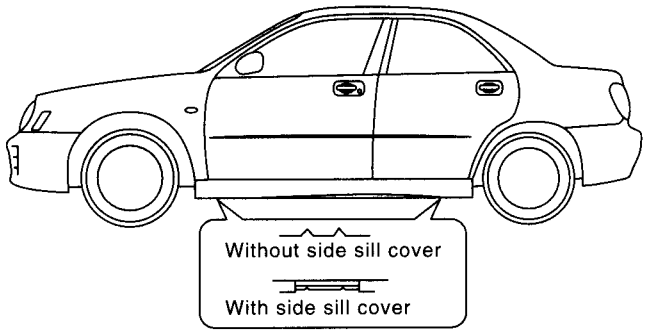
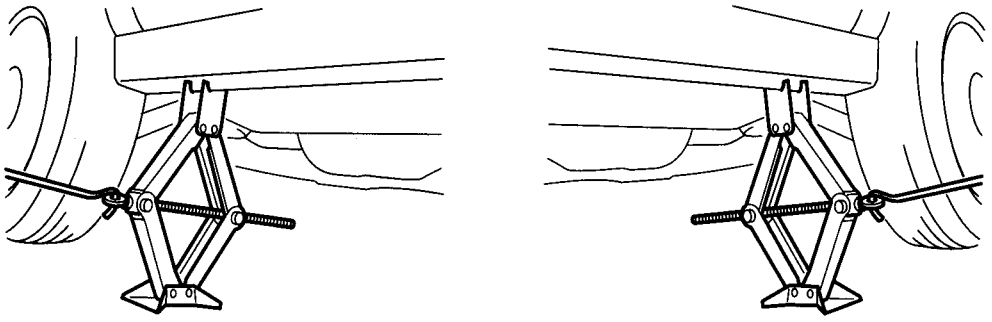
5. LIFTS AND JACKS

When using a lift or jack-ridged rack to raise a vehicle, always follow the instructions concerning jack-up points and weight limits to prevent the vehicle from falling, which could result in injury. Be especially careful to make sure the vehicle is balanced before raising it.

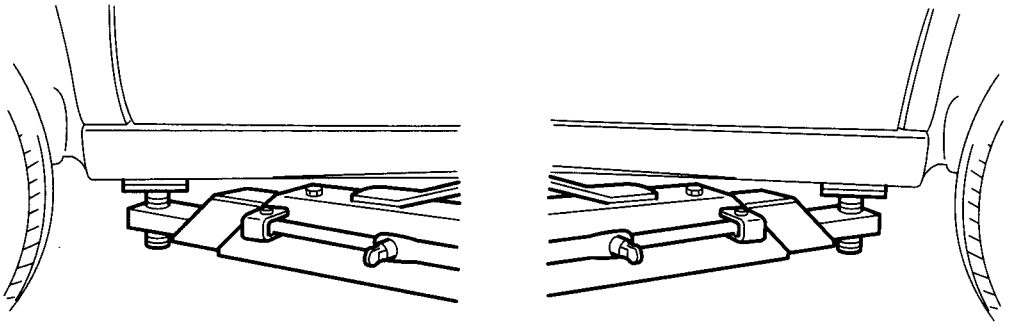
Support locations



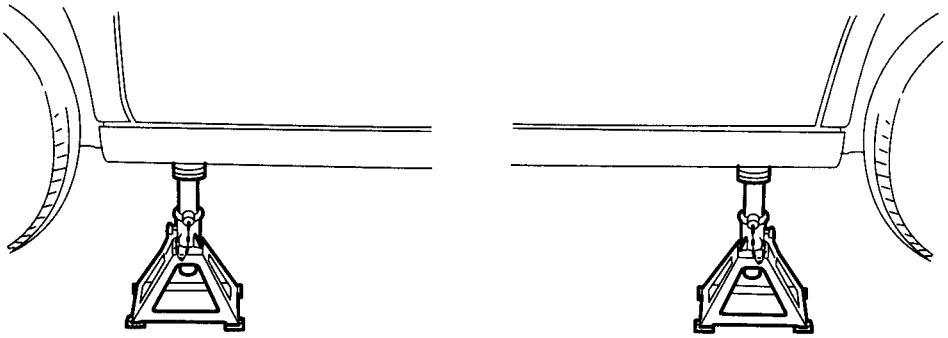
Pantograph jack



Lift



Safety stand

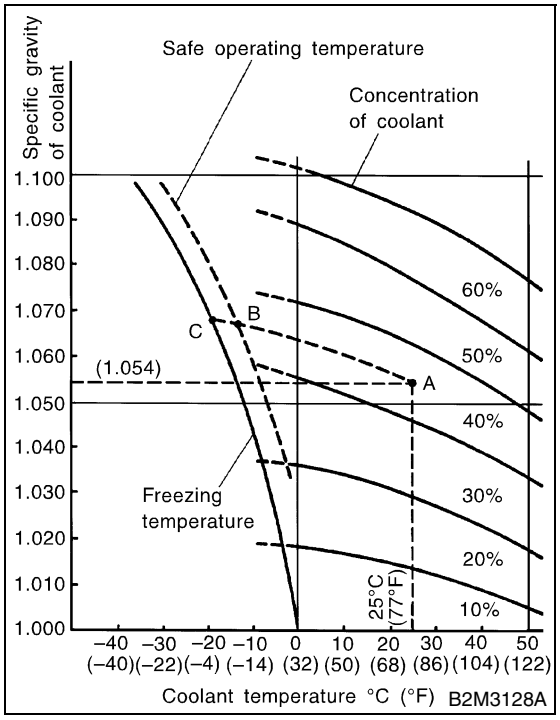


GI0166

B: INSPECTION

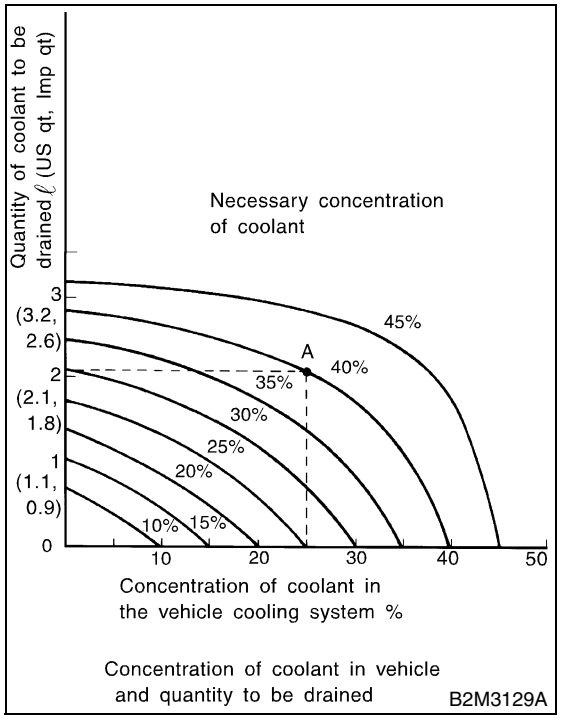
1. RELATIONSHIP OF SUBARU COOLANT CONCENTRATION AND FREEZING TEMPERATURE

The concentration and safe operating temperature of the SUBARU coolant is shown in the diagram. Measuring the temperature and specific gravity of the coolant will provide this information.
[Example]
If the coolant temperature is 25°C (77°F) and its specific gravity is 1.054, the concentration is 35% (point A), the safe operating temperature is –14°C (7°F) (point B), and the freezing temperature is –20°C (–4°F) (point C).

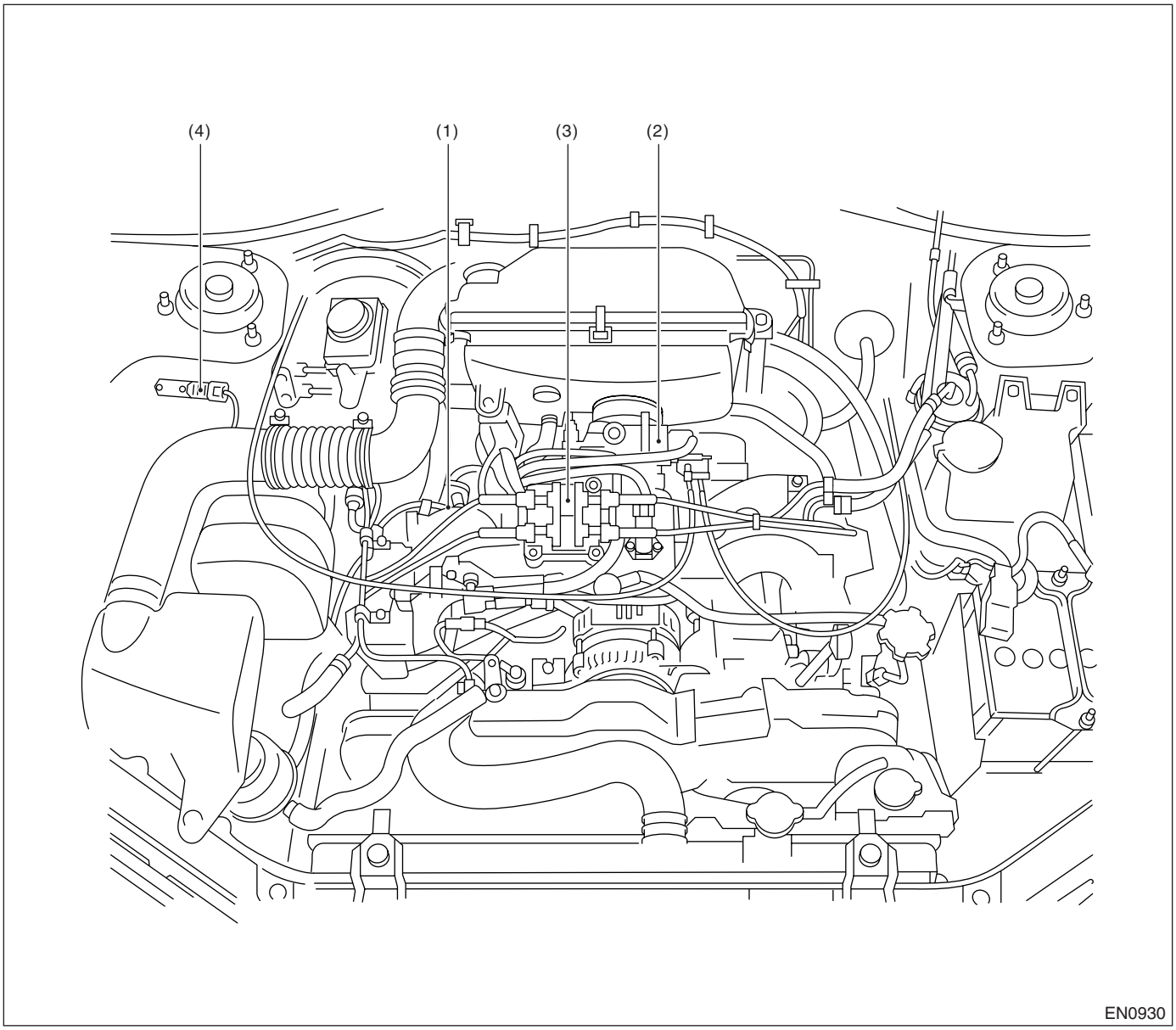


2. PROCEDURE TO ADJUST THE CONCENTRATION OF THE COOLANT

To adjust the concentration of the coolant according to temperature, find the proper fluid concentration in the above diagram and replace the necessary amount of coolant with an undiluted solution of SUBARU genuine coolant (concentration 50%).
The amount of coolant that should be replaced can be determined using the diagram.
[Example]
Assume that the coolant concentration must be increased from 25% to 40%. Find point A, where the 25% line of coolant concentration intersects with the 40% curve of the necessary coolant concentration, and read the scale on the vertical axis of the graph at height A. The quantity of coolant to be drained is 2.1 ℓ (2.2 US qt, 1.8 Imp qt). Drain 2.1 ℓ (2.2 US qt, 1.8 Imp qt) of coolant from the cooling system and add 2.1 ℓ (2.2 US qt, 1.8 Imp qt) of the undiluted solution of SUBARU coolant.
If a coolant concentration of 50% is needed, drain all the coolant and refill with the undiluted solution only.

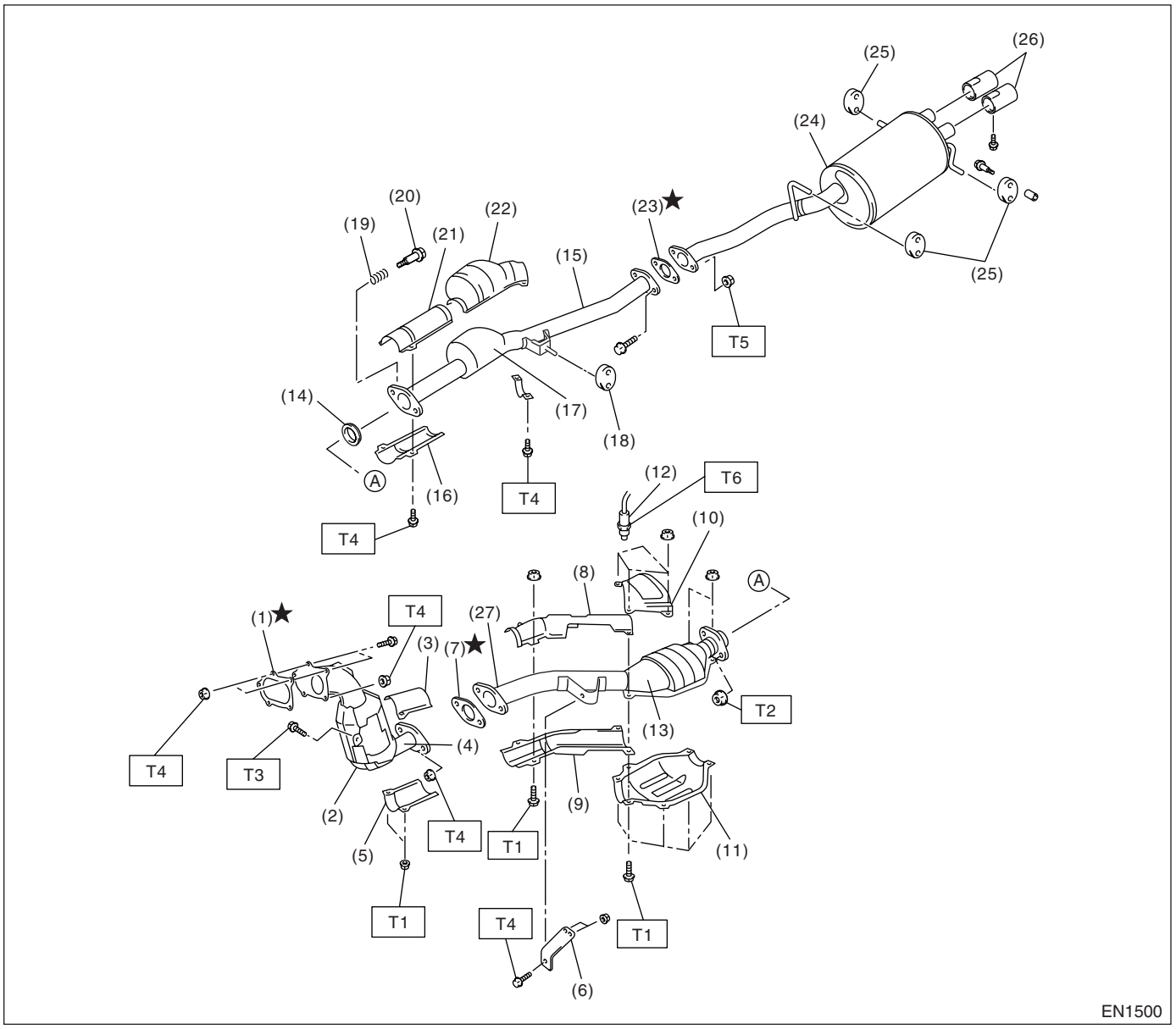


3. SOLENOID VALVE, EMISSION CONTROL SYSTEM PARTS AND IGNITION SYSTEM PARTS



(1) Purge control solenoid valve
(2) Idle air control solenoid valve
(3) Ignition coil and ignitor ASSY
(4) CO resistor (Without catalyst model)

2. CENTER AND REAR EXHAUST PIPE, AND MUFFLER



(1) Gasket
(2) Front catalytic converter
(3) Upper center pipe cover (Front)
(4) Center exhaust pipe (Front)
(5) Lower center pipe cover (Front)
(6) Bracket
(7) Gasket
(8) Upper center pipe cover (Rear)
(9) Lower center pipe cover (Rear)
(10) Upper rear catalytic converter cover
(11) Lower rear catalytic converter cover
(12) Rear oxygen sensor
(13) Rear catalytic converter
(14) Gasket
(15) Rear exhaust pipe
(16) Lower rear exhaust pipe cover (Front)
(17) Chamber
(18) Cushion
(19) Spring
(20) Bolt
(21) Upper rear exhaust pipe cover (Front)
(22) Upper rear exhaust pipe cover (Rear)
(23) Gasket
(24) Muffler
(25) Cushion
(26) Muffler cutter
(27) Center exhaust pipe (Rear)

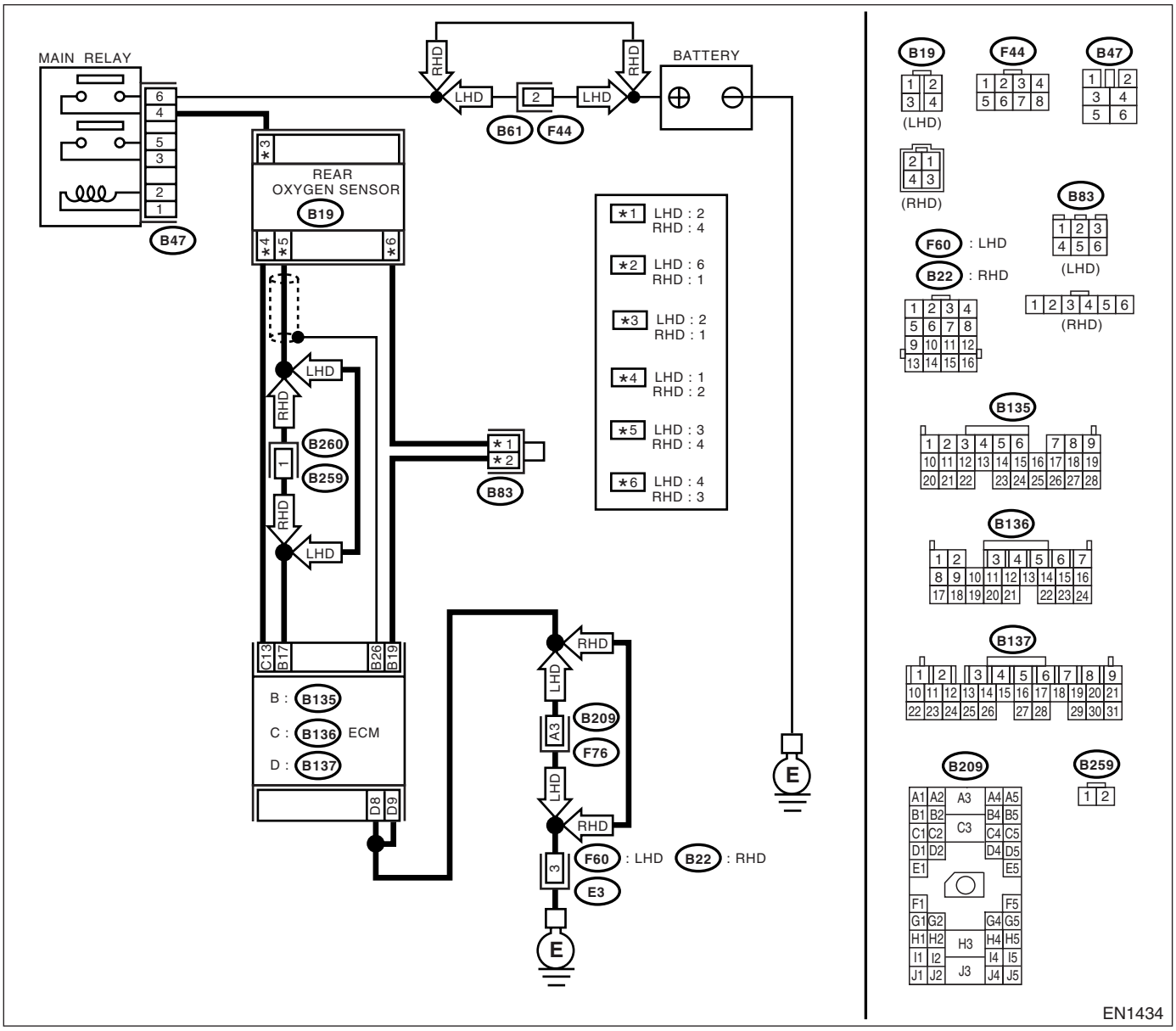
Tightening torque: N·m (kgf-m, ft-lb)
T1: 13 (1.3, 9.6)
T2: 18 (1.8, 13.0)
T3: 30 (3.1, 22.4)
T4: 35 (3.6, 26.0)
T5: 48 (4.9, 35.4)
T6: <Ref. to FU(TURBO)-46, INSTALLATION, Rear Oxygen Sensor.>

X: DTC P0137 — REAR OXYGEN SENSOR CIRCUIT LOW INPUT [AT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-45, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



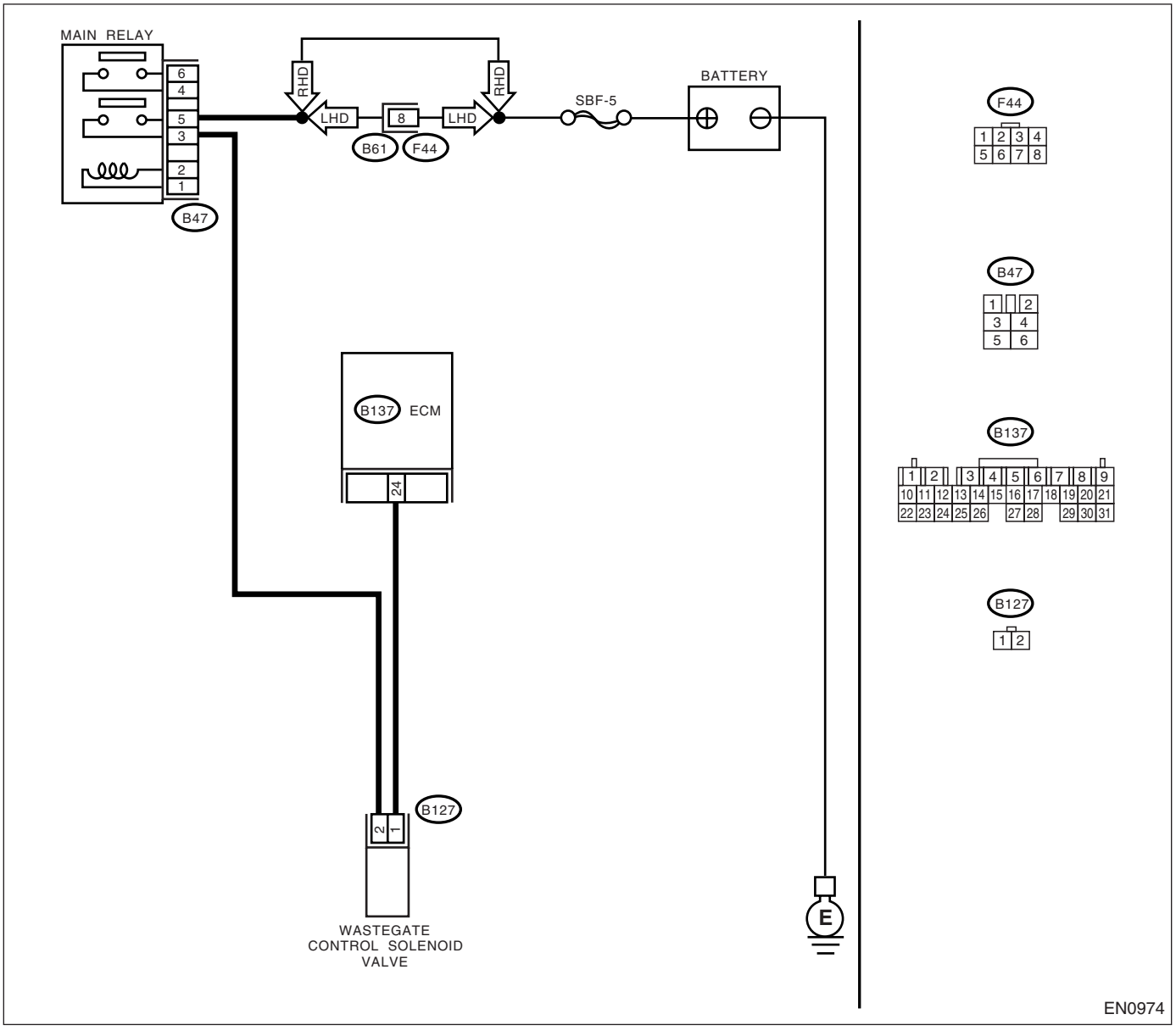
Step		Check	Yes	No
1	**CHECK ANY OTHER DIAGNOSTIC TROUBLE CODE (DTC) ON DISPLAY.**	Does the Subaru Select Monitor or OBD-II general scan tool indicate DTC P0131 or P0132?	Go to step **2.**	Go to step **3.**

CS:DTC P1244 — WASTEGATE CONTROL SOLENOID VALVE RANGE/PERFORMANCE PROBLEM (LOW INPUT) [MT VEHICLES] —

- **DTC DETECTING CONDITION:**
  - Two consecutive driving cycles with fault

CAUTION:
After repair or replacement of faulty parts, conduct Clear Memory Mode <Ref. to EN(TURBO)-45, OPERATION, Clear Memory Mode.> and Inspection Mode <Ref. to EN(TURBO)-42, Inspection Mode.> .

- **WIRING DIAGRAM:**



	Step	Check	Yes	No
36	**CHECK INPUT SIGNAL FOR TCM.** 1)Turn the ignition switch to OFF. 2)Connect the connector to TCM and inhibitor switch. 3)Turn the ignition switch to ON. 4)Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 14 (+) — Chassis ground (–):***	Is the voltage less than 1 V in "N" range?	Go to step **37.**	Go to step **65.**
37	**CHECK INPUT SIGNAL FOR TCM.** Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 14 (+) — Chassis ground (–):***	Is the voltage more than 8 V in other ranges?	Go to step **65.**	Replace the TCM. <Ref. to AT-46, Transmission Control Module (TCM).>
38	**CHECK "N" RANGE INDICATOR LIGHT BULB.** 1)Turn the ignition switch to OFF. 2)Remove the combination meter. 3)Remove the "N" range indicator light bulb from combination meter.	Is the "N" range indicator light bulb OK?	Go to step **39.**	Replace the "N" range indicator light bulb. <Ref. to IDI-15, Combination Meter Assembly.>
39	**CHECK HARNESS CONNECTOR BETWEEN TCM AND COMBINATION METER.** 1)Disconnect the connectors from TCM and combination meter. 2)Measure the resistance of harness between TCM and combination meter. ***Connector & terminal*** ***(B55) No. 14 — (i12) No. 12:***	Is the resistance less than 1 Ω?	Go to step **65.**	Repair the open circuit in harness between TCM connector and combination meter, and poor contact in TCM connector.
40	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1)Turn the ignition switch to OFF. 2)Disconnect the connectors from TCM, inhibitor switch and combination meter. 3)Measure the resistance of harness between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 14 — Chassis ground:***	Is the resistance more than 1 MΩ?	Go to step **41.**	Repair the ground short circuit in "N" range circuit.
41	**CHECK HARNESS CONNECTOR BETWEEN TCM AND INHIBITOR SWITCH.** 1)Turn the ignition switch to OFF. 2)Disconnect the connectors from TCM and inhibitor switch. 3)Measure the resistance of harness between TCM and inhibitor switch connector. ***Connector & terminal*** ***(B55) No. 4 — (T7) No. 3:***	Is the resistance less than 1 Ω?	Go to step **42.**	Repair the open circuit in harness between TCM and inhibitor switch connector, and poor contact in coupling connector.
42	**CHECK INPUT SIGNAL FOR TCM.** 1)Turn the ignition switch to OFF. 2)Connect the connector to TCM and inhibitor switch. 3)Turn the ignition switch to ON. 4)Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 4 (+) — Chassis ground (–):***	Is the voltage less than 1 V in "D" range?	Go to step **43.**	Go to step **65.**
43	**CHECK INPUT SIGNAL FOR TCM.** Measure the voltage between TCM and chassis ground. ***Connector & terminal*** ***(B55) No. 4 (+) — Chassis ground (–):***	Is the voltage more than 8 V in other ranges?	Go to step **65.**	Replace the TCM. <Ref. to AT-46, Transmission Control Module (TCM).>

AB:SELECT MONITOR

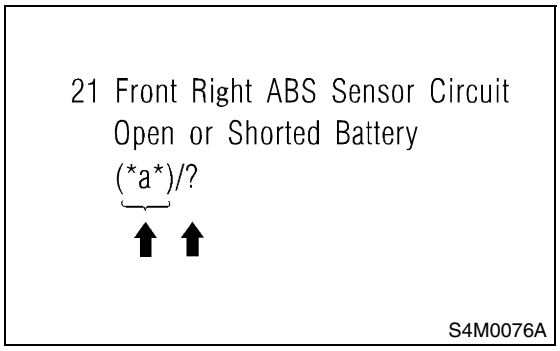
Applicable cartridge of select monitor: <Ref. to ABS-10, SPECIAL TOOLS, PREPARATION TOOL, General Description.>

NOTE:
For basic handling of the select monitor, refer to its Operation Manual.

AC:DIAGNOSTIC TROUBLE CODES (DTCs) ARE DISPLAYED.

A maximum of 3 DTCs are displayed in order of occurrence.

• If a particular DTC is not properly stored in memory (due to a drop in ABSCM&H/U power supply, etc.) when a problem occurs, the DTC, followed by a question mark "?", appears on the select monitor display. This shows it may be an unreliable reading.



S4M0076A

• *a* refers to the troubles in order of occurrence (Latest, Old, Older and Reference).

Display screen	Contents to be monitored
Latest	The most recent DTC appears on select monitor display.
Old	The second most recent DTC appears on select monitor display.
Older	The third most recent DTC appears on select monitor display.
Reference	A specified period of time proceeding DTC appears on select monitor display.

AD:CLEAR MEMORY

Display screen	Contents to be monitored
Clear memory?	Function of clearing DTC and freeze frame data.

AE:ANALOG DATA ARE DISPLAYED.

Display screen	Contents to be monitored
FR wheel speed	Wheel speed detected by Front Right ABS sensor is displayed in km/h or mile/h.
FL wheel speed	Wheel speed detected by Front Left ABS sensor is displayed in km/h or mile/h.
RR wheel speed	Wheel speed detected by Rear Right ABS sensor is displayed in km/h or mile/h.
RL wheel speed	Wheel speed detected by Rear Left ABS sensor is displayed in km/h or mile/h.
Stop light switch	Stop light switch monitor voltage is displayed.
G sensor output voltage	Refers to vehicle acceleration detecting by analog G sensor. It appears on the select monitor display in volts.

AF:ON/OFF DATA ARE DISPLAYED.

Display screen	Contents to be monitored
Stop light switch	Stop light switch signal
Valve relay signal	Valve relay signal
Motor relay signal	Motor relay signal
ABS signal to TCM	ABS operation signal from ABS control module to TCM
ABS warning light	ABS warning light
Valve relay monitor	Valve relay operation monitor signal
Motor relay monitor	Motor relay operation monitor signal
CCM signal	ABS operation signal from ABS control module to TCM

AG:ABS SEQUENCE CONTROL

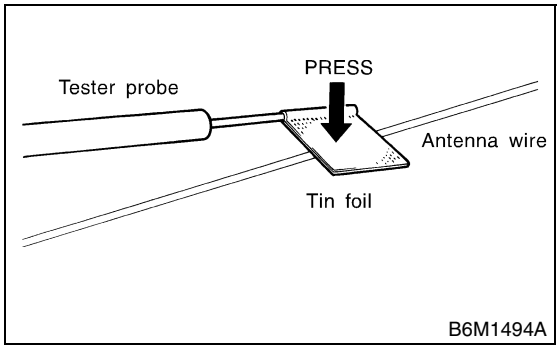
Display screen	Contents to be monitored	Index No.
ABS sequence control	Perform ABS sequence control by operating valve and pump motor sequentially.	<Ref. to ABS-11, ABS Sequence Control.>

8. Antenna

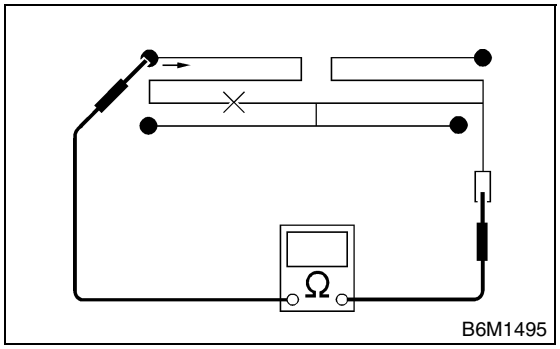
A: INSPECTION

Measure the resistance between antenna terminal and each antenna wire.
If an antenna wire is OK, resistance will be less than 1 W. If an antenna wire is broken, the resistance will be more than 1 MW.

NOTE:
When checking the continuity, wind a piece of tin foil around the tip of tester probe and press foil against wire with your finger.

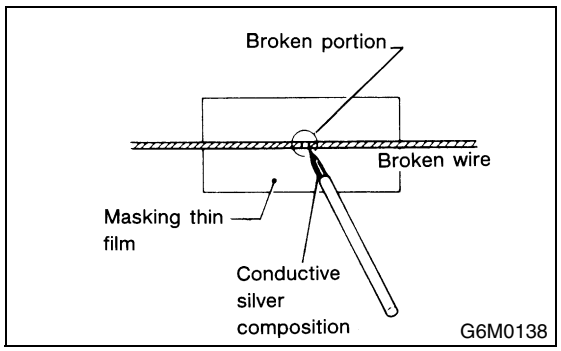


To locate the broken point, move the probe along antenna wire.



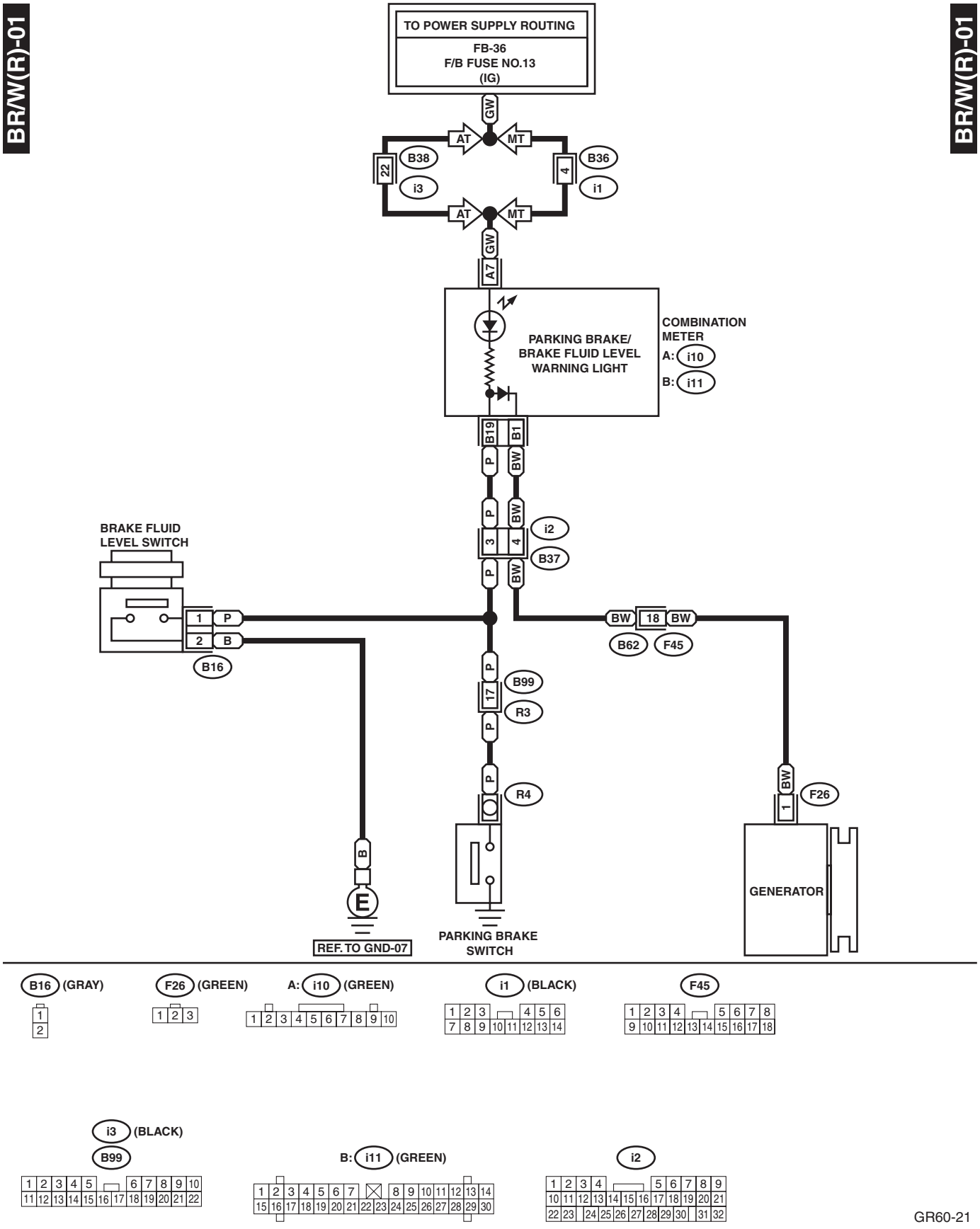
B: REPAIR

1) Clean the antenna wire and surrounding area with a cloth dampened by alcohol.
2) Paste a thin masking film on the glass along broken wire.
3) Deposit conductive silver composition (DUPONT NO. 4817) on the broken portion with a drawing pen.



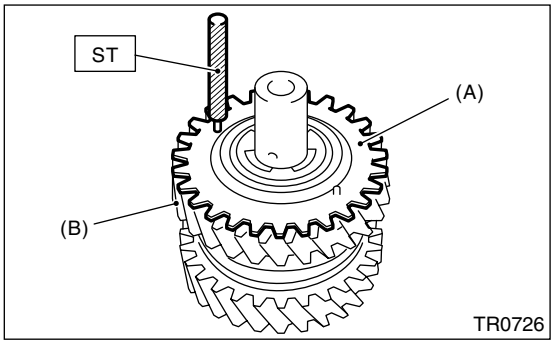
4) Dry out the deposited portion.
5) After repair has been completed, measure the resistance in repaired wire.

2. RHD MODEL


BR/W(R)-01
BR/W(R)-01
TO POWER SUPPLY ROUTING
FB-36
F/B FUSE NO.13
(IG)
GW
AT
MT
B38
22
i3
B36
4
i1
AT
MT
GW
A7
PARKING BRAKE/
BRAKE FLUID LEVEL
WARNING LIGHT
COMBINATION
METER
A: i10
B: i11
B19
B1
P
BW
P
BW
i2
3
4
B37
P
BW
BRAKE FLUID
LEVEL SWITCH
1
P
2
B
B16
BW
18
BW
B62
F45
P
17
B99
R3
P
P
R4
B
E
REF. TO GND-07
PARKING BRAKE
SWITCH
BW
1
F26
GENERATOR
B16 (GRAY)
F26 (GREEN)
A: i10 (GREEN)
i1 (BLACK)
F45
i3 (BLACK)
B99
B: i11 (GREEN)
i2
GR60-21

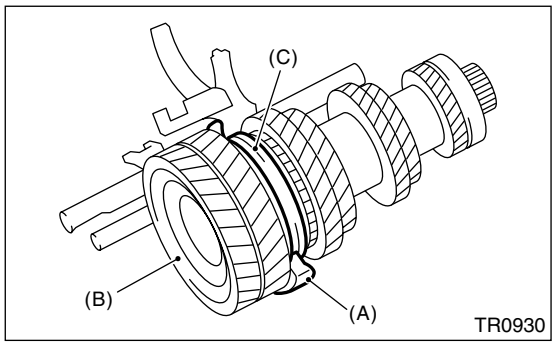
B: INSTALLATION

1) Adjust the 3rd-4th, and 5th-6th shifter fork rod. <Ref. to 6MT-123, ADJUSTMENT, Shifter Fork and Rod.>
2) Turn the sub gear counterclockwise for approx. three teeth. Align the sub gear and reverse idler gear hole, then insert the ST.
ST 18757AA000 STRAIGHT PIN



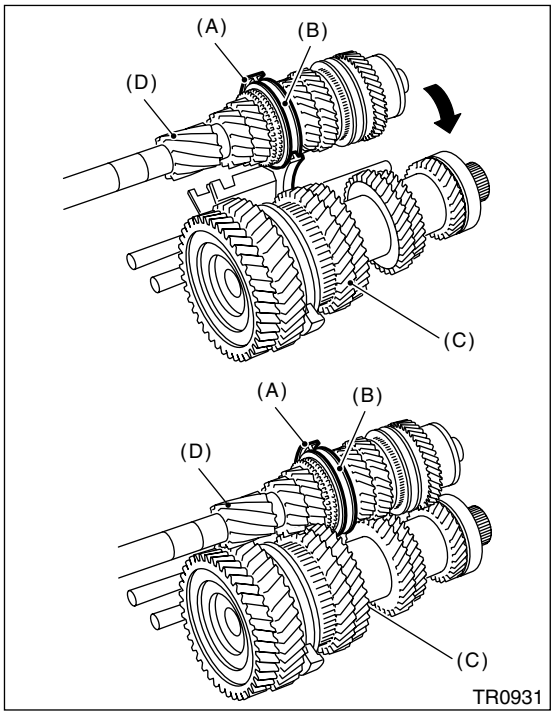
(A) Sub gear
(B) Reverse idler gear

3) Install the driven gear assembly to 1st-2nd shifter fork assembly.



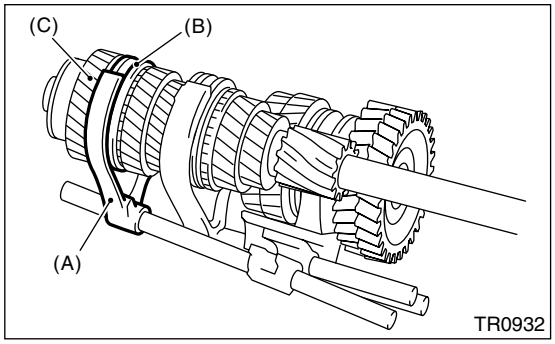
(A) 1st-2nd shifter fork
(B) Driven gear assembly
(C) 1st-2nd sleeve

4) Install the main shaft assembly to 3rd-4th shifter fork, and then assemble to driven gear assembly.



(A) 3rd-4th shifter fork
(B) 3rd-4th sleeve
(C) Driven gear assembly
(D) Main shaft assembly

5) Install the 5th-6th shifter fork assembly to main shaft assembly.

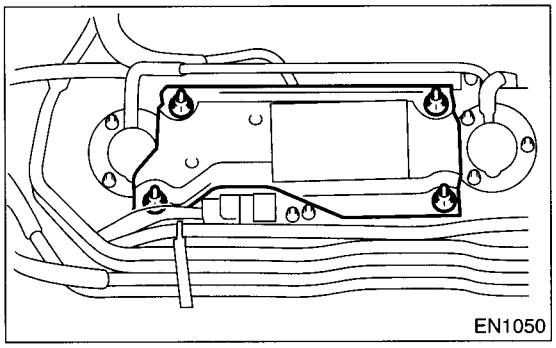


(A) 5th-6th shifter fork
(B) 5th-6th sleeve
(C) Main shaft assembly

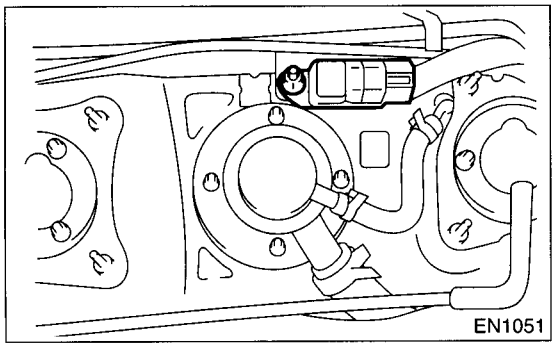
10.Fuel Tank Pressure Sensor

A: REMOVAL

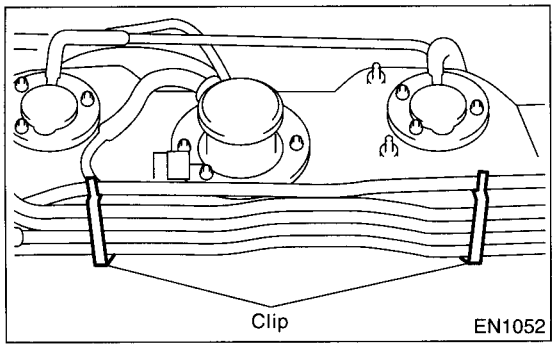
1) Remove the fuel tank. <Ref. to FU(DOHC TURBO)-52, REMOVAL, Fuel Tank.>
2) Remove the protector cover.



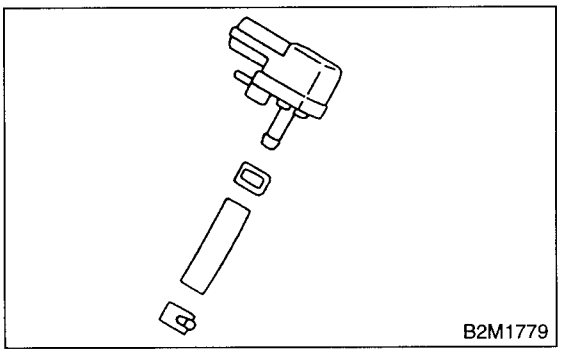
3) Disconnect the connector from fuel pressure sensor, then remove the fixing nut.



4) Release the clips which hold fuel pipes onto fuel tank.



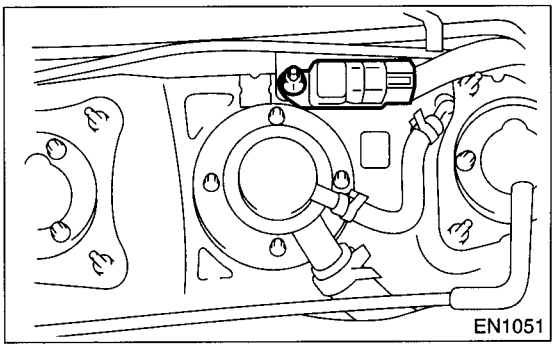
5) Remove the clip, and disconnect pressure hose from fuel tank.
6) Disconnect the pressure hose from fuel tank pressure sensor.



B: INSTALLATION

Install in the reverse order of removal.

Tightening torque:
7.4 N·m (0.75 kgf-m, 5.4 ft-lb)



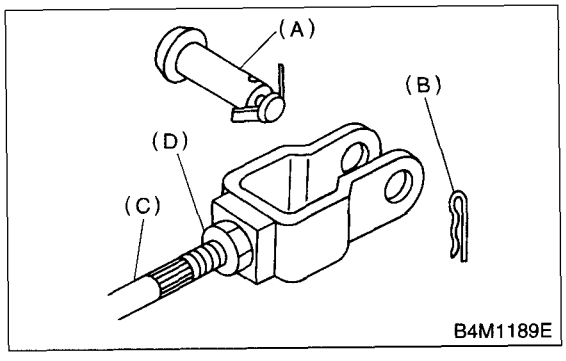
C: INSPECTION

Make sure the hoses are not cracked or loose.

6. Master Cylinder

A: REMOVAL

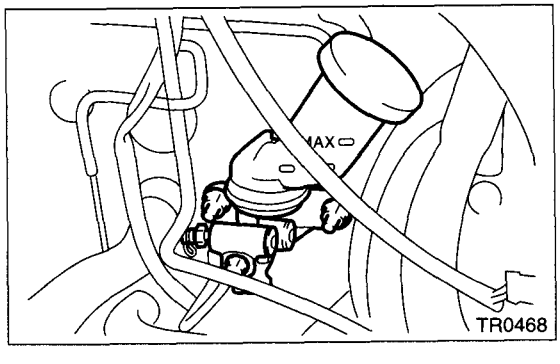
1) Thoroughly drain the brake fluid from reservoir tank.
2) Remove the snap pin, clevis pin and separate the push rod of master cylinder from clutch pedal.



(A) Clevis pin
(B) Snap pin
(C) Push rod
(D) Lock nut

3) Remove the air cleaner case and air intake duct (Non-turbo model). <Ref. to IN(SOHC)-6, REMOVAL, Air Cleaner Case.> and <Ref. to IN(SOHC)-7, REMOVAL, Air Intake Duct.>
4) Remove the intercooler (Turbo model). <Ref. to IN(DOHC TURBO)-10, REMOVAL, Intercooler.>
5) Remove the clutch pipe from master cylinder.
6) Remove the master cylinder with reservoir tank.

CAUTION:
Be extremely careful not to spill the brake fluid. Brake fluid spilt on the vehicle body will harm the paint surface; wipe it off quickly if spilt.



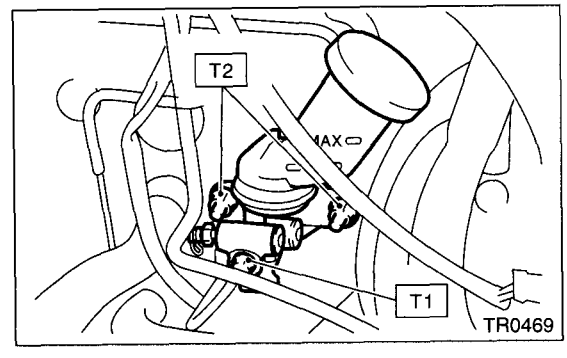
(A) Master cylinder
(B) Clutch pipe

B: INSTALLATION

1) Install the master cylinder to body, and install the clutch pipe to master cylinder.

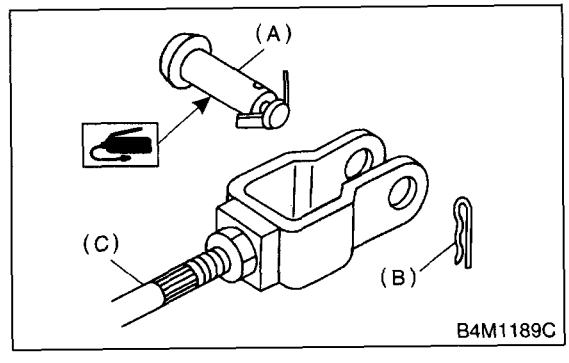
CAUTION:
Check that the pipe is routed properly.

Tightening torque:
T1: 15 N·m (1.5 kgf-m, 10.8 ft-lb)
T2: 18 N·m (1.8 kgf-m, 13.0 ft-lb)



2) Connect the push rod of master cylinder to clutch pedal, and install the clevis pin and snap pin.

NOTE:
Apply grease to the clevis pin.



(A) Clevis pin
(B) Snap pin
(C) Push rod

3) After bleeding air from the system, ensure that the clutch operates properly.
<Ref. to CL-24, Clutch Fluid Air Bleeding.>
4) Install the air cleaner case and air intake duct (Non-turbo model). <Ref. to IN(SOHC)-6, INSTALLATION, Air Cleaner Case.> and <Ref. to IN(SOHC)-7, INSTALLATION, Air Intake Duct.>
5) Install the intercooler (Turbo model). <Ref. to IN(DOHC TURBO)-11, INSTALLATION, Intercooler.>

1. General Description

A: SPECIFICATIONS

		Non-turbo		Turbo
		Other	Sedan and OUTBACK	
Front disc brake	Size	15 inch		16 inch
	Type	Disc (Floating type, ventilated)		
	Effective disc diameter	228 mm (8.98 in)		247 mm (9.72 in)
	Disc thickness × Outer diameter	24 × 277 mm (0.94 × 10.91 in)		24 × 294 mm (0.94 × 11.57 in)
	Effective cylinder diameter	42.8 mm (1.685 in) × 2		
	Pad dimensions (length × width × thickness)	105.0 × 50.5 × 11.0 mm (4.134 × 1.989 × 0.433 in)		112.3 × 50.0 × 11.0 mm (4.421 × 1.969 × 0.433 in)
	Clearance adjustment	Automatic adjustment		
Rear disc brake	Type	—	Disc (Floating type)	
	Effective disc diameter	—	230 mm (9.06 in)	
	Disc thickness × Outer diameter	—	10 × 266 mm (0.39 × 10.47 in)	
	Effective cylinder diameter	—	38.1 mm (1.500 in)	
	Pad dimensions (length × width × thickness)	—	82.4 × 33.7 × 9.0 mm (3.244 × 1.327 × 0.354 in)	
	Clearance adjustment	—	Automatic adjustment	
Rear drum brake	Type	Drum (Leading-Trailing type)	—	
	Effective drum diameter	228.6 mm (9 in)	—	
	Effective cylinder diameter	19.0 mm (0.689 in)	—	
	Lining dimensions (length × width × thickness)	219.3 × 35.0 × 4.1 mm (8.63 × 1.378 × 0.161 in)	—	
	Clearance adjustment	Automatic adjustment	—	
Master cylinder	Type	Tandem		
	Effective diameter	26.99 mm (1-1/16 in)		
	Reservoir type	Sealed type		
	Brake fluid reservoir capacity	205 cm^3 (12.51 cu in)		
Brake booster	Type	Vacuum suspended		
	Effective diameter	205 + 230 mm (8.07 + 9.06 in)		
Proportioning valve	Split point	1,961 kPa (20 kg/cm^2, 285 psi)		
	Reducing ratio	0.3		
Brake line		Dual circuit system		
Brake fluid		FMVSS No. 116, DOT3 or DOT4		

NOTE:
Refer to "PB section" for parking brake SPECIFICATIONS. <Ref. to PB-2, SPECIFICATIONS, General Description.>

BULKHEAD WIRING HARNESS (IN ENGINE ROOM)