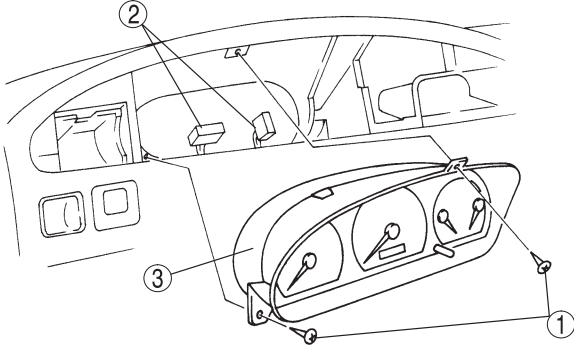


WARNING AND INDICATOR SYSTEM

INSTRUMENT CLUSTER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the meter hood. (Refer to section S, DASHBOARD AND CONSOLE, METER HOOD REMOVAL/INSTALLATION.)
3. Remove in the order indicated in the table.
4. Install in the reverse order of removal.



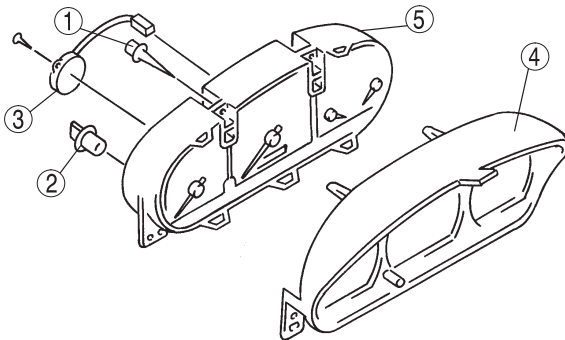
1	Screw
2	Instrument cluster connector
3	Instrument cluster

INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY

Caution

- If the print plate on the back of the instrument cluster is damaged, the system will not operate properly and it may become the cause of trouble or malfunction.

1. Disassemble in the order indicated in the table.
2. Assemble in the reverse order of disassembly.



1	Screw
2	Bulb
3	Alarm
4	Front lens
5	Instrument cluster

INSTRUMENT CLUSTER INSPECTION

Speedometer

1. Adjust the tire air pressure to the specification.
2. Using a speedometer tester, verify that the speedometer indication is within the allowable range indicated in the table.

Speedometer tester indication (km/h)	Allowable range (km/h)
20	18—22
40	36—44
60	54—66
80	72—88
100	90—110
120	108—132
140	126—154
160	144—176
180	162—198

3. Verify that fluctuation of the speedometer needle is within the allowable range.

Needle fluctuation allowable range Within 0.5 km/h

4. If the speedometer needle does not move or if the indication is outside of the allowable range, inspect the vehicle speedometer sensor and related wiring harness.
5. If the vehicle speedometer sensor and related wiring harness are normal, replace the instrument cluster.

Tachometer

Using the SSTs (NGS kit) or a dwell tacho tester

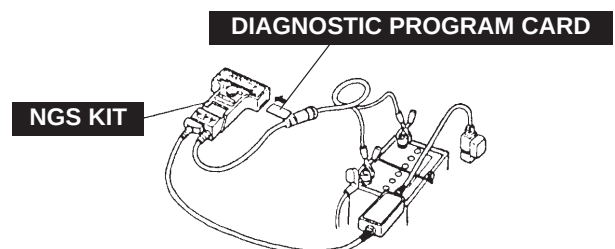
Caution

- If the engine speed exceeds the allowable range, the engine could be damaged. Therefore, when inspecting the tachometer, do not allow the engine speed to exceed the allowable range indication on the tachometer.

1. Follow the appropriate procedure for using the SSTs (NGS kit) or dwell tacho tester.

Using the SSTs (NGS kit)

- (1) Connect the SSTs (NGS kit) to the data link connector and battery.



WARNING AND INDICATOR SYSTEM

- (2) Select "VEHICLE & ENGINE SELECTION" and press TRIGGER. (Select the model and specifications of the vehicle you are testing.)
- (3) Select "PCM-POWERTRAIN CTRL MODULE" and press TRIGGER.
- (4) Select "PID/DATA MONITOR AND RECORD" and press TRIGGER.
- (5) Select "RPM" and press TRIGGER.
- (6) Press START.

Using a dwell tacho tester

- Connect a dwell tacho tester to the terminals K and B of the PCM connector.

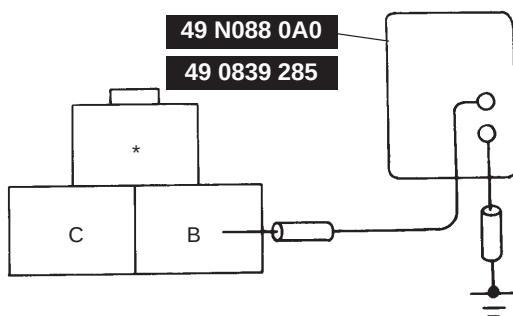
2. Verify that the tachometer indication is within the allowable range indicated in the table.

Dwell tacho tester indication (rpm)	Allowable range (rpm)
650	583—705
1000	926—1060
2000	1954—2120
3000	2980—3180
4000	4008—4240

3. If the tachometer needle does not move or if the indication is outside of the allowable range, inspect the PCM and related wiring harness.
4. If the PCM and related wiring harness are normal, replace the instrument cluster.

Fuel Gauge

1. Disconnect the fuel gauge sender unit connector.
2. Connect the red lead of **SST** (Fuel And Thermometer checker) to terminal B of the fuel gauge sender unit connector and black lead to ground.
3. Set the resistance of **SST** (Fuel And Thermometer checker) to **180 Ω**.

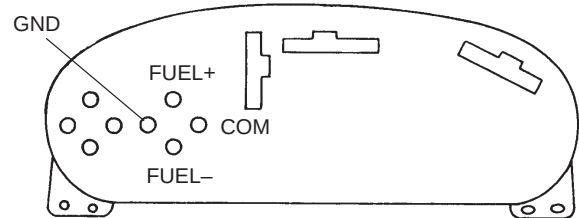


4. Turn the ignition switch to ON position.
5. Verify that the needle is below E.
6. Turn the ignition switch to LOCK position.
7. Set the resistance of **SST** (Fuel And Thermometer checker) to **10 Ω**.
8. Turn the ignition switch to ON position.
9. Verify that the needle is above F.
10. If the needle does not move or moves irregularly, remove the instrument cluster. (Refer to INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
11. Measure the resistance between the fuel gauge terminals using an ohmmeter.

○—○ : Resistance

Step	Terminal			
	FUEL +	FUEL -	GND	COM
1	○—○	R ₁		
2			○—○	R ₂

R₁, R₂: 140—200 Ω



12. Verify that the difference in resistance between R₁ and R₂ is **less than 6 Ω**.
13. If not as specified, replace the instrument cluster.

Water Temperature Gauge

1. Disconnect the water temperature sender unit connector.
2. Turn the ignition switch to ON position.
3. Verify that the needle is below C.
4. Ground terminal A of the water temperature sender unit's vehicle side connector.



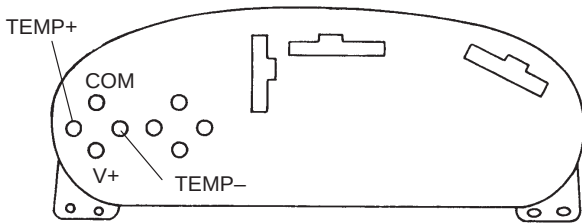
5. Verify that the needle is above H.
6. If the needle does not move or moves irregularly, remove the instrument cluster. (Refer to INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
7. Measure the resistance between the water temperature gauge terminals using an ohmmeter.

○—○ : Resistance

Step	Terminal			
	TEMP +	TEMP -	V+	COM
1	○—○	R ₁		
2			○—○	R ₂

R₁, R₂: 140—200 Ω

WARNING AND INDICATOR SYSTEM



8. Verify that the difference in resistance between R_1 and R_2 is **less than 6 Ω** .
9. If not as specified, replace the instrument cluster.

INSTRUMENT CLUSTER REPAIR

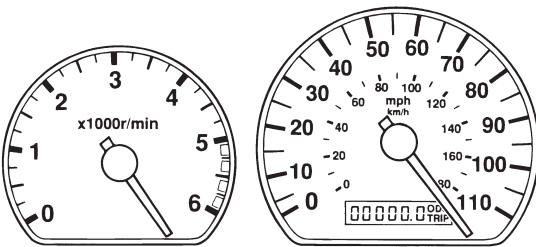
Note

- The needle of speedometer or tachometer may continue to rotate clockwise until it rests on the mask plate. If a customer complains of this concern, repair the needle position according to the following steps.

1. Verify the concern.

TACHOMETER

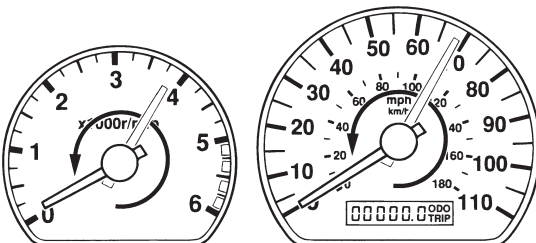
SPEEDOMETER



2. Turn the ignition switch to LOCK position.
3. Remove the ROOM fuse, then wait for **10 minutes or more** until the power supply in the instrument cluster is spent.
4. Turn the ignition switch to ON position.
5. Verify that the needle returns to zero.

TACHOMETER

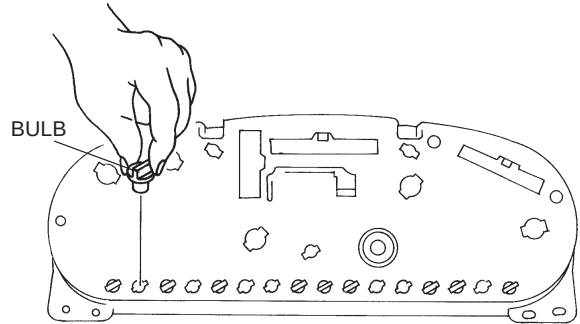
SPEEDOMETER



6. After the needle returns to zero, install the ROOM fuse with the ignition switch at ON position. If the needle does not return to zero, remove the front lens and carefully move the needle to zero by hand. (Refer to INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.)

WARNING AND INDICATOR LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the instrument cluster.
(Refer to INSTRUMENT CLUSTER REMOVAL/INSTALLATION.)
3. Turn the socket counterclockwise to remove the bulb as shown in the figure.



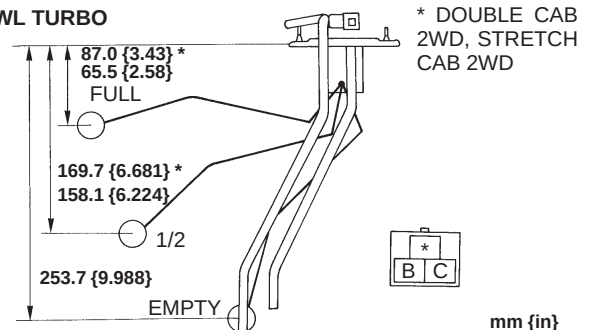
4. Install in the reverse order of removal.

FUEL GAUGE SENDER UNIT INSPECTION

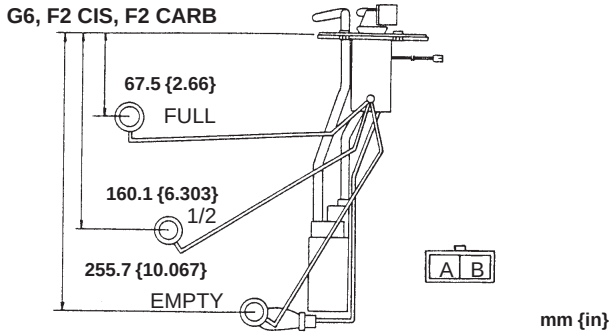
1. For G6, F2 CIS, or F2 Carb engine vehicles, remove the fuel pump unit. (Refer to section F1, FUEL SYSTEM, FUEL TANK REMOVAL/INSTALLATION.) (Refer to section F3, FUEL SYSTEM, FUEL TANK REMOVAL/INSTALLATION.) (Refer to section F4, FUEL SYSTEM, FUEL TANK REMOVAL/INSTALLATION.) For WL or WL Turbo engine vehicles, remove the fuel gauge sender unit. (Refer to section F2, FUEL SYSTEM, FUEL TANK REMOVAL/INSTALLATION.)
2. Using an ohmmeter, measure and verify that the resistance between terminals B and C (WL, WL Turbo) or A and B (G6, F2 CIS, F2 Carb) of the fuel gauge sender unit is as shown in the following chart while slowly moving the unit arm from empty to full.

Measuring point	Resistance (Ω)
Full	18.4—26.4
1/2	81.5—93.5
Empty	136—154

WL, WL TURBO



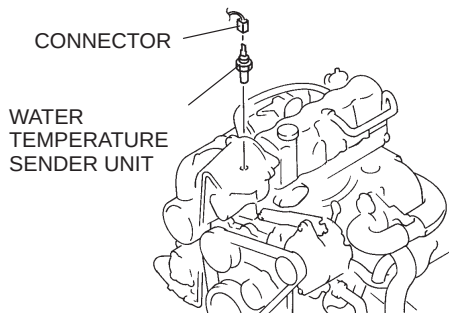
WARNING AND INDICATOR SYSTEM



3. If not as specified, replace the fuel gauge sender unit. (Refer to section F1, FUEL SYSTEM, FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY.) (Refer to section F2, FUEL SYSTEM, FUEL TANK REMOVAL/INSTALLATION.) (Refer to section F3, FUEL SYSTEM, FUEL PUMP UNIT DISASSEMBLY/ASSEMBLY.) (Refer to section F4, FUEL SYSTEM, FUEL PUMP UNIT REMOVAL/INSTALLATION.)

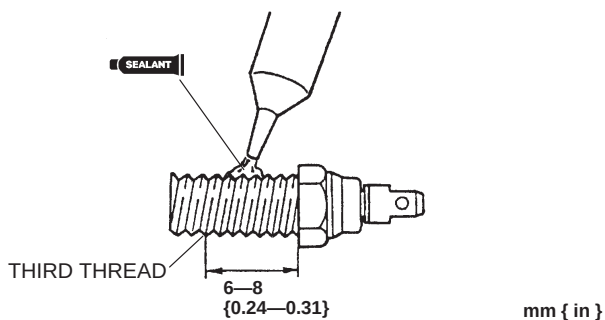
WATER TEMPERATURE SENDER UNIT REMOVAL

1. Disconnect the negative battery cable.
2. Disconnect the connector.
3. Remove the water temperature sender unit.



WATER TEMPERATURE SENDER UNIT INSTALLATION

1. Apply sealant from the third thread to the top thread.



2. Install the water temperature sender unit.

Tightening torque

11.8—17.6 N·m

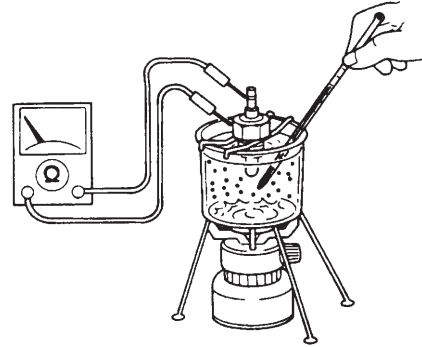
{120—180 kgf·cm, 105—156 in·lbf}

3. Connect the water temperature sender unit connector.
4. Connect the negative battery cable.

WATER TEMPERATURE SENDER UNIT INSPECTION

1. Remove the water temperature sender unit.
2. Place the sender unit in a container of water.
3. Heat the water gradually.
4. Using an ohmmeter, measure and verify that the resistance between terminal of the sender unit and the sender unit body is as shown below.

Water temperature (°C {°F})	Resistance (Ω)
49.8—50.2 {121.7—122.3}	189.4—259.6



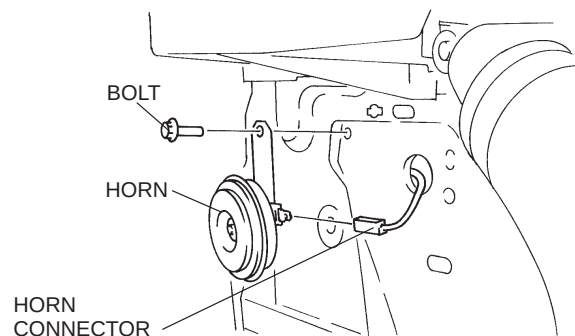
5. If not as specified, replace the water temperature sender unit.

OIL PRESSURE SWITCH INSPECTION

1. Verify that the oil pressure warning light illuminates when the ignition switch is turned to ON position.
2. Verify that the oil pressure warning light goes off when the engine is started.
3. If the oil pressure warning light does not illuminate or remains illuminated, inspect the oil pressure warning light bulb and related wiring harness.
4. If the oil pressure warning light bulb and related wiring harness are normal, inspect the oil pressure. (Refer to section D, LUBRICATION SYSTEM, OIL PRESSURE INSPECTION.)
5. If the oil pressure is normal, replace the oil pressure switch.

HORN REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Disconnect the horn connector.
3. Remove the bolt.
4. Remove the horn.



5. Install in the reverse order of removal.

HORN RELAY REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the driver-side front side trim. (Refer to section S, TRIM, FRONT SIDE TRIM REMOVAL/INSTALLATION.)