

FUEL

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FUEL SYSTEM <6G72-24 Valve Engine, 6G74 Engine>

GENERAL

OUTLINE OF CHANGES

The maintenance service points below have been established to correspond to the following changes.

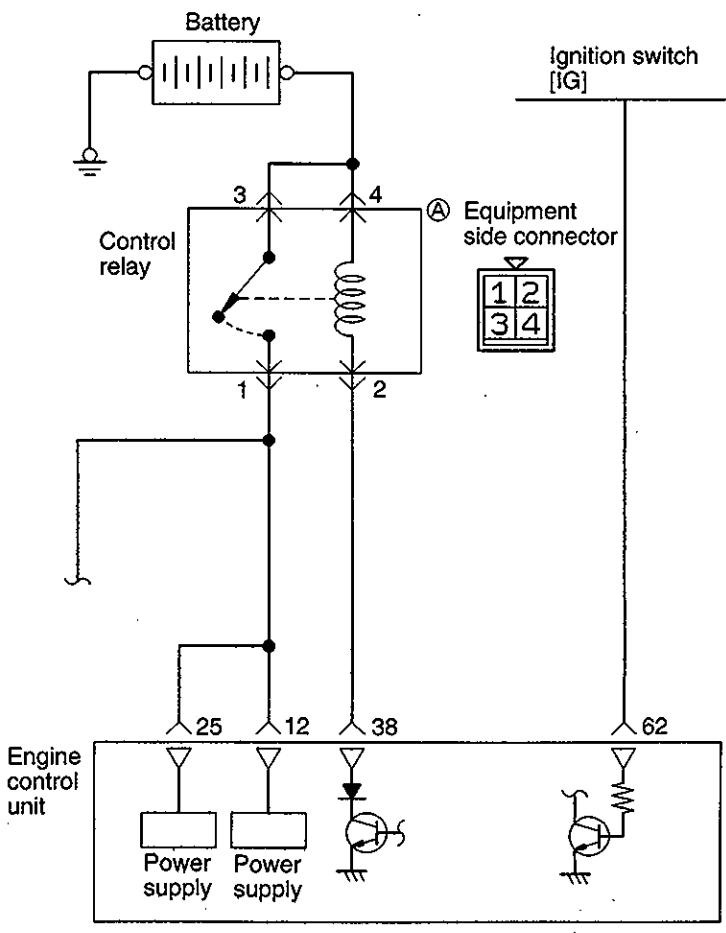
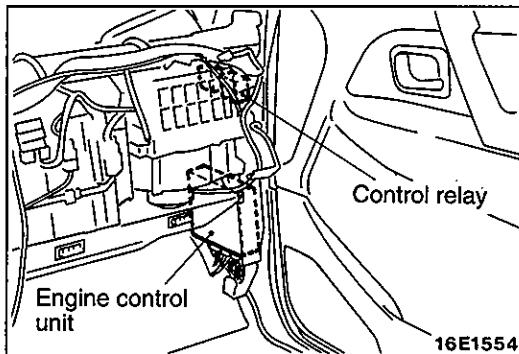
- Changes in the engine-ECU
- Separation of the engine control relay and fuel pump control relay which were previously integrated

GENERAL INFORMATION

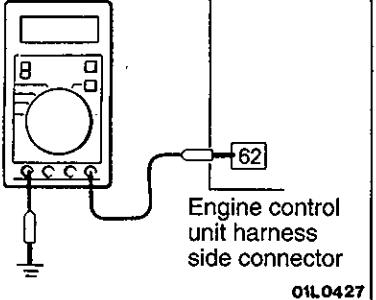
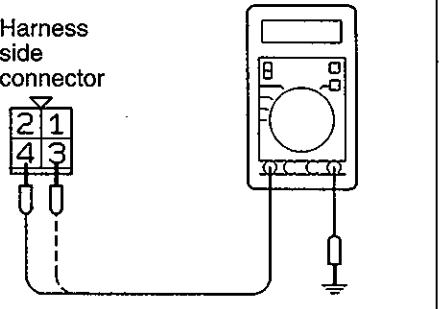
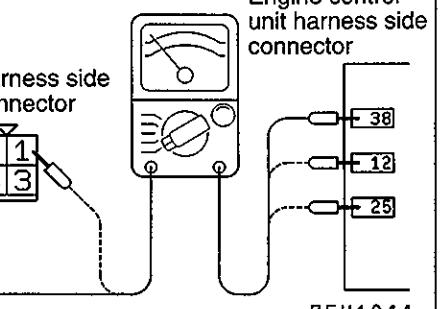
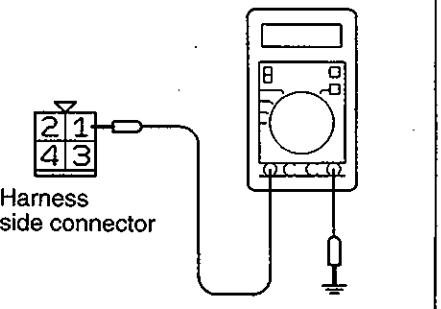
Items		Specifications	
Engine ECU	Identification model No.	SOHC	E2T37498 E2T37499 <Vehicles with immobilizer system>
		DOHC	E2T39987 E2T39988 <Vehicles with immobilizer system>

ON-VEHICLE INSPECTION OF MPI COMPONENTS

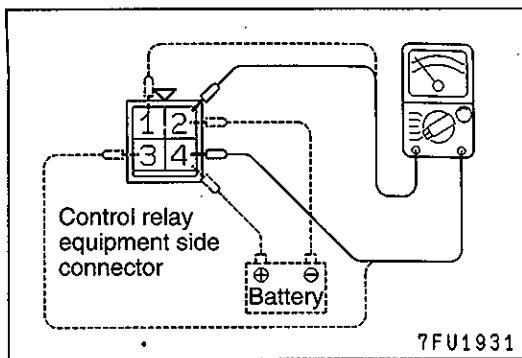
POWER SUPPLY (Control relay) AND IGNITION SWITCH-IG



HARNESS INSPECTION

1  <p>Engine control unit harness side connector 01L0427</p>	<p>Measure the ignition switch (IG) terminal input voltage</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected <table border="1" data-bbox="644 328 1085 452"> <thead> <tr> <th>Ignition switch</th> <th>Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>0 – 1</td> </tr> <tr> <td>ON</td> <td>SV</td> </tr> </tbody> </table>	Ignition switch	Voltage (V)	OFF	0 – 1	ON	SV	 → 2  → Repair the harness. (Ignition switch – 62) or check the ignition switch
Ignition switch	Voltage (V)							
OFF	0 – 1							
ON	SV							
2  <p>Harness side connector Ⓐ connector 2 1 4 3</p> <p>7FU1928</p>	<p>Measure the power supply voltage of the control relay.</p> <ul style="list-style-type: none"> • Ignition switch: OFF • Control relay connector: Disconnected <table border="1" data-bbox="644 740 1085 822"> <thead> <tr> <th>Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>SV</td> </tr> </tbody> </table>	Voltage (V)	SV	 → 3  → Repair the harness. (Battery – Ⓐ 3, Ⓐ 4)				
Voltage (V)								
SV								
3  <p>Engine control unit harness side connector 7FU1944</p> <p>Harness side connector Ⓐ connector 2 1 4 3</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the engine control unit and the control relay.</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected • Control relay connector: Disconnected 	 → 4  → Repair the harness. (Ⓐ 2 ~ 38) (Ⓐ 1 ~ 12, 25)						
4  <p>Control relay connector Connected</p> <p>Engine control unit connector Connected</p> <p>7FU1930</p> <p>Ⓐ Harness side connector 2 1 4 3</p>	<p>Measure power voltage to the actuator.</p> <ul style="list-style-type: none"> • Control relay connector: Connected • Engine control unit connector: Connected <table border="1" data-bbox="644 1490 1085 1613"> <thead> <tr> <th>Engine</th> <th>Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>Cranking</td> <td>8V oder higher</td> </tr> <tr> <td>Racing</td> <td>SV</td> </tr> </tbody> </table>	Engine	Voltage (V)	Cranking	8V oder higher	Racing	SV	 → STOP  → Replace the control relay or defective engine control unit
Engine	Voltage (V)							
Cranking	8V oder higher							
Racing	SV							

CONTROL RELAY INSPECTION

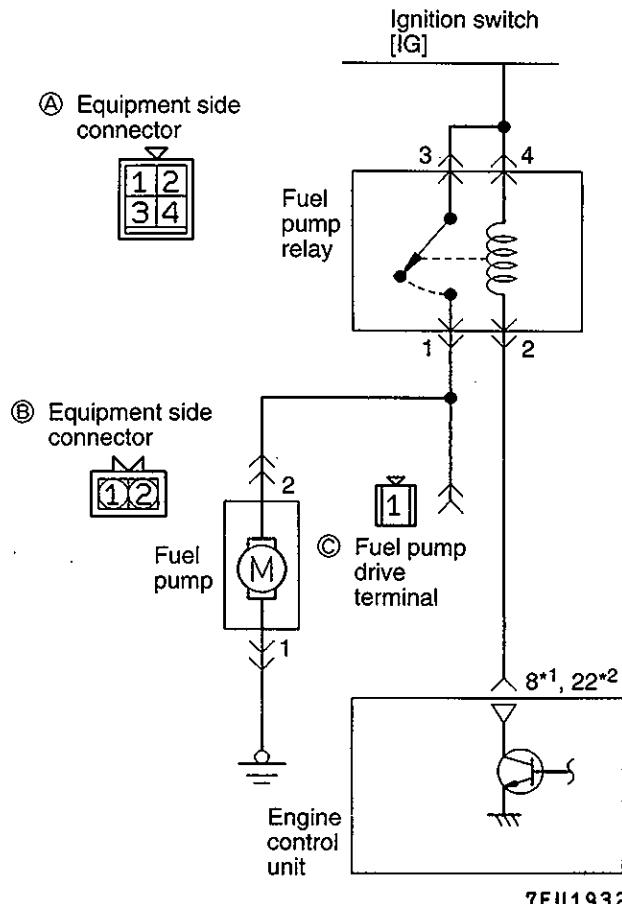
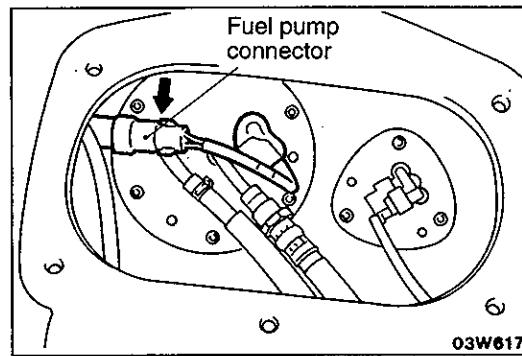
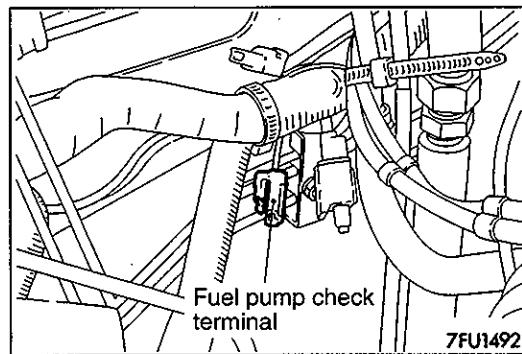
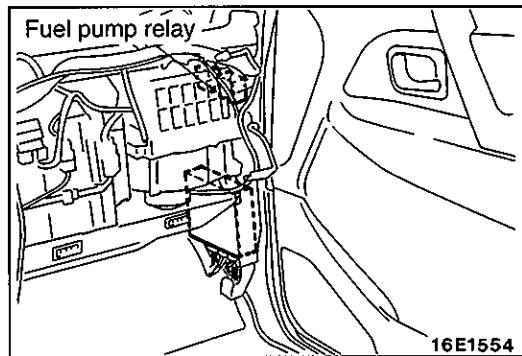


(1) Disconnect the control relay.

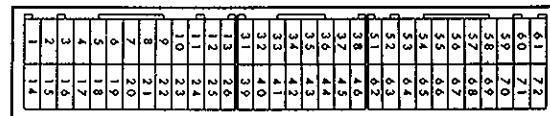
Battery voltage	Terminal No.			
	1	2	3	4
Not supplied		○		○
Supplied	○		○	○

(2) Replace the control relay if faulty.

FUEL PUMP



Engine control unit connector

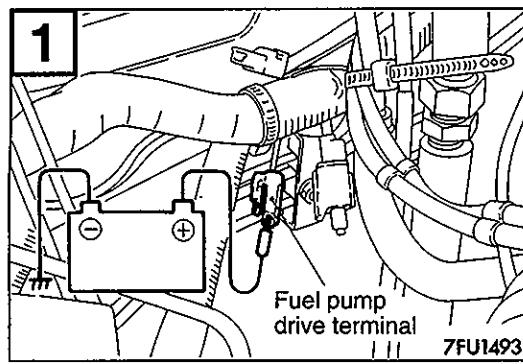
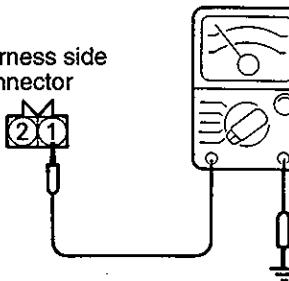
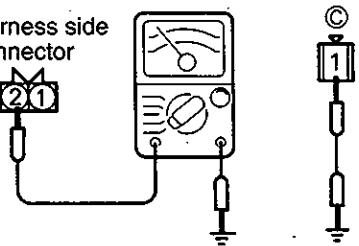
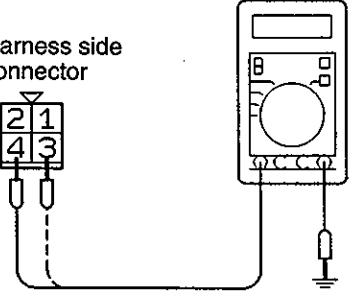
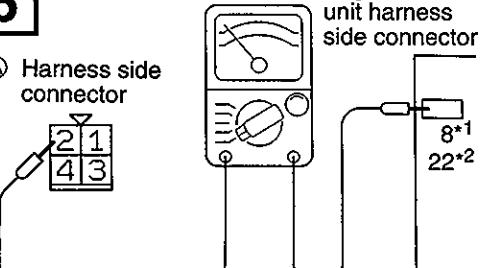


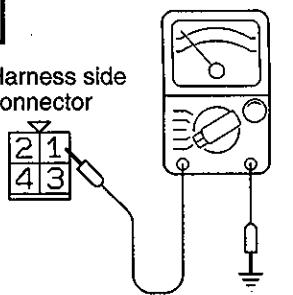
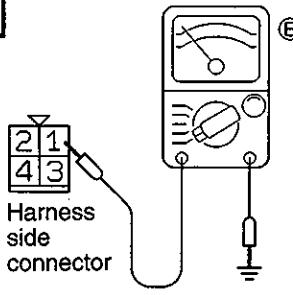
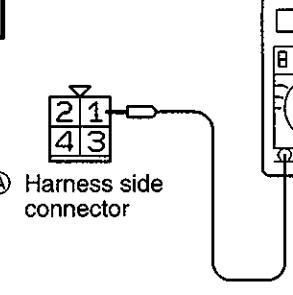
NOTE

*¹ : Vehicle without immobilizer system

*² : Vehicles with immobilizer system

HARNESS INSPECTION

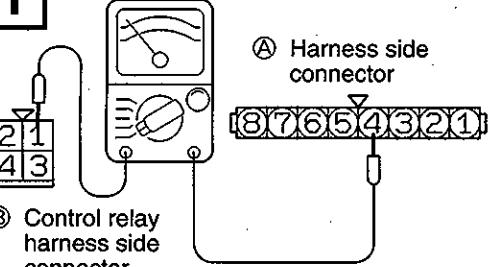
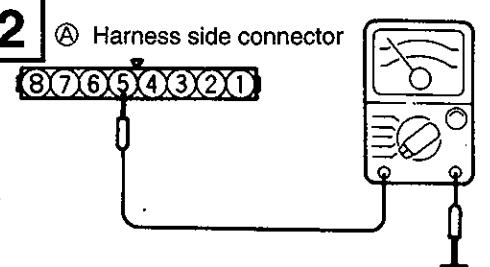
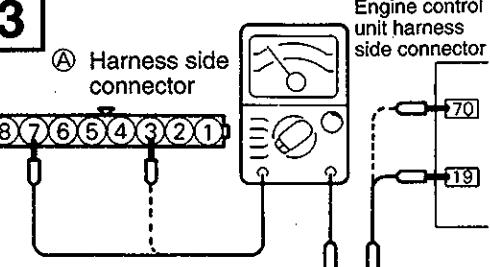
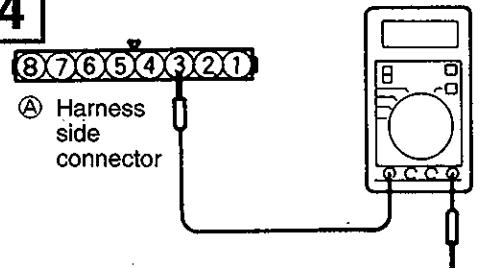
1  <p>Fuel pump drive terminal 7FU1493</p>	<p>Check the fuel pump</p> <ul style="list-style-type: none"> • Apply battery voltage to the fuel pump drive terminal and operate the pump 	 → 4  → 2						
2  <p>⑧ Harness side connector 2-1 1FU0521</p>	<p>Check for continuity of the fuel pump earthing line.</p> <ul style="list-style-type: none"> • Fuel pump connector: Disconnected 	 → 3  → Repair the harness. (⑧ 1 – Earth)						
3  <p>⑧ Harness side connector 2-1 1FU0522</p>	<p>Check for open-circuit or short-circuit between the fuel pump and the fuel pump drive terminal.</p> <ul style="list-style-type: none"> • Fuel pump connector: Disconnected • Fuel pump relay connector: Disconnected 	 → 4  → Repair the harness. (⑧ 2 – C 1)						
4  <p>⑧ Harness side connector 2-1 4-3 7FU1928</p>	<p>Measure the power supply voltage of the fuel pump relay.</p> <ul style="list-style-type: none"> • Fuel pump relay connector: Disconnected <table border="1"> <thead> <tr> <th>Ignition switch</th> <th>Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>OFF</td> <td>0 – 1</td> </tr> <tr> <td>ON</td> <td>SV</td> </tr> </tbody> </table>	Ignition switch	Voltage (V)	OFF	0 – 1	ON	SV	 → 5  → Repair the harness. (Ignition switch – ⑧ 3 4) or check for ignition switch.
Ignition switch	Voltage (V)							
OFF	0 – 1							
ON	SV							
5  <p>⑧ Harness side connector 2-1 4-3 8*1 22*2 7FU1945</p>	<p>Check for an open-circuit, or a short-circuit to earth between the fuel pump relay and the engine control unit.</p> <ul style="list-style-type: none"> • Fuel pump relay connector: Disconnected • Engine control unit connector: Disconnected 	 → 6  → Repair the harness. (⑧ 2 – 8)*1 (⑧ 2 – 22)*2						

<p>6</p> <p>Ⓐ Harness side connector</p>  <p>7FU1934</p>	<p>Check for continuity between the fuel pump drive terminal and the fuel pump relay.</p> <ul style="list-style-type: none"> • Fuel pump relay connector: Disconnected • Fuel pump connector: Disconnected 	<p>OK → 7</p> <p>OK → Repair the harness. (Ⓐ 1 – Ⓑ 1)</p>						
<p>7</p> <p>Ⓐ Harness side connector</p>  <p>7FU1935</p>	<p>Check for an open-circuit, or a short-circuit to earth between the fuel pump relay and the fuel pump.</p> <ul style="list-style-type: none"> • Fuel pump relay connector: Disconnected • Fuel pump connector: Disconnected 	<p>OK → 8</p> <p>OK → Repair the harness. (Ⓐ 1 – Ⓑ 2)</p>						
<p>8</p> <p>Ⓐ Harness side connector</p>  <p>7FU1930</p>	<p>Measure the power supply voltage of the fuel pump.</p> <ul style="list-style-type: none"> • Fuel pump relay connector: Connected • Engine control unit connector: Connected <table border="1"> <thead> <tr> <th>Engine</th> <th>Voltage (V)</th> </tr> </thead> <tbody> <tr> <td>Cranking</td> <td>8V or more</td> </tr> <tr> <td>Racing</td> <td>SV</td> </tr> </tbody> </table>	Engine	Voltage (V)	Cranking	8V or more	Racing	SV	<p>OK → STOP</p> <p>OK → Fuel pump relay or engine control unit is defective.</p>
Engine	Voltage (V)							
Cranking	8V or more							
Racing	SV							

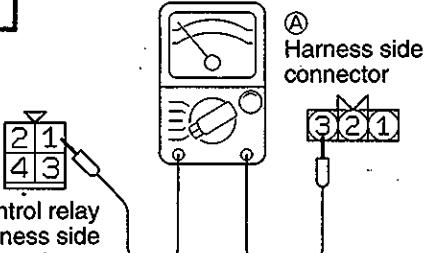
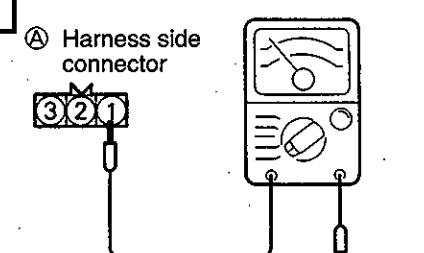
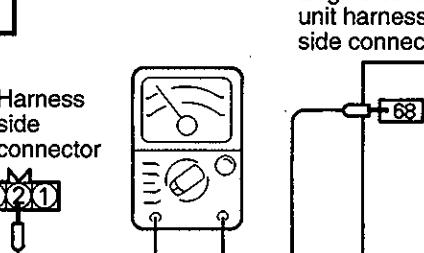
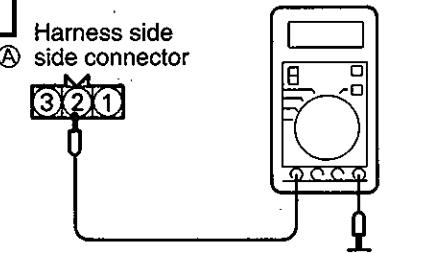
FUEL PUMP RELAY INSPECTION

Refer to P.13-4.

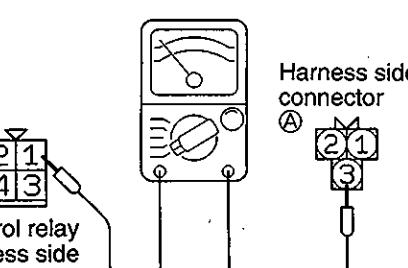
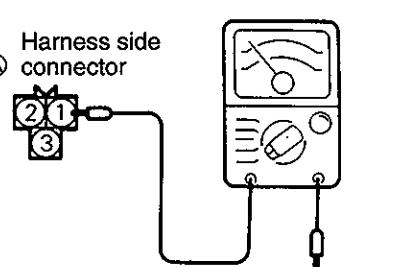
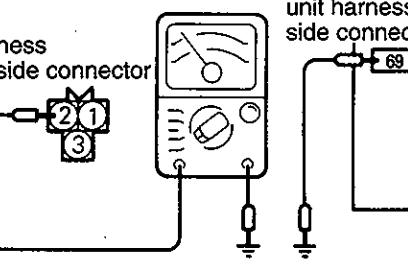
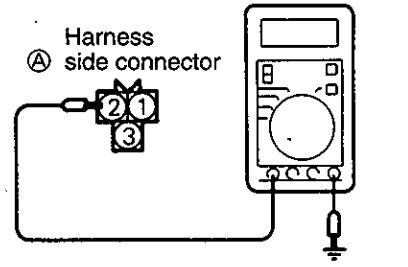
AIR FLOW SENSOR HARNESS INSPECTION

<p>1</p>  <p>Ⓐ Harness side connector Ⓑ Control relay harness side connector</p> <p>7FU1946</p>	<p>Check the continuity between the air flow sensor and the control relay.</p> <ul style="list-style-type: none"> Control relay connector: Disconnected Air flow sensor connector: Disconnected <p>NOTE Touch the circuit tester probes to both ends of the harness.</p> <p>OK → 2</p> <p>OK → Repair the harness. (Ⓐ [4] – Ⓑ [1])</p>		
<p>2</p>  <p>Ⓐ Harness side connector</p> <p>7FU0657</p>	<p>Check for continuity of the earth circuit.</p> <ul style="list-style-type: none"> Connector: Disconnected <p>OK → 3</p> <p>OK → Repair the harness. (Ⓐ [5] – [72])</p>		
<p>3</p>  <p>Ⓐ Harness side connector Engine control unit harness side connector</p> <p>7FU1222</p>	<p>Check for open-circuit or short-circuit between the air flow sensor and the engine control unit.</p> <ul style="list-style-type: none"> Air flow sensor connector: Disconnected Engine control unit connector: Disconnected <p>OK → 4</p> <p>OK → Repair the harness. (Ⓐ [3] – [70]) (Ⓐ [7] – [19])</p>		
<p>4</p>  <p>Ⓐ Harness side connector</p> <p>7FU0656</p>	<p>Measure the applied voltage.</p> <ul style="list-style-type: none"> Air flow sensor connector: Disconnected Engine control unit connector: Connected Ignition switch: ON <table border="1"> <tr> <td>Voltage (V)</td> </tr> <tr> <td>4.8 – 5.2</td> </tr> </table> <p>OK → STOP</p> <p>OK → Replace the engine control unit.</p>	Voltage (V)	4.8 – 5.2
Voltage (V)			
4.8 – 5.2			

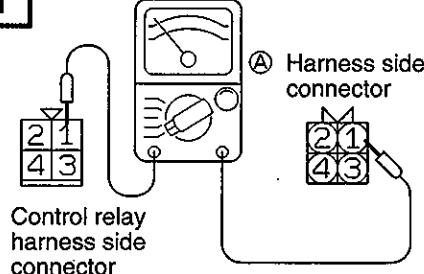
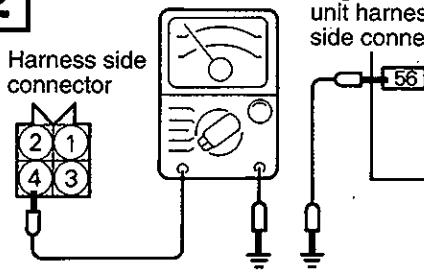
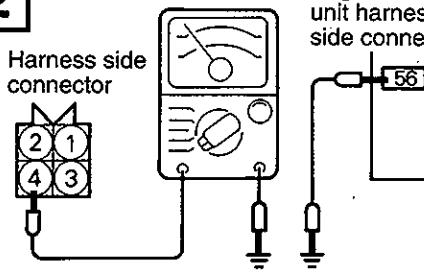
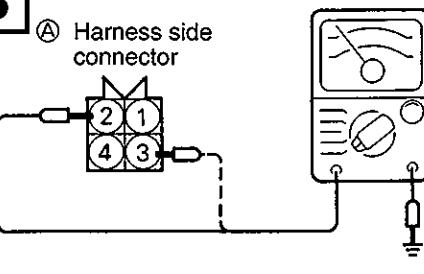
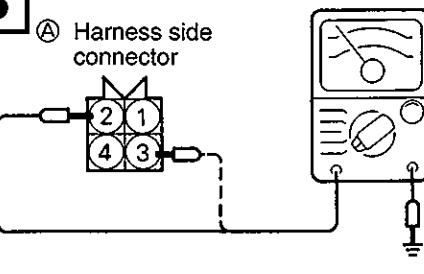
**CAM POSITION SENSOR
HARNESS INSPECTION**

<p>1</p>  <p>Ⓐ Harness side connector Ⓑ Control relay harness side connector</p> <p>7FU1947</p>	<p>Check for continuity between the cam position sensor and control relay.</p> <ul style="list-style-type: none"> • Cam position sensor connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch ohmmeter probes to both ends of the harness.</p>	<p>OK → 2</p> <p>✗ → Repair the harness. (Ⓐ 3 – Ⓑ 1)</p>		
<p>2</p>  <p>Ⓐ Harness side connector</p> <p>6AF0057</p>	<p>Check for continuity of the earth circuit.</p> <ul style="list-style-type: none"> • Cam position sensor connector: Disconnected 	<p>OK → 3</p> <p>✗ → Repair the harness. (Ⓐ 1 – Earth)</p>		
<p>3</p>  <p>Ⓐ Harness side connector</p> <p>6AF0058</p>	<p>Check for an open-circuit, or a short-circuit to earth between the cam position sensor and the engine control unit.</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected • Cam position sensor connector: Disconnected 	<p>OK → 4</p> <p>✗ → Repair the harness. (Ⓐ 2 – 68)</p>		
<p>4</p>  <p>Ⓐ Harness side connector</p> <p>6AF0059</p>	<p>Measure the impressed voltage</p> <ul style="list-style-type: none"> • Cam position sensor connector: Disconnected • Engine control unit connector: Connected • Ignition switch: ON <table border="1" data-bbox="652 1580 1109 1685"> <tr> <td>Voltage (V)</td> </tr> <tr> <td>4.8 – 5.2</td> </tr> </table>	Voltage (V)	4.8 – 5.2	<p>OK → STOP</p> <p>✗ → Replace the engine control unit.</p>
Voltage (V)				
4.8 – 5.2				

CRANK ANGLE SENSOR HARNESS INSPECTION

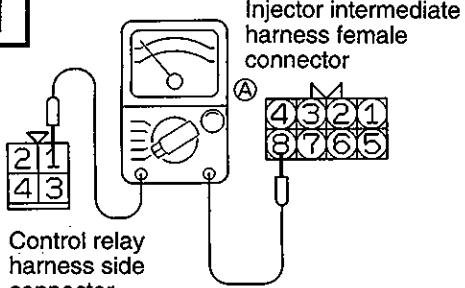
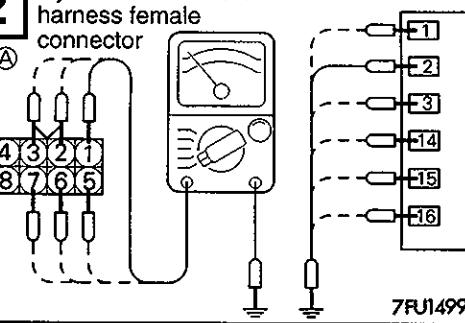
1  Control relay harness side connector Harness side connector A 7FU1948	<p>Check for continuity between the crank angle sensor and the control relay.</p> <ul style="list-style-type: none"> • Crank angle sensor connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch ohmmeter probes to both ends of the harness</p>	 → 2  → Repair the harness. (A [3] – B [1])		
2  Harness side connector A 6AF0062	<p>Check for continuity of the earth circuit.</p> <ul style="list-style-type: none"> • Crank angle sensor connector: Disconnected 	 → 3  → Repair the harness. (A [1] – Earth)		
3  Harness side connector A Engine control unit harness side connector (69) 6AF0063	<p>Check for an open-circuit, or a short-circuit to earth between the crank angle sensor and the engine control unit.</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected • Crank angle sensor connector: Disconnected 	 → 4  → Repair the harness. (A [2] – [69])		
4  Harness side connector A 6AF0064	<p>Measure the impressed voltage.</p> <ul style="list-style-type: none"> • Crank angle sensor connector: Disconnected • Engine control unit connector: Connected • Ignition switch: ON <table border="1" data-bbox="644 1572 1101 1655"> <tr> <td>Voltage (V)</td> </tr> <tr> <td>4.8 – 5.2</td> </tr> </table>	Voltage (V)	4.8 – 5.2	 → STOP  → Replace the engine control unit.
Voltage (V)				
4.8 – 5.2				

**OXYGEN SENSOR
HARNESS INSPECTION**

<p>1</p>  <p>② Control relay harness side connector</p> <p>③ Harness side connector</p> <p>7FU1949</p>	<p>Check for continuity between the oxygen sensor and the control relay.</p> <ul style="list-style-type: none"> • Control relay connector: Disconnected • Oxygen sensor connector: Disconnected <p>NOTE Touch the ohmmeter probes to both ends of the harness.</p>	 <p>2</p>  <p>④ Harness side connector</p> <p>⑤ Engine control unit harness side connector</p> <p>7FU1132</p>
<p>2</p>  <p>④ Harness side connector</p> <p>⑤ Engine control unit harness side connector</p> <p>7FU1132</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the engine control unit and the oxygen sensor.</p> <ul style="list-style-type: none"> • Oxygen sensor connector: Disconnected • Engine control unit connector: Disconnected 	 <p>3</p>  <p>⑥ Harness side connector</p> <p>7FU1133</p>
<p>3</p>  <p>⑥ Harness side connector</p> <p>7FU1133</p>	<p>Check for continuity of the earth circuit.</p> <ul style="list-style-type: none"> • Oxygen sensor connector: Disconnected • Engine control unit connector: Disconnected 	 <p>STOP</p>  <p>Repair the harness. (⑥ 2 – 72) (⑥ 3 – Earth)</p>

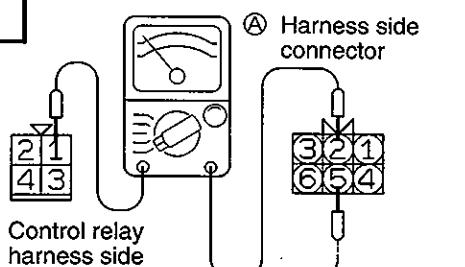
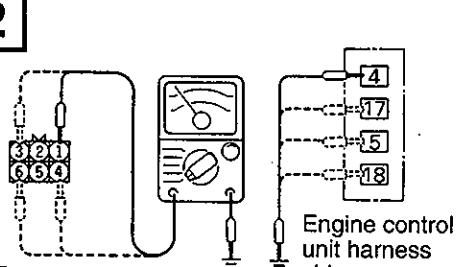
INJECTORS

HARNESS INSPECTION

<p>1</p>  <p>Injector intermediate harness female connector</p> <p>④ 43 21 67 65</p> <p>⑤ Control relay harness side connector</p> <p>7FU1950</p>	<p>Check for continuity between the injectors and the control relay.</p> <ul style="list-style-type: none"> • Injector intermediate connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch the ohmmeter probes to both ends of the harness.</p>	<p>OK → 2</p> <p>OKX → Repair the harness. (④ 6) – (⑤ 1)</p>
<p>2</p>  <p>Injector intermediate harness female connector</p> <p>④ 43 21 67 65</p> <p>⑤ Control relay harness side connector</p> <p>7FU1499</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the engine control unit and the injector.</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected • Injector intermediate connector: Disconnected 	<p>OK → STOP</p> <p>OKX → Repair the harness. (④ 1 – 2) (④ 2 – 14) (④ 3 – 1) (④ 5 – 16) (④ 6 – 3) (④ 7 – 15)</p>

IDLE SPEED CONTROL SERVO (STEPPER MOTOR TYPE)

HARNESS INSPECTION

<p>1</p>  <p>④ Harness side connector</p> <p>⑤ Control relay harness side connector</p> <p>7FU1951</p>	<p>Check for continuity between the idle speed control servo and the control relay.</p> <ul style="list-style-type: none"> • Idle speed control servo connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch the ohmmeter probes to both ends of the harness.</p>	<p>OK → 2</p> <p>OKX → Repair the harness. (④ 2 – 5) – (⑤ 1)</p>
<p>2</p>  <p>④ Harness side connector</p> <p>⑤ Engine control unit harness side connector</p> <p>010397</p>	<p>Check for an open-circuit, or a short-circuit to earth between the engine control unit and the idle speed control servo.</p> <ul style="list-style-type: none"> • Engine control unit connector: Disconnected • Idle speed control servo connector: Disconnected 	<p>OK → STOP</p> <p>OKX → Repair the harness. (④ 1 – 4) (④ 3 – 17) (④ 4 – 5) (④ 6 – 18)</p>

**VARIABLE INDUCTION CONTROL SOLENOID VALVE <DOHC>
HARNESS INSPECTION**

<p>1</p> <p>Control relay harness side connector</p> <p>Control relay side connector</p> <p>7FU1952</p>	<p>Check for continuity between variable induction control solenoid valve and control relay.</p> <ul style="list-style-type: none"> • Variable induction control solenoid valve connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch the ohmmeter probes to both ends of the harness.</p>	<p>OK → 2</p> <p>OK → Repair the harness. (A 1 – B 1)</p>
<p>2</p> <p>Engine control unit harness side connector</p> <p>9FU0040</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the variable induction control solenoid valve and the engine control unit.</p> <ul style="list-style-type: none"> • Variable induction control solenoid valve connector: Disconnected • Engine control unit connector: Disconnected 	<p>OK → STOP</p> <p>OK → Repair the harness. (A 1 – 6)</p>

**PURGE CONTROL SOLENOID VALVE
HARNESS INSPECTION**

<p>1</p> <p>Control relay harness side connector</p> <p>Control relay side connector</p> <p>7FU2034</p>	<p>Check for continuity between the purge control solenoid valve and the control relay.</p> <ul style="list-style-type: none"> • Purge control solenoid valve connector: Disconnected • Control relay connector: Disconnected <p>NOTE Touch the ohmmeter probes to both ends of the harness.</p>	<p>OK → 2</p> <p>OK → Repair the harness. (A 1 – B 1)</p>
<p>2</p> <p>Engine control unit harness side connector</p> <p>7FU0526</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the purge control solenoid valve and the engine control unit.</p> <ul style="list-style-type: none"> • Purge control solenoid valve connector: Disconnected • Engine control unit connector: Disconnected 	<p>OK → STOP</p> <p>OK → Repair the harness. (A 1 – 9)</p>

EGR CONTROL SOLENOID VALVE

HARNESS INSPECTION

<p>1</p> <p>④ Harness side connector</p> <p>⑤ Harness side connector</p> <p>7FU2035</p>	<p>Check for continuity between EGR control solenoid valve and control relay</p> <ul style="list-style-type: none"> • EGR control solenoid valve connector: Disconnected • Control relay connector: Disconnected <p>NOTE. Touch the ohmmeter probes to both ends of the harness</p>	<p>OK → 2</p> <p>OK → Repair the harness. (④ 21 – ⑤ 21)</p>
<p>2</p> <p>④ Harness side connector</p> <p>⑤ Engine control unit harness side connector</p> <p>01A0825</p>	<p>Check for an open-circuit, or a short-circuit to earth, between the EGR control solenoid valve and the engine control unit.</p> <ul style="list-style-type: none"> • EGR control solenoid valve connector: Disconnected • Engine control unit connector: Disconnected 	<p>OK → STOP</p> <p>OK → Repair the harness. (④ 21 – 54)</p>