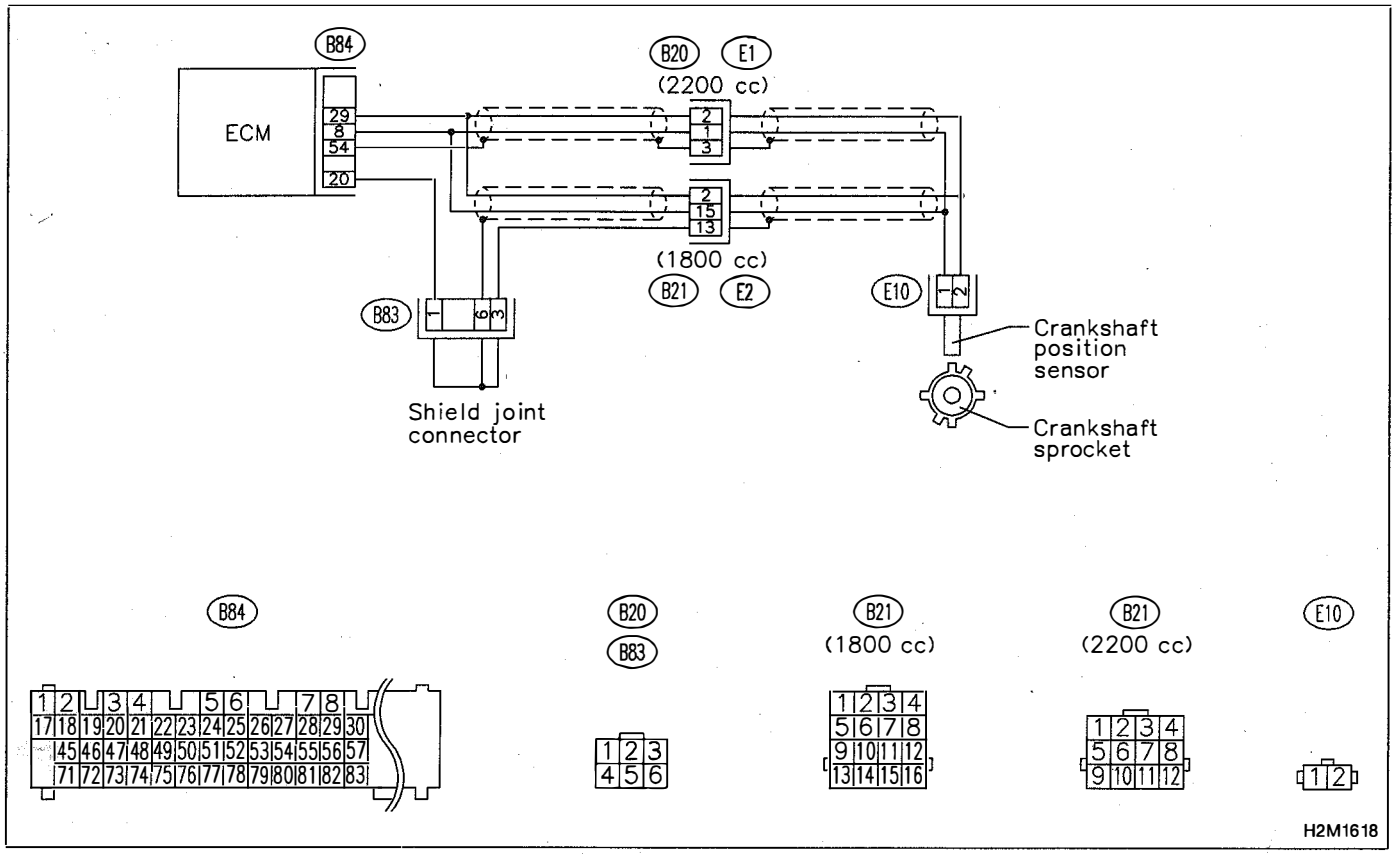
G: CRANKSHAFT POSITION SENSOR CIRCUIT

WIRING DIAGRAM:

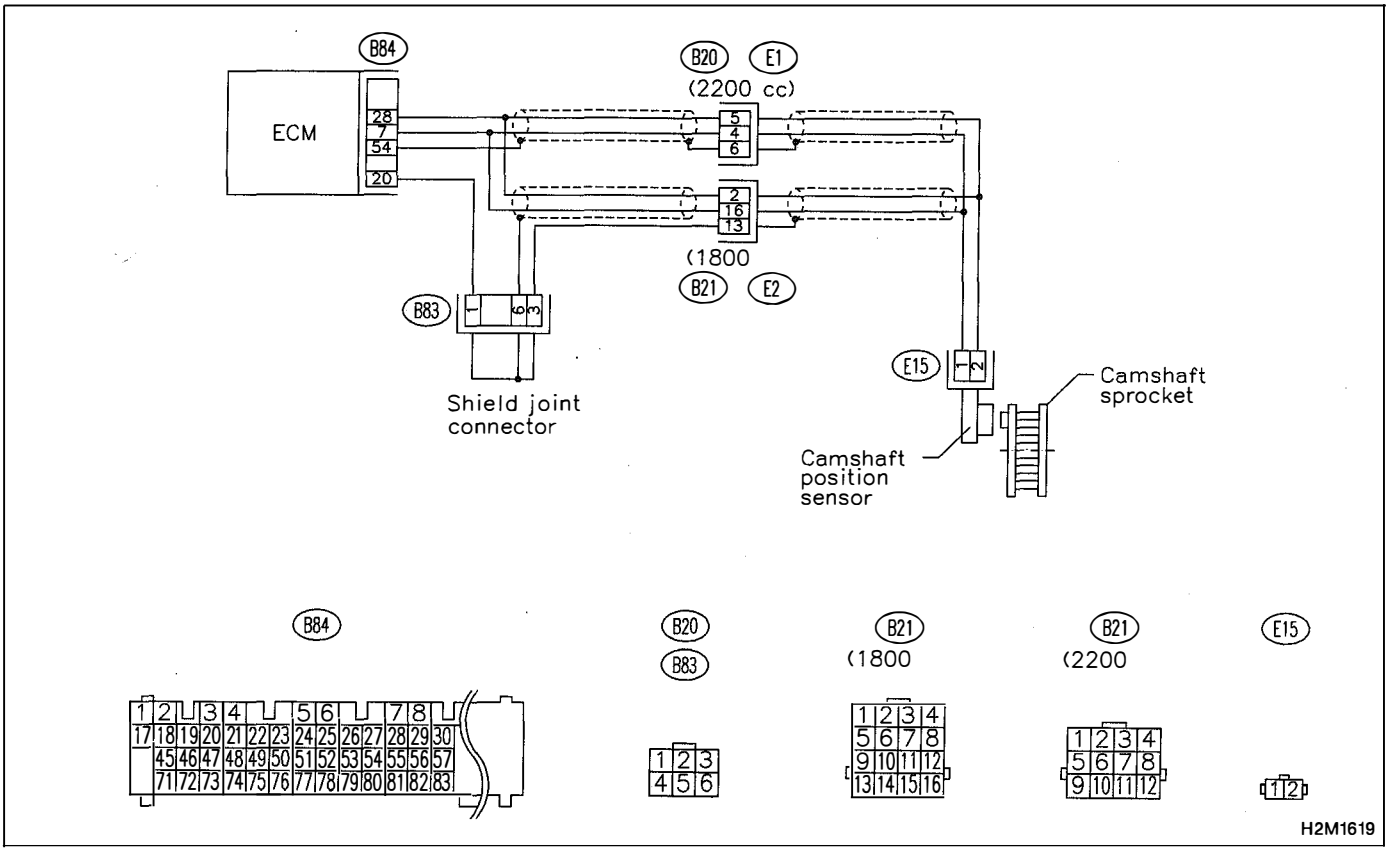


CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

NOTE:
Check crankshaft position sensor circuit. <Ref. to 2-7 [T10AK0].>

H: CAMSHAFT POSITION SENSOR CIRCUIT

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

NOTE:
Check camshaft position sensor circuit. <Ref. to 2-7 [T10AM0].>

MEMO:

9. General Diagnostic Table

A: GENERAL DIAGNOSTICS TABLE WITH NONCONFORMITY SYMPTOM FOR ENGINE

NOTE:
Malfunction of parts other than those listed is also possible. <Ref. to 2-3 [K100].>

Symptom	Problem parts
1. Engine stalls during idling.	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Ignition parts (*1) 4) Engine coolant temperature sensor (*2) 5) Crankshaft position sensor (*3) 6) Camshaft position sensor (*3) 7) EGR valve 8) Fuel injection parts (*4)
2. Rough idling	1) Idle air control solenoid valve 2) Mass air flow sensor 3) Engine coolant temperature sensor (*2) 4) Ignition parts (*1) 5) Air intake system (*5) 6) Fuel injection parts (*4) 7) Throttle position sensor 8) Crankshaft position sensor (*3) 9) Camshaft position sensor (*3) 10) EGR valve 11) Oxygen sensor 12) Fuel pump and fuel pump relay
3. Engine does not return to idle.	1) Idle air control solenoid valve 2) Engine coolant temperature sensor 3) Accelerator cable (*6) 4) Throttle position sensor 5) Mass air flow sensor
4. Poor acceleration	1) Mass air flow sensor 2) Throttle position sensor 3) Fuel injection parts (*4) 4) Fuel pump and fuel pump relay 5) Engine coolant temperature sensor (*2) 6) Crankshaft position sensor (*3) 7) Camshaft position sensor (*3) 8) A/C switch and A/C cut relay 9) Engine torque control signal circuit 10) Ignition parts (*1)
5. Engine stalls or engine sags or hesitates at acceleration.	1) Mass air flow sensor 2) Engine coolant temperature sensor (*2) 3) Crankshaft position sensor (*3) 4) Camshaft position sensor (*3) 5) Purge control solenoid valve 6) EGR valve 7) Fuel injection parts (*4) 8) Throttle position sensor 9) Fuel pump and fuel pump relay

Symptom	Problem parts
6. Surge	1) Mass air flow sensor 2) Engine coolant temperature sensor (*2) 3) Crankshaft position sensor (*3) 4) Camshaft position sensor (*3) 5) EGR valve 6) Fuel injection parts (*4) 7) Throttle position sensor 8) Fuel pump and fuel pump relay
7. Spark knock	1) Mass air flow sensor 2) Engine coolant temperature sensor 3) Knock sensor 4) Fuel injection parts (*4) 5) Fuel pump and fuel pump relay
8. After burning in exhaust system	1) Mass air flow sensor 2) Engine coolant temperature sensor (*2) 3) Fuel injection parts (*4) 4) Fuel pump and fuel pump relay

*1: Check ignitor, ignition coil and spark plug.
*2: Indicate the symptom occurring only in cold temperatures.
*3: Ensure the secure installation.
*4: Check fuel injector, fuel pressure regulator and fuel filter.
*5: Inspect air leak in air intake system.
*6: Adjust accelerator cable.

B: GENERAL DIAGNOSTICS TABLE WITH NONCONFORMITY SYMPTOM FOR AUTOMATIC TRANSMISSION

Symptom	Problem parts
Starter does not rotate when select lever is in "P" or "N"; starter rotates when select lever is in "R", "D", "3" or "2".	1) Inhibitor switch 2) Select cable 3) Select lever 4) Starter motor and harness
Abnormal noise when select lever is in "P" or "N".	1) Strainer 2) Duty solenoid C 3) Oil pump 4) Drive plate 5) ATF level too high or too low
Hissing noise occurs during standing start.	1) Strainer 2) ATF level too high or too low
Noise occurs while driving in "D1".	1) Final gear 2) Planetary gear 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D2".	
Noise occurs while driving in "D3".	1) Final gear 2) Low & reverse brake 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D4".	1) Final gear 2) Low & reverse brake 3) Planetary gear 4) Reduction gear 5) Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	1) Control valve 2) Lock-up damper 3) Engine performance
Vehicle moves when select lever is in "N".	1) Control unit 2) Inhibitor switch 3) Forward clutch
Shock occurs when select lever is moved from "N" to "D".	1) Control module 2) Accumulator ("N" to "D") 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from "N" to "D".	1) Control module 2) Control valve 3) Forward clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case
Shock occurs when select lever is moved from "N" to "R".	1) Control module 2) Accumulator (4A) 3) Control valve 4) ATF deterioration 5) Dropping resistor

Symptom	Problem parts
Excessive time lag occurs when select lever is moved from "N" to "R".	1) Control valve 2) Low & reverse clutch 3) Reverse clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case
Vehicle does not start in any shift range (engine stalls).	1) Parking brake mechanism 2) Planetary gear
Vehicle does not start in any shift range (engine revving up).	1) Strainer 2) Duty solenoid A 3) Control valve 4) Drive pinion 5) Hypoid gear 6) Axle shaft 7) Differential gear 8) Oil pump 9) Input shaft 10) Output shaft 11) Planetary gear 12) Drive plate 13) ATF level too low 14) Front gasket transmission case
Vehicle does not start in "R" range only (engine revving up).	1) Select cable 2) Select lever 3) Control valve 4) Low & reverse clutch 5) Reverse clutch
Vehicle does not start in "R" range only (engine stalls).	1) Forward clutch 2) Band brake 3) Planetary gear 4) Parking brake mechanism
Vehicle does not start in "D", "3" or "2" range only (engine revving up).	1) Forward clutch 2) One-way clutch (1-2)
Vehicle does not start in "D", "3", "2" or "1" range only (engine revving up).	1) Forward clutch
Vehicle does not start in "D", "3", "2" or "1" range only (engine stalls).	1) Reverse clutch
Vehicle starts in "R" range only (engine revving up).	1) Control valve
Acceleration during standing starts is poor (high stall rpm).	1) Control valve 2) Forward clutch 3) Reverse clutch 4) ATF level too low 5) Front gasket transmission case
Acceleration during standing starts is poor (low stall rpm).	1) Oil pump 2) Torque converter one-way clutch 3) Engine performance
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	1) Control module 2) Control valve 3) High clutch 4) Brake band 5) Planetary gear

Symptom	Problem parts
Acceleration is poor when select lever is in "R" (normal stall rpm).	1) Control module 2) Overrunning clutch 3) High clutch 4) Brake band 5) Planetary gear
No shift occurs from 1st to 2nd gear.	1) Control module 2) Vehicle speed sensor 1 3) Vehicle speed sensor 2 4) Throttle position sensor 5) Shift solenoid 1 6) Shift solenoid 2 7) Control valve 8) Brake band
No shift occurs from 2nd to 3rd gear.	1) Control module 2) Control valve 3) High clutch 4) One-way clutch (3-4)
No shift occurs from 3rd to 4th gear.	1) Control module 2) Accumulator (3R) 3) ATF temperature sensor 4) Control valve 5) Band brake
Engine brake is not effected when select lever is in "3" range.	1) Inhibitor switch 2) Control module 3) Throttle position sensor 4) Control valve 5) Shift solenoid 3
Engine brake is not effected when select lever is in "3" or "2" range.	1) Control valve 2) Overrunning clutch
Engine brake is not effected when select lever is in "1" range.	1) Control valve 2) Low & reverse brake clutch
Shift characteristics are erroneous.	1) Inhibitor switch 2) Control module 3) Vehicle speed sensor 1 4) Vehicle speed sensor 2 5) Throttle position sensor 6) Control valve
No lock-up occurs.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Control valve 5) Lock-up facing 6) Engine speed signal
Parking brake is not effected.	1) Select cable 2) Select lever 3) Parking mechanism
Shift lever cannot be moved or is hard to move from "P" range.	
ATF spurts out.	1) ATF level too high
Differential oil spurts out.	1) Differential gear oil too high
Differential oil level changes excessively.	1) Seal pipe 2) Double oil seal

Symptom	Problem parts
Odor is produced from ATF supply pipe.	1) Transfer clutch 2) Forward clutch 3) Overrunning clutch 4) High clutch 5) Band brake 6) Low & reverse clutch 7) Reverse clutch 8) Lock-up facing 9) ATF deterioration
Shock occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Accumulator (2A) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake 8) ATF deterioration 9) Engine performance 10) Dropping resistor
Slippage occurs from 1st to 2nd gear.	1) Control module 2) Throttle position sensor 3) Accumulator (2A) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake
Shock occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Accumulator (3R) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) Band brake 9) ATF deterioration 10) Engine performance 11) Dropping resistor
Slippage occurs from 2nd to 3rd gear.	1) Control module 2) Throttle position sensor 3) Accumulator (3R) 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) High clutch 8) Band brake
Shock occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Accumulator 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Overrunning clutch 8) Band brake 9) ATF deterioration 10) Engine performance

Symptom	Problem parts
Slippage occurs from 3rd to 4th gear.	1) Control module 2) Throttle position sensor 3) Accumulator 4) ATF temperature sensor 5) Duty solenoid A 6) Control valve 7) Band brake
Shock occurs when select lever is moved from "3" to "2" range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Overrunning clutch 7) Band brake 8) ATF deterioration
Shock occurs when select lever is moved from "D" to "1" range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) ATF deterioration 7) Low & reverse brake
Shock occurs when select lever is moved from "2" to "1" range.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Low & reverse clutch 7) ATF deterioration
Shock occurs when accelerator pedal is released at medium speeds.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Duty solenoid A 5) Control valve 6) Lock-up damper 7) Engine performance
Vibration occurs during straight-forward operation.	1) Control module 2) Duty solenoid B 3) Lock-up facing 4) Lock-up damper
Vibration occurs during turns (tight corner "braking" phenomenon).	1) Control module 2) Vehicle speed sensor 1 3) Vehicle speed sensor 2 4) Throttle position sensor 5) ATF temperature sensor 6) Transfer clutch 7) Transfer valve 8) Duty solenoid C 9) ATF deterioration

Symptom	Problem parts
Front wheel slippage occurs during standing starts.	1) Control module 2) Vehicle speed sensor 2 3) FWD switch 4) Throttle position sensor 5) ATF temperature sensor 6) Control valve 7) Transfer clutch 8) Transfer valve 9) Transfer pipe 10) Duty solenoid C 11) Transfer clutch hub
Vehicle is not set in FWD mode.	1) Control module 2) FWD switch 3) Transfer clutch 4) Transfer valve 5) Duty solenoid C
Select lever is hard to move.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate
Select lever is too high to move (unreasonable resistance).	1) Detent spring 2) Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate

10. Diagnostic Chart with Trouble Code

A: DIAGNOSTIC TROUBLE CODE (DTC) LIST

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P0101	QA—RLOW	Mass air flow sensor circuit range/performance problem (low input)	140
P0102	QA—LOW	Mass air flow sensor circuit low input	142
P0103	QA—HI	Mass air flow sensor circuit high input	148
P0106	PS—R2	Pressure sensor circuit range/performance problem	152
P0107	P—SLOW	Pressure sensor circuit low input	156
P0108	P—SHI	Pressure sensor circuit high input	160
P0116	TW—LOW	Engine coolant temperature sensor circuit low input	166
P0117	TW—HI	Engine coolant temperature sensor circuit high input	170
P0121	TH—RHI	Throttle position sensor circuit range/performance problem (high input)	174
P0122	THV—LOW	Throttle position sensor circuit low input	176
P0123	THV—HI	Throttle position sensor circuit high input	182
P0125	TW—CL	Insufficient coolant temperature for closed loop fuel control	186
P0130	FO2—V	Front oxygen sensor circuit malfunction	188
P0133	FO2—R	Front oxygen sensor circuit slow response	192
P0135	FO2H	Front oxygen sensor heater circuit malfunction	194
P0136	RO2—V	Rear oxygen sensor circuit malfunction	198
P0139	RO2—R	Rear oxygen sensor circuit slow response	202
P0141	RO2H	Rear oxygen sensor heater circuit malfunction	204
P0170	FUEL	Fuel trim malfunction	208
P0181	TNKT—F	Fuel temperature sensor A circuit range/performance problem	214
P0182	TNKT—LOW	Fuel temperature sensor A circuit low input	216
P0183	TNKT—HI	Fuel temperature sensor A circuit high input	220
P0261	INJ1	Fuel injector circuit low input - #1	224
P0262	INJ1—HI	Fuel injector circuit high input - #1	230
P0264	INJ2	Fuel injector circuit low input - #2	224
P0265	INJ2—HI	Fuel injector circuit high input - #2	230
P0267	INJ3	Fuel injector circuit low input - #3	224
P0268	INJ3—HI	Fuel injector circuit high input - #3	230
P0270	INJ4	Fuel injector circuit low input - #4	224
P0271	INJ4—HI	Fuel injector circuit high input - #4	230
P0301	MIS—1	Cylinder 1 misfire detected	234
P0302	MIS—2	Cylinder 2 misfire detected	234
P0303	MIS—3	Cylinder 3 misfire detected	234
P0304	MIS—4	Cylinder 4 misfire detected	234
P0325	KNOCK	Knock sensor circuit malfunction	244
P0335	CRANK	Crankshaft position sensor circuit malfunction	248
P0336	CRANK—R	Crankshaft position sensor circuit range/performance problem	252
P0340	CAM	Camshaft position sensor circuit malfunction	254

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P0341	CAM—R	Camshaft position sensor circuit range/performance problem	258
P0400	EGR	Exhaust gas recirculation flow malfunction	260
P0403	EGRSOL	Exhaust gas recirculation circuit low input	266
P0420	CAT	Catalyst system efficiency below threshold	270
P0440	EVAP	Evaporative emission control system malfunction	272
P0441	CPC—F	Evaporative emission control system incorrect purge flow	276
P0443	CPC	Evaporative emission control system purge control valve circuit low input	278
P0446	VCMSOL—LO	Evaporative emission control system vent control low input	282
P0451	TNKP—F	Evaporative emission control system pressure sensor range/performance problem	286
P0452	TNKP—LOW	Evaporative emission control system pressure sensor low input	288
P0453	TNKP—HI	Evaporative emission control system pressure sensor high input	294
P0461	FLVL—R	Fuel level sensor circuit range/performance problem	300
P0462	FLVL—LOW	Fuel level sensor circuit low input	302
P0463	FLVL—HI	Fuel level sensor circuit high input	308
P0500	VSP	Vehicle speed sensor malfunction	314
P0505	ISC	Idle control system malfunction	316
P0506	ISC—RLOW	Idle control system RPM lower than expected	324
P0507	ISC—RHI	Idle control system RPM higher than expected	326
P0600	—	Serial communication link malfunction	328
P0601	RAM	Internal control module memory check sum error	330
P0703	ATBRK	Brake switch input malfunction	332
P0705	ATRNG	Transmission range sensor circuit malfunction	336
P0710	ATF	Transmission fluid temperature sensor circuit malfunction	355
P0720	ATVSP	Output speed sensor (vehicle speed sensor 1) circuit malfunction	356
P0725	ATNE	Engine speed input circuit malfunction	357
P0731	ATGR1	Gear 1 incorrect ratio	358
P0732	ATGR2	Gear 2 incorrect ratio	358
P0733	ATGR3	Gear 3 incorrect ratio	358
P0734	ATGR4	Gear 4 incorrect ratio	358
P0740	ATLU—F	Torque converter clutch system malfunction	362
P0743	ATLU	Torque converter clutch system electrical	366
P0748	ATPL	Pressure control solenoid electrical	367
P0753	ATSFT1	Shift solenoid A electrical	368
P0758	ATSFT2	Shift solenoid B electrical	369
P0760	ATOVR—F	Shift solenoid C malfunction	370
P0763	ATOVR	Shift solenoid C electrical	374
P1100	ST—SWOFF	Starter switch circuit low input	376
P1101	N—SW	Neutral position switch circuit malfunction [MT vehicles]	378
P1101	N—SWOFF	Neutral position switch circuit high input [AT vehicles]	382
P1102	BR	Pressure sources switching solenoid valve circuit low input	388

DTC No.	Abbreviation (Subaru Select Monitor)	Item	Page
P1103	TRQ	Engine torque control signal circuit malfunction	392
P1120	ST—SWON	Starter switch circuit high input	396
P1121	N—SWON	Neutral position switch circuit low input [AT vehicles]	398
P1122	BR—HI	Pressure sources switching solenoid valve circuit high input	402
P1141	QA—RHI	Mass air flow sensor circuit range/performance problem (high input)	406
P1142	TH—RLOW	Throttle position sensor circuit range/performance problem (low input)	408
P1143	PS—RLOW	Pressure sensor circuit range/performance problem (low input)	410
P1144	PS—RHI	Pressure sensor circuit range/performance problem (high input)	414
P1400	PCVSOL—LO	Fuel tank pressure control solenoid valve circuit low input	416
P1420	PCVSOL—HI	Fuel tank pressure control solenoid valve circuit high input	420
P1421	EGRSOL—HI	Exhaust gas recirculation circuit high input	424
P1422	CPC—HI	Evaporative emission control system purge control valve circuit high input	428
P1423	VCMSOL—HI	Evaporative emission control system vent control high input	432
P1440	PCV—FLOW	Fuel tank pressure control system function problem (low input)	436
P1441	PCV—FHI	Fuel tank pressure control system function problem (high input)	440
P1442	FLVL—R2	Fuel level sensor circuit range/performance problem 2	444
P1500	FAN—1	Radiator fan relay 1 circuit low input	446
P1502	FAN—F	Radiator fan function problem	450
P1507	ISC—SHI	Idle control system malfunction (fail-safe)	452
P1520	FAN—1HI	Radiator fan relay 1 circuit high input	454
P1540	VSP—S	Vehicle speed sensor malfunction 2	458
P1700	ATTH	Throttle position sensor circuit malfunction for automatic transmission	460
P1701	ATCRS	Cruise control set signal circuit malfunction for automatic transmission	462
P1702	ATDIAG—LO	Automatic transmission diagnosis input signal circuit low input	464
P1722	ATDIAG—HI	Automatic transmission diagnosis input signal circuit high input	468
P1742	ATDIAG—2	Automatic transmission diagnosis input signal circuit malfunction	472

MEMO:

OBD	(FB1)
P0101	<QA_RLOW>

B2M1056

B: DTC P0101 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

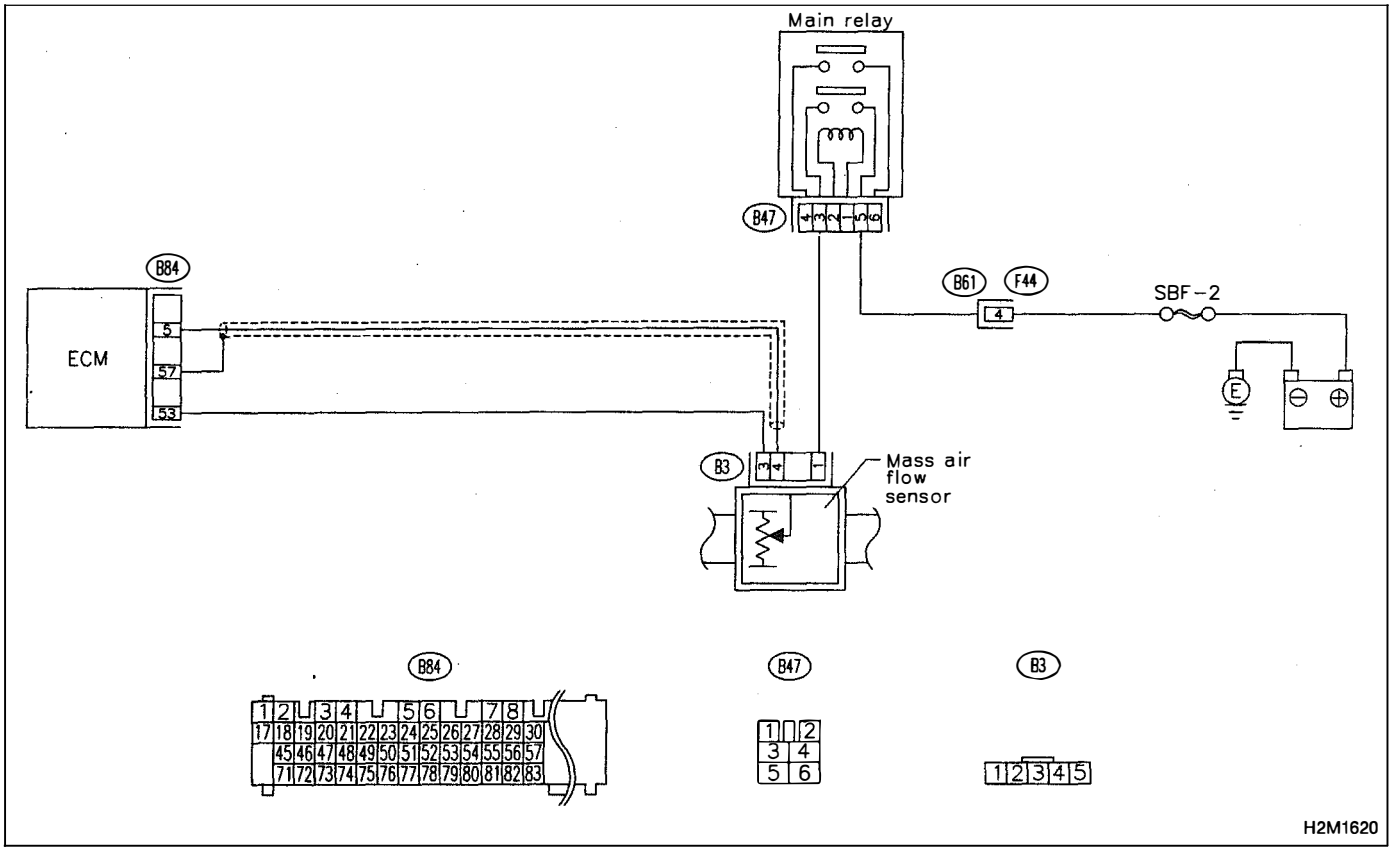
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10B1	CHECK DTC P0102 OR P0103 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0102 or P0103?***

YES : Inspect DTC P0102 or P0103 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0101.

NO : Replace mass air flow sensor.

OBD (FB1)
P0102 <QA_LOW>
B2M1058

C: DTC P0102 — MASS AIR FLOW SENSOR CIRCUIT LOW INPUT —

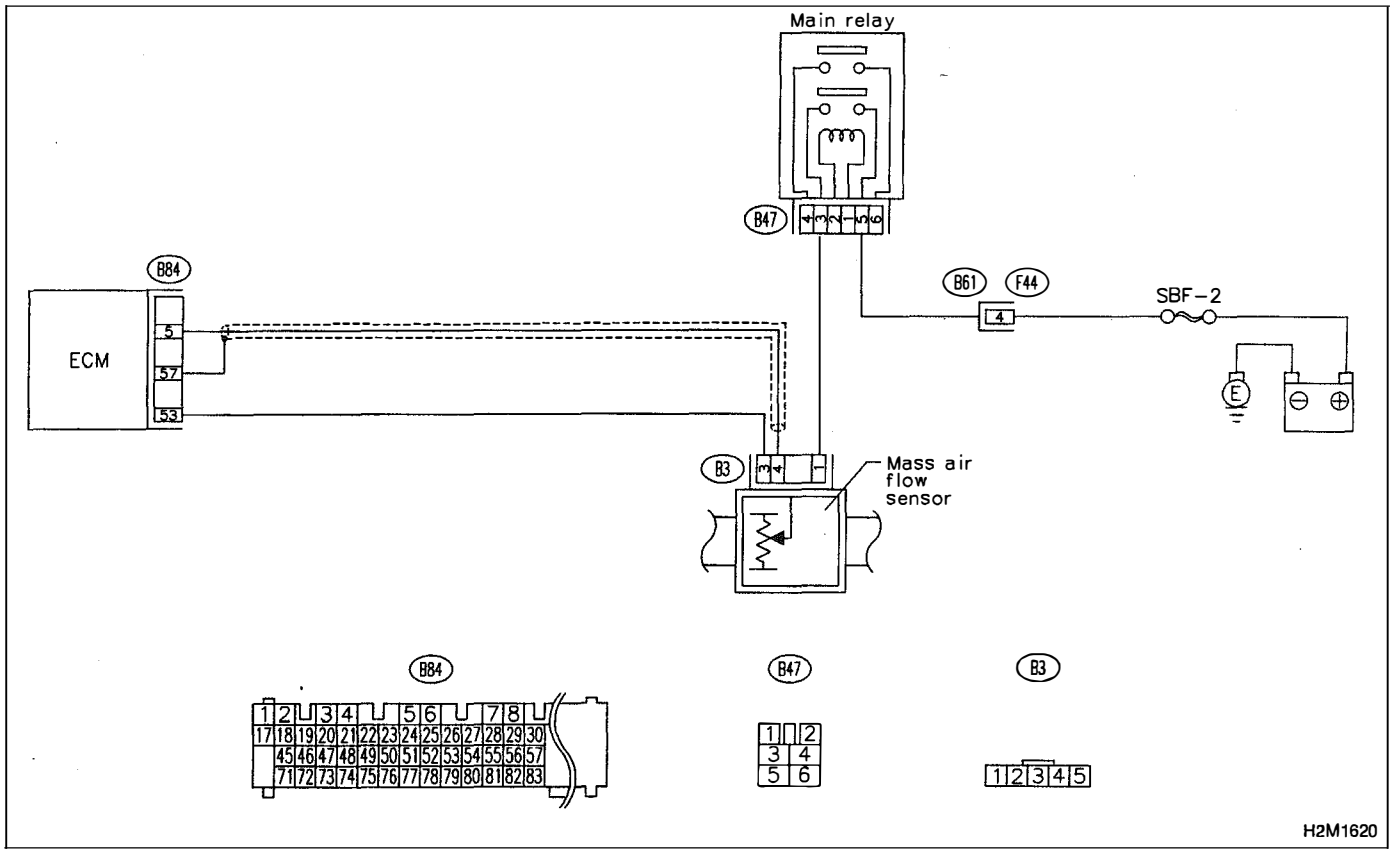
DTC DETECTING CONDITION:

- Immediately at fault recognition

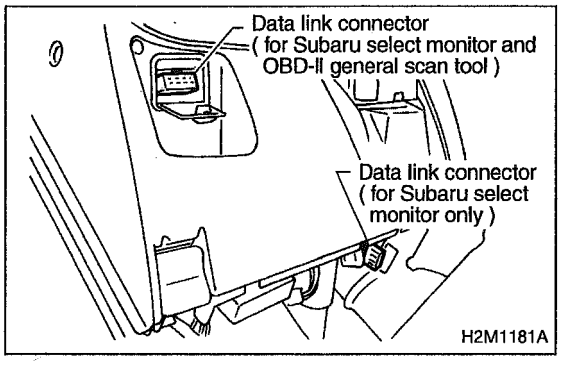
TROUBLE SYMPTOM:

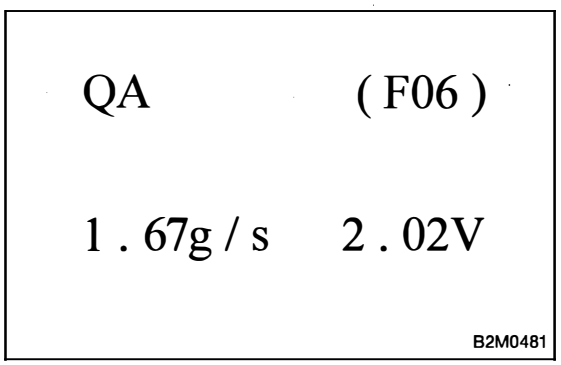
- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10C1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.

5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F06

- F06: Mass air flow and voltage input from mass air flow sensor are shown on display at the same time.

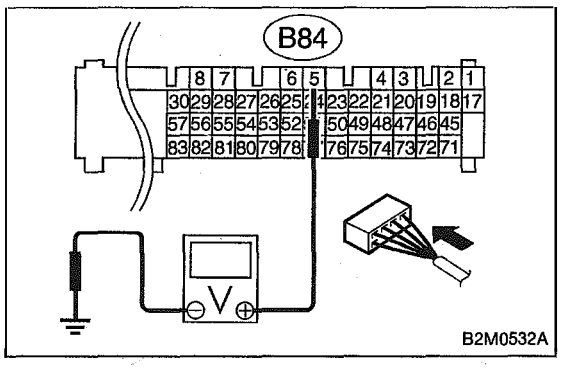
CHECK ***: Is the value equal to or more than 1.3 g/sec or 0.3 V and equal to or less than 250 g/sec or 5.0 V in function mode F06?***

Probable cause: Poor connect of connectors, circuit and grounding line.

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the mass air flow sensor.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between mass air flow sensor and ECM connector
- Poor contact in mass air flow sensor or ECM connector

NO : Go to step **10C2**.



10C2	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

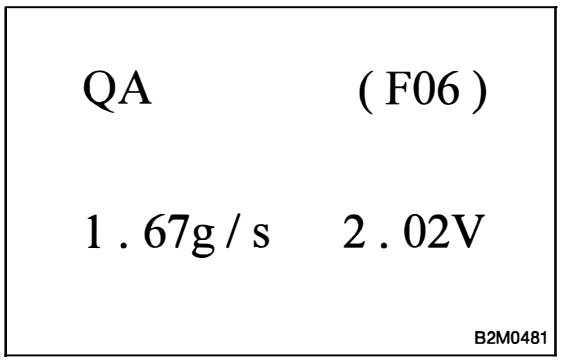
1) Measure voltage between ECM connector and chassis ground while engine is idling.

Connector & terminal
(B84) No. 5 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 0.3 V?***

YES : Go to step **10C3**.

NO : Go to next step 2).



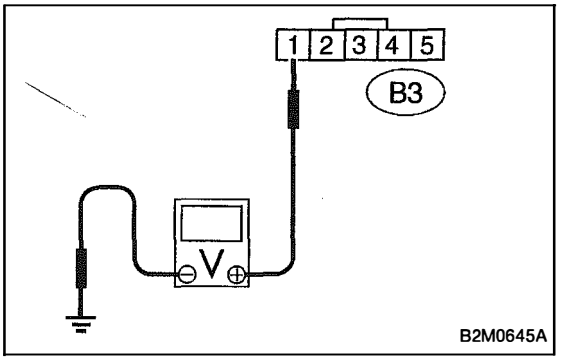
2) Measure voltage between ECM connector and chassis ground while engine is idling.

CHECK ***: Does the voltage change more than 0.3 V by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10C3	CHECK POWER SUPPLY TO MASS AIR FLOW SENSOR.

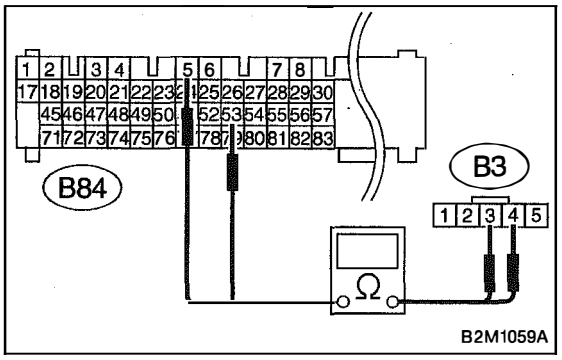
1) Turn ignition switch to OFF.
2) Disconnect connector from mass air flow sensor.
3) Turn ignition switch to ON.
4) Measure voltage between mass air flow sensor connector and engine ground.

Connector & terminal
(B3) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10C4**.

NO : Repair open circuit in harness between main relay and mass air flow sensor connector.



10C4	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and mass air flow sensor connector.

Connector & terminal
(B84) No. 5 — (B3) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and mass air flow sensor connector
- Poor contact in mass air flow sensor connector
- Poor contact in ECM connector

4) Measure resistance of harness between ECM and mass air flow sensor connector.

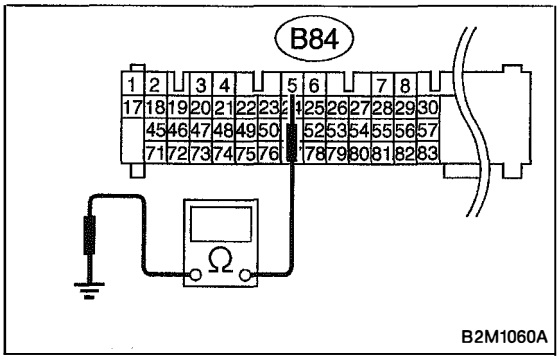
Connector & terminal
(B84) No. 53 — (B3) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10C5**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and mass air flow sensor connector
- Poor contact in mass air flow sensor connector
- Poor contact in ECM connector



10C5	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 5 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Replace mass air flow sensor.

NO : Repair ground short circuit in harness between ECM and mass air flow sensor connector.

MEMO:

OBD (FB1)
P0103 <QA_HI>
B2M1061

D: DTC P0103 — MASS AIR FLOW SENSOR CIRCUIT HIGH INPUT —

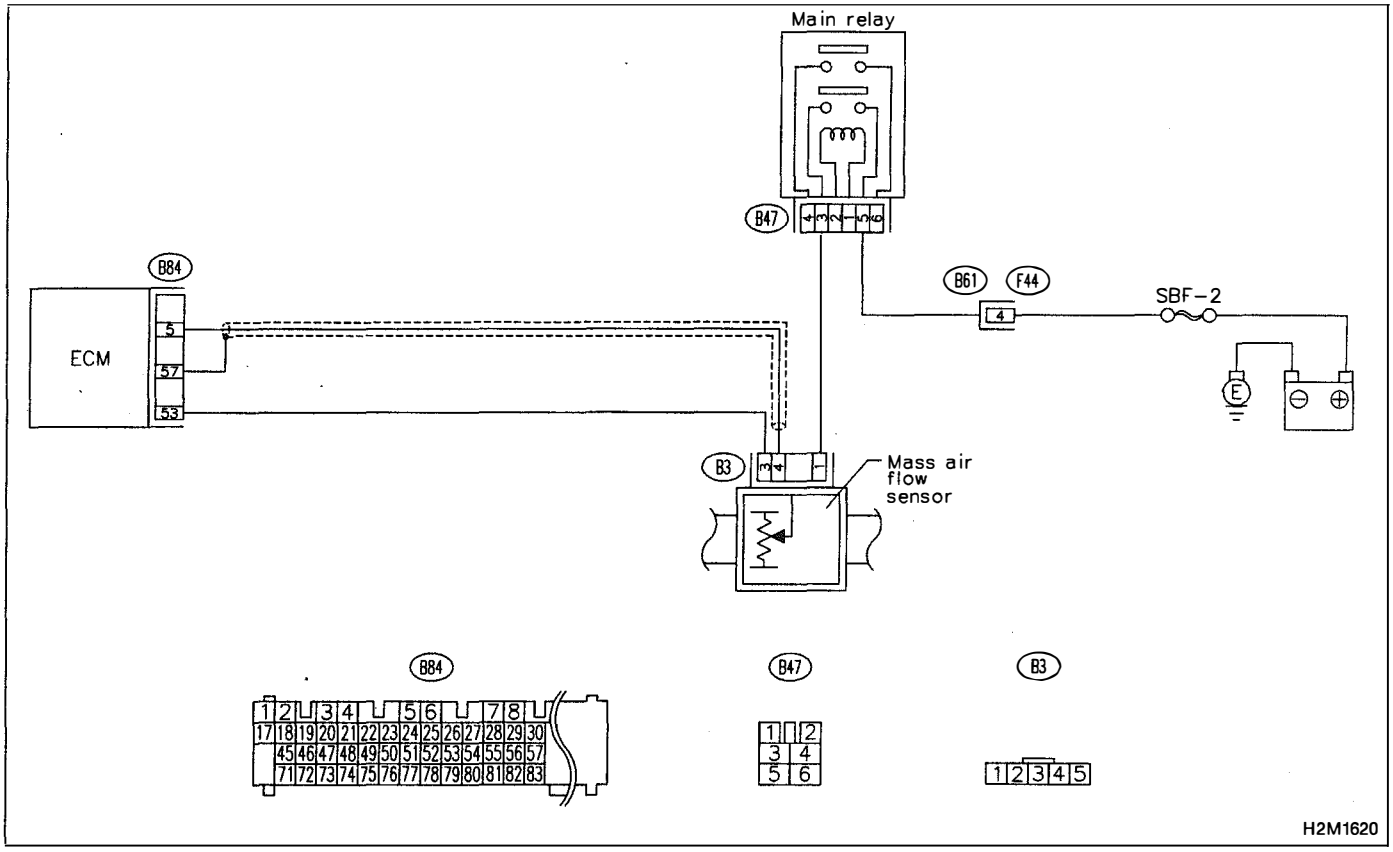
DTC DETECTING CONDITION:

- Immediately at fault recognition

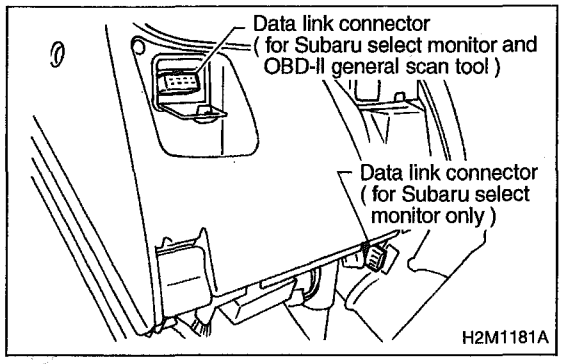
TROUBLE SYMPTOM:

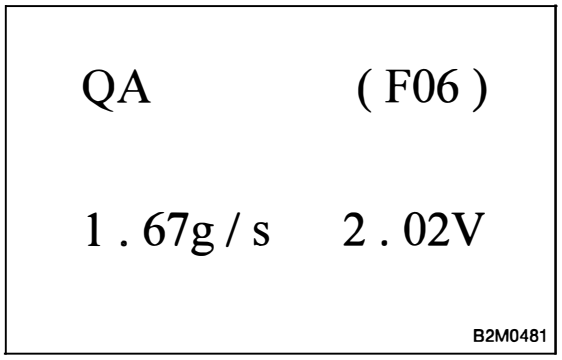
- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10D1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.

5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F06

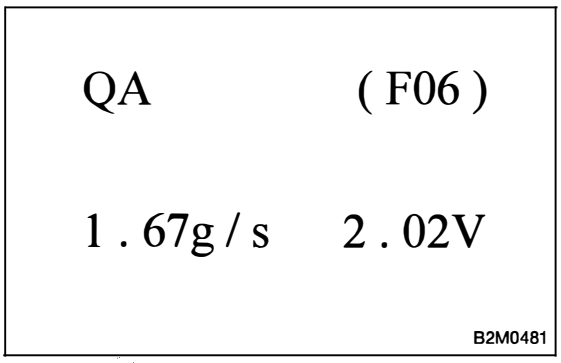
- F06: Mass air flow and voltage input from mass air flow sensor are shown on display at the same time.

CHECK ***: Is the value equal to or more than 1.3 g/sec or 0.3 V and equal to or less than 250 g/sec or 5.0 V in function mode F06?***

Probable cause: Poor connect of connectors, circuit and grounding line.

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NO : Go to step **10D2**.



10D2	CHECK HARNESS BETWEEN ECM AND MASS AIR FLOW SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Disconnect connector from mass air flow sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data on Subaru select monitor or OBD-II general scan tool.

● Subaru Select Monitor

Designate mode using function key.

Function mode: F06

CHECK ***: Is the value more than 250 g/sec or 5 V in function mode F06?***

YES : Repair battery short circuit in harness between mass air flow sensor and ECM connector. After repair, replace ECM.

NO : Replace mass air flow sensor.

● OBD-II general scan tool

For detailed operation procedures, refer to OBD-II General Scan Tool Instruction Manual.

MEMO:

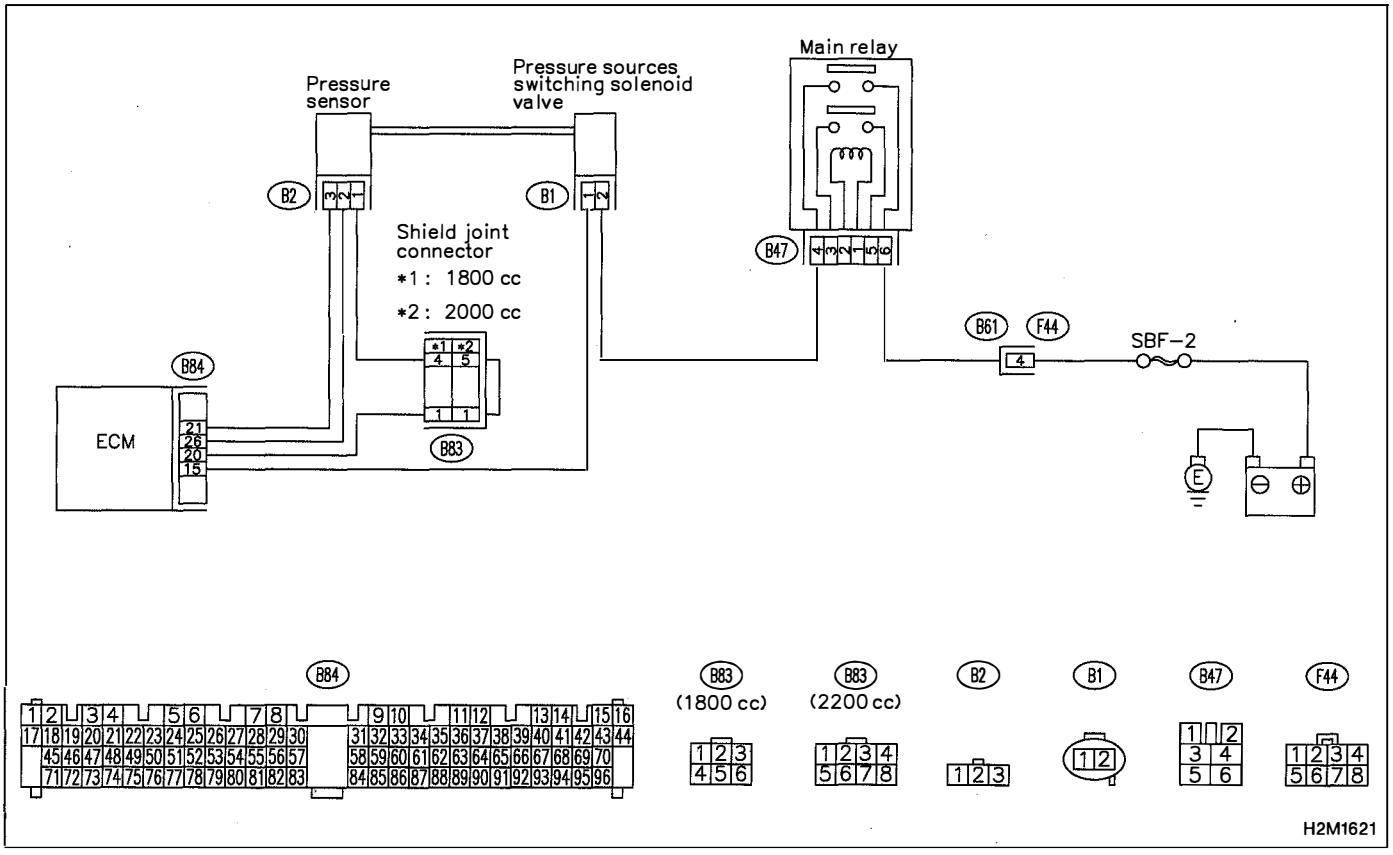
OBD (FB1)
P0106 <PS_R2>
B2M1062

E: DTC P0106 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

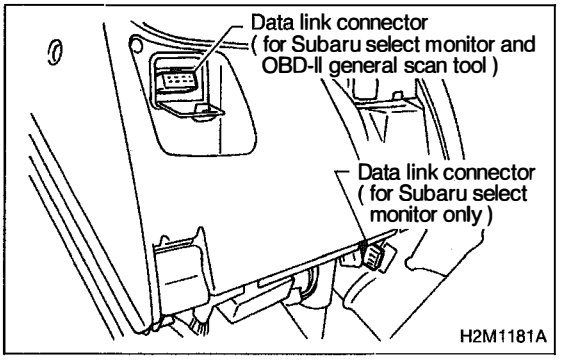
10E1	CHECK DTC P0107, P0108, P1102 OR P1122 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0107, P0108, P1102 OR P1122?***

YES : Inspect DTC P0107, P0108, P1102 OR P1122 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

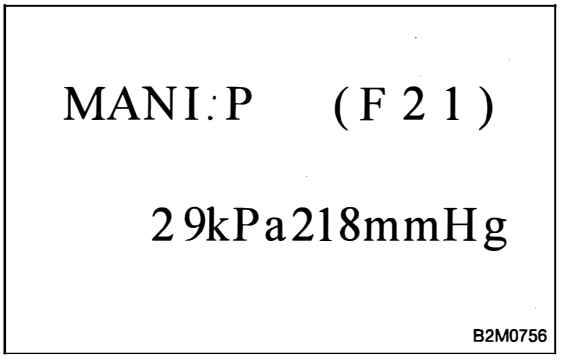
NOTE:
In this case, it is not necessary to inspect DTC P0106.

NO : Go to step **10E2.**



10E2	CHECK DATA FOR CONTROL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.



5) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

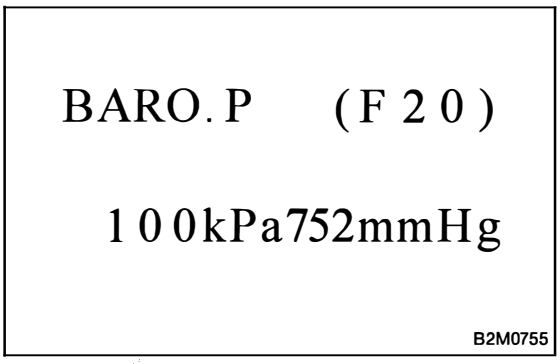
Function mode: F21 and F20

- F21: Display shows pressure signal value sent from the pressure sensor.
- F20: Display shows pressure signal value sent from the pressure sensor.

CHECK : ***Is the value more than 85 kPa in function mode F21?***

YES : Go to step **10E3.**

NO : Go to next step 6).

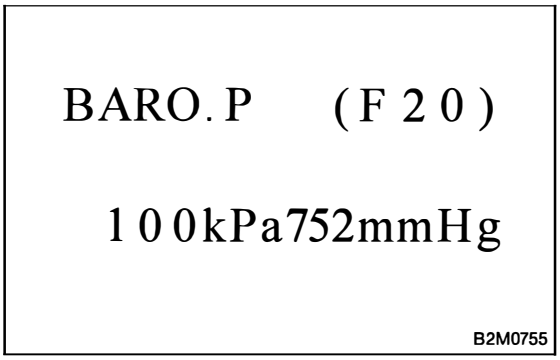


6) Read data on Subaru Select Monitor or OBD-II general scan tool.

CHECK : ***Is the value less than 32 kPa in function mode F20?***

YES : Go to step **10E4**.

NO : Go to step 7).



7) Read data on Subaru Select Monitor or OBD-II general scan tool.

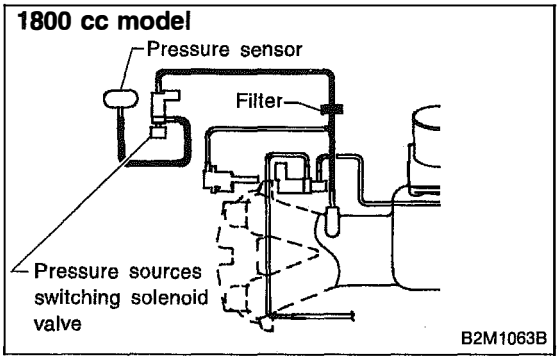
CHECK : ***Is the value more than 133 kPa in function mode F20?***

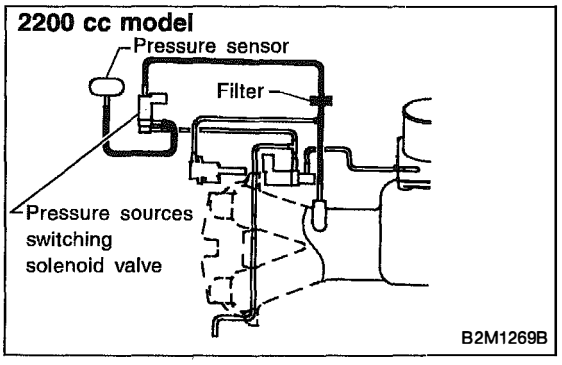
YES : Replace pressure sensor.

NO : Repair poor contact in pressure sensor connector, pressure sources switching solenoid valve connector, and ECM connector.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.





10E3	CHECK VACUUM HOSE.

CHECK : ***Is there a fault in vacuum hose?***

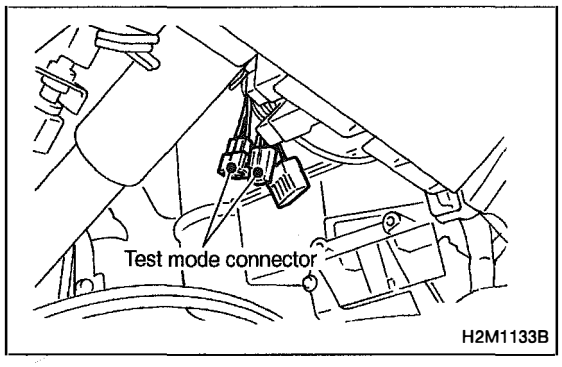
NOTE:

Check the following items.

- Disconnection of the vacuum hose from pressure sources switching solenoid valve to intake manifold
- Holes in the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Clogging of the vacuum hose between pressure sources switching solenoid valve to intake manifold
- Disconnection of the vacuum hose from pressure sensor to pressure sources switching solenoid valve
- Holes in the vacuum hose between pressure sensor and pressure sources switching solenoid valve
- Clogging of the vacuum hose between pressure sensor and pressure sources switching solenoid valve
- Clogging of the filter

YES : Repair or replace hoses or filter.

NO : Go to step **10E4**.



10E4	CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.
3) Turn ignition switch to ON.

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ↔ OFF each 1.5 sec.)***

NOTE:
Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD10). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Replace pressure sensor.

NO : Replace pressure sources switching solenoid valve.

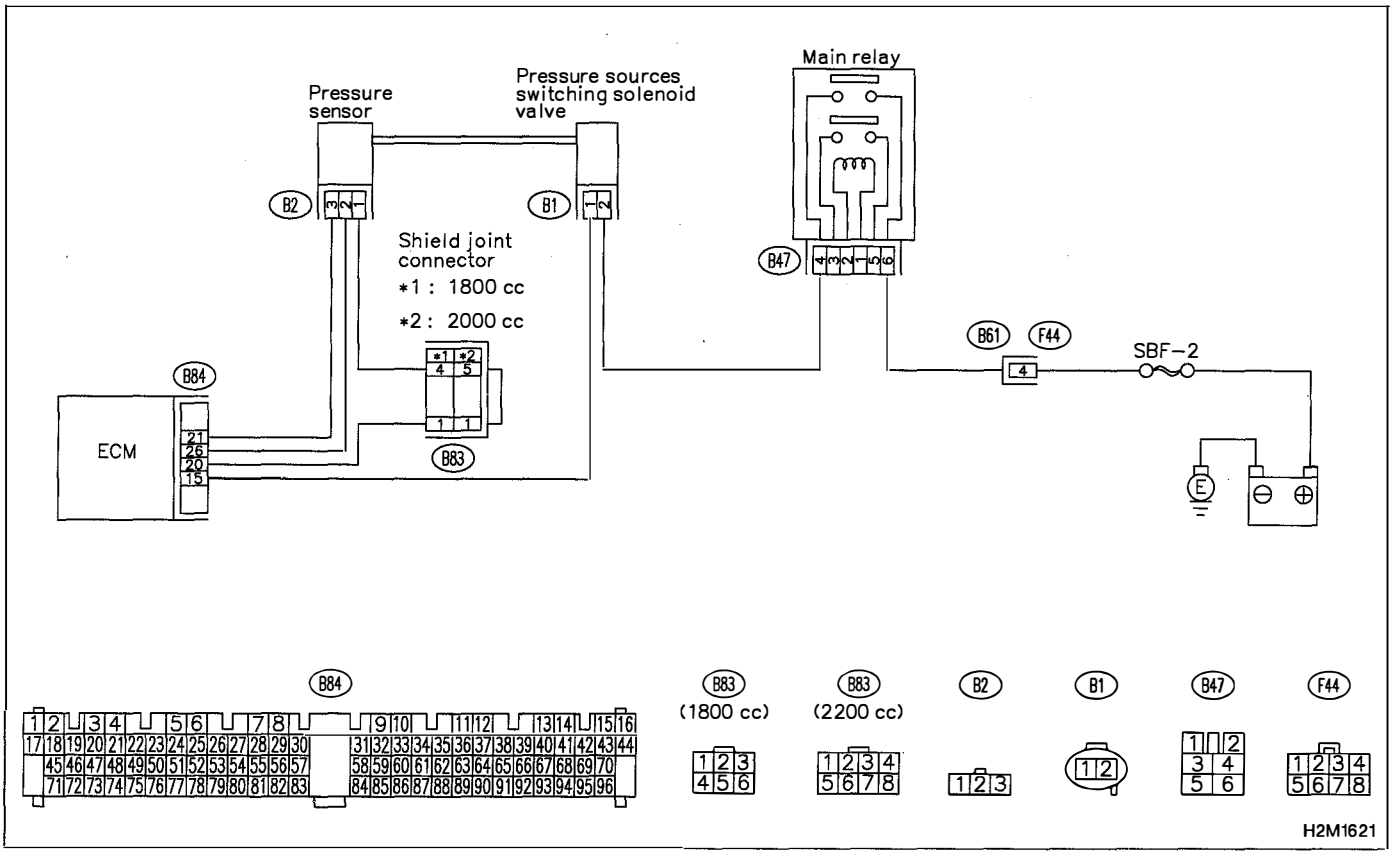
OBD (FB1)
P0107 <P_SLOW>
B2M1064

F: DTC P0107 — PRESSURE SENSOR CIRCUIT LOW INPUT —

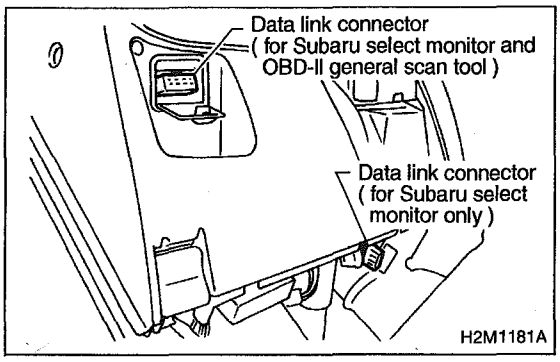
DTC DETECTING CONDITION:

- Immediately at fault recognition

WIRING DIAGRAM:

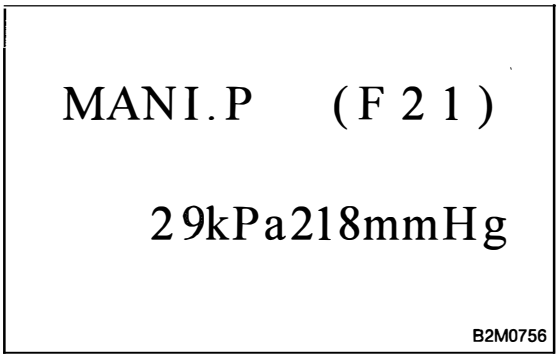


CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10F1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.



5) Read the data on Subaru Select Monitor or the OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F21

- F21: Display shows pressure signal value sent from pressure sensor.

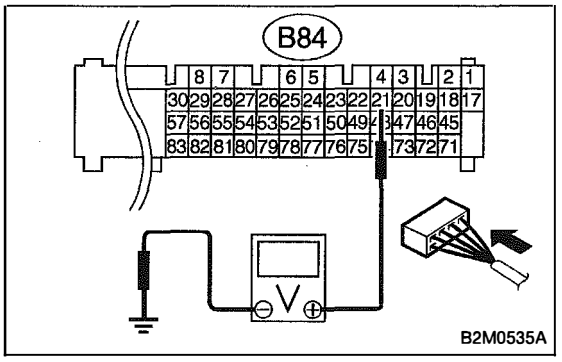
CHECK ***: Is the value less than 0 kPa in function mode F21?***

YES : Go to step **10F2**.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10F2	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

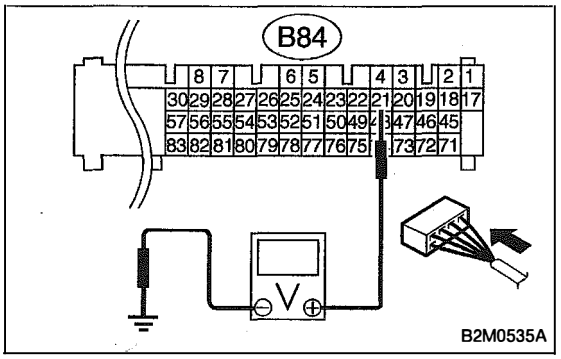
1) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 2).

NO : Go to next CHECK .

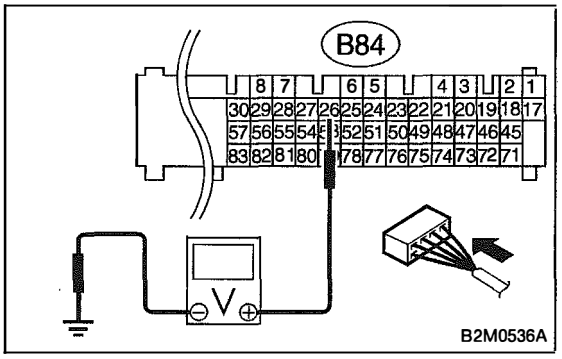


CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



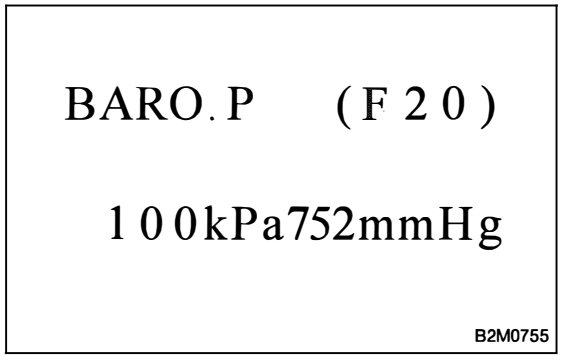
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 26 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 0.2 V?***

YES : Go to step **10F3**.

NO : Go to next step 3).



3) Read data on Subaru Select Monitor.
- Subaru Select Monitor

Designate mode using function key.

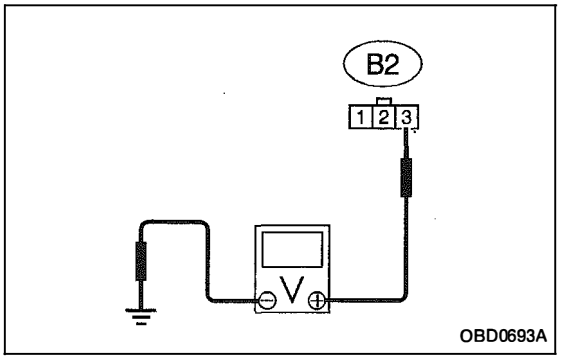
Function mode: F20

- F20: Display shows pressure signal value sent from pressure sensor.

CHECK : ***Does the value change more than 0 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

YES : Repair poor contact in ECM connector.

NO : Go to step **10F3**.



10F3	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

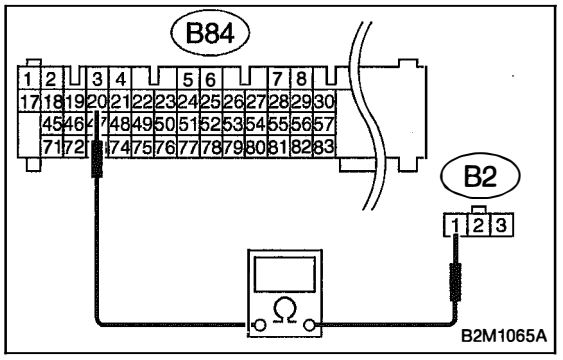
1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between pressure sensor connector and engine ground.

Connector & terminal
(B2) No. 3 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 5).

NO : Repair open circuit in harness between ECM and pressure sensor connector.



5) Turn ignition switch to OFF.
6) Disconnect connector from ECM.
7) Measure resistance of harness between ECM and pressure sensor connector.

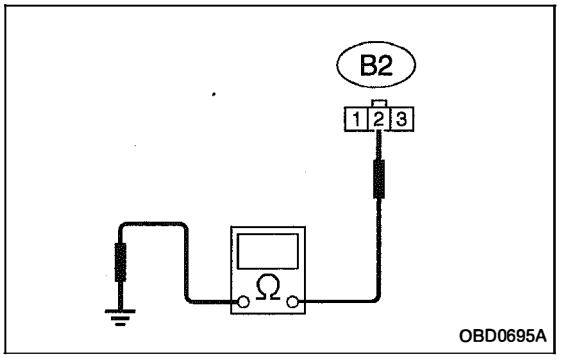
Connector & terminal
(B84) No. 20 — (B2) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 8).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in shield joint connector (B83)



8) Measure resistance of harness between pressure sensor connector and engine ground.

Connector & terminal
(B2) No. 2 — Engine ground:

CHECK ***: Is the resistance more than 500 kΩ?***

YES : Go to step **10F4**.

NO : Repair ground short circuit in harness between ECM and pressure sensor connector.

10F4	CHECK POOR CONTACT.

Check poor contact in pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in pressure sensor connector?***

YES : Repair poor contact in pressure sensor connector.

NO : Replace pressure sensor.

OBD	(FB1)
P0108	<P_SHI>

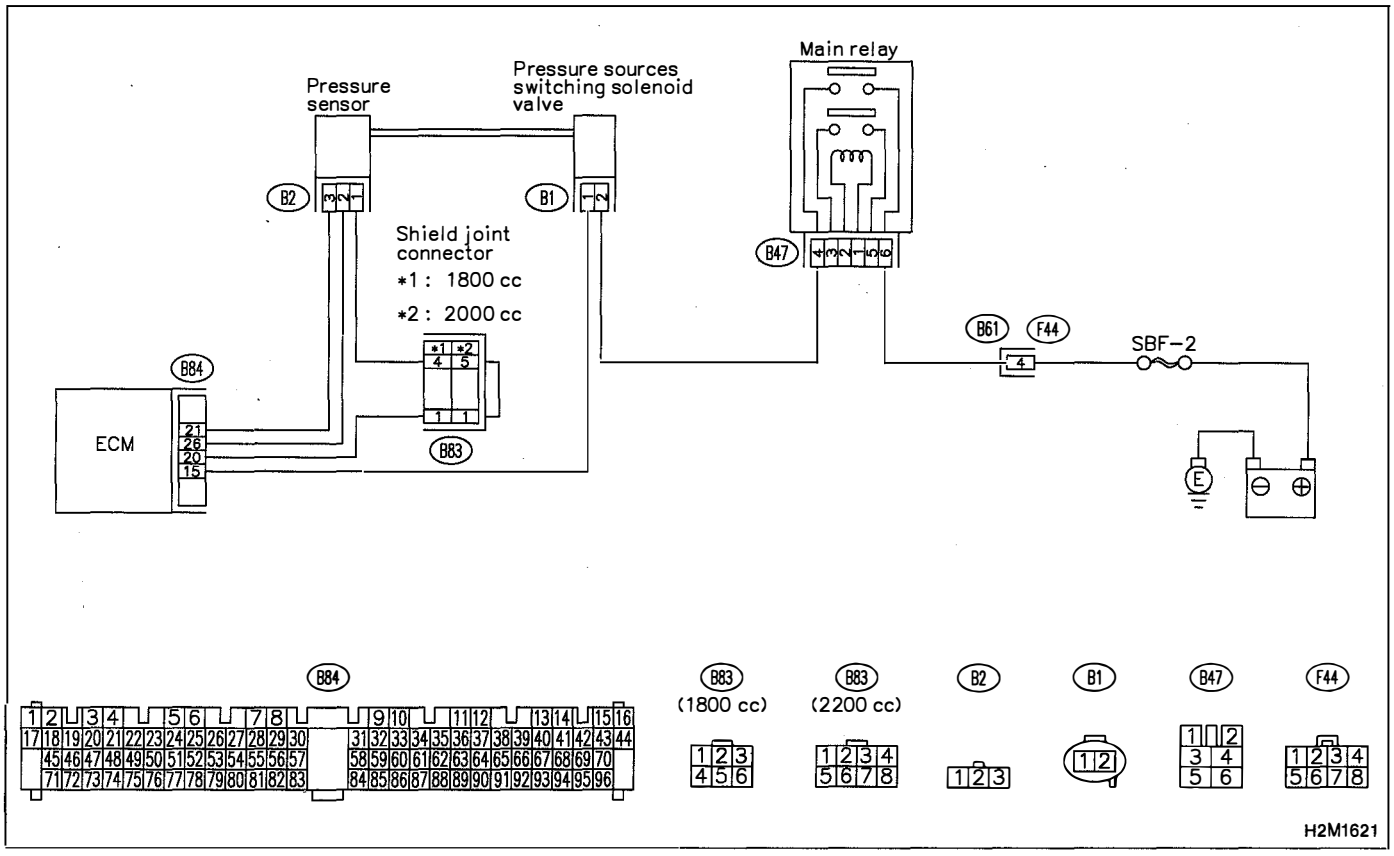
B2M1066

G: DTC P0108 — PRESSURE SENSOR CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:

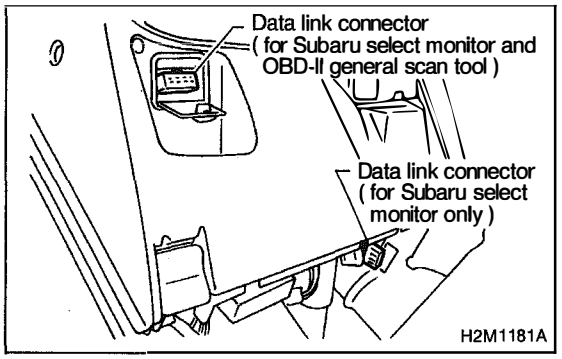
- Immediately at fault recognition

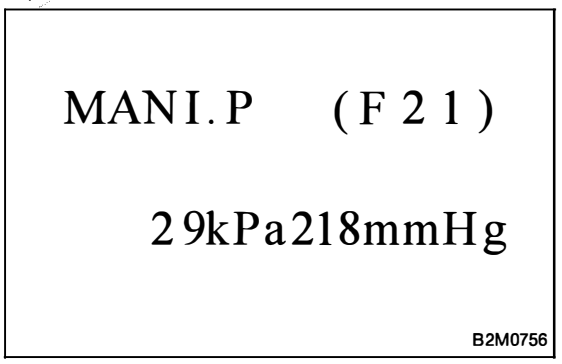
WIRING DIAGRAM:



H2M1621

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10G1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Start engine.

5) Read the data on Subaru Select Monitor or the OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F21

- F21: Display shows pressure signal value sent from pressure sensor.

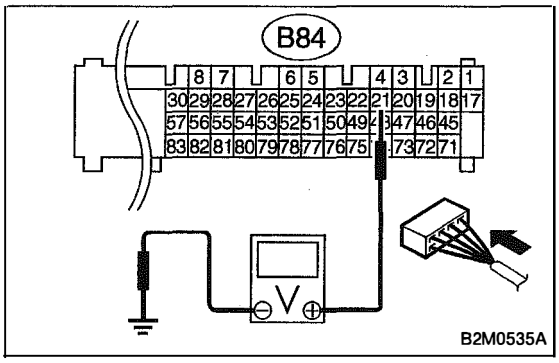
CHECK ***: Is the value more than 140 kPa in function mode F21?***

YES : Go to step **10G5.**

NO : Go to step **10G2.**

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10G2	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

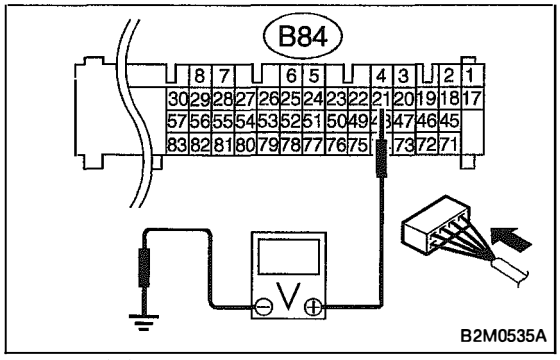
1) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 2).

NO : Go to next CHECK .

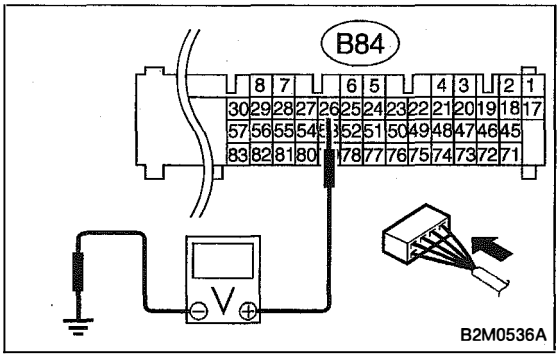


CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



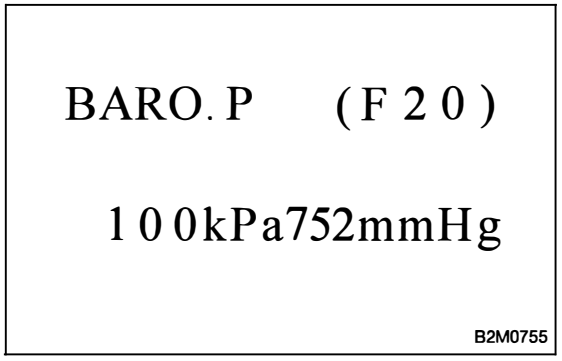
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 26 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 0.2 V?***

YES : Go to step **10G3.**

NO : Go to next step 3).



3) Read data on Subaru Select Monitor.
- Subaru Select Monitor

Designate mode using function key.

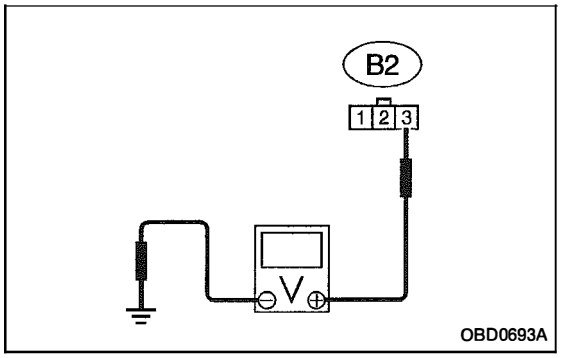
Function mode: F20

- F20: Display shows pressure signal value sent from pressure sensor.

CHECK : ***Does the value change more than 0 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

YES : Repair poor contact in ECM connector.

NO : Go to step **10G3.**



10G3	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

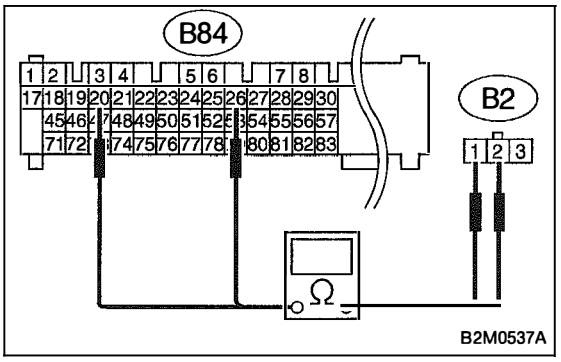
1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON.
4) Measure voltage between pressure sensor connector and engine ground.

Connector & terminal
(B2) No. 3 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 5).

NO : Repair open circuit in harness between ECM and pressure sensor connector.



5) Turn ignition switch to OFF.
6) Disconnect connector from ECM.
7) Measure resistance of harness between ECM and pressure sensor connector.

Connector & terminal
(B84) No. 26 — (B2) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 8).

NO : Repair open circuit in harness between ECM and pressure sensor connector.

8) Measure resistance of harness between ECM and pressure sensor connector.

Connector & terminal
(B84) No. 20 — (B2) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10G4.**

NO : Repair harness and connector

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sensor connector
- Poor contact in shield joint connector (B83)

10G4	CHECK POOR CONTACT.

Check poor contact in pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in pressure sensor connector?***

YES : Repair poor contact in pressure sensor connector.

NO : Replace pressure sensor.

MANI.P (F21)

29kPa218mmHg

B2M0756

10G5	CHECK HARNESS BETWEEN ECM AND PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Disconnect connector from pressure sensor.
3) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
4) Read data on Subaru select monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F21

CHECK : ***Is the value more than 140 kPa in function mode F21?***

YES : Repair battery short circuit in harness between ECM and pressure sensor connector.

NO : Replace pressure sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

MEMO:

OBD (FB1)
P0116 <TW_LOW>
B2M1067

H: DTC P0116 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT LOW INPUT —

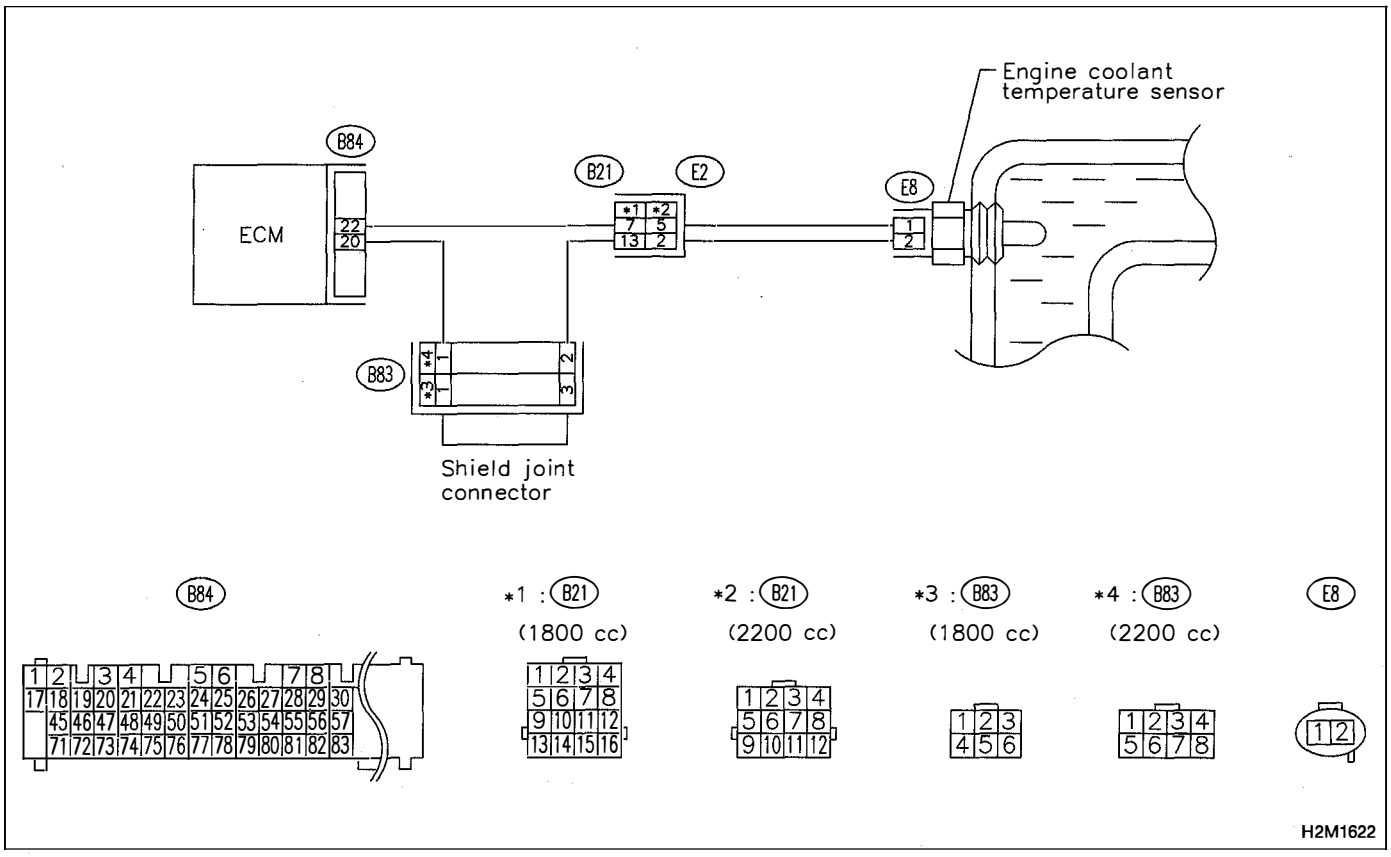
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

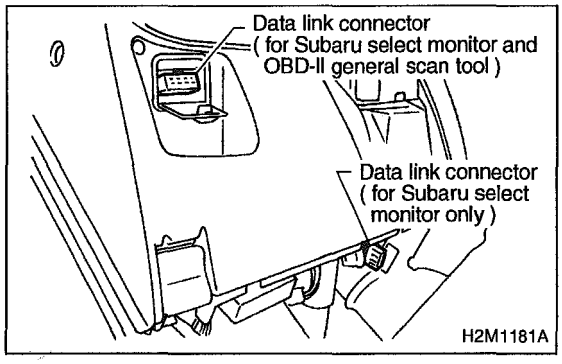
- Hard to start
- Erroneous idling
- Poor driving performance

WIRING DIAGRAM:



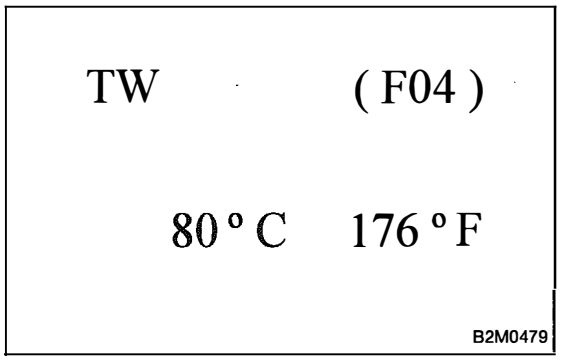
H2M1622

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10H1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in "°C" and "°F".

CHECK ***: Is the value greater than 150°C or 300°F in function mode F04?***

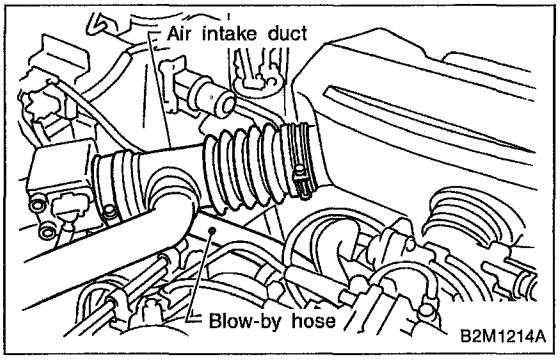
YES : Go to step **10H2**.

NO : Repair poor contact.

NOTE:
In this case, repair the following:

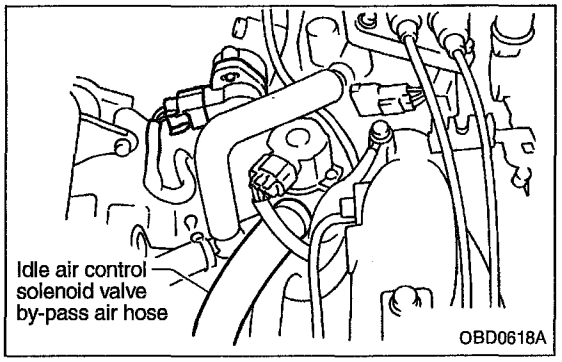
- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

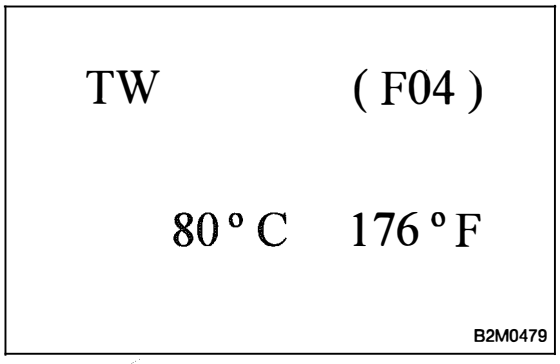


10H2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove air intake duct. <Ref. to 2-7 [W1A0].>



3) Remove idle air control solenoid valve by-pass air hose (2200 cc model).
4) Disconnect connector from engine coolant temperature sensor.
5) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.



6) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in "°C" and "°F".

CHECK ***: Is the value less than –40°C or –40°F in function mode F04?***

YES : Replace engine coolant temperature sensor.

NO : Repair ground short circuit in harness between engine coolant temperature sensor and ECM connector.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

MEMO:

OBD (FB1)
P0117 <TW_HI>
B2M1068

I: DTC P0117 — ENGINE COOLANT TEMPERATURE SENSOR CIRCUIT HIGH INPUT —

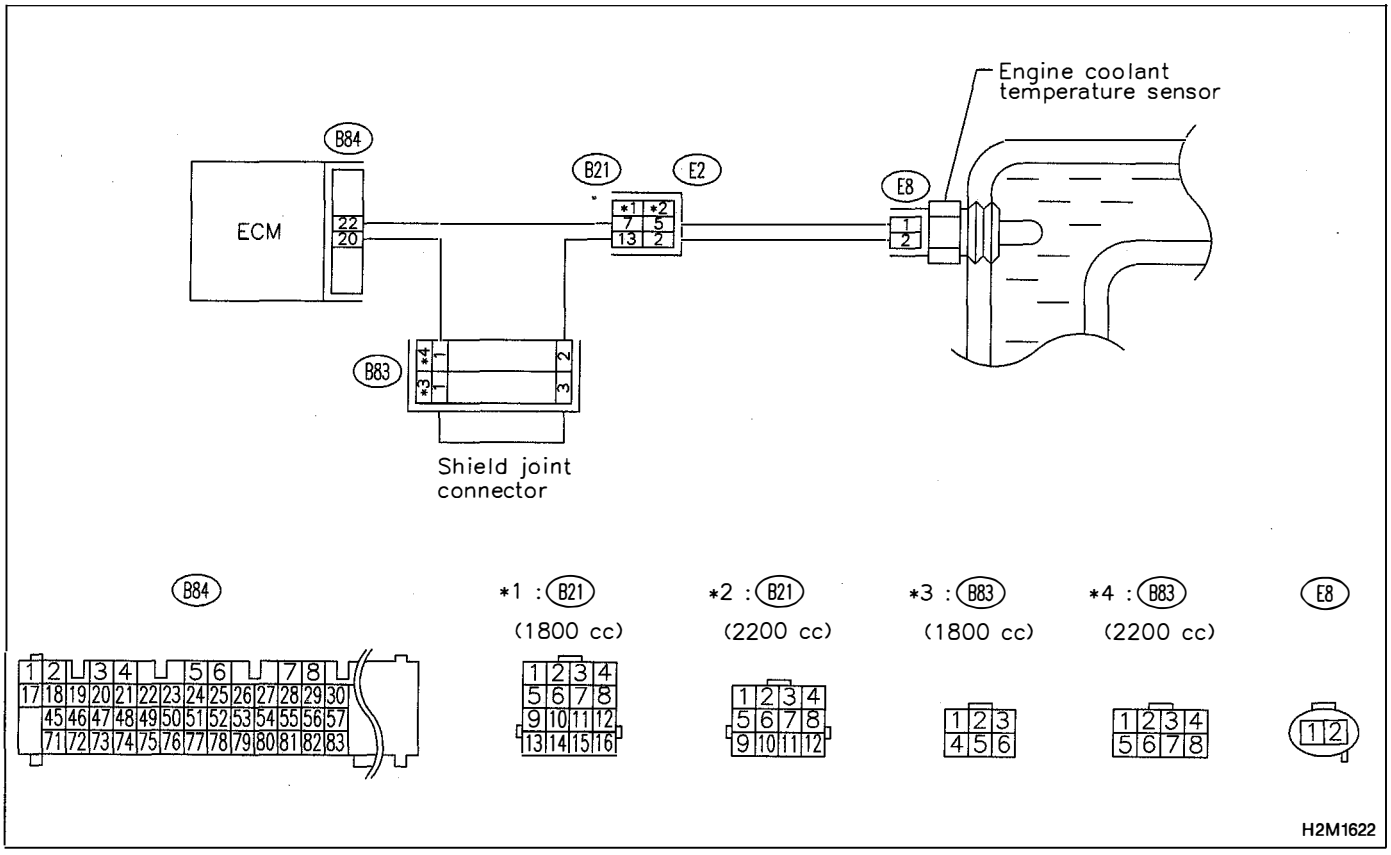
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

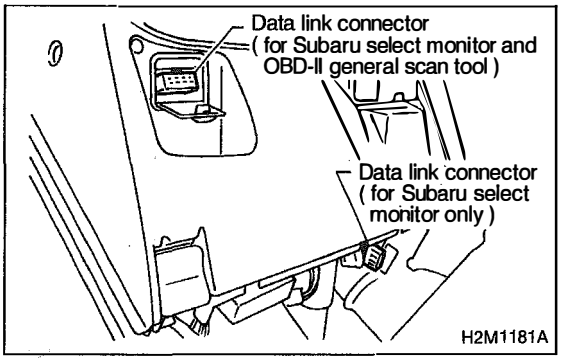
- Hard to start
- Erroneous idling
- Poor driving performance

WIRING DIAGRAM:



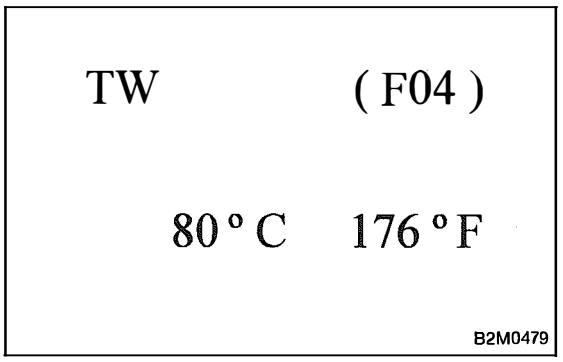
H2M1622

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10I1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in "°C" and "°F".

CHECK ***: Is the value less than –40°C or –40°F in function mode F04?***

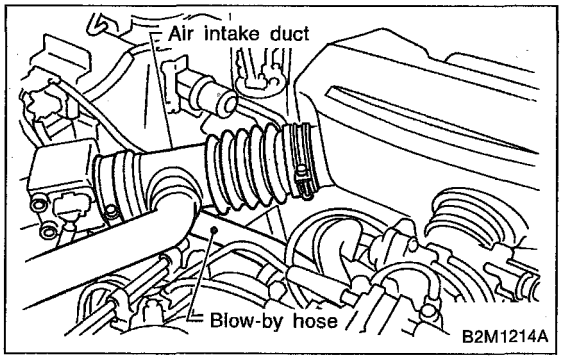
YES : Go to step **10I3**.

NO : Repair poor contact.

NOTE:
In this case, repair the following:

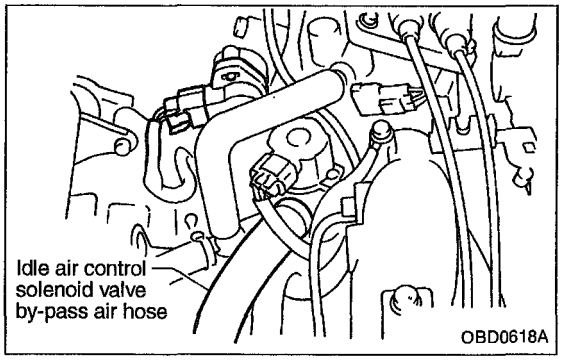
- Poor contact in engine coolant temperature sensor
- Poor contact in ECM
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

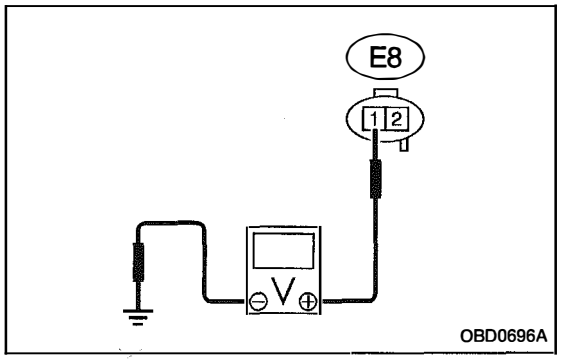


10I2	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove air intake duct. <Ref. to 2-7 [W1A01].>



3) Remove idle air control solenoid valve by-pass air hose. (2200 cc model)
4) Disconnect connector from engine coolant temperature sensor.



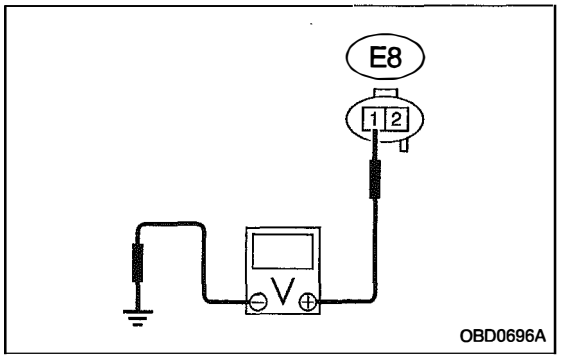
5) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.

NO : Go to next step 6).



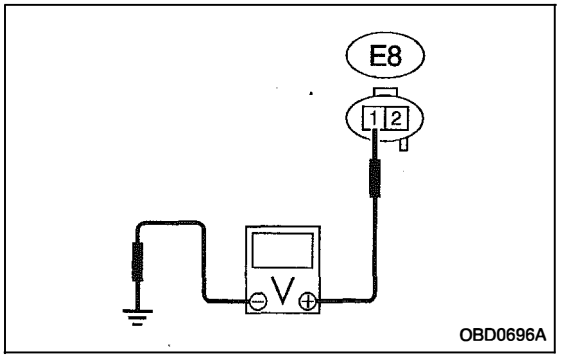
6) Turn ignition switch to ON.
7) Measure voltage between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and engine coolant temperature sensor connector.

NO : Go to step **10I3**.



10I3	CHECK HARNESS BETWEEN ENGINE COOLANT TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Measure voltage between engine coolant temperature sensor connector and engine ground.

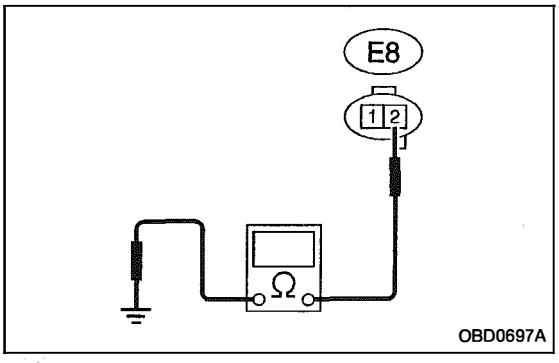
Connector & terminal
(E8) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 4 V?***

YES : Go to next step 2).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)



2) Turn ignition switch to OFF.

3) Measure resistance of harness between engine coolant temperature sensor connector and engine ground.

Connector & terminal
(E8) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Replace engine coolant temperature sensor.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between ECM and engine coolant temperature sensor connector
- Poor contact in engine coolant temperature sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in shield joint connector (B83)

OBD (FB1)
P0121 <TH_RHI>
B2M1069

J: DTC P0121 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

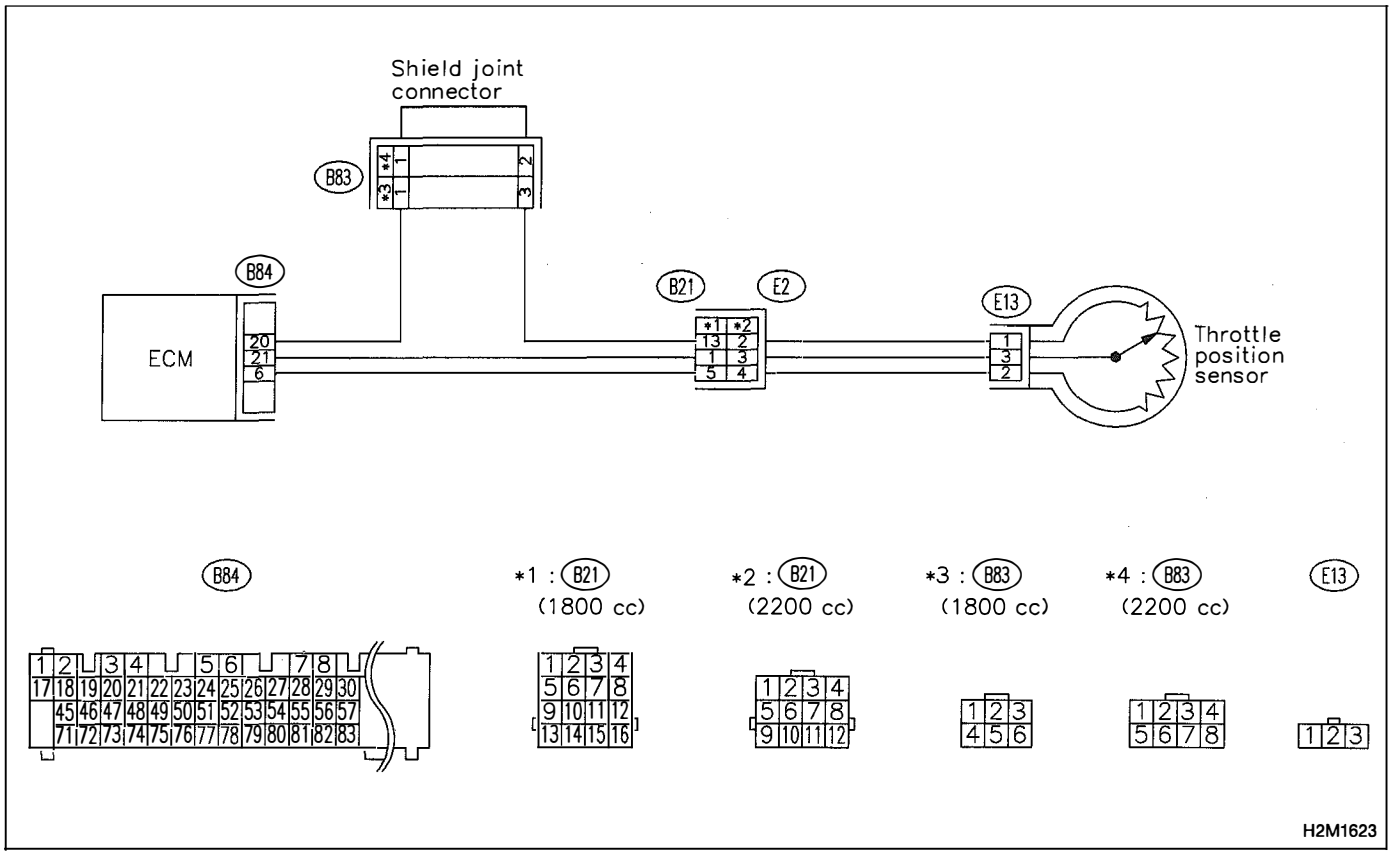
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10J1	CHECK DTC P0122 OR P0123 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0122 or P0123?***

YES : Inspect DTC P0122 or P0123 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0121.

NO : Replace throttle position sensor.

OBD (FB1)
P0122 <THV_LOW>
B2M1070

K: DTC P0122 — THROTTLE POSITION SENSOR CIRCUIT LOW INPUT —

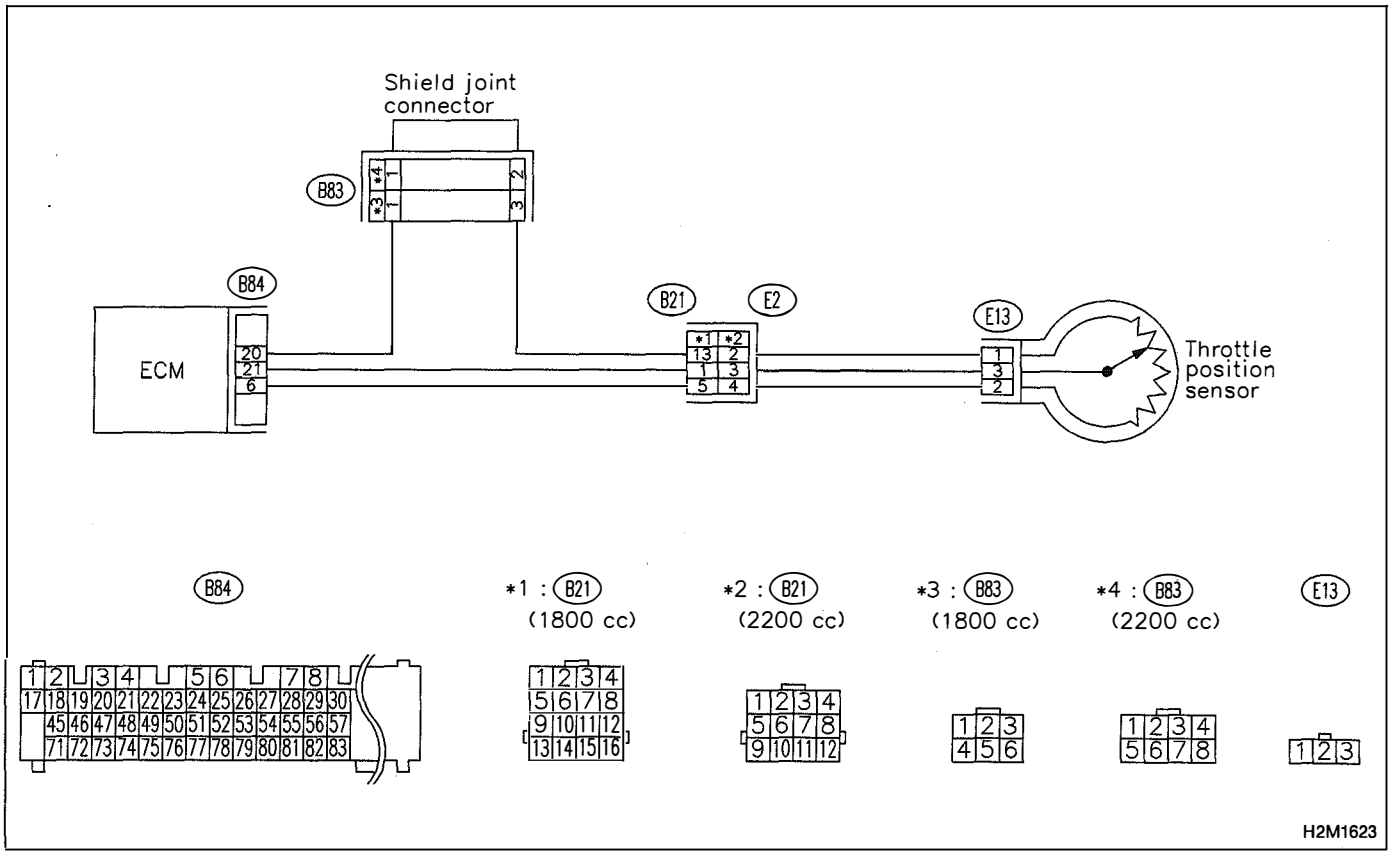
DTC DETECTING CONDITION:

- Immediately at fault recognition

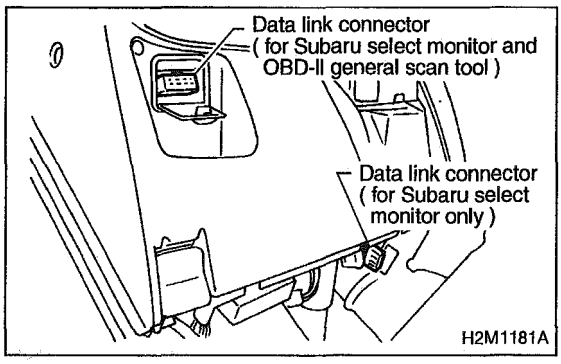
TROUBLE SYMPTOM:

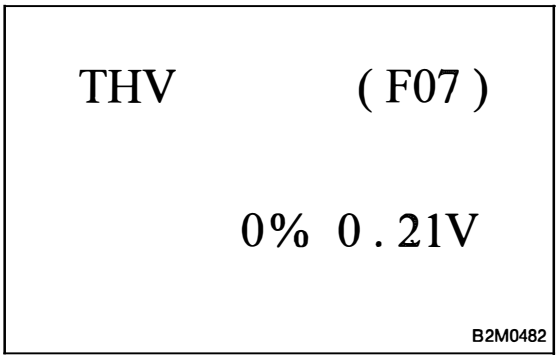
- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10K1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.

5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F07

- F07: Throttle position sensor output signal is indicated.

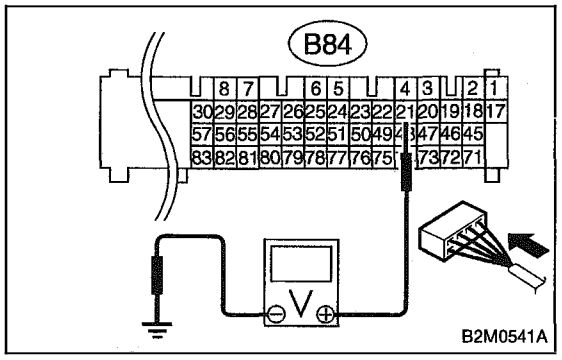
CHECK ***: Is the value less than 0.1 V in function mode F07?***

YES : Go to step **10G2**.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10K2	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

1) Measure voltage between ECM connector and chassis ground while throttle valve is fully closed.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 2).

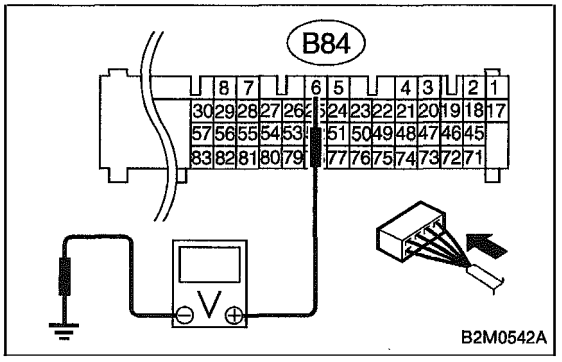
NO : Go to next CHECK .

CHECK ***: Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



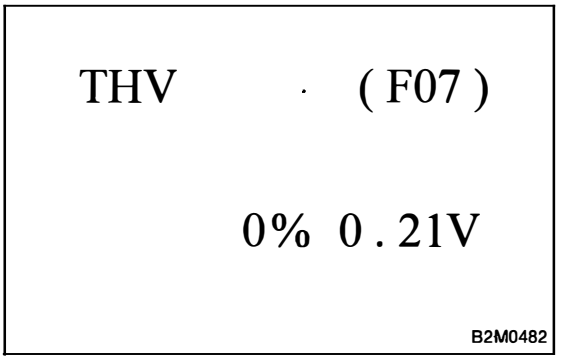
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 6 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 0.1 V?***

YES : Go to step **10K3**.

NO : Go to next step 3).

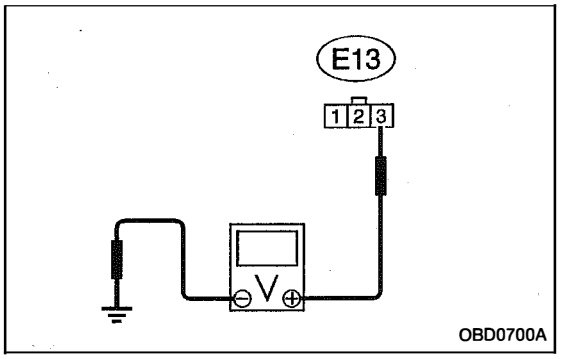


3) Measure voltage between ECM connector and chassis ground.

CHECK ***: Does the voltage change more than 0.1 V by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

YES : Repair poor contact in ECM connector.

NO : Go to step **10K3**.



10K3	CHECK HARNESS BETWEEN ECM AND THROTTLE POSITION SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from throttle position sensor.
3) Turn ignition switch to ON.
4) Measure voltage between throttle position sensor connector and engine ground.

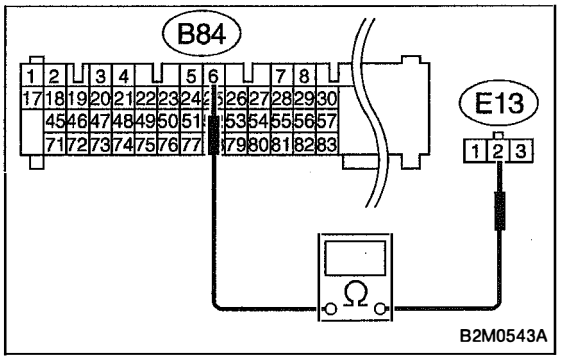
Connector & terminal
(E13) No. 3 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 5).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)



5) Turn ignition switch to OFF.
6) Measure resistance of harness between ECM connector and throttle position sensor connector.

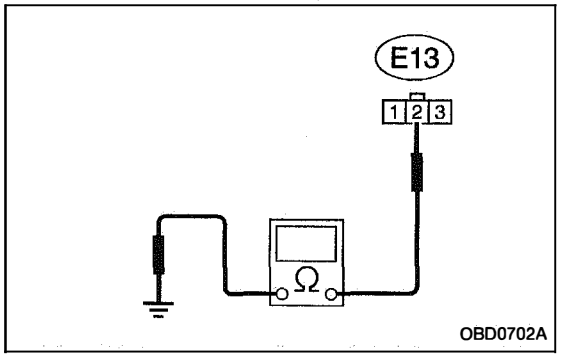
Connector & terminal
(B84) No. 6 — (E13) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 7).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in throttle position sensor connector
- Poor contact in coupling connector (B21)



7) Measure resistance of harness between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between throttle position sensor and ECM connector.

NO : Go to step **10K4**.

10K4	CHECK POOR CONTACT.

Check poor contact in throttle position sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in throttle position sensor connector?***

YES : Repair poor contact in throttle position sensor connector.

NO : Replace throttle position sensor.

MEMO:

OBD (FB1)
P0123 <THV_HI>
B2M1071

L: DTC P0123 — THROTTLE POSITION SENSOR CIRCUIT HIGH INPUT —

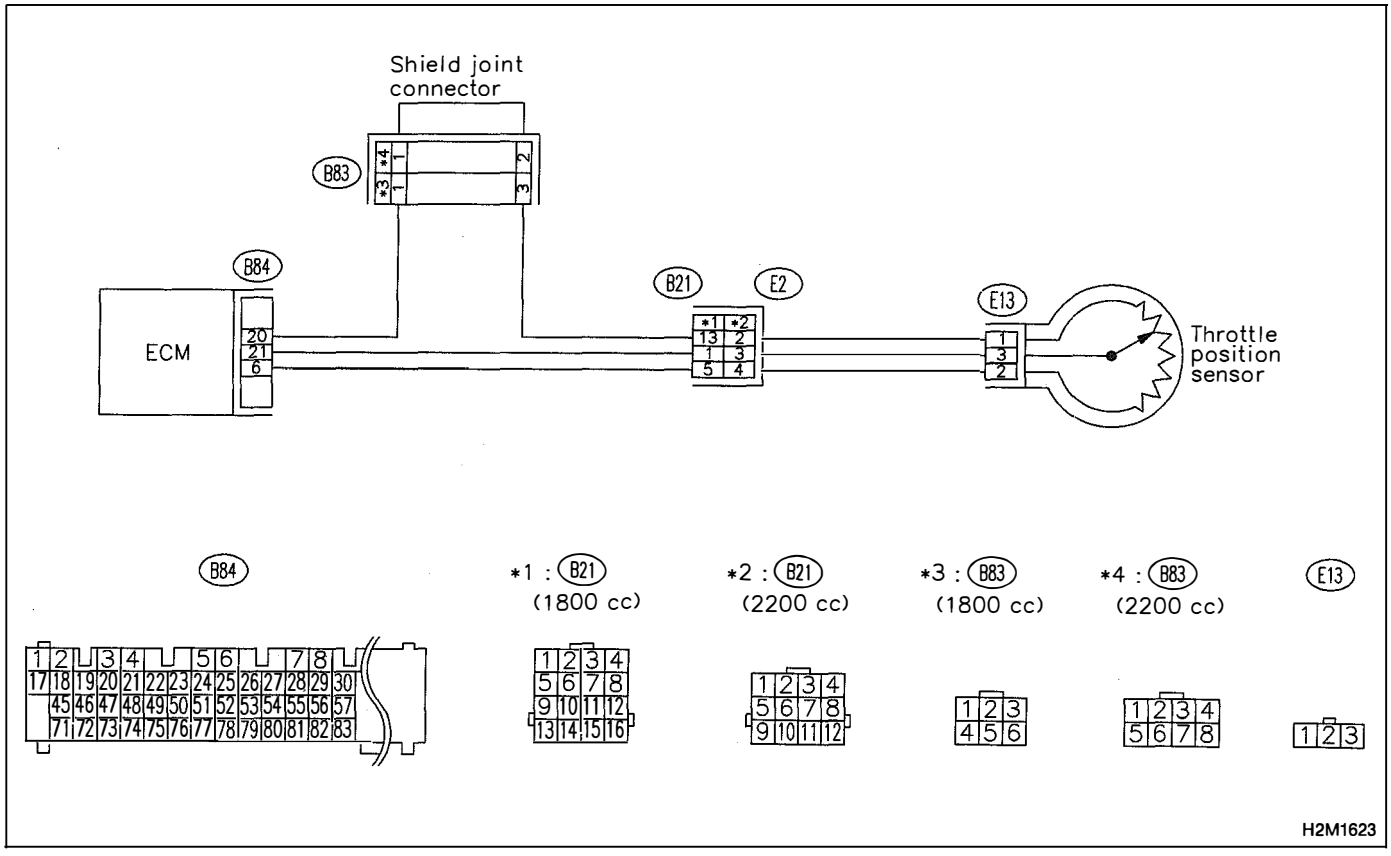
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

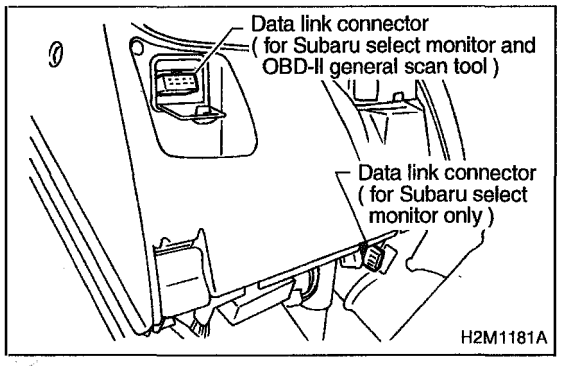
- Erroneous idling
- Engine stalls.
- Poor driving performance

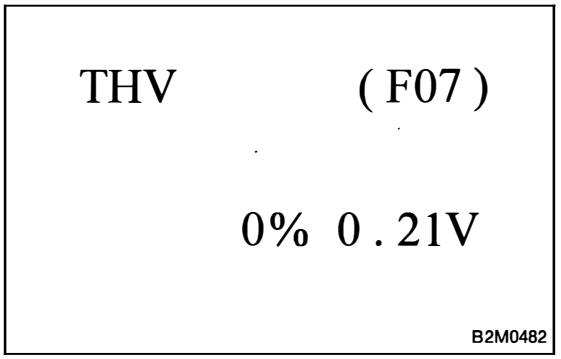
WIRING DIAGRAM:



H2M1623

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10L1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.

5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F07

- F07: Throttle position sensor output signal is indicated.

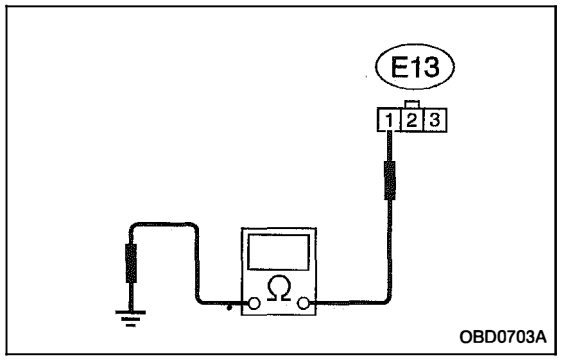
(CHECK) ***: Is the value more than 4.9 V in function mode F07?***

(YES) : Go to step **10L2**.

(NO) : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in throttle position sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10L2	**CHECK HARNESS BETWEEN THROTTLE POSITION SENSOR AND BODY CONNECTOR.**

1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance of harness between throttle position sensor connector and engine ground.

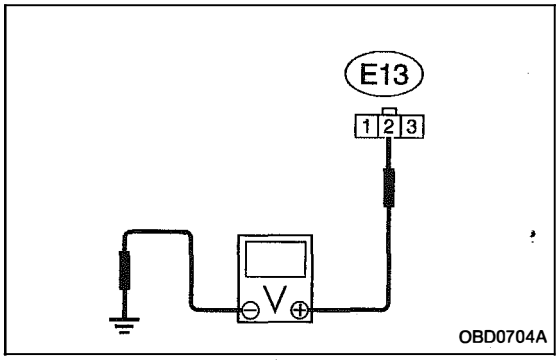
Connector & terminal
(E13) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between throttle position sensor and ECM connector
- Poor contact in shield joint connector (B83)



4) Turn ignition switch to ON.
5) Measure voltage between throttle position sensor connector and engine ground.

Connector & terminal
(E13) No. 2 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 4.9 V?***

YES : Repair battery short circuit in harness between throttle position sensor and ECM connector. After repair, replace ECM.

NO : Replace throttle position sensor.

MEMO:

OBD	(FB1)
P0125	<TW_CL>

OBD0191

M: DTC P0125 — INSUFFICIENT COOLANT TEMPERATURE FOR CLOSED LOOP FUEL CONTROL —

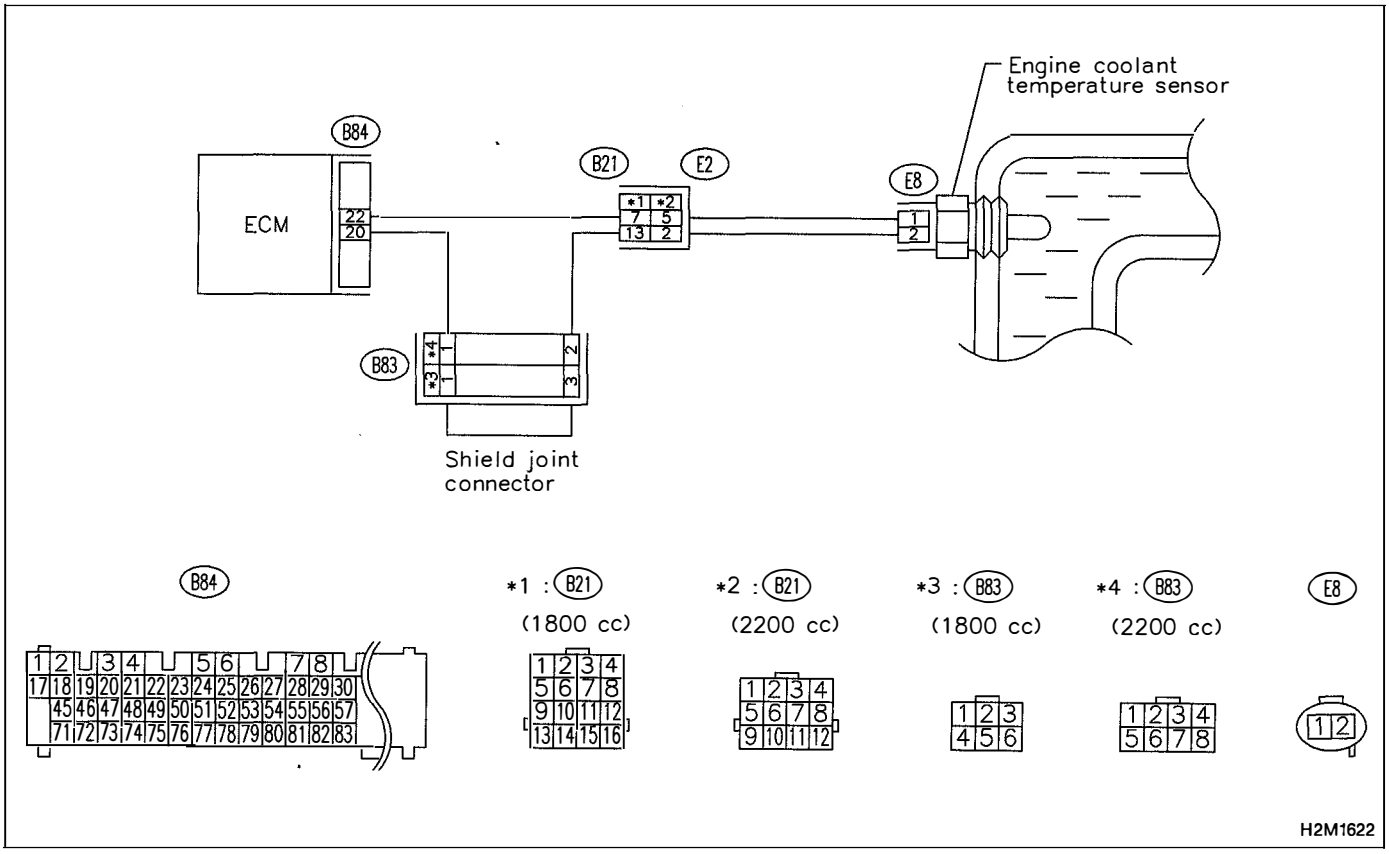
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine would not return to idling.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10M1	CHECK DTC P0116 OR P0117 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0116 or P0117?***

YES : Inspect DTC P0116 or P0117 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0125.

NO : Replace engine coolant temperature sensor.

OBD	(FB1)
P0130	<FO2_V>

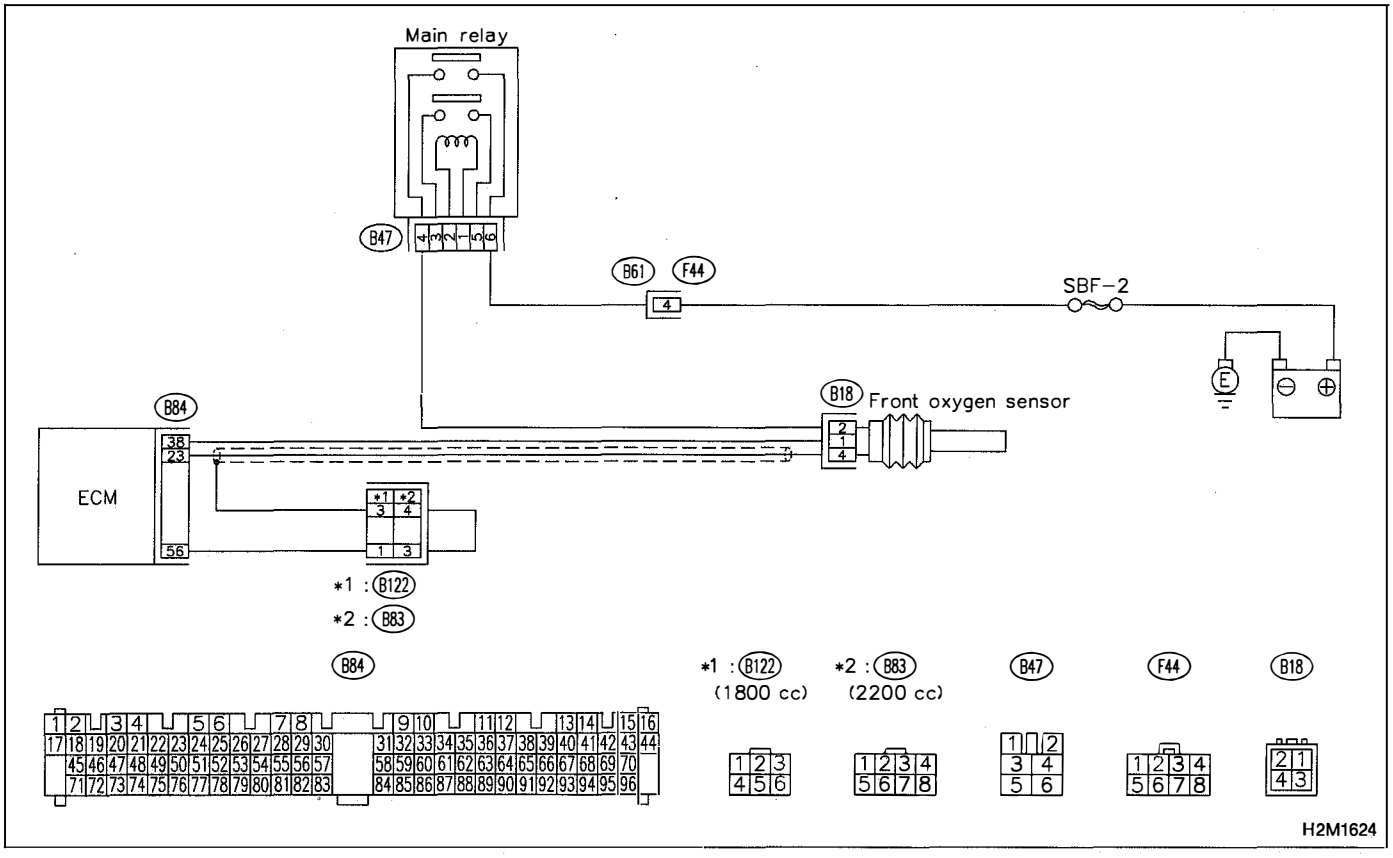
OBD0199

N: DTC P0130
— FRONT OXYGEN SENSOR CIRCUIT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

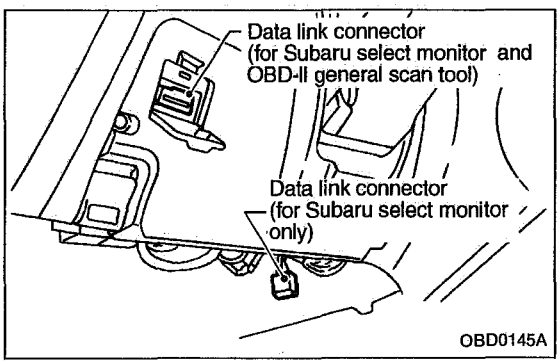
10N1	CHECK FOR OTHER CAUSES AFFECTING EXHAUST GAS.

CHECK : ***Is CO % more than 2 % after engine warm-up?***

YES : Check fuel system.

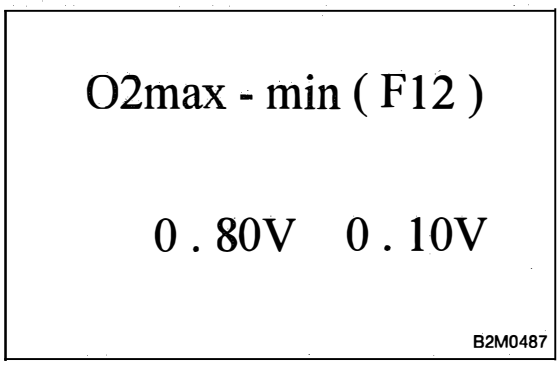
NOTE:
- Check for use of improper fuel.
- Check if engine oil or coolant level is extremely low.

NO : Go to step **10N2.**



10N2	CHECK FRONT OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Start engine and Turn the Subaru Select Monitor and the OBD-II general scan tool switch to ON.
4) Warm-up the engine until coolant temperature is above 70°C (160°F) and keep the engine speed at 2,000 rpm to 3,000 rpm for one minute.



5) Read data on Subaru Select Monitor or the OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F12

- F12: Front oxygen sensor max. and min. output signals are indicated at the same time.

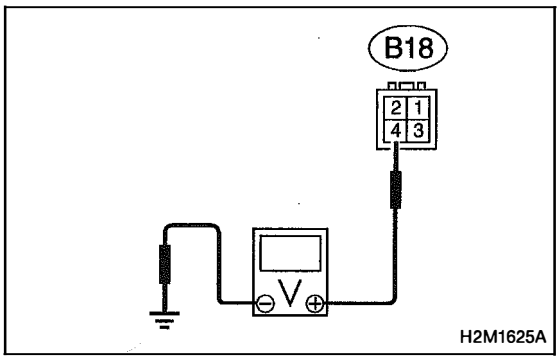
CHECK : ***Is the difference of voltage less than 0.1 V between the value of max. output and min. output with function mode F12?***

YES : Go to step **10N3.**

NO : Replace front oxygen sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10N3	CHECK HARNESS BETWEEN FRONT OXYGEN SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen sensor harness connector and engine ground.

Connector & terminal
(B18) No. 4 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 0.2 V?***

YES : Go to step **10N4**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and front oxygen sensor connector
- Poor contact in the ECM connector

10N4	CHECK POOR CONTACT.

Check poor contact in front oxygen sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in front oxygen sensor connector?***

YES : Repair poor contact in front oxygen sensor connector.

NO : Replace front oxygen sensor.

MEMO:

OBD	(FB1)
P0133	<FO2_R>

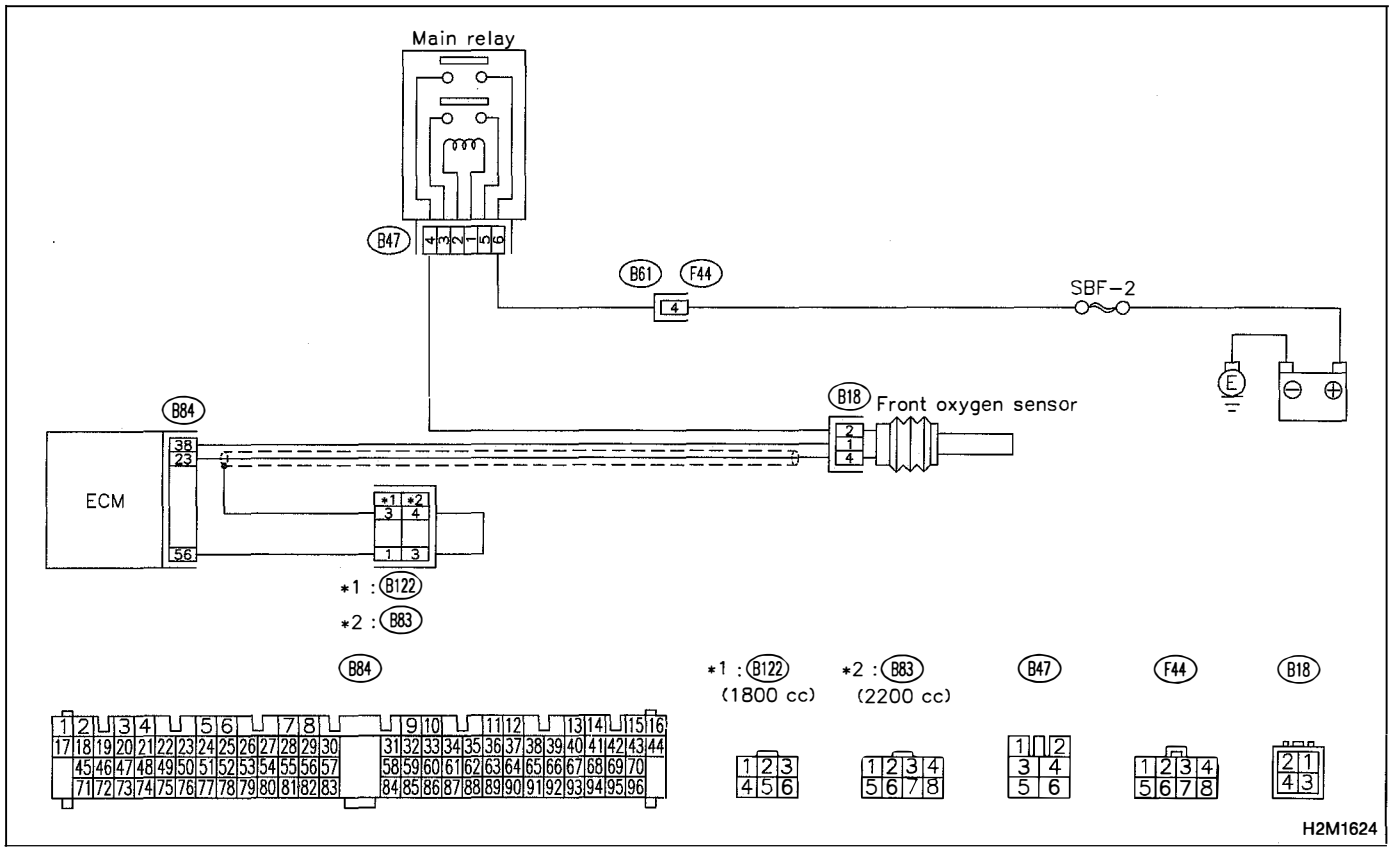
OBD0209

O: DTC P0133 — FRONT OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1624

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

1001	CHECK DTC P0130 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0130?***

YES : Inspect DTC P0130 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0133.

NO : Go to step **1002**.

1002	CHECK EXHAUST SYSTEM.

CHECK : ***Is there a fault in exhaust system?***

NOTE:
Check the following items.
- Loose installation of front portion of exhaust pipe onto cylinder heads
- Loose connection between front exhaust pipe and front catalytic converter
- Damage of exhaust pipe resulting in a hole

YES : Repair exhaust system.

NO : Replace front oxygen sensor.

OBD	(FB1)
P0135	<FO2H>

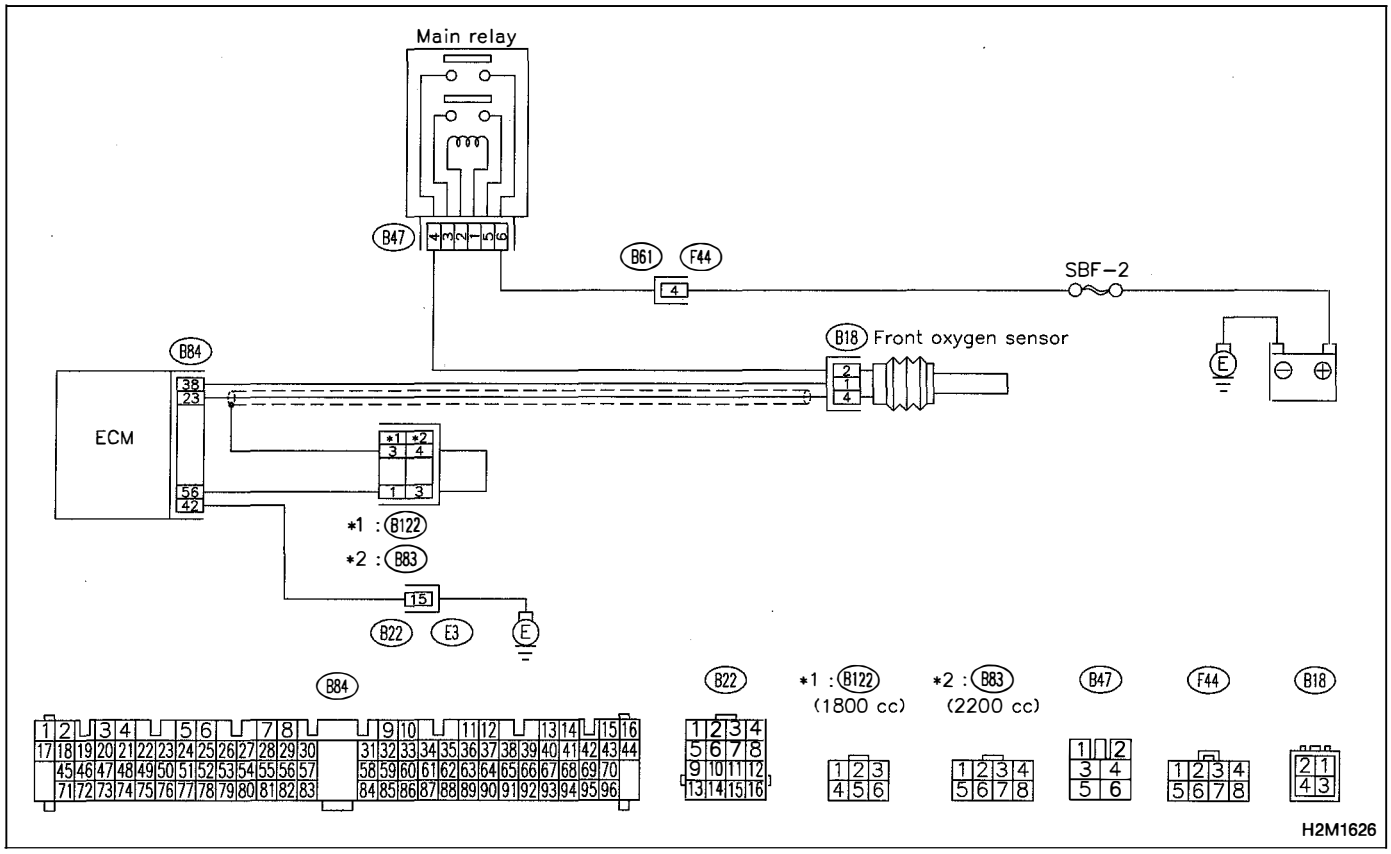
OBD0212

P: DTC P0135
— FRONT OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1626

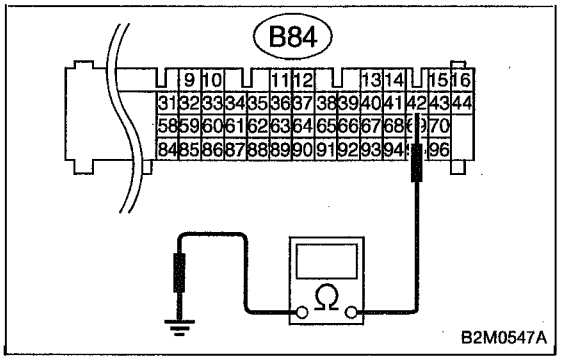
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10P1	CHECK DTC P0141 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0135 and P0141 at the same time?***

YES : Go to next step 1).

NO : Go to step **10P2**.



1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

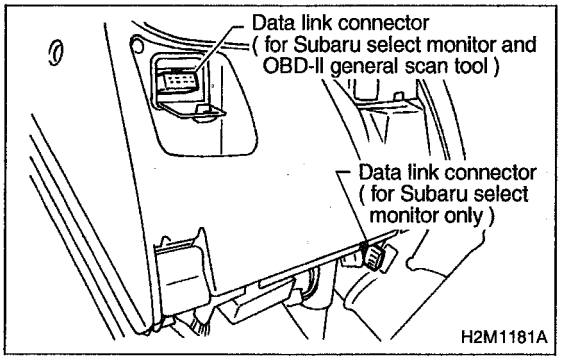
Connector & terminal
(B84) No. 42 — Chassis ground:

CHECK : ***Is the resistance less than 5 Ω?***

YES : Repair poor contact in ECM connector.

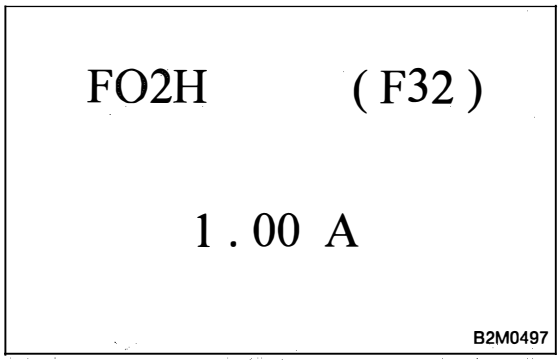
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and coupling connector (B22)
- Open circuit in harness between coupling connector (B22) and engine grounding terminal
- Poor contact in front oxygen sensor connector
- Poor contact in coupling connector (B22)



10P2	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F32

- F32: Front oxygen sensor heater current is indicated.

CHECK ***: Is the value more than 0.2 A in function mode F32?***

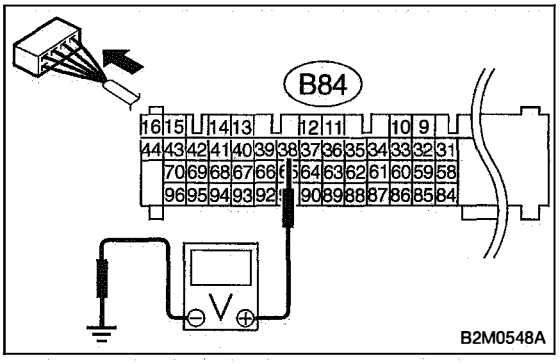
YES : Repair connector.

NOTE:
In this case, repair the following:
- Poor contact in front oxygen sensor connector
- Poor contact in ECM connector

NO : Go to step **10P3.**

- OBD-II scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10P3	CHECK OUTPUT SIGNAL FROM ECM. (USING VOLTAGE METER.)

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 38 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1.0 V?***

YES : Go to step **10P4.**

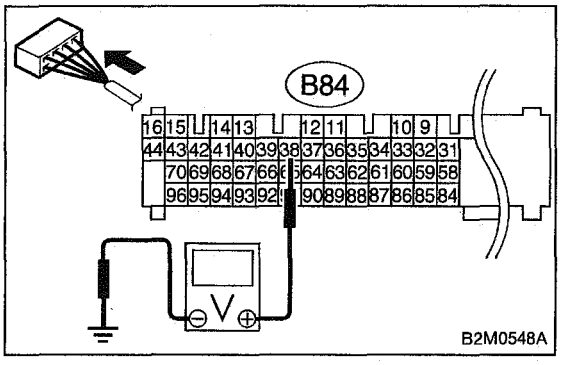
NO : Go to next step 3).

3) Measure voltage between ECM connector and chassis ground.

CHECK ***: Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Go to next step 4).



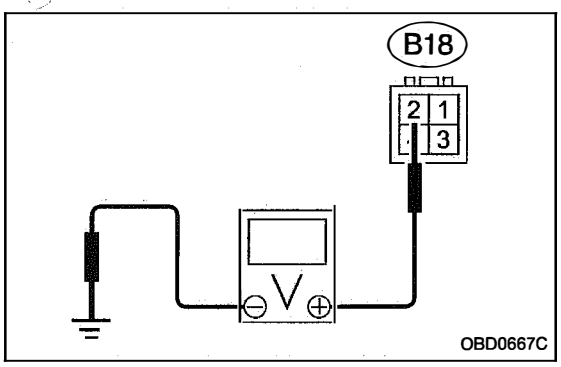
4) Disconnect connector from front oxygen sensor.
5) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 38 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1.0 V?***

YES : Replace ECM.

NO : Repair battery short circuit in harness between ECM and front oxygen sensor connector. After repair, replace ECM.



10P4	CHECK POWER SUPPLY TO FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from front oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between front oxygen sensor connector and engine ground.

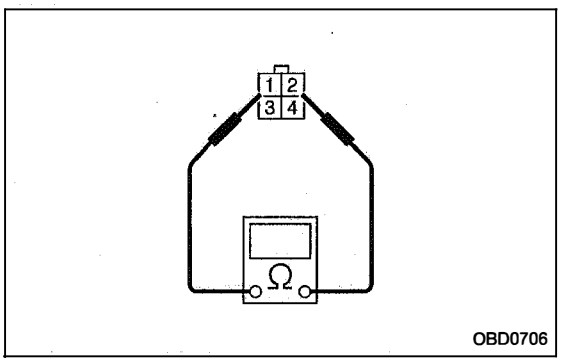
Connector & terminal
(B18) No. 2 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10P5**.

NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and front oxygen sensor connector
- Poor contact in front oxygen sensor connector
- Poor contact in main relay connector



10P5	CHECK FRONT OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between front oxygen sensor connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 30 Ω?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between front oxygen sensor and ECM connector
- Poor contact in front oxygen sensor connector
- Poor contact in ECM connector

NO : Replace front oxygen sensor.

OBD	(FB1)
P0136	<RO2_V>

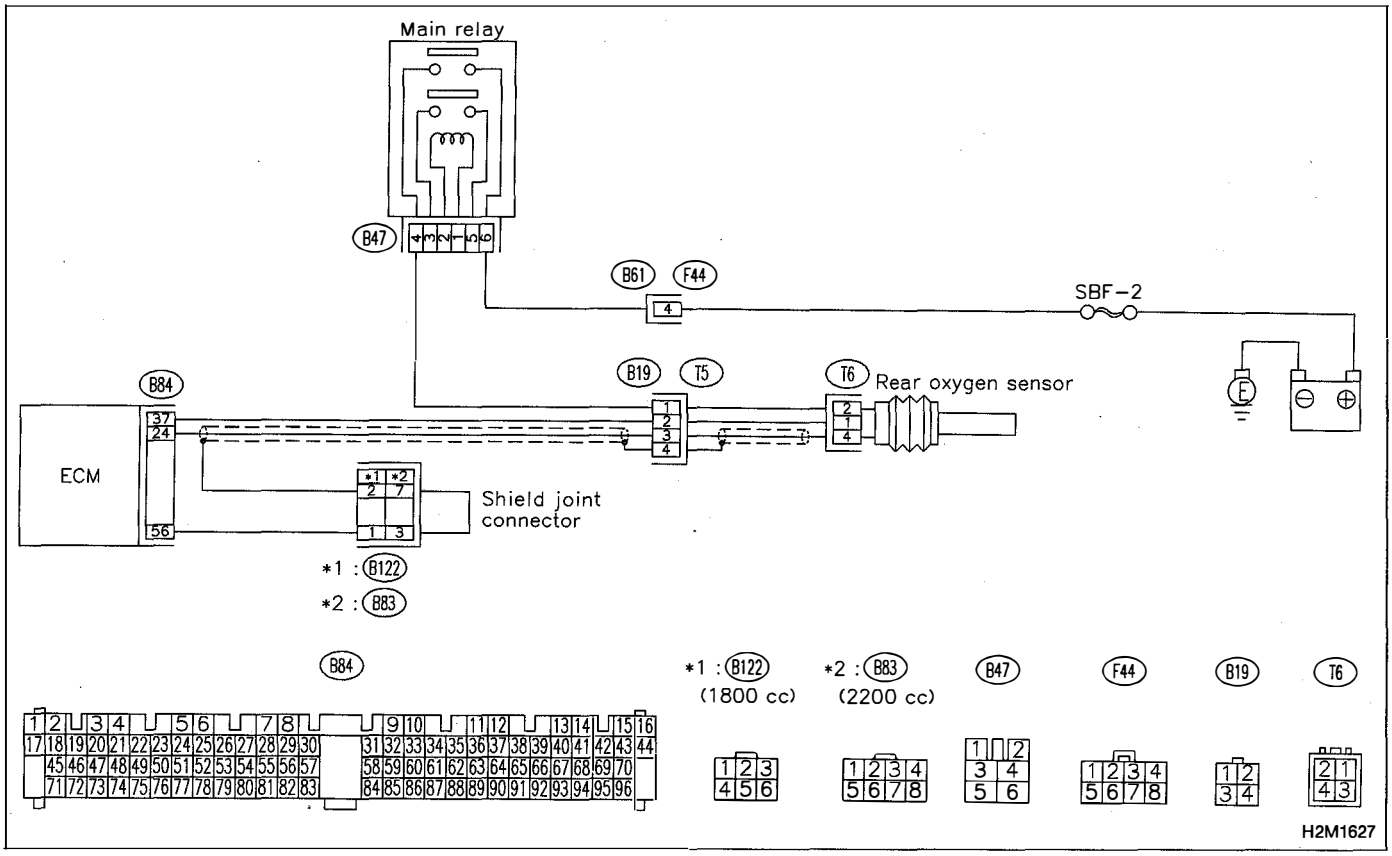
OBD0220

Q: DTC P0136 — REAR OXYGEN SENSOR CIRCUIT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10Q1	CHECK DTC P0130 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0130?***

YES : Go to step **10Q2.**

NO : Go to step **10Q3.**

10Q2	CHECK FAILURE CAUSE OF P0130.

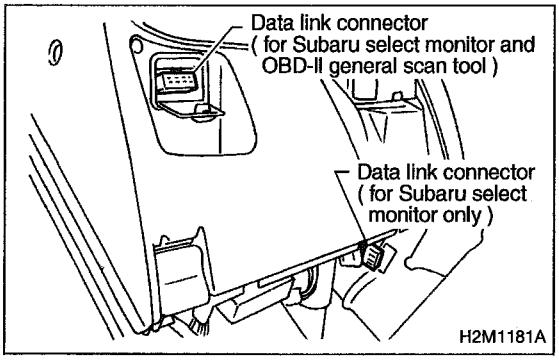
Perform the step 1 of DTC P0130.

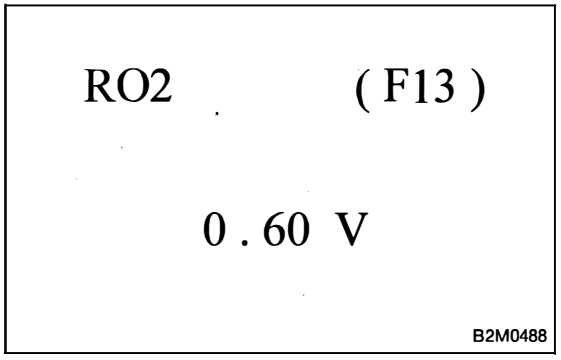
CHECK : ***Is the failure cause of P0130 in the fuel system?***

YES : Check fuel system.

NOTE:
In this case, it is not necessary to inspect DTC P0136.

NO : Go to step **10Q3.**





10Q3	CHECK REAR OXYGEN SENSOR DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or OBD-II general scan tool to data link connector.
3) Start the engine, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Warm-up the engine until engine coolant temperature is above 70°C (160°F), and keep the engine speed at 2,000 rpm to 3,000 rpm for two minutes.
5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

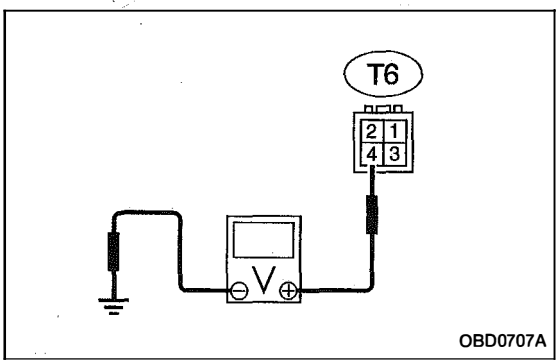
Function mode: F13

- F13: Rear oxygen sensor output signal is indicated.

CHECK : ***Does the value fluctuate in function mode F13?***

YES : Go to step **10Q5.**

NO : Go to next step 6).



6) Read data on Subaru Select Monitor or OBD-II General Scan Tool.

CHECK : ***Is the value fixed between 0.2 and 0.4 V in function mode F13?***

YES : Go to step **10Q4.**

NO : Replace rear oxygen sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

10Q4	CHECK HARNESS BETWEEN REAR OXYGEN SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from rear oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between rear oxygen sensor harness connector and engine ground or chassis ground.

Connector & terminal
(T6) No. 4 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 0.2 V?***

YES : Replace rear oxygen sensor.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in rear oxygen sensor connecting harness connector

10Q5	CHECK EXHAUST SYSTEM.

CHECK : ***Is there a fault in exhaust system?***

NOTE:
Check the following items.
- Loose installation of portions
- Damage (crack, hole etc.) of parts
- Looseness and ill fitting of parts between front oxygen sensor and rear oxygen sensor

YES : Repair or replace faulty parts.

NO : Replace rear oxygen sensor.

MEMO:

OBD	(FB1)
P0139	<RO2_R>

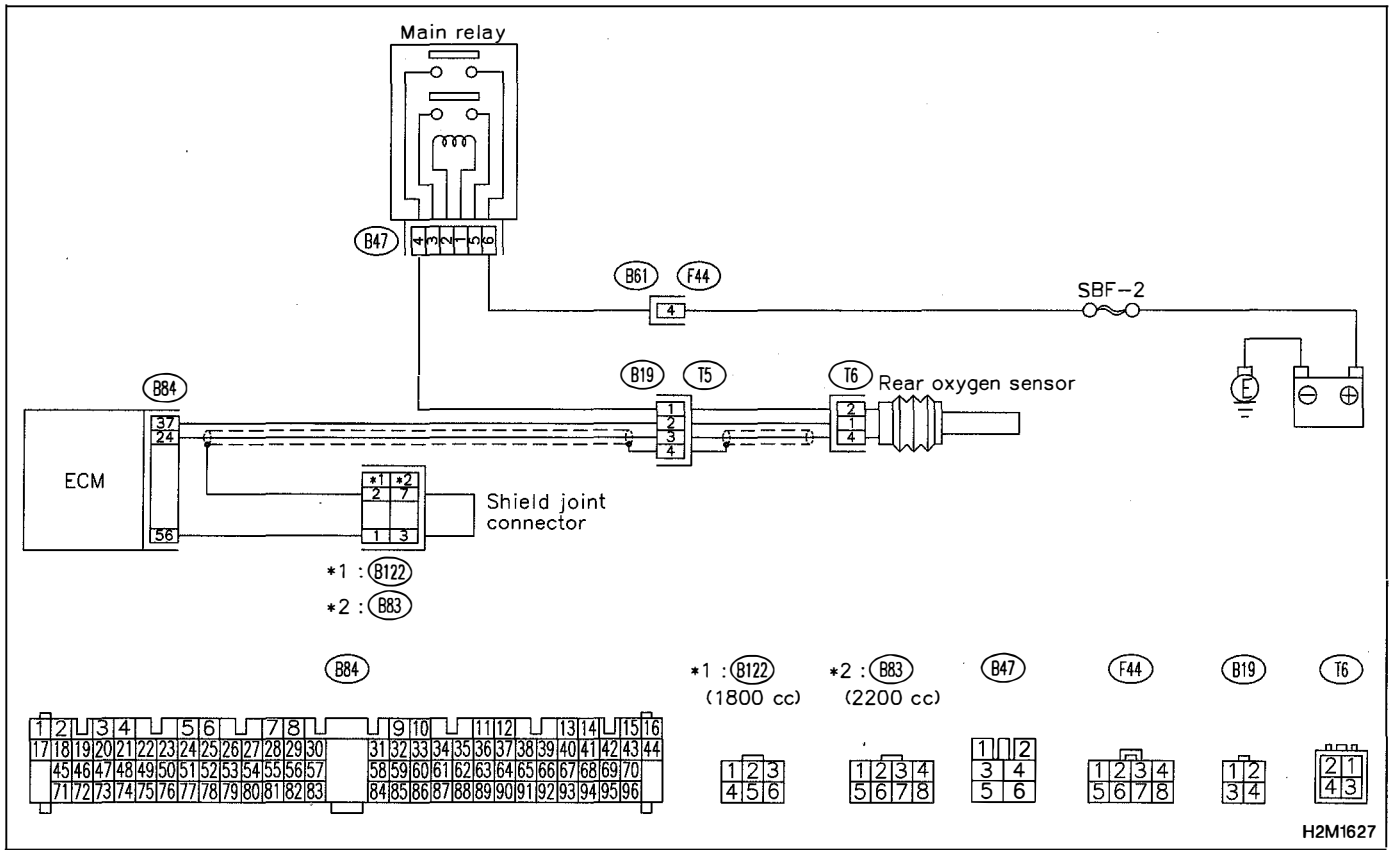
OBD0229

R: DTC P0139 — REAR OXYGEN SENSOR CIRCUIT SLOW RESPONSE —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10R1	CHECK DTC P0136 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0136?***

YES : Inspect DTC P0136 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0139.

NO : Replace rear oxygen sensor.

OBD	(FB1)
P0141	<RO2H>

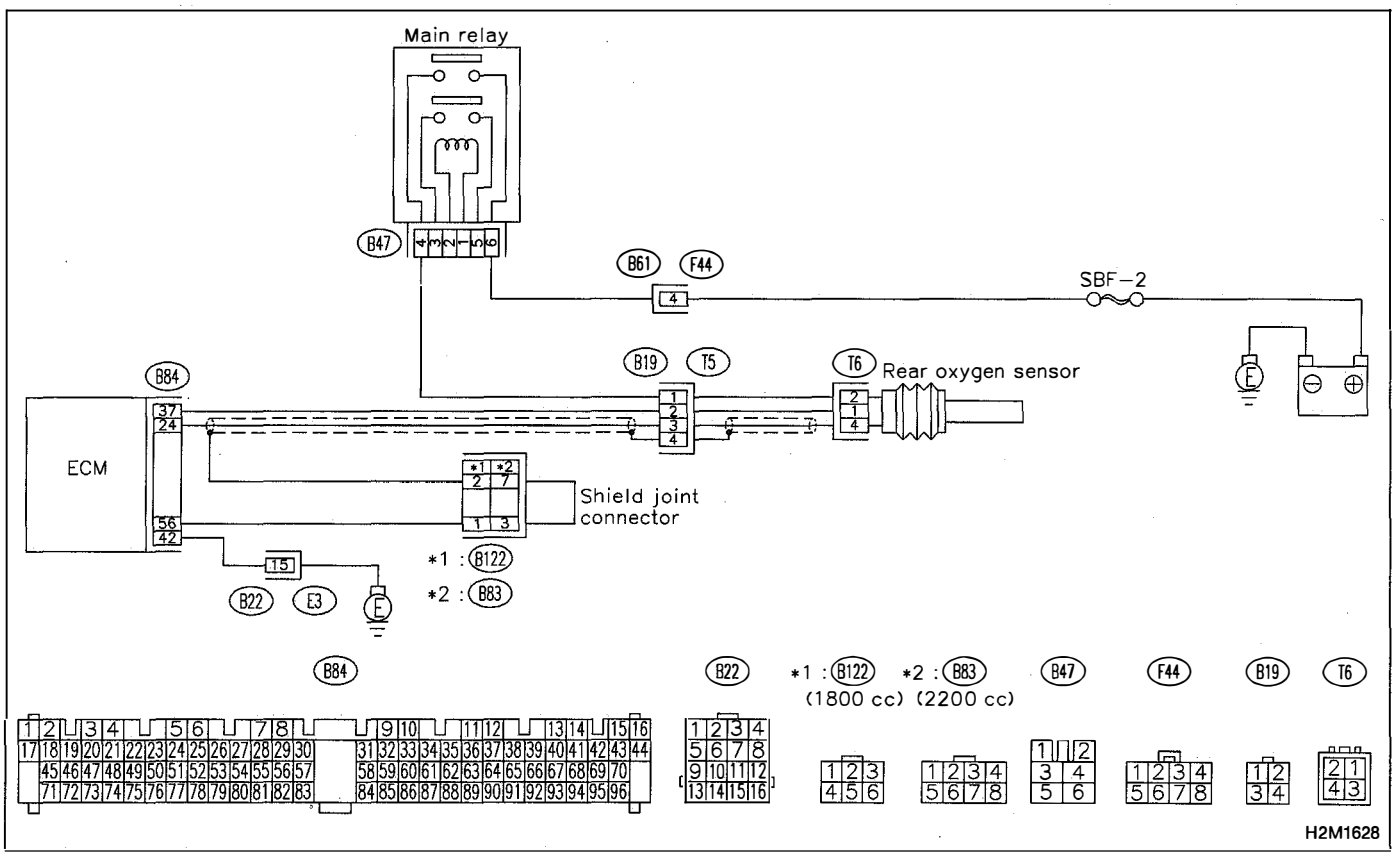
OBD0232

S: DTC P0141
— REAR OXYGEN SENSOR HEATER CIRCUIT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



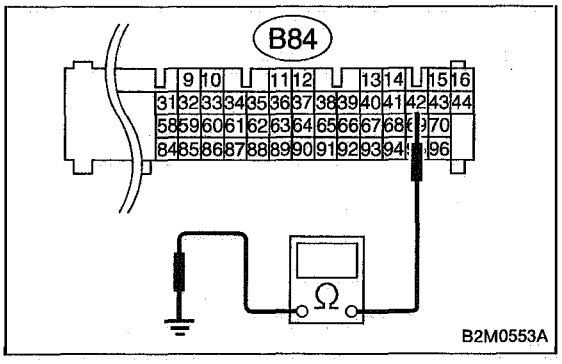
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10S1	CHECK DTC P0135 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0141 and P0135 at the same time?***

YES : Go to next step 1).

NO : Go to step **10S2.**



1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

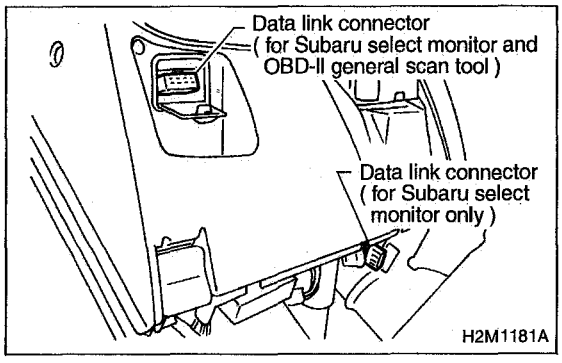
Connector & terminal
(B84) No. 42 — Chassis ground:

CHECK : ***Is the resistance less than 5 Ω?***

YES : Repair poor contact in ECM connector.

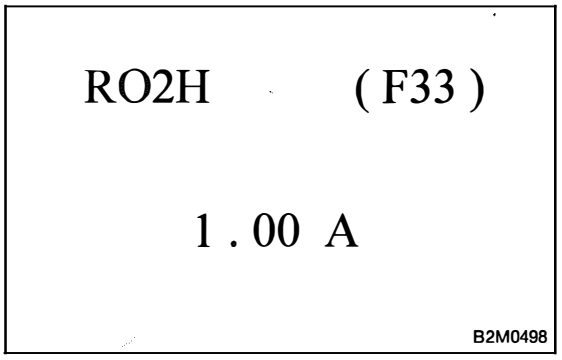
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and coupling connector (B22)
- Open circuit in harness between coupling connector (B22) and engine grounding terminal
- Poor contact in engine grounding terminal
- Poor contact in coupling connector (B22)



10S2	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.
- Subaru Select Monitor

Designate mode using function key.

Function mode: F33

- F33: Rear oxygen sensor heater current is indicated.

CHECK : ***Is the value more than 0.2 A in function mode F33?***

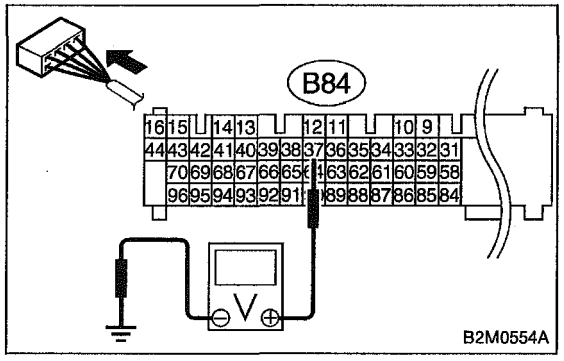
YES : Repair connector.

NOTE:
In this case, repair the following:
- Poor contact in rear oxygen sensor connector
- Poor contact in rear oxygen sensor connecting harness connector
- Poor contact in ECM connector

NO : Go to step **10S3**.

- OBD-II scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10S3	CHECK OUTPUT SIGNAL FROM ECM. (USING VOLTAGE METER.)

1) Start and idle the engine.
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 37 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1.0 V?***

YES : Go to step **10S4**.

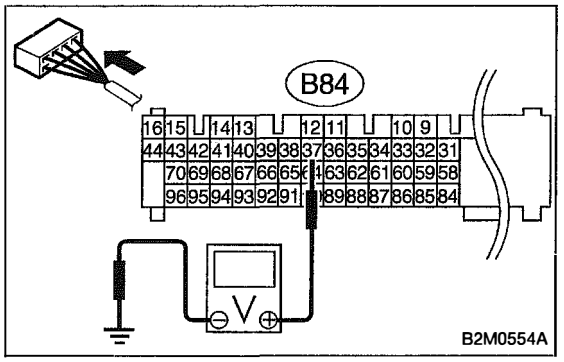
NO : Go to next step 3).

3) Measure voltage between ECM connector and chassis ground.

CHECK : ***Does the voltage change less than 1.0 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Go to next step 4).



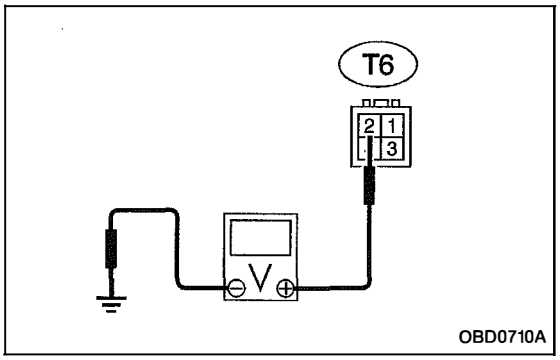
4) Disconnect connector from rear oxygen sensor.
5) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 37 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1.0 V?***

YES : Replace ECM.

NO : Repair battery short circuit in harness between ECM and rear oxygen sensor connector. After repair, replace ECM.



10S4	CHECK POWER SUPPLY TO REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from rear oxygen sensor.
3) Turn ignition switch to ON.
4) Measure voltage between rear oxygen sensor connector and engine ground or chassis ground.

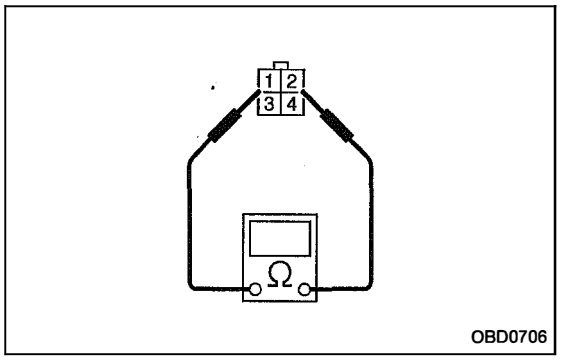
Connector & terminal
(T6) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10S5.**

NO : Repair power supply line.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and rear oxygen sensor connector
- Poor contact in rear oxygen sensor connector
- Poor contact in rear oxygen sensor connecting harness connector



10S5	CHECK REAR OXYGEN SENSOR.

1) Turn ignition switch to OFF.
2) Measure resistance between rear oxygen sensor connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 30 Ω?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between rear oxygen sensor and ECM connector
- Poor contact in rear oxygen sensor connector
- Poor contact in ECM connector
- Poor contact in rear oxygen sensor connecting harness connector

NO : Replace rear oxygen sensor.

OBD (FB1)

P0170 <FUEL>

OBD0240

T: DTC P0170
— FUEL TRIM MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODE.
<Ref. to 2-7 [T3D0] and [T3E0].>

10T1	CHECK EXHAUST SYSTEM.

CHECK : ***Are there holes or loose bolts on exhaust system?***

YES : Repair exhaust system.

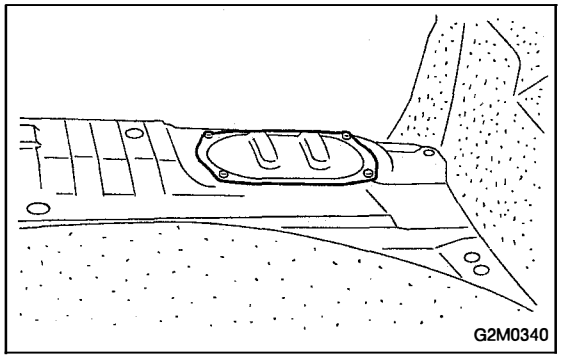
NO : Go to step **10T2**.

10T2	CHECK AIR INTAKE SYSTEM.

CHECK : ***Are there holes, loose bolts or disconnection of hose on air intake system?***

YES : Repair air intake system.

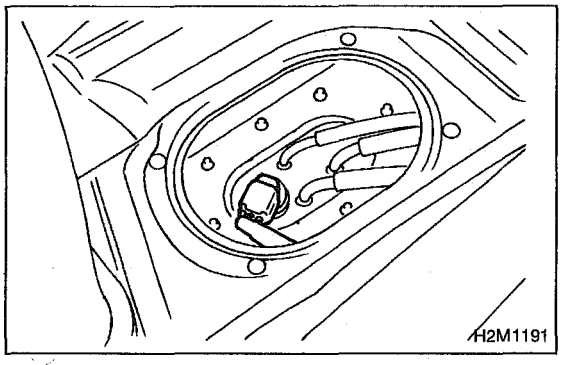
NO : Go to step **10T3**.



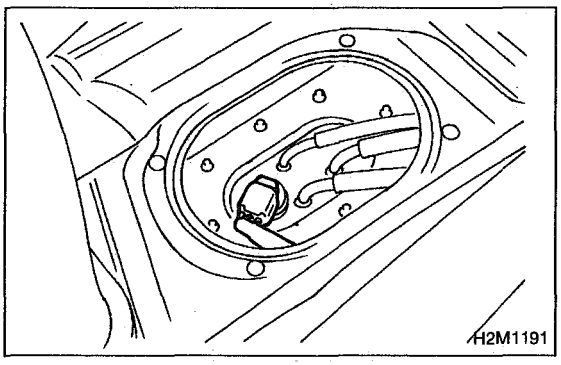
G2M0340

10T3	CHECK FUEL PRESSURE.

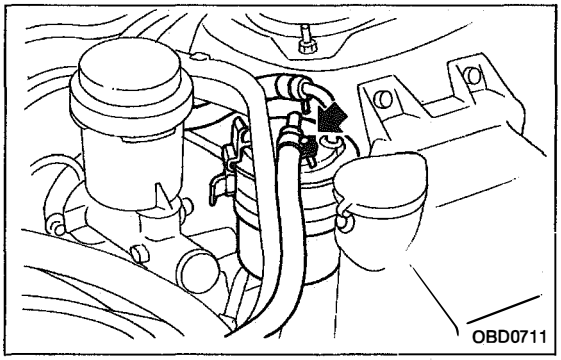
1) Release fuel pressure.
   (1) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



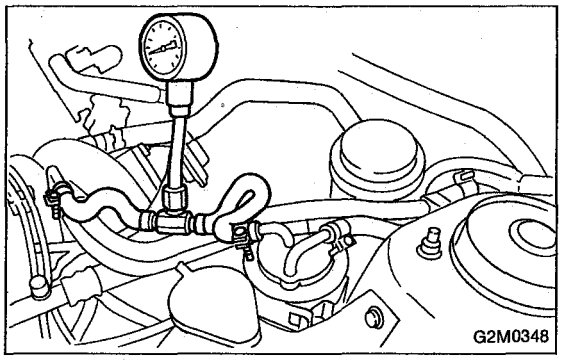
(2) Disconnect connector from fuel tank.
(3) Start the engine, and run it until it stalls.
(4) After stopping the engine, crank the engine for 5 to 7 seconds to reduce fuel pressure.
(5) Turn ignition switch to OFF.



2) Connect connector to fuel tank.



3) Disconnect fuel delivery hose from fuel filter, and connect fuel pressure gauge.



4) Start the engine and idle while gear position is neutral.
5) Measure fuel pressure while disconnecting pressure regulator vacuum hose from intake manifold.

CHECK ***: Is fuel pressure between 226 and 275 kPa (2.3 — 2.8 kg/cm^2, 33 — 40 psi)?***

YES : Go to next step 6).

NO : Repair the following items.

Fuel pressure too high	• Clogged fuel return line or bent hose
Fuel pressure too low	• Improper fuel pump discharge • Clogged fuel supply line

6) After connecting pressure regulator vacuum hose, measure fuel pressure.

CHECK : ***Is fuel pressure between 157 and 206 kPa (1.6 — 2.1 kg/cm², 23 — 30 psi)?***

YES : Go to step **10T4**.

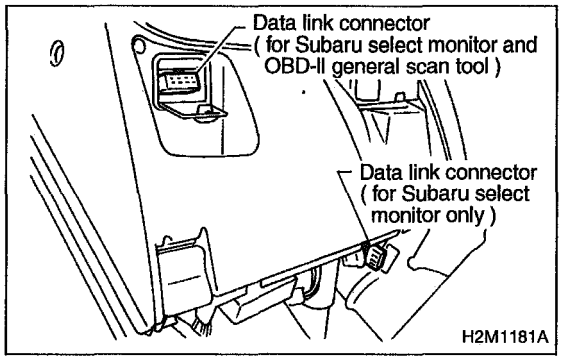
NO : Repair the following items.

Fuel pressure too high	• Faulty pressure regulator • Clogged fuel return line or bent hose
Fuel pressure too low	• Faulty pressure regulator • Improper fuel pump discharge • Clogged fuel supply line

WARNING:
Before removing fuel pressure gauge, release fuel pressure.

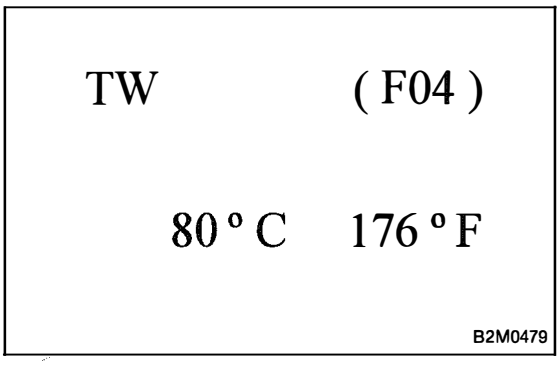
NOTE:

• If fuel pressure does not increase, squeeze fuel return hose 2 to 3 times, then measure fuel pressure again.
• If out of specification as measured at this step, check or replace pressure regulator and pressure regulator vacuum hose.



10T4	**CHECK ENGINE COOLANT TEMPERATURE SENSOR.** **< REF. TO 2-7 [T10H0] OR [T10I0]. >**

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Start the engine and warm-up completely.



4) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F04

- F04: Water temperature is indicated in "°C" and "°F".

CHECK ***: Is temperature greater than 60°C or 140°F in function mode F04?***

YES : Go to step **10T5**.

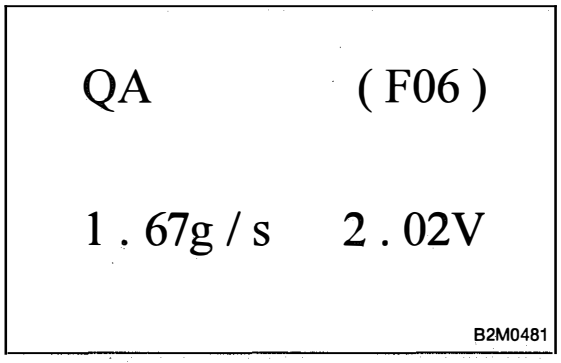
NO : Replace engine coolant temperature sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

10T5	CHECK MASS AIR FLOW SENSOR.

1) Start the engine and warm-up engine until coolant temperature is greater than 60°C (140°F).
2) Place the selector lever in "N" or "P" position.
3) Turn A/C switch to OFF.
4) Turn all accessory switches to OFF.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F06

- F06: Mass air flow and voltage input from mass air flow sensor are shown on display.

CHECK ***: Is the voltage in function mode F06 within the specifications shown in the following table?***

Model	Engine speed	Specified value
1800 cc	Idling	1.6 — 2.8 (g/sec)
	2,500 rpm	6.1 — 10.3 (g/sec)
2200 cc	Idling	1.7 — 3.3 (g/sec)
	2,500 rpm	7.1 — 14.2 (g/sec)

YES : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

NO : Replace mass air flow sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

MEMO:

OBD (FB1)

P0181 <TNKT_F>

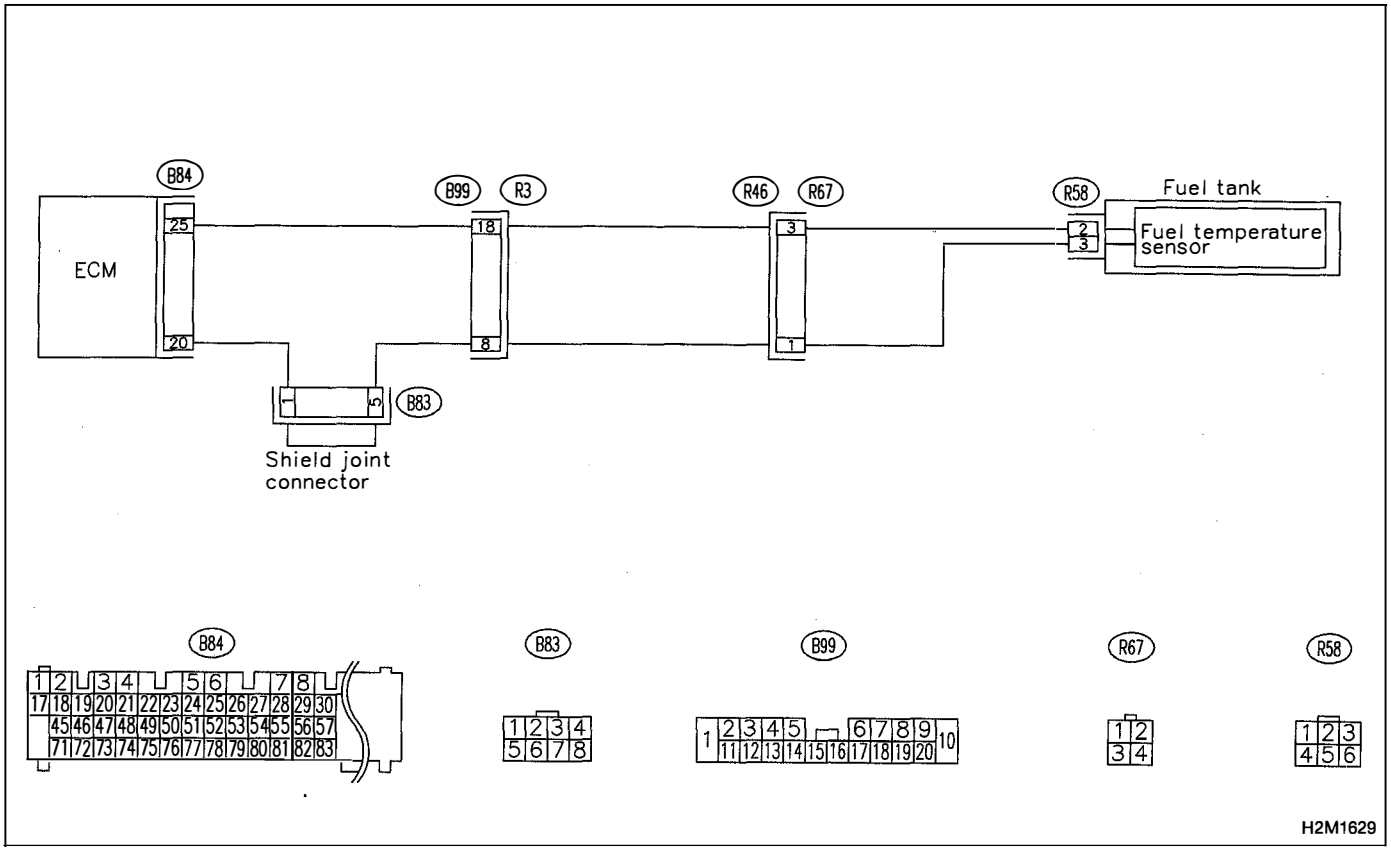
H2M1350

U: DTC P0181
— FUEL TEMPERATURE SENSOR A CIRCUIT RANGE/PERFORMANCE PROBLEM —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1629

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10U1	CHECK DTC P0182 OR P0183 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0182 or P0183?***

YES : Inspect DTC P0182 or P0183 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0181.

NO : Replace fuel temperature sensor.

OBD (FB1)

P0182 <TNKT_LOW>

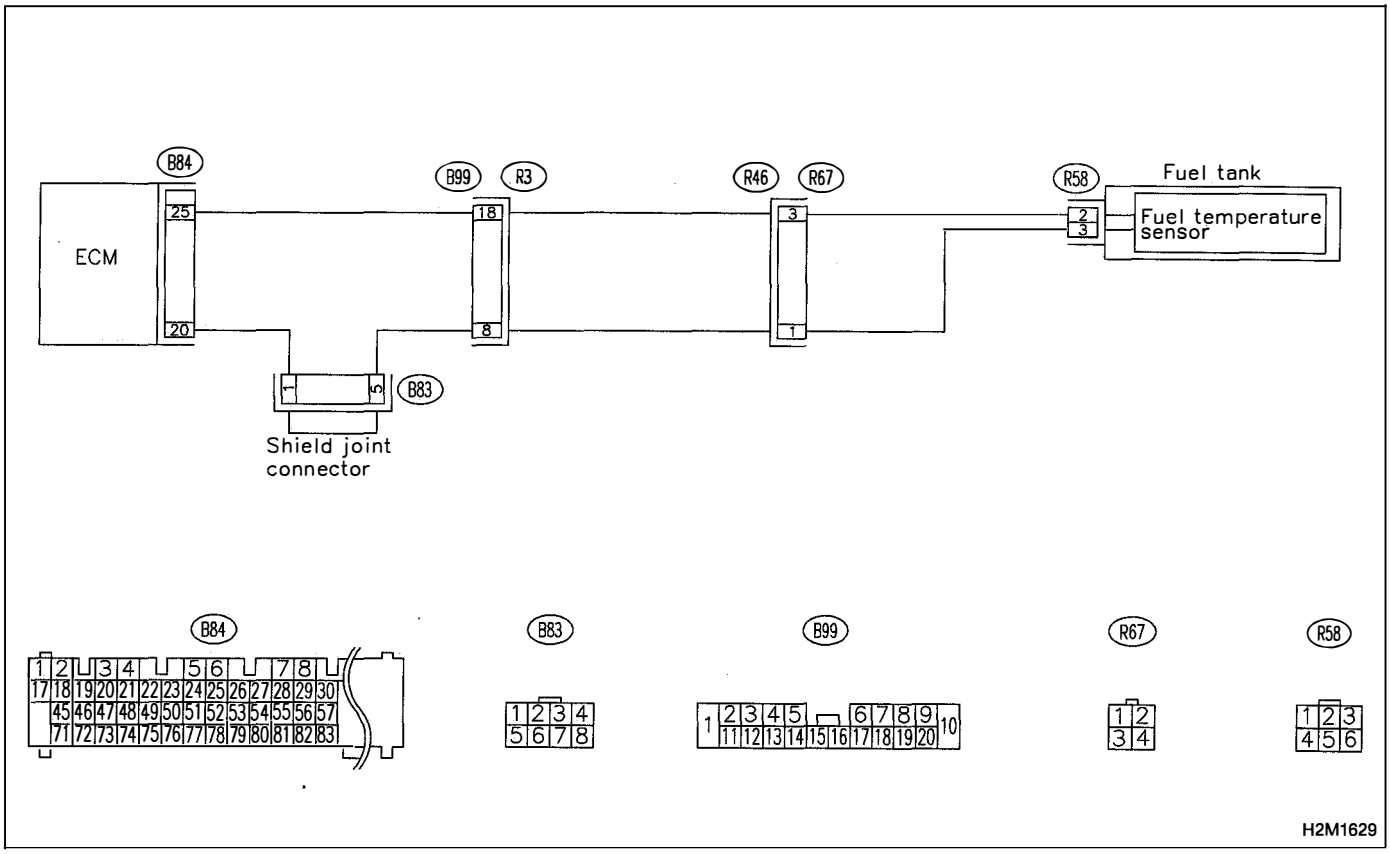
B2M1079

V: DTC P0182 — FUEL TEMPERATURE SENSOR A CIRCUIT LOW INPUT —

DTC DETECTING CONDITION:

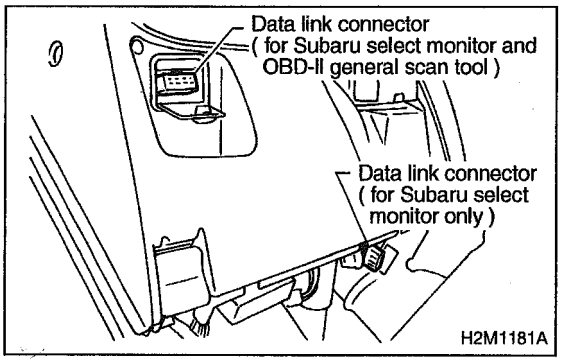
- Immediately at fault recognition

WIRING DIAGRAM:



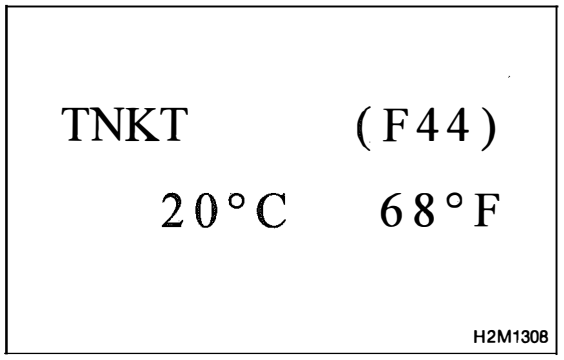
H2M1629

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10V1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F44

- F44: Fuel temperature is indicated in "°C" and "°F".

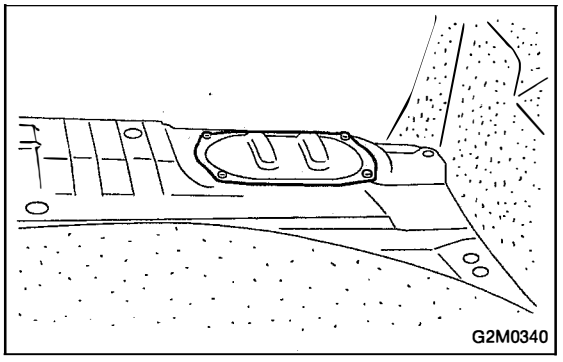
CHECK ***: Is the value greater than 150°C or 300°F in function mode F44?***

YES : Go to step **10V2**.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

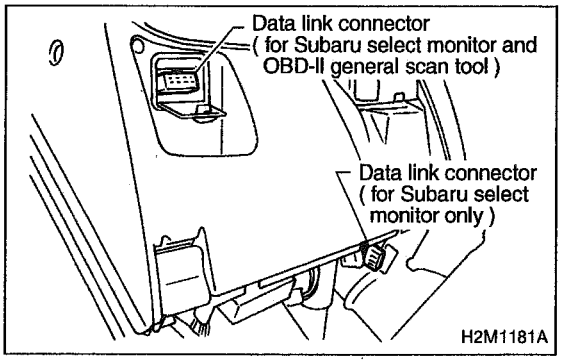
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

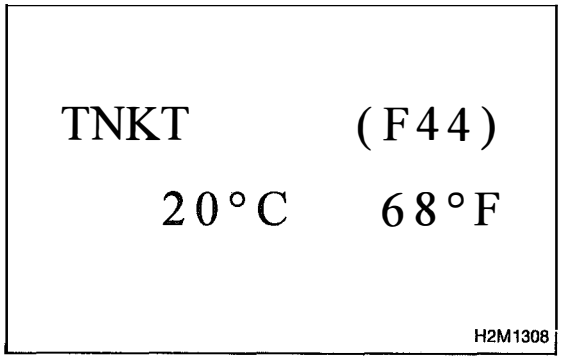


10V2	CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.
3) Disconnect connector from fuel pump.



4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
5) Turn ignition switch and Subaru Select Monitor or OBD-II general scan tool switch to ON.



6) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F44

- F44: Fuel temperature is indicated in "°C" and "°F".

(CHECK) ***: Is the value less than –40°C or –40°F in function mode F44?***

(YES) : Replace fuel temperature sensor.

(NO) : Repair ground short circuit in harness between fuel pump and ECM connector.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

MEMO:

OBD (FB1)

P0183 <TNKT_HI>

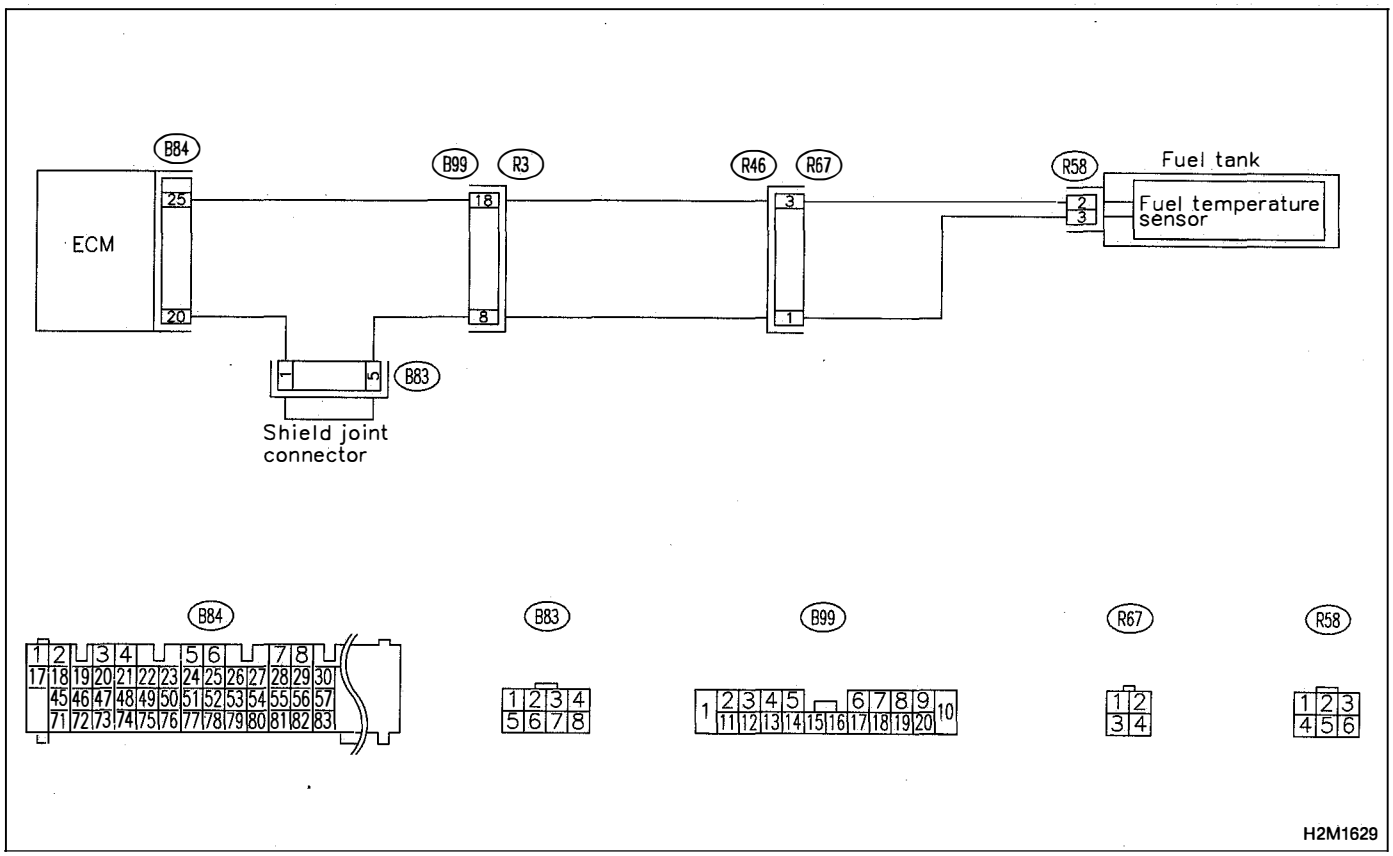
B2M1080

W: DTC P0183 — FUEL TEMPERATURE SENSOR A CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:

- Immediately at fault recognition

WIRING DIAGRAM:

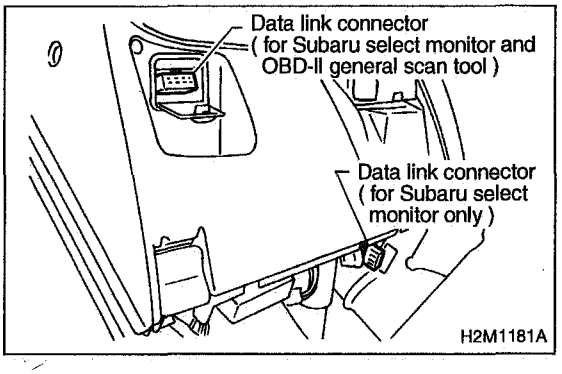


H2M1629

CAUTION:

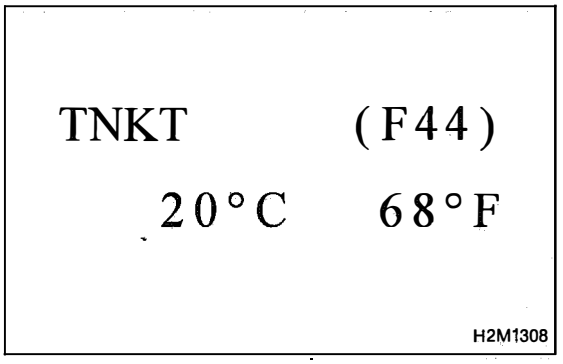
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.

<Ref. to 2-7 [T3D0] and [T3E0].>



10W1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor or OBD-II general scan tool switch to ON.
4) Start engine.



5) Read data on Subaru Select Monitor or OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F44

- F44: Fuel temperature is indicated in "°C" and "°F".

CHECK ***: Is the value less than –40°C or –40°F in function mode F44?***

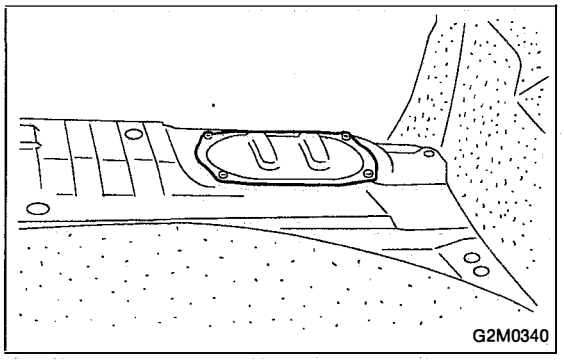
YES : Go to step **10W2**.

NO : Repair poor contact.

NOTE:
In this case, repair the following:

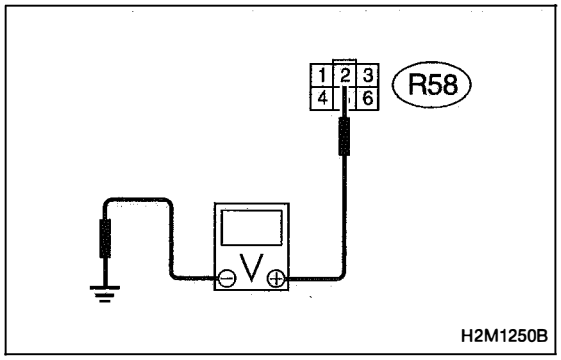
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B83, B99 and R67)
- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10W2	CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove access hole lid.
3) Disconnect connector from fuel pump.



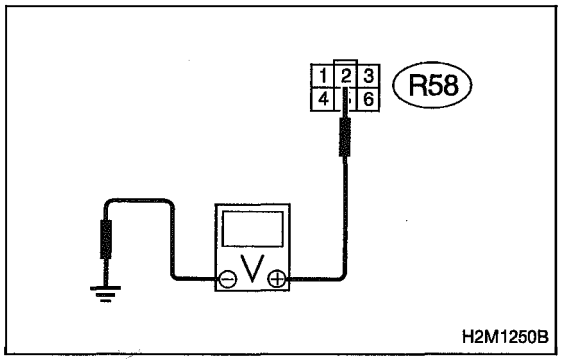
4) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and fuel pump connector.

NO : Go to next step 5).



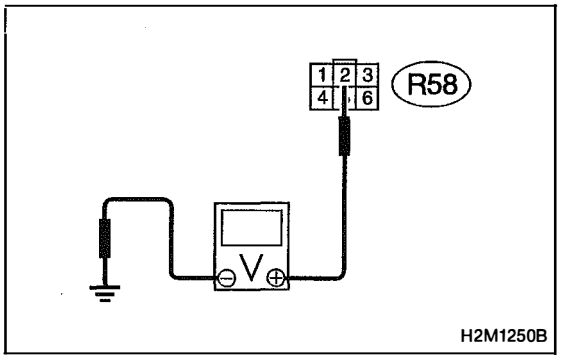
5) Turn ignition switch to ON.
6) Measure voltage between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and fuel pump connector.

NO : Go to step **10W3.**



10W3	**CHECK HARNESS BETWEEN FUEL TEMPERATURE SENSOR AND ECM CONNECTOR.**

1) Measure voltage between fuel pump connector and chassis ground.

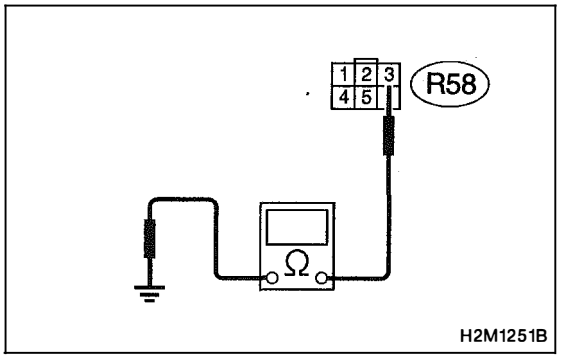
Connector & terminal
(R58) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4 V?***

YES : Go to next step 2).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B99 and R67)



2) Turn ignition switch to OFF.
3) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 3 — Chassis ground:

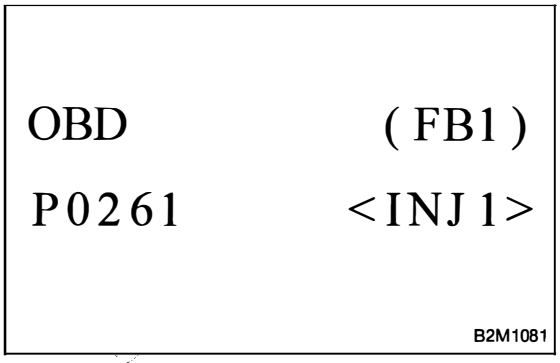
CHECK ***: Is the resistance less than 5 Ω?***

YES : Replace fuel temperature sensor.

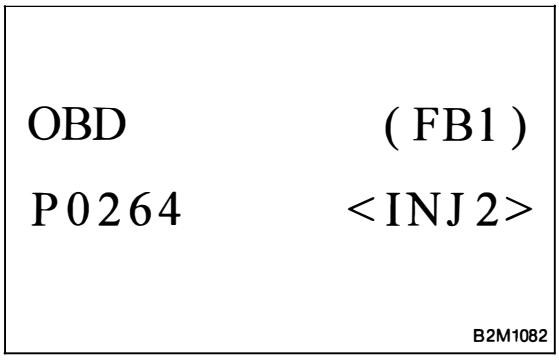
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel pump connector
- Poor contact in fuel pump connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B83, B99 and R67)

MEMO:



X: DTC P0261
— FUEL INJECTOR CIRCUIT LOW INPUT - #1 —



Y: DTC P0264
— FUEL INJECTOR CIRCUIT LOW INPUT - #2 —

Z: DTC P0267
— FUEL INJECTOR CIRCUIT LOW INPUT - #3 —

AA: DTC P0270
— FUEL INJECTOR CIRCUIT LOW INPUT - #4 —

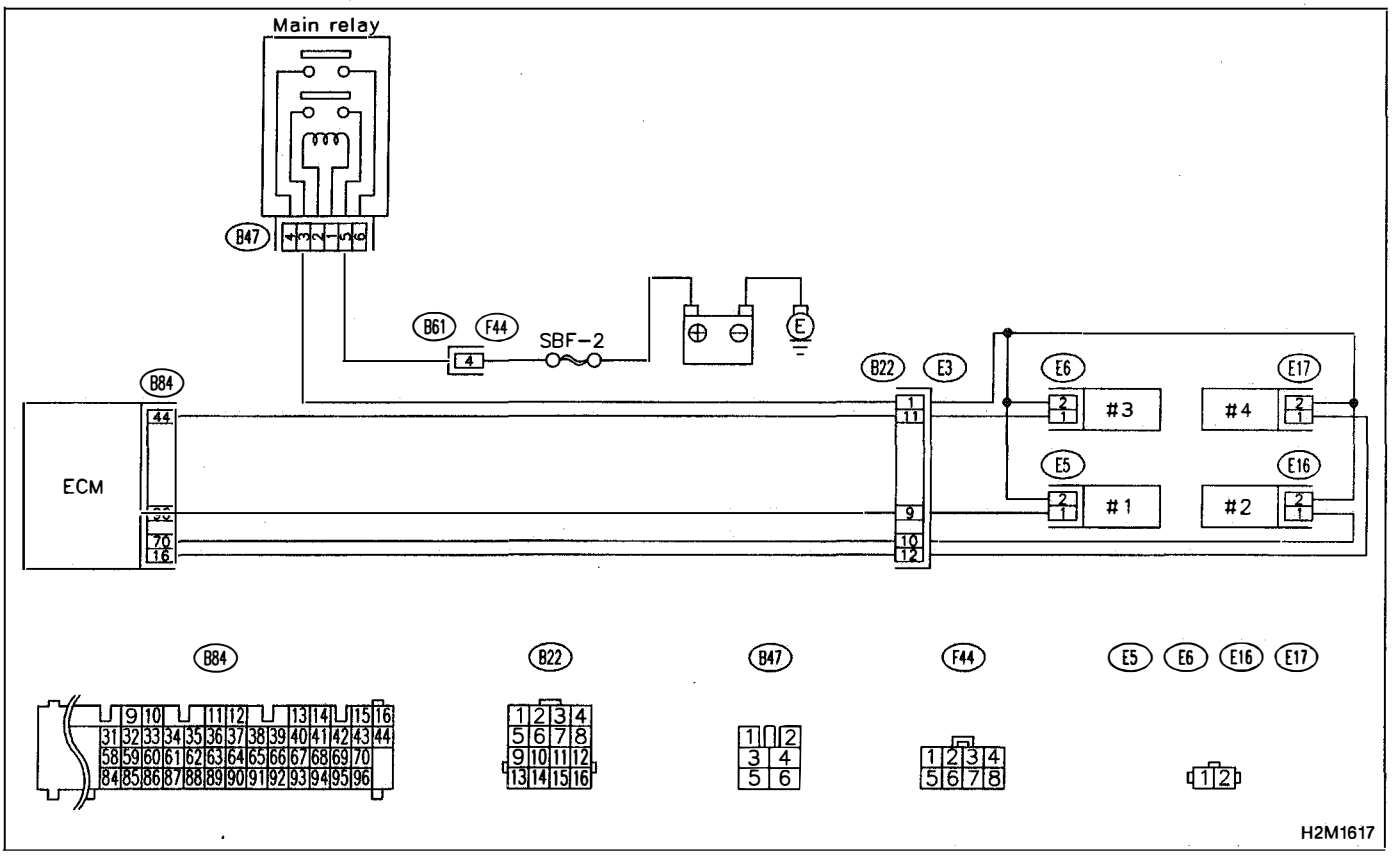
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Failure of engine to start
- Engine stalls.
- Erroneous idling
- Rough driving

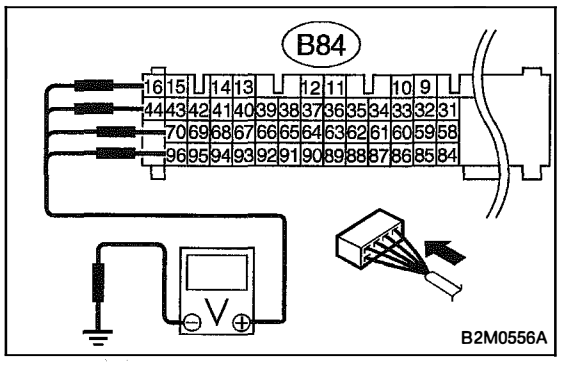
WIRING DIAGRAM:



CAUTION:

- **Check or repair only faulty cylinders.**
- **After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.**

<Ref. to 2-7 [T3D0] and [T3E0].>



10AA1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal
#1 (B84) No. 96 (+) — Chassis ground (–):
#2 (B84) No. 70 (+) — Chassis ground (–):
#3 (B84) No. 44 (+) — Chassis ground (–):
#4 (B84) No. 16 (+) — Chassis ground (–):

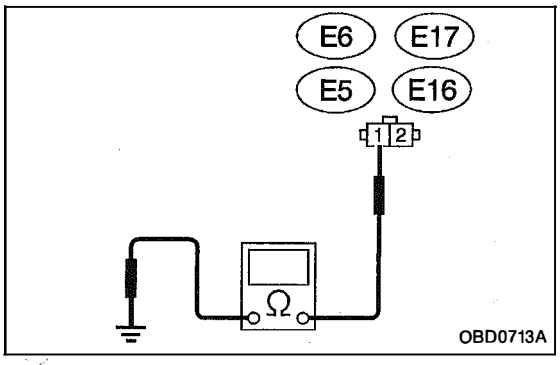
CHECK ***: Is the voltage more than 10 V?***
YES : Go to step **10AA2**.
NO : Go to step **10AA3**.

10AA2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10AA3	CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

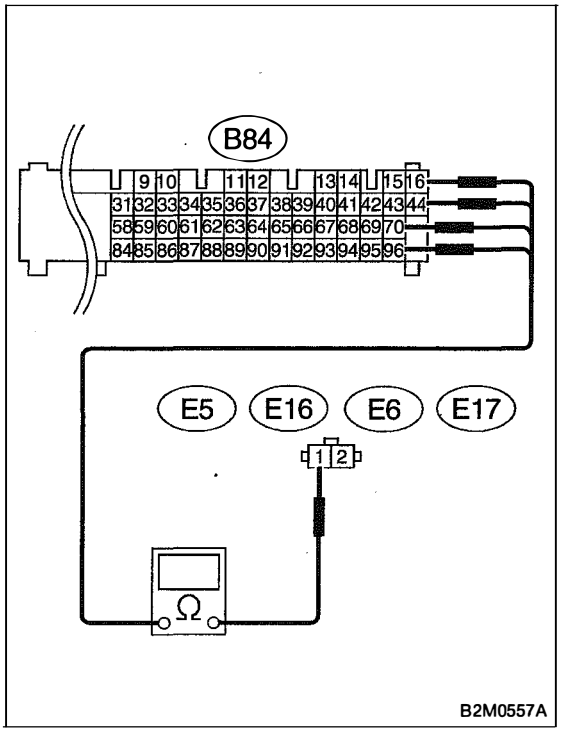
1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinders.
3) Measure voltage between ECM connector and engine ground on faulty cylinders.

Connector & terminal
#1 (E5) No. 1 — Engine ground:
#2 (E16) No. 1 — Engine ground:
#3 (E6) No. 1 — Engine ground:
#4 (E17) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between fuel injector and ECM connector.

NO : Go to next step 4).



4) Measure resistance of harness connector between ECM connector and fuel injector on faulty cylinders.

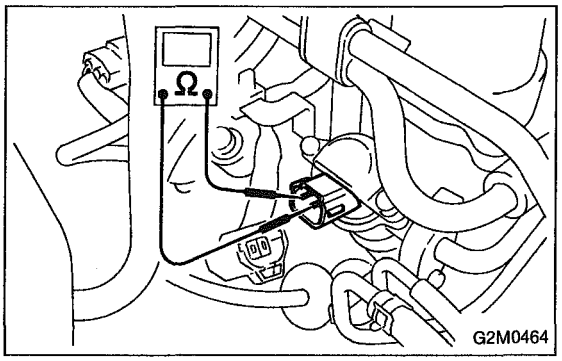
Connector & terminal
#1 (B84) No. 96 — (E5) No. 1:
#2 (B84) No. 70 — (E16) No. 1:
#3 (B84) No. 44 — (E6) No. 1:
#4 (B84) No. 16 — (E17) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10AA4**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel injector connector
- Poor contact in coupling connector (B22)



10AA4	CHECK FUEL INJECTOR.

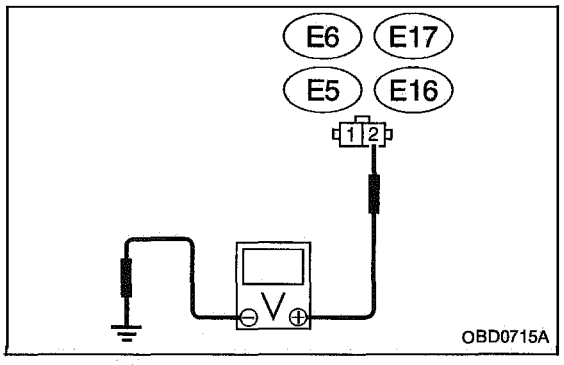
Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 5 and 20 Ω?***

NO : Replace faulty fuel injector.

YES : Go to step **10AA5**.



10AA5	CHECK POWER SUPPLY LINE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel injector and engine ground on faulty cylinders.

Connector & terminal
#1 (E5) No. 2 (+) — Engine ground (–):
#2 (E16) No. 2 (+) — Engine ground (–):
#3 (E6) No. 2 (+) — Engine ground (–):
#4 (E17) No. 2 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Repair poor contact in all connectors in fuel injector circuit.
NO : Repair harness and connector.

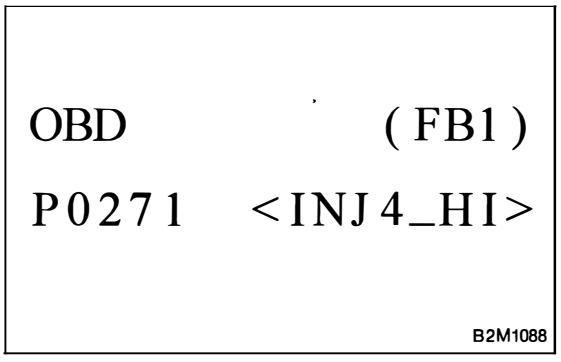
NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and fuel injector connector on faulty cylinders
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector
- Poor contact in fuel injector connector on faulty cylinders

MEMO:

AB: DTC P0262
— FUEL INJECTOR CIRCUIT HIGH INPUT - #1 —

AC: DTC P0265
— FUEL INJECTOR CIRCUIT HIGH INPUT - #2 —

AD: DTC P0268
— FUEL INJECTOR CIRCUIT HIGH INPUT - #3 —



AE: DTC P0271
— FUEL INJECTOR CIRCUIT HIGH INPUT - #4 —

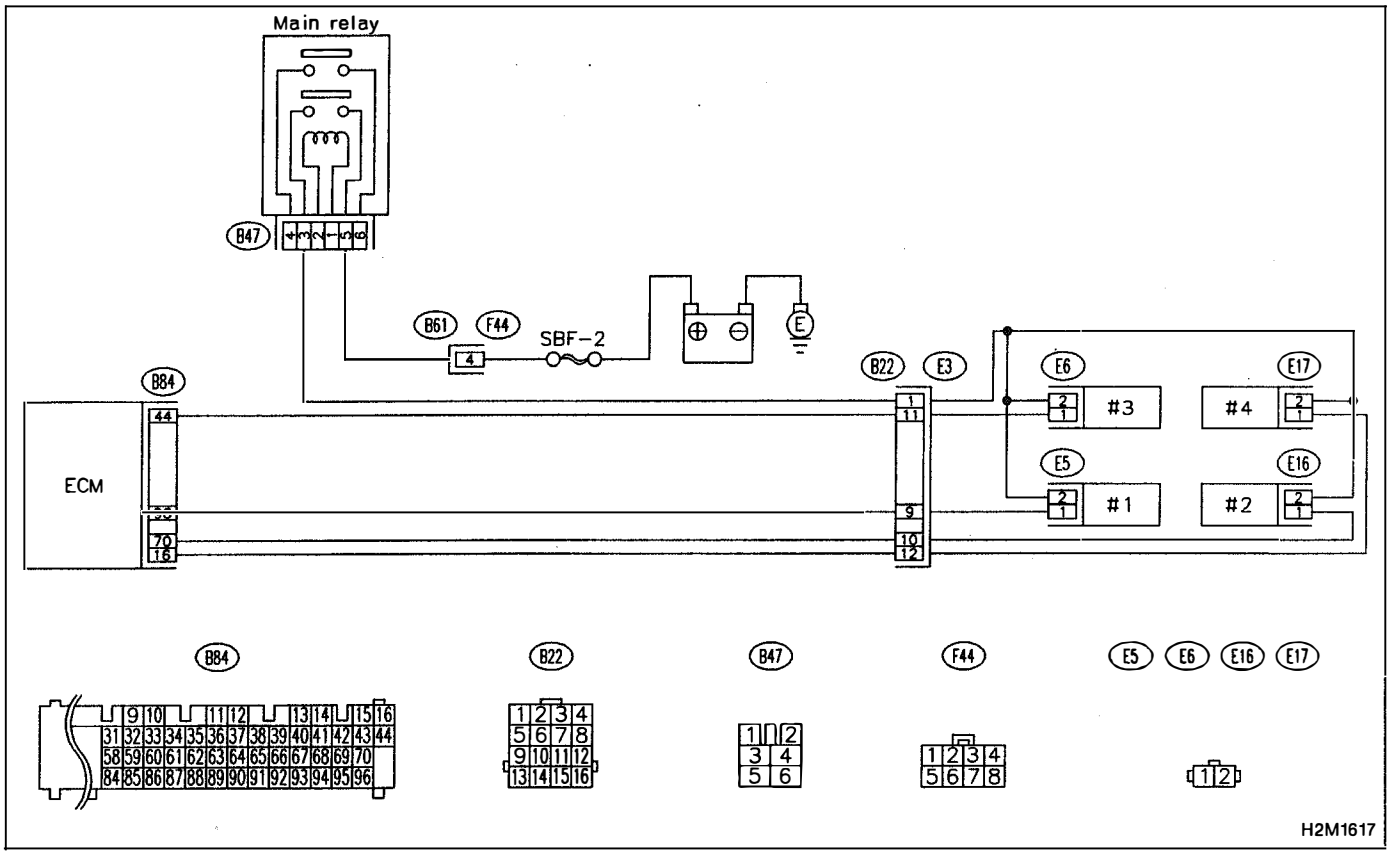
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Failure of engine to start
- Engine stalls.
- Erroneous idling
- Rough driving

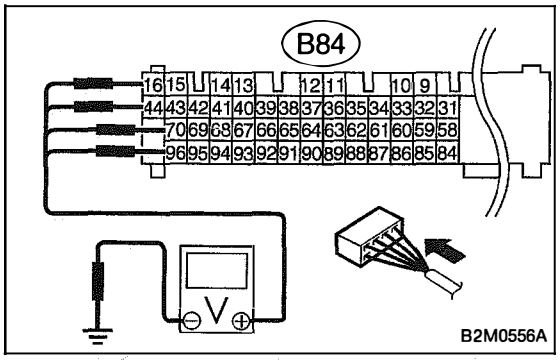
WIRING DIAGRAM:



CAUTION:

- **Check or repair only faulty cylinders.**
- **After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.**

<Ref. to 2-7 [T3D0] and [T3E0].>



10AE1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM connector and chassis ground on faulty cylinders.

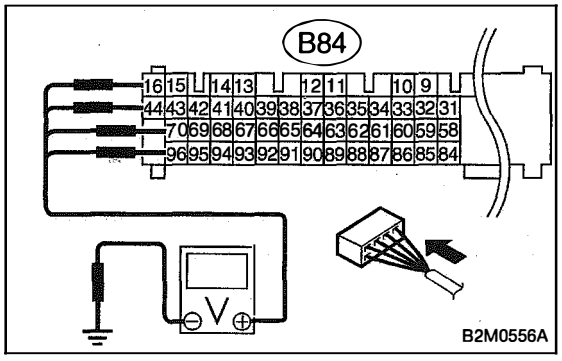
Connector & terminal
#1 (B84) No. 96 (+) — Chassis ground (–):
#2 (B84) No. 70 (+) — Chassis ground (–):
#3 (B84) No. 44 (+) — Chassis ground (–):
#4 (B84) No. 16 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Go to step **10AE3**.
NO : Go to step **10AE2**.

10AE2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

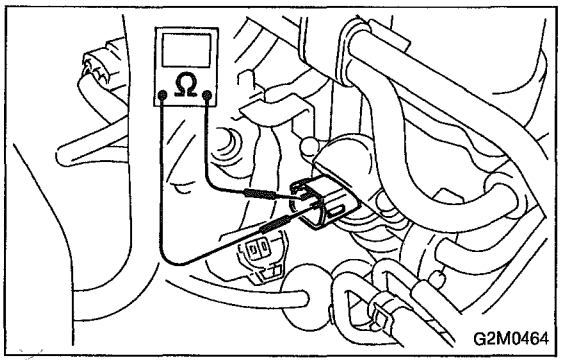


10AE3	CHECK HARNESS BETWEEN FUEL INJECTOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from fuel injector on faulty cylinder.
3) Turn ignition switch to ON.
4) Measure voltage between ECM connector and chassis ground on faulty cylinders.

Connector & terminal
#1 (B84) No. 96 (+) — Chassis ground (–):
#2 (B84) No. 70 (+) — Chassis ground (–):
#3 (B84) No. 44 (+) — Chassis ground (–):
#4 (B84) No. 16 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and fuel injector. After repair, replace ECM.
NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between fuel injector terminals on faulty cylinder.

Terminals
No. 1 — No. 2 :

CHECK ***: Is the resistance less than 1 Ω?***

YES : Replace faulty fuel injector and ECM.

NO : Go to step **10AE4**.

10AE4	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

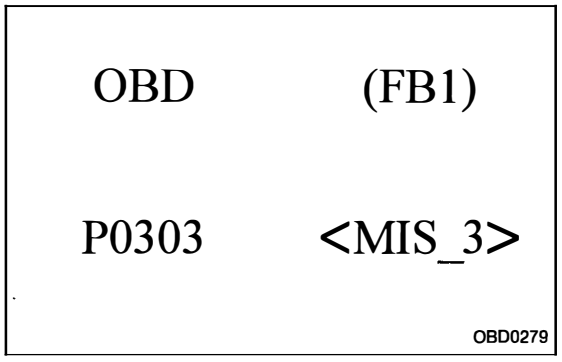
CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

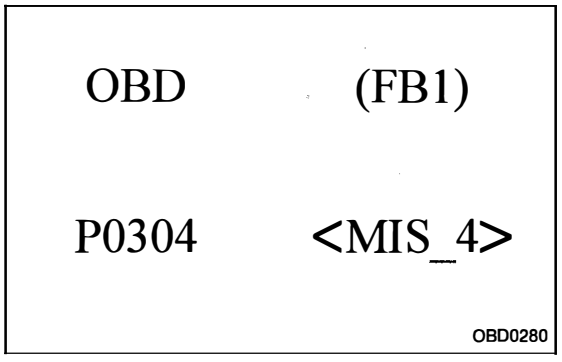
NO : Replace ECM.

AF: DTC P0301
— CYLINDER 1 MISFIRE DETECTED —

AG: DTC P0302
— CYLINDER 2 MISFIRE DETECTED —



AH: DTC P0303
— CYLINDER 3 MISFIRE DETECTED —



AI: DTC P0304
— CYLINDER 4 MISFIRE DETECTED —

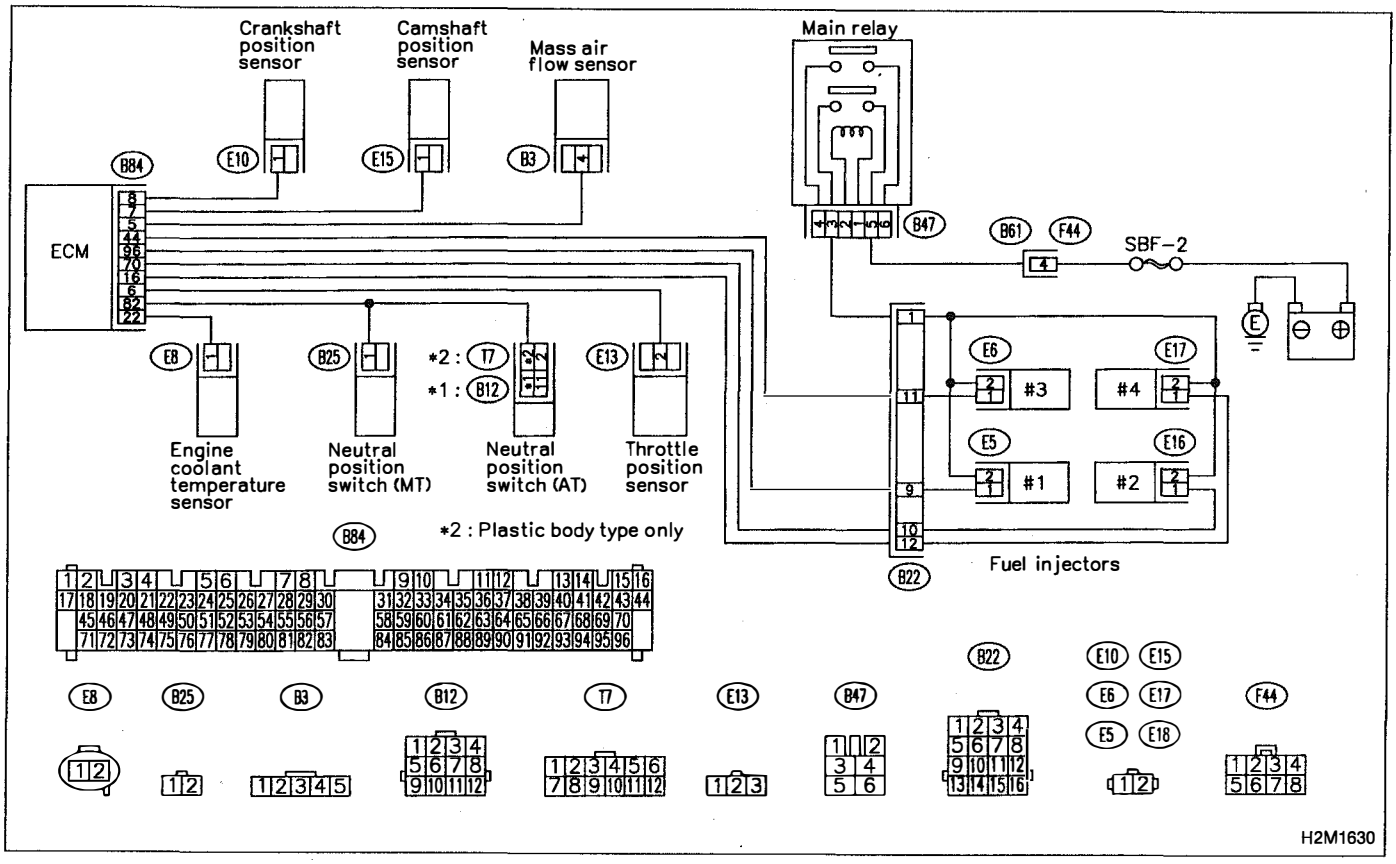
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault
- Immediately at fault recognition (A misfire which could damage catalyst occurs.)

TROUBLE SYMPTOM:

- Engine stalls.
- Erroneous idling
- Rough driving

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

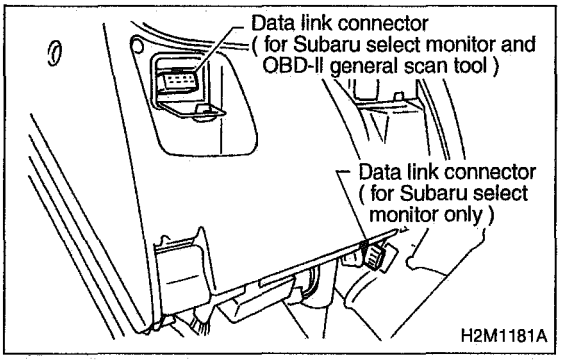
10AI1	**CHECK DTC P0101, P0102, P0103, P0116, P0117, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 OR P0271 ON DISPLAY.**

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0101, P0102, P0103, P0116, P0117, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 or P0271?***

YES : Inspect DTC P0101, P0102, P0103, P0116, P0117, P0125, P0261, P0262, P0264, P0265, P0267, P0268, P0270 or P0271 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

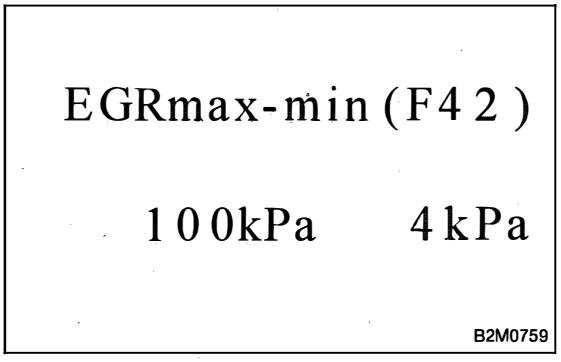
NOTE:
In this case, it is not necessary to inspect DTC P0301, P0302, P0303 and P0304.

NO : Go to step **10AI2**.



10AI2	**CONNECT SUBARU SELECT MONITOR AND READ DATA.**

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to the data link connector.
3) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.

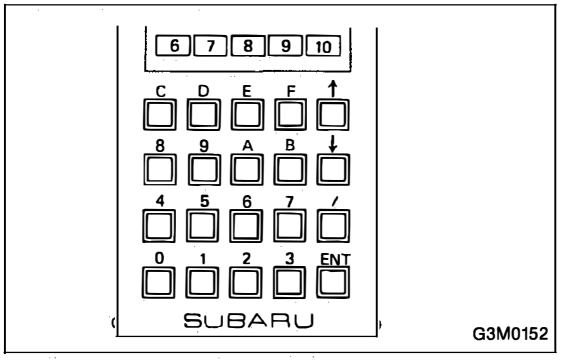


4) Read data on Subaru Select Monitor.
Designate mode use function key.

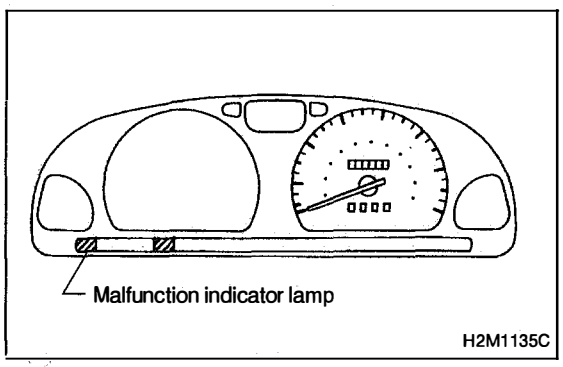
Function mode: F42

NOTE:
F42: Maximum and minimum EGR system pressure value are indicated at the same time.

5) Print out the displayed data on paper.



6) Clear memory on Subaru Select Monitor.
Designate mode use function key.
Press [F], [C], [0], [ENT] in that order.



7) Start engine, and drive the vehicle more than 10 minutes.

CHECK : ***Is the MIL coming on or blinking?***

YES : Go to step **10AI3.**

NO : Go to next CHECK .

CHECK : ***Has the vehicle been run empty of fuel?***

YES : Finish diagnostics operation, if the engine has no abnormality.

NO : Go to next CHECK .

CHECK : ***Was the cause of misfire diagnosed when the engine is running?***

NOTE:
Ex. Remove spark plug cord, etc.

YES : Finish diagnostics operation, if the engine has no abnormality.

NO : Repair poor connector.

NOTE:
In this case, repair the following:
- Poor contact in ignitor connector
- Poor contact in ignition coil connector
- Poor contact in fuel injector connector on faulty cylinders
- Poor contact in ECM connector
- Poor contact in coupling connector (B22)

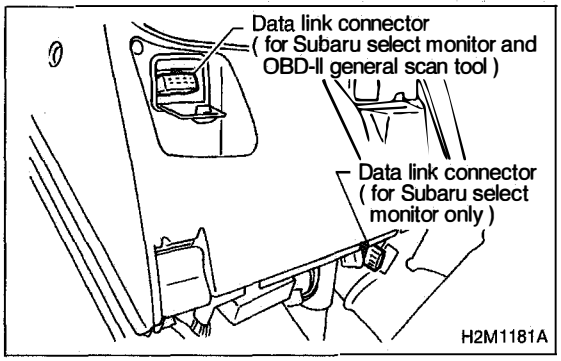
10AI3	CHECK AIR INTAKE SYSTEM.

CHECK : ***Is there a fault in air intake system?***

NOTE:
Check the following items:
- Are there air leaks or air suction caused by loose or dislocated nuts and bolts?
- Are there cracks or any disconnection of hoses?

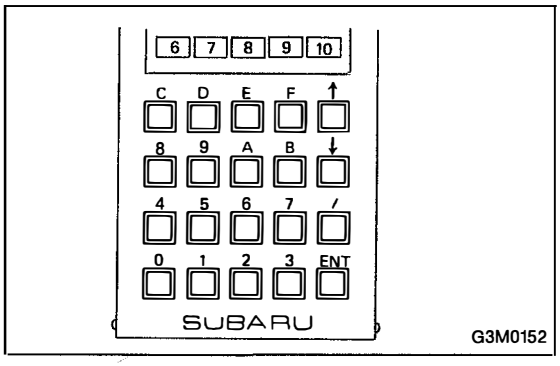
YES : Repair air intake system.

NO : Go to step **10AI4.**



10AI4	CHECK MISFIRE SYMPTOM.

1) Turn ignition switch to OFF.
2) Connect the Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch to ON, and turn Subaru Select Monitor or OBD-II general scan tool switch to ON.



4) Read diagnostic trouble code (DTC).
● Subaru Select Monitor
Designate mode use function key.

Function mode: FB1

● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Operation Manual.

NOTE:
Perform diagnosis according to the items listed below.

CHECK ***: Does the Subaru select monitor or OBD-II general scan tool indicate only one DTC?***

YES : Go to step **10AI5**.

NO : Go to next CHECK .

CHECK ***: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0301 and P0302?***

YES : Go to step **10AI6**.

NO : Go to next CHECK .

CHECK ***: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0303 and P0304?***

YES : Go to step **10AI7**.

NO : Go to next CHECK .

CHECK ***: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0301 and P0303?***

YES : Go to step **10AI8**.

NO : Go to next CHECK .

CHECK ***: Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0302 and P0304?***

YES : Go to step **10AI9**.

NO : Go to step **10AI10**.

10AI5	ONLY ONE CYLINDER

CHECK : ***Is there a fault in that cylinder?***

NOTE:
Check the following items.
- Spark plug
- Spark plug cord
- Fuel injector
- Compression ratio

YES : Repair or replace faulty parts.

NO : Go to step **10AI11**.

10AI6	GROUP OF #1 AND #2 CYLINDERS

CHECK : ***Are there faults in #1 and #2 cylinders?***

NOTE:
- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
- If no abnormal is discovered, check for "8. D: IGNITION CONTROL SYSTEM" of #1 and #2 cylinders side. <Ref. to 2-7 [T8D0].>

YES : Repair or replace faulty parts.

NO : Go to step **10AI11**.

10AI7	GROUP OF #3 AND #4 CYLINDERS

CHECK : ***Are there faults in #3 and #4 cylinders?***

NOTE:

- Check the following items.
  - Spark plugs
  - Fuel injectors
  - Ignition coil
- If no abnormal is discovered, check for "8. D: IGNITION CONTROL SYSTEM" of #3 and #4 cylinders side. <Ref. to 2-7 [T8D0].>

YES : Repair or replace faulty parts.

NO : Go to step **10AI11**.

10AI8	GROUP OF #1 AND #3 CYLINDERS

CHECK : ***Are there faults in #1 and #3 cylinders?***

NOTE:

Check the following items.

- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

YES : Repair or replace faulty parts.

NO : Go to step **10AI11**.

10AI9	GROUP OF #2 AND #4 CYLINDERS

CHECK : ***Are there faults in #2 and #4 cylinders?***

NOTE:
Check the following items.
- Spark plugs
- Fuel injectors
- Skipping timing belt teeth

YES : Repair or replace faulty parts.

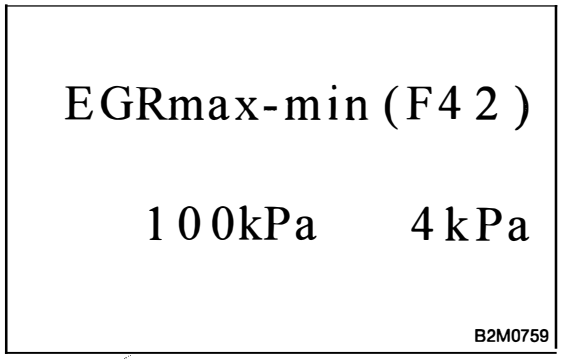
NO : Go to step **10AI11**.

10AI10	THE CYLINDER AT RANDOM

CHECK : ***Is the engine idle rough?***

YES : Go to step **10AI11**.

NO : Go to DTC P0170. <Ref. to 2-7 [T10T3], [T10T4] and [T10T5].>



10AI11	CHECK EGR SYSTEM.

CHECK : ***Is the minimum EGR system pressure value (value of function mode (F42) less than 1 kPa?***

NOTE:
Use the value read in step **10X2** for function mode F42.

YES : Clean EGR valve.

CAUTION:
Do not use solvent when cleaning EGR valve assembly, as it can damage diaphragm.

NOTE:
- Remove and blow away the exhaust deposits. Make sure the valve operates smoothly and the valve seat area is completely cleaned.
- Replace EGR valve as required.

NO : Go to DTC P0170. <Ref. to 2-7 [T10T3], [T10T4] and [T10T5].>

MEMO:

OBD	(FB1)
P0325	<KNOCK>

OBD0283

AJ: DTC P0325 — KNOCK SENSOR CIRCUIT MALFUNCTION —

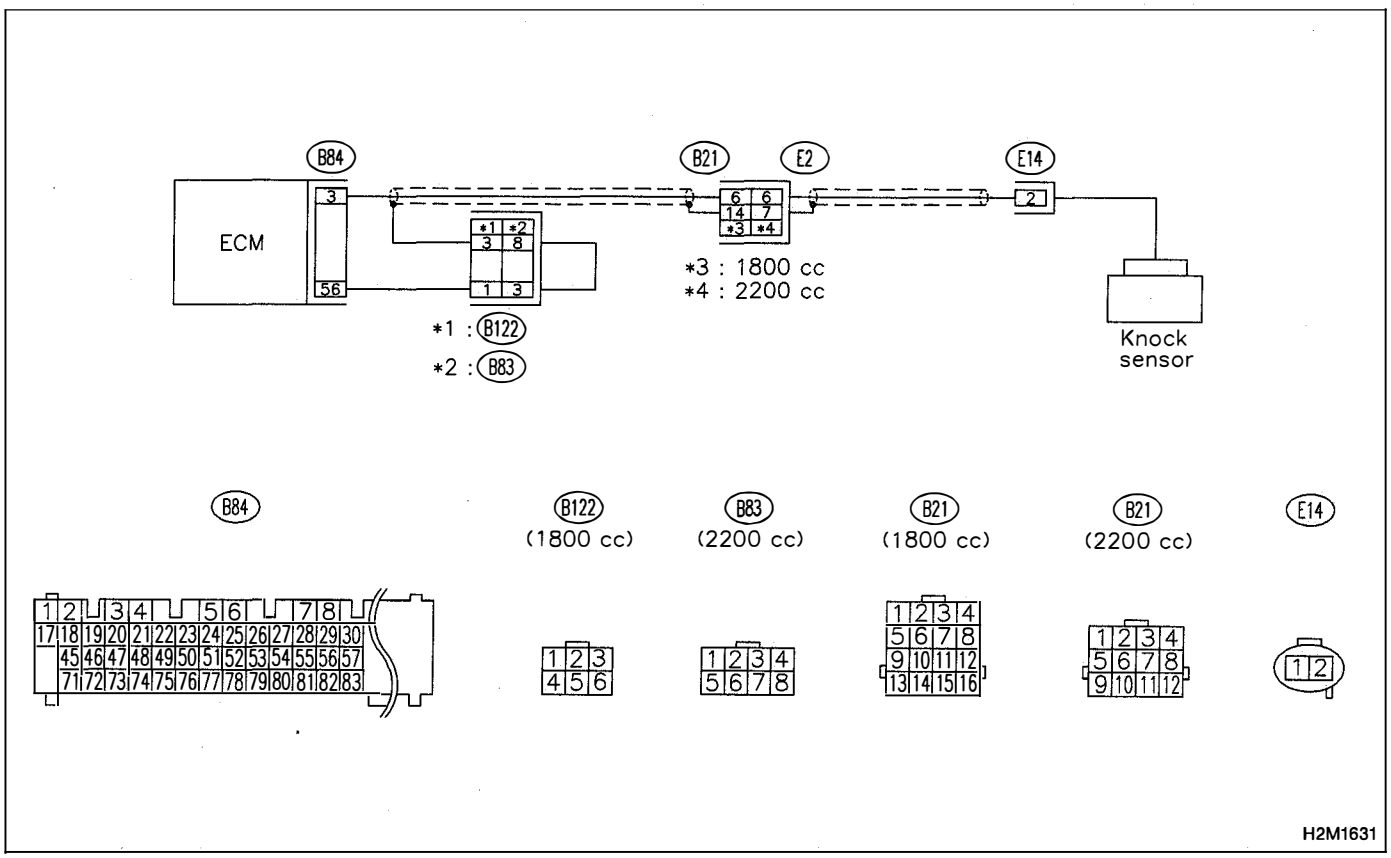
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Poor driving performance
- Knocking occurs.

WIRING DIAGRAM:



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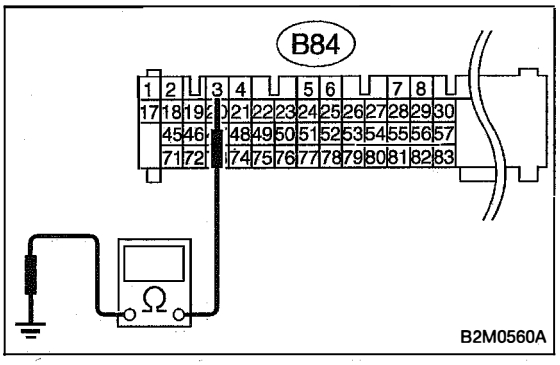
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10AJ1	CHECK HARNESS BETWEEN KNOCK SENSOR AND ECM CONNECTOR.

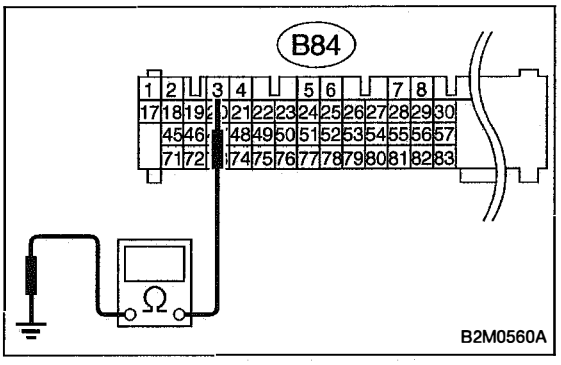
1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 700 kΩ?***

YES : Go to step **10AJ2**.

NO : Go to next step 4).



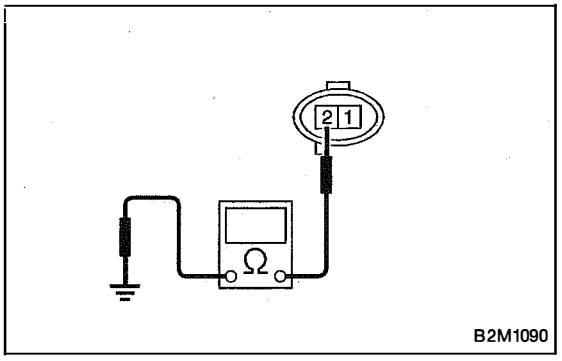
4) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 3 — Chassis ground:

CHECK ***: Is the resistance less than 400 kΩ?***

YES : Go to step **10AJ3**.

NO : Go to step **10AJ4**.



10AJ2	CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

Terminal
No. 2 — Engine ground:

CHECK ***: Is the resistance more than 700 kΩ?***

YES : Go to next CHECK .

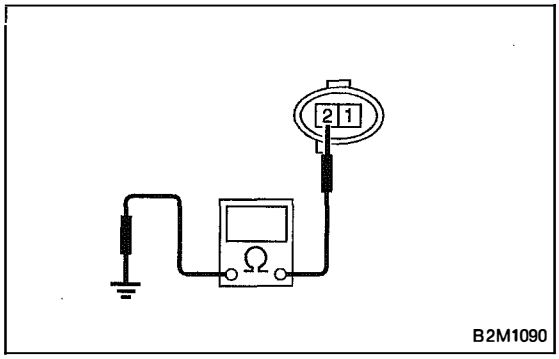
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between knock sensor and ECM connector
- Poor contact in knock sensor connector
- Poor contact in coupling connector (B21)

CHECK : ***Is the knock sensor installation bolt tightened securely?***

YES : Replace knock sensor.

NO : Tighten knock sensor installation bolt securely.



10AJ3	CHECK KNOCK SENSOR.

1) Disconnect connector from knock sensor.
2) Measure resistance between knock sensor connector terminal and engine ground.

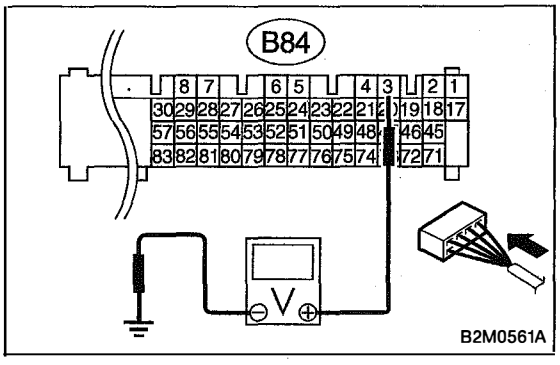
Terminal
No. 2 — Engine ground:

CHECK : ***Is the resistance less than 400 kΩ?***

YES : Replace knock sensor.

NO : Repair ground short circuit in harness between knock sensor connector and ECM connector.

NOTE:
The harness between both connectors is shielded. Repair short circuit of harness together with shield.



10AJ4	CHECK INPUT SIGNAL FOR ECM.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 3 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 2 V?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in knock sensor connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)

NO : Repair poor contact in ECM connector.

MEMO:

OBD (FB1)

P0335 <CRANK>

OBD0292

AK: DTC P0335 — CRANKSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

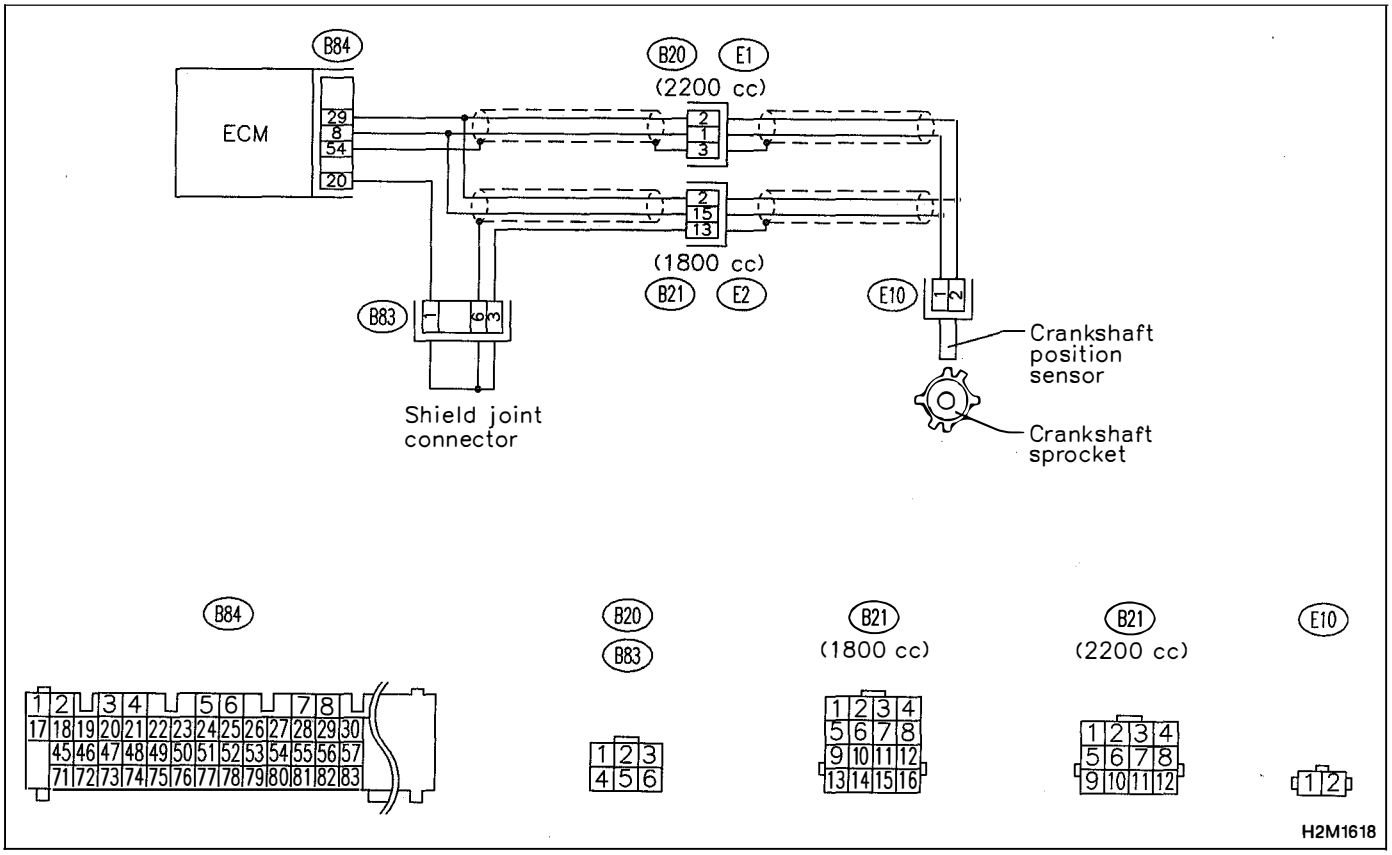
DTC DETECTING CONDITION:

- Immediately at fault recognition

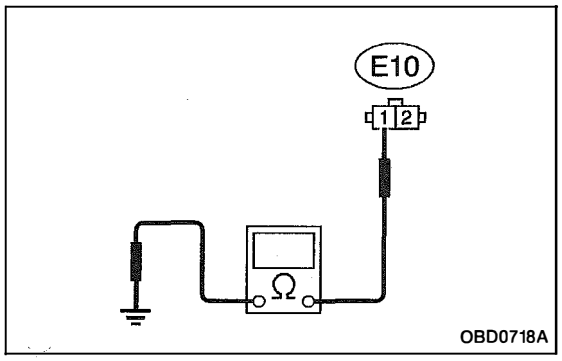
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10AK1	CHECK HARNESS BETWEEN CRANKSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from crankshaft position sensor.
3) Measure resistance of harness between crankshaft position sensor connector and engine ground.

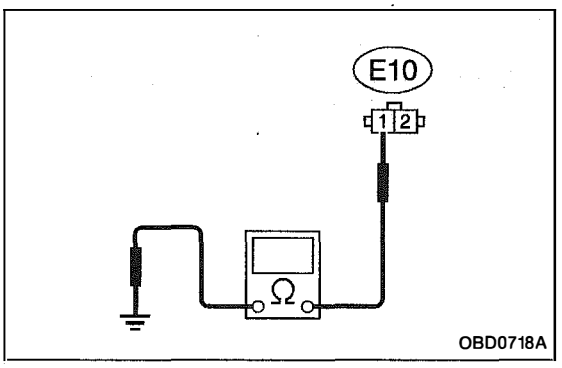
Connector & terminal
(E10) No. 1 — Engine ground:

CHECK ***: Is the resistance more than 100 kΩ?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

NO : Go to next step 4).



4) Measure resistance of harness between crankshaft position sensor connector and engine ground.

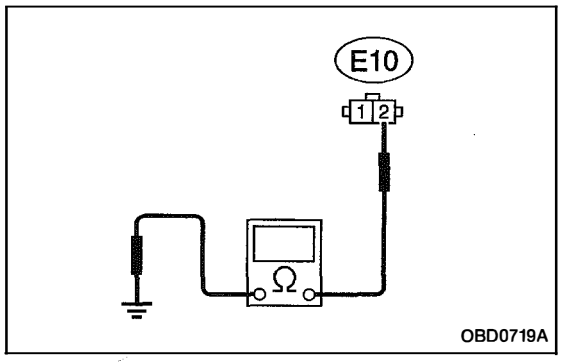
Connector & terminal
(E10) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between crankshaft position sensor and ECM connector.

NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to next step 5).



5) Measure resistance of harness between crankshaft position sensor connector and engine ground.

Connector & terminal
(E10) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to step **10AK2.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

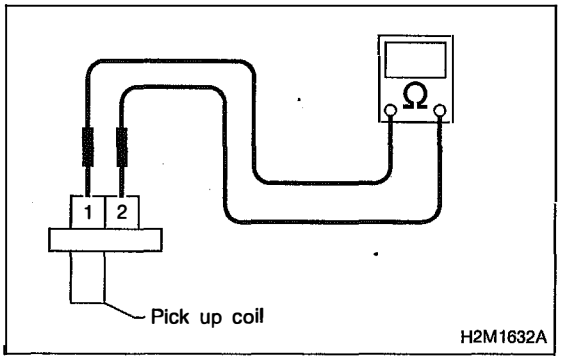
- Open circuit in harness between crankshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

10AK2	CHECK CRANKSHAFT POSITION SENSOR.

CHECK ***: Is the crankshaft position sensor installation bolt tightened securely?***

YES : Go to next step 1).

NO : Tighten crankshaft position sensor installation bolt securely.



1) Remove crankshaft position sensor.
2) Measure resistance between connector terminals of crankshaft position sensor.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 1 and 4 kΩ?***

YES : Repair poor contact in crankshaft position sensor connector.

NO : Replace crankshaft position sensor.

MEMO:

OBD (FB1)

P0336 <CRANK_R>

B2M1091

AL: DTC P0336 — CRANKSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

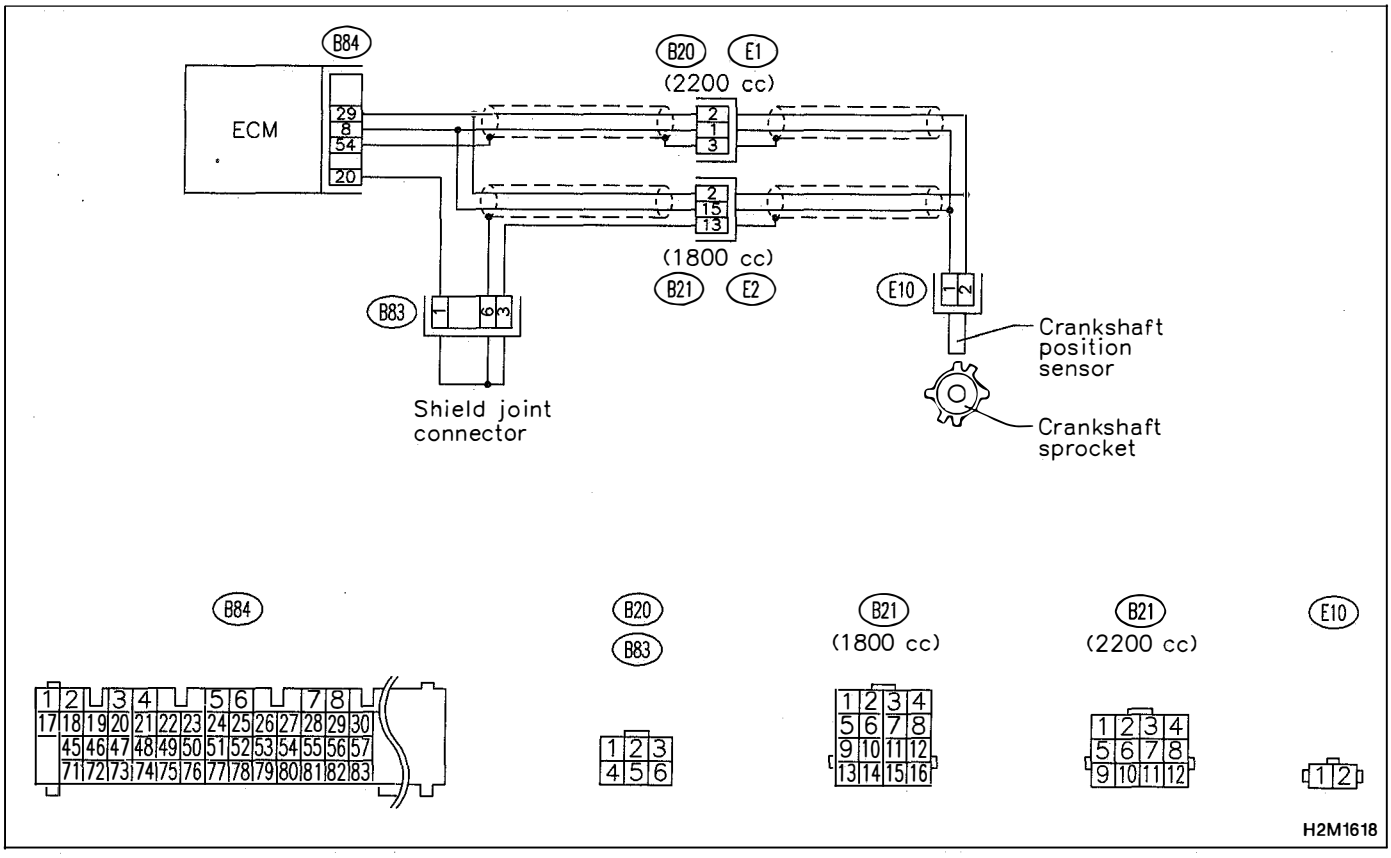
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

WIRING DIAGRAM:



H2M1618

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AL1	CHECK DTC P0335 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0335?***

YES : Inspect DTC P0335 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Replace crankshaft position sensor.

OBD	(FB1)
P0340	<CAM>

OBD0304

AM: DTC P0340 — CAMSHAFT POSITION SENSOR CIRCUIT MALFUNCTION —

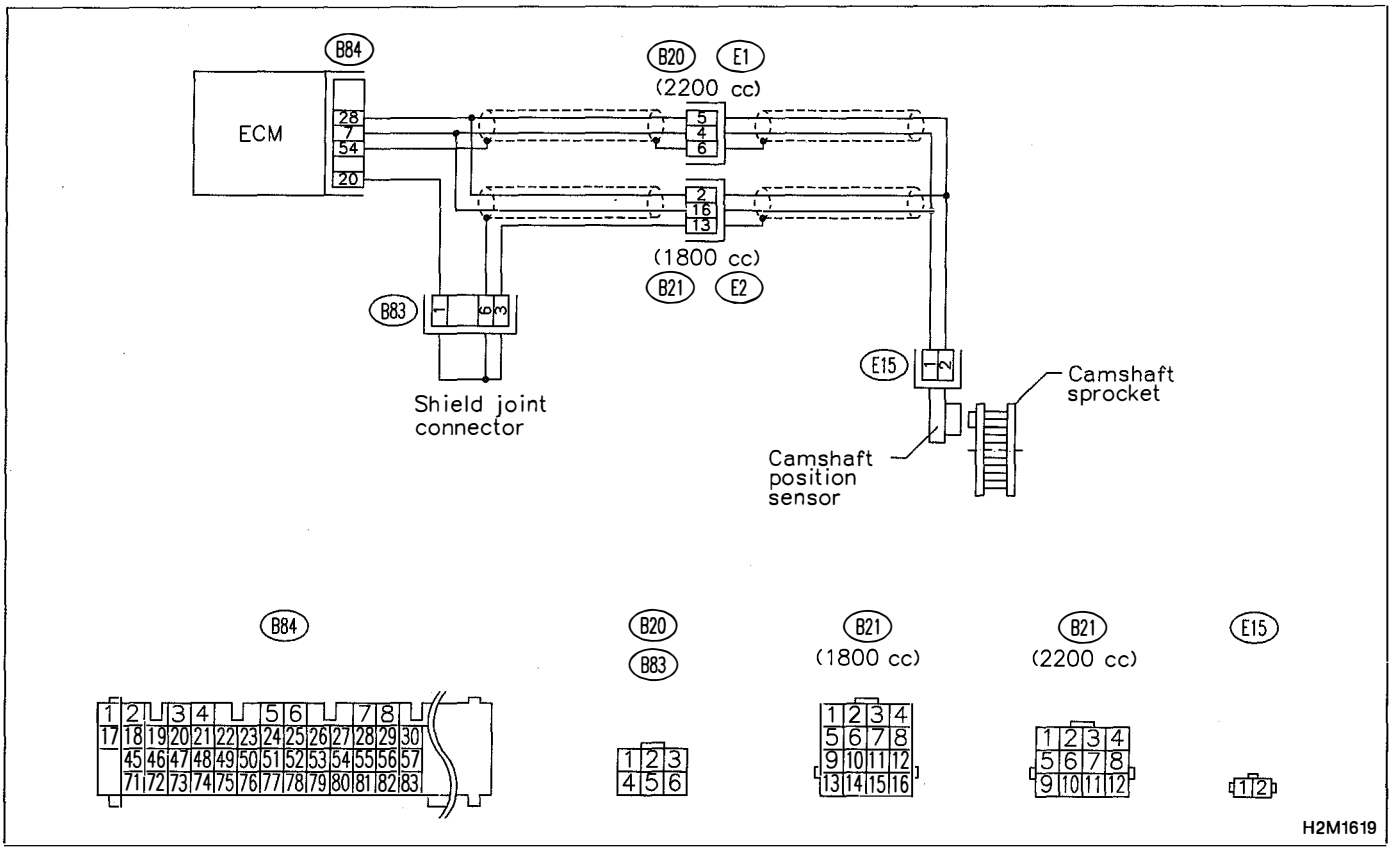
DTC DETECTING CONDITION:

- Immediately at fault recognition

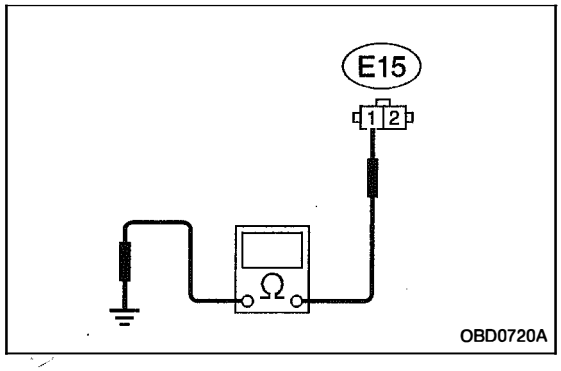
TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10AM1	CHECK HARNESS BETWEEN CAMSHAFT POSITION SENSOR AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from camshaft position sensor.
3) Measure resistance of harness between camshaft position sensor connector and engine ground.

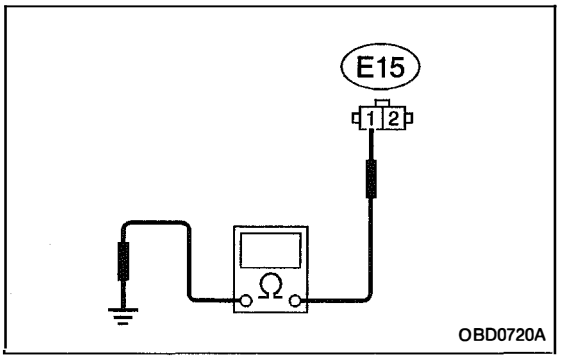
Connector & terminal
(E15) No. 1 — Engine ground:

CHECK ***: Is the resistance more than 100 kΩ?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

NO : Go to next step 4).



4) Measure resistance of harness between camshaft position sensor connector and engine ground.

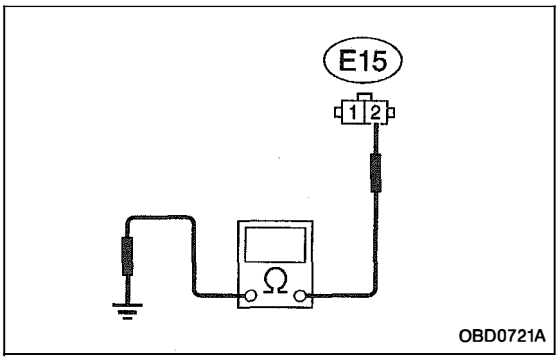
Connector & terminal
(E15) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between camshaft position sensor connector and ECM connector.

NOTE:
The harness between both connectors are shielded. Repair ground short circuit in harness together with shield.

NO : Go to next step 5).



5) Measure resistance of harness between camshaft position sensor connector and engine ground.

Connector & terminal
(E15) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to step **10AM2**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

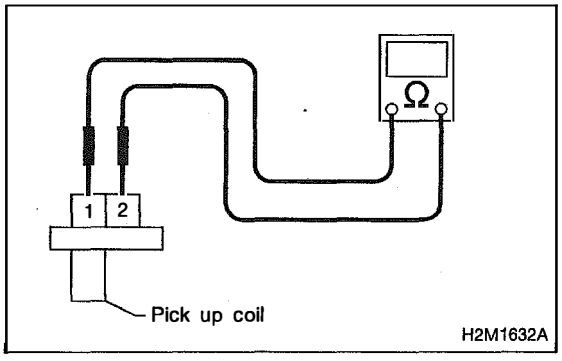
- Open circuit in harness between camshaft position sensor and ECM connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B20) [2200 cc]

10AM2	CHECK CAMSHAFT POSITION SENSOR.

CHECK ***: Is the camshaft position sensor installation bolt tightened securely?***

YES : Go to next step 1).

NO : Tighten camshaft position sensor installation bolt securely.



1) Remove camshaft position sensor.
2) Measure resistance between connector terminals of camshaft position sensor.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 1 and 4 kΩ?***

YES : Repair poor contact in camshaft position sensor connector.

NO : Replace camshaft position sensor.

MEMO:

OBD	(FB1)
P0341	<CAM_R>

B2M1092

AN: DTC P0341
— CAMSHAFT POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM —

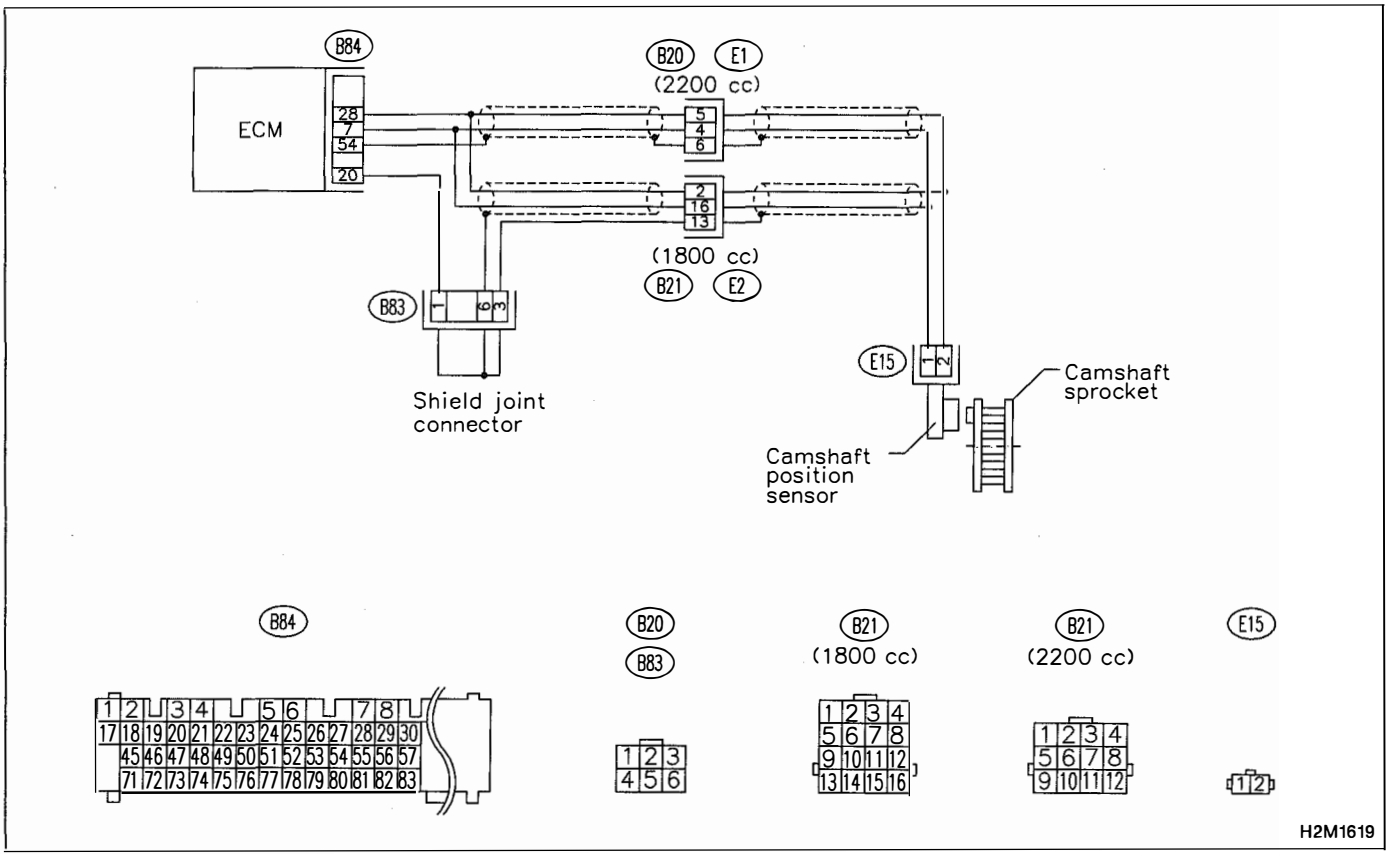
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Engine stalls.
- Failure of engine to start

WIRING DIAGRAM:



H2M1619

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AN1	CHECK DTC P0340 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0340?***

YES : Inspect DTC P0340 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Replace camshaft position sensor.

OBD	(FB1)
P0400	<EGR>

OBD0315

AO: DTC P0400 — EXHAUST GAS RECIRCULATION FLOW MALFUNCTION —

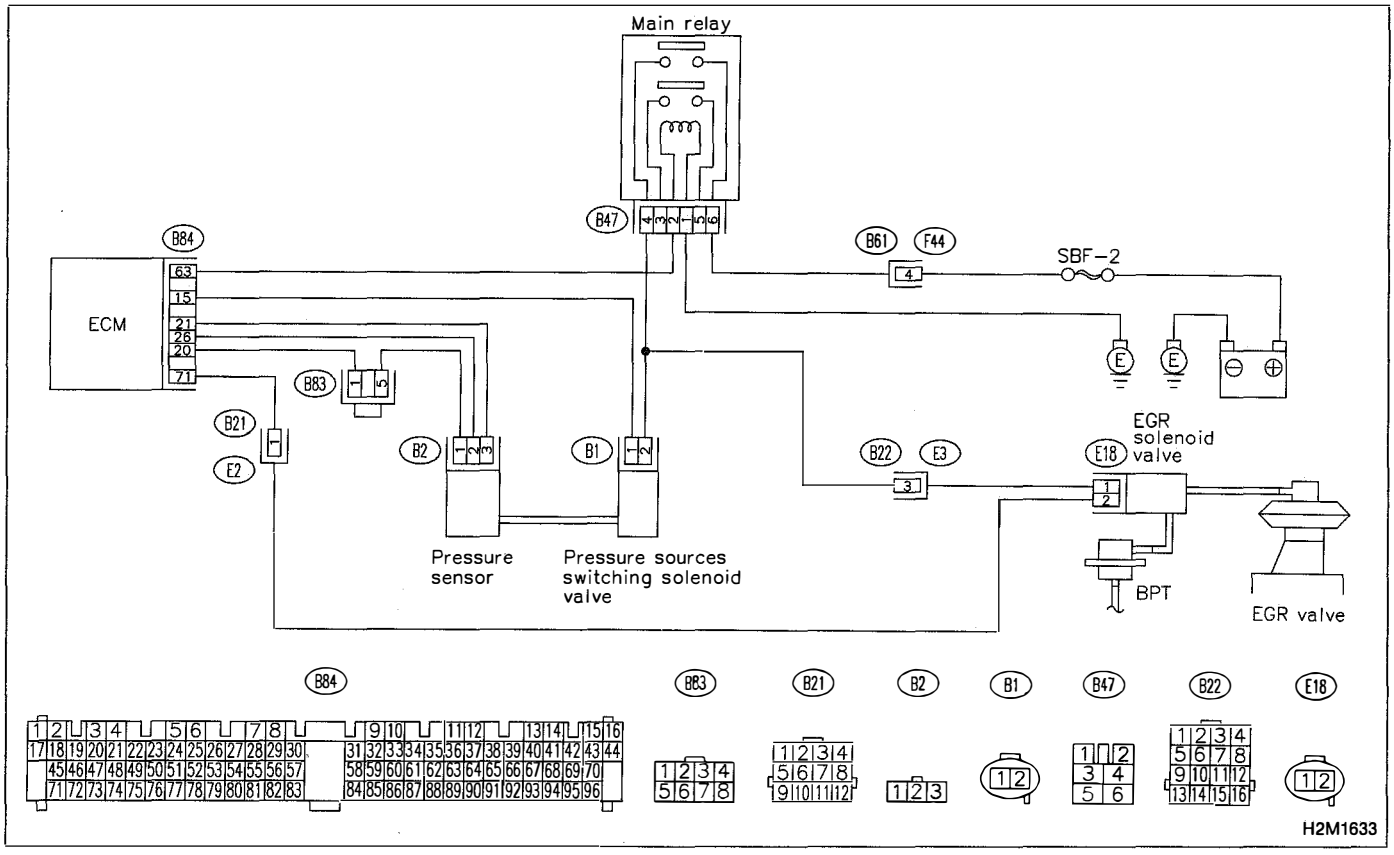
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed

WIRING DIAGRAM:



CAUTION:

Before confirmation of actual driving pattern, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AO1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type MT?***

YES : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

NO : Go to step **10AO2**.

10AO2	CHECK DTC P0106, P0107, P0108, P0403, P1102, P1122 OR P1421 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0403, P1102, P1122 or P1421?***

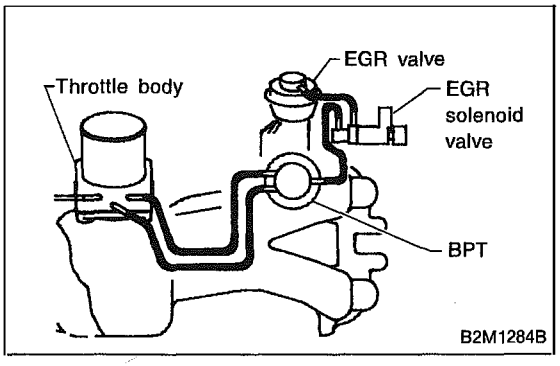
YES : ● Inspect DTC P0106, P0107, P0108, P0403, P1102, P1122 or P1421 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>
● Manually check that EGR valve diaphragm is not stuck.

WARNING:
Be careful when checking EGR valve, since it may be extremely hot.

NOTE:
In this case, it is not necessary to inspect DTC P0400.

After checking the above item, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

NO : Go to step **10AO3**.



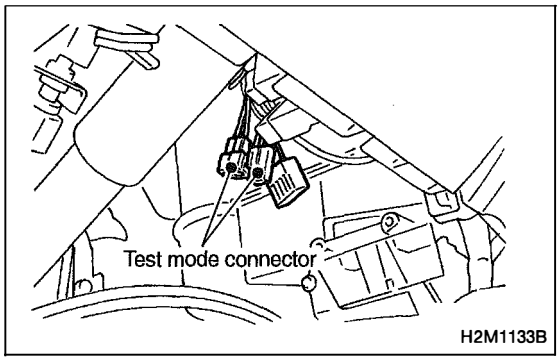
10AO3	CHECK VACUUM LINE.

CHECK : ***Is there a fault in vacuum line?***

NOTE:
Check the following items.
- Disconnection, leakage and clogging of the two vacuum hoses and pipes between throttle body and BPT
- Disconnection, leakage and clogging of the vacuum hose and pipe between EGR solenoid valve and BPT
- Disconnection, leakage and clogging of the vacuum hose between EGR solenoid valve and EGR valve
- Disconnection, leakage and clogging of BPT pressure transmitting hose

YES : Repair or replace hoses and pipes.
And after the checking and repairing, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

NO : Go to step **10AO4.**



10AO4	CHECK OPERATION OF EGR SYSTEM.

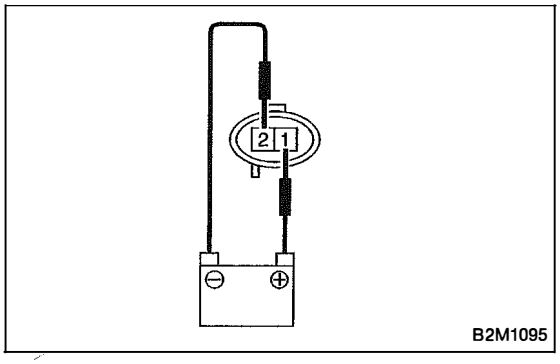
1) Turn ignition switch to OFF.
2) Connect the test mode connector.
3) Turn ignition switch to ON.

CHECK : ***Does EGR solenoid valve produce operating sound?***

NOTE:
EGR control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD05). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to next step 4).

NO : Replace EGR solenoid valve.



B2M1095

4) Turn ignition switch to OFF.
5) Disconnect connector from EGR solenoid valve.
6) Connect 12 V battery's ground ⊖ terminal to one terminal of the EGR solenoid valve. Then connect 12 V battery's ⊕ terminal to the other terminal of it.

CAUTION:
Do not use the 12 V battery installed in the vehicle, because the electrical system may be damaged.

7) Start the engine.

CHECK ***: Does EGR valve operate at a throttle valve opening of 5 to 10 degrees with visually check?***

YES : Possibly EGR valve malfunction may be due to freezing or clogging by foreign matter. At this point in time do not replace EGR valve, since it is not faulty. And after the checking, go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

NOTE:
If malfunction is detected again in the confirmation of actual driving pattern, EGR valve is faulty. Go to next step 8).

NO : Go to next step 8).

8) Turn ignition switch to OFF.

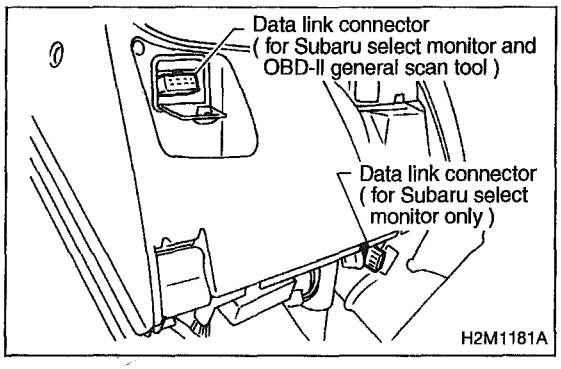
CHECK ***: Is there clogging in the gas outlets of intake manifold or cylinder head, checking by breathing into the outlets?***

YES : Repair or replace intake manifold or cylinder head. And go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

NO : Clean EGR valve. And go to **CONFIRMATION OF ACTUAL DRIVING PATTERN.**

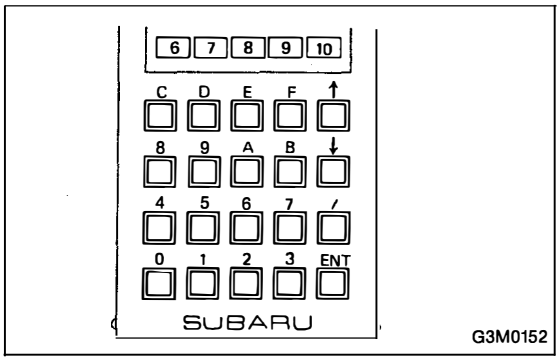
CAUTION:
Do not use solvent when cleaning EGR valve assembly, as it can damage diaphragm.

NOTE:
- Remove and blow away the exhaust deposits. Make sure the valve operates smoothly and the valve seat area is completely cleaned.
- Replace EGR valve as required.

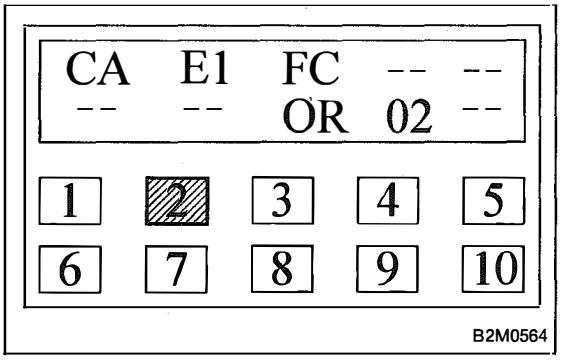


CONFIRMATION OF ACTUAL DRIVING PATTERN.

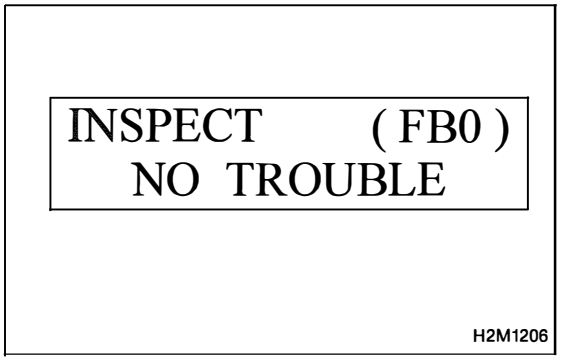
1) Conduct CLEAR MEMORY and INSPECTION MODES. <Ref. to 2-7 [T3D0] and [T3E0].>
2) Connect Subaru select monitor to its data link connector.
3) Start and warm-up the engine until the radiator fan makes one complete rotation. (All accessory switches are OFF.)
4) Turn Subaru select monitor switch to ON.



5) Designate mode using function key.
Function mode: FA4



6) Drive at 88±5 km/h (55±3 MPH) until the LED No. 2 comes on.
NOTE:
Keep the throttle valve opening at the same degree, since diagnosis will be interrupted when the opening varies.
Diagnosis starts in 190 seconds after starting engine and takes 4 seconds.
Put the gear to "D" range for the diagnosis.



7) Designate mode using function key.
Function mode: FB0
8) Confirm the "No trouble" indication on Subaru select monitor.

MEMO:

OBD	(FB1)
P0403	<EGRSOL>

OBD0323

AP: DTC P0403 — EXHAUST GAS RECIRCULATION CIRCUIT LOW INPUT —

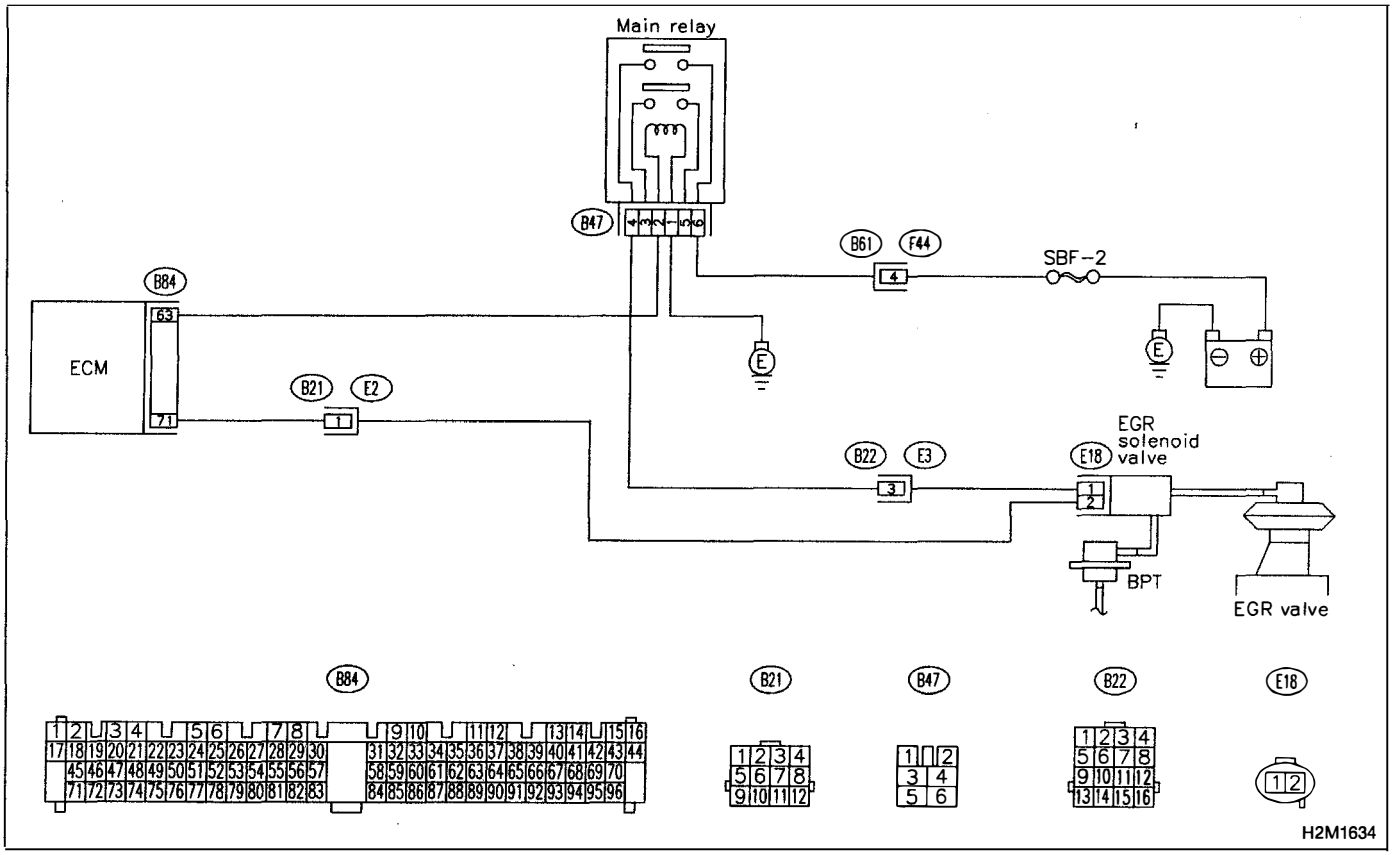
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed

WIRING DIAGRAM:



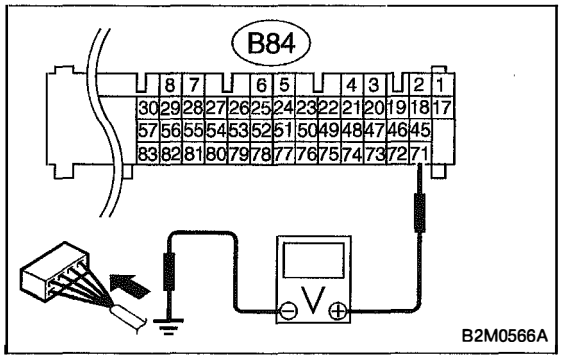
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AP1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type MT?***

YES : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

NO : Go to step **10AP2.**



10AP2	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 71 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V?***

YES : Go to **10AP3.**

NO : Go to step **10AP4.**

10AP3	CHECK POOR CONTACT.

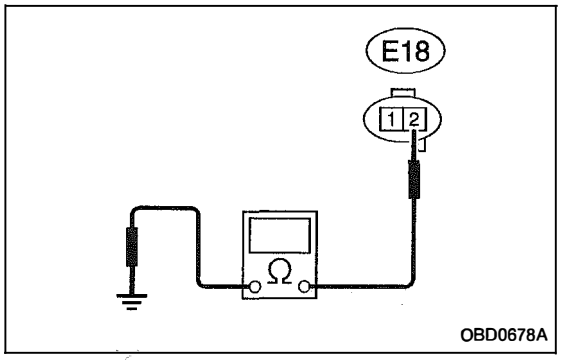
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in EGR solenoid valve connector
- Poor contact in ECM connector
- Poor contact in coupling connector (B21)



10AP4	CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

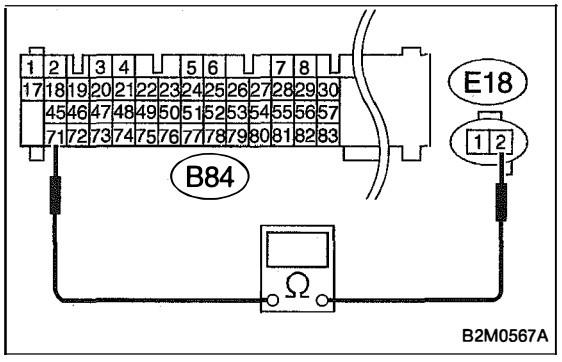
1) Turn ignition switch to OFF.
2) Disconnect connectors from EGR solenoid valve and ECM.
3) Measure resistance of harness between EGR solenoid valve connector and engine ground.

Connector & terminal
(E18) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and EGR solenoid valve connector.

NO : Go to next step 4).



4) Measure resistance of harness between ECM and EGR solenoid valve connector.

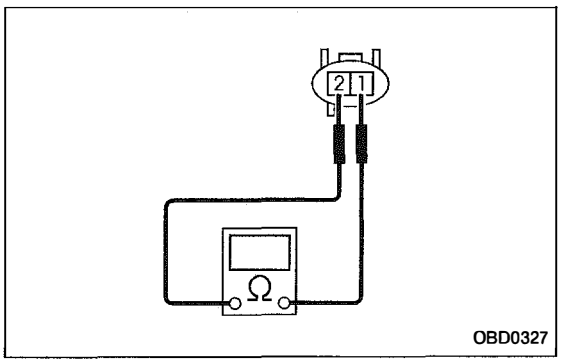
Connector & terminal
(B84) No. 71 — (E18) No. 2:

CHECK ***: Is the voltage less than 1 Ω?***

YES : Go to step **10AP5.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between EGR solenoid valve and ECM connector
- Poor contact in coupling connector (B21)
- Poor contact in EGR solenoid valve connector
- Poor contact in ECM connector



10AP5	CHECK EGR SOLENOID VALVE.

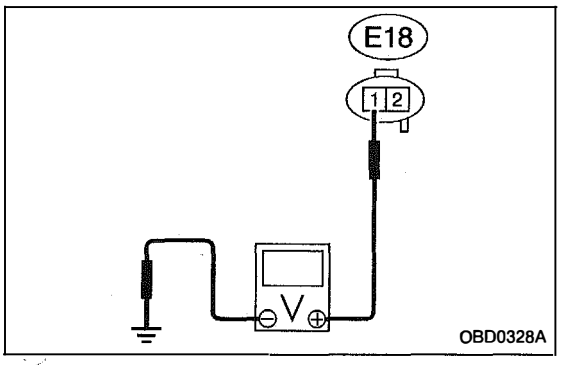
Measure resistance between EGR solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 10 and 100 Ω?***

YES : Go to step **10AP6.**

NO : Replace EGR solenoid valve.



10AP6	CHECK POWER SUPPLY TO EGR SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between EGR solenoid valve and engine ground.

Connector & terminal
(E18) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10AP7.**

NO : Repair open circuit in harness between main relay and EGR solenoid valve connector.

10AP7	CHECK POOR CONTACT.

Check poor contact in EGR solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in EGR solenoid valve connector?***

YES : Repair poor contact in EGR solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P0420	<CAT>

OBD0329

AQ: DTC P0420 — CATALYST SYSTEM EFFICIENCY BELOW THRESHOLD —

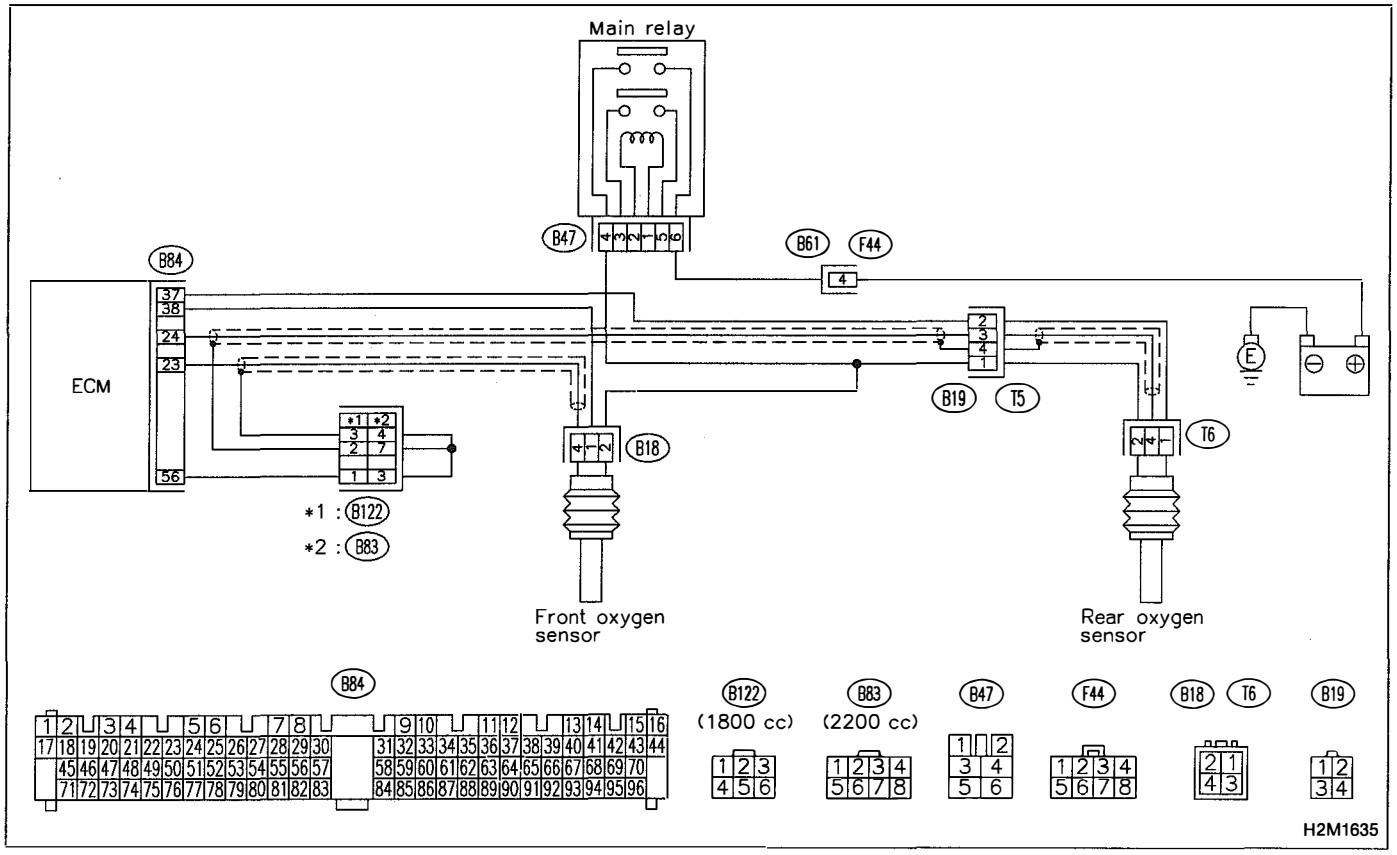
DTC DETECTING CONDITION:

- Immediately at fault recognition (2200 cc Federal spec. vehicles only)
- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine stalls.
- Idle mixture is out of specifications.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AQ1	CHECK ANY OTHER DTC P0130, P0133, P0135, P0136, P0139 AND P0141 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0130, P0133, P0135, P0136, P0139 and P0141?***

YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0420.

NO : Go to step **10AQ2**.

10AQ2	CHECK EXHAUST SYSTEM.

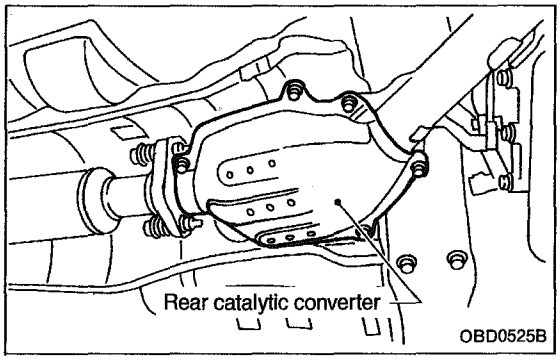
Check for gas leaks or air suction caused by loose or dislocated nuts and bolts, and open hole at exhaust pipes.

CHECK : ***Is there a fault in exhaust system?***

NOTE:
Check the following positions.
- Between cylinder head and front exhaust pipe
- Between front exhaust pipe and front catalytic converter
- Between front catalytic converter and rear catalytic converter

YES : Repair or replace exhaust system.

NO : Go to step **10AQ3**.



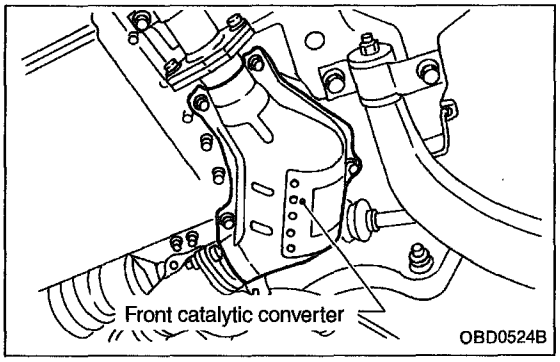
10AQ3	CHECK REAR CATALYTIC CONVERTER.

1) Separate rear catalytic converter from rear exhaust pipe.

CHECK : ***Is there damage at rear face of rear catalyst?***

YES : Replace front and rear catalytic converters.

NO : Go to next step 2).



2) Remove front catalytic converter.

CHECK : ***Is there damage at rear face or front face of front catalyst?***

YES : Replace front catalytic converter.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P0440	<EVAP>

H2M1365

AR: DTC P0440 — EVAPORATIVE EMISSION CONTROL SYSTEM MALFUNCTION —

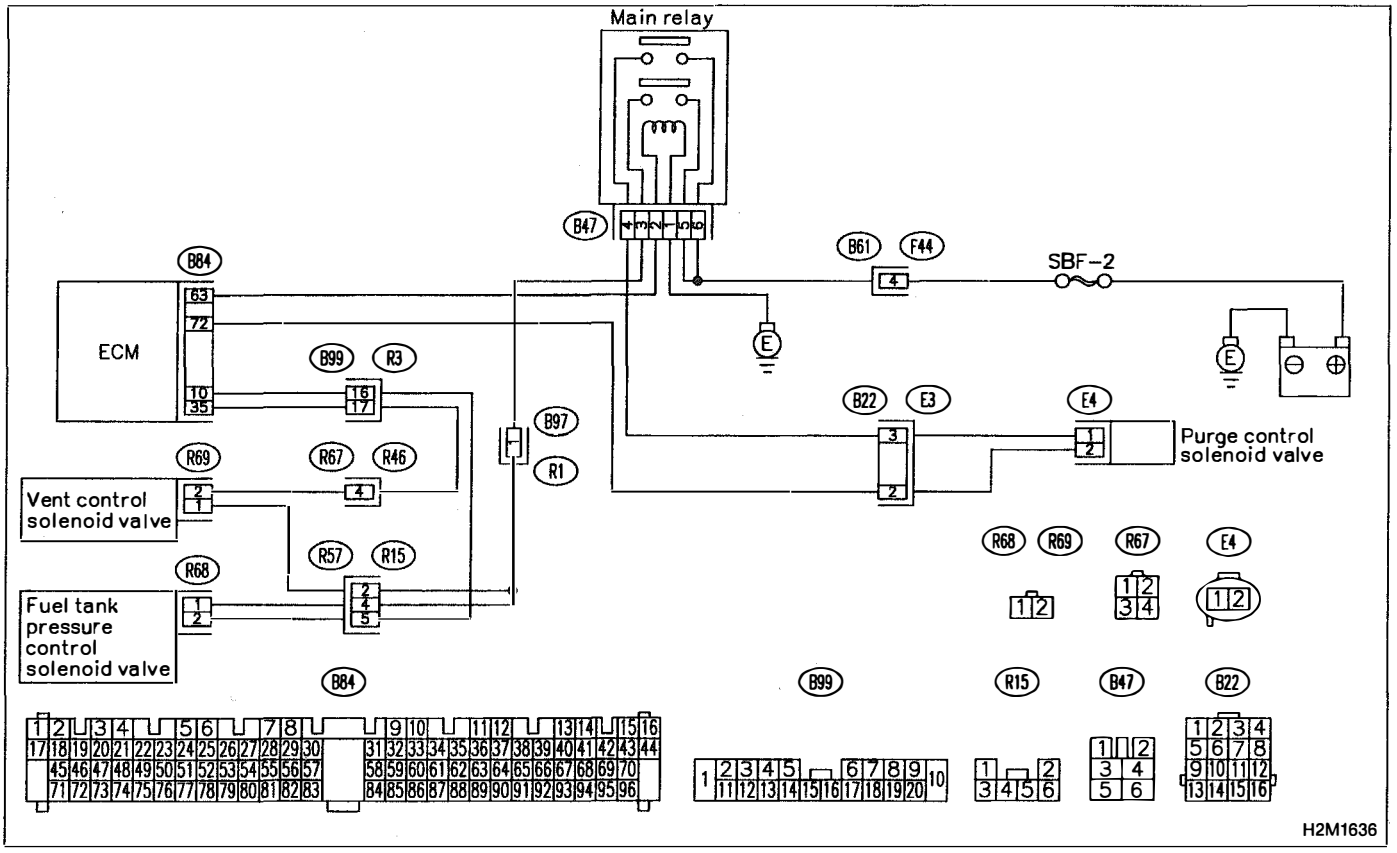
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Gasoline smell

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AR1	CHECK ANY OTHER DTC (BESIDES DTC P0440) ON DISPLAY.

CHECK : ***Is there any other DTC on display?***

YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step **10AR2**.

10AR2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is the fuel filler cap tightened securely?***

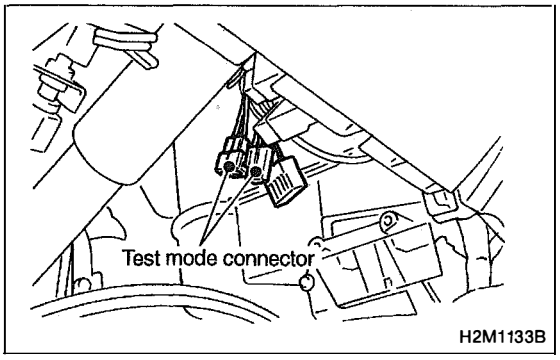
YES : Tighten fuel filler cap securely.

NO : Go to next CHECK .

CHECK : ***Is there any damage to the seal between fuel filler cap and fuel filler pipe?***

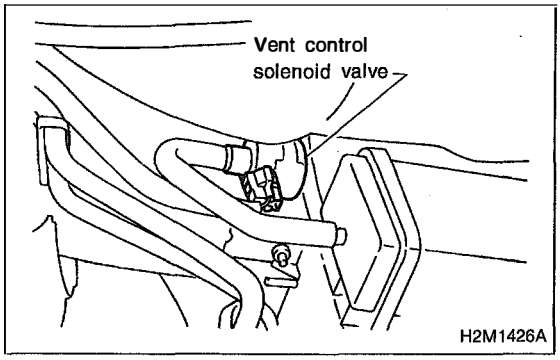
YES : Repair or replace fuel filler cap and fuel filler pipe.

NO : Go to step **10AR3**.



10AR3	CHECK VENT CONTROL SOLENOID VALVE.

1) Connect test mode connector.
2) Turn ignition switch to ON.

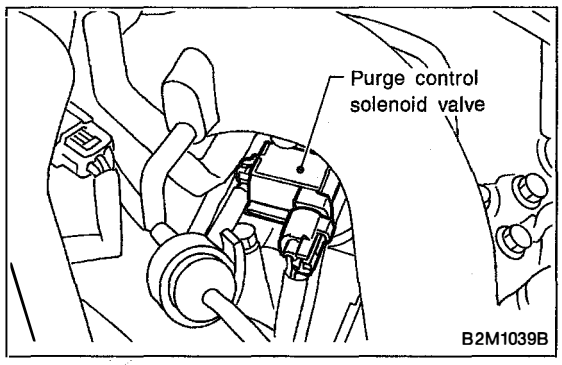


CHECK : ***Does vent control solenoid valve produce operating sound?***

NOTE:
Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR4**.

NO : Replace vent control solenoid valve.



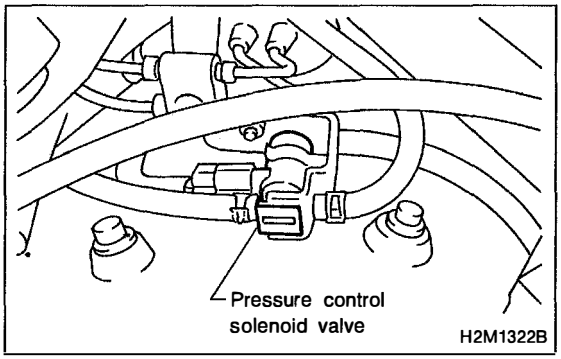
10AR4	CHECK PURGE CONTROL SOLENOID VALVE.

CHECK : ***Does purge control solenoid valve produce operating sound?***

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR5**.

NO : Replace purge control solenoid valve.



10AR5	CHECK PRESSURE CONTROL SOLENOID VALVE.

CHECK : ***Does pressure control solenoid valve produce operating sound?***

NOTE:
Pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10AR6**.

NO : Replace pressure control solenoid valve.

10AR6	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK ***: Does fuel leak in fuel line?***

YES : Repair or replace fuel line.

NO : Go to next CHECK .

CHECK ***: Is there any damage at canister?***

YES : Repair or replace canister.

NO : Go to next CHECK .

CHECK ***: Is there any damage at fuel tank?***

YES : Repair or replace fuel tank.

NO : Go to next CHECK .

CHECK ***: Are there holes, cracks, clogging or disconnections of hoses or pipes in evaporative emission control system?***

YES : Repair or replace hoses or pipes.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P0441	<CPC_F>

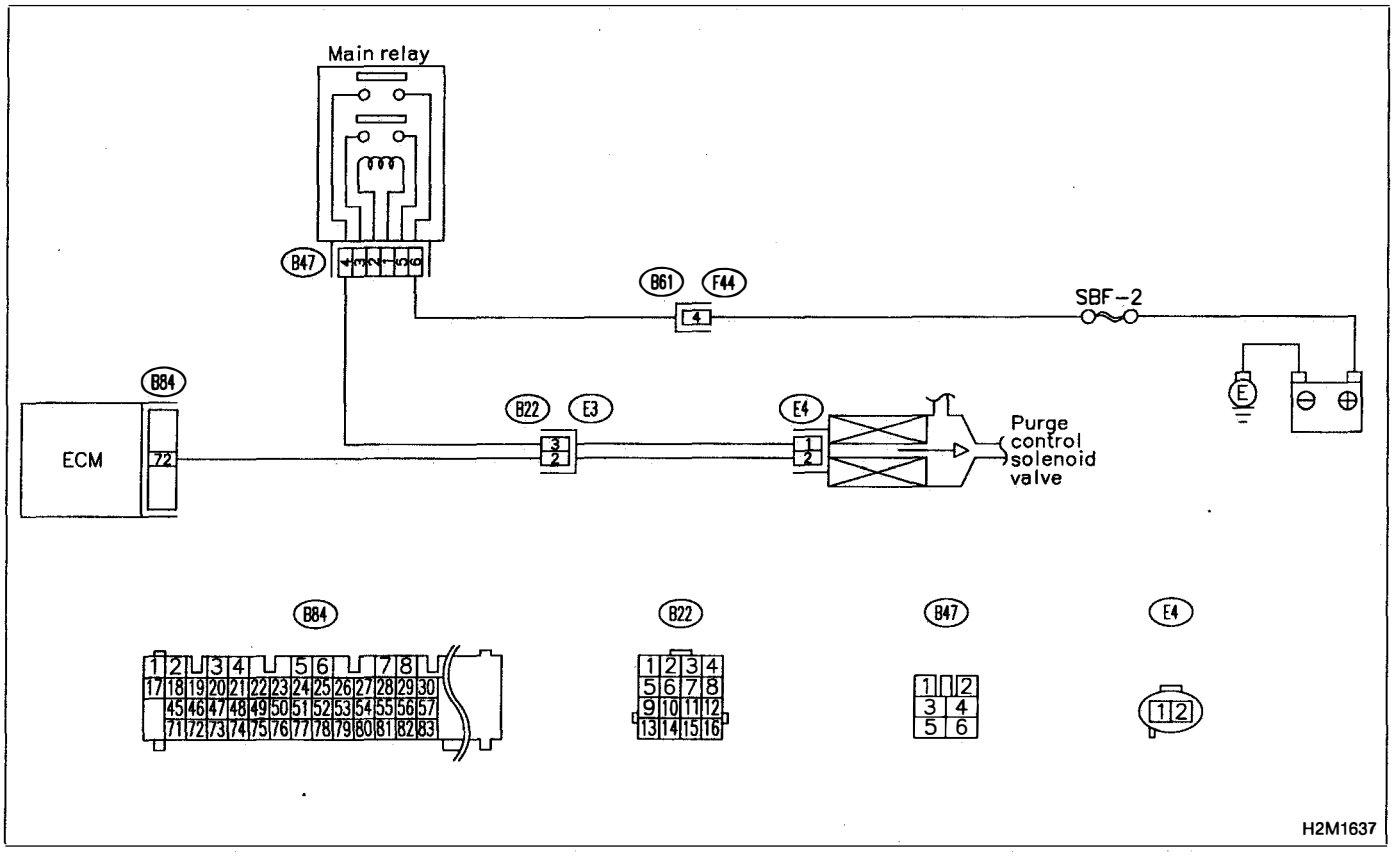
OBD0331

AS: DTC P0441
— EVAPORATIVE EMISSION CONTROL SYSTEM INCORRECT PURGE FLOW —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

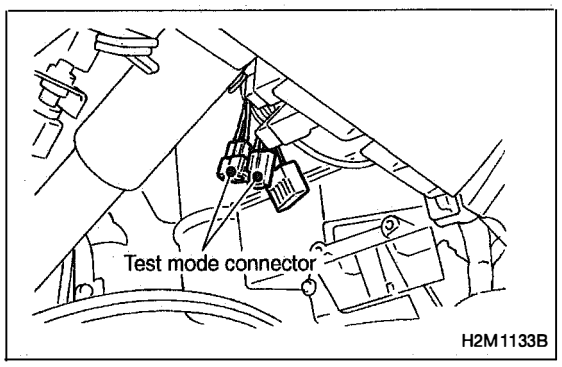
10AS1	CHECK DTC P0106, P0107, P0108, P0443, P1102, P1122 OR P1422 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422?***

YES : Inspect the relevant DTC P0106, P0107, P0108, P0443, P1102, P1122 or P1422 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0441.

NO : Go to step **10AS2.**



10AS2	CHECK PURGE CONTROL SOLENOID VALVE OPERATION.

1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
3) Turn ignition switch to ON.

CHECK : ***Does purge control solenoid valve produce operating sound at about 0.3 Hz?***

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to next step 4).

NO : Replace purge control solenoid valve.

4) Disconnect canister purge hose from canister.

CHECK : ***Does pulsation occur by blowing through the canister purge hose?***

YES : Repair or replace evaporation line.

NOTE:
In this case, repair the following:
- Loose connections in evaporation line
- Cracks in evaporation line
- Clogging in evaporation line

NO : Replace purge control solenoid valve.

OBD	(FB1)
P0443	<CPC>

OBD0335

AT: DTC P0443 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT LOW INPUT —

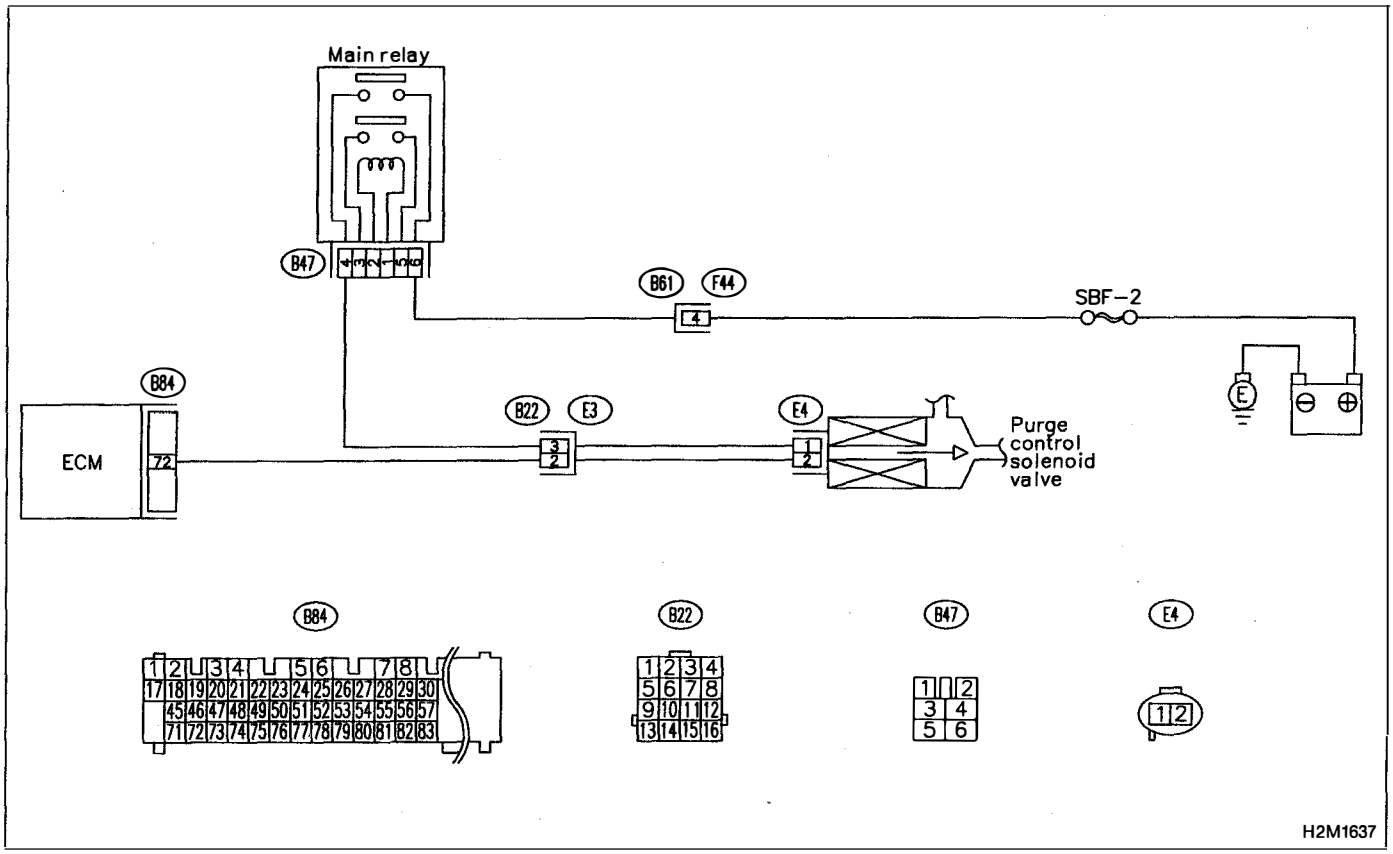
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

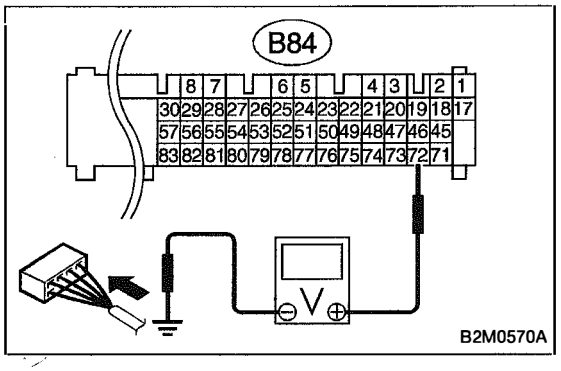
TROUBLE SYMPTOM:

- Erroneous idling

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10AT1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

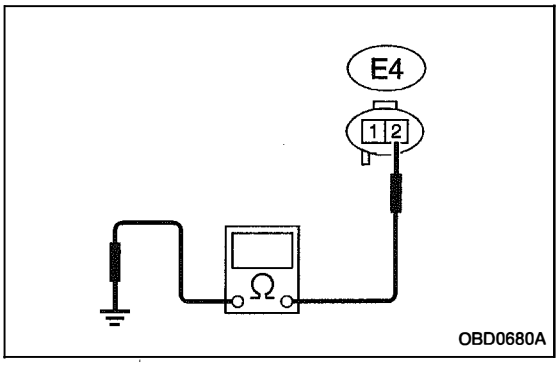
Connector & terminal
(B84) No. 72 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

NO : Go to step **10AT2**.



10AT2	CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

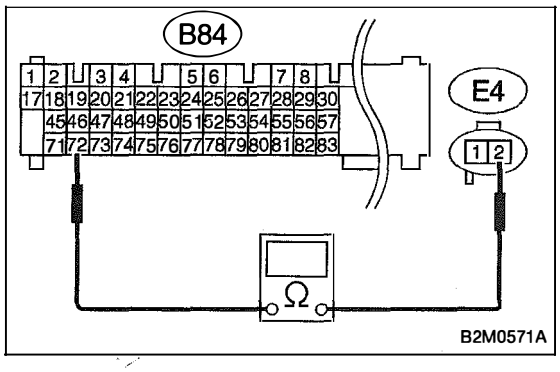
1) Turn ignition switch to OFF.
2) Disconnect connectors from purge control solenoid valve and ECM.
3) Measure resistance of harness between purge control solenoid valve connector and engine ground.

Connector & terminal
(E4) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and purge control solenoid valve connector.

NO : Go to next step 4).



4) Measure resistance of harness between ECM and purge control solenoid valve of harness connector.

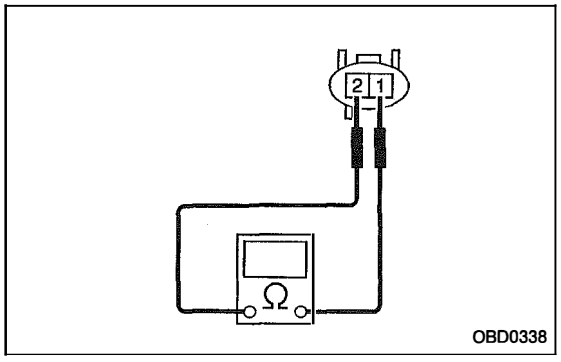
Connector & terminal
(B84) No. 72 — (E4) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10AT3**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and purge control solenoid valve connector
- Poor contact in coupling connector (B22)



10AT3	CHECK PURGE CONTROL SOLENOID VALVE.

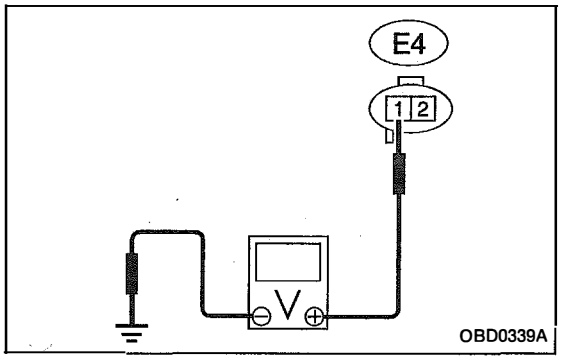
1) Remove purge control solenoid valve.
2) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 10 and 100 Ω?***

YES : Go to step **10AT4**.

NO : Replace purge control solenoid valve.



10AT4	CHECK POWER SUPPLY TO PURGE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between purge control solenoid valve and engine ground.

Connector & terminal
(E4) No. 1 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10AT5**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and purge control solenoid valve connector
- Poor contact in coupling connector (B22)
- Poor contact in main relay connector

10AT5	CHECK POOR CONTACT.

Check poor contact in purge control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in purge control solenoid valve connector?***

YES : Repair poor contact in purge control solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)

P0446<VCMSOL_LO>

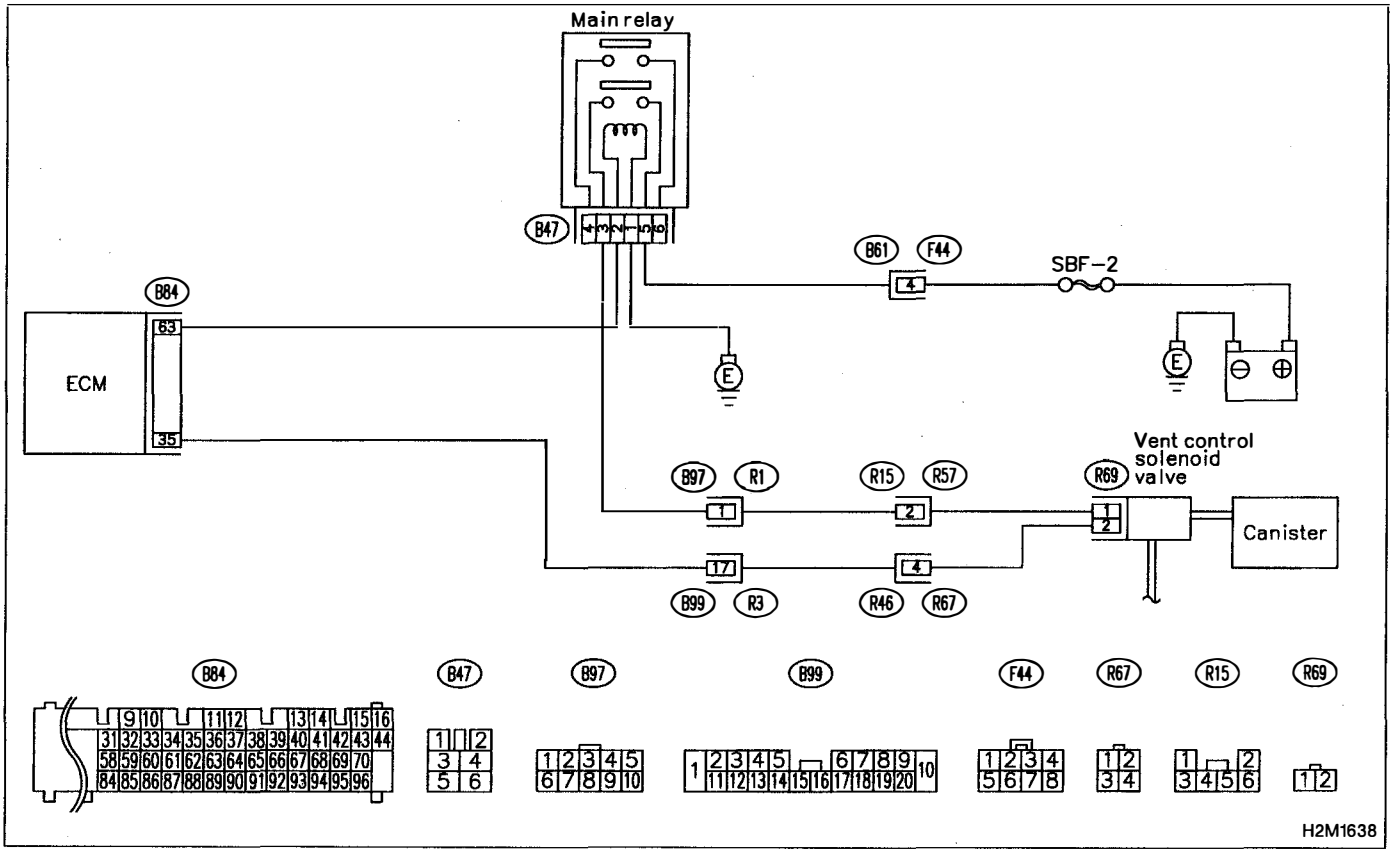
B2M1098

AU: DTC P0446
— EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL LOW INPUT —

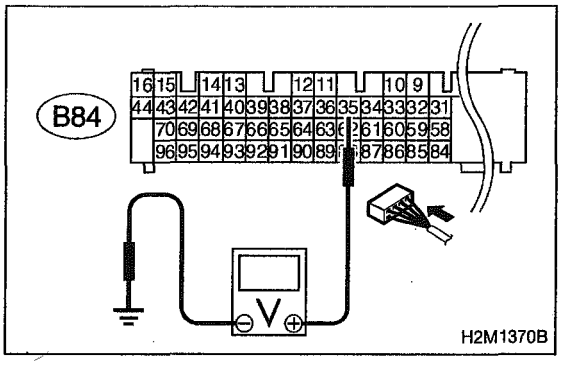
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10AU1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 35 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10AU2.**

NO : Go to step **10AU3.**

10AU2	CHECK POOR CONTACT.

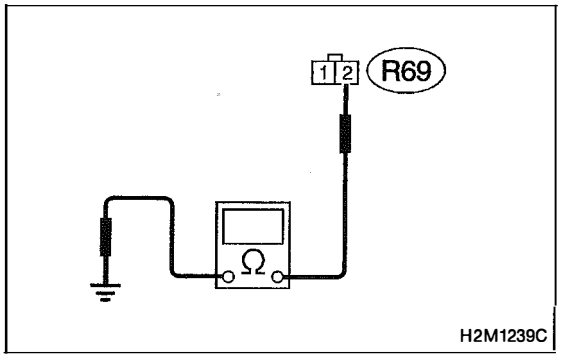
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. (However, the possibility of poor contact still remains.)

NOTE:
In this case, repair the following:
- Poor contact in vent control solenoid valve connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B97, B99, R15 and R67)



10AU3	CHECK HARNESS BETWEEN VENT CONTROL SOLENOID VALVE AND ECM CONNECTOR.

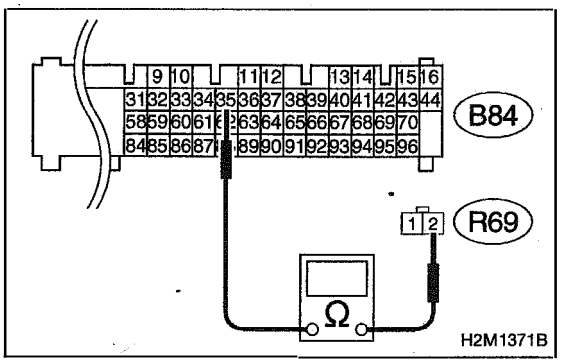
1) Turn ignition switch to OFF.
2) Disconnect connectors from vent control solenoid valve and ECM.
3) Measure resistance of harness between vent control solenoid valve connector and chassis ground.

Connector & terminal
(R69) No. 2 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and vent control solenoid valve connector.

NO : Go to next step 4).



4) Measure resistance of harness between ECM and vent control solenoid valve connector.

Connector & terminal
(B84) No. 35 — (R69) No. 2:

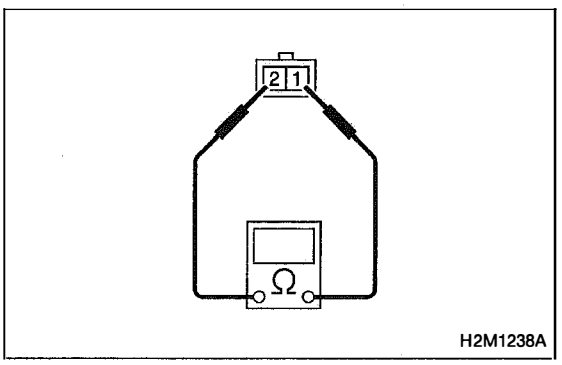
CHECK ***: Is the voltage less than 1 Ω?***

YES : Go to step **10AU4**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between ECM and vent control solenoid valve connector
- Poor contact in coupling connectors (B99 and R67)



10AU4	CHECK VENT CONTROL SOLENOID VALVE.

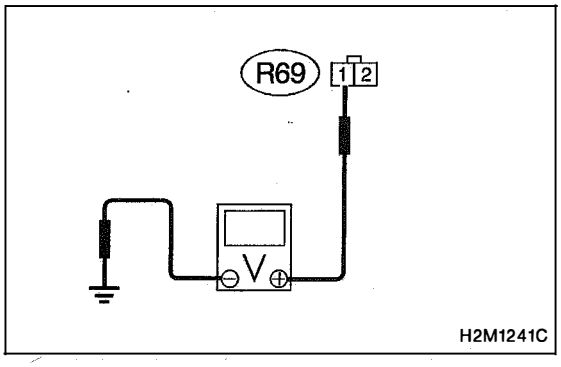
Measure resistance between vent control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 10 and 100 Ω?***

YES : Go to step **10AU5**.

NO : Replace vent control solenoid valve.



10AU5	CHECK POWER SUPPLY TO VENT CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between vent control solenoid valve and chassis ground.

Connector & terminal
(R69) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10AU6**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and vent control solenoid valve
- Poor contact in coupling connectors (B97 and R15)
- Poor contact in main relay connector

10AU6	CHECK POOR CONTACT.

Check poor contact in vent control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in vent control solenoid valve connector?***

YES : Repair poor contact in vent control solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)

P0451 <TNKP_F>

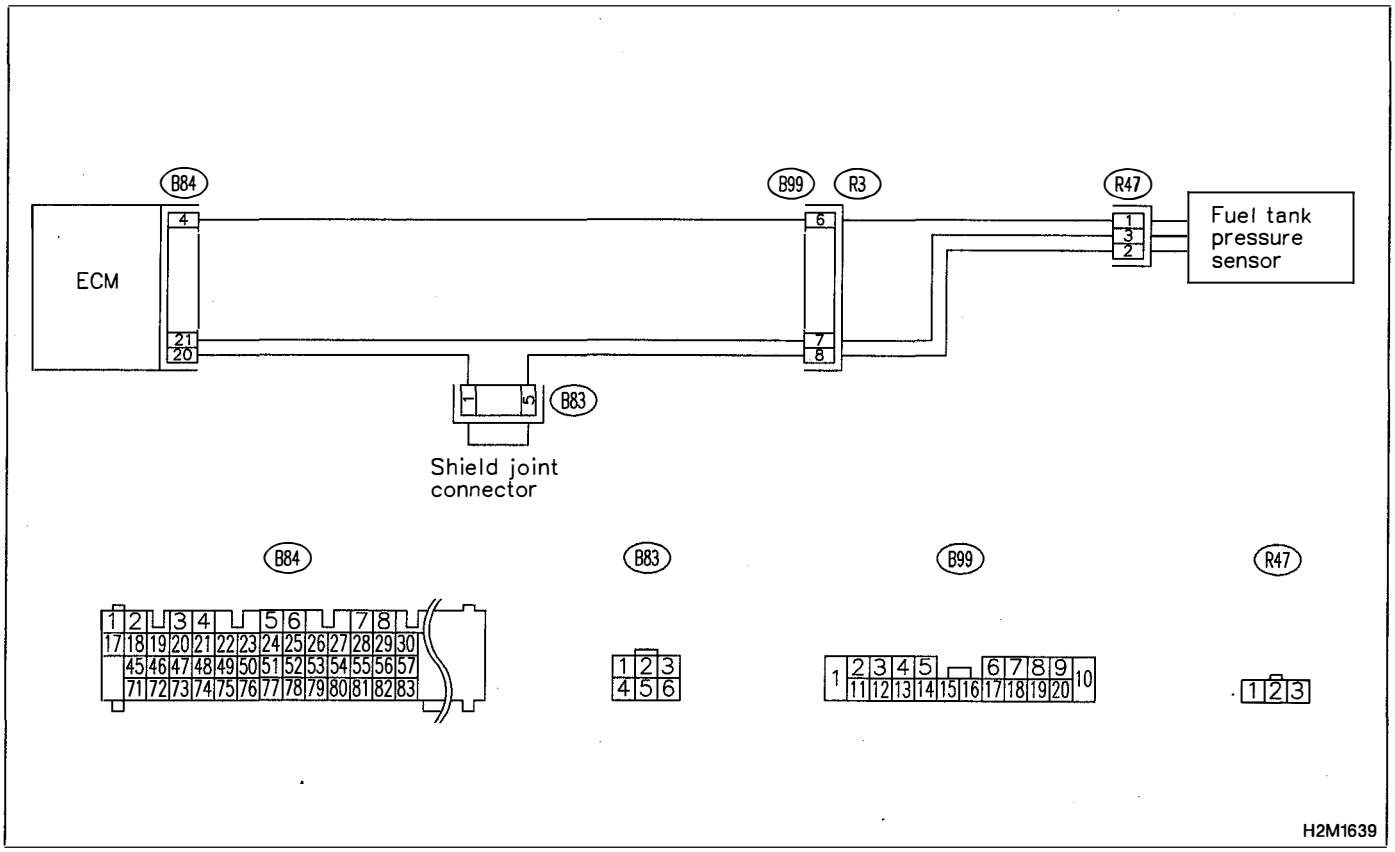
H2M1377

AV: DTC P0451 — EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR RANGE/PERFORMANCE PROBLEM —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1639

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AV1	CHECK PRESSURE/VACUUM LINE.

CHECK : ***Is there a fault in pressure/vacuum line?***

NOTE:

Check the following items.

- Disconnection, leakage and clogging of the vacuum hoses and pipes between fuel tank pressure sensor and fuel tank
- Disconnection, leakage and clogging of air ventilation hoses and pipes between fuel filler pipe and fuel tank

YES : Repair or replace hoses and pipes.

NO : Replace fuel tank pressure sensor.

OBD (FB1)

P0452 <TNKP_LOW>

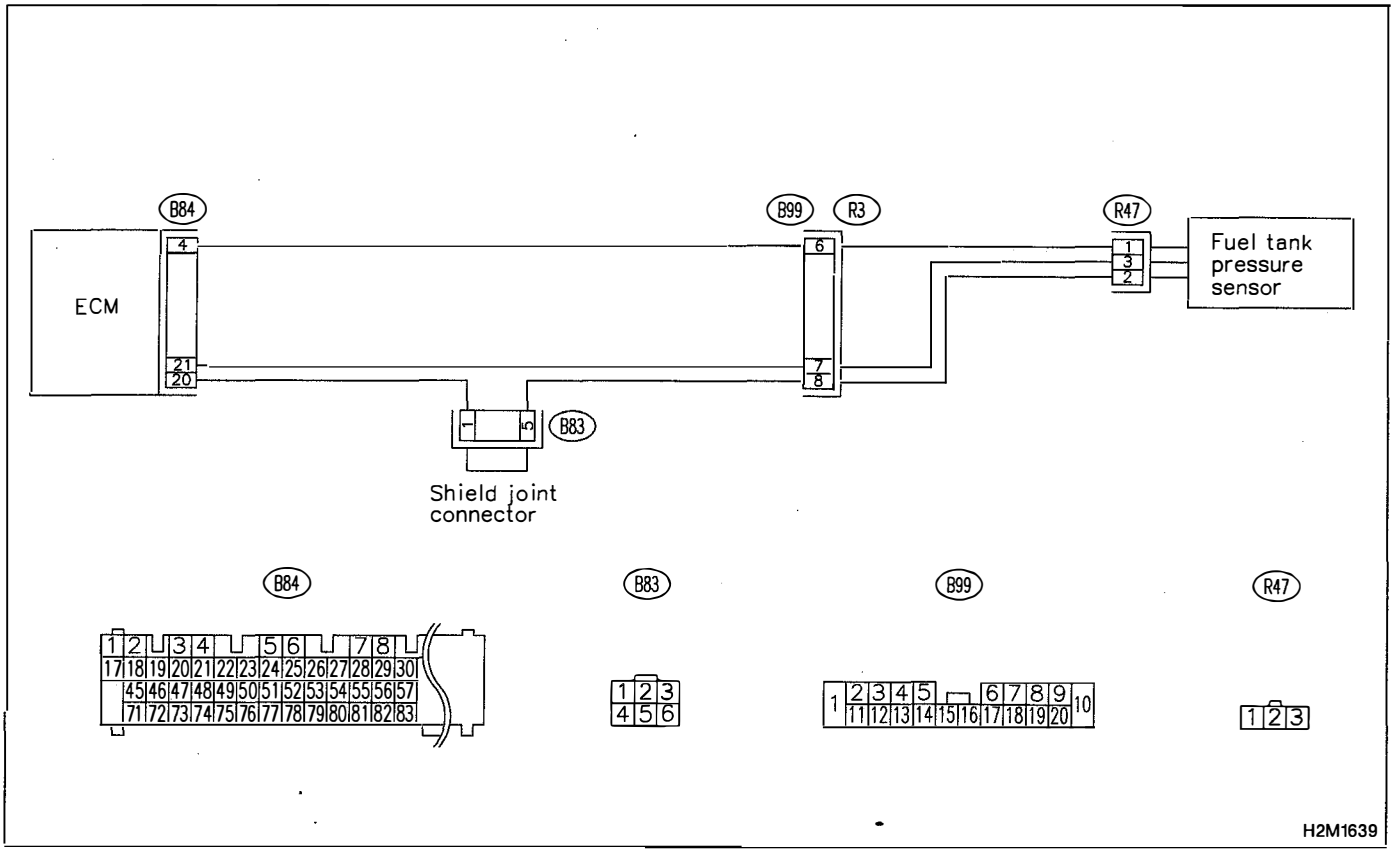
B2M1099

AW: DTC P0452
— EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR LOW INPUT —

DTC DETECTING CONDITION:

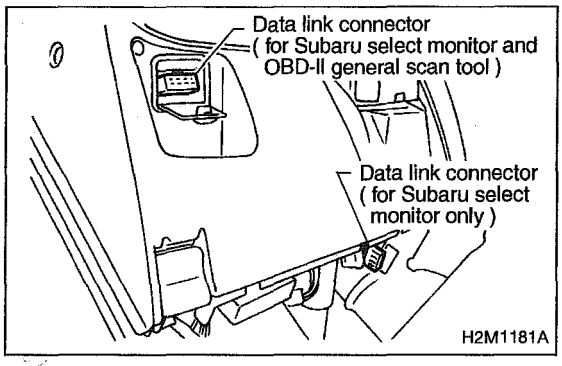
- Immediately at fault recognition

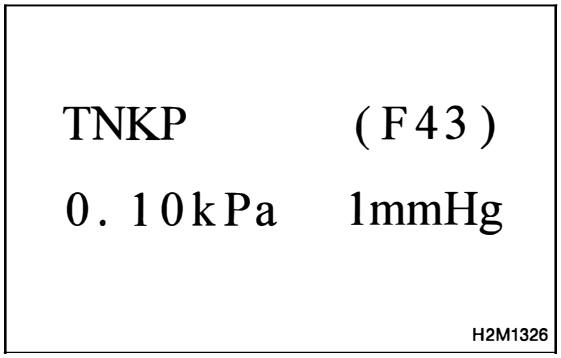
WIRING DIAGRAM:



H2M1639

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10AW1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read the data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

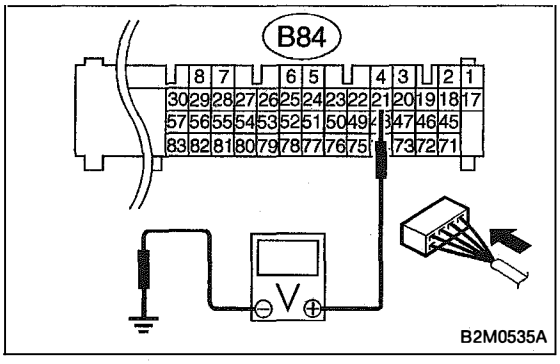
CHECK ***: Is the value less than –2.8 kPa in function mode F43?***

YES : Go to step **10AW2.**

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10AW2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

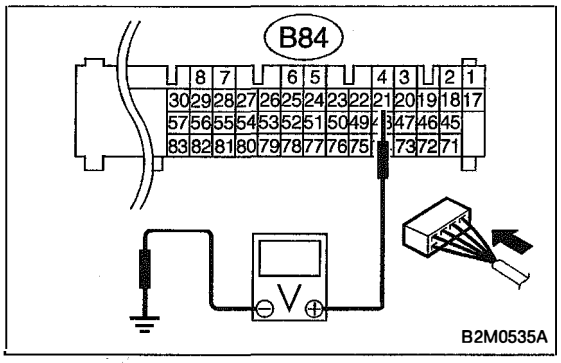
1) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to step **10AW3.**

NO : Go to next step 2).



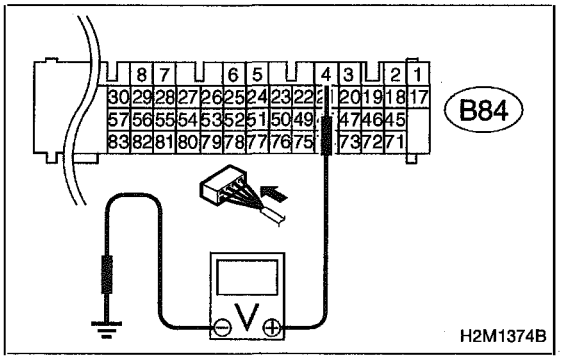
2) Measure voltage between ECM connector and chassis ground.

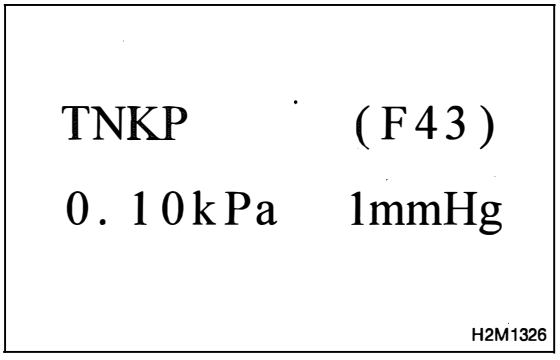
CHECK : ***Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.





10AW3	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

1) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 4 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 0.2 V?***

YES : Go to step **10AW4**.

NO : Go to next step 2).

2) Read data on Subaru Select Monitor.

- Subaru Select Monitor

Designate mode using function key.

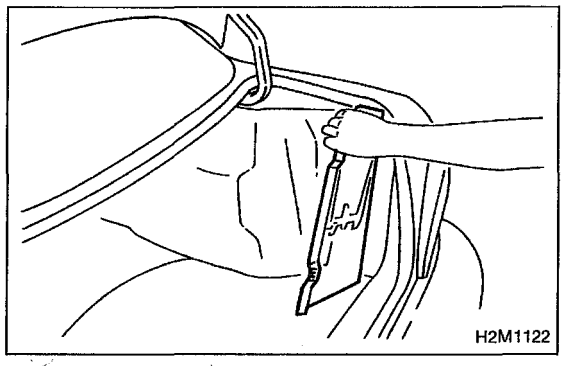
Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

CHECK : ***Does the value change more than –2.8 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

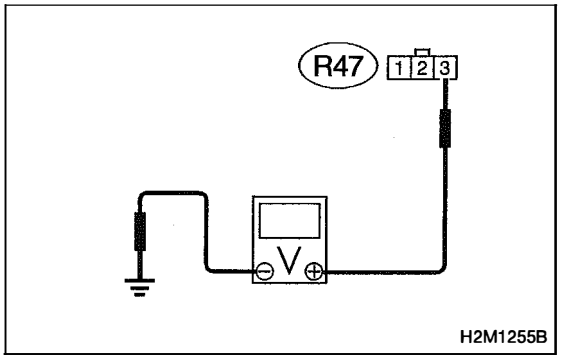
YES : Repair poor contact in ECM connector.

NO : Go to step **10AW4**.



10AW4	**CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.**

1) Turn ignition switch to OFF.
2) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).



3) Disconnect connector from fuel tank pressure sensor.
4) Turn ignition switch to ON.
5) Measure voltage between fuel tank pressure sensor connector and chassis ground.

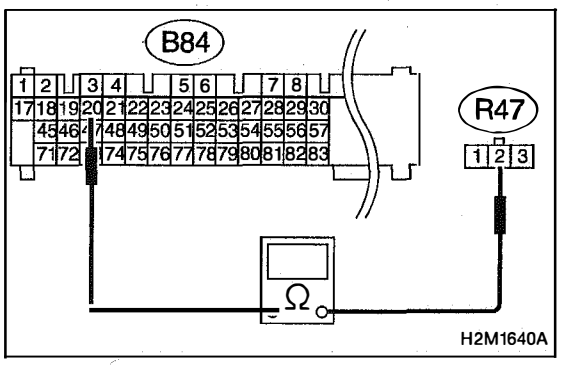
Connector & terminal
(R47) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 6).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connectors (B83 and B99)



6) Turn ignition switch to OFF.
7) Disconnect connector from ECM.
8) Measure resistance of harness between ECM and pressure sensor connector.

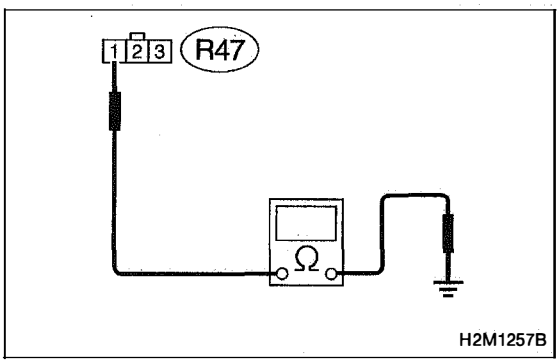
Connector & terminal
(B84) No. 20 — (R47) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 9).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connectors (B83 and B99)



9) Measure resistance of harness between fuel tank pressure sensor connector and chassis ground.

Connector & terminal
(R47) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 500 kΩ?***

YES : Go to step **10AW5**.

NO : Repair ground short circuit in harness between ECM and fuel tank pressure sensor connector.

10AW5	CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in fuel tank pressure sensor connector?***

YES : Repair poor contact in fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor.

MEMO:

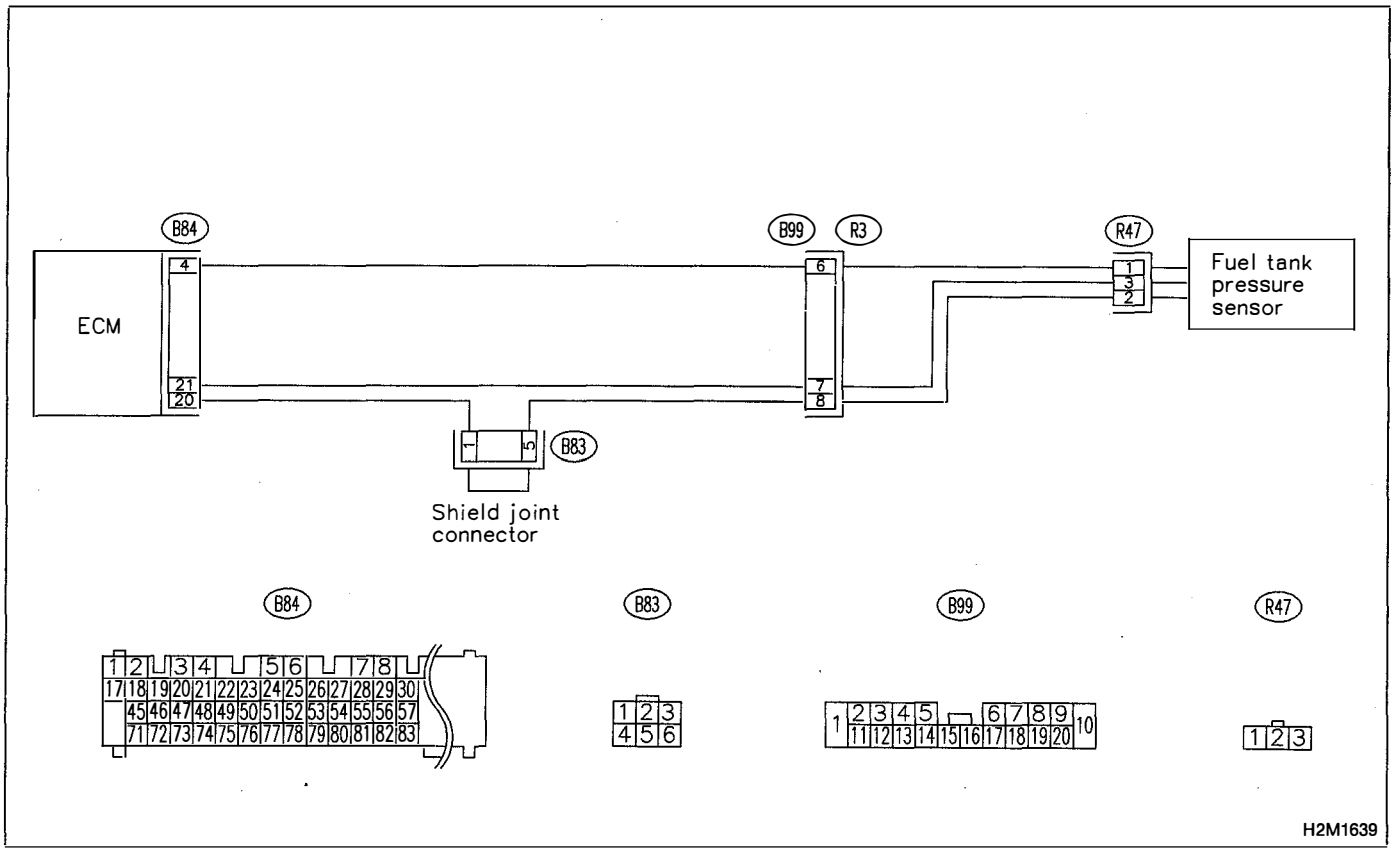
OBD (FB1)
P0453 <TNKP_HI>
B2M1100

AX: DTC P0453
— EVAPORATIVE EMISSION CONTROL SYSTEM PRESSURE SENSOR HIGH INPUT —

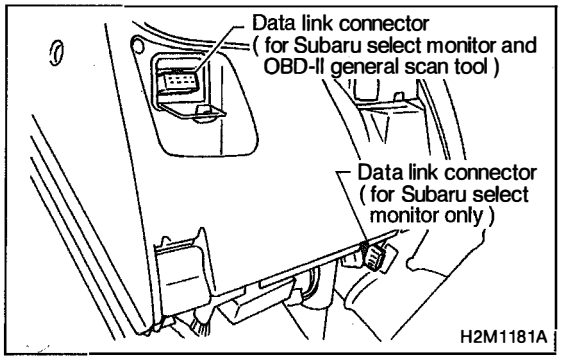
DTC DETECTING CONDITION:

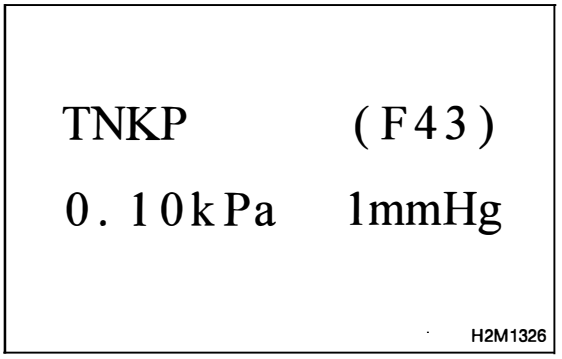
- Immediately at fault recognition

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10AX1	CONNECT SUBARU SELECT MONITOR OR THE OBD-II GENERAL SCAN TOOL, AND READ DATA.

1) Turn ignition switch to OFF.
2) Remove fuel filler cap.
3) Install fuel filler cap.
4) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
5) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
6) Read the data on Subaru Select Monitor or the OBD-II general scan tool.
● Subaru Select Monitor
Designate mode using function key.

Function mode: F43

● F43: Display shows pressure signal value sent from fuel tank pressure sensor.

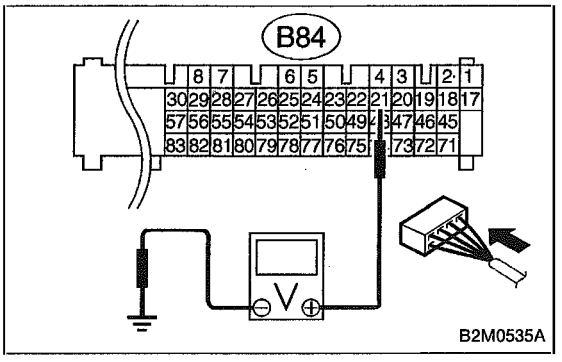
CHECK ***: Is the value more than 2.8 kPa in function mode F43?***

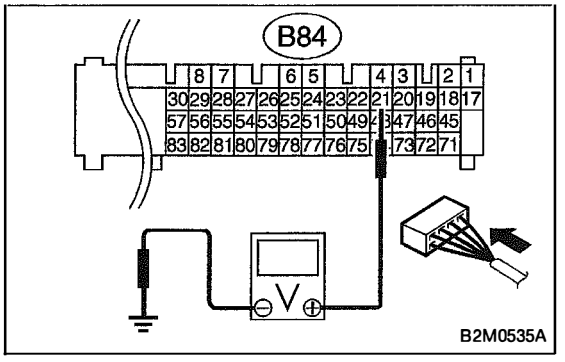
YES : Go to step **10AX6**.

NO : Go to step **10AX2**.

● OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.





10AX2	CHECK POWER SUPPLY TO FUEL TANK PRESSURE SENSOR.

1) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 21 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to step **10AX3**.

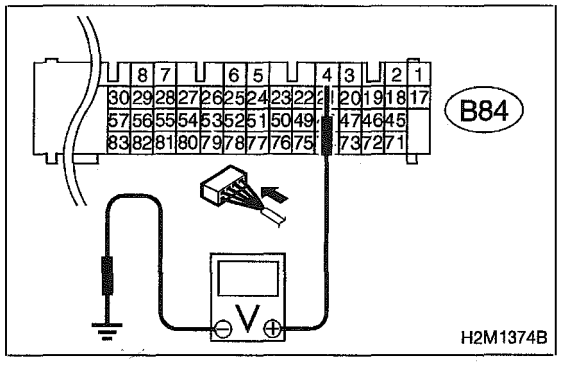
NO : Go to next step 2).

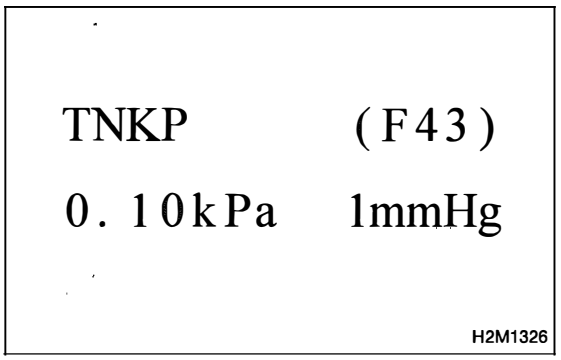
2) Measure voltage between ECM connector and chassis ground.

CHECK ***: Does the voltage change more than 4.5 V by shaking harness and connector of ECM while monitoring the value with voltage meter?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.





10AX3	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

1) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 0.2 V?***

YES : Go to step **10AX4**.

NO : Go to next step 2).

2) Read data on Subaru Select Monitor.
- Subaru Select Monitor

Designate mode using function key.

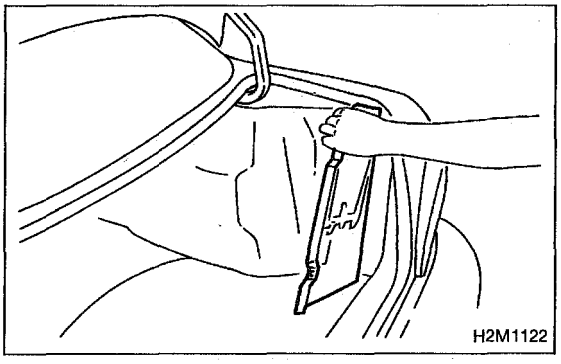
Function mode: F43

- F43: Display shows pressure signal value sent from fuel tank pressure sensor.

CHECK ***: Does the value change more than –2.8 kPa by shaking harness and connector of ECM while monitoring the value with Subaru select monitor?***

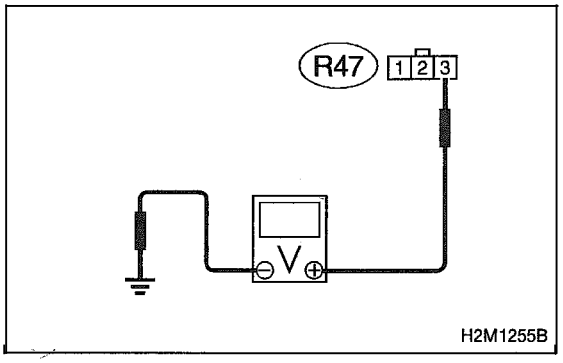
YES : Repair poor contact in ECM connector.

NO : Go to step **10AX4**.



10AX4	CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF.
2) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).



3) Disconnect connector from fuel tank pressure sensor.
4) Turn ignition switch to ON.
5) Measure voltage between fuel tank pressure sensor connector and chassis ground.

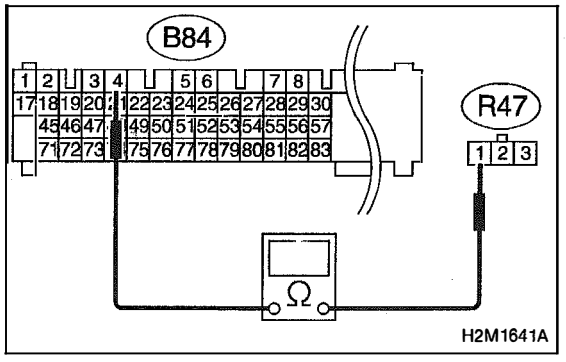
Connector & terminal
(R47) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to next step 6).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B99)



6) Turn ignition switch to OFF.
7) Disconnect connector from ECM.
8) Measure resistance of harness between ECM and pressure sensor connector.

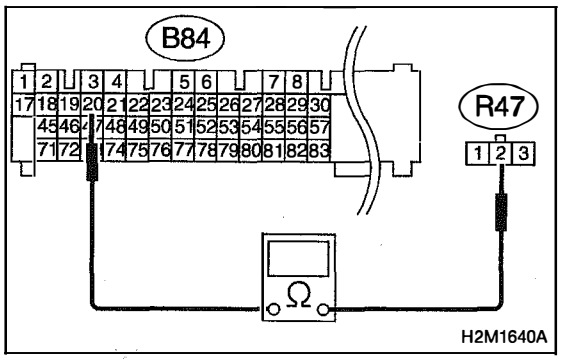
Connector & terminal
(B84) No. 4 — (R47) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 9).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connector (B99)



9) Measure resistance of harness between ECM and pressure sensor connector.

Connector & terminal
(B84) No. 20 — (R47) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10AX5**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between ECM and fuel tank pressure sensor connector
- Poor contact in coupling connectors (B83 and B99)

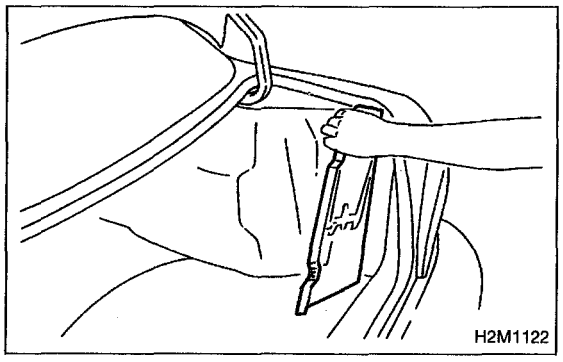
10AX5	CHECK POOR CONTACT.

Check poor contact in fuel tank pressure sensor connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in fuel tank pressure sensor connector?***

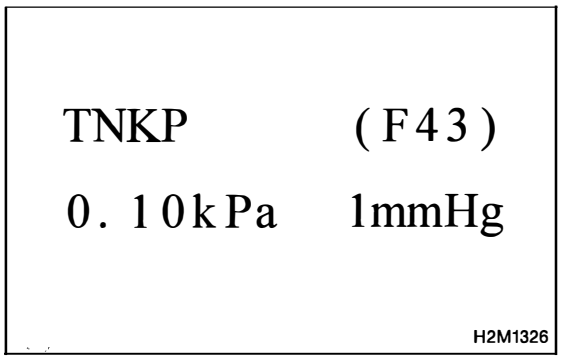
YES : Repair poor contact in fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor.



10AX6	CHECK HARNESS BETWEEN ECM AND FUEL TANK PRESSURE SENSOR CONNECTOR.

1) Turn ignition switch to OFF and Subaru Select Monitor or the OBD-II general scan tool switch to OFF.
2) Detach right side trunk side trim panel (Sedan) or right side rear quarter trim panel (Wagon).



3) Disconnect connector from fuel tank pressure sensor.
4) Remove fuel filler cap.
5) Install fuel filler cap.
6) Turn ignition switch to ON and Subaru Select Monitor or the OBD-II general scan tool switch to ON.
7) Read data on Subaru select monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F43

CHECK ***: Is the value more than 2.8 kPa in function mode F43?***

YES : Repair battery short circuit in harness between ECM and fuel tank pressure sensor connector.

NO : Replace fuel tank pressure sensor.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

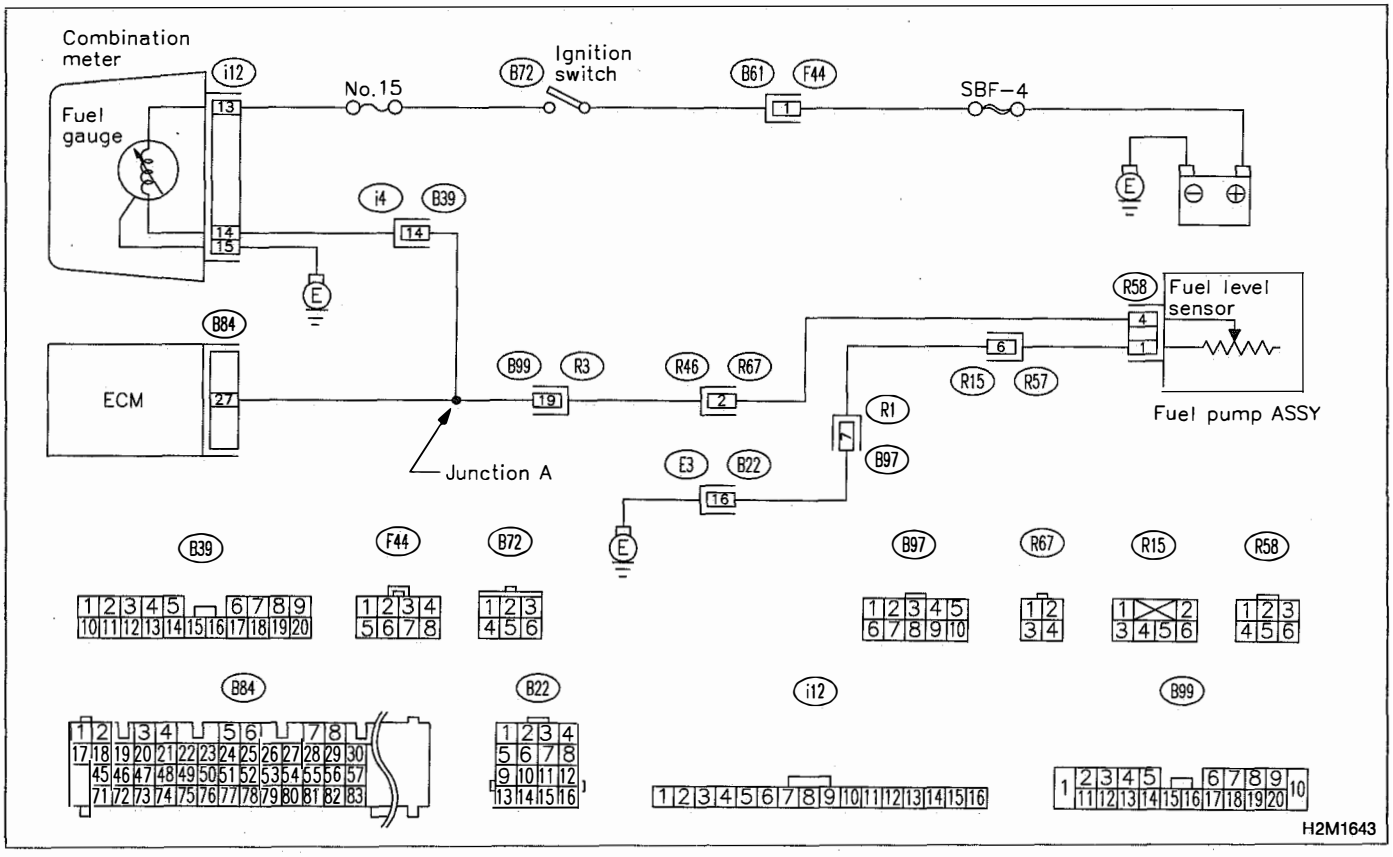
OBD (FB1)
P0461 <FLVL_R>
B2M1101

AY: DTC P0461
— FUEL LEVEL SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AY1	CHECK DTC P0462 OR P0463 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0462 or P0463?***

YES : Inspect DTC P0462 or P0463 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect this trouble.

NO : Replace fuel sending unit and fuel sub meter unit.

OBD (FB1)

P0462 <FLVL_LOW>

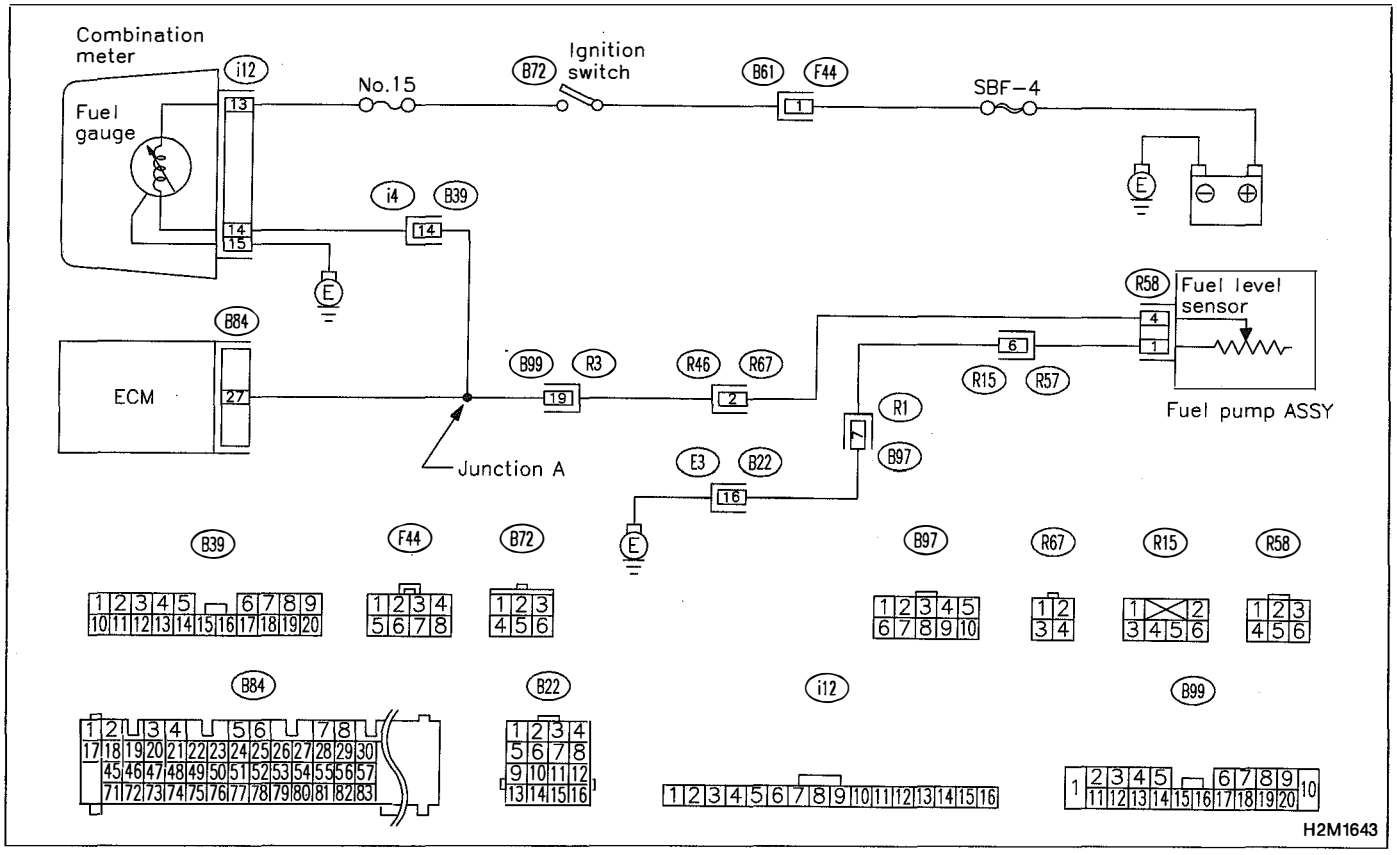
B2M1102

AZ: DTC P0462 — FUEL LEVEL SENSOR CIRCUIT LOW INPUT —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:

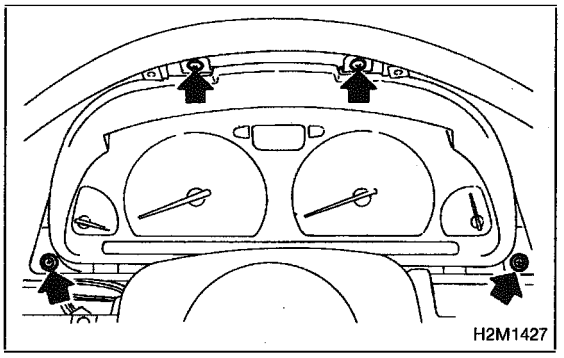
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10AZ1	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer and tachometer operate normally?***

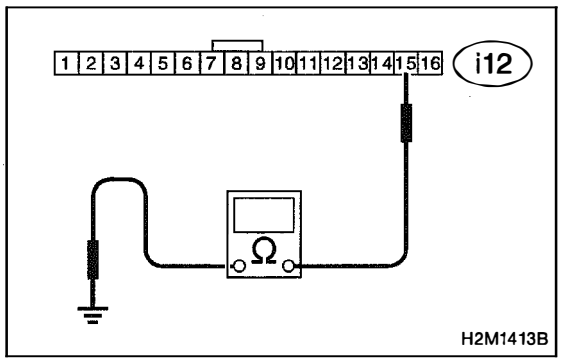
YES : Go to step **10AZ3**.

NO : Go to step **10AZ2**.



10AZ2	CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>
3) Disconnect connector from combination meter.



4) Measure resistance of harness between combination meter connector and chassis ground.

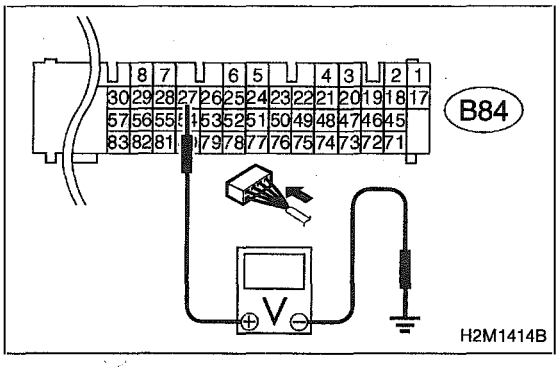
Connector & terminal
(i12) No. 15 — Chassis ground:

CHECK : ***Is resistance less than 5 Ω?***

YES : Repair or replace combination meter.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal



10AZ3	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

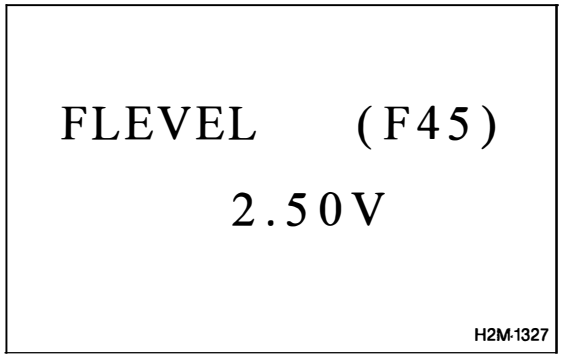
1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 0.12 V?***

YES : Go to step **10AZ4**.

NO : Go to next step 3).



3) Measure voltage between ECM connector and chassis ground.

CHECK ***: Does the value change less than 0.12 V by shaking harness and connector of ECM while monitoring the value with Subaru Select Monitor?***

- Subaru Select Monitor

Designate mode using function key.

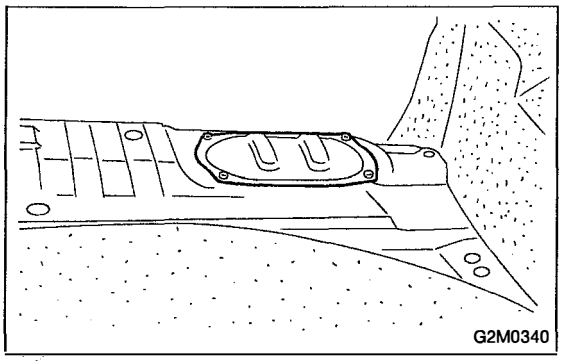
Function mode: F45

- F45: Fuel level sensor output signal is indicated.

YES : Repair poor contact in ECM connector.

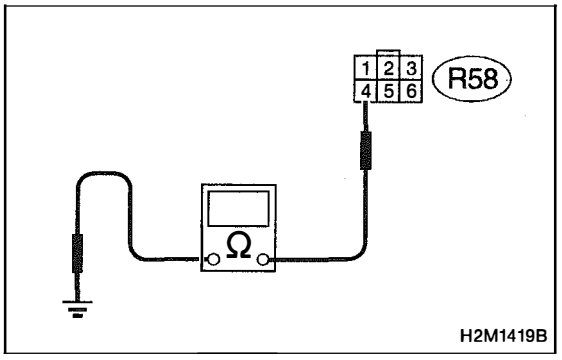
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B39, B22, B99, B97, R67 and R15)


G2M0340

10AZ4	CHECK HARNESS BETWEEN ECM, COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



H2M1419B

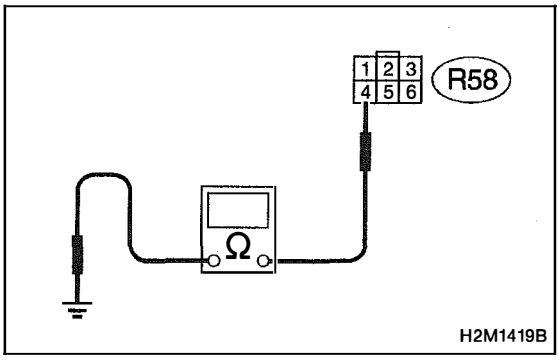
3) Disconnect connector from fuel pump.
4) Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Go to next step 5).

NO : Go to step **10AZ5**.



H2M1419B

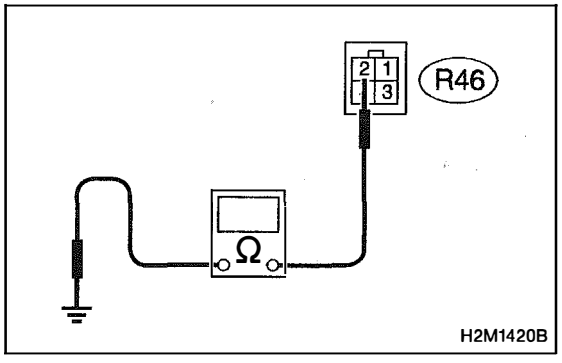
5) Separate fuel tank cord connector (R67) and rear wiring harness connector (R46).
6) Measure resistance of harness between fuel sub meter unit connector and chassis ground.

Connector & terminal
(R58) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in fuel tank cord.

NO : Go to next step 7).



H2M1420B

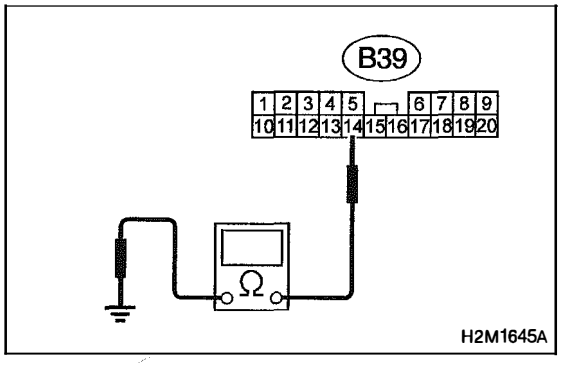
7) Separate rear wiring harness connector (R3) and bulkhead wiring harness connector (B99).
8) Measure resistance of harness between rear wiring harness connector and chassis ground.

Connector & terminal
(R46) No. 2 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in rear wiring harness.

NO : Go to next step 9).



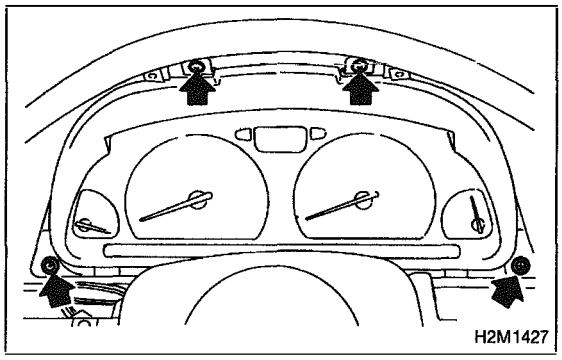
9) Separate bulkhead wiring harness connector (B39) and instrument panel wiring harness connector (i4).
10) Measure resistance of harness between bulkhead wiring harness connector and chassis ground.

Connector & terminal
(B39) No. 14 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

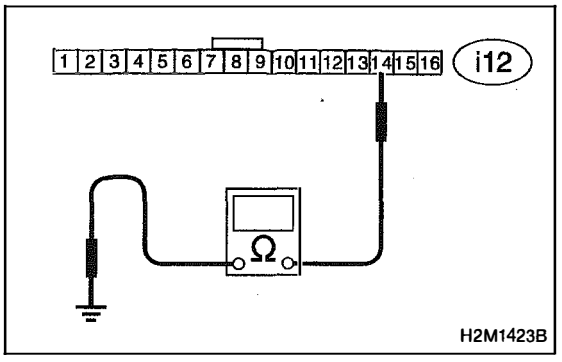
YES : Repair ground short circuit in bulkhead wiring harness.

NO : Repair ground short circuit in instrument panel wiring harness.



10AZ5	CHECK HARNESS BETWEEN COMBINATION METER AND FUEL PUMP CONNECTOR.

1) Connect connector to fuel pump.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>
3) Disconnect connector from combination meter.



4) Measure resistance of harness between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 14 — Chassis ground:
Is the resistance less than 200 Ω?

YES : Go to step **10AZ6.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and junction A on rear wiring harness
- Poor contact in coupling connector (B39)

10AZ6	CHECK COMBINATION METER.

1) Disconnect speedometer cable from combination meter and remove combination meter.

CHECK ***: Is the fuel meter installation screw tightened securely?***

YES : Go to next step 2).

NO : Tighten fuel meter installation screw securely.

2) Remove printed circuit plate assembly from combination meter assembly.

CHECK ***: Is there flaw or burning on printed circuit plate assembly?***

YES : Replace printed circuit plate assembly.

NO : Replace fuel meter assembly.

OBD (FB1)

P0463 <FLVL_HI>

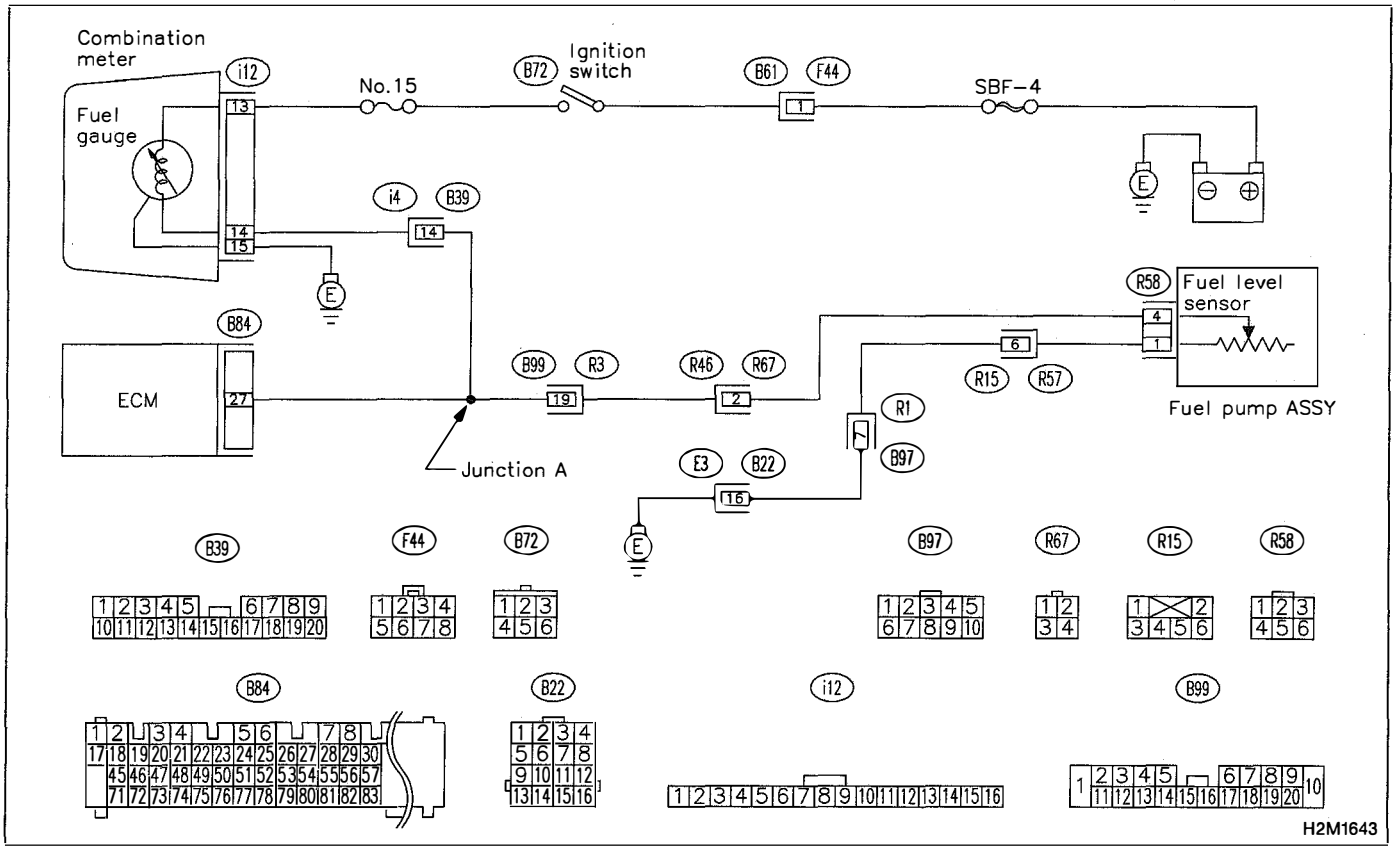
B2M1103

BA: DTC P0463 — FUEL LEVEL SENSOR CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



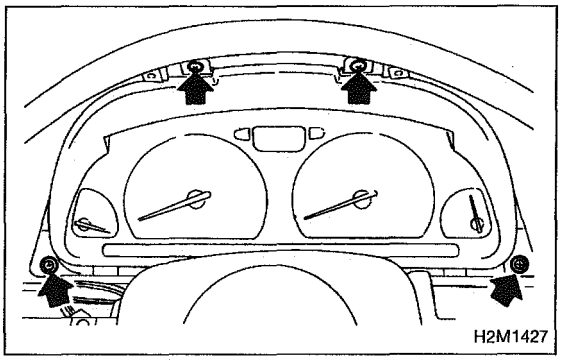
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BA1	CHECK SPEEDOMETER AND TACHOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer and tachometer operate normally?***

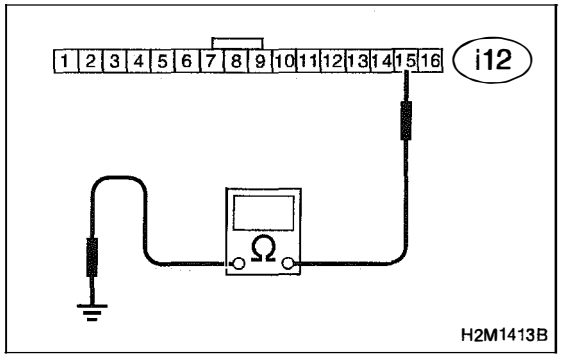
YES : Go to step **10BA3**.

NO : Go to step **10BA2**.



10BA2	CHECK GROUND CIRCUIT OF COMBINATION METER.

1) Turn ignition switch to OFF.
2) Pull out combination meter from instrument panel. <Ref. to 6-2 [W8A0].>
3) Disconnect connector from combination meter.



4) Measure resistance of harness between combination meter connector and chassis ground.

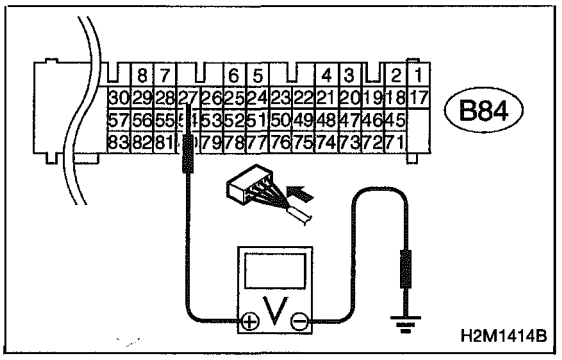
Connector & terminal
(i12) No. 15 — Chassis ground:

CHECK : ***Is resistance less than 5 Ω?***

YES : Repair or replace combination meter.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between combination meter connector and grounding terminal
- Poor contact in combination meter connector
- Poor contact in grounding terminal



10BA3	CHECK INPUT SIGNAL FOR ECM. (USING VOLTAGE METER AND SUBARU SELECT MONITOR.)

1) Turn ignition switch to ON. (Engine OFF)
2) Measure voltage between ECM connector and chassis ground.

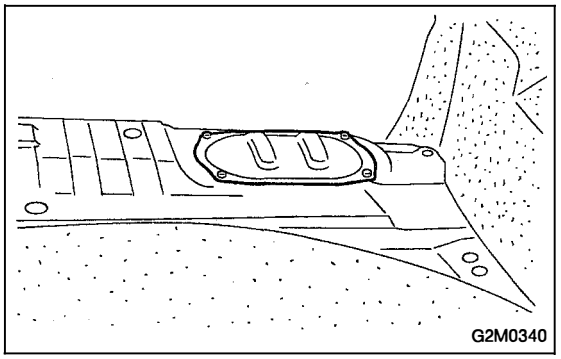
Connector & terminal
(B84) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.75 V?***

YES : Go to step **10BA4.**

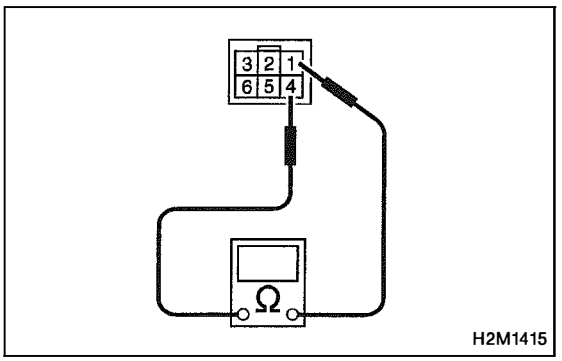
NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector may be the cause.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in combination meter connector
- Poor contact in ECM connector
- Poor contact in coupling connectors (B39, B22, B99, B97, R67 and R15)



10BA4	CHECK FUEL LEVEL SENSOR.

1) Turn ignition switch to OFF.
2) Remove fuel pump access hole lid located on the right rear of trunk compartment floor (Sedan) or luggage compartment floor (Wagon).



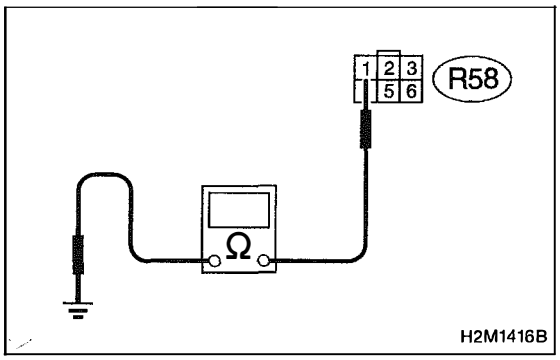
3) Disconnect connector from fuel pump.
4) Measure resistance between connector terminals of fuel pump.

Terminals
No. 1 — No. 4:

CHECK ***: Is the resistance less than 100 Ω?***

YES : Go to step **10BA5.**

NO : Replace fuel sending unit.



10BA5	CHECK GROUND CIRCUIT OF FUEL LEVEL SENSOR.

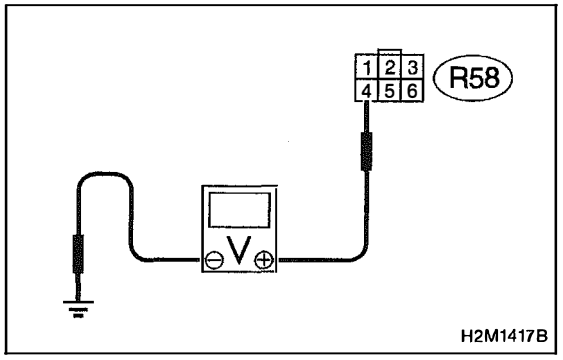
Measure resistance of harness between fuel pump connector and chassis ground.

Connector & terminal
(R58) No. 1 — Chassis ground:
Is the resistance less than 5 Ω?

YES : Go to step **10BA6**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and chassis grounding terminal
- Poor contact in fuel pump connector
- Poor contact in coupling connectors (R15, B97 and B22)



10BA6	CHECK HARNESS BETWEEN ECM AND FUEL PUMP CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between fuel pump connector and chassis ground.

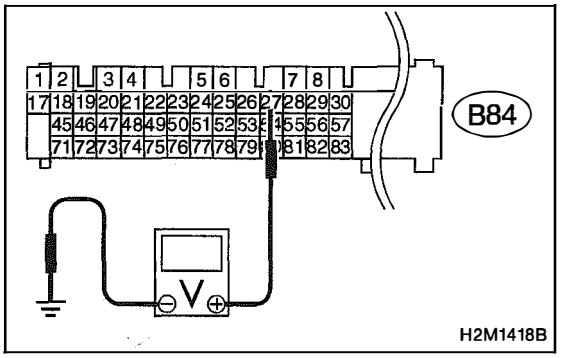
Connector & terminal
(R58) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between fuel pump connector and junction A on rear wiring harness
- Poor contact in fuel pump connector
- Poor contact in coupling connector (R67)

NO : Go to next step 3).



3) Turn ignition switch to OFF.
4) Disconnect connector from ECM.
5) Turn ignition switch to ON.
6) Measure voltage between ECM connector and chassis ground.

Connector & terminal
(B84) No. 27 (+) — Chassis ground:

CHECK ***: Is the voltage less than 1 V?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and junction A on rear wiring harness
- Poor contact in coupling connector (B99)

NO : Repair connector.

NOTE:
In this case, repair the following:
- Poor contact in fuel pump connector
- Poor contact in ECM connector

MEMO:

OBD	(FB1)
P0500	<VSP>

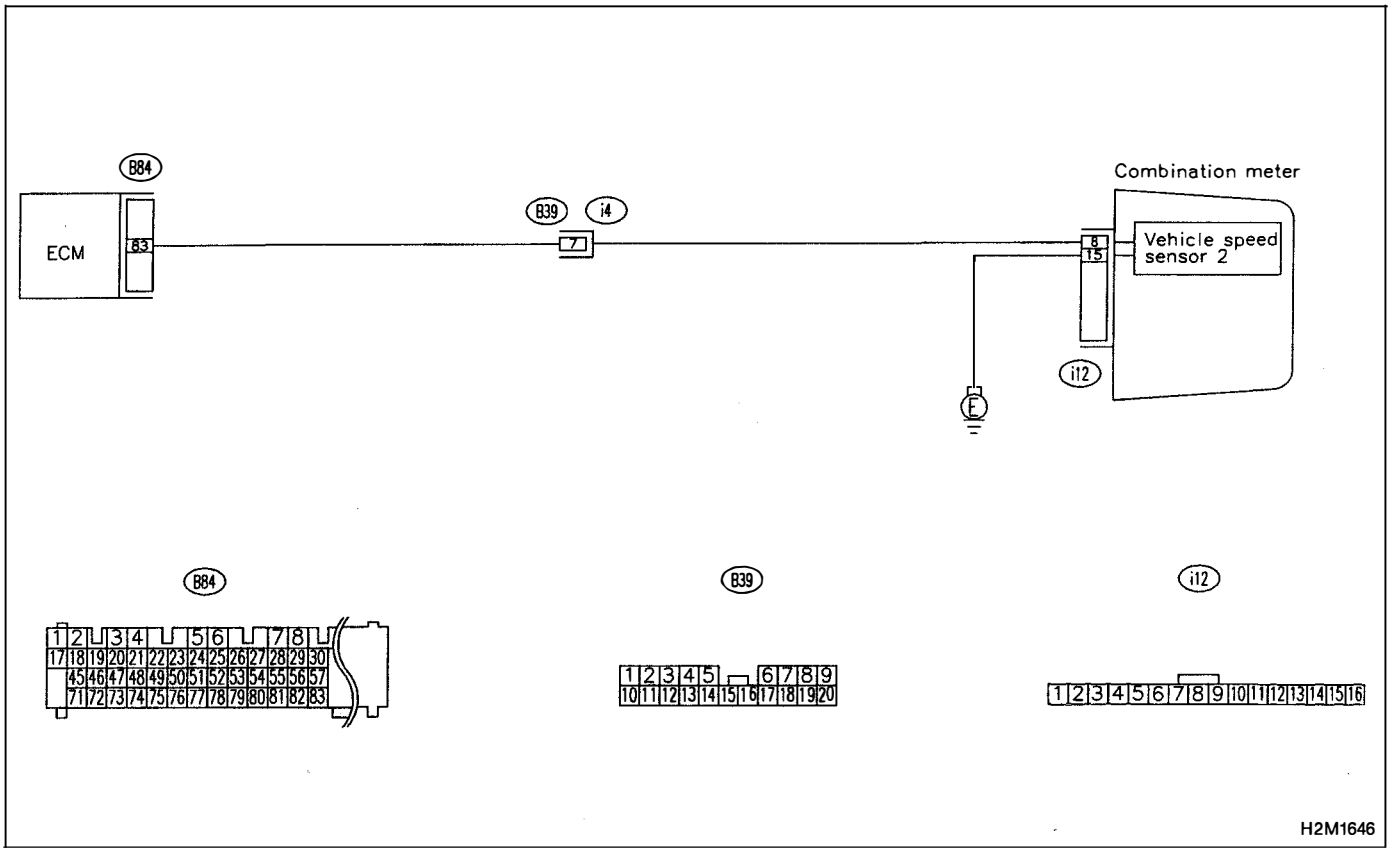
OBD0340

BB: DTC P0500
— VEHICLE SPEED SENSOR MALFUNCTION —

DTC DETECTING CONDITION:

- Immediately at fault recognition

WIRING DIAGRAM:



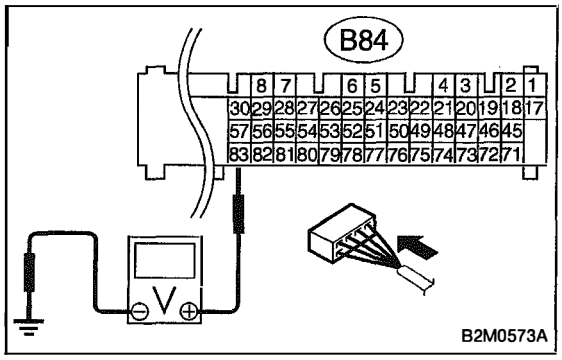
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BB1	CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***

YES : Go to step **10BB2**.

NO : Check speedometer and vehicle speed sensor 2 <Ref. to 6-2 [K2A0].>.



10BB2	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

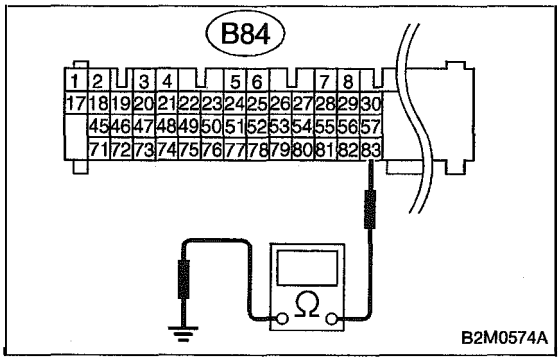
Connector & terminal
(B84) No. 83 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 2 V?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (B39)

NO : Go to step **10BB3**.



10BB3	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 83 — Chassis ground:

CHECK : ***Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and combination meter connector.

NO : Repair poor contact in ECM connector.

OBD	(FB1)
P0505	<ISC>

OBD0358

BC: DTC P0505 — IDLE CONTROL SYSTEM MALFUNCTION —

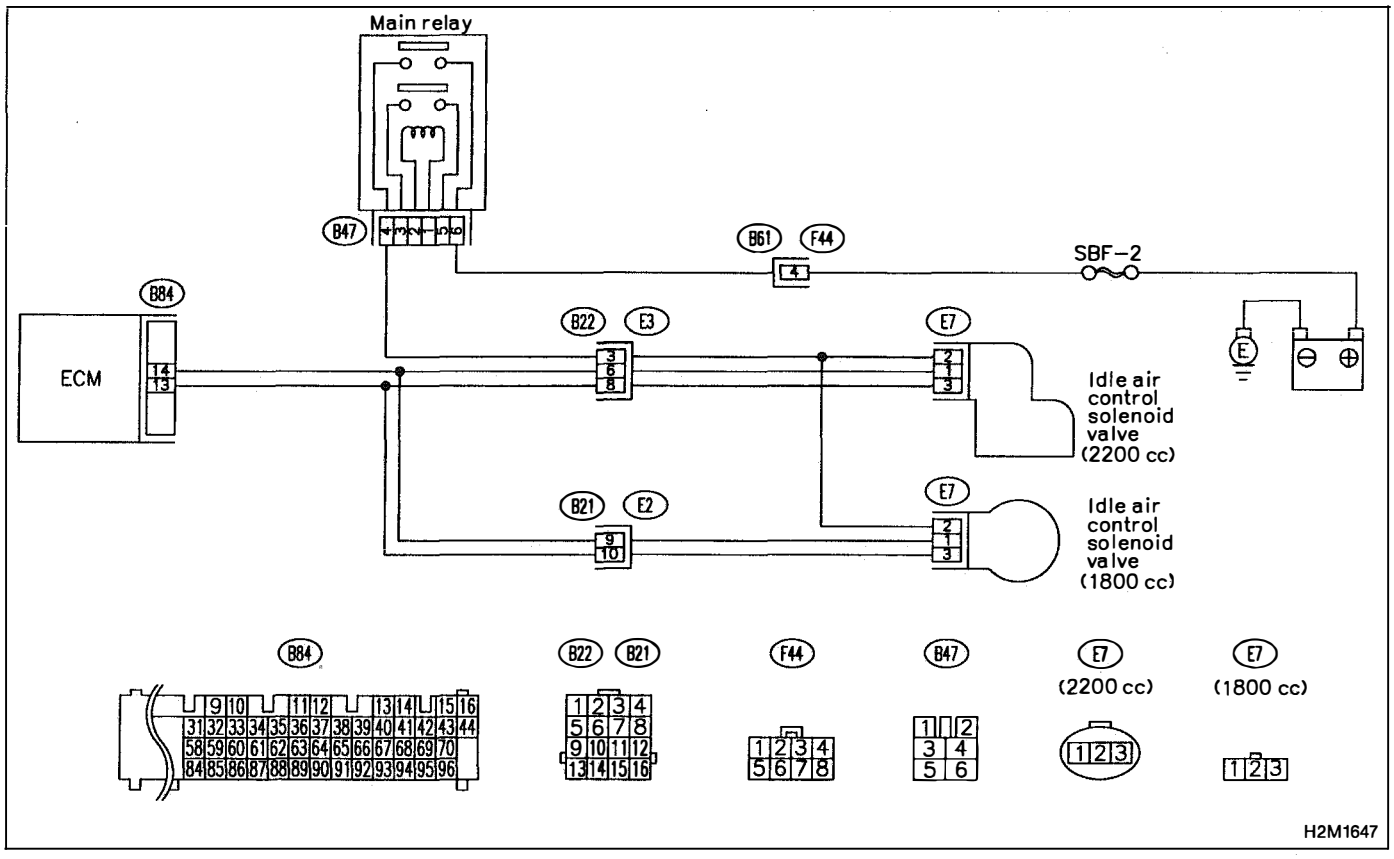
DTC DETECTING CONDITION:

- Immediately at fault recognition

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Engine breathing

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BC1	CHECK AIR INTAKE SYSTEM.

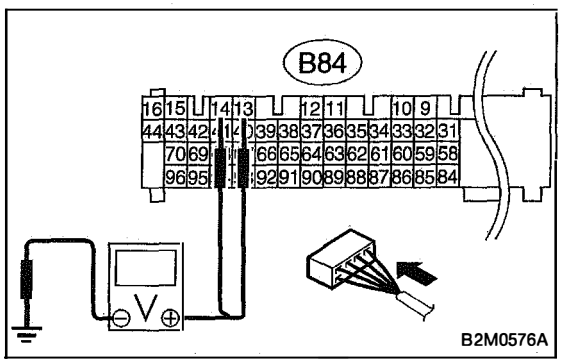
1) Turn ignition switch to ON.
2) Start engine, and idle it.

CHECK : ***Is there a fault in air intake system?***

NOTE:
Check the following items.
- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Loose connections and cracks of idle air control solenoid valve by-pass hoses
- Disconnections of vacuum hoses

YES : Repair or replace air intake system.

NO : Go to step **10BC2.**



10BC2	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 13 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 3 V?***

YES : Go to next step 3).

NO : Go to step **10BC5.**

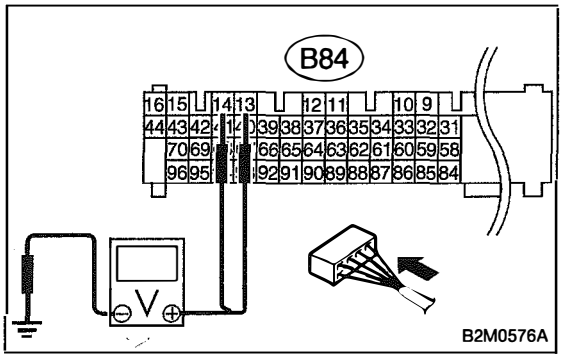
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 14 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 3 V?***

YES : Go to next step 4).

NO : Go to step **10BC5.**



4) Turn ignition switch to OFF.
5) Disconnect connector from idle air control solenoid valve.
6) Turn ignition switch to ON.
7) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 13 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM.

NO : Go to next step 8).

8) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 14 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and idle air control solenoid valve connector. After repair, replace ECM.

NO : Go to step **10BC3**.

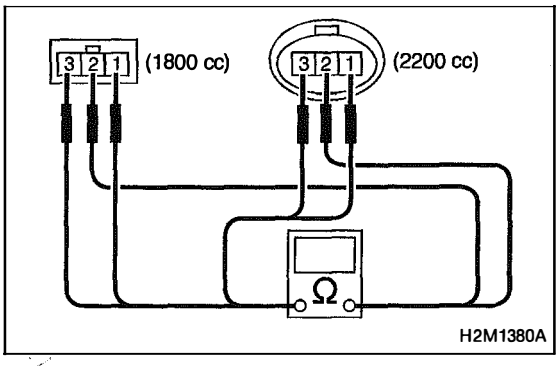
10BC3	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Go to step **10BC4**.



10BC4	CHECK IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Measure resistance between idle air control solenoid valve connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance more than 20 Ω?***

YES : Replace idle air control solenoid valve.

NO : Go to next step 3).

3) Measure resistance between idle air control solenoid valve connector terminals.

Terminals
No. 2 — No. 3:

CHECK ***: Is the resistance more than 20 Ω?***

YES : Replace idle air control solenoid valve.

NO : Go to next step 4).

4) Measure resistance between idle air control solenoid valve connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Replace idle air control solenoid valve and ECM.

NO : Go to next step 5).

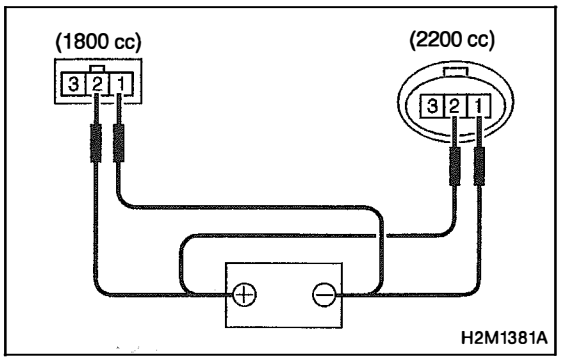
5) Measure resistance between idle air control solenoid valve connector terminals.

Terminals
No. 2 — No. 3:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Replace idle air control solenoid valve and ECM.

NO : Go to next step 6).

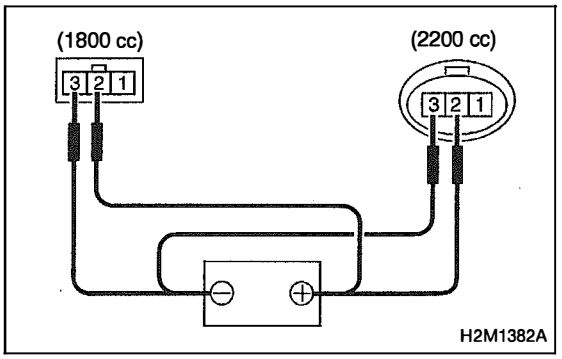


6) Remove idle air control solenoid valve. <Ref. to 2-7 [W12A0].>
7) Check operation of idle air control solenoid valve.

CHECK : ***Is idle air control solenoid valve fully opened when applying the battery to terminals No. 2 (+) and No. 1 (–)?***

YES : Go to next step 8).

NO : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>

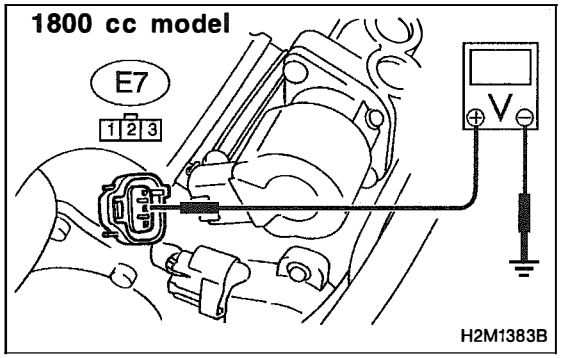


8) Check operation of idle air control solenoid valve.

CHECK : ***Is idle air control solenoid valve fully closed when applying the battery to terminals No. 2 (+) and No. 3 (–)?***

YES : Go to step **10BC5**.

NO : Clean idle air control solenoid valve. <Ref. to 2-7 [W12B0].>



10BC5	CHECK POWER SUPPLY TO IDLE AIR CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from idle air control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between idle air control solenoid valve and engine ground.

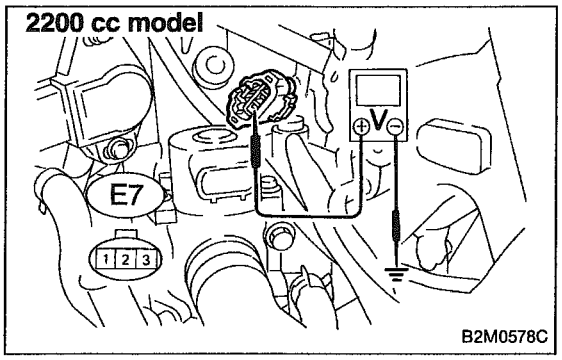
Connector & terminal
(E7) No. 2 (+) — Engine ground (–):

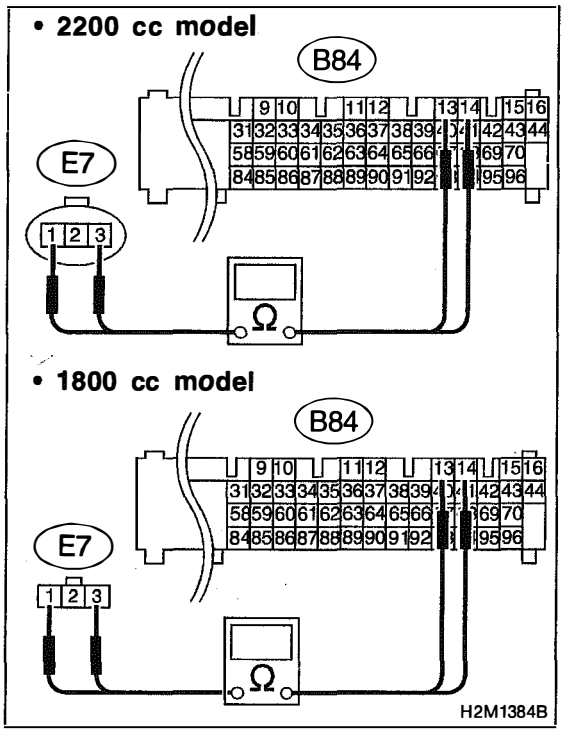
CHECK : ***Is the voltage more than 10 V?***

YES : Go to step **10BC6.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between idle air control solenoid valve and main relay connector
- Poor contact in coupling connector (B22)





10BC6	CHECK HARNESS BETWEEN ECM AND IDLE AIR CONTROL SOLENOID VALVE CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and idle air control solenoid valve connector.

Connector & terminal
(B84) No. 14 — (E7) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B22) [2200 cc]

4) Measure resistance of harness between ECM and idle air control solenoid valve connector.

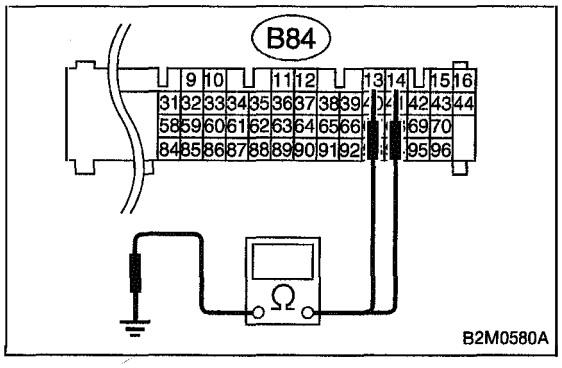
Connector & terminal
(B84) No. 13 — (E7) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 5).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and idle air control solenoid valve connector
- Poor contact in coupling connector (B21) [1800 cc]
- Poor contact in coupling connector (B22) [2200 cc]



5) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 13 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.

NO : Go to next step 6).

6) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 14 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and idle air control solenoid valve connector.

NO : Go to step **10BC7**.

10BC7	CHECK POOR CONTACT.

Check poor contact in idle air control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in idle air control solenoid valve connector?***

YES : Repair poor contact in idle air control solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

OBD (FB1)

P0506 <ISC_RLOW>

B2M1104

BD: DTC P0506 — IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED —

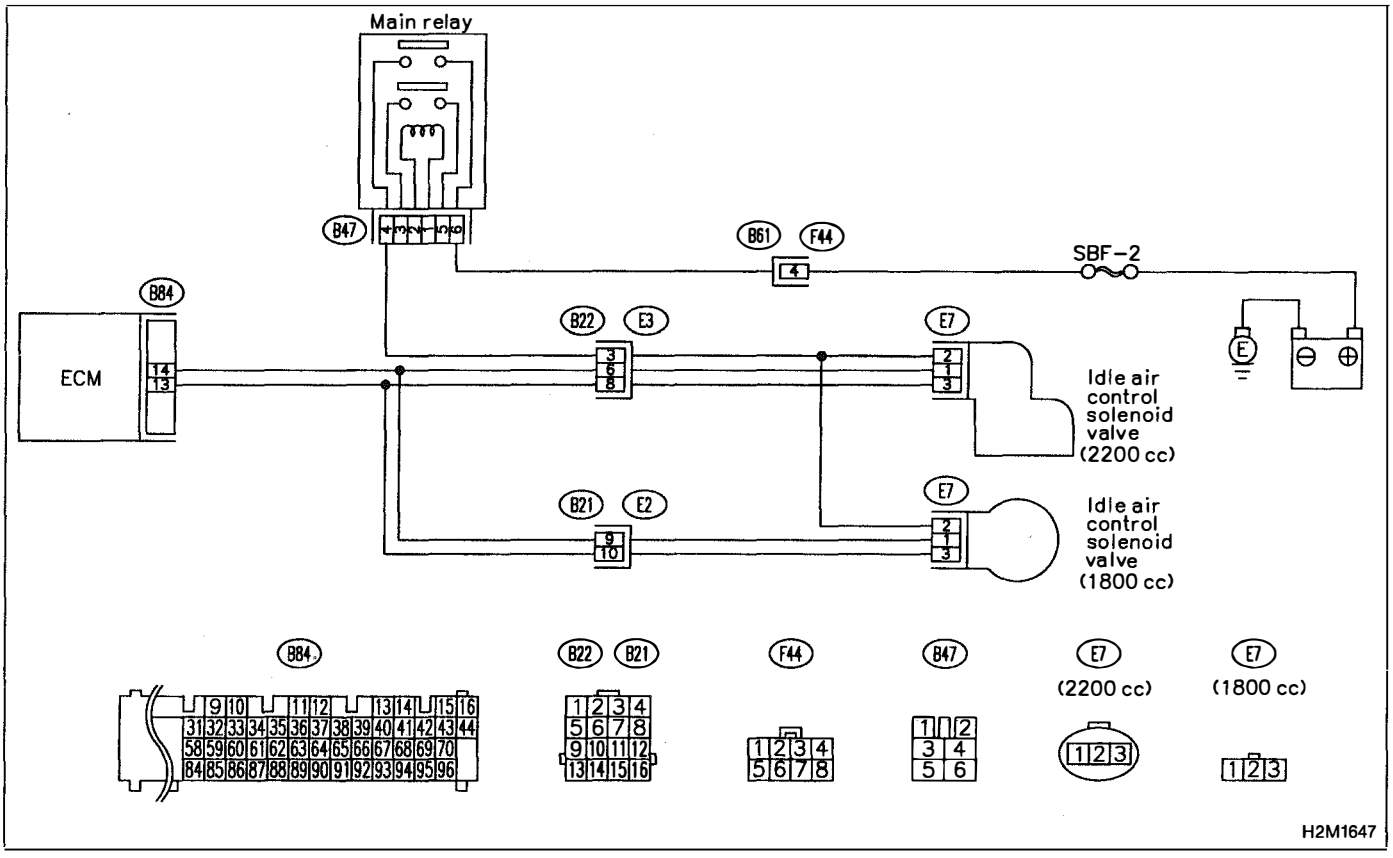
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine is difficult to start.
- Engine does not start.
- Erroneous idling
- Engine stalls.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BD1	CHECK DTC P0505 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?***

YES : Inspect DTC P0505 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0506.

NO : Go to step **10BD2.**

10BD2	CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.

CHECK : ***Is clogging the by-pass line between by-pass hose and intake duct?***

YES : Repair the by-pass line.

NO : Replace idle air control solenoid valve.

OBD (FB1)
P0507 <ISC_RHI>
B2M1105

BE: DTC P0507 — IDLE CONTROL SYSTEM RPM HIGHER THAN EXPECTED —

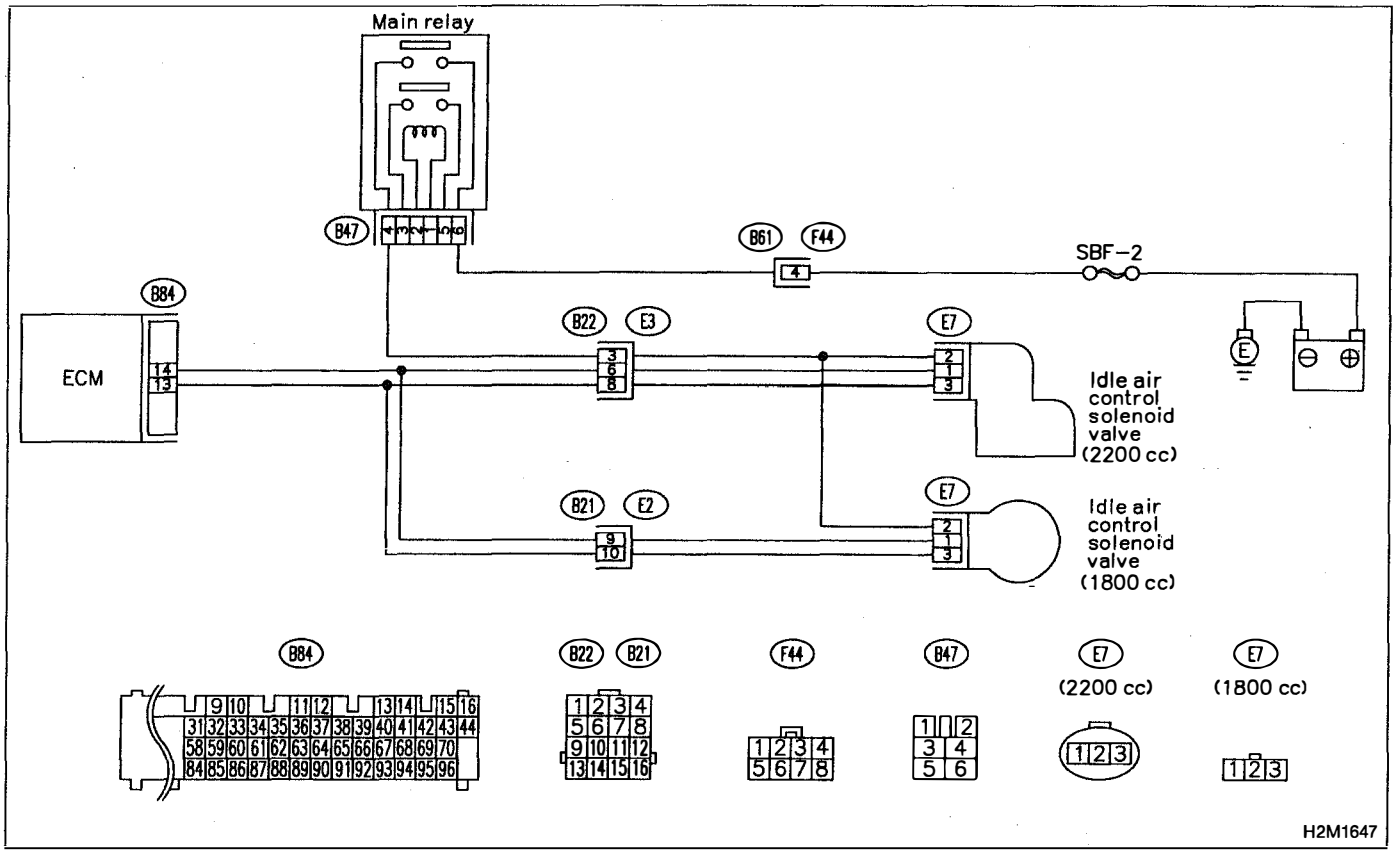
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine keeps running at higher revolution than specified idling revolution.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BE1	CHECK DTC P0505 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?***

YES : Inspect DTC P0505 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P0507.

NO : Go to step **10BE2**.

10BE2	CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.

CHECK : ***Is there a fault in air intake system?***

NOTE:
Check the following items.
- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Loose connections and cracks of idle air control solenoid valve by-pass hoses
- Disconnections of vacuum hoses

YES : Repair air suction and leaks.

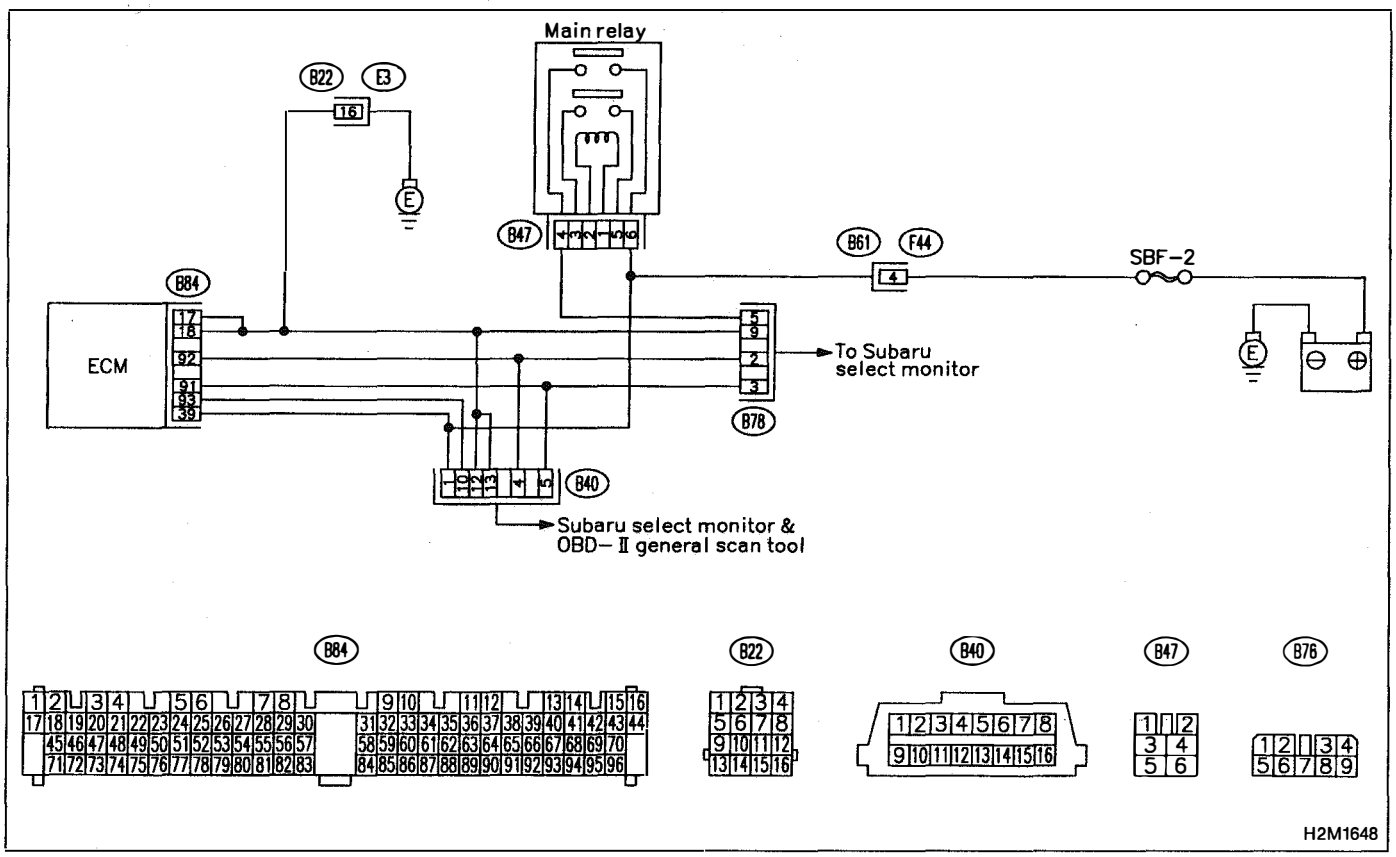
NO : Replace idle air control solenoid valve.

BF: DTC P0600 — SERIAL COMMUNICATION LINK MALFUNCTION —

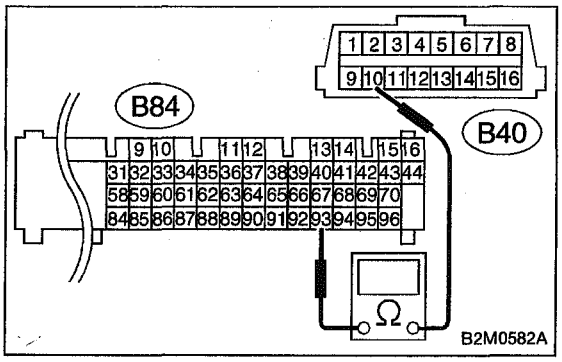
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10BF1	CHECK HARNESS BETWEEN ECM AND DATA LINK CONNECTOR.

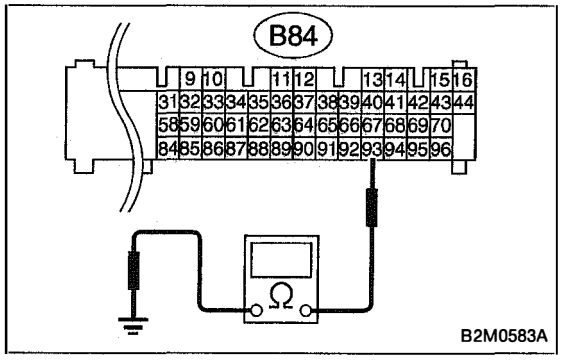
1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM and data link connector (for Subaru Select Monitor & OBD-II general scan tool).

Connector & terminal
(B84) No. 93 — (B40) No. 10:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair open circuit in harness between ECM and data link connector.



4) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 93 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and data link connector.

NO : Repair poor contact in ECM connector and data link connector.

OBD	(FB1)
P0601	<RAM>

OBD0376

BG: DTC P0601 — INTERNAL CONTROL MODULE MEMORY CHECK SUM ERROR —

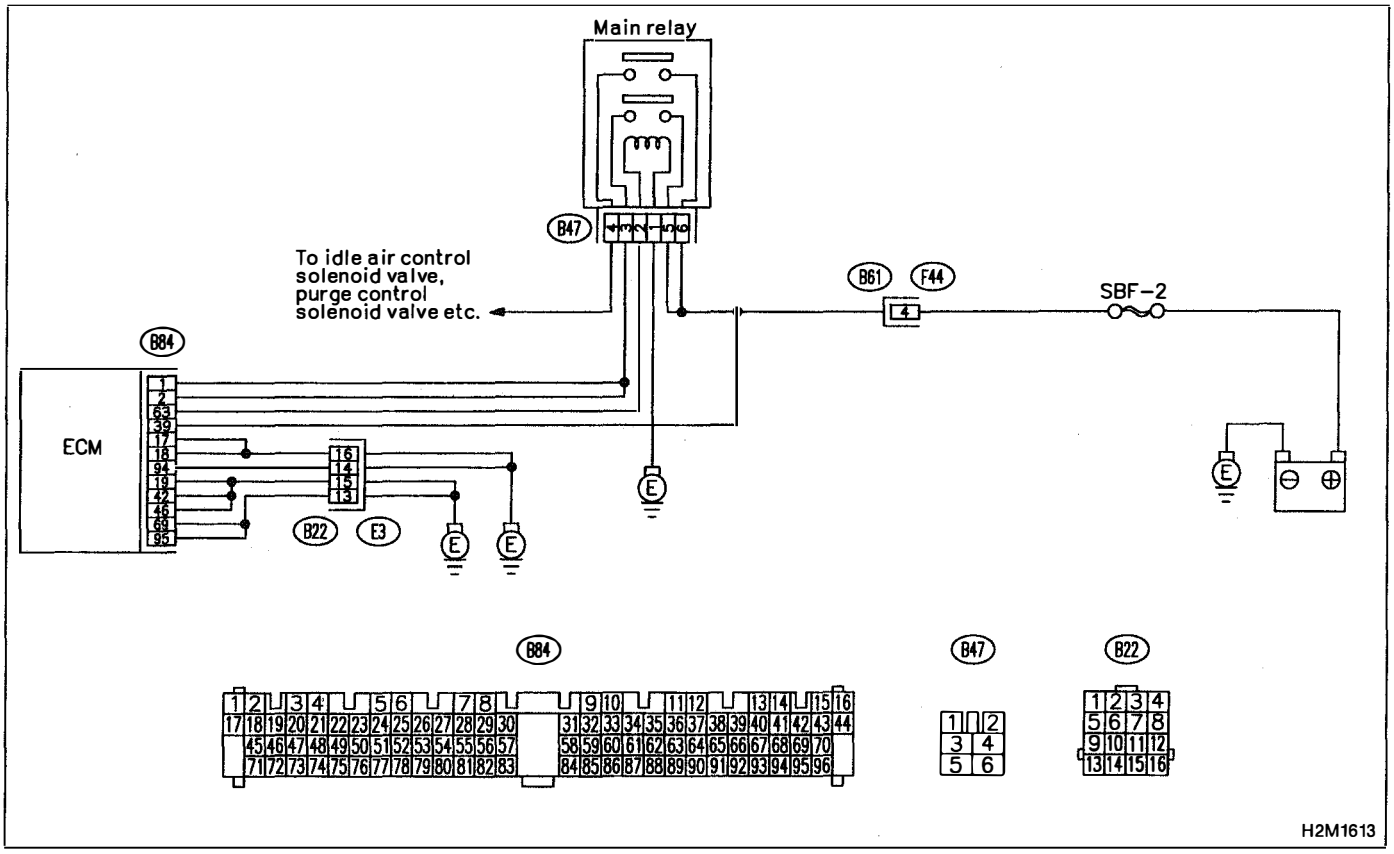
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine does not start.
- Engine stalls.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BG1	CHECK DTC P0601 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0601?***

YES : Replace ECM.

NO : It is not necessary to inspect DTC P0601.

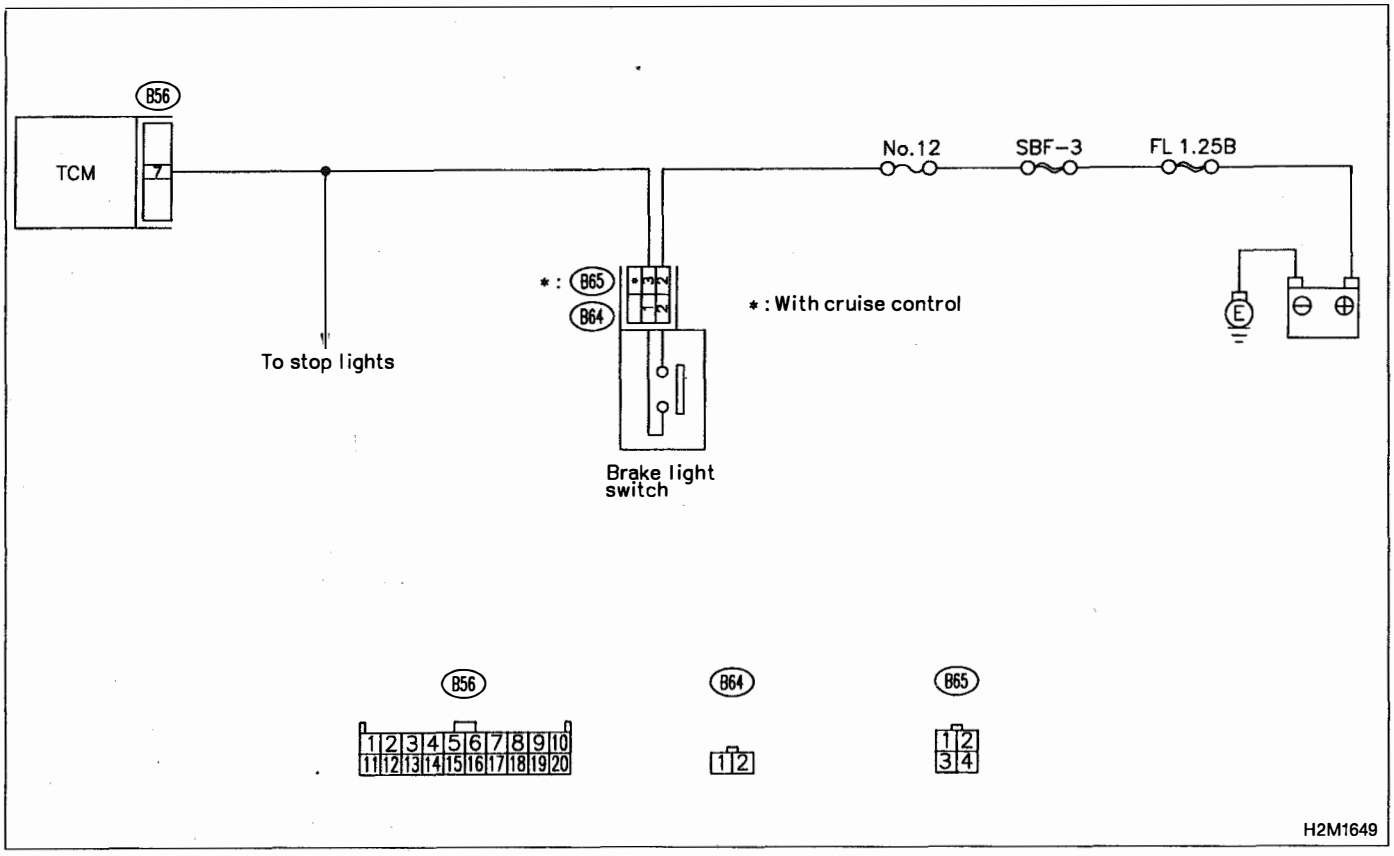
OBD (FB1)
P0703 <ATBRK>
B2M0655

BH: DTC P0703
— BRAKE SWITCH INPUT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



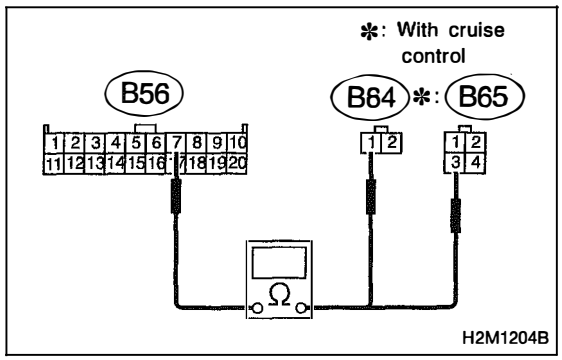
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BH1	CHECK OPERATION OF BRAKE LIGHT.

CHECK : ***Does brake light come on when depressing the brake pedal?***

YES : Go to step **10BH2.**

NO : Repair or replace brake light circuit.



10BH2	CHECK HARNESS BETWEEN TCM AND BRAKE LIGHT SWITCH CONNECTOR.

1) Disconnect connectors from TCM and brake light switch.

2) Measure resistance of harness between TCM and brake light switch connector.

Connector & terminal
(B56) No. 7 — (B64) No. 1 (Without cruise control):
(B56) No. 7 — (B65) No. 3 (With cruise control):

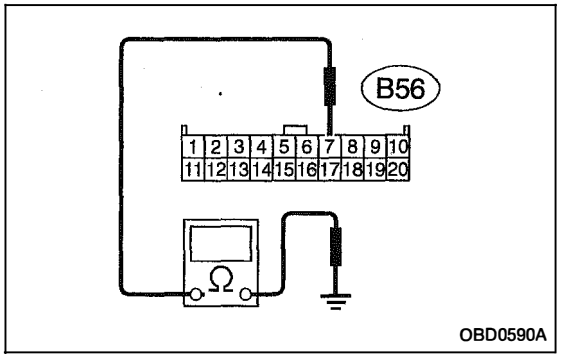
CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair or replace harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and brake light switch connector
- Poor contact in TCM connector
- Poor contact in brake light switch connector



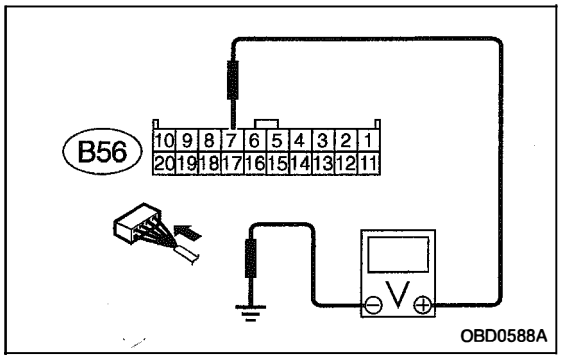
3) Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 7 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **10BH3.**

NO : Repair ground short circuit in harness between TCM and brake light switch connector.



10BH3	CHECK INPUT SIGNAL FOR TCM.

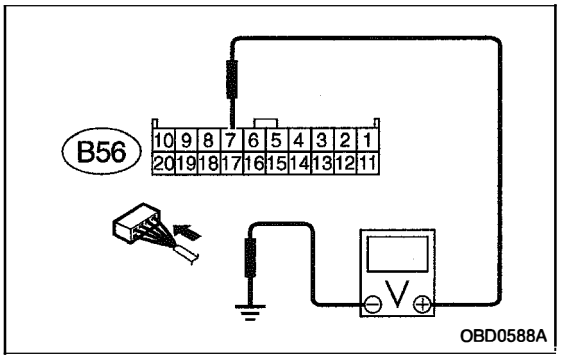
1) Connect connectors to TCM and brake light switch.
2) Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V when releasing the brake pedal?***

YES : Go to next step 3).

NO : Adjust or replace brake light switch.



3) Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V when depressing the brake pedal?***

YES : Go to step **10BH4**.

NO : Adjust or replace brake light switch.

10BH4	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

MEMO:

OBD (FB1)
P0705 <ATRNG>
B2M0656

BI: DTC P0705 — TRANSMISSION RANGE SENSOR CIRCUIT MALFUNCTION —

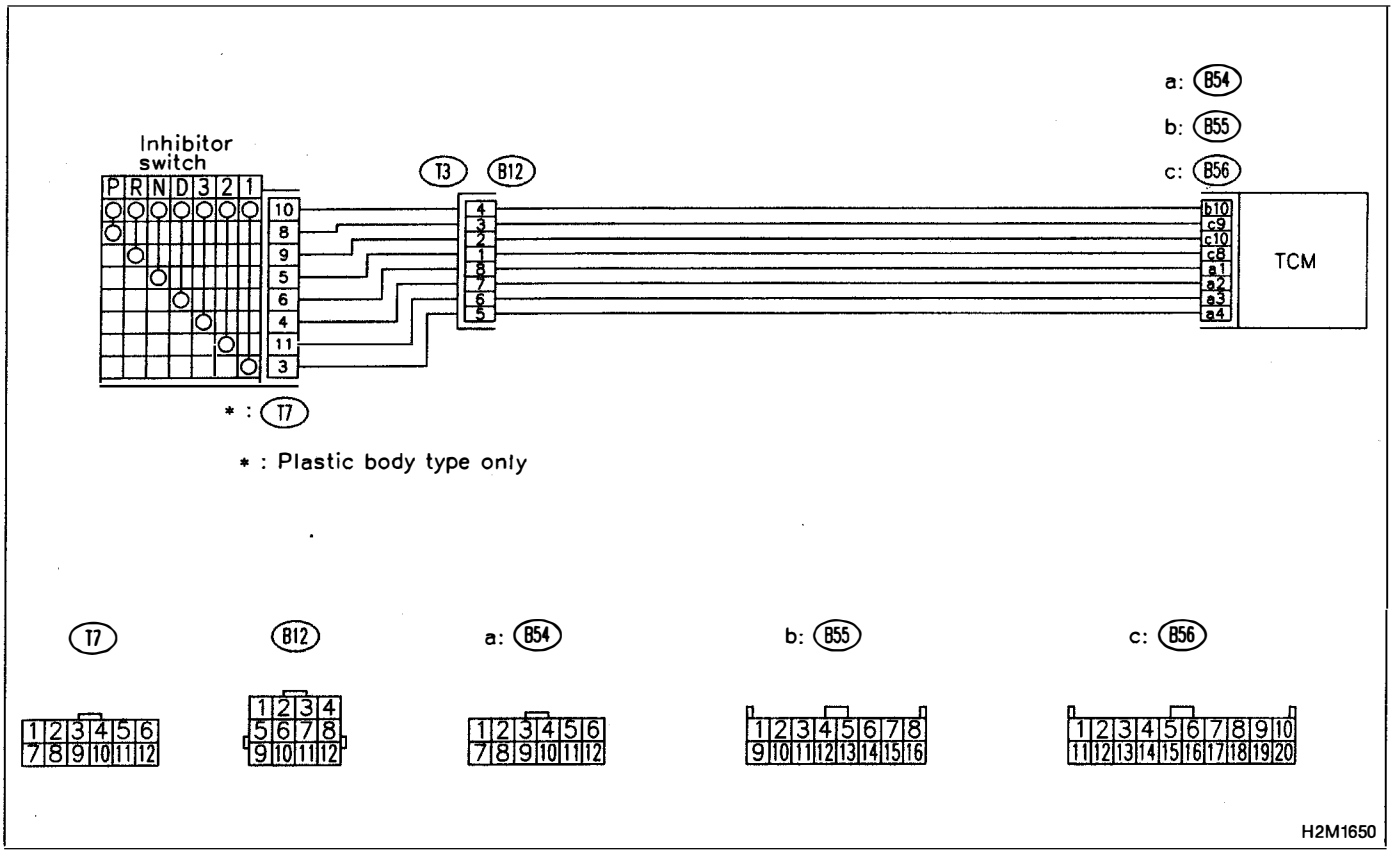
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Starter does not rotate when selector lever is in "P" or "N" range.
- Starter rotates when selector lever is in "R", "D", "3", "2" or "1" range.
- Engine brake is not effected when selector lever is in "3" range.
- Shift characteristics are erroneous.

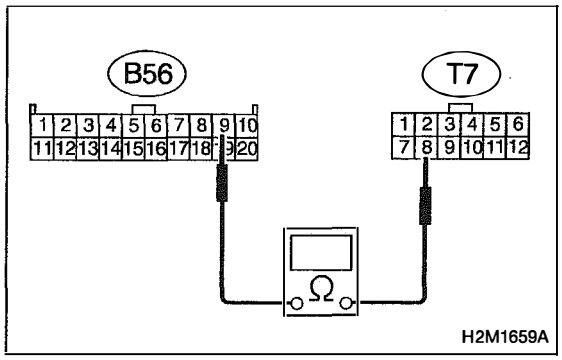
WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BI1	CHECK INHIBITOR SWITCH TYPE.

CHECK : ***Is inhibitor switch type plastic body?***
YES : Go to step **10BI2**.
NO : Go to step **10BI4**.



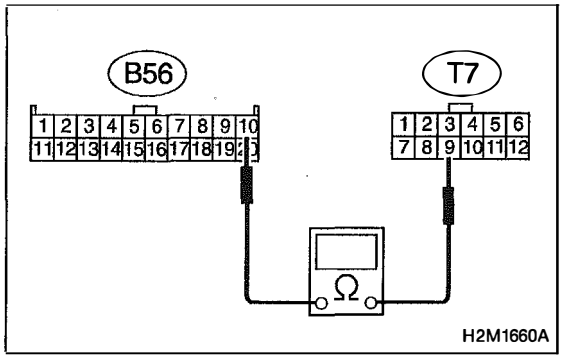
10BI2	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission.
3) Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 9 — (T7) No. 8:

CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BI3**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



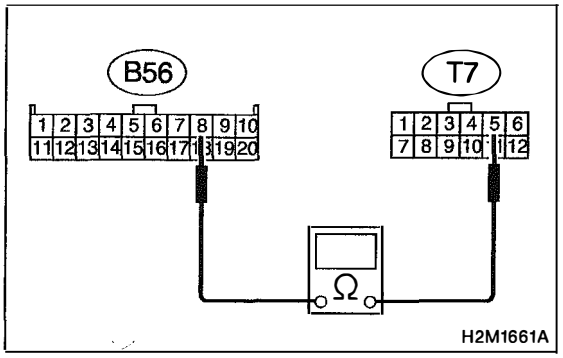
10BI3	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 10 — (T7) No. 9:

CHECK : ***Is the resistance less than 1 Ω?***
YES : Go to step **10BI4**.
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



10BI4	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

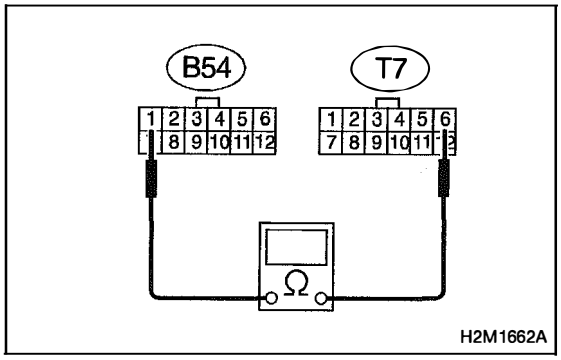
Connector & terminal
(B56) No. 8 — (T7) No. 5:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10BI5.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector.
- Poor contact in coupling connector (B12)



10BI5	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

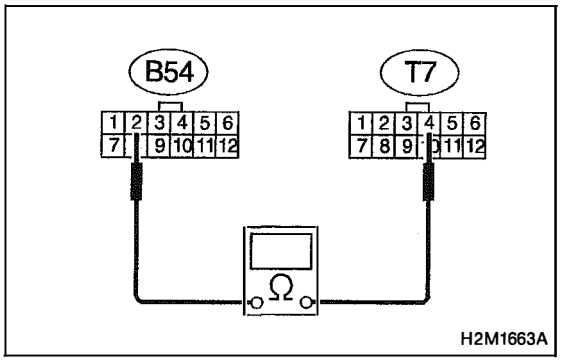
Connector & terminal
(B54) No. 1 — (T7) No. 6:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10BI6.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



10BI6	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

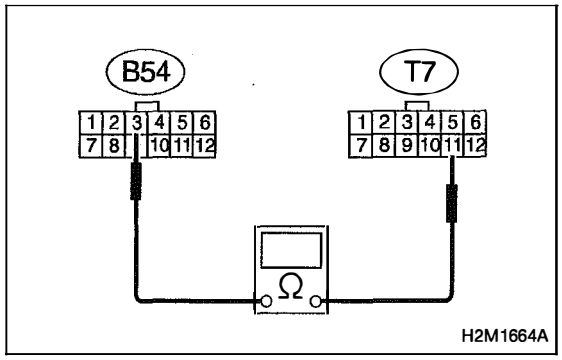
Connector & terminal
(B54) No. 2 — (T7) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10BI7.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



10BI7	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

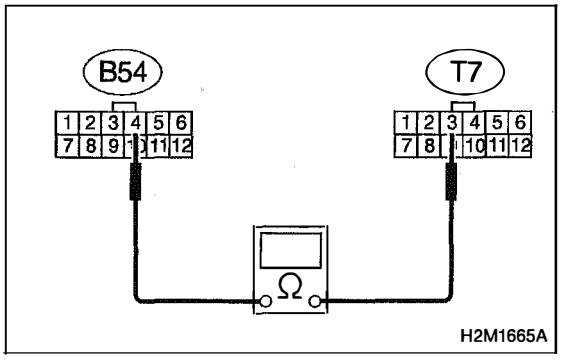
Connector & terminal
(B54) No. 3 — (T7) No. 11:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10BI8**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



10BI8	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

Measure resistance of harness between TCM and transmission harness connector.

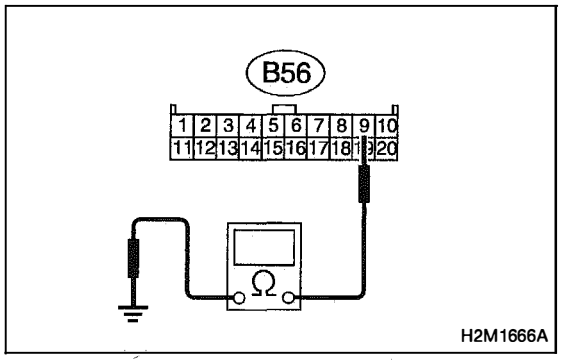
Connector & terminal
(B54) No. 4 — (T7) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10BI9**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)



10BI9	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

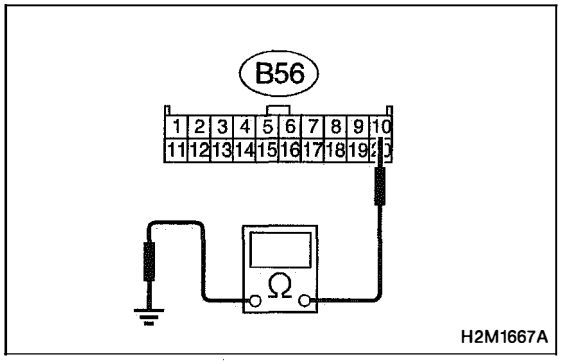
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 9 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI10**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI10	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

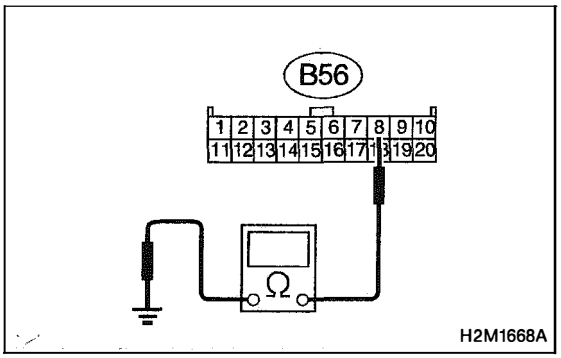
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI11**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI11	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

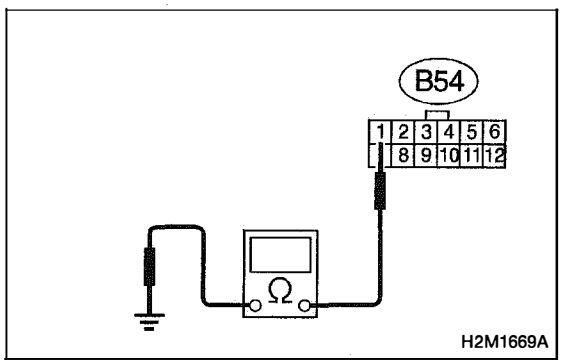
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 8 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI12**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI12	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

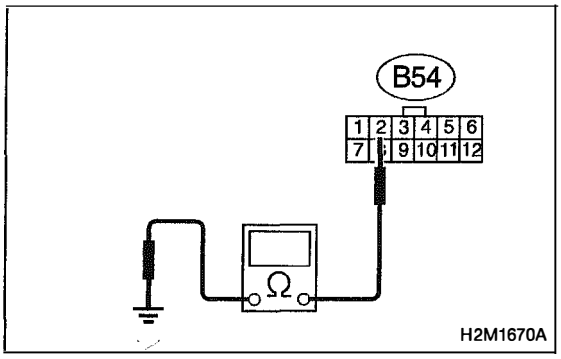
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI13**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI13	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

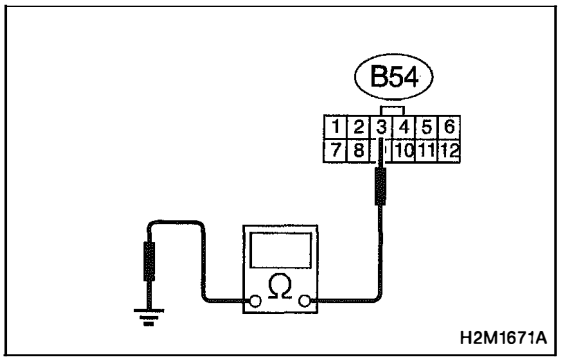
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 2 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI14**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI14	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

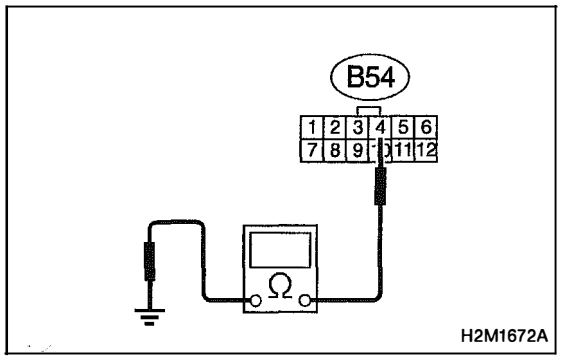
Measure resistance of harness between TCM and chassis grond.

Connector & terminal
(B54) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI15**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI15	CHECK HARNESS BETWEEN TCM AND INHIBITOR SWITCH CONNECTOR.

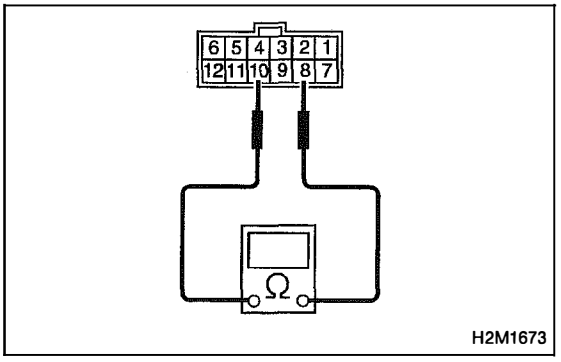
Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B54) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI16**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI16	CHECK INHIBITOR SWITCH.

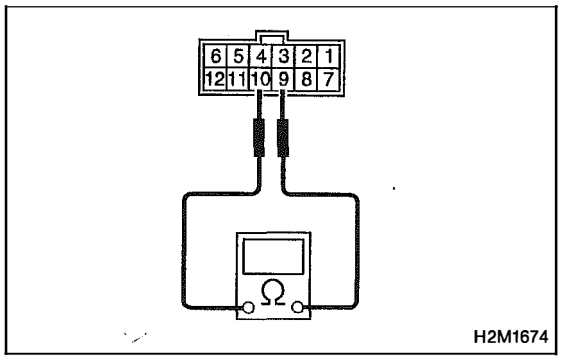
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 8 — No. 10

CHECK ***: • Is the resistance less than 1 Ω in "P" position?***
• Is the resistance more than 1 MΩ in other positions?

YES : Go to step **10BI17**.

NO : Go to step **10BI23**.



10BI17	CHECK INHIBITOR SWITCH.

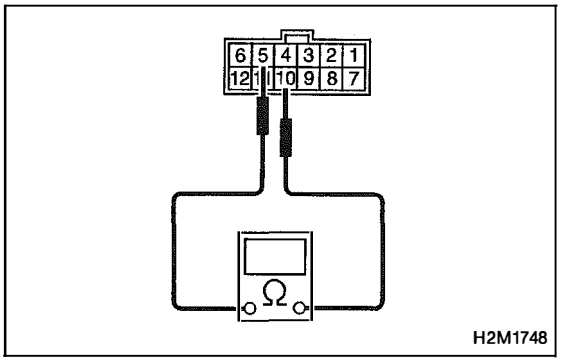
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 9 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "R" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI18**.

NO : Go to step **10BI23**.



10BI18	CHECK INHIBITOR SWITCH.

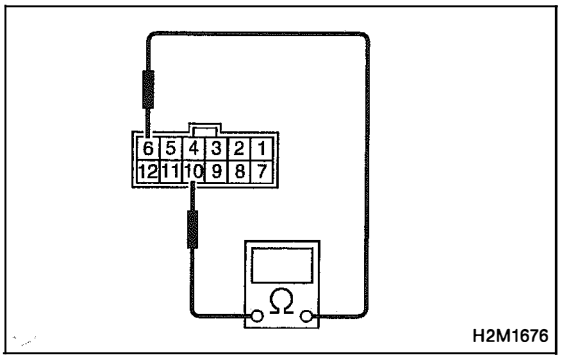
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 5 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "N" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI19**.

NO : Go to step **10BI23**.



10BI19	CHECK INHIBITOR SWITCH.

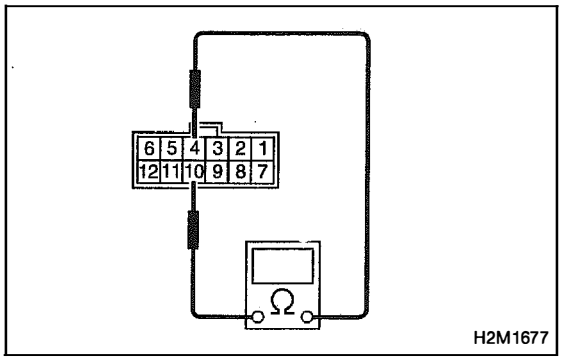
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 6 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "D" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI20**.

NO : Go to step **10BI23**.



10BI20	CHECK INHIBITOR SWITCH.

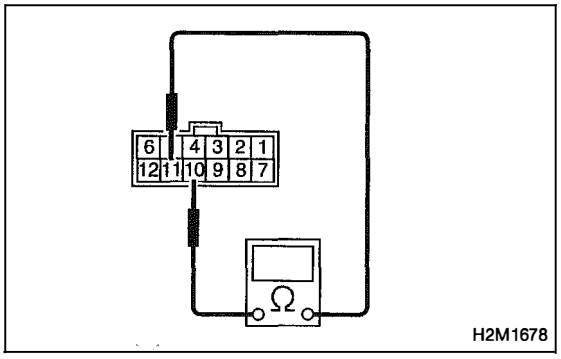
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 4 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "3" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI21**.

NO : Go to step **10BI23**.



10BI21	CHECK INHIBITOR SWITCH.

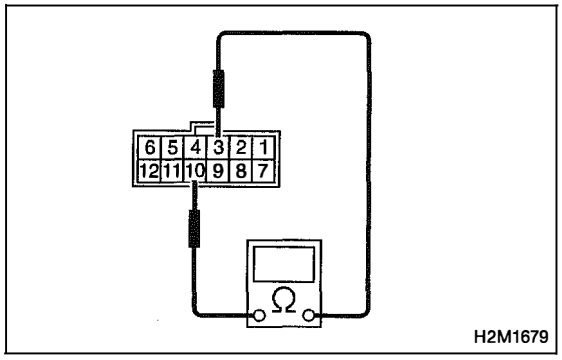
Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 11 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "2" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI22**.

NO : Go to step **10BI23**.



10BI22	CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 3 — No. 10

CHECK : ● ***Is the resistance less than 1 Ω in "1" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to step **10BI26**.

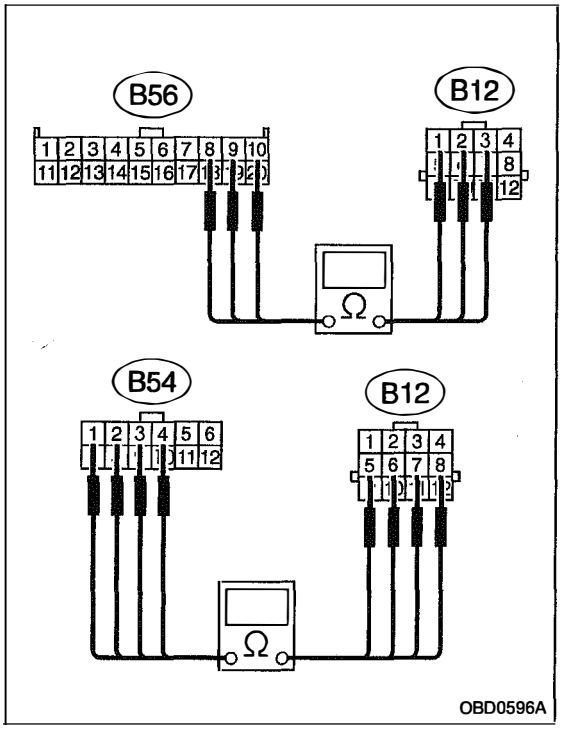
NO : Go to step **10BI23**.

10BI23	CHECK SELECTOR CABLE.

CHECK : ***Is there faulty connection in the selector cable?***

YES : Repair connection of selector cable.

NO : Replace inhibitor switch.



10BI24	CHECK HARNESS BETWEEN TCM AND TRANSMISSION HARNESS CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and transmission harness connector.
3) Measure resistance of harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 9 — (B12) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 10 — (B12) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 8 — (B12) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 1 — (B12) No. 8:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 2 — (B12) No. 7:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 3 — (B12) No. 6:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

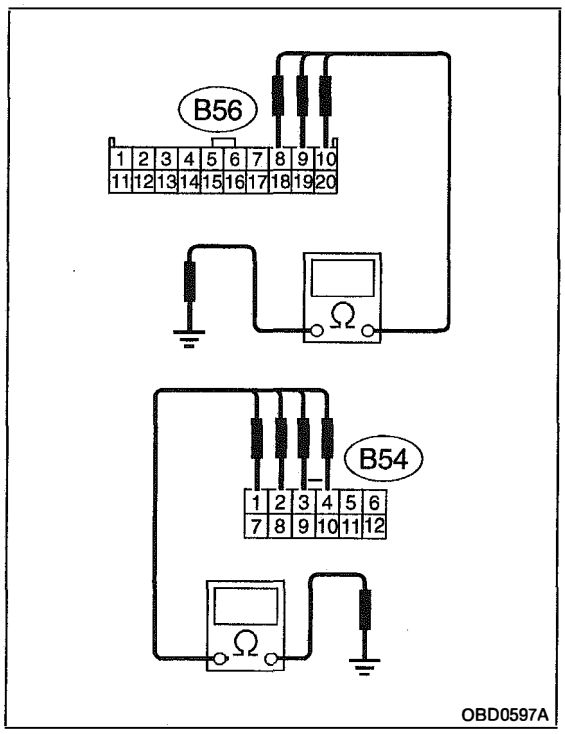
NO : Repair open circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 4 — (B12) No. 5:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair open circuit in harness between TCM and transmission harness connector.



4) Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 9 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B56) No. 8 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 2 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

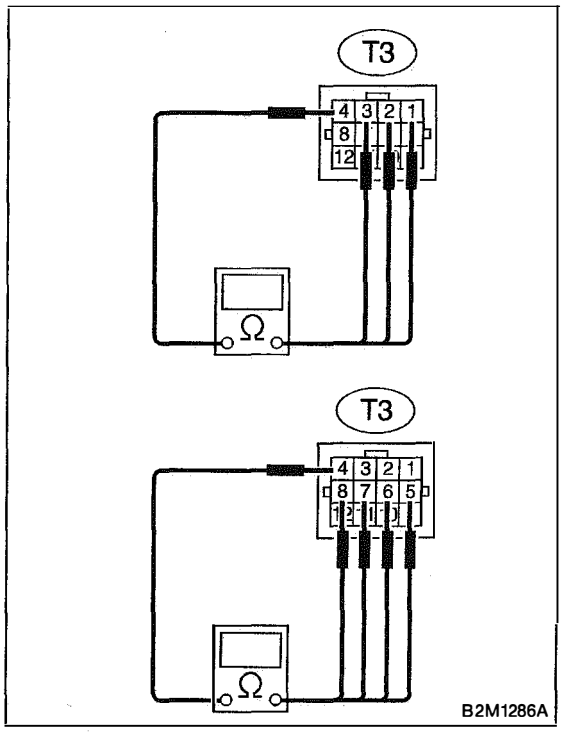
NO : Repair ground short circuit in harness between TCM and transmission harness connector.

Connector & terminal
(B54) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10BI25**.

NO : Repair ground short circuit in harness between TCM and transmission harness connector.



10BI25	CHECK INHIBITOR SWITCH.

Measure resistance between transmission harness connector receptacle's terminals.

Connector & terminal
(T3) No. 3 — No. 4

CHECK ***: • Is the resistance less than 1 Ω in "P" position?***
• Is the resistance more than 1 MΩ in other positions?

YES : Go to next CHECK .

NO : Go to CHECK1 .

Connector & terminal
(T3) No. 2 — No. 4

CHECK ***: • Is the resistance less than 1 Ω in "R" position?***
• Is the resistance more than 1 MΩ in other positions?

YES : Go to next CHECK .

NO : Go to CHECK1 .

Connector & terminal
(T3) No. 1 — No. 4

CHECK ***: • Is the resistance less than 1 Ω in "N" position?***
• Is the resistance more than 1 MΩ in other positions?

YES : Go to next CHECK .

NO : Go to CHECK1 .

Connector & terminal
(T3) No. 8 — No. 4

CHECK ***: • Is the resistance less than 1 Ω in "D" position?***
• Is the resistance more than 1 MΩ in other positions?

YES : Go to next CHECK .

NO : Go to CHECK1 .

Connector & terminal
(T3) No. 7 — No. 4

(CHECK) : ● ***Is the resistance less than 1 Ω in "3" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

(YES) : Go to next (CHECK) .

(NO) : Go to (CHECK1) .

Connector & terminal
(T3) No. 6 — No. 4

(CHECK) : ● ***Is the resistance less than 1 Ω in "2" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

(YES) : Go to next (CHECK) .

(NO) : Go to (CHECK1) .

Connector & terminal
(T3) No. 5 — No. 4

(CHECK) : ● ***Is the resistance less than 1 Ω in "1" position?***
● ***Is the resistance more than 1 MΩ in other positions?***

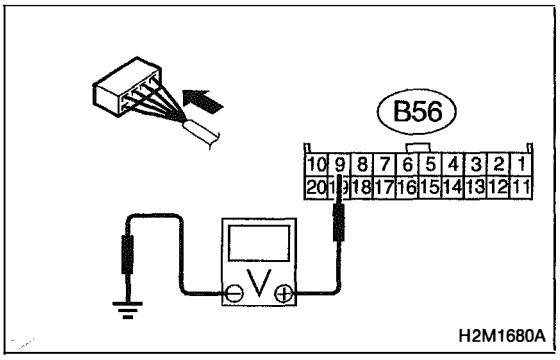
(YES) : Go to step **10BI26**.

(NO) : Go to (CHECK1) .

(CHECK1) : ***Is there faulty connection in the selector cable?***

(YES) : Repair connection of selector cable.

(NO) : Replace inhibitor switch.



10BI26	CHECK INPUT SIGNAL FOR TCM.

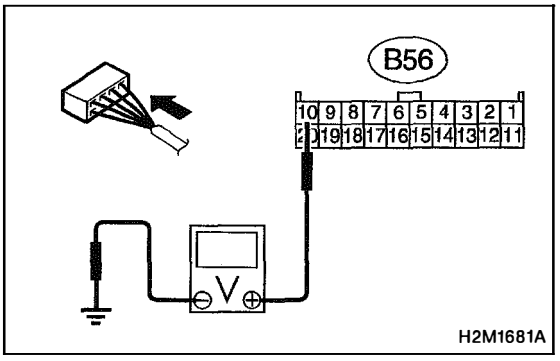
1) Turn ignition switch to OFF.
2) Connect connector to TCM and transmission.
3) Turn ignition switch to ON.
4) Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 9 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "P" and "N" positions?***
● ***Is the voltage more than 8 V in other positions?***

YES : Go to step **10BI27**.

NO : Go to step **10BI33**.



10BI27	CHECK INPUT SIGNAL FOR TCM.

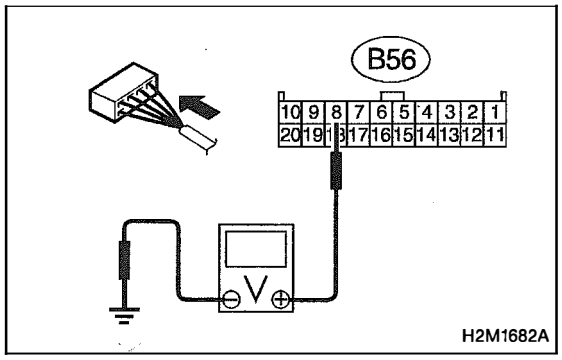
Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 10 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "R" position?***
● ***Is the voltage more than 6 V in other positions?***

YES : Go to step **10BI28**.

NO : Go to step **10BI33**.



10BI28	CHECK INPUT SIGNAL FOR TCM.

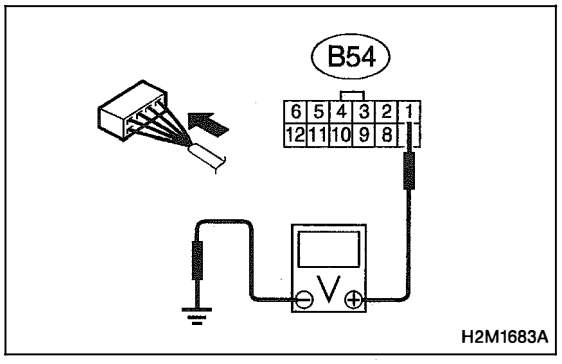
Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 8 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "N" and "P" positions?***
● ***Is the voltage more than 8 V in other positions?***

YES : Go to step **10BI29**.

NO : Go to step **10BI33**.



10BI29	CHECK INPUT SIGNAL FOR TCM.

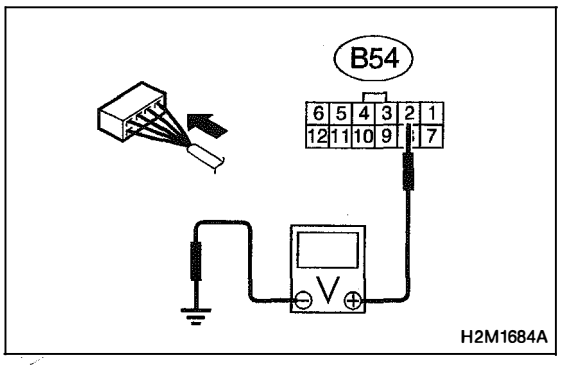
Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 1 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "D" position?***
● ***Is the voltage more than 6 V in other positions?***

YES : Go to step **10BI30**.

NO : Go to step **10BI33**.



10BI30	CHECK INPUT SIGNAL FOR TCM.

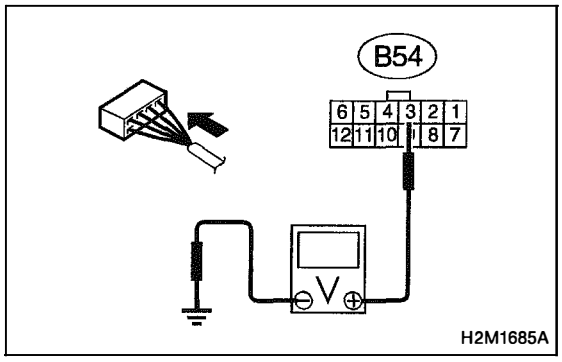
Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 2 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "3" position?***
● ***Is the voltage more than 6 V in other positions?***

YES : Go to step **10BI31**.

NO : Go to step **10BI33**.



10BI31	CHECK INPUT SIGNAL FOR TCM.

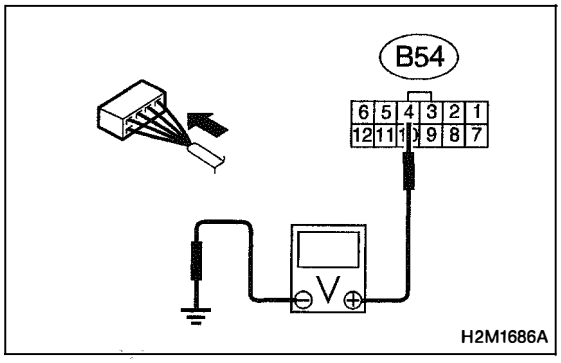
Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 3 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "2" position?***
● ***Is the voltage more than 6 V in other positions?***

YES : Go to step **10BI32**.

NO : Go to step **10BI33**.



10BI32	CHECK INPUT SIGNAL FOR TCM.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B54) No. 4 (+) — Chassis ground (–):

CHECK : ● ***Is the voltage less than 1 V in "1" position?***
● ***Is the voltage more than 6 V in other positions?***

YES : Repair poor contact in TCM connector.

NO : Go to step **10BI33**.

10BI33	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

OBD	(FB1)
P0710	<ATF>

OBD0380

BJ: DTC P0710 — TRANSMISSION FLUID TEMPERATURE SENSOR CIRCUIT MALFUNCTION —

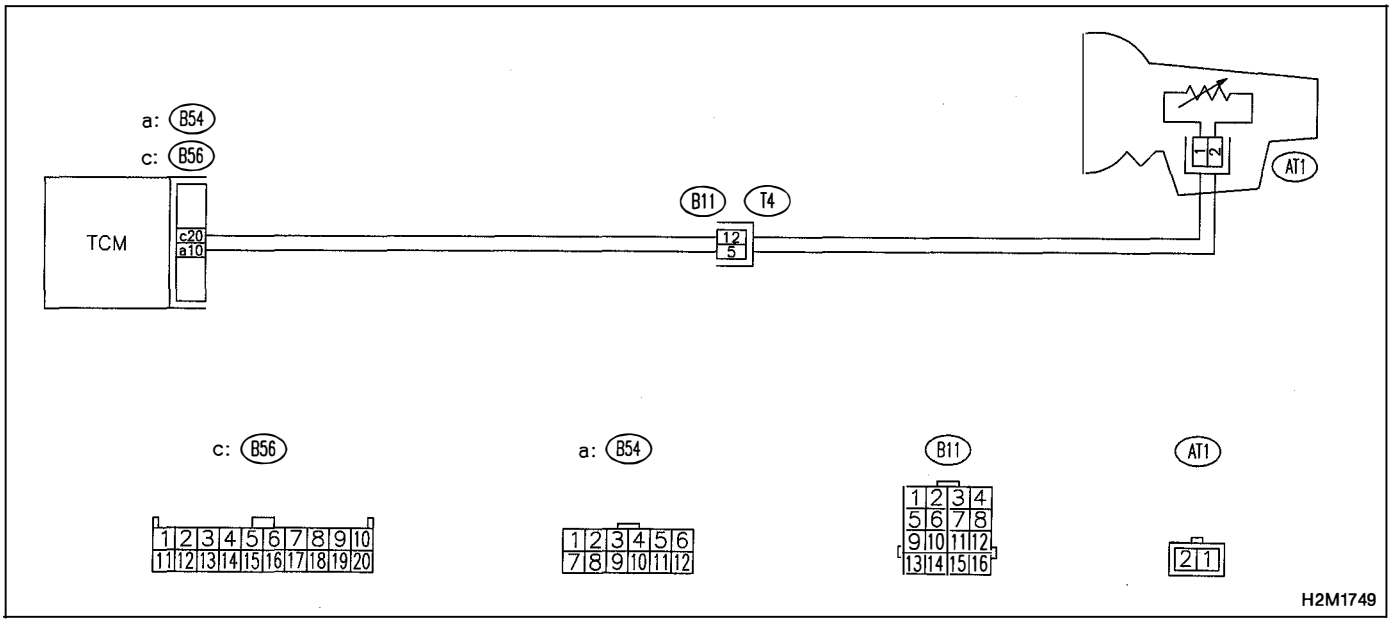
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift up to 4th speed (after engine warm-up)
- No lock-up (after engine warm-up)
- Excessive shift shock

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BJ1	CHECK DTC P0710 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0710?***

YES : Check ATF temperature sensor circuit. <Ref. to 3-2 [T8H0].>

NO : It is not necessary to inspect DTC P0710.

OBD	(FB1)
P0720	<ATVSP>

OBD0392

BK: DTC P0720 — OUTPUT SPEED SENSOR (VEHICLE SPEED SENSOR 1) CIRCUIT MALFUNCTION —

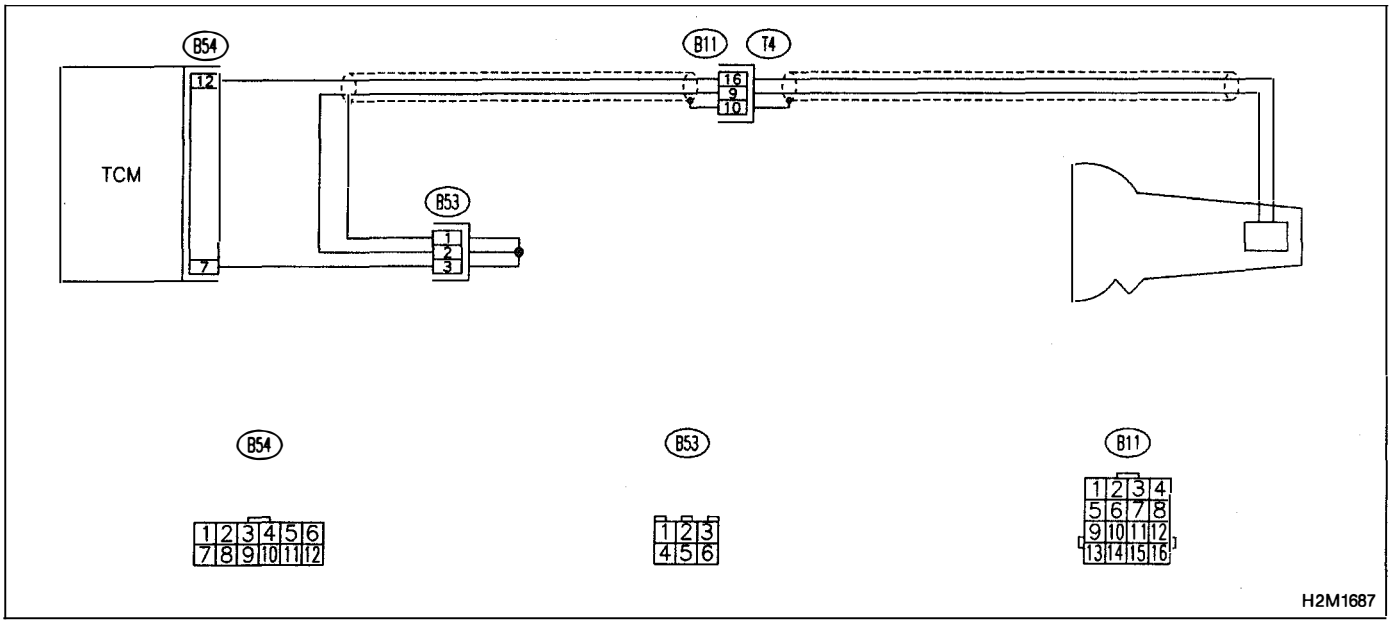
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift or excessive tight corner "braking"

WIRING DIAGRAM:



H2M1687

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BK1	CHECK DTC P0720 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0720?***

YES : Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8N0].>

NO : It is not necessary to inspect DTC P0720.

OBD (FB1)

P0725 <ATNE>

OBD0404

BL: DTC P0725 — ENGINE SPEED INPUT CIRCUIT MALFUNCTION —

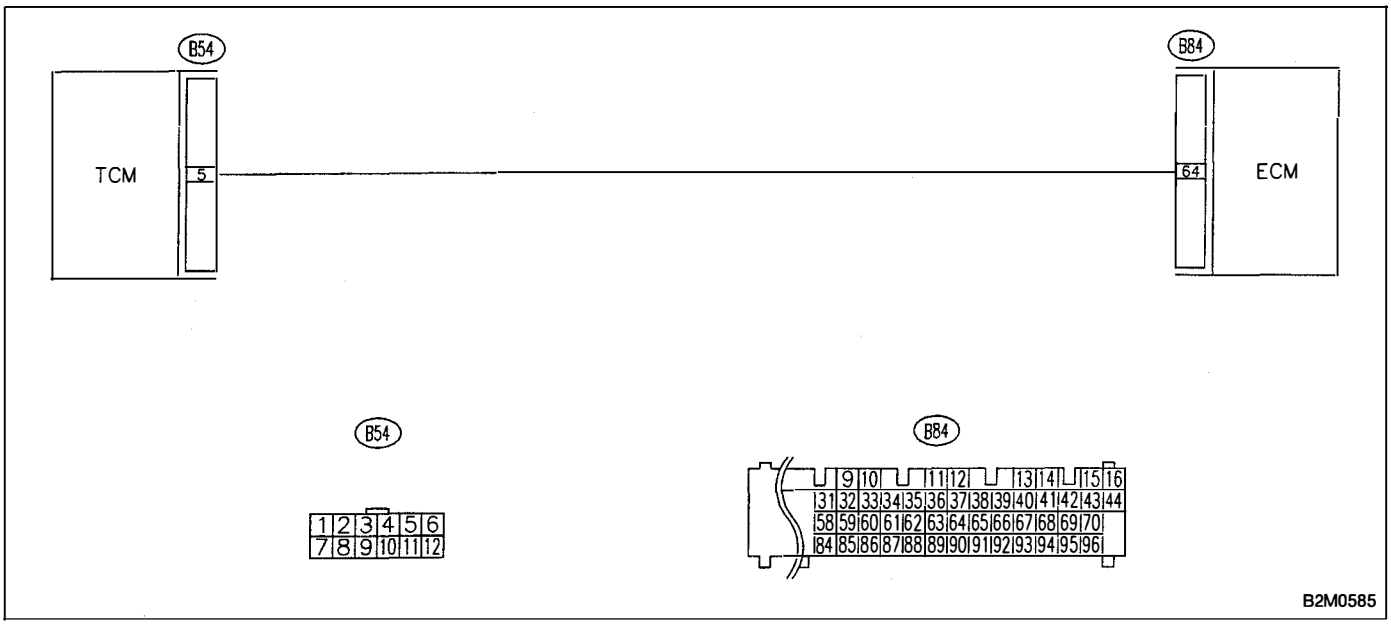
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up)
- AT diagnostic indicator light (AT OIL TEMP indicator light) remains on when vehicle speed is "0".

WIRING DIAGRAM:



B2M0585

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BL1	CHECK DTC P0725 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0725?***

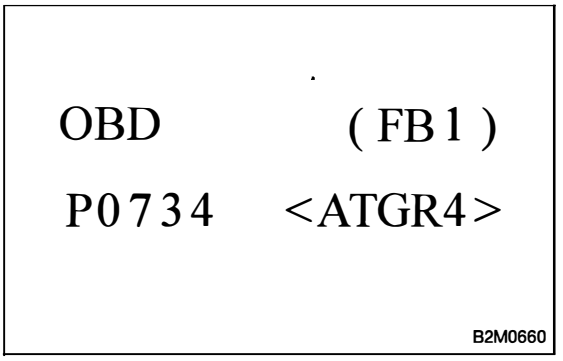
YES : Check engine speed input signal circuit. <Ref. to 3-2 [T8J0].>

NO : It is not necessary to inspect DTC P0725.

BM: DTC P0731
— GEAR 1 INCORRECT RATIO —

BN: DTC P0732
— GEAR 2 INCORRECT RATIO —

BO: DTC P0733
— GEAR 3 INCORRECT RATIO —



BP: DTC P0734
— GEAR 4 INCORRECT RATIO —

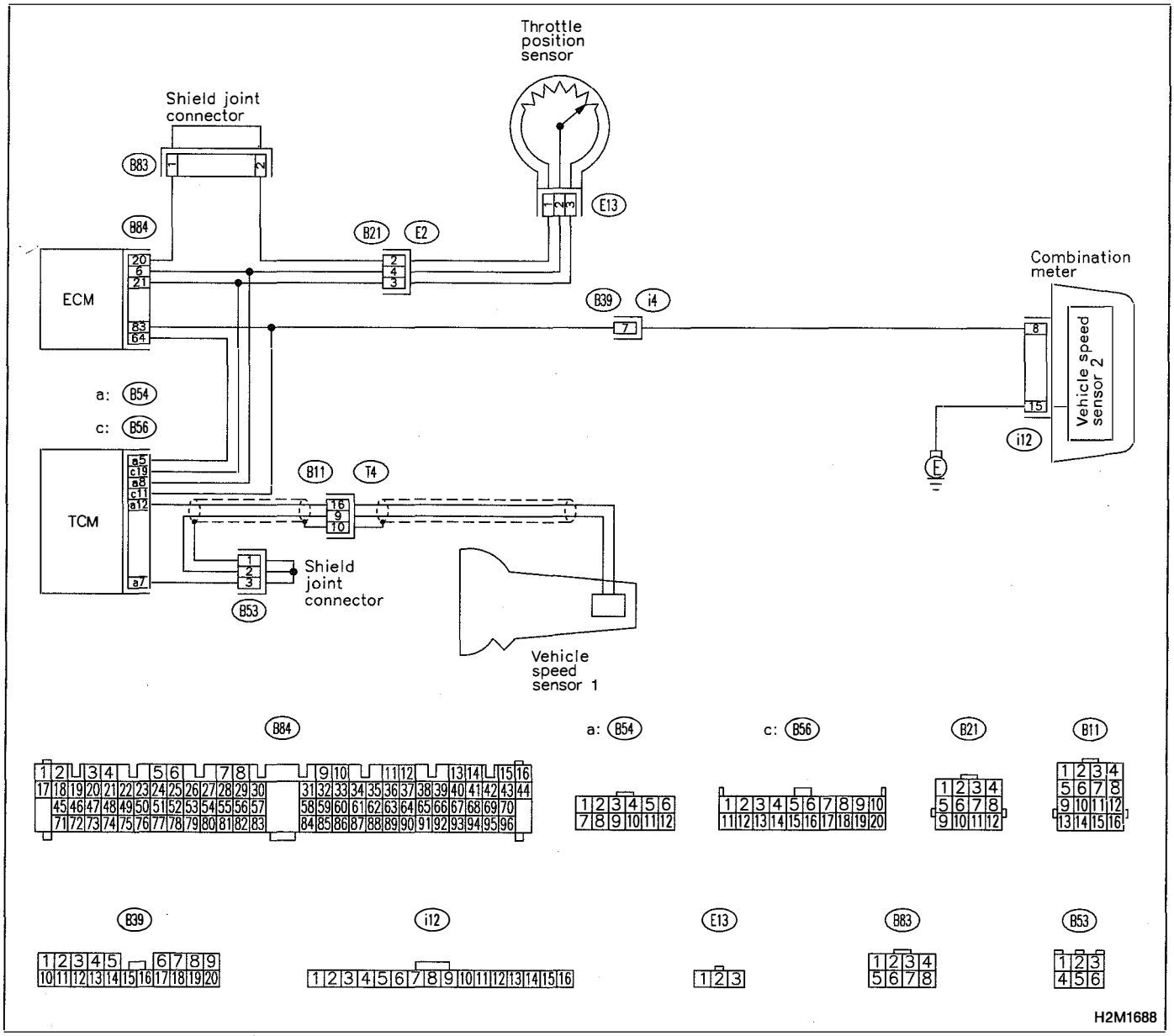
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Shift point too high or too low; engine brake not effected in "3" range; excessive shift shock; excessive tight corner "braking"

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BP1	**CHECK ANY OTHER DTC (BESIDES DTC P0731, P0732, P0733, P0734) ON DISPLAY.**

CHECK ***: Is there any other DTC on display?***

YES : Inspect relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step **10BP2**.

10BP2	CHECK THROTTLE POSITION SENSOR CIRCUIT.

Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>

CHECK : ***Is there any trouble in throttle position sensor circuit?***

YES : Repair or replace throttle position sensor circuit.

NO : Go to step **10BP3**.

10BP3	CHECK VEHICLE SPEED SENSOR 1 CIRCUIT.

Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8N0].>

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***

YES : Repair or replace vehicle speed sensor 1 circuit.

NO : Go to step **10BP4**.

10BP4	CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8O0].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***

YES : Repair or replace vehicle speed sensor 2 circuit.

NO : Go to step **10BP5**.

10BP5	CHECK ENGINE SPEED INPUT CIRCUIT.

Check engine speed input circuit. <Ref. to 3-2 [T8J0].>

CHECK : ***Is there any trouble in engine speed input circuit?***

YES : Repair or replace engine speed input circuit.

NO : Go to step **10BP6**.

10BP6	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Go to step **10BP7**.

10BP7	CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK ***: Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission.

NO : Replace TCM.

OBD (FB1)

P0740 <ATLU_F>

B2M0661

BQ: DTC P0740 — TORQUE CONVERTER CLUTCH SYSTEM MALFUNCTION —

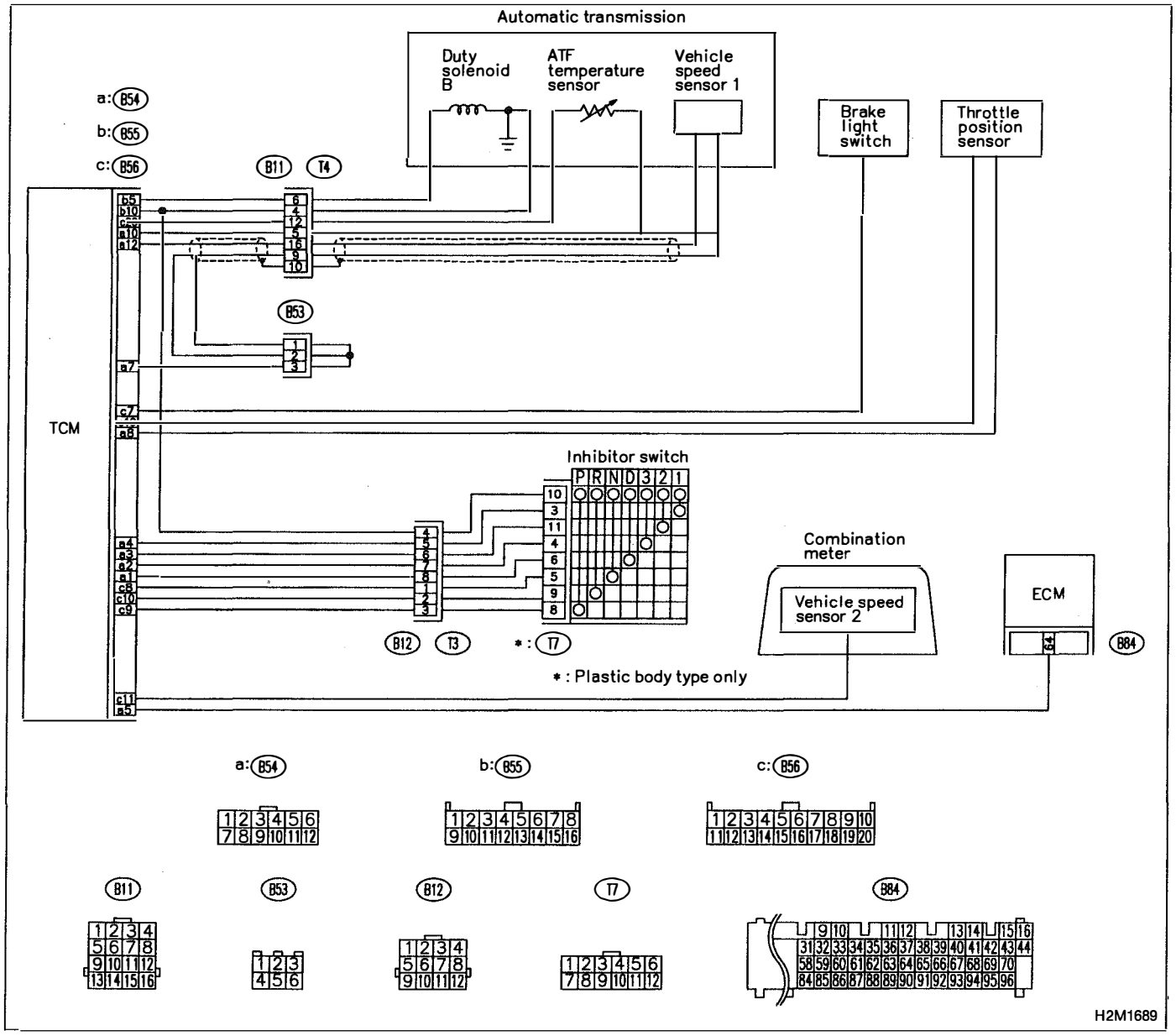
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up)
- No shift or excessive tight corner "braking"

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BQ1	**CHECK ANY OTHER DTC (BESIDES DTC P0740) ON DISPLAY.**

CHECK ***: Is there any other DTC on display?***
YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>
NO : Go to step **10BQ2**.

10BQ2	**CHECK DUTY SOLENOID B CIRCUIT.**

Check duty solenoid B circuit. <Ref. to 3-2 [T8D0].>
CHECK ***: Is there any trouble in duty solenoid B circuit?***
YES : Repair or replace duty solenoid B circuit.
NO : Go to step **10BQ3**.

10BQ3	**CHECK THROTTLE POSITION SENSOR CIRCUIT.**

Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>
CHECK ***: Is there any trouble in throttle position sensor circuit?***
YES : Repair or replace throttle position sensor circuit.
NO : Go to step **10BQ4**.

10BQ4	**CHECK VEHICLE SPEED SENSOR 1 CIRCUIT.**

Check vehicle speed sensor 1 circuit. <Ref. to 3-2 [T8N0].>
CHECK ***: Is there any trouble in vehicle speed sensor 1 circuit?***
YES : Repair or replace vehicle speed sensor 1 circuit.
NO : Go to step **10BQ5**.

10BQ5	CHECK VEHICLE SPEED SENSOR 2 CIRCUIT.

Check vehicle speed sensor 2 circuit. <Ref. to 3-2 [T8O0].>

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***

YES : Repair or replace vehicle speed sensor 2 circuit.

NO : Go to step **10BQ6**.

10BQ6	CHECK ENGINE SPEED INPUT CIRCUIT.

Check engine speed input circuit. <Ref. to 3-2 [T8J0].>

CHECK : ***Is there any trouble in engine speed input circuit?***

YES : Repair or replace engine speed input circuit.

NO : Go to step **10BQ7**.

10BQ7	CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T10BI0].>

CHECK : ***Is there any trouble in inhibitor switch circuit?***

YES : Repair or replace inhibitor switch circuit.

NO : Go to step **10BQ8**.

10BQ8	CHECK BRAKE LIGHT SWITCH CIRCUIT.

Check brake light switch circuit. <Ref. to 2-7 [T10BH0].>

CHECK : ***Is there any trouble in brake light switch circuit?***

YES : Repair or replace brake light switch circuit.

NO : Go to step **10BQ9**.

10BQ9	CHECK ATF TEMPERATURE SENSOR CIRCUIT.

Check ATF temperature sensor circuit. <Ref. to 3-2 [T8H0].>

CHECK ***: Is there any trouble in ATF temperature sensor circuit?***

YES : Repair or replace ATF temperature sensor circuit.

NO : Go to step **10BQ10**.

10BQ10	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Go to step **10BQ11**.

10BQ11	CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK ***: Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission.

NO : Replace TCM.

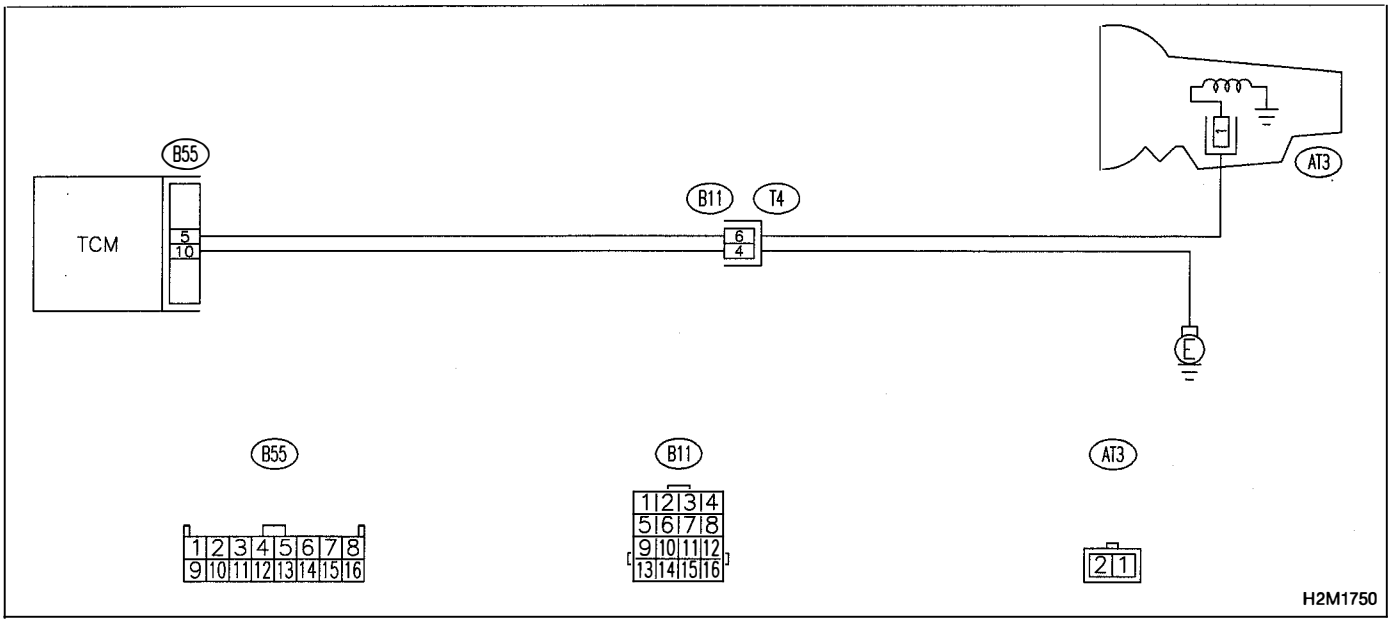
OBD (FB1)
P0743 <ATLU>
B2M0662

BR: DTC P0743
— TORQUE CONVERTER CLUTCH SYSTEM (DUTY SOLENOID B) ELECTRICAL —

DTC DETECTING CONDITION:
- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:
- No lock-up (after engine warm-up)

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BR1	CHECK DTC P0743 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0743?***

YES : Check duty solenoid B circuit. <Ref. to 3-2 [T8D0].>

NO : It is not necessary to inspect DTC P0743.

OBD (FB1)
P0748 <ATPL>
B2M0663

BS: DTC P0748
— PRESSURE CONTROL SOLENOID (DUTY SOLENOID A) ELECTRICAL —

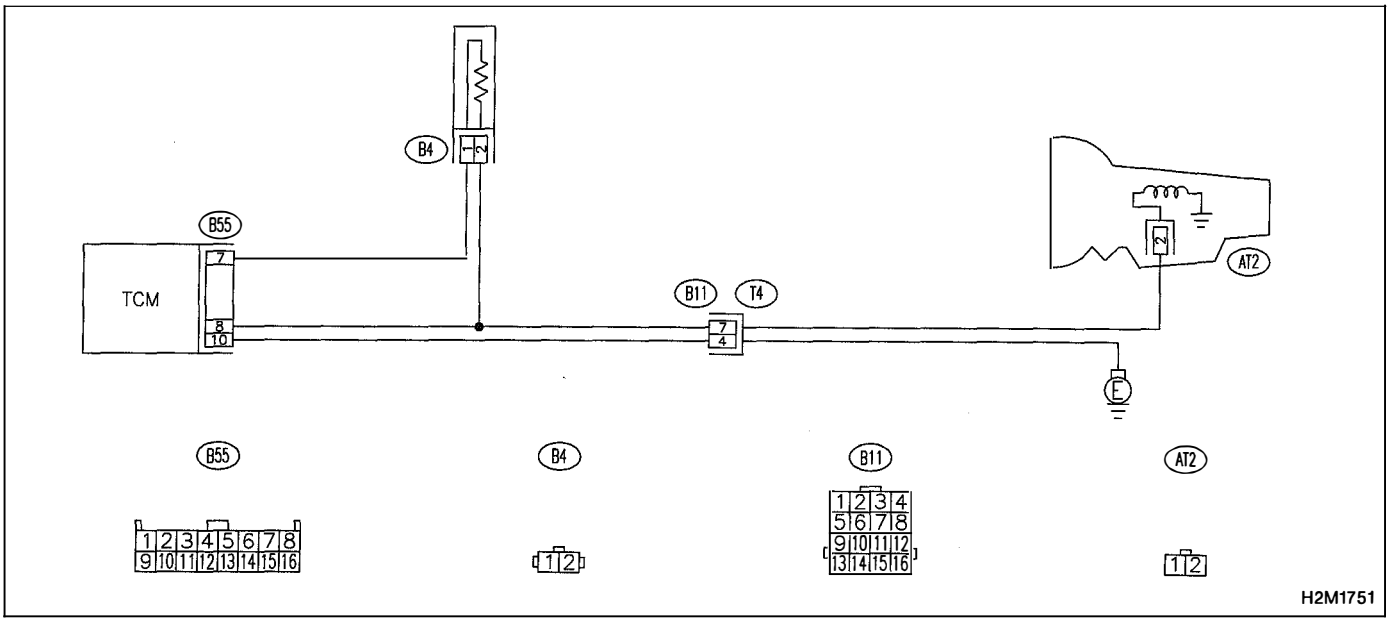
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Excessive shift shock

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BS1	CHECK DTC P0748 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0748?***

YES : Check duty solenoid A circuit. <Ref. to 3-2 [T8C0].>

NO : It is not necessary to inspect DTC P0748.

OBD (FB1)
P0753 <ATSFT1>
B2M0664

BT: DTC P0753 — SHIFT SOLENOID A (SHIFT SOLENOID 1) ELECTRICAL —

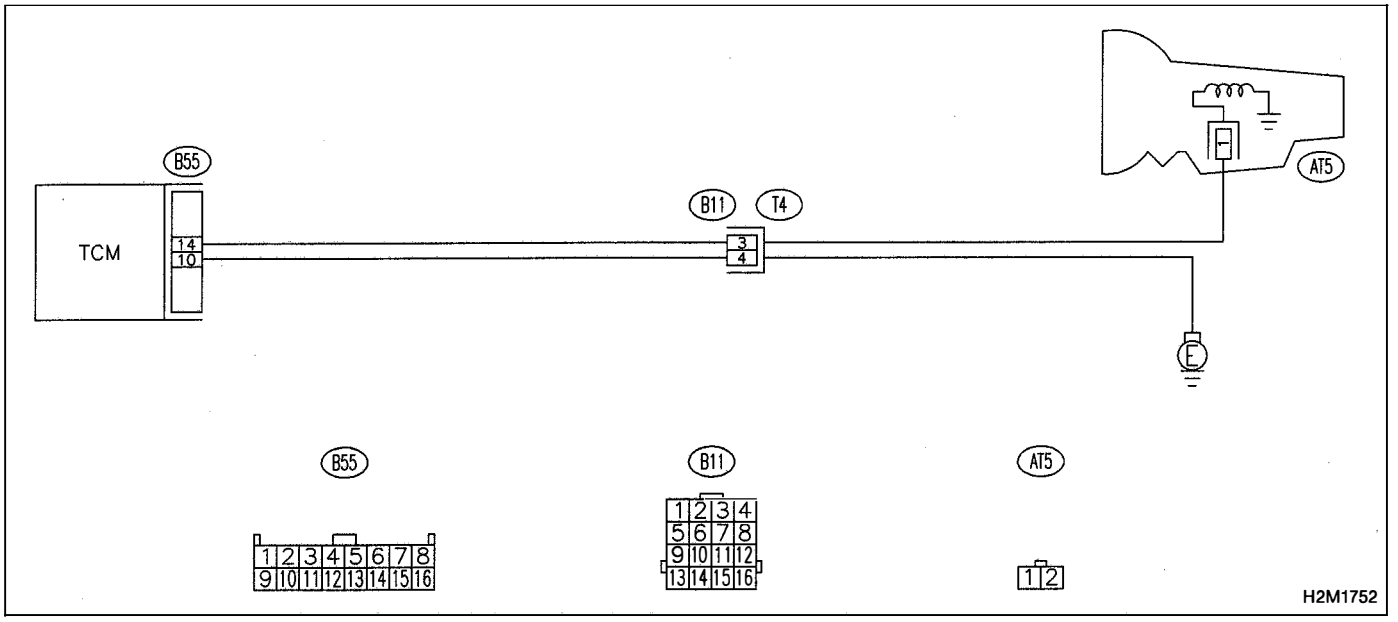
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BT1	CHECK DTC P0753 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0753?***

YES : Check shift solenoid 1 circuit. <Ref. to 3-2 [T8G0].>

NO : It is not necessary to inspect DTC P0753.

OBD (FB1)

P0758 <ATSFT2>

B2M0665

BU: DTC P0758 — SHIFT SOLENOID B (SHIFT SOLENOID 2) ELECTRICAL —

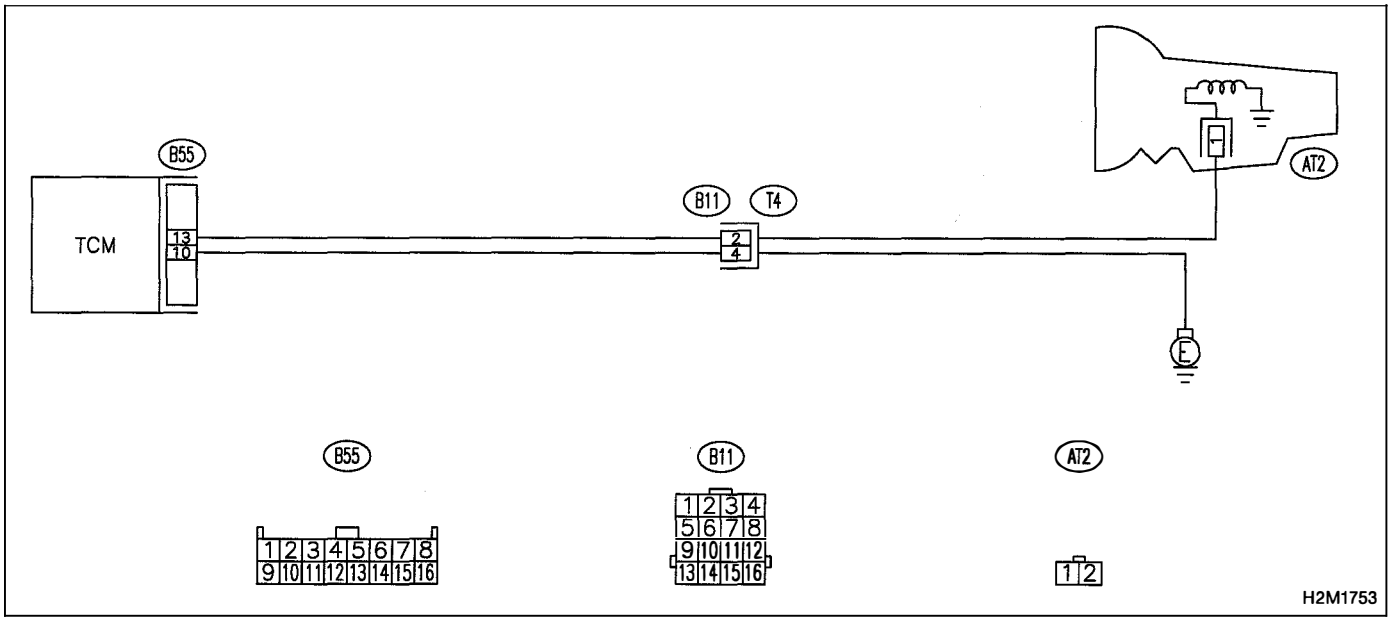
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- No shift

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BU1	**CHECK DTC P0758 ON DISPLAY.**

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0758?***

YES : Check shift solenoid 2 circuit. <Ref. to 3-2 [T8F0].>

NO : It is not necessary to inspect DTC P0758.

OBD (FB1)

P0760<ATOVR_F>

B2M0666

BV: DTC P0760 — SHIFT SOLENOID C (SHIFT SOLENOID 3) MALFUNCTION —

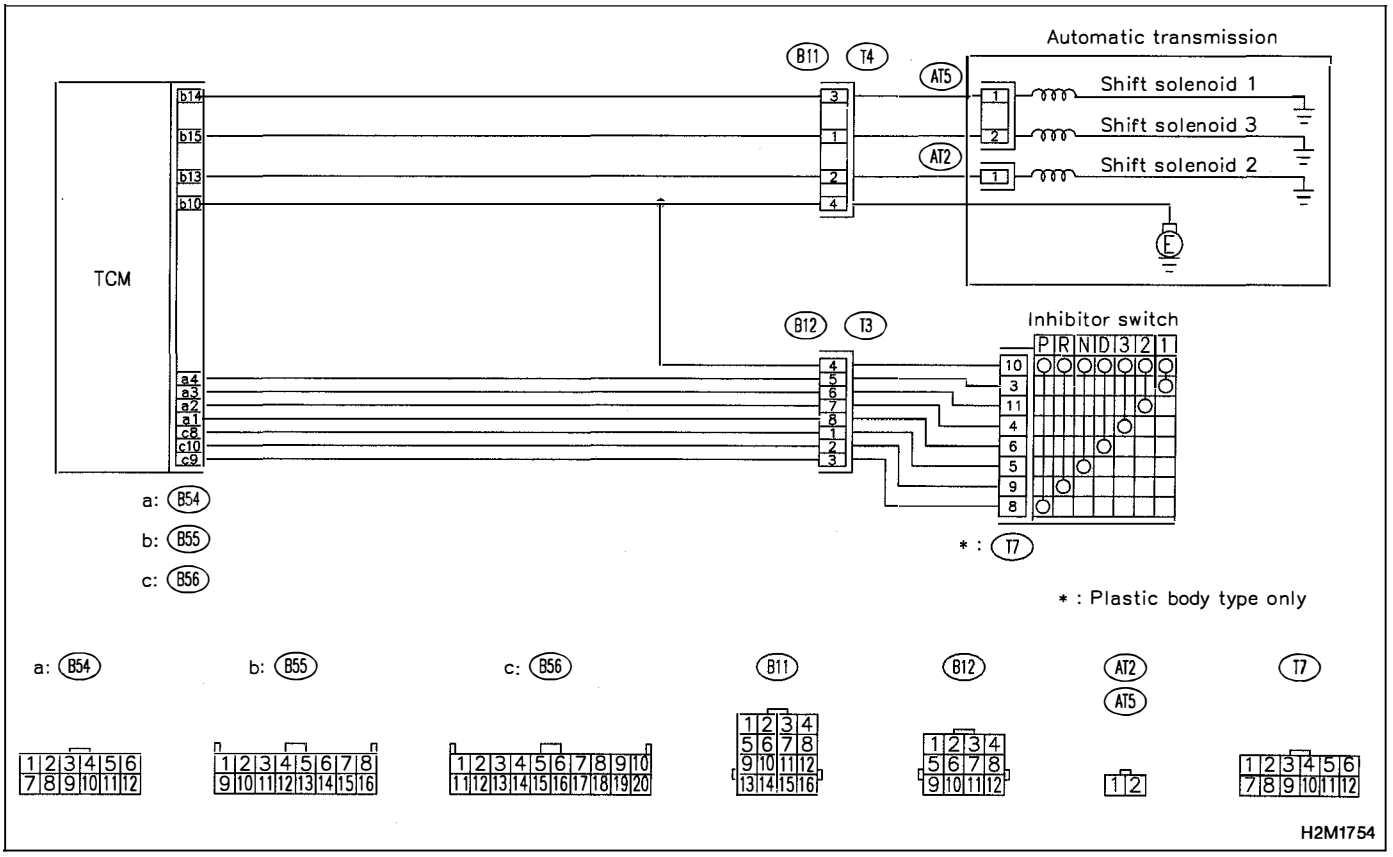
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Ineffective engine brake with selector lever in "3"

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BV1	**CHECK ANY OTHER DTC (BESIDES DTC P0760) ON DISPLAY.**

CHECK ***: Is there any other DTC on display?***

YES : Inspect relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step **10BV2**.

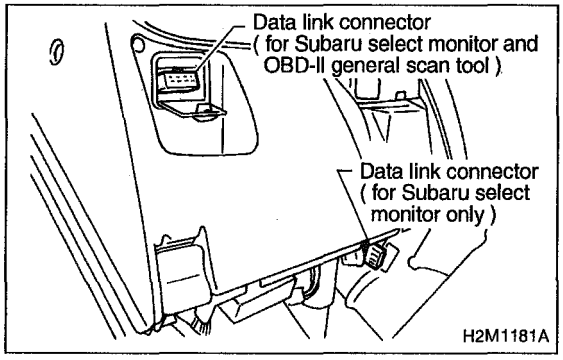
10BV2	CHECK INHIBITOR SWITCH CIRCUIT.

Check inhibitor switch circuit. <Ref. to 2-7 [T10BI0].>

CHECK ***: Is there any trouble in inhibitor switch circuit?***

YES : Repair or replace inhibitor switch circuit.

NO : Go to step **10BV3**.

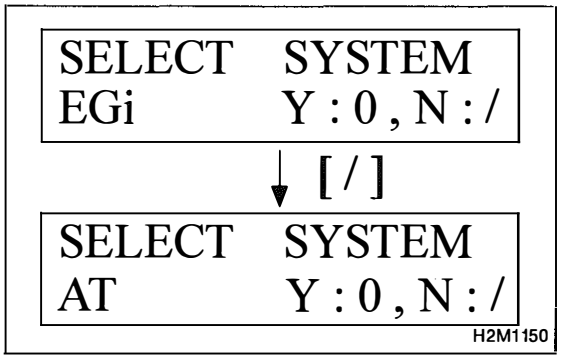


10BV3	CHECK GEAR POSITION.

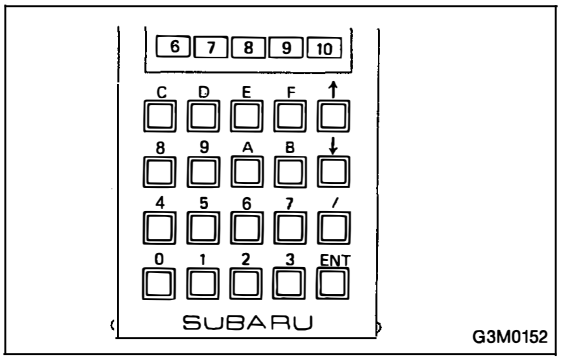
1) Turn ignition switch to OFF.
2) Connect the Subaru select monitor to data link connector.
3) Lift-up or raise the vehicle and support with safety stands.

CAUTION:
On AWD models, raise all wheels off ground.

4) Start and warm-up the engine and transmission.

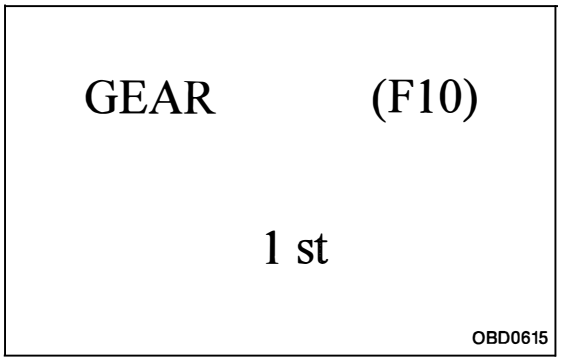


5) Subaru select monitor switch to ON.
6) Select AT mode using function key.
Press the function key [/], and change to AT mode.
7) Press the function key [0].



8) Designate mode using function key.

Function mode for AT: F10



9) Move selector lever to "D" and drive the vehicle.
10) Read data on Subaru select monitor.

CHECK ***: Does gear position change according to throttle position and vehicle speed?***

YES : Go to step **10BV4**.

NO : Go to step **10BV6**.

10BV4	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Go to step **10BV5.**

10BV5	CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK ***: Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission.

NO : Replace TCM.

10BV6	CHECK SHIFT SOLENOID 1 CIRCUIT.

Check shift solenoid 1 circuit. <Ref. to 3-2 [T8G0].>

CHECK ***: Is there any trouble in shift solenoid 1 circuit?***

YES : Repair or replace shift solenoid 1 circuit.

NO : Go to step **10BV7.**

10BV7	CHECK SHIFT SOLENOID 2 CIRCUIT.

Check shift solenoid 2 circuit. <Ref. to 3-2 [T8F0].>

CHECK ***: Is there any trouble in shift solenoid 2 circuit?***

YES : Repair or replace shift solenoid 2 circuit.

NO : Go to step **10BV8.**

10BV8	CHECK SHIFT SOLENOID 3 CIRCUIT.

Check shift solenoid 3 circuit. <Ref. to 3-2 [T8E0].>

CHECK ***: Is there any trouble in shift solenoid 3 circuit?***

YES : Repair or replace shift solenoid 3 circuit.

NO : Go to step **10BV9.**

10BV9	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Go to step **10BV10**.

10BV10	CHECK MECHANICAL TROUBLE.

Check mechanical trouble in automatic transmission.

CHECK ***: Is there any mechanical trouble in automatic transmission?***

YES : Repair or replace automatic transmission.

NO : Replace TCM.

OBD (FB1)
P0763 <ATOVR>
B2M0667

BW: DTC P0763 — SHIFT SOLENOID C (SHIFT SOLENOID 3) ELECTRICAL —

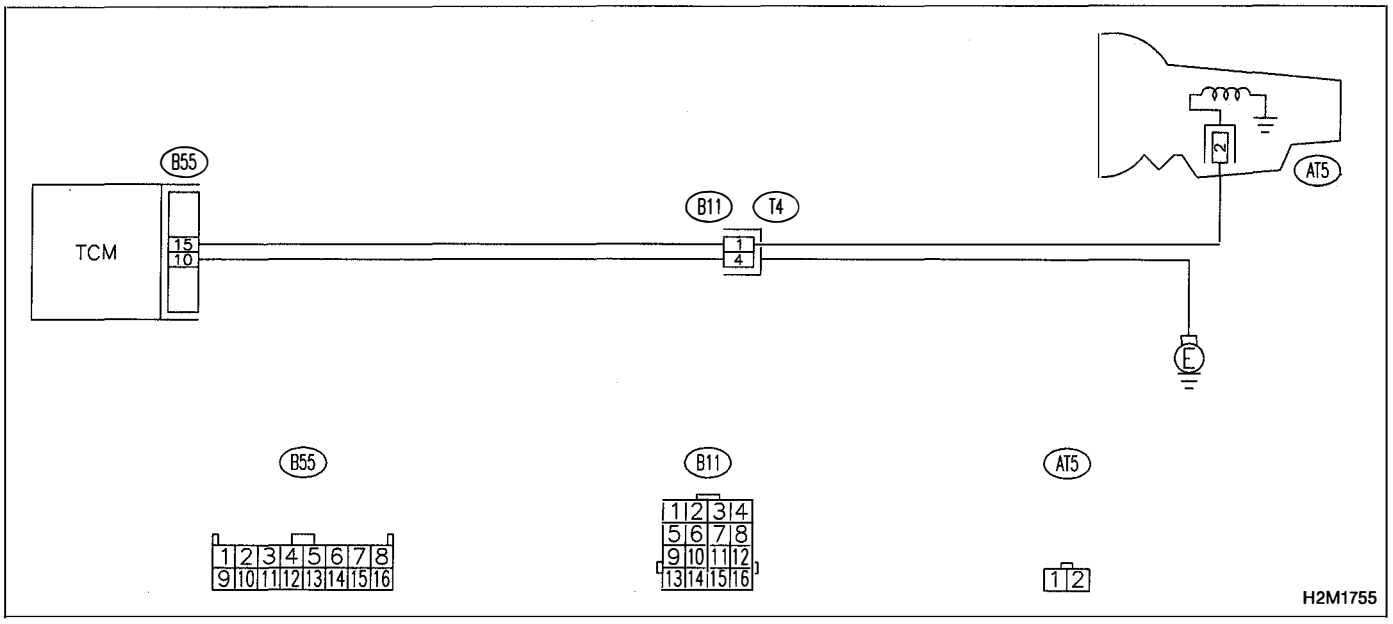
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Ineffective engine brake with selector lever in "3"

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BW1	**CHECK DTC P0763 ON DISPLAY.**

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0763?***

YES : Check shift solenoid 3 circuit. <Ref. to 3-2 [T8E0].>

NO : It is not necessary to inspect DTC P0763.

MEMO:

OBD (FB1)

P1100 <ST_SWOFF>

B2M1113

BX: DTC P1100
— STARTER SWITCH CIRCUIT LOW INPUT —

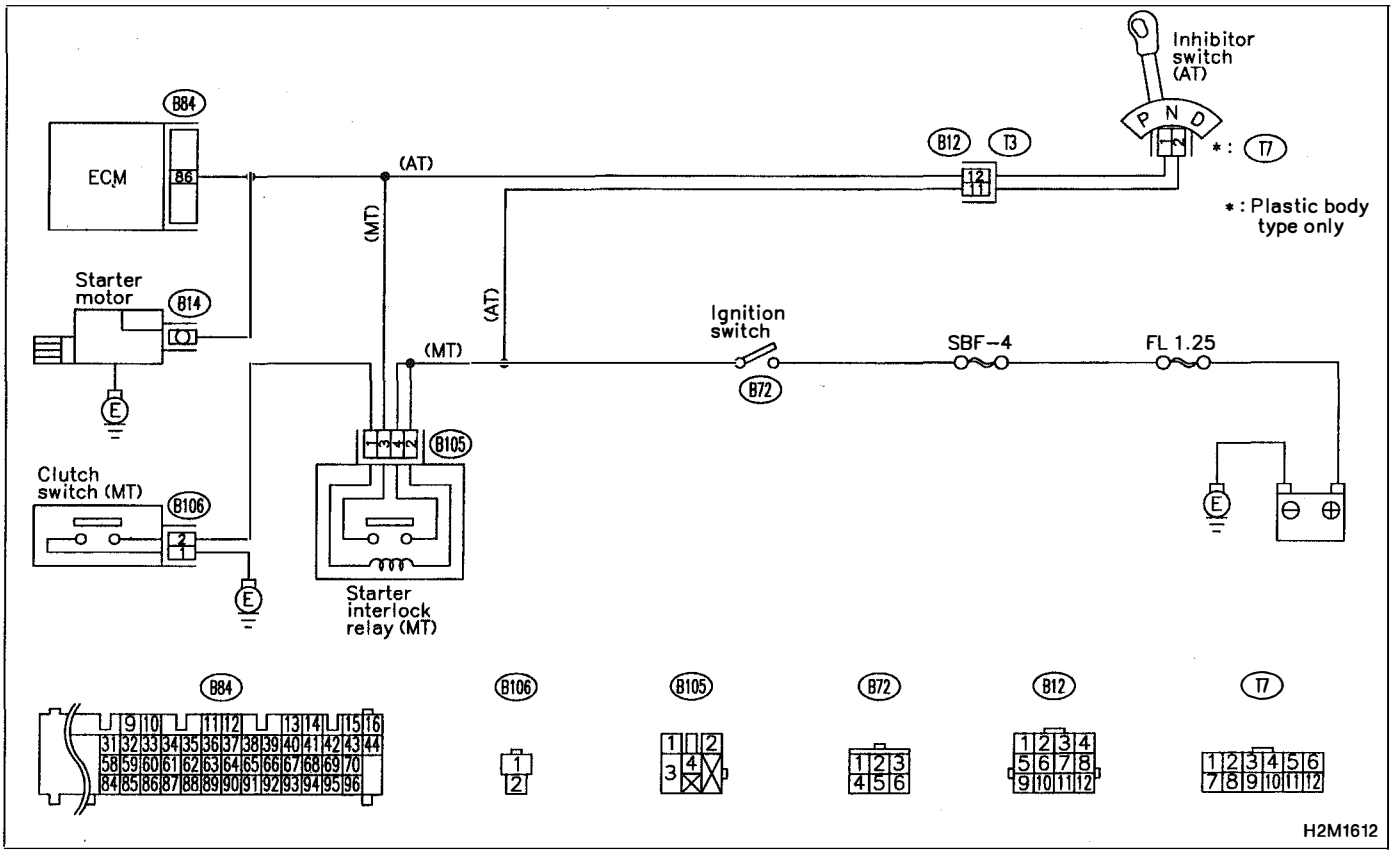
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BX1	CHECK OPERATION OF STARTER MOTOR.

CHECK ***: Does starter motor operate when ignition switch to "ST"?***

NOTE:
- On AT vehicles, place the inhibitor switch in the "P" or "N" position.
- On MT vehicles, depress the clutch pedal.

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open or ground short circuit in harness between ECM and starter motor connector.
- Poor contact in ECM connector.

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

OBD (FB1)
P1101 <N_SW>
B2M1114

BY: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT MALFUNCTION [MT VEHICLES] —

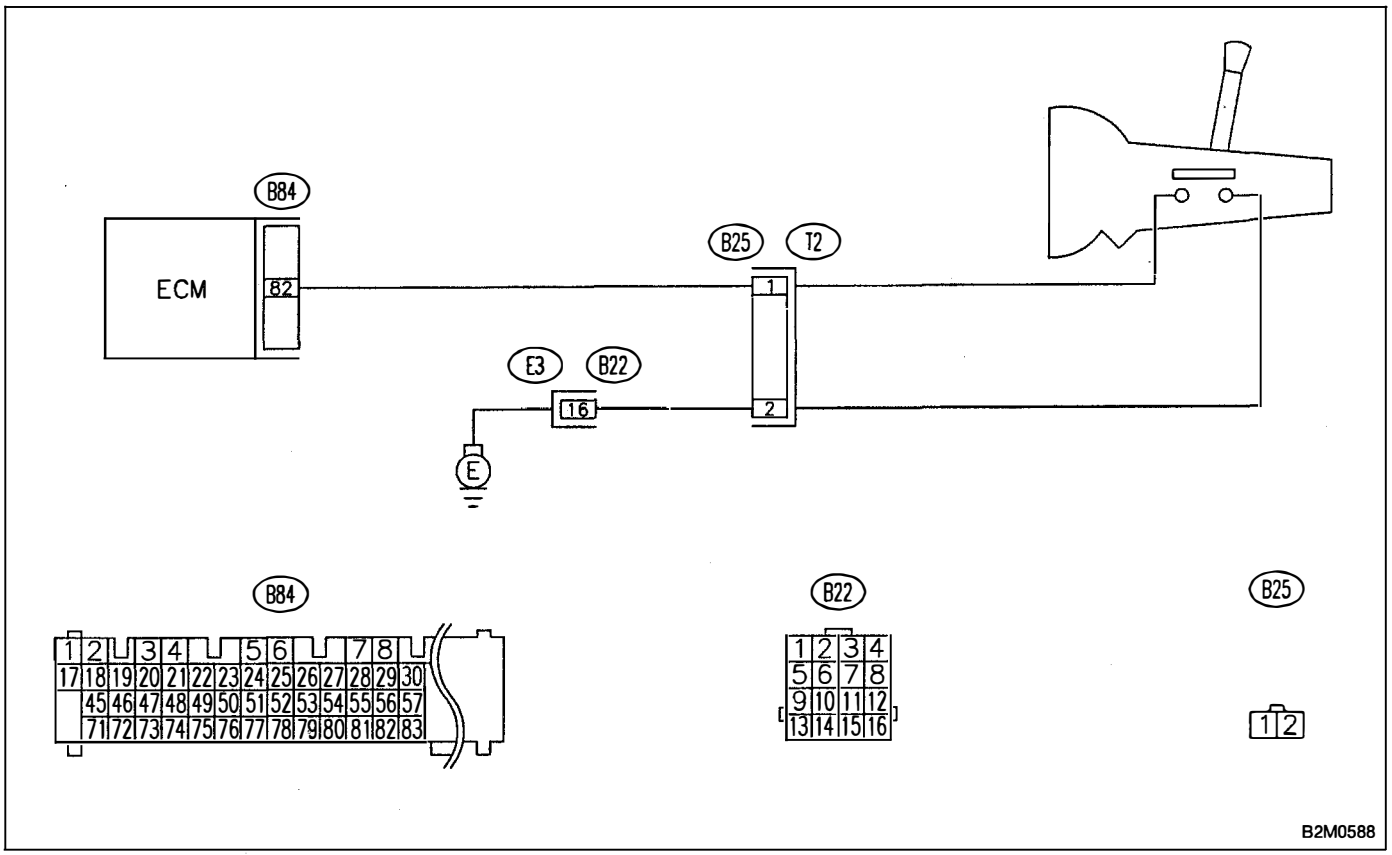
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

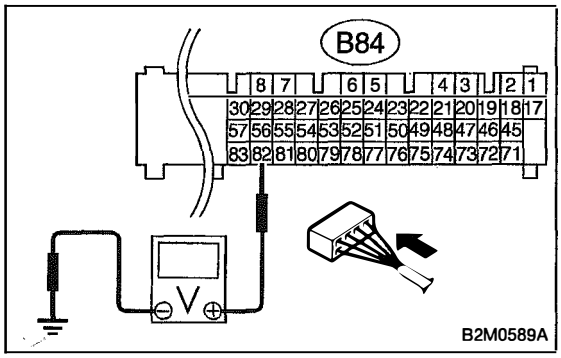
- Erroneous idling

WIRING DIAGRAM:



B2M0588

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10BY1	CHECK INPUT SIGNAL FOR ECM.

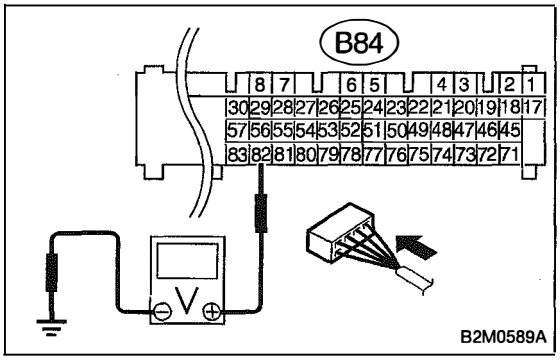
1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 4.5 and 5.5 V in neutral position?***

YES : Go to next step 3).

NO : Go to step **10BY3**.



3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V in other positions?***

YES : Go to step **10BY2**.

NO : Go to step **10BY3**.

10BY2	CHECK POOR CONTACT.

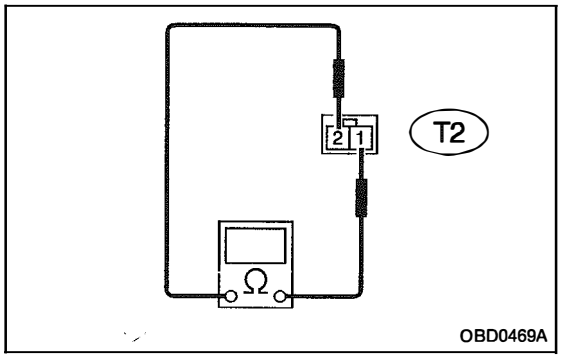
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10BY3	CHECK NEUTRAL POSITION SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission harness.
3) Measure resistance between transmission harness and connector terminals.

Connector & terminal
(T2) No. 1 — No. 2:

CHECK ***: Is the resistance more than 1 MΩ in neutral position?***

YES : Go to next step 4).

NO : Repair short circuit in transmission harness or replace neutral position switch.

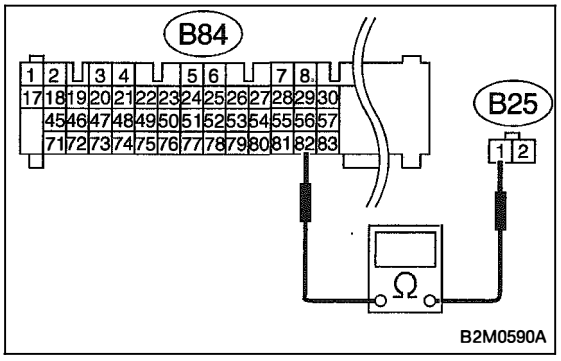
4) Measure resistance between transmission harness connector terminals.

Connector & terminal
(T2) No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω in other positions?***

YES : Go to step **10BY4**.

NO : Repair open circuit in transmission harness or replace neutral position switch.



10BY4	CHECK HARNESS BETWEEN ECM AND NEUTRAL POSITION SWITCH.

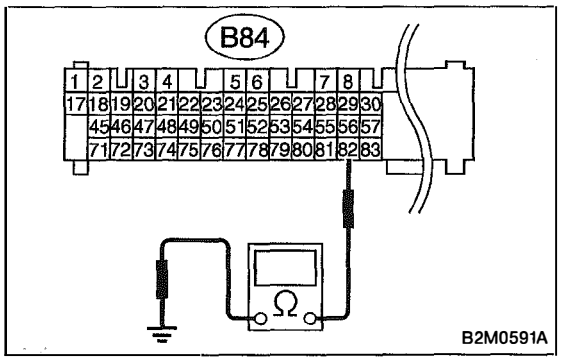
1) Disconnect connector from ECM.
2) Measure resistance of harness between ECM and transmission harness connector.

Connector & terminal
(B84) No. 82 — (B25) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair open circuit in harness between ECM and transmission harness connector.



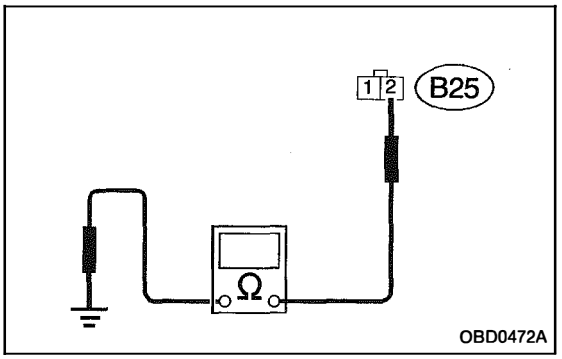
3) Measure resistance between ECM and chassis ground.

Connector & terminal
(B84) No. 82 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and transmission harness connector.

NO : Go to next step 4).



4) Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(B25) No. 2 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to step **10BY5.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between transmission harness connector and engine grounding terminal
- Poor contact in coupling connector (B22)

10BY5	CHECK POOR CONTACT.

Check poor contact in transmission harness connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in transmission harness connector?***

YES : Repair poor contact in transmission harness connector.

NO : Replace ECM.

OBD (FB1)
P1101 <N_SWOFF>
B2M1115

BZ: DTC P1101 — NEUTRAL POSITION SWITCH CIRCUIT HIGH INPUT [AT VEHICLES] —

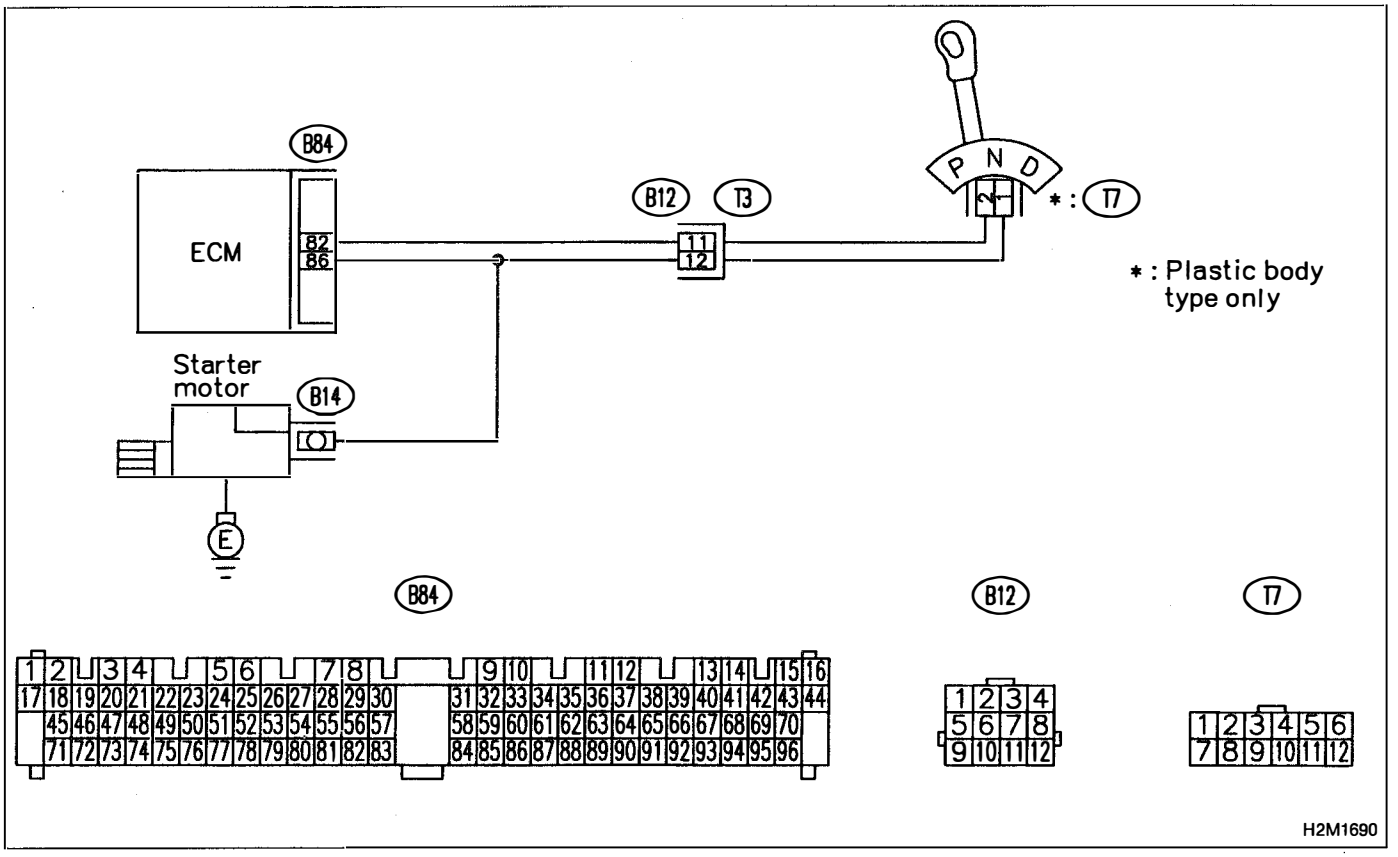
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling

WIRING DIAGRAM:



H2M1690

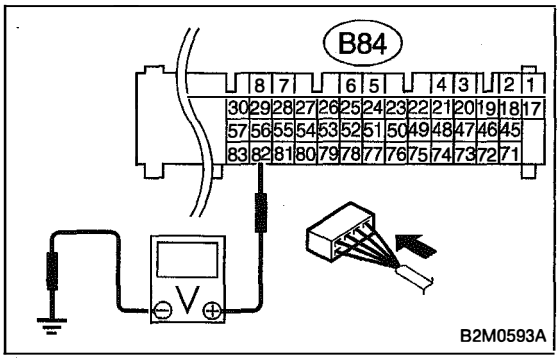
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10BZ1	CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0705?***

YES : Inspect DTC P0705 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step **10BZ2**.



10BZ2	CHECK INPUT SIGNAL FOR ECM.

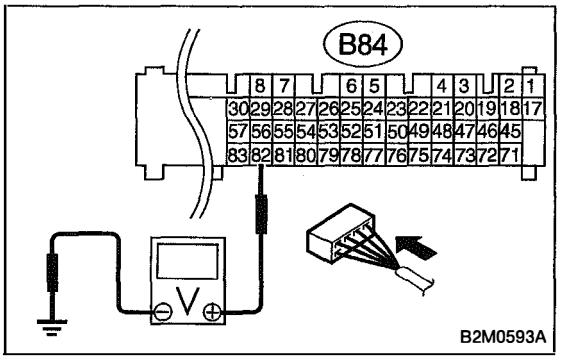
1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V in "N" and "P" positions?***

YES : Go to next step 3).

NO : Go to step **10BZ4**.



3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK : ***Is the voltage between 4.5 and 5.5 V in other positions?***

YES : Go to step **10BZ3**.

NO : Go to step **10BZ4**.

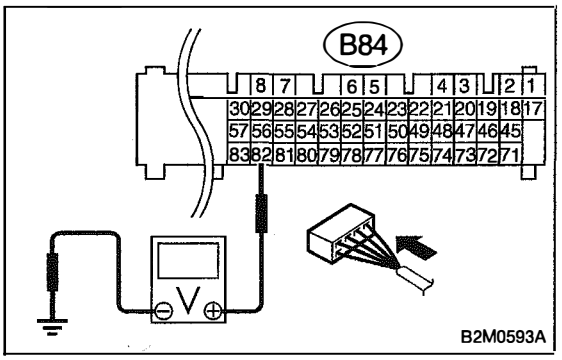
10BZ3	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10BZ4	CHECK INPUT SIGNAL FOR ECM.

Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and inhibitor switch connector.

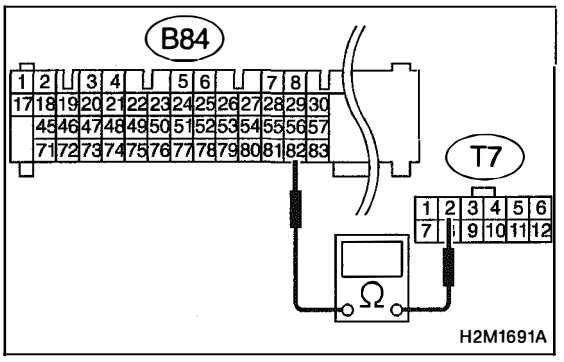
NO : Go to step **10BZ5**.

10BZ5	CHECK INHIBITOR SWITCH TYPE.

CHECK ***: Is inhibitor switch type plastic body?***

YES : Go to step **10BZ6**.

NO : Go to step **10BZ8**.



10BZ6	CHECK HARNESS BETWEEN ECM AND INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and inhibitor switch.
3) Measure resistance of harness between ECM and inhibitor switch connector.

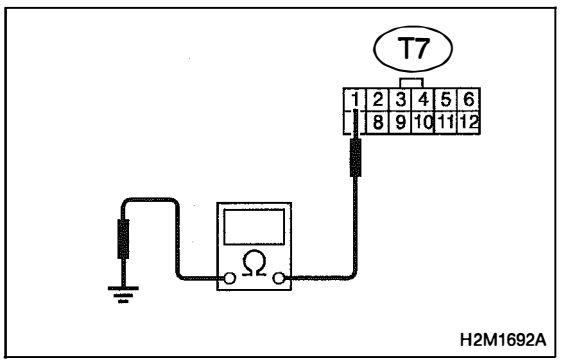
Connector & terminal
(B84) No. 82 — (T7) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and inhibitor switch connector
- Poor contact in coupling connector (B12)
- Poor contact in inhibitor switch connector
- Poor contact in ECM connector



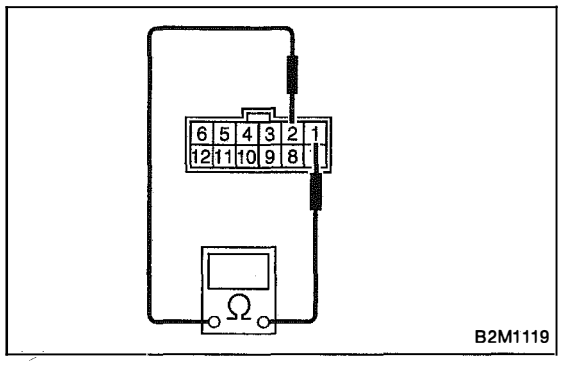
4) Measure resistance of harness between inhibitor switch connector and engine ground.

Connector & terminal
(T7) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to step **10BZ7**.

NO : Repair open circuit in inhibitor switch ground line.



10BZ7	CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω in "N" and "P" positions?***

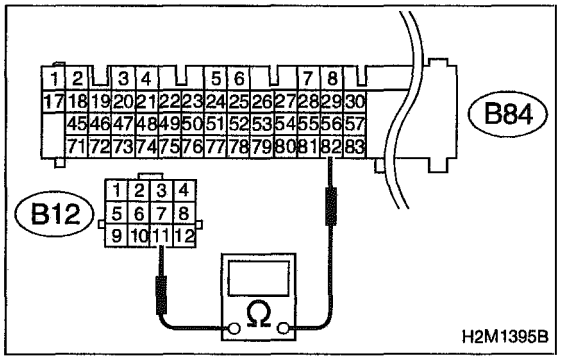
YES : Go to next CHECK .

NO : Replace inhibitor switch.

CHECK ***: Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W3B0].>

NO : Replace ECM.



10BZ8	CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and transmission harness connector.
3) Measure resistance of harness between ECM and transmission harness connector.

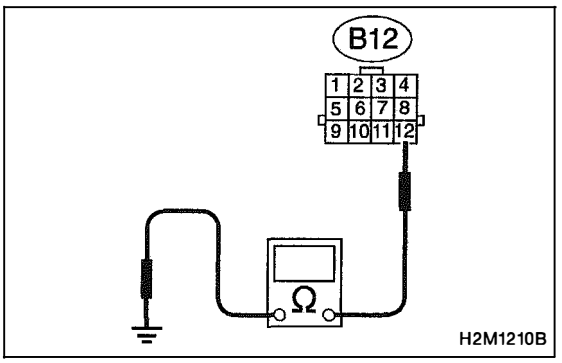
Connector & terminal
(B84) No. 82 — (B12) No. 11:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and transmission harness connector
- Poor contact in transmission harness connector
- Poor contact in ECM connector



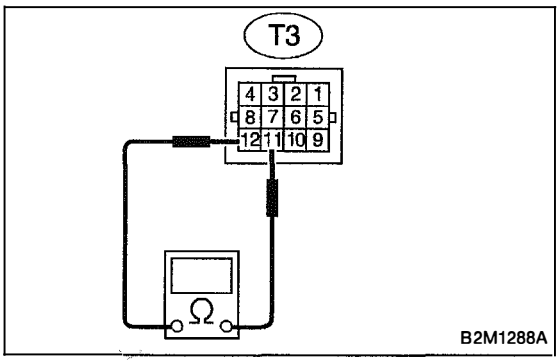
4) Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(B12) No. 12 — Engine ground:

CHECK ***: Is the resistance less than 5 Ω?***

YES : Go to step **10BZ9**.

NO : Repair open circuit in inhibitor switch ground line.



10BZ9	CHECK INHIBITOR SWITCH.

Measure resistance between transmission harness connector receptacle's terminals.

Connector & terminal
(T3) No. 11 — No. 12:

CHECK ***: Is the resistance less than 1 Ω in "N" and "P" positions?***

YES : Go to next CHECK .

NO : Replace inhibitor switch.

CHECK ***: Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W3B0].>

NO : Replace ECM.

MEMO:

OBD	(FB1)
P1102	

OBD0481

CA: DTC P1102 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT LOW INPUT —

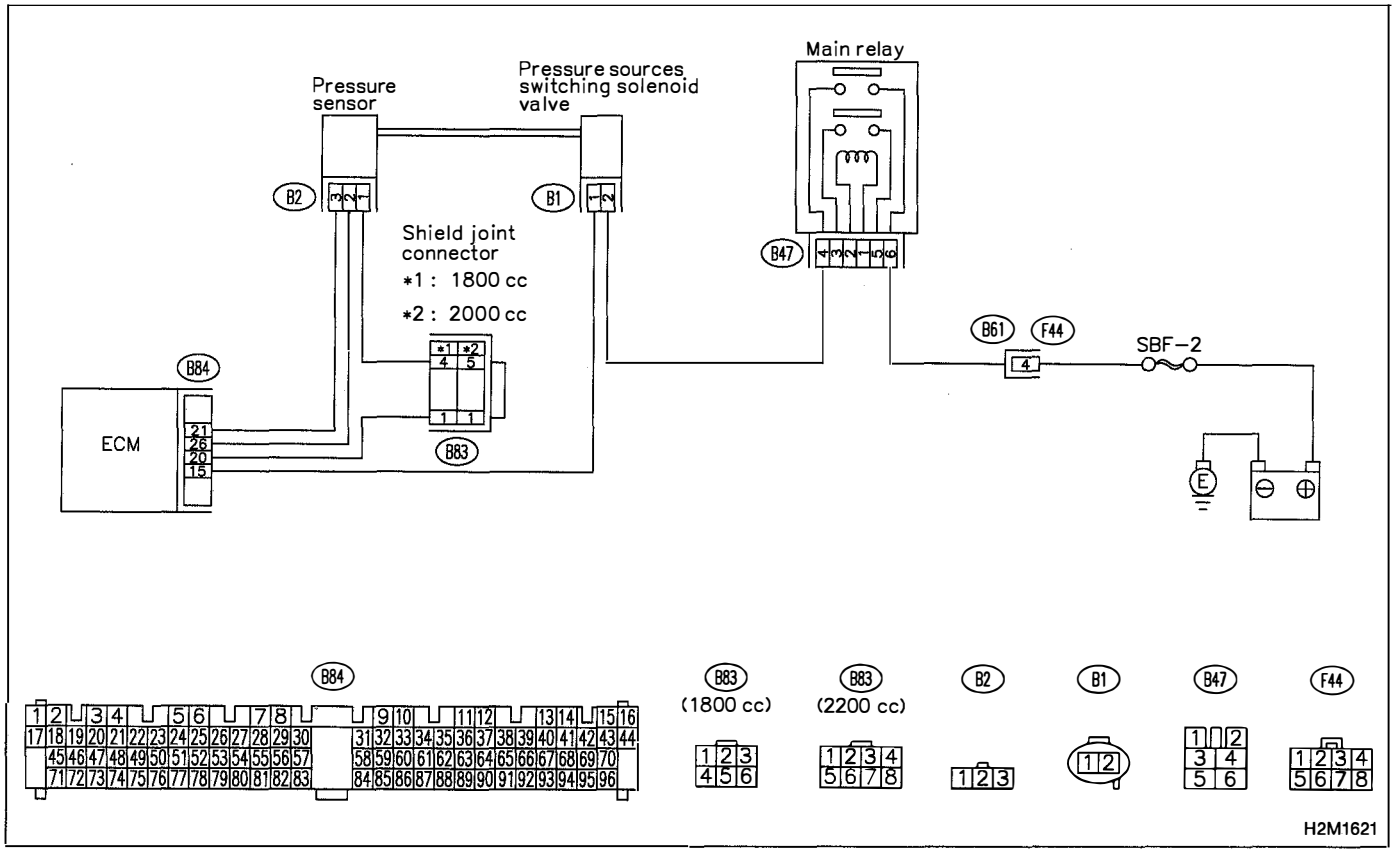
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

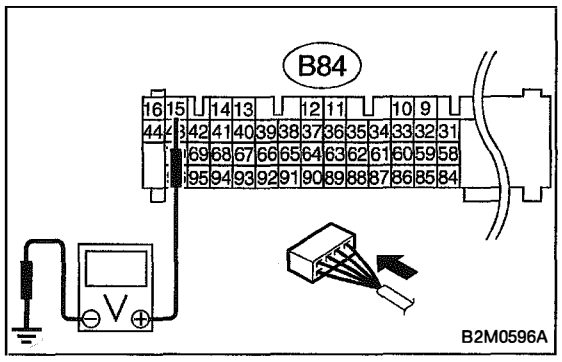
TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODE.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CA1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 15 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CA2**.

NO : Go to step **10CA3**.

10CA2	CHECK POOR CONTACT.

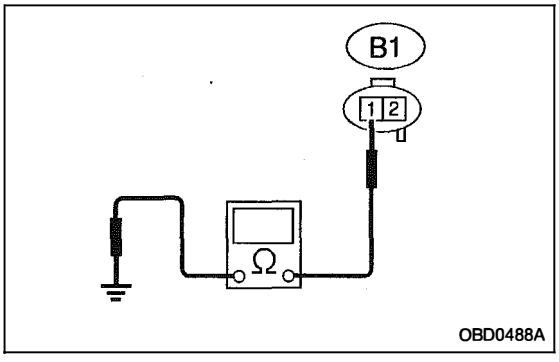
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10CA3	CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

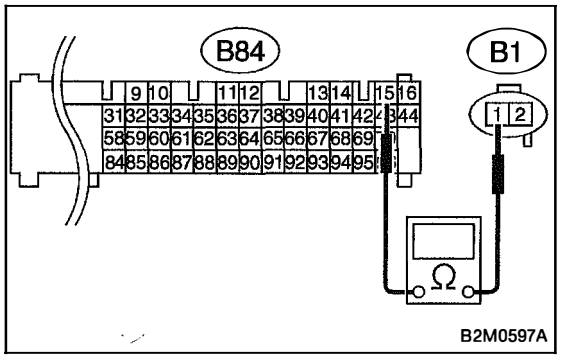
1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sources switching solenoid valve and ECM.
3) Measure resistance of harness between pressure sources switching solenoid valve connector and engine ground.

Connector & terminal
(B1) No. 1 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and pressure sources switching solenoid valve connector.

NO : Go to next step 4).



4) Measure resistance of harness between ECM and pressure sources switching solenoid valve connector.

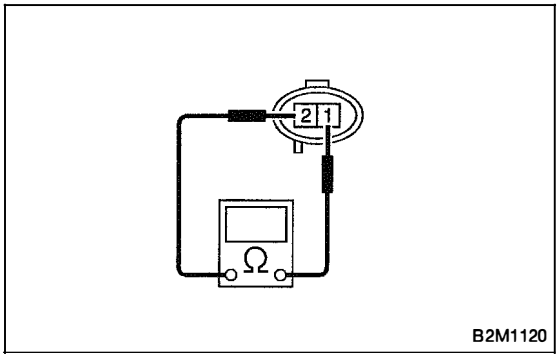
Connector & terminal
(B84) No. 15 — (B1) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10CA4.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and pressure sources switching solenoid valve connector
- Poor contact in shield joint connector (B83)



10CA4	CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

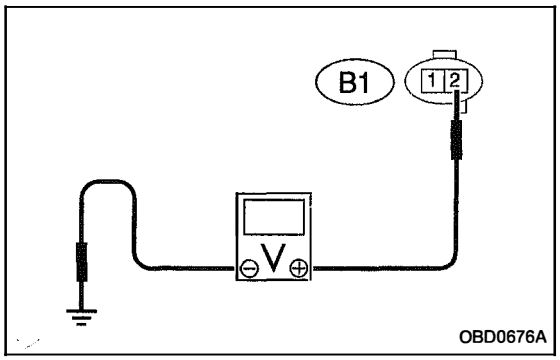
Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 10 and 100 Ω?***

YES : Go to step **10CA5.**

NO : Replace pressure sources switching solenoid valve.



10CA5	CHECK POWER SUPPLY TO PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between pressure sources switching solenoid valve harness connector and engine ground.

Connector & terminal
(B1) No. 2 (+) — Engine ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CA6**.

NO : Repair open circuit in harness between main relay and pressure sources switching solenoid valve connector.

10CA6	CHECK POOR CONTACT.

Check poor contact in pressure sources switching solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in pressure sources switching solenoid valve connector?***

YES : Repair poor contact in pressure sources switching solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P1103	<TRQ>

OBD0489

CB: DTC P1103 — ENGINE TORQUE CONTROL SIGNAL CIRCUIT MALFUNCTION —

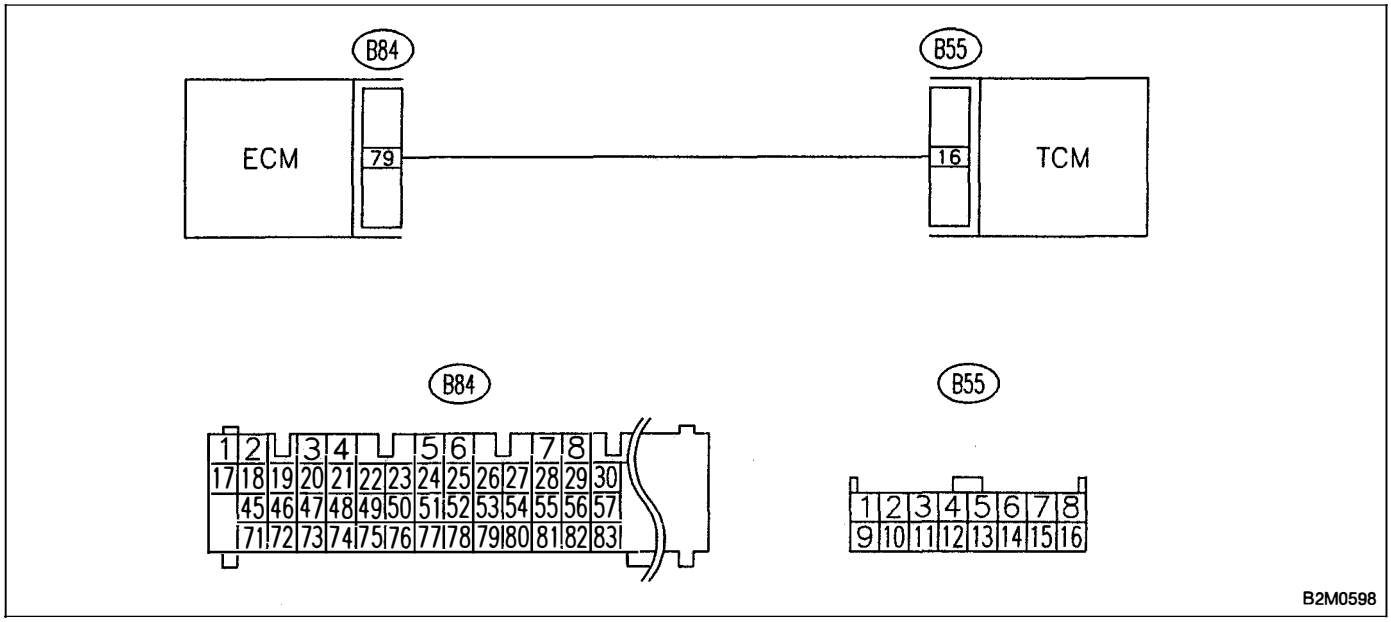
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

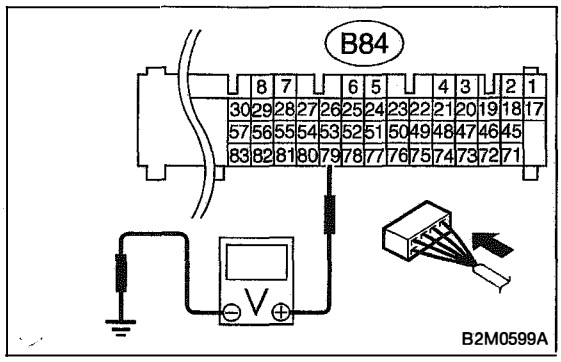
- Excessive shift shock

WIRING DIAGRAM:



B2M0598

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CB1	CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 79 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 4.5 V?***

YES : Go to step **10CB2**.

NO : Go to step **10CB3**.

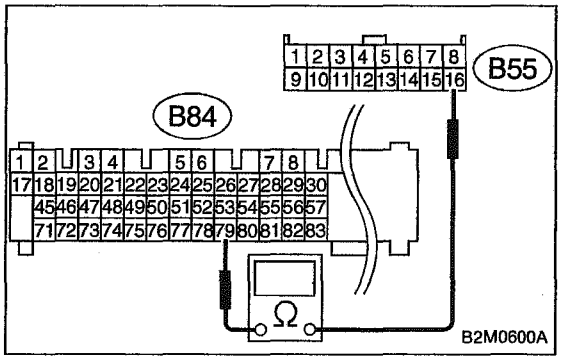
10CB2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10CB3	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

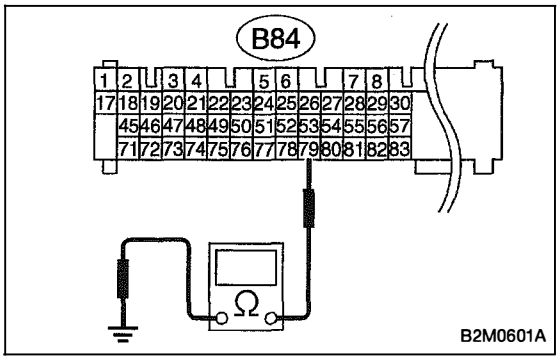
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and TCM.
3) Measure resistance of harness between ECM and TCM connector.

Connector & terminal
(B84) No. 79 — (B55) No. 16:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair open circuit in harness between ECM and TCM connector.



4) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 79 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and TCM connector.

NO : Go to step **10CB4**.

10CB4	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

MEMO:

OBD (FB1)

P1120 <ST_SWON>

B2M1122

CC: DTC P1120 — STARTER SWITCH CIRCUIT HIGH INPUT —

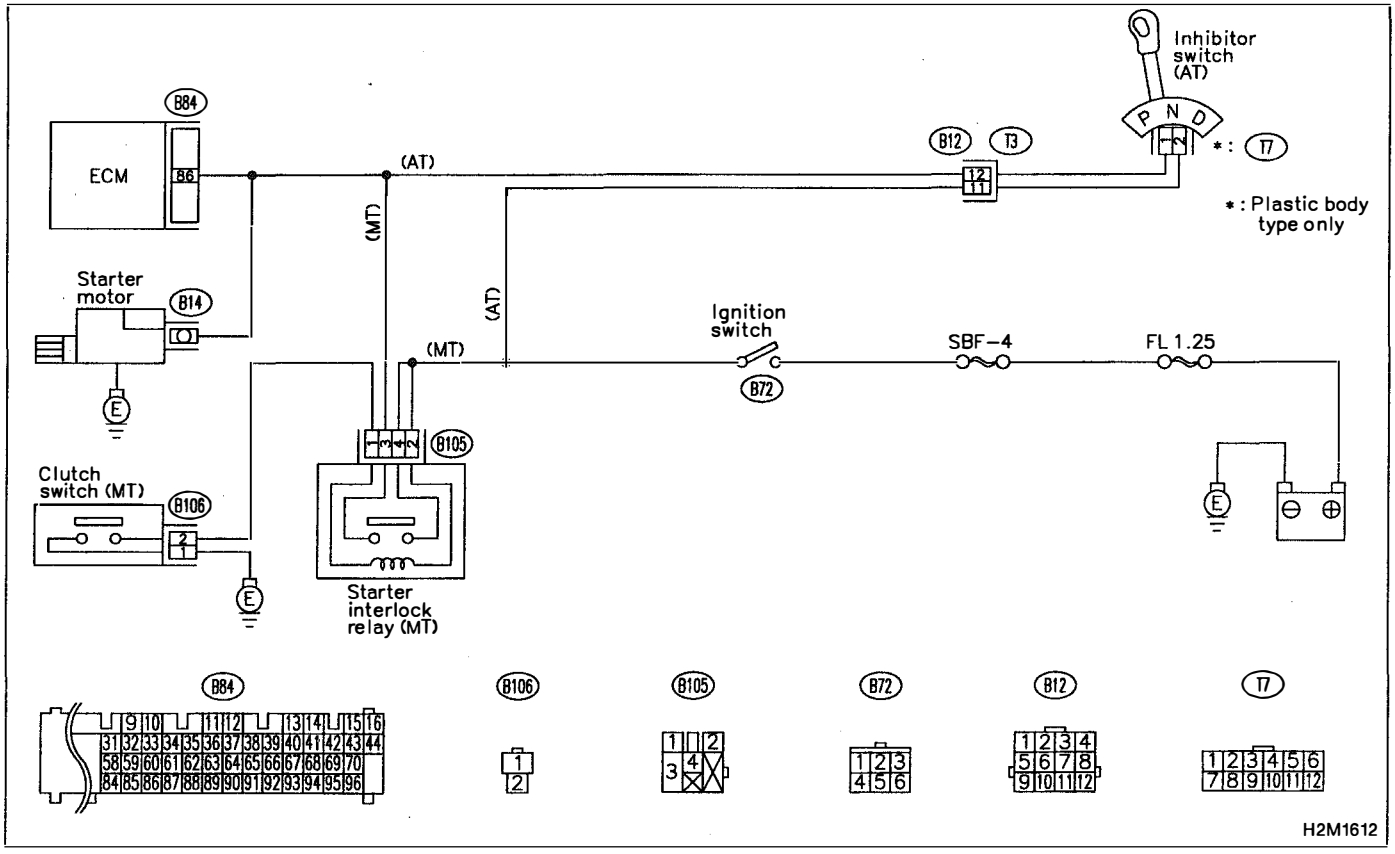
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CC1	CHECK OPERATION OF STARTER MOTOR.

CHECK : ***Does starter motor operate when ignition switch to "ON"?***

NOTE:
- On AT vehicles, place the inhibitor switch in each position.
- On MT vehicles, depress or release the clutch pedal.

YES : Repair battery short circuit in starter motor circuit. After repair, replace ECM.

NO : Check starter motor circuit. <Ref. to 2-7 [T8B0].>

OBD	(FB1)
P1121	<N_SWON>

B2M1123

CD: DTC P1121 — NEUTRAL POSITION SWITCH CIRCUIT LOW INPUT [AT VEHICLES] —

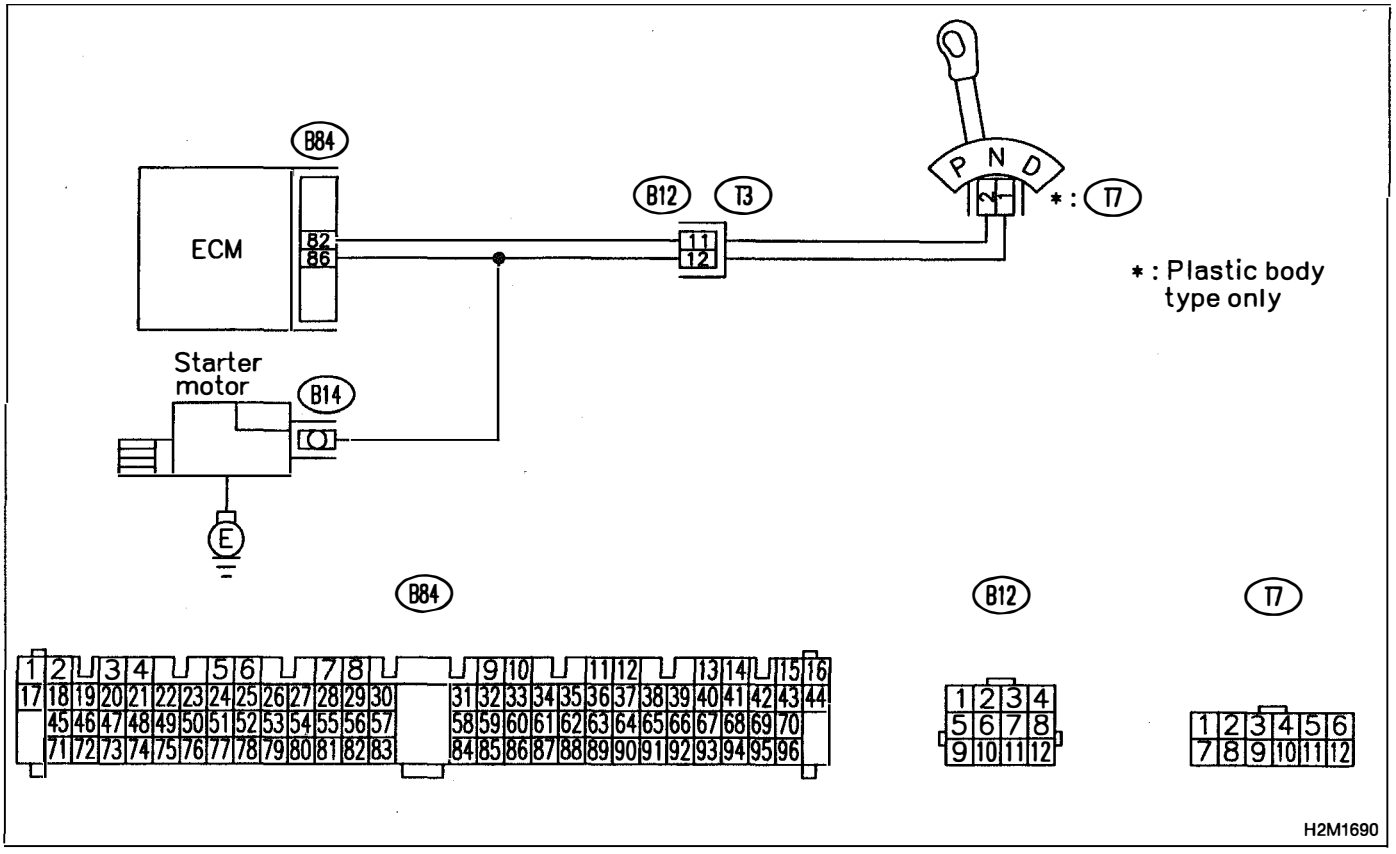
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling

WIRING DIAGRAM:



H2M1690

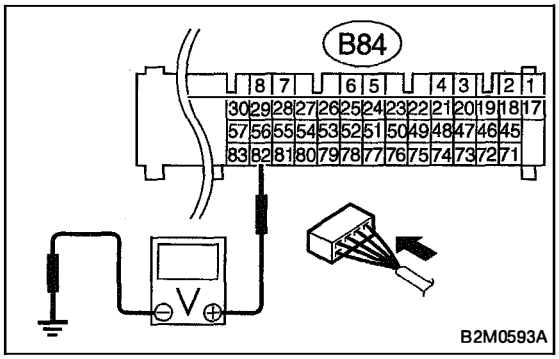
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CD1	CHECK DTC P0705 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0705?***

YES : Inspect DTC P0705 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Go to step **10CD2.**



10CD2	CHECK INPUT SIGNAL FOR ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 82 (+) — Chassis ground (–):

CHECK : ***Is the voltage between 4.5 and 5.5 V in other positions?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

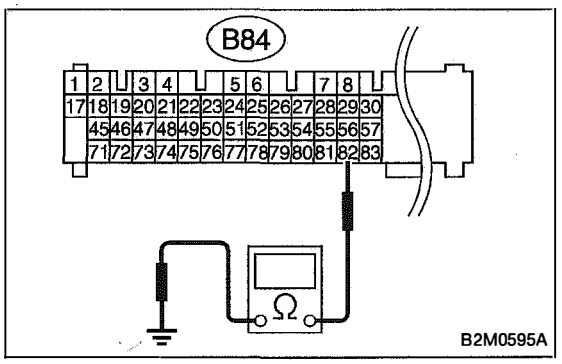
NO : Go to step **10CD3.**

10CD3	CHECK INHIBITOR SWITCH TYPE.

CHECK : ***Is inhibitor switch type plastic body?***

YES : Go to step **10CD4.**

NO : Go to step **10CD7.**



10CD4	CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

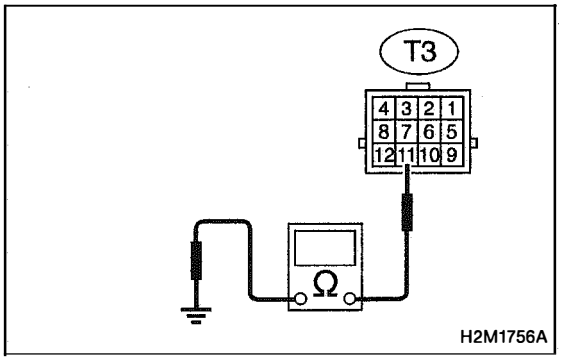
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and transmission harness connector.
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 82 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and transmission harness connector.

NO : Go to step **10CD5**.



10CD5	CHECK TRANSMISSION HARNESS CONNECTOR.

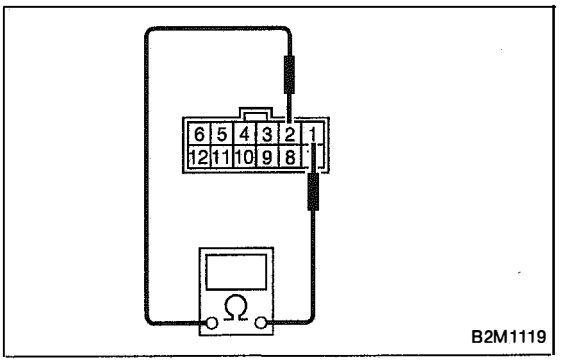
1) Disconnect connector from inhibitor switch.
2) Measure resistance of harness between transmission harness connector and engine ground.

Connector & terminal
(T3) No. 11 — Engine ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between transmission harness and inhibitor switch connector.

NO : Go to step **10CD6**.



10CD6	CHECK INHIBITOR SWITCH.

Measure resistance between inhibitor switch connector receptacle's terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance more than 1 MΩ in other positions?***

YES : Go to next CHECK .

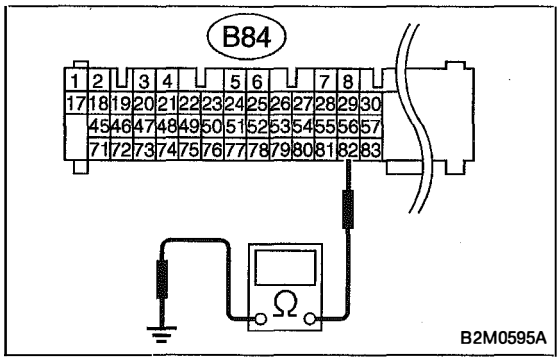
NO : Replace inhibitor switch.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W3B0].>

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10CD7	CHECK HARNESS BETWEEN ECM AND TRANSMISSION HARNESS CONNECTOR.

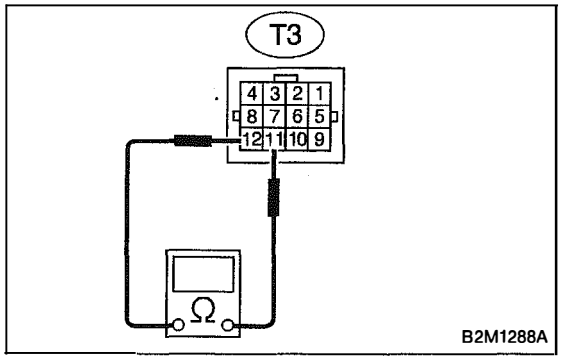
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM and transmission harness connector.
3) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 82 — Chassis ground:

CHECK : ***Is the resistance less than 10 Ω?***

YES : Repair short circuit in harness between ECM and transmission harness connector.

NO : Go to step **10CD8**.



10CD8	CHECK INHIBITOR SWITCH.

Measure resistance between transmission harness connector receptacle's terminals.

Connector & terminal
(T3) No. 11 — No. 12:

CHECK : ***Is the resistance more than 1 MΩ in other positions?***

YES : Go to next CHECK .

NO : Replace inhibitor switch.

CHECK : ***Is there any fault in selector cable connection to inhibitor switch?***

YES : Repair selector cable connection. <Ref. to 3-2 [W3B0].>

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)
P1122 <BR_HI>
B2M1124

CE: DTC P1122 — PRESSURE SOURCES SWITCHING SOLENOID VALVE CIRCUIT HIGH INPUT —

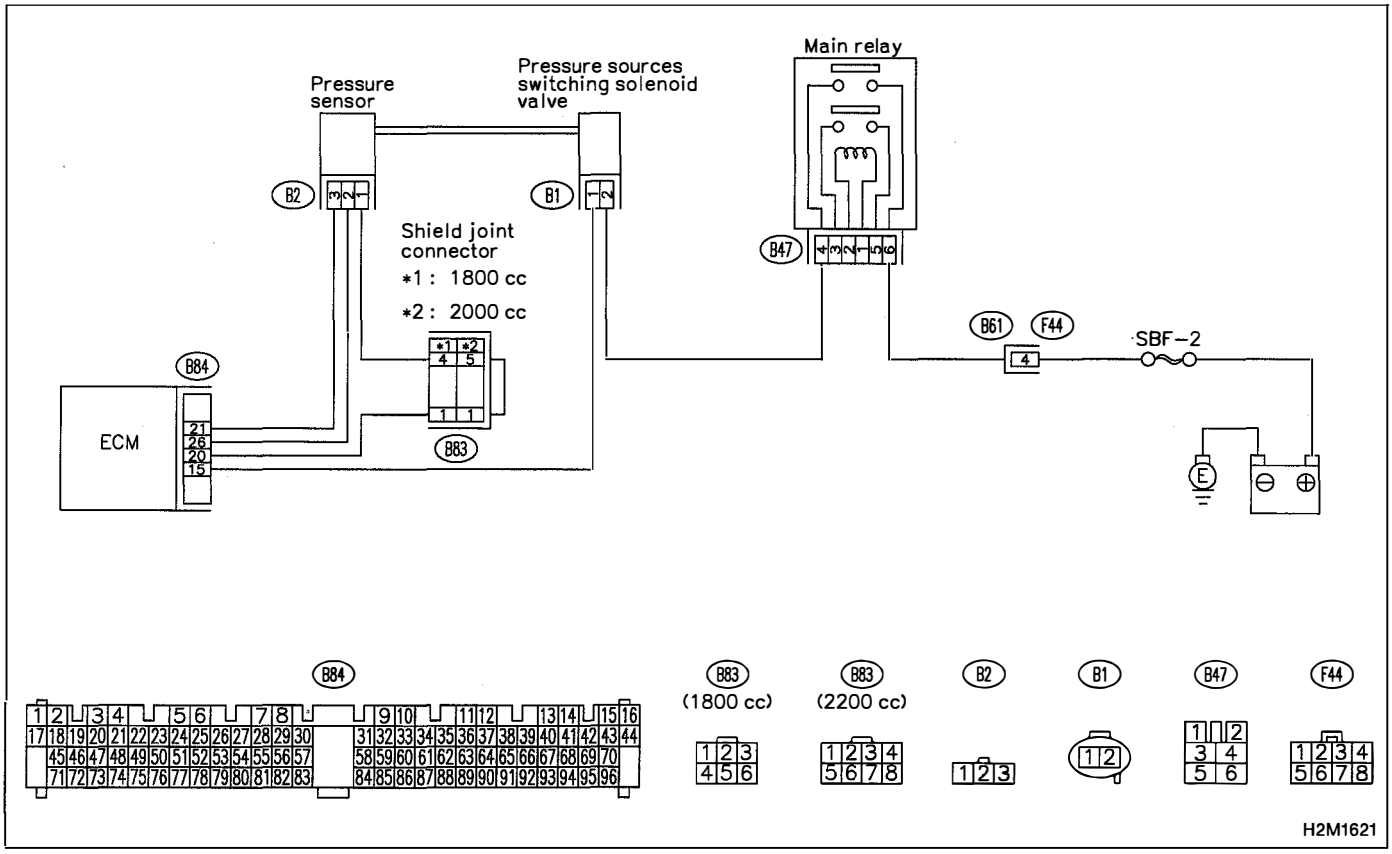
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

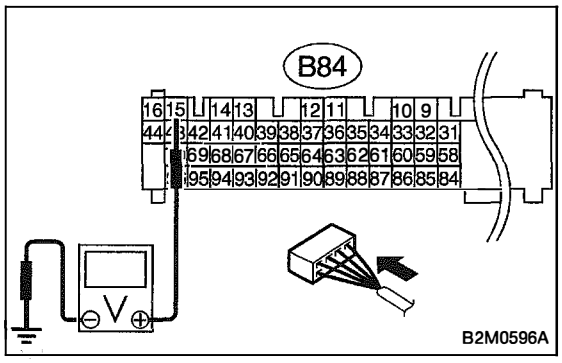
TROUBLE SYMPTOM:

- Erroneous idling
- Failure of engine to start

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODE.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CE1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 15 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CE3.**

NO : Go to step **10CE2.**

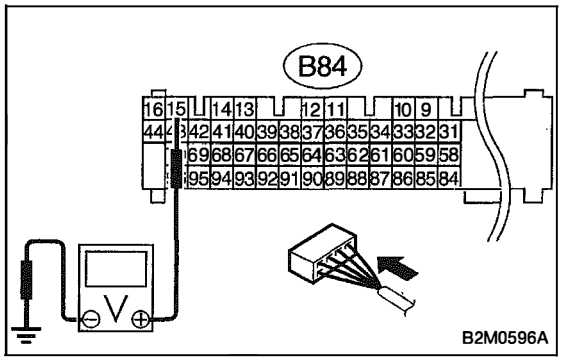
10CE2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10CE3	CHECK HARNESS BETWEEN ECM AND PRESSURE SOURCES SWITCHING SOLENOID VALVE CONNECTOR.

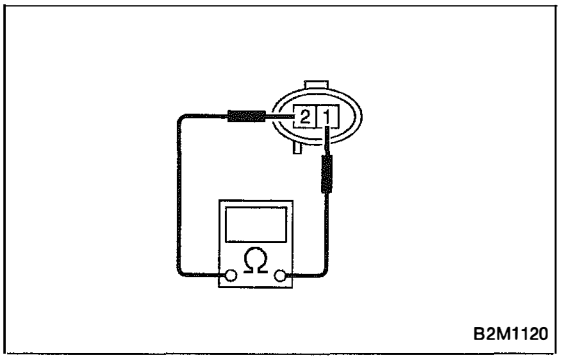
1) Turn ignition switch to OFF.
2) Disconnect connector from pressure sources switching solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 15 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and pressure sources switching solenoid valve connector. After repair, replace ECM.

NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between pressure sources switching solenoid valve connector terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Replace pressure sources switching solenoid valve and ECM.

NO : Go to step **10CE4.**

10CE4	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.

MEMO:

OBD (FB1)

P1141 <QA_RHI>

B2M1126

CF: DTC P1141 — MASS AIR FLOW SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

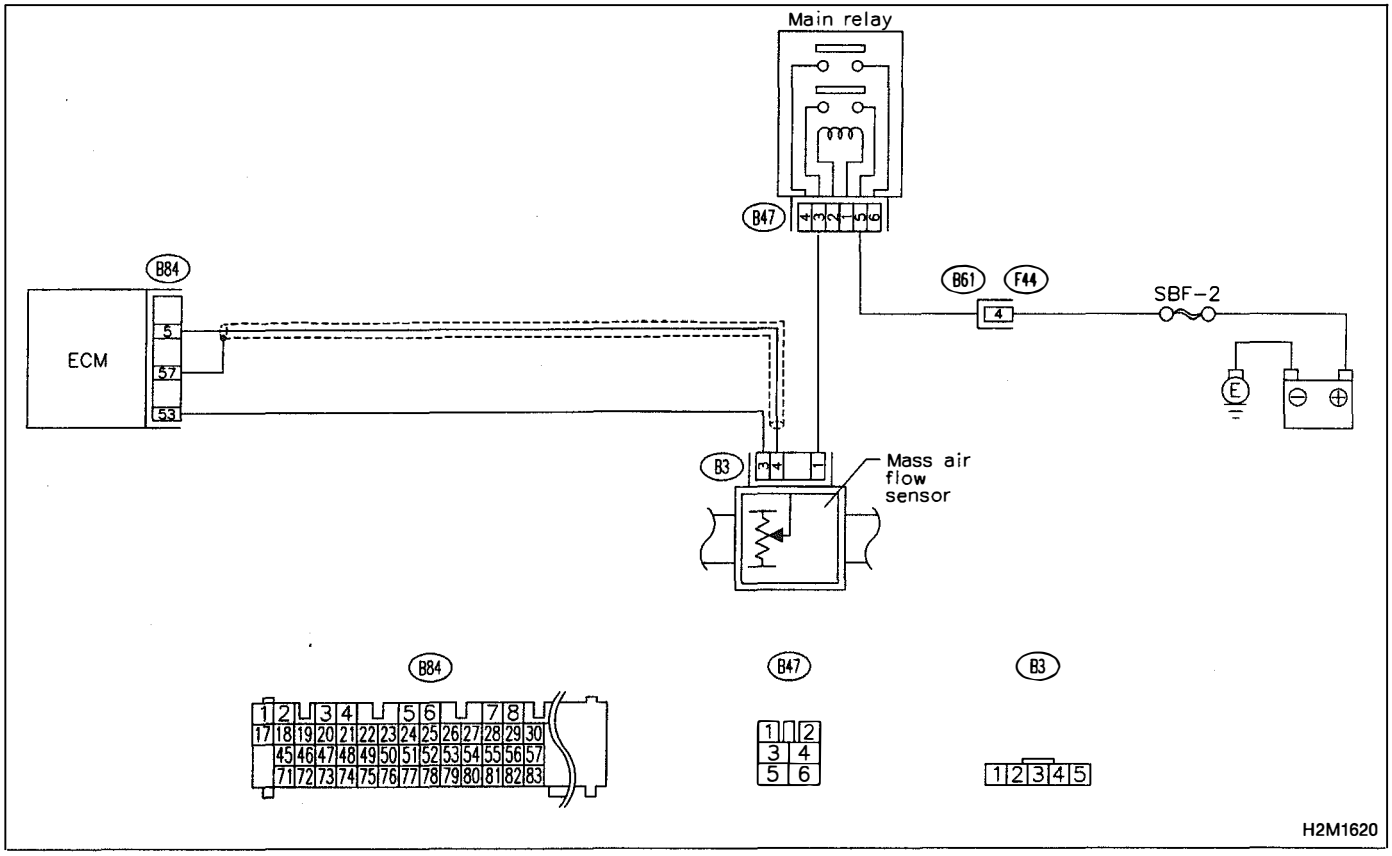
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CF1	CHECK DTC P0102 OR P0103 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0102 or P0103?***

YES : Inspect DTC P0102 or P0103 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1141.

NO : Replace mass air flow sensor.

OBD (FB1)
P1142 <TH_RLOW>
B2M1127

CG: DTC P1142 — THROTTLE POSITION SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

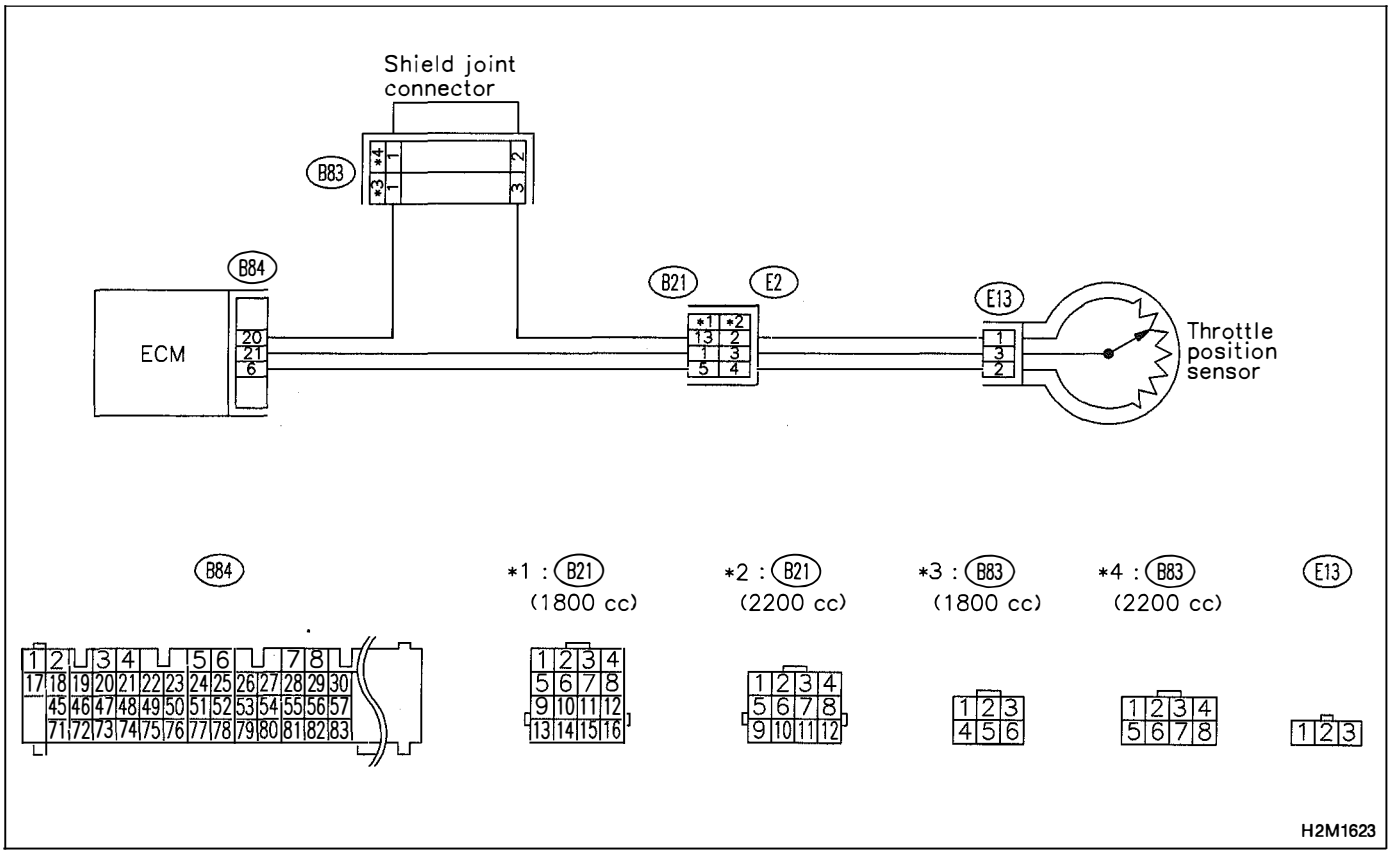
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Erroneous idling
- Engine stalls.
- Poor driving performance

WIRING DIAGRAM:



H2M1623

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CG1	CHECK DTC P0122 OR P0123 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0122 or P0123?***

YES : Inspect DTC P0122 or P0123 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1142.

NO : Replace throttle position sensor.

OBD (FB1)

P1143 <PS_RLOW>

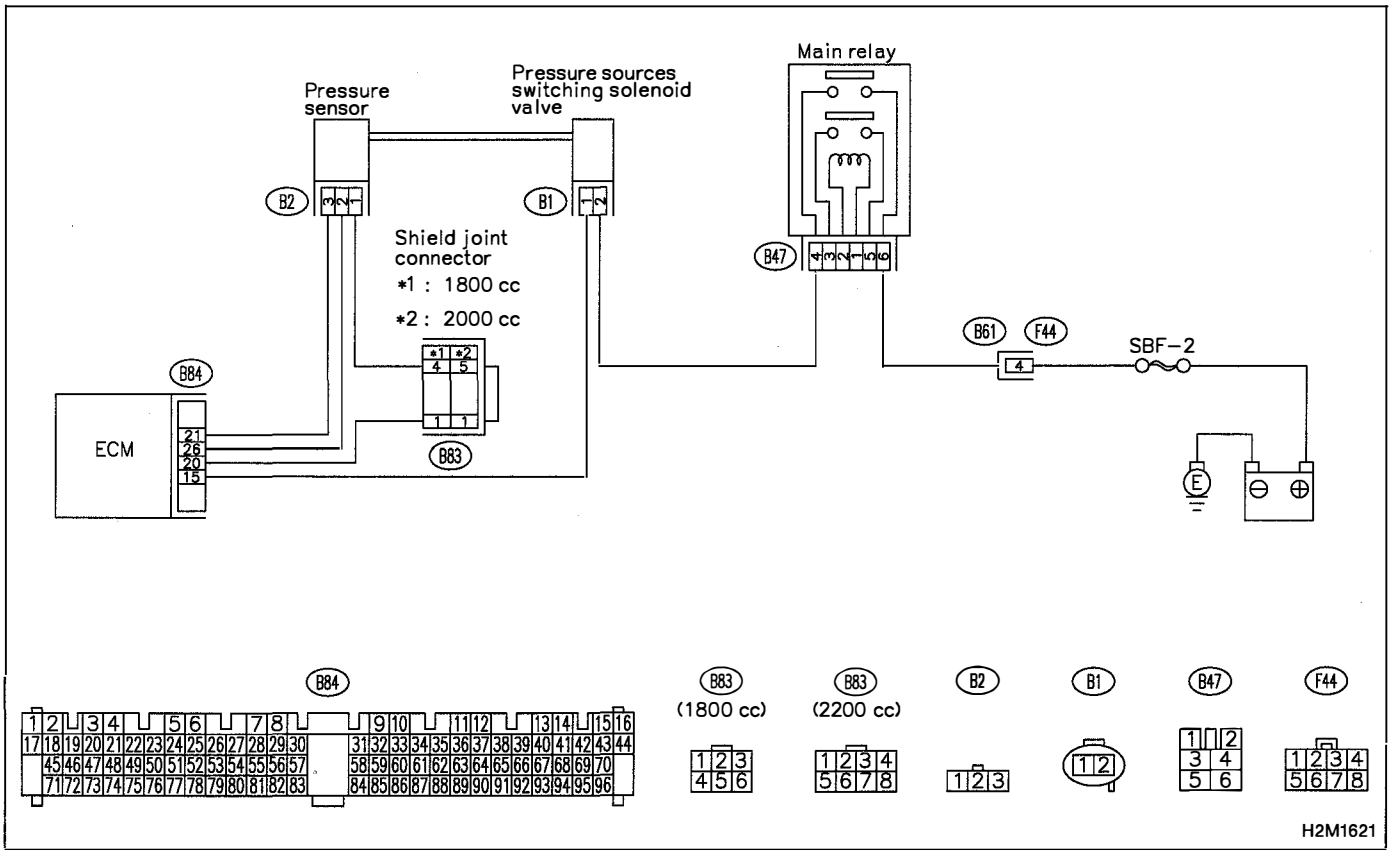
B2M1128

CH: DTC P1143 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (LOW INPUT) —

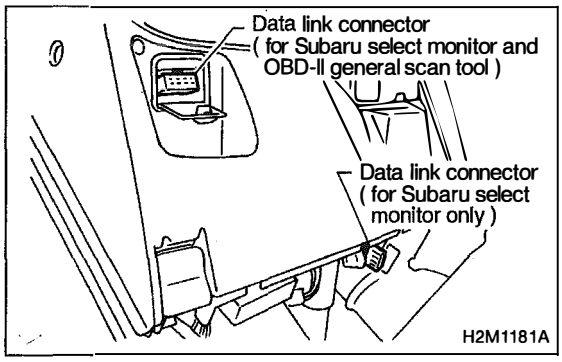
DTC DETECTING CONDITION:

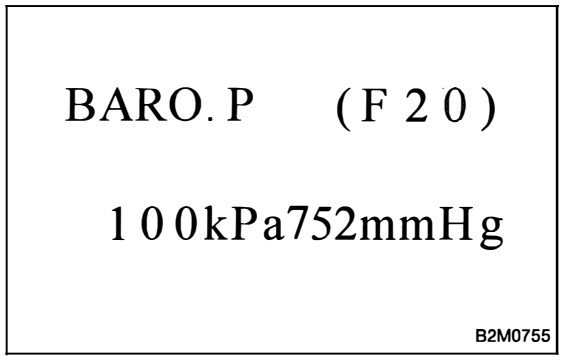
- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>





10CH1	CHECK DATA FOR CONTROL.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.
5) Read data on Subaru Select Monitor or the OBD-II general scan tool.

● Subaru Select Monitor
Designate mode using function key.

Function mode: F20

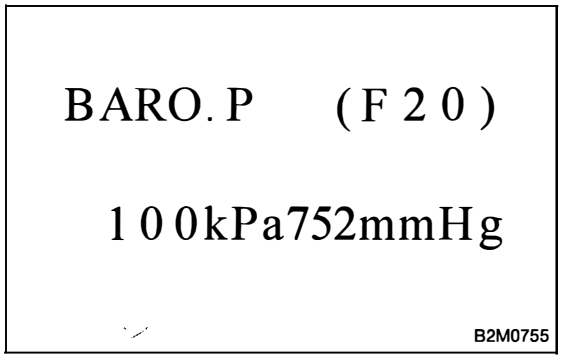
● F20: Display shows pressure signal value sent from the pressure sensor.

CHECK ***: Is the value less than 32 kPa in function mode F20?***

YES : Go to step **10CH3**.

NO : Go to step **10CH2**.

● OBD-II general scan tool
For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.



10CH2	CHECK PRESSURE SENSOR.

1) Measure actual atmospheric pressure.
2) Read data on Subaru Select Monitor or OBD-II general scan tool.
● Subaru Select Monitor
Designate mode using function key.

Function mode: F20

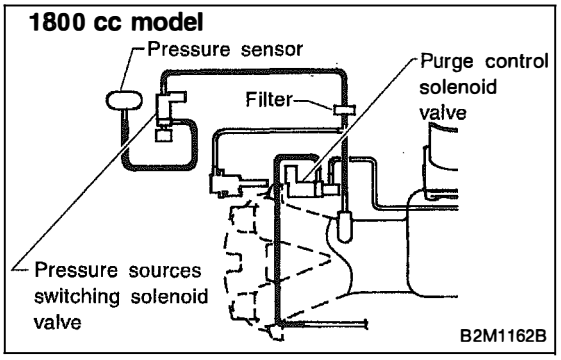
● F20: Display shows pressure signal value sent from the pressure sensor.

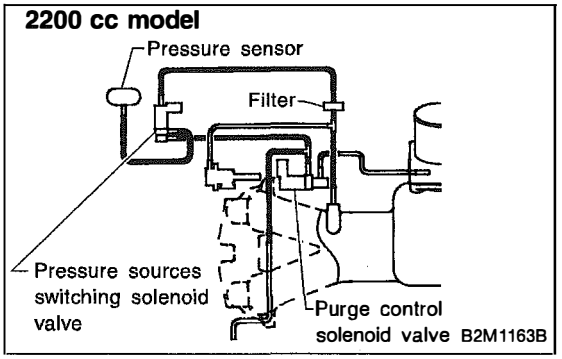
CHECK ***: Is the difference between absolute value of Subaru Selector Monitor indication and actual atmospheric pressure greater than 10 kPa (0.102 kg/cm^2, 1.45 psi)?***

YES : Replace pressure sensor.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.





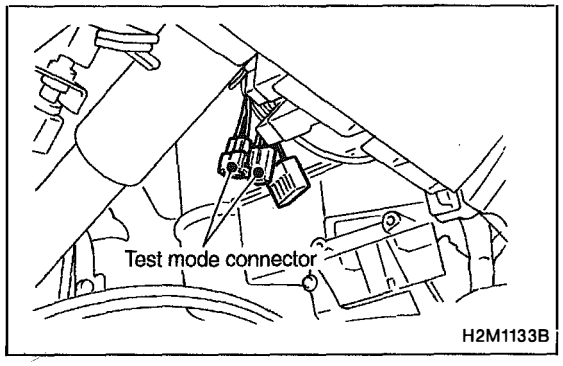
10CH3	CHECK VACUUM HOSE.

CHECK ***: Is there a fault in vacuum hose?***

NOTE:
Check the following item.
Incorrect hose connections in line between the pressure sources switching solenoid valve and pressure sensor, intake manifold and/or CPC solenoid valve.

YES : Repair or replace hoses or filter.

NO : Go to step **10CH4**.



10CH4	CHECK PRESSURE SOURCES SWITCHING SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.
3) Turn ignition switch to ON.

CHECK : ***Does pressure sources switching solenoid valve produce operating sound? (ON ↔ OFF each 1.5 sec.)***

NOTE:
Pressure sources switching solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD10). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Replace pressure sensor.

NO : Replace pressure sources switching solenoid valve.

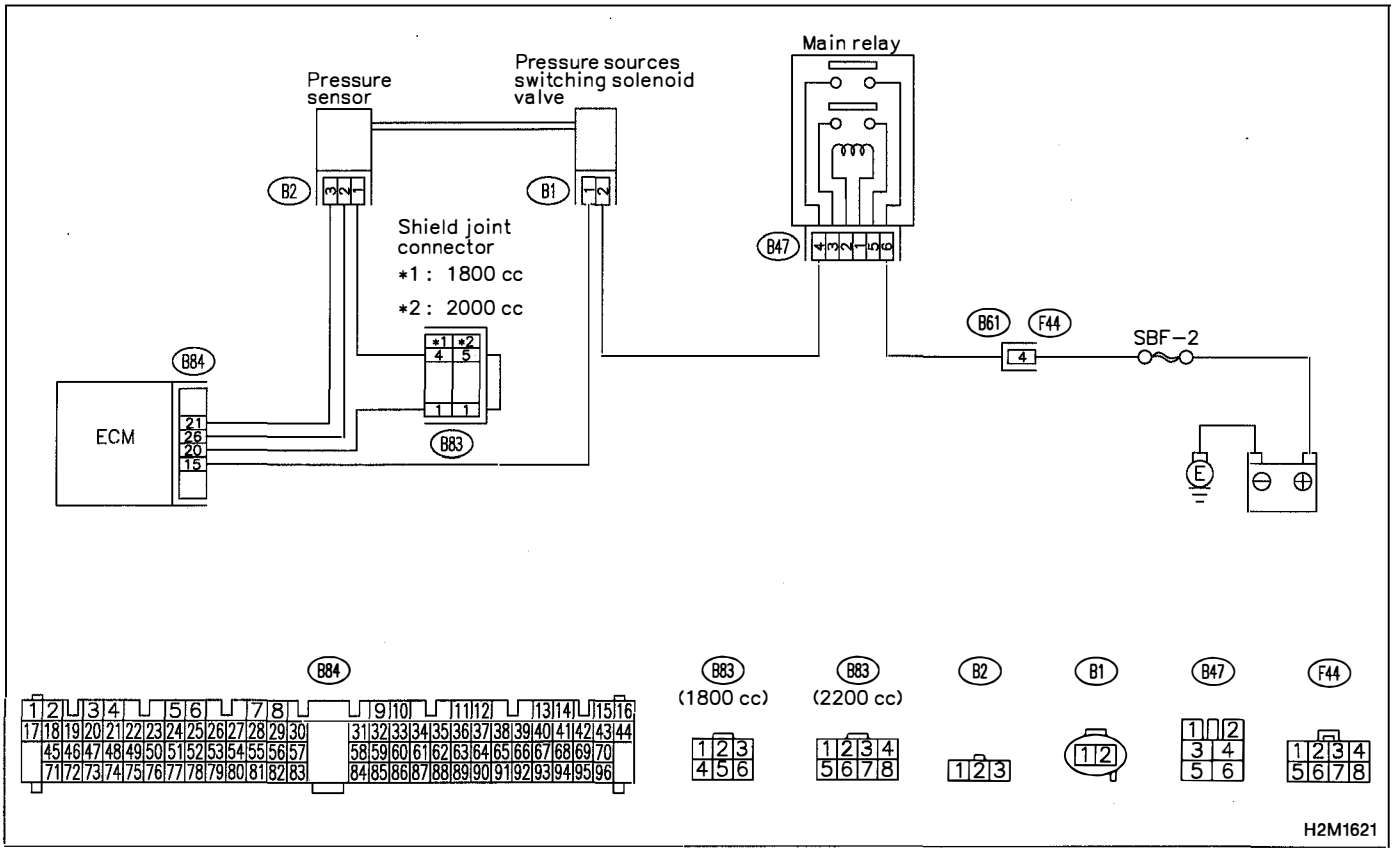
OBD (FB1)
P1144 <PS_RHI>
B2M1129

CI: DTC P1144 — PRESSURE SENSOR CIRCUIT RANGE/PERFORMANCE PROBLEM (HIGH INPUT) —

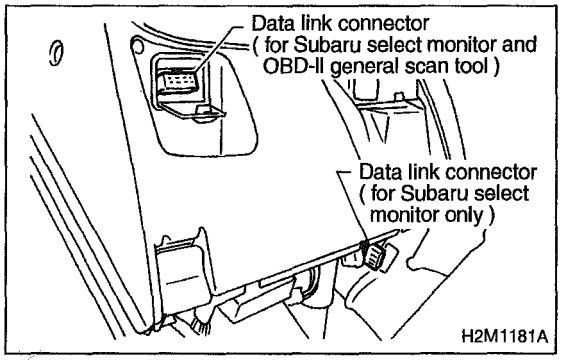
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CI1	CHECK DATA FOR CONTROL.

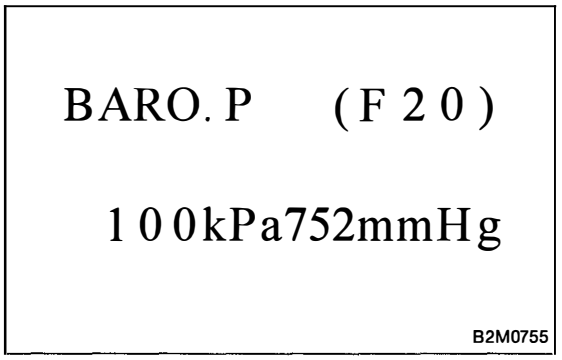
1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor or the OBD-II general scan tool to data link connector.
3) Turn ignition switch ON and Subaru Select Monitor or the OBD-II general scan tool switch ON.
4) Start engine.
5) Read data on Subaru Select Monitor or the OBD-II general scan tool.

- Subaru Select Monitor

Designate mode using function key.

Function mode: F20

- F20: Display shows pressure signal value sent from the pressure sensor.



CHECK ***: Is the value more than 133 kPa in function mode F20?***

YES : Replace pressure sensor.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

- OBD-II general scan tool

For detailed operation procedures, refer to the OBD-II General Scan Tool Instruction Manual.

OBD (FB1)

P1400<PCVSOL_LO>

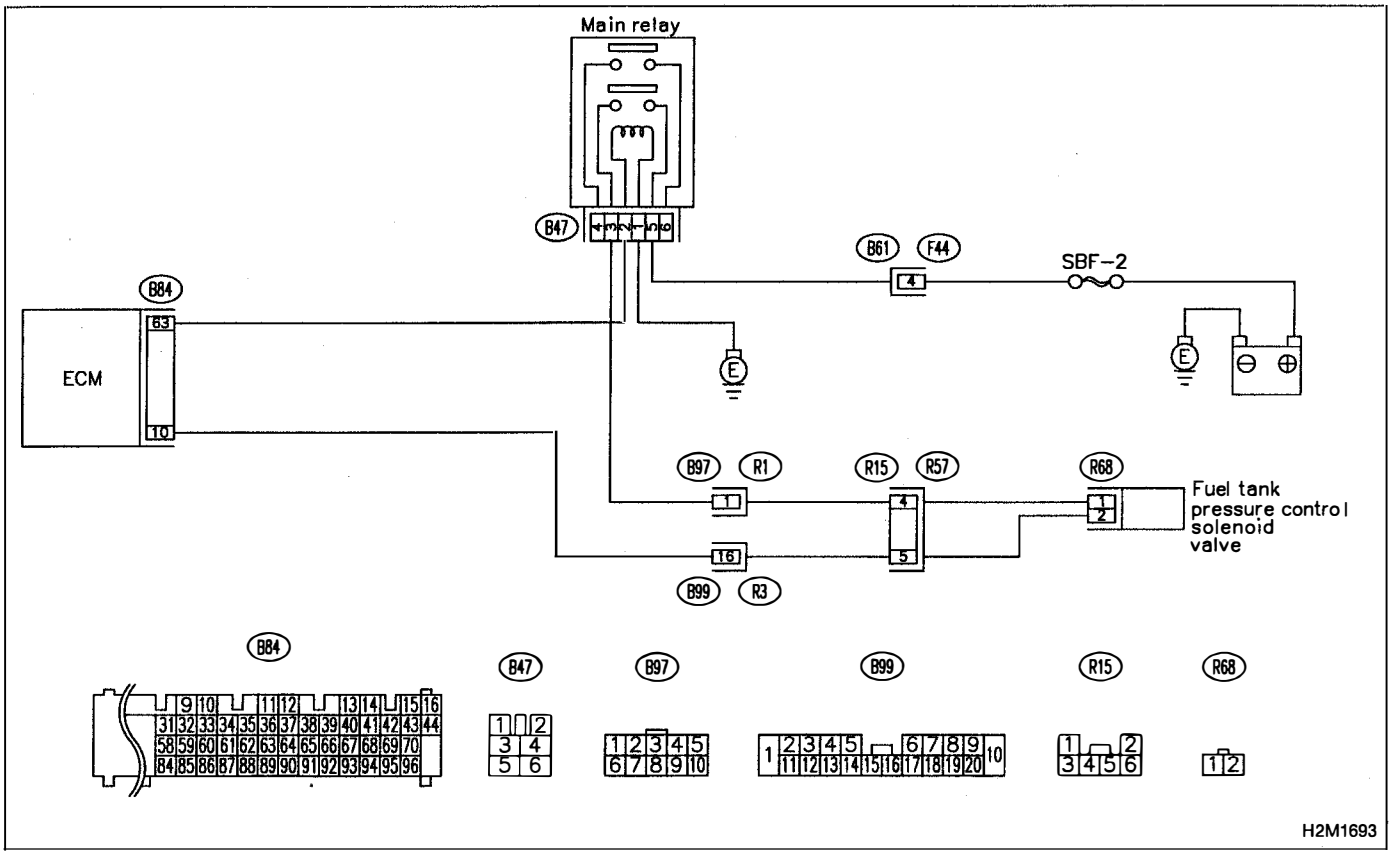
B2M1130

CJ: DTC P1400
— FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT LOW INPUT —

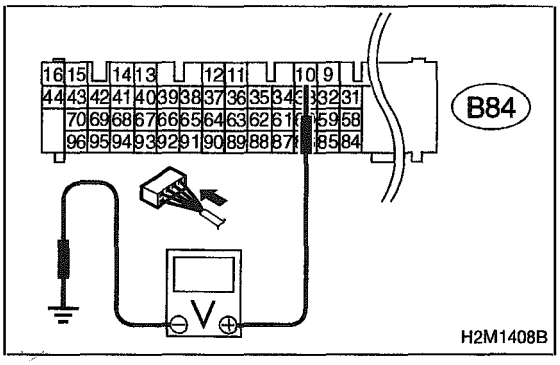
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CJ1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CJ2**.

NO : Go to step **10CJ3**.

10CJ2	CHECK POOR CONTACT.

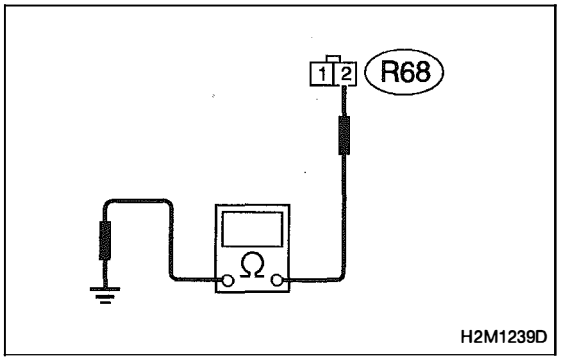
Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10CJ3	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

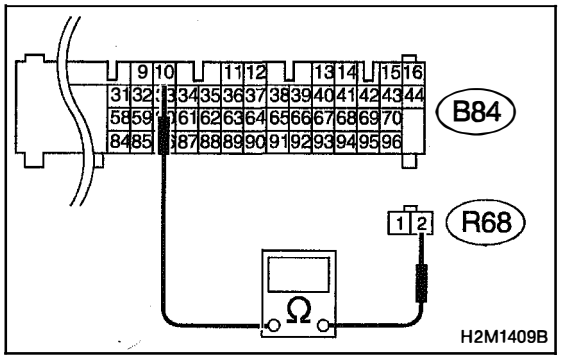
1) Turn ignition switch to OFF.
2) Disconnect connectors from fuel tank pressure control solenoid valve and ECM.
3) Measure resistance of harness between fuel tank pressure control solenoid valve connector and chassis ground.

Connector & terminal
(R68) No. 2 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and fuel tank pressure control solenoid valve connector.

NO : Go to next step 4).



4) Measure resistance of harness between ECM and fuel tank pressure control solenoid valve connector.

Connector & terminal
(B84) No. 10 — (R68) No. 2:

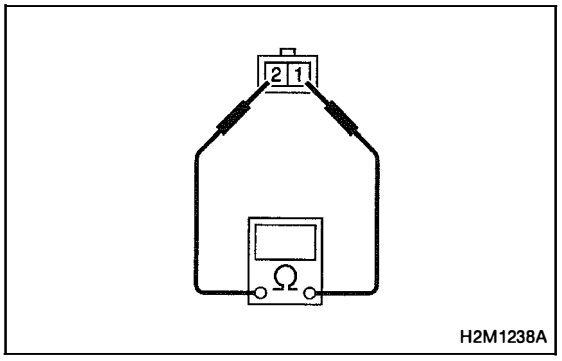
CHECK ***: Is the voltage less than 1 Ω?***

YES : Go to step **10CJ4**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between ECM and fuel tank pressure control solenoid valve connector
- Poor contact in coupling connectors (B99 and R15)



10CJ4	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

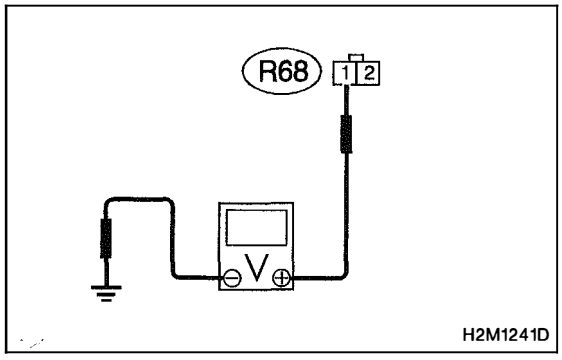
Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance between 10 and 100 Ω?***

YES : Go to step **10CJ5**.

NO : Replace fuel tank pressure control solenoid valve.



10CJ5	CHECK POWER SUPPLY TO FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between fuel tank pressure control solenoid valve and chassis ground.

Connector & terminal
(R68) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CJ6.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between main relay and fuel tank pressure control solenoid valve connector
- Poor contact in coupling connectors (B97 and R15)
- Poor contact in main relay connector

10CJ6	CHECK POOR CONTACT.

Check poor contact in fuel tank pressure control solenoid valve connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in fuel tank pressure control solenoid valve connector?***

YES : Repair poor contact in fuel tank pressure control solenoid valve connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)

P1420<PCVSOL_HI>

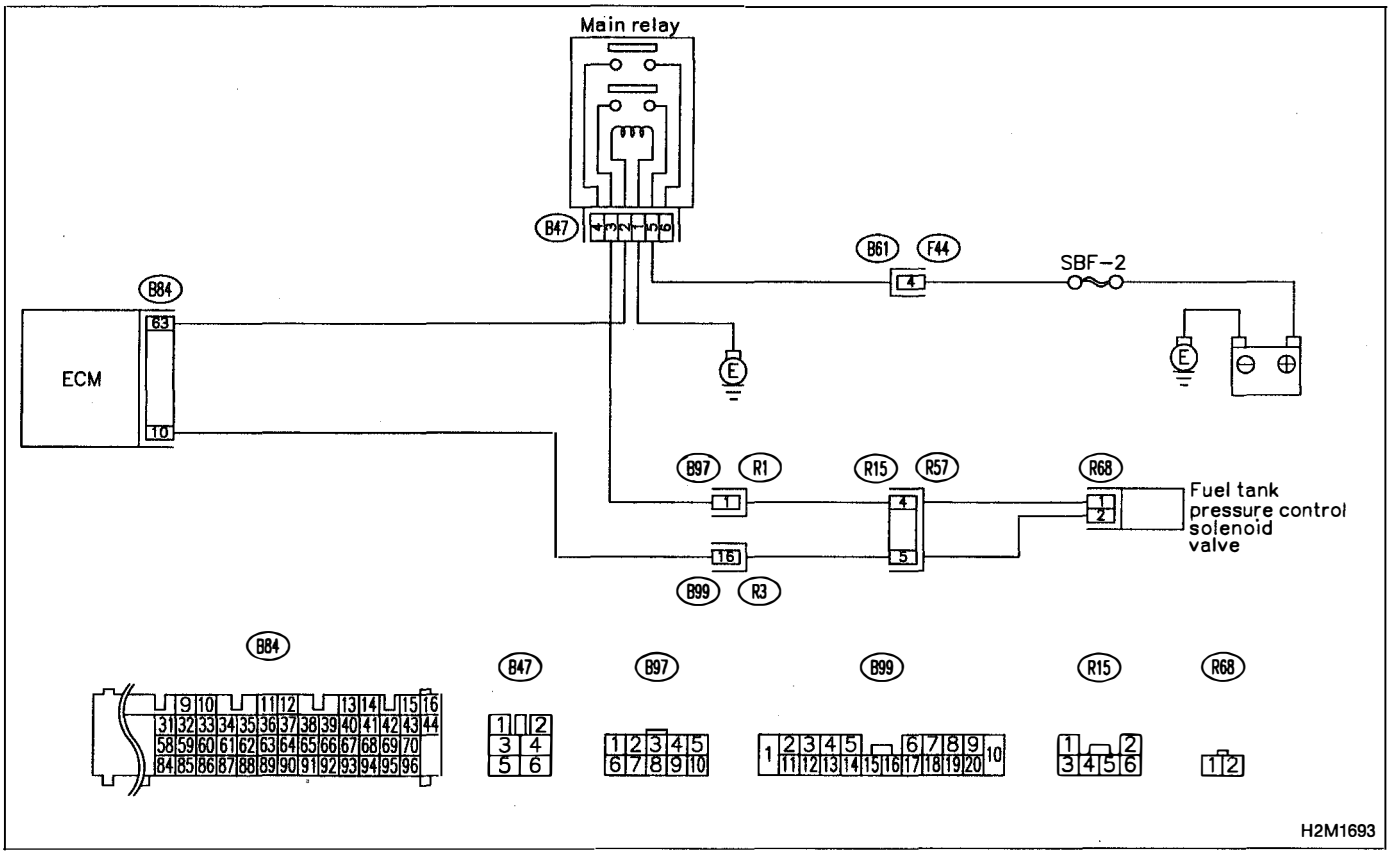
B2M1131

CK: DTC P1420
— FUEL TANK PRESSURE CONTROL SOLENOID VALVE CIRCUIT HIGH INPUT —

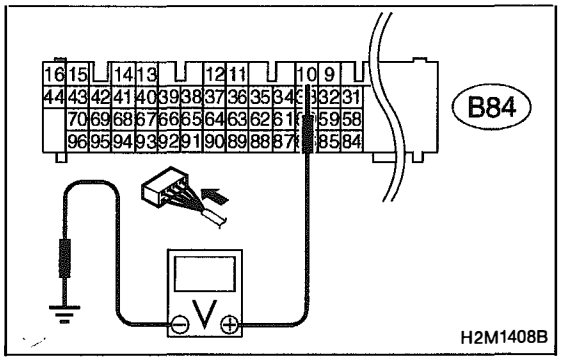
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CK1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CK3.**

NO : Go to step **10CK2.**

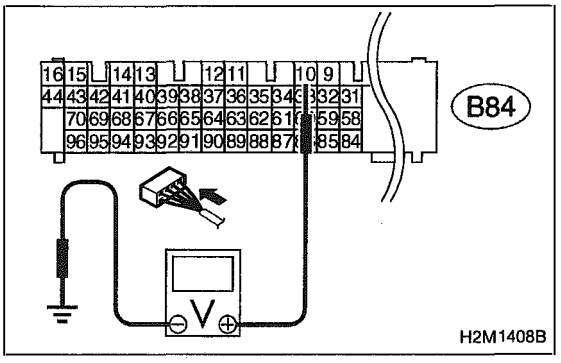
10CK2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10CK3	CHECK HARNESS BETWEEN FUEL TANK PRESSURE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

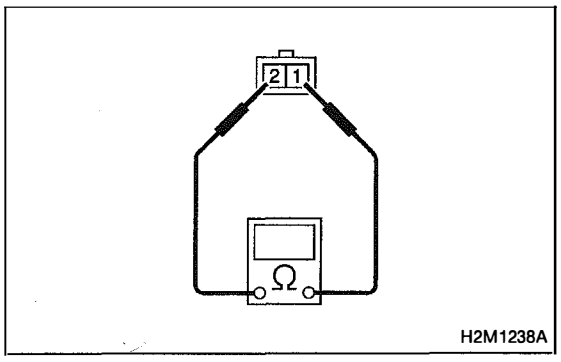
1) Turn ignition switch to OFF.
2) Disconnect connector from fuel tank pressure control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and fuel tank pressure control solenoid valve connector. After repair, replace ECM.

NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between fuel tank pressure control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Replace fuel tank pressure control solenoid valve and ECM.

NO : Go to step **10CK4**.

10CK4	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.

MEMO:

OBD (FB1)

P1421<EGRSOL_HI>

B2M1132

CL: DTC P1421 — EXHAUST GAS RECIRCULATION CIRCUIT HIGH INPUT —

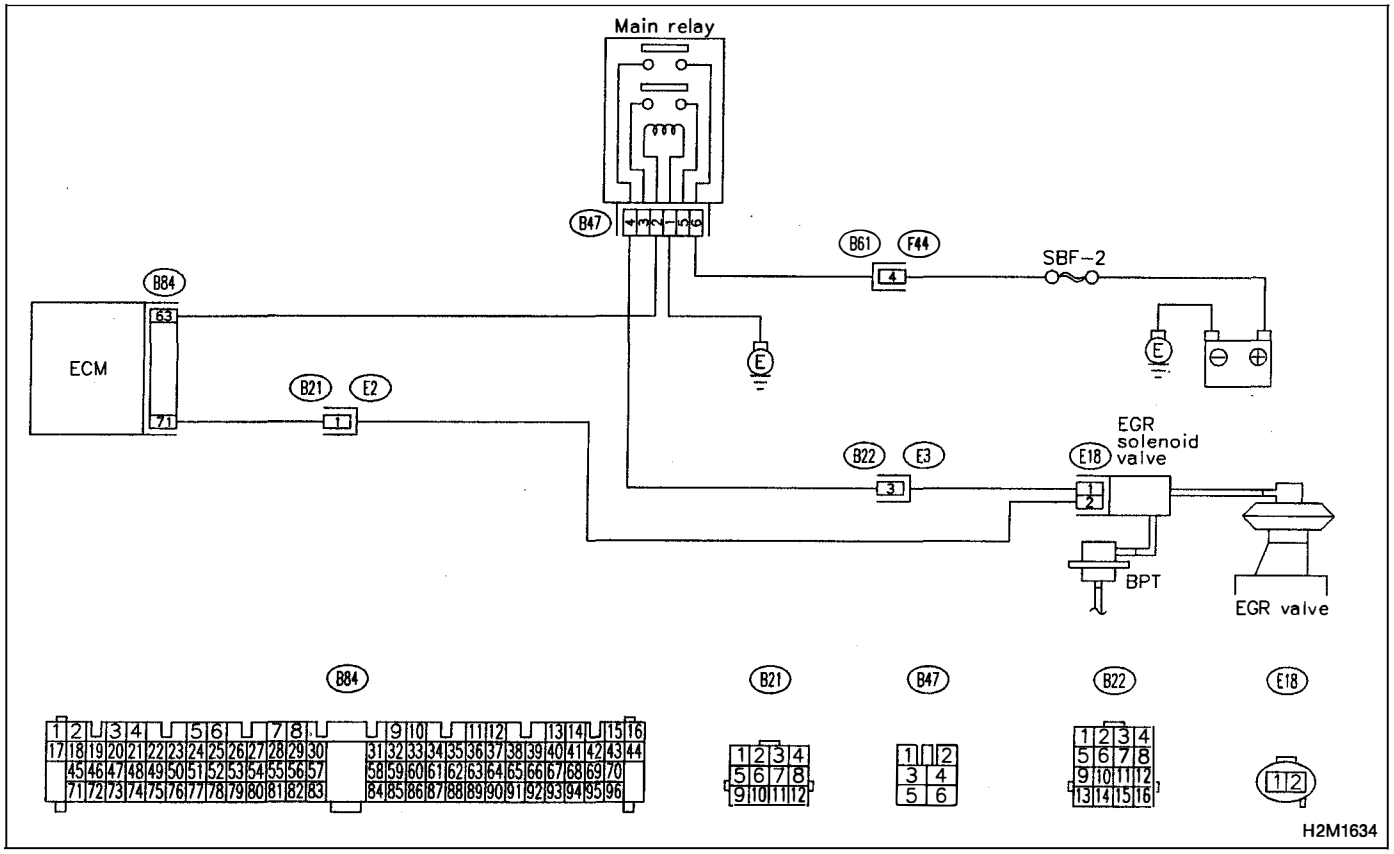
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Poor driving performance on low engine speed

WIRING DIAGRAM:



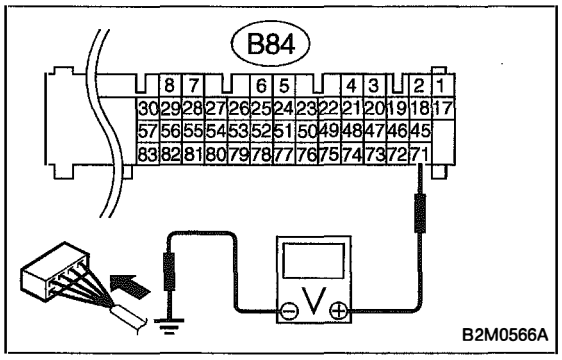
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CL1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type MT?***

YES : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

NO : Go to step **10CL2**.



10CL2	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 71 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V?***

YES : Go to step **10CL4**.

NO : Go to step **10CL3**.

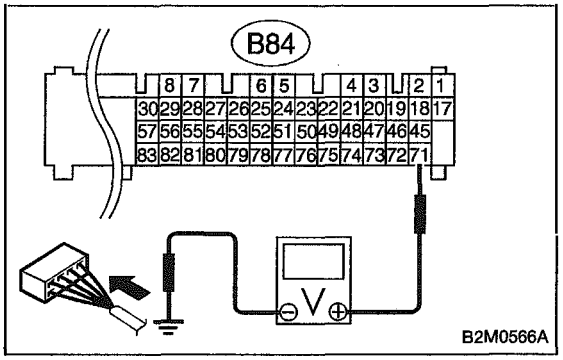
10CL3	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10CL4	CHECK HARNESS BETWEEN EGR SOLENOID VALVE AND ECM CONNECTOR.

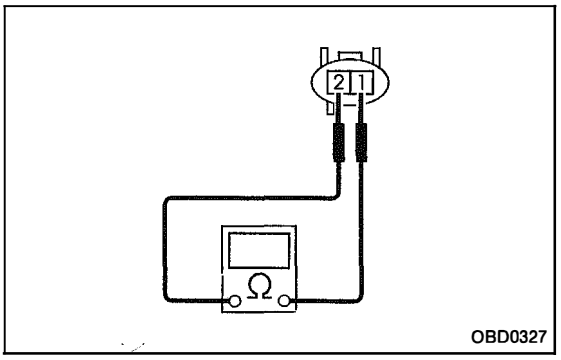
1) Turn ignition switch to OFF.
2) Disconnect connector from EGR solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 71 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and EGR solenoid valve connector. After repair, replace ECM.

NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between EGR solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω?***
YES : Replace EGR solenoid valve and ECM.
NO : Go to step **10CL5**.

10CL5	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

MEMO:

OBD (FB1)
P1422 <CPC_HI>
B2M1133

CM: DTC P1422 — EVAPORATIVE EMISSION CONTROL SYSTEM PURGE CONTROL VALVE CIRCUIT HIGH INPUT —

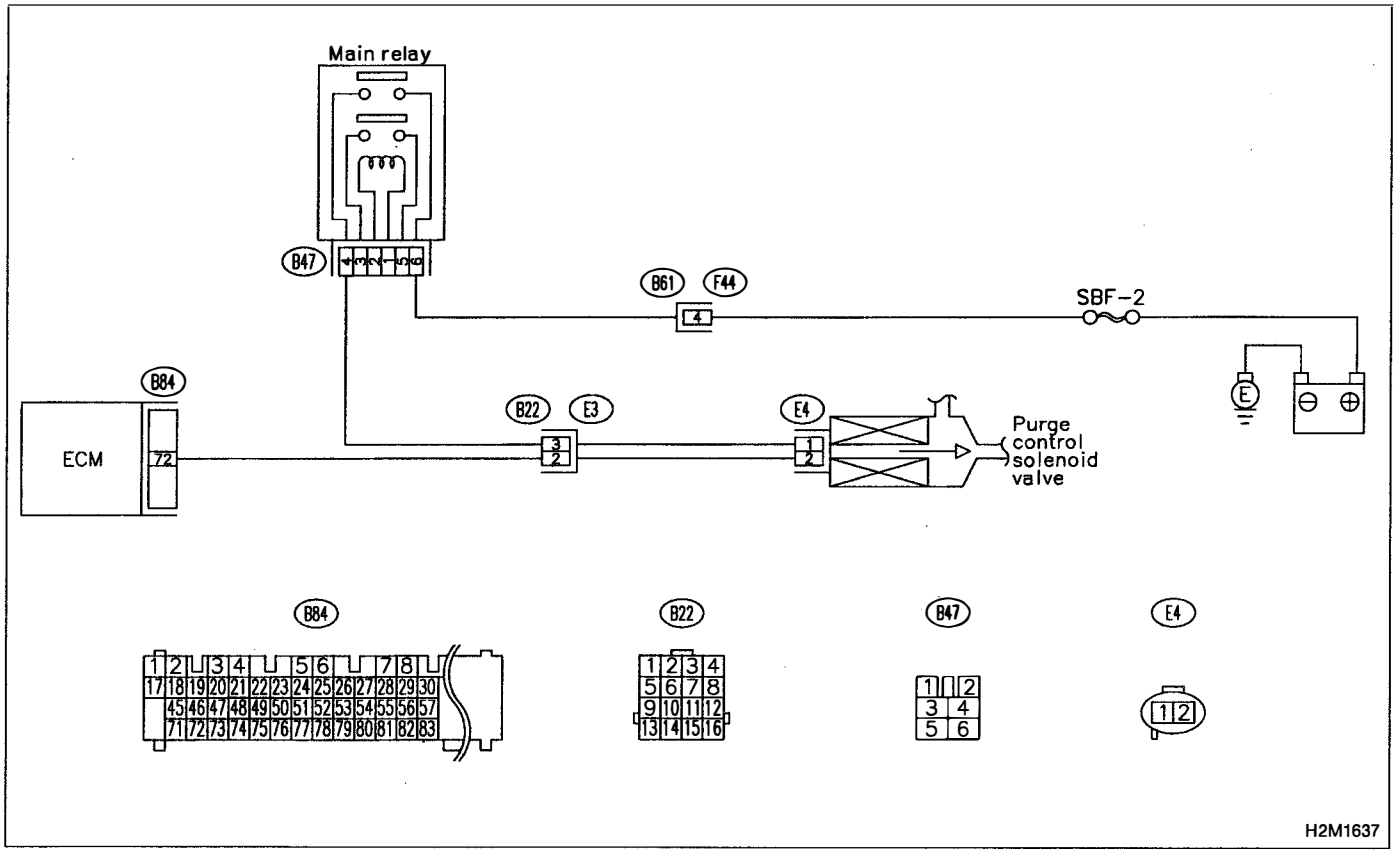
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

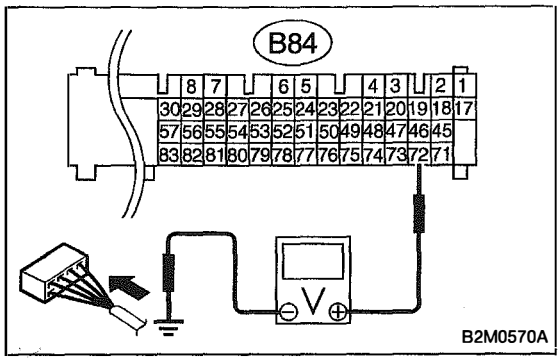
TROUBLE SYMPTOM:

- Erroneous idling

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CM1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

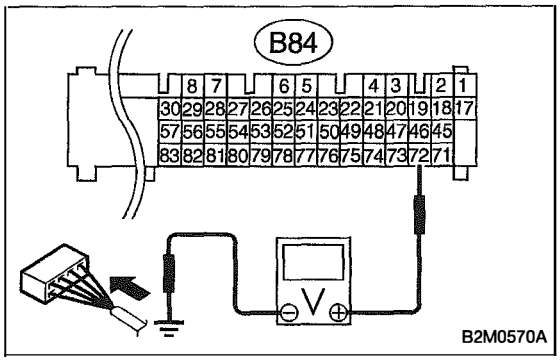
Connector & terminal
(B84) No. 72 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Go to step **10CM3.**
NO : Go to step **10CM2.**

10CM2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

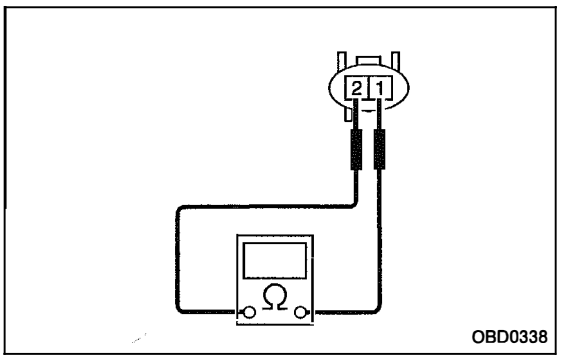


10CM3	CHECK HARNESS BETWEEN PURGE CONTROL SOLENOID VALVE AND ECM CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from purge control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 72 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Repair battery short circuit in harness between ECM and purge control solenoid valve connector. After repair, replace ECM.
NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between purge control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω?***
YES : Replace purge control solenoid valve and ECM.
NO : Go to step **10CM4**.

10CM4	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***
YES : Repair poor contact in ECM connector.
NO : Replace ECM.

MEMO:

OBD (FB1)

P1423<VCMSOL_HI>

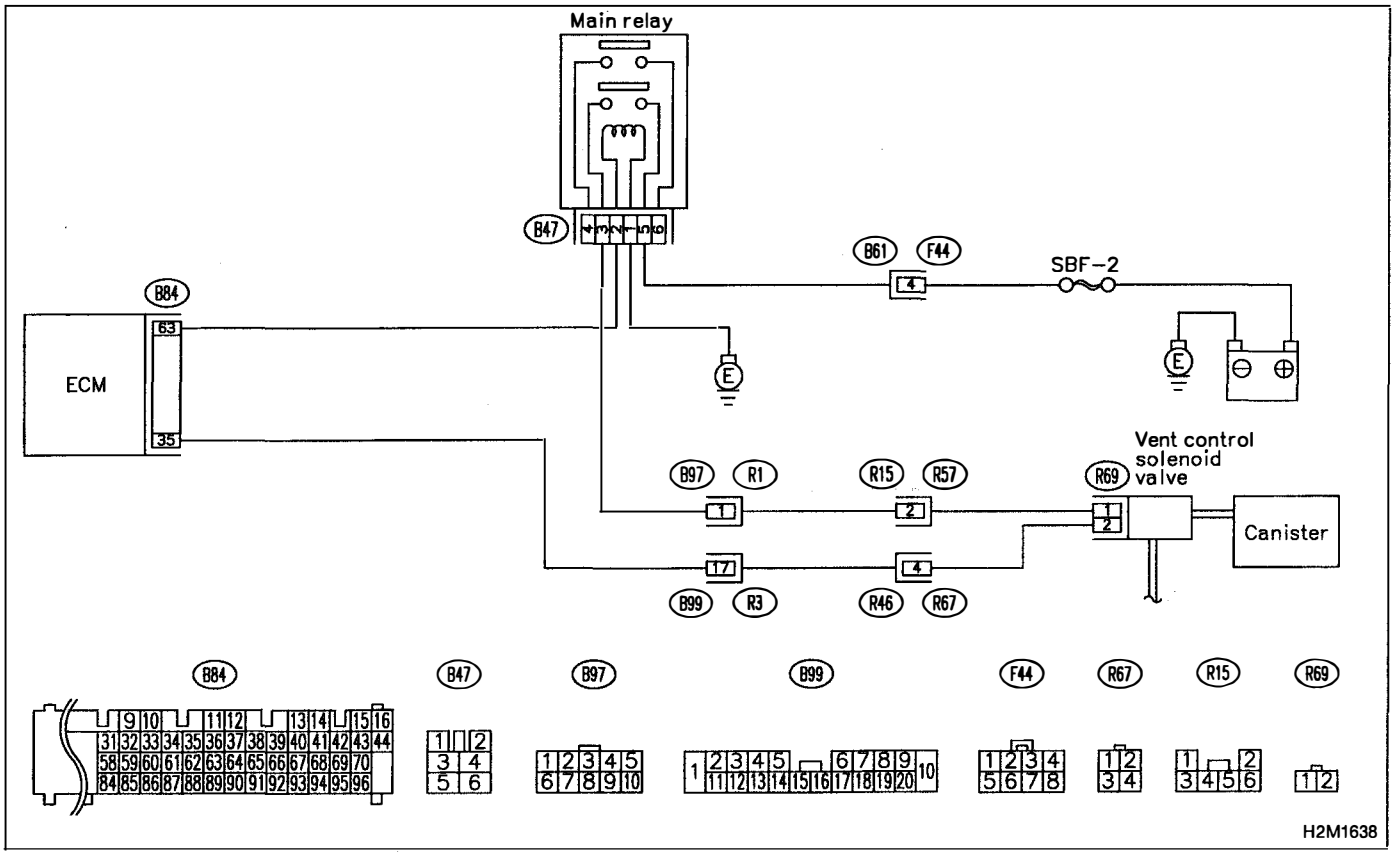
B2M1134

CN: DTC P1423 — EVAPORATIVE EMISSION CONTROL SYSTEM VENT CONTROL HIGH INPUT —

DTC DETECTING CONDITION:

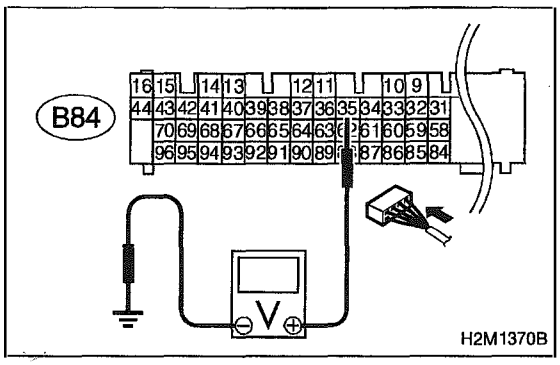
- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1638

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CN1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 35 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CN3**.

NO : Go to step **10CN2**.

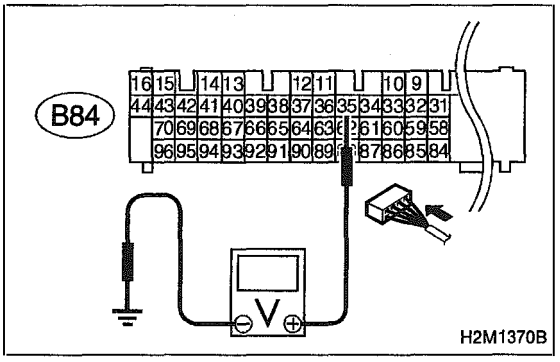
10CN2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C2].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.



10CN3	CHECK HARNESS BETWEEN VENT CONTROL SOLENOID VALVE AND ECM CONNECTOR.

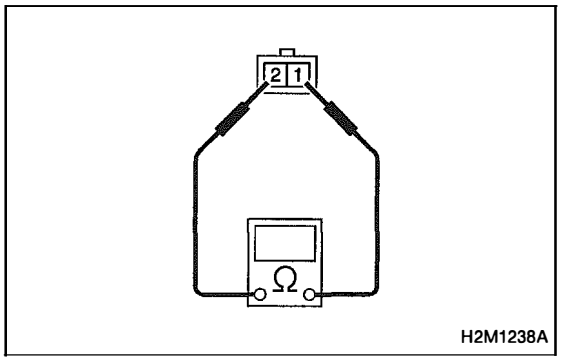
1) Turn ignition switch to OFF.
2) Disconnect connector from vent control solenoid valve.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 35 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and vent control solenoid valve connector. After repair, replace ECM.

NO : Go to next step 5).



5) Turn ignition switch to OFF.
6) Measure resistance between vent control solenoid valve terminals.

Terminals
No. 1 — No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Replace vent control solenoid valve and ECM.

NO : Go to step **10CN4**.

10CN4	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.

MEMO:

OBD (FB1)
P1440 <PCV_FLOW>

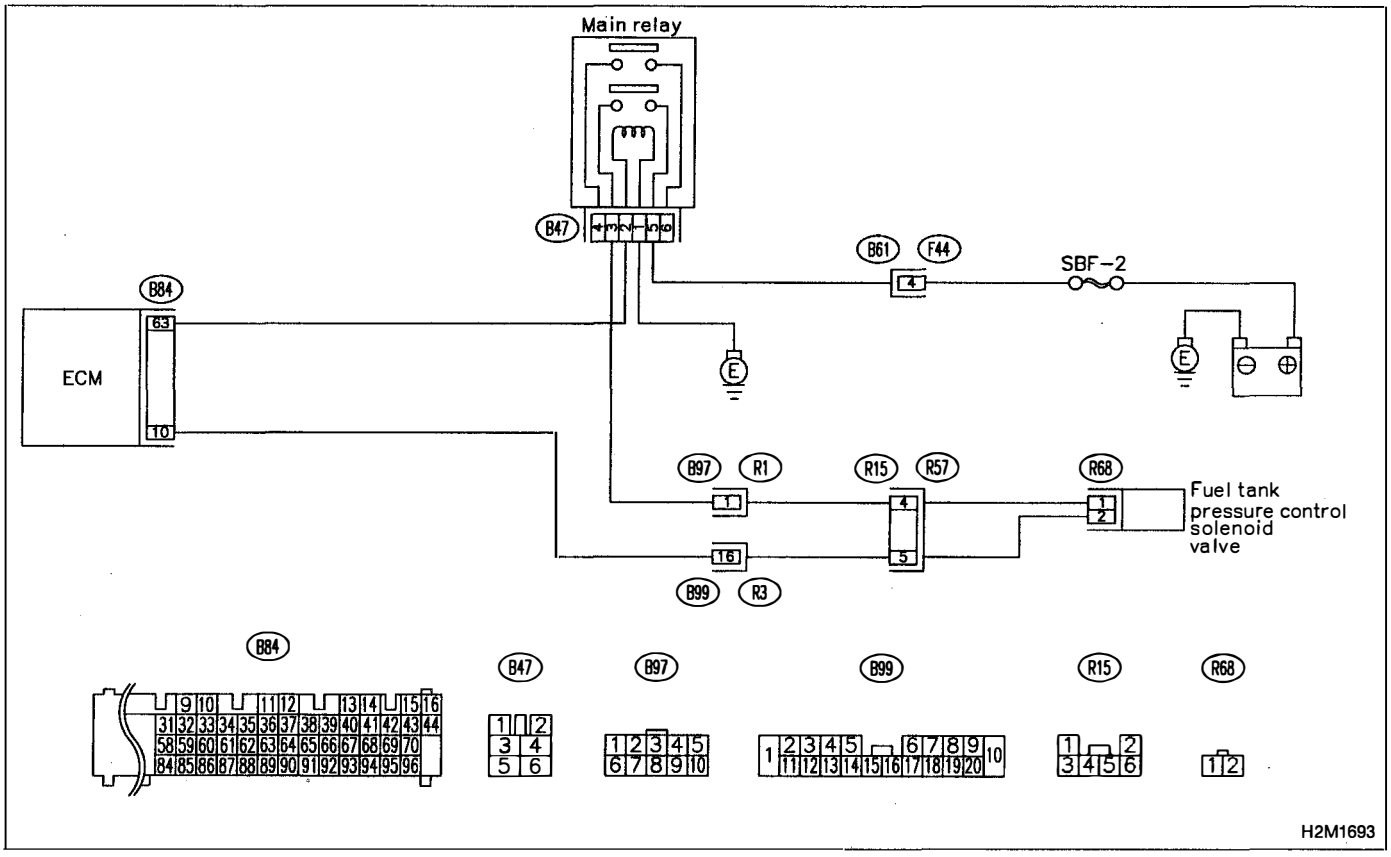
B2M1135

CO: DTC P1440
— FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (LOW INPUT) —

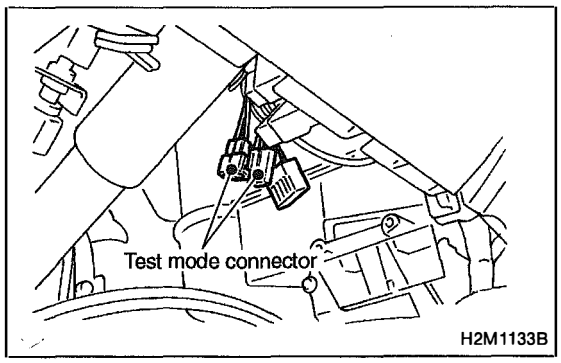
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CO1	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.
3) Turn ignition switch to ON.

CHECK ***: Does fuel tank pressure control solenoid valve produce operating sound?***

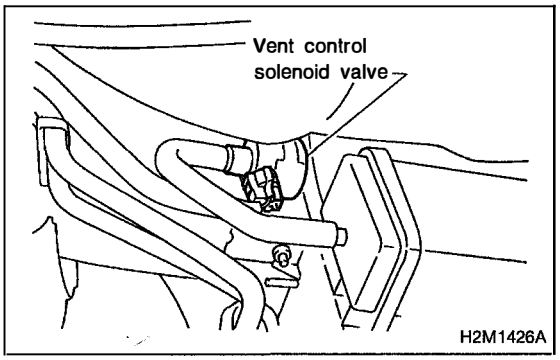
NOTE:
Fuel tank pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CO2.**
NO : Replace fuel tank pressure control solenoid valve.

10CO2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK ***: Is the fuel filler cap tightened securely?***
YES : Tighten fuel filler cap securely.
NO : Go to next CHECK .
CHECK ***: Is there any damage to the seal between fuel filler cap and fuel filler pipe?***
YES : Repair or replace fuel filler cap and fuel filler pipe.
NO : Go to step **10CO3.**



10CO3	CHECK VENT CONTROL SOLENOID VALVE.

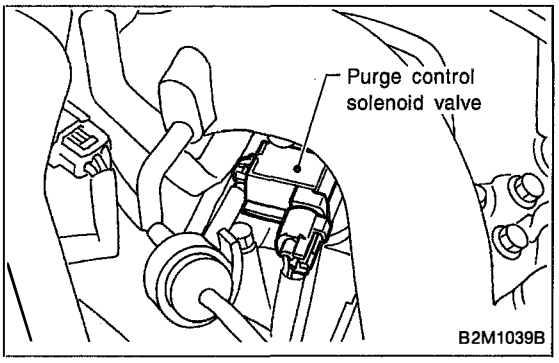
Turn ignition switch to ON.

CHECK : ***Does vent control solenoid valve produce operating sound?***

NOTE:
Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CO4**.

NO : Replace vent control solenoid valve.



10CO4	CHECK PURGE CONTROL SOLENOID VALVE.

CHECK : ***Does purge control solenoid valve produce operating sound?***

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CO5**.

NO : Replace purge control solenoid valve.

10CO5	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK ***: Does fuel leak in fuel line?***

YES : Repair or replace fuel line.

NO : Go to next CHECK .

CHECK ***: Is there any damage at canister?***

YES : Repair or replace canister.

NO : Go to next CHECK .

CHECK ***: Is there any damage at fuel tank?***

YES : Repair or replace fuel tank.

NO : Go to next CHECK .

CHECK ***: Are there holes, cracks or disconnections of hoses or pipes in evaporative emission control system?***

YES : Repair or replace hoses or pipes.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD (FB1)

P1441 <PCV_FHI>

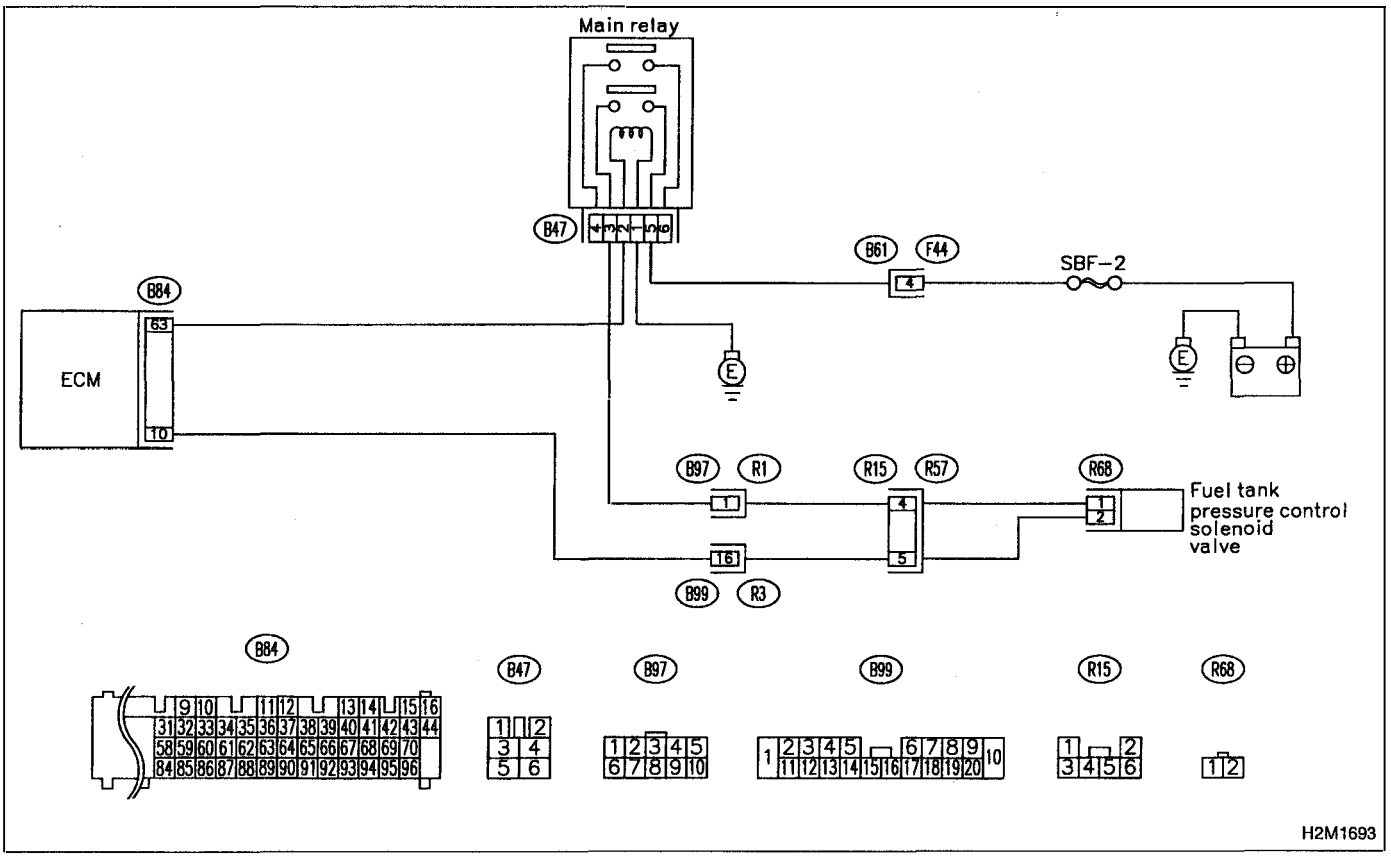
B2M1136

CP: DTC P1441
— FUEL TANK PRESSURE CONTROL SYSTEM FUNCTION PROBLEM (HIGH INPUT) —

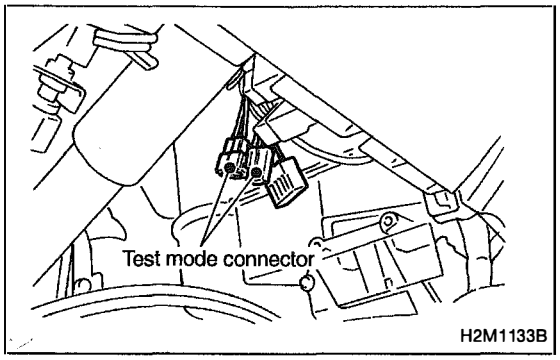
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CP1	CHECK FUEL TANK PRESSURE CONTROL SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Connect test mode connector.
3) Turn ignition switch to ON.

CHECK : ***Does fuel tank pressure control solenoid valve produce operating sound?***

NOTE:
Fuel tank pressure control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD07). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

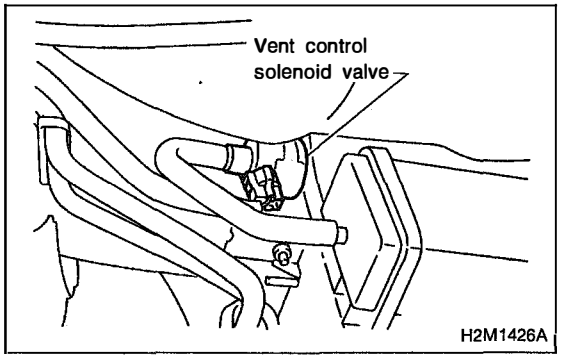
YES : Go to step **10CP2**.
NO : Replace fuel tank pressure control solenoid valve.

10CP2	CHECK FUEL FILLER CAP AND FUEL FILLER PIPE.

1) Turn ignition switch to OFF.
2) Open the fuel flap.

CHECK : ***Is there any damage at fuel filler cap and fuel filler pipe?***

YES : Repair or replace fuel filler cap and fuel filler pipe.
NO : Go to step **10CP3**.



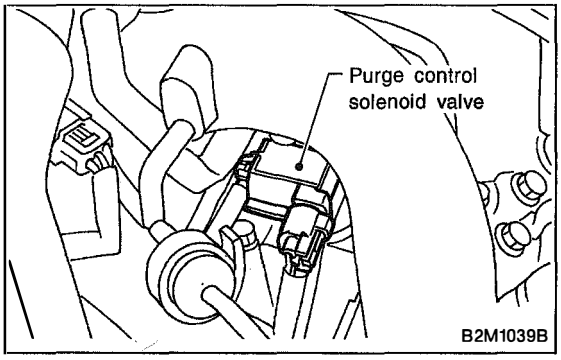
10CP3	CHECK VENT CONTROL SOLENOID VALVE.

Turn ignition switch to ON.

CHECK : ***Does vent control solenoid valve produce operating sound?***

NOTE:
Vent control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD08). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CP4**.
NO : Replace vent control solenoid valve.



10CP4	CHECK PURGE CONTROL SOLENOID VALVE.

CHECK : ***Does purge control solenoid valve produce operating sound?***

NOTE:
Purge control solenoid valve operation check can also be executed using Subaru Select Monitor (Function mode: FD02). For the procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CP5**.

NO : Replace purge control solenoid valve.

10CP5	CHECK EVAPORATIVE EMISSION CONTROL SYSTEM LINE.

Turn ignition switch to OFF.

CHECK : ***Is there any damage at canister?***

YES : Repair or replace canister.

NO : Go to next CHECK .

CHECK : ***Is there any damage at fuel tank?***

YES : Repair or replace fuel tank.

NO : Go to next CHECK .

CHECK : ***Is there clogging of hoses or pipes in evaporative emission control system?***

YES : Repair or replace hoses or pipes.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

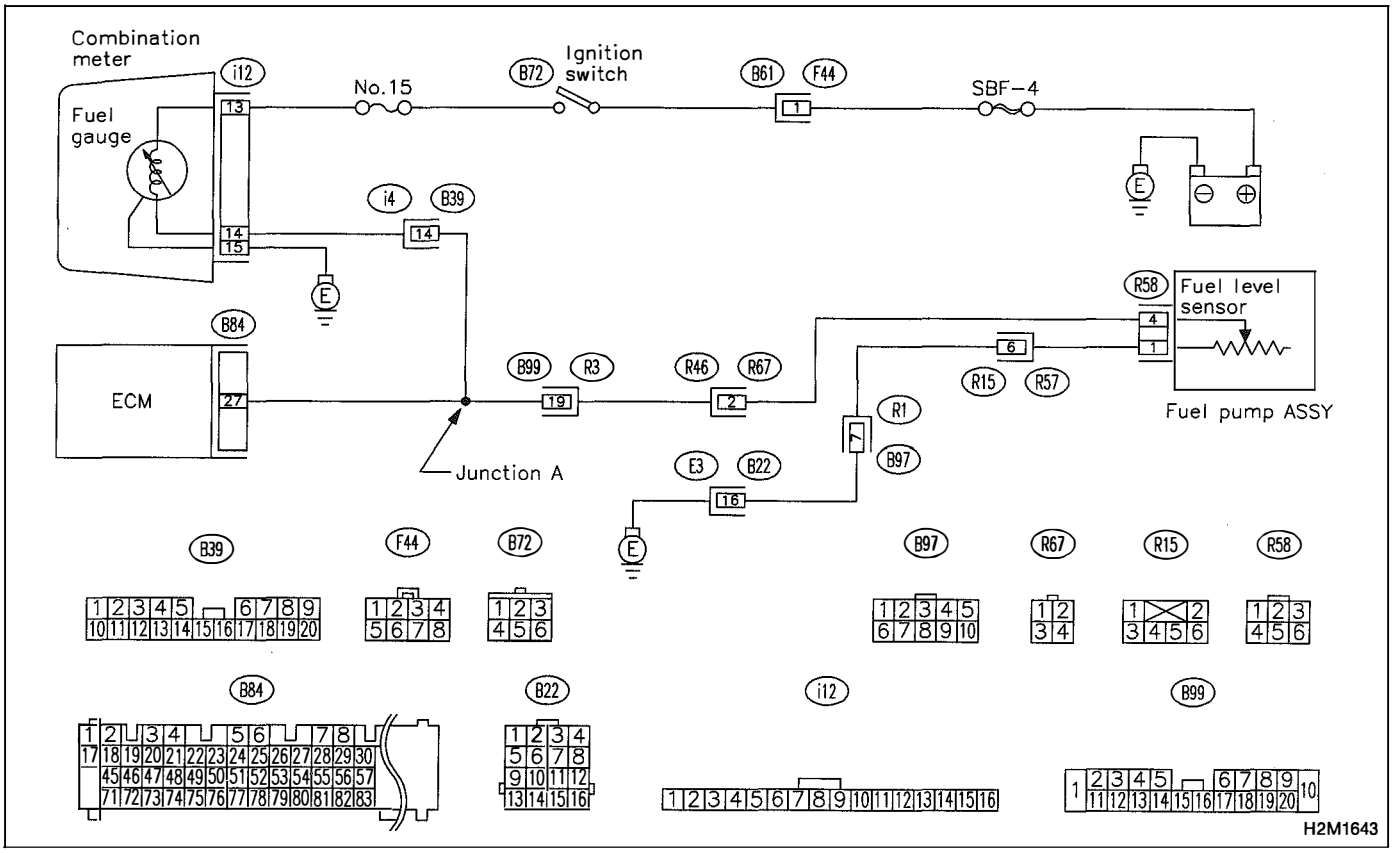
OBD (FB1)
P1442 <FLVL_R2>
B2M1137

CQ: DTC P1442 — FUEL LEVEL SENSOR CIRCUIT RANGE/ PERFORMANCE PROBLEM 2 —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CQ1	CHECK DTC P0461, P0462 OR P0463 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0461, P0462 or P0463?***

YES : Inspect DTC P0461, P0462 or P0463 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect this trouble.

NO : Replace fuel sending unit and fuel sub meter unit.

OBD	(FB1)
P1500	<FAN_1>

OBD0527

CR: DTC P1500 — RADIATOR FAN RELAY 1 CIRCUIT LOW INPUT —

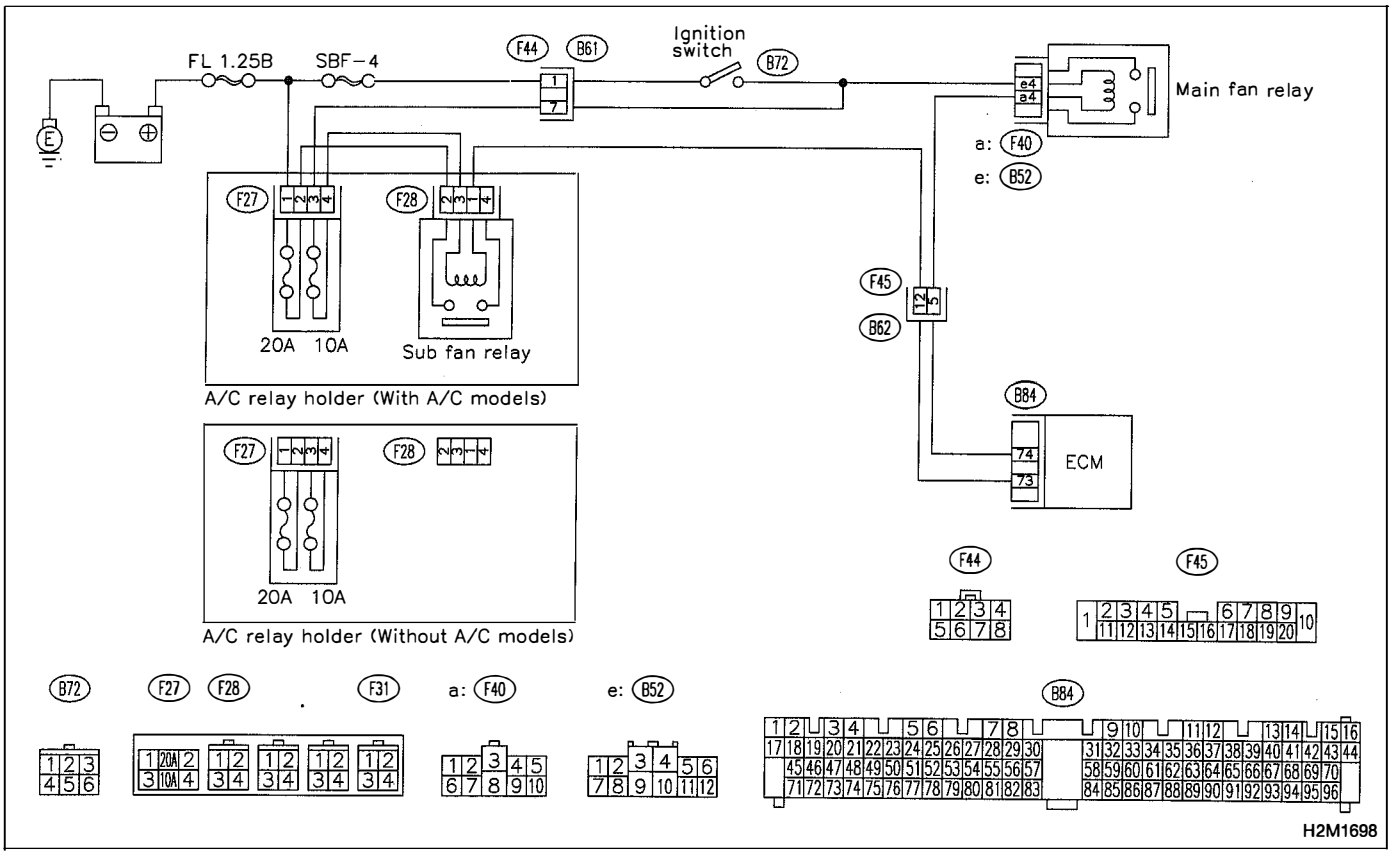
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

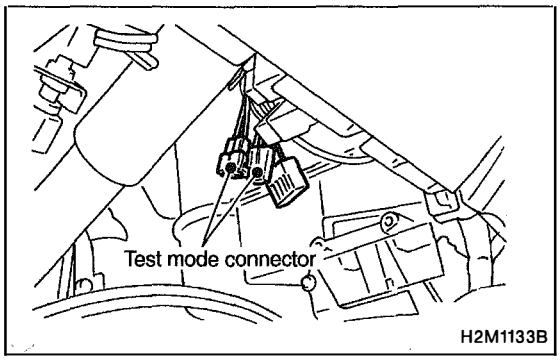
TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

WIRING DIAGRAM:

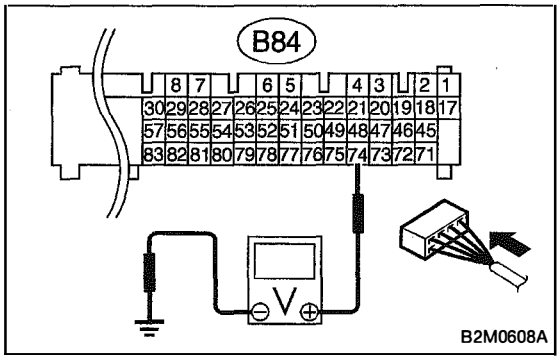


CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODE.
<Ref. to 2-7 [T3D0] and [T3E0].>



10CR1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
3) Turn ignition switch to ON.



4) Measure voltage between ECM and chassis ground.

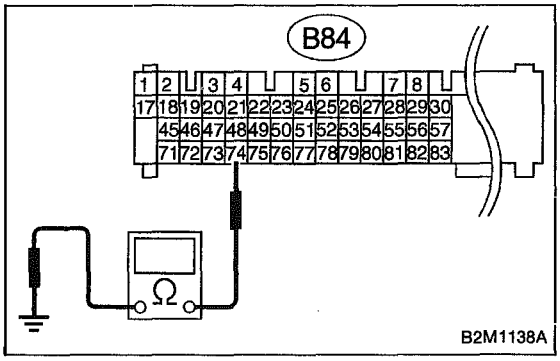
Connector & terminal
(B84) No. 74 (+) — Chassis ground:

CHECK ***: Does voltage change between 0 and 10 volts?***

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor (Function mode: FD03). For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Repair poor contact in ECM connector.

NO : Go to step **10CR2**.



10CR2	CHECK GROUND SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

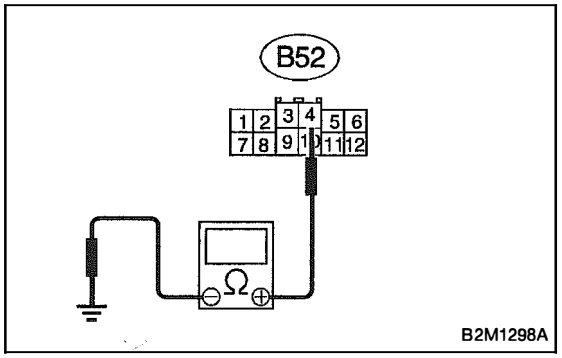
1) Turn ignition switch to OFF.
2) Disconnect connectors from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 74 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in radiator fan relay 1 control circuit.

NO : Go to step **10CR3**.



10CR3	CHECK POWER SUPPLY FOR RELAY.

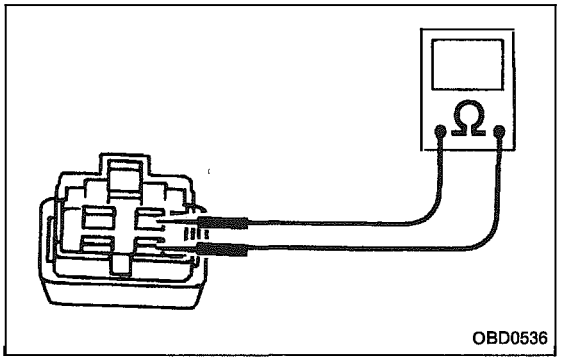
1) Disconnect connector (B52) from fuse and relay box (F/B).
2) Turn ignition switch to ON.
3) Measure voltage between fuse and relay box (F/B) connector and chassis ground.

Connector & terminal
(B52) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10CR4.**

NO : Repair open circuit in harness between ignition switch and fuse and relay box (F/B) connector.



10CR4	CHECK MAIN FAN RELAY 1, SUB FAN RELAY 1 AND MAIN FAN RELAY.

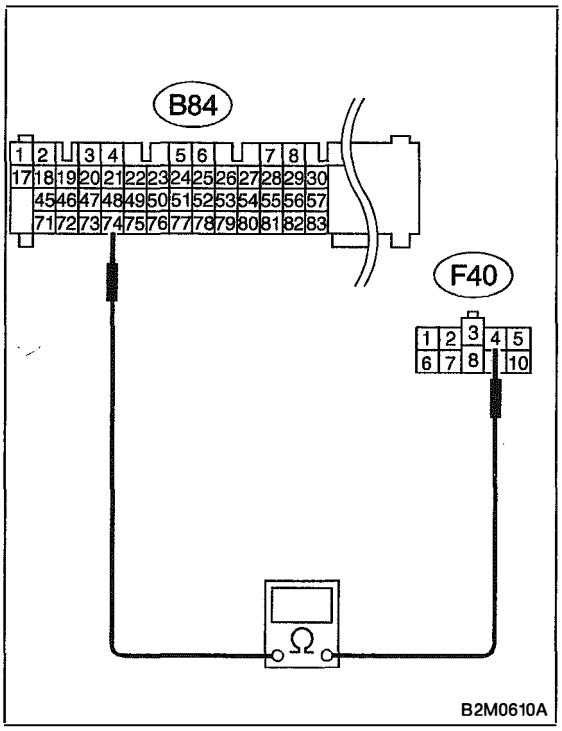
1) Turn ignition switch to OFF.
2) Remove main fan relay.
3) Measure resistance between main fan relay terminals.

Terminal
No. 1 — No. 3:

CHECK ***: Is the resistance between 83 and 117 Ω?***

YES : Go to step **10CR5.**

NO : Replace main fan relay.



10CR5	CHECK OPEN CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

1) Disconnect connector (F40) from fuse and relay box (F/B).

2) Measure resistance of harness between ECM and main fan relay connector.

Connector & terminal
(B84) No. 74 — (F40) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **10CR6.**

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and main fan relay connector
- Poor contact in coupling connector (F45)

10CR6	CHECK POOR CONTACT.

Check poor contact in ECM or main fan relay connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM or main fan relay connector?***

YES : Repair poor contact in ECM or main fan relay connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

OBD	(FB1)
P1502	<FAN_F>

OBD0538

CS: DTC P1502
— RADIATOR FAN FUNCTION PROBLEM —

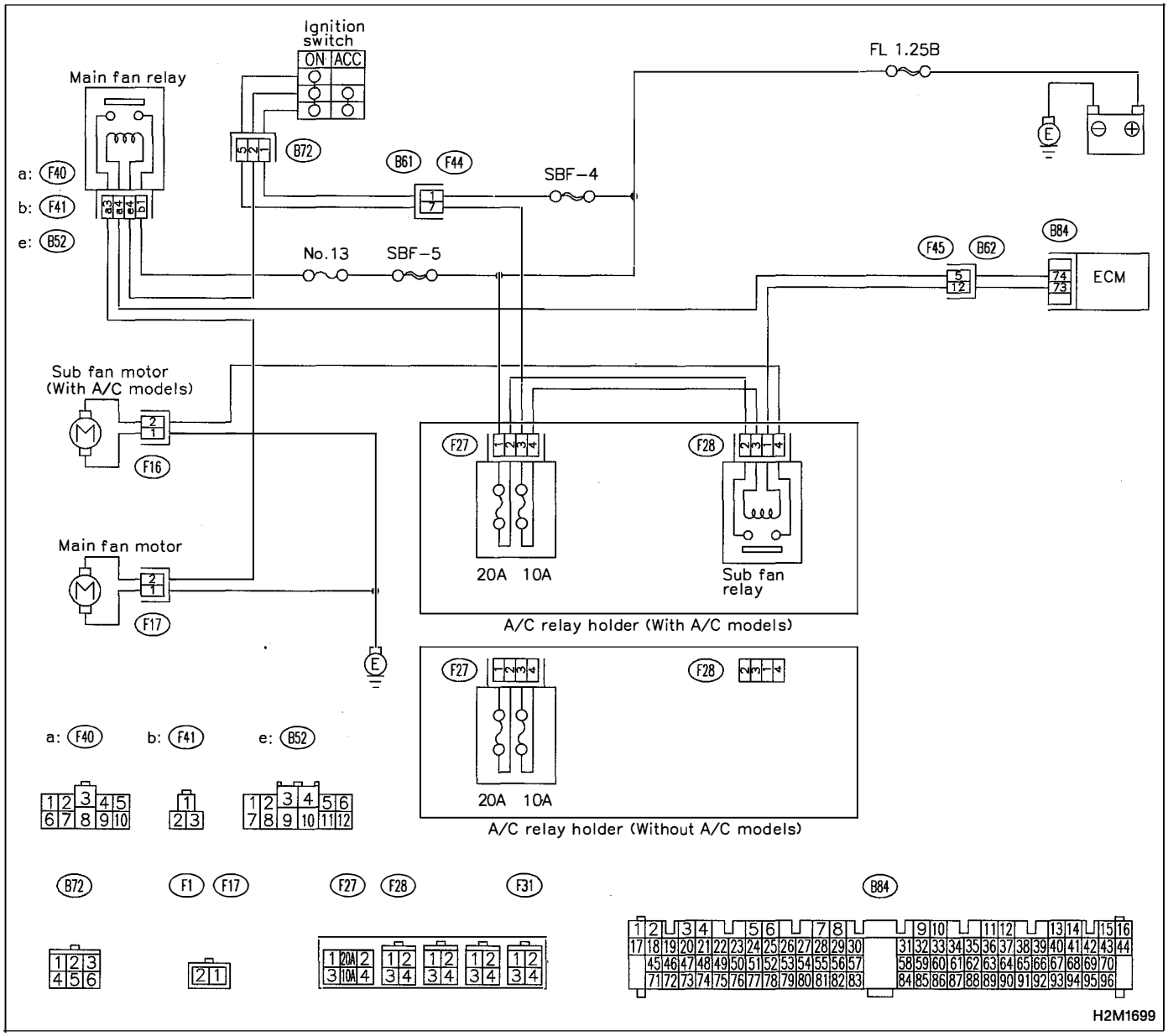
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Occurrence of noise
- Overheating

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

NOTE:
If the vehicle, with the engine idling, is placed very close to a wall or another vehicle, preventing normal cooling function, the OBD system may detect malfunction.

10CS1	**CHECK ANY OTHER DTC (BESIDE DTC P1502) ON DISPLAY.**

CHECK ***: Is there any other DTC on display?***

YES : Inspect the relevant DTC using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NO : Check engine cooling system. <Ref. to 2-5 [T100].>

OBD (FB1)
P1507 <ISC_SHI>
B2M1140

CT: DTC P1507 — IDLE CONTROL SYSTEM MALFUNCTION (FAIL-SAFE) —

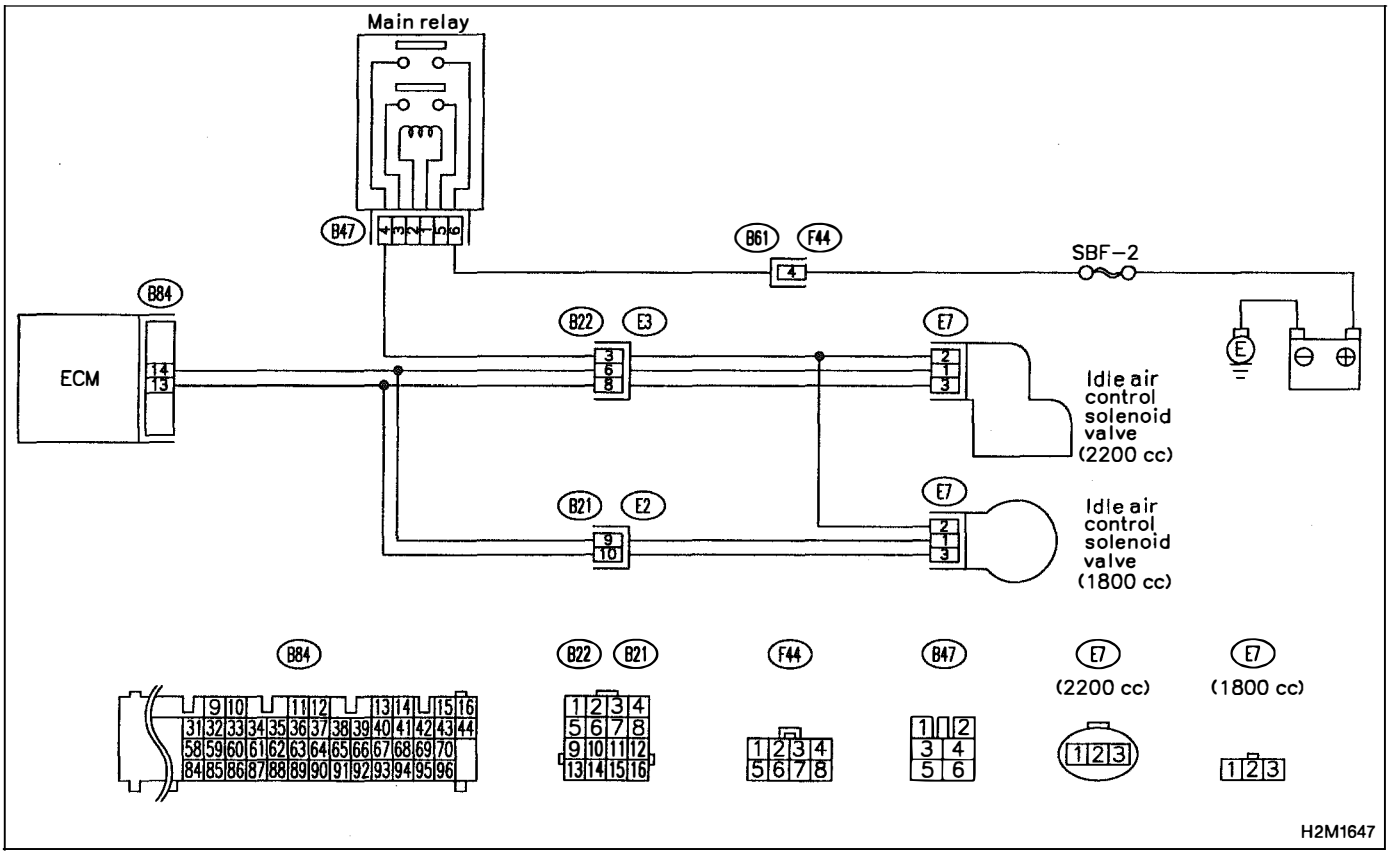
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Engine keeps running at higher revolution than specified idling revolution.

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CT1	CHECK DTC P0505 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P0505?***

YES : Inspect DTC P0505 using "10. Diagnostics Chart with Trouble Code". <Ref. to 2-7 [T10A0].>

NOTE:
In this case, it is not necessary to inspect DTC P1507.

NO : Go to step **10CT2**.

10CT2	CHECK AIR INTAKE SYSTEM.

1) Turn ignition switch to ON.
2) Start engine, and idle it.

CHECK : ***Is there a fault in air intake system?***

NOTE:
Check the following items.
- Loose installation of intake manifold, idle air control solenoid valve and throttle body
- Cracks of intake manifold gasket, idle air control solenoid valve gasket and throttle body gasket
- Loose connections and cracks of idle air control solenoid valve by-pass hoses
- Disconnections of vacuum hoses

YES : Repair air suction and leaks.

NO : Replace idle air control solenoid valve.

OBD (FB1)

P1520 <FAN_1HI>

B2M1141

CU: DTC P1520 — RADIATOR FAN RELAY 1 CIRCUIT HIGH INPUT —

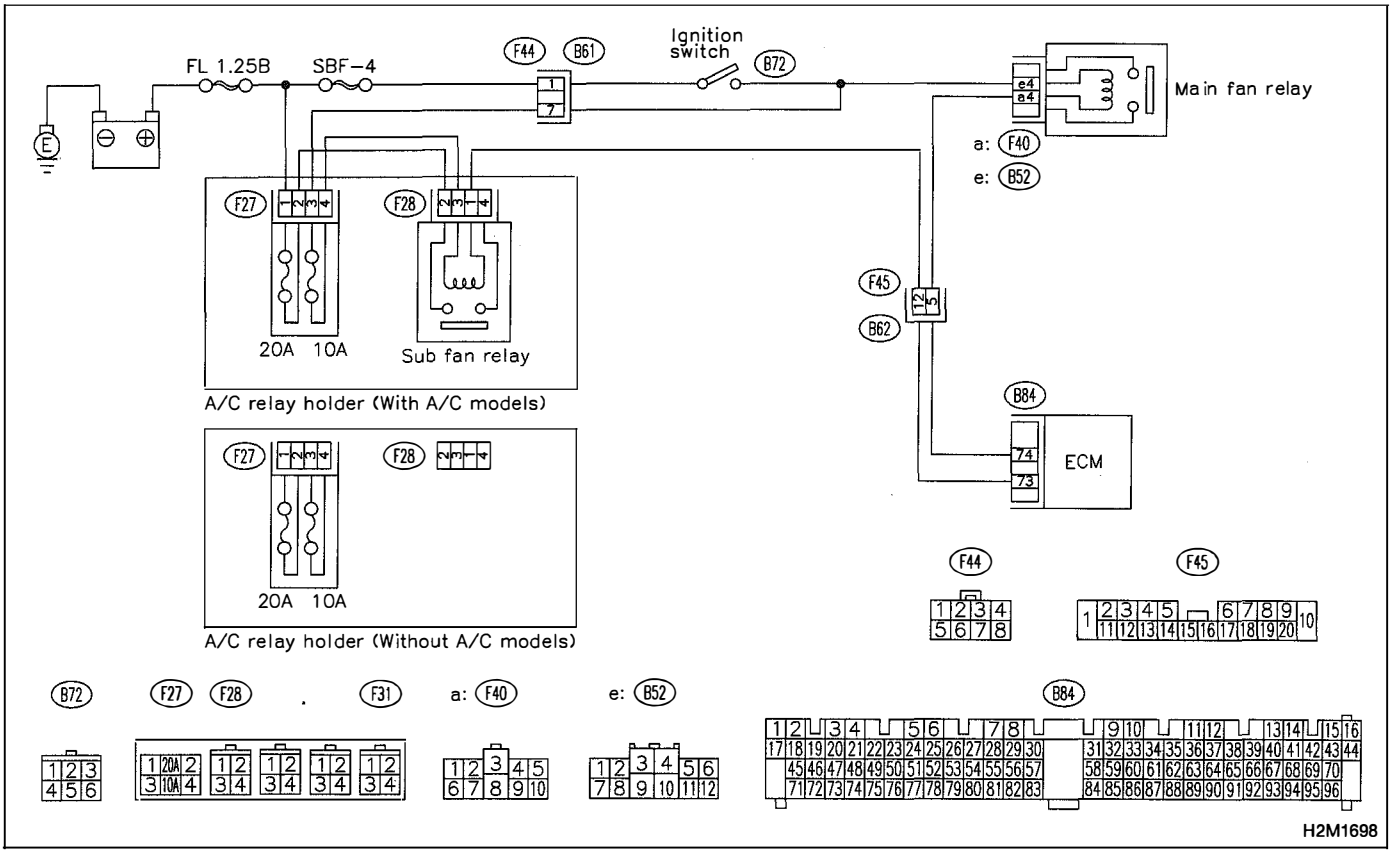
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Radiator fan does not operate properly.
- Overheating

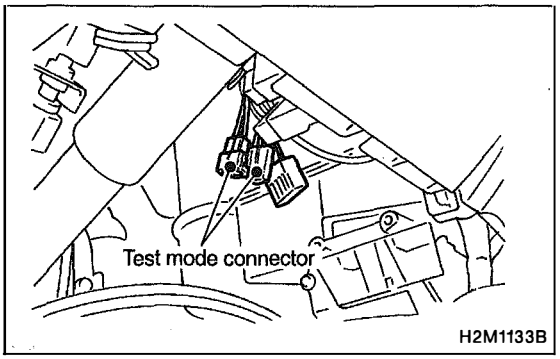
WIRING DIAGRAM:



CAUTION:

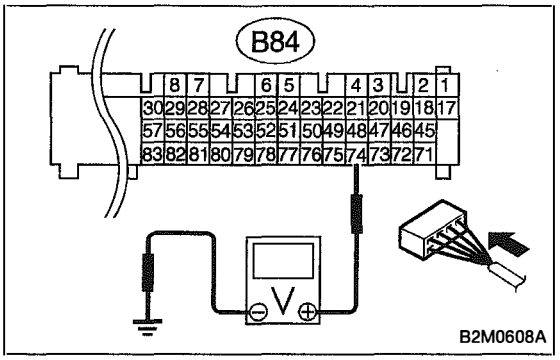
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODE.

<Ref. to 2-7 [T3D0] and [T3E0].>



10CU1	CHECK OUTPUT SIGNAL FROM ECM.

1) Turn ignition switch to OFF.
2) Connect test mode connector at the lower portion of instrument panel (on the driver's side), to the side of the center console box.
3) Turn ignition switch to ON.



4) Measure voltage between ECM and chassis ground.

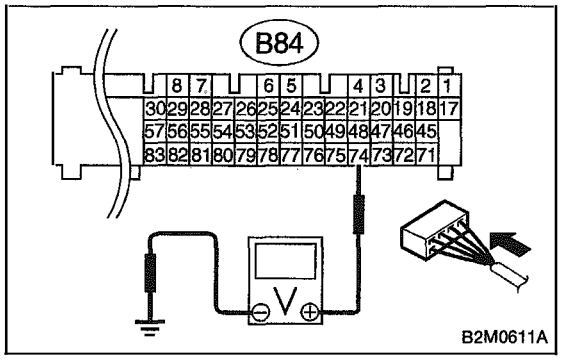
Connector & terminal
(B84) No. 74 (+) — Chassis ground:

CHECK ***: Does voltage change between 0 and 10 volts?***

NOTE:
Radiator fan relay operation check can be executed using Subaru Select Monitor (Function mode: FD03). For procedure, refer to "COMPULSORY VALVE OPERATION CHECK MODE". <Ref. to 2-7 [T3F0].>

YES : Go to step **10CU2**.

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time. In this case, repair poor contact in ECM connector.



10CU2	CHECK SHORT CIRCUIT IN RADIATOR FAN RELAY 1 CONTROL CIRCUIT.

1) Turn ignition switch to OFF.
2) Remove main fan relay 1 and sub fan relay 1. (with A/C models)
Remove main fan relay. (without A/C models)
3) Disconnect test mode connector.
4) Turn ignition switch to ON.
5) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 74 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Repair battery short circuit in radiator fan relay 1 control circuit. After repair, replace ECM.

NO : Go to step **10CU3**.

10CU3	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Replace ECM.

MEMO:

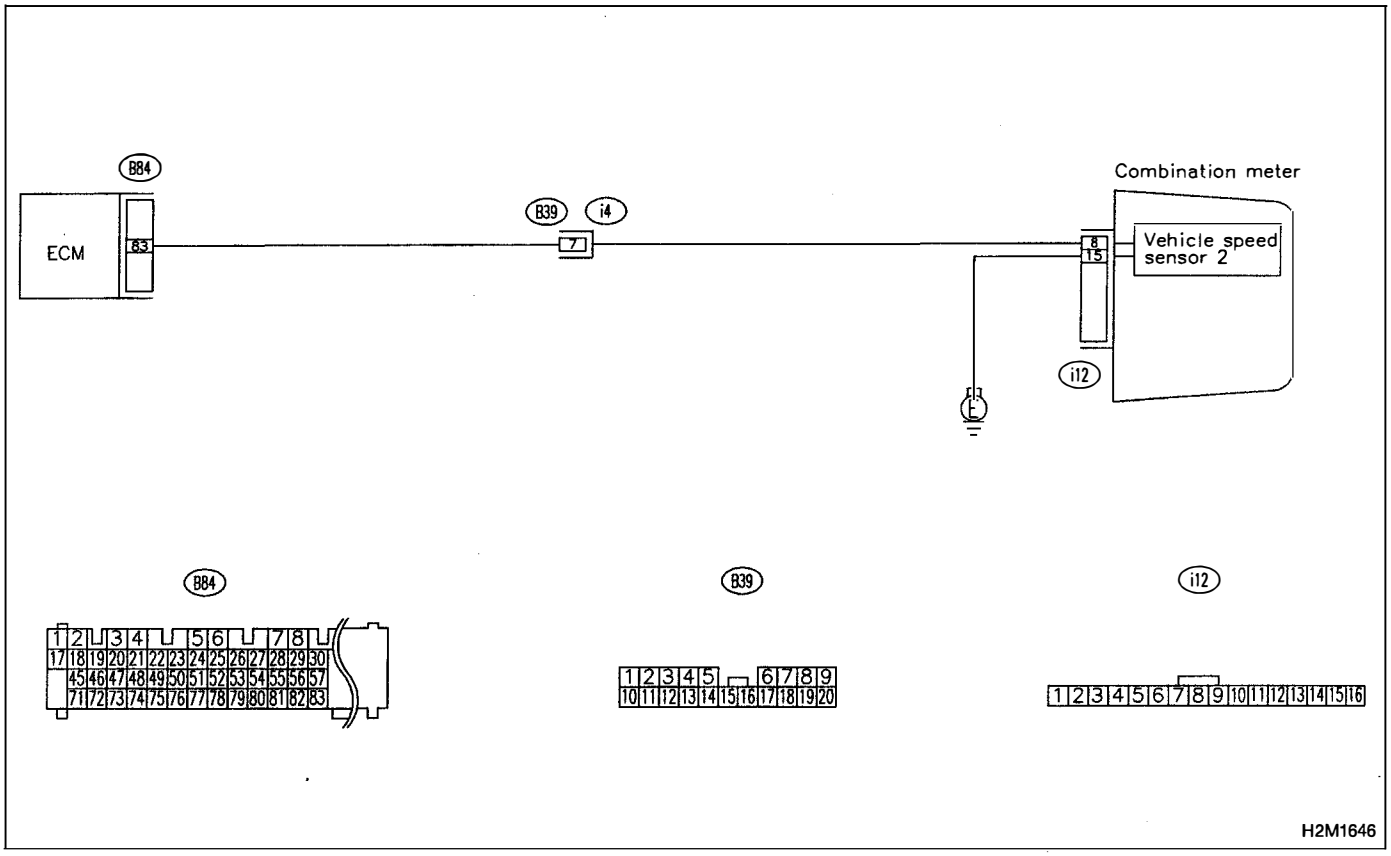
OBD (FB1)
P1540 <VSP_S>
B2M1142

CV: DTC P1540 — VEHICLE SPEED SENSOR MALFUNCTION 2 —

DTC DETECTING CONDITION:

- Immediately at fault recognition

WIRING DIAGRAM:



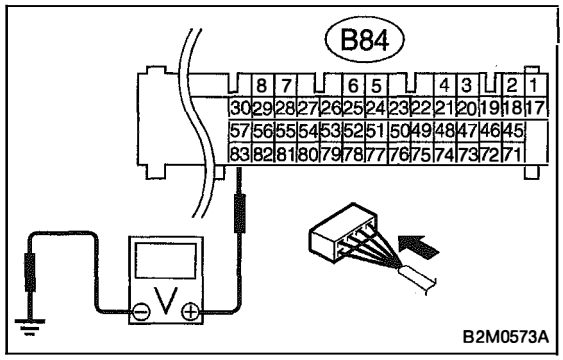
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CV1	CHECK SPEEDOMETER OPERATION IN COMBINATION METER.

CHECK : ***Does speedometer operate normally?***

YES : Go to step **10CV2.**

NO : Check speedometer and vehicle speed sensor 2. <Ref. to 6-2 [K2A0].>



10CV2	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ECM and chassis ground.

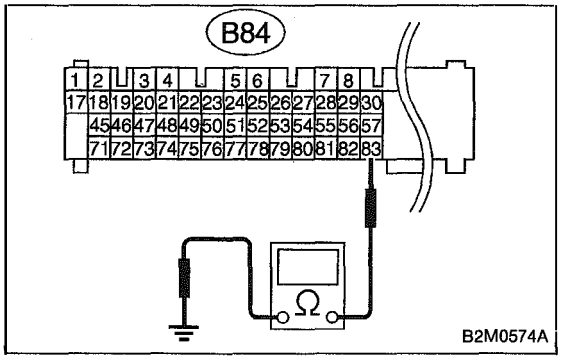
Connector & terminal
(B84) No. 83 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 2 V?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM and combination meter connector
- Poor contact in ECM connector
- Poor contact in combination meter connector
- Poor contact in coupling connector (B39)

NO : Go to step **10CV3.**



10CV3	CHECK HARNESS BETWEEN ECM AND COMBINATION METER CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ECM.
3) Measure resistance of harness between ECM connector and chassis ground.

Connector & terminal
(B84) No. 83 — Chassis ground:

CHECK : ***Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and combination meter connector.

NO : Repair poor contact in ECM connector.

OBD	(FB1)
P1700	<ATTH>

OBD0501

CW: DTC P1700 — THROTTLE POSITION SENSOR CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

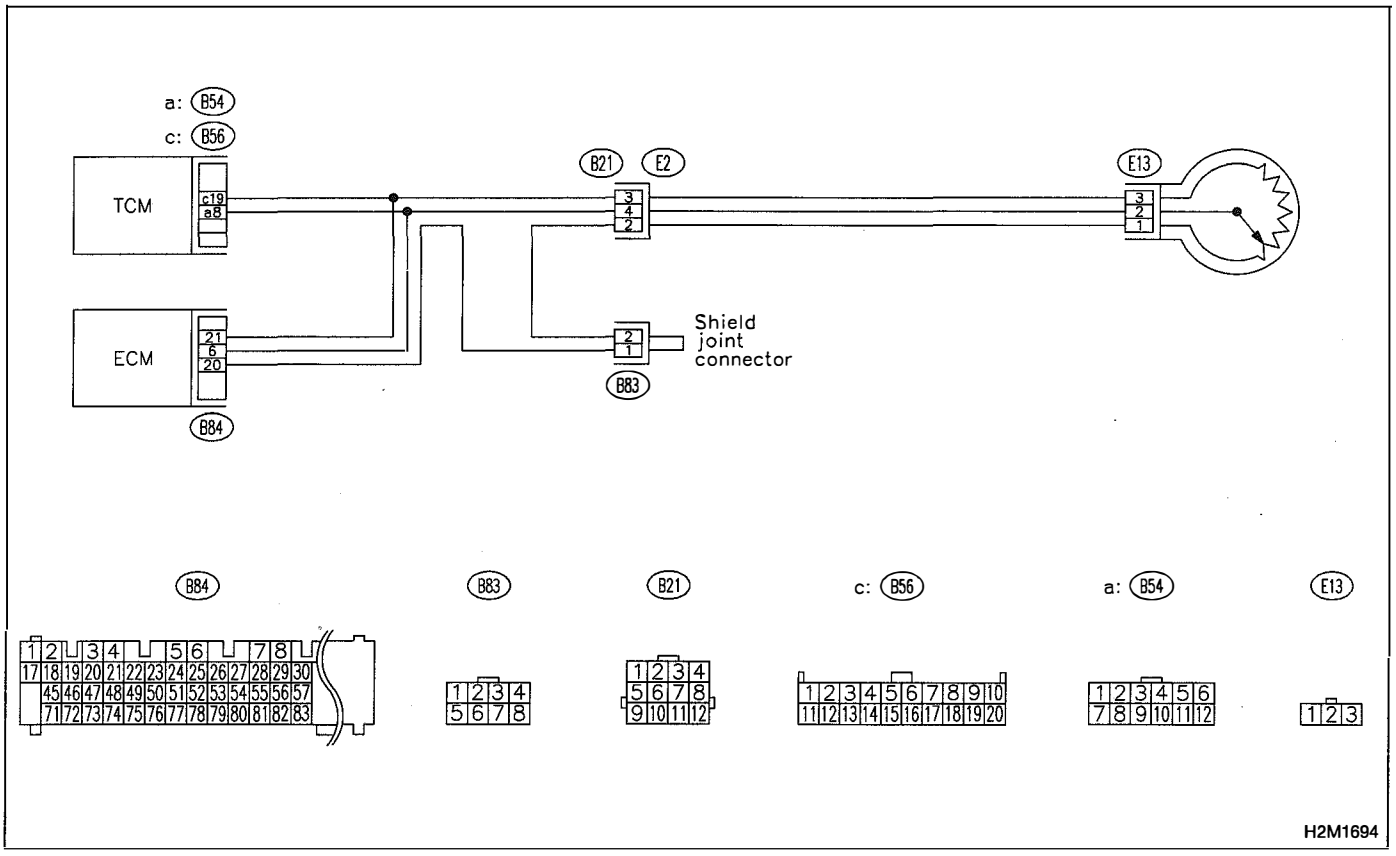
DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

TROUBLE SYMPTOM:

- Shift point too high or too low; engine brake not effected in "3" range; excessive shift shock; excessive tight corner "braking"

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CW1	CHECK DTC P1700 ON DISPLAY.

CHECK : ***Does the Subaru select monitor or OBD-II general scan tool indicate DTC P1700?***

YES : Check throttle position sensor circuit. <Ref. to 3-2 [T8M0].>

NO : It is not necessary to inspect DTC P1700.

OBD (FB1)
P1701 <ATCRS>

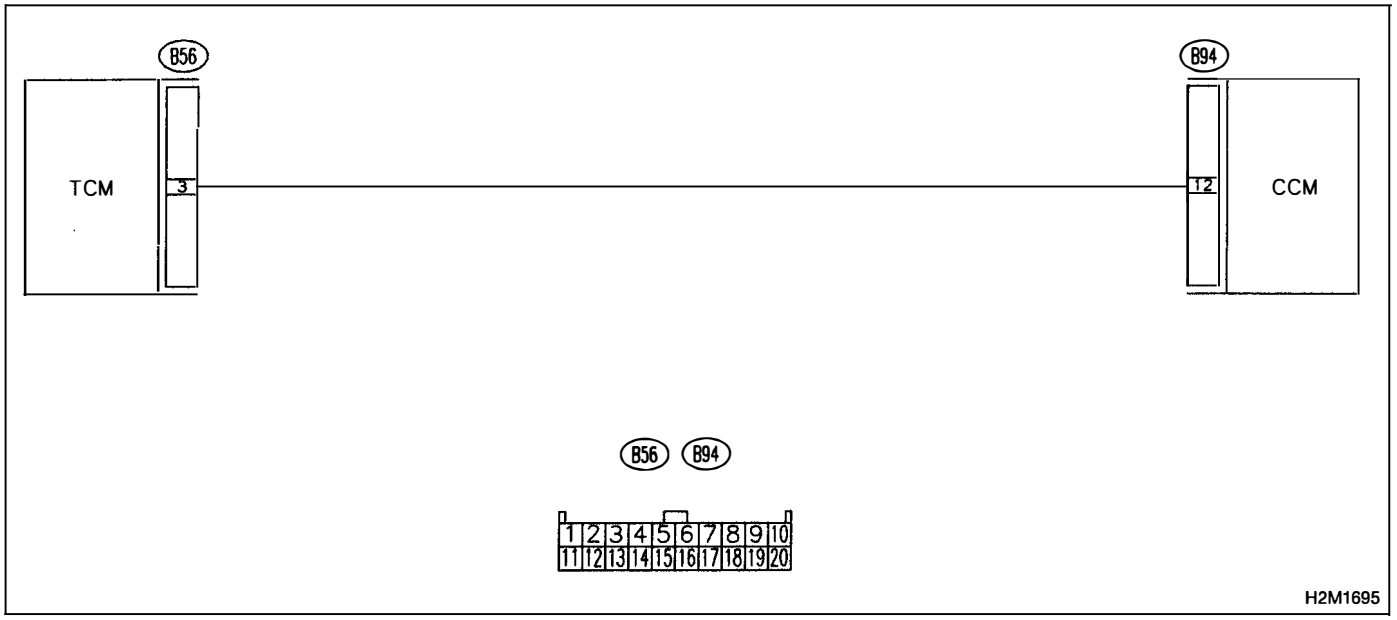
B2M0669

CX: DTC P1701 — CRUISE CONTROL SET SIGNAL CIRCUIT MALFUNCTION FOR AUTOMATIC TRANSMISSION —

DTC DETECTING CONDITION:

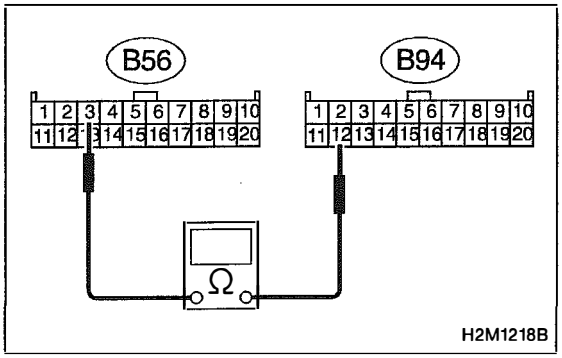
- Two consecutive driving cycles with fault

WIRING DIAGRAM:



H2M1695

CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



H2M1218B

10CX1	CHECK HARNESS BETWEEN TCM AND CCM CONNECTOR.

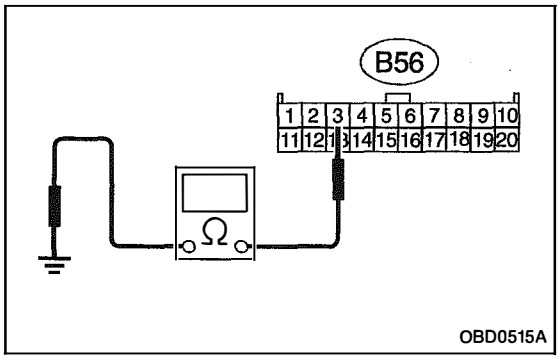
1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and CCM.
3) Measure resistance of harness between TCM and CCM connector.

Connector & terminal
(B56) No. 3 — (B94) No. 12:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair open circuit in harness between TCM and CCM connector.



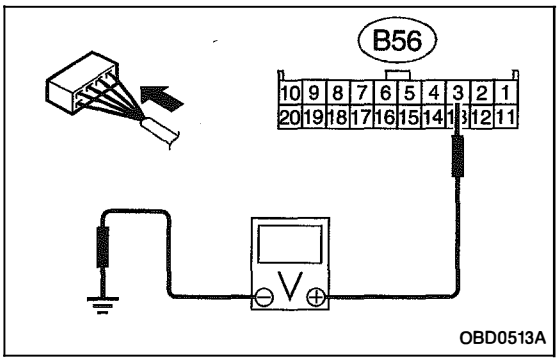
4) Measure resistance of harness between TCM and chassis ground.

Connector & terminal
(B56) No. 3 — Chassis ground:

CHECK ***: Is the resistance less than 10 Ω?***

YES : Repair short circuit in harness between TCM and CCM connector.

NO : Go to step **10CX2**.



10CX2	CHECK INPUT SIGNAL FOR TCM.

1) Connect connector to TCM and CCM.
2) Lift-up the vehicle or set the vehicle on free rollers.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine.
4) Cruise control main switch to ON.
5) TCS OFF switch to ON. (with TCS models only)
6) Move selector lever to "D" and slowly increase vehicle speed to 50 km/h (31 MPH).
7) Cruise control set switch to ON.
8) Measure voltage between TCM and chassis ground.

Connector & terminal
(B56) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the resistance less than 1 V?***

YES : Go to step **10CX3**.

NO : Check cruise control set circuit. <Ref. to 6-3 [D5011].>

10CX3	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

OBD (FB1)

P1702<ATDIAG_LO>

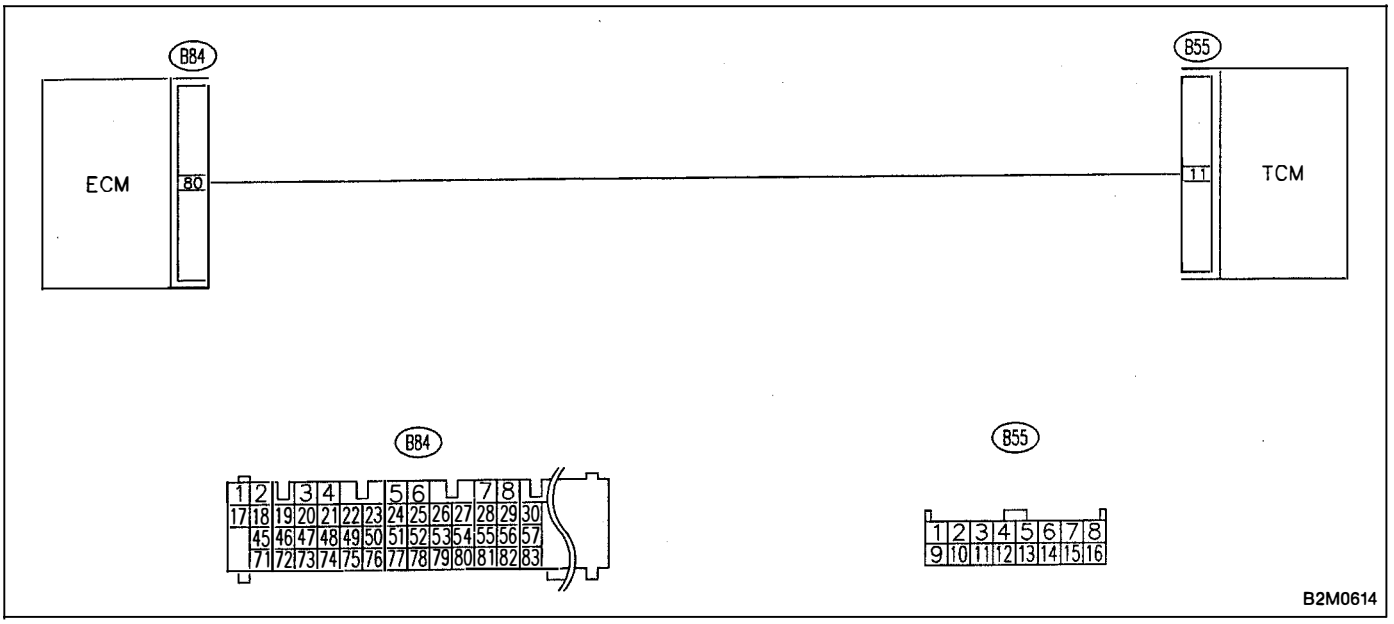
B2M1143

CY: DTC P1702
— AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT LOW INPUT —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



B2M0614

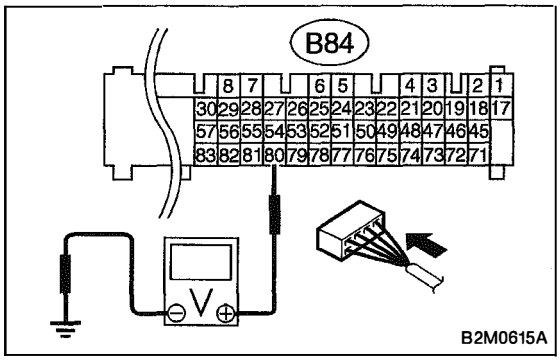
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CY1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***

YES : Go to step **10CY2.**

NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>



10CY2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

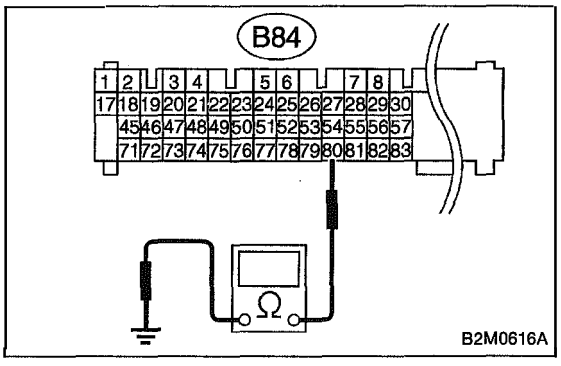
Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **10CY3.**

NO : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM connector



10CY3	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

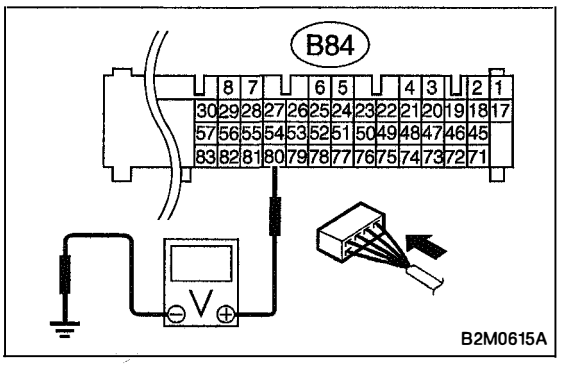
1) Turn ignition switch to OFF.
2) Disconnect connector from ECM and TCM.
3) Measure resistance of harness between ECM and chassis ground.

Connector & terminal
(B84) No. 80 — Chassis ground:

CHECK : ***Is the resistance less than 10 Ω?***

YES : Repair ground short circuit in harness between ECM and TCM connector.

NO : Go to step **10CY4.**



10CY4	CHECK ECM.

1) Connect connector to ECM.
2) Turn ignition switch to ON.
3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 5 V?***

YES : Replace TCM.

NO : Contact SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

MEMO:

OBD (FB1)

P1722<ATDIAG_HI>

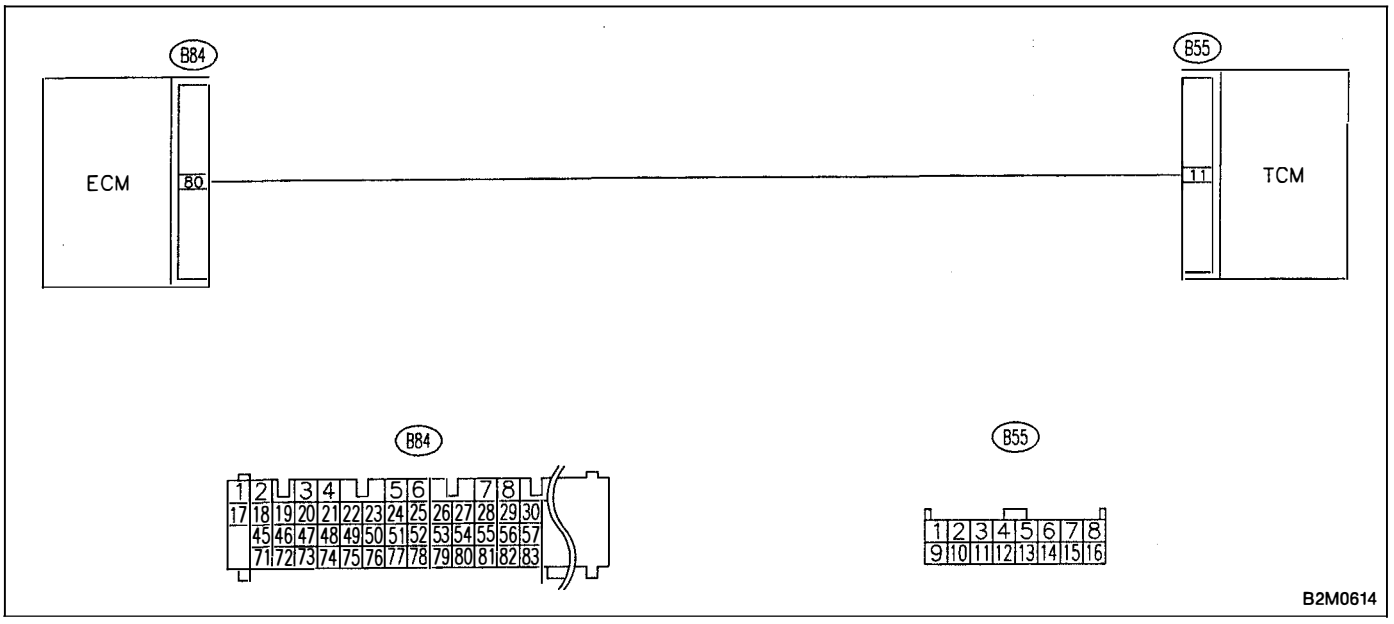
B2M1144

CZ: DTC P1722
— AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT HIGH INPUT —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



B2M0614

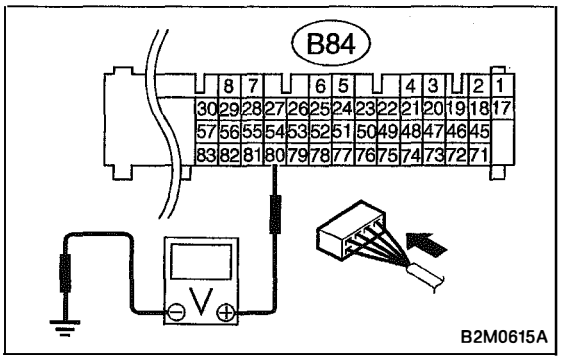
CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10CZ1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***

YES : Go to step **10CZ2**.

NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>



10CZ2	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

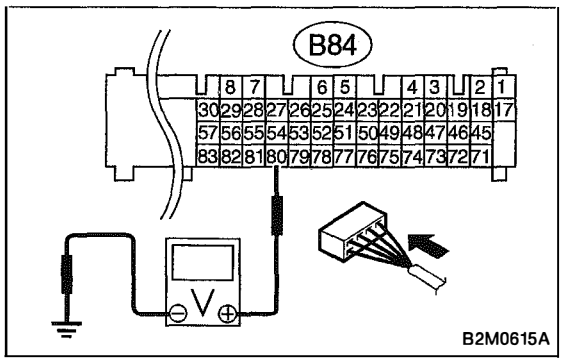
1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V?***

YES : Repair battery short circuit in harness between ECM and TCM connector. After repair, replace ECM.

NO : Go to step **10CZ3**.



10CZ3	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

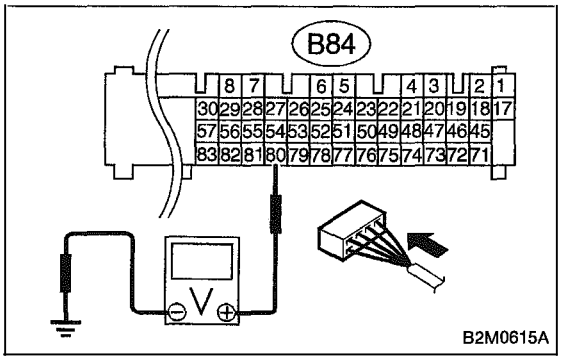
1) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 4 V?***

YES : Go to step **10CZ4**.

NO : Go to next step 2).



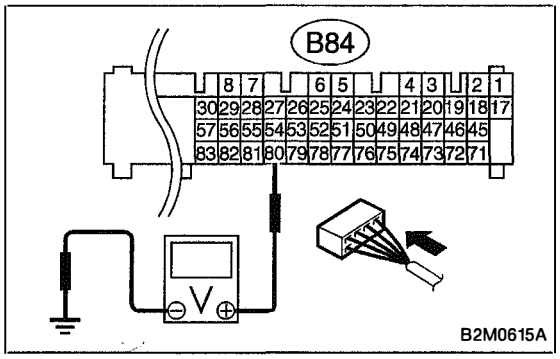
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Repair poor contact in ECM connector.

NO : Go to next step 3).



3) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 80 (+) — Chassis ground (–):

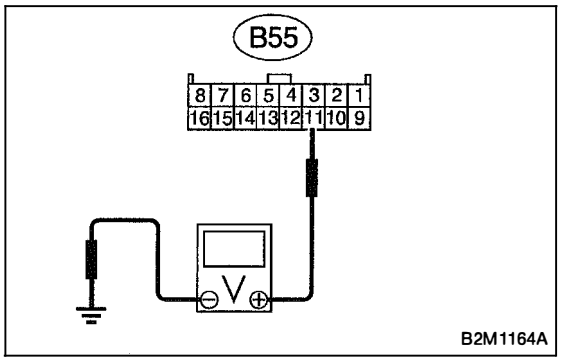
CHECK : ***Does the voltage change from 1 V to 4 V while monitoring the value with voltage meter?***

YES : Even if MIL lights up, the circuit has returned to a normal condition at this time.

NOTE:
In this case, repair the following:
- Poor contact in ECM connector
- Poor contact in TCM.connector

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.



10CZ4	CHECK HARNESS BETWEEN ECM AND TCM CONNECTOR.

Measure voltage between TCM and chassis ground.

Connector & terminal
(B55) No. 11 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 4 V?***

YES : Go to step **10CZ5**.

NO : Repair open circuit in harness between ECM and TCM connector.

10CZ5	CHECK POOR CONTACT.

Check poor contact in TCM connector. <Ref. to FOREWORD [T3C1].>

CHECK : ***Is there poor contact in TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Check TCM power supply line and grounding line.

MEMO:

OBD (FB1)

P1742 <ATDIAG_2>

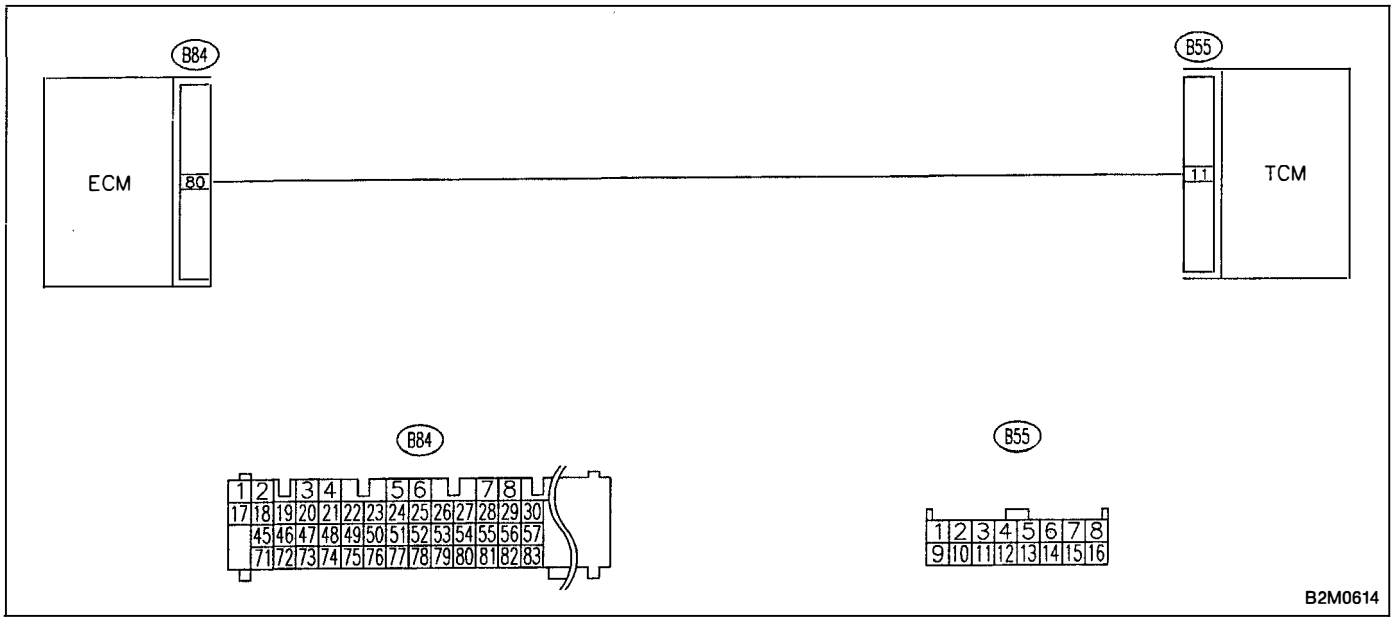
B2M1147

DA: DTC P1742
— AUTOMATIC TRANSMISSION DIAGNOSIS INPUT SIGNAL CIRCUIT MALFUNCTION —

DTC DETECTING CONDITION:

- Two consecutive driving cycles with fault

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>

10DA1	CHECK TRANSMISSION TYPE.

CHECK : ***Is transmission type AT?***
YES : Go to step **10DA2**.
NO : Check AT/MT identification circuit. <Ref. to 2-7 [T10DB0].>

10DA2	CHECK DRIVING CONDITION.

1) Start and warm-up the engine until the radiator fan makes one complete rotation.
2) Drive the vehicle.

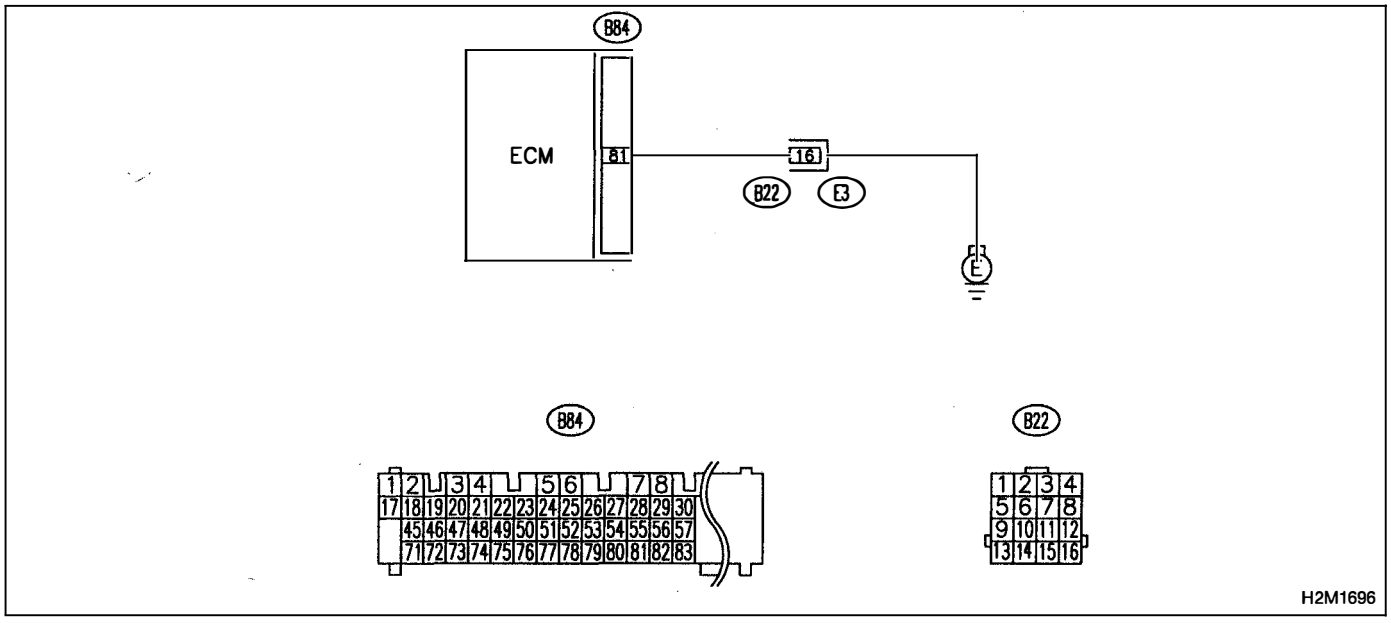
CHECK : ***Is AT shift control functioning properly?***
YES : Go to step **10DA3**.
NO : Replace TCM.

10DA3	CHECK ACCESSORY.

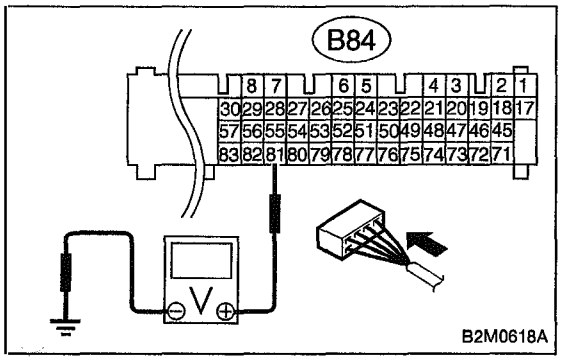
CHECK : ***Are car phone and/or CB installed on vehicle?***
YES : Repair grounding line of car phone or CB system.
NO : Replace TCM.

DB: — AT/MT IDENTIFICATION CIRCUIT MALFUNCTION [MT VEHICLES] —

WIRING DIAGRAM:



CAUTION:
After repair or replacement of faulty parts, conduct CLEAR MEMORY and INSPECTION MODES.
<Ref. to 2-7 [T3D0] and [T3E0].>



10DB1	CHECK HARNESS BETWEEN ECM CONNECTOR AND ENGINE GROUNDING TERMINAL.

1) Turn ignition switch to ON.
2) Measure voltage between ECM and chassis ground.

Connector & terminal
(B84) No. 81 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 2 V?***

YES : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ECM connector and engine grounding terminal
- Poor contact in engine grounding terminal
- Poor contact in coupling connector (B22)

NO : Go to step **10DB2.**

10DB2	CHECK POOR CONTACT.

Check poor contact in ECM connector. <Ref. to FOREWORD [T3C1].>

CHECK ***: Is there poor contact in ECM connector?***

YES : Repair poor contact in ECM connector.

NO : Contact with SOA service.

NOTE:
Inspection by DTM is required, because probable cause is deterioration of multiple parts.

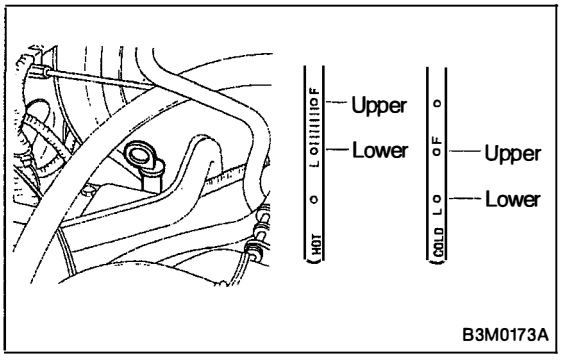
MEMO:

AUTOMATIC TRANSMISSION AND DIFFERENTIAL 3-2

1. Supplemental Restraint System "Airbag"

Airbag system wiring harness is routed near the transmission control module (TCM).

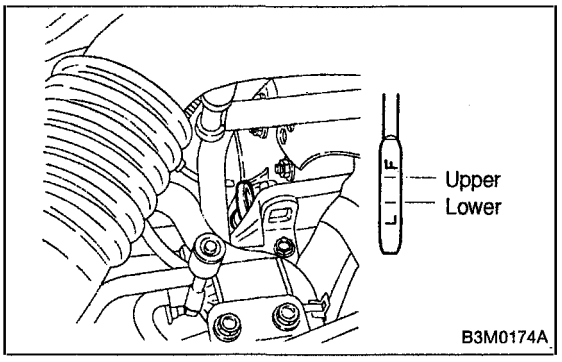
- **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when performing diagnostics and servicing the TCM.**



2. Pre-inspection

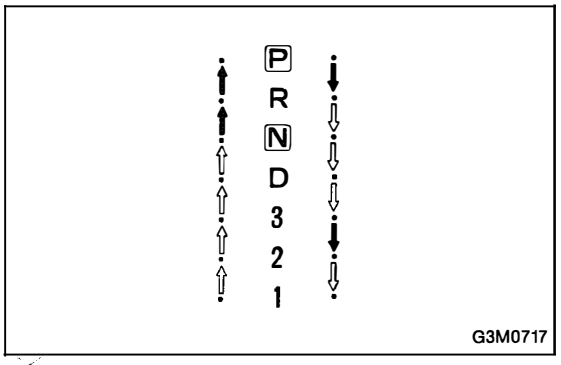
1. ATF LEVEL

Make sure that ATF level is in the specification.



2. FRONT DIFFERENTIAL OIL LEVEL

Make sure that front differential oil level is in the specification.



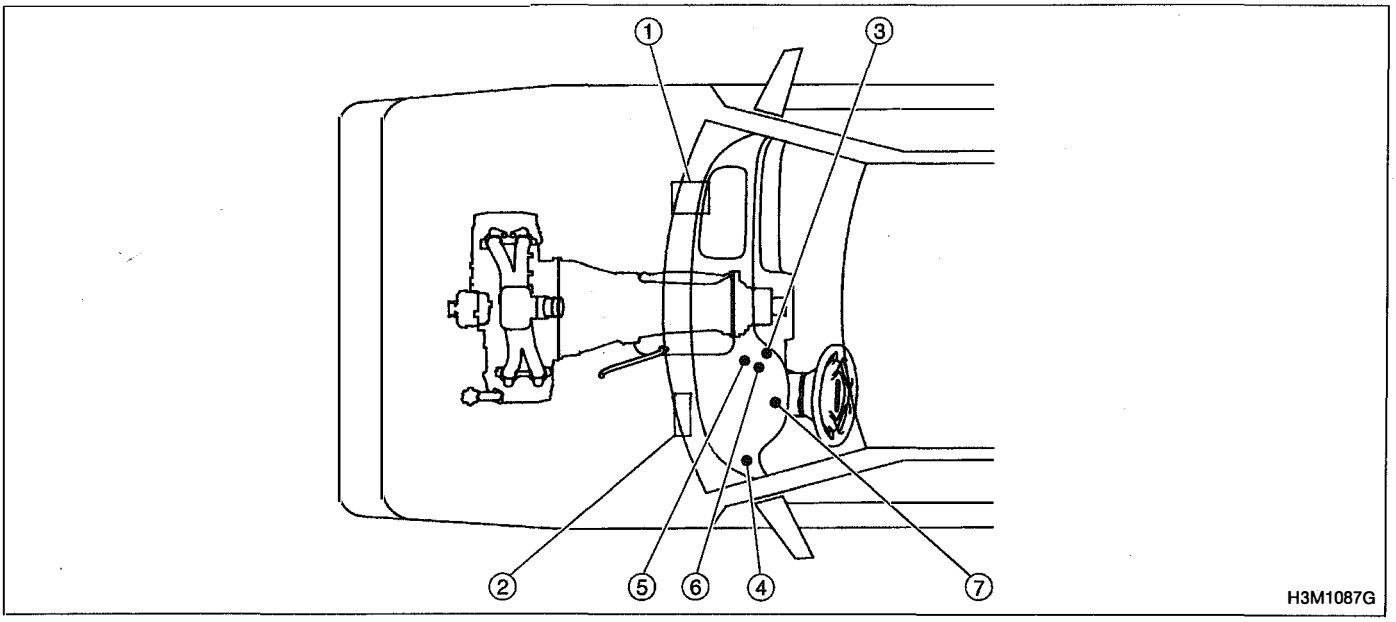
3. OPERATION OF SHIFT SELECTOR LEVER

WARNING:
Stop the engine while checking operation of selector lever.

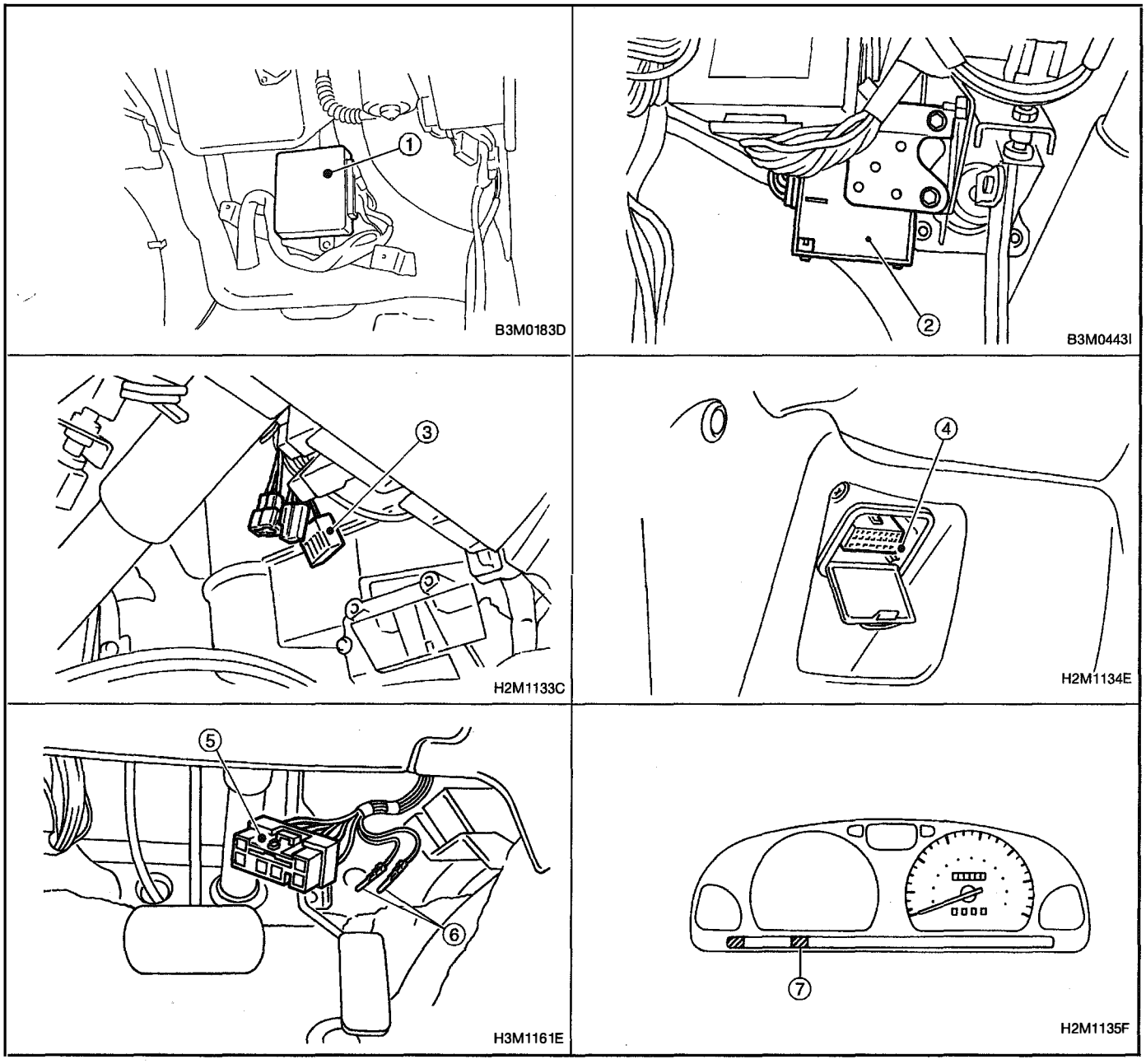
1) Check that selector lever does not move from "N" to "R" without pushing the button.
2) Check that selector lever does not move from "R" to "P" without pushing the button.
3) Check that selector lever does not move from "P" to "R" without pushing the button.
4) Check that selector lever does not move from "3" to "2" without pushing the button.

3. Electrical Components Location

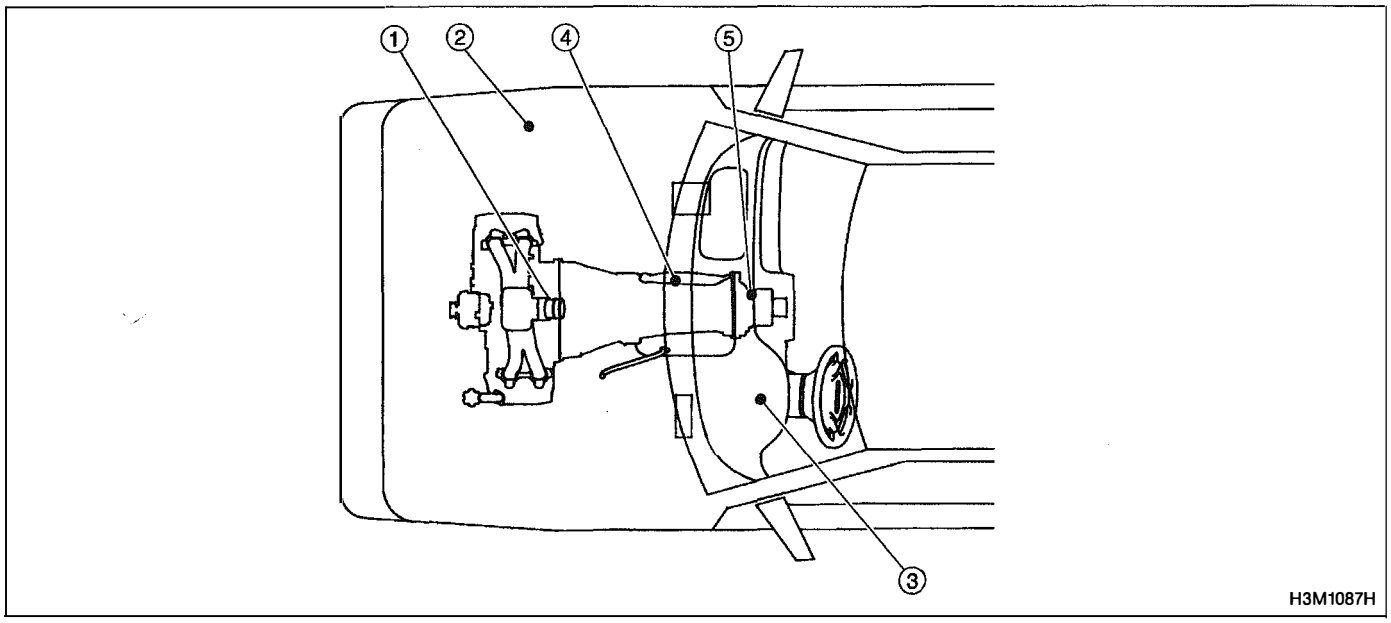
1. MODULE



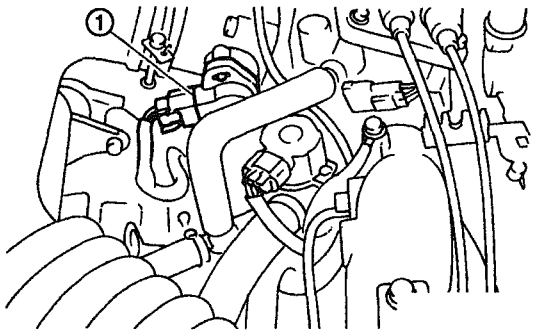
① ECM
② TCM
③ Data link connector (for Subaru select monitor only)
④ Data link connector (for Subaru select monitor and OBD-II general scan tool)
⑤ Diagnosis connector
⑥ Diagnosis terminal
⑦ AT OIL TEMP indicator light (AT diagnostic indicator light)


①
B3M0183D
②
B3M0443I
③
H2M1133C
④
H2M1134E
⑤
⑥
H3M1161E
⑦
H2M1135F

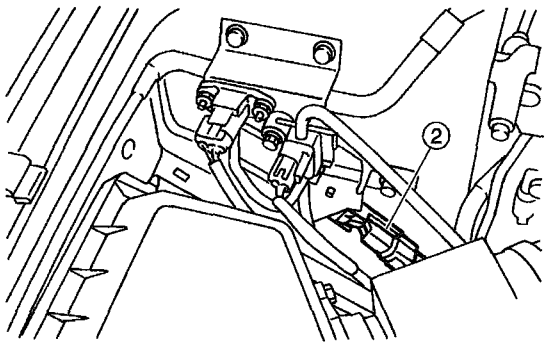
2. SENSOR



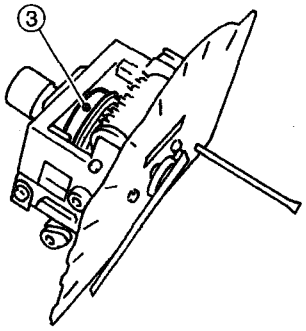
① Throttle position sensor
② Dropping resistor
③ Vehicle speed sensor 2
④ Inhibitor switch
⑤ Vehicle speed sensor 1



B2M0155A

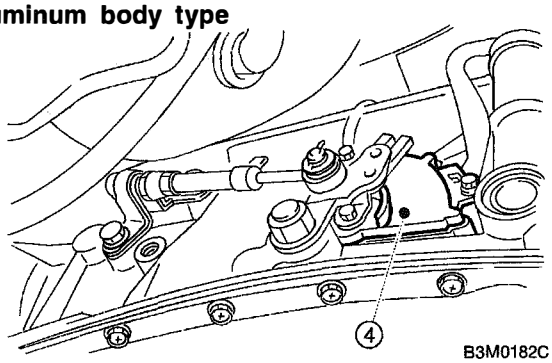


OBD0046A

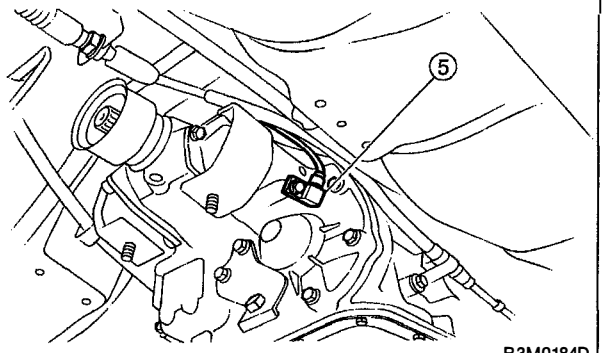


H2M1144B

Aluminum body type

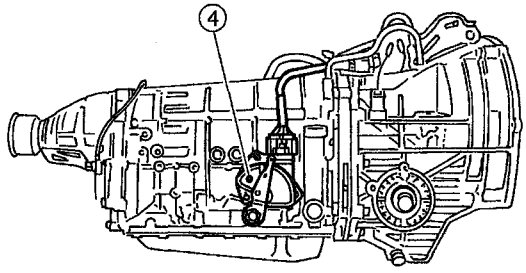


B3M0182C



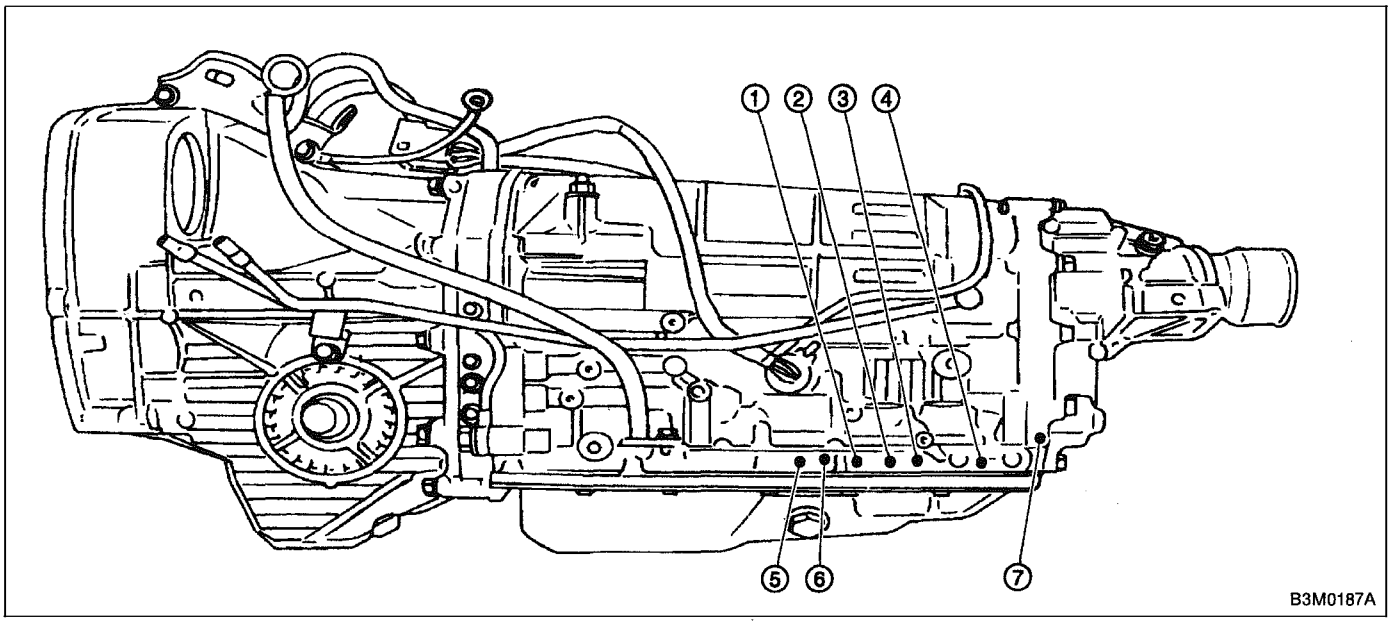
B3M0184D

Plastic body type

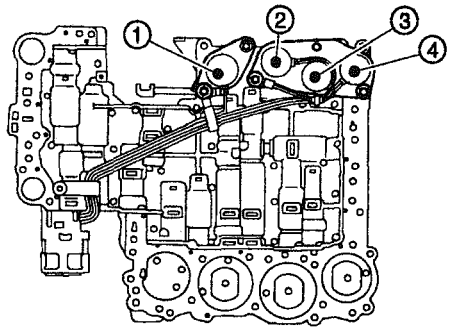


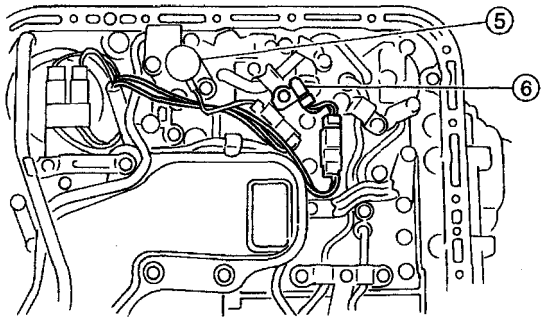
B2M1043C

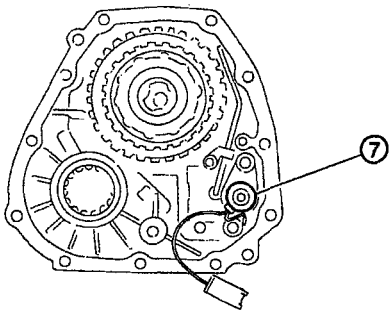
3. SOLENOID



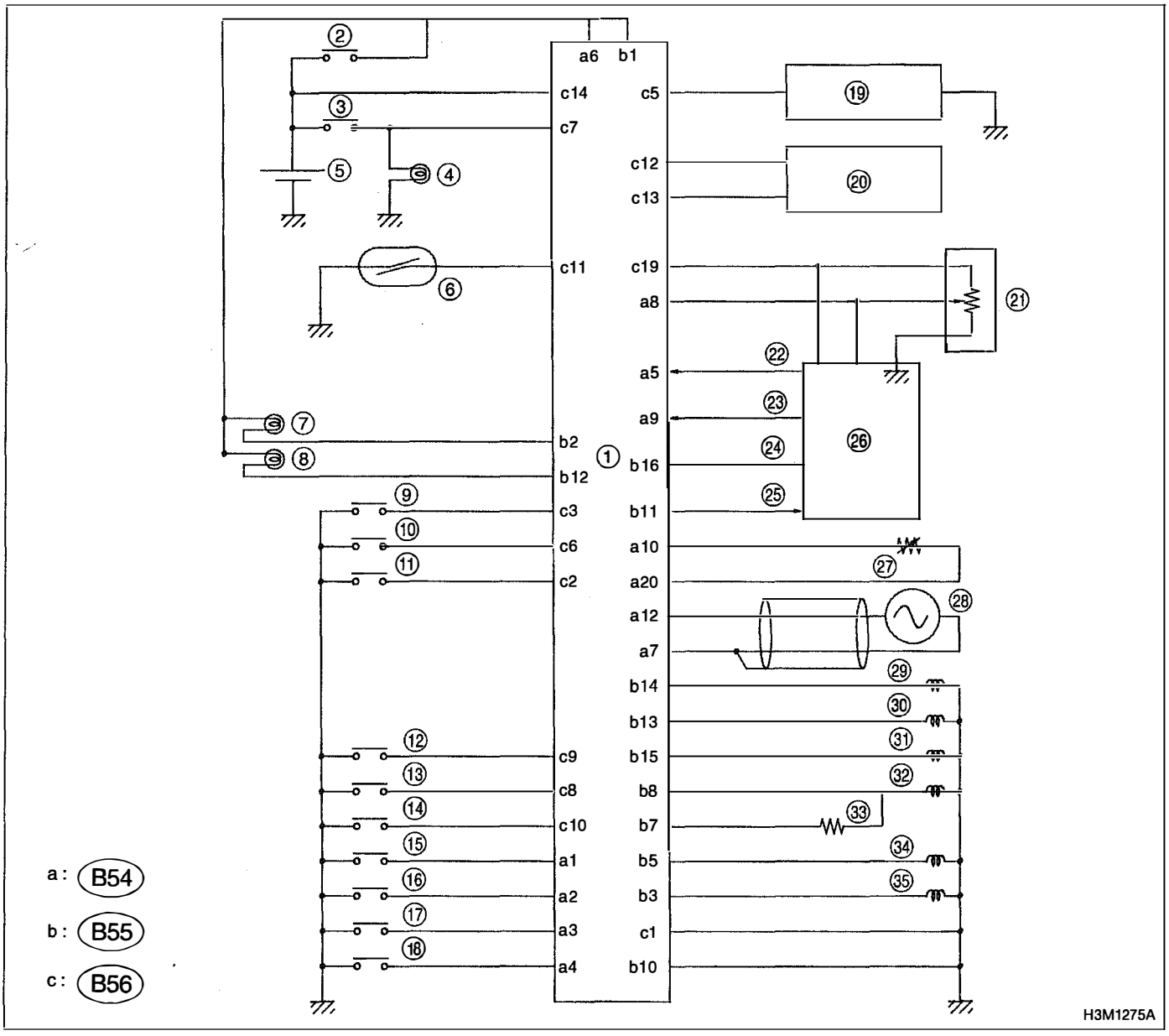
① Duty solenoid A
② Solenoid 2
③ Solenoid 1
④ Solenoid 3
⑤ Duty solenoid B
⑥ ATF temperature sensor
⑦ Duty solenoid C (AWD)





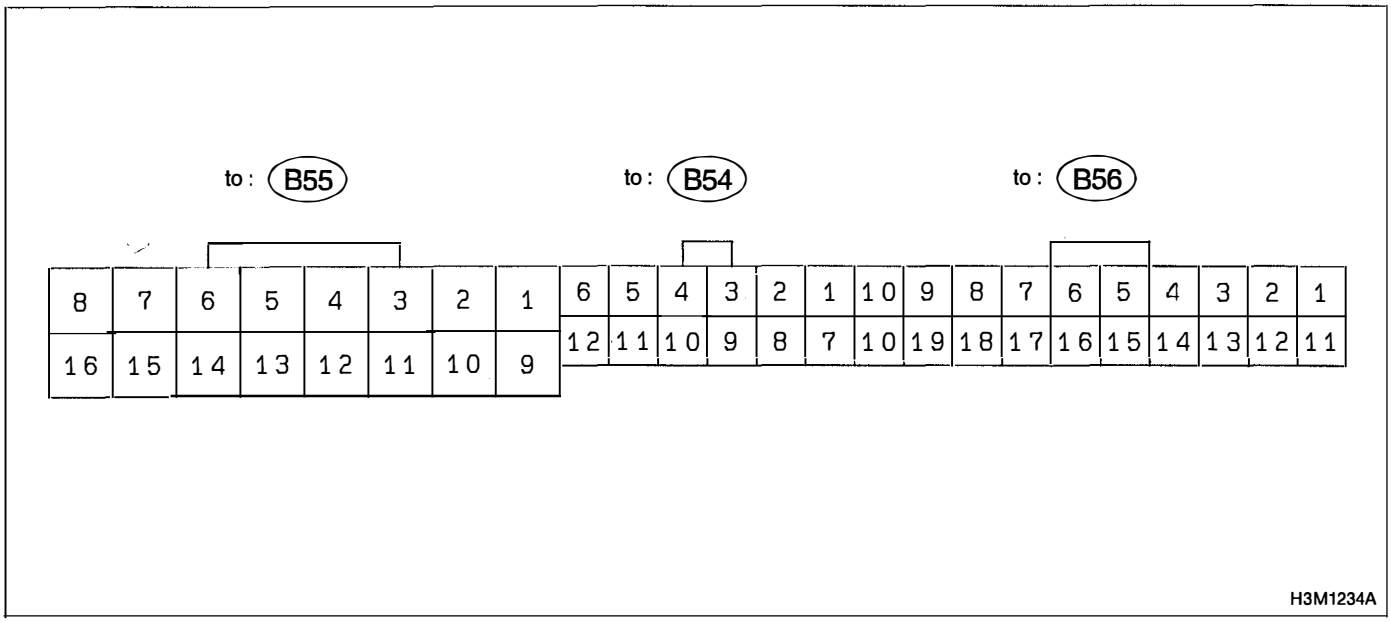


4. Schematic



① Transmission control module
② Ignition switch
③ Brake switch
④ Brake light
⑤ Battery
⑥ Vehicle speed sensor 2
⑦ FWD indicator light
⑧ AT OIL TEMP indicator light
⑨ Cruise set switch
⑩ Diagnosis switch
⑪ FWD switch
⑫ "P" range switch
⑬ "R" range switch
⑭ "N" range switch
⑮ "D" range switch
⑯ "3" range switch
⑰ "2" range switch
⑱ "1" range switch
⑲ ABS control module
⑳ Data link connector
㉑ Throttle position sensor
㉒ Engine speed signal
㉓ Mass air flow signal
㉔ Torque control signal
㉕ AT diagnostics signal
㉖ Engine control module
㉗ ATF temperature sensor
㉘ Vehicle speed sensor 1
㉙ Shift solenoid 1
㉚ Shift solenoid 2
㉛ Shift solenoid 3
㉜ Duty solenoid A
㉝ Dropping resistor
㉞ Duty solenoid B
㉟ Duty solenoid C

5. Transmission Control Module (TCM) I/O Signal



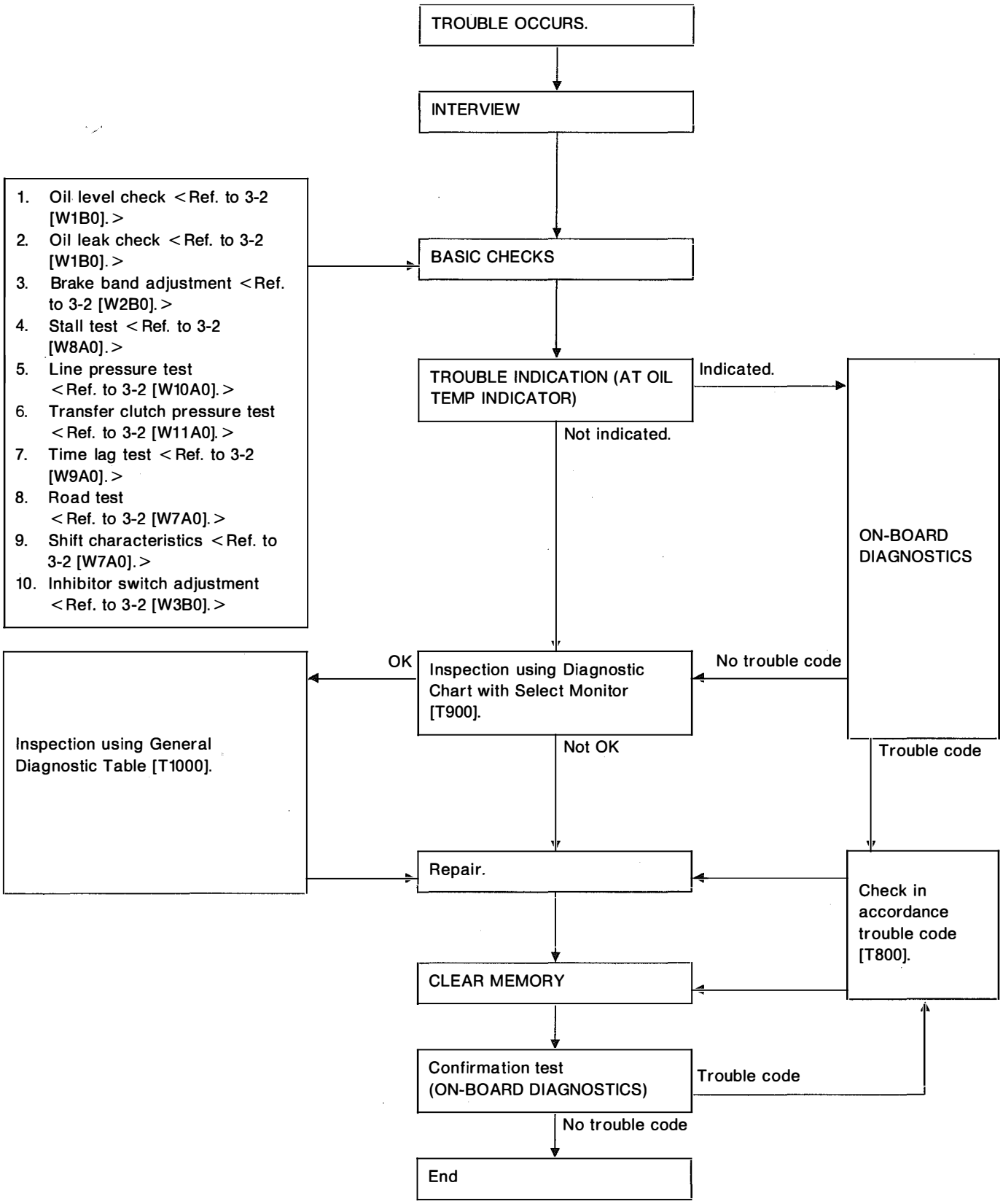
Check with ignition switch ON.

Content		Connector No.	Terminal No.	Measuring conditions	Voltage (V)
Back-up power supply		B56	14	Ignition switch OFF	10 — 16
Ignition power supply		B54	6	Ignition switch ON (with engine OFF)	10 — 16
		B55	1		
Inhibitor switch	"P" range switch	B56	9	Select lever in "P" range	Less than 1
				Select lever in any other than "P" range (except "N" range)	More than 8
	"N" range switch	B56	8	Select lever in "N" range	Less than 1
				Select lever in any other than "N" range (except "P" range)	More than 8
	"R" range switch	B56	10	Select lever in "R" range	Less than 1
				Select lever in any other than "R" range	More than 6
	"D" range switch	B54	1	Select lever in "D" range	Less than 1
				Select lever in any other than "D" range	More than 6
	"3" range switch	B54	2	Select lever in "3" range	Less than 1
				Select lever in any other than "3" range	More than 6
	"2" range switch	B54	3	Select lever in "2" range	Less than 1
				Select lever in any other than "2" range	More than 6
	"1" range switch	B54	4	Select lever in "1" range	Less than 1
				Select lever in any other than "1" range	More than 6
Diagnosis switch		B56	6	Diagnosis connector connected	Less than 1
				Diagnosis connector disconnected	More than 6
Brake switch		B56	7	Brake pedal depressed.	More than 10.5
				Brake pedal released.	Less than 1
ABS signal		B56	5	ABS switch ON	Less than 1
				ABS switch OFF	More than 6.5
AT diagnostic signal		B55	11	Ignition switch ON (With engine OFF)	Less than 1
				Ignition switch ON (With engine ON)	More than 10

Content	Connector No.	Terminal No.	Measuring conditions	Voltage (V)	Resistance to body (ohms)
Throttle position sensor	B54	8	Throttle fully closed.	0.5±0.2	—
			Throttle fully open.	4.6±0.3	
Throttle position sensor power supply	B56	19	Ignition switch ON (With engine OFF)	5.05±0.25	—
ATF temperature sensor	B54	10	ATF temperature 20°C (68°F)	3.45±0.55	2.1 — 2.9 k
			ATF temperature 80°C (176°F)	1.2±0.2	272 — 374
Vehicle speed sensor 1	B54	12	Vehicle stopped.	0	450 — 720
			Vehicle speed at least 20 km/h (12 MPH)	More than 1 (AC range)	
Vehicle speed sensor 2	B56	11	When vehicle is slowly moved at least 2 meters (7ft).	Less than 1↔More than 4	—
Engine speed signal	B54	5	Ignition switch ON (with engine OFF).	More than 10.5	—
			Ignition switch ON (with engine ON).	8 — 11	
Cruise set signal	B56	3	When cruise control is set (SET lamp ON).	Less than 1	—
			When cruise control is not set (SET lamp OFF).	More than 6.5	
Torque control signal	B55	16	Ignition switch ON	5±1	—
Mass air flow signal	B54	9	Engine idling after warm-up	0.5 — 1.2	—
Shift solenoid 1	B55	14	1st or 4th gear	More than 9	20 — 32
			2nd or 3rd gear	Less than 1	
Shift solenoid 2	B55	13	1st or 2nd gear	More than 9	20 — 32
			3rd or 4th gear	Less than 1	
Shift solenoid 3	B55	15	Select lever in "N" range (with throttle fully closed).	Less than 1	20 — 32
			Select lever in "D" range (with throttle fully closed).	More than 9	
Duty solenoid A	B55	8	Throttle fully closed (with engine OFF) after warm-up.	1.5 — 4.0	2.0 — 4.5
			Throttle fully open (with engine OFF) after warm-up.	Less than 1	
Dropping resistor	B55	7	Throttle fully closed (with engine OFF) after warm-up.	More than 8.5	12 — 18
			Throttle fully open (with engine OFF) after warm-up.	Less than 1	
Duty solenoid B	B55	5	When lock up occurs.	More than 8.5	9 — 17
			When lock up is released.	Less than 0.5	
Duty solenoid C	B55	3	Fuse on FWD switch	More than 8.5	9 — 17
			Fuse removed from FWD switch (with throttle fully open and with select lever in 1st gear).	Less than 0.5	
Sensor ground line 1	B54	7	—	0	Less than 1
Sensor ground line 2	B56	20	—	0	Less than 1
System ground line	B56	1	—	0	Less than 1
Power system ground line	B55	10	—	0	Less than 1
FWD switch	B56	2	Fuse removed.	6 — 9.1	—
			Fuse installed.	Less than 1	

6. Diagnostic Chart for On-board Diagnostics System

A: BASIC DIAGNOSTICS PROCEDURE

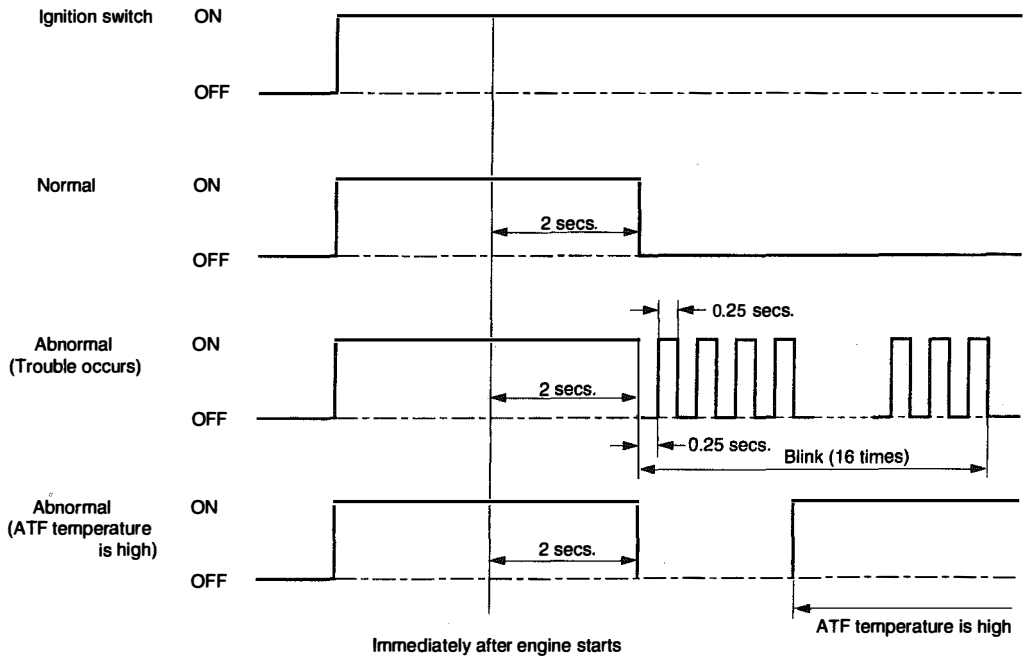


B: ABNORMAL DISPLAY ON AT OIL TEMP INDICATOR

When any on-board diagnostics item is malfunctioning, the display on the AT OIL TEMP indicator blinks immediately after the engine starts.
The malfunctioning part or unit can be determined by a trouble code during on-board diagnostics operation. Problems which occurred previously can also be identified through the memory function.
If the AT OIL TEMP indicator does not show a problem (although a problem is occurring), the problem can be determined by checking the performance characteristics of each sensor using the select monitor.
Indicator signal is as shown in the figure.

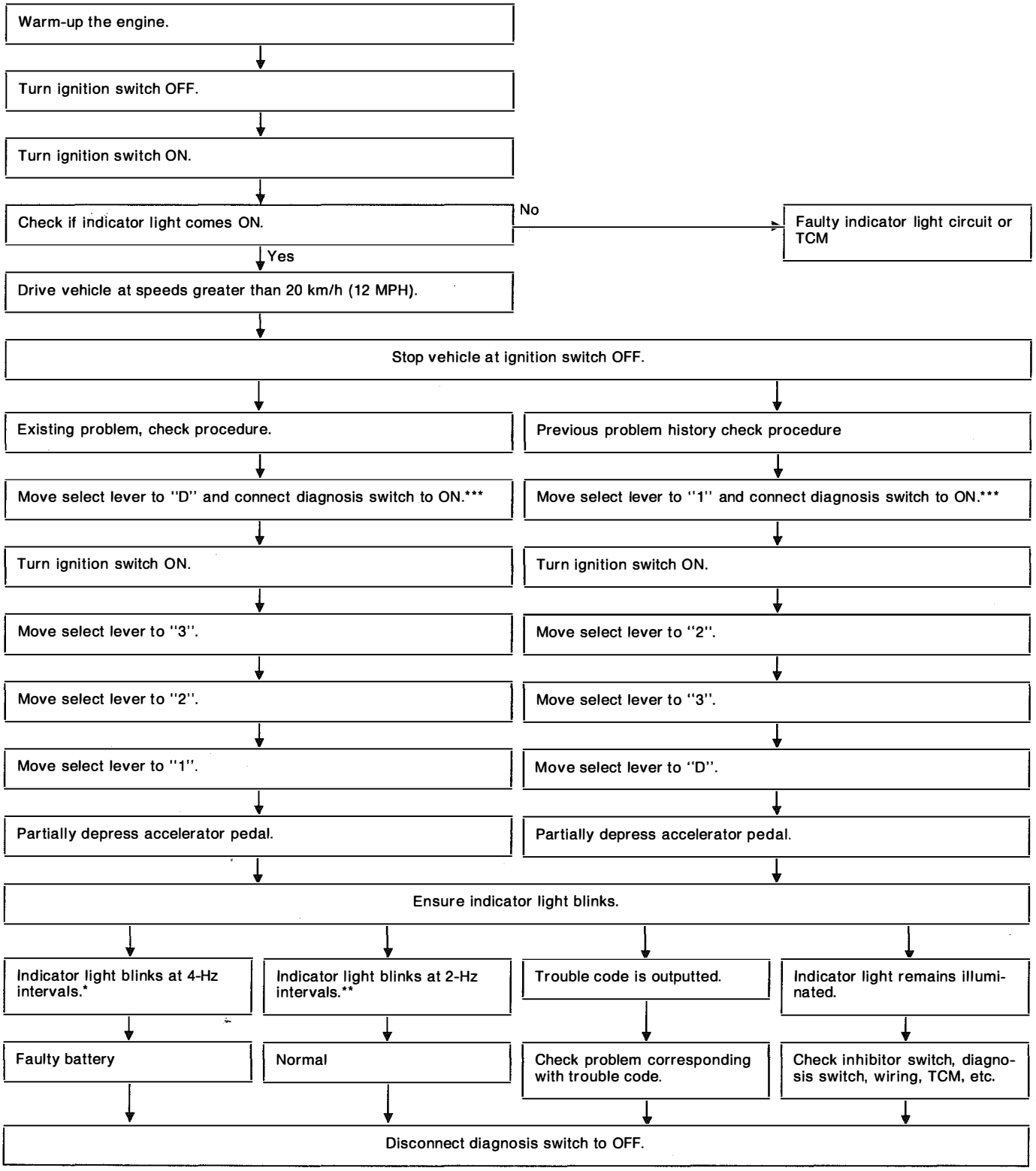
WARNING:

Warning can be noticed only when the engine is initially started.



H3H1066

C: ON-BOARD DIAGNOSTICS



* : Blinks every 0.125 (1/8) seconds (until ignition switch is turned OFF).
** : Blinks every 0.25 (1/4) seconds (until ignition switch is turned OFF).
***: Plug in diagnosis terminal to diagnosis connector No. 5 located below instrument lower cover.

7. Diagnostics for On-board Diagnostics Failed

A: AT OIL TEMP INDICATOR LIGHT

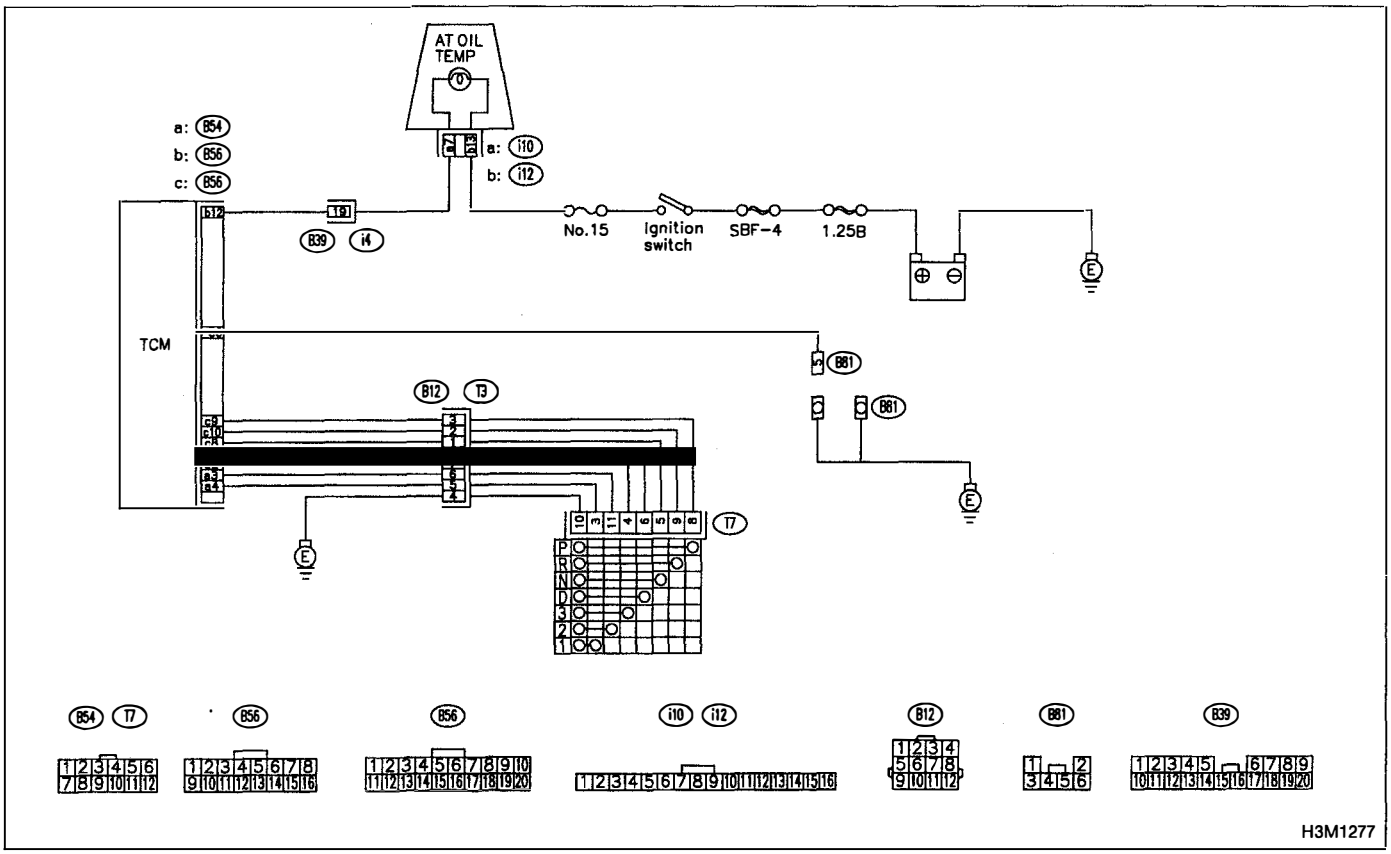
DIAGNOSIS:

● The AT OIL TEMP indicator light circuit is open or shorted.

TROUBLE SYMPTOM:

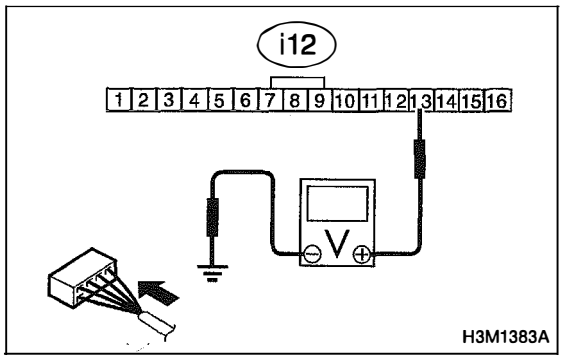
● When ignition switch is turned to ON (engine OFF), AT OIL TEMP indicator light does not illuminate. ..... TROUBLE 1

● When on board diagnostics is performed, AT OIL TEMP indicator light remains illuminated. ..... TROUBLE 2



7A1	**CLASSIFY THE MALFUNCTION. IS IT TROUBLE 1 OR TROUBLE 2?**

If the malfunction shows TROUBLE 1, go to **7A2**.
If the malfunction shows TROUBLE 2, go to **7A5**.



7A2	CHECK HARNESS CONNECTOR BETWEEN COMBINATION METER AND IGNITION SWITCH.

1) Turn ignition switch to OFF.
2) Remove combination meter.
3) Turn ignition switch to ON (engine OFF).
4) Measure voltage between combination meter connector and chassis ground.

Connector & terminal
(i12) No. 13 (+) — Chassis ground (–):

CHECK ***: Is voltage more than 10 V?***

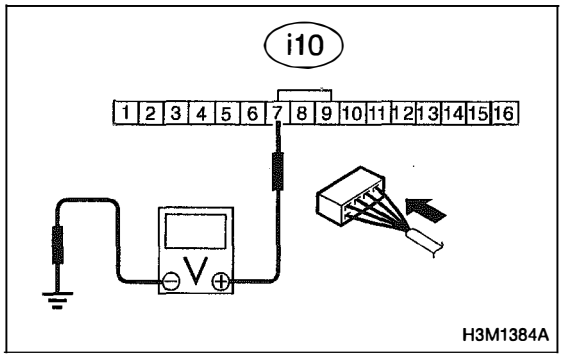
YES : Go to next CHECK .

NO : Check the following and repair if necessary.

- Check that fuse (No. 15) is not blown out.

NOTE:
If replaced fuse (No. 15) blows out easily, check the harness for short circuit between fuse (No. 15) and combination meter.

- Check that harness from fuse to combination meter is not open.



Connector & terminal
(i10) No. 7 (+) — Chassis ground (–):

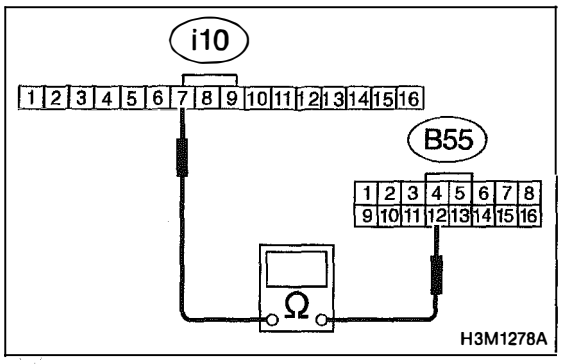
CHECK ***: Is voltage less than 1 V?***

YES : Go to step **7A3**.

NO : Replace bulb or combination meter.

7A3	CHECK OPEN CIRCUIT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and combination meter connector.



3) Measure resistance of harness between TCM and combination meter.

Connector & terminal
(B55) No. 12 — (i10) No. 7:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **7A4.**

NO : Repair harness connector.

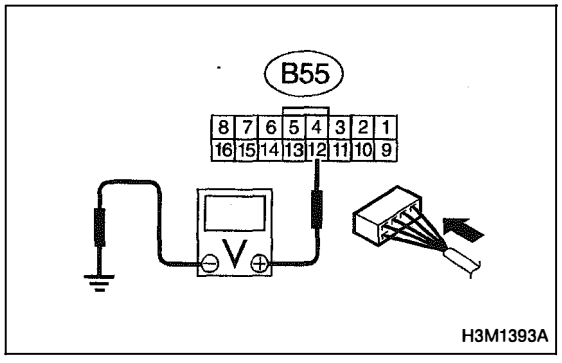
NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and combination meter.
- Poor contact in coupling connector (B39).

7A4	CHECK INPUT SIGNAL FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and combination meter.
3) Install combination meter.
4) Turn ignition switch to ON (engine OFF).
5) Measure voltage between TCM connector and chassis ground.

Connector & terminal
(B55) No. 12 (+) — Chassis ground (–):



CHECK ***: Is the voltage less than 1 V?***

YES : Even if AT OIL TEMP indicator lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

NO : Replace TCM.

7A5	CHECK INHIBITOR SWITCH.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Turn ignition switch to ON.
4) Subaru Select Monitor to ON.
5) Read data on Subaru Select Monitor.
6) Designate mode using function key.

Function mode FA1

- FA1: Check the range switch ON ↔ OFF signal.

CHECK : ***When each range is selected, does LED of Subaru Select Monitor light up?***

YES : Go to step **7A6**.

NO : Check inhibitor switch circuit.

NOTE:
For the diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10B10].

7A6	CHECK DIAGNOSIS SWITCH.

1) Designate mode using function key.
Function mode FA1
- FA1: Check diagnosis switch (SS) ON ↔ OFF signal.

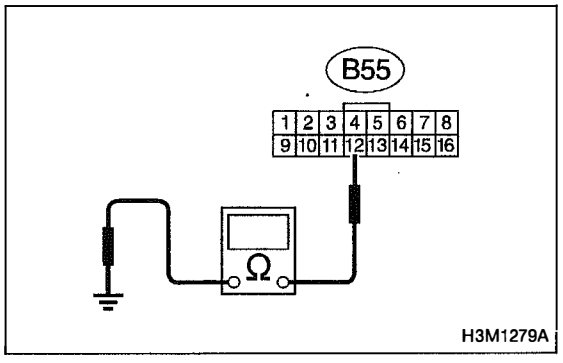
2) Diagnosis switch to ON.

CHECK : ***Does LED of diagnosis switch on Subaru Select Monitor light up?***

YES : Go to step **7A7**.

NO : Check diagnosis switch circuit.

NOTE:
For the diagnosis procedure on diagnosis switch circuit, refer to 3-2 [T9R0].



7A7	CHECK SHORT CIRCUIT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Remove combination meter.
4) Disconnect connector from combination meter.
5) Measure resistance of harness connector between TCM and combination meter.

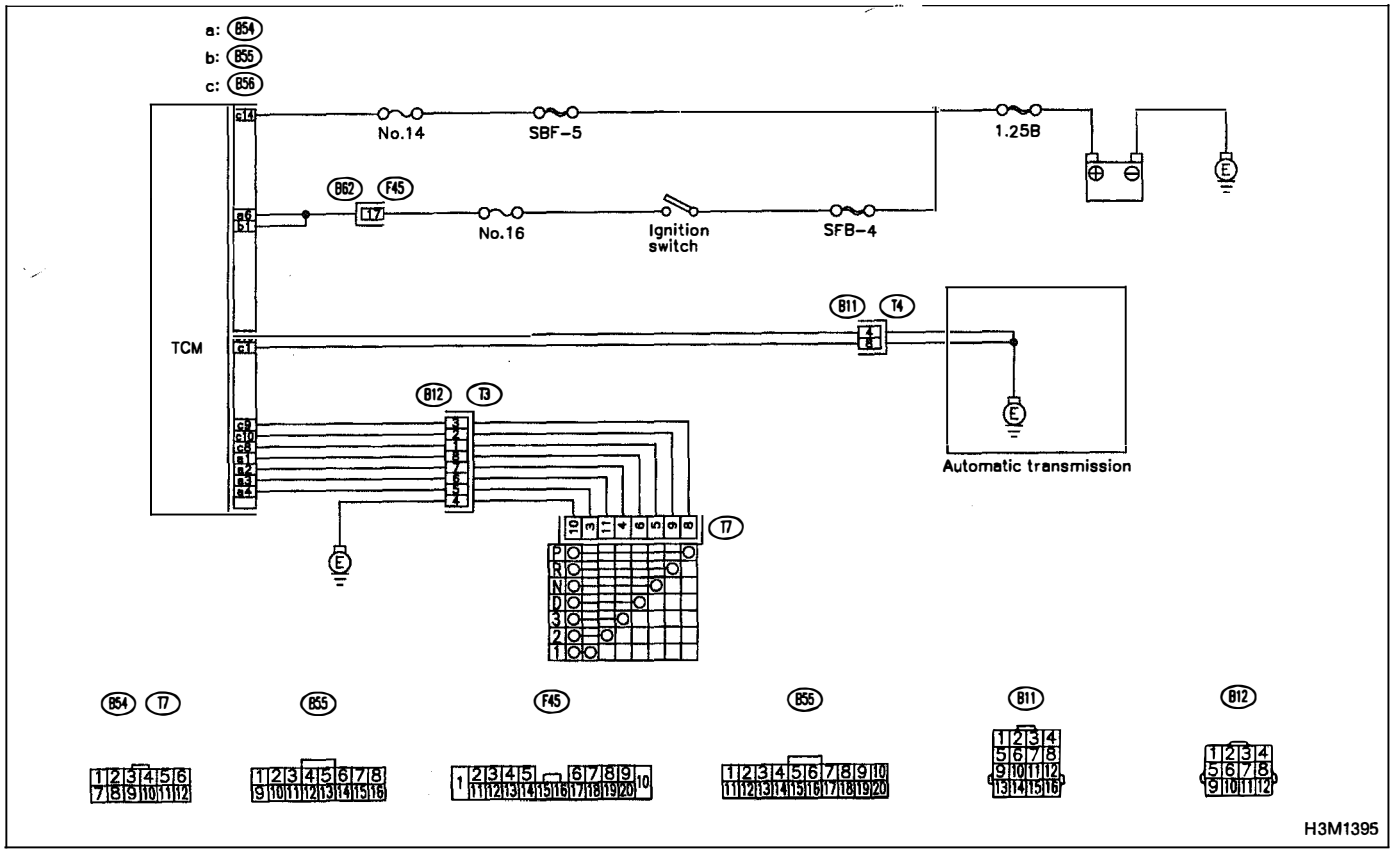
Connector & terminal/specified resistance (B55) No. 12 — Chassis ground:

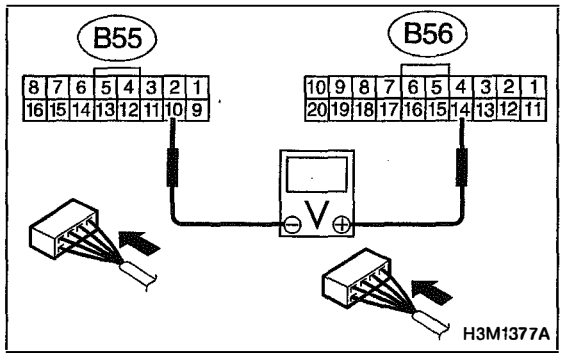
CHECK : ***Is the resistance less than 1 MΩ?***

YES : Replace TCM.

NO : Repair short circuit in harness between combination meter connector and TCM connector.

B: CONTROL MODULE POWER SUPPLY AND GROUND LINE





7B1	CHECK BACK-UP POWER SUPPLY CIRCUIT.

1) Turn ignition switch to OFF.
2) Measure back-up power supply voltage between TCM connector terminal.

Connector & terminal
(B56) No. 14 (+) — (B55) No. 10 (–):

CHECK ***: Is the voltage more than 10 V?***

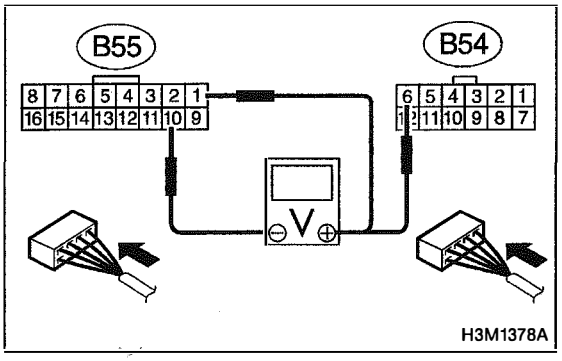
YES : Go to next CHECK .

NO : Repair harness of back-up power supply circuit.

CHECK ***: Is there poor contact of TCM connector?***

YES : Repair poor contact in TCM connector.

NO : Go to step **7B2.**

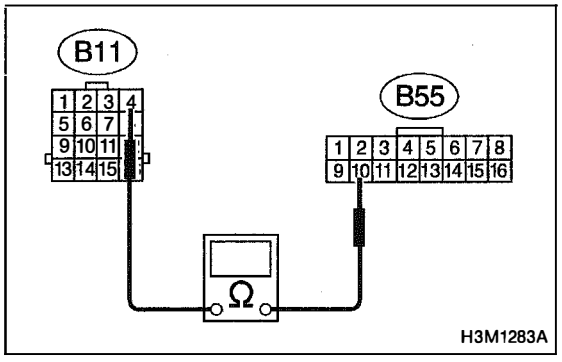


7B2	CHECK IGNITION POWER SUPPLY CIRCUIT.

1) Turn ignition switch to ON (engine OFF).
2) Measure ignition power supply voltage between TCM connector terminal.

Connector & terminal
(B54) No. 6 (+) — (B55) No. 10 (–):
(B55) No. 1 (+) — No. 10 (–):

CHECK ***: Is the voltage more than 10 V?***
YES : Go to next CHECK .
NO : Repair harness of ignition power supply circuit.
CHECK ***: Is there poor contact of TCM connector?***
YES : Repair poor contact in TCM connector.
NO : Go to step **7B3.**

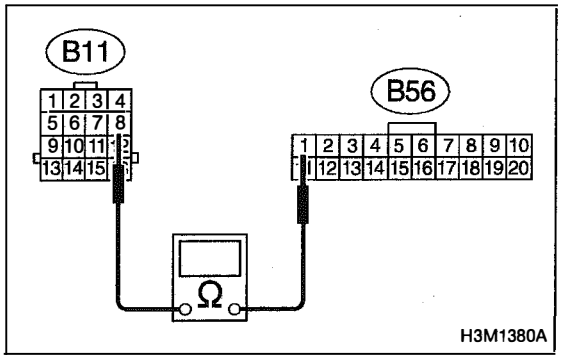


7B3	CHECK HARNESS CONNECTOR BETWEEN TCM, INHIBITOR SWITCH AND TRANSMISSION.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM, transmission and inhibitor switch.
3) Measure resistance between TCM connector.

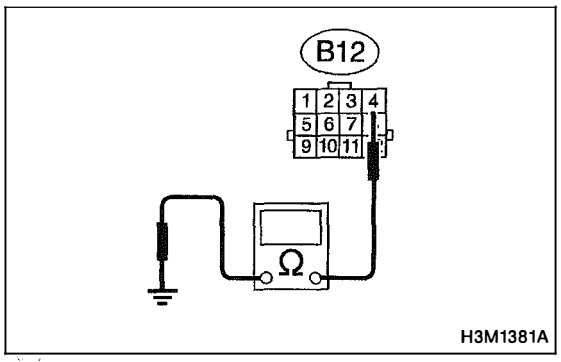
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***
YES : Go to next CHECK .
NO : Repair open circuit in harness between TCM and transmission.



Connector & terminal
(B56) No. 1 — (B11) No. 8:

CHECK ***: Is the resistance less than 1 Ω?***
YES : Go to next CHECK .
NO : Repair open circuit in harness between TCM and transmission.

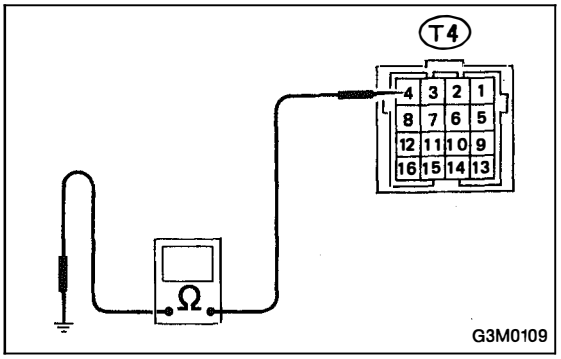


Connector & terminal
(B12) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **7B4**.

NO : Repair open circuit in harness between TCM and transmission.



7B4	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND TRANSMISSION GROUND.

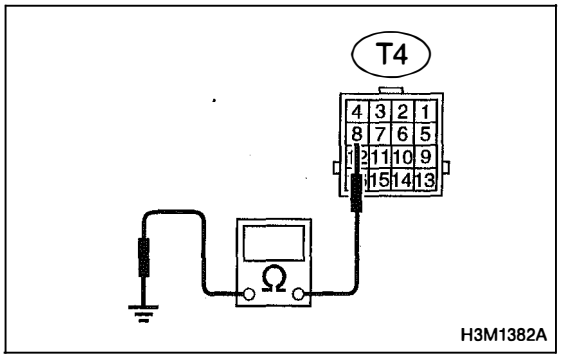
1) Drain automatic transmission fluid.
2) Remove oil pan.
3) Measure resistance of harness between transmission and transmission ground.

Connector & terminal
(T4) No. 4 — Transmission ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair open circuit in harness between transmission and transmission ground.



Connector & terminal
(T4) No. 8 — Transmission ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Repair transmission ground terminal.

NO : Repair open circuit in harness between transmission and transmission ground.

8. Diagnostic Chart with Trouble Code

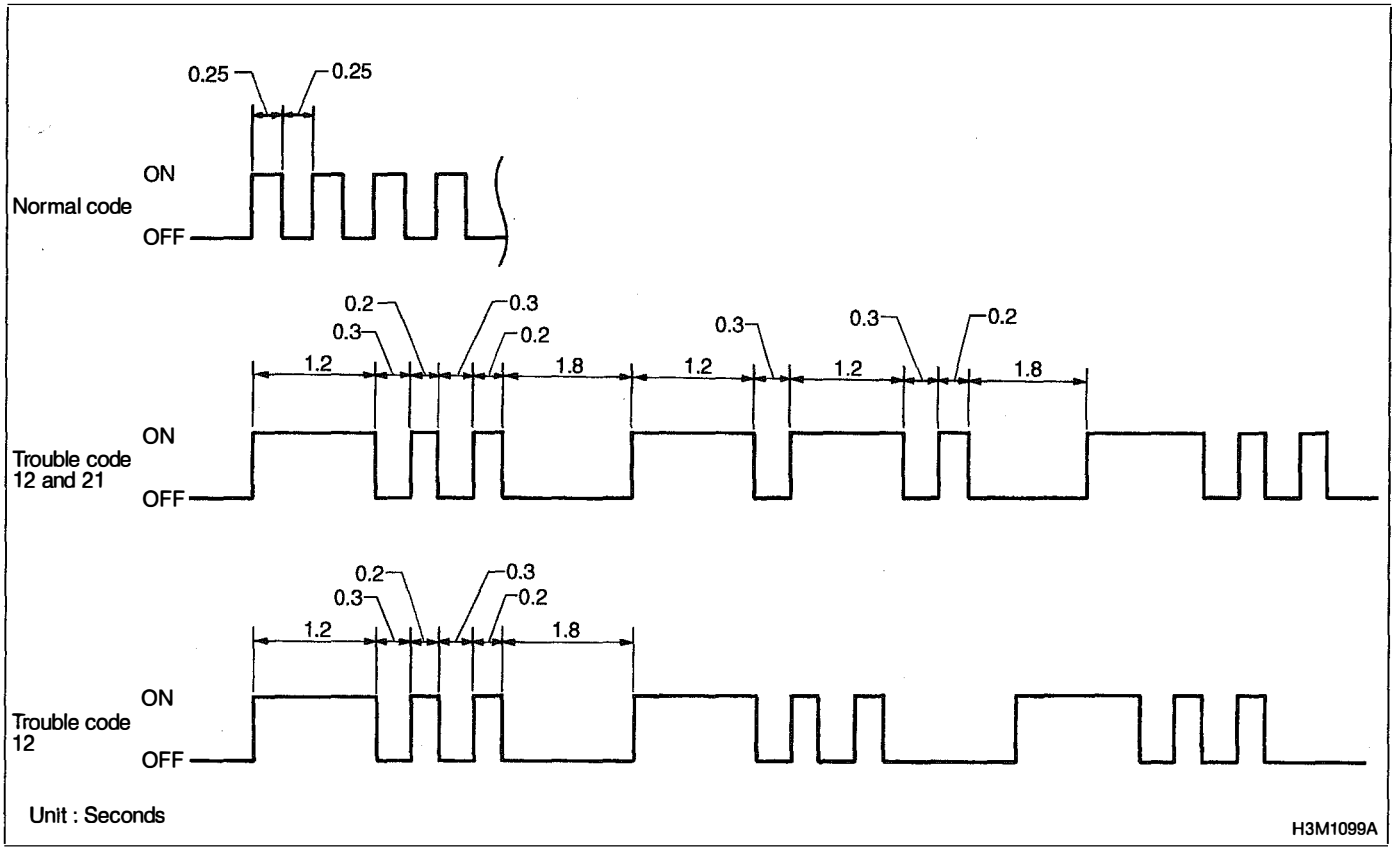
A: LIST OF TROUBLE CODE

1. TROUBLE CODE

Trouble code	Item	Content of diagnosis	Abbr. (Select monitor)	Page
11	Duty solenoid A	Detects open or shorted drive circuit, as well as valve seizure.	PL	24
12	Duty solenoid B	Detects open or shorted drive circuit, as well as valve seizure.	L/U	33
13	Shift solenoid 3	Detects open or shorted drive circuit, as well as valve seizure.	OVR	41
14	Shift solenoid 2	Detects open or shorted drive circuit, as well as valve seizure.	SFT2	47
15	Shift solenoid 1	Detects open or shorted drive circuit, as well as valve seizure.	SFT1	52
21	ATF temperature sensor	Detects open or shorted input signal circuit.	ATFT	57
22	Mass air flow signal	Detects open or shorted input signal circuit.	AFM	64
23	Engine speed signal	Detects open or shorted input signal circuit.	EREV	67
24	Duty solenoid C	Detects open or shorted drive circuit, as well as valve seizure.	4WD	70
25	Torque control signal	Detects open or shorted input signal circuit.	TQ.CT	76
31	Throttle position sensor	Detects open or shorted input signal circuit.	THV	78
32	Vehicle speed sensor 1	Detects open or shorted input signal circuit.	VSP1	85
33	Vehicle speed sensor 2	Detects open or shorted input signal circuit.	VSP2	91

2. HOW TO READ TROUBLE CODE OF INDICATOR LIGHT

The AT OIL TEMP indicator light flashes the code corresponding to the faulty part.
The long segment (1.2 sec on) indicates a "ten", and the short segment (0.2 sec on) signifies a "one".



B: CLEAR MEMORY

Current trouble codes shown on the display are cleared by turning the ignition switch OFF after conducting on-board diagnostics operation. Previous trouble codes, however, cannot be cleared since they are stored in the TCM memory which is operating on the back-up power supply. These trouble codes can be cleared by removing the specified fuse (located under the right lower portion of the instrument panel).

CLEAR MEMORY:

Removal of No. 14 fuse (for at least one minute)

- The No. 14 fuse is located in the line to the memory back-up power supply of the TCM and ECM (MFI). Removal of this fuse clears the previous trouble codes stored in the TCM and ECM (MFI) memory.
- Be sure to remove the No. 14 fuse for at least the specified length of time. Otherwise, trouble codes may not be cleared.

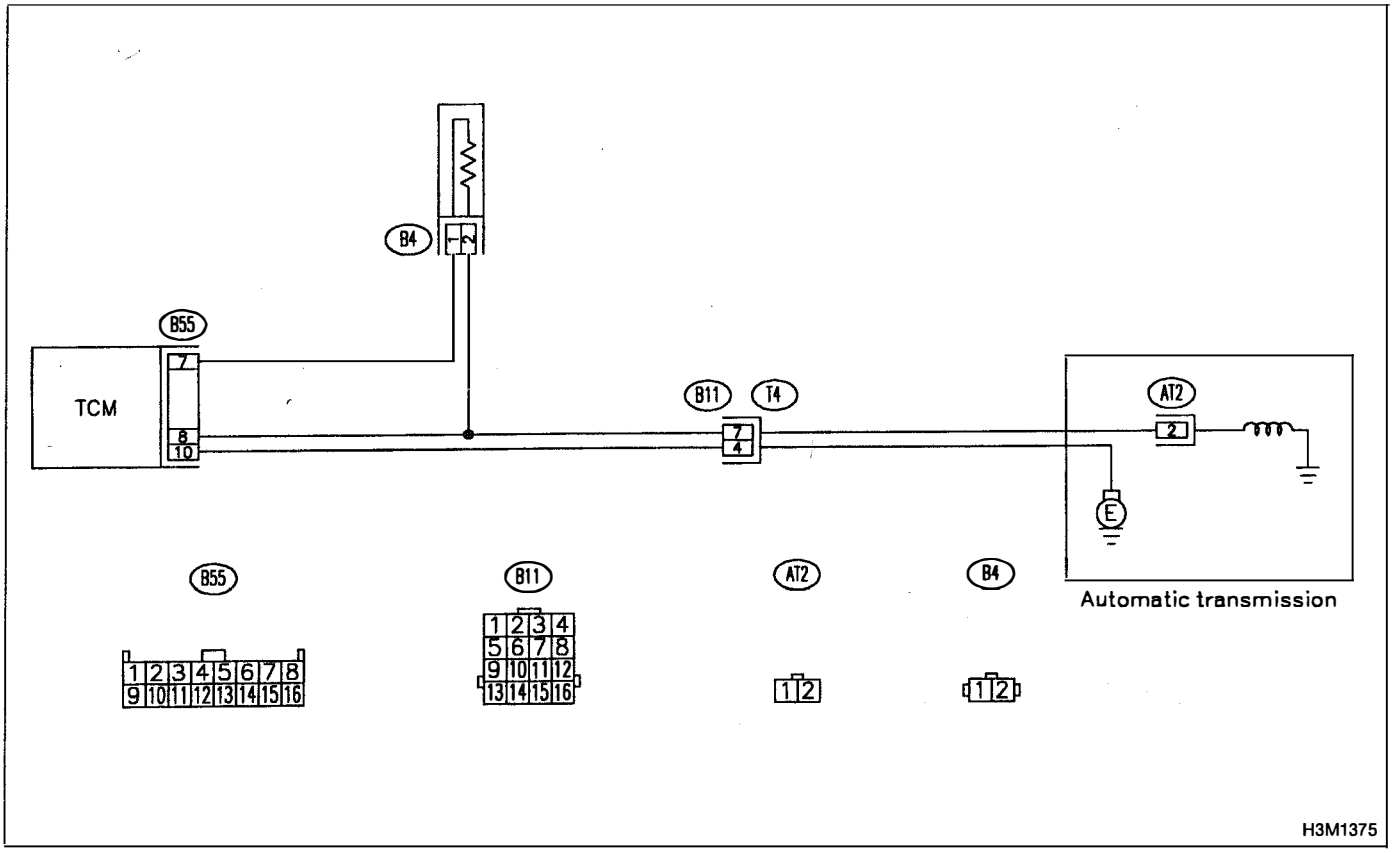
C: TROUBLE CODE 11 — DUTY SOLENOID A —

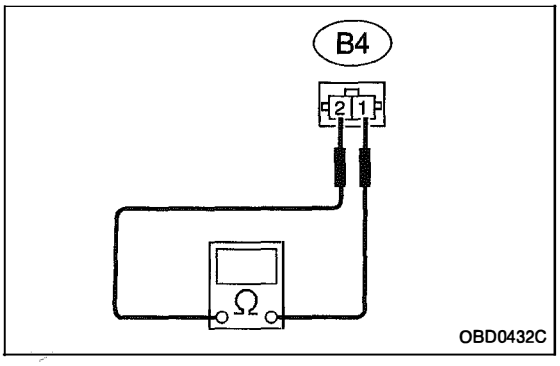
DIAGNOSIS:

Output signal circuit of duty solenoid A or resistor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.





8C1	CHECK RESISTOR.

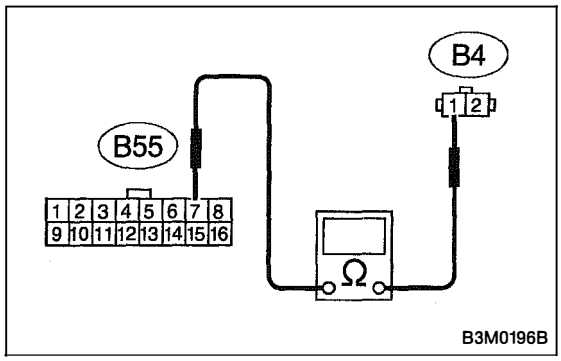
1) Turn ignition switch to OFF.
2) Disconnect connector from dropping resistor.
3) Measure resistance between dropping resistor terminal.

Terminals
(B4) No. 1 — No. 2:

CHECK ***: Is the resistance between 9 and 15 Ω?***

YES : Go to step **8C2**.

NO : Replace dropping resistor.



8C2	CHECK HARNESS CONNECTOR BETWEEN TCM AND DROPPING RESISTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Measure resistance of harness between TCM connector and dropping resistor connector.

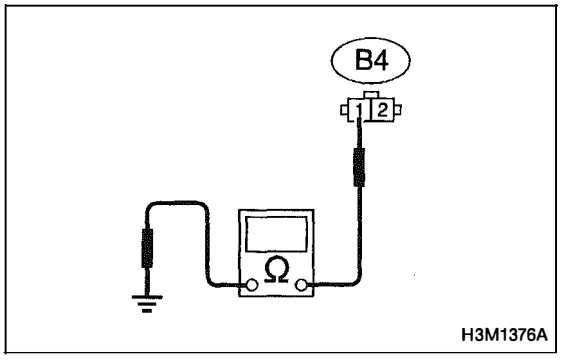
Connector & terminal
(B55) No. 7 — (B4) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and dropping resistor connector.
- Poor contact in TCM connector.
- Poor contact in dropping resistor connector.



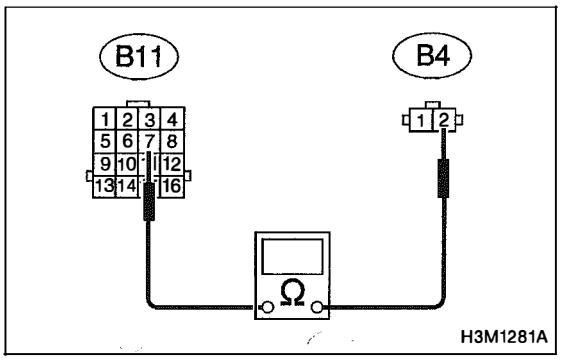
4) Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8C3**.

NO : Repair short circuit in harness between TCM and dropping resistor connector.



8C3	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DROPPING RESISTOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between transmission and dropping resistor connector.

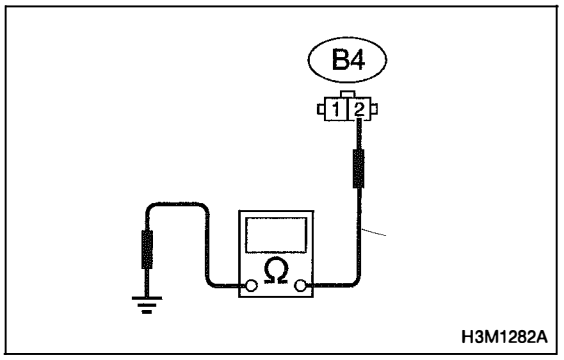
Connector & terminal
(B4) No. 2 — (B11) No. 7:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between dropping resistor and transmission connector.
- Poor contact in transmission connector.
- Poor contact in dropping resistor connector.



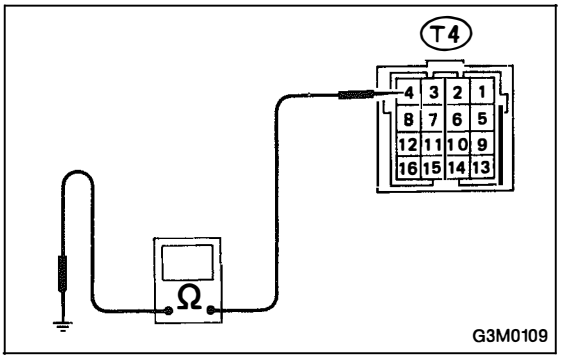
3) Measure resistance of harness between dropping resistor connector and chassis ground.

Connector & terminal
(B4) No. 2 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8C4**.

NO : Repair short circuit in harness between dropping resistor and transmission connector.



8C4	CHECK DUTY SOLENOID A GROUND LINE.

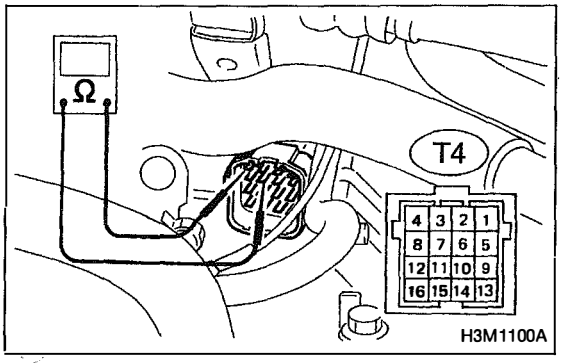
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 4 — Transmission ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8C5**.

NO : Repair open circuit in transmission harness connector.



8C5	CHECK DUTY SOLENOID A.

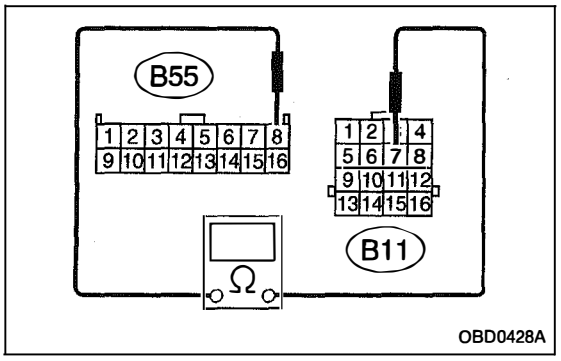
Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 7 — No. 4:

CHECK ***: Is the resistance between 1.5 and 4.5 Ω?***

YES : Go to step **8C6**.

NO : Go to step **8C8**.



8C6	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Turn ignition switch to OFF.
2) Disconnect connectors from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

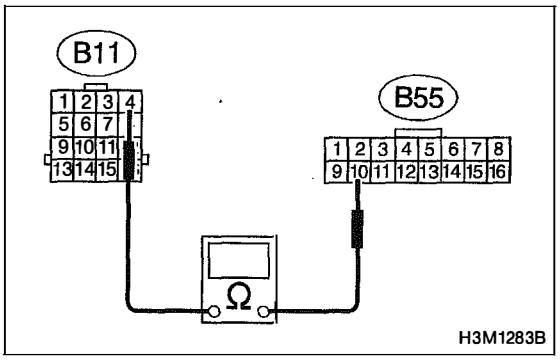
Connector & terminal
(B55) No. 8 — (B11) No. 7:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



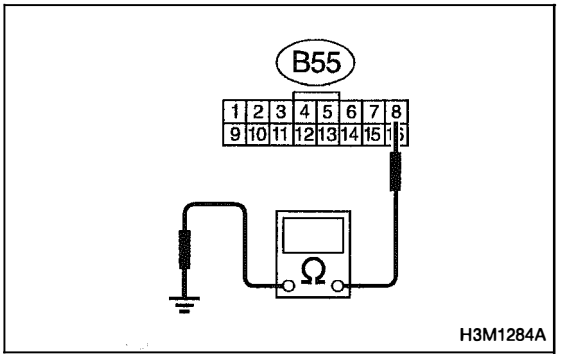
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.

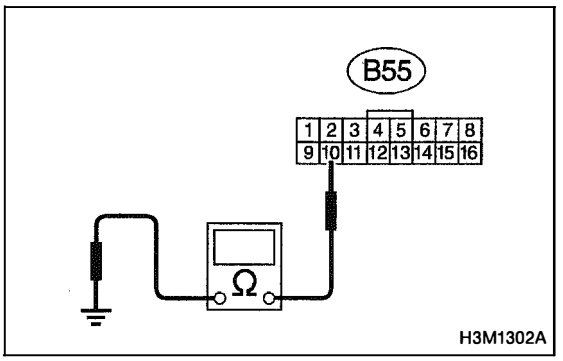


Connector & terminal
(B55) No. 8 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8C7.**

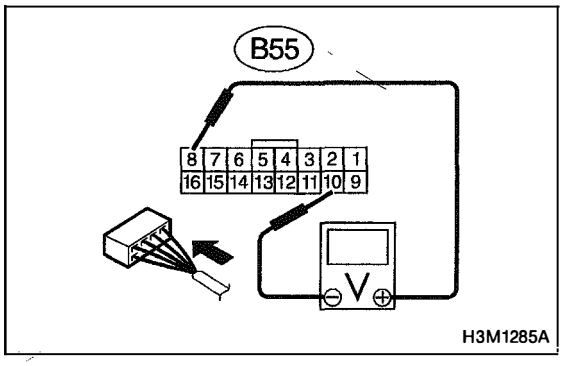
NO : Repair short circuit harness between TCM and transmission connector.

8C7	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM, transmission and dropping resistor.
3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Turn ignition switch to ON (engine OFF).
5) Move selector lever to "N".



6) Measure voltage between TCM connector terminal.

Connector & terminal
(B55) No. 8 (+) — No. 10 (–):

CHECK : ***Is the voltage between 1.5 and 4.0 V with throttle fully closed?***

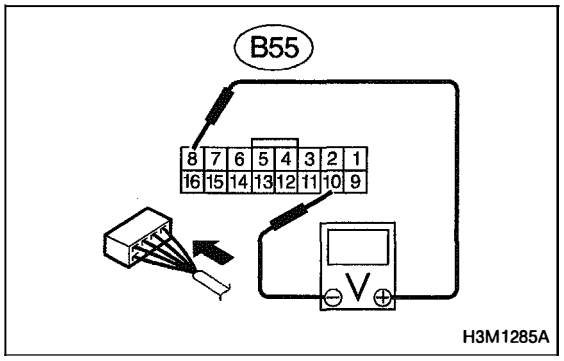
YES : Go to next step CHECK1 .

NO : Go to next CHECK .

CHECK : ***Is the voltage between 1.5 and 4.0 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B55) No. 8 (+) — No. 10 (–):

CHECK1 : ***Is the voltage less than 1 V with throttle fully open?***

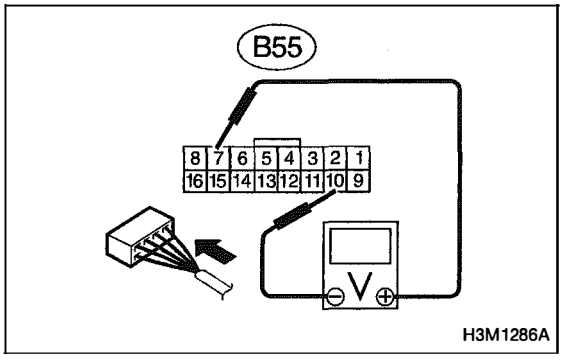
YES : Go to next step CHECK1 .

NO : Go to next CHECK .

CHECK : ***Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B55) No. 7 (+) — No. 10 (–):

CHECK1 : ***Is the voltage between 5 and 14 V with throttle fully closed?***

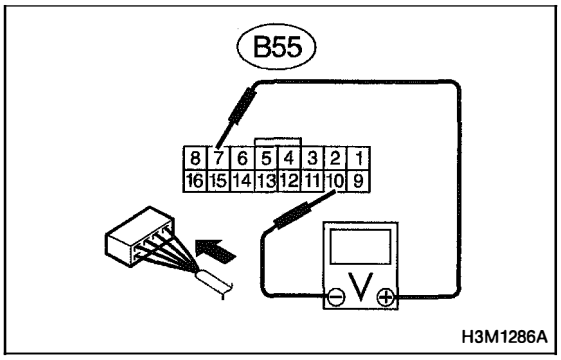
YES : Go to next step CHECK1 .

NO : Go to next CHECK .

CHECK : ***Is the voltage between 5 and 14 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B55) No. 7 (+) — No. 10 (–):

CHECK1 : ***Is the voltage less than 1 V with throttle fully open?***

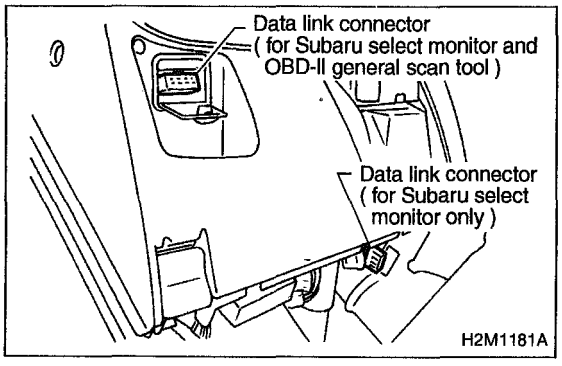
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

NO : Go to next CHECK .

CHECK : ***Is the voltage between 5 and 14 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



● Using Subaru Select Monitor

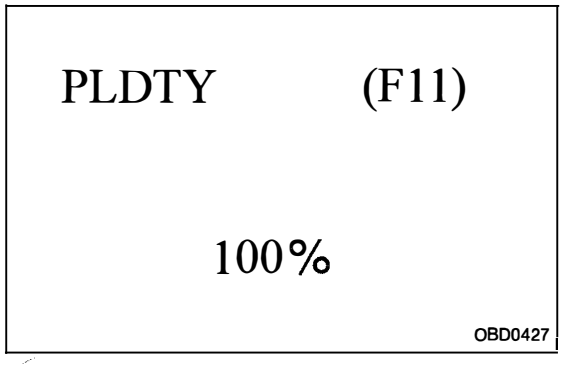
1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the transmission until ATF temperature is above 80°C (176°F).

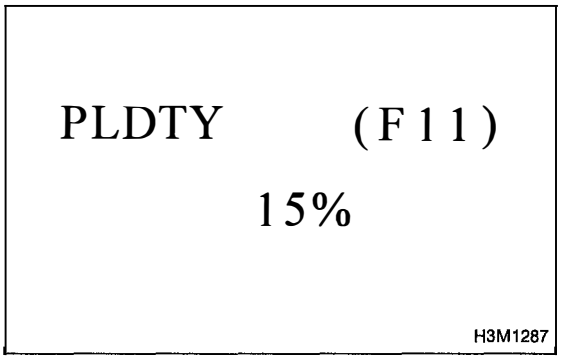
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Stop the engine and turn ignition switch to ON (engine OFF).
7) Move selector lever to "N".
8) Read data on Subaru Select Monitor.
9) Designate mode using function key.

Function mode F11

● F11: Line pressure duty is indicated in "%".





10) Throttle is fully closed.

CHECK : ***Is the value 100% in function mode F11?***

YES : Go to next step 11).

NO : Go to next CHECK .

CHECK : ***Is the value 100% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

11) Throttle is fully open.

CHECK : ***Is the value 15% in function mode F11?***

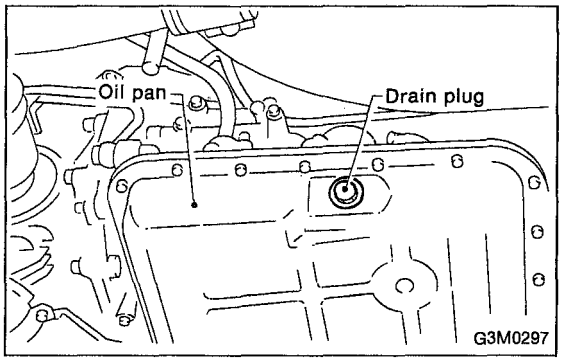
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

NO : Go to next CHECK .

CHECK : ***Is the value 15% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

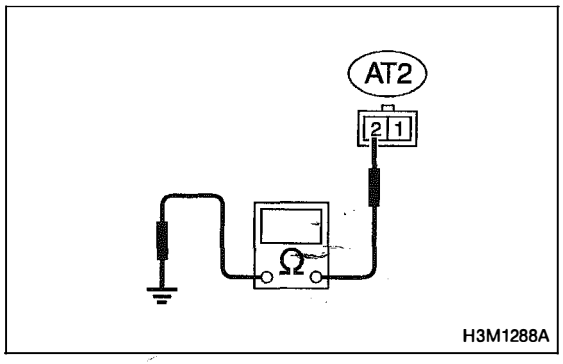


8C8	CHECK DUTY SOLENOID A (IN TRANSMISSION).

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

5) Remove oil pan, and disconnect connector from duty solenoid A.



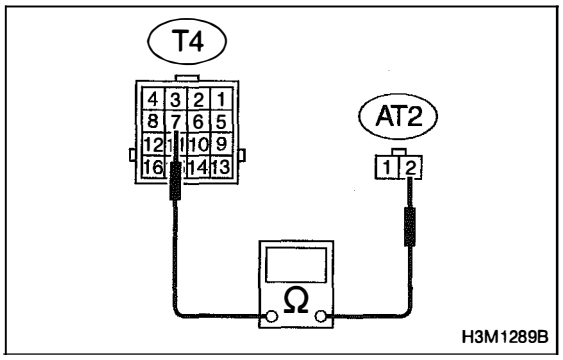
6) Measure resistance between duty solenoid A connector and transmission ground.

Terminal
(AT2) No. 2 — Transmission ground:

CHECK ***: Is the resistance 1.5 and 4.5 Ω?***

YES : Go to step **8C9**.

NO : Replace duty solenoid A.



8C9	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND DUTY SOLENOID A.

1) Disconnect connector from transmission.
2) Measure resistance of harness between duty solenoid A and transmission connector.

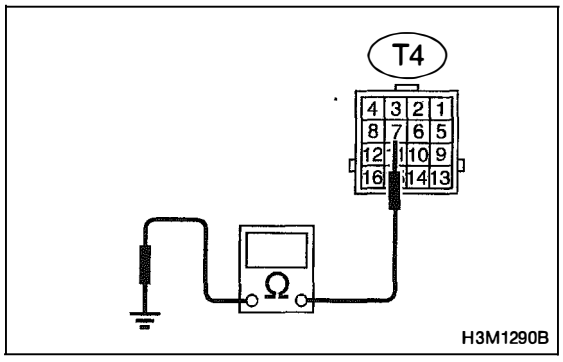
Connector & terminal
(T4) No. 7 — (AT2) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between duty solenoid A and transmission connector.
- Poor contact in duty solenoid A connector.
- Poor contact in transmission connector.



3) Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 7 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid A and transmission connector.

NO : Repair short circuit in harness between duty solenoid A and transmission connector.

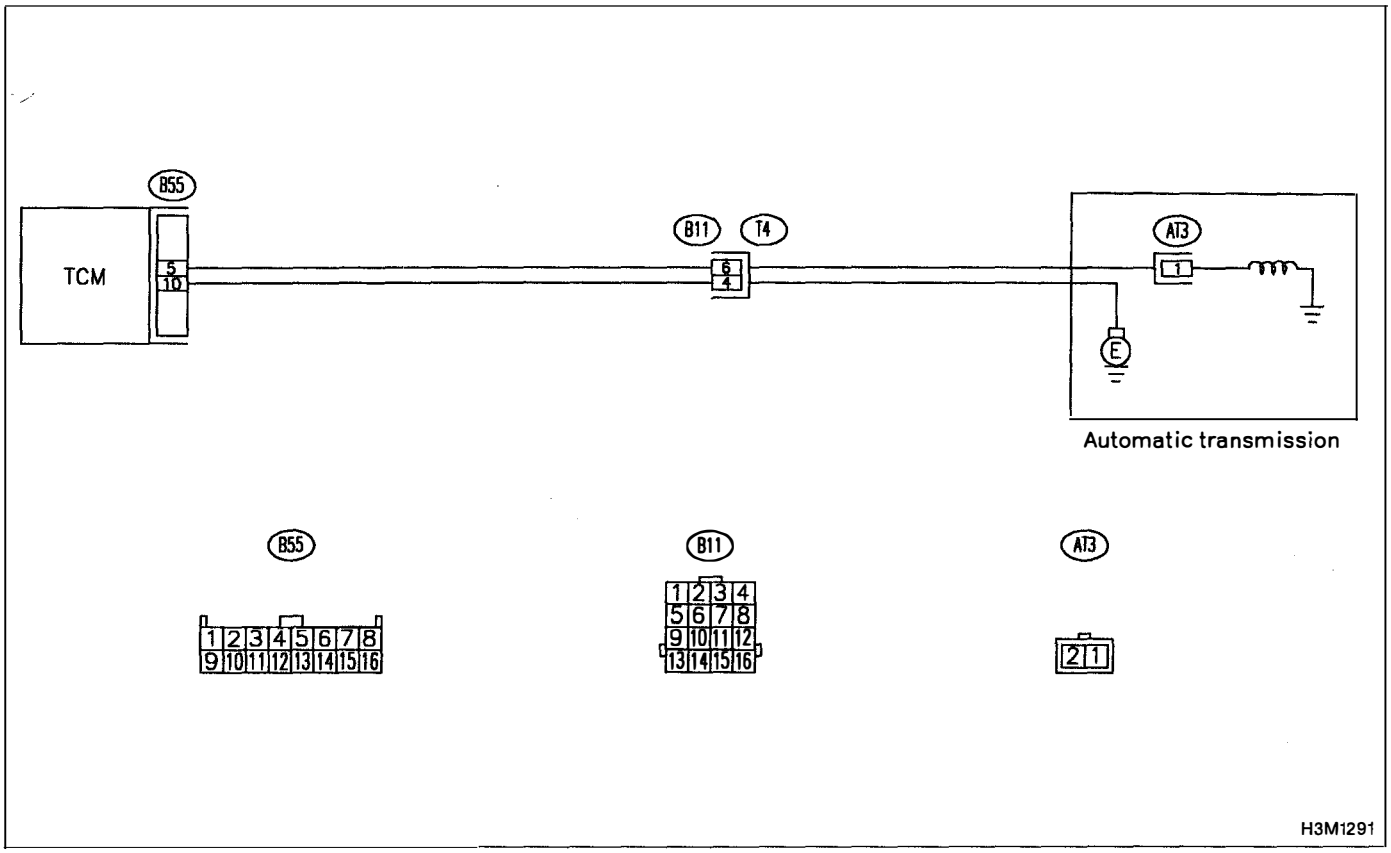
D: TROUBLE CODE 12
— DUTY SOLENOID B —

DIAGNOSIS:

Output signal circuit of duty solenoid B is open or shorted.

TROUBLE SYMPTOM:

No "lock-up" (after engine warm-up).

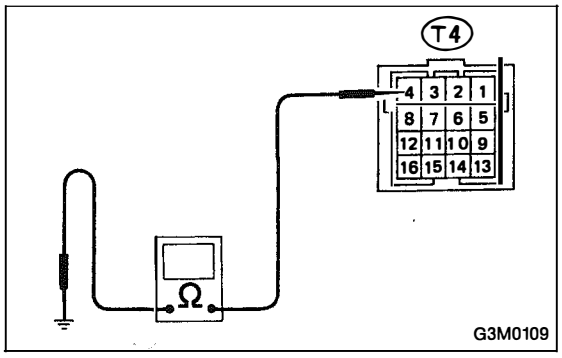


8D1	CHECK TROUBLE CODE.

CHECK : ***Do multiple trouble codes appear in the on-board diagnostics test mode?***

YES : Go to another trouble code.

NO : Go to step **8D2**.



8D2	CHECK DUTY SOLENOID B GROUND LINE.

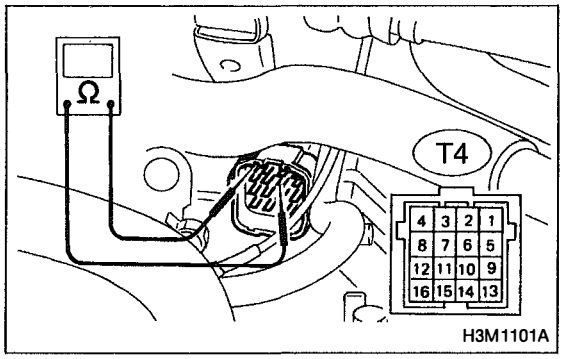
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8D3**.

NO : Repair open circuit in transmission harness connector.



8D3	CHECK DUTY SOLENOID B.

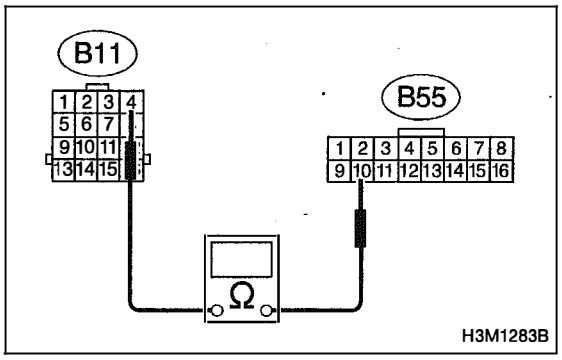
Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 6 — No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8D4**.

NO : Go to step **8D7**.



8D4	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Turn ignition switch to OFF.
2) Disconnect connectors from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

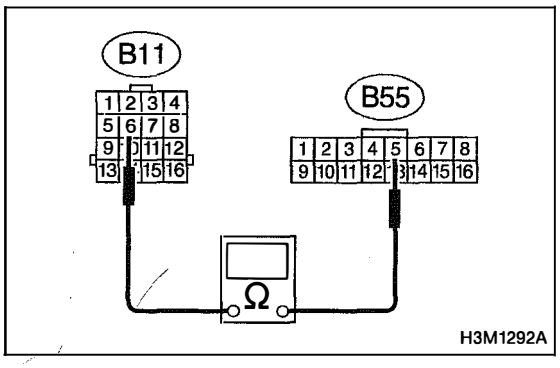
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.



Connector & terminal
(B55) No. 5 — (B11) No. 6:

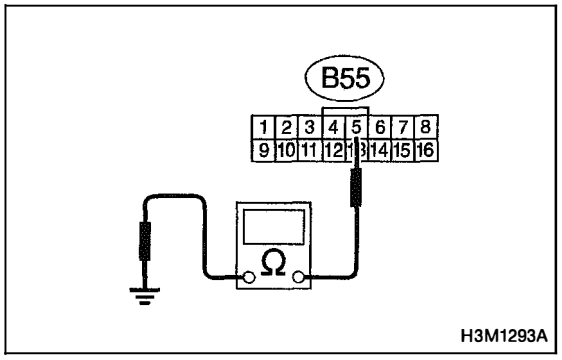
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.

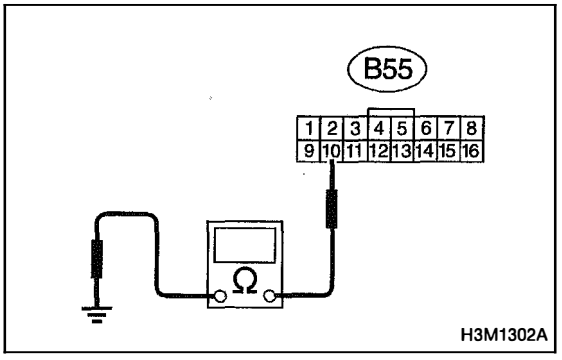


Connector & terminal
(B55) No. 5 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8D5**.

NO : Repair short circuit in harness between TCM and transmission connector.

8D5	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

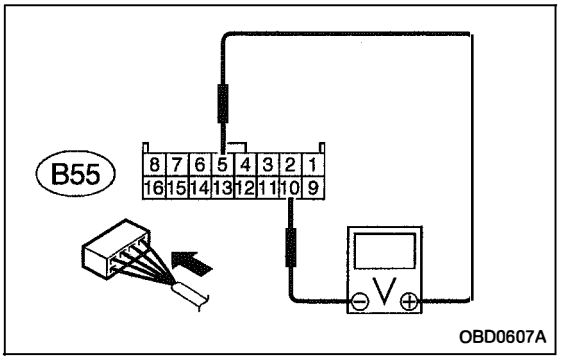
1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.

4) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 m/h). Wheels will lock-up.



6) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 5 (+) — No. 10 (–):

CHECK ***: Is the voltage more than 8.5 V?***

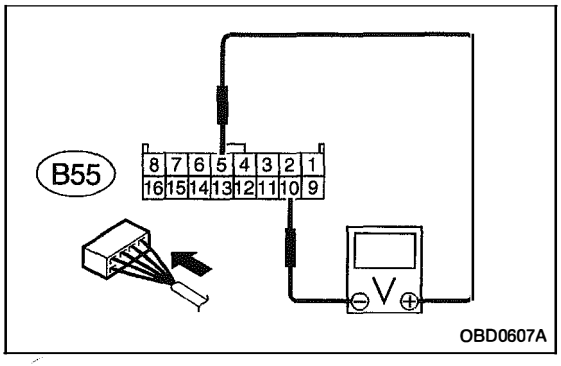
YES : Go to next step 7).

NO : Go to next CHECK .

CHECK ***: Is the voltage more than 8.5 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



7) Return the engine to idling speed and move selector lever to "N".
8) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 5 (+) — No. 10 (–):

CHECK ***: Is the voltage less than 0.5 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

NO : Go to next CHECK .

CHECK ***: Is the voltage less than 0.5 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

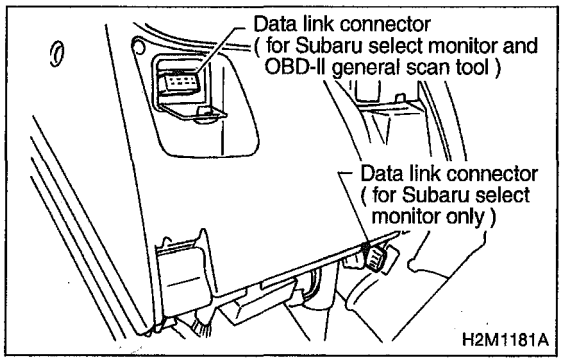
NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

- Using Subaru Select Monitor

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Lift-up the vehicle and place safety stand.

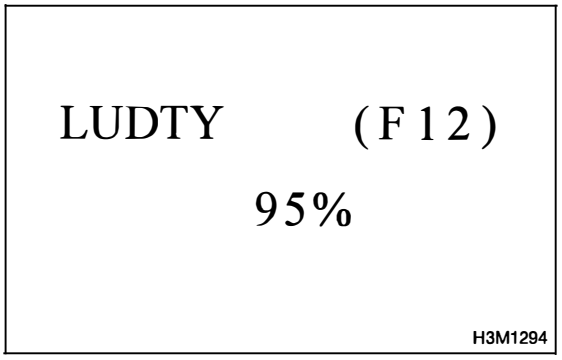
CAUTION:
On AWD models, make sure that all wheels are raised off floor.



4) Connect Subaru Select Monitor to data link connector.
5) Start the engine, and turn Subaru Select Monitor switch to ON.
6) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

7) Read data on Subaru Select Monitor.
8) Designate mode using function key.
Function mode F12
- F12: Lock-up duty is indicated in "%".



9) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 m/h). Wheels will lock-up.

CHECK ***: Is the value 95% in function mode F12?***

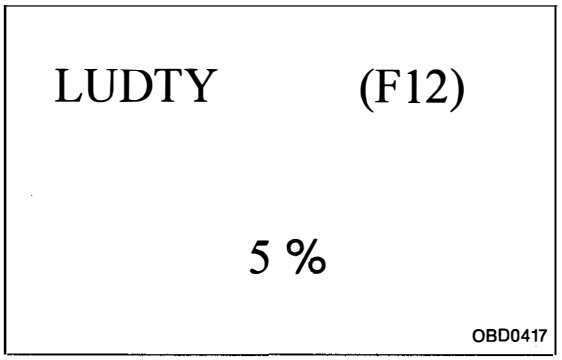
YES : Go to next step 10).

NO : Go to next CHECK .

CHECK ***: Is the value 95% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.



10) Return the engine to idling speed and move selector lever to "N".

CHECK ***: Is the value 5% in function mode F12?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

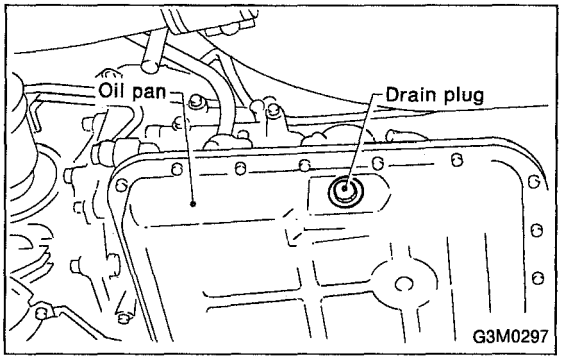
NO : Go to next CHECK .

CHECK : ***Is the value 5% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

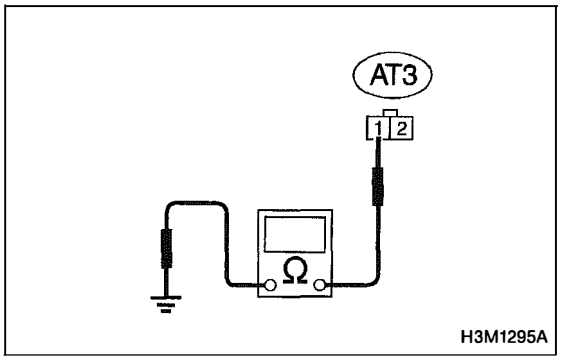


8D6	CHECK DUTY SOLENOID B (IN TRANSMISSION).

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

5) Remove oil pan, and disconnect connector from duty solenoid B.



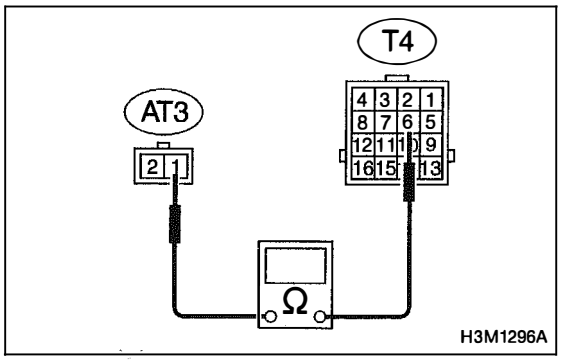
6) Measure resistance between duty solenoid B connector and transmission ground.

Connector & terminal
(AT3) No. 1 — Transmission ground:

CHECK : ***Is the resistance between 9 and 17 Ω?***

YES : Go to step **8D7**.

NO : Replace duty solenoid B.



8D7	CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID B AND TRANSMISSION.

1) Disconnect connector from transmission.
2) Measure resistance of harness between duty solenoid B and transmission connector.

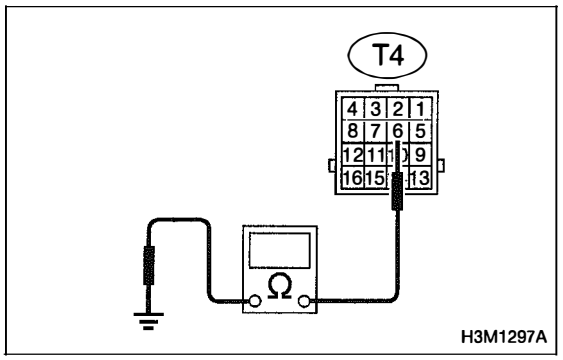
Connector & terminal
(T4) No. 6 — (AT3) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.



3) Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 6 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in duty solenoid B and transmission connector.

NO : Repair short circuit in harness between TCM and transmission connector.

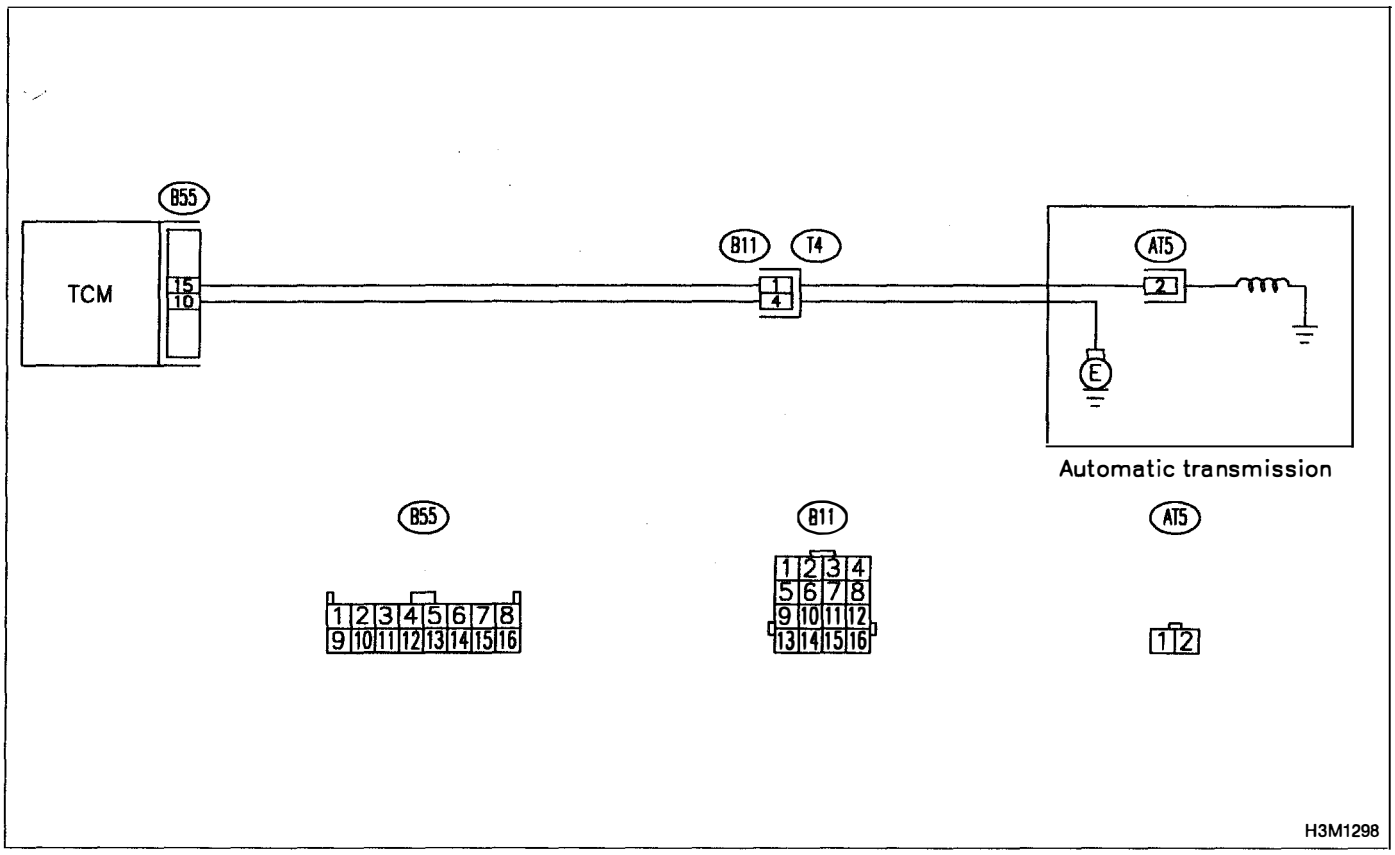
E: TROUBLE CODE 13 — SHIFT SOLENOID 3 —

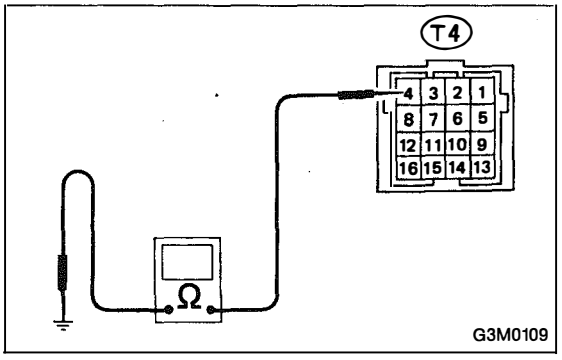
DIAGNOSIS:

Output signal circuit of shift solenoid 3 is open or shorted.

TROUBLE SYMPTOM:

Ineffective engine brake with shift lever in "3".





8E1	CHECK SHIFT SOLENOID 3 GROUND LINE.

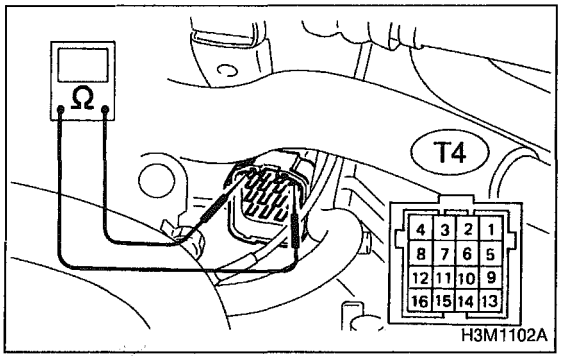
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8E2**.

NO : Repair open circuit in transmission harness connector.



8E2	CHECK SHIFT SOLENOID 3.

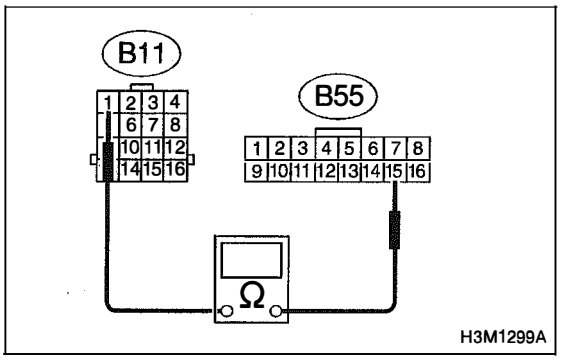
Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 1 — No. 4:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8E3.**

NO : Go to step **8E5.**



8E3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and transmission connector.

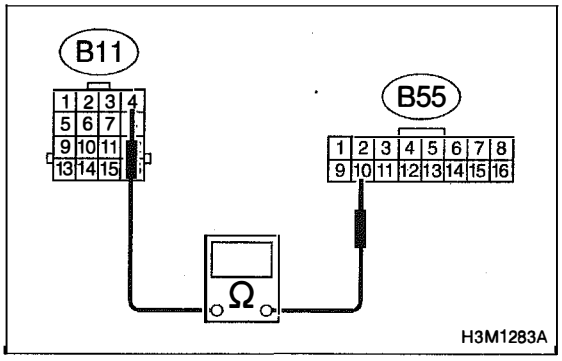
Connector & terminal
(B55) No. 15 — (B11) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



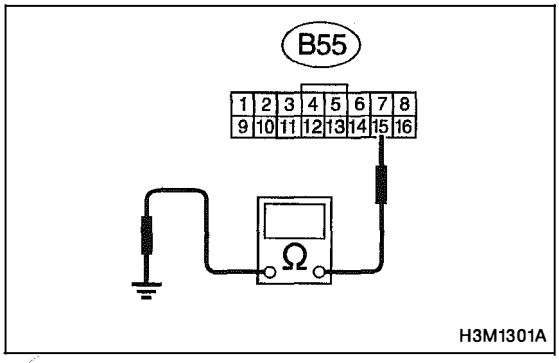
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



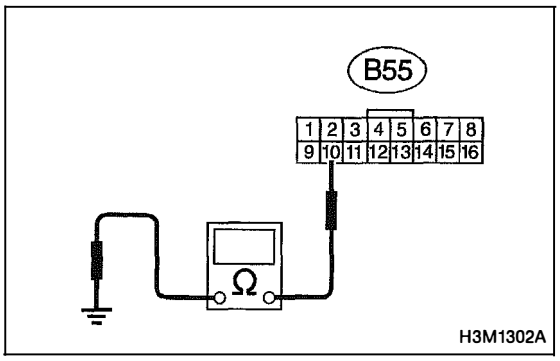
3) Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 15 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8E4**.

NO : Repair short circuit in harness between TCM and transmission connector.

8E4	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

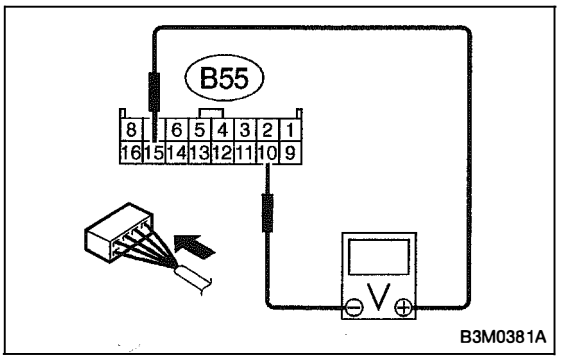
1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "2", and slowly increase vehicle speed to 35 km/h (22 m/h).



5) Measure voltage between TCM connector terminals.
Connector & terminal
(B55) No. 15 (+) — No. 10 (–):

CHECK ***: Is the voltage less than 1 V?***

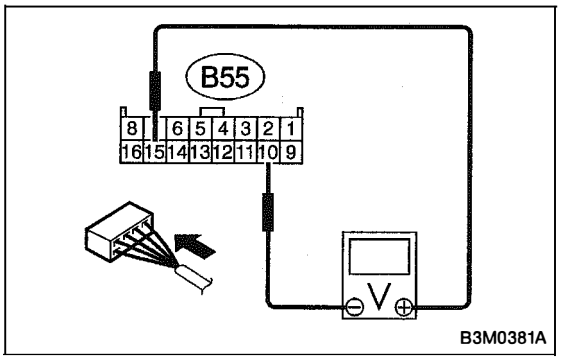
YES : Go to next step 6).

NO : Go to next CHECK .

CHECK ***: Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



6) Move selector lever to "D", and slowly increase vehicle speed to 65 km/h (41 m/h).
7) Measure voltage between TCM connector terminals.
Connector & terminal
(B55) No. 15 (+) — No. 10 (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.

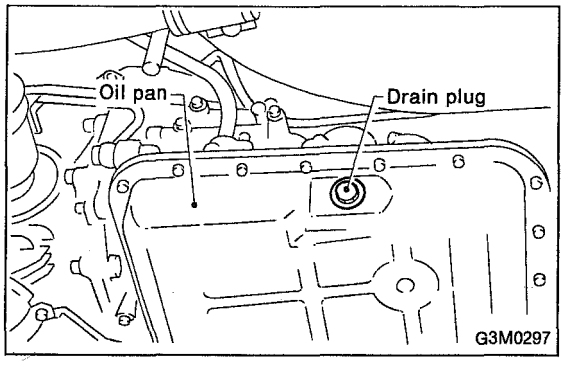
NO : Go to next CHECK .

CHECK ***: Is the voltage more than 10 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>



8E5	CHECK SHIFT SOLENOID 3 (IN TRANSMISSION).

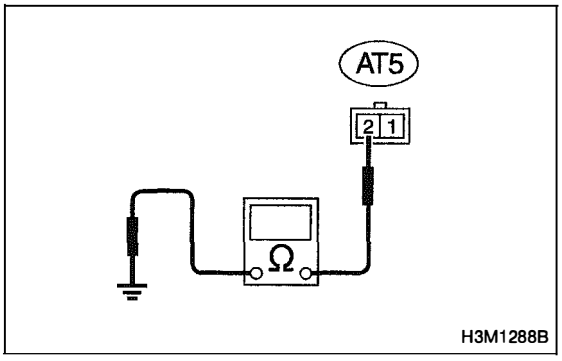
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

5) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

6) Remove oil pan, and disconnect connector from shift solenoid 3.



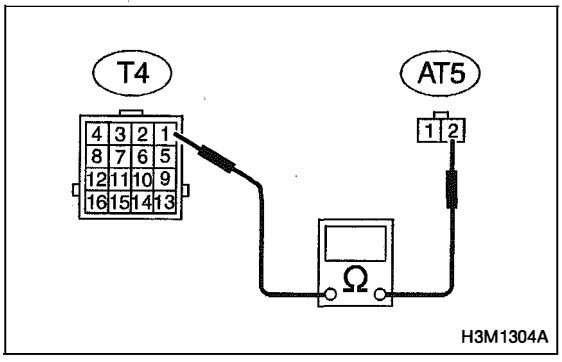
7) Measure resistance between shift solenoid 3 connector and transmission ground.

Terminal
(AT5) No. 2 — Transmission ground:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8E6**.

NO : Replace shift solenoid assembly.



8E6	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 3 AND TRANSMISSION.

1) Measure resistance of harness between shift solenoid 3 and transmission connector.

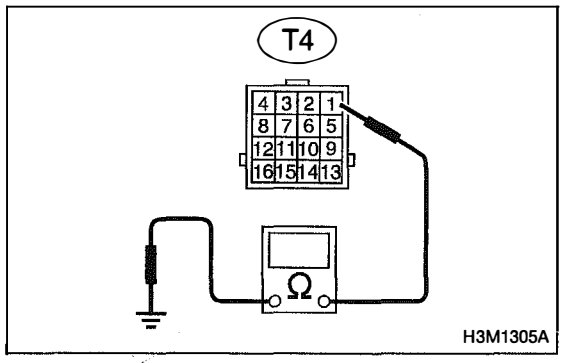
Connector & terminal
(AT5) No. 2 — (T4) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 2).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between shift solenoid 3 and transmission connector.
- Poor contact in shift solenoid 3 connector.
- Poor contact in transmission connector.



2) Measure resistance of harness between shift solenoid 3 connector and transmission ground.

Connector & terminal
(T4) No. 1 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.

- Poor contact in shift solenoid 3 connector.
- Poor contact in transmission connector.

NO : Repair short circuit harness between TCM and transmission connector.

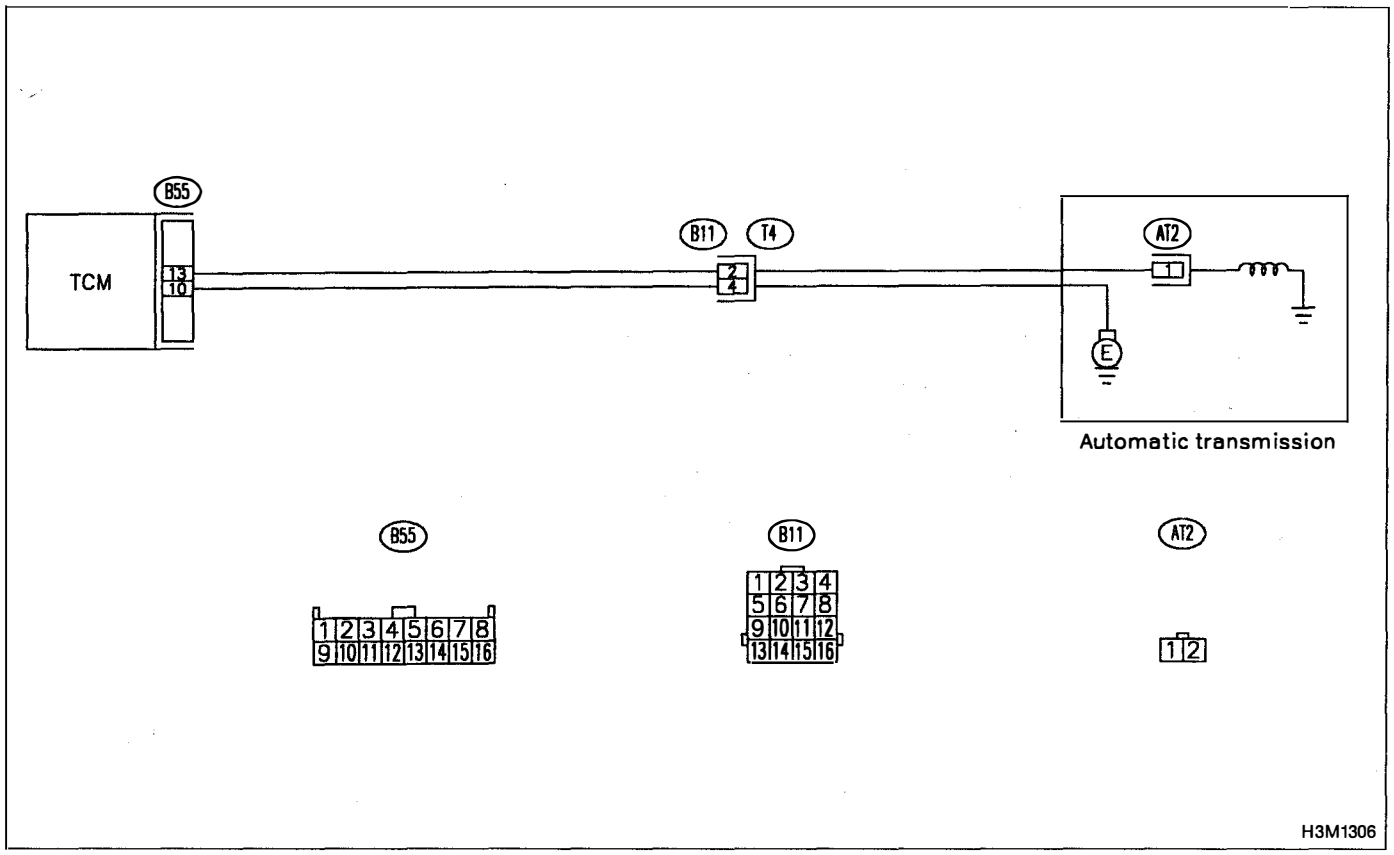
F: TROUBLE CODE 14 — SHIFT SOLENOID 2 —

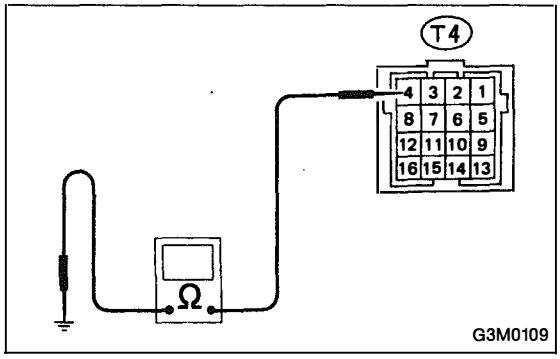
DIAGNOSIS:

Output signal circuit of shift solenoid 2 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.





8F1	CHECK SHIFT SOLENOID 2 GROUND LINE.

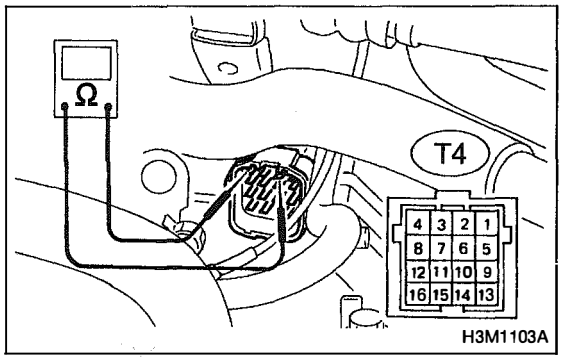
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8F2**.

NO : Repair open circuit in transmission harness connector.



8F2	CHECK SHIFT SOLENOID 2.

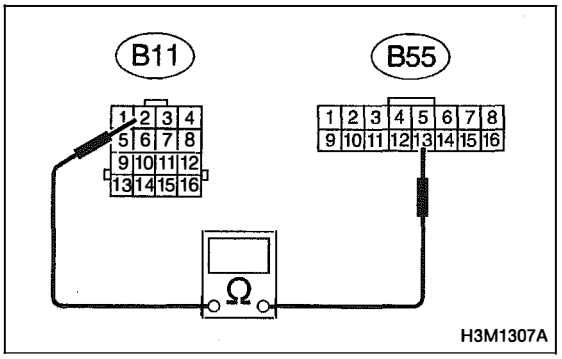
Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 2 — No. 4:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8F3.**

NO : Go to step **8F5.**



8F3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 2 connector.

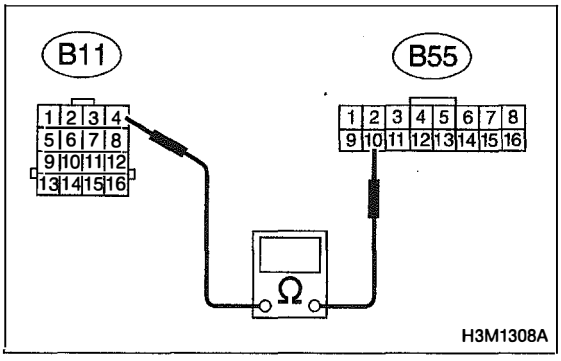
Connector & terminal
(B55) No. 13 — (B11) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



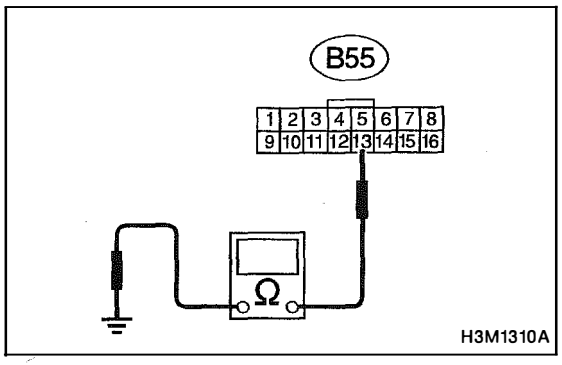
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



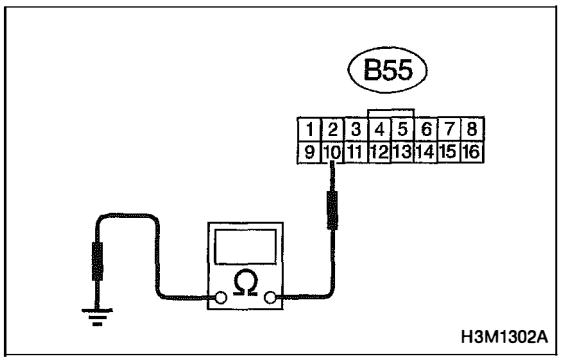
3) Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 13 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8F4**.

NO : Repair short circuit in harness between TCM and transmission connector.

8F4	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

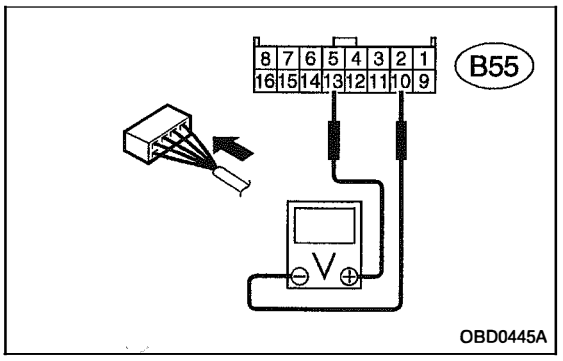
1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 m/h).



5) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 13 (+) — No. 10 (–):

CHECK ***: Is the voltage 9 V → 1 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.

NO : Go to next step 6).

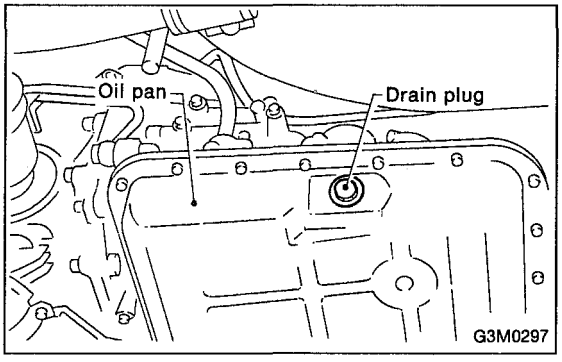
6) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 m/h).

CHECK ***: Is the voltage changing 9 V → 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

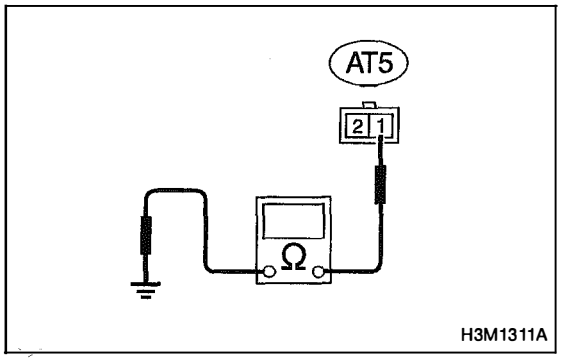


8F5	CHECK SHIFT SOLENOID 2 (IN TRANSMISSION).

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

5) Remove oil pan, and disconnect connector from shift solenoid 2.



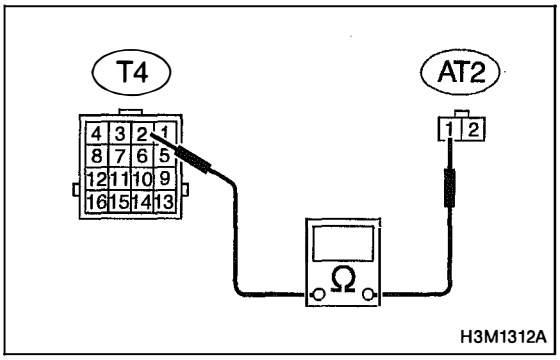
6) Measure resistance between shift solenoid 2 connector and transmission ground.

Terminal
(AT2) No. 1 — Transmission ground:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8F6**.

NO : Replace shift solenoid assembly.



8F6	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 2 AND TRANSMISSION.

1) Measure resistance of harness between shift solenoid 2 and transmission connector.

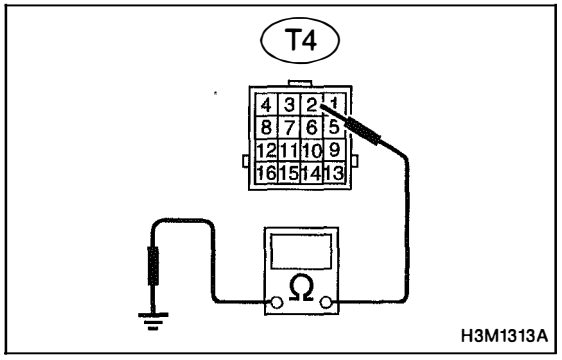
Connector & terminal
(AT2) No. 1 — (T4) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 2).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between shift solenoid 2 and transmission connector.
- Poor contact in shift solenoid 2 connector.
- Poor contact in transmission connector.



2) Measure resistance of harness between shift solenoid 2 connector and transmission ground.

Connector & terminal
(T4) No. 2 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.

- Poor contact in shift solenoid 2 connector.
- Poor contact in transmission connector.

NO : Repair short circuit harness between TCM and transmission connector.

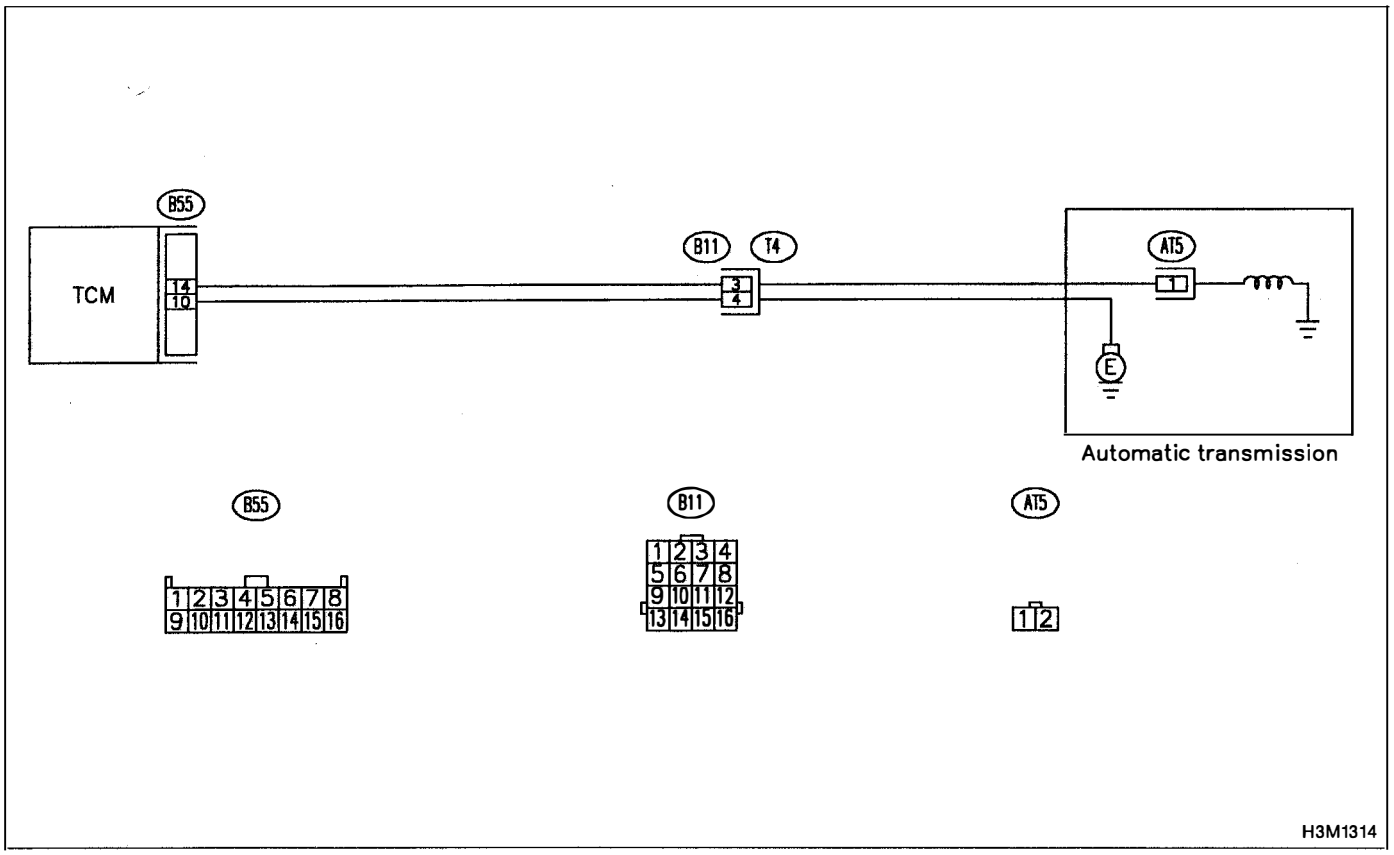
G: TROUBLE CODE 15
— SHIFT SOLENOID 1 —

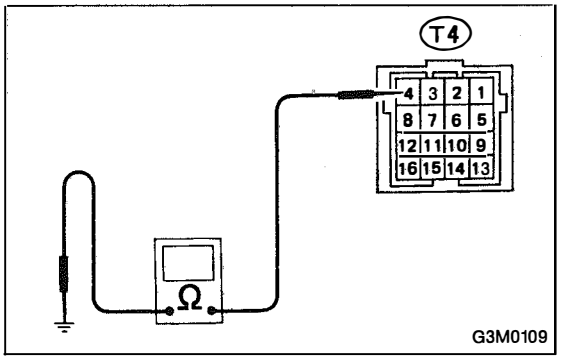
DIAGNOSIS:

Output signal circuit of shift solenoid 3 is open or shorted.

TROUBLE SYMPTOM:

Does not shift.





8G1	CHECK SHIFT SOLENOID 1 GROUND LINE.

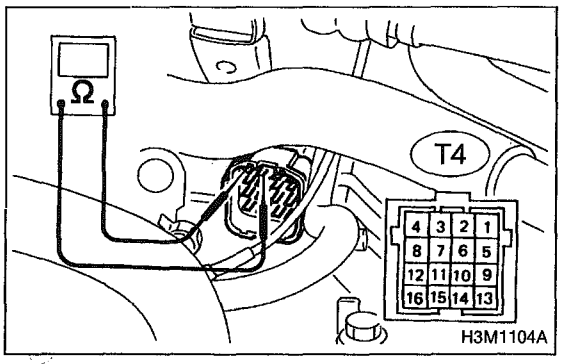
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8G2.**

NO : Repair open circuit in transmission harness connector.



8G2	CHECK SHIFT SOLENOID 1.

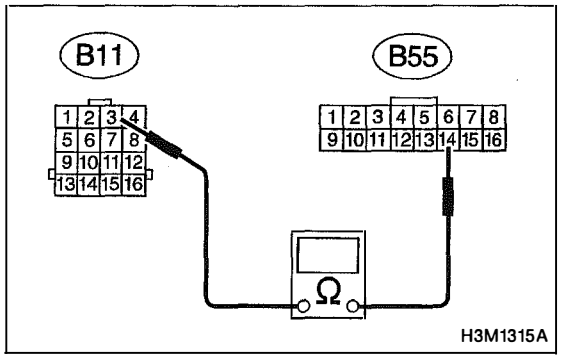
Measure resistance between transmission connector terminals.

Connector & terminal
(T4) No. 3 — No. 4:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8G3**.

NO : Go to step **8G5**.



8G3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and shift solenoid 1 connector.

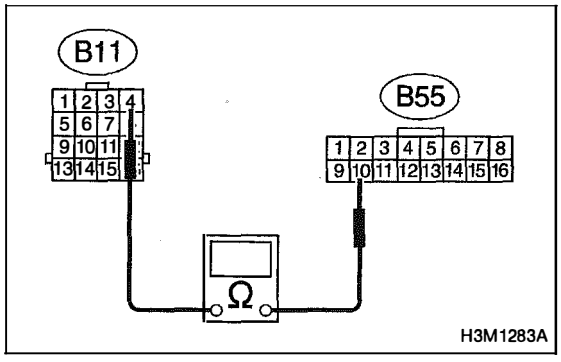
Connector & terminal
(B55) No. 14 — (B11) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



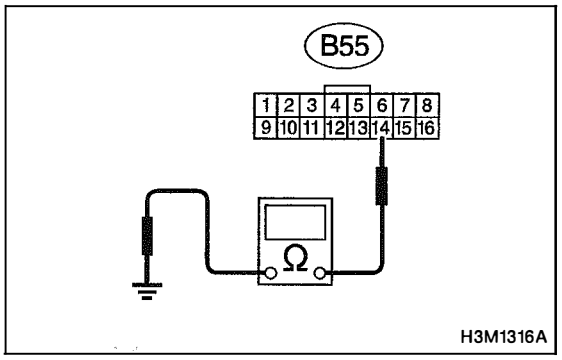
Connector & terminal
(B55) No. 10 — (B11) No. 4:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM connector.
- Poor contact in transmission connector.



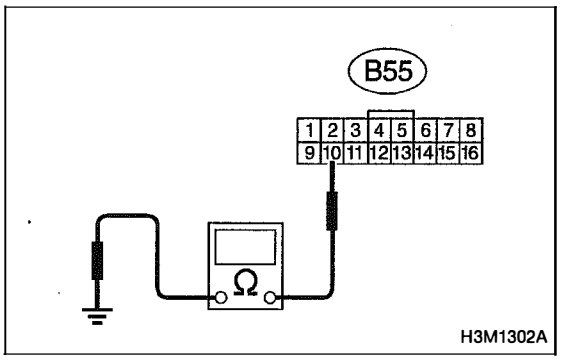
3) Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B55) No. 14 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8G4.**

NO : Repair short circuit in harness between TCM and transmission connector.

8G4	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

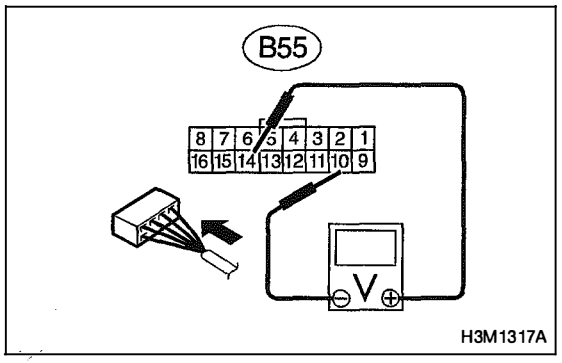
1) Connect connectors to TCM and transmission.
2) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

3) Start the engine and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

4) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 m/h).



5) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 14 (+) — No. 10 (–):

CHECK ***: Is the voltage 1 V → 9 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next step 7).

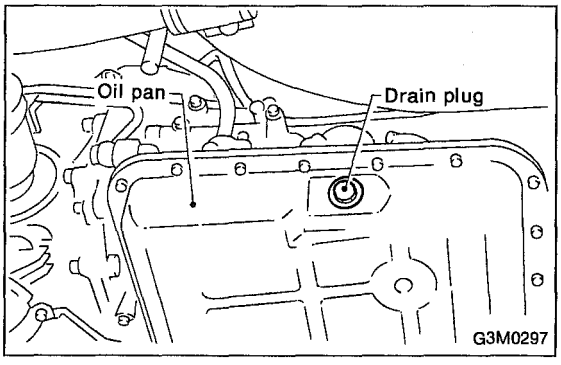
6) Move selector lever to "D", and slowly increase vehicle speed to 50 km/h (31 m/h).

CHECK ***: Is the voltage changing 1 V → 9 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. < Ref. to 4-4 [T6D2] or [T9J0]. >

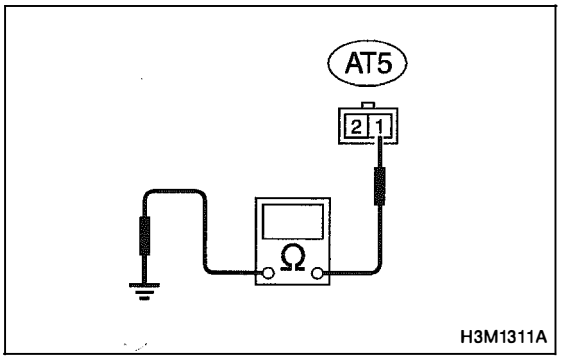


8G5	CHECK SHIFT SOLENOID 1 (IN TRANSMISSION).

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Lift-up or raise the vehicle and support with safety stand.

CAUTION:
On AWD models, raise all wheels off ground.

5) Drain automatic transmission fluid.
6) Remove oil pan, and disconnect connector from shift solenoid 1.



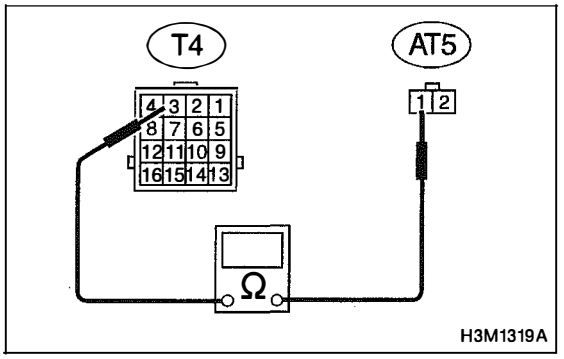
7) Measure resistance between shift solenoid 1 connector and transmission ground.

Terminal
(AT5) No. 1 — Transmission ground:

CHECK ***: Is the resistance between 20 and 32 Ω?***

YES : Go to step **8G6**.

NO : Replace shift solenoid assembly.



8G6	CHECK HARNESS CONNECTOR BETWEEN SHIFT SOLENOID 1 AND TRANSMISSION.

1) Measure resistance of harness between shift solenoid 1 and transmission connector.

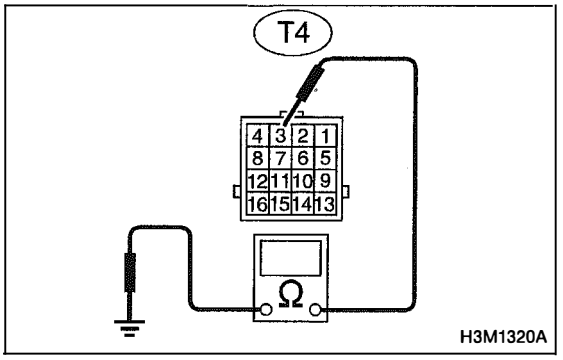
Connector & terminal
(AT5) No. 1 — (T4) No. 3:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 2).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in shift solenoid 1 connector.
- Poor contact in transmission connector.



2) Measure resistance of harness between shift solenoid 1 connector and transmission ground.

Connector & terminal
(T4) No. 3 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NOTE:
In this case, repair the following:
- Poor contact in shift solenoid 1 connector.
- Poor contact in transmission connector.

NO : Repair short circuit harness between TCM and transmission connector.

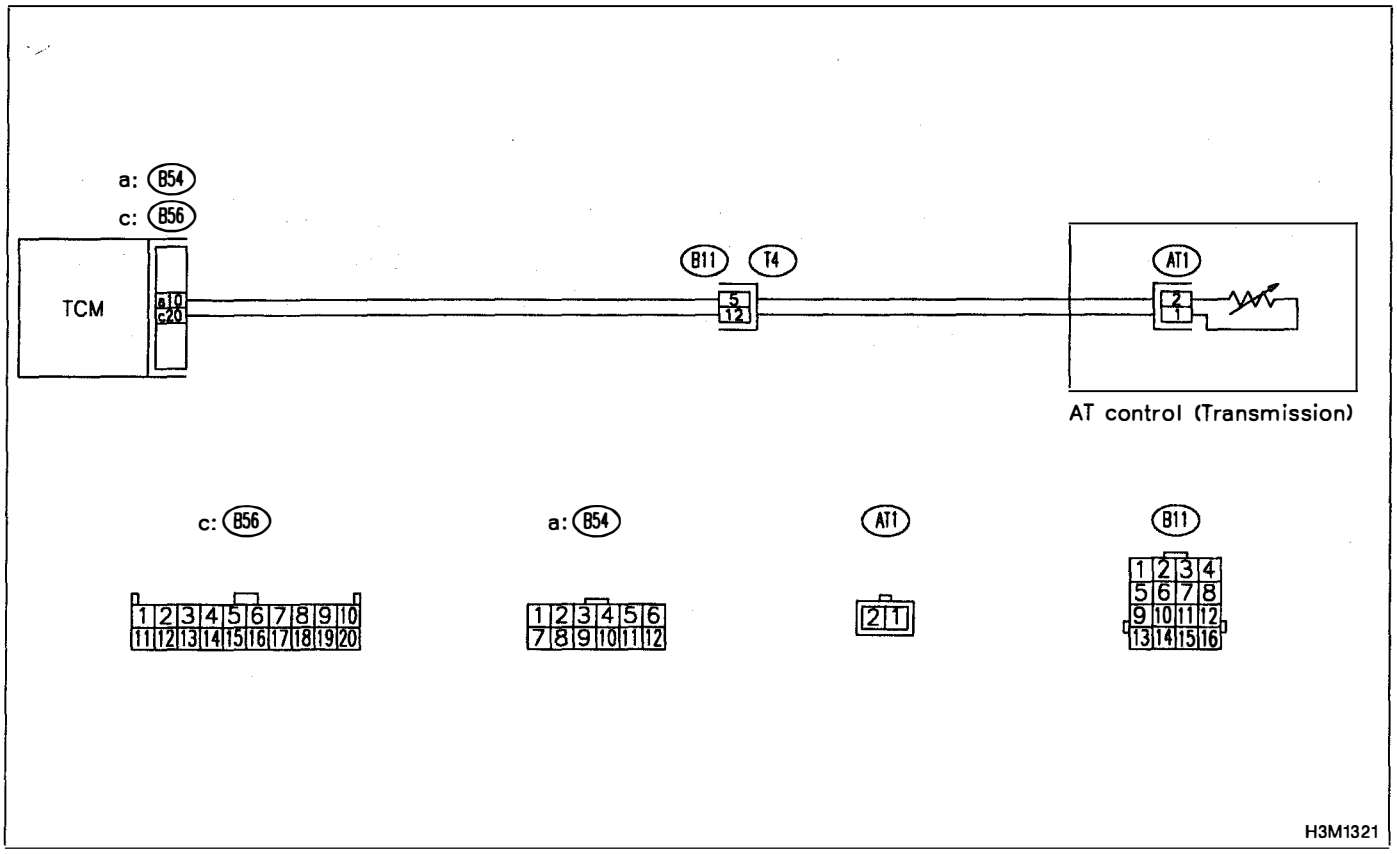
H: TROUBLE CODE 21
— ATF TEMPERATURE SENSOR —

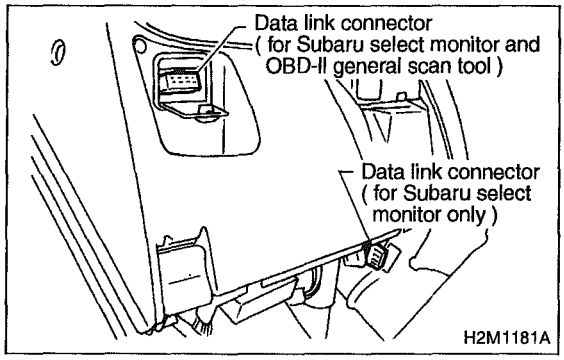
DIAGNOSIS:

Input signal circuit of TCM to ATF temperature sensor is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.



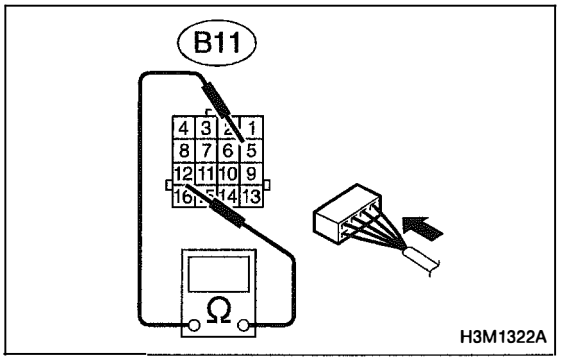


8H1	CHECK ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
4) Start engine.
5) Read data on Subaru Select Monitor.
6) Designate mode function key.

Function mode F07 or F08

- F07: ATF temperature is indicated in "°F".
- F08: ATF temperature is indicated in "°C".

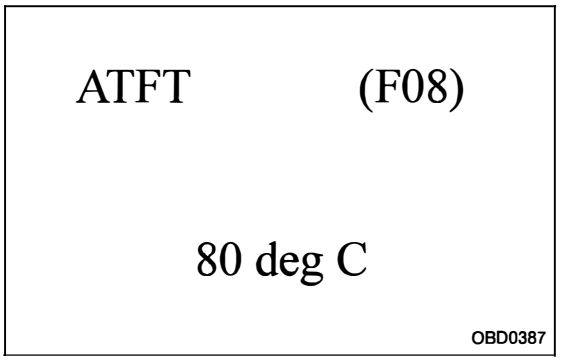


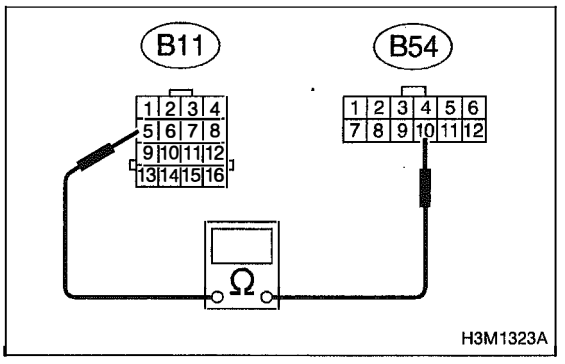
7) Measure resistance between transmission connector receptacle's terminals shown in the following table.

Connector & terminal
(B11) No. 12 — No. 5:

Function mode F07 (°F)	Function mode F08 (°C)	Resistance (kΩ)
68	20	2.1 — 2.9
104	40	0.96 — 1.36
140	60	0.49 — 0.69
176	80	0.272 — 0.374

CHECK ***: Is the resistance in range?***
YES : Go to step **8H2.**
NO : Go to step **8H4.**





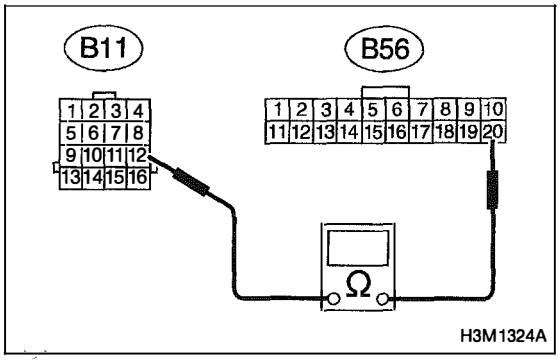
8H2	CHECK HARNESS CONNECTOR BETWEEN TCM AND ATF TEMPERATURE SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

Connector & terminal
(B54) No. 10 — (B11) No. 5:

CHECK ***: Is the resistance less than 1 Ω?***
YES : Go to next CHECK .
NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.



Connector & terminal
(B56) No. 20 — (B11) No. 12:

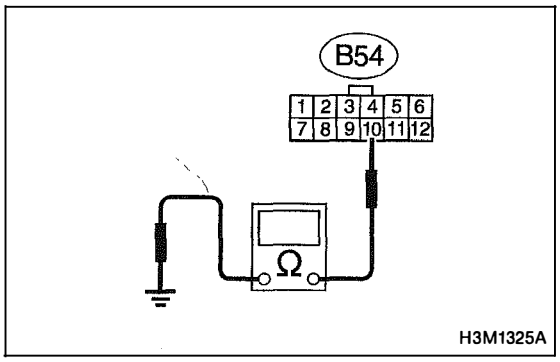
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.



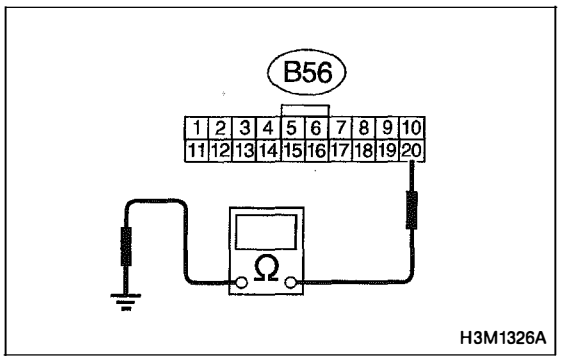
4) Measure resistance of harness between TCM connector and transmission ground.

Connector & terminal
(B54) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.

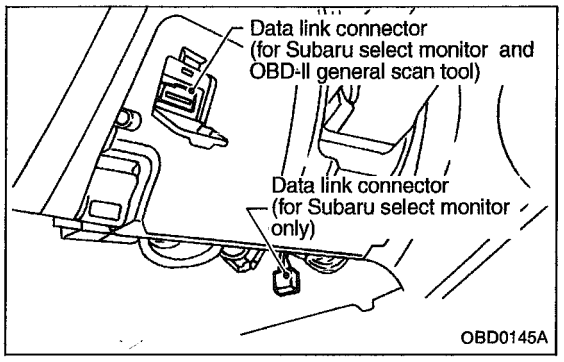


Connector & terminal
(B56) No. 20 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8H3.**

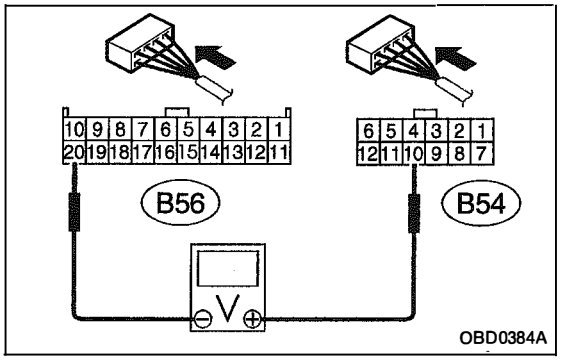
NO : Repair short circuit in harness between TCM and transmission connector.



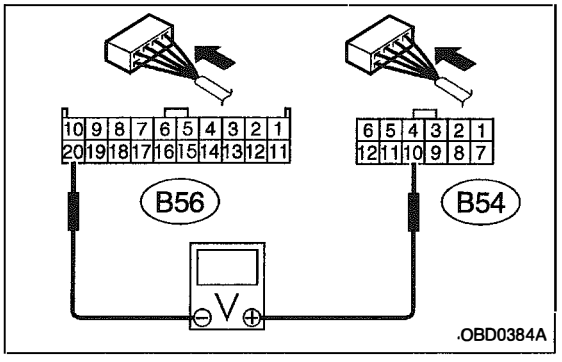
8H3	CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.
4) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
5) Start engine.
6) Read data on Subaru Select Monitor.
7) Designate mode function key.
Function mode F07 or F08
- F07: ATF temperature is indicated in "°F".
- F08: ATF temperature is indicated in "°C".

8) ATF temperature is above 20°C (68°F) in function mode F08 (F07).



9) Measure voltage between TCM connector terminal.
Connector & terminal
(B54) No. 10 (+) — (B56) No. 20 (–):
CHECK ***: Is the voltage between 2.9 and 4.0 V?***
YES : Go to next step 10).
NO : Go to next CHECK .
CHECK ***: Is the voltage between 2.9 and 4.0 V while shaking harness and connector of TCM?***
YES : Repair poor contact in TCM.
NO : Replace TCM.



10) Warm-up the transmission until ATF temperature is about 80°C (176°F) in function mode F08 (F07).
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.
11) Measure voltage between TCM connector terminal.
Connector & terminal
(B54) No. 10 (+) — (B56) No. 20 (–):

CHECK : ***Is the voltage between 1.0 and 1.4 V?***

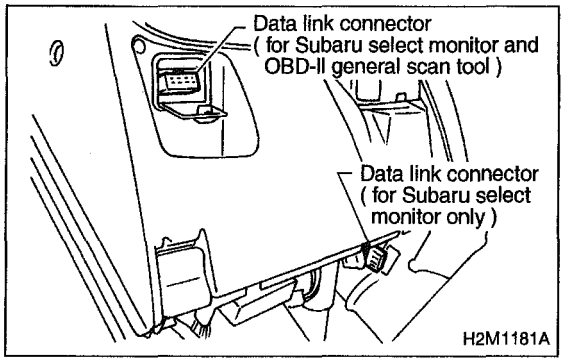
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the TCM.

NO : Go to next CHECK .

CHECK : ***Is the voltage between 1.0 and 1.4 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



- Using Subaru Select Monitor

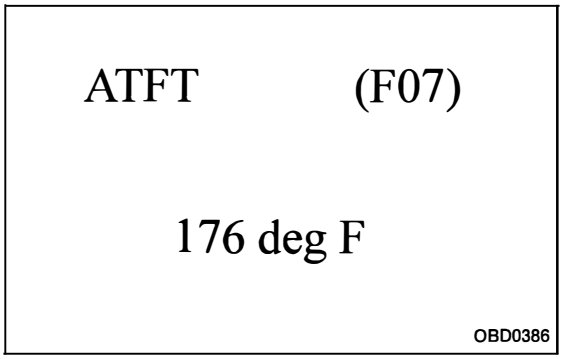
1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data on Subaru Select Monitor.
7) Designate mode function key.

Function mode F07 or F08

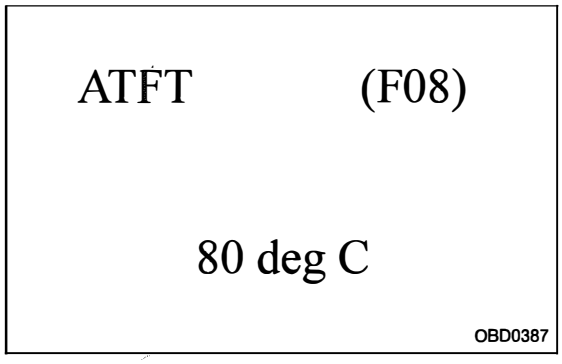
- F07: ATF temperature is indicated in "°F".
- F08: ATF temperature is indicated in "°C".



CHECK : ***Is the ATF temperature between 70 and 110°C (158 and 230°F).***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the ATF temperature sensor and transmission connector.

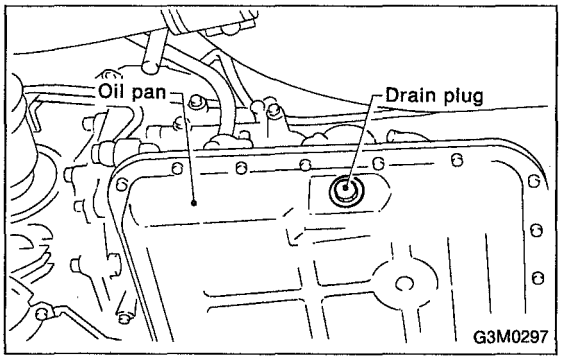
NO : Go to next CHECK .



CHECK : ***Is the ATF temperature between 70 and 110°C (158 and 230°F) by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



8H4	CHECK ATF TEMPERATURE SENSOR (IN TRANSMISSION).

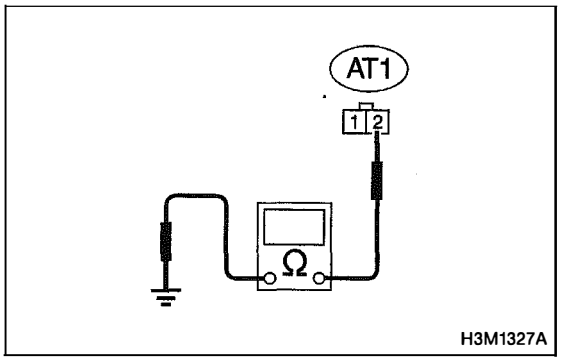
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Remove transmission connector from bracket.
4) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.

5) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

6) Remove oil pan, and disconnect connector from ATF temperature sensor connector.



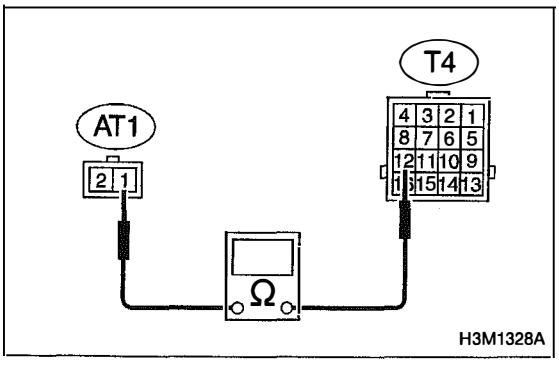
7) Measure resistance between ATF temperature sensor connector and transmission ground.

Connector & terminal
(AT1) No. 2 — Transmission ground:

CHECK : ***Is the resistance between 1.5 and 4.5 Ω?***

YES : Go to step **8H5**.

NO : Replace ATF temperature sensor.



8H5	CHECK HARNESS CONNECTOR BETWEEN TRANSMISSION AND ATF TEMPERATURE SENSOR.

1) Disconnect connector from transmission.
2) Measure resistance of harness between ATF temperature sensor and transmission connector.

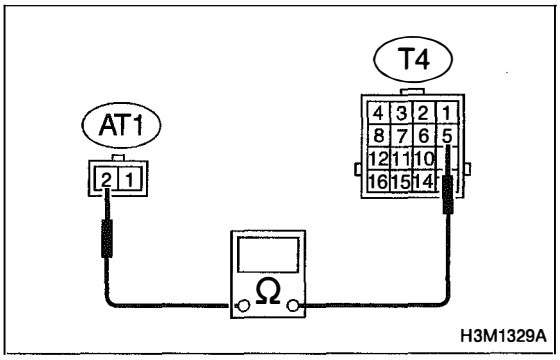
Connector & terminal
(T4) No. 12 — (AT1) No. 1:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ATF temperature sensor and transmission connector.
- Poor contact in ATF temperature sensor connector.
- Poor contact in transmission connector.



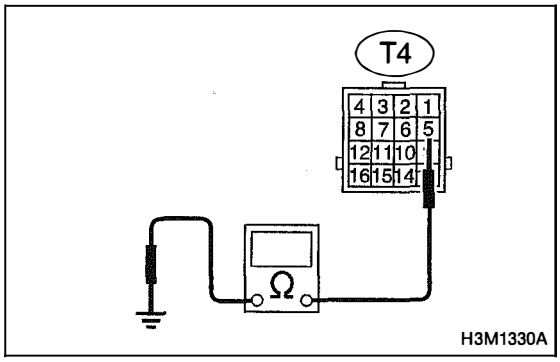
Connector & terminal
(T4) No. 5 — (AT1) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between ATF temperature sensor and transmission connector.
- Poor contact in ATF temperature sensor connector.
- Poor contact in transmission connector.



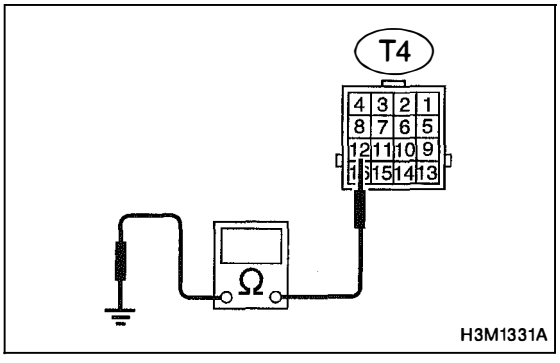
3) Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 5 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.



Connector & terminal
(T4) No. 12 — Transmission ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the ATF temperature sensor and transmission connector.

NO : Repair short circuit in harness between ATF temperature sensor and transmission connector.

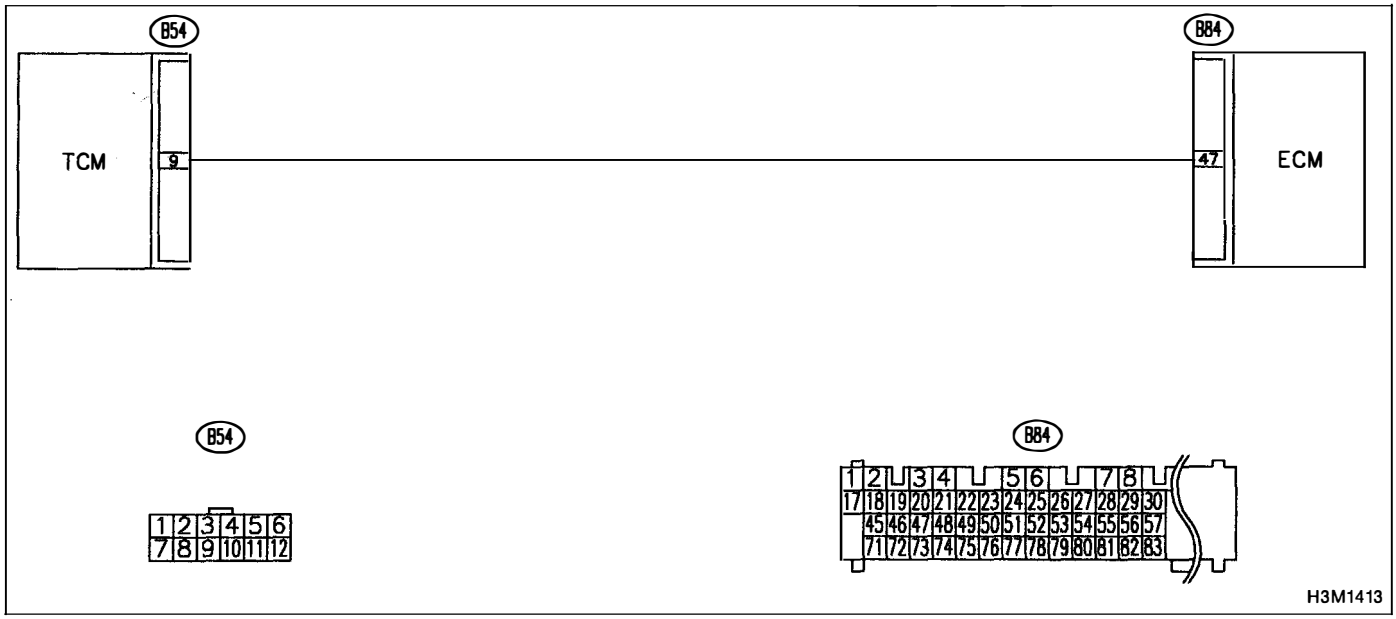
I: TROUBLE CODE 22
— MASS AIR FLOW SIGNAL —

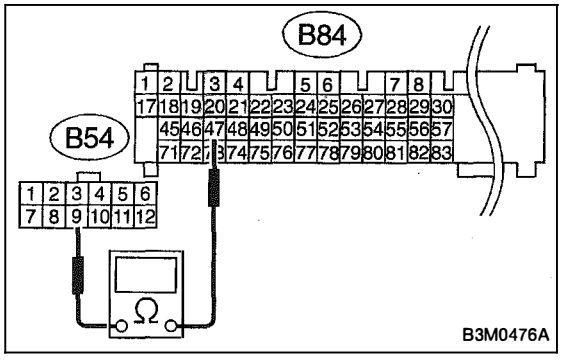
DIAGNOSIS:

Input signal circuit of TCM from ECM is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.





8I1	**CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.**

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

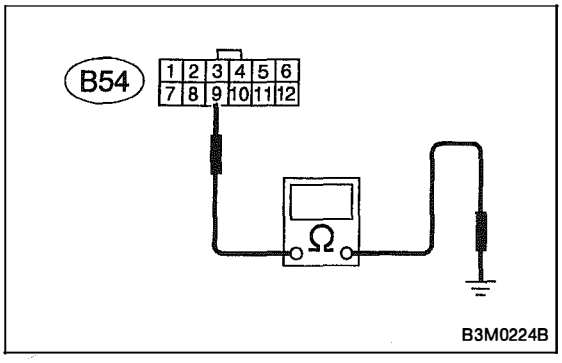
Connector & terminal
(B54) No. 9 — (B84) No. 47:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and ECM connector.
- Poor contact in TCM connector.
- Poor contact in ECM connector.



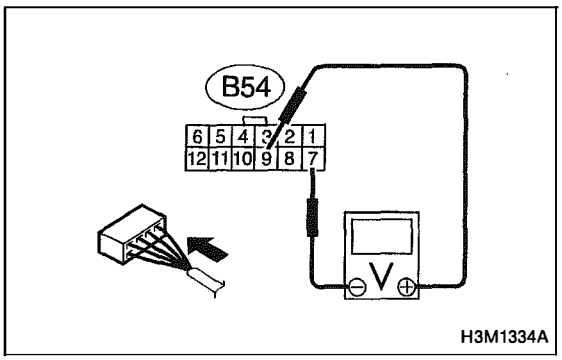
4) Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 9 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8I2**.

NO : Repair short circuit in harness between TCM and ECM connector.



8I2	CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Start the engine, and warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

3) Engine idling.
4) Measure voltage between TCM connectors.

Connector & terminal
(B54) No. 9 (+) — No. 7 (–):

CHECK ***: Is the voltage between 0.5 and 1.2 V?***

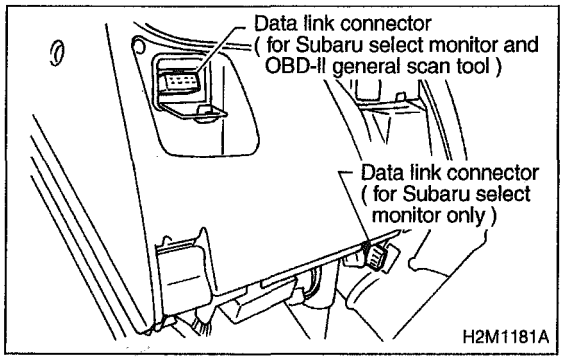
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

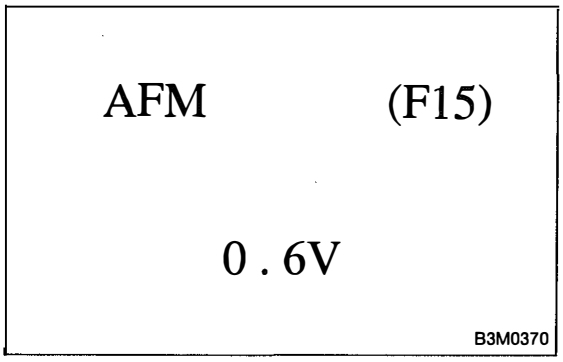
CHECK ***: Is the voltage between 0.5 V and 1.2 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



● Using Subaru Select Monitor
1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read data on Subaru Select Monitor.
8) Designate mode using function key.
Function mode: F15
● F15: Display shows mass air flow signal value sent from ECM.



CHECK : ***Is the value between 0.5 and 1.2 V in function mode F15?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK : ***Is the voltage between 0.5 V and 1.2 V by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

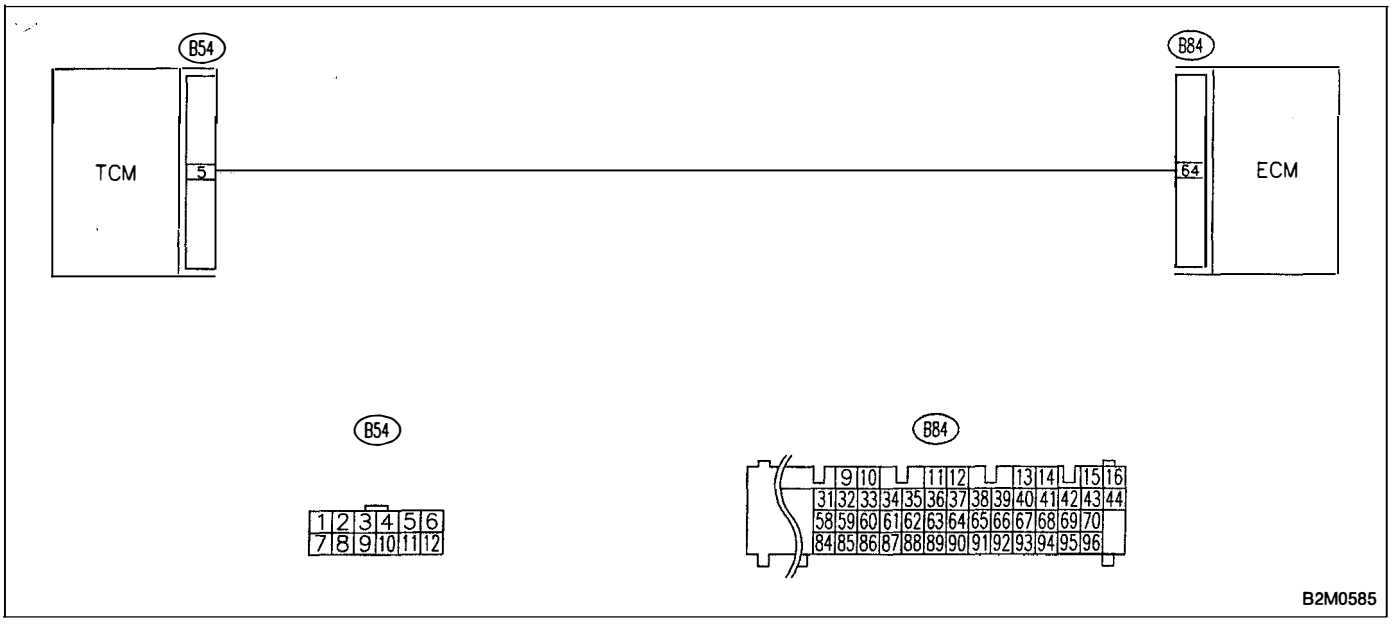
J: TROUBLE CODE 23
— ENGINE SPEED SIGNAL —

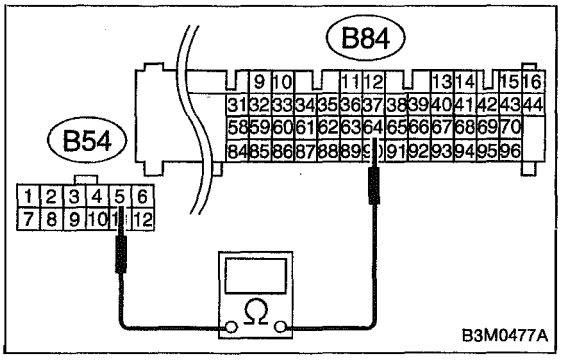
DIAGNOSIS:

Engine speed input signal circuit is open or shorted.

TROUBLE SYMPTOM:

- No lock-up (after engine warm-up).
- AT OIL TEMP indicator remains on when vehicle speed is "0".





8J1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

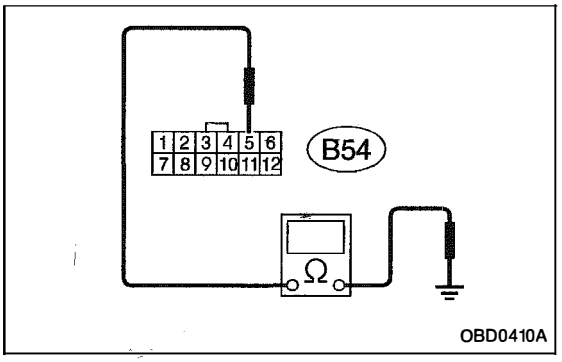
Connector & terminal
(B54) No. 5 — (B84) No. 64:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and ECM connector.
- Poor contact in TCM connector.
- Poor contact in ECM connector.



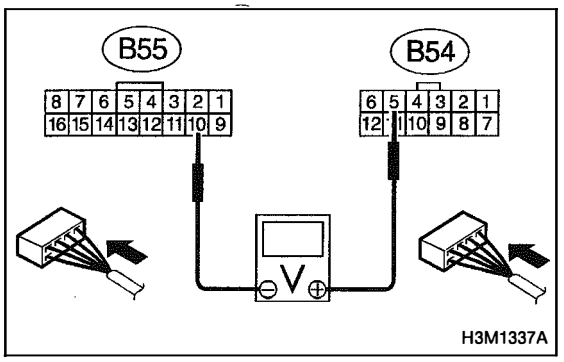
4) Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 5 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **8J2**.

NO : Repair short circuit in harness between TCM and ECM connector.



8J2	CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connectors.

Connector & terminal
(B54) No. 5 (+) — (B55) No. 10 (–):

CHECK : ***Is the voltage more than 10.5 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK : ***Is the voltage more than 10.5 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

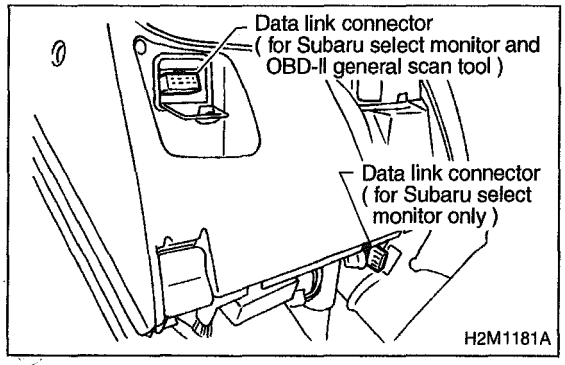
NO : Go to next CHECK .

CHECK : ***Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***

YES : Replace TCM.

NOTE:
Install the old ECM.

NO : Replace ECM.



● Using Subaru Select Monitor
1) Connect connectors to TCM and ECM.
2) Turn ignition switch to OFF.
3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the engine until engine coolant temperature is above 80°C (176°F).
6) Engine idling.
7) Read on Subaru Select Monitor.
8) Designate mode using function key.
Function mode: F06
● F06: Display shows engine speed signal value sent from ECM.

CHECK **: *Is the revolution value the same as the tachometer reading shown on the combination meter?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK **: *Does the value shown on Subaru Select Monitor become equal to the tachometer reading when shaking TCM connector and harness?***

YES : Repair poor contact in TCM connector.

NO : Replace TCM.

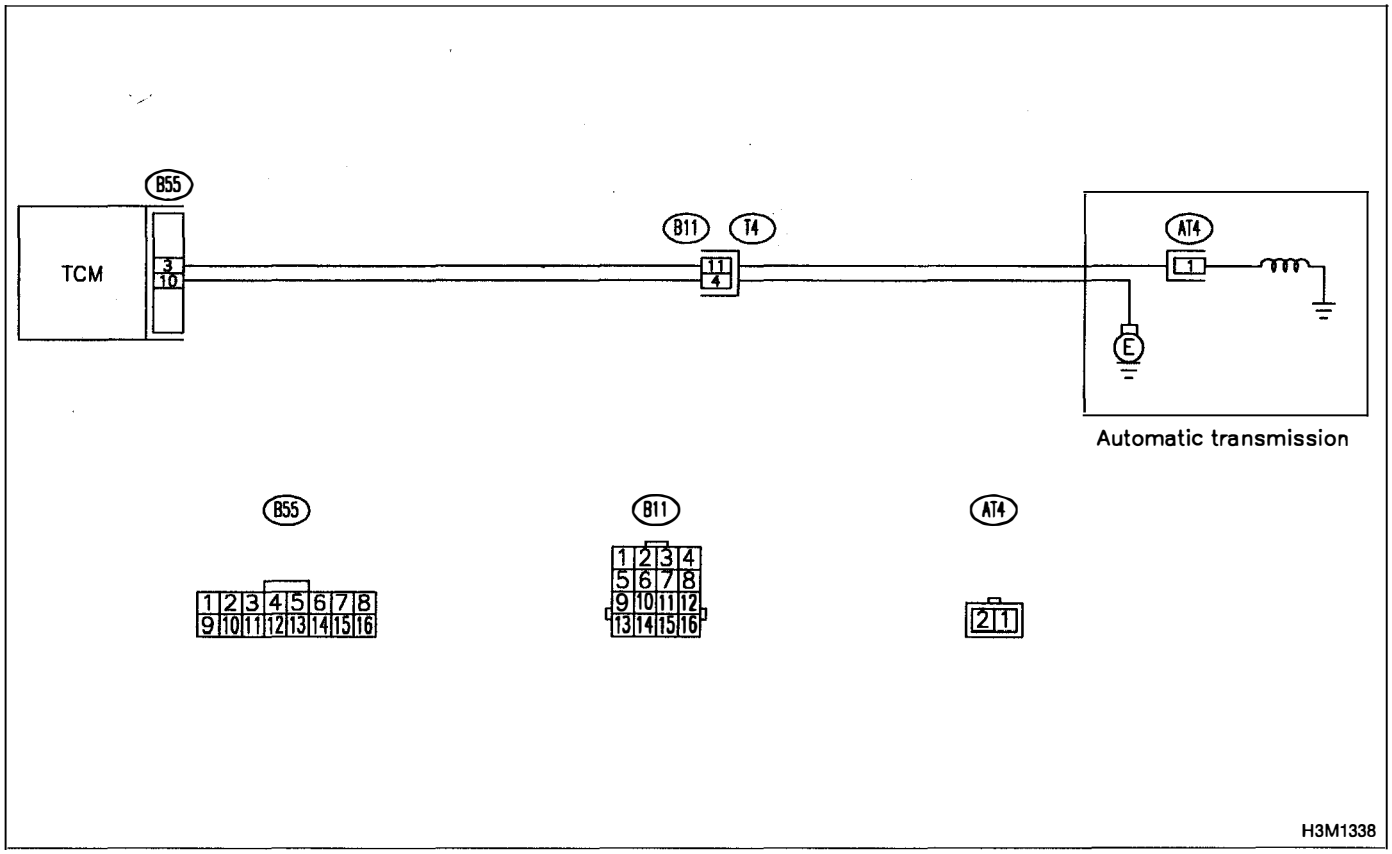
K: TROUBLE CODE 24
— DUTY SOLENOID C —

DIAGNOSIS:

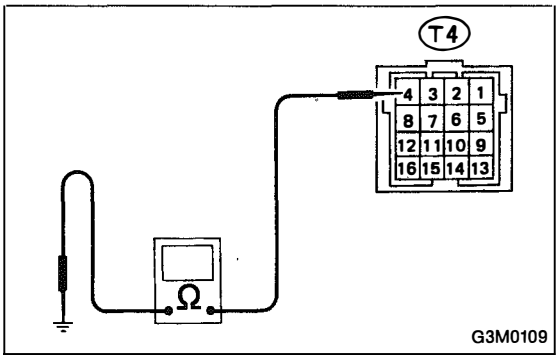
Output signal circuit of duty solenoid C is open or shorted.

TROUBLE SYMPTOM:

Excessive "braking" in tight corners.



H3M1338



G3M0109

8K1	CHECK DUTY SOLENOID C GROUND LINE.

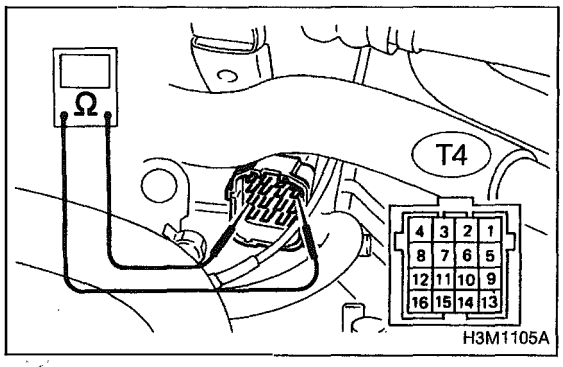
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission ground.

Connector & terminal
(T4) No. 4 — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **8K2**.

NO : Repair open circuit in transmission harness connector.



8K2	CHECK DUTY SOLENOID C.

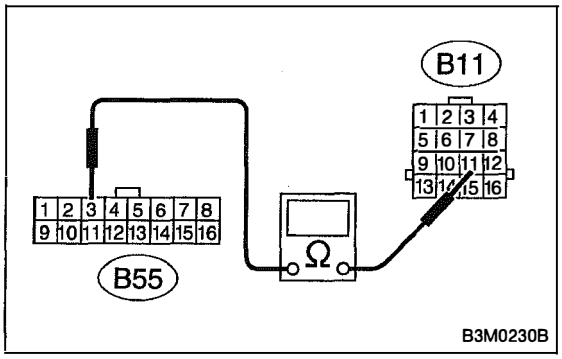
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector and transmission terminals.

Connector & terminal
(T4) No. 11 — No. 4:

CHECK ***: Is the resistance between 9 and 17 Ω?***

YES : Go to step **8K3**.

NO : Go to step **8K5**.



8K3	CHECK HARNESS CONNECTOR BETWEEN TCM AND TRANSMISSION.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

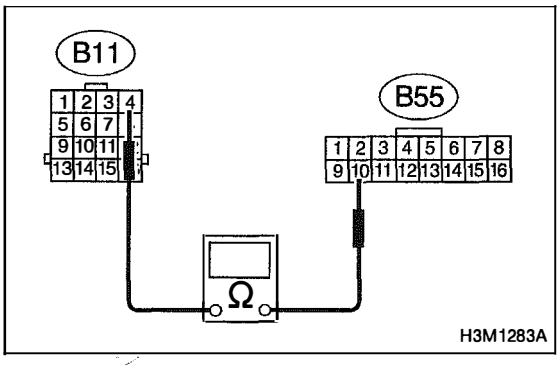
Connector & terminal
(B55) No. 3 — (B11) No. 11:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.



Connector & terminal
(B55) No. 10 — (B11) No. 4:

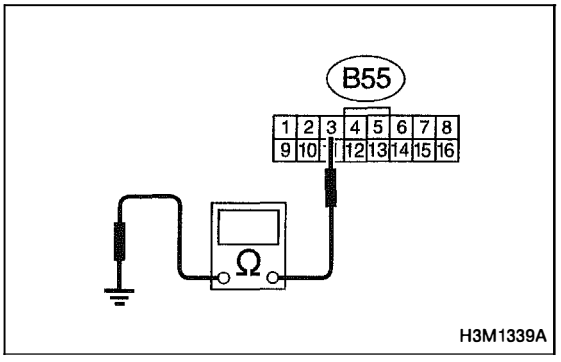
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission connector.

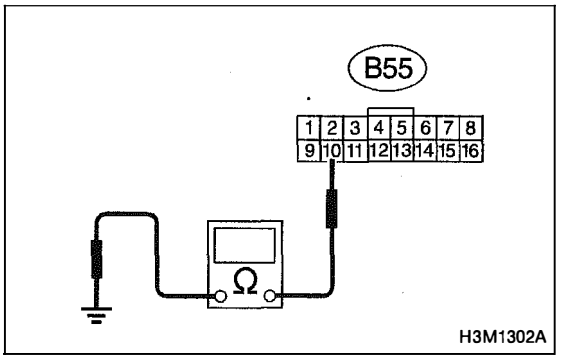


Connector & terminal
(B55) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8K4**.

NO : Repair short circuit in harness between TCM and transmission connector.

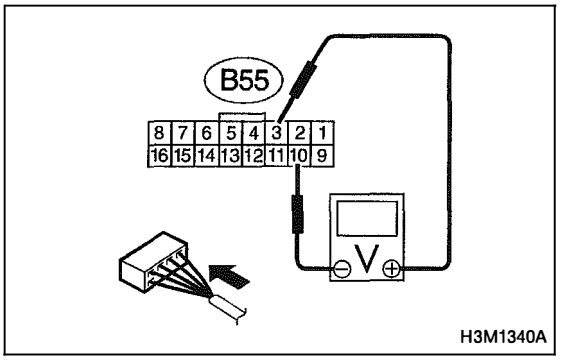


Connector & terminal
(B55) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8K4**.

NO : Repair short circuit in harness between TCM and transmission connector.



8K4	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Turn ignition switch to ON (engine OFF).
4) Throttle is fully closed.
5) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 3 (+) — No. 10 (–):

CHECK ***: Is the voltage less than 1 V in "P" position?***

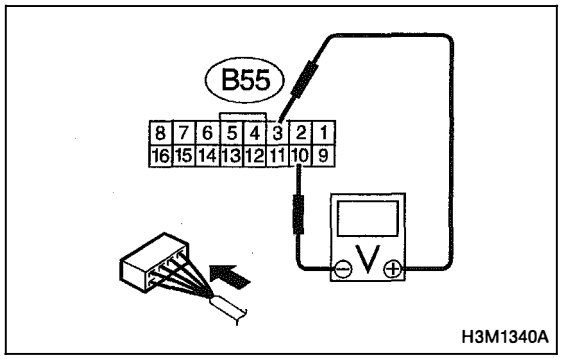
YES : Go to next step CHECK1 .

NO : Go to next CHECK .

CHECK ***: Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B55) No. 3 (+) — No. 10 (–):

CHECK1 ***: Is the voltage between 5 V and 7 V in "D" position?***

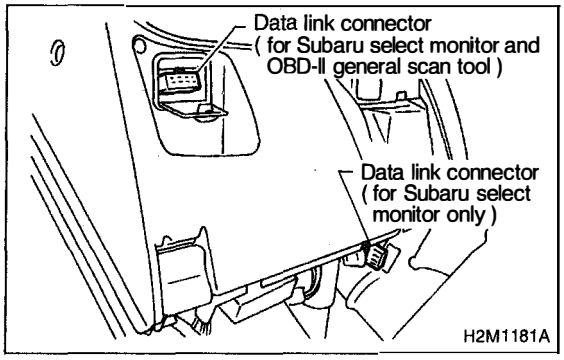
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the ATF temperature sensor and transmission connector.

NO : Go to next CHECK .

CHECK ***: Is the voltage between 5 V and 7 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

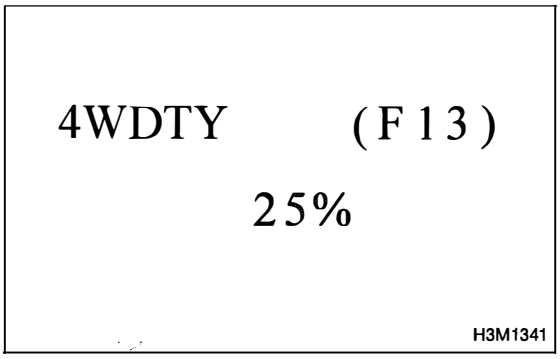


- Using Subaru Select Monitor

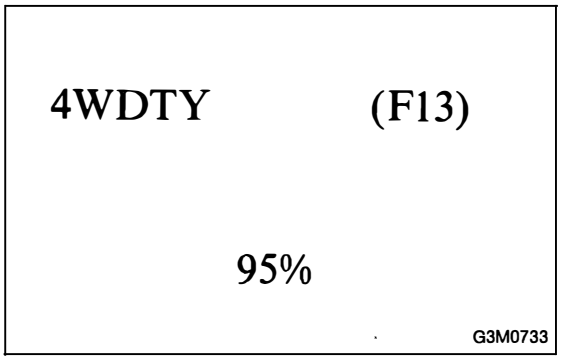
1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.
4) Turn ignition switch to ON (engine OFF) and turn Subaru Select Monitor switch to ON.
5) Move selector lever to "D" with throttle fully open (vehicle speed 0 km/h or 0 m/h).
6) Read data on Subaru Select Monitor.
7) Designate mode using function key.

Function mode F13

- F13: AWD duty is indicated in "%".



CHECK : ***Is the value 25% in function mode F13?***
YES : Go to next step 8).
NO : Go to next CHECK .
CHECK : ***Is the value 25% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in TCM.
NO : Replace TCM.

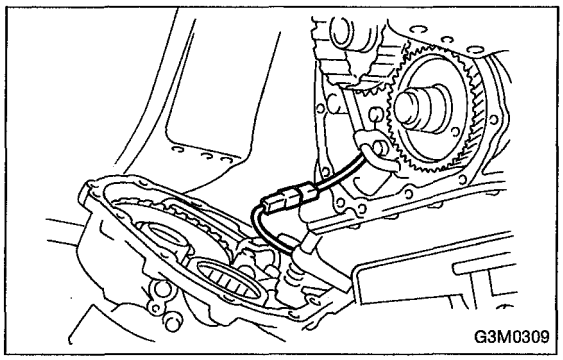


8) Set FWD mode.
9) Throttle fully closed.
CHECK : ***Is the value 95% in function mode F13?***
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the ATF temperature sensor and transmission connector.
NO : Go to next CHECK .
CHECK : ***Is the value 95% by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***
YES : Repair poor contact in TCM.
NO : Replace TCM.

8K5	**CHECK DUTY SOLENOID C (IN TRANSMISSION).**

1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

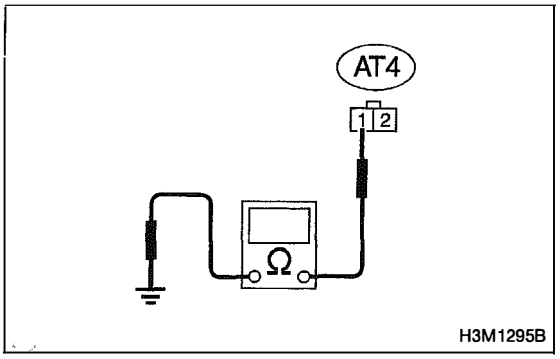
CAUTION:
On AWD models, make sure that all wheels are raised off floor.



3) Drain automatic transmission fluid.

CAUTION:
Do not drain the automatic transmission fluid until it cools down.

4) Remove extension case, and disconnect connector from duty solenoid C.
<Ref. to 3-2 [W6A0].>

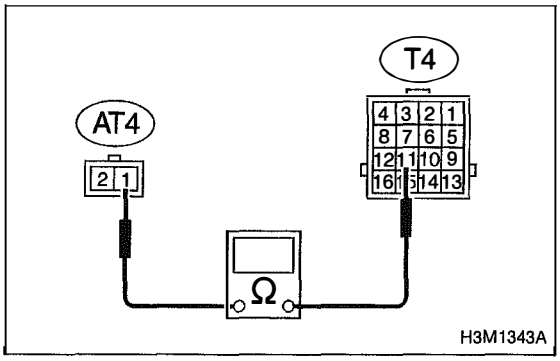


5) Measure resistance between duty solenoid C connector and transmission ground.

CHECK : ***Terminal***
(AT4) No. 1 — Transmission ground:
Is the resistance between 9 and 17 Ω?

YES : Go to step **8K6**.

NO : Replace duty solenoid C.



8K6	CHECK HARNESS CONNECTOR BETWEEN DUTY SOLENOID C AND TRANSMISSION.

1) Disconnect connector from transmission.
2) Remove transmission bracket.
3) Measure resistance of harness between duty solenoid C and transmission connector.

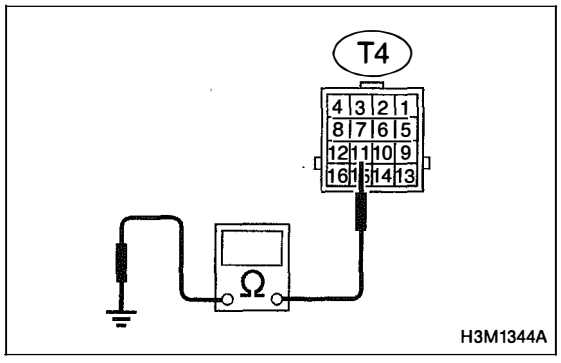
Connector & terminal
(T4) No. 11 — (AT4) No. 1:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between duty solenoid C and transmission connector.
- Poor contact in duty solenoid C connector.
- Poor contact in transmission connector.



4) Measure resistance of harness between transmission connector and transmission ground.

Connector & terminal
(T4) No. 11 — Transmission ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or contact in the duty solenoid C and transmission connector.

NO : Repair short circuit in harness between duty solenoid C and transmission connector.

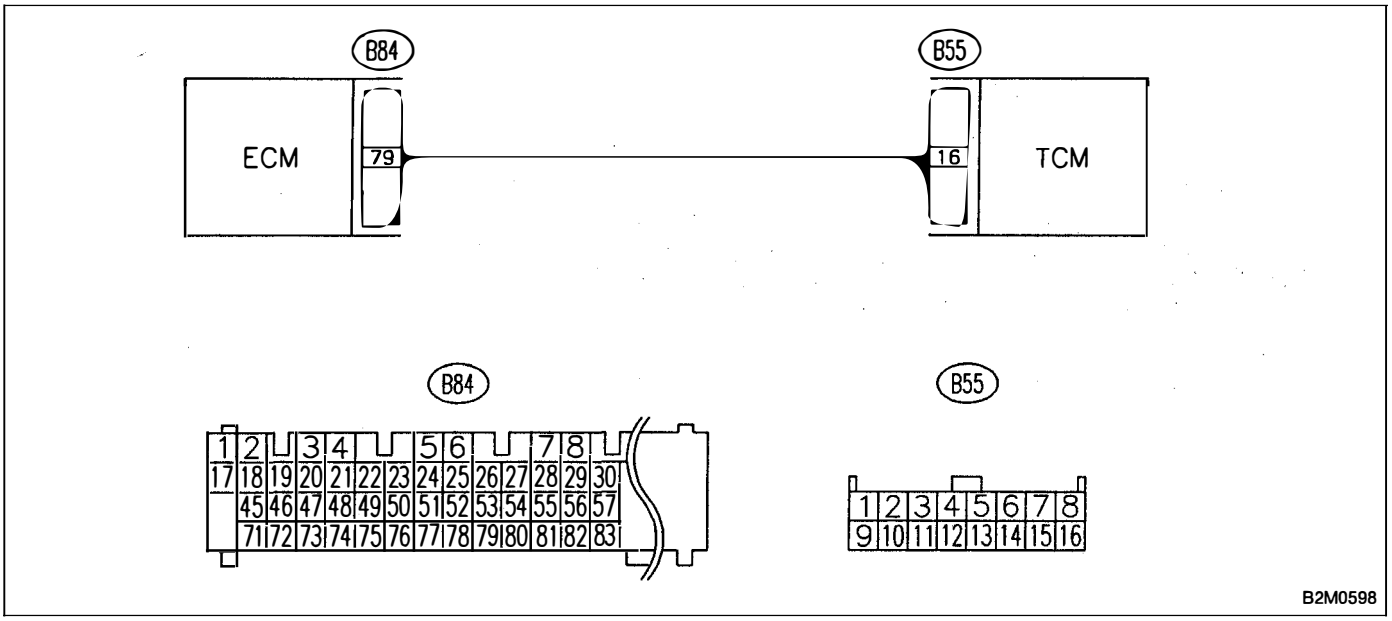
L: TROUBLE CODE 25
— TORQUE CONTROL SIGNAL —

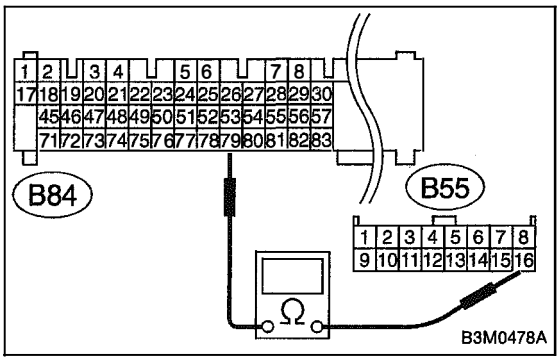
DIAGNOSIS:

- Torque control signal is not emitted from TCM.
- The signal circuit is open or shorted.

TROUBLE SYMPTOM:

Excessive shift shock.





8L1	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Turn ignition switch to OFF.
2) Disconnect connectors from TCM and ECM.
3) Measure resistance of harness between TCM and ECM connector.

Connector & terminal
(B55) No. 16 — (B84) No. 79:

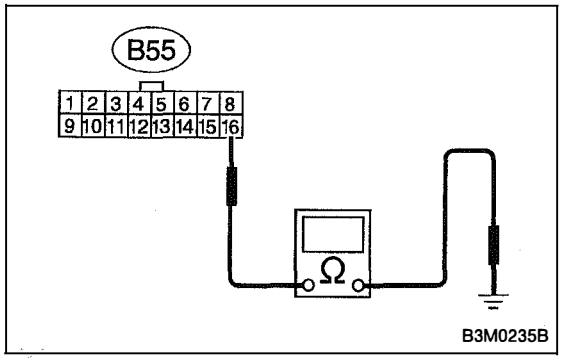
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and ECM connector.
- Poor contact in TCM connector.
- Poor contact in ECM connector.



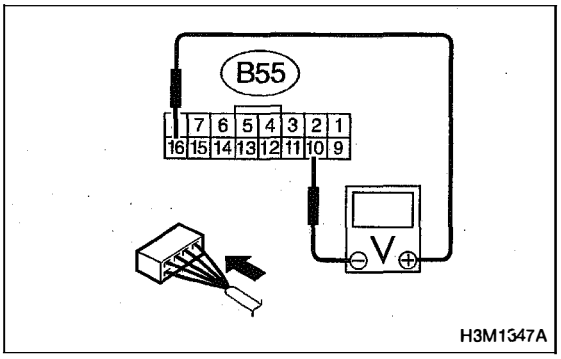
4) Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B55) No. 16 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8L2**.

NO : Repair short circuit in harness between TCM and ECM connector.



8L2	CHECK OUTPUT SIGNAL EMITTED FROM TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and ECM.
3) Turn ignition switch to ON (engine OFF).
4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 16 (+) — No. 10 (–):

CHECK ***: Is the voltage between 4 and 6 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK ***: Is the voltage between 4 V and 6 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Go to next CHECK .

CHECK ***: Replace ECM with a new one. Does the trouble code appear again, after the memory has been cleared?***

YES : Replace TCM.

NOTE:
Install the old ECM.

NO : Replace ECM.

M: TROUBLE CODE 31

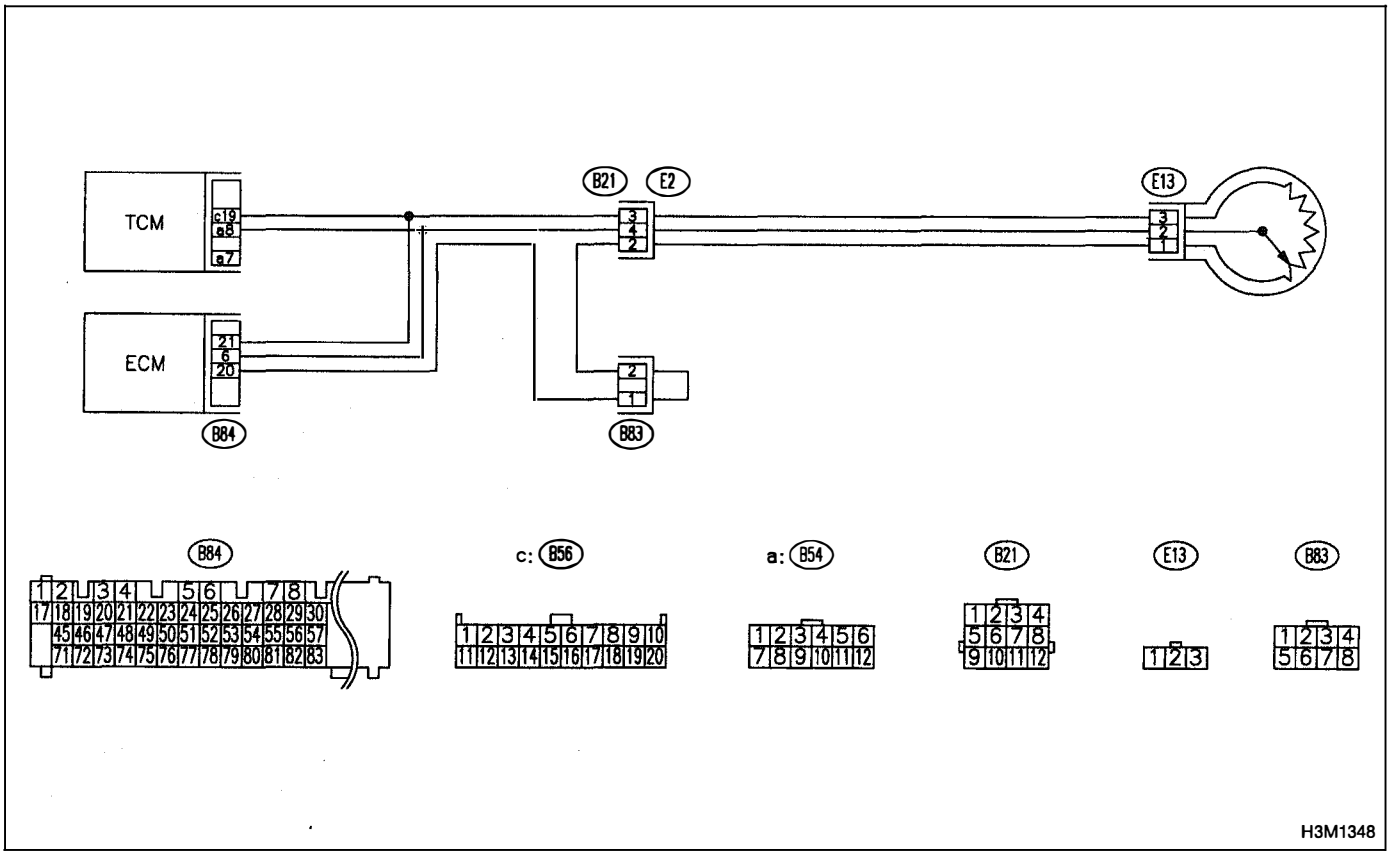
— THROTTLE POSITION SENSOR —

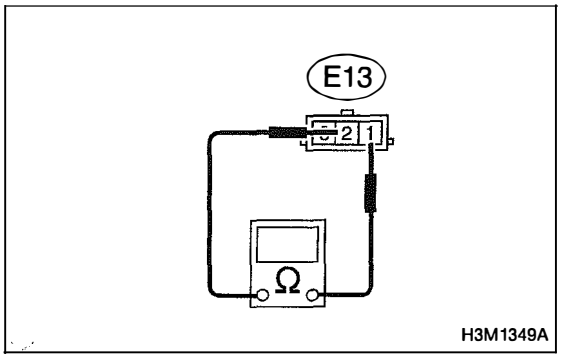
DIAGNOSIS:

Input signal circuit of throttle position sensor is open or shorted.

TROUBLE SYMPTOM:

Shift point too high or too low; engine brake not effected in "3" range: excessive shift shock; excessive tight corner "braking".





8M1	CHECK THROTTLE POSITION SENSOR.

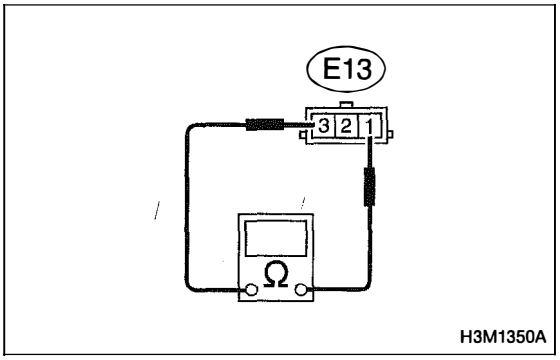
1) Turn ignition switch to OFF.
2) Disconnect connector from throttle position sensor.
3) Measure resistance between throttle position sensor connector receptacle's terminals.

Terminals
(E13) No. 1 — No. 2:

CHECK ***: Is the resistance between 0.3 and 0.7 kΩ?***

YES : Go to next CHECK .

NO : Replace throttle position sensor.

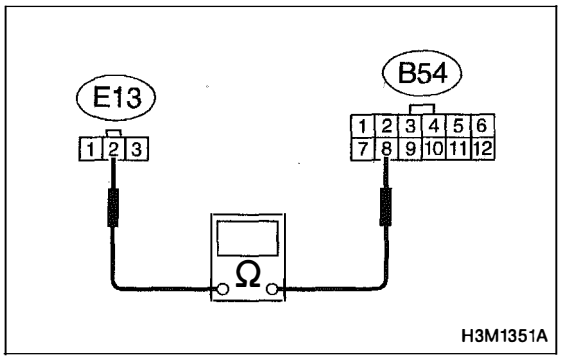


Terminals
(E13) No. 1 — No. 3:

CHECK ***: Is the resistance between 3.5 and 6.5 kΩ?***

YES : Go to step **8M2**.

NO : Replace throttle position sensor.



8M2	CHECK HARNESS CONNECTOR BETWEEN TCM AND THROTTLE POSITION SENSOR.

1) Disconnect connector from TCM.
2) Measure resistance of harness between TCM and throttle position sensor connector.

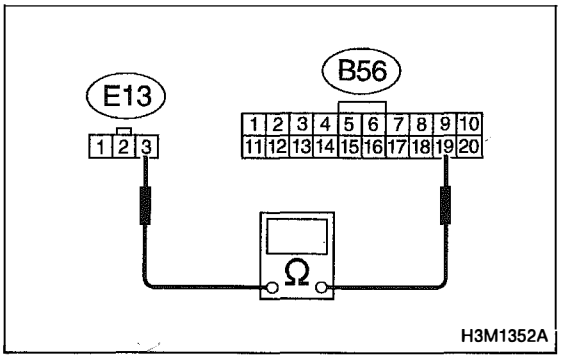
Connector & terminal
(B54) No. 8 — (E13) No. 2:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and throttle position sensor.
- Poor contact in TCM connector.
- Poor contact in throttle position sensor connector.
- Poor contact in coupling connector (B21).



Connector & terminal
(B56) No. 19 — (E13) No. 3:

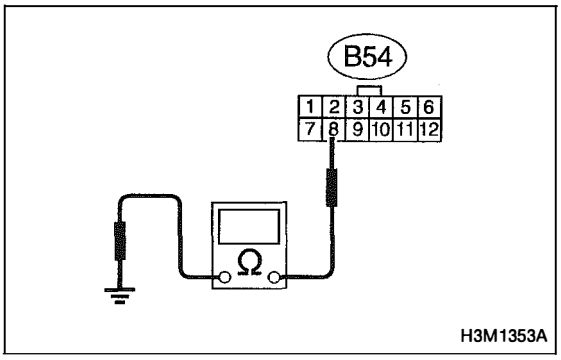
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 3).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Open circuit in harness between TCM and throttle position sensor.
- Poor contact in TCM connector.
- Poor contact in throttle position sensor connector.
- Poor contact in coupling connector (B21).



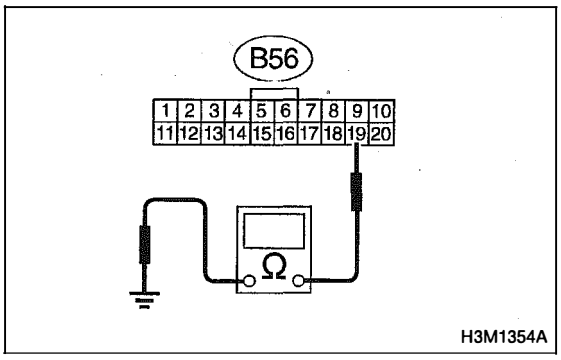
3) Measure resistance of harness between TCM connector and chassis ground.

Connector & terminal
(B54) No. 8 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and throttle position sensor.

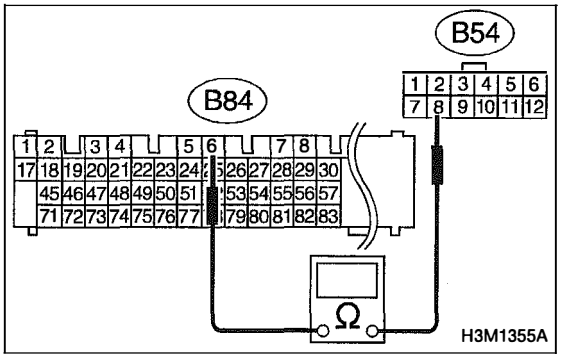


Connector & terminal
(B56) No. 19 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8M3**.

NO : Repair short circuit in harness between TCM and throttle position sensor.



8M3	CHECK HARNESS CONNECTOR BETWEEN TCM AND ECM.

1) Disconnect connector from ECM.
2) Measure resistance of harness between TCM and ECM connector.

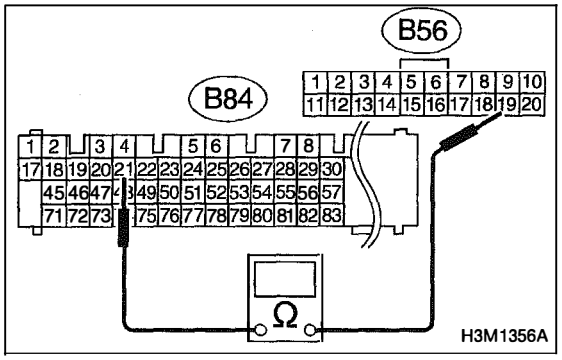
Connector & terminal
(B54) No. 8 — (B84) No. 6:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and ECM.
- Poor contact in TCM connector.
- Poor contact in ECM connector.



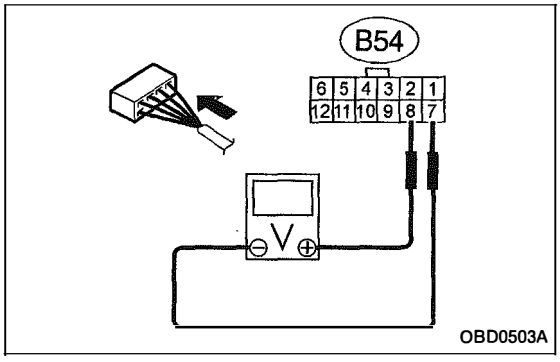
Connector & terminal
(B56) No. 19 — (B84) No. 21:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to step **8M4**.

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and ECM.
- Poor contact in TCM connector.
- Poor contact in ECM connector.



8M4	CHECK INPUT SIGNAL FOR TCM.

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Turn ignition switch to ON (engine OFF).
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 8 (+) — No. 7 (–):

CHECK : ***Is the voltage between 0.3 and 0.7 V in throttle fully closed?***

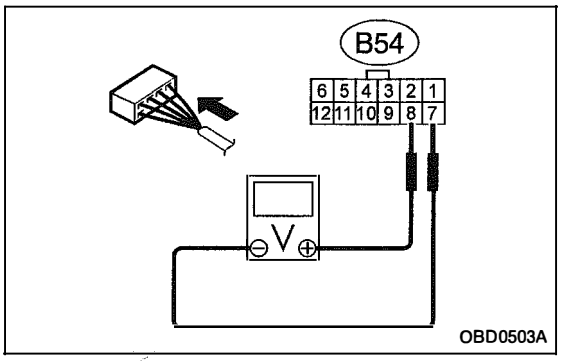
YES : Go to next step CHECK .

NO : Go to next CHECK1 .

CHECK1 : ***Is the voltage between 0.3 and 0.7 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B54) No. 8 (+) — No. 7 (–):

CHECK ***: Is the voltage between 4.3 and 4.9 V with throttle fully open?***

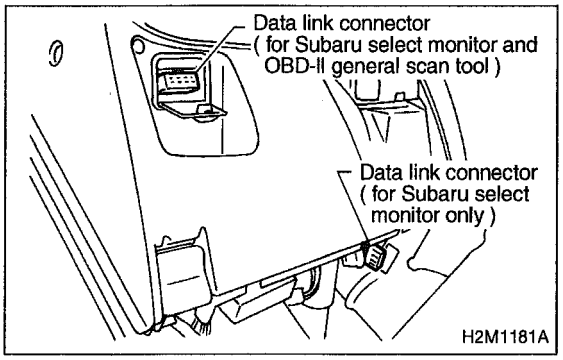
YES : Go to step **8M5.**

NO : Go to next CHECK .

CHECK ***: Is the voltage between 4.3 and 4.9 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

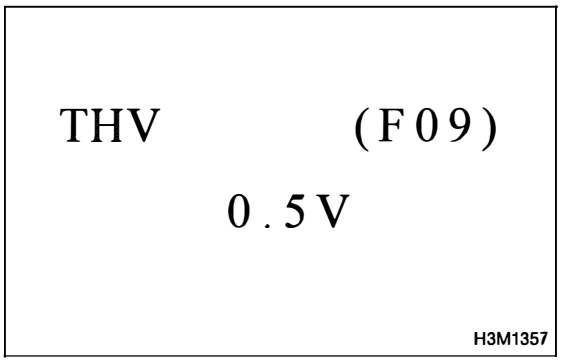


- Using Subaru Select Monitor

1) Connect connectors to TCM, throttle position sensor and ECM.
2) Connect Subaru Select Monitor to data link connector.
3) Turn ignition switch to ON (engine OFF).
4) Turn Subaru Select Monitor switch to ON.
5) Throttle fully closed.
6) Read data on Subaru Select Monitor.
7) Designate mode using function key.

Function mode F09

- F09: Throttle position sensor input signal is indicated.



CHECK ***: Is the value voltage between 0.3 and 0.7 V in function mode F09?***

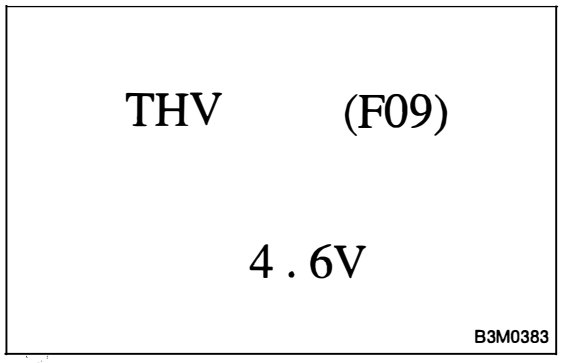
YES : Go to next step 8).

NO : Go to next CHECK .

CHECK ***: Is the voltage between 0.3 and 0.7 V by shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



8) Throttle fully open.

CHECK : ***Is the value voltage between 4.3 and 4.9 V in function model F09?***

NOTE:
Must be changed correspondingly with accelerator pedal operation (from "released" to "depressed" position).

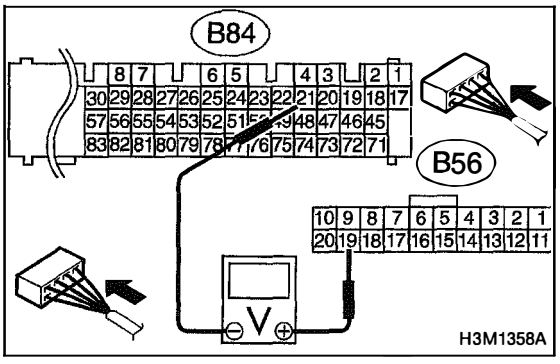
YES : Go to step **8M5**.

NO : Go to next CHECK .

CHECK : ***Is the voltage between 4.3 and 4.9 V by shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



8M5	CHECK INPUT SIGNAL FOR TCM (THROTTLE POSITION SENSOR POWER SUPPLY).

Measure voltage between TCM connector terminals.

Connector & terminal
(B56) No. 19 (+) — (B84) No. 21 (–):

CHECK : ***Is the voltage between 5.02 and 5.22 V?***

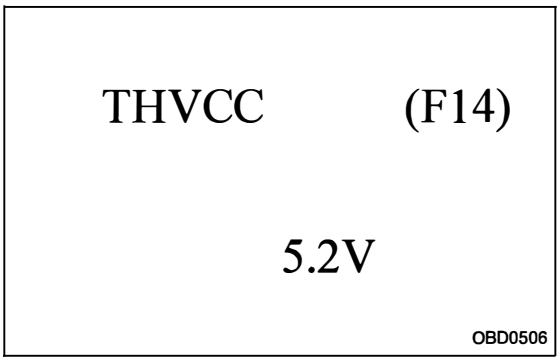
YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

NO : Go to next CHECK .

CHECK : ***Is the voltage between 5.02 and 5.22 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



● Using Subaru Select Monitor
1) Read data on Subaru Select Monitor.
2) Designate mode using function key.
Function mode F14
● F14: Throttle position sensor power supply voltage is indicated.

CHECK : ***Is the value voltage between 5.02 and 5.22 V in function mode F14?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in TCM.

CHECK : ***Is the voltage between 5.02 and 5.22 V by shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

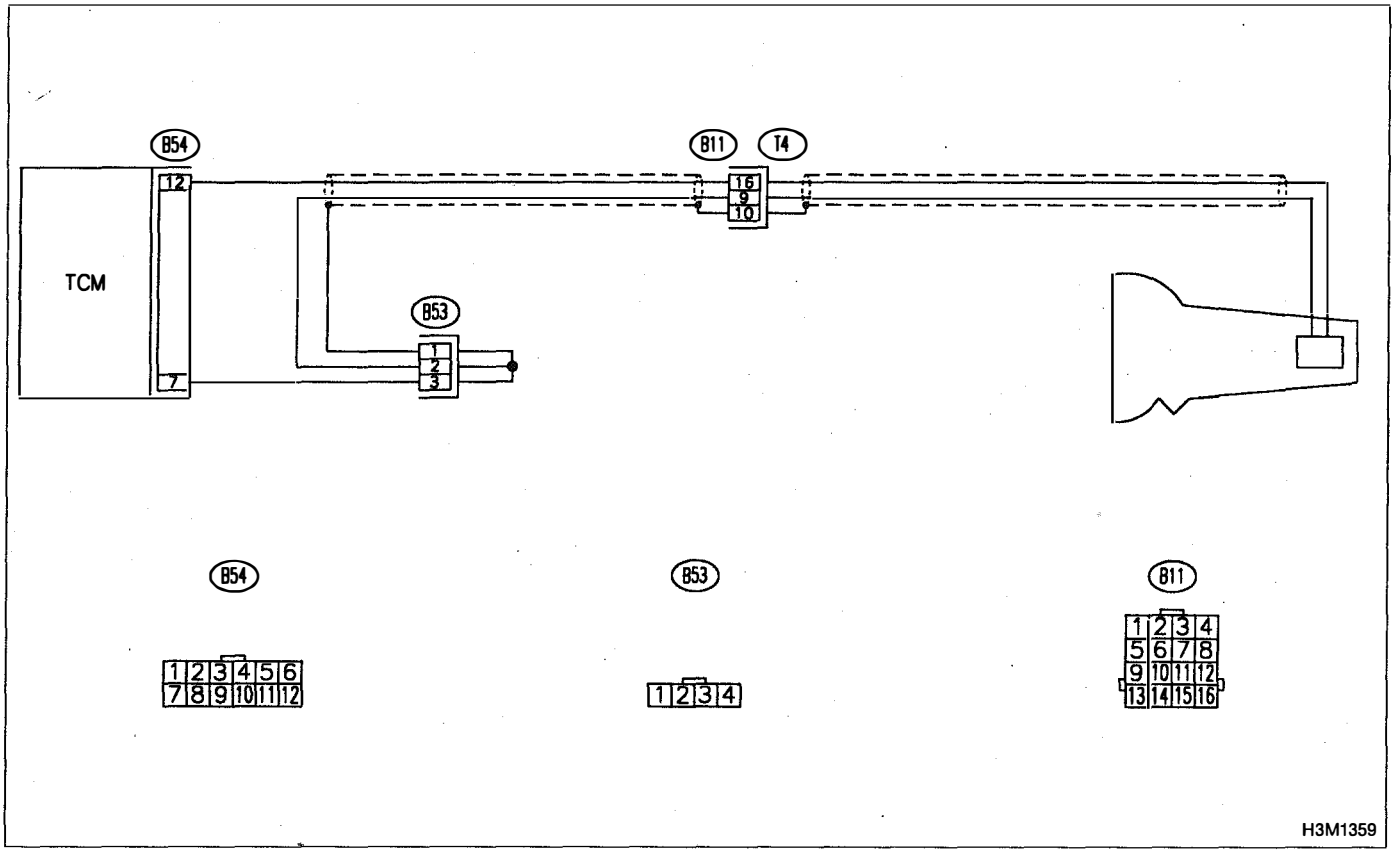
N: TROUBLE CODE 32
— VEHICLE SPEED SENSOR 1 —

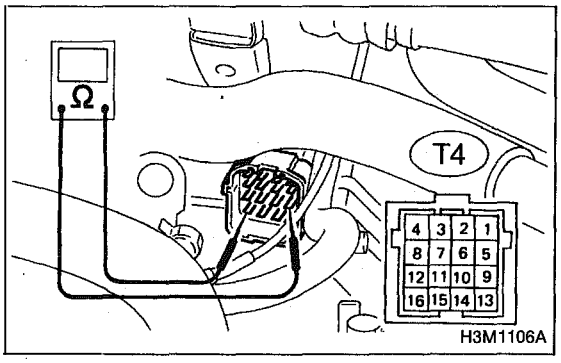
DIAGNOSIS:

Input signal circuit of TCM is open or shorted.

TROUBLE SYMPTOM:

No lock-up or excessive tight corner "braking".





8N1	CHECK VEHICLE SPEED SENSOR 1.

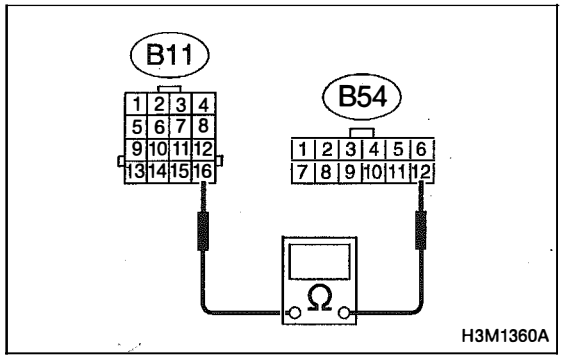
1) Turn ignition switch to OFF.
2) Disconnect connector from transmission.
3) Measure resistance between transmission connector receptacle's terminals.

Connector & terminal
(T4) No. 16 — No. 9:

(CHECK) ***: Is the resistance between 450 and 720 Ω?***

(YES) : Go to step **8N2**.

(NO) : Replace vehicle speed sensor 1 connector.



8N2	CHECK HARNESS BETWEEN TCM AND TRANSMISSION CONNECTOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from transmission and TCM.
3) Measure resistance of harness between TCM and transmission connector.

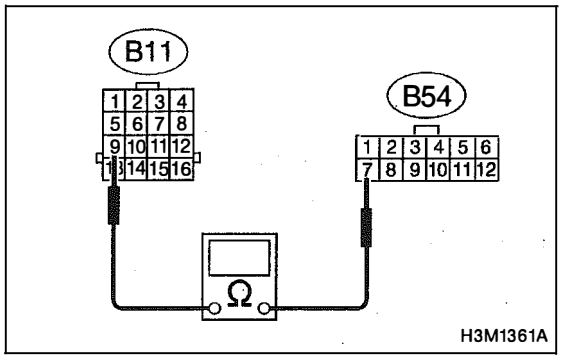
Connector & terminal
(B54) No. 12 — (B11) No. 16:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission.



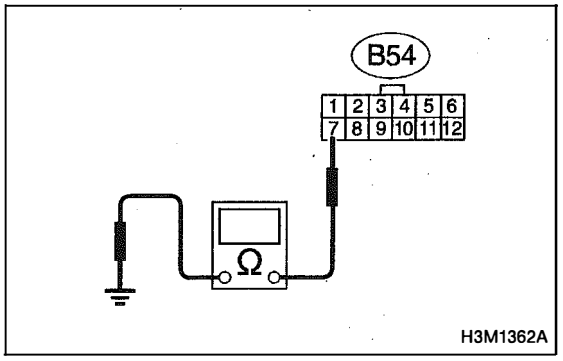
Connector & terminal
(B54) No. 7 — (B11) No. 9:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and transmission connector.
- Poor contact in TCM.
- Poor contact in transmission.
- Poor contact in shield joint connector (B53).

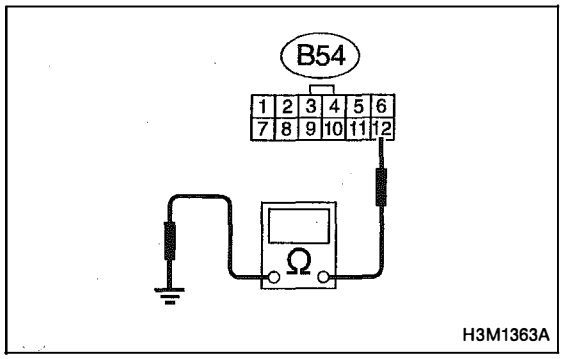


Connector & terminal
(B54) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to next CHECK .

NO : Repair short circuit in harness between TCM and transmission connector.



Connector & terminal
(B54) No. 12 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8N3.**

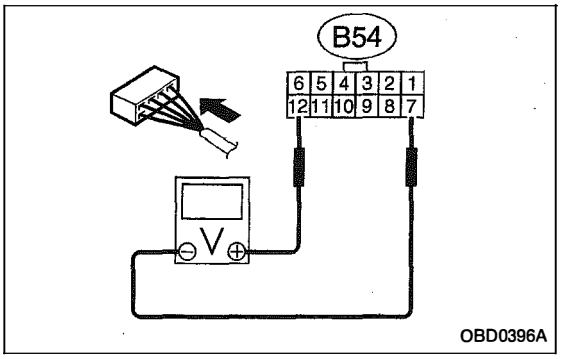
NO : Repair short circuit in harness between TCM and transmission connector.

8N3	CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

4) Start the engine and set vehicle in 20 km/h (12 m/h) condition.



5) Measure voltage between TCM connector terminals.

Connector & terminal
(B54) No. 12 (+) — No. 7 (–):

CHECK ***: Is the voltage more than AC 1 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

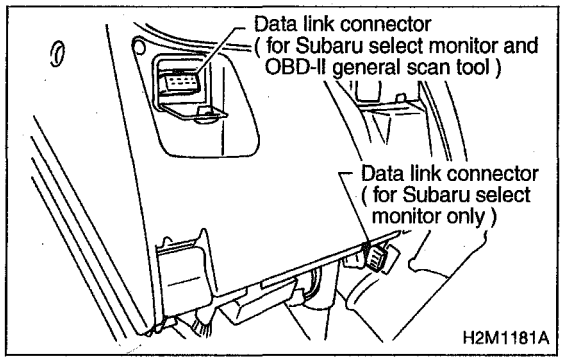
NO : Go to next CHECK .

CHECK ***: Is the voltage more than AC 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

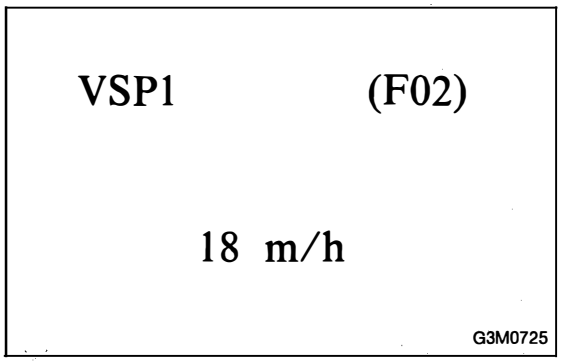


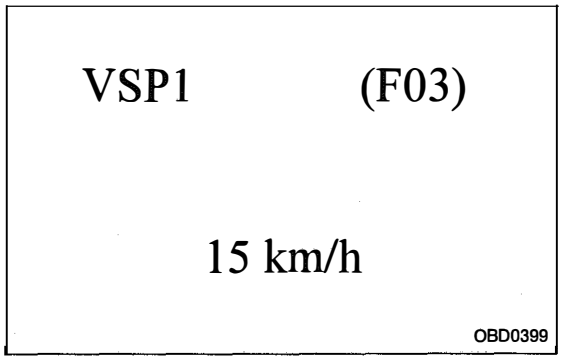
● Using Subaru Select Monitor
1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Connect Subaru Select Monitor to data link connector.

4) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.

5) Turn ignition switch to ON and turn Subaru Select Monitor switch to ON.
6) Start the engine.
7) Read data on Subaru Select Monitor.
8) Designate mode using function key.
Function mode F02 or F03
● F02: Compare speedometer with Subaru Select Monitor indications.
● F02: Vehicle speed is indicated in "m/h".
● F03: Compare speedometer with Subaru Select Monitor indications.
● F03: Vehicle speed is indicated in "km/h".





CHECK : ***Are Select Monitor indications noted anywhere between vehicle speeds listed under the F02 and/or F03 function modes, and speedometer indications? Refer to the table below.***

Speedometer (in combination meter)	Function mode F02	Function mode F03
20 (m/h or km/h)	19 — 22 (m/h)	18 — 23 (km/h)
40 (m/h or km/h)	39 — 42 (m/h)	38 — 43 (km/h)
60 (m/h or km/h)	58 — 62 (m/h)	58 — 63 (km/h)

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK : ***Is the vehicle speed within the range of table by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM.

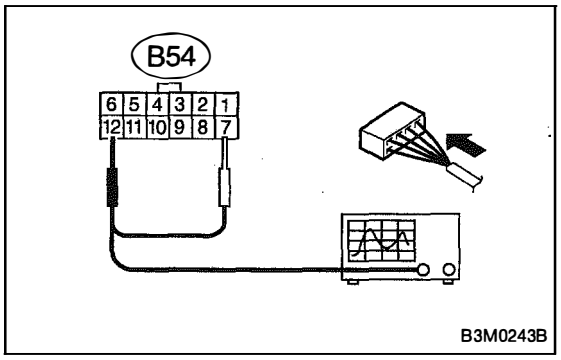
NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

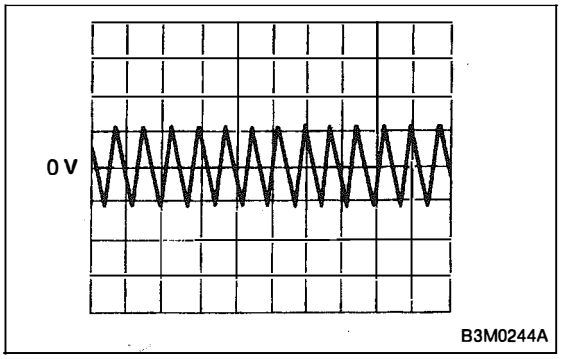
- Using Oscilloscope

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and transmission.
3) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.



4) Set oscilloscope to TCM connector terminals.
Position prove; (B54) No. 12
Earth lead; (B54) No. 7
5) Start the engine and set vehicle in 20 km/h (12 m/h) condition.
6) Measure signal voltage indicated on oscilloscope.



CHECK ***: Is the signal voltage more than AC 1 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK ***: Is the voltage more than AC 1 V by shaking harness and connector of TCM while monitoring the value with oscilloscope?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

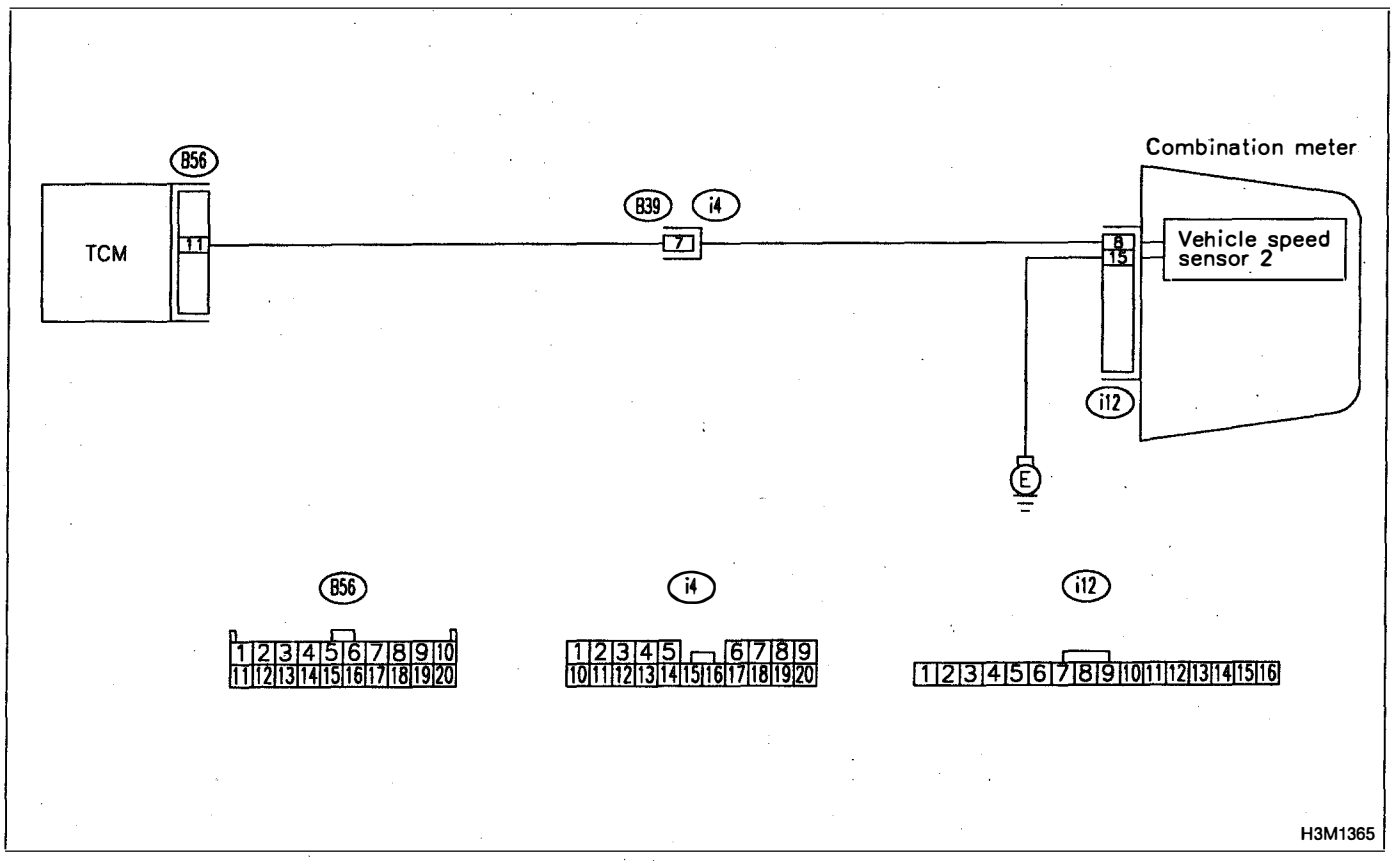
O: TROUBLE CODE 33
— VEHICLE SPEED SENSOR 2 —

DIAGNOSIS:

- The vehicle speed signal is abnormal.
- The circuit in combination meter is faulty.
- The harness connector between TCM and vehicle speed sensor is in short or open.

TROUBLE SYMPTOM:

- Erroneous idling.
- Engine stalls.
- Poor driving performance.

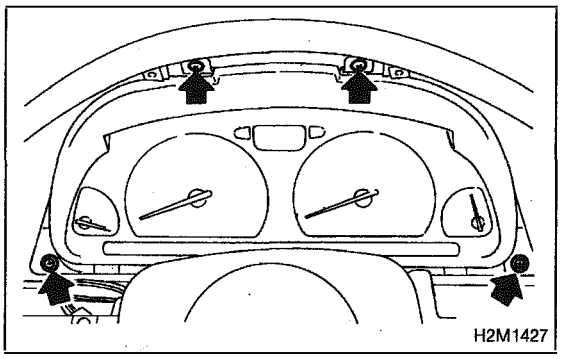


8O1	CHECK OPERATION OF SPEEDOMETER.

CHECK : ***Does speedometer operate normally?***

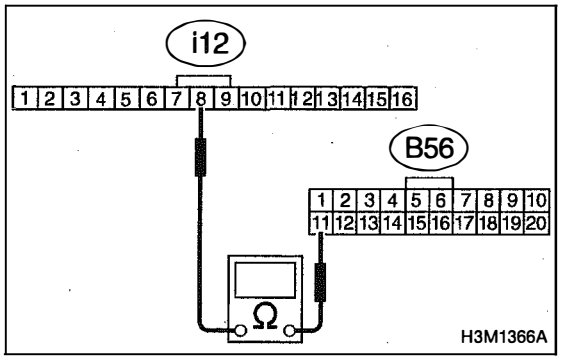
YES : Go to step **8O2**.

NO : Check speedometer. <Ref. to 6-2 [K2A0].>


H2M1427

8O2	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

1) Turn ignition switch to OFF.
2) Remove combination meter.



H3M1366A

3) Disconnect connectors from TCM and combination meter.
4) Measure resistance of harness between TCM and combination meter connector.

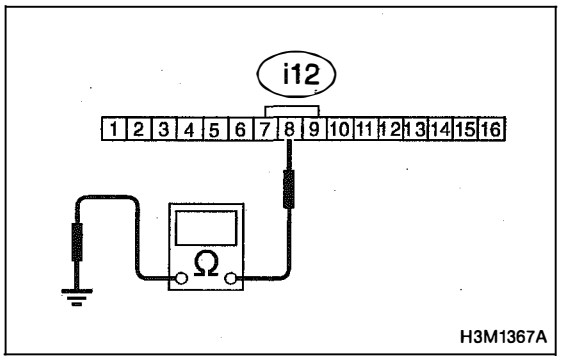
Connector & terminal
(B56) No. 11 — (i12) No. 8:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next CHECK .

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Open circuit in harness between TCM and combination meter connector.
- Poor contact in TCM connector.
- Poor contact in combination meter connector.
- Poor contact in coupling connector (B39).



H3M1367A

Connector & terminal
(i12) No. 8 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

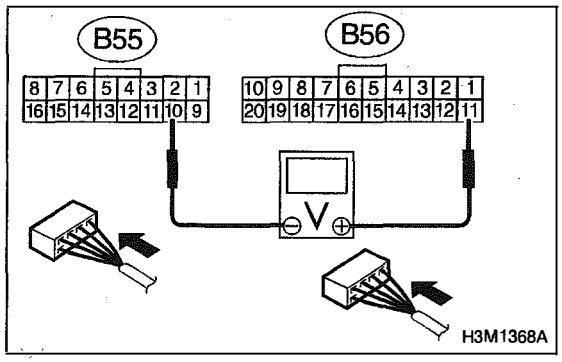
YES : Go to step **8O3.**

NO : Repair short circuit in harness between TCM and combination meter connector.

8O3	CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and combination meter.
3) Install combination meter.
4) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.



5) Start the engine, and set vehicle in 10 km/h (6 m/h).
6) Measure voltage between TCM connector terminals.

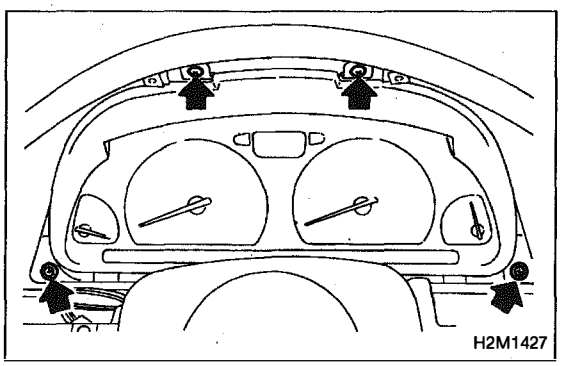
Connector & terminal
(B56) No. 11 (+) — (B55) No. 10 (–):

CHECK ***: Is the voltage less than 1 V ↔ more than 4 V?***

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Is the voltage changing less than 1 V ↔ more than 4 V while shaking harness and connector of TCM?

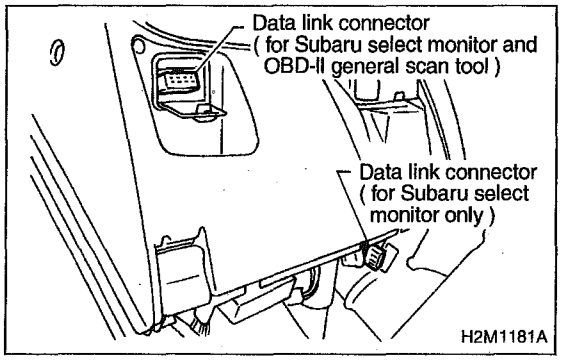
NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>



- Using Subaru Select Monitor

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and combination meter.
3) Install combination meter.
4) Lift-up the vehicle and place safety stand.

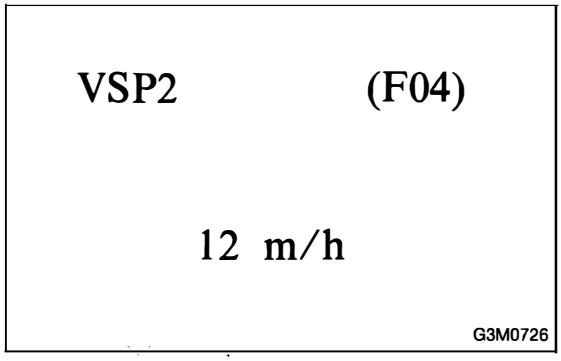
CAUTION:
On AWD models, make sure that all wheels are raised off floor.

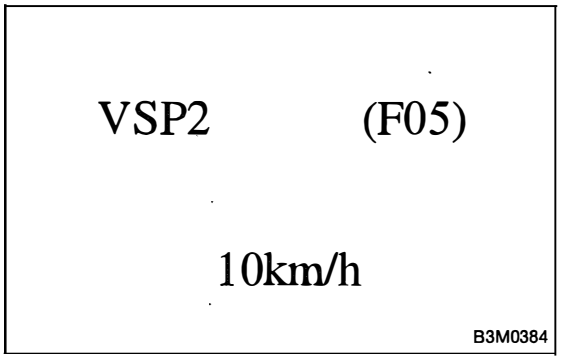


5) Connect Subaru Select Monitor to data link connector.
6) Turn ignition switch to ON and Subaru Select Monitor switch to ON.
7) Start the engine, and drive all wheels.
8) Read data on Subaru Select Monitor.
9) Designate mode using function key.

Function mode F04 or F05

- F04: Compare speedometer with Subaru Select Monitor indications.
- F04: Vehicle speed is indicated in "m/h".
- F05: Compare speedometer with Subaru Select Monitor indications.
- F05: Vehicle speed is indicated in "km/h".





CHECK : ***Are Select Monitor indications noted anywhere between vehicle speeds listed under the F04 and/or F05 function modes, and speedometer indications? Refer to the table below.***

Speedometer (in combination meter)	Function mode F04	Function mode F05
20 (m/h or km/h)	19 — 22 (m/h)	18 — 23 (km/h)
40 (m/h or km/h)	39 — 42 (m/h)	38 — 43 (km/h)
60 (m/h or km/h)	58 — 62 (m/h)	58 — 63 (km/h)

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK : ***Is the vehicle speed within the range of table by shaking harness and connector of TCM while monitoring the value with Subaru Select Monitor?***

YES : Repair poor contact in TCM.

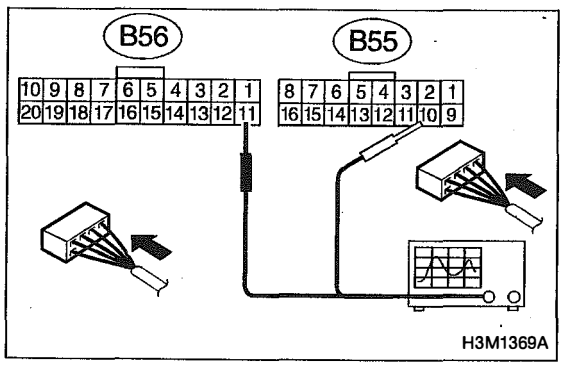
NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

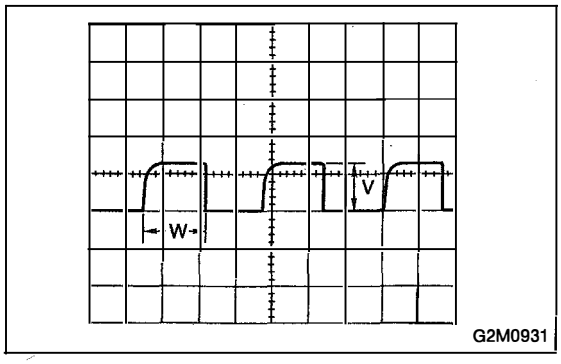
- Using Oscilloscope

1) Turn ignition switch to OFF.
2) Connect connectors to TCM and combination meter.
3) Install combination meter.
4) Lift-up or raise the vehicle and place safety stands.

CAUTION:
On AWD models, raise all wheels off floor.



5) Set oscilloscope to TCM connector terminals.
Positive prove; (B56) No. 11
Earth lead; (B55) No. 10
6) Start the engine.
7) Shift on the gear position, and keep the vehicle speed at constant.



8) Measure signal voltage indicated on oscilloscope.

CHECK ***: Is the voltage more than AC 2 V?***

NOTE:
If vehicle speed increases, the width of amplitude (W) decreases.

YES : Even if "AT OIL TEMP" lights up, the circuit has returned to a normal condition at this time. A temporary poor contact of the connector or harness may be the cause. Repair harness or connector in the TCM.

NO : Go to next CHECK .

CHECK ***: Is the voltage more than AC 2 V by shaking harness and connector of TCM while monitoring the value with oscilloscope?***

NOTE:
If vehicle speed increases, the width of amplitude (W) decreases.

YES : Repair poor contact in TCM.

NO : Replace TCM.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

9. Diagnostic Chart with Select Monitor

A: BASIC DIAGNOSTIC CHART

If no trouble codes appear in the on-board diagnostics operation (although problems have occurred or are occurring), measure performance characteristics of sensors, actuators, etc., in the "F" mode (select monitor function), and compare with the "basic data" to determine the cause of problems.

1) Trouble occurs.
2) No trouble codes appear in on-board diagnostics operation.
3) Measure each item in select mode function.
4) Compare measured values with basic data.
5) Determine item which is outside basic data specifications.
6) Check sensor and actuator affected.

B: LIST OF OUTPUT MODES

1. FUNCTION MODE

Mode	Contents	Abbr.	Unit	Contents of display	Page
F00	Mode display	—	—	AT or EGI mode (when monitor is connected.)	98
F01	Battery voltage	VB	V	Battery voltage applied to control unit.	98
F02	Vehicle speed sensor 1	VSP1	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 1.	99
F03	Vehicle speed sensor 1	VSP1	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 1.	99
F04	Vehicle speed sensor 2	VSP2	m/h	Vehicle speed (miles/h) sent from vehicle speed sensor 2.	101
F05	Vehicle speed sensor 2	VSP2	km/h	Vehicle speed (km/h) sent from vehicle speed sensor 2.	101
F06	Engine speed signal	EREV	rpm	Engine speed sent from ECM.	102
F07	ATF temperature sensor	ATFT	°F	ATF temperature (°F) sent from ATF temperature sensor.	103
F08	ATF temperature sensor	ATFT	°C	ATF temperature (°C) sent from ATF temperature sensor.	103
F09	Throttle position sensor	THV	V	Voltage sent from throttle position sensor.	105
F10	Gear position	GEAR	—	Transmission gear position	106
F11	Line pressure duty	PLDTY	%	Duty ratio flowing through duty solenoid A.	107
F12	Lock-up duty	LUDTY	%	Duty ratio flowing through duty solenoid B.	110
F13	AWD duty	4WDTY	%	Duty ratio flowing through duty solenoid C.	113
F14	Throttle position sensor power supply	THVCC	V	Power supply voltage to throttle position sensor	117
F15	Mass air flow signal	AFM	V	Output voltage from air flow sensor	118

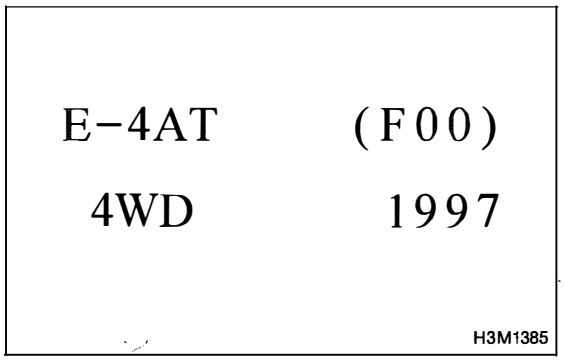
2. ON ←→ OFF SIGNAL LIST

Mode	LED No.	Signal name	Display	LED "ON" requirements	Page
FA0	1	FWD switch	FF	When fuse is installed in FWD switch.	121
	2*	Kick-down switch	KD	—	—
	3	—	—	—	—
	4	—	—	—	—
	5	Brake switch	BR	When brake switch is turned ON.	—
	6	ABS switch	AB	When ABS signal is entered.	—
	7	Cruise control set	CR	When cruise control is set.	—
	8*	Power switch	PW	—	—
	9	—	—	—	—
	10	—	—	—	—
FA1	1	P/N range switch	NP	When P or N range is selected.	—
	2	R range switch	RR	When R range is selected.	—
	3	D range switch	RD	When D range is selected.	—
	4	3 range switch	R3	When 3 range is selected.	—
	5	2 range switch	R2	When 2 range is selected.	—
	6	1 range switch	R1	When 1 range is selected.	—
	7	Diagnosis switch	SS	When diagnosis switch is turned ON.	127
	8	—	—	—	—
	9	—	—	—	—
	10	—	—	—	—

*: LED Nos. 2 and 8 cannot be turned on.

3. DIAGNOSIS MODE

Mode	Contents	Abbr.	Contents of display
FB0	On-board diagnostics	DIAG.U	Current trouble code determined by on-board diagnostics.
FB1	On-board diagnostics	DIAG.M	Previous trouble code stored in memory by on-board diagnostics.
FC0	Back-up clear	—	Function of clearing trouble code stored in memory.



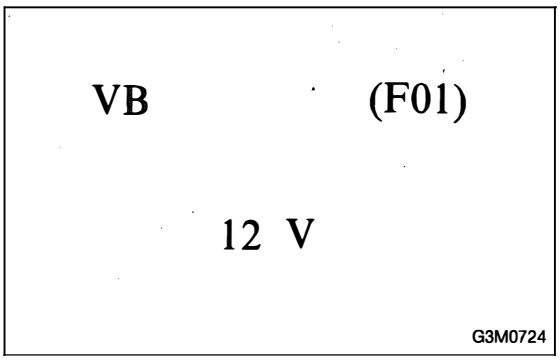
C: MODE F00 — MODE DISPLAY —

SPECIFIED DATA:

Data at the left should be indicated.

Probable cause (if outside "specified data")

1. Communication failure (No communication method can be confirmed with power ON.)	(1)	Check loose or poor connectors, or short circuit.
	(2)	Check type of cartridge.
2. Vehicle types cannot be identified (due to communication failure).		Check improper cartridge. Replace with proper one.



D: MODE F01 — BATTERY VOLTAGE (VB) —

CONDITION:

- Ignition switch ON
- Engine idling after warm-up

SPECIFIED DATA:

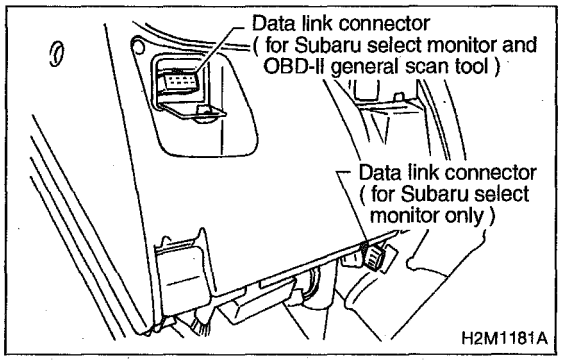
VB: 10 — 16 V

1. Battery		Check battery voltage and specific gravity of electrolyte.
2. Charging system	(1)	Measure regulating voltage under no loads.
	(2)	Check generator (as a single unit).

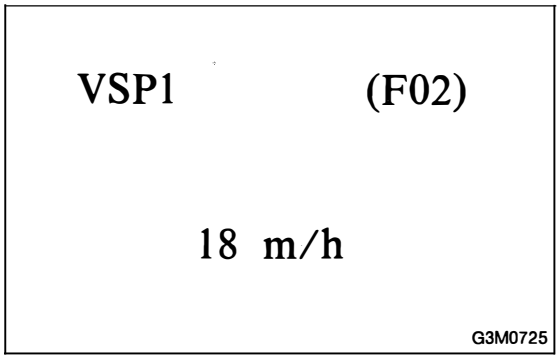
E: MODE F02 OR F03 — CHECK VEHICLE SPEED SENSOR 1 —

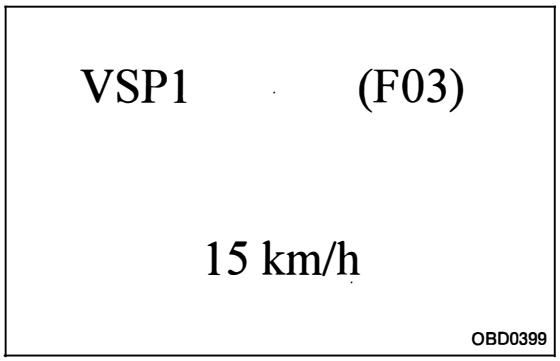
1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.



3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Read data on Subaru Select Monitor.
6) Designate mode using function key.
Function mode: F02 or F03
- F02: Compare speedometer with Subaru Select Monitor indications.
- F02: Vehicle speed is indicated in "m/h".
- F03: Compare speedometer with Subaru Select Monitor indications.
- F03: Vehicle speed is indicated in "km/h".





CHECK : ***Are Select Monitor indications noted anywhere between vehicle speeds listed under the F02 and/or F03 function modes, and speedometer indications? Refer to the table below.***

Speedometer (in combination meter)	Function mode F02	Function mode F03
20 (m/h or km/h)	19 — 22 (m/h)	18 — 23 (km/h)
40 (m/h or km/h)	39 — 42 (m/h)	38 — 43 (km/h)
60 (m/h or km/h)	58 — 62 (m/h)	58 — 63 (km/h)

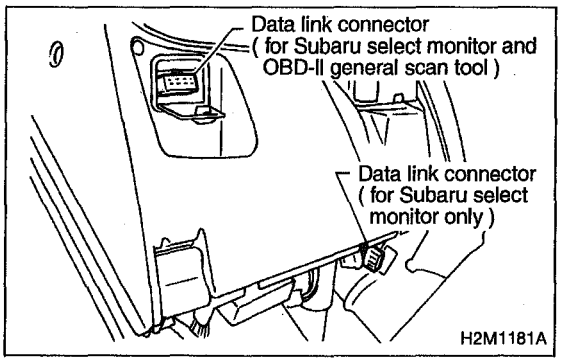
YES : Go to step MODE F04 or F05.
NO : Check vehicle speed sensor 1 circuit.
NOTE:
- For the diagnostics procedure on vehicle speed sensor 1 circuit, refer to 3-2 [T8N0].

● The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

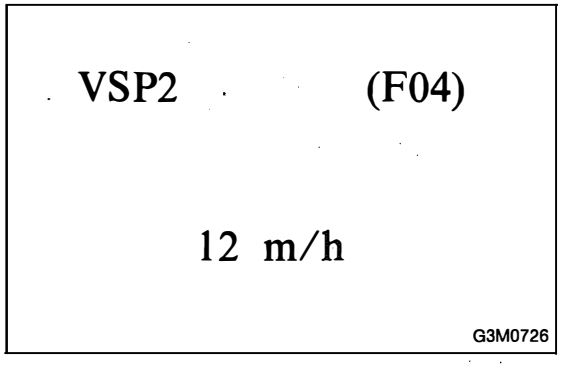
F: MODE F04 OR F05 — CHECK VEHICLE SPEED SENSOR 2 —

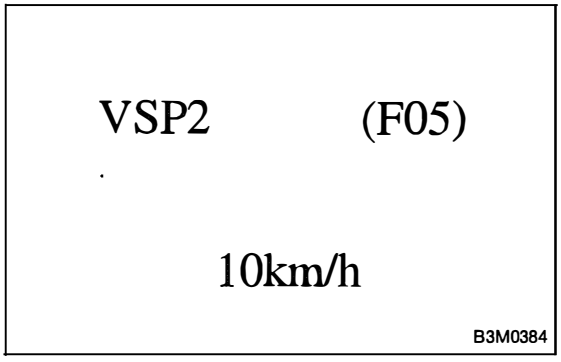
1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.



3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Read data on Subaru Select Monitor.
6) Designate mode using function key.
Function mode: F04 or F05
- F04: Compare speedometer with Subaru Select Monitor indications.
- F04: Vehicle speed is indicated in "m/h".
- F05: Compare speedometer with Subaru Select Monitor indications.
- F05: Vehicle speed is indicated in "km/h".





CHECK : ***Are Select Monitor indications noted anywhere between vehicle speeds listed under the F04 and/or F05 function modes, and speedometer indications? Refer to the table below.***

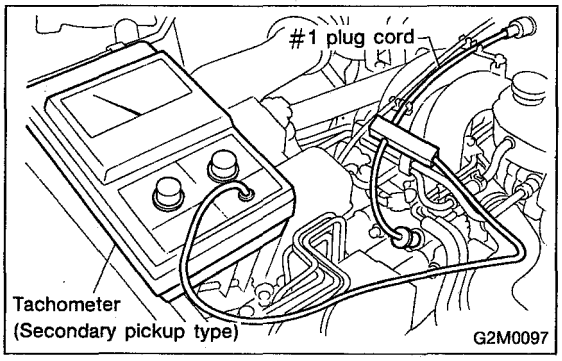
Speedometer (in combination meter)	Function mode F04	Function mode F05
20 (m/h or km/h)	19 — 22 (m/h)	18 — 23 (km/h)
40 (m/h or km/h)	39 — 42 (m/h)	38 — 43 (km/h)
60 (m/h or km/h)	58 — 62 (m/h)	58 — 63 (km/h)

YES : Go to step MODE F06.
NO : Check vehicle speed sensor 2 circuit.
NOTE:
- For the diagnostics procedure on vehicle speed sensor 2 circuit, refer to 3-2 [T8O0].
- The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

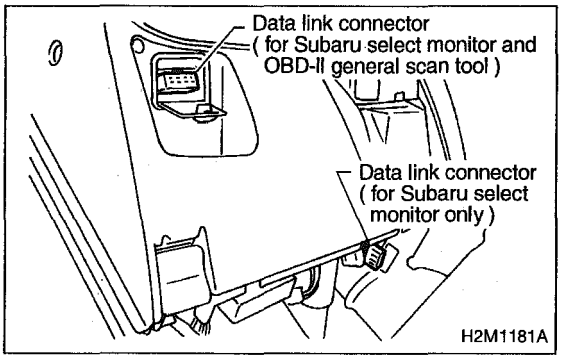
G: MODE F06
— CHECK ENGINE SPEED SIGNAL —

1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

CAUTION:
On AWD models, make sure that all wheels are raised off floor.



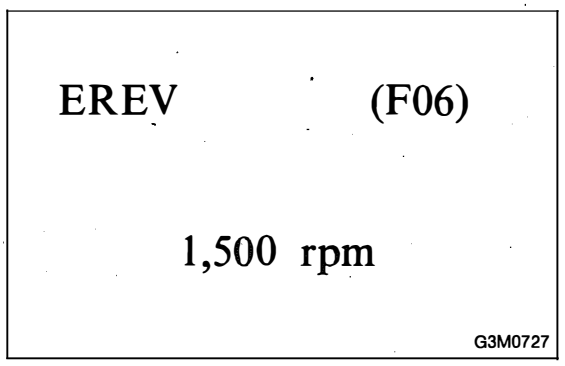
3) Attach the pickup sensor on tachometer (secondary pickup type) to #1 cylinder spark plug cord (without tachometer models).
4) Turn A/C switch to OFF (with A/C models).



5) Connect Subaru Select Monitor to data link connector.
6) Start the engine, and turn Subaru Select Monitor switch to ON.
7) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

8) Read data on Subaru Select Monitor.
9) Designate mode using function key.
Function mode: F06



- F06: Engine revolution is indicated in "rpm".

CHECK : ***Is the revolution in function mode F06 and tachometer within the specifications shown in the following table?***

Tachometer (in combination meter)	Function mode F06
Idling	600 — 800 rpm
1,000 rpm	925 — 1,075 rpm
2,000 rpm	1,890 — 2,145 rpm

YES : Go to step MODE F07.

NO : Check engine speed signal circuit.

NOTE:
- For the diagnostics procedure on engine speed signal circuit, refer to 3-2 [T8J0].
- The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

H: MODE F07 OR F08 — CHECK ATF TEMPERATURE SENSOR —

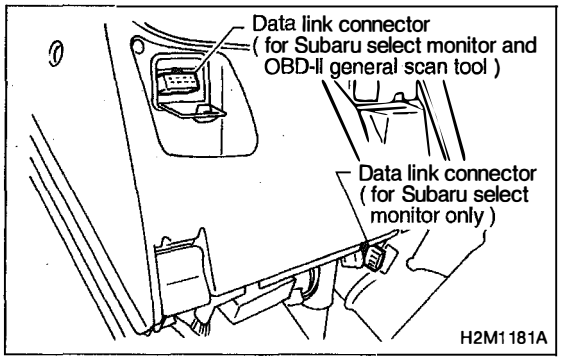
1) Turn ignition switch to OFF.
2) Start engine.

CHECK : ***Does the AT OIL TEMP warning light remain on 2 seconds after the engine has been started?***

YES : Go to next step 3).

NO : Check ATF temperature sensor and combination meter circuit.

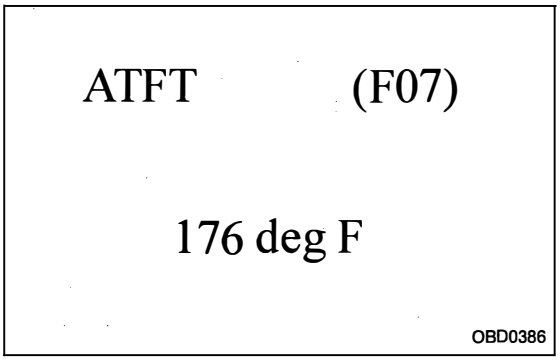
NOTE:
For the diagnostics procedure on ATF temperature sensor and combination meter circuit, refer to 3-2 [T8H0].



3) Turn ignition switch to OFF.
4) Connect Subaru Select Monitor to data link connector.
5) Turn ignition switch to ON (engine OFF).
6) Turn Subaru Select Monitor switch to ON.
7) Start engine.
8) Read data on Subaru Select Monitor.
9) Designate mode using function key.
Function mode: F07 or F08
- F07: ATF temperature is indicated in "°F".
- F08: ATF temperature is indicated in "°C".

10) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.



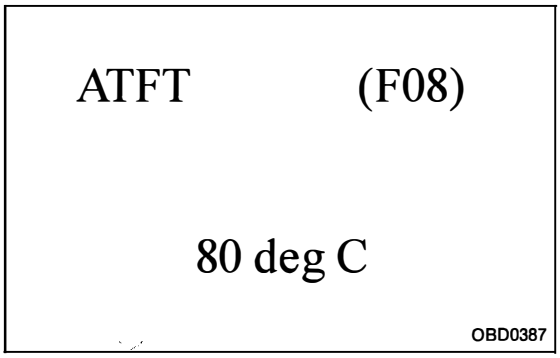
11) Turn ignition switch to OFF.

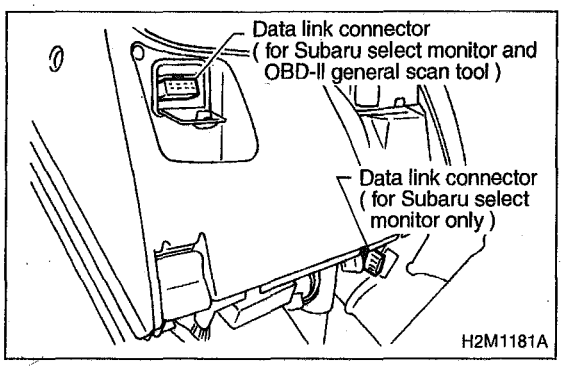
CHECK : ***Does the ATF temperature change from 176°F (80°C)?***

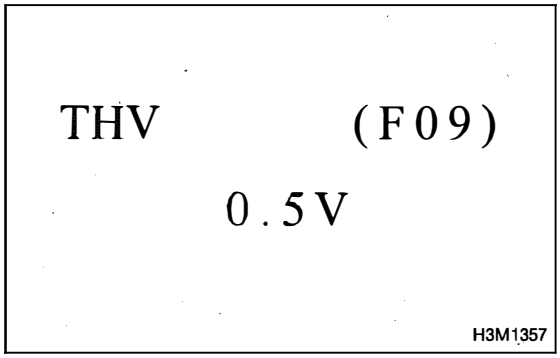
YES : Go to step MODE F09.

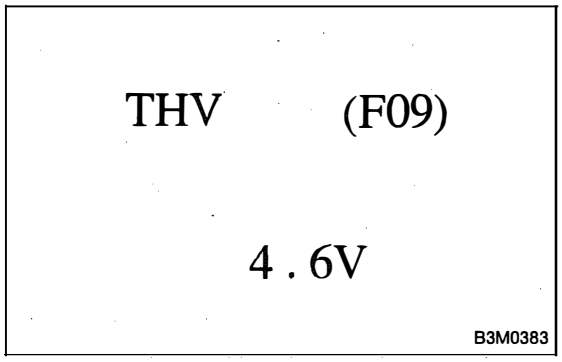
NO : Check ATF temperature sensor circuit.

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit, refer to 3-2 [T8H0].


ATFT (F08)
80 deg C
OBD0387







I: MODE F09
— CHECK THROTTLE POSITION SENSOR —

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Turn ignition switch to ON.
4) Turn Subaru Select Monitor switch to ON.
5) Read data on Subaru Select Monitor.
6) Designate mode using function key.

Function mode: F09

● F09: Throttle position sensor input signal is indicated.

CHECK ***: Is voltage between 0.3 and 0.7 V in the function mode F09 when the accelerator pedal is completely released?***

YES : Go to next CHECK .

NO : Check throttle position sensor circuit.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, refer to 3-2 [T8M0].

CHECK ***: Is voltage between 4.4 and 4.8 V in the function mode F09 when the accelerator pedal is completely depressed?***

YES : Go to next CHECK .

NO : Check throttle position sensor circuit.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, refer to 3-2 [T8M0].

CHECK ***: Does voltage in the function mode F09 decrease smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step MODE F10.

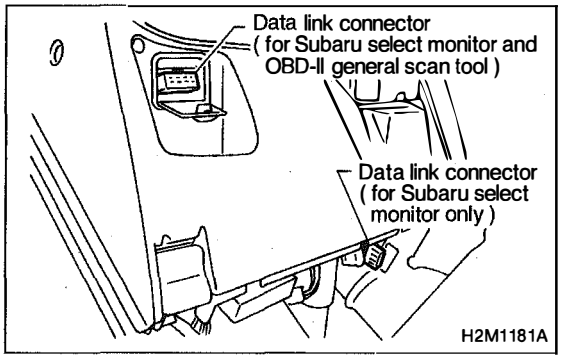
NO : Check throttle position sensor circuit.

NOTE:
For the diagnostics procedure on throttle position sensor circuit, refer to 3-2 [T8M0].

J: MODE F10
— CHECK GEAR POSITION —

1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

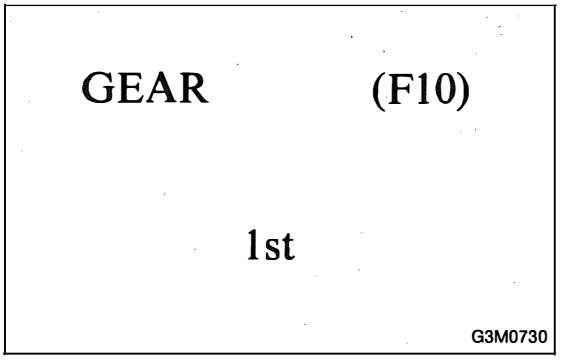
CAUTION:
On AWD models, make sure that all wheels are raised off floor.



3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Select D range, and drive vehicle.
6) Read data on Subaru Select Monitor.
7) Designate mode using function key.

Function mode: F10

- F10: Gear position is indicated.



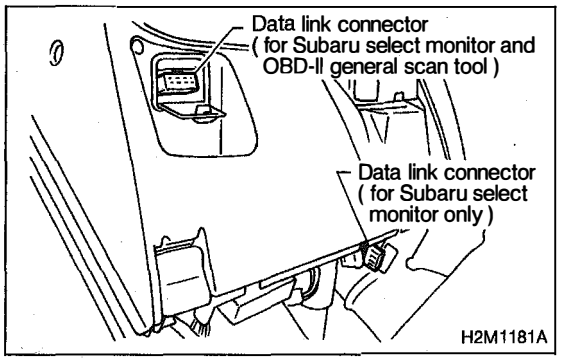
CHECK : ***Does the transmission gear correspond to the gear which is shown on display in the F10 mode?***

YES : Go to step MODE F11.

NO : Check shift solenoid 1 and shift solenoid 2 signal circuit.

NOTE:

- For the diagnostics procedure on shift solenoid 1 and shift solenoid 2 signal circuit, refer to 3-2 [T8F0] and [T8G0].
- The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>



K: MODE F11
— CHECK LINE PRESSURE DUTY —

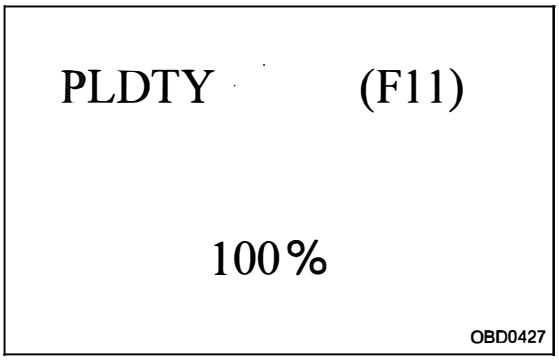
1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Stop the engine and turn ignition switch to ON (engine OFF).
6) Move selector lever to "N".
7) Read data on Subaru Select Monitor.
8) Designate mode using function key.

Function mode: F11

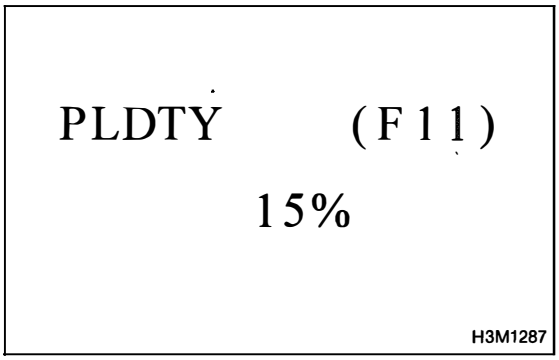
- F11: Line pressure duty is indicated in "%".



CHECK : ***Does the function mode F11 indicate 100% when the accelerator pedal is completely released?***

YES : Go to next CHECK .

NO : Go to step **9K1**.



CHECK : ***Does the function mode F11 indicate 15% or less when the accelerator pedal is completely depressed?***

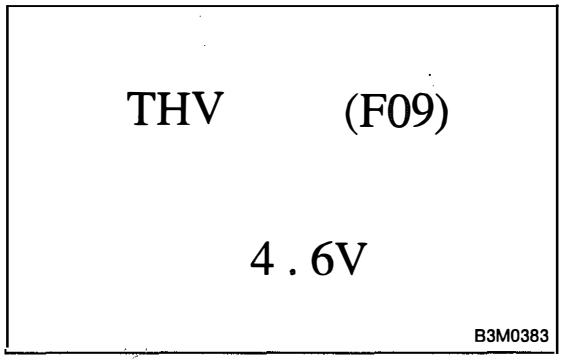
YES : Go to next CHECK .

NO : Go to step **9K1**.

CHECK : ***Does the function mode F11 change smoothly when the accelerator pedal is fully depressed and then fully released?***

YES : Go to step MODE F12.

NO : Go to step **9K1**.



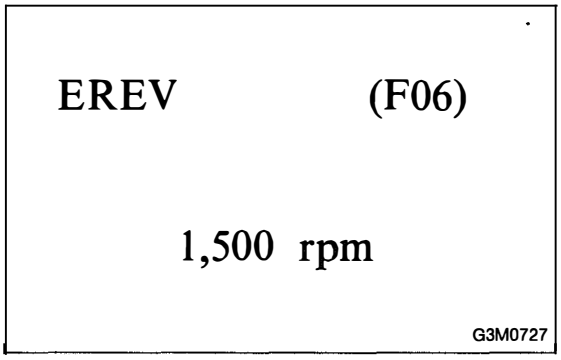
9K1	CHECK THROTTLE POSITION SENSOR CIRCUIT (FUNCTION MODE F09).

CHECK : ***Is there any trouble in throttle position sensor circuit?***

NOTE:
For the diagnostics procedure on throttle position sensor circuit (mode F09), refer to 3-2 [T9I0].

YES : Repair or replace throttle position sensor circuit, refer to 3-2 [T8M0].

NO : Go to step **9K2.**



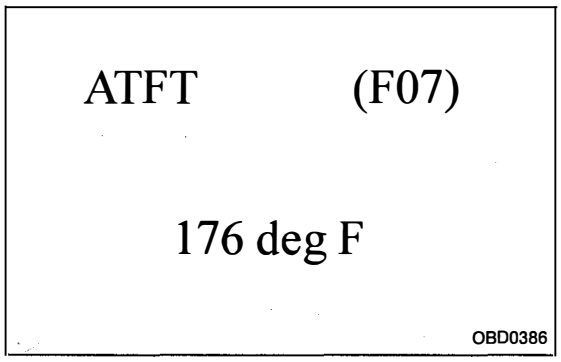
9K2	CHECK ENGINE SPEED SIGNAL CIRCUIT (FUNCTION MODE F06).

CHECK : ***Is there any trouble in engine speed signal circuit?***

NOTE:
For the diagnostics procedure on engine speed signal circuit (mode F06), refer to 3-2 [T9G0].

YES : Repair or replace engine speed signal circuit, refer to 3-2 [T8J0].

NO : Go to step **9K3.**



9K3	CHECK ATF TEMPERATURE SENSOR CIRCUIT (FUNCTION MODE F07 OR F08).

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit (mode F07 or F08), refer to 3-2 [T9H0].

YES : Repair or replace ATF temperature sensor circuit, refer to 3-2 [T8H0].

NO : Go to step **9K4**.

9K4	CHECK INHIBITOR SWITCH.

1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data on Subaru Select Monitor.
3) Designate mode using function key.

Function mode: FA1

- FA1: Check the inhibitor switch ON ↔ OFF signal.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***

YES : Go to step MODE FA12.

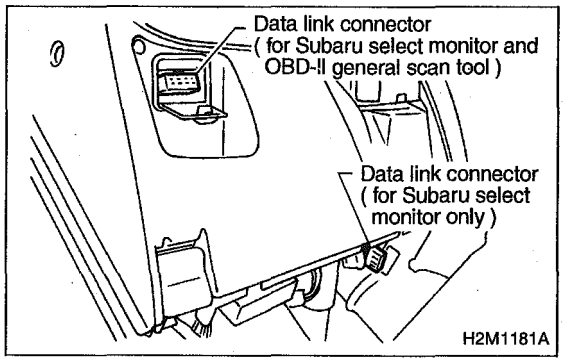
NO : Check inhibitor switch circuit.

NOTE:
For the diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10B10].

L: MODE F12
— CHECK LOCK-UP DUTY —

1) Turn ignition switch to OFF.
2) Lift-up the vehicle and place safety stand.

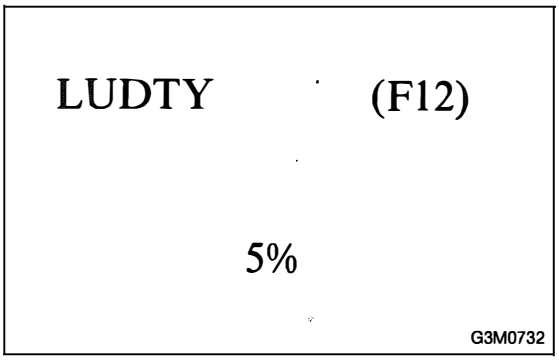
CAUTION:
On AWD models, make sure that all wheels are raised off floor.



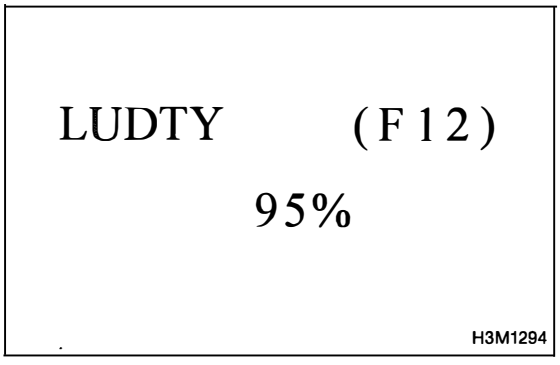
3) Connect Subaru Select Monitor to data link connector.
4) Start the engine, and turn Subaru Select Monitor switch to ON.
5) Warm-up the transmission until ATF temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

6) Read data on Subaru Select Monitor.
7) Designate mode using function key.
Function mode: F12
- F12: Lock-up duty is indicated in "%".



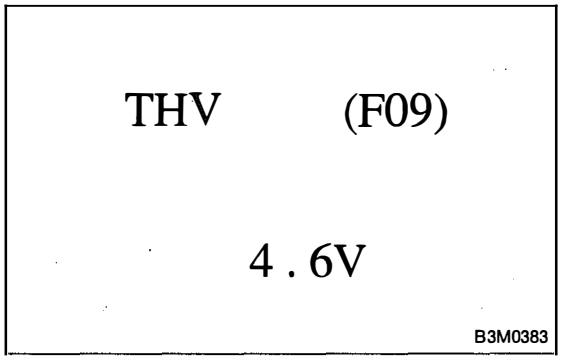
CHECK ***: Does the function mode F12 indicate 5%?***
YES : Go to next step 8).
NO : Go to step **9L1**.



8) Move selector lever to "D" and slowly increase vehicle speed to 75 km/h (47 m/h).
CHECK ***: Does the function mode F12 indicate 95%?***
YES : Go to step MODE F13.

NOTE:
The speed difference between front and rear wheels may light the ABS warning light, but this indicates no malfunction. When AT control diagnosis is finished, perform the ABS memory clearance procedure of on-board diagnostics system. <Ref. to 4-4 [T6D2] or [T9J0].>

NO : Go to step **9L1**.



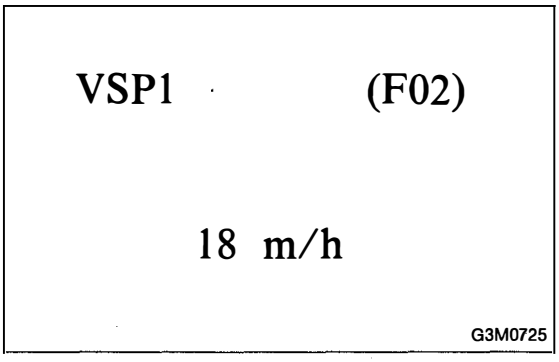
9L1	CHECK THROTTLE POSITION SENSOR CIRCUIT (FUNCTION MODE F09).

CHECK : ***Is there any trouble in throttle position sensor circuit?***

NOTE:
For the diagnostics procedure on throttle position sensor circuit (mode F09), refer to 3-2 [T9I0].

YES : Repair or replace throttle position sensor circuit, refer to 3-2 [T8M0].

NO : Go to step **9L2**.



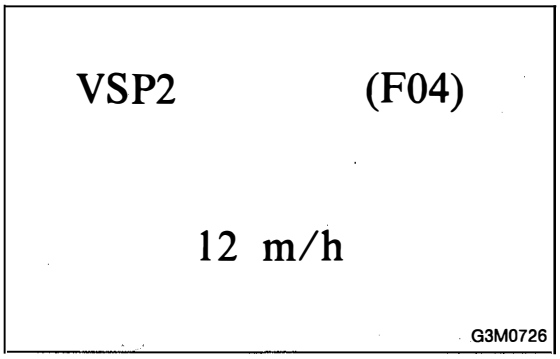
9L2	CHECK VEHICLE SPEED SENSOR 1 CIRCUIT (FUNCTION MODE F02 OR F03).

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit (mode F02 or F03), refer to 3-2 [T9E0].

YES : Repair or replace vehicle speed sensor 1 circuit, refer to 3-2 [T8N0].

NO : Go to step **9L3**.



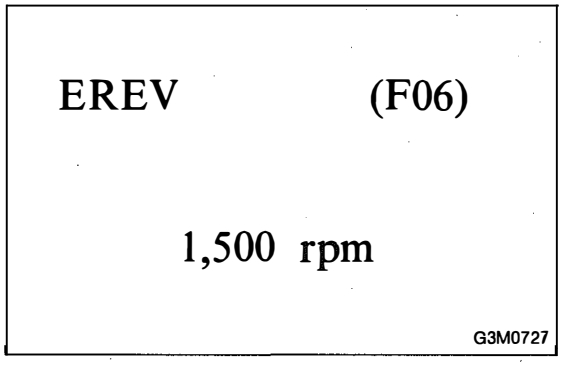
9L3	CHECK VEHICLE SPEED SENSOR 2 CIRCUIT (FUNCTION MODE F04 OR F05).

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit (mode F04 or F05), refer to 3-2 [T9F0].

YES : Repair or replace vehicle speed sensor 2 circuit, refer to 3-2 [T8O0].

NO : Go to step **9L4**.



9L4	CHECK ENGINE SPEED SIGNAL CIRCUIT (FUNCTION MODE F06).

CHECK : ***Is there any trouble in engine speed signal circuit?***

NOTE:
For the diagnostics procedure on engine speed signal circuit (mode F06), refer to 3-2 [T9G0].

YES : Repair or replace engine speed signal circuit, refer to 3-2 [T8K0].

NO : Go to step **9L5**.

9L5	CHECK INHIBITOR SWITCH.

1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data on Subaru Select Monitor.
3) Designate mode using function key.

Function mode: FA1

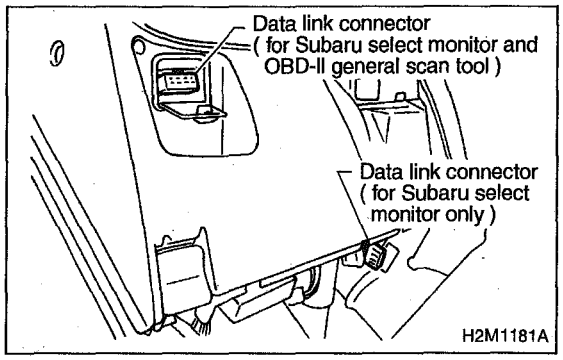
- FA1: Check the inhibitor switch ON ↔ OFF signal.

CHECK : ***When each range is selected, does LED of the range switch on Subaru Select Monitor light up?***

YES : Go to MODE F13.

NO : Check inhibitor switch circuit.

NOTE:
For the diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].



M: MODE F13
— CHECK AWD DUTY —

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the transmission until ATF temperature is above 80°C (176°F).

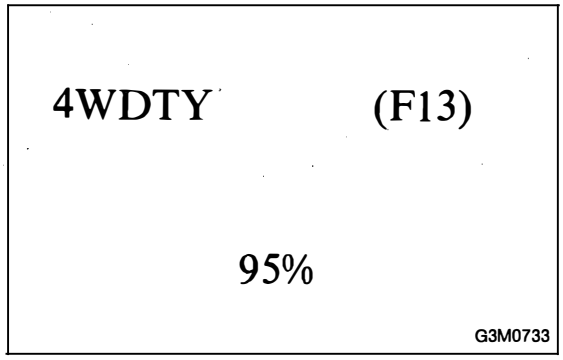
NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Turn ignition switch to ON (engine OFF).
6) Move selector lever to "D".
7) Read data on Subaru Select Monitor.
8) Designate mode using function key.
Function mode: F13
- F13: AWD duty is indicated in "%".

CHECK ***: Does the duty ratio change in response to the depress-release motion of the accelerator pedal in the function mode F13?***

YES : Go to next step 9).

NO : Go to step **9M1**.

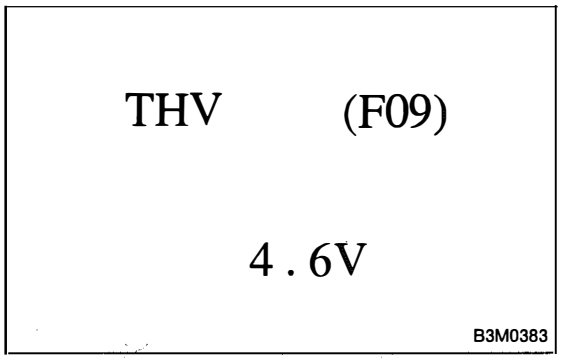


9) Turn ignition switch to OFF.
10) Set FWD mode.
11) Turn ignition switch to ON (engine OFF).

CHECK ***: Does the function mode F13 indicate 95%?***

YES : Go to step MODE F14.

NO : Go to step **9M1**.



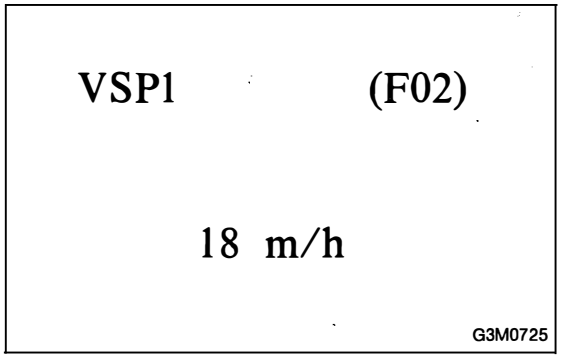
9M1	CHECK THROTTLE POSITION SENSOR (FUNCTION MODE F09).

CHECK : ***Is there any trouble in throttle position sensor circuit?***

NOTE:
For the diagnostics procedure on throttle position sensor circuit (mode F09), refer to 3-2 [T9I0].

YES : Repair or replace throttle position sensor circuit, refer to 3-2 [T8M0].

NO : Go to step **9M2**.



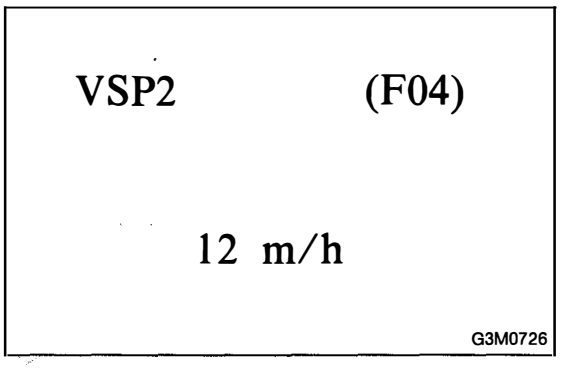
9M2	CHECK VEHICLE SPEED SENSOR 1 (FUNCTION MODE F02 OR F03).

CHECK : ***Is there any trouble in vehicle speed sensor 1 circuit?***

NOTE:
For the diagnostics procedure on vehicle speed sensor 1 circuit (mode F02 or F03), refer to 3-2 [T9E0].

YES : Repair or replace vehicle speed sensor 1 circuit, refer to 3-2 [T8N0].

NO : Go to step **9M3**.



9M3	CHECK VEHICLE SPEED SENSOR 2 (FUNCTION MODE F04 OR F05).

CHECK : ***Is there any trouble in vehicle speed sensor 2 circuit?***

NOTE:
For the diagnostics procedure on vehicle speed sensor 2 circuit (mode F04 or F05), refer to 3-2 [T9F0].

YES : Repair or replace vehicle speed sensor 2 circuit, refer to 3-2 [T8O0].

NO : Go to step **9M4**.

9M4	CHECK ATF TEMPERATURE SENSOR CIRCUIT (FUNCTION MODE F07 OR F08).

CHECK : ***Is there any trouble in ATF temperature sensor circuit?***

NOTE:
For the diagnostics procedure on ATF temperature sensor circuit (mode F07 or F08), refer to 3-2 [T9H0].

YES : Repair or replace ATF temperature sensor circuit, refer to 3-2 [T8H0].

NO : Go to step **9M5**.

9M5	CHECK INHIBITOR SWITCH CIRCUIT.

1) Turn ignition switch and Subaru Select Monitor to ON.
2) Read data on Subaru Select Monitor.
3) Designate mode using function key.
Function mode: FA1
● FA1: Check the inhibitor switch ON ↔ OFF signal.

CHECK : ***When each range is selected, does LED of range switch on Subaru Select Monitor light up?***

YES : Go to step **9M6**.

NO : Check inhibitor switch circuit.

NOTE:
For the diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10B0].

9M6	CHECK ABS SIGNAL.

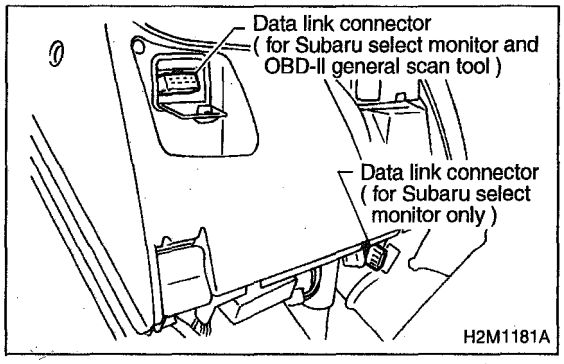
1) Start the engine, and turn Subaru Select Monitor switch to ON.
2) Read data on Subaru Select Monitor.
Designate mode using function key.
Function mode: FA0
● FA0: Check the ABS switch (AB) ON ↔ OFF signal.

CHECK : ***Does the ABS switch (AB) flash while the vehicle is being driven at speeds of 6 km/h (4 MPH) or more, and less than 10 km/h (6 MPH)?***

YES : Go to step MODE F14.

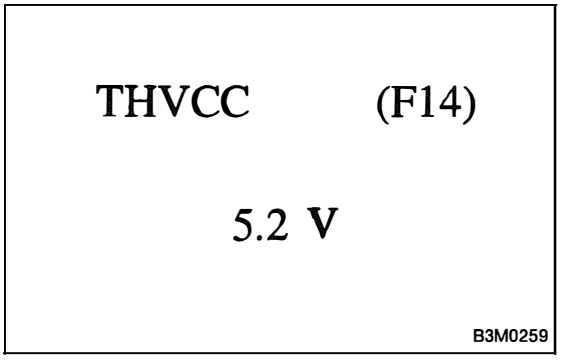
NO : Check ABS signal circuit.

NOTE:
For the diagnostics procedure on ABS signal circuit, refer to 4-4 [T8I0].



N: MODE F14 — CHECK THROTTLE POSITION SENSOR POWER SUPPLY —

1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Turn ignition switch to ON (engine OFF) and Subaru Select Monitor switch to ON.
4) Read data on Subaru Select Monitor.
5) Designate mode using function key.
Function mode: F14
● Throttle position sensor power supply voltage is indicated.

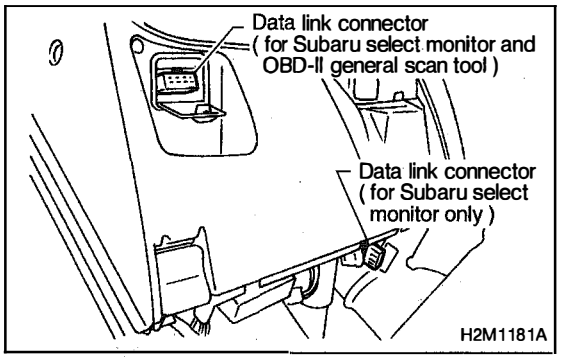


CHECK ***: Is the value fixed between 5.02 and 5.22 V in function mode F14?***

YES : Go to step MODE F15.

NO : Check throttle position sensor power supply circuit.

NOTE:
For the diagnostics procedure on throttle position sensor power supply circuit, refer to 3-2 [T8M0].



O: MODE F15
— CHECK MASS AIR FLOW SIGNAL —

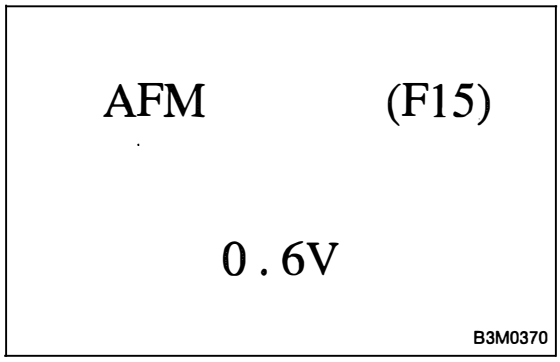
1) Turn ignition switch to OFF.
2) Connect Subaru Select Monitor to data link connector.
3) Start the engine, and turn Subaru Select Monitor switch to ON.
4) Warm-up the engine until engine coolant temperature is above 80°C (176°F).

NOTE:
If ambient temperature is below 0°C (32°F), drive the vehicle until the ATF reaches its operating temperature.

5) Engine idling after warm-up.
6) Move selector lever to "N".
7) Read data on Subaru Select Monitor.
8) Designate mode using function key.

Function mode: F15

● F15: Display shows mass air flow signal value sent from ECM.



CHECK : ***Does voltage change in response to the depress-release motion of the accelerator pedal in the function mode F15?***

YES : Go to next CHECK .

NO : Check mass air flow signal circuit.

NOTE:
For the diagnostics procedure on mass air flow signal circuit, refer to 3-2 [T8I0].

CHECK : ***Has trouble been eliminated after ECM replacement?***

YES : Replace ECM.

NO : Go to next CHECK .

NOTE:
Install the old ECM.

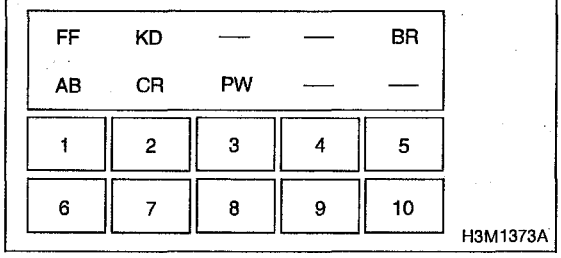
CHECK : ***Has trouble been eliminated after TCM replacement?***

YES : Replace TCM.

NO : Go to MODE FA0.

DISPLAY

LED No.	Signal name	Symbol
1	FWD switch	FF
2	Kick-down switch	KD
3	—	—
4	—	—
5	Brake	BR
6	ABS switch	AB
7	Cruise control set	CR
8	Power switch	PW
9	—	—
10	—	—



P: MODE FA0
— SWITCH 1 (SW1) —

Reference values

- Lights up when the fuse is installed in FWD switch (No. 1).
- Light up when the brake pedal is depressed (No. 5)
- Light up when the ABS signal is entered (No. 6).
- Lights up when the cruise control is set (No. 7).

NOTE:
Kick-down switch and power switch are not installed. Therefore, LEDs of kick-down switch (KD) and power switch (PW) do not light up.

9P1	CHECK FWD SWITCH (FF).

CHECK : ***When fuse is inserted in FWD switch, does LED (FF) light up?***

YES : Go to step **9P2.**

NO : Check FWD switch circuit.

NOTE:
For diagnostics procedure on FWD switch circuit , refer to 3-2 [T9Q0].

9P2	CHECK BRAKE (BR).

CHECK : ***When the brake pedal is depressed, does LED (BR) light up?***

YES : Go to **9P3.**

NO : Check brake switch circuit.

NOTE:
For diagnostics procedure on brake switch circuit, refer to 2-7 [T10BH0].

9P3	CHECK ABS SWITCH (AB).

Engine start.

CHECK : ***Does the LED (AB) flash while the vehicle is being driven at speed of 6 km/h (4 MPH) or more, and less than 10 km/h (6 MPH)?***

YES : Go to **9P4**.

NO : Check ABS switch circuit.

NOTE:
For diagnostics procedure or ABS switch circuit, refer to 4-4 [T8I0].

9P4	CHECK CRUISE CONTROL SET (CR).

CHECK : ***When cruise control is set, does LED (CR) light up?***

YES : Go to MODE FA1.

NO : Check cruise control set circuit.

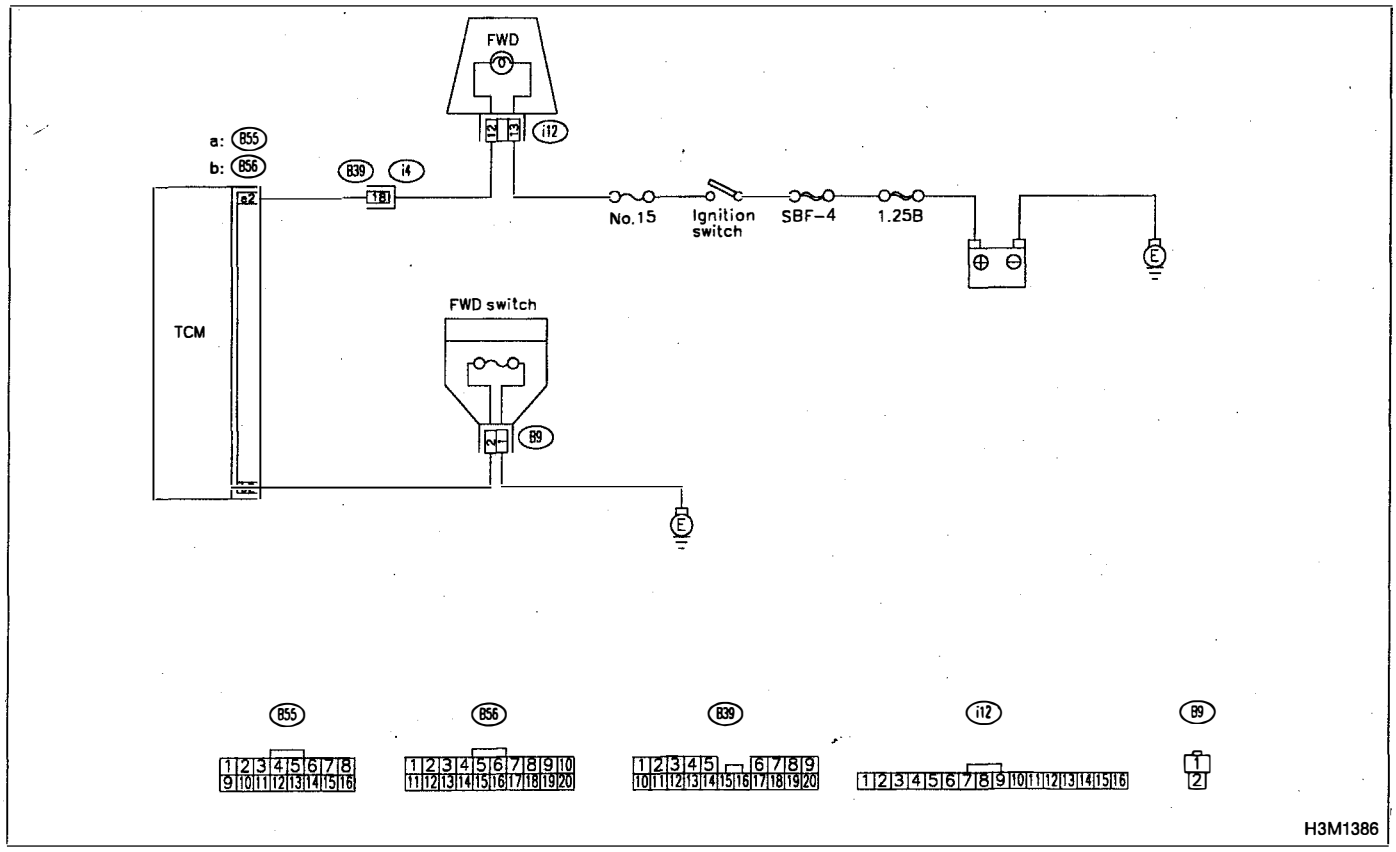
NOTE:
For diagnostics procedure on cruise control circuit, refer to 2-7 [T10CZ0].

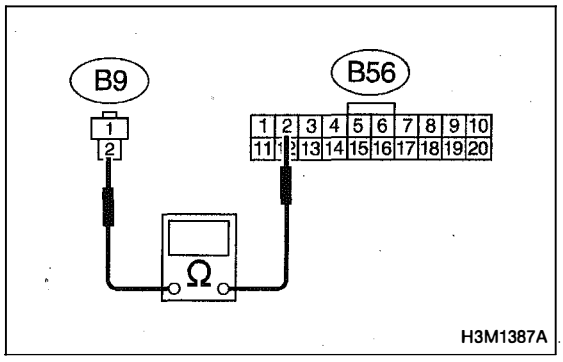
Q: MODE FA0

— LED NO. 1, FWD SWITCH —

DIAGNOSIS:

- LED does not come on even if FWD switch is ON.
- Diagnosis switch circuit is open or short.





9Q1	CHECK HARNESS CONNECTOR BETWEEN TCM AND FWD SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM and FWD switch.
3) Measure resistance of harness between TCM and FWD switch connector.

Connector & terminal
(B56) No. 2 — (B9) No. 2:

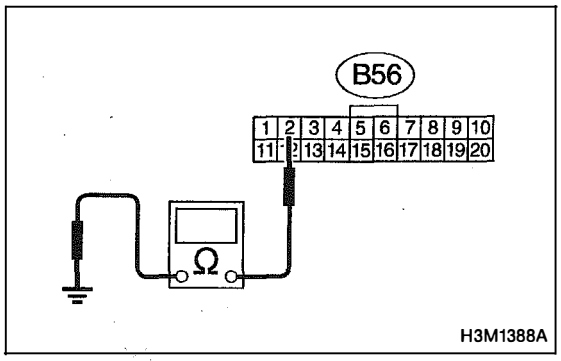
CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:

- Poor contact in TCM connector.
- Poor contact in FWD switch.
- Open circuit in harness between TCM and FWD switch connector.



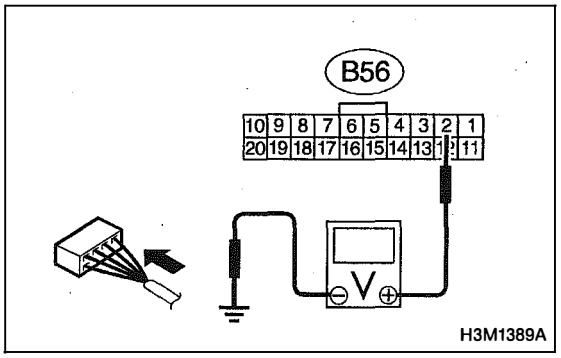
4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal
(B56) No. 2 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **9Q2**.

NO : Repair short circuit in harness connector between TCM and chassis ground.



9Q2	CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and FWD switch.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while installing and removing the fuse to FWD switch connector.

Connector & terminal
(B56) No. 2 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***

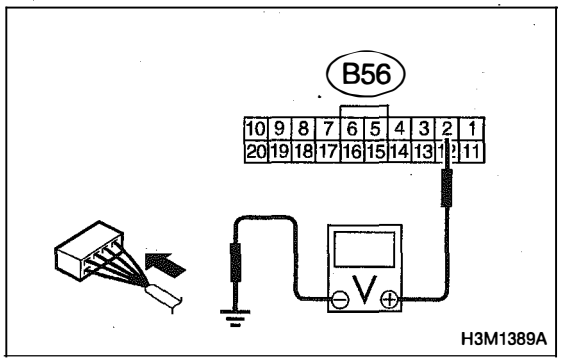
YES : Go to next step CHECK .

NO : Go to next CHECK1 .

CHECK1 : ***Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

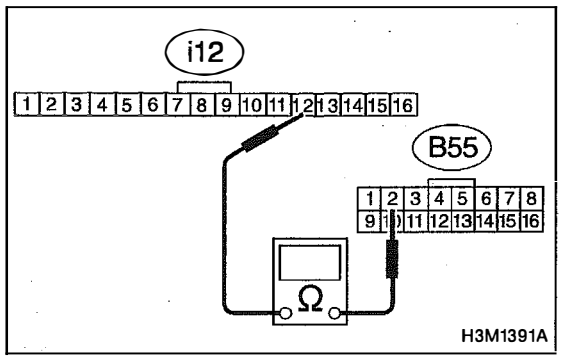


Connector & terminal
(B56) No. 2 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***

YES : Go to step **9Q3**.

NO : Replace TCM.



9Q3	CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.

1) Turn ignition switch to OFF.
2) Remove combination meter.
3) Disconnect connector from TCM and combination meter.
4) Measure resistance of harness between TCM and diagnosis connector.

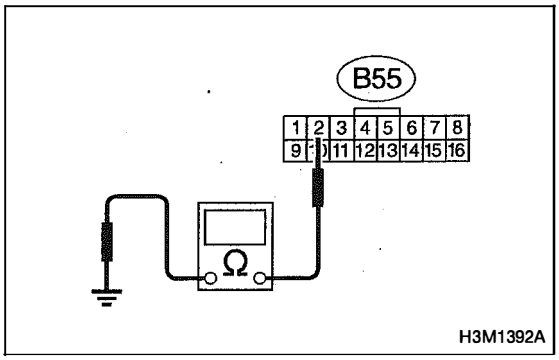
Connector & terminal
(B55) No. 2 — (i12) No. 12:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Poor contact in TCM connector.
- Poor contact in combination meter.
- Open circuit in harness between TCM and combination meter.
- Poor contact in coupling connector (B39).



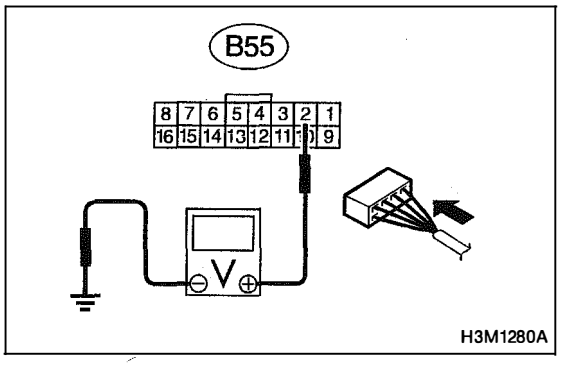
4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal
(B55) No. 2 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **9Q4**.

NO : Repair short circuit in harness connector between TCM and combination meter.



9Q4	CHECK OUTPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM and combination meter.
3) Install combination meter.
4) Turn ignition switch to ON.
5) Measure signal voltage for TCM while installing and removing the fuse to FWD switch connector.

Connector & terminal
(B55) No. 2 — Chassis ground:

CHECK : ***Is the voltage less than 1 V in FWD switch while installing?***

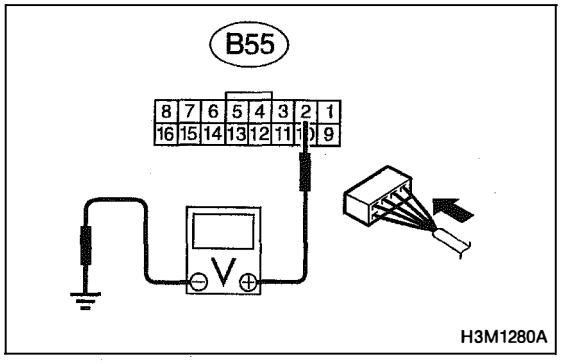
YES : Go to next step CHECK .

NO : Go to next CHECK1 .

CHECK1 : ***Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



Connector & terminal
(B55) No. 2 — Chassis ground:

CHECK : ***Is the voltage more than 10 V in FWD switch while removing?***

YES : Go to next CHECK .

NO : Replace TCM.

CHECK : ***Is the voltage more than 10 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

DISPLAY

LED No.	Signal name	Symbol
1	N/P range switch	NP
2	R range switch	RR
3	D range switch	RD
4	3 range switch	R3
5	2 range switch	R2
6	1 range switch	R1
7	Diagnosis switch	SS
8	—	—
9	—	—
10	—	—

NP	RR	RD	R3	R2
R1	SS	—	—	—

1	2	3	4	5
6	7	8	9	10

H3M1374A

R: MODE FA1
— SWITCH 2 (SW2) —

Reference values

- Lights up when the N or P range is selected (No. 1).
- Lights up when the R range is selected (No. 2).
- Lights up when the D range is selected (No. 3).
- Lights up when the 3 range is selected (No. 4).
- Lights up when the 2 range is selected (No. 5).
- Lights up when the 1 range is selected (No. 6).
- Lights up when the diagnosis switch is connected (No. 7).

9R1	CHECK N/P RANGE SWITCH (NP).

CHECK : ***When N and P ranges are selected, does LED (NP) light up?***

YES : Go to step **9R2**.

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R2	CHECK R RANGE SWITCH (RR).

CHECK : ***When the R range is selected, does LED (RR) light up?***

YES : Go to step **9R3**.

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R3	CHECK D RANGE SWITCH (RD).

CHECK : ***When the D range is selected, does LED (RD) light up?***

YES : Go to step **9R4**.

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R4	CHECK 3 RANGE SWITCH (R3).

CHECK : ***When the 3 range is selected, does LED (R3) light up?***

YES : Go to step **9R5.**

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R5	CHECK 2 RANGE SWITCH (R2).

CHECK : ***When the 2 range is selected, does LED (R2) light up?***

YES : Go to step **9R6.**

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R6	CHECK 1 RANGE SWITCH (R1).

CHECK : ***When the 1 range is selected, does LED (R1) light up?***

YES : Go to step **9R7.**

NO : Check inhibitor switch circuit.

NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 2-7 [T10BI0].

9R7	CHECK DIAGNOSIS SWITCH (SS).

CHECK : ***When the diagnosis switch is turned on, does LED (SS) light up?***

YES : Go to general diagnostics table.

NOTE:
Inspect using general diagnostics table, refer to 3-2 [T1000].

NO : Check diagnosis switch circuit.

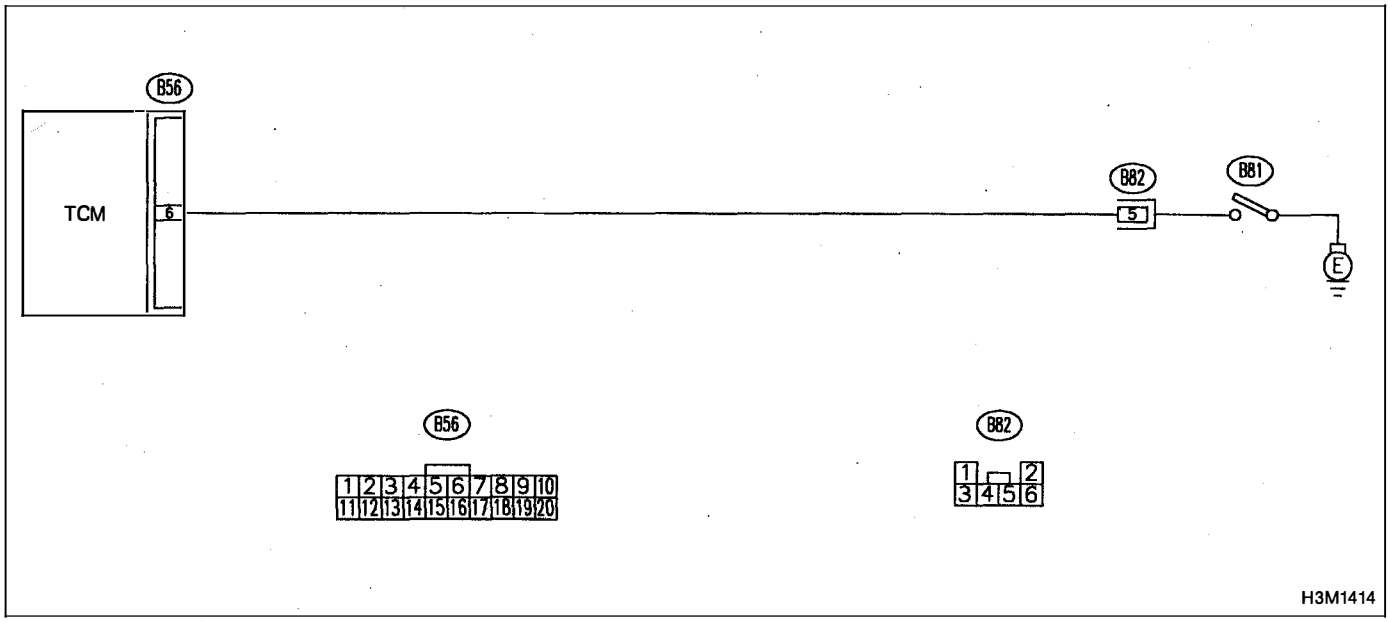
NOTE:
For diagnostics procedure on inhibitor switch circuit, refer to 3-2 [T9S0].

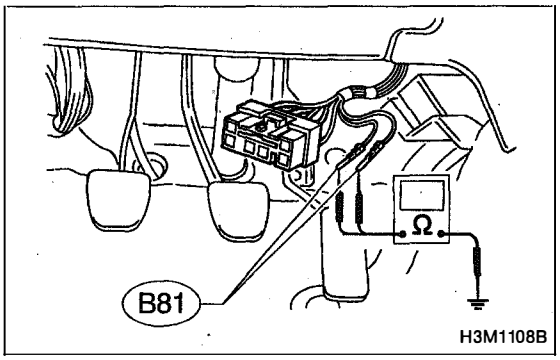
S: MODE FA1

— LED NO. 7, DIAGNOSIS SWITCH —

DIAGNOSIS:

- LED does not come on even if diagnosis switch is ON.
- Diagnosis switch circuit is open or short.





9S1	CHECK DIAGNOSIS SWITCH GROUND LINE.

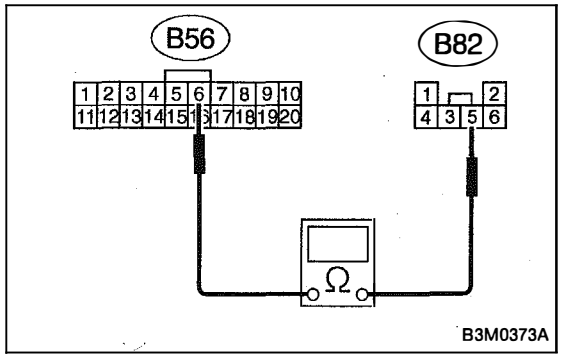
1) Turn ignition switch to OFF.
2) Measure resistance of harness between diagnosis ground terminals and chassis ground.

Terminal
(B81) — Chassis ground:

CHECK ***: Is the resistance less than 1 Ω?***

YES : Go to step **9S2**.

NO : Repair open circuit in diagnosis ground terminals.



9S2	CHECK HARNESS CONNECTOR BETWEEN TCM AND DIAGNOSIS SWITCH.

1) Turn ignition switch to OFF.
2) Disconnect connector from TCM.
3) Measure resistance of harness between TCM and diagnosis connector.

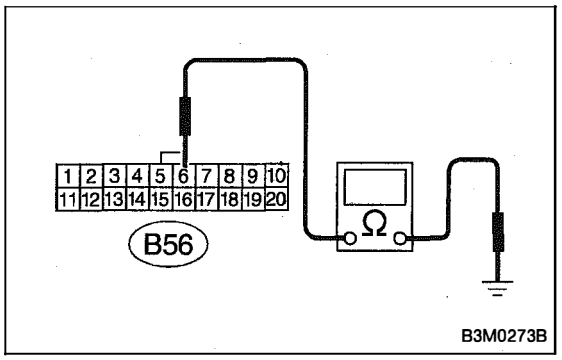
Connector & terminal
(B56) No. 6 — (B82) No. 5:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to next step 4).

NO : Repair harness and connector.

NOTE:
In this case, repair the following:
- Poor contact in TCM connector.
- Poor contact in diagnosis switch.
- Open circuit in harness between TCM and diagnosis connector.



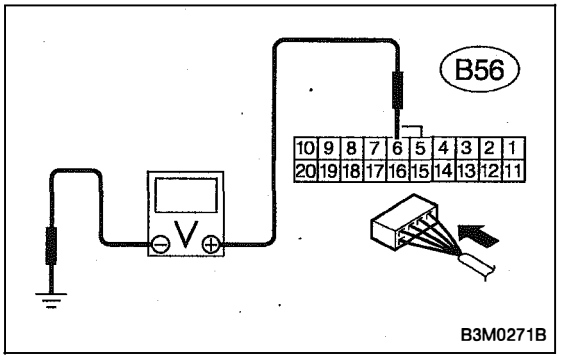
4) Measure resistance of harness connector between TCM and body to make sure that circuit does not short.

Connector & terminal
(B56) No. 6 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **3.**

NO : Repair short circuit in harness connector between TCM and chassis ground.



9S3	CHECK INPUT SIGNAL FOR TCM.

1) Turn ignition switch to OFF.
2) Connect connector to TCM.
3) Turn ignition switch to ON.
4) Measure signal voltage for TCM while connecting and disconnecting the diagnosis terminal to diagnosis connector.

Connector & terminal
(B56) No. 6 — Chassis ground:

CHECK : ***Is the voltage less than 1 V in diagnosis connector connected?***

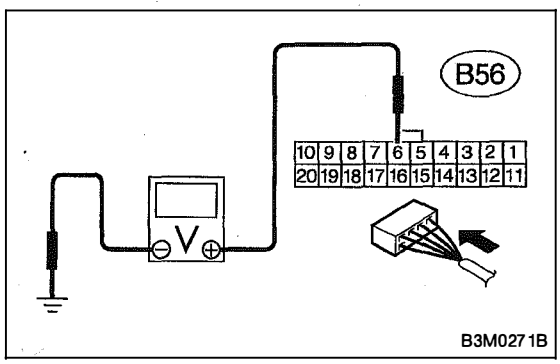
YES : Go to next step CHECK .

NO : Go to next CHECK1 .

CHECK1 : ***Is the voltage less than 1 V while shaking harness and connector of TCM?***

YES : Repair poor contact in TCM.

NO : Replace TCM.

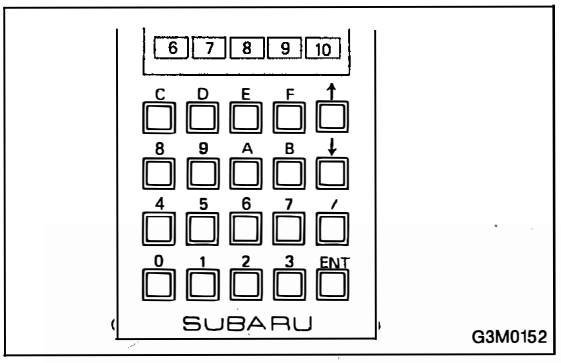


Connector & terminal
(B56) No. 6 — Chassis ground:

CHECK ***: Is the voltage more than 6 V in diagnosis connector disconnected?***

YES : Repair poor contact in TCM.

NO : Replace TCM.



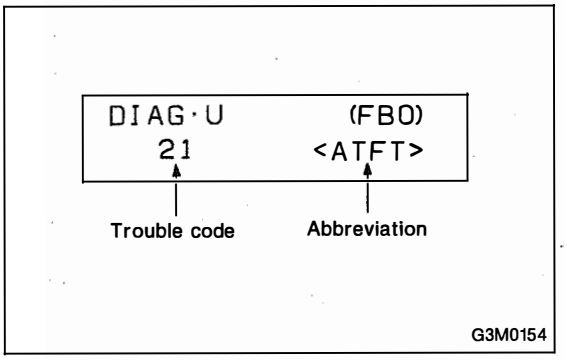
G3M0152

T: MODE FB0
— ON-BOARD DIAGNOSTICS (DIAG. U) —

DISPLAY:

Current trouble code determined by on-board diagnostics.

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [0] [ENT] in that order.



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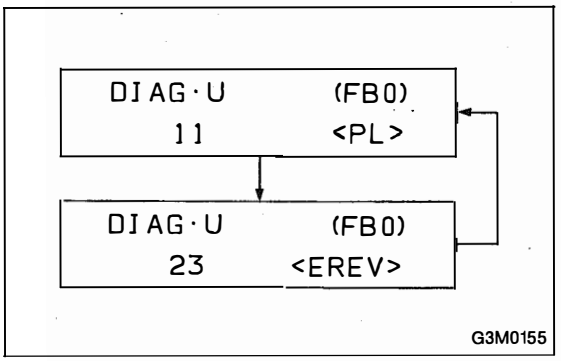
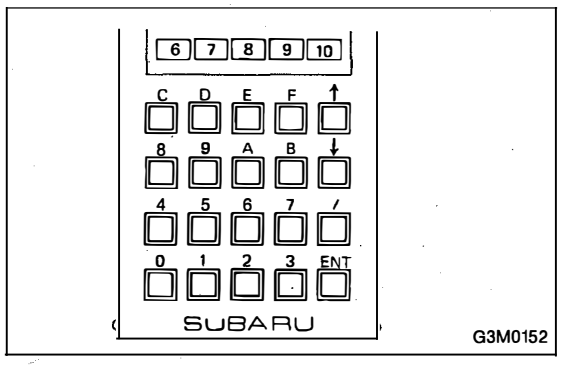
3) Ensure displayed trouble code(s).
- When there is only one trouble code



G3M0155

- When there are multiple trouble codes

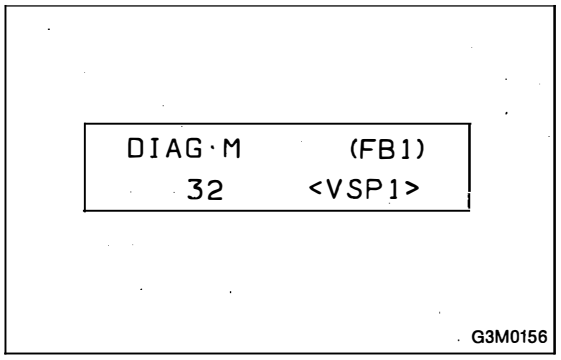


U: MODE FB1
— ON-BOARD DIAGNOSTICS (DIAG. M) —

DISPLAY:

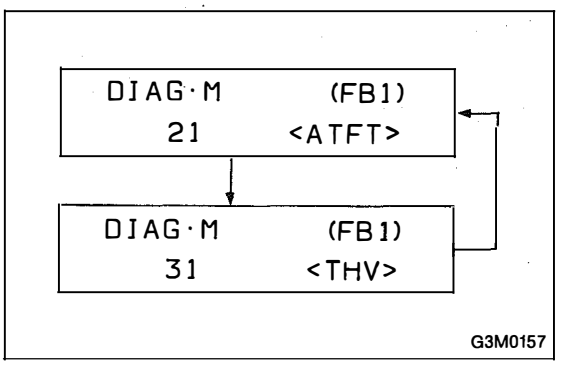
Previous trouble code stored in by on-board diagnostics.

1) Connect select monitor.
2) Designate mode using function key.
Press [F] [B] [1] [ENT] in that order.



3) Ensure displayed trouble code(s).
- When there is only one trouble code

- When there are multiple trouble codes



V: MODE FC0 — BACK-UP CLEAR —

DISPLAY:

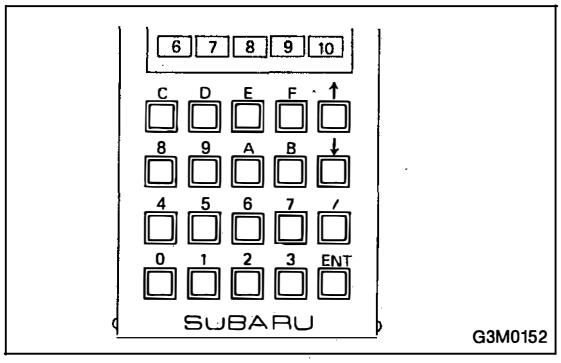
Function of clearing trouble code stored in memory.

The current trouble history code is deleted from the monitor when the ignition switch is turned OFF after performing on-board diagnostics. However, past trouble history code are stored in TCM. They remain in memory even when the ignition switch is turned OFF, because there is a memory back-up battery. The current trouble history code can be displayed again when on-board diagnostics is performed after driving, provided that no inspection or repair has been made.

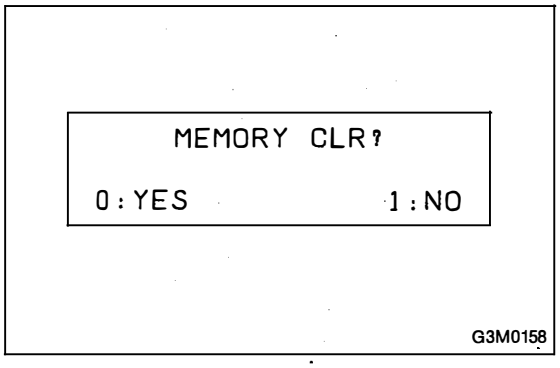
To delete past trouble history codes, first perform on-board diagnostics after inspection and repair using the current trouble history code, then confirm that no trouble code is displayed. Next, select and execute a particular mode on the select monitor.

NOTE:

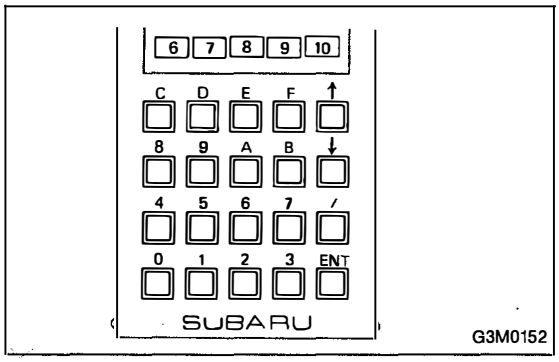
- Since the past trouble history is deleted, it is necessary when erasing the trouble code to inspect and make repairs according to the trouble code, and ensure that no trouble code is indicated in on-board diagnostics.
- The past trouble history will not be not lost, provided inspection and repairs are performed according to the current trouble history code, and that no trouble remains.



1) Connect select monitor.
2) Designate mode using function key.
Press [F] [C] [0] [ENT] in that order.



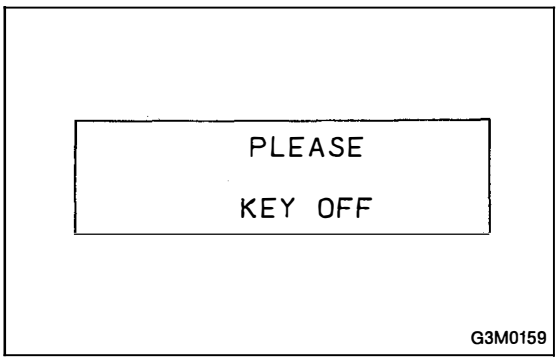
3) Ensure displayed message.



4) Press [ENT] key.
- When executing, (YES)

Press [0] [ENT] in that order.
- When not executing, (NO)

Press [1] [ENT] in that order.



5) When executed, the indication as shown here appears for approximately four seconds, and the past trouble history is deleted.

6) After the display is gone, turn ignition switch to OFF.

10. General Diagnostic Table

Symptom	Problem parts
Starter does not rotate when select lever is in "P" or "N"; starter rotates when select lever is in "R", "D", "3" or "2".	1) Inhibitor switch 2) Select cable 3) Select lever 4) Starter motor and harness
Abnormal noise when select lever is in "P" or "N".	1) Strainer 2) Duty solenoid C 3) Oil pump 4) Drive plate 5) ATF level too high or too low
Hissing noise occurs during standing start.	1) Strainer 2) ATF level too high or too low
Noise occurs while driving in "D1".	1) Final gear 2) Planetary gear 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D2".	
Noise occurs while driving in "D3".	1) Final gear 2) Low & reverse brake 3) Reduction gear 4) Differential gear oil level too high or too low
Noise occurs while driving in "D4".	1) Final gear 2) Low & reverse brake 3) Planetary gear 4) Reduction gear 5) Differential gear oil level too high or too low
Engine stalls while shifting from one range to another.	1) Control valve 2) Lock-up damper 3) Engine performance
Vehicle moves when select lever is in "N".	1) Control unit 2) Inhibitor switch 3) Forward clutch
Shock occurs when select lever is moved from "N" to "D".	1) Control module 2) Accumulator ("N" to "D") 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from "N" to "D".	1) Control module 2) Control valve 3) Forward clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case
Shock occurs when select lever is moved from "N" to "R".	1) Control module 2) Accumulator (4A) 3) Control valve 4) ATF deterioration 5) Dropping resistor
Excessive time lag occurs when select lever is moved from "N" to "R".	1) Control valve 2) Low & reverse clutch 3) Reverse clutch 4) Duty solenoid A 5) Forward clutch seal ring 6) Front gasket transmission case

Symptom	Problem parts
Vehicle does not start in any shift range (engine stalls).	1) Parking brake mechanism 2) Planetary gear
Vehicle does not start in any shift range (engine revving up).	1) Strainer 2) Duty solenoid A 3) Control valve 4) Drive pinion 5) Hypoid gear 6) Axle shaft 7) Differential gear 8) Oil pump 9) Input shaft 10) Output shaft 11) Planetary gear 12) Drive plate 13) ATF level too low 14) Front gasket transmission case
Vehicle does not start in "R" range only (engine revving up).	1) Select cable 2) Select lever 3) Control valve 4) Low & reverse clutch 5) Reverse clutch
Vehicle does not start in "R" range only (engine stalls).	1) Forward clutch 2) Band brake 3) Planetary gear 4) Parking brake mechanism
Vehicle does not start in "D", "3" or "2" range only (engine revving up).	1) Forward clutch 2) One-way clutch (1-2)
Vehicle does not start in "D", "3", "2" or "1" range only (engine revving up).	1) Forward clutch
Vehicle does not start in "D", "3", "2" or "1" range only (engine stalls).	1) Reverse clutch
Vehicle starts in "R" range only (engine revving up).	1) Control valve
Acceleration during standing starts is poor (high stall rpm).	1) Control valve 2) Forward clutch 3) Reverse clutch 4) ATF level too low 5) Front gasket transmission case
Acceleration during standing starts is poor (low stall rpm).	1) Oil pump 2) Torque converter one-way clutch 3) Engine performance
Acceleration is poor when select lever is in "D", "3" or "2" range (normal stall rpm).	1) Control module 2) Control valve 3) High clutch 4) Brake band 5) Planetary gear
Acceleration is poor when select lever is in "R" (normal stall rpm).	1) Control module 2) Overrunning clutch 3) High clutch 4) Brake band 5) Planetary gear

Symptom	Problem parts
No shift occurs from 1st to 2nd gear.	1) Control module 2) Vehicle speed sensor 1 3) Vehicle speed sensor 2 4) Throttle position sensor 5) Shift solenoid 1 6) Shift solenoid 2 7) Control valve 8) Brake band
No shift occurs from 2nd to 3rd gear.	1) Control module 2) Control valve 3) High clutch 4) One-way clutch (3-4)
No shift occurs from 3rd to 4th gear.	1) Control module 2) Accumulator (3R) 3) ATF temperature sensor 4) Control valve 5) Band brake
Engine brake is not effected when select lever is in "3" range.	1) Inhibitor switch 2) Control module 3) Throttle position sensor 4) Control valve 5) Shift solenoid 3
Engine brake is not effected when select lever is in "3" or "2" range.	1) Control valve 2) Overrunning clutch
Engine brake is not effected when select lever is in "1" range.	1) Control valve 2) Low & reverse brake clutch
Shift characteristics are erroneous.	1) Inhibitor switch 2) Control module 3) Vehicle speed sensor 1 4) Vehicle speed sensor 2 5) Throttle position sensor 6) Control valve
No lock-up occurs.	1) Control module 2) Throttle position sensor 3) ATF temperature sensor 4) Control valve 5) Lock-up facing 6) Engine speed signal
Parking brake is not effected.	1) Select cable 2) Select lever 3) Parking mechanism
Shift lever cannot be moved or is hard to move from "P" range.	
ATF spurts out.	1) ATF level too high
Differential oil spurts out.	1) Differential gear oil too high
Differential oil level changes excessively.	1) Seal pipe 2) Double oil seal
Odor is produced from ATF supply pipe.	1) Transfer clutch 2) Forward clutch 3) Overrunning clutch 4) High clutch 5) Band brake 6) Low & reverse clutch 7) Reverse clutch 8) Lock-up facing 9) ATF deterioration

Symptom	Problem parts
Vehicle is not set in FWD mode.	1) Control module 2) FWD switch 3) Transfer clutch 4) Transfer valve 5) Duty solenoid C
Select lever is hard to move.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate
Select lever is too high to move (unreasonable resistance).	1) Detent spring 2) Manual plate
Select lever slips out of operation during acceleration or while driving on rough terrain.	1) Select cable 2) Select lever 3) Detent spring 4) Manual plate

MEMO:

1. Supplemental Restraint System "Airbag"

Airbag system wiring harness is routed near the ABS control module, ABS sensor and hydraulic control unit.

CAUTION:

- **All Airbag system wiring harness and connectors are colored yellow. Do not use electrical test equipment on these circuit.**
- **Be careful not to damage Airbag system wiring harness when servicing the ABS control module, ABS sensor and hydraulic control unit.**

2. Pre-inspection

Before performing diagnostics, check the following items which might affect ABS problems:

A: MECHANICAL INSPECTION

1. POWER SUPPLY

1) Measure battery voltage and specific gravity of electrolyte.

Standard voltage: 12 V, or more
Specific gravity: Above 1.260

2) Check the condition of the main and other fuses, and harnesses and connectors. Also check for proper grounding.

2. BRAKE FLUID

1) Check brake fluid level.
2) Check brake fluid leakage.

3. BRAKE DRAG

Check brake drag. <Ref. to 4-4 [K100].>

4. BRAKE PAD AND ROTOR

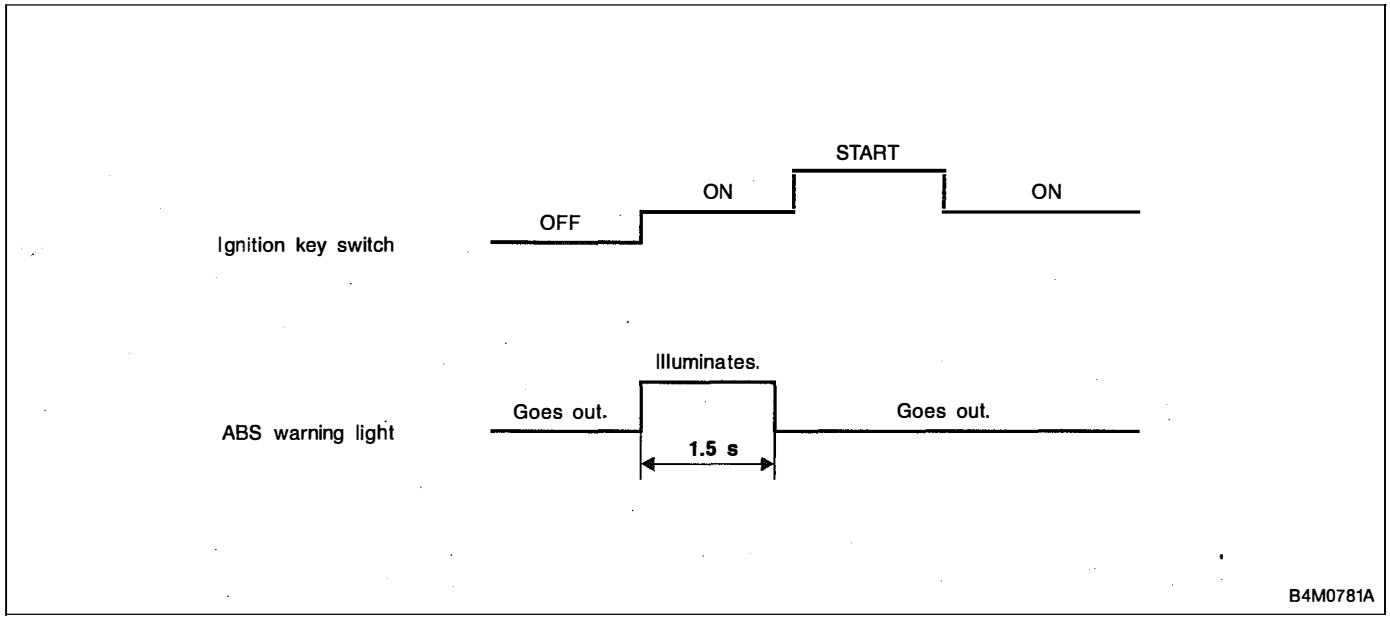
Check brake pad and rotor. <Ref. to 4-4 [K100].>

5. TIRE SPECIFICATIONS, TIRE WEAR AND AIR PRESSURE

Check tire specifications, tire wear and air pressure. <Ref. to 4-2 [S1A1], [S1A2].>

B: ELECTRICAL INSPECTION

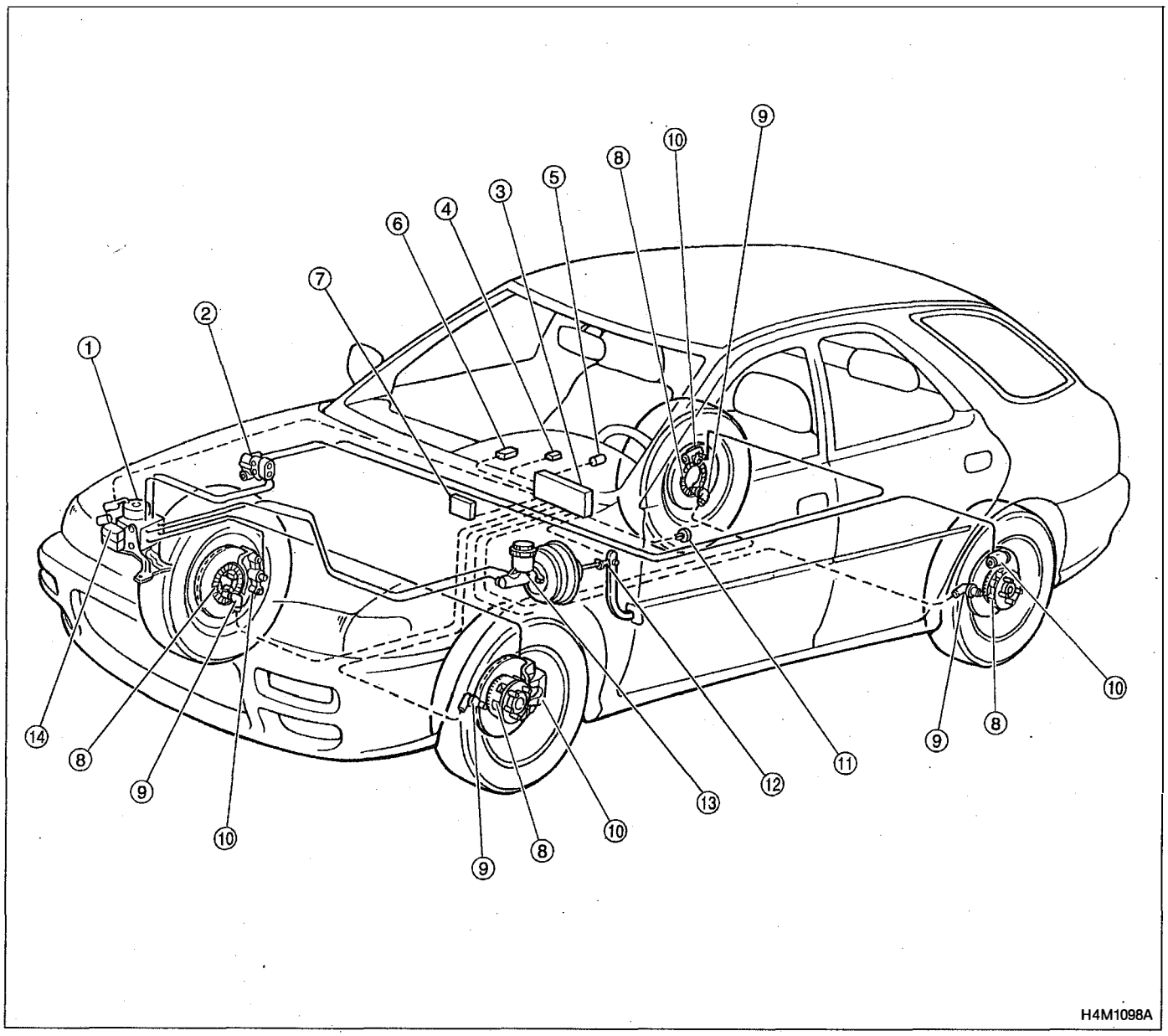
1. WARNING LIGHT ILLUMINATION PATTERN



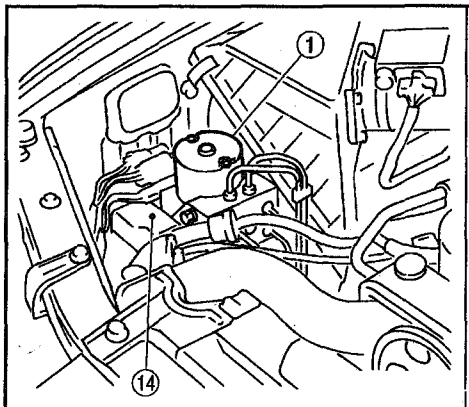
1) When the ABS warning light does not illuminate in accordance with this illumination pattern, there must be an electrical malfunction.
2) When the ABS warning light remains constantly OFF, repair the ABS warning light circuit or diagnosis circuit. <Ref. to [T7A0].>

NOTE:
Even though the ABS warning light does not go out 1.5 seconds after it illuminates, the ABS system operates normally when the warning light goes out while driving at approximately 12 km/h (7 MPH). However, the Anti-lock brakes do not work while the ABS warning light is illuminated.

3. Electrical Components Location



① Hydraulic control unit (H/U)
② Proportioning valve
③ ABS control module (ABSCM)
④ ABS diagnosis connector
⑤ ABS warning light
⑥ Data link connector (for Subaru select monitor)
⑦ Transmission control module (only AT vehicle)
⑧ Tone wheel
⑨ ABS sensor
⑩ Wheel cylinder
⑪ G sensor (only AWD vehicle)
⑫ Brake switch
⑬ Master cylinder
⑭ Relay box



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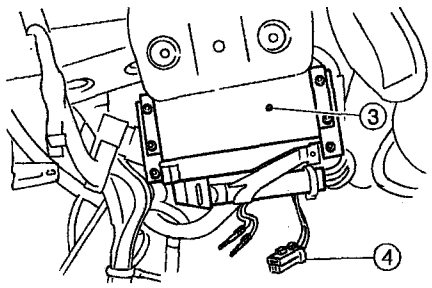

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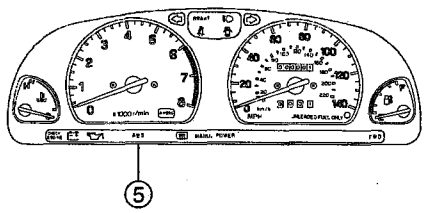

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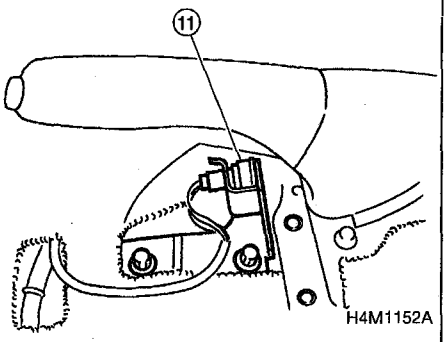

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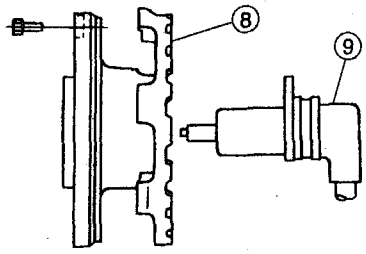

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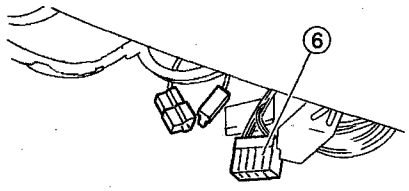

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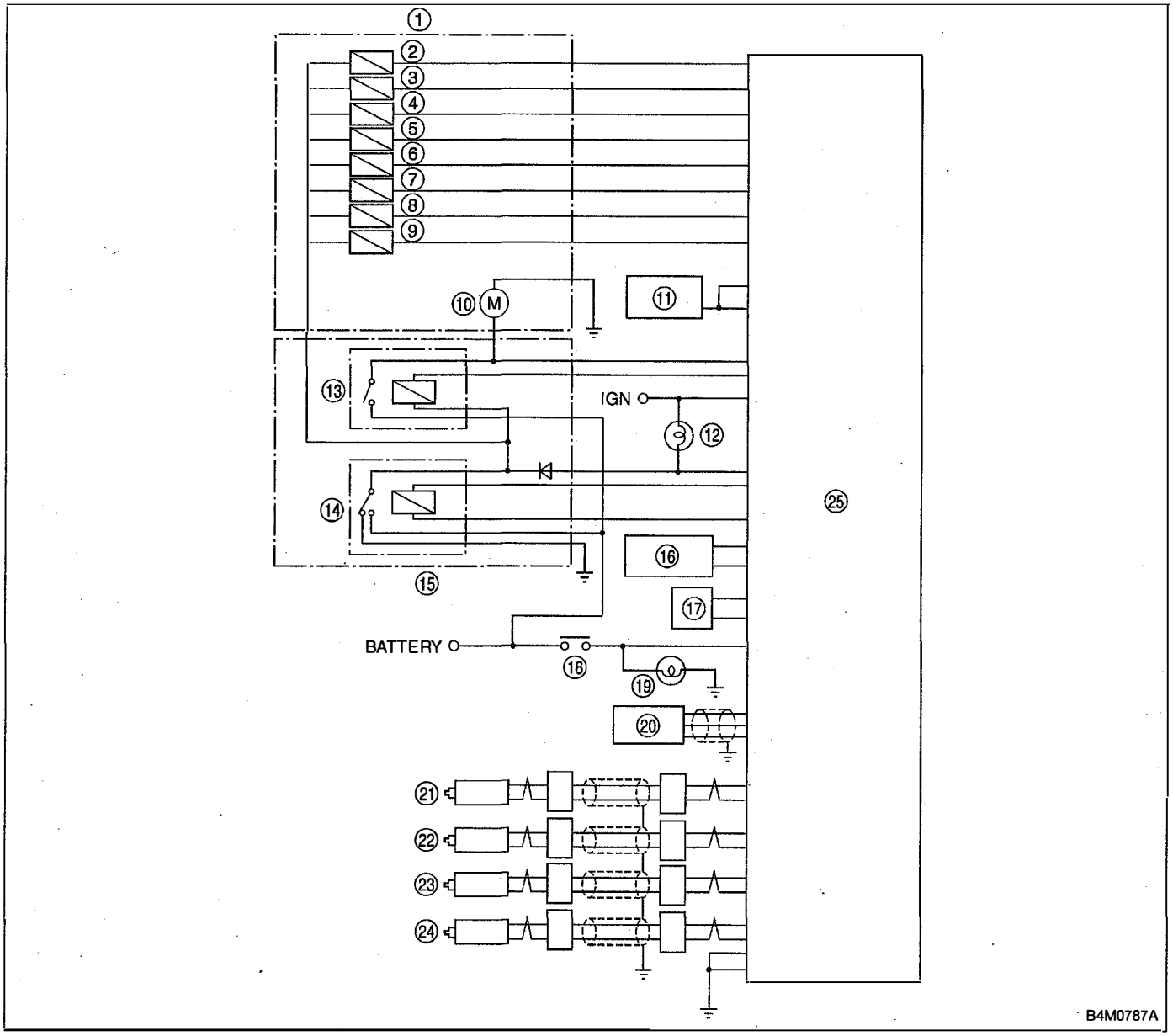
4. Schematic

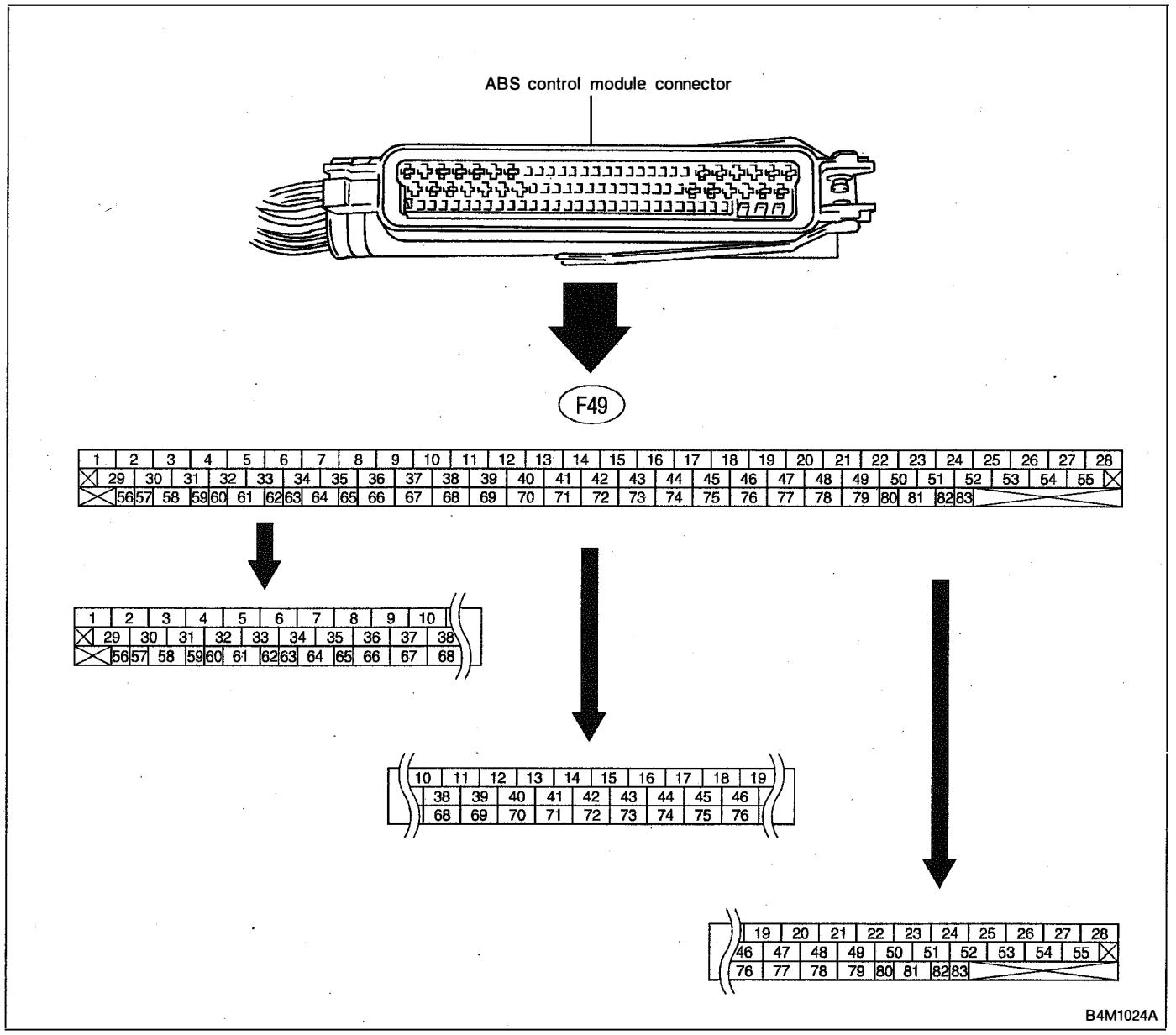


① Hydraulic control unit (H/U)
② Front left inlet solenoid valve
③ Front left outlet solenoid valve
④ Front right inlet solenoid valve
⑤ Front right outlet solenoid valve
⑥ Rear left inlet solenoid valve
⑦ Rear left outlet solenoid valve
⑧ Rear right inlet solenoid valve
⑨ Rear right outlet solenoid valve
⑩ Motor
⑪ Transmission control module (only AT model)
⑫ ABS warning light
⑬ Motor relay
⑭ Valve relay
⑮ Relay box
⑯ Data link connector
⑰ ABS diagnosis connector
⑱ Stop light switch
⑲ Stop light
⑳ G sensor (only AWD model)
㉑ Front left ABS sensor
㉒ Front right ABS sensor
㉓ Rear left ABS sensor
㉔ Rear right ABS sensor
㉕ ABS control module (ABSCM)

MEMO:

5. Control Module I/O Signal

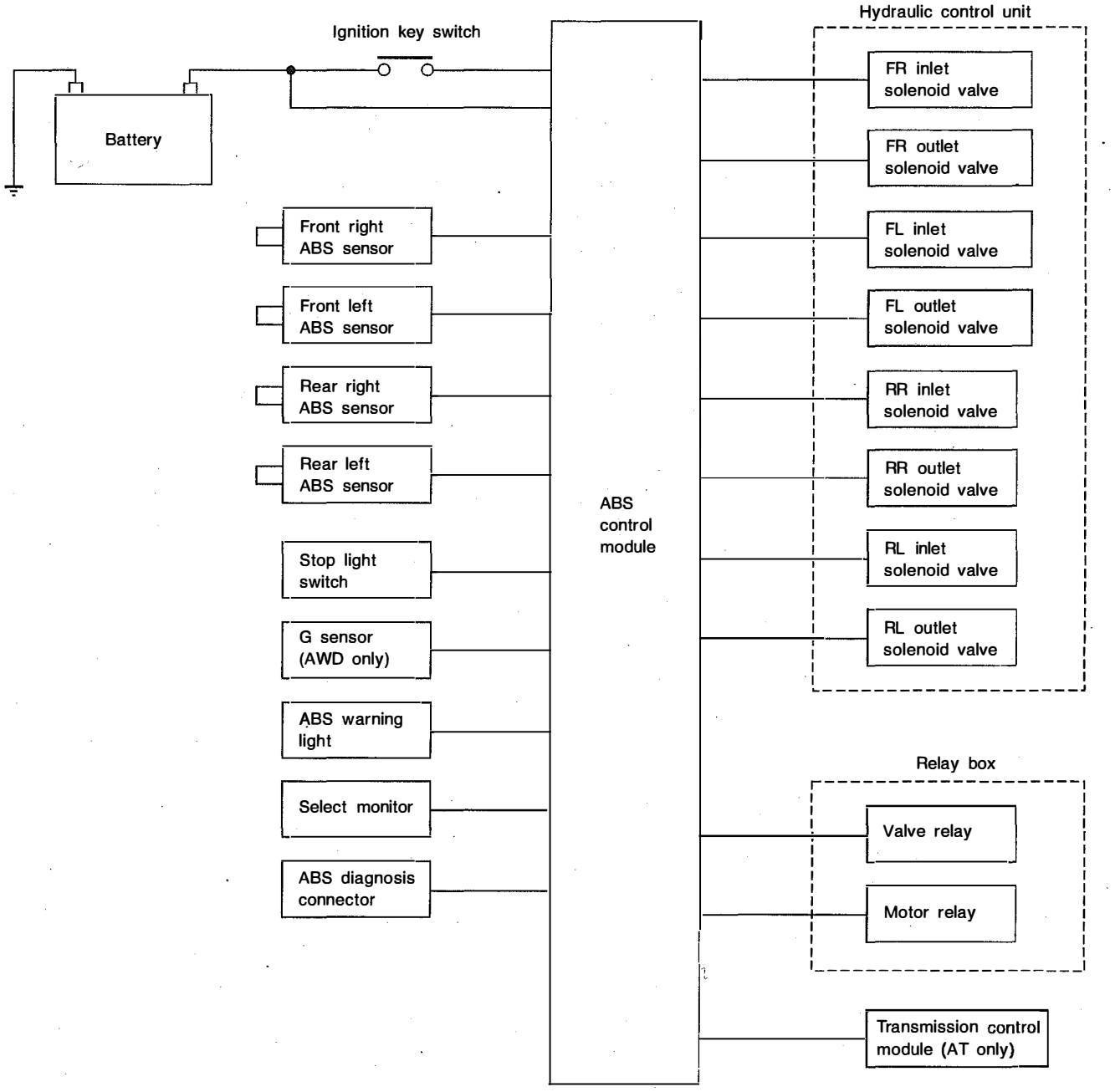
1. I/O SIGNAL VOLTAGE



NOTE:
The terminal numbers in the ABS control module connector are as shown in the figure.

Contents			Terminal No.	Input/Output signal Measured value and measuring conditions
ABS sensor (Wheel speed sensor)	Front left wheel		49—19	0.12 — 1 V (When it is 20 Hz.)
	Front right wheel		14—15	
	Rear left wheel		16—17	
	Rear right wheel		18—46	
Hydraulic control unit	Solenoid valve	Front left outlet	51—1	10 — 13 V when the valve is OFF and less than 1.5 V when the valve is ON.
		Front right outlet	3—1	
		Rear left outlet	4—1	
		Rear right outlet	50—1	
		Front left inlet	24—1	
		Front right inlet	30—1	
		Rear left inlet	31—1	
		Rear right inlet	23—1	
Relay box	Valve relay power supply		27—1	10 — 13 V when ignition switch is ON.
	Valve relay coil		47—1	Less than 1.5 V when ignition switch is ON.
	Motor relay coil		22—1	More than 10 V when the ABS control does not operate still and less than 1.5 V when ABS operates.
	Motor monitoring		10—1	Less than 1.5 V when the ABS control does not operate still and more than 10 V when ABS operates.
G sensor (AWD model only)	power supply		8—45	4.75 — 5.25 V
	ground		45	—
	output		7—45	2.3±0.2 V when vehicle is in horizontal position.
Stop light switch			36—1	Less than 1.5 V when the stop light is OFF and more than 4.5 V when the stop light is ON.
ABS warning light			54—1	Less than 1.5 V during 1.5 seconds when ignition switch is ON, and 10 — 14 V after 1.5 seconds.
AT ABS signal (AT model only)			12—1	Less than 1.5 V when the ABS control does not operate still and more than 5.5 V when ABS operates.
ABS operation signal monitor			39—1	Less than 1.5 V when the ABS control does not operate still and more than 5.5 V when ABS operates.
Select monitor	Data is received.		11—1	Less than 1.5 V when no data is received.
	Data is sent.		38—1	4.75 — 5.25 V when no data is sent.
ABS diagnosis connector	Terminal No. 1		5—1	10 — 14 V when ignition switch is ON.
	Terminal No. 2		13—1	10 — 14 V when ignition switch is ON.
Power supply			28—1	10 — 14 V when ignition switch is ON.
Grounding line			1	—
Grounding line			55	—

2. I/O SIGNAL DIAGRAM



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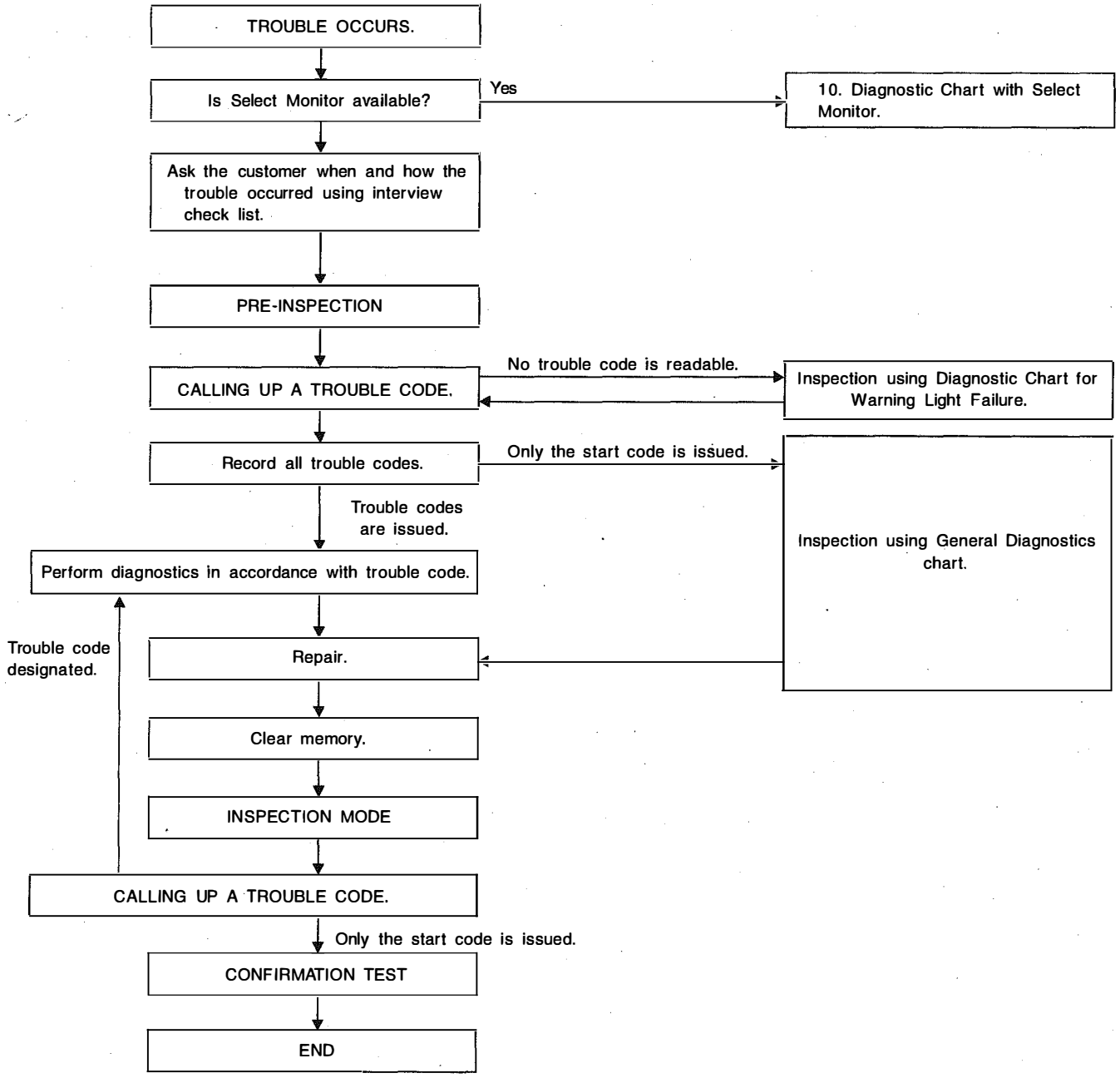
6. Diagnostics Chart for On-board Diagnosis System

A: BASIC DIAGNOSTICS PROCEDURE



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NOTE:
- To check harness for broken wires or short circuits, shake it while holding it or the connector.
- When ABS warning light illuminates, read and record trouble code indicated by ABS warning light.

B: CHECK LIST FOR INTERVIEW

Check the following items about the vehicle's state.

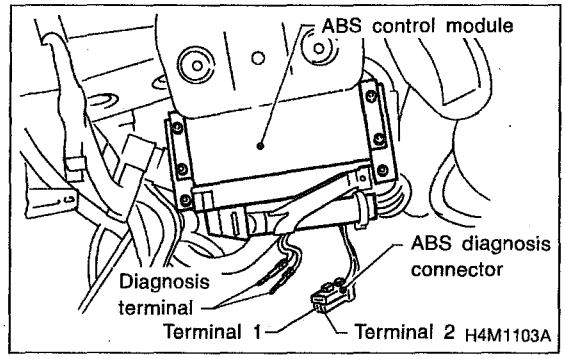
1. THE STATE OF THE ABS WARNING LIGHT			
ABS warning light comes on.	☐ Always ☐ Sometimes ☐ Only once ☐ Does not come on ● When /how long does it come on?:		
Ignition key position	☐ LOCK ☐ ACC ☐ ON (before starting engine) ☐ START ☐ On after starting (Engine is running) ☐ On after starting (Engine is stop)		
Timing	☐ Immediately after ignition is ON. ☐ Immediately after ignition starts.		
	☐ When advancing	km/h to	km/h
		MPH to	MPH
	☐ While traveling at a constant speed	km/h	MPH
	☐ When decelerating	km/h to	km/h
		MPH to	MPH
	☐When turning to right	Steering angle :	deg
		Steering time :	sec
	☐ When turning to left	Steering angle :	deg
		Steering time :	sec
	☐ When moving other electrical parts		
	● Parts name : ● Operating condition :		
2. SYMPTOMS			
ABS operating condition	☐ Performs no work.		
	☐ Operates only when abruptly applying brakes.	Vehicle speed :	km/h
			MPH
	● How to step on brake pedal :		
	a) Operating time :		sec
	b) Operating noise : ☐ Produce / ☐ Does not produce		
	● What kind of noise?	☐ Knock ☐ Gong gong ☐ Bong ☐ Buzz ☐ Gong gong buzz ☐ Others :	
	c) Reaction force of brake pedal		
		☐ Stick ☐ Press down once with a clunk ☐ Press and released ☐ Others :	

Behavior of vehicle	a) Directional stability cannot be obtained or steering arm refuses to work when applying brakes : ☐ Yes / ☐No	
	● When :	☐ Vehicle turns to right ☐ Vehicle turns to left ☐ Spins ☐ Others :
	b) Directional stability cannot be obtained or steering arm refuses to work when accelerating : ☐ Yes / ☐No	
	● When :	☐ Vehicle turns to right ☐ Vehicle turns to left ☐ Spins ☐ Others :
	c) Brakes are out of order : ☐ Yes / ☐No	
	● What :	☐ Braking distance is long ☐ Brakes lock or drag ☐ Pedal stroke is long ☐ Pedal sticks ☐ Others :
	d) Poor acceleration : ☐ Yes / ☐No	
	● What :	☐ Fails to accelerate ☐ Engine stalls ☐ Others :
	e) Occurrence of vibration : ☐ Yes / ☐No	
	● Where ● What kind :	
	f) Occurrence of abnormal noise : ☐ Yes / ☐No	
	● Where ● What kind :	
	g) Occurrence of other phenomena : ☐ Yes / ☐No	
	● What kind :	
3. CONDITIONS UNDER WHICH TROUBLE OCCURS		
Environment	a) Weather	☐ Fine ☐ Cloudy ☐ Rainy ☐ Snowy ☐ Various/Others :
	b) Ambient temperature	F(°C)
	c) Road	☐ Urban area ☐ Suburbs ☐ Highway ☐ General road ☐ Ascending slope ☐ Descending slope ☐ Paved road ☐ Gravel road ☐ Muddy road ☐ Sandy place ☐ Others :
	d) Road surface	☐ Dry ☐ Wet ☐ New-fallen snow ☐ Compressed snow ☐ Frozen slope ☐ Others :

Condition	a) Brakes	Deceleration : g
		☐ Continuous / ☐Intermittent
	b) Accelerator	Acceleration : g
		☐ Continuous / ☐ Intermittent
	c) Vehicle speed	km/h | MPH
		☐ Advancing ☐ Accelerating ☐ Reducing speed ☐ Low speed ☐ Turning ☐ Others :
	d) Tire inflation pressure	Front RH tire : kPa
		Front LH tire : kPa
		Rear RH tire : kPa
		Rear LH tire : kPa
	e) Degree of wear	Front RH tire :
		Front LH tire :
		Rear RH tire :
		Rear LH tire :
	f) Genuine parts are used. : ☐Yes / ☐No	
	g) Chain is passed around tires. : ☐Yes / ☐No	
	h) T tire is used. : ☐Yes / ☐No	
	i) Condition of suspension alignment :	
	j) Loading state :	
	k) Repair parts are used. : ☐Yes / ☐No	
	• What :	
	l) Others :	

C: INSPECTION MODE

Reproduce the condition under which the problem has occurred as much as possible.
Drive the vehicle at a speed more than 40 km/h (25 MPH) for at least one minute.



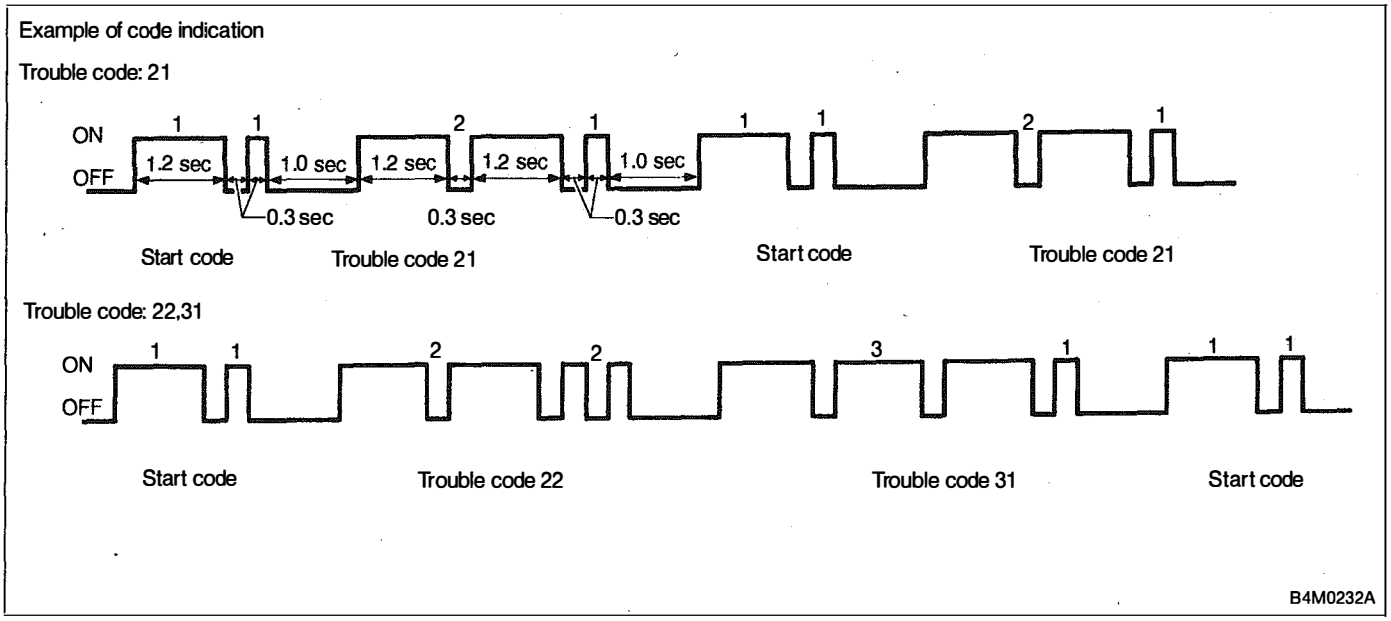
D: TROUBLE CODES

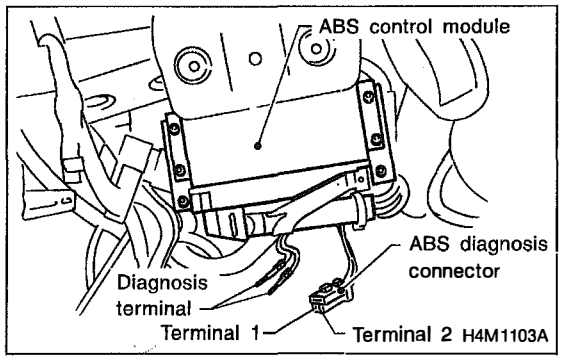
When on-board diagnosis of the ABS control module detects a problem, the information (up to a maximum of three) will be stored in the EEP ROM as a trouble code. When there are more than three, the most recent three will be stored. (Stored codes will stay in memory until they are cleared.)

1. CALLING UP A TROUBLE CODE

1) Take out ABS diagnosis connector from side of driver's seat heater unit.
2) Turn ignition switch OFF.
3) Connect ABS diagnosis connector terminal 2 to diagnosis terminal.
4) Turn ignition switch ON.
5) ABS warning light is set in the diagnostic mode and blinks to identify trouble code.
6) After the start code (11) is shown, the trouble codes will be shown in order of the last information first.
These repeat for a maximum of 5 minutes.

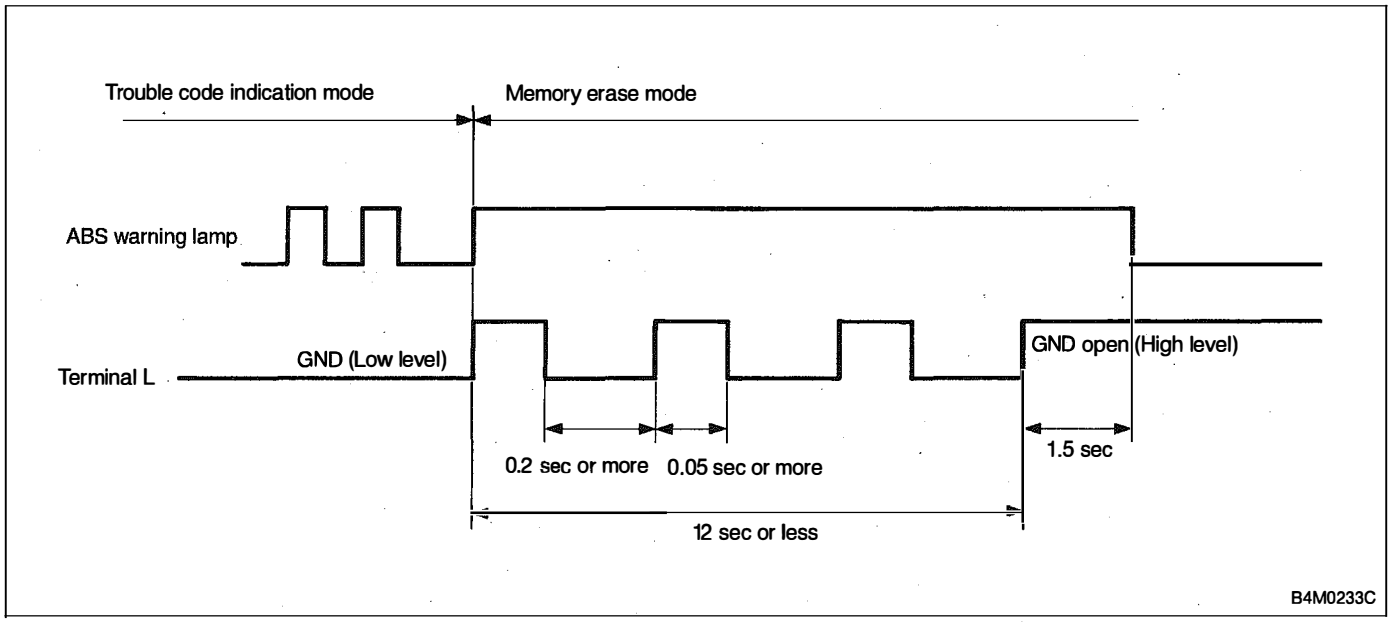
NOTE:
When there are no trouble codes in memory, only the start code (11) is shown.





2. CLEARING MEMORY

1) After calling up a trouble code, disconnect ABS diagnosis connector terminal 2 from diagnosis terminal.
2) Repeat 3 times within approx. 12 seconds; connecting and disconnecting terminal 2 and diagnosis terminal for at least 0.05 seconds each time.



NOTE:
After diagnostics is completed, make sure to clear memory. Make sure only start code (11) is shown after memory is cleared.

MEMO:

7. Diagnostics Chart for ABS Warning Light Circuit and Diagnosis Circuit Failure

A: ABS WARNING LIGHT DOES NOT COME ON.

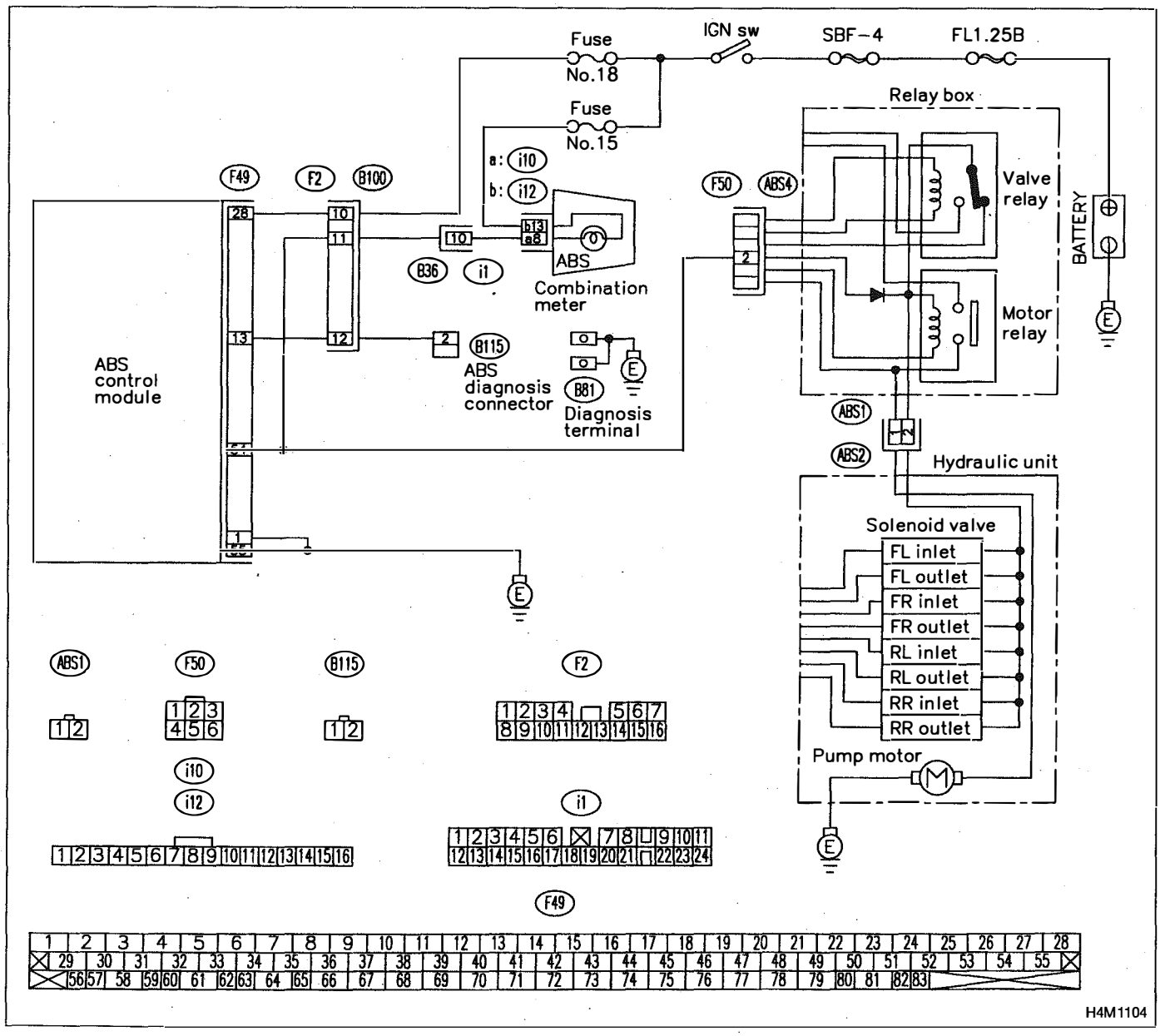
DIAGNOSIS:

- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When ignition switch is turned ON (engine OFF), ABS warning light does not come on.

WIRING DIAGRAM:



7A1	CHECK IF OTHER WARNING LIGHTS TURN ON.

Turn ignition switch to ON (engine OFF).

CHECK : ***Do other warning lights turn on?***

YES : Go to step **7A2.**

NO : Repair combination meter.

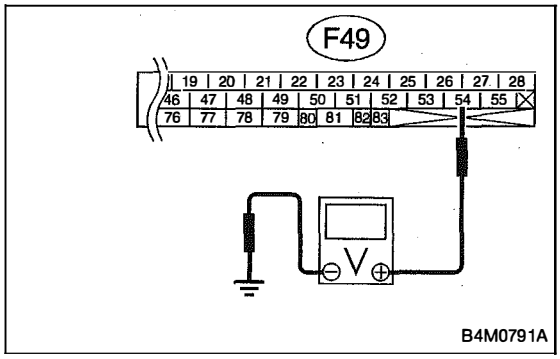
7A2	CHECK ABS WARNING LIGHT BULB.

1) Turn ignition switch to OFF.
2) Remove combination meter.
3) Remove ABS warning light bulb from combination meter.

CHECK : ***Is ABS warning light bulb OK?***

YES : Go to step **7A3.**

NO : Replace ABS warning light bulb.



7A3	CHECK WIRING HARNESS.

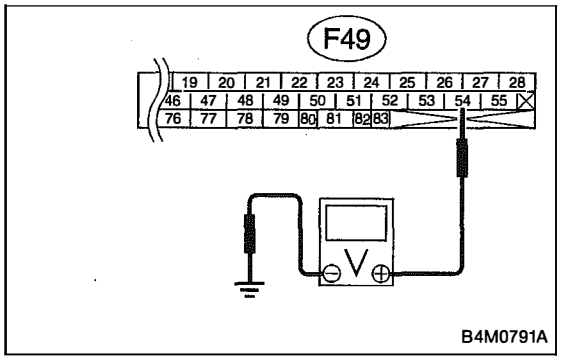
1) Disconnect connector from ABSCM.
2) Disconnect connector (F50) from relay box.
3) Turn ignition switch to ON.
4) Measure voltage between connector (F49) and chassis ground.

Connector & terminal
(F49) No. 54 (+) — Chassis ground (–):

CHECK : ***Is the voltage more than 10 V?***

YES : Go to step **7A4.**

NO : Repair broken wire in harness or connector.



7A4	CHECK WIRING HARNESS.

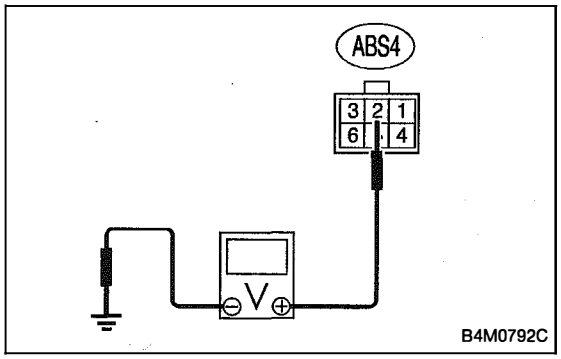
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector (F49) and chassis ground.

Connector & terminal
(F49) No. 54 (+) — Chassis ground (–):

CHECK : ***Is voltage less than 3 V?***

YES : Go to step **7A5.**

NO : Repair battery short of harness.

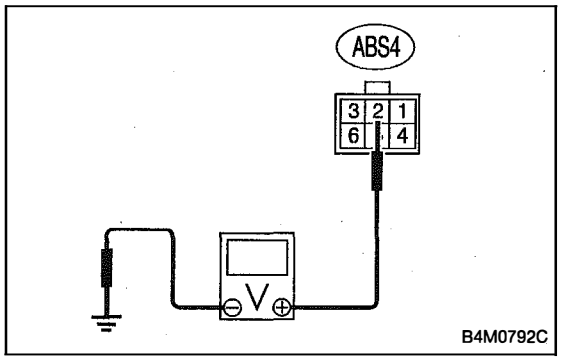


7A5	CHECK BATTERY SHORT OF RELAY BOX.

1) Disconnect connector from relay box.
2) Measure voltage between relay box and chassis ground.

Connector & terminal
(ABS4) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **7A6.**
NO : Replace relay box.



7A6	CHECK BATTERY SHORT OF RELAY BOX.

1) Turn ignition switch to ON.
2) Measure voltage between relay box and chassis ground.

Connector & terminal
(ABS4) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **7A7.**
NO : Replace relay box.

7A7	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK ***: Is there poor contact in connectors between combination meter and ABSCM? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Replace ABSCM.

MEMO:

B: ABS WARNING LIGHT DOES NOT GO OFF.

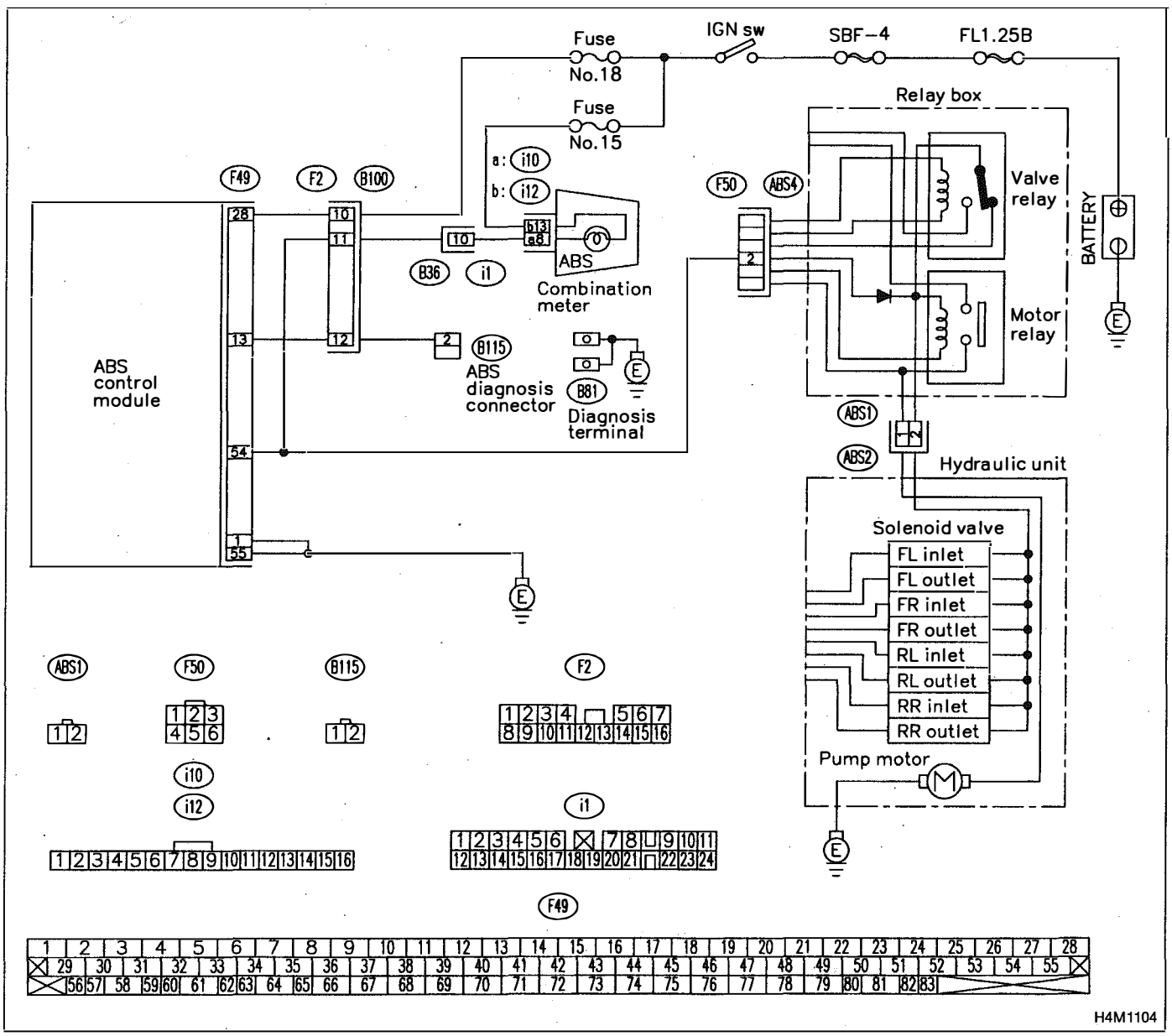
DIAGNOSIS:

- ABS warning light circuit is open or shorted.

TROUBLE SYMPTOM:

- When starting the engine and while ABS warning light is kept ON.

WIRING DIAGRAM:



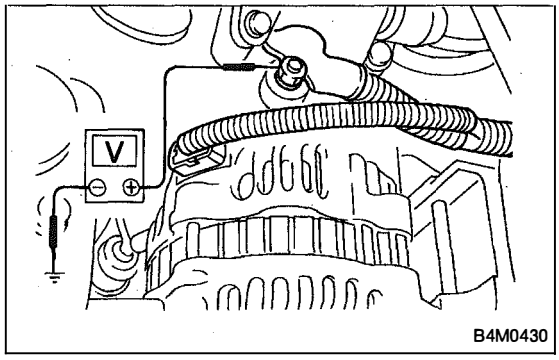
7B1	CHECK INSTALLATION OF ABSCM CONNECTOR.

Turn ignition switch to OFF.

CHECK : ***Is ABSCM connector inserted into ABSCM until the clamp locks onto it?***

YES : Go to step **7B2.**

NO : Insert ABSCM connector into ABSCM until the clamp locks onto it.



7B2	CHECK GENERATOR.

1) Start the engine.
2) Idle the engine.
3) Measure voltage between generator and chassis ground.

Terminal
Generator B terminal (+) — Chassis ground (–):

CHECK : ***Is the voltage between 10 and 15 V?***

YES : Go to step **7B3.**

NO : Repair generator.

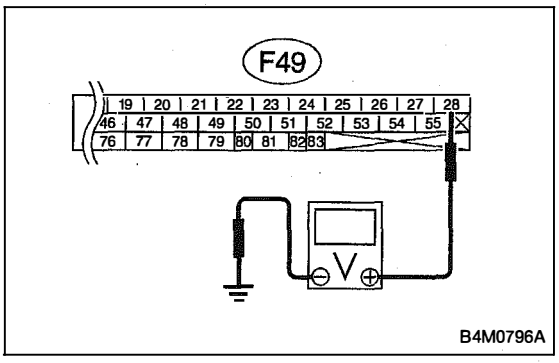
7B3	CHECK BATTERY TERMINAL.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact at battery terminal?***

YES : Repair battery terminal.

NO : Go to step **7B4.**



7B4	CHECK POWER SUPPLY OF ABSCM.

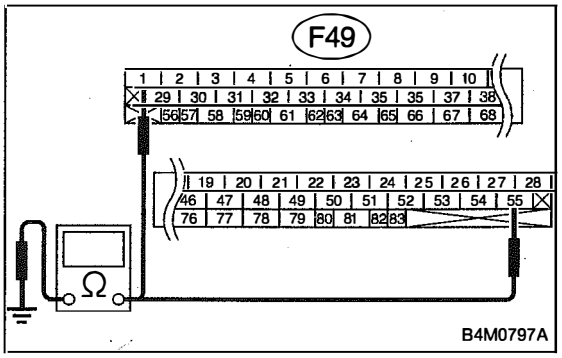
1) Disconnect connector from ABSCM.
2) Start engine.
3) Idle the engine.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 28 (+) — Chassis ground (–):

CHECK : ***Is the voltage between 10 and 15 V?***

YES : Go to step **7B5.**

NO : Repair ABSCM power supply circuit.



7B5	CHECK GROUND CIRCUIT OF ABSCM.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:
(F49) No. 55 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **7B6**.

NO : Repair ABSCM ground harness.

7B6	CHECK WIRING HARNESS.

1) Disconnect connector (F50) from relay box.
2) Turn ignition switch to ON.

CHECK ***: Does the ABS warning light remain off?***

YES : Go to step **7B7**.

NO : Repair front wiring harness.

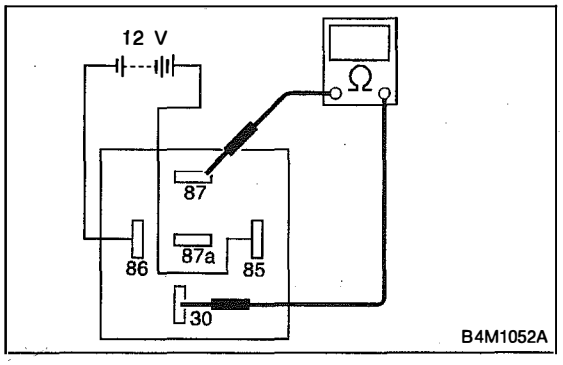
7B7	CHECK RELAY BOX.

1) Turn ignition switch to OFF.
2) Connect connector (F50) to relay box.
3) Remove valve relay from relay box.
4) Disconnect connector (ABS1) from hydraulic control unit.
5) Turn ignition switch to ON.

CHECK ***: Does the ABS warning light remain off?***

YES : Go to step **7B8**.

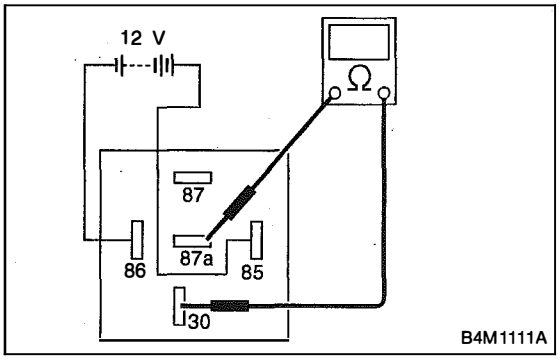
NO : Repair relay box and check fuse.



7B8	CHECK CONTACT POINT OF VALVE RELAY.

1) Connect battery to valve relay terminals No. 85 and No. 86.
2) Measure resistance between valve relay terminals.

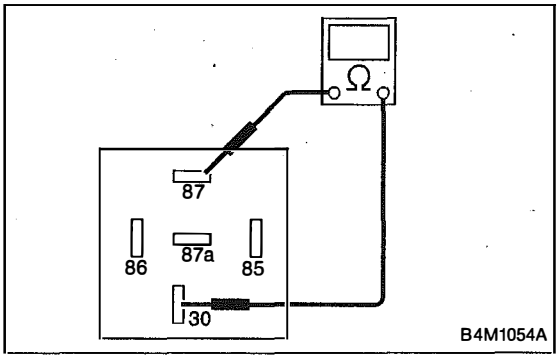
Terminals
No. 30 — No. 87:
CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **7B9**.
NO : Replace valve relay.



7B9	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

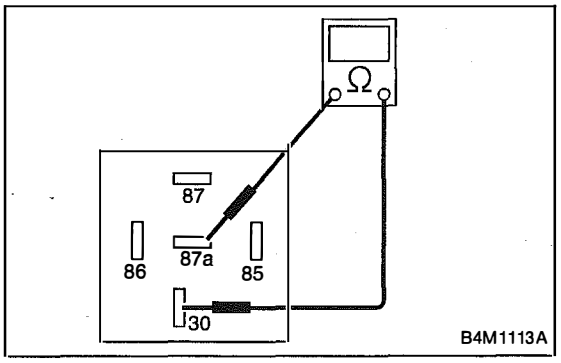
Terminals
No. 30 — No. 87a:
Is the resistance more than 1 MΩ?
YES : Go to step **7B10**.
NO : Replace valve relay.



7B10	CHECK CONTACT POINT OF VALVE RELAY.

1) Disconnect battery from valve relay terminals.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:
CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **7B11**.
NO : Replace valve relay.



7B11	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:
CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **7B12**.
NO : Replace valve relay.

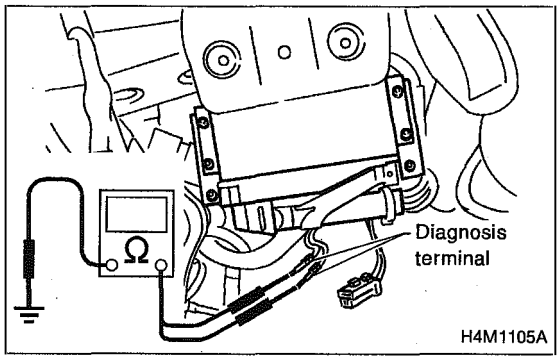
7B12	CHECK HYDRAULIC CONTROL UNIT.

1) Turn ignition switch to OFF.
2) Connect connector (ABS1) to hydraulic control unit.
3) Turn ignition switch to ON.

CHECK : ***Is the ABS warning light off?***

YES : Go to step **7B13.**

NO : Replace hydraulic control unit and check fuse No. 19.



7B13	CHECK DIAGNOSIS TERMINAL.

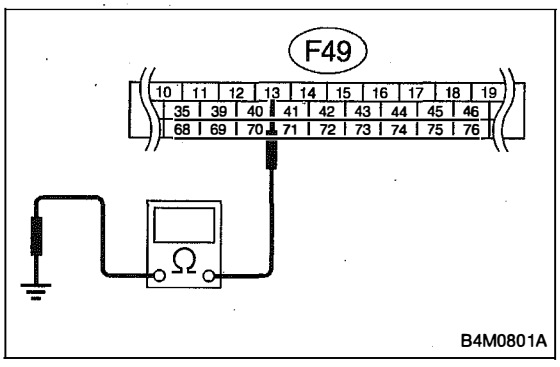
Measure resistance between diagnosis terminals (B81) and chassis ground.

Terminals
Diagnosis terminal (A) — Chassis ground:
Diagnosis terminal (B) — Chassis ground:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to step **7B14.**

NO : Repair diagnosis terminal harness.



7B14	CHECK DIAGNOSIS LINE.

1) Turn ignition switch to OFF.
2) Connect diagnosis terminal to ABS diagnosis connector (B115) No. 2.
3) Disconnect connector from ABSCM.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 13 — Chassis ground:

CHECK : ***Is the resistance less than 1 Ω?***

YES : Go to step **7B15.**

NO : Repair harness connector between ABSCM and ABS diagnosis connector.

7B15	CHECK POOR CONTACT IN ABSCM CONNECTOR.

CHECK : ***Is there poor contact in ABSCM connector?***
<Ref. to FOREWORD [T3C1].>

YES : Repair connector.

NO : Replace ABSCM.

C: TROUBLE CODE DOES NOT APPEAR.

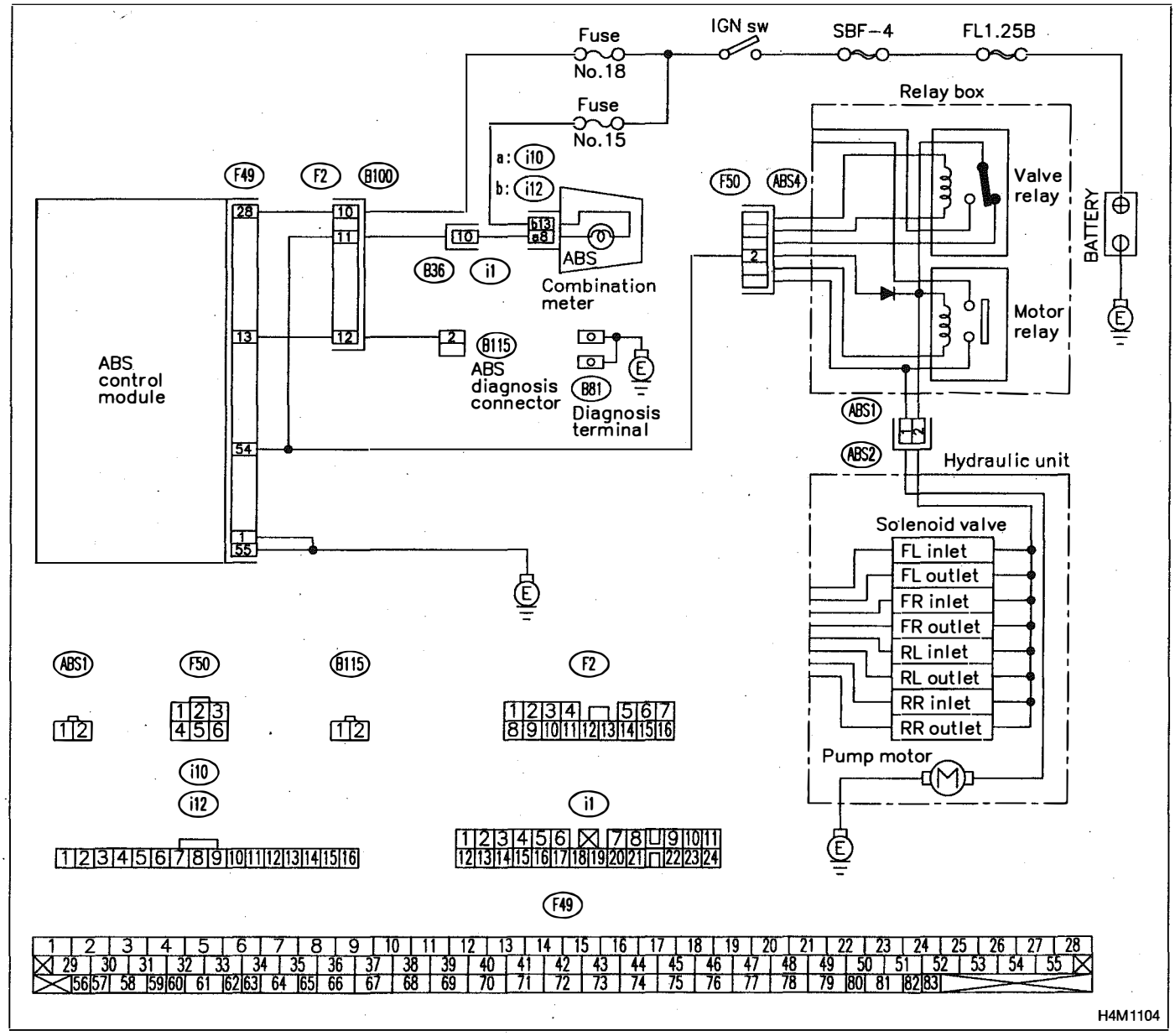
DIAGNOSIS:

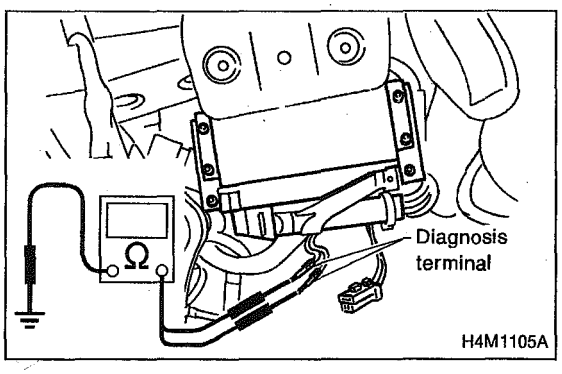
- Diagnosis circuit is open.

TROUBLE SYMPTOM:

- The ABS warning light turns on or off normally but the start code cannot be read out in the diagnostic mode.

WIRING DIAGRAM:



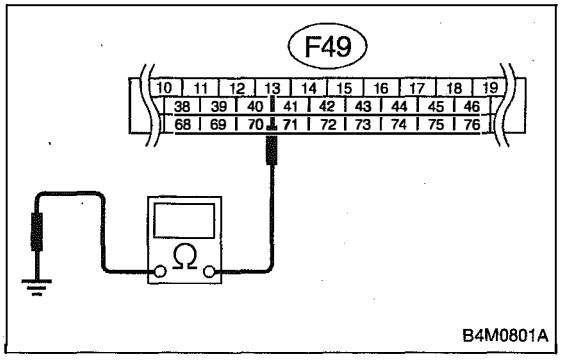


7C1	CHECK DIAGNOSIS TERMINAL.

Measure resistance between diagnosis terminals (B81) and chassis ground.

Terminals
Diagnosis terminal (A) — Chassis ground:
Diagnosis terminal (B) — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **7C2**.
NO : Repair diagnosis terminal harness.



7C2	CHECK DIAGNOSIS LINE.

1) Turn ignition switch to OFF.
2) Connect diagnosis terminal to ABS diagnosis connector (B115) No. 2.
3) Disconnect connector from ABSCM.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 13 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **7C3**.
NO : Repair harness connector between ABSCM and ABS diagnosis connector.

7C3	CHECK POOR CONTACT IN ABSCM CONNECTOR.

CHECK ***: Is there poor contact in ABSCM connector?***
<Ref. to FOREWORD [T3C1].>
YES : Repair connector.
NO : Replace ABSCM.

8. Diagnostics Chart with Trouble Code by ABS Warning Light

A: LIST OF TROUBLE CODE

Trouble code	Contents of diagnosis		Ref. to
11	Start code ● Trouble code is shown after start code. ● Only start code is shown in normal condition.		—
21	Abnormal ABS sensor (Open circuit or input voltage too high)	Front right ABS sensor	[T8B0]
23		Front left ABS sensor	[T8C0]
25		Rear right ABS sensor	[T8D0]
27		Rear left ABS sensor	[T8E0]
22	Abnormal ABS sensor (Abnormal ABS sensor signal)	Front right ABS sensor	[T8F0]
24		Front left ABS sensor	[T8G0]
26		Rear right ABS sensor	[T8H0]
28		Rear left ABS sensor	[T8I0]
29		Any one of four	[T8J0]
31	Abnormal solenoid valve circuit(s) in hydraulic unit	Front right inlet valve	[T8K0]
32		Front right outlet valve	[T8O0]
33		Front left inlet valve	[T8L0]
34		Front left outlet valve	[T8P0]
35		Rear right inlet valve	[T8M0]
36		Rear right outlet valve	[T8Q0]
37		Rear left inlet valve	[T8N0]
38		Rear left outlet valve	[T8R0]
41	Abnormal ABS control module		[T8S0]
42	Source voltage is low.		[T8T0]
44	A combination of AT control abnormal		[T8U0]
46	Abnormal G sensor power supply voltage		[T8V0]
51	Abnormal valve relay		[T8W0]
52	Abnormal motor and/or motor relay		[T8X0]
54	Abnormal stop light switch		[T8Y0]
56	Abnormal G sensor output voltage		[T8Z0]

MEMO:

B: TROUBLE CODE 21 (FRONT RH)
C: TROUBLE CODE 23 (FRONT LH)
D: TROUBLE CODE 25 (REAR RH)
E: TROUBLE CODE 27 (REAR LH)
— ABNORMAL ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

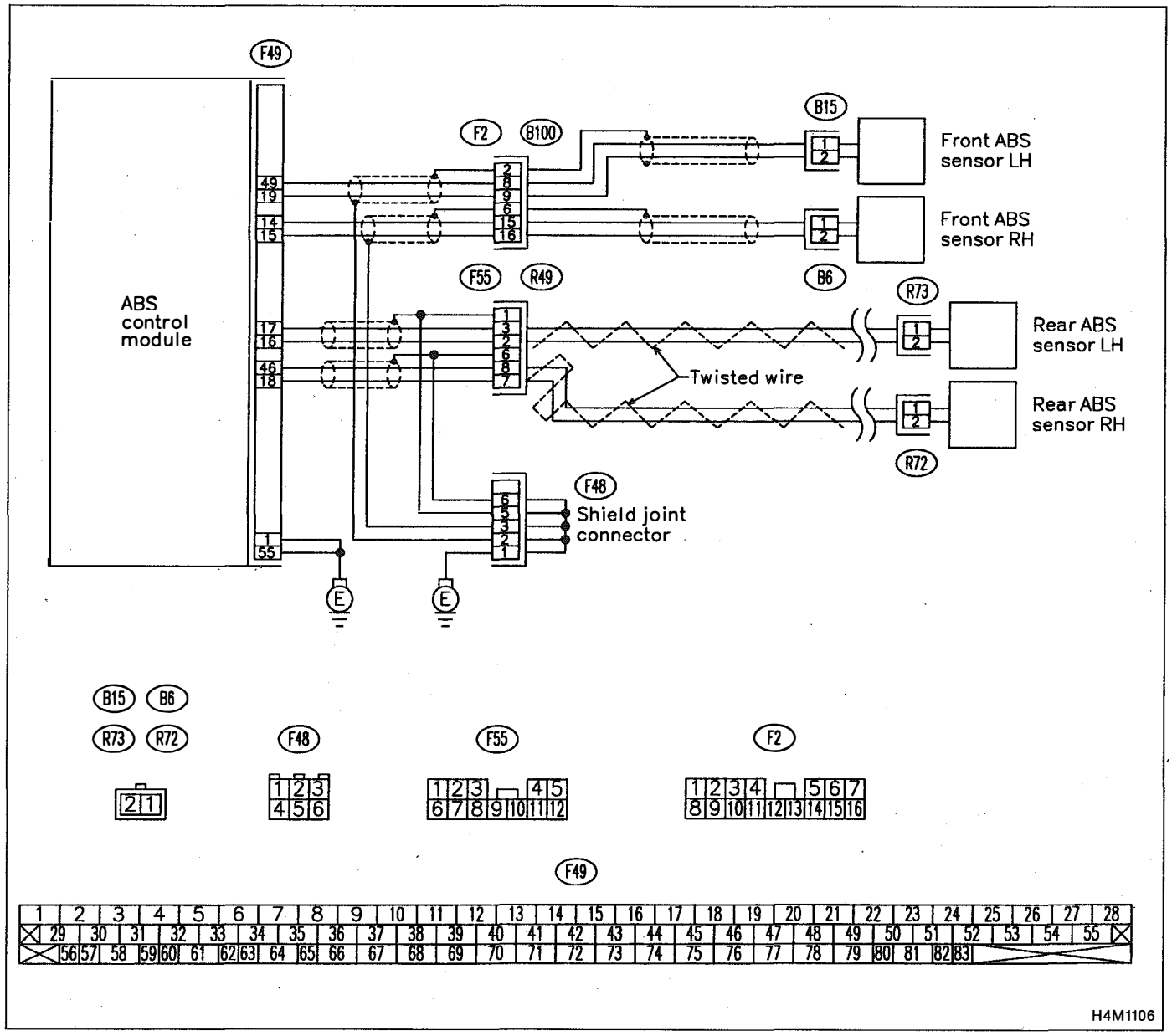
DIAGNOSIS:

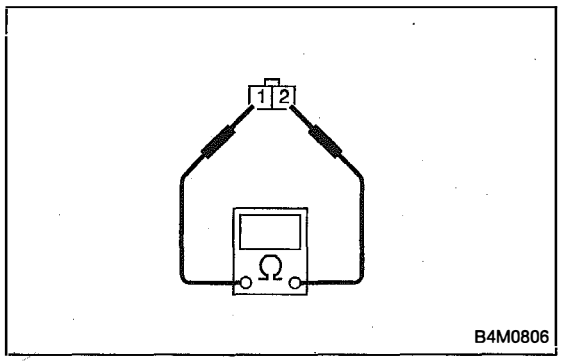
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



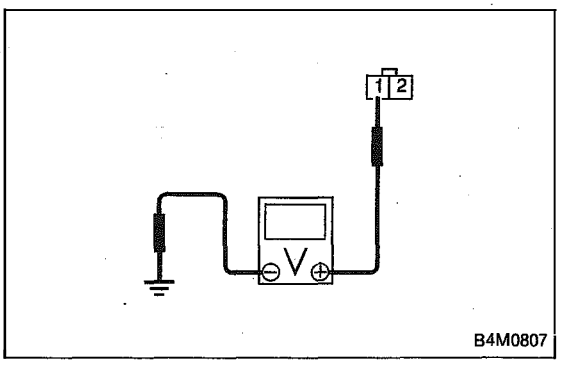


8E1	CHECK ABS SENSOR.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance of ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8E2**.
NO : Replace ABS sensor.

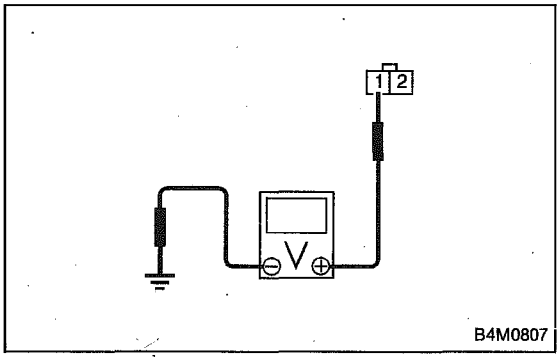


8E2	CHECK BATTERY SHORT OF ABS SENSOR.

1) Disconnect connector from ABSCM.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (–):
Front LH No. 1 (+) — Chassis ground (–):
Rear RH No. 1 (+) — Chassis ground (–):
Rear LH No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8E3**.
NO : Replace ABS sensor.



8E3	CHECK BATTERY SHORT OF ABS SENSOR.

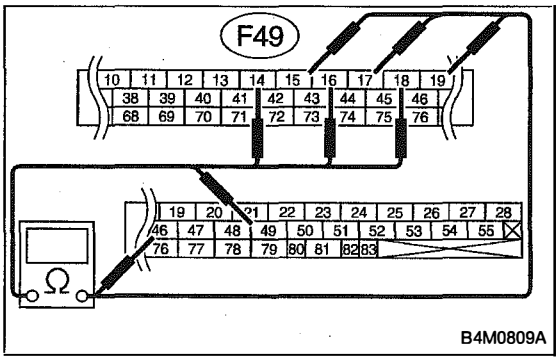
1) Turn ignition switch to ON.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (–):
Front LH No. 1 (+) — Chassis ground (–):
Rear RH No. 1 (+) — Chassis ground (–):
Rear LH No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8E4**.

NO : Replace ABS sensor.



8E4	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND ABS SENSOR.

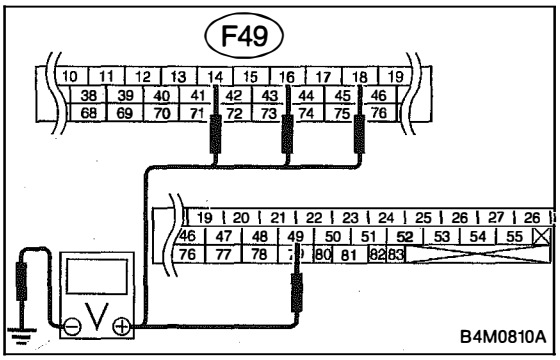
1) Turn ignition switch to OFF.
2) Connect connector to ABS sensor.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 21 / (F49) No. 14 — No. 15:
Trouble code 23 / (F49) No. 49 — No. 19:
Trouble code 25 / (F49) No. 18 — No. 46:
Trouble code 27 / (F49) No. 16 — No. 17:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***

YES : Go to step **8E5**.

NO : Repair harness/connector between ABSCM and ABS sensor.



8E5	CHECK BATTERY SHORT OF HARNESS.

Measure voltage between ABSCM connector and chassis ground.

Connector & terminal

Trouble code 21 / (F49) No. 14 (+) — Chassis ground (–):

Trouble code 23 / (F49) No. 49 (+) — Chassis ground (–):

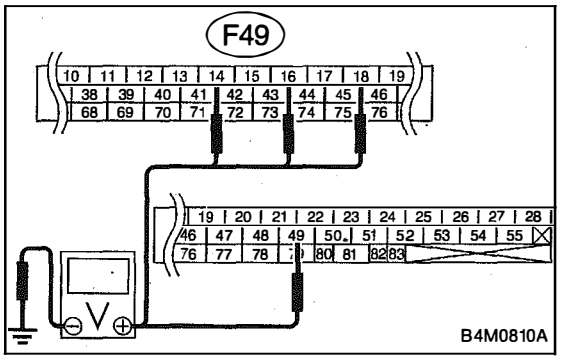
Trouble code 25 / (F49) No. 18 (+) — Chassis ground (–):

Trouble code 27 / (F49) No. 16 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8E6**.

NO : Repair harness between ABSCM and ABS sensor.



8E6	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal

Trouble code 21 / (F49) No. 14 (+) — Chassis ground (–):

Trouble code 23 / (F49) No. 49 (+) — Chassis ground (–):

Trouble code 25 / (F49) No. 18 (+) — Chassis ground (–):

Trouble code 27 / (F49) No. 16 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8E7**.

NO : Repair harness between ABSCM and ABS sensor.

8E7	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK ***: Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **8E8**.

NO : Tighten ABS sensor installation bolts securely.

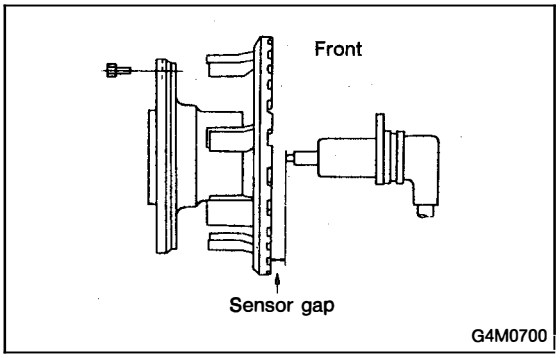
8E8	CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***

YES : Go to step **8E9**.

NO : Tighten tone wheel installation bolts securely.



8E9	CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.

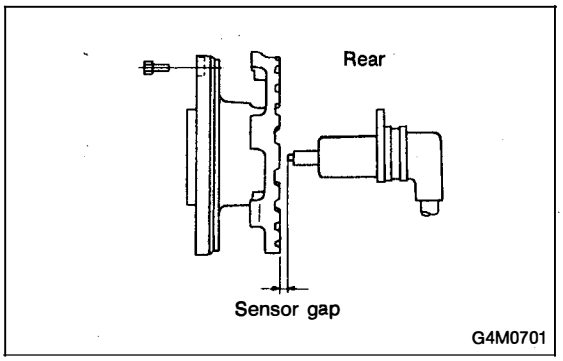
CHECK : ***Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

YES : Go to step **8E10**.

NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.



8E10	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **8E11**.

NO : Repair hub.

8E11	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8E12**.

8E12	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8E13**.

8E13	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM and ABS sensor.

F: TROUBLE CODE 22 (FRONT RH)
G: TROUBLE CODE 24 (FRONT LH)
H: TROUBLE CODE 26 (REAR RH)
I: TROUBLE CODE 28 (REAR LH)
— ABNORMAL ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —

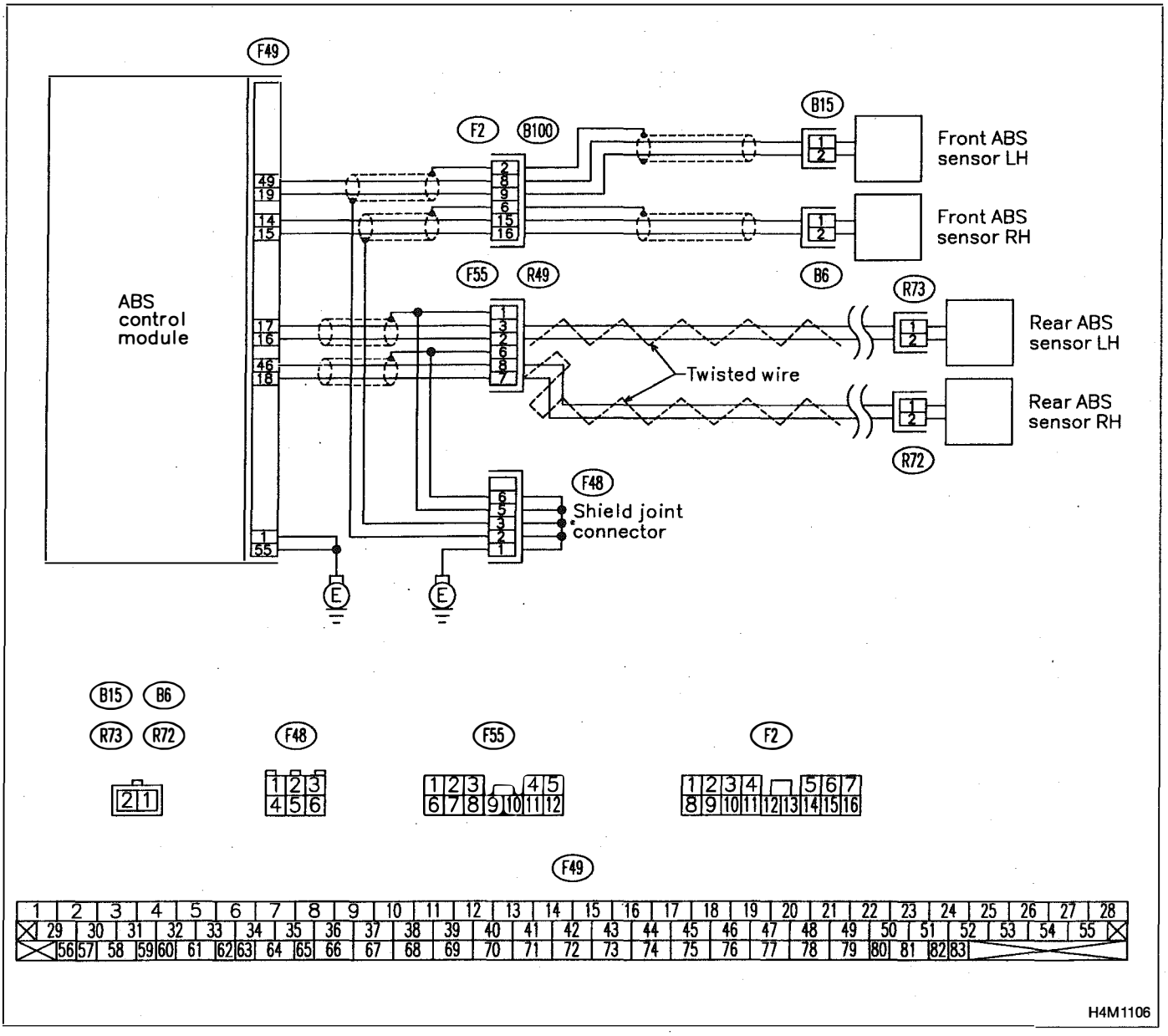
DIAGNOSIS:

- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



8I1	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK ***: Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **8I2**.

NO : Tighten ABS sensor installation bolts securely.

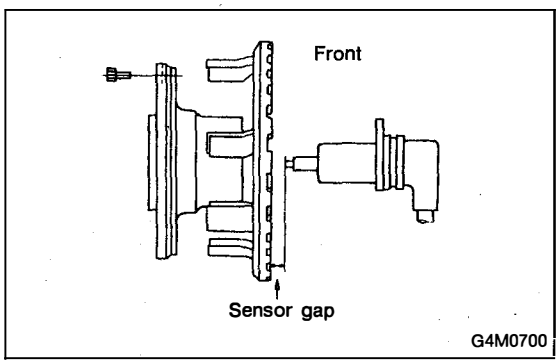
8I2	CHECK INSTALLATION OF TONE WHEEL.

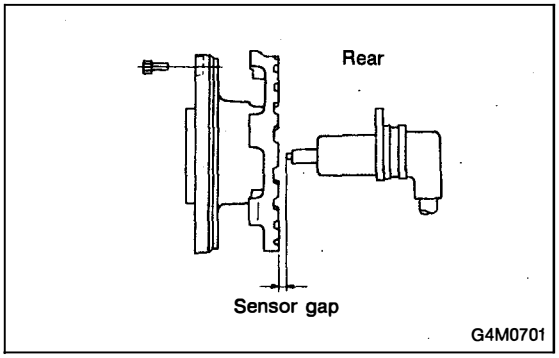
Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK ***: Are the tone wheel installation bolts tightened securely?***

YES : Go to step **8I3**.

NO : Tighten tone wheel installation bolts securely.





8I3	CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.

CHECK ***: Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

YES : Go to step **8I4**.

NO : Adjust the gap.

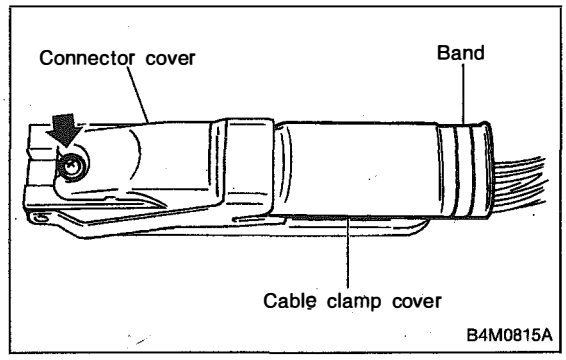
NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

8I4	CHECK OSCILLOSCOPE.

CHECK ***: Is an oscilloscope available?***

YES : Go to step **8I5**.

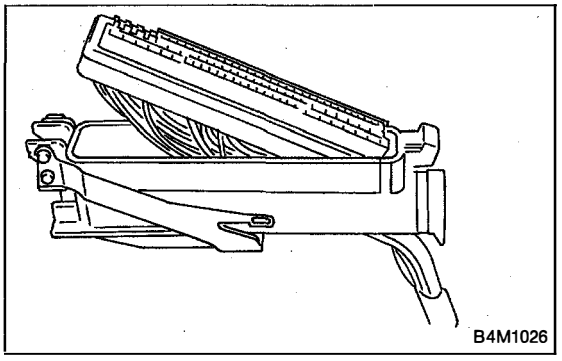
NO : Go to step **8I6**.



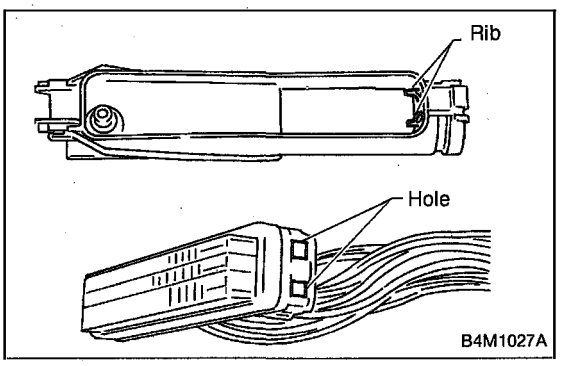
8I5	CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Disconnect connector from ABS control module.
4) Remove band.
5) Remove cable clamp cover.
6) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

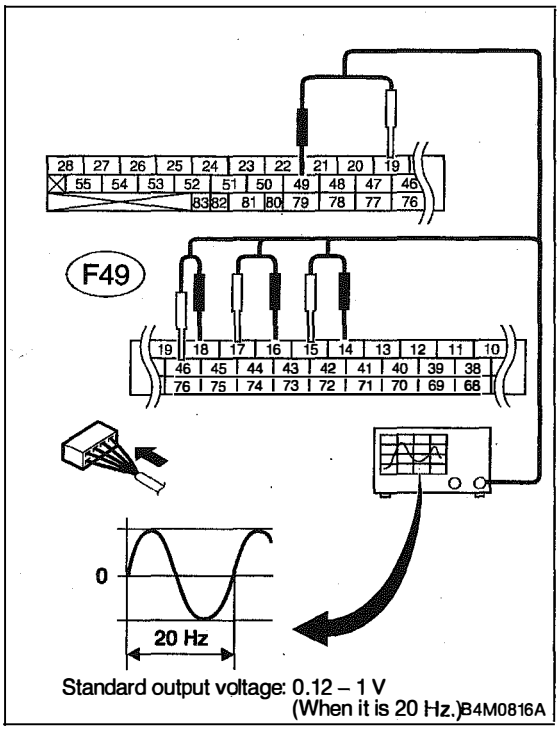


7) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

8) Connect connector to ABS control module.
9) Connect the oscilloscope to the ABS control module connector in accordance with trouble code.
10) Turn ignition switch ON.



Standard output voltage: 0.12 – 1 V
(When it is 20 Hz.)B4M0816A

11) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABS control module sometimes stores the trouble code 29.

Connector & terminal
Trouble code 22 I (F49) No. 14 (+) — No. 15 (–):
Trouble code 24 I (F49) No. 49 (+) — No. 19 (–):
Trouble code 26 I (F49) No. 18 (+) — No. 46 (–):
Trouble code 28 I (F49) No. 16 (+) — No. 17 (–):
Specified voltage: 0.12 — 1 V (When it is 20 Hz.)

CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***

YES : Go to step **819**.

NO : Go to step **816**.

816	CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor or drum from hub in accordance with trouble code.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***

YES : Thoroughly remove dirt or other foreign matter.

NO : Go to step **817**.

817	CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged in the ABS sensor pole piece or the tone wheel?***

YES : Replace ABS sensor or tone wheel.

NO : Go to step **818**.

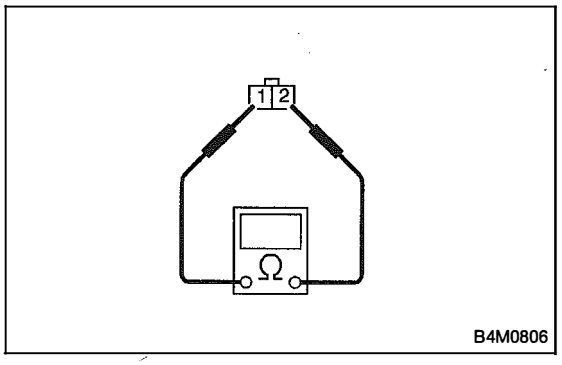
818	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **819**.

NO : Repair hub.

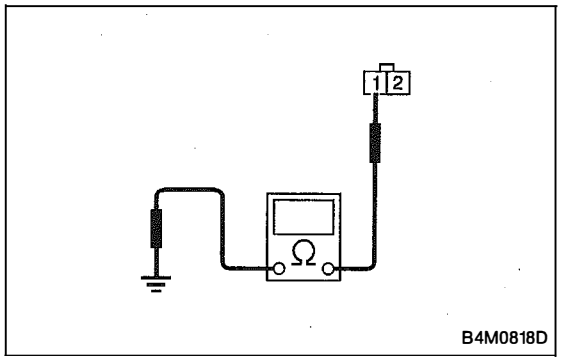


8I9	CHECK RESISTANCE OF ABS SENSOR.

1) Turn ignition switch OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance between ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **8I10**.
NO : Replace ABS sensor.

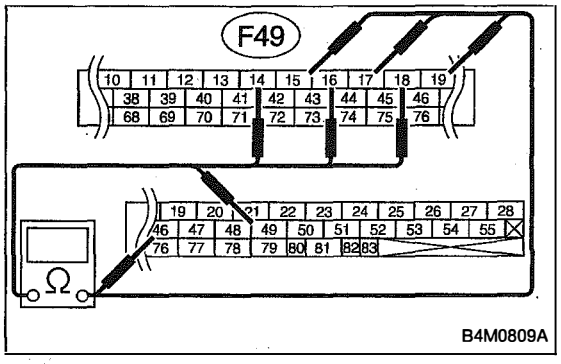


8I10	CHECK GROUND SHORT OF ABS SENSOR.

Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8I11**.
NO : Replace ABS sensor.



8I11	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND ABS SENSOR.

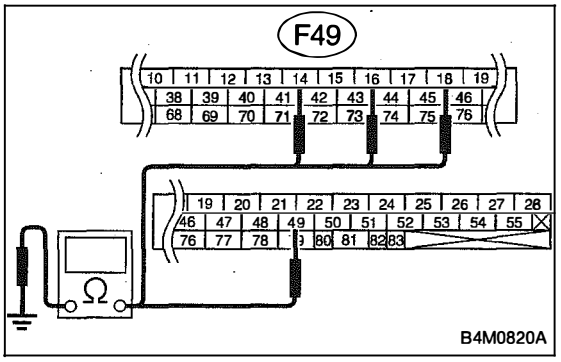
1) Connect connector to ABS sensor.
2) Disconnect connector from ABS control module.
3) Measure resistance at ABSCM connector terminals.

Connector & terminal
Trouble code 22 / (F49) No. 14 — No. 15:
Trouble code 24 / (F49) No. 49 — No. 19:
Trouble code 26 / (F49) No. 18 — No. 46:
Trouble code 28 / (F49) No. 16 — No. 17:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***

YES : Go to step **8I12**.

NO : Repair harness/connector between ABSCM and ABS sensor.



8I12	CHECK GROUND SHORT OF HARNESS.

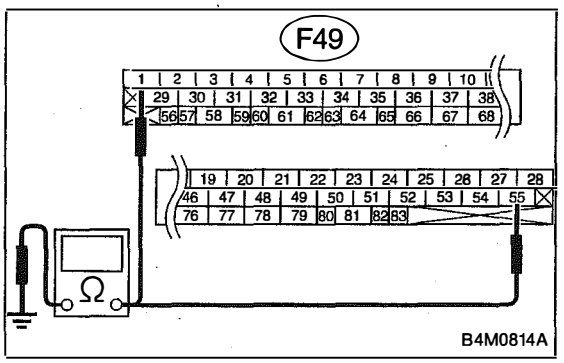
Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 22 / (F49) No. 14 — Chassis ground:
Trouble code 24 / (F49) No. 49 — Chassis ground:
Trouble code 26 / (F49) No. 18 — Chassis ground:
Trouble code 28 / (F49) No. 16 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8I13**.

NO : Repair harness/connector between ABSCM and ABS sensor.



8I13	CHECK GROUND CIRCUIT OF ABSCM.

Measure resistance between ABSCM and chassis ground.

Connector & terminal
(F49) No. 1 — GND:
(F49) No. 55 — GND:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8I14**.

NO : Repair ABSCM ground harness.

8I14	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8I15**.

8I15	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***

YES : Go to step **8I16**.

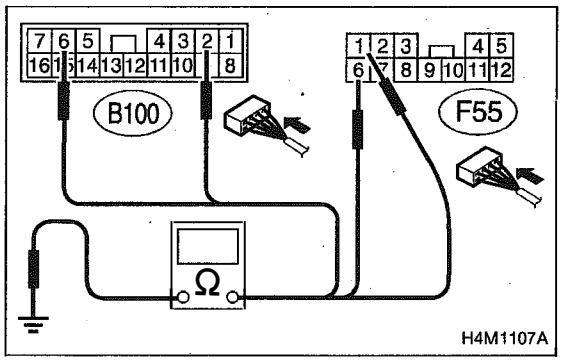
NO : Properly install the car telephone or the wireless transmitter.

8I16	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***

YES : Install the noise sources apart from the sensor harness.

NO : Go to step **8I17**.



8I17	CHECK SHIELD CIRCUIT.

1) Connect all connectors.
2) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 6 — Chassis ground:
Trouble code 24 / (B100) No. 2 — Chassis ground:
Trouble code 26 / (F55) No. 6 — Chassis ground:
Trouble code 28 / (F55) No. 1 — Chassis ground:

CHECK : ***Is the resistance less than 0.5 Ω?***

YES : Go to step **8I18**.

NO : Repair shield harness.

8I18	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8I19**.

8I19	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary noise interference.

J: TROUBLE CODE 29 — ABNORMAL ABS SENSOR SIGNAL (ANY ONE OF FOUR) —

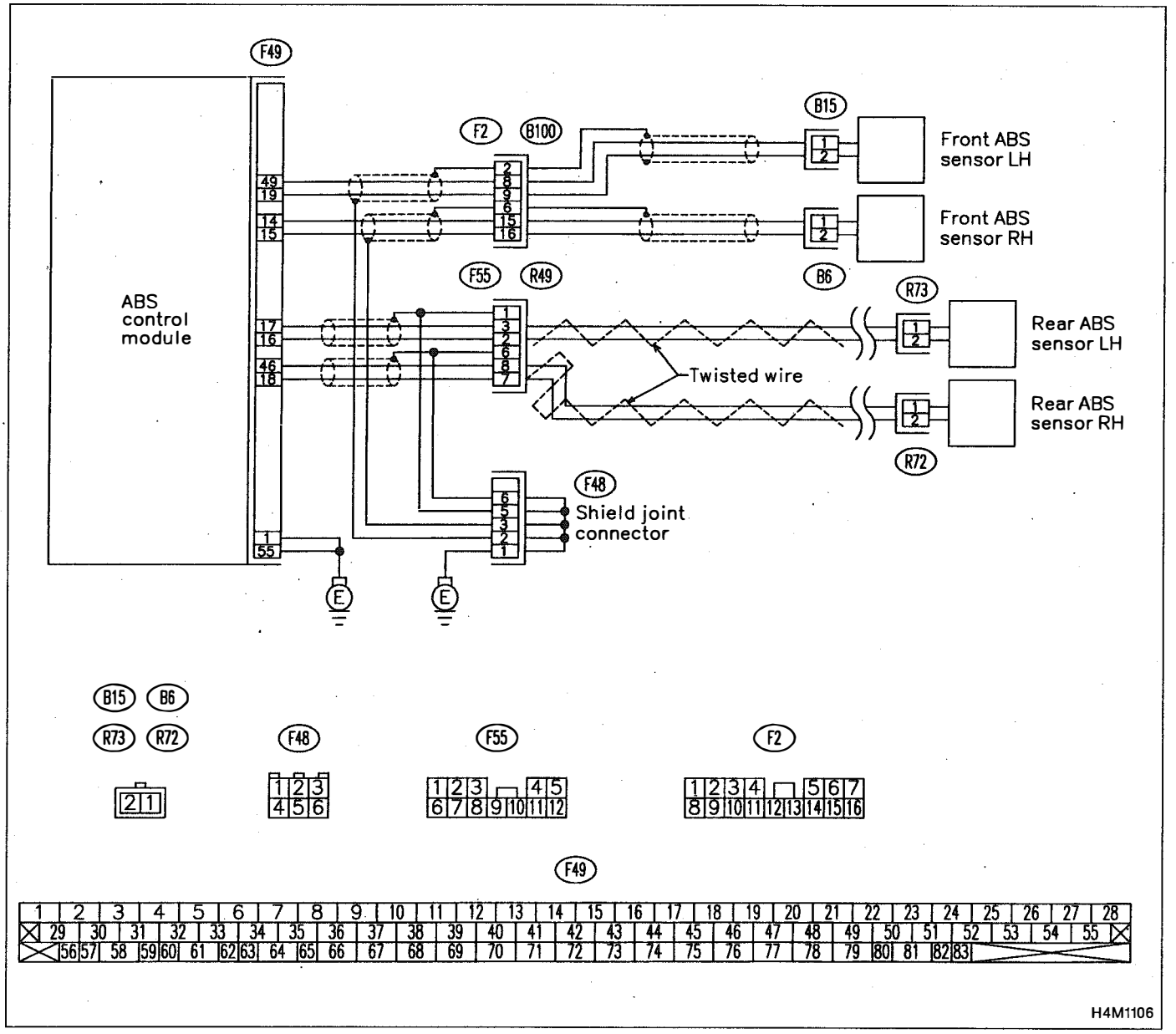
DIAGNOSIS:

- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1106

8J1	CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.

CHECK : ***Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface.***

YES : The ABS is normal. Erase the trouble code.

NOTE:
When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way, this trouble code may sometimes occur.

NO : Go to step **8J2.**

8J2	CHECK TIRE SPECIFICATIONS.

CHECK : ***Are the tire specifications correct?***

YES : Go to step **8J3.**

NO : Replace tire.

8J3	CHECK WEAR OF TIRE.

CHECK : ***Is the tire worn excessively?***

YES : Replace tire.

NO : Go to step **8J4.**

8J4	CHECK TIRE PRESSURE.

CHECK : ***Is the tire pressure correct?***

YES : Go to step **8J5.**

NO : Adjust tire pressure.

8J5	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **8J6.**

NO : Tighten ABS sensor installation bolts securely.

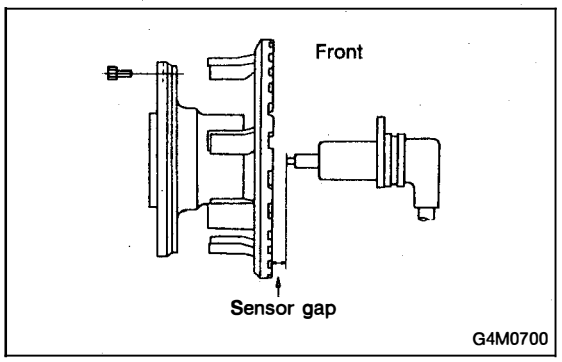
8J6	CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK ***: Are the tone wheel installation bolts tightened securely?***

YES : Go to step **8J7**.

NO : Tighten tone wheel installation bolts securely.

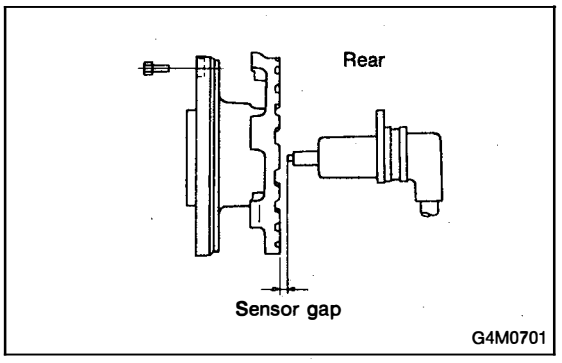


8J7	CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.

CHECK ***: Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)



YES : Go to step **8J8**.

NO : Adjust the gap.

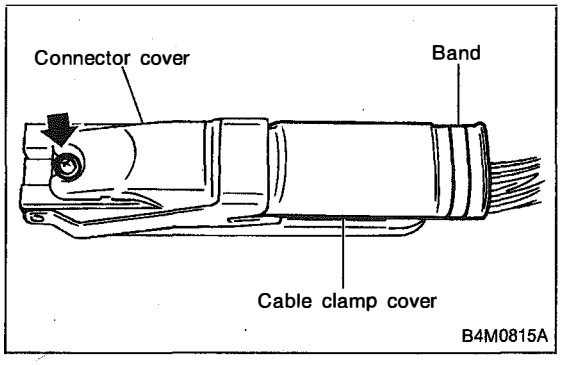
NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

8J8	CHECK OSCILLOSCOPE.

CHECK ***: Is an oscilloscope available?***

YES : Go to step **8J9**.

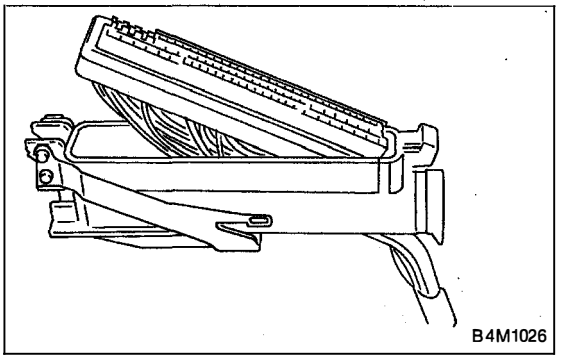
NO : Go to step **8J10**.



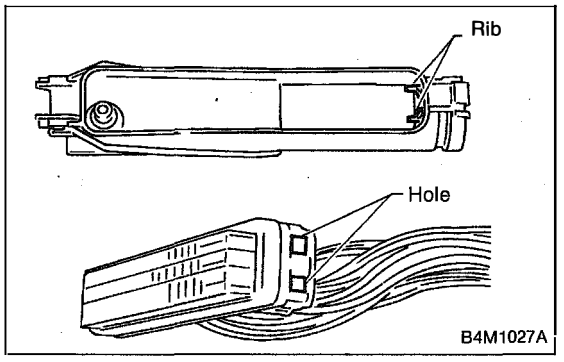
8J9	CHECK ABS SENSOR SIGNAL.

1) Raise all four wheels of ground.
2) Turn ignition switch OFF.
3) Disconnect connector from ABS control module.
4) Remove band.
5) Remove cable clamp cover.
6) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

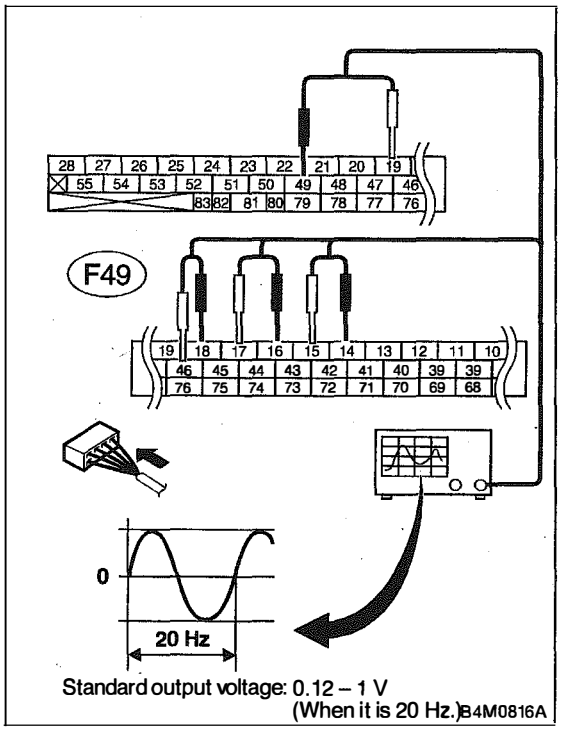


7) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

8) Connect connector to ABS control module.
9) Connect the oscilloscope to the ABS control module connector in accordance with trouble code.
10) Turn ignition switch ON.



11) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABS control module sometimes stores the trouble code 29.

Connector & terminal
(F49) No. 14 (+) — No. 15 (–) (Front RH):
(F49) No. 49 (+) — No. 19 (–) (Front LH):
(F49) No. 18 (+) — No. 46 (–) (Rear RH):
(F49) No. 16 (+) — No. 17 (–) (Rear LH):
Specified voltage: 0.12 — 1 V (When it is 20 Hz.)

CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***

YES : Go to step **8J13**.

NO : Go to step **8J10**.

8J10	CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor from hub.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***

YES : Thoroughly remove dirt or other foreign matter.

NO : Go to step **8J11**.

8J11	CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel?***

YES : Replace ABS sensor or tone wheel.

NO : Go to step **8J12**.

8J12	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **8J13**.

NO : Repair hub.

8J13	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.

4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8J14**.

8J14	**CHECK ANY OTHER TROUBLE CODES APPEARANCE.**

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

K: TROUBLE CODE 31 (FRONT RH)
L: TROUBLE CODE 33 (FRONT LH)
M: TROUBLE CODE 35 (REAR RH)
N: TROUBLE CODE 37 (REAR LH)
— ABNORMAL INLET SOLENOID VALVE CIRCUIT(S) IN HYDRAULIC UNIT —

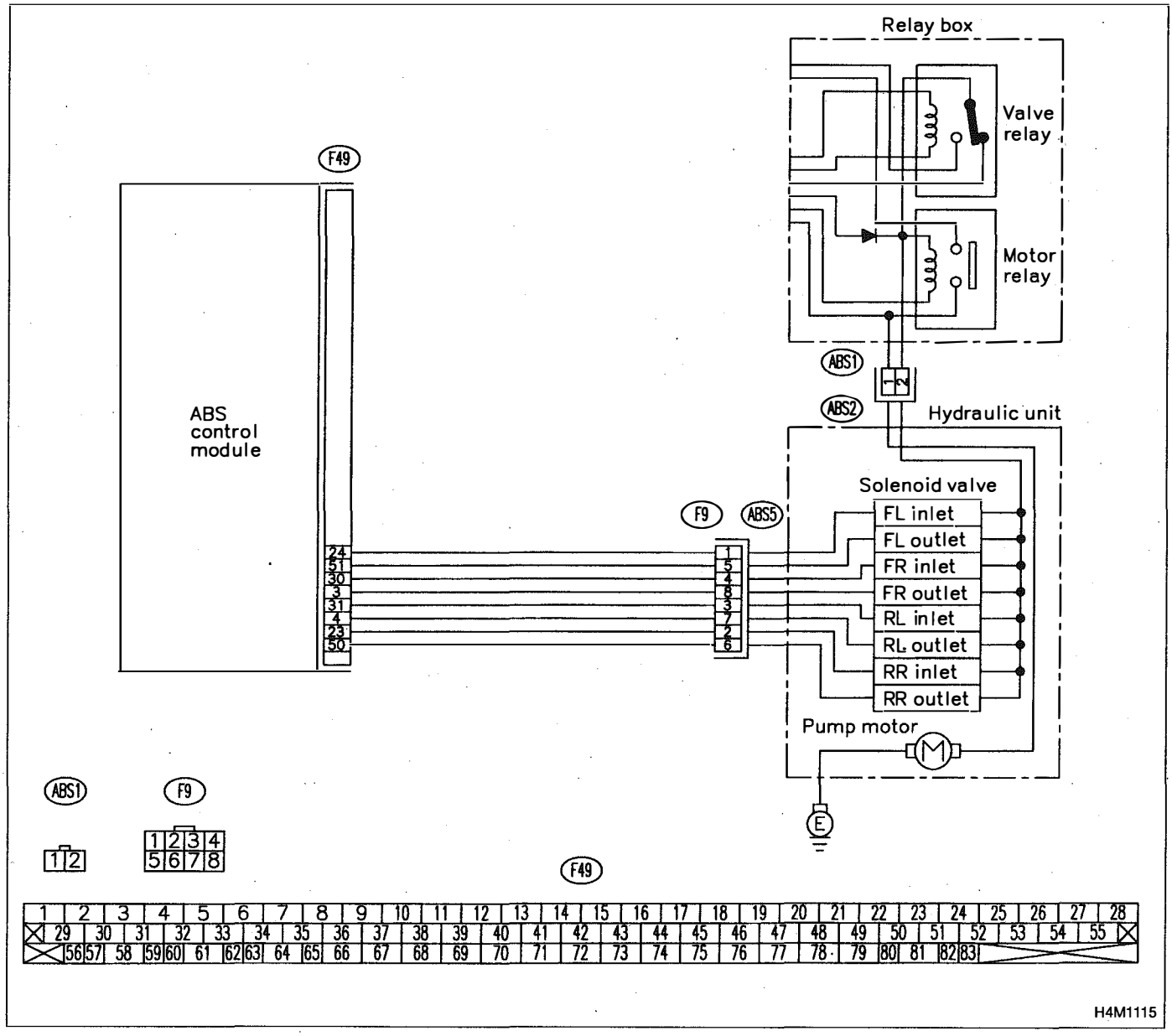
DIAGNOSIS:

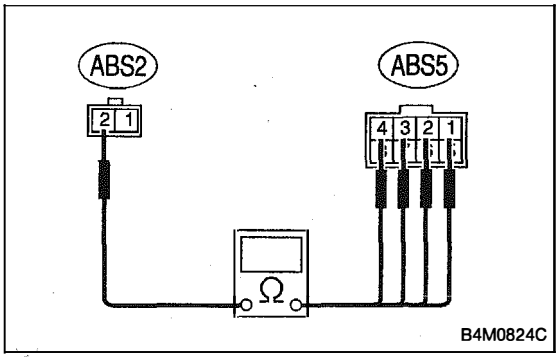
- Faulty harness/connector
- Faulty inlet solenoid valve in hydraulic unit

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



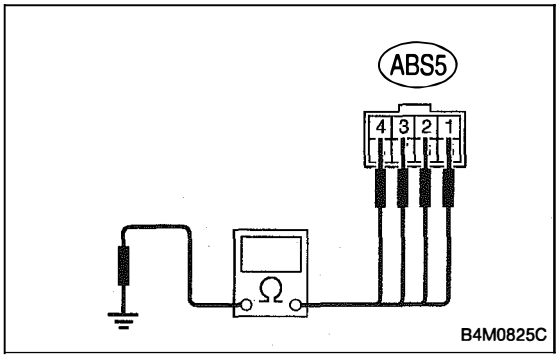


8N1	CHECK RESISTANCE OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — (ABS2) No. 2:
Trouble code 33 / (ABS5) No. 1 — (ABS2) No. 2:
Trouble code 35 / (ABS5) No. 2 — (ABS2) No. 2:
Trouble code 37 / (ABS5) No. 3 — (ABS2) No. 2:

CHECK ***: Is the resistance between 7.8 and 9.2 Ω?***
YES : Go to step **8N2**.
NO : Replace hydraulic unit.

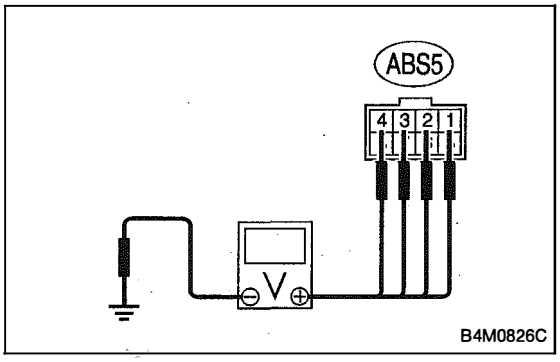


8N2	CHECK GROUND SHORT OF SOLENOID VALVE.

Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — Chassis ground:
Trouble code 33 / (ABS5) No. 1 — Chassis ground:
Trouble code 35 / (ABS5) No. 2 — Chassis ground:
Trouble code 37 / (ABS5) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8N3**.
NO : Replace hydraulic unit.

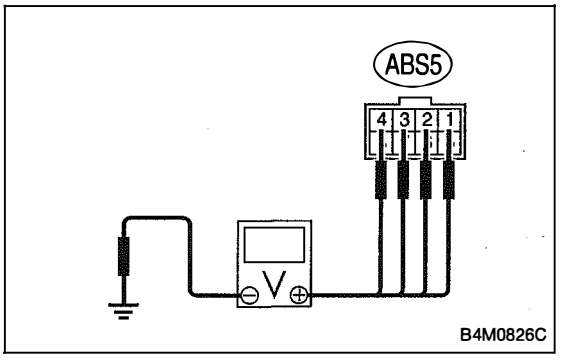


8N3	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Disconnect connector from ABSCM.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 / (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 / (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 / (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8N4**.
NO : Replace hydraulic unit.

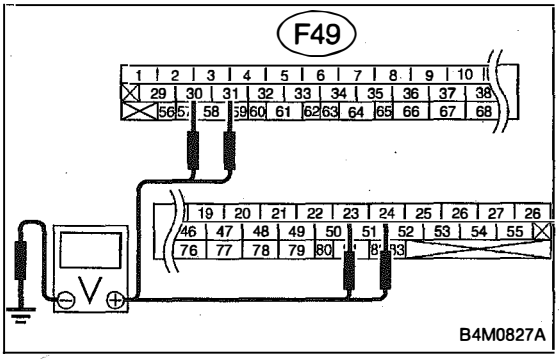


8N4	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 / (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 / (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 / (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8N5**.
NO : Replace hydraulic unit.



8N5	CHECK BATTERY SHORT OF HARNESS.

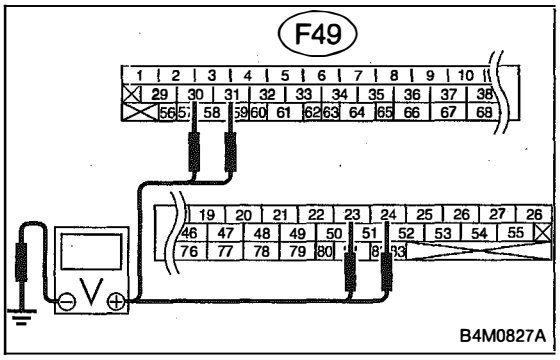
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8N6**.

NO : Repair harness between ABSCM and hydraulic unit.



8N6	CHECK BATTERY SHORT OF HARNESS.

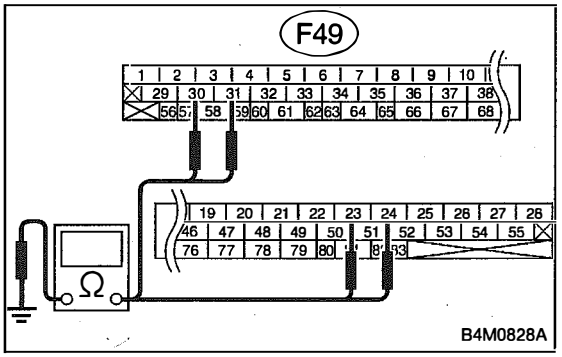
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8N7**.

NO : Repair harness between ABSCM and hydraulic unit.

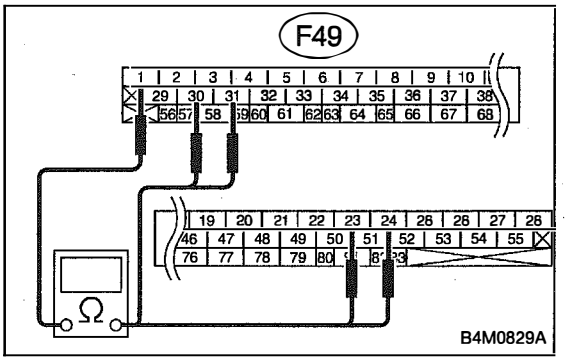


8N7	CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 — Chassis ground:
Trouble code 33 / (F49) No. 24 — Chassis ground:
Trouble code 35 / (F49) No. 23 — Chassis ground:
Trouble code 37 / (F49) No. 31 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8N8**.
NO : Repair harness between ABSCM and hydraulic unit.



8N8	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 31 / (F49) No. 30 — No. 1:
Trouble code 33 / (F49) No. 24 — No. 1:
Trouble code 35 / (F49) No. 23 — No. 1:
Trouble code 37 / (F49) No. 31 — No. 1:

CHECK ***: Is the resistance between 8.3 and 9.7 Ω?***
YES : Go to step **8N9**.
NO : Repair harness/connector between ABSCM and hydraulic unit.

8N9	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **8N10**.

8N10	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8N11.**

8N11	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

O: TROUBLE CODE 32 (FRONT RH)
P: TROUBLE CODE 34 (FRONT LH)
Q: TROUBLE CODE 36 (REAR RH)
R: TROUBLE CODE 38 (REAR LH)
— ABNORMAL OUTLET SOLENOID VALVE CIRCUIT(S) IN HYDRAULIC UNIT —

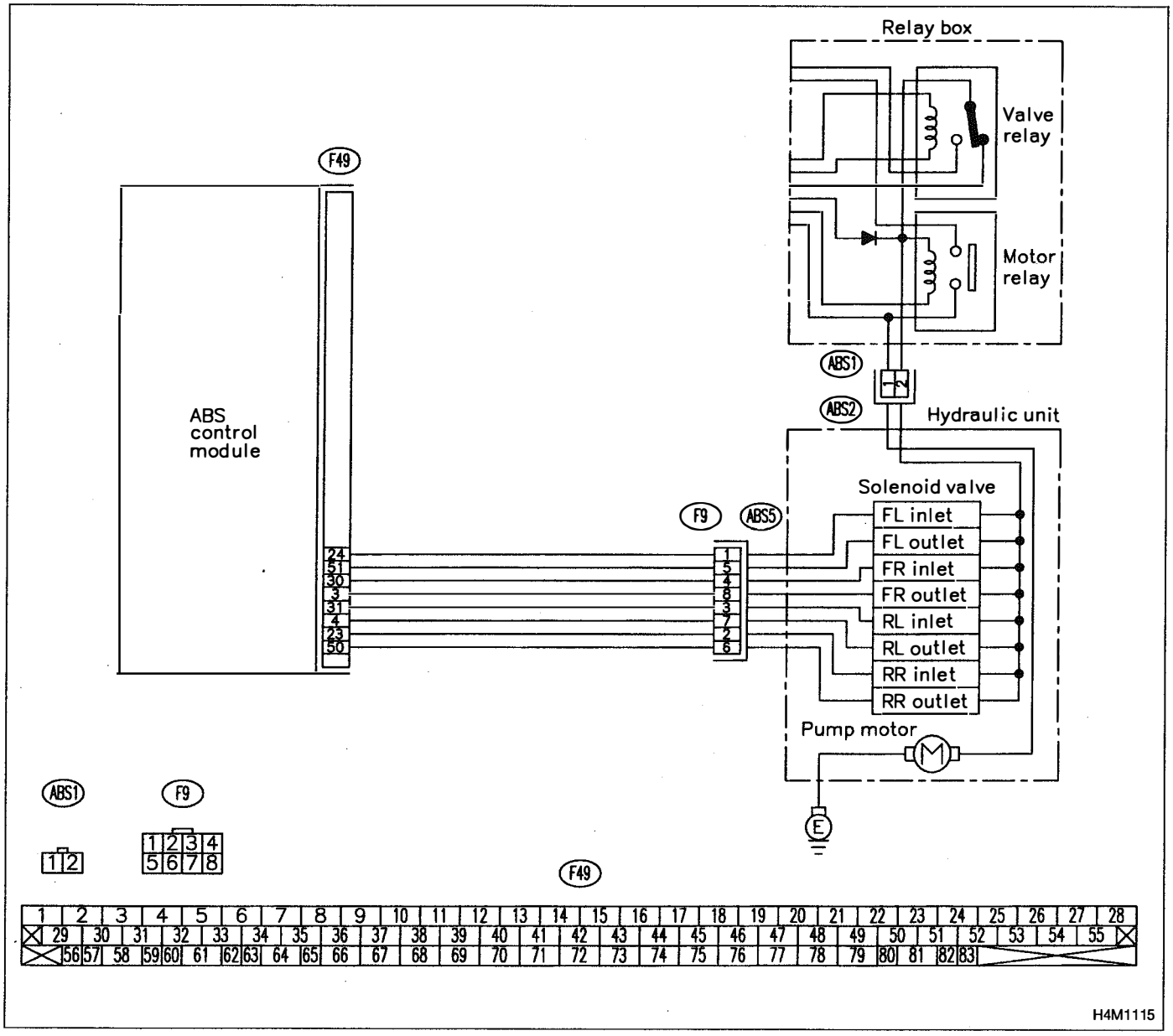
DIAGNOSIS:

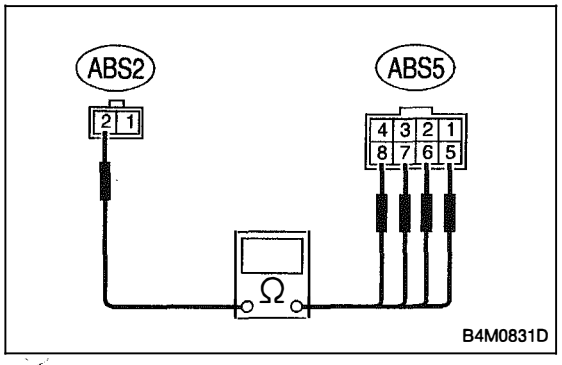
- Faulty harness/connector
- Faulty outlet solenoid valve in hydraulic unit

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



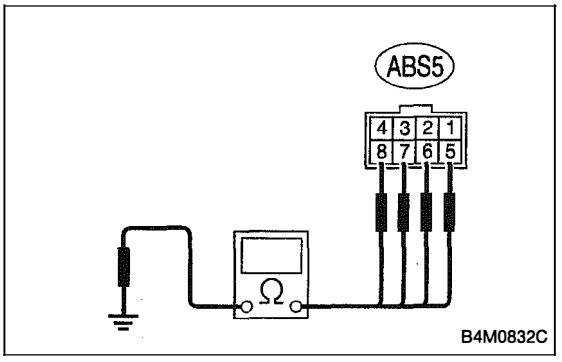


8R1	CHECK RESISTANCE OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — (ABS2) No. 2:
Trouble code 34 / (ABS5) No. 5 — (ABS2) No. 2:
Trouble code 36 / (ABS5) No. 6 — (ABS2) No. 2:
Trouble code 38 / (ABS5) No. 7 — (ABS2) No. 2:

CHECK ***: Is the resistance between 3.8 and 4.8 Ω?***
YES : Go to step **8R2**.
NO : Replace hydraulic unit.

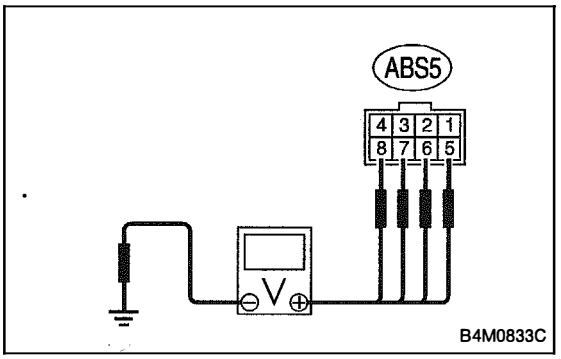


8R2	CHECK GROUND SHORT OF SOLENOID VALVE.

Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — Chassis ground:
Trouble code 34 / (ABS5) No. 5 — Chassis ground:
Trouble code 36 / (ABS5) No. 6 — Chassis ground:
Trouble code 38 / (ABS5) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8R3**.
NO : Replace hydraulic unit.

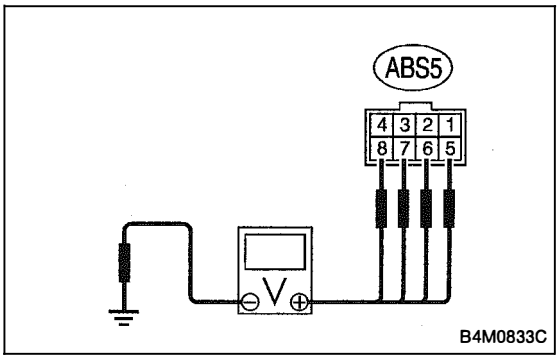


8R3	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Disconnect connector from ABSCM.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 / (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 / (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 / (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8R4**.
NO : Replace hydraulic unit.

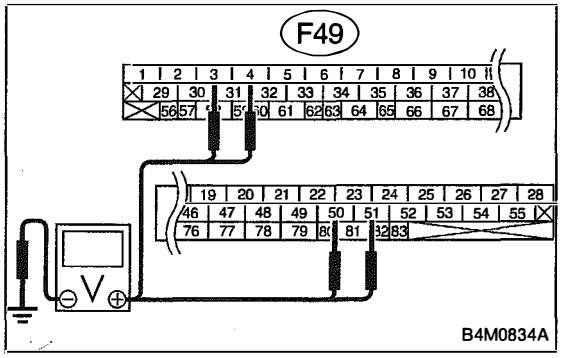


8R4	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 / (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 / (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 / (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8R5**.
NO : Replace hydraulic unit.



8R5	CHECK BATTERY SHORT OF HARNESS.

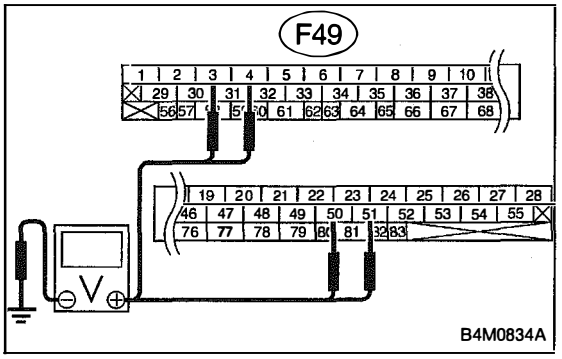
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8R6**.

NO : Repair harness between ABSCM and hydraulic unit.



8R6	CHECK BATTERY SHORT OF HARNESS.

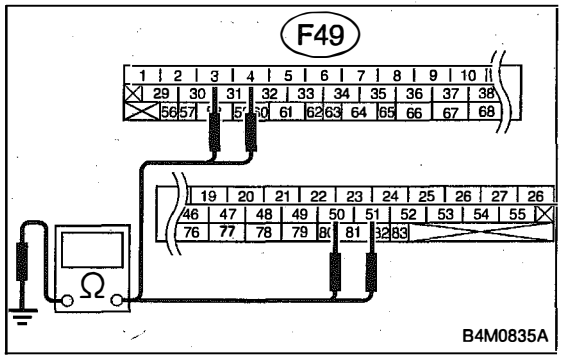
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8R7**.

NO : Repair harness between ABSCM and hydraulic unit.



8R7	CHECK GROUND SHORT OF HARNESS.

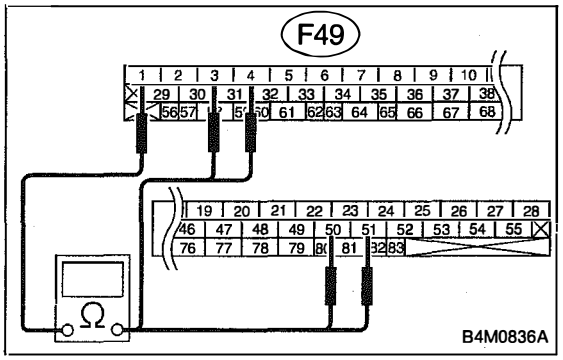
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 — Chassis ground:
Trouble code 34 / (F49) No. 51 — Chassis ground:
Trouble code 36 / (F49) No. 50 — Chassis ground:
Trouble code 38 / (F49) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8R8**.

NO : Repair harness between ABSCM and hydraulic unit.



8R8	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 32 / (F49) No. 3 — No. 1:
Trouble code 34 / (F49) No. 51 — No. 1:
Trouble code 36 / (F49) No. 50 — No. 1:
Trouble code 38 / (F49) No. 4 — No. 1:

CHECK ***: Is the resistance between 4.3 and 5.3 Ω?***

YES : Go to step **8R9**.

NO : Repair harness/connector between ABSCM and hydraulic unit.

8R9	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8R10**.

8R10	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8R11**.

8R11	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

S: TROUBLE CODE 41
— ABNORMAL ABS CONTROL MODULE —

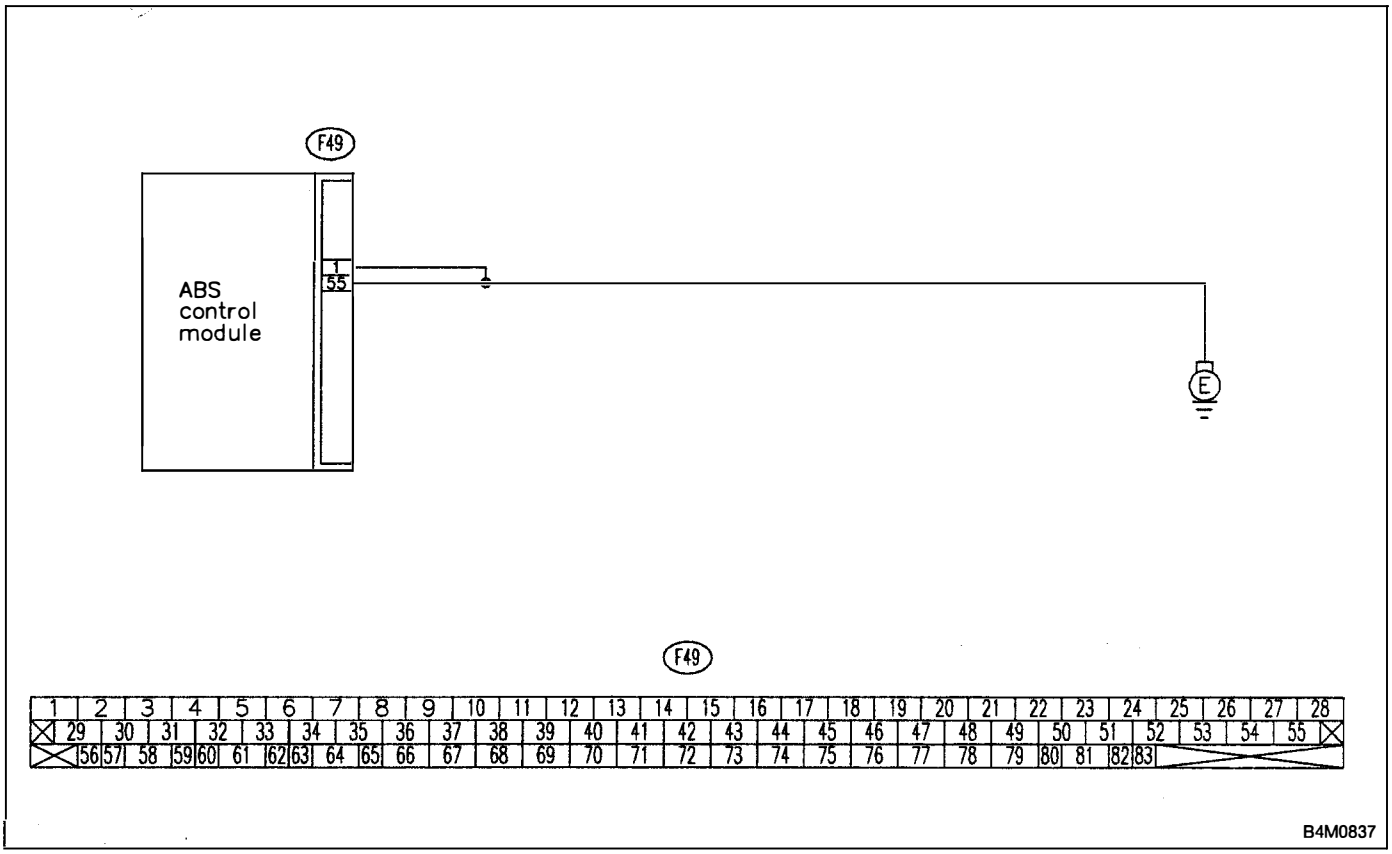
DIAGNOSIS:

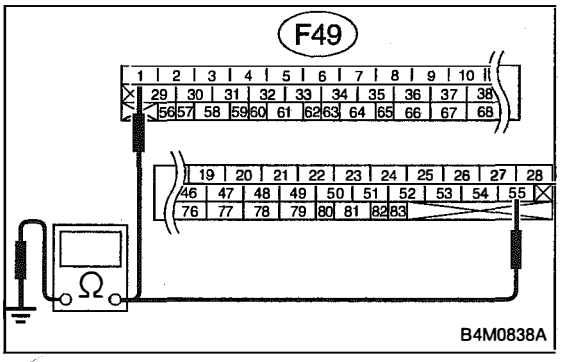
- Faulty ABSCM

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





8S1	CHECK GROUND CIRCUIT OF ABSCM.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:
(F49) No. 55 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8S2**.

NO : Repair ABSCM ground harness.

8S2	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between battery, ignition switch and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8S3**.

8S3	CHECK SOURCES OF SIGNAL NOISE.

CHECK ***: Is the car telephone or the wireless transmitter properly installed?***

YES : Go to step **8S4**.

NO : Properly install the car telephone or the wireless transmitter.

8S4	CHECK SOURCES OF SIGNAL NOISE.

CHECK ***: Are noise sources (such as an antenna) installed near the sensor harness?***

YES : Install the noise sources apart from the sensor harness.

NO : Go to step **8S5**.

8S5	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8S6**.

8S6	**CHECK ANY OTHER TROUBLE CODES APPEARANCE.**

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

T: TROUBLE CODE 42
— SOURCE VOLTAGE IS LOW. —

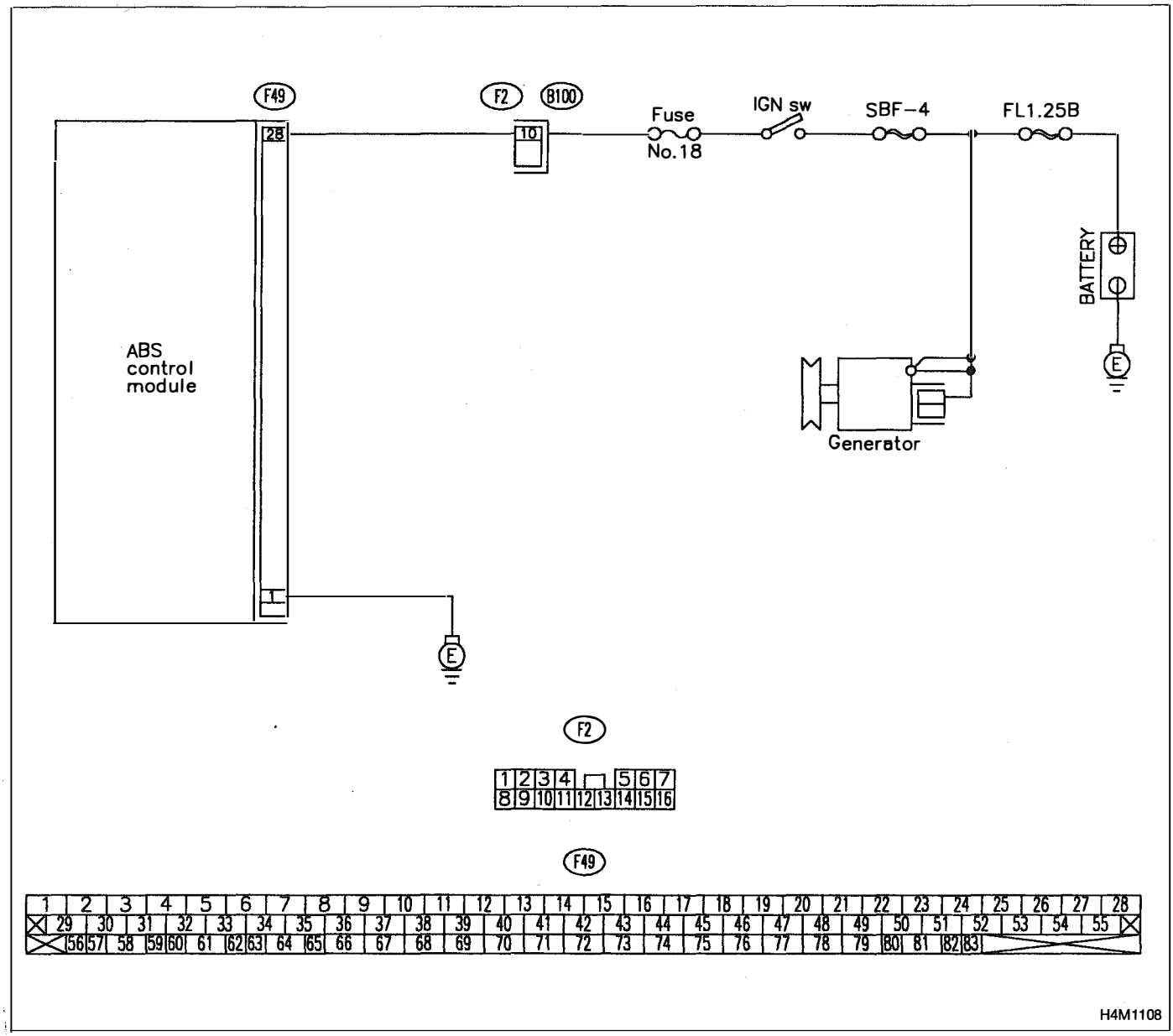
DIAGNOSIS:

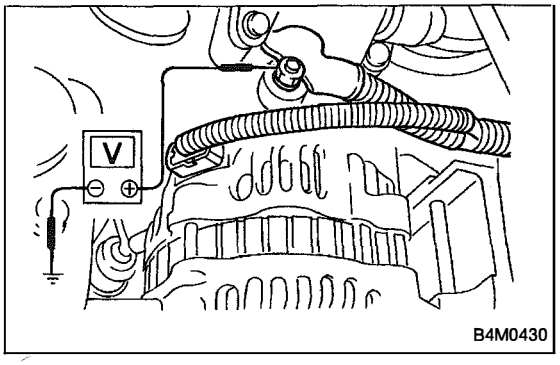
- Power source voltage of the ABSCM is low.

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





8T1	CHECK GENERATOR.

1) Start engine.
2) Idling after warm-up.
3) Measure voltage between generator B terminal and chassis ground.

Terminal
Generator B terminal — Chassis ground:

CHECK ***: Is the voltage between 10 V and 15 V?***

YES : Go to step **8T2**.

NO : Repair generator.

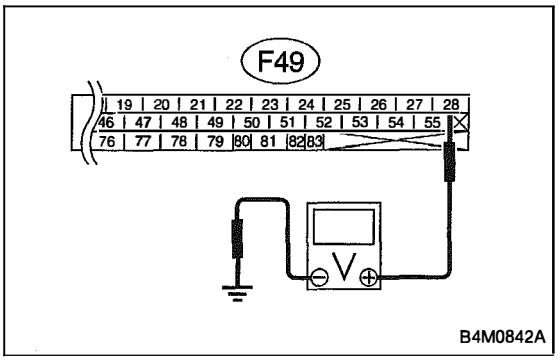
8T2	CHECK BATTERY TERMINAL.

Turn ignition switch to OFF.

CHECK ***: Are the positive and negative battery terminals tightly clamped?***

YES : Go to step **8T3**.

NO : Tighten the clamp of terminal.



8T3	CHECK INPUT VOLTAGE OF ABSCM.

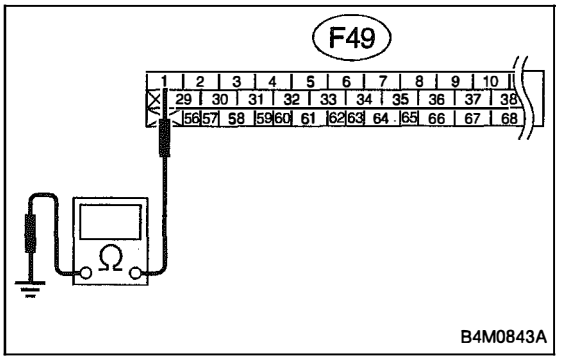
1) Disconnect connector from ABSCM.
2) Run the engine at idle.
3) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 28 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 15 V?***

YES : Go to step **8T4**.

NO : Repair harness connector between battery, ignition switch and ABSCM.



8T4	CHECK GROUND CIRCUIT OF ABSCM.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8T5**.

NO : Repair ABSCM ground harness.

8T5	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8T6**.

8T6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8T7**.

8T7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

U: TROUBLE CODE 44 — A COMBINATION OF AT CONTROL ABNORMAL —

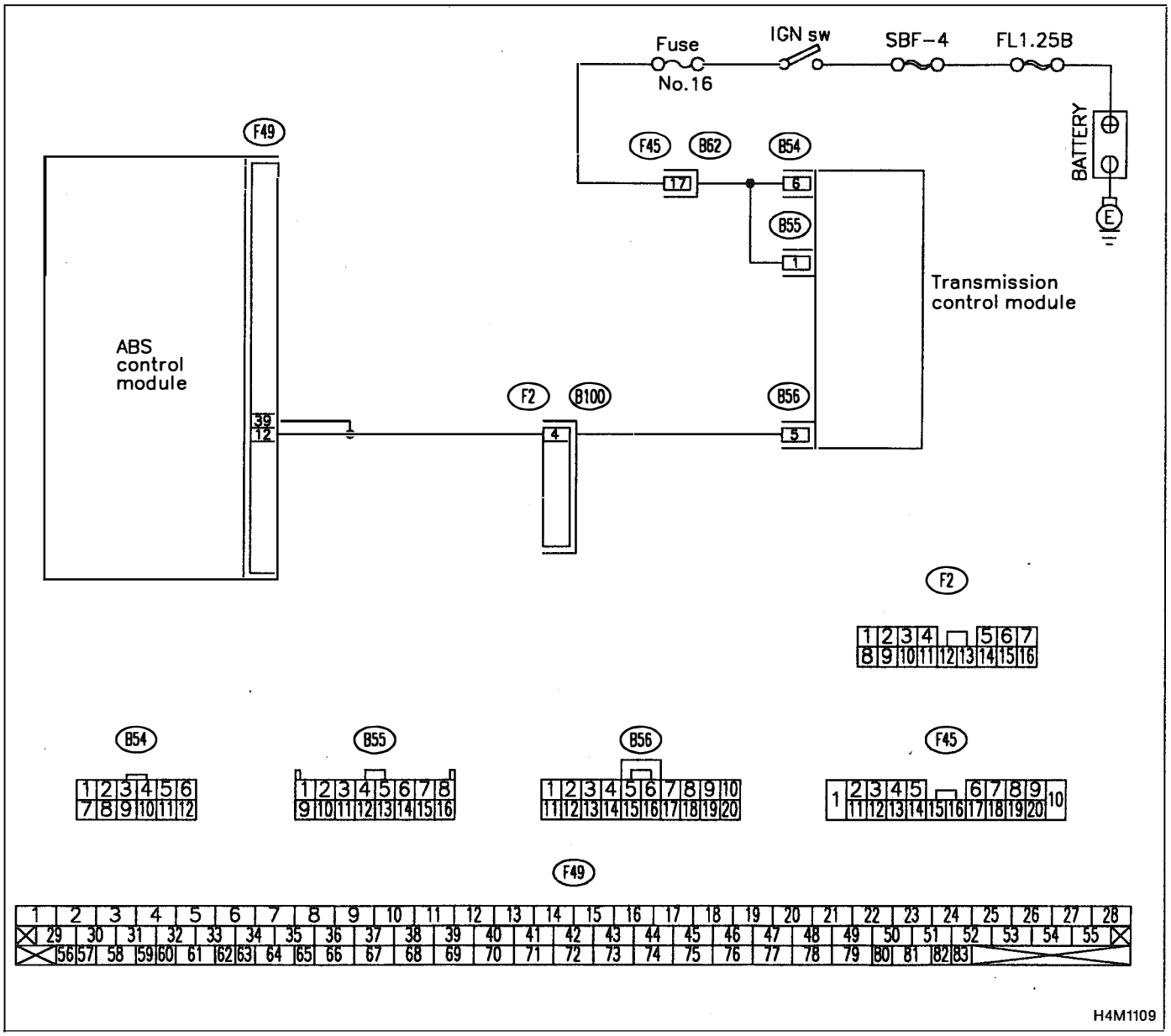
DIAGNOSIS:

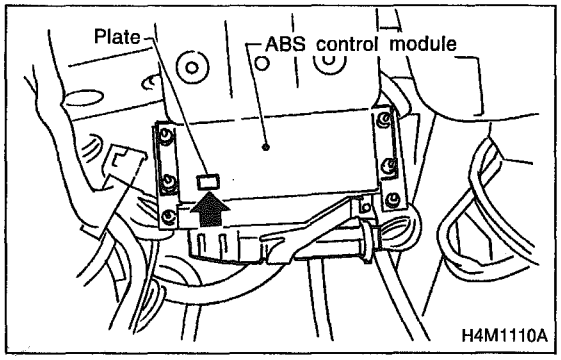
- Combination of AT control faults

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





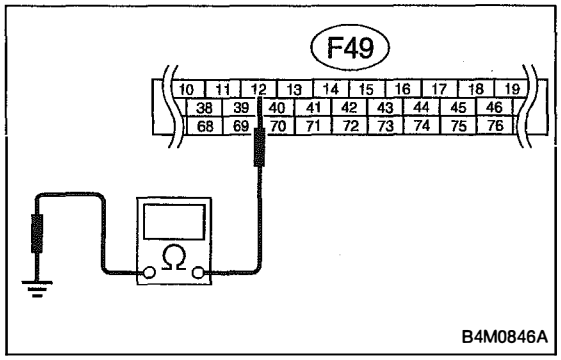
8U1	CHECK SPECIFICATIONS OF THE ABSCM.

Check specifications of the plate attached to the ABSCM.

CHECK : ***Is an ABSCM for AT model installed on a MT model?***

YES : Replace ABSCM.

NO : Go to step **8U2**.



8U2	CHECK GROUND SHORT OF HARNESS.

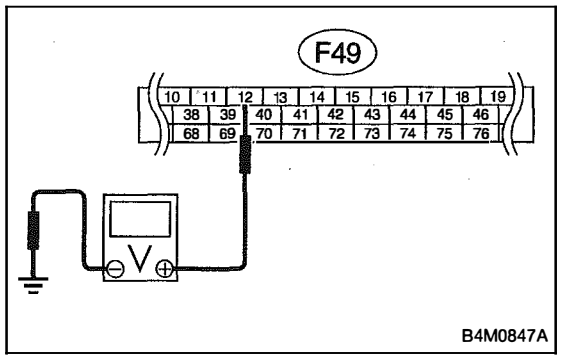
1) Turn ignition switch to OFF.
2) Disconnect two connectors from TCM.
3) Disconnect connector from ABSCM.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **8U3**.

NO : Repair harness between TCM and ABSCM.



8U3	CHECK BATTERY SHORT OF HARNESS.

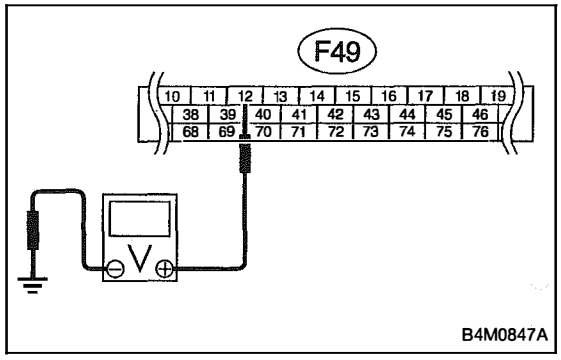
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **8U4**.

NO : Repair harness between TCM and ABSCM.



8U4	CHECK BATTERY SHORT OF HARNESS.

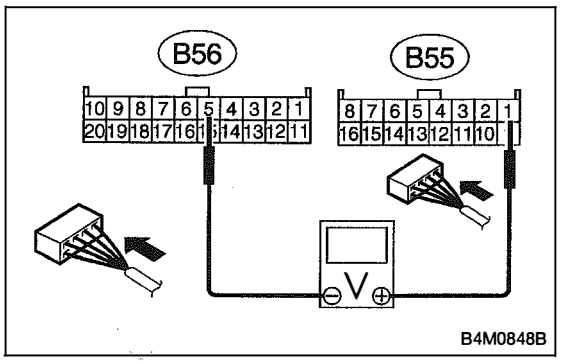
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **8U5**.

NO : Repair harness between TCM and ABSCM.



8U5	CHECK TCM.

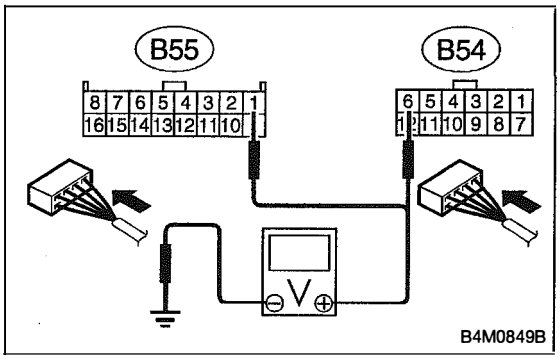
1) Turn ignition switch to OFF.
2) Connect all connectors to TCM.
3) Turn ignition switch to ON.
4) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 1 (+) — (B56) No. 5 (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **8U7**.

NO : Go to step **8U6**.



8U6	CHECK TCM.

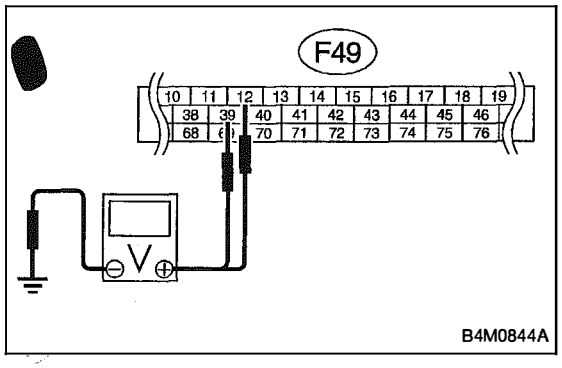
Measure voltage between TCM connector and chassis ground.

Connector & terminal
(B54) No. 6 (+) — Chassis ground (–):
(B55) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Replace TCM.

NO : Repair harness/connector between battery, ignition switch and TCM.



8U7	CHECK OPEN CIRCUIT OF HARNESS.

Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):
(F49) No. 39 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **8U8.**

NO : Repair harness/connector between TCM and ABSCM.

8U8	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between TCM and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8U9.**

8U9	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8U10.**

8U10	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

V: TROUBLE CODE 46 — ABNORMAL G SENSOR POWER SUPPLY VOLTAGE —

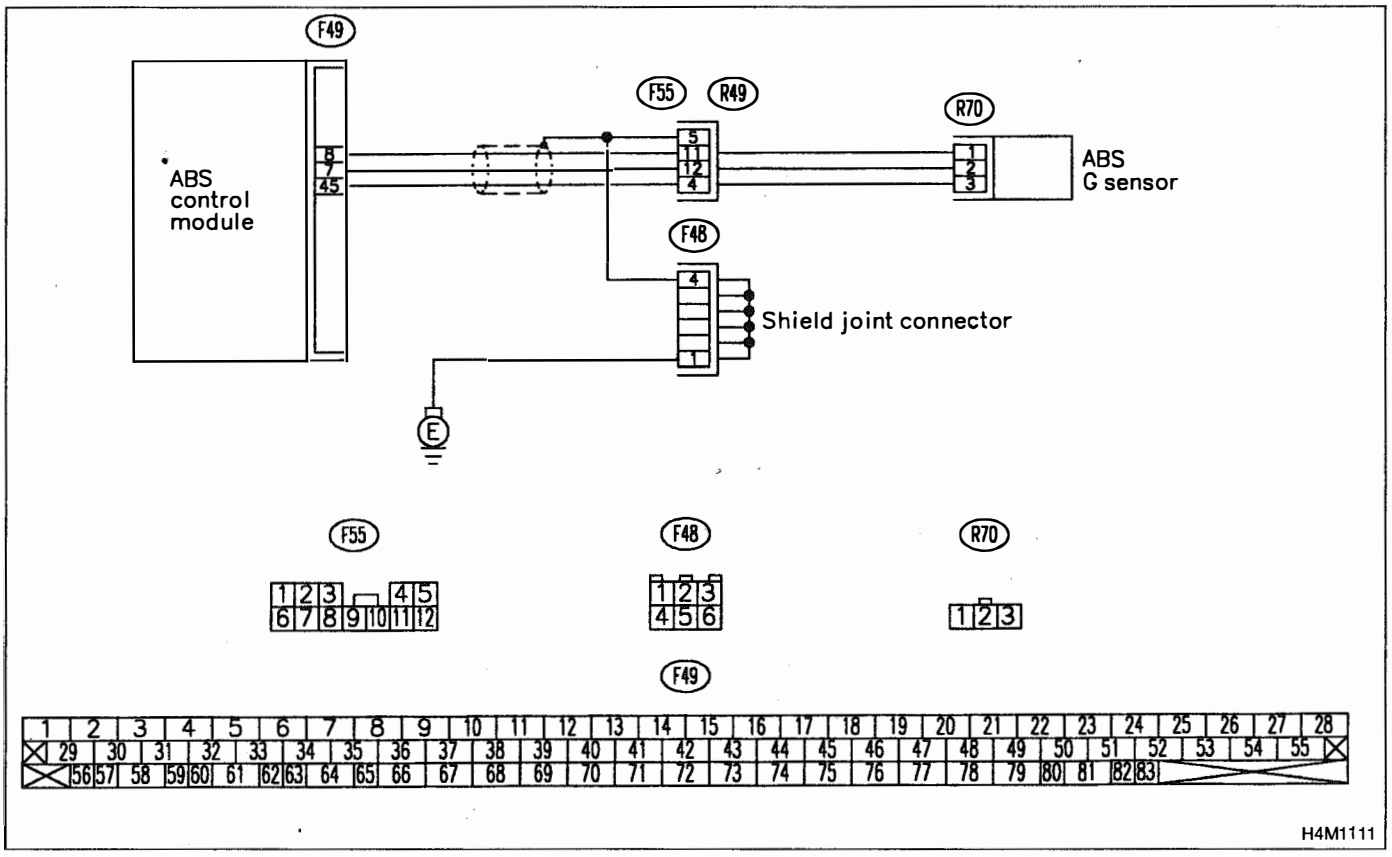
DIAGNOSIS:

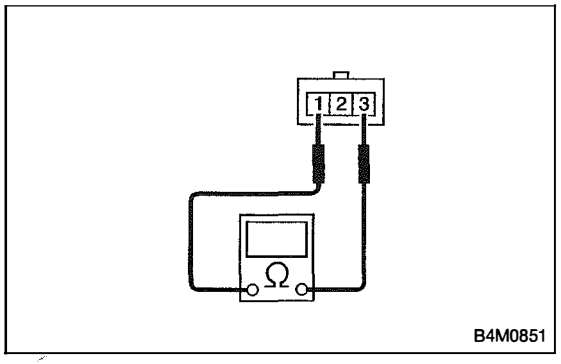
- Faulty G sensor power supply voltage

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





8V1	CHECK G SENSOR.

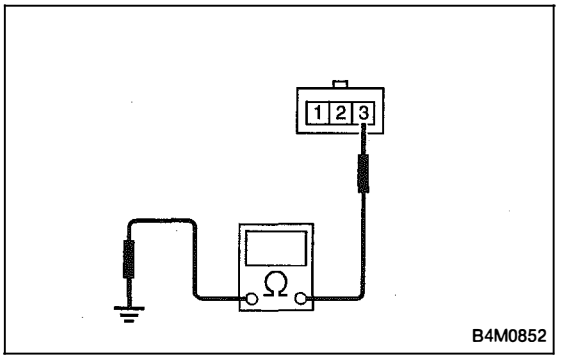
1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect connector from G sensor.
4) Measure resistance of G sensor.

Terminal
No. 1 — No. 3:

CHECK ***: Is the resistance between 42 and 58 kΩ?***

YES : Go to step **8V2**.

NO : Replace G sensor.



8V2	CHECK GROUND SHORT OF G SENSOR.

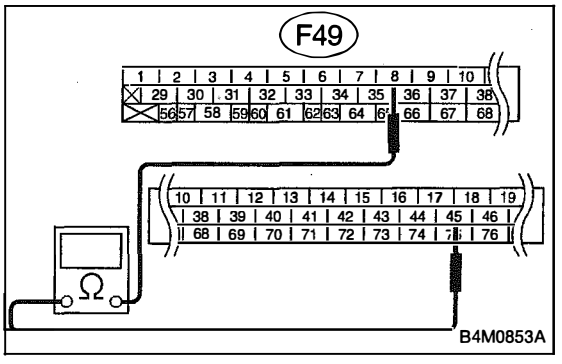
Measure resistance between G sensor and bracket.

Terminal
No. 3 — Bracket:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8V3**.

NO : Replace G sensor.



8V3	CHECK SHORT CIRCUIT IN HARNESS BETWEEN ABSCM AND G SENSOR.

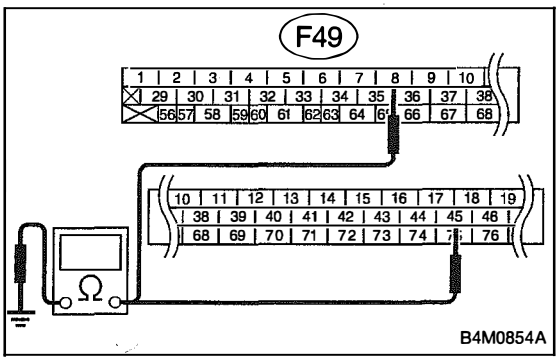
1) Disconnect connector from ABSCM.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 45 — No. 8:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8V4**.

NO : Repair harness between ABSCM and G sensor.



8V4	CHECK GROUND SHORT OF HARNESS.

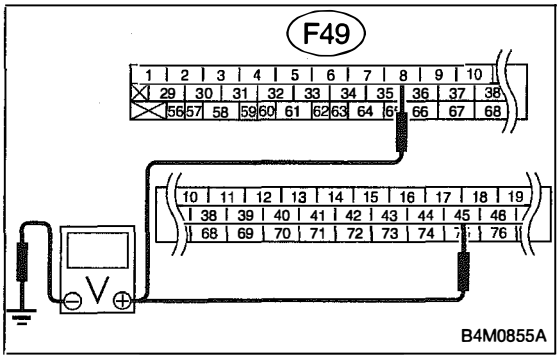
Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 8 — Chassis ground:
(F49) No. 45 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8V5**.

NO : Repair harness between ABSCM and G sensor.



8V5	CHECK BATTERY SHORT OF HARNESS.

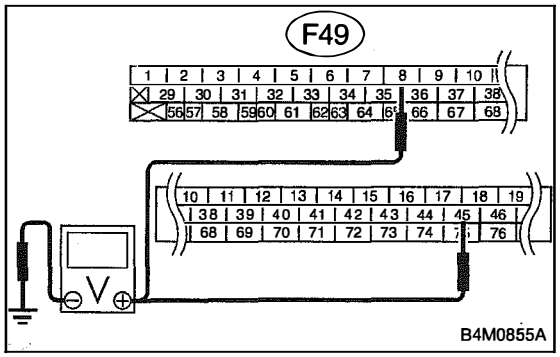
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 8 (+) — Chassis ground (–):
(F49) No. 45 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8V6**.

NO : Repair harness between ABSCM and G sensor.



8V6	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM and chassis ground.

Connector & terminal
(F49) No. 8 (+) — Chassis ground (–):
(F49) No. 45 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8V7**.

NO : Repair harness between ABSCM and chassis ground.

8V7	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8V8**.

8V8	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8V9**.

8V9	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

W: TROUBLE CODE 51
— ABNORMAL VALVE RELAY —

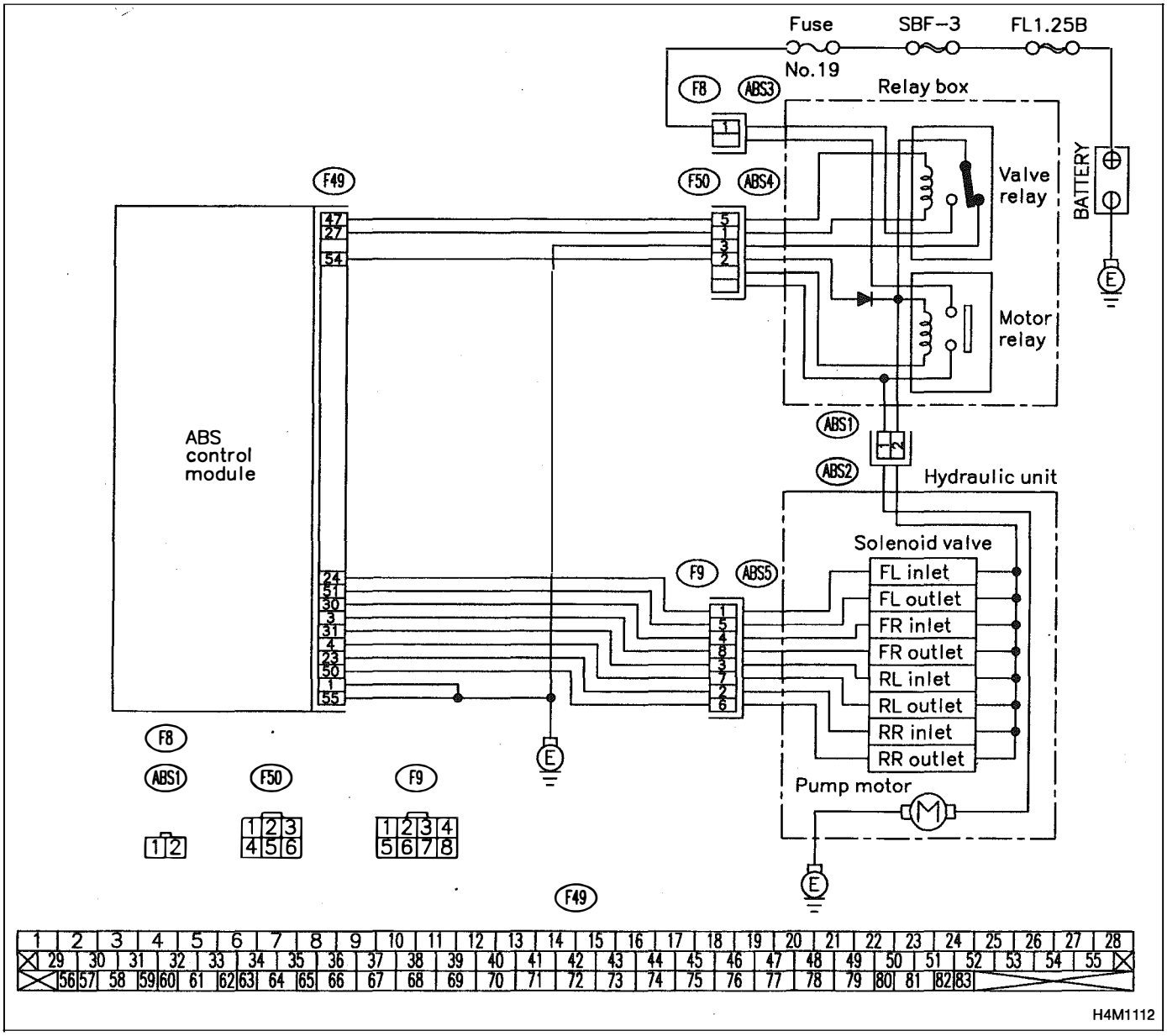
DIAGNOSIS:

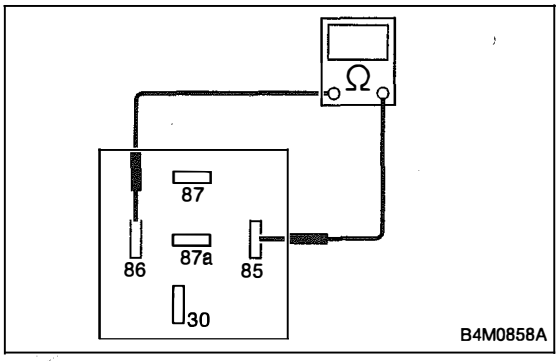
- Faulty valve relay

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





8W1	CHECK RESISTANCE OF VALVE RELAY.

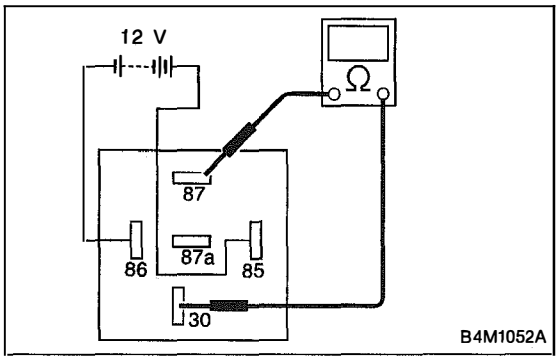
1) Turn ignition switch to OFF.
2) Remove valve relay from relay box.
3) Measure resistance between valve relay terminals.

Terminals
No. 85 — No. 86:

CHECK ***: Is the resistance between 93 and 113 Ω?***

YES : Go to step **8W2**.

NO : Replace valve relay.



8W2	CHECK CONTACT POINT OF VALVE RELAY.

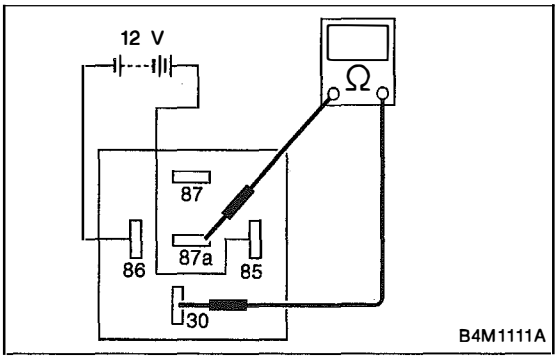
1) Connect battery to valve relay terminals No. 85 and No. 86.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8W3**.

NO : Replace valve relay.



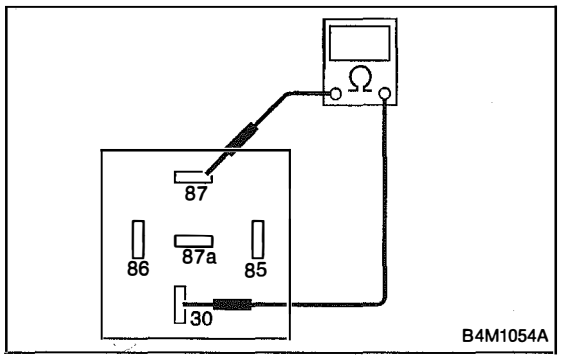
8W3	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:
Is the resistance more than 1 MΩ?

YES : Go to step **8W4**.

NO : Replace valve relay.

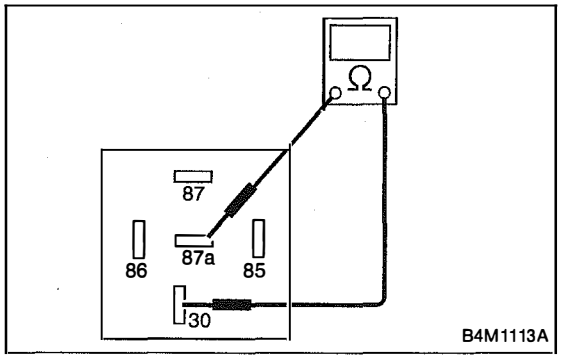


8W4	CHECK CONTACT POINT OF VALVE RELAY.

1) Disconnect battery from valve relay terminals.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8W5**.
NO : Replace valve relay.

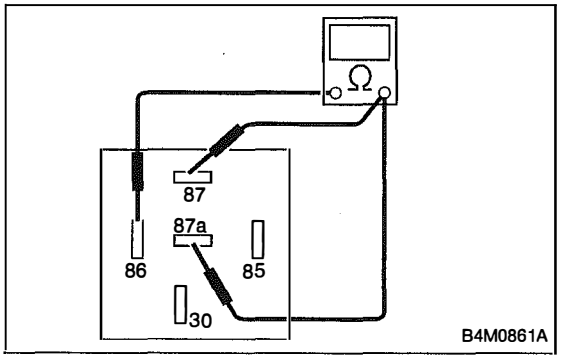


8W5	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **8W6**.
NO : Replace valve relay.

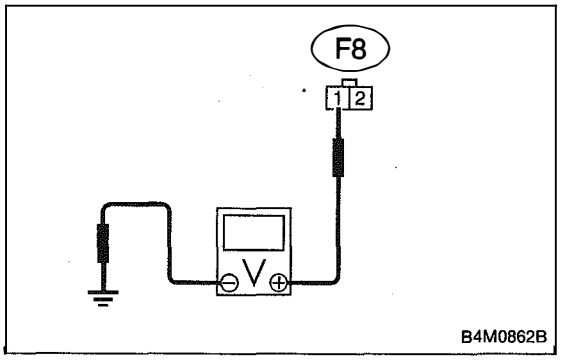


8W6	CHECK SHORT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 86 — No. 87:
No. 86 — No. 87a:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8W7**.
NO : Replace valve relay.

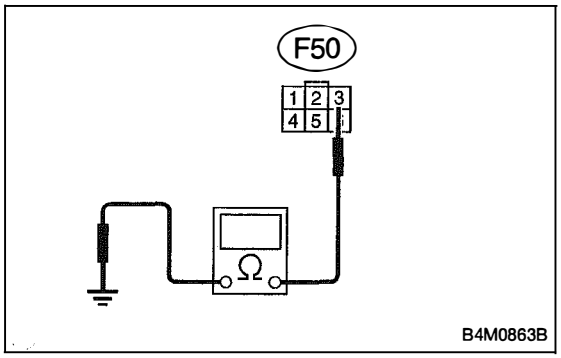


8W7	CHECK POWER SUPPLY FOR VALVE RELAY.

1) Disconnect connector (F8) from relay box.
2) Turn ignition switch to ON.
3) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(F8) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***
YES : Go to step **8W8**.
NO : Repair harness between battery and relay box connector. Check fuse No. 19.



8W8	CHECK GROUND CIRCUIT OF RELAY BOX.

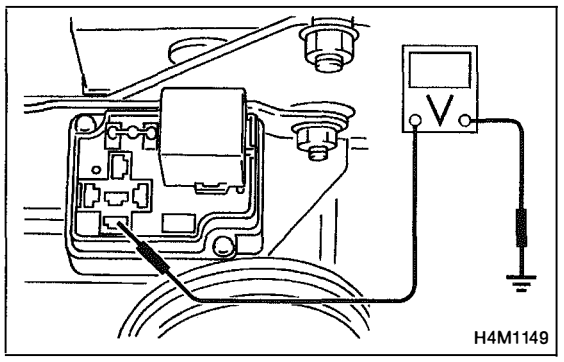
1) Turn ignition switch to OFF.
2) Disconnect connector (F50) from relay box.
3) Measure resistance between relay box connector and chassis ground.

Connector & terminal
(F50) No. 3 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8W9**.

NO : Repair relay box ground harness.



8W9	CHECK OPEN CIRCUIT AND GROUND SHORT IN POWER SUPPLY CIRCUIT OF RELAY BOX.

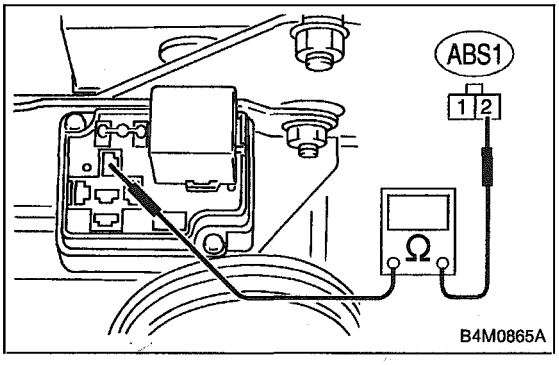
1) Disconnect connector (ABS1) from hydraulic unit.
2) Connect connector (F8) to relay box.
3) Turn ignition switch to ON.
4) Measure voltage of relay box.

Connector & terminal
Valve relay installing point No. 87 — Chassis ground:

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **8W10**.

NO : Replace relay box and check fuse No. 19.



8W10	CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.

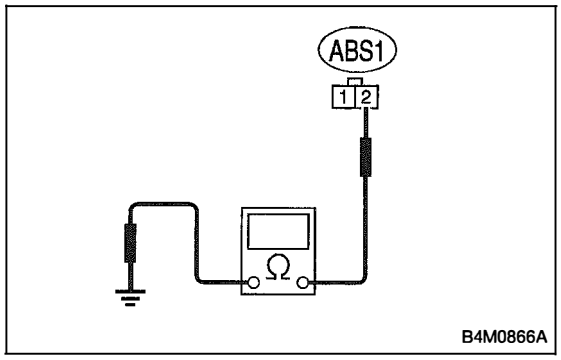
1) Turn ignition switch to OFF.
2) Measure resistance between hydraulic unit connector and valve relay installing point.

Connector & terminal
(ABS1) No. 2 — Valve relay installing point No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8W11**.

NO : Replace relay box.



8W11	CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

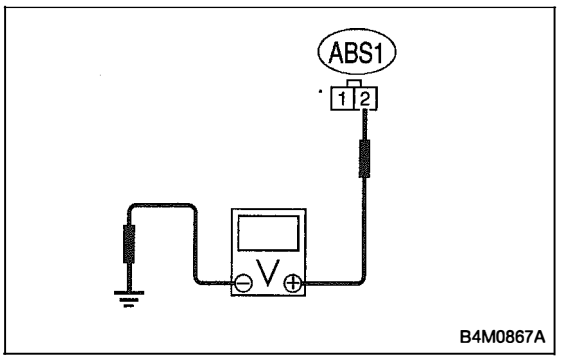
Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS1) No. 2 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8W12**.

NO : Replace relay box and check fuse SBF6.



8W12	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

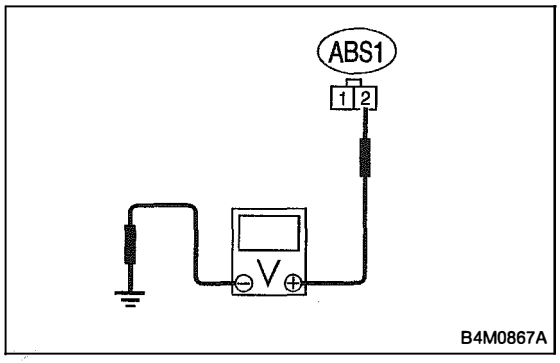
1) Disconnect connector from ABSCM.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS1) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W13**.

NO : Replace relay box. Check fuse No. 19 and SBF6.



8W13	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

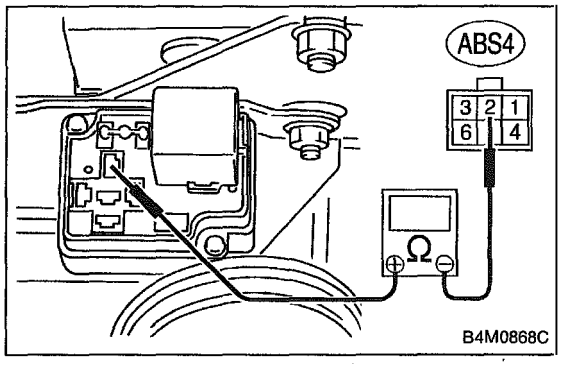
1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS1) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W14**.

NO : Replace relay box. Check fuse No. 19 and SBF6.



8W14	CHECK DIODE OF RELAY BOX.

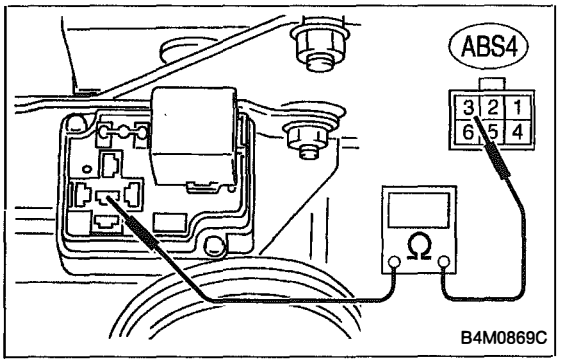
1) Turn ignition switch to OFF.
2) Measure resistance between relay box connector and valve relay installing point.

Connector & terminal
Valve relay installing point No. 30 (+) — (ABS4) No. 2 (–):

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8W15**.

NO : Replace relay box.



8W15	CHECK OPEN CIRCUIT IN GROUND CIRCUIT OF RELAY BOX.

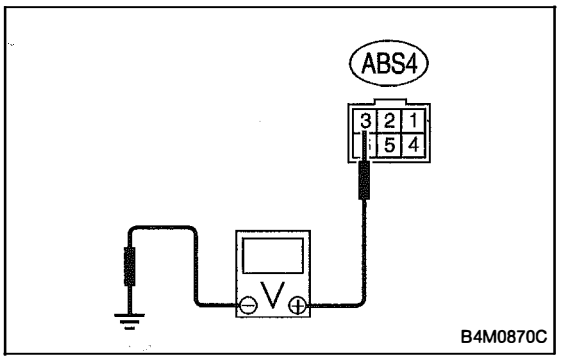
Measure resistance between relay box connector and valve relay installing point.

Connector & terminal
(ABS4) No. 3 — Valve relay installing point No. 87a:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8W16**.

NO : Replace relay box.



8W16	CHECK BATTERY SHORT IN GROUND CIRCUIT OF RELAY BOX.

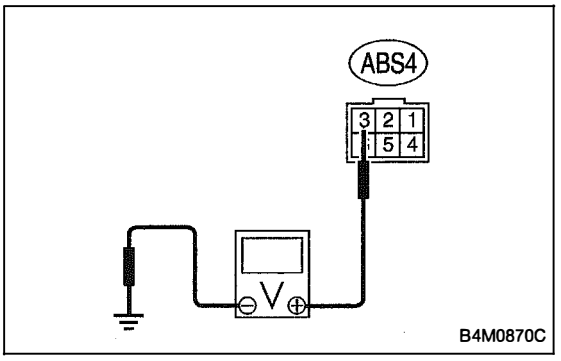
Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W17**.

NO : Replace relay box and check all fuses.



8W17	CHECK BATTERY SHORT IN GROUND CIRCUIT OF RELAY BOX.

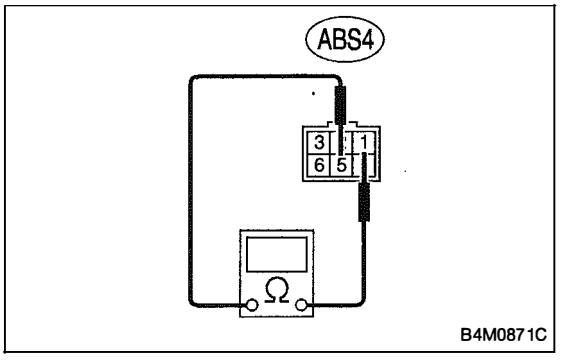
1) Turn ignition switch to ON.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W18**.

NO : Replace relay box and check all fuses.



8W18	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

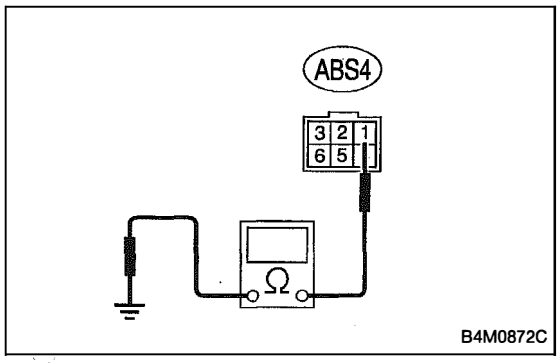
1) Turn ignition switch to OFF.
2) Install valve relay to relay box.
3) Measure resistance between relay box connector terminals.

Connector & terminal
(ABS4) No. 1 — No. 5:

CHECK ***: Is the resistance between 93 and 113 Ω?***

YES : Go to step **8W19**.

NO : Replace relay box.



8W19	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

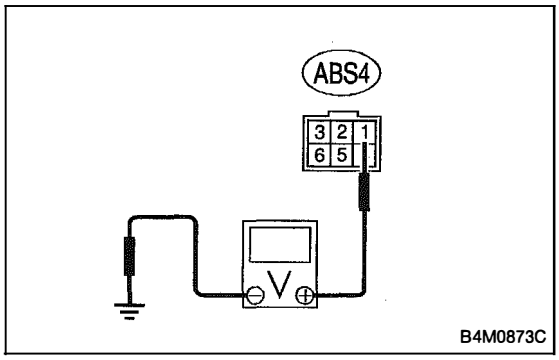
Measure resistance between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8W20**.

NO : Replace relay box and check all fuses.



8W20	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

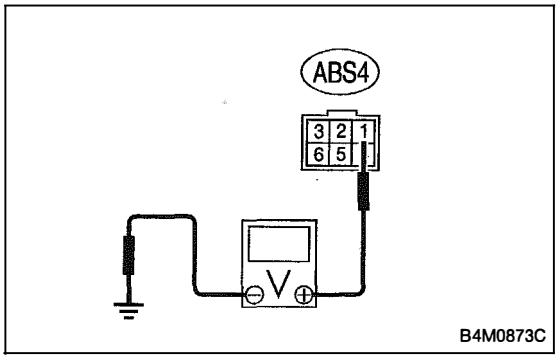
Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W21**.

NO : Replace relay box. Check fuse No. 19 and SBF45A.



8W21	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

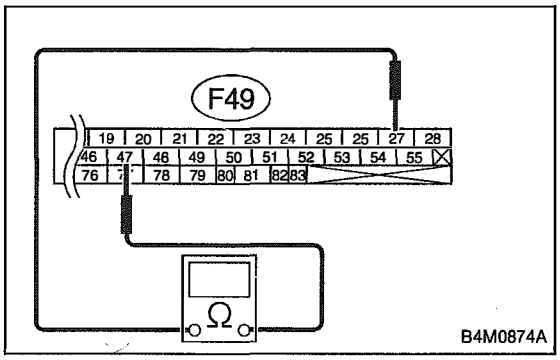
1) Turn ignition switch to ON.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W22**.

NO : Replace relay box. Check fuse No. 19 and SBF45A.



8W22	CHECK OPEN CIRCUIT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

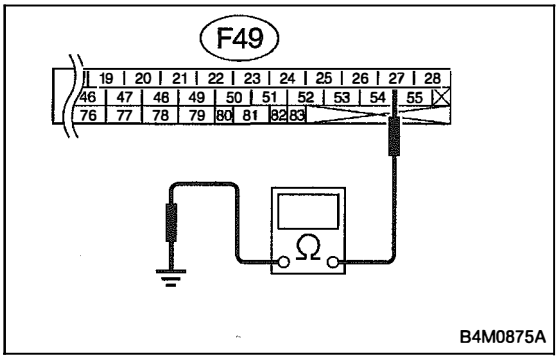
1) Turn ignition switch to OFF.
2) Connect connector (F50) to relay box.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 27 — No. 47:

CHECK ***: Is the resistance between 93 and 113 Ω?***

YES : Go to step **8W23.**

NO : Repair harness between ABSCM and relay box. Check fuse No. 18.



8W23	CHECK GROUND SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

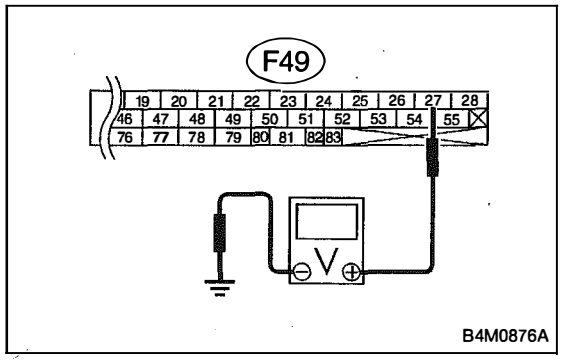
Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8W24.**

NO : Repair harness between ABSCM and relay box. Check fuse No. 18.



8W24	CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

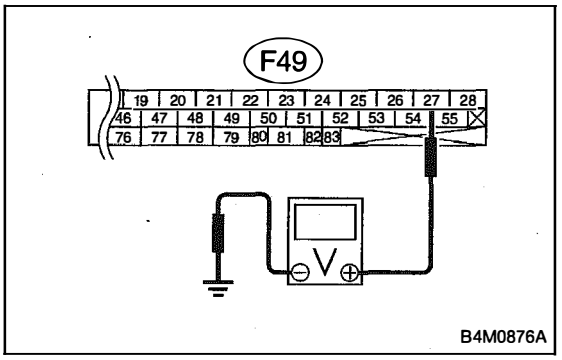
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W25**.

NO : Repair harness between ABSCM and relay box and check all fuses.



8W25	CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

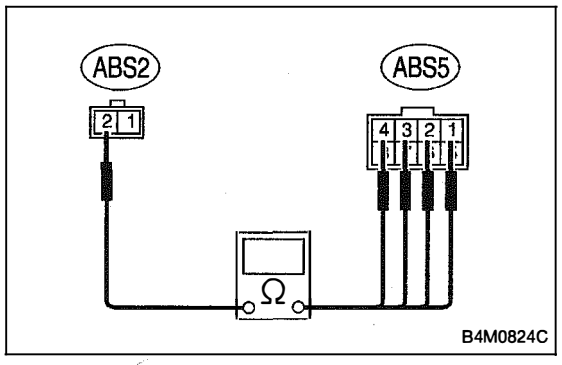
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W26**.

NO : Repair harness between ABSCM and relay box and check all fuses.

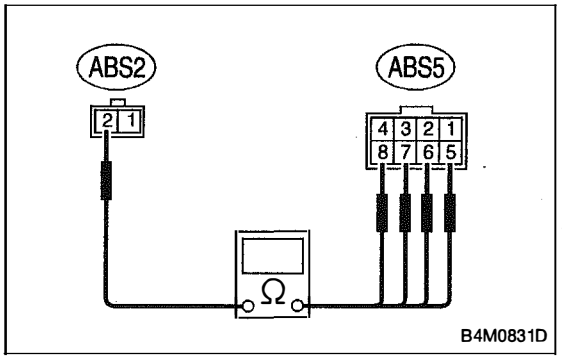


8W26	CHECK RESISTANCE OF INLET SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect connector from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
(ABS5) No. 4 — (ABS2) No. 2:
(ABS5) No. 1 — (ABS2) No. 2:
(ABS5) No. 2 — (ABS2) No. 2:
(ABS5) No. 3 — (ABS2) No. 2:

CHECK ***: Is the resistance between 7.8 and 9.2 Ω?***
YES : Go to step **8W27**.
NO : Replace hydraulic unit.

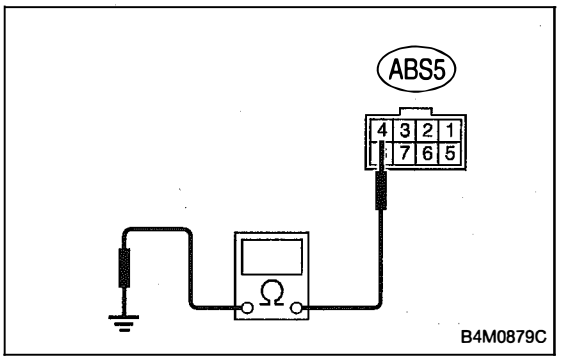


8W27	CHECK RESISTANCE OF OUTLET SOLENOID VALVE.

Measure resistance between hydraulic unit connector terminals.

Connector & terminal
(ABS5) No. 8 — (ABS2) No. 2:
(ABS5) No. 5 — (ABS2) No. 2:
(ABS5) No. 6 — (ABS2) No. 2:
(ABS5) No. 7 — (ABS2) No. 2:

CHECK ***: Is the resistance between 3.8 and 4.8 Ω?***
YES : Go to step **8W28**.
NO : Replace hydraulic unit.

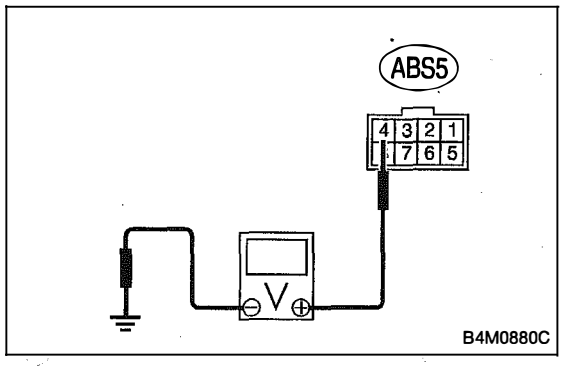


8W28	CHECK GROUND SHORT OF SOLENOID VALVE.

Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8W29**.
NO : Replace hydraulic unit and check all fuses.



8W29	CHECK BATTERY SHORT OF SOLENOID VALVE.

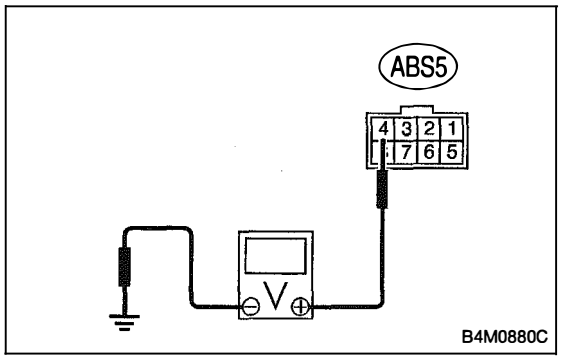
Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W30**.

NO : Replace hydraulic unit and check all fuses.



8W30	CHECK BATTERY SHORT OF SOLENOID VALVE.

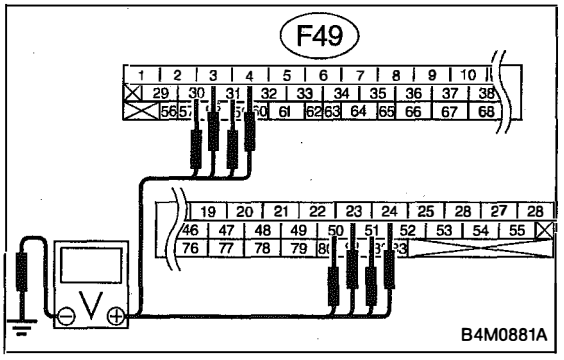
1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W31**.

NO : Replace hydraulic unit and check all fuses.



8W31	CHECK BATTERY SHORT OF HARNESS.

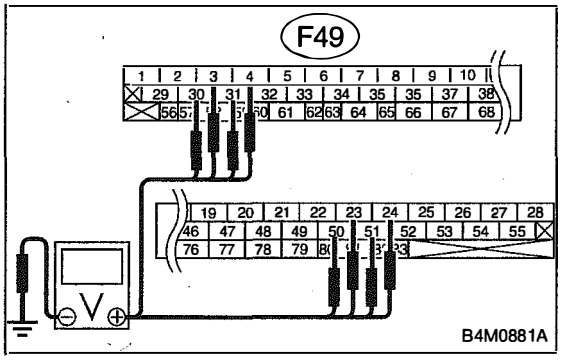
1) Turn ignition switch to OFF.
2) Disconnect connector from hydraulic unit.
3) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W32**.

NO : Repair harness between hydraulic unit and ABSCM and check all fuses.



8W32	CHECK BATTERY SHORT OF HARNESS.

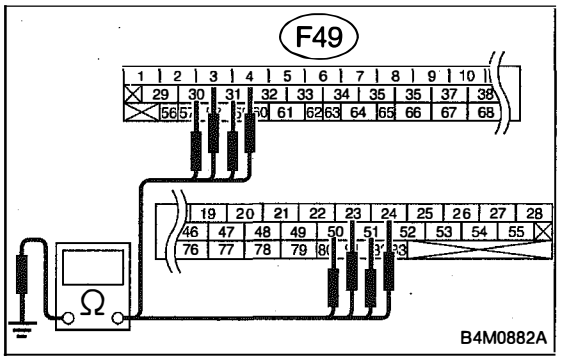
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8W33**.

NO : Repair harness between hydraulic unit and ABSCM and check all fuses.



8W33	CHECK GROUND SHORT OF HARNESS.

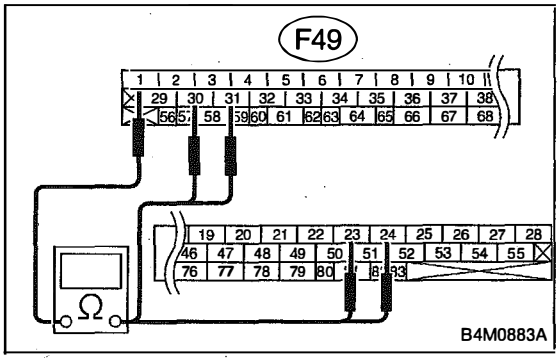
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 — Chassis ground:
(F49) No. 24 — Chassis ground:
(F49) No. 23 — Chassis ground:
(F49) No. 31 — Chassis ground:
(F49) No. 3 — Chassis ground:
(F49) No. 51 — Chassis ground:
(F49) No. 50 — Chassis ground:
(F49) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8W34**.

NO : Repair harness between hydraulic unit and ABSCM.



8W34	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

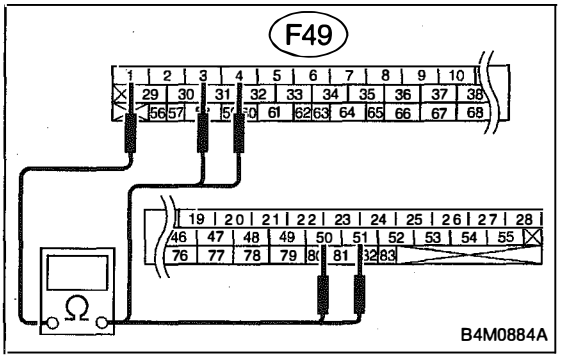
1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 30 — No. 1:
(F49) No. 24 — No. 1:
(F49) No. 23 — No. 1:
(F49) No. 31 — No. 1:

CHECK ***: Is the resistance between 8.3 and 9.7 Ω?***

YES : Go to step **8W35**.

NO : Repair harness/connector between hydraulic unit and ABSCM.



8W35	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 3 — No. 1:
(F49) No. 51 — No. 1:
(F49) No. 50 — No. 1:
(F49) No. 4 — No. 1:

CHECK ***: Is the resistance between 4.3 and 5.3 Ω?***

YES : Go to step **8W36**.

NO : Repair harness/connector between hydraulic unit and ABSCM.

8W36	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connector between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8W37**.

8W37	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8W38.**

8W38	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

X: TROUBLE CODE 52 — ABNORMAL MOTOR AND/OR MOTOR RELAY —

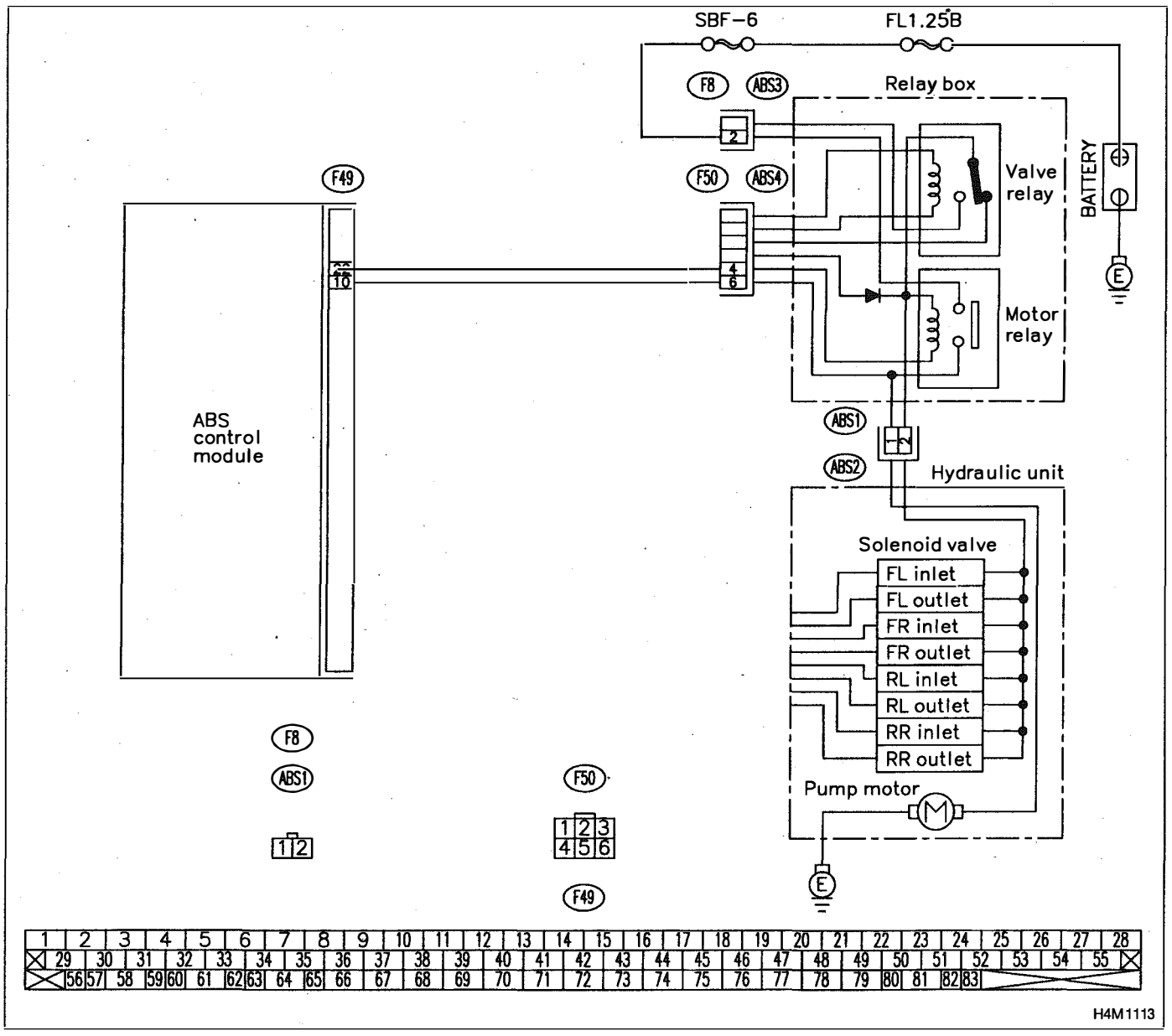
DIAGNOSIS:

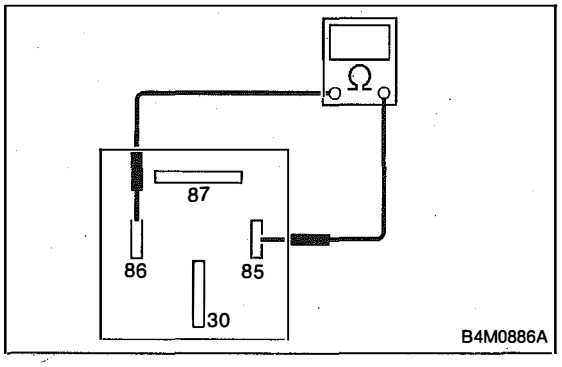
- Faulty motor
- Faulty motor relay
- Faulty harness connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



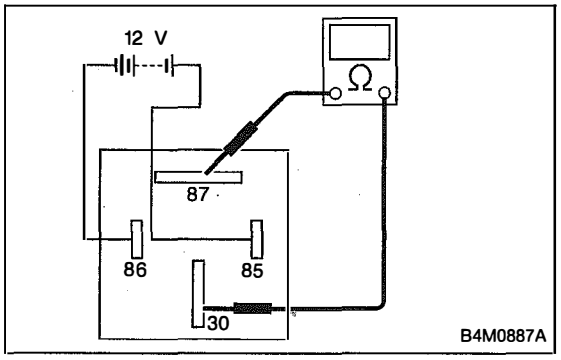


8X1	CHECK RESISTANCE OF MOTOR RELAY.

1) Turn ignition switch to OFF.
2) Remove motor relay from relay box.
3) Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 86:

CHECK ***: Is the resistance between 70 and 90 Ω?***
YES : Go to step **8X2**.
NO : Replace motor relay.

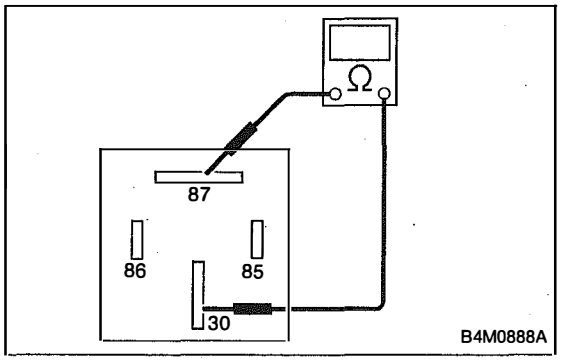


8X2	CHECK CONTACT POINT OF MOTOR RELAY.

1) Connect battery to motor relay terminals No. 85 and No. 86.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **8X3**.
NO : Replace motor relay.

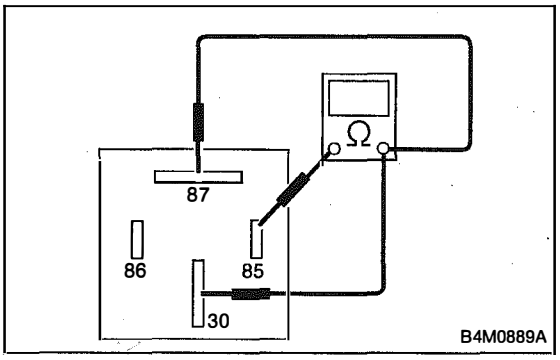


8X3	CHECK CONTACT POINT OF MOTOR RELAY.

1) Disconnect battery from motor relay terminals.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **8X4**.
NO : Replace motor relay.



8X4	CHECK SHORT OF MOTOR RELAY.

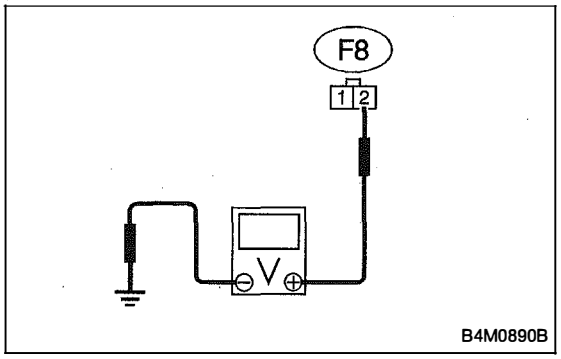
Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 30:
No. 85 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8X5**.

NO : Replace motor relay.



8X5	CHECK INPUT VOLTAGE OF RELAY BOX.

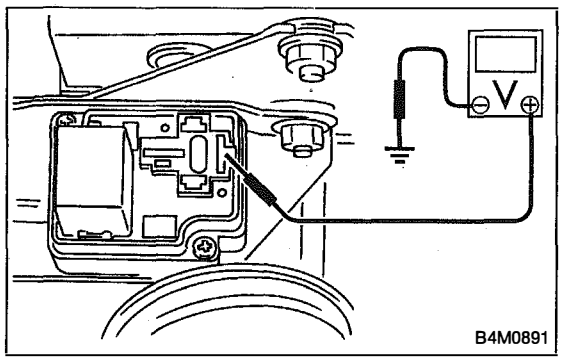
1) Disconnect connector (F8) from relay box.
2) Turn ignition switch to ON.
3) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(F8) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **8X6**.

NO : Repair harness/connector between battery and relay box, and check fuse SBF6.



8X6	CHECK INPUT VOLTAGE OF MOTOR RELAY.

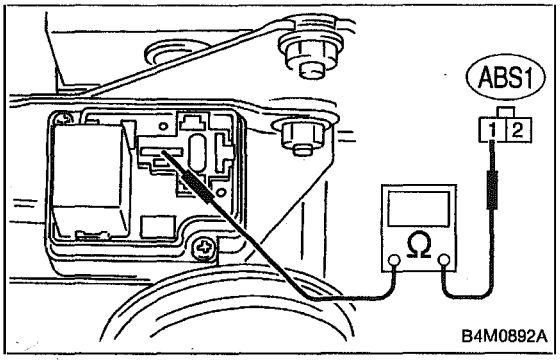
1) Turn ignition switch to OFF.
2) Connect connector (F8) to relay box.
3) Turn ignition switch to ON.
4) Measure voltage between relay box and chassis ground.

Connector & terminal
Relay installing point No. 87 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **8X7**.

NO : Replace relay box, and check fuse SBF6.



8X7	CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.

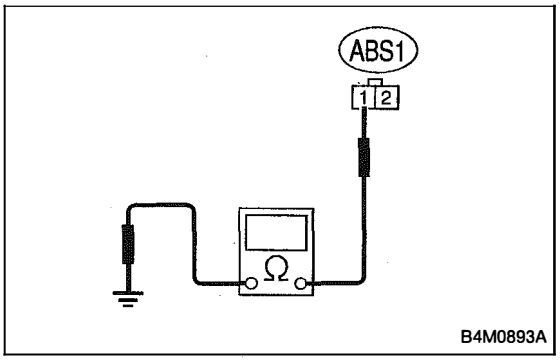
1) Turn ignition switch to OFF.
2) Disconnect connector (ABS1) from hydraulic unit.
3) Measure resistance between hydraulic unit and motor relay installing portion.

Connector & terminal
(ABS1) No. 1 — Motor relay installing portion No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8X8**.

NO : Replace relay box.



8X8	CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

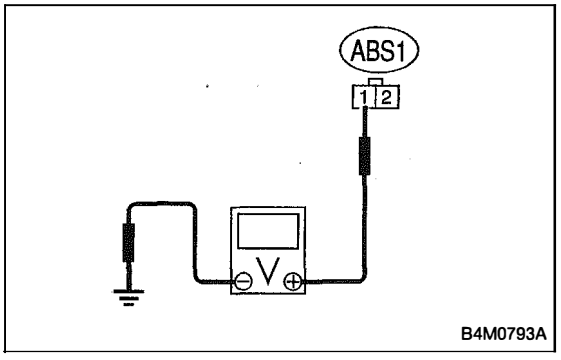
Measure resistance between hydraulic unit and chassis ground.

Connector & terminal
(ABS1) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8X9**.

NO : Replace relay box. Check fuse No. 19.



8X9	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

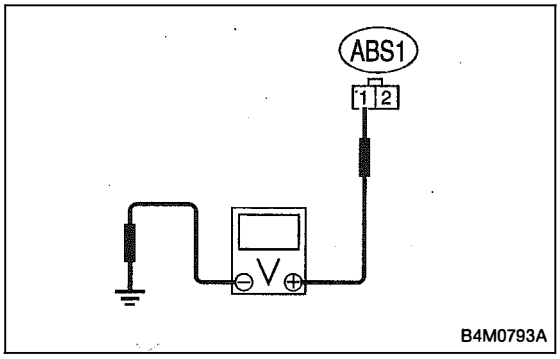
1) Disconnect connector from ABSCM.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(ABS1) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8X10**.

NO : Replace relay box.



8X10	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

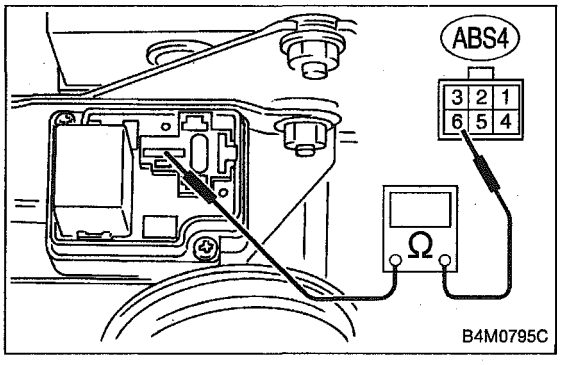
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(ABS1) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8X11**.

NO : Replace relay box.



8X11	CHECK OPEN CIRCUIT IN MONITOR SYSTEM CIRCUIT OF RELAY BOX.

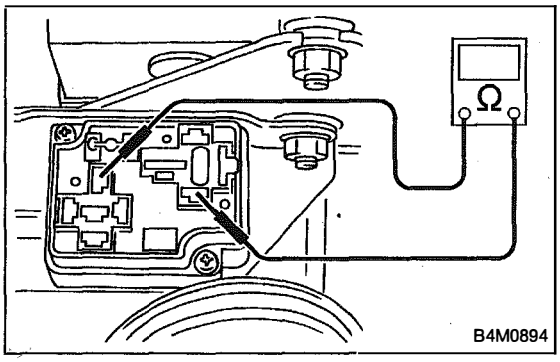
1) Turn ignition switch to OFF.
2) Disconnect connector (F50) from relay box.
3) Measure resistance between relay box connector and motor relay installing point.

Connector & terminal
(ABS4) No. 6 — Motor relay installing point No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8X12**.

NO : Replace relay box.

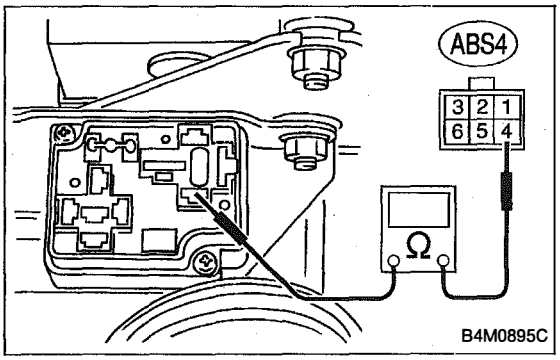


8X12	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

1) Remove valve relay from relay box.
2) Measure resistance between motor relay installing point and valve relay installing point.

Connector & terminal
Motor relay installing point No. 86 — Valve relay installing point No. 30:

(CHECK) ***: Is the resistance less than 0.5 Ω?***
(YES) : Go to step **8X13**.
(NO) : Replace relay box.

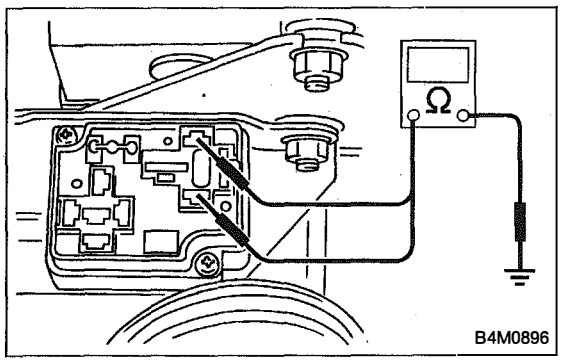


8X13	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

Measure resistance between motor relay installing point and relay box connector.

Connector & terminal
Motor relay installing point No. 86 — (ABS4) No. 4:

(CHECK) ***: Is the resistance less than 0.5 Ω?***
(YES) : Go to step **8X14**.
(NO) : Replace relay box.

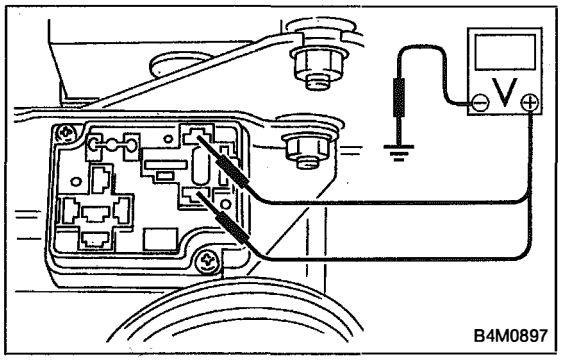


8X14	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

Measure resistance between relay box and chassis ground.

Connector & terminal
Motor relay installing point No. 86 — Chassis ground:
Motor relay installing point No. 85 — Chassis ground:

(CHECK) ***: Is the resistance more than 1 MΩ?***
(YES) : Go to step **8X15**.
(NO) : Replace relay box. Check fuse No. 19.



8X15	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

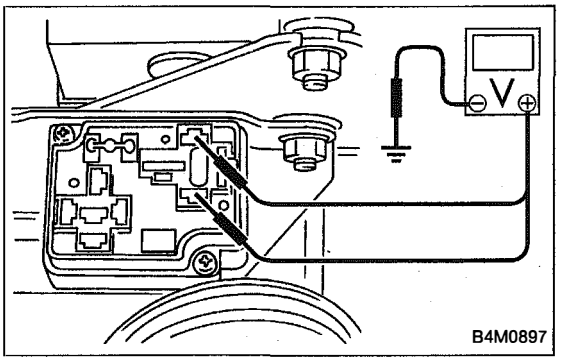
Measure voltage between motor relay installing point and chassis ground.

Connector & terminal
Motor relay installing point (+) No. 86 — Chassis ground (–):
Motor relay installing point (+) No. 85 — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8X16**.

NO : Replace relay box and check all fuses.



8X16	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

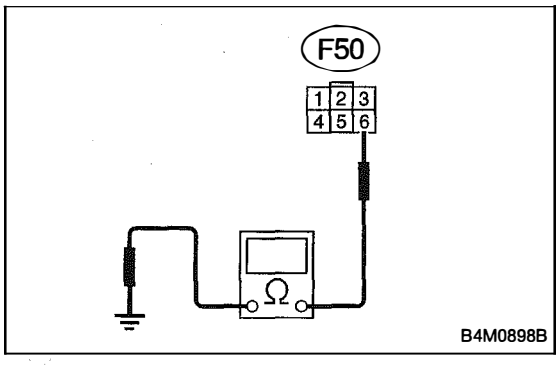
1) Turn ignition switch to ON.
2) Measure voltage between motor relay installing point and chassis ground.

Connector & terminal
Motor relay installing point (+) No. 86 — Chassis ground:
Motor relay installing point (+) No. 85 — Chassis ground:

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8X17**.

NO : Replace relay box and check all fuses.



8X17	CHECK OPEN CIRCUIT IN MONITOR SYSTEM HARNESS.

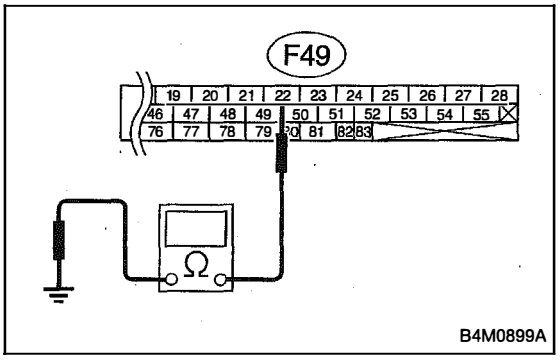
1) Turn ignition switch to OFF.
2) Connect between terminals No. 10 and No. 1 of ABSCM connector (F49) with a lead wire.
3) Measure resistance between relay box connector and chassis ground.

Connector & terminal
(F50) No. 6 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **8X18**.

NO : Repair harness/connector between ABSCM and relay box.



8X18	CHECK OPEN CIRCUIT IN RELAY CONTROL SYSTEM HARNESS.

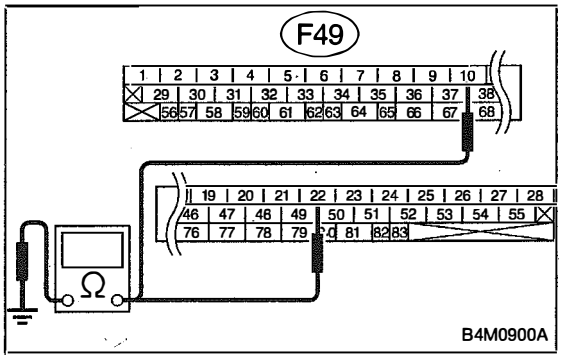
1) Connect valve relay and motor relay to relay box.
2) Connect connector (F50) to relay box.
3) Connect connector to hydraulic unit.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 — Chassis ground:

CHECK ***: Is the resistance between 70 and 90 Ω?***

YES : Go to step **8X19**.

NO : Repair harness/connector between ABSCM and relay box.



8X19	CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

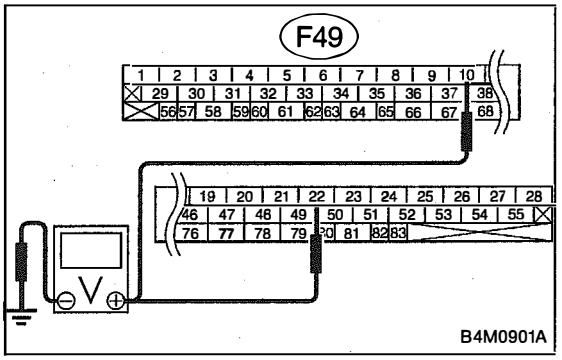
1) Disconnect connector (F50) from relay box.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 — Chassis ground:
(F49) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8X20**.

NO : Repair harness between ABSCM and relay box. Check fuse No. 19 and SBF6.



8X20	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

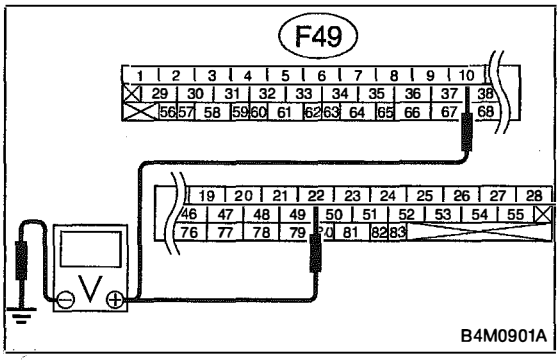
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8X21**.

NO : Repair harness between relay box and ABSCM. Check fuse SBF6.

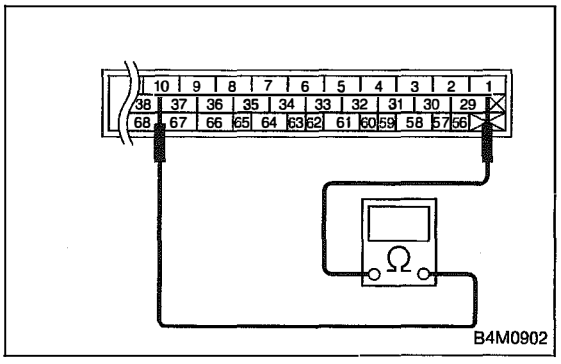


8X21	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **8X22**.
NO : Repair harness between relay box and ABSCM. Check fuse SBF6.

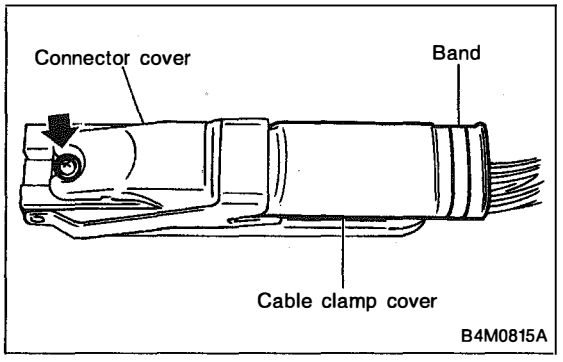


8X22	CHECK GROUND SHORT AT ABSCM MONITOR TERMINAL.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM terminals.

Terminal
No. 10 — No. 1:

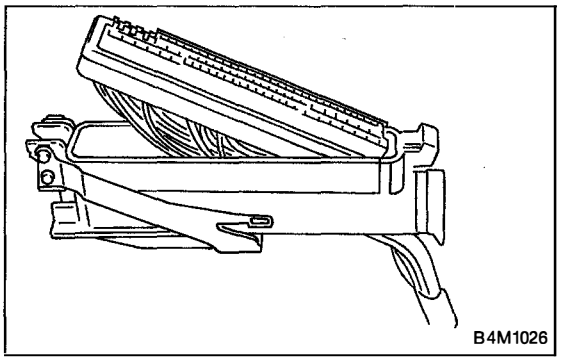
CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **8X23**.
NO : Replace ABSCM.



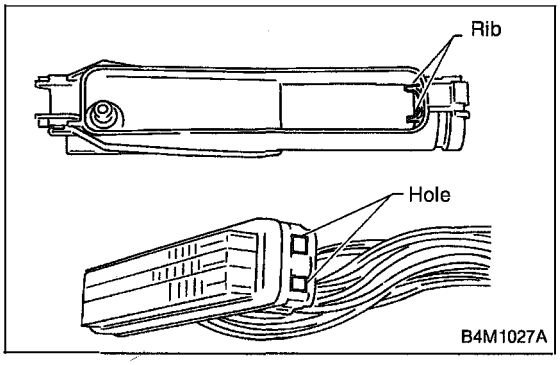
8X23	CHECK BATTERY SHORT IN ABSCM CONNECTOR TERMINAL.

1) Remove band.
2) Remove cable clamp cover.
3) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

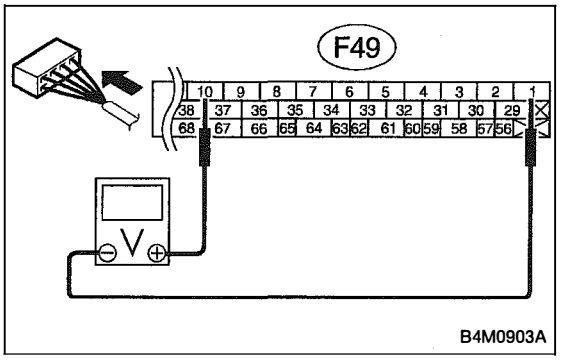


4) Remove connector cover.

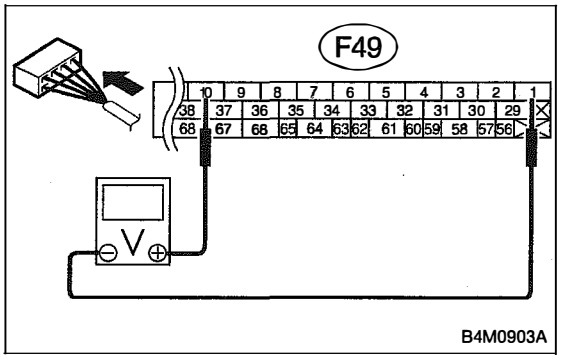


NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

5) Connect all connectors.

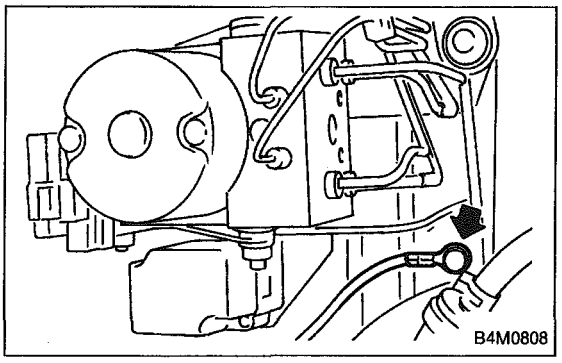


6) Measure voltage between ABSCM connector terminals.
Connector & terminal
(F49) No. 10 (+) — No. 1 (–):
CHECK ***: Is the voltage less than 2 V?***
YES : Go to step **8X24.**
NO : Replace ABSCM.



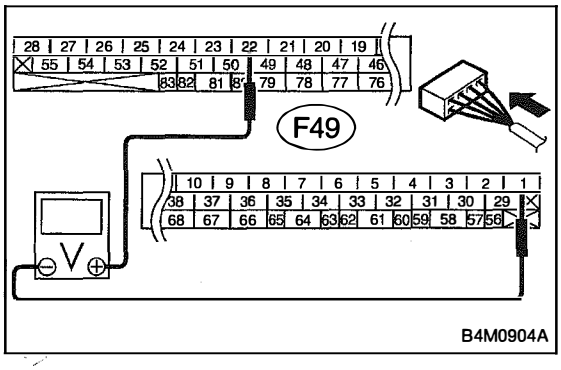
8X24	CHECK BATTERY SHORT IN ABSCM CONNECTOR TERMINAL.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector terminals.
Connector & terminal
(F49) No. 10 (+) — No. 1 (–):
CHECK ***: Is the voltage less than 2 V?***
YES : Go to step **8X25.**
NO : Replace ABSCM.



8X25	CHECK CONDITION OF MOTOR GROUND.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb):
CHECK ***: Is the motor ground terminal tightly clamped?***
YES : Go to step **8X26.**
NO : Tighten the clamp of motor ground terminal.



8X26	CHECK ABSCM MOTOR DRIVE TERMINAL.

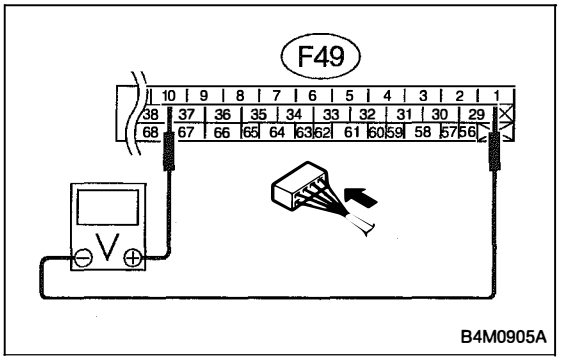
1) Operate the check sequence. <Ref. to 4-4 [W12D1].>
2) Measure voltage between ABSCM connector terminals.

Connector & terminal
(F49) No. 22 (+) — No. 1 (–):

CHECK : ***Does the voltage drop from between 10 V and 13 V to less than 1.5 V, and rise to between 10 V and 13 V again when carrying out the check sequence?***

YES : Go to step **8X27**.

NO : Replace ABSCM.



8X27	CHECK MOTOR OPERATION.

1) Operate the check sequence. <Ref. to 4-4 [W12D1].>
2) Measure voltage between ABSCM connector terminals.

Connector & terminal
(F49) No. 10 (+) — No. 1 (–):

CHECK : ***Does the voltage raise from less than 1.5 V to between 10 V and 13 V, and return to less than 1.5 V again when carrying out the check sequence?***

YES : Go to step **8X28**.

NO : Replace hydraulic unit.

8X28	CHECK MOTOR OPERATION.

Operate the check sequence. <Ref. to 4-4 [W12D1].>

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the check sequence?***

YES : Go to step **8X29**.

NO : Replace hydraulic unit.

8X29	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between hydraulic unit, relay box and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8X30**.

8X30	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8X31**.

8X31	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

Y: TROUBLE CODE 54
— ABNORMAL STOP LIGHT SWITCH —

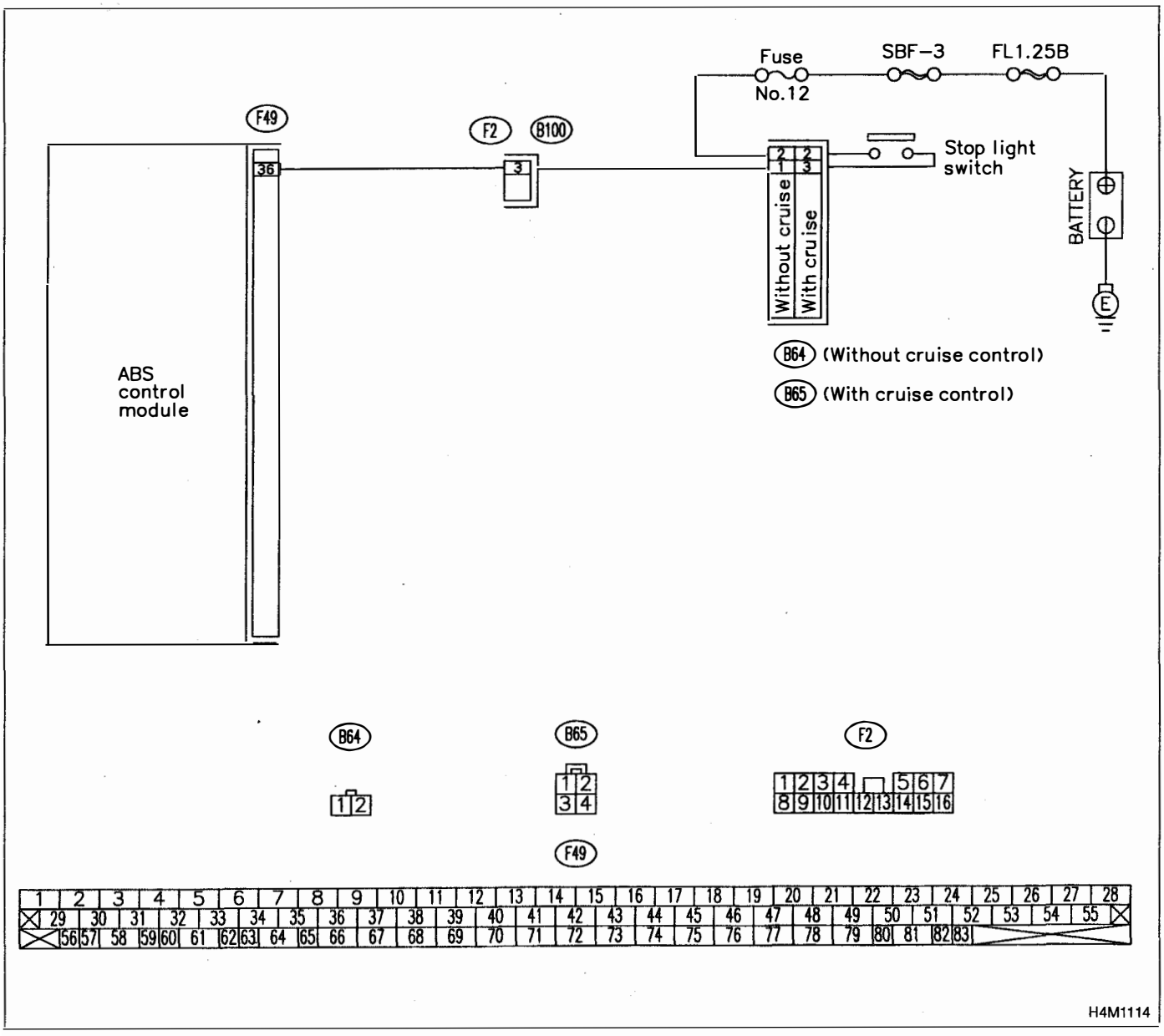
DIAGNOSIS:

- Faulty stop light switch

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



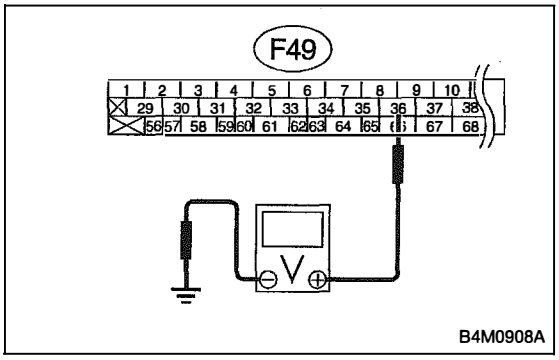
8Y1	CHECK STOP LIGHTS COME ON.

Depress the brake pedal.

CHECK : ***Do stop lights come on?***

YES : Go to step **8Y2.**

NO : Repair stop lights circuit.



8Y2	CHECK OPEN CIRCUIT IN HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Depress brake pedal.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 36 — Chassis ground:

CHECK : ***Is the voltage between 10 V and 13 V?***

YES : Go to step **8Y3.**

NO : Repair harness between stop light switch and ABSCM.

8Y3	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between stop light switch and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8Y4.**

8Y4	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **8Y5.**

8Y5	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

Z: TROUBLE CODE 56 — ABNORMAL G SENSOR OUTPUT VOLTAGE —

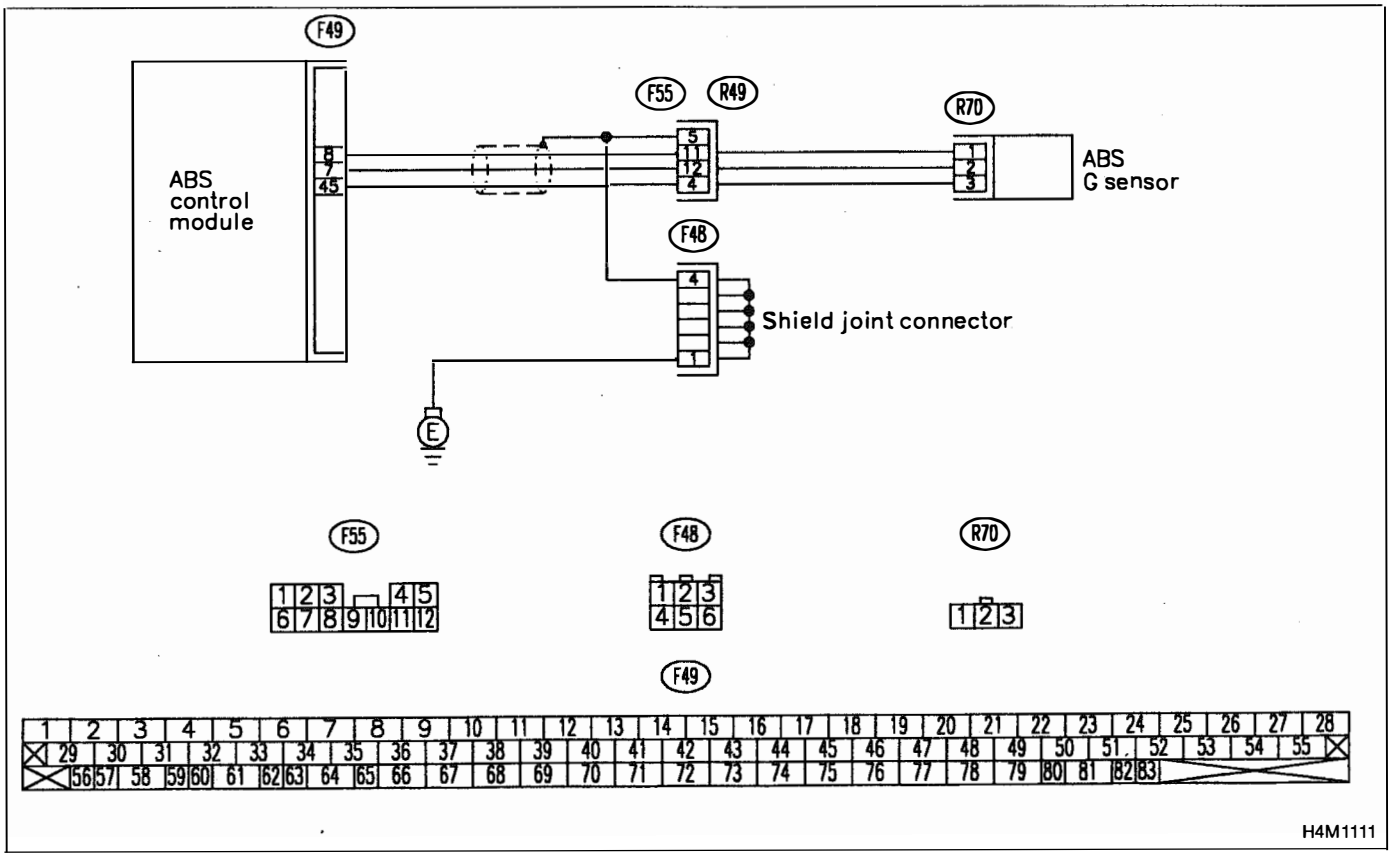
DIAGNOSIS:

- Faulty G sensor output voltage

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:

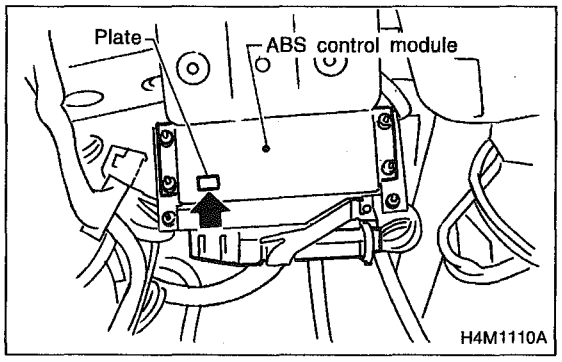


8Z1	CHECK ALL FOUR WHEELS FOR FREE TURNING.

CHECK : ***Have the wheels been turned freely such as when the vehicle is lifted up, or operated on a rolling road?***

YES : The ABS is normal. Erase the trouble code.

NO : Go to step **8Z2**.



8Z2	CHECK SPECIFICATIONS OF ABSCM.

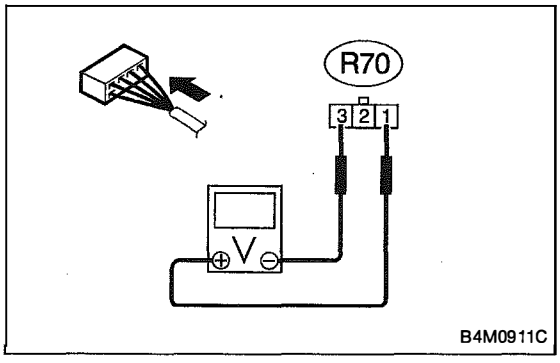
Check specifications of the plate attached to the ABSCM.

CHECK : ***Is an ABSCM for 4WD model installed on a FWD model?***

CAUTION:
Be sure to turn ignition switch to OFF when removing ABSCM.

YES : Replace ABSCM.

NO : Go to step **8Z3**.



8Z3	CHECK INPUT VOLTAGE OF G SENSOR.

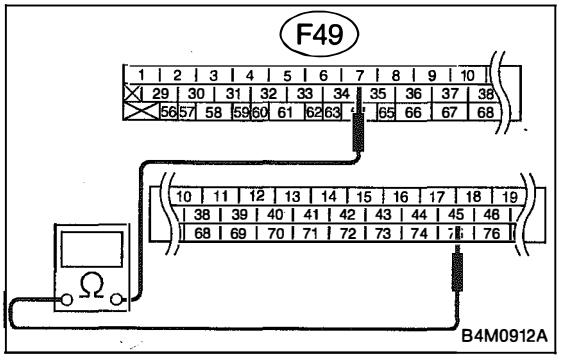
1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect G sensor from body. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 1 (+) — No. 3 (–):

CHECK : ***Is the voltage between 4.75 and 5.25 V?***

YES : Go to step **8Z4**.

NO : Repair harness/connector between G sensor and ABSCM.



8Z4	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

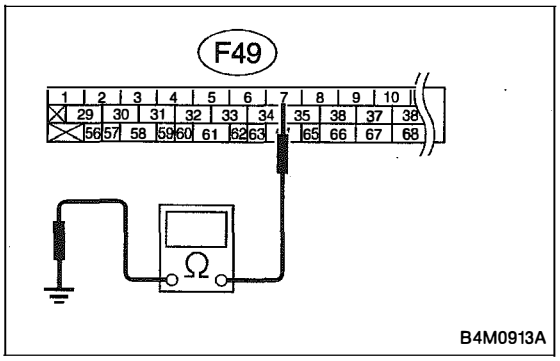
1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 7 — No. 45:

CHECK ***: Is the resistance between 4.3 and 4.9 kΩ?***

YES : Go to step **8Z5**.

NO : Repair harness/connector between G sensor and ABSCM.



8Z5	CHECK GROUND SHORT IN G SENSOR OUTPUT HARNESS.

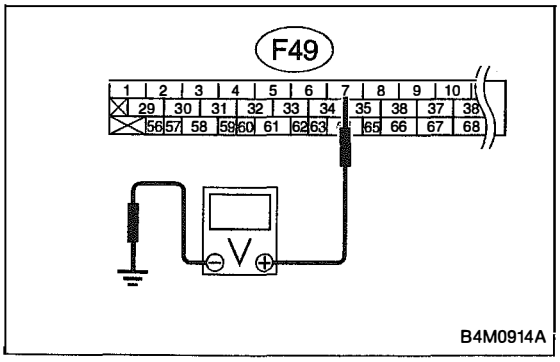
1) Disconnect connector from G sensor.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **8Z6**.

NO : Repair harness between G sensor and ABSCM.



8Z6	CHECK BATTERY SHORT OF HARNESS.

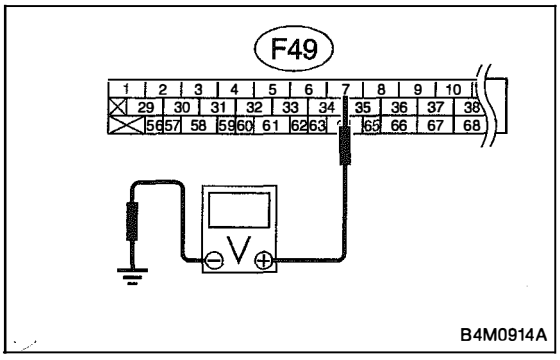
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8Z7**.

NO : Repair harness between G sensor and ABSCM.



8Z7	CHECK BATTERY SHORT OF HARNESS.

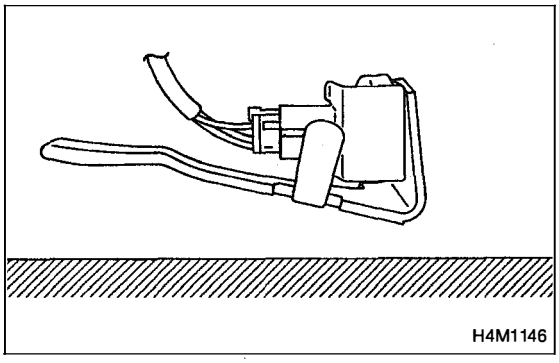
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **8Z8**.

NO : Repair harness between G sensor and ABSCM.



8Z8	CHECK G SENSOR.

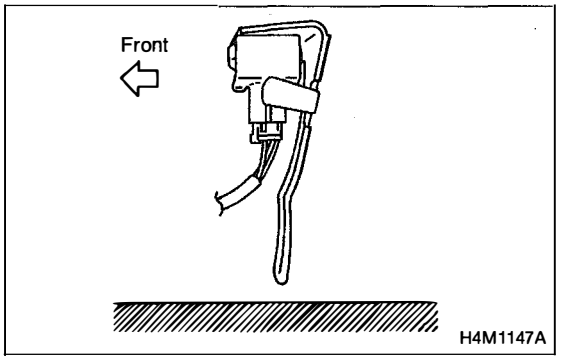
1) Turn ignition switch to OFF.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 2.1 and 2.4 V when G sensor is horizontal?***

YES : Go to step **8Z9**.

NO : Replace G sensor.



8Z9	CHECK G SENSOR.

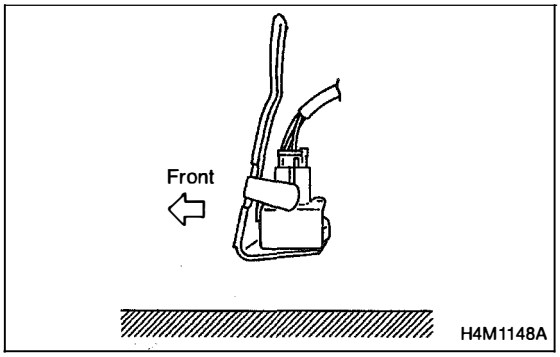
Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***

YES : Go to step **8Z10**.

NO : Replace G sensor.



8Z10	CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***

YES : Go to step **8Z11**.

NO : Replace G sensor.

8Z11	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **8Z12**.

8Z12	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

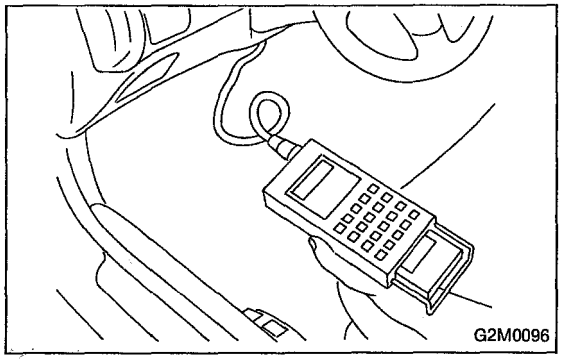
NO : Go to step **8Z13**.

8Z13	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



9. Select Monitor Function Mode

Applicable cartridge of select monitor: No. 498346200

A: LIST OF FUNCTION MODE

1. F MODE (ROM ID, ANALOG DATA ARE DISPLAYED.)

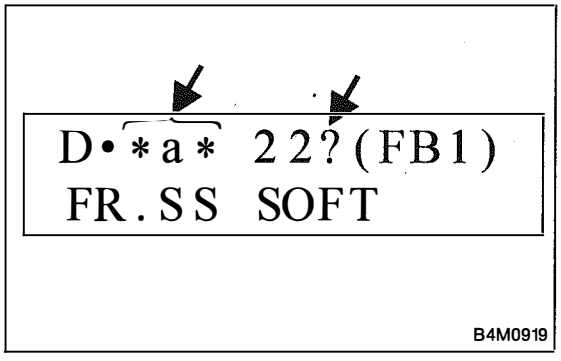
Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
F00	ROM ID	ECM identification	ROM ID number of ECM is read and enabled communication state is displayed.	Possible	[T9B0]
F01	FR	FR wheel speed (mile/h)	Wheel speed detected by the FR ABS sensor is displayed in mile/h.	Possible	[T9C0]
F02	FL	FL wheel speed (mile/h)	Wheel speed detected by the FL ABS sensor is displayed in mile/h.	Possible	[T9D0]
F03	RR	RR wheel speed (mile/h)	Wheel speed detected by the RR ABS sensor is displayed in mile/h.	Possible	[T9E0]
F04	RL	RL wheel speed (mile/h)	Wheel speed detected by the RL ABS sensor is displayed in mile/h.	Possible	[T9F0]
F05	FR	FR wheel speed (km/h)	Wheel speed detected by the FR ABS sensor is displayed in km/h.	Possible	[T9C0]
F06	FL	FL wheel speed (km/h)	Wheel speed detected by the FL ABS sensor is displayed in km/h.	Possible	[T9D0]
F07	RR	RR wheel speed (km/h)	Wheel speed detected by the RR ABS sensor is displayed in km/h.	Possible	[T9E0]
F08	RL	RL wheel speed (km/h)	Wheel speed detected by the RL ABS sensor is displayed in km/h.	Possible	[T9F0]
F09	BLS	Stop light switch monitor	Stop light switch monitor voltage is displayed.	Possible	[T9G0]
F10	G-SENS	G sensor output voltage (V)	Refers to vehicle acceleration detecting by the analog G sensor. It appears on the select monitor display in volts.	Possible	[T9H0]

2. FA MODE (ON/OFF DATA ARE DISPLAYED.)

Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
FA0	B1	Stop light switch	LED 1 comes on with the switch on (with the brake pedal down).	Possible	[T9I0]
	VR	Valve relay signal	LED 2 comes on with the valve relay off.		
	MR	Motor relay signal	LED 3 comes on with the motor on.		
	AT	AT ABS signal	LED 4 comes on when ABS control is on.		
	AW	ABS warning light	LED 6 comes on when the warning light is on.		
	VM	Valve relay monitor	LED 1 comes on with the valve relay off.		
	MM	Motor relay monitor	LED 8 comes on when the motor relay is on.		
	CM	CCM signal	LED 9 comes on when ABS control is on.		

3. FB MODE (TROUBLE CODES ARE DISPLAYED.)

Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
FB1	D·ALL	History of trouble codes is displayed.	A maximum of 3 trouble codes are displayed in order of occurrence.	Possible	[T10B0]
	D·NEW		The most recent trouble code appears on the select monitor display.		
	D·MID		The second most recent trouble code appears on the select monitor display.		
	D·OLD		The third most recent trouble code appears on the select monitor display.		



NOTE:
- If a particular trouble code is not properly stored in memory (due to a drop in ABSCM power supply, etc.) when a problem occurs, the trouble code, followed by a question mark "?", appears on the select monitor display. This shows it may be an unreliable reading.
- *a* refers to the troubles in order of occurrence (NEW. MID and OLD).

4. FC MODE (TROUBLE CODES ARE ERASED.)

Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
FC0	D-CLR	History of trouble codes is erased.	Function of clearing trouble code.	Possible	[T9J0]

5. FD MODE (ABS SEQUENCE CHECK MODE)

Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
FD1	A-CHK	ABS sequence control	Perform ABS sequence control by operating valve and pump motor sequentially.	Impossible	4-4 [W12D1]

6. FE MODE (FREEZE FRAME DATA)

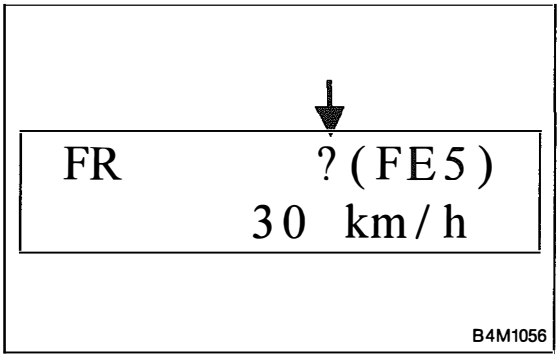
NOTE:

- Data stored at the time of trouble occurrence is shown on display.
- Each time trouble occurs, the latest information is stored in the freeze frame data in memory.

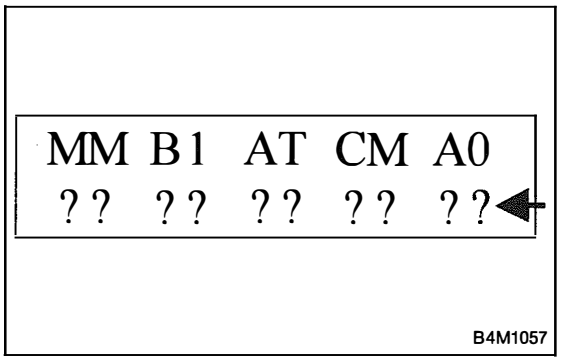
Function code		Measuring items	Contents to be monitored	Scroll	Ref. to
Code	Abbreviation				
FE1	FR	FR wheel speed (mile/h)	Wheel speed detected by the FR ABS sensor is displayed in mile/h.	Possible	[T9K0]
FE2	FL	FL wheel speed (mile/h)	Wheel speed detected by the FL ABS sensor is displayed in mile/h.	Possible	[T9L0]
FE3	RR	RR wheel speed (mile/h)	Wheel speed detected by the RR ABS sensor is displayed in mile/h.	Possible	[T9M0]
FE4	RL	RL wheel speed (mile/h)	Wheel speed detected by the RL ABS sensor is displayed in mile/h.	Possible	[T9N0]
FE5	FR	FR wheel speed (km/h)	Wheel speed detected by the FR ABS sensor is displayed in km/h.	Possible	[T9K0]
FE6	FL	FL wheel speed (km/h)	Wheel speed detected by the FL ABS sensor is displayed in km/h.	Possible	[T9L0]
FE7	RR	RR wheel speed (km/h)	Wheel speed detected by the RR ABS sensor is displayed in km/h.	Possible	[T9M0]
FE8	RL	RL wheel speed (km/h)	Wheel speed detected by the RL ABS sensor is displayed in km/h.	Possible	[T9N0]
FE13	POWER	ABSCM power supply voltage (V)	Power (in volts) supplied to ABSCM appears on the select monitor display.	Possible	[T9O0]
FE14	G-SENS	G sensor output voltage (V)	Refers to vehicle acceleration detected by the analog G sensor. It appears on the select monitor display in volts.	Possible	[T9P0]
FE15	MM	Motor relay monitor	LED 1 comes on when motor relay is on.	Possible	[T9Q0]
	B1	Stop light switch	LED 2 comes on with the stop light switch on (with the brake pedal depressed).		
	AT	AT ABS signal	LED 3 comes on when ABS control is on.		
	CM	CCM signal	LED 4 comes on when ABS control is on.		
	A0	ABS control	LED 5 comes on when ABS control is on.		
FE16	CODE	Trouble code	The most recent trouble code appears on select monitor display.	Possible	[T9R0]

1) When a trouble code is not stored in memory, activating the FE mode causes the initial value to appear on the select monitor display.

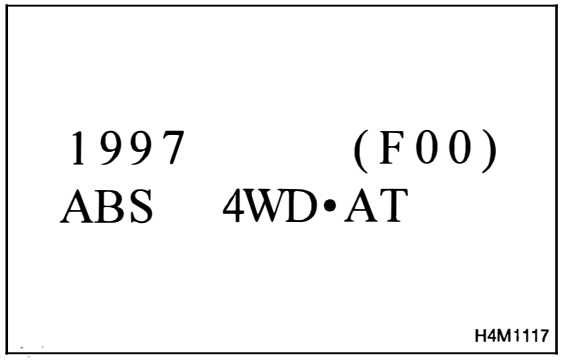
- FE1 — 4: 159 mile/h
- FE5 — 8: 255 km/h
- FE13: 16.84 V
- FE14: 5.00 V
- FE15: The MM, B1 and A0 LEDs are on. The AT and CM LEDs are out.
- FE16: NO HISTORY OF OCCURED



2) If freeze frame data is not properly stored in memory (due to a drop in ABSCM power supply, etc.), a trouble code, preceded by a question mark "?", appears on the select monitor display. This shows it may be an unreliable reading.



3) When a trouble code is detected in the FE mode, a question mark "?" appears continuously on the select monitor display until the freeze frame data is stored in memory.



B: MODE F00 — ROM ID NUMBER (ROM) —

CONDITION:

Ignition switch ON

SPECIFIED DATA:

Presentation display

9B1	CHECK MESSAGE OF DISPLAY.

CHECK : ***Does display indicate message "Error 1"?***

YES : Repair loose or disconnect connector, or discontinued circuit in data link circuit.

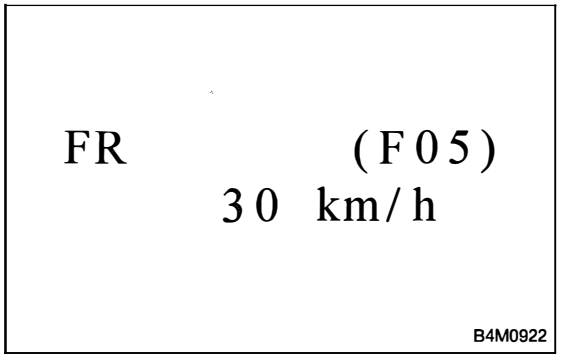
NO : Go to step **9B2**.

9B2	CHECK MESSAGE OF DISPLAY.

CHECK : ***Does display indicate message "Error 2"?***

YES : Repair poor contact of select monitor cartridge, or installation of different type select monitor cartridge.

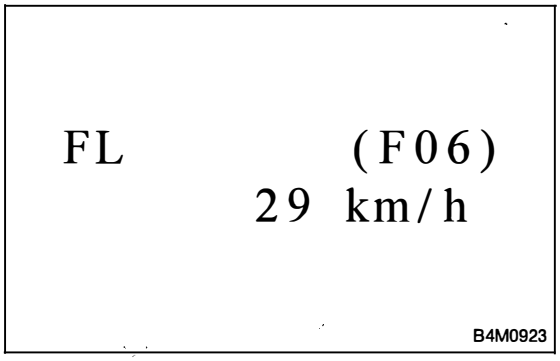
NO : Data link system is normal.



C: MODE F01 AND F05 — FRONT RIGHT WHEEL SPEED SIGNAL (FR) —

- Compare speedometer with monitor indications.
- F01: FR wheel speed is indicated in mile per hour (mile/h).
- F05: FR wheel speed is indicated in kilometer per hour (km/h).

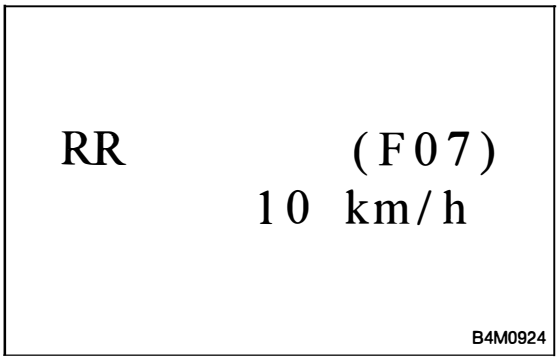
NOTE:
The monitor as shown, indicates that FR wheel speed is 30 km/h.



D: MODE F02 AND F06 — FRONT LEFT WHEEL SPEED SIGNAL (FL) —

- Compare speedometer with monitor indications.
- F02: FL wheel speed is indicated in mile per hour (mile/h).
- F06: FL wheel speed is indicated in kilometer per hour (km/h).

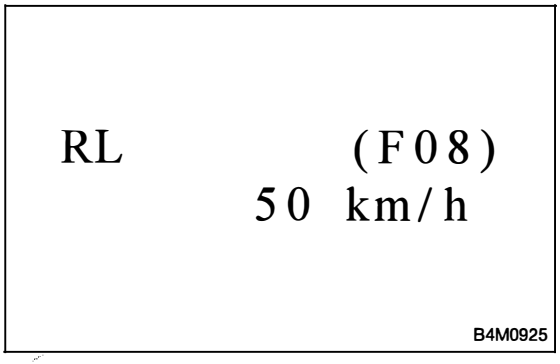
NOTE:
The monitor as shown, indicates that FL wheel speed is 29 km/h.



E: MODE F03 AND F07 — REAR RIGHT WHEEL SPEED SIGNAL (RR) —

- Compare speedometer with monitor indications.
- F03: RR wheel speed is indicated in mile per hour (mile/h).
- F07: RR wheel speed is indicated in kilometer per hour (km/h).

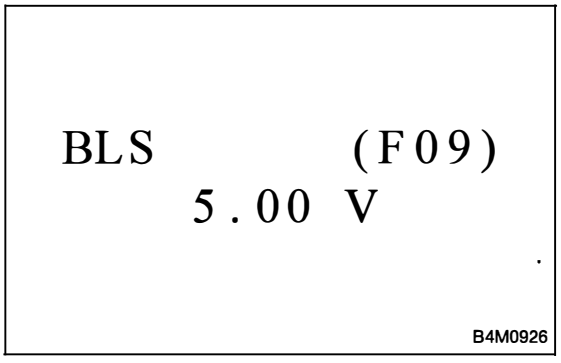
NOTE:
The monitor as shown, indicates that RR wheel speed is 10 km/h.



F: MODE F04 AND F08
— REAR LEFT WHEEL SPEED SIGNAL (RL) —

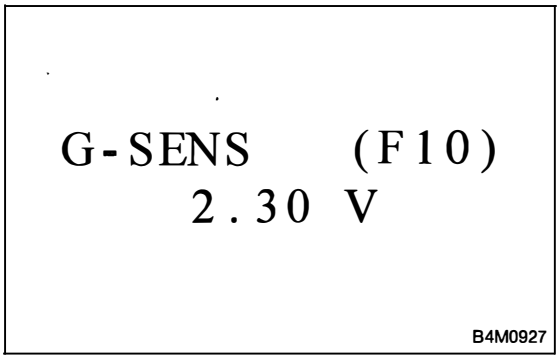
- Compare speedometer with monitor indications.
- F04: RL wheel speed is indicated in mile per hour (mile/h).
- F08: RL wheel speed is indicated in kilometer per hour (km/h).

NOTE:
The monitor as shown, indicates that RL wheel speed is 50 km/h.



G: MODE F09
— STOP LIGHT SWITCH MONITOR (BLS) —

- Stop light switch monitor voltage is displayed.

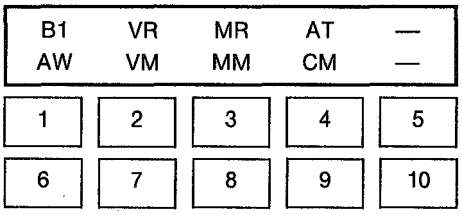


H: MODE F10
— G SENSOR OUTPUT VOLTAGE (G-SENS) —

- Refers to vehicle acceleration detecting by the analog G sensor. It appears on the select monitor display in volts.

NOTE:
Only AWD model

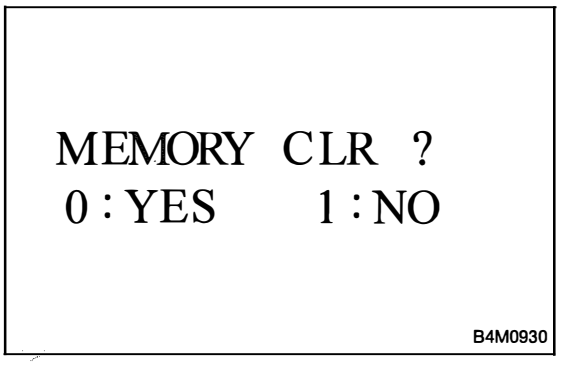
LED No.	Signal name	Display
1	Stop light switch	B1
2	Valve relay signal	VR
3	Motor relay signal	MR
4	AT ABS signal	AT
5	—	—
6	ABS warning light	AW
7	Valve relay monitor	VM
8	Motor relay monitor	MM
9	CCM signal	CM
10	—	—



I: MODE FA0
— ON ↔ OFF SIGNAL —

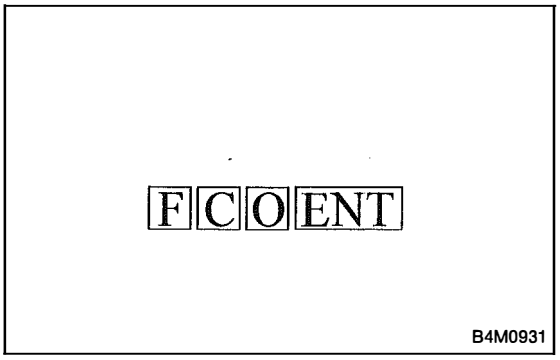
Requirement for LED "ON"

LED No. 1 Stop light switch is turned ON. (With brake pedal depressed.)
LED No. 2 Valve relay is turned OFF.
LED No. 3 Motor relay is turned ON.
LED No. 4 ABS control operates.
LED No. 6 ABS warning light is ON.
LED No. 7 Valve relay is turned OFF.
LED No. 8 Motor relay is turned ON.
LED No. 9 ABS control operates.

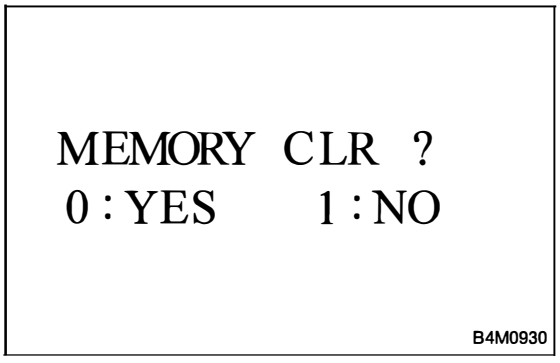


J: MODE FC0 — HISTORY OF TROUBLE CODES IS ERASED (D·CLR) —

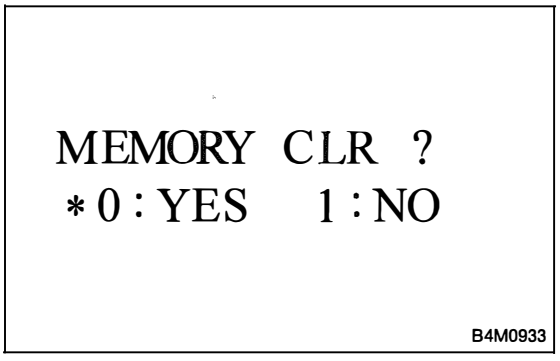
- Deletes the recorded trouble codes in ABS control module.



1) Press the function key [F] [C] [O] [ENT] in that order.

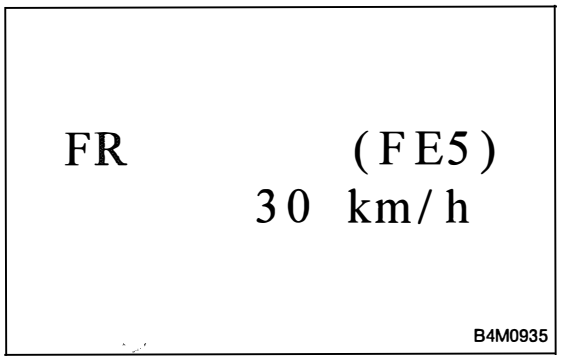


2) System indicates as shown.



3) Press the function key [0], to clear memories. The indication of * is added to screen.

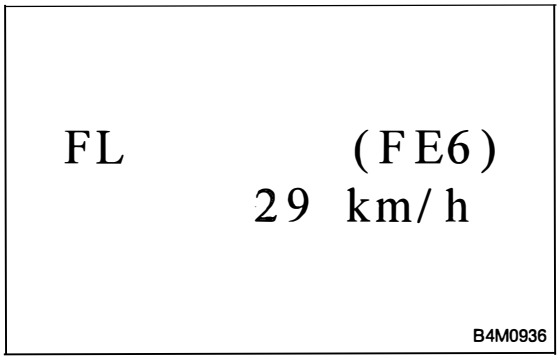
4) Press the function key [ENT]. System indicates as shown.
5) Turn ignition switch to OFF.



K: MODE FE1 AND FE5 — FRONT RIGHT WHEEL SPEED SIGNAL (FR) —

- The wheel speed is indicated at the time of malfunction.
- FE1: FR wheel speed is indicated in mile per hour (mile/h).
- FE5: FR wheel speed is indicated in kilometer per hour (km/h).

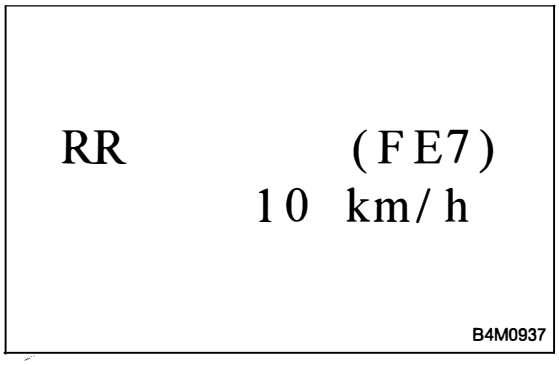
NOTE:
The monitor as shown, indicates that FR wheel speed is 30 km/h.



L: MODE FE2 AND FE6 — FRONT LEFT WHEEL SPEED SIGNAL (FL) —

- The wheel speed is indicated at the time of malfunction.
- FE2: FL wheel speed is indicated in mile per hour (mile/h).
- FE6: FL wheel speed is indicated in kilometer per hour (km/h).

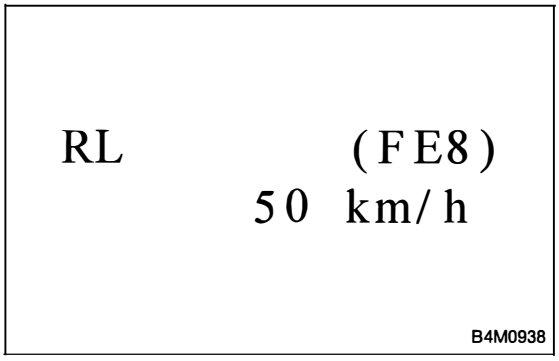
NOTE:
The monitor as shown, indicates that FL wheel speed is 29 km/h.



M: MODE FE3 AND FE7 — REAR RIGHT WHEEL SPEED SIGNAL (RR) —

- The wheel speed is indicated at the time of malfunction.
- FE3: RR wheel speed is indicated in mile per hour (mile/h).
- FE7: RR wheel speed is indicated in kilometer per hour (km/h).

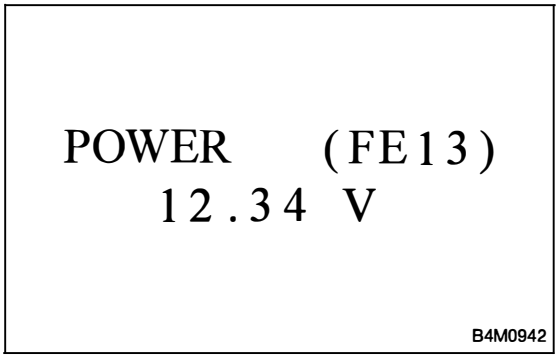
NOTE:
The monitor as shown, indicates that RR wheel speed is 10 km/h.



N: MODE FE4 AND FE8 — REAR LEFT WHEEL SPEED SIGNAL (RL) —

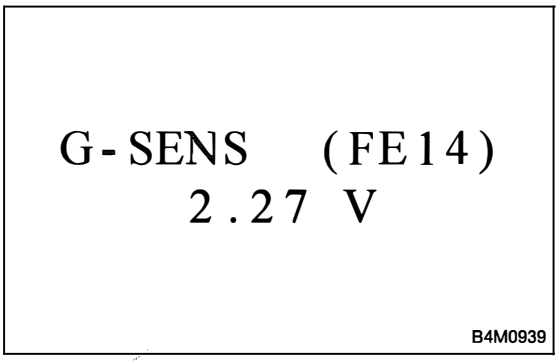
- The wheel speed is indicated at the time of malfunction.
- FE4: RL wheel speed is indicated in mile per hour (mile/h).
- FE8: RL wheel speed is indicated in kilometer per hour (km/h).

NOTE:
The monitor as shown, indicates that RL wheel speed is 50 km/h.



O: MODE FE13 — ABSCM POWER SUPPLY VOLTAGE (POWER) —

- ABSCM power supply voltage is indicated at the time of malfunction.

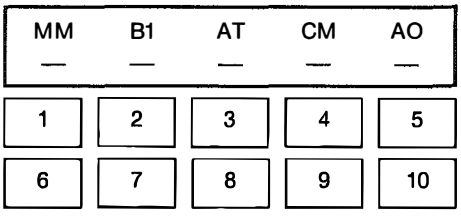


P: MODE FE14
— G SENSOR OUTPUT VOLTAGE (G-SENS) —

● Refers to vehicle acceleration detected by the analog G sensor at the time of malfunction. It appears on the select monitor display in volts.

NOTE:
Only AWD model

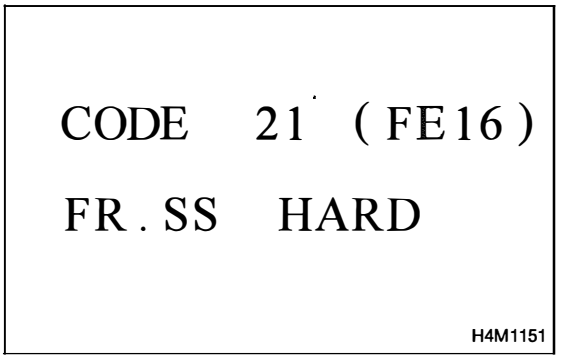
LED No.	Signal name	Display
1	Motor relay monitor	MM
2	Stop light switch	B1
3	AT ABS signal	AT
4	CCM signal	CM
5	ABS signal	AO
6	—	—
7	—	—
8	—	—
9	—	—
10	—	—



Q: MODE FE15
— ON ↔ OFF SIGNAL —

● ON or OFF is indicated at the time of malfunction.
● Requirement for LED "ON"

LED No. 1 Motor relay is turned ON.
LED No. 2 Stop light switch is turned ON. (With brake pedal depressed.)
LED No. 3 ABS control operates.
LED No. 4 ABS control operates.
LED No. 5 ABS control operates.



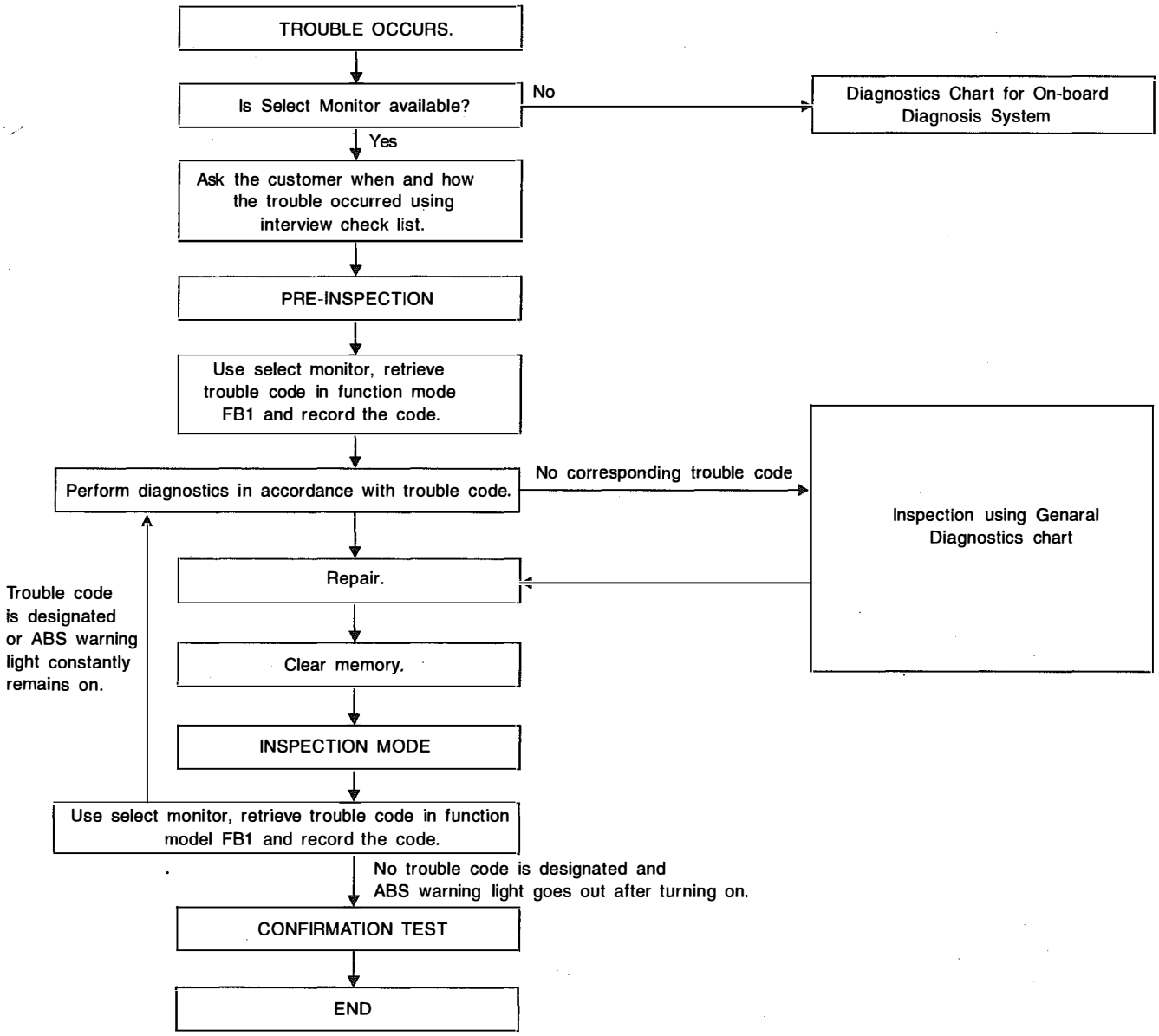
R: MODE FE16
— TROUBLE CODE (CODE) —

● When freeze frame data is stored in memory, trouble code appears on monitor.

NOTE:
The monitor as shown, indicates trouble code 21.

10. Diagnostics Chart with Select Monitor

A: BASIC DIAGNOSTIC CHART



B4M1076A

NOTE:
To check harness for broken wires or short circuits, shake it while holding it or the connector.

B: LIST OF TROUBLE CODE

Code	Display screen (FB1)	Contents of diagnosis	Ref. to
—	ERROR 3 (1)	Select monitor communication failure	[T10C0]
11	NO TROUBLE	Although no trouble appears on the select monitor display, the ABS warning light remains on	[T10D0]
21	FR. SS HARD	Open circuit or input voltage too high of FR sensor	[T10E0]
22	FR. SS SOFT	Abnormal ABS sensor signal of FR sensor	[T10I0]
23	FL. SS HARD	Open circuit or input voltage too high of FL sensor	[T10F0]
24	FL. SS SOFT	Abnormal ABS sensor signal of FL sensor	[T10J0]
25	RR. SS HARD	Open circuit or input voltage too high of RR sensor	[T10G0]
26	RR. SS SOFT	Abnormal ABS sensor signal of RR sensor	[T10K0]
27	RL. SS HARD	Open circuit or input voltage too high of RL sensor	[T10H0]
28	RL. SS SOFT	Abnormal ABS sensor signal of RL sensor	[T10L0]
29	EITHER. SS SOFT	Abnormal ABS sensor signal (any one of four)	[T10M0]
31	FR. EV VALVE	Abnormal FR inlet valve	[T10N0]
32	FR. AV VALVE	Abnormal FR outlet valve	[T10R0]
33	FL. EV VALVE	Abnormal FL inlet valve	[T10O0]
34	FL. AV VALVE	Abnormal FL outlet valve	[T10S0]
35	RR. EV VALVE	Abnormal RR inlet valve	[T10P0]
36	RR. AV VALVE	Abnormal RR outlet valve	[T10T0]
37	RL. EV VALVE	Abnormal RL inlet valve	[T10Q0]
38	RL. AV VALVE	Abnormal RL outlet valve	[T10U0]
41	ECU	Abnormal ABSCM	[T10V0]
42	LOW VOLTAGE	Source voltage is low	[T10W0]
44	CCM LINE	A combination of AT control abnormals (ABS not in control)	[T10X0]
	CCM OPEN	A combination of AT control abnormals (ABS in control)	[T10Y0]
46	GS POWER OVER	G sensor line voltage too high	[T10Z0]
	GS POWER LOW	G sensor line voltage too low	[T10AA0]
51	V. RELAY	Abnormal valve relay	[T10AB0]
	V. RELAY ON	Valve relay ON failure	[T10AC0]
52	M. RELAY OPEN	Open circuit of motor relay	[T10AD0]
	M. RELAY ON	Motor relay ON failure	[T10AE0]
	MOTOR	Abnormal motor	[T10AF0]
54	BLS	Abnormal stop light switch	[T10AG0]
56	G SENSOR LINE	Open or short circuit of G sensor	[T10AH0]
	G SENSOR +B	Battery short of G sensor	[T10AI0]
	G SENSOR H μ	Abnormal G sensor high μ output	[T10AJ0]
	G SENSOR STICK	G sensor output is stuck	[T10AK0]

NOTE:
High μ means high friction coefficient against road surface.

MEMO:

* * * * * * * * * * * * * *
ERROR 3
B4M0943

C: ERROR 3 (1) — SELECT MONITOR COMMUNICATION FAILURE —

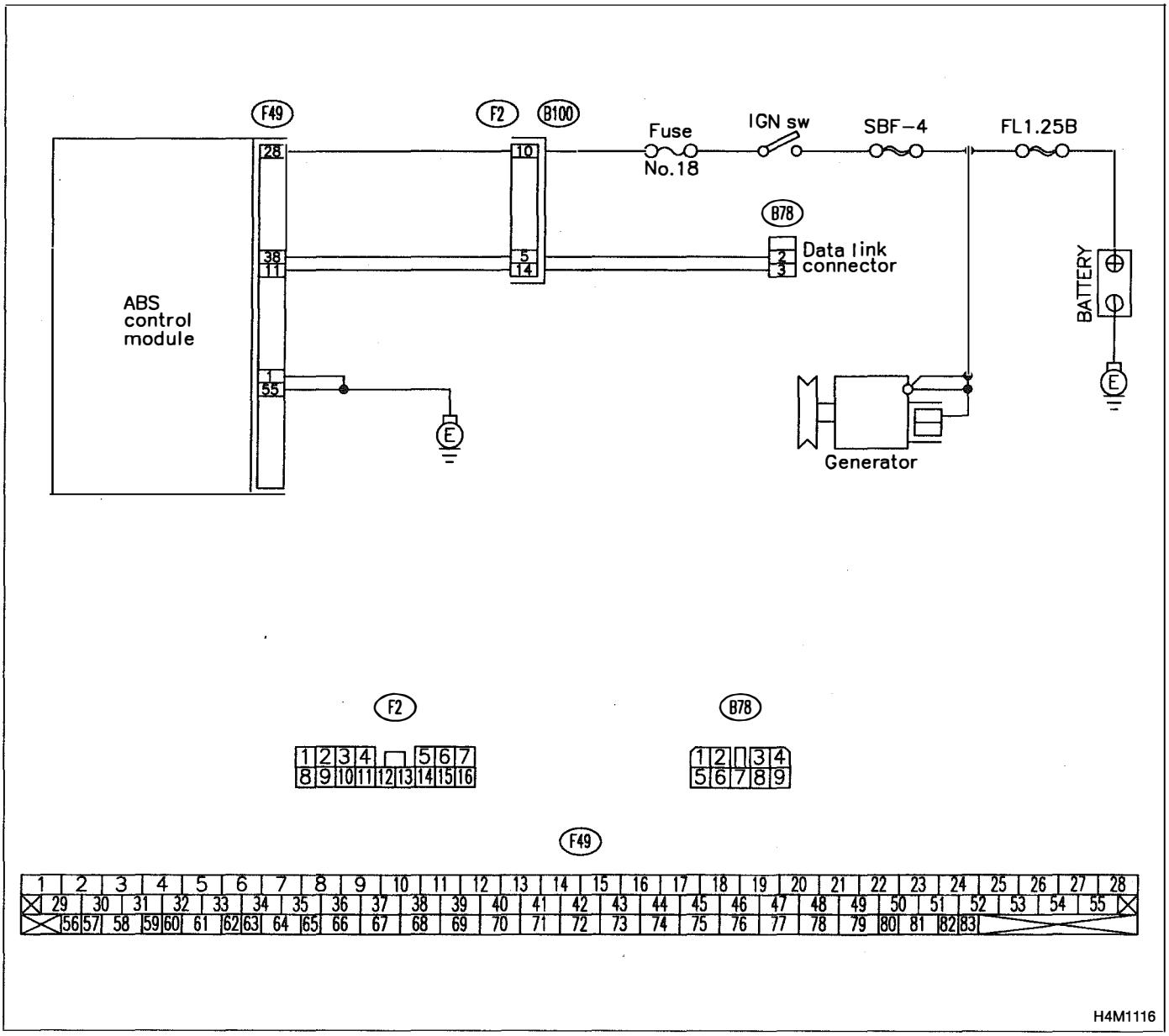
DIAGNOSIS:

- Faulty harness connector

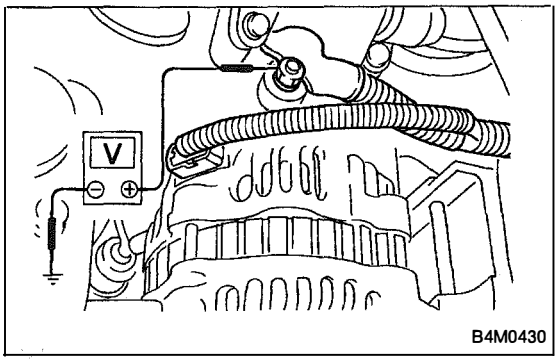
TROUBLE SYMPTOM:

- ABS warning light remains on.
- ERROR 3 or 1 appears on the select monitor display.

WIRING DIAGRAM:



H4M1116



10C1	CHECK GENERATOR.

1) Start the engine.
2) Idle the engine.
3) Measure voltage between generator and chassis ground.

Terminal
Generator B terminal (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 and 15 V?***
YES : Go to step **10C2**.
NO : Repair generator.

10C2	CHECK BATTERY TERMINAL.

Turn ignition switch to OFF.

CHECK ***: Is there poor contact at battery terminal?***
YES : Repair battery terminal.
NO : Go to step **10C3**.

10C3	CHECK COMMUNICATION OF SELECT MONITOR.

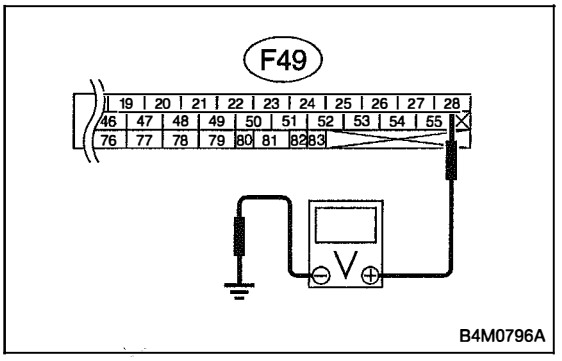
Using the select monitor, check whether communication to other system (such as engine, AT, etc.) can be executed normally.

CHECK ***: Are the name and year of the system displayed on the select monitor?***
YES : Go to step **10C4**.
NO : Repair select monitor communication cable and connector.

10C4	CHECK INSTALLATION OF ABSCM CONNECTOR.

Turn ignition switch to OFF.

CHECK ***: Is ABSCM connector inserted into ABSCM until the clamp locks onto it?***
YES : Go to step **10C5**.
NO : Insert ABSCM connector into ABSCM until the clamp locks onto it.



10C5	CHECK POWER SUPPLY OF ABSCM.

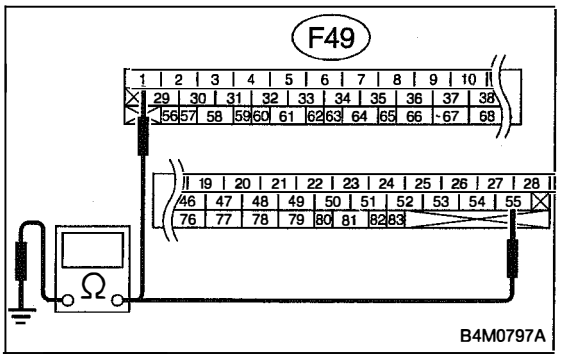
1) Disconnect connector from ABSCM.
2) Start engine.
3) Idle the engine.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 28 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 and 15 V?***

YES : Go to step **10C6**.

NO : Repair ABSCM power supply circuit.



10C6	CHECK GROUND CIRCUIT OF ABSCM.

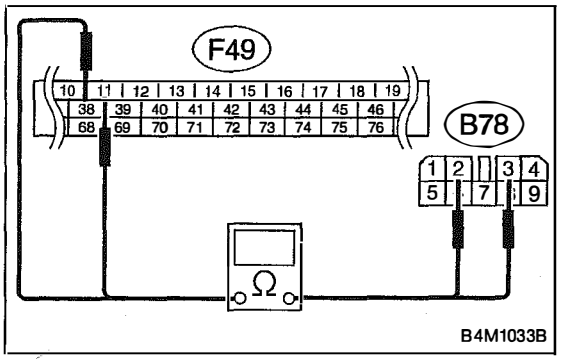
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:
(F49) No. 55 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Repair harness/connector between ABSCM and select monitor.

NO : Go to step **10C7**.



10C7	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND DATA LINK.

1) Turn ignition switch OFF.
2) Measure resistance between ABSCM connector and data link connector.

Connector & terminal
(F49) No. 11 — (B78) No. 3:
(F49) No. 38 — (B78) No. 2:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Repair harness and connector between ABSCM and data link connector.

NO : Go to step **10C8**.

10C8	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and data link? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Replace ABSCM.

D•ALL 11 (FB1)
NO TROUBLE

B4M0944

D: NO TROUBLE — ALTHOUGH NO TROUBLE APPEARS ON THE SELECT MONITOR DISPLAY, THE ABS WARNING LIGHT REMAINS ON —

DIAGNOSIS:

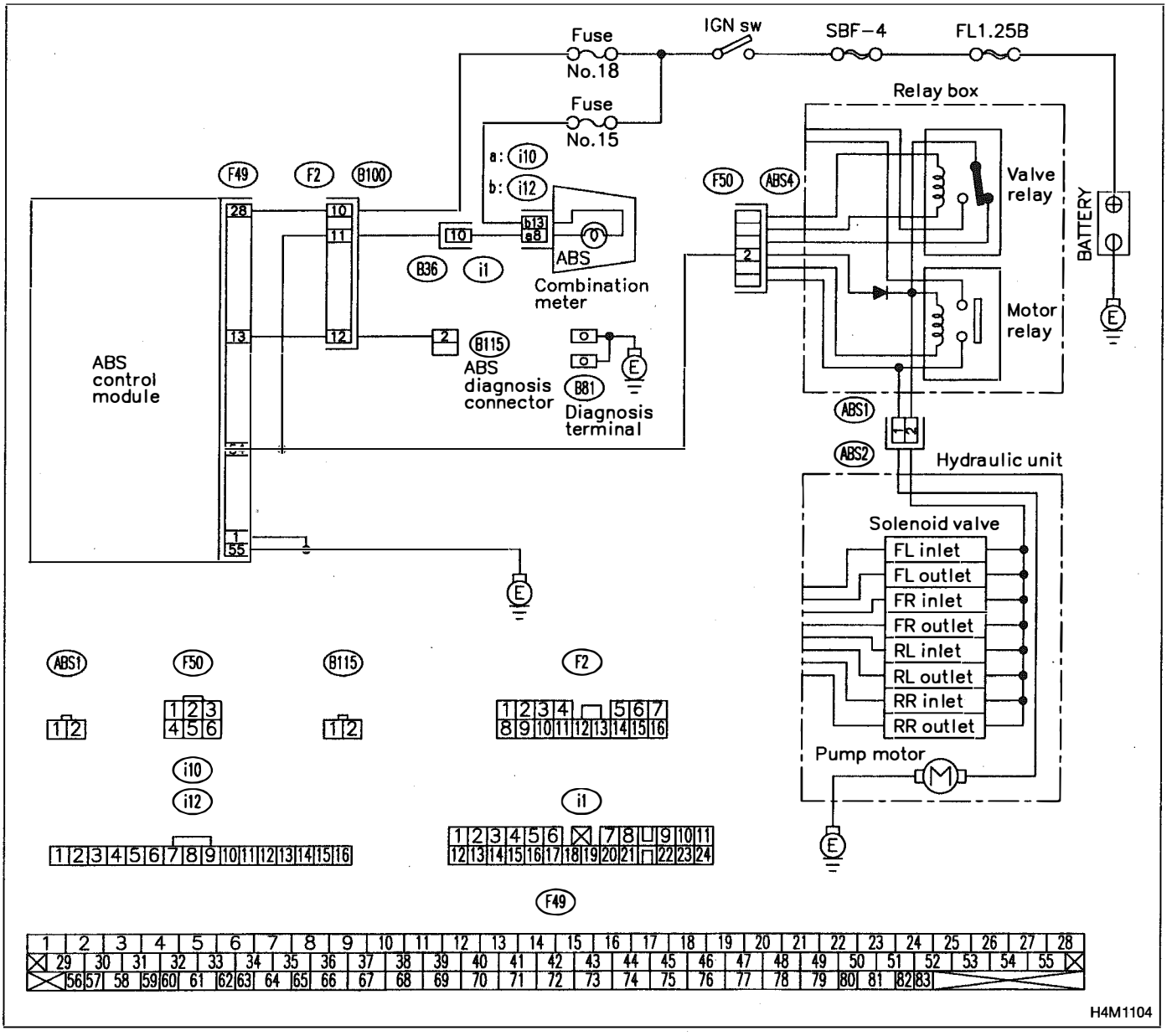
- ABS warning light circuit is shorted.

TROUBLE SYMPTOM:

- ABS warning light remains on.
- NO TROUBLE displayed on the select monitor.

NOTE:
When the ABS warning light is OFF and "NO TROUBLE" is displayed on the select monitor, the system is in normal condition.

WIRING DIAGRAM:



10D1	CHECK GROUND SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Disconnect connector (F50) from relay box.
4) Turn ignition switch to ON.

CHECK ***: Does the ABS warning light remain OFF?***

YES : Go to step **10D2**.

NO : Repair harness between ABSCM, relay box ABS warning light.

10D2	CHECK GROUND SHORT OF RELAY BOX.

1) Turn ignition switch to OFF.
2) Connect connector (F50) to relay box.
3) Disconnect connector (ABS1) from hydraulic unit.
4) Remove valve relay from relay box.
5) Turn ignition switch to ON.

CHECK ***: Does the ABS warning light remain OFF?***

YES : Replace ABSCM.

NO : Replace relay box.

D•NEW 21 (FB1)
FR.SS HARD

B4M0945

E: TROUBLE CODE 21 FR. SS HARD — ABNORMAL FRONT RH ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

D•NEW 23 (FB1)
FL.SS HARD

B4M0946

F: TROUBLE CODE 23 FL. SS HARD — ABNORMAL FRONT LH ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

D•NEW 25 (FB1)
RR.SS HARD

B4M0947

G: TROUBLE CODE 25 RR. SS HARD — ABNORMAL REAR RH ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

D•NEW 27 (FB1)
RL.SS HARD

B4M0948

H: TROUBLE CODE 27 RL. SS HARD — ABNORMAL REAR LH ABS SENSOR (OPEN CIRCUIT OR INPUT VOLTAGE TOO HIGH) —

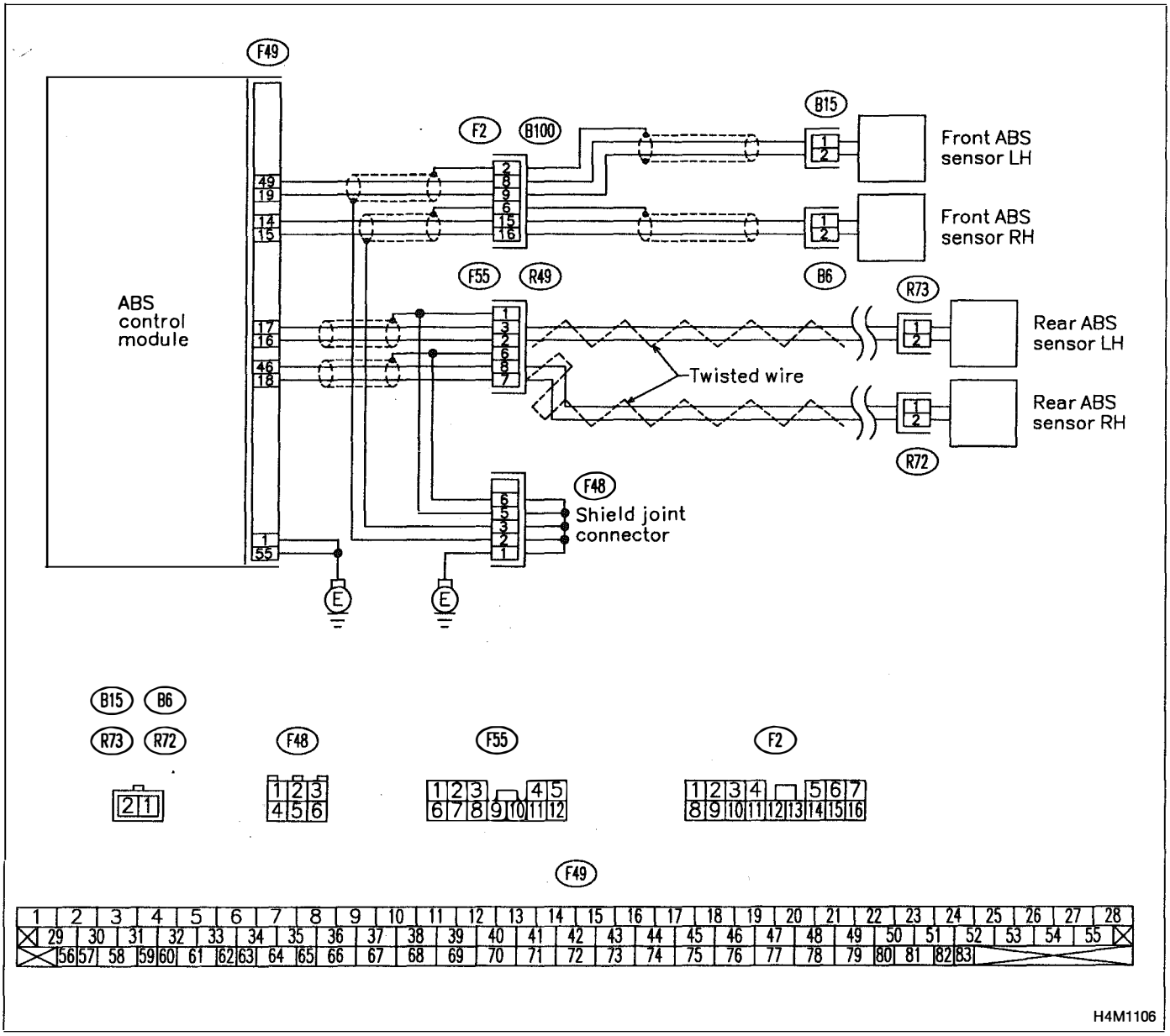
DIAGNOSIS:

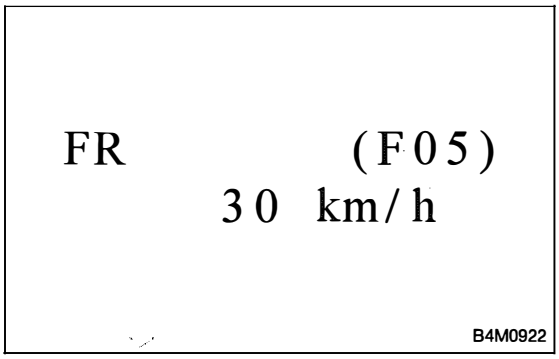
- Faulty ABS sensor (Broken wire, input voltage too high)
- Faulty harness connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





10H1	CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.

Read the ABS sensor output corresponding to the faulty system in the select monitor function mode.

NOTE:
The select monitor display shows that the front right wheel is rotating at 30 km/h.

CHECK : ***Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position?***

YES : Go to step **10H2**.

NO : Go to step **10H9**.

10H2	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **10H3**.

NO : Tighten ABS sensor installation bolts securely.

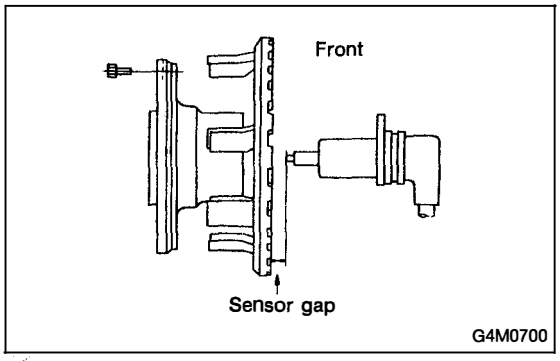
10H3	CHECK INSTALLATION OF TONE WHEEL.

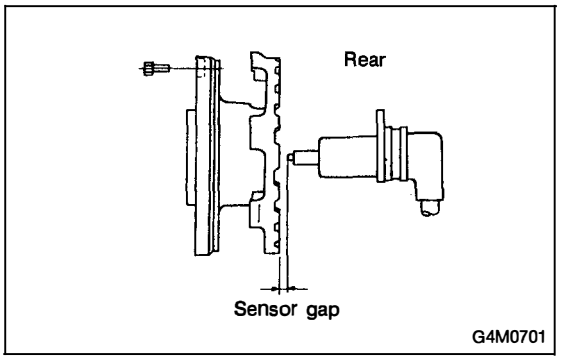
Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***

YES : Go to step **10H4**.

NO : Tighten tone wheel installation bolts securely.





10H4	CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.

CHECK : ***Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

YES : Go to step **10H5.**

NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10H5	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **10H6.**

NO : Repair hub.

10H6	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10H7.**

10H7	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10H8.**

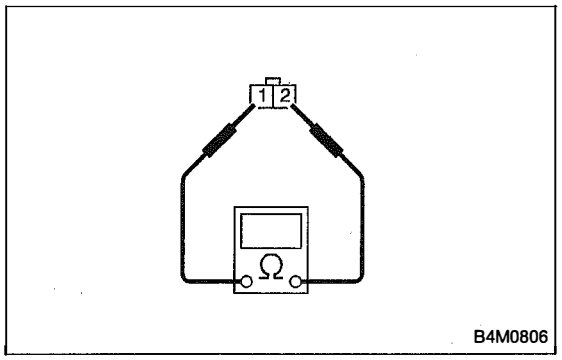
10H8	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM and ABS sensor.



B4M0806

10H9	CHECK RESISTANCE OF ABS SENSOR.

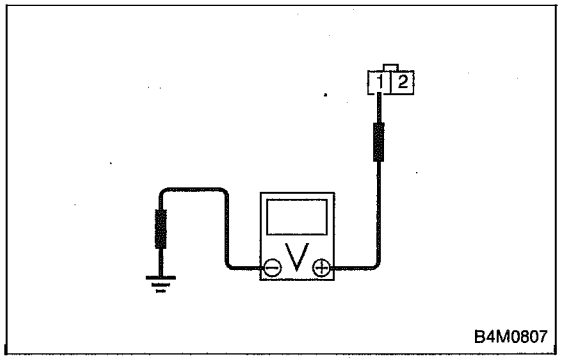
1) Turn ignition switch to OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance of ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

CHECK : ***Is the resistance between 0.8 and 1.2 kΩ?***

YES : Go to step **10H10**.

NO : Replace ABS sensor.



B4M0807

10H10	CHECK BATTERY SHORT OF ABS SENSOR.

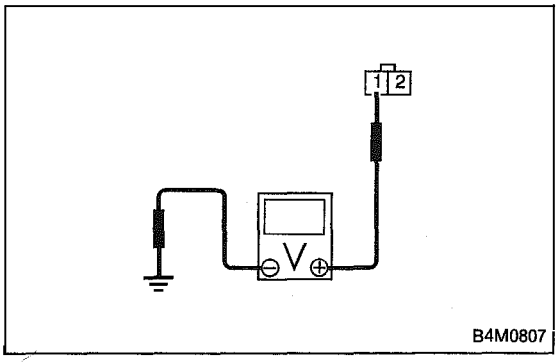
1) Disconnect connector from ABSCM.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (–):
Front LH No. 1 (+) — Chassis ground (–):
Rear RH No. 1 (+) — Chassis ground (–):
Rear LH No. 1 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **10H11**.

NO : Replace ABS sensor.

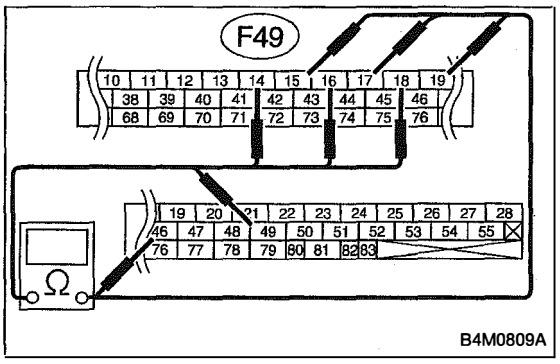


10H11	CHECK BATTERY SHORT OF ABS SENSOR.

1) Turn ignition switch to ON.
2) Measure voltage between ABS sensor and chassis ground.

Terminal
Front RH No. 1 (+) — Chassis ground (–):
Front LH No. 1 (+) — Chassis ground (–):
Rear RH No. 1 (+) — Chassis ground (–):
Rear LH No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10H12**.
NO : Replace ABS sensor.

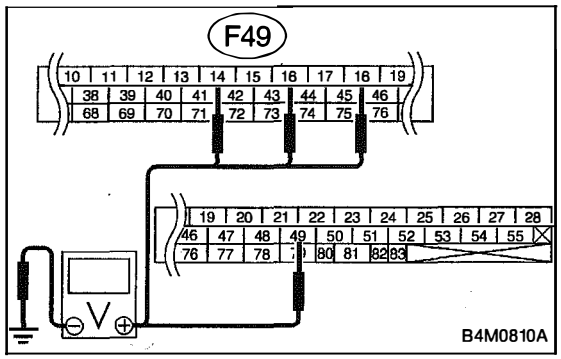


10H12	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND ABS SENSOR.

1) Connect connector to ABS sensor.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 21 / (F49) No. 14 — No. 15:
Trouble code 23 / (F49) No. 49 — No. 19:
Trouble code 25 / (F49) No. 18 — No. 46:
Trouble code 27 / (F49) No. 16 — No. 17:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **10H13**.
NO : Repair harness/connector between ABSCM and ABS sensor.



10H13	CHECK BATTERY SHORT OF HARNESS.

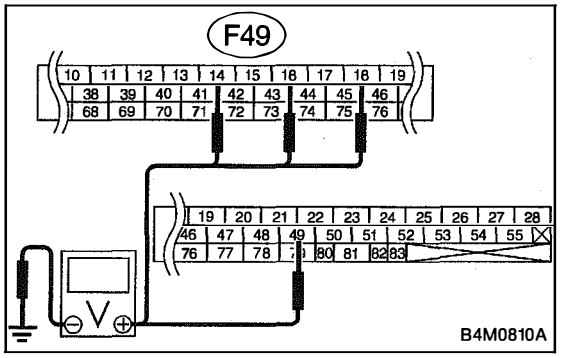
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 21 / (F49) No. 14 — Chassis ground:
Trouble code 23 / (F49) No. 49 — Chassis ground:
Trouble code 25 / (F49) No. 18 — Chassis ground:
Trouble code 27 / (F49) No. 16 — Chassis ground:

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10H14**.

NO : Repair harness between ABSCM and ABS sensor.



10H14	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 21 / (F49) No. 14 — Chassis ground:
Trouble code 23 / (F49) No. 49 — Chassis ground:
Trouble code 25 / (F49) No. 18 — Chassis ground:
Trouble code 27 / (F49) No. 16 — Chassis ground:

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10H15**.

NO : Repair harness between ABSCM and ABS sensor.

10H15	CHECK INSTALLATION OF ABS SENSOR.

CHECK ***: Tightening torque:***
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)
Are the ABS sensor installation bolts tightened securely?

YES : Go to step **10H16**.

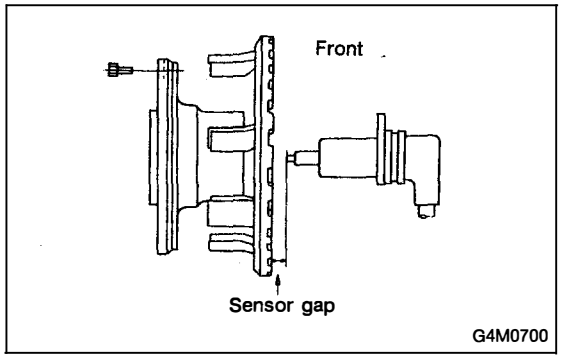
NO : Tighten ABS sensor installation bolts securely.

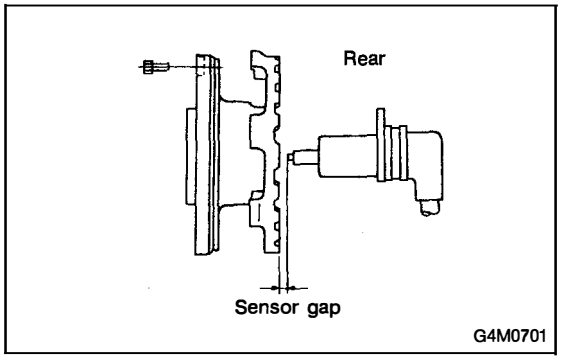
10H16	CHECK INSTALLATION OF TONE WHEEL.

CHECK : ***Tightening torque:***
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)
Are the tone wheel installation bolts tightened securely?

YES : Go to step **10H17**.

NO : Tighten tone wheel installation bolts securely.





10H17	CHECK ABS SENSOR GAP.

Measure tone wheel-to-pole piece gap over entire perimeter of the wheel.

CHECK : ***Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)

YES : Go to step **10H18**.

NO : Adjust the gap.

NOTE:
Adjust the gap using spacers (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10H18	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **10H19**.

NO : Repair hub.

10H19	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10H20**.

10H20	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10H21**.

10H21	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

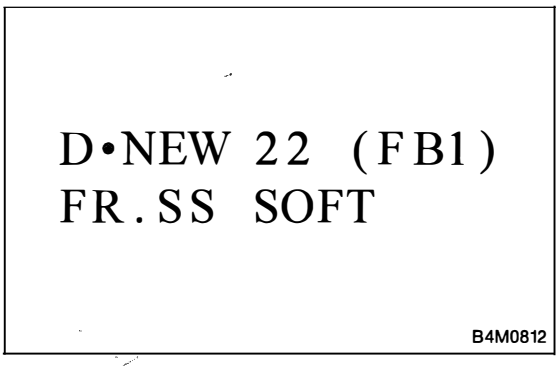
CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

NOTE:
Check harness and connectors between ABSCM and ABS sensor.

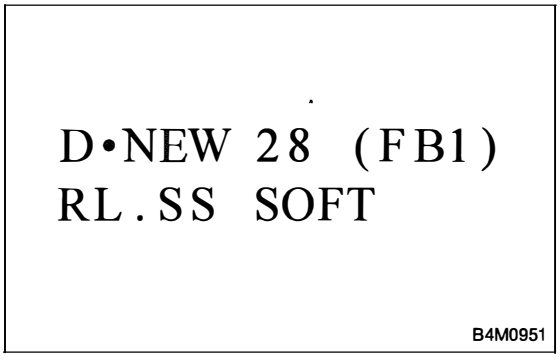
MEMO:



I: TROUBLE CODE 22 FR. SS SOFT — ABNORMAL FRONT RH ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —

J: TROUBLE CODE 24 FL. SS SOFT — ABNORMAL FRONT LH ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —

K: TROUBLE CODE 26 RR. SS SOFT — ABNORMAL REAR RH ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —



L: TROUBLE CODE 28 RL. SS SOFT — ABNORMAL REAR LH ABS SENSOR (ABNORMAL ABS SENSOR SIGNAL) —

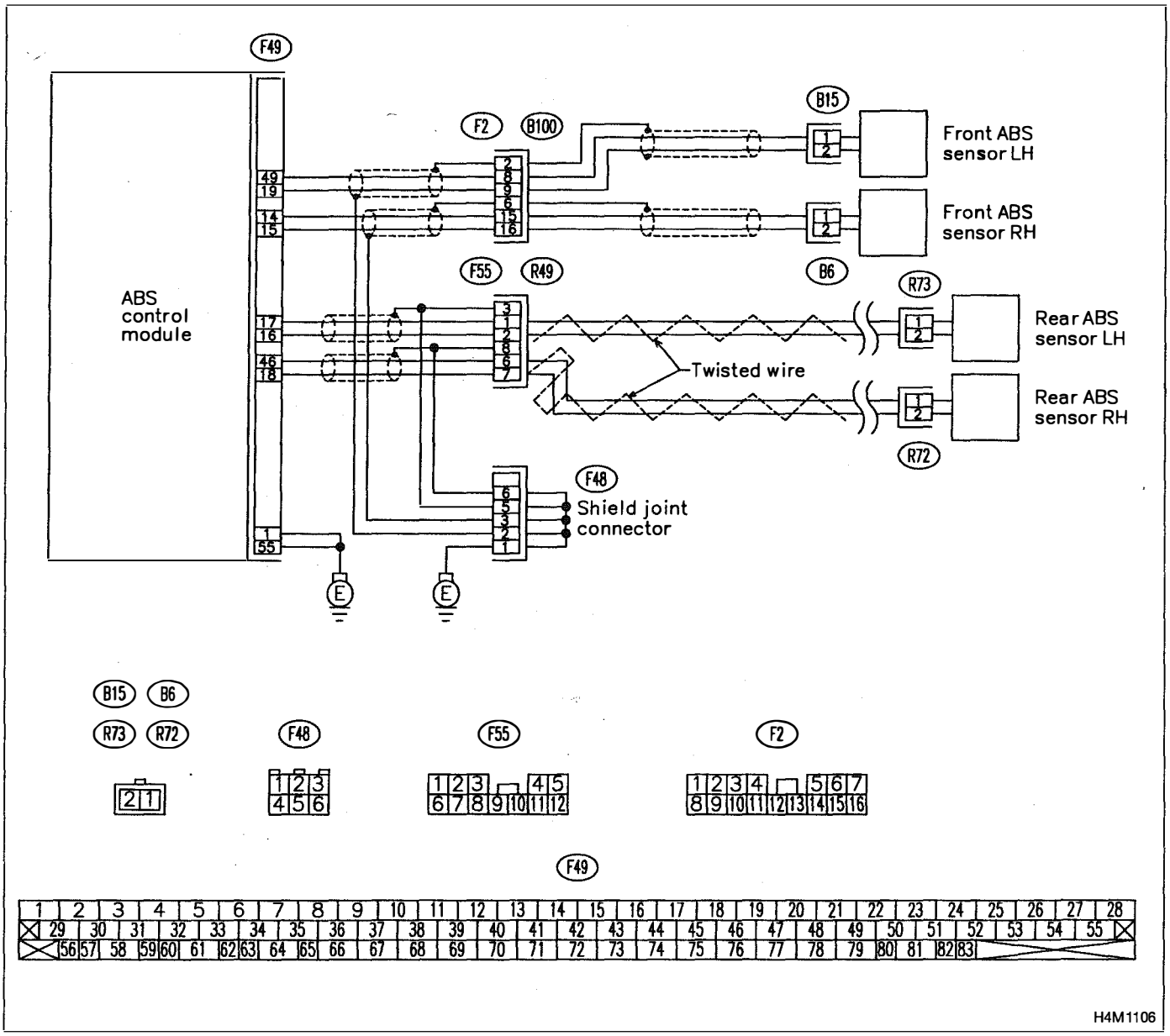
DIAGNOSIS:

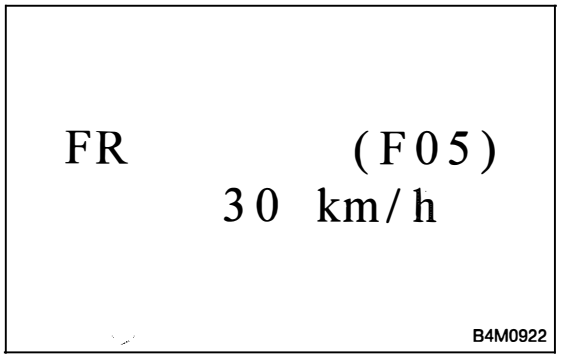
- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty harness/connector

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





10L1	CHECK OUTPUT OF ABS SENSOR USING SELECT MONITOR.

Read the ABS sensor output corresponding to the faulty system in the select monitor function mode.

NOTE:
The select monitor display shows that the front right wheel is rotating at 30 km/h.

CHECK : ***Does the speed indicated on the display change in response to the speedometer reading during acceleration/deceleration when the steering wheel is in the straight-ahead position?***

YES : Go to step **10L2**.

NO : Go to step **10L8**.

10L2	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor?***

YES : Repair connector.

NO : Go to step **10L3**.

10L3	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***

YES : Go to step **10L4**.

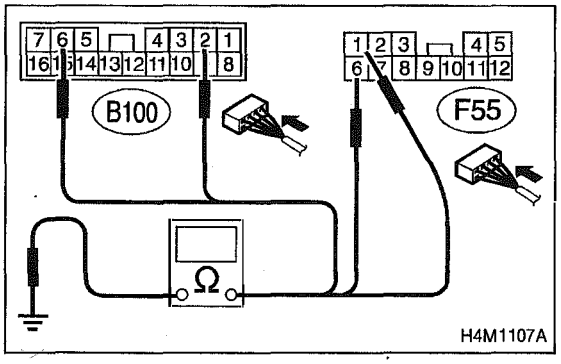
NO : Properly install the car telephone or the wireless transmitter.

10L4	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***

YES : Install the noise sources apart from the sensor harness.

NO : Go to step **10L5**.



10L5	CHECK SHIELD CIRCUIT.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 6 — Chassis ground:
Trouble code 24 / (B100) No. 2 — Chassis ground:
Trouble code 26 / (F55) No. 6 — Chassis ground:
Trouble code 28 / (F55) No. 1 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10L6**.
NO : Repair shield harness.

10L6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM.
NO : Go to step **10L7**.

10L7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary noise interference.

10L8	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK ***: Are the ABS sensor installation bolts tightened securely?***
YES : Go to step **10L9**.
NO : Tighten ABS sensor installation bolts securely.

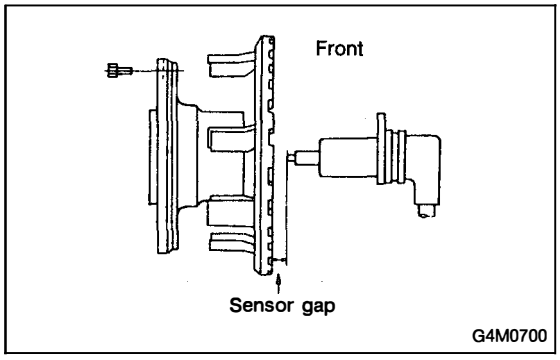
10L9	CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***

YES : Go to step **10L10**.

NO : Tighten tone wheel installation bolts securely.

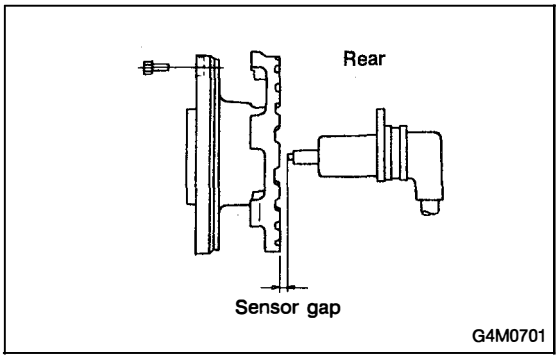


10L10	CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.

CHECK : ***Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)



YES : Go to step **10L11**.

NO : Adjust the gap.

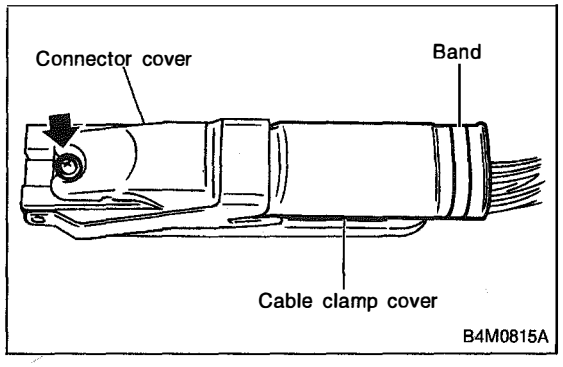
NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10L11	CHECK OSCILLOSCOPE.

CHECK : ***Is an oscilloscope available?***

YES : Go to step **10L12**.

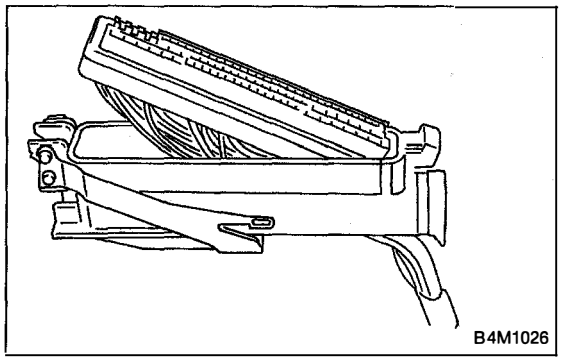
NO : Go to step **10L13**.



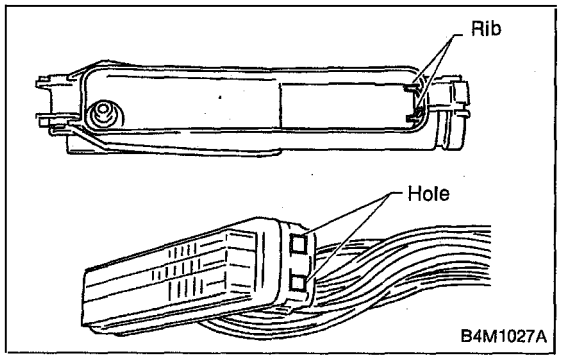
10L12	CHECK ABS SENSOR SIGNAL.

1) Turn ignition switch OFF.
2) Raise all four wheels of ground.
3) Disconnect connector from ABS control module.
4) Remove band.
5) Remove cable clamp cover.
6) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

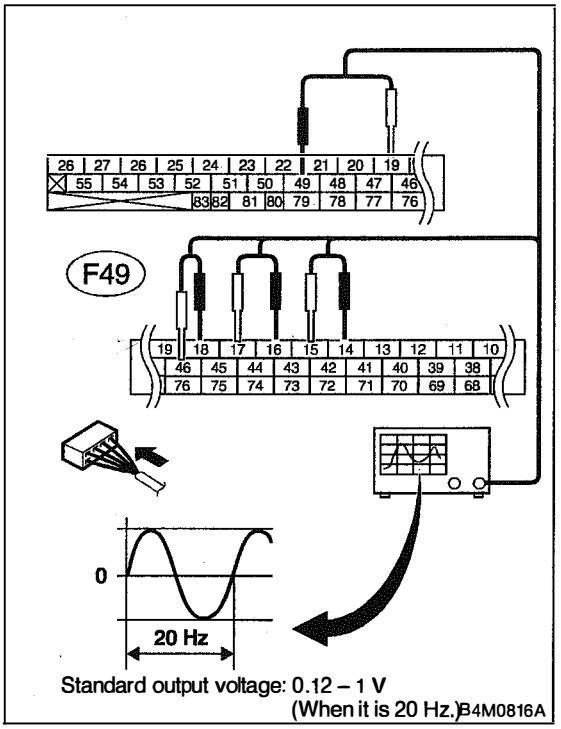


7) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

8) Connect connector to ABS control module.
9) Connect the oscilloscope to the ABS control module connector in accordance with trouble code.
10) Turn ignition switch ON.



11) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABS control module sometimes stores the trouble code 29.

Connector & terminal
Trouble code 22 I (F49) No. 14 (+) — No. 15 (–):
Trouble code 24 I (F49) No. 49 (+) — No. 19 (–):
Trouble code 26 I (F49) No. 18 (+) — No. 46 (–):
Trouble code 28 I (F49) No. 16 (+) — No. 17 (–):
Specified voltage: 0.12 — 1 V (When it is 20 Hz.)

CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***

YES : Go to step **10L16**.
NO : Go to step **10L13**.

10L13	CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor or drum from hub in accordance with trouble code.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***

YES : Thoroughly remove dirt or other foreign matter.
NO : Go to step **10L14**.

10L14	CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel?***

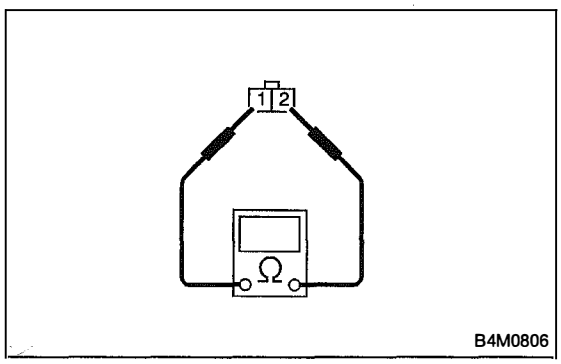
YES : Replace ABS sensor or tone wheel.
NO : Go to step **10L15**.

10L15	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **10L16**.
NO : Repair hub.

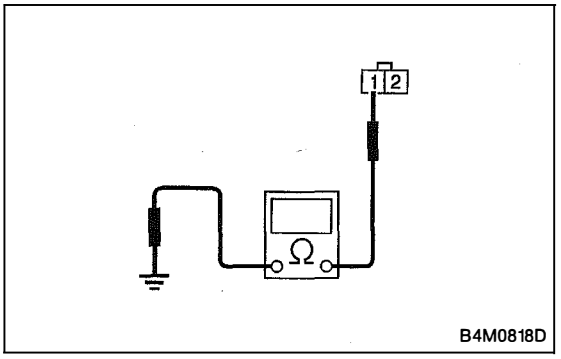


10L16	CHECK RESISTANCE OF ABS SENSOR.

1) Turn ignition switch OFF.
2) Disconnect connector from ABS sensor.
3) Measure resistance between ABS sensor connector terminals.

Terminal
Front RH No. 1 — No. 2:
Front LH No. 1 — No. 2:
Rear RH No. 1 — No. 2:
Rear LH No. 1 — No. 2:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***
YES : Go to step **10L17**.
NO : Replace ABS sensor.

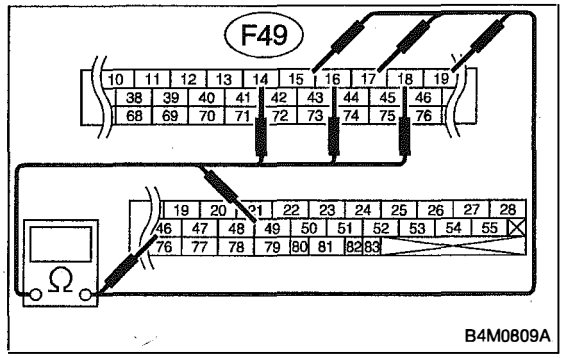


10L17	CHECK GROUND SHORT OF ABS SENSOR.

Measure resistance between ABS sensor and chassis ground.

Terminal
Front RH No. 1 — Chassis ground:
Front LH No. 1 — Chassis ground:
Rear RH No. 1 — Chassis ground:
Rear LH No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10L18**.
NO : Replace ABS sensor.



10L18	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND ABS SENSOR.

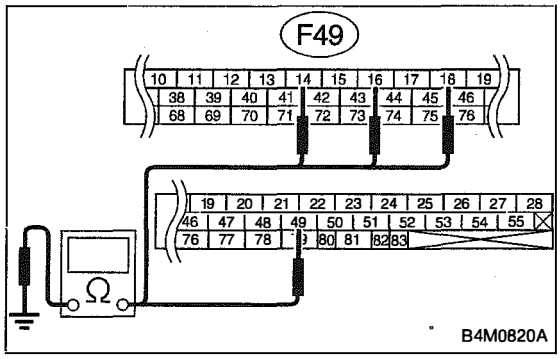
1) Connect connector to ABS sensor.
2) Disconnect connector from ABSCM.
3) Measure resistance at ABSCM connector terminals.

Connector & terminal
Trouble code 22 / (F49) No. 14 — No. 15:
Trouble code 24 / (F49) No. 49 — No. 69:
Trouble code 26 / (F49) No. 18 — No. 46:
Trouble code 28 / (F49) No. 16 — No. 17:

CHECK ***: Is the resistance between 0.8 and 1.2 kΩ?***

YES : Go to step **10L19**.

NO : Repair harness/connector between ABSCM and ABS sensor.



10L19	CHECK GROUND SHORT OF HARNESS.

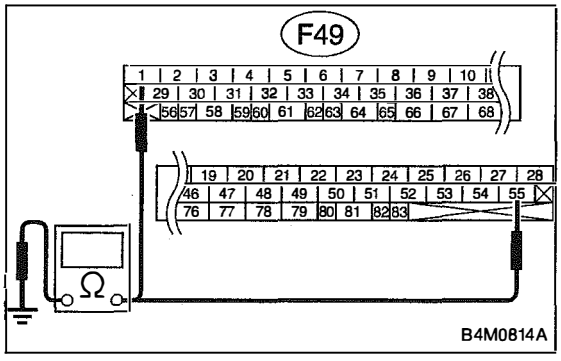
Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 22 / (F49) No. 14 — Chassis ground:
Trouble code 24 / (F49) No. 49 — Chassis ground:
Trouble code 26 / (F49) No. 18 — Chassis ground:
Trouble code 28 / (F49) No. 16 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10L20**.

NO : Repair harness between ABSCM and ABS sensor.



10L20	CHECK GROUND CIRCUIT OF ABSCM.

Measure resistance between ABSCM and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:
(F49) No. 55 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10L21**.

NO : Repair ABSCM ground harness.

10L21	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM and ABS sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10L22**.

10L22	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***

YES : Go to step **10L23**.

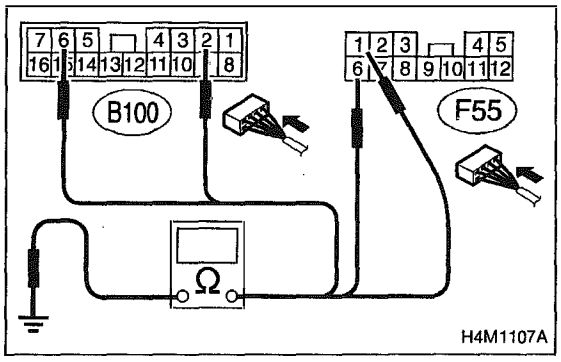
NO : Properly install the car telephone or the wireless transmitter.

10L23	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***

YES : Install the noise sources apart from the sensor harness.

NO : Go to step **10L24.**



10L24	CHECK SHIELD CIRCUIT.

1) Connect all connectors.
2) Measure resistance between shield connector and chassis ground.

Connector & terminal
Trouble code 22 / (B100) No. 6 — Chassis ground:
Trouble code 24 / (B100) No. 2 — Chassis ground:
Trouble code 26 / (F55) No. 6 — Chassis ground:
Trouble code 28 / (F55) No. 1 — Chassis ground:

CHECK : ***Is the resistance less than 0.5 Ω?***

YES : Go to step **10L25**.

NO : Repair shield harness.

10L25	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10L26**.

10L26	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary noise interference.

MEMO:

D•NEW 29 (FB1)
EITHER. SS SOFT

B4M0952

M: TROUBLE CODE 29 EITHER. SS SOFT — ABNORMAL ABS SENSOR SIGNAL (ANY ONE OF FOUR) —

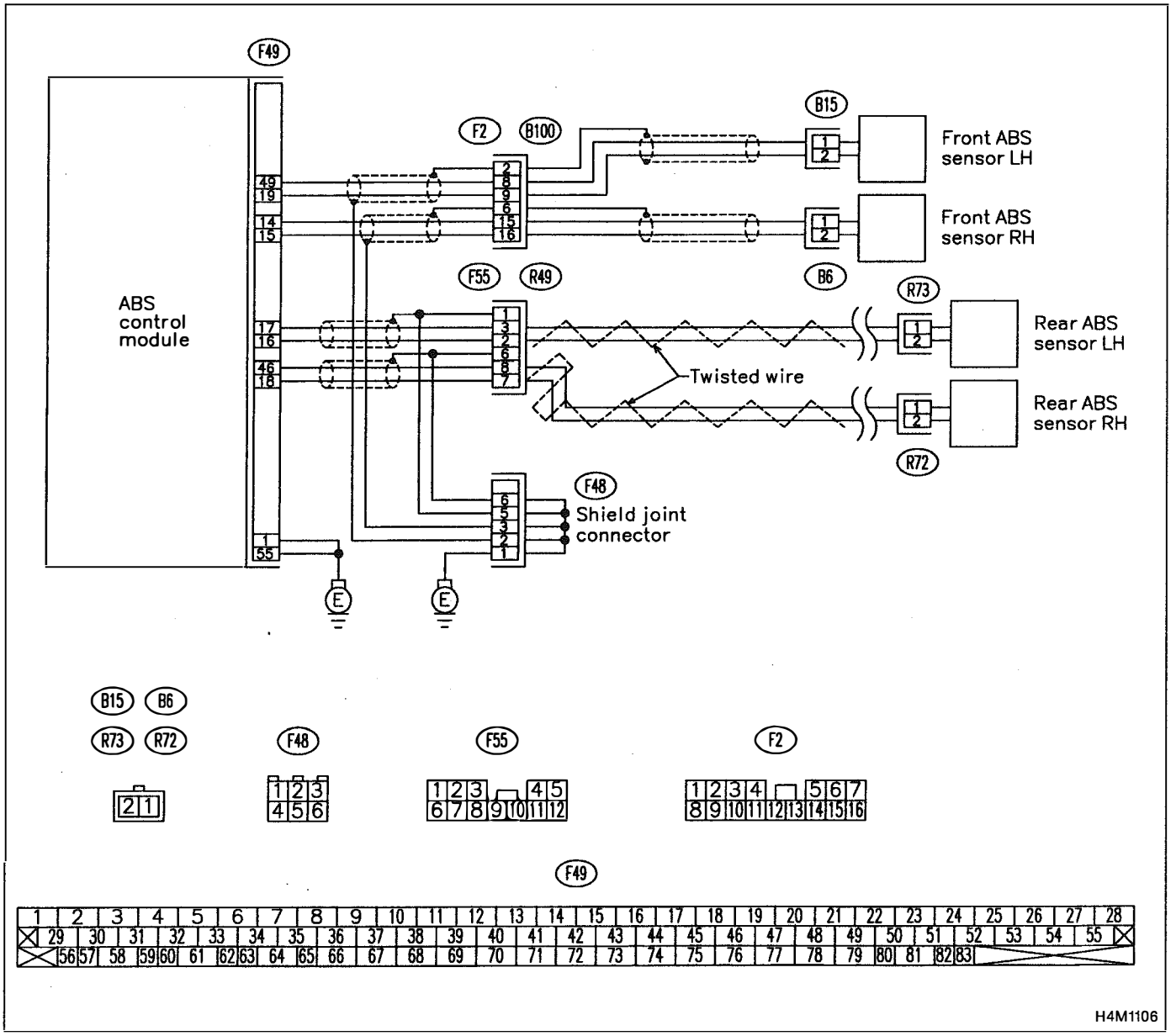
DIAGNOSIS:

- Faulty ABS sensor signal (noise, irregular signal, etc.)
- Faulty tone wheel
- Wheels turning freely for a long time

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1106

10M1	CHECK IF THE WHEELS HAVE TURNED FREELY FOR A LONG TIME.

CHECK : ***Check if the wheels have been turned freely for more than one minute, such as when the vehicle is jacked-up, under full-lock cornering or when tire is not in contact with road surface.***

YES : The ABS is normal. Erase the trouble code.

NOTE:
When the wheels turn freely for a long time, such as when the vehicle is towed or jacked-up, or when steering wheel is continuously turned all the way, this trouble code may sometimes occur.

NO : Go to step **10M2**.

10M2	CHECK TIRE SPECIFICATIONS.

Turn ignition switch to OFF.

CHECK : ***Are the tire specifications correct?***

YES : Go to step **10M3**.

NO : Replace tire.

10M3	CHECK WEAR OF TIRE.

CHECK : ***Is the tire worn excessively?***

YES : Replace tire.

NO : Go to step **10M4**.

10M4	CHECK TIRE PRESSURE.

CHECK : ***Is the tire pressure correct?***

YES : Go to step **10M5**.

NO : Adjust tire pressure.

10M5	CHECK INSTALLATION OF ABS SENSOR.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK : ***Are the ABS sensor installation bolts tightened securely?***

YES : Go to step **10M6**.

NO : Tighten ABS sensor installation bolts securely.

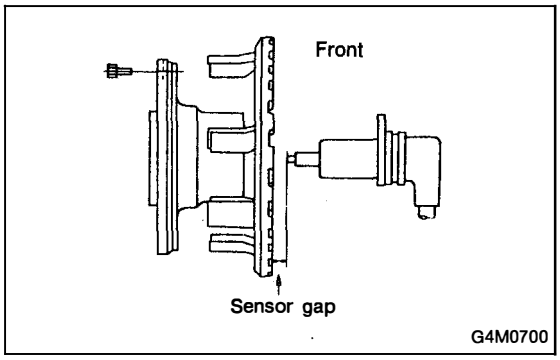
10M6	CHECK INSTALLATION OF TONE WHEEL.

Tightening torque:
13 ± 3 N·m (1.3 ± 0.3 kg-m, 9 ± 2.2 ft-lb)

CHECK : ***Are the tone wheel installation bolts tightened securely?***

YES : Go to step **10M7**.

NO : Tighten tone wheel installation bolts securely.

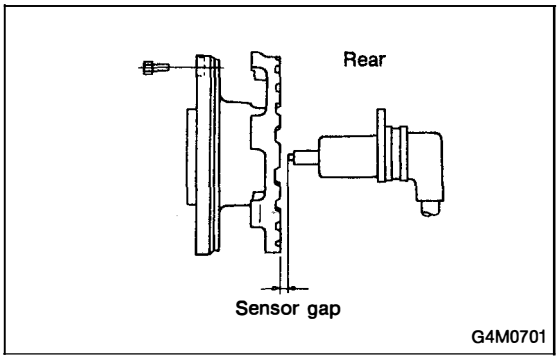


10M7	CHECK ABS SENSOR GAP.

Measure tone wheel to pole piece gap over entire perimeter of the wheel.

CHECK : ***Is the gap within the specifications shown in the following table?***

	Front wheel	Rear wheel
Specifications	0.9 — 1.4 mm (0.035 — 0.055 in)	0.7 — 1.2 mm (0.028 — 0.047 in)



YES : Go to step **10M8**.

NO : Adjust the gap.

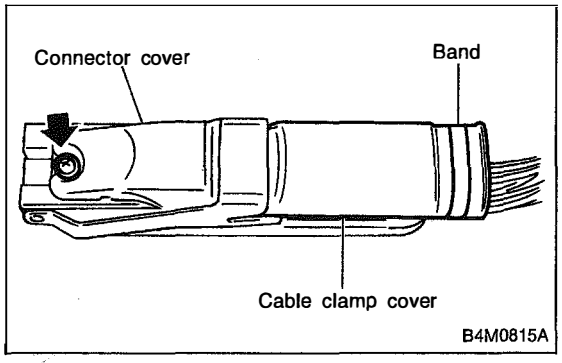
NOTE:
Adjust the gap using spacer (Part No. 26755AA000). If spacers cannot correct the gap, replace worn sensor or worn tone wheel.

10M8	CHECK OSCILLOSCOPE.

CHECK : ***Is an oscilloscope available?***

YES : Go to step **10M9**.

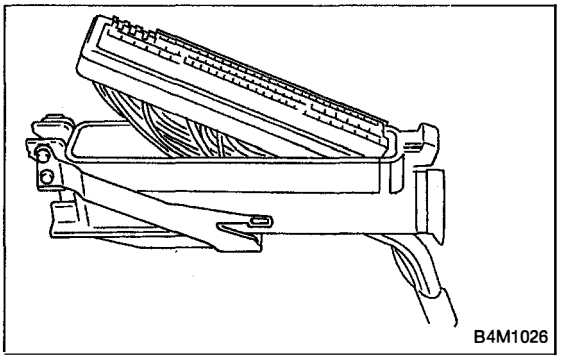
NO : Go to step **10M10**.



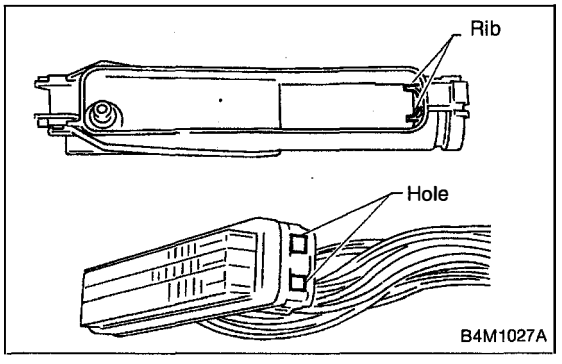
10M9.	CHECK ABS SENSOR SIGNAL.

1) Turn ignition switch OFF.
2) Raise all four wheels of ground.
3) Disconnect connector from ABS control module.
4) Remove band.
5) Remove cable clamp cover.
6) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

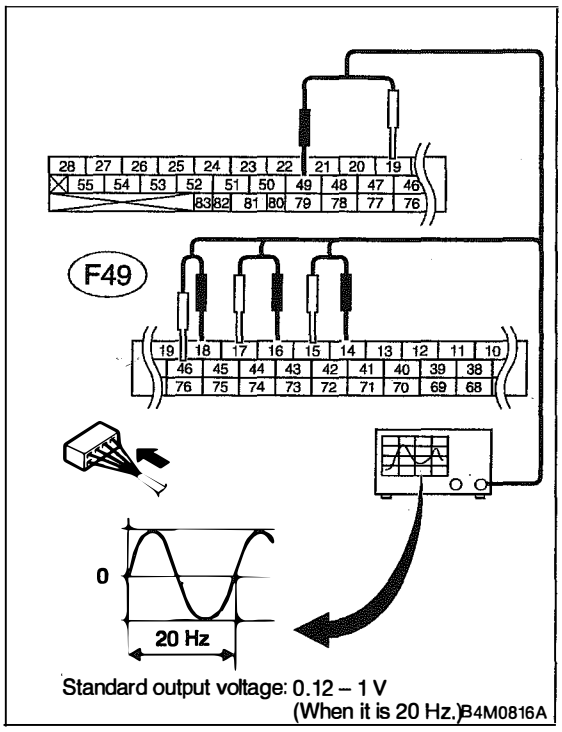


7) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

8) Connect connector to ABS control module.
9) Connect the oscilloscope to the ABS control module connector.
10) Turn ignition switch ON.



11) Rotate wheels and measure voltage at specified frequency.

NOTE:
When this inspection is completed, the ABS control module sometimes stores the trouble code 29.

Connector & terminal
(F49) No. 14 (+) — No. 15 (–) (Front RH):
(F49) No. 49 (+) — No. 19 (–) (Front LH):
(F49) No. 18 (+) — No. 46 (–) (Rear RH):
(F49) No. 16 (+) — No. 17 (–) (Rear LH):
Specified voltage: 0.12 — 1 V (When it is 20 Hz.)

CHECK : ***Is oscilloscope pattern smooth, as shown in figure?***

YES : Go to step **10M13**.

NO : Go to step **10M10**.

10M10	CHECK CONTAMINATION OF ABS SENSOR OR TONE WHEEL.

Remove disc rotor from hub.

CHECK : ***Is the ABS sensor pole piece or the tone wheel contaminated by dirt or other foreign matter?***

YES : Thoroughly remove dirt or other foreign matter.

NO : Go to step **10M11**.

10M11	CHECK DAMAGE OF ABS SENSOR OR TONE WHEEL.

CHECK : ***Are there broken or damaged teeth in the ABS sensor pole piece or the tone wheel?***

YES : Replace ABS sensor or tone wheel.

NO : Go to step **10M12**.

10M12	CHECK HUB RUNOUT.

Measure hub runout.

CHECK : ***Is the runout less than 0.05 mm (0.0020 in)?***

YES : Go to step **10M13**.

NO : Repair hub.

10M13	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

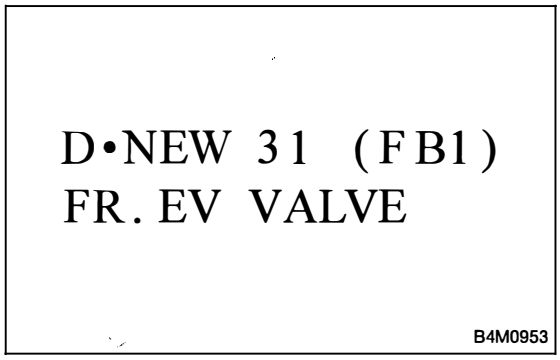
NO : Go to step **10M14.**

10M14	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

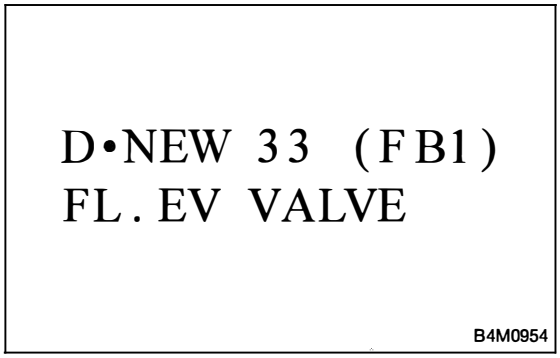
CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

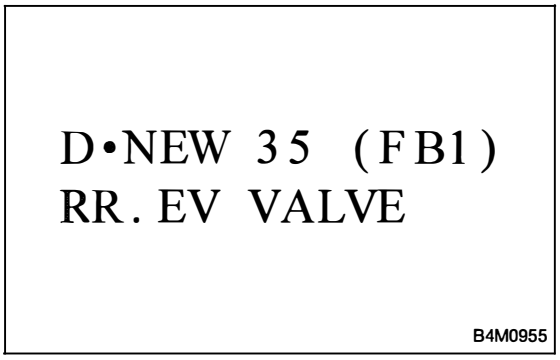
NO : A temporary poor contact.



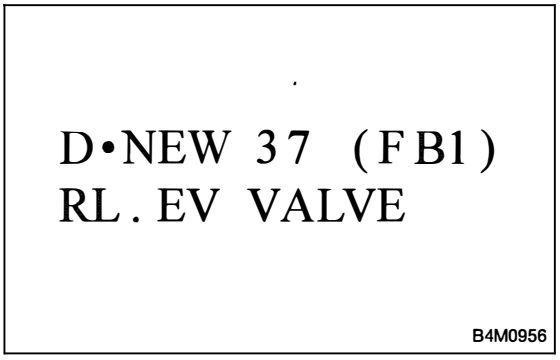
N: TROUBLE CODE 31 FR. EV VALVE — ABNORMAL FRONT RH INLET SOLENOID VALVE —



O: TROUBLE CODE 33 FL. EV VALVE — ABNORMAL FRONT LH INLET SOLENOID VALVE —



P: TROUBLE CODE 35 RR. EV VALVE — ABNORMAL REAR RH INLET SOLENOID VALVE —



Q: TROUBLE CODE 37 RL. EV VALVE — ABNORMAL REAR LH INLET SOLENOID VALVE —

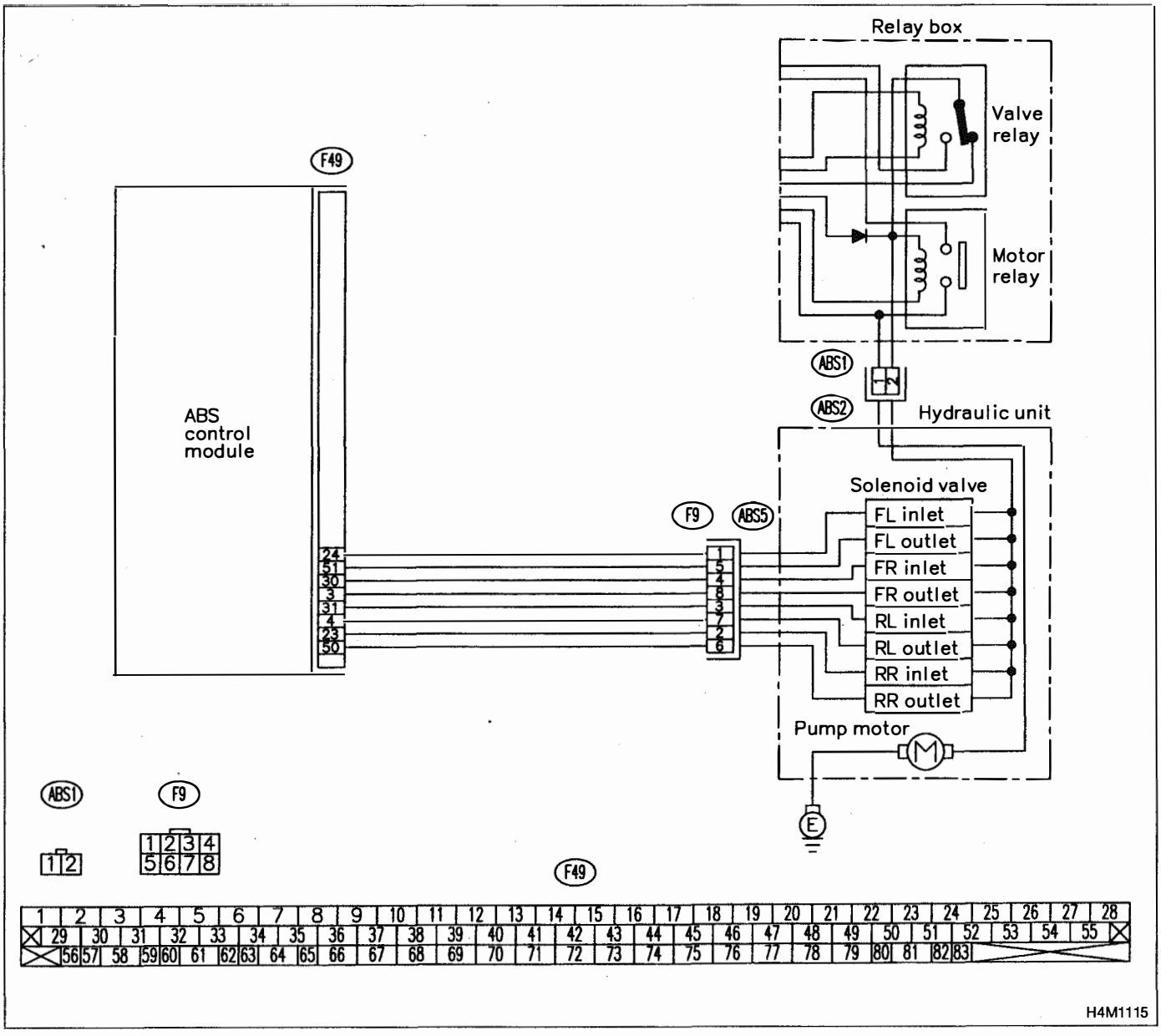
DIAGNOSIS:

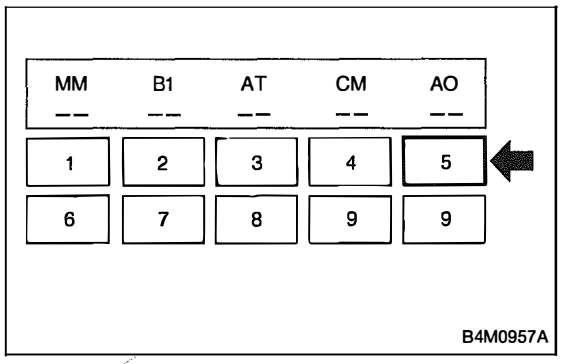
- Faulty harness/connector
- Faulty inlet solenoid valve in hydraulic unit

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





10Q1	CHECK FREEZE FRAME DATA.

Press [F], [E], [1] and [5] on the select monitor.

CHECK : ***Is the select monitor LED 5 off? Was the ABS inactive when the problem occurred?***

YES : Go to step **10Q2**.

NO : Go to step **10Q15**.

10Q2	CHECK THE CONDITION WHEN THE TROUBLE OCCURRED.

Ask the vehicle owner about driving conditions when the trouble occurred. Attempt to duplicate the conditions.

CHECK : ***Is the trouble immediately apparent?***

YES : Go to step **10Q3**.

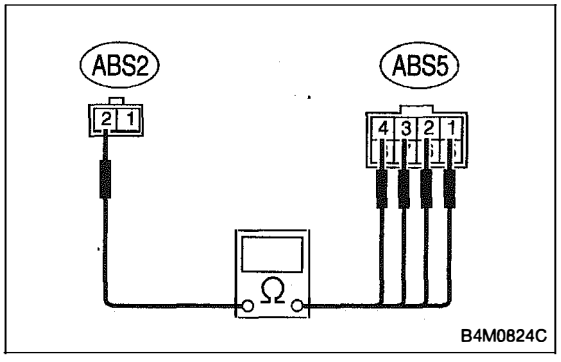
NO : Go to step **10Q15**.

10Q3	CHECK THE CONDITION WHEN THE TROUBLE OCCURRED.

CHECK : ***Did the trouble occur immediately after engine starting or during standing starts?***

YES : Go to step **10Q11**.

NO : Go to step **10Q4**.



10Q4	CHECK RESISTANCE OF SOLENOID VALVE.

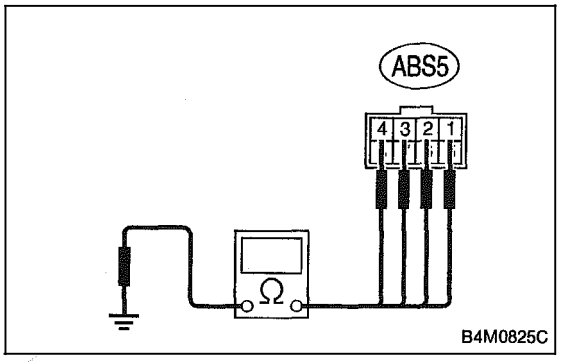
1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — (ABS2) No. 2:
Trouble code 33 / (ABS5) No. 1 — (ABS2) No. 2:
Trouble code 35 / (ABS5) No. 2 — (ABS2) No. 2:
Trouble code 37 / (ABS5) No. 3 — (ABS2) No. 2:

CHECK : ***Is the resistance between 7.8 and 9.2 Ω?***

YES : Go to step **10Q5**.

NO : Replace hydraulic unit.



10Q5	CHECK GROUND SHORT OF SOLENOID VALVE.

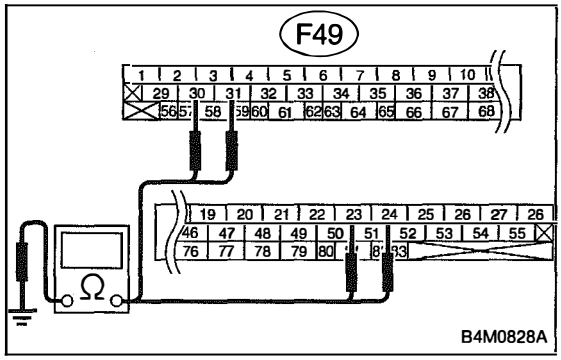
Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — Chassis ground:
Trouble code 33 / (ABS5) No. 1 — Chassis ground:
Trouble code 35 / (ABS5) No. 2 — Chassis ground:
Trouble code 37 / (ABS5) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10Q6**.

NO : Replace hydraulic unit.



10Q6	CHECK GROUND SHORT OF HARNESS.

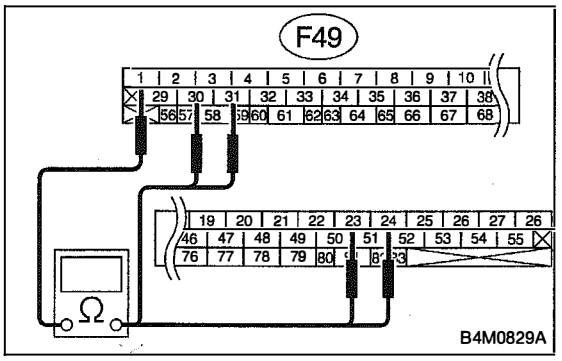
1) Disconnect connector from ABSCM.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 — Chassis ground:
Trouble code 33 / (F49) No. 24 — Chassis ground:
Trouble code 35 / (F49) No. 23 — Chassis ground:
Trouble code 37 / (F49) No. 31 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10Q7**.

NO : Repair harness between ABSCM and hydraulic unit.



10Q7	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 31 / (F49) No. 30 — No. 1:
Trouble code 33 / (F49) No. 24 — No. 1:
Trouble code 35 / (F49) No. 23 — No. 1:
Trouble code 37 / (F49) No. 31 — No. 1:

CHECK ***: Is the resistance between 8.3 and 9.7 Ω?***
YES : Go to step **10Q8**.
NO : Repair harness/connector between ABSCM and hydraulic unit.

10Q8	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10Q9**.

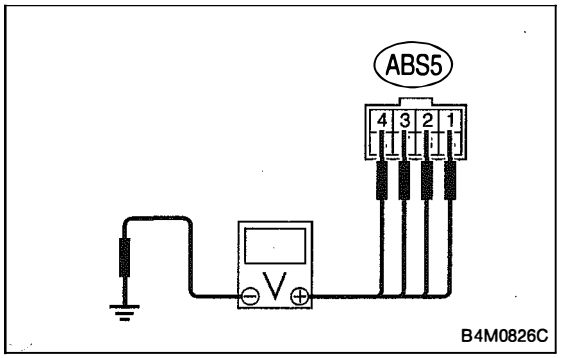
10Q9	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM.
NO : Go to step **10Q10**.

10Q10	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

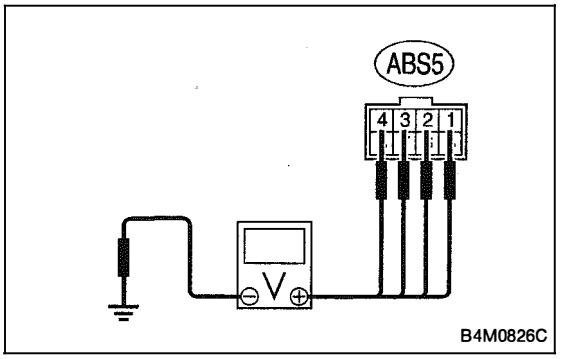


10Q11	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Disconnect connector from ABSCM.
4) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 I (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 I (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 I (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 I (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10Q12**.
NO : Replace hydraulic unit.

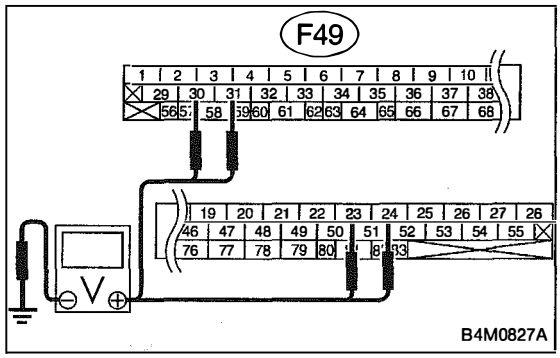


10Q12	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 I (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 I (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 I (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 I (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10Q13**.
NO : Replace hydraulic unit.

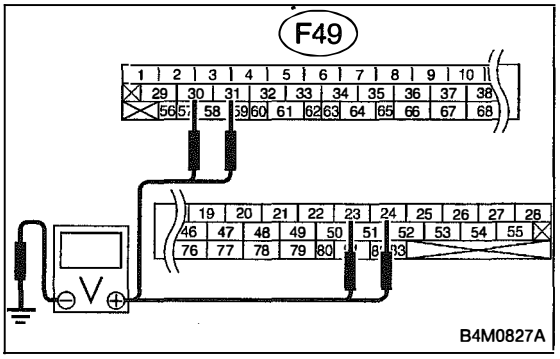


10Q13	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10Q14**.
NO : Repair harness between ABSCM and hydraulic unit.

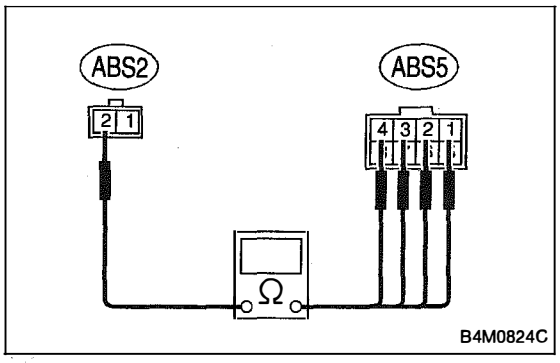


10Q14	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Replace ABSCM.
NO : Repair harness between ABSCM and hydraulic unit.

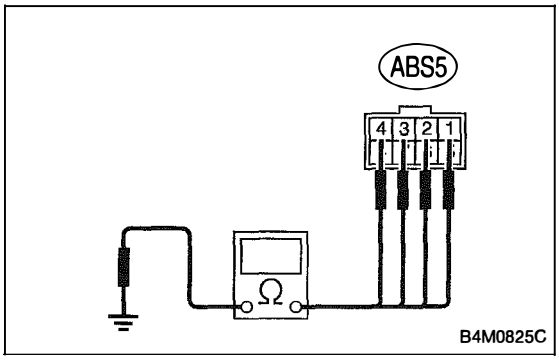


10Q15	CHECK RESISTANCE OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — (ABS2) No. 2:
Trouble code 33 / (ABS5) No. 1 — (ABS2) No. 2:
Trouble code 35 / (ABS5) No. 2 — (ABS2) No. 2:
Trouble code 37 / (ABS5) No. 3 — (ABS2) No. 2:

CHECK ***: Is the resistance between 7.8 and 9.2 Ω?***
YES : Go to step **10Q16**.
NO : Replace hydraulic unit.

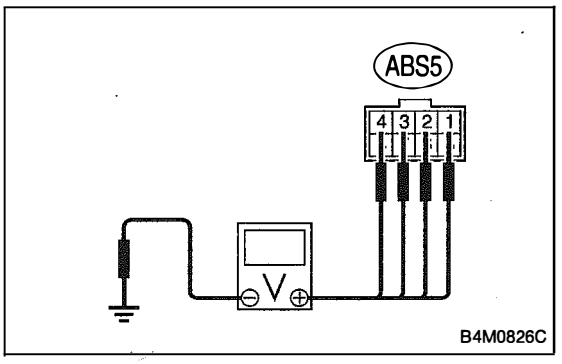


10Q16	CHECK GROUND SHORT OF SOLENOID VALVE.

Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 — Chassis ground:
Trouble code 33 / (ABS5) No. 1 — Chassis ground:
Trouble code 35 / (ABS5) No. 2 — Chassis ground:
Trouble code 37 / (ABS5) No. 3 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10Q17**.
NO : Replace hydraulic unit.

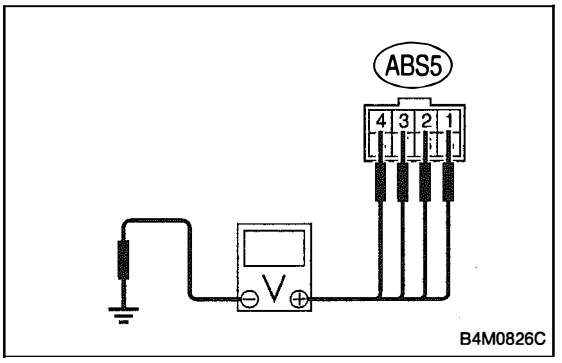


10Q17	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Disconnect connector from ABSCM.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 / (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 / (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 / (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10Q18**.
NO : Replace hydraulic unit.

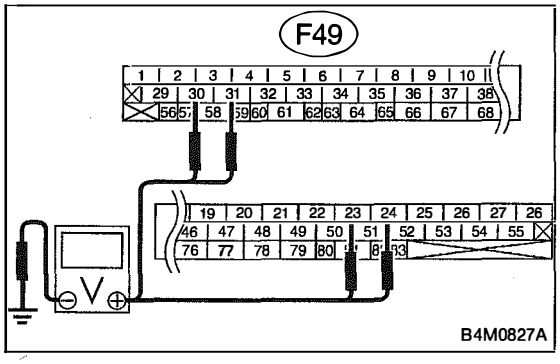


10Q18	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 31 / (ABS5) No. 4 (+) — Chassis ground (–):
Trouble code 33 / (ABS5) No. 1 (+) — Chassis ground (–):
Trouble code 35 / (ABS5) No. 2 (+) — Chassis ground (–):
Trouble code 37 / (ABS5) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10Q19**.
NO : Replace hydraulic unit.



10Q19	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10Q20**.

NO : Repair harness between ABSCM and hydraulic unit.

10Q20	CHECK BATTERY SHORT OF HARNESS.

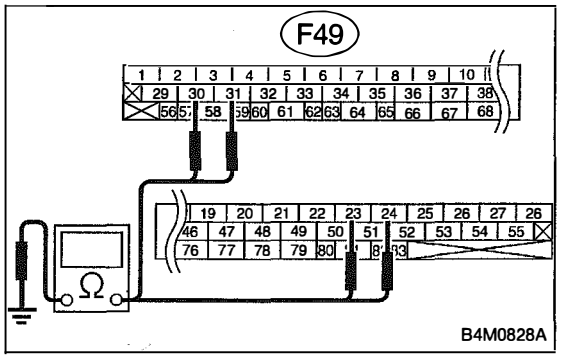
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 (+) — Chassis ground (–):
Trouble code 33 / (F49) No. 24 (+) — Chassis ground (–):
Trouble code 35 / (F49) No. 23 (+) — Chassis ground (–):
Trouble code 37 / (F49) No. 31 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10Q21**.

NO : Repair harness between ABSCM and hydraulic unit.



10Q21	CHECK GROUND SHORT OF HARNESS.

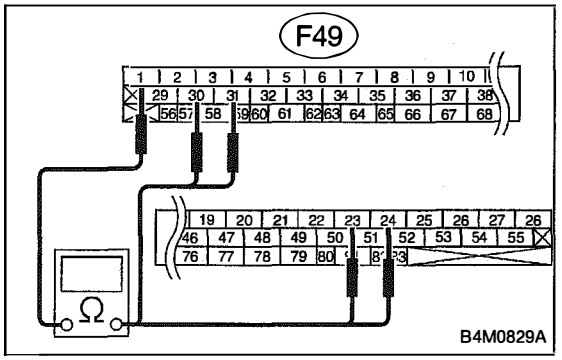
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 31 / (F49) No. 30 — Chassis ground:
Trouble code 33 / (F49) No. 24 — Chassis ground:
Trouble code 35 / (F49) No. 23 — Chassis ground:
Trouble code 37 / (F49) No. 31 — Chassis ground:

(CHECK) ***: Is the resistance more than 1 MΩ?***

(YES) : Go to step **10Q22**.

(NO) : Repair harness between ABSCM and hydraulic unit.



10Q22	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 31 / (F49) No. 30 — No. 1:
Trouble code 33 / (F49) No. 24 — No. 1:
Trouble code 35 / (F49) No. 23 — No. 1:
Trouble code 37 / (F49) No. 31 — No. 1:

(CHECK) ***: Is the resistance between 8.3 and 9.7 Ω?***

(YES) : Go to step **10Q23**.

(NO) : Repair harness/connector between ABSCM and hydraulic unit.

10Q23	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10Q24**.

10Q24	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

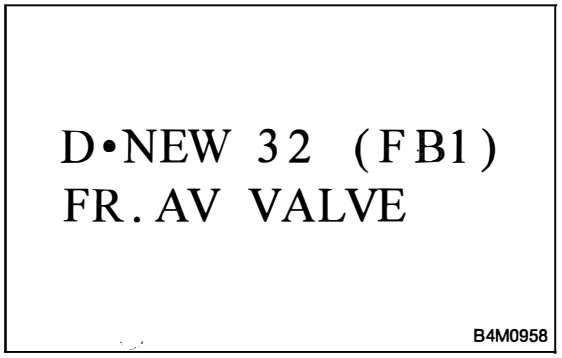
NO : Go to step **10Q25**.

10Q25	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

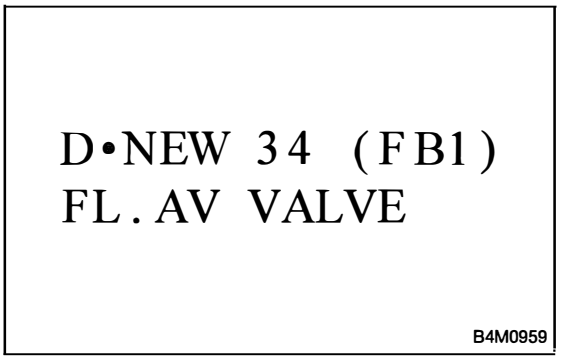
CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

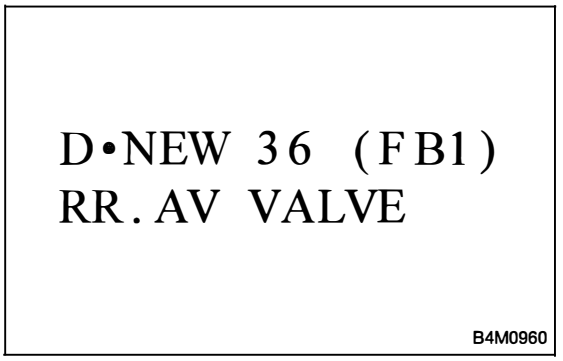
NO : A temporary poor contact.



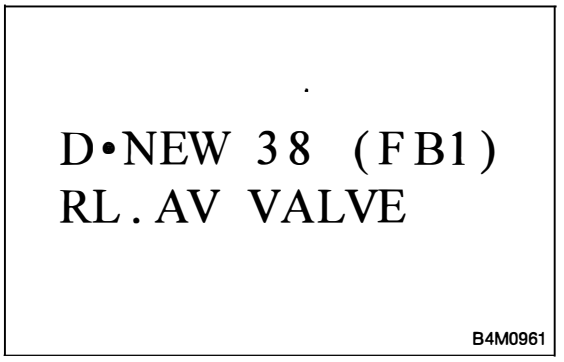
R: TROUBLE CODE 32 FR. AV VALVE — ABNORMAL FRONT RH OUTLET SOLENOID VALVE —



S: TROUBLE CODE 34 FL. AV VALVE — ABNORMAL FRONT LH OUTLET SOLENOID VALVE —



T: TROUBLE CODE 36 RR. AV VALVE — ABNORMAL REAR RH OUTLET SOLENOID VALVE —



U: TROUBLE CODE 38 RL. AV VALVE — ABNORMAL REAR LH OUTLET SOLENOID VALVE —

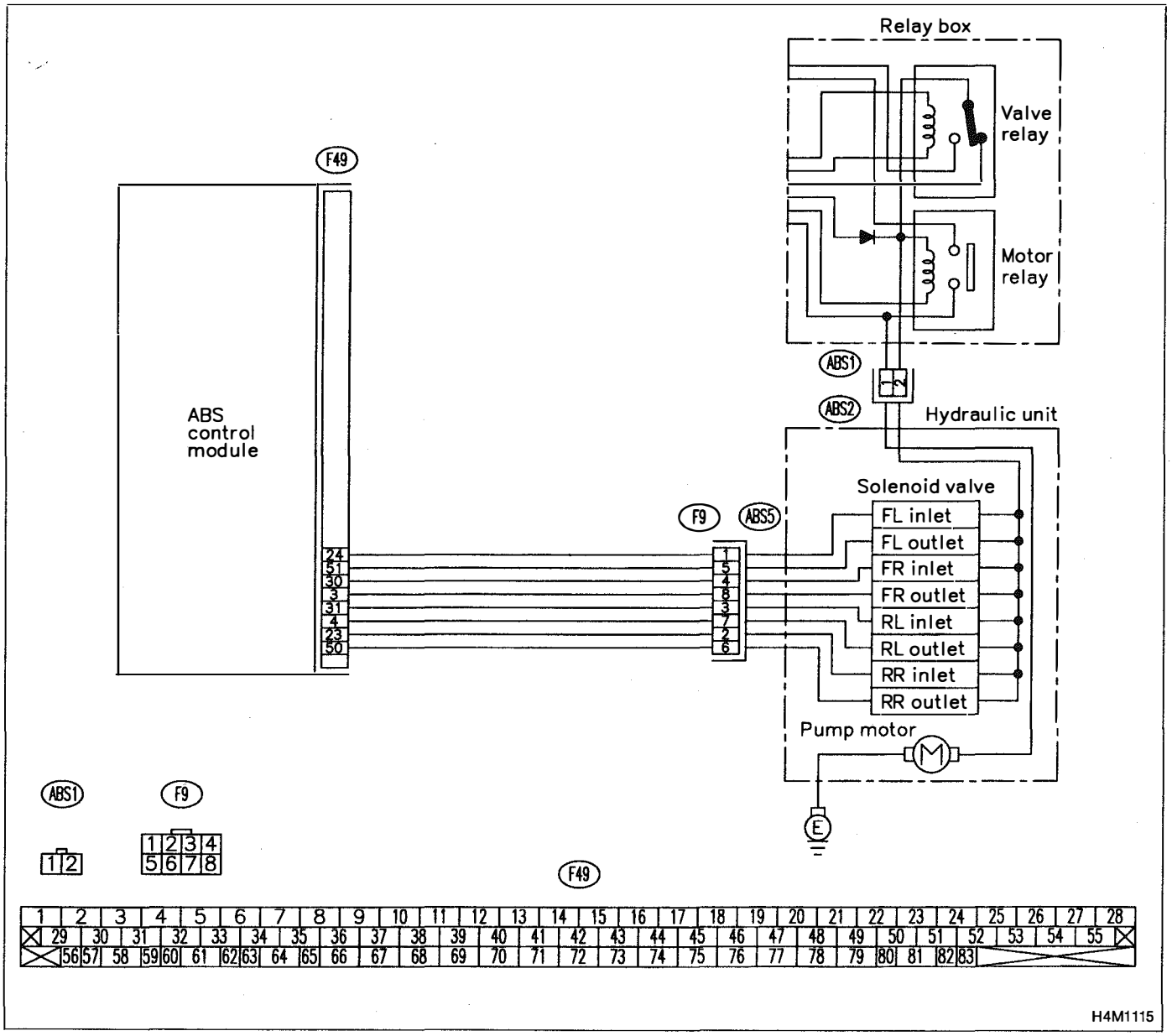
DIAGNOSIS:

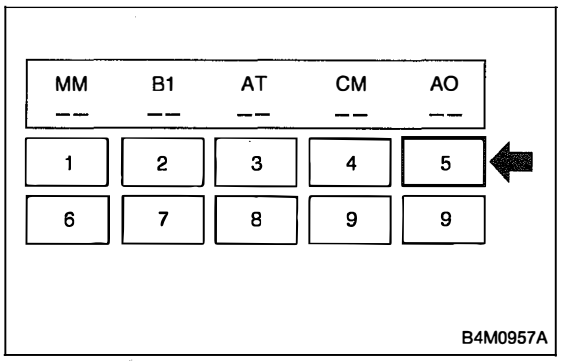
- Faulty harness/connector
- Faulty outlet solenoid valve in hydraulic unit

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





10U1	CHECK FREEZE FRAME DATA.

Press [F], [E], [1] and [5] on the select monitor.

CHECK : ***Is the select monitor LED 5 off? Was the ABS inactive when the problem occurred?***

YES : Go to step **10U2**.

NO : Go to step **10U15**.

10U2	CHECK THE CONDITION WHEN THE TROUBLE OCCURRED.

Ask the vehicle owner about driving conditions when the trouble occurred. Attempt to duplicate the conditions.

CHECK : ***Is the trouble immediately apparent?***

YES : Go to step **10U3**.

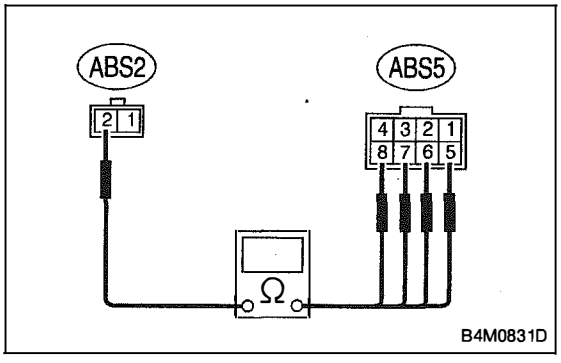
NO : Go to step **10U15**.

10U3	CHECK THE CONDITION WHEN THE TROUBLE OCCURRED.

CHECK : ***Did the trouble occur immediately after engine starting or during standing starts?***

YES : Go to step **10U11**.

NO : Go to step **10U4**.



10U4	CHECK RESISTANCE OF SOLENOID VALVE.

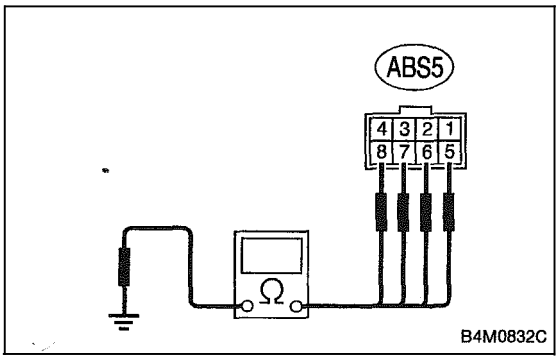
1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — (ABS2) No. 2:
Trouble code 34 / (ABS5) No. 5 — (ABS2) No. 2:
Trouble code 36 / (ABS5) No. 6 — (ABS2) No. 2:
Trouble code 38 / (ABS5) No. 7 — (ABS2) No. 2:

CHECK : ***Is the resistance between 3.8 and 4.8 Ω?***

YES : Go to step **10U5**.

NO : Replace hydraulic unit.



10U5	CHECK GROUND SHORT OF SOLENOID VALVE.

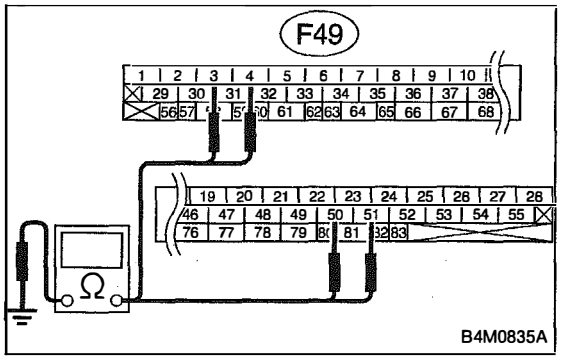
Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — Chassis ground:
Trouble code 34 / (ABS5) No. 5 — Chassis ground:
Trouble code 36 / (ABS5) No. 6 — Chassis ground:
Trouble code 38 / (ABS5) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10U6**.

NO : Replace hydraulic unit.



10U6	CHECK GROUND SHORT OF HARNESS.

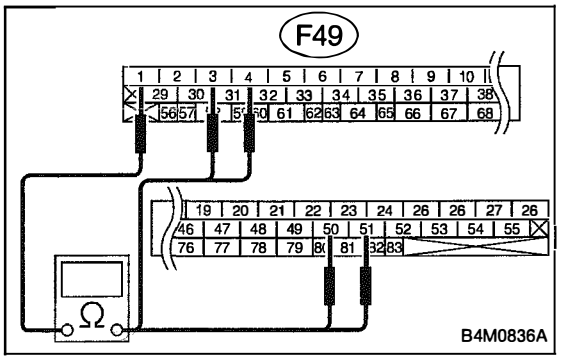
1) Disconnect connector from ABSCM.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 — Chassis ground:
Trouble code 34 / (F49) No. 51 — Chassis ground:
Trouble code 36 / (F49) No. 50 — Chassis ground:
Trouble code 38 / (F49) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10U7**.

NO : Repair harness between ABSCM and hydraulic unit.



10U7	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 32 / (F49) No. 3 — No. 1:
Trouble code 34 / (F49) No. 51 — No. 1:
Trouble code 36 / (F49) No. 50 — No. 1:
Trouble code 38 / (F49) No. 4 — No. 1:

CHECK ***: Is the resistance between 4.3 and 5.3 Ω?***
YES : Go to step **10U8**.
NO : Repair harness/connector between ABSCM and hydraulic unit.

10U8	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10U9**.

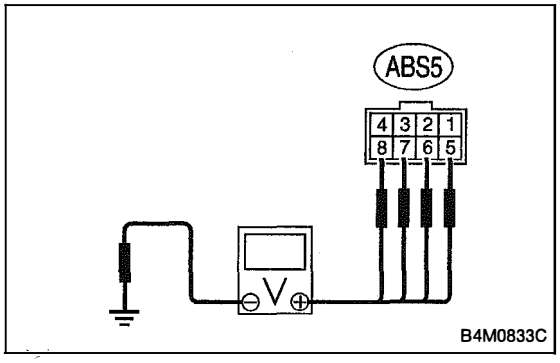
10U9	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM.
NO : Go to step **10U10**.

10U10	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

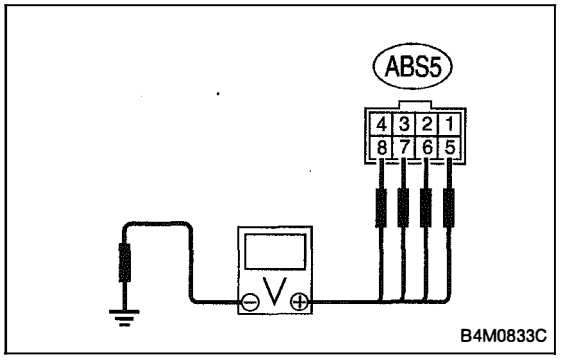


10U11	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Disconnect connector from ABSCM.
4) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 / (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 / (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 / (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10U12**.
NO : Replace hydraulic unit.

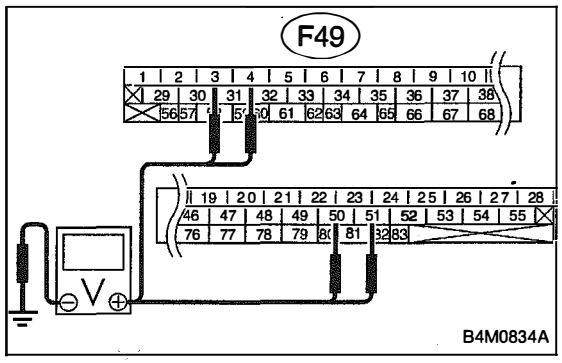


10U12	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 / (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 / (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 / (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10U13**.
NO : Replace hydraulic unit.



10U13	CHECK BATTERY SHORT OF HARNESS.

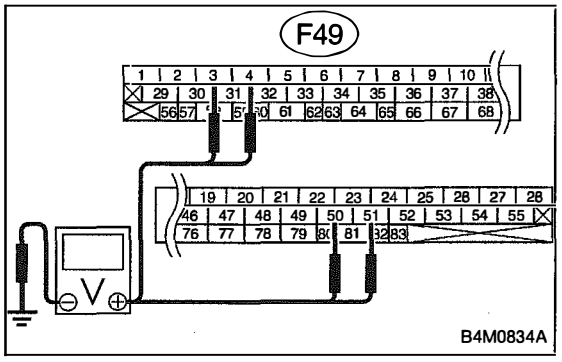
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10U14**.

NO : Repair harness between ABSCM and hydraulic unit.



10U14	CHECK BATTERY SHORT OF HARNESS.

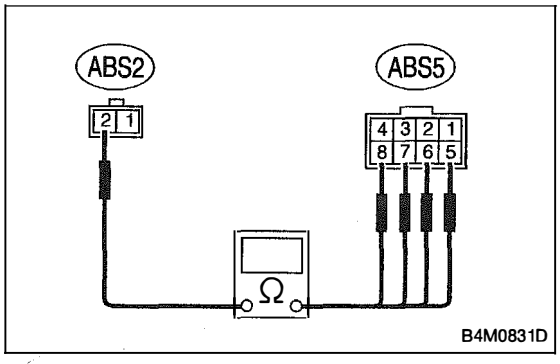
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Replace ABSCM.

NO : Repair harness between ABSCM and hydraulic unit.

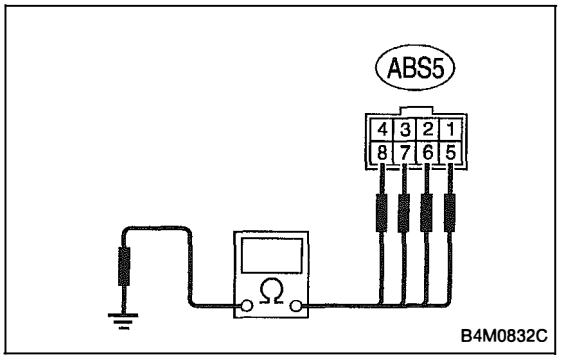


10U15	CHECK RESISTANCE OF SOLENOID VALVE.

1) Turn ignition switch to OFF.
2) Disconnect two connectors (ABS1, F9) from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — (ABS2) No. 2:
Trouble code 34 / (ABS5) No. 5 — (ABS2) No. 2:
Trouble code 36 / (ABS5) No. 6 — (ABS2) No. 2:
Trouble code 38 / (ABS5) No. 7 — (ABS2) No. 2:

CHECK ***: Is the resistance between 3.8 and 4.8 Ω?***
YES : Go to step **10U16**.
NO : Replace hydraulic unit.

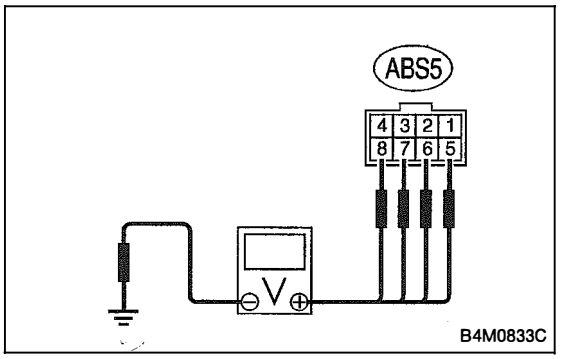


10U16	CHECK GROUND SHORT OF SOLENOID VALVE.

Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 / (ABS5) No. 8 — Chassis ground:
Trouble code 34 / (ABS5) No. 5 — Chassis ground:
Trouble code 36 / (ABS5) No. 6 — Chassis ground:
Trouble code 38 / (ABS5) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10U17**.
NO : Replace hydraulic unit.

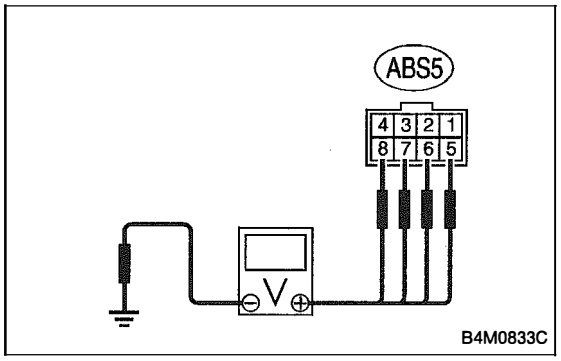


10U17	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Disconnect connector from ABSCM.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 I (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 I (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 I (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 I (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10U18**.
NO : Replace hydraulic unit.

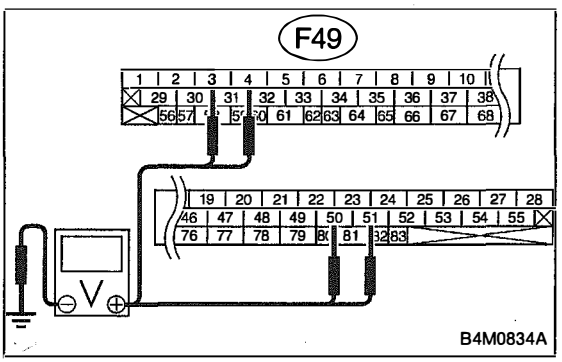


10U18	CHECK BATTERY SHORT OF SOLENOID VALVE.

1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
Trouble code 32 I (ABS5) No. 8 (+) — Chassis ground (–):
Trouble code 34 I (ABS5) No. 5 (+) — Chassis ground (–):
Trouble code 36 I (ABS5) No. 6 (+) — Chassis ground (–):
Trouble code 38 I (ABS5) No. 7 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10U19**.
NO : Replace hydraulic unit.



10U19	CHECK BATTERY SHORT OF HARNESS.

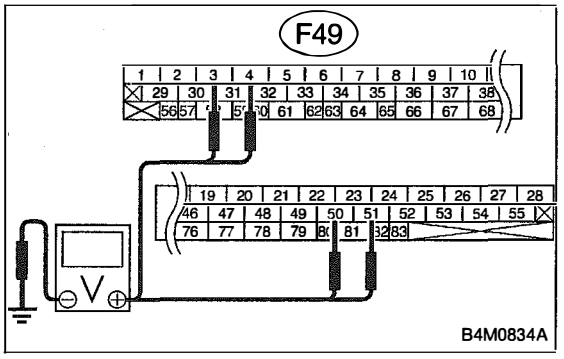
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10U20.**

NO : Repair harness between ABSCM and hydraulic unit.



10U20	CHECK BATTERY SHORT OF HARNESS.

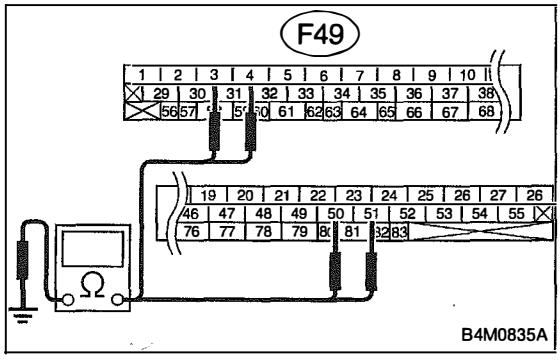
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 (+) — Chassis ground (–):
Trouble code 34 / (F49) No. 51 (+) — Chassis ground (–):
Trouble code 36 / (F49) No. 50 (+) — Chassis ground (–):
Trouble code 38 / (F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10U21.**

NO : Repair harness between ABSCM and hydraulic unit.



10U21	CHECK GROUND SHORT OF HARNESS.

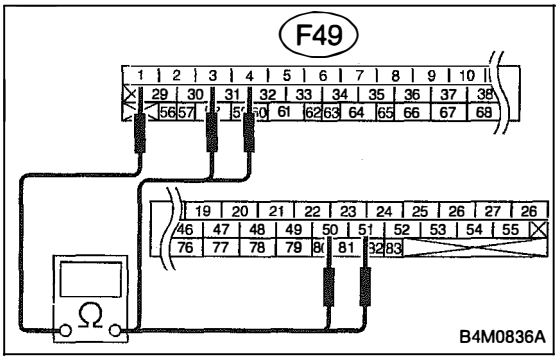
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
Trouble code 32 / (F49) No. 3 — Chassis ground:
Trouble code 34 / (F49) No. 51 — Chassis ground:
Trouble code 36 / (F49) No. 50 — Chassis ground:
Trouble code 38 / (F49) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10U22**.

NO : Repair harness between ABSCM and hydraulic unit.



10U22	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
Trouble code 32 / (F49) No. 3 — No. 1:
Trouble code 34 / (F49) No. 51 — No. 1:
Trouble code 36 / (F49) No. 50 — No. 1:
Trouble code 38 / (F49) No. 4 — No. 1:

CHECK ***: Is the resistance between 4.3 and 5.3 Ω?***

YES : Go to step **10U23**.

NO : Repair harness/connector between ABSCM and hydraulic unit.

10U23	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10U24**.

10U24	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10U25**.

10U25	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 41 (FB1) ECU

B4M0962

V: TROUBLE CODE 41 ECU — ABNORMAL ABS CONTROL MODULE —

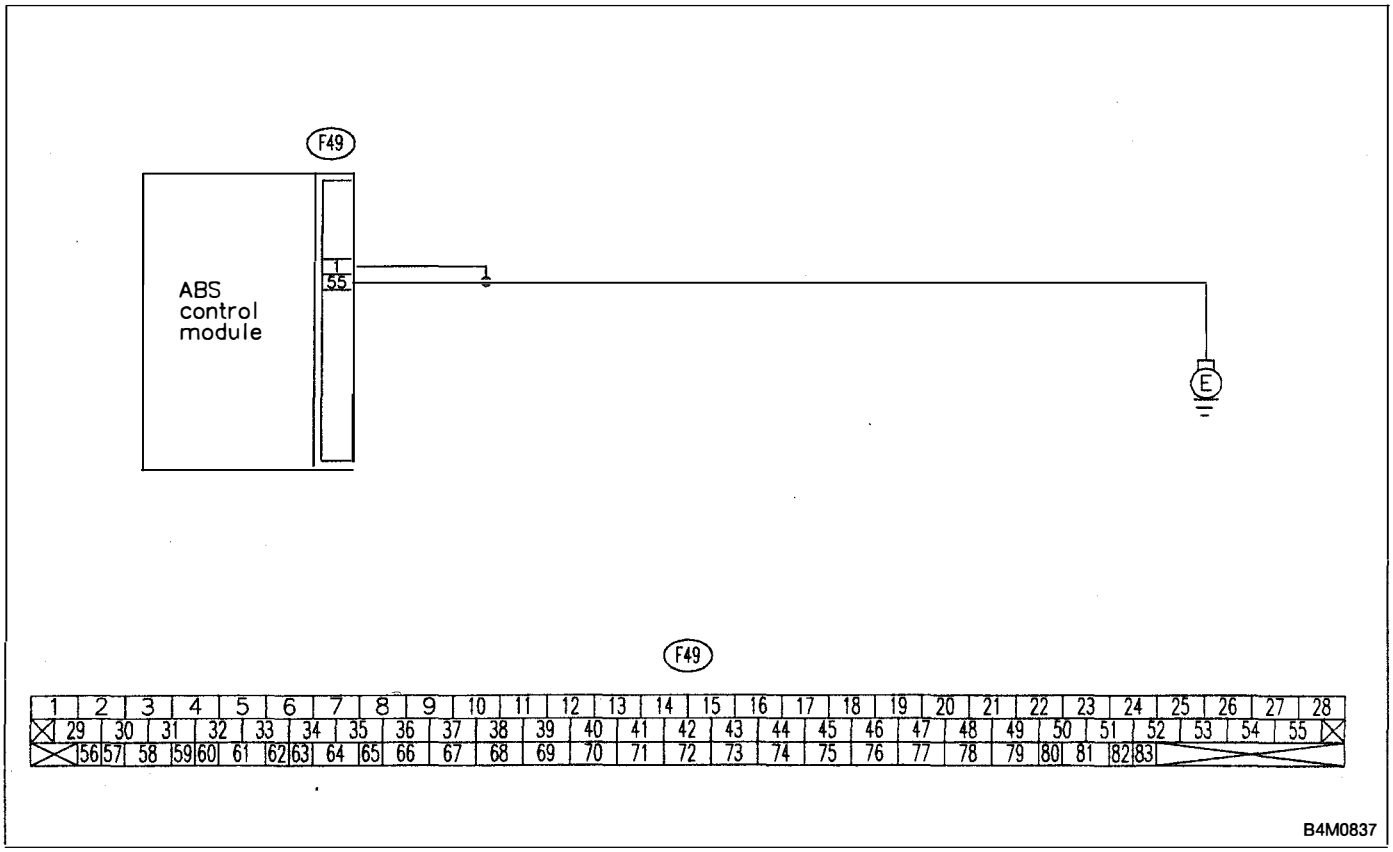
DIAGNOSIS:

- Faulty ABSCM

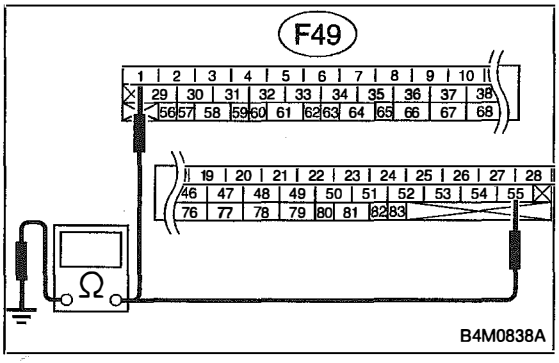
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



B4M0837



10V1	CHECK GROUND CIRCUIT OF ABSCM.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:
(F49) No. 55 — Chassis ground:

CHECK : ***Is the resistance less than 0.5 Ω?***
YES : Go to step **10V2**.
NO : Repair ABSCM ground harness.

10V2	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between battery, ignition switch and ABSCM? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10V3**.

10V3	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Is the car telephone or the wireless transmitter properly installed?***
YES : Go to step **10V4**.
NO : Properly install the car telephone or the wireless transmitter.

10V4	CHECK SOURCES OF SIGNAL NOISE.

CHECK : ***Are noise sources (such as an antenna) installed near the sensor harness?***
YES : Install the noise sources apart from the sensor harness.
NO : Go to step **10V5**.

10V5	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM.
NO : Go to step **10V6**.

10V6	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 42 (FB1)
LOW VOLTAGE

B4M0963

W: TROUBLE CODE 42 LOW VOLTAGE — SOURCE VOLTAGE IS LOW —

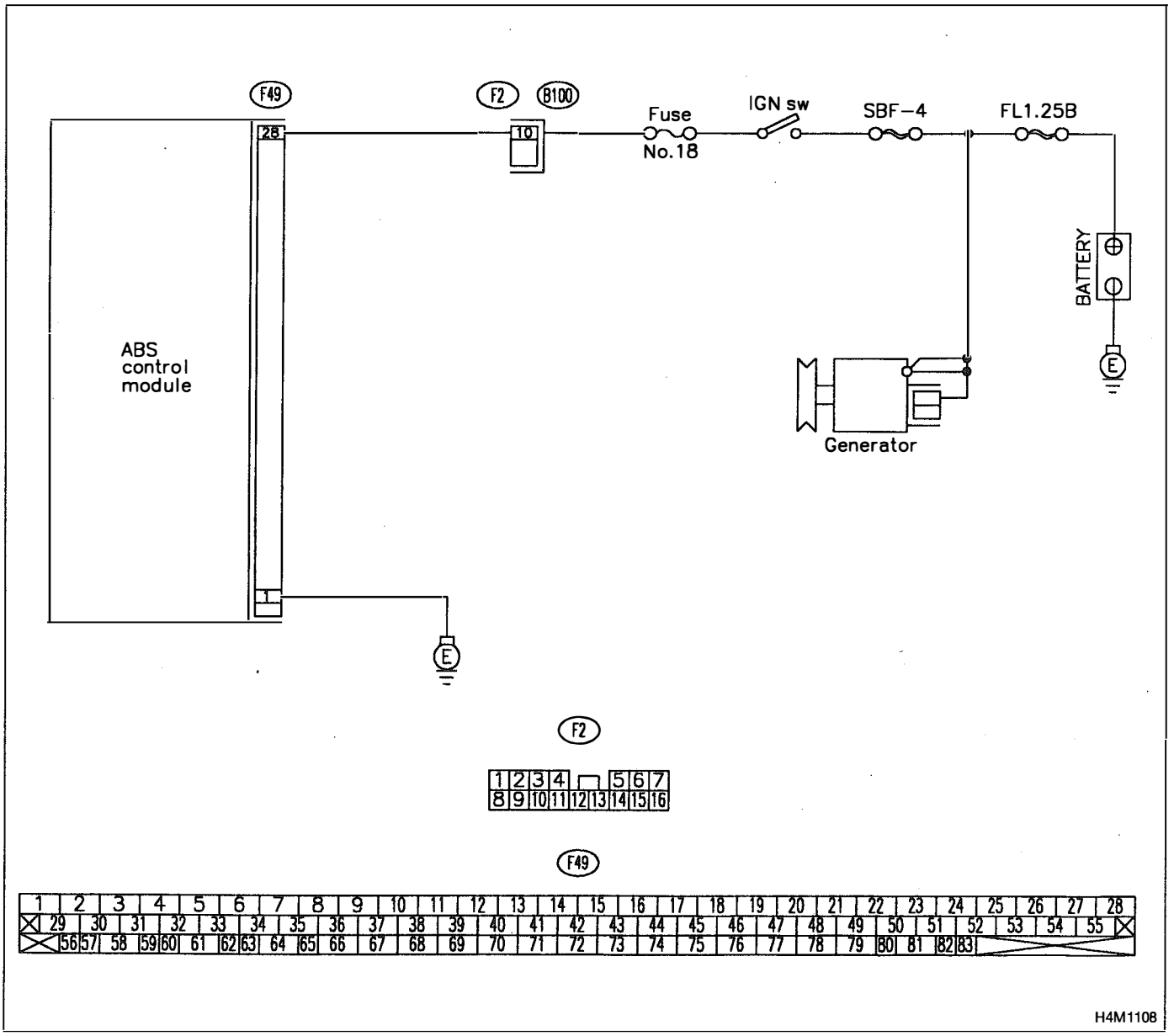
DIAGNOSIS:

- Power source voltage of the ABSCM is low.

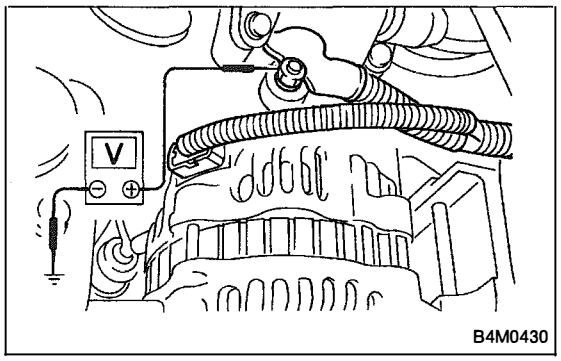
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1108



10W1	CHECK GENERATOR.

1) Start engine.
2) Idling after warm-up.
3) Measure voltage between generator B terminal and chassis ground.

Terminal
Generator B terminal — Chassis ground:

CHECK ***: Is the voltage between 10 V and 15 V?***

YES : Go to step **10W2**.

NO : Repair generator.

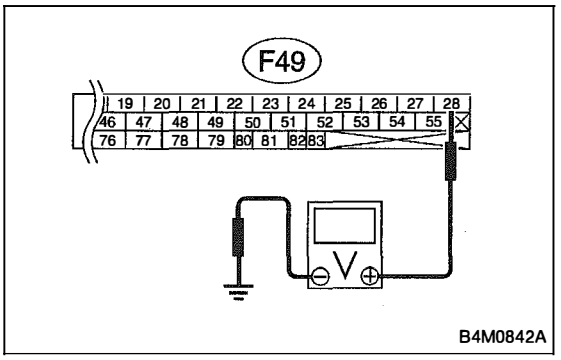
10W2	CHECK BATTERY TERMINAL.

Turn ignition switch to OFF.

CHECK ***: Are the positive and negative battery terminals tightly clamped?***

YES : Go to step **10W3**.

NO : Tighten the clamp of terminal.



10W3	CHECK INPUT VOLTAGE OF ABSCM.

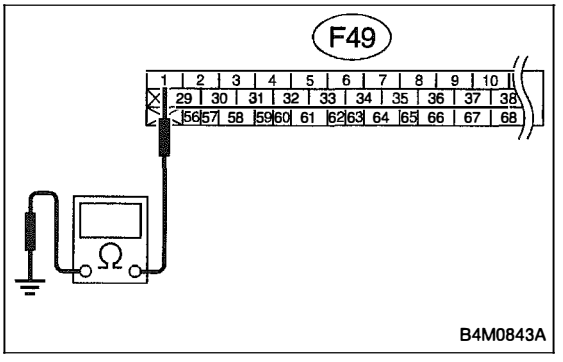
1) Disconnect connector from ABSCM.
2) Run the engine at idle.
3) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 28 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 15 V?***

YES : Go to step **10W4**.

NO : Repair harness connector between battery, ignition switch and ABSCM.



10W4	CHECK GROUND CIRCUIT OF ABSCM.

1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 1 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10W5**.

NO : Repair ABSCM ground harness.

10W5	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connectors between generator, battery and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10W6**.

10W6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10W7**.

10W7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 44 (FB1)
CCM LINE

B4M0964

X: TROUBLE CODE 44 CCM LINE — A COMBINATION OF AT CONTROL ABNORMALS —

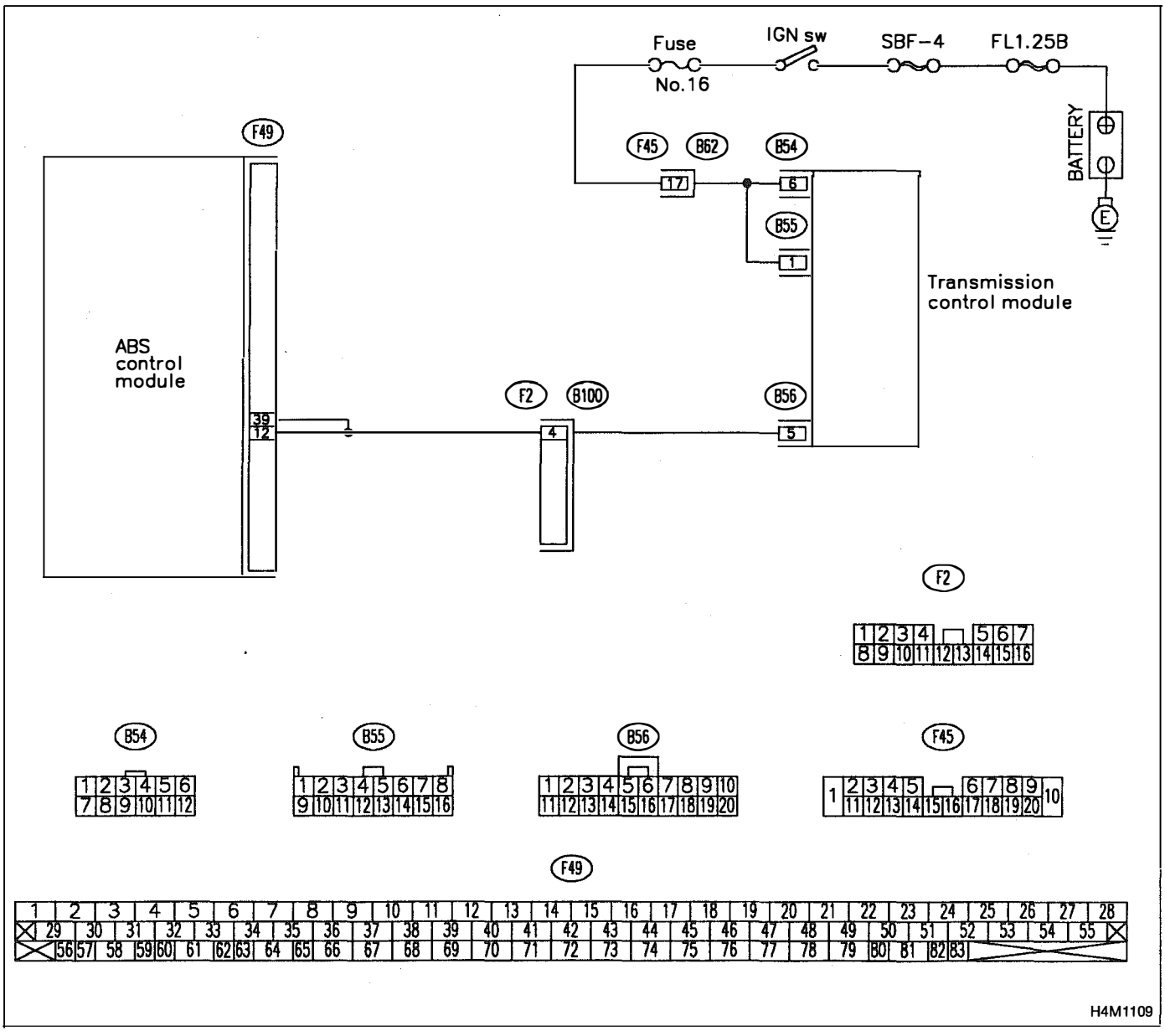
DIAGNOSIS:

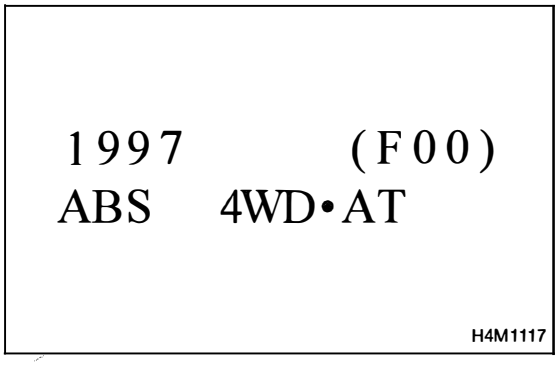
- Combination of AT control faults

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





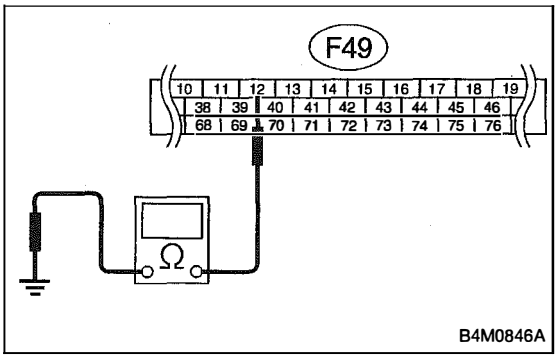
10X1	CHECK SPECIFICATIONS OF ABSCM USING SELECT MONITOR.

1) Press [F], [0] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is an ABSCM for AT model installed on a MT model?***

YES : Replace ABSCM.

NO : Go to step **10X2**.



10X2	CHECK GROUND SHORT OF HARNESS.

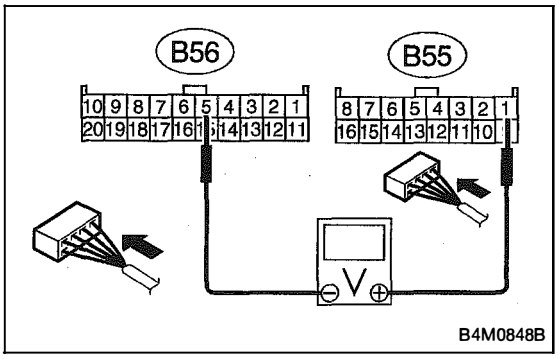
1) Turn ignition switch to OFF.
2) Disconnect two connectors from TCM.
3) Disconnect connector from ABSCM.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 — Chassis ground:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **10X3**.

NO : Repair harness between TCM and ABSCM.



10X3	CHECK TCM.

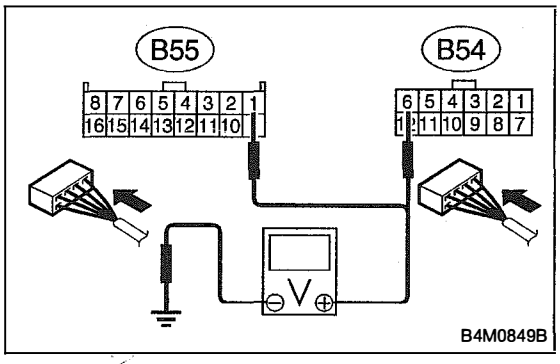
1) Connect all connectors to TCM.
2) Turn ignition switch to ON.
3) Measure voltage between TCM connector terminals.

Connector & terminal
(B55) No. 1 (+) — (B56) No. 5 (–):

CHECK : ***Is the voltage between 10 V and 13 V?***

YES : Go to step **10X5**.

NO : Go to step **10X4**.



10X4	CHECK POWER SUPPLY FOR TCM.

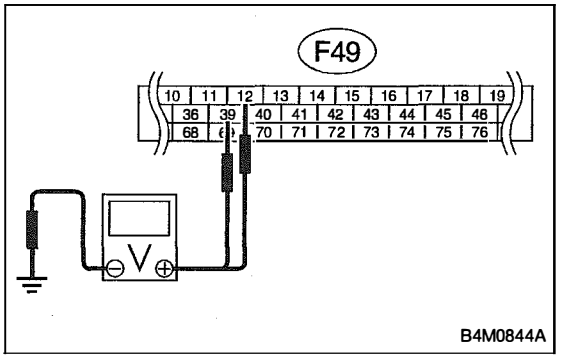
Measure voltage between TCM connector and chassis ground.

Connector & terminal
(B54) No. 6 (+) — Chassis ground (–):
(B55) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Replace TCM.

NO : Repair harness/connector between battery, ignition switch and TCM.



10X5	CHECK OPEN CIRCUIT OF HARNESS.

Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):
(F49) No. 39 (+) — Chassis ground (–):

CHECK ***: Is the voltage more than 10 V?***

YES : Go to step **10X6**.

NO : Repair harness/connector between AT control module and ABSCM.

10X6	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between AT control module and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10X7**.

10X7	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10X8**.

10X8	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 44 (FB1)
CCM OPEN

B4M0965

Y: TROUBLE CODE 44 CCM OPEN — A COMBINATION OF AT CONTROL ABNORMALS —

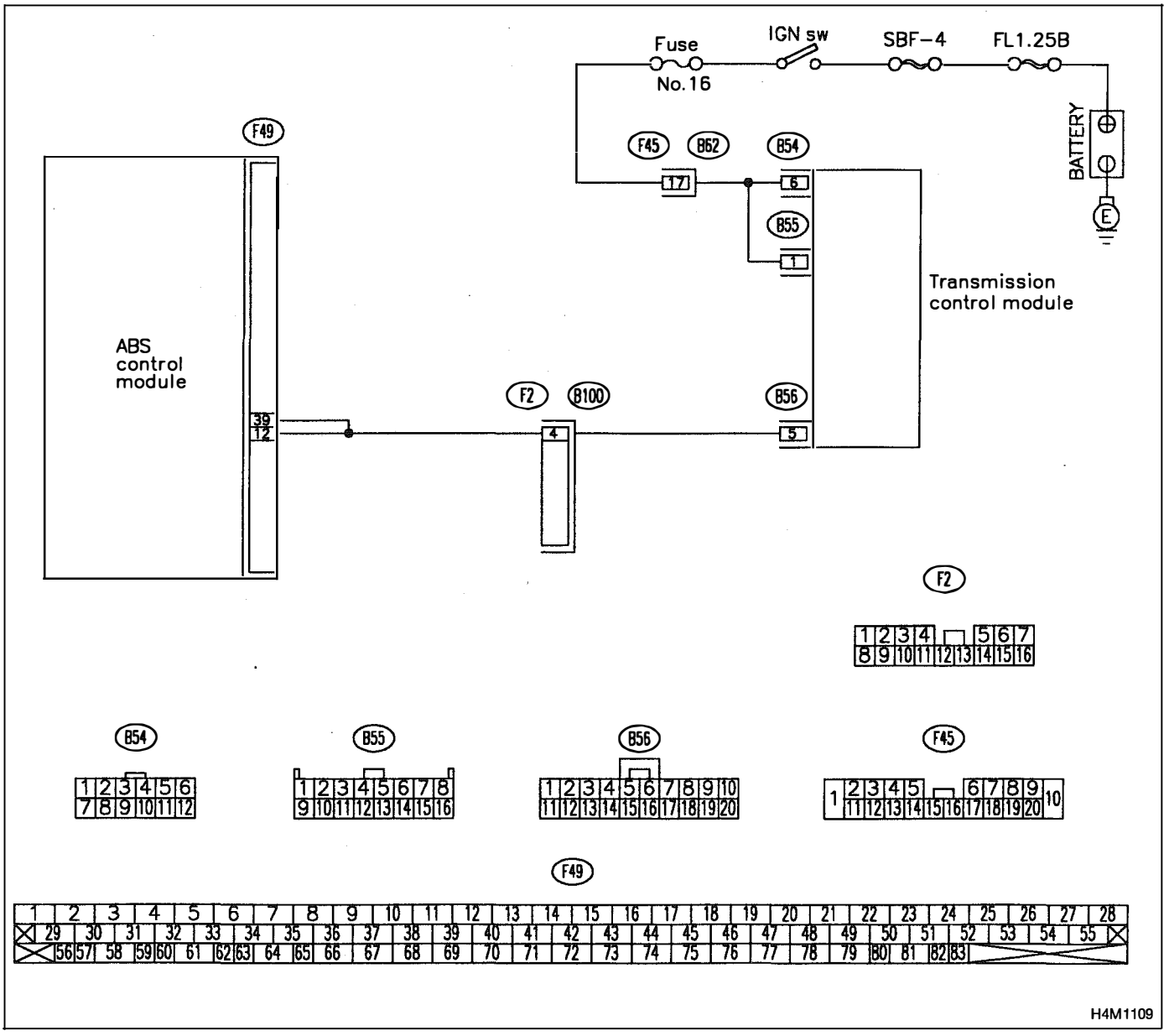
DIAGNOSIS:

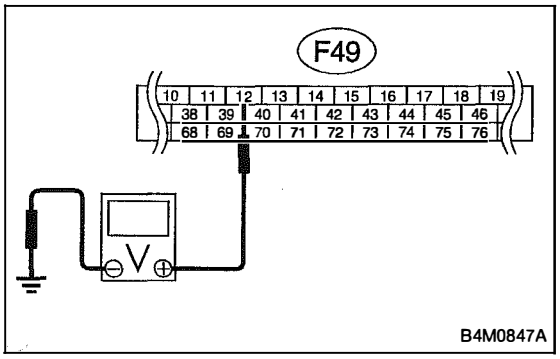
- Combination of AT control faults

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:





10Y1	CHECK BATTERY SHORT OF HARNESS.

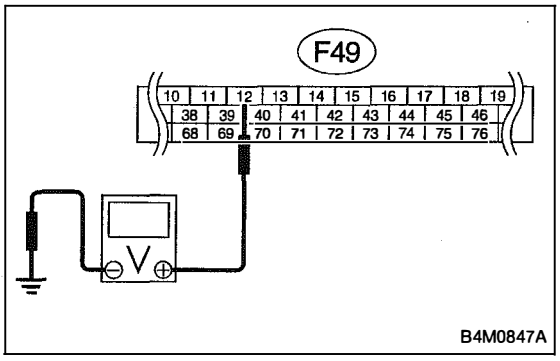
1) Turn ignition switch to OFF.
2) Disconnect two connectors from AT control module.
3) Disconnect connector from ABSCM.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10Y2**.

NO : Repair harness between AT control module and ABSCM.



10Y2	CHECK BATTERY SHORT OF HARNESS.

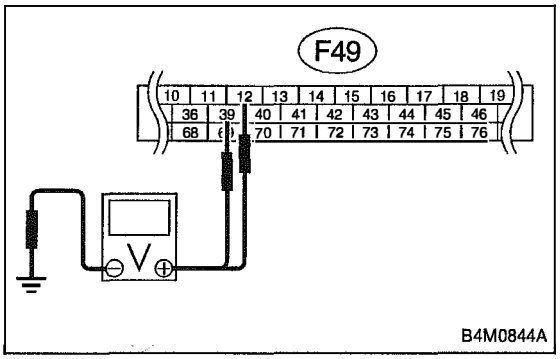
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10Y3**.

NO : Repair harness between AT control module and ABSCM.



10Y3	CHECK OPEN CIRCUIT OF HARNESS.

1) Turn ignition switch to OFF.
2) Connect all connectors to TCM.
3) Turn ignition switch to ON.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 12 (+) — Chassis ground (–):
(F49) No. 39 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **10Y4**.

NO : Repair harness/connector between TCM and ABSCM.

10Y4	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK ***: Is there poor contact in connectors between AT control module and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10Y5**.

10Y5	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10Y6**.

10Y6	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 46 (FB1)
GS POWER OVER

B4M0966

Z: TROUBLE CODE 46 GS POWER OVER — G SENSOR LINE VOLTAGE TOO HIGH —

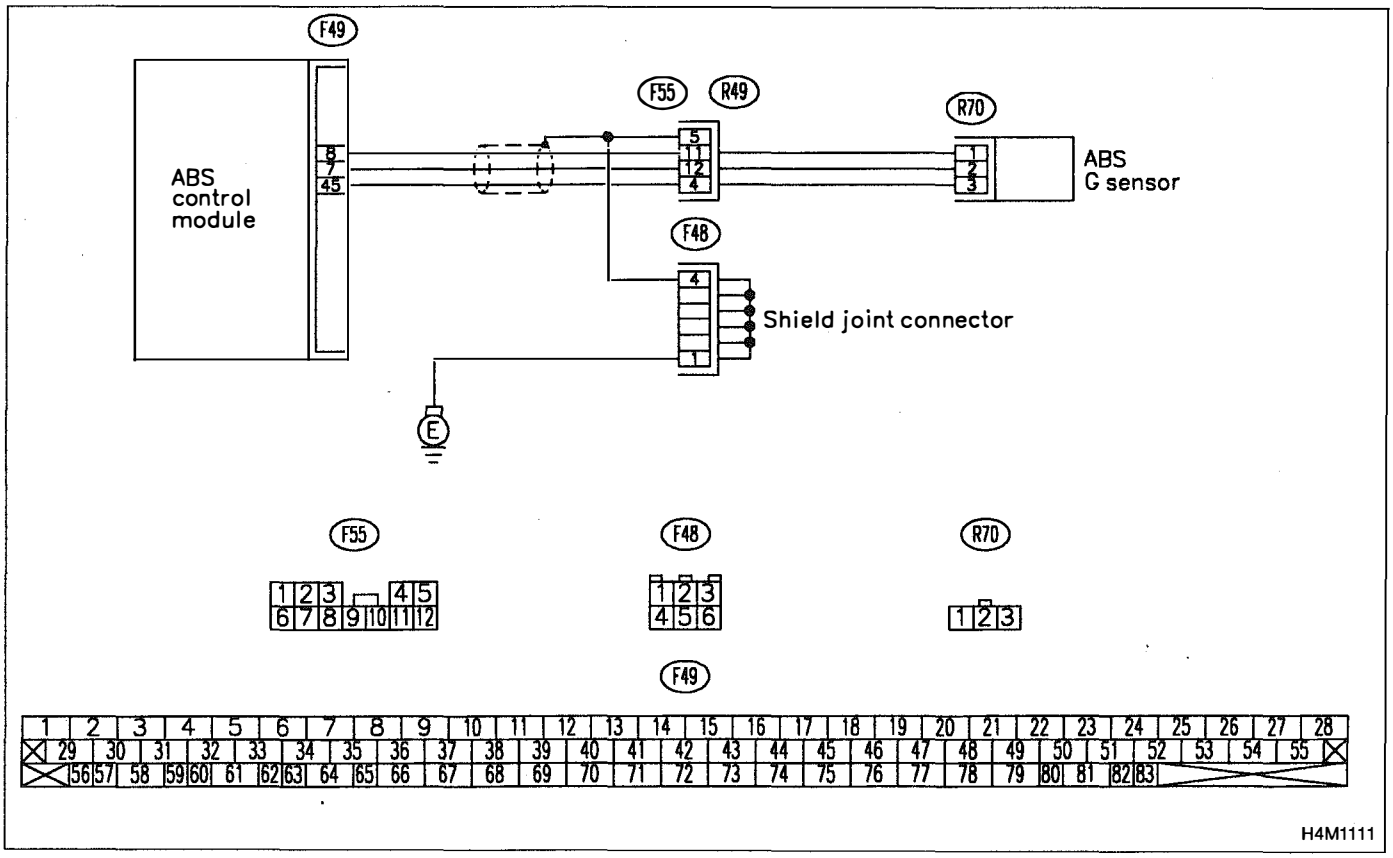
DIAGNOSIS:

- Faulty G sensor power supply voltage

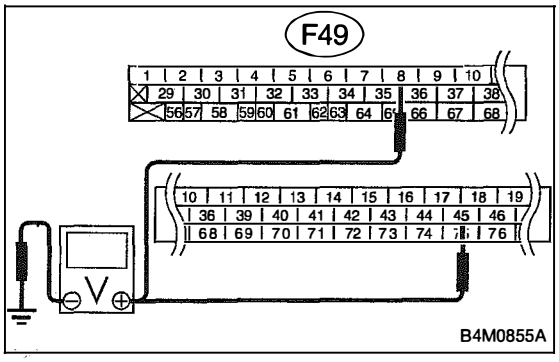
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1111



10Z1	CHECK BATTERY SHORT OF HARNESS.

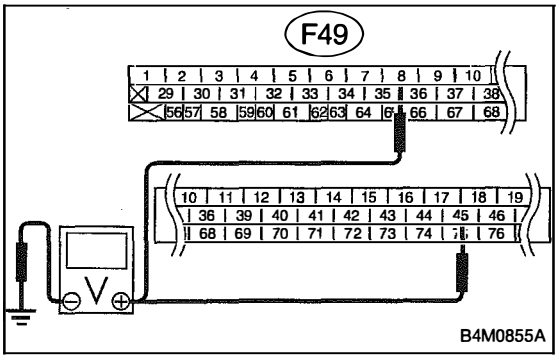
1) Turn ignition switch to OFF.
2) Remove console cover from console box.
3) Disconnect connector from G sensor.
4) Disconnect connector from ABSCM.
5) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 8 (+) — Chassis ground (–):
(F49) No. 45 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10Z2**.

NO : Repair harness between ABSCM and G sensor.



10Z2	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM and chassis ground.

Connector & terminal
(F49) No. 8 (+) — Chassis ground (–):
(F49) No. 45 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Replace ABSCM.

NO : Repair harness between ABSCM and chassis ground.

D•NEW 46 (FB1)
GS POWER LOW

B4M0967

AA: TROUBLE CODE 46 GS POWER LOW — G SENSOR LINE VOLTAGE TOO LOW —

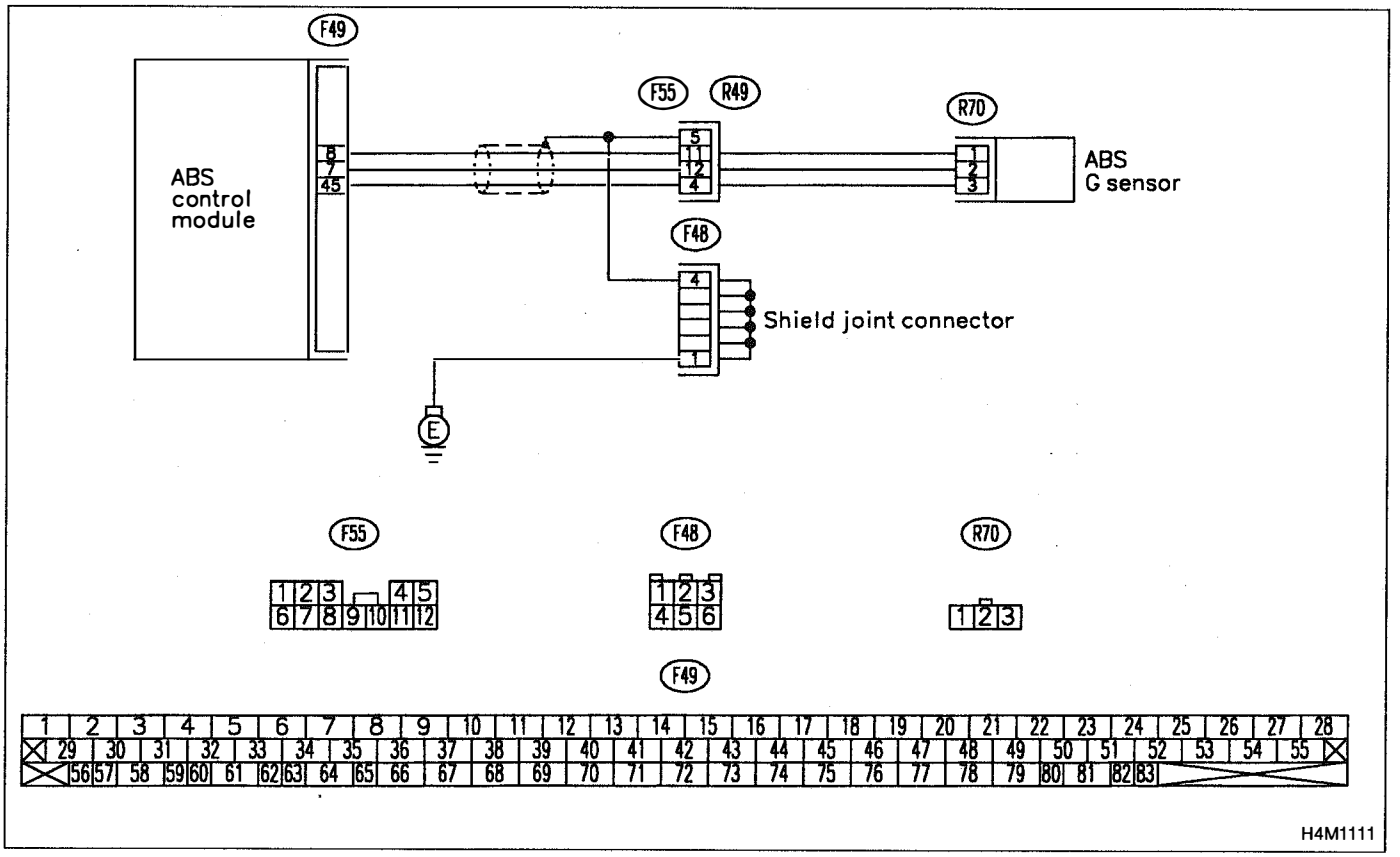
DIAGNOSIS:

- Faulty G sensor power supply voltage

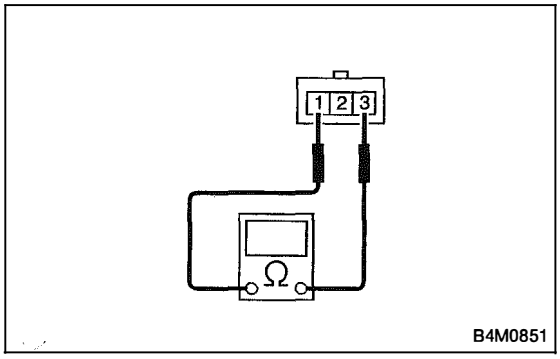
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1111



10AA1	CHECK G SENSOR.

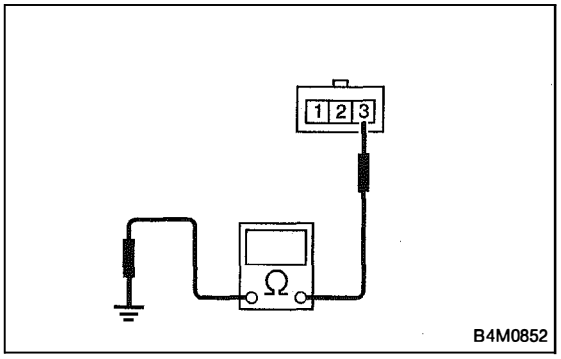
1) Turn ignition switch to OFF.
2) Remove console cover from console box.
3) Disconnect connector from G sensor.
4) Measure resistance of G sensor.

Terminal
No. 1 — No. 3:

CHECK ***: Is the resistance between 42 and 58 kΩ?***

YES : Go to step **10AA2**.

NO : Replace G sensor.



10AA2	CHECK GROUND SHORT OF G SENSOR.

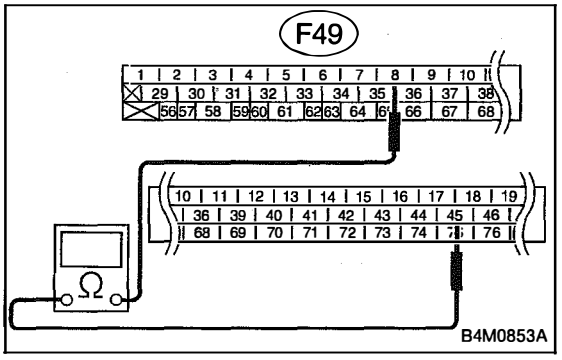
Measure resistance between G sensor and bracket.

Terminal
No. 3 — Bracket:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AA3**.

NO : Replace G sensor.



10AA3	CHECK SHORT OF HARNESS BETWEEN ABSCM AND G SENSOR.

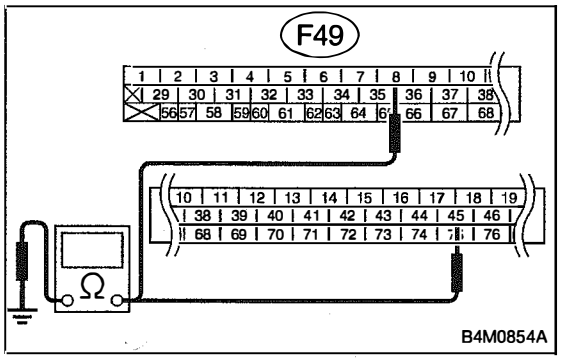
1) Disconnect connector from ABSCM.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 45 — No. 8

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AA4**.

NO : Repair harness between ABSCM and G sensor.



10AA4	CHECK GROUND SHORT OF HARNESS.

Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 8 — Chassis ground:
(F49) No. 45 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AA5**.
NO : Repair harness between ABSCM and G sensor.

10AA5	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***
YES : Repair connector.
NO : Go to step **10AA6**.

10AA6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***
YES : Replace ABSCM.
NO : Go to step **10AA7**.

10AA7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***
YES : Proceed with the diagnosis corresponding to the trouble code.
NO : A temporary poor contact.

MEMO:

D•NEW 51 (FB1)
V.RELAY

B4M0968

AB: TROUBLE CODE 51 V. RELAY — ABNORMAL VALVE RELAY —

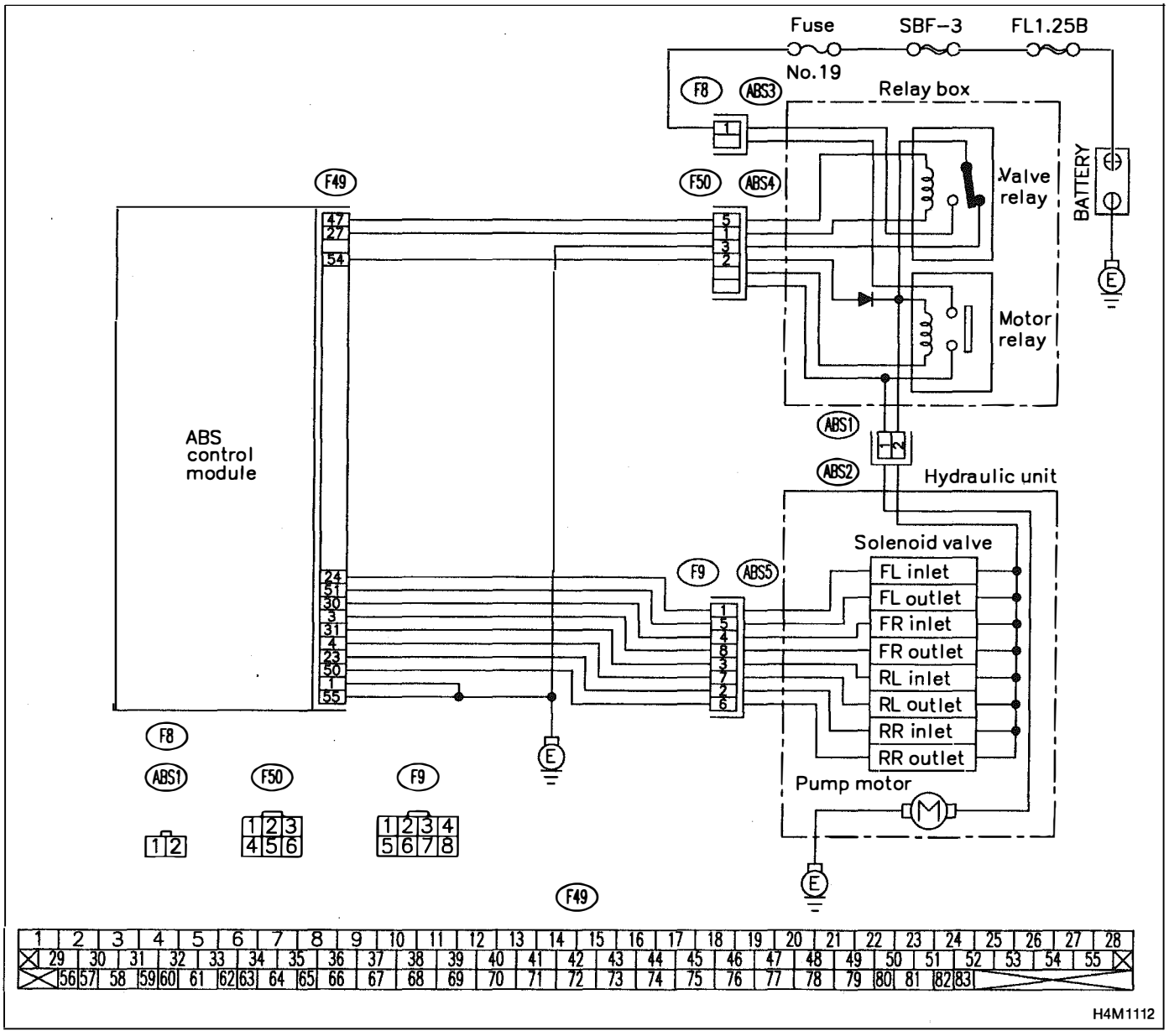
DIAGNOSIS:

- Faulty valve relay

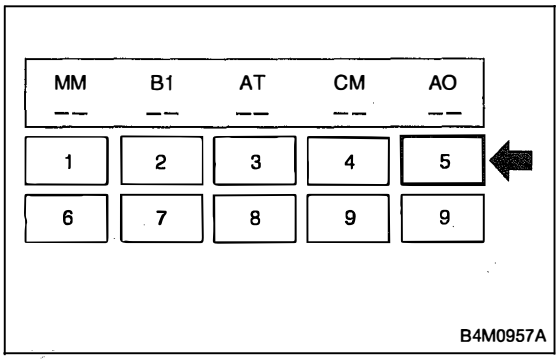
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1112



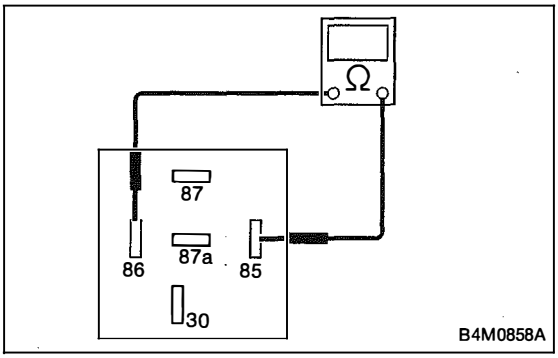
10AB1	CHECK FREEZE FRAME DATA.

Press [F], [E], [1] and [5] on the select monitor.

CHECK : ***Is the select monitor LED 5 off? Was the ABS inactive when the problem occurred?***

YES : Go to step **10AB2**.

NO : Go to step **10AB32**.



10AB2	CHECK RESISTANCE OF VALVE RELAY.

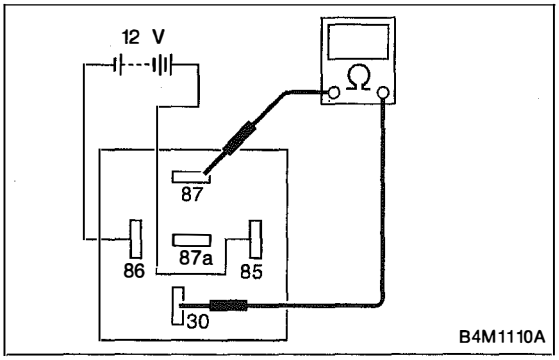
1) Turn ignition switch to OFF.
2) Remove valve relay from relay box.
3) Measure resistance between valve relay terminals.

Terminals
No. 85 — No. 86:

CHECK : ***Is the resistance between 93 and 113 Ω?***

YES : Go to step **10AB3**.

NO : Replace valve relay.



10AB3	CHECK CONTACT POINT OF VALVE RELAY.

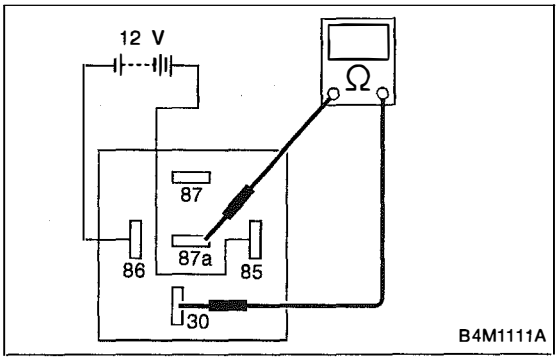
1) Connect battery to valve relay terminals No. 85 and No. 86.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK : ***Is the resistance less than 0.5 Ω?***

YES : Go to step **10AB4**.

NO : Replace valve relay.



10AB4	CHECK CONTACT POINT OF VALVE RELAY.

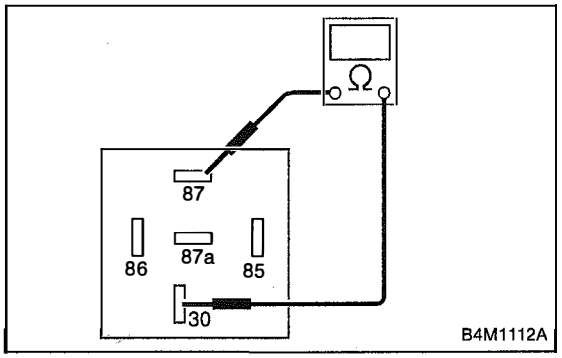
Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:

CHECK : ***Is the resistance more than 1 MΩ?***

YES : Go to step **10AB5**.

NO : Replace valve relay.

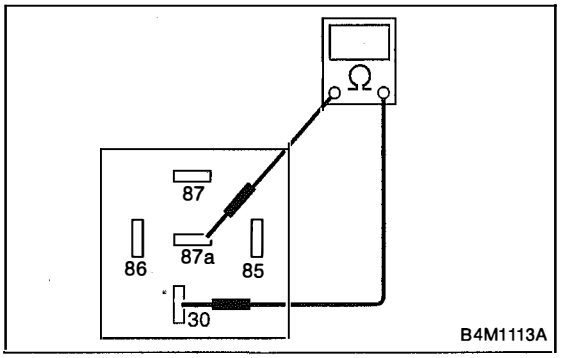


10AB5	CHECK CONTACT POINT OF VALVE RELAY.

1) Disconnect battery from valve relay terminals.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB6**.
NO : Replace valve relay.

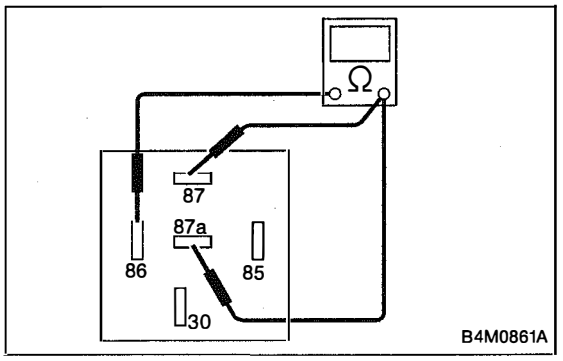


10AB6	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AB7**.
NO : Replace valve relay.

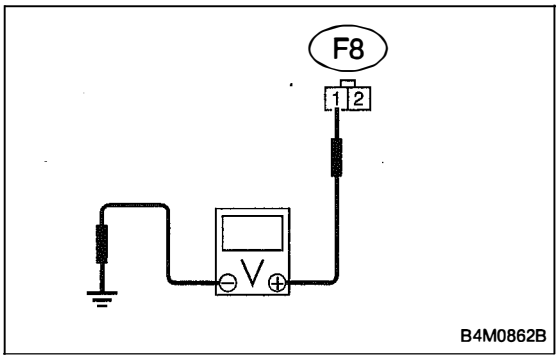


10AB7	CHECK SHORT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 86 — No. 87:
No. 86 — No. 87a:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB8**.
NO : Replace valve relay.

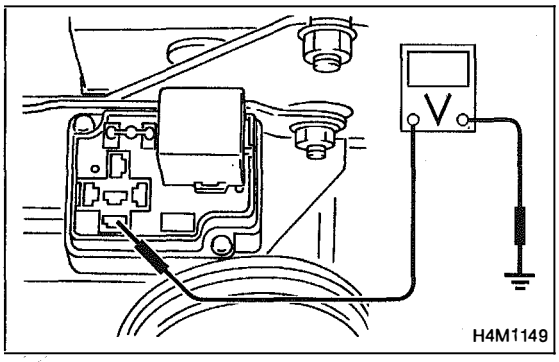


10AB8	CHECK POWER SUPPLY VOLTAGE AT VALVE RELAY CONTACT POINT.

1) Disconnect connector (F8) from relay box.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(F8) No. 1 (+) — Chassis ground (–):

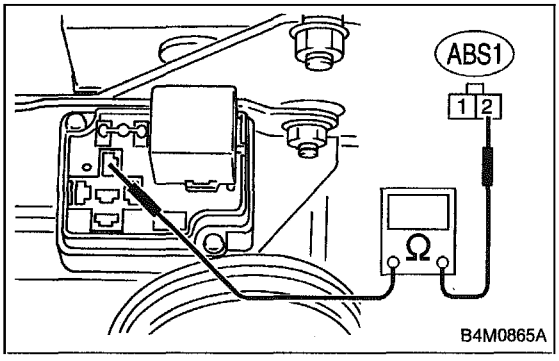
CHECK ***: Is the voltage between 10 V and 13 V?***
YES : Go to step **10AB9**.
NO : Repair harness connector between battery and relay box, and check fuse No. 19.



10AB9	CHECK OPEN AND GROUND SHORT CIRCUIT IN POWER SUPPLY CIRCUIT OF RELAY BOX.

1) Disconnect connector (ABS1) from hydraulic unit.
2) Connect connector (F8) to relay box.
3) Disconnect connector (F50) from relay box.
4) Measure voltage of relay box.

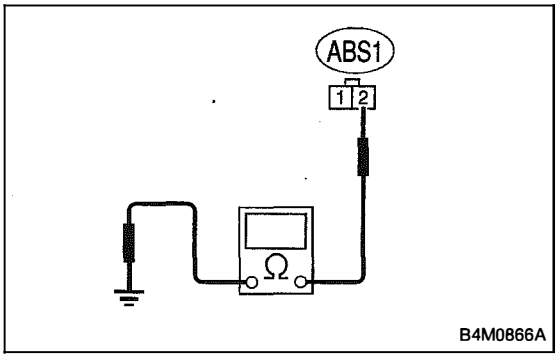
Connector & terminal
Valve relay installing point No. 87 — Chassis ground:
CHECK ***: Is the voltage between 10 V and 13 V?***
YES : Go to step **10AB10**.
NO : Replace relay box, and check fuse No. 19.



10AB10	CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.

Measure resistance between hydraulic unit connector and valve relay installing point.

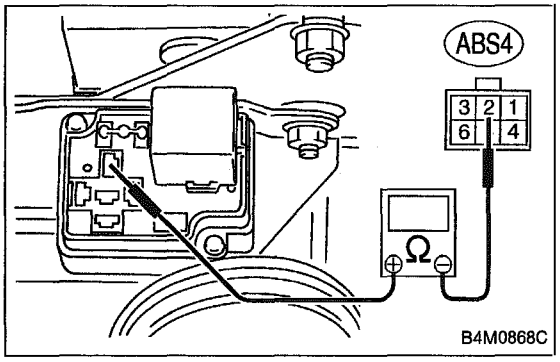
Connector & terminal
(ABS1) No. 2 — Valve relay installing point No. 30:
CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AB11**.
NO : Replace relay box.



10AB11	CHECK GROUND SHORT CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.

Measure resistance between relay box connector and chassis ground.

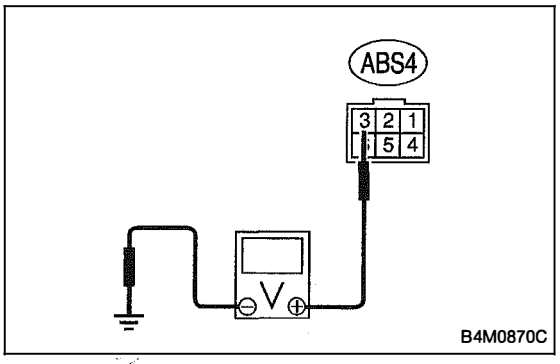
Connector & terminal
(ABS1) No. 2 — Chassis ground:
CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB12**.
NO : Replace relay box, and check fuse SBF6.



10AB12	CHECK DIODE OF RELAY BOX.

Measure resistance between relay box connector and valve relay installing point.

Connector & terminal
Valve relay installing point No. 30 (+) — (ABS4) No. 2 (–):
CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB13**.
NO : Replace relay box.



10AB13	CHECK BATTERY SHORT IN GROUND CIRCUIT OF RELAY BOX.

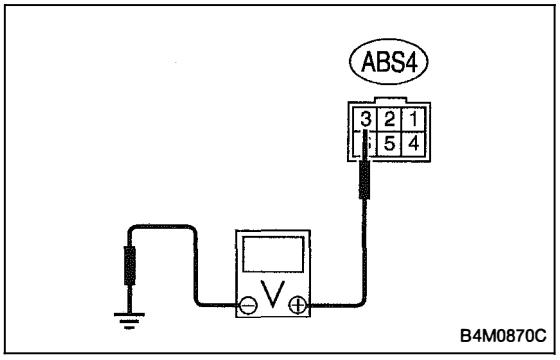
1) Disconnect connector from ABSCM.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB14**.

NO : Replace relay box, and check all fuses.



10AB14	CHECK BATTERY SHORT IN GROUND CIRCUIT OF RELAY BOX.

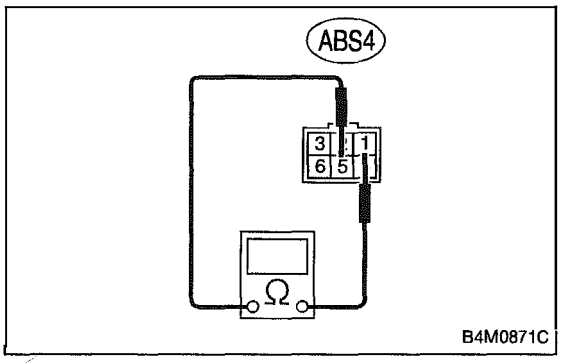
1) Turn ignition switch to ON.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 3 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB15**.

NO : Replace relay box, and check all fuses.

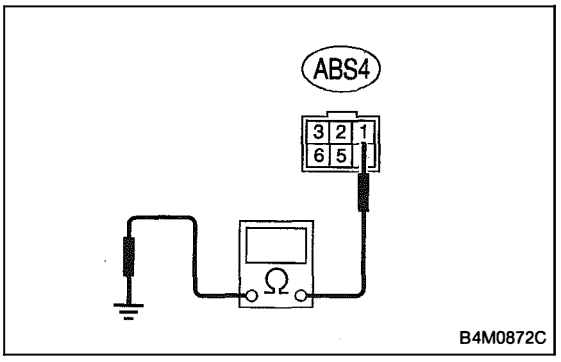


10AB15	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

1) Turn ignition switch to OFF.
2) Install valve relay to relay box.
3) Measure resistance between relay box connector terminals.

Connector & terminal
(ABS4) No. 1 — No. 5:

CHECK ***: Is the resistance between 93 and 113 Ω?***
YES : Go to step **10AB16**.
NO : Replace relay box.

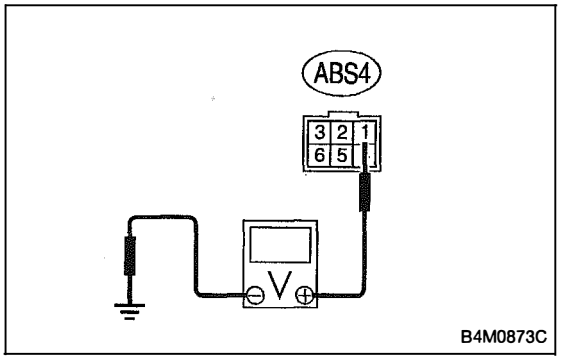


10AB16	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

Measure resistance between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB17**.
NO : Replace relay box, and check all fuses.

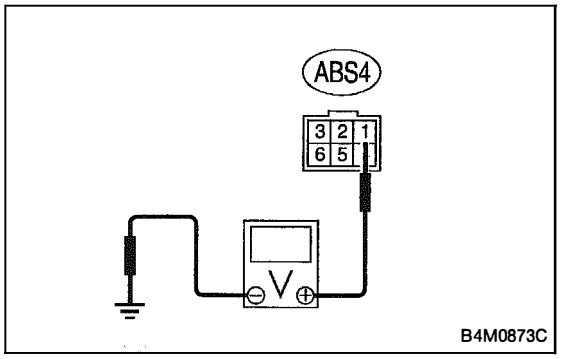


10AB17	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10AB18**.
NO : Replace relay box, and check fuse No. 19 and SBF6.



10AB18	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

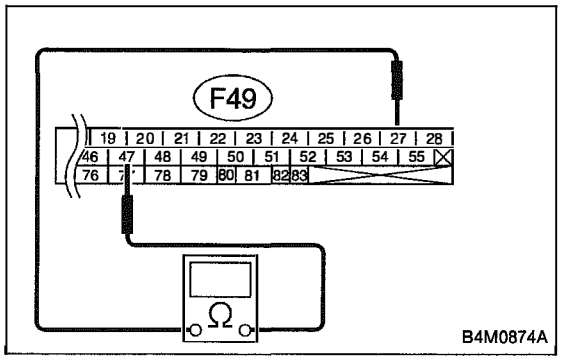
1) Turn ignition switch to ON.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB19**.

NO : Replace relay box, and check fuse No. 19 and SBF6.



10AB19	CHECK OPEN CIRCUIT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

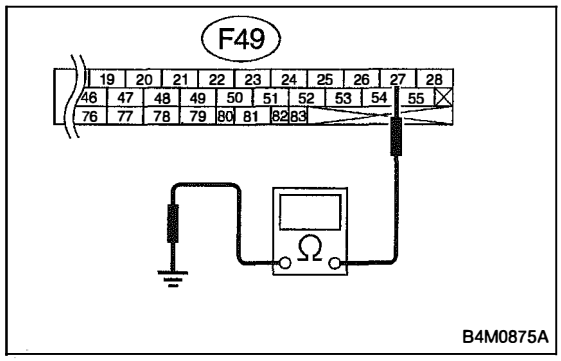
1) Turn ignition switch to OFF.
2) Connect connector (F50) to relay box.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 27 — No. 47:

CHECK ***: Is the resistance between 93 and 113 Ω?***

YES : Go to step **10AB20**.

NO : Repair harness between ABSCM and relay box, and check fuse No. 18.

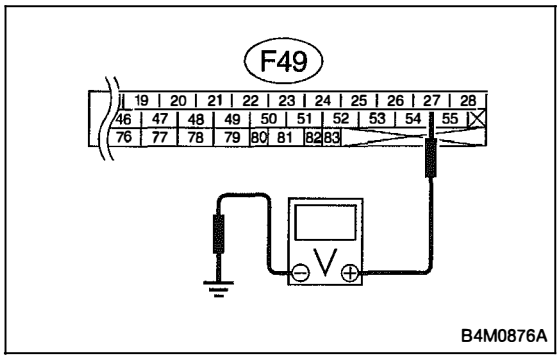


10AB20	CHECK GROUND SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

1) Disconnect connector (F50) from relay box.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AB21**.
NO : Repair harness between ABSCM and relay box, and check fuse No. 18.

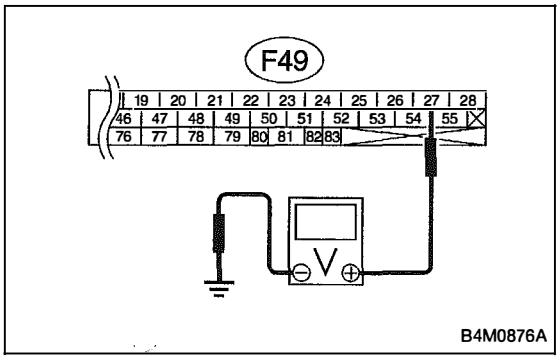


10AB21	CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

1) Connect connector (F50) to relay box.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10AB22**.
NO : Repair harness between ABSCM and relay box, and check all fuses.



10AB22	CHECK BATTERY SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

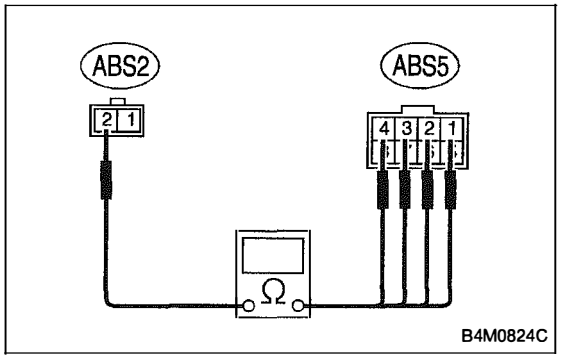
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB23.**

NO : Repair harness between ABSCM and relay box, and check all fuses.



10AB23	CHECK RESISTANCE OF INLET SOLENOID VALVE.

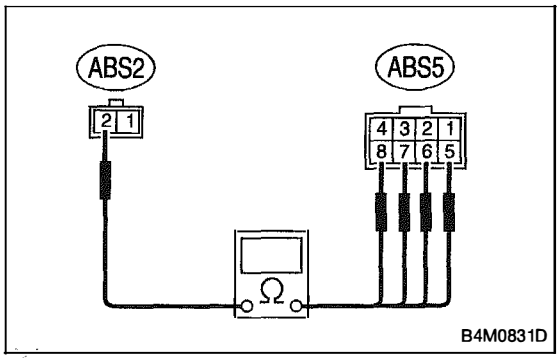
1) Turn ignition switch to OFF.
2) Disconnect connector from hydraulic unit.
3) Measure resistance between hydraulic unit connector terminals.

Connector & terminal
(ABS5) No. 4 — (ABS2) No. 2:
(ABS5) No. 1 — (ABS2) No. 2:
(ABS5) No. 2 — (ABS2) No. 2:
(ABS5) No. 3 — (ABS2) No. 2:

CHECK ***: Is the resistance between 7.8 and 9.2 Ω?***

YES : Go to step **10AB24.**

NO : Replace hydraulic unit.



10AB24	CHECK RESISTANCE OF OUTLET SOLENOID VALVE.

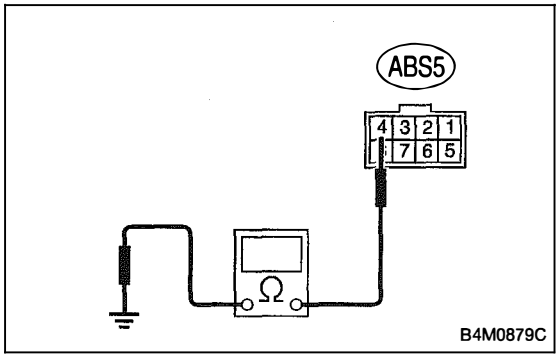
Measure resistance between hydraulic unit connector terminals.

Connector & terminal
(ABS5) No. 8 — (ABS2) No. 2:
(ABS5) No. 5 — (ABS2) No. 2:
(ABS5) No. 6 — (ABS2) No. 2:
(ABS5) No. 7 — (ABS2) No. 2:

CHECK ***: Is the resistance between 3.8 and 4.8 Ω?***

YES : Go to step **10AB25**.

NO : Replace hydraulic unit.



10AB25	CHECK GROUND SHORT OF SOLENOID VALVE.

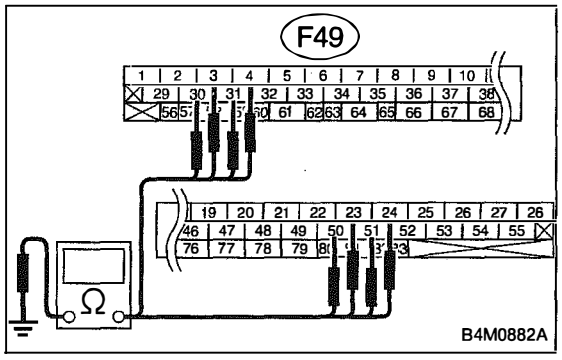
Measure resistance between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AB26**.

NO : Replace hydraulic unit, and check all fuses.



10AB26	CHECK GROUND SHORT OF HARNESS.

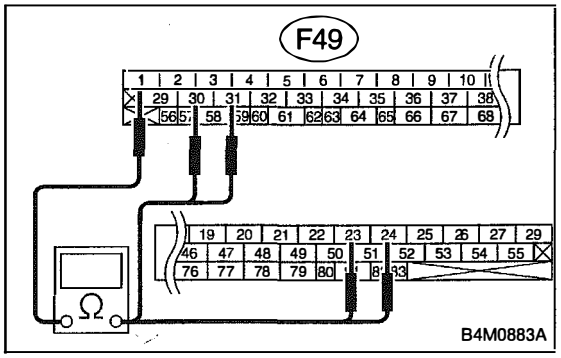
1) Disconnect connector from hydraulic unit.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 — Chassis ground:
(F49) No. 24 — Chassis ground:
(F49) No. 23 — Chassis ground:
(F49) No. 31 — Chassis ground:
(F49) No. 3 — Chassis ground:
(F49) No. 51 — Chassis ground:
(F49) No. 50 — Chassis ground:
(F49) No. 4 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AB27**.

NO : Repair harness between hydraulic unit and ABSCM.



10AB27	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

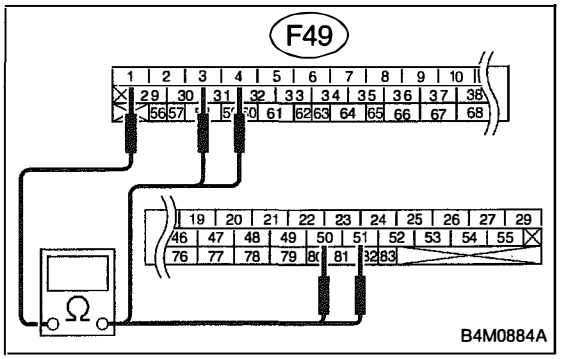
1) Connect connector to hydraulic unit.
2) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 30 — No. 1:
(F49) No. 24 — No. 1:
(F49) No. 23 — No. 1:
(F49) No. 31 — No. 1:

CHECK ***: Is the resistance between 8.3 and 9.7 Ω?***

YES : Go to step **10AB28**.

NO : Repair harness/connector between hydraulic unit and ABSCM.



10AB28	CHECK HARNESS/CONNECTOR BETWEEN ABSCM AND HYDRAULIC UNIT.

Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 3 — No. 1:
(F49) No. 51 — No. 1:
(F49) No. 50 — No. 1:
(F49) No. 4 — No. 1:

CHECK ***: Is the resistance between 4.3 and 5.3 Ω?***

YES : Go to step **10AB29**.

NO : Repair harness/connector between hydraulic unit and ABSCM.

10AB29	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connector between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AB30**.

10AB30	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

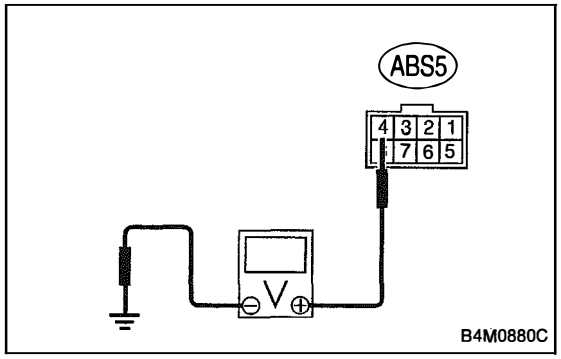
NO : Go to step **10AB31**.

10AB31	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



10AB32	CHECK BATTERY SHORT OF SOLENOID VALVE.

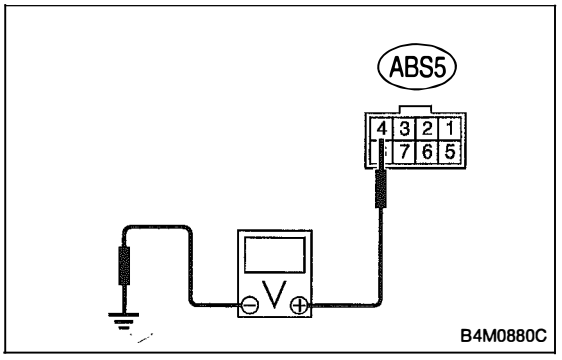
1) Turn ignition switch to OFF.
2) Disconnect connectors (ABS1, F9) from hydraulic unit.
3) Disconnect connector from ABSCM.
4) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **10AB33**.

NO : Replace hydraulic unit, and check all fuses.



10AB33	CHECK BATTERY SHORT OF SOLENOID VALVE.

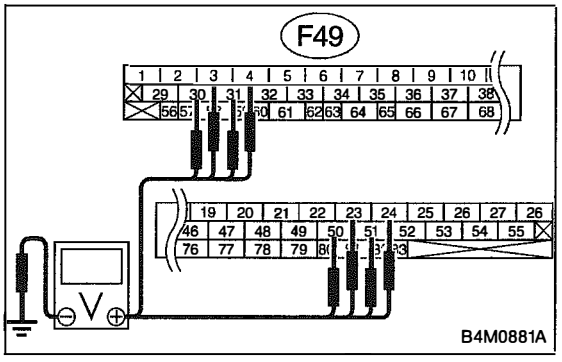
1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB34**.

NO : Replace hydraulic unit, and check all fuses.



10AB34	CHECK BATTERY SHORT OF HARNESS.

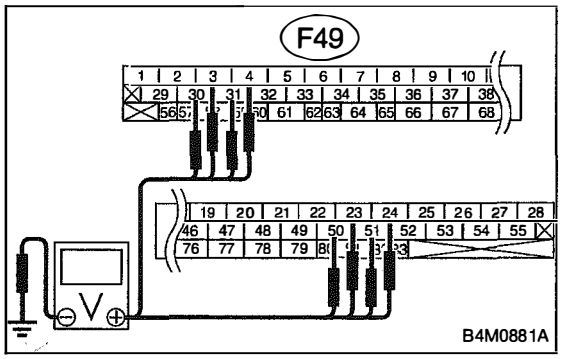
1) Turn ignition switch to OFF.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB35**.

NO : Repair harness between hydraulic unit and ABSCM, and check all fuses.



10AB35	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AB36.**

NO : Repair harness between hydraulic unit and ABSCM, and check all fuses.

10AB36	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AB37.**

10AB37	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 51 (FB1)
V.RELAY ON

B4M0802

AC: TROUBLE CODE 51 V. RELAY ON — VALVE RELAY ON FAILURE —

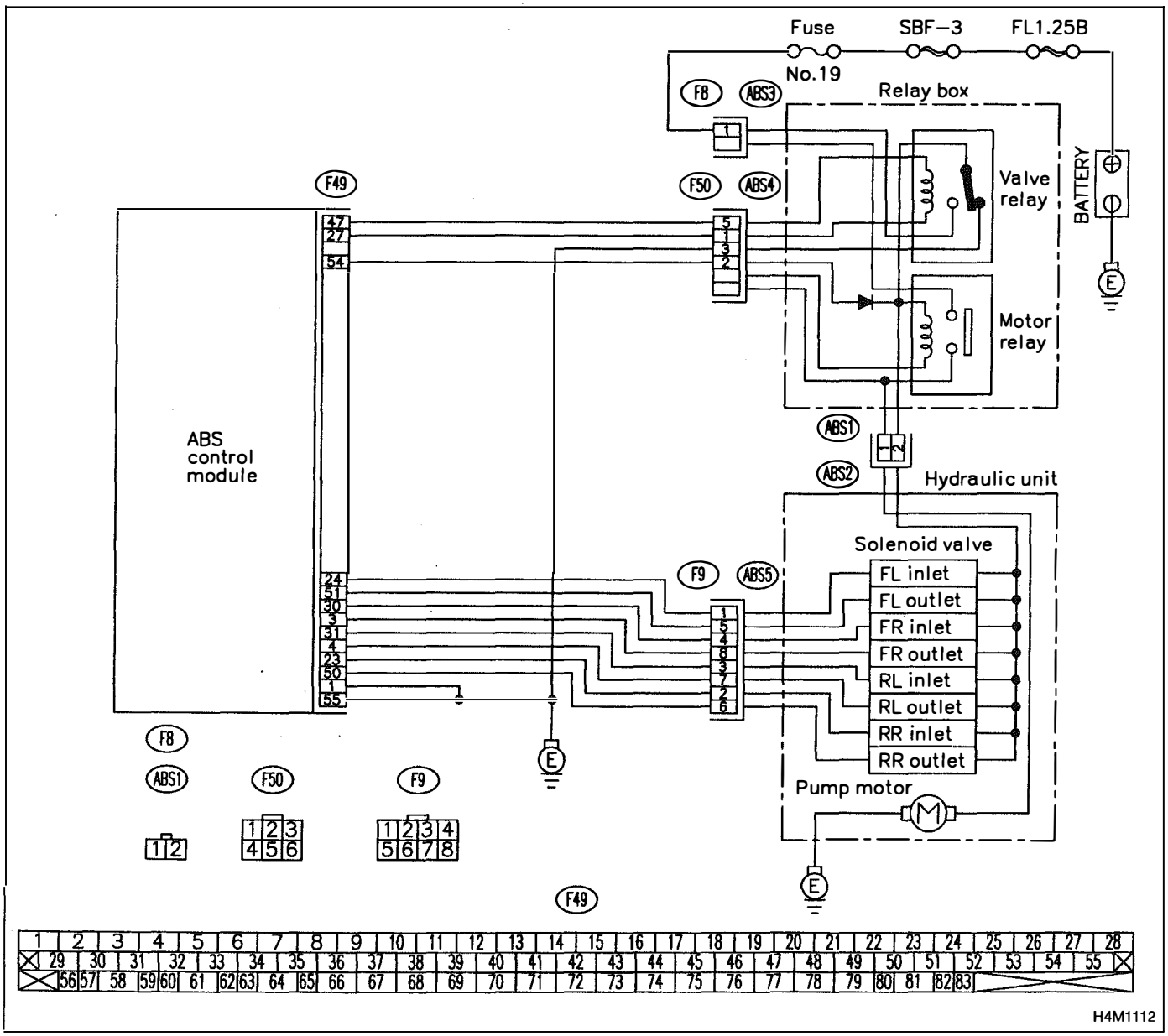
DIAGNOSIS:

- Faulty valve relay

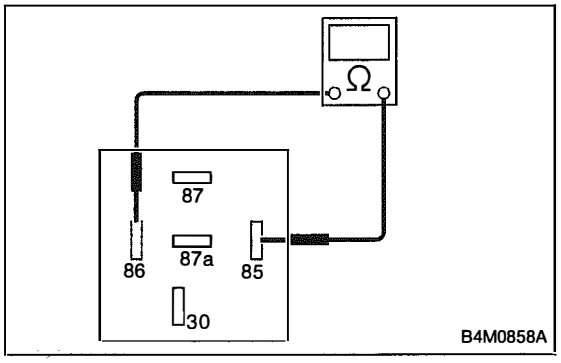
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1112

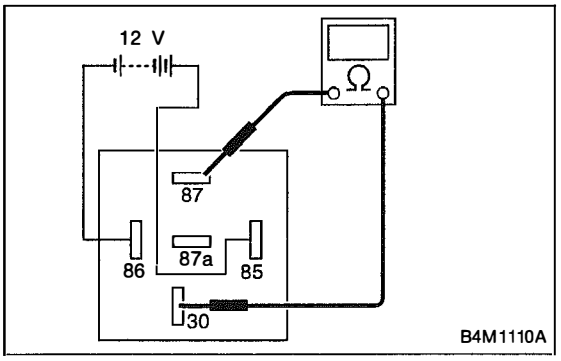


10AC1	CHECK RESISTANCE OF VALVE RELAY.

1) Turn ignition switch to OFF.
2) Remove valve relay from relay box.
3) Measure resistance between valve relay terminals.

Terminals
No. 85 — No. 86:

CHECK ***: Is the resistance between 93 and 113 Ω?***
YES : Go to step **10AC2**.
NO : Replace valve relay.

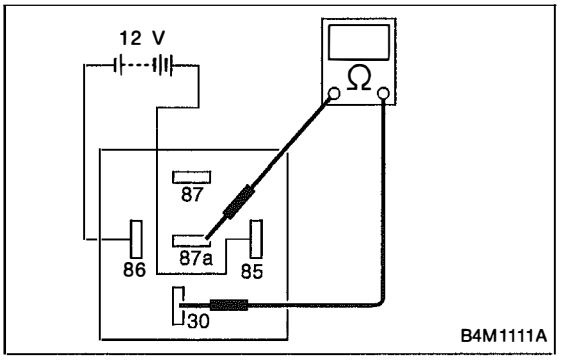


10AC2	CHECK CONTACT POINT OF VALVE RELAY.

1) Connect battery to valve relay terminals No. 85 and No. 86.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AC3**.
NO : Replace valve relay.

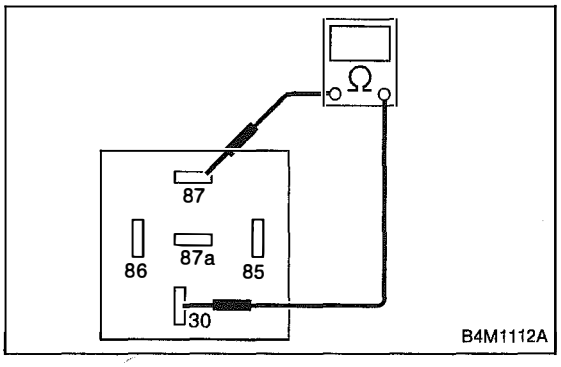


10AC3	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AC4**.
NO : Replace valve relay.

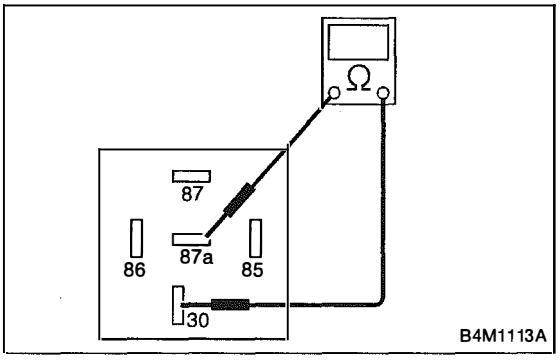


10AC4	CHECK CONTACT POINT OF VALVE RELAY.

1) Disconnect battery from valve relay terminals.
2) Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AC5**.
NO : Replace valve relay.

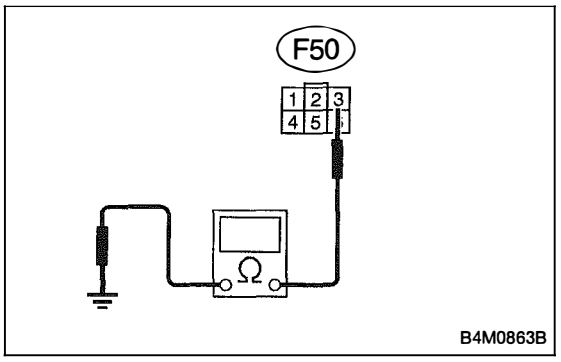


10AC5	CHECK CONTACT POINT OF VALVE RELAY.

Measure resistance between valve relay terminals.

Terminals
No. 30 — No. 87a:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AC6**.
NO : Replace valve relay.

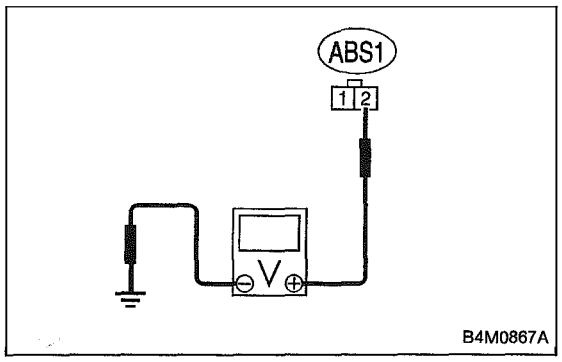


10AC6	CHECK GROUND CIRCUIT OF RELAY BOX.

1) Disconnect connector (F50) from relay box.
2) Measure resistance between relay box connector and chassis ground.

Connector & terminal
(F50) No. 3 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AC7**.
NO : Repair relay box ground harness.



10AC7	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

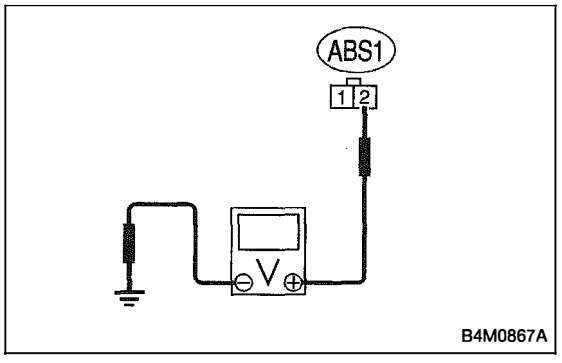
1) Disconnect connector from ABSCM.
2) Disconnect connector (ABS1) from hydraulic unit.
3) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS1) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC8**.

NO : Replace relay box, and check fuse No. 19 and SBF6.



10AC8	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

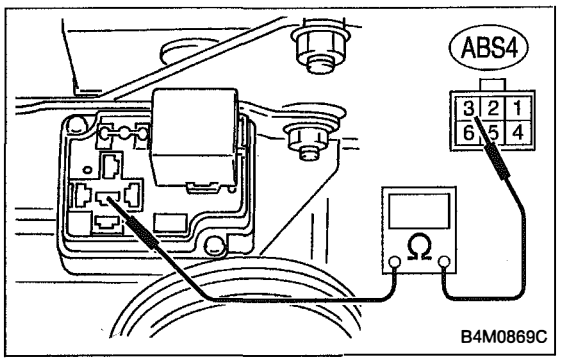
1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS1) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC9**.

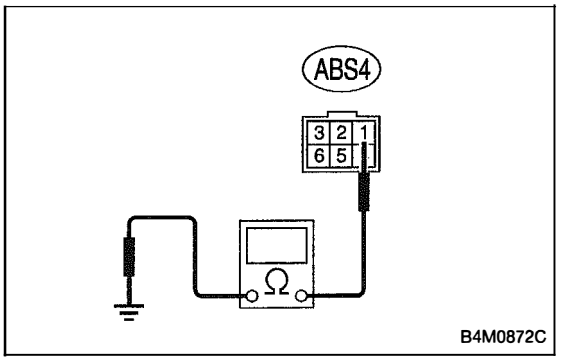
NO : Replace relay box, and check fuse No. 9 and SBF6.



10AC9	CHECK OPEN CIRCUIT IN GROUND CIRCUIT OF RELAY BOX.

1) Turn ignition switch to OFF.
2) Measure resistance between relay box connector and valve relay installing point.

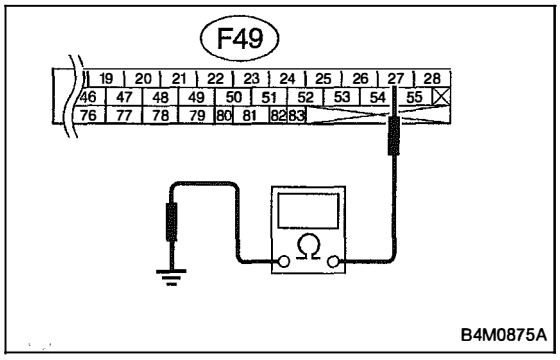
Connector & terminal
(ABS4) No. 3 — Valve relay installing point No. 87a:
CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AC10**.
NO : Replace relay box.



10AC10	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

1) Install valve relay to relay box.
2) Measure resistance between relay box connector and chassis ground.

Connector & terminal
(ABS4) No. 1 — Chassis ground:
CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AC11**.
NO : Replace relay box, and check all fuses.



10AC11	CHECK GROUND SHORT IN CONTROL SYSTEM HARNESS OF VALVE RELAY.

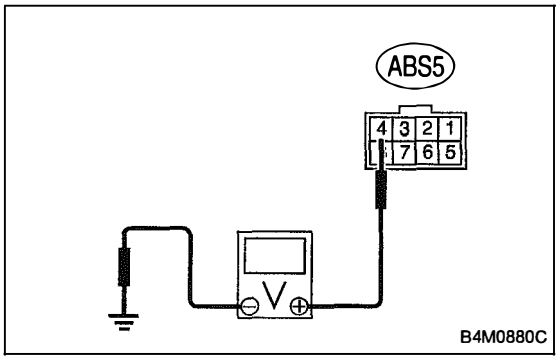
Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 27 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AC12**.

NO : Repair harness between ABSCM and relay box, and check fuse No. 18.



10AC12	CHECK BATTERY SHORT OF SOLENOID VALVE.

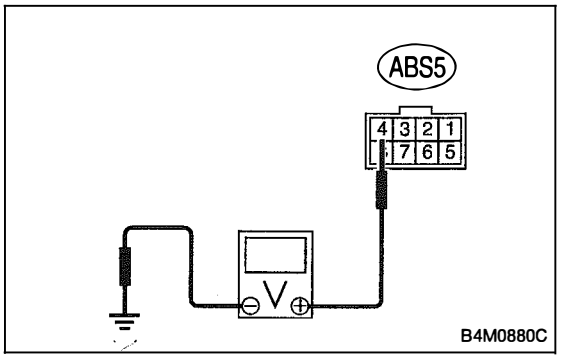
1) Disconnect connector (ABS1, F9) from hydraulic unit.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC13**.

NO : Replace hydraulic unit, and check all fuses.



10AC13	CHECK BATTERY SHORT OF SOLENOID VALVE.

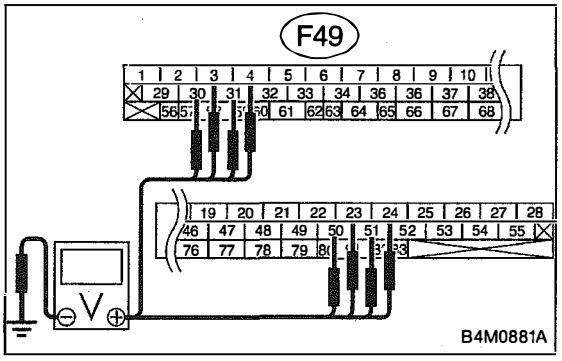
1) Turn ignition switch to ON.
2) Measure voltage between hydraulic unit connector and chassis ground.

Connector & terminal
(ABS5) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC14**.

NO : Replace hydraulic unit, and check all fuses.



10AC14	CHECK BATTERY SHORT OF HARNESS.

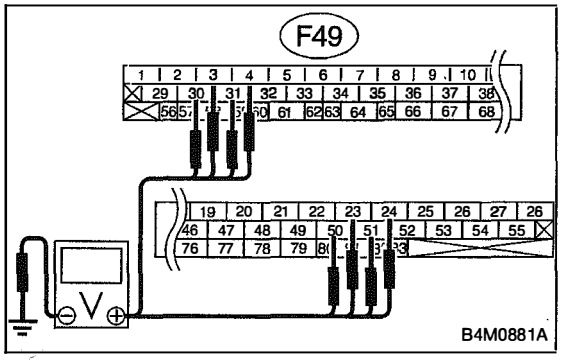
1) Turn ignition switch to OFF.
2) Disconnect connector from hydraulic unit.
3) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC15**.

NO : Repair harness between hydraulic unit and ABSCM, and check all fuses.



10AC15	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 30 (+) — Chassis ground (–):
(F49) No. 24 (+) — Chassis ground (–):
(F49) No. 23 (+) — Chassis ground (–):
(F49) No. 31 (+) — Chassis ground (–):
(F49) No. 3 (+) — Chassis ground (–):
(F49) No. 51 (+) — Chassis ground (–):
(F49) No. 50 (+) — Chassis ground (–):
(F49) No. 4 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AC16**.

NO : Repair harness between hydraulic unit and ABSCM, and check all fuses.

10AC16	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connectors between ABSCM and hydraulic unit? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AC17**.

10AC17	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AC18**.

10AC18	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 52 (FB1)
M.RELAY OPEN

B4M0969

AD: TROUBLE CODE 52 M. RELAY OPEN — OPEN CIRCUIT OF MOTOR RELAY —

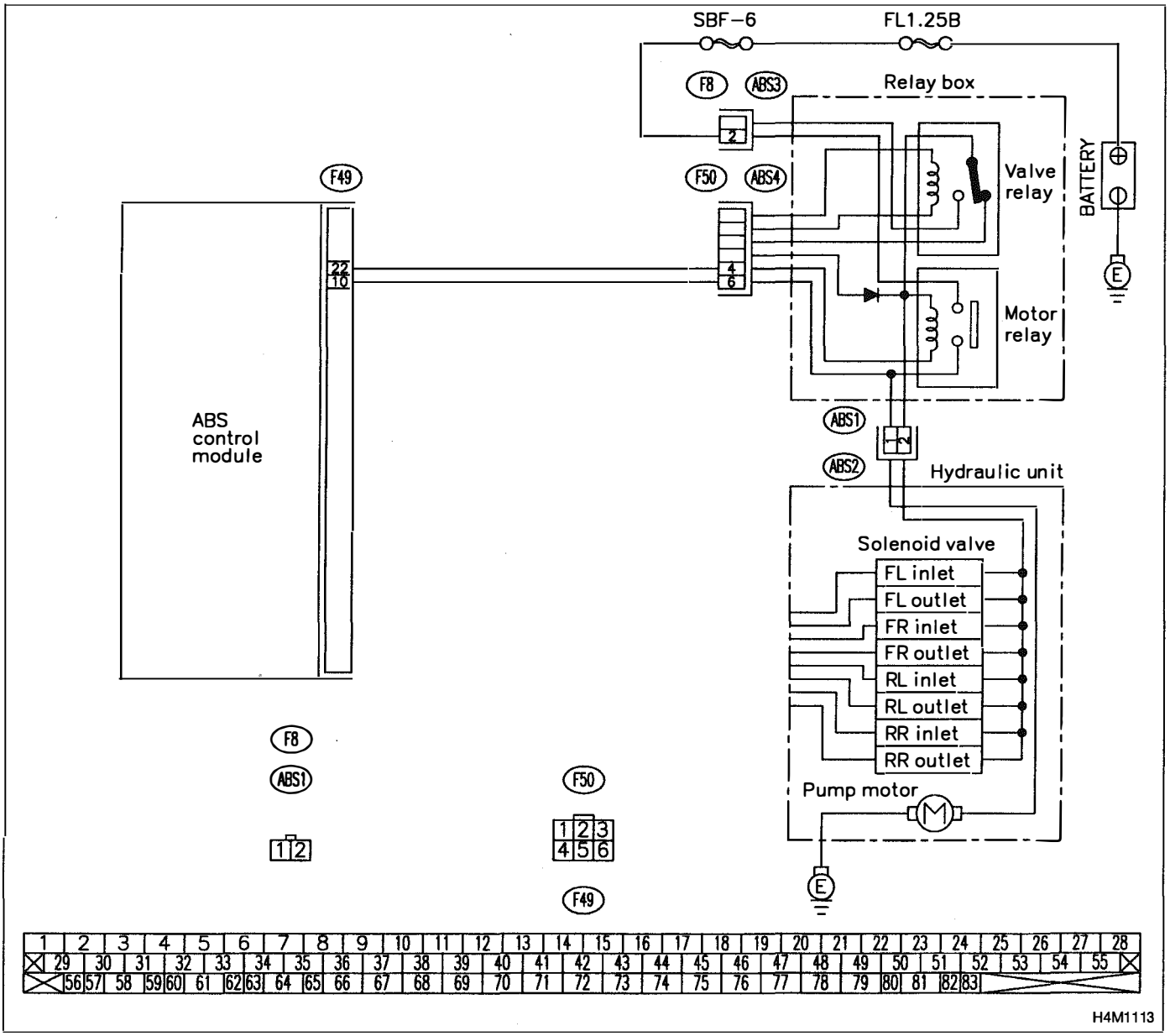
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

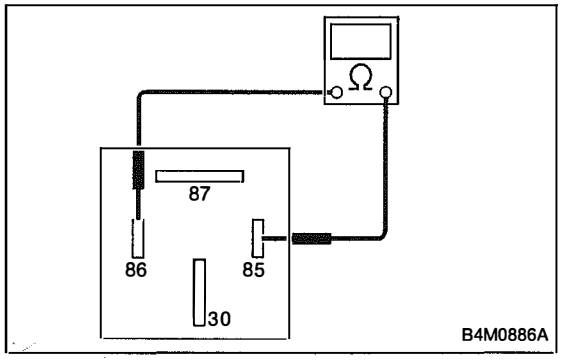
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1113

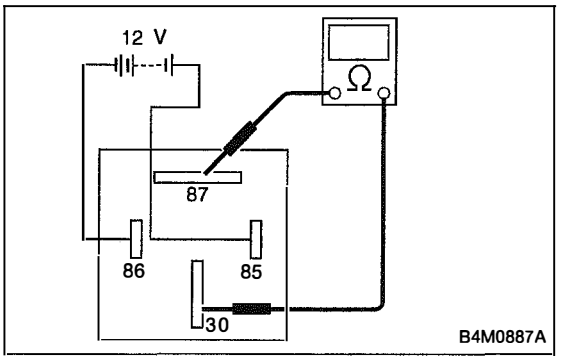


10AD1	CHECK RESISTANCE OF MOTOR RELAY.

1) Turn ignition switch to OFF.
2) Remove motor relay from relay box.
3) Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 86:

CHECK ***: Is the resistance between 70 and 90 Ω?***
YES : Go to step **10AD2**.
NO : Replace motor relay.

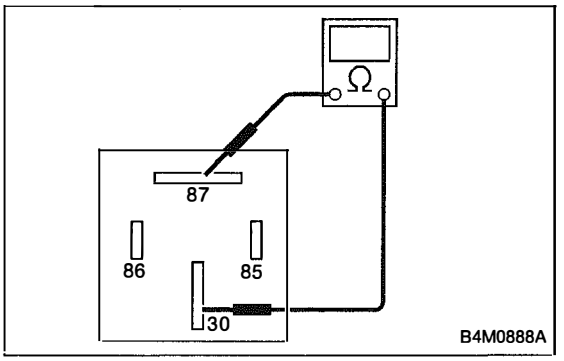


10AD2	CHECK CONTACT POINT OF MOTOR RELAY.

1) Connect battery to motor relay terminals No. 85 and No. 86.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AD3**.
NO : Replace motor relay.

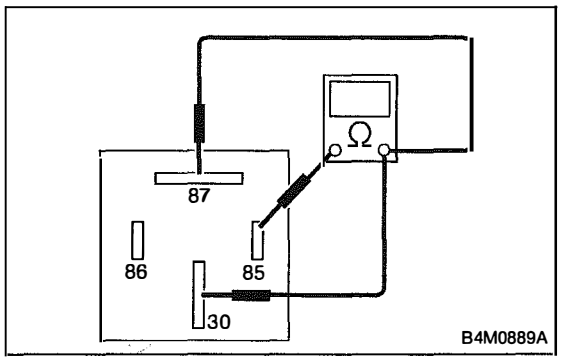


10AD3	CHECK CONTACT POINT OF MOTOR RELAY.

1) Disconnect battery from motor relay terminals.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AD4**.
NO : Replace motor relay.



10AD4	CHECK SHORT OF MOTOR RELAY.

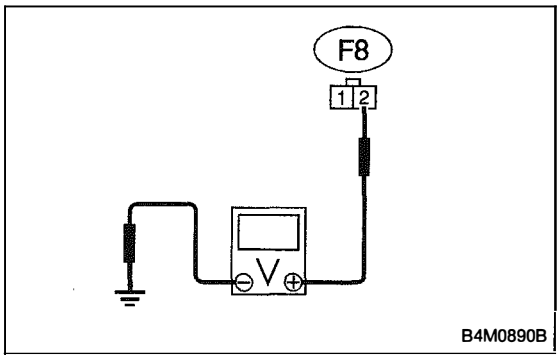
Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 30:
No. 85 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AD5**.

NO : Replace motor relay.



10AD5	CHECK INPUT VOLTAGE OF RELAY BOX.

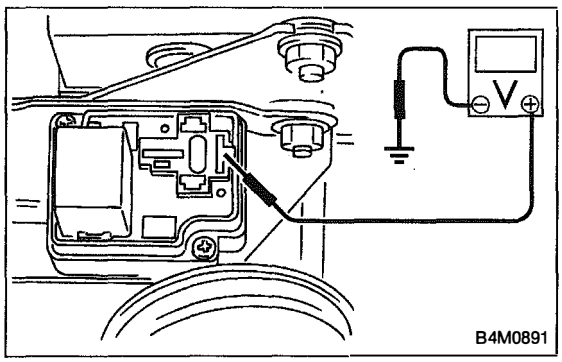
1) Disconnect connector (F8) from relay box.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(F8) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **10AD6**.

NO : Repair harness/connector between battery and relay box, and check fuse SBF6.



10AD6	CHECK INPUT VOLTAGE OF MOTOR RELAY.

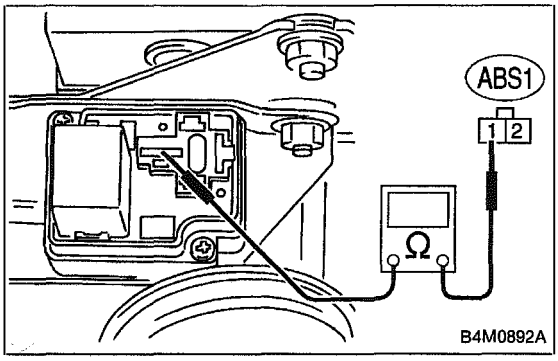
1) Connect connector (F8) to relay box.
2) Measure voltage between relay box and chassis ground.

Connector & terminal
Relay installing point No. 87 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **10AD7**.

NO : Replace relay box, and fuse SBF6.



10AD7	CHECK OPEN CIRCUIT IN CONTACT POINT CIRCUIT OF RELAY BOX.

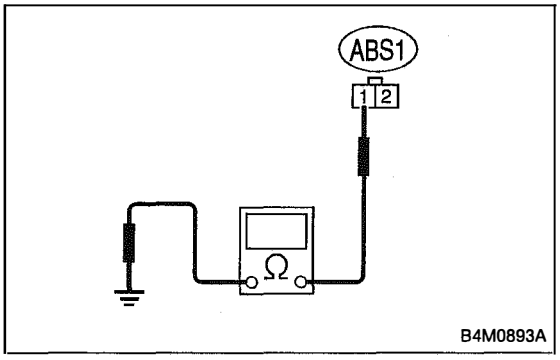
1) Disconnect connector (ABS1) from hydraulic unit.
2) Measure resistance between hydraulic unit and motor relay installing portion.

Connector & terminal
(ABS1) No. 1 — Motor relay installing portion No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10AD8**.

NO : Replace relay box.



10AD8	CHECK GROUND SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

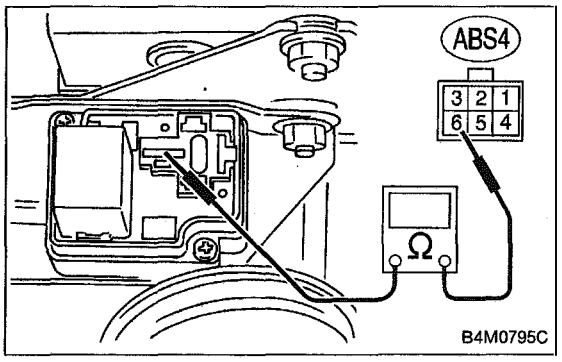
Measure resistance between hydraulic unit and chassis ground.

Connector & terminal
(ABS1) No. 1 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AD9**.

NO : Replace relay box, and check fuse No. 19.



10AD9	CHECK OPEN CIRCUIT IN MONITOR SYSTEM CIRCUIT OF RELAY BOX.

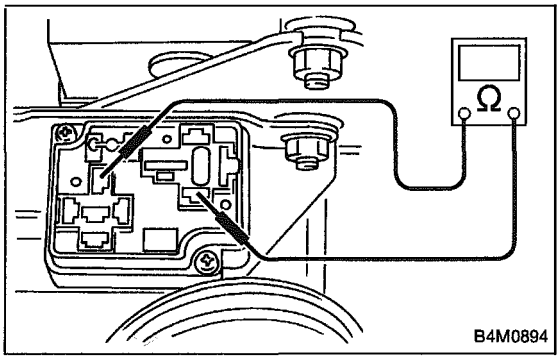
1) Disconnect connector (F50) from relay box.
2) Measure resistance between relay box connector and motor relay installing point.

Connector & terminal
(ABS4) No. 6 — Motor relay installing point No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10AD10**.

NO : Replace relay box.

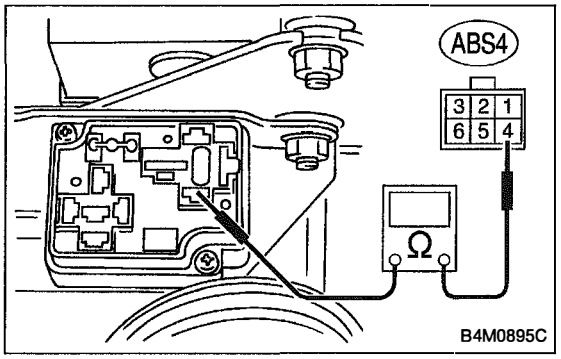


10AD10	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

1) Remove valve relay from relay box.
2) Measure resistance between motor relay installing point and valve relay installing point.

Connector & terminal
Motor relay installing point No. 86 — Valve relay installing point No. 30:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AD11**.
NO : Replace relay box.

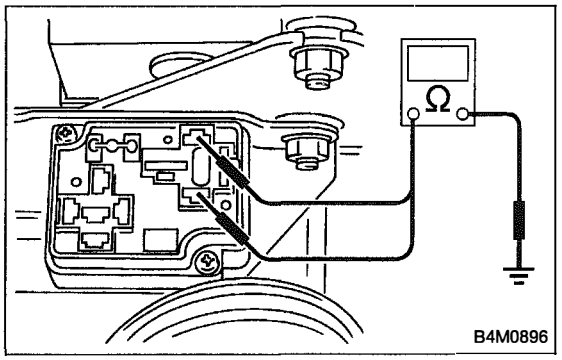


10AD11	CHECK OPEN CIRCUIT IN CONTROL CIRCUIT OF RELAY BOX.

Measure resistance between motor relay installing point and relay box connector.

Connector & terminal
Motor relay installing point No. 86 — (ABS4) No. 4:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AD12**.
NO : Replace relay box.

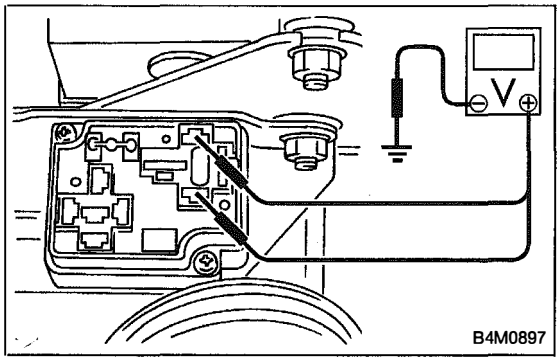


10AD12	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

Measure resistance between relay box and chassis ground.

Connector & terminal
Motor relay installing point No. 86 — Chassis ground:
Motor relay installing point No. 85 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AD13**.
NO : Replace relay box, and check fuse No. 19.

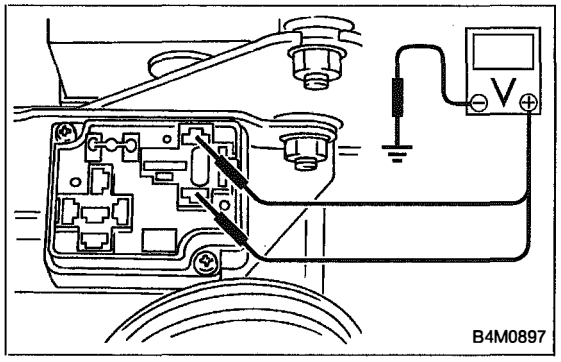


10AD13	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

1) Disconnect connector from ABSCM.
2) Measure voltage between motor relay installing point and chassis ground.

Connector & terminal
Motor relay installing point No. 85 (+) — Chassis ground (–):
Motor relay installing point No. 86 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10AD14**.
NO : Replace relay box, and check all fuses.

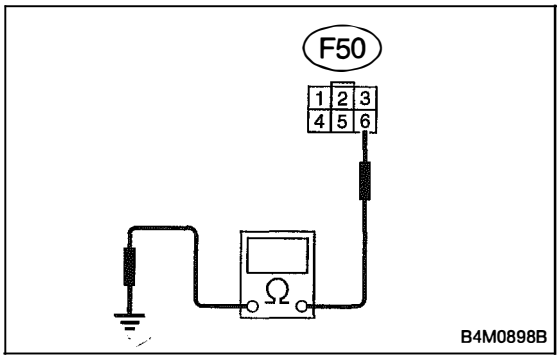


10AD14	CHECK BATTERY SHORT IN CONTROL CIRCUIT OF RELAY BOX.

1) Turn ignition switch to ON.
2) Measure voltage between motor relay installing point and chassis ground.

Connector & terminal
Motor relay installing point No. 85 (+) — Chassis ground (–):
Motor relay installing point No. 86 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***
YES : Go to step **10AD15**.
NO : Replace relay box, and check all fuses.



10AD15	CHECK OPEN CIRCUIT IN MONITOR SYSTEM HARNESS.

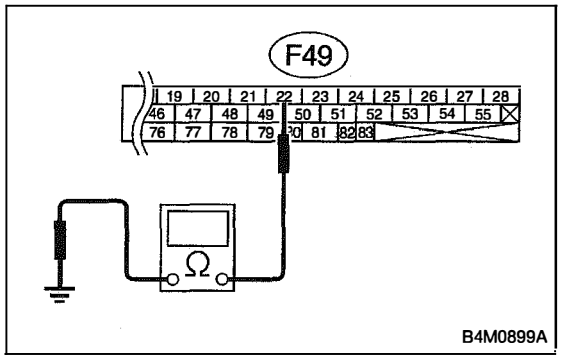
1) Turn ignition switch to OFF.
2) Connect between terminals No. 10 and No. 1 of ABSCM connector (F49) with a lead wire.
3) Measure resistance between relay box connector and chassis ground.

Connector & terminal
(F50) No. 6 — Chassis ground:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10AD16**.

NO : Repair harness/connector between ABSCM and relay box.



10AD16	CHECK OPEN CIRCUIT IN RELAY CONTROL SYSTEM HARNESS.

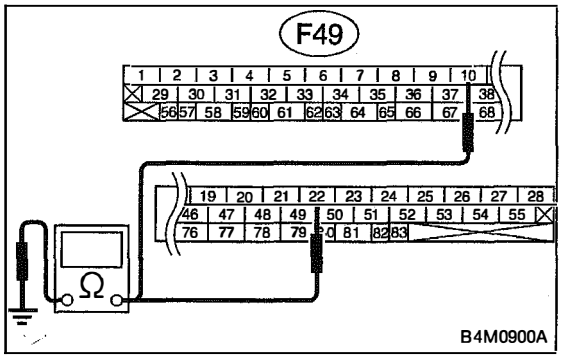
1) Connect valve relay and motor relay to relay box.
2) Connect connector (F50) to relay box.
3) Connect connector to hydraulic unit.
4) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 — Chassis ground:

CHECK ***: Is the resistance between 70 and 90 Ω?***

YES : Go to step **10AD17**.

NO : Repair harness/connector between ABSCM and relay box.



10AD17	CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

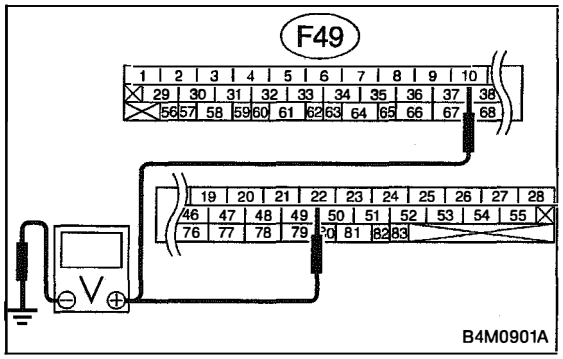
1) Disconnect connector (F50) from relay box.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 — Chassis ground:
(F49) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AD18**.

NO : Repair harness between ABSCM and relay box, and check fuse No. 19 and SBF6.



10AD18	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

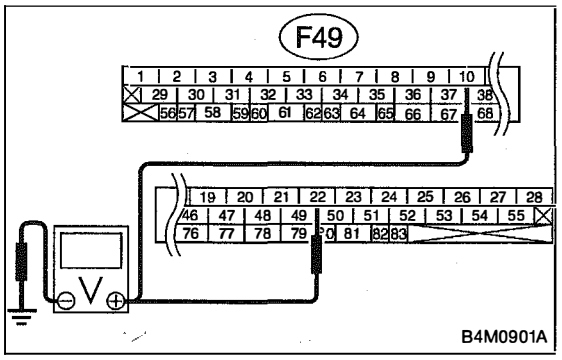
Measure voltage between ABSCM and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AD19**.

NO : Repair harness between relay box and ABSCM, and check fuse SBF6.



10AD19	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

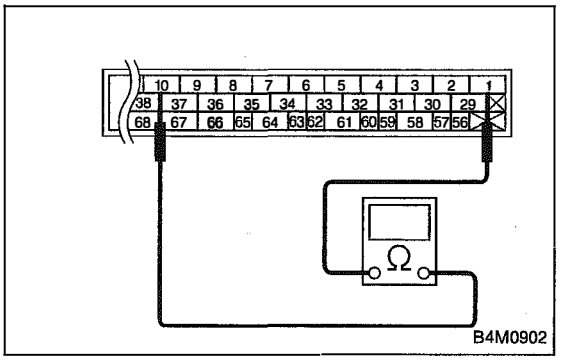
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AD20**.

NO : Repair harness between relay box and ABSCM, and check fuse SBF6.



10AD20	CHECK GROUND SHORT AT ABSCM MONITOR TERMINAL.

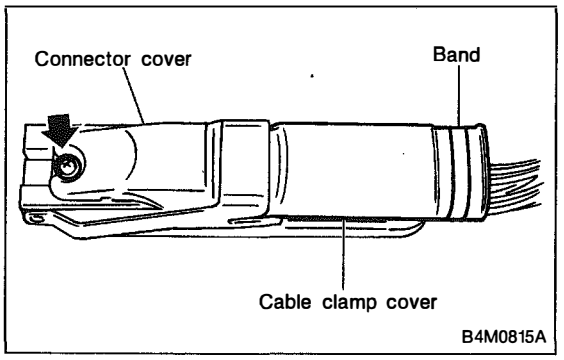
1) Turn ignition switch to OFF.
2) Measure resistance between ABSCM terminals.

Terminal
No. 10 — No. 1:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AD21**.

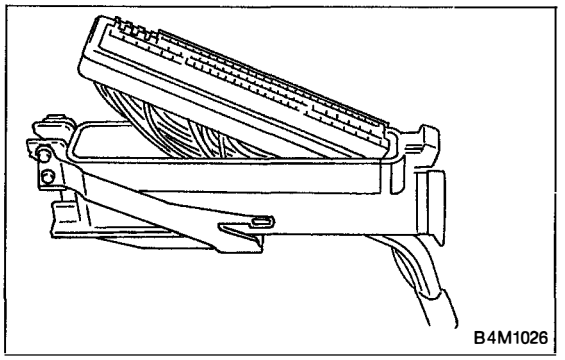
NO : Replace ABSCM.



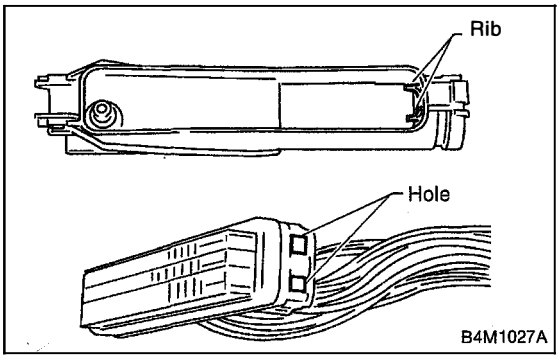
10AD21	CHECK ABSCM MOTOR DRIVE TERMINAL.

1) Disconnect connector cover from ABSCM connector.
2) Remove band.
3) Remove cable clamp cover.
4) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.

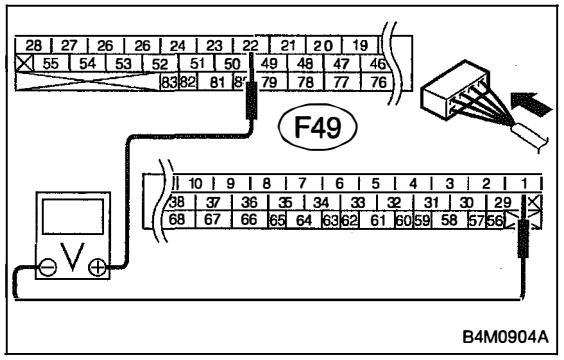


5) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

6) Connect all connectors.



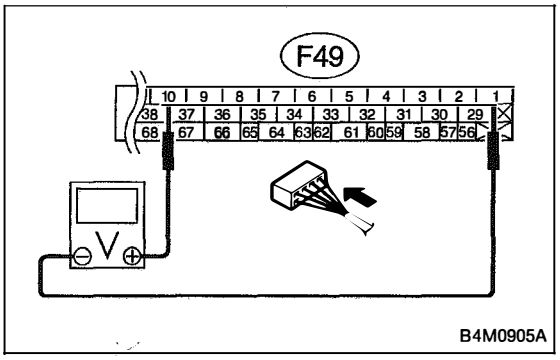
7) Measure voltage between ABSCM connector terminals.
8) Operate the check sequence. <Ref. to 4-4 [W12D1].>

Connector & terminals
(F49) No. 22 (+) — No. 1 (–):

CHECK : ***Does the voltage drop from between 10 V and 13 V to less than 1.5 V, and rise to between 10 V and 13 V again when carrying out the check sequence?***

YES : Go to step **10AD22**.

NO : Replace ABSCM.



10AD22	CHECK MOTOR OPERATION.

1) Measure voltage between ABSCM connector terminal.
2) Operate the check sequence. <Ref. to 4-4 [W12D1].>

Connector & terminals
(F49) No. 10 (+) — No. 1 (–):

CHECK : ***Does the voltage raise from less than 1.5 V to between 10 V and 13 V and return to less than 1.5 V again when carrying out the check sequence?***

YES : Go to step **10AD23**.

NO : Replace hydraulic unit.

10AD23	CHECK MOTOR OPERATION.

Operate the check sequence. <Ref. to 4-4 [W12D1].>

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the check sequence?***

YES : Go to step **10AD24**.

NO : Replace hydraulic unit.

10AD24	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connectors between hydraulic unit, relay box and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AD25**.

10AD25	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AD26**.

10AD26	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 52 (FB1)
M.RELAY ON

B4M0970

AE: TROUBLE CODE 52 M. RELAY ON — MOTOR RELAY ON FAILURE —

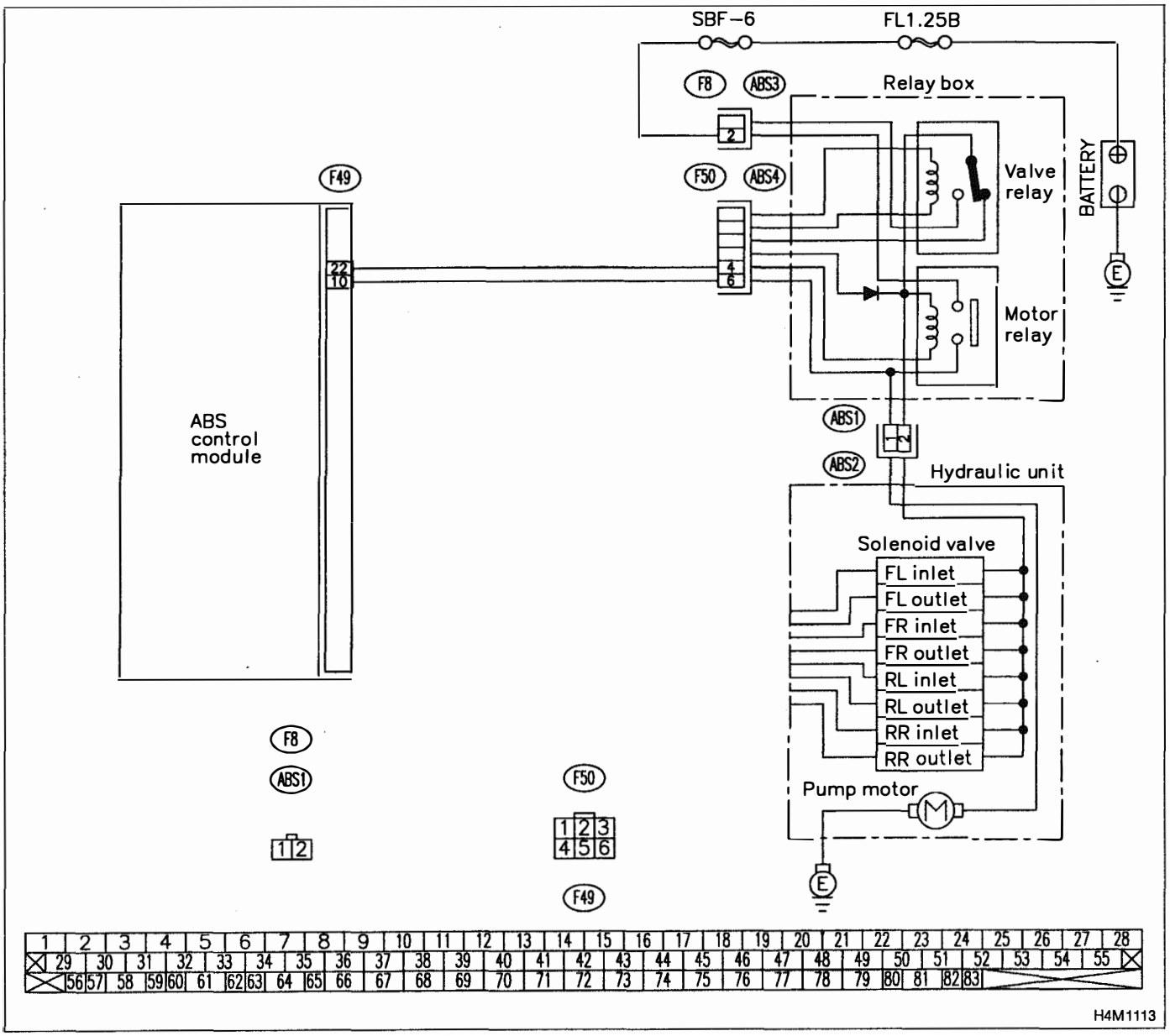
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

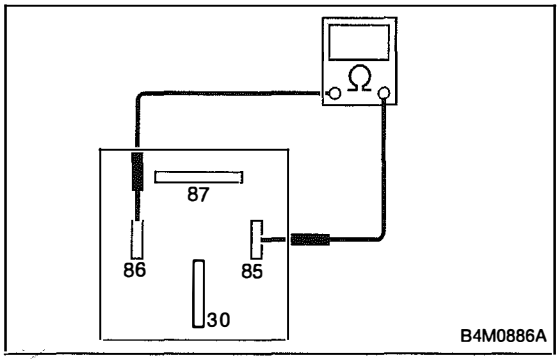
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1113

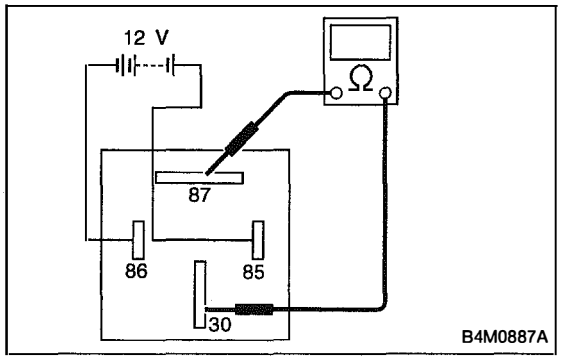


10AE1	CHECK RESISTANCE OF MOTOR RELAY.

1) Turn ignition switch to OFF.
2) Remove motor relay from relay box.
3) Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 86:

CHECK ***: Is the resistance between 70 and 90 Ω?***
YES : Go to step **10AE2**.
NO : Replace motor relay.

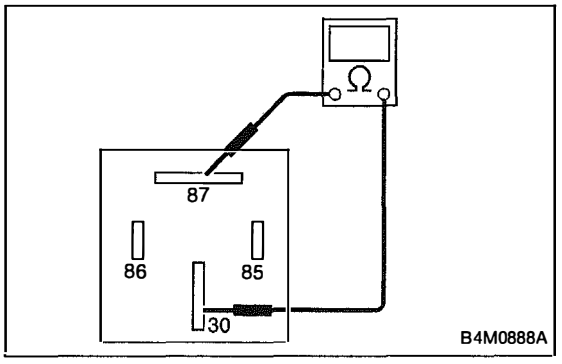


10AE2	CHECK CONTACT POINT OF MOTOR RELAY.

1) Connect battery to motor relay terminals No. 85 and No. 86.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***
YES : Go to step **10AE3**.
NO : Replace motor relay.

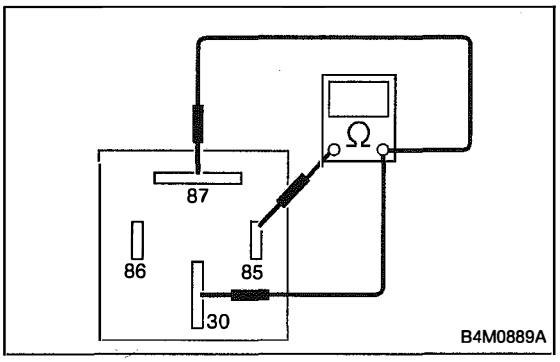


10AE3	CHECK CONTACT POINT OF MOTOR RELAY.

1) Disconnect battery from motor relay terminals.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***
YES : Go to step **10AE4**.
NO : Replace motor relay.



10AE4	CHECK SHORT OF MOTOR RELAY.

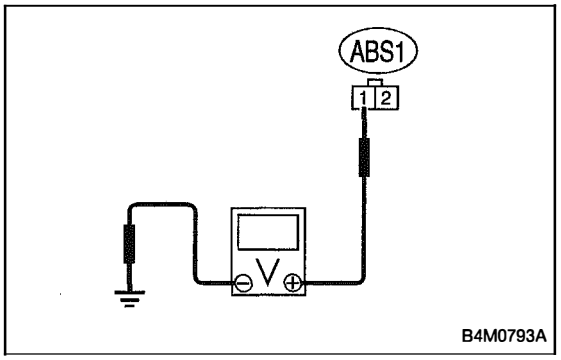
Measure resistance between motor relay terminals.

Terminals
No. 85 — No. 30:
No. 85 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AE5**.

NO : Replace motor relay.



10AE5	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

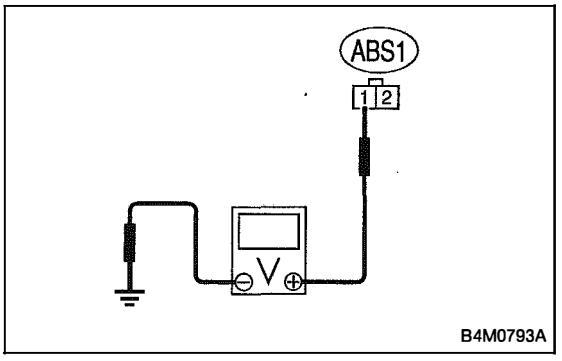
1) Disconnect connector from ABSCM.
2) Disconnect connector (ABS1) from hydraulic unit.
3) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS1) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AE6**.

NO : Replace relay box.



10AE6	CHECK BATTERY SHORT IN CONTACT POINT CIRCUIT OF RELAY BOX.

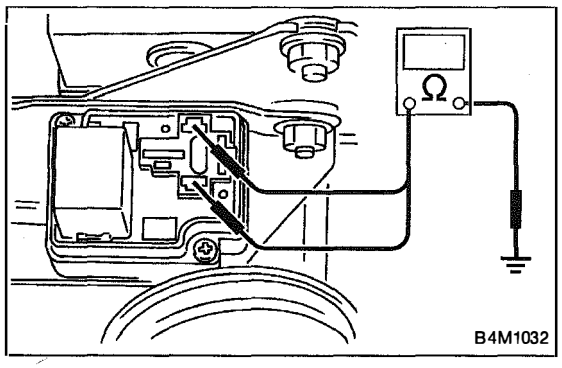
1) Turn ignition switch to ON.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(ABS1) No. 1 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AE7**.

NO : Replace relay box.



10AE7	CHECK GROUND SHORT IN CONTROL CIRCUIT OF RELAY BOX.

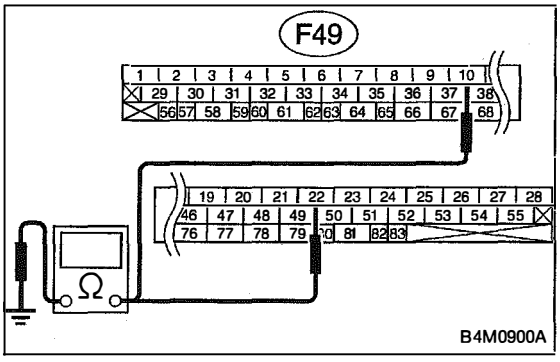
1) Turn ignition switch to OFF.
2) Disconnect connector (F50) from relay box.
3) Measure resistance between relay box and chassis ground.

Connector & terminal
Motor relay installing point No. 85 — Chassis ground:
Motor relay installing point No. 86 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AE8**.

NO : Replace relay box, and check fuse No. 19.



10AE8	CHECK GROUND SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

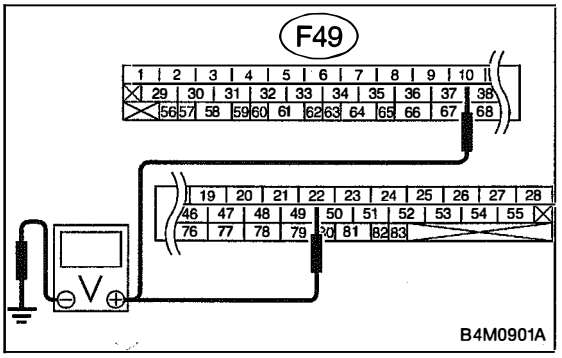
1) Disconnect connector (F49) from ABSCM.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 — Chassis ground:
(F49) No. 10 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AE9**.

NO : Repair harness between ABSCM and relay box, and check fuse No. 19 and SBF6.



10AE9	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

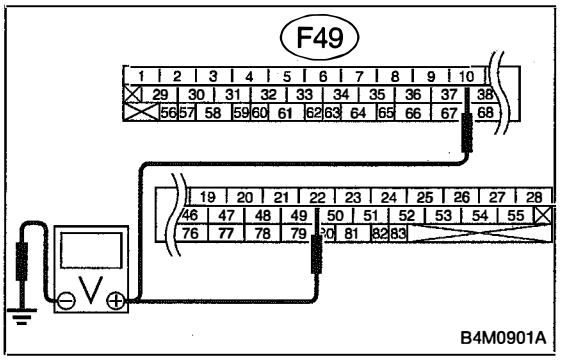
Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AE10**.

NO : Repair harness between relay box and ABSCM connector, and check fuse SBF6.



10AE10	CHECK BATTERY SHORT IN HARNESS BETWEEN RELAY BOX AND ABSCM.

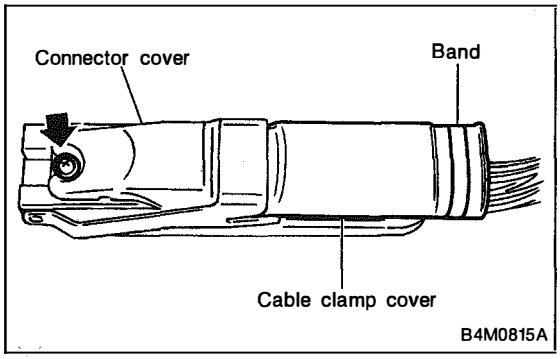
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 22 (+) — Chassis ground (–):
(F49) No. 10 (+) — Chassis ground (–):

CHECK ***: Is the voltage less than 1 V?***

YES : Go to step **10AE11**.

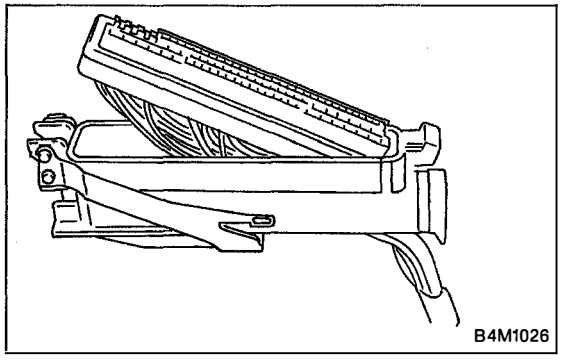
NO : Repair harness between relay box and ABSCM, and check fuse SBF6.



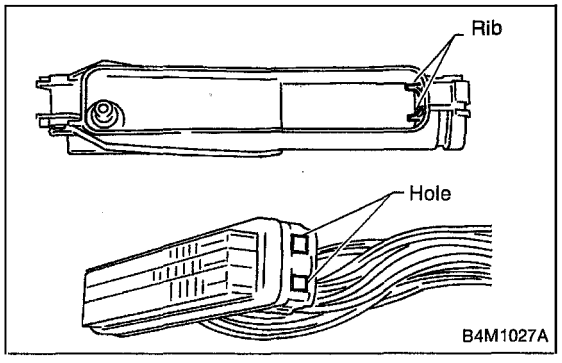
10AE11	CHECK BATTERY SHORT AT ABSCM MONITOR TERMINAL.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABS control module.
3) Remove band.
4) Remove cable clamp cover.
5) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during Installation.

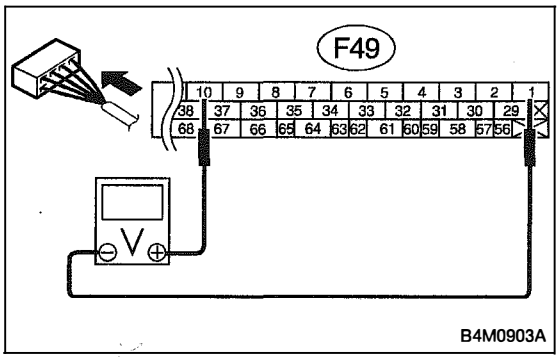


6) Remove connector cover.



NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

7) Connect all connectors.



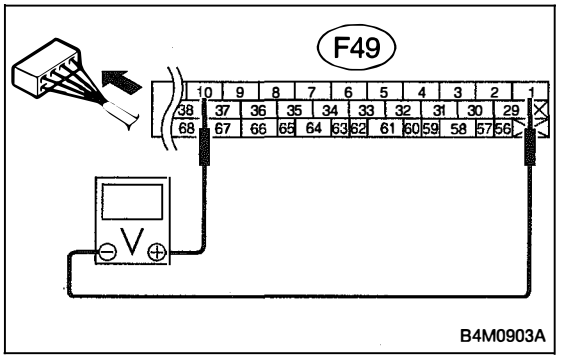
8) Measure voltage between ABSCM connector terminals.

Connector & terminal
(F49) No. 10 (+) — No. 1 (–):

CHECK ***: Is the voltage less than 2 V?***

YES : Go to step **10AE12.**

NO : Replace ABSCM.



10AE12	CHECK BATTERY SHORT AT ABSCM MONITOR TERMINAL.

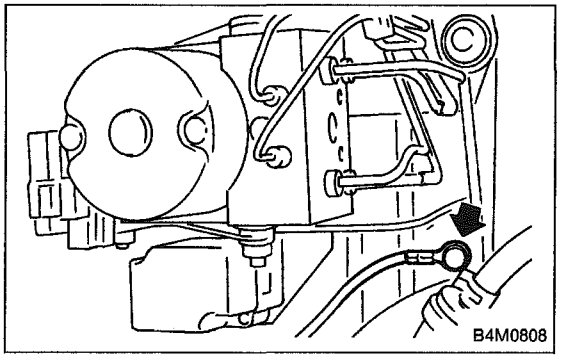
1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector terminals.

Connector & terminal
(F49) No. 10 (+) — No. 1 (–):

CHECK ***: Is the voltage less than 2 V?***

YES : Go to step **10AE13.**

NO : Replace ABSCM.



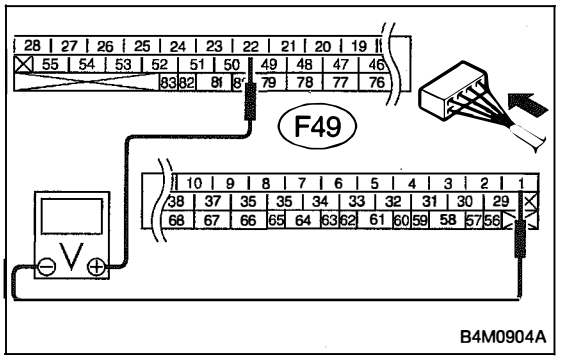
10AE13	CHECK MOTOR GROUND.

Turn ignition switch to OFF.

CHECK ***: Tightening torque:***
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)
Is the motor ground terminal tightly clamped?

YES : Go to step **10AE14.**

NO : Tighten the clamp of motor ground terminal.



10AE14	CHECK ABSCM MOTOR DRIVE TERMINAL.

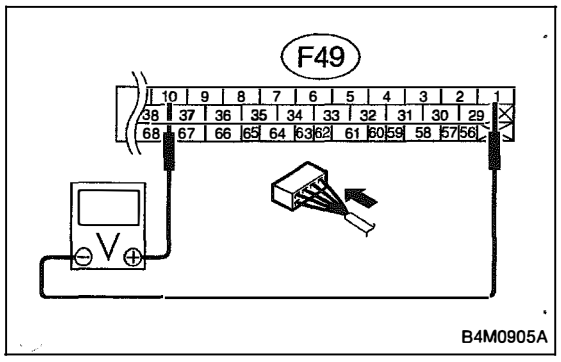
1) Measure voltage between ABSCM connector terminals.
2) Operate the check sequence. <Ref. to 4-4 [W12D1].>

Connector & terminals
(F49) No. 22 (+) — No. 1 (–):

CHECK ***: Does the voltage drop from between 10 V and 13 V to less than 1.5 V, and rise to between 10 V and 13 V again when carrying out the check sequence?***

YES : Go to step **10AE15.**

NO : Replace ABSCM.



10AE15	CHECK MOTOR OPERATION.

1) Measure voltage between ABSCM connector terminal.
2) Operate the check sequence. <Ref. to 4-4 [W12D1].>

Connector & terminals
(F49) No. 10 (+) — No. 1 (–):

CHECK : ***Does the voltage raise from less than 1.5 V to between 10 V and 13 V, and return to less than 1.5 V again when carrying out the check sequence?***

YES : Go to step **10AE16**.

NO : Replace hydraulic unit.

10AE16	CHECK MOTOR OPERATION.

Operate the check sequence. <Ref. to 4-4 [W12D1].>

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the check sequence?***

YES : Go to step **10AE17**.

NO : Replace hydraulic unit.

10AE17	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between hydraulic unit, relay box and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AE18**.

10AE18	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AE19**.

10AE19	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

(CHECK) ***: Are other trouble codes being output?***

(YES) : Proceed with the diagnosis corresponding to the trouble code.

(NO) : A temporary poor contact.

MEMO:

D•NEW 52 (FB1)
MOTOR

B4M0971

AF: TROUBLE CODE 52 MOTOR — ABNORMAL MOTOR —

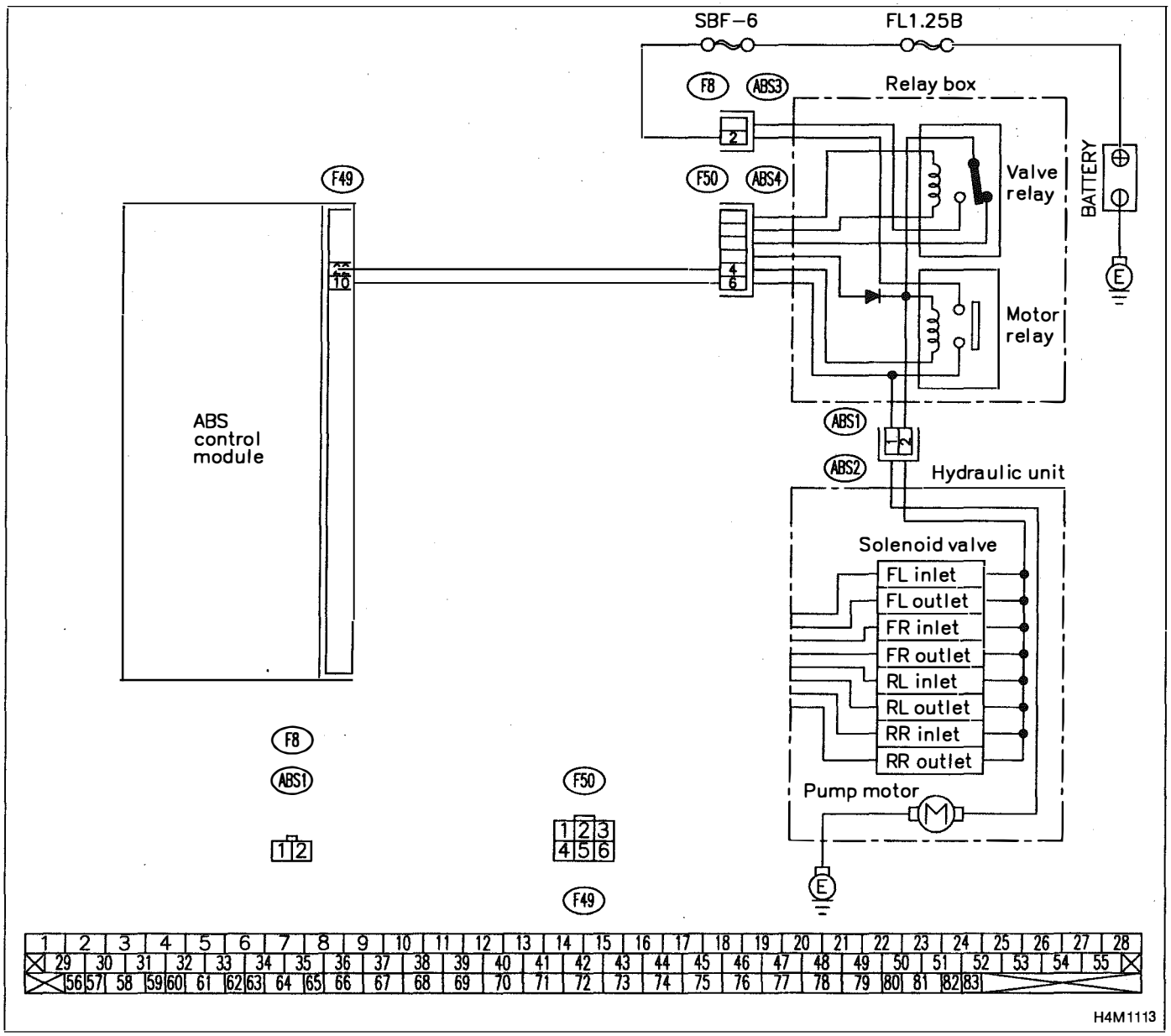
DIAGNOSIS:

- Faulty motor
- Faulty motor relay
- Faulty harness connector

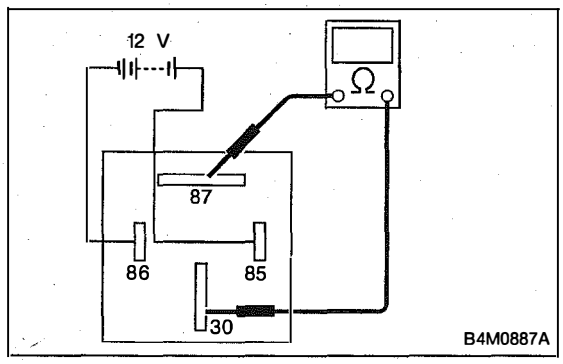
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1113



10AF1	CHECK CONTACT POINT OF MOTOR RELAY.

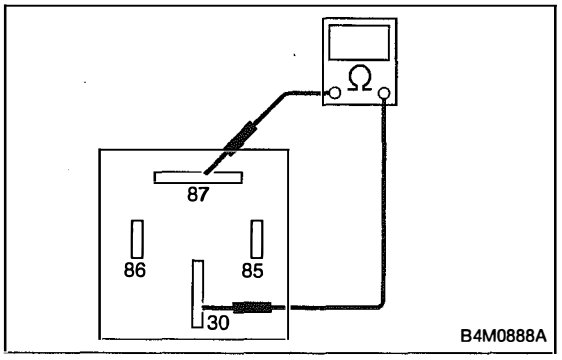
1) Turn ignition switch to OFF.
2) Remove motor relay from relay box.
3) Connect battery to motor relay terminals No. 85 and No. 86.
4) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance less than 0.5 Ω?***

YES : Go to step **10AF2**.

NO : Replace motor relay.



10AF2	CHECK CONTACT POINT OF MOTOR RELAY.

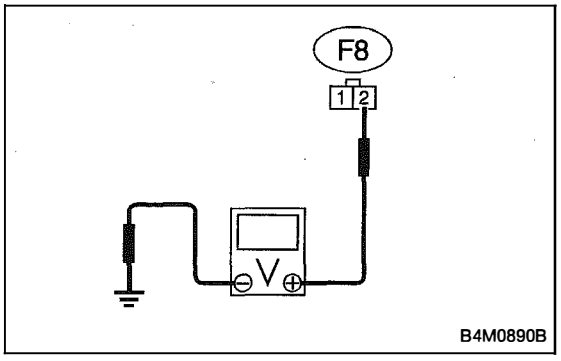
1) Disconnect battery from motor relay terminals.
2) Measure resistance between motor relay terminals.

Terminals
No. 30 — No. 87:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AF3**.

NO : Replace motor relay.



10AF3	CHECK INPUT VOLTAGE OF RELAY BOX.

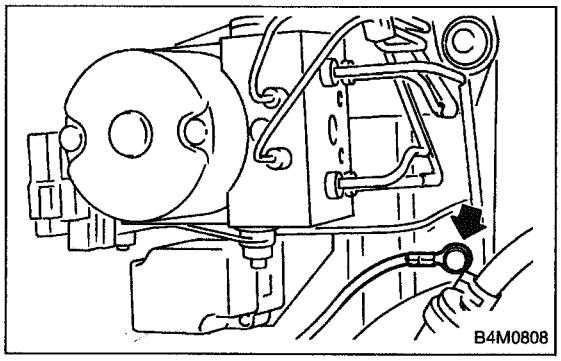
1) Disconnect connector (F8) from relay box.
2) Measure voltage between relay box connector and chassis ground.

Connector & terminal
(F8) No. 2 (+) — Chassis ground (–):

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **10AF4**.

NO : Repair harness/connector between battery and relay box, and check fuse SBF6.


B4M0808

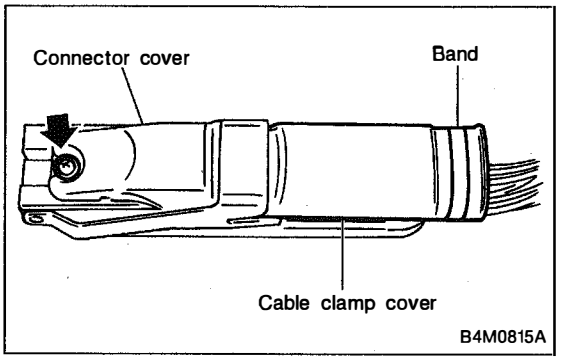
10AF4	CHECK MOTOR GROUND.

Tightening torque:
32 ± 10 N·m (3.3 ± 1.0 kg-m, 24 ± 7 ft-lb)

CHECK ***: Is the motor ground terminal tightly clamped?***

YES : Go to step **10AF5**.

NO : Tighten the clamp of motor ground terminal.

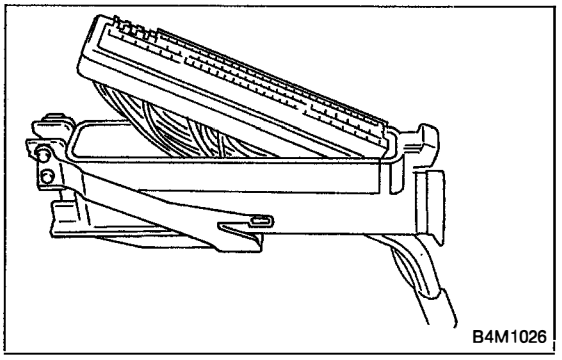


B4M0815A

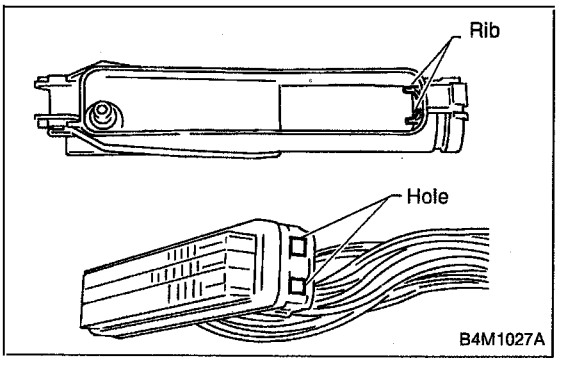
10AF5	CHECK MOTOR OPERATION.

1) Disconnect connector from ABS control module.
2) Remove band.
3) Remove cable clamp cover.
4) Remove screws securing connector cover.

CAUTION:
Do not allow harness to catch on adjacent parts during installation.


B4M1026

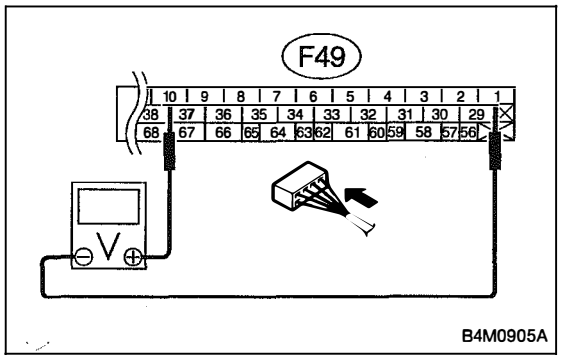
5) Remove connector cover.



B4M1027A

NOTE:
- To install, reverse above removal procedures.
- Align connector cover rib with connector hole before installation.

6) Connect connector to ABSCM.
7) Connect motor relay to relay box.
8) Connect all connectors.



9) Measure voltage between ABSCM connector terminal.
10) Operate the check sequence. <Ref. to 4-4 [W12D1].>

Connector & terminals
(F49) No. 10 (+) — No. 1 (–):

CHECK : ***Does the voltage raise from less than 1.5 V to between 10 V and 13 V, and return to less than 1.5 V again when carrying out the check sequence?***

YES : Go to step **10AF6**.

NO : Replace hydraulic unit.

10AF6	CHECK MOTOR OPERATION.

Operate the check sequence. <Ref. to 4-4 [W12D1].>

CHECK : ***Can motor revolution noise (buzz) be heard when carrying out the check sequence?***

YES : Go to step **10AF7**.

NO : Replace hydraulic unit.

10AF7	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between hydraulic unit, relay box and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AF8**.

10AF8	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AF9**.

10AF9	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 54 (FB1)
BLS

B4M0972

AG: TROUBLE CODE 54 BLS — ABNORMAL STOP LIGHT SWITCH —

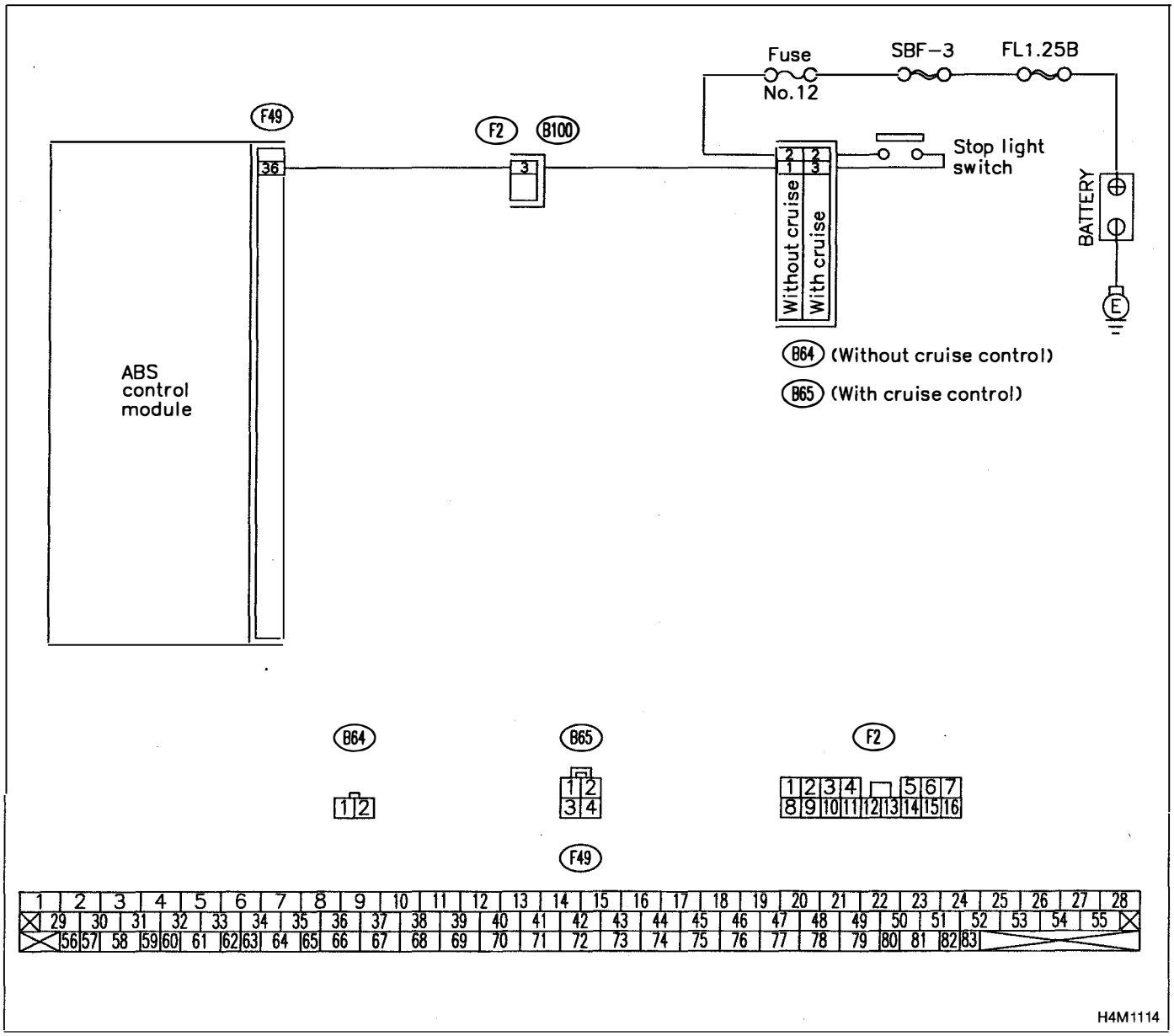
DIAGNOSIS:

- Faulty stop light switch

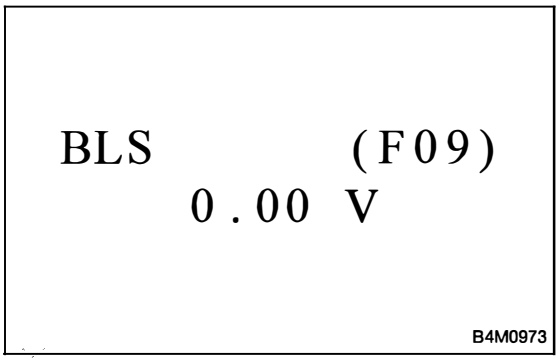
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1114



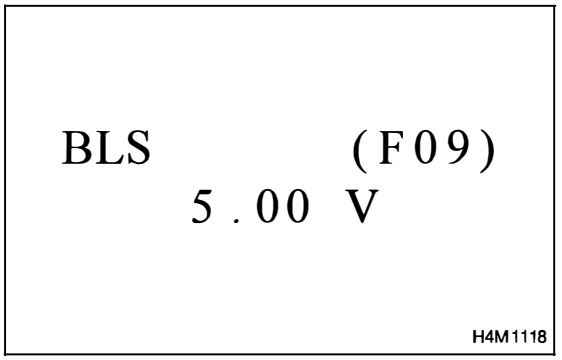
10AG1	CHECK OUTPUT OF STOP LIGHT SWITCH USING SELECT MONITOR.

1) Press [F], [0] and [9] on the select monitor.
2) Depress the brake pedal.
3) Read the stop light switch output on the select monitor display.

CHECK : ***Is the reading indicated on monitor display less than 1.5 V?***

YES : Go to step **10AG2**.

NO : Go to step **10AG3**.



10AG2	CHECK OUTPUT OF STOP LIGHT SWITCH USING SELECT MONITOR.

1) Release the brake pedal.
2) Read the stop light switch output on the select monitor display.

CHECK : ***Is the reading indicated on monitor display greater than 4.5 V?***

YES : Go to step **10AG5**.

NO : Go to step **10AG3**.

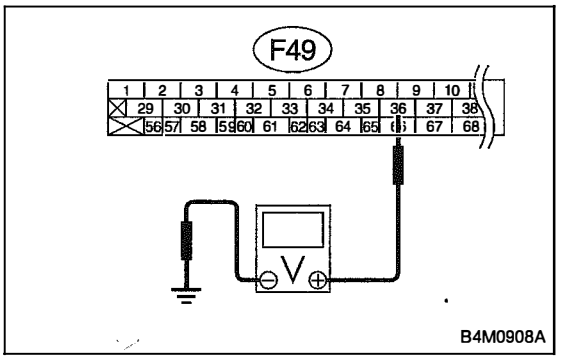
10AG3	CHECK IF STOP LIGHTS COME ON.

Depress the brake pedal.

CHECK : ***Do stop lights turn on?***

YES : Go to step **10AG4**.

NO : Repair stop lights circuit.



10AG4	CHECK OPEN CIRCUIT IN HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Depress brake pedal.
4) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 36 — Chassis ground:

CHECK ***: Is the voltage between 10 V and 13 V?***

YES : Go to step **10AG5**.

NO : Repair harness between stop light switch and ABSCM connector.

10AG5	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connector between stop light switch and ABSCM? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AG6**.

10AG6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AG7**.

10AG7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 56 (FB1)
G SENSOR LINE

B4M0974

AH: TROUBLE CODE 56 G SENSOR LINE — OPEN OR SHORT CIRCUIT OF G SENSOR —

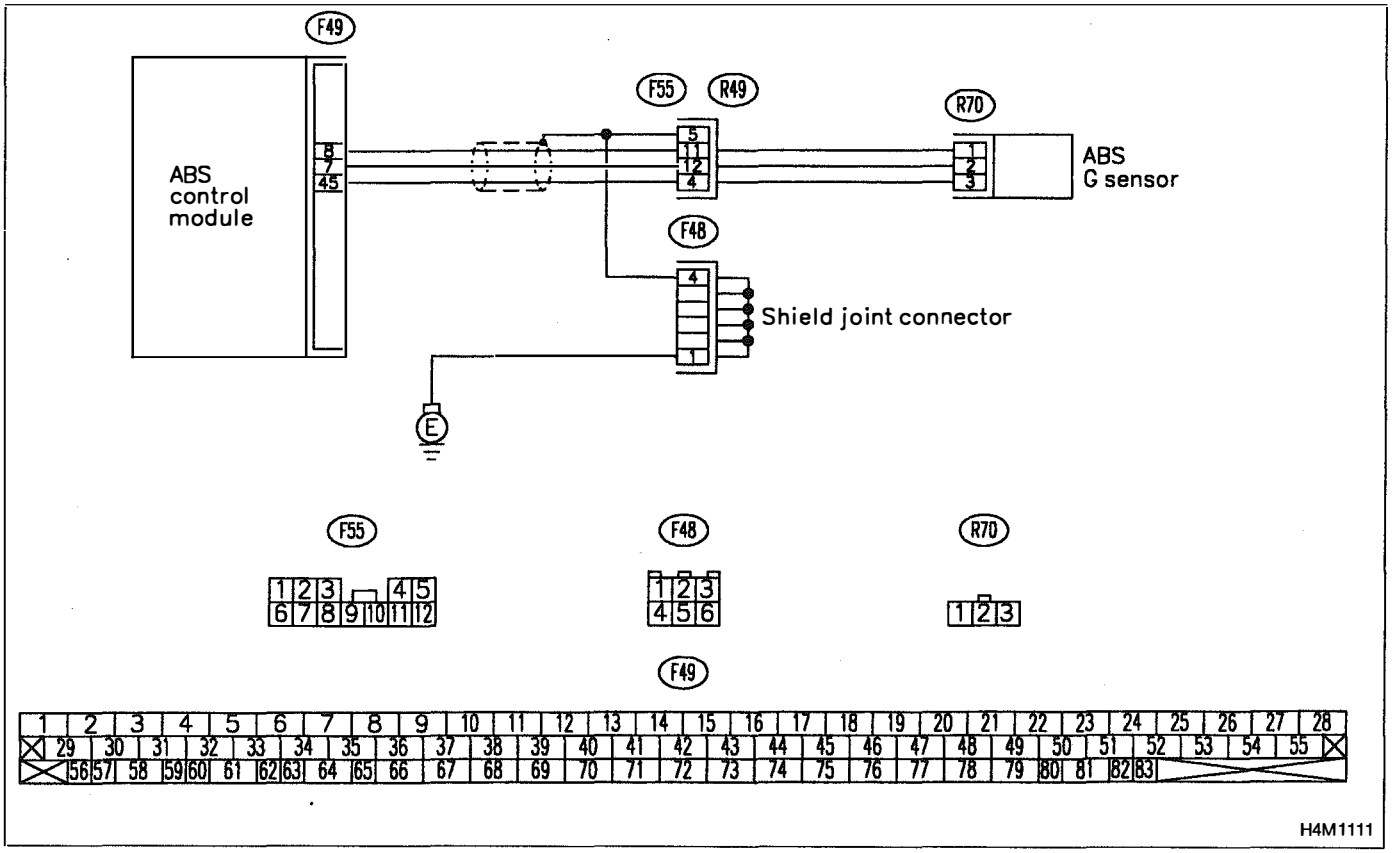
DIAGNOSIS:

- Faulty G sensor output voltage

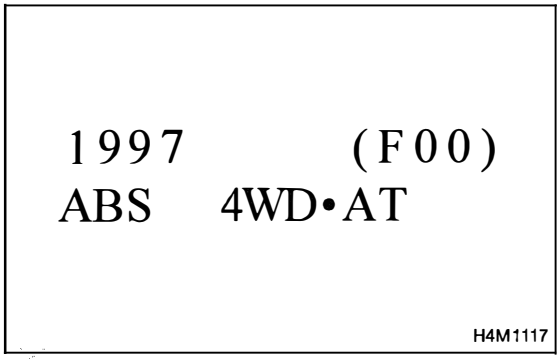
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1111



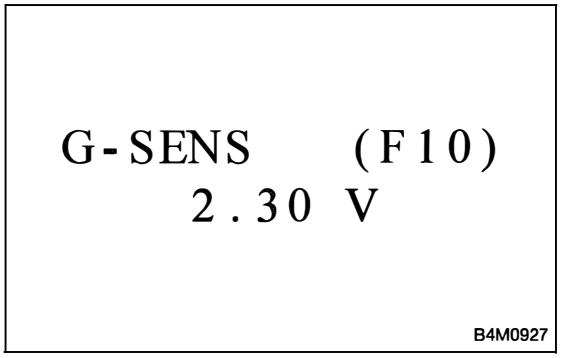
10AH1	CHECK SPECIFICATIONS OF ABSCM USING SELECT MONITOR.

1) Press [F], [0] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is an ABSCM for 4WD model installed on a FWD model?***

YES : Replace ABSCM.

NO : Go to step **10AH2**.



10AH2	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Press [F], [1] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the indicated reading between 2.1 and 2.5 V when the G sensor is in horizontal position?***

YES : Go to step **10AH3**.

NO : Go to step **10AH6**.

10AH3	CHECK POOR CONTACT IN CONNECTORS.

CHECK : ***Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AH4**.

10AH4	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

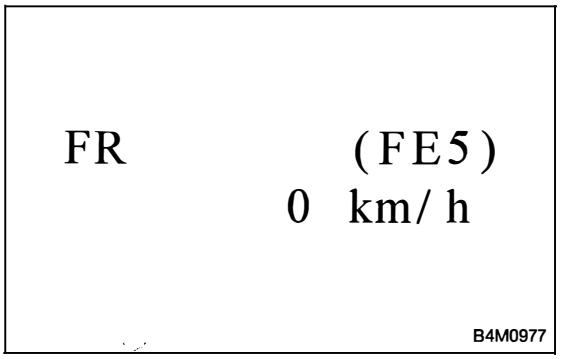
NO : Go to step **10AH5**.

10AH5	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



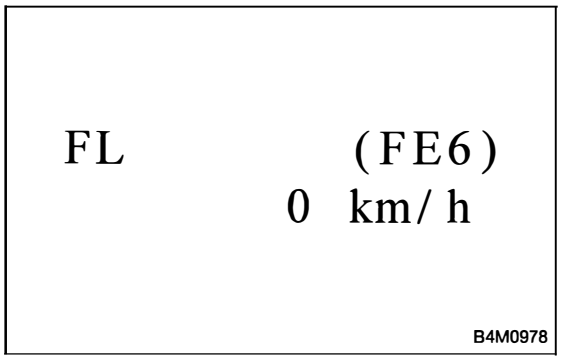
10AH6	CHECK FREEZE FRAME DATA.

1) Press [F], [E] and [5] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the reading indicated on monitor display 0 km?***

YES : Go to step **10AH7**.

NO : Go to step **10AH15**.



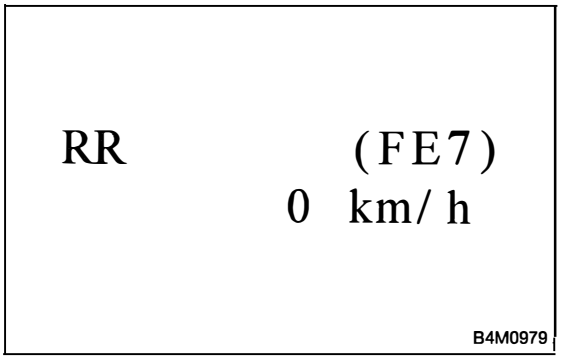
10AH7	CHECK FREEZE FRAME DATA.

1) Press the scroll key so that FE6 appears on the monitor display.
2) Read the select monitor display.

CHECK : ***Is the reading indicated on monitor display 0 km?***

YES : Go to step **10AH8**.

NO : Go to step **10AH15**.



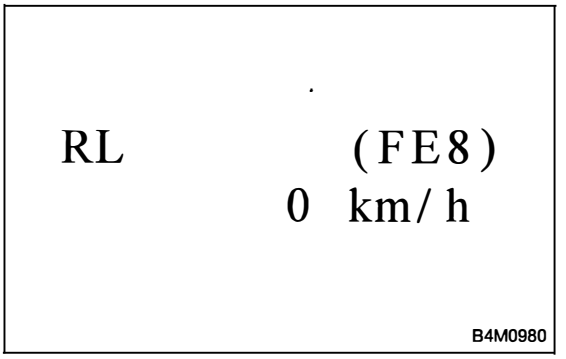
10AH8	CHECK FREEZE FRAME DATA.

1) Press the scroll key so that FE7 appears on the monitor display.
2) Read the select monitor display.

CHECK : ***Is the reading indicated on monitor display 0 km?***

YES : Go to step **10AH9**.

NO : Go to step **10AH15**.



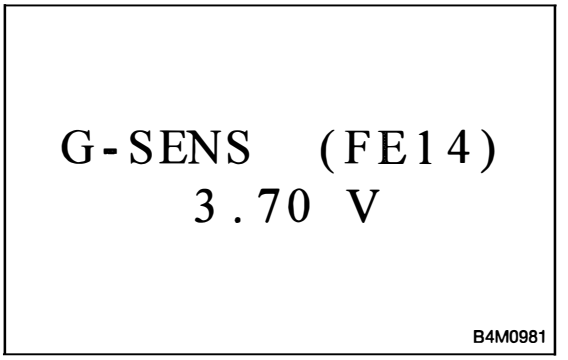
10AH9	CHECK FREEZE FRAME DATA.

1) Press the scroll key so that FE8 appears on the monitor display.
2) Read the select monitor display.

CHECK : ***Is the reading indicated on monitor display 0 km?***

YES : Go to step **10AH10**.

NO : Go to step **10AH15**.



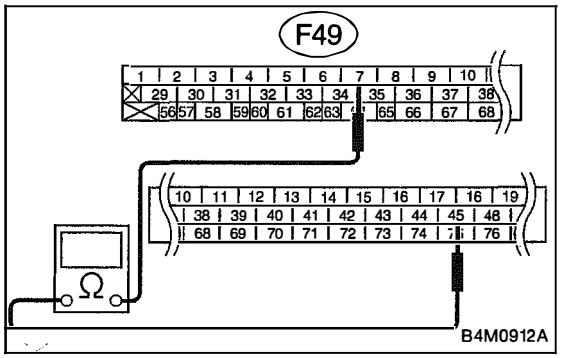
10AH10	CHECK FREEZE FRAME DATA.

1) Press the scroll key so that FE14 appears on the monitor display.
2) Read the select monitor display.

CHECK : ***Is the reading indicated on monitor display more than 3.65 V?***

YES : Go to step **10AH11**.

NO : Go to step **10AH15**.



10AH11	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 7 — No. 45:

CHECK ***: Is the resistance between 4.3 and 4.9 kΩ?***

YES : Go to step **10AH12**.

NO : Repair harness/connector between G sensor and ABSCM.

10AH12	CHECK POOR CONTACT IN CONNECTORS.

CHECK ***: Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AH13**.

10AH13	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

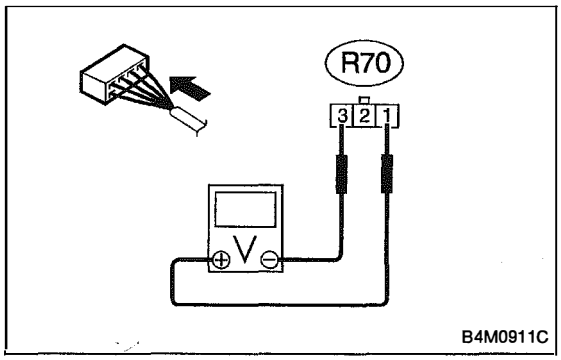
NO : Go to step **10AH14**.

10AH14	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



10AH15	CHECK INPUT VOLTAGE OF G SENSOR.

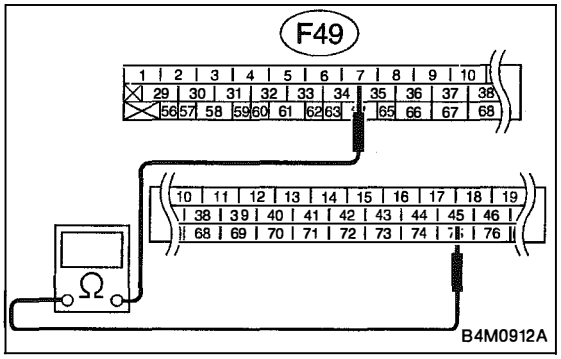
1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect G sensor from body. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 1 (+) — No. 3 (–):

CHECK ***: Is the voltage between 4.75 and 5.25 V?***

YES : Go to step **10AH16**.

NO : Repair harness/connector between G sensor and ABSCM.



10AH16	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

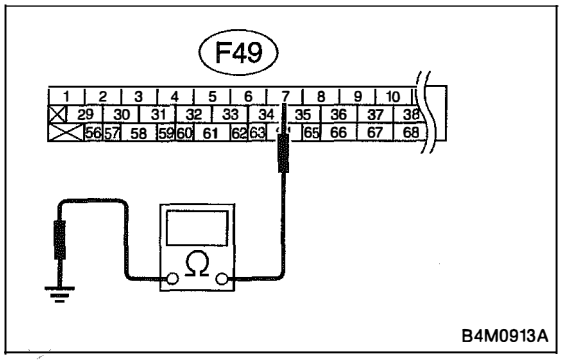
1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 7 — No. 45:

CHECK ***: Is the resistance between 4.3 and 4.9 kΩ?***

YES : Go to step **10AH17**.

NO : Repair harness/connector between G sensor and ABSCM.



10AH17	CHECK GROUND SHORT IN G SENSOR OUTPUT HARNESS.

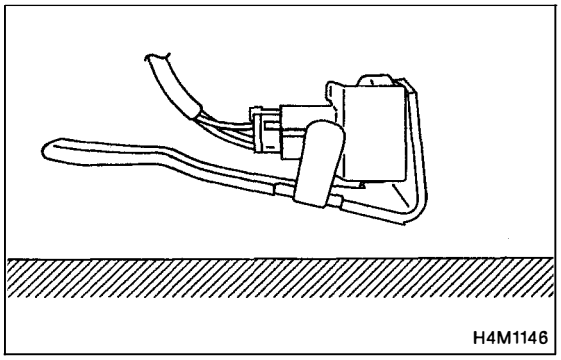
1) Disconnect connector from G sensor.
2) Measure resistance between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 — Chassis ground:

CHECK ***: Is the resistance more than 1 MΩ?***

YES : Go to step **10AH18**.

NO : Repair harness between G sensor and ABSCM.



10AH18	CHECK G SENSOR.

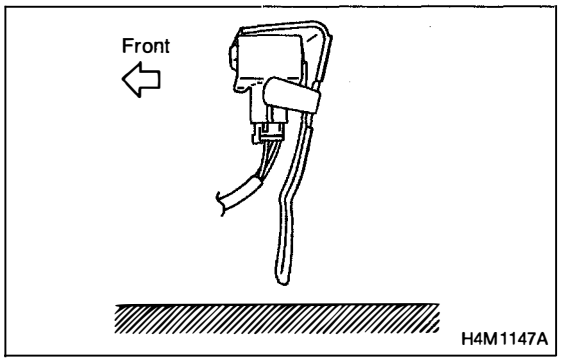
1) Connect connector to G sensor.
2) Connect connector to ABSCM.
3) Turn ignition switch to ON.
4) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***

YES : Go to step **10AH19**.

NO : Replace G sensor.



10AH19	CHECK G SENSOR.

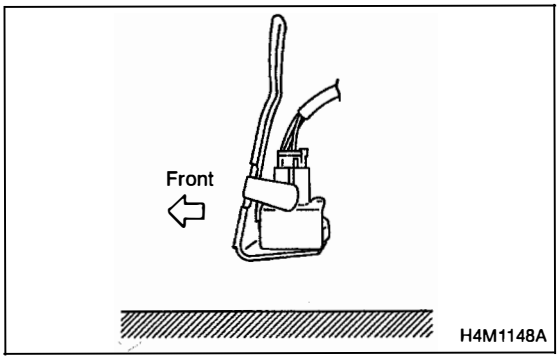
Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***

YES : Go to step **10AH20**.

NO : Replace G sensor.



10AH20	CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***

YES : Go to step **10AH21**.

NO : Replace G sensor.

10AH21	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK ***: Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AH22**.

10AH22	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK ***: Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AH23**.

10AH23	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK ***: Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 56 (FB1)
G SENSOR +B

B4M0982

AI: TROUBLE CODE 56 G SENSOR +B — BATTERY SHORT OF G SENSOR —

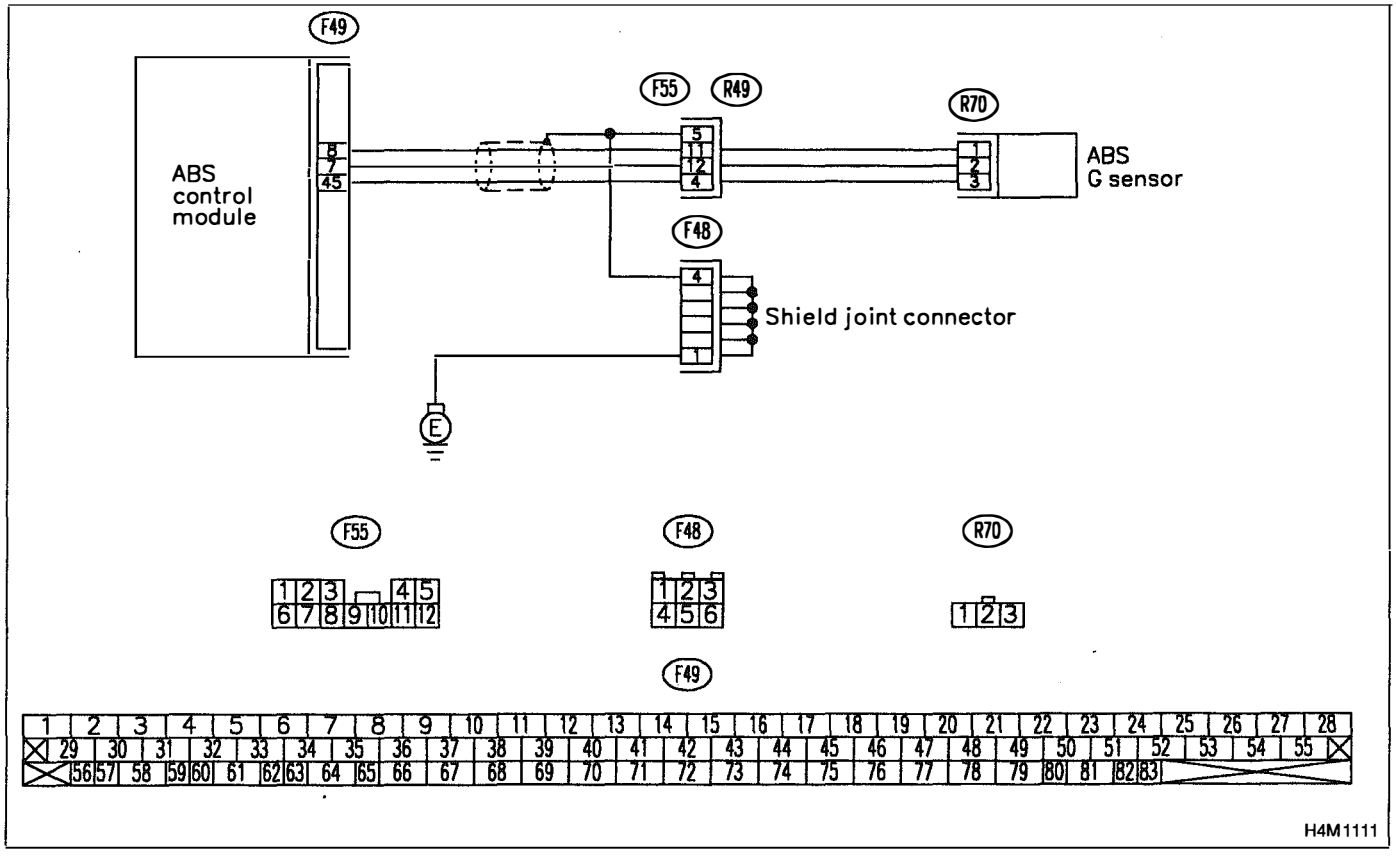
DIAGNOSIS:

- Faulty G sensor output voltage

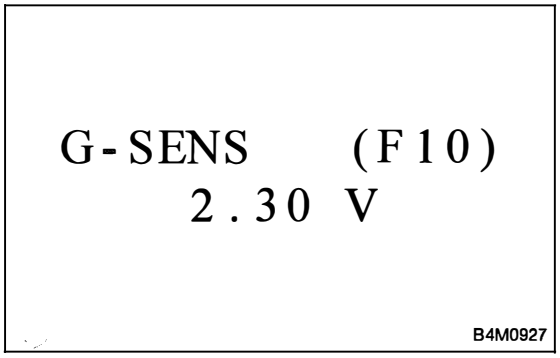
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1111



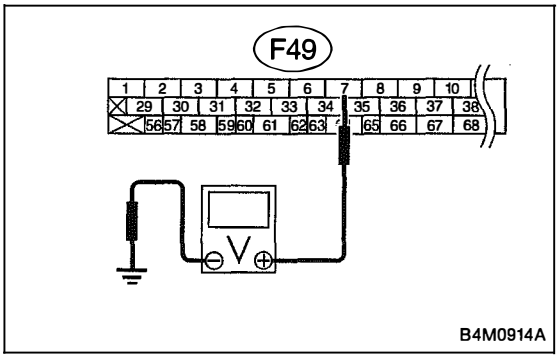
10AI1	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Press [F], [1] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the indicated reading between 2.1 and 2.5 V when the G sensor is in horizontal position?***

YES : Replace ABSCM.

NO : Go to step **10AI2**.



10AI2	CHECK BATTERY SHORT OF HARNESS.

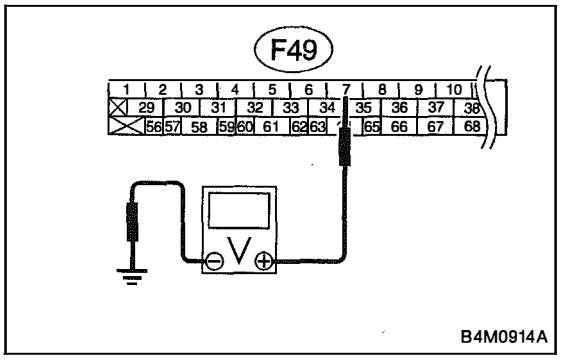
1) Turn ignition switch to OFF.
2) Remove console box.
3) Disconnect connector from G sensor.
4) Disconnect connector from ABSCM.
5) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **10AI3**.

NO : Repair harness between G sensor and ABSCM.



10AI3	CHECK BATTERY SHORT OF HARNESS.

1) Turn ignition switch to ON.
2) Measure voltage between ABSCM connector and chassis ground.

Connector & terminal
(F49) No. 7 (+) — Chassis ground (–):

CHECK : ***Is the voltage less than 1 V?***

YES : Go to step **10AI4**.

NO : Repair harness between G sensor and ABSCM.

10AI4	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AI5.**

10AI5	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

MEMO:

D•NEW 56 (FB1)
G SENSOR Hμ

B4M0984

AJ: TROUBLE CODE 56 G SENSOR Hμ — ABNORMAL G SENSOR HIGH μ OUTPUT —

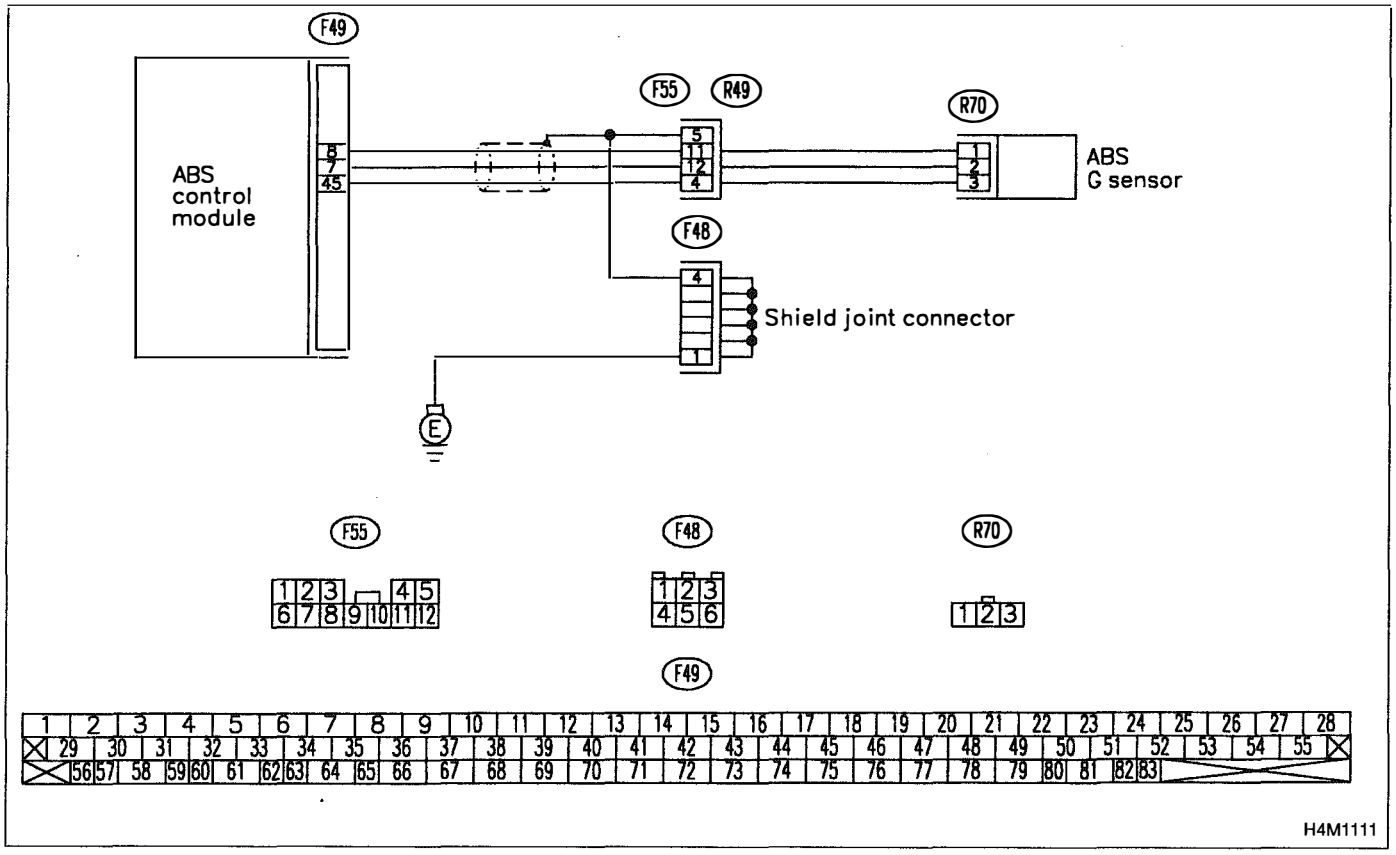
DIAGNOSIS:

- Faulty G sensor output voltage

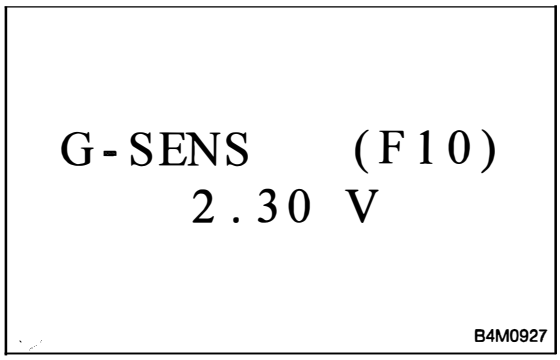
TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



H4M1111



10AJ1	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Press [F], [1] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the indicated reading 2.3 ± 0.2 V when the G sensor is in horizontal position?***

YES : Go to step **10AJ2**.

NO : Go to step **10AJ6**.

10AJ2	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AJ3**.

10AJ3	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

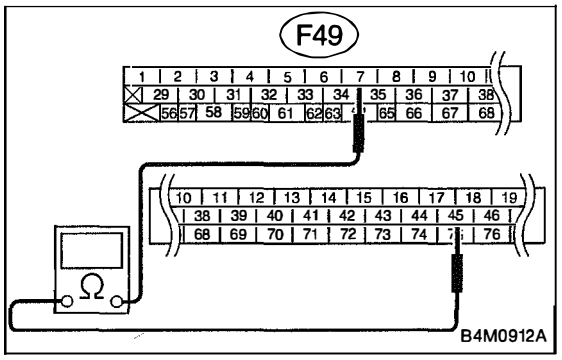
NO : Go to step **10AJ4**.

10AJ4	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



10AJ5	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

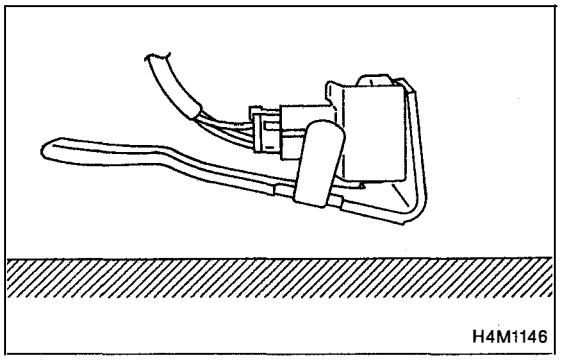
1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 7 — No. 45:

CHECK ***: Is the resistance between 4.3 and 4.9 kΩ?***

YES : Go to step **10AJ6**.

NO : Repair harness/connector between G sensor and ABSCM.



10AJ6	CHECK G SENSOR.

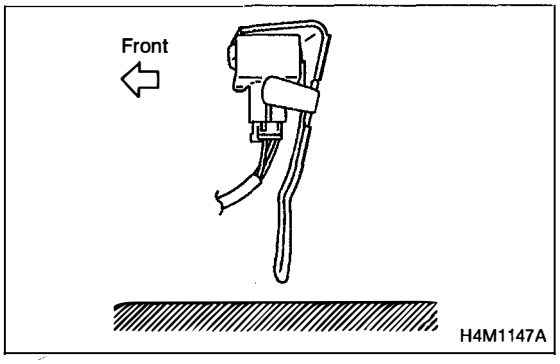
1) Remove console box.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

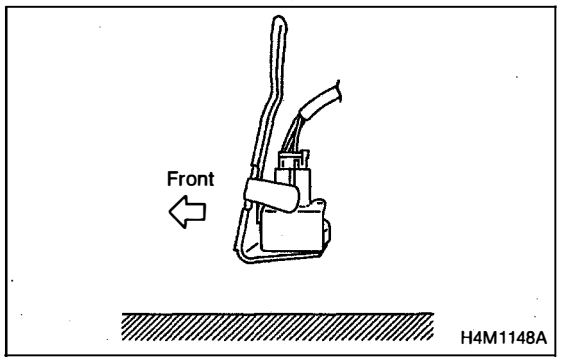
Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***

YES : Go to step **10AJ7**.

NO : Replace G sensor.





10AJ7	CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK : ***Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***

YES : Go to step **10AJ8**.

NO : Replace G sensor.

10AJ8	CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK : ***Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***

YES : Go to step **10AJ9**.

NO : Replace G sensor.

10AJ9	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AJ10**.

10AJ10	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

D•NEW 56 (FB1)
G SENSOR STICK

B4M0813

AK: TROUBLE CODE 56 G SENSOR STICK — G SENSOR OUTPUT IS STUCK —

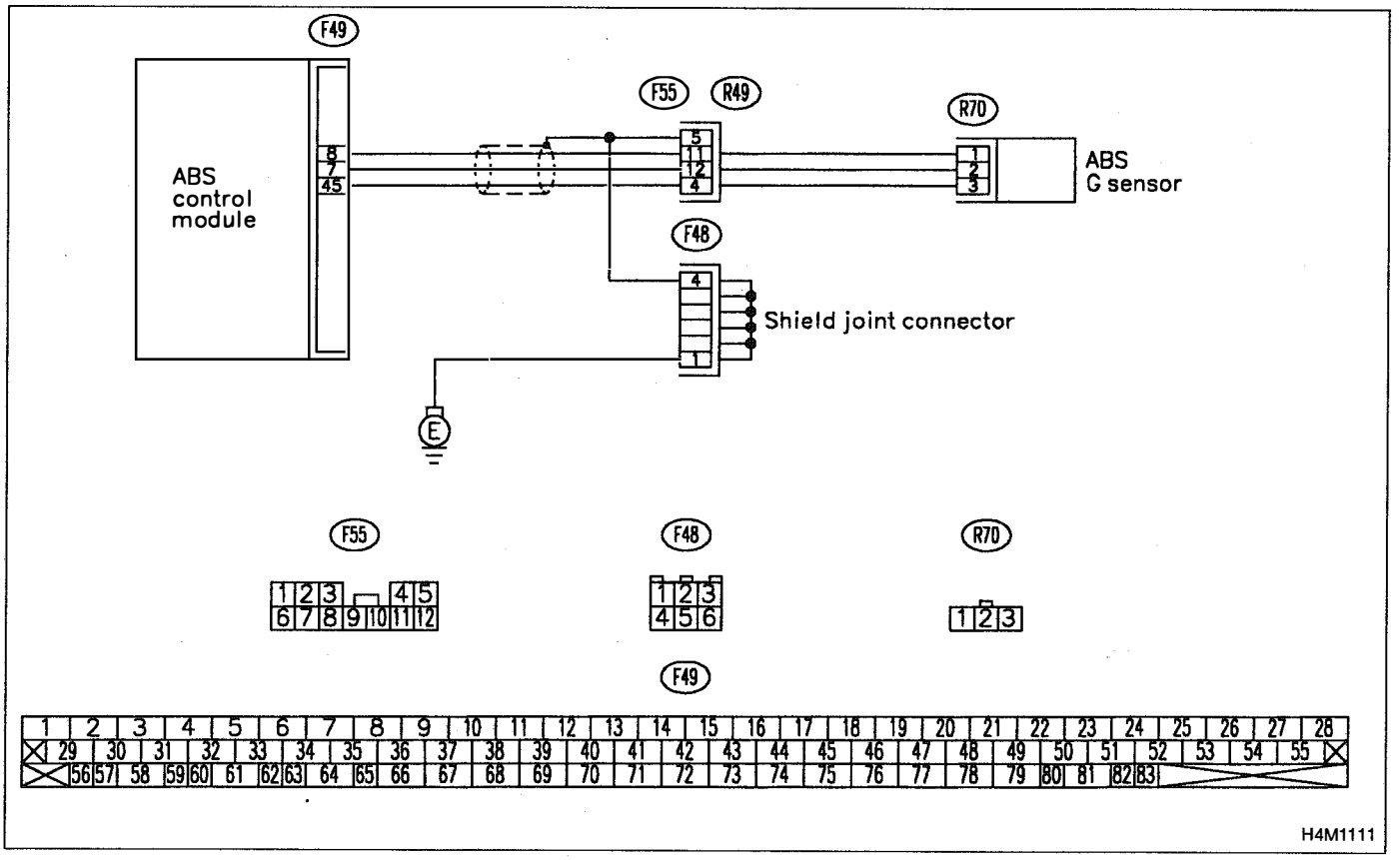
DIAGNOSIS:

- Faulty G sensor output voltage

TROUBLE SYMPTOM:

- ABS does not operate.

WIRING DIAGRAM:



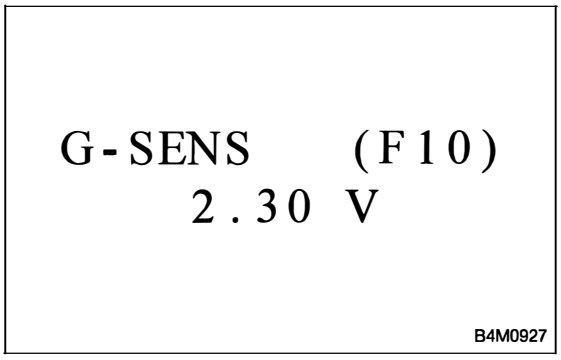
H4M1111

10AK1	CHECK ALL FOUR WHEELS FOR FREE TURNING.

CHECK : ***Have the wheels been turned freely such as when the vehicle is lifted up, or operated on a rolling road?***

YES : The ABS is normal. Erase the trouble code.

NO : Go to step **10AK2**.



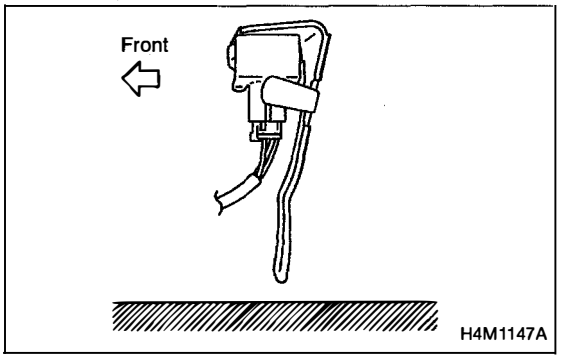
10AK2	CHECK OUTPUT OF G SENSOR USING SELECT MONTOR.

1) Press [F], [1] and [0] on the select monitor.
2) Read the select monitor display.

CHECK : ***Is the indicated reading between 2.1 and 2.5 V when the vehicle is in horizontal position?***

YES : Go to step **10AK3**.

NO : Go to step **10AK8**.



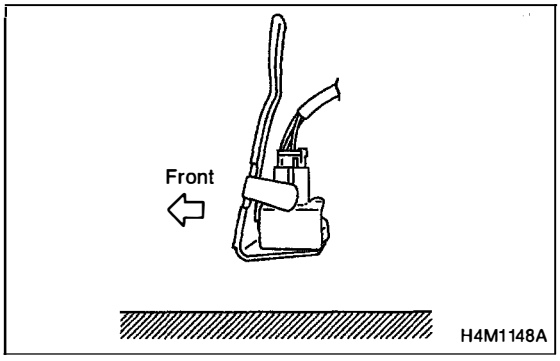
10AK3	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

1) Turn ignition switch to OFF.
2) Remove console box.
3) Remove G sensor from vehicle. (Do not disconnect connector.)
4) Turn ignition switch to ON.
5) Press [F], [1] and [0] on the select monitor.
6) Read the select monitor display.

CHECK : ***Is the indicated reading between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***

YES : Go to step **10AK4**.

NO : Replace G sensor.



10AK4	CHECK OUTPUT OF G SENSOR USING SELECT MONITOR.

Read the select monitor display.

CHECK : ***Is the indicated reading between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***

YES : Go to step **10AK5**.

NO : Replace G sensor.

10AK5	CHECK POOR CONTACT IN CONNECTORS.

Turn ignition switch to OFF.

CHECK : ***Is there poor contact in connector between ABSCM and G sensor? <Ref. to FOREWORD [T3C1].>***

YES : Repair connector.

NO : Go to step **10AK6**.

10AK6	CHECK ABSCM.

1) Connect all connectors.
2) Erase the memory.
3) Perform inspection mode.
4) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

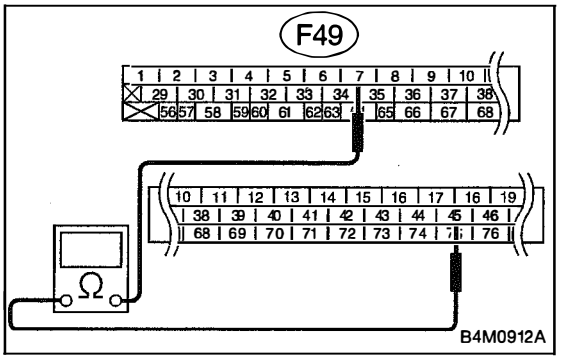
NO : Go to step **10AK7**.

10AK7	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.



10AK8	CHECK OPEN CIRCUIT IN G SENSOR OUTPUT HARNESS AND GROUND HARNESS.

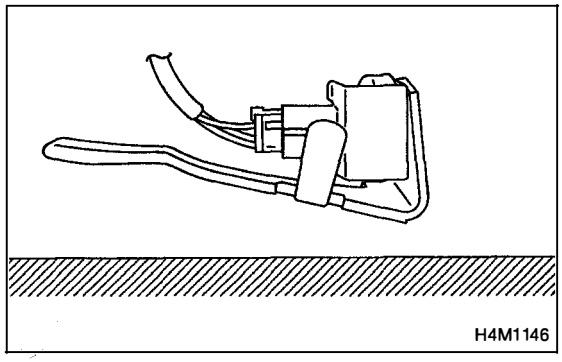
1) Turn ignition switch to OFF.
2) Disconnect connector from ABSCM.
3) Measure resistance between ABSCM connector terminals.

Connector & terminal
(F49) No. 7 — No. 45:

CHECK : ***Is the resistance between 4.3 and 4.9 kΩ?***

YES : Go to step **10AK9**.

NO : Repair harness/connector between G sensor and ABSCM.



10AK9	CHECK G SENSOR.

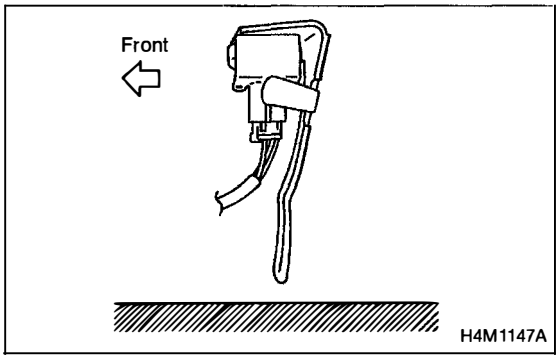
1) Remove console box.
2) Remove G sensor from vehicle.
3) Connect connector to G sensor.
4) Connect connector to ABSCM.
5) Turn ignition switch to ON.
6) Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 2.1 and 2.5 V when G sensor is horizontal?***

YES : Go to step **10AK10.**

NO : Replace G sensor.



10AK10	CHECK G SENSOR.

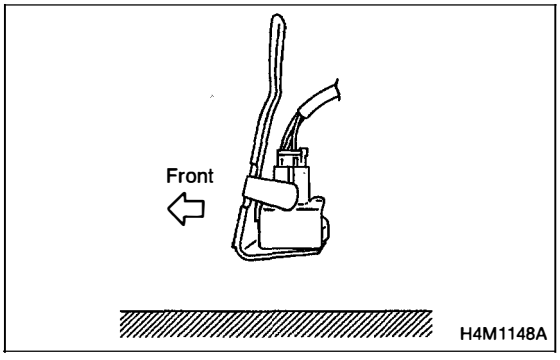
Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 3.7 and 4.1 V when G sensor is inclined forwards to 90°?***

YES : Go to step **10AK11.**

NO : Replace G sensor.



10AK11	CHECK G SENSOR.

Measure voltage between G sensor connector terminals.

Connector & terminal
(R70) No. 2 (+) — No. 1 (–):

CHECK ***: Is the voltage between 0.5 and 0.9 V when G sensor is inclined backwards to 90°?***

YES : Go to step **10AK12.**

NO : Replace G sensor.

10AK12	CHECK ABSCM.

1) Turn ignition switch to OFF.
2) Connect all connectors.
3) Erase the memory.
4) Perform inspection mode.
5) Read out the trouble code.

CHECK : ***Is the same trouble code as in the current diagnosis still being output?***

YES : Replace ABSCM.

NO : Go to step **10AK13**.

10AK13	CHECK ANY OTHER TROUBLE CODES APPEARANCE.

CHECK : ***Are other trouble codes being output?***

YES : Proceed with the diagnosis corresponding to the trouble code.

NO : A temporary poor contact.

11. General Diagnostics Table

A: SYMPTOMS AND PROBABLE CAUSES

Symptom		Probable faulty units/parts
Vehicle instability during braking	Vehicle pulls to either side.	● Hydraulic unit (solenoid valve) ● ABS sensor ● Brake (caliper & piston, pads) ● Wheel alignment ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections ● Road surface (uneven, camber)
	Vehicle spins.	● Hydraulic unit (solenoid valve) ● ABS sensor ● Brake (pads) ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections
Poor braking	Long braking/stopping distance	● Hydraulic unit (solenoid valve) ● Brake (pads) ● Air in brake line ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections
	Wheel locks.	● Hydraulic unit (solenoid valve, motor) ● ABS sensor ● Incorrect wiring or piping connections
	Brake dragging	● Hydraulic unit (solenoid valve) ● ABS sensor ● Master cylinder ● Brake (caliper & piston) ● Parking brake ● Axle & wheels ● Brake pedal play
	Long brake pedal stroke	● Air in brake line ● Brake pedal play
	Vehicle pitching	● Suspension play or fatigue (reduced damping) ● Incorrect wiring or piping connections ● Road surface (uneven)
	Unstable or uneven braking	● Hydraulic unit (solenoid valve) ● ABS sensor ● Brake (caliper & piston, pads) ● Tire specifications, tire wear and air pressures ● Incorrect wiring or piping connections ● Road surface (uneven)
Vibration and/or noise (while driving on slippery roads)	Excessive pedal vibration	● Incorrect wiring or piping connections ● Road surface (uneven)
	Noise from hydraulic unit	● Hydraulic unit (mount bushing) ● ABS sensor ● Brake piping
	Noise from front of vehicle	● Hydraulic unit (mount bushing) ● ABS sensor ● Master cylinder ● Brake (caliper & piston, pads, rotor) ● Brake piping ● Brake booster & check valve ● Suspension play or fatigue
	Noise from rear of vehicle	● ABS sensor ● Brake (caliper & piston, pads, rotor) ● Parking brake ● Brake piping ● Suspension play or fatigue

B: CHECKING THE HYDRAULIC UNIT OPERATION

11B1	**PREPARING THE BRAKE TESTER.**

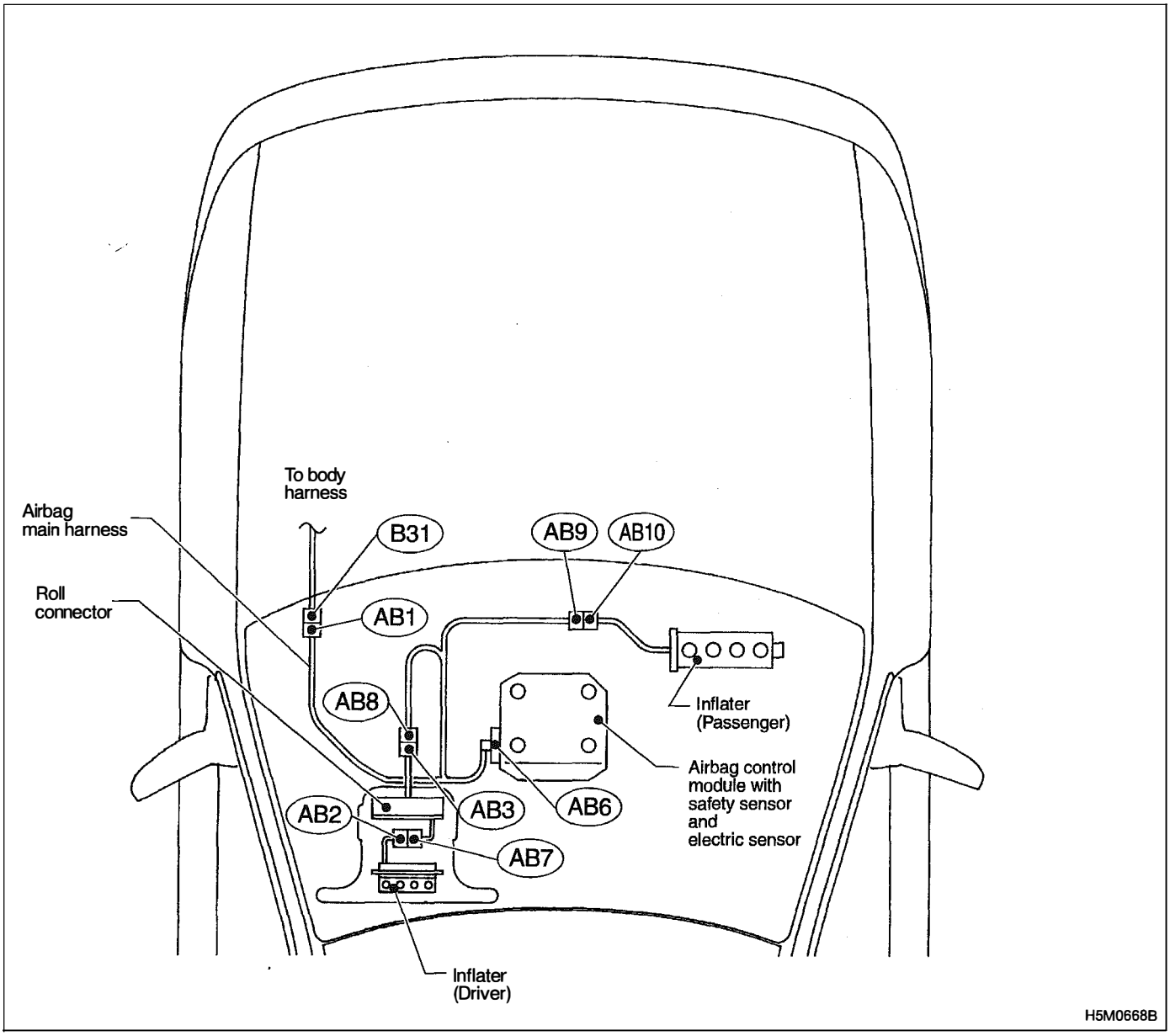
CHECK ***: Is the brake tester available?***

YES : CHECKING THE HYDRAULIC UNIT ABS OPERATION WITH BRAKE TESTER <Ref. to 4-4 [W12C2].>

NO : CHECKING THE HYDRAULIC UNIT ABS OPERATION BY PRESSURE GAUGE <Ref. to 4-4 [W12C1].>

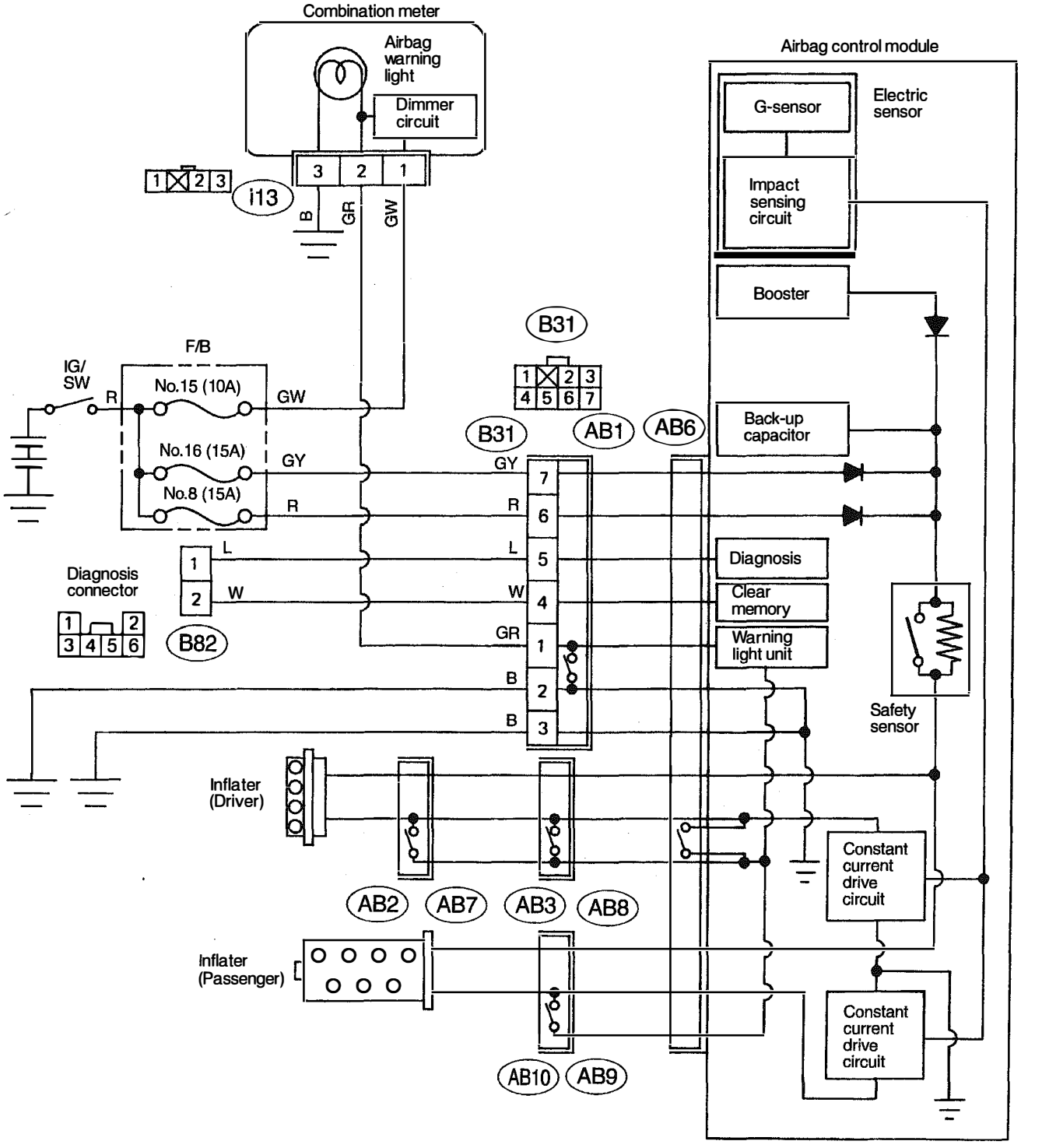
SUPPLEMENTAL RESTRAINT SYSTEM 5-5

1. Electrical Components Location



Connector No.	(AB1)	(AB2)	(AB3)	(AB6)	(AB7)	(AB8)	(AB9)	(AB10)
Pole	7	3	3	12	3	3	3	3
Color	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Male/Female	Male	Female	Female	Female	Male	Male	Male	Female

2. Schematic



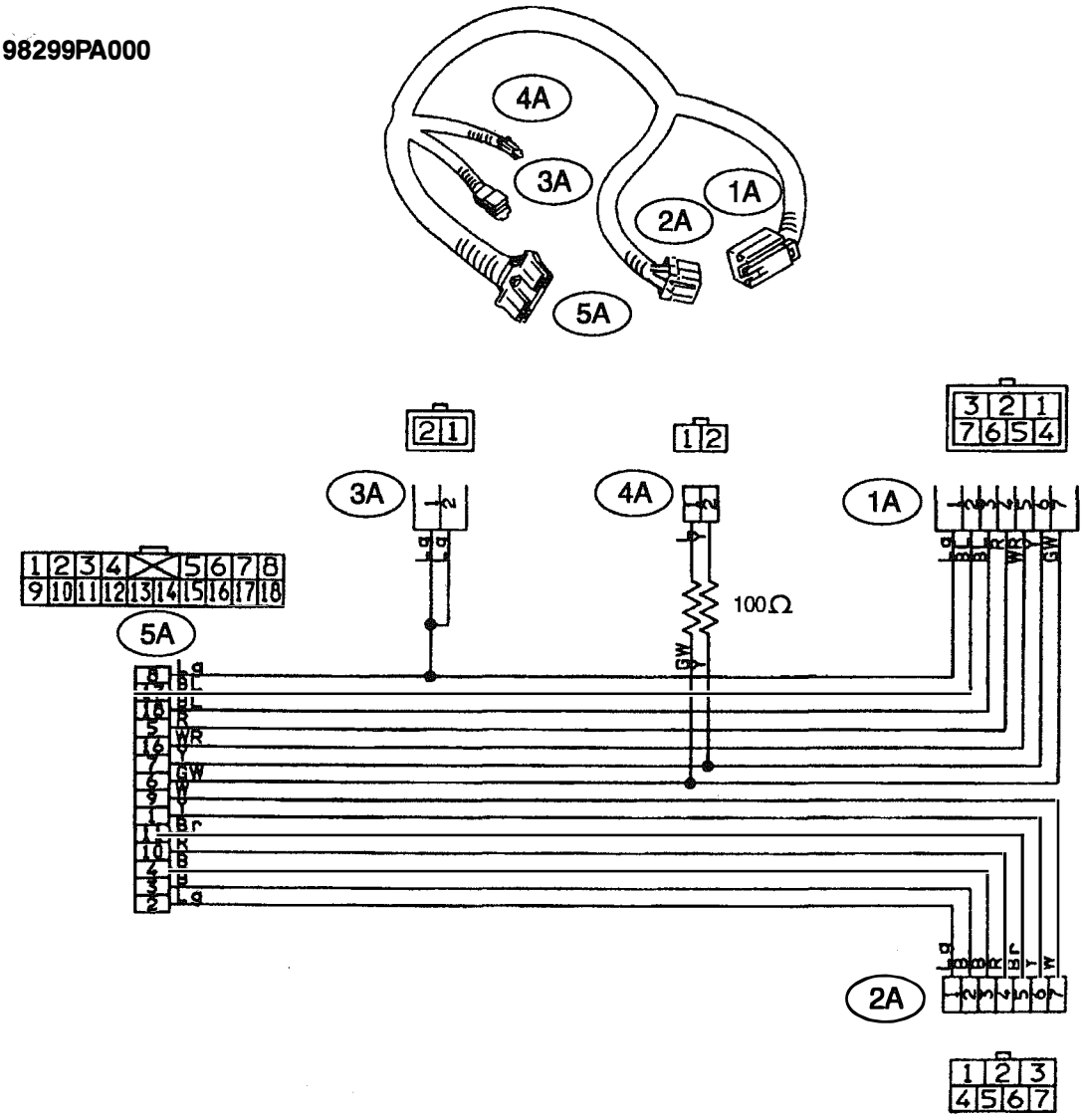
H5M0667B

3. Tools for Diagnostics

CAUTION:
Be sure to use specified test harness A, B or C when measuring voltage, resistance, etc. of AIRBAG system component parts.

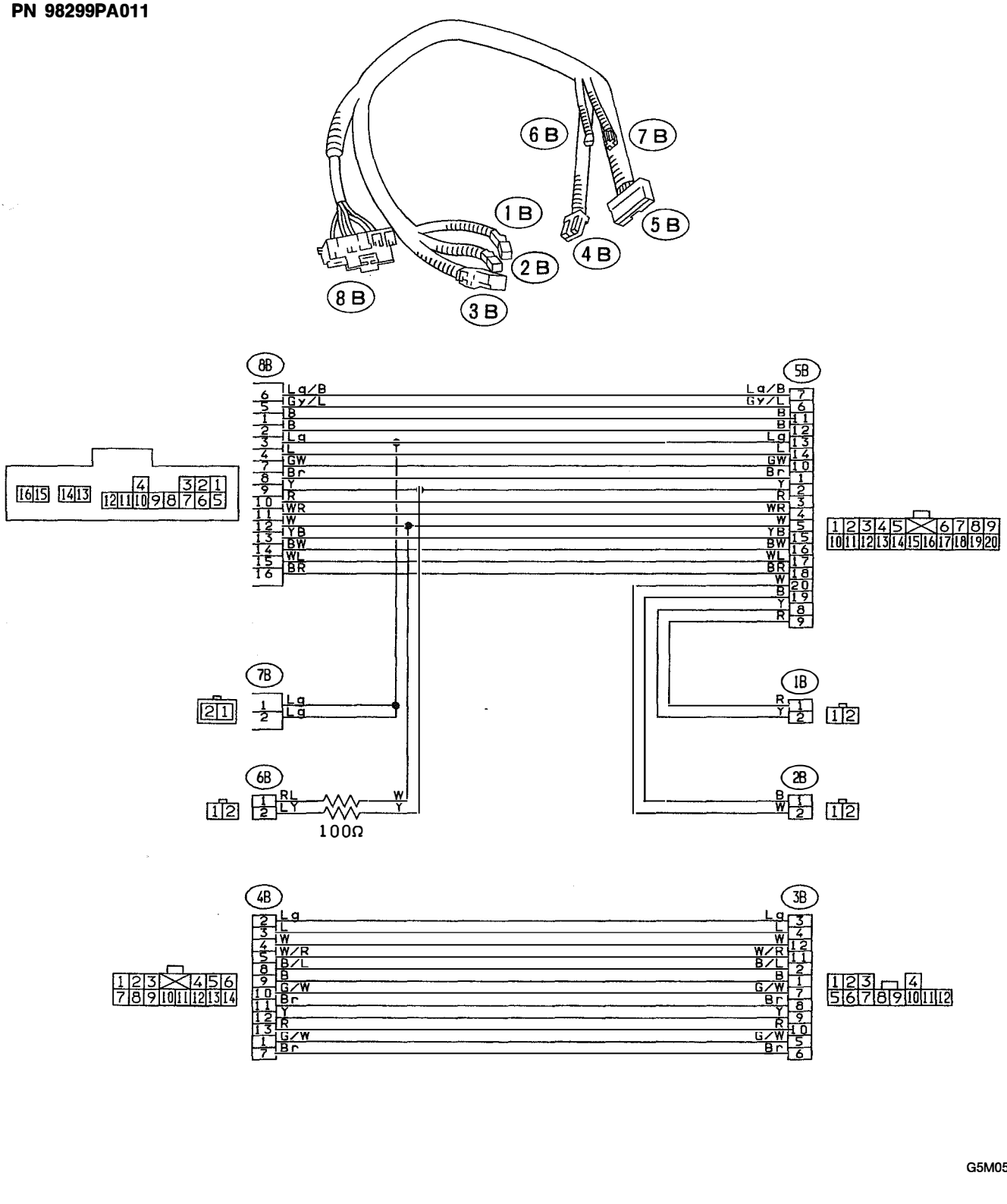
A: TEST HARNESS A

PN 98299PA000



B: TEST HARNESS B2

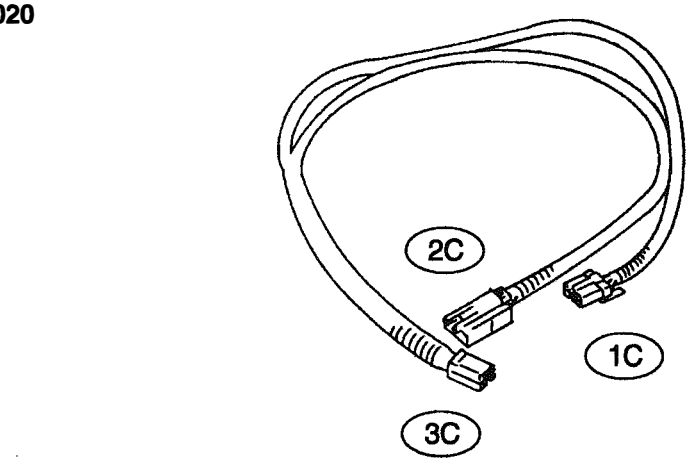
PN 98299PA011

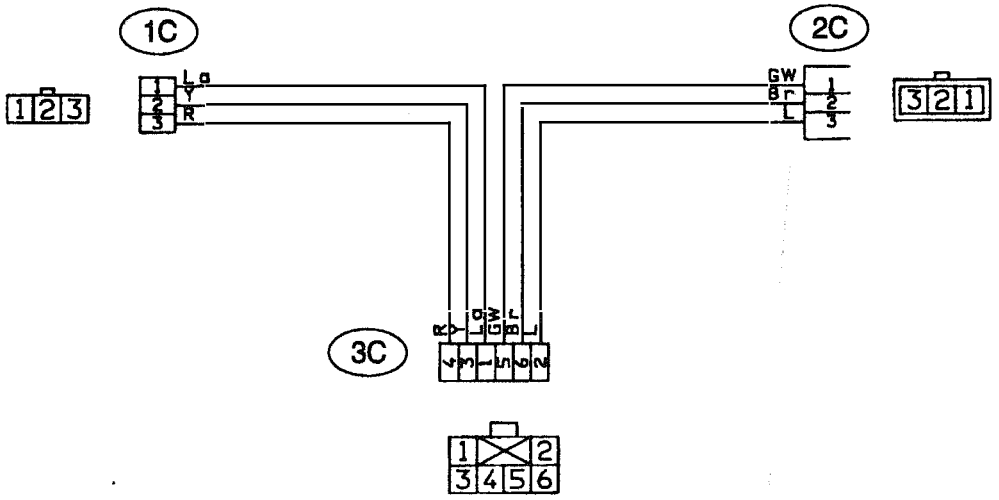


G5M0593

C: TEST HARNESS C

PN 98299PA020



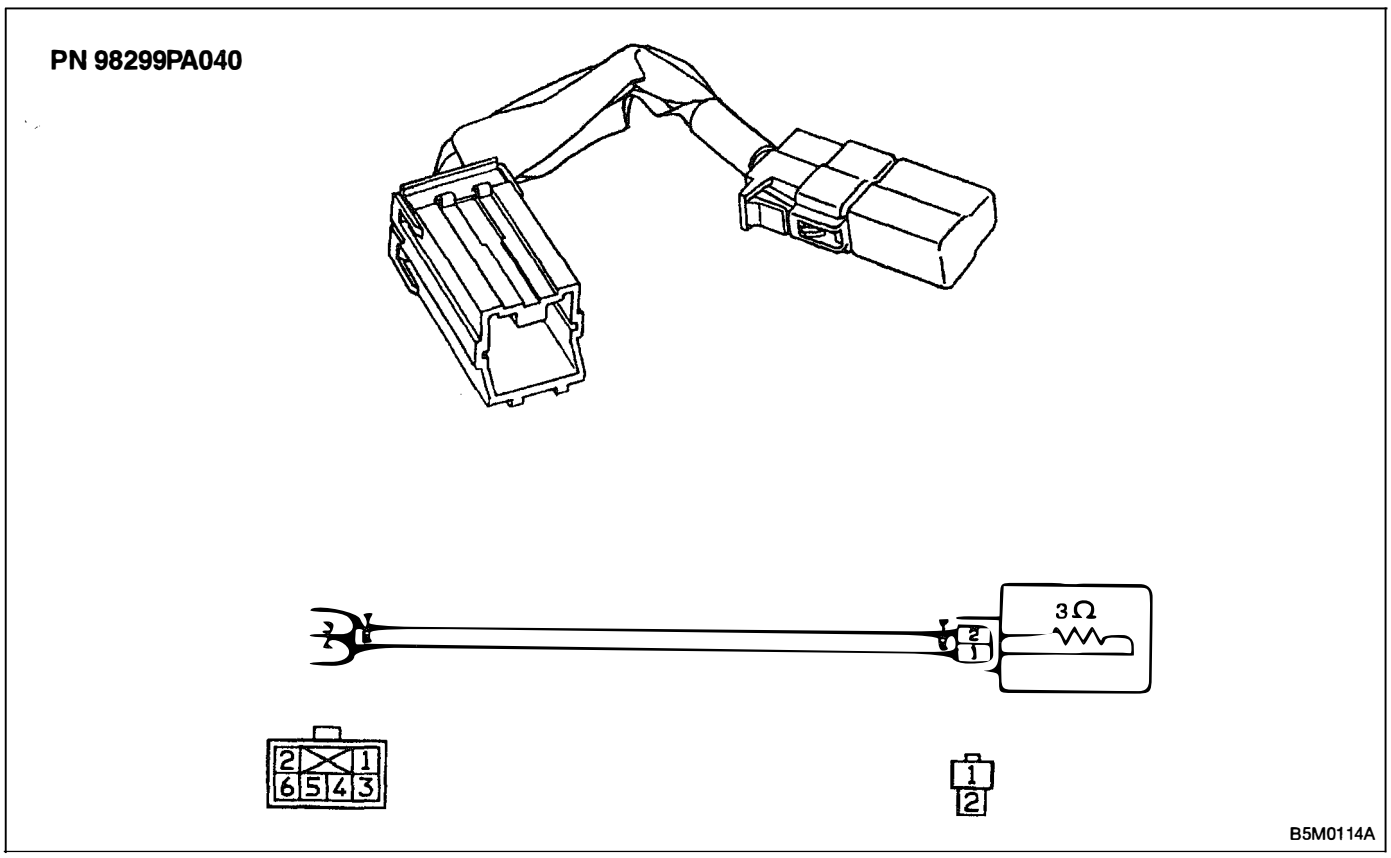


B5M0113A

D: AIRBAG RESISTOR

The airbag resistor is used during diagnostics. The airbag resistor has the same resistance as the airbag module and thus provides safety when used instead of the airbag module. It also makes it possible to finish, diagnostics in less time.

PN 98299PA040



4. Diagnostics Chart for On-board Diagnostic System

A: BASIC DIAGNOSTICS PROCEDURE

4A1	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Airbag warning light comes ON.
2) Turn ignition switch to ON (engine OFF).
3) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light stay ON after about 7 seconds or remain OFF, or come back ON after 30 seconds?***

YES : Repair and replace. <Ref. to 5-5 [T4D0].>

NO : Go to step **4A2**.

4A2	CHECK TROUBLE CODE INDICATES.

Perform ON-BOARD DIAGNOSTICS.
<Ref. to 5-5 [T4B0].>

CHECK : ***Does trouble code indicate? <Ref. to 5-5 [T5A0].>***

YES : Repair and replace. <Ref. to 5-5 [T5Q0].> Then go to step **4A3**.

NO : Repair and replace. <Ref. to 5-5 [T5R0].> Then go to step **4A3**.

4A3	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to ON (engine OFF).
2) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light stay ON after about 7 seconds or come back ON after 30 seconds?***

YES : Repair and replace. <Ref. to 5-5 [T4D0].>

NO : Go to step **4A4**.

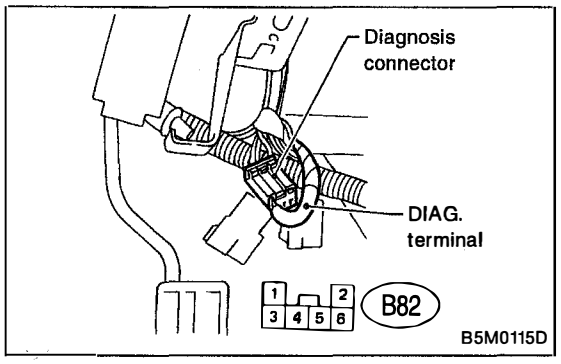
4A4	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

Check airbag warning light illuminates.

CHECK : ***Does airbag warning light come ON for about 7 seconds, then go out and stay out?***

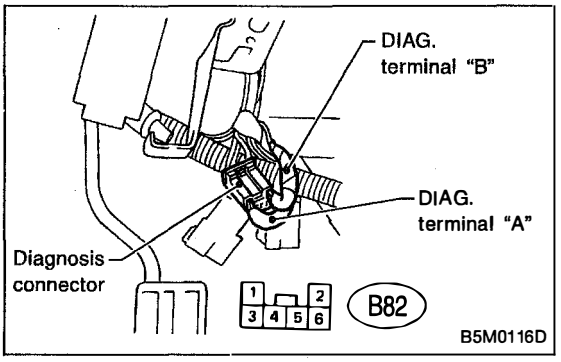
YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Go to step **4A1**.



B: ON-BOARD DIAGNOSTIC

When the airbag system is in functioning condition, the airbag warning light will remain on for about 7 seconds and go out when the ignition switch is set to ON.
If there is any malfunction, the airbag warning light will either stay on or off continuously. In such cases, perform on-board diagnostic in accordance with the specified procedure to determine trouble codes.
1) Turn ignition switch ON (with engine OFF).
2) Connect DIAG. terminal to No. 1 terminal of diagnosis connector located inside lower cover.
3) Check in accordance with the trouble code indicated by the AIRBAG warning light, and record the trouble codes.
4) Turn the ignition switch "OFF" and remove the DIAG. terminal from No.1 terminal of diagnosis connector.



C: CLEAR MEMORY

After eliminating problem as per trouble code, clear memory as follows:
1) Make sure ignition switch is ON (and engine off). Connect one DIAG. terminal "A" on diagnosis connector terminal No. 1.
While warning light is flashing, connect the other DIAG. terminal "B" on terminal No. 2 for at least three seconds.
2) After memory is cleared, normal warning light flashing rate resumes. (Warning light flashes every 0.6 seconds ON-OFF operation.) Memory cannot be cleared if any problem exists.
3) After clear memory and then DIAG. terminals "A" and "B", extract from diagnosis connector.

D: DIAGNOSTICS PROCEDURE

4D1	CHECK TROUBLE CODE INDICATES.

1) Perform on-board diagnostic. <Ref. to 5-5 [T4B0].>
2) Check trouble code indicates.

CHECK : ***Are trouble codes 4, 12, 13, 22, 34, 41, 42, or 43 indicated? <Ref. to 5-5 [T5A2].>***

YES : Go to step **4D2**.

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].> Then go to step **4D10**.

4D2	CHECK TROUBLE CODE INDICATES.

Check trouble code indicates.

CHECK : ***Are trouble codes 4, 22, 34, 42 indicated? <Ref. to 5-5 [T5A2].>***

YES : Go to step **4D3**.

NO : Go to step **4D7**.

4D3	CHECK TROUBLE CODE INDICATES.

Check trouble code indicates.

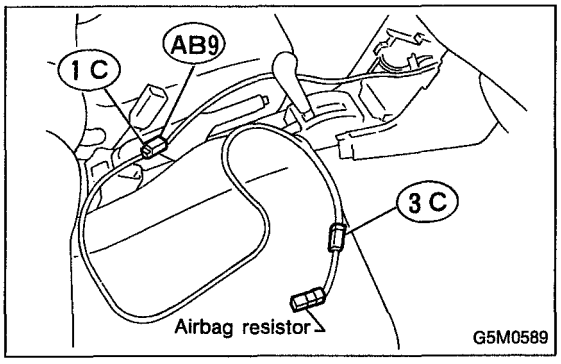
CHECK : ***Are trouble codes 12, 13, 41, 43 indicated? <Ref. to 5-5 [T5A2].>***

YES : Go to step **4D4**.

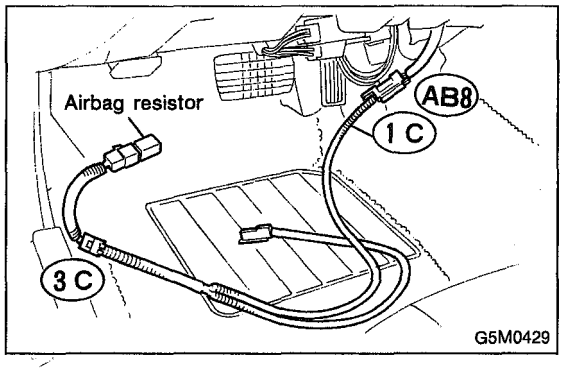
NO : Go to step **4D8**.

4D4	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.
2) Disconnect passenger's airbag module connector (AB9) to (AB10). <Ref. to 5-5 [W3A2].>



3) Connect test harness C connector (1C) to (AB9).
4) Connect airbag resistor to test harness C connector (3C).



5) Remove lower cover panel and connect test harness C connector (1C) to (AB8) <Ref. to 5-4 [W1A0].> with airbag resistor attached to test harness C connector (3C).
6) Connect battery ground cable and turn ignition switch to ON.
7) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Go to step **4D5**.

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].> Then go to step **4D10**.

4D5	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.
2) Connect passenger's airbag module connector (AB9) to (AB10).
3) Connect battery ground cable and turn ignition switch to ON.
4) Check airbag warning light illuminates.

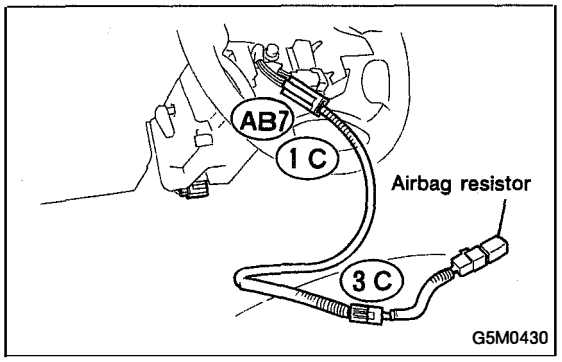
CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Go to step **4D6**.

NO : Replace with a new passenger's airbag module. <Ref. to 5-5 [W3A2].> Then go to step **4D5**.

4D6	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to "OFF". Disconnect battery ground cable, and wait 20 seconds.
2) Connect connector (AB8) to (AB3).



3) Remove driver's airbag module and connect test harness C connector (1C) to (AB7). <Ref. to 5-5 [W3A1].>
4) Connect airbag resistor to test harness C connector (3C).
5) Connect battery ground cable and turn ignition switch to ON.
6) Check airbag warning light illuminates.

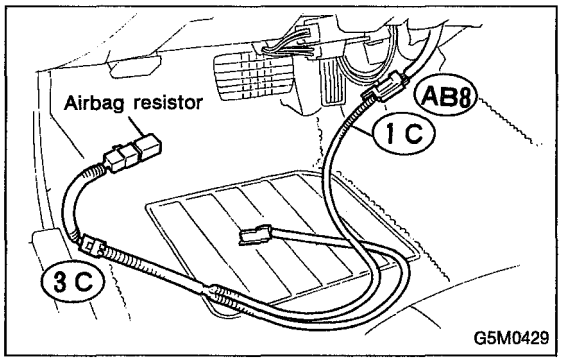
CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Replace with a new driver's airbag module. <Ref. to 5-5 [W3A1].> Then go to step **4D10.**

NO : Replace with a new combination switch. <Ref. to 5-5 [W600].> and install driver's airbag module. <Ref. to 5-5 [W3A1].> Then go to step **4D9.**

4D7	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.



2) Remove lower cover panel and connect test harness C connector (1C) to (AB8) <Ref. to 5-4 [W1A0].> with airbag resistor attached to test harness C connector (3C).
3) Connect battery ground cable and turn ignition switch to ON.
4) Check airbag warning light illuminates.

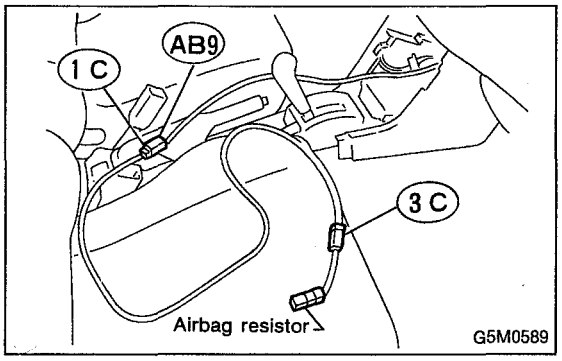
CHECK ***: Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Go to step **4D6.**

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].> Then go to step **4D10.**

4D8	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Turn ignition switch to OFF. Disconnect battery ground cable, and wait 20 seconds.
2) Disconnect passenger's airbag module connector (AB9) to (AB10). <Ref. to 5-5 [W3A2].>



3) Connect test harness C connector (1C) to (AB9).
4) Connect airbag resistor to test harness C connector (3C).
5) Connect battery ground cable and turn ignition switch to ON.
6) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Replace with a new passenger's airbag module. <Ref. to 5-5 [W3A2].> Then go to step **4D10**.

NO : Perform diagnostics and repair according to indicated trouble code. <Ref. to 5-5 [T5A0].> Then go to step **4D10**.

4D9	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Connect battery ground cable and turn ignition switch to ON.
2) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Replace with a new driver's airbag module. <Ref. to 5-5 [W3A1].> Then go to step **4D10**.

4D10	CHECK AIRBAG WARNING LIGHT ILLUMINATES.

1) Connect battery ground cable and turn ignition switch to ON.
2) Check airbag warning light illuminates.

CHECK : ***Does airbag warning light go off after about 7 seconds and remain off for more than 30 seconds? <Ref. to 5-5 [T4D11].>***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Then go to step **4D1**.

4D11	NOTES

- Always remember to secure the green double locks before turning the ignition switch to ON.
- In some cases the airbag warning light will go OFF after about 7 seconds but will turn ON again within 30 seconds. In this case continue diagnostics with the basic diagnostics procedures or trouble code procedures.

5. Diagnostics Chart with Trouble Code

A: TROUBLE CODES

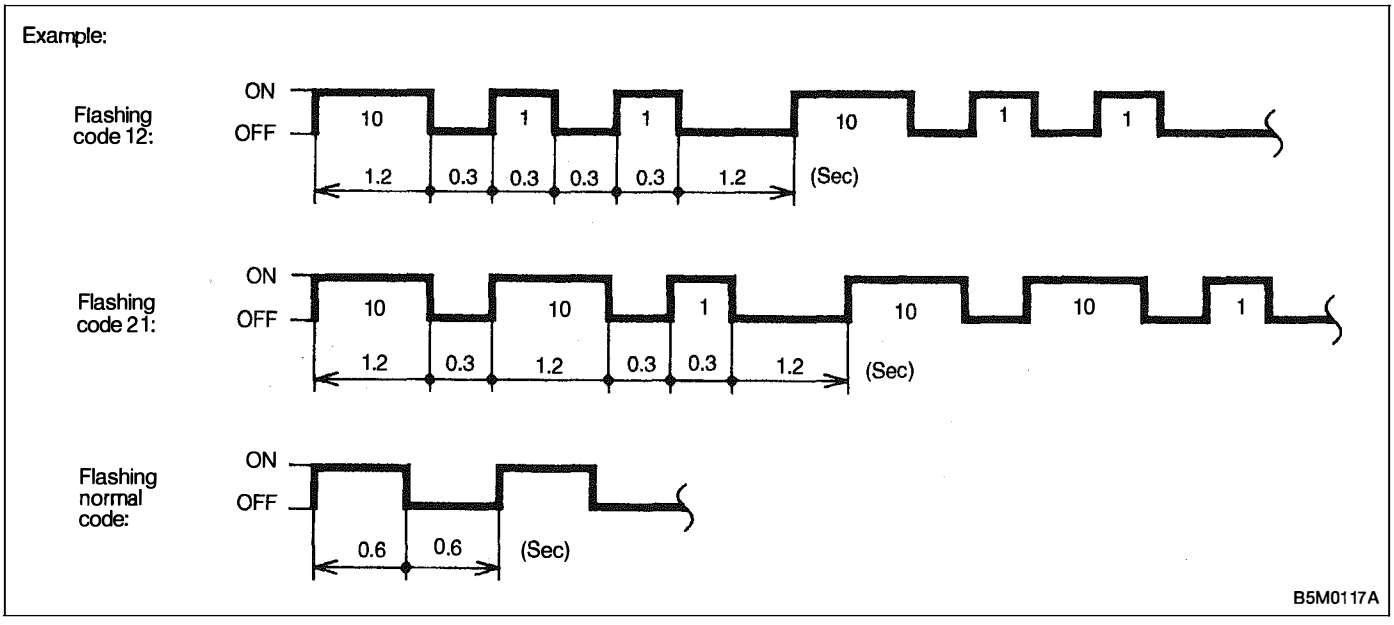
1. LIST OF TROUBLE CODES

Trouble code/ Contents of troubles	Memory function	Contents of diagnosis	Ref. to
04	Provided.	1) Airbag main harness circuit is shorted. 2) Passenger's airbag module harness circuit is shorted. 3) Airbag control module is faulty.	<Ref. to 5-5 [T5B0].>
11	Provided.	1) Airbag control module is faulty. 2) Airbag main harness circuit is open. 3) Fuse No. 8 is blown. 4) Body harness circuit is open.	<Ref. to 5-5 [T5C0].>
12	Provided.	1) Airbag main harness circuit is open. 2) Driver's airbag module harness circuit is open. 3) Roll connector circuit is open. 4) Airbag control module is faulty.	<Ref. to 5-5 [T5D0].>
13	Provided.	1) Airbag main harness circuit is shorted. 2) Driver's airbag module harness is shorted. 3) Roll connector circuit is shorted. 4) Airbag control module is faulty.	<Ref. to 5-5 [T5E0].>
14	Not provided.	1) (AB9) and (AB10) are not connected properly. 2) (AB2) and (AB7) are not connected properly. 3) (AB3) and (AB8) are not connected properly. 4) (AB6) is not connected properly to airbag control module.	<Ref. to 5-5 [T5F0].>
21	Provided.	Airbag control module is faulty.	<Ref. to 5-5 [T5G0].>
22	Provided.	1) Airbag main harness circuit is open. 2) Passenger's airbag module harness circuit is open. 3) Airbag control module is faulty.	<Ref. to 5-5 [T5H0].>
31	Not provided.	1) Airbag control module is faulty. 2) Airbag main harness circuit is open. 3) Fuse No. 16 is blown. 4) Body harness circuit is open.	<Ref. to 5-5 [T5I0].>
33	Provided.	Airbag module is inflated.	<Ref. to 5-5 [T5J0].>
34	Provided.	1) Passenger's airbag main harness circuit is shorted to power supply. 2) Passenger's airbag module harness is shorted to power supply. 3) Airbag control module is faulty.	<Ref. to 5-5 [T5K0].>
41	Provided.	1) Driver's airbag main harness circuit is shorted to ground. 2) Driver's airbag module harness circuit is shorted to ground. 3) Roll connector circuit is shorted to ground. 4) Airbag control module is faulty.	<Ref. to 5-5 [T5L0].>
42	Provided.	1) Passenger's airbag main harness circuit is shorted to ground. 2) Passenger's airbag module harness circuit is shorted to ground. 3) Airbag control module is faulty.	<Ref. to 5-5 [T5M0].>
43	Provided.	1) Driver's airbag main harness circuit is shorted to power supply. 2) Driver's airbag module harness is shorted to power supply. 3) Roll connector is shorted to power supply. 4) Airbag control module is faulty.	<Ref. to 5-5 [T5N0].>

Trouble code/ Contents of troubles	Memory function	Contents of diagnosis	Ref. to
Airbag warning light remains on.	Not provided.	1) Airbag warning light is faulty. 2) Airbag control module to airbag warning light harness circuit is shorted or open. 3) Grounding circuit is faulty. 4) Airbag control module is faulty. 5) (AB1) and (B31) are not connected properly.	<Ref. to 5-5 [T5O0].>
Airbag warning light remains off.	Not provided.	1) Fuse No. 15 is blown. 2) Body harness circuit is open. 3) Airbag warning light is faulty. 4) Airbag main harness is faulty. 5) Airbag control module is faulty.	<Ref. to 5-5 [T5P0].>
Warning light indicates trouble code, then normal code. (Flashing trouble code.)	Provided.	Airbag system component parts are faulty.	<Ref. to 5-5 [T5Q0].>
Warning light indicates trouble code, then normal code. (Flashing normal code.)	Not provided.	1) Airbag connector is faulty. 2) Fuse No. 16 is blown. 3) Airbag main harness is faulty. 4) Airbag control module is faulty. 5) Body harness is faulty.	<Ref. to 5-5 [T5R0].>

2. HOW TO READ TROUBLE CODES

The AIRBAG warning light flashes a code corresponding to the faulty parts.
The long segment (1.2 sec on) indicates a "ten", and the short segment (0.3 sec on) indicates a "one".



B: TROUBLE CODE 04

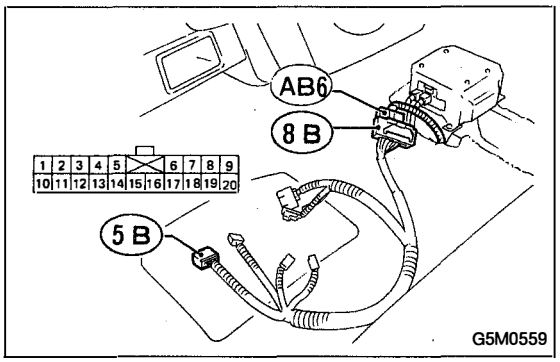
DIAGNOSIS:

- Airbag main harness circuit is shorted.
- Airbag module harness (Passenger) circuit is shorted.
- Airbag control module is faulty.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.

After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5B1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

2) Measure resistance between test harness B2 connector (5B) terminal.

Connector & terminal
(5B) No. 6 — (5B) No. 7:

CHECK ***: Is resistance more than 10 kΩ?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

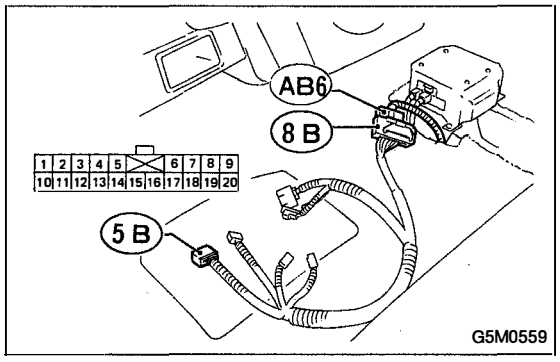
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

C: TROUBLE CODE 11

DIAGNOSIS:

- Airbag control module is faulty.
- Airbag main harness circuit is open.
- Fuse No. 8 is blown.
- Body harness circuit is open.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5C1	AIRBAG CONTROL MODULE INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].> and connect it to test harness B2 connector (8B).

2) Connect battery ground cable and turn ignition switch "ON". (engine off)

3) Measure voltage across connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 2 (+) — Chassis ground (–):

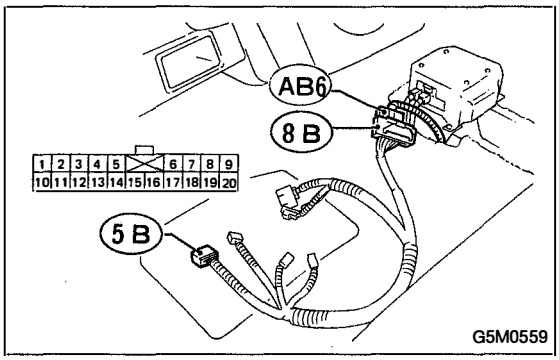
CHECK ***: Is voltage more than 10 V?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

NO : Go to step **5C2**.

5C2	AIRBAG MAIN HARNESS INSPECTION

1) Go to following procedure after performing diagnostics on airbag system as per diagnosis procedure under "5C1 AIR BAG CONTROL MODULE INSPECTION" <Ref. to 5-5 [T5C1].> previously outlined.
2) Turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.



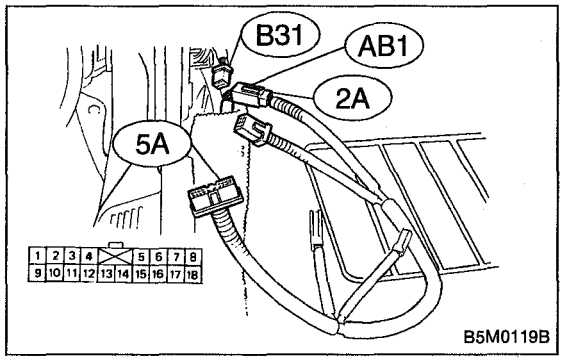
3) Disconnect body harness connector (B31) from connector (AB1) at front lower pillar, and connect connector (AB1) to test harness A connector (2A).
4) Measure resistance between test harness A connector (5A) terminal and test harness B2 connector (5B) terminal.

Connector & terminal
(5A) No. 1 — (5B) No. 2:

CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5C3.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5C3	AIRBAG MAIN HARNESS INSPECTION

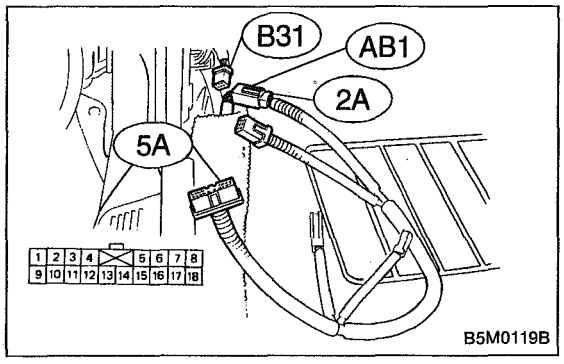
Measure resistance between (5A) connector terminal and chassis ground.

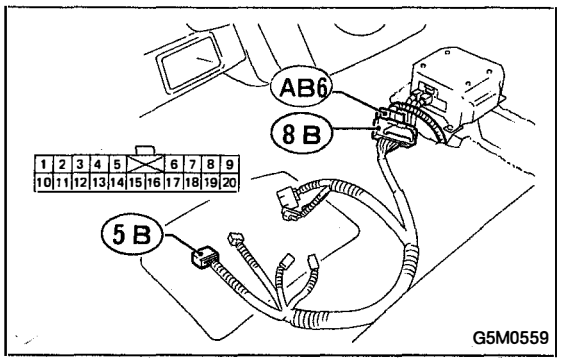
Connector & terminal
(5A) No. 1 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 10 kΩ?***

YES : Go to step **5C4.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>





5C4	AIRBAG MAIN HARNESS INSPECTION

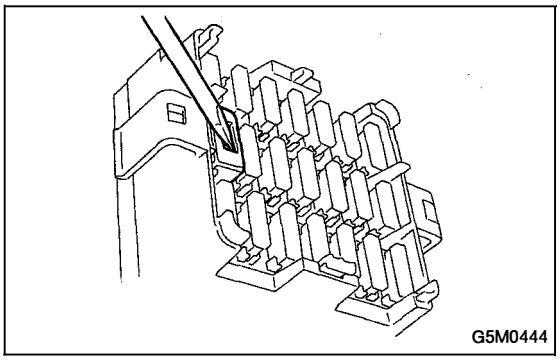
Measure resistance between (5B) connector terminal and chassis ground.

Connector & terminal
(5B) No. 2 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 10 kΩ?***

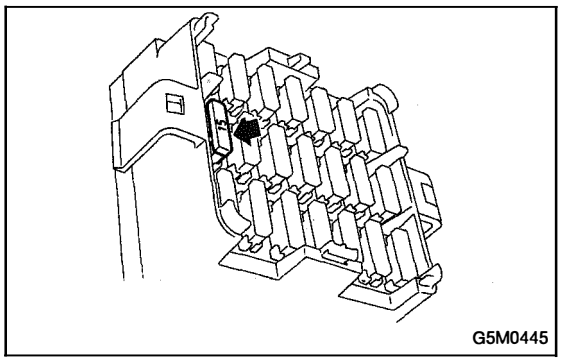
YES : Go to step **5C5**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5C5	FUSE No. 8 INSPECTION

1) Turn ignition switch "OFF", and remove airbag fuse protector.



2) Remove and visually check fuse No. 8.

CHECK ***: Is fuse No. 8 blown?***

YES : Replace fuse No. 8 if fuse No. 8 blows again, repair body harness.

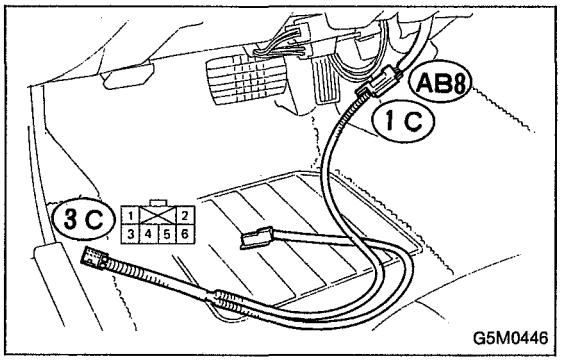
NO : Repair body harness.

D: TROUBLE CODE 12

DIAGNOSIS:

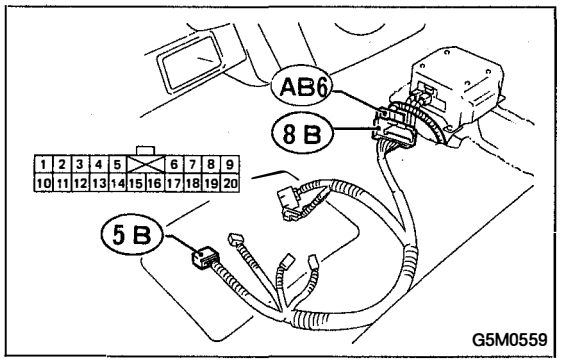
- Airbag main harness circuit is open.
- Airbag module harness (Driver) circuit is open.
- Roll connector circuit is open.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.



5D1	AIRBAG MAIN HARNESS INSPECTION

1) Remove lower cover panel <Ref. to 5-4 [W1A0].>, and connect connector (AB8) below steering column to test harness C connector (1C).



2) Disconnect connector (AB6) <Ref. to 5-5 [W5A0].> from airbag control module, and connect it to test harness B2 connector (8B) terminal.

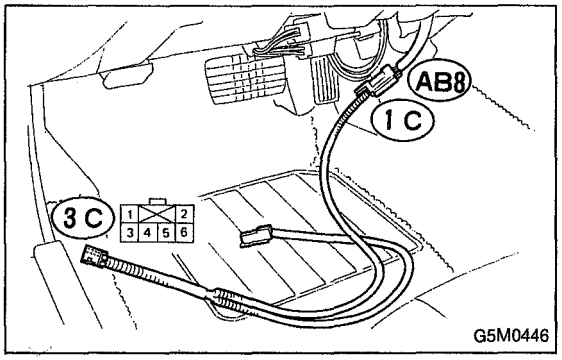
3) Measure resistance between test harness B2 connector (5B) and test harness C connector (3C) terminals.

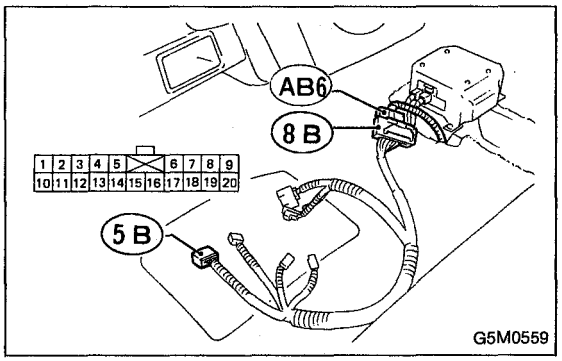
Connector & terminal
(5B) No. 14 — (3C) No. 4:

CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5D2.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>





5D2	AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness B2 connector (5B) and test harness C connector (3C) terminals.

Connector & terminal
(5B) No. 1 — (3C) No. 3:

CHECK ***: Is resistance less than 10 Ω?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

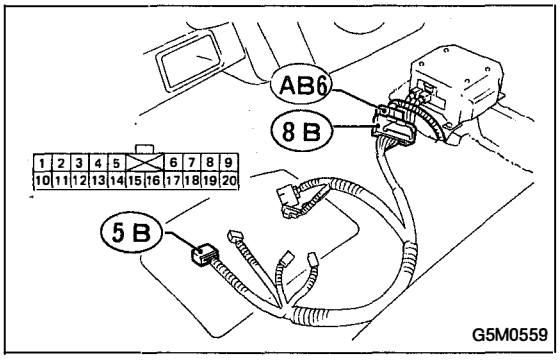
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

E: TROUBLE CODE 13

DIAGNOSIS:

- Airbag main harness circuit is shorted.
- Airbag module harness (Driver) is shorted.
- Roll connector circuit is shorted.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5E1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

2) Measure resistance between test harness B2 connector (5B) terminal.

Connector & terminal
(5B) No. 1 — (5B) No. 14:

CHECK ***: Is resistance more than 10 kΩ?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

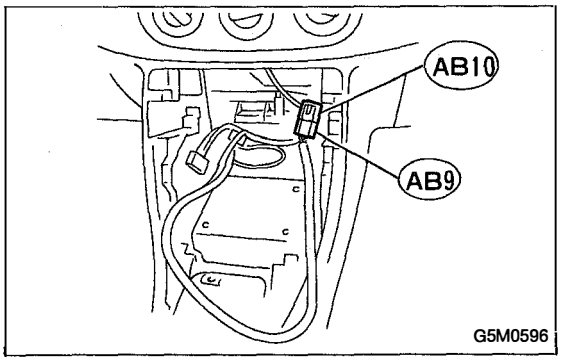
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

F: TROUBLE CODE 14

DIAGNOSIS:

- (AB9) and (AB10) are not connected properly.
- (AB2) and (AB7) are not connected properly.
- (AB3) and (AB8) are not connected properly.
- (AB6) is not connected properly to airbag control module.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.



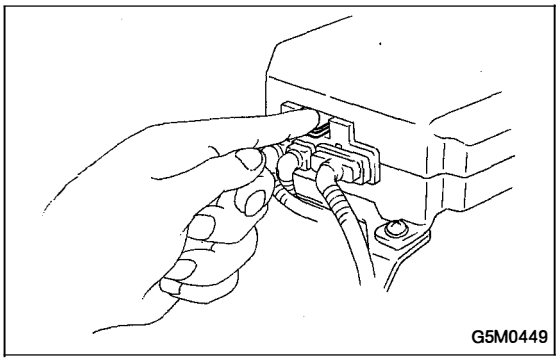
5F1	DOUBLE LOCK INSPECTION FOR CONNECTORS (AB9) AND (AB10)

1) Remove front pillar lower trim (Passenger side). <Ref. to 5-3 [W500].>
2) Check double lock of connectors (AB9) and (AB10).

CHECK : ***Is there poor contact in double lock of connectors (AB9) and (AB10)?***

YES : Repair poor contact in double lock of connectors (AB9) and (AB10).

NO : Go to step **5F2**.



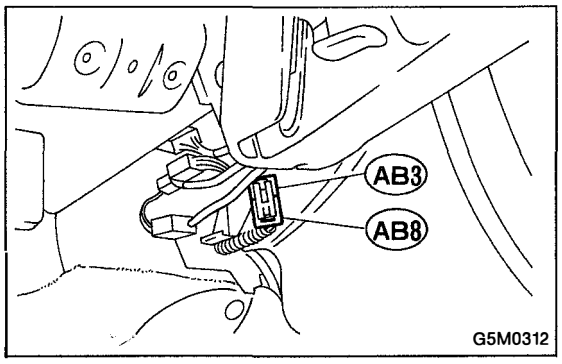
5F2	AIRBAG CONTROL MODULE DOUBLE LOCK INSPECTION AT CONNECTOR (AB6)

Check double lock of connector (AB6) connected to airbag control module. <Ref. to 5-5 [W5A0].>

CHECK : ***Is there poor contact in double lock of connector (AB6)?***

YES : Repair poor contact in double lock of connector (AB6).

NO : Go to step **5F3**.



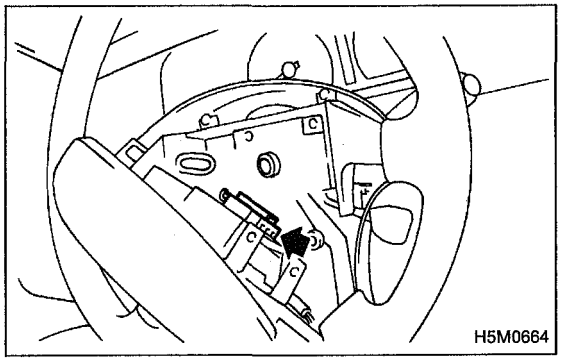
5F3	DOUBLE LOCK INSPECTION FOR CONNECTORS (AB3) AND (AB8)

1) Remove lower cover panel. <Ref. to 5-4 [W1A0].>
2) Check double lock of connectors (AB3) and (AB8) below steering column.

CHECK : ***Is there poor contact in double lock of connectors (AB3) and (AB8)?***

YES : Repair poor contact in double lock of connectors (AB3) and (AB8).

NO : Go to step **5F4**.



5F4	ROLL CONNECTOR DOUBLE LOCK INSPECTION AT CONNECTORS (AB2) AND (AB7)

Remove driver's airbag module <Ref. to 5-5 [W3A1].>, and check double lock of connectors (AB2) and (AB7) at roll connector.

CHECK : ***Is there poor contact in double lock of connectors (AB2) and (AB7)?***

YES : Repair poor contact in double lock of connectors (AB2) and (AB7).

NO : Replace airbag control module. <Ref. to 5-5 [W500].>

G: TROUBLE CODE 21

DIAGNOSIS:

- Airbag control module is faulty.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds. <Ref. to 5-5 [W5A0].>

5G1	**CHECK IF TROUBLE CODE 21 IS INDICATED.**

Confirm flashing trouble code according to "BASIC DIAGNOSTICS PROCEDURE". <Ref. to 5-5 [T4A0].>

CHECK ***: Is airbag warning light trouble code 21 indicated?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

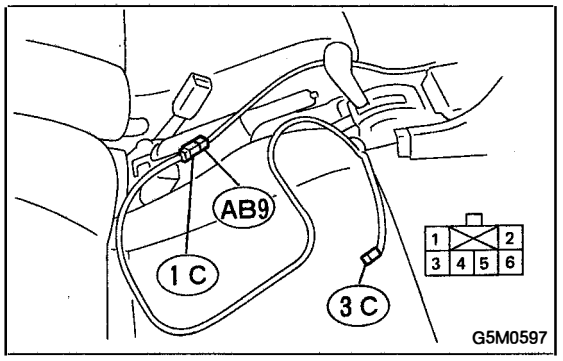
NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

H: TROUBLE CODE 22

DIAGNOSIS:

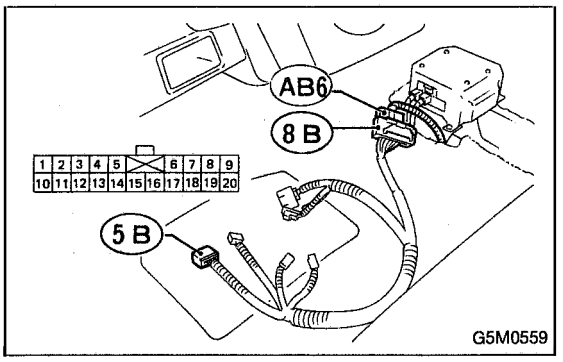
- Airbag main harness circuit is open.
- Airbag module harness (Passenger) circuit is open.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.



5H1	AIRBAG MAIN HARNESS INSPECTION

1) Remove front pillar lower trim (Passenger side). <Ref. to 5-3 [W500].>, disconnect connector (AB9) and (AB10) and connect connector (AB9) to test harness C connector (1C).



2) Disconnect connector (AB6) <Ref. to 5-5 [W5A0].> from airbag control module, and connect it to test harness B2 connector (8B) terminal.

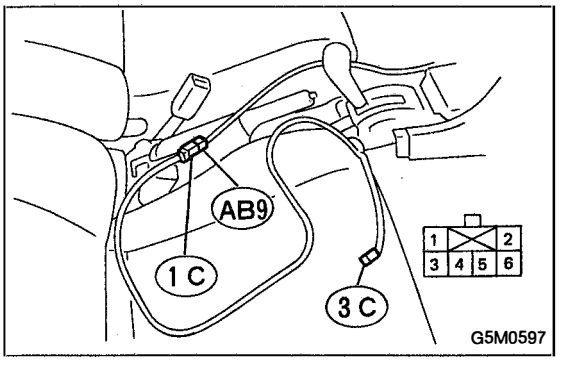
3) Measure resistance between test harness B2 connector (5B) and test harness C connector (3C) terminals.

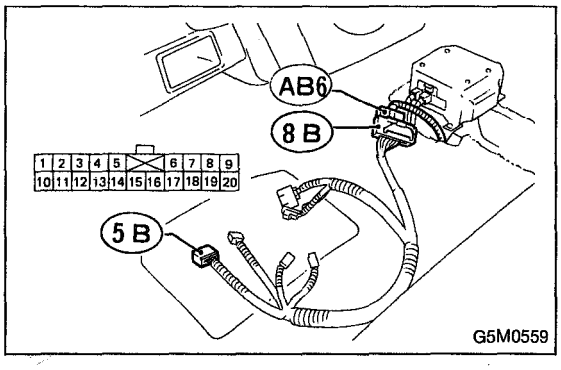
Connector & terminal
(5B) No. 6 — (3C) No. 4:

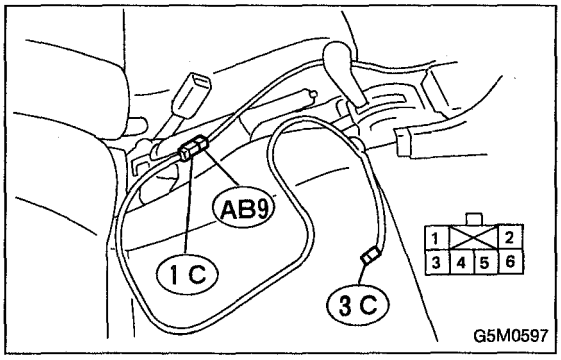
CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5H2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>







5H2	AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness B2 connector (5B) and test harness C connector (3C) terminals.

Connector & terminal
(5B) No. 7 — (3C) No. 3:

CHECK ***: Is resistance less than 10 Ω?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

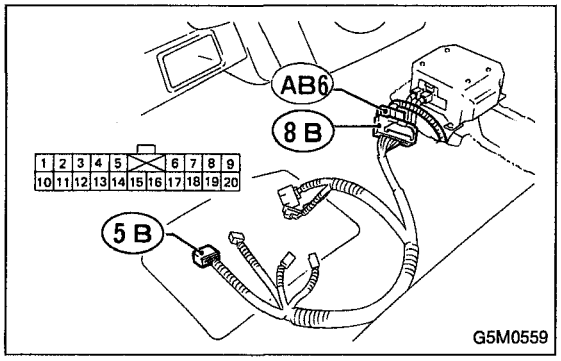
I: TROUBLE CODE 31

DIAGNOSIS:

- Airbag control module is faulty.
- Airbag main harness circuit is open.
- Fuse No. 16 is blown.
- Body harness circuit is open.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5I1	AIRBAG CONTROL MODULE INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

2) Connect battery ground cable and turn ignition switch "ON" (engine off).

3) Measure voltage across connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 5 (+) — Chassis ground (–):

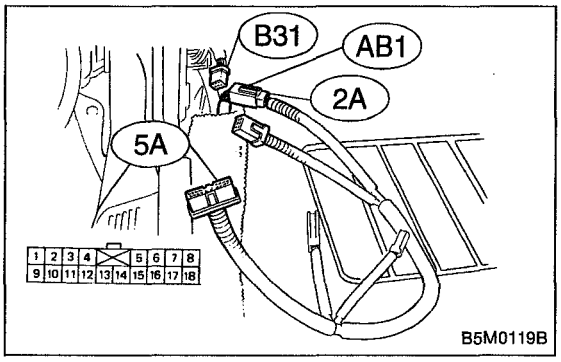
CHECK ***: Is voltage more than 10 V?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

NO : Go to step **5I2**.

5I2	AIRBAG MAIN HARNESS INSPECTION

1) Go to following procedure after performing diagnostics on airbag system as per diagnosis procedure under "5I1 AIRBAG CONTROL MODULE INSPECTION" <Ref. to 5-5 [T5I1].> previously outlined.
2) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.



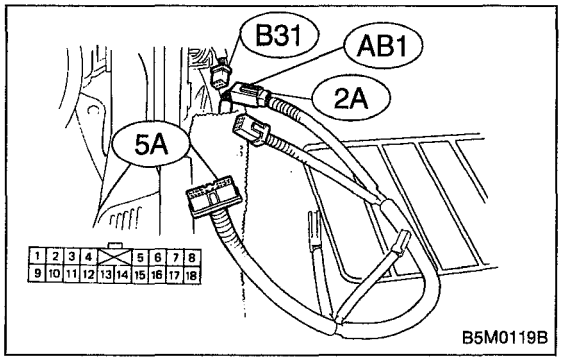
3) Disconnect connector (AB1) from body harness connector (B31) at front lower pillar (driver side), and connect connector (AB1) to test harness A connector (2A).
4) Measure resistance between test harness A connector (5A) and test harness B2 connector (5B) terminals.

Connector & terminal
(5A) No. 9 — (5B) No. 5:

CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5I3**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5I3	AIRBAG MAIN HARNESS INSPECTION

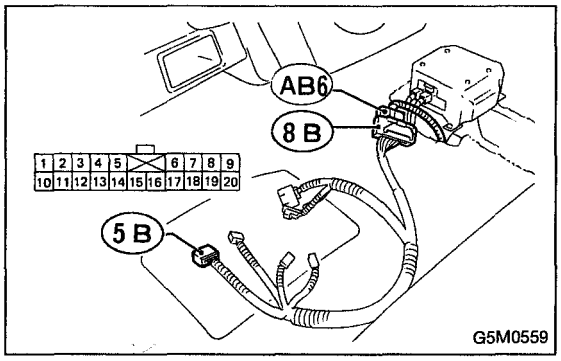
Measure resistance between each terminal of connectors (5A) and chassis ground.

Connector & terminal
(5A) No. 9 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 10 kΩ?***

YES : Go to step **5I4**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5I4	AIRBAG MAIN HARNESS INSPECTION

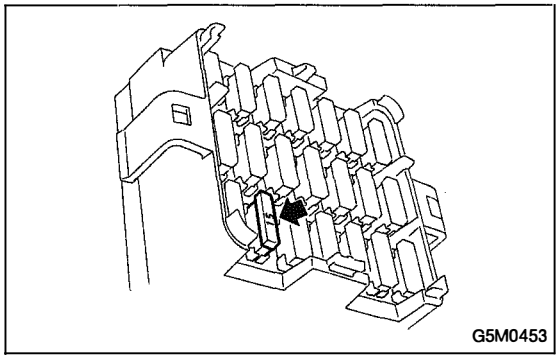
Measure resistance between each terminal of connectors (5B) and chassis ground.

Connector & terminal
(5B) No. 5 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 10 kΩ?***

YES : Go to step **5I5.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5I5	FUSE No. 16 INSPECTION

Make sure ignition switch is turned "OFF", then remove and visually check fuse No. 16.

CHECK ***: Is fuse No. 16 blown?***

YES : Replace fuse No. 16. If fuse No. 16 blows again, repair body harness.

NO : Repair body harness.

J: TROUBLE CODE 33

DIAGNOSIS:

- Airbag module is inflated.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds. <Ref. to 5-5 [W5A0].>

5J1	**CHECK IF TROUBLE CODE 33 IS INDICATED.**

Confirm flashing trouble code according to "BASIC DIAGNOSTICS PROCEDURE". <Ref. to 5-5 [T4A0].>

CHECK : ***Is airbag warning light trouble code 33 indicated?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

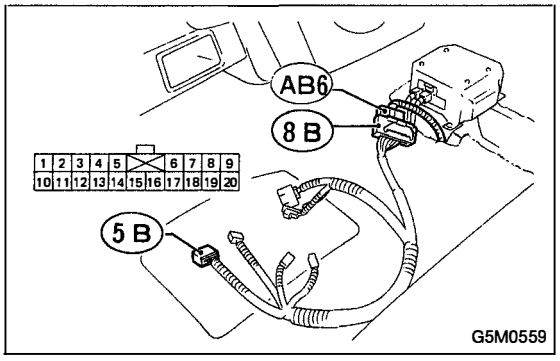
NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

K: TROUBLE CODE 34

DIAGNOSIS:

- Airbag main harness circuit (Passenger) is shorted to power supply.
- Airbag module harness (Passenger) is shorted to power supply.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5K1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

2) Connect battery ground cable and turn ignition switch "ON" (engine off).

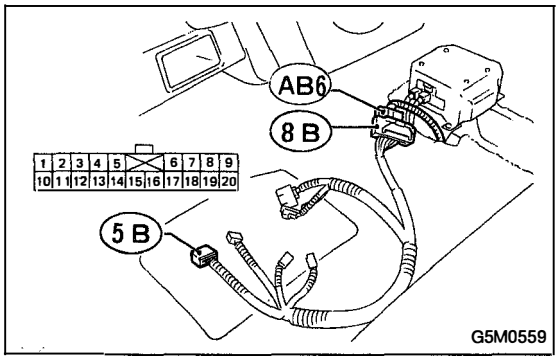
3) Measure voltage across each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 6 (+) — Chassis ground (–):

CHECK ***: Is voltage less than 1 V?***

YES : Go to step **5K2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5K2	AIRBAG MAIN HARNESS INSPECTION

Measure voltage across each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 7 (+) — Chassis ground (–):

CHECK ***: Is voltage less than 1 V?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

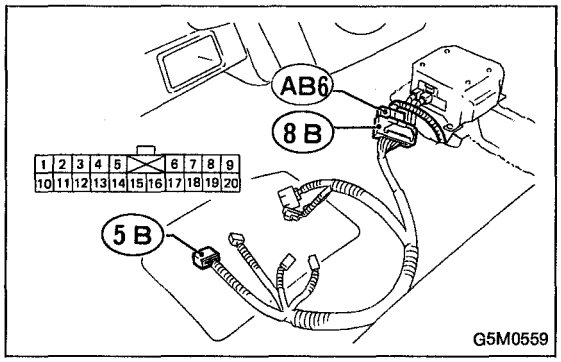
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

L: TROUBLE CODE 41

DIAGNOSIS:

- Airbag main harness circuit (Driver) is shorted to ground.
- Airbag module harness (Driver) is shorted to ground.
- Roll connector circuit is shorted to ground.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5L1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

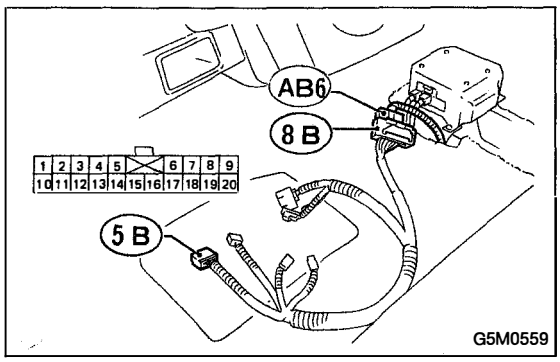
2) Measure resistance between test harness B2 connector (5B) terminals and chassis ground.

Connector & terminal
(5B) No. 1 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 200 Ω?***

YES : Go to step **5L2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5L2	AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness B2 connector (5B) terminals and chassis ground.

Connector & terminal
(5B) No. 14 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 200 Ω?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

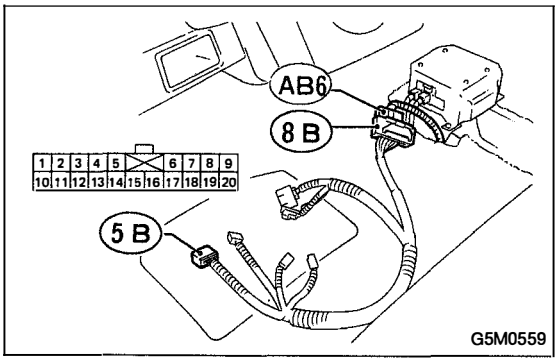
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

M: TROUBLE CODE 42

DIAGNOSIS:

- Airbag main harness circuit (Passenger) is shorted to ground.
- Airbag module harness circuit (Passenger) is shorted to ground.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5M1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

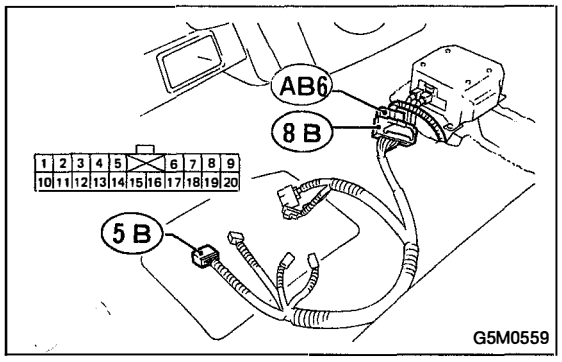
2) Measure resistance between test harness B2 connector (5B) terminals and chassis ground.

Connector & terminal
(5B) No. 6 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 200 Ω?***

YES : Go to step **5M2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5M2	AIRBAG MAIN HARNESS INSPECTION

Measure resistance between test harness B2 connector (5B) terminals and chassis ground.

Connector & terminal
(5B) No. 7 (+) — Chassis ground (–):

CHECK ***: Is resistance more than 200 Ω?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

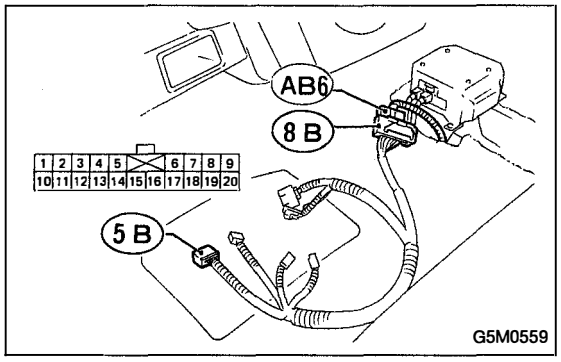
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

N: TROUBLE CODE 43

DIAGNOSIS:

- Airbag main harness circuit (Driver) is shorted to power supply.
- Airbag module harness (Driver) is shorted to power supply.
- Roll connector is shorted to power supply.
- Airbag control module is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal and then wait at least 20 seconds.
After 20 seconds elapse, remove instrument panel lower cover, and disconnect (AB3) and (AB8), (AB9) and (AB10).



5N1	AIRBAG MAIN HARNESS INSPECTION

1) Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

2) Connect battery ground cable and turn ignition switch "ON" (engine off).

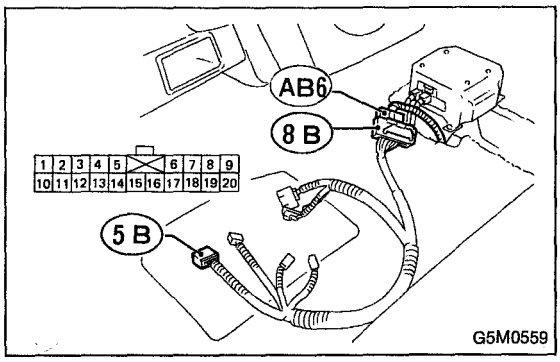
3) Measure voltage across each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 1 (+) — Chassis ground (–):

CHECK ***: Is voltage less than 1 V?***

YES : Go to step **5N2**.

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5N2	AIRBAG MAIN HARNESS INSPECTION

Measure voltage across each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 14 (+) — Chassis ground (–):

CHECK ***: Is voltage less than 1 V?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

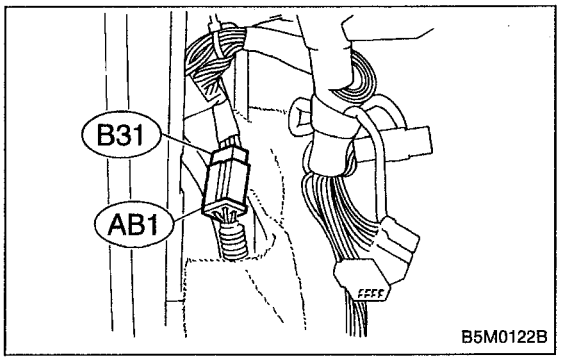
NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

O: AIRBAG WARNING LIGHT REMAINS ON.

DIAGNOSIS:

- Airbag warning light is faulty.
- Airbag control module to airbag warning light harness circuit is shorted or open.
- Grounding circuit is faulty.
- Airbag control module is faulty.
- (AB1) and (B31) are not connected properly.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.



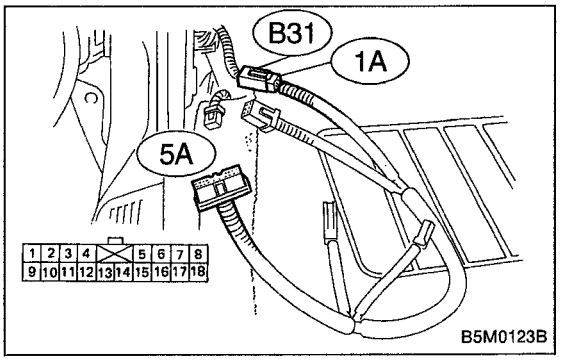
5O1	DOUBLE LOCK INSPECTION FOR CONNECTORS (AB1) AND (B31)

1) Remove front pillar lower trim (Driver side).
2) Check double lock of connectors (AB1) and (B31).

CHECK : ***Is there poor contact in double lock of connectors (AB1) and (B31)?***

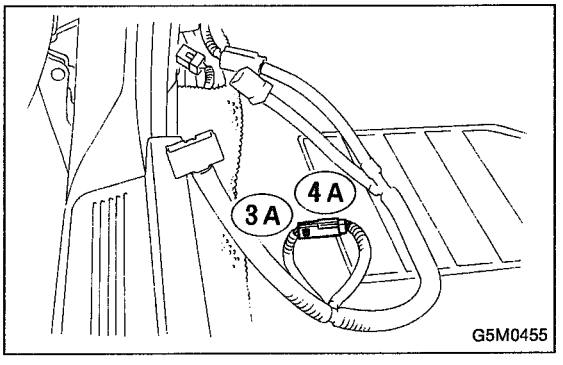
YES : Repair poor contact in double lock of connectors (AB1) and (B31).

NO : Go to step **5O2**.



5O2	INSPECTION OF AIRBAG WARNING LIGHT

1) Turn ignition switch "OFF" and connect body harness connector (B31) to test connector A connector (1A).

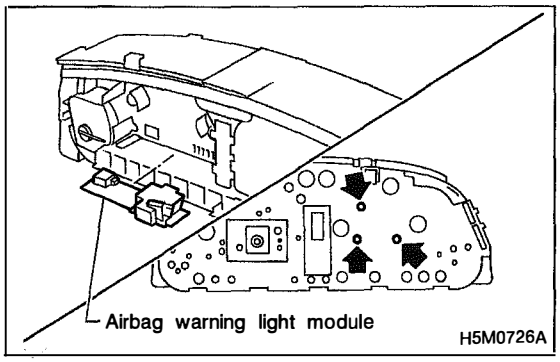


2) Connect battery ground cable and turn ignition switch "ON", (engine off) and connect connectors (3A) and (4A).

CHECK : ***Does the airbag warning light come off?***

YES : Go to step **5O4**.

NO : Go to step **5O3**.



5O3	INSPECTION OF BODY HARNESS

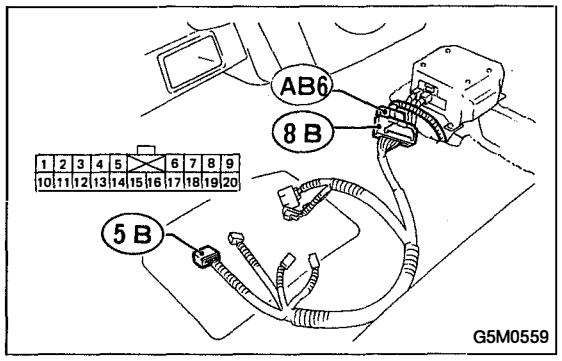
Check body harness.

CHECK : ***Is there anything unusual to body harness?***

YES : Repair body harness.

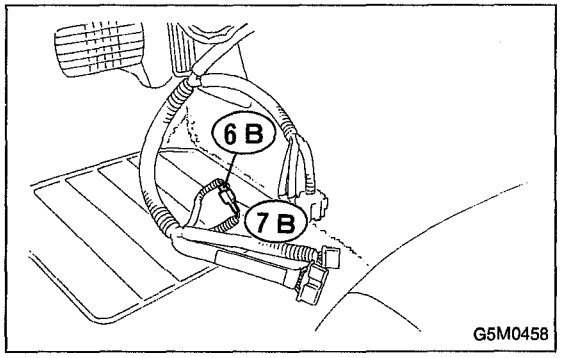
NO : Replace airbag warning light module.

NOTE:
After problem has been eliminated, disconnect connectors (3A) and (4A).



5O4	INSPECTION OF AIRBAG MAIN HARNESS

1) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds, and re-connect connectors (AB1) and (B31).
2) Remove instrument panel lower cover and disconnect (AB3) with (AB8), then disconnect connector (AB6) from airbag control module, <Ref. to 5-5 [W5A0].> and connect it to test harness B2 connector (8B).



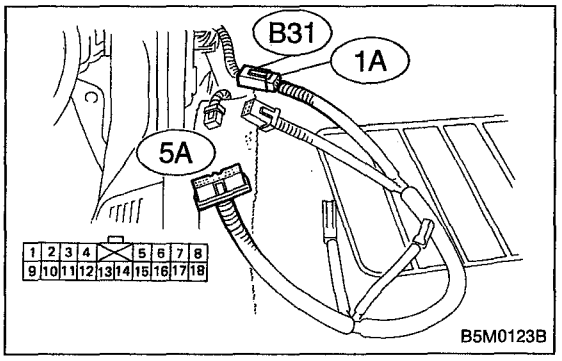
3) Connect battery ground cable and turn ignition switch "ON", (engine off) and connect connectors (6B) and (7B).

CHECK : ***Does the airbag warning light come on?***

YES : Go to step **5O5.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

NOTE:
After problem has been eliminated, disconnect connectors (6B) and (7B).



5O5	GROUNDING CIRCUIT INSPECTION

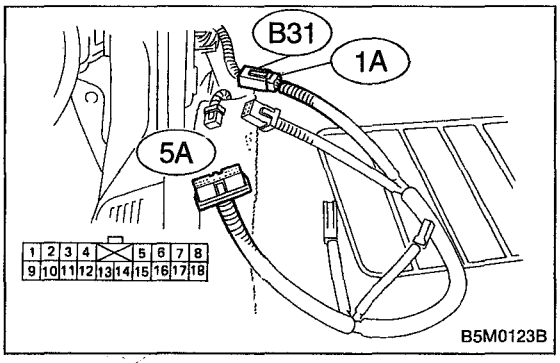
1) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
2) Disconnect connector (AB1) from body harness connector (B31), and connect connector (B31) to test harness A connector (1A).
3) Measure resistance between connector (5A) terminal and chassis ground.

Connector & terminal
(5A) No. 17 (+) — Chassis ground (–):

CHECK : ***Is resistance less than 10 Ω?***

YES : Go to step **5O6.**

NO : Repair body grounding circuit.



5O6	GROUNDING CIRCUIT INSPECTION

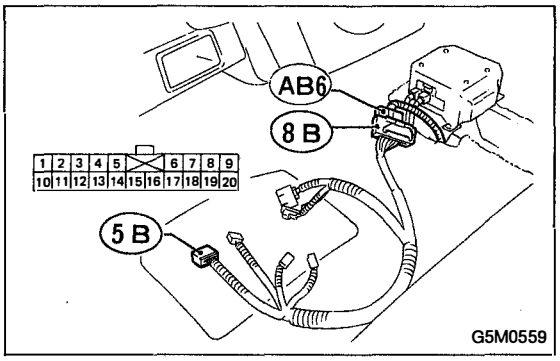
Measure resistance between connector (5A) terminal and chassis ground.

Connector & terminal
(5A) No. 18 (+) — Chassis ground (–):

CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5O7**.

NO : Repair body grounding circuit.



5O7	INSPECTION OF AIRBAG MAIN HARNESS

1) Connect connectors (AB1) and (B31). Disconnect connector (AB6) from airbag control module <Ref. to 5-5 [W5A0].>, and connect it to test harness B2 connector (8B).

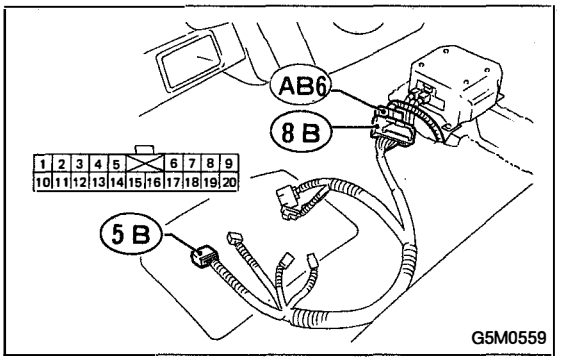
2) Measure resistance between each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 11 (+) — Chassis ground (–):

CHECK ***: Is resistance less than 10 Ω?***

YES : Go to step **5O8.**

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>



5O8	INSPECTION OF AIRBAG MAIN HARNESS

Measure resistance between each test harness B2 connector (5B) terminal and chassis ground.

Connector & terminal
(5B) No. 12 (+) — Chassis ground (–):

CHECK ***: Is resistance less than 10 Ω?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

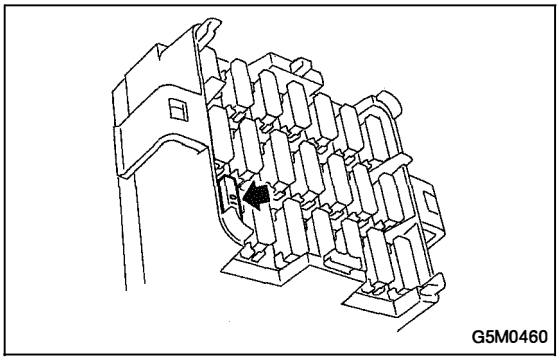
P: AIRBAG WARNING LIGHT REMAINS OFF.

DIAGNOSIS:

- Fuse No. 15 is blown.
- Body harness circuit is open.
- Airbag warning light is faulty.
- Airbag main harness is faulty.
- Airbag control module is faulty.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground terminal, and then wait at least 20 seconds.



5P1	FUSE No. 15 INSPECTION

Remove and visually check fuse No. 15.

CHECK : ***Is fuse No. 15 blown?***

YES : Replace fuse No. 15.
If fuse No. 15 blows again, go to step **5P2**.

NO : Go to step **5P2**.

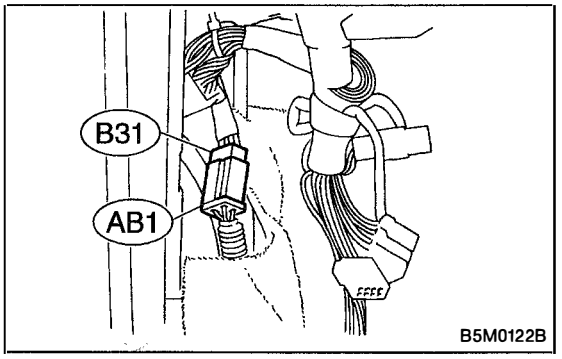
5P2	BODY HARNESS INSPECTION

Turn ignition switch "ON" (engine off) to make sure other warning lights (in combination meter) illuminate.

CHECK : ***Do all the warning lights (in combination meter) except airbag warning light come on?***

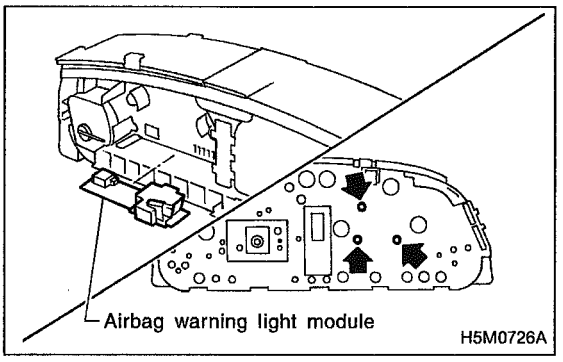
YES : Go to step **5P3**.

NO : Repair body harness.



5P3	AIRBAG WARNING LIGHT MODULE (IN COMBINATION METER) INSPECTION

1) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
2) Disconnect body harness connector (B31) from connector (AB1).

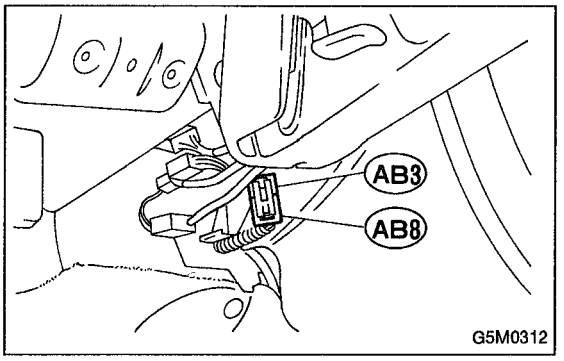


3) Connect battery ground cable and turn ignition switch "ON" (engine off) to make sure airbag warning light illuminates.

CHECK : ***Does the airbag warning light come on?***

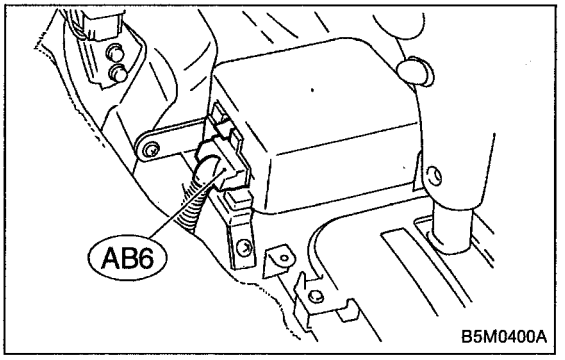
YES : Go to step **5P4.**

NO : Replace airbag warning light module.



5P4	AIRBAG MAIN HARNESS INSPECTION

1) Turn ignition switch "OFF", disconnect battery ground cable and then wait at least 20 seconds.
2) Connect body harness connector (B31) and connector (AB1).
3) Disconnect connectors (AB3) and (AB8) below steering column. <Ref. to 5-5 [M2E2].>



4) Disconnect connector (AB6) from airbag control module. <Ref. to 5-5 [W5A0].>

5) Connect battery ground cable and turn ignition switch "ON" to make sure airbag warning light illuminates.

CHECK : ***Does the airbag warning light come on?***

YES : Replace airbag control module. <Ref. to 5-5 [W500].>

NO : Replace airbag main harness. <Ref. to 5-5 [W400].>

Q: WARNING LIGHT INDICATES TROUBLE CODE, THEN NORMAL CODE.
— FLASHING TROUBLE CODE. —

DIAGNOSIS:

- Airbag system component parts are faulty.

CAUTION:

Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable, and then wait at least 20 seconds.

5Q1	AIRBAG COMPONENT PARTS APPEARANCE INSPECTION

1) Conduct on-board diagnostic and call up trouble codes stored in memory. <Ref. to 5-5 [T4B0].>

2) Select trouble code required to check airbag component parts from those listed in table and reproduce symptom.

Trouble codes	Check parts	Refer to
04	• Airbag module (Passenger) • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W400].> <5-5 [W500].>
11	• Fuse No. 8 • Airbag main harness • Airbag control module • Body harness	<5-5 [T5C5].> <5-5 [W400].> <5-5 [W500].> —
12	• Roll connector • Airbag module (Driver) • Airbag main harness • Airbag control module	<5-5 [W600].> <5-5 [W300].> <5-5 [W400].> <5-5 [W500].>
13	• Airbag module (Driver) • Roll connector • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W600].> <5-5 [W400].> <5-5 [W500].>
21	• Airbag control module	<5-5 [W500].>
22	• Airbag module (Passenger) • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W400].> <5-5 [W500].>
33	• Airbag control module	<5-5 [W500].>
34	• Airbag main harness • Airbag module (Passenger) • Airbag control module	<5-5 [W400].> <5-5 [W300].> <5-5 [W500].>
41	• Airbag module (Driver) • Roll connector • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W600].> <5-5 [W400].> <5-5 [W500].>
42	• Airbag module (Passenger) • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W400].> <5-5 [W500].>
43	• Airbag module (Driver) • Roll connector • Airbag main harness • Airbag control module	<5-5 [W300].> <5-5 [W600].> <5-5 [W400].> <5-5 [W500].>

3) Conduct appearance inspection on parts selected.

CHECK : ***Is there anything unusual about the appearance of airbag component parts?***

YES : Replace faulty airbag component parts.

NO : Go to step **5Q2**.

NOTE:
Also check connector terminals, wiring harness, case, etc. for damage.

5Q2	AIRBAG COMPONENT PARTS VIBRATION INSPECTION

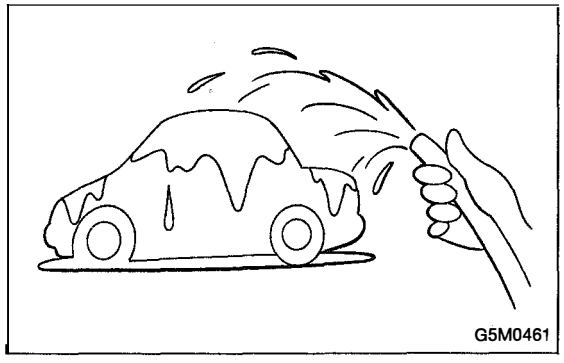
1) Gently shake check parts (to determine faults.).
2) To check airbag module or roll connector, turn and tilt steering wheel.

CAUTION:
Do not shake or vibrate airbag control module.

CHECK : ***Does the component malfunction again when shaking?***

YES : Replace faulty airbag component parts.

NO : Go to step **5Q3**.



5Q3	SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on airbag components.

CHECK : ***Does water leak into the passenger compartment when showering vehicle?***

YES : Replace faulty airbag component parts.

NO : Perform clear memory. <Ref. to 5-5 [T4C0].>

NOTE:
Also check wiring harnesses as water may leak along them and get airbag component parts wet.

R: WARNING LIGHT INDICATES TROUBLE CODE, THEN NORMAL CODE.
— FLASHING NORMAL CODE. —

DIAGNOSIS:

- Airbag connector is faulty.
- Fuse No. 16 is blown.
- Airbag main harness is faulty.
- Airbag control module is faulty.
- Body harness is faulty.

CAUTION:
Before performing diagnostics on airbag system, turn ignition switch "OFF", disconnect battery ground cable, and then wait at least 20 seconds.

5R1	AIRBAG CONNECTOR APPEARANCE INSPECTION

Conduct appearance inspection on airbag connectors (AB2) through (AB8). <Ref. to 5-5 [T100].>

CHECK : ***Is there anything unusual about the appearance of connectors (AB2) through (AB8)?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R2**.

NOTE:
Check terminals, case and wiring harnesses for damage.

5R2	AIRBAG CONNECTOR VIBRATION INSPECTION

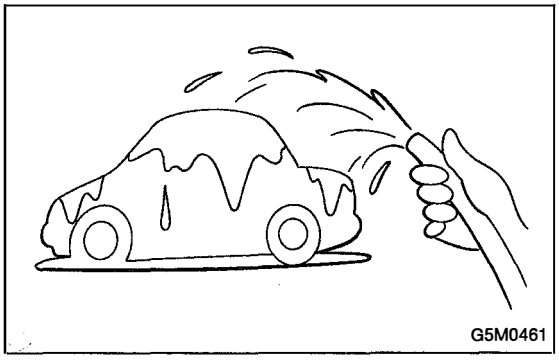
Conduct vibration inspection on airbag connectors (AB2) through (AB8). <Ref. to 5-5 [T100].>

CHECK : ***Do the connectors (AB2) through (AB8) malfunction again when shaking?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R3**.

NOTE:
Gently shake each airbag connector.



5R3	SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on airbag components.

CHECK : ***Does water leak into the passenger compartment when showering vehicle?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R4**.

NOTE:
If leaks are noted, also check wiring harnesses as water may leak along them and wet airbag connectors.

5R4	FUSE No. 16, AIRBAG MAIN HARNESS, AIRBAG CONTROL MODULE, BODY HARNESS APPEARANCE INSPECTION

Conduct appearance inspection on fuse No. 16 <Ref. to 5-5 [T5I5].>, airbag main harness <Ref. to 5-5 [W400].>, airbag control module <Ref. to 5-5 [W5A0].> and body harness.

CHECK : ***Is there anything unusual about the appearance of fuse No. 16, airbag main harness, airbag control module or body harness?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R5**.

NOTE:
Also check connectors, terminals, wiring harness and case for damage.

5R5	FUSE No. 16, AIRBAG MAIN HARNESS, BODY HARNESS VIBRATION INSPECTION

Conduct vibration inspection on fuse No. 16, airbag main harness and body harness.

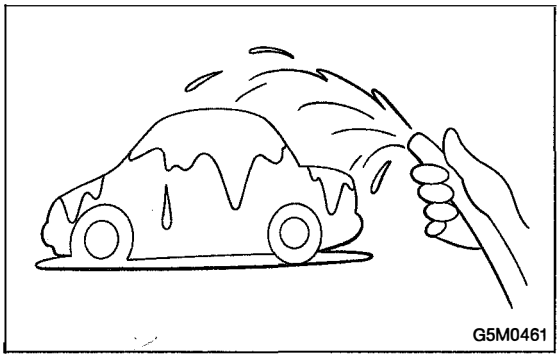
CAUTION:
Do not shake or vibrate airbag control module.

CHECK : ***Do fuse No. 16, airbag main harness or body harness malfunction again when shaking?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R6**.

NOTE:
Gently shake each part.


G5M0461

5R6	SHOWERING INSPECTION TO BODY

Spray water on vehicle body.

CAUTION:
Do not directly spray water on each part.

CHECK ***: Does water leak into the passenger compartment when showering vehicle?***

YES : Replace faulty airbag component parts.

NO : Go to step **5R7**.

NOTE:
If leaks are noted, check wiring harnesses as water may leak along them and get parts wet.

5R7	WARNING LIGHT ILLUMINATION CHECK

Turn ignition switch "ON" (engine off) and observe airbag warning light.

CHECK ***: Does the airbag warning light come on for about 7 seconds, then go out and stay out?***

YES : Perform clear memory. <Ref. to 5-5 [T4C0].>

NO : Go to "DIAGNOSTICS PROCEDURE". <Ref. to 5-5 [T4D0].>

WIRING DIAGRAM SECTION

FOREWORD

This portion of the service manual has been prepared to provide SUBARU service personnel with the necessary information and data for the correct maintenance and repair of SUBARU vehicle.
The manual include the procedures for maintenance disassembling, reassembling, inspection and adjustment of components and diagnostics for guidance of both the fully qualified and the less-experienced mechanics.
Please peruse and utilize this manual fully to ensure complete repair work for satisfying our customers by keeping their vehicle in optimum condition. When replacement of parts during repair work is needed, be sure to use SUBARU genuine parts.

All information, illustration and specifications contained in this manual are based on the latest product information available at the time of publication approval.

FUJI HEAVY INDUSTRIES LTD.

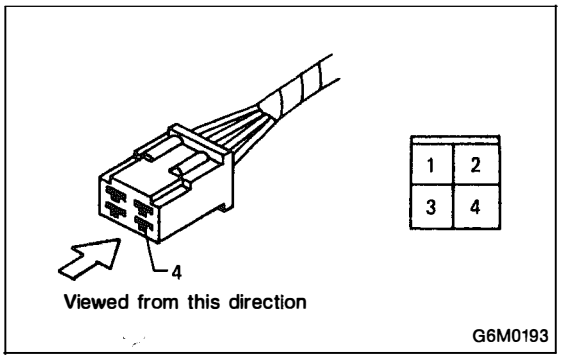
1. Important Safety Notice

● Providing appropriate service and repair is a matter of great importance in the serviceman's safety maintenance and safe operation, function and performance which the SUBARU vehicle possesses.

● In case the replacement of parts or replenishment of consumables is required, genuine SUBARU parts whose parts numbers are designated or their equivalents must be utilized.

● It must be made well known that the safety of the serviceman and the safe operation of the vehicle would be jeopardized if he used any service parts, consumables, special tools and work procedure manuals which are not approved or designated by SUBARU.

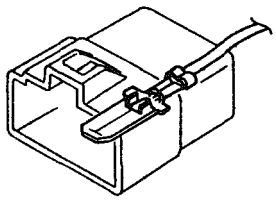
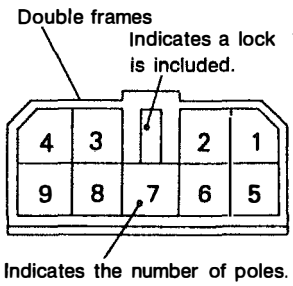
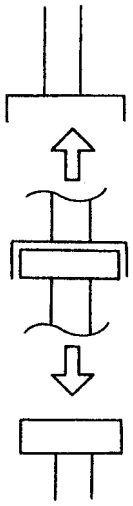
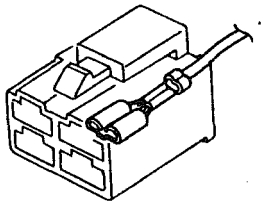
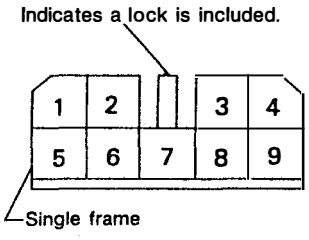
WIRING DIAGRAM 6-3

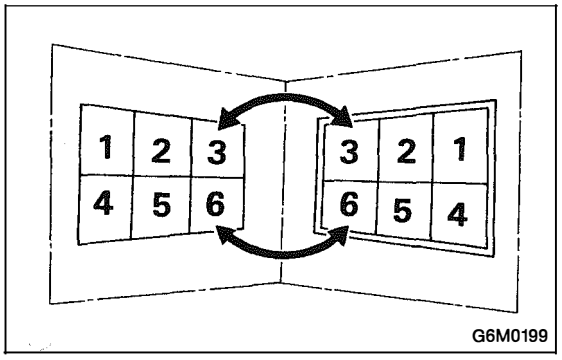


1. General Description

1. WIRING DIAGRAM

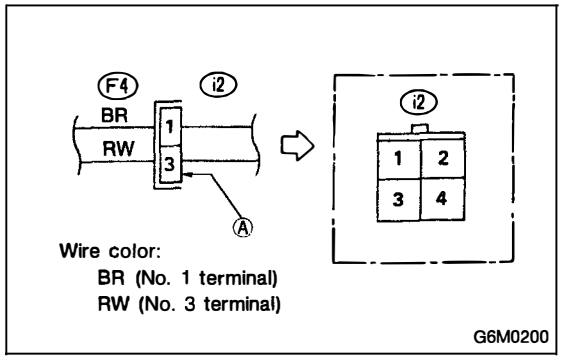
The wiring diagram of each system is illustrated so that you can understand the path through which the electric current flows from the battery.
Sketches and codes are used in the diagrams. They should read as follows:
1) Each connector and its terminal position are indicated by a sketch of the connector in a disconnected state which is viewed from the front, as shown in figure.
2) The number of poles or pins, presence of a lock, and pin number of each terminal are indicated in the sketch of each connector.
In the sketch, the highest pole number refers to the number of poles which the connector has. For example, the sketch of the connector shown in figure indicates the connector has 9 poles.

Connector used in vehicle	Connector shown in wiring diagram		
	Sketch	Symbol	Number of poles
 G6M0194	 G6M0196	 G6M0198	Numbered in order from upper right to lower left.
 G6M0195	 G6M0197		Numbered in order from upper left to lower right.



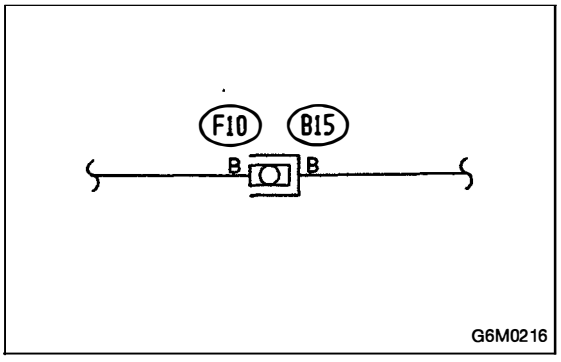
When one set of connectors is viewed from the front side, the pole numbers of one connector are symmetrical to those of the other. When these two connectors are connected as a unit, the poles which have the same number are joined.

3) Electrical wiring harness
The connectors are numbered along with the number of poles, external colors, and mating connections in the accompanying list.



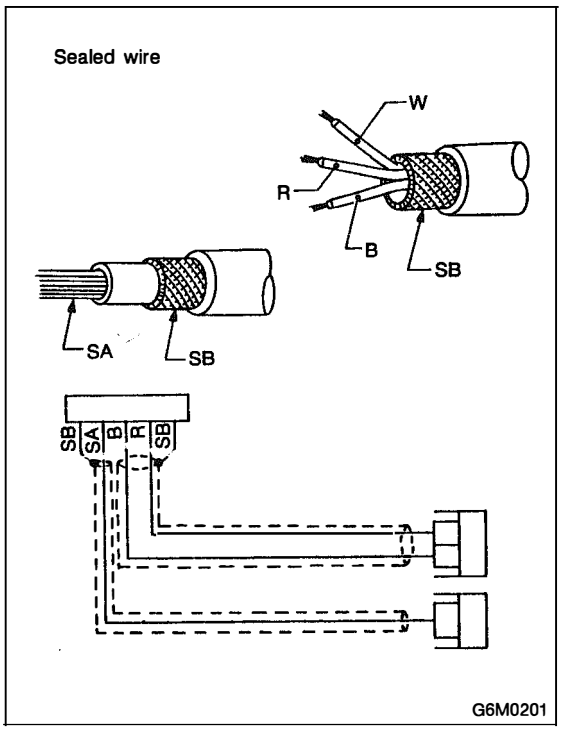
4) The sketch of each connector in the wiring diagram usually shows the "A" side of the connector. The relationship between the wire color, terminal number and connector is described in figure.

NOTE:
A wire which runs in one direction from a connector terminal sometimes may have a different color from that which runs in the other direction from that terminal.



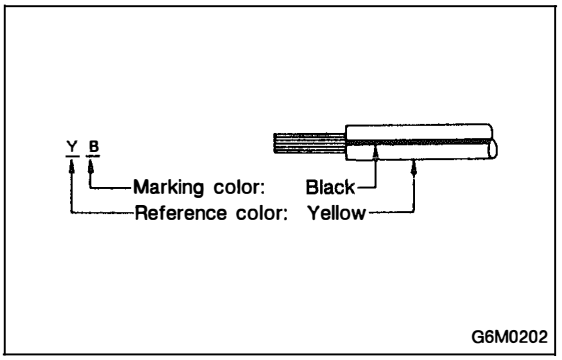
5) In wiring diagram, connectors which have no terminal number refer to one-pole types. Sketches of these connectors are omitted intentionally.

WIRING DIAGRAM



6) The following color codes are used to indicate the colors of the wires used.

Color code	Color
L	Blue
B	Black
Y	Yellow
G	Green
R	Red
W	White
Br	Brown
Lg	Light green
Gr	Gray
P	Pink
Or	Orange
Lb	Light Blue
V	Violet
SA	Sealed (Inner)
SB	Sealed (Outer)



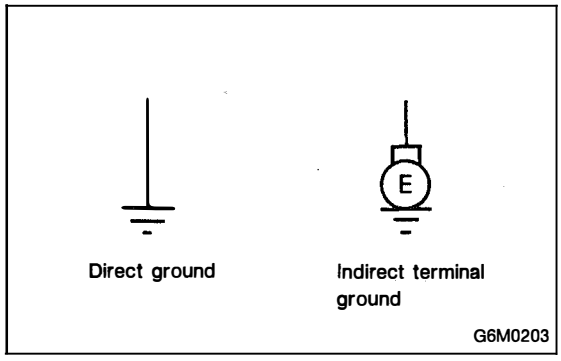
7) The wire color code, which consists of two letters (or three letters including Br or Lg), indicates the standard color (base color of the wire covering) by its first letter and the stripe marking by its second letter.

8) The table below lists the nominal sectional areas and allowable currents of the wires.

Nominal sectional area mm^2	No. of strands/ strand diameter	Outside diameter of finished wiring mm	Allowable current Amps/40°C
0.3	7/0.26	1.8	7
0.5	7/0.32	2.2 (or 2.0)	12
0.75	30/0.18	2.6 (or 2.4)	16
0.85	11/0.32	2.4 (or 2.2)	16
1.25	16/0.32	2.7 (or 2.5)	21
2	26/0.32	3.1 (or 2.9)	28
3	41/0.32	3.8 (or 3.6)	38
5	65/0.32	4.6 (or 4.4)	51
8	50/0.45	5.5	67

CAUTION:
- **When replacing or repairing a wire, be sure to use the same size and type of the wire which was originally used.**

NOTE:
- The allowable current in the above table indicates the tolerable amperage of each wire at an ambient temperature of 40°C (104°F).
- The allowable current changes with ambient temperature. Also, it changes if a bundle of more than two wires is used.



9) Each unit is directly grounded to the body or indirectly grounds through a harness ground terminal. Different symbols are used in the wiring diagram to identify the two grounding systems.

The ground points shown in the wiring diagram refer to the following:

(GB) Body ground

(GE) Engine ground

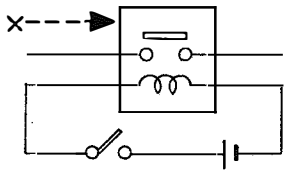
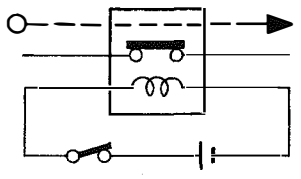
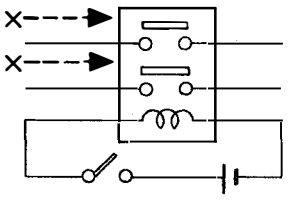
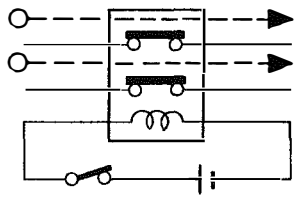
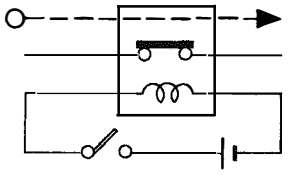
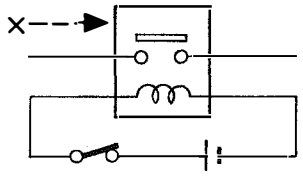
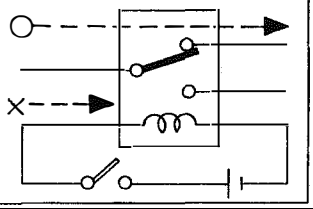
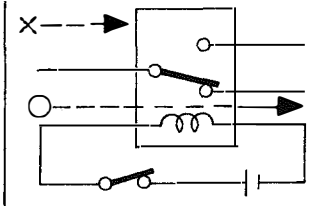
(GR) Radio ground

(GD) Rear defogger ground

All wiring harnesses are provided with a ground point which should be securely connected.

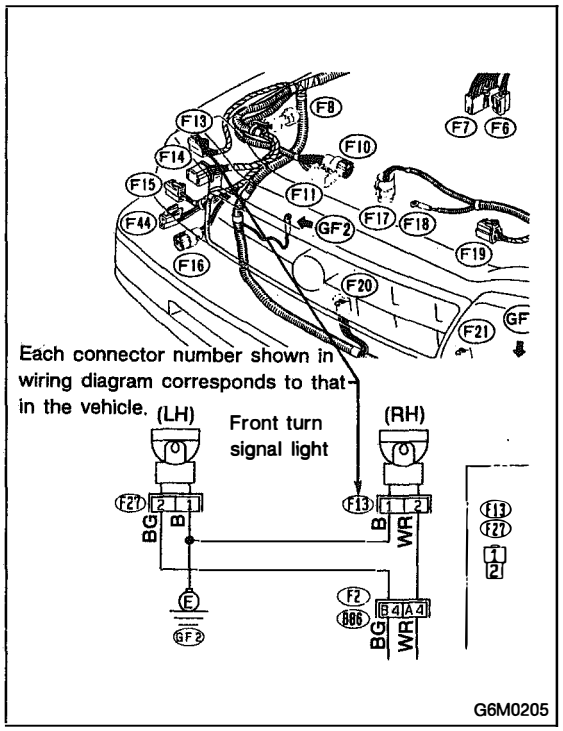
WIRING DIAGRAM

10) Relays are classified as normally-open or normally-closed.
The normally-closed relay has one or more contacts.
The wiring diagram shows the relay mode when the energizing circuit is OFF.

Relay type		Energizing circuit OFF	Energizing circuit ON
Normally-open type	4-pole		
	6-pole		
Normally-closed type	4-pole		
Mixed type	5-pole		

G6M0204

Key to symbols:
○ → : Current flows.
X → : Current does not flow.



11) Each connector number shown in the wiring diagram corresponds to that in the wiring harness. The location of each connector in the actual vehicle is determined by reading the first character of the connector (for example, a "F" for F8, "i" for i16, etc.) and the type of wiring harness.
The first character of each connector number refers to the area or system of the vehicle, as indicated in table below.

Symbol	Wiring harness and Cord
F	Front wiring harness
B	Bulkhead wiring harness
E	Engine wiring harness
T	Transmission cord, Rear oxygen sensor cord
D	Door cord LH & RH, Rear door adapter cord LH & RH
I	Instrument panel wiring harness
R	Rear wiring harness, Rear defogger cord (Ground) Fuel tank cord, Roof cord, Rear gate cord, Rear gate lock adapter cord

2. Basic Diagnostics Procedure

The most important purpose of diagnostics is to determine which part is malfunctioning quickly, to save time and labor.

A: IDENTIFICATION OF TROUBLE SYMPTOM

Determine what the problem is based on the symptom.

B: PROBABLE CAUSE OF TROUBLE

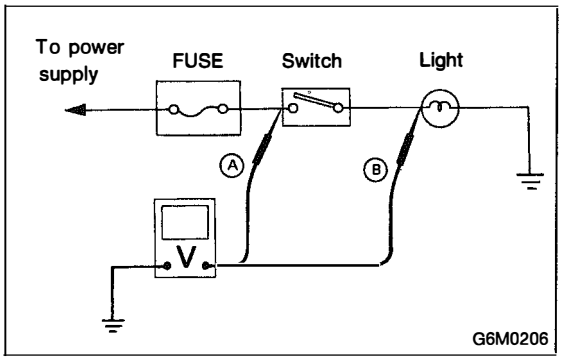
Look at the wiring diagram and check the system's circuit. Then check the switch, relay, fuse, ground, etc.

C: LOCATION AND REPAIR OF TROUBLE

1) Using the diagnostics narrow down the causes.
2) If necessary, use a voltmeter, ohmmeter, etc.
3) Before replacing certain component parts (switch, relay, etc.), check the power supply, ground, for open wiring harness, poor connectors, etc. If no problems are encountered, check the component parts.

D: CONFIRMATION OF SYSTEM OPERATION

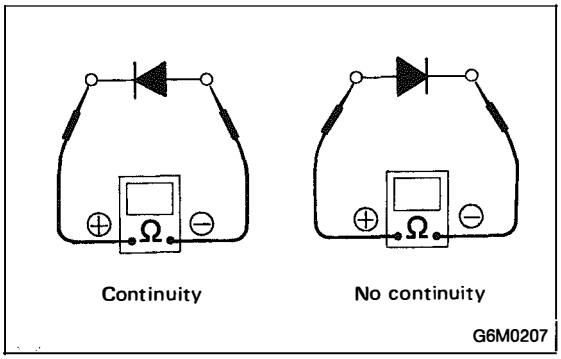
After repairing, ensure that the system operates properly.



E: INSPECTION

1. VOLTAGE MEASUREMENT

1) Using a voltmeter, connect the negative lead to a good ground point or negative battery terminal and the positive lead to the connector or component terminal.
2) Contact the positive probe of the voltmeter on connector (A).
The voltmeter will indicate a voltage.
3) Shift the positive probe to connector (B). The voltmeter will indicate no voltage.
With test set-up held as it is, turn switch ON. The voltmeter will indicate a voltage and, at the same time, the light will come on.
4) The circuit is in good order. If a problem such as a lamp failing to light occurs, use the procedures outlined above to track down the malfunction.



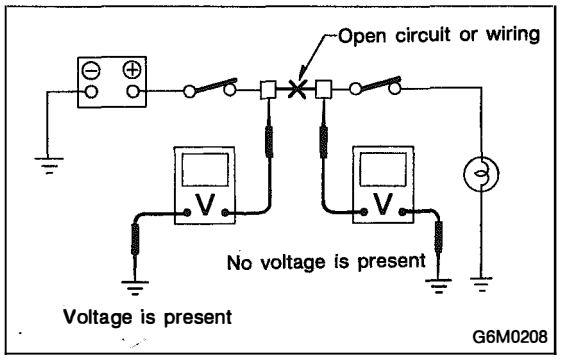
2. CIRCUIT CONTINUITY CHECKS

1) Disconnect the battery terminal or connector so there is no voltage between the check points.
Contact the two leads of an ohmmeter to each of the check points.
If the circuit has diodes, reverse the two leads and check again.

2) Use an ohmmeter to check for diode continuity.
When contacting the negative lead to the diode positive side and the positive lead to the negative side, there should be continuity.
When contacting the two leads in reverse, there should be no continuity.

3) Symbol "o—o" indicates that continuity exists between two points or terminals. For example, when a switch position is "3", continuity exists among terminals 1, 3 and 6, as shown in table below.

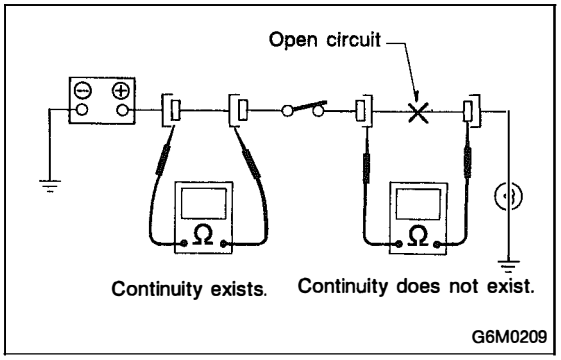
Terminal / Switch Position	1	2	3	4	5	6
OFF						
1	o				o	o
2	o			o		o
3	o		o			o
4	o	o				o



3. HOW TO DETERMINE AN OPEN CIRCUIT

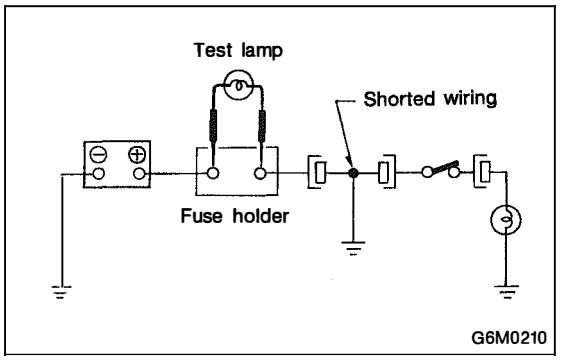
1) Voltmeter Method

An open circuit is determined by measuring the voltage between respective connectors and ground using a voltmeter, starting with the connector closest to the power supply. The power supply must be turned ON so that current flows in the circuit. If voltage is not present between a particular connector and ground, the circuit between that connector and the previous connector is open.



2) Ohmmeter method

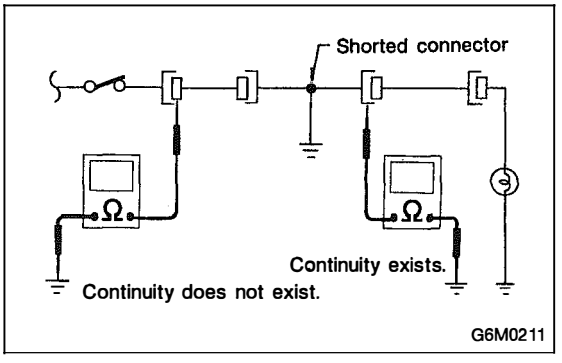
Disconnect all connectors affected, and check continuity in the wiring between adjacent connectors. When the ohmmeter indicates "infinite", the wiring is open.



4. HOW TO DETERMINE A SHORTCIRCUIT

1) Test lamp method

Connect a test lamp (rated at approximately 3 watts) in place of the blown fuse and allow current to flow through the circuit. Disconnect one connector at a time from the circuit, starting with the one located farthest from the power supply. If the test lamp goes out when a connector is disconnected, the wiring between that connection and the next connector (farther from the power supply) is shorted.



2) Ohmmeter method

Disconnect all affected connectors, and check continuity between each connector and ground. When ohmmeter indicates continuity between a particular connector and ground, that connector is shorted.

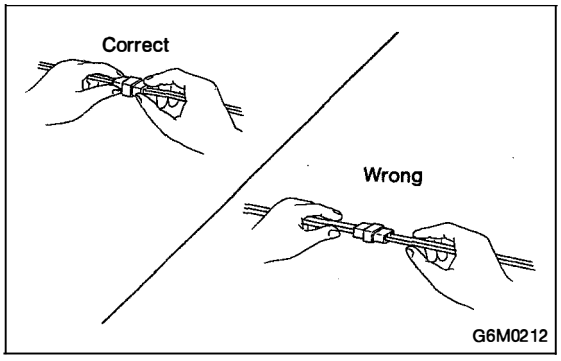
3. Working Precautions

1. PRECAUTIONS WHEN WORKING WITH THE PARTS MOUNTED ON THE VEHICLE

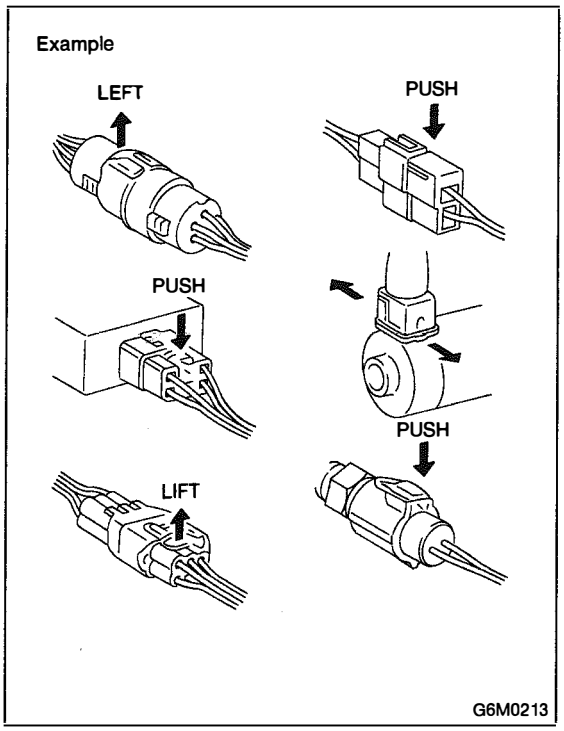
1) When working under a vehicle which is jacked-up, always be sure to use safety stands.
2) The parking brake must always be applied during working. Also, in automatic transmission vehicles, keep the select lever set to the P (Parking) range.
3) Be sure the workshop is properly ventilated when running the engine. Further, be careful not to touch the belt or fan while the engine is operating.
4) Be careful not to touch hot metal parts, especially the radiator and exhaust system immediately after the engine has been shut off.

2. PRECAUTIONS IN TROUBLE DIAGNOSIS AND REPAIR OF ELECTRIC PARTS

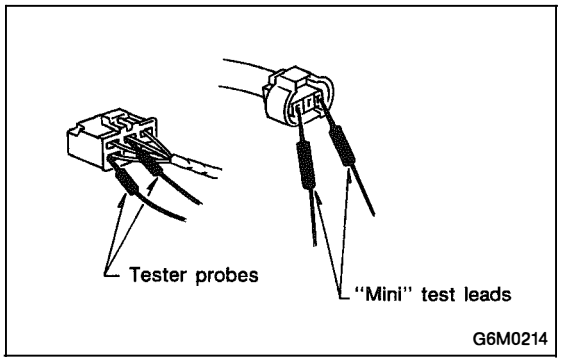
1) The battery cable must be disconnected from the battery's (–) terminal, and the ignition switch must be set to the OFF position, unless otherwise required by the diagnostics.
2) Securely fasten the wiring harness with clamps and slips so that the harness does not interfere with the body end parts or edges and bolts or screws.
3) When installing parts, be careful not to catch them on the wiring harness.



4) When disconnecting a connector, do not pull the wires, but pull while holding the connector body.



5) Some connectors are provided with a lock. One type of such a connector is disconnected by pushing the lock, and the other, by moving the lock up. In either type the lock shape must be identified before attempting to disconnect the connector.
To connect, insert the connector until it snaps and confirm that it is tightly connected.



6) When checking continuity between connector terminals, or measuring voltage across the terminal and ground, always contact tester probe(s) on terminals from the wiring connection side. If the probe is too thick to gain access to the terminal, use "mini" test leads.
To check water-proof connectors (which are not accessible from the wiring side), contact test probes on the terminal side being careful not to bend or damage the terminals.

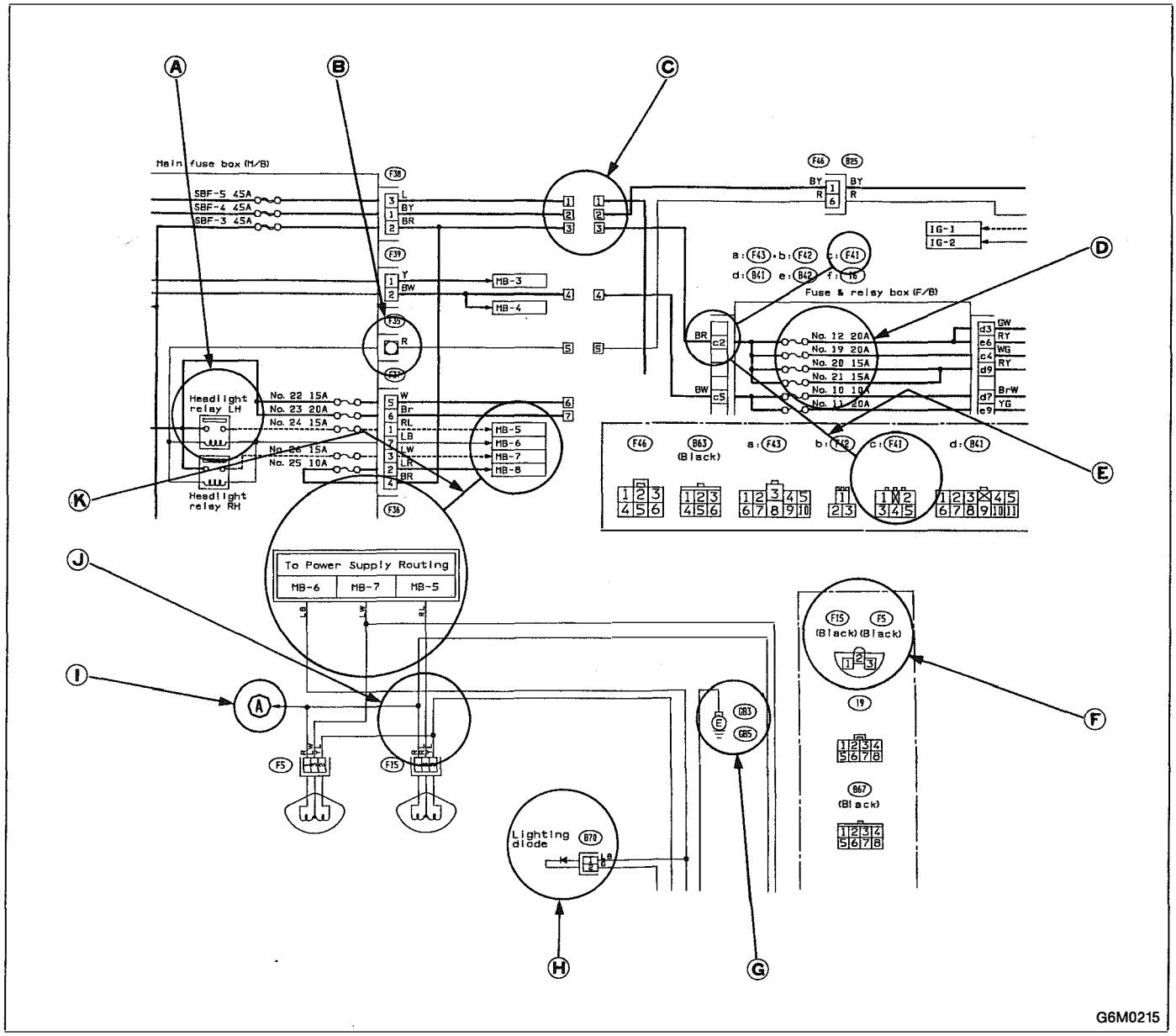
7) Sensors, relays, electrical unit, etc., are sensitive to strong impacts.
Handle them with care so that they are not dropped or mishandled.

ABBREVIATION LIST

Abbr.	Full name
ABS	Antilock Brake System
ACC	Accessory
A/C	Air Conditioning
AD	Auto Down
AT	Automatic Transmission
AU	Auto Up
+B	Battery
DN	Down
E	Ground
F/B	Fuse & Joint Box
FL1.5	Fusible link 1.5 mm^2
IG	Ignition
Illumi.	Illumination

Abbr.	Full name
LH	Left Hand
Lo	Low
M	Motor
M/B	Main Fuse Box
MG	Magnet
Mi	Middle
OP	Optional Parts
PASS	Passing
RH	Right Hand
SBF	Slow Blow Fuse
ST	Starter
SW	Switch
UP	Up
WASH	Washer

4. How to Use Wiring Diagram



A: RELAY

A symbol used to indicate a relay.

B: CONNECTOR-1

The sketch of the connector indicates the one-pole types.

C: WIRING CONNECTION

Some wiring diagrams are indicated in foldouts for convenience. Wiring destinations are indicated where necessary by corresponding symbols (as when two pages are needed for clear indication).

D: FUSE NO. & RATING

The "FUSE No. & RATING" corresponds with that used in the fuse box (main fuse box, fuse and joint box.)

E: CONNECTOR-2

1. Each connector is indicated by a symbol.
2. Each terminal number is indicated in the corresponding wiring diagram in an abbreviated form.
3. For example, terminal number "C2" refers to No. 2 terminal of connector (C:F41) shown in the connector sketch.

F: CONNECTOR SKETCH

1. Each connector sketch clearly identifies the shape and color of a connector as well as terminal locations. Non-colored connectors are indicated in natural color.
2. When more than two types of connector number are indicated in a connector sketch, it means that the same type connectors are used.

G: GROUND

Each grounding point can be located easily by referring to the corresponding wiring harness.

H: DIODE

A symbol is used to indicate a diode.

I: WIRE TRACING ON EXTENDED WIRING DIAGRAMS

For a wiring diagram extending over at least two pages, a symbol (consisting of the same characters with arrows), as shown below, facilitates wire tracing from one page to the next.

A ↔ A, B ↔ B

J: SYMBOLS OF WIRE CONNECTION AND CROSSING

 Symbol — Refers to wires which are connected and branched at the "dot" point.

 Symbol — Refers to wires which are crossed but not connected.

K: POWER SUPPLY ROUTING

A symbol is used to indicate the power supply in each wiring diagram.

"MB-5", "MB-6", etc., which are used as power-supply symbols throughout the text, correspond with those shown in the POWER SUPPLY ROUTING in the wiring diagram.

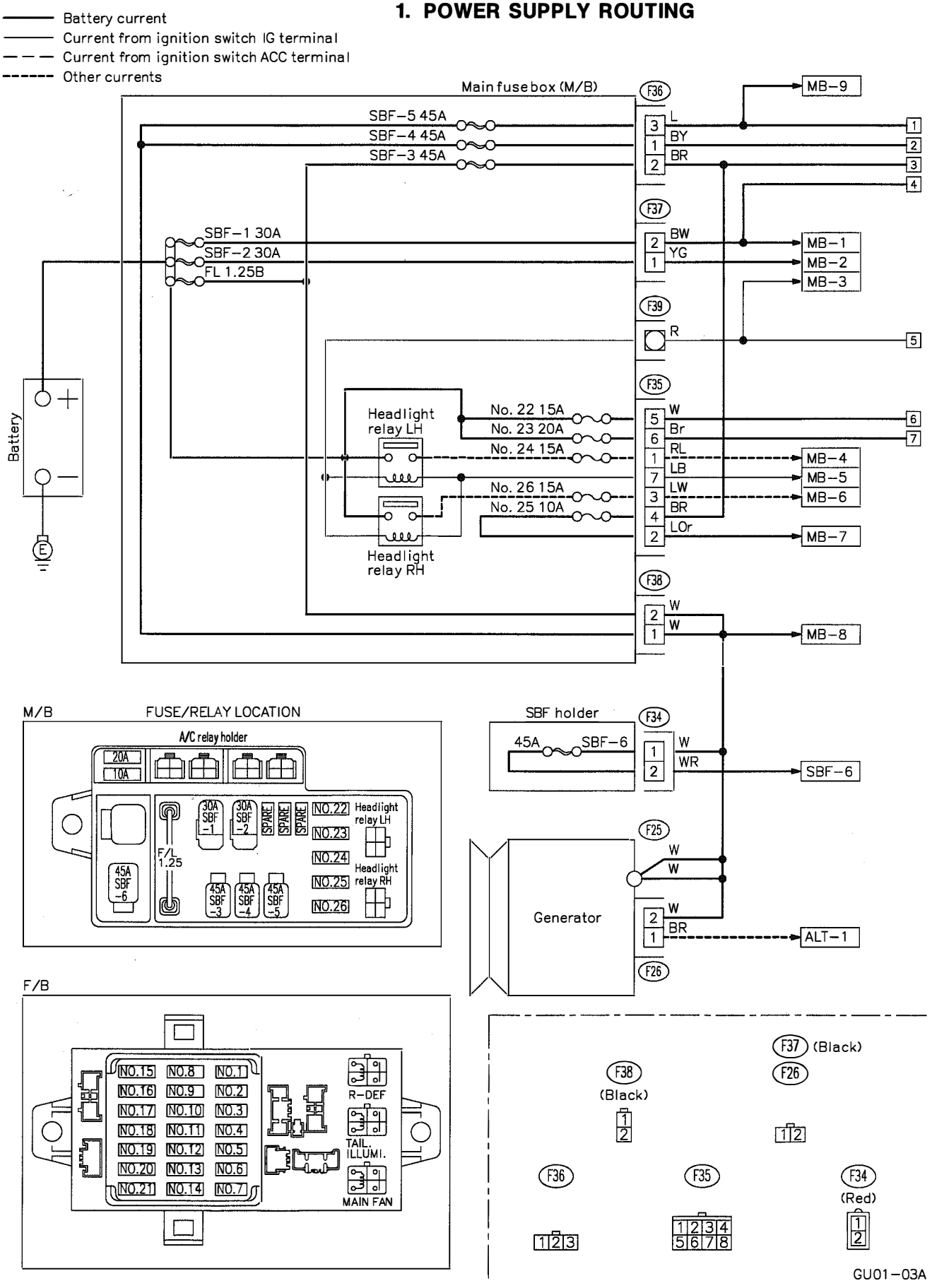
Accordingly, using the POWER SUPPLY ROUTING and wiring diagrams permits service personnel to understand the entire electrical arrangement of a system.

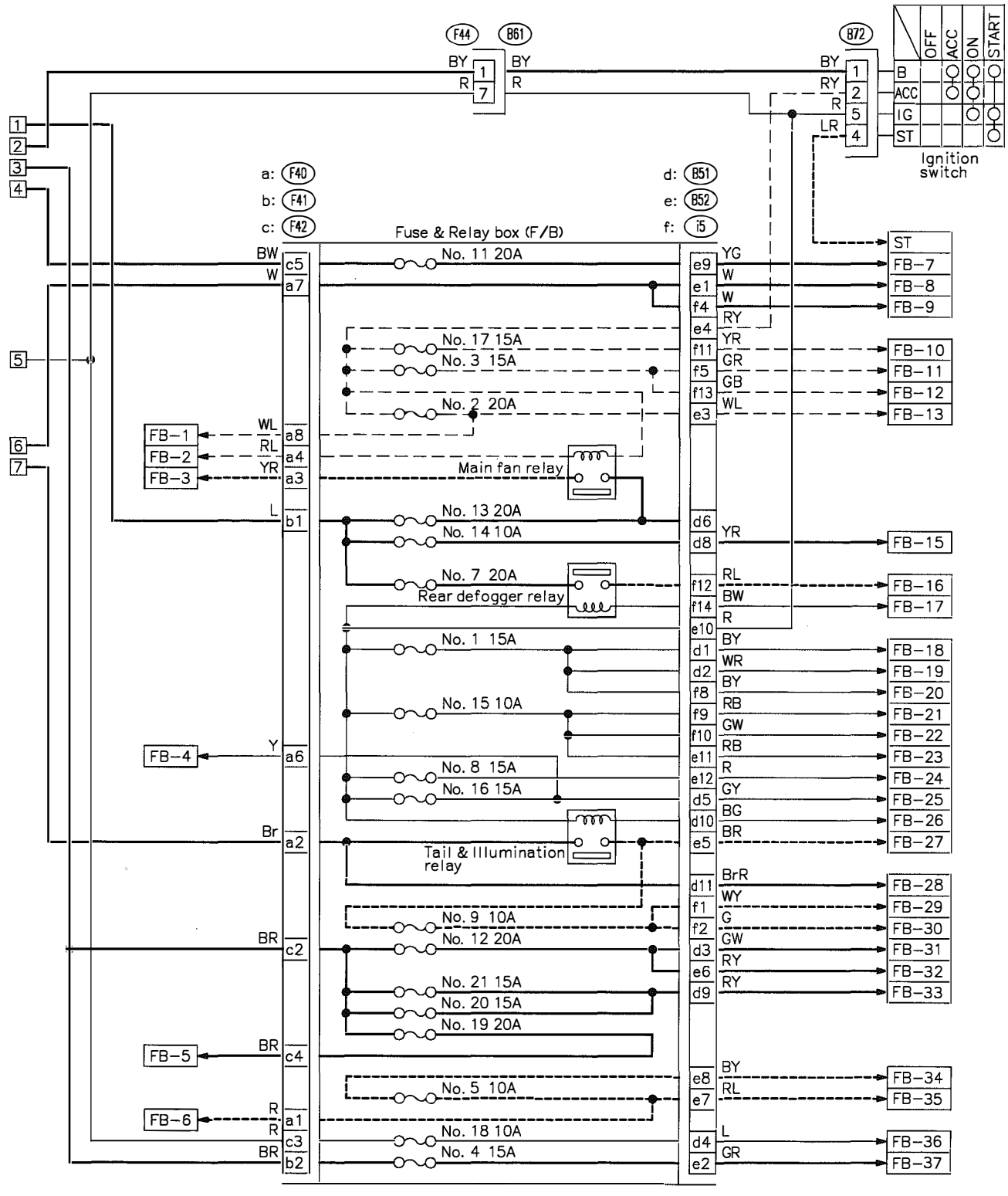
L: SYMBOLS AND ABBREVIATIONS

A number of symbols and abbreviations are used in each wiring diagram to easily identify parts or circuits.

5. Wiring Diagram

1. POWER SUPPLY ROUTING




F44
B61
B72
OFF
ACC
ON
START
B
ACC
IG
ST
Ignition switch
a: F40
b: F41
c: F42
d: B51
e: B52
f: i5
Fuse & Relay box (F/B)
No. 11 20A
No. 17 15A
No. 3 15A
No. 2 20A
Main fan relay
No. 13 20A
No. 14 10A
No. 7 20A
Rear defogger relay
No. 1 15A
No. 15 10A
No. 8 15A
No. 16 15A
Tail & Illumination relay
No. 9 10A
No. 12 20A
No. 21 15A
No. 20 15A
No. 19 20A
No. 5 10A
No. 18 10A
No. 4 15A
FB-1
FB-2
FB-3
FB-4
FB-5
FB-6
FB-7
FB-8
FB-9
FB-10
FB-11
FB-12
FB-13
FB-15
FB-16
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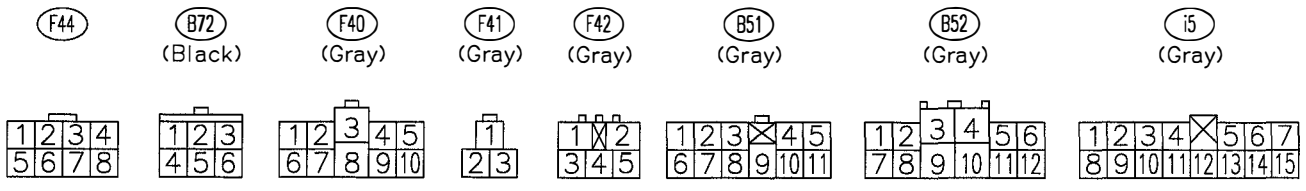
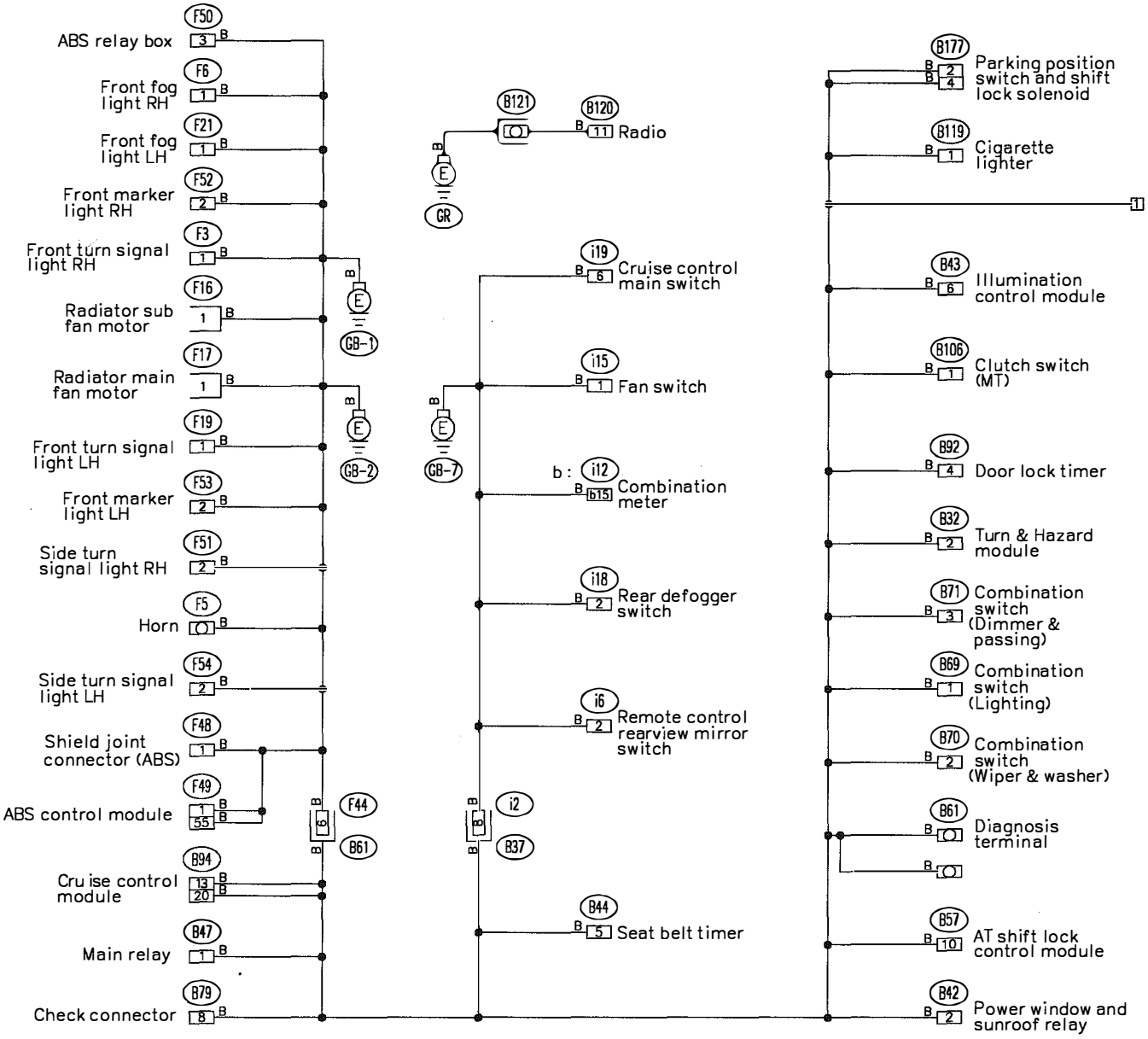
FB-36
FB-37

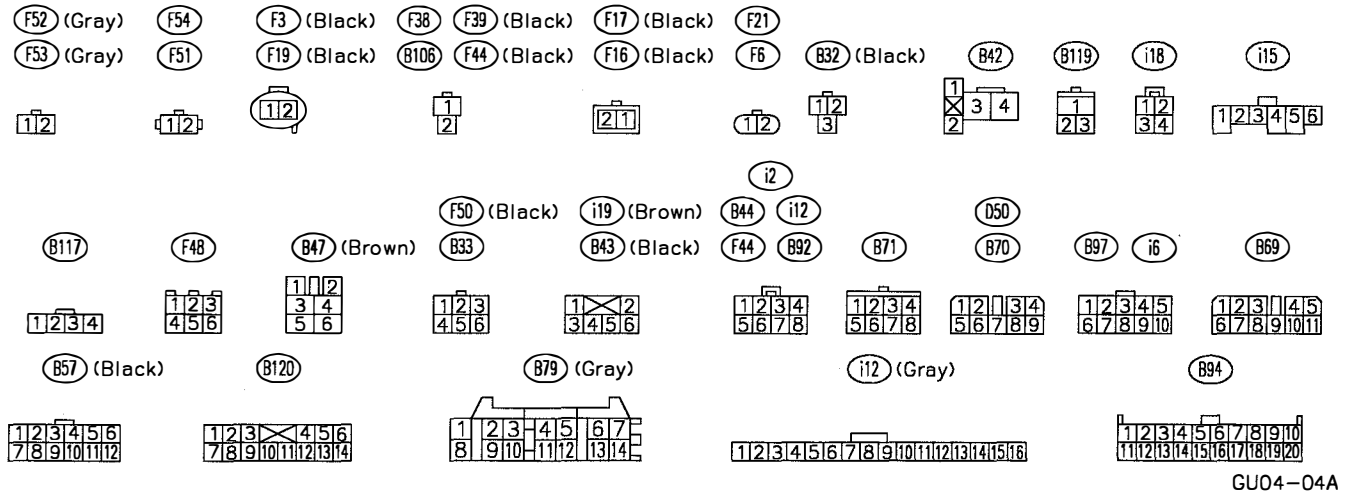

F44
B72 (Black)
F40 (Gray)
F41 (Gray)
F42 (Gray)
B51 (Gray)
B52 (Gray)
i5 (Gray)

GU01-03B

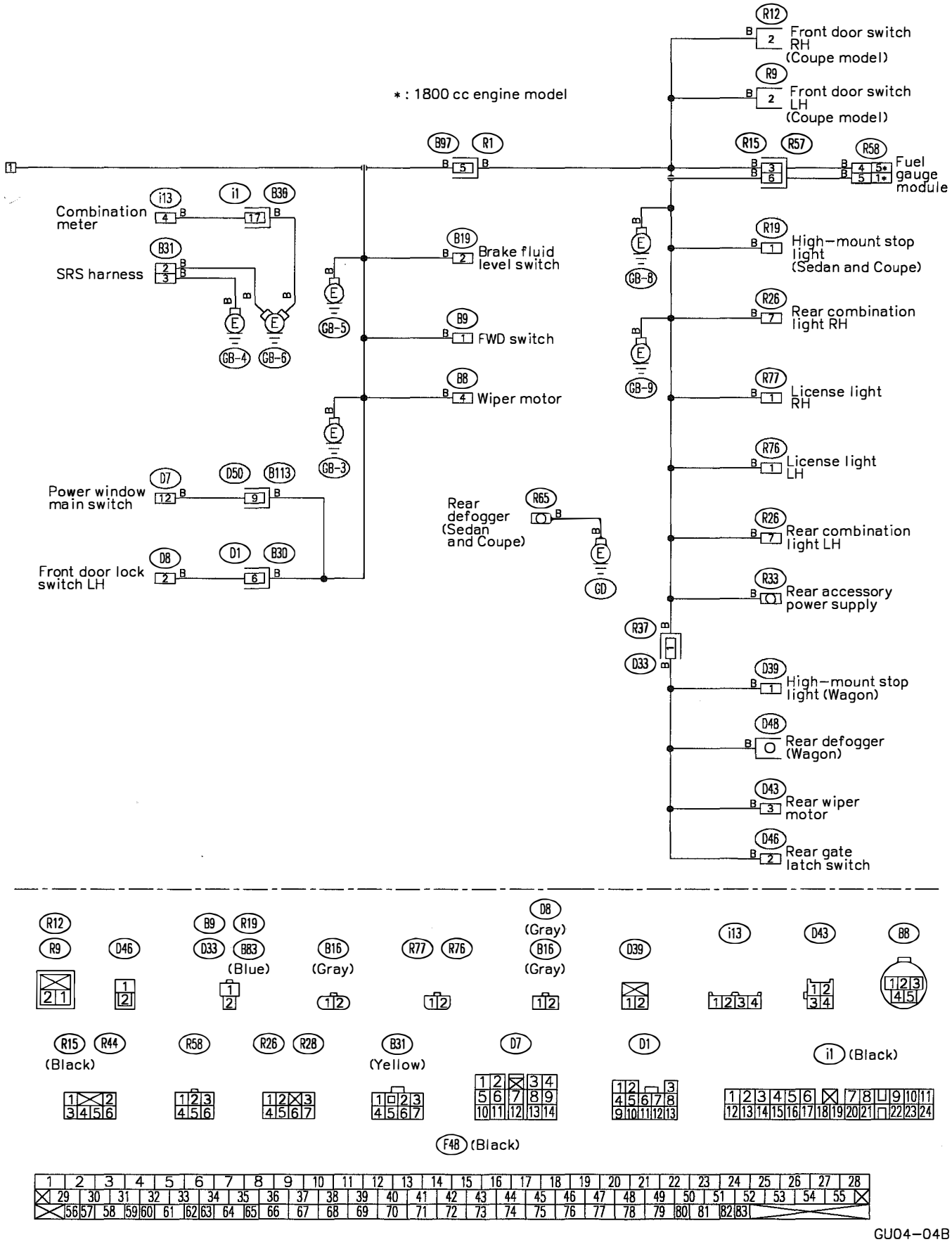
WIRING DIAGRAM

2. GROUND DISTRIBUTION

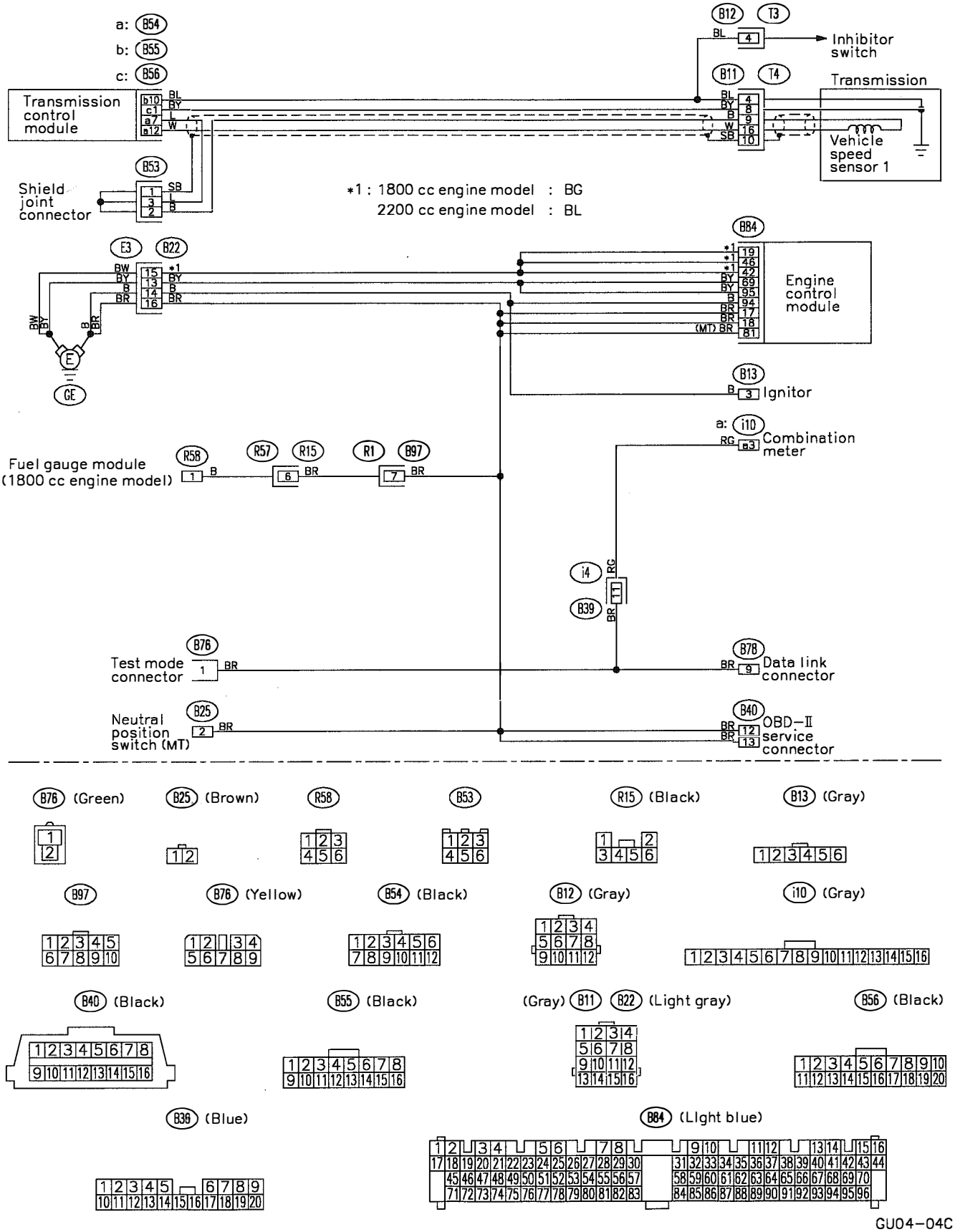




GU04–04A


*: 1800 cc engine model
Combination meter
SRS harness
Power window main switch
Front door lock switch LH
Brake fluid level switch
FWD switch
Wiper motor
Rear defogger (Sedan and Coupe)
Front door switch RH (Coupe model)
Front door switch LH (Coupe model)
Fuel gauge module
High-mount stop light (Sedan and Coupe)
Rear combination light RH
License light RH
License light LH
Rear combination light LH
Rear accessory power supply
High-mount stop light (Wagon)
Rear defogger (Wagon)
Rear wiper motor
Rear gate latch switch
(Black)
(Blue)
(Gray)
(Yellow)
GU04-04B

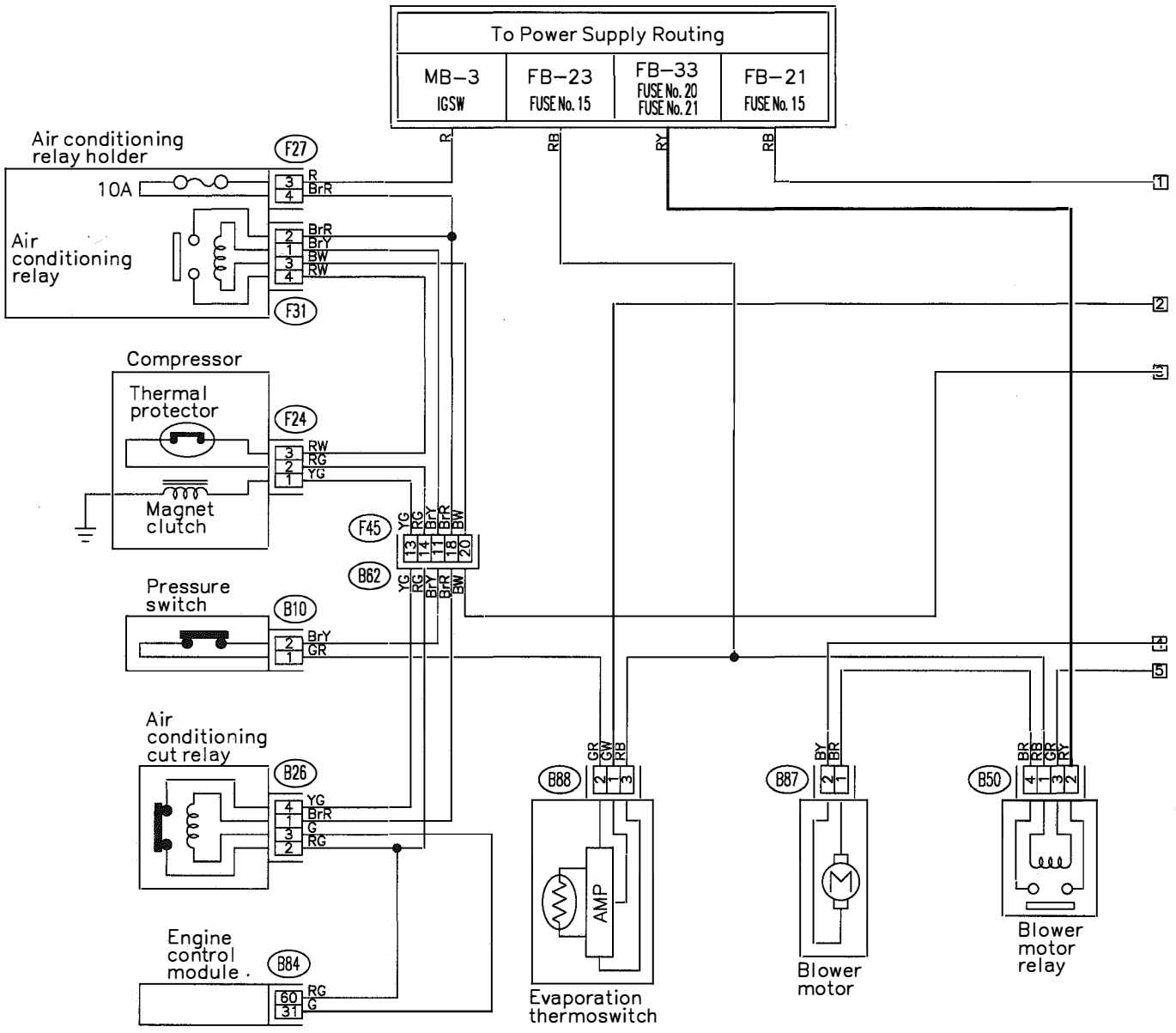
WIRING DIAGRAM

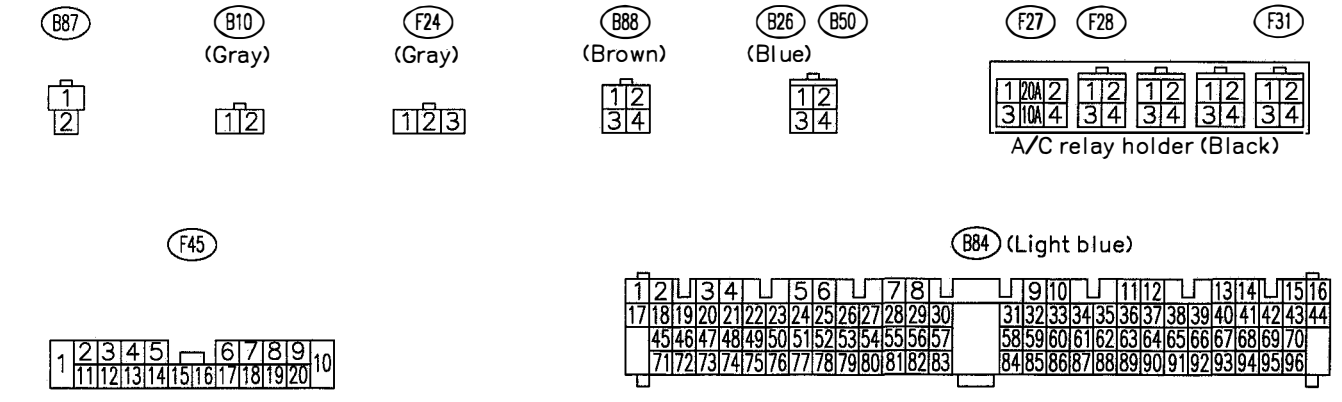


GU04–04C

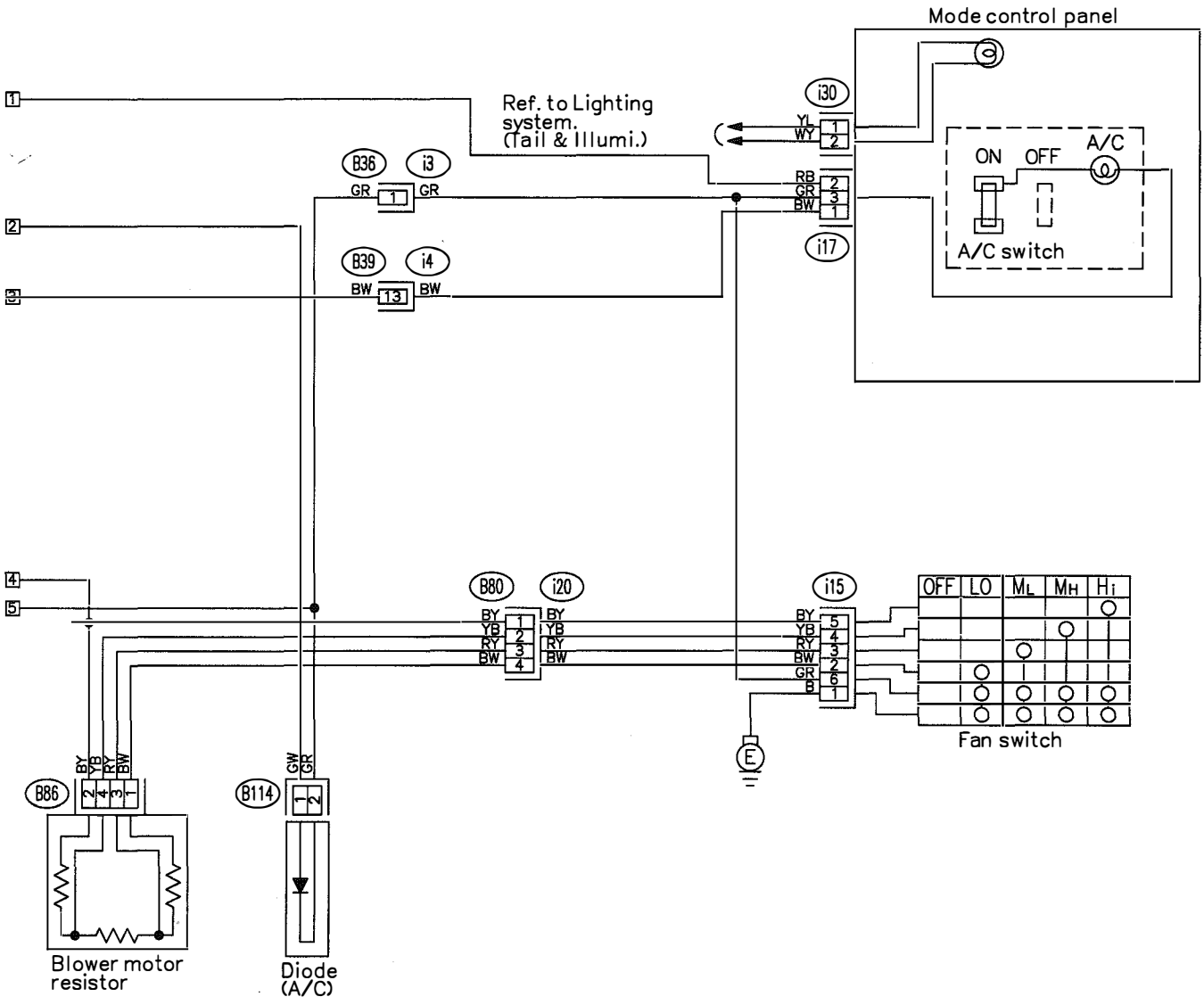
MEMO:

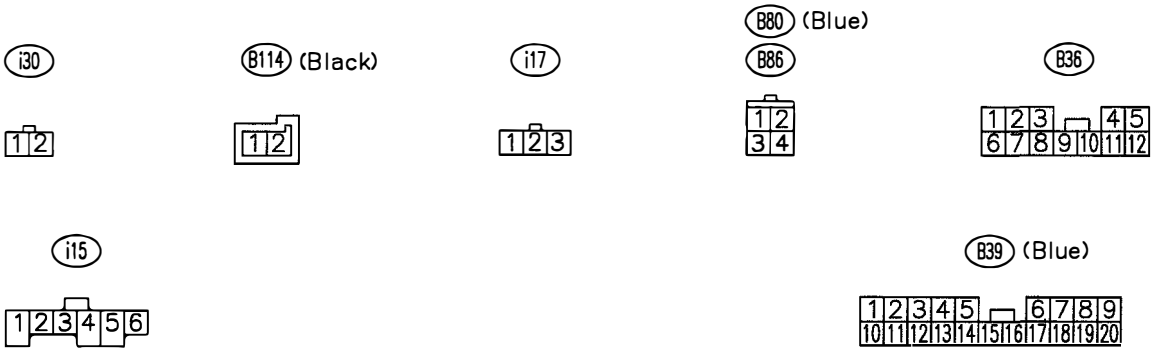
3. AIR CONDITIONING SYSTEM





GU45–04A

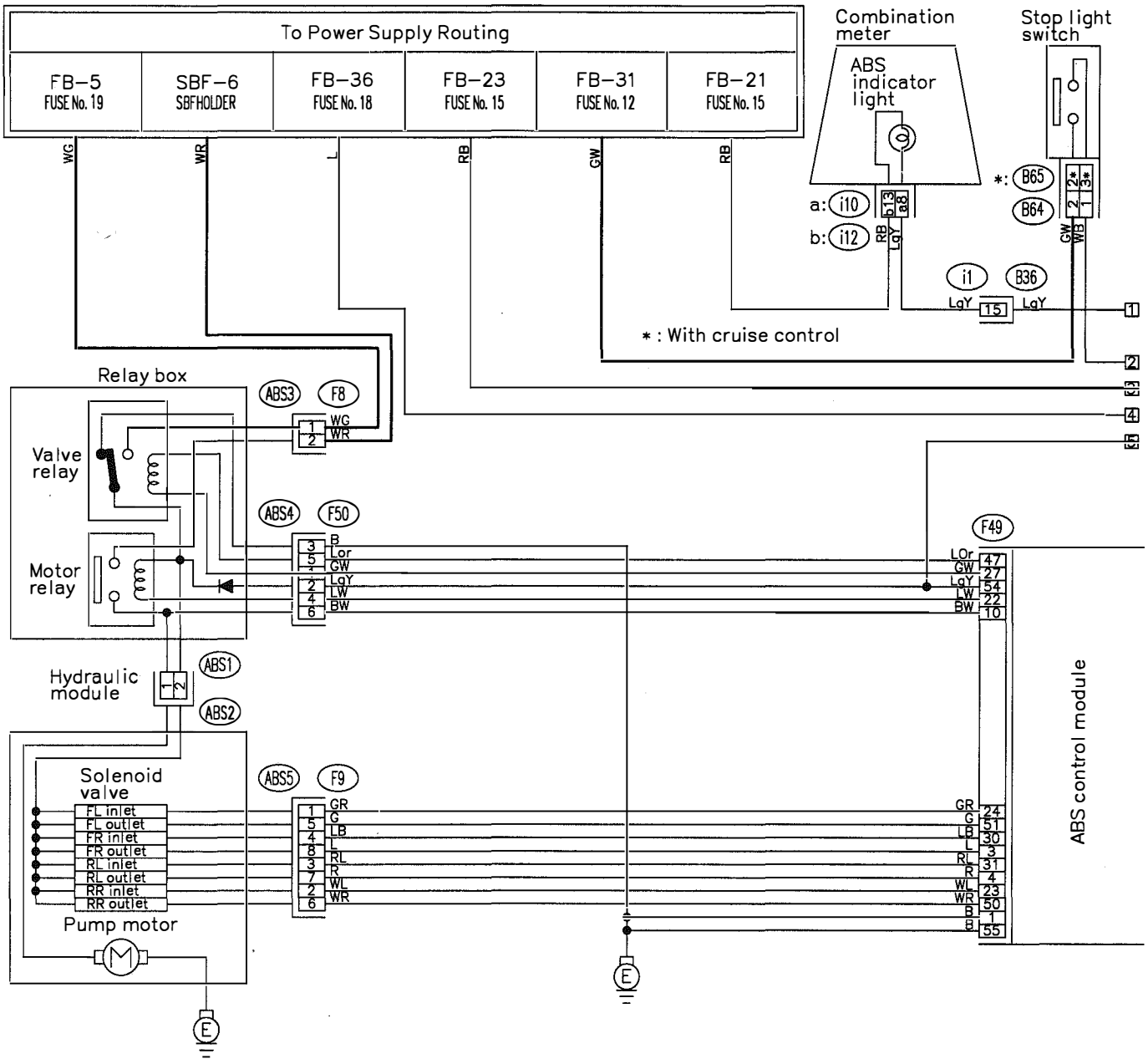

Mode control panel
Ref. to Lighting system. (Tail & Illumi.)
i30
YL
WY
RB
GR
BW
i17
ON
OFF
A/C
A/C switch
B36
i3
GR
B39
i4
BW
B80
i20
BY
YB
RY
BW
i15
GR
B
OFF
LO
ML
MH
Hi
Fan switch
E
B86
B114
GW
Blower motor resistor
Diode (A/C)

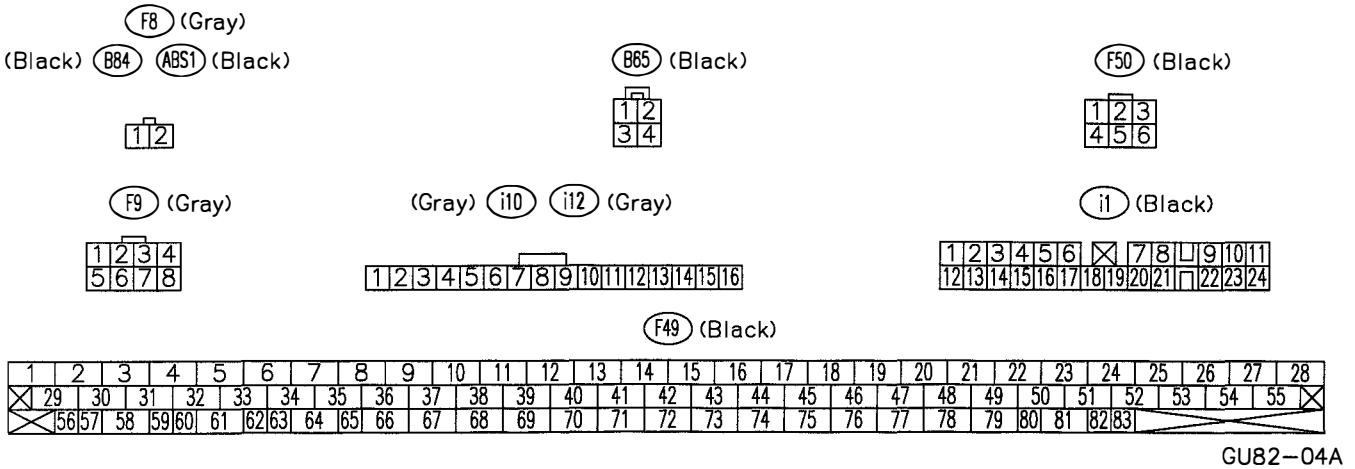

i30
1 2
B114 (Black)
1 2
i17
1 2 3
B80 (Blue)
B86
1 2
3 4
B36
1 2 3 4 5
6 7 8 9 10 11 12
i15
1 2 3 4 5 6
B39 (Blue)
1 2 3 4 5 6 7 8 9
10 11 12 13 14 15 16 17 18 19 20

GU45–04B

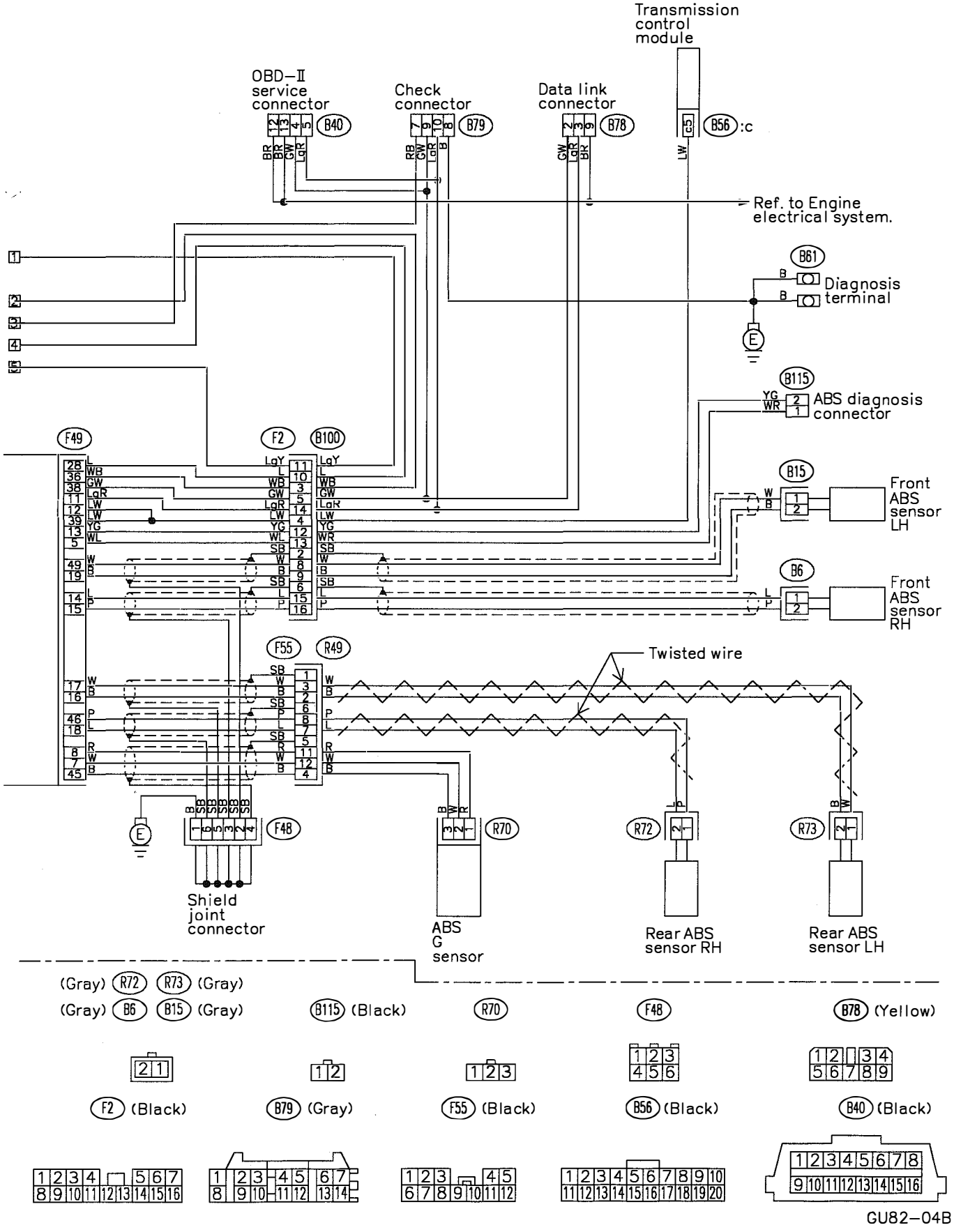
WIRING DIAGRAM

4. ANTI-LOCK BRAKE SYSTEM



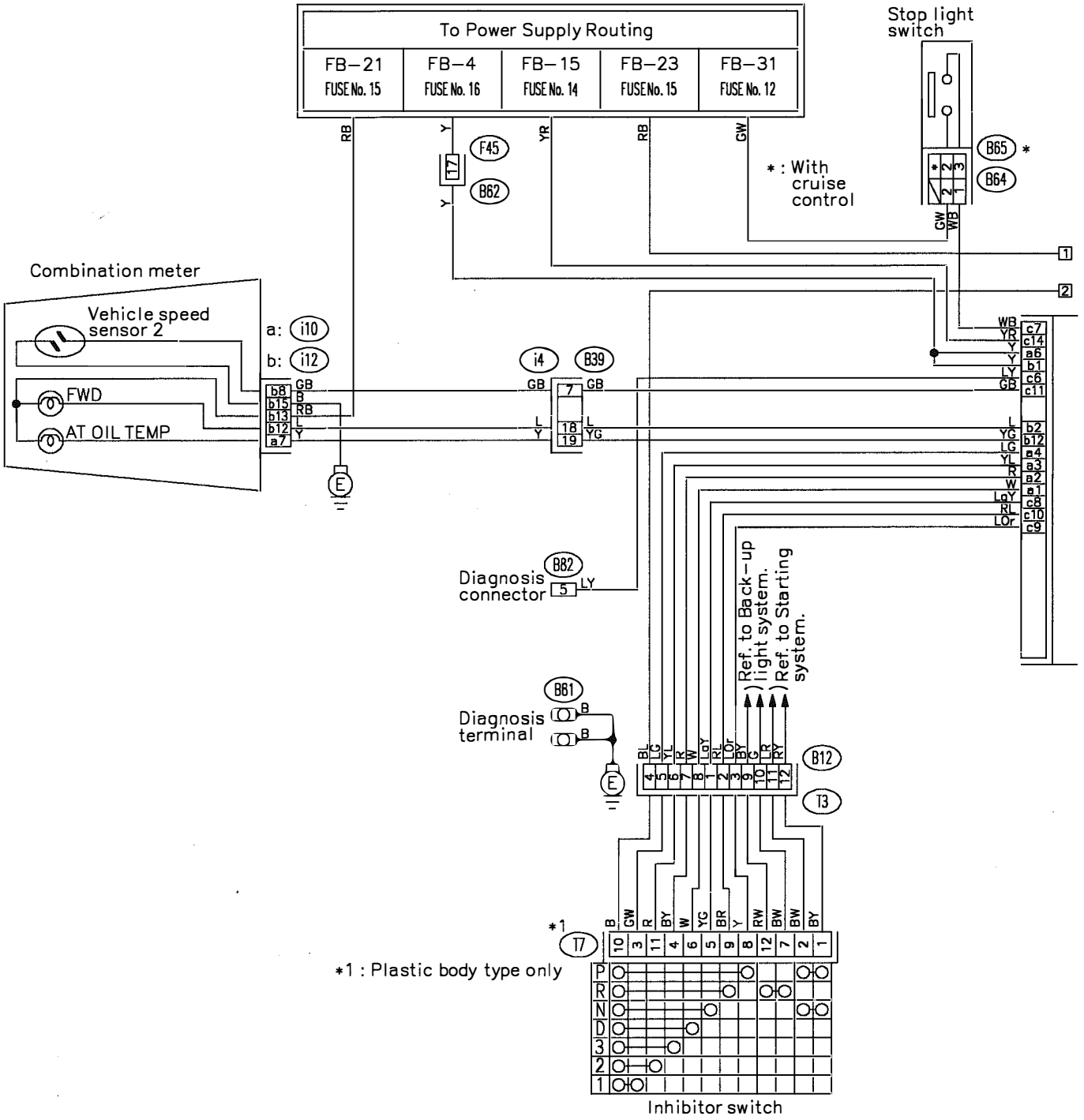


GU82–04A

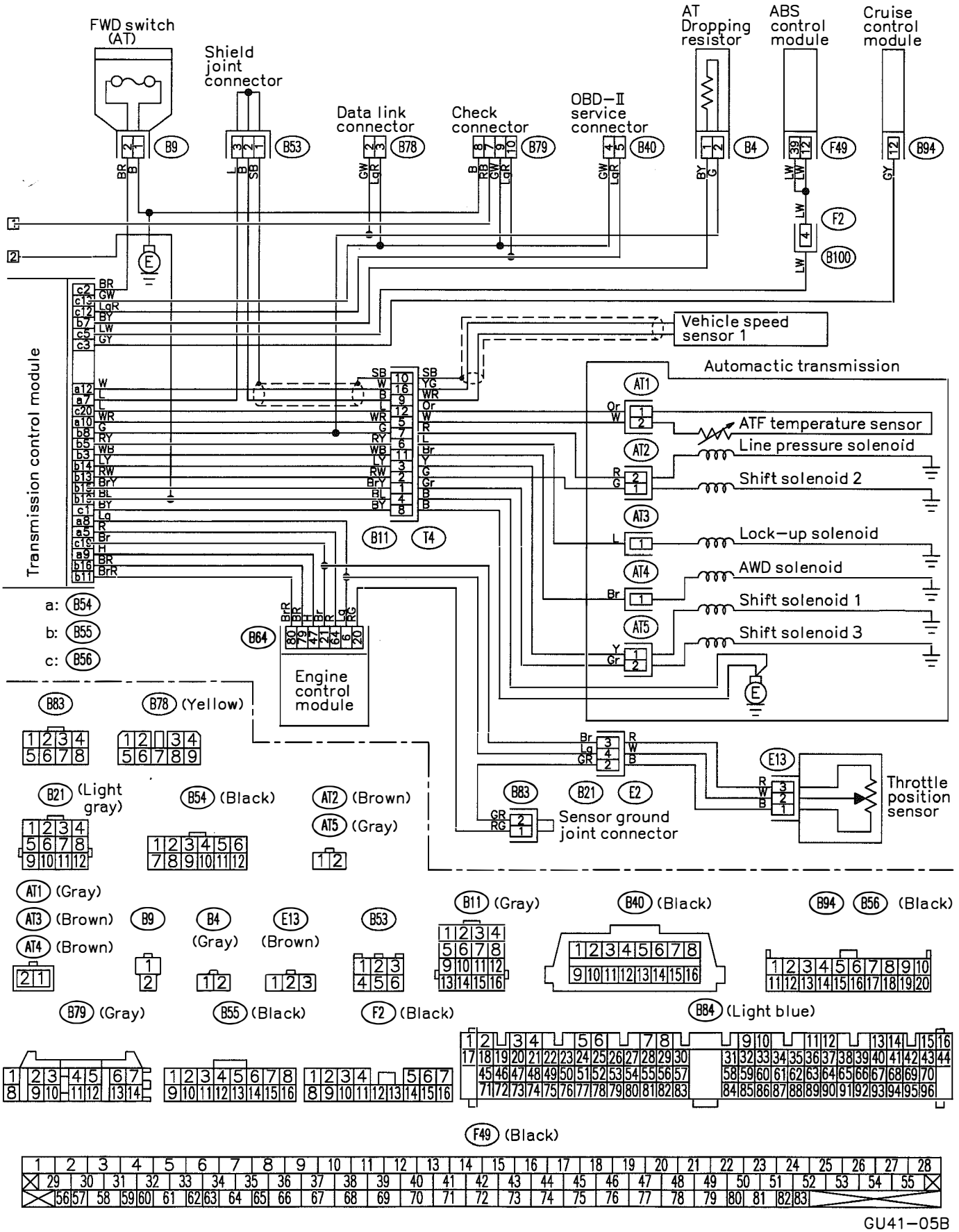

Transmission control module
OBD–II service connector
Check connector
Data link connector
B40
B79
B78
B56:c
Ref. to Engine electrical system.
B61
Diagnosis terminal
B115
ABS diagnosis connector
F49
F2
B100
B15
Front ABS sensor LH
B6
Front ABS sensor RH
F55
R49
Twisted wire
F48
R70
R72
R73
Shield joint connector
ABS G sensor
Rear ABS sensor RH
Rear ABS sensor LH
(Gray) R72 R73 (Gray)
(Gray) B6 B15 (Gray)
B115 (Black)
R70
F48
B78 (Yellow)
F2 (Black)
B79 (Gray)
F55 (Black)
B56 (Black)
B40 (Black)
GU82–04B

WIRING DIAGRAM

5. A/T CONTROL SYSTEM



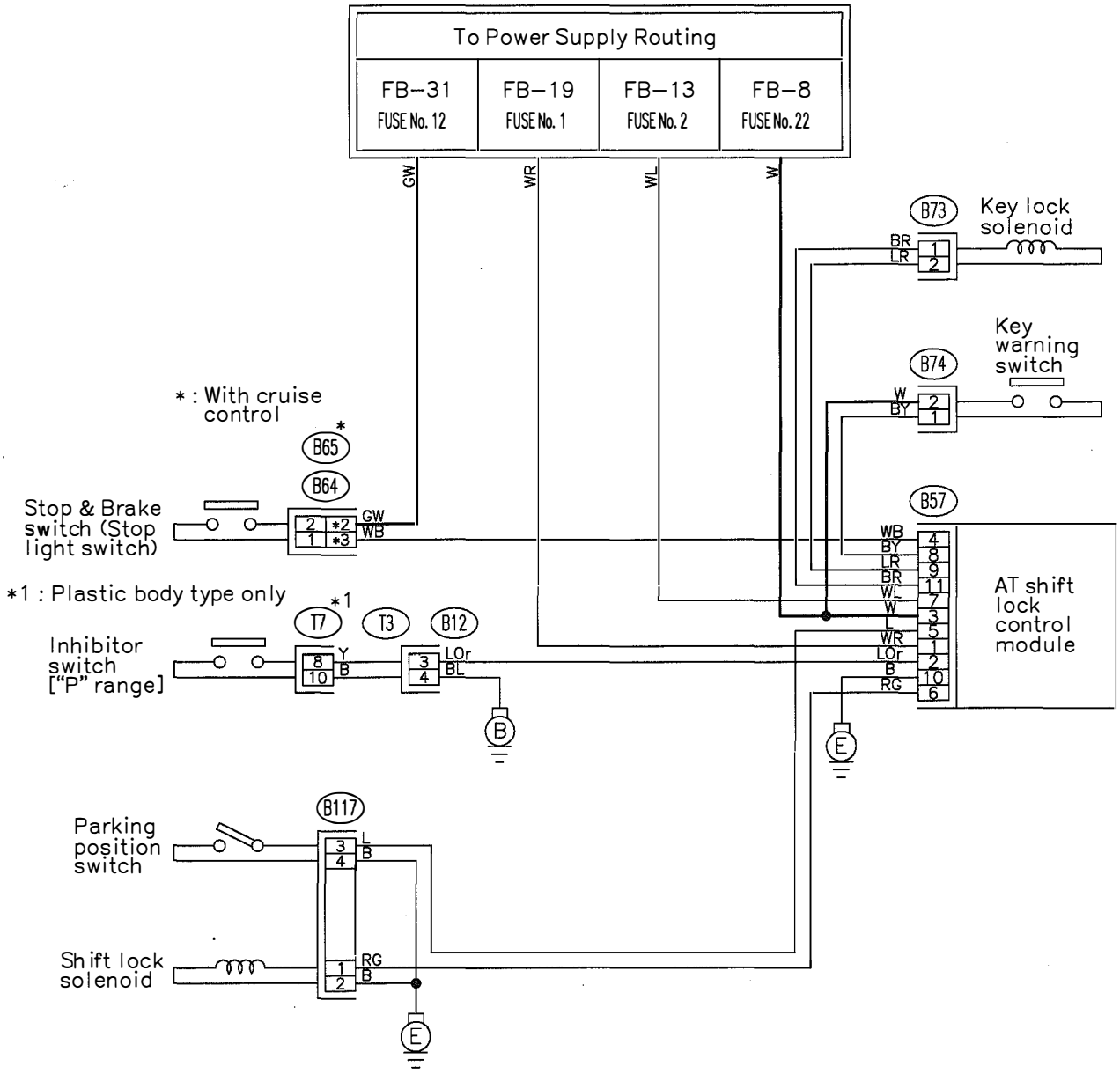
GU41–05A

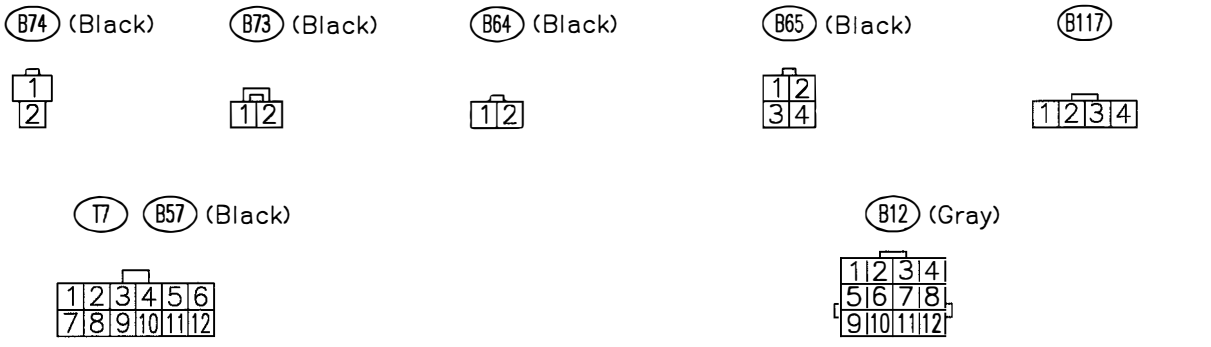

FWD switch (AT)
Shield joint connector
Data link connector
Check connector
OBD−II service connector
AT Dropping resistor
ABS control module
Cruise control module
Transmission control module
Vehicle speed sensor 1
Automactic transmission
ATF temperature sensor
Line pressure solenoid
Shift solenoid 2
Lock−up solenoid
AWD solenoid
Shift solenoid 1
Shift solenoid 3
Engine control module
Sensor ground joint connector
Throttle position sensor
(Light gray)
(Black)
(Brown)
(Gray)
(Yellow)
(Light blue)

GU41−05B

WIRING DIAGRAM

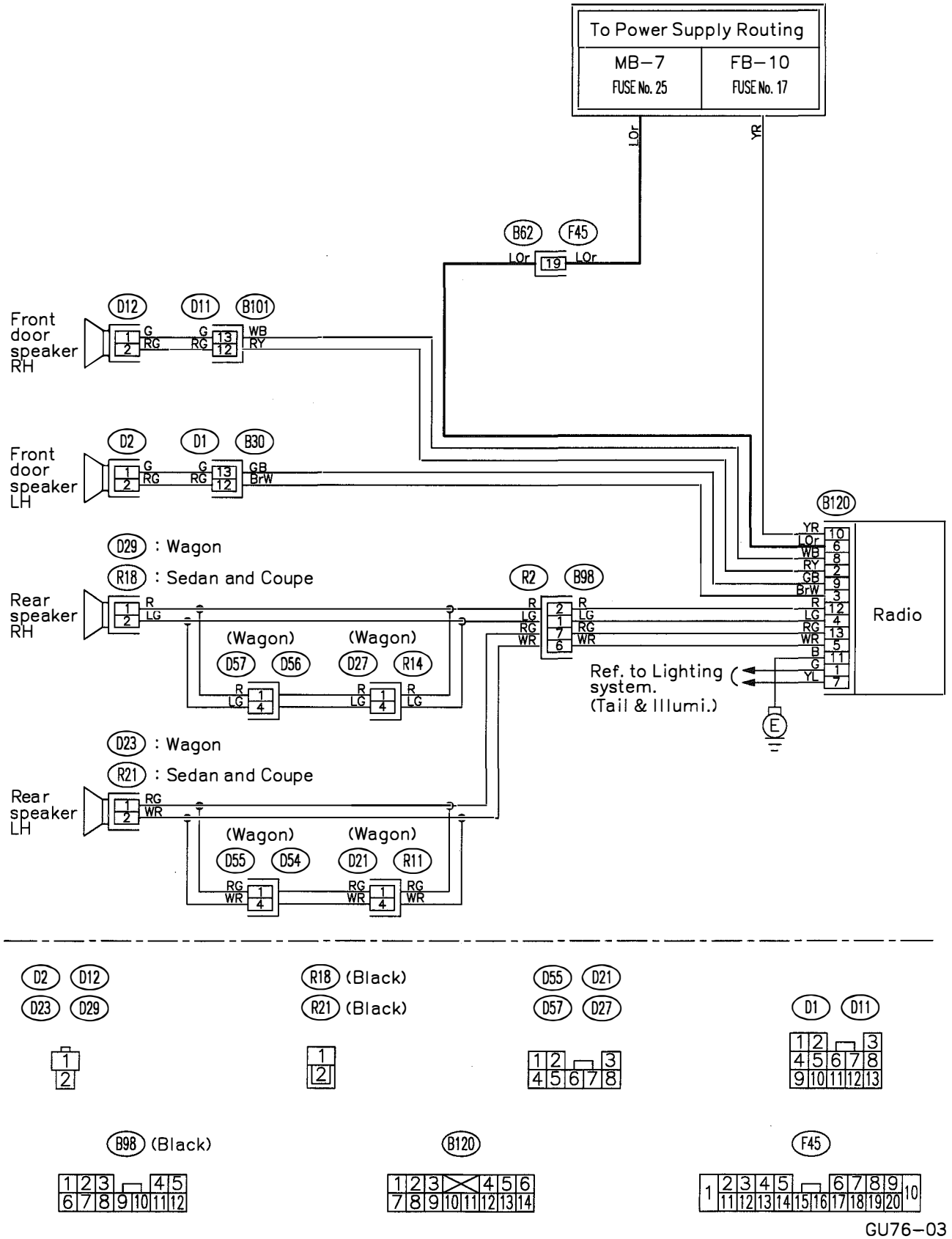
6. A/T SHIFT LOCK SYSTEM





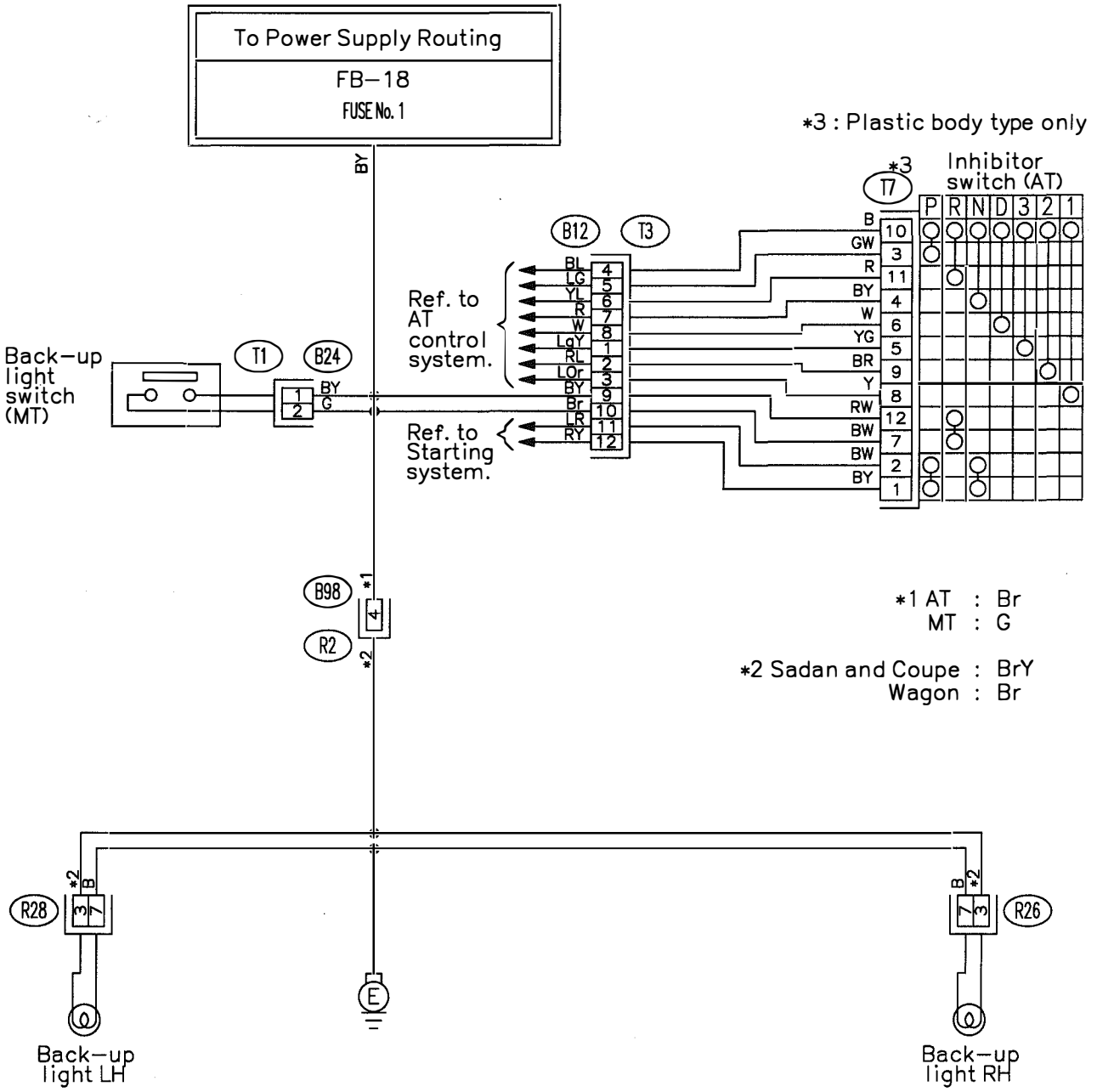
GU42–03

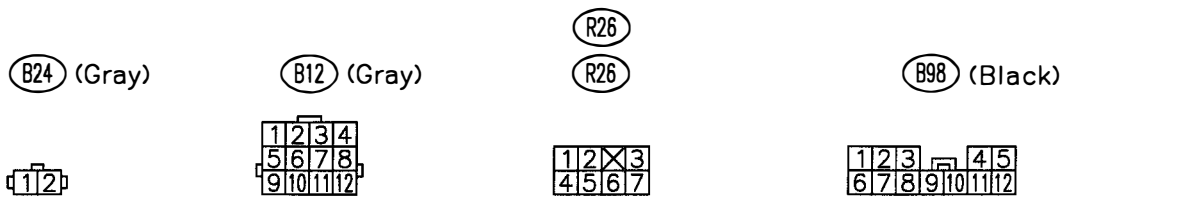
7. AUDIO SYSTEM



WIRING DIAGRAM

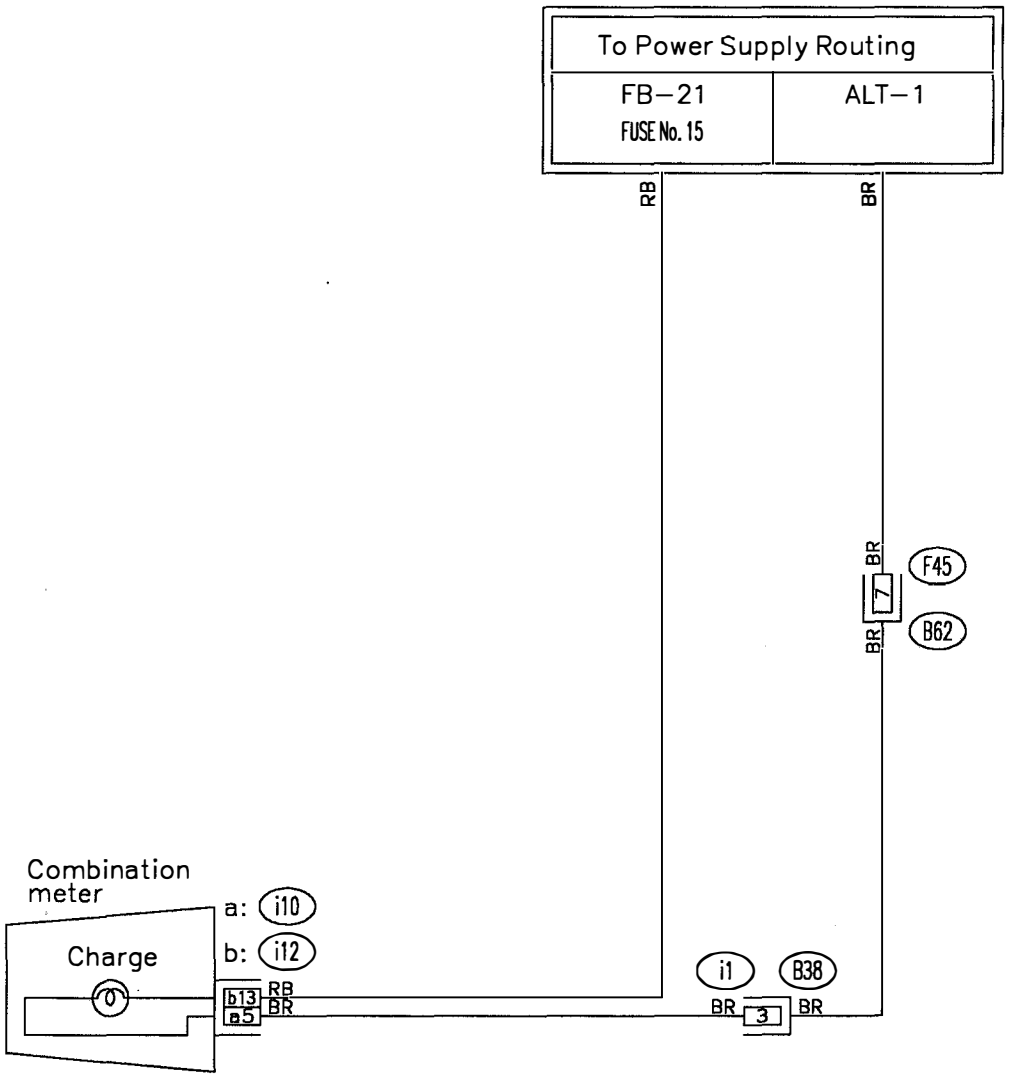
8. BACK-UP LIGHT SYSTEM

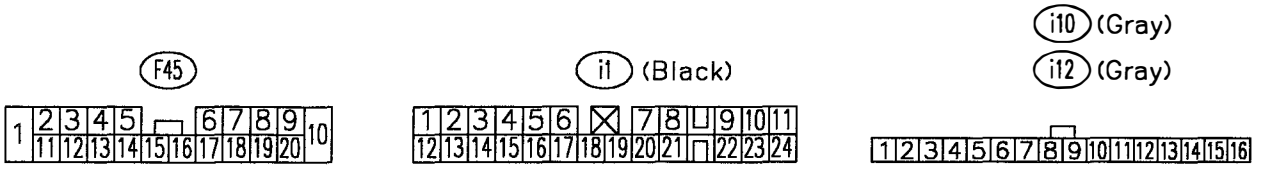




GU29–02

9. CHARGING SYSTEM

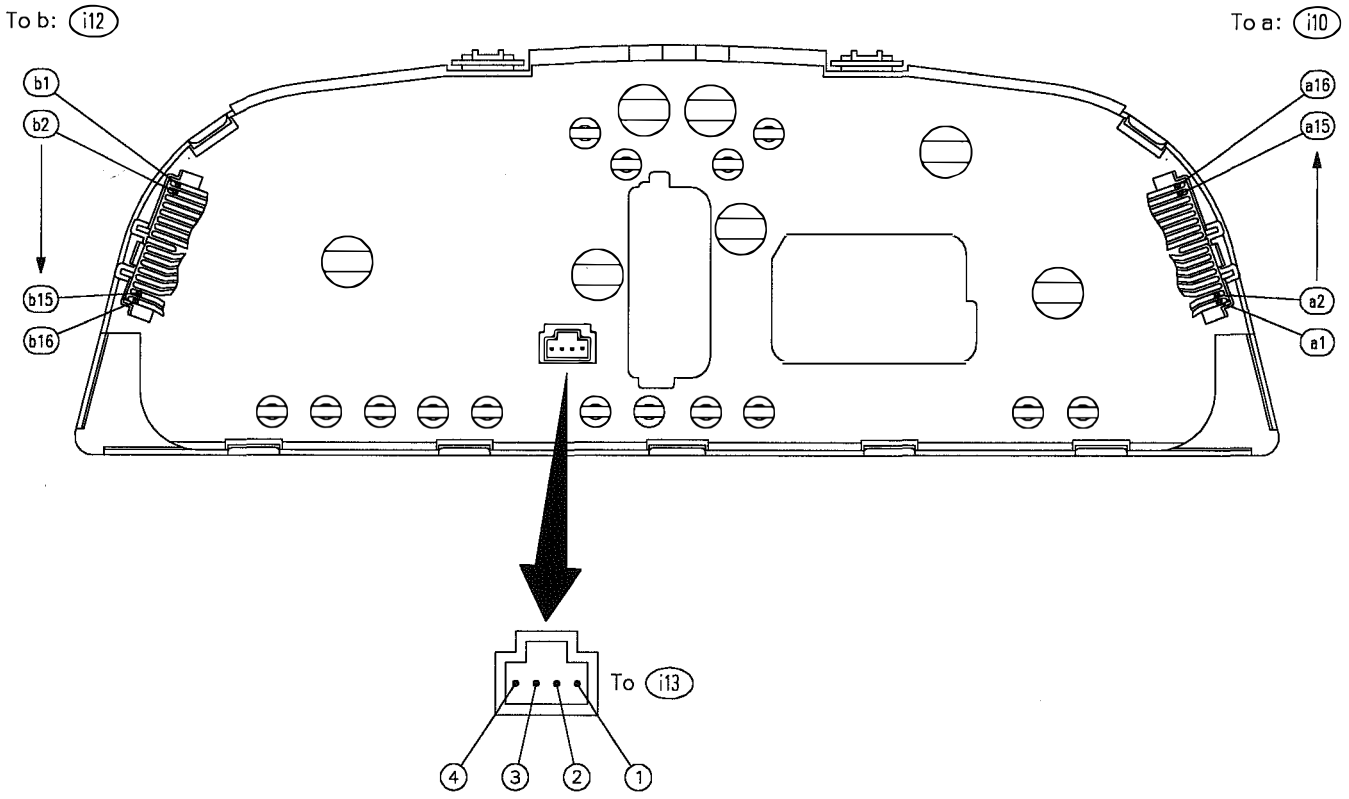


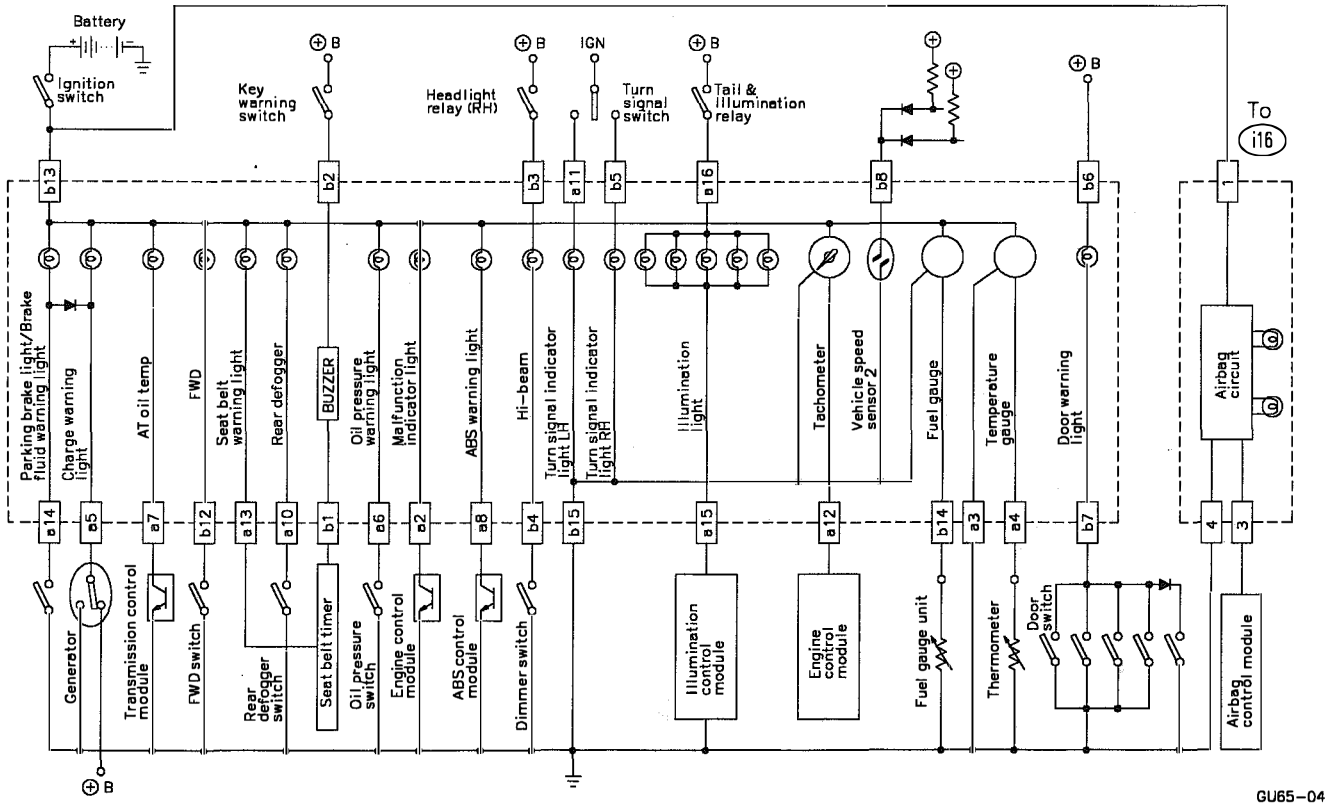


GU02−03

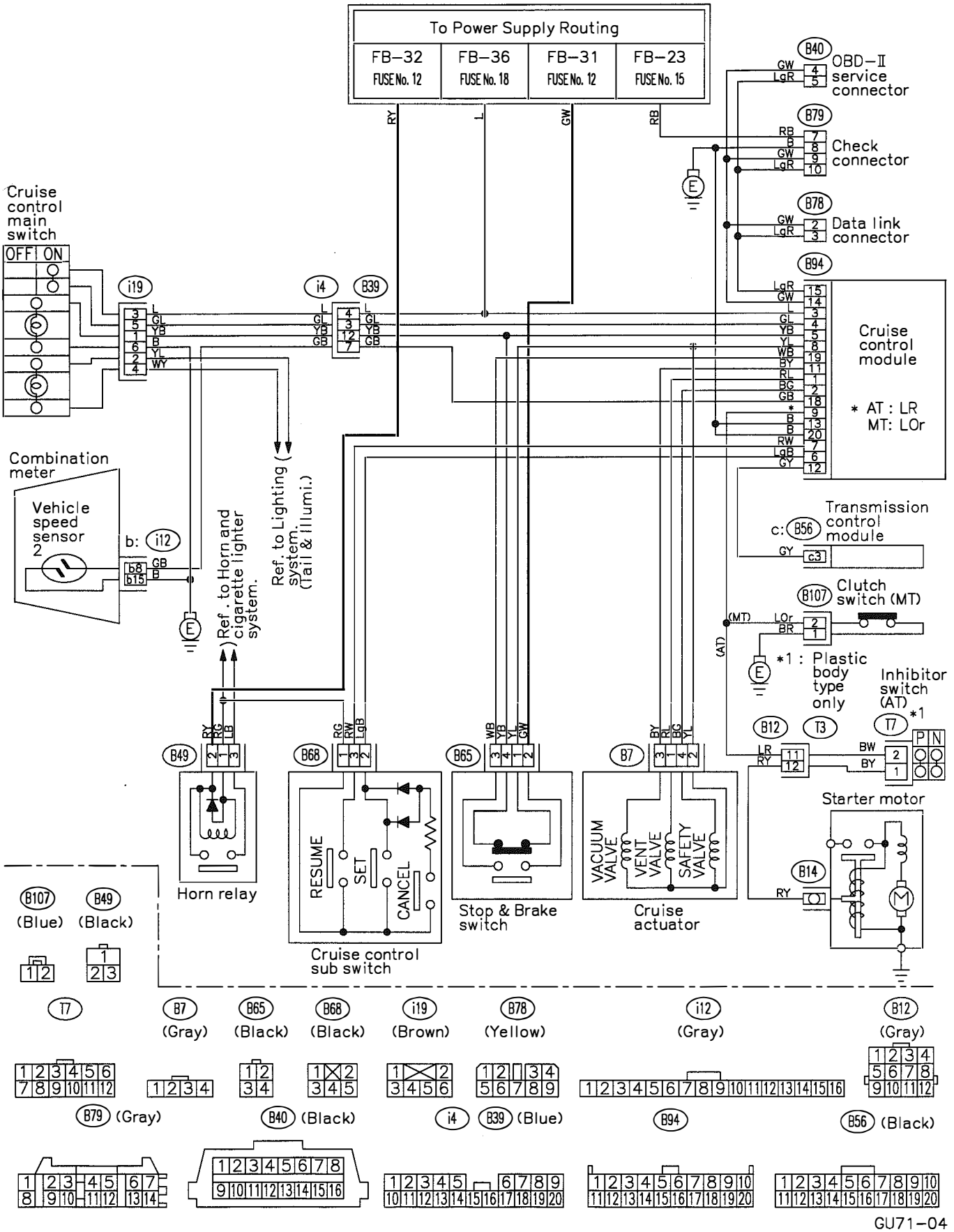
WIRING DIAGRAM

10. COMBINATION METER

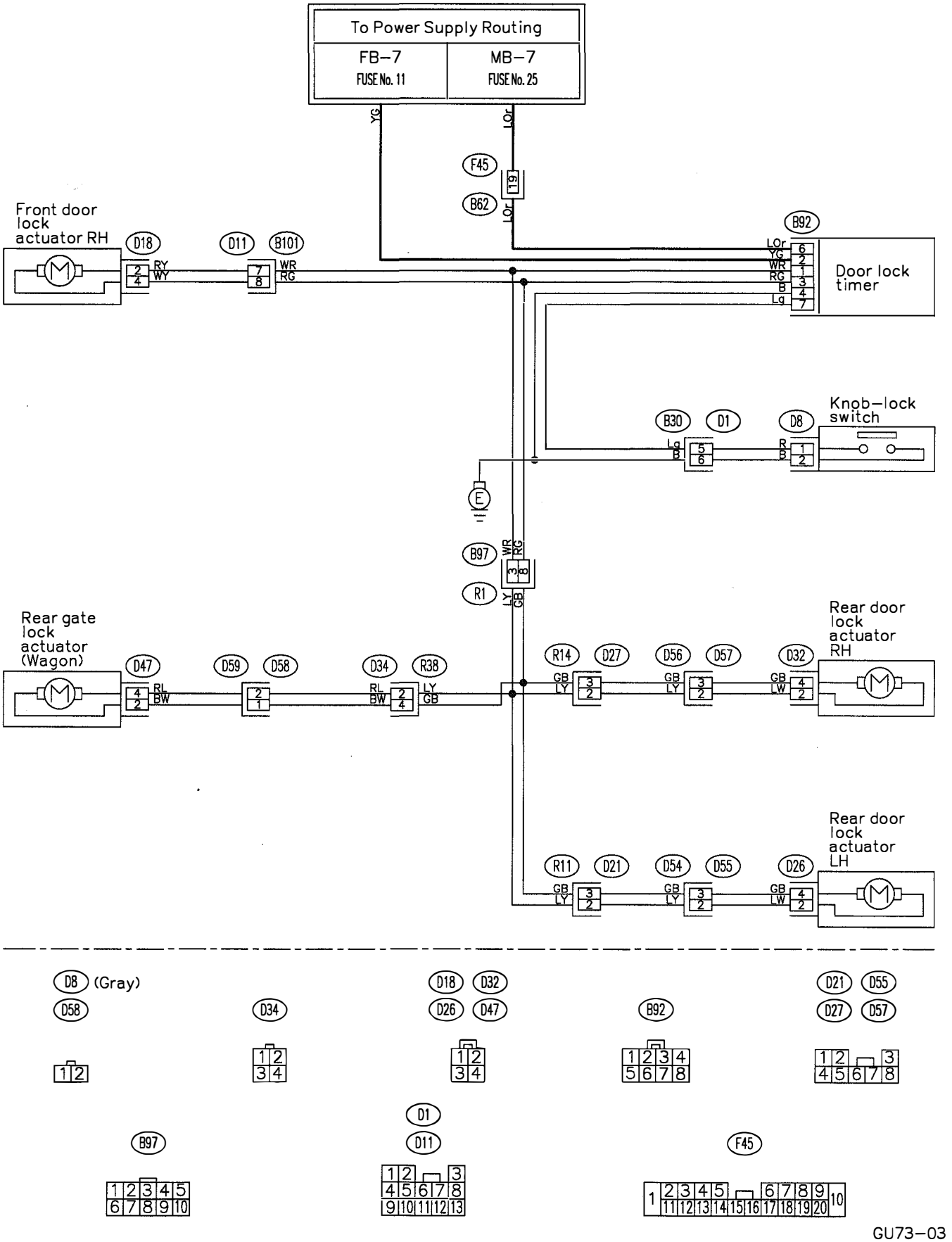




11. CRUISE CONTROL SYSTEM



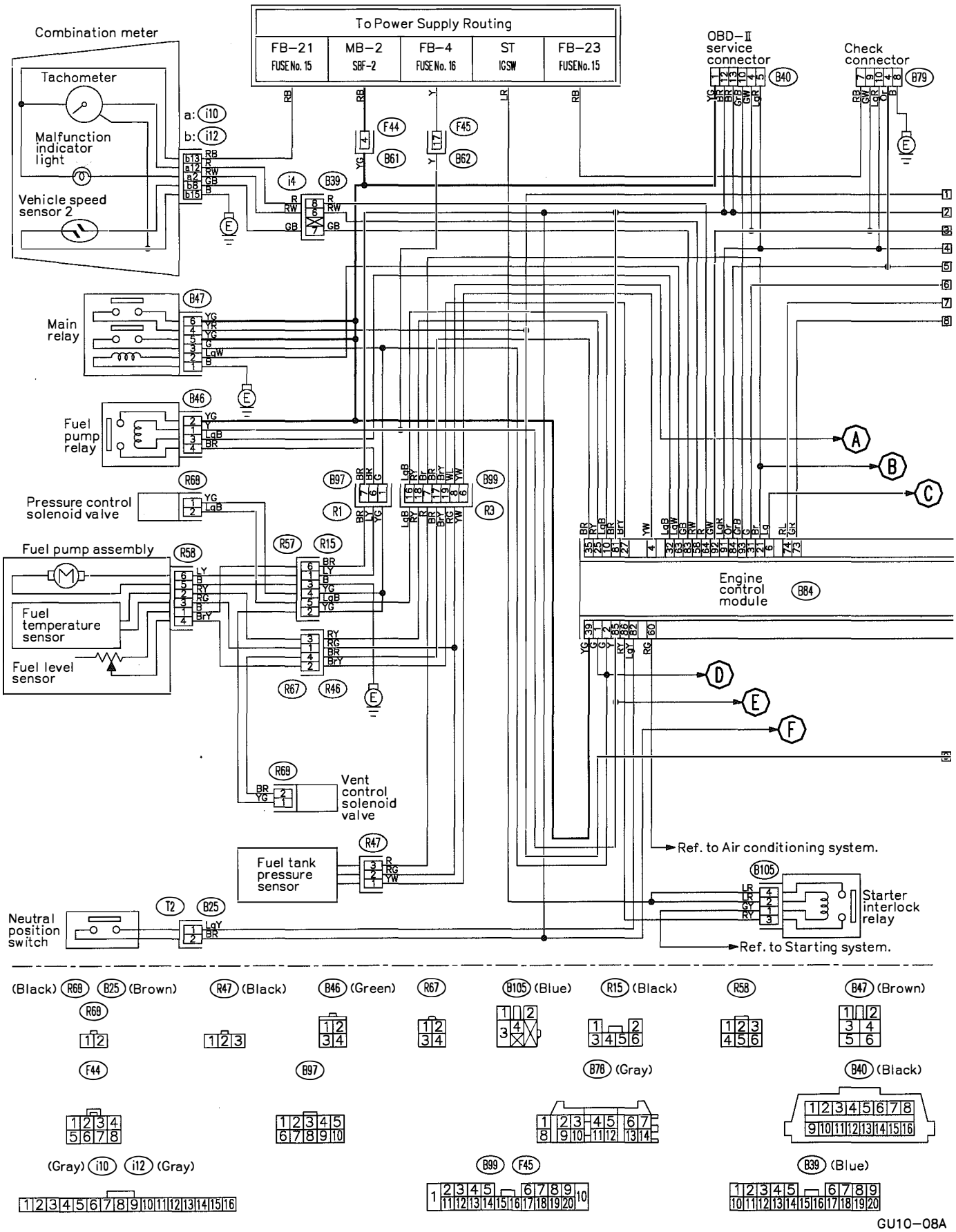
12. DOOR LOCK SYSTEM



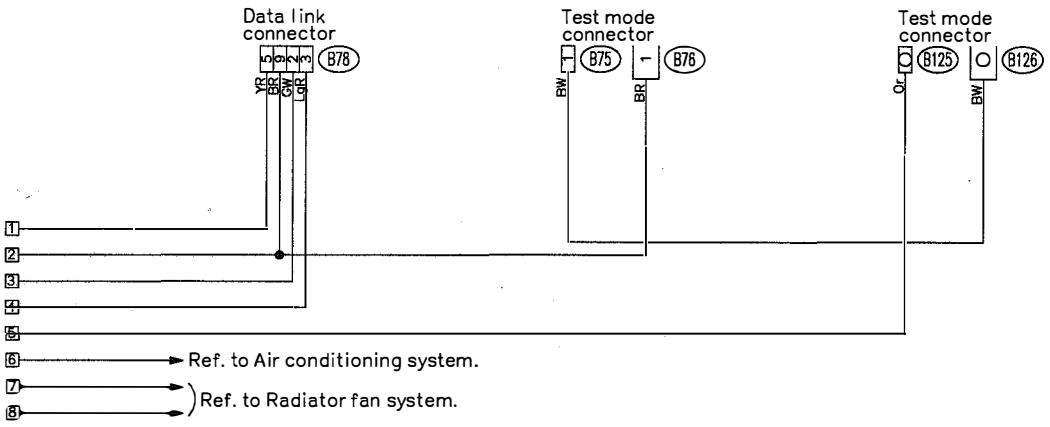
MEMO:

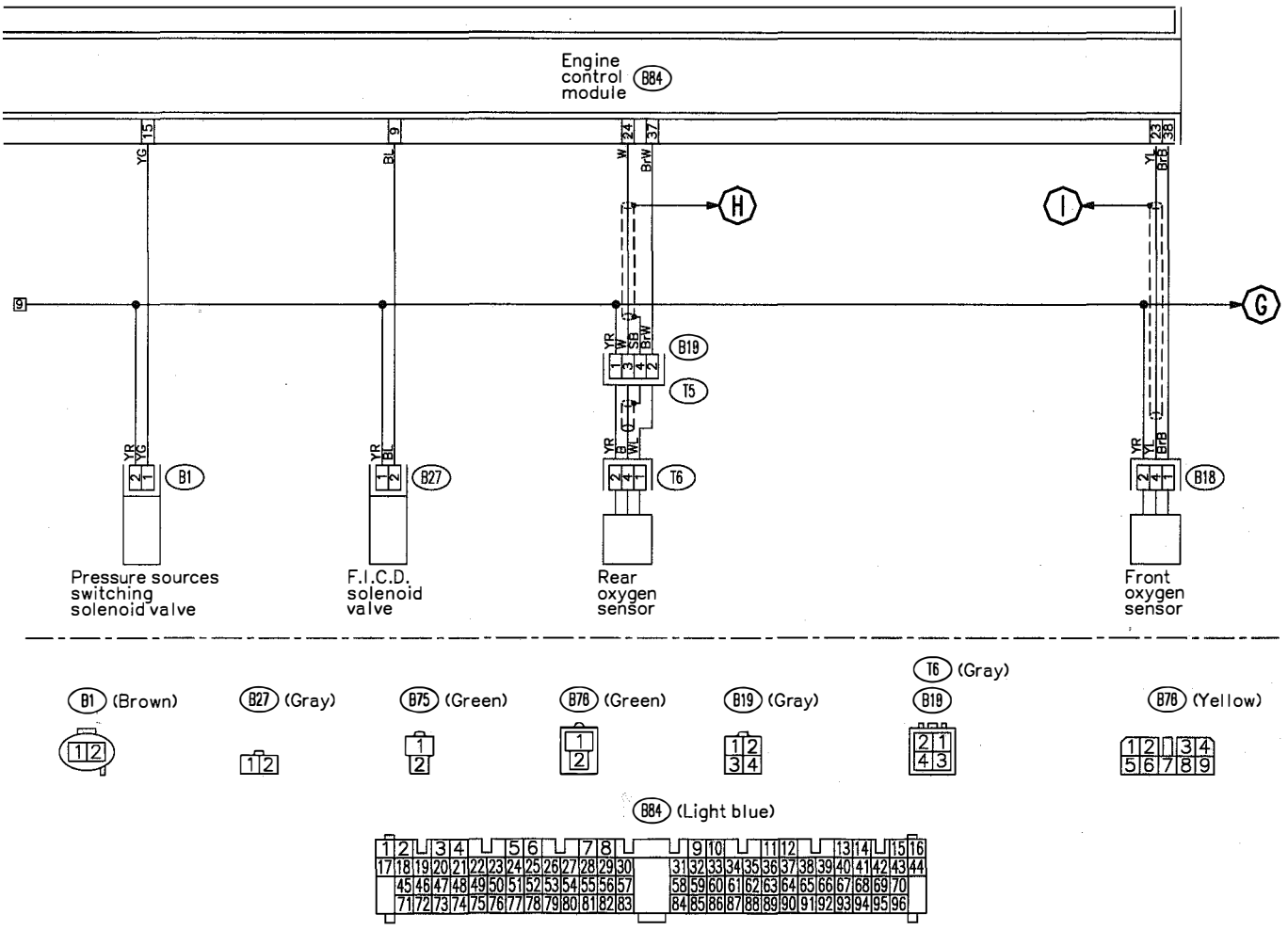
13. ENGINE ELECTRICAL SYSTEM

• 1800 cc engine model



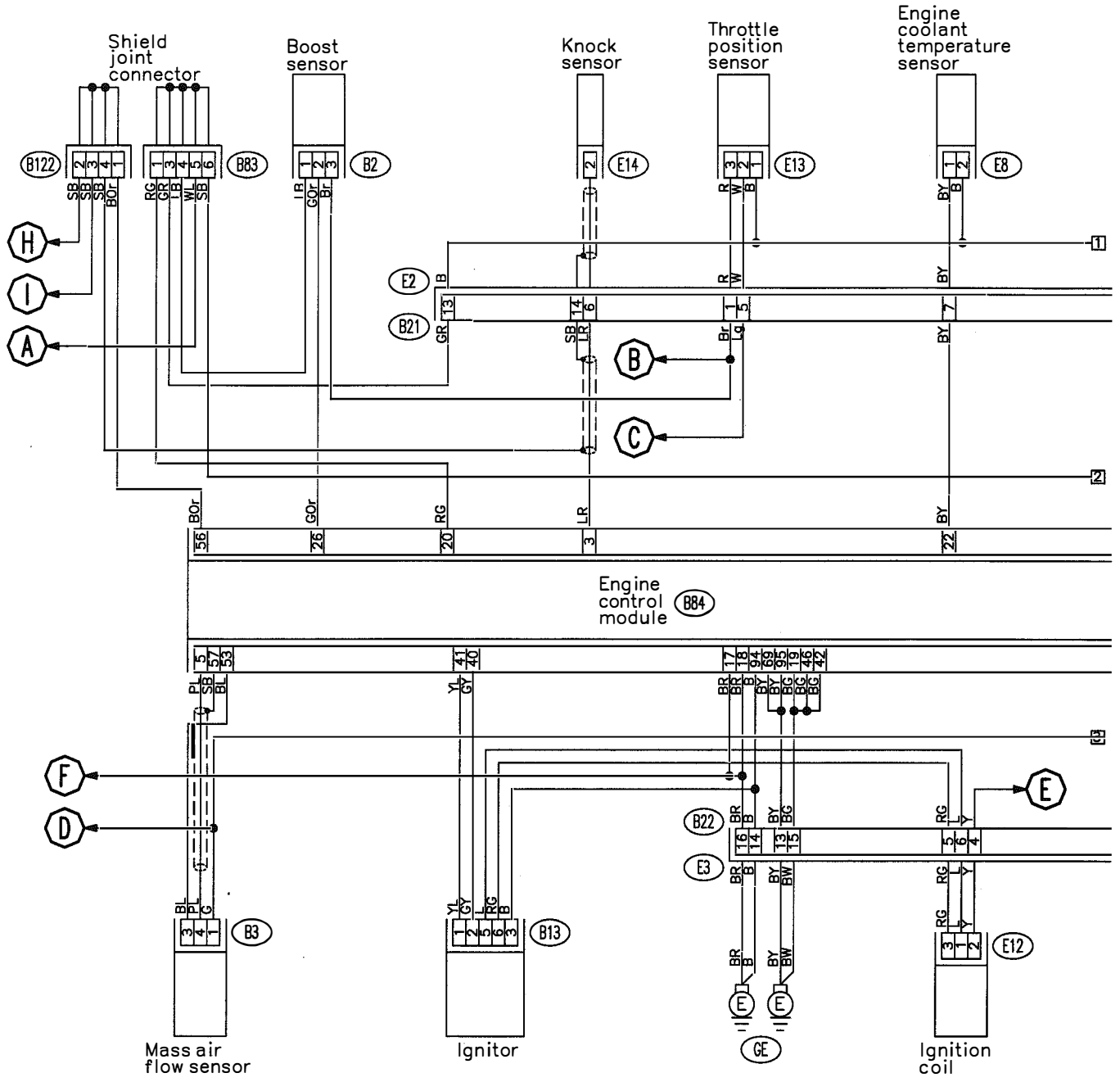
GU10–08A

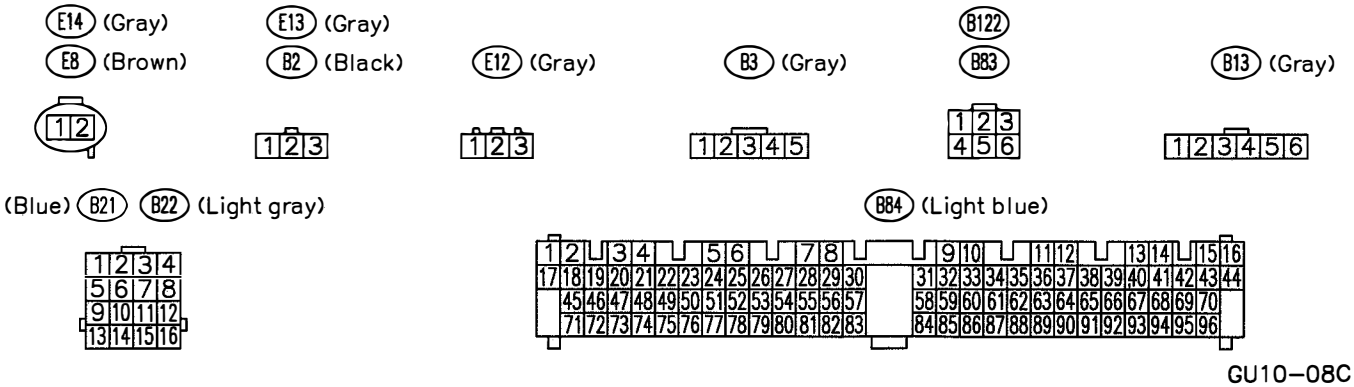

Data link connector
B78
Test mode connector
B75
B76
Test mode connector
B125
B126
Ref. to Air conditioning system.
Ref. to Radiator fan system.


Engine control module
B84
B1
B27
B19
T5
T6
B18
Pressure sources switching solenoid valve
F.I.C.D. solenoid valve
Rear oxygen sensor
Front oxygen sensor
B1 (Brown)
B27 (Gray)
B75 (Green)
B76 (Green)
B19 (Gray)
T6 (Gray)
B19
B78 (Yellow)
B84 (Light blue)

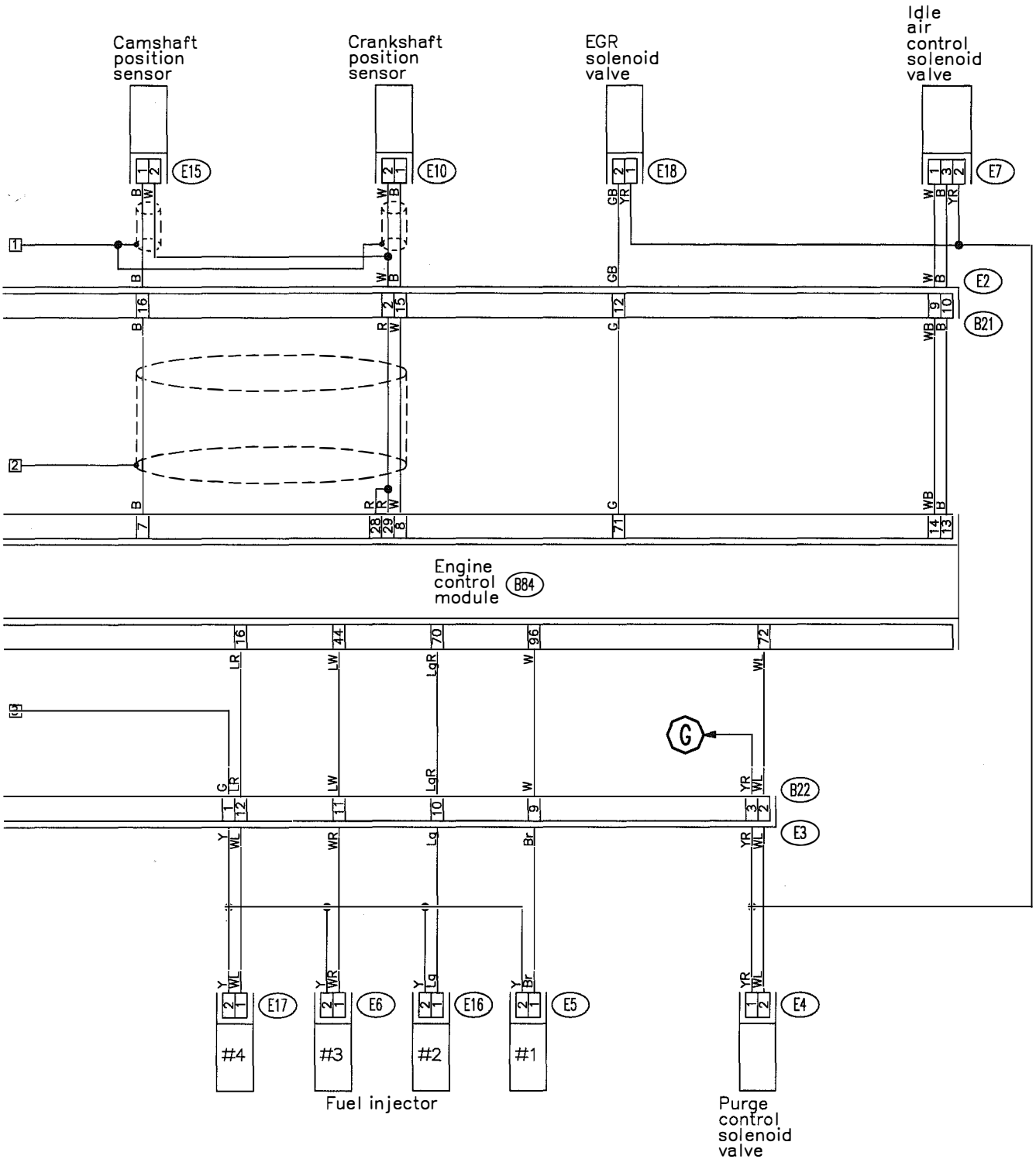
GU10-08B

WIRING DIAGRAM





GU10–08C



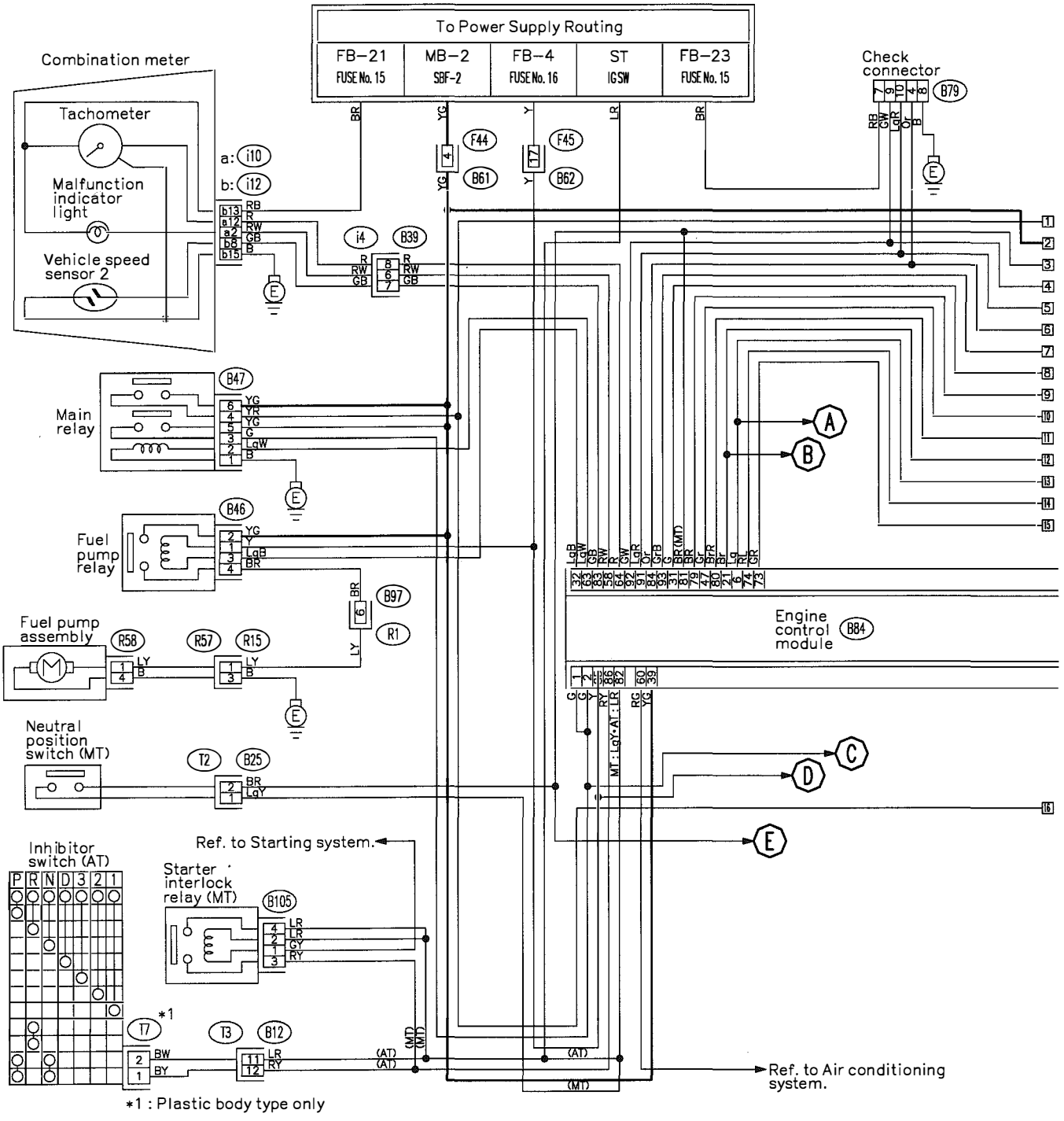
E15 (Gray) E10 (Gray) (Gray) E5 E16 (Gray) (Gray) E6 E17 (Gray) E18 (Brown) E4 (Blue) E7 (Gray)

GU10–08D

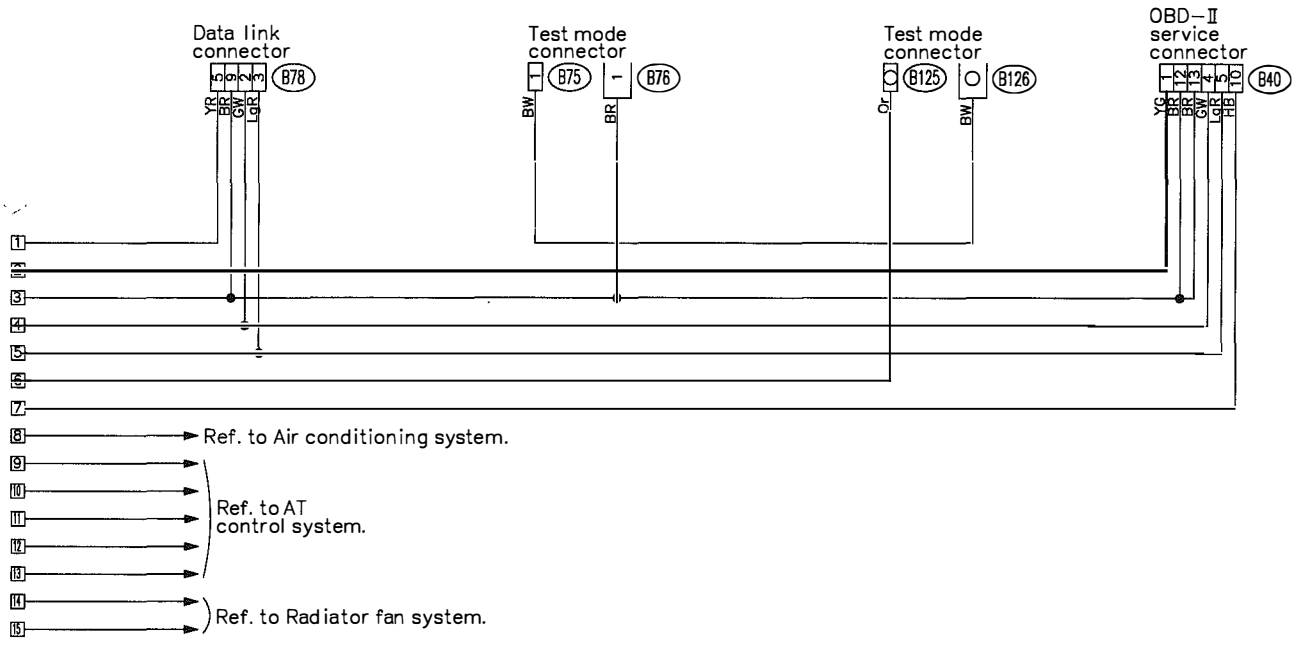
WIRING DIAGRAM

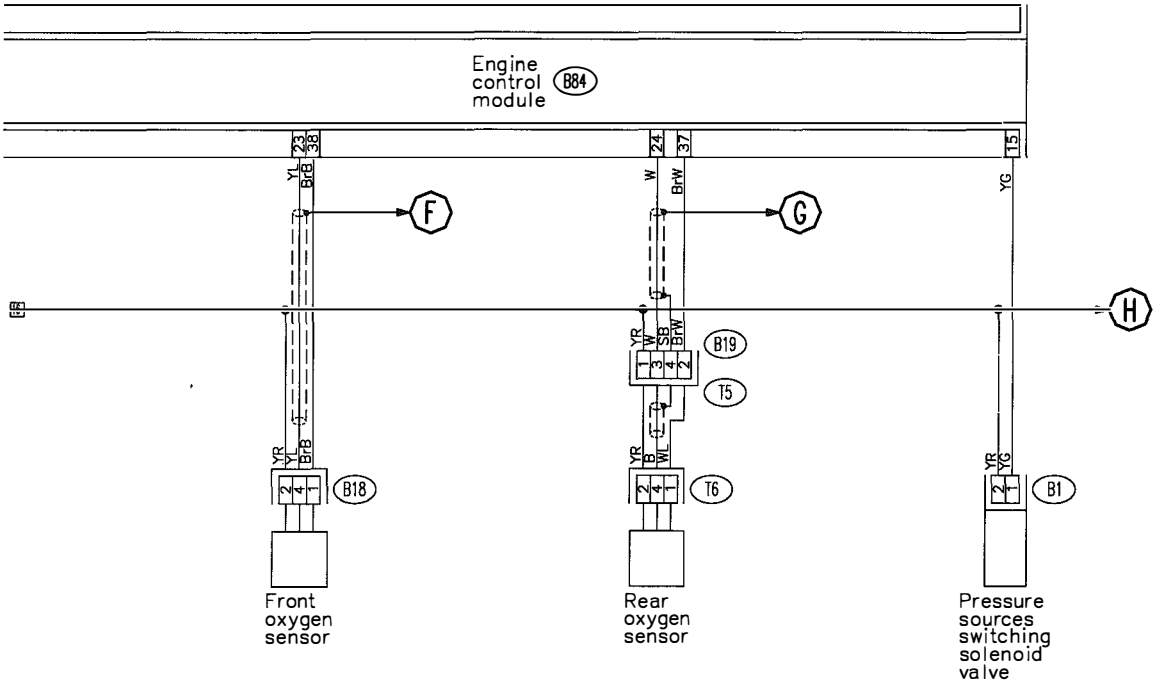
13. ENGINE ELECTRICAL SYSTEM

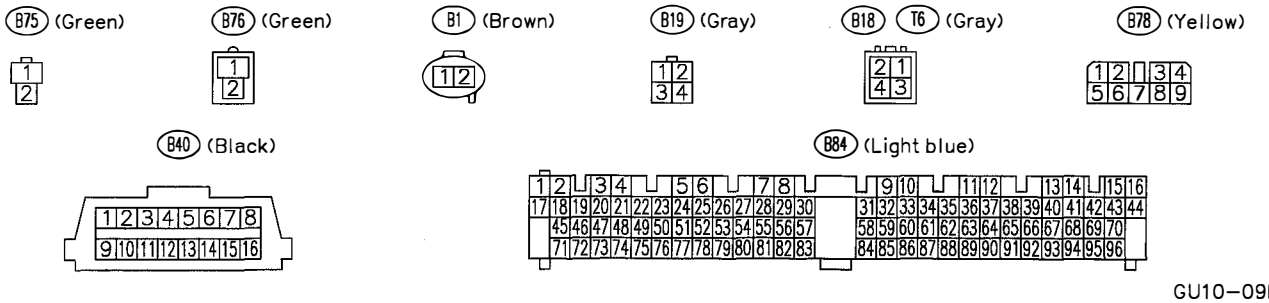
• 2200 cc engine model



GU10-09A

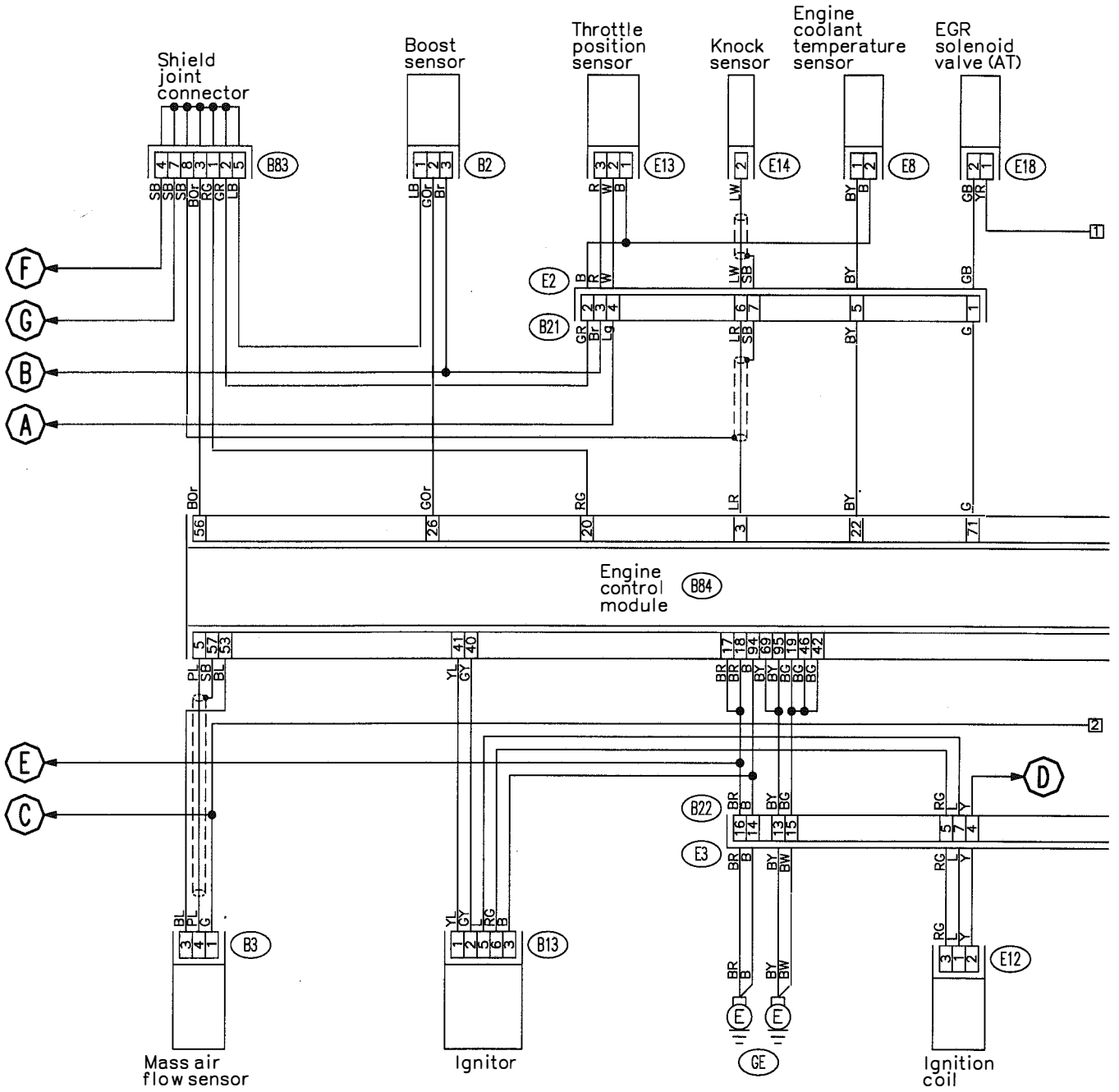

Data link connector
B78
Test mode connector
B75
B76
Test mode connector
B125
B126
OBD-II service connector
B40
Ref. to Air conditioning system.
Ref. to AT control system.
Ref. to Radiator fan system.

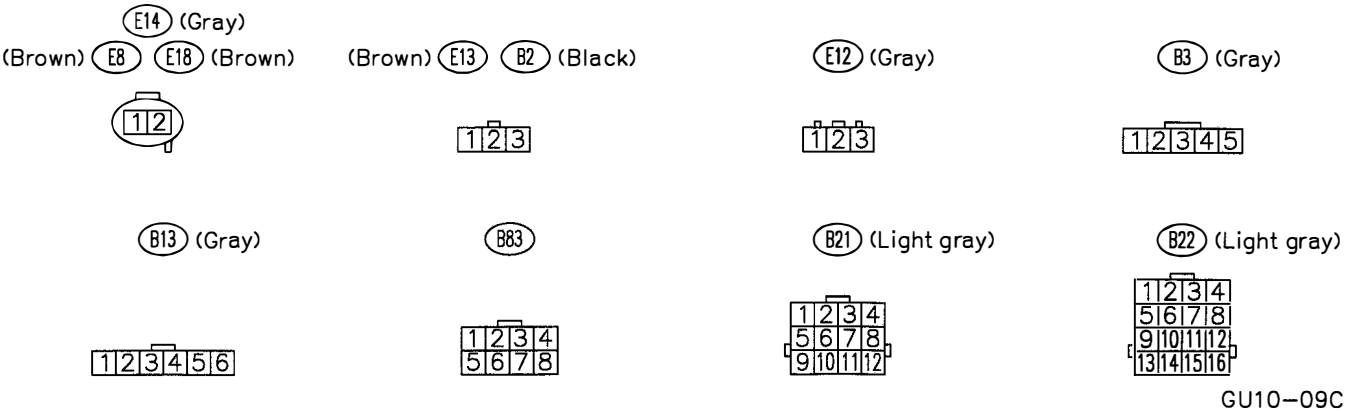

Engine control module
B84
F
G
H
B19
T5
B18
T6
B1
Front oxygen sensor
Rear oxygen sensor
Pressure sources switching solenoid valve


B75 (Green)
B76 (Green)
B1 (Brown)
B19 (Gray)
B18 T6 (Gray)
B78 (Yellow)
B40 (Black)
B84 (Light blue)

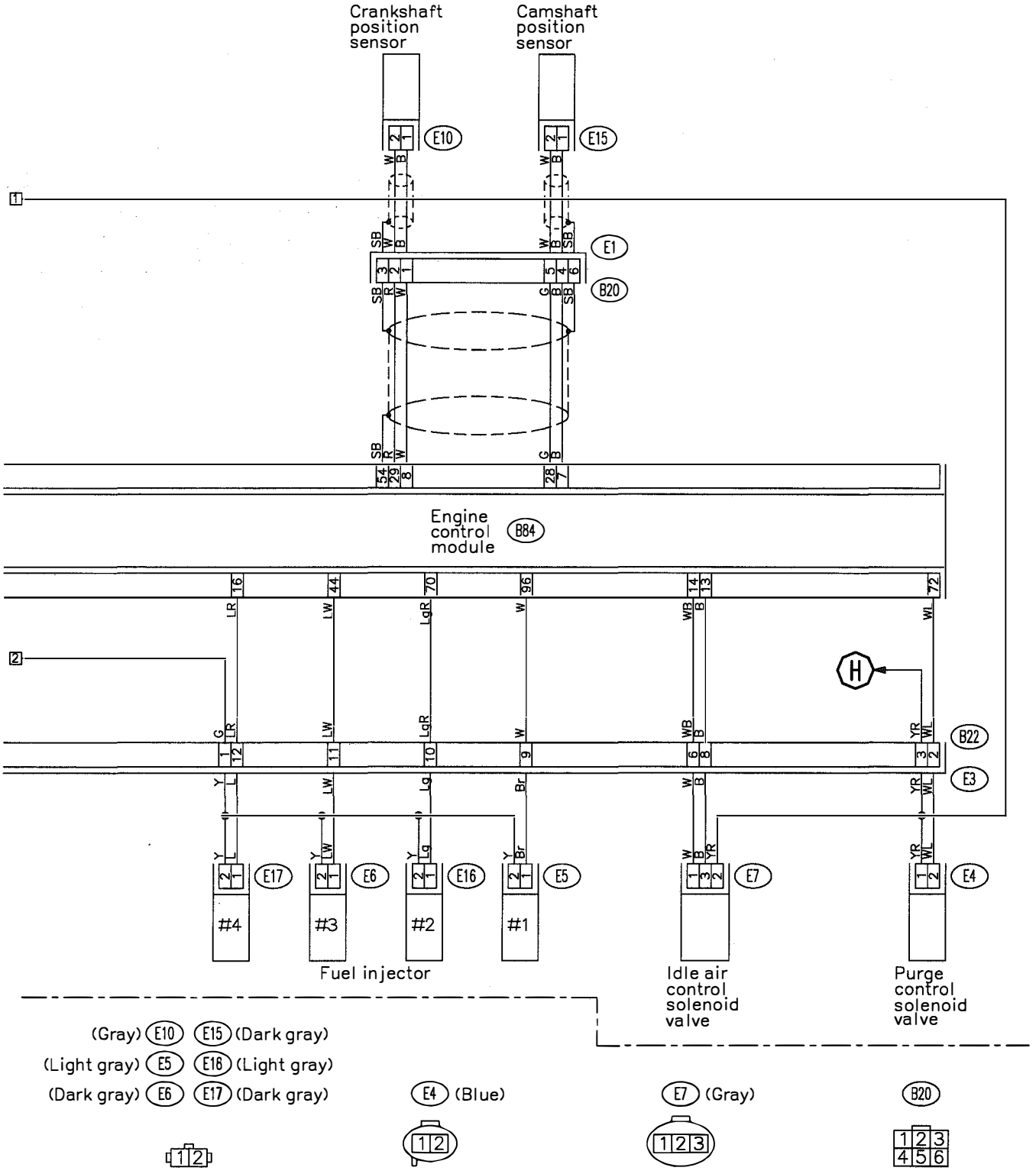
GU10-09B

WIRING DIAGRAM





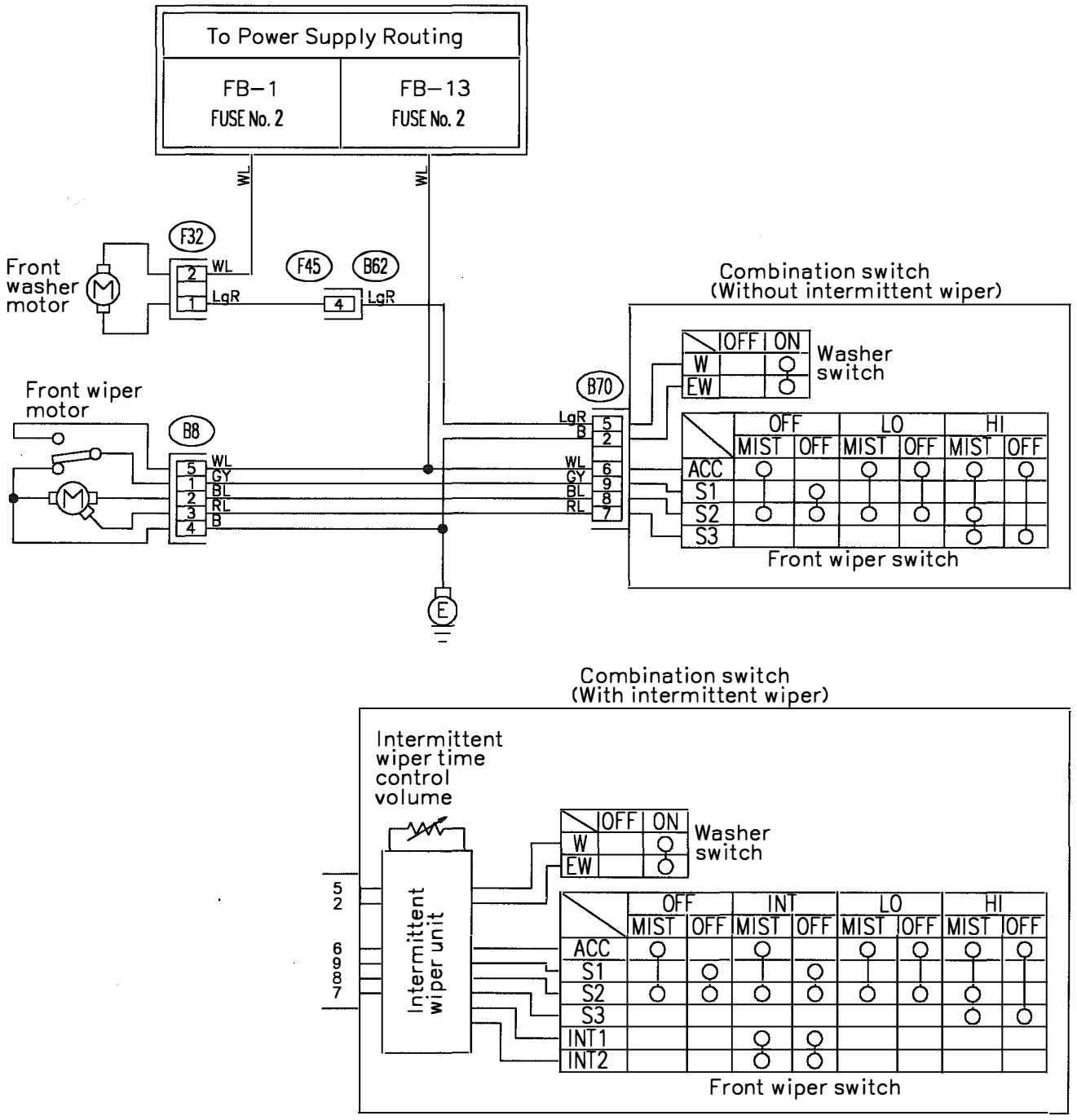
GU10-09C


Crankshaft position sensor
Camshaft position sensor
E10
E15
E1
B20
Engine control module
B84
B22
E3
H
#4
#3
#2
#1
E17
E6
E16
E5
E7
E4
Fuel injector
Idle air control solenoid valve
Purge control solenoid valve
(Gray) E10 E15 (Dark gray)
(Light gray) E5 E18 (Light gray)
(Dark gray) E6 E17 (Dark gray)
E4 (Blue)
E7 (Gray)
B20
B84 (Light blue)

GU10–09D

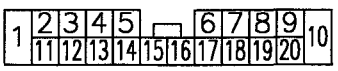
WIRING DIAGRAM

14. FRONT WIPER AND WASHER SYSTEM



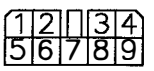
F32 (Green)

F45



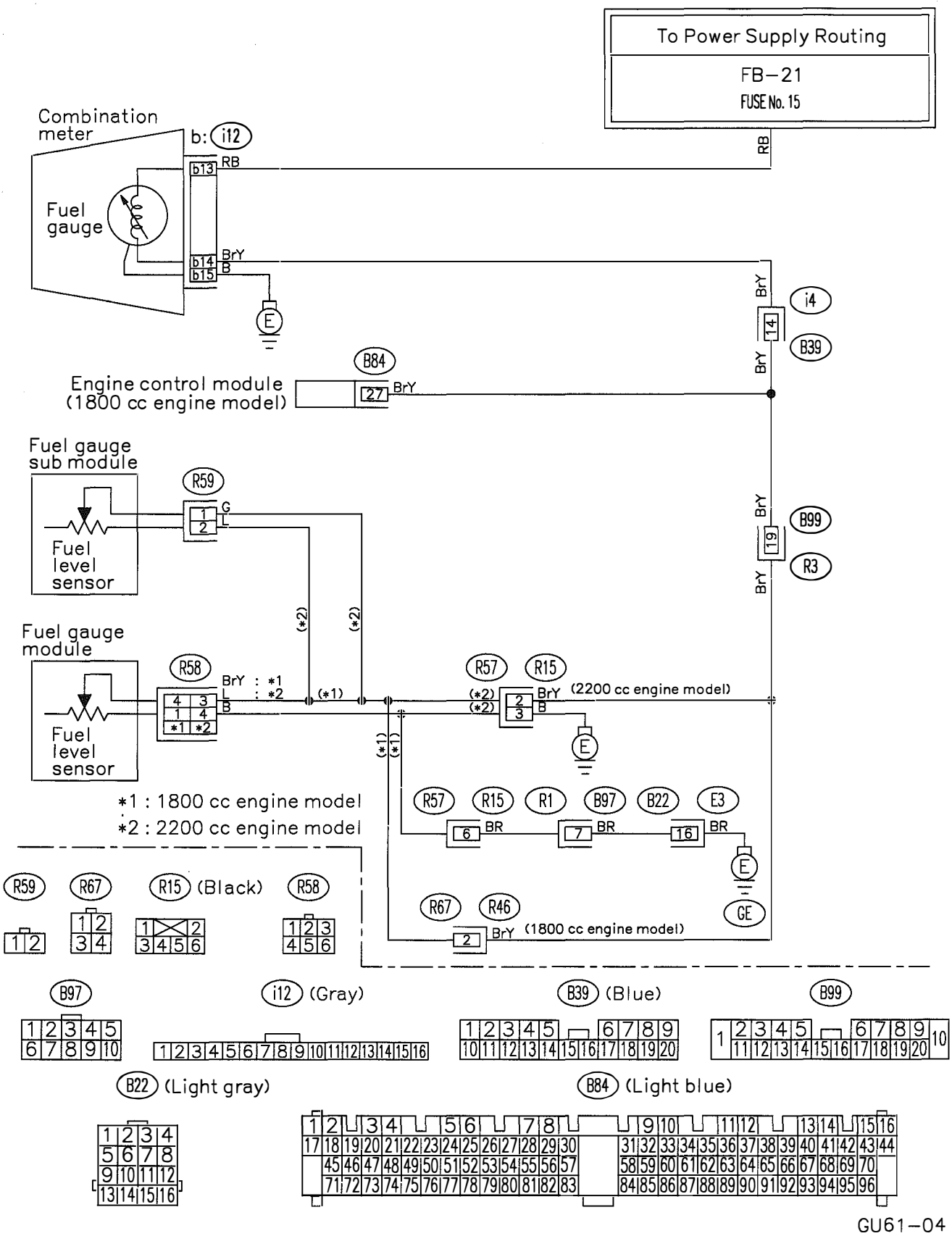
B8

B70



GU50–02

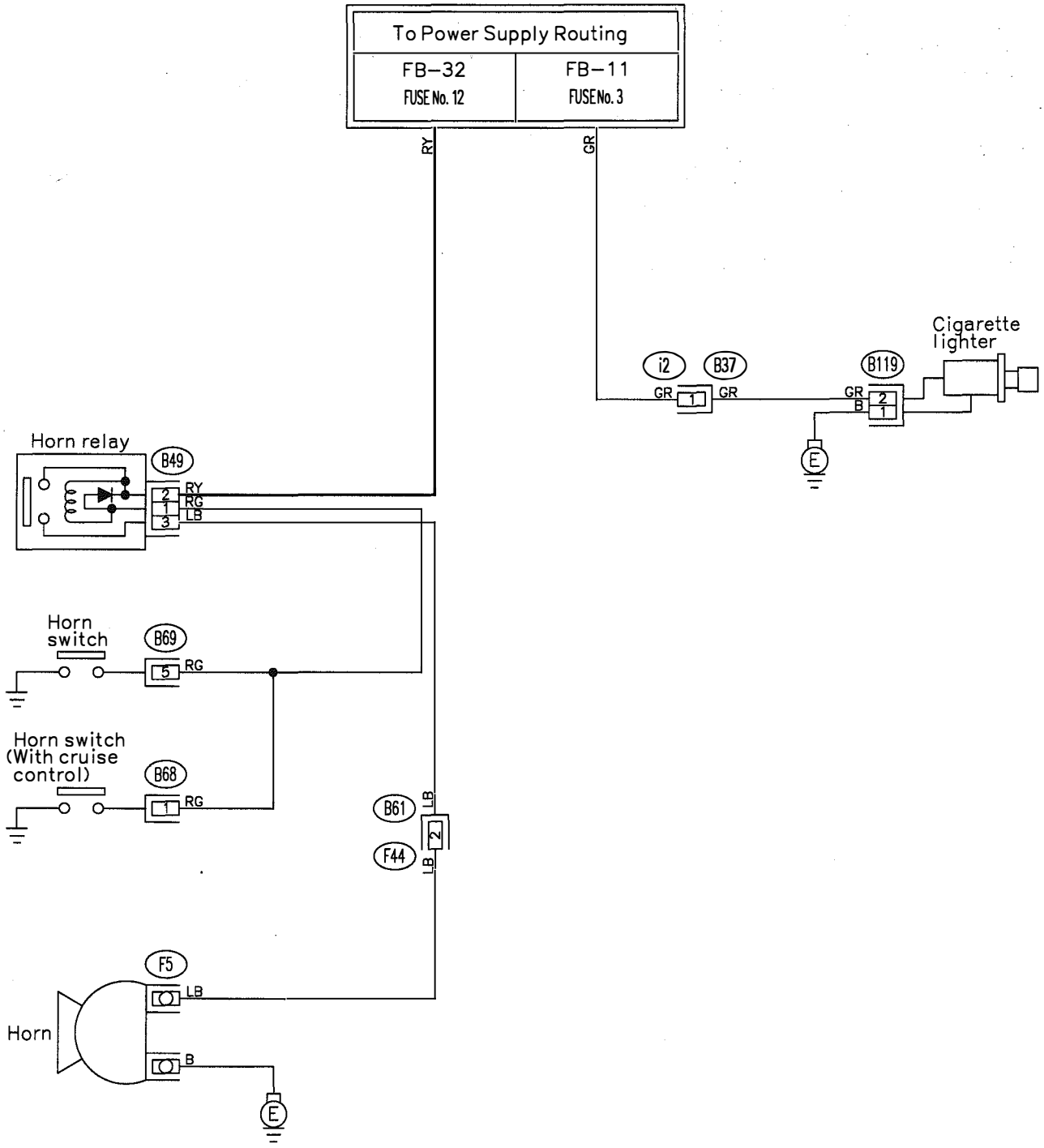
15. FUEL GAUGE SYSTEM

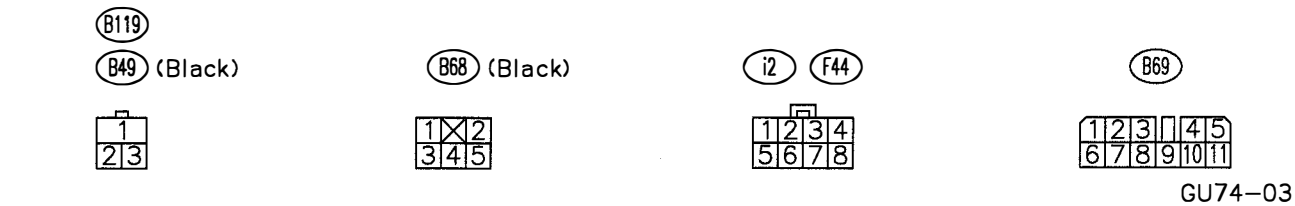


GU61−04

WIRING DIAGRAM

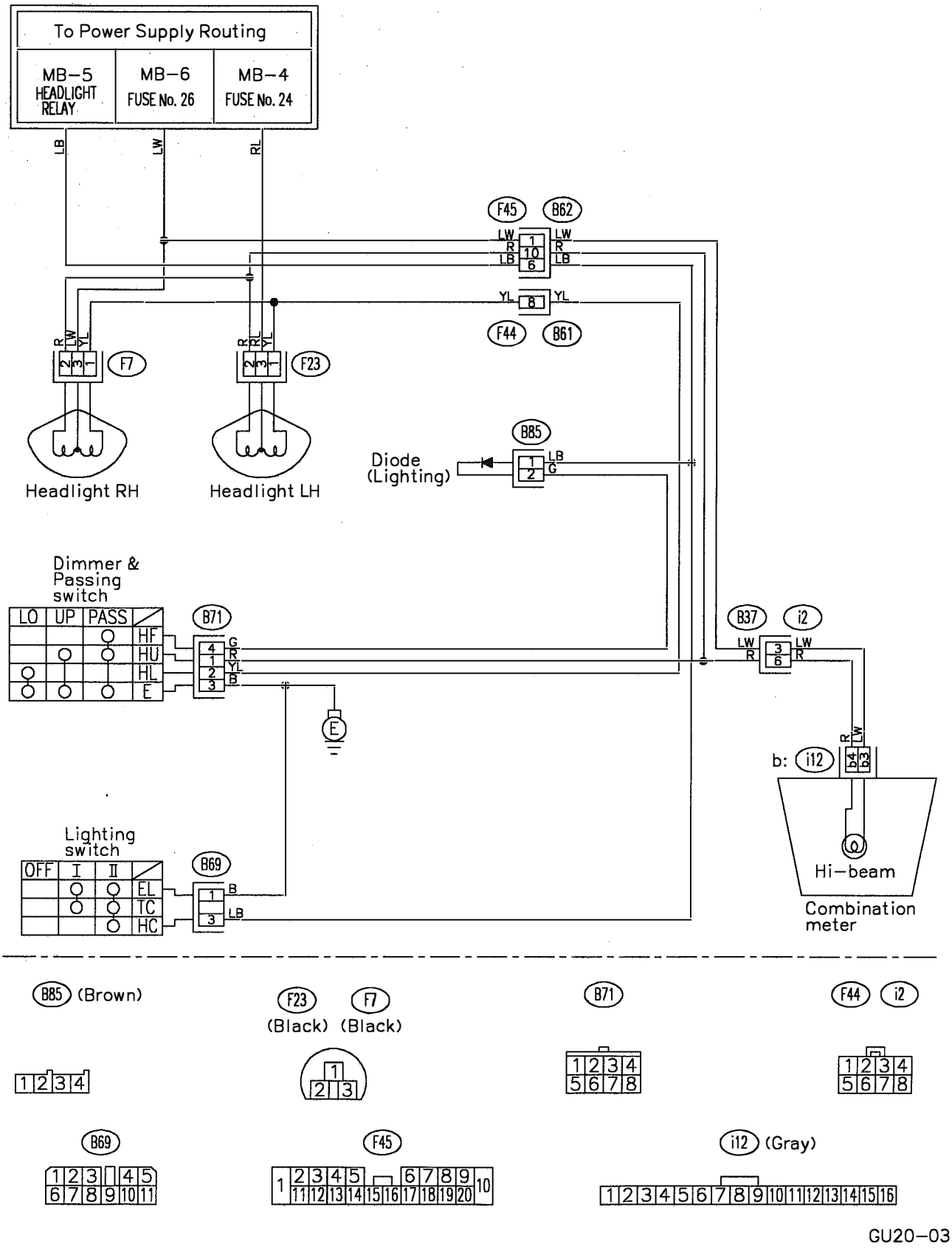
16. HORN AND CIGARETTE LIGHTER SYSTEM





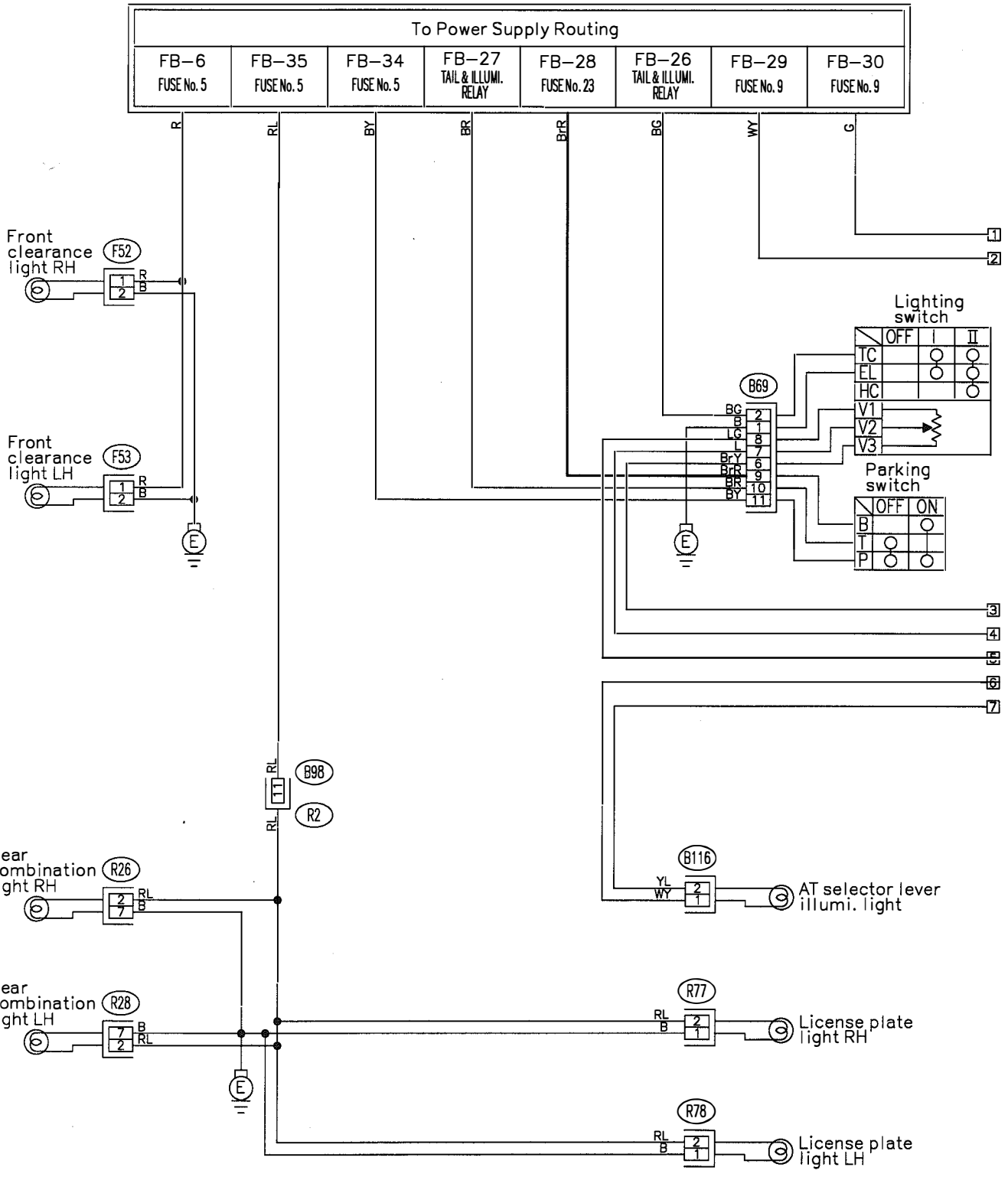
GU74–03

17. LIGHTING (HEADLIGHT) SYSTEM



GU20–03

18. LIGHTING
(TAIL LIGHT·ILLUMINATION LIGHT·ETC.) SYSTEM



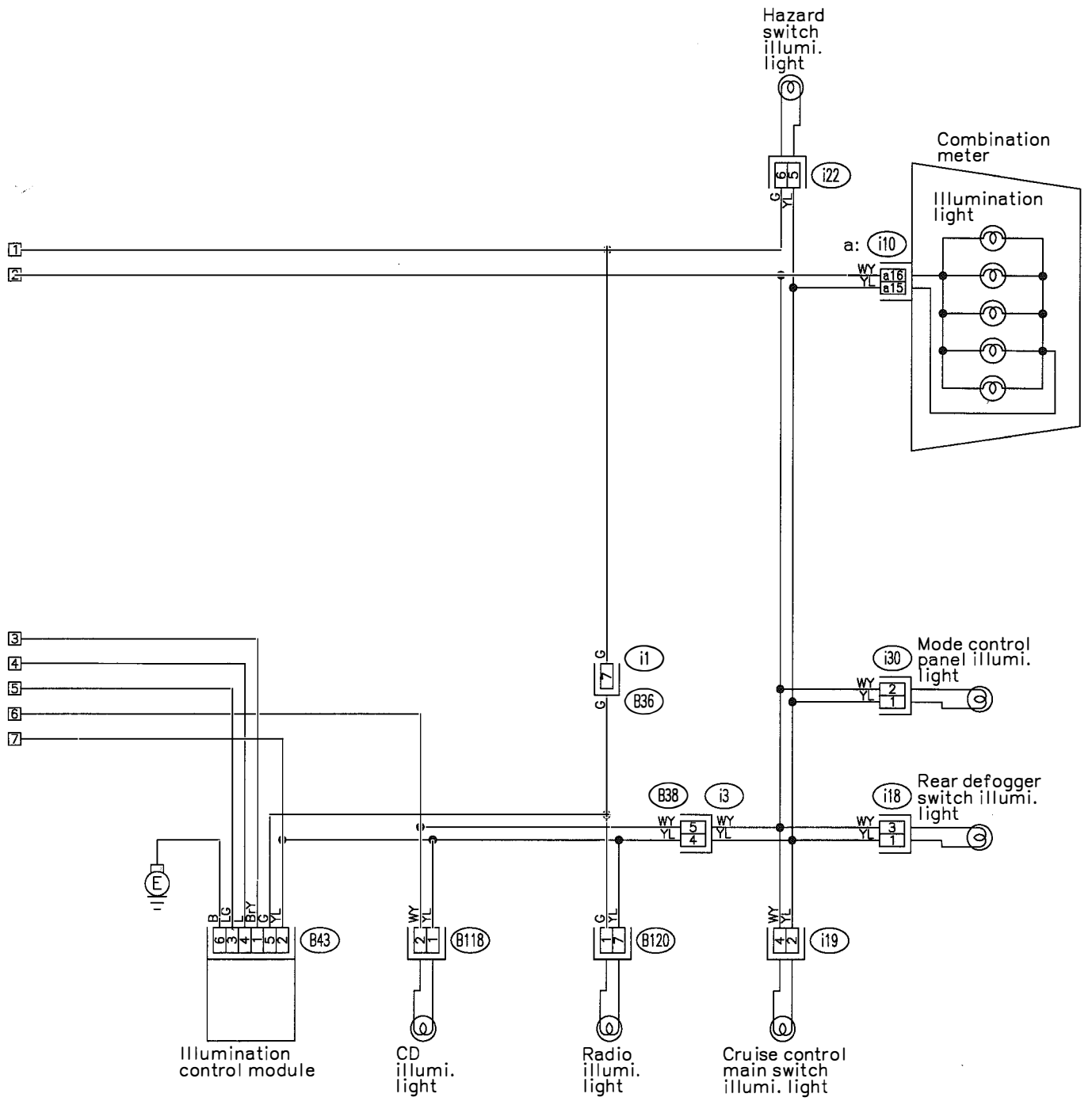
R77 R76 — 1 2

F52 (Gray) F53 (Gray) — 1 2

R26 R26 — 1 2 3 4 5 6 7

B69 — 1 2 3 4 5 6 7 8 9 10 11

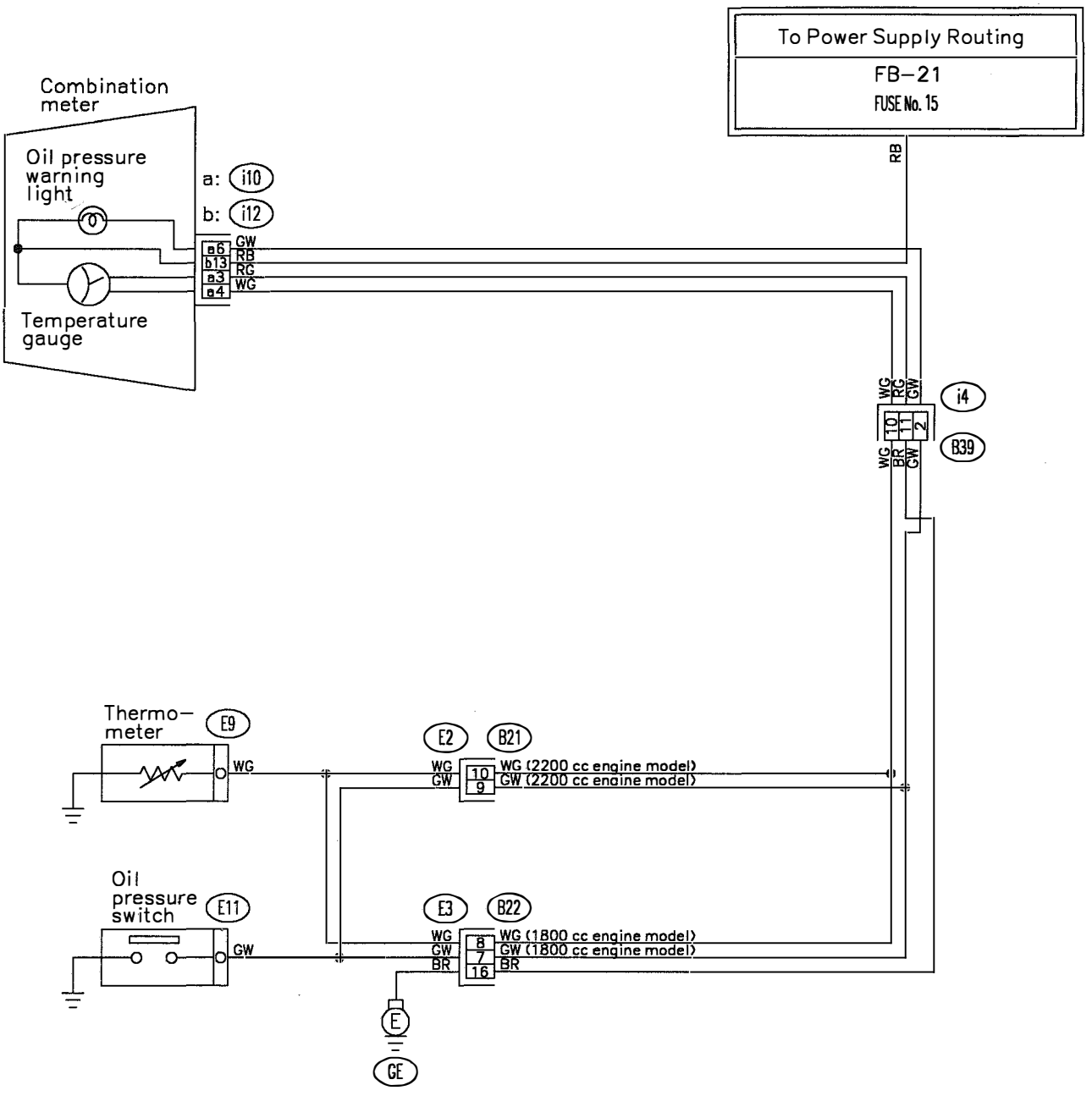
GU21–03A

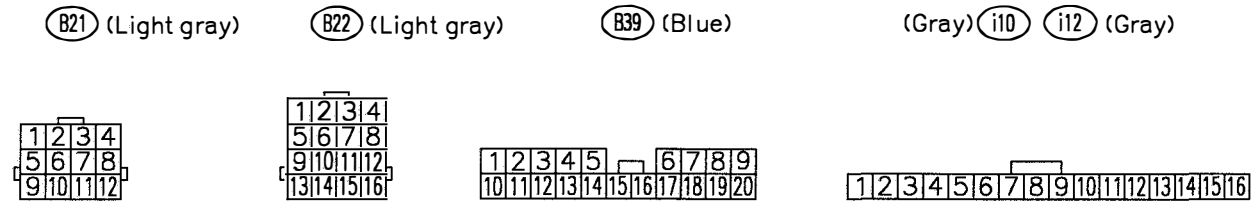

Hazard switch illumi. light
Combination meter
Illumination light
a: i10
i22
i1
B36
i30
Mode control panel illumi. light
B38
i3
i18
Rear defogger switch illumi. light
B43
B118
B120
i19
Illumination control module
CD illumi. light
Radio illumi. light
Cruise control main switch illumi. light
i19 (Brown)
B43 (Black)
B38
B98 (Black)
i10 (Gray)
i1 (Black)

GU21–03B

WIRING DIAGRAM

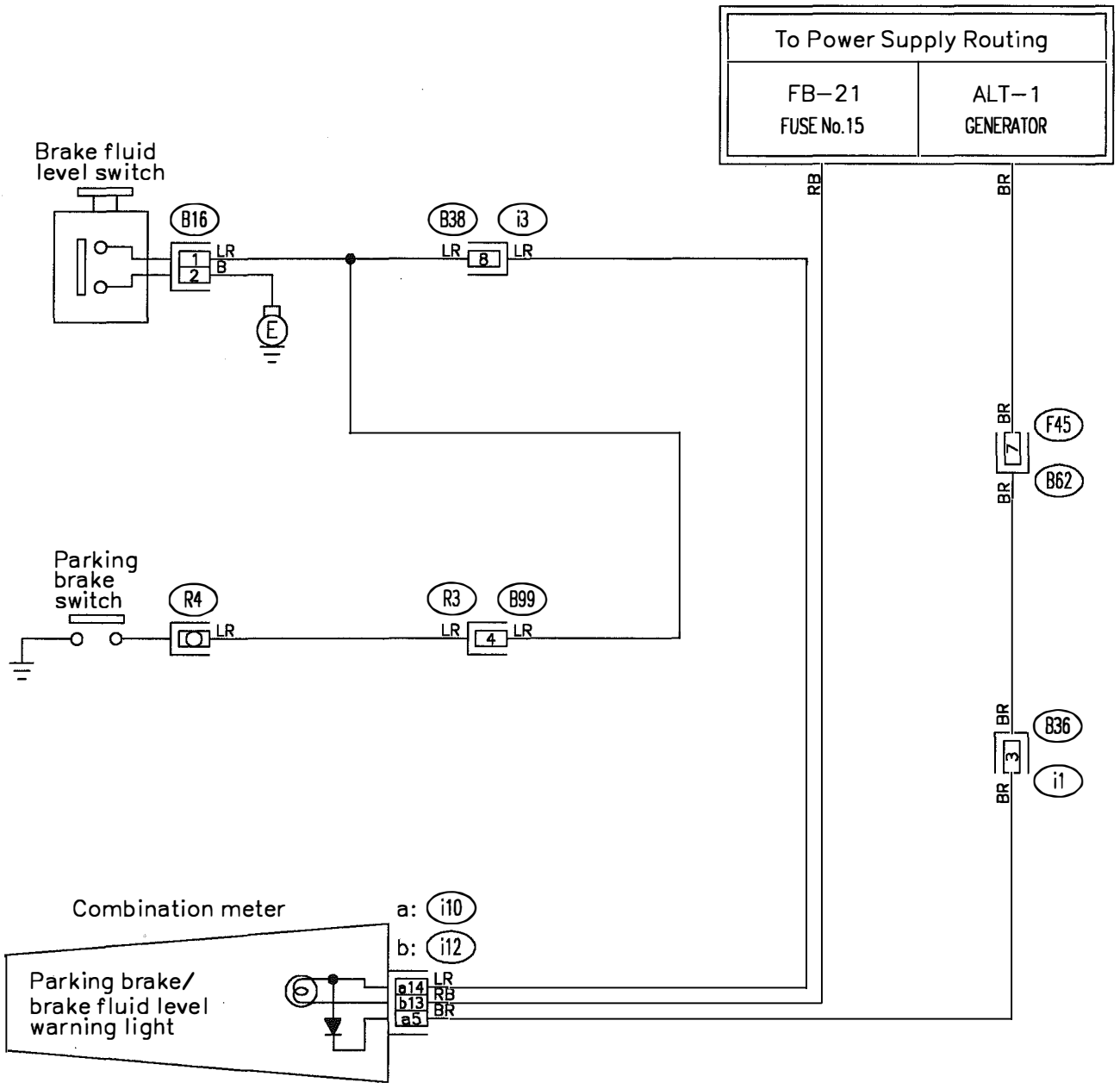
19. OIL PRESSURE AND TEMPERATURE GAUGE SYSTEM

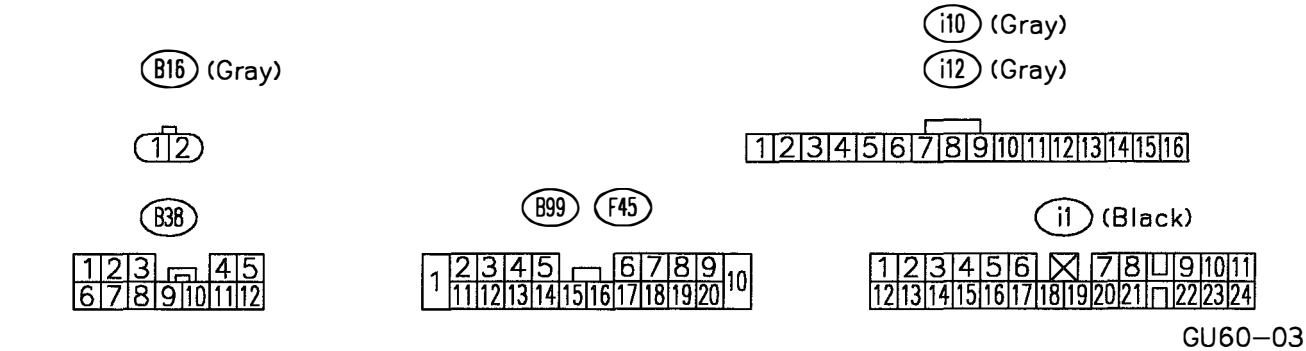




GU66–04

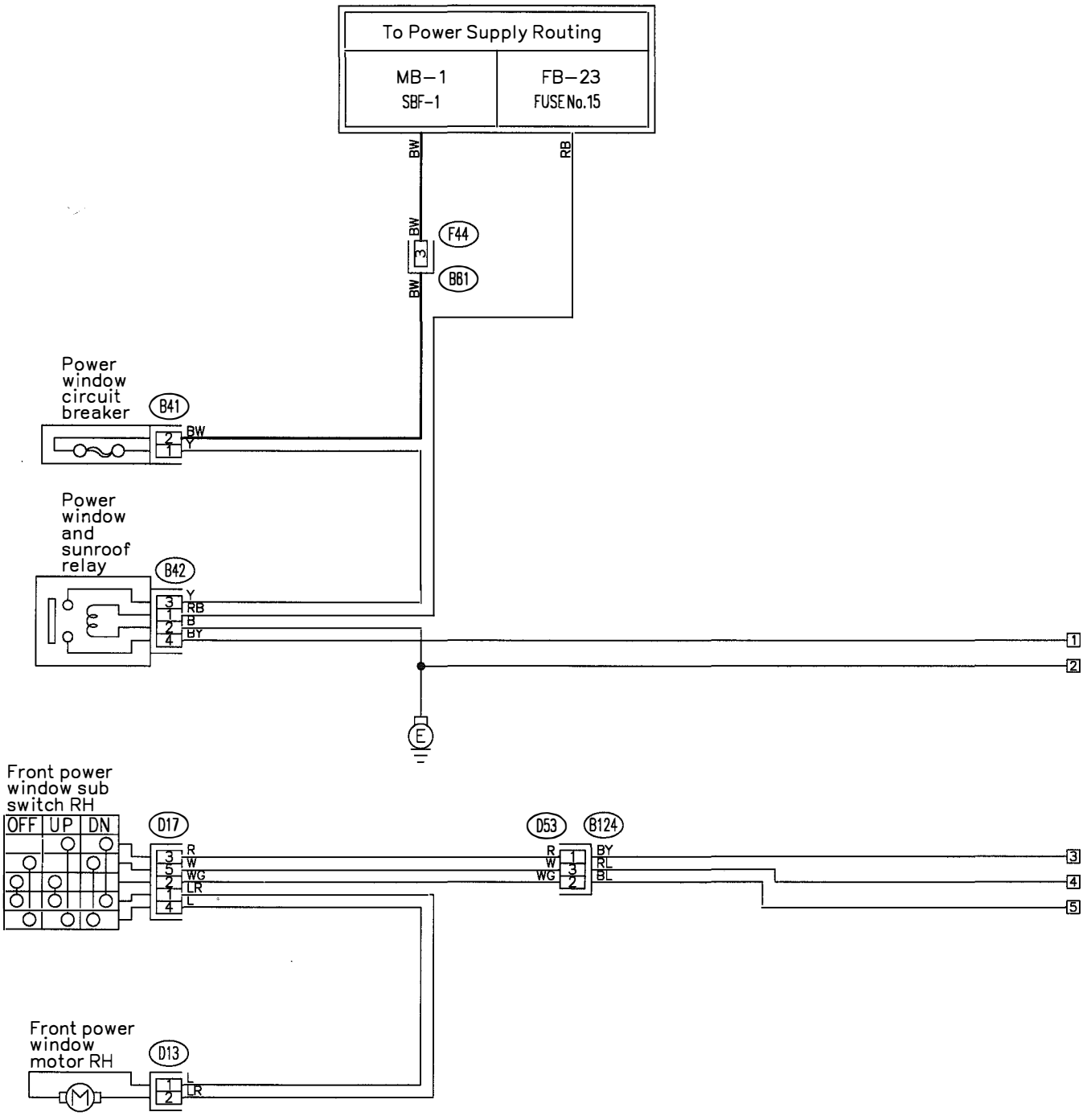
20. PARKING BRAKE AND BRAKE FLUID LEVEL WARNING SYSTEM



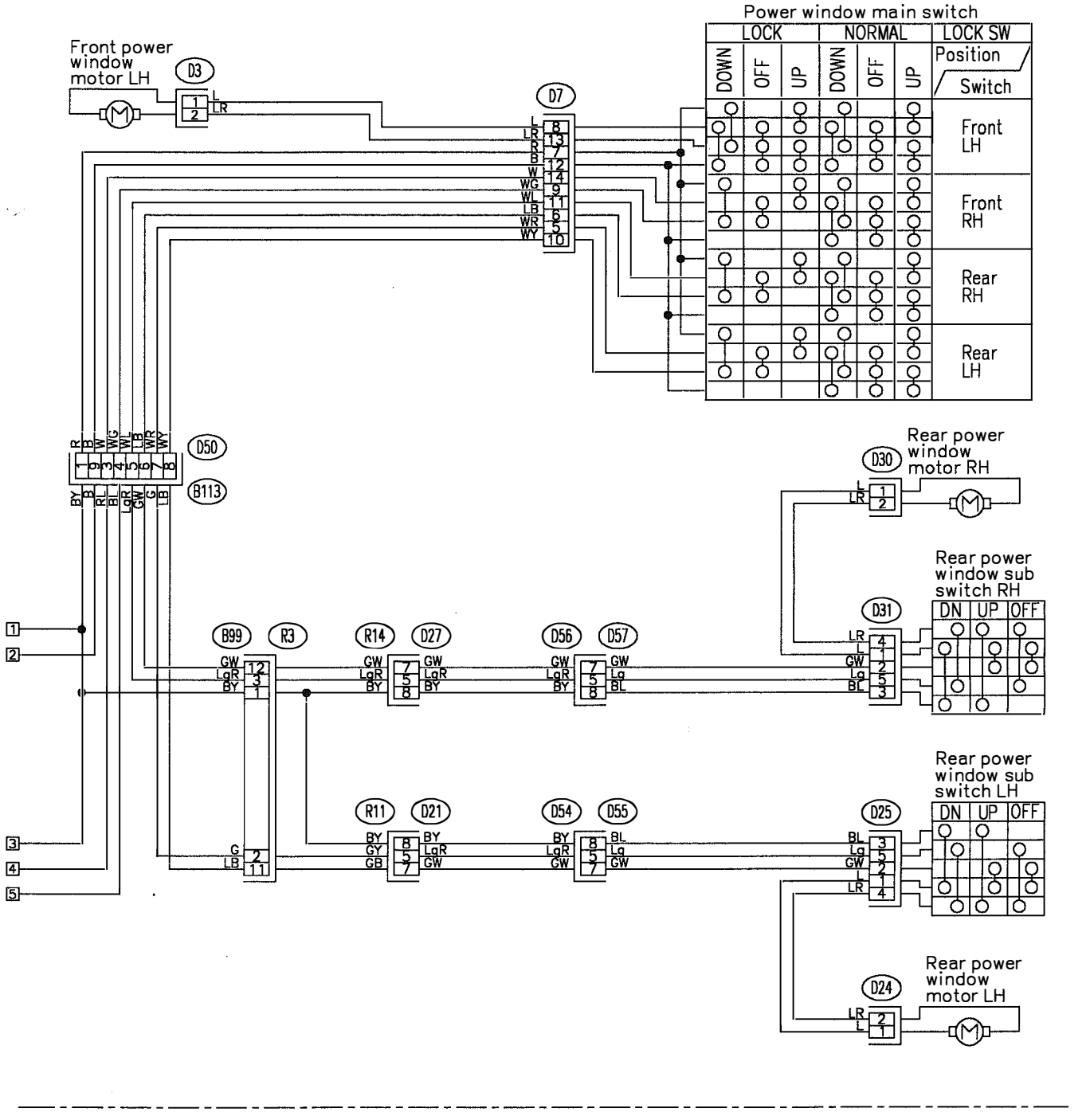


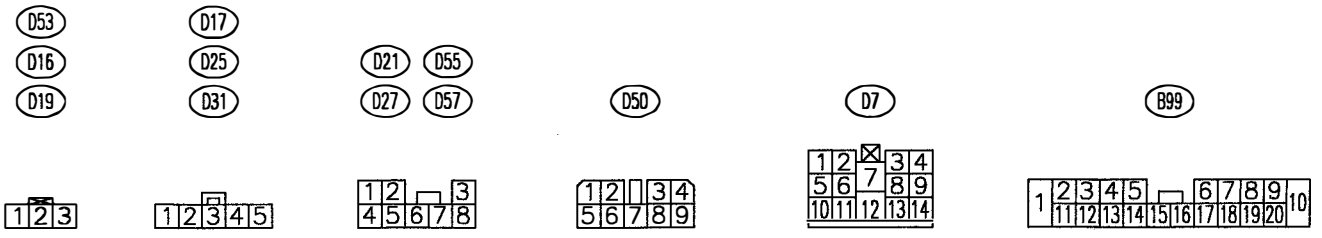
GU60–03

21. POWER WINDOW SYSTEM



GU70−02A

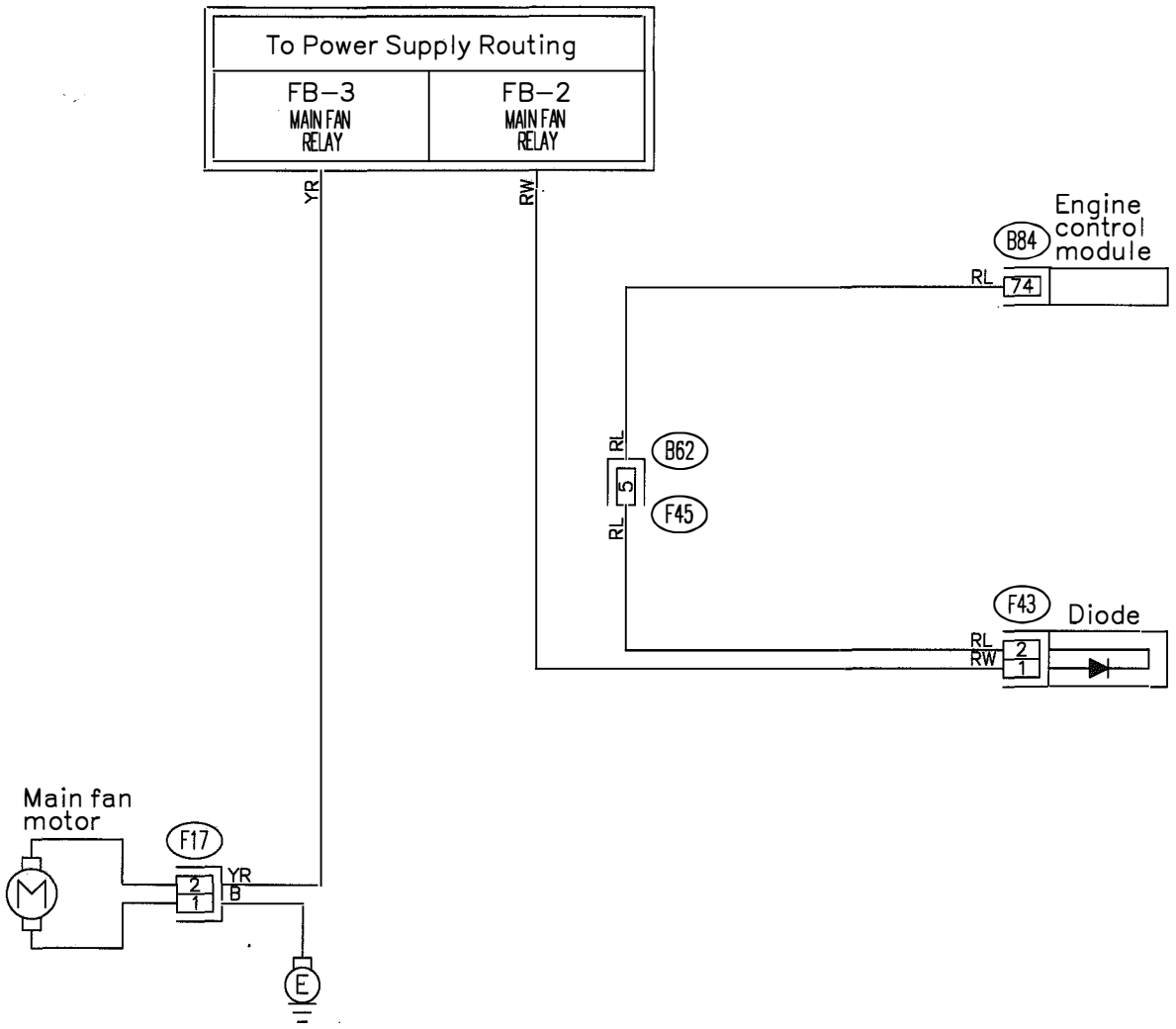

Power window main switch
LOCK
NORMAL
LOCK SW
DOWN
OFF
UP
DOWN
OFF
UP
Position
Switch
Front LH
Front RH
Rear RH
Rear LH
Front power window motor LH
D3
D7
D50
B113
Rear power window motor RH
D30
Rear power window sub switch RH
D31
DN
UP
OFF
B99
R3
R14
D27
D56
D57
Rear power window sub switch LH
D25
R11
D21
D54
D55
Rear power window motor LH
D24


D53
D16
D19
D17
D25
D31
D21
D55
D27
D57
D50
D7
B99

GU70–02B

22. RADIATOR FAN SYSTEM

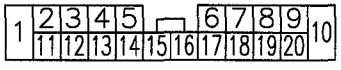
- **Without A/C**



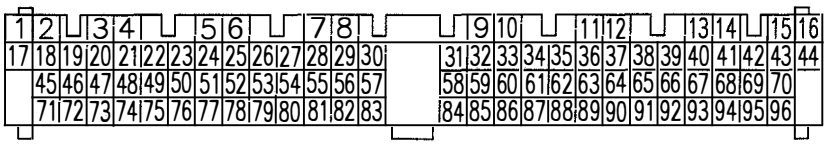
F17 (Black)

F43 (Black)

F45



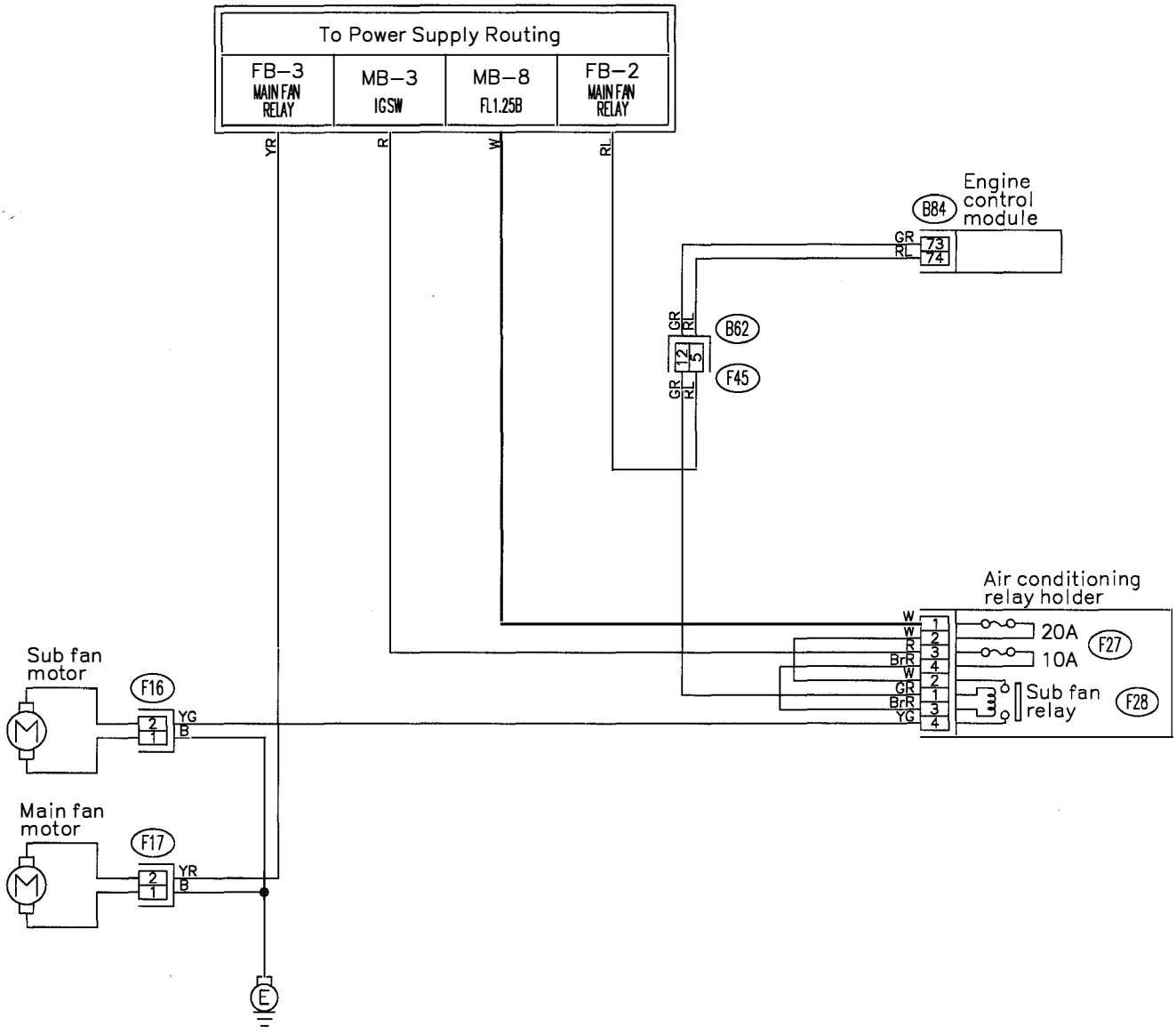
B84 (Light blue)

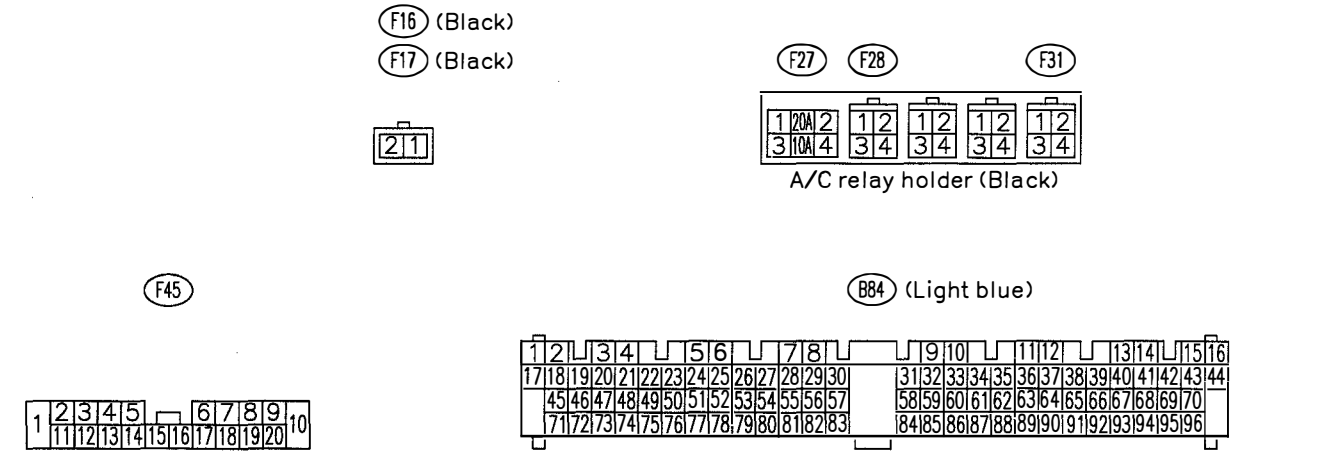


GU14–08

22. RADIATOR FAN SYSTEM

- **With A/C**

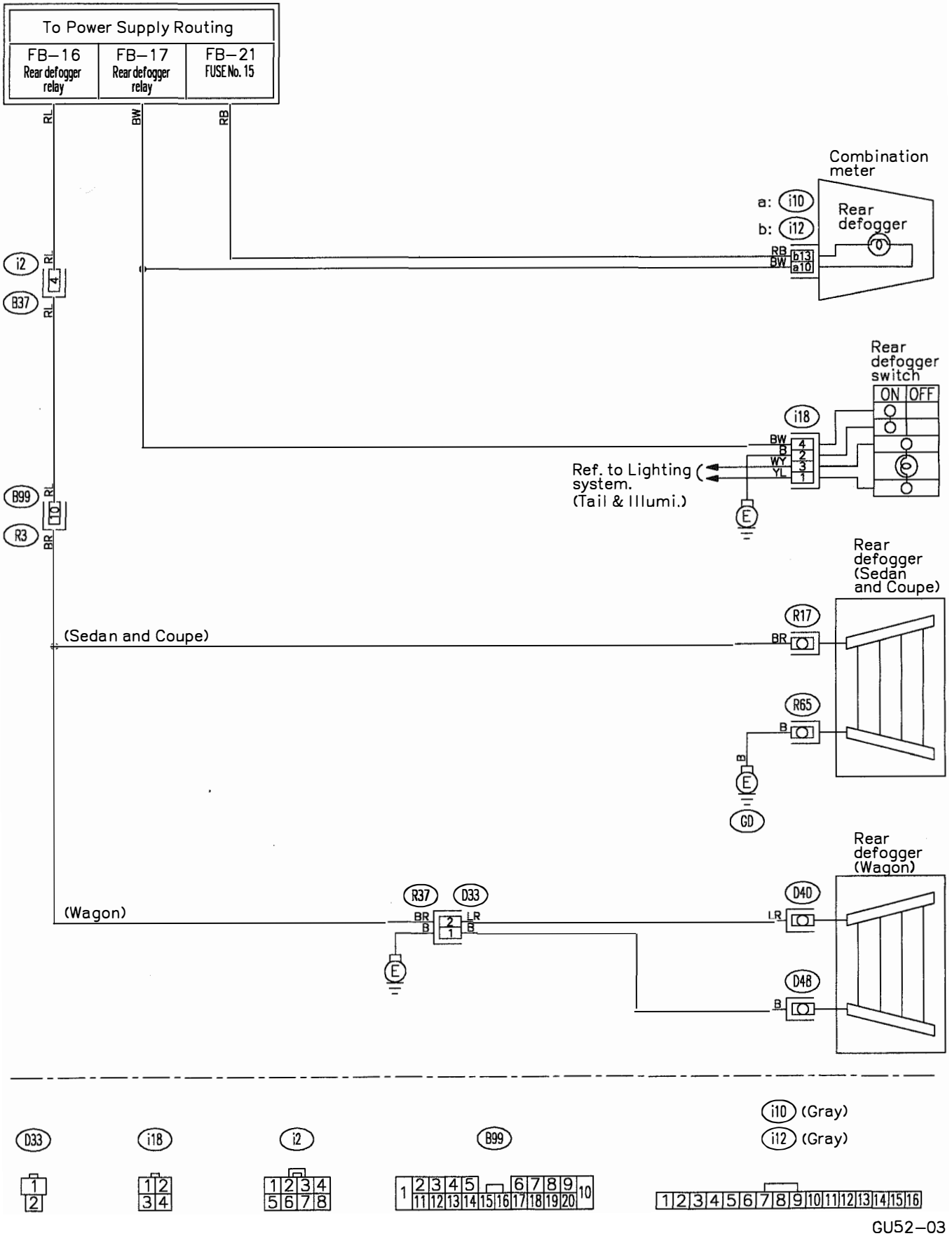




GU14–07

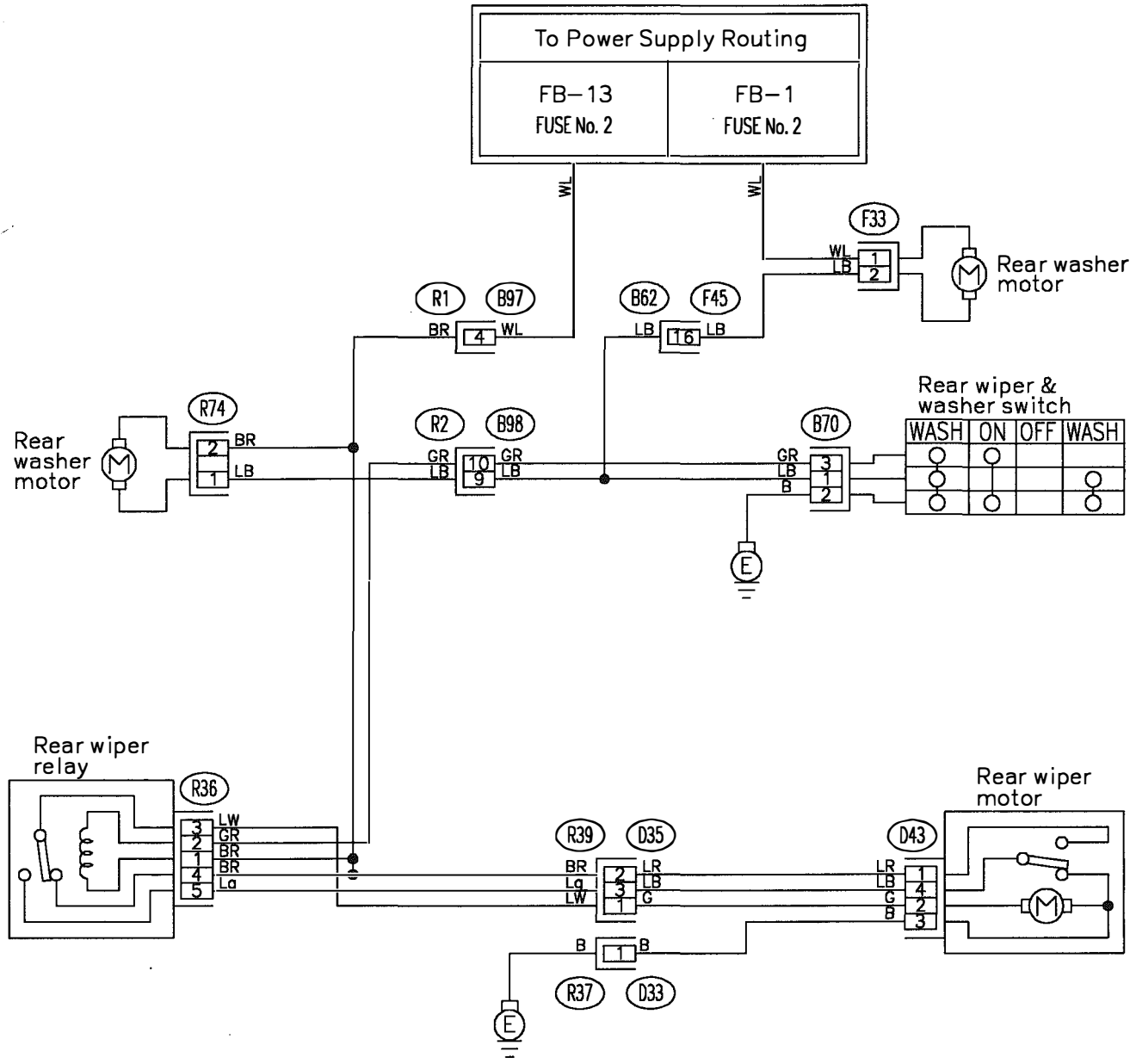
WIRING DIAGRAM

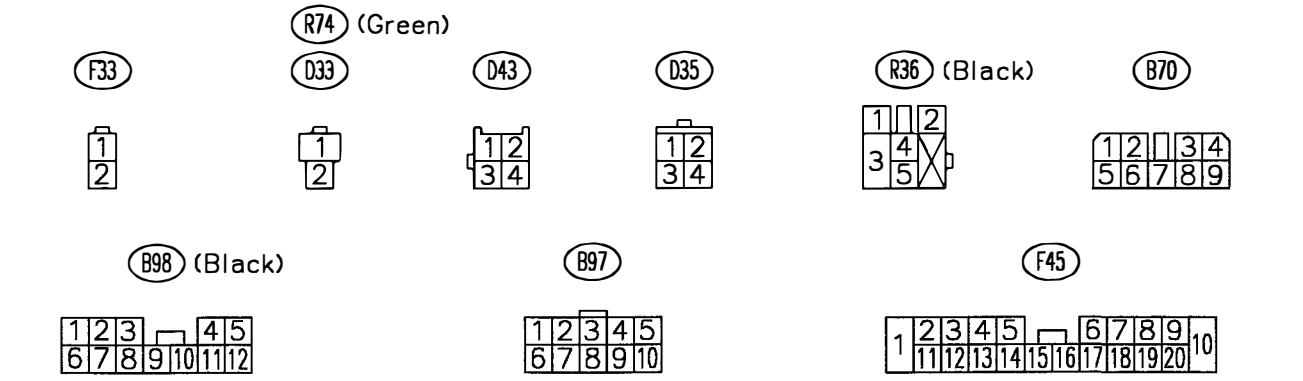
23. REAR WINDOW DEFOGGER SYSTEM



GU52–03

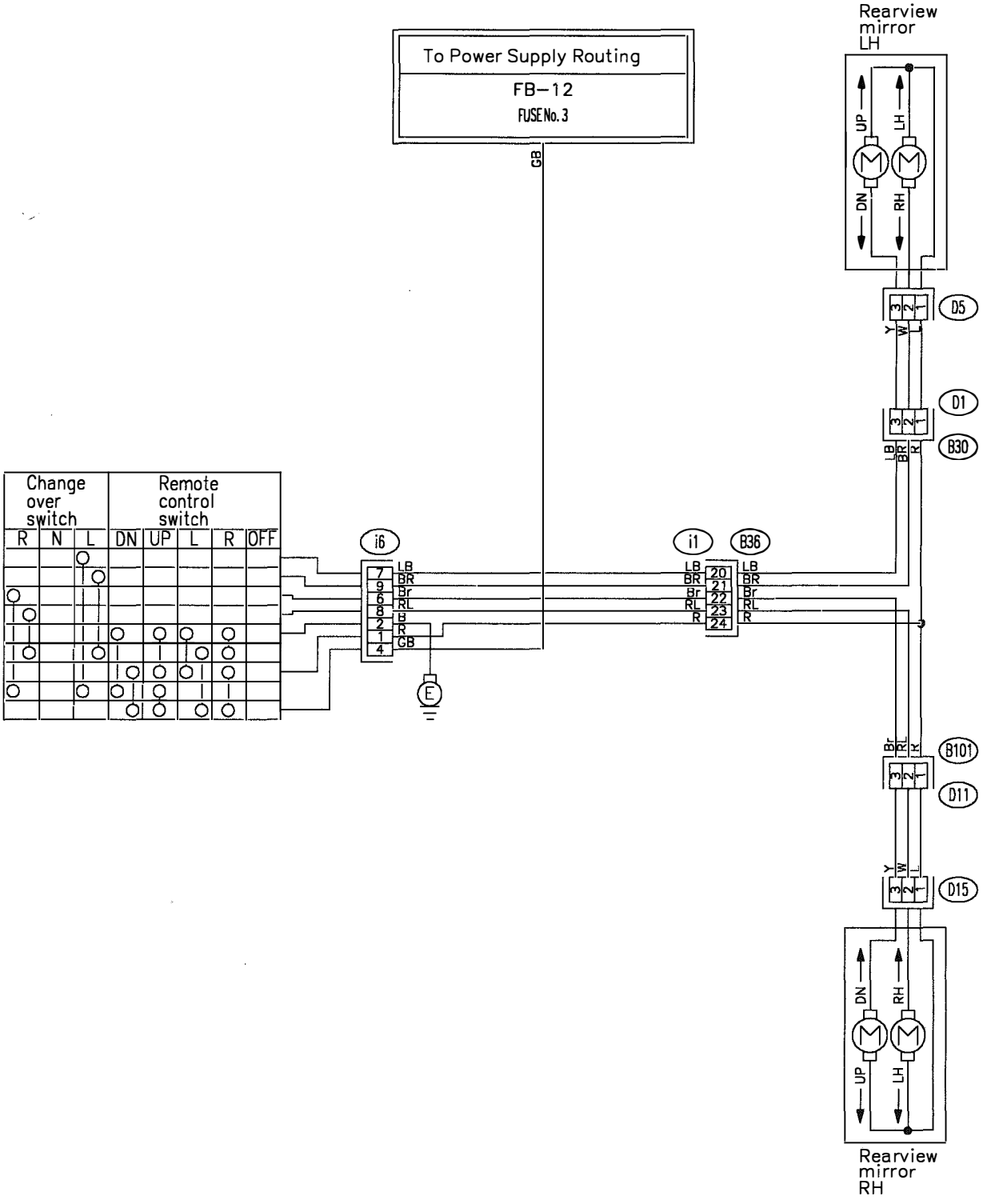
24. REAR WIPER AND WASHER SYSTEM

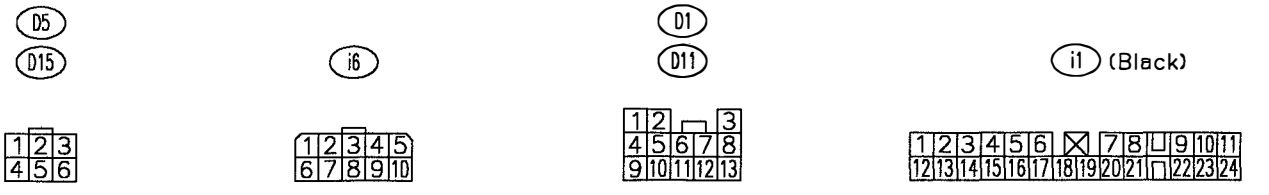




GU51–03

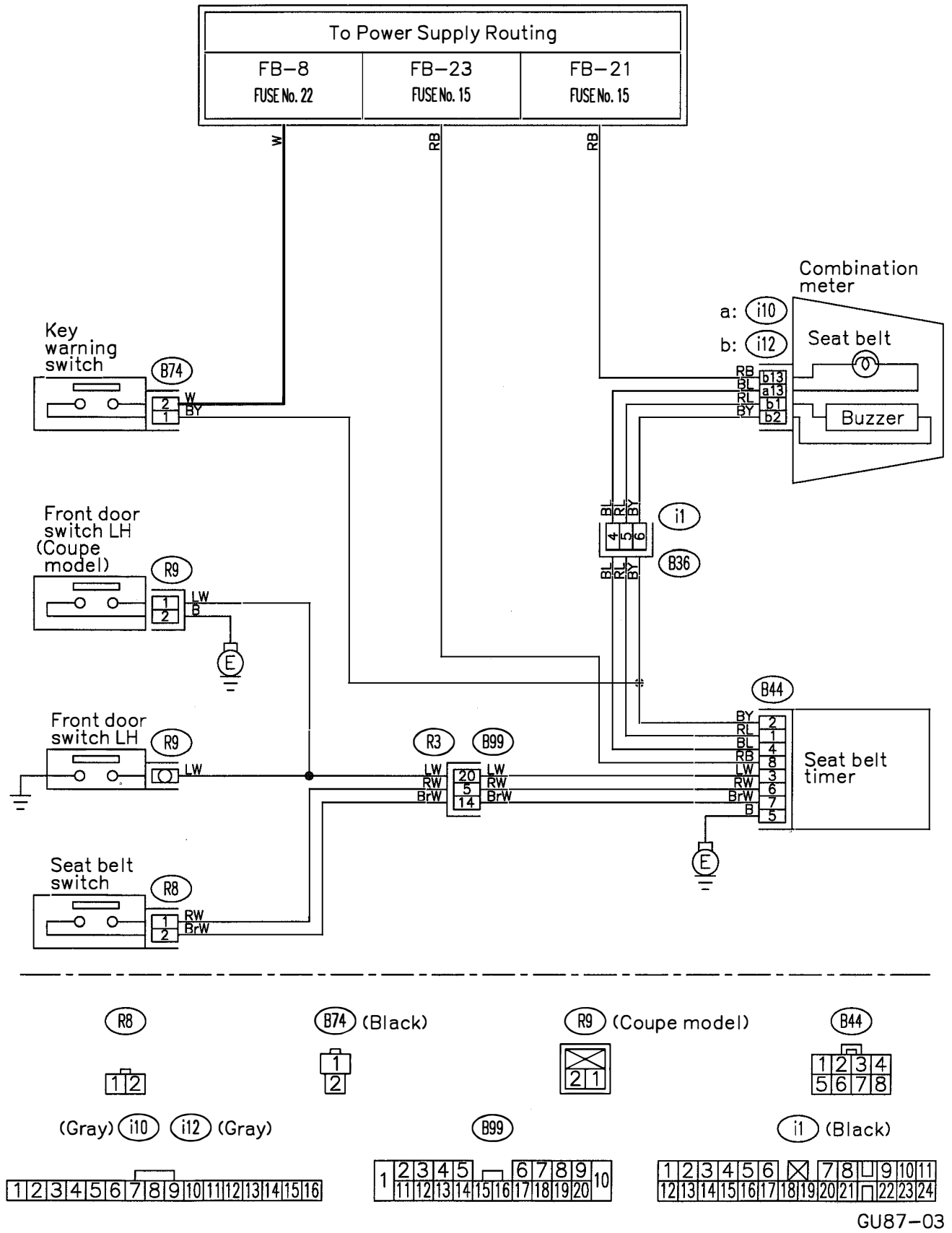
25. REMOTE CONTROL REARVIEW MIRROR SYSTEM





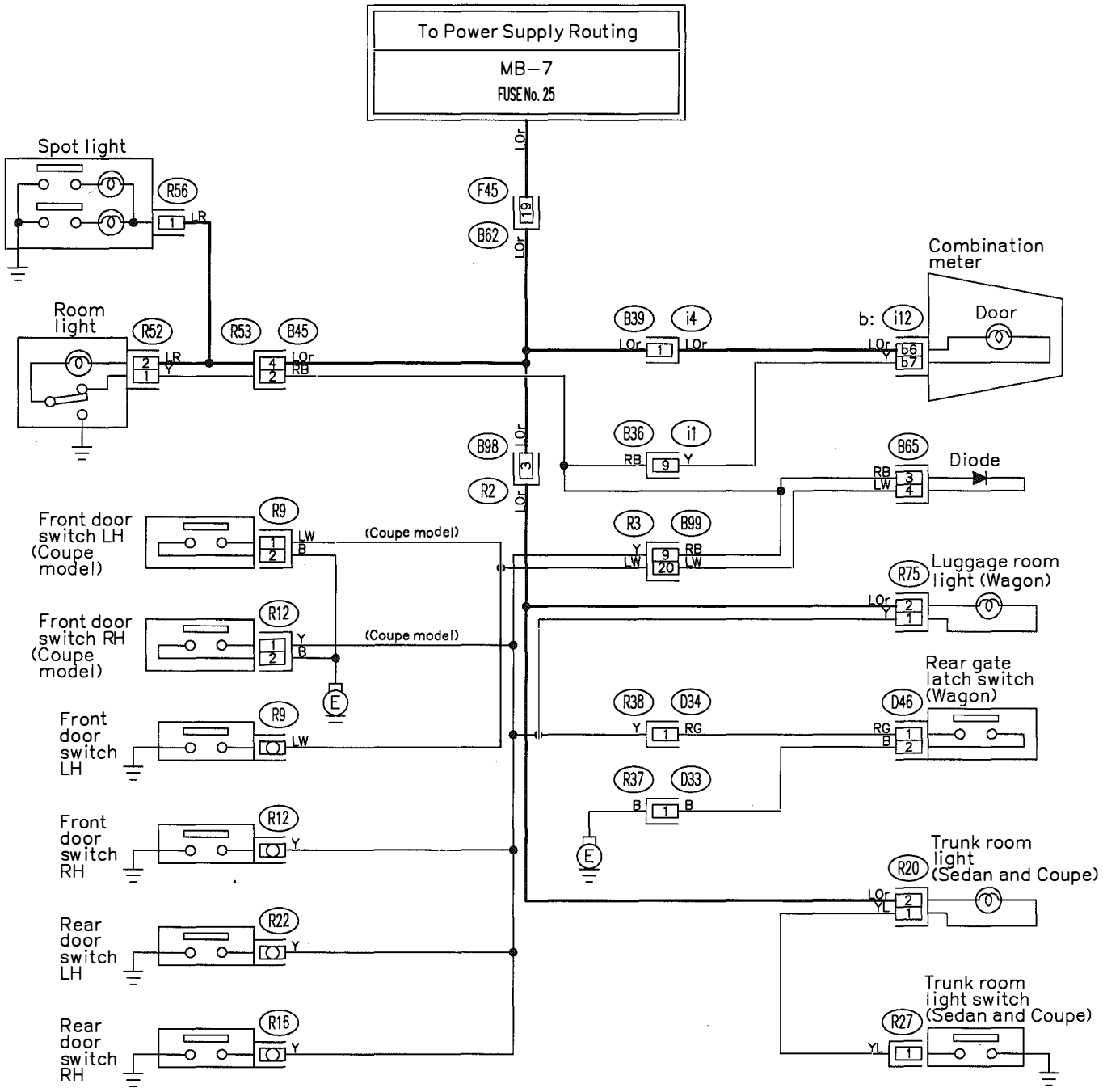
GU79–02

26. SEAT BELT WARNING AND KEY WARNING SYSTEM



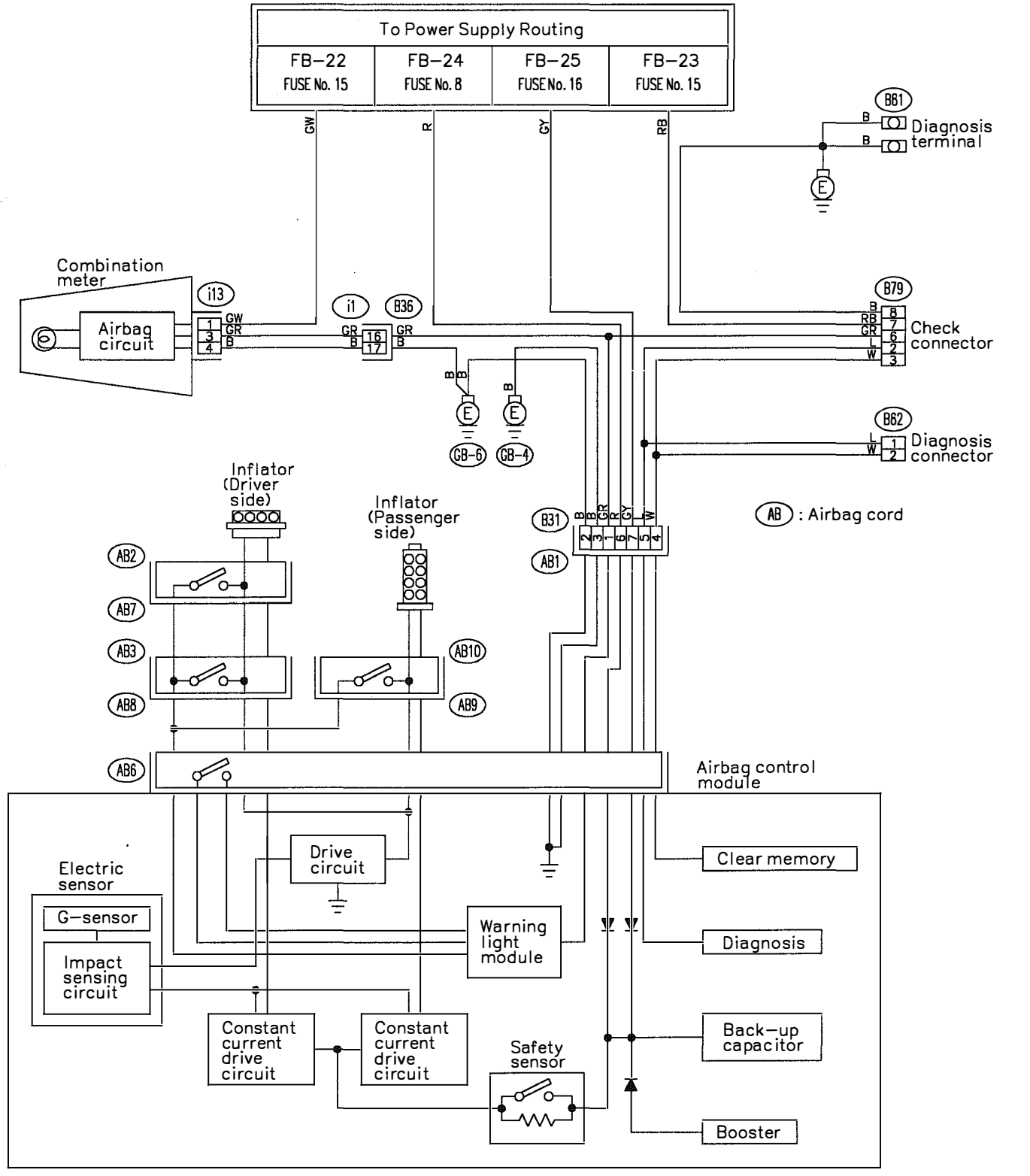
GU87–03

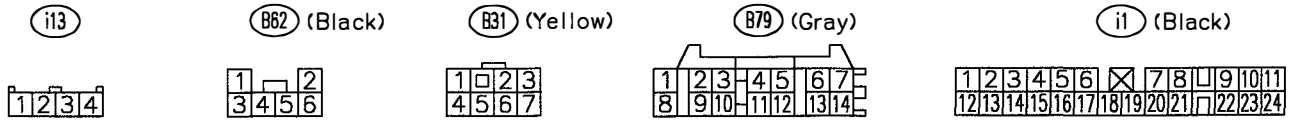
27. SPOT LIGHT, ROOM LIGHT, LUGGAGE AND TRUNK ROOM LIGHT SYSTEM



GU24–03

28. SRS (AIRBAG SYSTEM)

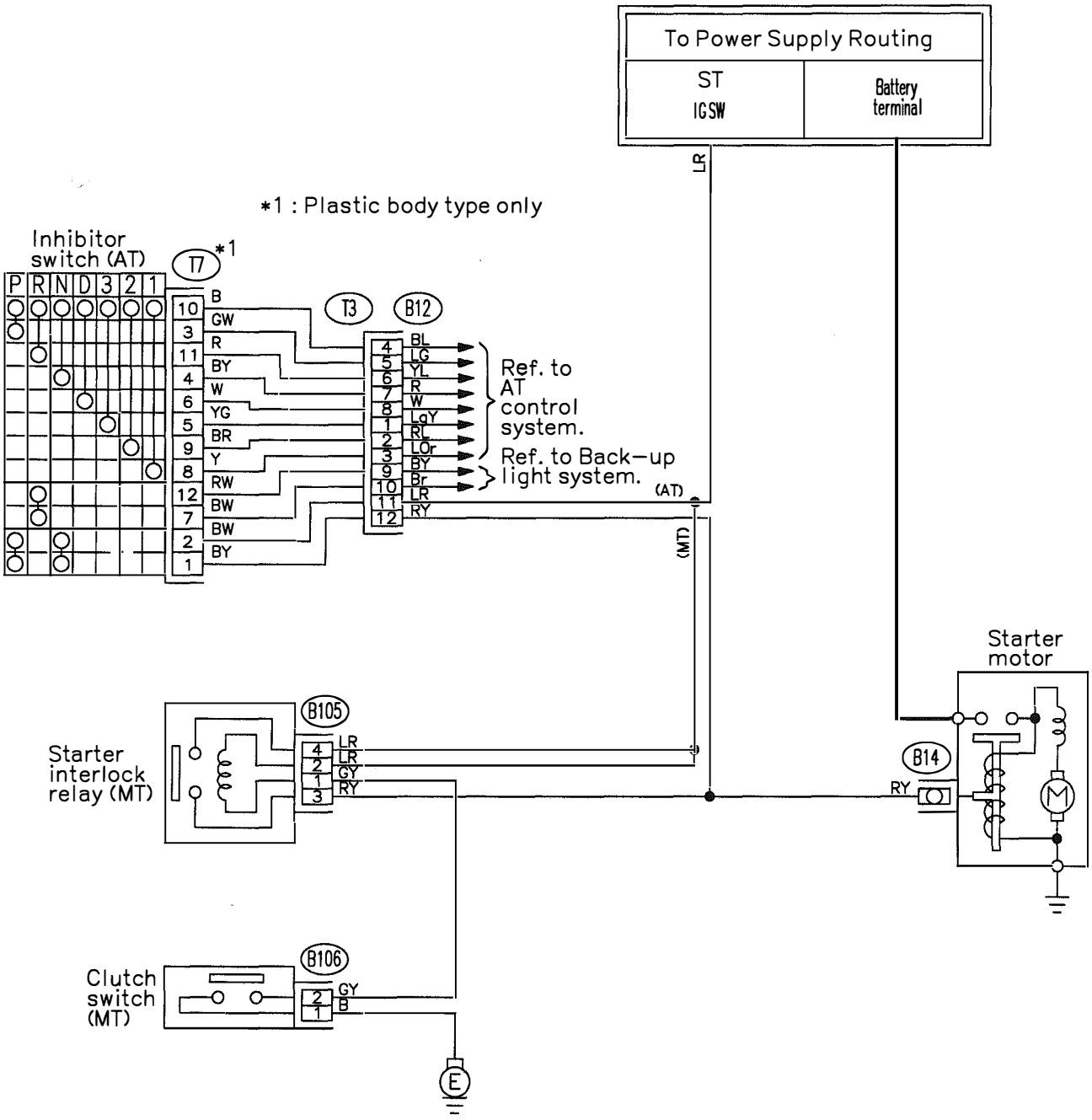


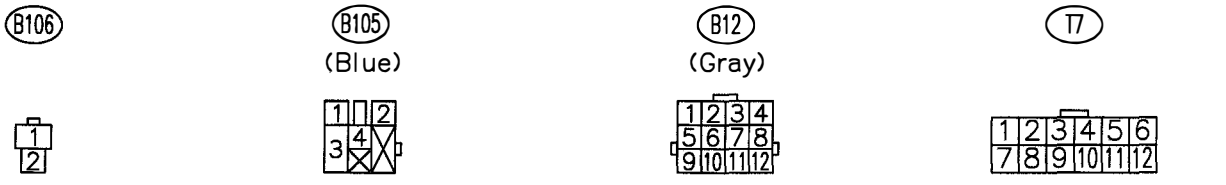


GU86-04

WIRING DIAGRAM

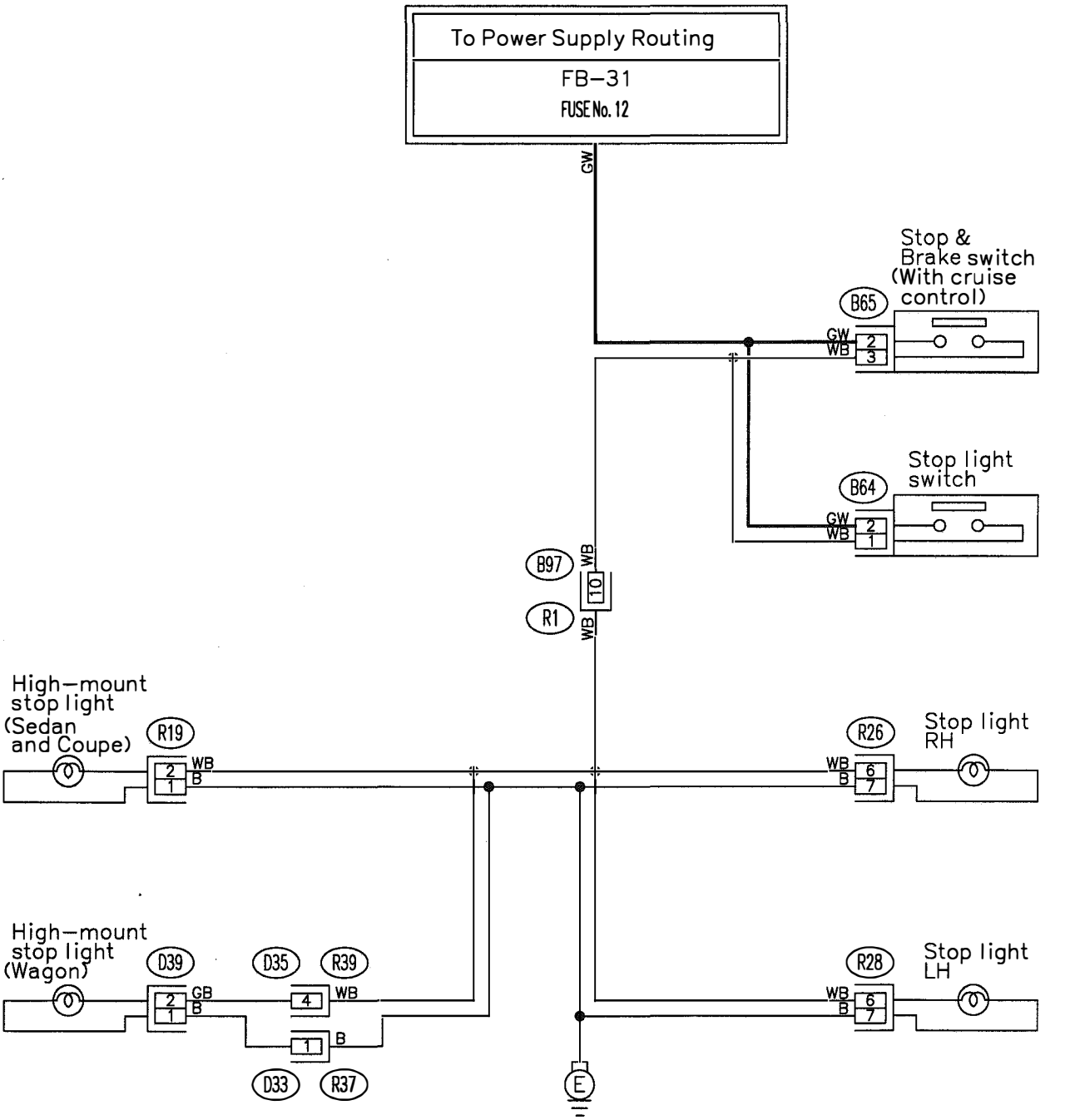
29. STARTING SYSTEM

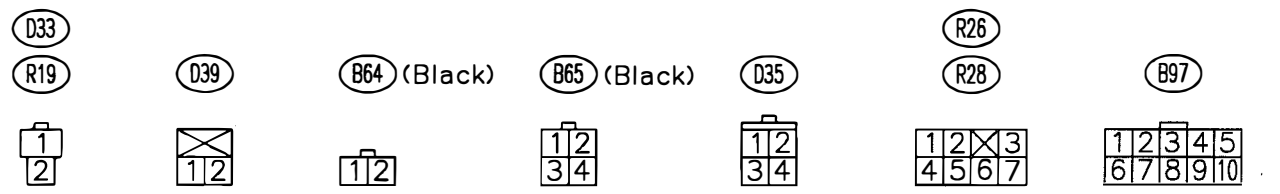




GU03-02

30. STOP LIGHT SYSTEM

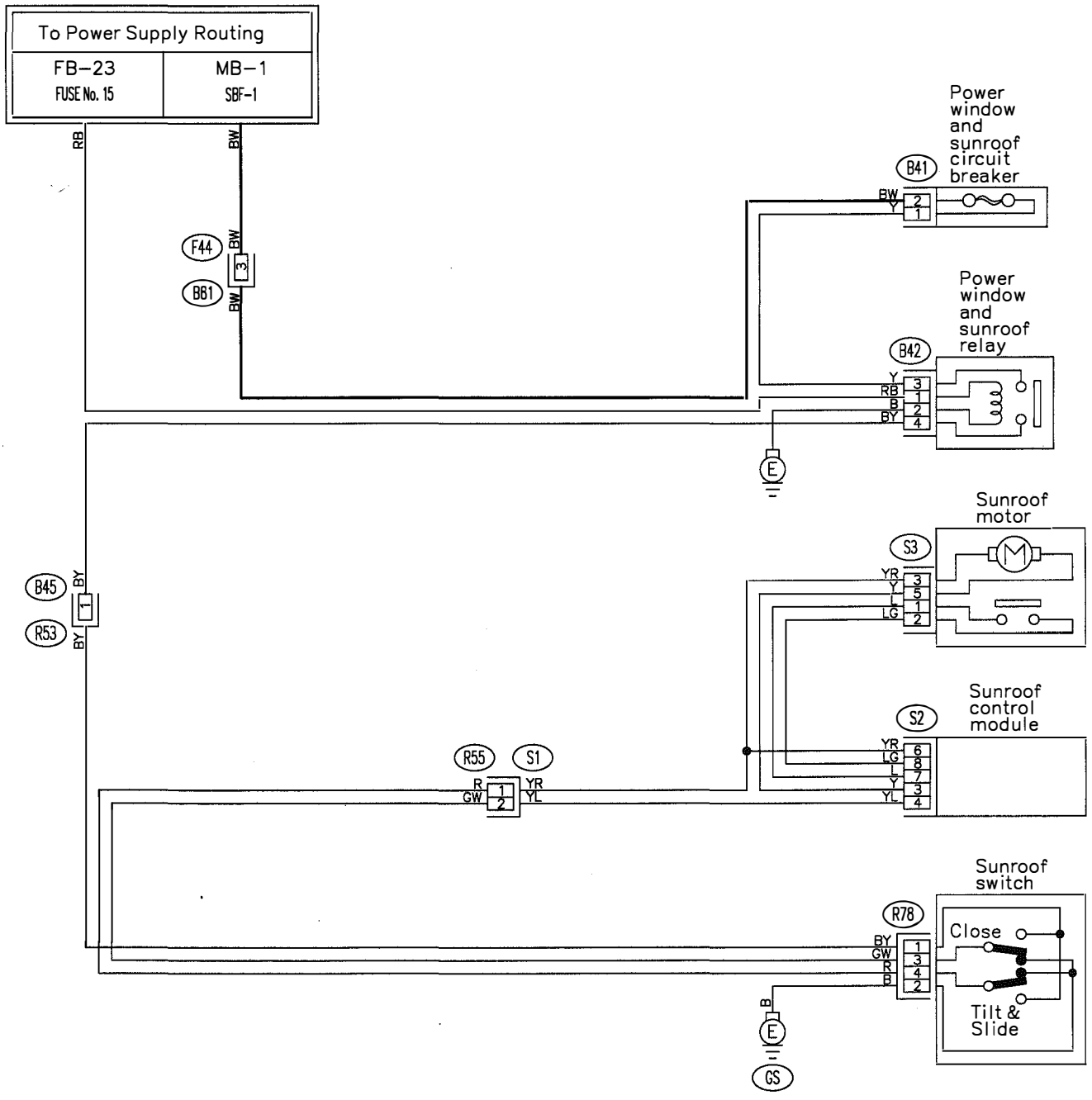


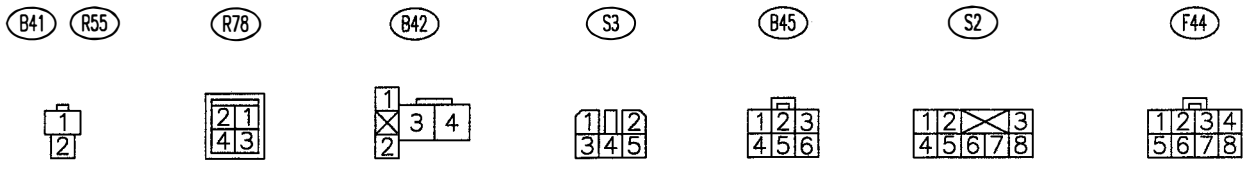


GU25–03

WIRING DIAGRAM

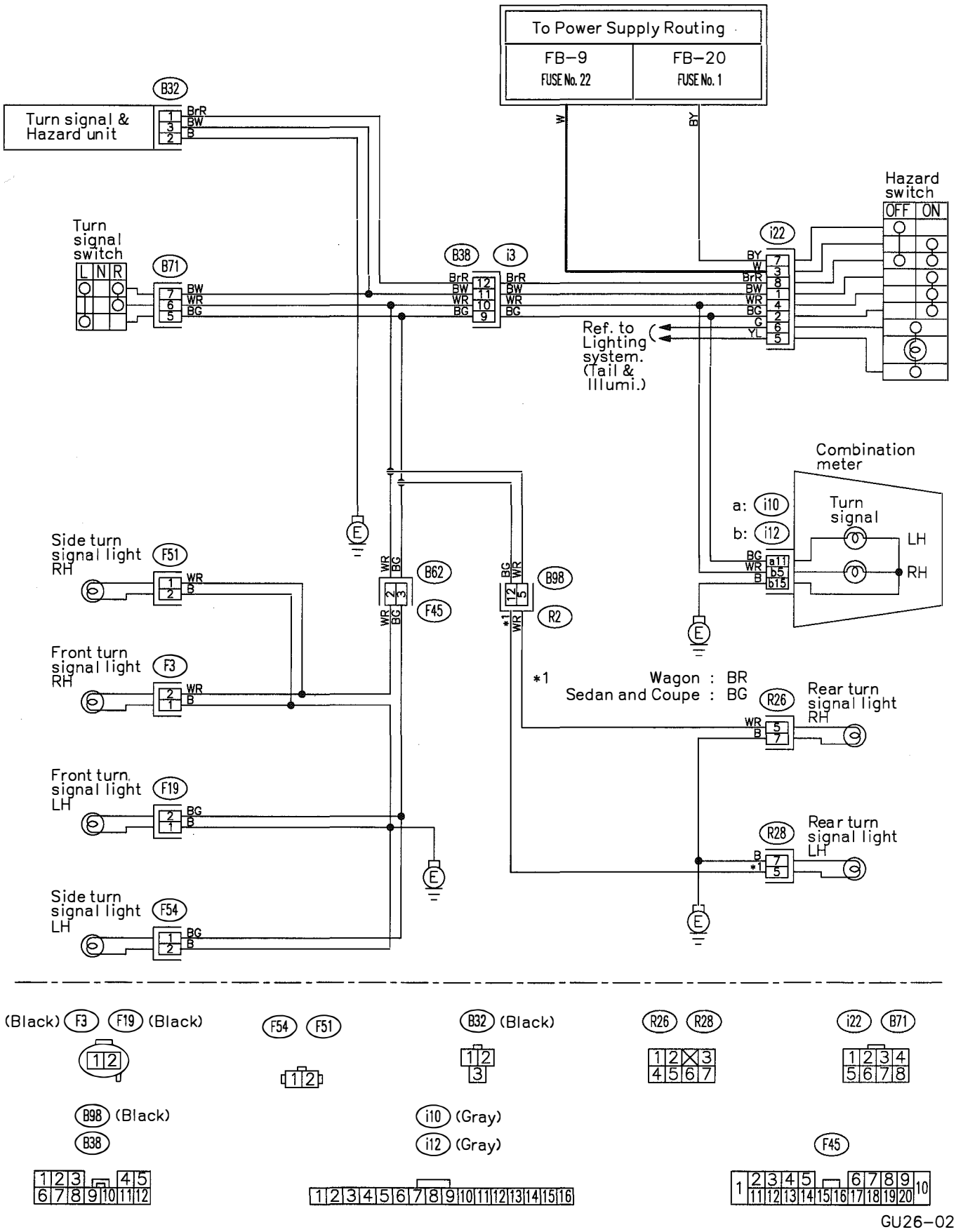
31. SUNROOF SYSTEM





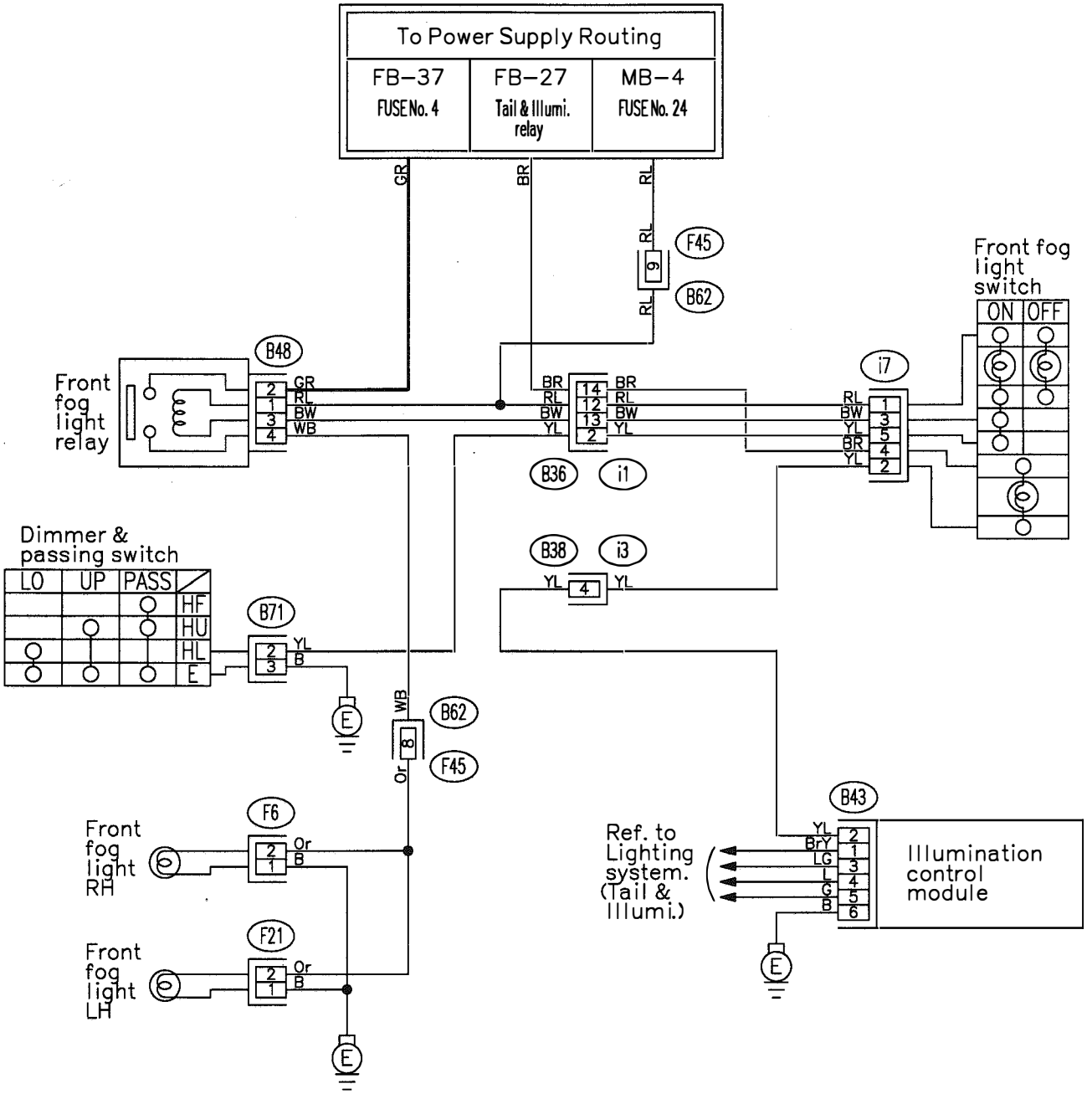
GU75–02

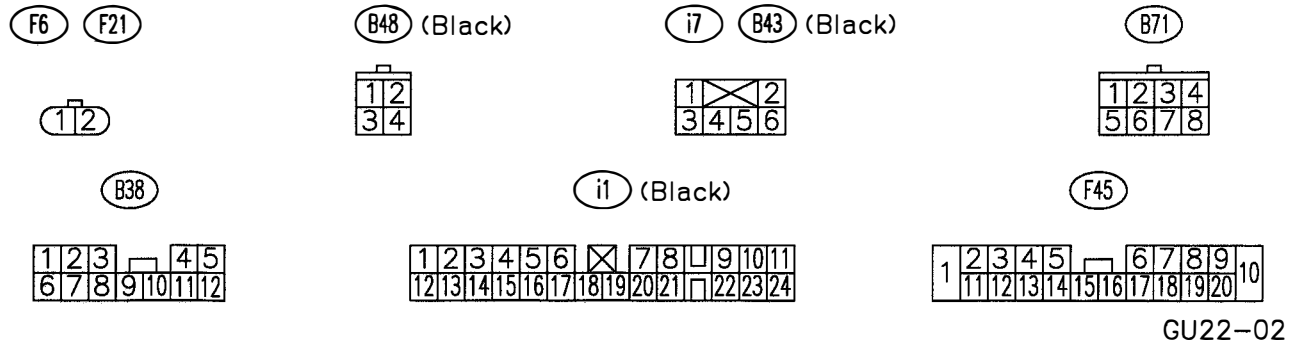
32. TURN SIGNAL AND HAZARD SYSTEM



WIRING DIAGRAM

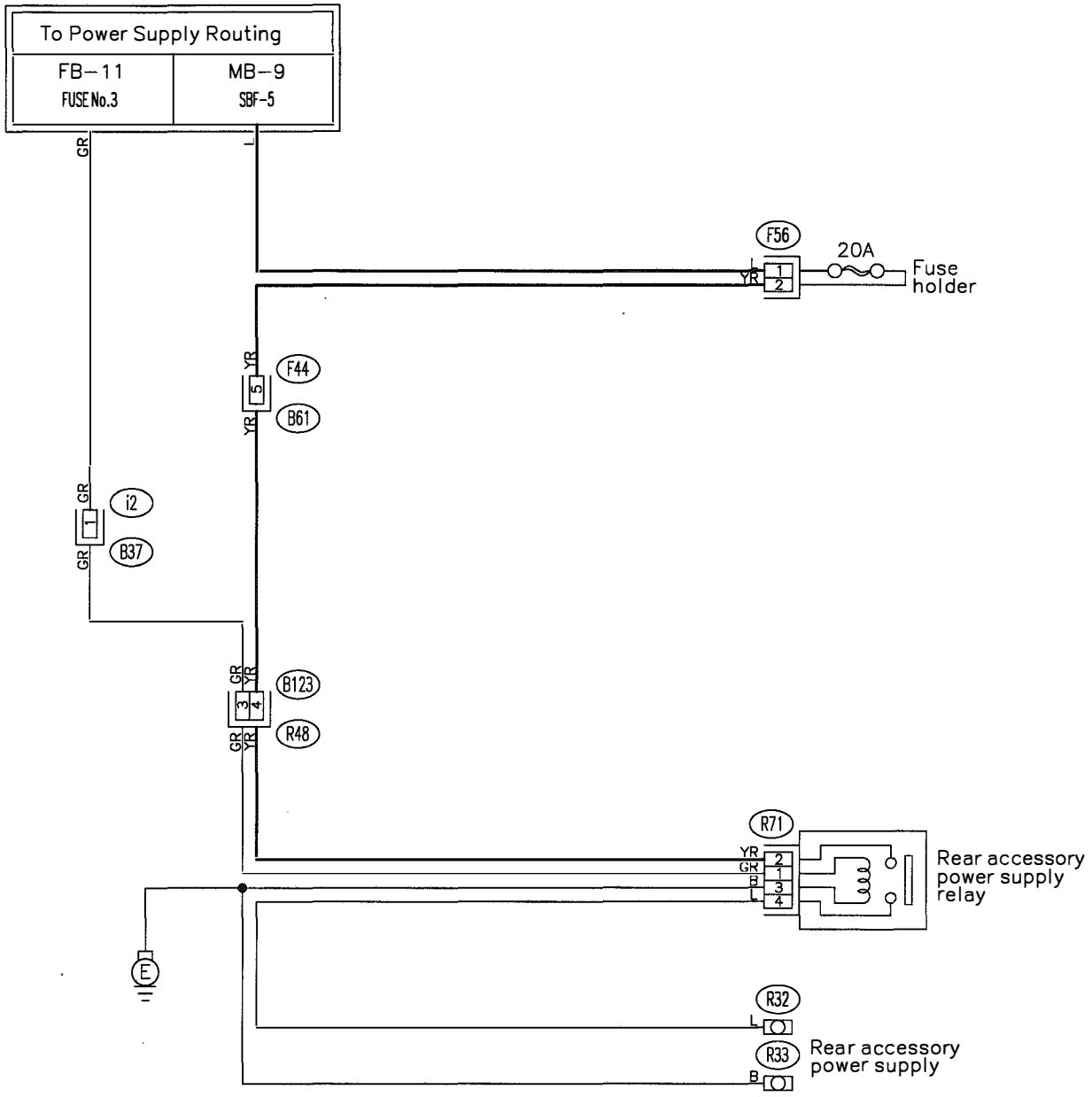
33. FRONT FOG LIGHT SYSTEM





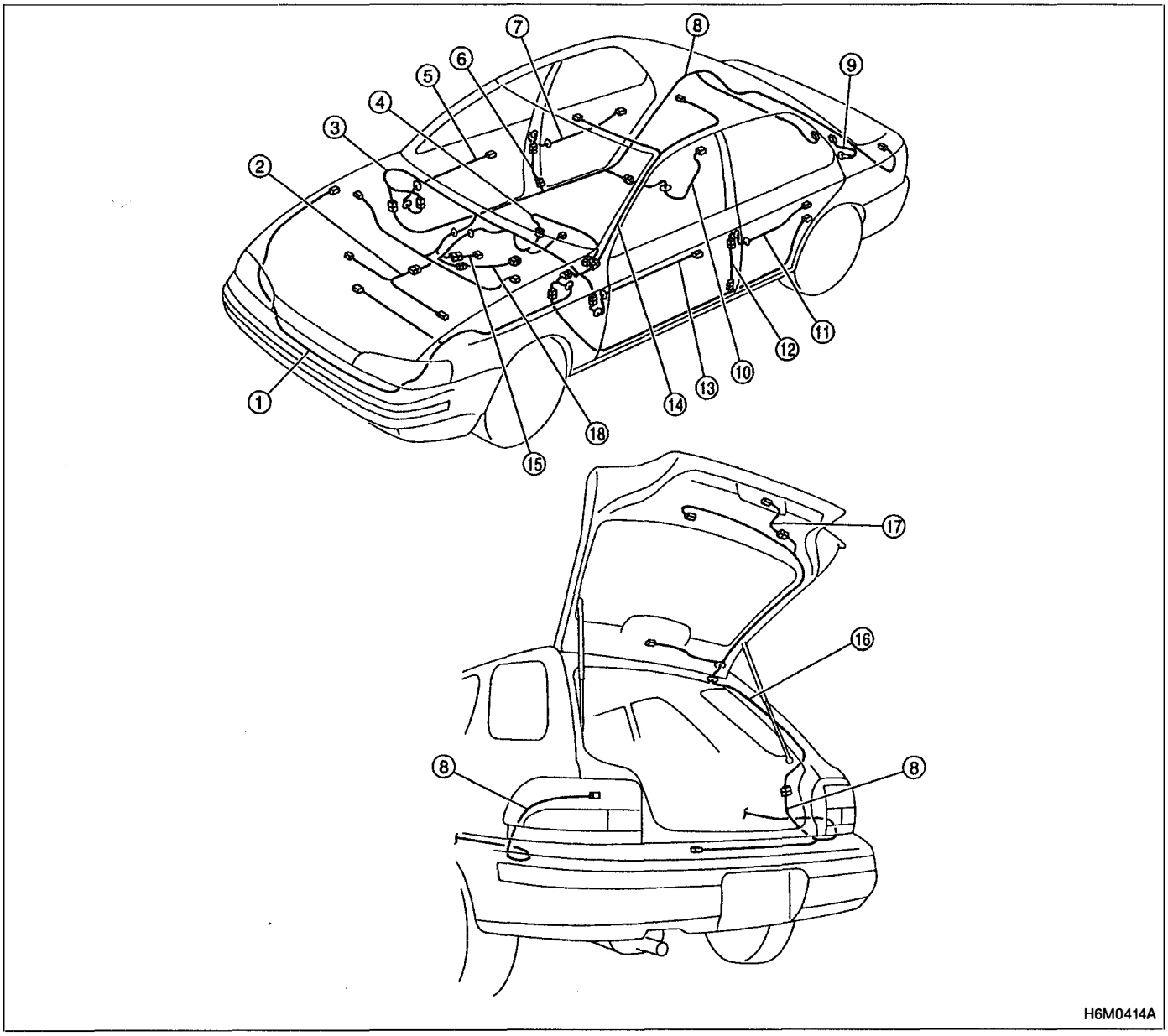
GU22–02

34. REAR ACCESSORY POWER SUPPLY SYSTEM



GU90–01

6. Electrical Wiring Harness and Ground Point



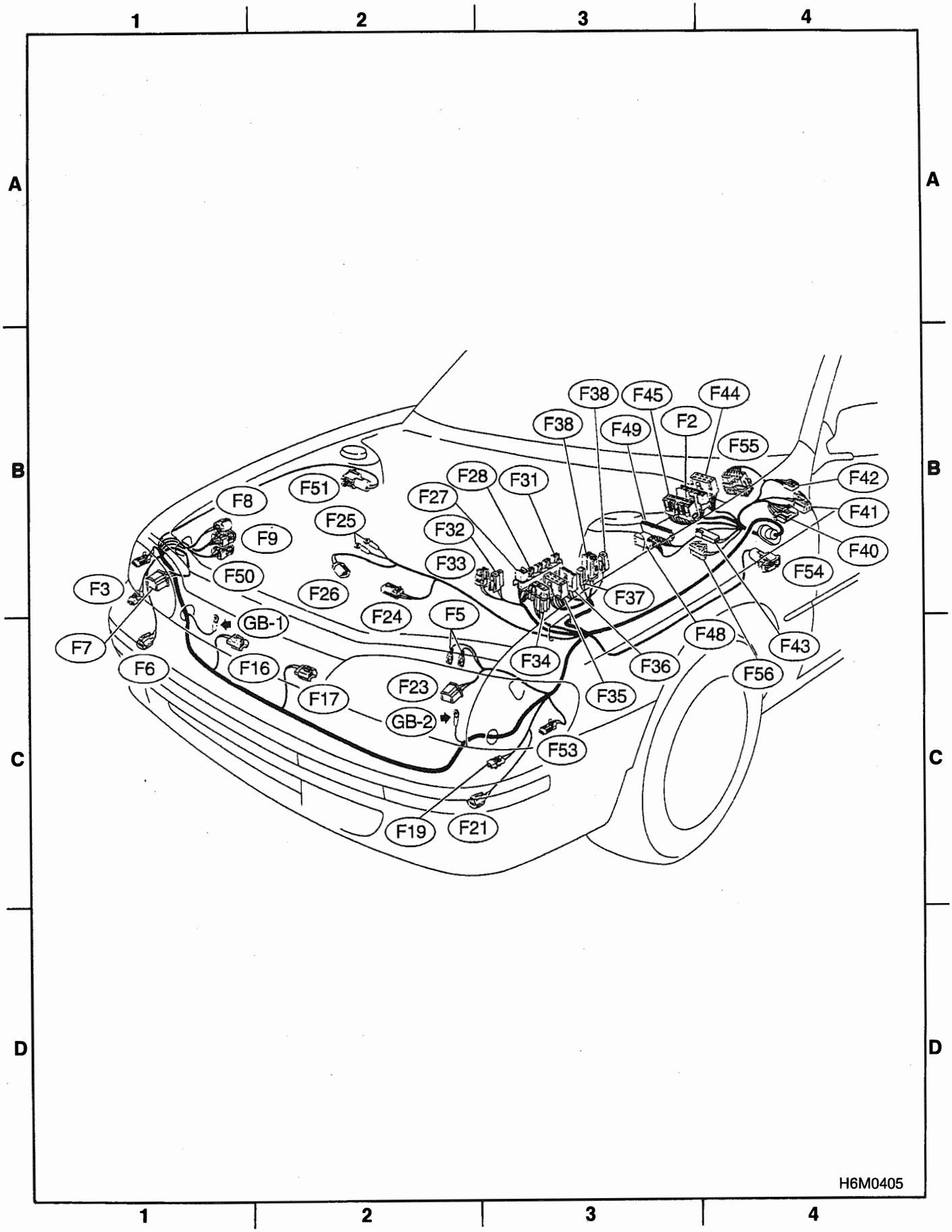
① Front wiring harness
② Engine wiring harness
③ Bulkhead wiring harness
④ Instrument panel wiring harness
⑤ Front door cord RH
⑥ Rear door adapter cord RH
⑦ Rear door cord RH
⑧ Rear wiring harness
⑨ Rear defogger cord (Ground)
⑩ Fuel tank cord
⑪ Rear door cord LH
⑫ Rear door adapter cord LH
⑬ Front door cord LH
⑭ Roof cord
⑮ Transmission cord
⑯ Rear gate cord
⑰ Rear gate lock adapter cord
⑱ Rear oxygen sensor cord

MEMO:

Connector			Connecting to	
No.	Pole	Color	No.	Name
F2	16	Black	B100	Bulkhead wiring harness
F3	2	Black		Front turn signal light RH
F5	1 x 2	★		Horn
F6	2	★		Front fog light RH
F7	3	Black		Headlight RH
F8	2	Gray		Hydraulic module (ABS)
F9	8	Gray		
F16	2	Black		Sub fan motor
F17	2	Black		Radiator main fan motor
F19	2	Black		Front turn signal light LH
F21	2	★		Front fog light LH
F23	3	Black		Headlight LH
F24	3	Gray		A/C compressor
F25	1 x 2	★		Generator
F26	2	★		
F27	4	Black		A/C fuse (Relay holder)
F28	4	Black		A/C sub fan relay (Relay holder)
F31	4	Black		A/C relay (Relay holder)
F32	2	Green		Front washer motor
F33	2	★		Rear washer motor
F34	2	Red		SBF holder
F35	8	★		M/B
F36	3	★		
F37	2	Black		
F38	2	Black		
F39	1	Brown		
F40	10	Gray		F/B
F41	3	Gray		
F42	5	Gray		
F43	2	Black		A/C diode
F44	8	★	B61	Bulkhead wiring harness
F45	20	★	B62	
F48	6	★		Shield joint connector (ABS)
F49	83	Black		ABS control module
F50	6	Black		ABS relay box
F51	2	★		Side turn signal light RH
F52	2	Gray		Front marker light RH
F53	2	Gray		Front marker light LH
F54	2	★		Side turn signal light LH
F55	12	Black	R49	Rear wiring harness (ABS)
F56	2	Black		Fuse holder

★: Non-colored

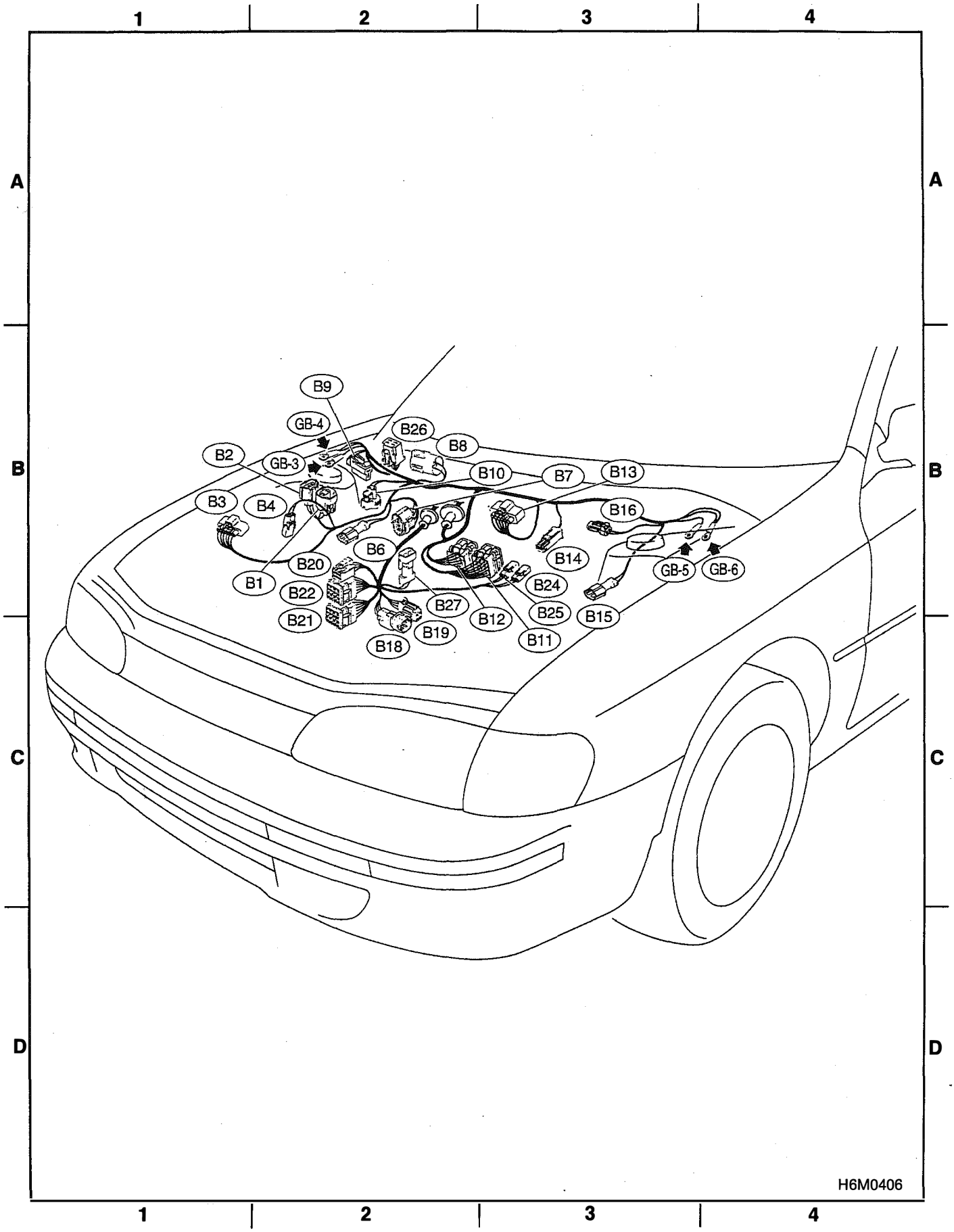
1. FRONT WIRING HARNESS AND GROUND POINT



Connector			Connecting to	
No.	Pole	Color	No.	Name
B1	2	Blown		Pressure source switching solenoid
B2	3	Black		Pressure sensor
B3	5	Gray		Mass air flow sensor
B4	2	Gray		AT dropping resistor
B6	2	Gray		ABS front sensor RH
B7	4	Gray		Cruise control actuator
B8	5	★		Front wiper motor
B9	2	★		FWD switch (AT)
B10	2	Gray		A/C pressure switch
B11	16	Gray	T4	Transmission (AT)
B12	12	Gray	T3	
B13	6	Gray		Ignitor
B14	1	Black		Starter (Magnet)
B15	2	Gray		ABS front sensor LH
B16	2	Gray		Brake fluid level switch
B18	4	★		Front oxygen sensor
B19	4	Gray	T5	Rear oxygen sensor cord
B20	6	★	E1	Engine wiring harness (2200 cc engine model)
B21	12	Light gray	E2	Engine wiring harness (2200 cc engine model)
	16	Blue	E2	Engine wiring harness (1800 cc engine model)
B22	16	Light gray	E3	Engine wiring harness
B24	2	Gray	T1	Back-up light switch (MT)
B25	2	Brown	T2	Neutral position switch (MT)
B26	4	Blue		A/C cut relay
B27	2	Gray		FICD solenoid (1800 cc engine model)

★: Non-colored

2. BULKHEAD WIRING HARNESS AND GROUND POINT (IN ENGINE ROOM)

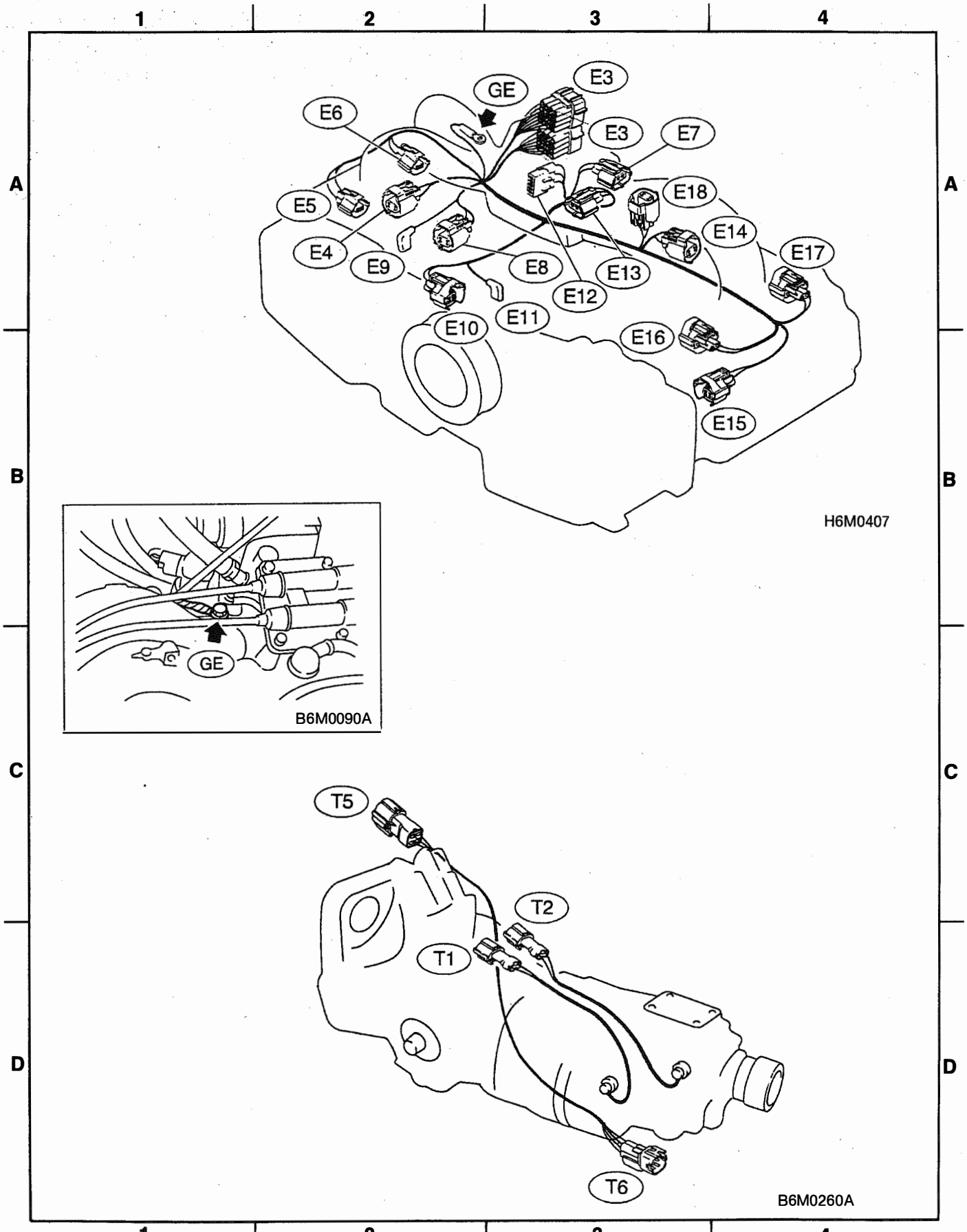


Connector			Connecting to	
No.	Pole	Color	No.	Name
E2	16	Blue	B21	Bulkhead wiring harness
E3	16	Gray	B22	
E4	2	Black		Purge control solenoid valve
E5	2	Gray		Injector #1
E6	2	Gray		Injector #3
E7	3	Gray		Idle air control solenoid
E8	2	Brown		Engine coolant temperature sensor
E9	1	★		Thermometer
E10	2	Gray		Crankshaft position sensor
E11	1	★		Oil pressure switch
E12	3	Gray		Ignition coil
E13	3	Gray		Throttle position sensor
E14	2	Gray		Knock sensor
E15	2	Gray		Camshaft position sensor
E16	2	Gray		Injector #2
E17	2	Gray		Injector #4
E18	2	Brown		EGR solenoid valve

Connector			Connecting to	
No.	Pole	Color	No.	Name
T1	2	Gray	B24	Bulkhead wiring harness (Back-up light switch)
T2	2	Brown	B25	Bulkhead wiring harness (Neutral position switch)
T5	4	Gray	B19	Bulkhead wiring harness
T6	4	Gray		Rear oxygen sensor

★: Non-colored

3. ENGINE WIRING HARNESS · TRANSMISSION CORD AND GROUND POINT (1800 cc engine model)

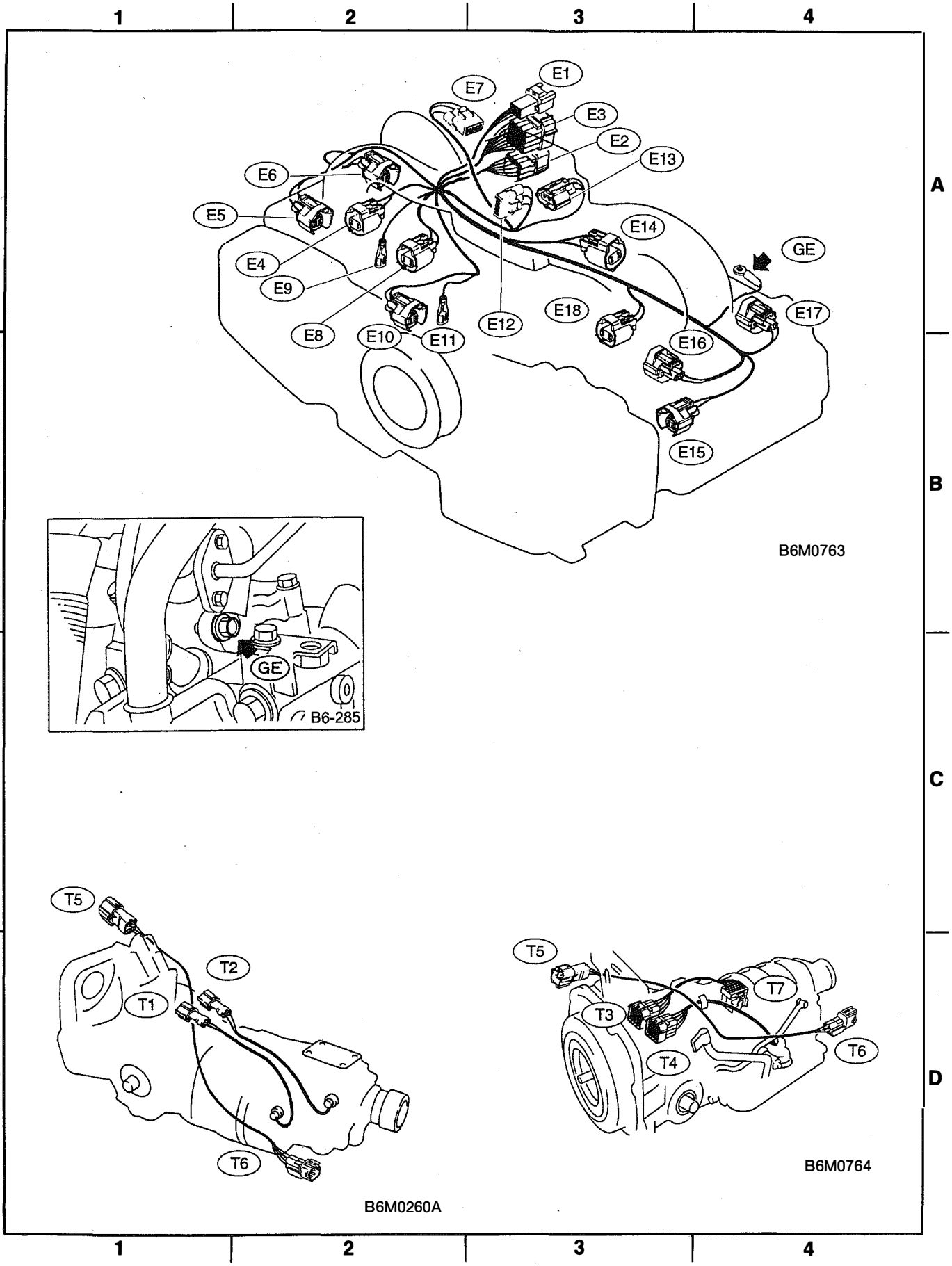


Connector			Connecting to	
No.	Pole	Color	No.	Name
E1	6	★	B20	Bulkhead wiring harness
E2	12	Light gray	B21	
E3	16	Light gray	B22	
E4	2	Blue		Purge control solenoid valve
E5	2	Light gray		Injector #1
E6	2	Dark gray		Injector #3
E7	3	Gray		Idle air control solenoid valve
E8	2	Brown		Engine coolant temperature sensor
E9	1	★		Thermometer
E10	2	Gray		Crankshaft position sensor
E11	1	★		Oil pressure switch
E12	3	Gray		Ignition coil
E13	3	Brown		Throttle position sensor
E14	2	Gray		Knock sensor
E15	2	Dark gray		Camshaft position sensor
E16	2	Light gray		Injector #2
E17	2	Dark gray		Injector #4
E18	2	Brown		EGR solenoid (AT)

Connector			Connecting to	
No.	Pole	Color	No.	Name
T1	2	Gray	B24	Bulkhead wiring harness (MT)
T2	2	Brown	B25	
T3	12	Gray	B12	Bulkhead wiring harness (AT)
T4	16	Gray	B11	
T5	4	Gray	B19	Bulkhead wiring harness
T6	4	Gray		Rear oxygen sensor
T7	12	★		Inhibitor switch (AT)

★: Non-colored

3. ENGINE WIRING HARNESS, TRANSMISSION CORD AND GROUND POINT (2200 cc engine model)

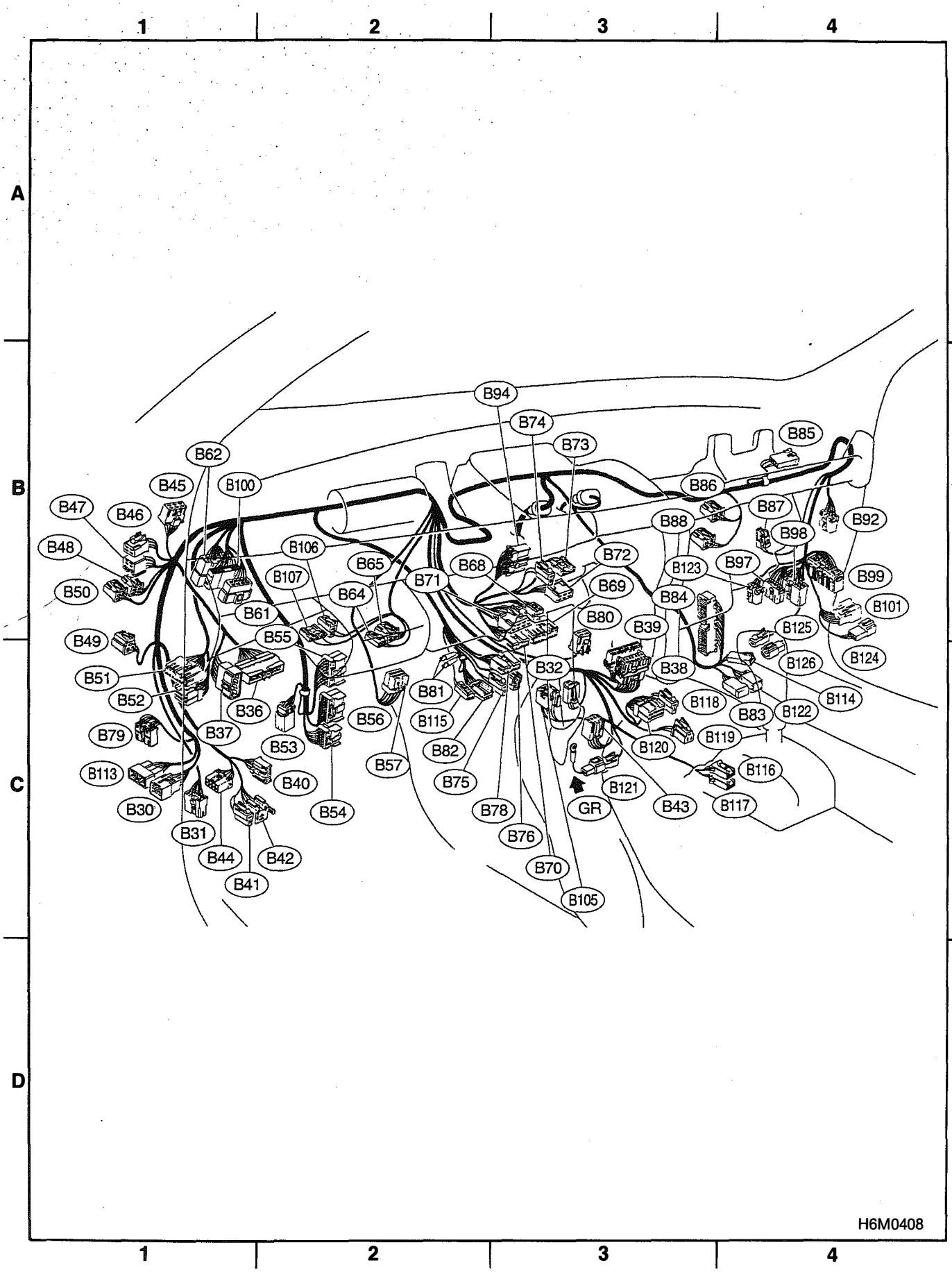


Connector			Connecting to	
No.	Pole	Color	No.	Name
B30	13	★	D1	Front door cord LH
B31	7	Yellow	AB1	SRS (Airbag) harness
B32	3	Black		Turn & hazard module
B36	24	Black	i1	Instrument panel wiring harness
B37	8	★	i2	
B38	12	★	i3	
B39	20	Blue	i4	
B40	16	Black		OBD-II service connector
B41	2	★		Power window circuit breaker
B42	4	★		Power window and sunroof relay
B43	6	Black		Illumination control module
B44	8	★		Seat belt timer
B45	6	★	R53	Roof cord
B46	4	Green		Fuel pump relay
B47	6	Brown		Main relay
B48	4	Black		Front fog light relay
B49	3	Black		Horn relay
B50	4	★		Blower relay
B51	11	Gray		F/B
B52	12	Gray		
B53	6	★		Shield joint connector (AT)
B54	12	Black		Transmission control module
B55	16	Black		
B56	20	Black		
B57	12	Black		Shift lock control module
B61	8	★	F44	Front wiring harness
B62	20	★	F45	
B64	2	Black		Stop light switch
B65	4	Black		Stop & brake switch (With cruise control)
B68	5	Black		Cruise control sub switch
B69	11	★		Combination switch
B70	9	★		
B71	8	★		
B72	6	Black		Ignition switch
B73	2	Black		Key lock solenoid (AT)
B74	2	Black		Key warning switch
B75	2	Green	B76	Test mode connector
B76	2	Green	B75	
B78	9	Yellow		Data link connector

Connector			Connecting to	
No.	Pole	Color	No.	Name
B79	14	Gray		Check connector
B80	4	Blue	i20	Instrument panel wiring harness
B81	1 x 2	★		Diagnosis terminal (Ground)
B82	6	Black		Diagnosis connector
B83	6	★		Shield joint connector (E/G) (1800 cc engine model)
	8	★		Shield joint connector (E/G) (2200 cc engine model)
B84	96	Light blue		Engine control module
B85	4	Brown		Diode (Lighting)
B86	4	★		Blower motor resistor
B87	2	★		Blower motor
B88	4	Brown		Evaporator thermoswitch
B92	8	★		Door lock timer
B94	20	★		Cruise control module
B97	10	★	R1	Rear wiring harness
B98	12	Black	R2	
B99	20	★	R3	
B100	16	Black	F2	Front wiring harness (With ABS model)
B101	13	★	D11	Front door cord RH
B105	4	Blue		Starter interlock relay (MT)
B106	2	★		Clutch switch (MT)
B107	2	Blue		Clutch switch (Cruise control)
B113	9	★	D50	Front door cord LH
B114	2	Black		Diode (A/C)
B115	2	Black		Check connector (ABS)
B116	4	Black		Select level illumination light (AT)
B117	4	★		Parking position switch & shift lock solenoid (AT)
B118	2	★		CD player illumination light
B119	3	★		Cigarette lighter
B120	14	★		Radio
B121	1	Black		Ground (Radio)
B122	6	★		Sensor ground joint connector
B123	4	★	R48	Rear wiring harness
B124	3	★		Front door cord RH
B125	1	Green	B126	Test mode connector
B126	1	Green	B125	

★: Non-colored

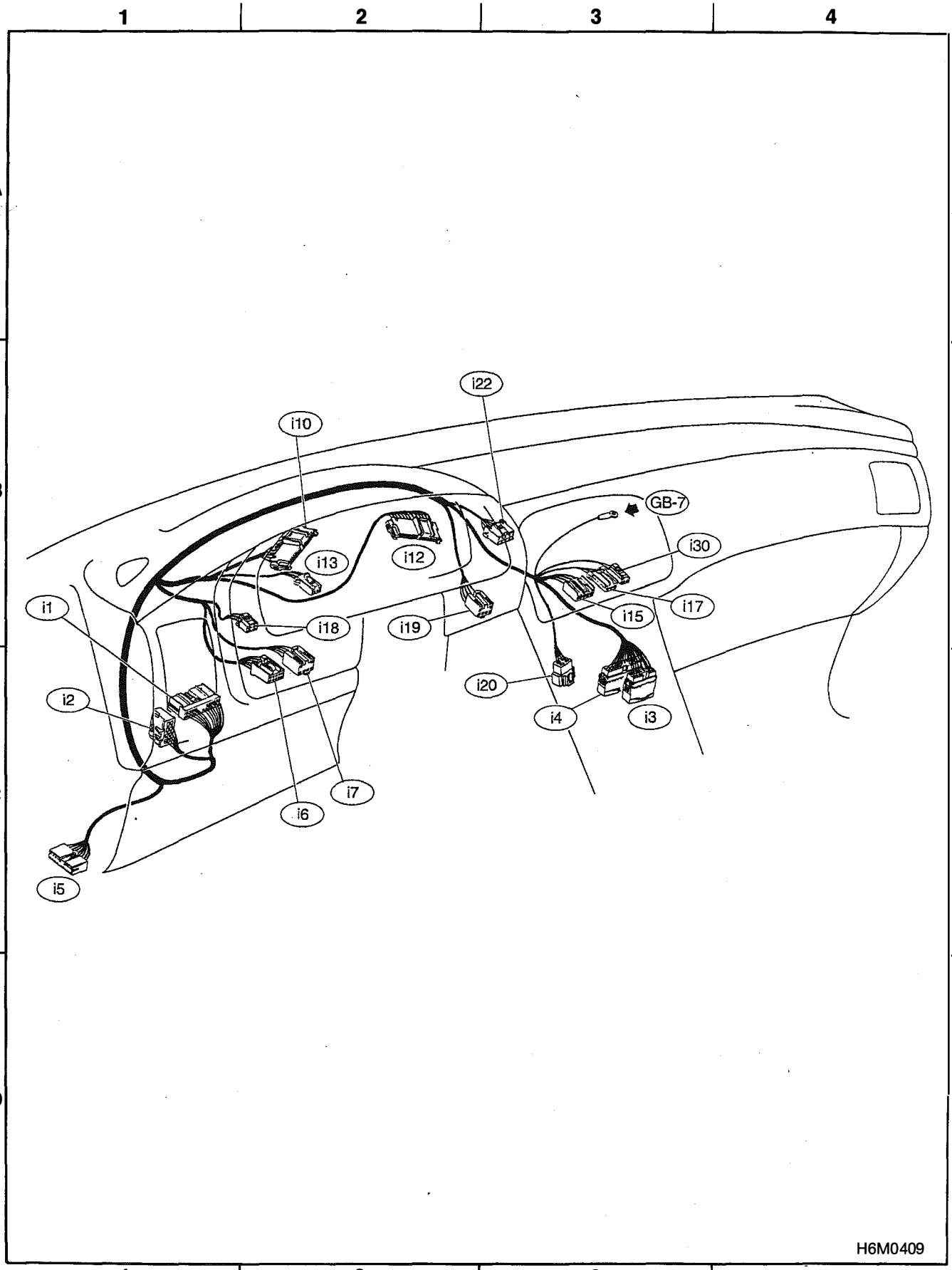
4. BULKHEAD WIRING HARNESS (IN COMPARTMENT)



Connector			Connecting to	
No.	Pole	Color	No.	Name
i1	24	Black	B36	Bulkhead wiring harness
i2	8	★	B37	
i3	12	★	B38	
i4	20	Blue	B39	
i5	15	Gray		F/B
i6	10	★		Remote control rearview mirror switch
i7	6	★		Front fog light switch
i10	16	Gray		Combination meter
i12	16	Gray		
i13	4	★		Combination meter (Airbag warning)
i15	6	★		Fan switch
i17	3	★		Mode control panel
i18	4	★		Rear defogger switch
i19	6	Brown		Cruise control main switch
i20	4	Blue	B80	Bulkhead wiring harness
i22	8	★		Hazard switch
i30	2	★		Mode control panel illumination light

★: Non-colored

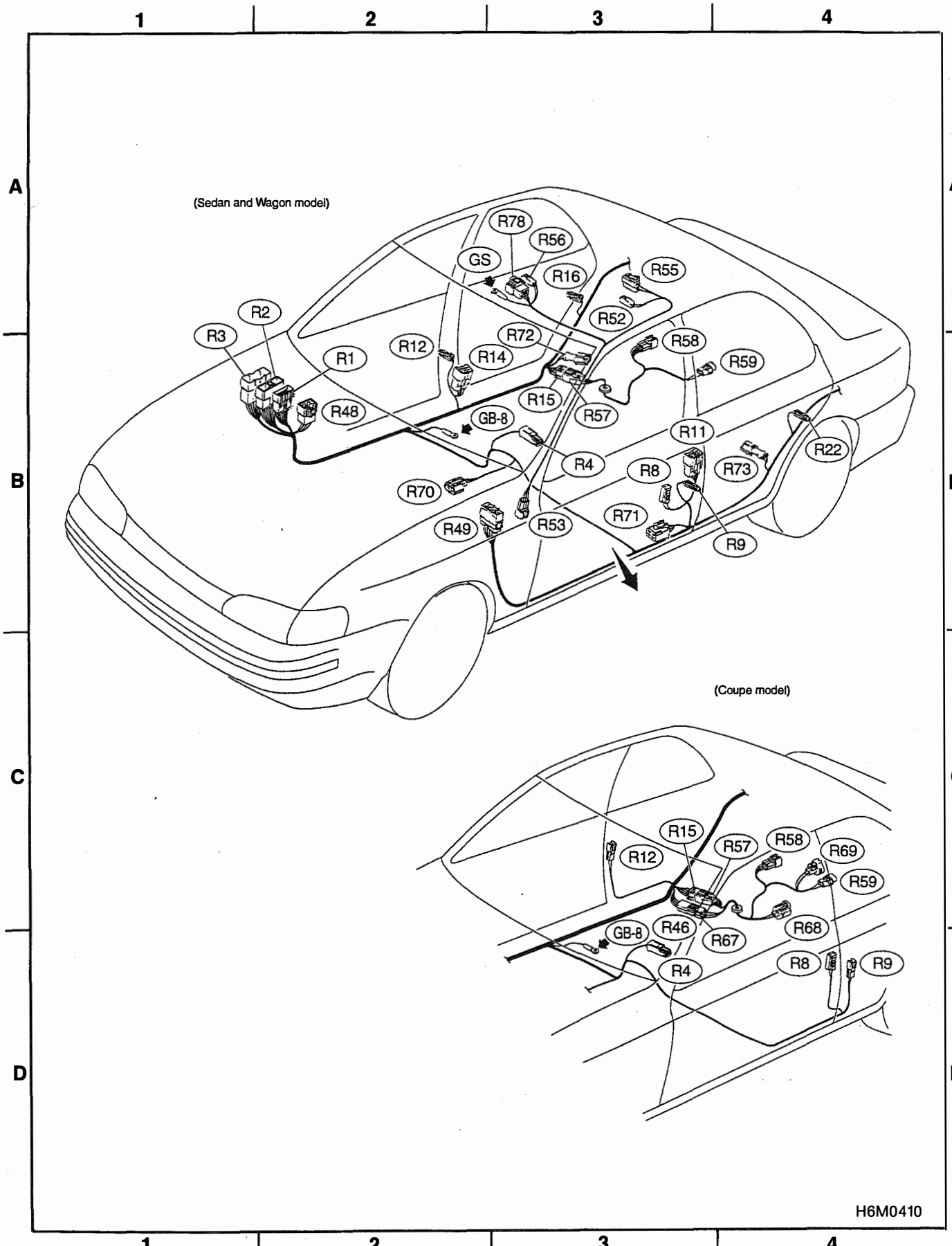
5. INSTRUMENT PANEL WIRING HARNESS AND GROUND POINT



Connector			Connecting to	
No.	Pole	Color	No.	Name
R1	10	★	B97	Bulkhead wiring harness
R2	12	Black	B98	
R3	20	★	B99	
R4	1	Black		Parking brake switch
R8	2	★		Seat belt switch
R9	1	Brown		Front door switch LH (Sedan and Wagon model)
	2	★		Front door switch LH (Coupe model)
R11	8	★	D21	Rear door adapter cord LH
R12	1	Brown		Front door switch RH (Sedan and Wagon model)
	2	★		Front door switch RH (Coupe model)
R14	8	★	D27	Rear door adapter cord RH
R15	6	Black	R57	Fuel tank cord
R16	1	Brown		Rear door switch RH
R22	1	Brown		Rear door switch LH
R46	4	★	R67	Fuel tank cord (1800 cc engine model)
R48	4	★	B123	Bulkhead wiring harness (Wagon model)
R49	12	Black	F55	Front wiring harness (With ABS model)
R52	2	★		Room light
R53	6	★	B45	Bulkhead wiring harness
R55	2	★		Sunroof control module and sunroof motor
R56	2	★		Spot light
R57	6	Black	R15	Rear wiring harness
R58	6	★		Fuel gauge module & fuel pump assembly
R59	2	★		Fuel gauge sub module
R67	4	★	R46	Rear wiring harness
R68	2	Black		Pressure control solenoid valve
R69	2	★		Vent control solenoid valve
R70	3	★		ABS G sensor
R71	4	Red		Rear accessory power supply relay
R72	2	Gray		Rear ABS sensor RH
R73	2	Gray		Rear ABS sensor LH

★: Non-colored

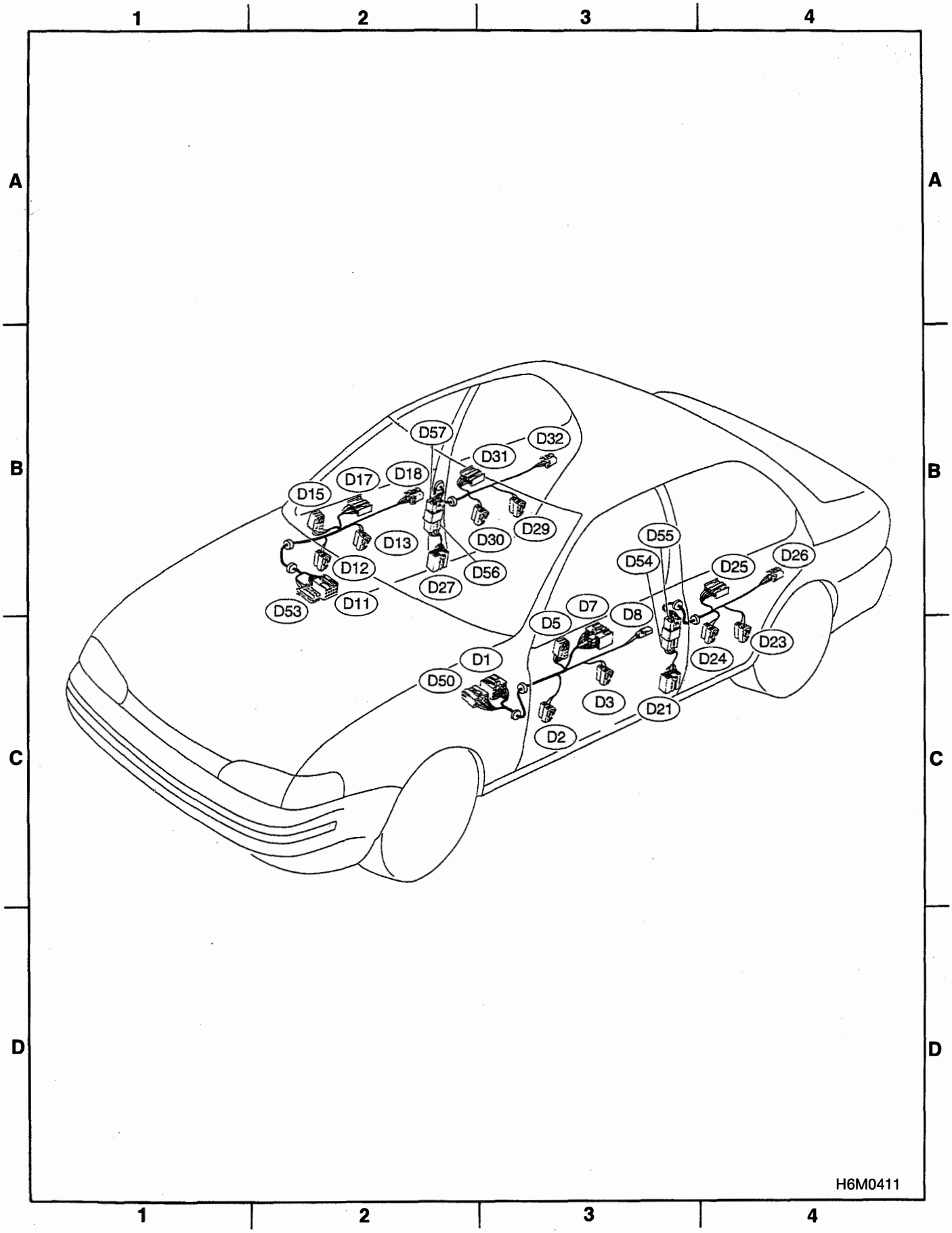
6. REAR WIRING HARNESS AND GROUND POINT



Connector			Connecting to	
No.	Pole	Color	No.	Name
D1	13	★	B30	Bulkhead wiring harness
D2	2	★		Front speaker LH
D3	2	Green		Front power window motor LH
D5	6	★		Remote control rearview mirror LH
D7	14	★		Power window main switch
D8	2	Gray		Front door lock switch LH
D11	13	★	B101	Bulkhead wiring harness
D12	2	★		Front speaker RH
D13	2	Green		Front power window motor RH
D15	6	★		Remote control rearview mirror RH
D17	5	★		Front power window sub switch RH
D18	4	★		Front door lock actuator RH
D21	8	★	R11	Rear wiring harness
D23	2	★		Rear door speaker LH
D24	2	Green		Rear power window motor LH
D25	5	★		Rear power window sub switch LH
D26	4	★		Rear door lock actuator LH
D27	8	★	R14	Rear wiring harness
D29	2	★		Rear door speaker RH
D30	2	Green		Rear power window motor RH
D31	5	★		Rear power window sub switch RH
D32	4	★		Rear door lock actuator RH
D50	9	★	B113	Bulkhead wiring harness
D53	3	★	B124	Bulkhead wiring harness
D54	8	★	D55	Rear door cord LH
D55	8	★	D54	Rear door adapter cord LH
D56	8	★	D57	Rear door cord RH
D57	8	★	D56	Rear door adapter cord RH

★: Non-colored

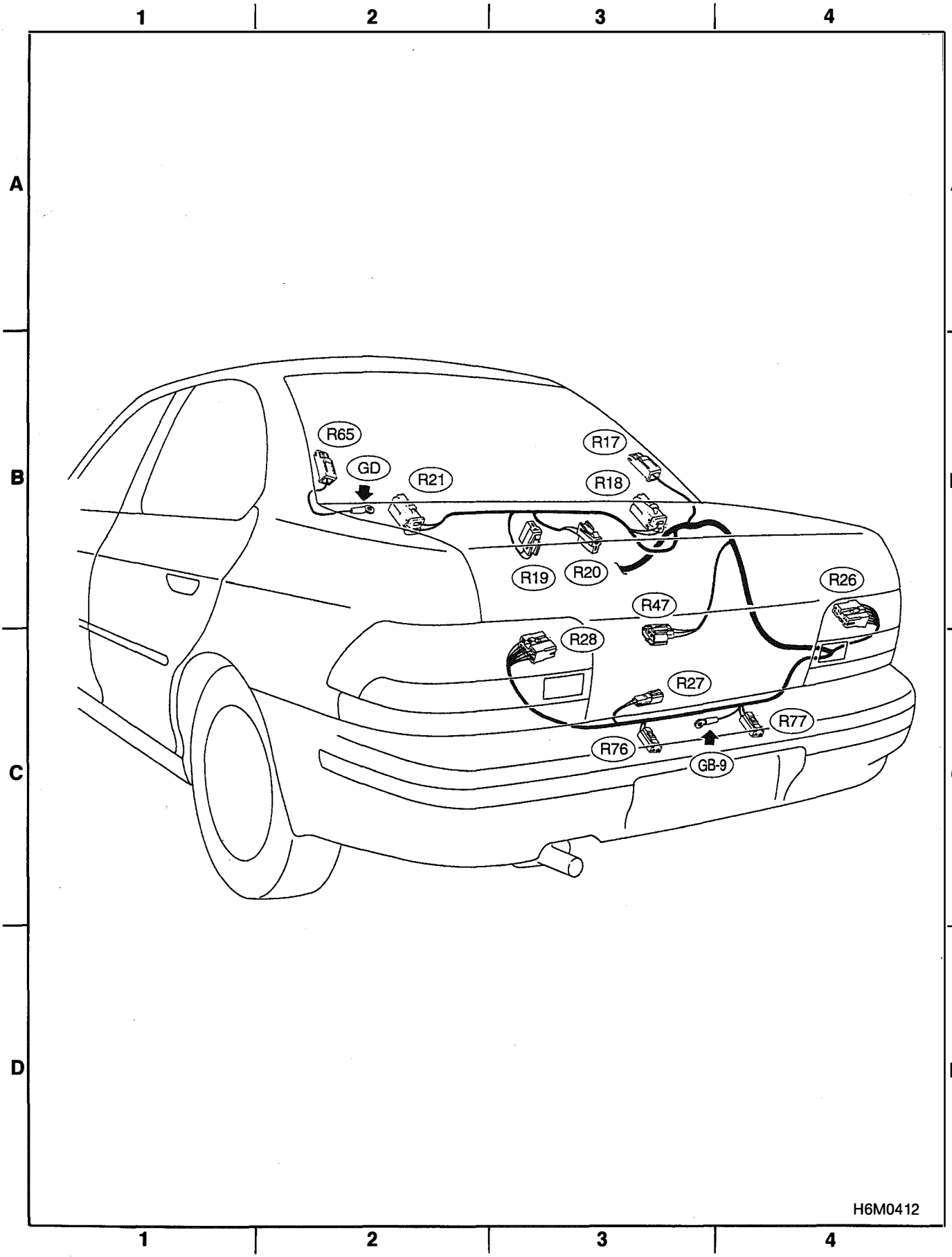
7. DOOR CORD


1
2
3
4
A
B
C
D
D57
D32
D31
D17
D18
D15
D29
D13
D30
D12
D56
D27
D53
D11
D55
D54
D25
D26
D7
D8
D5
D23
D1
D24
D50
D3
D21
D2
H6M0411

Connector			Connecting to	
No.	Pole	Color	No.	Name
R17	1	Black		Rear defogger (Power)
R18	2	Black		Rear speaker RH
R19	2	★		High-mount stop light
R20	2	Black		Trunk room light
R21	2	Black		Rear speaker LH
R26	7	★		Rear combination light RH
R27	2	★		Trunk room light switch
R28	7	★		Rear combination light LH
R47	3	Black		Fuel tank pressure sensor (1800 cc engine model)
R65	1	Black		Rear defogger (Ground)
R76	2	★		License plate light LH
R77	2	★		License plate light RH

★: Non-colored

8. REAR END WIRING HARNESS AND GROUND POINT OF SEDAN AND COUPE

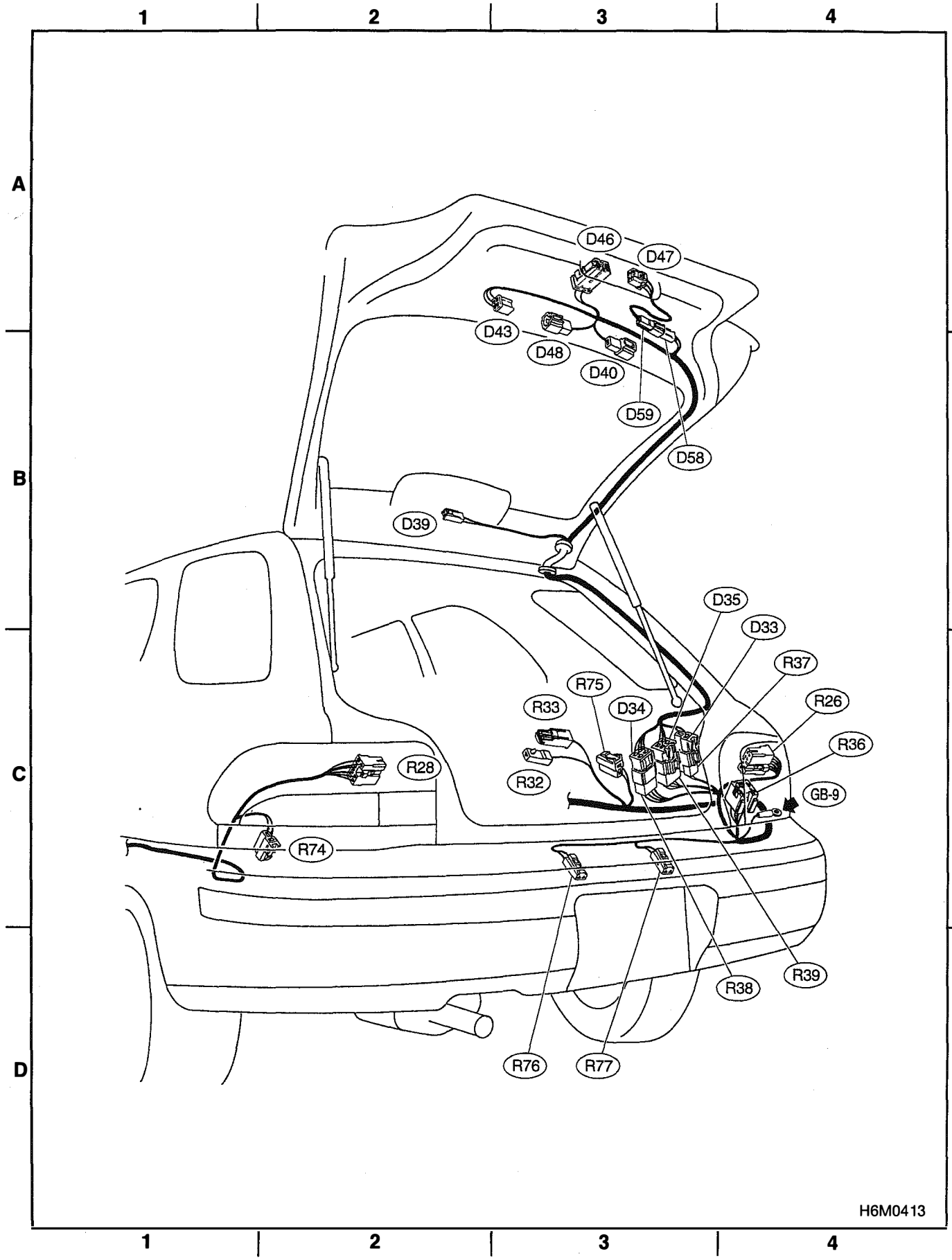


Connector			Connecting to	
No.	Pole	Color	No.	Name
R26	7	★		Rear combination light RH
R28	7	★		Rear combination light LH
R32	1	★		Rear accessory power supply (Power)
R33	1	Black		Rear accessory power supply (Ground)
R36	5	Black		Rear wiper relay
R37	2	★	D33	Rear gate cord
R38	4	★	D34	
R39	4	★	D35	
R74	2	Green		Rear washer motor
R75	2	★		Luggage room light
R76	2	★		License plate light LH
R77	2	★		License plate light RH

Connector			Connecting to	
No.	Pole	Color	No.	Name
D33	2	★	R37	Rear wiring harness
D34	4	★	R38	
D35	4	★	R39	
D39	2	★		High-mount stop light
D40	1	★		Rear defogger (Power)
D43	4	★		Rear wiper motor
D46	2	★		Rear gate latch switch
D47	4	★		Rear gate lock actuator
D48	1	★		Rear defogger (Ground)
D58	2	★	D59	Rear gate lock adapter cord
D59	2	★	D58	Rear gate cord

★: Non-colored

9. REAR END WIRING HARNESS AND GROUND POINT OF WAGON



MEMO: