

INTRODUCTION

How to Use This Manual

This supplement contains information for the 1993 CIVIC. Refer to following shop manuals for service procedures and data not included in this supplement.

Description	Code No.
CIVIC CHASSIS 92 VOL.1 Maintenance, Repair and Construction	62SR300A
CIVIC CHASSIS 92 VOL.2 Maintenance, Repair and Construction	62SR300B

The first page of each section is marked with a black tab that lines up with one of the thumb index tabs on this page. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.

Special Information

⚠ WARNING Indicates a strong possibility of severe personal injury or loss of life if instructions are not followed.

CAUTION: Indicates a possibility of personal injury or equipment damage if instructions are not followed.


NOTE: Gives helpful information.

CAUTION: Detailed descriptions of *standard workshop* procedures, safety principles and service operations are not included. Please note that this manual contains warnings and cautions against some specific service methods which could cause **PERSONAL INJURY**, damage a vehicle or make it unsafe. Please understand that these warnings cannot cover all conceivable ways in which service, whether or not recommended by HONDA might be done, or of the possible hazardous consequences of every conceivable way, nor could HONDA investigate all such ways. Anyone using service procedures or tools, whether or not recommended by HONDA, *must satisfy himself thoroughly* that neither personal safety nor vehicle safety will be jeopardized.

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Service Publication Office

 marked sections are not included in this manual.
As sections with * include SRS components, special precautions are required, when servicing.

* General Info



Special Tools



Specifications

specs

Maintenance



Engine



Cooling



Fuel and Emissions



Transaxle



* Steering



Suspension



Brakes
(Including ABS)



* Body



* Heater and
Air Conditioner



* Electrical
(Including SRS)



Outline of Model Changes

ITEM	DESCRIPTION	93 MODEL	REFERENCE SECTION
Engine	Modified <ul style="list-style-type: none"> • Rocker shaft collar for D15Z1 engine 	○	6
PGM-CARB.	Changed <ul style="list-style-type: none"> • Wire harness color for PGM-CARB. control system • Fuel feed pipe, fuel return pipe and fuel vapor pipe materials for 2WD (except Europe) models 	○	11
PGM-FI	Changed <ul style="list-style-type: none"> • Wire harness color of PGM-FI. control system • Fuel feed pipe, fuel return pipe and fuel vapor pipe materials for 2WD (except Europe) models Out of use <ul style="list-style-type: none"> • Fuel-sub pump for 4WD model Added <ul style="list-style-type: none"> • Jet pump for 4wd model 	○	11
Clutch	Changed <ul style="list-style-type: none"> • Torque value of clutch pipe for LHD model • Recommended grease 	○	12
Manual Transmission	Changed <ul style="list-style-type: none"> • Recommended grease • Method of shaft fork spring pin installing 	○	13
Automatic Transmission	Modified <ul style="list-style-type: none"> • Hydraulic circuit • Secondary valve body • Reverse idler gear Changed <ul style="list-style-type: none"> • Drain plug • Throttle pressure and governor pressure • Reverse selector hub on the countershaft 	○	14
Brake	Modified <ul style="list-style-type: none"> • Wire colors between solenoids and ABS control unit 	○	19
Electrical	Changed <ul style="list-style-type: none"> • Wire color of ignition switch • Data link connector • Alternator brushes (Mitsubishi type) • Terminal number of shift lock solenoid Modified <ul style="list-style-type: none"> • Power supply circuit 	○	23



General Information

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Chassis and Engine Numbers

European Model (2-Door Hatchback)

Vehicle Identification Number

JHMEG33200S100001

Manufacturer Code and Type of Vehicle

JHM: HONDA MOTOR CO.,
LTD., JAPAN.
HONDA Passenger car

Body Type

EG3: CIVIC 1300/2-Door
Hatchback
EG4: CIVIC 1500/2-Door
Hatchback
EG5: CIVIC 1600/2-Door
Hatchback
EG6: CIVIC 1600 VTi/2-Door
Hatchback

Body and Transmission Type

3: 2-Door Hatchback/5-speed
Manual
4: 2-Door Hatchback/4-speed
Automatic

Vehicle Grade

2: DX (EG3: KG/KF/KS/KE)
4: DXi (EG4: KG)
5: LSi (EG4: KG/KF/KS/KE)
6: VEi (EG4: KG/KF/KS/KE)
8: ESi (EG5: KG/KF/KS/KE/KZ)
9: VTi (EG6: KG/KF/KS/KE)

Fixed Code

Auxiliary Number

Factory Code

S: Suzuka Factory in JAPAN

Model Year

1: 1993

Serial Number

Engine Number

B16A2-1100001

Engine Type

B16A2: 1600 DOHC 16-valves Multiport
Fuel-injected VTEC Engine
with CATA
D13B2: 1300 SOHC 16-valves 1-carbureted
Engine with CATA
D15B2: 1500 SOHC 16-valves Dual-point
Fuel-injected Engine with CATA
D15Z1: 1500 SOHC 16-valves Multiport
Fuel-injected VTEC-E Engine
with CATA
D16Z6: 1600 SOHC 16-valves Multiport
Fuel-injected VTEC Engine
with CATA
D16Z7: 1600 SOHC 16-valves Multiport
Fuel-injected VTEC Engine
with CATA for KZ (Austria)

Serial Number

B16A2: 1100001~
D13B2: 2100001~
D15B2: 6800001~
D15Z1: 2700001~
D16Z6: 2700001~
D16Z7: 1200001~

Manual Transmission Number

S20-1000001

Transmission Type

S20: Except B16A2 engine
Y21: B16A2 engine

Serial Number

Automatic Transmission Number

M24A-2000001

Transmission Type

Serial Number



European Model (4-Door Sedan)

Vehicle Identification Number

JHMEG85400S100001

Manufacturer Code and

Type of Vehicle

JHM: HONDA MOTOR CO.,
LTD., JAPAN.
HONDA Passenger car

Body Type

EG8: CIVIC 1500/4-Door
Sedan
EG9: CIVIC 1600 VTi/4-Door
Sedan
EH1: CIVIC 1600/4-Door
Sedan 4WD
EH9: CIVIC 1600/4-Door
Sedan

Body and Transmission Type

5: 4-Door Sedan/5-speed
Manual
6: 4-Door Sedan/4-speed
Automatic

Vehicle Grade

4: DXi (EG8: KG/KS)
5: LSi (EG8: KG/KS/KE)
6: VEi (EG8: KG/KF/KS/KE)
8: ESi (EH9: KG/KF/KS/KE)
: RTSi (EH1: KG)
9: VTi (EG9: KG/KF/KS/KE)

Fixed Code

Auxiliary Number

Factory Code

S: Suzuka Factory in JAPAN

Model Year

1: 1993

Serial Number

Engine Number

B16A2-1100001

Engine Type

B16A2: 1600 DOHC 16-valves Multiport
Fuel-injected VTEC Engine
with CATA
D15B2: 1500 SOHC 16-valves Dual-point
Fuel-injected Engine with CATA
D15Z1: 1500 SOHC 16-valves Multiport
Fuel-injected VTEC-E Engine
with CATA
D16Z6: 1600 SOHC 16-valves Multiport
Fuel-injected VTEC Engine
with CATA
D16Z7: 1600 SOHC 16-valves Multi-point
Fuel-injected VTEC Engine
with CATA for KZ (Austria)
and 4WD

Serial Number

B16A2: 1100001~
D15B2: 6800001~
D15Z1: 2700001~
D16Z6: 2700001~
D16Z7 for KZ (Austria): 1200001~
D16Z7 for 4WD: 1300001~

Manual Transmission Number

S20-1000001

Transmission Type

S20: Except B16A2 engine and
4WD models
Y21: For B16A2 engine
S22: For 4WD models

Serial Number

Automatic Transmission Number

M24A-2000001

Transmission Type

M24A: For 2WD models
M25A: For 4WD models

Serial Number

Chassis and Engine Numbers

Except European Model (2-Door Hatchback)

Vehicle Identification Number

JHMEG33100S100001

Manufacturer Code and Type of Vehicle

JHM: HONDA MOTOR CO.,
LTD., JAPAN.
HONDA Passenger car

Body Type

EG3: CIVIC 1300/2-Door
Hatchback
EG4: CIVIC 1500/2-Door
Hatchback
EG5: CIVIC 1600/2-Door
Hatchback

Body and Transmission Type

3: 2-Door Hatchback/5-speed
Manual
4: 2-Door Hatchback/4-speed
Automatic

Vehicle Grade

1: CX (EG3: KQ), EL (EG3: KT),
1.5 EL (EG4: KY)
2: EX (EG4: KP/KT/KY)
3: GL (EG4: KQ)
7: Si (EG5: KQ/KP/KT)

Fixed Code

Auxiliary Number

Factory Code

S: Suzuka Factory in JAPAN

Model Year

1: 1993

Serial Number

Engine Number

B13B2-2100001

Engine Type

D13B2: 1300 SOHC 16-valves 1-carbureted
Engine with CATA for KQ
D13B3: 1300 SOHC 16-valves 1-carbureted
Engine without CATA for KT
D15B3: 1500 SOHC 16-valves 1-carbureted
Engine without CATA for KP/KT/KY
D15B4: 1500 SOHC 16-valves 2-carbureted
Engine with CATA for KQ
D16A8: 1600 DOHC 16-valves Multiport
Fuel-injected Engine
with CATA for KQ
D16A9: 1600 DOHC 16-valves Multiport
Fuel-injected Engine
without CATA for KP/KT

Serial Number

Manual Transmission Number

S20-1000001

Transmission Type

Serial Number

Automatic Transmission Number

M24A-2000001

Transmission Type

M24A: For D16A8 engine
M48A: Except D16A8 engine

Serial Number



Except European Model (4-Door Sedan)

Vehicle Identification Number (Except KB, KH)

JHMEH85100S100001

Manufacturer Code and Type of Vehicle

JHM: HONDA MOTOR CO.,
LTD., JAPAN.
HONDA Passenger car

Body Type

EH8: CIVIC 1200/4-Door Sedan
EG7: CIVIC 1300/4-Door Sedan
EG8: CIVIC 1500/4-Door Sedan
EH9: CIVIC 1600/4-Door Sedan

Body and Transmission Type

5: 4-Door Sedan/5-speed
Manual
6: 4-Door Sedan/4-speed
Automatic

Vehicle Grade

1: 1.2 EL (EH8: KT), EL (EG7: KP),
1.5 EL (EG8: KP/KT/KU)
2: 1.2 EX (EH8: KU),
EX (EG8: KP/KT/KY)
3: GL (EG8: KQ)
7: Vei (EG8: KQ),
Si (EH9: KQ/KP/KT/KY)

Fixed Code

Auxiliary Number

Factory Code

S: Suzuka Factory in JAPAN

Model Year

1: 1993

Serial Number

Engine Number (Except KB, KH)

B12B1-2100001

Engine Type

D12B1: 1200 SOHC 16-valves 1-carbureted
Engine without CATA
D13B3: 1300 SOHC 16-valves 1-carbureted
Engine without CATA
D15B3: 1500 SOHC 16-valves 1-carbureted
Engine without CATA
D15B4: 1500 SOHC 16-valves 2-carbureted
Engine with CATA
D16A8: 1600 DOHC 16-valves Multiport
Fuel-injected Engine with CATA
D16A9: 1600 DOHC 16-valves Multiport
Fuel-injected Engine without CATA

Serial Number

Engine Number (KB, KH)

D15B7-2850001

Engine Type

D15B7: 1500 SOHC 16-valves Multiport
Fuel-injected Engine with CATA
D16A7: 1600 SOHC 16-valves Multiport
Fuel-injected Engine without CATA

Serial Number

D15B7: 2850001~
D16A7: 5100001~

Vehicle Identification Number (KB, KH)

1HGEG855*PL000001

Manufacturer Code and Type of Vehicle

JHM: HONDA OF AMERICA
MFG., INC. U.S.A.
HONDA Passenger car

Body Type

EG8: CIVIC 1500/4-Door Sedan
EH5: CIVIC 1600/4-Door Sedan

Body and Transmission Type

5: 4-Door Sedan/5-speed
Manual
6: 4-Door Sedan/4-speed
Automatic

Vehicle Grade

4: DX (EH5: KB)
5: LX (EG8: KH)
6: EX (EH5: KB)

Check Digit

Model Year

P: 1993

Factory Code

L: Ohio Factory in U.S.A. (East Liberty)

Serial Number

EG8 (KH): 000001~
EH5 (KB): 700001~

Manual Transmission Number

S20-1000001

Transmission Type

Serial Number

Automatic Transmission Number

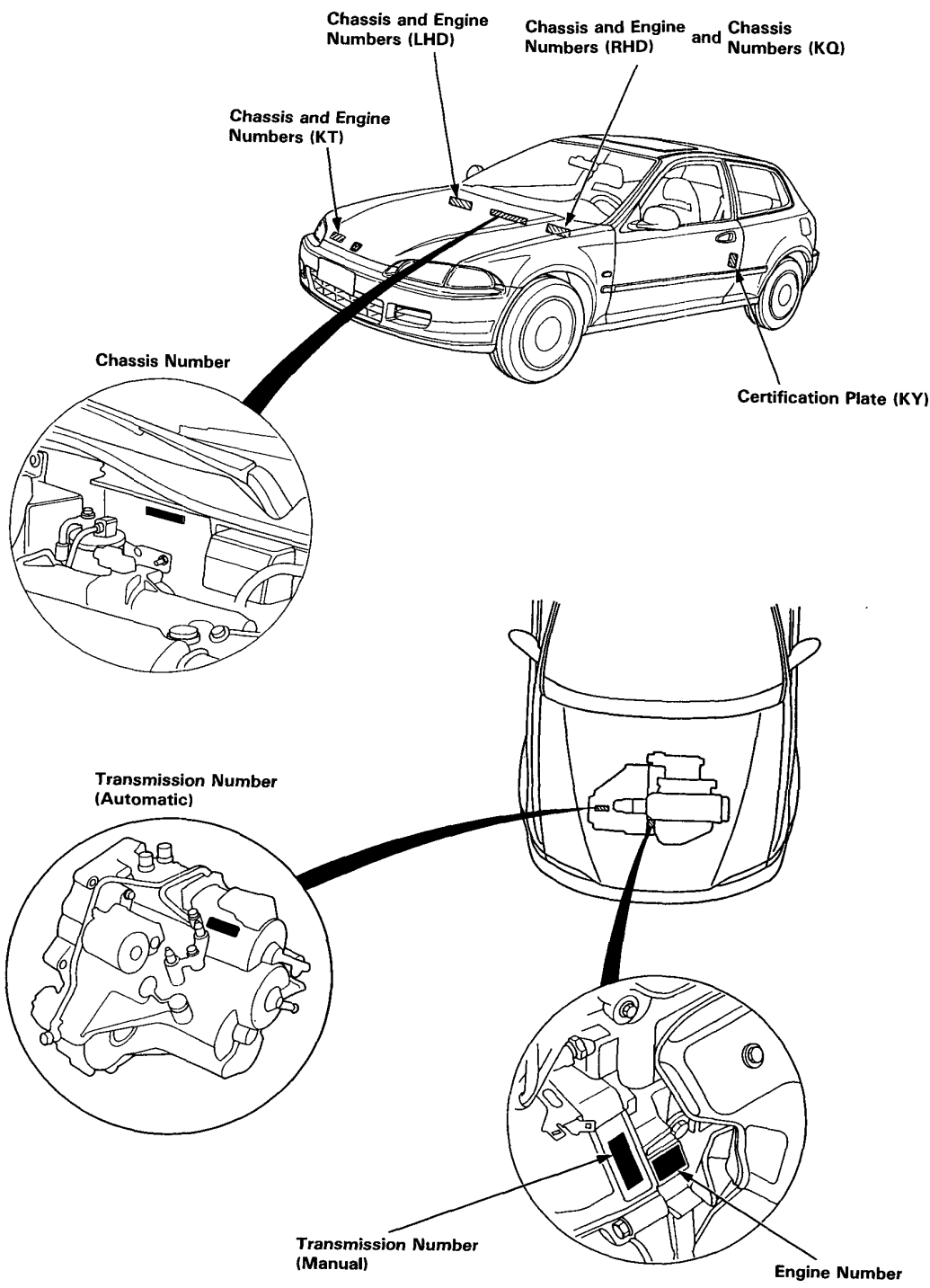
M24A-2000001

Transmission Type

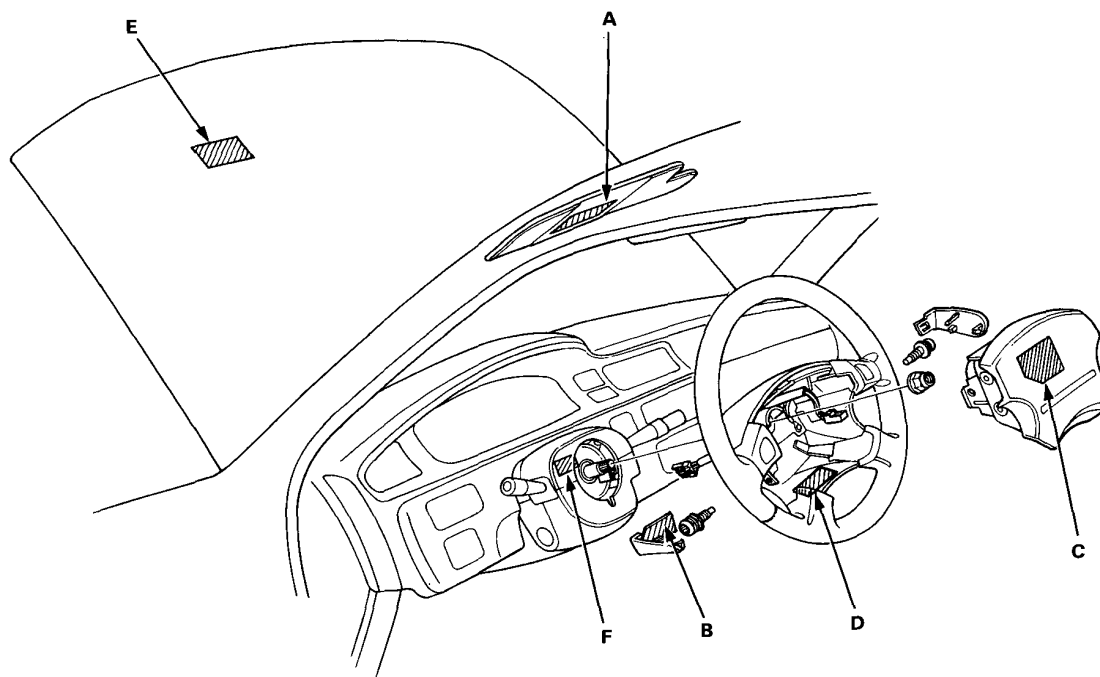
M24A: For D15B7, D16A7, D16A8 engines
M48A: Except D15B7, D16A7, D16A8
engines

Serial Number

Identification Number Locations



Warning/Caution Label Locations



A: DRIVER INFORMATION

ALWAYS WEAR YOUR SEAT BELT SRS

- THIS CAR IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (S.R.S.).
- IT IS DESIGNED TO SUPPLEMENT THE SEAT BELT.
- IF YOUR SRS INDICATOR LIGHTS WHILE DRIVING, SEE YOUR AUTHORIZED HONDA DEALER.

ATTACHEZ TOUJOURS VOTRE CEINTURE SRS

- CE VEHICULE EST EQUIPE D'UN COUSSIN D'AIR POUR LE CONDUCTEUR QUI CONSTITUE UN SYSTEME DE RETENUE COMPLEMENTAIRE (S.R.S.).
- CE COUSSIN D'AIR COMPLETE LA FONCTION DE LA CEINTURE DE SECURITE.
- SI LE TEMOIN SRS S'ALLUME PENDANT LA CONDUITE, ADRESSEZ-VOUS A VOTRE CONCESSIONNAIRE HONDA OFFICIEL.

SICHERHEITSGURTE

BEI JEDER FAHRT ANLEGEN SRS

- DIESES FAHRZEUG BESITZT EINEN FAHRER-AIRBAG ALS ZUSÄTZLICHES RÜCKHALTESYSTEM (S.R.S.).
- ES IST EINE ERGÄNZUNG ZUM SICHERHEITSGURT.
- WENN DUE SRS-KONTROLLEUCHTE WAHREND DER FAHRT AUFLEUCHTET, UMGEHEND FINEN HONDA HÄNDLER AUFsuchen.

DRAAG ALTIJD UW VEILIGHEIDSGORDEL SRS

- DIT VOERTUIG IS UITGERUST MET EEN LUCHTKUSSEN AAN DE BESTUURDESKANT ALTS EXTRA BESCHERMING (S.R.S.).
- DIT IS ONTWERPEN ALS EXTRA BESCHERMING BIJ DE VEILIGHEIDSGORDEL.
- ALS HEL SRS-WAARSCHUWINGSLAMPJE GAAT BRANDEN ONDER HET RIJDEN. NEEM DAN KONTAKT OP MET EEN HONDA DEALER.

B: MAINTENANCE LID CAUTION

CAUTION SRS

BEFORE MAINTENANCE, SWITCH OFF THE IGNITION.
ATTENTION

AVANT TOUT ENTRETIEN, COUPER LE CONTACT.

ACHTUNG

VOR WARTUNG ZÜNDUNG AUSSCHALTEN.

LET OP

ZET HET KONTAKTSLOT AF ALVORENS MET HET ONDERHOUD TE BEGINNEN.

(cont'd)

Warning/Caution Label Locations

(cont'd)

C: MONITOR CAUTION

CAUTION **SRS**
REFER TO THE SHOP MANUAL
ATTENTION
SE REPORTER AU MANUEL D'ATELIER
WAARSCHUWING
LEES HET WERKPLAATS HANDBOEK
ACHTUNG
● WERKSTATT HANDBUCH LESEN
● DER GASGENERATOR IN DIESEM GEHÄUSE
DARF NUR FÜR INSASSEN-RÜCKHALTESYSTEME
MIT LUFTSACK IN KRAFTFAHRZEUGE
MONTIERT WERDEN.
DIE MONTAGE UND DEMONTAGE
DES GASGENERATORS
DARF NUR VON DAFÜR
GESCHULTEM PERRSONAL
VORGENCHMEN VERDEN.

D: COVER CAUTION

CAUTION **SRS**
ACHTUNG
● REFER TO THE SHOP MANUAL
● SE REPORTER AU MANUEL D'ATELIER.
● WERKSTATT HANDBUCH LESEN.
● LEES HET WERKPLAATSHANDBOEK.

E: LABEL **AIRBAG**

E: UNDER-HOOD WARNING

WARNING **SRS**
THIS VEHICLE IS EQUIPPED WITH A DRIVER AIRBAG AS A SUPPLEMENTAL RESTRAINT SYSTEM (SRS). ALL S.R.S. ELECTRICAL WIRING AND CONNECTORS ARE COLORED YELLOW. DO NOT USE ELECTRICAL TEST EQUIPMENT ON THESE CIRCUITS. TAMPERING WITH OR DISCONNECTING THE S.R.S. WIRING COULD RESULT IN ACCIDENTAL FIRING OF THE INFLATOR OR MAKE THE SYSTEM INOPERATIVE, WHICH MAY RESULT IN SERIOUS INJURY.

ATTENTION **SRS**
CE VEHICULE EST EQUIPE D'UN COUSSIN D'AIR DU COTE CONDUCTEUR QUI CONSTITUE UN SYSTEME DE RETENUE COMPLEMENTAIRE (S.R.S.) TOUS LES FILS ET CONNECTEURS ELECTRIQUES DU SYSTEME DE RETENUE COMPLEMENTAIRE (S.R.S.) SONT DE COULEUR JAUNE. N'UTILISEZ PAS UN EQUIPEMENT D'ESSAIS ELECTRIQUES SUR CES CIRCUITS. NE TOUCHEZ PAS ET NE DEBRANCHEZ PAS LES FILS DU SYSTEME S.R.S. CAR CECI POURRAIT DE TRADUIRE PAR LE DECLenchement ACCIDENTEL DU GONFLEUR OU RENDRE LE SYSTEME INOPERANT ET VOUS EXPOSER AINSI A DE GRAVES BLESSURES.

WARNUNG **SRS**
DIESES FAHRZEUG IST MIT EINEM FAHRER-AIRBAG (SRS) ALS ZUSÄTZLICHEM RÜCKHALTESYSTEM AUSGERÜSTET.

ALLE ELEKTRISCHEN KABEL, SOWIE DIE ZUGEHÖRIGEN STECKVERBINDER DES S.R.S. -SYSTEMS SIND IN GELBER FARBE AUSGEFÜHRT.

KEINE ELEKTRISCHEN PRÜGERÄTE AN DIE S.R.S. -VERKABELUNG ANSCHLIEßEN. VERÄNDERN ODER UNTERBRECHEN DER S.R.S. -VERKABELUNG KANN UNKONTROLLIERTES ZÜNDEN DES GASGENERATORS AUSLÖSEN. ODER DAS SYSTEM AUßER FUNKTION SETZEN. WAS ZU ERNSTHAFTEN VERLETZUNGEN FÜHREN KANN.

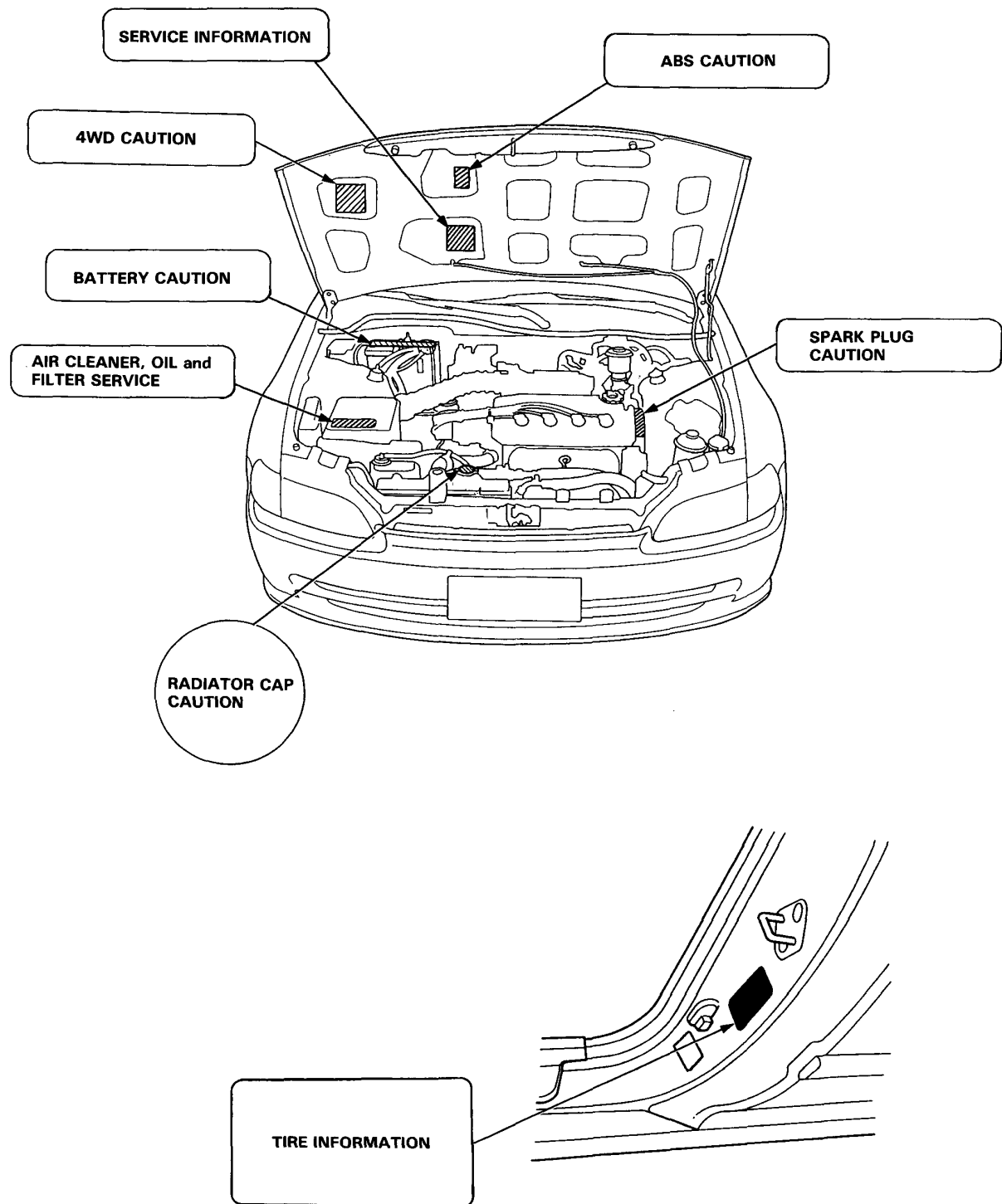
WAARSCHUWING **SRS**
DIT VOERTUIG IS UITGERUST MET EEN LUCHTKUSSEN AAN DE BESTUURDESKANT ALS EXTRA BESCHERMING (S.R.S.).

ALLE ELEKTRISCHE LEIDINGEN EN AANSLUITIGEN VAN DE S.R.S. ZIJN GEEL GEKLEURD. GEBRUIK GEEN ELEKTRISCHE TESTAPPARATUUR VOOR DEZE CIRCUITS. KNOEIEN MET OF LOSKOPPELEN VAN DE S.R.S. LEIDINGEN KAN LEIDEN TOT BRAND IN DE VULINRICHTING OF TOT UITSCHAKELLEN VAN HET SYSTEEM DIT KAN TOT ERNSTIGE ONGELUKKEN LEIDEN.

F: SLIP RING CAUTION

SRS
● **CAUTION** REFER TO THE SHOP MANUAL.
● **ACHTUNG** WERKSTATT HANDBUCH LESEN.
● **ATTENTION** SE REPORTER AU MANUEL D'ATELIER.
● **WAARSCHUWING** LEES HET WERKPLAATS HANDBOEK.

Label C, D, E and F locations: Refer to page 1-7.



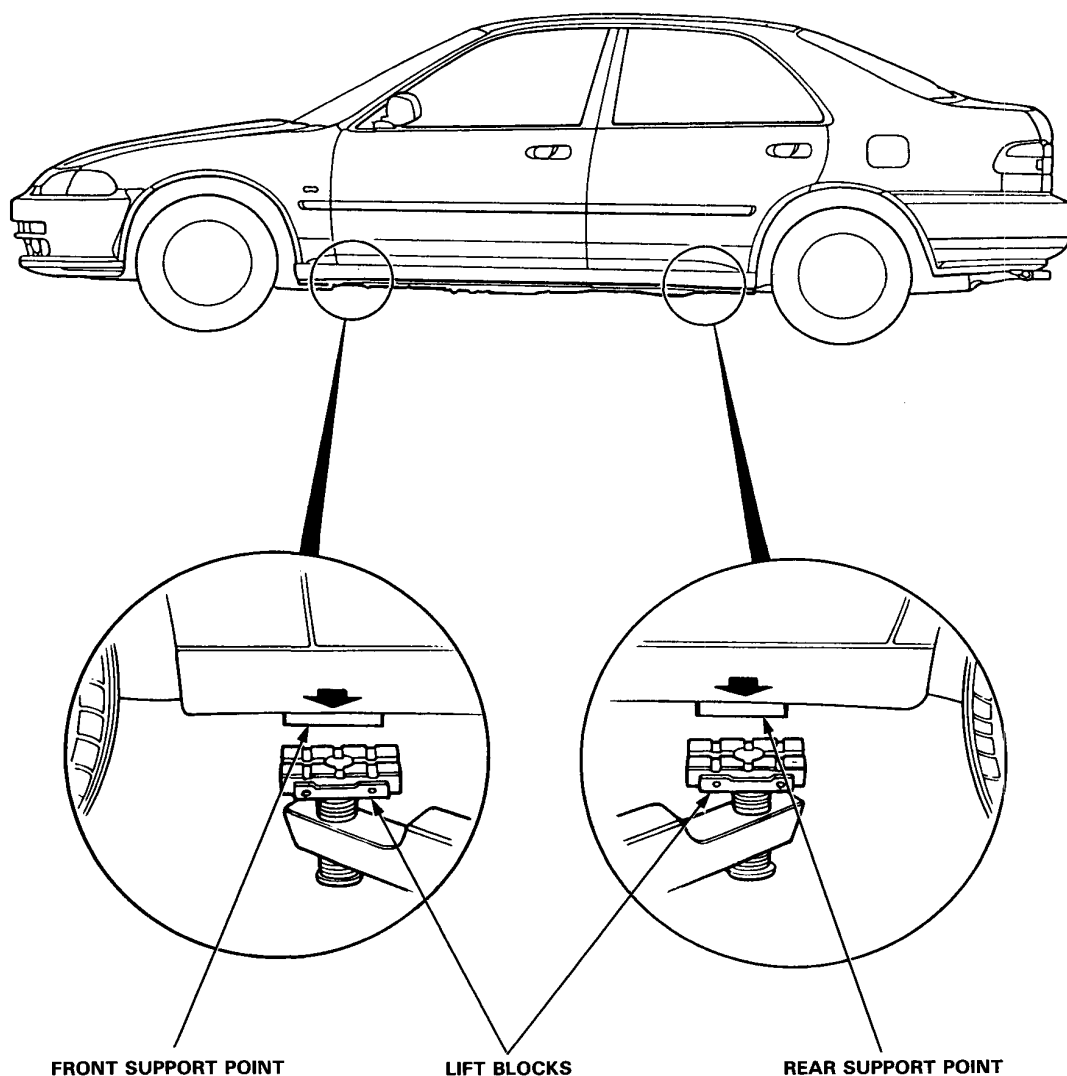
Lift and Support Points

Lift

⚠ WARNING When heavy rear components such as suspension, fuel tank, spare tire and hatch are to be removed, place additional weight in the luggage area before hoisting. When substantial weight is removed from the rear of the car, the center of gravity may change and can cause the car to tip forward on the hoist.

NOTE: Since each tire/wheel assembly weighs approximately 14 kg (30 lbs), placing the front wheels in the trunk can assist with the weight distribution.

1. Place the lift blocks as shown.
2. Raise the hoist until the tyres are slightly off the ground and rock the car to be sure it is firmly supported.
3. Raise the hoist to full height and inspect lift points for solid support.





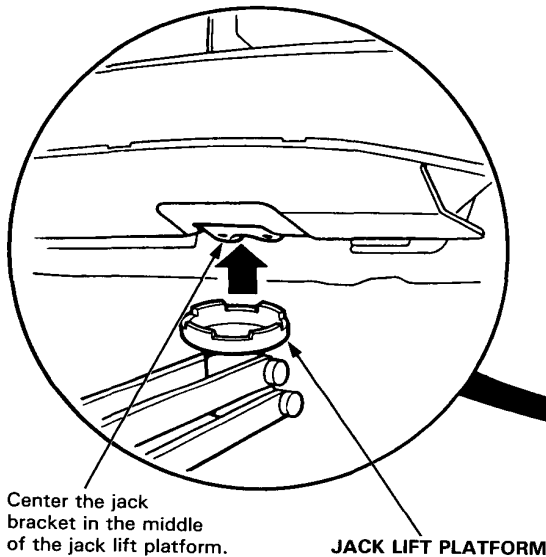
Floor Jack

1. Set the parking brake and block the wheels that are not being lifted.
2. When lifting the rear of the car, put the gearshift lever in reverse (Automatic in **P** position).
3. Raise the car high enough to insert the safety stands.
4. Adjust and place the safety stands as shown on page 1-12 so the car will be approximately level, then lower the car onto them.

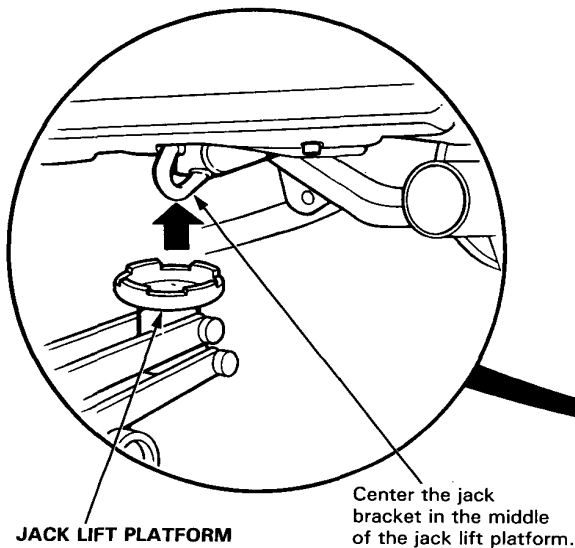
⚠ WARNING

- Always use safety stands when working on or under any vehicle that is supported by only a jack.
- Never attempt to use a bumper jack for lifting or supporting the car.

Front

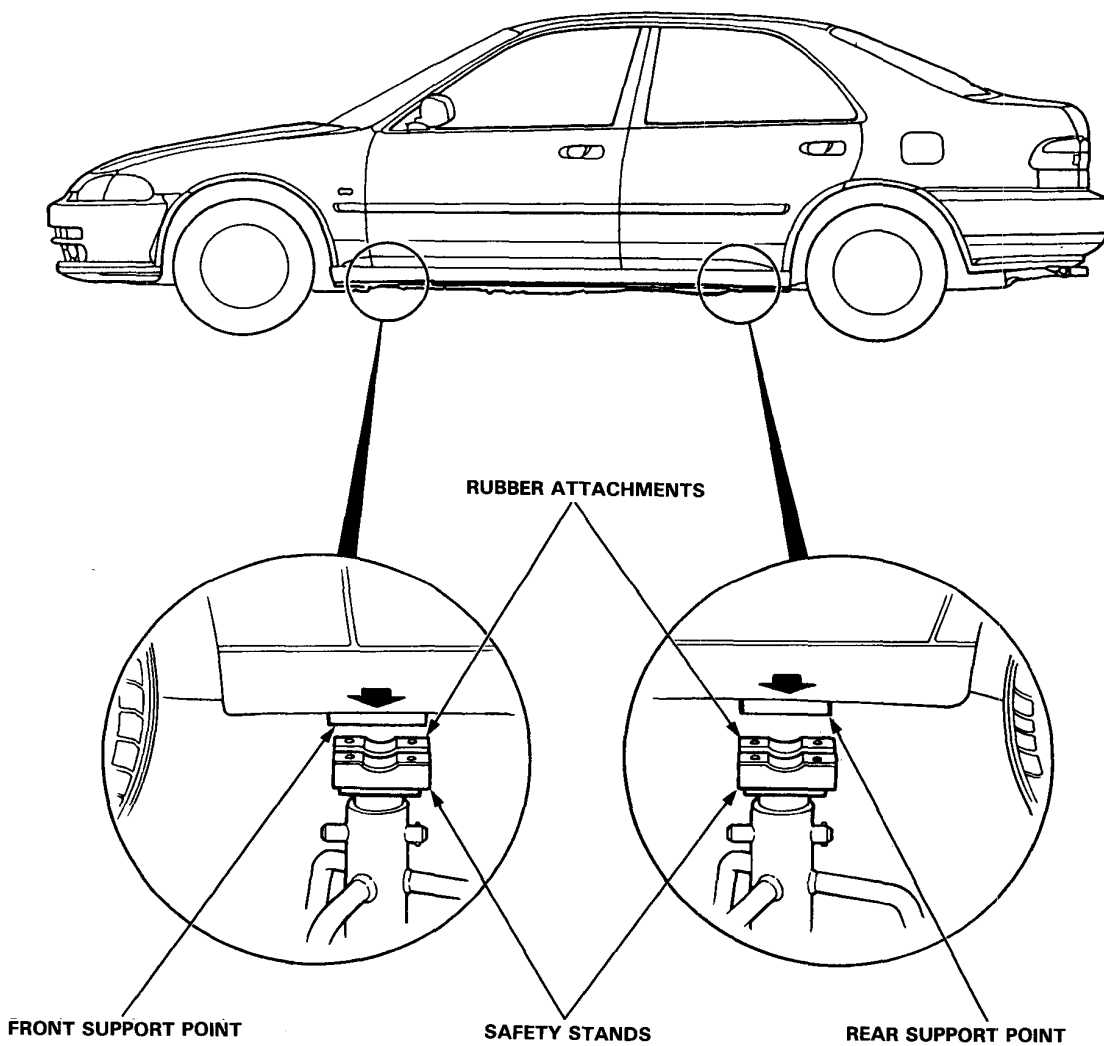


Rear



Lift and Support Points

Safety Stands



Service Precautions



Towing

For 4WD see also "4WD Disengagement".

If the car needs to be towed, call a professional towing service. Never tow the car behind another car with just a rope or chain. It is very dangerous.

Emergency Towing

There are three popular methods of towing a car:

Flat-bed Equipment—The operator loads the car on the back of a truck. This is the best way of towing the car.

Wheel Lift Equipment—The tow truck uses two pivoting arms which go under the tires (front or rear) and lifts them off the ground. The other two wheels remain on the ground.

Sling-type Equipment—The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension and the cables lift that end of the car off the ground. The car's suspension and body can be seriously damaged if this method of towing is attempted.

If the car cannot be transported by flat-bed, it should be towed with the front wheels off the ground. If due to damage, the car must be towed with the front wheels on the ground, do the following:

5-speed Manual Transmission

- Release the parking brake.
- Shift to transmission in neutral

Automatic Transmission

- Release the parking brake.
- Start the engine.
- Shift to transmission in **D4** position, then in **N** position.
- Turn off the engine.

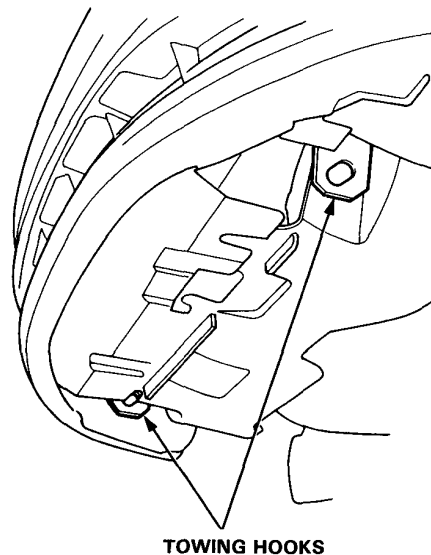
NOTICE: Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine (automatic transmission), the car must be transported on a flat-bed.

- It is best to tow the car no farther than 80 km (50 miles), and keep the speed below 55 km/h (35 mph).

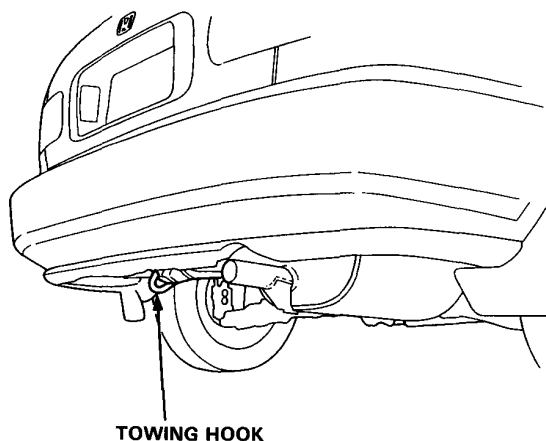
NOTICE: Trying to lift or tow the car by the bumpers will cause serious damage. The bumpers are not designed to support the car's weight.

Front:

CAUTION: On the car equipped with the front spoiler, remove the spoiler when towing.



Rear:



Service Precautions

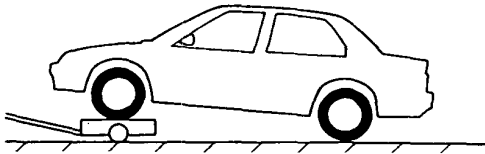
4WD Disengagement

The 4WD System shifts instantaneously and automatically from front wheel drive to four wheel drive when greater traction is needed.

⚠ WARNING The 4WD system must be manually disengaged before performing service that requires only the front wheels or only the rear wheels to be turning. Disengaging the system will prevent sudden movement of the car, which may result in personal injury.

TOWING:

CAUTION: Before towing the car with either the front or rear wheels raised off the ground, place the transmission in neutral and manually disengage the 4WD system to prevent the raised wheels from turning.



If possible, always tow the car with the front wheels off the ground, and 4WD disengaged. Do not use the bumpers to lift the car or to support the car's weight while towing. Check local regulations for towing with a chain or frame-mounted tow bar. A chain may be attached to the hooks shown in the illustration. Do not attach a tow bar to either bumper.

If the car is to be towed with front wheels on the ground, observe the following precautions;

Manual Transmission

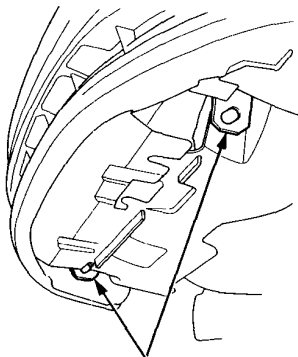
Shift the transmission to Neutral and turn the ignition key to the "I" position.

Automatic Transmission

First, check the automatic transmission fluid level (see section 14). Start the engine and shift to **D₄** position, then to **N** position. Return the ignition key to the "I" position.

CAUTION:

- Do not tow with front wheels on the ground when the automatic transmission fluid level is low or the transmission cannot be shifted with the engine running.
- Do not exceed 55 km/h (35 mph) or tow for distances of more than 80 km (50 miles.)



TOW HOOKS

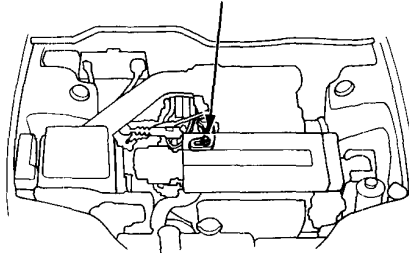
4WD Disengagement

(For cars not equipped ABS)

Manual Transmission:

1. Located the orange disengagement lever at the rear of the engine compartment.

DISENGAGEMENT LEVER



2. Loosen the lock at the slotted end of the lever.

NOTE: For better accessibility, use a socket and a long extension bar.

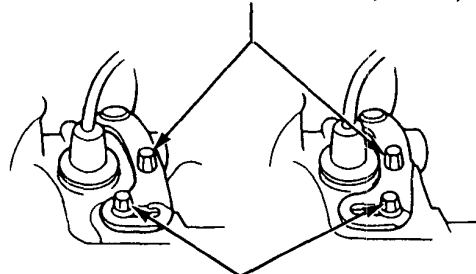
CAUTION: Do not loosen the lock bolt more than 5–7 turns.

Replacement is extremely difficult.

Unlocked Position
(4WD off)

MIDDLE BOLT

Locked Position
(4WD on)



LOCK BOLT

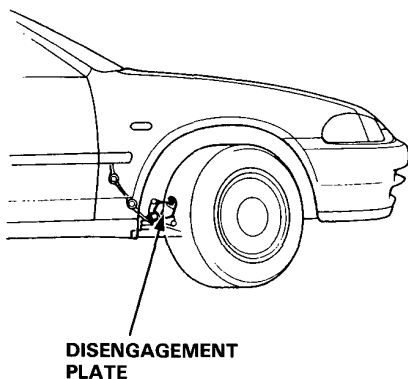
3. Move the lever by turning the middle bolt counterclockwise.
4. Tighten the lock bolt.

NOTE: After service or towing is completed return the lever to the normal (4WD on) position and tighten the lock bolt.



Automatic transmission:

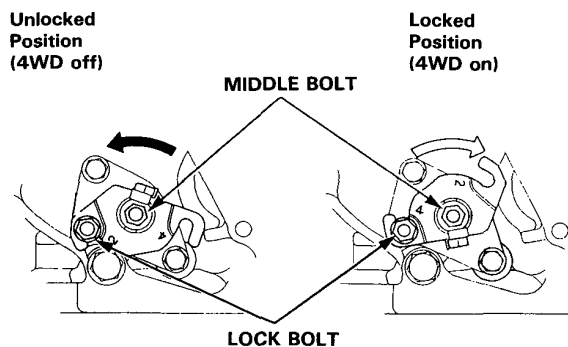
1. Locate the disengagement plate at the rear of the transmission case behind the right front wheel.



2. Loosen the lock bolt in the notch on the plate.

NOTE: For better accessibility, use a socket and a long extension bar.

CAUTION: Do not loosen the middle bolt more than 5–7 turns. Replacement is extremely difficult.

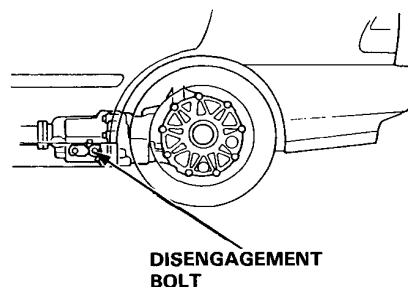


3. Turn the middle bolt counterclockwise until the plate rotates about 150° and is stopped by the lock bolt.
4. Tighten the lock bolt.

NOTE: After service or towing is completed, return the plate to the normal (4WD on) position and tighten the lock bolt.

4WD Disengagement (For cars equipped with ABS)

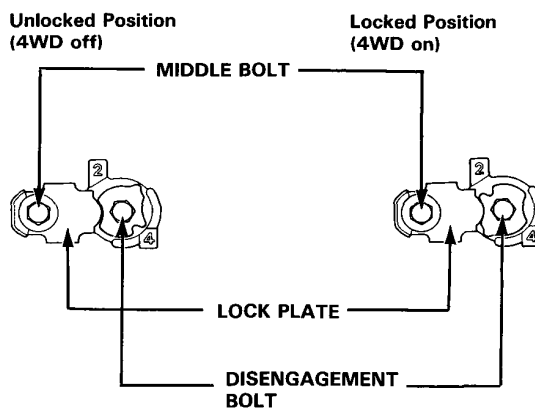
1. Locate the orange disengagement bolt at the front of the rear differential behind the left rear wheel.



2. Loosen the middle bolt fixing the lock plate.

NOTE: For better accessibility, use a socket and a long extension bar.

CAUTION: Do not loosen the middle bolt more than 5–7 turns. Replacement is extremely difficult.



3. Turn the disengagement bolt counterclockwise until the disengagement bolt rotates about 180° and is stopped by the lock plate.
4. Tighten the middle bolt.

NOTE: After service or towing is completed, return the plate to the normal (4WD on) position and tighten the middle bolt.



Special Tools

Individual tool lists are located at the front of each section.

Specifications

Standards and Service Limits	3-2
Design Specifications	3-41
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Standards and Service Limits

Cylinder Head/Valve Train — Section 6 D12B, D13B, D15B, D16A7 Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Com- pression	250 min ⁻¹ (rpm) and wide open throttle kPa (kg/cm ² , psi)	Nominal Minimum Maximum variation	1,300 (13.0,184) 950 (9.5,135) 200 (2,28)	
Cylinder head	Warpage Height		— 94.95—95.05 (3.738—3.742)	0.05 (0.002) —
Camshaft	End play		0.05—0.15 (0.002—0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance		0.050—0.089 (0.002—0.004)	0.15 (0.006)
	Total runout		0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	D12B1, D13B2, D13B3 IN	35.472 (1.3965)	—
		EX	35.693 (1.4052)	—
		D15B3, D15B4 IN	36.603 (1.4411)	—
		EX	36.747 (1.4467)	—
		D15B2 IN	36.603 (1.4411)	—
		EX	36.750 (1.4468)	—
		D16A7 IN	36.782 (1.4481)	—
Valve	Valve clearance	IN	0.18—0.22 (0.007—0.009)	—
		EX	0.23—0.27 (0.009—0.011)	—
	Valve stem O.D.	IN	5.48—5.49 (0.2157—0.2161)	5.45 (0.2183)
		EX	5.45—5.46 (0.2146—0.2150)	5.42 (0.2134)
	Stem-to-guide clearance	IN	0.02—0.05 (0.001—0.002)	0.08 (0.003)
		EX	0.05—0.08 (0.002—0.003)	0.11 (0.004)
Valve seat	Width	IN	0.85—1.15 (0.033—0.045)	1.6 (0.063)
		EX	1.25—1.55 (0.049—0.061)	2.0 (0.079)
	Stem installed height	IN	46.985—47.455 (1.8498—1.8683)	47.705 (1.8781)
		EX	48.965—49.435 (1.9278—1.9463)	49.685 (1.9561)
Valve spring	Free length	D12B1, D13B2, D13B3 IN	47.97 (1.889)	—
		EX	49.19 (1.937)	—
		D15B2, D15B3, D16A7 IN	48.58 (1.913)	—
		EX	49.19 (1.937)	—
		D15B4 IN	48.58 (1.913)	—
		EX	48.49 (1.909)	—
		D15B7 IN	51.90 (2.043)* ¹	—
		EX	51.88 (2.043)* ²	—
Valve guide	I.D.	IN	5.51—5.53 (0.217—0.218)	5.60 (0.220)
		EX	5.51—5.53 (0.217—0.218)	5.60 (0.220)
	Installed height	IN	15.95—16.45 (0.628—0.648)	—
		EX	15.95—16.45 (0.628—0.648)	—
Rocker arm	Arm-to-shaft clearance	IN	0.017—0.050 (0.0007—0.0020)	0.08 (0.003)
		EX	0.018—0.054 (0.0007—0.0021)	0.08 (0.003)

*1: NIHON HATSUJO manufactured valve spring, *2: CHUO HATSUJO manufactured valve spring.

Cylinder Head/Valve Train — Section 6
D15Z, D16Z Engine

	MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Com- pression	250 min ⁻¹ (rpm) and wide open throttle kPa (kg/cm ² , psi)	Nominal Minimum Maximum variation		1,300 (13.0,184) 1,150 (11.5,166) 200 (2.0,28)	
Cylinder head	Warpage Height			— 92.95—93.05 (3.659—3.663)	0.05 (0.002) —
Camshaft	End play			0.05—0.15 (0.002—0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance			0.050—0.089 (0.002—0.004)	0.15 (0.006)
	Total runout			0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	D15Z1	IN Primary	38.427 (1.5129)	—
			EX Secondary	32.292 (1.2713)	—
			EX	37.997 (1.4959)	—
		D16Z6, D16Z7	IN Primary	35.900 (1.4134)	—
			EX Mid	38.107 (1.5003)	—
Valve	Valve clearance		IN	0.18—0.22 (0.007—0.009)	—
			EX	0.23—0.27 (0.009—0.011)	—
	Valve stem O.D.		IN	5.48—5.49 (0.2157—0.2161)	5.45 (0.2183)
			EX	5.45—5.46 (0.2146—0.2150)	5.42 (0.2134)
	Stem-to-guide clearance		IN	0.02—0.05 (0.001—0.002)	0.08 (0.003)
			EX	0.05—0.08 (0.002—0.003)	0.12 (0.005)
Valve seat	Width		IN	0.85—1.15 (0.033—0.045)	1.6 (0.063)
			EX	1.25—1.55 (0.049—0.061)	2.0 (0.079)
	Stem installed height		IN	53.165—53.635 (2.0931—2.1116)	53.885 (2.1215)
			EX	53.165—53.635 (2.0931—2.1116)	53.885 (2.1215)
Valve spring	Free length	D15Z1	IN	54.78 (2.157)	—
			EX	58.23 (2.293) *1	—
				58.26 (2.294) *2	—
		D16Z6, D16Z7	IN	57.97 (2.282)	—
			EX	58.41 (2.300)	—
Valve guide	I.D.		IN	5.51—5.53 (0.217—0.218)	5.60 (0.220)
			EX	5.51—5.53 (0.217—0.218)	5.60 (0.220)
	Installed height		IN	17.85—18.35 (0.703—0.722)	—
			EX	18.65—19.15 (0.734—0.754)	—
Rocker arm	Arm-to-shaft clearance		IN	0.017—0.050 (0.0007—0.0020)	0.08 (0.003)
			EX	0.018—0.054 (0.0007—0.0021)	0.08 (0.003)

*1: NIHON HATSUJO manufactured valve spring, *2: CHUO HATSUJO manufactured valve spring.

Standards and Service Limits

Cylinder Head/Valve Train — Section 6 D16A8, D16A9, Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Com- pression	250 min ⁻¹ (rpm) and wide open throttle kPa (kg/cm ² , psi)	Nominal Minimum Maximum variation	1,350 (13.5,192) 950 (9.5,135) 200 (2,28)	
Cylinder head	Warpage Height		— 131.95—132.05 (5.195—5.199)	0.05 (0.002) —
Camshaft	End play Camshaft-to-holder oil clearance Total runout Cam lobe height	IN EX	0.05—0.15 (0.002—0.006) 0.050—0.089 (0.002—0.004) 0.03 (0.001) max. 33.021 (1.3000) 32.382 (1.2749)	0.5 (0.02) 0.15 (0.006) 0.04 (0.002) — —
Valve	Valve clearance Valve stem O.D. Stem-to-guide clearance	IN EX IN EX IN EX	0.13—0.17 (0.005—0.007)* 0.15—0.19 (0.006—0.008)* 6.58—6.59 (0.2591—0.2594) 6.55—6.56 (0.2579—0.2583) 0.02—0.05 (0.001—0.002) 0.05—0.08 (0.002—0.003)	— — 6.55 (0.2579) 6.52 (0.2567) 0.08 (0.003) 0.11 (0.004)
Valve seat	Width Stem installed height	IN EX IN EX	1.25—1.55 (0.049—0.061) 1.25—1.55 (0.049—0.061) 45.545—46.015 (1.793—1.812) 44.735—45.205 (1.761—1.780)	2.0 (0.079) 2.0 (0.079) 46.265 (1.821) 45.455 (1.790)
Valve spring	Free length	IN EX	47.49 (1.870) 46.89 (1.846)	— —
Valve guide	I.D. Installed height	IN and EX IN and EX	6.61—6.63 (0.260—0.261) 19.15—19.65 (0.754—0.774)	6.65 (0.262) —

*Measuring point between camshaft and rocker arm

Cylinder Head/Valve Train — Section 6
B16A Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Com- pression	250 min ⁻¹ (rpm) and wide open throttle kPa (kg/cm ² , psi)	Nominal Minimum Maximum variation	1,300 (13.0,184) 950 (9.5,135) 200 (2,28)	
Cylinder head	Warpage Height		— 141.95—142.05 (5.589—5.593)	0.05 (0.002) —
Camshaft	End play		0.05—0.15 (0.002—0.006)	0.5 (0.02)
	Camshaft-to-holder oil clearance		0.050—0.089 (0.002—0.004)	0.15 (0.006)
	Total runout		0.03 (0.001) max.	0.04 (0.002)
	Cam lobe height	IN Primary	33.088 (1.3027)	—
		Mid	36.267 (1.4278)	—
		Secondary	34.978 (1.3771)	—
		EX Primary	32.785 (1.2907)	—
		Mid	35.720 (1.4063)	—
		Secondary	34.691 (1.3658)	—
Valve	Valve clearance	IN	0.15—0.19 (0.006—0.007)*	—
		EX	0.17—0.21 (0.007—0.008)*	—
	Valve stem O.D.	IN	5.475—5.485 (0.2156—0.2159)	5.445 (0.2144)
		EX	5.450—5.460 (0.2146—0.2150)	5.420 (0.2134)
	Stem-to-guide clearance	IN	0.025—0.055 (0.0010—0.0022)	0.08 (0.003)
		EX	0.050—0.080 (0.0020—0.0031)	0.11 (0.004)
Valve seat	Width	IN	1.25—1.55 (0.049—0.061)	2.0 (0.079)
		EX	1.25—1.55 (0.049—0.061)	2.0 (0.079)
	Stem installed height	IN	37.465—37.935 (1.4750—1.4935)	38.185 (1.5033)
		EX	37.165—37.635 (1.4632—1.4817)	37.885 (1.4915)
Valve spring	Free length	IN OUTER	40.92 (1.611) *1	—
			40.91 (1.611) *2	—
		INNER	36.71 (1.445)	—
		EX	41.96 (1.652)*1	—
			41.94 (1.651)*2	—
Valve guide	I.D.	IN	5.51—5.53 (0.217—0.218)	5.55 (0.219)
		EX	5.51—5.53 (0.217—0.218)	5.55 (0.219)
	Installed height	IN	12.55—13.05 (0.494—0.514)	—
		EX	12.55—13.05 (0.494—0.514)	—
Rocker arm.	Arm-to-shaft clearance	IN	0.025—0.052 (0.0009—0.0020)	0.08 (0.003)
		EX	0.025—0.052 (0.0009—0.0020)	0.08 (0.003)

*Measuring point between camshaft and rocker arm.

*1: NIHON HATSUJO manufactured valve spring. *2: CHUO HATSUJO manufactured valve spring.

Standard and Service Limits

Engine Block — Section 7 D12B, D13B, D15B, D15Z, D16A, D16Z Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT	
Cylinder block	Wapage of deck surface		0.07 (0.003) max.	0.10 (0.004)	
	Bore diameter		75.00—75.02 (2.953—2.954)	75.07 (2.956)	
	Bore taper		—	0.05 (0.002)	
	Reboring limit		—	0.5 (0.02)	
Piston	Skirt O.D.	At 16 mm (0.6 in) from bottom of skirt	74.980—74.990 (2.9520—2.9524)	74.970 (2.9516)	
	Clearance in cylinder		0.010—0.040 (0.0004—0.0016)	0.05 (0.002)	
	Groove width (for ring)				
	Top	D15Z1	1.020—1.030 (0.0402—0.0406)	1.05 (0.041)	
		Except D15Z1	1.220—1.230 (0.0480—0.0484)	1.25 (0.049)	
	Second	D15Z1	1.220—1.230 (0.0480—0.0484)	1.25 (0.049)	
		Except D15Z1	1.520—1.530 (0.0598—0.0602)	1.55 (0.061)	
	Oil	D15Z1, D16Z6, D16Z7	2.805—2.820 (0.1104—0.1110)	2.85 (0.112)	
		D15B2, D15B4, D15B7, D16A7, D16A8			
		D16A9, D12B1, D13B2, D13B3, D15B3	2.805—2.825 (0.1104—0.1112)	2.85 (0.112)	
		4.005—4.025 (0.1577—0.1585)	4.05 (0.159)		
Piston ring	Ring-to-groove clearance	Top	D15Z1	0.035—0.060 (0.0014—0.0024)	0.13 (0.005)
			Except D15Z1	0.030—0.055 (0.0012—0.0022)* ¹	0.13 (0.005)
				0.030—0.060 (0.0012—0.0024)* ^{2,3}	0.13 (0.005)
		Second	D15Z1	0.035—0.060 (0.0014—0.0024)* ¹	0.13 (0.005)
				0.030—0.055 (0.0012—0.0022)* ²	0.13 (0.005)
			Except D15Z1	0.030—0.055 (0.0012—0.0022)	0.13 (0.005)
	Ring end gap	Top		0.15—0.30 (0.006—0.012)	0.60 (0.024)
		Second		0.30—0.45 (0.012—0.018)	0.70 (0.028)
		Oil	D15Z1	0.20—0.50 (0.008—0.020)* ¹	0.70 (0.028)
				0.20—0.70 (0.008—0.028)* ²	0.80 (0.031)
			D16Z6	0.20—0.50 (0.008—0.020)* ¹	0.70 (0.028)
				0.20—0.80 (0.008—0.031)* ²	0.90 (0.035)
			D16Z7	0.20—0.50 (0.008—0.020)	0.70 (0.028)
			Except D15Z1, D16Z6, D16Z7	0.20—0.80 (0.008—0.031)	0.90 (0.035)
Piston Pin	O.D.		18.994—19.000 (0.7478—0.7480)	—	
	Pin-to-piston clearance		0.010—0.022 (0.0004—0.0009)	—	
Connecting rod	Pin-to-rod interference		0.014—0.040 (0.0006—0.0016)	—	
	Small end bore diameter		18.96—18.98 (0.746—0.747)	—	
	Large end bore diameter	Nominal	D12B, D13B	43.0 (1.69)	—
			D15B, D15Z	45.0 (1.77)	—
			D16A, D16Z	48.0 (1.89)	—
	End play installed on crankshaft		0.15—0.30 (0.006—0.012)	0.40 (0.016)	
Small end bore-to-large end bore parallelism		0.12 (0.005)/100 max.	0.15 (0.006)/100		
Crankshaft	Main journal diameter	D16A, D16Z	54.976—55.000 (2.1644—2.1654)	—	
		D12B, D13B, D15B, D15Z	44.976—45.000 (1.7707—1.7717)	—	
	Rod journal diameter	D12B, D13B	39.976—40.000 (1.5739—1.5748)	—	
		D15B, D15Z	41.976—42.000 (1.6526—1.6535)	—	
		D16A, D16Z	44.976—45.000 (1.7707—1.7717)	—	
	Taper		0.0025 (0.00010) max.	0.005 (0.0002)	
	Out-of round		0.0025 (0.00010) max.	0.005 (0.0002)	
	End play		0.10—0.35 (0.004—0.014)	0.45 (0.018)	
	Total runout	0.03 (0.001) max.	0.04 (0.002)		
Bearings	Main bearing-to-journal Oil clearance				
	No. 1 and 5 journals		0.018—0.036 (0.0007—0.0014)	0.05 (0.002)	
	No. 2, 3 and 4 journals		0.024—0.042 (0.0009—0.0017)	0.05 (0.002)	
	Rod bearing-to-journal oil clearance		0.020—0.038 (0.0008—0.0014)	0.05 (0.002)	

*1: TEIKOKU PISTON RING manufactured piston ring.

*2: RIKEN manufactured piston ring.

*3: ALLIED RING CORP manufactured piston ring.

Engine Block — Section 7
B16A Engine

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Cylinder block	Warpage of deck surface		0.05 (0.002)	0.08 (0.03)
	Bore diameter	X	81.000—81.020 (3.1890—3.1898)	} 81.070 (3.1917)
		Y	81.000—81.015 (3.1890—3.1896)	
	Bore taper		—	0.05 (0.002)
	Reboring limit		—	0.50 (0.020)
Piston	Skirt O.D. At 15 mm (0.59 in) from bottom of skirt		80.980—80.990 (3.1882—3.1886)	80.970 (3.1878)
	Clearance in cylinder		0.010—0.035 (0.0004—0.0014)	0.05 (0.002)
	Ring groove width	Top	1.030—1.040 (0.0406—0.0409)	1.060 (0.0417)
		2nd	1.230—1.240 (0.0484—0.0488)	1.260 (0.0496)
Piston ring		Oil	2.805—2.820 (0.1104—0.1110)	2.840 (0.1118)
	Piston-to-ring clearance	Top	0.045—0.070 (0.0018—0.0028)	0.13 (0.005)
		2nd	0.040—0.065 (0.0016—0.0026)	0.13 (0.005)
	Ring end gap	Top	0.20—0.35 (0.008—0.014)	0.60 (0.024)
Piston pin		2nd	0.40—0.55 (0.016—0.022)	0.70 (0.028)
		Oil	0.20—0.50 (0.008—0.020)	0.80 (0.031)
	Diameter		20.994—21.000 (0.8265—0.8268)	—
	Pin-to-piston clearance		0.010—0.022 (0.0004—0.0009)	—
Connecting rod	Pin-to-rod interference		0.013—0.032 (0.0005—0.0013)	—
	Small end bore diameter		20.968—20.981 (0.8255—0.8260)	—
	Large end bore diameter	Nominal	48.0 (1.89)	—
	End play installed on crankshaft		0.15—0.30 (0.006—0.012)	0.40 (0.016)
Crankshaft	Main journal diameter		54.976—55.000 (2.1644—2.1654)	—
	No. 1, 2, 4 and 5 journals		54.970—54.994 (2.1642—2.1651)	—
	No. 3 journal		44.976—45.000 (1.7707—1.7717)	—
	Rod journal diameter		0.005 (0.0002) max.	0.010 (0.0004)
	Journal taper		0.004 (0.0002) max.	0.006 (0.0002)
	Journal out of round		0.10—0.35 (0.0039—0.0138)	0.045 (0.0018)
	End play		0.020 (0.0008) max.	0.030 (0.0012)
Bearing	Total runout			
	Main bearing-to-journal oil clearance		0.024—0.042 (0.0009—0.0017)	0.050 (0.0020)
	No. 1, 2, 4 and 5 journals		0.030—0.048 (0.0012—0.0019)	0.060 (0.0024)
	No. 3 journal		0.032—0.050 (0.0013—0.0020)	0.060 (0.0024)
	Rod bearing-to-journal oil clearance			

Standards and Service Limits

Engine Lubrication — Section 8 D12B, D13B, D15B, D15Z, D16A Engine

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US qt, Imp qt) D12B, D13B, D15B, D15Z, D16A7 D16A8, D16A9	4.0 (4.2, 3.5) for engine overhaul 3.3 (3.5, 2.9) for oil change, including filter 3.0 (3.2, 2.6) for oil change, without filter 4.3 (4.5, 3.8) for engine overhaul 3.5 (3.7, 3.1) for oil change, including filter 3.2 (3.4, 2.8) for oil change, without filter	
Oil pump	Displacement D12B, D13B, D15B, D15Z, D16A7 ℓ (US qt, Imp qt)/min @min ⁻¹ (rpm) D16A8, D16A9	45 (48, 40) @6,300 63 (67, 55) @6,800	
	Inner-to-outer rotor clearance	0.020—0.140 (0.0008—0.0055)	0.20 (0.008)
	Pump body-to-outer rotor clearance	0.100—0.175 (0.0039—0.0069)	0.20 (0.008)
	Pump body-to-rotor axial clearance	0.030—0.080 (0.0012—0.0031)	0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F) kPa (kg/cm ² , psi) at idle at 3,000 min ⁻¹ (rpm)	70 (0.7, 10) min. 350 (3.5, 50) min.	

Engine Lubrication — Section 8 B16A Engine

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Engine oil	Capacity ℓ (US qt, Imp qt)	4.8 (5.1, 4.2) For engine disassembly 4.0 (4.2, 3.5) For oil change, including oil filter	
Oil pump	Displacement ℓ (US qt, Imp qt)/min@min ⁻¹ (rpm)	73 (77, 64) @7,800	
	inner-to-outer rotor radial clearance	0.04—0.16 (0.002—0.006)	0.20 (0.008)
	Pump body-to-rotor radial clearance	0.10—0.19 (0.004—0.007)	0.20 (0.008)
	Pump body-to-rotor axial clearance	0.02—0.07 (0.001—0.003)	0.15 (0.006)
Relief valve	Pressure setting 80°C (176°F) kPa (kg/cm ²) at idle at 3,000 min ⁻¹ (rpm)	70 (0.7, 10) min. 350 (3.5, 50) min.	

Cooling — Section 10

	MEASUREMENT		STANDARD (NEW)
Radiator	Coolant capacity ℓ (US qt, Imp qt) including engine, heater, cooling line and reservoir reservoir capacity: 0.4 ℓ (0.42 US qt, 0.35 Imp qt)	M/T	B16A2 4.8 (5.1, 4.2) for overhaul 3.9 (4.1, 3.4) for coolant change Except B16A2, D15Z1 4.5 (4.8, 4.0) for overhaul 3.6 (3.8, 3.2) for coolant change D15Z1 4.4 (4.6, 3.9) for overhaul 3.5 (3.7, 3.1) for coolant change
		A/T	D12B1, D15B2, D15B3, D15B4 4.4 (4.6, 3.9) for overhaul 3.5 (3.7, 3.1) for coolant change D16A7, D16A8, D16A9, D16Z6, D16Z7 4.7 (5.0, 4.1) for overhaul 3.8 (4.0, 3.3) for coolant change
Radiator cap	Opening pressure kPa (kg/cm ² , psi)		95–125 (0.95–1.25, 14–18)
Thermostat	Start to opening °C (°F)	D15Z1	80–84 (176–183)
		Except D15Z1	76–80 (169–176)
	Fully open °C (°F)	D15Z1	95 (203)
		Except D15Z1	90 (194)
	Valve lift at fully open		8.0 (0.31) min.
Water pump	Displacement	D12B, D13B, D15B,	125 (132, 110) @6,000
	ℓ (US qt, Imp qt)/min	D15Z, D16Z, D16A7	
	@min ⁻¹ (rpm)	D16A8, D16A9 B16A	112 (118, 99) @6,000 140 (148, 123) @6,000
Cooling fan	Thermoswitch "ON" temperature	°C (°F)	91.0–95.0 (196–203)
	Thermoswitch "OFF" temperature	°C (°F)	Subtract 3–8 (5–15) from actual "ON" temperature.

Standards and Service Limits

Fuel and Emission (Carbureted Engine) — Section 11

	MEASUREMENT	STANDARD (NEW)	
Fuel pump	Displacement cc (US oz, Imp oz)/min	760 (25.7, 26.8) min.	
	Delivery pressure kPa (kg/cm ² , psi)	9–14 (0.09–0.14, 1–2)	
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)	
Engine	Idle speed min ⁻¹ (rpm) with headlight and cooling fan off D12B1, D15B3 D13B D15B4	M/T	A/T in N or P position
		800 ± 50	1,000 ± 50
		800 ± 50	—
		650 ± 50	720 ± 50
	Idle CO %	With CATA: 0.5 max. Without CATA: 1.0 max.	

Fuel and Emission (PGM-FI Engine) — Section 11

	MEASUREMENT	STANDARD (NEW)	
Fuel pump	Displacement cc (US oz, Imp oz) in 10 seconds	222 (7.5, 7.8) min.	
	Relief valve opening pressure kPa (kg/cm ² , psi)	450–600 (4.5–6.0, 64–85)	
Pressure regulator	Pressure with regulator vacuum hose disconnected kPa (kg/cm ² , psi)	280–330 (2.8–3.3, 40–47)	
Fuel tank	Capacity ℓ (US gal, Imp gal)	45 (11.9, 9.9)	
Engine	Idle speed min ⁻¹ (rpm) with headlight and cooling fan off D15B2 D15B7 D16A, D16Z D15B7 D15Z1 B16A2	M/T	A/T in N or P position
		810 ± 50	810 ± 50
		670 ± 50	700 ± 50
		750 ± 50	750 ± 50
		670 ± 50	700 ± 50
		600 ± 50	—
		750 ± 50	—
	Idle CO %	With CATA: 0.1 max, Without CATA: 2.0 max	

Clutch — Section 12

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch pedal	Pedal height to floor	164 (6.4)	—
	Stroke	135 (5.3)	—
	Pedal play	12–21 (0.5–0.8)	—
	Disengagement height to floor to carpet	83 (3.3) 55 (2.2) min. Reference	— —
Flywheel	Clutch surface runout	0.05 (0.002) max.	0.15 (0.006)
Clutch disc	Rivet head depth	1.3 (0.06) min.	0.2 (0.008)
	Surface runout	0.8 (0.03) max.	1.0 (0.04)
	Thickness	8.4–9.1 (0.33–0.36)	6.0 (0.24)
Clutch cover	Pressure plate warpage	0.03 (0.001) max.	0.15 (0.006)

2WD Manual Transmission S20 — Section 13

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity	ℓ (US qt, Imp qt)	1.8 (1.9, 1.6) for oil change 1.9 (2.0, 1.7) for overhaul	
Mainshaft	End play		0.11—0.18 (0.004—0.007)	Adjust with shim
	Diameter of ball bearing contact area (Clutch housing side)		25.977—25.990 (1.0227—1.0232)	25.92 (1.020)
	Diameter of 3rd gear contact area		33.984—34.000 (1.3380—1.3386)	33.93 (1.336)
	Diameter of 4th, 5th gear contact area		26.980—26.993 (1.0622—1.0627)	26.93 (1.060)
	Diameter of ball bearing contact area (Transmission housing side)		21.987—22.000 (0.8656—0.8661)	21.93 (0.863)
	Runout		0.02 (0.0008) max.	0.05 (0.002)
Mainshaft 3rd and 4th gears	I.D.		39.009—39.025 (1.5358—1.5364)	39.07 (1.538)
	End play	3rd	0.06—0.21 (0.0024—0.0083)	0.33 (0.013)
		4th	0.06—0.19 (0.0024—0.0075)	0.31 (0.012)
	Thickness	3rd	30.22—30.27 (1.1898—1.1917)	30.15 (1.187)
		4th	30.12—30.17 (1.1858—1.1878)	30.05 (1.183)
Mainshaft 5th gear	I.D.		37.009—37.025 (1.4570—1.4577)	37.07 (1.459)
	End play		0.06—0.19 (0.0024—0.0075)	0.31 (0.012)
	Thickness		28.42—28.47 (1.1189—1.1209)	28.35 (1.116)
Counter-shaft	End play		0.17—0.38 (0.0067—0.0150)	0.53 (0.021)
	Diameter of needle bearing contact area		30.000—30.015 (1.1811—1.1817)	29.95 (1.179)
	Diameter of ball bearing contact area		24.980—24.993 (0.9835—0.9840)	24.93 (0.981)
	Diameter of 1st gear contact area		35.984—36.000 (1.4167—1.4173)	35.93 (1.415)
	Runout		0.02 (0.0008) max.	0.05 (0.002)
Counter-shaft 1st gear	I.D.		41.009—41.025 (1.6145—1.6152)	41.07 (1.617)
	End play (When tightened to the specified torque)		0.03—0.10 (0.0012—0.0039)	0.22 (0.009)
	Thickness		30.41—30.44 (1.1972—1.1984)	30.36 (1.195)
Counter-shaft 2nd gear	I.D.		44.009—44.025 (1.7326—1.7333)	44.07 (1.735)
	End play (When tightened to the specified torque)		0.03—0.11 (0.0012—0.0043)	0.23 (0.009)
	Thickness		31.92—31.97 (1.2567—1.2587)	31.85 (1.254)
Spacer collar (Countershaft 2nd gear)	I.D.		32.988—32.998 (1.2987—1.2991)	33.04 (1.301)
	O.D.		38.989—39.000 (1.5350—1.5354)	38.93 (1.533)
	Length		32.03—32.06 (1.2610—1.2622)	32.01 (1.260)
Spacer collar (Mainshaft 4th and 5th gears)	I.D.		27.002—27.012 (1.0631—1.0635)	27.06 (1.065)
	O.D.	4th	33.989—34.000 (1.3381—1.3386)	33.93 (1.336)
		5th	31.989—32.000 (1.2594—1.2598)	31.93 (1.257)
	Length	4th	22.83—22.86 (0.8988—0.9000)	22.81 (0.898)
		5th	23.53—23.56 (0.9264—0.9276)	23.51 (0.926)
Reverse Idler gear	I.D.		15.016—15.043 (0.5911—0.5922)	15.08 (0.594)
	Gear-to-reverse gear shaft clearance		0.032—0.077 (0.0013—0.0030)	0.14 (0.006)
Synchro ring	Ring-to-gear clearance (Ring pushed against gear)		0.73—1.18 (0.029—0.046)	0.4 (0.016)
Shift fork	Shift fork finger thickness		6.4—6.5 (0.252—0.255)	—
	Fork-to-synchro sleeve clearance		0.25—0.45 (0.0098—0.0177)	0.8 (0.03)
Reverse shift fork	Shift fork pawl groove width		12.7—13.0 (0.500—0.512)	—
	Fork-to-reverse idler gear clearance		0.5—1.1 (0.020—0.043)	1.8 (0.071)
	Groove width		7.05—7.25 (0.278—0.285)	—
	Fork-to-5th/reverse shift piece pin clearance		0.05—0.35 (0.002—0.014)	0.5 (0.02)
Shift arm A	Diameter of shift rod contact area		13.005—13.130 (0.5120—0.5169)	—
	Shift arm A-to-shift rod clearance		0.005—0.230 (0.0002—0.0091)	0.35 (0.0138)
Shift arm B	Diameter of shift arm shaft contact area		13.973—14.000 (0.5501—0.5512)	—
	Shift arm B-to-shift arm shaft clearance		0.013—0.070 (0.0005—0.0028)	0.16 (0.0063)
	Shift arm B-to-shift piece clearance		0.2—0.5 (0.0079—0.0197)	0.62 (0.0244)
	Shift piece diameter of shift fork contact area		12.9—13.0 (0.5079—0.5118)	12.78 (0.5031)

Standards and Service Limits

2WD Manual Transmission Y21 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (U.S.qt., Imp.qt.)	2.3 (2.4, 2.0) at oil change 2.4 (2.5, 2.1) at assembly	
Mainshaft	End play Diameter of ball bearing contact area (Clutch housing side) Diameter of third gear contact area Diameter of ball bearing contact area (Transmission housing side) Runout	0.11—0.18 (0.004—0.007) 27.977—27.990 (1.101—1.102) 37.984—38.000 (1.495—1.496) 27.987—28.000 (1.1018—1.1024) 0.02 (0.0008) max.	Adjust with shim 27.93 (1.10) 37.93 (1.493) 27.94 (1.10) 0.05 (0.002)
Mainshaft 3rd and 4th gears	I.D. End play Thickness 3rd 4th	43.009—43.025 (1.6933—1.6939) 0.06—0.21 (0.0024—0.0083) 34.92—34.97 (1.3748—1.3768) 31.42—31.47 (1.2370—1.2390)	43.08 (1.696) 0.3 (0.013) 34.3 (1.350) 31.3 (1.232)
Mainshaft 5th gear	I.D. End play Thickness	43.009—43.025 (1.6933—1.6939) 0.06—0.21 (0.0024—0.0083) 31.42—31.47 (1.237—1.239)	43.08 (1.696) 0.3 (0.012) 31.3 (1.232)
Counter- shaft	Diameter of needle bearing contact area Diameter of ball bearing contact area Diameter of low gear contact area Runout	33.000—33.015 (1.299—1.300) 24.980—24.993 (0.9835—0.9840) 36.984—37.000 (1.4561—1.4567) 0.02 (0.0008) max.	32.95 (1.297) 24.94 (0.982) 36.93 (1.454) 0.05 (0.002)
Counter- shaft 1st gear	I.D. End play	42.009—42.025 (1.6539—1.6545) 0.04—0.12 (0.0016—0.0047)	42.08 (1.657) Adjust with shim
Counter- shaft 2nd gear	I.D. End play Thickness	47.009—47.025 (1.8507—1.8514) 0.05—0.12 (0.0020—0.0047) 28.92—28.97 (1.1386—1.1405)	47.08 (1.854) Adjust with collar 28.8 (1.134)
Spacer collar (Counter- shaft 2nd gear)	I.D. O.D. Length A B	36.521—36.531 (1.4378—1.4382) 41.989—42.000 (1.6531—1.6535) 29.02—29.04 (1.1425—1.1433) 29.07—29.09 (1.1444—1.1453)	36.541 (1.439) 41.94 (1.651) — —
Spacer collar (Mainshaft 4th and 5th gears)	I.D. O.D. Length A B	31.002—31.012 (1.2205—1.2209) 36.989—37.000 (1.4563—1.4567) 56.45—56.55 (2.2224—2.2264) 26.03—26.08 (1.0248—1.0268)	31.06 (1.223) 36.94 (1.454) — —

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2WD Manual Transmission Y21 (cont'd) — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Reverse idler gear	I.D. Gear-to-reverse gear shaft clearance	20.016–20.043 (0.7880–0.7891) 0.036–0.084 (0.0014–0.0033)	20.09 (0.7909) 0.16 (0.006)
Synchro ring	Ring-to-gear clearance (Ring pushed against gear)	0.85–1.10 (0.033–0.043)	0.4 (0.016)
Dual cone synchro ring	Clearance (Ring pushed against gear) Outer synchro ring-to-gear Inner synchro ring-to-gear Outer synchro ring-to-synchro cone	0.95–1.68 (0.037–0.066) 0.5–1.0 (0.02–0.04) 0.5–1.0 (0.02–0.04)	0.6 (0.024) 0.3 (0.01) 0.3 (0.01)
Shift fork	Shift fork finger thickness Fork-to-synchro sleeve clearance	7.4–7.5 (0.291–0.295) 0.45–0.65 (0.018–0.026)	— 1.0 (0.039)
Reverse shift fork	Shift fork pawl groove width Fork-to-reverse idler gear clearance "L" groove width at fifth gear side at reverse gear side Fork-to-fifth/reverse shift piece pin clearance at fifth gear side at reverse gear side	13.0–13.3 (0.511–0.524) 0.5–1.1 (0.020–0.043) 7.40–7.70 (0.291–0.303) 7.05–7.25 (0.278–0.285) 0.4–0.9 (0.016–0.035) 0.05–0.45 (0.0020–0.018)	— 1.8 (0.07) — — — —
Shift arm	Groove width of change piece contact area Shift arm-to-change piece clearance Groove width of shift piece contact area Shift rod guide-to-shift arm clearance	11.8–12.0 (0.4646–0.4724) 0.05–0.35 (0.002–0.014) 7.9–8.0 (0.311–0.315) 0.10–0.30 (0.004–0.012)	— 0.80 (0.031) — 0.60 (0.024)
Shift piece	I.D. Shift piece-to-shaft clearance Diameter of shift fork contact area Diameter of shift arm contact area Shift piece-to-shift fork clearance	14.000–14.068 (0.551–0.554) 0.011–0.092 (0.0004–0.0036) 11.90–12.00 (0.469–0.472) 8.1–8.2 (0.319–0.323) 0.20–0.50 (0.008–0.020)	— 0.150 (0.0059) — — 0.80 (0.032)
Select arm	Groove width of change piece contact area Arm-to-change piece clearance Interlock width of select arm Arm-to-interlock clearance	11.90–12.00 (0.469–0.472) 0.05–0.25 (0.002–0.010) 10.05–10.15 (0.396–0.400) 0.05–0.25 (0.002–0.010)	— 0.50 (0.020) — 0.50 (0.020)

Standards and Service Limits

4WD Manual Transmission S22 — Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission oil	Capacity ℓ (US qt, Imp qt)	2.3 (2.4, 2.0) for oil change 2.4 (2.5, 2.1) for overhaul	
Mainshaft	End play Diameter of 4th/5th spacer collar contact area Diameter of 3rd gear contact area Diameter of 63/28C ball bearing contact area Diameter of 6306/25 ball bearing contact area Runout	0.11–0.18 (0.004–0.007) 27.987–28.000 (1.1018–1.1024) 34.984–35.000 (1.3773–1.3780) 27.977–27.990 (1.1015–1.1020) 24.987–25.000 (0.9837–0.9843) 0.02 (0.001) max.	Adjust with shim 27.93 (1.100) 34.93 (1.375) 27.92 (1.099) 24.93 (0.981) 0.05 (0.002)
Mainshaft 3rd gear	I.D. End play Thickness	40.009–40.025 (1.5752–1.5758) 0.06–0.21 (0.002–0.008) 32.42–32.47 (1.276–1.278)	40.07 (1.578) 0.3 (0.01) 32.3 (1.27)
Mainshaft 4th gear	I.D. End play Thickness	40.009–40.025 (1.5752–1.5758) 0.06–0.21 (0.002–0.008) 30.92–30.97 (1.217–1.219)	40.07 (1.578) 0.3 (0.01) 30.8 (1.21)
Mainshaft 5th gear	I.D. End play Thickness	40.009–40.025 (1.5752–1.5758) 0.06–0.21 (0.002–0.008) 30.42–30.47 (1.198–1.200)	40.07 (1.578) 0.3 (0.01) 30.3 (1.19)
Counter-shaft	End play Diameter of needle bearing contact area Diameter of ball bearing contact area Diameter of super-low 3 gear contact area Runout	0.05–0.30 (0.002–0.012) 29.000–29.015 (1.1417–1.1423) 24.987–25.000 (0.9837–0.9843) 30.464–30.480 (1.1994–1.2000) 0.02 (0.001) max.	0.5 (0.02) 28.94 (1.139) 24.93 (0.981) 30.41 (1.197) 0.05 (0.002)
Counter-shaft 1st gear	I.D. End play Thickness	50.009–50.025 (1.9689–1.9695) 0.03–0.08 (0.001–0.003) 32.95–33.00 (1.297–1.299)	50.07 (1.971) 0.18 (0.007) 32.83 (1.293)
Counter-shaft 2nd gear	I.D. End play Thickness	50.009–50.025 (1.989–1.9695) 0.03–0.08 (0.001–0.003) 32.92–32.97 (1.296–1.298)	50.07 (1.971) 0.18 (0.007) 32.8 (1.29)
Mainshaft 4th gear & 5th gear distance collar	I.D. O.D. Length	28.002–28.012 (1.1024–1.1028) 34.989–35.000 (1.3775–1.3780) 26.03–26.08 (1.025–1.027)	28.06 (1.105) 34.93 (1.375) 26.01 (1.024)
Counter-shaft 2nd gear distance collar	I.D. O.D. Length	36.48–36.49 (1.436–1.437) 43.989–44.000 (1.7318–1.7323) 28.96–29.40 (1.140–1.157)	36.54 (1.439) 43.93 (1.730) Adjust with collar.
Reverse idler gear	I.D. Gear to shaft clearance	20.016–20.043 (0.7880–0.7890) 0.036–0.084 (0.0014–0.0033)	20.08 (0.791) 0.14 (0.006)
Super-low 1st shaft	Distance of needle bearing contact area	23.984–23.993 (0.9443–0.9446)	23.93 (0.942)
Super-low 1st gear	I.D. Thickness	30.000–30.013 (1.1811–1.1816) 62.95–63.00 (2.478–2.480)	29.94 (1.179) 62.83 (2.474)
Super-low 2nd shaft	Diameter of spacer collar contact area End play Diameter of ball bearing contact area Runout	22.987–23.000 (0.9050–0.9055) 0.07–0.20 (0.003–0.008) 27.987–28.000 (1.1018–1.1024) 19.987–20.000 (0.7869–0.7874) 0.02 (0.001) max.	22.94 (0.903) Adjust with shim. 27.93 (1.100) 19.93 (0.785) 0.05 (0.002)

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4WD Manual Transmission S22 (cont'd)— Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Super-low 2nd gear	I.D. End play Thickness	37.009–37.025 (1.4570–1.4577) 0.03–0.16 (0.001–0.006) 34.42–34.47 (1.355–1.357)	37.07 (1.459) 0.24 (0.009) 34.3 (1.35)
Super-low 3rd gear	Diameter of needle bearing contact area Width of needle bearing contact area	43.984–44.000 (1.7318–1.7323) 31.03–31.08 (1.222–1.224)	43.93 (1.730) 31.01 (1.221)
Super-low 2nd gear distance collar	I.D. O.D. Width	23.000–23.013 (0.9055–0.9060) 31.989–32.000 (1.2594–1.2598) 31.00–31.03 (1.220–1.222)	23.06 (0.908) 31.93 (1.257) 30.98 (1.220)
Transfer shaft	Diameter of needle bearing contact area Diameter of taper bearing contact area Width of transfer driven bevel gear contact area Diameter of drive bevel gear contact area Runout	27.987–28.000 (1.1018–1.1024) 16.989–17.000 (0.6689–0.6693) 45.01–45.05 (1.772–1.774) 35.002–35.018 (1.3780–1.3787) 0.02 (0.001) max.	27.93 (1.100) 16.93 (0.667) 45.17 (1.778) 34.95 (1.376) 0.05 (0.002)
Transfer driven gear	I.D. Diameter of needle bearing contact area End play Thickness	34.009–34.025 (1.3389–1.3396) 54.000–54.015 (2.1260–2.1266) 0.04–0.13 (0.002–0.005) 44.92–44.97 (1.690–1.770)	34.07 (1.341) 53.94 (2.124) 0.21 (0.008) 44.8 (1.76)
Transfer drive bevel gear	I.D. Diameter of taper bearing contact area	25.000–25.021 (0.9843–0.9851) 35.002–35.018 (1.3780–1.3787)	25.06 (0.987) 34.95 (1.376)
Transfer driven bevel gear	Backlash Diameter of taper bearing contact area	0.10–0.15 (0.004–0.006) 35.002–35.018 (1.3780–1.3787) 27.987–28.000 (1.1018–1.1024)	Adjust with shim. 34.95 (1.376) 27.93 (1.100)
Synchro ring	Ring-to-gear clearance	0.85–1.10 (0.033–0.043)	0.4 (0.02)
1st/2nd shift fork & 3rd/4th shift fork	Synchro sleeve groove width Shift fork-to-synchro sleeve clearance Fork shaft-to-shift fork clearance	7.95–8.05 (0.313–0.317) 0.45–0.65 (0.018–0.026) 0.05–0.45 (0.002–0.018) 0.040–0.138 (0.0016–0.0054)	— 1.0 (0.04) 0.8 (0.03) —
5th shift fork	Synchro sleeve groove width Shift fork-to-synchro sleeve clearance Fork shaft-to-shift fork clearance 5th/Reverse shift fork shaft 1st/2nd shift fork shaft	5.75–5.85 (0.226–0.230) 0.25–0.45 (0.010–0.018) 0.05–0.45 (0.002–0.018) 0.005–0.070 (0.0002–0.0028) 0.440–0.670 (0.0173–0.0264)	— 0.8 (0.03) 0.8 (0.03) — —
Reverse shift fork	Shift fork pawl thickness Shift fork-to-reverse idler gear clearance L-groove width Shift fork-to-5th/Reverse shift piece clearance	13.0–13.3 (0.51–0.52) 0.5–1.1 (0.02–0.04) 7.05–7.25 (0.278–0.285) 0.05–0.35 (0.002–0.014)	— 1.8 (0.07) — 0.5 (0.02)
Shift arm A	Diameter of shift piece contact area Shift arm-to-shift piece clearance I.D. Shift arm-to-shaft clearance	12.9–13.0 (0.508–0.512) 0.2–0.5 (0.01–0.02) 16.000–16.068 (0.6299–0.6326) 0.011–0.092 (0.0004–0.0036)	— 0.7 (0.03) — —

(cont'd)

Standards and Service Limits

4WD Manual Transmission S22 (cont'd)— Section 13

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Shift arm	Diameter of shift arm A contact area	11.9—12.0 (0.469—0.472)	—
	Shift arm-to-shift arm A clearance	0.05—0.25 (0.002—0.010)	0.5 (0.02)
Select arm	Diameter of shift arm A contact area	7.95—8.00 (0.313—0.315)	—
	Select arm-to-shift arm A clearance	0.10—0.25 (0.004—0.010)	0.5 (0.02)
Super-low shift fork	Synchro sleeve groove width	5.75—5.85 (0.226—0.230)	—
	Shift fork-to-synchro sleeve clearance		
	Thrust	0.25—0.45 (0.010—0.018)	0.8 (0.03)
	Radial	0.05—0.45 (0.002—0.018)	0.8 (0.03)
Super-low shift piece A	Shift piece-to-fork shaft clearance	0.040—0.138 (0.0016—0.0054)	—
	Diameter of super-low shift lever contact area	10.1—10.2 (0.398—0.402)	—
	Shift piece-to-super-low shift lever clearance	0.1—0.3 (0.004—0.012)	0.6 (0.02)
Super-low shift piece B	Diameter of super-low shift lever contact area	7.9—8.0 (0.311—0.315)	—
	Shift piece-to-super-low shift lever clearance	0.05—0.25 (0.002—0.010)	0.5 (0.02)
Select fork	Sleeve groove width	8.45—8.55 (0.333—0.337)	—
	Fork-to-sleeve clearance	0.45—0.65 (0.018—0.026)	1.0 (0.04)
	Thrust	0.2—1.1 (0.01—0.04)	1.5 (0.06)
	Radial		

2WD Automatic Transmission M48A— Section 14

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M48A (cont'd)— Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Hydraulic pressure kPa (kg/cm ² , psi) D15B3	Line pressure at 2,000 min ⁻¹ (rpm) N or P position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position		420 (4.2, 60) throttle fully closed	370 (3.7, 53) throttle fully closed
	3rd clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position		850—900 (8.5—9.0, 121—128) throttle more than 1/4 opened	800 (8.0, 114) throttle more than 1/4 opened
	4th clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position			
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) 2 position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min ⁻¹ (rpm) D₄ or D₃ position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)		151—161 (1.51—1.61, 21—23)	146 (1.46, 21)
	Throttle pressure B	Throttle fully closed Throttle fully open	0 800—850 (8.0—8.5, 114—121)	— 750 (7.5, 107)
	Throttle pressure A	Throttle fully closed Throttle fully open	0—5 (0—0.05, 0—1) 515—530 (5.15—5.3, 73—75)	— 510 (5.1, 73)
Hydraulic pressure kPa (kg/cm ² , psi) D16A9	Line pressure at 2,000 min ⁻¹ (rpm) N or P position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position		420 (4.2, 60) throttle fully closed	370 (3.7, 53) throttle fully closed
	3rd clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position		850—900 (8.5—9.0, 121—128) throttle more than 1/4 opened	800 (8.0, 114) throttle more than 1/4 opened
	4th clutch pressure at 2,000 min ⁻¹ (rpm) D₄ position			
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) 2 position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min ⁻¹ (rpm) D₄ or D₃ position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)		151—161 (1.51—1.61, 21—23)	146 (1.46, 21)
	Throttle pressure B	Throttle fully closed Throttle fully open	0 800—850 (8.0—8.5, 114—121)	— 750 (7.5, 107)
	Throttle pressure A	Throttle fully closed Throttle fully open	0—5 (0—0.05, 0—1) 495—510 (4.95—5.1, 70—73)	— 490 (4.9, 70)
Stall speed min ⁻¹ (rpm) (check with car on level ground)			2,300—2,900	—
Clutch	Clutch initial clearance	1st, 2nd	0.65—0.85 (0.026—0.033)	—
		3rd, 4th	0.40—0.60 (0.016—0.024)	—
	Clutch return spring free length	1st	31.0 (1.22)	29.0 (1.14)
		2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
	Clutch disc thickness		1.88—2.00 (0.074—0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55—1.65 (0.061—0.065)	Discoloration
		2nd, 3rd, 4th	1.95—2.05 (0.077—0.081)	Discoloration

(cont'd)

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch	Clutch end plate thickness D12B1, D15B3	MARK 1 MARK 2 MARK 3 MARK 4 MARK 5 MARK 11 MARK 12 MARK 13 MARK 14 MARK 15 MARK 16	2.2—2.3 (0.087—0.091) 2.5—2.6 (0.098—0.102) 2.8—2.9 (0.110—0.114) 3.1—3.2 (0.122—0.126) 3.4—3.5 (0.134—0.138) 2.05—2.15 (0.081—0.085) 2.35—2.45 (0.093—0.096) 2.65—2.75 (0.104—0.108) 2.95—3.05 (0.116—0.120) 3.25—3.35 (0.128—0.132) 3.55—3.65 (0.140—0.144)	Discoloration ↑ ↓ Discoloration
	Clutch end plate thickness D15B4, D16A9	MARK 1 MARK 2 MARK 3 MARK 4 MARK 5 MARK 6 MARK 7 MARK 8 MARK 9 MARK 10 MARK 11 MARK 12 MARK 13	2.3—2.4 (0.091—0.094) 2.4—2.5 (0.094—0.098) 2.5—2.6 (0.098—0.102) 2.6—2.7 (0.102—0.106) 2.7—2.8 (0.106—0.110) 2.8—2.9 (0.110—0.114) 2.9—3.0 (0.114—0.118) 3.0—3.1 (0.118—0.122) 3.1—3.2 (0.122—0.126) 3.2—3.3 (0.126—0.130) 2.0—2.1 (0.079—0.083) 2.1—2.2 (0.083—0.087) 2.2—2.3 (0.087—0.091)	Discoloration ↑ ↓ Discoloration

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M48A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Trans- mission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	19.980—19.993 (0.7866—0.7871)	Wear or damage ↑
	On mainshaft 2nd gear	35.975—35.991 (1.4163—1.4169)	
	On mainshaft 4th gear collar	31.975—31.991 (1.2589—1.2595)	↓
	On mainshaft 1st gear collar	27.975—27.995 (1.1014—1.1022)	
	On countershaft (L.side)	36.004—36.017 (1.4175—1.4180)	Wear or damage
	On countershaft 3rd gear distance collar	31.975—31.991 (1.2589—1.2595)	
	On countershaft 4th gear	27.980—27.993 (1.1016—1.1021)	↓
	On countershaft reverse gear collar	29.980—29.993 (1.1803—1.1808)	
	On countershaft 1st gear collar	29.980—29.993 (1.1803—1.1808)	Wear or damage
	On reverse idler gear shaft	13.990—14.000 (0.5508—0.5512)	
	On mainshaft 1st gear	33.000—33.016 (1.2992—1.2998)	↓
	Inside diameter of needle bearing contact area		
	On mainshaft 2nd gear	41.000—41.016 (1.6142—1.6148)	Wear or damage ↑
	On mainshaft 4th gear	38.000—38.016 (1.4961—1.4967)	
	On countershaft 1st gear	35.000—35.016 (1.3780—1.3786)	↓
	On countershaft 3rd gear	38.000—38.016 (1.4961—1.4967)	
	On countershaft 4th gear	33.000—33.016 (1.2992—1.2998)	Wear or damage
	On countershaft reverse gear	36.000—36.016 (1.4173—1.4179)	
	On reverse idler gear	18.007—18.020 (0.7089—0.7094)	↓
	On stator shaft (R. side)	26.000—26.013 (1.0236—1.0241)	
	On stator shaft (stator side)	24.000—24.021 (0.9449—0.9457)	Wear or damage
	On reverse idler shaft holder	14.416—14.434 (0.5676—0.5683)	
	End play		
	Mainshaft 1st gear	0.08—0.24 (0.003—0.009)	—
	Mainshaft 2nd gear	0.07—0.15 (0.003—0.006)	—
	Mainshaft 4th gear	0.10—0.22 (0.004—0.009)	—
	Countershaft 1st gear	0.10—0.45 (0.004—0.018)	—
	Countershaft 3rd gear	0.07—0.15 (0.003—0.006)	—
	Countershaft 4th gear	0.07—0.15 (0.003—0.006)	—
	Reverse idler gear	0.05—0.18 (0.002—0.007)	—
	Countershaft reverse gear	0.10—0.45 (0.004—0.018)	—
	Selector hub O.D.	51.87—51.90 (2.042—2.043)	Wear or damage
	Mainshaft 4th gear collar length	40.00—40.05 (1.5748—1.5768)	
	Mainshaft 1st gear collar length	25.00—25.15 (0.9843—0.9902)	—
	Mainshaft 1st gear collar flange thickness	2.5—2.6 (0.098—0.102)	Wear or damage
	Countershaft distance collar length	38.97—39.00 (1.534—1.535) 39.02—39.05 (1.536—1.537) 39.07—39.10 (1.538—1.539) 39.12—39.15 (1.540—1.541) 39.17—39.20 (1.542—1.543) 39.22—39.25 (1.544—1.545) 39.27—39.30 (1.546—1.547) 38.87—38.90 (1.530—1.531) 38.92—38.95 (1.532—1.533)	— — — — — — — — —
	Countershaft reverse gear collar length	14.5—14.55 (0.571—0.573)	—
	Countershaft reverse gear collar flange thickness	2.45—2.55 (0.096—0.100)	Wear or damage
	Countershaft 1st gear collar length	14.50—14.55 (0.571—0.573)	—
	Countershaft 1st gear collar flange thickness	2.45—2.55 (0.096—0.100)	Wear or damage

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2WD Automatic Transmission M48A (cont'd)— Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47—3.50 (0.137—0.138) 3.52—3.55 (0.139—0.140) 3.57—3.60 (0.141—0.142) 3.62—3.65 (0.143—0.144) 3.67—3.70 (0.145—0.146) 3.72—3.75 (0.147—0.148) 3.77—3.80 (0.148—0.150) 3.82—3.85 (0.151—0.152) 3.87—3.90 (0.153—0.154)	Wear or damage ↑ ↓ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	4.45—4.55 (0.175—0.179) 2.95—3.05 (0.116—0.120) 1.45—1.50 (0.057—0.057) 2.43—2.50 (0.096—0.098)	Wear or damage ↑ ↓ Wear or damage
	Countershaft 3rd gear splined washer thickness	2.87—2.90 (0.113—0.114) 2.92—2.95 (0.115—0.116) 2.97—3.00 (0.117—0.118) 3.02—3.05 (0.119—0.120) 3.07—3.10 (0.121—0.122) 3.12—3.15 (0.123—0.124) 3.17—3.20 (0.125—0.126) 3.22—3.25 (0.127—0.128) 3.27—3.30 (0.129—0.130) 3.32—3.35 (0.131—0.132) 3.37—3.40 (0.133—0.134)	Wear or damage ↑ ↓ Wear or damage
	Mainshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Mainshaft sealing ring thickness Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Mainshaft sealing ring groove width	2.93—3.00 (0.115—0.118) 74.414—74.440 (2.930—2.931) 57.755—57.768 (2.2738—2.2743) 8.97—8.98 (0.353—0.354) 5.97—5.98 (0.2350—0.2354) 7.97—7.98 (0.3138—0.3142) 1.980—1.995 (0.0780—0.0785) 6.018—6.030 (0.2369—0.2374) 9.000—9.015 (0.3543—0.3549) 8.000—8.015 (0.3150—0.3156) 2.025—2.060 (0.0797—0.081)	Wear or damage ↑ ↓ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (0.313) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 2.080 (0.082)
	Regulator valve body	Sealing ring contact I.D.	32.000—32.025 (1.260—1.261) 32.05 (1.262)
Shifting device and parking brake control	Reverse shift fork finger thickness	5.90—6.00 (0.232—0.236)	5.40 (0.213)
	Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	— — 18.5—18.6 (0.728—0.732)	Wear or other defect —
Servo body	Shift fork shaft bore I.D.	A 14.000—14.005 (0.5512—0.5514) B 14.006—14.010 (0.5514—0.5516) C 14.011—14.015 (0.5516—0.5518)	— — —
	Shift fork shaft valve bore I.D.	37.000—37.039 (1.4567—1.4582)	37.045 (1.4585)
Oil pump	Oil pump gear side clearance	0.03—0.05 (0.001—0.002)	0.07 (0.003)
	Oil pump gear-to-body clearance	Drive 0.240—0.266 (0.009—0.010) Driven 0.063—0.088 (0.002—0.003)	— —
	Oil pump driven gear I.D. Oil pump shaft O.D.	14.016—14.034 (0.5518—0.5525) 13.980—13.990 (0.5504—0.5508)	Wear or damage Wear or damage

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M48A (cont'd)

	MEASUREMENT	STANDARD (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Spring	2nd orifice control valve spring	0.9 (0.035)	6.5 (0.256)	44.0 (1.732)	22.0
	3-4 shift valve spring	0.7 (0.028)	9.6 (0.378)	32.9 (1.295)	6.4
	3-4 shift ball spring	0.45 (0.018)	4.5 (0.177)	12.0 (0.472)	6.7
	Cooler relief valve spring	1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12.0
	Relief valve spring	1.1 (0.043)	8.4 (0.331)	33.8 (1.331)	12.5
	2-3 shift valve spring	0.7 (0.028)	7.6 (0.299)	43.0 (1.693)	12.7
	2-3 shift valve ball spring	0.4 (0.016)	4.5 (0.177)	14.7 (0.579)	7.3
	1-2 shift valve spring	0.5 (0.020)	4.5 (0.177)	44.5 (1.752)	35.1
	1-2 shift valve ball spring	0.4 (0.016)	4.5 (0.177)	11.3 (0.445)	8.0
	Regulator valve spring A	Except D16A9	1.8 (0.071)	14.7 (0.579)	86.5 (3.406)
		D16A9	1.8 (0.071)	14.7 (0.579)	88.6 (3.488)
	Regulator valve spring B	1.8 (0.071)	9.6 (0.378)	44.0 (1.732)	7.5
	Stator reaction spring	5.5 (0.217)	*26.4 (1.039)	30.3 (1.193)	2.1
	Lock-up control valve spring	D12B1/D15B3	0.7 (0.028)	6.6 (0.260)	32.5 (1.280)
		D15B4	0.6 (0.024)	6.6 (0.260)	33.8 (1.331)
		D16A9	0.6 (0.024)	6.6 (0.260)	32.8 (1.291)
	Torque converter check valve spring	1.1 (0.043)	8.4 (0.331)	36.4 (1.433)	12.0
	Modulator valve spring	Except D16A9	1.2 (0.047)	9.4 (0.370)	26.3 (1.035)
			1.2 (0.047)	7.0 (0.276)	27.2 (1.071)
		D16A9	1.2 (0.047)	9.4 (0.370)	26.3 (1.035)
			1.2 (0.047)	9.4 (0.370)	26.4 (1.039)
	Throttle valve A spring	D12B1/D15B3	1.1 (0.043)	8.5 (0.335)	22.3 (0.878)
			1.1 (0.043)	8.5 (0.335)	22.3 (0.878)
			1.0 (0.039)	8.5 (0.335)	22.2 (0.874)
			1.0 (0.039)	8.5 (0.335)	22.1 (0.870)
		D15B4/D16A9	1.0 (0.039)	8.5 (0.335)	22.2 (0.874)
			1.0 (0.039)	8.5 (0.335)	22.1 (0.870)
			1.0 (0.039)	8.5 (0.335)	22.5 (0.886)
			1.0 (0.039)	8.5 (0.335)	22.3 (0.878)
	Throttle valve A adjusting spring	0.8 (0.031)	6.2 (0.244)	27.0 (1.063)	8.5
	Throttle valve B spring	D12B1/D15B3	1.4 (0.055)	8.5 (0.335)	41.4 (1.630)
			1.4 (0.055)	8.5 (0.335)	41.4 (1.630)
			1.6 (0.063)	8.5 (0.335)	41.3 (1.626)
		D15B4/D16A9	1.6 (0.063)	8.5 (0.335)	41.3 (1.626)
			1.6 (0.063)	8.5 (0.335)	41.4 (1.630)
			1.6 (0.063)	8.5 (0.335)	41.3 (1.626)

*: Inside Diameter

2WD Automatic Transmission M48A (cont'd)

	MEASUREMENT	STANDARD (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Spring	Throttle valve B adjusting spring	0.8 (0.031)	6.2 (0.244)	30.0 (1.181)	8.0
	3rd accumulator spring	2.8 (0.110)	15.5 (0.610)	80.4 (3.165)	15.8
	2nd accumulator spring	3.8 (0.150)	20.2 (0.795)	75.2 (2.961)	10.2
	4th accumulator spring	3.2 (0.126)	18.6 (0.732)	82.7 (3.256)	12.0
	Reverse timing valve spring	0.7 (0.028)	5.6 (0.220)	43.8 (1.724)	21.7
	Servo control valve spring	1.0 (0.039)	7.6 (0.299)	39.4 (1.551)	18.2
	Lock-up shift valve spring D12B1/D15B3 D15B4/D16A9	0.7 (0.028)	8.1 (0.319)	39.0 (1.535)	15.4
		1.1 (0.043)	8.1 (0.319)	51.8 (2.039)	22.3
	Lock-up timing valve spring	1.0 (0.039)	6.6 (0.260)	52.3 (2.059)	30.1
	Governor spring A	1.0 (0.039)	18.8 (0.740)	20.4 (0.803)	4.0
	Governor spring B	1.0 (0.039)	18.8 (0.740)	20.4 (0.803)	4.0
		0.8 (0.031)	11.8 (0.465)	20.4 (0.803)	4.0
	Kick-down valve spring	1.0 (0.039)	10.1 (0.398)	38.9 (1.531)	12.5
	Orifice control valve spring	0.9 (0.035)	6.1 (0.240)	35.9 (1.413)	20.0
	Shift timing valve spring	0.9 (0.035)	8.6 (0.339)	42.9 (1.689)	21.4
	4th exhaust valve spring	0.9 (0.035)	6.1 (0.240)	43.7 (1.720)	20.3
	Accumulator control valve spring D12B1/D15B3 D15B4/D16A9	1.2 (0.047)	8.6 (0.339)	46.9 (1.846)	15.2
		1.2 (0.047)	8.6 (0.339)	20.1 (0.791)	14.7
	Lock-up cut valve spring	0.7 (0.028)	7.6 (0.299)	29.0 (1.142)	18.0
	Reverse control valve spring	0.7 (0.028)	7.6 (0.299)	37.2 (1.465)	15.3
	CPC (Clutch Pressure Control) valve spring	0.9 (0.035)	8.6 (0.339)	18.2 (0.717)	5.54
	Governor spring A	1.0 (0.039)	18.8 (0.740)	20.4 (0.803)	4.0
	Governor spring B	1.0 (0.039)	18.8 (0.740)	20.4 (0.803)	4.0
		0.9 (0.035)	11.8 (0.465)	30.9 (1.217)	6.0
	1st accumulator one-way ball spring	0.29 (0.011)	4.0 (0.157)	14.0 (0.551)	13.0
	1st accumulator spring A	2.9 (0.114)	21.5 (0.846)	58.8 (2.315)	7.3
	1st accumulator spring B	2.3 (0.091)	7.5 (0.295)	17.4 (0.685)	5.6

Standards and Service Limits

2WD Automatic Transmission M24A – Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission fluid	Capacity ℓ (US qt, Imp qt)	5.9 (6.2, 5.2) for overhaul 2.7 (2.8, 2.4) for fluid change	
Hydraulic pressure kPa (kg/cm ² , psi) D16Z6, D16A8, D16A7	Line pressure at 2,000 min ⁻¹ (rpm) N or P position	850–900 (8.5–9.0, 121–128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position	400 (4.0, 57) throttle fully closed	350 (3.5, 50) throttle fully closed
	3rd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position	850–900 (8.5–9.0, 121–128) throttle more than 1/8 opened	800 (8.0, 114) throttle more than 1/8 opened
	4th clutch pressure at 2,000 min ⁻¹ (rpm) D4 position		
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) 2 position	850–900 (8.5–9.0, 121–128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min ⁻¹ (rpm) D4 or 1 position	850–900 (8.5–9.0, 121–128)	800 (8.0, 114)
	Governor pressure at 60 km/h (38 mph)	D16A7 180–190 (1.80–1.90, 26–27) D16Z6 182–192 (1.82–1.92, 26–27) D16A8 137–147 (1.37–1.47, 19–21)	175 (1.75, 25) 177 (1.77, 25) 132 (1.32, 19)
	Throttle B pressure	Throttle fully closed 0–15 (0–0.15, 0–2) Throttle fully open 850–900 (8.5–9.0, 121–128)	— 800 (8.0, 114)
	Throttle A pressure D16Z6	Throttle fully closed 0–5 (0–0.05, 0–1) Throttle fully open 485–500 (4.85–5.00, 69–71)	— 480 (4.8, 68)
	Throttle pressure A D16A7, D16A8	Throttle fully closed 0–5 (0–0.05, 0–1) Throttle fully open 515–530 (5.15–5.3, 73–75)	— 510 (5.1, 73)
Hydraulic pressure kPa (kg/cm ² , psi) D15B2, D15B7	Line pressure at 2,000 min ⁻¹ (rpm) N or P position	800–850 (8.0–8.5, 114–121)	750 (7.5, 107)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position	400 (4.0, 57) throttle fully closed	350 (3.5, 50) throttle fully closed
	3rd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position	800–850 (8.0–8.5, 114–121) throttle more than 1/8 opened	750 (7.5, 107) throttle more than 1/8 opened
	4th clutch pressure at 2,000 min ⁻¹ (rpm) D4 position		
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) 2 position	800–850 (8.0–8.5, 114–121)	750 (7.5, 107)
	1st clutch pressure at 2,000 min ⁻¹ (rpm) D4 or 1 position	800–850 (8.0–8.5, 114–121)	750 (7.5, 107)
	Governor pressure at 60 km/h (38 mph)	182–192 (1.82–1.92, 26–27)	177 (1.77, 25)
	Throttle B pressure	Throttle fully closed 0–15 (0–0.15, 0–2) Throttle fully open 800–850 (8.0–8.5, 114–121)	— 750 (7.5, 107)
	Throttle A pressure	Throttle fully closed 0–5 (0–0.05, 0–1) Throttle fully open 515–530 (5.15–5.30, 73–75)	— 510 (5.1, 73)
Stall speed min ⁻¹ (rpm) (check with car on level ground)		2,400–2,800	—

(cont'd)

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Clutch	Clutch initial clearance	1st, 2nd	0.65–0.85 (0.026–0.033)	—
		3rd, 4th	0.40–0.60 (0.016–0.024)	—
	Clutch return spring free length	1st-hold	0.5–0.8 (0.02–0.03)	—
		1st	31.0 (1.22)	29.0 (1.14)
		2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
	Clutch disc thickness	1st-hold	34.6 (1.36)	32.6 (1.28)
			1.88–2.00 (0.074–0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55–1.65 (0.061–0.065)	Discoloration
		Except 1st	1.95–2.05 (0.077–0.081)	Discoloration
	Clutch end plate thickness (except 1st-hold)	MARK 1	2.3–2.4 (0.091–0.094)	<div>Discoloration</div> <div>↑</div> <div>↓</div> <div>Discoloration</div>
		MARK 2	2.4–2.5 (0.094–0.098)	
		MARK 3	2.5–2.6 (0.098–0.102)	
		MARK 4	2.6–2.7 (0.102–0.106)	
		MARK 5	2.7–2.8 (0.106–0.110)	
		MARK 6	2.8–2.9 (0.110–0.114)	
		MARK 7	2.9–3.0 (0.114–0.118)	
		MARK 8	3.0–3.1 (0.118–0.122)	
		MARK 9	3.1–3.2 (0.122–0.126)	
		MARK 10	3.2–3.3 (0.126–0.130)	
		MARK 11	2.0–2.1 (0.079–0.083)	
		MARK 12	2.1–2.2 (0.083–0.087)	
		MARK 13	2.2–2.3 (0.087–0.091)	
	Clutch end plate thickness (1st-hold)	MARK 1	2.05–2.10 (0.081–0.083)	<div>Discoloration</div> <div>↑</div> <div>↓</div> <div>Discoloration</div>
		MARK 2	2.15–2.20 (0.085–0.087)	
		MARK 3	2.25–2.30 (0.089–0.091)	
		MARK 4	2.35–2.40 (0.093–0.094)	
		NO MARK	2.45–2.50 (0.096–0.098)	
		MARK 6	2.55–2.60 (0.100–0.102)	
		MARK 7	2.65–2.70 (0.104–0.106)	

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Standards and Service Limits

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Trans- mission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	22.980—22.993 (0.9047—0.9052)	Wear or damage
	On mainshaft 2nd gear	35.975—35.991 (1.4163—1.4169)	
	On mainshaft 4th gear collar	31.975—31.991 (1.2589—1.2595)	Wear or damage
	On mainshaft 1st gear collar	30.975—30.991 (1.2195—1.2201)	
	On countershaft (L. side)	36.004—36.017 (1.4175—1.4180)	Wear or damage
	On countershaft 3rd gear distance collar	31.975—31.991 (1.2589—1.2595)	
	On countershaft 4th gear	27.980—27.993 (1.1016—1.1021)	Wear or damage
	On countershaft reverse gear collar	31.975—31.991 (1.2589—1.2595)	
	On countershaft 1st gear collar	31.975—31.991 (1.2589—1.2595)	Wear or damage
	On subshaft (L. side)	25.991—26.000 (1.0233—1.0236)	
	On subshaft 4th gear collar	27.980—27.993 (1.1016—1.1021)	Wear or damage
	On reverse idler gear shaft	13.990—14.000 (0.5508—0.5512)	
	On mainshaft 1st gear	35.000—35.016 (1.3780—1.3786)	Wear or damage
	On mainshaft 2nd gear	41.000—41.016 (1.6142—1.6148)	
	On mainshaft 4th gear	38.000—38.016 (1.4961—1.4967)	Wear or damage
	On countershaft 1st gear	38.000—38.016 (1.4961—1.4967)	
	Inside diameter of needle bearing contact area		
	On countershaft 3rd gear	38.000—38.016 (1.4961—1.4967)	Wear or damage
	On countershaft 4th gear	33.000—33.016 (1.2992—1.2998)	
	On countershaft reverse gear	38.000—38.016 (1.4961—1.4967)	Wear or damage
	On subshaft 4th gear	32.000—32.016 (1.2598—1.2605)	
	On reverse idler gear	18.007—18.020 (0.7089—0.7094)	Wear or damage
	On stator shaft (R. side)	29.000—29.013 (1.1417—1.1422)	
	On stator shaft (stator side)	27.000—27.021 (1.0630—1.0638)	Wear or damage
	On reverse idler gear shaft holder	14.416—14.434 (0.5676—0.5683)	
	End play		
	Mainshaft 1st gear	0.08—0.24 (0.003—0.009)	—
	Mainshaft 2nd gear	0.05—0.13 (0.002—0.0051)	—
	Mainshaft 4th gear	0.05—0.135 (0.002—0.0053)	—
	Countershaft 1st gear	0.1—0.5 (0.004—0.020)	—
	Countershaft 3rd gear	0.05—0.13 (0.002—0.0051)	—
	Countershaft 4th gear	0.05—0.13 (0.002—0.0051)	—
	Subshaft 4th gear	0.05—0.17 (0.002—0.007)	—
	Reverse idler gear	0.05—0.18 (0.002—0.007)	—
	Countershaft reverse gear	0.10—0.25 (0.004—0.010)	—
	Selector hub O.D.	51.87—51.90 (2.042—2.043)	Wear or damage
	Mainshaft 4th gear collar length	45.00—45.03 (1.772—1.773)	—
	Mainshaft 1st gear collar length	27.00—27.15 (1.063—1.069)	—
	Mainshaft 1st gear collar flange thickness	2.5—2.6 (2.098—2.102)	Wear or damage
	Countershaft distance collar length	38.97—39.00 (1.534—1.535)	—
		39.02—39.05 (1.536—1.537)	—
		39.07—39.10 (1.538—1.539)	—
		39.12—39.15 (1.540—1.541)	—
		39.17—39.20 (1.542—1.543)	—
		39.22—39.25 (1.544—1.545)	—
		39.27—39.30 (1.546—1.547)	—
		38.87—38.90 (1.530—1.531)	—
		38.92—38.95 (1.532—1.533)	—
	Countershaft reverse gear collar length	14.5—14.6 (0.571—0.575)	—
	Countershaft reverse gear collar flange thickness	2.4—2.6 (0.094—0.102)	Wear or damage
	Countershaft 1st gear collar length	14.5—14.6 (0.571—0.575)	—
	Countershaft 1st gear collar flange thickness	2.4—2.6 (0.094—0.102)	Wear or damage
	Subshaft 4th gear collar length	24.0—24.1 (0.945—0.949)	Wear or damage
	Subshaft 4th gear collar flange thickness	3.00—3.15 (0.118—0.124)	Wear or damage

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2WD Automatic Transmission M24A (cont'd)— Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Trans- mission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47—3.50 (0.137—0.138) 3.52—3.55 (0.139—0.140) 3.57—3.60 (0.141—0.142) 3.62—3.65 (0.143—0.144) 3.67—3.70 (0.145—0.146) 3.72—3.75 (0.147—0.148) 3.77—3.80 (0.148—0.150) 3.82—3.85 (0.151—0.152) 3.87—3.90 (0.153—0.154)	Wear or damage ↑ ↓ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	4.45—4.55 (0.175—0.179) 3.45—3.55 (0.136—0.140) 1.45—1.50 (0.057—0.059) 3.43—3.50 (0.135—0.138)	Wear or damage ↑ ↓ Wear or damage
	Countershaft 3rd gear thrust washer thickness	2.97—3.00 (0.117—0.118) 3.02—3.05 (0.119—0.120) 3.07—3.10 (0.121—0.122) 3.12—3.15 (0.123—0.124) 3.17—3.20 (0.125—0.126) 3.22—3.25 (0.127—0.128) 3.27—3.30 (0.129—0.130) 3.32—3.35 (0.131—0.132) 3.37—3.40 (0.133—0.134) 3.42—3.45 (0.135—0.136) 3.47—3.50 (0.137—0.138)	Wear or damage ↑ ↓ Wear or damage
	Subshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Subshaft feed pipe O.D. Mainshaft sealing ring thickness (29 mm and 35 mm) Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Subshaft bushing I.D. Mainshaft sealing ring groove width	2.93—3.00 (0.115—0.118) 83.339—83.365 (3.2810—3.2821) 66.685—66.698 (2.6254—2.6259) 8.97—8.98 (0.353—0.354) 5.97—5.98 (0.2350—0.2354) 7.97—7.98 (0.3138—0.3142) 7.97—7.98 (0.3138—0.3142) 1.980—1.995 (0.0780—0.0785) 6.018—6.030 (0.2369—0.2374) 9.000—9.015 (0.3543—0.3549) 8.000—8.015 (0.3150—0.3156) 8.000—8.015 (0.3150—0.3156) 2.025—2.060 (0.080—0.081)	Wear or damage ↑ ↓ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (0.313) 7.95 (0.313) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 8.030 (0.3161) 2.080 (0.082)
	Regulator valve body Sealing ring contact I.D.	35.000—35.025 (1.3780—1.3782)	35.050 (1.3799)
Shifting device and parking brake control	Reverse shift fork finger thickness Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	5.90—6.00 (0.232—0.236) — — 27.0—27.1 (1.063—1.067)	5.40 (0.213) Wear or other defect —
Servo body	Shift fork shaft bore I.D. Shift fork shaft valve bore I.D.	14.000—14.010 (0.5512—0.5516) 37.000—37.039 (1.4567—1.4582)	— 37.045 (1.4585)
Oil pump	Oil pump gear side clearance Oil pump gear-to-body clearance Oil pump driven gear I.D. Oil pump shaft O.D.	0.03—0.05 (0.001—0.002) 0.210—0.265 (0.0083—0.0104) 0.070—0.125 (0.0028—0.0049) 14.016—14.034 (0.5518—0.5525) 13.980—13.990 (0.5504—0.5508)	0.07 (0.003) — — Wear or damage Wear or damage

(cont'd)

Standards and Service Limits

2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Springs D16Z6, D16A7, D15B2, D15B7	Regulator valve spring A D16A7, D16Z6	1.8 (0.07)	14.7 (0.58)	88.6 (3.49)	16.5
	Regulator valve spring A D15B2, D15B7	1.8 (0.07)	14.7 (0.58)	86.5 (3.406)	16.5
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	5.5 (0.22)	26.4 (1.04)	30.3 (1.19)	2.1
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	Modulator valve spring	1.2 (0.05)	7.0 (0.28)	27.2 (1.07)	8.0
	Relief valve spring	1.1 (0.04)	8.6 (0.34)	37.1 (1.46)	13.4
	Cooler check valve spring	1.1 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	Governor spring A	1.0 (0.04)	18.8 (0.74)	32.9 (1.30)	4.1
	Governor spring B	0.9 (0.04)	11.8 (0.47)	27.8 (1.09)	6.0
		0.9 (0.04)	11.8 (0.47)	29.1 (1.15)	6.0
	2—3 orifice control valve spring	1.0 (0.04)	6.6 (0.26)	33.2 (1.31)	14.9
	4—3 kick-down valve spring	1.0 (0.04)	6.6 (0.26)	29.9 (1.18)	14.7
	2/3—4 orifice control valve spring	1.0 (0.04)	8.6 (0.34)	51.9 (2.04)	19.8
	Throttle valve spring A	1.0 (0.04)	8.5 (0.33)	22.2 (0.87)	6.0
	Throttle valve spring A	1.0 (0.04)	8.5 (0.33)	22.1 (0.87)	5.5
	Throttle valve spring A	1.1 (0.04)	8.5 (0.33)	22.3 (0.87)	8.1
	Throttle valve spring A	1.1 (0.04)	8.5 (0.33)	22.3 (0.87)	7.6
	Throttle valve adjust spring B	0.8 (0.03)	6.2 (0.24)	30 (1.18)	8
	Throttle valve adjust spring A	0.8 (0.03)	6.2 (0.24)	27 (1.06)	8.5
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	10.5
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	11.2
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.6 (1.64)	12.4
	1—2 shift valve spring	0.45 (0.018)	5.1 (0.20)	52.8 (2.08)	29
	1—2 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	10.7 (0.42)	12.7
	2—3 shift valve spring	0.9 (0.04)	7.1 (0.28)	65.3 (2.57)	32.1
	2—3 shift valve ball spring	0.4 (0.02)	4.5 (0.18)	14.7 (0.58)	7.3
	3—4 shift valve spring	0.9 (0.04)	9.6 (0.38)	32.5 (1.28)	10.3
	3—4 shift valve ball spring	0.5 (0.02)	4.5 (0.18)	11.3 (0.44)	7.4
	1st-hold accumulator spring	4.0 (0.16)	21.5 (0.85)	71.7 (2.82)	8.3
	1st accumulator spring A	2.6 (0.10)	24.3 (0.96)	101.9 (4.01)	11.6
	1st accumulator spring B	2.3 (0.09)	9.9 (0.39)	49.0 (1.93)	4.6
	2nd accumulator spring	3.5 (0.14)	22 (0.87)	77.0 (3.03)	9.5
	3rd accumulator spring	2.6 (0.10)	17.5 (0.69)	91.8 (3.61)	15.8
	4th accumulator spring	2.6 (0.10)	16 (0.63)	90.1 (3.55)	15.6
	Lock-up shift valve spring	0.9 (0.04)	7.6 (0.30)	73.7 (2.90)	32
	Lock-up timing valve spring	0.8 (0.03)	6.6 (0.26)	61.5 (2.42)	27.6
	Lock-up control valve spring	0.9 (0.04)	6.6 (0.26)	38.4 (1.51)	23.3
	Governor cut valve spring	0.7 (0.03)	7.6 (0.30)	44.5 (1.75)	17
	CPC valve spring	0.9 (0.04)	8.4 (0.33)	24.9 (0.98)	9.8
	Reverse control valve spring	0.7 (0.03)	7.1 (0.28)	40 (1.57)	20.8
	3—2 timing valve spring	1.2 (0.05)	8.6 (0.34)	20.1 (0.79)	14.7
	3—2 kick-down valve spring	1.3 (0.05)	8.6 (0.34)	45.6 (1.80)	17
	Servo control valve spring	0.9 (0.04)	6.4 (0.25)	34.1 (1.34)	17.5
	2—1 timing valve spring	0.7 (0.03)	5.6 (0.22)	33 (1.30)	21.7
	4th exhaust valve spring	0.9 (0.04)	6.6 (0.26)	43.3 (1.70)	22

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2WD Automatic Transmission M24A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Springs D16A8	Regulator valve spring A	1.8 (0.07)	14.7 (0.58)	88.6 (3.49)	16.5
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	5.5 (0.22)	26.4 (1.04)	30.3 (1.19)	2.1
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	Modulator valve spring	1.2 (0.05)	7.0 (0.28)	27.2 (1.07)	8.0
	Relief valve spring	1.1 (0.04)	8.6 (0.34)	37.1 (1.46)	13.4
	Cooler check valve spring	1.1 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	Governor spring A	1.0 (0.04)	18.8 (0.74)	18.0 (0.71)	4.0
	Governor spring B	0.8 (0.03)	11.8 (0.47)	30.0 (1.18)	6.3
		0.8 (0.03)	11.8 (0.47)	34.4 (1.35)	6.3
		0.8 (0.03)	11.8 (0.47)	30.9 (1.22)	6.0
	2—3 orifice control valve spring	0.9 (0.04)	6.6 (0.26)	33.2 (1.31)	14.9
	4—3 kick-down valve spring	1.0 (0.04)	6.6 (0.26)	29.9 (1.18)	14.7
	2/3—4 orifice control valve spring	1.0 (0.04)	8.6 (0.34)	51.9 (2.04)	19.8
	Throttle valve spring A	1.0 (0.04)	8.5 (0.33)	22.2 (0.87)	6.0
	Throttle valve spring A	1.0 (0.04)	8.5 (0.33)	22.1 (0.87)	5.5
	Throttle valve spring A	1.1 (0.04)	8.5 (0.33)	22.3 (0.87)	8.1
	Throttle valve spring A	1.0 (0.04)	8.5 (0.33)	22.3 (0.87)	6.2
	Throttle valve adjust spring B	0.8 (0.03)	6.2 (0.24)	30 (1.18)	8
	Throttle valve adjust spring A	0.8 (0.03)	6.2 (0.24)	27 (1.06)	8.5
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	10.5
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.5 (1.63)	11.2
	Throttle valve spring B	1.4 (0.06)	8.5 (0.33)	41.6 (1.64)	12.4
	1—2 shift valve spring	0.5 (0.02)	6.1 (0.24)	52.0 (2.05)	18.8
	1—2 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	10.7 (0.42)	12.7
	2—3 shift valve spring	0.9 (0.04)	7.6 (0.30)	53.4 (2.10)	28.5
	2—3 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	13.2 (0.52)	10.5
	3—4 shift valve spring	0.8 (0.03)	9.6 (0.38)	26.8 (1.06)	7.8
	3—4 shift valve ball spring	0.45 (0.018)	4.5 (0.18)	13.2 (0.52)	8.2
	1st-hold accumulator spring	4.0 (0.16)	21.5 (0.85)	71.7 (2.82)	8.3
	1st accumulator spring A	2.6 (0.10)	24.3 (0.96)	101.9 (4.01)	11.6
	1st accumulator spring B	2.3 (0.09)	9.9 (0.39)	49.0 (1.93)	4.6
	2nd accumulator spring	3.5 (0.14)	22 (0.87)	77.0 (3.03)	9.5
	3rd accumulator spring	2.6 (0.10)	17.5 (0.69)	91.8 (3.61)	15.8
	4th accumulator spring	2.6 (0.10)	16 (0.63)	90.1 (3.55)	15.6
	Lock-up shift valve spring	0.9 (0.04)	7.6 (0.30)	73.7 (2.90)	32
	Lock-up timing valve spring	0.7 (0.03)	6.6 (0.26)	64.3 (2.53)	22.4
	Lock-up control valve spring	0.9 (0.04)	6.6 (0.26)	38.4 (1.51)	23.3
	Governor cut valve spring	0.7 (0.03)	7.6 (0.30)	44.5 (1.75)	17
	CPC valve spring	0.9 (0.04)	8.4 (0.33)	24.9 (0.98)	9.8
	Reverse control valve spring	0.7 (0.03)	7.1 (0.28)	40 (1.57)	20.8
	3—2 timing valve spring	1.2 (0.05)	8.6 (0.34)	47.2 (1.86)	17.8
	3—2 kick-down spring	1.3 (0.05)	8.6 (0.34)	45.6 (1.80)	17
	Servo control valve spring	0.9 (0.04)	6.4 (0.25)	34.1 (1.34)	17.5
	2—1 timing valve spring	0.7 (0.03)	5.6 (0.22)	33 (1.30)	21.7
	4th exhaust valve spring	0.9 (0.04)	6.6 (0.26)	43.3 (1.70)	22

(cont'd)

Standards and Service Limits

4WD Automatic Transmission M25A— Section 14

	MEASUREMENT		STANDARD (NEW)	SERVICE LIMIT
Transmission fluid	Capacity ℓ (US qt, Imp qt)		6.4 (6.8, 5.6) for overhaul 3.2 (3.4, 2.8) for fluid change	
Hydraulic pressure kPa (kg/cm ² , psi)	Line pressure at 2,000 min ⁻¹ (rpm) N or P position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position		500 (5.0, 71) throttle fully closed 850—900 (8.5—9.0, 121—128) throttle more than 3/8 opened	450 (4.5, 61) throttle fully closed 800 (8.0, 114) throttle more than 3/8 opened
	3rd clutch pressure at 2,000 min ⁻¹ (rpm) D4 position			
	4th clutch pressure at 2,000 min ⁻¹ (rpm) D4 position			
	2nd clutch pressure at 2,000 min ⁻¹ (rpm) 2 position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	1st clutch pressure at 2,000 min ⁻¹ (rpm) D4 or 1 position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	1st-hold clutch pressure at 2,000 min ⁻¹ (rpm) 1 position		850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
	Throttle pressure B		Throttle fully closed	0
Throttle fully open			850—900 (8.5—9.0, 121—128)	800 (8.0, 114)
Stall speed min ⁻¹ (rpm) (check with car on level ground)			2,300—2,900	—
Clutch	Clutch initial clearance	1st, 2nd	0.65—0.85 (0.026—0.033)	—
		3rd, 4th	0.40—0.60 (0.016—0.024)	—
		1st-hold	0.5—0.8 (0.02—0.03)	—
	Clutch return spring free length	1st	31.0 (1.22)	29.0 (1.14)
		2nd, 3rd, 4th	30.5 (1.20)	28.5 (1.12)
		1st-hold	34.6 (1.36)	32.6 (1.28)
	Clutch disc thickness		1.88—2.00 (0.074—0.079)	Until grooves worn out
	Clutch plate thickness	1st	1.55—1.65 (0.061—0.065)	Discoloration
		Except 1st	1.95—2.05 (0.077—0.081)	Discoloration
	Clutch end plate thickness (except 1st-hold)	MARK 1	2.3—2.4 (0.091—0.094)	<div>Discoloration</div> <div>↑</div> <div>↓</div> <div>Discoloration</div>
		MARK 2	2.4—2.5 (0.094—0.098)	
		MARK 3	2.5—2.6 (0.098—0.102)	
		MARK 4	2.6—2.7 (0.102—0.106)	
		MARK 5	2.7—2.8 (0.106—0.110)	
		MARK 6	2.8—2.9 (0.110—0.114)	
		MARK 7	2.9—3.0 (0.114—0.118)	
		MARK 8	3.0—3.1 (0.118—0.122)	
		MARK 9	3.1—3.2 (0.122—0.126)	
		MARK 10	3.2—3.3 (0.126—0.130)	
		MARK 11	2.0—2.1 (0.079—0.083)	
		MARK 12	2.1—2.2 (0.083—0.087)	
		MARK 13	2.2—2.3 (0.087—0.091)	
	Clutch end plate thickness (1st-hold)	MARK 1	2.05—2.10 (0.081—0.083)	<div>Discoloration</div> <div>↑</div> <div>↓</div> <div>Discoloration</div>
		MARK 2	2.15—2.20 (0.085—0.087)	
		MARK 3	2.25—2.30 (0.089—0.091)	
		MARK 4	2.35—2.40 (0.093—0.094)	
		NO MARK	2.45—2.50 (0.096—0.098)	
		MARK 6	2.55—2.60 (0.100—0.102)	
		MARK 7	2.65—2.70 (0.104—0.106)	

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4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Trans- mission	Diameter of needle bearing contact area		
	On mainshaft and stator shaft	19.980–19.993 (0.7866–0.7871)	Wear or damage
	On mainshaft 2nd gear	35.975–35.991 (1.4163–1.4169)	
	On mainshaft 4th gear collar	31.975–31.991 (1.2589–1.2595)	Wear or damage
	On mainshaft 1st gear collar	30.975–30.991 (1.2195–1.2201)	
	On countershaft (L. side)	36.004–36.017 (1.4175–1.4180)	Wear or damage
	On countershaft 3rd gear distance collar	31.975–31.991 (1.2589–1.2595)	
	On countershaft 4th gear	27.980–27.993 (1.1016–1.1021)	Wear or damage
	On countershaft reverse gear collar	29.980–29.993 (1.1803–1.1808)	
	On countershaft 1st gear collar	31.975–31.991 (1.2589–1.2595)	Wear or damage
	On subshaft (L. side)	27.991–28.000 (1.1020–1.1024)	
	On subshaft 4th gear collar	29.980–29.993 (1.1803–1.1808)	Wear or damage
	On reverse idler gear shaft	13.990–14.000 (0.5508–0.5512)	
	Inside diameter of needle bearing contact area		
	On mainshaft 1st gear	36.000–36.016 (1.4173–1.4179)	Wear or damage
	On mainshaft 2nd gear	41.000–41.016 (1.6142–1.6148)	
	On mainshaft 4th gear	38.000–38.016 (1.4961–1.4967)	Wear or damage
	On countershaft 1st gear	38.000–38.016 (1.4961–1.4967)	
	On countershaft 3rd gear	38.000–38.016 (1.4961–1.4967)	Wear or damage
	On countershaft 4th gear	33.000–33.016 (1.2992–1.2998)	
	On countershaft reverse gear	36.000–36.016 (1.4173–1.4179)	Wear or damage
	On subshaft 4th gear	35.000–35.016 (1.3780–1.3786)	
	On reverse idler gear	18.007–18.020 (0.7089–0.7094)	Wear or damage
	On stator shaft (R. side)	26.000–26.013 (1.0236–1.0241)	
	On stator shaft (stator side)	24.000–24.021 (0.9449–0.9457)	Wear or damage
	On reverse idler gear shaft holder	14.416–14.434 (0.5676–0.5683)	
	End play		
	Mainshaft 1st gear	0.08–0.24 (0.003–0.009)	—
	Mainshaft 2nd gear	0.07–0.15 (0.003–0.006)	—
	Mainshaft 4th gear	0–0.08 (0–0.003)	—
	Countershaft 1st gear	0.1–0.45 (0.004–0.018)	—
	Countershaft 3rd gear	0.07–0.15 (0.003–0.006)	—
	Countershaft 4th gear	0.07–0.15 (0.003–0.006)	—
	Reverse idler gear	0.05–0.18 (0.002–0.007)	—
	Countershaft reverse gear	0.1–0.45 (0.004–0.018)	—
	Selector hub O.D.	51.87–51.90 (2.042–2.043)	Wear or damage
	Mainshaft 4th gear collar length	46.50–46.53 (1.8307–1.8319)	—
	Mainshaft 1st gear collar length	24.50–24.55 (0.9646–0.9665)	—
	Mainshaft 1st gear collar flange thickness	2.5–2.6 (0.098–0.102)	Wear or damage
	Countershaft distance collar length	38.97–39.00 (1.534–1.535)	—
		39.02–39.05 (1.536–1.537)	—
		39.07–39.10 (1.538–1.539)	—
		39.12–39.15 (1.540–1.541)	—
		39.17–39.20 (1.542–1.543)	—
		39.22–39.25 (1.544–1.545)	—
		39.27–39.30 (1.546–1.547)	—
		38.87–38.90 (1.530–1.531)	—
		38.92–38.95 (1.532–1.533)	—
	Countershaft reverse gear collar length	14.5–14.55 (0.5709–0.5728)	—
	Countershaft reverse gear collar flange thickness	2.45–2.55 (0.096–0.100)	Wear or damage
	Countershaft 1st gear collar length	14.5–14.55 (0.5709–0.5728)	—
	Countershaft 1st gear collar flange thickness	2.45–2.55 (0.096–0.100)	Wear or damage
	Subshaft 4th gear collar length	24.0–24.1 (0.945–0.949)	Wear or damage
	Subshaft 4th gear collar length of needle bearing contact area	21.0–21.1 (0.8268–0.8307)	Wear or damage

(cont'd)

Standards and Service Limits

4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Transmission (cont'd)	Mainshaft 2nd gear thrust washer thickness	3.47—3.50 (0.137—0.138) 3.52—3.55 (0.139—0.140) 3.57—3.60 (0.141—0.142) 3.62—3.65 (0.143—0.144) 3.67—3.70 (0.145—0.146) 3.72—3.75 (0.147—0.148) 3.77—3.80 (0.148—0.150) 3.82—3.85 (0.151—0.152) 3.87—3.90 (0.153—0.154)	Wear or damage ↑ ↓ Wear or damage
	Thrust washer thickness Mainshaft 4th gear Mainshaft ball bearing L. side Mainshaft 1st gear L. side Mainshaft 1st gear R. side	4.45—4.55 (0.175—0.179) 2.95—3.05 (0.1161—0.1201) 1.45—1.50 (0.057—0.059) 2.43—2.50 (0.096—0.098)	Wear or damage ↑ ↓ Wear or damage
	Countershaft 3rd gear thrust washer thickness	2.87—2.90 (0.113—0.114) 2.92—2.95 (0.115—0.116) 2.97—3.00 (0.117—0.118) 3.02—3.05 (0.119—0.120) 3.07—3.10 (0.121—0.122) 3.12—3.15 (0.123—0.124) 3.17—3.20 (0.125—0.126) 3.22—3.25 (0.127—0.128) 3.27—3.30 (0.129—0.130) 3.32—3.35 (0.131—0.132) 3.37—3.40 (0.133—0.134)	Wear or damage ↑ ↓ Wear or damage
	Mainshaft 4th gear thrust washer thickness One-way clutch contact area I.D. Countershaft 1st gear Parking gear Mainshaft feed pipe A, O.D. Mainshaft feed pipe B, O.D. Countershaft feed pipe O.D. Subshaft feed pipe O.D. Mainshaft sealing ring thickness Mainshaft bushing I.D. Mainshaft bushing I.D. Countershaft bushing I.D. Subshaft bushing I.D. Mainshaft sealing ring groove width	2.93—3.00 (0.115—0.118) 83.339—83.365 (3.2810—3.2821) 66.685—66.698 (2.6254—2.6259) 8.97—8.98 (0.353—0.354) 5.97—5.98 (0.2350—0.2354) 7.97—7.98 (0.3138—0.3142) 5.97—5.98 (0.2350—0.2354) 1.980—1.995 (0.0780—0.0785) 6.018—6.030 (0.2369—0.2374) 9.000—9.015 (0.3543—0.3549) 8.000—8.015 (0.3150—0.3156) 6.018—6.030 (0.2369—0.2374) 2.025—2.060 (0.080—0.081)	Wear or damage ↑ ↓ Wear or damage 8.95 (0.352) 5.95 (0.234) 7.95 (9.313) 5.95 (0.2343) 1.80 (0.071) 6.045 (0.2380) 9.030 (0.355) 8.030 (0.3161) 6.045 (0.2380) 2.080 (0.082)
	Regulator valve body Sealing ring contact I.D.	35.000—35.025 (1.3780—1.3782)	35.050 (1.3799)
Shifting device and parking brake control	Reverse shift fork finger thickness	5.90—6.00 (0.232—0.236)	5.40 (0.213)
	Parking brake ratchet pawl Parking brake gear Throttle cam stopper height	— — 27.0—27.1 (1.063—1.067)	Wear or other defect —
Servo body	Shift fork shaft bore I.D.	A 14.000—14.005 (0.5512—0.5514) B 14.006—14.010 (0.5514—0.5516) C 14.011—14.015 (0.5516—0.5518)	— — —
	Shift fork shaft valve bore I.D.	37.000—37.039 (1.4567—1.4582)	37.045 (1.4585)
Oil pump	Oil pump gear side clearance	0.03—0.05 (0.001—0.002)	0.07 (0.003)
	Oil pump gear-to-body clearance	0.240—0.266 (0.009—0.010)	—
	Oil pump driven gear I.D.	0.063—0.088 (0.002—0.003)	—
	Oil pump shaft O.D.	14.016—14.034 (0.5518—0.5525) 13.980—13.990 (0.5504—0.5508)	Wear or damage Wear or damage

(cont'd)

4WD Automatic Transmission M25A (cont'd) — Section 14

	MEASUREMENT	STANDARD (NEW)			
		Wire Dia.	O.D.	Free Length	No. of Coils
Springs	Regulator valve spring A	1.8 (0.07)	14.7 (0.58)	88.6 (3.49)	16.5
	Regulator valve spring B	1.8 (0.07)	9.6 (0.38)	44.0 (1.73)	7.5
	Stator reaction spring	5.5 (0.22)	26.4 (1.039)*	30.3 (1.19)	2.1
	Torque converter check valve spring	1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
	Relief valve spring	1.1 (0.04)	8.4 (0.33)	33.8 (1.33)	12.5
	2nd orifice control valve spring	0.8 (0.03)	6.6 (0.26)	38.5 (1.52)	28
	Servo orifice control valve spring	0.9 (0.04)	6.1 (0.24)	35.9 (1.41)	20
	Throttle control valve B spring	1.6 (0.06)	8.5 (0.33)	41.3 (1.63)	13.9
	Throttle control valve B adjuster spring	0.8 (0.03)	6.2 (0.24)	30.0 (1.18)	8
	1—2 shift valve spring	0.9 (0.04)	8.6 (0.34)	40.4 (1.59)	14.5
	2—3 shift valve spring	0.8 (0.03)	8.6 (0.34)	35.8 (1.41)	10.6
	3—4 shift valve spring	0.8 (0.03)	7.6 (0.30)	59.7 (2.35)	22.7
	1st accumulator spring	2.0 (0.08)	13.7 (0.54)	71.3 (2.81)	8.0/11.0
	1st-hold accumulator spring	3.2 (0.13)	24.3 (0.96)	59.5 (2.34)	5.8
	4th accumulator spring	3.5 (0.14)	18.6 (0.73)	77.0 (3.03)	11
	2nd accumulator spring	2.7 (0.11)	16.1 (0.63)	88.4 (3.48)	16.0
	3rd accumulator spring	2.8 (0.11)	15.5 (0.61)	78.7 (3.10)	15
	Lock-up control valve spring	0.8 (0.03)	6.6 (0.26)	47.9 (1.89)	25.1
	Lock-up timing valve B spring	0.9 (0.04)	5.6 (0.22)	43.6 (1.72)	30.1
	CPC valve spring	1.4 (0.06)	9.4 (0.37)	33.0 (1.30)	10.5
	Lock-up shift valve spring	1.1 (0.04)	8.1 (0.32)	51.0 (2.01)	21.3
	4—2 kick down valve spring	0.9 (0.04)	6.4 (0.25)	42.7 (1.68)	20.8
	Cooler relief valve spring	1.1 (0.04)	8.4 (0.33)	36.4 (1.43)	12
	Modulator valve springs A and B	0.9 (0.04)	8.6 (0.34)	18.2 (0.72)	5.54
	Servo control valve spring	1.0 (0.04)	8.1 (0.32)	42.0 (1.65)	16.5
	4th exhaust valve spring	0.9 (0.04)	6.6 (0.26)	37.0 (1.46)	18.7
	4—3 kick down valve spring	0.9 (0.04)	6.4 (0.25)	42.7 (1.68)	20.8

*: Inside diameter

Standards and Service Limits

Differential 2WD M/T S20 — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.07–0.130 (0.0028–0.0051)	0.180 (0.0071)
Differential carrier	Pinion shaft bore diameter	18.000–18.018 (0.7087–0.7094)	—
	Carrier-to-pinion shaft clearance	0.013–0.047 (0.0005–0.0019)	0.095 (0.004)
	Driveshaft bore diameter	26.025–26.045 (1.0246–1.0254)	—
	Carrier-to-driveshaft clearance	28.025–28.045 (1.1033–1.1041) 0.045–0.086 (0.0018–0.0034)	— 0.14 (0.006)
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	—
	Pinion gear bore diameter	18.042–18.066 (0.7103–0.7113)	—
	Pinion gear-to-pinion shaft clearance	0.055–0.095 (0.0021–0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0–0.1 (0–0.004)	Adjust with shim

Differential 2WD M/T Y21 — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.085–0.142 (0.003–0.006)	0.200 (0.008)
Differential carrier	Pinion shaft bore diameter	18.000–18.016 (0.7087–0.7093)	—
	Carrier-to-pinion shaft clearance	0.013–0.045 (0.001–0.002)	0.10 (0.004)
	Driveshaft bore diameter	28.005–28.025 (1.1026–1.1033)	—
	Carrier-to-driveshaft clearance	0.025–0.066 (0.0010–0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	—
	Pinion gear bore diameter	18.042–18.066 (0.710–0.711)	—
	Pinion gear-to-pinion shaft clearance	0.057–0.095 (0.002–0.004)	0.15 (0.006)
Set ring-to-bearing outer race		0–0.1 (0–0.004)	Adjust with shim

Differential 2WD A/T M48A — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.082–0.137 (0.0032–0.0054)	0.2 (0.0079)
Differential carrier	Pinion shaft bore diameter	15.000–15.018 (0.5906–0.5913)	—
	Carrier-to-pinion shaft clearance	0.016–0.052 (0.0006–0.0020)	0.1 (0.004)
	Driveshaft bore diameter	26.005–26.025 (1.0238–1.0246)	—
	Carrier-to-driveshaft clearance	0.025–0.063 (0.0010–0.0026)	0.12 (0.005)
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	—
	Pinion gear bore diameter	15.041–15.061 (0.5922–0.5930)	—
	Pinion gear-to-pinion shaft clearance	0.057–0.095 (0.0022–0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0–0.15 (0–0.006)	Adjust with shim

Differential 2WD A/T M24A — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.071–0.129 (0.0028–0.0051)	—
Differential carrier	Pinion shaft contact area I.D.	18.000–18.018 (15.8382–15.8540)	—
	Carrier-to-pinion clearance	0.016–0.052 (0.0006–0.0024)	0.10 (0.004)
	Driveshaft contact area I.D.	28.005–28.025 (1.1026–1.1033)	—
	Carrier-to-driveshaft clearance	0.025–0.066 (0.0010–0.0026)	0.12 (0.005)
	Ball bearing contact area O.D.	40.002–40.018 (1.5749–1.5755)	—
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	—
	I.D.	18.042–18.066 (0.7103–0.7113)	—
	Pinion gear-to-pinion shaft clearance	0.059–0.095 (0.0023–0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0–0.15 (0–0.006)	Adjust with shim

Front Differential 4WD Transmission — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Final driven gear	Backlash	0.071–0.129 (0.0030–0.0050)	—
Differential carrier	Pinion shaft bore diameter	18.000–18.018 (0.7087–0.7094)	—
	Carrier-to-pinion shaft clearance	0.016–0.052 (0.0006–0.0020)	0.1 (0.004)
	Driveshaft bore diameter	28.005–28.021 (1.1024–1.1032)	—
	Carrier-to-driveshaft clearance	0.025–0.066 (0.0010–0.0026)	0.12 (0.005)
	Ball bearing bore diameter	40.002–40.018 (1.5749–1.5755)	—
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	—
	Pinion gear bore diameter	18.042–18.066 (0.7103–0.7112)	—
	Pinion gear-to-pinion shaft clearance	0.059–0.095 (0.0023–0.0037)	0.15 (0.006)
Set ring-to-bearing outer race		0–0.10 (0–0.004)	Adjust with shim

Rear Differential 4WD Transmission without ABS — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Differential carrier assembly	Oil capacity	0.65 ℓ (0.69 US qt, 0.57 Imp qt)	—
	Replace Disassemble	0.70 ℓ (0.74 US qt, 0.62 Imp qt)	—
Differential carrier	Diameter of taper bearing contact area		
	Front drive pinion bearing	57.979–58.009 (2.2826–2.2838)	58.06 (2.286)
	Rear drive pinion bearing	71.979–72.009 (2.8338–2.8350)	72.06 (2.837)
	Side bearing	68.000–68.030 (2.6772–2.6783)	68.08 (2.680)
Differential case	Diameter of diff. pinion shaft contact area	18.000–18.018 (0.7087–0.7094)	—
	Case-to-diff. pinion shaft	0.016–0.052 (0.0006–0.0020)	0.1 (0.004)
	Diameter of drive shaft contact area	26.005–26.025 (1.0236–1.0246)	—
	Case-to-drive shaft clearance	0.025–0.066 (0.0010–0.0026)	0.12 (0.005)
	Diameter of taper bearing contact area	40.002–40.018 (1.5749–1.5755)	39.95 (1.573)
Differential pinion gear	Backlash	0.05–0.15 (0.002–0.006)	Adjust with washer
	I.D.	18.042–18.066 (0.7103–0.7113)	—
	Gear-to-pinion shaft clearance	0.059–0.095 (0.0022–0.0037)	0.15 (0.006)
Hypoid drive pinion gear	Backlash	0.11–0.16 (0.004–0.006)	Adjust with shim
	Diameter of taper bearing contact area		
	Front pinion bearing	27.987–28.000 (1.1018–1.1024)	27.93 (1.100)
	Rear pinion bearing	30.002–30.018 (1.1812–1.1818)	29.95 (1.179)

Standards and Service Limits

Rear Differential 4WD Transmission with ABS — Section 15

	MEASUREMENT	STANDARD (NEW)	SERVICE LIMIT
Clutch housing	Fluid Capacity Disassembly	0.31 ℓ (0.33 US qt, 0.27 Imp qt)	
Differential carrier assembly	Oil capacity Replace Disassembly	0.93 ℓ (0.98 US qt, 0.82 Imp qt) 1.00 ℓ (1.06 US qt, 0.88 Imp qt)	— —
Hypoid drive pinion gear	Backlash	0.10–0.15 (0.004–0.006)	Adjust with shim
2-4 shift fork	Fork projection width for 2–4 sleeve groove	6.8–6.9 (0.268–0.272)	6.65 (0.262)
Clearance of clutch hub to clutch peace		0.05–0.25 (0.002–0.100) max.	—
Preroid of hypoid drive pinion N·m (kg·cm, lb-in)		1.0–1.66 (10.0–16.6, 9–14)	—
Total preroid of hypoid drive pinion and bisccous coupling unit N·m (kg·cm, lb-in)		1.11–1.78 (11.1–17.8, 10–15)	—

Steering — Section 17

	MEASUREMENT	STANDARD (NEW)
Steering wheel	Play at steering wheel circumference Starting load at steering wheel circumference N (kg, lb) Manual steering Power steering Engine running LHD RHD	0–10 (0–0.4) 13–18 (1.3–1.8, 2.87–3.97) Except B16A2: 30 (3.0, 6.6) B16A2: 25 (2.5, 5.5) 25 (2.5, 5.5)
Gearbox	Angle of rack guide screw loosened from locked position M/S P/S LHD RHD Preload at pinion gear shaft N·m (kg·cm, lb-in) M/S P/S	50 ± 10° 20 + 5° 0° 25° max. 0.5–1.7 (5–17, 4.3–14.8) 0.6–1.1 (6–11, 5.21–9.55)
Pump	Pump pressure with valve closed (oil temp./speed: 40°C (105°F) min./idle. Do not run for more than 5 seconds). kPa (kg/cm², psi) LHD RHD	8,000–9,000 (80–90, 1,138–1,280) 5,500–6,500 (55–65, 398–470)
Power steering fluid	Recommended power steering fluid Fluid capacity System LHD RHD Reservoir	HONDA Power Steering Fluid-V 1.1 (1.16, 0.97) 1.0 (1.06, 0.88) 0.4 (0.42, 0.35)
Power steering belt*	Deflection with 100 N (10 kg, 22 lbs) between pulleys Except D16A8, D16A9 D16A8, D16A9 Tension measured with belt tension gauge N (kg, lbs) Except D16A8, D16A9 D16A8, D16A9	8.0–12.0 (0.31–0.47) with used belt 6.0–9.5 (0.24–0.37) with new belt 5.5–9.0 (0.22–0.35) with new belt 350–500 (35–50, 77–110) with used belt 500–700 (50–70, 110–154) with new belt 550–750 (55–75, 121–165) with new belt

M/S: manual steering, P/S: Power steering

*When using a new belt, adjust deflection or tension to new values. Run the engine for 5 minutes then turn it off. Readjust the deflection or tension to used belt values.

Suspension — Section 18

	MEASUREMENT			STANDARD (NEW)	SERVICE LIMIT
Wheel alignment	B16A2	Camber	Front	$-0^{\circ}05' \pm 1^{\circ}$	—
			Rear	$-0^{\circ}25' \pm 1^{\circ}$	—
		Caster	Front	$1^{\circ}10' \pm 1^{\circ}$	—
			Front	$0 \pm 2.0 (0 \pm 0.08)$	—
		Total toe	Rear	$2.0 \pm 2.0 (0.08 \pm 0.08)$	—
			Inward wheel	$36^{\circ} \pm 2^{\circ}$	—
	Except B16A2 (2WD)	Camber	Front	$0^{\circ}00' \pm 1^{\circ}$	—
			Rear	$-0^{\circ}20' \pm 1^{\circ}$	—
		Caster	Front	$1^{\circ}10' \pm 1^{\circ}$	—
			Front	$0 \pm 2.0 (0 \pm 0.08)$	—
		Total toe	Rear	$2.0 \pm 2.0 (0.08 \pm 0.08)$	—
			Inward wheel	$41^{\circ} \pm 2^{\circ}$	—
	4WD	Camber	Front	$0^{\circ}15' \pm 1^{\circ}$	—
			Rear	$-0^{\circ}25' \pm 1^{\circ}$	—
		Caster	Front	$1^{\circ}05' \pm 1^{\circ}$	—
			Front	$0 \pm 2.0 (0 \pm 0.08)$	—
		Total toe	Rear	$2.0 \pm 2.0 (0.08 \pm 0.08)$	—
			without ABS	$0 \pm 2.0 (0 \pm 0.08)$	—
Wheel	Rim runout	Aluminum wheel	Axial	$0-0.7 (0-0.03)$	2.0 (0.08)
			Radial	$0-0.7 (0-0.03)$	1.5 (0.06)
		Steel wheel	Axial	$0-1.0 (0-0.04)$	2.0 (0.08)
			Radial	$0-1.0 (0-0.04)$	1.5 (0.06)
Wheel bearing	End play		Front	$0-0.05 (0-0.002)$	—
			Rear	$0-0.05 (0-0.002)$	—

Standards and Service Limits

Brakes — Section 19

	MEASUREMENT		STANDARD (NEW)		SERVICE LIMIT
Parking brake lever	Play in stroke at 200 N (20 kg, 44 lbs) lever force		To be locked when pulled 6—10 notches		—
Foot brake pedal	Pedal height (with floor mat removed)	M/T	160 (6.30)		—
	Free play	A/T	165 (6.50) 1—5 (1/16—13/64)		—
Master cylinder	Piston-to-pushrod clearance		0—0.4 (0—0.016)		—
Disc brake	Disc thickness	Front	21.0 (0.83)		19.0 (0.75)
		D13B 3D except KQ	17.0 (0.67)		15.0 (0.59)
		Rear	9.0 (0.35)		8.0 (0.31)
	Disc runout	Front	—		0.10 (0.004)
		Rear	—		0.10 (0.004)
	Disc parallelism	Front and rear	—		0.015 (0.0006)
		Front D13B 3D except KQ	9.5 (0.37)		1.6 (0.06)
		B16A2, D16Z7 (4WD)	10.0 (0.39)		1.6 (0.06)
Rear brake drum	I.D.	2WD	180 (7.09)		181 (7.13)
		4WD	200 (7.87)		201 (7.91)
	Lining thickness	2WD	4.5 (0.18)		2.0 (0.08)
		4WD	4.0 (0.16)		2.0 (0.08)
Brake booster	Characteristics at 200 N (20 kg, 44 lbs) pedal force.		Vacuum mmHg (inHg)	Line pressure kPa (kg/cm ² , psi)	
	D16Z7 (4WD) without ABS		0 (0) 300 (11.8) 500 (19.7)	1,310 (13.1, 186) 5,460 (54.6, 776) 8,300 (83.0, 1,180)	
	B16A2 without ABS		0 (0) 300 (11.8) 500 (19.7)	1,310 (13.1, 186) 5,460 (54.6, 776) 7,650 (76.5, 1,088)	
	D16Z7 (4WD) and B16A2 with ABS		0 (0) 300 (11.8) 500 (19.7)	920 (9.2, 131) 5,570 (55.7, 792) 8,740 (87.4, 1,243)	
	D13B 3D		0 (0) 300 (11.8) 500 (19.7)	1,520 (15.2, 216) 5,310 (53.1, 755) 7,880 (78.8, 1,120)	
	Others		0 (0) 300 (11.8) 500 (19.7)	1,520 (15.2, 216) 6,380 (63.8, 907) 8,870 (88.7, 1,261)	

Air Conditioning — Section 22

Air Conditioning — Section 22

	MEASUREMENT		STANDARD (NEW)		
			MATSUSHITA	NIPPONDENSO	SANDEN
Air conditioning system	Lubricant capacity cc (fl oz)	Condenser	15 (1/2)	15 (1/2)	20 (2/3)
		Evaporator	35 (1-1/6)	35 (1-1/6)	45 (1-1/2)
		Line or hose	10 (1/3)	10 (1/3)	10 (1/3)
		Receiver	10 (1/3)	10 (1/3)	10 (1/3)
Compressor	Lubricant capacity cc(US oz, Imp oz) Stator coil resistance at 20°C (68°F), Ω Pulley-to-pressure plate clearance		140—150 (4.73—5.07, 4.93—5.28)	60—100 (2.03—3.38, 2.11—3.52)	120—140 (4.06—4.73, 4.22—4.93)
			3.16—3.50	3.4—3.8	2.65—2.95
			0.4—0.6 0.016—0.024)	0.35—0.65 (0.014—0.026)	0.35—0.65 (0.014—0.026)
Compressor belt*	Deflection with 100 N (10 kg, 22 lbs) between pulleys	6.5—10.5 (0.26—0.41) with used belt 5.0—7.0 (0.20—0.28) with new belt			
	Tension measured with belt tension gauge N (kg, lbs)	350—500 (35—50, 77—110) with used belt 600—800 (60—80, 132—176) with new belt			

*When using a new belt, adjust deflection or tension to new values. Run the engine for 5 minutes then turn it off. Readjust the deflection or tension to used belt values.

Standards and Service Limits

Unit of length: mm (in)

Electrical — Section 23

	MEASUREMENT	STANDARD (NEW)	
Ignition coil	Rated voltage V	12	
		D12B, D13B, D15B3, D15B4	D15B2, D15Z, D16Z, D16A, B16A
	Primary winding resistance Ω at 20°C (68°F) Secondary winding resistance k Ω at 20°C (68°F)	0.5—0.7 14.4—21.6	0.6—0.8 13.2—19.8
Spark plug	Type Gap	See Section 23 1.0—1.1 (0.39—0.43)	
Ignition timing	At idling ° BTDC	D12B1 (A/T): 22° (Red) BTDC D15B3 (A/T): 12° (Red) BTDC D13B, D15B3 (M/T), D15B4: 20° (Red) BTDC Others: 16° (Red) BTDC	
Alternator belt	Deflection with 100 N (10 kg, 22 lbs) between pulleys Except B16A2 B16A2	7.0—10.5 (0.28—0.41) with used belt 5.5—8.0 (0.22—0.31) with new belt 5.0—7.0 (0.20—0.28) with new belt	
	Tension measured with belt tension gauge N (kg, lbs) Except B16A2 B16A2	350—550 (35—50, 77—110) with used belt 550—750 (55—75, 121—165) with new belt 700—900 (79—90, 154—198) with new belt	
Alternator (NIPPON-DENSO)	Output 13.5 V at hot A Coil resistance (rotor) Ω Slip ring O.D. Brush length Brush spring tension g (oz)	70 2.9 14.4 (0.567) 10.5 (0.41) 330 (11.6)	— — 14.0 (0.551) 5.5 (0.22) —
Alternator (MITSUBISHI)	Output 13.5 V at hot A Coil resistance (rotor) Ω Slip ring O.D. Brush length Brush spring tension g (oz)	70 3.4—3.8 22.7 (0.89) 22.0 (0.87) 300—450 (10.6—15.9)	— — 22.2 (0.87) 8.0 (0.31) —
Alternator (NIPPON-DENSO)	Output 13.5 V at hot A Coil resistance (rotor) Ω Slip ring O.D. Brush length Brush spring tension g (oz)	80 2.8—3.0 14.4 (0.567) 10.5 (0.41) 300—360 (10.6—12.7)	— — 14.0 (0.551) 5.5 (0.22) —
Starter motor (HITACHI 0.8 kW)	Type Mica depth Commutator runout Commutator O.D. Brush length Brush spring tension (new) N (kg, lbs)	Direct drive 0.5—0.8 (0.02—0.03) 0—0.1 (0—0.004) 40.0 (1.574) 14.5—15.5 (0.57—0.61) 13 (1.3, 2.9)	0.2 (0.008) 0.4 (0.016) 39.0 (1.535) 11.0 (0.43) —
Starter motor (MITSUBA) 1.0 kW, 1.2 kW, 1.4 kW	Type Mica depth Commutator runout Commutator O.D. Brush length Brush spring tension (new) N (kg, lbs) 1.0, 1.2 kW 1.4 kW	Gear reduction 0.4—0.5 (0.016—0.020) 0—0.02 (0—0.001) 28.0—28.1 (1.102—1.106) 14.3—14.7 (0.56—0.58) 18.5—23.5 (1.85—2.35, 4.1—5.2) 16—18 (1.6—1.8, 3.5—4.0)	0.15 (0.006) 0.05 (0.002) 27.5 (1.083) 9.3 (0.37) — —
Starter motor, (NIPPON-DENSO) 1.0 kW, 1.2 kW	Type Mica depth Commutator runout Commutator O.D. Brush length Brush spring tension (new) N (kg, lbs) 1.0 kW 1.2 kW	Gear reduction 0.5—0.8 (0.02—0.03) 0—0.02 (0—0.001) 29.9—30.0 (1.177—1.181) 13.0—13.5 (0.51—0.53) 17—24 (1.70—2.40, 3.7—5.3) 14.0—20.0 (1.4—2.0, 3.1—4.4)	0.2 (0.008) 0.05 (0.002) 29.0 (1.142) 8.5 (0.33) — —

*When using a new belt, adjust deflection or tension to new belt values. Run the engine for 5 minutes then turn it off. Readjust the deflection or tension to used belt values.

Design Specifications

	ITEMS		METRIC	ENGLISH	NOTES
DIMENSIONS 2D H/B	Overall length		4,080 mm	160.6 in	For Finland only KQ KY
			4,090 mm	161.0 in	
			4,070 mm	160.2 in	
			4,075 mm	160.4 in	
	Overall width		1,695 mm	66.7 in	KY
			1,345 mm	53.0 in	
	Overall height		1,355 mm	53.3 in	
			2,570 mm	101.2 in	
	Wheelbase				Except VEi model with CATA
	Track	Front	1,475 mm	58.1 in	
		Rear	1,465 mm	57.8 in	
	Ground clearance		160 mm	6.3 in	
			150 mm	5.9 in	
	Seating capacity	Except VTi VTi	Five (5) Four (4)		
DIMENSIONS 4D	Overall length		4,405 mm	173.4 in	For Finland model KQ, KY
			4,415 mm	173.8 in	
			4,395 mm	173.0 in	
			1,695 mm	66.7 in	
	Overall width		1,375 mm	54.1 in	2WD KY 4WD
			1,390 mm	54.7 in	
	Overall height		1,395 mm	54.9 in	
			2,620 mm	103.1 in	
	Wheelbase				Except VEi model with CATA
	Track	Front	1,475 mm	58.1 in	
		Rear 2WD	1,465 mm	57.8 in	
	Ground clearance	4WD	1,455 mm	57.3 in	
			160 mm	6.3 in	
			150 mm	5.9 in	
	Seating capacity	Except VTi VTi	Five (5) Four (4)		

(cont'd)

Design Specifications

European Model

	ITEM			METRIC	ENGLISH	NOTES	
2-Door Hatchback							
WEIGHT	Curb Weight	DX	M/T	940 kg	2,072 lbs	KG,KF,KE	
				945 kg	2,083 lbs	KS	
		DXi	M/T	950 kg	2,043 lbs	KG	
				980 kg	2,161 lbs	KG	
		LSi	M/T	965 kg	2,172 lbs	KG,KF,KE	
				970 kg	2,138 lbs	KS	
			A/T	995 kg	2,194 lbs	KG,KF,KE	
				1,000 kg	2,205 lbs	KS	
		VEi	M/T	965 kg	2,127 lbs	KG,KF,KE	
				970 kg	2,138 lbs	KS	
		ESi	M/T	1,000 kg	2,205 lbs	KG,KF	
				1,015 kg	2,238 lbs	KE	
			A/T	1,005 kg	2,216 lbs	KS	
				1,030 kg	2,271 lbs	KG,KF	
				1,045 kg	2,304 lbs	KE	
				1,035 kg	2,282 lbs	KS	
		VTi	M/T	1,085 kg	2,392 lbs	KG,KE	
				1,090 kg	2,403 lbs	KS	
	Weight Distribution (Front/Rear)	DX	M/T	570/370 kg	1,257/816 lbs	KG,KF,KE	
				575/370 kg	1,268/816 lbs	KS	
		DXi	M/T	580/370 kg	1,276/816 lbs	KG	
				610/370 kg	1,345/816 lbs	KG	
		LSi	M/T	595/370 kg	1,312/816 lbs	KG,KF,KE	
				600/370 kg	1,323/816 lbs	KS	
			A/T	625/370 kg	1,378/816 lbs	KG,KF,KE	
				630/370 kg	1,389/816 lbs	KS	
		VEi	M/T	595/370 kg	1,312/816 lbs	KG,KF,KE	
				600/370 kg	1,323/816 lbs	KS	
		ESi	M/T	615/385 kg	1,356/849 lbs	KG,KF	
				625/390 kg	1,378/860 lbs	KE	
			A/T	620/385 kg	1,367/849 lbs	KS	
				645/385 kg	1,422/849 lbs	KG,KF	
				655/390 kg	1,444/860 lbs	KE	
				650/385 kg	1,433/849 lbs	KS	
		VTi	M/T	680/405 kg	1,499/893 lbs	KG,KE	
				685/405 kg	1,510/893 lbs	KS	
	Max. Permissible Weight						
	DX				1,370 kg	3,020 lbs	
	EX,VEi,DXi,LSi,VTi				1,460 kg	3,219 lbs	
	ESi				1,500 kg	3,310 lbs	

European Model

	ITEM			METRIC	ENGLISH	NOTES	
4-Door Sedan							
WEIGHT	Curb Weight	DXi	M/T	990 kg	2,183 lbs	KG	
			A/T	995 kg	2,194 lbs	KS	
				1,020 kg	2,249 lbs	KG	
				1,025 kg	2,260 lbs	KS	
		LSi	M/T	1,005 kg	2,216 lbs	KG,KE	
			A/T	1,010 kg	2,227 lbs	KS	
				1,035 kg	2,282 lbs	KG,KE	
				1,040 kg	2,293 lbs	KS	
		VEi	M/T	1,005 kg	2,216 lbs	KG,KF,KE	
			A/T	1,010 kg	2,227 lbs	KS	
		ESi	M/T	1,040 kg	2,293 lbs	KG,KF,KE	
			A/T	1,045 kg	2,304 lbs	KS	
				1,070 kg	2,359 lbs	KG,KF,KE	
				1,075 kg	2,370 lbs	KS	
		VTi	M/T	1,115 kg	2,458 lbs	KG,KE	
			A/T	1,130 kg	2,491 lbs	KE	
				1,120 kg	2,469 lbs	KS	
			RTSi	M/T	1,140 kg	2,513 lbs	KG
				A/T	1,155 kg	2,546 lbs	KG
	Weight Distribution (Front/Rear)	DXi	M/T	585/405 kg	1,290/893 lbs	KG	
			A/T	590/405 kg	1,301/893 lbs	KS	
				615/405 kg	1,356/893 lbs	KG	
				620/405 kg	1,367/893 lbs	KS	
		LSi	M/T	600/405 kg	1,323/893 lbs	KG,KE	
			A/T	605/405 kg	1,334/893 lbs	KS	
				630/405 kg	1,389/893 lbs	KG,KE	
				635/405 kg	1,400/893 lbs	KS	
		VEi	M/T	600/405 kg	1,323/893 lbs	KG,KF,KE	
			A/T	605/405 kg	1,334/893 lbs	KS	
		ESi	M/T	620/420 kg	1,367/926 lbs	KG,KF,KE	
			A/T	625/420 kg	1,378/926 lbs	KS	
				650/420 kg	1,433/926 lbs	KG,KF,KE	
				655/420 kg	1,444/926 lbs	KS	
		VTi	M/T	685/430 kg	1,510/948 lbs	KG,KF	
			A/T	695/435 kg	1,532/959 lbs	KE	
				690/430 kg	1,521/948 lbs	KS	
			RTSi	M/T	670/470 kg	1,477/1,036 lbs	KG
				A/T	685/470 kg	1,510/1,036 lbs	KG
	Max. Permissible Weight						
		DXi,LSi			1,500 kg	3,310 lbs	
		ESi,VTi,			1,520 kg	3,351 lbs	
		RTSi			1,640 kg	3,616 lbs	

Design Specifications

Except European Model

	ITEM			METRIC	ENGLISH	NOTES
2-Door Hatchback						
WEIGHT	Curb Weight	CX	M/T	970 kg	2,138 lbs	KQ
		EX	M/T	950 kg	2,043 lbs	KP
				1,008 kg	2,222 lbs	KY
			A/T	970 kg	2,138 lbs	KP
				1,028 kg	2,266 lbs	KY
		GL	M/T	976 kg	2,152 lbs	KQ
			A/T	1,001 kg	2,207 lbs	KQ
		Si	M/T	1,005 kg	2,216 lbs	KP
				1,016 kg	2,240 lbs	KQ
			A/T	1,041 kg	2,295 lbs	KQ
	Weight Distribution (Front/Rear)	CX	M/T	599/371 kg	1,321/818 lbs	KQ
		EX	M/T	585/365 kg	1,290/805 lbs	KP
				624/384 kg	1,376/847 lbs	KY
			A/T	605/365 kg	1,334/805 lbs	KP
				648/380 kg	1,429/838 lbs	KY
		GL	M/T	602/374 kg	1,327/825 lbs	KQ
			A/T	627/374 kg	1,382/825 lbs	KQ
		Si	M/T	620/385 kg	1,367/849 lbs	KP
				624/392 kg	1,376/864 lbs	KQ
			A/T	649/392 kg	1,431/864 lbs	KQ

Except European Model

	ITEM			METRIC	ENGLISH	NOTES
4-Door Sedan						
WEIGHT	Curb Weight	1.5 EL	M/T	980 kg	2,161 lbs	KP
				1,017 kg	2,242 lbs	KY
		A/T		1,000 kg	2,205 lbs	KP
				1,037 kg	2,286 lbs	KY
		1.5EX	M/T	995 kg	2,194 lbs	KP
				1,045 kg	2,304 lbs	KY
		A/T		1,015 kg	2,238 lbs	KP
				1,065 kg	2,348 lbs	KY
		GL	M/T	1,012 kg	2,231 lbs	KQ
			A/T	1,041 kg	2,295 lbs	KQ
		VEi	M/T	1,007 kg	2,220 lbs	KQ
				1,080 kg	2,381 lbs	KB
		DX	M/T	1,100 kg	2,425 lbs	KB
			A/T	1,090 kg	2,403 lbs	KB
		EX	M/T	1,110 kg	2,447 lbs	KB
			A/T	1,052 kg	2,319 lbs	KQ
		Si	M/T	1,090 kg	2,403 lbs	KY
				1,077 kg	2,374 lbs	KQ
				1,115 kg	2,458 lbs	KY
		Weight Distribution (Front/Rear)	1.5EL	M/T	585/395 kg	1,290/871 lbs
				625/392 kg	1,378/864 lbs	KY
	A/T			605/395 kg	1,334/871 lbs	KP
				649/388 kg	1,431/855 lbs	KY
	1.5EX		M/T	600/395 kg	1,323/871 lbs	KP
				633/412 kg	1,396/908 lbs	KY
	A/T			620/395 kg	1,367/871 lbs	KP
				657/408 kg	1,448/899 lbs	KY
	GL		M/T	610/402 kg	1,345/886 lbs	KQ
			A/T	635/406 kg	1,400/895 lbs	KQ
	VEi		M/T	605/402 kg	1,334/886 lbs	KQ
				655/425 kg	1,444/937 lbs	KB
	DX		M/T	680/420 kg	1,499/926 lbs	KB
			A/T	660/430 kg	1,455/948 lbs	KB
	EX		M/T	685/425 kg	1,510/937 lbs	KB
			A/T	635/417 kg	1,400/919 lbs	KQ
	Si		M/T	649/441 kg	1,431/972 lbs	KY
				660/417 kg	1,455/919 lbs	KQ
			680/435 kg	1,499/959 lbs	KY	

Design Specifications

	ITEM	METRIC	ENGLISH	NOTES
ENGINE	Type	Water-cooled, 4-stroke SOHC gasoline engine		
	Cylinder Arrangement	Water-cooled, 4-stroke DOHC gasoline engine		
	Bore and Stroke	In-line 4-cylinder, transverse mount		
	D12B	75.0 x 67.5 mm	2.95 x 2.66 in (*1)	
	D13B	75.0 x 76.0 mm	2.95 x 2.99 in (*1)	
	D15B, D15Z	75.0 x 84.5 mm	2.95 x 3.33 in (*1)	
	D16A, D16Z	75.0 x 90.0 mm	2.95 x 3.54 in (*2)	
	B16A	81.0 x 77.4 mm	3.19 x 3.05 in (*2)	
	Displacement	D12B	1,193 cm ³	73.0 cu-in
		D13B	1,343 cm ³	82.0 cu-in
		D15B, D15Z	1,493 cm ³	91.0 cu-in
		D16A, D16Z	1,590 cm ³	97.0 cu-in
		B16A	1,595 cm ³	97.3 cu-in
	Compression Ratio	D12B	8.6	
		D13B	9.0	
		D15B	9.2	
		D15Z	9.3	
		D16A7	9.1	
		D16Z	9.2	
		D16A8, D16A9	9.5	
		B16A	10.2	
	Valve Train	Belt driven, SOHC		
		Belt driven, DOHC		
	Lubrication System	Forced and wet sump, trochoid pump		
	Fuel Required	D12B1	Leaded gasoline with 85 R.O.N or higher*1	*1 Unleaded gasoline with 91 R.O.N. or higher may also be used. *2 Premium unleaded gasoline with 95 R.O.N. or higher may also be used. *3 Leaded gasoline with 91 R.O.N or higher may also be used.
		D13B3, D15B3	Leaded gasoline with 91 R.O.N or higher*1	
		D13B2, D15B2, D15B4	Unleaded gasoline with 91 R.O.N or higher	
		D15B7, D15Z1, D16A8		
		D16Z6, D16Z7, B16A2	Premium unleaded gasoline 95 R.O.N or higher	
		D16A9	Premium leaded gasoline 98 R.O.N or higher*2	
		D16A7	UNLEADED gasoline with 91 R.O.N or higher*3	
STARTER	Makes/Type	HITACHI/Direct drive, 0.8 kW		
		MITSUBA/Gear reduction, 1.0 kW, 1.2 kW and 1.4 kW		
		NIPPONDENSO/Gear reduction, 1.0 kW and 1.2 kW		
	Normal Output	0.8 kW, 1.0 kW, 1.2 kW, 1.4 kW		
	Nominal Voltage	12 V		
	Hour Rating	30 seconds		
	Direction of Rotation	Clockwise as viewed from gear end		
	Weight HITACHI 0.8 kW	3.7 kg	8.2 lb	
	MITSUBA 1.0, 1.2 kW	3.4 kg	7.5 lb	
	1.4 kW	3.5 kg	7.7 lb	
	NIPPONDENSO 1.0 kW	3.85 kg	8.49 lb	
	1.2 kW	3.4 kg	7.5 lb	

	ITEM		METRIC		ENGLISH		NOTES	
CLUTCH	Clutch Type	M/T	Single plate dry, diaphragm spring Torque converter			176 cm ²		27 sq-in
	Clutch Facing Area	A/T						
TRANS- MISSION	Transmission		Synchronized 5-speed forward, 1 reverse 4-speed automatic with lock-up clutch, 1 reverse Electronically controlled 4-speed automatic, 1 reverse Direct 1 : 1					
	Primary Reduction							
	Type		Manual					
			D12B D13B D15B D16A	D15Z1	D16Z	D16Z7 4WD	B16A	
	Gear Ratio	SL	—	—	—	4.512	—	
		1st	3.250	3.250	3.250	3.384	3.230	
		2nd	1.900	1.900	1.900	1.952	2.105	
		3rd	1.250	1.250	1.250	1.266	1.458	
		4th	0.909	0.909	0.937	0.942	1.107	
		5th	0.750	0.750	0.771	0.789	0.875	
	Reverse	3.153	3.153	3.153	3.000	3.000		
		Final Reduction	Gear ratio	4.250	3.722	4.250	4.428	4.266
	Gear type		Single helical gear					
	Type		Automatic					
			D12B, D15B3	D15B2, D16Z6	D15B4	D16A8	D16A9	D16A7 D15B7
Gear Ratio	1st	2.722	2.600	2.720	2.600	2.722	2.600	2.526
	2nd	1.555	1.393	1.500	1.393	1.500	1.468	1.428
	3rd	1.027	0.975	1.027	0.926	1.027	0.975	0.974
	4th	0.780	0.772	0.780	0.673	0.780	0.673	0.733
	Reverse	1.954	1.954	1.954	1.954	1.954	1.954	1.954
Final Reduction	Gear ratio	3.937	4.333	3.937	4.333	3.937	4.333	4.333
	Gear type	Single helical gear						

(cont'd)

Design Specifications

	ITEM	METRIC	ENGLISH	NOTES
AIR CONDI- TIONING	Cooling Capacity Conditions: Compressor Speed Outside Air Temperature Outside Air Humidity Condenser Air Velocity Blower Capacity	3,730 Kcal/h 2,200 rpm 35 → 25 → 20°C 80% → 30% 3.5 m/sec 430 m³/h	14,800 BTU/h 95 → 77 → 68°F 11.5 ft/sec 15,188 cu-ft/h	at 12 V
	Compressor Type/Makes No. of Cylinder Capacity Max. Speed Lubricant Capacity	Scroll type/SANDEN 85.6 cc/rev 10,000 min ⁻¹ (rpm) 120 cc	5.22 cu-in/rev 4.06 US oz. 4.22 Imp oz	D15Z, D16A, D16Z
	Compressor Type/Make No. of Cylinder Capacity Max. Speed Lubricant Capacity	Vane rotary type/MATSUSHITA 3 150 cc/rev 8,000 min ⁻¹ (rpm) 140 cc	9.15 cu-in/rev 4.73 US oz. 4.93 Imp oz	D12B, D13B, D15B
	Compressor Type/Make No. of Cylinder Capacity Max. Speed Lubricant Capacity	Swash-plate type/NIPPONDENSO 10 155.3 cc/rev 7,600 min ⁻¹ (rpm) 60—100 cc	9.47 cu-in/rev 2.03—3.38 US oz. 2.11—3.52 Imp oz	B16A2
	Condenser Type	Corrugated fin type		
	Evaporator Type	Corrugated fin type		
	Blower Type Motor Input Speed Control Max. Capacity	Sirocco fan 200 W/12 V 4-speed variable 430 m³/h	15,188 cu-ft/h	at 12 V
	Temp. Control	Air-mix type		
	Comp. Clutch Type Power Consumption	Dry, single plate, poly-V-belt drive 42 W max./12 V		
	Refrigerant Type Quantity	R12 650 ± ⁰ ₅₀ g	22.9 ± ⁰ _{1.8} oz	

(cont'd)

Design Specifications

	ITEM		METRIC	ENGLISH	NOTES
STEERING SYSTEM	Type	P/S	Power assisted, rack and pinion		
		M/S	rack and pinion		
	Overall Ratio	VTi	LHD: 17.5	RHD: 16.5	
		Except VTi	LHD: 17.5	RHD: 17.0	
		M/S	LHD: 19.0	RHD: 19.0	
	Turns, Lock-to-lock	VTi	LHD: 3.3	RHD: 3.1	
		Except VTi	LHD: 3.6	RHD: 3.5	
		M/S	LHD: 3.9	RHD: 3.9	
Steering Wheel Dia.	Except VEi and VTi	375 mm	14.8 in		
	VEi	380 mm	15.0 in		
	VTi	377 mm	14.8 in		
SUS-PENSION	Type, Front and Rear Shock Absorber, Front and Rear		Independent double wishbone, coil spring Telescopic, hydraulic nitrogen gas-filled		
WHEEL ALIGNMENT	Camber Front	VTi	-0°05'		
		2WD except VTi	0°00'		
		4WD	0°15'		
	Rear	VTi	-0°25'		
		2WD except VTi	-0°20'		
		4WD	-0°25'		
	Caster Front	2WD	1°10'		
		4WD	1°05'		
	Toe Front		0 mm	0 in	
		Rear	In 2.0 mm	In 0.08 in	
BRAKE SYSTEM	Type, Front		Power-assisted self-adjusting ventilated disc		Disc, 190 mm dia. Disc, 191 mm dia. Disc, 211 mm dia. Disc Drum
	Rear		Power-assisted self-adjusting solid disc or drum		
	Pad and Lining Surface Area: Front		35.8 cm ² x 2	5.5 sq-in x 2	
			43.2 cm ² x 2	6.7 sq-in x 2	
			51.5 cm ² x 2	8.0 sq-in x 2	
		Rear	21.0 cm ² x 2	3.26 sq-in x 2	
			50.2 cm ² x 2	7.8 sq-in x 2	
Parking Brake Kind and Type		Mechanical actuating, rear two wheel brakes			
TIRE	Size	175/70R13 82H			
		155R13 78S			
		185/60R14 82H			
		195/55 R15 84V			
		T135/70D15			
	Spare tire	VTi (2D H/B)			

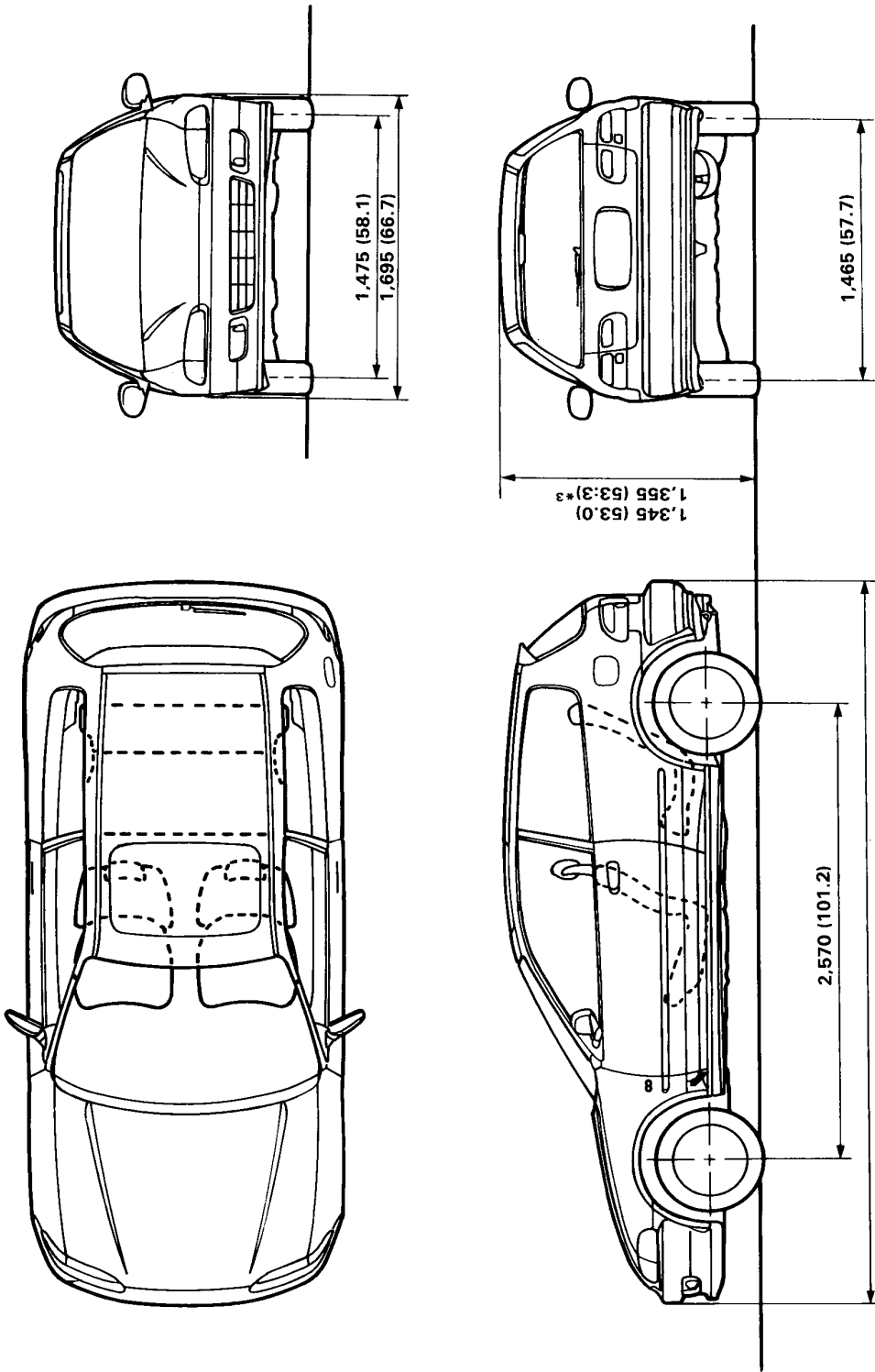
Design Specifications

	ITEM	METRIC	ENGLISH	NOTES
ELEC- TRICAL	Battery	12 V—47 AH, 36 AH, 38 AH/5 HR		
	Starter	12 V—0.8 kW, 12 V—1.0 kW, 12 V—1.2 kW, 12 V—1.4 kW		
	Alternator	12 V—70 A, 80 A		
	Fuses			
	In the Under-dash Fuse Box	7.5 A, 10 A, 15 A, 20 A, 30 A		
	In the Under-hood Fuse/Relay Box	7.5 A, 10 A, 15 A, 20 A, 30 A, 40 A, 50 A, 80 A		
	In the Under-hood ABS Fuse/Relay Box	7.5 A, 15 A, 20 A, 50 A		
	Headlights	12 V—60/55 W		
	High/Low	12 V—21 W		
	Front Turn Signal Lights	12 V—43/3CP		KY model
	Rear Turn Signal Lights	12 V—21 W		
	Brake/Taillights	12 V—21/5 W		
	High Mount Brake Light*	12 V—21 CP		KQ and KY model
		12 V—32 CP		KB model
	Back-up Lights	12 V—21 W		
	License Plate Lights	12 V—5 W		
		12 V—8 W		KB model
	Ceiling Lights	12 V—5 W		
	Trunk/Luggage Lights	12 V—3.4 W		
	Gauge Lights	12 V—3.0 W		
	Indicator Lights	12 V—1.12 W, 1.4 W		
	Illumination and Pilot Lights	12 V—1.4 W, 1.12 W, 0.84 W		
		12 V—0.91 W, 0.56 W, LED		
	Heater Illumination Lights	12 V—1.4 W		
	Rear Fog Light*	12 V—21 W		European, KB and KP model

Body Specifications

2-Door Hatchback:

Unit: mm (in)

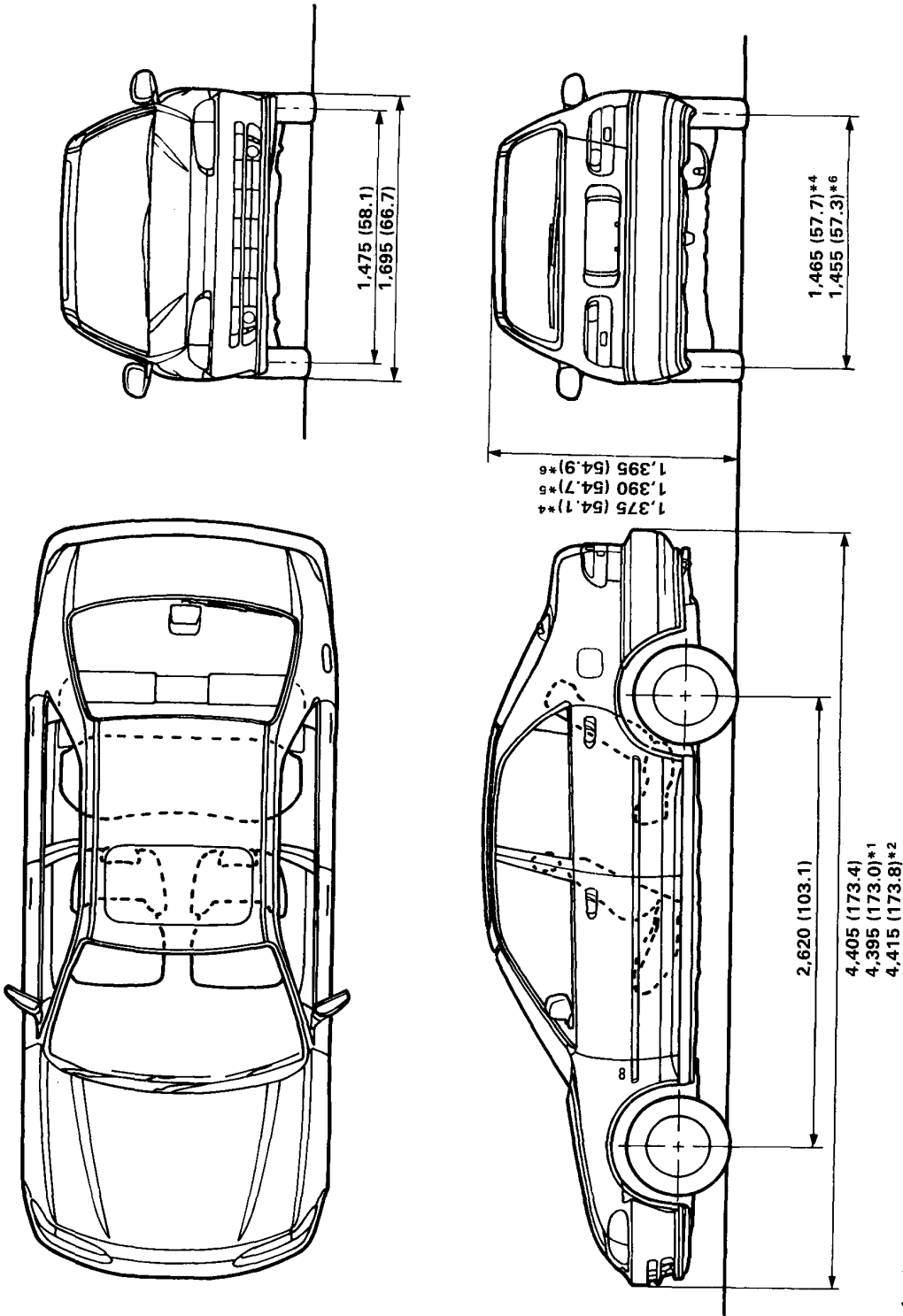


*1 Finland model, *2 KQ, *3 KY

Body Specifications

4-Door Sedan:

Unit: mm (in)



Maintenance

Lubrication Points	4-2
Maintenance Schedule	4-4



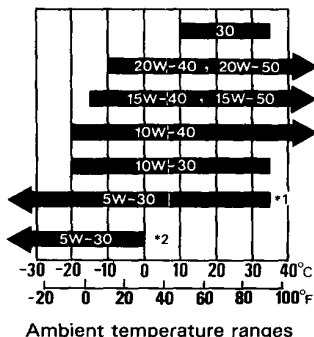
Lubrication Points

For the details of lubrication points and types of lubricants to be applied, refer to the Illustrated Index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

No.	LUBRICATION POINTS		LUBRICANT
1	Engine		API Service Grade: SF or SG fuel efficient oil SAE Viscosity: See chart below
2	Transmission	Manual	API Service Grade: SF or SG SAE Viscosity: 10 W—30 or 10 W—40
		Automatic	Honda Premium Formula or DEXRON® II Automatic transmission fluid (ATF)
3	Brake Line		Brake fluid DOT3 or DOT4
4	Clutch Line		Brake fluid DOT3 or DOT4
5	Power steering gearbox		Steering grease P/N 08733—B070E
6	Shift lever pivots (Manual transmission)		Grease with molybdenum disulfide
7	Release fork (Manual transmission)		Multi-purpose grease
8	Steering boots		
9	Tailgate hinges and latches (2-Door Hatchback)		
10	Steering ball joints		
11	Select lever (Automatic transmission)		
12	Pedal linkage		
13	Brake master cylinder pushrod		
14	Trunk hinges and latch (4-Door Sedan)		
15	Door hinges upper and lower		
16	Door opening detents		
17	Fuel filler lid		
18	Engine hood hinges and engine hood latch		
19	Clutch master cylinder pushrod		
20	Throttle cable end		
21	Rear brake shoe linkages		
22	Caliper	Piston seal, Dust seal, Caliper pin, Piston	Silicone grease
23	Power steering system		Honda power steering fluid-V
24	Rear Differential (4WD only)		Hypoid Gear oil (API GL5) Viscosity: above −18°C (0°F) SAE90, below −18°C (0°F) SAE 80 or 80W90

Recommended Engine Oil

API Service Grade: SF or SG fuel efficient oil. Select the oil for the car according to this chart.



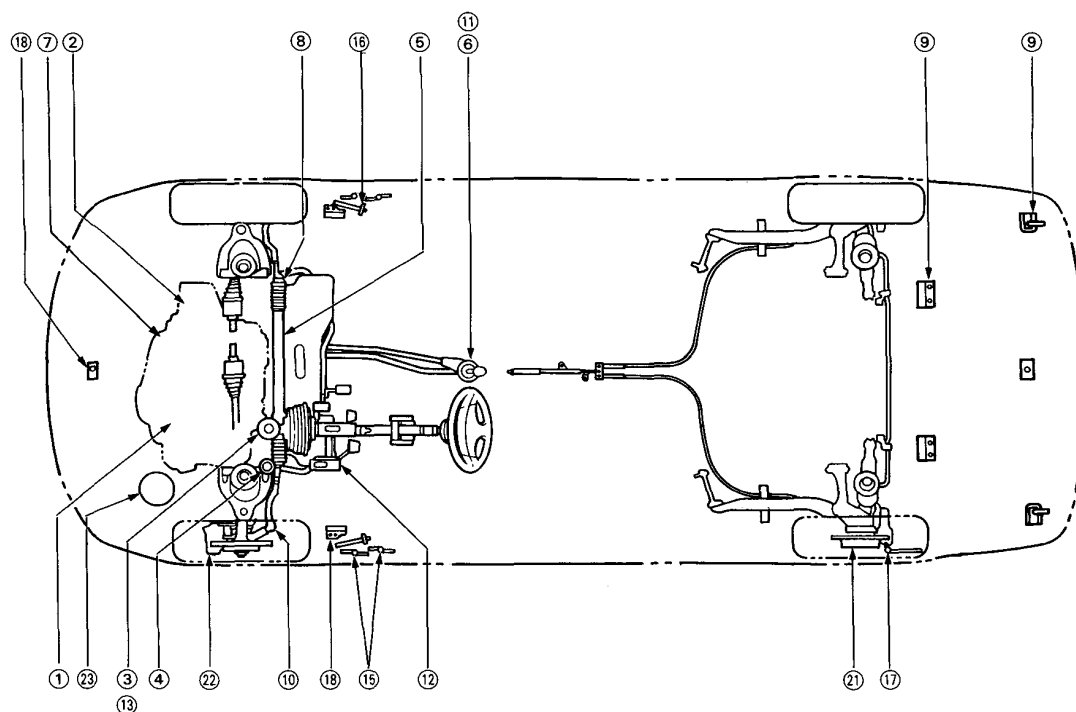
*1: Except 1.6 l models

*2: 1.6 l models

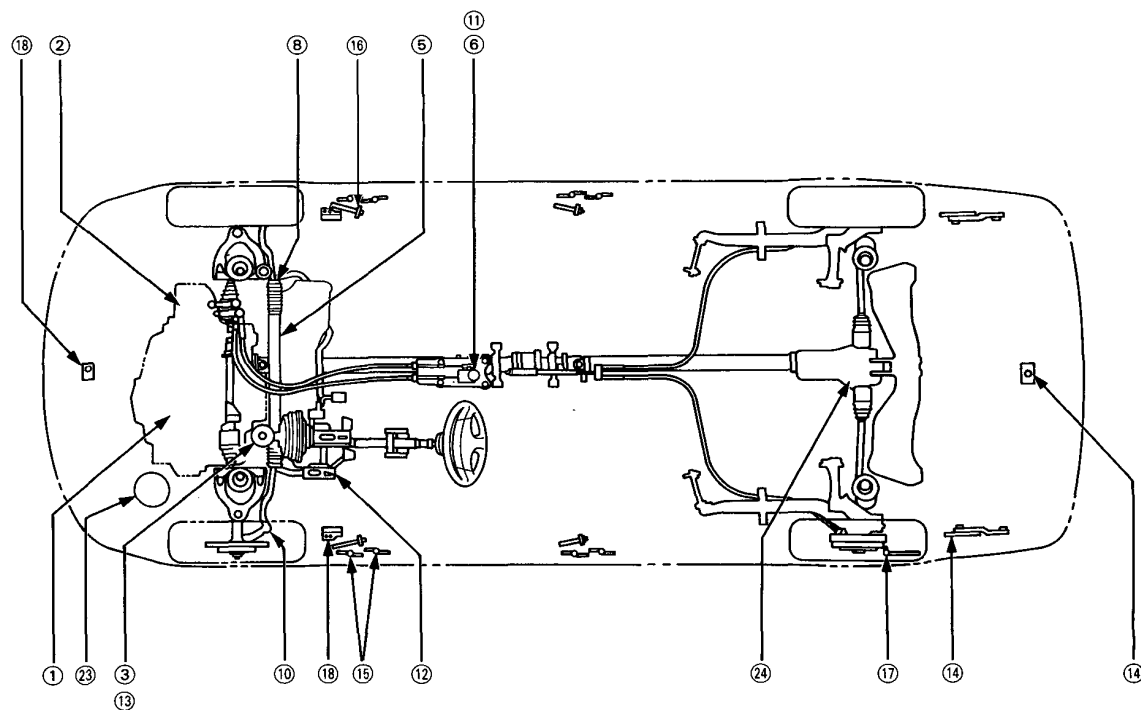
CAUTION: Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.



2-Door Hatchback:



4-Door Sedan 4WD:



Maintenance Schedule

R—Replace I—Inspect After inspection, clean, adjust, repair or replace if necessary.

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.		x 1,000 km	10	20	30	40	50	60	70	80	90	100
		x 1,000 miles	6	12	18	24	30	36	42	48	54	60
		months	6	12	18	24	30	36	42	48	54	60
Emission Related												
<input type="checkbox"/> Air Cleaner Element	For European and Australian model					R				R		
	Except for European and Australian model			R		R		R		R		R
Idle speed and idle CO	Except for Switzerland and KS model* ²			I		I		I		I		I
	For Switzerland and KS model* ²											
E.G.R. System (VEi only)												
Evaporative emission control system (For cars using unleaded gasoline and KY model)												
Ignition timing and control system	Except for Switzerland and KS model* ²					I				I		I
	For Switzerland and KS model* ²											
Positive crankcase ventilation valve	Except for Switzerland and KS model* ²					I				I		I
	For Switzerland and KS model* ²											
Blow-by filter	For carburetor types					I				I		I
Intake air temperature control system	For carburetor types											
Throttle control system	Except for KS model* ² * ³					I				I		I
	For KS model* ² * ³											
Choke opener operation	For automatic choke types* ³											
Valve clearance				I		I		I		I		I
Fuel filter (Including aux. filter)						R				R		
Tank, fuel line and connections						I				I		
Spark plugs	For cars using unleaded gasoline					R* ¹				R* ¹		
	For cars using leaded gasoline					R		R		R		R
Distributor cap and rotor	Except for Switzerland and KS model* ²					I				I		I
	For Switzerland and KS model* ²											
Ignition wiring	Except for Switzerland and KS model* ²					I				I		I
	For Switzerland and KS model* ²											
<input checked="" type="checkbox"/> Engine oil and oil filter			R	R	R	R	R	R	R	R	R	R
Alternator drive belt						I				I		
Power steering pump belt (For cars with power steering system)						I				I		
Cooling system hoses and connections						I				I		
• Radiator coolant (Engine coolant)										R* ⁴		
<input type="checkbox"/> Transmission oil						R				R		
Rear differential oil (For cars with 4WD)						R				R		

• Day to day care (engine oil, ATF and coolant level) should be done practically according to the owner's manual by the customer.

☐ Under severe driving conditions, service these items more often.

*¹ For KS model, replace every 2 years or 40,000 km (24,000 miles), whichever comes first after 30,000 km (18,000 miles).

*² KS model-Sales Country: Sweden, Norway and Finland

*³ For carburetor types

*⁴ Thereafter, replace every 2 years or 40,000 km, whichever comes first.



R—Replace I—Inspect After inspection, clean, adjust, repair or replace if necessary.

Service at the interval listed x 1,000 km (or miles) or after that number of months, whichever comes first.	x 1,000 km	10	20	30	40	50	60	70	80	90	100
	x 1,000 miles	6	12	18	24	30	36	42	48	54	60
	months	6	12	18	24	30	36	42	48	54	60
Engine (Non-Emission Related)											
Timing Belt											R
Water pump											I
Exhaust pipe and muffler			I		I		I		I		I
Catalytic converter heat shield (For cars with catalytic converter)											I
Brakes (Non-Emission Related)											
Front brake pad		I	I	I	I	I	I	I	I	I	I
<input type="checkbox"/> Front brake discs and calipers			I		I		I		I		I
<input type="checkbox"/> Rear brake discs, calipers and pad				I							
Rear brake drums, wheel cylinders and linings					I						
Brake hoses and lines (including Anti-lock brake system* ¹)			I	I	I	I	I	I	I	I	I
Parking brake			I		I						
Brake fluid (including Anti-lock brake system* ¹)					R				R		
Anti-lock brake system high pressure hose* ¹									R		
Anti-lock brake system operation* ¹			I		I						
Steering, suspension miscellaneous (Non-Emission Related)											
Front wheel alignment			I		I		I		I		I
Steering operation, tie rod ends, steering gear box and boots			I		I						
Suspension mounting bolts			I		I		I		I		I
<input type="checkbox"/> Power steering system (For cars with power steering system)			I		I		I		I		I
Rear differential clutch operation* ² (For cars with 4WD)			I		I						
Supplemental Restraint System											
Inspect system and replace slip ring 10 years after first registration.											

• Day to day care (engine oil, ATF and coolant level) should be done practically according to the owner's manual by the customer.

☐ Under severe driving conditions, service these items more often.

*¹ For cars with Anti-lock brake system.

Severe Driving Conditions

Items marked a ☐ need service more often, if you drive in these conditions.

The conditions are:

- A. Repeated short distance driving.
- B. Dusty conditions.
- C. Severe cold weather.
- D. Areas with road salt or other corrosive materials.
- E. Rough or muddy roads.
- F. Towing a trailer.

The services are:

- Replace engine oil and oil filter every 5,000 km (3,000 miles) or 3 months under condition A, B or F.
- Replace the air cleaner element every 20,000 km (12,000 miles) or 12 months for European and Australian model under condition B or E.
- Replace the air cleaner element every 10,000 km (6,000 miles) or 6 months for other than European and Australian model under condition B or E.
- Replace transmission oil every 20,000 km (12,000 miles) or 12 months under condition F.
- Inspect the front brake discs and calipers every 10,000 km (6,000 miles) or 6 months under condition A, B, D, E or F.
- Inspect the rear brake discs, calipers and pads every 20,000 km (12,000 miles) or 12 months under condition A, B, D, E or F.
- Inspect the power steering system every 10,000 km (6,000 miles) or 6 months under condition B, C or E.

Cylinder Head/Valve Train

Rocker Shaft Collars

Selection (D15Z1 engine) 6-2



Outline of Model Changes

- The rocker shaft collars have been modified.

Selection (D15Z1 engine)

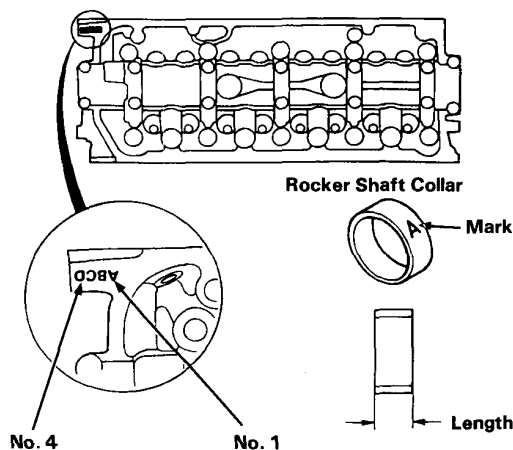
CAUTION:

If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.

Cam Holder Length Code Location (Marks)

Marks have been stamped on the upper face end of the cylinder head as a code for the length of each cam holder.

Use them, and the marks stamped on the rocker shaft collar (code for collar length), to choose the correct rocker shaft collars from the table below.



Fitting Table

Cylinder Head Marks	A	B	C	D	E	F
Shaft Collar Marks	A	B	C	D	E	F

Rocker Shaft Collar

Marks	Part Number	Length mm (in)
A	14651-P07-000	8.925-8.975 (0.3514-0.3533)
B	14652-P07-000	8.875-8.925 (0.3494-0.3514)
C	14653-P07-000	8.825-8.875 (0.3474-0.3494)
D	14654-P07-000	8.775-8.825 (0.3455-0.3474)
E	14655-P07-000	8.725-8.775 (0.3435-0.3455)
F	14656-P07-000	8.675-8.725 (0.3415-0.3435)

Fuel and Emissions

Carbureted Engine	11-1
Fuel-injected Engine	11-5



Fuel and Emissions (Carbureted Engine)

PGM-CARB Control System

Troubleshooting Flow Charts..... 11-2

Fuel Supply System

Fuel Hoses and Fuel Pipes 11-3



Outline of Model Changes

- The main wire harness color has been changed on PGM-CARB Control System.
- The material of the fuel feed pipe, fuel return pipe and fuel vapor pipe on the 2WD (except Europe) model has been changed.

PGM-CARB Control System

Troubleshooting Flowchart

A few wire colors of the main wire harness have been changed.

ECU TERMINAL	'92 model MAIN WIRE HARNESS COLOR	'93 model MAIN WIRE HARNESS COLOR	SYSTEM
B6	GRN/BLK	LT GRN	A/T Lock-up Control Solenoid Valve B
B15	WHT/GRN	PNK/WHT	Idle Boost Solenoid Valve

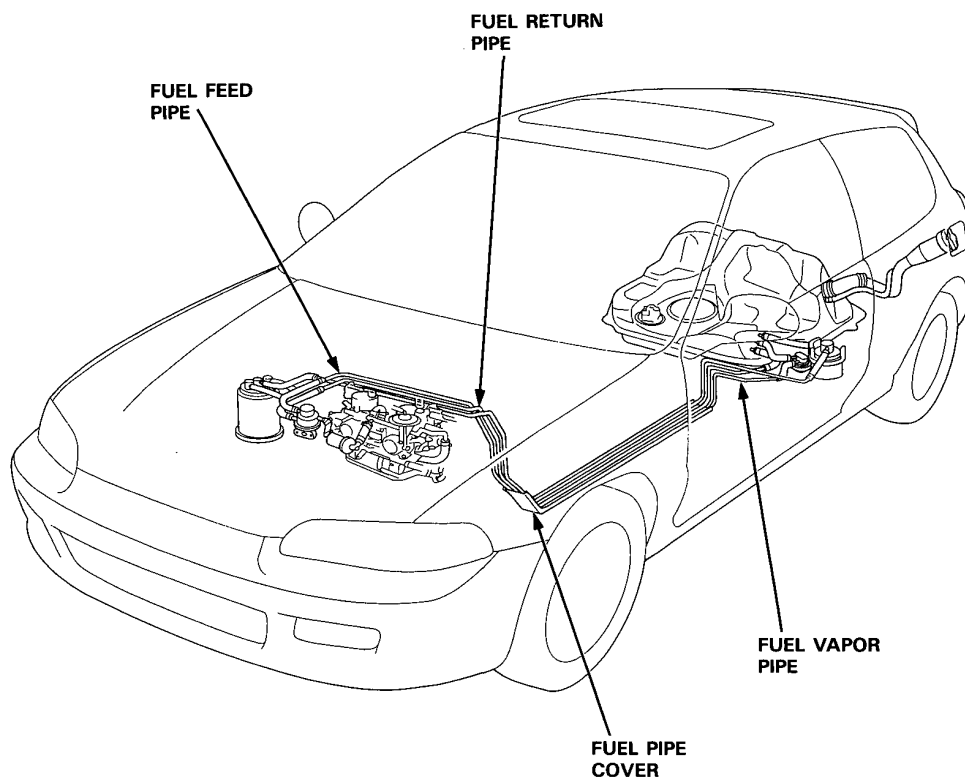


Fuel Supply System

Fuel Hoses and Fuel Pipes (except European model)

Inspection

1. Inspect the fuel hoses for damage, leaks, interference or twisting.
2. Check the fuel feed pipe, fuel return pipe and fuel vapor pipe for damage, tipping, rusting or leakage. Also check for bent fuel lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.



Fuel and Emissions (Fuel-injected Engine)

Component Locations	
Index	11-6
PGM-FI Control System	
Troubleshooting Flowcharts	11-7
Fuel Supply System	
System Troubleshooting Guide	11-9
Jet Pump (4WD)	11-10
Fuel Hoses and Fuel Pipes	11-12



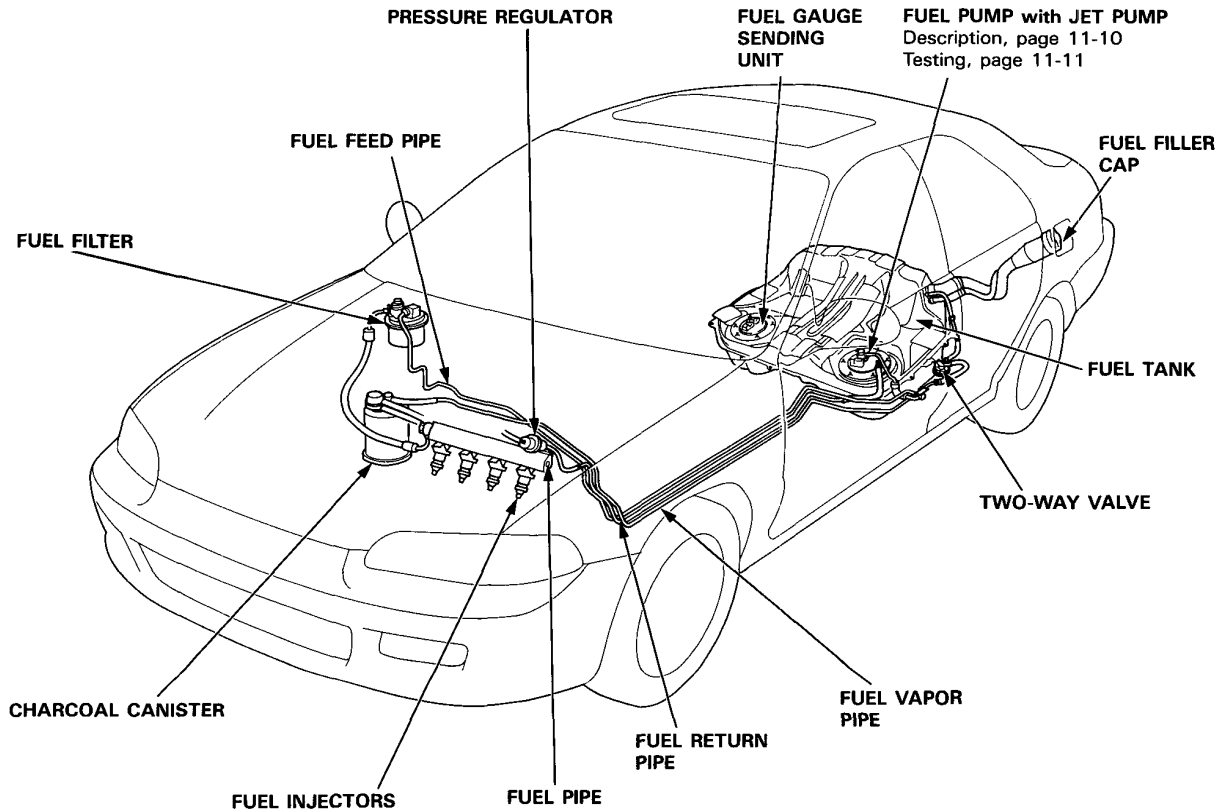
Outline of Model Changes

- The main wire harness color has been changed on PGM-FI Control System.
- The fuel-sub pump has been out of use on the 4WD model.
- The jet pump has been added on the 4WD model.
- The material of the fuel feed pipe, fuel return pipe and fuel vapor pipe on the 2WD (except Europe) model has been changed.

Component Locations

Index

4WD:



PGM-FI Control System



Troubleshooting Flowchart

Several wire colors of the main wire harness have been changed.

Except D15B2 engine:

ECU TERMINAL	'92 model MAIN WIRE HARNESS COLOR	'93 model MAIN WIRE HARNESS COLOR	SYSTEM	CODE
D17	WHT	PNK/WHT	MAP Sensor	3
D11	RED/BLU	PNK/BLU	Throttle Angle Sensor	7
A11	ORN/BLU	PNK/GRN	EGR Control System	12
A17	GRN/BLK	LT GRN	Lock-Up Control Solenoid Valve	19

D15B2 engine:

ECU TERMINAL	'92 model MAIN WIRE HARNESS COLOR	'93 model MAIN WIRE HARNESS COLOR	SYSTEM	CODE
C11	WHT	PNK/WHT	MAP Sensor	3

Fuel Supply System

System Troubleshooting Guide



NOTE: Across each row in the chart, the sub-systems that could be sources of a symptom are ranked in the order they should be inspected starting with ①. Find the symptom in the left column, read across to the most likely source, then refer to the page listed at the top of that column. If inspection shows the system is OK, try the next most likely system ②, etc.

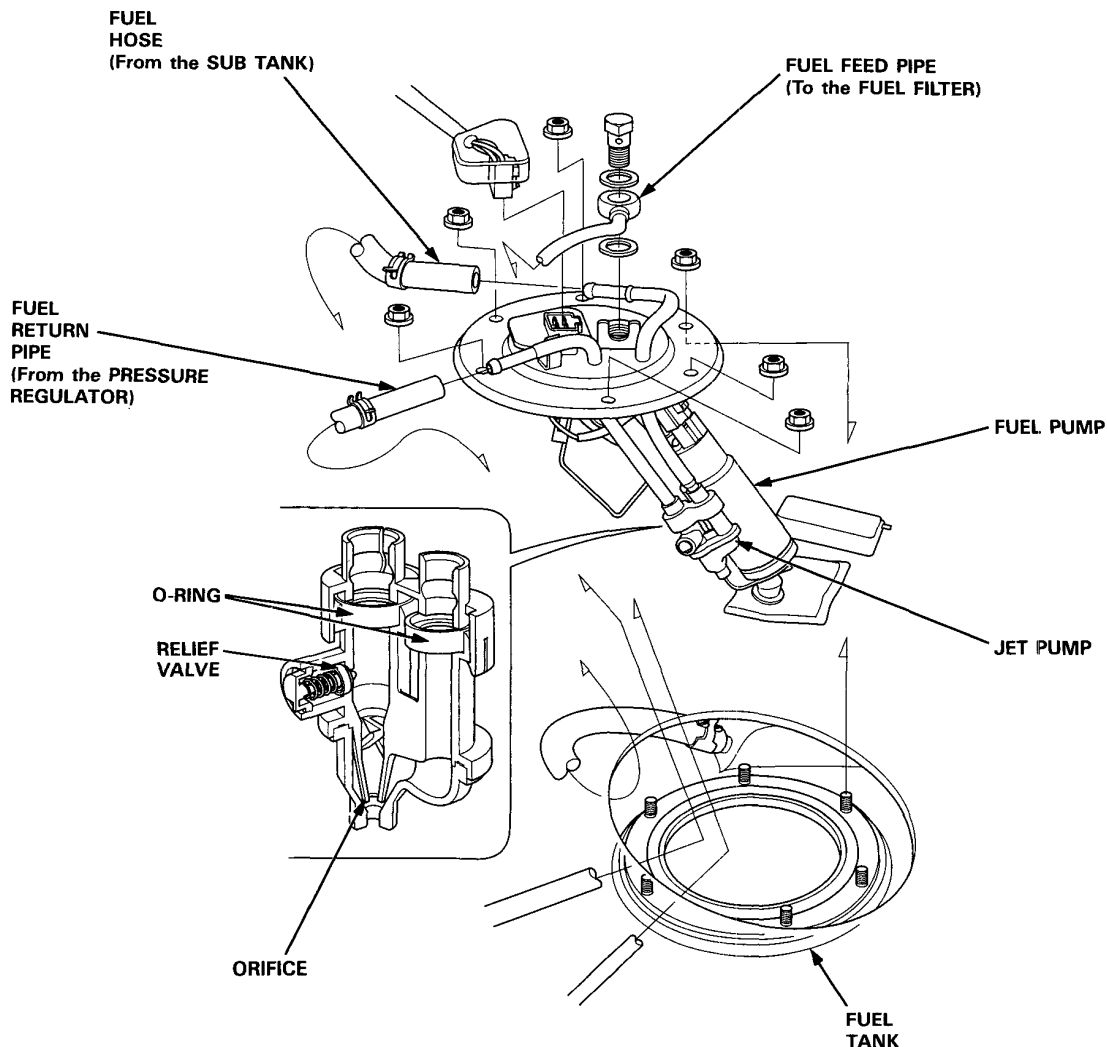
PAGE	SUB-SYSTEM	FUEL INJECTOR	PRESSURE REGULATOR	FUEL FILTER	FUEL PUMP	JET PUMP (4WD)	MAIN RELAY	CONTAMINATED FUEL
SYMPTOM		—	—	—	—	10	—	—
ENGINE WON'T START				③	①	③	②	
DIFFICULT TO START ENGINE WHEN COLD OR HOT				①				
ROUGH IDLE		①						②
POOR PERFORMANCE	MISFIRE OR ROUGH RUNNING	①	③					②
	FAILS EMISSION TEST	②	①					
	LOSS OF POWER	③		②	①			
FREQUENT STALLING	WHILE WARMING UP		①					
	AFTER WARMING UP		①					

Fuel Supply System

Jet Pump (4WD)

Description

As soon as the engine starts, the fuel pump feeds fuel under pressure to the injectors with excess fuel returned to the fuel tank. The jet pump operates on the pressure under which the excess fuel is returned to the fuel tank through the fuel return pipe. The jet pump features lighter construction and higher reliability thanks to its fewer parts to require attention.



Operation

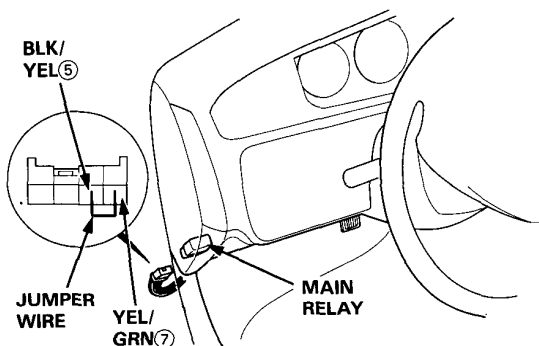
In the main fuel tank, the jet pump is connected to the end of the fuel return pipe with an orifice at the other end. As fuel passes through the orifice, vacuum is produced. Since the orifice is located in the end of a passage leading to the sub tank and open to the main tank, the vacuum causes fuel to be drawn from the sub tank into the main tank. A pressure relief valve is provided in the jet pump to prevent abnormal pressure from being attained within the fuel line when the orifice is clogged.



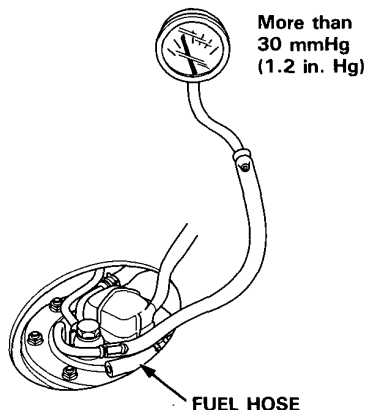
Testing

⚠ WARNING Do not smoke during the test. Keep open flame away from your work area.

1. Remove the rear seat (section 20).
2. Remove the left maintenance lid.
3. Remove the fuel filler cap.
4. Disconnect the fuel hose from the sub tank, then connect a vacuum pressure gauge to the fuel pipe from the jet pump.
5. Turn the ignition switch OFF and disconnect the main relay connector and connect the BLK/YEL ⑤ wire and YEL/GRN ⑦ wire with a jumper wire.



6. Turn the ignition switch ON and check that vacuum reads more than 30 mmHg (1.2 in. Hg) on the gauge.



- If vacuum is correct, check the sub tank fuel pipe and filter for clogging.
- Ability of the jet pump to draw fuel from the sub tank into the main tank is directly affected by the operation of the main fuel pump. If vacuum is out of specs, be sure to check the main fuel pump for correct discharge.

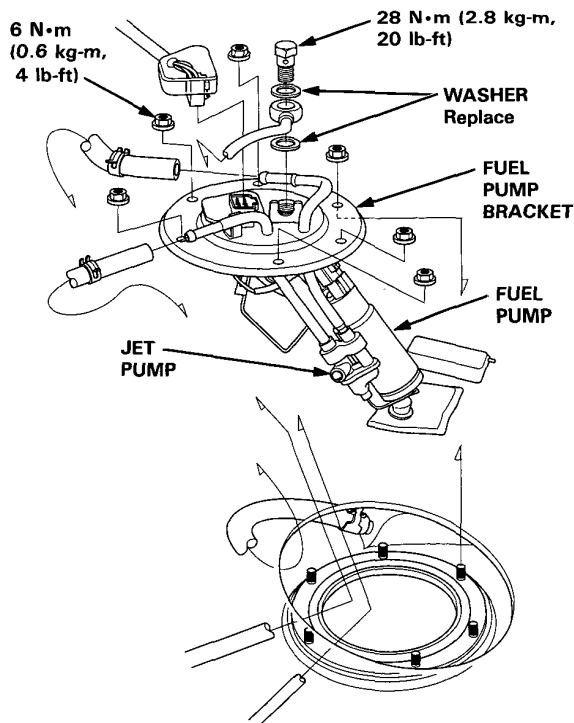
Replacement

⚠ WARNING Do not smoke while working on fuel system. Keep open flames away from your work area.

1. Relieve the fuel pressure.
2. Remove the rear seat (Section 20).
3. Remove the fuel filler cap.
4. Remove the left maintenance lid.
5. Disconnect the fuel lines and connector.
6. Remove the fuel pump mounting nuts.
7. Remove the fuel pump from the fuel tank.
8. Remove the jet pump from the pipes.

NOTE:

- Do not twist or bend the fuel pipes.
- Take care not to damage the O-rings, and make sure install a new jet pump.
- Be sure to replace the O-rings with new ones whenever the jet pump is removed.

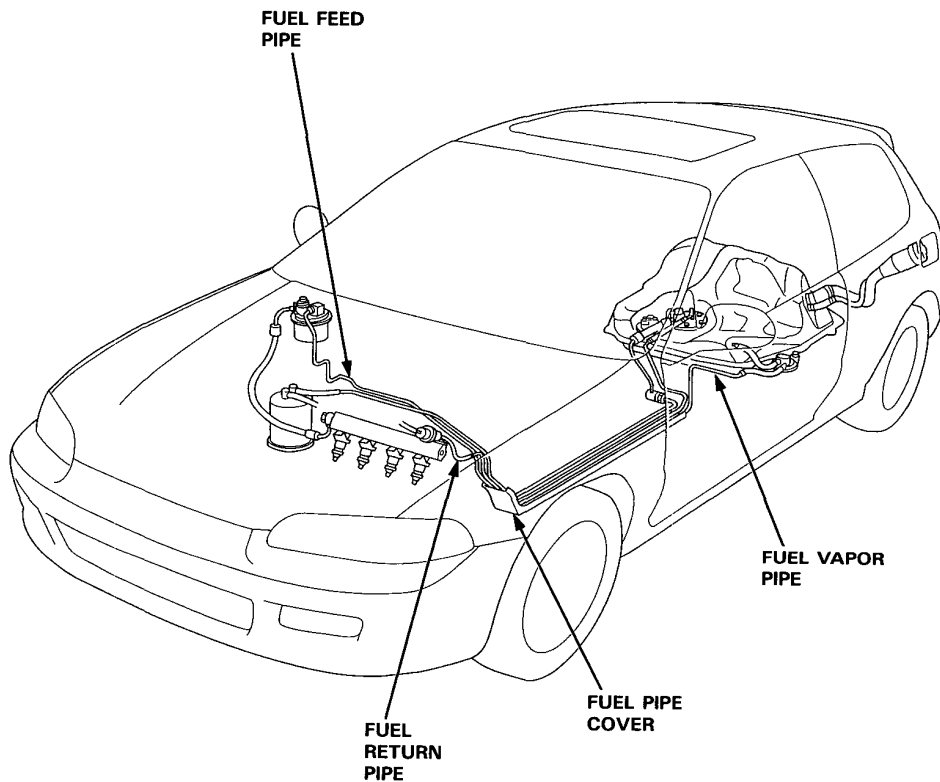


Fuel Supply System

Fuel Hoses and Fuel Pipes (except European model)

Inspection

1. Inspect the fuel hoses for damage, leaks, interference or twisting.
2. Check the fuel feed pipe, fuel return pipe, fuel vapor pipe and fuel pipe cover for damage, tipping, rusting or leakage. Also check for bent fuel lines.
3. Check for leaks at hose and line joints or connections, and retighten if necessary.



Clutch

Special Tools	12-2
Illustrated Index	12-3
Release Bearing	
Installation	12-4
Clutch Disc, Pressure	
Plate Installation	12-4

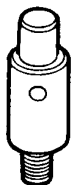


Outline of Model Changes

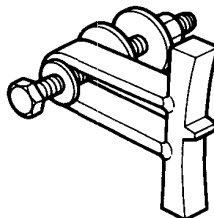
- The clutch pipe torque (LHD type) have been changed.
- The grease type has been changed.

Special Tools

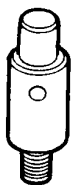
Ref. No.	Tool Number	Description	Qty	Page Reference
①	07JAF—PM7012A	Clutch Alignment Shaft	1	12-4, 5, 6
②	07LAB—PV00100 or 07924—PD20003	Ring Gear Holder	1	12-4, 5, 6
③	07LAF—PR30100	Clutch Alignment Shaft	1	12-4, 5, 6
④	07936—3710100	Handle	1	12-4, 5, 6



①



②

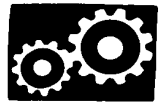


③



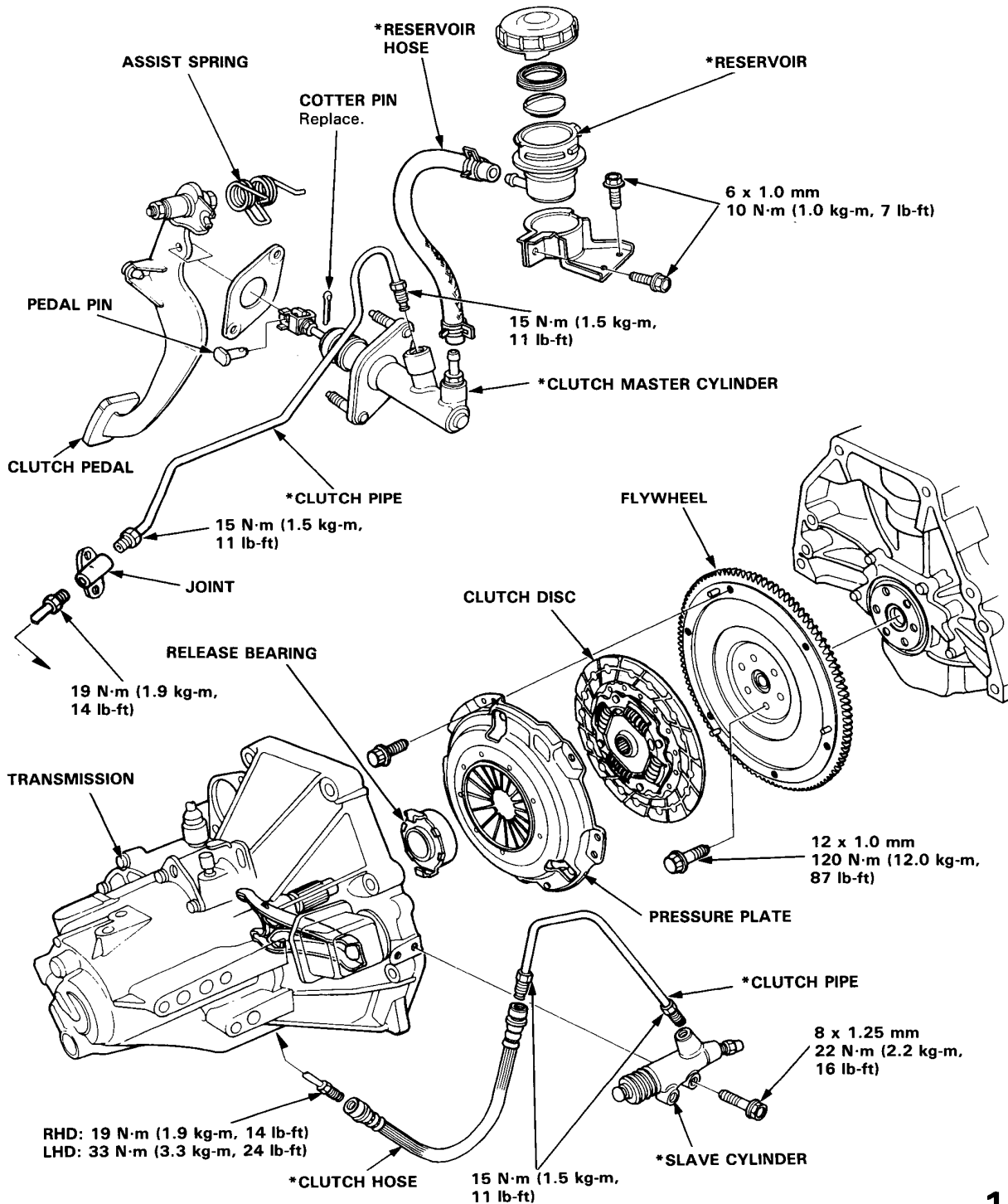
④

Illustrated Index



NOTE:

- Whenever the transmission is removed, clean and grease the release bearing sliding surface.
- If the parts marked * are removed, the clutch hydraulic system must be bled.
- Bleed the clutch hydraulic system.
- Inspect the hoses for damage, leaks, interference, and twisting.



Release Bearing

Installation

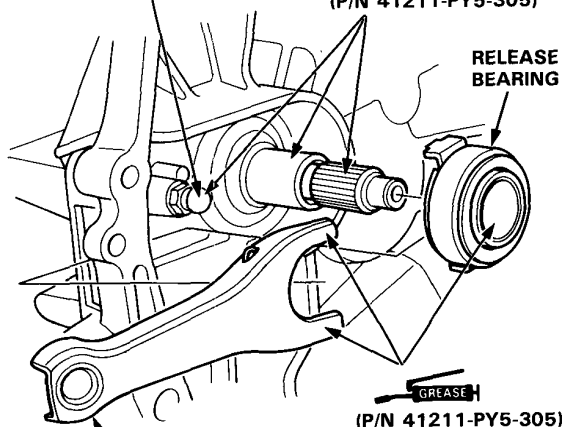
NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211-PY5-305).

1. With the release fork slid between the release bearing pawls,, install the release bearing on the main-shaft while inserting the release fork through the hole in the clutch housing.
2. Align the detent of the release fork with the release fork bolt, then press the release fork over the release fork bolt.

RELEASE FORK BOLT
30 N·m (3.0 kg-m, 22 lb-ft)

GREASE
(P/N 41211-PY5-305)

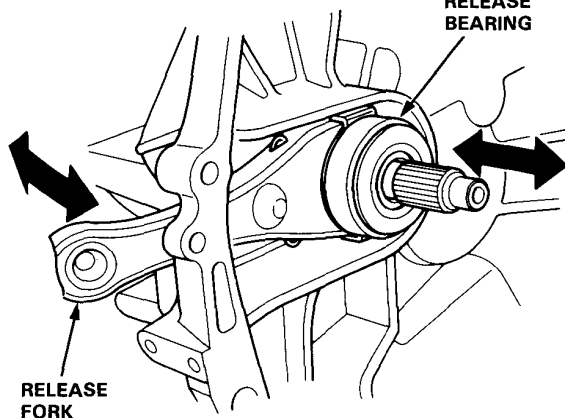
RELEASE BEARING



RELEASE FORK

3. Move the release fork right and left to make sure that the release fork fits properly against the release bearing, and that the release bearing slides smoothly.

RELEASE BEARING



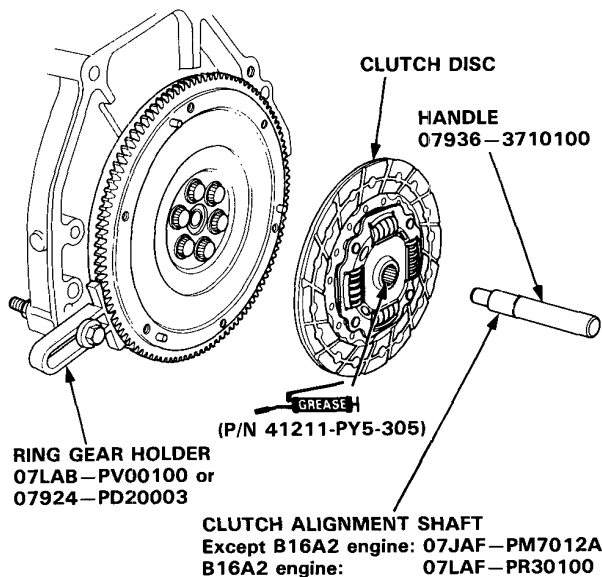
RELEASE FORK

Clutch Disc, Pressure Plate

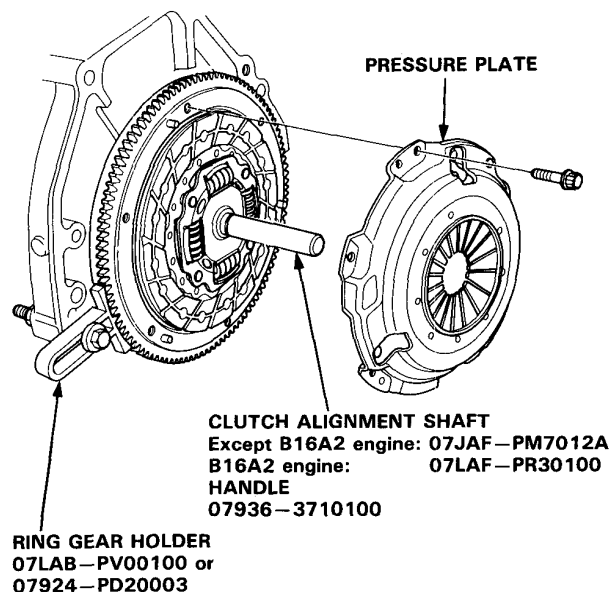
Installation

1. Install the Ring Gear Holder.
2. Install the clutch disc using the special tools.

NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211-PY5-305).



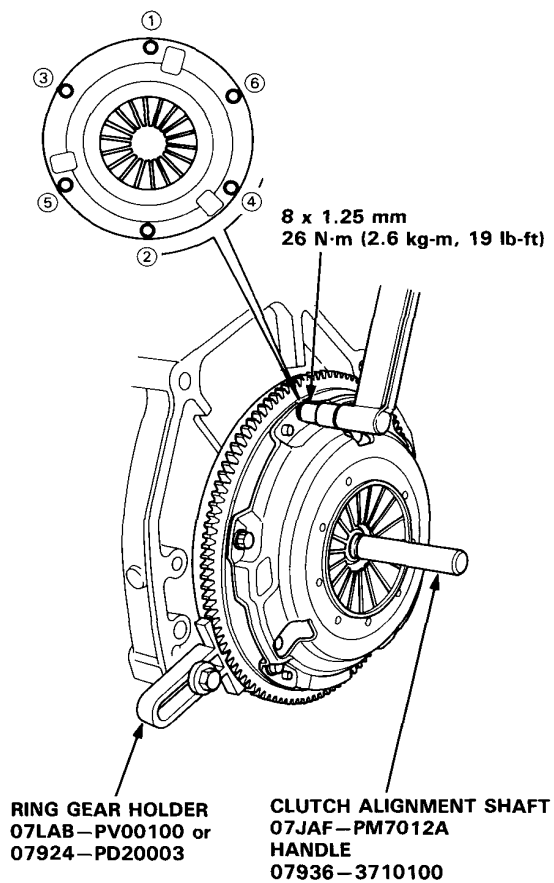
3. Install the pressure plate.



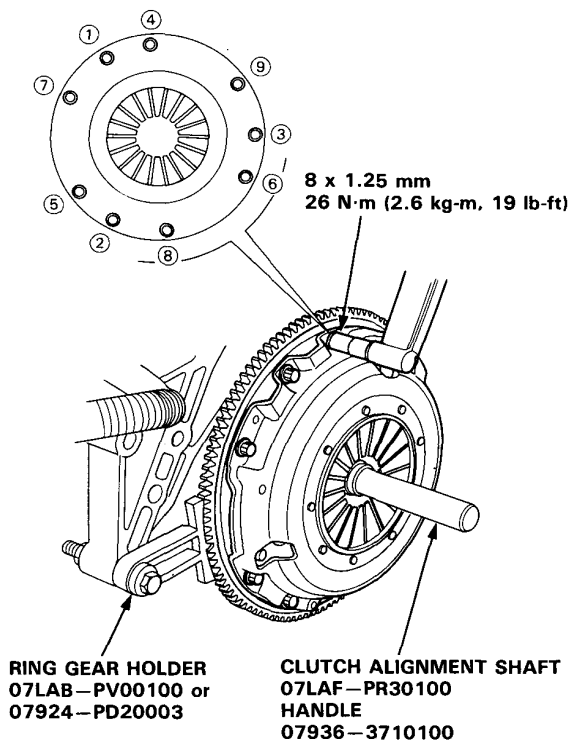


4. Torque the bolts in a crisscross pattern as shown. Tighten them two turns at a time to prevent warping the diaphragm spring.

Except B16A2 engine:



B16A2 engine:



Manual Transmission

Special Tools	13-2
Transmission Assembly	
Installation	13-3
Shift Fork Assembly (Y21 type)	
Disassembly/Reassembly	13-7

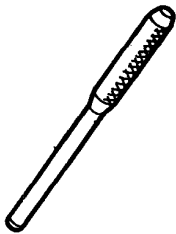


Outline of Model Changes

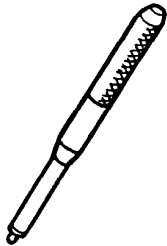
- The grease type has been changed, therefore the method of the transmission installing have been re-written.
- The method of the shift fork spring pin installing has been changed.

Special Tools

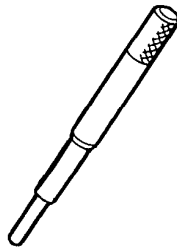
Ref. No.	Tool Number	Description	Qty	Page Reference
①	07744-0010200	Pin Driver, 3.0 mm	1	13-7
②	07744-0010400	Pin Driver, 5.0 mm	1	13-7
③	07744-0010600	Pin Driver, 8.0 mm	1	13-4



①



②



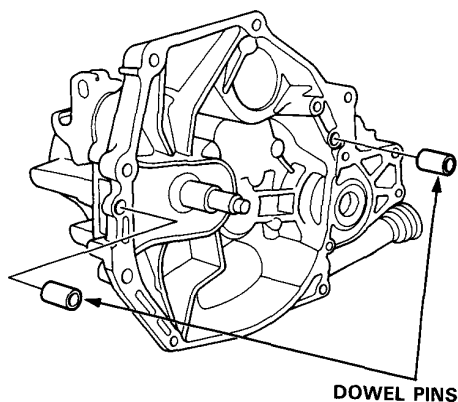
③



Transmission Assembly

Installation

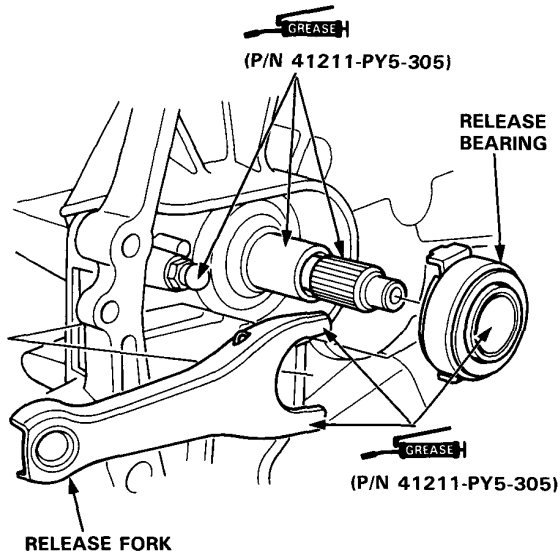
1. Install the dowel pins.



DOWEL PINS

2. Apply grease to the parts as shown.

NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211-PY5-305).



3. Install the release fork boot.

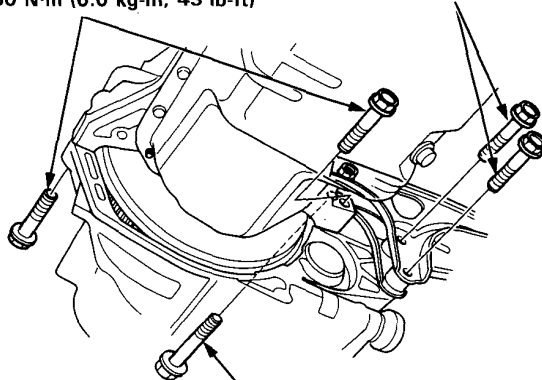
4. Place the transmission on the transmission jack, and raise it to the engine level.
5. Install the transmission mounting bolts and rear mount bolts.

TRANSMISSION MOUNTING BOLTS

12 x 1.25 mm
60 N·m (6.0 kg-m, 43 lb-ft)

REAR MOUNT BOLTS

14 x 1.5 mm
85 N·m (8.5 kg-m, 61 lb-ft)



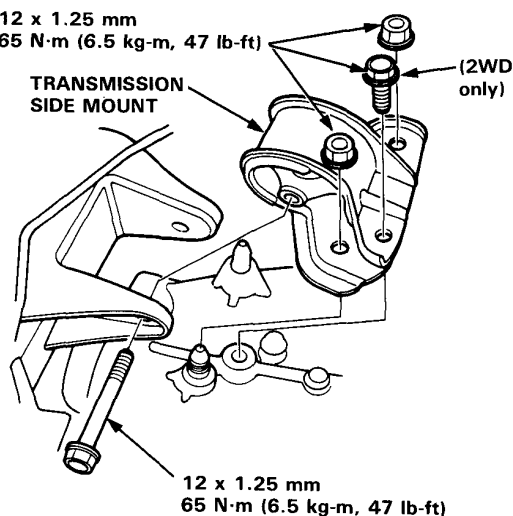
TRANSMISSION MOUNTING BOLTS

14 x 1.5 mm
85 N·m (8.5 kg-m, 61 lb-ft)

6. Raise the transmission, then install the transmission side mount.

12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)

TRANSMISSION SIDE MOUNT



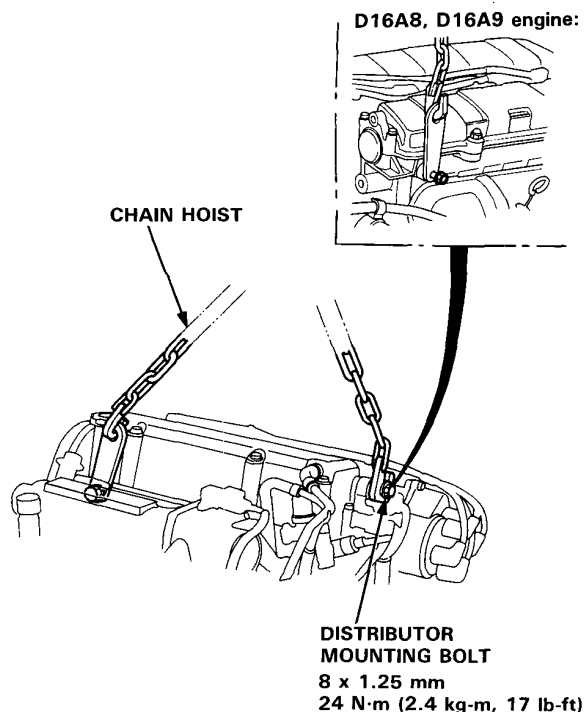
12 x 1.25 mm
65 N·m (6.5 kg-m, 47 lb-ft)

(cont'd)

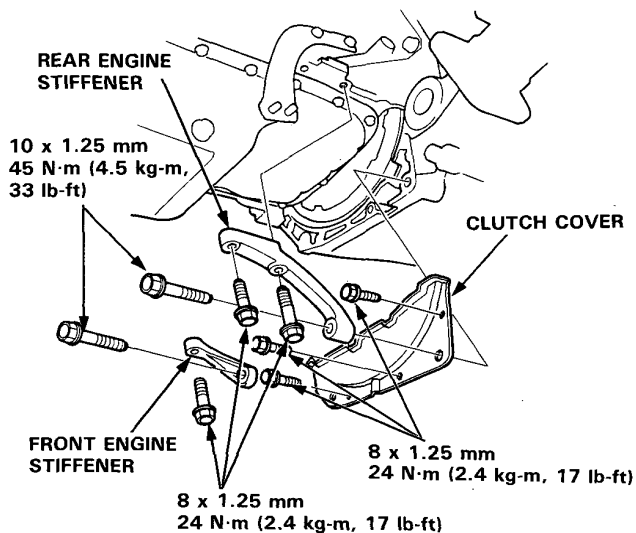
Transmission Assembly

Installation (cont'd)

7. Remove the chain hoist, then reinstall the distributor mounting bolts.

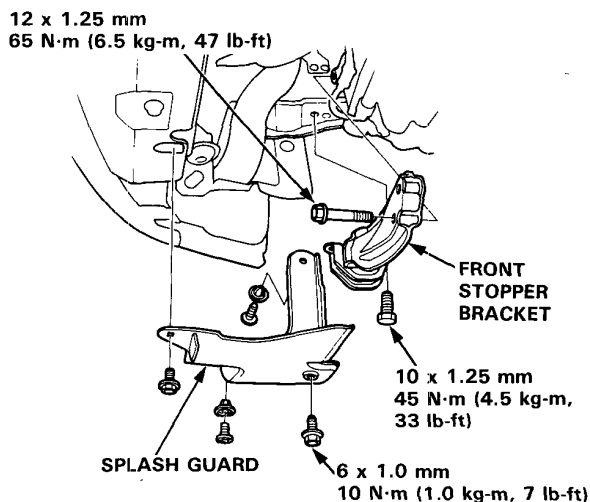


8. Install the clutch cover, front and rear engine stiffener.



9. Install the front stopper bracket.

10. Install the splash guard.

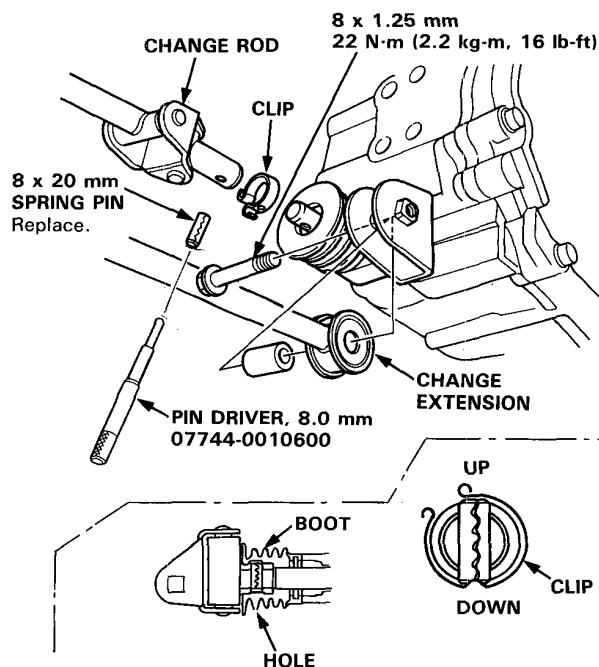


11. Install the change rod, 8 x 20 mm spring pin and clip.

NOTE:

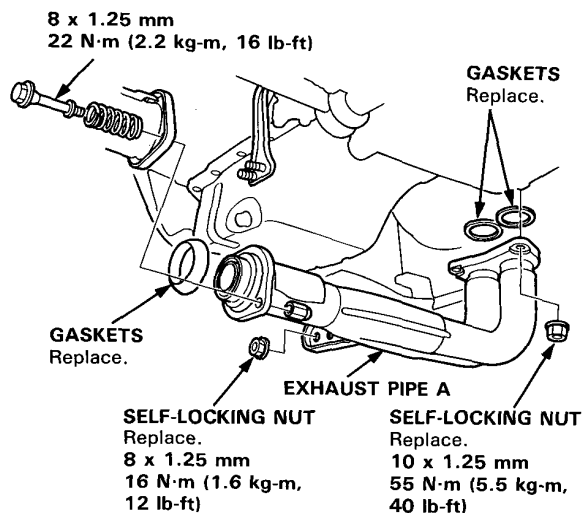
- Install the clip on the change rod as shown.
- Turn the boot so the hole is facing down.
- Make sure the boot is installed on the change rod.

12. Install the change extension.





13. Install exhaust pipe A.

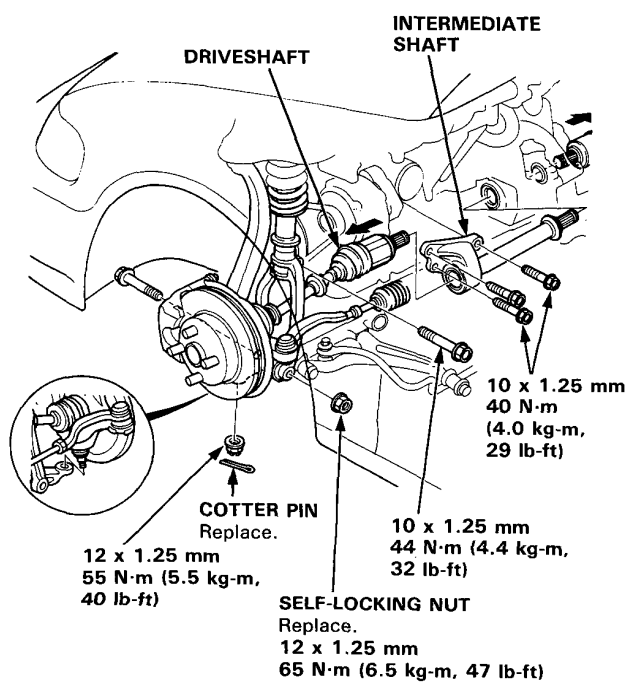


14. Install the intermediate shaft and driveshafts.

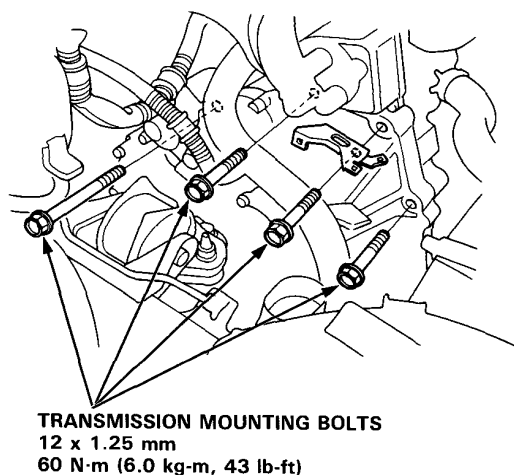
NOTE: Use the set rings with new ones.

15. Install the ball joint onto the lower arm.

16. Install the damper fork.

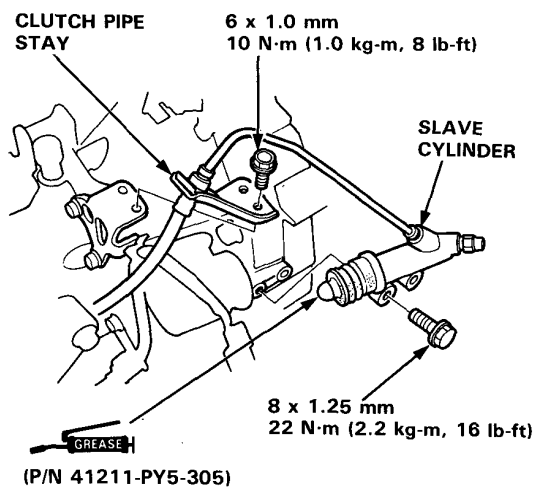


17. Install the transmission mounting bolts.



18. Install the slave cylinder, then install the clutch pipe stay.

NOTE: Use only HONDA Genuine Urea Grease UM264 (P/N 41211-PY5-305).



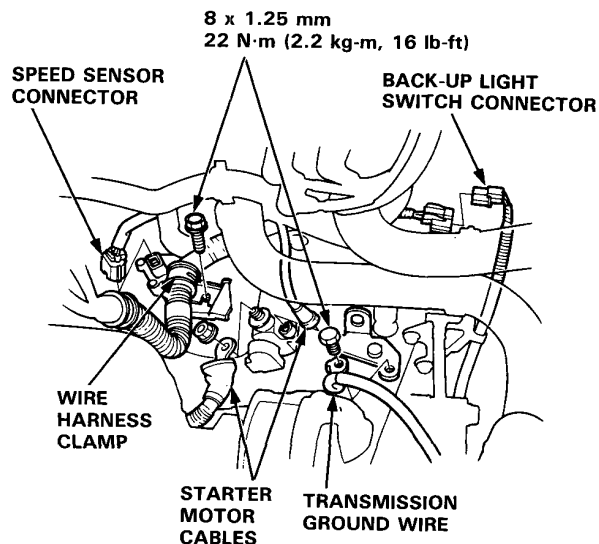
(cont'd)

Transmission Assembly

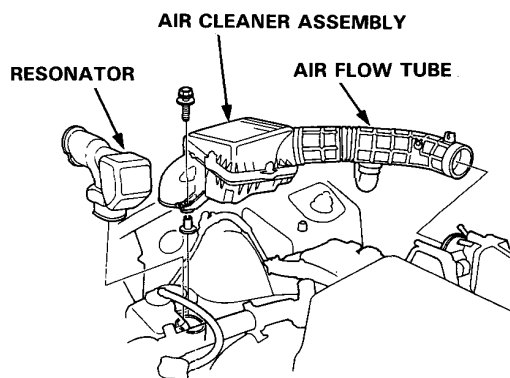
Installation (cont'd)

19. Connect the speed sensor connector, back-up light switch connector, transmission ground wire, and starter motor cables.

20. Install the wire harness clamp.



21. Install the resonator, air cleaner assembly, and air flow tube.



22. Refill the transmission with oil.

23. Connect the positive (+) and negative (-) cables to the battery.

24. Check the clutch operation.

25. Shift the transmission and check for smooth operation.



Shift Fork Assembly (Y21 type)

Disassembly/Reassembly

NOTE: Install the spring pins, so their grooves are 90° apart.



Prior to reassembling, clean all the parts in solvent, dry them and apply lubricant to any contact surfaces.

Disassembly: Remove with the 3 x 22 mm spring pin and 5 x 22 mm spring pin.

Reassembly: Install the 5 x 22 mm spring pin first, then install the 3 x 22 mm spring pin.

5TH/REVERSE SHIFT FORK SHAFT

3RD/4TH SHIFT FORK

5 x 22 mm SPRING PIN
Replace.

3 x 22 mm SPRING PIN
Replace.

5TH/REVERSE SHIFT FORK

3 x 22 mm SPRING PIN
Replace.

5 x 22 mm SPRING PIN
Replace.

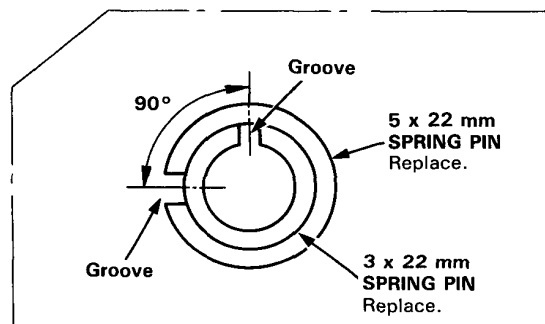
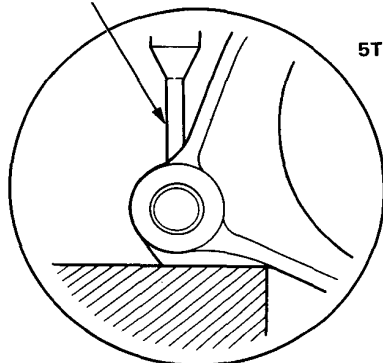
PIN DRIVER, 5.0 mm
07744-0010400
PIN DRIVER, 3.0 mm
07744-0010200

3RD/4TH SHIFT FORK SHAFT

1ST/2ND SHIFT FORK

1ST/2ND SHIFT FORK SHAFT

5TH/REVERSE SHIFT PIECE



Automatic Transmission

2WD Automatic Transmission M24A

Special Tool	14-2
Description	
Hydraulic Circuit	14-3
Fluid Level	
Checking/Changing	14-4
Secondary Valve Body	
Disassembly/Inspection/ Reassembly	14-6
Countershaft	
Disassembly/Inspection/ Reassembly	14-8
Reverse Idler Gear	
Installation	14-13

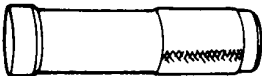


Outline of Model Changes

- Hydraulic circuit has been modified.
- Drain plug has been changed.
- Throttle pressure and governor pressure have been changed. ^{*1}
- Secondary valve body has been modified.
- Reverse selector hub on the countershaft has been changed.
- Reverse idler gear has been modified.

^{*1} Throttle pressure and governor pressure are not described in this section, refer to §3 Standards and Service Limits.

Special Tool

Ref. No.	Tool Number	Description	Qty	Page Reference
①	07746 — 0030100	Driver, 40 mm I.D.	1	14-10
<div></div> <div>①</div>				

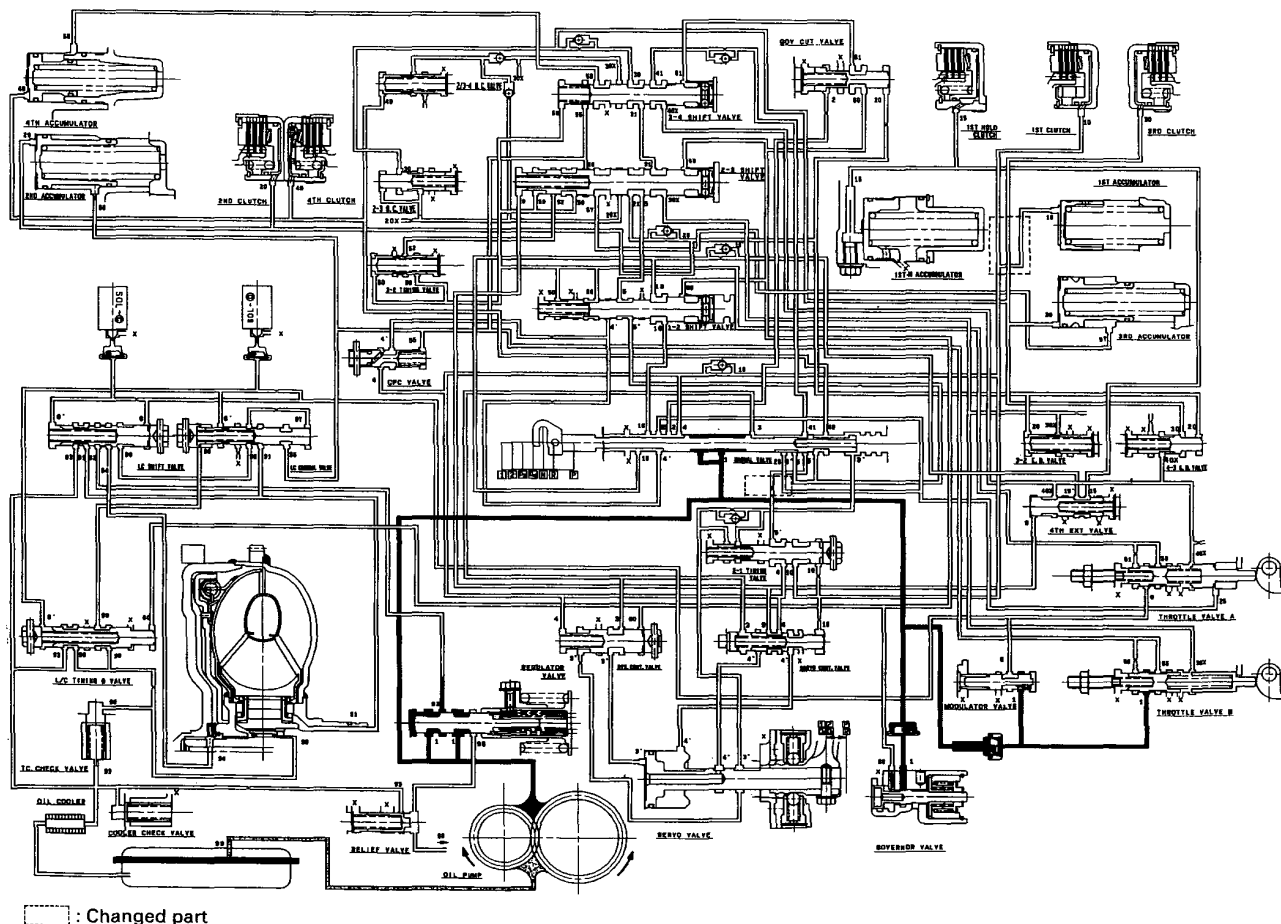


Description

Hydraulic Circuit

The hydraulic circuit has been modified due to the secondary valve body modification.

No.	DESCRIPTION OF PRESSURE	No.	DESCRIPTION OF PRESSURE	No.	DESCRIPTION OF PRESSURE
1	LINE	16	1ST-HOLD CLUTCH	57	THROTTLE B
2	LINE	18	LINE	58	THROTTLE B
3	LINE	20	2ND CLUTCH	60	GOVERNOR
3'	LINE	21	2ND CLUTCH	61	GOVERNOR
3"	LINE	25	LINE	90	TORQUE CONVERTER
4	LINE	30	3RD CLUTCH	91	TORQUE CONVERTER
4'	LINE	31	3RD CLUTCH	92	TORQUE CONVERTER
5	LINE	40	4TH CLUTCH	93	OIL COOLER
5'	LINE	41	4TH CLUTCH	94	TORQUE CONVERTER
5"	LINE	50	THROTTLE A	95	LUBRICATION
6	MODULATOR	51	THROTTLE A	96	TORQUE CONVERTER
6'	MODULATOR	52	THROTTLE A	97	TORQUE CONVERTER
10	1ST CLUTCH	55	THROTTLE B	99	SUCTION
15	1ST-HOLD CLUTCH	56	THROTTLE B	x	BLEED



Fluid Level

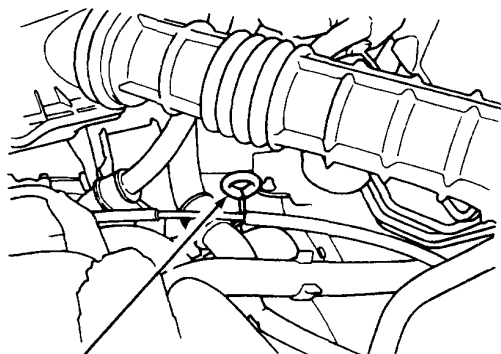
Checking/Changing

Checking

NOTE:

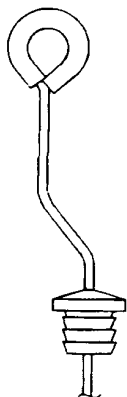
Check the fluid level with the engine at normal operating temperature (the cooling fan comes on).

1. Park the car on level ground. Shut off the engine.
2. Remove the dipstick (yellow loop) from the transmission and wipe it with a clean cloth.
3. Insert the dipstick into the transmission.



DIPSTICK (YELLOW LOOP)

4. Remove the dipstick and check the fluid level. It should be between the upper and lower marks.



UPPER MARK
LOWER MARK

5. If the level is below the lower mark, add fluid into the tube to bring it to the upper mark. Use Honda Premium Formula Automatic Transmission Fluid or an equivalent DEXRON® II Automatic Transmission Fluid (ATF) only.
6. Insert the dipstick back into the transmission.

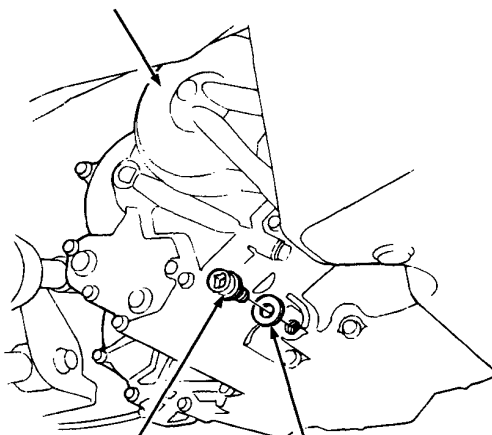
Changing

1. Bring the transmission up to operating temperature by driving the car. Park the car on level ground, turn the engine off, then remove drain plug.
2. Reinstall the drain plug with a new washer, then refill the transmission to the upper mark on the dipstick.

Automatic Transmission Fluid Capacity:

2.7 l (2.9 US qt, 2.4 Imp qt) at change
5.9 l (6.2 US qt, 5.2 Imp qt) at overhaul

TRANSMISSION RIGHT SIDE COVER



DRAIN PLUG
18 x 1.5 mm
50 N·m (5.0 kg-m, 36 lb-ft)

SEALING WASHER
Replace.



Secondary Valve Body

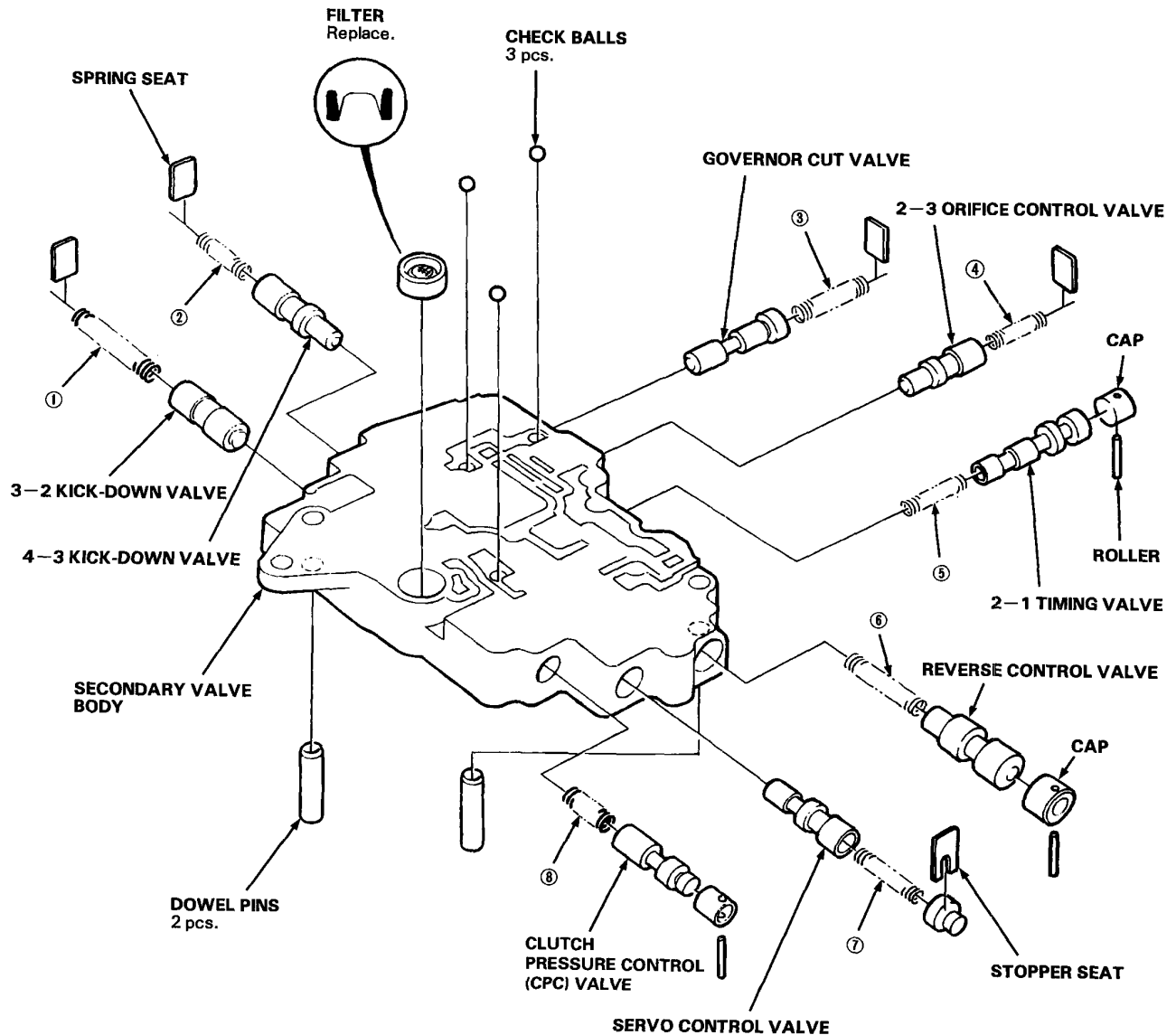
Disassembly/Inspection/Reassembly

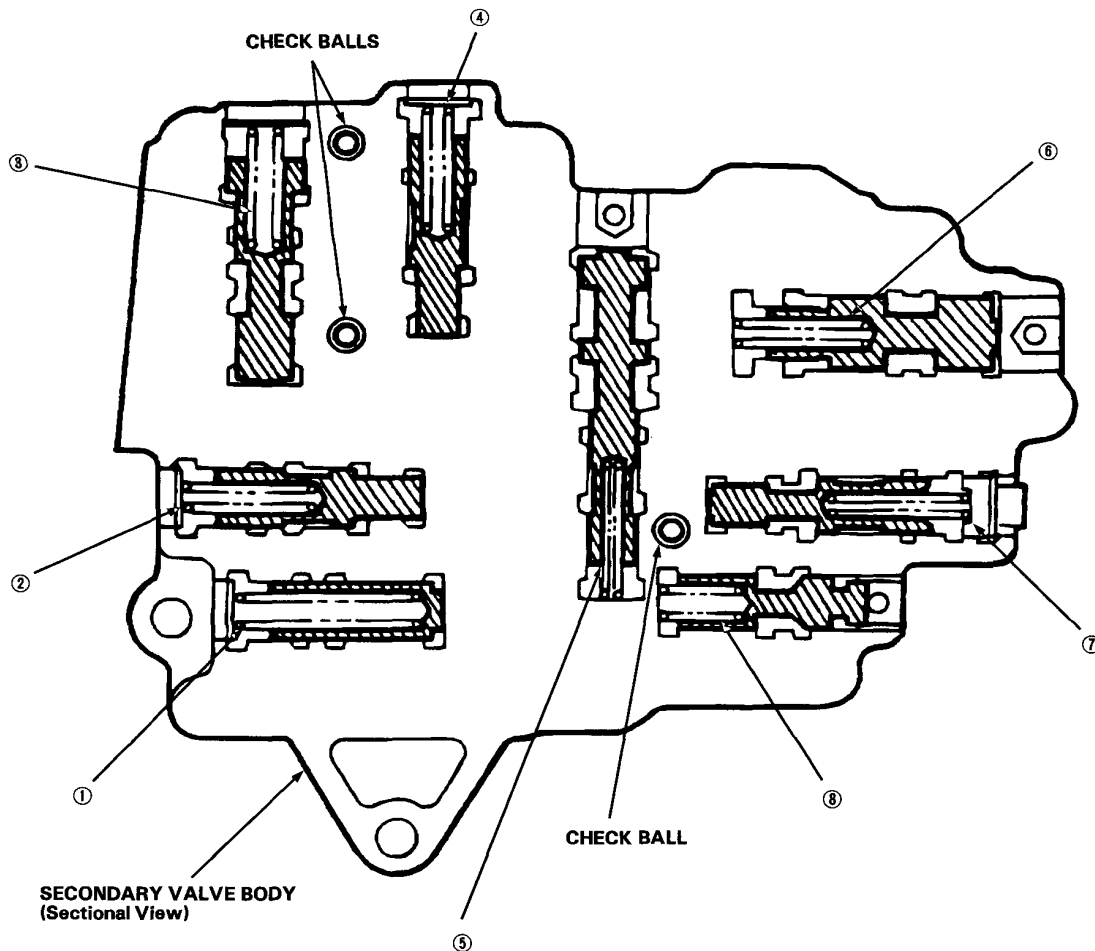
NOTE:

- Clean all parts thoroughly in solvent or carburetor cleaner and dry with compressed air.
- Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair on the Shop Manual (62SR300A).
- Coat all parts with ATF before reassembly.

CAUTION:

Do not use a magnet to remove the check balls; it may magnetize the balls.





SPRING SPECIFICATIONS

Unit : mm (in)

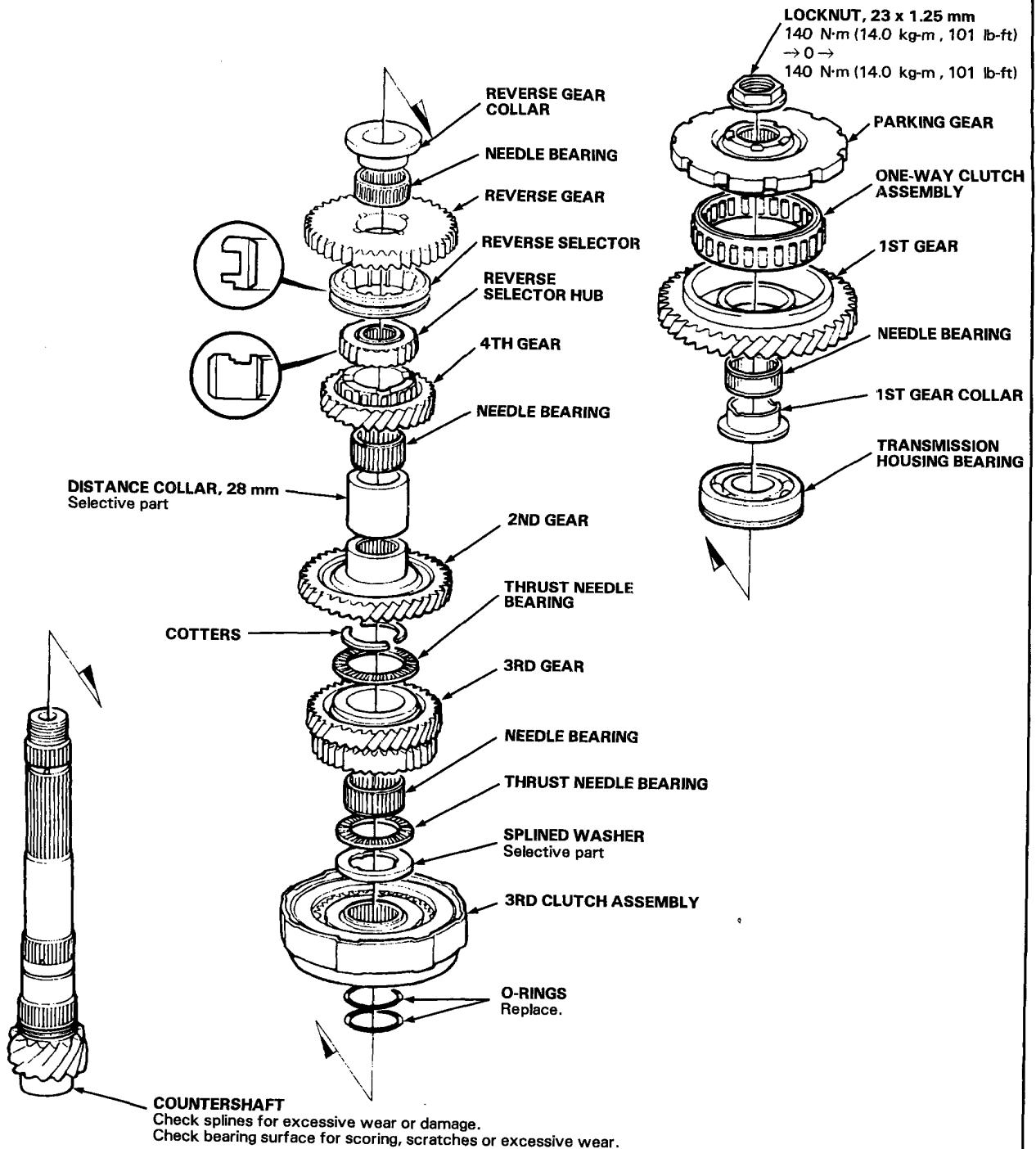
No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	3-2 kick-down valve spring	1.30 (0.051)	8.60 (0.339)	45.60 (1.795)	17.0
②	4-3 kick-down valve spring	1.00 (0.039)	6.60 (0.260)	29.90 (1.177)	14.7
③	Governor cut valve spring	0.80 (0.031)	7.60 (0.299)	44.50 (1.752)	17.0
④	2-3 orifice control valve spring	1.00 (0.039)	6.60 (0.260)	29.90 (1.177)	14.7
⑤	2-1 timing valve spring	0.70 (0.028)	5.60 (0.220)	33.00 (1.299)	21.7
⑥	Reverse control valve spring	0.70 (0.028)	7.10 (0.280)	40.00 (1.575)	20.8
⑦	Servo control valve spring	0.90 (0.035)	6.40 (0.252)	34.10 (1.343)	17.5
⑧	CPC (Clutch Pressure Control) valve spring	0.80 (0.031)	8.40 (0.331)	25.50 (1.004)	8.1

Countershaft

Disassembly/Inspection/Reassembly

NOTE:

- Lubricate all parts with ATF before reassembly.
- Install the thrust needle bearings with unrolled edge of bearing retainer facing washer.
- Inspect the thrust needle bearings and the needle bearings for galling and rough movement.
- Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.





Disassembly/Reassembly

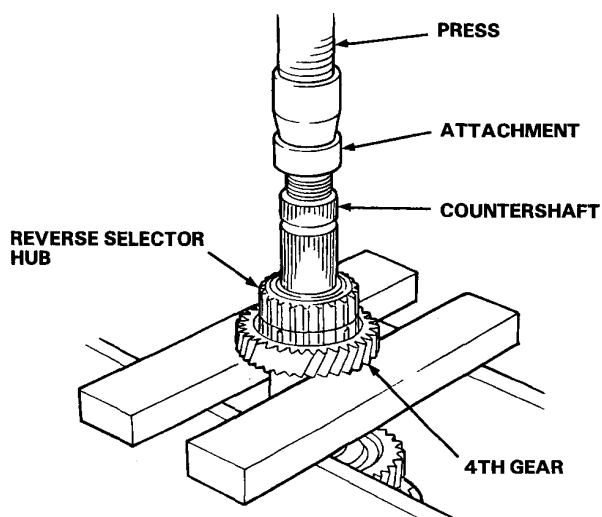
1. Using a hydraulic press, press out the countershaft while supporting 4th gear.

NOTE:

Place an attachment between the press and the countershaft to prevent damage to the shaft.

CAUTION:

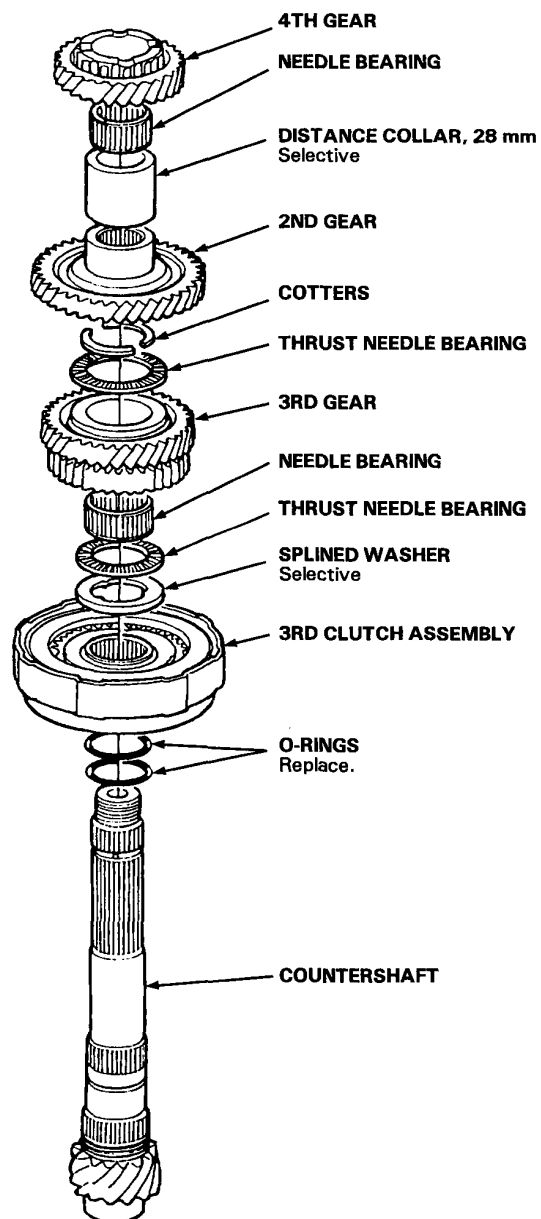
Do not allow the countershaft to fall and hit the ground.



2. Assemble the parts on the countershaft as shown below.

NOTE:

- Lubricate all parts with ATF during assembling.
- Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.

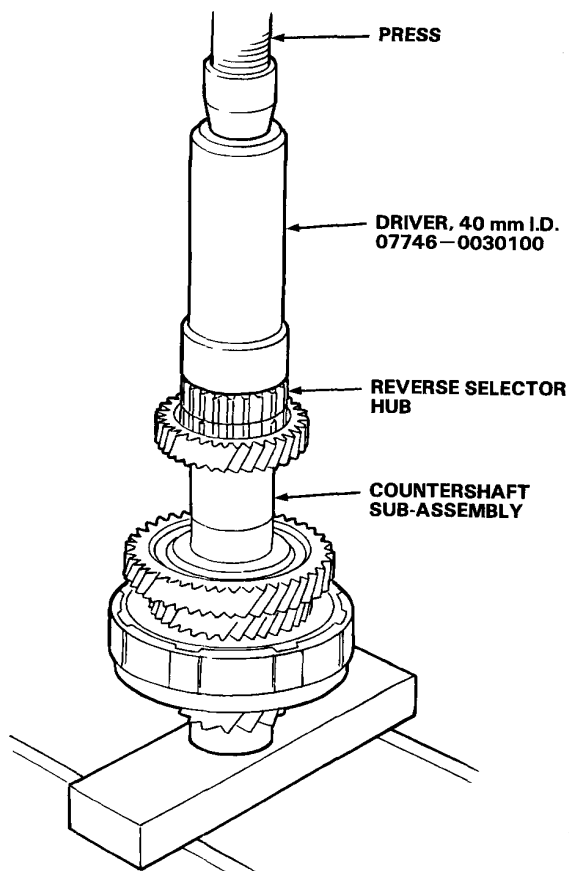


(cont'd)

Countershaft

Disassembly/Reassembly (cont'd)

3. Install the reverse selector hub on the countershaft sub-assembly, and then press the reverse selector hub using the special tool and a press as shown.



Inspection

- Clearance Measurement

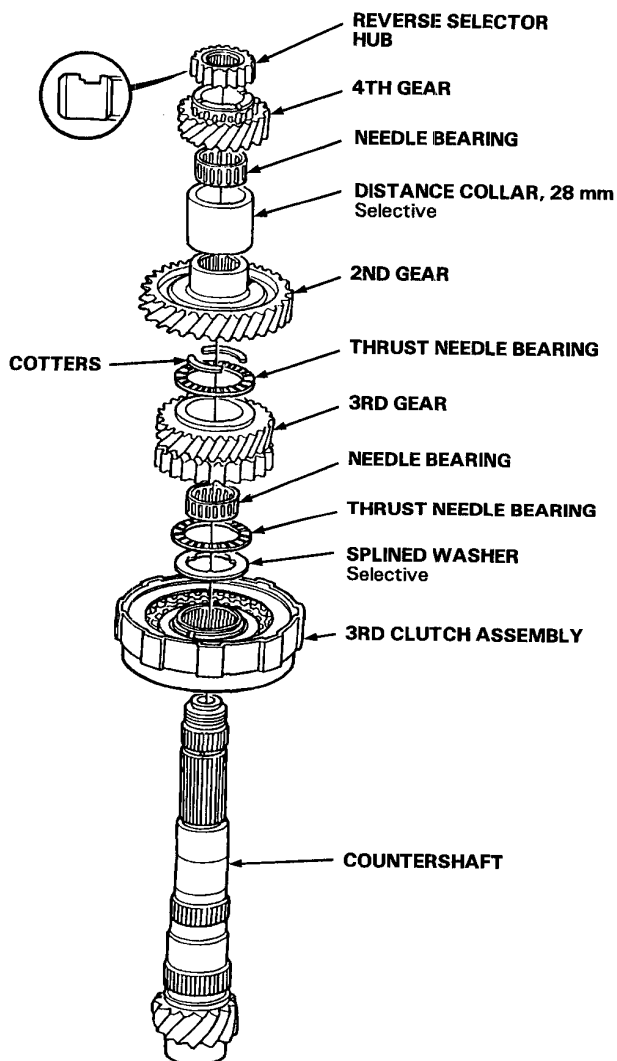
NOTE:

Lubricate all parts with ATF during assembly.

1. Remove the countershaft bearing from the transmission housing (see Shop Manual: 62SR300A).
2. Install the parts below on the countershaft using the special tool and a press as described on this page.

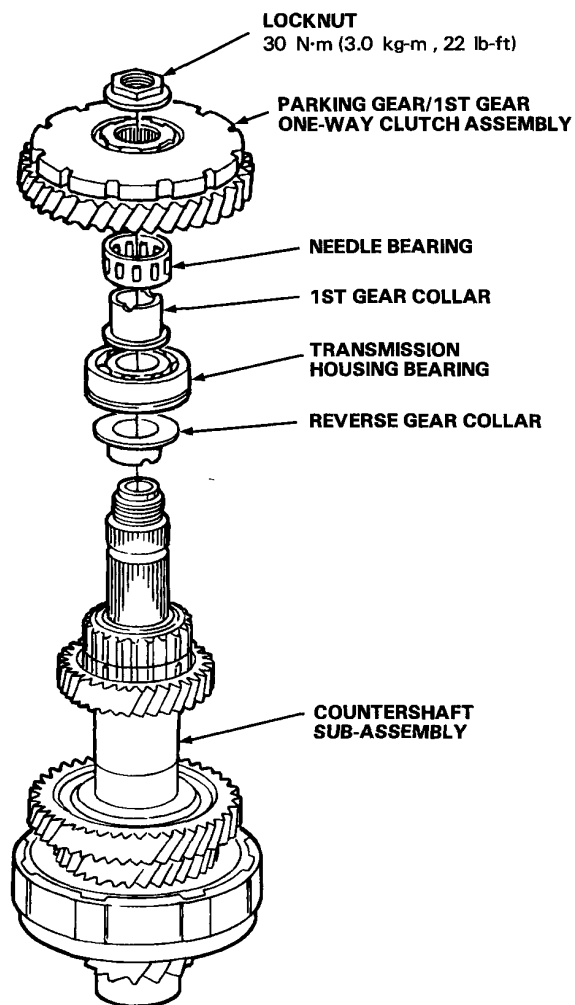
NOTE:

Do not assemble the O-rings while inspecting.





3. Install the parts below on the countershaft sub-assembly, then torque the locknut to 30 N·m (3.0 kg·m, 22 lb-ft).

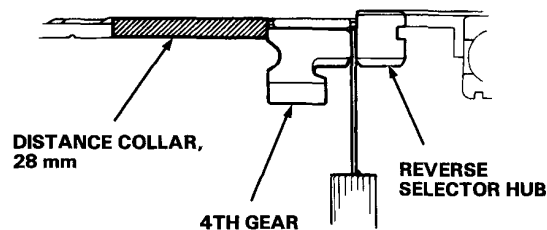
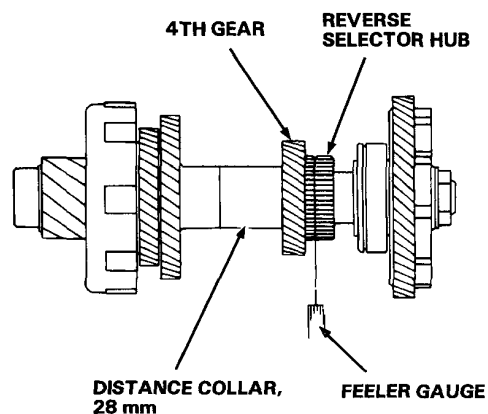


4. Measure the clearance between the 4th gear and the reverse selector hub with a feeler gauge.

NOTE:

Take measurements in at least three places and take the average as the actual clearance.

STANDARD: 0.05—0.13 mm (0.002—0.005 in)



(cont'd)

Countershaft

Inspection (cont'd)

5. Measure the clearance between 3rd gear and 2nd gear with a feeler gauge, with the feeler gauge from step 4 between 4th gear and reverse selector hub.

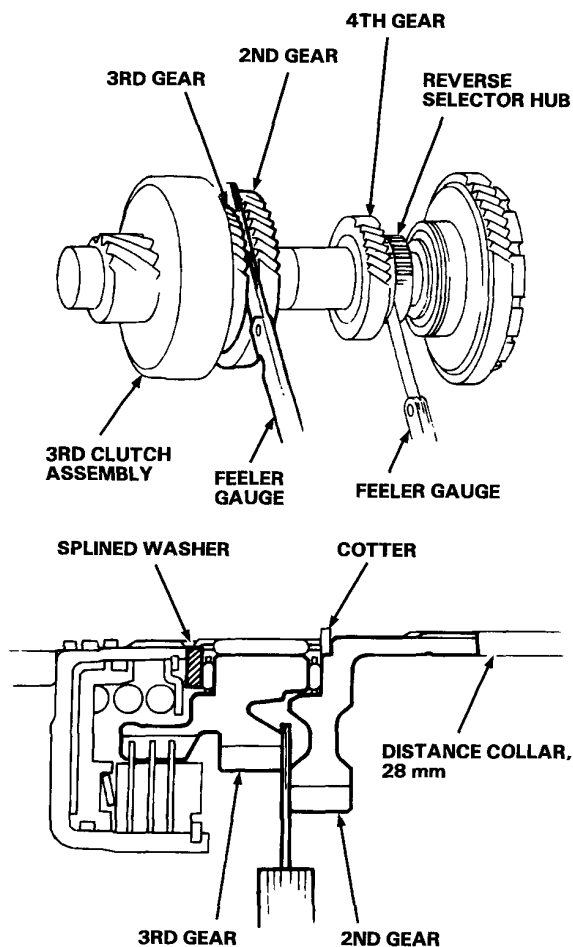
- 1. Measure the clearance with 3rd gear pushed towards 3rd clutch.
- 2. Measure the clearance with 3rd gear pushed towards 2nd gear.

NOTE:

Take measurements in at least three places and take the average as the actual clearance.

- 3. Subtract the measurements of step 2 from step 3 and you have the clearance between 3rd gear and 2nd gear.

STANDARD: 0.05–0.13 mm (0.002–0.005 in)



6. If the clearance is out of tolerance, remove the splined washer and/or distance collar and measure the thickness and/or the width.

7. Select and install a new distance collar, then recheck.

DISTANCE COLLAR 28 mm

No.	Part Number	Thickness
1	90503—PC9—000	39.00 mm (1.535 in)
2	90504—PC9—000	39.10 mm (1.539 in)
3	90505—PC9—000	39.20 mm (1.543 in)
4	90507—PC9—000	39.30 mm (1.547 in)
5	90508—PC9—000	39.05 mm (1.537 in)
6	90509—PC9—000	39.15 mm (1.541 in)
7	90510—PC9—000	39.25 mm (1.545 in)
8	90511—PC9—000	38.90 mm (1.531 in)
9	90512—PC9—000	38.95 mm (1.533 in)

8. After replacing the distance collar, make sure the clearance is within tolerance.

9. Select and install a new splined washer, then recheck.

SPLINED WASHER 35 x 52 mm

No.	Part Number	Thickness
1	90411—PF4—000	3.00 mm (0.118 in)
2	90412—PF4—000	3.05 mm (0.120 in)
3	90413—PF4—000	3.10 mm (0.122 in)
4	90414—PF4—000	3.15 mm (0.124 in)
5	90415—PF4—000	3.20 mm (0.126 in)
6	90416—PF4—000	3.25 mm (0.128 in)
7	90417—PF4—000	3.30 mm (0.130 in)
8	90418—PF4—000	3.35 mm (0.132 in)
9	90419—PF4—000	3.40 mm (0.134 in)
10	90411—P24—J00	3.45 mm (0.136 in)
11	90412—P24—J00	3.50 mm (0.138 in)

10. After replacing the splined washer, make sure the clearance is within tolerance.



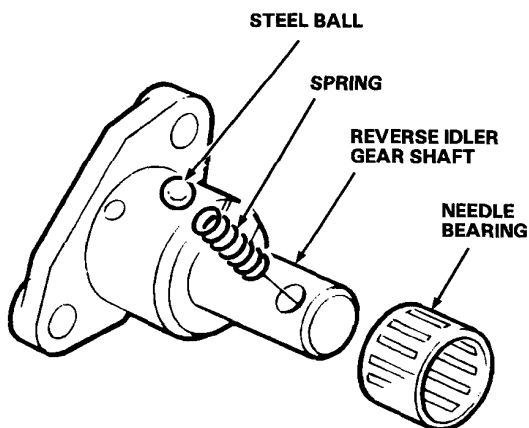
Reverse Idler Gear

Installation

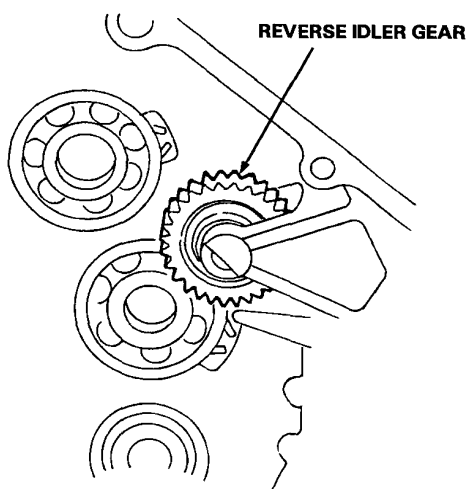
1. Set the spring in the reverse idler gear shaft. Push the spring in with the steel ball, then install the needle bearing.

NOTE:

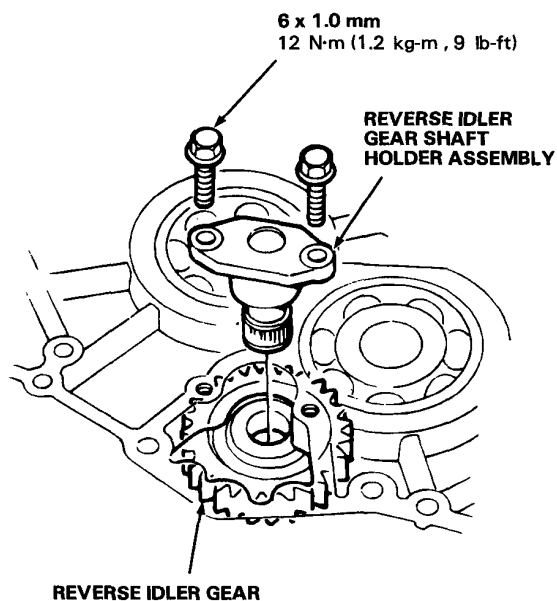
The steel ball is under spring pressure. Take care not to let it pop out.



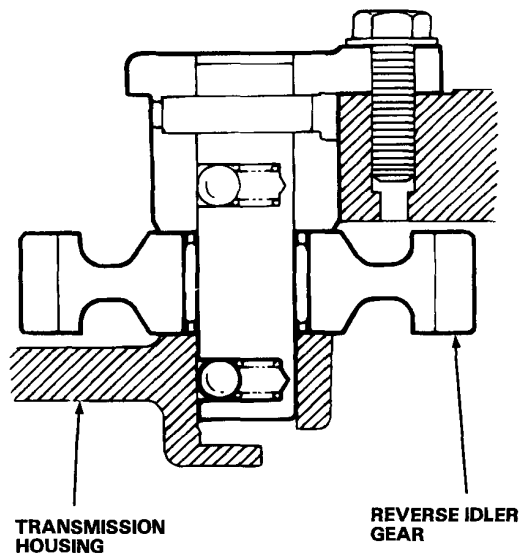
2. Install the reverse idler gear.



3. Install the reverse idler gear shaft holder into the transmission housing, then tighten the bolts.



Sectional View



Anti-lock Brake System

Circuit Diagram 19-2

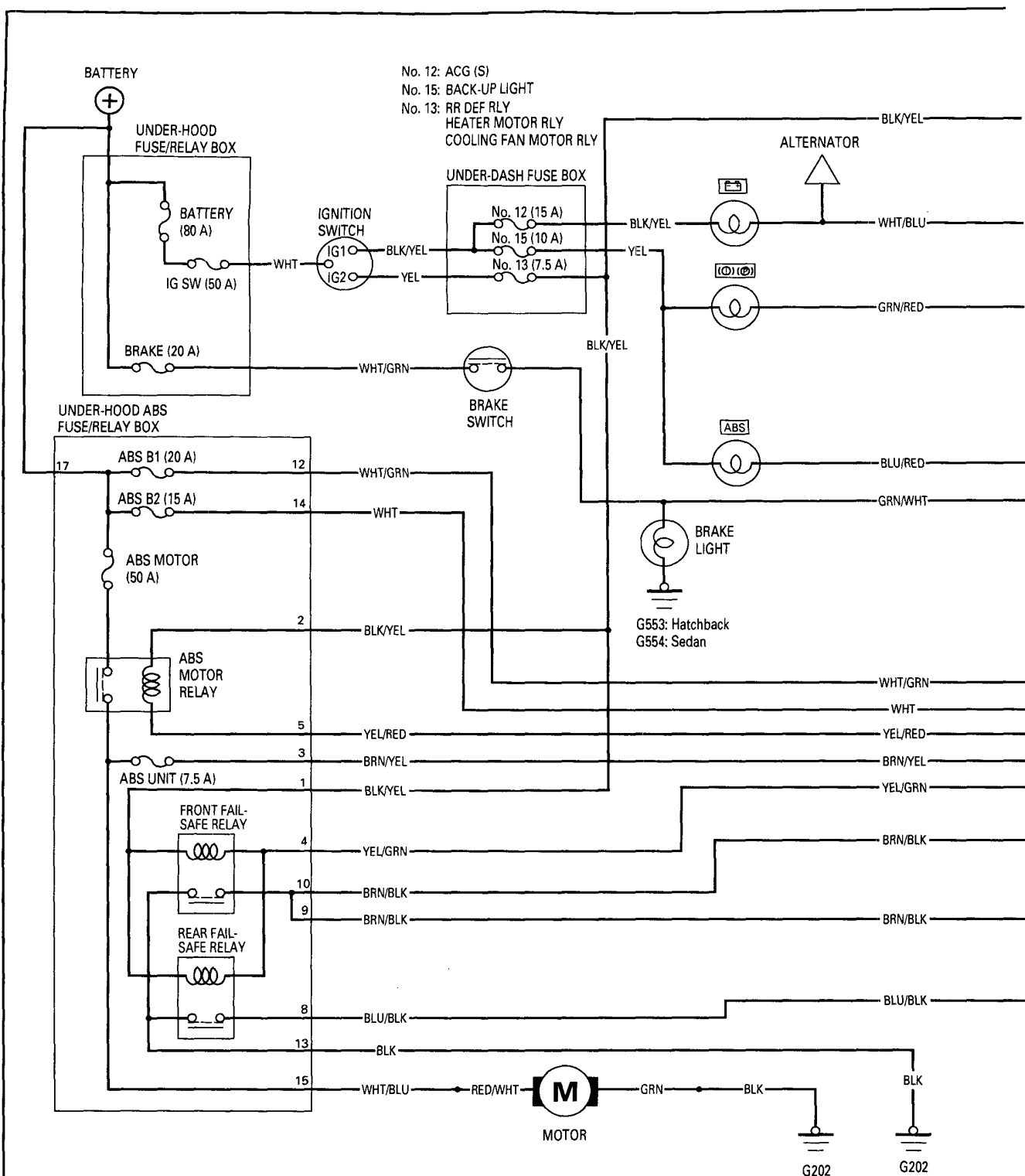


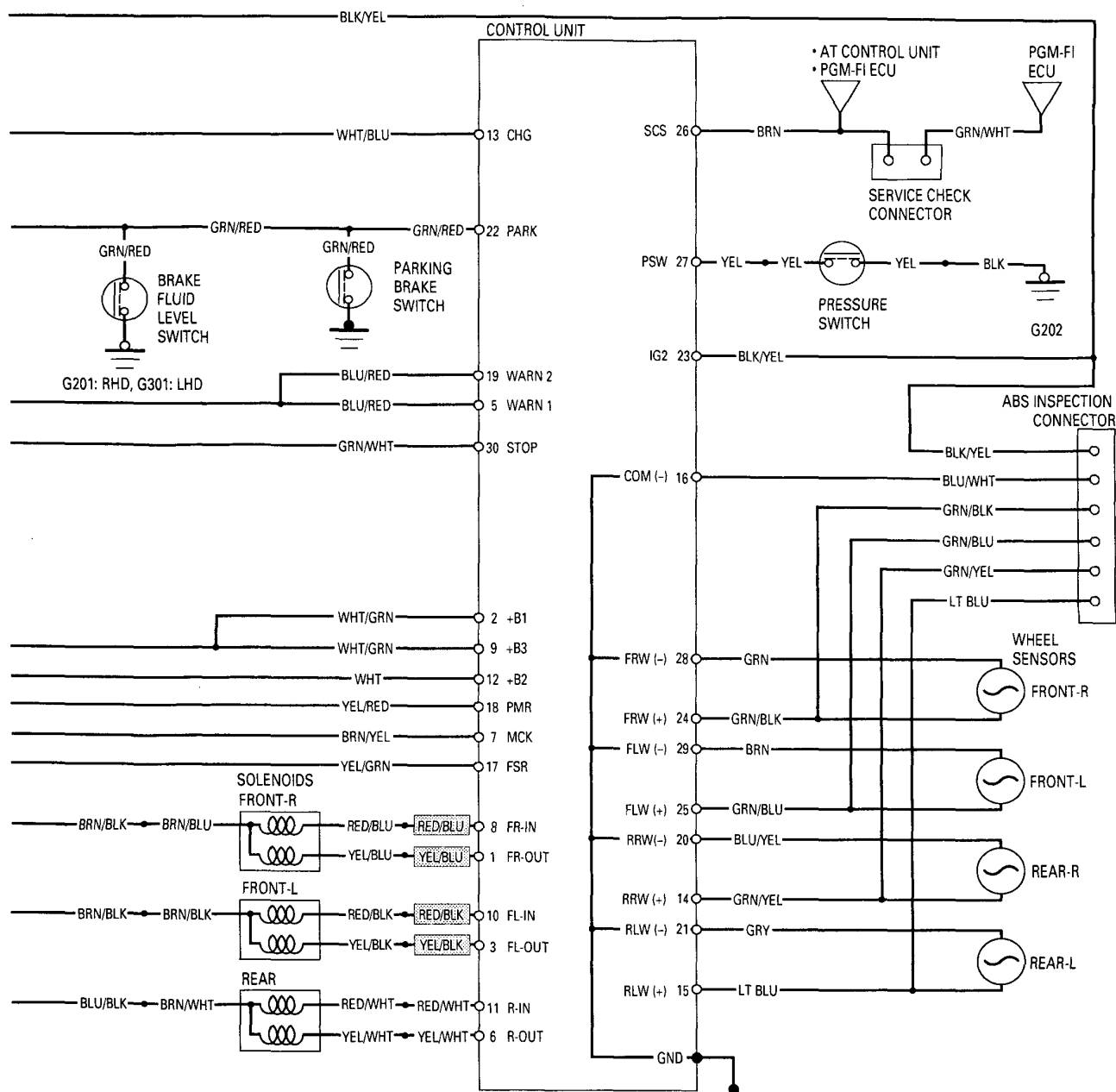
NOTE: When troubleshooting Problem Code 6 and 7, exchange the each wire color between the solenoids and control unit, in the shop manual '92 Civic (Code No. 62SR300). And refer to following the shop manual.

Outline of Model Changes

- The wire colors between the solenoids and control unit, have been changed.

Circuit Diagram (2WD)





18P CONNECTOR

30	29	28	27		26	25	24	23	
22	21	20	19	18	17	16	15	14	13

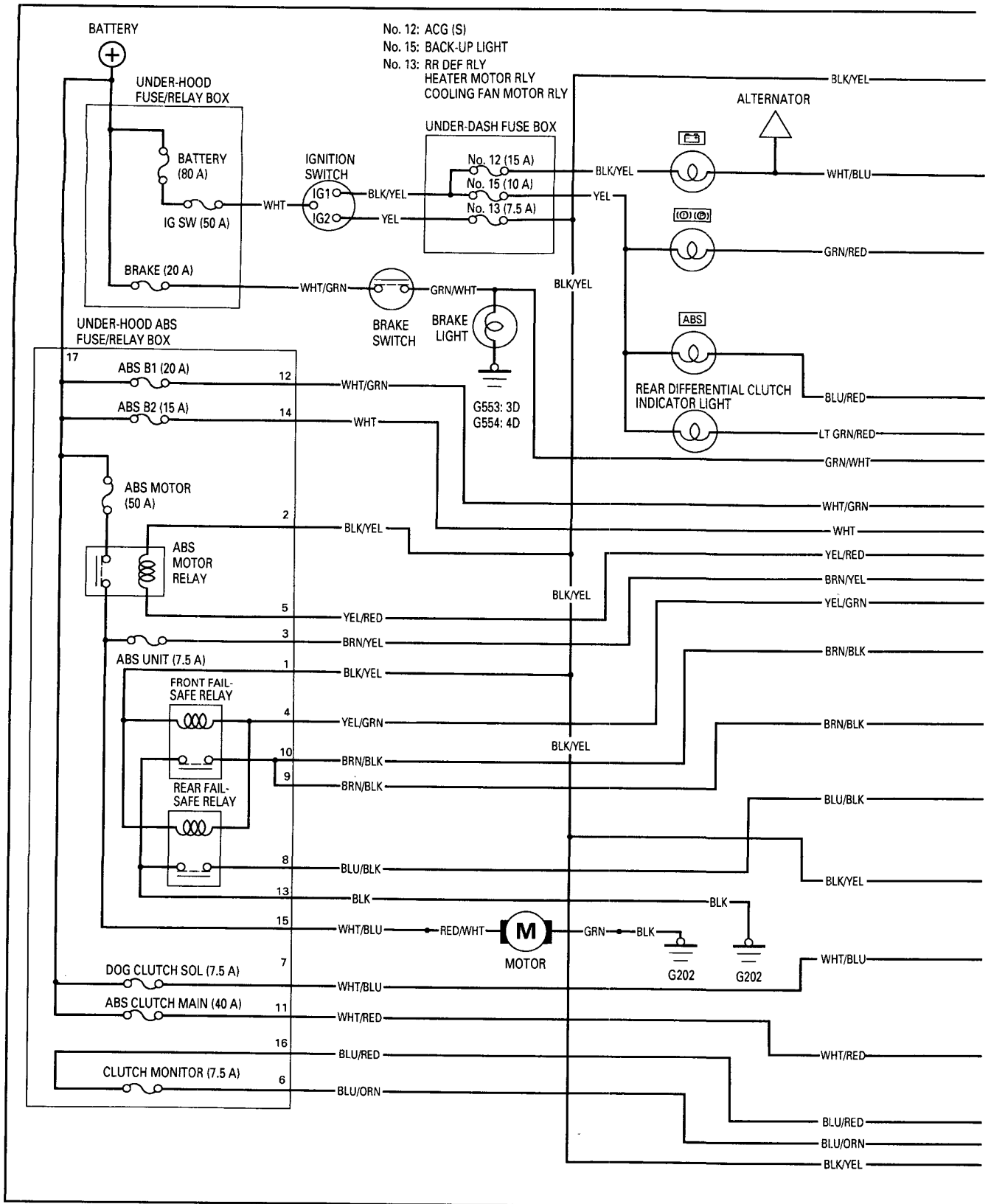
CONTROL UNIT TERMINAL SIDE

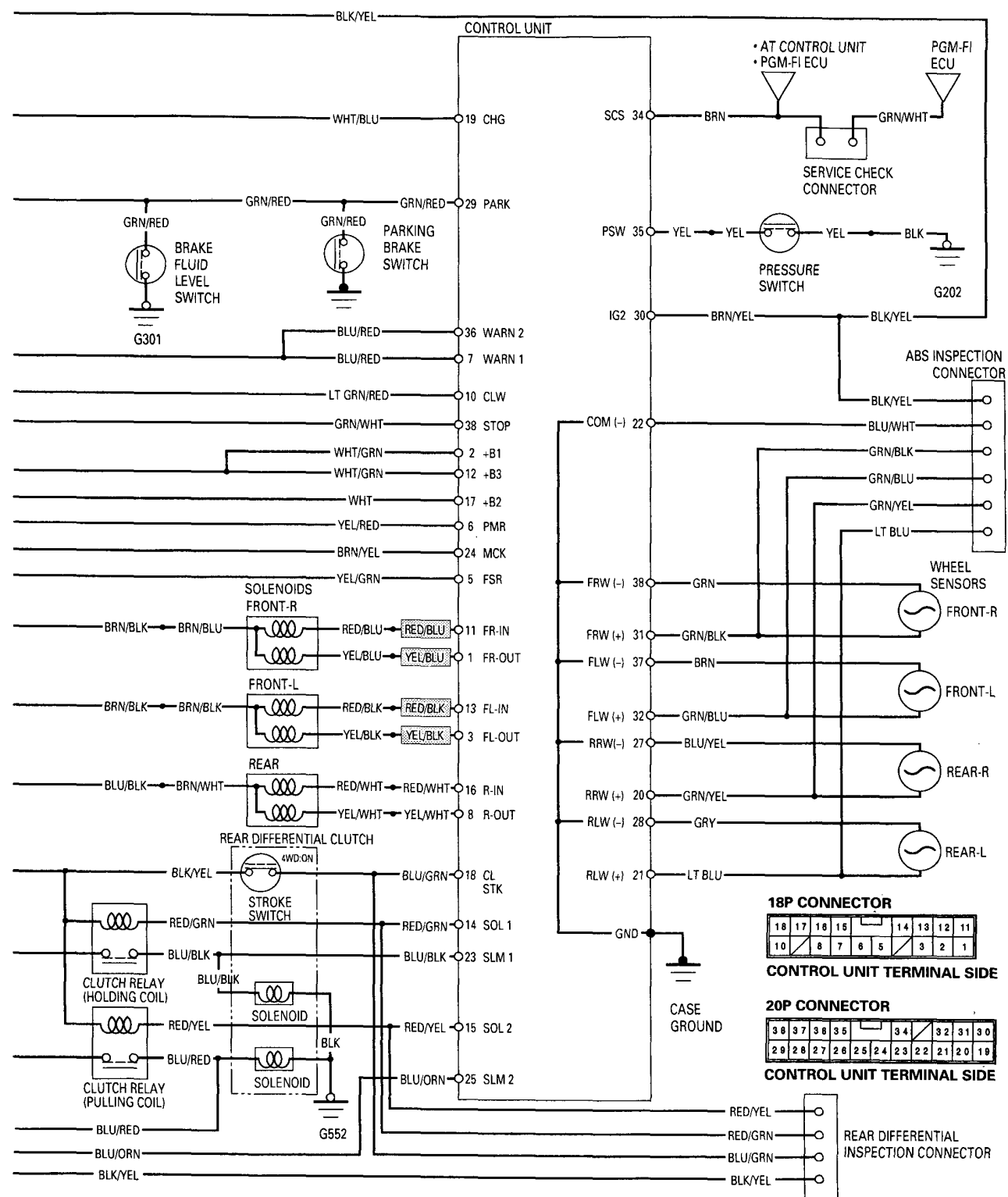
20P CONNECTOR

12	11		10	9	8
7	6	5	3	2	1

CONTROL UNIT TERMINAL SIDE

Circuit Diagram (4WD)





Electrical

Fuses

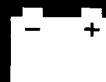
Under-hood Fuse/Relay Box	23-2
Under-dash Fuse Box	23-4
Under-hood ABS Fuse/Relay Box	23-6
Power Distribution	23-8
Ground Distribution	23-22
Ignition Switch	
Test	23-35
Electrical Switch Replacement	23-36
Ignition System	
Component Location Index	23-37

Charging System

Troubleshooting	23-38
Alternator Overhaul	23-43
Rectifier Removal	23-44
Rectifier Test	23-46
Alternator Brush Inspection	23-46
Rear Bearing Replacement	23-47
Alternator Reassembly	23-47
Interlock System	
Shift Lock Solenoid Test/ Replacement	23-48
Wiring Diagrams	23-50

Outline of Model Changes

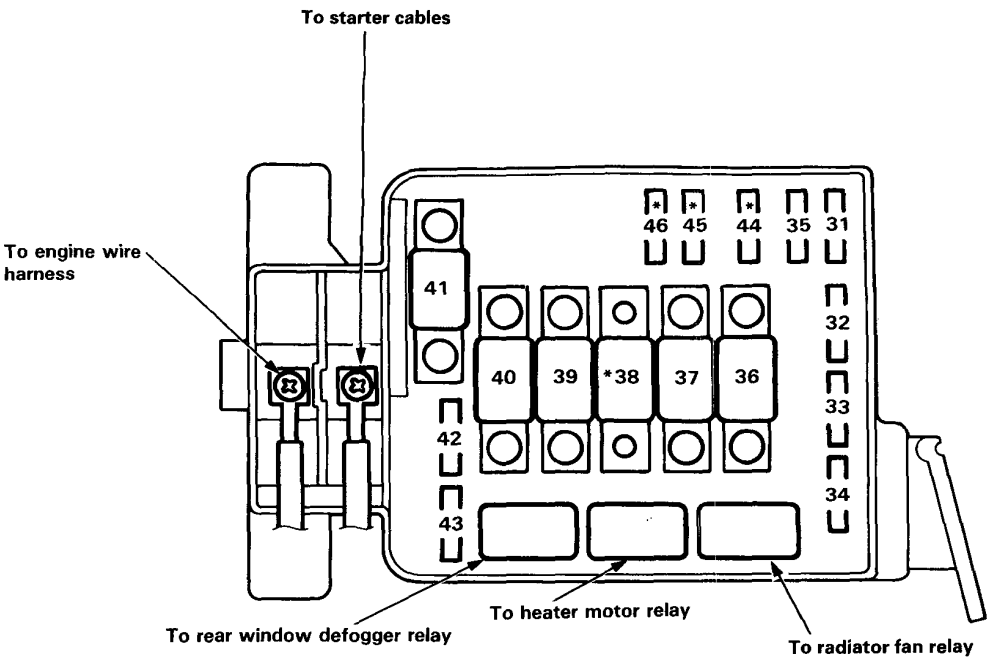
- Ignition Switch: As the wire color of the ignition switch has been changed, the related items have been rewritten.
- Ignition System: As the data link connector has been changed, it makes a distinction between the data link connector and service check connector on the location index.
- Charging System: As the alternator brushes (Mitsubishi Type) have been changed, the flowchart, and related items have been rewritten.
- Interlock System: As the terminal number of the shift lock solenoid has been changed, test and replacement have been rewritten.
- Modifications to the data link connector and wire colors have been reflected in Power Distribution, Ground Distribution, and Wiring Diagrams.



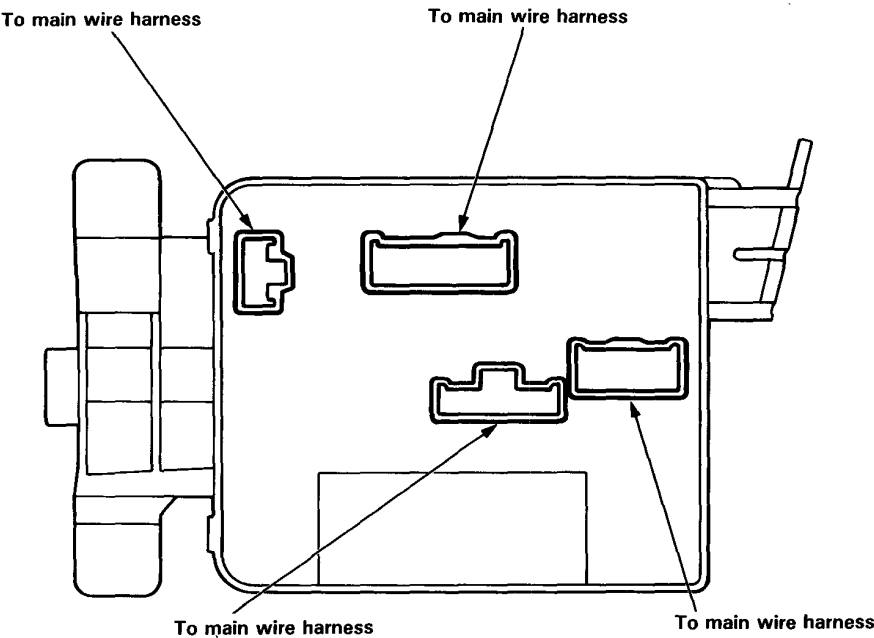
Fuses

Under-hood Fuse/Relay Box

*: Not used

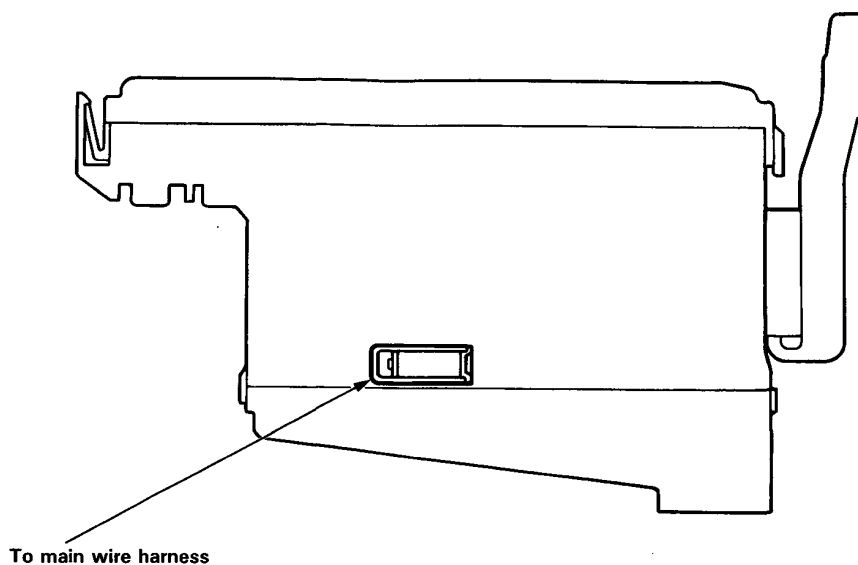


NOTE: View from back side of the under-hood fuse/relay box.





NOTE: View from side of the under-hood fuse/relay box.

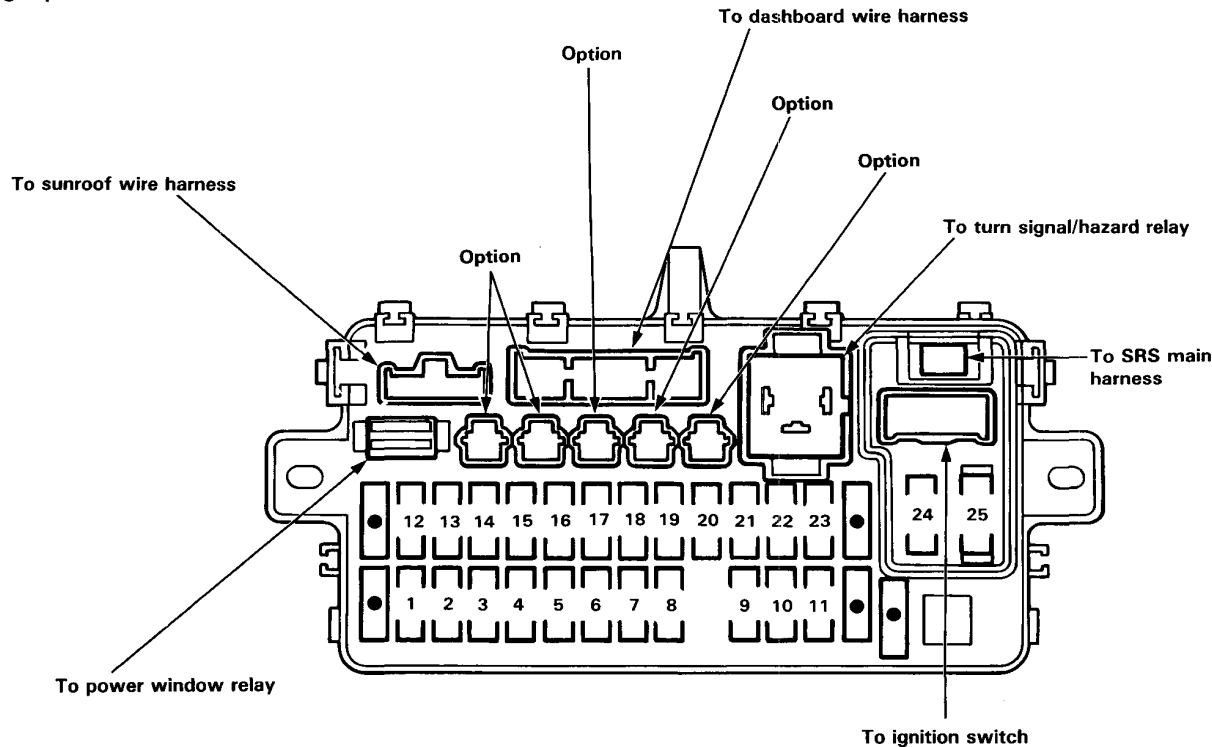


Fuse Number	Amps	Wire Color	Component or Circuit Protected
31	15 A	YEL/WHT	PGM-FI main relay (+B)
32	7.5 A	WHT/BLU	PGM-FI ECU, A/T control unit (4WD-A/T)
33	15 A	—	Radiator fan relay (contacts)
34	30 A	—	Rear window defogger relay (contacts)
35	20 A	WHT	Condenser fan motor, A/C compressor clutch
36	50 A	WHT/RED	(To under-dash fuse box)
37	30 A	—	Heater motor relay (contacts)
38	—	—	Not used
39	50 A	WHT/BLK	Ignition switch (BAT)
40	40 A	WHT	Combination light switch
41	80 A	—	Power distribution
42	20 A	WHT/GRN	Horns, Brake system
43	10 A	WHT/GRN	Turn signal/hazard system
44	—	—	Not used
45	—	—	Not used
46	—	—	Not used

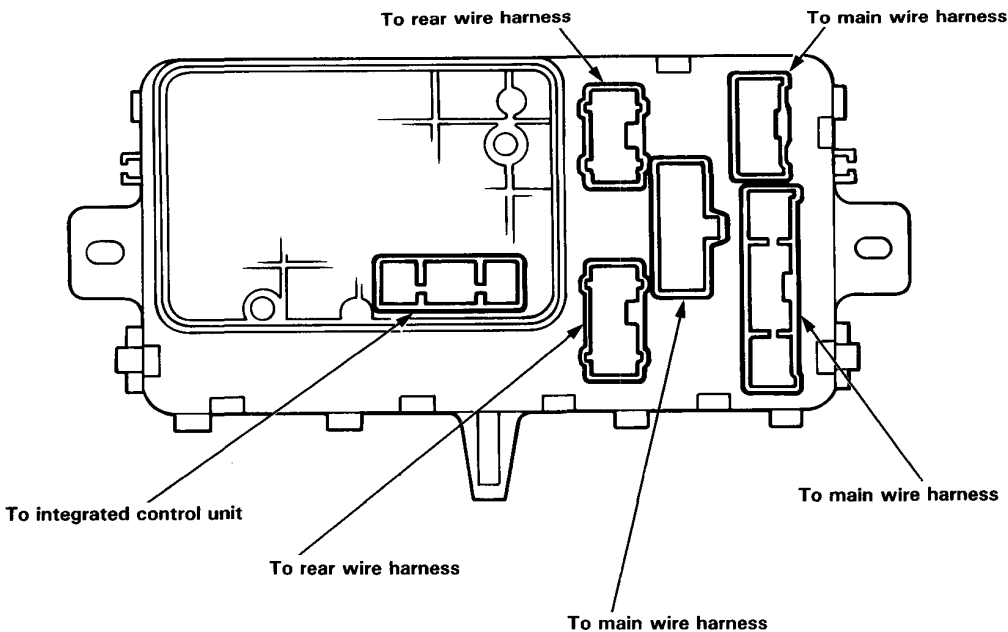
Fuses

Under-dash Fuse Box

●: Spare fuse



NOTE: View from back side of the under-dash fuse box.



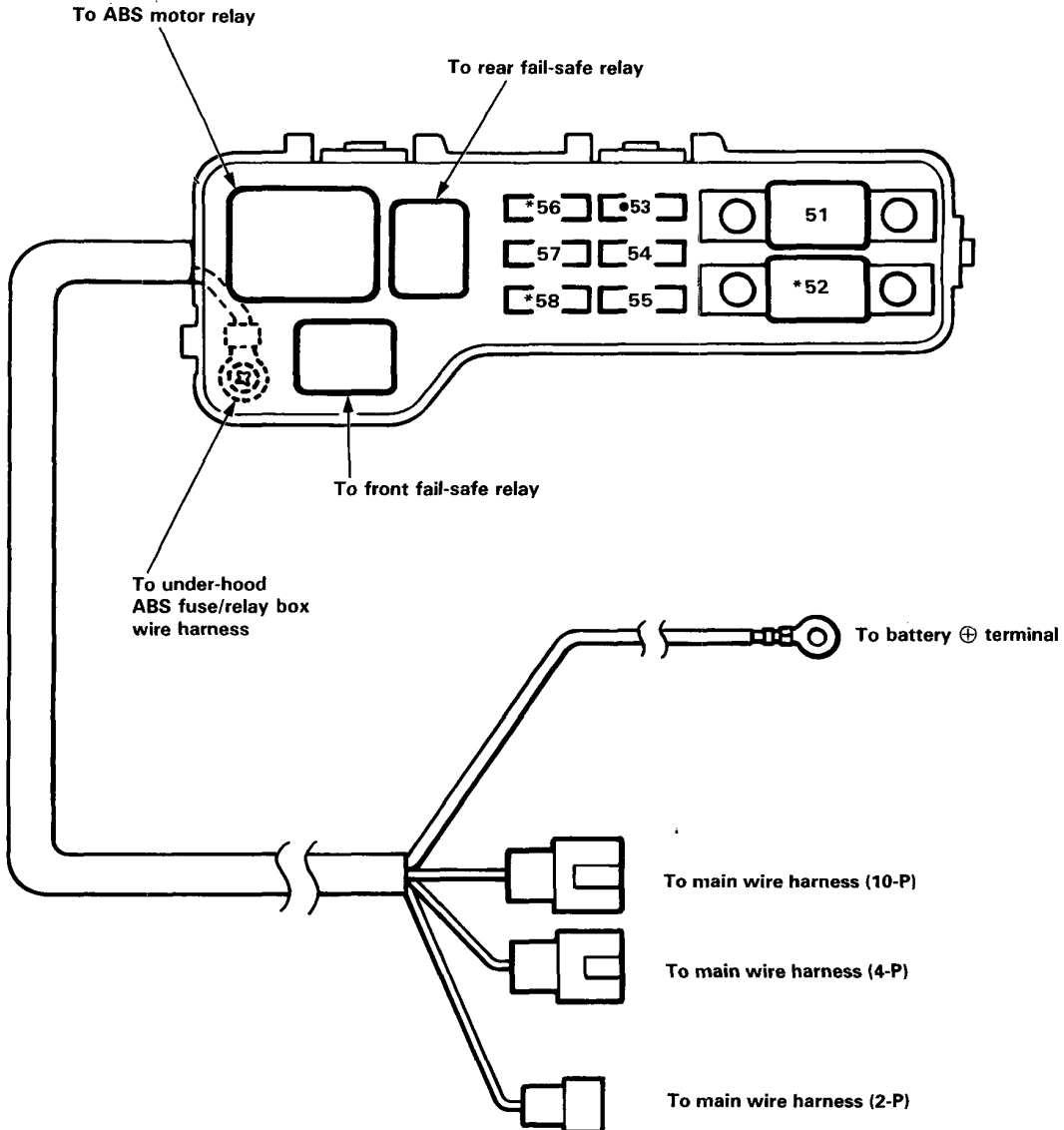


Fuse Number	Amps	Wire Color	Component or Circuit Protected
1	30 A	WHT	Sunroof motor
2	20 A	WHT/BLK	Seat heater (Some model versions of KG and KS)
3	7.5 A	WHT/RED	Ceiling light, Data link connector, Trunk/cargo area light
4	20 A	YEL/BLK	R. Rear power window motor
5	20 A	WHT/YEL	Driver's power window motor, Power window master switch
6	20 A	WHT/GRN	Power door lock control unit
7	20 A	GRN/BLK	L. Rear power window motor
8	20 A	BLU/BLK	Front passenger's power window motor
9	10 A	RED/BLU	R. Headlight (HIGH), Integrated control unit (KE, KS)
10	10 A	RED/GRN	L. Headlight (HIGH), High beam indicator light
11	20 A	WHT/BLK	Headlight washer control unit (Some model versions of KG and KS)
12	15 A	BLK/YEL	Alternator (No SRS)
13	7.5 A	BLK/YEL	Rear window defogger relay, ABS motor relays
14	20 A	GRN/BLK	Windshield wiper motor, Sunroof relays
15	10 A	YEL	Gauge and indicator lights, Clock
16	7.5 A	YEL/BLK	Integrated control unit (KS)
17	10 A	RED/BLU RED/BLU } (KS) RED/BLK WHT/YEL (KE)	LHD: L. Taillights, Option (Europe except KS), Taillights, Front parking lights (KS), Option (General exports) RHD: Integrated control unit (KE)
18	7.5 A	BLU/WHT	PGM-FI ECU, PGM-FI ECU main relay
19	10 A	RED/BLK	Dash lights, Taillights, Front parking lights (Except KS)
20	7.5 A	RED/WHT	Rear fog light
21	10 A	RED/WHT	R. Headlight (LOW)
22	10 A	RED/YEL	L. Headlight (LOW)
23	15 A	YEL/RED	Radio/cassette player
24	15 A	BLK/YEL	Alternator (With SRS), SRS indicator light (With SRS)
25	10 A	RED	SRS unit (With SRS)

Fuses

Under-hood ABS Fuse/Relay Box

- *: 4WD
- : Not used

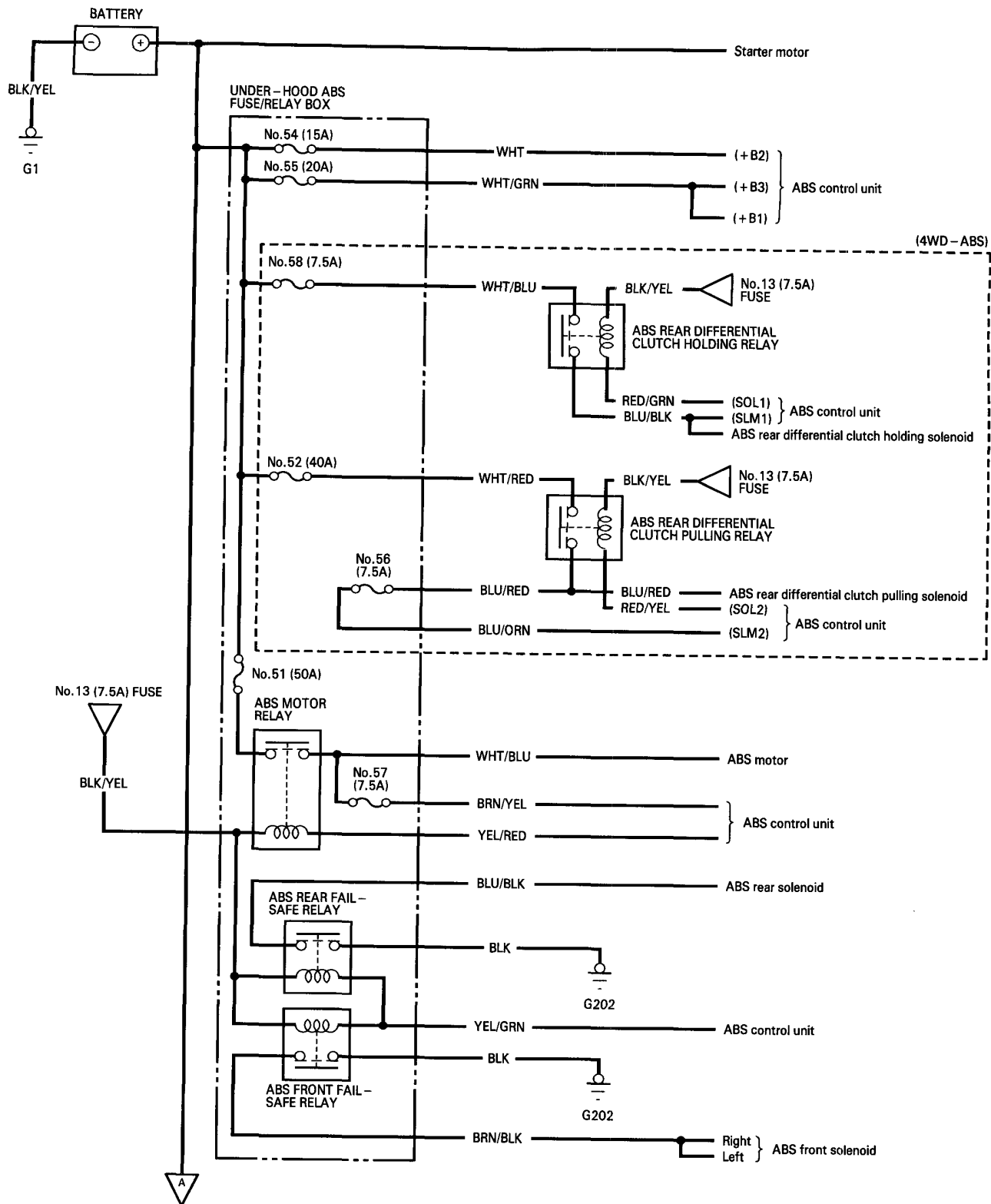


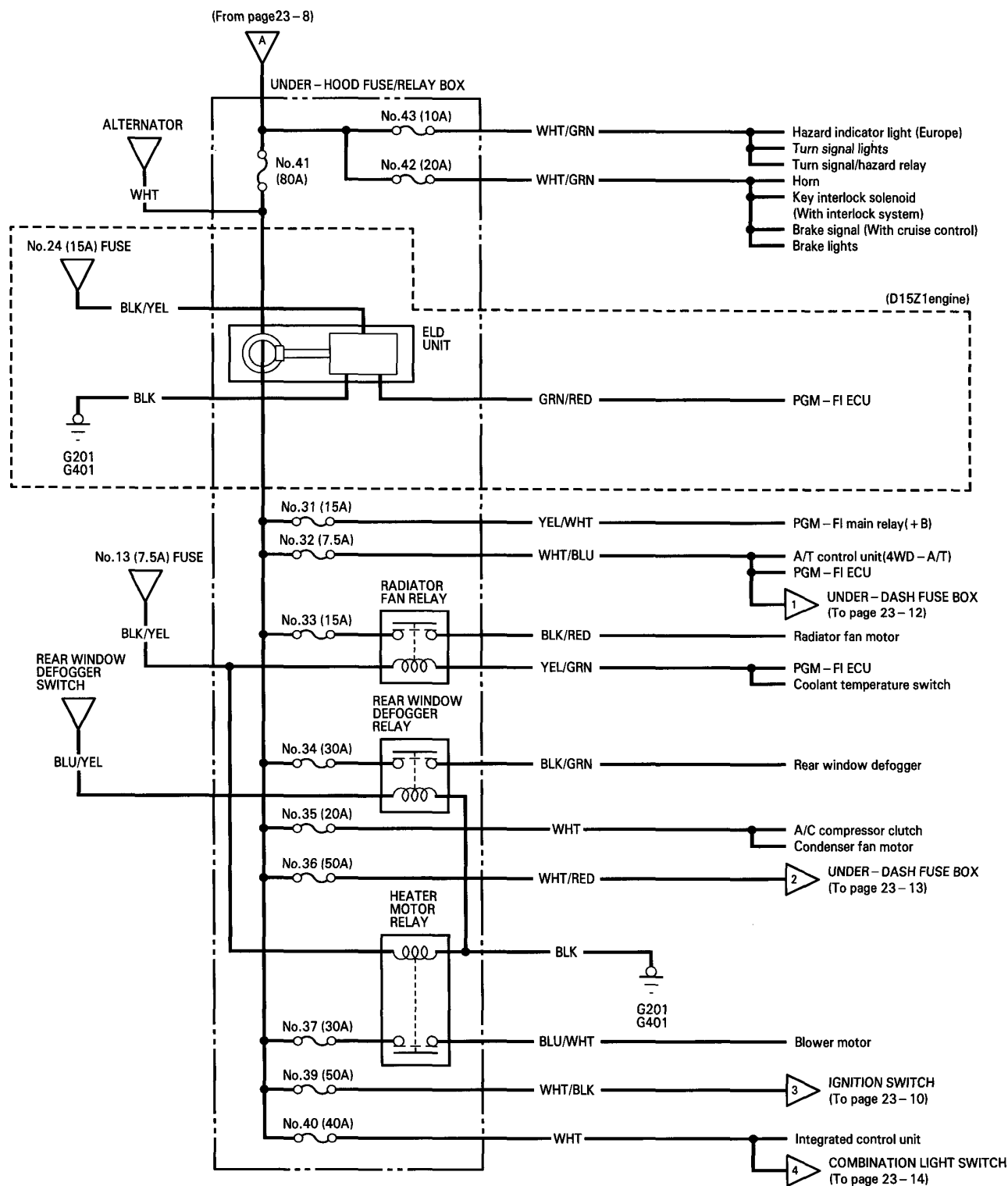


Fuse Number	Amps	Wire Color	Component or Circuit Protected
51	50 A	——	ABS motor relay (contacts)
52	40 A	WHT/RED	Rear differential clutch pull-in relay (4WD)
53	——	——	Not used
54	15 A	WHT	ABS control unit (+B2)
55	20 A	WHT/GRN	ABS control unit (+B1, +B3)
56	7.5 A	BLU/ORN	ABS control unit (4WD)
57	7.5 A	BRN/YEL	ABS control unit
58	7.5 A	WHT/BLU	Rear differential clutch hold-in solenoid (4WD), ABS control unit (4WD)

Power Distribution (LHD)

Circuit Identification

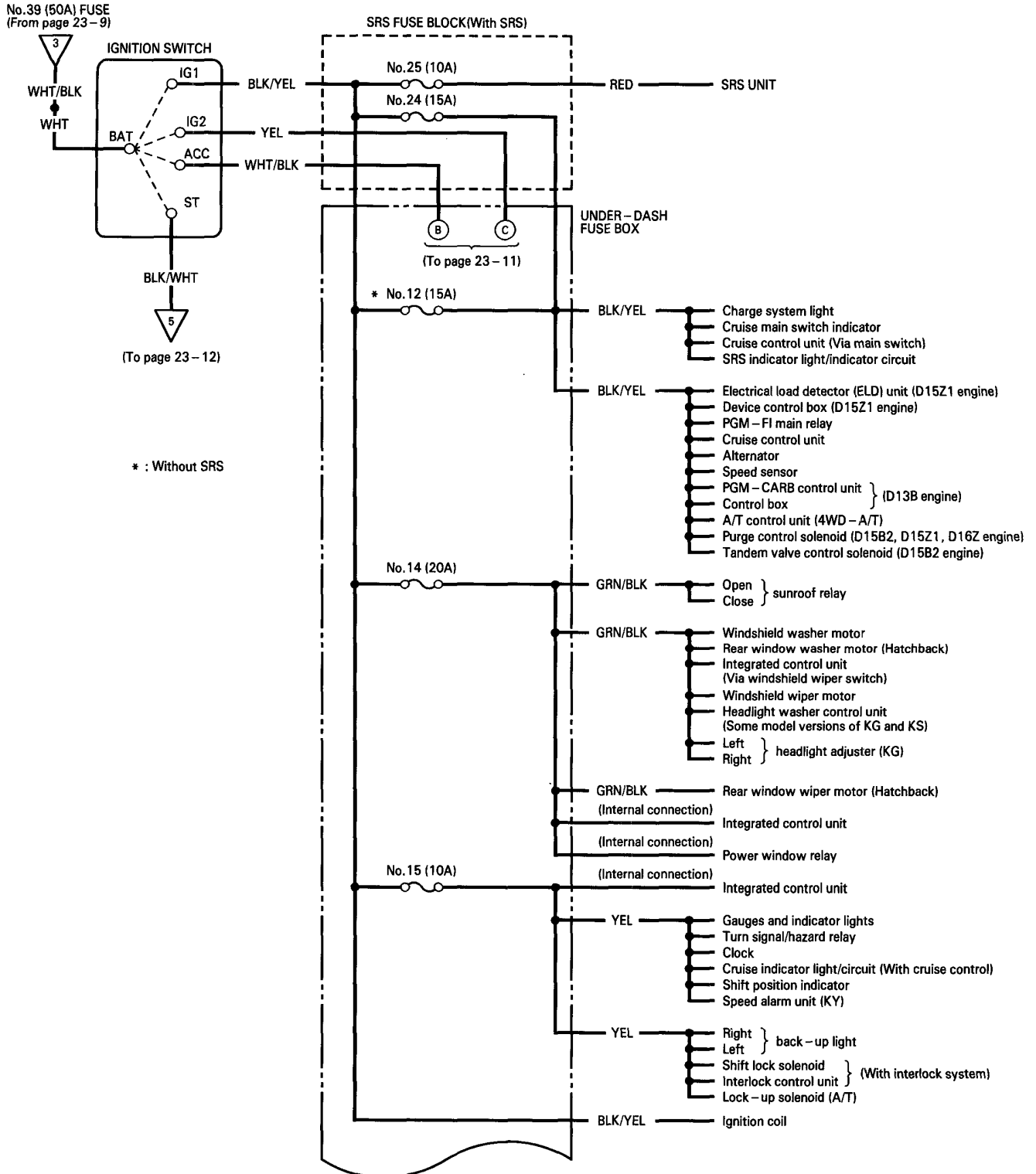




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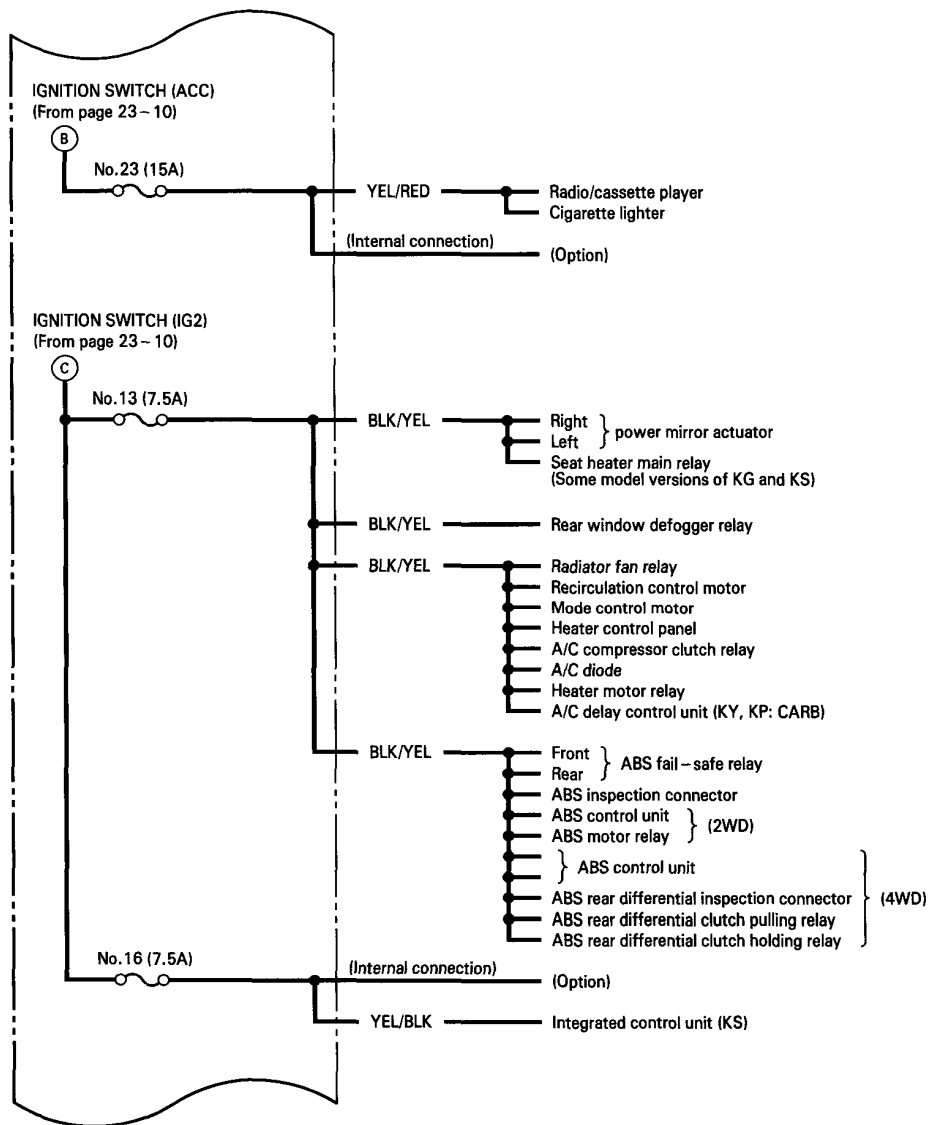
Power Distribution

Circuit Identification (cont'd)





UNDER-DASH FUSE BOX

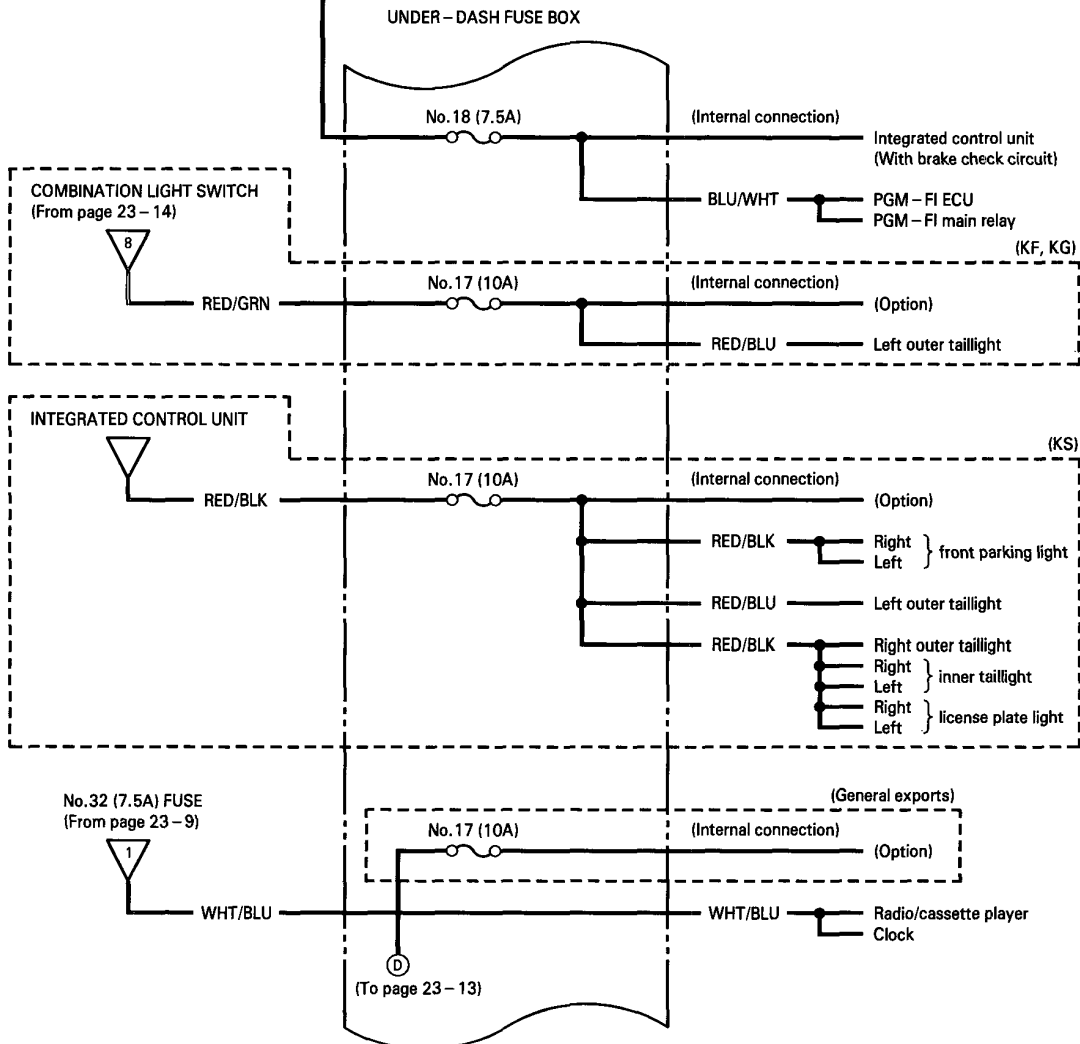
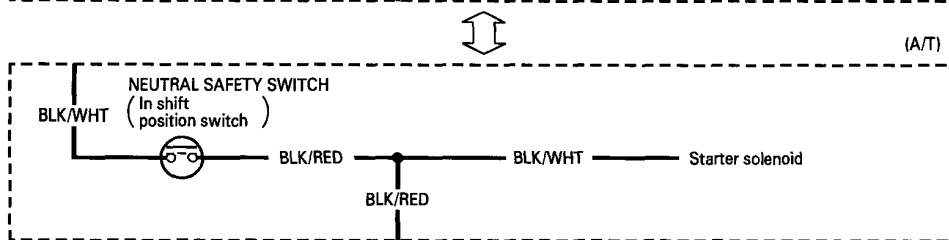
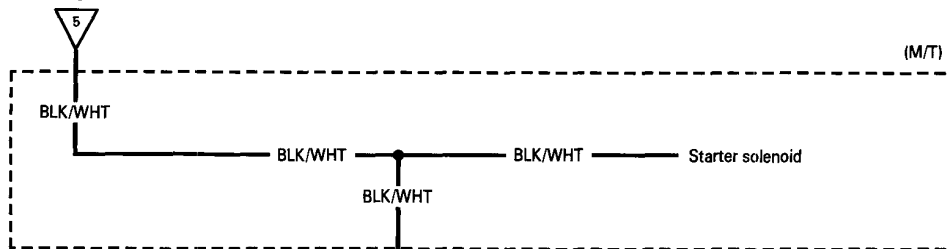


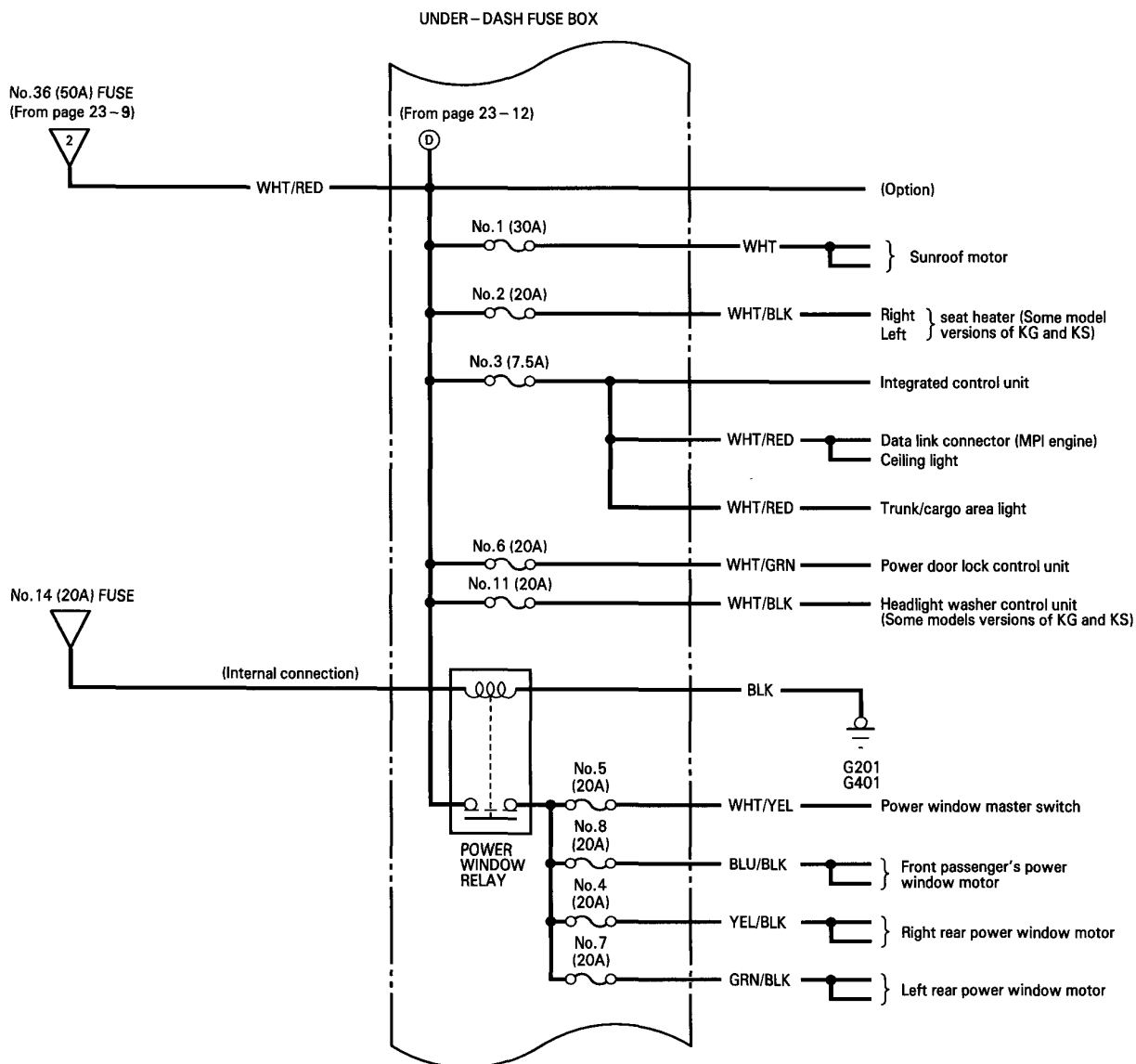
(cont'd)

Power Distribution

Circuit Identification (cont'd)

IGNITION SWITCH (ST)
(From page 23 - 10)

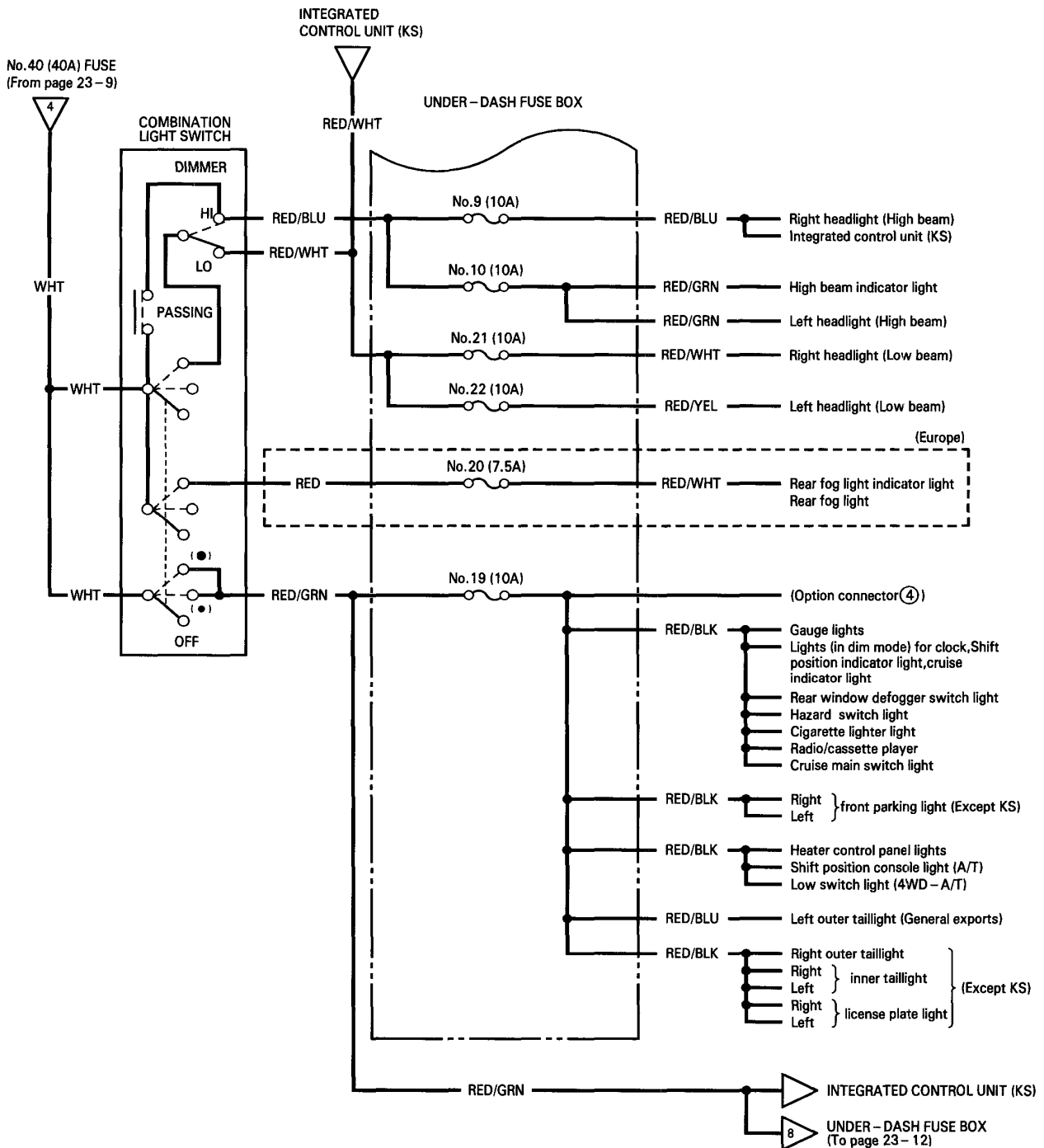




(cont'd)

Power Distribution

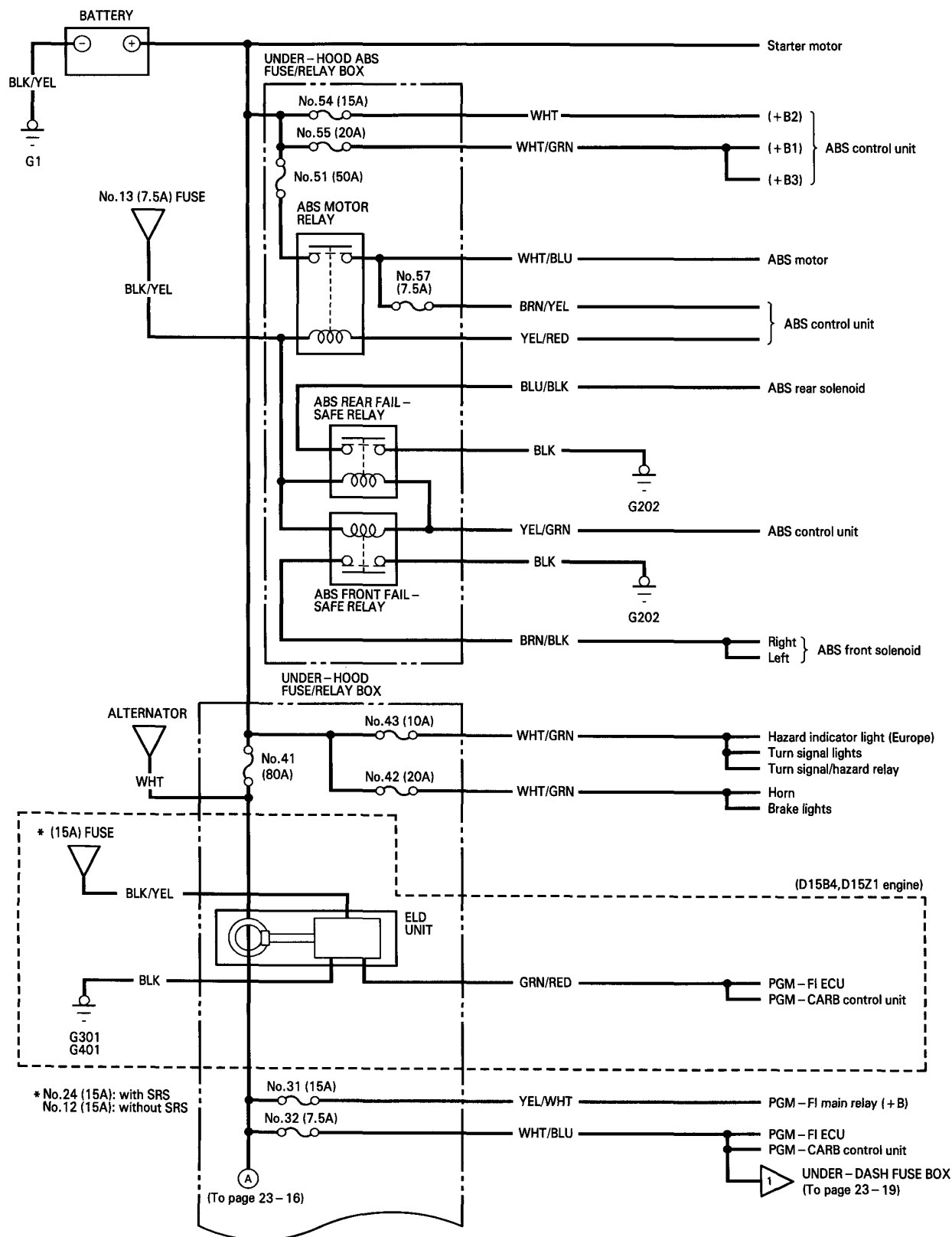
Circuit Identification (cont'd)





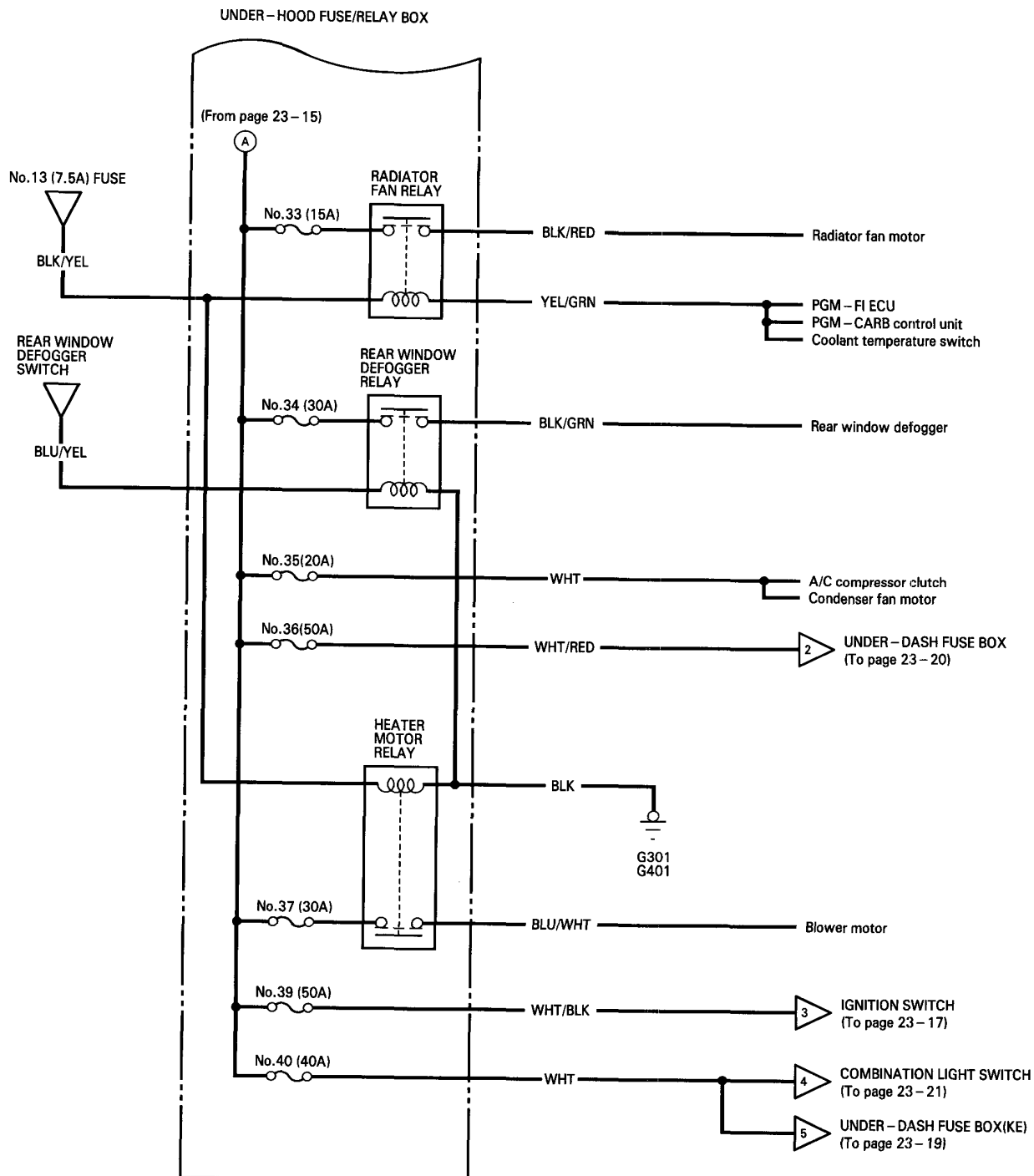
Power Distribution(RHD)

Circuit Identification



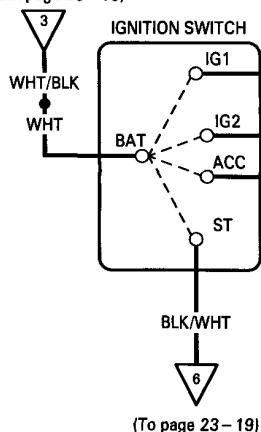
Power Distribution

Circuit Identification (cont'd)

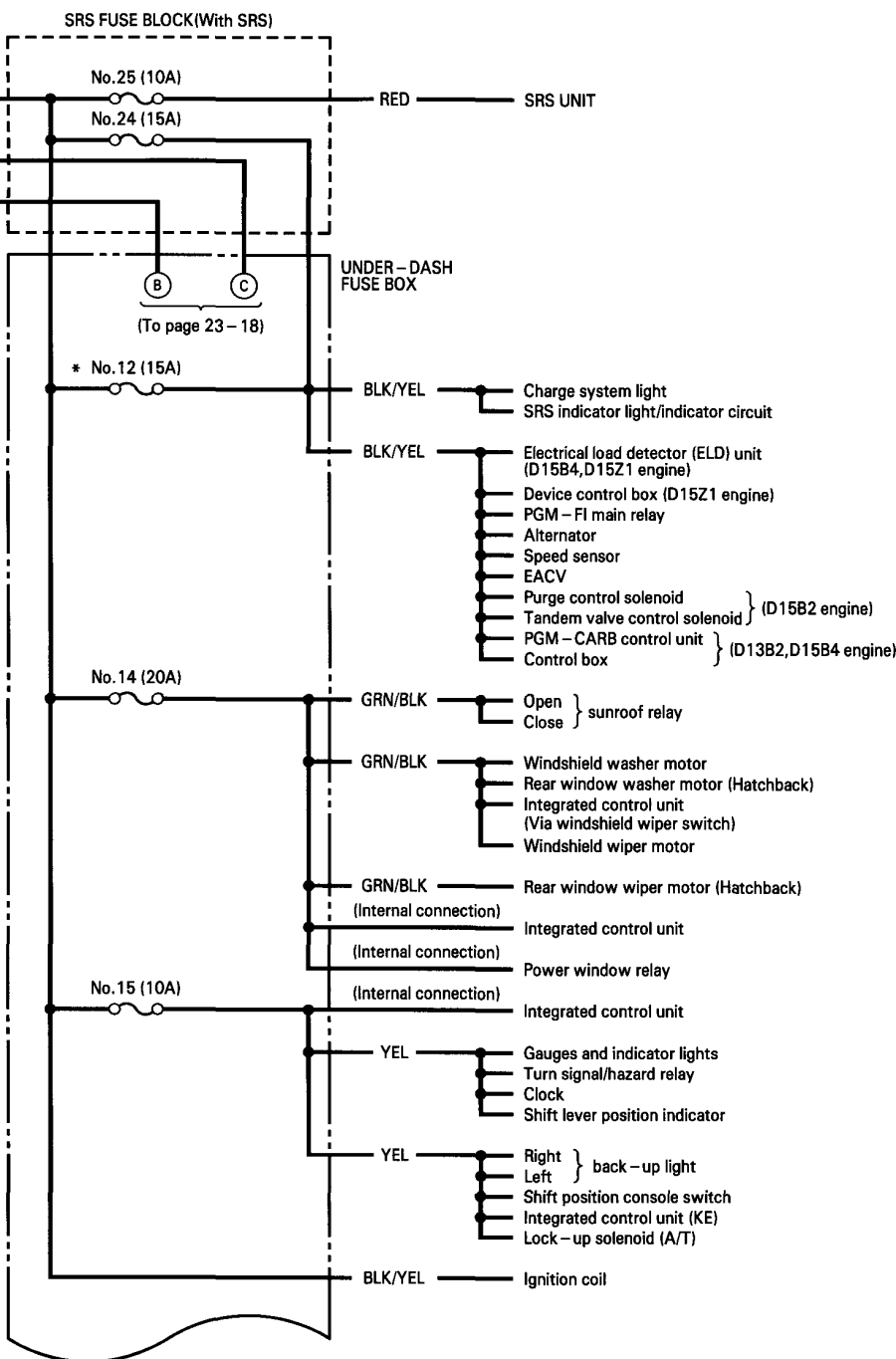




No.39 (50A) FUSE
(From page 23-16)

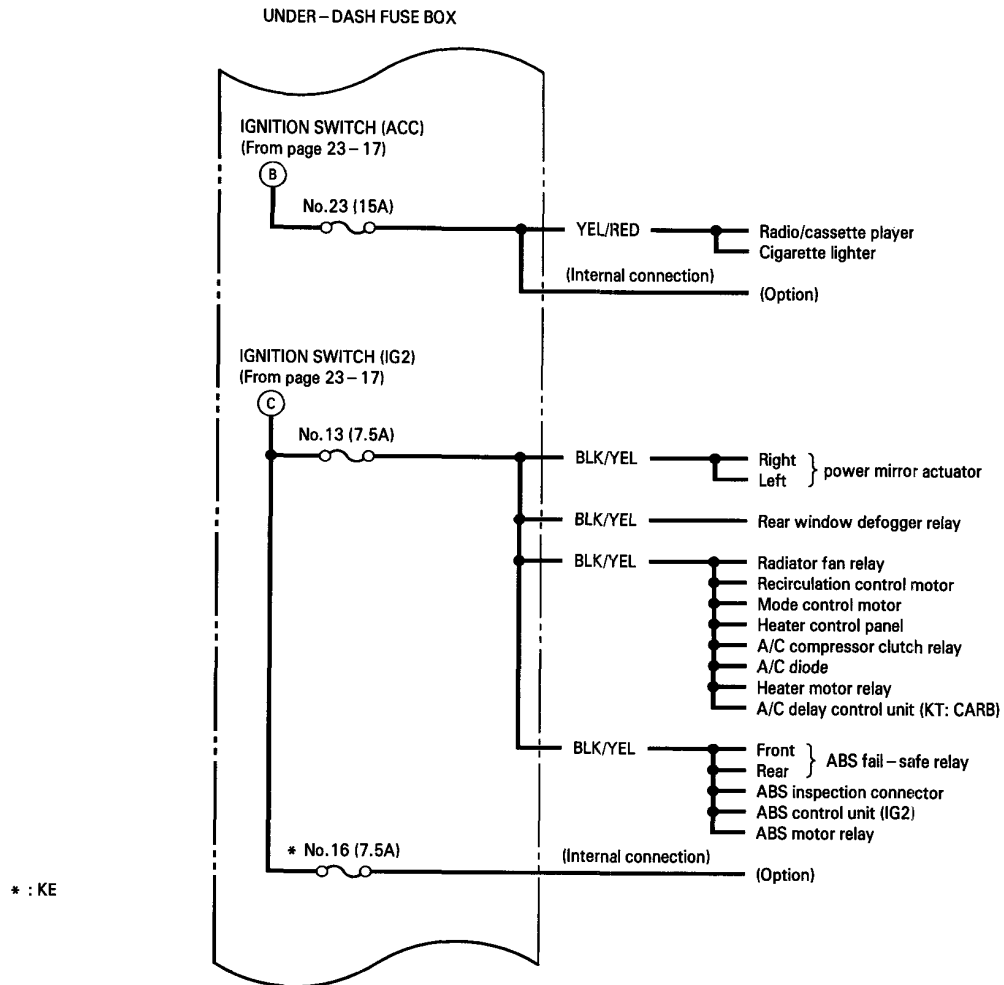


* : Without SRS



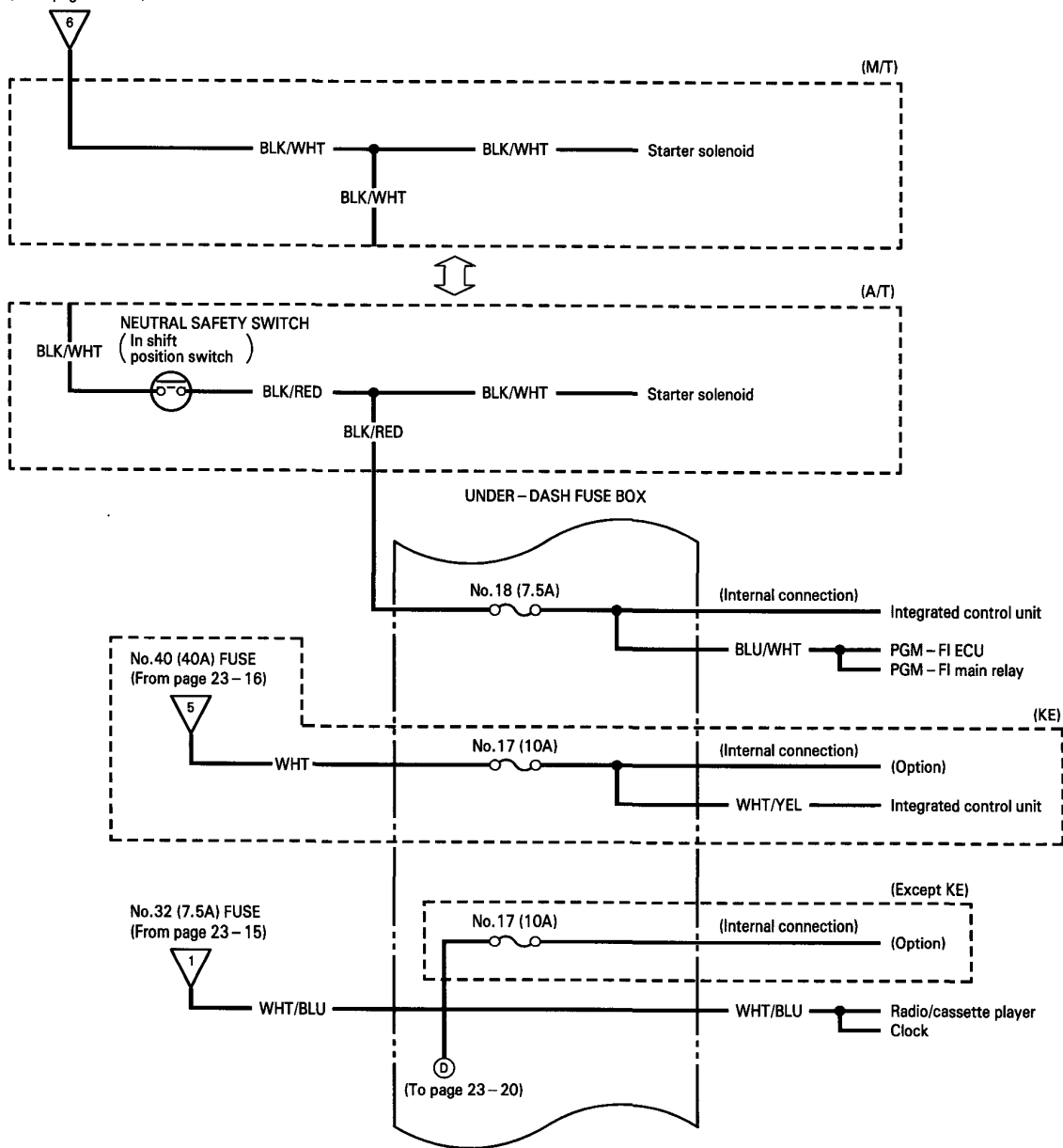
Power Distribution

Circuit Identification (cont'd)



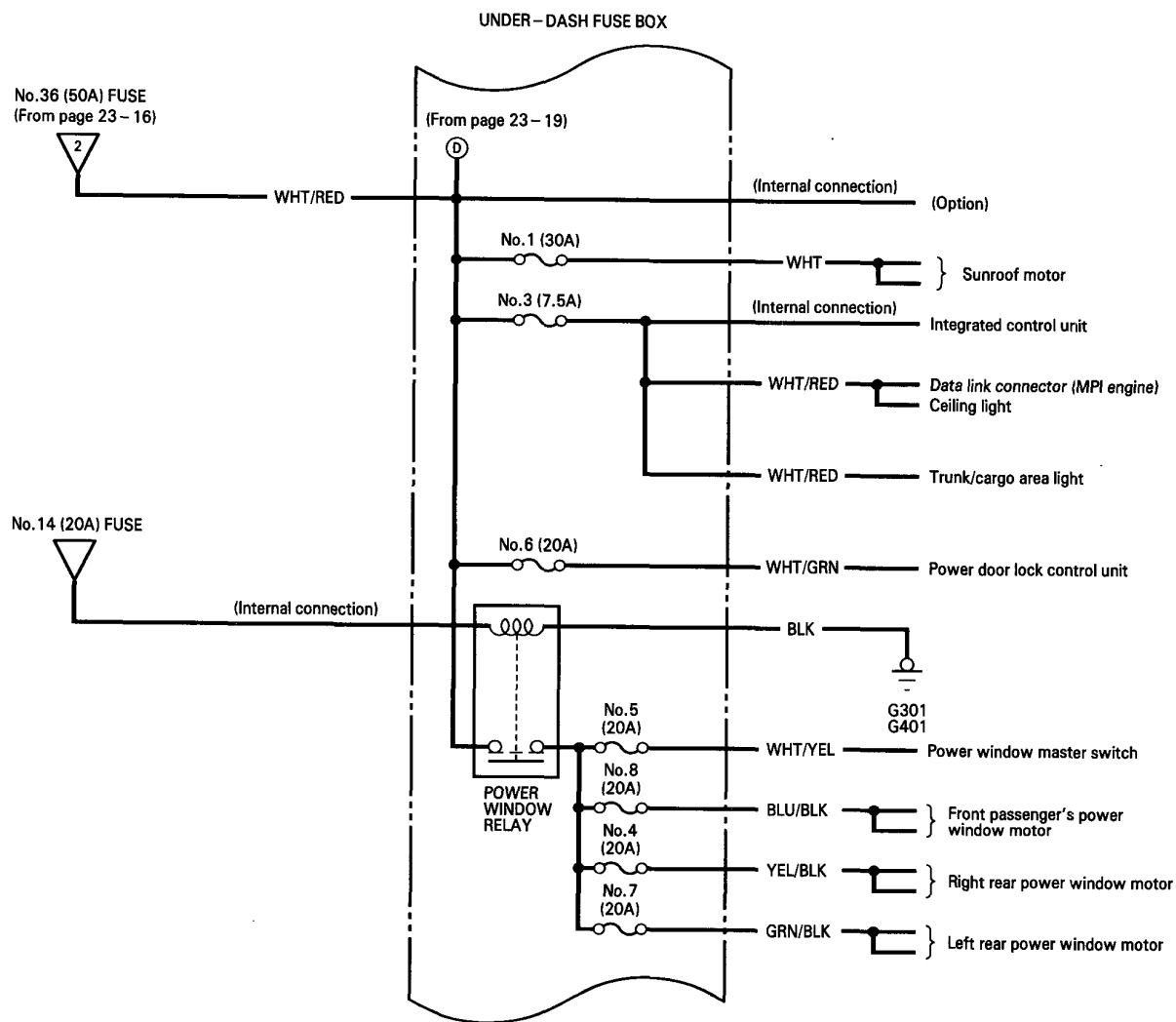


IGNITION SWITCH (ST)
(From page 23 - 17)



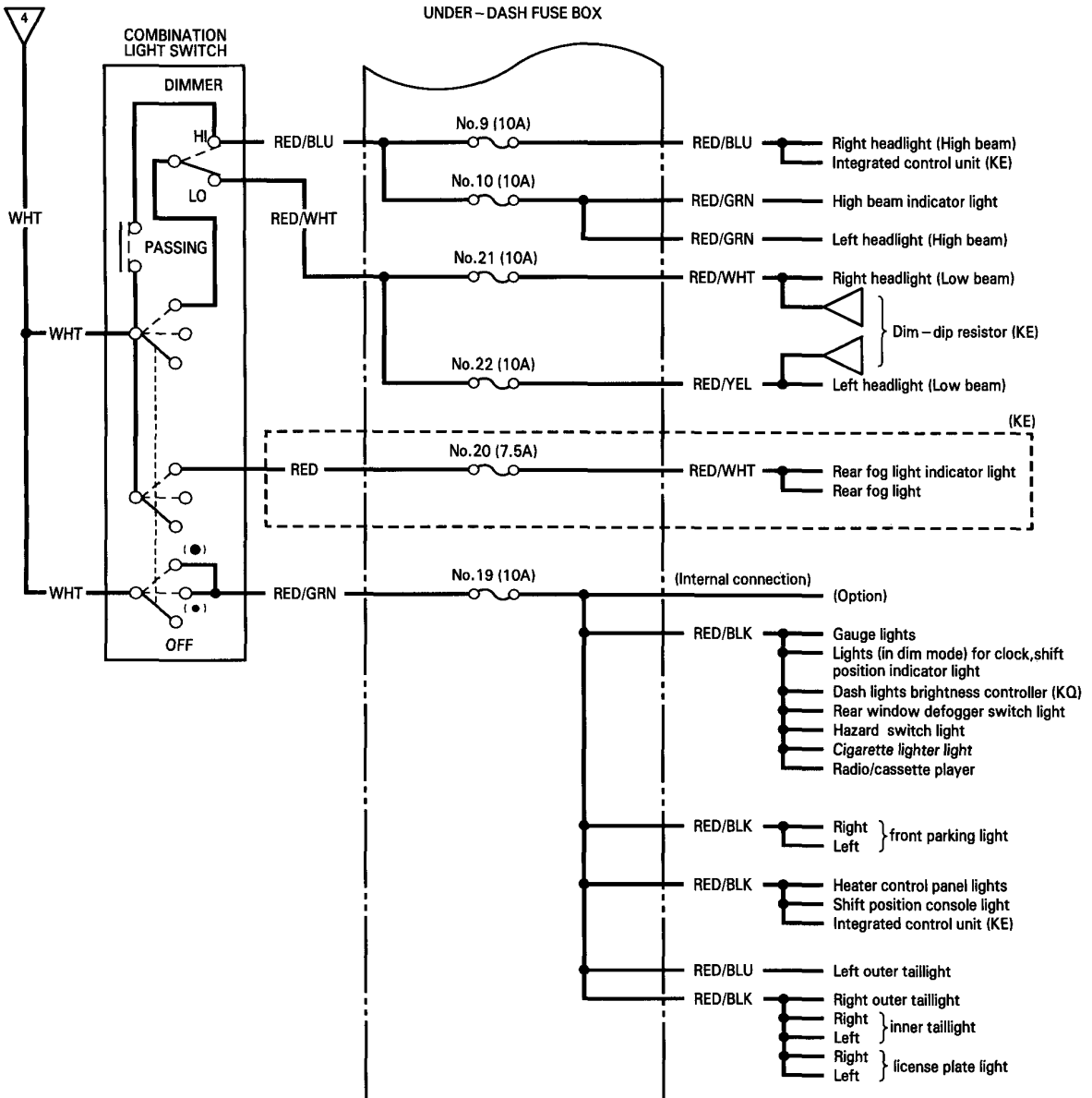
Power Distribution

Circuit Identification (cont'd)



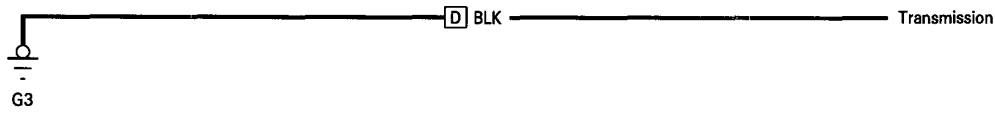
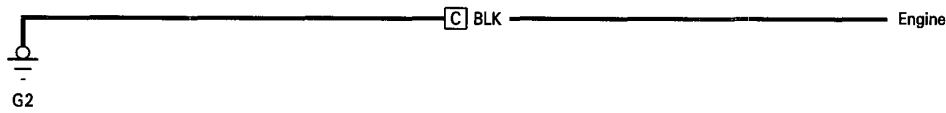
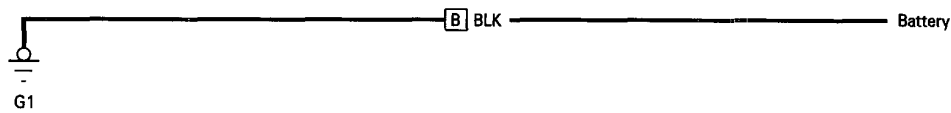


No.40 (40A) FUSE
(From page 23 - 16)

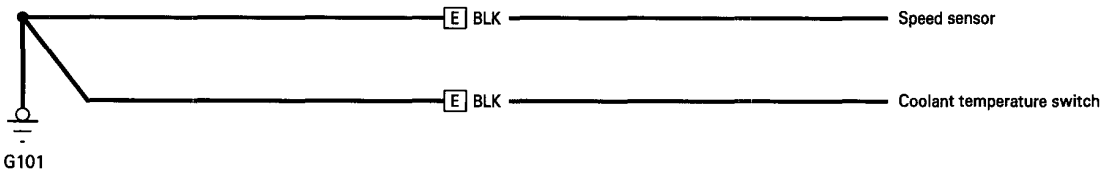


Ground Distribution

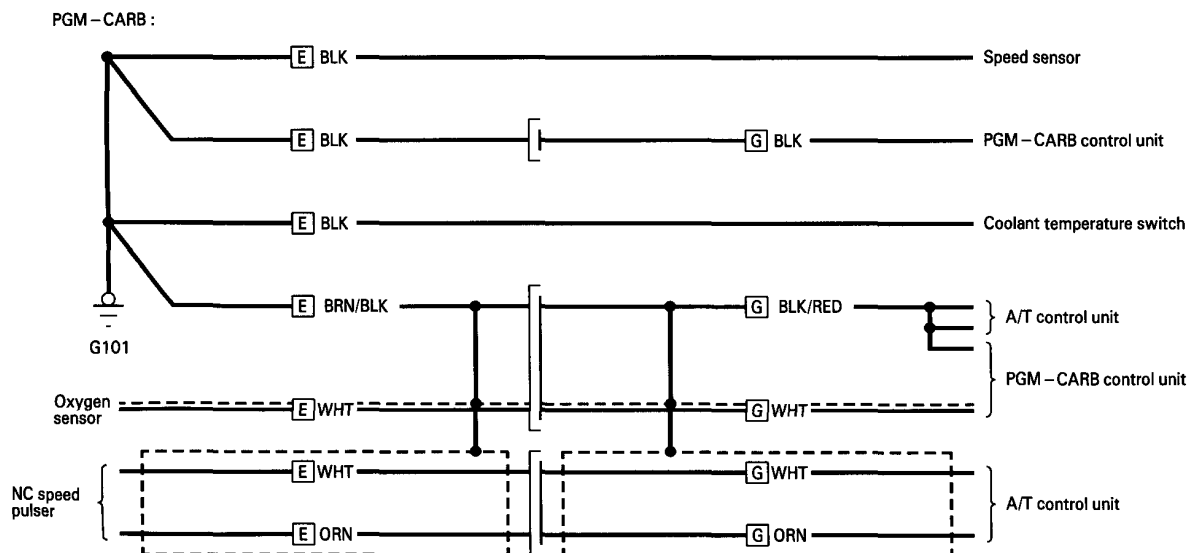
Circuit Identification



CARB (except PGM – CARB) :



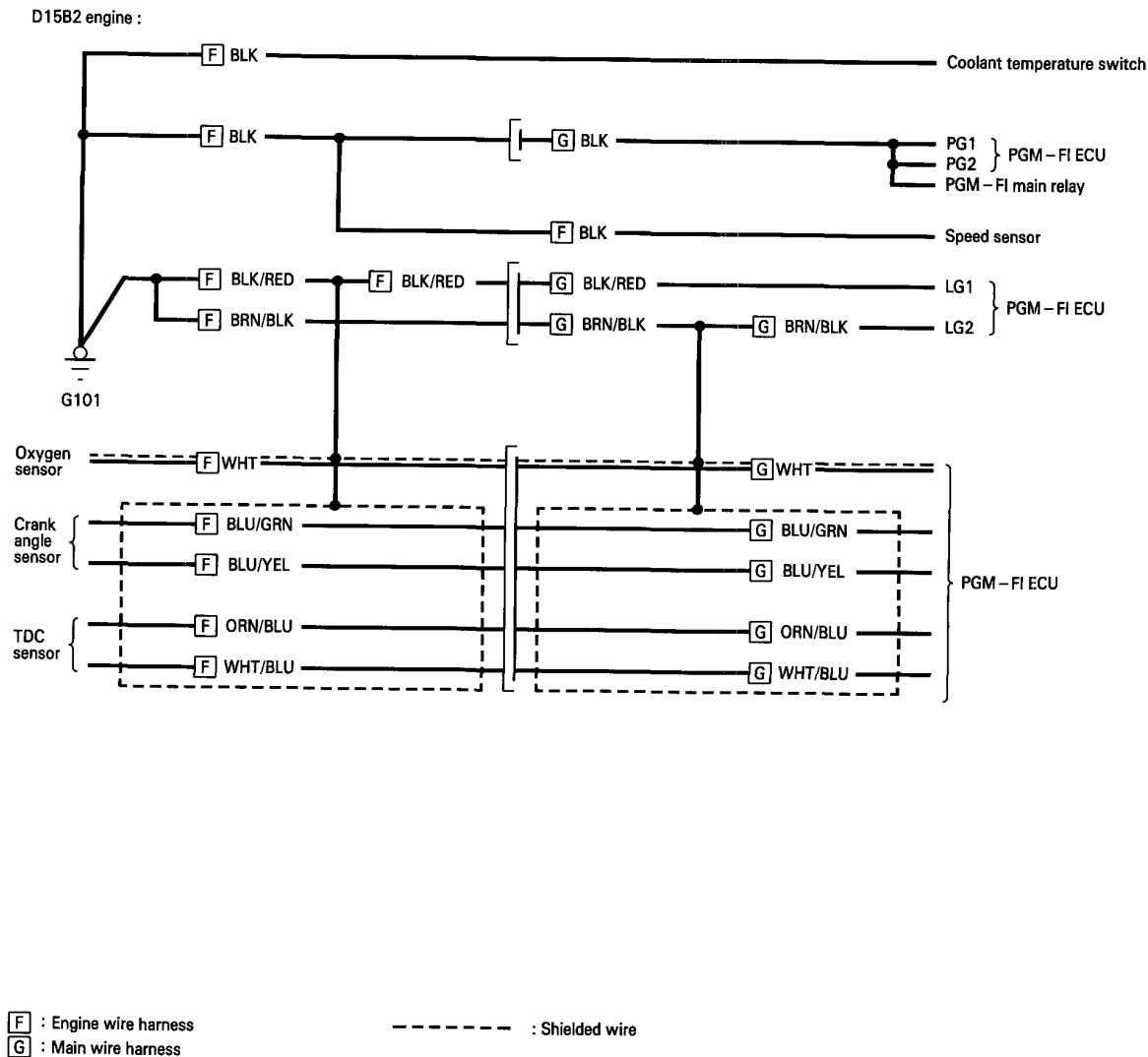
- [B] : Battery ground wire
- [C] : Engine ground wire A
- [D] : Engine ground wire B
- [E] : Engine wire harness



(cont'd)

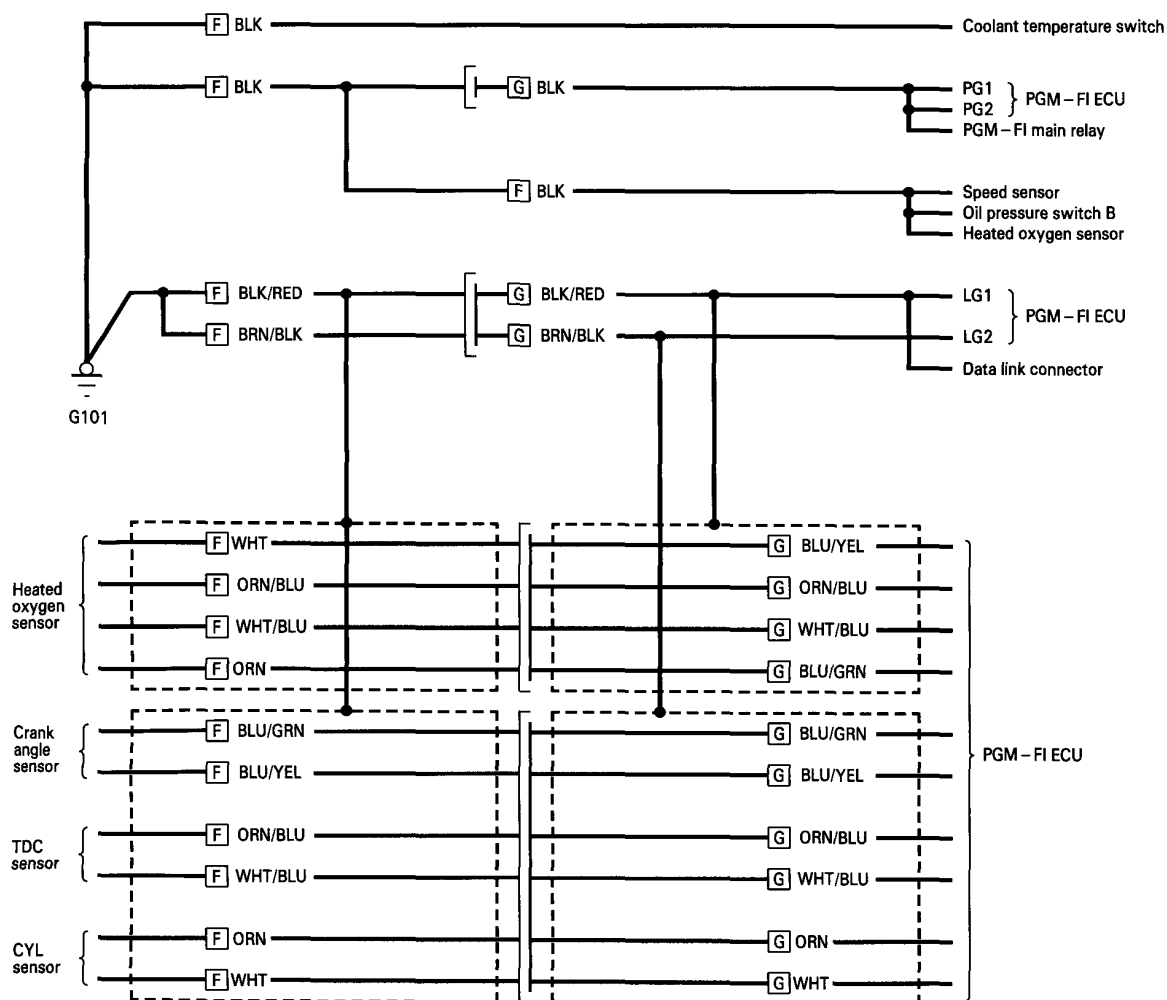
Ground Distribution

Circuit Identification



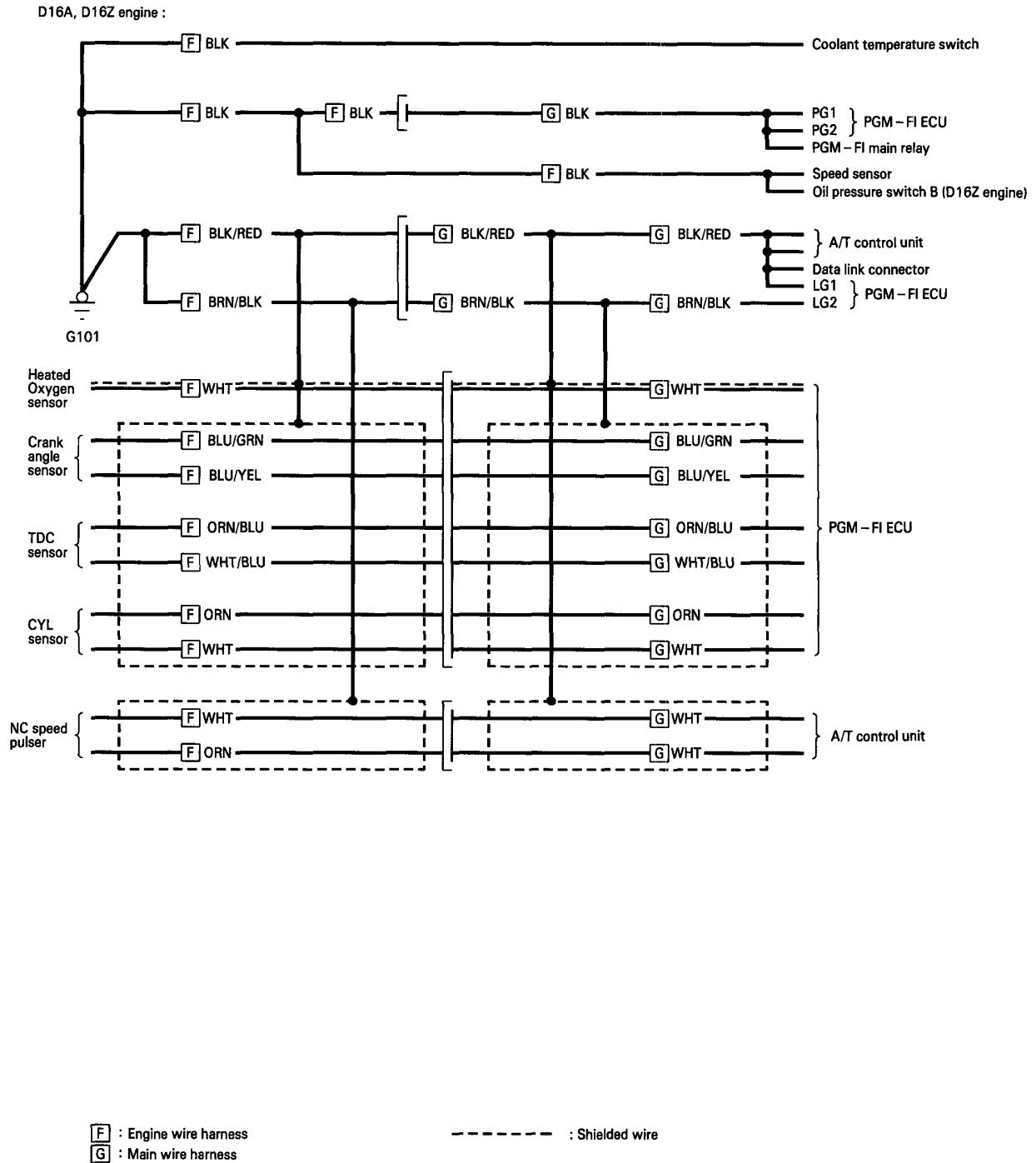


D15Z1 engine :



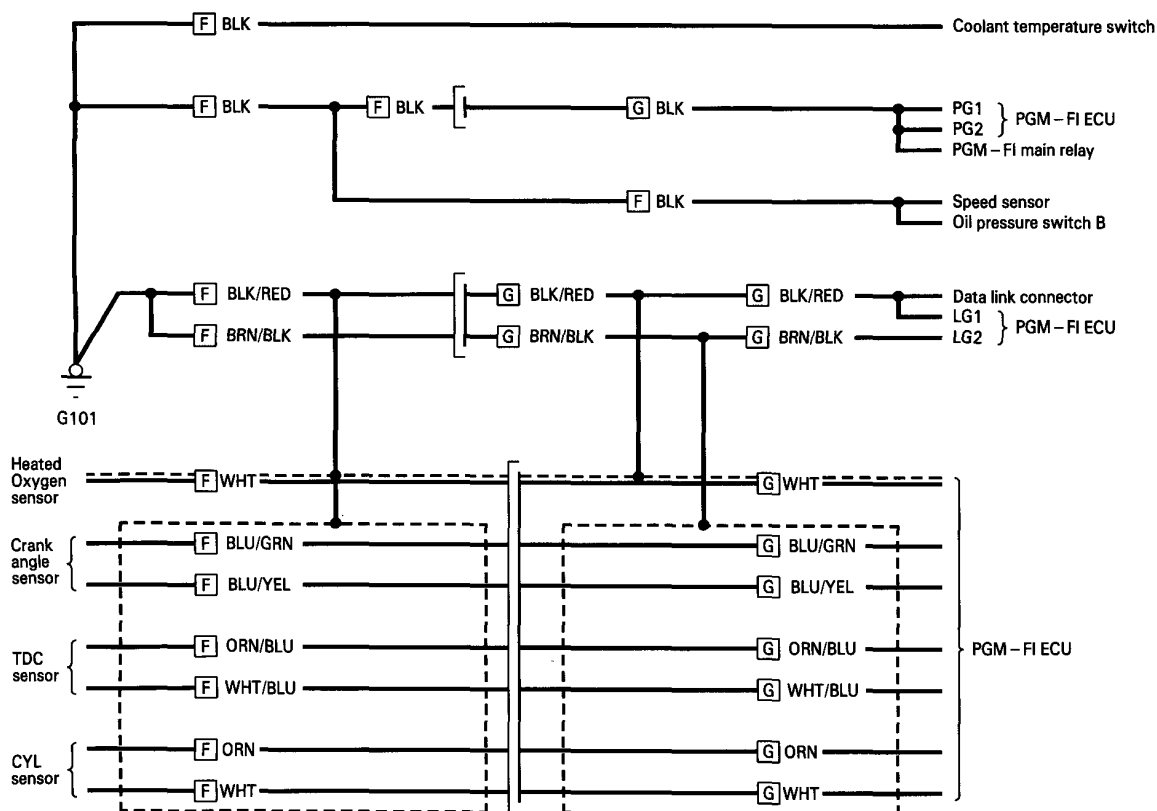
Ground Distribution

Circuit Identification (cont'd)





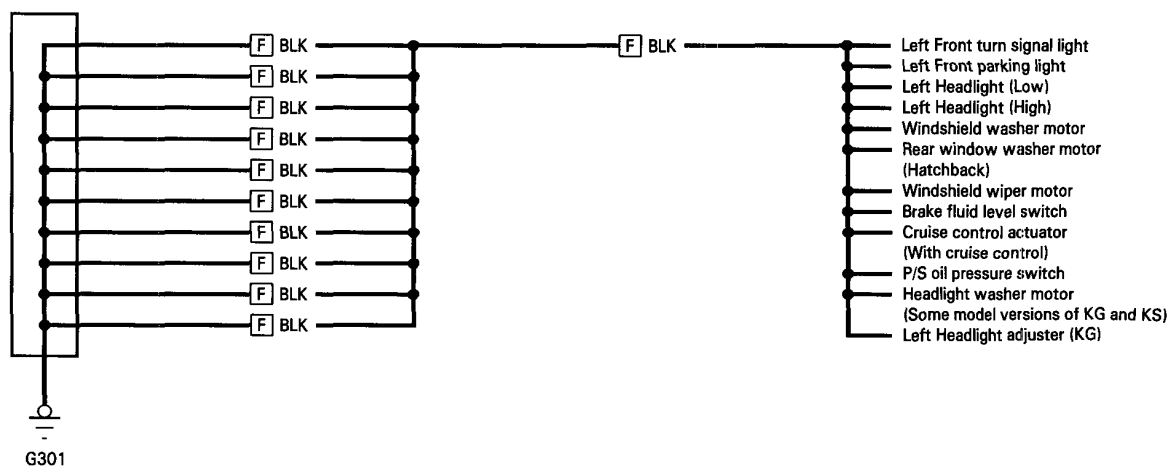
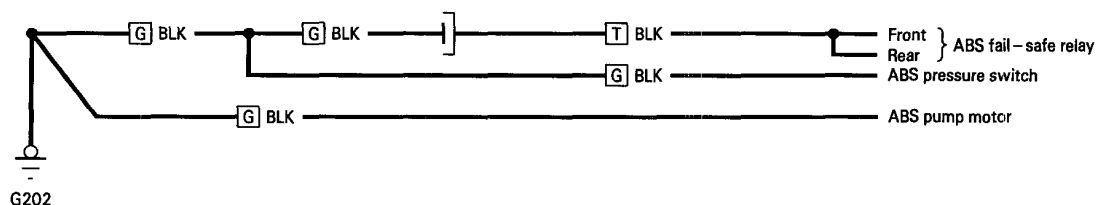
B16A2 engine :



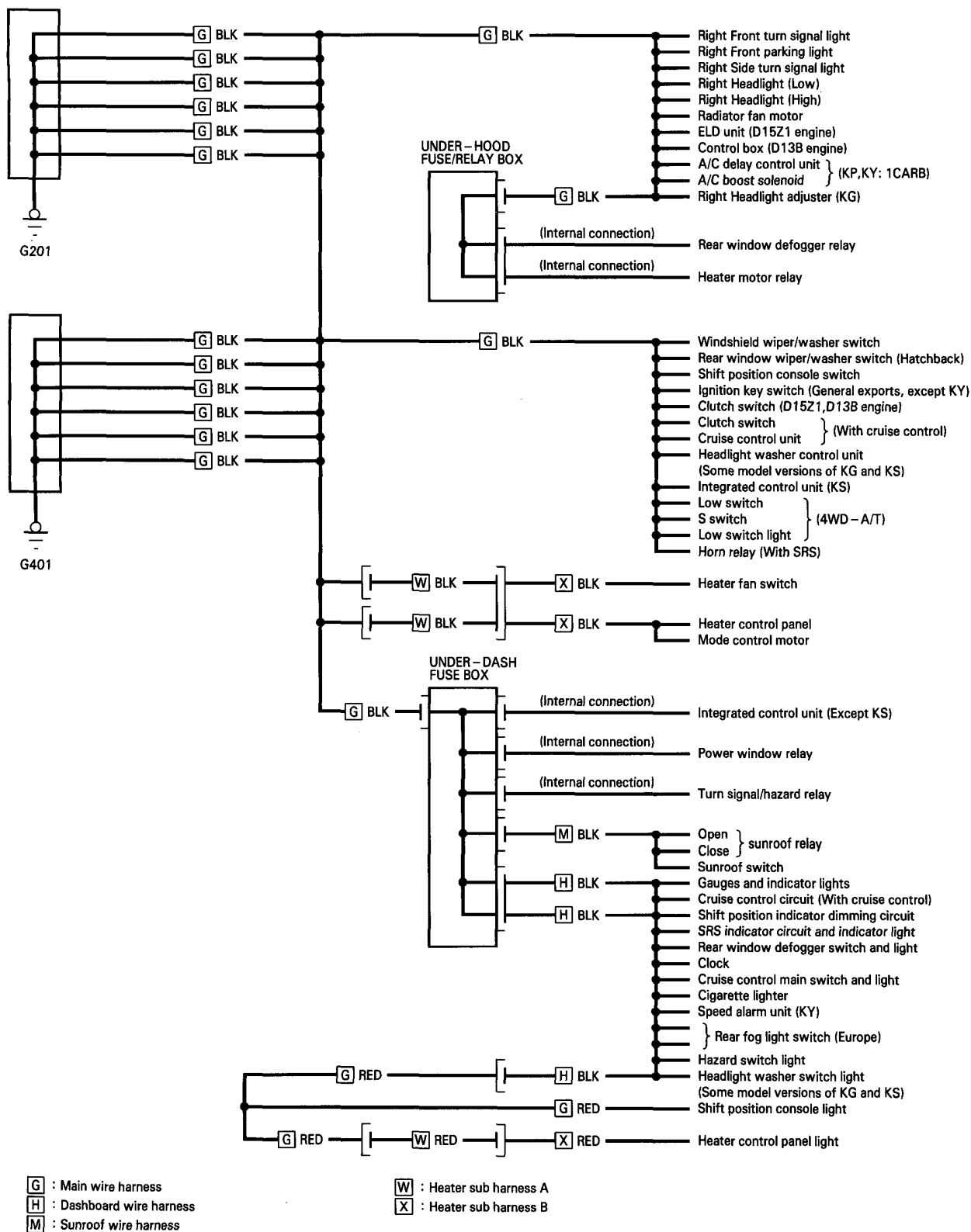
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Ground Distribution

Circuit Identification (LHD)

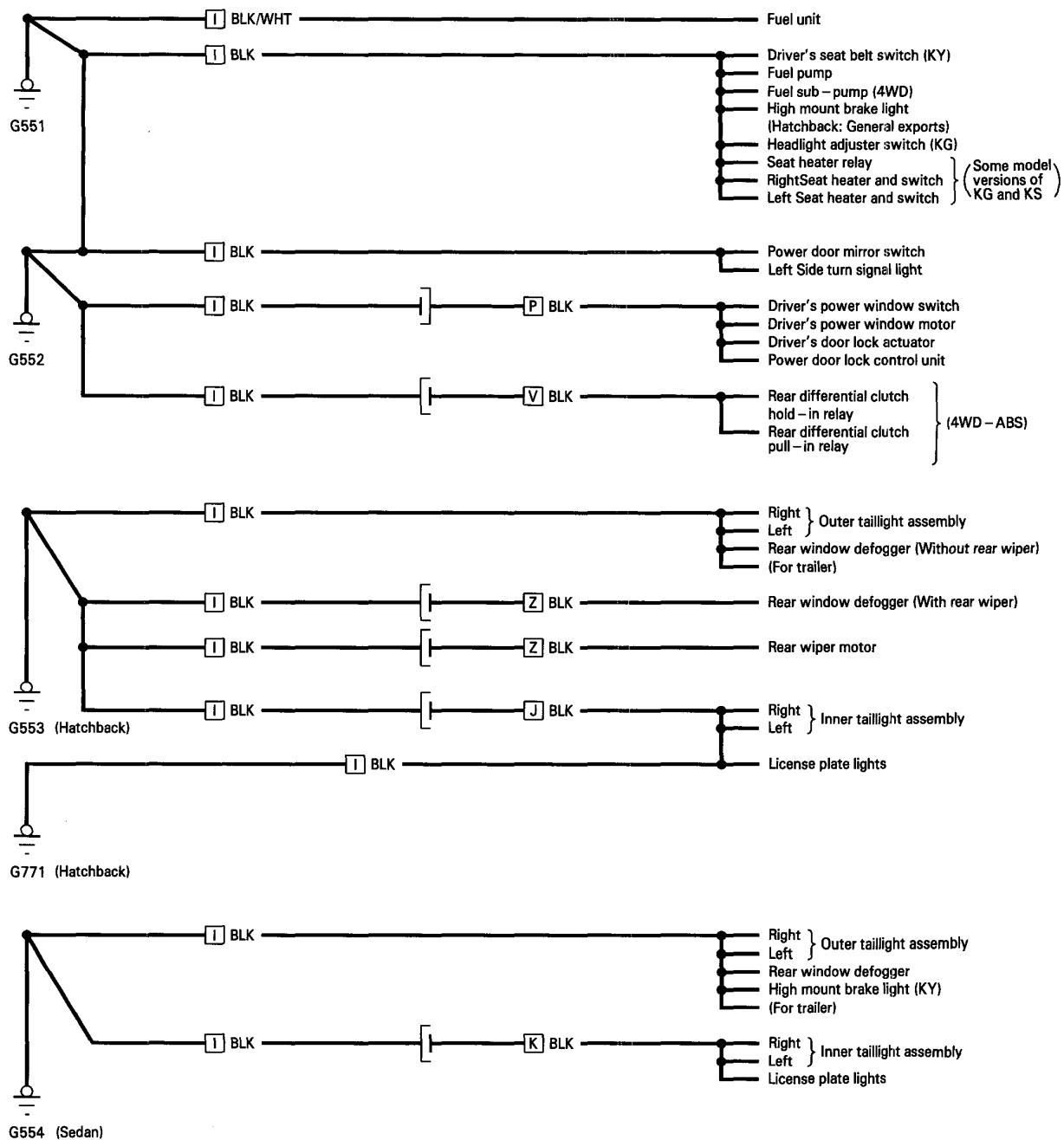


- F** : Engine compartment wire harness
- G** : Main wire harness
- T** : Under-hood ABS fuse/relay box wire harness



Ground Distribution

Circuit Identification (cont'd)

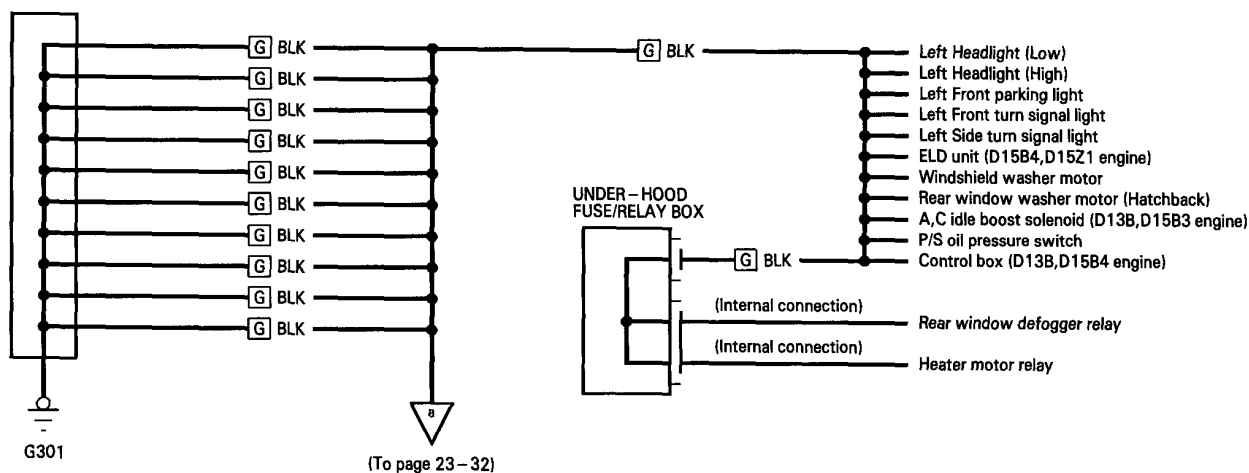
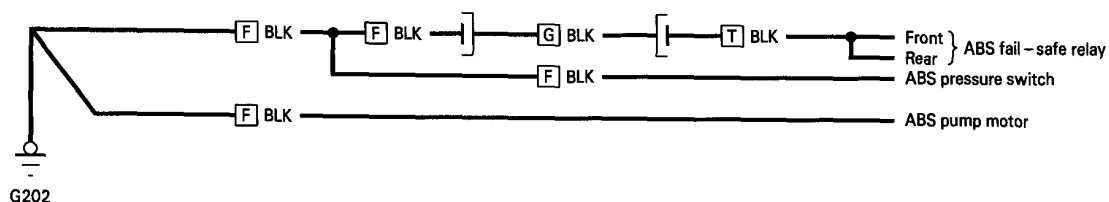
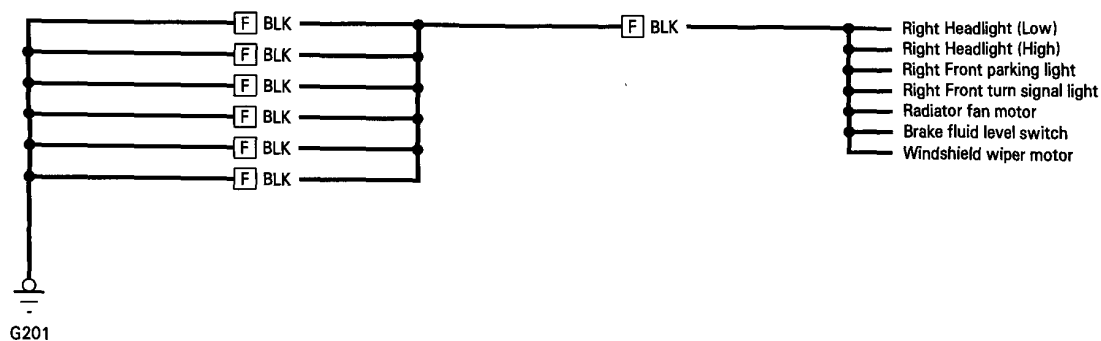


I : Rear wire harness
J : Tailgate wire harness
K : Trunk lid wire harness

P : Driver's door wire harness
V : ABS sub - harness
Z : Rear wiper sub - harness



Circuit Identification(RHD)

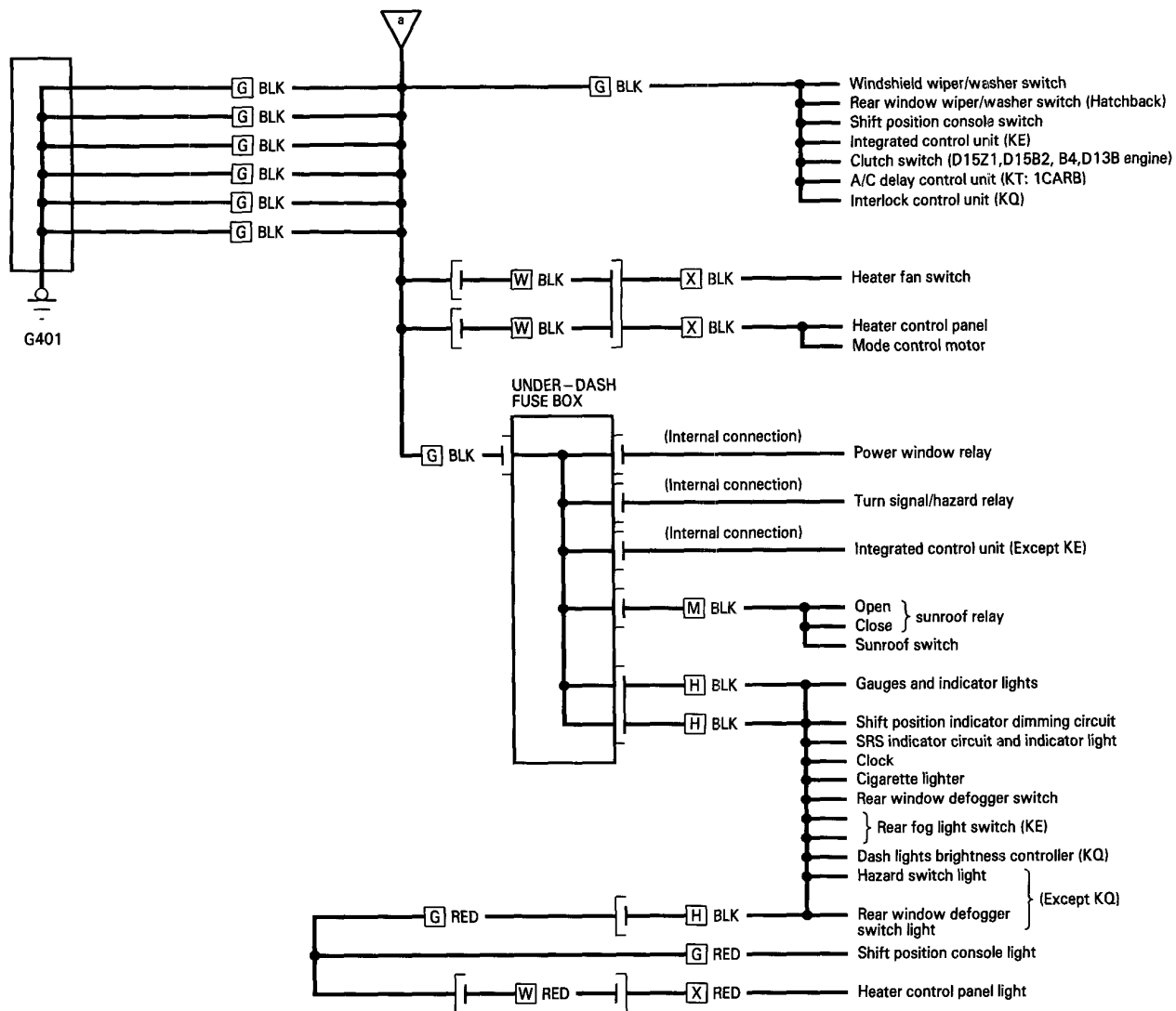


[F] : Engine compartment wire harness
 [G] : Main wire harness
 [T] : Under-hood ABS fuse/relay box wire harness

Ground Distribution

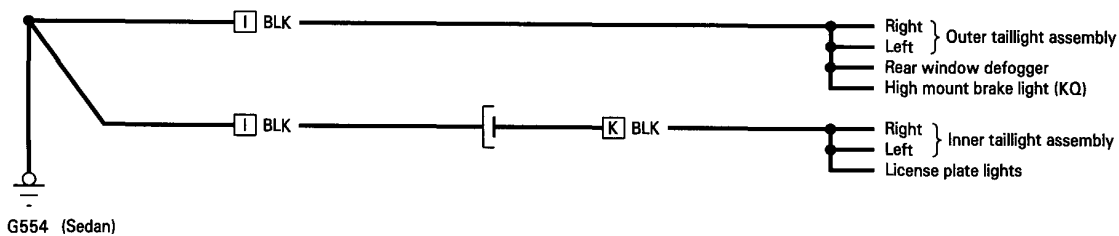
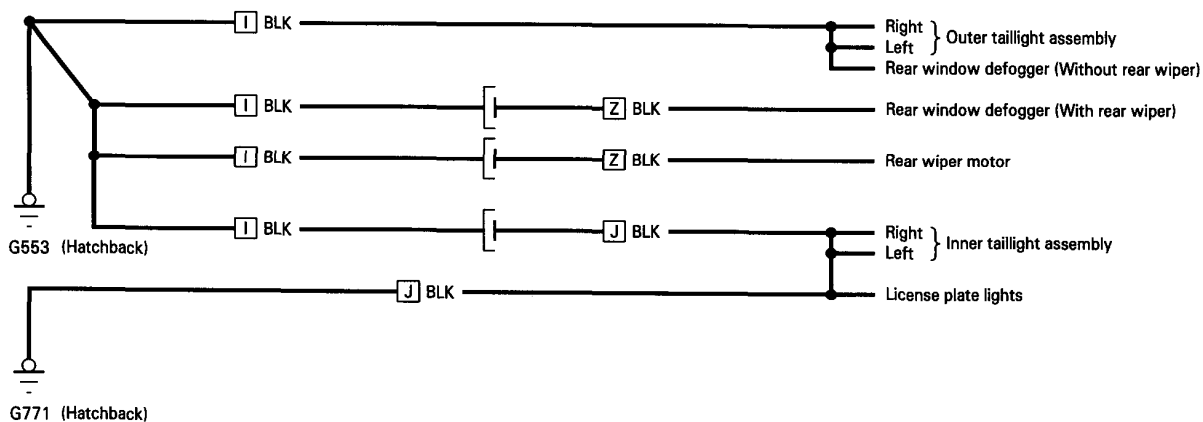
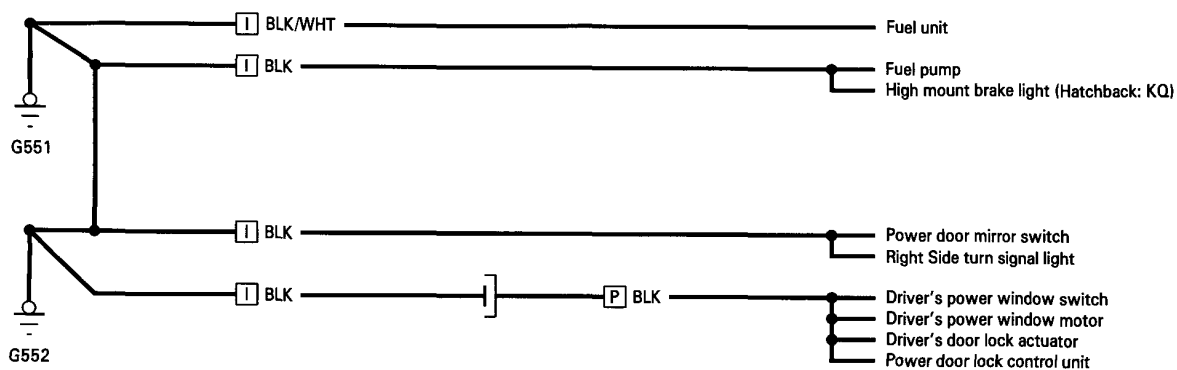
Circuit Identification (cont'd)

(From page 23-31)



G : Main wire harness
H : Dashboard wire harness
M : Sunroof wire harness

W : Heater sub harness A
X : Heater sub harness B

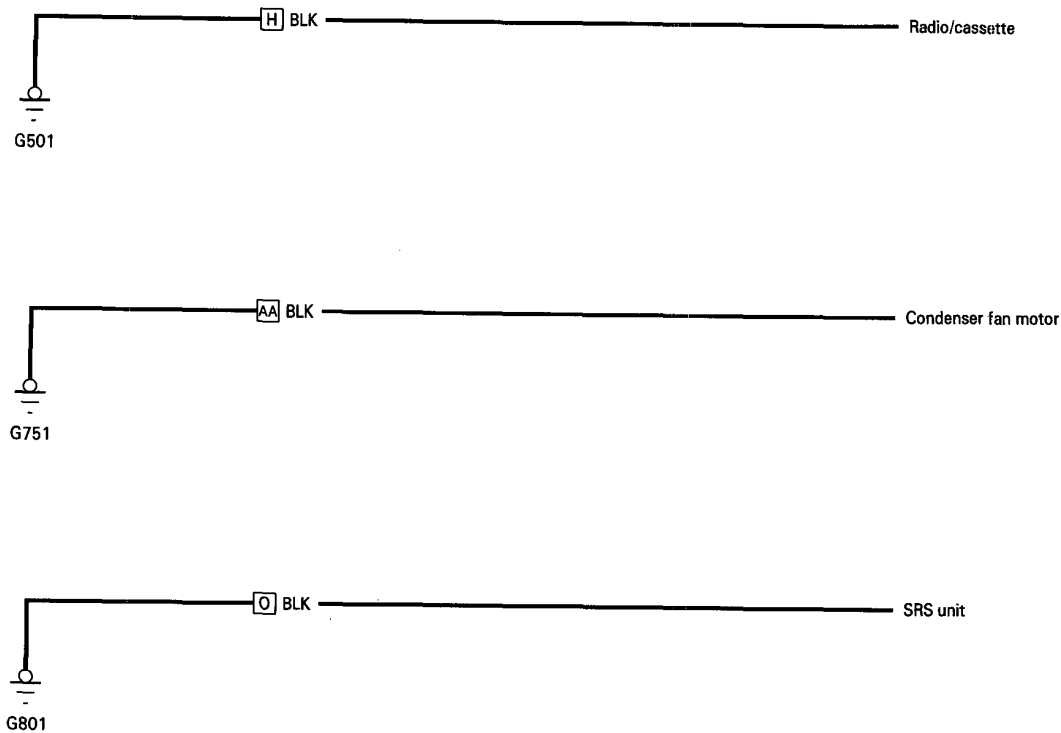


I : Rear wire harness
J : Tailgate wire harness
K : Trunk lid wire harness

P : Driver's door wire harness
Z : Rear wiper sub-harness

Ground Distribution

Circuit Identification



- [H]** : Dashboard wire harness
- [O]** : SRS unit sub – harness
- [AA]** : A/C wire harness

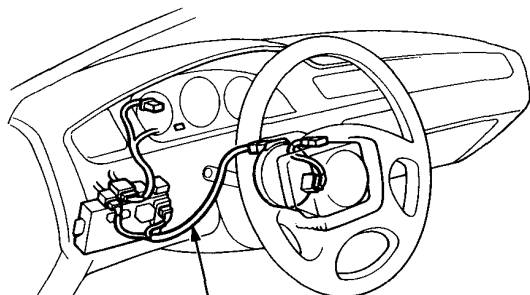
Ignition Switch



Test

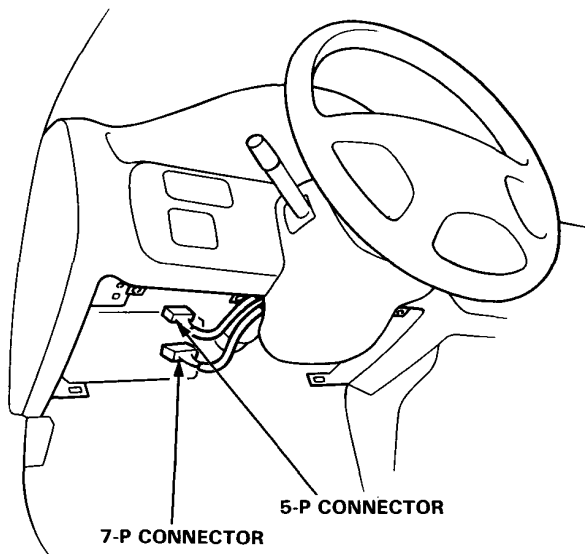
CAUTION :

- All SRS electrical wiring harnesses are covered with yellow outer insulation.
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.
- Before disconnecting the SRS wiring harnesses, turn the ignition switch off, disconnect the negative and positive battery cables, and wait at least three minutes.



SRS MAIN HARNESS
(Covered with yellow outer insulation)

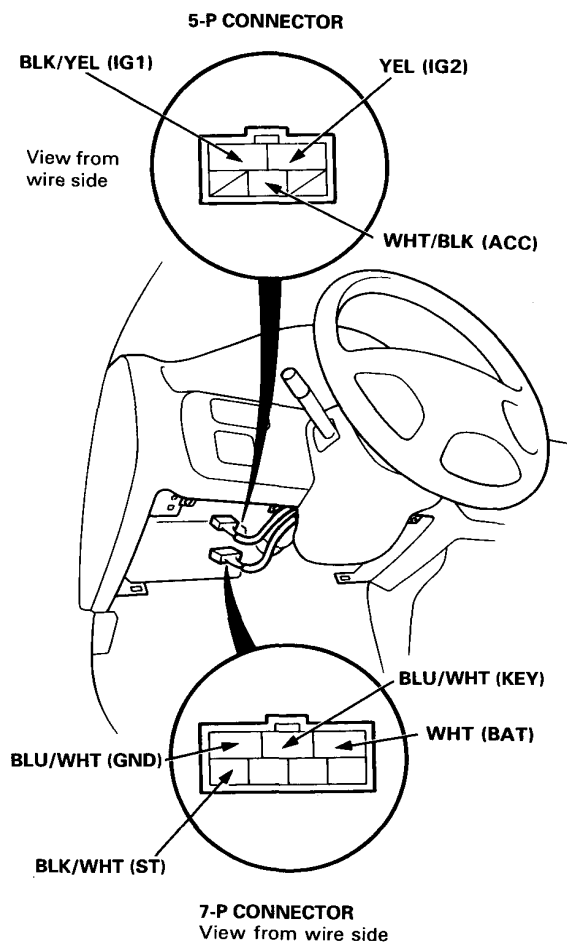
1. Remove the dashboard lower cover and knee bolster.
2. Disconnect the 5-P connector from the under-dash fuse box and the 7-P connector from the main wire harness.



3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position	WHT/ BLK (ACC)	WHT (BAT)	BLK/ YEL (IG1)	YEL (IG2)	BLK/ WHT (ST)	BLU/ WHT (KEY)	BLU/ WHT (GND)
LOCK							
ACC	○—○						
ON	○—○	○—○	○—○	○—○			
ST		○—○	○—○		○—○		
Key out						○—○	

4. If continuity checks do not agree with the table, replace the steering lock assembly.

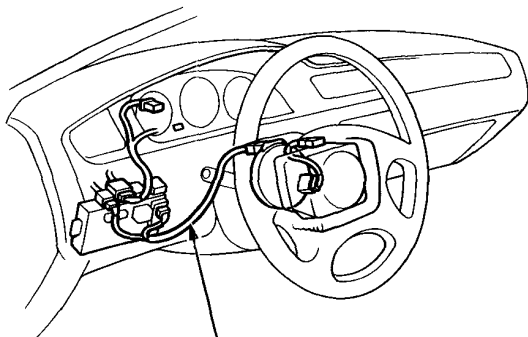


Ignition Switch

Electrical Switch Replacement

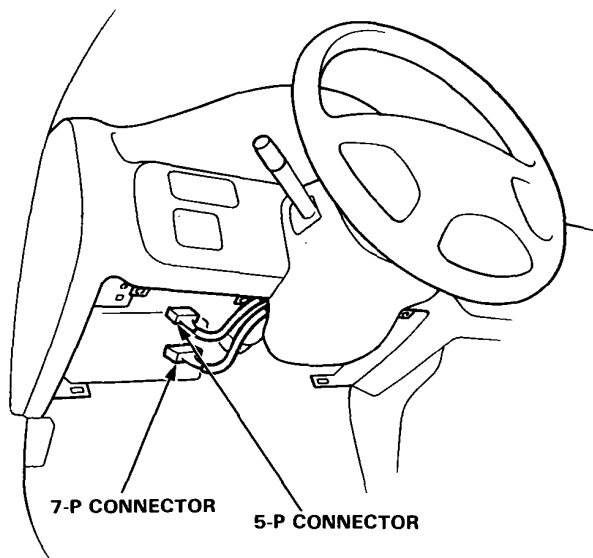
CAUTION :

- All SRS electrical wiring harnesses are covered with yellow outer insulation.
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.
- Before disconnecting the SRS wiring harnesses, turn the ignition switch off, disconnect the negative and positive battery cables, and wait at least three minutes.



SRS MAIN HARNESS
(Covered with yellow outer insulation)

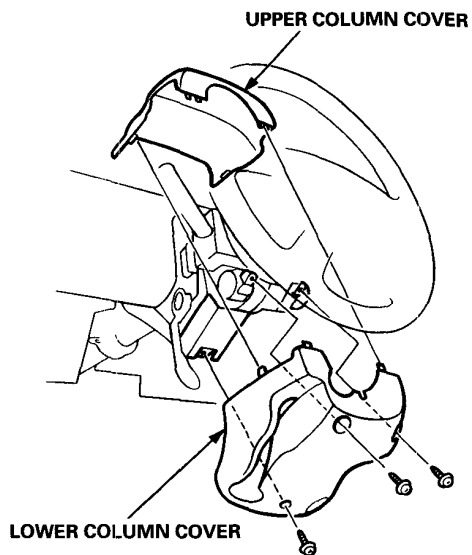
1. Disconnect the negative cable from the battery.
2. Remove the dashboard lower cover and knee bolster.
3. Disconnect the 5-P connector from the under-dash fuse box and the 7-P connector from the main wire harness.



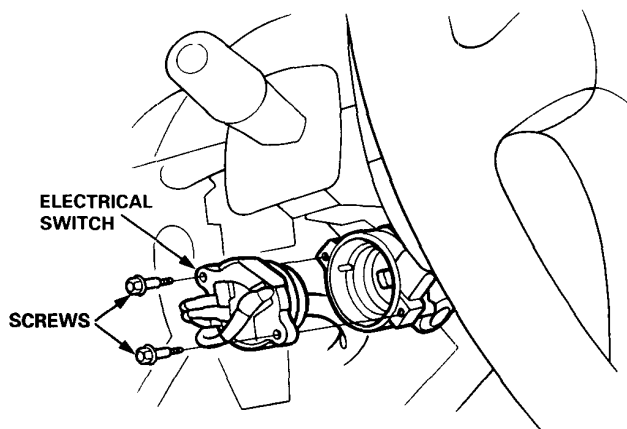
7-P CONNECTOR

5-P CONNECTOR

4. Remove the steering column covers.



5. Insert the key and turn it to "LOCK".
6. Remove the two screws and replace the switch.



ELECTRICAL SWITCH

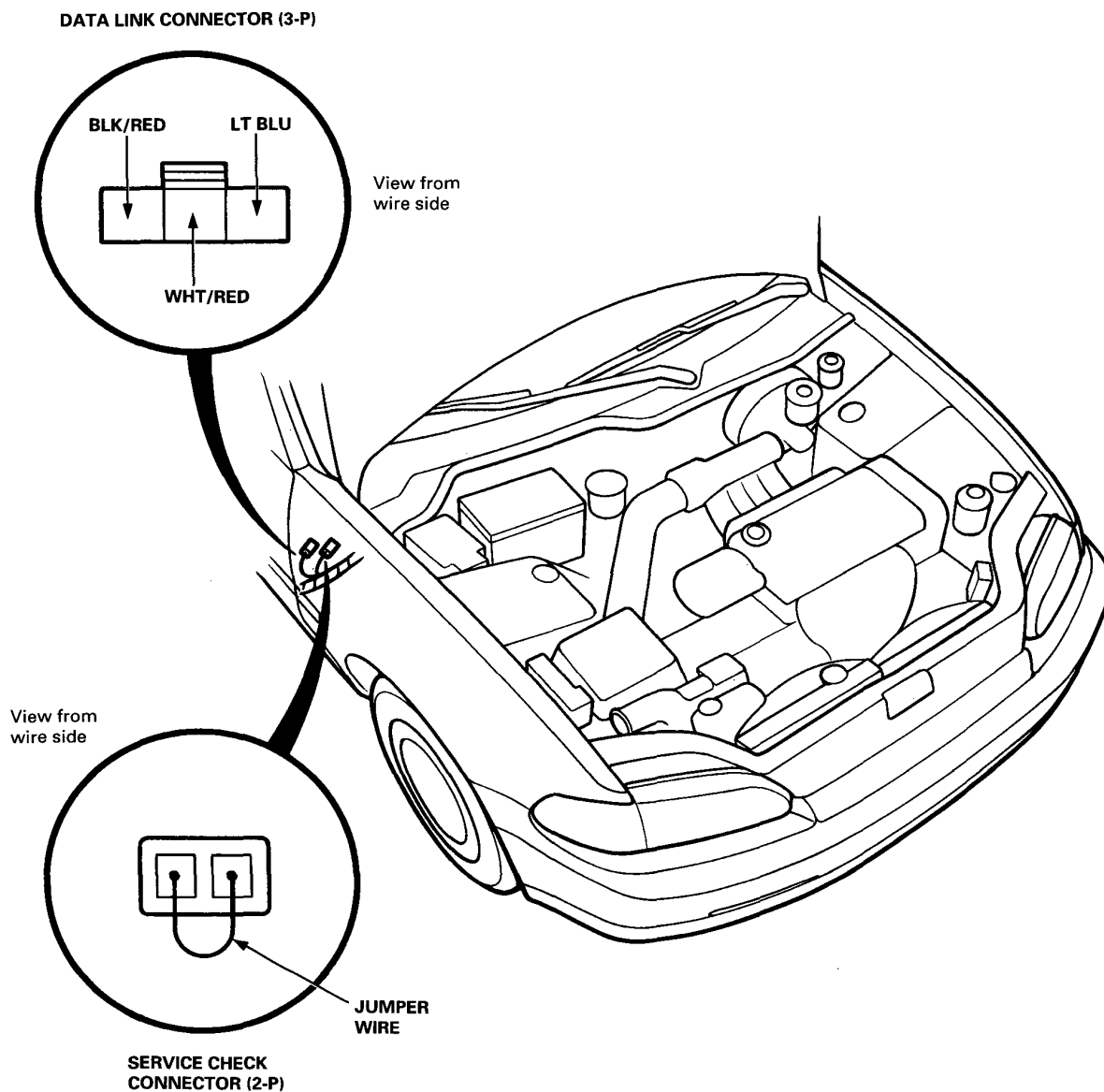
SCREWS



Ignition System

Component Location Index

NOTE: The illustration shows LHD type; RHD type is similar.

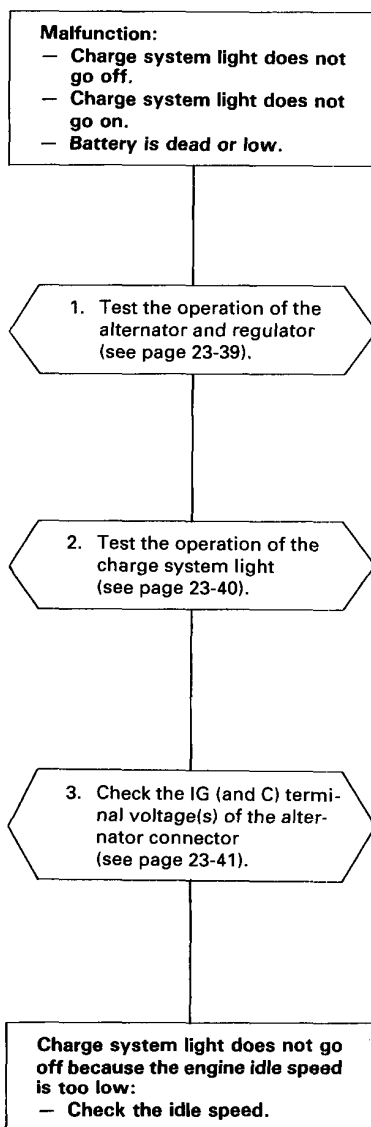


Charging System

Troubleshooting

NOTE:

- Before troubleshooting check:
 - Tightness of the alternator belt.
 - That the self-diagnosis indicator light of the PGM-FI ECU does not blink. If it blinks (20 times), refer to section 11.
- Troubleshoot by performing following tests in the order listed below.





Alternator/Regulator Operation Test

CAUTION: Be careful during testing as the cooling fan comes on suddenly while the engine is running.

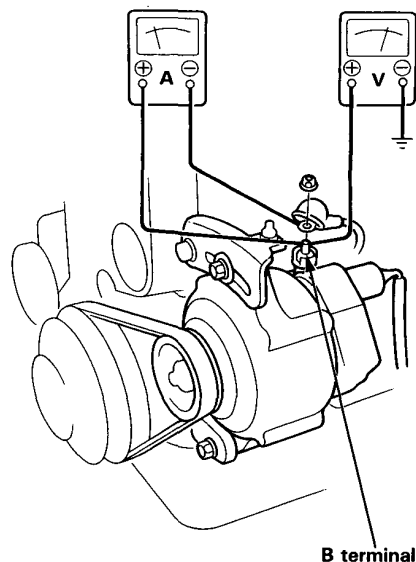
Be sure to use a good battery. Disconnect the B terminal and connect an ammeter and a voltmeter as shown.

NOTE: Be sure to use an ammeter capable of measuring amperages higher than 120 A.

Start the engine and let it idle until it reaches normal operating temperature (cooling fan comes on two times).

Raise the engine speed to 2000 rpm and hold it there. Turn the headlights (HI) on and check the voltage at the battery terminals.

CAUTION: As the headlights warm up considerably, do not cover them.



Is the voltage between 13.9 and 15.1 V?

NO

Test the alternator (see page 23-42).

YES

Turn the blower motor and the rear window defogger on, and check the battery voltage.

Is the battery voltage less than 13.5 V?

NO

Turn on also the fog lights, brake lights, etc.

YES

Read the amperage.

Are there more than 40 A?

NO

Test the alternator (see page 23-42).

YES

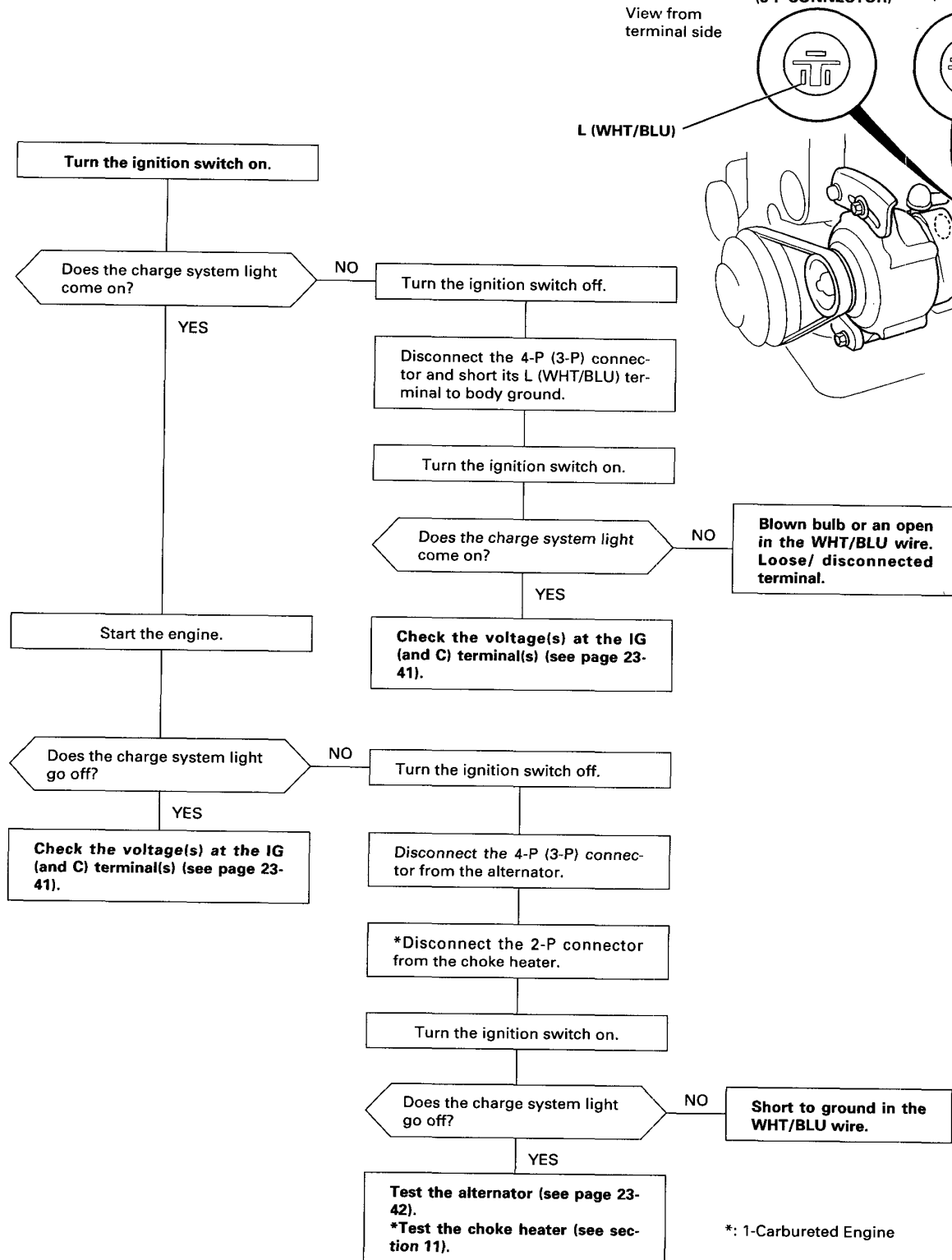
Alternator/Regulator operation is OK. Test the charge system light operation (see page 23-40).

(cont'd)

Charging System

Troubleshooting (cont'd)

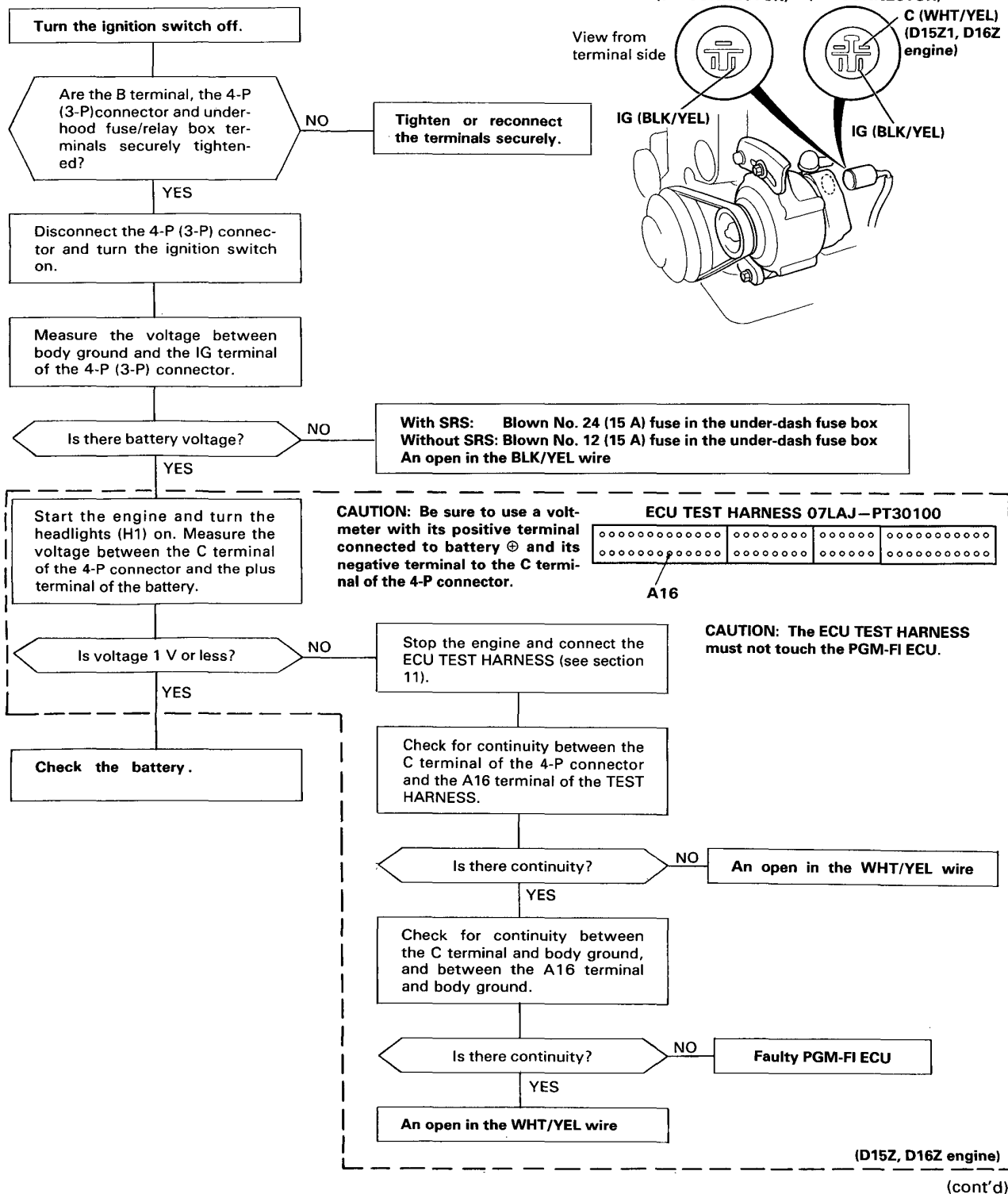
Charge System Light Test



*: 1-Carbureted Engine



Voltage Checks at IG and C (D15Z, D16Z engine) terminals



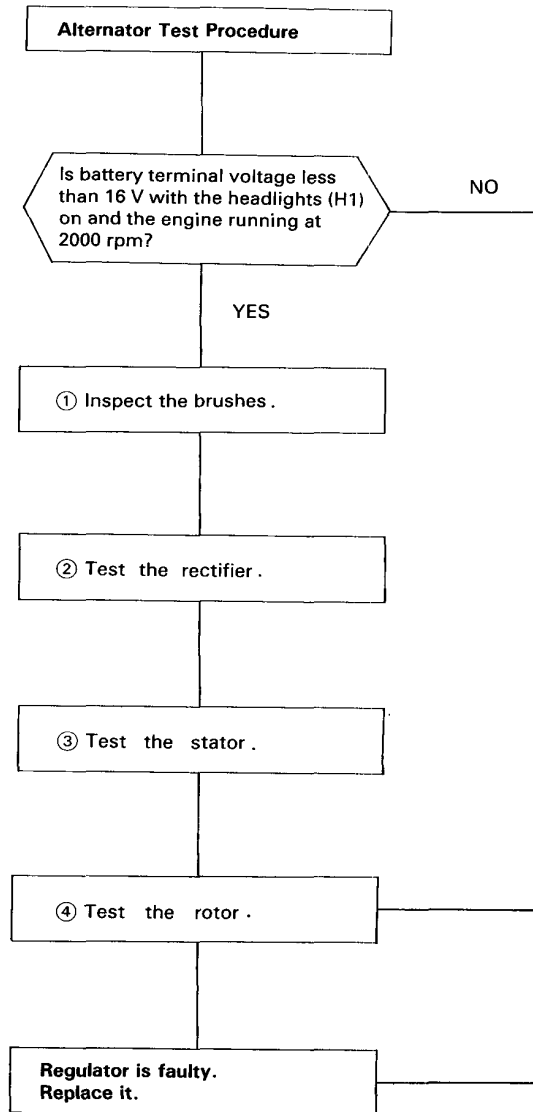
(cont'd)

Charging System

Troubleshooting (cont'd)

Alternator Test

NOTE: Because an overall check is necessary to avoid misleading conclusions, test the alternator in the order described below.



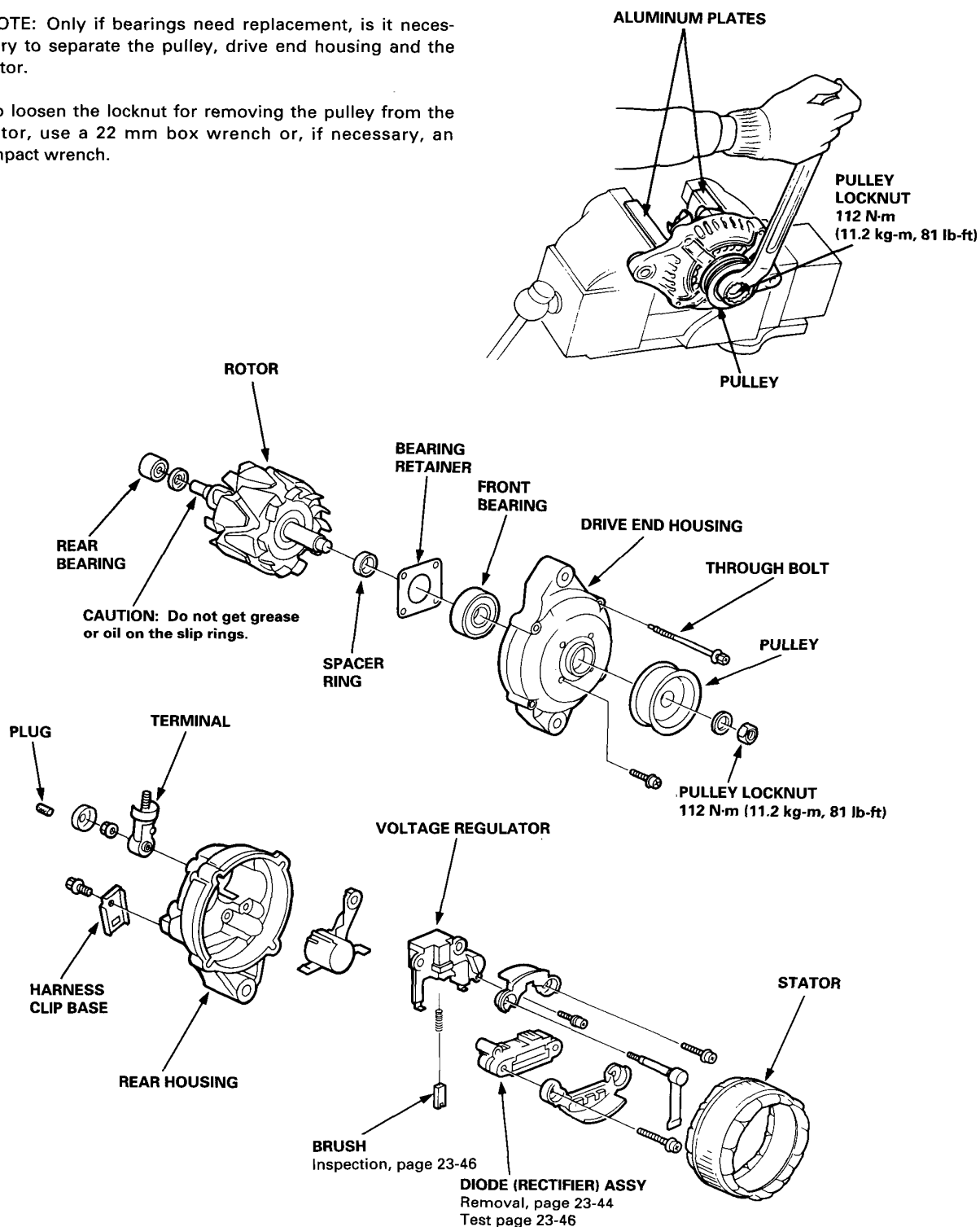


Charging System

Alternator Overhaul (Mitsubishi Type)

NOTE: Only if bearings need replacement, is it necessary to separate the pulley, drive end housing and the rotor.

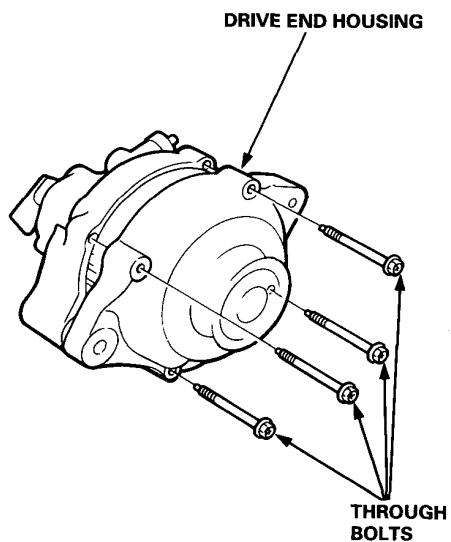
To loosen the locknut for removing the pulley from the rotor, use a 22 mm box wrench or, if necessary, an impact wrench.



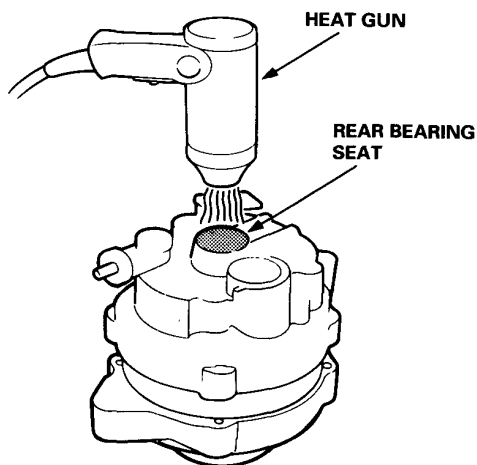
Charging System

Rectifier Removal

1. Remove the four through bolts.

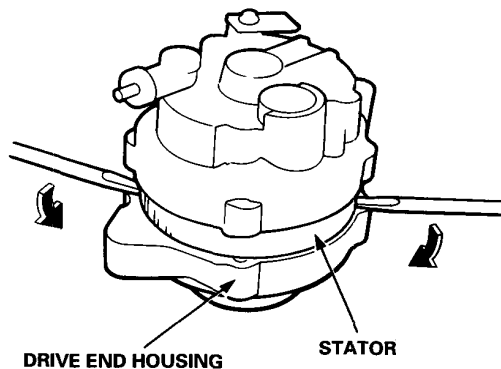


2. Heat the rear bearing seat with a heat gun for a few minutes (50 — 60°C, 122 — 140°F).



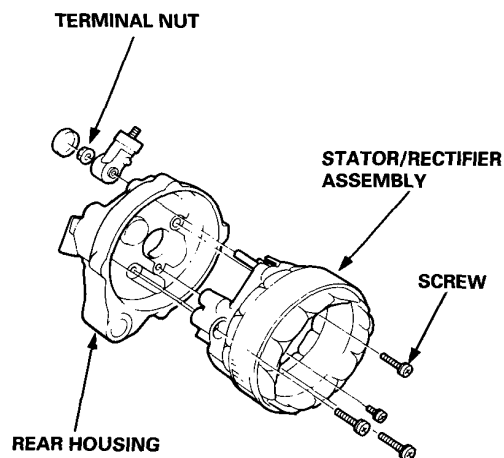
3. Separate the rear housing from the drive end housing by inserting a flat tip screwdriver into the openings and prying them apart.

CAUTION: Use a protective cloth to prevent damaging the stator.





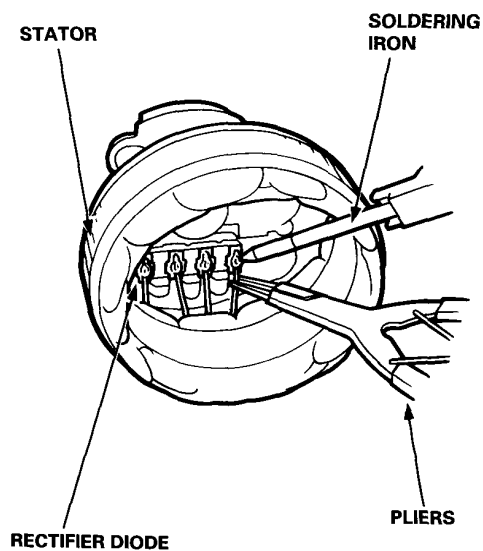
4. Separate the rear housing from the stator/rectifier assembly by removing the four screws and the terminal nut.



5. Unsolder the rectifier from the stator leads.

NOTE:

- To avoid damaging the diodes with heat, pinch the stator leads between pliers to carry heat off, and apply the soldering iron only long enough to separate the leads from the diode.
- Use a 100 W soldering iron.



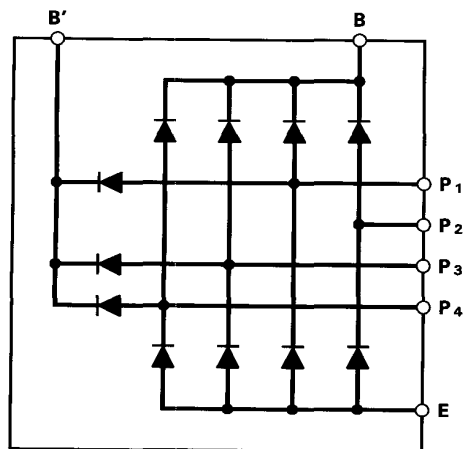
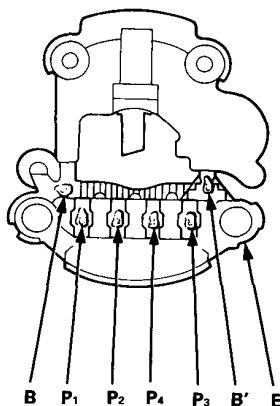
6. Install the new rectifier in the reverse order of removal.
- Apply the soldering iron only long enough to ensure a good connection so the heat will not damage the diodes.
 - Use only a rosin core type solder or solder joints will corrode.

Charging System

Rectifier Test

NOTE:

- The diodes are designed to allow current to pass in one direction while blocking the opposite direction. Each diode must be tested for continuity in both directions. Since the rectifier is made up of eleven diodes, there are a total of 22 checks.
 - Use an ohmmeter capable of checking diodes.
1. Check for continuity in each direction between the B and P terminals, E (ground) and P terminals, and between the B and P (except P4) terminals of each diode pair. All diodes should have continuity in only one direction.



2. If any of the eleven diodes fails, replace the rectifier assembly (diodes are not available separately).

Alternator Brush Inspection

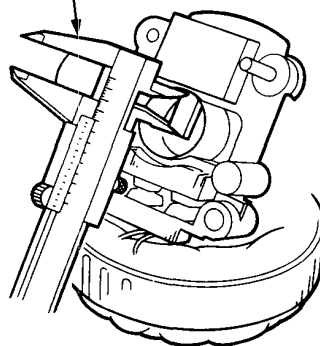
CAUTION: When replacing the brushes, use only a rosin core type solder or solder joints will corrode.

1. Separate the drive end housing from the rear housing as described on page 23-44.
2. Separate the rear housing from the stator/rectifier assembly by removing the four screws and the terminal nut from the rear housing (see page 23-45).
3. Measure the length of the brushes with a vernier caliper.

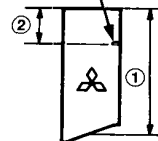
Alternator Brush Length:

- ① Standard: 19.0 mm (0.75 in)
- ② Service Limit: 5.0 mm (0.20 in)

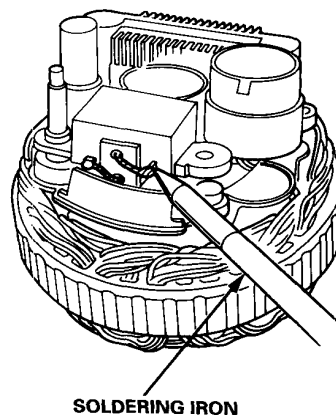
VERNIER CALIPER



LIMIT MARK



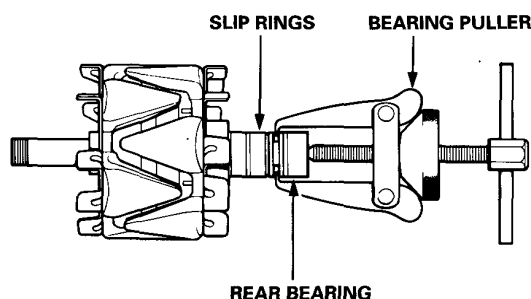
If the brushes are less than the service limit, replace them.



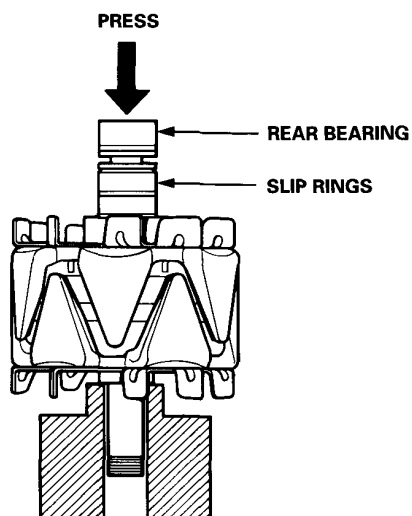


Rear Bearing Replacement

1. Pull off the rear bearing.
 - Make sure the tips of the bearing puller jaws are thin enough to fit between the bearing and the slip rings.
 - Do not reuse the bearing.

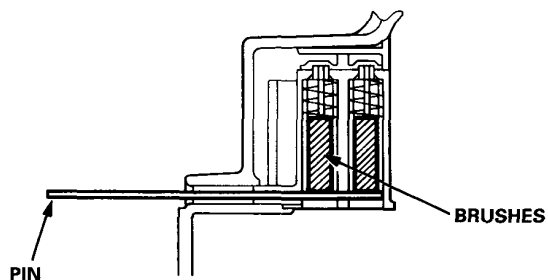


2. Use a hand press to install the new bearing. Apply pressure only on the inner race to avoid damaging the bearing.

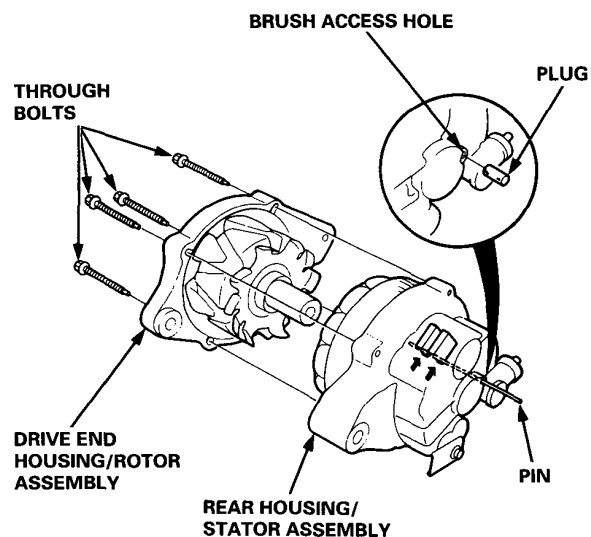


Alternator Reassembly

1. Push the brushes in. Then insert a pin or drill bit (about 1.8 mm diameter) to hold them there.



2. Heat the rear bearing seat in the rear housing as described on page 23-44. After heating, continue immediately with assembling before the rear bearing seat cools completely.
3. Put the rear housing/stator assembly and drive end housing/rotor assembly together, tighten the four through bolts, pull out the pin, and plug the brush access hole.



4. After assembling, turn the pulley by hand to make sure the rotor rotates smoothly and without noise.

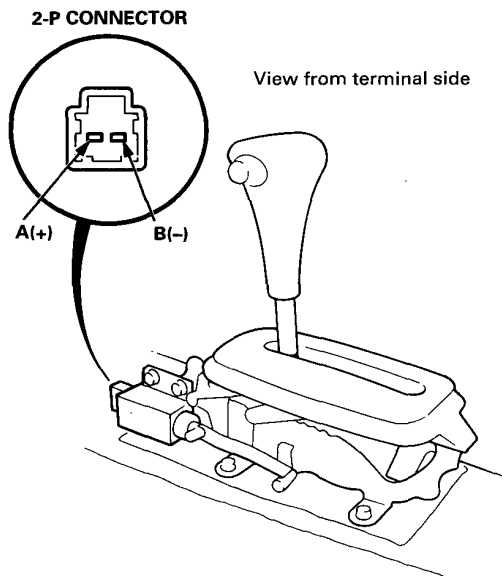
Interlock System

Shift Lock Solenoid Test/Replacement

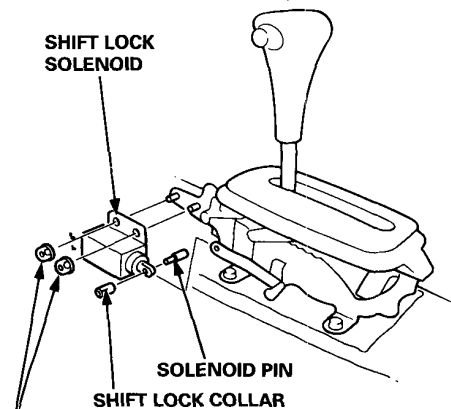
1. Remove the console, then disconnect the 2-P connector of the shift lock solenoid from the main wire harness.

NOTE: Do not connect power to the B (-) terminal (reverse polarity) or you will damage the diode inside the solenoid.

2. Connect battery power to the A terminal, ground the B terminal momentarily, and check solenoid operation.



- If the solenoid does not operate, replace it as described in steps 3, 4, and 5.
 - If the solenoid operates, check and, if necessary, adjust its two positions as shown in step 5.
3. Remove the shift lock collar and the solenoid pin.
 4. Remove the self-locking nuts and shift lock solenoid, then install the new solenoid in the reverse order of removal.

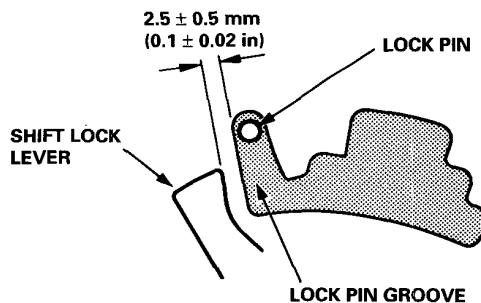


SELF-LOCKING NUTS
Replace.
10 N·m (1.0 kg·m,
7.2 lb-ft)

5. Check and, if necessary, adjust the solenoid's position.

- When the shift lock solenoid is ON, check that there is a clearance of 2.5 ± 0.5 mm (0.1 ± 0.02 in.) between the top rear corner of the shift lock lever and the lock pin groove, then tighten the self-locking nuts.

NOTE: Use new self-locking nuts.



- When the shift lock solenoid is OFF, make sure that the lock pin is blocked by the shift lock lever.

