SECTION LAN

LAN SYSTEM

CONTENTS

CAN

PRECAUTIONS

PFP:00001

Precautions for Supplemental Restraint System (SRS) “AIR BAG” and “SEAT BELT PRE-TENSIONER”

EKS001U0

The Supplemental Restraint System such as “AIR BAG” and “SEAT BELT PRE-TENSIONER”, used along with a front seat belt, helps to reduce the risk or severity of injury to the driver and front passenger for certain types of collision. Information necessary to service the system safely is included in the SRS and SB section of this Service Manual.

WARNING:

- **To avoid rendering the SRS inoperative, which could increase the risk of personal injury or death in the event of a collision which would result in air bag inflation, all maintenance must be performed by an authorized NISSAN/INFINITI dealer.**
- **Improper maintenance, including incorrect removal and installation of the SRS, can lead to personal injury caused by unintentional activation of the system. For removal of Spiral Cable and Air Bag Module, see the SRS section.**
- **Do not use electrical test equipment on any circuit related to the SRS unless instructed to in this Service Manual. SRS wiring harnesses can be identified by yellow and/or orange harness connectors.**

Precautions For Trouble Diagnosis

EKS001U1

CAN SYSTEM

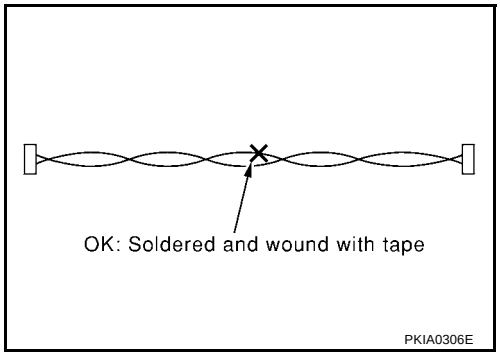
- Do not apply voltage of 7.0V or higher to the measurement terminals.
- Use the tester with its open terminal voltage being 7.0V or less.

Precautions For Harness Repair

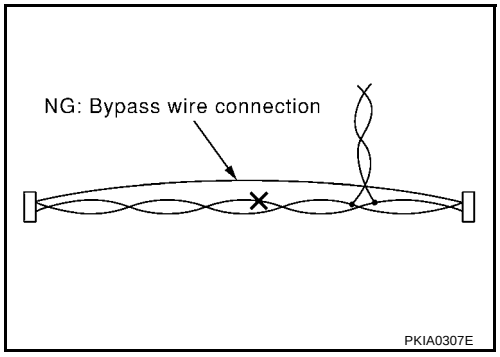
EKS001U2

CAN SYSTEM

- Solder the repaired parts, and wrap with tape. [Frays of twisted line must be within 110 mm (4.33 in)]



- Do not perform bypass wire connections for the repair parts. (The spliced wire will become separated and the characteristics of twisted line will be lost.)



CAN COMMUNICATION

PFP:23710

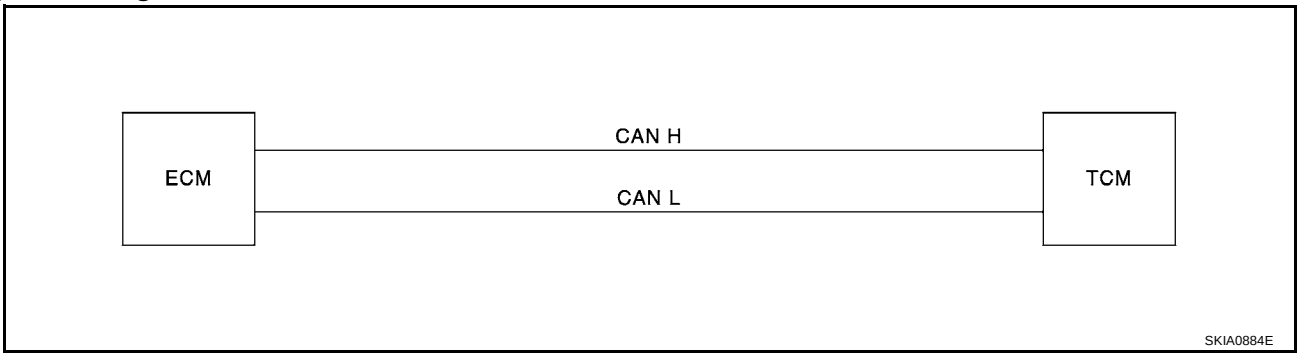
System Description

EKS001U3

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

FOR A/T MODELS

System diagram



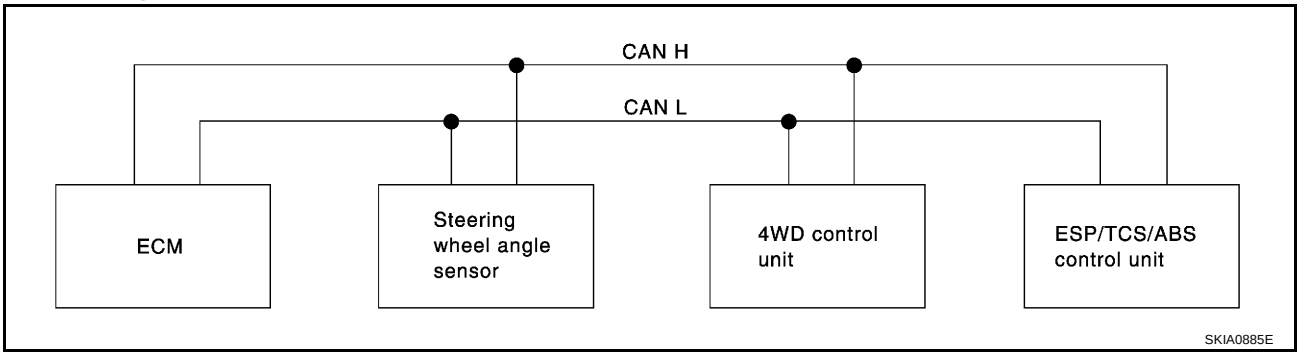
Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM
Engine coolant temperature signal	T	R
Accelerator pedal position signal	T	R
A/T self-diagnosis signal	R	T

FOR M/T MODELS

System diagram



Input/output signal chart

T: Transmit R: Receive

Signals	ECM	Steering wheel angle sensor	4WD control unit	ESP/ TCS / ABS control unit
Engine speed signal	T		R	R
Accelerator pedal position signal	T			R
ESP operation signal	R		R	T
TCS operation signal	R		R	T
ABS operation signal	R		R	T
Stop lamp switch signal			R	T
Steering wheel angle sensor signal		T		R
ESP-OFF switch signal			R	T

Signals	ECM	Steering wheel angle sensor	4WD control unit	ESP/ TCS / ABS control unit
Wheel speed sensor signal			R	T
4WD mode signal			T	R

CAN SYSTEM (FOR A/T MODELS)

PFP:23710

System Description

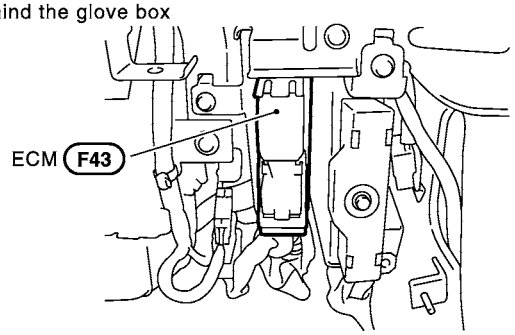
EKS002AD

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

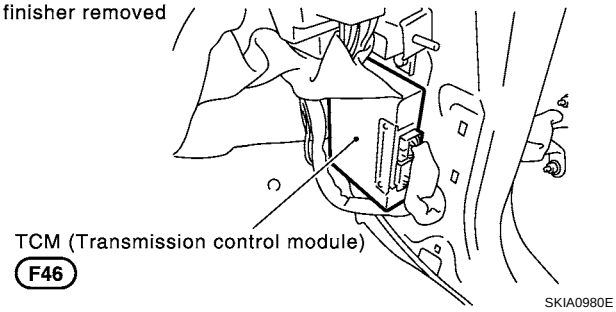
Component Parts and Harness Connector Location

EKS002AE

Behind the glove box



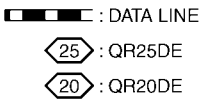
Passenger side view with dash side lower finisher removed

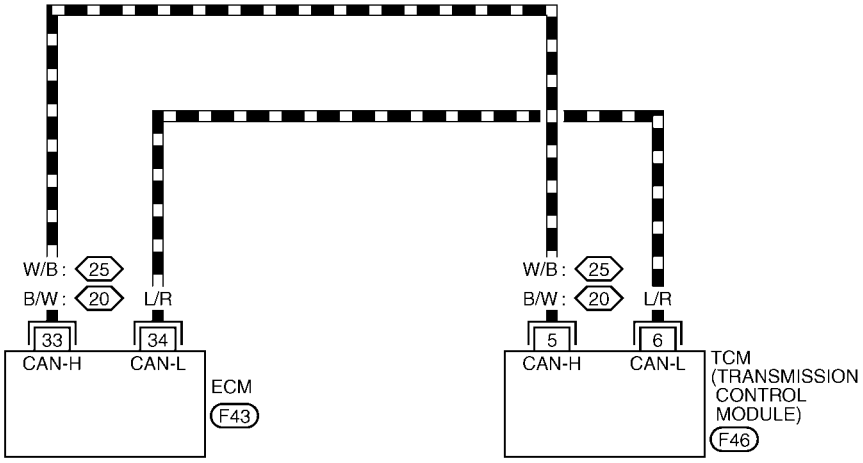


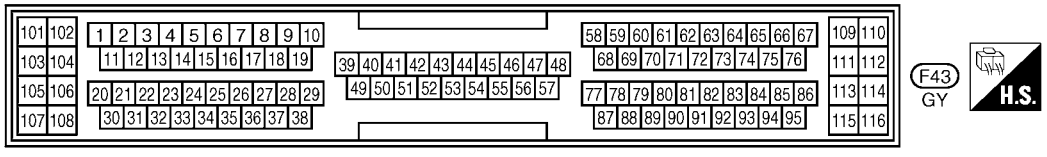
Wiring Diagram — CAN —

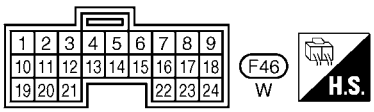
EKS002AF

LAN-CAN-01









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Work Flow

EKS002AG

1. Print all the data of “SELF-DIAG RESULTS” and “DATA MONITOR” for “ENGINE” and “A/T” displayed on CONSULT-II. Refer to the following:
   - EC-854, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITH EURO-OBD) for “ENGINE”
   - EC-1199, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITHOUT EURO-OBD) for “ENGINE”
   - EC-122, "DTC U1000 CAN COMMUNICATION LINE" (QR25 WITH EURO-OBD) for “ENGINE”
   - EC-513, "DTC U1000 CAN COMMUNICATION LINE" (QR25 WITHOUT EURO-OBD) for “ENGINE”
   - AT-190, "DTC U1000 CAN COMMUNICATION LINE" (EURO-OBD) for “A/T”
   - AT-403, "CAN COMMUNICATION LINE" (ALL) for “A/T”
2. Attach the printed sheet of “SELF-DIAG RESULTS” and “DATA MONITOR” onto the check sheet. Refer to LAN-8, "CHECK SHEET" .
3. Based on the data monitor results, put “v” marks onto the items with “UNKWN” or “NG” in the check sheet table. Refer to LAN-8, "CHECK SHEET" .

   NOTE:
   If “NG” is displayed on “CAN COMM” for the diagnosed control unit, replace the control unit.
4. According to the check sheet results (example), start inspection. Refer to LAN-9, "CHECK SHEET RESULTS (EXAMPLE)" .

CHECK SHEET

Symptoms :

Check sheet table

ENGINE	CAN COMM	CAN CIRC 1	—	CAN CIRC 2
A/T	CAN COMM	CAN CIRC 1	CAN CIRC 2	—

Attach copy of ENGINE SELF-DIAG RESULTS

Attach copy of A/T SELF-DIAG RESULTS

Attach copy of ENGINE DATA MONITOR

Attach copy of A/T DATA MONITOR

SKIA0886E

CHECK SHEET RESULTS (EXAMPLE)

Case 1: Replace ECM

ENGINE	CAN COMM	CAN CIRC 1	—	CAN CIRC 2
A/T	CAN COMM	CAN CIRC 1	CAN CIRC 2	—

Case 2: Replace TCM

ENGINE	CAN COMM	CAN CIRC 1	—	CAN CIRC 2
A/T	CAN COMM	CAN CIRC 1	CAN CIRC 2	—

Case 3

ENGINE	CAN COMM	CAN CIRC 1	—	CAN CIRC 2
A/T	CAN COMM	CAN CIRC 1	CAN CIRC 2	—

SKIA0887E

INSPECTION

Proceed trouble diagnosis according to the check sheet results (example).
Case 1:Replace ECM.
Case 2:Replace TCM.
Case 3:Check CAN communication circuit. Refer to LAN-9, "CAN Communication Circuit Check" .

CAN Communication Circuit Check

EKS002AH

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check following terminals and connector for damage, bend and loose connection (control module-side and harness-side).

- TCM.
- ECM.

OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

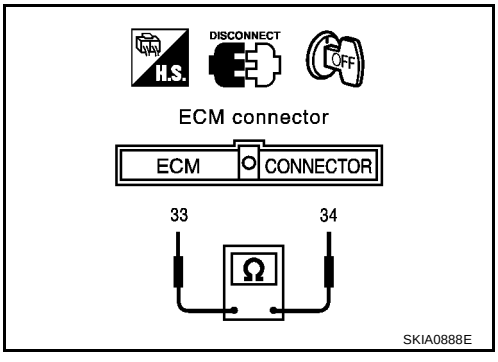
1. Disconnect ECM connector and TCM connector.
2. Check the following.

- QR20DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (B/W) and 34 (L/R).

  33 (B/W) – 34 (L/R) (QR20DE engine models) : Continuity should not exist.

- QR25DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (W/B) and 34 (L/R).

  33 (W/B) – 34 (L/R) (QR25DE engine models) : Continuity should not exist.



SKIA0888E

OK or NG

OK >> GO TO 3.
NG >> Repair harness between ECM and TCM.

3. CHECK HARNESS FOR SHORT CIRCUIT

1. Check the following.

- QR20DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (B/W), 34 (L/R) and ground.

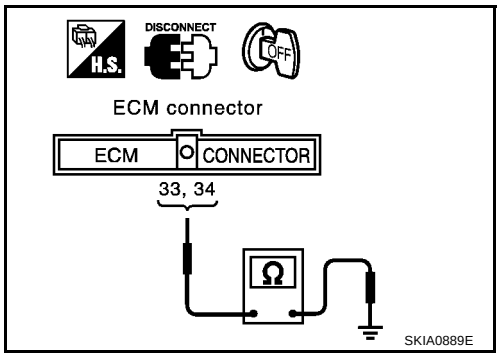
  33 (B/W) – ground (QR20DE engine models) : Continuity should not exist.

  34 (L/R) – ground (QR20DE engine models) : Continuity should not exist.

- QR25DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (W/B), 34 (L/R) and ground.

  33 (W/B) – ground (QR25DE engine models) : Continuity should not exist.

  34 (L/R) – ground (QR25DE engine models) : Continuity should not exist.



OK or NG

OK >> GO TO 4.
NG >> Repair harness between ECM and TCM.

4. CHECK HARNESS FOR OPEN CIRCUIT

1. Check the following.

- QR20DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (B/W), 34 (L/R) and TCM harness connector F46 terminals 5 (B/W), 6 (L/R).

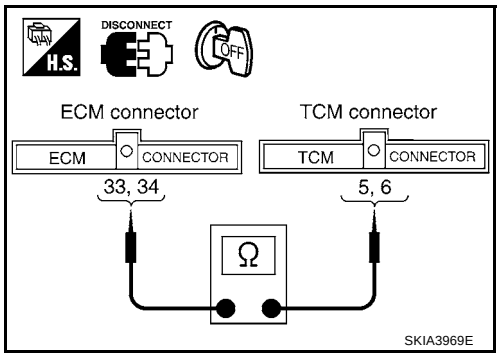
  33 (B/W) – 5 (B/W) (QR20DE engine models) : Continuity should exist.

  34 (L/R) – 6 (L/R) (QR20DE engine models) : Continuity should exist.

- QR25DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (W/B), 34 (L/R) and TCM harness connector F46 terminals 5 (W/B), 6 (L/R).

  33 (W/B) – 5 (W/B) (QR25DE engine models) : Continuity should exist.

  34 (L/R) – 6 (L/R) (QR25DE engine models) : Continuity should exist.



OK or NG

OK >> GO TO 5.
NG >> Repair harness.

5. ECM/TCM INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to LAN-11, "ECM/TCM INTERNAL CIRCUIT INSPECTION"

OK or NG

OK >> Reconnect all connectors to perform “SELF-DIAG RESULTS” and “DATA MONITOR” for “ENGINE” and “A/T”. Refer to the following:

- EC-854, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITH EURO-OBD) for “ENGINE”
- EC-1199, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITHOUT EURO-OBD) for “ENGINE”
- EC-122, "DTC U1000 CAN COMMUNICATION LINE" (QR25 WITH EURO-OBD) for “ENGINE”
- EC-513, "DTC U1000 CAN COMMUNICATION LINE" (QR25 WITHOUT EURO-OBD) for “ENGINE”
- AT-190, "DTC U1000 CAN COMMUNICATION LINE" (EURO-OBD) for “A/T”
- AT-403, "CAN COMMUNICATION LINE" (ALL) for “A/T”

NG >> Replace ECM and/or TCM.

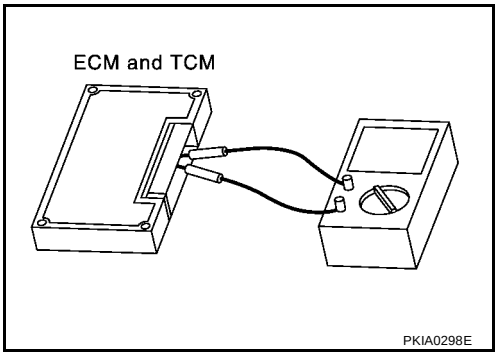
Component Inspection

EKS002AI

ECM/TCM INTERNAL CIRCUIT INSPECTION

- Remove ECM and TCM from vehicle.
- Check resistance between ECM terminals 33 and 34.
- Check resistance between TCM terminals 5 and 6.

Unit	Terminal	Resistance value (Ω)
ECM	33 – 34	Approx. 108 - 132
TCM	5 – 6	



CAN SYSTEM (FOR M/T MODELS)

PFP:23710

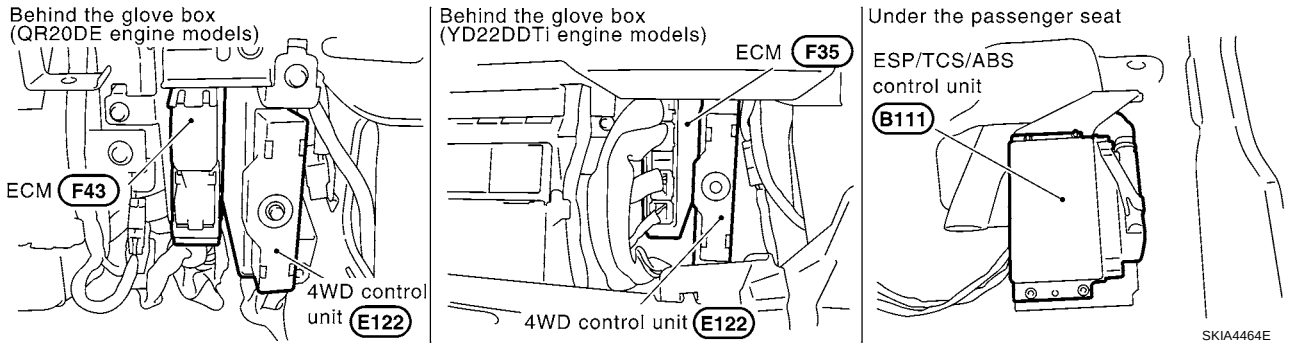
System Description

EKS002FK

CAN (Controller Area Network) is a serial communication line for real time application. It is an on-vehicle multiplex communication line with high data communication speed and excellent error detection ability. Many electronic control units are equipped onto a vehicle, and each control unit shares information and links with other control units during operation (not independent). In CAN communication, control units are connected with 2 communication lines (CAN H line, CAN L line) allowing a high rate of information transmission with less wiring. Each control unit transmits/receives data but selectively reads required data only.

Component Parts and Harness Connector Location

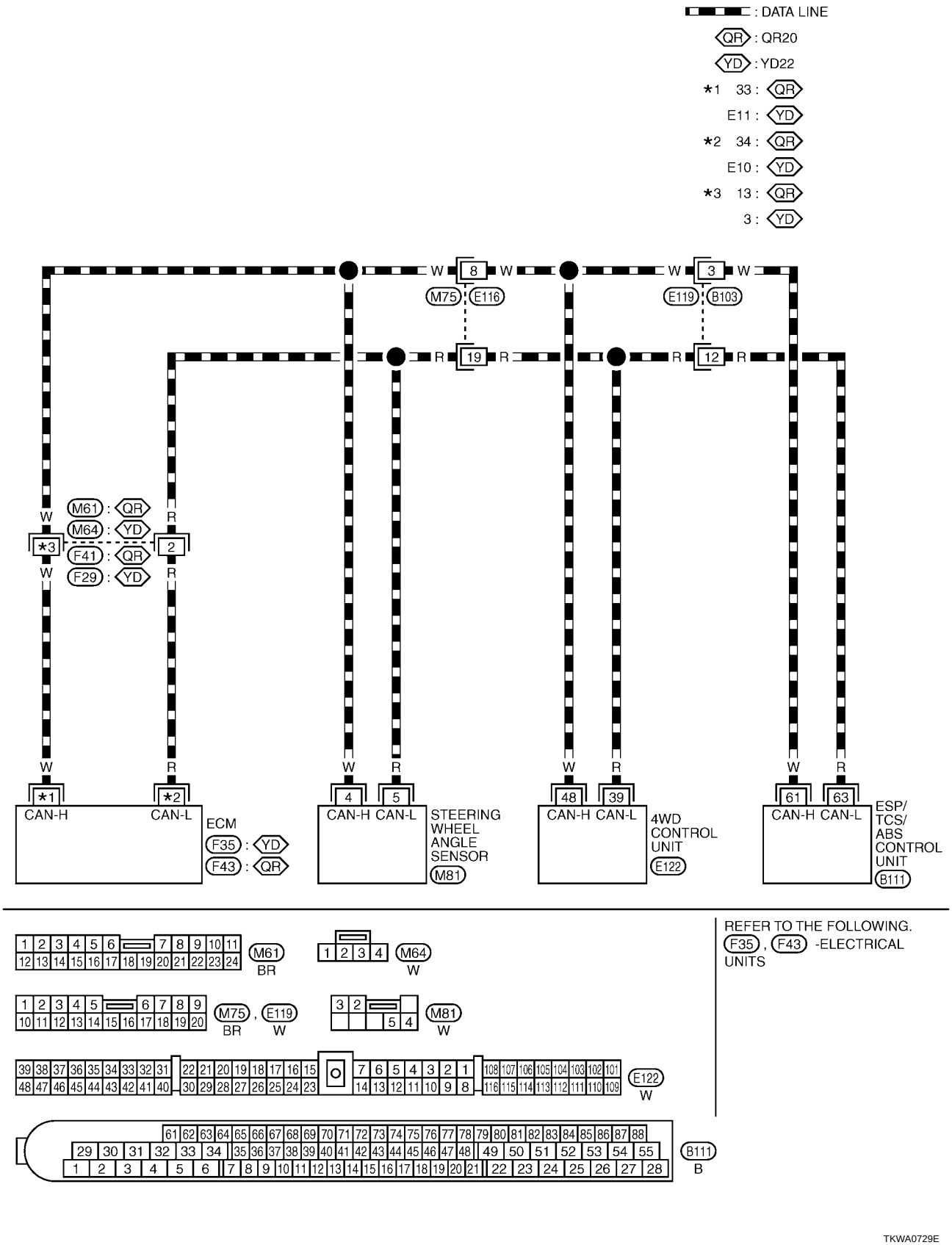
EKS002FL



Wiring Diagram — CAN —

EKS002FM

LAN-CAN-02



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Work Flow

EKS002FN

1. Print all the data of “SELF-DIAG RESULTS” and “DATA MONITOR” for “ENGINE”, “ALL MODE 4WD”, and “ABS” displayed on CONSULT-II. Refer to the following:
   - EC-854, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITH EURO-OBD) for “ENGINE”
   - EC-1199, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITHOUT EURO-OBD) for “ENGINE”
   - EC-1448, "DTC U1000 CAN COMMUNICATION LINE" (YD) for “ENGINE”
   - TF-53, "CAN COMMUNICATION SYSTEM" for “ALL MODE 4WD”
   - BRC-110, "Inspection 15 CAN Communication Circuit, ESP/TCS/ABS Control Unit and Steering Wheel Angle Sensor" for “ABS”
2. Attach the printed sheet of “SELF-DIAG RESULTS” and “DATA MONITOR” onto the check sheet. Refer to LAN-15, "CHECK SHEET" .
3. Based on the data monitor results, put “v” marks onto the items with “UNKWN” or “NG” in the check sheet table. Refer to LAN-15, "CHECK SHEET" .

   NOTE:
   If “NG” is displayed on “CAN COMM” for the diagnosed control unit, replace the control unit.
4. According to the check sheet results (example), start inspection. Refer to LAN-16, "CHECK SHEET RESULTS (EXAMPLE)" .

CHECK SHEET

Check sheet table

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

Symptoms :

Attach copy of ENGINE SELF-DIAG RESULTS	Attach copy of ALL MODE 4WD SELF-DIAG RESULTS	Attach copy of ABS SELF-DIAG RESULTS
Attach copy of ENGINE DATA MONITOR	Attach copy of ALL MODE 4WD DATA MONITOR	Attach copy of ABS DATA MONITOR

SKIA0925E

CHECK SHEET RESULTS (EXAMPLE)

Case 1 : Replace ECM

ENGINE	CAN COMM ✓	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3 ✓
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

Case 2 : Replace ESP/TCS/ABS control unit

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM ✓	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2 ✓	CAN CIRC 5 ✓	CAN CIRC 7 ✓	—

Case 3 : Replace 4WD control unit

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM ✓	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3 ✓	—	—	CAN CIRC 2 ✓
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

Case 4

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3 ✓
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3 ✓	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2 ✓	CAN CIRC 5 ✓	CAN CIRC 7	—

Case 5

ENGINE	CAN COMM	CAN CIRC 1 ✓	—	—	—	CAN CIRC 3 ✓
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3 ✓	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2 ✓	CAN CIRC 5	CAN CIRC 7	—

Case 6

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1 ✓	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7 ✓	—

SKIA0926E

Case 7

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

Case 8

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

Case 9

ENGINE	CAN COMM	CAN CIRC 1	—	—	—	CAN CIRC 3
ALL MODE 4WD	CAN COMM	CAN CIRC 1	CAN CIRC 3	—	—	CAN CIRC 2
ABS	CAN COMM	CAN CIRC 1	CAN CIRC 2	CAN CIRC 5	CAN CIRC 7	—

SKIA0927E

INSPECTION

Proceed trouble diagnosis according to the check sheet results (example).
Case 1: Replace ECM.
Case 2: Replace ESP/TCS/ABS control unit.
Case 3: Replace 4WD control unit.
Case 4: Check harness between steering wheel angle sensor and 4WD control unit. Refer to LAN-17, "Circuit Check Between Steering Wheel Angle Sensor and 4WD Control Unit" .
Case 5: Check ECM circuit. Refer to LAN-18, "ECM Circuit Check" .
Case 6: Check 4WD control unit circuit. Refer to LAN-19, "4WD Control Unit Circuit Check" .
Case 7: Check Steering wheel angle sensor circuit. Refer to LAN-20, "Steering Wheel Angle Sensor Circuit Check" .
Case 8: Check ESP/TCS/ABS control unit circuit. Refer to LAN-20, "ESP/TCS/ABS Control Unit Circuit Check" .
Case 9: Check CAN communication circuit. Refer to LAN-21, "CAN Communication Circuit Check" .

Circuit Check Between Steering Wheel Angle Sensor and 4WD Control Unit

EKS002FO

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check following terminals and connector for damage, bend and loose connection (control unit-side, sensor-side and harness-side).

- 4WD control unit.
- Steering wheel angle sensor.
- Between 4WD control unit and steering wheel angle sensor.

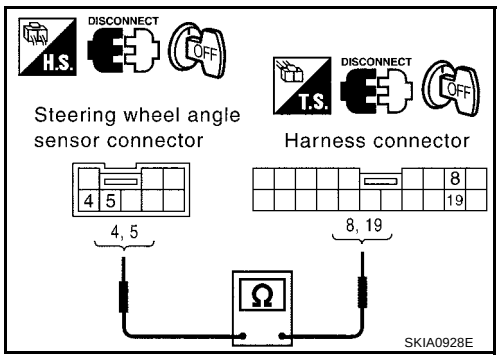
OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect steering wheel angle sensor connector and harness connector M75.
2. Check continuity between steering wheel angle sensor harness connector M81 terminals 4 (W), 5 (R) and harness connector M75 terminals 8 (W), 19 (R).

4 (W) – 8 (W) : Continuity should exist.
5 (R) – 19 (R) : Continuity should exist.



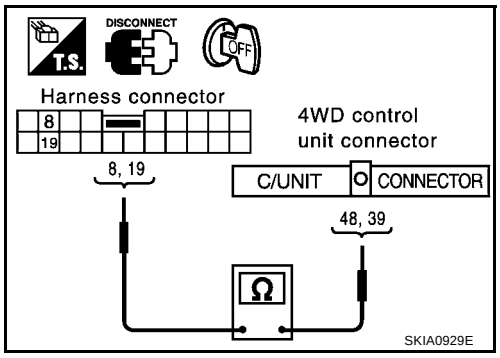
OK or NG

OK >> GO TO 3.
NG >> Repair harness.

3. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check continuity between harness connector E116 terminals 8 (W), 19 (R) and 4WD control unit harness connector E122 terminals 48 (W), 39 (R).

8 (W) – 48 (W) : Continuity should exist.
19 (R) – 39 (R) : Continuity should exist.



OK or NG

OK >> Reconnect all connectors to perform “SELF-DIAG RESULTS” and “DATA MONITOR” for “ENGINE”, “ALL MODE 4WD” and “ABS” displayed on CONSULT-II. Refer to the following:

- EC-854, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITH EURO-OBD) for “ENGINE”
- EC-1199, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITHOUT EURO-OBD) for “ENGINE”
- EC-1448, "DTC U1000 CAN COMMUNICATION LINE" (YD) for “ENGINE”
- TF-53, "CAN COMMUNICATION SYSTEM" for “ALL MODE 4WD”
- BRC-110, "Inspection 15 CAN Communication Circuit, ESP/TCS/ABS Control Unit and Steering Wheel Angle Sensor" for “ABS”

NG >> Repair harness.

ECM Circuit Check

EKS002FQ

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check following terminals and connector for damage, bend and loose connection (control module-side and harness-side).

- ECM.
- Harness connector F41 (QR20DE engine models).
- Harness connector M61 (QR20DE engine models).
- Harness connector F29 (YD22DDTi engine models).
- Harness connector M64 (YD22DDTi engine models).

OK or NG

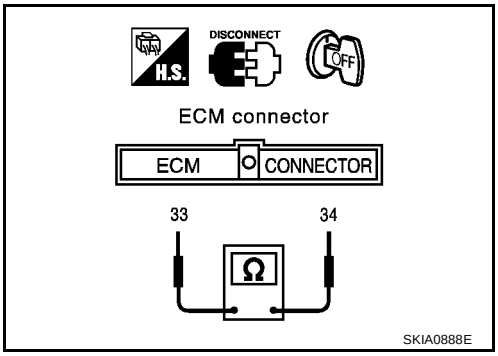
OK >> GO TO 2.
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ECM connector.
2. Check the following.

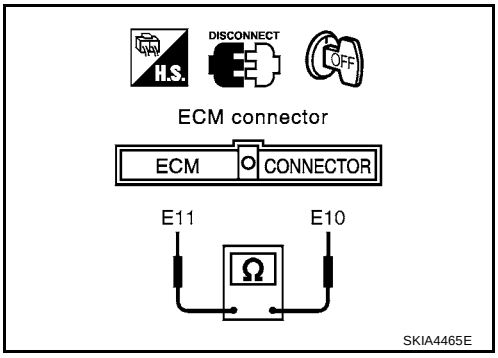
- QR20DE engine models:
  Resistance between ECM harness connector F43 terminals 33 (W) and 34 (R).

  33 (W) – 34 (R) (QR20DE engine models) **: Approx. 108 – 132Ω**



- YD22DDTi engine models:
  Resistance between ECM harness connector F35 terminals E11 (W) and E10 (R).

  E11 (W) – E10 (R) (YD22DDTi engine models) **: Approx. 108 – 132Ω**



OK or NG

OK >> Replace ECM.
NG >> Repair harness between harness connector M75 and ECM.

4WD Control Unit Circuit Check

EKS002FR

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check the terminals and connector of 4WD control unit for damage, bend and loose connection (control unit-side and harness-side).

OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

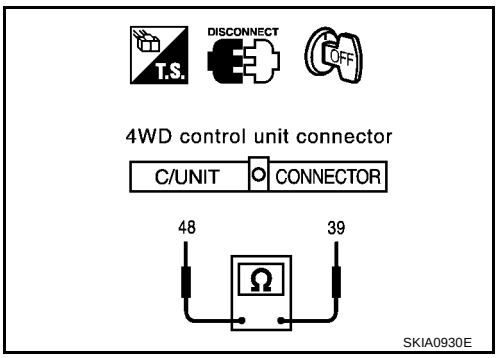
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect 4WD control unit connector.
2. Check resistance between 4WD control unit harness connector E122 terminals 48 (W) and 39 (R).

   48 (W) – 39 (R) **: Approx. 54 – 66Ω**

OK or NG

OK >> Replace 4WD control unit.
NG >> Repair harness between harness connector E119 and 4WD control unit.



Steering Wheel Angle Sensor Circuit Check

EKS002FS

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check the terminals and connector of steering wheel angle sensor for damage, bend and loose connection (sensor-side and harness-side).

OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

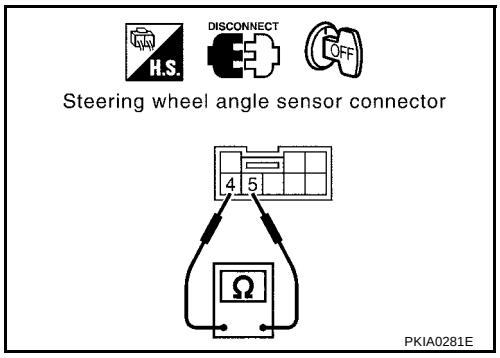
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect steering wheel angle sensor connector.
2. Check resistance between steering wheel angle sensor harness connector M81 terminals 4 (W) and 5 (R).

4 (W) – 5 (R) : Approx. 54 – 66Ω

OK or NG

OK >> Replace steering wheel angle sensor.
NG >> Repair harness between harness connector M75 and steering wheel angle sensor.



ESP/TCS/ABS Control Unit Circuit Check

EKS002LD

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check following terminals and connector for damage, bend and loose connection (control unit-side and harness-side).

- ESP/TCS/ABS control unit.
- Harness connector B103.
- Harness connector E119.

OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

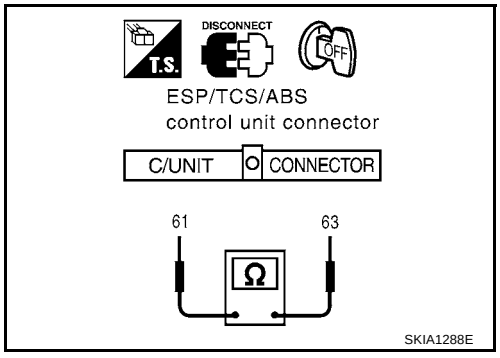
2. CHECK HARNESS FOR OPEN CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector.
2. Check resistance between ESP/TCS/ABS control unit harness connector B111 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Approx. 108 – 132Ω

OK or NG

OK >> Replace ESP/TCS/ABS control unit.
NG >> Repair harness between harness connector E116 and ESP/TCS/ABS control unit.



CAN Communication Circuit Check

EKS002LE

1. CHECK CONNECTOR

1. Turn ignition switch OFF.
2. Check following terminals and connector for damage, bend and loose connection (control module-side, control unit-side, sensor-side and harness-side).

- ESP/TCS/ABS control unit.
- 4WD control unit.
- Steering wheel angle sensor.
- ECM.
- Between ESP/TCS/ABS control unit and ECM.

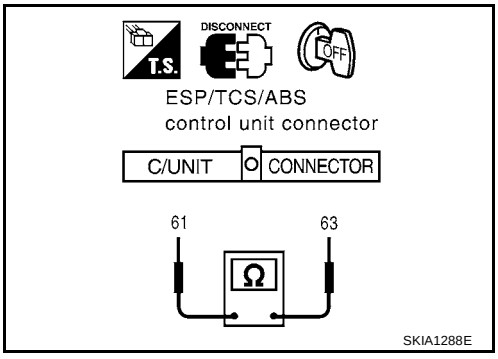
OK or NG

OK >> GO TO 2.
NG >> Repair terminal or connector.

2. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect ESP/TCS/ABS control unit connector and harness connector B103.
2. Check continuity between ESP/TCS/ABS control unit harness connector B111 terminals 61 (W) and 63 (R).

61 (W) – 63 (R) : Continuity should not exist.



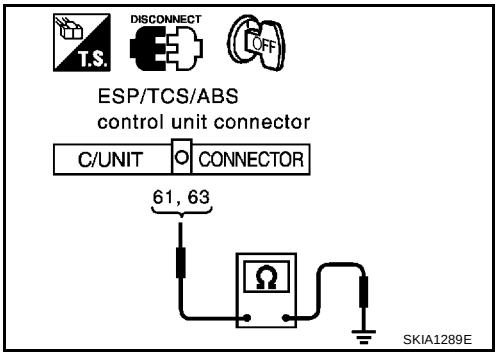
OK or NG

OK >> GO TO 3.
NG >> Repair harness between harness connector B103 and ESP/TCS/ABS control unit.

3. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between ESP/TCS/ABS control unit harness connector B111 terminals 61 (W), 63 (R) and ground.

61 (W) – ground : Continuity should not exist.
63 (R) – ground : Continuity should not exist.



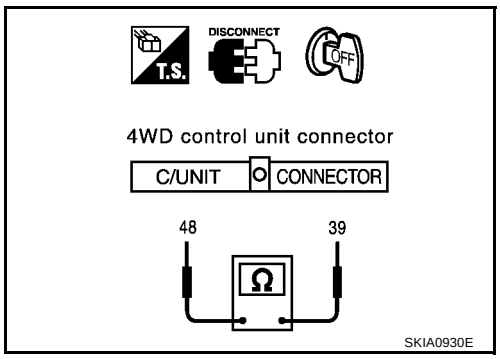
OK or NG

OK >> GO TO 4.
NG >> Repair harness between harness connector B103 and ESP/TCS/ABS control unit.

4. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect 4WD control unit connector and harness connector E116.
2. Check continuity between 4WD control unit harness connector E122 terminals 48 (W) and 39 (R).

48 (W) – 39 (R) : Continuity should not exist.



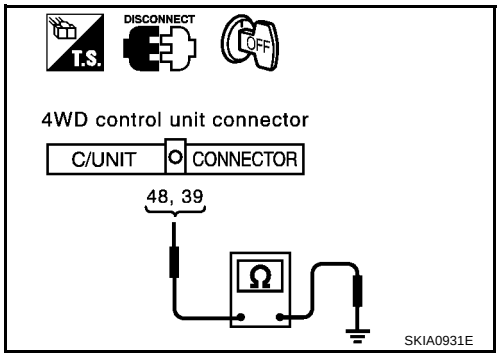
OK or NG

OK >> GO TO 5.
NG >>
- Repair harness between harness connector E116 and harness connector E119.
- Repair harness between harness connector E116 and 4WD control unit.

5. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between 4WD control unit harness connector E122 terminals 48 (W), 39 (R) and ground.

48 (W) – ground : Continuity should not exist.
39 (R) – ground : Continuity should not exist.



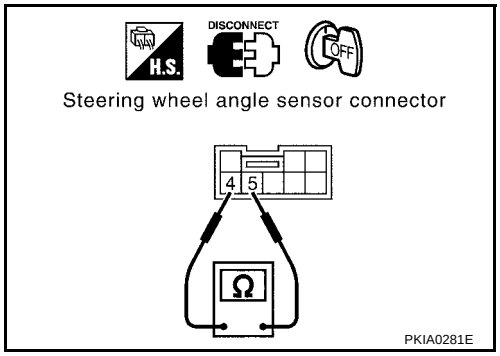
OK or NG

OK >> GO TO 6.
NG >>
- Repair harness between harness connector E116 and harness connector E119.
- Repair harness between harness connector E116 and 4WD control unit.

6. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect steering wheel angle sensor connector and harness connector M61 (QR20DE engine models) or harness connector M64 (YD22DDTi engine models).
2. Check continuity between steering wheel angle sensor harness connector M81 terminals 4 (W) and 5 (R).

4 (W) – 5 (R) : Continuity should not exist.



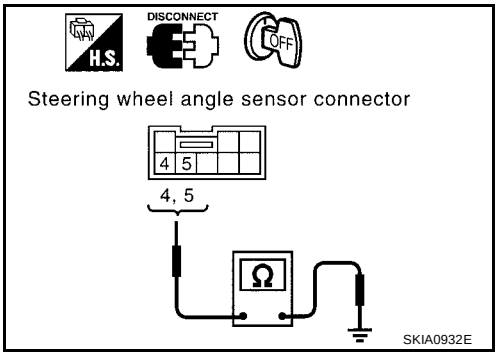
OK or NG

OK >> GO TO 7.
NG >>
- Repair harness between harness connector M75 and harness connector M61 (QR20DE engine models).
- Repair harness between harness connector M75 and harness connector M64 (YD22DDTi engine models).
- Repair harness between steering wheel angle sensor and harness connector M75.

7. CHECK HARNESS FOR SHORT CIRCUIT

Check continuity between steering wheel angle sensor harness connector M81 terminals 4 (W), 5 (R) and ground.

4 (W) – ground : Continuity should not exist.
5 (R) – ground : Continuity should not exist.



OK or NG

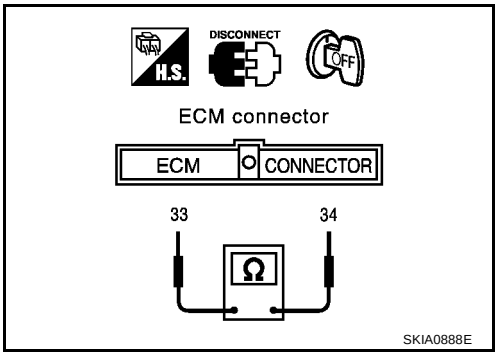
OK >> GO TO 8.
NG >>
- Repair harness between harness connector M75 and harness connector M61 (QR20DE engine models).
- Repair harness between harness connector M75 and harness connector M64 (YD22DDTi engine models).
- Repair harness between steering wheel angle sensor and harness connector M75.

8. CHECK HARNESS FOR SHORT CIRCUIT

1. Disconnect ECM connector.
2. Check the following.

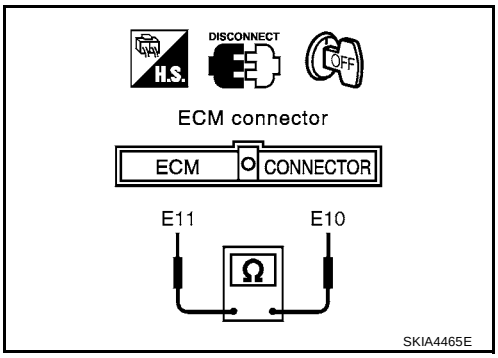
- QR20DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (W) and 34 (R).

33 (W) – 34 (R) (QR20DE engine models) : Continuity should not exist.



- YD22DDTi engine models:
  Continuity between ECM harness connector F35 terminals E11 (W) and E10 (R).

E11 (W) – E10 (R) (YD22DDTi engine models) : Continuity should not exist.



OK or NG

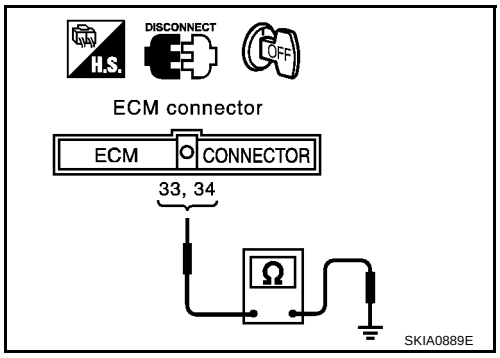
OK >> GO TO 9.
NG >>
- Repair harness between ECM and harness connector F41 (QR20DE engine models).
- Repair harness between ECM and harness connector F29 (YD22DDTi engine models).

9. CHECK HARNESS FOR SHORT CIRCUIT

1. Check the following.

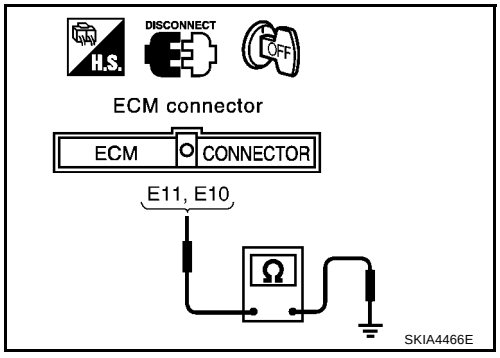
- QR20DE engine models:
  Continuity between ECM harness connector F43 terminals 33 (W), 34 (R) and ground.

  33 (W) – ground (QR20DE engine models) : Continuity should not exist.
  34 (R) – ground (QR20DE engine models) : Continuity should not exist.



- YD22DDTi engine models:
  Continuity between ECM harness connector F35 terminals E11 (W), E10 (R) and ground.

  E11 (W) – ground (YD22DDTi engine models) : Continuity should not exist.
  E10 (R) – ground (YD22DDTi engine models) : Continuity should not exist.



OK or NG

OK >> GO TO 10.
NG >> ● Repair harness between ECM and harness connector F41 (QR20DE engine models).
● Repair harness between ECM and harness connector F29 (YD22DDTi engine models).

10. ECM / ESP/TCS/ABS CONTROL UNIT INTERNAL CIRCUIT INSPECTION

Check components inspection. Refer to LAN-25, "ECM / ESP/TCS/ABS CONTROL UNIT INTERNAL CIRCUIT INSPECTION"

OK or NG

OK >> Reconnect all connectors to perform “SELF-DIAG RESULTS” and “DATA MONITOR” for “ENGINE”, “ALL MODE 4WD” and “ABS” displayed on CONSULT-II. Refer to the following:
- EC-854, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITH EURO-OBD) for “ENGINE”
- EC-1199, "DTC U1000 CAN COMMUNICATION LINE" (QR20 WITHOUT EURO-OBD) for “ENGINE”
- EC-1448, "DTC U1000 CAN COMMUNICATION LINE" (YD) for “ENGINE”
- TF-53, "CAN COMMUNICATION SYSTEM" for “ALL MODE 4WD”
- BRC-110, "Inspection 15 CAN Communication Circuit, ESP/TCS/ABS Control Unit and Steering Wheel Angle Sensor" for “ABS”

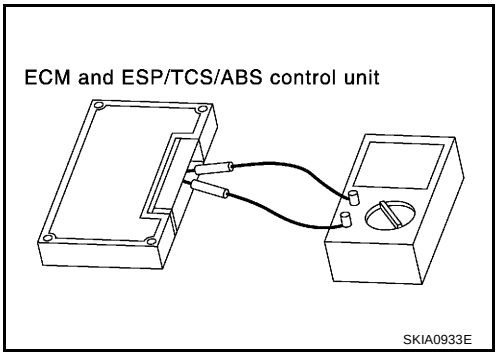
NG >> Replace ECM and/or ESP/TCS/ABS control unit.

Component Inspection

EKS002FW

ECM / ESP/TCS/ABS CONTROL UNIT INTERNAL CIRCUIT INSPECTION

- Remove ECM and ESP/TCS/ABS control unit from vehicle.
- Check resistance between ECM terminals 33 and 34 (QR20DE engine models).
- Check resistance between ECM terminals E11 and E10 (YD22DDTi engine models).
- Check resistance between ESP/TCS/ABS control unit terminals 61 and 63.



Unit	Terminal	Resistance value (Ω)
ECM (QR20DE engine models)	33 – 34	Approx. 108 - 132
ECM (YD22DDTi engine models)	E11 – E10	
ESP/TCS/ABS control unit	61 – 63	