Parts Requiring Angle Tightening

EBS00NKI

- For the final tightening of the following engine parts use Tool:

Tool number : KV10112100 (BT-8653-A)

- Cylinder head bolts
- Lower cylinder block bolts
- Connecting rod cap bolts
- Crankshaft pulley bolt (No angle wrench is required as bolt flange is provided with notches for angle tightening)

- Do not use a torque value for final tightening.
- The torque value for these parts are for a preliminary step.
- Ensure thread and seat surfaces are clean and coated with engine oil.

Precautions for Liquid Gasket

EBS00NKJ

REMOVAL OF LIQUID GASKET SEALING

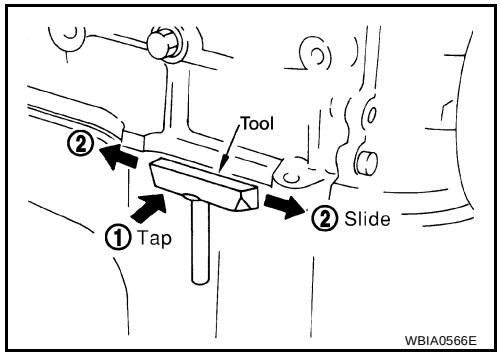
- After removing nuts and bolts, separate the mating surface and remove old liquid gasket sealing using Tool.

Tool number : KV10111100 (J-37228)

CAUTION:
Be careful not to damage the mating surfaces.

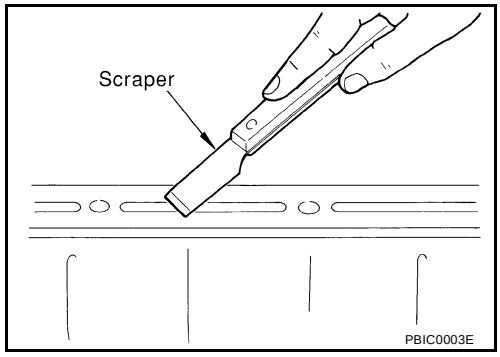
- Tap seal cutter to insert it, and then slide it by tapping on the side as shown.
- In areas where Tool is difficult to use, use plastic hammer to lightly tap the parts, to remove it.

CAUTION:
If for some unavoidable reason tool such as screwdriver is used, be careful not to damage the mating surfaces.



LIQUID GASKET APPLICATION PROCEDURE

1. Using scraper, remove old liquid gasket adhering to the gasket application surface and the mating surface.
   - Remove liquid gasket completely from the groove of the gasket application surface, bolts, and bolt holes.
2. Thoroughly clean the mating surfaces and remove adhering moisture, grease and foreign materials.

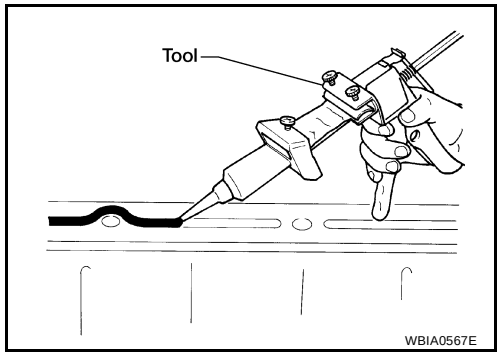


3. Attach liquid gasket tube to Tool.

Tool number : WS39930000 (—)

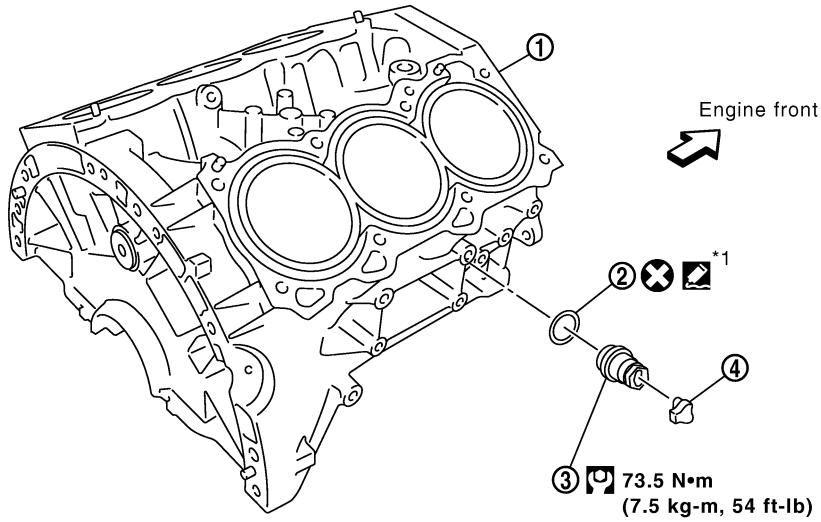
Use Genuine RTV Silicone Sealant or equivalent. Refer to GI-48, "Recommended Chemical Products and Sealants" .

4. Apply liquid gasket without breaks to the specified location with the specified dimensions.
   - If there is a groove for liquid gasket application, apply liquid gasket to the groove.



For Canada

SEC. 110



- **Install cylinder block heater with heater part downward as shown in the figure.**
- **Remove liquid gasket completely after removing cylinder block heater.**

: Apply Anaerobic Liquid Gasket or equivalent. Refer to GI section.

*1 Sealing point : Front and reverse side.

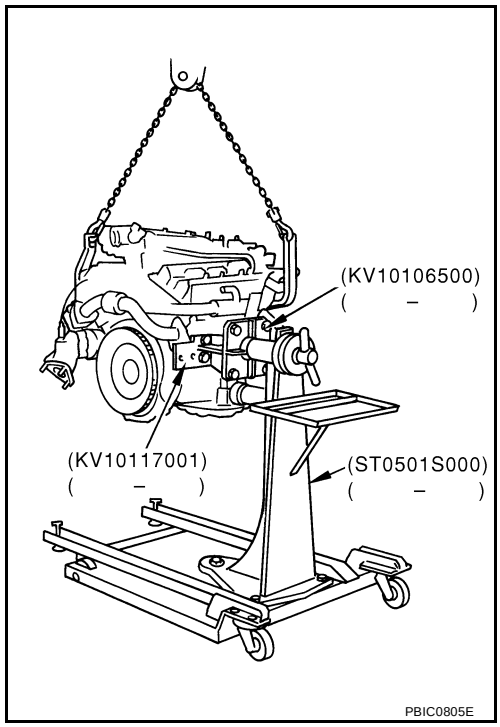
: Always replace after every disassembly.

PBIC2936E

1. Cylinder block
2. Gasket
3. Cylinder block heater
4. Connector protector cap

DISASSEMBLY

1. Remove engine assembly from vehicle. Refer to EM-106, "REMOVAL" .
2. Remove both exhaust manifolds. Refer to EM-22, "Removal and Installation" .
3. Lift engine, and mount it onto engine stand.



PBIC0805E

INDEX FOR DTC

PFP:00024

DTC No. Index

UBS00MNZ

NOTE:

- **If DTC U1000 or U1001 is displayed with other DTC, first perform the trouble diagnosis for DTC U1000, U1001. Refer to EC-155, "DTC U1000, U1001 CAN COMMUNICATION LINE" .**
- **If DTC U1010 is displayed with other DTC, first perform the trouble diagnosis for DTC U1010. Refer to EC-158, "DTC U1010 CAN COMMUNICATION" .**

DTC*1		Items (CONSULT-II screen terms)	Reference page
CONSULT-II GST*2	ECM*3		
U1000	1000*4	CAN COMM CIRCUIT	EC-155
U1001	1001*4	CAN COMM CIRCUIT	EC-155
U1010	1010	CONTROL UNIT(CAN)	EC-158
P0000	**0000**	**NO DTC IS DETECTED. FURTHER TESTING MAY BE REQUIRED.**	—
P0011	0011	INT/V TIM CONT-B1	EC-160
P0021	0021	INT/V TIM CONT-B2	EC-160
P0031	0031	A/F SEN1 HTR (B1)	EC-164
P0032	0032	A/F SEN1 HTR (B1)	EC-164
P0037	0037	HO2S2 HTR (B1)	EC-172
P0038	0038	HO2S2 HTR (B1)	EC-172
P0051	0051	A/F SEN1 HTR (B2)	EC-164
P0052	0052	A/F SEN1 HTR (B2)	EC-164
P0057	0057	HO2S2 HTR (B2)	EC-172
P0058	0058	HO2S2 HTR (B2)	EC-172
P0075	0075	INT/V TIM V/CIR-B1	EC-181
P0081	0081	INT/V TIM V/CIR-B2	EC-181
P0101	0101	MAF SEN/CIRCUIT	EC-188
P0102	0102	MAF SEN/CIRCUIT	EC-197
P0103	0103	MAF SEN/CIRCUIT	EC-197
P0112	0112	IAT SEN/CIRCUIT	EC-204
P0113	0113	IAT SEN/CIRCUIT	EC-204
P0117	0117	ECT SEN/CIRC	EC-209
P0118	0118	ECT SEN/CIRC	EC-209
P0122	0122	TP SEN 2/CIRC	EC-214
P0123	0123	TP SEN 2/CIRC	EC-214
P0125	0125	ECT SENSOR	EC-221
P0127	0127	IAT SENSOR	EC-224
P0128	0128	THERMSTAT FNCTN	EC-227
P0130	0130	A/F SENSOR1 (B1)	EC-229
P0131	0131	A/F SENSOR1 (B1)	EC-239
P0132	0132	A/F SENSOR1 (B1)	EC-248
P0133	0133	A/F SENSOR1 (B1)	EC-257
P0137	0137	HO2S2 (B1)	EC-269
P0138	0138	HO2S2 (B1)	EC-281

DTC P0131, P0151 A/F SENSOR 1

PFP:22693

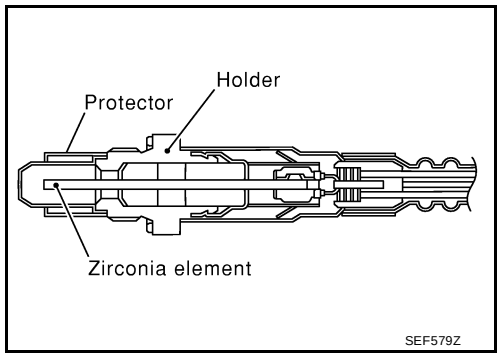
Component Description

UBS00MZ2

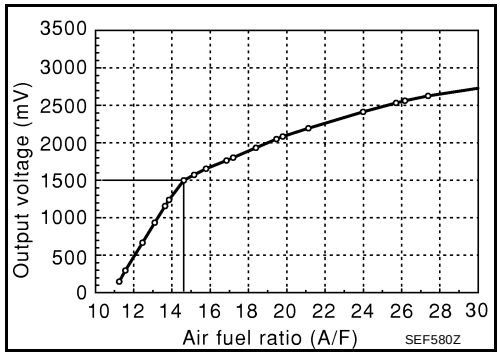
The air fuel ratio (A/F) sensor is a planar dual-cell limit current sensor. The sensor element of the air fuel ratio (A/F) sensor is the combination of a Nernst concentration cell (sensor cell) with an oxygen-pump cell, which transports ions. It has a heater in the element.

The sensor is capable of precise measurement $\lambda = 1$, but also in the lean and rich range. Together with its control electronics, the sensor outputs a clear, continuous signal throughout a wide λ range ($0.7 < \lambda <$ air).

The exhaust gas components diffuse through the diffusion gap at the electrode of the oxygen pump and Nernst concentration cell, where they are brought to thermodynamic balance.



An electronic circuit controls the pump current through the oxygen-pump cell so that the composition of the exhaust gas in the diffusion gap remains constant at $\lambda = 1$. Therefore, the air fuel ratio (A/F) sensor is able to indicate air/fuel ratio by this pumping of current. In addition, a heater is integrated in the sensor to ensure the required operating temperature of 700 - 800°C (1,292 - 1,472°F).



CONSULT-II Reference Value in Data Monitor Mode

UBS00MZ3

Specification data are reference values.

MONITOR ITEM	CONDITION		SPECIFICATION
A/F SEN1 (B1) A/F SEN1 (B2)	● Engine: After warming up	Maintaining engine speed at 2,000 rpm	Fluctuates around 1.5V

On Board Diagnosis Logic

UBS00MZ4

To judge the malfunction, the diagnosis checks that the A/F signal computed by ECM from the air fuel ratio (A/F) sensor 1 signal is not inordinately low.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible Cause
P0131 0131 (Bank 1) P0151 0151 (Bank 2)	Air fuel ratio (A/F) sensor 1 circuit low voltage	● The A/F signal computed by ECM from the air fuel ratio (A/F) sensor 1 signal is constantly approx. 0V.	● Harness or connectors (The air fuel ratio (A/F) sensor 1 circuit is open or shorted.) ● Air fuel ratio (A/F) sensor 1

DTC Confirmation Procedure

UBS00MZ5

NOTE:
If DTC Confirmation Procedure has been previously conducted, always turn ignition switch OFF and wait at least 10 seconds before conducting the next test.

TESTING CONDITION:
Before performing the following procedure, confirm that battery voltage is more than 11V at idle.

WITH CONSULT-II

1. Start engine and warm it up to normal operating temperature.
2. Select “A/F SEN1 (B1)” or “A/F SEN1 (B2)” in “DATA MONITOR” mode with CONSULT-II.

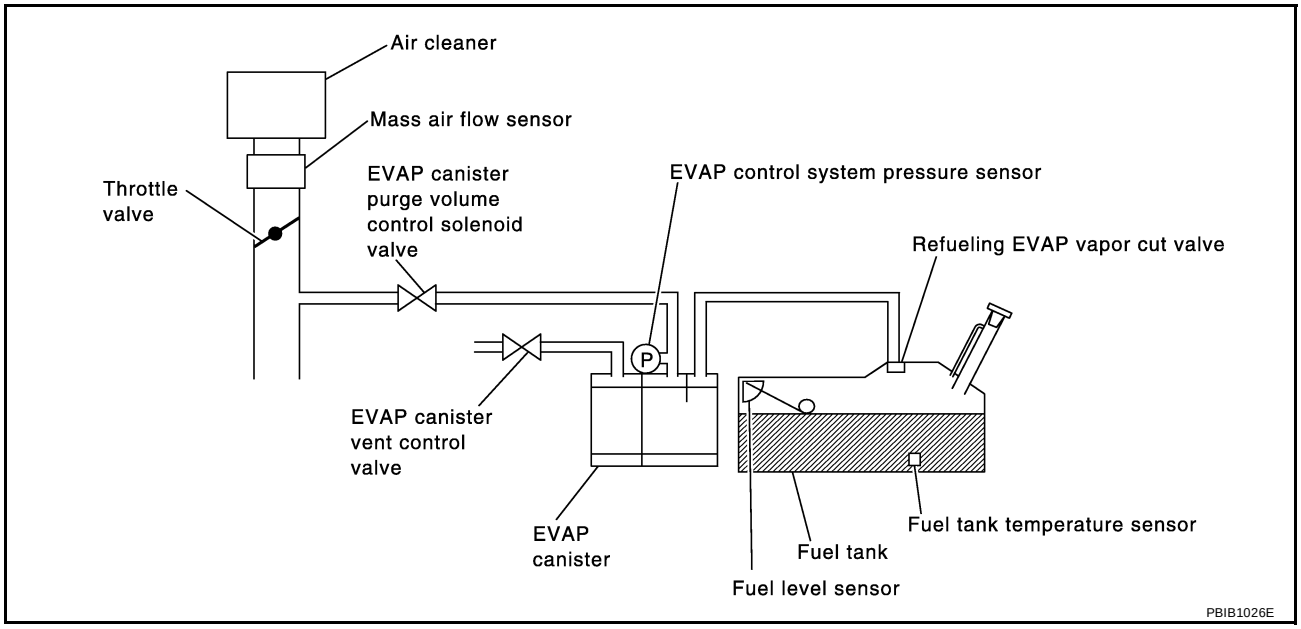
DTC P0441 EVAP CONTROL SYSTEM

PFP:14950

System Description

UBS00MTY

NOTE:
If DTC P0441 is displayed with other DTC such as P2122, P2123, P2127, P2128 or P2138, first perform trouble diagnosis for other DTC.



In this evaporative emission (EVAP) control system, purge flow occurs during non-closed throttle conditions. Purge volume is related to air intake volume. Under normal purge conditions (non-closed throttle), the EVAP canister purge volume control solenoid valve is open to admit purge flow. Purge flow exposes the EVAP control system pressure sensor to intake manifold vacuum.

On Board Diagnosis Logic

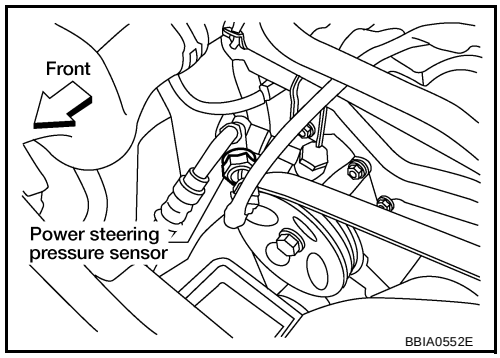
UBS00MTZ

Under normal conditions (non-closed throttle), sensor output voltage indicates if pressure drop and purge flow are adequate. If not, a malfunction is determined.

DTC No.	Trouble diagnosis name	DTC detecting condition	Possible cause
P0441 0441	EVAP control system incorrect purge flow	EVAP control system does not operate properly, EVAP control system has a leak between intake manifold and EVAP control system pressure sensor.	● EVAP canister purge volume control solenoid valve stuck closed ● EVAP control system pressure sensor and the circuit ● Loose, disconnected or improper connection of rubber tube ● Blocked rubber tube ● Cracked EVAP canister ● EVAP canister purge volume control solenoid valve circuit ● Accelerator pedal position sensor ● Blocked purge port ● EVAP canister vent control valve

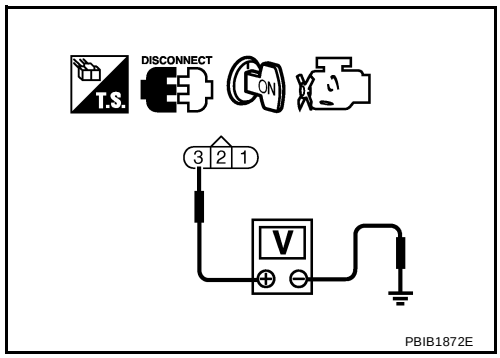
2. CHECK PSP SENSOR POWER SUPPLY CIRCUIT

1. Disconnect power steering pressure (PSP) sensor harness connector.
2. Turn ignition switch ON.



3. Check voltage between PSP sensor terminal 3 and ground with CONSULT-II or tester.

Voltage: Approximately 5V



OK or NG

OK >> GO TO 3.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

3. CHECK PSP SENSOR GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Disconnect ECM harness connector.
3. Check harness continuity between PSP sensor terminal 1 and ECM terminal 67. Refer to Wiring Diagram.

Continuity should exist.

4. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 4.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

4. CHECK PSP SENSOR INPUT SIGNAL CIRCUIT FOR OPEN AND SHORT

1. Check harness continuity between ECM terminal 12 and PSP sensor terminal 2.

Continuity should exist.

2. Also check harness for short to ground and short to power.

OK or NG

OK >> GO TO 5.
NG >> Repair open circuit or short to ground or short to power in harness or connectors.

5. CHECK PSP SENSOR

Refer to EC-474, "Component Inspection" .

OK or NG

OK >> GO TO 6.
NG >> Replace PSP sensor.

8. CHECK CONDENSER-1 GROUND CIRCUIT FOR OPEN AND SHORT

1. Turn ignition switch OFF.
2. Check harness continuity between condenser-1 terminal 2 and ground. Refer to Wiring Diagram.

Continuity should exist.

3. Also check harness for short to power.

OK or NG

OK >> GO TO 9.
NG >> Repair open circuit or short to power in harness or connectors.

9. CHECK CONDENSER-1

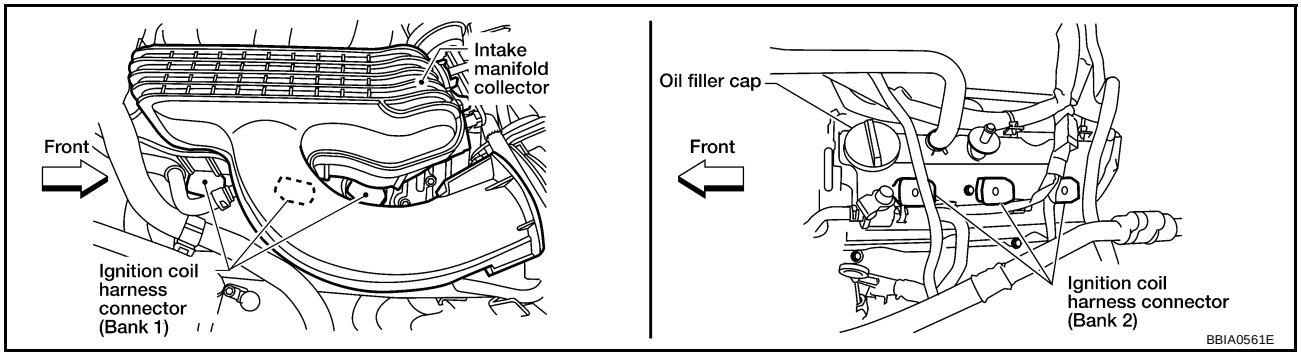
Refer to EC-673, "Component Inspection" .

OK or NG

OK >> GO TO 10.
NG >> Replace condenser-1.

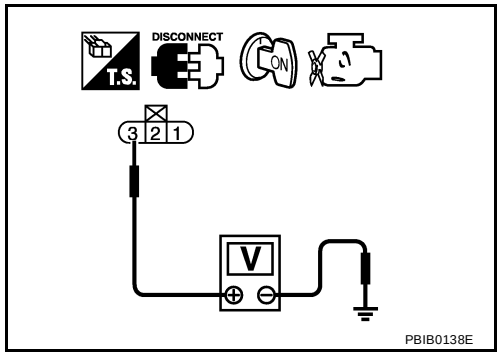
10. CHECK IGNITION COIL POWER SUPPLY CIRCUIT-IV

1. Turn ignition switch OFF.
2. Reconnect all harness connectors disconnected.
3. Disconnect ignition coil harness connector.



4. Turn ignition switch ON.
5. Check voltage between ignition coil terminal 3 and ground with CONSULT-II or tester.

Voltage: Battery voltage



OK or NG

OK >> GO TO 12.
NG >> GO TO 11.

11. DETECT MALFUNCTIONING PART

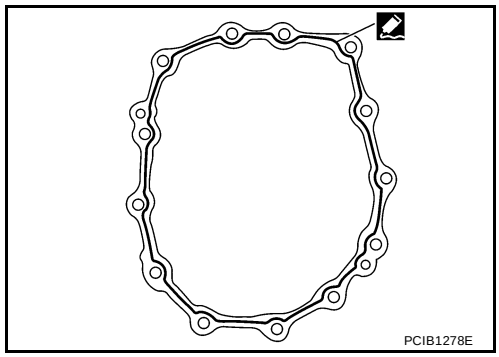
Check the following.

- Harness connectors F26, F125
- Harness for open or short between ignition coil and harness connector F32

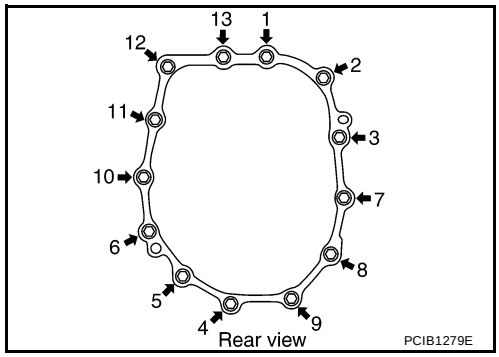
>> Repair or replace harness or connectors.

17. Apply recommended sealant to mating surface of rear extension as shown.
    - **Use Genuine Silicone RTV or the equivalent. Refer to GI-48, "Recommended Chemical Products and Sealants" .**

    CAUTION:
    Remove old sealant adhering to the mating surfaces. Also remove any moisture, oil, or foreign material adhering to both mating surfaces.

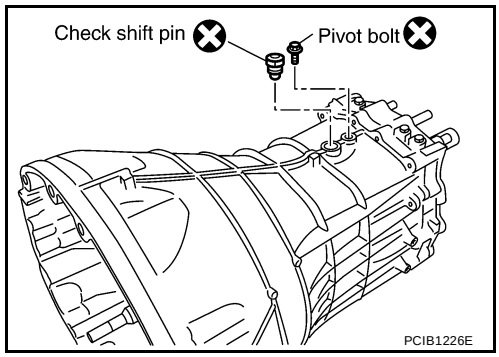


18. Install rear extension (or OD gear case) to adapter plate, and then tighten bolts to the specified torque in order as shown. Refer to MT-22, "Case Components" .



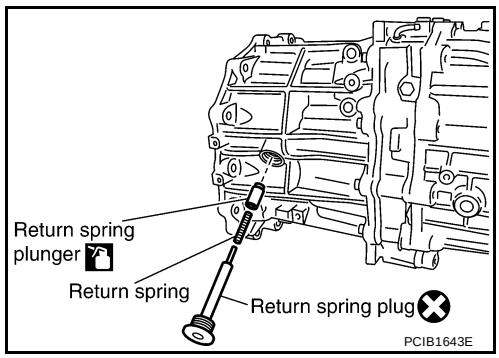
19. Install check shift pin and pivot bolt to transmission case, and then tighten them to the specified torque. Refer to MT-22, "Case Components" .

    CAUTION:
    Do not reuse check shift pin and pivot bolt.



20. Install return spring plunger, return spring and return spring plug to rear extension (or OD gear case), and then tighten return spring plug to the specified torque. Refer to MT-26, "Shift Control Components" .

    CAUTION:
    - **Do not reuse return spring plug.**
    - **Apply gear oil to return spring plunger.**



21. Install PNP switch and back-up lamp switch according to the following.

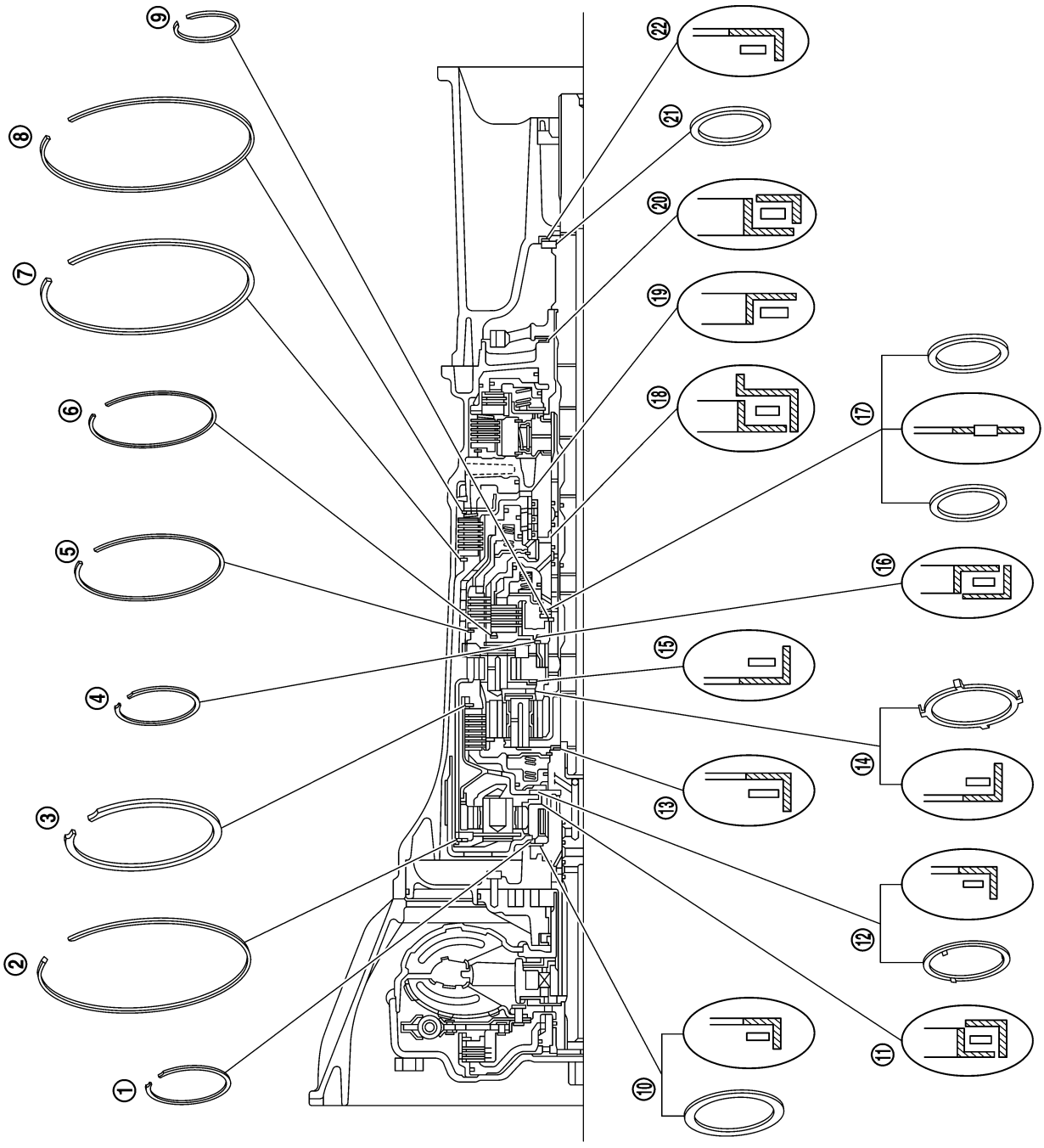
4WD models

Outer diameter of snap rings

Item number	Outer diameter mm (in)
①	63 (2.48)
②	183 (7.20)
③	173 (6.81)
④	70 (2.76)
⑤	170 (6.69)
⑥	135 (5.31)
⑦	180 (7.09)
⑧	185 (7.28)
⑨	48 (1.89)

Outer diameter of needle bearings

Item number	Outer diameter mm (in)
⑩	80 (3.15)
⑪	77 (3.03)
⑫	77 (3.03)
⑬	47 (1.85)
⑭	84 (3.31)
⑮	80 (3.15)
⑯	92 (3.62)
⑰	60 (2.36)
⑱	63 (2.48)
⑲	92 (3.62)
⑳	65 (2.56)
㉒	60 (2.36)



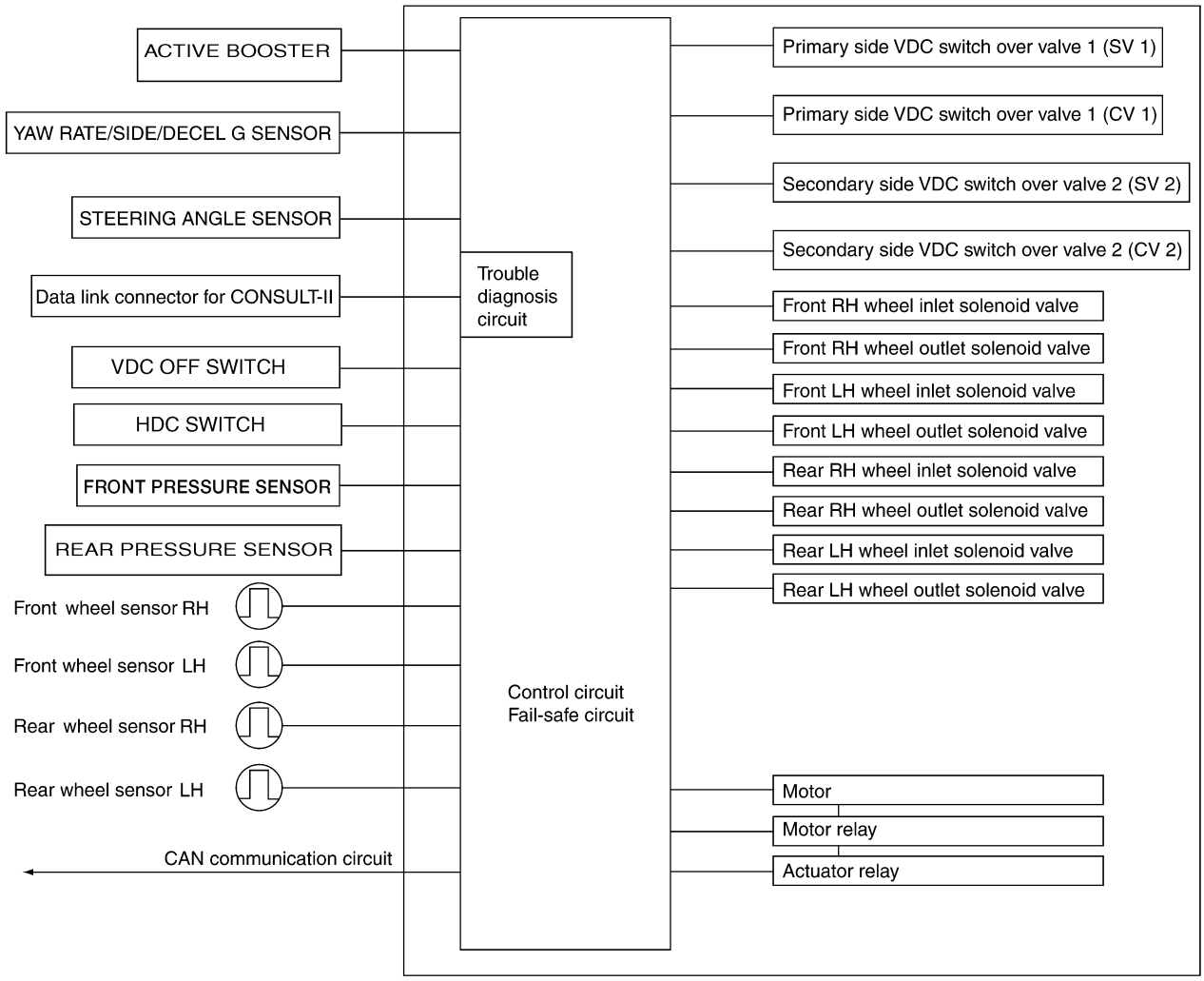
SCIA7020E

SYSTEM DESCRIPTION

PFP:00000

System Components

EFS005J4



ABS actuator and electric unit (control unit)

WFIA0347E

Back Door Key Cylinder Switch Check

EIS006VV

1. CHECK BACK DOOR KEY CYLINDER SWITCH

With CONSULT-II

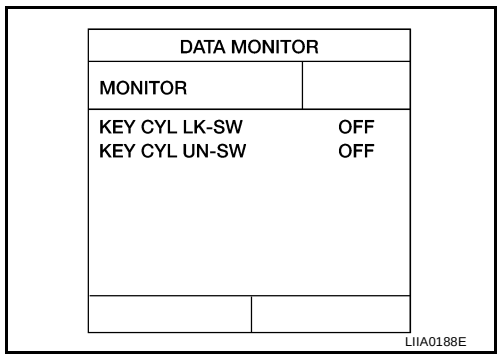
Check back door key cylinder switch ("KEY CYL LK-SW") and ("KEY CYL UN-SW) in DATA MONITOR mode in CONSULT–II. Refer to BL-27, "DATA MONITOR" .

- When key inserted in back door key cylinder is turned to LOCK:

  KEY CYL LK-SW : ON

- When key inserted in back door key cylinder is turned to UNLOCK:

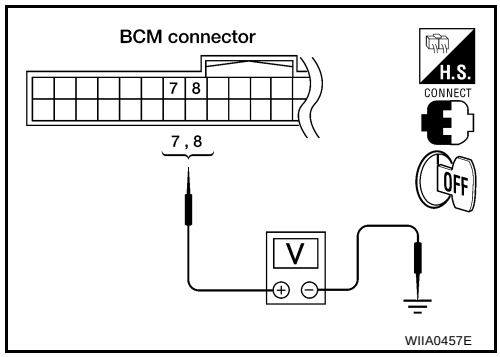
  KEY CYL UN-SW : ON



Without CONSULT-II

Check voltage between BCM connector M18 terminals 7, 8 and ground.

Connector	Terminals (+)	Terminals (–)	Condition	Voltage (V) (Approx.)
M18	7	Ground	Neutral/Lock	5
			Unlock	0
	8		Neutral/Unlock	5
			Lock	0



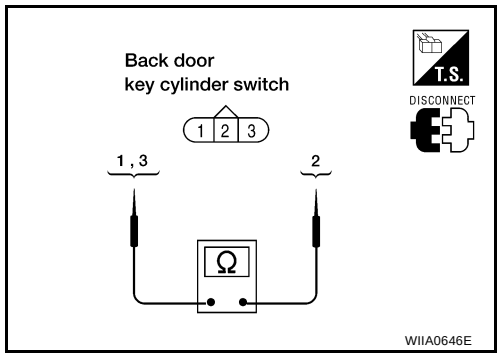
OK or NG

OK >> Back door key cylinder switch signal is OK.
NG >> GO TO 2.

2. CHECK BACK DOOR KEY CYLINDER SWITCH

1. Turn ignition switch OFF.
2. Disconnect back door key cylinder switch.
3. Check continuity between back door key cylinder switch terminals 1, 2 and 3.

Terminals	Condition	Continuity
1 – 2	Key is turned to LOCK.	Yes
	Key is in N position or turned to UNLOCK	No
3 – 2	Key is turned to UNLOCK.	Yes
	Key is in N position or turned to LOCK	No



OK or NG

OK >> GO TO 3.
NG >> Replace back door key cylinder switch.

does not have dedicated recovery equipment, you may contact a local refrigerant product retailer for available service. This refrigerant must be disposed of in accordance with all federal and local regulations. In addition, replacement of all refrigerant system components on the vehicle is recommended.

- If the vehicle is within the warranty period, the air conditioner warranty is void. Please contact NISSAN Customer Affairs for further assistance.

General Refrigerant Precautions

EJS00440

WARNING:

- **Do not release refrigerant into the air. Use approved recovery/recycling equipment to capture the refrigerant every time an air conditioning system is discharged.**
- **Always wear eye and hand protection (goggles and gloves) when working with any refrigerant or air conditioning system.**
- **Do not store or heat refrigerant containers above 52°C (125°F).**
- **Do not heat a refrigerant container with an open flame; if container warming is required, place the bottom of the container in a warm pail of water.**
- **Do not intentionally drop, puncture, or incinerate refrigerant containers.**
- **Keep refrigerant away from open flames: poisonous gas will be produced if refrigerant burns.**
- **Refrigerant will displace oxygen, therefore be certain to work in well ventilated areas to prevent suffocation.**
- **Do not pressure test or leak test HFC-134a (R-134a) service equipment and/or vehicle air conditioning systems with compressed air during repair. Some mixtures of air and HFC-134a (R-134a) have been shown to be combustible at elevated pressures. These mixtures, if ignited, may cause injury or property damage. Additional health and safety information may be obtained from refrigerant manufacturers.**

Precautions for Leak Detection Dye

EJS00441

- The A/C system contains a fluorescent leak detection dye used for locating refrigerant leaks. An ultraviolet (UV) lamp is required to illuminate the dye when inspecting for leaks.
- Always wear fluorescence enhancing UV safety goggles to protect your eyes and enhance the visibility of the fluorescent dye.
- The fluorescent dye leak detector is not a replacement for an electronic refrigerant leak detector. The fluorescent dye leak detector should be used in conjunction with an electronic refrigerant leak detector (J-41995).
- For your safety and the customer's satisfaction, read and follow all manufacturer's operating instructions and precautions prior to performing work.
- A compressor shaft seal should not be repaired because of dye seepage. The compressor shaft seal should only be repaired after confirming the leak with an electronic refrigerant leak detector (J-41995).
- Always remove any remaining dye from the leak area after repairs are complete to avoid a misdiagnosis during a future service.
- Do not allow dye to come into contact with painted body panels or interior components. If dye is spilled, clean immediately with the approved dye cleaner. Fluorescent dye left on a surface for an extended period of time **cannot be removed** .
- Do not spray the fluorescent dye cleaning agent on hot surfaces (engine exhaust manifold, etc.).
- Do not use more than one refrigerant dye bottle (1/4 ounce / 7.4 cc) per A/C system.
- Leak detection dyes for HFC-134a (R-134a) and CFC-12 (R-12) A/C systems are different. Do not use HFC-134a (R-134a) leak detection dye in CFC-12 (R-12) A/C systems or CFC-12 (R-12) leak detection dye in HFC-134a (R-134a) A/C systems or A/C system damage may result.
- The fluorescent properties of the dye will remain for over three (3) years unless a compressor failure occurs.

A/C Identification Label

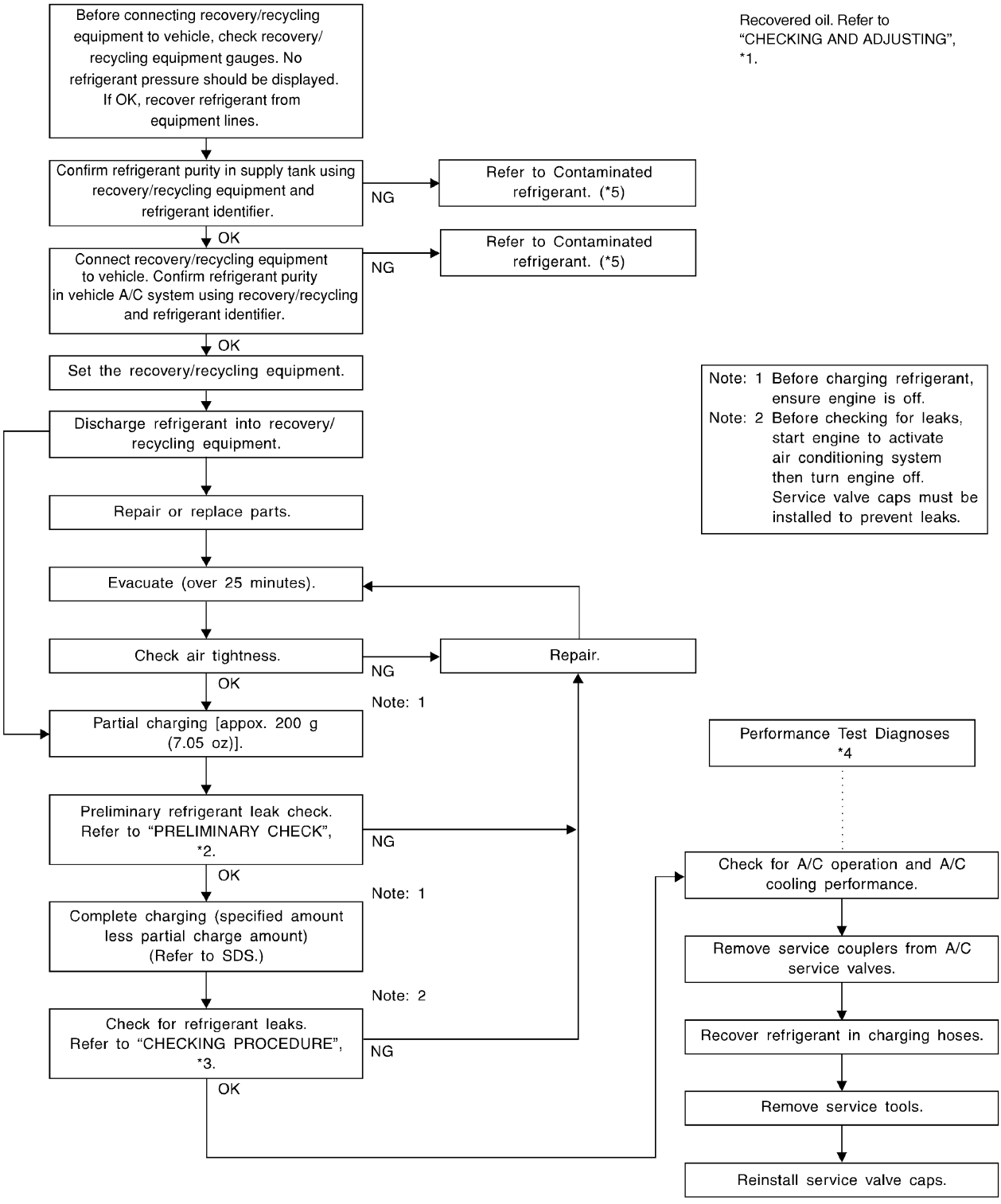
EJS00442

Vehicles with factory installed fluorescent dye have this identification label on the underside of hood.

Precautions for Refrigerant Connection

EJS00443

A new type refrigerant connection has been introduced to all refrigerant lines except the following locations.

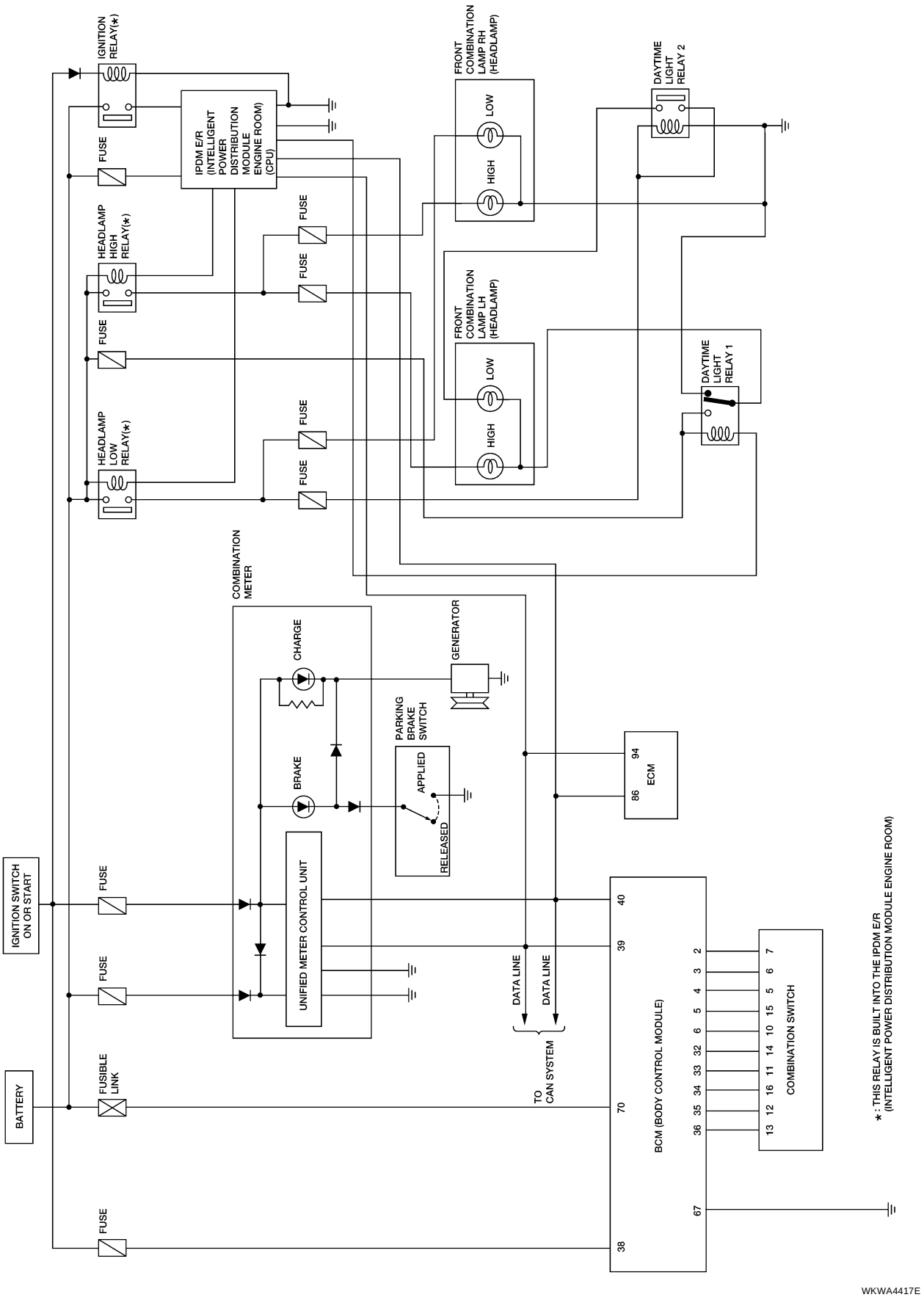


WJIA1923E

*1 MTC-19, "CHECKING AND ADJUSTING"
*2 MTC-105, "Checking for Refrigerant Leaks"
*3 MTC-105, "Checking for Refrigerant Leaks"
*4 MTC-69, "PERFORMANCE TEST DIAGNOSES"
*5 MTC-4, "Contaminated Refrigerant"

Schematic

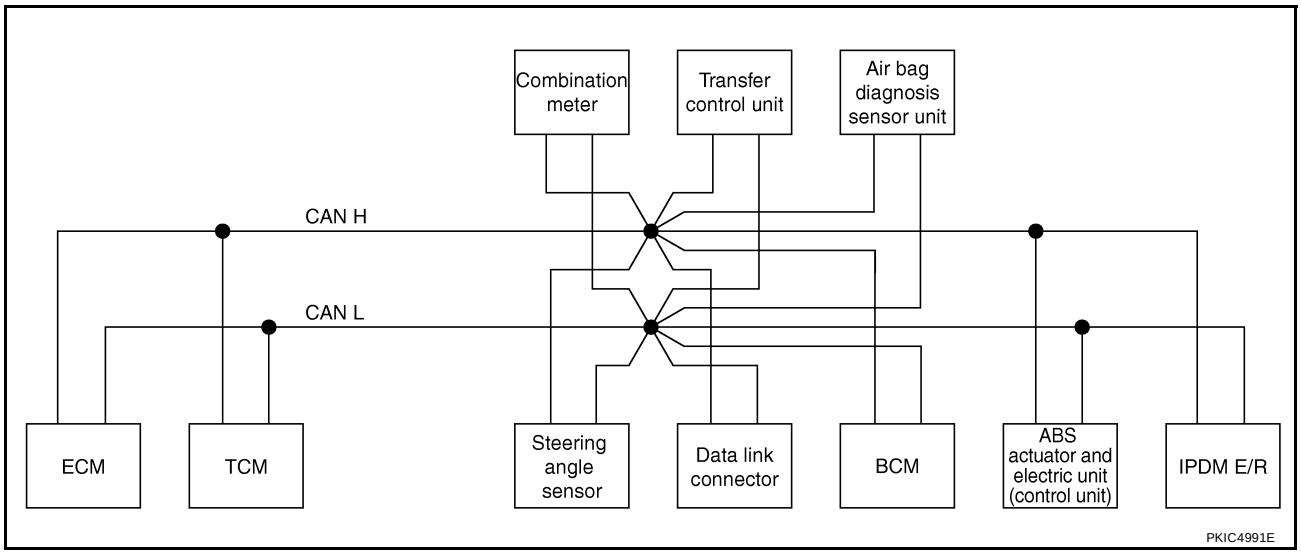
EKS00EJ2



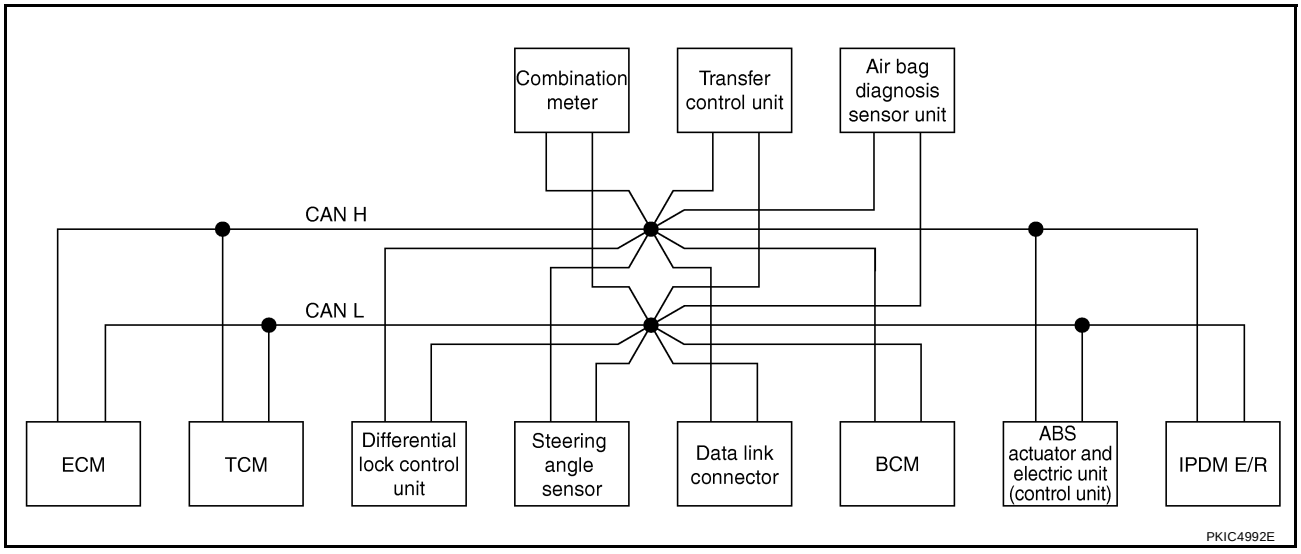
TYPE 5/TYPE 6

System diagram

- Type 5



- Type 6



Input/output signal chart

T: Transmit R: Receive

Signals	ECM	TCM	Differential lock control unit*1	Steering angle sensor	BCM	Combination meter	Transfer control unit	ABS actuator and electric unit (control unit)	IPDM E/R
A/C compressor request signal	T								R
Accelerator pedal position signal	T	R						R	
ASCD CRUISE lamp signal	T					R			
ASCD OD cancel request	T	R							
ASCD operation signal	T	R							
ASCD SET lamp signal	T					R			
Battery voltage signal	T	R							
Closed throttle position signal	T	R							