

2005 ACCESSORIES & EQUIPMENT

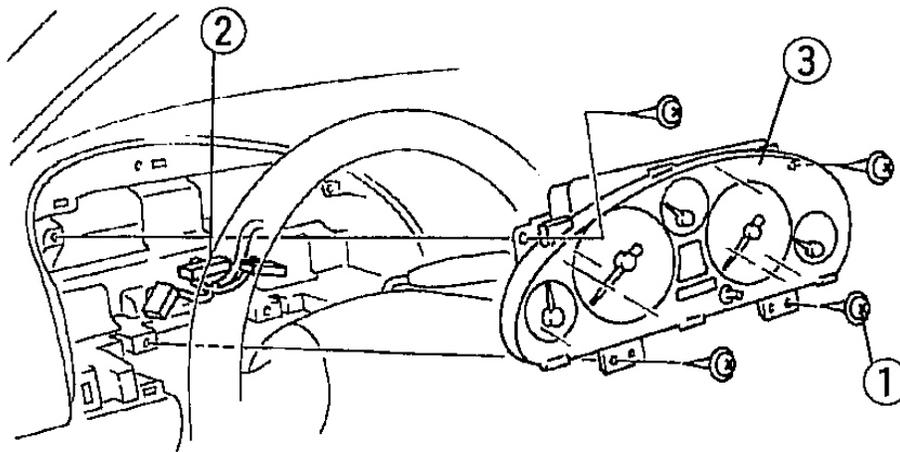
Instrumentation/Driver Info - MX-5 Miata

INSTRUMENT CLUSTER SYSTEM WIRING DIAGRAM

See INSTRUMENT CLUSTER .

INSTRUMENT CLUSTER REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the meter hood. (See METER HOOD REMOVAL/INSTALLATION .)
3. Remove in the order indicated in the table.



1	Screw
2	Connector
3	Instrument cluster

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Fig. 1: Removing Instrument Cluster
 Courtesy of MAZDA MOTORS CORP.

4. Install in the reverse order of removal.

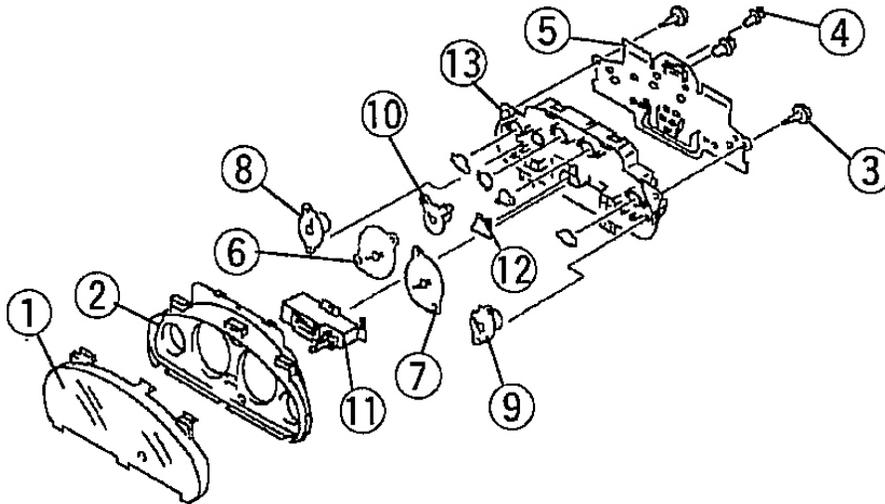
INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY

2005 Mazda MX-5 Miata

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CAUTION: • If the instrument cluster is dropped or damaged, the system will not work properly and it may be the cause of trouble or malfunction.

1. Disassemble in the order indicated in the table.



1	Front glass
2	Window plate
3	Screw
4	Bulb
5	Print plate
6	Tachometer
7	Speedometer
8	Fuel gauge
9	Water temperature gauge
10	Oil pressure gauge
11	Odometer/tripmeter
12	Warning plate
13	Case

Fig. 2: Disassembling Instrument Cluster
 Courtesy of MAZDA MOTORS CORP.

2. Assemble in the reverse order of disassembly.

INSTRUMENT CLUSTER INSPECTION

SPEEDOMETER

1. Remove the speedometer. (See INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.)
2. Measure the resistance between the speedometer terminals using an ohmmeter.
 - If not as specified, replace the speedometer.

(See INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.)

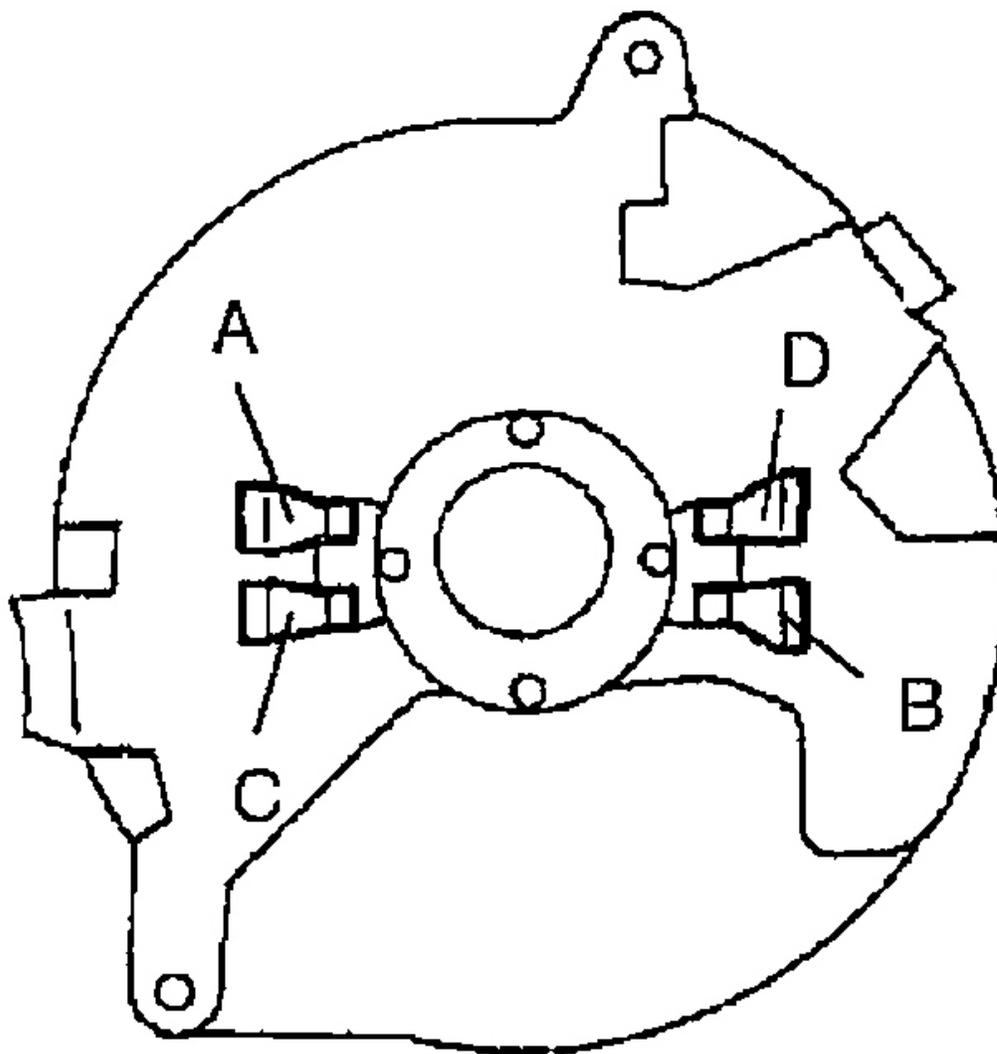
○—W—○ : Resistance

Step	Terminal			
	A	B	C	D
1	○—W—○			: R
2			○—W—○	: R

R: 136—184 Ω

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Fig. 3: Speedometer Terminal Connector Continuity
 Courtesy of MAZDA MOTORS CORP.



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Fig. 4: Identifying Speedometer Terminals
Courtesy of MAZDA MOTORS CORP.

TACHOMETER

1. Remove the tachometer. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)
2. Measure the resistance between the tachometer terminals using an ohmmeter.
 - If not as specified, replace the tachometer.

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(See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)

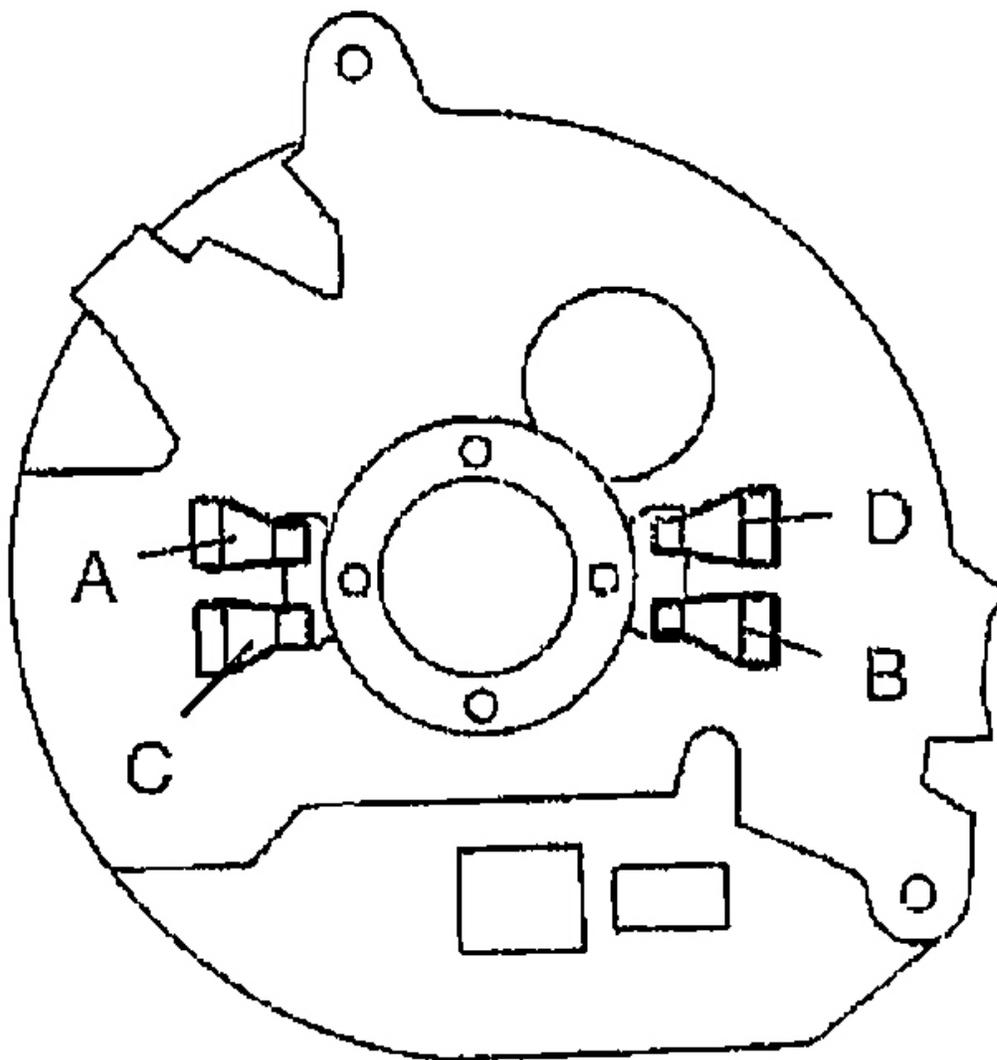
○—W—○ : Resistance

Step	Terminal			
	A	B	C	D
1	○—W—○			: R
2			○—W—○	: R

R: 136—184 Ω

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Fig. 5: Tachometer Terminal Connector Continuity
 Courtesy of MAZDA MOTORS CORP.



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Fig. 6: Identifying Tachometer Terminals
Courtesy of MAZDA MOTORS CORP.

FUEL GAUGE

1. Remove the fuel gauge. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)
2. Measure the resistance between the fuel gauge terminals using an ohmmeter.
 - If not as specified, replace the fuel gauge.

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(See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)

○—W—○ : Resistance

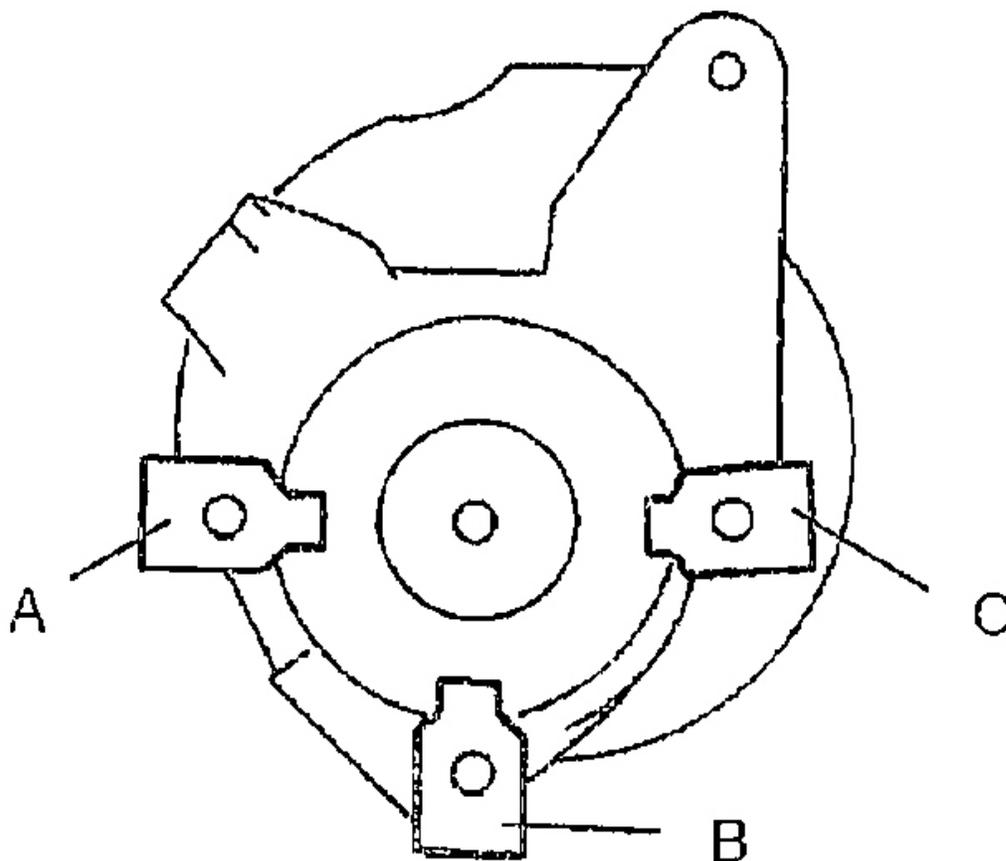
Step	Terminal		
	A	B	C
1	○—W—○		:R ₁
2		○—W—○	:R ₂
3	○—W—○		:R ₃

R₁: 110.7—135.3 Ω R₂: 89.1—108.9 Ω

R₃: 199.8—244.2 Ω

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Fig. 7: Fuel Gauge Terminal Connector Continuity
 Courtesy of MAZDA MOTORS CORP.



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Fig. 8: Identifying Fuel Gauge Terminals
Courtesy of MAZDA MOTORS CORP.

WATER TEMPERATURE GAUGE

1. Remove the water temperature gauge. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)
2. Measure the resistance between the water temperature gauge terminals using an ohmmeter.
 - If not as specified, replace the water temperature gauge. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)

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○—W—○ : Resistance

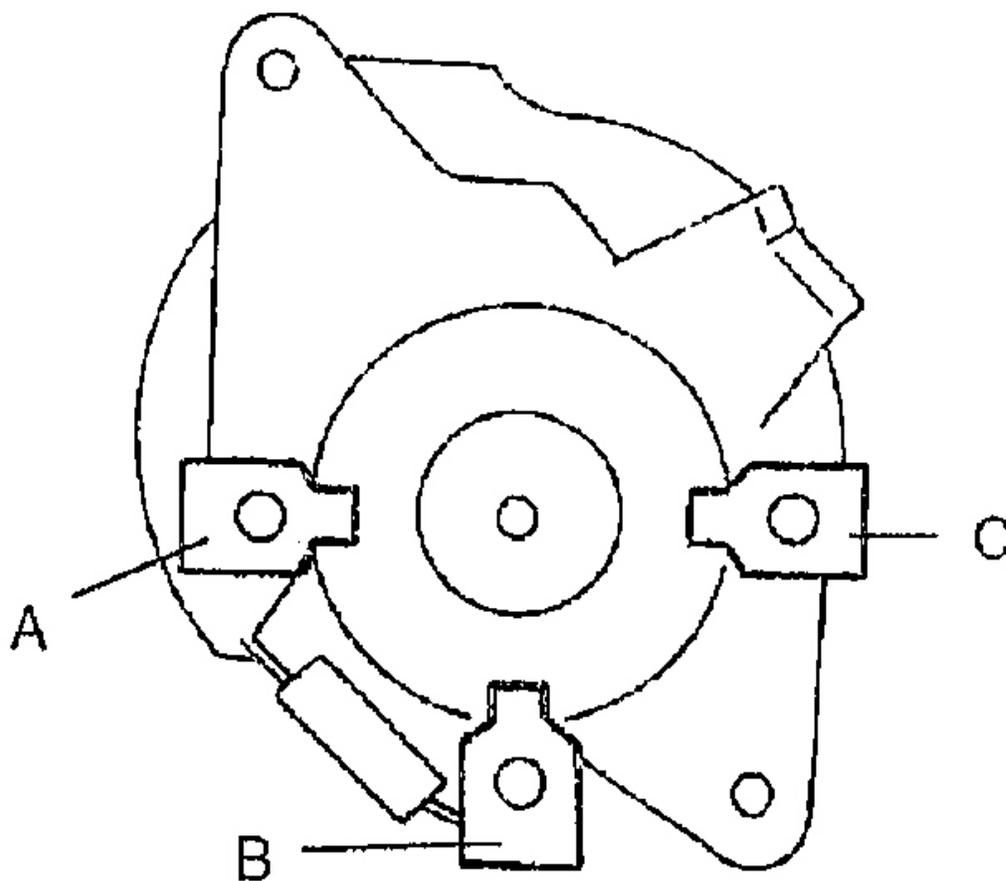
Step	Terminal		
	A	B	C
1	○—W—○		:R ₁
2		○—W—○	:R ₂
3	○—	—W—	—○ :R ₃

R₁: 85.5—94.5 Ω R₂: 247.5—302.5 Ω

R₃: 193.5—236.5 Ω

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Fig. 9: Water Temperature Gauge Terminal Connector Continuity
 Courtesy of MAZDA MOTORS CORP.



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Fig. 10: Identifying Water Temperature Gauge Terminals
Courtesy of MAZDA MOTORS CORP.

OIL PRESSURE GAUGE

1. Remove the oil pressure gauge. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)
2. Measure the resistance between the oil pressure gauge terminals using an ohmmeter.
 - If not as specified, replace the oil pressure gauge. (See **INSTRUMENT CLUSTER DISASSEMBLY/ASSEMBLY.**)

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○—W—○ : Resistance

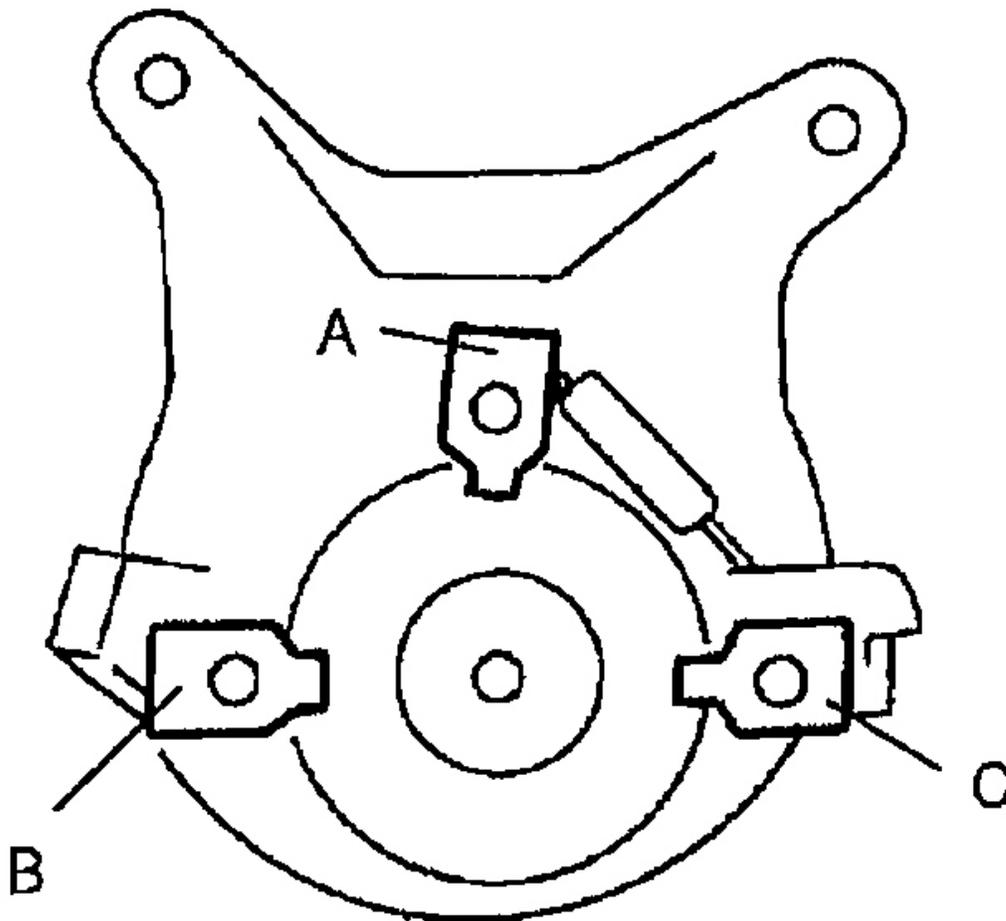
Step	Terminal		
	A	B	C
1	○—W—○		:R ₁
2		○—W—○	:R ₂
3	○—	—W—	○:R ₃

R₁: 89.1—108.9 Ω R₂: 228.6—279.4 Ω

R₃: 139.5—170.5 Ω

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Fig. 11: Oil Pressure Gauge Terminal Connector Continuity
 Courtesy of MAZDA MOTORS CORP.



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Fig. 12: Identifying Oil Pressure Gauge Terminals
 Courtesy of MAZDA MOTORS CORP.

INSTRUMENT CLUSTER INPUT/OUTPUT CHECK MODE

NOTE: • In this mode, it is possible to check the item in the following chart.

DIAGNOSTIC TROUBLE CODE

DTC	Checking item
01	Seat belt switch
04	Door switch

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08	TNS relay
14	Buzzer
31	Key reminder switch

NOTE:

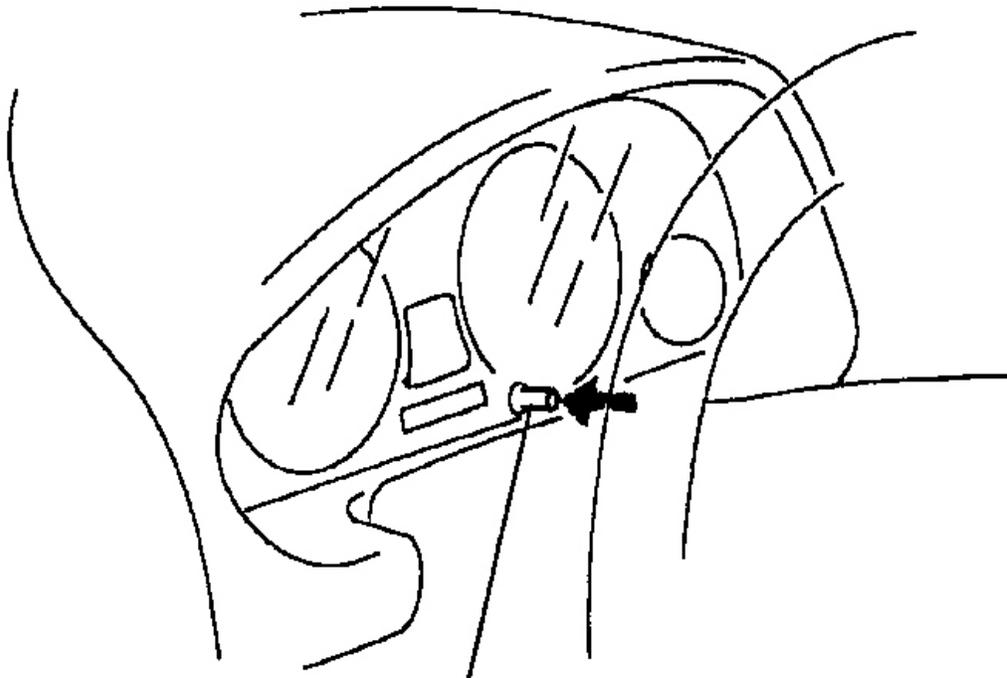
- The DTC switch are not listed may be indicated, but they cannot be inspected.

OPERATING ORDER

NOTE:

- Wait 30 seconds or more have passed after disconnecting the negative battery cable and connect the cable then operate the input/output check mode again after terminating the input/output check mode.

1. Close the all doors.
2. Disconnect the negative battery cable.
3. Open the driver's side door.
4. Connect the negative battery cable.
5. Perform the following procedures within **30 seconds** , after connecting the negative battery cable.
 - a. Turn the ignition switch to the ON position.
 - b. Push the door switch 3 times.
 - c. Push the odometer/tripmeter switch 3 times.



ODOMETER/TRIPMETER SWITCH

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Fig. 13: Identifying Odometer/Tripmeter Switch
Courtesy of MAZDA MOTORS CORP.

CHECKING ORDER

NOTE:

- The DTC are displayed in numerical order. (While performing the inspection, if you want to inspect a DTC whose number is smaller than the code number you are currently inspecting, terminate the check mode then repeat the inspection from the beginning.)
- If rotating the wheels, cancel the input/output check mode.

CHECK CODE 01-14

NOTE:

- The DTC can be fast-forwarded by pushing and holding the odometer/tripmeter switch for 1 second or more.

1. Push the odometer/tripmeter switch and select the DTC.

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2. Inspect each DTC by following the related inspection procedures. (See **INSPECTION OF DIAGNOSTIC TROUBLE CODES (DTC).**)

CHECK CODE 31

1. Turn the ignition switch to the ACC position.
2. Push the odometer/tripmeter switch and select the DTC.
3. Inspect each DTC by following the related inspection procedures. (See **INSPECTION OF DIAGNOSTIC TROUBLE CODES (DTC).**)

CANCEL ORDER

1. Cancel the input/output check mode by turning the ignition switch to the LOCK position then back to the ON position.

NOTE:

- **Cancel the input/output check mode by leaving the instrument cluster in check mode for approximately 45 minutes.**

INSPECTION OF DIAGNOSTIC TROUBLE CODES (DTC)

DTC 01 - DIAGNOSTIC TROUBLE CODES INSPECTION CHART

DTC 01	Seat belt switch on/off signal		
STEP	INSPECTION	INDICATION	ACTION
1	Pull the driver's side seat belt.	on	Check the seat belt switch. Check the wiring harness. (Instrument cluster - seat belt switch)
		oFF	Go to next step.
2	Release the driver's side seat belt.	on	Input signal to instrument cluster is okay.
		oFF	Check the seat belt switch. Check the wiring harness. (Instrument cluster - seat belt switch)

DTC 04 - DIAGNOSTIC TROUBLE CODES INSPECTION CHART

DTC 04	Door switch on/off signal		
STEP	INSPECTION	INDICATION	ACTION
1	Open the driver's side door.	on	Close the driver's side door, then go to next step.
		oFF	Check the door switch. Check the wiring harness. (Instrument cluster - door switch)
2	Open the passenger's side door.	on	Close the passenger's side door, then go to next step.
		oFF	Check the door switch. Check the wiring harness. (Instrument cluster - door switch)
3	Close all doors.	on	Check the door switch. Check the wiring harness. (Instrument cluster - door switch)

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	oFF	Input signal to instrument cluster is okay.
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DTC 08 - DIAGNOSTIC TROUBLE CODES INSPECTION CHART

DTC 08	TNS relay on/off signal		
STEP	INSPECTION	INDICATION	ACTION
1	Turn the headlight switch to TNS position.	on	Go to next step.
		oFF	Check the TNS relay. Check the wiring harness. (Battery - TNS relay - instrument cluster)
2	Turn the headlight switch to OFF.	on	Check the TNS relay. Check the wiring harness. (Battery - TNS relay - instrument cluster)
		oFF	Input signal to instrument cluster is okay.

DTC 14 - DIAGNOSTIC TROUBLE CODES INSPECTION CHART

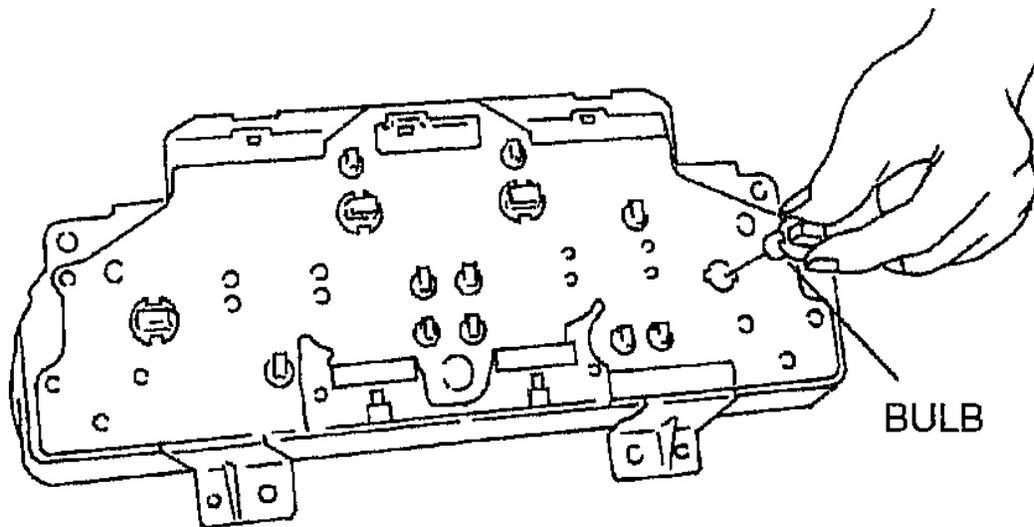
DTC 14	Operation signal to buzzer		
INSPECTION	INDICATION	SITUATION	ACTION
Wait for 2 seconds after selecting DTC 14.	(No indication)	Buzzer continuously sounds.	Buzzer is okay.
		Buzzer does not continuously sound.	Replace the odometer/tripmeter.

DTC 31 - DIAGNOSTIC TROUBLE CODES INSPECTION CHART

DTC 31	Key reminder switch on/off, signal		
STEP	INSPECTION	INDICATION	ACTION
1	Insert the key into steering lock.	on	Go to next step.
		oFF	Check the key reminder switch. Check the wiring harness. (Battery - key reminder switch - instrument cluster)
2	Remove the key from steering lock.	on	Check the key reminder switch. Check the wiring harness. (Battery - key reminder switch - instrument cluster)
		oFF	Input signal to instrument cluster is okay.

WARNING AND INDICATOR LIGHT BULB REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the instrument cluster. (See **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.



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Fig. 14: Removing Warning And Indicator Light Bulb
Courtesy of MAZDA MOTORS CORP.

FUEL GAUGE SENDER UNIT INSPECTION

1. Remove the fuel pump. (See **FUEL PUMP (FP) REMOVAL/INSTALLATION [BP, BP WITH TC]** .)
2. Move the float to the topmost and bottommost positions, and verify that the resistance between terminals A and B of the unit and the position of the float are as indicated in the figure.
 - If they are not as indicated, replace the fuel gauge sender unit. (See **FUEL PUMP (FP) REMOVAL/INSTALLATION [BP, BP WITH TC]** .)

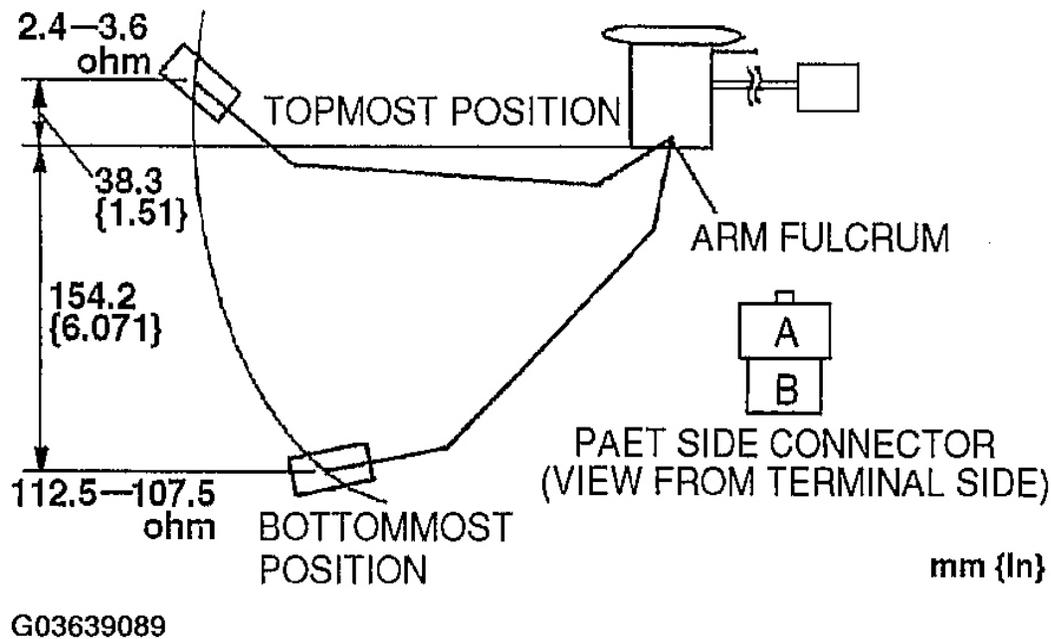


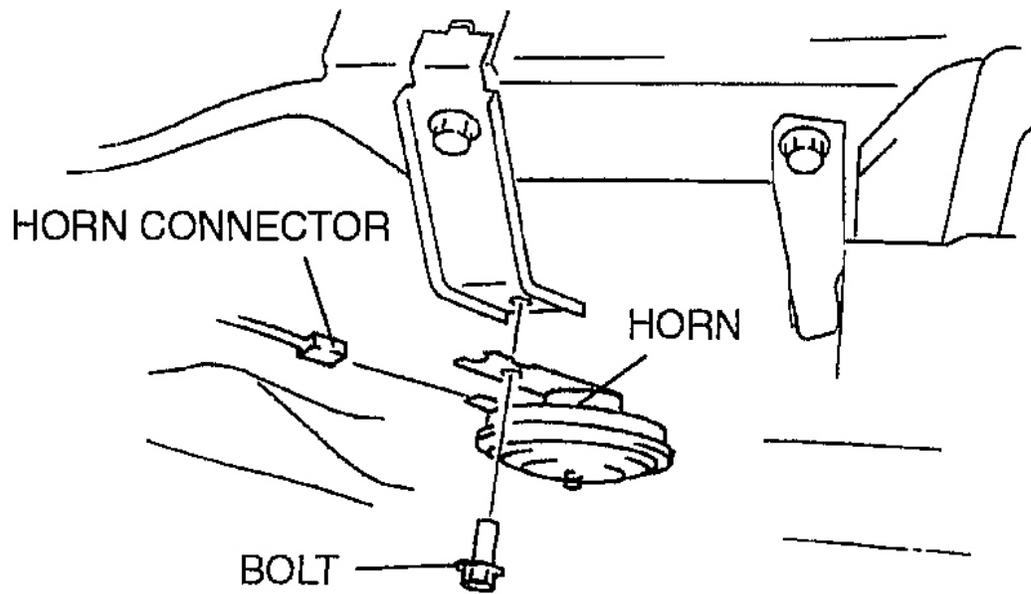
Fig. 15: Inspecting Fuel Gauge Sender Unit
 Courtesy of MAZDA MOTORS CORP.

OIL PRESSURE SWITCH INSPECTION

1. Verify that the oil pressure gauge needle moves to H when the engine is started.
2. Verify that the oil pressure gauge needle moves to L when the engine is stopped.
 - If the oil pressure gauge needle does not move, inspect the oil pressure gauge and related wiring harness.
 - If the oil pressure gauge and related wiring harness are normal, inspect the oil pressure. (See **OIL PRESSURE INSPECTION** .)
 - If the oil pressure is normal, replace the oil pressure switch. (See **OIL PRESSURE INSPECTION** .)

HORN REMOVAL/INSTALLATION

1. Disconnect the negative battery cable.
2. Remove the upper seal board.
3. Disconnect the horn connector.
4. Remove the bolt.
5. Remove the horn.



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Fig. 16: Removing Horn
Courtesy of MAZDA MOTORS CORP.

6. Install in the reverse order of removal.