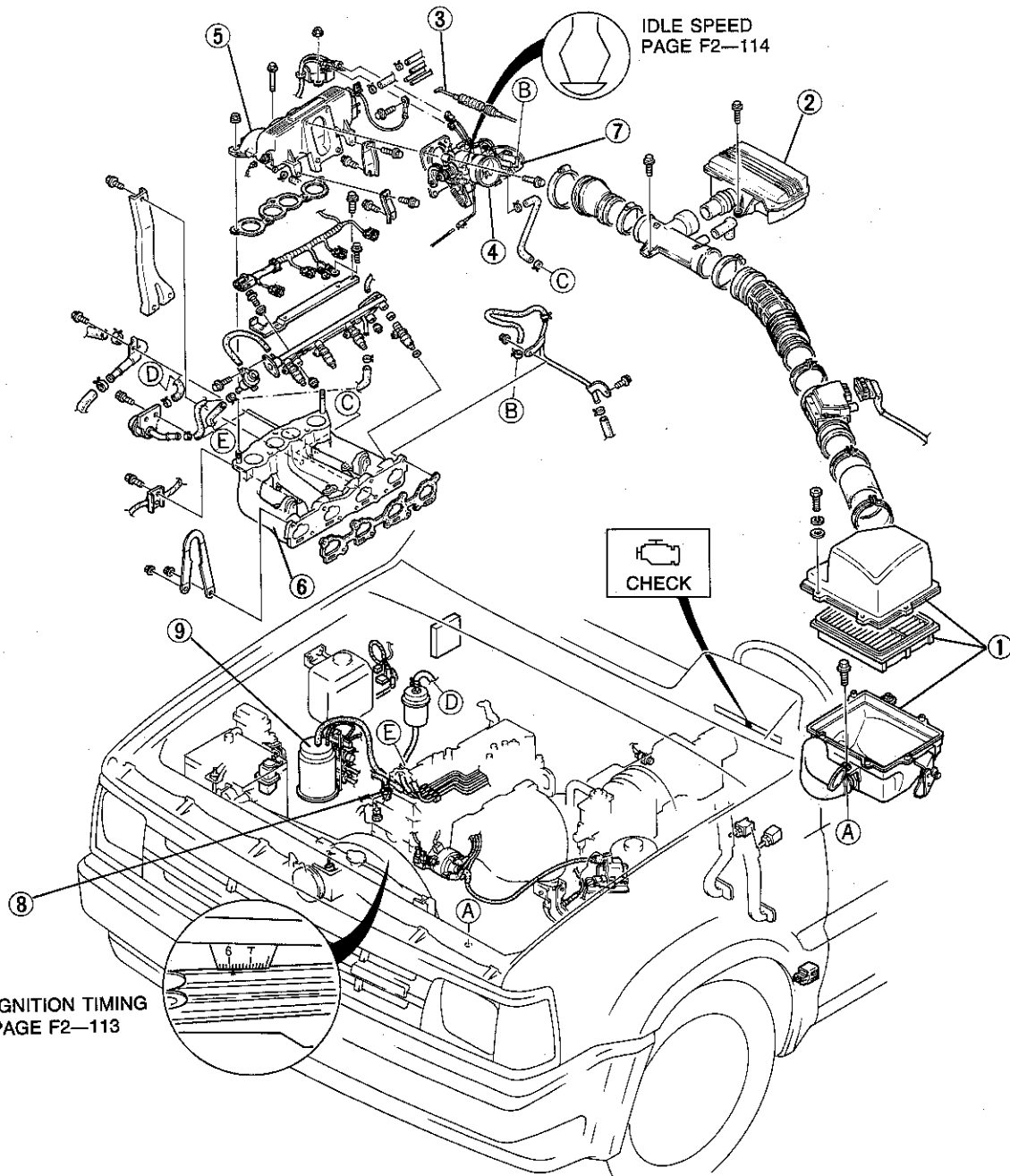


FUEL AND EMISSION CONTROL SYSTEMS (EGI)

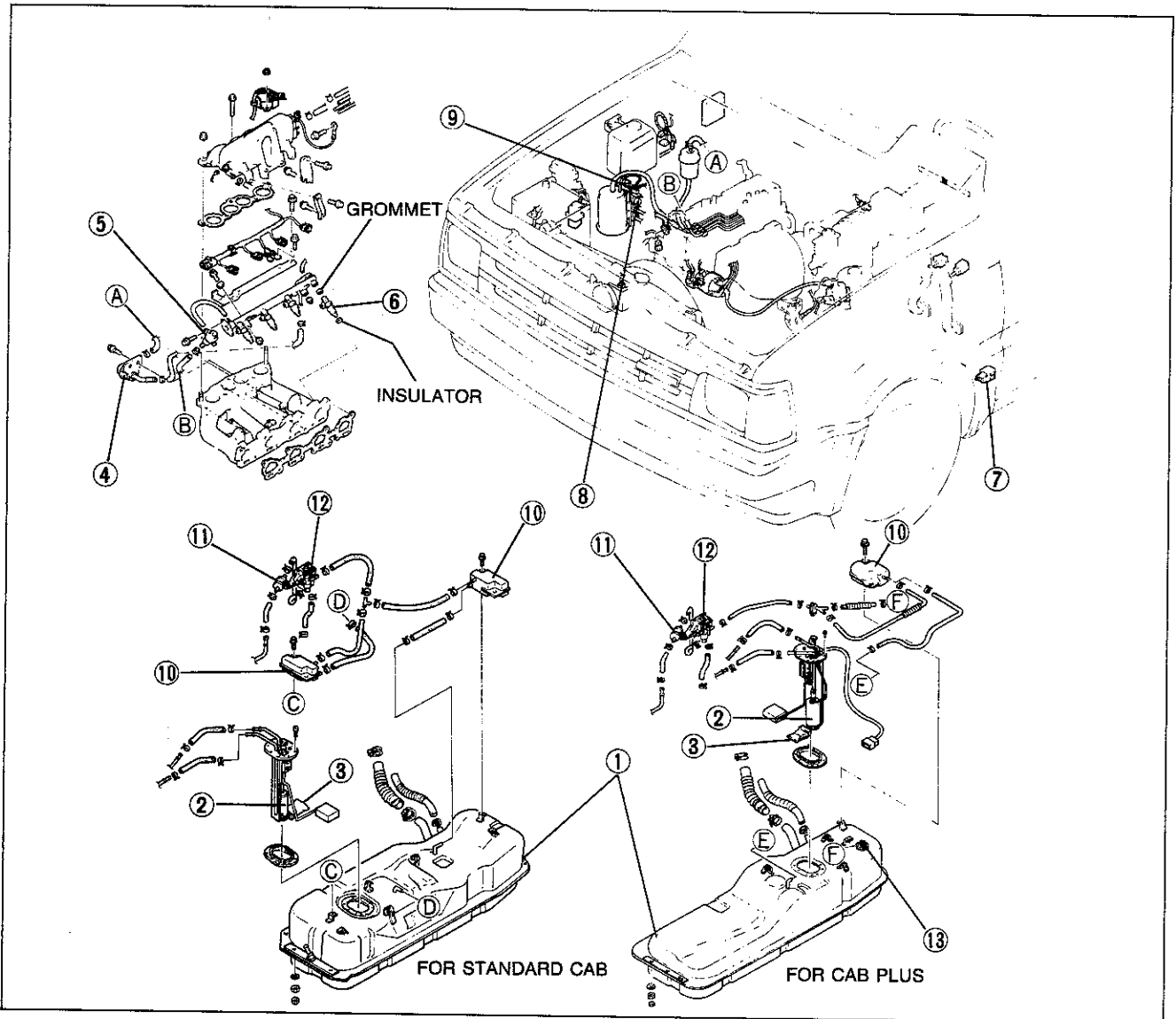
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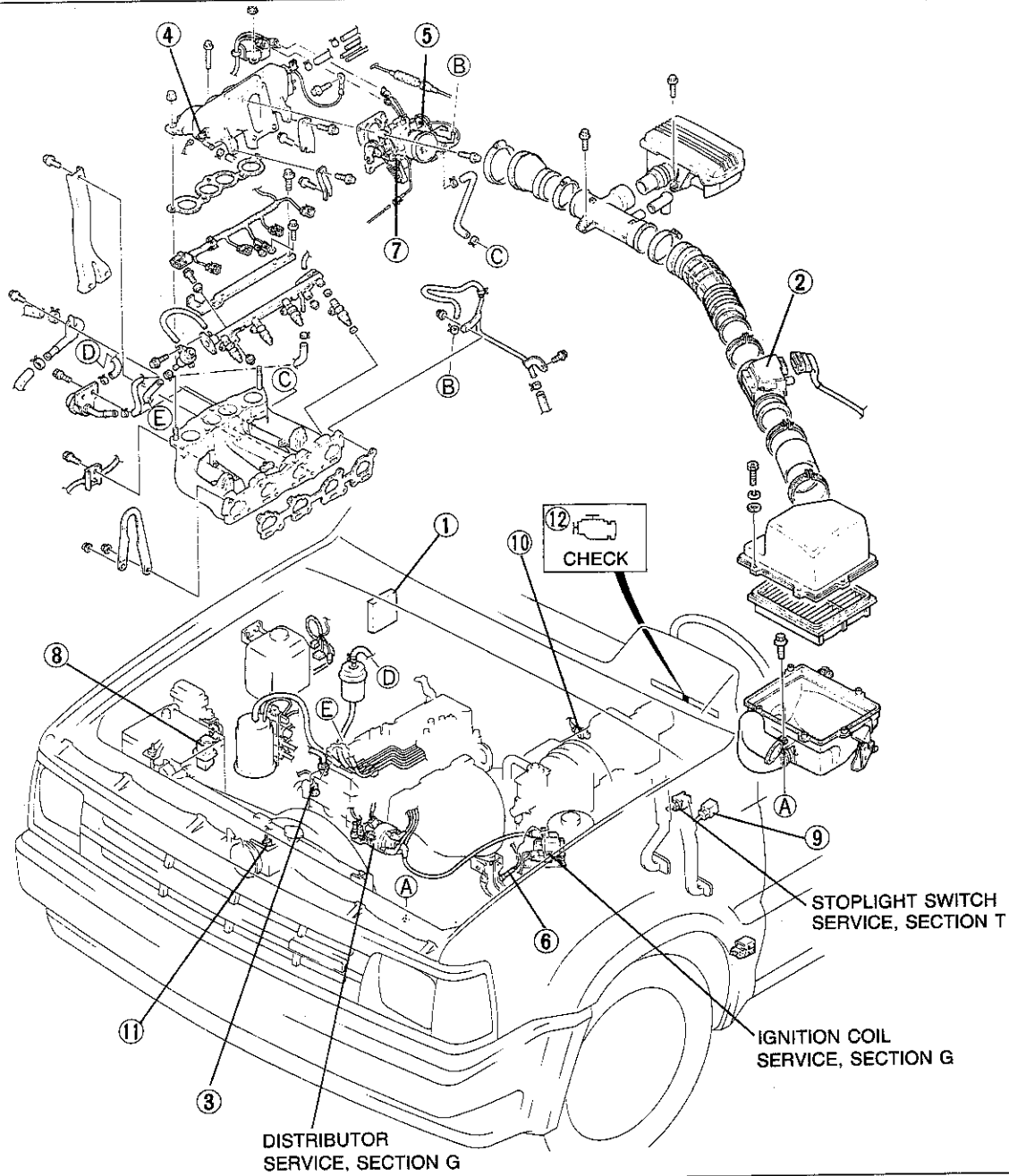
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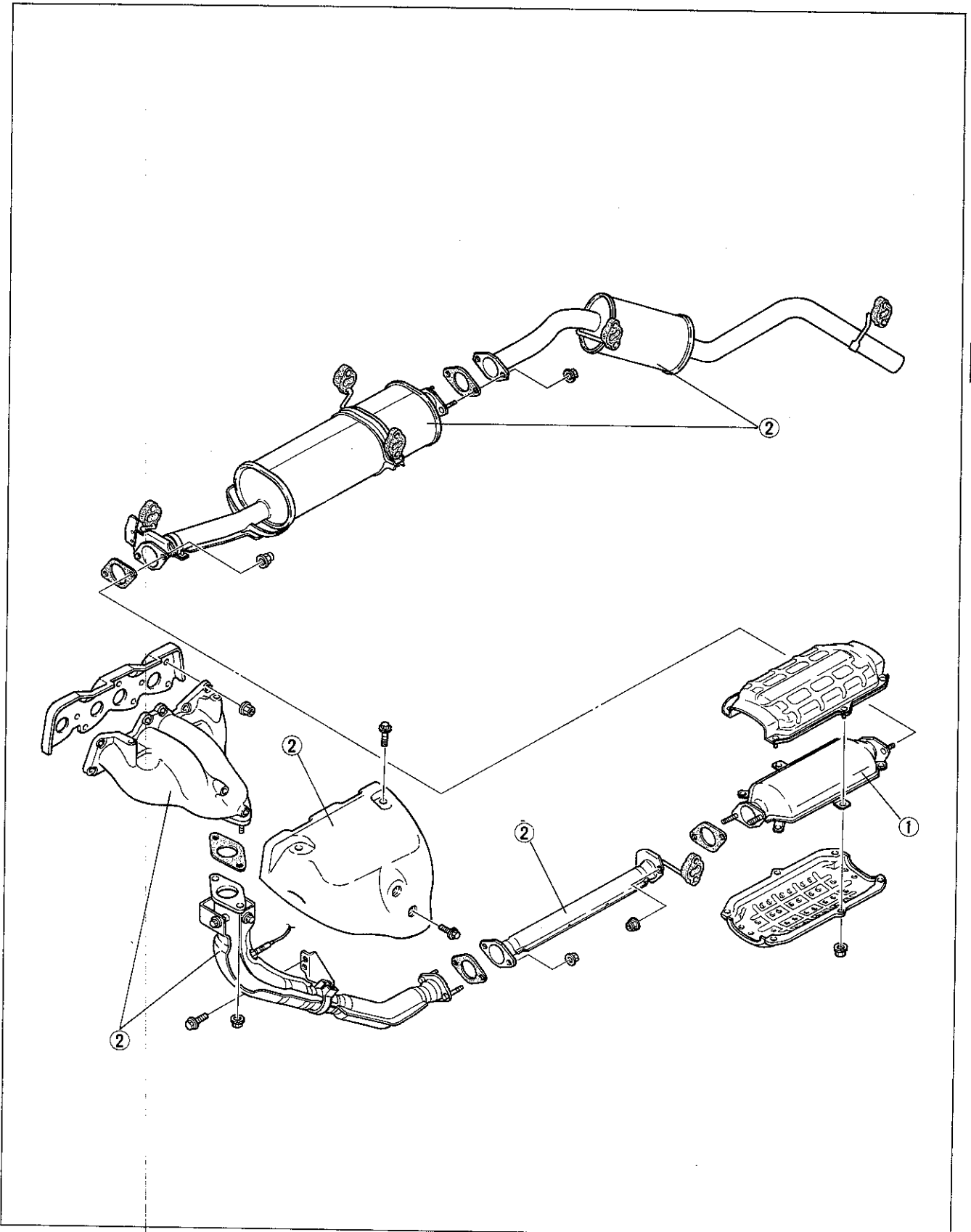
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F2

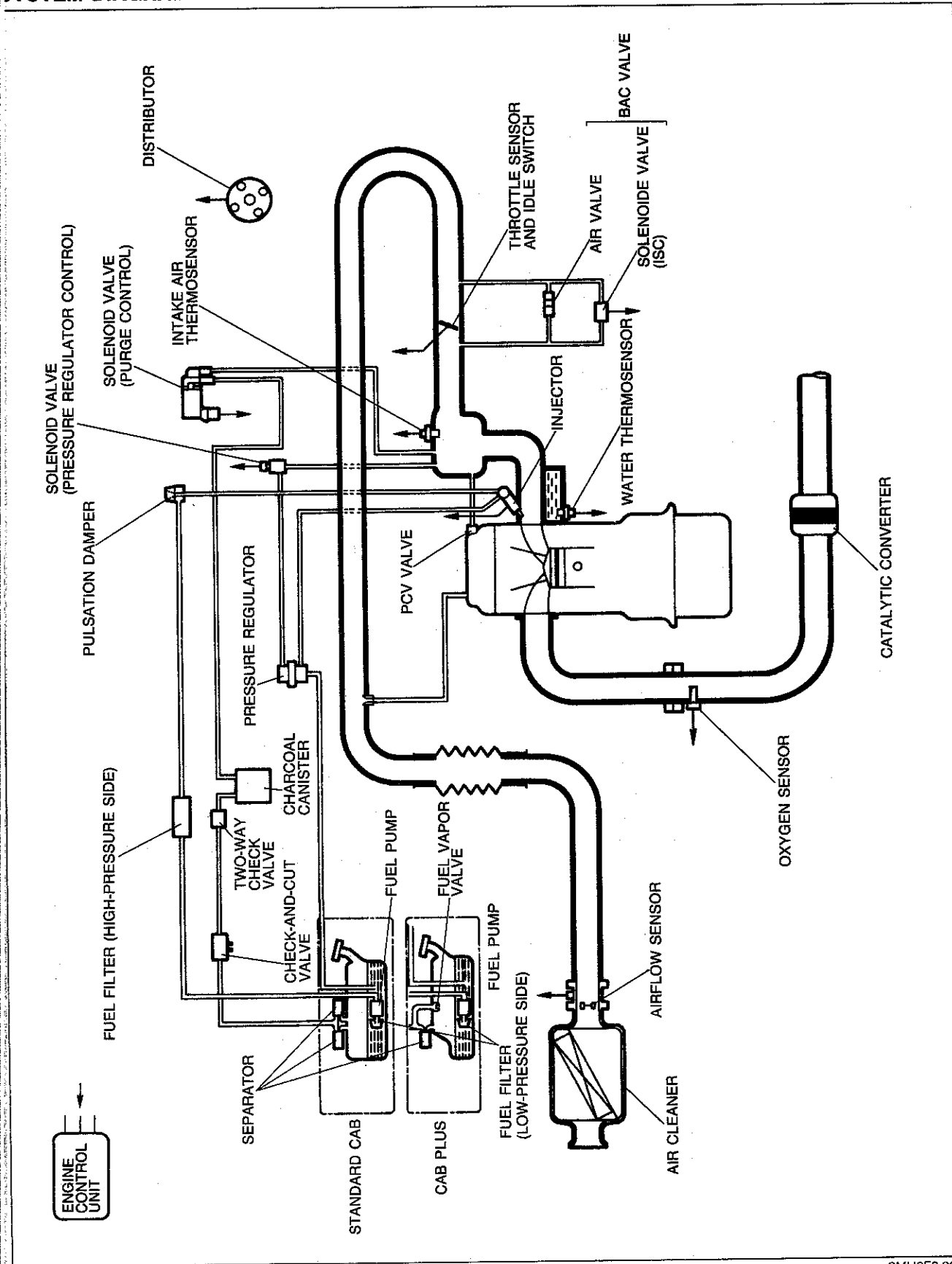
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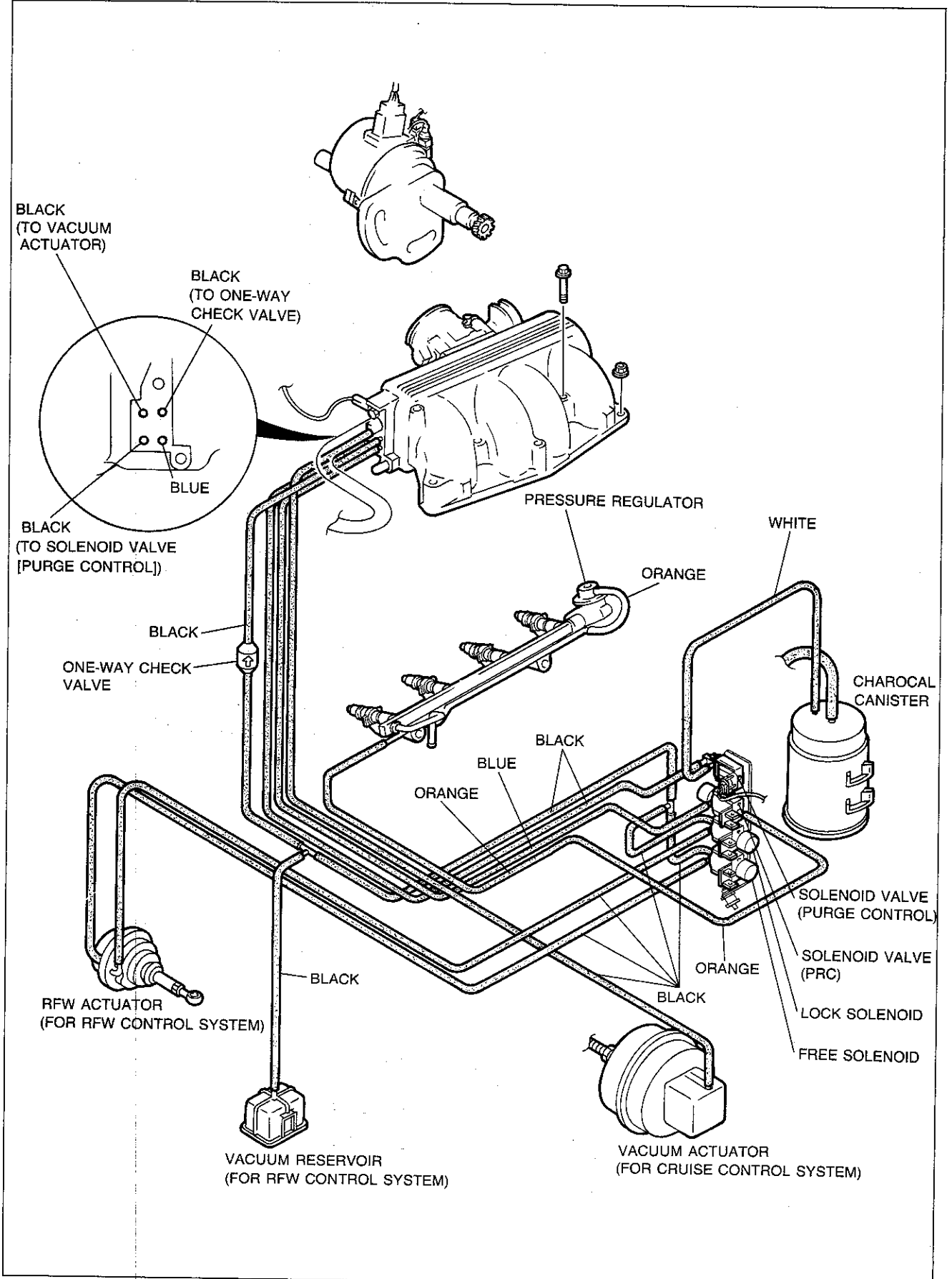
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OUTLINE

SYSTEM DIAGRAM



VACUUM HOSE ROUTING DIAGRAM

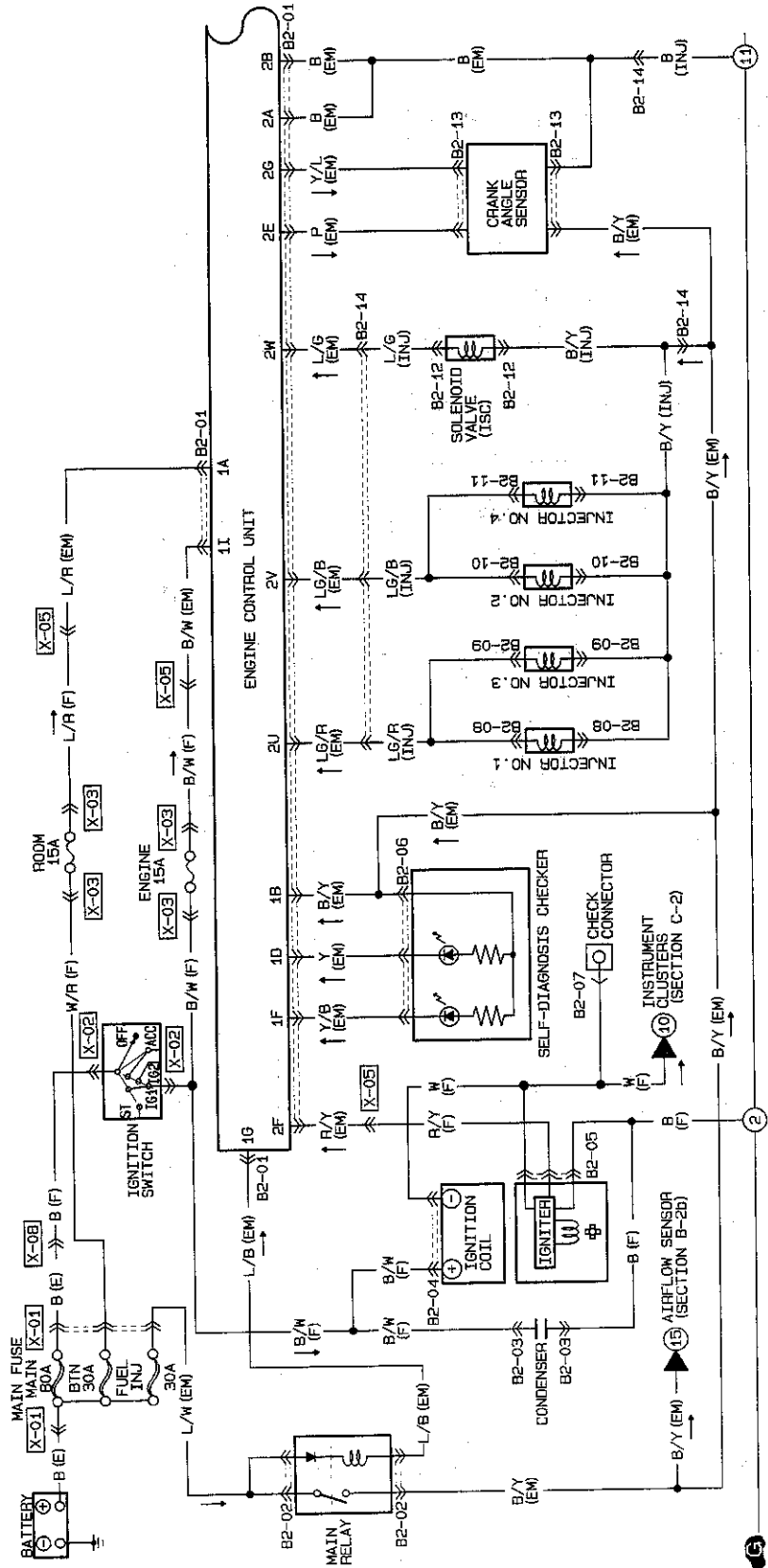


F2

WIRING DIAGRAM

2.2L: EGI ■ IGNITION SYSTEM ■ ENGINE CONTROL SYSTEM

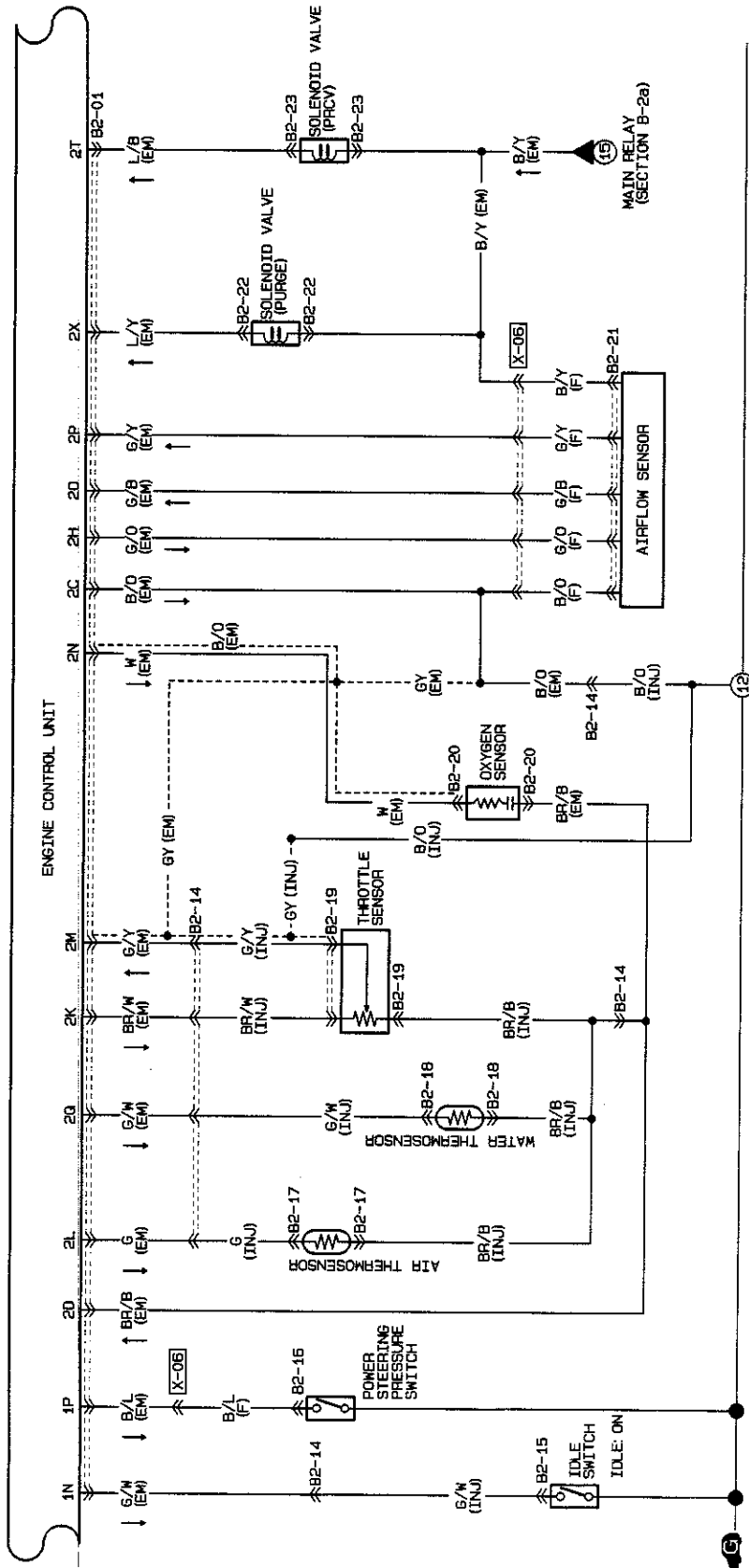
B-28



B2-01 ENGINE CONTROL UNIT (EM)	1U 1S 1Q 1P 1O 1N 1M 1L 1K 1J 1I 1H 1G 1F 1E 1D 1C 1A	R/L R/Y R/W W/G G/R BR/R B/W L/B W B/G L/R B/Y * * B/L G/W B R/B L/G Y/B Y B/Y	2Y 2X 2V 2U 2T 2S 2R 2Q 2P 2O 2N 2M 2L 2K 2J 2I 2H 2G 2F 2E 2D 2C 2B 2A	* L/G LG/R * G/W G/B G/Y BR/W * Y/L P B/O B * L/Y LG/B L/B * G/Y W G * G/O R/Y BR/B B	B2-03 CONDENSER (F)	B	B/W
B2-04 IGNITION COIL (F)	1V 1T 1R 1P 1N 1L 1K 1J 1I 1H 1G 1F 1E 1D 1C 1A	B/W W			B2-02 MAIN RELAY (EM)	L/W L/B B/Y	
B2-05 IGNITER (F)		W B B/Y			B2-08 INJECTOR NO.1 (INJ)	B2-09 INJECTOR NO.3 (INJ)	B2-10 INJECTOR NO.2 (INJ)
B2-06 SELF-DIAGNOSTICS CHECKER (EM)		* B/Y Y/B * Y *			B2-11 INJECTOR NO.4 (INJ)	B2-12 SOLENOID VALVE (ISC) (INJ)	
B2-13 CRANK ANGLE SENSOR (EM)		Y/L P B/Y B			B2-14 CONNECTOR BETWEEN EMISSION (EM) & INJECTOR (INJ)		
B2-11 INJECTOR NO.4 (INJ)		L/G B/Y			L/S/BR/B B/Y L/G B/Y G/W L/S/BR/W B/D B G G/W		

2.2L: EGI ■ ENGINE CONTROL SYSTEM

B-2b

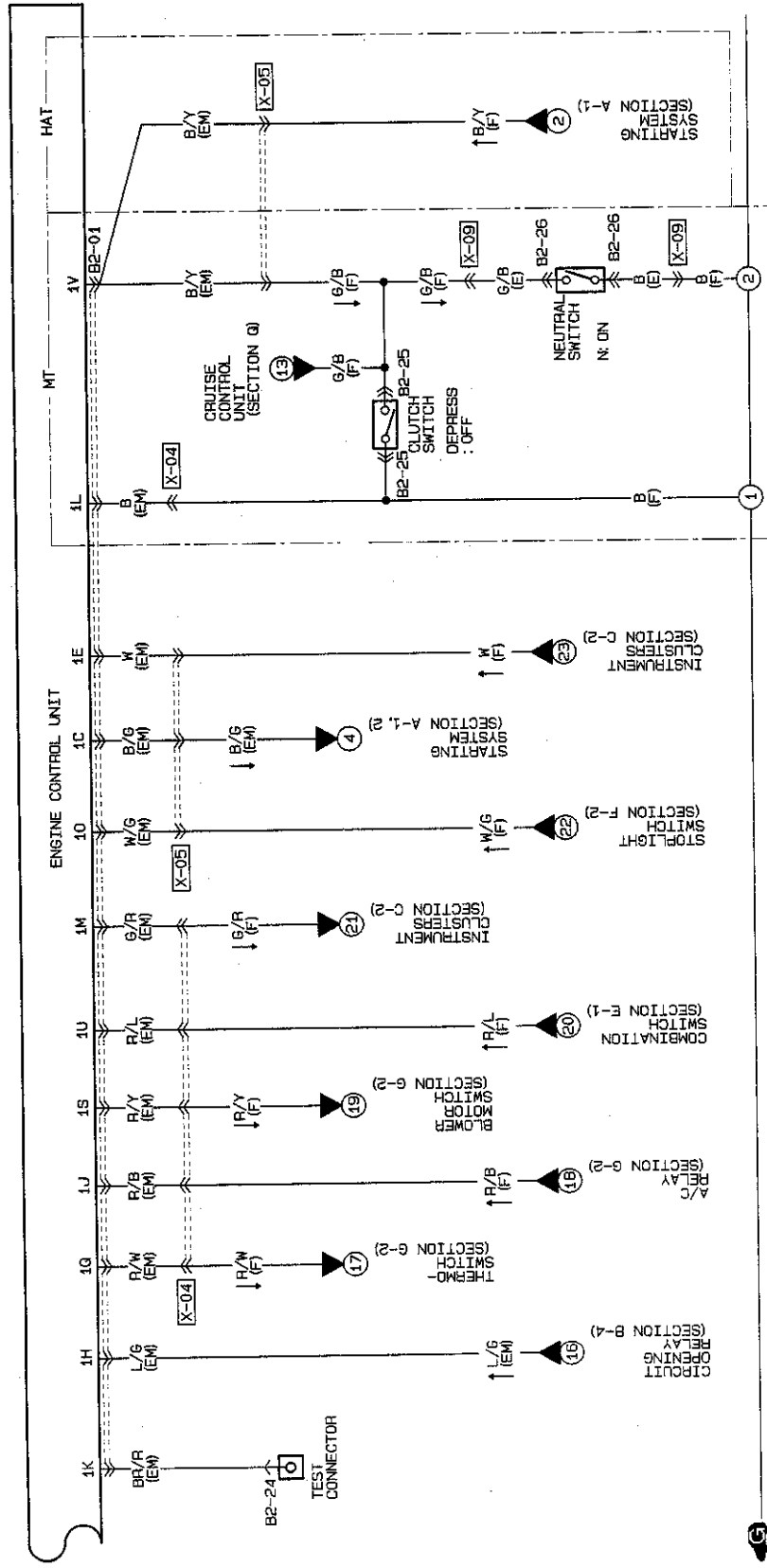


B2-01 ENGINE CONTROL UNIT (EM)										B2-14 CONNECTOR BETWEEN EMISSION (EM)										
1U	1V	1W	1X	1Y	1Z	2A	2B	2C	2D	1U	1V	1W	1X	1Y	1Z	2A	2B	2C	2D	
R/L	R/Y	R/W	W/G	G/R	BR/R	B/W	L/B	W	B/S	L/R	G/W	B/Y	L/G	G/Y	BR/B	G/B	B/O	B		
B/Y	*	B/L	G/W	B	R/B	L/G	Y/B	Y	B/Y		G/M	G	B	B/O	BR/M	L/S/R				
B2-15	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-15	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16	B2-16
POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	POWER STEERING PRESSURE SWITCH (F)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)
B2-15 OXYGEN SENSOR (EM)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-15 OXYGEN SENSOR (EM)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)	B2-16 WATER THERMOSENSOR (INJ)	B2-16 AIR THERMOSENSOR (INJ)
B2-20	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-20	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21	B2-21
OXYGEN SENSOR (EM)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	AIRFLOW SENSOR (F)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)	SOLENOID VALVE (EM)

F2

B-2c

2.2L: EGI ENGINE CONTROL SYSTEM



B2-01 ENGINE CONTROL UNIT (EM) (MT)

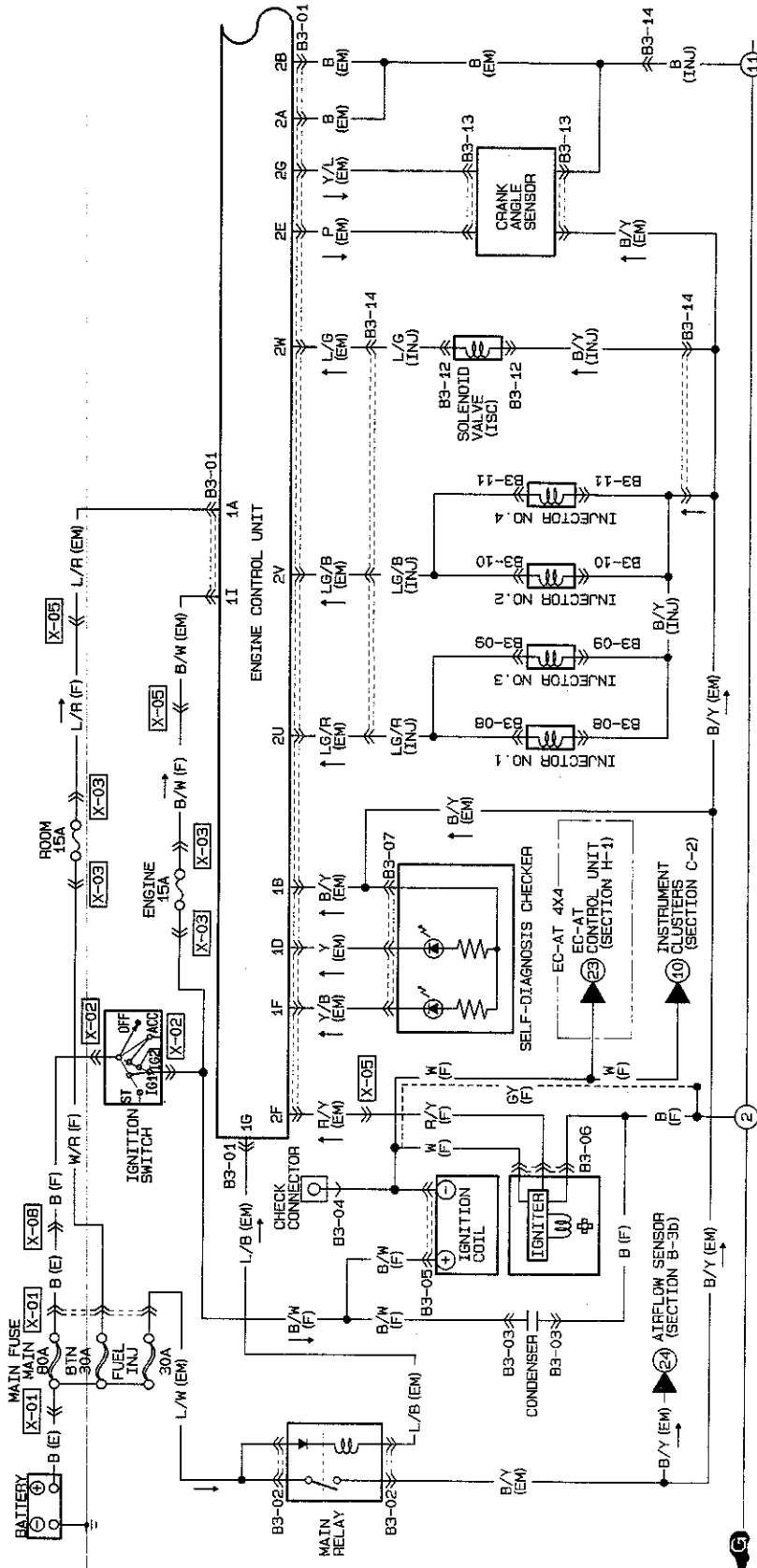
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R/L	R/Y	R/W	G/R	BR/R	B/W	L/B	W	B/G	L/R	B/G	L/R	L/G	L/R	L/Y	L/B	G/W	G/B	G/Y	W	G	Y/L	P	B/D	B
B/Y	*	*	B/L	G/W	B	R/B	L/G	V/B	Y	B/Y	*	*	L/Y	L/B	*	*	G/D	R/Y	BR/B	*	G/D	R/Y	BR/B	B

B2-24 TEST CONNECTOR (EM) (MT)

B2-26 NEUTRAL SWITCH (E)

B-3a

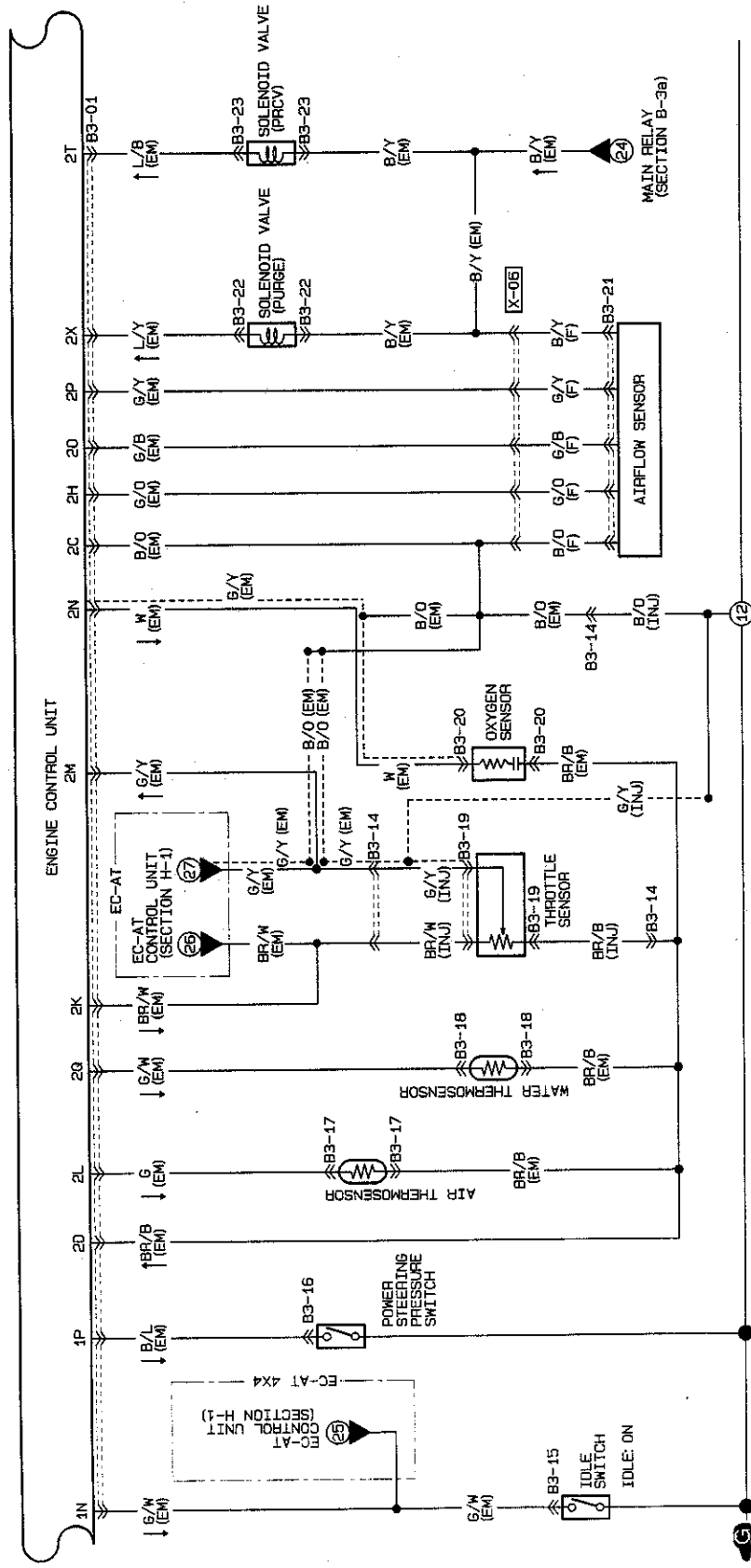
2.6L ■ IGNITION SYSTEM ■ ENGINE CONTROL SYSTEM



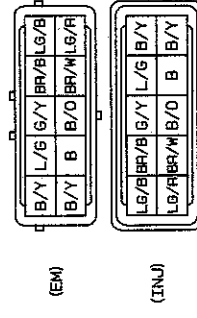
Terminal	Wire Color	Component
1A	B	SOLENOID VALVE (ISC)
1B	B/Y	SOLENOID VALVE (ISC)
1C	B	SOLENOID VALVE (ISC)
1D	Y	SOLENOID VALVE (ISC)
1E	W	SOLENOID VALVE (ISC)
1F	Y/B	SOLENOID VALVE (ISC)
1G	W	SOLENOID VALVE (ISC)
1H	W	SOLENOID VALVE (ISC)
1I	W	SOLENOID VALVE (ISC)
1J	W	SOLENOID VALVE (ISC)
1K	W	SOLENOID VALVE (ISC)
1L	W	SOLENOID VALVE (ISC)
1M	W	SOLENOID VALVE (ISC)
1N	W	SOLENOID VALVE (ISC)
1O	W	SOLENOID VALVE (ISC)
1P	W	SOLENOID VALVE (ISC)
1Q	W	SOLENOID VALVE (ISC)
1R	W	SOLENOID VALVE (ISC)
1S	W	SOLENOID VALVE (ISC)
1T	W	SOLENOID VALVE (ISC)
1U	W	SOLENOID VALVE (ISC)
1V	W	SOLENOID VALVE (ISC)
1W	W	SOLENOID VALVE (ISC)
1X	W	SOLENOID VALVE (ISC)
1Y	W	SOLENOID VALVE (ISC)
1Z	W	SOLENOID VALVE (ISC)
2A	L	SOLENOID VALVE (ISC)
2B	L/G	SOLENOID VALVE (ISC)
2C	L/G	SOLENOID VALVE (ISC)
2D	L/G	SOLENOID VALVE (ISC)
2E	L/G	SOLENOID VALVE (ISC)
2F	L/G	SOLENOID VALVE (ISC)
2G	L/G	SOLENOID VALVE (ISC)
2H	L/G	SOLENOID VALVE (ISC)
2I	L/G	SOLENOID VALVE (ISC)
2J	L/G	SOLENOID VALVE (ISC)
2K	L/G	SOLENOID VALVE (ISC)
2L	L/G	SOLENOID VALVE (ISC)
2M	L/G	SOLENOID VALVE (ISC)
2N	L/G	SOLENOID VALVE (ISC)
2O	L/G	SOLENOID VALVE (ISC)
2P	L/G	SOLENOID VALVE (ISC)
2Q	L/G	SOLENOID VALVE (ISC)
2R	L/G	SOLENOID VALVE (ISC)
2S	L/G	SOLENOID VALVE (ISC)
2T	L/G	SOLENOID VALVE (ISC)
2U	L/G	SOLENOID VALVE (ISC)
2V	L/G	SOLENOID VALVE (ISC)
2W	L/G	SOLENOID VALVE (ISC)
2X	L/G	SOLENOID VALVE (ISC)
2Y	L/G	SOLENOID VALVE (ISC)
2Z	L/G	SOLENOID VALVE (ISC)
3A	L/G	SOLENOID VALVE (ISC)
3B	L/G	SOLENOID VALVE (ISC)
3C	L/G	SOLENOID VALVE (ISC)
3D	L/G	SOLENOID VALVE (ISC)
3E	L/G	SOLENOID VALVE (ISC)
3F	L/G	SOLENOID VALVE (ISC)
3G	L/G	SOLENOID VALVE (ISC)
3H	L/G	SOLENOID VALVE (ISC)
3I	L/G	SOLENOID VALVE (ISC)
3J	L/G	SOLENOID VALVE (ISC)
3K	L/G	SOLENOID VALVE (ISC)
3L	L/G	SOLENOID VALVE (ISC)
3M	L/G	SOLENOID VALVE (ISC)
3N	L/G	SOLENOID VALVE (ISC)
3O	L/G	SOLENOID VALVE (ISC)
3P	L/G	SOLENOID VALVE (ISC)
3Q	L/G	SOLENOID VALVE (ISC)
3R	L/G	SOLENOID VALVE (ISC)
3S	L/G	SOLENOID VALVE (ISC)
3T	L/G	SOLENOID VALVE (ISC)
3U	L/G	SOLENOID VALVE (ISC)
3V	L/G	SOLENOID VALVE (ISC)
3W	L/G	SOLENOID VALVE (ISC)
3X	L/G	SOLENOID VALVE (ISC)
3Y	L/G	SOLENOID VALVE (ISC)
3Z	L/G	SOLENOID VALVE (ISC)

B-3b

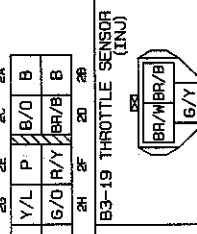
2.6L ■ ENGINE CONTROL SYSTEM



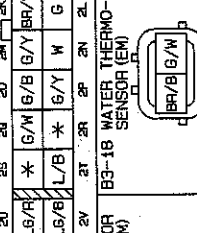
B3-14 CONNECTOR BETWEEN EMISSION (EM) & INJECTOR (INU)



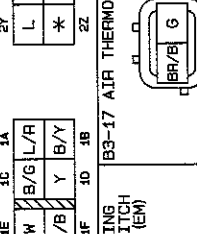
B3-19 THROTTLE SENSOR (INU)



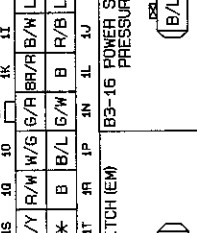
B3-23 SOLENOID VALVE (PRCV) (EM)



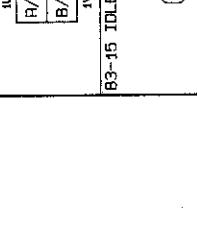
B3-22 SOLENOID VALVE (PURGE) (EM)



B3-20 OXYGEN SENSOR (EM)



B3-21 AIRFLOW SENSOR (F)



B3-15 IDLE SWITCH (EM)



B3-16 POWER STEERING PRESSURE SWITCH (EM)

B3-17 AIR THERMOSENSOR (EM)

B3-18 WATER THERMOSENSOR (EM)

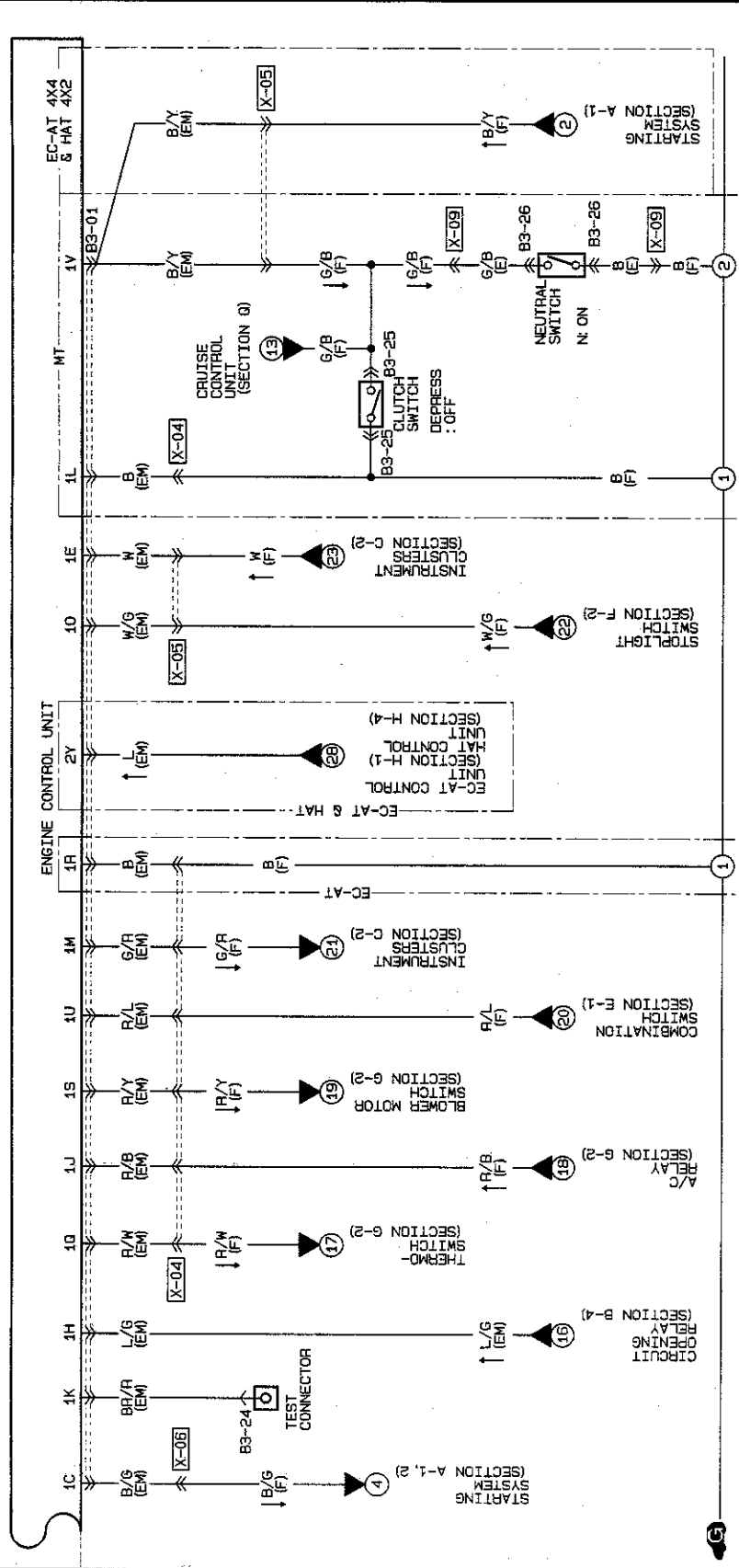
B3-19 THROTTLE SENSOR (INU)

B3-22 SOLENOID VALVE (PURGE) (EM)

B3-23 SOLENOID VALVE (PRCV) (EM)

B-3C

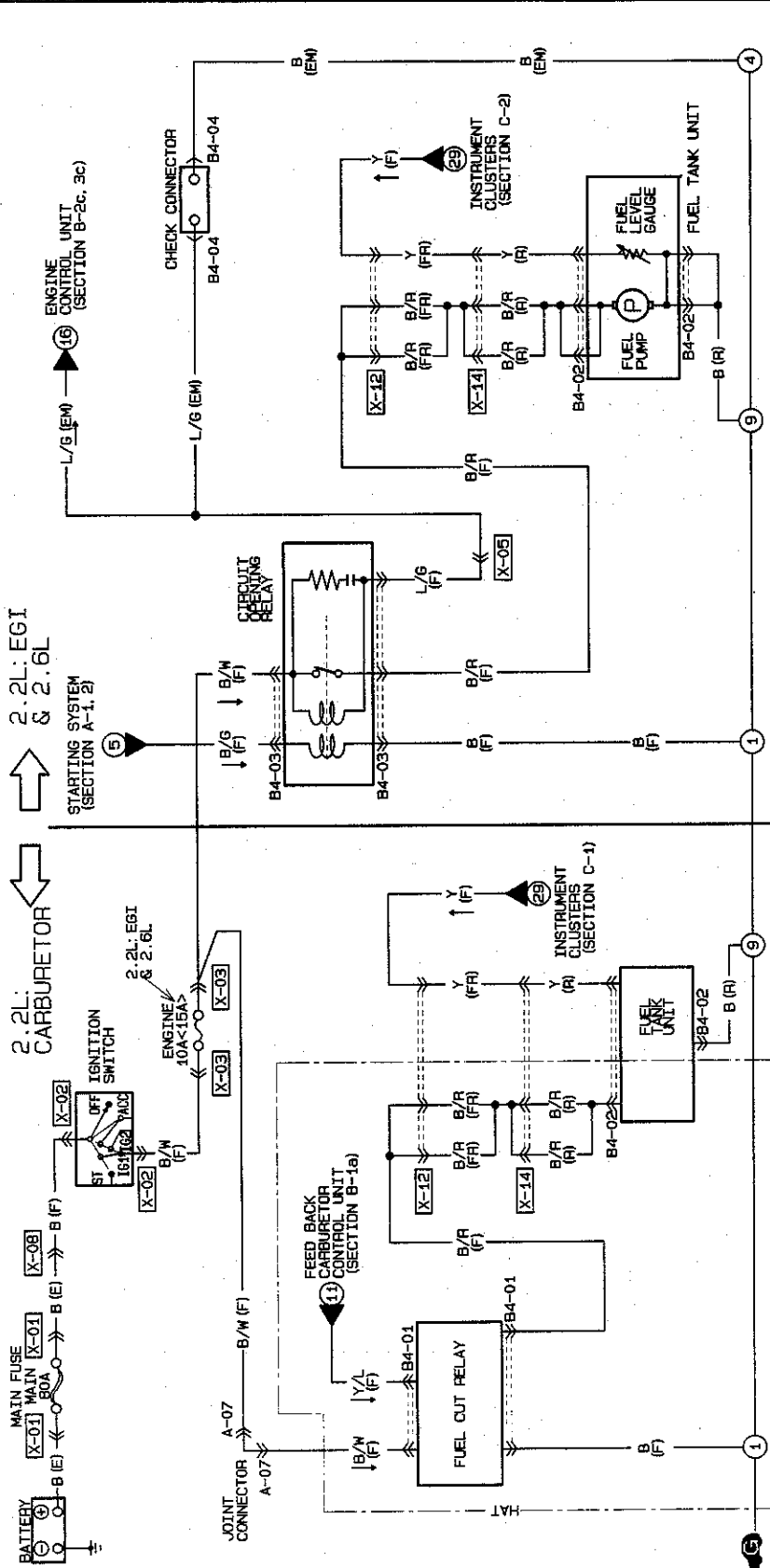
2.6L ■ ENGINE CONTROL SYSTEM



B3-01 ENGINE CONTROL UNIT (EM)										B3-24 TEST CONNECTOR (EM)										B3-25 CLUTCH SWITCH (F)																
1A	1B	1C	1E	1I	1K	1L	1M	1N	1O	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J							
R/L	R/Y	R/W	G/W	G/R	BR/R	B/W	L/B	W	B/G	L/R	L	L/G	LB/R	*	G/W	G/B	G/Y	BR/W	*	Y/L	P	B/D	B	L	L/G	LB/R	*	G/W	G/B	G/Y	BR/W	*	Y/L	P	B/D	B
B/Y	*	B	B/L	G/W	B	R/B	L/G	Y/B	Y	B/Y	L	L/G	LB/R	*	G/W	G/B	G/Y	BR/W	*	Y/L	P	B/D	B	L	L/G	LB/R	*	G/W	G/B	G/Y	BR/W	*	Y/L	P	B/D	B
B3-26 NEUTRAL SWITCH (E)										B3-24 TEST CONNECTOR (EM)										B3-25 CLUTCH SWITCH (F)																
1V	1W	1X	1Y	1Z	1A	1B	1C	1D	1E	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J	1A	1B	1C	1D	1E	1F	1G	1H	1I	1J							
G/B	B	B	B	B	B	B	B	B	B	BR/R	BR/R	BR/R	BR/R	BR/R	BR/R	BR/R	BR/R	BR/R	BR/R	G/B/B	B	B	B	B	B	B	B	B	B							

B-4

FUEL CONTROL SYSTEM



B4-01 FUEL CUT RELAY (F)	B4-02 FUEL TANK UNIT (F)	B4-03 CIRCUIT OPENING RELAY (F)	B4-04 CHECK CONNECTOR (EM)	A-07 JOINT CONNECTOR (F)
HAT 2.2L: CARBURETOR MT 2.2L: CARBURETOR	HAT 2.2L: CARBURETOR	2.2L: EGI & 2.6L	2.2L: EGI & 2.6L	() ...HAT B/W * B/W

SPECIFICATIONS

Item		Specification
Idle speed* ¹	rpm	M/T: 730—770, A/T: 750—790 (P range)
Ignition timing* ¹	BTDC	G6: 4—6°, F2: 5—7°
Throttle body		
Type	Horizontal draft (1 barrel)	
Throat diameter	mm (in)	G6: 55 (2.2) F2: 50 (2.0)
	No.1	
	No.2	
Fuel pump		
Type	Impeller (in-tank)	
Output pressure	kPa (kg/cm ² , psi)	441—589 (4.5—6.0, 64—85)
Fuel filter		
Type	Low-pressure side	Nylon element
	High-pressure side	Paper element
Pressure regulator		
Type	Diaphragm	
Regulating pressure	kPa (kg/cm ² , psi)	265—314 (2.7—3.2, 38—46)
Injector		
Type	High-ohmic	
Type of drive	Voltage	
Resistance	Ω	12—16 (at 20°C, 68°F)
Volume	G6: 74—89 cc (4.51—5.43 cu in)/15 sec.	
	F2: 50—62 cc (3.05—3.78 cu in)/15 sec.	
BAC valve (solenoid valve [Idle speed control])		
Solenoid resistance	Ω	7.7—9.3 (at 23°C, 73°F)
Solenoid valve (Purge control)		
Solenoid resistance	Ω	30—34 (at 20°C, 68°F)
Water thermosensor		
Resistance	kΩ	-20°C (-4°F) 14.5—17.8
		20°C (68°F) 2.2—2.7
		80°C (176°F) 0.28—0.35
Intake air thermosensor		
Resistance	kΩ	25°C (77°F) 29.7—36.3
		85°C (185°F) 3.3—3.7
Circuit opening relay		
Resistance	Ω	STA—E ₁ 21—43
		B—Fc 109—226
		B—Fp ∞
Fuel tank		
Capacity	liters (US gal, Imp gal)	56 (14.8, 12.3)
Air cleaner		
Element type	Dry	
Accelerator cable		
Free play	mm (in)	1—3 (0.039—0.118)
Fuel		
Specification	Unleaded regular (RON 87 or higher)	

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*¹..... Test connector grounded

COMPONENT DESCRIPTIONS

Component	Function	Remarks
Air cleaner	Filters air entering throttle body	
Airflow sensor	Detects amount of intake air; sends signal to engine control unit	
Air valve	When cold, supplies bypass air into dynamic chamber	<ul style="list-style-type: none"> • Engine speed increased to shorten warm-up period • Thermowax type • Installed in BAC valve
Atmospheric pressure sensor	Detects atmospheric pressure	In ECU
BAC valve	Supplies bypass air into dynamic chamber	Consists of air valve and ISC valve
Catalytic converter	Reduces HC, CO, and NOx by chemical reaction	Monolith type
Charcoal canister	Stores gas tank fumes when engine stopped	
Check connector	For Self-Diagnosis Checker	6-pin connector (Green)
Check-and-cut valve	Releases excessive pressure or vacuum in fuel tank to atmosphere	
Circuit opening relay	Voltage for fuel pump while engine running	
Clutch switch	Detects in-gear condition; sends signal to engine control unit	Switch ON when clutch pedal depressed
Crank angle sensor (In distributor)	<ol style="list-style-type: none"> 1. Detects No.1 cylinder TDC; sends signal to engine control unit 2. Detects engine speed; sends signal to engine 	For determining fuel injection timing
Dynamic chamber	Interconnects all cylinders	
Engine control unit	<p>Detects following:</p> <ol style="list-style-type: none"> 1. Engine speed 2. No.1 piston TDC 3. Intake air amount 4. Engine coolant temperature 5. Ignition ON signal 6. Throttle valve opening angle 7. Throttle valve fully closed 8. Air/fuel ratio (Oxygen concentration) 9. In-gear condition 10. Intake air temperature 11. Atmospheric pressure 12. A/C operation 13. P/S operation 14. E/L operation 15. Cranking signal 16. Test signal (idle speed, malfunction code No.) 17. Braking signal <p>Controls operation of the following:</p> <ol style="list-style-type: none"> 1. Fuel injection system 2. Idle speed control 3. Pressure regulator control system 4. Purge control system 5. Fail-safe function 6. Monitor function 7. Burn-off system 8. Ignition timing control system 9. Fuel pump 10. A/C (cut off) 11. Main relay control 	<ol style="list-style-type: none"> 1. Ne-Signal 2. G-signal 3. Airflow sensor 4. Water thermostensor 5. Ignition switch 6. Throttle sensor 7. Idle switch 8. Oxygen sensor 9. Neutral and clutch switches 10. Intake air thermostensor (on dynamic chamber) 11. Atmospheric pressure sensor (In ECU) 12. A/C switch 13. P/S pressure switch 14. Headlight and blower switches 15. Ignition switch (START position) 16. Test connector 17. Stoplight switch 1. Injector 2. Solenoid valve (Idle speed control) 3. Solenoid valve (Pressure regulator control) 4. Solenoid valve (Purge control) 5. Self-Diagnosis Checker and MIL 6. Monitor lamp (Self-Diagnosis Checker) 7. Airflow sensor 8. Igniter 9. Circuit opening relay 10. A/C relay 11. Main relay

Component	Function	Remarks
Fuel filter	Filters particles from fuel	
Fuel pump	Provides fuel to injectors	<ul style="list-style-type: none"> Operates while engine running Installed in fuel tank
Fuel vapor valve	Prevents fuel from flowing into charcoal canister	
Idle switch	Detects when throttle valve fully closed; sends signal to engine control unit	Installed on throttle body
Igniter	Receives spark signal from signal ECU and generates high voltage to ignition coil	
Ignition switch (START position)	Sends engine cranking signal to engine control unit	
Injector	Injects fuel into intake port	<ul style="list-style-type: none"> Controlled by signals from engine control unit High-ohmic injector Two port injector nozzle (G6)
Intake air thermosensor	Detects intake air temperature; sends signal to engine control unit	Installed on dynamic chamber
Main relay	Supplies electric current to injectors and engine control unit.	
MIL (Malfunction indicator lamp)	(For Federal and Canada) Lamp illuminates to indicate the maintenance schedule for the emission control system	Every 60,000 and 80,000 miles (Federal) or 90,000 and 130,000 km (Canada)
	(For California) Lamp illuminates when input device malfunctions	Test connector not grounded
	(For California) Lamp flashers to indicate malfunction code No. of input and output devices	Test connector grounded
Neutral switch	Detects in-gear condition; sends signal to engine control unit	Switch ON when neutral
Oxygen sensor	Detects oxygen concentration; sends signal to engine control unit	Zirconia ceramic and platinum coating
PCV valve	Controls amount of blowby gas introduced into engine	
P/S pressure switch	Detects P/S operation; sends signal to engine control unit	P/S: ON when steering wheel turned right or left
Pressure regulator	Adjusts fuel pressure supplied to injectors	
Resonance chamber (G6)	Improves mid-range torque characteristics	
Separator	Prevents fuel from flowing into charcoal canister	
Solenoid valve	Idle speed control	<ul style="list-style-type: none"> Controlled by duty signal from engine control unit With integrated air valve Controls idle-up
	Pressure regulator control	Controls vacuum to pressure regulator
	Purge control	Controls evaporative fumes from canister to intake manifold
Stoplight switch	Detects braking operation (deceleration); sends signal to engine control unit	

Component	Function	Remarks
Test connector	For Self-Diagnosis Checker and idle speed Ignition timing adjustment	1-pin connector (Green)
Throttle body	Controls intake air quantity	Integrated throttle sensor and idle switch
Throttle sensor	Detects throttle valve opening angle; sends signal to engine control unit	Installed on throttle body
Two-way check valve	Controls pressure in fuel tank	
Water thermosensor	Detects coolant temperature; sends signal to engine control unit	

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TROUBLESHOOTING GUIDE

RELATIONSHIP CHART

INPUT DEVICES		OUTPUT DEVICES										
		INJECTOR	FUEL INJECTION AMOUNT	FUEL INJECTION TIMING	AIR VALVE	ISC VALVE	SOLENOID VALVE (PURGE CONTROL)	SOLENOID VALVE (PRESSURE REGULATOR CONTROL)	A/C RELAY (A/C CUT-OFF)	AIRFLOW SENSOR (BURN-OFF)	CIRCUIT OPENING RELAY (FUEL PUMP CONTROL)	IGNITER (IGNITION TIMING CONTROL)
TEST CONNECTOR		X	X	X	O	X	X	X	X	X	X	O
IGNITION SWITCH (ON POSITION)		X	X	X	X	X	X	X	O	X	X	X
IGNITION SWITCH (START POSITION)		O	O	X	O	X	O	O	X	X	O	O
HEADLIGHT AND BLOWER SWITCH		X	X	X	O	X	X	X	X	X	X	X
P/S PRESSURE SWITCH		X	X	X	O	X	X	X	X	X	X	X
A/C SWITCH		X	X	X	O	X	X	O	X	X	X	X
NEUTRAL AND CLUTCH SWITCH		O	X	X	O	O	X	O	X	X	X	X
STOPLIGHT SWITCH		O	X	X	X	X	X	X	X	X	X	X
IDLE SWITCH		O	X	X	O	O	O	X	X	X	O	O
ATMOSPHERIC PRESSURE SENSOR		O	X	X	O F2 X G6	X	X	X	X	X	X	X
THROTTLE SENSOR		O	X	X	X	X	O	O	X	X	X	X
INTAKE AIR THERMOSENSOR		O	X	X	X	X	O	X	X	X	X	X
AIRFLOW SENSOR		O	X	X	O	O	X	X	O	X	O	O
OXYGEN SENSOR		O	X	X	X	O	X	X	X	X	X	X
WATER THERMOSENSOR		O	X	X	O	O	O	X	O	X	O	O
DISTRIBUTOR	(Ne-SIGNAL)	O	O	X	O	O	O	X	O	O	O	O
	(G-SIGNAL)	X	O	X	X	X	X	X	X	X	X	X

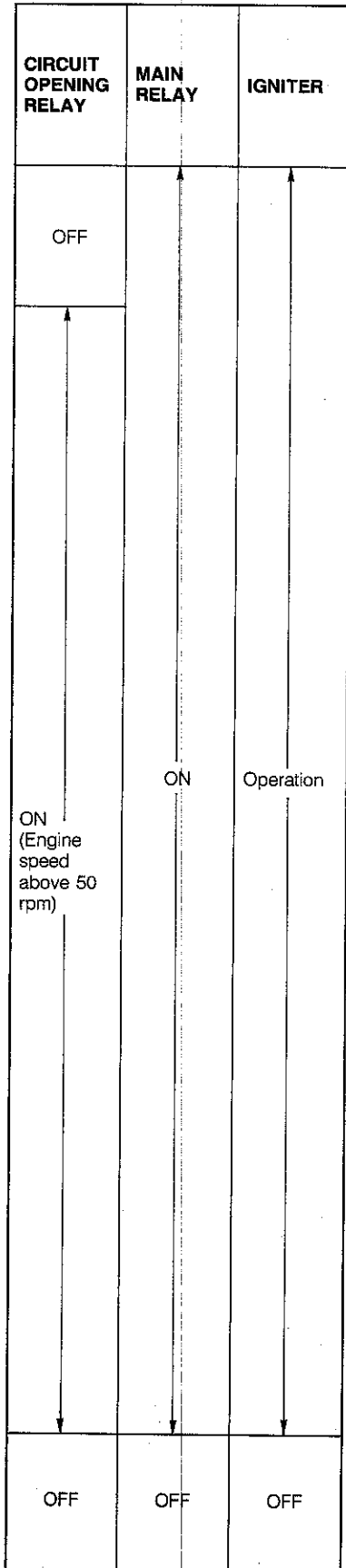
ENGINE CONTROL OPERATION CHART Input Devices and Engine Conditions

INPUT DEVICES ENGINE CONDITIONS	APPROXIMATE TIME (BASED ON 10—16°C or 50—60°F AMBIENT)	SENSORS							
		DISTRIBUTOR		WATER THER- MOSENSOR	OXYGEN SENSOR	AIRFLOW SENSOR	INTAKE AIR THER- MOSENSOR	THROTTLE SENSOR	AT- MOSPHERIC PRESSURE SENSOR (IN ECU)
		(G-SIGNAL)	(Ne-SIGNAL)						
CRANKING —COLD ENGINE • COLD AIR • COLD COOLANT	Zero	↑	↑	↑	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	↑
COLD START —FAST IDLE • COLD AIR • COLD COOLANT	One minutes	↑	↑	Cool to warm: medium voltage (3.5V and dropping)	Sensor cold: low to high voltage (0—0.9V)	Low volume airflow: low to high voltage (2.4—2.6V)	↑	Closed throttle: low voltage (0.3—0.7V)	↑
COLD DRIVEAWAY —PART THROTTLE • COLD AIR • COLD COOLANT	Two minutes	↑	↑	↑	↑	↑	↑	↑	↑
WARM DRIVEAWAY —PART THROTTLE • WARM AIR • WARM COOLANT	Three minutes	↑	↑	Warm: medium voltage (Approx. 0.7V and dropping)	Sensor warm: high voltage (0.9V)	Moderate volume airflow: low to medium voltage (3.0V)	↑	Part throttle: medium voltage (1—3.5V)	↑
HOT CRUISE • WARM AIR • WARM COOLANT	↑	Sends No.1 cylinder TDC signal to ECU	Sends engine speed signal to ECU	↑	Sensor hot: switching from high voltage (0.9V) ↓ to low voltage (0.1V)	↓	Cool to warm: medium voltage (1.4—3.4V)	↑	Sends voltage signal to ECU that varies with altitude: voltage (approx. 4V at sea level)
HOT ACCELERATION —60% THROTTLE	↑	↑	↑	↑	↑	Moderate to strong volume of airflow: (3.8V)	↑	↑	↑
HOT ACCELERATION —WIDE OPEN THROTTLE	More than four minutes	↑	↑	Hot: low voltage (Approx. 0.4V)	High voltage (0.9V)	Strong volume of airflow: (4.0V)	↑	Wide open throttle: high voltage (Approx. 4.0V)	↑
DECELERATION —CLOSED THROTTLE	↑	↑	↑	↑	Low voltage (0V)	↑	↑	↑	↑
HOT CURB IDLE —EXTENDED	↑	↑	↑	↑	Switching from high to low voltage (0.75—0.25V)	Low vol- ume of airflow: (2.4V)	↑	Closed throttle: low voltage (0.3—0.7V)	↑
HOT ENGINE SHUTDOWN	—	OFF	OFF	OFF	Sensor hot: low voltage (0.1V) until sen- sor cools	OFF	OFF	OFF	OFF

SWITCHES									
IDLE SWITCH	STOP-LIGHT SWITCH	NEUTRAL AND CLUTCH SWITCHES	A/C SWITCH	P/S PRESSURE SWITCH	HEAD-LIGHT SWITCH	BLOWER SWITCH	IGNITION SWITCH		TEST CONNECTOR
							START POSITION	ON POSITION	
Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Signal has no effect on ECU	Sends signal to ECU (approx. 12V)	Signal has no effect on ECU	Signal has no effect on ECU
Low voltage signal to ECU (below 1.5V)	Brake pedal depressed: sends signal to ECU (approx. 12V)	In neutral: low voltage signal to ECU (approx. 0V)							
High voltage signal to ECU (battery voltage)	No signal send to ECU (below 1.5V)	Driving in any gear: high voltage signal to ECU (battery voltage)	A/C switch ON: sends signal to ECU (battery voltage) A/C switch OFF: no signal to ECU (below 1.5V)	Steering wheel turned: low voltage signal to ECU (below 1.5V) Steering wheel straight ahead: high voltage signal to ECU (battery voltage)	Headlight switch ON: low voltage signal to ECU (below 1.5V) Headlight switch OFF: high voltage signal to ECU (battery voltage)	Blower switch ON: low voltage signal to ECU (below 1.5V) Blower switch OFF: high voltage signal to ECU (battery voltage)	No signal to ECU (below 1.5V)	Sends signal to ECU (battery voltage)	Connector not grounded: high voltage signal to ECU (battery voltage)
Low voltage signal to ECU (below 1.5V)	Brake pedal depressed: sends signal to ECU (approx. 12V)	In neutral: low voltage signal to ECU (approx. 0V)							Low voltage signal to ECU when connector grounded (below 1.5V)
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

Output Devices and Engine Conditions

ENGINE CONDITIONS	OUTPUT DEVICES APPROXIMATE TIME (BASED ON 10-16°C or 50-60°F AMBIENT)	INJECTOR		BAC VALVE		SOLENOID VALVE (PURGE CONTROL)	SOLENOID VALVE (PRESSURE REGULATOR CONTROL)	A/C RELAY (A/C CUT-OFF)	AIRFLOW SENSOR (BURN-OFF)			
		INJECTION	INJECTION TIMING	AIR VALVE	ISC VALVE							
CRANKING —COLD ENGINE • COLD AIR • COLD COOLANT	Zero	Rich	All cylinders each ignition pulse	Open (coolant temperature: below 50°C 122°F)	Large amount of bypass air	OFF (Purge cut)	OFF (Vacuum to pressure regulator)	OFF (A/C ON)	OFF			
COLD START —FAST IDLE • COLD AIR • COLD COOLANT	One minute		Rich and lean					2-group		Small amount of bypass air	Operates (Duty values [purge gas amount] change)	ON (A/C OFF: approx. 5 sec.)
COLD DRIVEAWAY —PART THROTTLE • COLD AIR • COLD COOLANT	Tow minutes											Rich
WARM DRIVEAWAY —PART THROTTLE • WARM AIR • WARM COOLANT	Three minutes	Rich	2-group	Large and small amount of bypass air	OFF (Purge cut)	OFF (A/C CUT)						
HOT CRUISE • WARM AIR • WARM COOLANT	More than four minutes					Rich	2-group	Small amount of bypass air	After starting: ON during hot start only (Vacuum cut)	OFF		
HOT ACCELERATION —60% THROTTLE		Rich	2-group	Small amount of bypass air	ON (A/C CUT)							
HOT ACCELERATION —WIDE OPEN THROTTLE					Rich and lean	2-group	Small amount of bypass air	OFF (A/C ON)				
DECELERATION —CLOSED THROTTLE	Fuel cut	Rich and lean	2-group	Small amount of bypass air				OFF (A/C ON)	OFF (A/C ON)			
HOT CURB IDLE —EXTENDED	Rich and lean				Rich and lean	2-group	Small amount of bypass air		OFF (A/C ON)	OFF (A/C ON)		
HOT ENGINE SHUTDOWN	—	Does not inject	OFF	OFF				OFF		OFF	ON (Burn-off)	



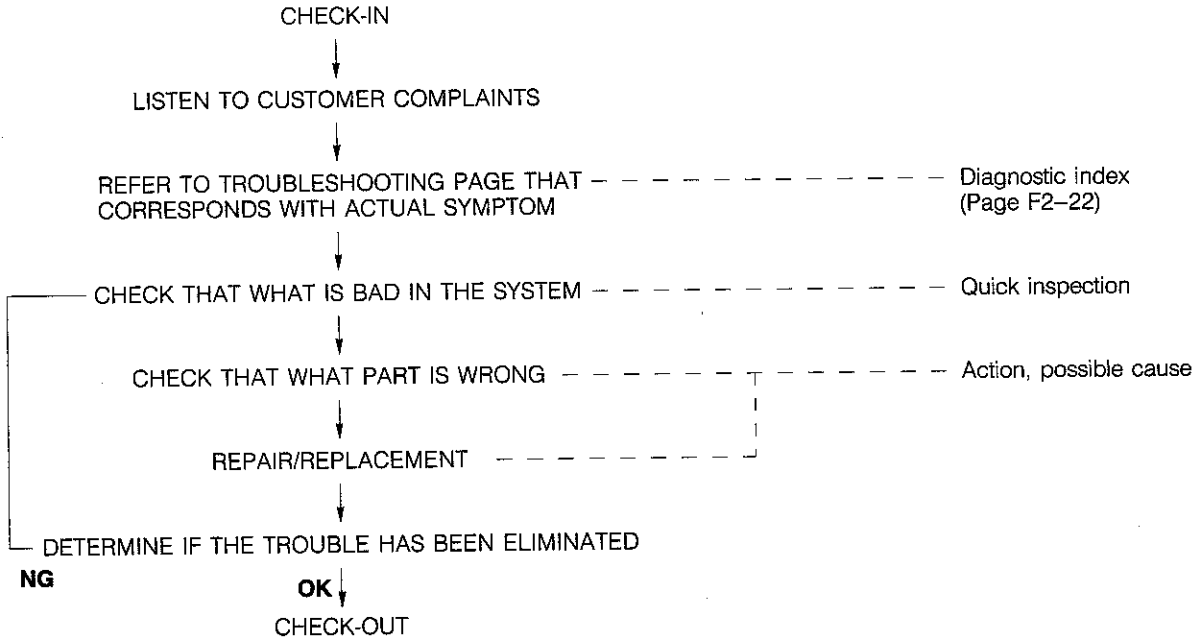
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HOW TO USE THIS SECTION

Introduction

Most of the fuel and emission control system is electronically controlled. Thus, it is sometimes difficult to diagnose problems in the system, especially intermittent problems. Before undertaking actual checks, take just a few minutes to talk with a customer who approaches with a drivability complaint. The customer is often a good source of information on such problems, especially intermittent ones. Through talks with the customer, one can find out what the symptoms are and under what conditions they occur.

Work flow



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How to read the troubleshooting chart

F2 TROUBLESHOOTING GUIDE		TROUBLESHOOTING GUIDE F2	
SYMPTOM TROUBLESHOOTING		STEP 1	
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Check for malfunction code (M) with DTC (MIL ON, Test connector (Green) not connected)	Yes: Check for cause by referring to check sequence Go to Next Step	F2-127
2	Check for leaks by introducing high-pressure lead wire cranking	Yes: Go to Next Step No: Check oxygen system (refer to system system troubleshooting)	G-19
3	Check for fuel pump operating sound from fuel filter unit (MIL ON, Test connector (Green) 2-pin connected)	Yes: Check engine start or no operation No: Check circuit opening (relays, etc.) No: Check circuit opening (relays, etc.)	F2-150 F2-150 F2-150
4	Check fuel line pressure (MIL ON, Test connector (Yellow-5-pin) connected) Fuel line pressure: 24-30 kPa (2.7-3.3 kg/cm ² , 0.4-0.5 psi)	Yes: Go to Next Step No: Check fuel pump (Refer to pressure)	F2-150 F2-150 F2-150
5	Check to engine operating sound while cranking	Yes: Go to Next Step No: Check valve timing (Refer to timing)	F2-151 F2-151
6	Check idling behavior (Check connector for tachometer, phone 1-pin and ground (Green) OK) Suspect a well-known ECU Check of the common rail system	Yes: Check idling behavior (Refer to idling) No: Check valve timing (Refer to timing)	F2-151 F2-151
7	Check idling behavior (Check connector for tachometer, phone 1-pin and ground (Green) OK) Suspect a well-known ECU Check of the common rail system	Yes: Check idling behavior (Refer to idling) No: Check valve timing (Refer to timing)	F2-151 F2-151

TROUBLESHOOTING GUIDE F2	
STEP 1	STEP 2

Left page shows the troubleshooting procedure

- QUICK INSPECTION
- ACTION
- POSSIBLE CAUSE AND DETAILED INSPECTION

Right page illustrates how to perform QUICK INSPECTION

Crank normally but won't start (No combustion)						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code (01) with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-127	
		No	Go to Step 2			
2	Check for spark by disconnecting high-tension lead while cranking	Yes	Go to Step 3			
		No	Check ignition system (Refer to ignition system troubleshooting)		G-19	
3	Check for fuel pump operating sound from fuel filler port [IGN ON, Test connector (White: 1-pin) grounded]	Yes	Check if engine starts in this condition	Yes	Check circuit opening relay switching operation	F2-159
				Yes	Check circuit opening relay circuit (IGN: START)	
				Go to Step 4		
		No	Check circuit opening relay switching operation	F2-159	Yes	Check circuit opening relay circuit
					Check fuel pump circuit	F2-157
					Check fuel pump operation	
				No		

STEP:

This shows the order of troubleshooting. Proceed with troubleshooting by steps.

QUICK INSPECTION:

This describes an easy inspection necessary to determine the malfunction of parts quickly.

ACTION:

This recommends the appropriate action to take as a result (Yes or No) of the QUICK INSPECTION. How to perform the action is shown on the reference page.

POSSIBLE CAUSE AND DETAILED INSPECTION:

This shows the possible point of malfunction. The detailed inspection is shown on the reference page.

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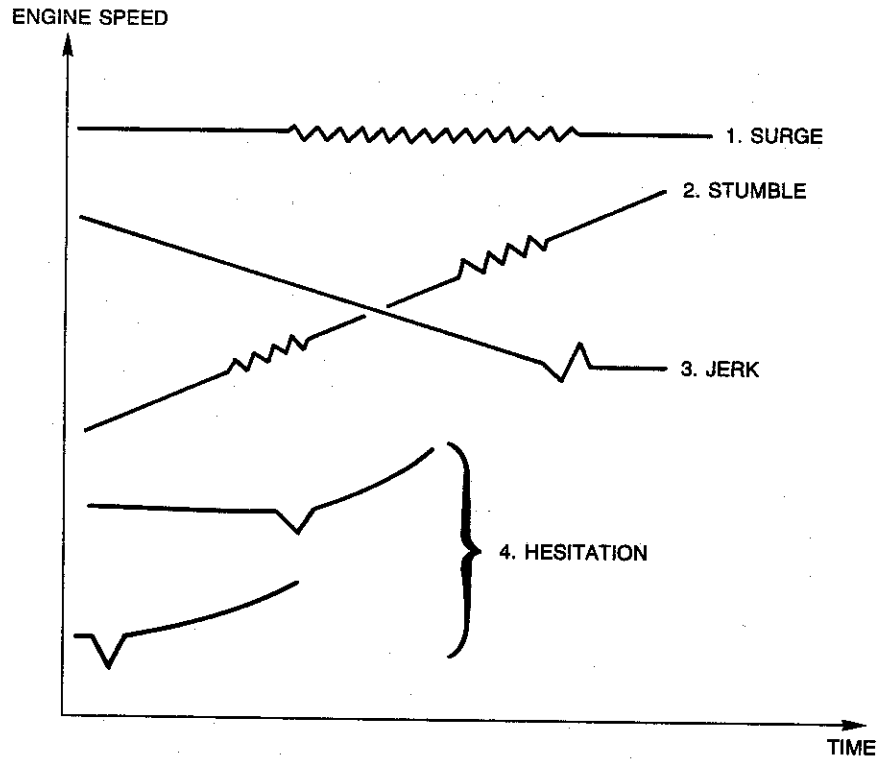
DIAGNOSTIC INDEX

No.	TROUBLESHOOTING ITEMS	REMARKS	PAGE
1	No cranks	Refer to Section G	
2	Cranks normally but won't start	No combustion	F2- 28
3	Cranks normally but hard to start (Always)		F2- 30
4	Cranks normally but hard to start (Only when engine is cold)		F2- 34
5	Cranks normally but hard to start (Only when engine is warm)		F2- 36
6	Cranks normally but hard to start (Only after heat soak)		F2- 38
7	Cranks normally but won't start (Intermittent)	No combustion	F2- 40
8	Rough idle (Always)		F2- 42
9	Rough idle (Only when engine is cold)		F2- 46
10	Rough idle (Only when engine is warm)		F2- 48
11	Rough idle (Only after heat soak)		F2- 52
12	Rough idle just after starting		F2- 56
13	Low idle speed (When A/C, P/S, E/L is ON)	Idle speed down and keeps low speed	F2- 58
14	High idle speed after warm up		F2- 60
15	Idle hunting or surging		F2- 62
16	Engine stall at idle (Always)		F2- 64
17	Engine stall at idle (Only when engine is cold)		F2- 66
18	Engine stall at idle (Only when engine is warm)		F2- 68
19	Engine stall at idle (When A/C or P/S or E/L is ON)		F2- 70
20	Engine stall during start up		F2- 72
21	Engine stall on deceleration		F2- 74
22	Engine stall at idle (Intermittent)		F2- 78
23	Hesitates/Stumble on acceleration	Includes start up	F2- 80
24	Hesitates at steady speed		F2- 82
25	Jerking on acceleration		F2- 84
26	Knocking		F2- 86
27	Poor acceleration		F2- 88
28	Lack of power		F2- 92
29	Bucking at high speed		F2- 96
30	Bucking on deceleration		F2- 98
31	Poor fuel economy		F2-100
32	High oil consumption/White exhaust smoke		F2-102
33	Afterburn on deceleration		F2-104
34	Rotten egg smell		F2-106
35	Gasoline fumes		F2-108
36	MIL always ON	(Federal and Canada) Odometer does not indicate emission system parts replacement time, but MIL is ON (California) Engine condition is OK, but MIL is ON	F2-110
37	MIL never ON	(Federal and Canada) Emission system parts replacement time has come, but MIL never ON (California) Self-diagnosis checker indicates malfunction code No., but MIL never ON	F2-112
38	A/C does not work		F2-114

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Description of Drivability

- (1) SURGE: Continuous soft jerking during cruise.
- (2) STUMBLE: Mild jerking during acceleration.
- (3) JERK: Shock occurring when the accelerator pedal is depressed just after deceleration.
- (4) HESITATION: Flat spot occurring just after the accelerator pedal is depressed.



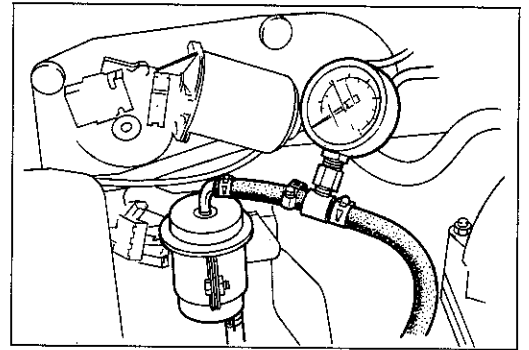
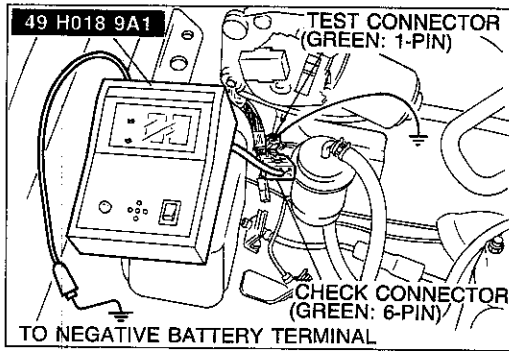
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SYMPTOM TROUBLESHOOTING

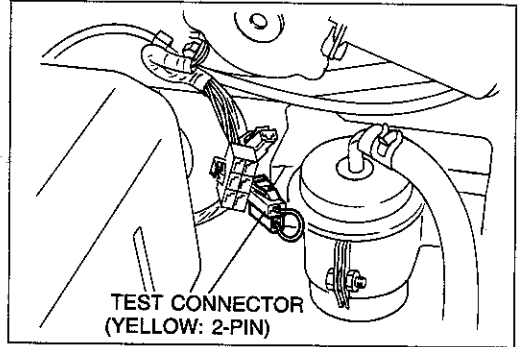
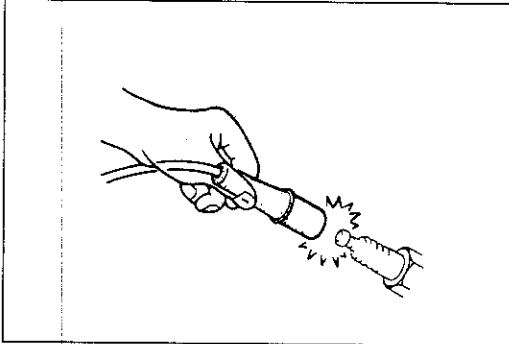
Crank normally but won't start (No combustion)							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Check for malfunction code (02) with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-123		
		No	Go to Next Step				
2	Check for spark by disconnecting high-tension lead while cranking	Yes	Go to Next Step				
		No	Check ignition system (Refer to ignition system troubleshooting)			Section G	
3	Check for fuel pump operating sound from fuel filler port [IGN ON, Test connector (Yellow: 2-pin) connected]	Yes	Check if engine starts in this condition	Yes	Check circuit opening relay switching operation	F2-153	
				No	Go to Next Step		
		No	Check circuit opening relay switching operation	F2-153	Yes	Check circuit opening relay circuit	F2-153
					No	Check fuel pump operation	F2-151
			No	Replace circuit opening relay	F2-153		
4	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi)	Yes	Go to Next Step				
		No	Check fuel pump maximum pressure	F2-150	Yes	Replace pressure regulator	F2-155
				No	Replace fuel pump	F2-152	
5	Check for injector operating sound while cranking	Yes	Go to Next Step				
		No	Check voltage at ECU (2U) and (2V) terminals with SST Voltage: Approx. 12V (IGN ON)	F2-175	Yes	Check throttle sensor	F2-181
						Replace ECU	F2-175
					No	Check wiring for short or open	
				Poor ground circuit from ECU (2A) terminal (Check terminal voltage with SST)	F2-175		
6	Substitute a well-known ECU Check if the condition improves	Yes	ECU malfunction				
		No	Check ground circuit from ECU (2B) terminal with SST Voltage: 0V (IGN ON)	F2-175	Yes	Go to Next Step	
				No	Poor ground circuit		
7					Low compression	Section B2	

1BU0F2-006

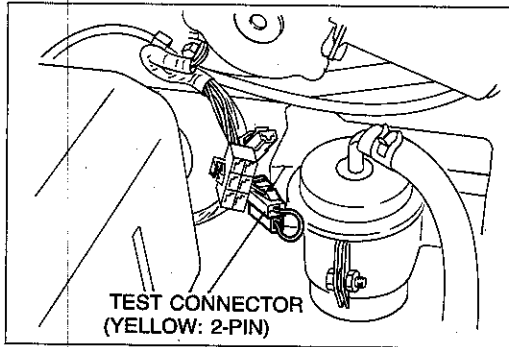
STEP 1



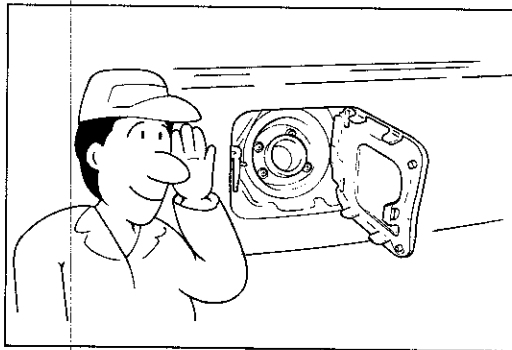
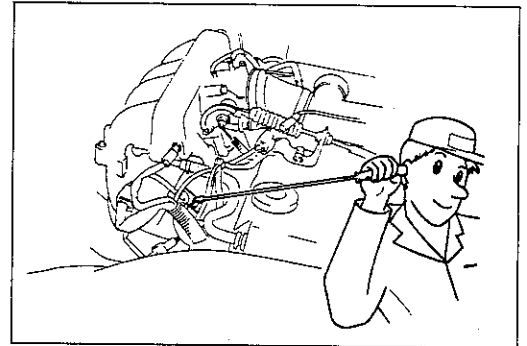
STEP 2



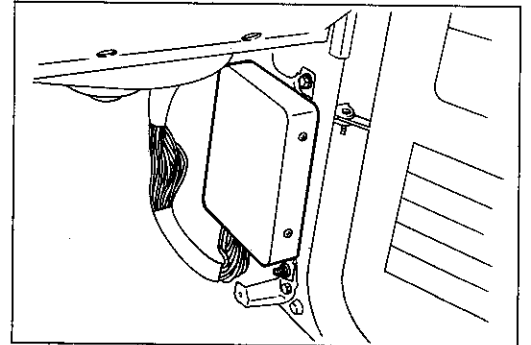
STEP 3



STEP 5



STEP 6

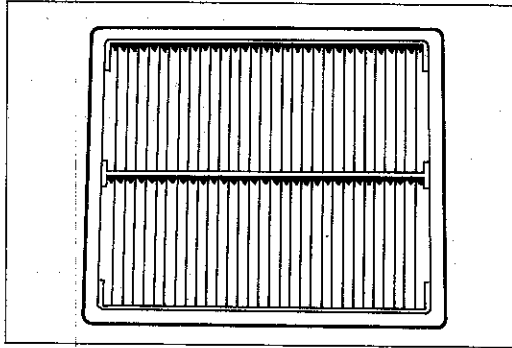


STEP 4

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

Crank normally but hard to start (Always)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check if vacuum hoses and the air hoses are connected correctly	Yes	Go to Next Step				
		No	Connect correctly				
2	Check air cleaner element for clogging	Yes	Go to Next Step				
		No	Clean air cleaner element				
3	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing			F2-117	
4	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (If step 3 OK)	F2-156
					No	Check spark plug	Section G
						Check high-tension lead	Section G
Check distributor cap	Section G						
5	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	
					No	Check injector resistance	F2-157
	Check wiring short or open						
6	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi)	Yes	Go to Next Step				
		No	Check if fuel filter has been replaced according to maintenance schedule	F2-150	Yes	Check fuel line for clogging	
No	Replace fuel filter				F2-149		
	Check fuel pump maximum pressure Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm ² , 64—85 psi)	F2-150	Yes	Replace pressure regulator	F2-155		
			No	Replace fuel pump	F2-152		

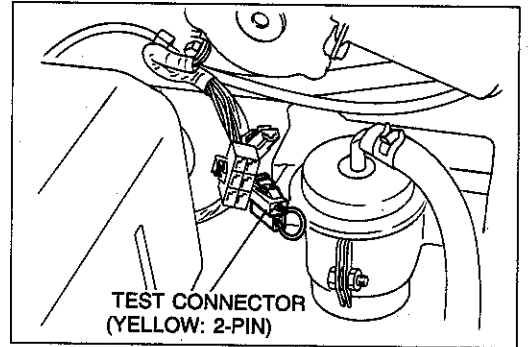
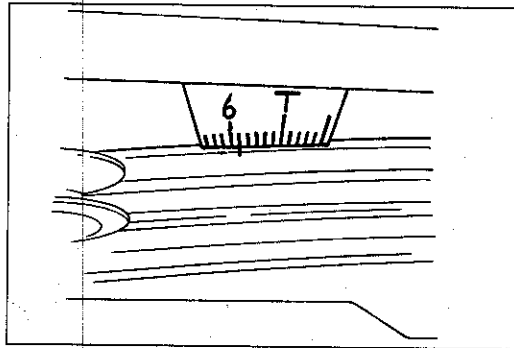
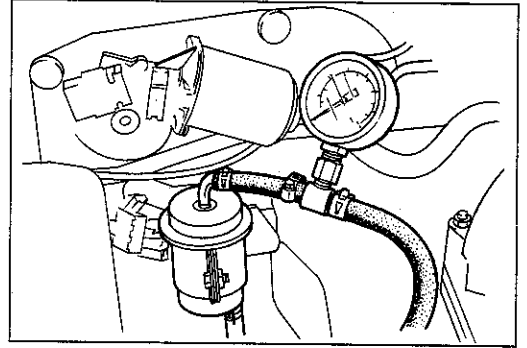
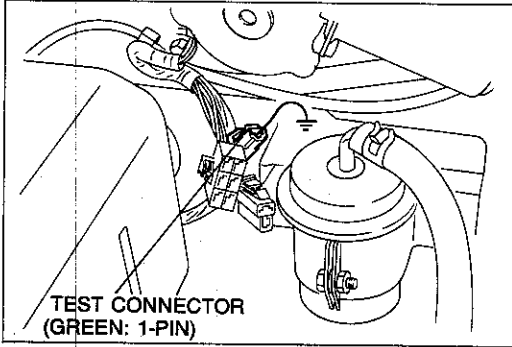
STEP 2



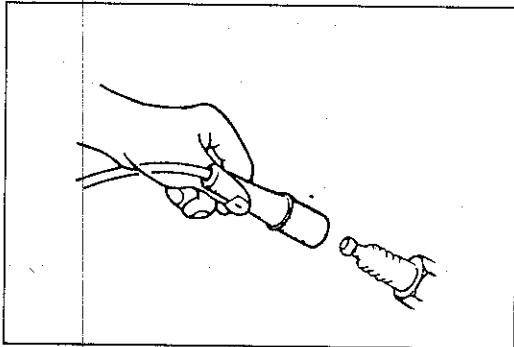
STEP 6

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

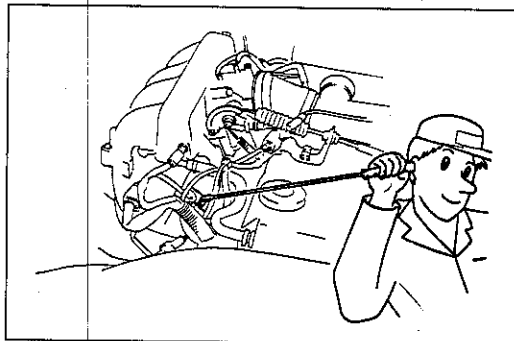
STEP 3



STEP 4



STEP 5



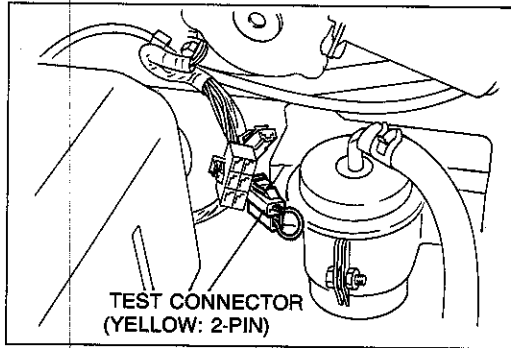
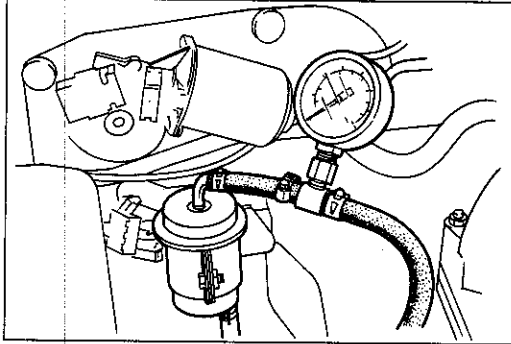
TROUBLESHOOTING GUIDE

Crank normally but hard to start (Always) (Cont'd)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
7	Operate fuel pump [IGN ON, Test connector (Yellow: 2-pin) connected] Turn ignition switch OFF and ob- serve fuel pressure for 5 minutes Fuel pressure: More than 147 kPa (1.5 kg/cm², 21 psi)	Yes	Go to Next Step				
		No	Check fuel pump pressure drop	F2-150	No	Replace fuel pump	F2-152
			Check pressure regulator pres- sure drop	F2-154	Yes	Check injector fuel leakage	F2-157
		No			Replace pressure regulator	F2-155	
8				Check compression	Section B2		

2BU0F2-004

STEP 7

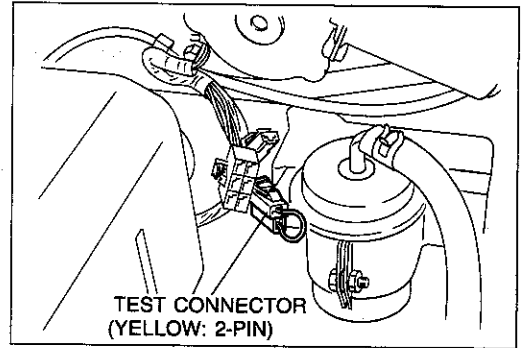
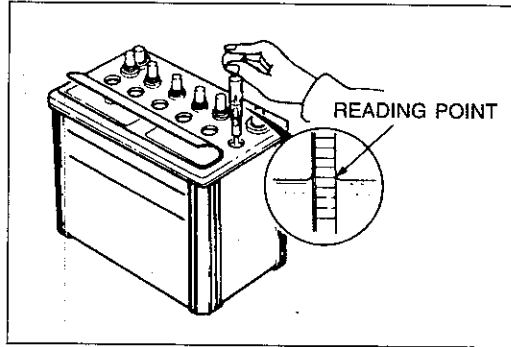
WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)



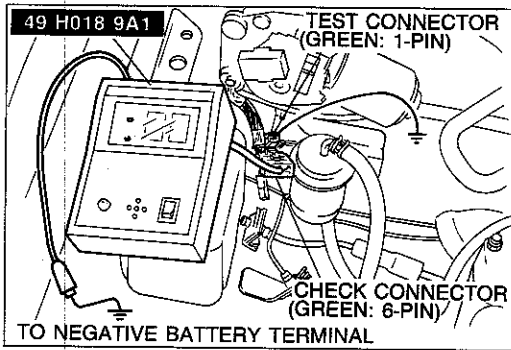
Crank normally but hard to start (Only when engine is cold)						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check specific gravity of battery using a hydrometer Specific gravity: Above 1.200	Yes	Go to Next Step			
		No	Recharge battery	Section G		
2	Check for malfunction code (09) (26) with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			
		No	Go to Next Step			
3	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step			
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Check spark plug	Section G
					Check high-tension lead	Section G
					Check distributor cap	Section G
4	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm², 38—46 psi)	Yes	Go to Next Step			
		No	Check for fuel leaks			
			Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging	
		No	Check fuel pump maximum pressure Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm², 64—85 psi)	No	Replace fuel filter	F2-149
				Yes	Replace pressure regulator	F2-155
				No	Replace fuel pump	F2-152
5	Disconnect ISC valve connector when engine is cold Check if idle speed decreases during warm up	Yes	Go to Next Step			
		No		Check if BAC valve (air valve) opens when cold	F2-142	
6	Check voltage at ECU (1C) terminal with SST Voltage: Approx. 10V (while cranking)	Yes	Go to Next Step			
		No	Check starter interlock switch	Section G	Yes No	Check related wiring Replace switch
7	Check voltage at ECU (2Q) terminal with SST Voltage: Approx. 2.5V (IGN ON, Engine coolant temperature 20°C [68°F])	Yes	Go to Next Step			
		No		Check water thermosensor	F2-179	
8				Check compression	Section B2	

1BU0F2-008

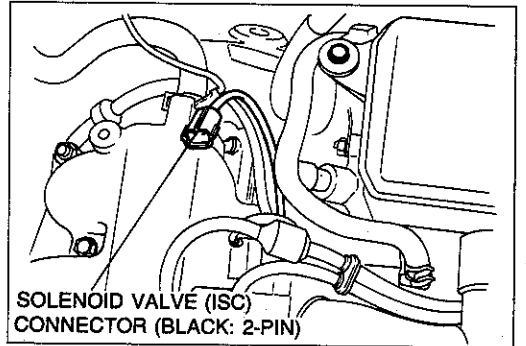
STEP 1



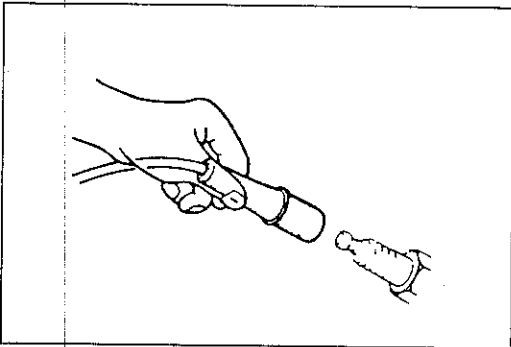
STEP 2



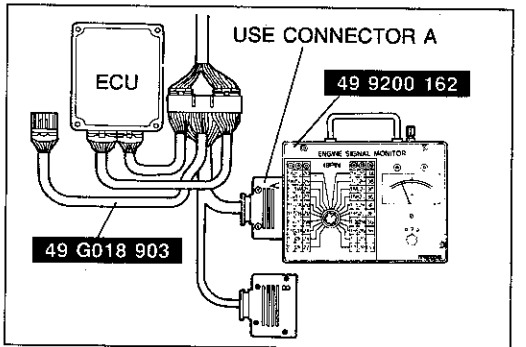
STEP 5



STEP 3

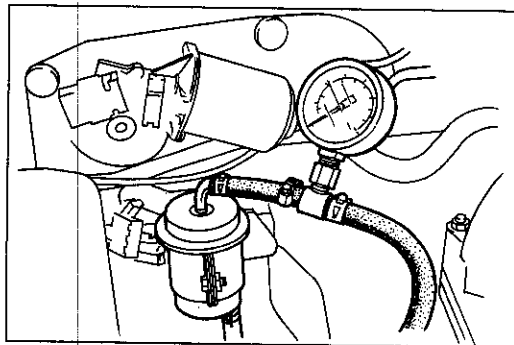
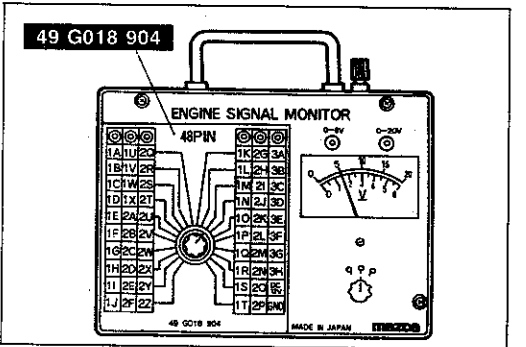


STEP 6



STEP 4

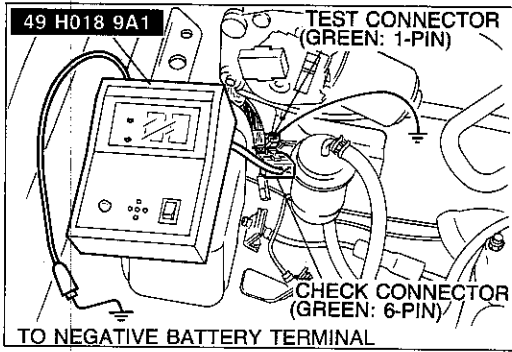
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)



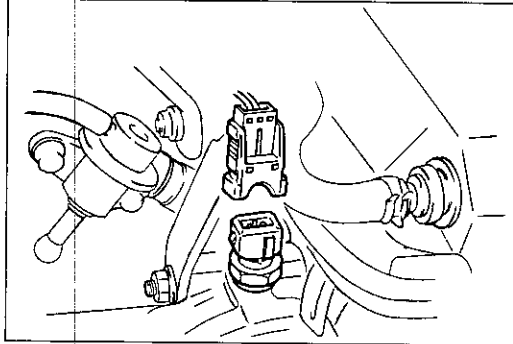
Crank normally but hard to start (Only when engine is warm)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122	
		No	Go to Next Step				
2	Disconnect water thermosensor connector Check if condition improves	Yes	Check water thermosensor connector condition as follows: 1. Shake connector and check if condition changes 2. Check condition of terminal (burned or damaged) 3. Connect a good terminal to harness side connector and check for looseness	Yes	Check water thermosensor	F2-179	
				No	Poor contact of water thermosensor connector		
		No	Go to Next Step				
3	Operate fuel pump [IGN ON, Test connector (Yellow: 2-pin) connected] Turn ignition switch OFF and observe fuel pressure for 5 minutes Fuel pressure: More than 147 kPa (1.5 kg/cm², 21 psi)	Yes	Go to Next Step				
		No	Check fuel pump pressure drop	F2-150	No	Replace fuel pump	F2-152
			Check pressure regulator pressure drop	F2-154	Yes	Check injector fuel leakage	F2-157
					No	Replace pressure regulator	F2-155
4					ECU malfunction		

1BU0F2-009

STEP 1

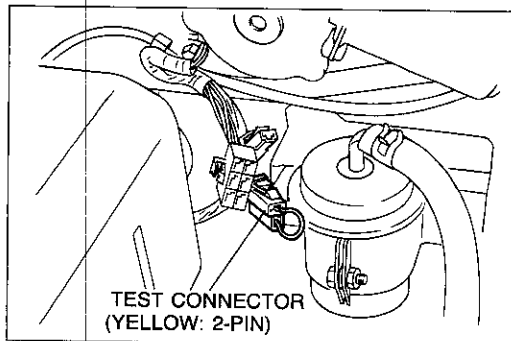
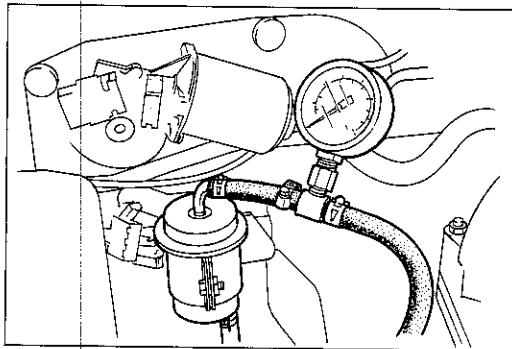


STEP 2



STEP 3

WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)

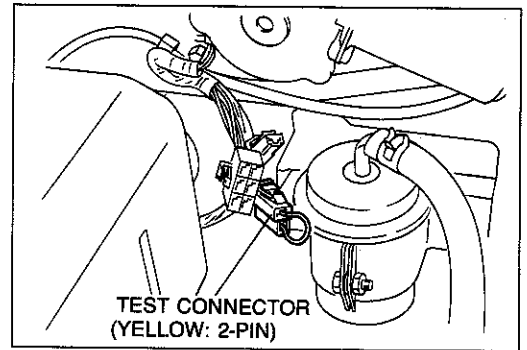
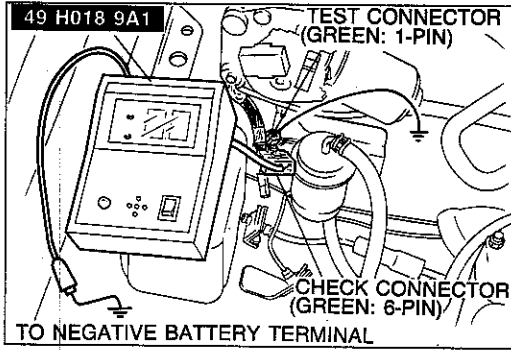


TROUBLESHOOTING GUIDE

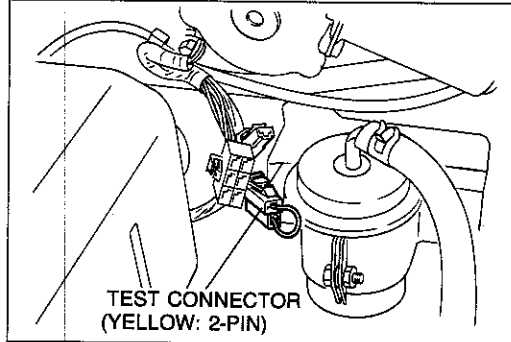
Crank normally but hard to start (Only after heat soak)								
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122		
		No	Go to Next Step					
2	Circulate fuel by operating fuel pump for 20 seconds [IGN ON, Test connector (Yellow: 2-pin) connected]. Check if condition improves	Yes	Go to Step 3					
		No	Go to Step 4					
3	Disconnect vacuum hose from pressure regulator Check if condition improves	Yes	Check the components related to pressure regulator control system	Check water thermo-sensor	F2-179			
				Check intake air thermosensor	F2-180			
				Check solenoid valve (PRC)	F2-160			
				ECU malfunction (Check (2T) terminal voltage)	F2-175			
No	Go to Next Step							
4	Operate fuel pump [IGN ON, Test connector (Yellow: 2-pin) connected] Turn ignition switch OFF and observe fuel pressure for 5 minutes Fuel pressure: More than 147 kPa (1.5 kg/cm², 21 psi)	Yes	Go to Next Step					
			No	Check fuel pump pressure drop	F2-150	No	Replace fuel pump	F2-152
				Check pressure regulator pressure drop	F2-154	Yes	Check injector fuel leakage	F2-155
						No	Replace pressure regulator	F2-155
5	Change fuel with specified one Check if condition improves	Yes	Poor fuel quality					
		No	Go to Next Step					
6		ECU malfunction						

1BU0F2-010

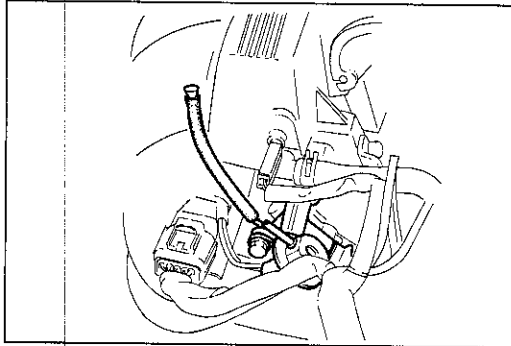
STEP 1



STEP 2

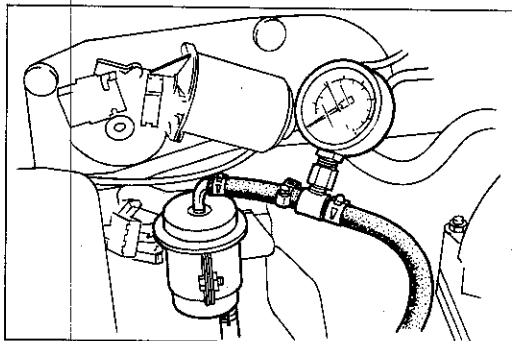


STEP 3



STEP 4

WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)

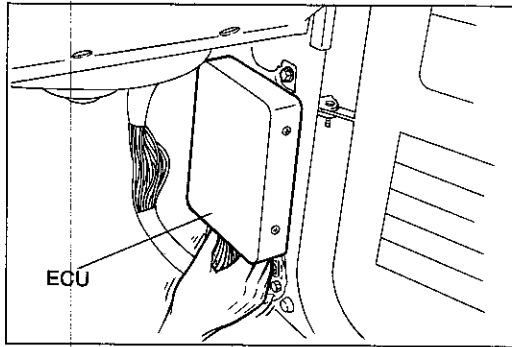
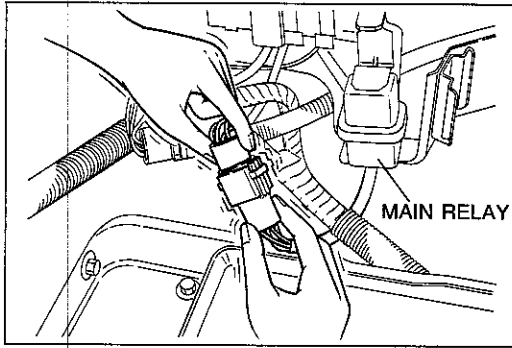
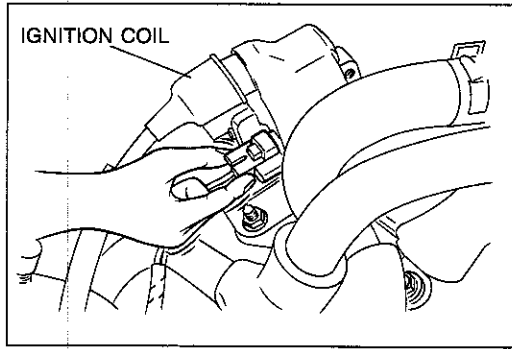


TROUBLESHOOTING GUIDE

Cranks normally but won't start (Intermittent)			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Shake connector of ignition coil, main relay and ECU while cranking Check if the engine starts	Yes	There may be a poor contact of the connector. Repair or replace the wiring
		No	Go to troubleshooting "Cranks normally but hard to start (Always)" F2-30

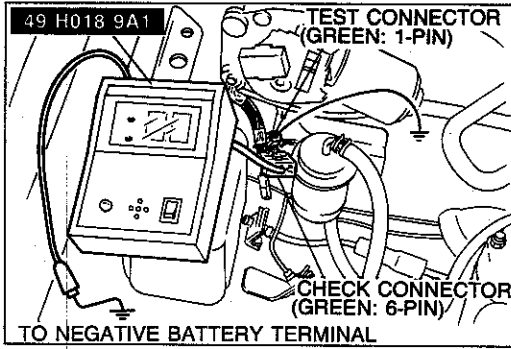
1BU0F2-096

STEP 1

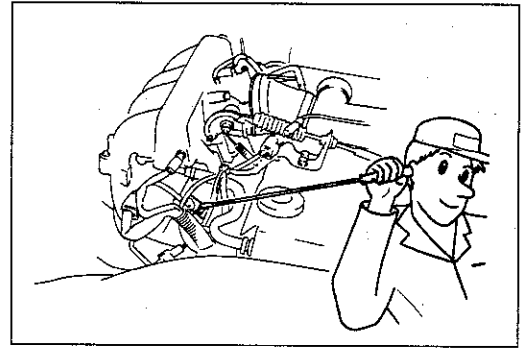


Rough idle (Always)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence			F2-122	
		No	"88" flashing Check voltage at ECU (2C) terminal with SST Voltage: 0V (IG ON) "00" Go to Next Step	F2-175	Yes	Replace ECU	F2-175
					No	Poor ground circuit	
2	Check ignition at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing (If possible)			F2-117	
3	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (If Step 3 OK)	F2-156
					No	Check spark plug	Section G
						Check high-tension lead	Section G
Check distributor cap	Section G						
4	Check idle speed after warm up Idle speed: 730—770 rpm (M/T) 750—790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust idle speed (If possible)			F2-118	
5	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	
					No	Check injector resistance	F2-157
						Check wiring short or open	
<table border="1"> <tr> <th>Terminals</th> <th>Resistance</th> </tr> <tr> <td>(B/Y)—(LG/B)</td> <td rowspan="2">6—8Ω</td> </tr> <tr> <td>(B/Y)—(LG/R)</td> </tr> </table>	Terminals	Resistance	(B/Y)—(LG/B)	6—8Ω	(B/Y)—(LG/R)		
Terminals	Resistance						
(B/Y)—(LG/B)	6—8Ω						
(B/Y)—(LG/R)							
6	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi)	Yes	Go to Next Step				
		No	Check for fuel leakage				
			Substitute a good fuel filter and retest	Yes	Replace fuel filter	F2-149	
			Check fuel pump maximum pressure	F2-150	Yes	Replace pressure regulator	F2-155
Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm ² , 64—85 psi)	No	Replace fuel pump	F2-152				
7	Check intake manifold vacuum at idle Vacuum: 500—540 mmHg (19.7—21.3 inHg)	Yes	Go to Next Step				
		No	Check for air leaks	F2-137	Yes	Intake air system components damaged	F2-137
					Vacuum and intake air hoses loose or damaged		
Bolts or nuts loose Gaskets damaged							
No	Check throttle valve closing condition	F2-138					

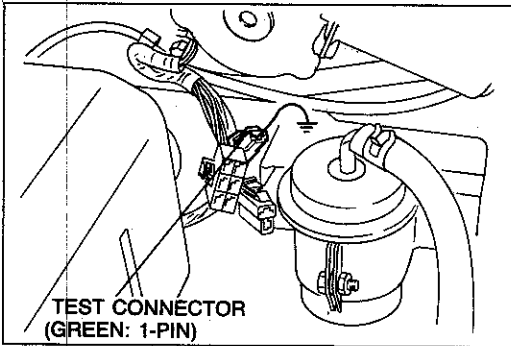
STEP 1



STEP 5

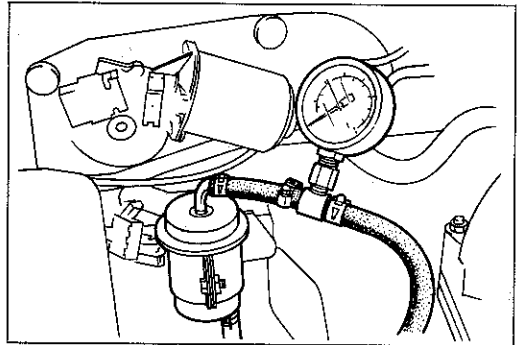
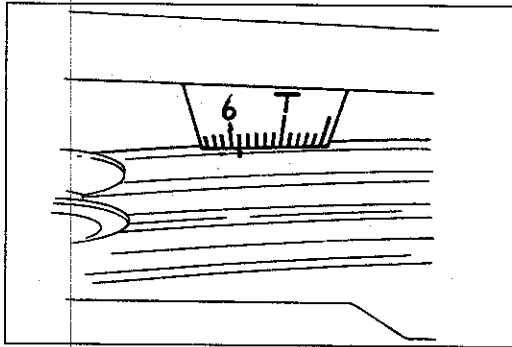


STEP 2

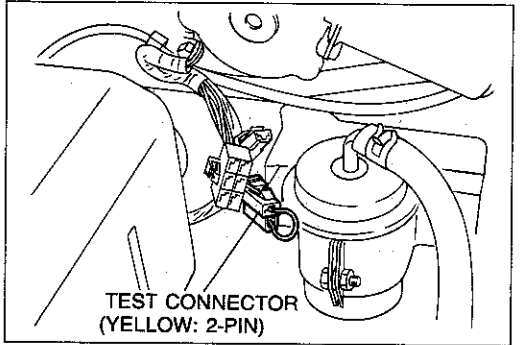
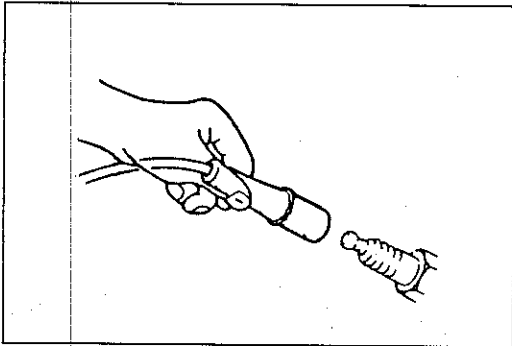


STEP 6

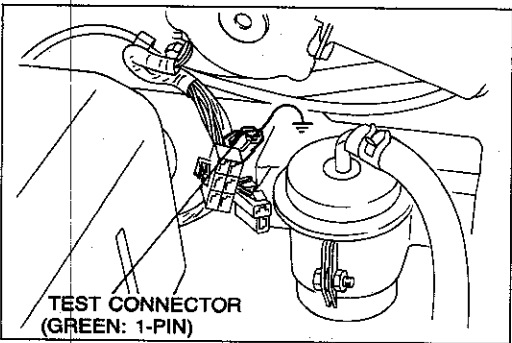
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)



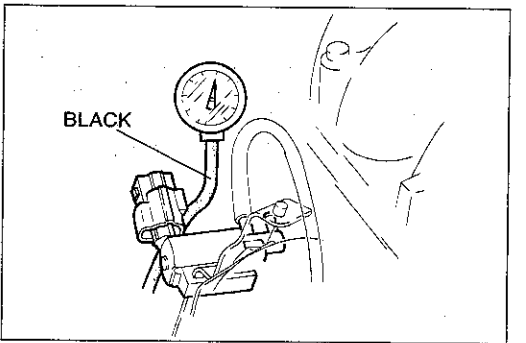
STEP 3



STEP 4



STEP 7

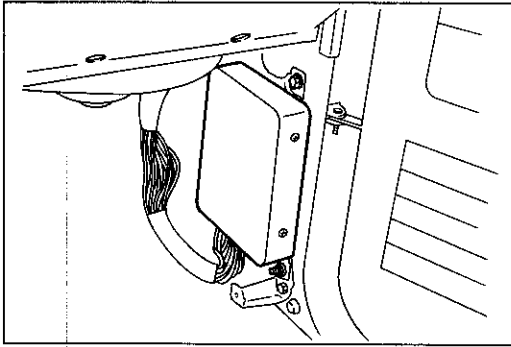


TROUBLESHOOTING GUIDE

Rough idle (Always) (Cont'd)						
STEP	QUICK INSPECTION		ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION
8	Substitute a well-known ECU Check if condition improves	Yes				ECU malfunction
		No	Check voltage at ECU (2C) terminal with SST Voltage: 0V (IGN ON)	F2-178	Yes	Go to Next Step
					No	Poor ground circuit
9					Check compression	Section B2

2BU0F2-005

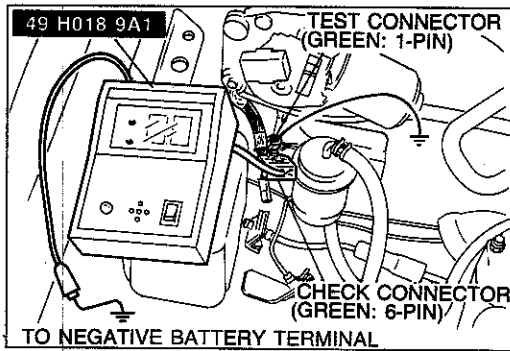
STEP 8



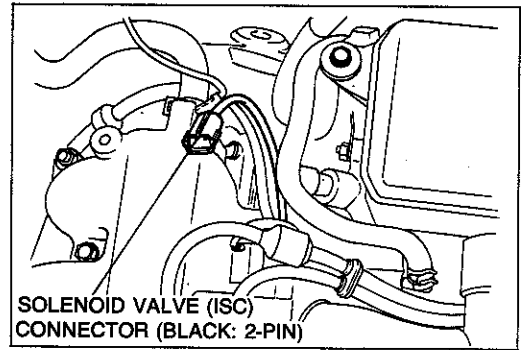
Rough idle (Only when engine is cold)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122	
		No	Go to Next Step				
2	Check ignition at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing (If possible)			F2-117	
3	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (If step 4 OK)	F2-156
					No	Check spark plug	Section G
						Check high-tension lead	Section G
Check distributor cap	Section G						
4	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	F2-157
					No	Injector malfunction (Check resistance)	
			Wiring short or open				
5	Disconnect ISC valve connector at idle when engine is cold Check if idle speed decreases during warm up	Yes	Go to Next Step				
		No				Check if BAC valve (air valve) opens when cold	F2-142
6	Check if specified engine oil is used	Yes	Go to Next Step				
		No	Change engine oil to specified oil				
7	Substitute a well-known ECU Check if condition improves	Yes				ECU malfunction	
		No				Check airflow sensor	F2-179

2BU0F2-006

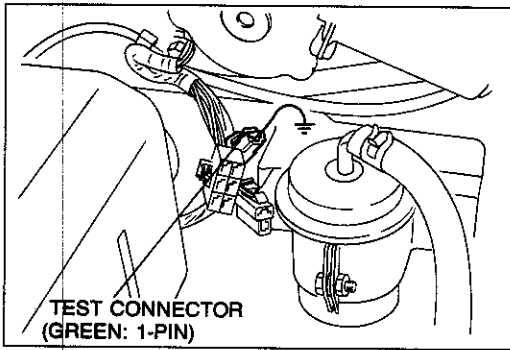
STEP 1



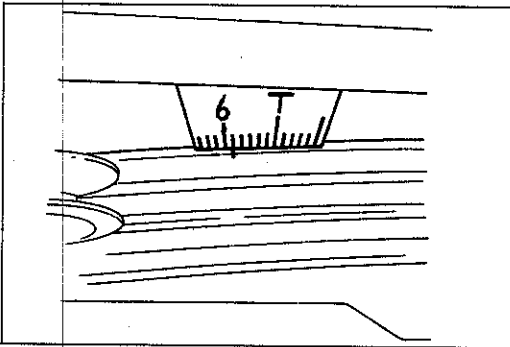
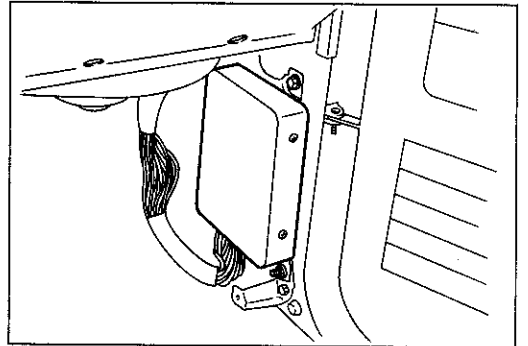
STEP 5



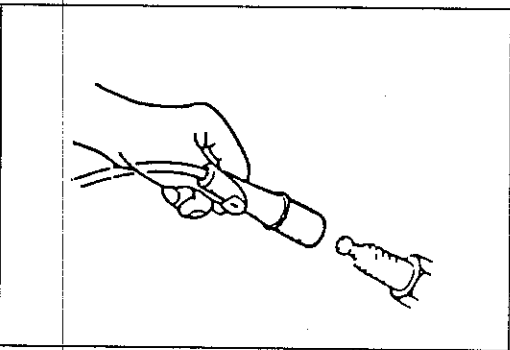
STEP 2



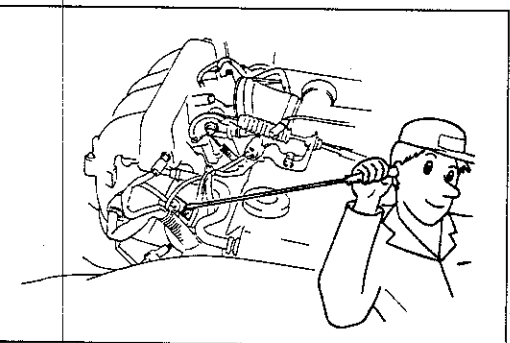
STEP 7



STEP 3

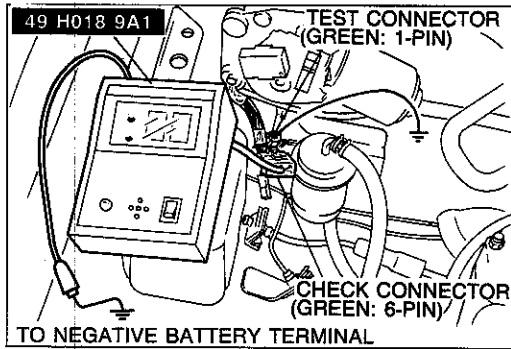


STEP 4

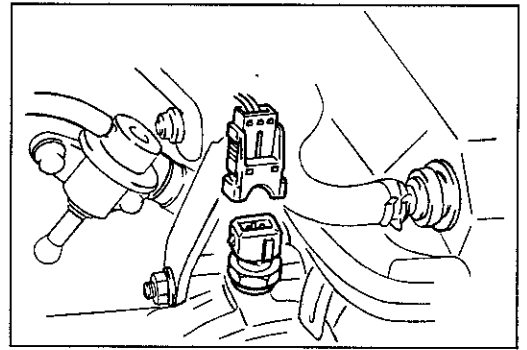


Rough idle (Only when engine is warm)							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Run engine at 2,000 rpm for more than 20 seconds Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122		
		No	Go to Next Step				
2	Check idle speed after warm up Idle speed: 730—770 rpm (M/T) 750—790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust idle speed (if possible)		F2-117		
3	Check for flashing of SST monitor lamp after warm up Monitor lamp: Flashes more than 8 times/10 seconds at 2,000—3,000 rpm [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No		Replace oxygen sensor	F2-183		
4	Disconnect ISC valve connector after warm up Check if engine speed drops	Yes	Go to Next Step				
		No		Check ISC valve	F2-142		
5	Disconnect water thermosensor connector Check if condition improves	Yes	Check water thermosensor connector condition as follows: 1. Shake connector and check if condition changes 2. Check condition of terminal (burned or damaged) 3. Connect a good terminal to harness side connector and check for looseness	Yes	Check water thermosensor	F2-179	
				No	Poor contact of water thermosensor connector		
		No	Go to Next Step				
6	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (if step 7 OK)	F2-156
					No	Check spark plug	Section G
						Check high-tension lead	Section G
	Check distributor cap	Section G					
Note: If spark plug is wet, injector may be leaking							

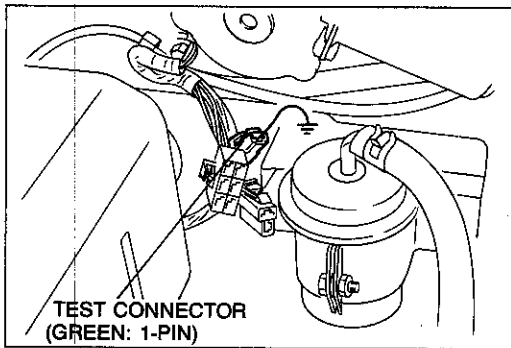
STEP 1



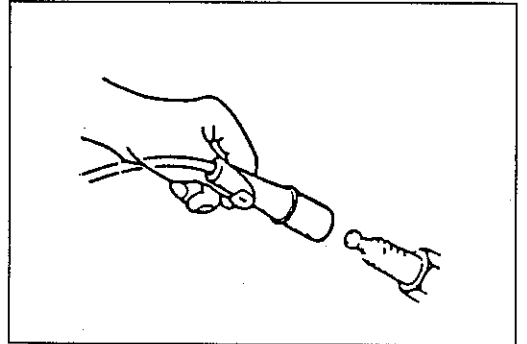
STEP 5



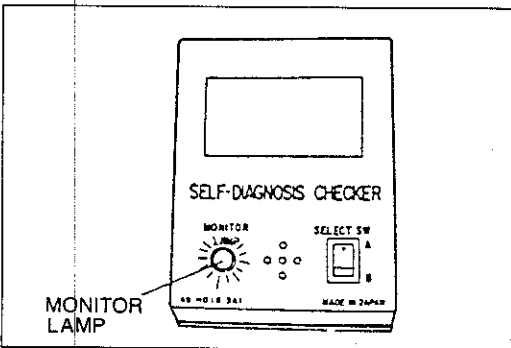
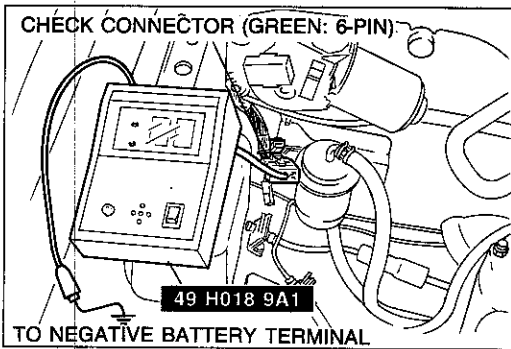
STEP 2



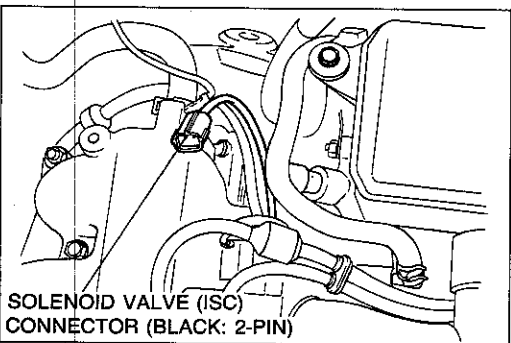
STEP 6



STEP 3



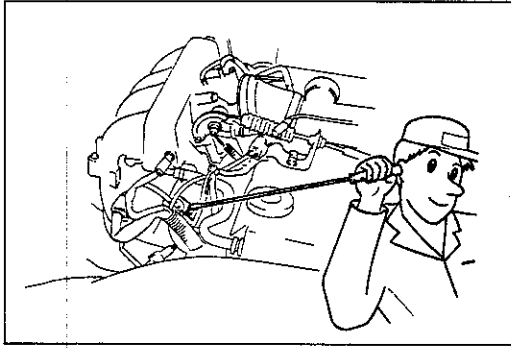
STEP 4



Rough idle (Only when engine is warm) (Cont'd)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
7	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	
					No	Check injector resistance	F2-157
						Check wiring short or open	
<table border="1"> <tr> <th>Terminals</th> <th>Resistance</th> </tr> <tr> <td>(B/Y)-(LG/B)</td> <td rowspan="2">6-8Ω</td> </tr> <tr> <td>(B/Y)-(LGR)</td> </tr> </table>	Terminals	Resistance	(B/Y)-(LG/B)	6-8Ω	(B/Y)-(LGR)		
Terminals	Resistance						
(B/Y)-(LG/B)	6-8Ω						
(B/Y)-(LGR)							
8	Check for air leaks by listening for sucking noise	Yes	Go to Next Step				
		No		Intake air system components damaged	F2-137		
				Vacuum and intake air hoses loose or damaged			
				Bolts or nuts loose			
Gaskets damaged							
9			Check compression	Section B2			

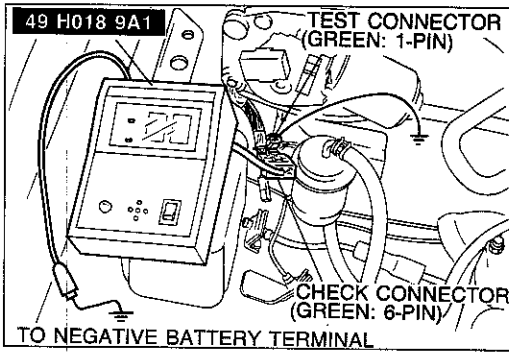
2BU0F2-007

STEP 7

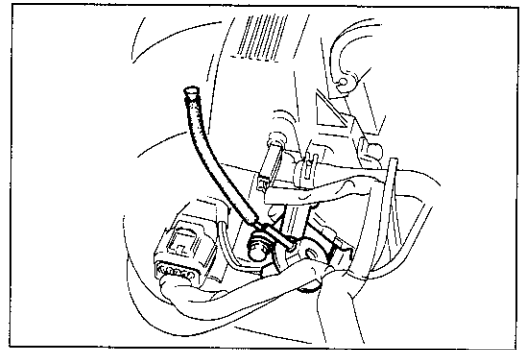


Rough idle (Only after heat soak)							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Run engine at, 2,000 rpm for more than 20 seconds Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122	
		No	Go to Next Step				
2	Check switches with SST Neutral switch Clutch switch [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to check sequence			F2-134	
3	Check for flashing of SST monitor lamp after warm up Monitor lamp: Flashes more than 8 times 10 seconds at 2,000-3,000 rpm [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No			Replace oxygen sensor	F2-183	
4	Disconnect vacuum hose from pressure regulator Check if condition improve	Yes	Check components related to pressure regulator control system	Check water thermo-sensor	F2-179		
				Check intake air thermosensor	F2-180		
				Check solenoid valve (PRC)	F2-160		
				ECU malfunction (Check (2T) terminal voltage)	F2-175		
		No	Go to Next Step				
5	Run engine at idle and stop it Observe fuel pressure for 5 minutes Fuel pressure: More than 147 kPa (1.5 kg/cm², 21 psi)	Yes	Go to Next Step				
		No	Check fuel pump pressure drop	F2-150	No	Replace fuel pump malfunction	F2-152
				F2-150	Yes	Check injector fuel leakage	F2-157
					No	Replace pressure regulator	F2-155
6	Disconnect high-tension lead of each cylinder at idle Check if engine condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (If step 3 OK)	F2-156
					No	Check spark plug	Section G
						Check high-tension lead	Section G
No	Check distributor cap	Section G					

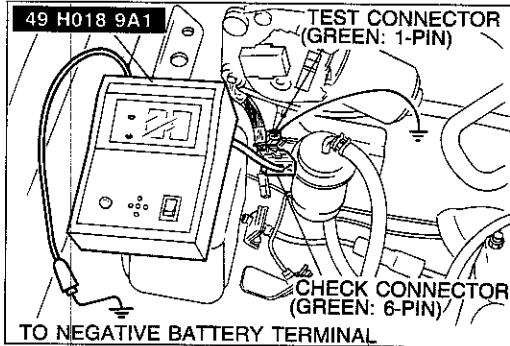
STEP 1



STEP 4

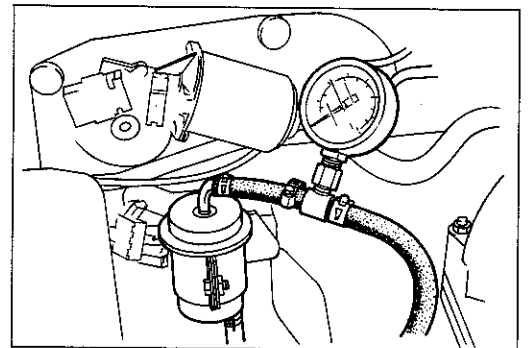
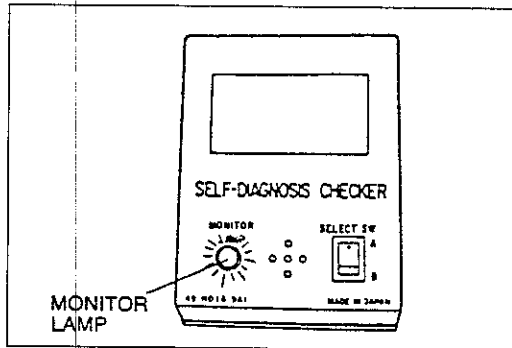


STEP 2

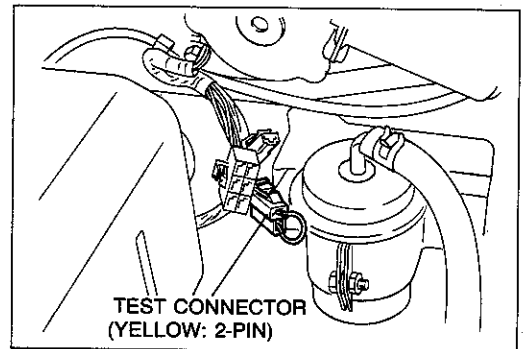
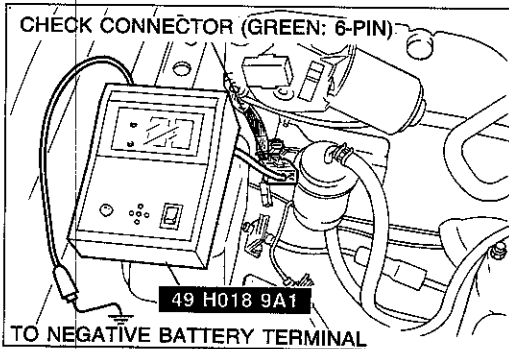


STEP 5

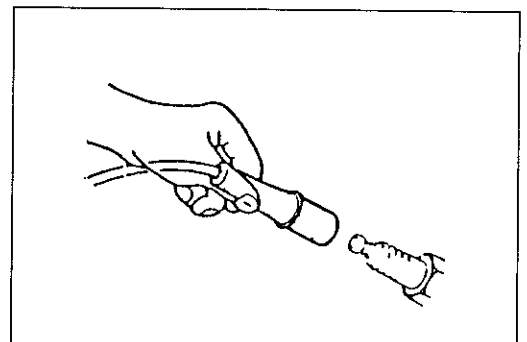
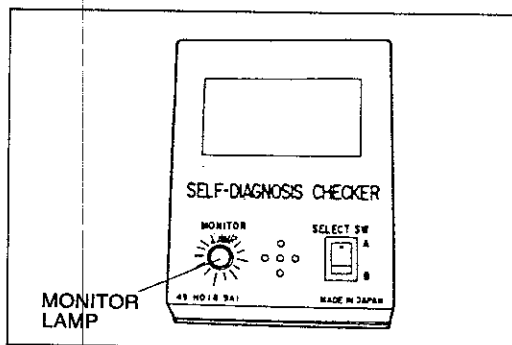
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)



STEP 3



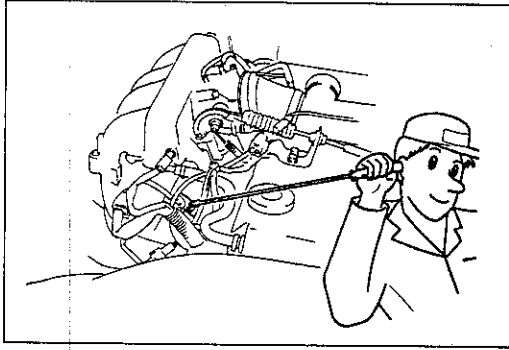
STEP 6



Rough idle (Only after heat soak) (Cont'd)							
STEP	QUICK INSPECTION		ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION	
7	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	
					No	Check injector resistance	F2-157
						Check wiring short or open	
Terminals	Resistance						
(B/Y)-(LG/B)	6-8Ω						
(B/Y)-(LG/R)							
8	Change fuel to specified grade	Yes				Poor fuel quality	
		No	Go to Next Step				
	Check if condition improves						
9						ECU malfunction	

1BU0F2-014

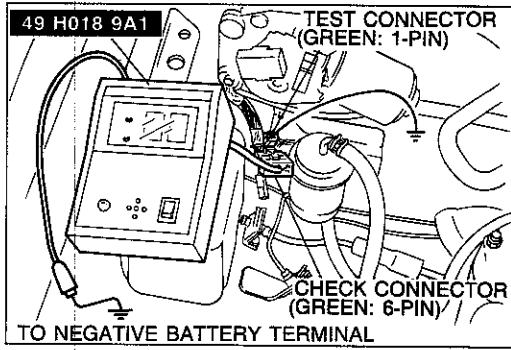
STEP 7



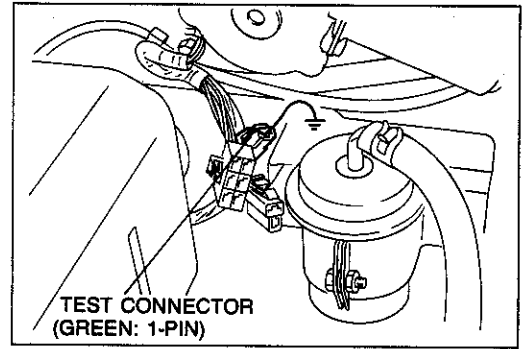
Rough idle just after starting							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122		
		No	Go to Next Step				
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to check sequence		F2-134		
3	Check ignition timing at idle after warm up Ignition timing: BTDC 4-6° (G6) 5-7° (F2) [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing		F2-117		
4	Check idle speed after warm up Idle speed: 730-770 rpm (M/T) 750-790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Try to adjust idle speed	F2-118	Yes	Idle-speed misadjustment	
					No	Check accelerator cable free play	F2-139
						Check ISC valve (Stuck closed)	F2-142
Check throttle body	F2-138						
5	Substitute a well-known ECU Check if condition improves	Yes			ECU malfunction		
		No	Check voltage at ECU (1C) terminal with SST Voltage: Approx. 10V (While cranking)	F2-175	Yes	Go to Next Step	
					No	Check starter interlock switch	Section G
				Check related wiring			
6					Poor quality engine oil		

2BU0F2-008

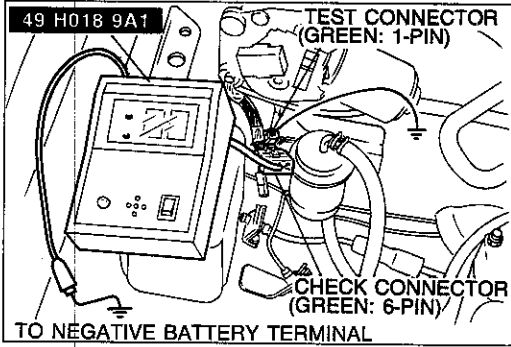
STEP 1



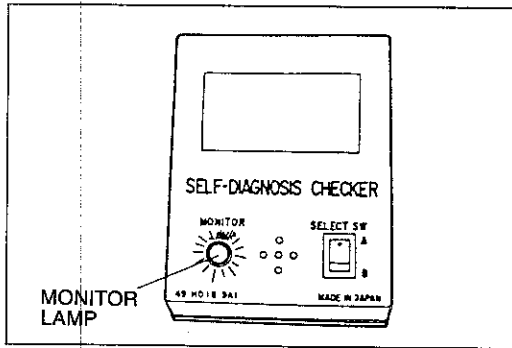
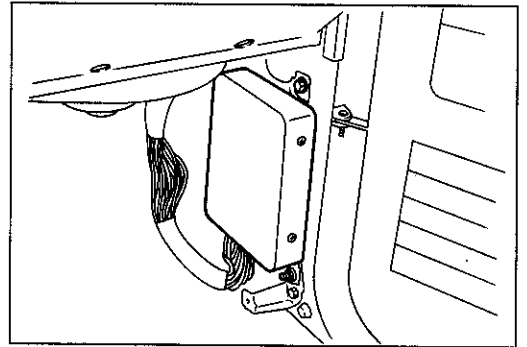
STEP 4



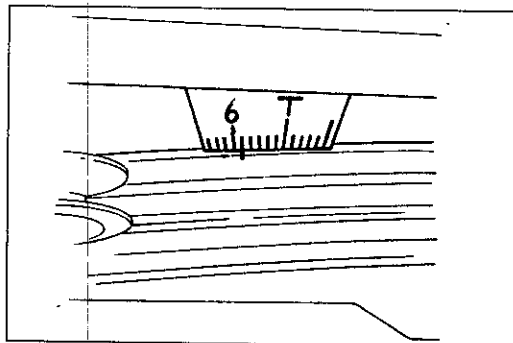
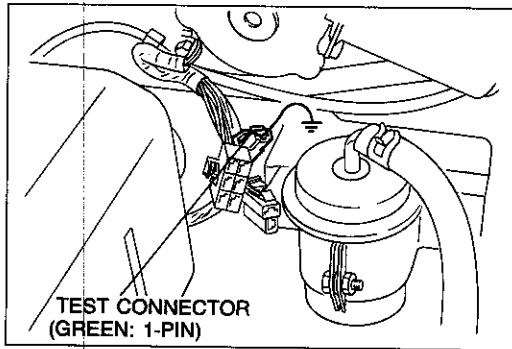
STEP 2



STEP 5



STEP 3



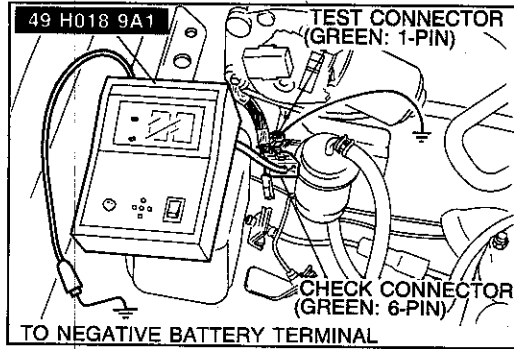
Low idle speed (When A/C, P/S, E/L is ON)			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence F2-122
		No	Go to Next Step
2	Disconnect ISC valve connector at idle Check if the condition does not change	Yes	Go to Next Step
		No	Check coolant level F2-116
			Check engine oil F2-116
3	Check switches with SST Idle switch Neutral switch Clutch switch [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step
		No	Check for cause by referring to check sequence F2-134
4	Check continuity between test connector (Green: 1-pin) and ground		Wiring short to ground

2BU0F2-045

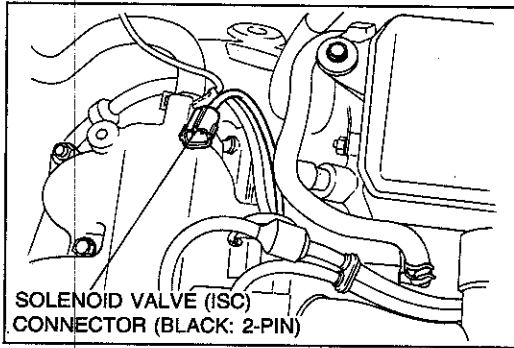
Note:

In case of low idle speed with A/C ON, if the problem cannot be solved by the above steps, it may be an A/C compressor malfunction. (Refer to Section U.)

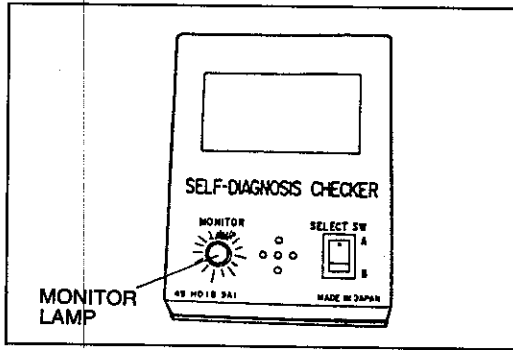
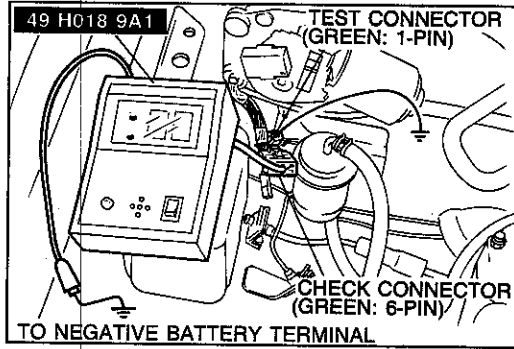
STEP 1



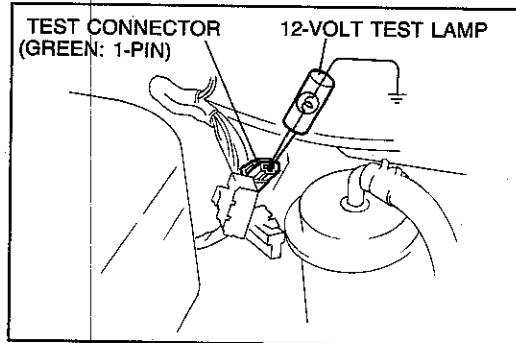
STEP 2



STEP 3



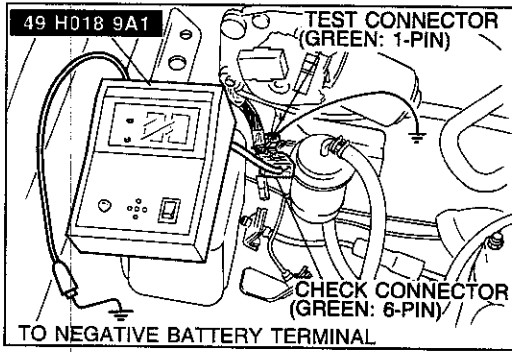
STEP 4



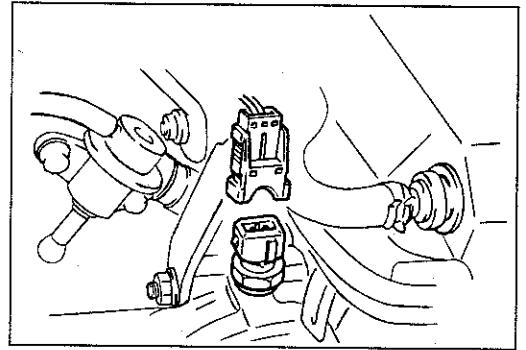
High idle speed after warm up						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122	
		No	Go to Next Step			
2	Check ignition timing at idle after warm up Ignition timing: BTDC 4-6° (G6) 5-7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step			
		No	Adjust ignition timing	F2-117		
3	Check if throttle valve is fully closed when accelerator released	Yes	Go to Next Step			
		No	Check if throttle linkage is correctly installed and operates freely		F2-137	
4	Check idle speed after warm up Idle speed: 730-770 rpm (M/T) Idle speed: 750-790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Check ISC valve		F2-142	
		No	Try to adjust idle speed	F2-118	Yes	Idle speed misadjustment
				No	Go to Next Step	
5	Disconnect ISC valve connector at idle when engine is cold Check if idle speed decreases during warm up	Yes	Go to Next Step			
		No	Check air valve		F2-142	
6	Disconnect water thermosensor connector and check if condition improves	Yes	Check water thermosensor connector condition as follows: 1. Shake connector and check if condition changes 2. Check condition of terminal (burned or damaged) 3. Connect a good terminal to harness side connector and check for looseness	Yes	Check water thermo-sensor	F2-179
				No	Poor contact of water thermo-sensor connector	
		No	Go to Next Step			
7				ECU malfunction		

2BU0F2-009

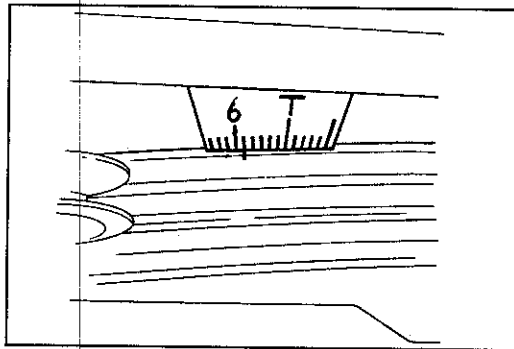
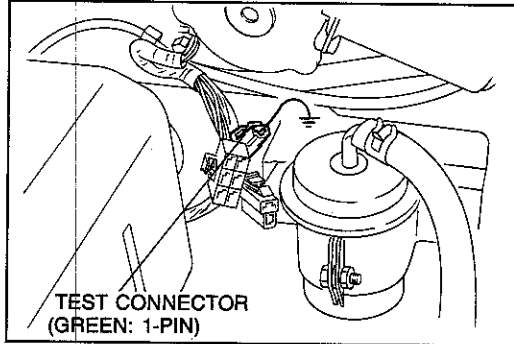
STEP 1



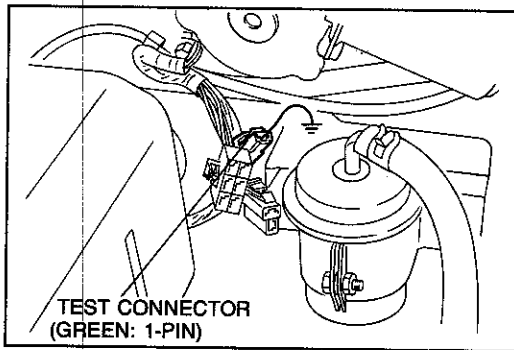
STEP 6



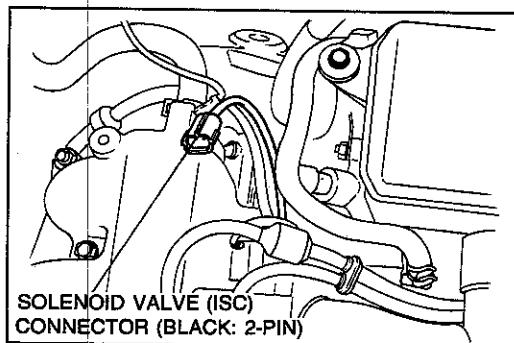
STEP 2



STEP 4



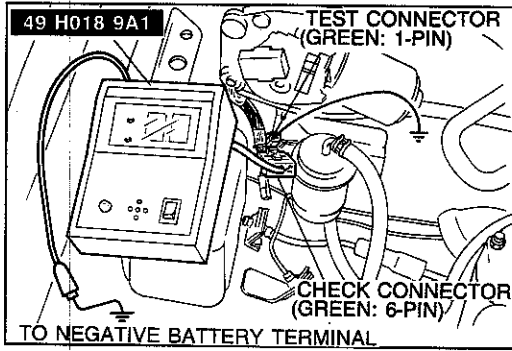
STEP 5



Idle hunting or surging							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	(If trouble occurs only at warm condition) Run engine at 2,000 rpm for more than 20 seconds Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122	
		No	Go to Next Step				
2	(If trouble occurs only at warm condition) Check for flashing of SST monitor lamp after warm up Monitor lamp: Flashes more than 8 times 10 seconds at 2,000—3,000 rpm [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No			Replace oxygen sensor	F2-183	
3	Check intake manifold vacuum at idle Vacuum: G6 500—540 mmHg (19.7—21.3 inHg) F2 510—550 mmHg (20.1—21.7 inHg)	Yes	Go to Next Step				
		No	Check for air leaks	F2-137	Yes	Intake air system components damaged	F2-137
						Vacuum and air intake hoses loose or damaged	
						Bolts or nuts loose	
No	Check throttle body	F2-138					
4	Pinch PCV hose Check if condition improves	Yes				Check PCV valve	F2-163
		No	Go to Next Step				
5	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm², 38—46 psi)	Yes	Go to Next Step				
		No	Check for fuel leaks				
			Substitute a good fuel filter and retest	Yes	Replace fuel filter	F2-149	
			Check fuel pump maximum pressure	F2-144	Yes	Replace pressure regulator	F2-155
No	Replace fuel pump	F2-152					
	Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm², 64—85 psi)						
6						ECU malfunction	

2BU0F2-010

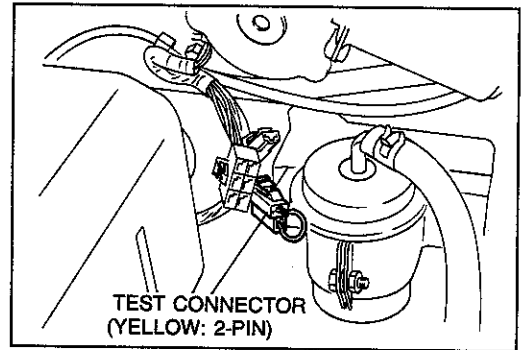
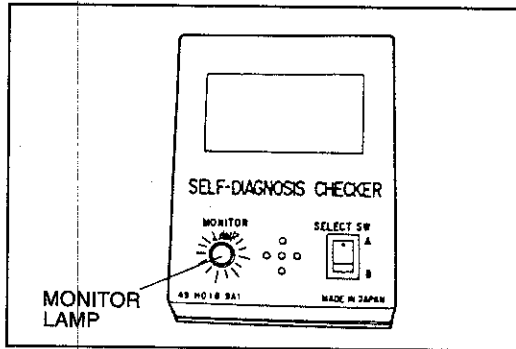
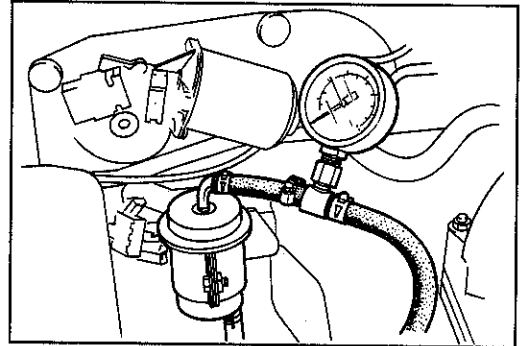
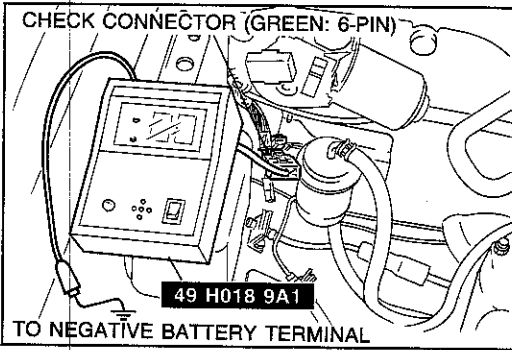
STEP 1



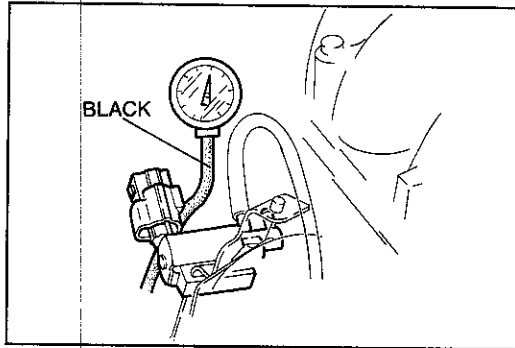
STEP 5

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

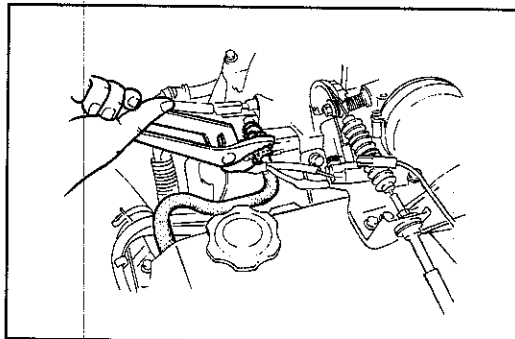
STEP 2



STEP 3



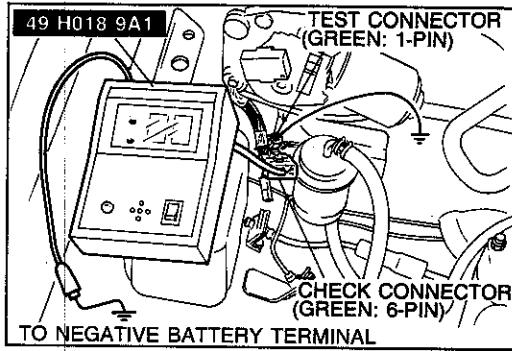
STEP 4



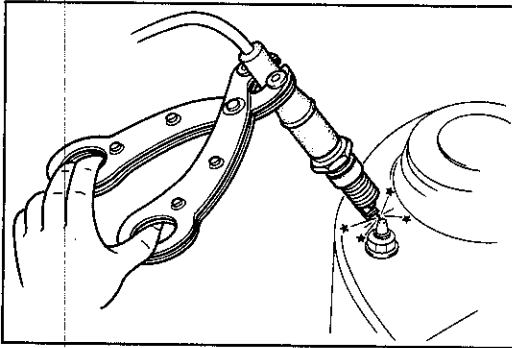
Engine stall at idle (Always)						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence		F2-122	
		No	Go to Next Step			
2	Check if strong blue spark is visible at spark plug while cranking	Yes	Go to Next Step			
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Check spark plug	Section G
					Check high-tension lead	Section G
Check distributor cap	Section G					
3	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi)	Yes	Go to Next Step			
		No	Check for fuel leaks			
			Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging	
				No	Replace fuel filter	F2-149
			Check fuel pump maximum pressure	F2-144	Yes	Replace pressure regulator
	No	Replace fuel pump		F2-152		
	Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm ² , 64—85 psi)					
4	Check if vacuum hoses and the air hoses are connected correctly	Yes	Go to Next Step			
		No	Connect correctly			
5			Airflow sensor	F2-179		
6			ECU malfunction			

1BU0F2-018

STEP 1

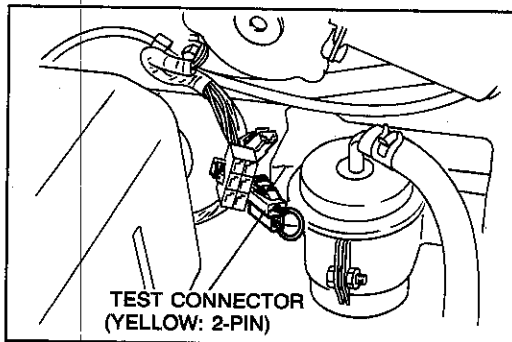
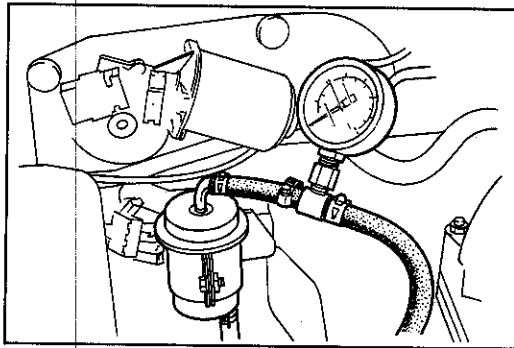


STEP 2



STEP 3

WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)



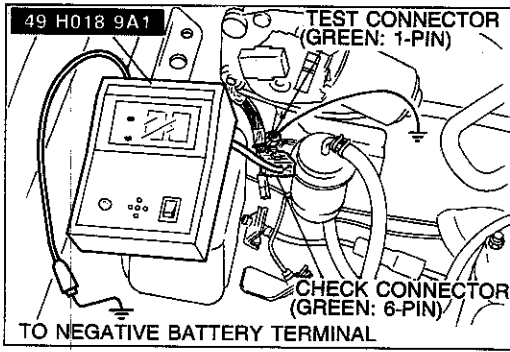
TROUBLESHOOTING GUIDE

Engine stall at idle (Only when engine is cold)

STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION						
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	<table border="1"> <tr> <td>Yes</td> <td>Check for cause by referring to check sequence</td> </tr> <tr> <td>No</td> <td>Go to Next Step</td> </tr> </table>	Yes	Check for cause by referring to check sequence	No	Go to Next Step	<table border="1"> <tr> <td></td> <td>F2-122</td> </tr> </table>		F2-122
Yes	Check for cause by referring to check sequence								
No	Go to Next Step								
	F2-122								
2			<table border="1"> <tr> <td>Check BAC valve (air valve)</td> <td>F2-142</td> </tr> </table>	Check BAC valve (air valve)	F2-142				
Check BAC valve (air valve)	F2-142								
3			<table border="1"> <tr> <td>ECU malfunction</td> </tr> </table>	ECU malfunction					
ECU malfunction									

1BU0F2-019

STEP 1



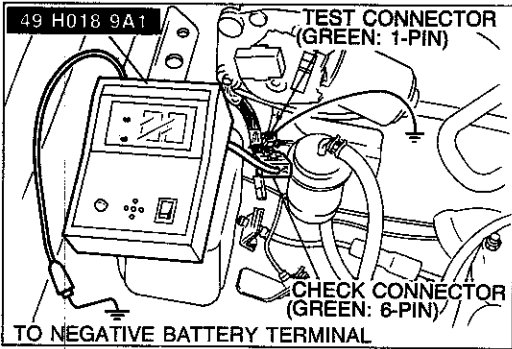
F2

TROUBLESHOOTING GUIDE

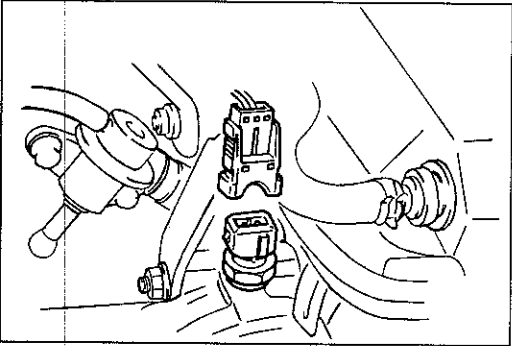
Engine stall at idle (Only when engine is warm)						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122	
		No	Go to Next Step			
2	Disconnect water thermosensor connector Check if condition improves	Yes	Check water thermosensor connector as follows: 1. Shake connector and check if condition changes 2. Check condition of terminal (burned or damaged) 3. Connect a good terminal to harness side connector and check for looseness	Yes	Check water thermosensor	F2-179
				No	Poor contact of water thermosensor connector	
		No	Go to Next Step			
3					ECU malfunction	

1BU0F2-020

STEP 1



STEP 2



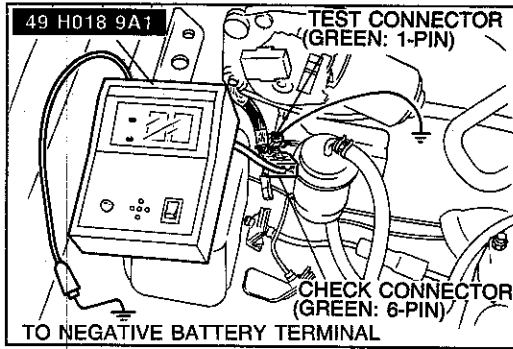
Engine stall at idle (When A/C, P/S, E/L is ON)					
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence F2-122		
		No	Go to Next Step		
2	Check switches with SST • Headlight switch • Blower switch [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step		
		No	Check for cause by referring to check sequence F2-134		
3	Disconnect ISC valve connector at idle [Test connector (Green: 1-pin) grounded] Check if the condition does not change	Yes	Go to Next Step		
		No	<table border="1"> <tr> <td>Check ISC valve</td> <td>F2-142</td> </tr> <tr> <td>Check engine oil</td> <td>F2-116</td> </tr> </table>	Check ISC valve	F2-142
Check ISC valve	F2-142				
Check engine oil	F2-116				
4	Check idle speed after warm up Idle speed: 730—770 rpm (M/T) 750—790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step		
		No	Adjust idle speed F2-118		
5			ECU malfunction		

2BU0F2-011

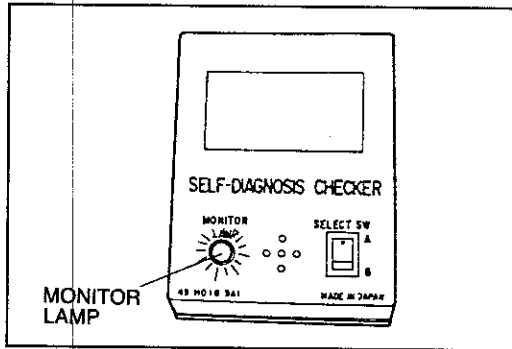
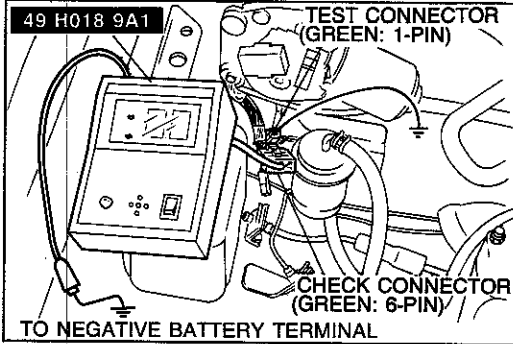
Note:

Engine stalls at idle with A/C ON, if the trouble cannot be fixed after checking above steps, it may be A/C compression malfunction (See Section U).

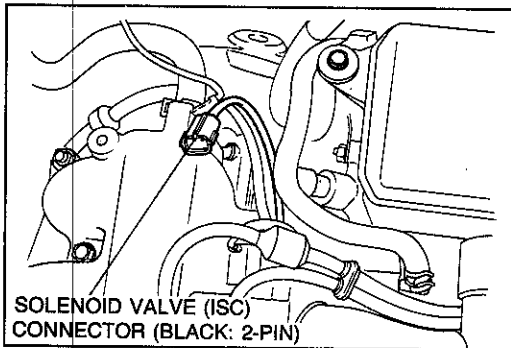
STEP 1



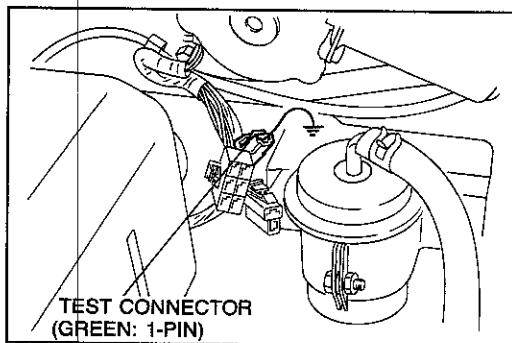
STEP 2



STEP 3



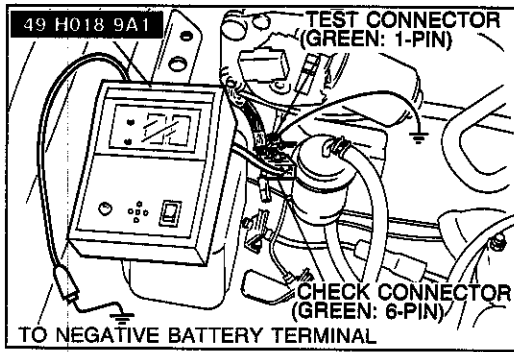
STEP 4



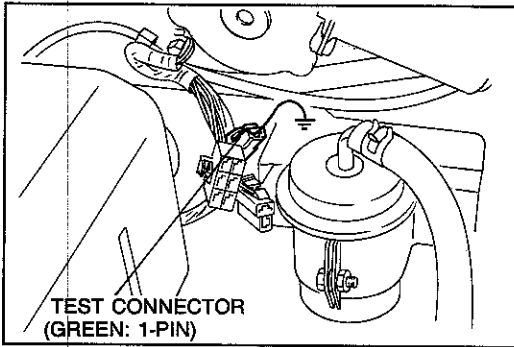
Engine stall during start up						
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION	
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122
		No	Go to Next Step			
2	Check idle speed after warm up Idle speed: 730—770 rpm (M/T) 750—790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step			
		No	Adjust idle speed			F2-118
3	Check for injector operating sound at idle	Yes	Go to Next Step			
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open
					No	Check injector resistance
			Terminal Resistance (B/Y)–(LG/B) 6–8Ω (B/Y)–(LG/R)	Check wiring		
4	Check ignition timing at idle after warm up Ignition timing: BTDC 4–6° (G6) 5–7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step			F2-117
No	Adjust ignition timing					
5					ECU malfunction	

2BU0F2-012

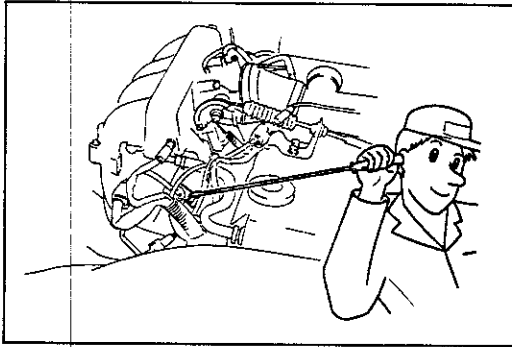
STEP 1



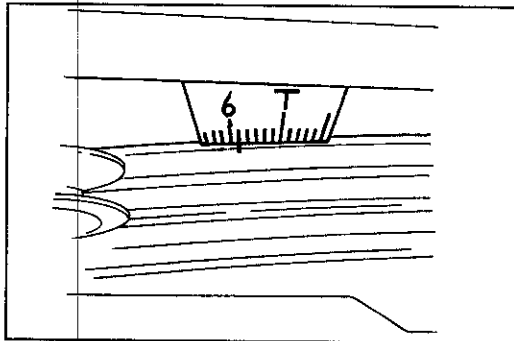
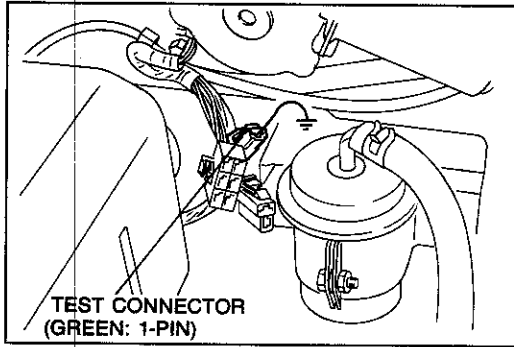
STEP 2



STEP 3



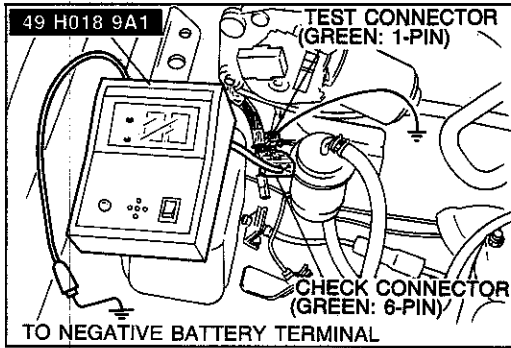
STEP 4



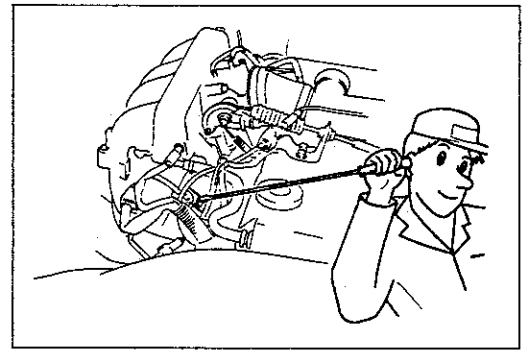
TROUBLESHOOTING GUIDE

Engine stall on deceleration							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for malfunction code with SST [IG ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence			F2-122	
		No	Go to Next Step				
2	Check idle switch and stoplight switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to check sequence			F2-134	
3	Check for flashing of monitor lamp after warm up Monitor lamp: Flashes more than 8 times/10 seconds at 2,000—3,000 rpm [The connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No		Replace oxygen sensor	F2-183		
4	Check for fuel cut operation during deceleration Fuel cut: after warm up Above 1,600 rpm (G6) Above 1,900 rpm (F2)	Yes	Go to Next Step				
		No	Check water thermosensor	F2-179	Yes	Replace ECU	F2-175
					No	Replace water thermosensor	F2-179

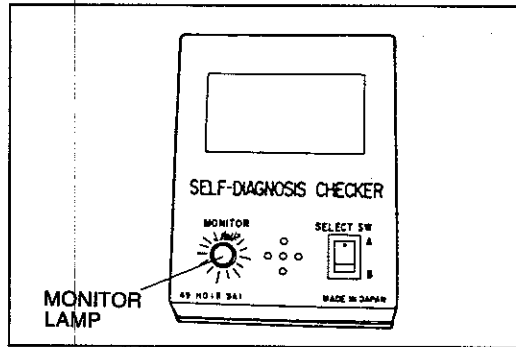
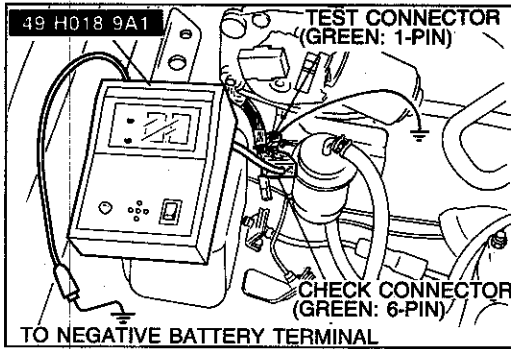
STEP 1



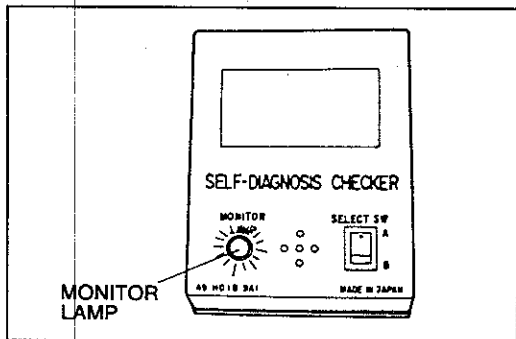
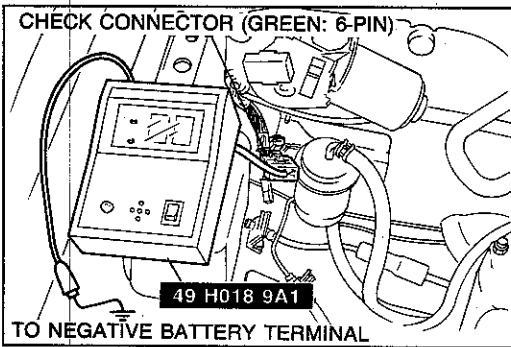
STEP 4



STEP 2



STEP 3

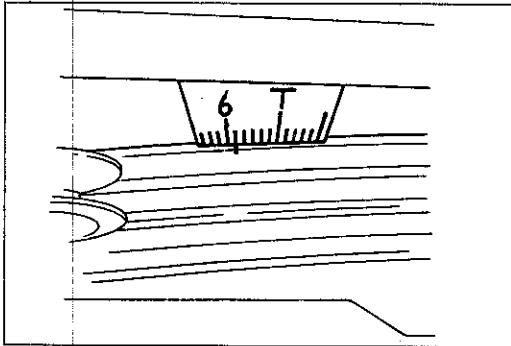
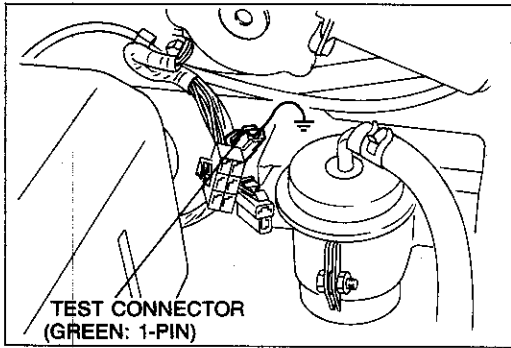


Engine stall on deceleration (Cont'd)

STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION
5	Check idle speed after warm up Idle speed: 730—770 rpm (M/T) 750—790 rpm (A/T, P range) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step	
		No	Adjust idle speed (if possible)	F2-117
6	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step	
		No	Adjust ignition timing	F2-117
7			Check ISC valve	F2-142

2BU0F2-013

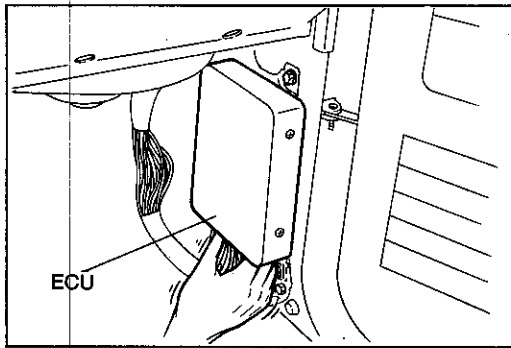
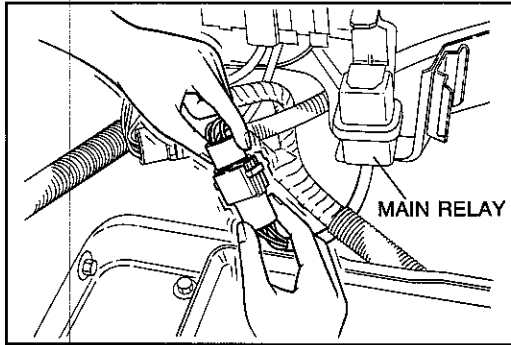
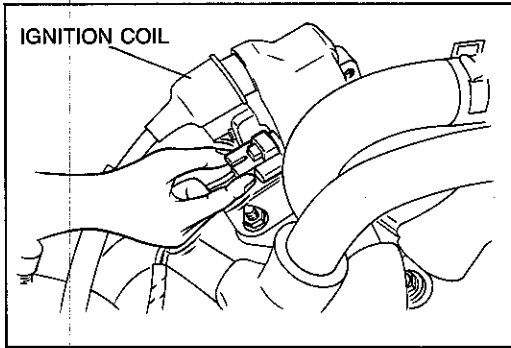
STEP 5
6



Engine stall at idle (Intermittent)			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Shake connector of ignition coil, main relay and ECU while cranking Check if the engine starts	Yes	There may be a poor contact at the connector. Repair or replace the wiring
		No	Go to troubleshooting "Engine stall at idle (Always)"

F2-64
1BU0F2-098

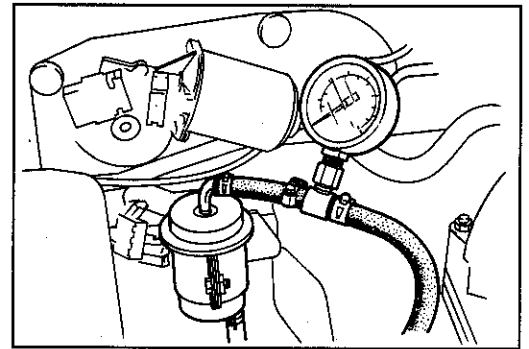
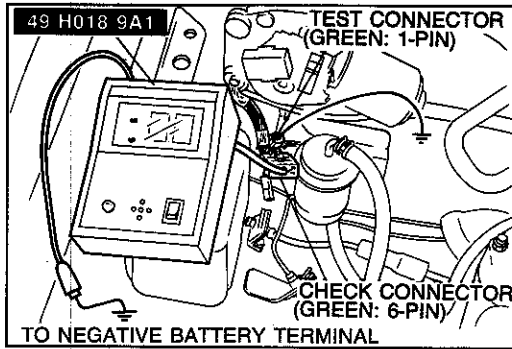
STEP 1



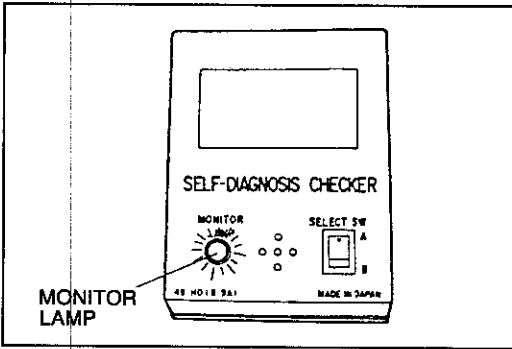
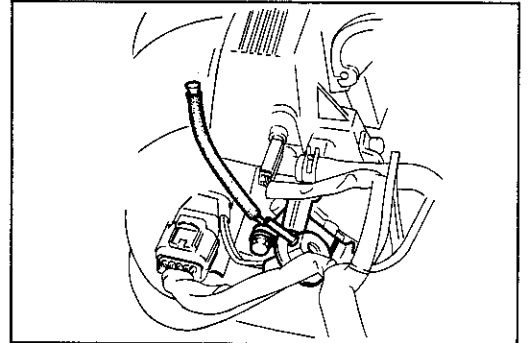
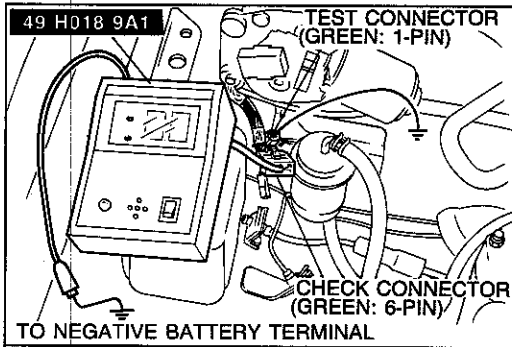
Hesitates/Stumbles on acceleration					
QUICK	INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION	
1	Run engine at 2,000 rpm for 20 seconds and stop it Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122
		No	Go to Next Step		
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step		
		No	Check for cause by referring to check sequence		F2-134
3	Disconnect oxygen sensor connector Check if condition improves	Yes		Check oxygen Sensor	F2-182
		No	Go to Next Step		
4	Check fuel line pressure while accelerating (Vacuum hose to pressure regulator disconnected) Fuel line pressure: Keeps 265—314 kPa 2.7—3.2 kg/cm², 38—46 psi)	Yes	Go to Next Step		
		No	Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging
				No	Replace fuel filter
			Replace pressure regulator	F2-155	
5	Check for air leaks with throttle valve open by listening for sucking noise	Yes	Intake air system components damaged		F2-137
			Vacuum and intake air hoses loose or damaged		
			Bolts or nuts loose		
Gaskets damaged					
6	Substitute a well-known ECU Check if condition improves	Yes	ECU malfunction		
		No		Check airflow sensor	F2-179
				Check throttle body	F2-138
				Check spark plug	Section G
7	Check other systems			Clutch slipping	Section H

2BU0F2-046

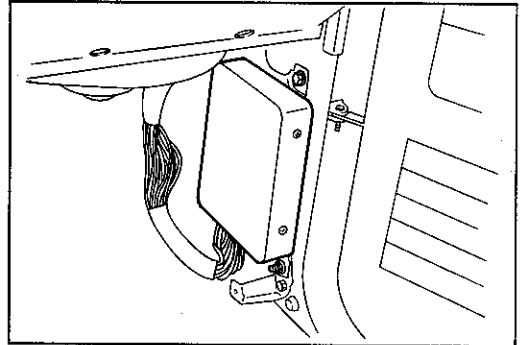
STEP 1



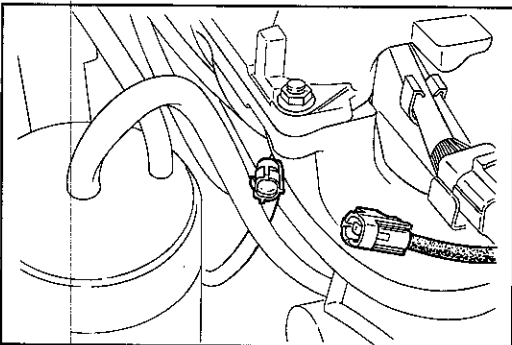
STEP 2



STEP 6



STEP 3



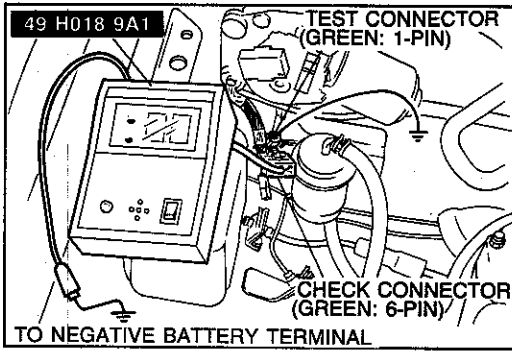
STEP 4

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

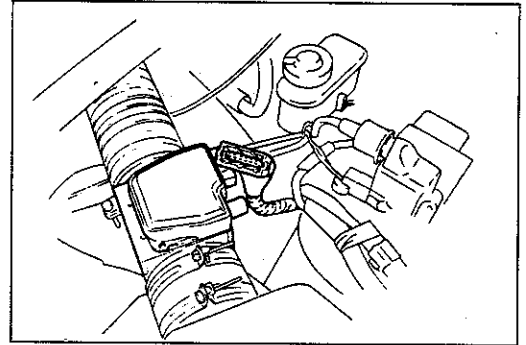
Hesitates at steady speed					
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION	
1	Run engine at 2,000 rpm for 20 seconds and stop it Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122
		No	Go to Next Step		
2	Disconnect oxygen sensor connector Check if condition improves	Yes		Check oxygen sensor	F2-182
		No	Go to Next Step		
3	Check for air leaks with throttle valve open by listening for sucking noise	Yes	Go to Next Step		
		No		Intake air system components damaged	F2-137
				Vacuum and intake air hoses loose or damaged	
				Nuts or bolts loose	
	Gasket damaged				
4	Check fuel line pressure while accelerating (Vacuum hose to pressure regulator disconnected) Fuel line pressure: Keeps 265—314 kPa (2.7—3.2 kg/cm², 38—46 psi)	Yes	Go to Next Step		
		No	Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging
				No	Replace fuel filter
				Replace pressure regulator	F2-155
5	Check condition of ignition coil and airflow meter connectors (Burned or damaged)	Yes		Poor contact	
		No	Go to Next Step		
6	Gradually open throttle valve Check if engine speed increases smoothly	Yes	Go to Next Step		
		No		Check airflow sensor	F2-179
				Check throttle body	F2-138
			Check throttle sensor	F2-181	
7				Check spark plug	Section G
8	Change fuel to specified grade Check if condition improves	Yes		Poor fuel quality	
		No	Go to Next Step		
9				ECU malfunction	

2BU0F2-047

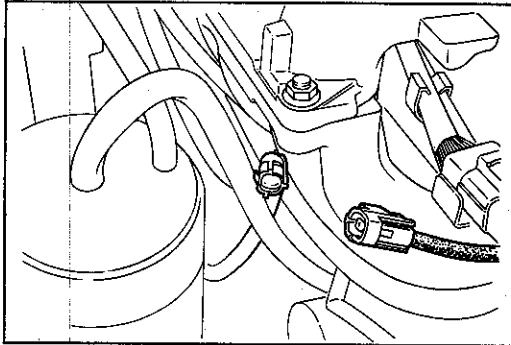
STEP 1



STEP 5

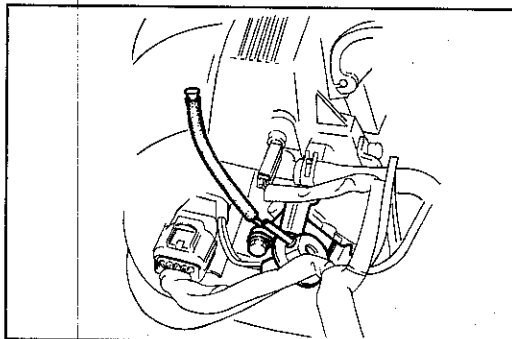
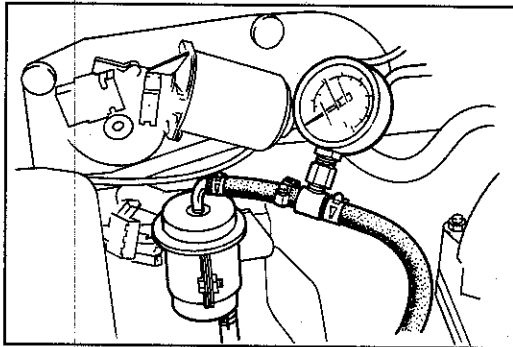


STEP 2



STEP 4

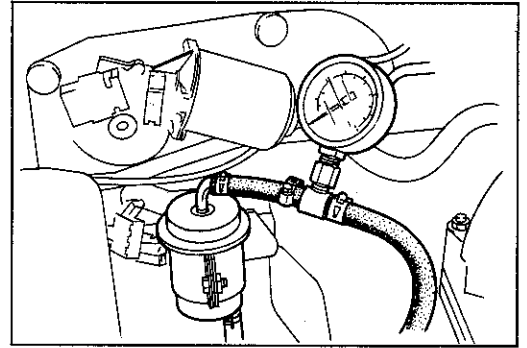
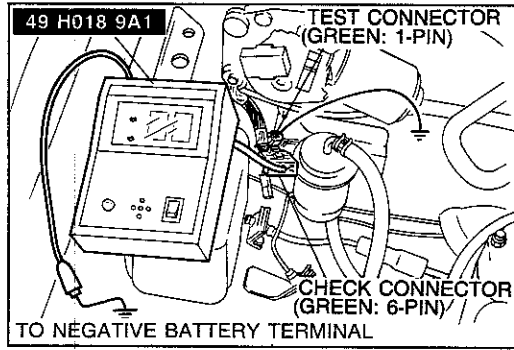
WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)



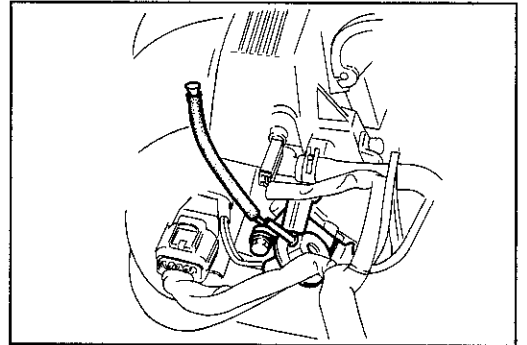
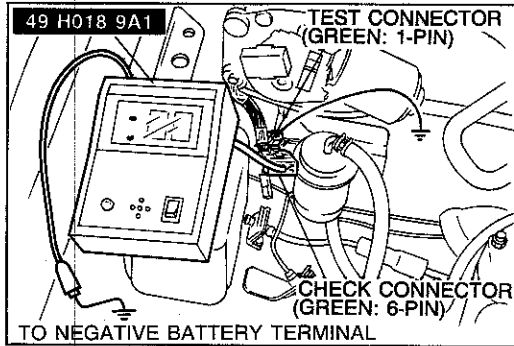
Jerking on acceleration						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Run engine at 2,000 rpm for 20 seconds and stop it Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence F2-122			
		No	Go to Next Step			
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step			
		No	Check for cause by referring to check sequence	F2-134		
3	Disconnect oxygen sensor connector Check if condition improves	Yes		Check oxygen Sensor F2-182		
		No	Go to Next Step			
4	Check fuel line pressure while accelerating (Vacuum hose to pressure regulator disconnected) Fuel line pressure: Keeps 265—314 kPa 2.7—3.2 kg/cm², 38—46 psi)	Yes	Go to Next Step			
		No	Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging	
				No	Replace fuel filter	F2-149
					Replace pressure regulator	F2-155
5	Check for air leaks with throttle valve open by listening for sucking noise	Yes		Intake air system components damaged		
				Vacuum and intake air hoses loose or damaged		
				Bofts or nuts loose		
		Gaskets damaged	F2-137			
		No	Go to Next Step			
6	Substitute a well-known ECU Check if condition improves	Yes		ECU malfunction		
		No		Check airflow sensor F2-179		
				Check throttle body	F2-138	
				Check spark plug	Section G	
7	Check other systems		Clutch slipping	Section H		

2BU0F2-048

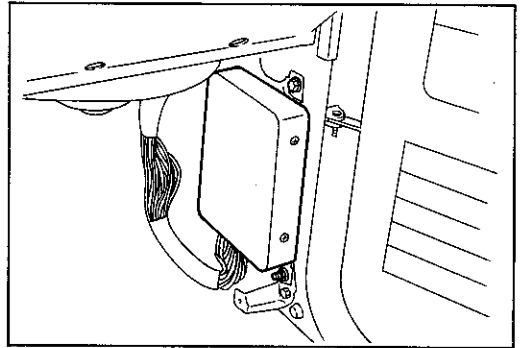
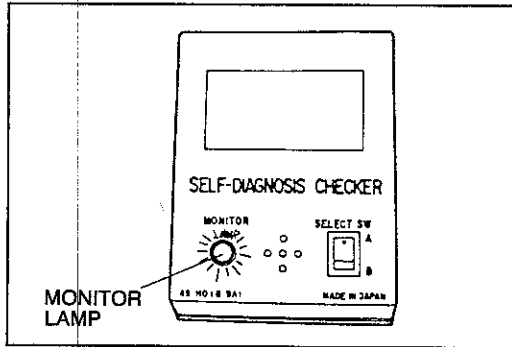
STEP 1



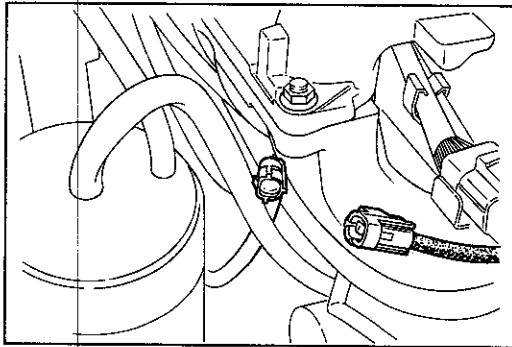
STEP 2



STEP 6



STEP 3



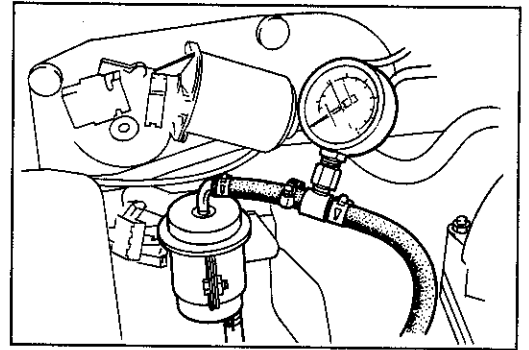
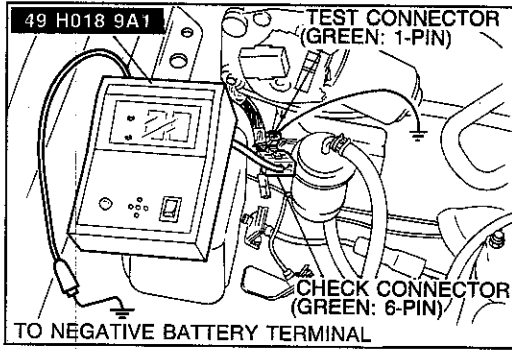
STEP 4

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

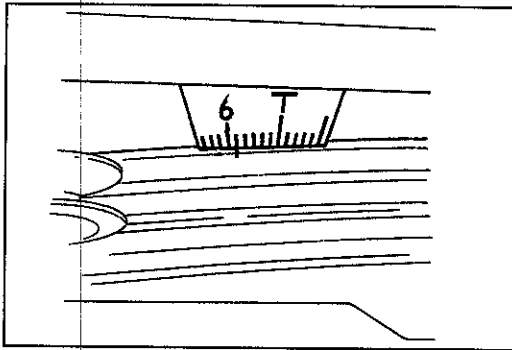
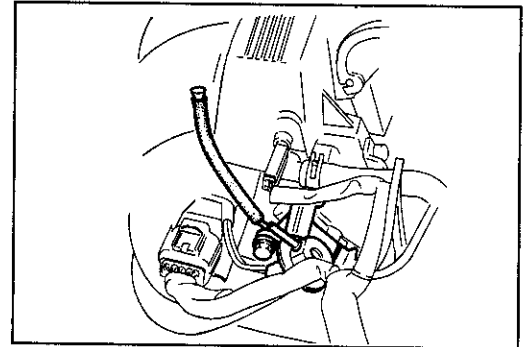
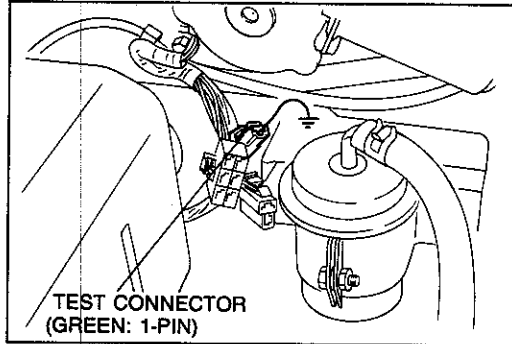
Knocking							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence			F2-122	
		No	Go to Step 2				
2	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (M/T) 5—7° (A/T, P range) [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step			F2-117	
		No	Adjust ignition timing				
3	Disconnect water thermosensor connector Check if condition improves	Yes	Check water thermo-sensor			F2-179	
		No	Go to Next Step				
4	Check vacuum routing (Refer to page F2-7)	Yes	Go to Next Step				
		No	Vacuum hose				
5	Observe fuel line pressure while accelerating from idle Fuel line pressure: Keeps 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi) (Vacuum hose to pressure regulator disconnected)	Yes	Go to Next Step				
		No	Check fuel pump maximum pressure Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm ² , 64—85 psi)	F2-150	Yes	Replace fuel filter	F2-149
					No	Replace fuel pump	F2-152
6					Check airflow sensor	F2-179	
7					Check spark plug	Section G	
8	Change fuel to specified grade Check if condition improves	Yes	Poor fuel quality				
		No	Go to Next Step				
9	Check cooling system				Thermostat		
					Radiator		
10					ECU malfunction		

2BU0F2-014

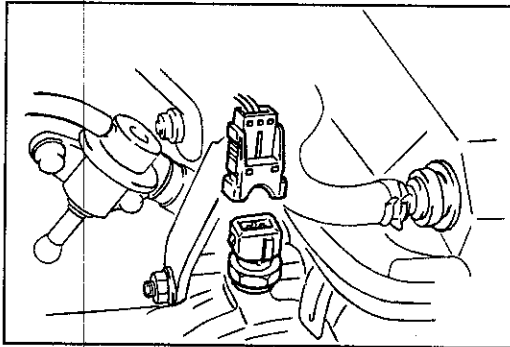
STEP 1



STEP 2



STEP 3

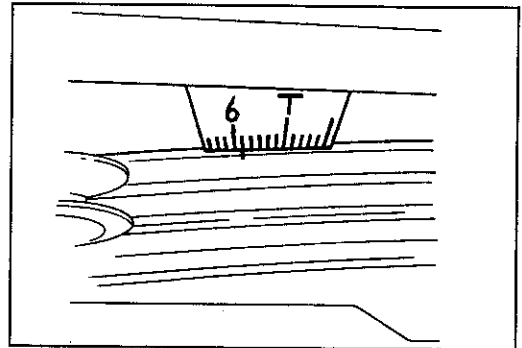
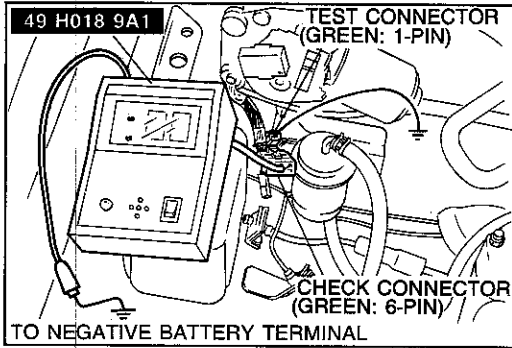


STEP 5

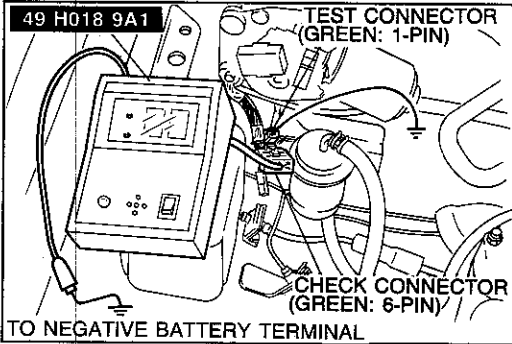
WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)

Poor acceleration							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122		
		No	Go to Next Step				
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to check sequence		F2-134		
3	Disconnect high—tension lead of each cylinder at idle. Check if engine condition changes [ISC valve connector disconnected]	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector	F2-156
					No	Check spark plug	Section G
						Check high-tension	Section G
Check distributor cup	Section G						
4	Check ignition at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing		F2-117		
5	Check for air leaks by listening for sucking noise	Yes			Intake air system components damaged	F2-137	
					Vacuum and air intake hoses loose or damaged		
					Nuts or bolts loose		
					Gasket damaged		
No	Go to Next Step						
6	Observe fuel line pressure while accelerating from idle Fuel line pressure: Keeps 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi) [Vacuum hose to pressure regulator disconnected]	Yes	Go to Next Step				
		No	Check if fuel filter has been replaced according to maintenance schedule	No	Replace pressure regulator	F2-155	
Yes	Replace fuel filter			F2-149			

STEP 1

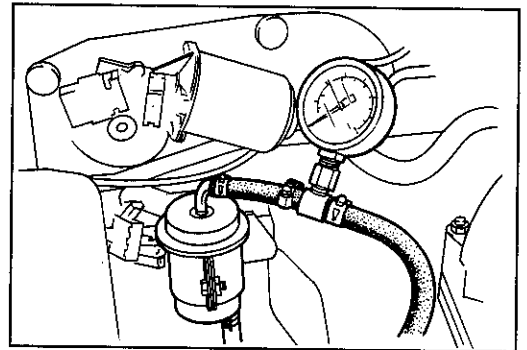
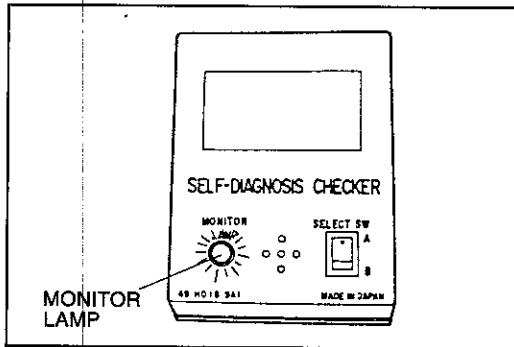


STEP 2

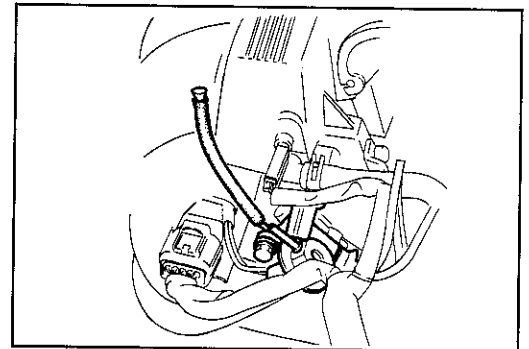
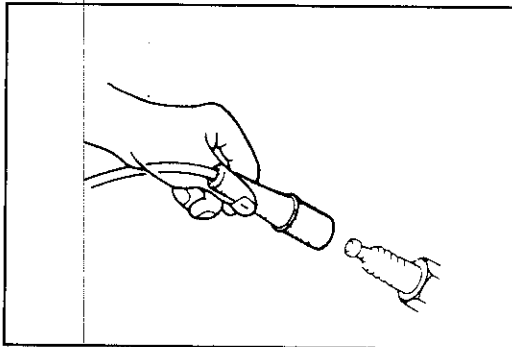


STEP 6

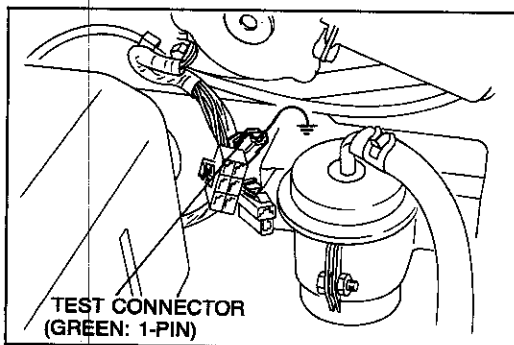
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)



STEP 3



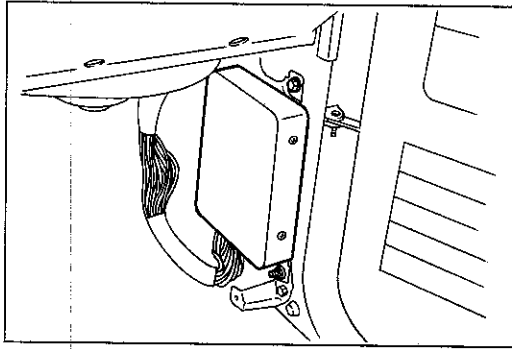
STEP 4



Poor acceleration (Cont'd)							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
7	Gradually depress accelerator from idle Check if engine speed increases smoothly	Yes	Go to Next Step				
		No	Check accelerator cable free play	F2-139	Yes	Check airflow sensor	F2-179
					No	Check throttle body	F2-138
					Adjust	F2-139	
8	Check fuel to specified grade Check if condition improves	Yes	Poor fuel quality				
		No	Go to Next Step				
9	Substitute a well-known ECU Check if condition improves	Yes	ECU malfunction				
		No	Go to Next Step				
10	Check other systems					Clutch slipping	Section H
						Transmission (M/T)	Section J2
						Brake dragging	Section P
						Belt tension	Section Q

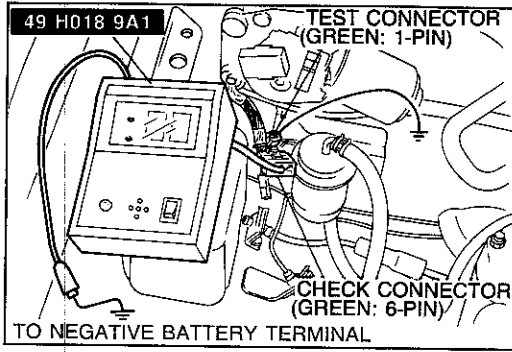
2BU0F2-015

STEP 9

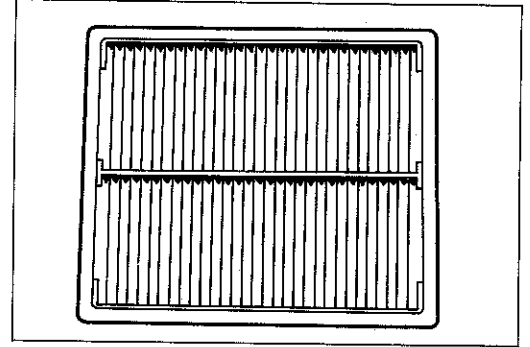


Lack of power							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Check for malfunction code and (only high-altitude) with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122		
		No	Go to Step 2 (High-altitude) Go to Step 3 (Others)				
2	Check ignition timing at idle after warm up Ignition timing: BTDC 4-6° (G6) 5-7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing		F2-117		
3	Disconnect ISC valve connector and the high-tension lead of each cylinder Check if condition changes	Yes	Go to Next Step				
		No	Check ignition system [Refer to ignition system troubleshooting (Misfire)]	Section G	Yes	Replace injector (If step 4 OK)	F2-156
					No	Check high-tension lead	Section G
						Check distributor cap	Section G
Check spark plug	Section G						
4	Check for injector operating sound at idle	Yes	Go to Next Step				
		No	Check resistance at injector harness connector (EMINJ-01)	F2-157	Yes	Check wiring short or open	
					No	Check injector resistance	F2-157
						Check wiring short or open	
Terminals	Resistance						
(B/Y)-(LG/B)	6-8Ω						
(B/Y)-(LG/R)							
5	Check air cleaner element for clogging	Yes	Go to Next Step				
		No	Clean air cleaner element				
6	Check for air leaks by listening for sucking noises • At idle • When throttle valve is open	Yes			Intake air system	F2-137	
					Components damaged		
					Vacuum and air intake hoses loose or damaged		
					Nuts or bolts loose		
Gasket damaged							

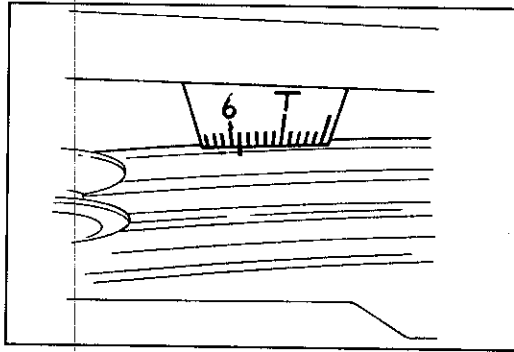
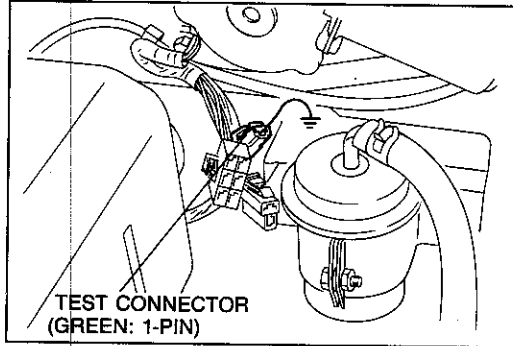
STEP 1



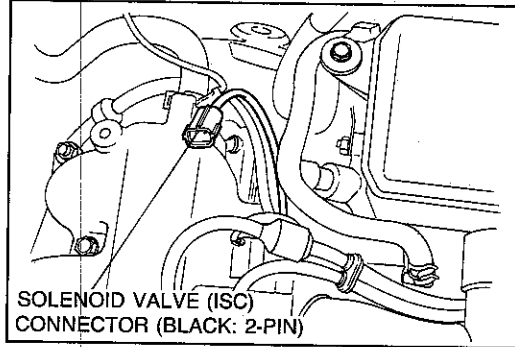
STEP 5



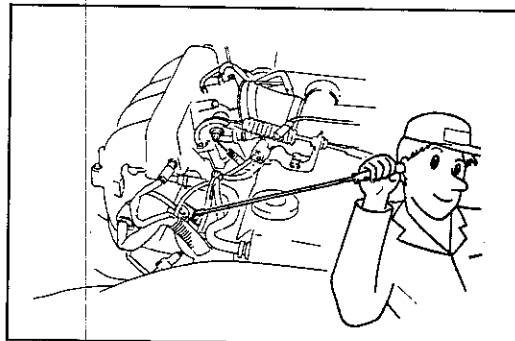
STEP 2



STEP 3



STEP 4

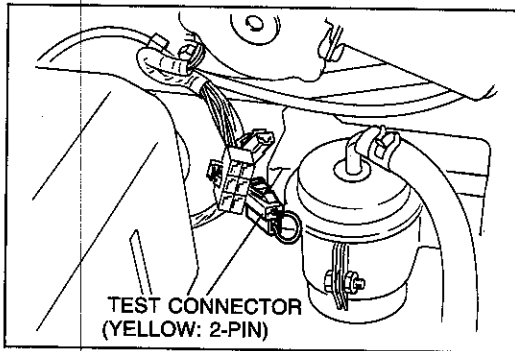
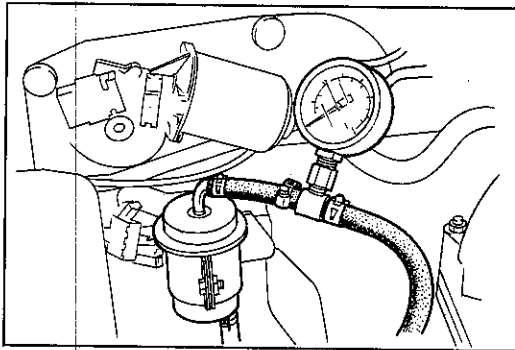


Lack of power (Cont'd)						
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
7	Check fuel line pressure [IGN ON, Test connector (Yellow: 2-pin) connected] Fuel line pressure: 265—314 kPa (2.7—3.2 kg/cm ² , 38—46 psi)	Yes	Go to Next Step			
		No	Check for fuel leakage			
			Substitute a good fuel filter and retest	Yes	Replace fuel filter	F2-149
			Check fuel pump maximum pressure	Yes	Replace pressure regulator	F2-155
No	Replace fuel pump	F2-152				
		Fuel pump maximum pressure: 441—588 kPa (4.5—6.0 kg/cm ² , 64—85 psi)				
8	Check fuel line pressure at idle Fuel line pressure: 216—264 kPa (2.2—2.7 kg/cm ² , 31—38 psi)	Yes	Go to Next Step			
		No		Replace pressure regulator	F2-155	
9	Check if fuel line pressure drops while accelerating (Vacuum hose disconnected)	Yes	Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging	
				No	Replace fuel filter	
		No Go to Next Step				
10	Check exhaust system for damage	Yes	Go to Next Step			
		No	Repair or replace	F2-161		
11	Check A/C, P/S and alternator belts tensions	Yes	Go to Next Step			
		No	Adjust belt tension	Sections B1, B2		
12	Check if accelerator can be depressed fully	Yes	Go to Next Step			
		No	Check accelerator cable	Yes	Throttle body	F2-138
				No	Accelerator cable	F2-139
13	Substitute a well-known ECU Check if condition improves	Yes	ECU malfunction			
		No	Check airflow sensor		F2-179	
			Check throttle sensor		F2-181	
		Go to Next Step				
14	Substitute a specified fuel Check if condition improves	Yes	Poor fuel quality			
		No	Go to Next Step			
15	Check other systems			Brake		
				Clutch		
				Engine		

2BU0F2-016

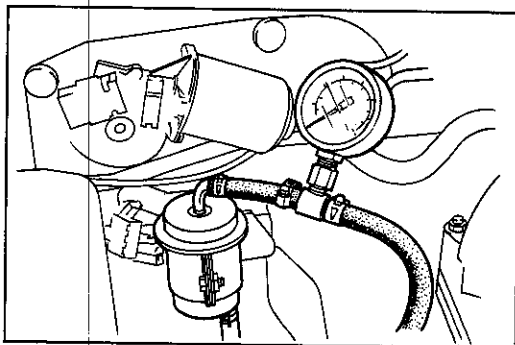
STEP 7

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

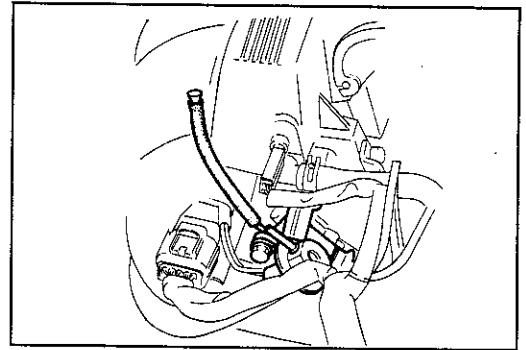


STEP 8

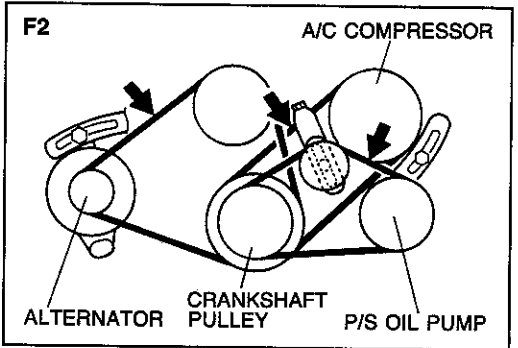
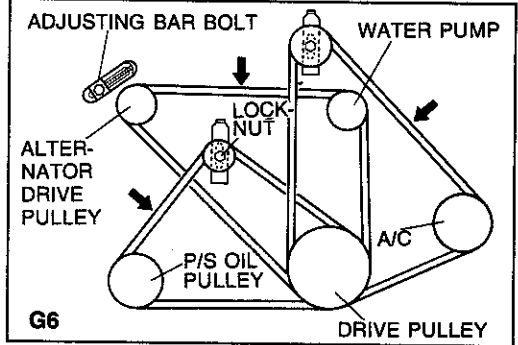
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)



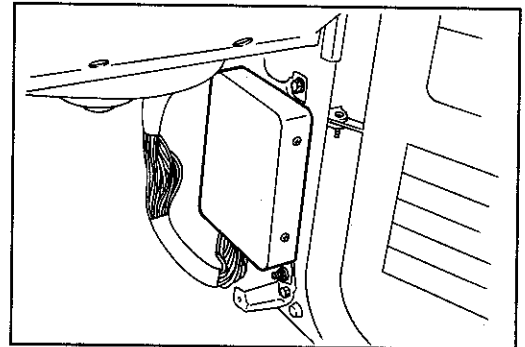
STEP 9



STEP 11



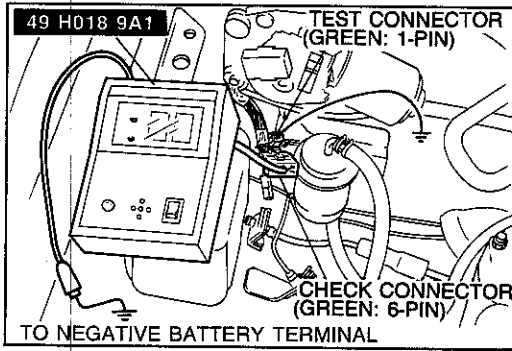
STEP 13



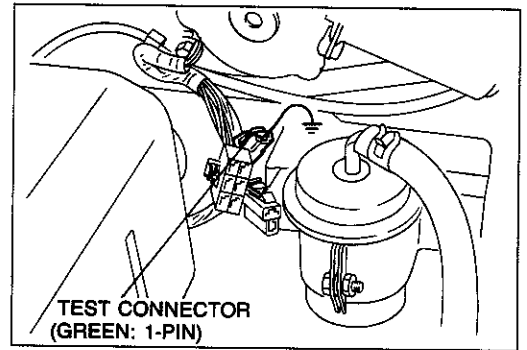
Bucking at high speed					
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION	
1	Run engine at 2,000 rpm for more than 20 seconds Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122
		No	Go to Next Step		
2	Disconnect oxygen sensor connector Check if condition improves	Yes		Check oxygen sensor	F2-182
		No	Go to Next Step		
3	Observe fuel line pressure while accelerating from idle Fuel line pressure: Keeps 265—314 kPa (2.7—3.2 kg/cm², 38—46 psi) [Vacuum hose to pressure regulator disconnected]	Yes	Go to Next Step		
		No	Check if fuel filter has been replaced according to maintenance schedule	Yes	Check fuel line for clogging
				No	Replace fuel filter
		Replace pressure regulator	F2-155		
4	Check for air leaks by listening sucking noise	Yes	Go to Next Step		
		No		Intake air system components damaged	F2-137
				Vacuum and air intake hoses loose or damaged	
				Nuts or bolts loose	
Gasket damaged					
5	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step		
		No	Adjust ignition timing		
6	Gradually open throttle valve from idle check if engine speed increases smoothly	Yes	Go to Next Step		
		No		Check airflow sensor	F2-179
7			Check spark plug	Section G	
8			ECU malfunction		

2BU0F2-017

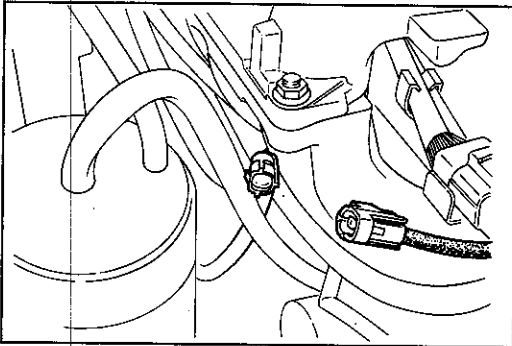
STEP 1



STEP 5

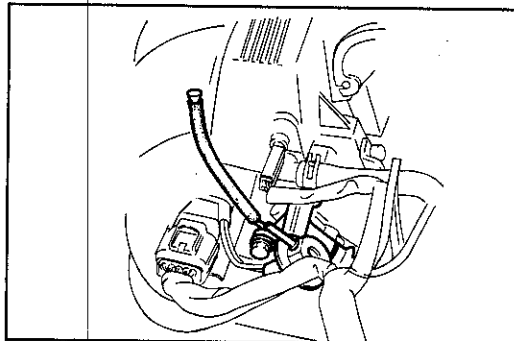
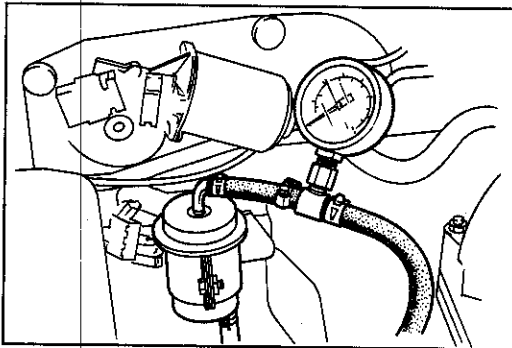


STEP 2



STEP 3

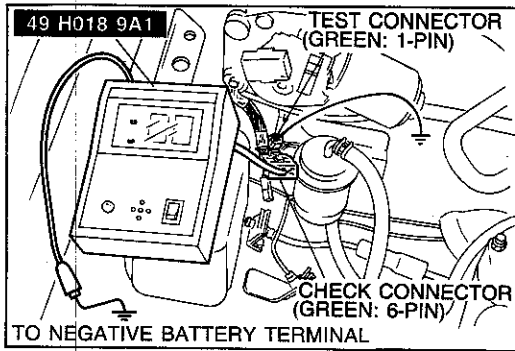
WARNING
BEFORE CONNECTING FUEL
PRESSURE GAUGE, RELEASE
FUEL PRESSURE FROM FUEL
SYSTEM TO REDUCE POSSIBILITY
OF INJURY OR FIRE
(REFER TO PAGE F2-144)



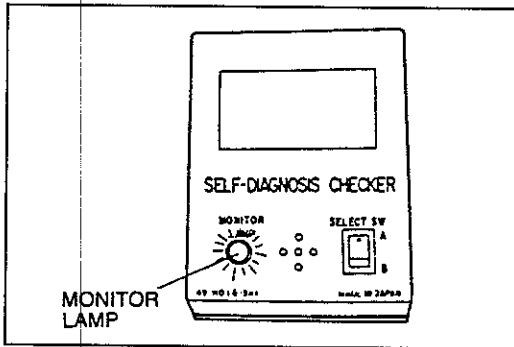
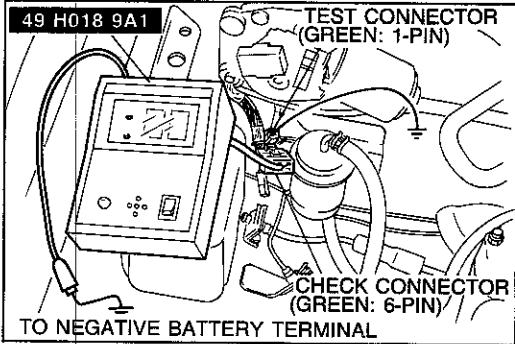
Bucking on deceleration			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence F2-122
		No	Go to Next Step
2	Check switches with SST [IGN ON, Test connector (Green: 1-pin) grounded] • Idle switch • Stoplight switch	Yes	Go to Next Step
		No	Check for cause by referring to the check sequence F2-134
3	Substitute a well-known ECU Check if condition improves	Yes	ECU malfunction
		No	Check throttle sensor F2-181 Go to Next Step
4			Check spark plug Section G
5			Check clutch slipping
6			Check compression between cylinders Section B2

1BU0F2-032

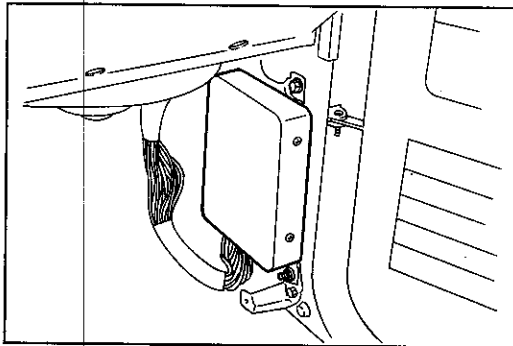
STEP 1



STEP 2



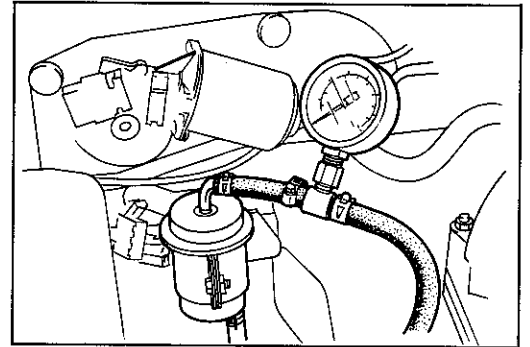
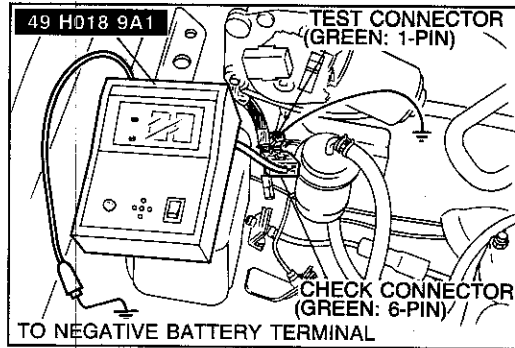
STEP 3



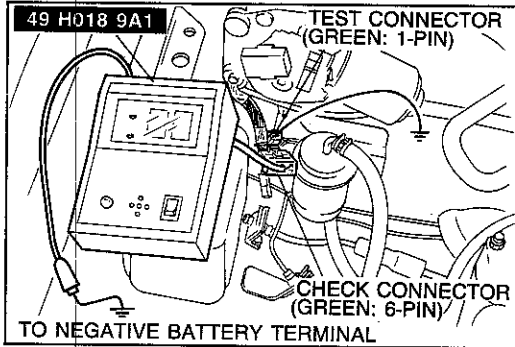
Poor fuel economy							
STEP	QUICK INSPECTION	ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION			
1	Run the engine at 2,000 rpm for more than 20 seconds after warm up and stop it. Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to check sequence		F2-122		
		No	Go to Next Step				
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to check sequence		F2-134		
3	Check for flashing of monitor lamp after warm up Monitor lamp: Flashes more than 8 times /10 seconds at 2,000—3,000 rpm [Test connector (Green: 1-pin) not grounded]	Yes	Go to Next Step				
		No		Replace oxygen sensor	F2-183		
4	Check fuel line pressure at idle Fuel line pressure: 196—255 kPa (2.0—2.6 kg/cm², 28—37 psi)	Yes	Go to Next Step				
		No	Check vacuum line to pressure regulator for clogging or air leakage	Yes	Vacuum line clogging or damaged	F2-7	
				No	Check solenoid valve (PRC)	F2-160	
					ECU malfunction (Check (2T) terminal voltage)	F2-175	
Replace pressure regulator	F2-155						
5	Check for fuel cut operation during deceleration Fuel cut: after warm up Above 1,600 rpm (G6) Above 1,900 rpm (F2)	Yes	Go to Next Step				
		No	Check water thermometer	F2-179	Yes	Replace ECU	F2-175
				No	Replace water thermometer	F2-179	
6	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing			F2-117	
7	Check other systems			Clutch slipping	Section H		
				Brake	Section P		
				Tire air pressure	Section Q		

2BU0F2-018

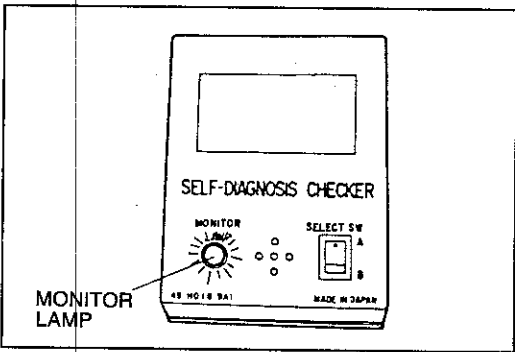
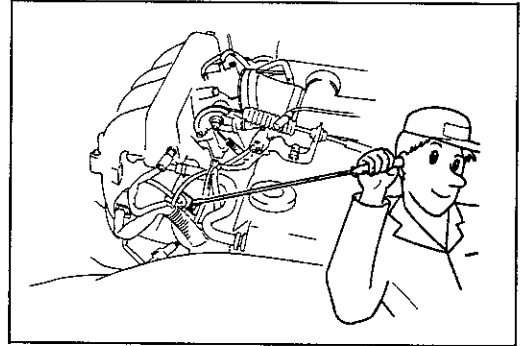
STEP 1



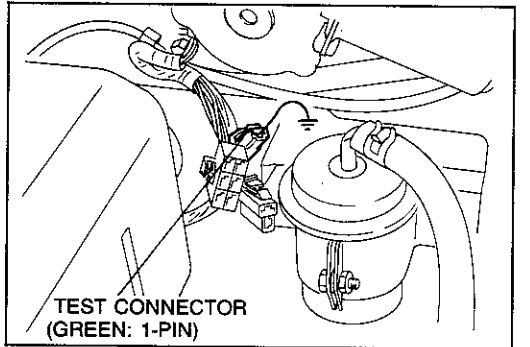
STEP 2



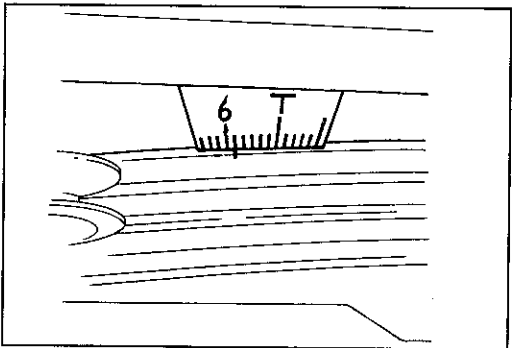
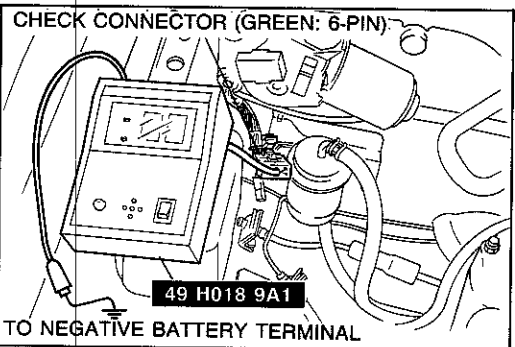
STEP 5



STEP 6



STEP 3



STEP 4

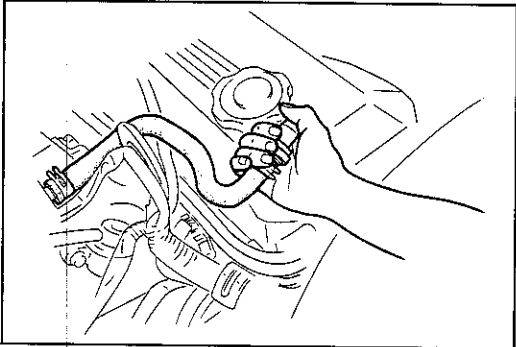
WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

TROUBLESHOOTING GUIDE

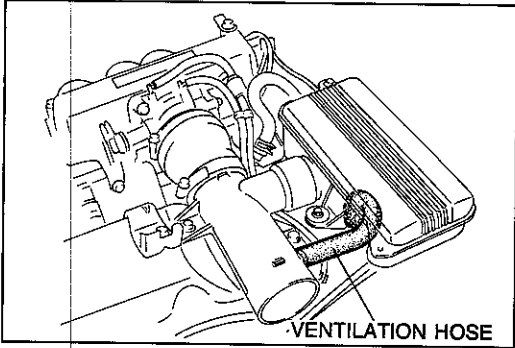
High oil consumption/White exhaust smoke					
STEP	QUICK INSPECTION		ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION
1	Check for oil leak from engine	Yes	Repair or replace		
		No	Go to Next Step		
2	Disconnect PCV valve from engine Check if vacuum is felt at idle	Yes	Go to Next Step		
		No	Check PCV valve	F2-163	Yes
				No	Replace PCV valve
3	Check that ventilation hose is installed correctly	Yes	Go to Next Step		
		No	Install ventilation hose correctly		
4	Possible malfunction of engine Check for cause by referring to the check sequence of Section B2				

1BU0F2-034

STEP 2



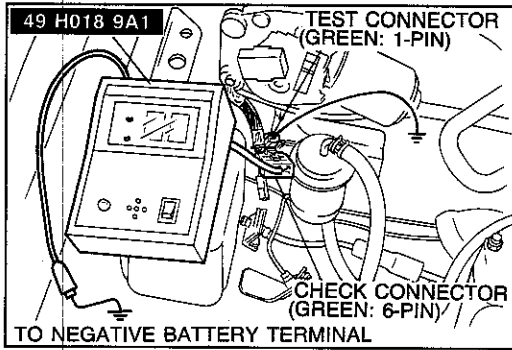
STEP 3



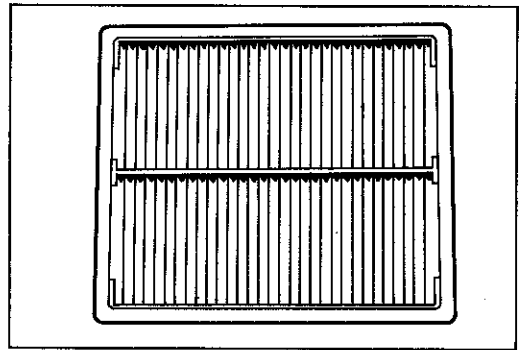
Afterburn on deceleration							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence			F2-122	
		No	Go to Next Step				
2	Check idle switch with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to the check sequence			F2-134	
3	Check ignition timing at idle after warm up Ignition timing: BTDC 4—6° (G6) 5—7° (F2) [Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Adjust ignition timing			F2-117	
4	Check air cleaner element for clogging	Yes	Go to Next Step				
		No	Clean air cleaner element				
5	Check fuel cut operation during deceleration Fuel cut: after warm up Above 1,600 rpm (G6) Above 1,900 rpm (F2)	Yes	Go to Next Step				
		No	Check water thermosensor	F2-179	Yes	ECU malfunction Check (2Q) terminal voltage	F2-175
					No	Replace water thermosensor	F2-179
6	Run engine at idle and stop it (IG OFF) Observe fuel pressure for 5 minutes Fuel pressure: More than 147 kPa (1.5 kg/cm², 21 psi)	Yes	Go to Next Step				
		No	Check fuel pump for pressure drop	F2-150	No	Replace fuel pump	F2-152
			Check pressure regulator for pressure drop	F2-154	Yes	Check injector fuel leakage	F2-157
				No	Replace pressure regulator	F2-155	
7					Check compression	Section B2	
					Check valve timing	Section B2	

2BU0F2-019

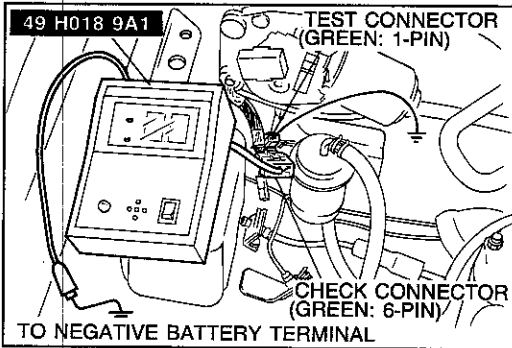
STEP 1



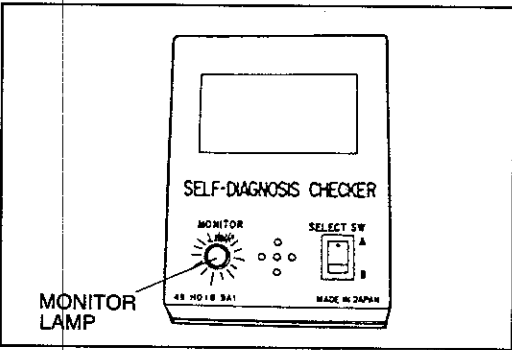
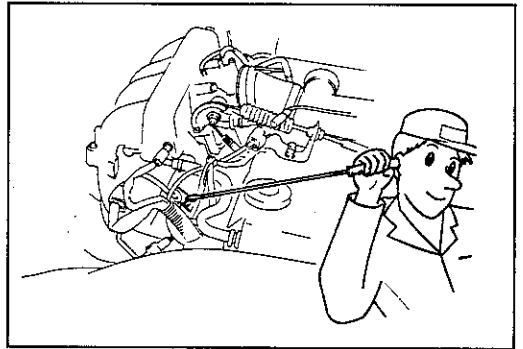
STEP 4



STEP 2



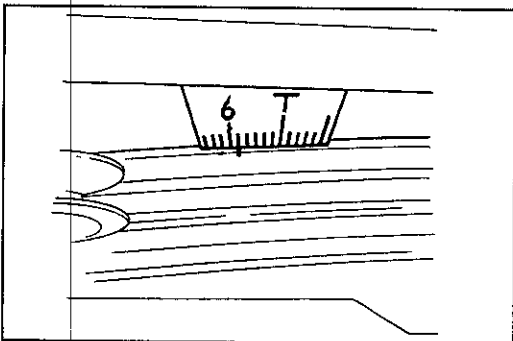
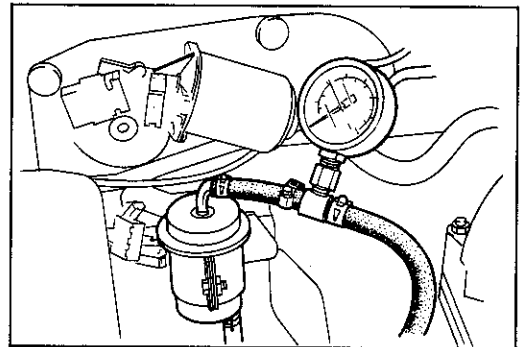
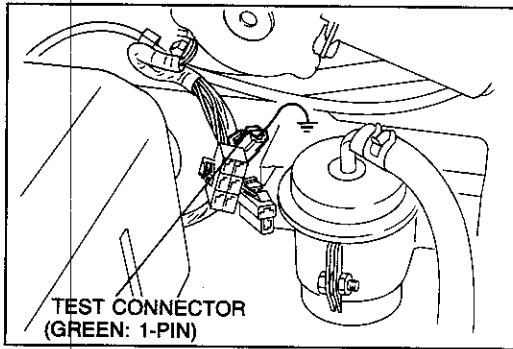
STEP 5



STEP 6

WARNING
BEFORE CONNECTING FUEL PRESSURE GAUGE, RELEASE FUEL PRESSURE FROM FUEL SYSTEM TO REDUCE POSSIBILITY OF INJURY OR FIRE (REFER TO PAGE F2-144)

STEP 3



TROUBLESHOOTING GUIDE

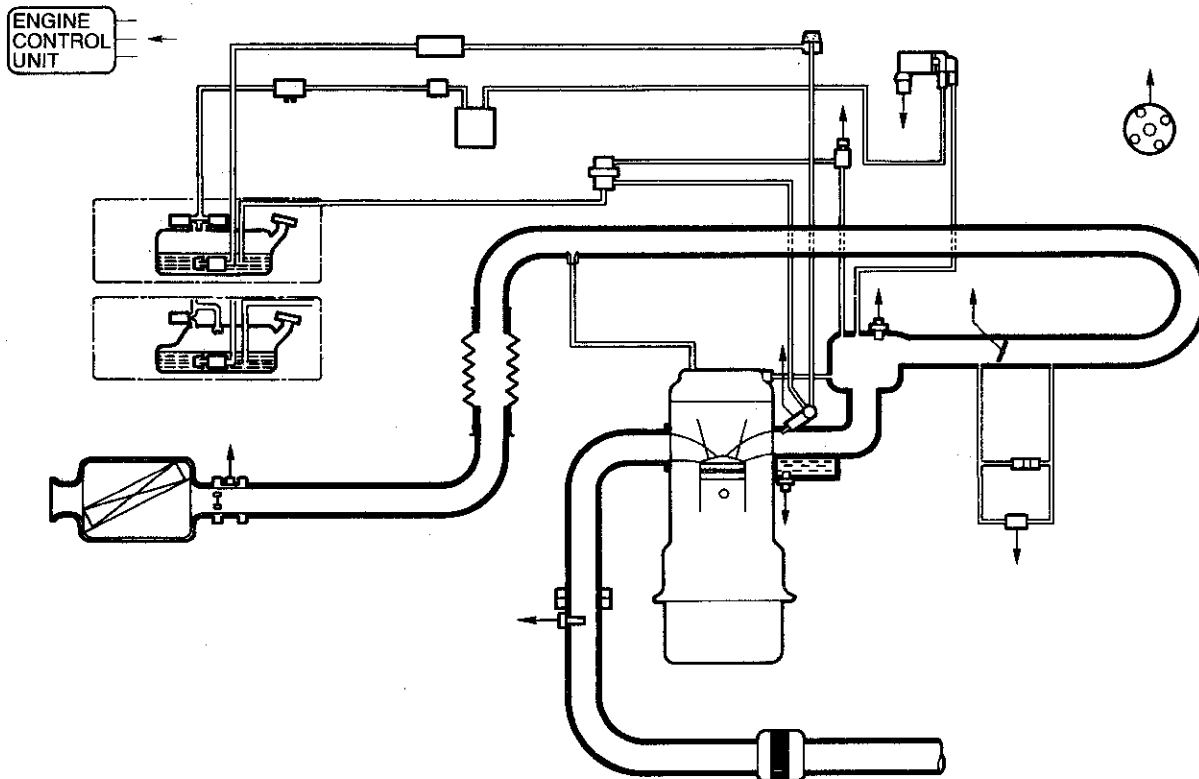
Rotten egg smell			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Change fuel to specified grade Check if condition improves		Poor fuel quality

9MU0F2-050

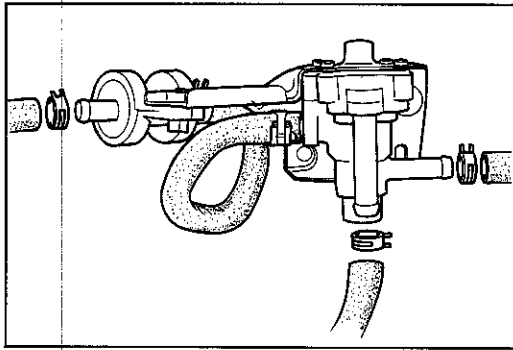
Gasoline fumes							
STEP	QUICK INSPECTION	ACTION			POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check for leaks	Yes	Replace				
		No	Go to Next Step				
2	Check if fumes are emitted from check-and-cut valve	Yes	Check check-and-cut valve	F2-166	Yes	Check two-way check valve Purge line clogging	F2-166
					No	Replace check-and-cut valve	F2-166
		No	Go to Next Step				
3	Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Check for cause by referring to the check sequence			F2-122	
		No	Go to Next Step				
4	Check switches with SST • Idle switch • Neutral switch • Clutch switch [IGN ON, Test connector (Green: 1-pin) grounded]	Yes	Go to Next Step				
		No	Check for cause by referring to the check sequence			F2-134	
5	Run engine at idle. Ground the solenoid valve (Purge control) terminal-wire (L/Y) and disconnect vacuum hose (white) from solenoid valve. Check for vacuum at solenoid valve	Yes	ECU malfunction Check (2X) terminal voltage			F2-175	
		No	Replace solenoid valve (Purge control)			F2-165	

2BU0F2-049

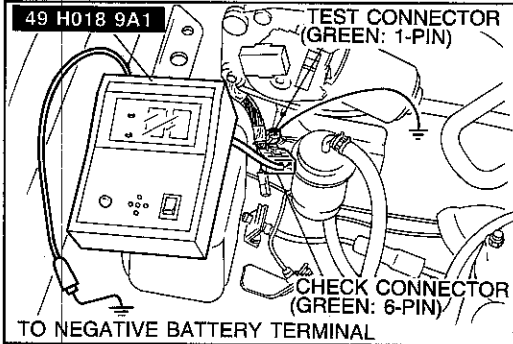
STEP 1



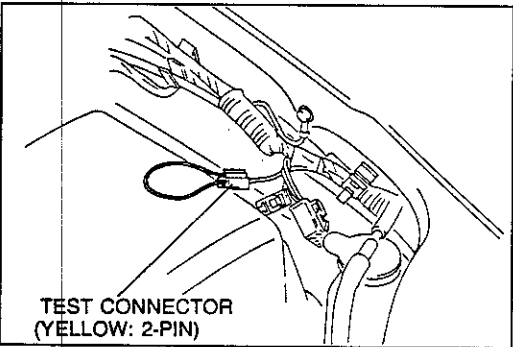
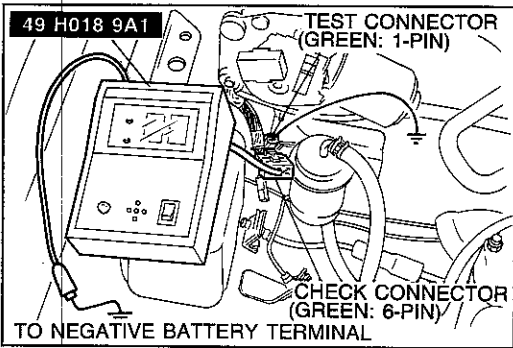
STEP 2



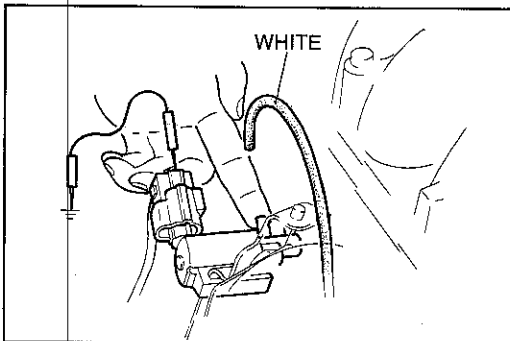
STEP 3



STEP 4



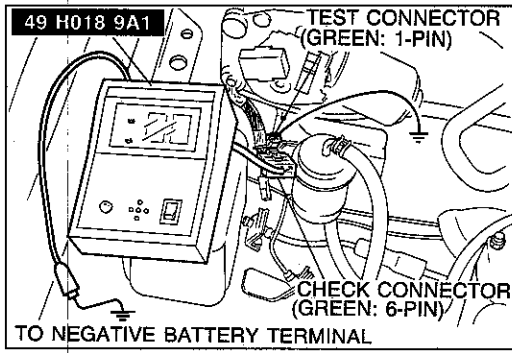
STEP 5



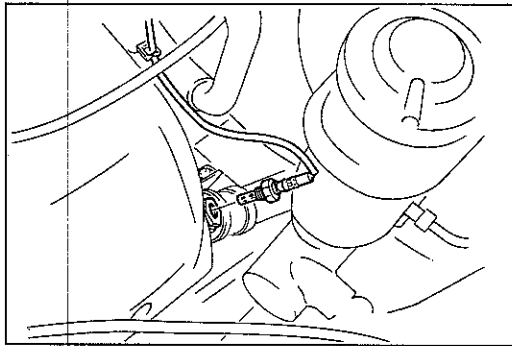
MIL always ON						
STEP	QUICK INSPECTION		ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION	
1	(California) Check for malfunction code with SST [IGN ON, Test connector (Green: 1-pin) grounded]		"88" Replace ECU			
			"00" Wiring between ECU (1E) terminal and MIL short to ground			
2	(Federal and Canada) Check if emission system parts replacement time has come Emission system parts replacement schedule: Every 60,000 and 80,000 miles (Federal) or 90,000 and 130,000 km (Canada)	Yes	Check if MIL has been reset by exchanging MIL set connector	Yes	Replace mileage sensor	Section T
				No	Reset the MIL	F2-187
		No		Replace mileage sensor	Section T	

1BU0F2-037

STEP 1



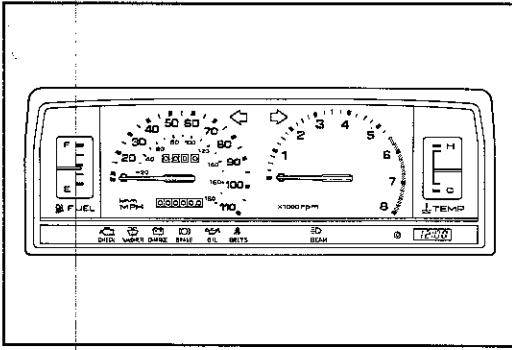
STEP 2



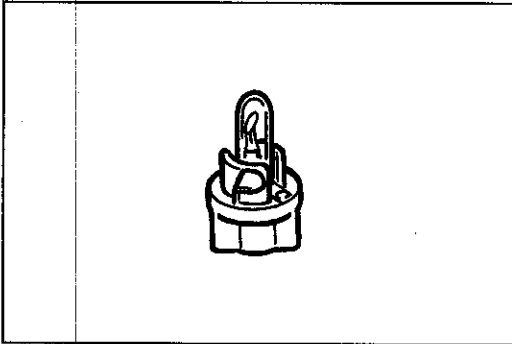
MIL never ON			
STEP	QUICK INSPECTION	ACTION	POSSIBLE CAUSE AND DETAILED INSPECTION
1	Check if other indicator lamps illuminate	Yes	Go to Next Step
		No	Check power supply circuit to combination meter Section T
2	Check bulb of the MIL	Yes (California only) Ground ECU (1E) terminal Check if MIL illuminates	Yes Replace ECU F2-175
			No Wiring between ECU and MIL open (Federal and Canada) MIL set connector loose or disconnected F2-187
		No Replace	

1BU0F2-038

STEP 1



STEP 2

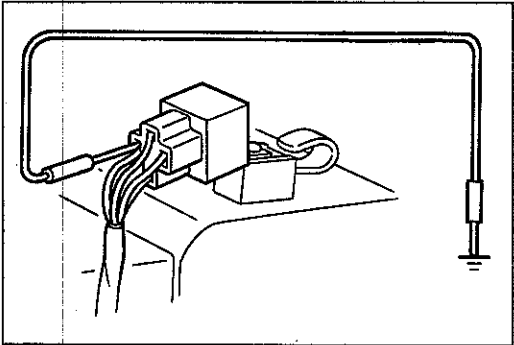


A/C does not work

STEP	QUICK INSPECTION		ACTION		POSSIBLE CAUSE AND DETAILED INSPECTION		
1	Check if condenser fan operates when grounding A/C relay terminal-wire (L/W) (IGN ON)	Yes	Check voltage at ECU (1Q) terminal with SST Voltage at idle after warm up: 0V (A/C and blower switches ON)	F2-175	Yes	ECU malfunction (Check (1J) terminal voltage)	F2-175
		No		A/C system malfunction	Section U		
		No	Check A/C system	Section U			

1BU0F2-039

STEP 1



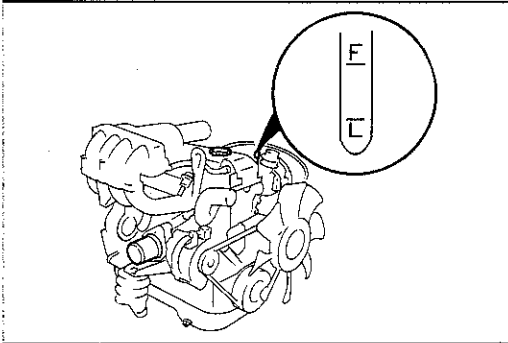
ENGINE TUNE-UP

BASIC INSPECTION

Engine Oil

Check the engine oil level and condition with the oil level gauge.

Add or change the oil if necessary.



9MU0F2-057

Coolant Level (Cold engine)

Warning

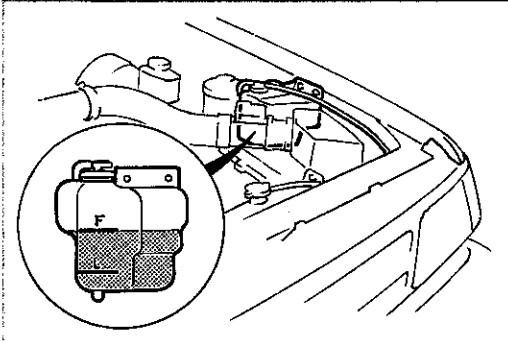
a) Never remove the radiator cap while the engine is hot.

b) Wrap a thick cloth around the cap while carefully removing it.

1. Check that the coolant level is near the radiator inlet port.

2. Check that the level in the coolant reservoir is between the FULL and LOW marks.

Add coolant if necessary.



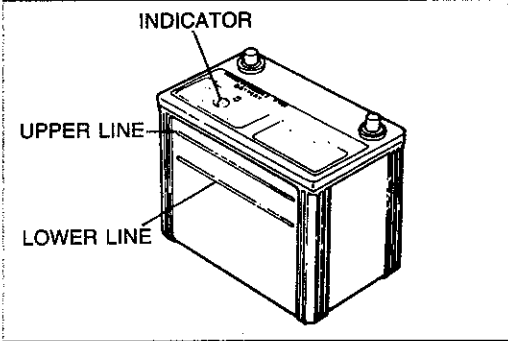
9MU0F2-058

Battery

1. Check for corrosion on the terminals and for loose cable connections. If necessary, clean the clamps and tighten them firmly.

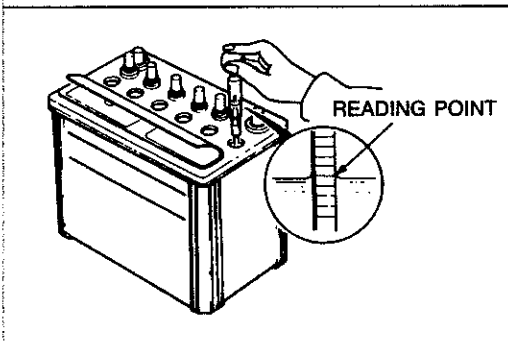
2. Check that the electrolyte level is between the UPPER and LOWER marks.

Add distilled water if necessary.



9MU0F2-059

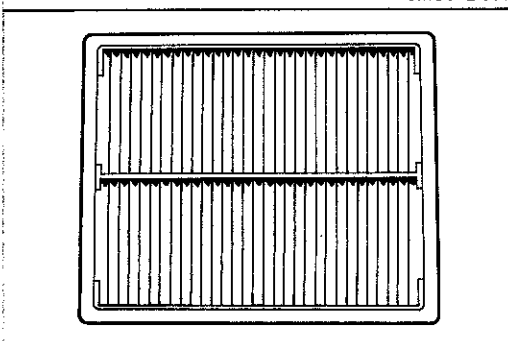
3. Check the specific gravity by using a hydrometer. If the specific gravity reading is **1.200 or less**, recharge the battery. (Refer to Section G.)



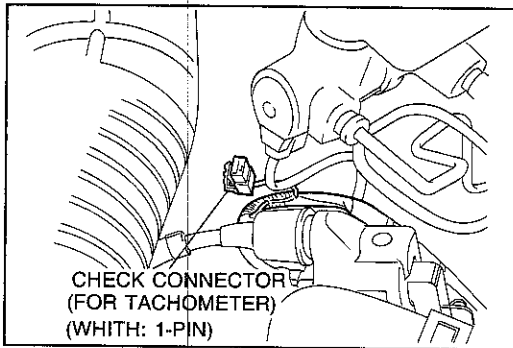
9MU0F2-060

Air Cleaner Element

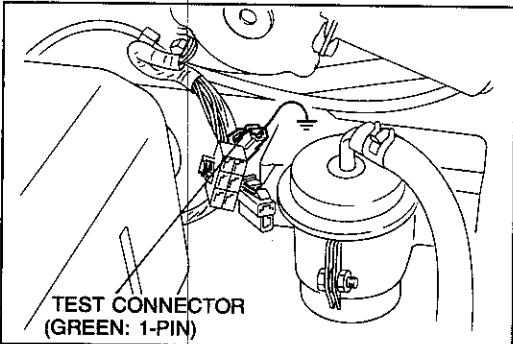
Visually check the air cleaner element for excessive dirt, damage, or oil. Clean or replace it if necessary.



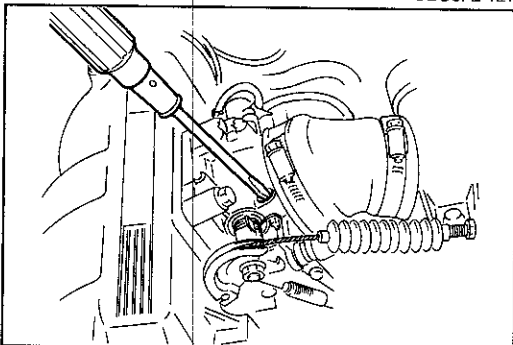
9MU0F2-061



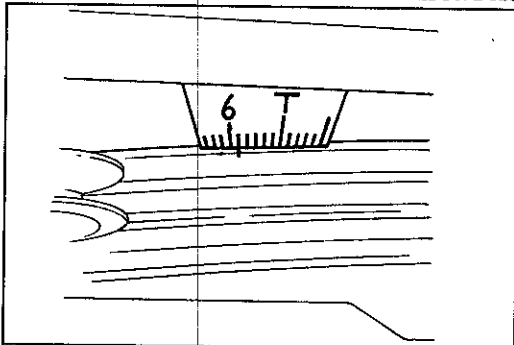
9MU0F2-062



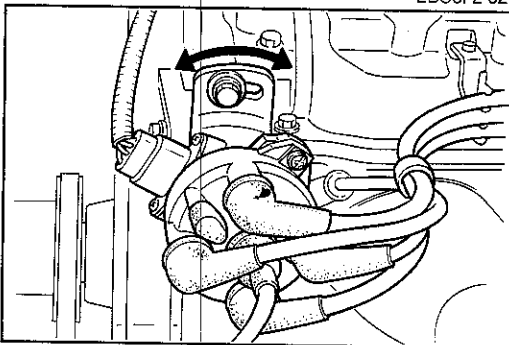
9BU0F2-127



2BU0F2-020



2BU0F2-021



9BU0F2-129

ADJUSTMENT

Preparation

1. Check the condition of the engine (spark plugs, leaks in hoses, etc.).
2. Make sure all accessories are OFF.
3. Warm up the engine to the normal operating temperature.
4. Connect a tachometer and a timing light to the engine.

Ignition Timing

1. Warm up the engine to normal operating temperature.
2. Turn all electric loads OFF.
3. Connect a jumper wire between the test connector (Green: 1-pin) and a ground.

4. Check the idle speed. Set it to the specified speed if necessary. (Refer to page F2-118.)

Idle speed: 730—770 rpm (M/T)
750—790 rpm (A/T, P range)

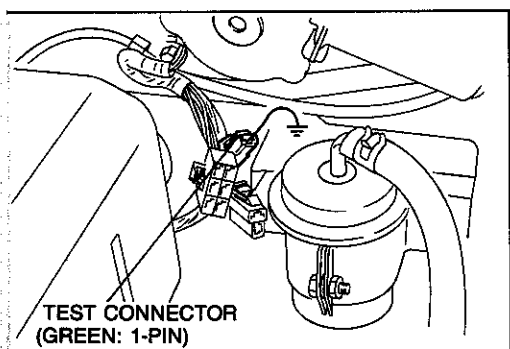
5. Check if the timing mark (Yellow) on the crankshaft pulley and the mark on the timing belt cover are aligned.

Ignition timing: 4—6° BTDC (G6)
5—7° BTDC (F2)

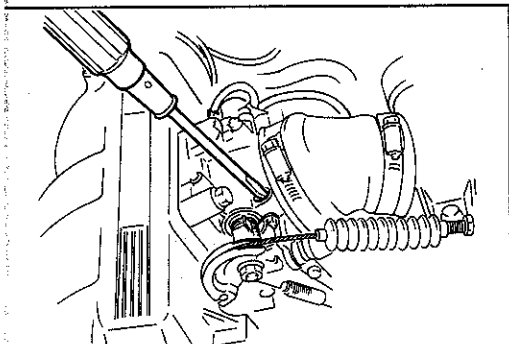
6. If the marks are not aligned, loosen the distributor lock bolts, and turn the distributor to make the adjustment.
7. Tighten the distributor lock bolts to the specified torque.

Tightening torque:
19—25 N·m (1.9—2.6 m·kg, 14—19 ft·lb)

8. Remove the jumper wire.



9MU0F2-067

**Idle Speed**

1. Ground the test connector to the body with a jumper wire.
2. Connect the tachometer to the engine.

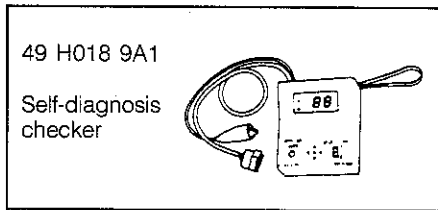
3. Check that the idle speed is within specification.

Idle speed: 730—770 rpm (M/T)
750—790 rpm (A/T, P range)

4. If the idle speed is not within specification, adjust the idle by turning the air adjusting screw.
5. After adjusting the idle speed, disconnect the jumper wire from the test connector.

TROUBLESHOOTING WITH SST

**PREPARATION
SST**

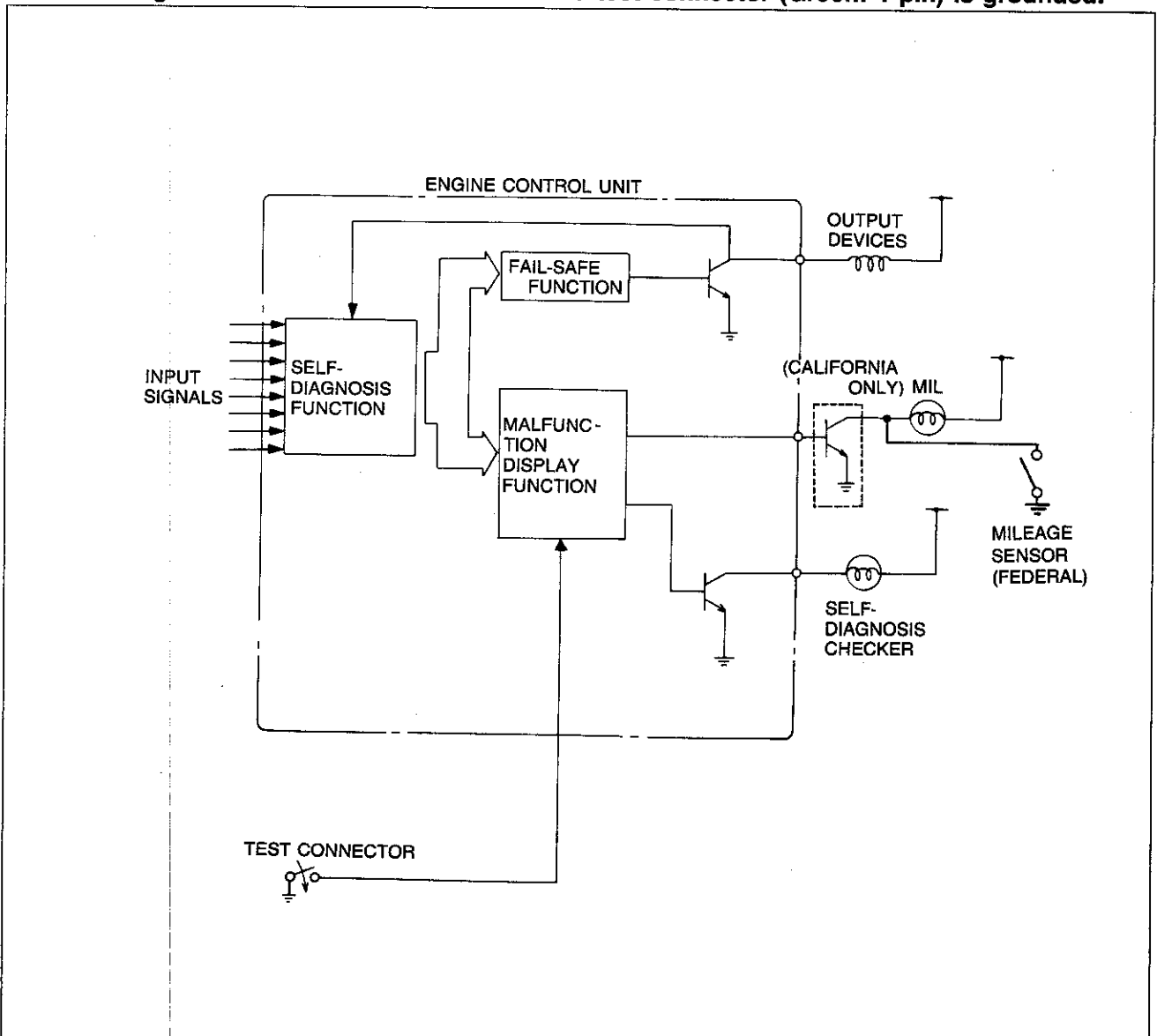


9MU0F2-069

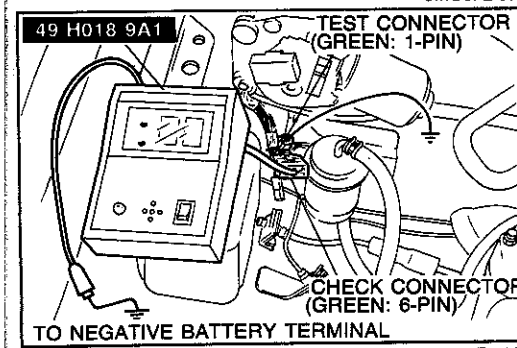
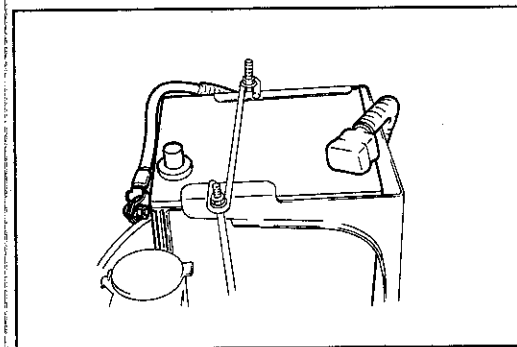
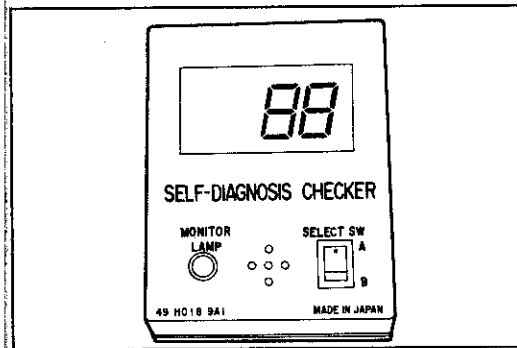
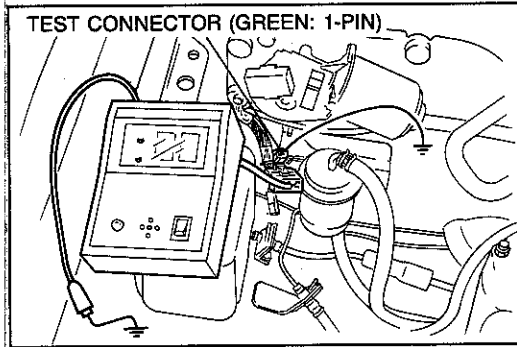
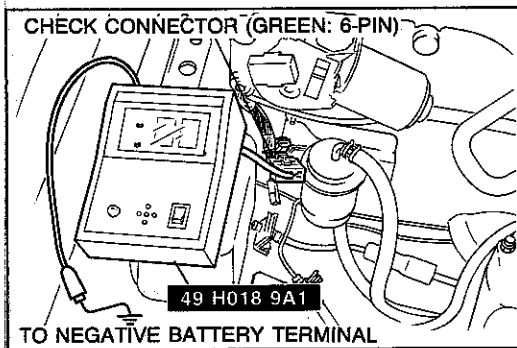
When troubles occur in the main input devices or output devices, check for the cause using the **SST**. Failures of each input and output device are indicated and retrieved from the engine control unit as malfunction code numbers.

Note

The engine control unit constantly checks for malfunction of the input devices. But, the engine control unit checks for malfunction of output devices only in a 3 second period after the ignition switch is turned ON and the test connector (Green: 1-pin) is grounded.



9MU0F2-070



INSPECTION PROCEDURE

1. Connect the **SST** to the check connector (Green: 6-pin) and the negative battery terminal.
2. Set the select switch to position A.

Note

The check connector is located near the fuel filter.

3. Ground the test connector (Green: 1-pin) with a jumper wire.

Note

The test connector is located near the check connector for Self-Diagnosis Checker.

4. Turn the ignition switch ON.
5. Check that **88** flashes on the digital display and the buzzer sounds for **3 sec** after turning the ignition switch ON.
6. If **88** does not flash, check the main relay (Refer to page F2-186.) power supply circuit, and check connector wiring.
7. If **88** flashes and the buzzer sounds continuously for more than **20 sec**, check for a short circuit between the engine control unit (1F) terminal and check connector (Green, 6-pin); then replace the engine control unit if necessary and perform steps 3 and 4 again.
8. Note the code numbers and check for the causes by referring to the check sequences shown on pages **from F2-123 to F2-132**. Repair as necessary.

Note

Cancel the code numbers by performing the after-repair procedure after repairing.

AFTER-REPAIR PROCEDURE

1. Cancel the memory of malfunctions by disconnecting the negative battery cable and depressing the brake pedal for **at least five seconds**; then reconnect the negative battery cable.
2. Connect the **SST** to the check connector (Green: 6-pin).
3. Ground the test connector (Green: 1-pin) with a jumper wire.
4. Turn the ignition switch ON, but do not start the engine for **six seconds**.
5. Start and warm up the engine, then run it at **2,000 rpm for three minutes**.
6. Check that no code numbers are displayed.

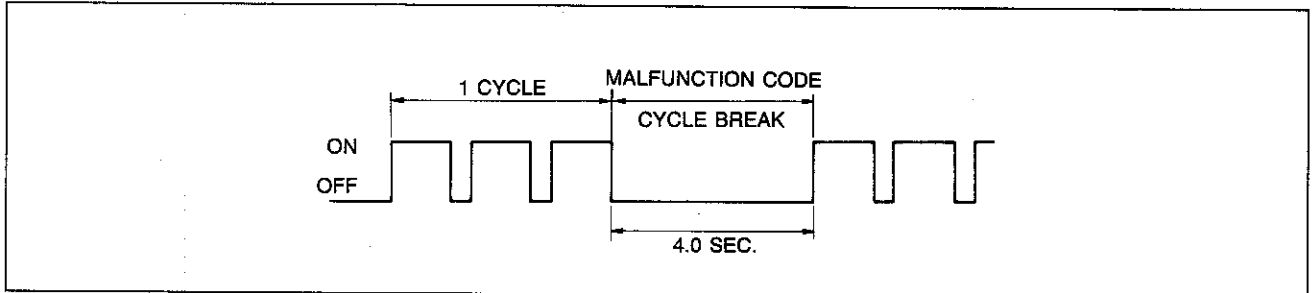
PRINCIPLE OF CODE CYCLE

Malfunction codes are determined as shown below

86U04A-017

1. Code cycle break

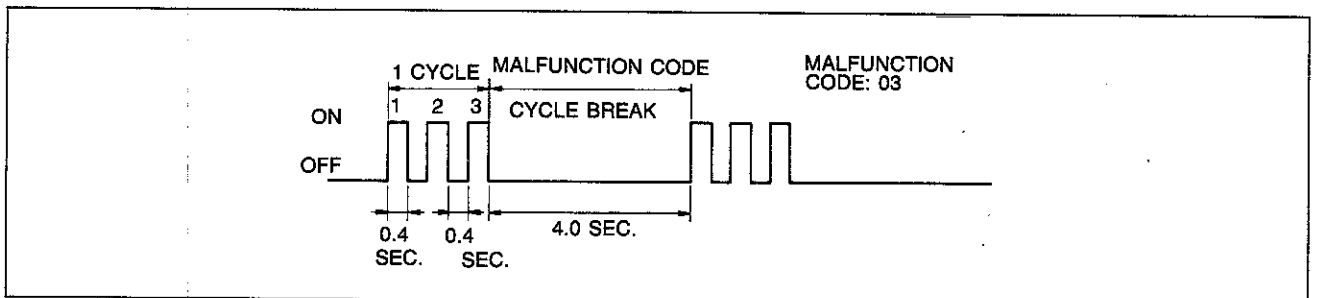
The time between malfunction code cycles is 4.0 sec (the time the MIL (California only) and the buzzer are off).



98U0F2-050

2. Second digit of malfunction code (ones position)

The digit in the ones position of the malfunction code represents the number of times the MIL (California only) and the buzzer are on 0.4 sec during one cycle.

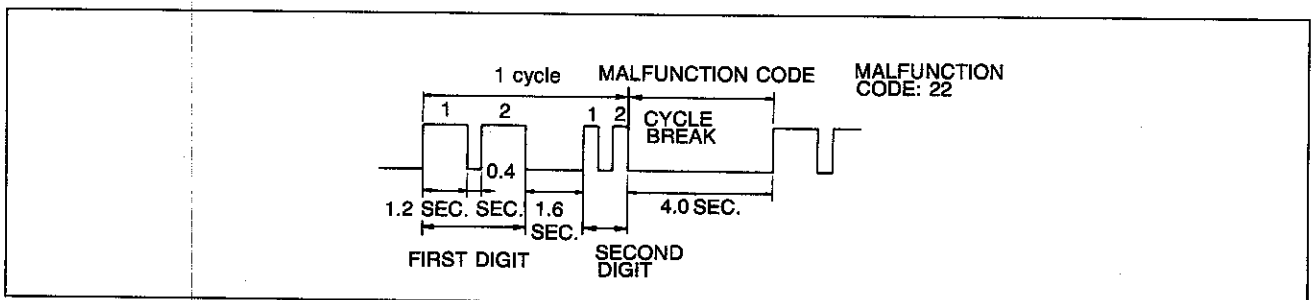


98U0F2-051

3. First digit of malfunction code (tens position)

The digit in the tens position of the malfunction code represents the number of times the MIL (California only) and the buzzer are on 1.2 sec during one cycle.

It should also be noted that the light goes off for 1.6 sec. between the long and short pulses of the MIL (California only) and the buzzer.



98U0F2-052

CODE NUMBERS

Malfunction display		Sensor or subsystem	Self-diagnosis	Fail-safe
Code No.	Pattern of output signal (Self-Diagnosis Checker or MIL (California only))			
02	ON OFF	Ne signal	No Ne signal	—
03	ON OFF	G signal	No G signal	Cancels 2-group injection
08	ON OFF	Airflow sensor	Open or short circuit	Basic fuel injection amount fixed as for two driving modes (1) Idle switch: ON (2) Idle switch: OFF
09	ON OFF	Water thermosensor	Open or short circuit	Maintains constant 20°(68°F) command
11	ON OFF	Intake air thermosensor (dynamic chamber)	Open or short circuit	Maintains constant 20°C (68°F) command
12	ON OFF	Throttle sensor	Open or short circuit	Maintains constant command of throttle valve fully open
14	ON OFF	Atmospheric pressure sensor	Open or short circuit	Maintains constant command of sea level pressure
15	ON OFF	Oxygen sensor (Inactivation)	Sensor output continues less than 0.45V 180 sec. after engine exceeds 1,500 rpm	Cancels engine feedback operation
17	ON OFF	Oxygen sensor (Inversion)	Sensor output not changed 20 sec. after engine exceeds 1,500 rpm	Cancels engine feedback operation
25	ON OFF	Solenoid valve (pressure regulator control)	Open or short circuit	—
26	ON OFF	Solenoid valve (purge control)		—
34	ON OFF	Solenoid valve (Idle speed control)		—

2BU0F2-023

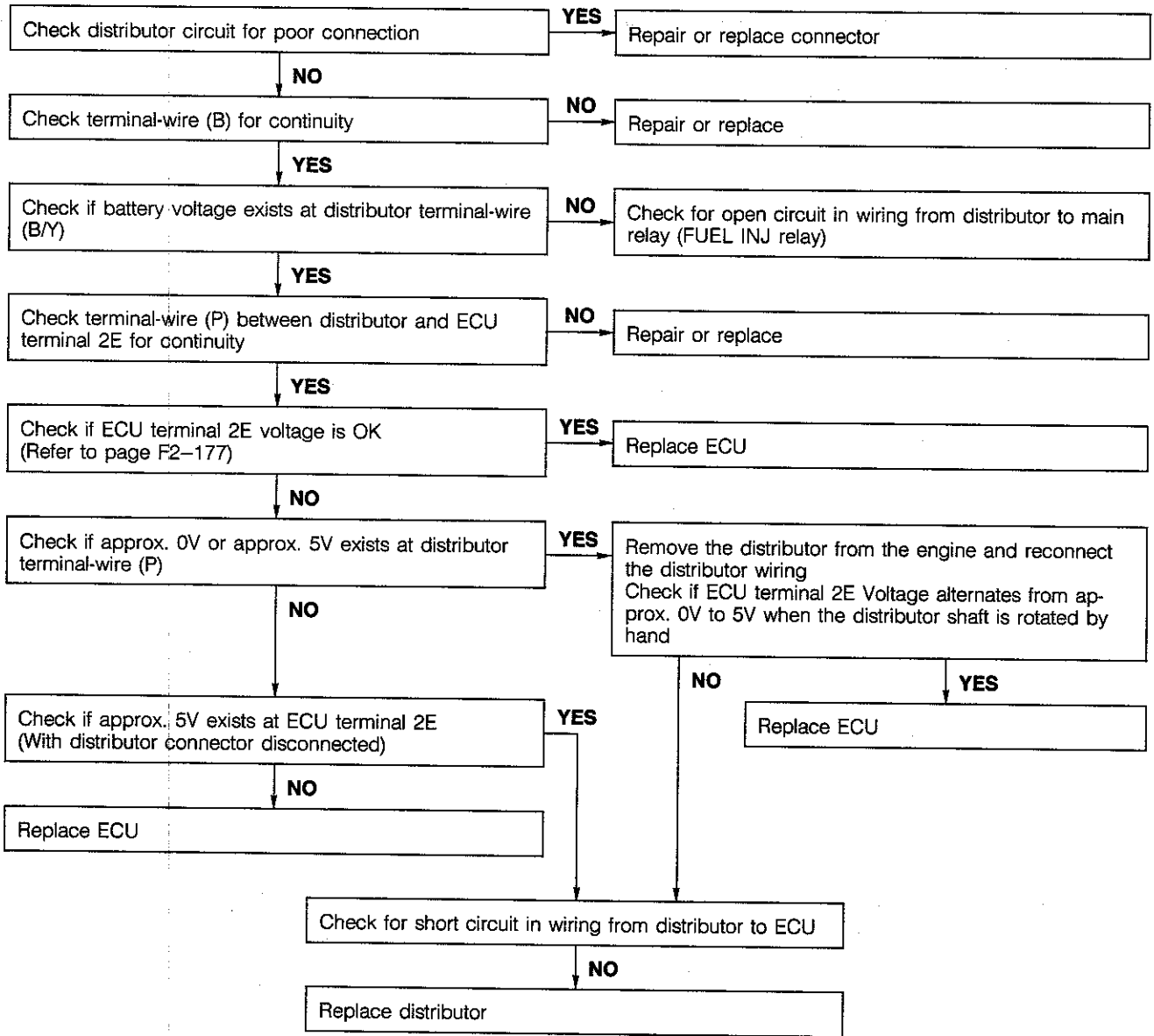
Caution

- If there is more than one failure present, the lowest number malfunction code is displayed first, the remaining codes are displayed in order.
- After repairing all failures, turn off the ignition switch, disconnect the negative battery cable for more than 20 seconds to erase the memory of a malfunction code from the engine control unit.

If a malfunction code number is shown on the **SST**, check the following chart along with the wiring diagram.

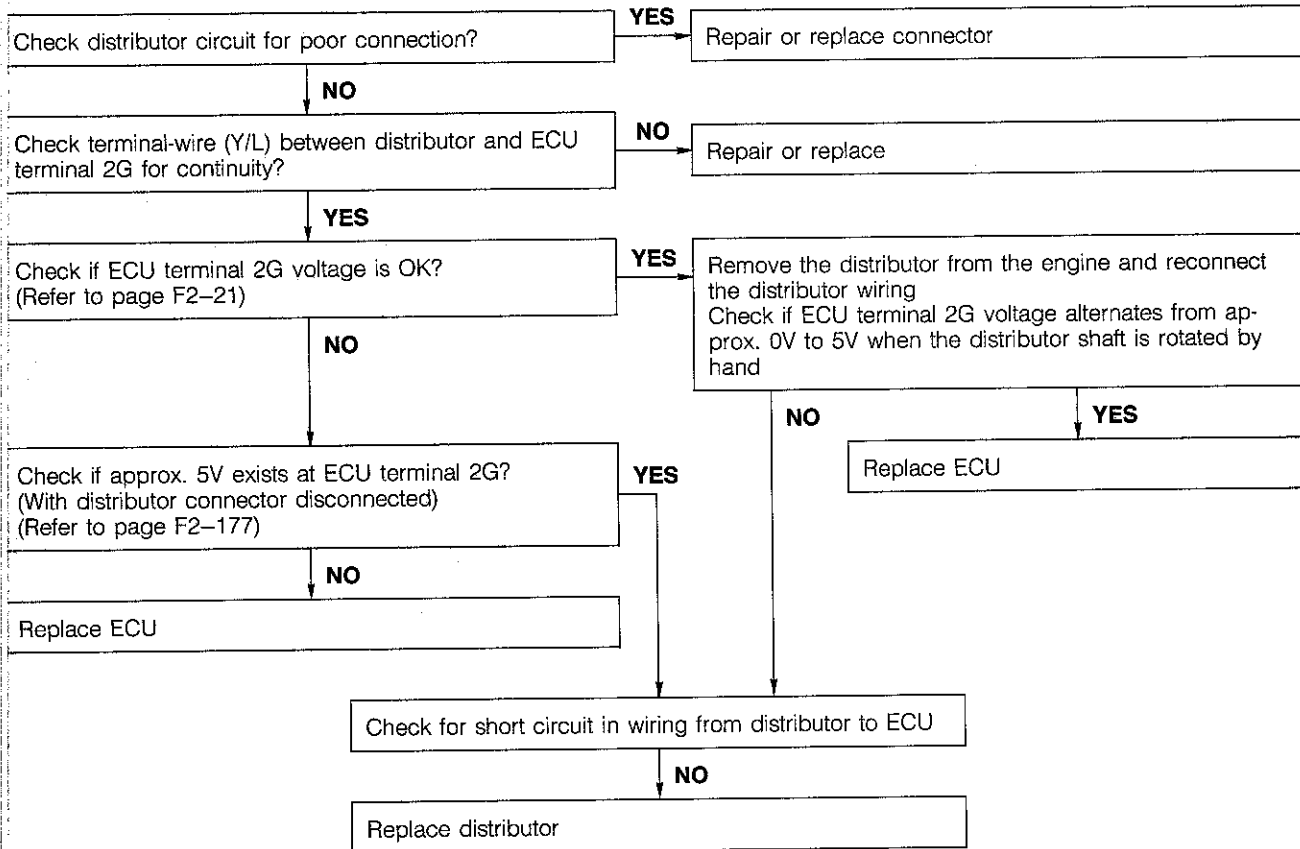
Code No.02 (Distributor Ne-signal)

PC: Possible Cause



1BU0F2-101

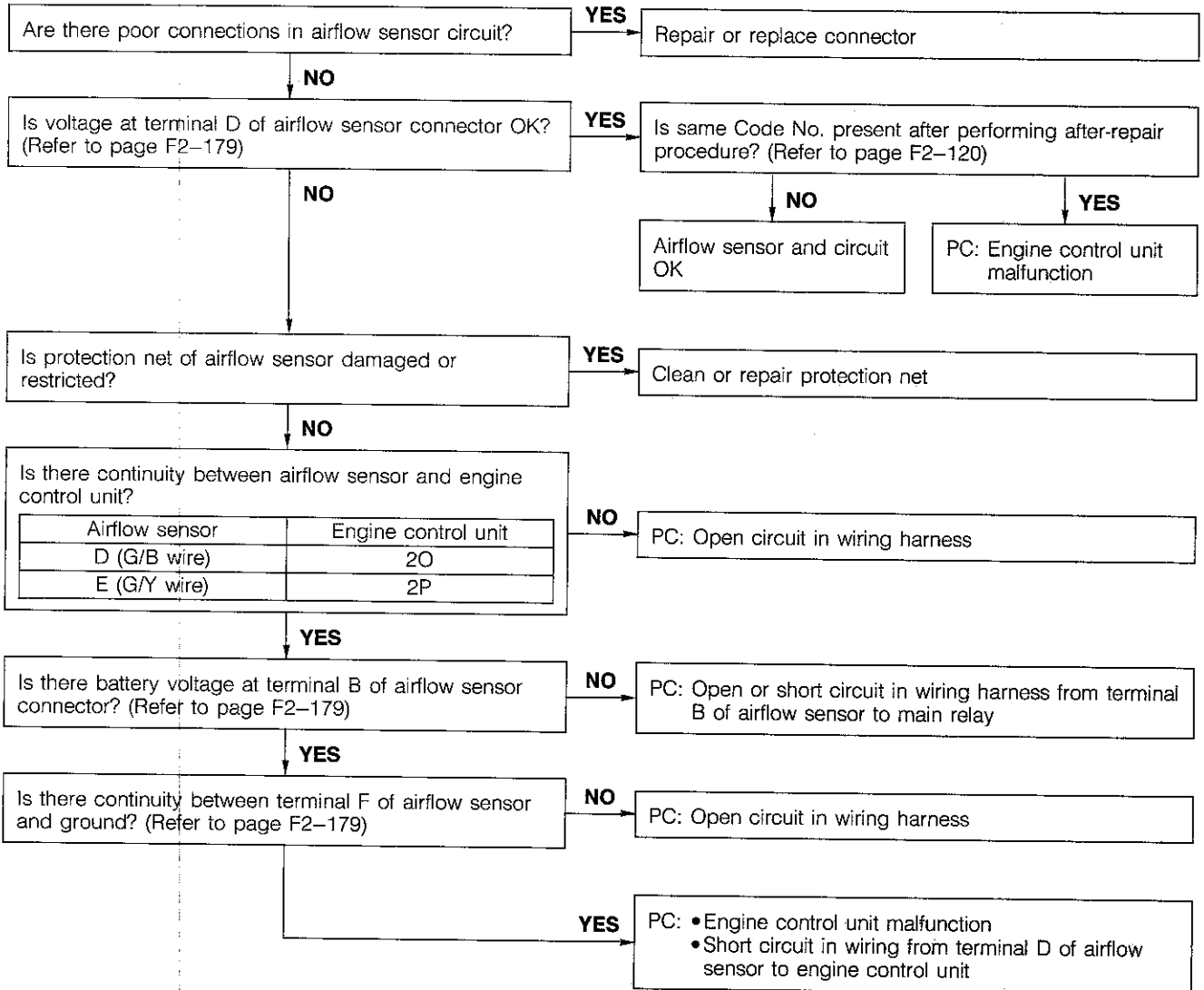
Code No.03 (Distributor G-signal)



1BU0F2-102

Code No.08 (Airflow sensor)

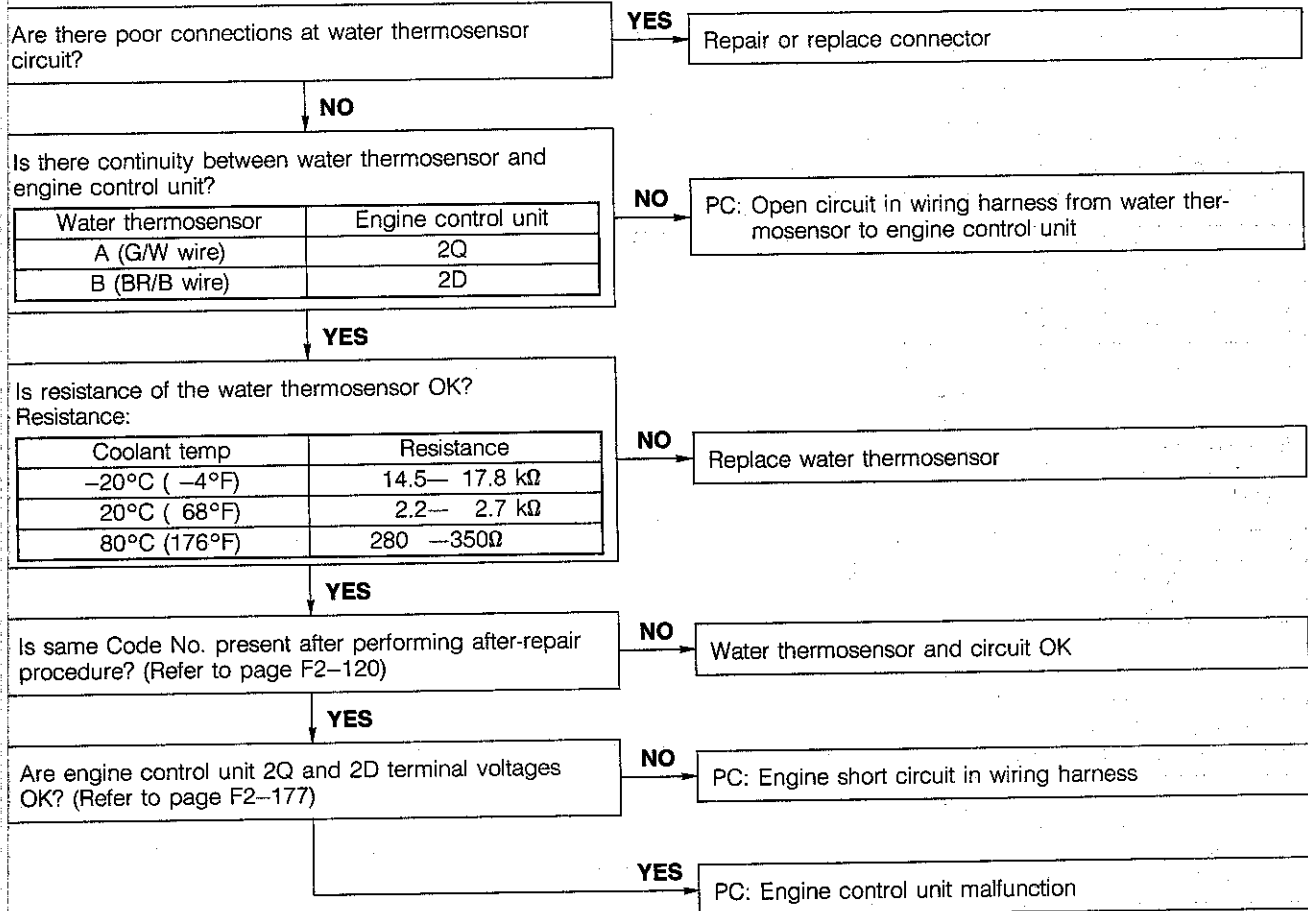
PC: Possible Cause



2BU0F2-024

Code No.09 (Water thermosensor)

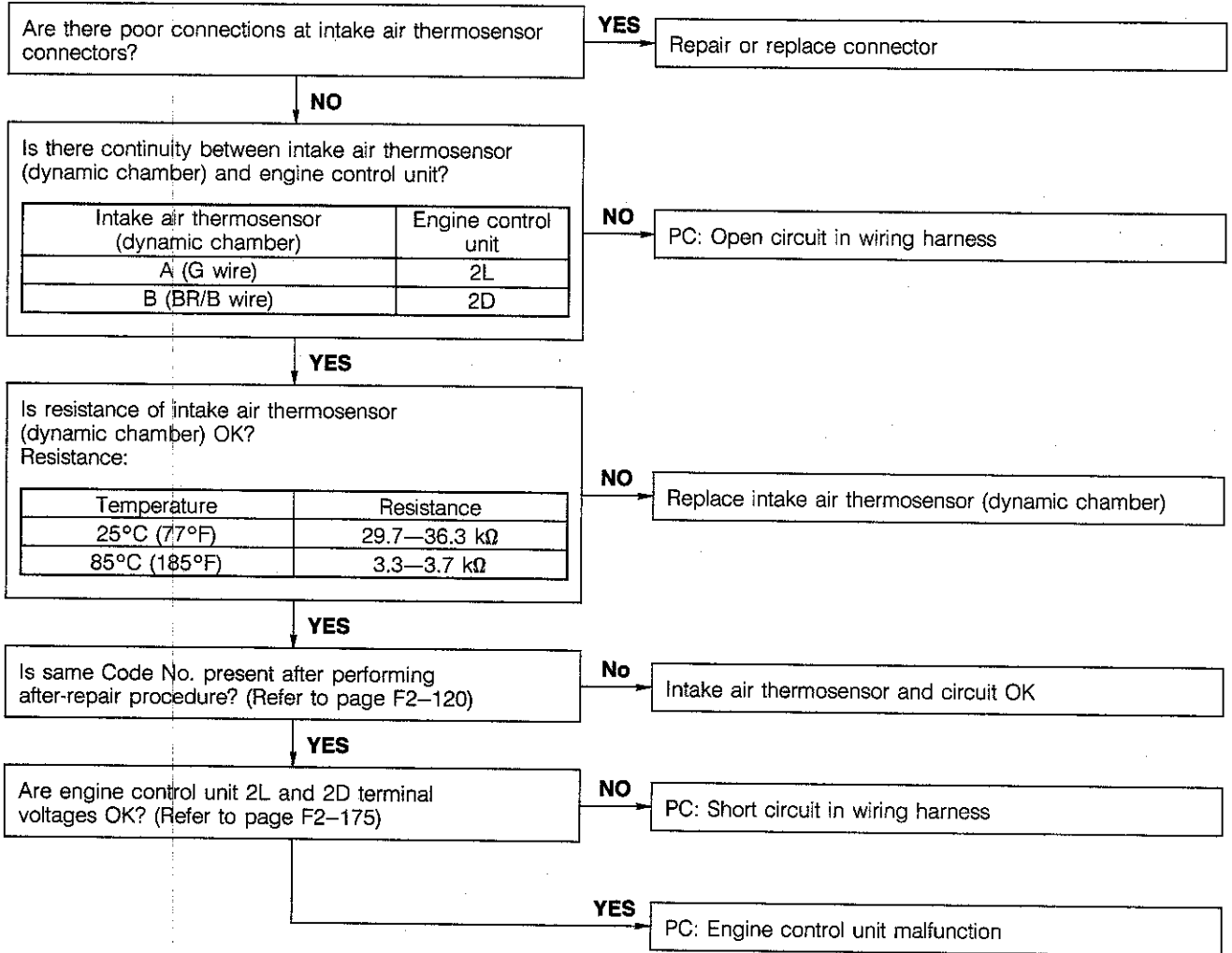
PC: Possible Cause



1BU0F2-041

No.11 Code (Intake air thermosensor)

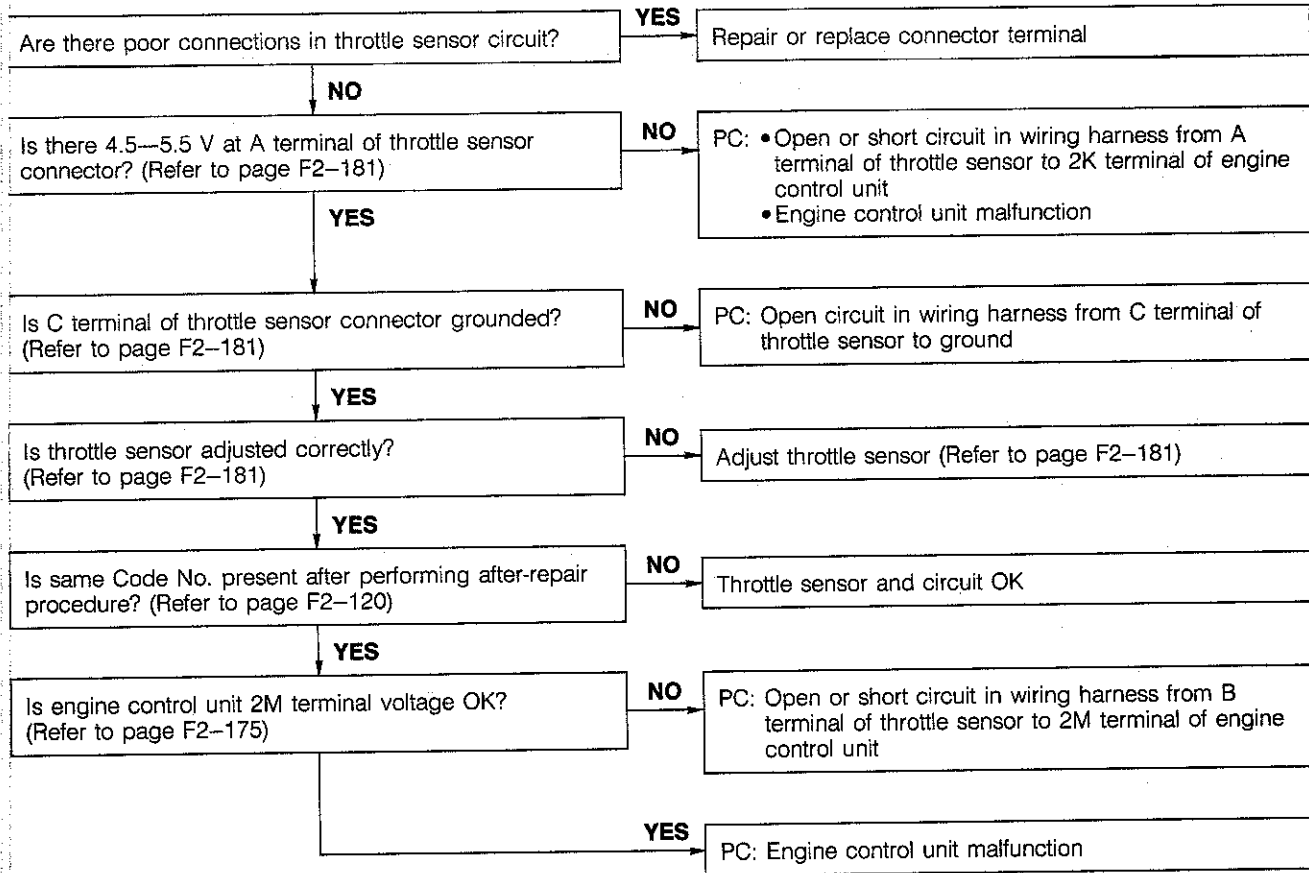
PC: Possible Cause



1BU0F2-042

Code No.12 (Throttle sensor)

PC: Possible cause



1BU0F2-043

Code No.14 (Atmospheric pressure sensor in ECU)

Replace ECU

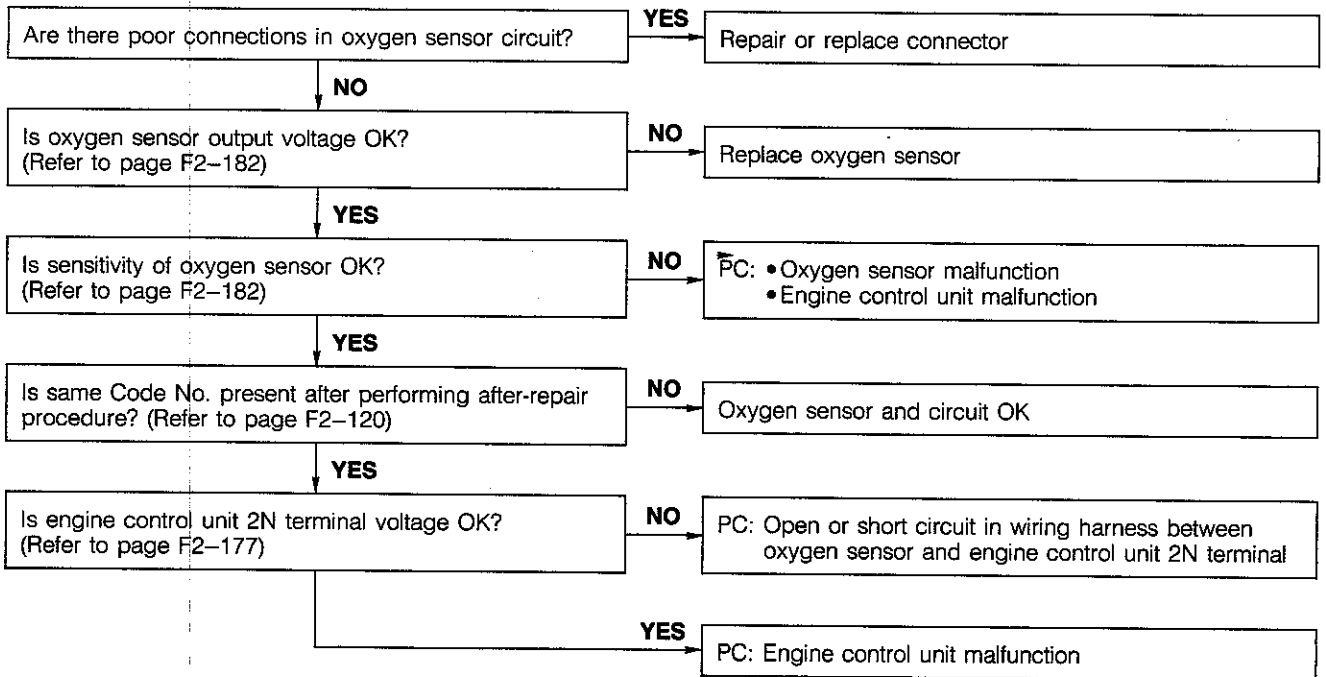
0BU0F2-053

Code No.15 (Oxygen sensor—Inactivation)

PC: Possible Cause

Note

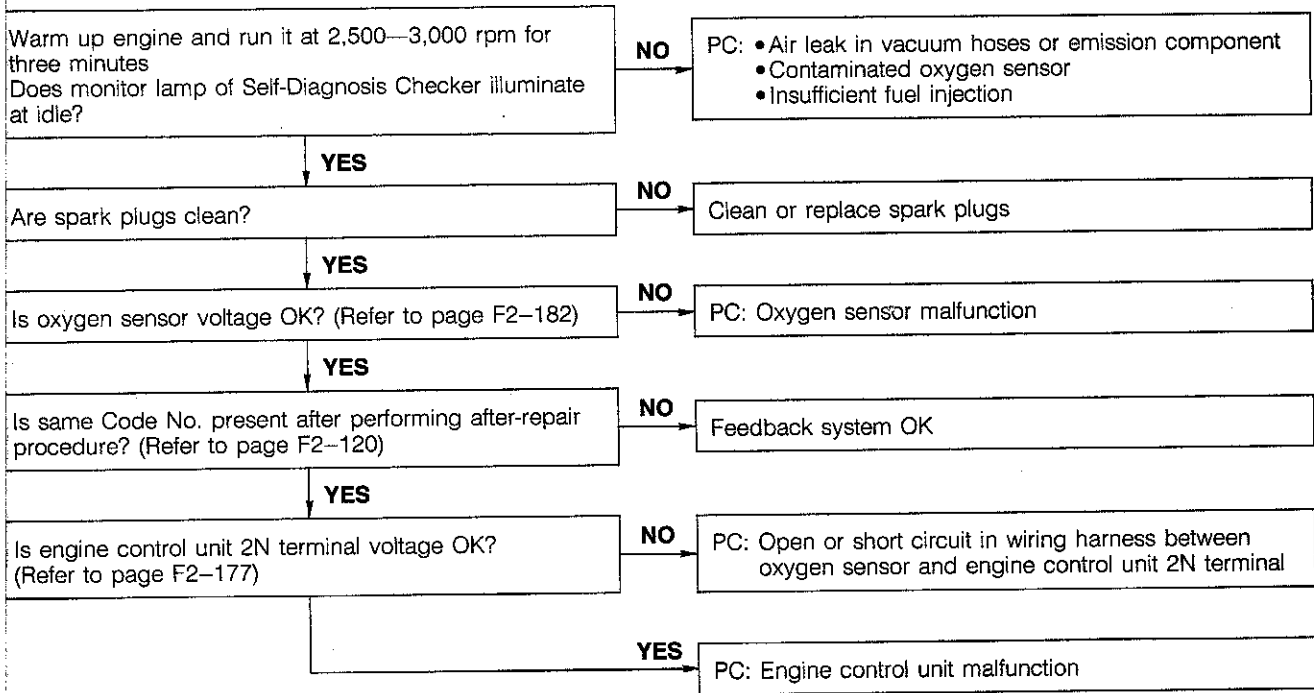
When Codes No.15 and 17 are present at the same time, first perform the checking procedure for Code No.17. (Refer to page F2-130.)



2BU0F2-025

Code No.17 (Oxygen sensor—Inversion)

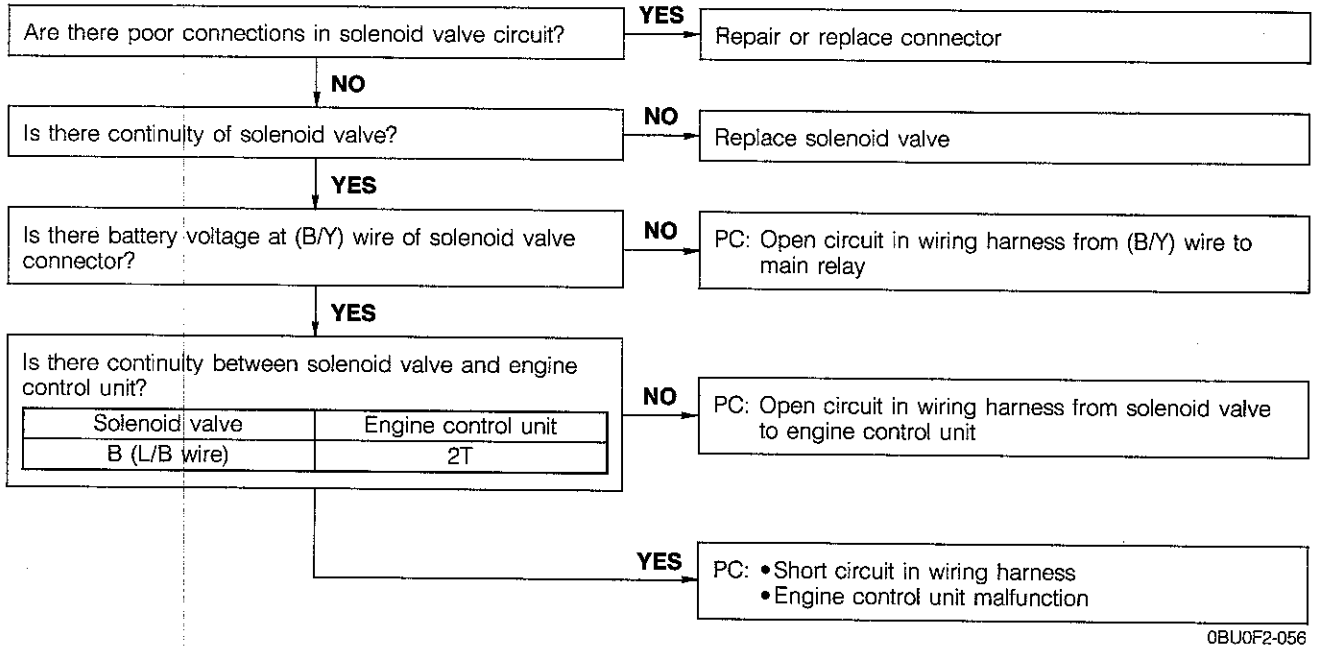
PC: Possible Cause



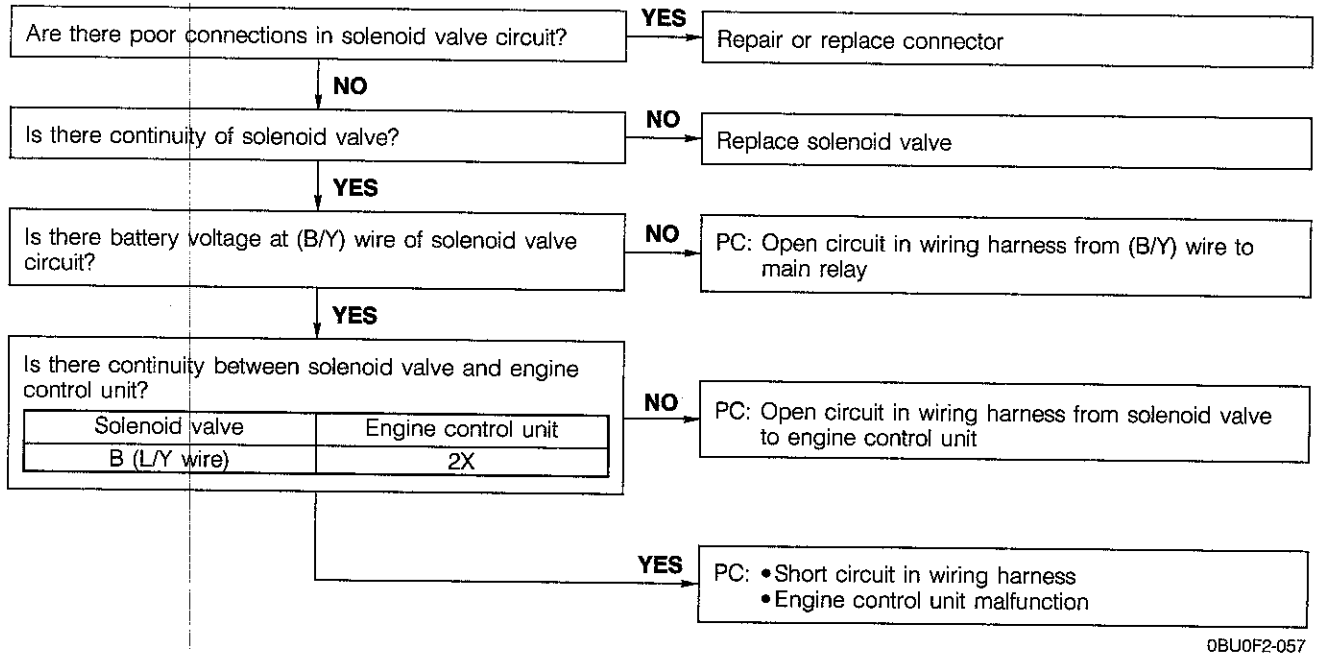
2BU0F2-026

Code No.25 (Solenoid valve—Pressure regulator control)

PC: Possible Cause

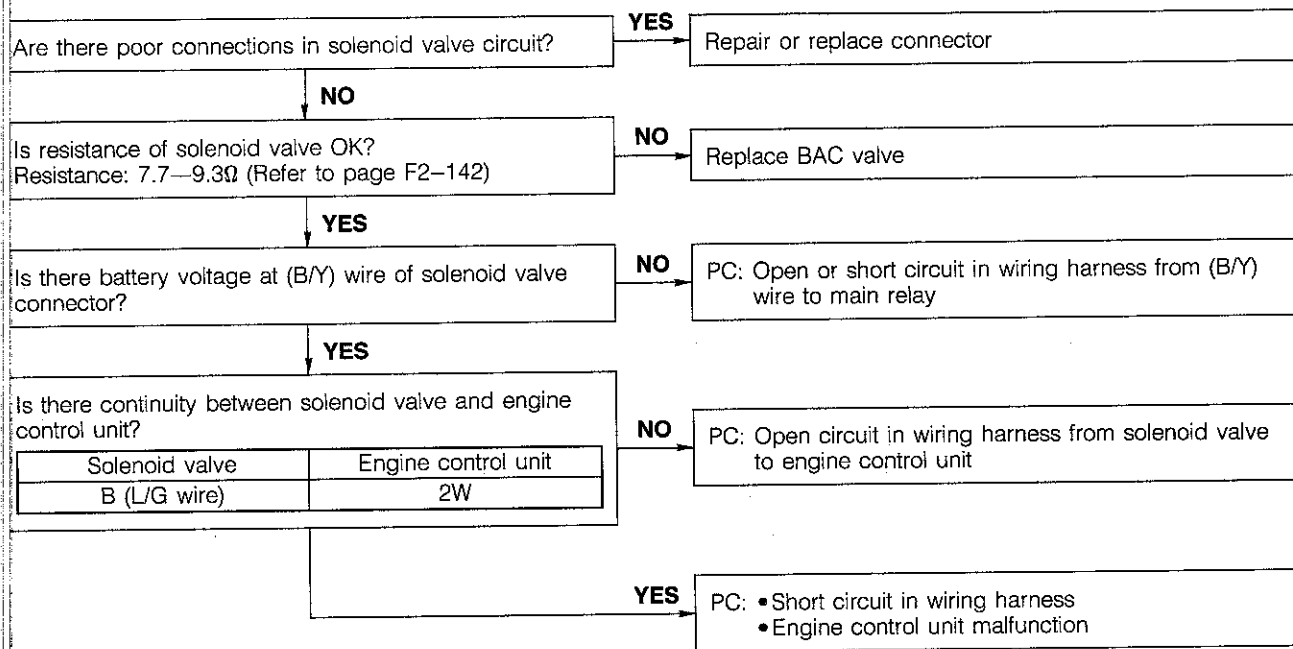


Code No.26 (Solenoid valve—Purge control)



Code No.34 (Solenoid valve—Idle speed control (ISC))

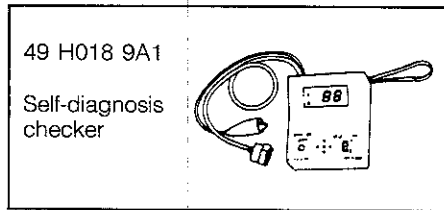
PC: Possible Cause



1BU0F2-046

SWITCH MONITOR FUNCTION

PREPARATION
SST

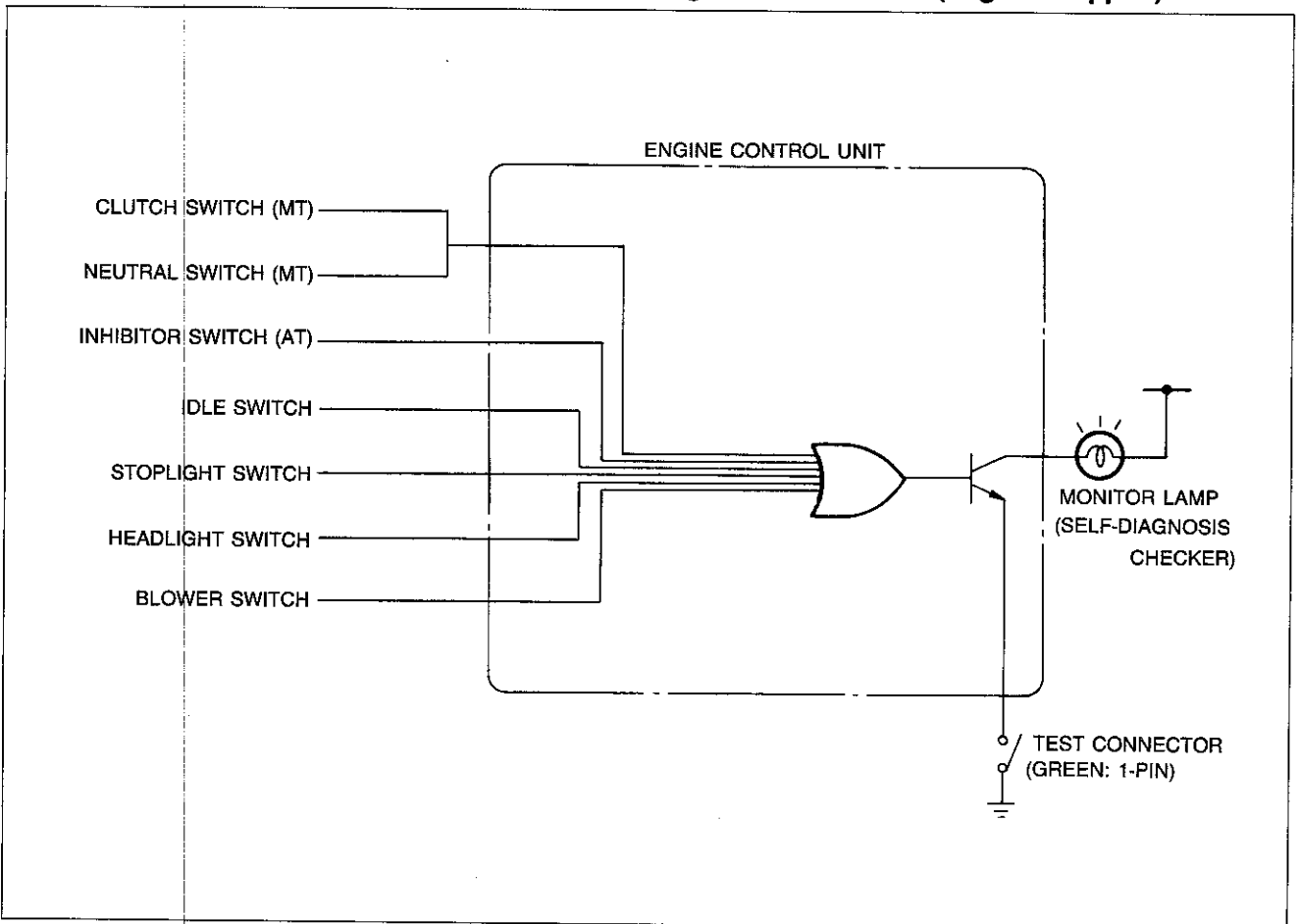


9MU0F2-244

Individual switches can be monitored by the **SST**.

Note

The test connector must be grounded and the ignition switch ON (engine stopped).

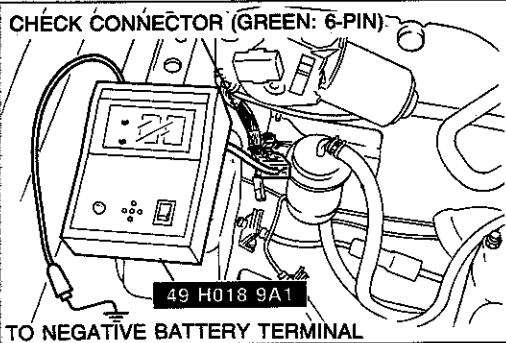


9BU0F2-064

Switch	Self-Diagnosis Checker (Monitor lamp)		Remark
	Light ON	Light OFF	
Clutch switch (MT)	Pedal released	Pedal depressed	In gear
Neutral switch (MT)	In gear	Neutral	Clutch pedal released
Inhibitor switch (AT)	L, S, D or R range	N or P range	—
Idle switch	Pedal depressed	Pedal released	—
Stoplight switch	Pedal depressed	Pedal released	—
Headlight switch	ON	OFF	Headlights/small lights: ON
Blower switch	ON	OFF	Blower motor ON

0BU0F2-059

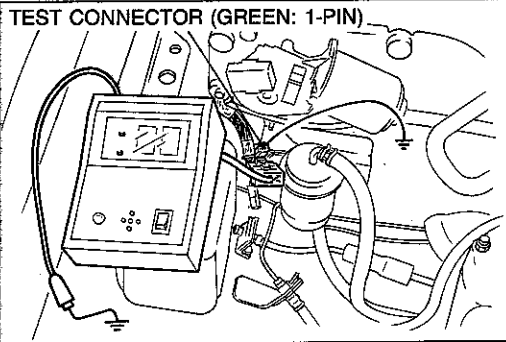
CHECK CONNECTOR (GREEN: 6-PIN)



TO NEGATIVE BATTERY TERMINAL

86U04A-034

TEST CONNECTOR (GREEN: 1-PIN)



86U04A-035

INSPECTION PROCEDURE

1. Warm up the engine to normal operating temperature and stop it.
2. Connect the **SST** to the check connector (Green, 6-pin) and the negative battery terminal.

3. Connect a jumper wire between the test connector (Green, 1-pin) and a ground.
4. Turn the ignition switch ON. Check if monitor lamp illuminates when each switch is made to function as described below.

Caution

- a) If any one of the switches is activated, the monitor lamp will stay on.
- b) Do not start the engine.

Procedure

Set conditions to deactivate each switch

- All accessories OFF
- Transmission in neutral
- All pedals released

Verify that monitor lamp does not illuminate

YES

Check each switch as described

NO

Check each switch and related wiring harness

- Clutch and Neutral switch :Refer to page F2-184
- Idle switch :Refer to page F2-183
- Stoplight switch :Refer to Section T
- Headlight switch :Refer to Section T
- Blower switch :Refer to Section T
- Inhibitor switch :Refer to Sections K1, K2

2BU0F2-027

Neutral and Clutch switch (M/T)

Shift transmission into gear
Check that monitor lamp illuminates with clutch pedal released

YES

Depress clutch pedal
Check that monitor lamp does not illuminate
Return transmission to neutral

NO

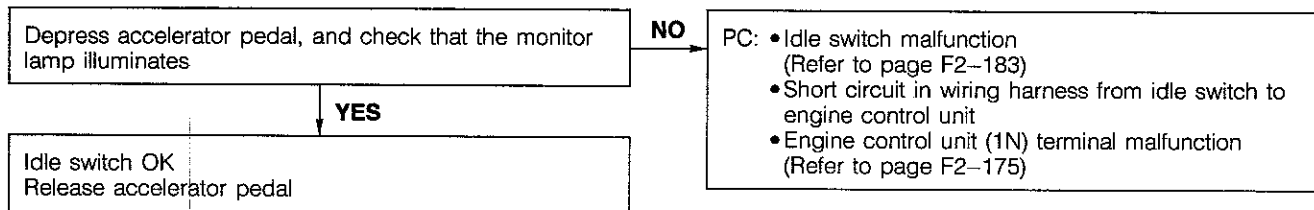
PC: • Neutral or clutch switch malfunction (Refer to F2-184)
• Open circuit in related wiring harness
• Engine control (1V) terminal malfunction (Refer to page F2-175)

NO

PC: • Clutch switch malfunction (Refer to page F2-184)

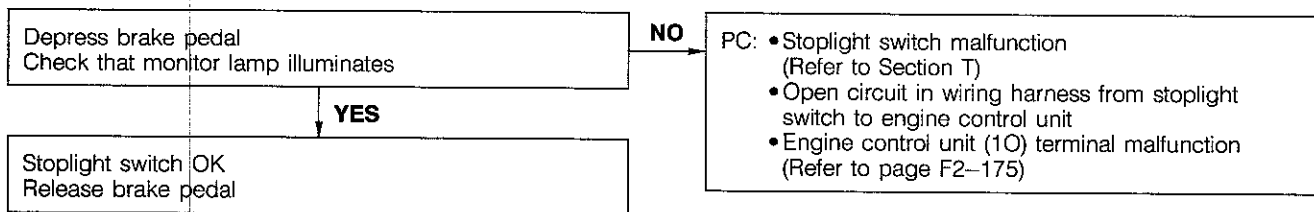
1BU0F2-048

Idle switch



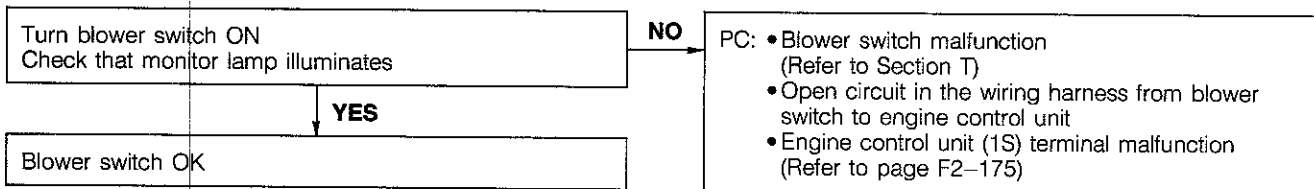
1BU0F2-049

Stoplight switch



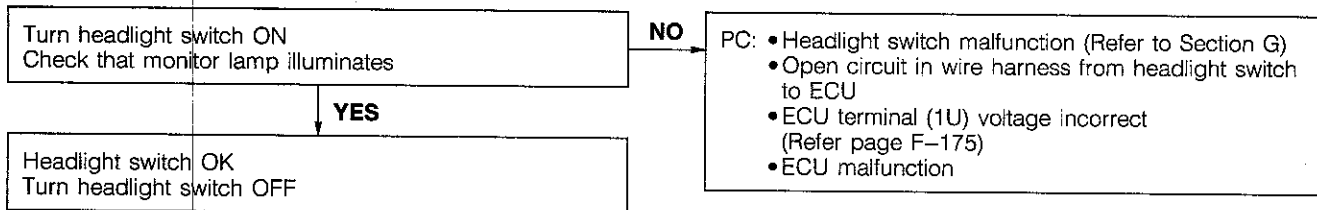
1BU0F2-050

Blower switch



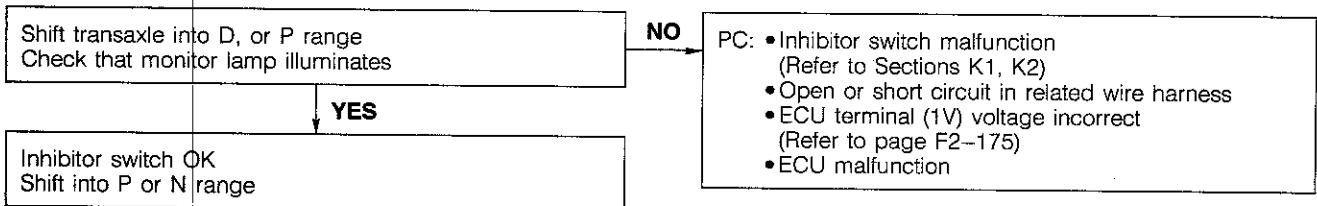
1BU0F2-051

Headlight switch



1BU0F2-052

Inhibitor switch (AT)



SWITCH MONITOR FUNCTION

Headlight switch

Turn ON headlight switch
Check that monitor lamp illuminates

NO

YES

Headlight switch OK
Turn OFF headlight switch

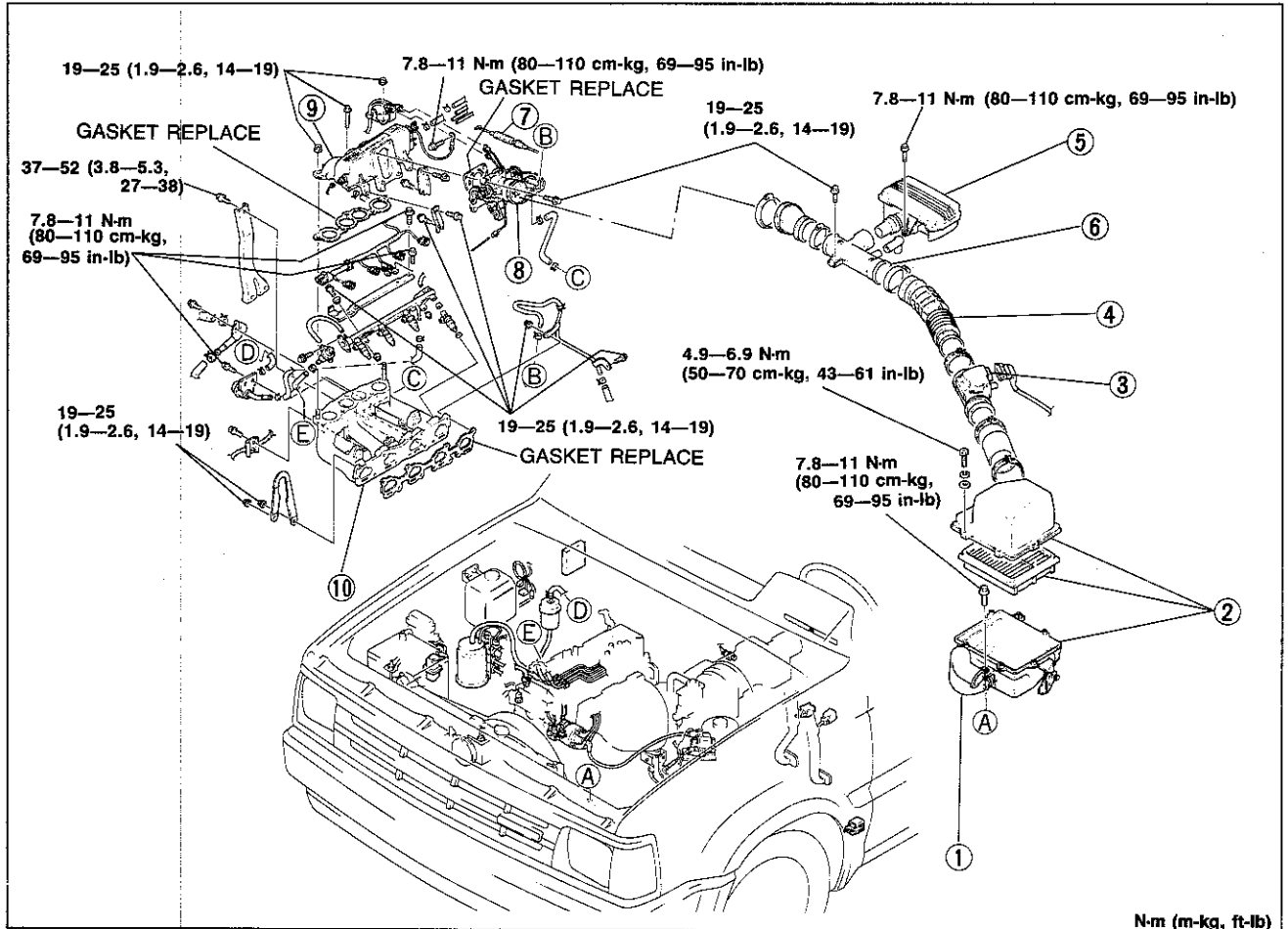
PC: • Headlight switch malfunction
(Refer to Section T)
• Open circuit in wiring harness from headlight
switch to engine control unit
• Engine control unit (1U) terminal malfunction
(Refer to page F2-175)

1BU0F2-054

INTAKE AIR SYSTEM

STRUCTURAL VIEW

This system controls the air required to operate the engine. The system consists of the air cleaner, the air pipe, the resonance chamber, the throttle body, the dynamic chamber, and the intake manifold.



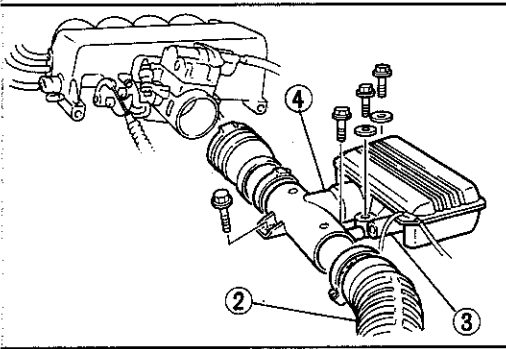
Inspection

1. Check for air leaks by listening for sucking noises.
2. Visually check the components for damage and replace if necessary.

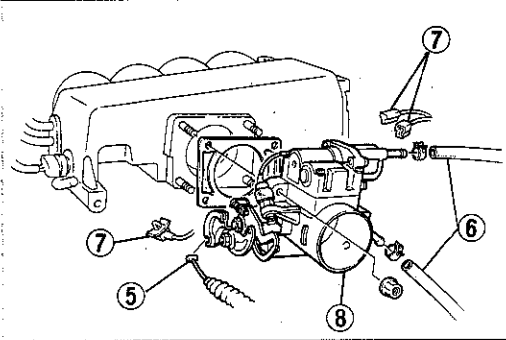
- | | | |
|---|--|---|
| <ol style="list-style-type: none"> 1. Air duct
Inspect for damage 2. Air cleaner
Inspect for excessive dirt, damage, or oil 3. Airflow sensor
Inspection and Replacement
..... page F2-179 4. Air hose
Inspect for damage | <ol style="list-style-type: none"> 5. Resonance chamber (G6)
Inspect for damage 6. Air pipe
Inspect for damage 7. Accelerator cable
Inspection and Replacement
..... page F2-139 8. Throttle body
Removal and Inspection
..... page F2-138 | <ol style="list-style-type: none"> 9. Dynamic chamber
Inspect for damage
Removal and Installation .. page F2-139 10. Intake manifold
Inspect for damage
Removal and Installation .. page F2-140 |
|---|--|---|

Caution

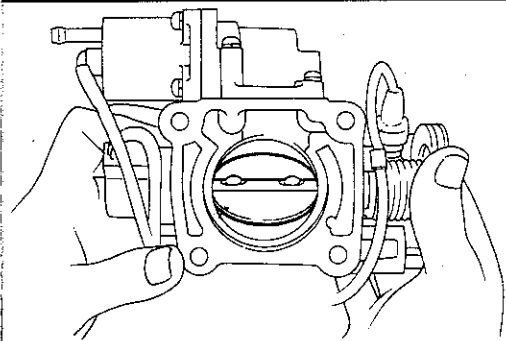
- a) The air cleaner must be replaced at the intervals outlined in the maintenance schedule.
- b) Never drive the vehicle without the air cleaner element, otherwise, damage to the airflow sensor (hot wire) will occur.
- c) Never use an oil permeated air cleaner element, otherwise, contamination of the hot wire will occur.



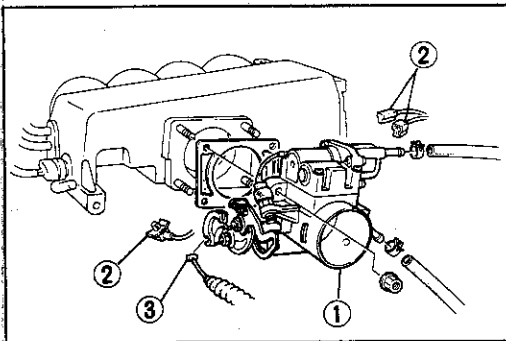
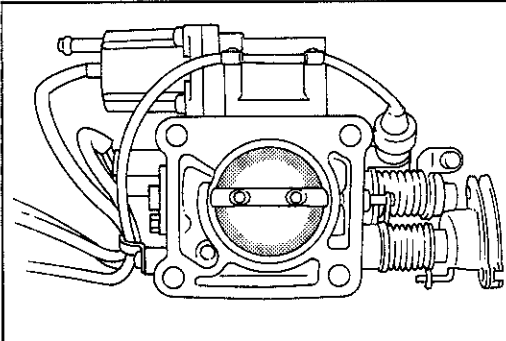
2BU0F2-029



0BU0F2-069



0MU0F2-641



0BU0F2-070

THROTTLE BODY Removal

1. Disconnect the negative battery terminal.
2. Disconnect the air hose.
3. Disconnect the ventilation hose.
4. Remove the air pipe and resonance chamber (G6).

5. Remove the accelerator cable from the throttle lever.

Note

- Before disconnecting the water hoses, drain the engine coolant.

6. Disconnect the water hoses.
7. Disconnect the connectors for the solenoid valve (ISC), the throttle sensor, and idle switch.
8. Remove the throttle body.

Inspection

1. Check that the throttle valve is fully closed.
2. Check that the throttle valve move smoothly when the throttle lever is moved from fully closed to fully open.
3. Replace the throttle body if necessary.

Caution

- Do not remove the thin seal coating from the throttle valve or bore.

Installation

1. Install the throttle body.

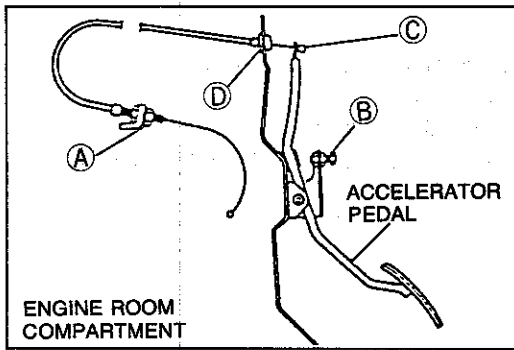
Note

- Use a new gasket.

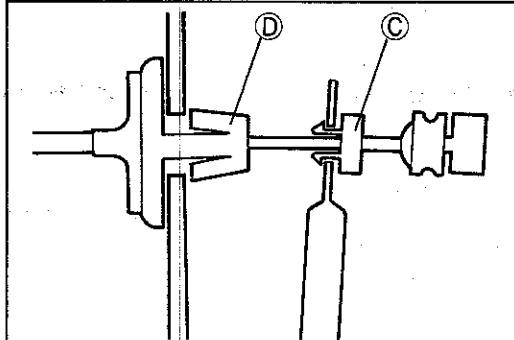
Tightening torque:

19—25 N·m (1.9—2.6 m·kg, 14—19 ft·lb)

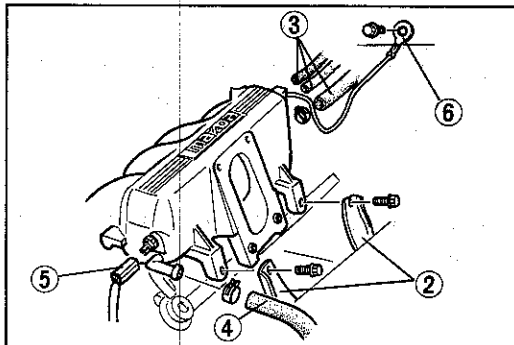
2. Connect the connectors.
3. Install the accelerator cable.



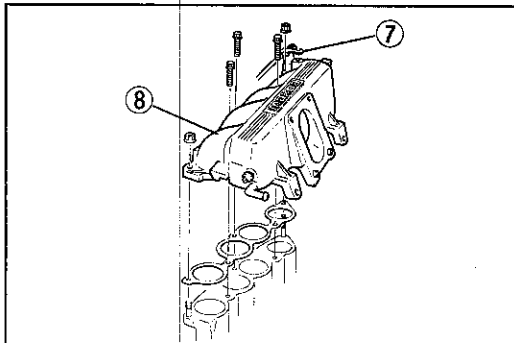
9MUOF2-107



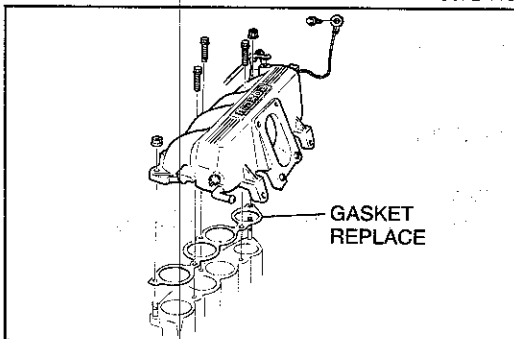
9MUOF2-108



1BUOF2-103



9MUOF2-110



9MUOF2-111

ACCELERATOR CABLE

Inspection

1. Check deflection of the cable. If deflection exceeds **1—3mm (0.039—0.118 in)**, adjust it by turning nuts A.
2. Depress the accelerator pedal to the floor and check that the throttle valve opens fully. Adjust with bolt B if necessary.

Replacement

1. Remove the accelerator cable from the throttle lever.
2. Loosen the throttle adjustment nuts and remove the cable from the bracket.
3. Compress the taps of stay C and remove the accelerator cable from the pedal arm.
4. Compress the taps of stay D and push the cable through the fire wall.
5. Remove the accelerator cable.
6. Install in the reverse order of removal.
7. Adjust deflection of the cable after installation.

DYNAMIC CHAMBER

Removal

1. Remove the throttle body. (Refer to page F2-138.)
2. Remove the dynamic chamber brackets.
3. Disconnect the vacuum hoses.
4. Disconnect the PCV hose.
5. Disconnect the intake air thermosensor connector.
6. Disconnect the ground wire.

7. Remove the injector harness bracket.
8. Remove the dynamic chamber.

Installation

Install in the reverse order of removal.

Note

Use a new gasket.

Tightening torque

Dynamic chamber and dynamic chamber bracket:
19—25 N·m (1.9—2.6 m·kg, 14—19 ft·lb)

Ground wire:

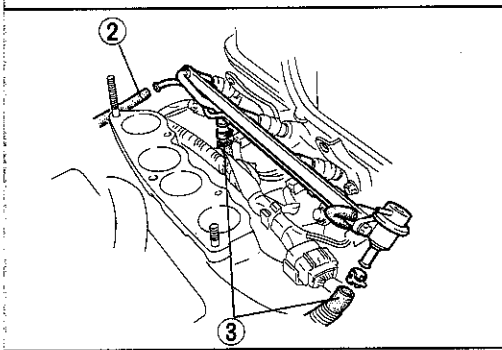
7.8—11 N·m (80—110 cm·kg, 69—95 in·lb)

INTAKE MANIFOLD Removal

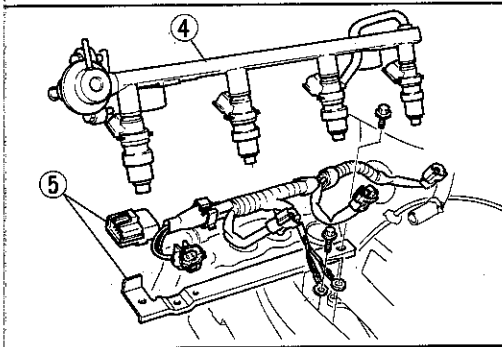
Warning

Before removal, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)

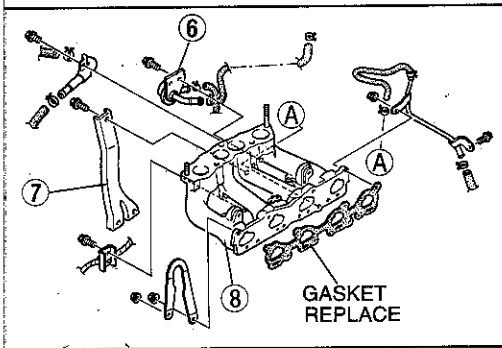
1. Remove the dynamic chamber. (Refer to page F2-139.)
2. Disconnect the vacuum hoses.
3. Disconnect the fuel hoses.



4. Remove the delivery pipe and injectors.
5. Remove the injector harness and the bracket.



6. Remove the pulsation damper.
7. Remove the intake manifold bracket.
8. Remove the intake manifold.



Installation

Install in the reverse order of removal.

Note

Use a new gasket.

Tightening torque

Intake manifold and delivery pipe:

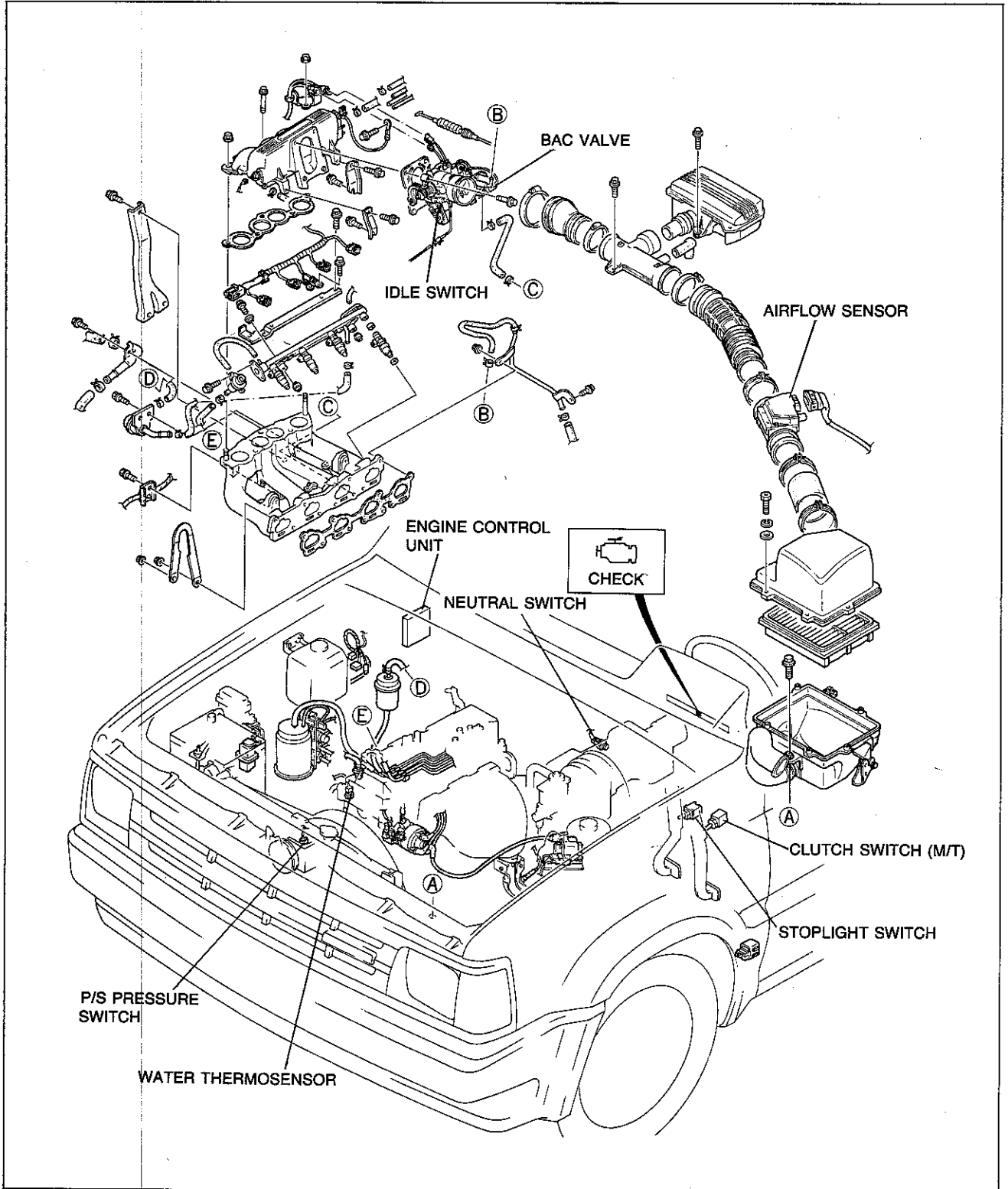
19—25 N·m (1.9—2.6 m·kg, 14—19 ft·lb)

Pulsation damper and injector harness bracket:

7.8—11 N·m (80—110 cm·kg, 69—95 in·lb)

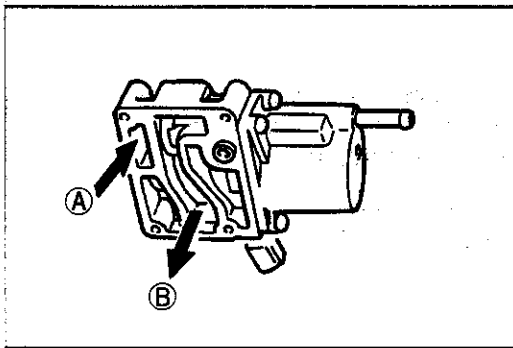
IDLE SPEED CONTROL (ISC) SYSTEM

DESCRIPTION

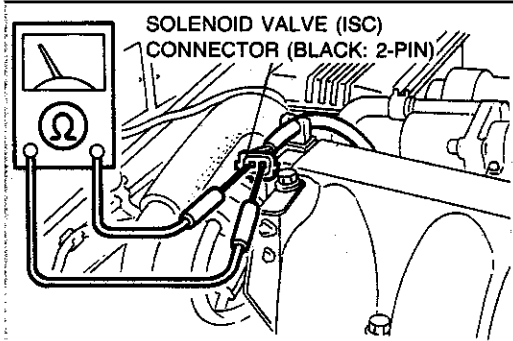


9MUOF2-115

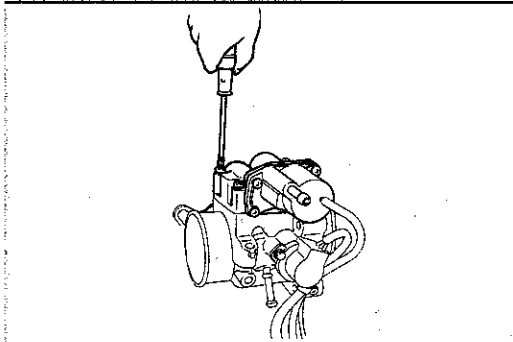
To improve idle smoothness, the ISC system controls the intake air amount by regulating the bypass air amount that passes through the throttle body. This system consists of the BAC valve and the control system. The BAC valve consists of the air valve that functions only when the engine is cold and the solenoid valve (ISC) that works throughout the entire engine speed range.



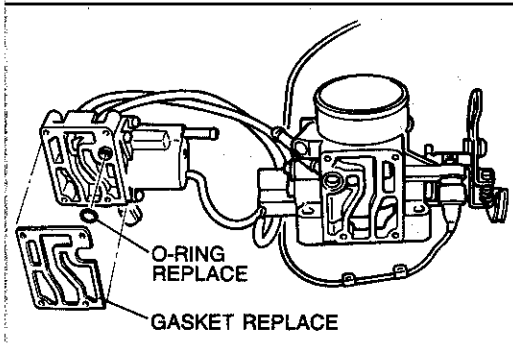
1BU0F2-058



9MU0F2-117



9MU0F2-118



9MU0F2-119

BAC VALVE**Inspection****Air valve**

1. Remove the BAC valve from the throttle body.
2. Blow air through the valve from port A and check that air comes out of port B when the BAC valve is cold.
3. Place the BAC valve into hot water (**more than 80°C [176°F] for one minute**).
4. Blow air through the valve from port A and check that no air comes out of port B.
5. If not correct, replace the BAC valve.

Solenoid valve (ISC)

1. Disconnect the solenoid valve (ISC) connector.
2. Connect an ohmmeter to the terminals of the solenoid valve.
3. Check the resistance.

Resistance (at 23°C [73°F]): 7.7—9.3Ω

4. If not as specified, replace the BAC valve.

Removal

1. Remove the screws.
2. Remove the BAC valve from the throttle body.

Installation**Caution**

- Install a new gasket and new O-ring.

1. Remove any dirt or old sealant from the contact surfaces.
2. Tighten the screws.

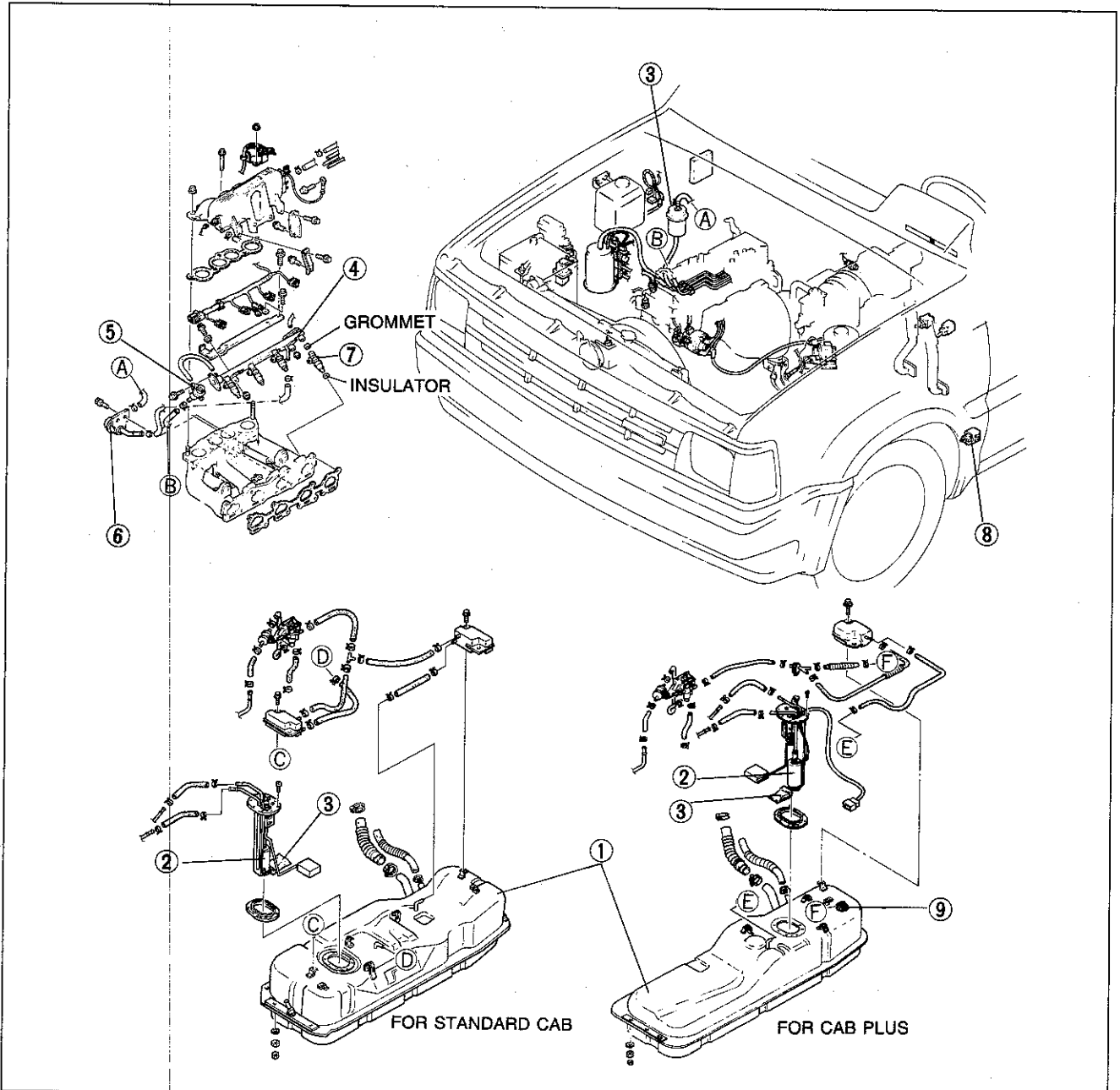
Tightening torque:

2.5—3.4 N·m (25—35 cm·kg, 22—30 in·lb)

FUEL SYSTEM

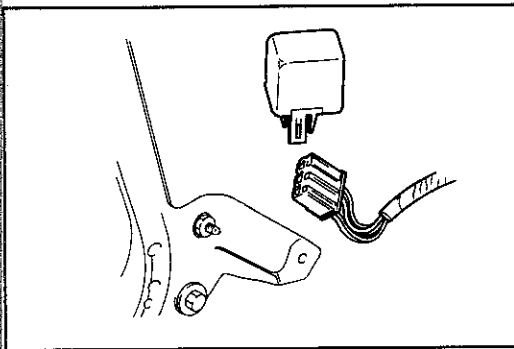
STRUCTURAL VIEW

This system supplies the necessary fuel for combustion at a constant pressure to the fuel injectors. Fuel is metered and injected into intake manifold according to the injection control signals from the engine control unit. It consists of the fuel tank, the fuel pump, the fuel filters, the delivery pipe, the pressure regulator, the injectors, and the circuit opening relay.

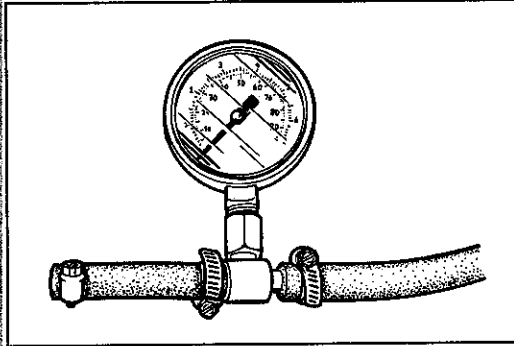


2BU0F2-050

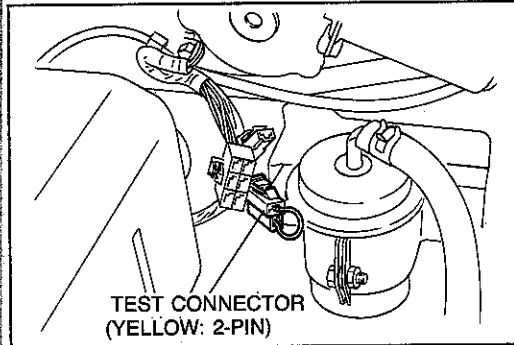
- | | | |
|---|---|---|
| <p>1. Fuel tank
Removal..... page F2-147
Installation..... page F2-148</p> <p>2. Fuel pump
Inspection..... page F2-150
Replacement. page F2-152</p> | <p>3. Fuel filter
Replacement. page F2-149</p> <p>4. Delivery pipe</p> <p>5. Pressure regulator
Inspection..... page F2-154
Replacement. page F2-155</p> <p>6. Pulsation damper
Inspection, Removal, and
Installation ... page F2-155</p> | <p>7. Injector
Removal..... page F2-156
Inspection..... page F2-157
Installation..... page F2-158</p> <p>8. Circuit opening relay
Inspection, Removal, and
Installation.... page F2-153</p> <p>9. Fuel vapor valve
Inspect for damage</p> |
|---|---|---|



9BU0F2-076



9MU0F2-122



9MU0F2-123

PRECAUTION**Fuel Pressure Release and Servicing Fuel System**

Fuel in the fuel system remains under high pressure even when the engine is not running.

- a) Before disconnecting any fuel line, release the fuel pressure from the fuel system to reduce the possibility of injury or fire.
 1. Start the engine.
 2. Disconnect the circuit opening relay connector.
 3. After the engine stalls, turn off the ignition switch.
 4. Reconnect the circuit opening relay connector.
- b) Use a rag as protection from fuel spray when disconnecting the hoses.
Plug the hoses after removal.
- c) When inspecting the fuel system, use a suitable fuel pressure gauge.

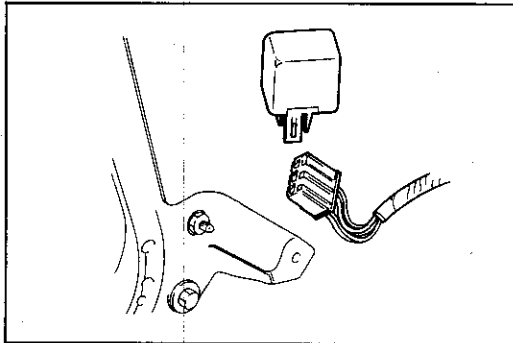
Caution

Install hose clamps to secure the fuel pressure gauge to the fuel filter and the fuel main hose to prevent fuel leakage.

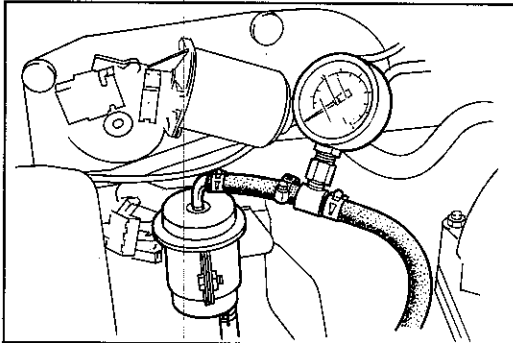
Priming Fuel System

After releasing the fuel system pressure for repairs or inspection the system must be primed to avoid excessive cranking when first starting the engine. Follow the steps below.

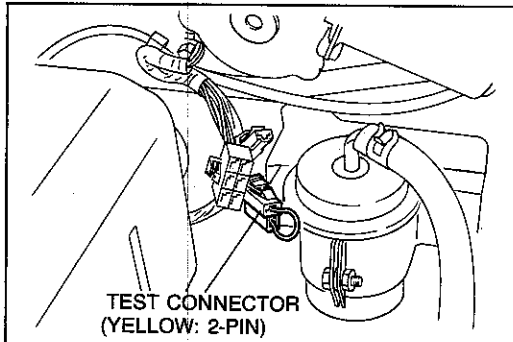
1. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
2. Turn the ignition switch ON for **approx. 10 sec.** and check for fuel leaks.
3. Turn the ignition switch OFF and remove the jumper wire.



1BU0F2-060



9MU0F2-125



TEST CONNECTOR
(YELLOW: 2-PIN)

9MU0F2-126

SYSTEM INSPECTION
Fuel System Pressure Drop

Warning

Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)

1. Disconnect the negative battery terminal.
2. Install a fuel pressure gauge between the fuel filter and the fuel main hose. (Install clamps as shown.)
3. Connect the negative battery terminal.

4. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
5. Turn the ignition switch ON for **10 seconds** to operate the fuel pump.
6. Turn the ignition switch OFF and disconnect the jumper wire.
7. Observe the fuel pressure **after 5 minutes**.

Fuel pressure:

More than 147 kPa (1.5 kg/cm², 21 psi)

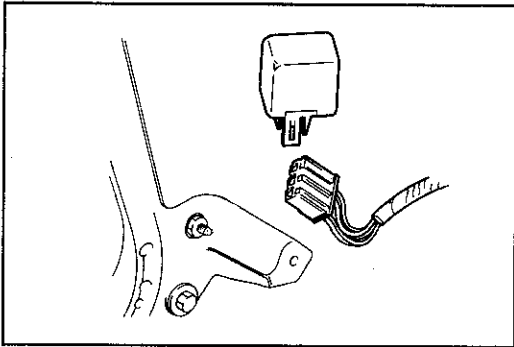
8. If not as specified, perform the following inspection.
 - Fuel pump fuel pressure drop (Refer to page F2-150.)
 - Pressure regulator fuel pressure drop (Refer to page F2-154.)
 - Injector fuel leakage (Refer to page F2-157.)

1BU0F2-061

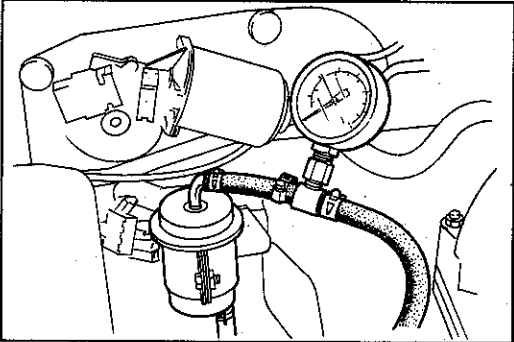
Fuel Line Pressure

Warning

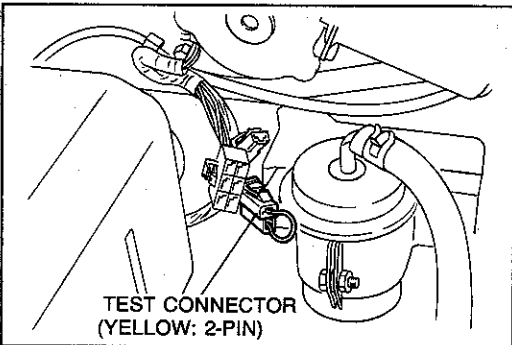
Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)



1BU0F2-062



9MU0F2-129



1BU0F2-063

1. Disconnect the negative battery terminal.
2. Install the fuel pressure gauge between the fuel filter and the fuel main hose. (Install clamps as shown.)
3. Connect the negative battery terminal.
4. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
5. Turn the ignition switch ON.
6. Measure the fuel line pressure.

Fuel line pressure:

265—314 kPa (2.7—3.2 kg/cm², 38—46 psi)

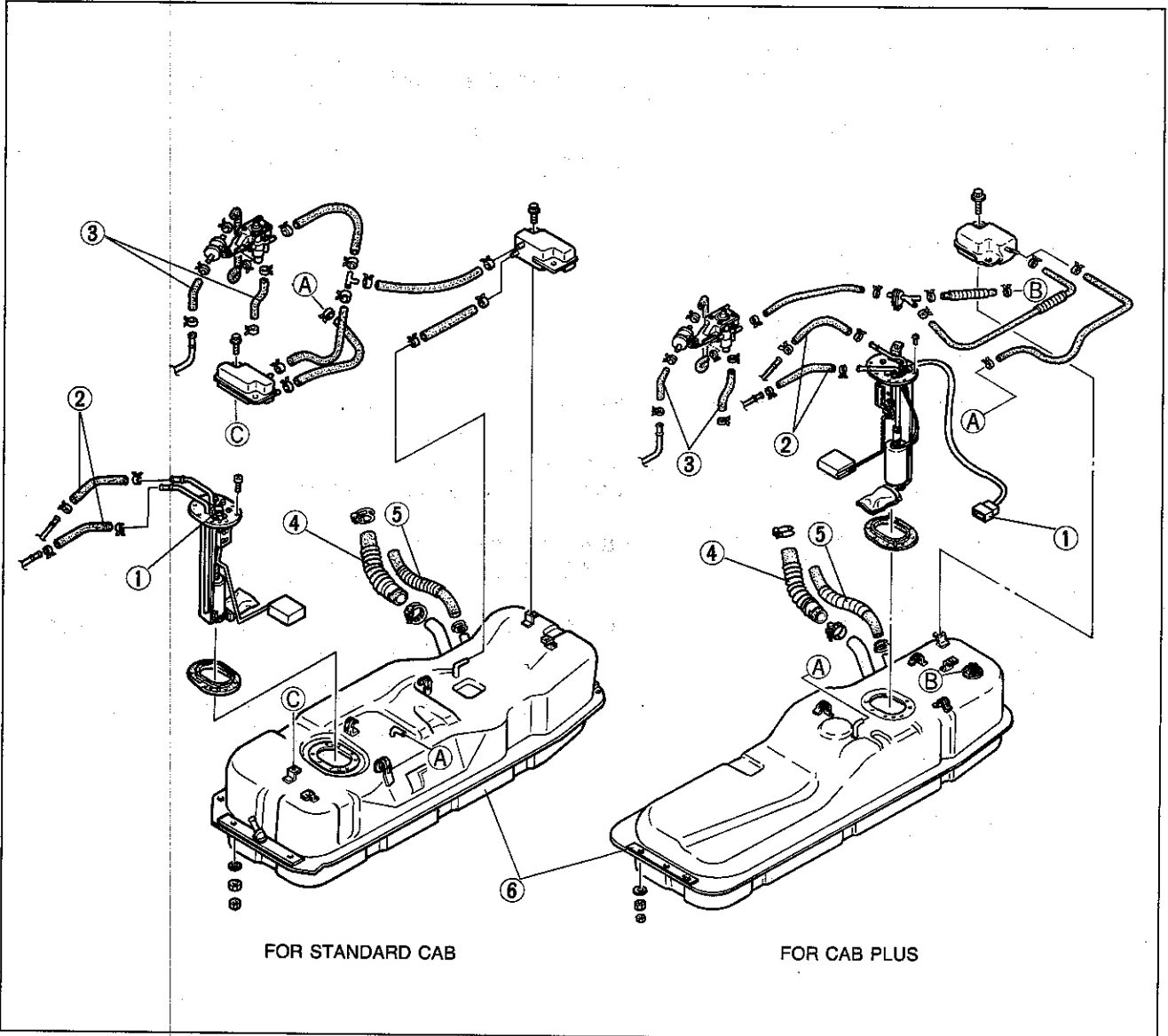
- Low pressure— Check fuel line and filter for clogging. Check fuel pump maximum pressure. (Refer to page F2-150.)
- High pressure— Replace the pressure regulator. (Refer to page F2-155.)

**FUEL TANK
Removal**

Warning

- a) Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)
- b) When removing the fuel tank, keep sparks, cigarettes, and open flames away from it.

1. Remove the fuel filler cap.
2. Remove in the order shown in the figure.



1BU0F2-064

Note

Drain the fuel from the fuel tank before removing the tank.

- 1. Fuel pump connector
- 2. Fuel hoses
- 3. Evaporative hoses
- 4. Fuel filler hose

- 5. Breather hose
- 6. Fuel tank

Inspect for cracks and corrosion
Repair or replace if necessary

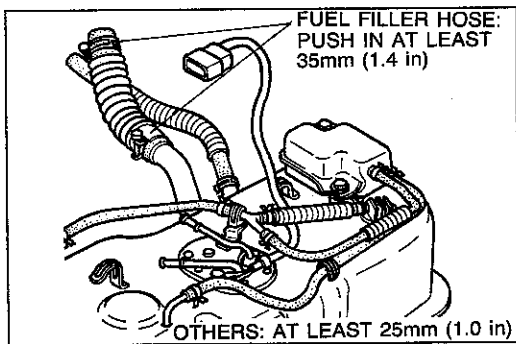
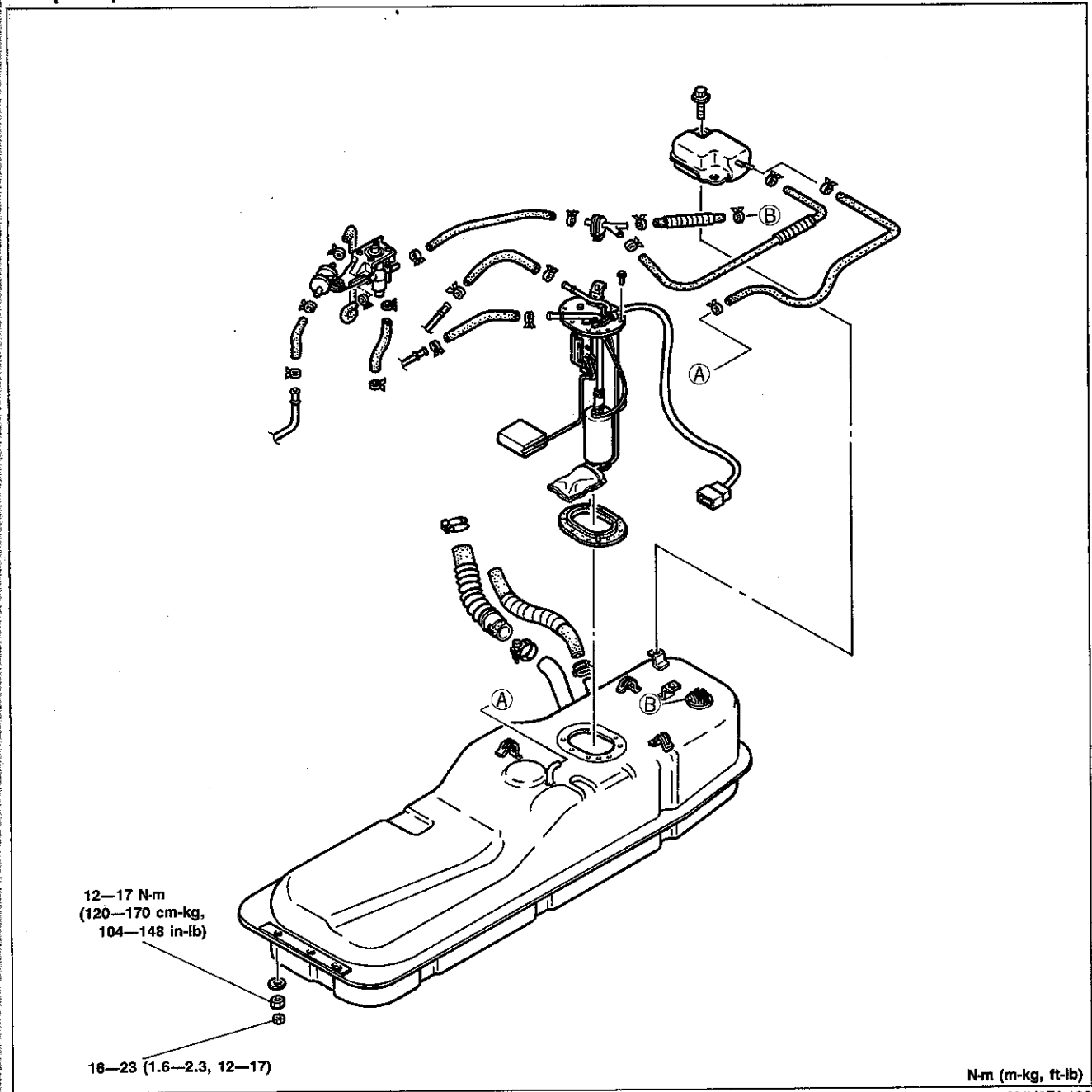
Warning

Before repairing the fuel tank, clean it thoroughly with steam to remove all explosive gas.

Installation

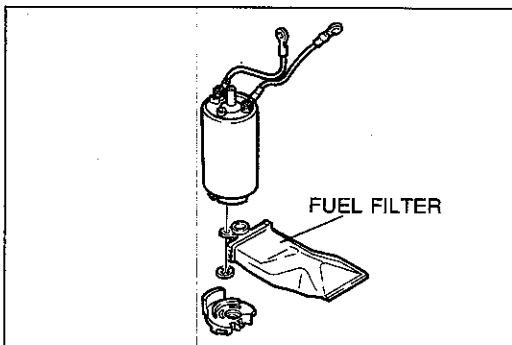
Install in the reverse order of removal, referring to **Installation Note**.

Torque Specifications

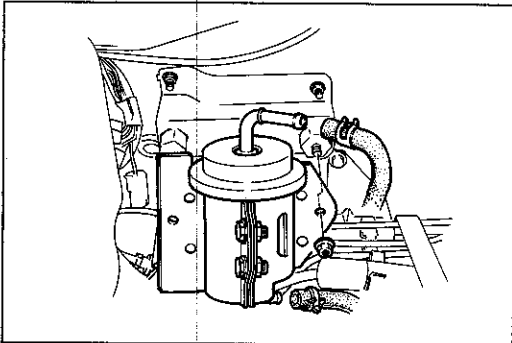


Installation note

1. Push the ends of the main fuel hose, fuel return hose, and evaporation hoses onto the fuel tank fittings **at least 25mm (1.0 in)**.
2. Push the fuel filler hose onto the fuel tank pipe and filler pipe **at least 35mm (1.4 in)**.



1BU0F2-065



9MU0F2-135

FUEL FILTER**Replacement****Low-pressure side (In-tank filter)**

Refer to page F2-152.

High-pressure side

The fuel filter must be replaced at the intervals outlined in the maintenance schedule.

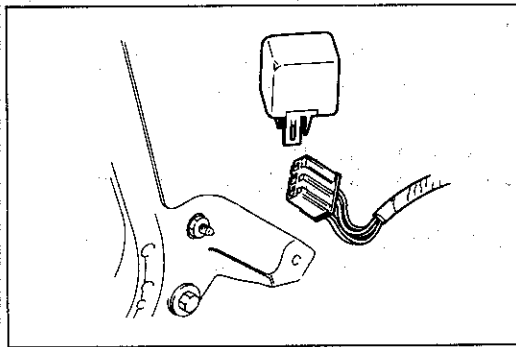
Warning

Always work away from sparks or open flames.

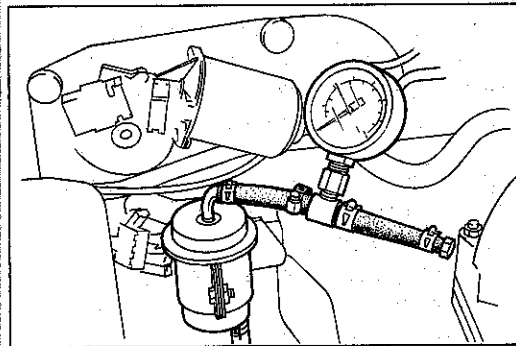
1. Disconnect the fuel hoses from the fuel filter.
2. Remove the fuel filter and bracket.
3. Install in the reverse order of removal.

Note

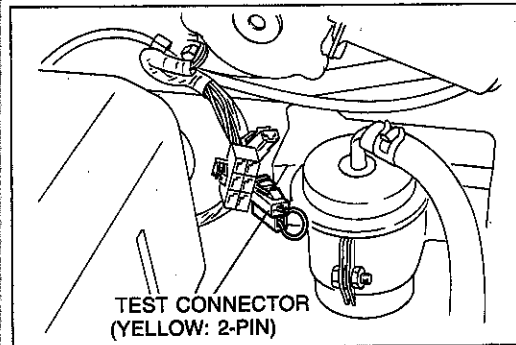
When installing the filter, push the fuel hoses fully onto the fuel filter.



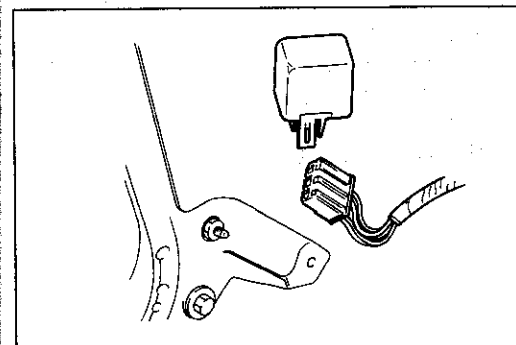
1BU0F2-066



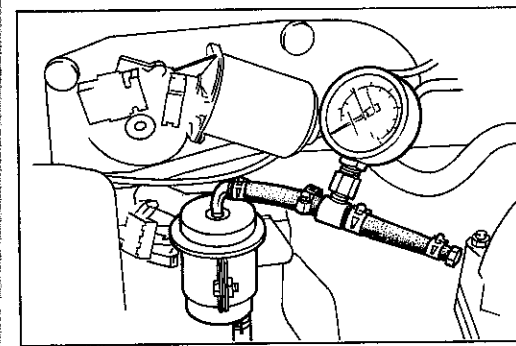
9MU0F2-138



9BU0F2-084



1BU0F2-067



9MU0F2-141

FUEL PUMP

Inspection

Fuel pressure drop

Only if fuel system pressure drop is not as specified, check fuel pressure drop for fuel pump.

Warning

Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)

1. Disconnect the negative battery terminal.
2. Install a fuel pressure gauge to the outlet of the fuel filter and plug the outlet of the fuel pressure gauge as shown. (Install clamps as shown.)
3. Connect the negative battery terminal.

4. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
5. Turn the ignition switch ON **for 10 seconds** to operate the fuel pump.
6. Turn the ignition switch OFF and disconnect the jumper wire.
7. Observe the fuel pressure **after 5 minutes**.

Fuel pressure:

More than 343 kPa (3.5 kg/cm², 50 psi)

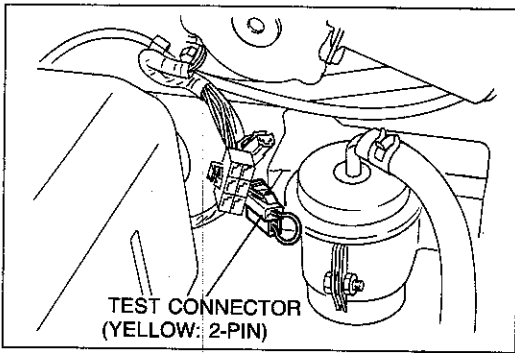
8. If not as specified, replace the fuel pump.

Fuel pump maximum pressure

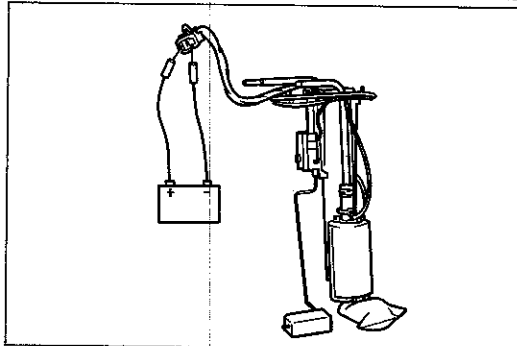
Warning

Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)

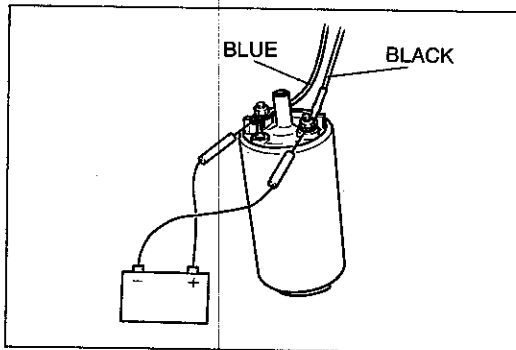
1. Disconnect the negative battery terminal.
2. Install a fuel pressure gauge to the outlet of the fuel filter and plug the outlet of the fuel pressure gauge as shown. (Install clamps as shown.)
3. Connect the negative battery terminal.



9MU0F2-142



2BU0F2-030



2BU0F2-031

4. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
5. Turn the ignition switch ON to operate the fuel pump.
6. Measure the fuel pump maximum pressure.

Fuel pump maximum pressure:

441—589 kPa (4.5—6.0 kg/cm², 64—85 psi)

7. Turn the ignition switch OFF and disconnect the jumper wire.
8. If not as specified, replace the fuel pump.

Fuel pump operation

– Only when fuel pump operating sound is not heard from fuel filler port (with IGN ON and test connector [yellow: 2-pin] connected) and circuit opening relay is normal

1. Remove the fuel pump and fuel tank gauge unit. (Refer to page F2-152.)
2. Apply battery voltage to the fuel pump connector terminal-wire (B/R) and ground terminal-wire (B). Check that the fuel pump operates.

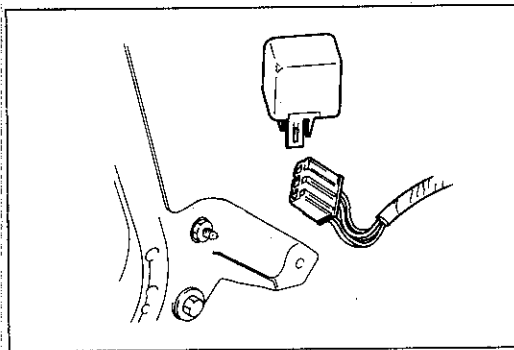
Operates————— Check wiring between circuit opening relay and fuel pump connector and between fuel pump connector and ground for open or short circuit

Does not operate—Go to next step

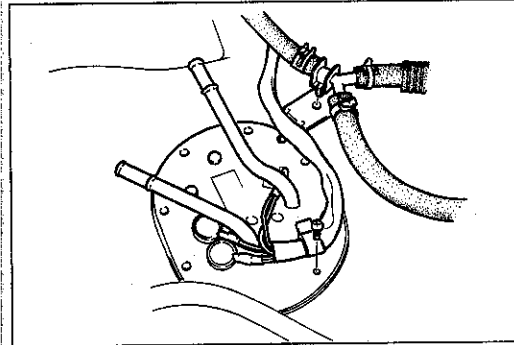
3. Apply battery voltage and a ground to the fuel pump terminals and check if the fuel pump operates.

Operates————— Check wiring between fuel pump connector and fuel pump for open or short circuit

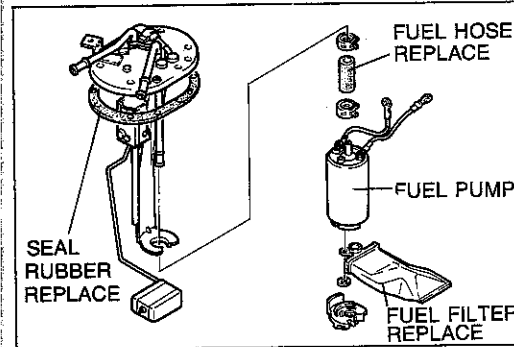
Does not operate—Replace fuel pump



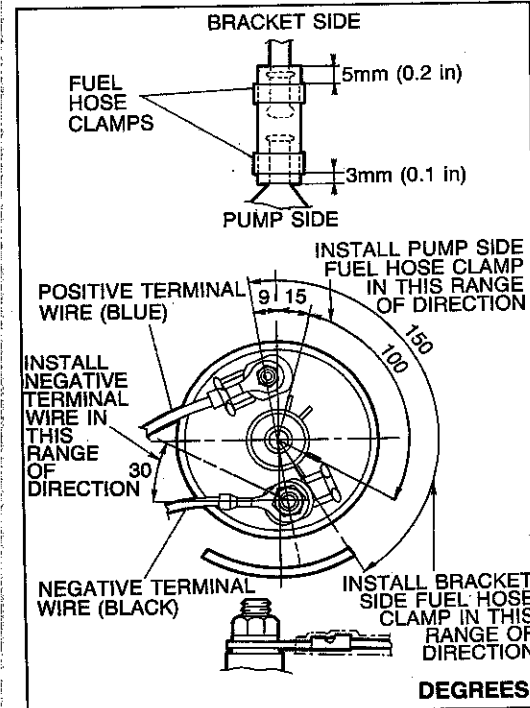
1BU0F2-069



1BU0F2-070



1BU0F2-071



9BU0F2-139

Replacement

Warning

- a) Before performing the following procedures, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)
- b) When replacing the fuel system parts, keep sparks, cigarettes, and open flames away from the fuel.

1. Remove the fuel tank. (Refer to page F2-147.)
2. Remove the fuel pump and fuel tank gauge unit assembly.

3. Remove the fuel pump.
4. Install in the reverse order of removal, referring to **Installation note**.
5. After installation, confirm that the fuel pump and fuel level gauge operates correctly. (Refer to page F2-151 and Section T.)

Installation note

Fuel filter

Use a new fuel filter.

Fuel pump terminals

1. Install the fuel pump terminals as shown.
2. Tighten the nuts with the specified torque.

Tightening torque:

**Positive terminal (Blue)..... 1.2—2.0 N·m
(12—20 cm·kg, 10—17 in·lb)**

**Negative terminal (Black).... 2.3—3.4 N·m
(23—33 cm·kg, 20—29 in·lb)**

Fuel hose

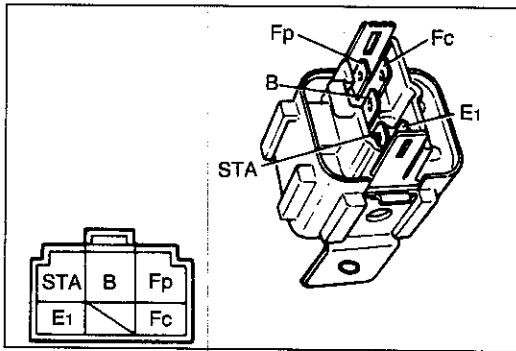
1. Use a new fuel hose.
2. Do not apply excessive side force when pushing the fuel hose onto the fuel pump nipple.
3. Install clamps as shown.

Fuel pump

Install the fuel pump to the bracket correctly.

Seal rubber

Use a new seal rubber.



2BU0F2-032

CIRCUIT OPENING RELAY

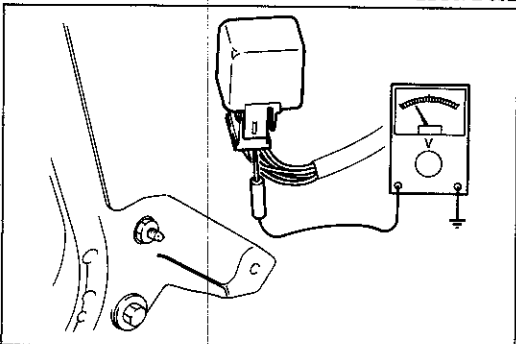
Inspection

Switching operation

Apply battery voltage and a ground to the terminals below and check the circuit opening relay operation as described.

12V	Grounded	Correct result
STA	E1	B-Fp: Continuity
B	Fc	Fp: Battery voltage

If not as specified, replace the circuit opening relay.



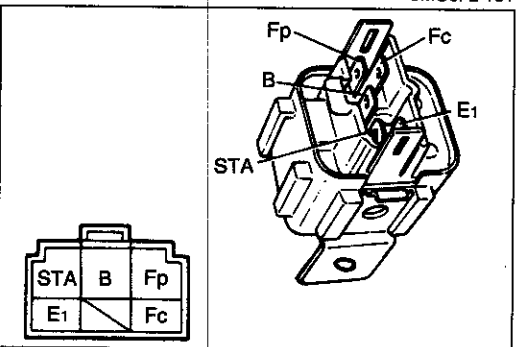
9MU0F2-151

Relay circuit

Check voltage between the terminals and a ground with a voltmeter.

Condition	Terminal	Fp	Fc	B	STA	E1
Ignition switch: ON		0V	12V	12V	0V	0V
Ignition switch: START		12V	0V	12V	12V	0V
At idle		12V	0V	12V	0V	0V

If not as specified, check the related wiring harness.



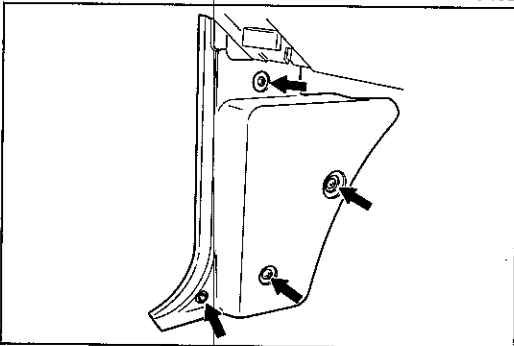
9MU0F2-152

Resistance

Check resistance between the terminals using an ohmmeter.

Between terminals	Resistance (Ω)
STA-E1	21—43
B-Fc	109—226
B-Fp	∞

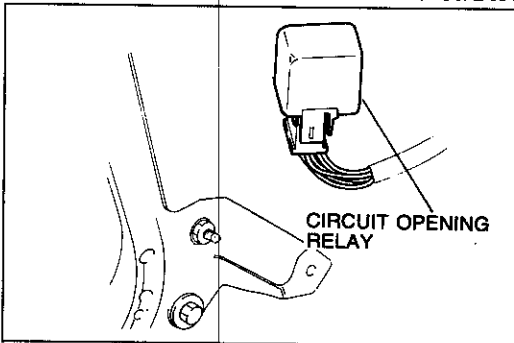
If not as specified, replace the circuit opening relay.



9BU0F2-091

Removal

1. Remove the front side trim on the driver's side.



9BU0F2-092

2. Remove the circuit opening relay.

Installation

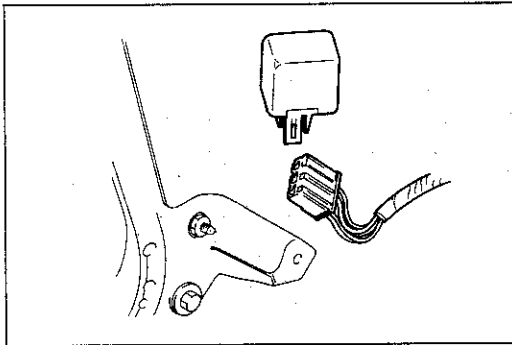
Install in the reverse order of removal.

PRESSURE REGULATOR

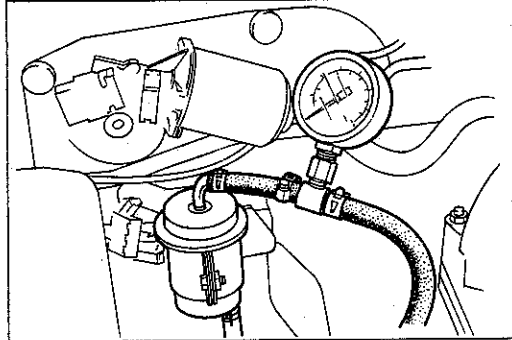
Inspection Fuel line pressure

Warning

Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)



1BU0F2-072



0BU0F2-082

1. Disconnect the negative battery terminal.
2. Install a fuel pressure gauge between the fuel filter and the fuel main hose. (Install clamps as shown.)
3. Connect the negative battery terminal.
4. Start the engine and run it at idle.
5. Measure the fuel line pressure.

Fuel line pressure:

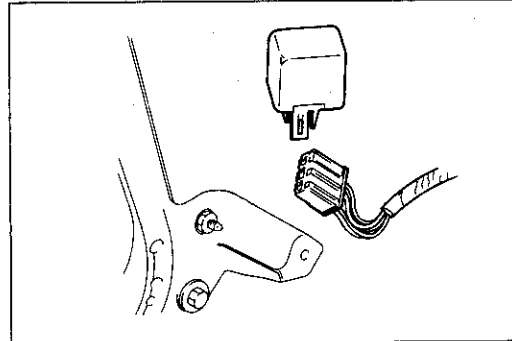
196—255 kPa (2.0—2.6 kg/cm², 28—37 psi)

Fuel pressure drop

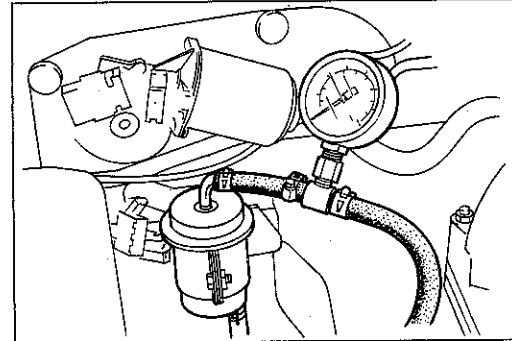
Only if fuel system pressure drop is not as specified and fuel pump pressure drop is as specified

Warning

Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)



1BU0F2-073



9BU0F2-137

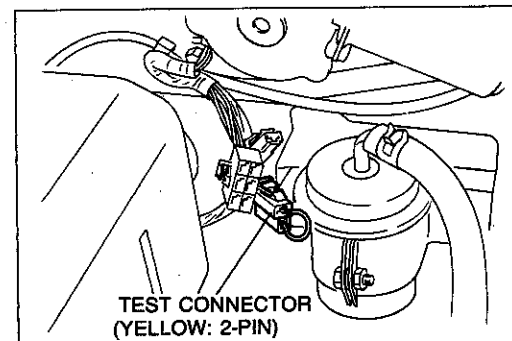
1. Disconnect the negative battery terminal.
2. Install a fuel pressure gauge between the fuel filter and the fuel main hose. (Install clamps as shown.)
3. Plug the fuel return hose from the pressure regulator.
4. Connect the negative battery terminal.

5. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire.
6. Turn the ignition switch ON for 10 seconds to operate the fuel pump.
7. Turn the ignition switch OFF and disconnect the jumper wire.
8. Observe the fuel pressure for 5 minutes.

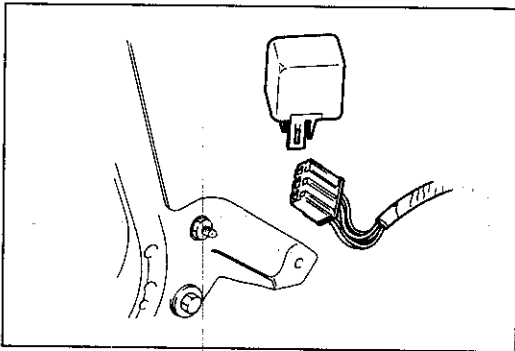
Fuel pressure:

More than 147 kPa (1.5 kg/cm², 21 psi)

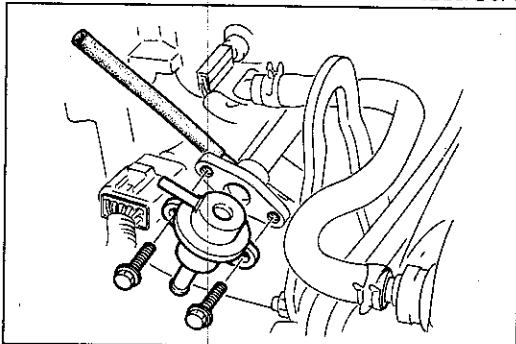
9. If as specified, replace the pressure regulator.



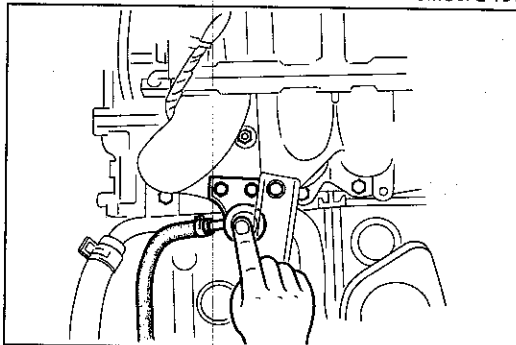
9BU0F2-095



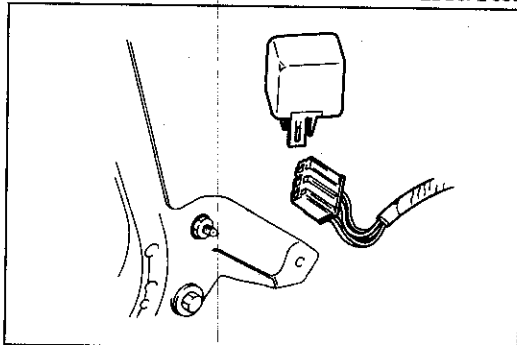
1BU0F2-074



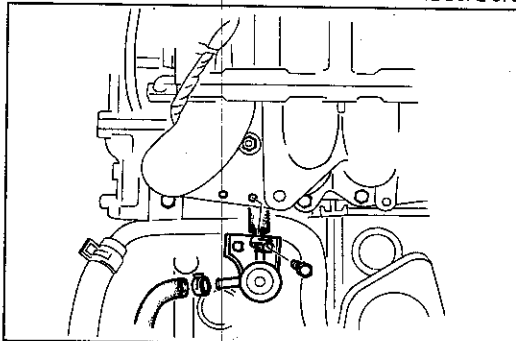
9MU0F2-161



2BU0F2-033



1BU0F2-075



9BU0F2-135

Replacement

Warning

- a) Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)
- b) When replacing fuel system parts, keep sparks, cigarettes, and open flames away from the fuel and all parts.

1. Disconnect the vacuum hose.
2. Disconnect the fuel return hose.
3. Remove the pressure regulator.

Tightening torque:

7.8—11 N·m (80—110 cm·kg, 69—95 in·lb)

4. Install in the reverse order of removal.

PULSATION DAMPER

Inspection (G6)

1. Place a finger on the screw of the pulsation damper head.
2. Check that pulsation is felt while the engine is running.

Removal

Warning

- a) Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)
- b) When replacing fuel system parts, keep sparks, cigarettes, and open flames away from the fuel and all parts.

1. Disconnect the fuel hoses.
2. Remove the pulsation damper.

Installation

Install in the reverse order of removal.

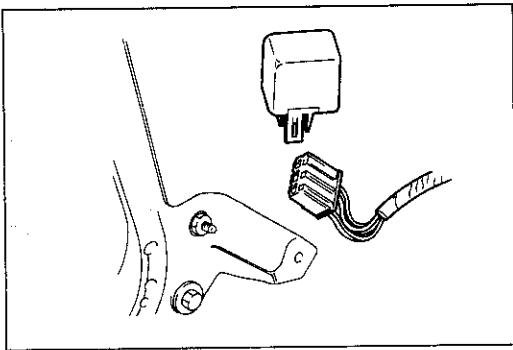
Tightening torque:

7.8—11 N·m (80—110 cm·kg, 69—95 in·lb)

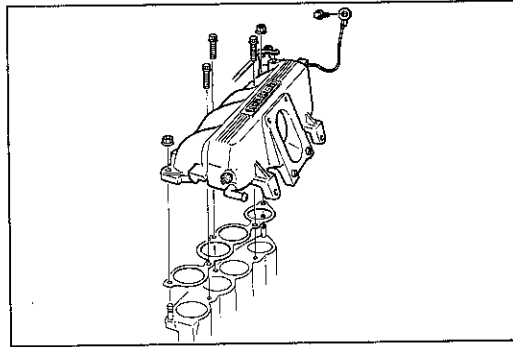
INJECTOR Removal

Warning

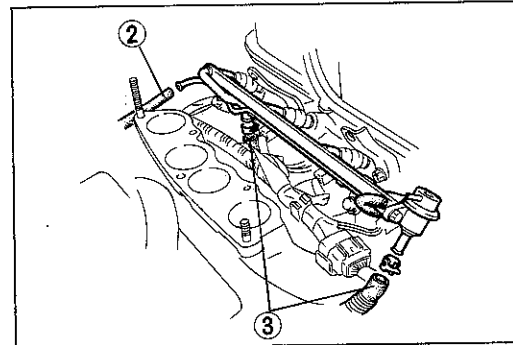
- a) Before performing the following operation, release the fuel pressure from the fuel system to reduce the possibility of injury or fire. (Refer to page F2-144.)
- b) When servicing the fuel system, keep sparks, cigarettes, and open flames away from the fuel.



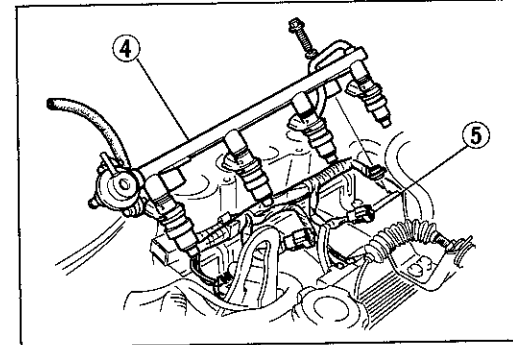
1BU0F2-076



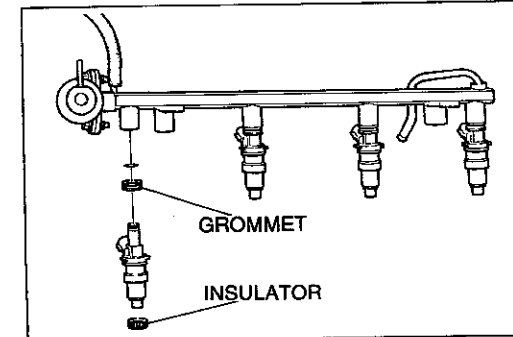
1BU0F2-077



9MU0F2-164



9MU0F2-165



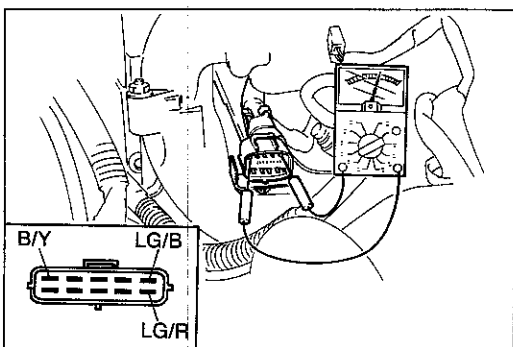
9MU0F2-166

1. Remove the dynamic chamber. (Refer to page F2-139.)

2. Disconnect the vacuum hose.
3. Disconnect the fuel hoses.

4. Remove the delivery pipe with the pressure regulator.
5. Disconnect the injector connectors.

6. Remove the grommets, injectors, and insulators.



9MU0F2-167

Inspection

Injector resistance (On-vehicle inspection)

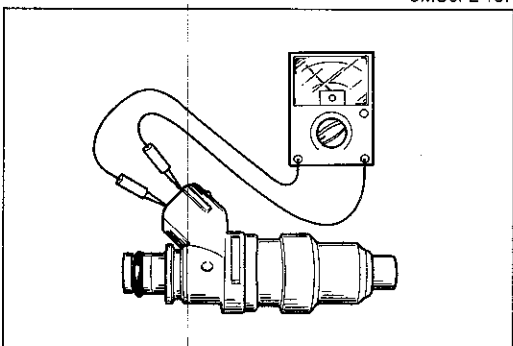
(When no injector operating sound is heard)

1. Check resistance at the injector harness connector (EMINJ-01) with an ohmmeter.

Inoperative injector	Terminals	Resistance
No.1 and/or 2	(B/Y)—(LG/B)	6—8Ω
No.3 and/or 4	(B/Y)—(LG/R)	6—8Ω

Correct——Check related wiring harness

Not correct—Check injector resistance
(Component inspection)



1BU0F2-078

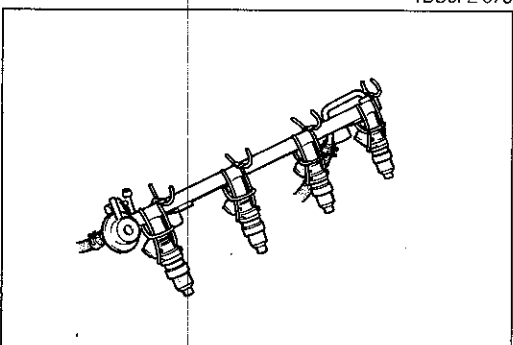
Injector resistance (Component inspection)

1. Remove the injector. (Refer to page F2-156.)
2. Check resistance of the injector with an ohmmeter.

Resistance: 12—16Ω

Correct——Check related wiring harness.

Not correct—Replace injector.



1BU0F2-079

Fuel leakage test

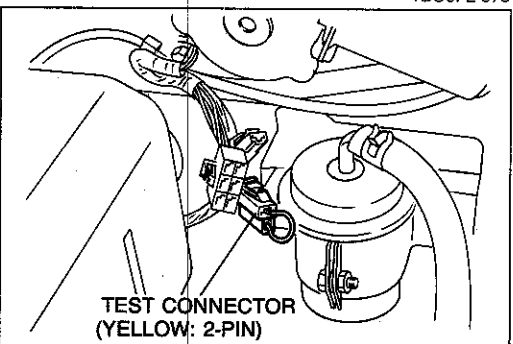
1. Remove the injectors and the delivery pipe. (Refer to page F2-156.)
2. Affix the injectors to the delivery pipe with wire.

Caution

Affix the injectors firmly to the delivery pipe so that no movement of the injectors is possible.

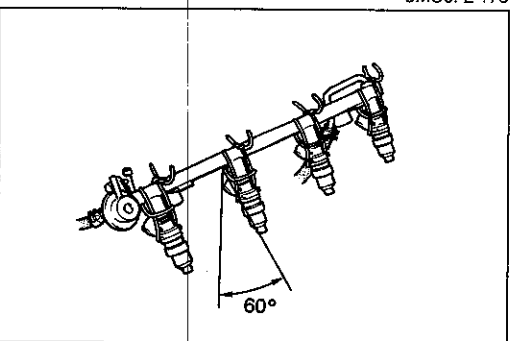
Warning

Be extremely careful when working with fuel. Always work away from sparks or open flames.



9MU0F2-170

3. Connect the terminals of the test connector (Yellow: 2-pin) with a jumper wire. Turn the ignition switch ON **for 10 seconds**.
4. Turn the ignition switch OFF and clean the nozzles.
5. Turn the ignition switch ON.

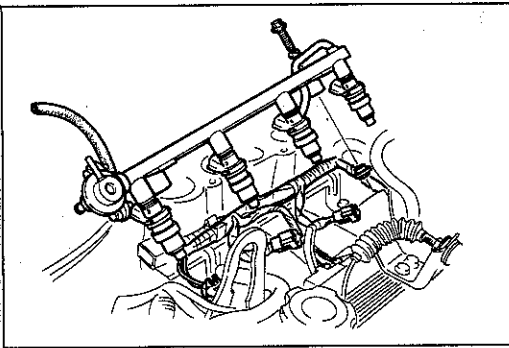


9MU0F2-171

6. Tilt the injectors **approx. 60 degrees** and check that no fuel leaks from the injector nozzles.
7. If fuel leaks from an injector, replace it.

Note

After 1 minute a drop of fuel from the injector is acceptable.



9MU0F2-172

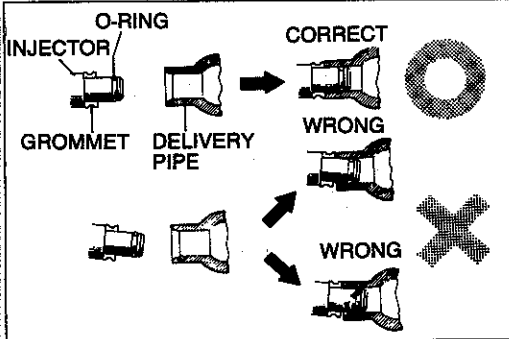
Installation

Install in the reverse order of removal, referring to **Installation note**.

Tightening torque

Delivery pipe:

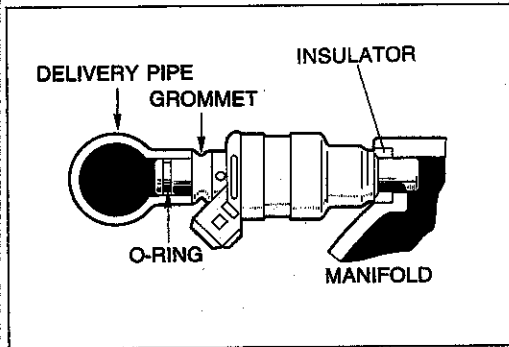
19—25 N·m (1.9—2.6 m·kg, 14—19 ft·lb)



9MU0F2-173

Installation note

1. Use new injector O-rings.
2. Apply a small amount of engine oil to the O-rings before installing.

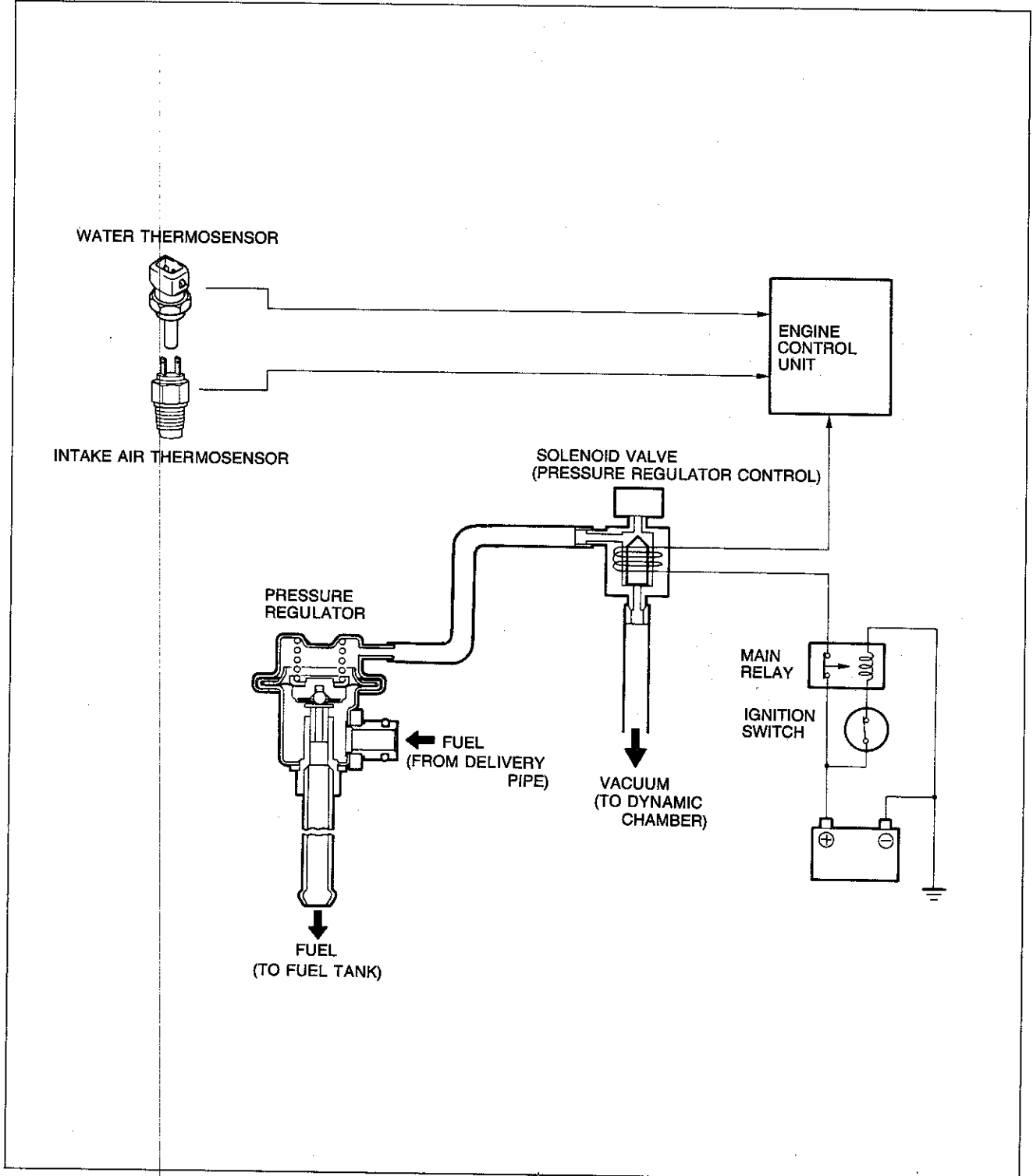


9MU0F2-174

3. Install the injectors and the injector insulators.

PRESSURE REGULATOR CONTROL (PRC) SYSTEM

DESCRIPTION



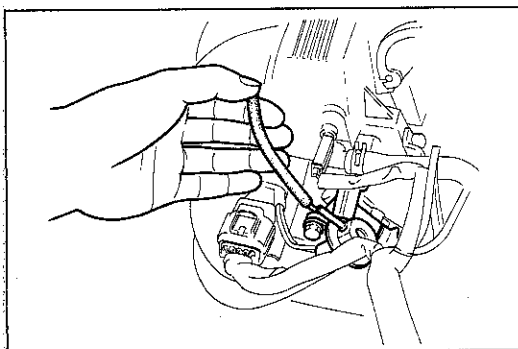
1BU0F2-080

To prevent percolation of the fuel during idle shortly after the engine is restarted, vacuum to the pressure regulator is cut, and the fuel injection pressure is increased to slightly **more than 284 kPa (2.9 kg/cm², 41 psi)**.

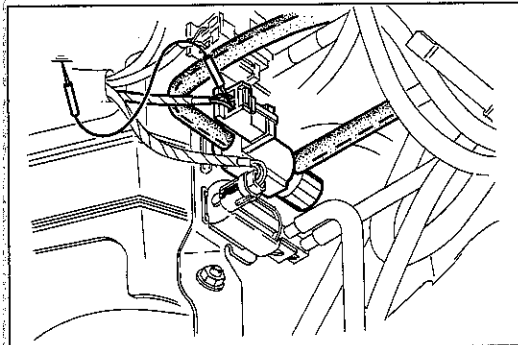
Specified time: Approx. 120 seconds

Operating condition: Coolant temperature — above 90°C (194°F)

Intake air temperature — above 75°C (167°F)—G6, 65°C (149°F)—F2



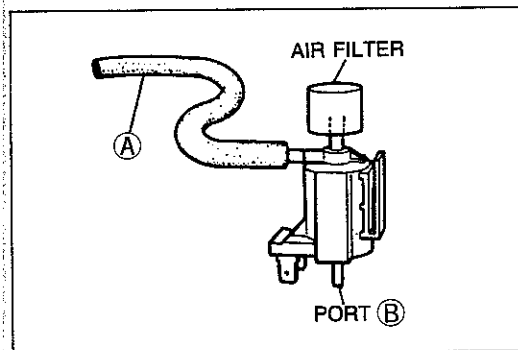
9MU0F2-176



9MU0F2-177

SOLENOID VALVE (PRESSURE REGULATOR CONTROL) On-vehicle Inspection

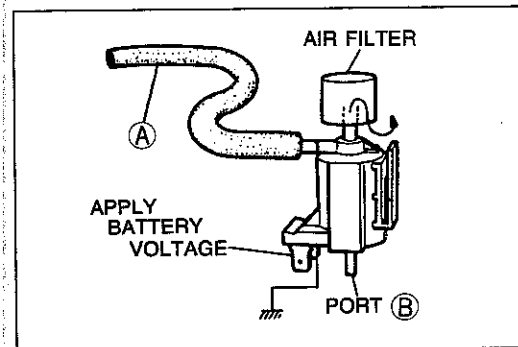
1. Start the engine and run it at idle.
2. Disconnect the vacuum hose (Orange) from the pressure regulator. Verify that vacuum is felt.
3. Ground the solenoid valve terminal wire (L/B) with a jumper wire. Check that no vacuum is felt.
4. If vacuum exists, check the solenoid valve.



9MU0F2-178

Solenoid Valve (Pressure Regulator Control)

1. Disconnect the vacuum hose from the solenoid valve and vacuum pipe.
2. Blow through the solenoid valve from port (A).
3. Check that air flows from port (B).



2BU0F2-034

4. Disconnect the solenoid valve connector.
5. Connect battery voltage and a ground to the terminals of the solenoid valve.
6. Blow through the solenoid valve from the port (A).
7. Check that air flows from the valve air filter.
8. If not as specified, replace the solenoid valve.

EXHAUST SYSTEM

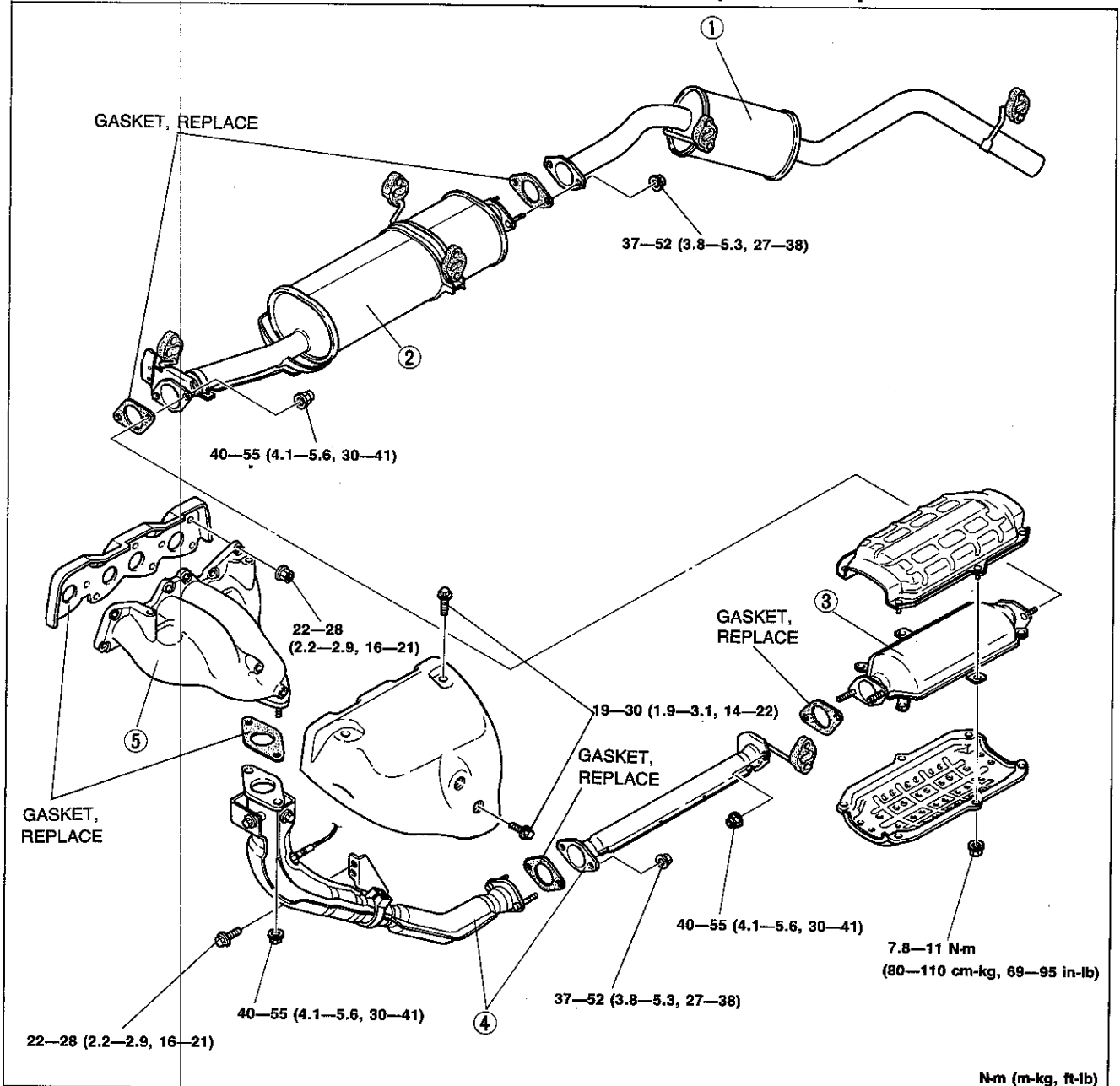
COMPONENTS

Removal, Inspection, and Installation

1. Remove in the sequence shown in the figure.
2. Check the exhaust component parts and replace as necessary.
3. Install in the reverse order of removal.

Note

When installing the exhaust system parts, tighten to the specified torque.



1. After-silencer
Inspect for deterioration and restriction
2. Main silencer
Inspect for deterioration and restriction
3. Catalytic converter
Inspection..... page F2-168

4. Front exhaust pipe
Inspect for deterioration and restriction
5. Exhaust manifold
Inspect for damage

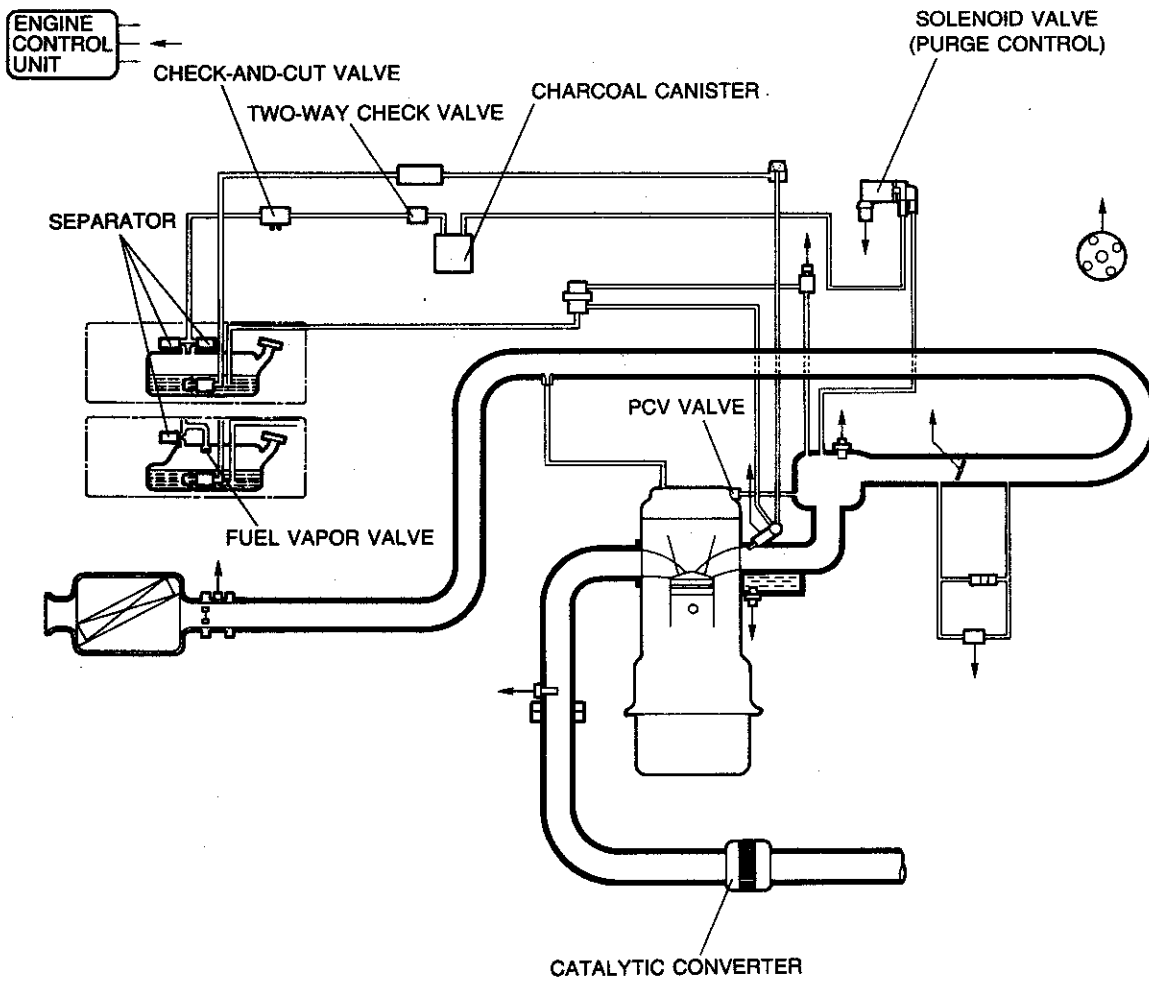
F2 OUTLINE OF EMISSION CONTROL SYSTEM

OUTLINE OF EMISSION CONTROL SYSTEM

STRUCTURAL VIEW

To reduce CO, HC, and NOx emissions, the following systems are employed.

1. Positive crankcase ventilation (PCV) system
2. Evaporative emission control system
3. Catalytic converter



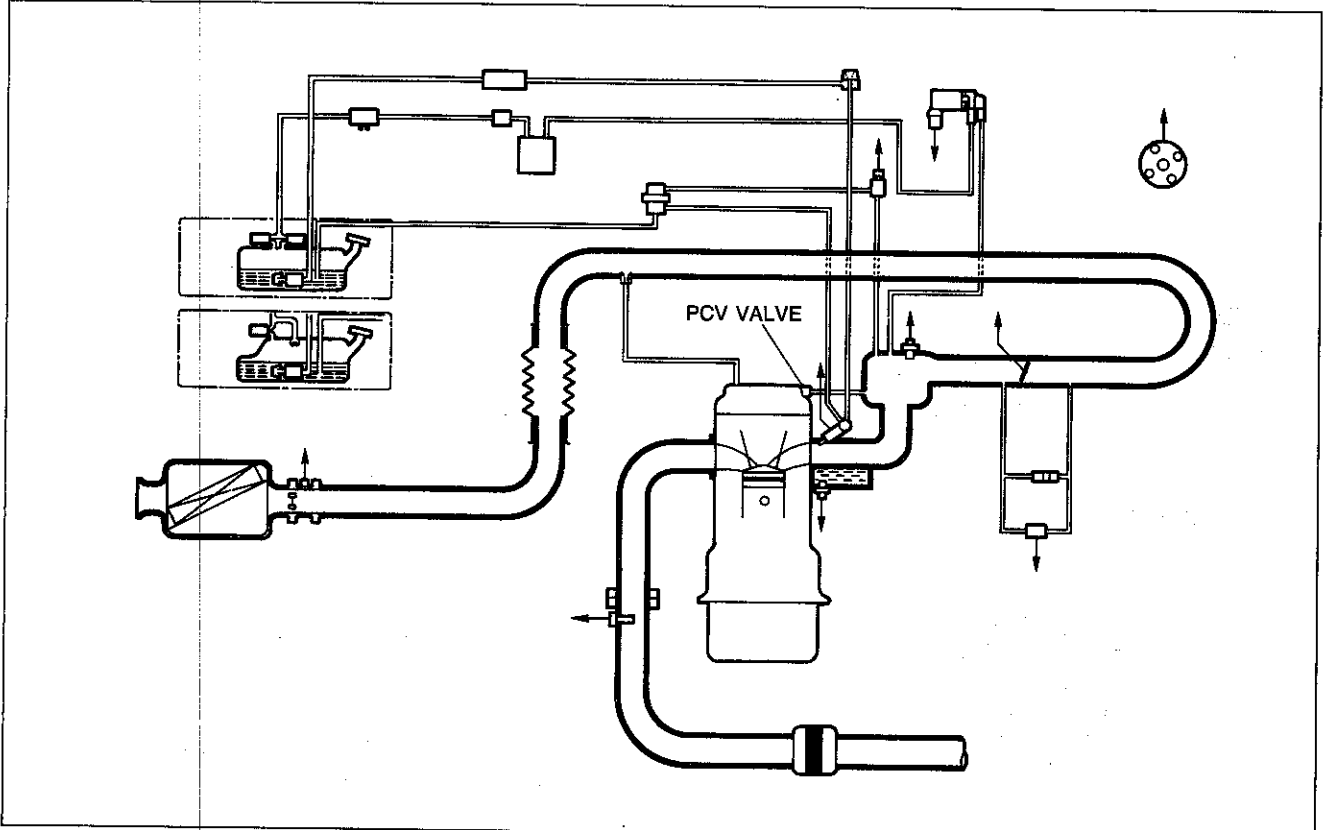
POSITIVE CRANKCASE VENTILATION (PCV) SYSTEM

DESCRIPTION

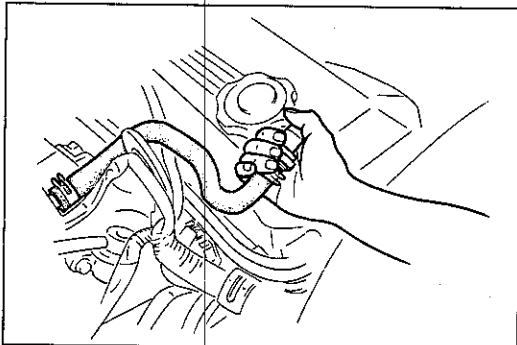
The PCV valve is operated by the intake manifold vacuum.

When the engine is running at idle, the PCV valve is opened slightly and a small amount of blowby gas is drawn into the dynamic chamber to be burned.

At higher engine speeds, the PCV valve is opened further, allowing a larger amount of blowby gas to be drawn into the dynamic chamber.



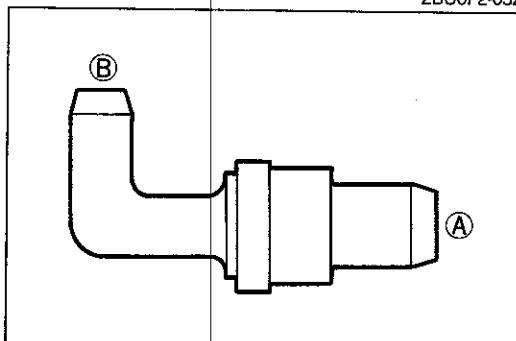
9MU0F2-182



2BU0F2-052

PCV VALVE Inspection

1. Warm up the engine to the normal operating temperature and run it at idle.
2. Disconnect the PCV valve together with the ventilation hose from the cylinder head cover.
3. Block the PCV valve opening.
4. Verify that vacuum is felt.

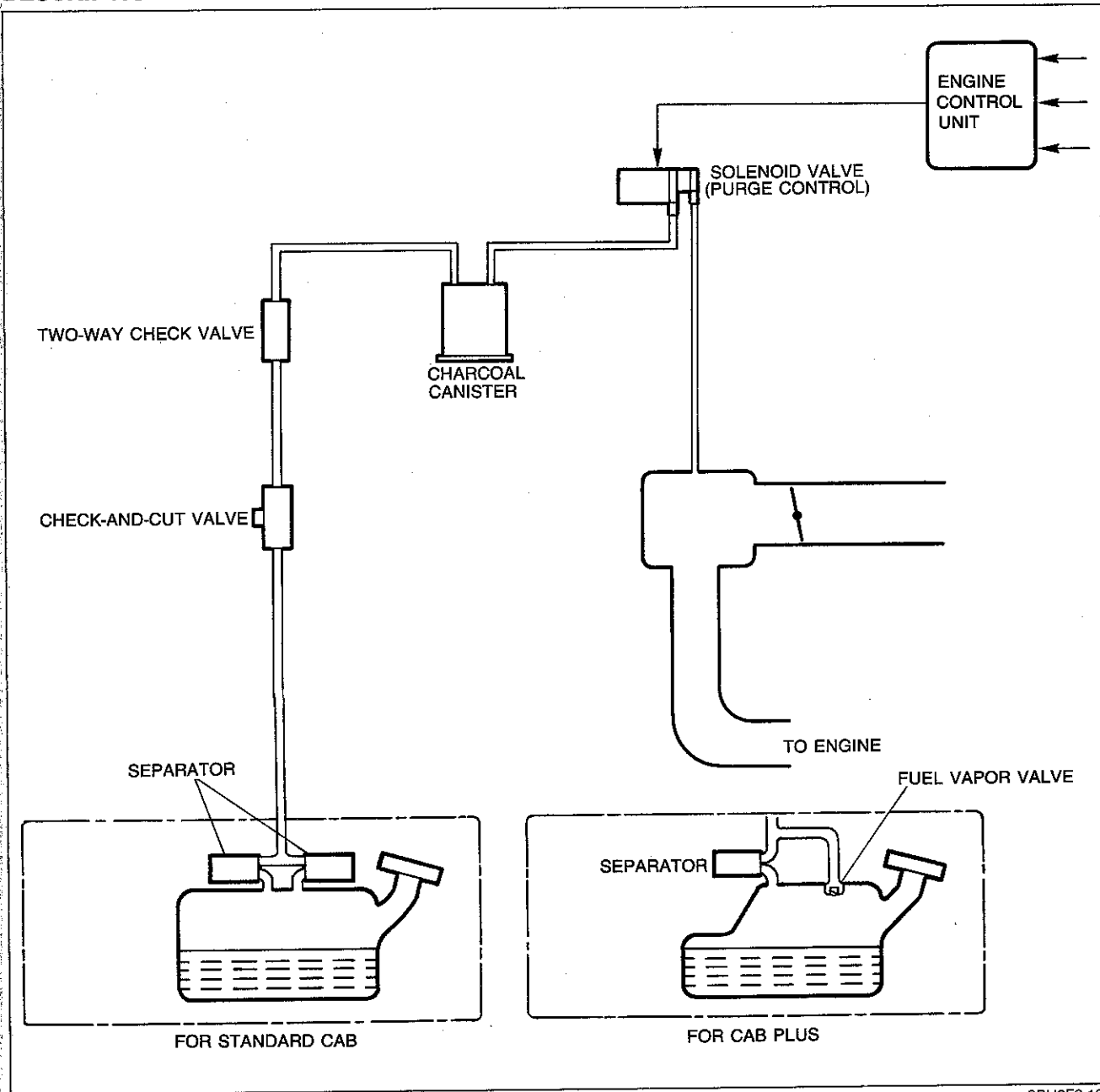


9MU0F2-184

5. Remove the PCV valve.
6. Blow through the valve from port (A) and verify that air comes out of port (B).
7. Blow through the valve from port (B) and verify that no air comes out of port (A).
8. Replace the PCV valve if necessary.

EVAPORATIVE EMISSION CONTROL SYSTEM

DESCRIPTION



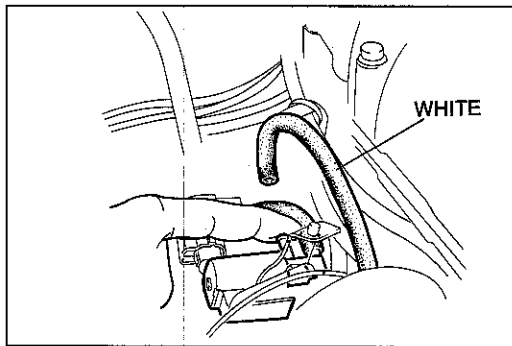
9BU0F2-103

The evaporative emission control system consists of the separator, the fuel vapor valve, the check-and-cut valve, the two-way check valve, the charcoal canister, the solenoid valve (purge control), the engine control unit, and the input devices. The amount of evaporative fumes introduced into the engine and burned is controlled by the solenoid valve to correspond to the engine's operating conditions. To maintain best engine performance, the solenoid valve is controlled by the engine control unit.

Operation

The solenoid valve (purge control) is controlled by duty signals from the engine control unit to perform purging of the charcoal canister. Purging is done when these conditions are met:

- (1) After warm up
- (2) Driving in gear
- (3) Accelerator pedal depressed (idle switch OFF)
- (4) Oxygen sensor functioning normally

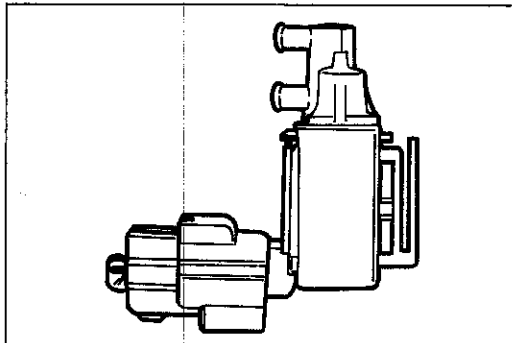


9MU0F2-186

SOLENOID VALVE (PURGE CONTROL)

On-vehicle Inspection

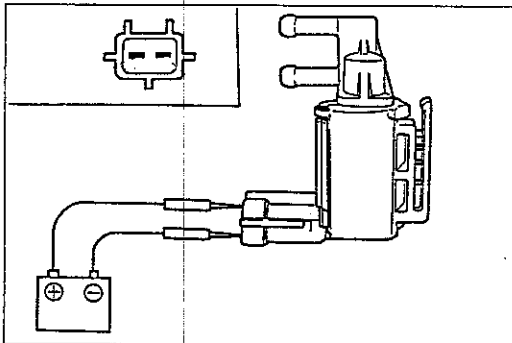
1. Warm up the engine to normal operating temperature.
2. Run the engine at idle.
3. Disconnect the vacuum hose (White) from the solenoid valve and check that no vacuum is felt at the solenoid valve.
4. If not as specified, check the solenoid valve.



9MU0F2-187

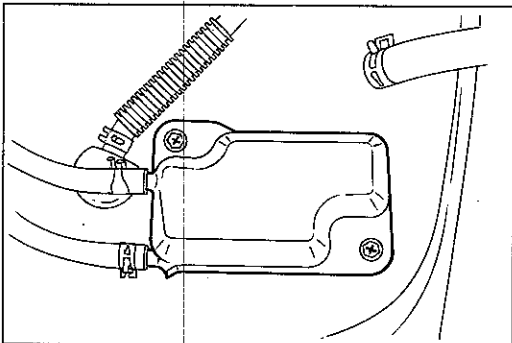
Solenoid Valve (Purge Control)

1. Disconnect the vacuum hoses from the charcoal canister and the dynamic chamber.
2. Check that no air flows through the valve.



9MU0F2-188

3. Disconnect the solenoid valve connector and connect **12V** and a ground to the terminals of the solenoid valve.
4. Check that the air flows through the valve.
5. If not as specified, replace the solenoid valve.

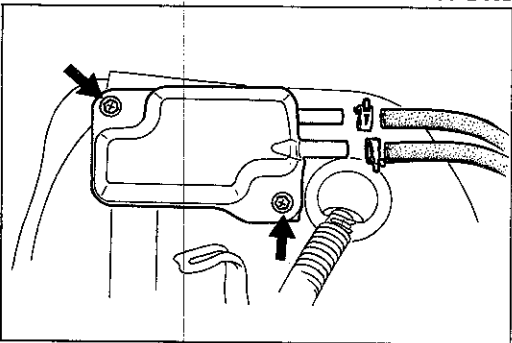


1BU0F2-082

SEPARATOR

Inspection

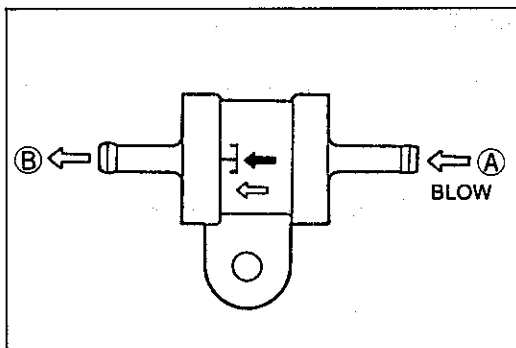
1. Remove the fuel tank. (Refer to page F2-147.)
2. Visually check the separator for damage, replace it if necessary.



1BU0F2-083

Replacement

1. Remove the fuel tank. (Refer to page F2-147.)
2. Disconnect the fuel hoses.
3. Remove the separator.
4. Install in the reverse order of removal.

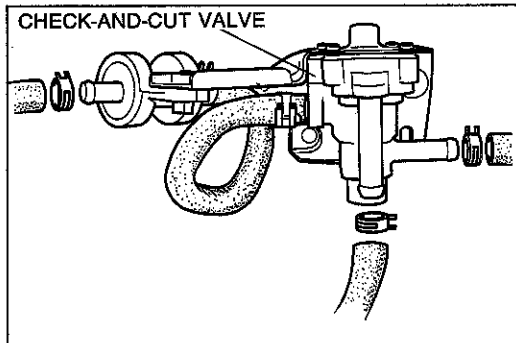


9MU0F2-192

TWO-WAY CHECK VALVE

Inspection

1. Remove the valve.
2. Blow through the valve from (A) and check that airflows.
3. Blow through the valve from (B) and check that air does not flow.



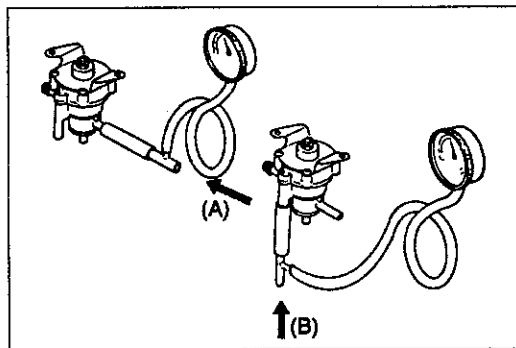
9BU0F2-106

Replacement

1. Remove the two-way check valve along with the check-and-cut valve.
2. Disconnect the hoses.
3. Remove the two-way check valve.
4. Install in the reverse order of removal.

Note

When connecting the hoses, be sure to connect them in the correct positions.



9BU0F2-107

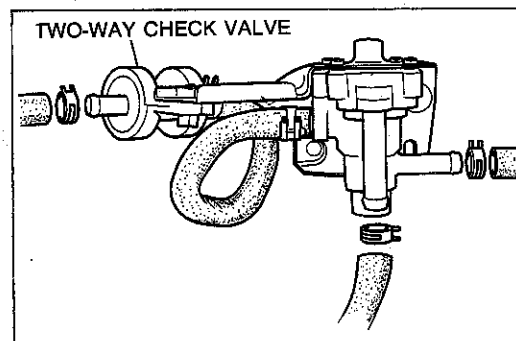
CHECK-AND-CUT VALVE

Inspection

1. Remove the check-and-cut valve.
2. Connect a pressure gauge to the passage connected to the fuel tank.
3. Blow through the valve from port A and verify that the valve opens at **5.39—6.87 kPa (0.055—0.07 kg/cm², 0.78—1.00 psi)**.
4. Remove the pressure gauge and connect it to the passage to atmosphere.
5. Blow through the valve from port B and verify that the valve opens at **0.98—4.91 kPa (0.01—0.05 kg/cm², 0.14—0.71 psi)**.

Note

The test must be performed with the valve held horizontally. Otherwise, the ball in the valve will move out of position and close the passage.



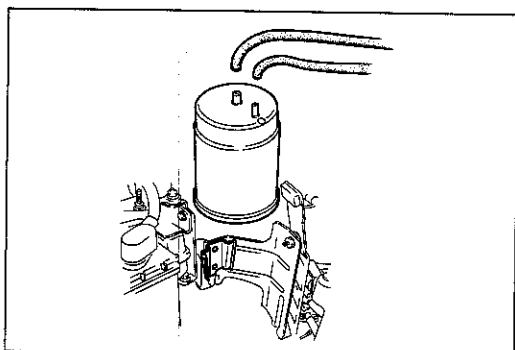
9BU0F2-108

Replacement

1. Remove the check-and-cut valve along with the two-way check valve.
2. Disconnect the hoses.
3. Remove the check-and-cut valve.
4. Install in the reverse order of removal.

Note

When connecting the hoses, be sure to connect them in the correct positions.



1BU0F2-084

CHARCOAL CANISTER**Inspection**

Visually check for damage and replace the charcoal canister if necessary.

Replacement

1. Slide the charcoal canister out of the bracket.
2. Disconnect the two hoses.
3. Install in the reverse order of removal.

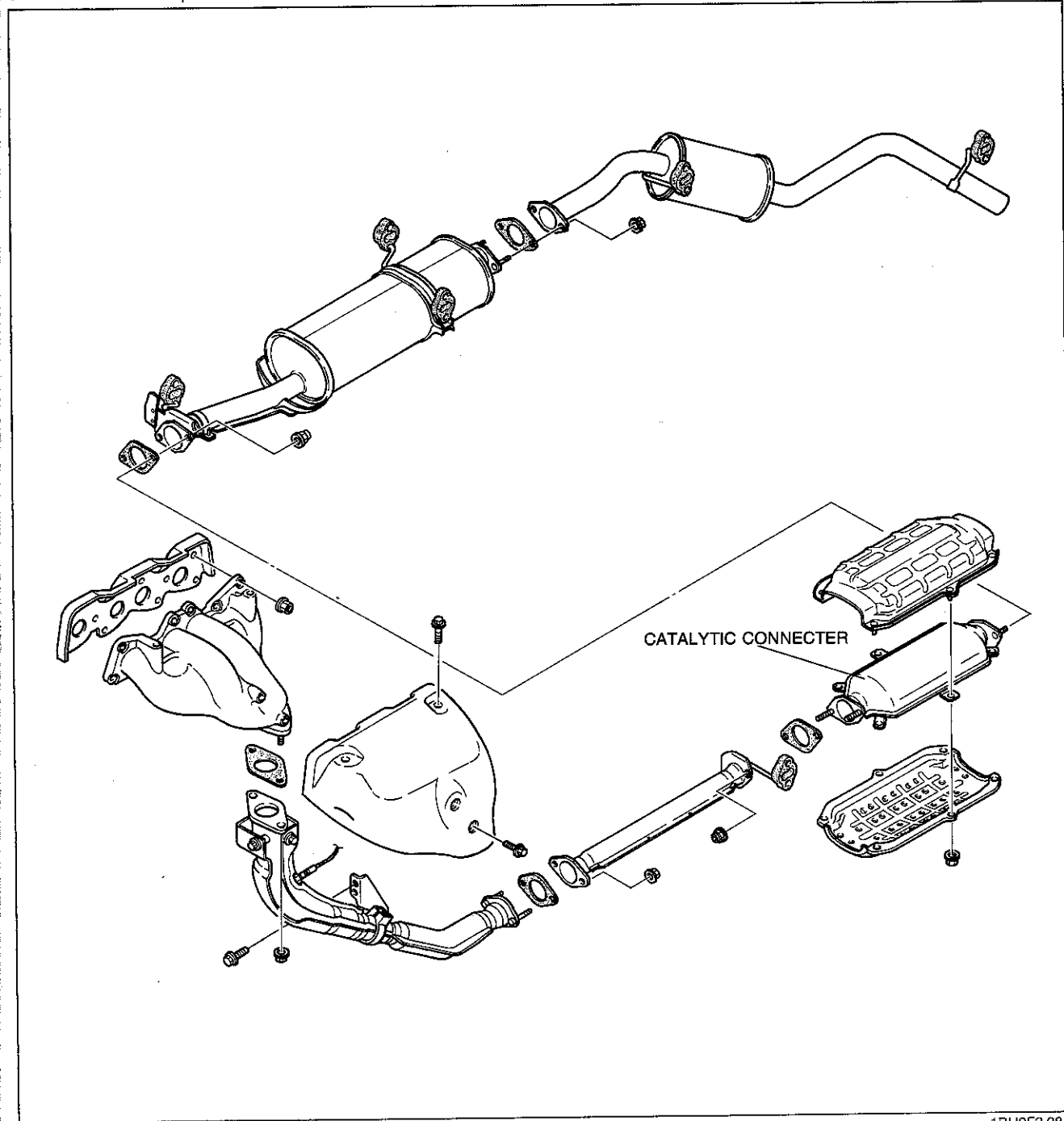
FUEL VAPOR VALVE

Refer to page F2-143.

CATALYTIC CONVERTER SYSTEM

DESCRIPTION

The catalytic converter reduces CO, HC, and NOx by chemical reaction. The converter contains platinum and rhodium compounds. The converter is a three-way catalyst type with a volume of **2,370 cc (144.6 cu in)**.



1BU0F2-085

CATALYTIC CONVERTER

Inspection

Check the catalytic converter for deterioration or restriction. Check for damage to the insulation covers welded to the catalytic converter. Replace the catalytic converter when necessary. (Refer to page F2-161.)

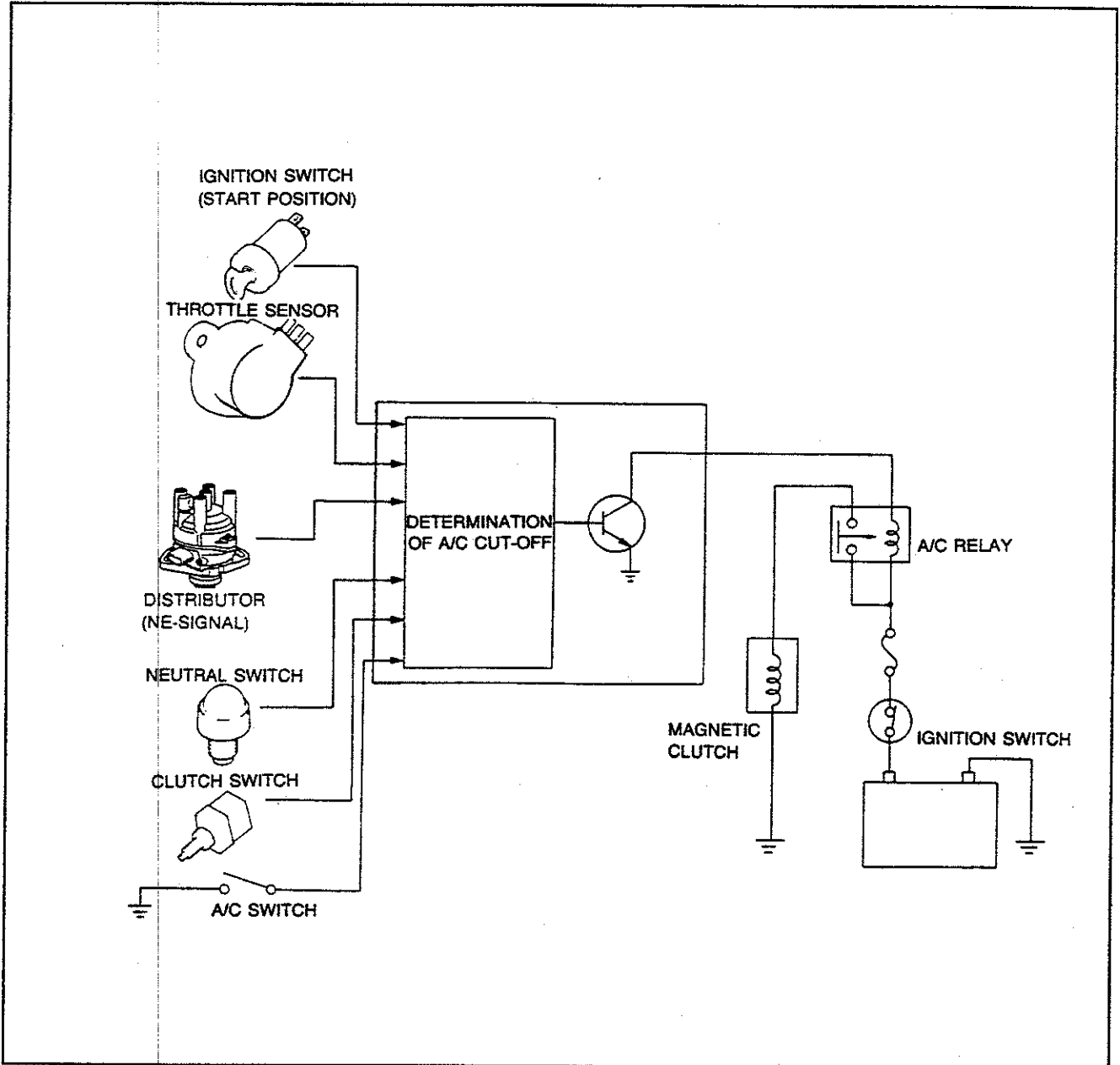
Note

If the insulation cover touches the catalytic converter housing, excessive heat at the floor of the vehicle will occur.

A/C CUT OFF SYSTEM

DESCRIPTION

An A/C cut-off system is used to improve idle smoothness just after starting the engine and to improve acceleration performance.



9BU0F2-110

Operation

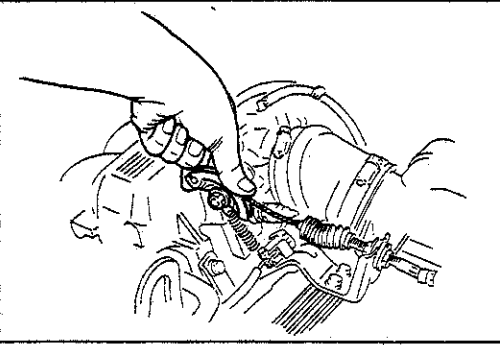
After engine has been starting

The A/C is cut-off just after the engine is started for **approx. 5 sec.**

Acceleration

The A/C is cut-off under the conditions below.

Control	Condition	Cut-off period
Throttle valve opening	More than half throttle	Approx. 10 sec.
Transmission	Except Neutral	
Clutch pedal	Released	



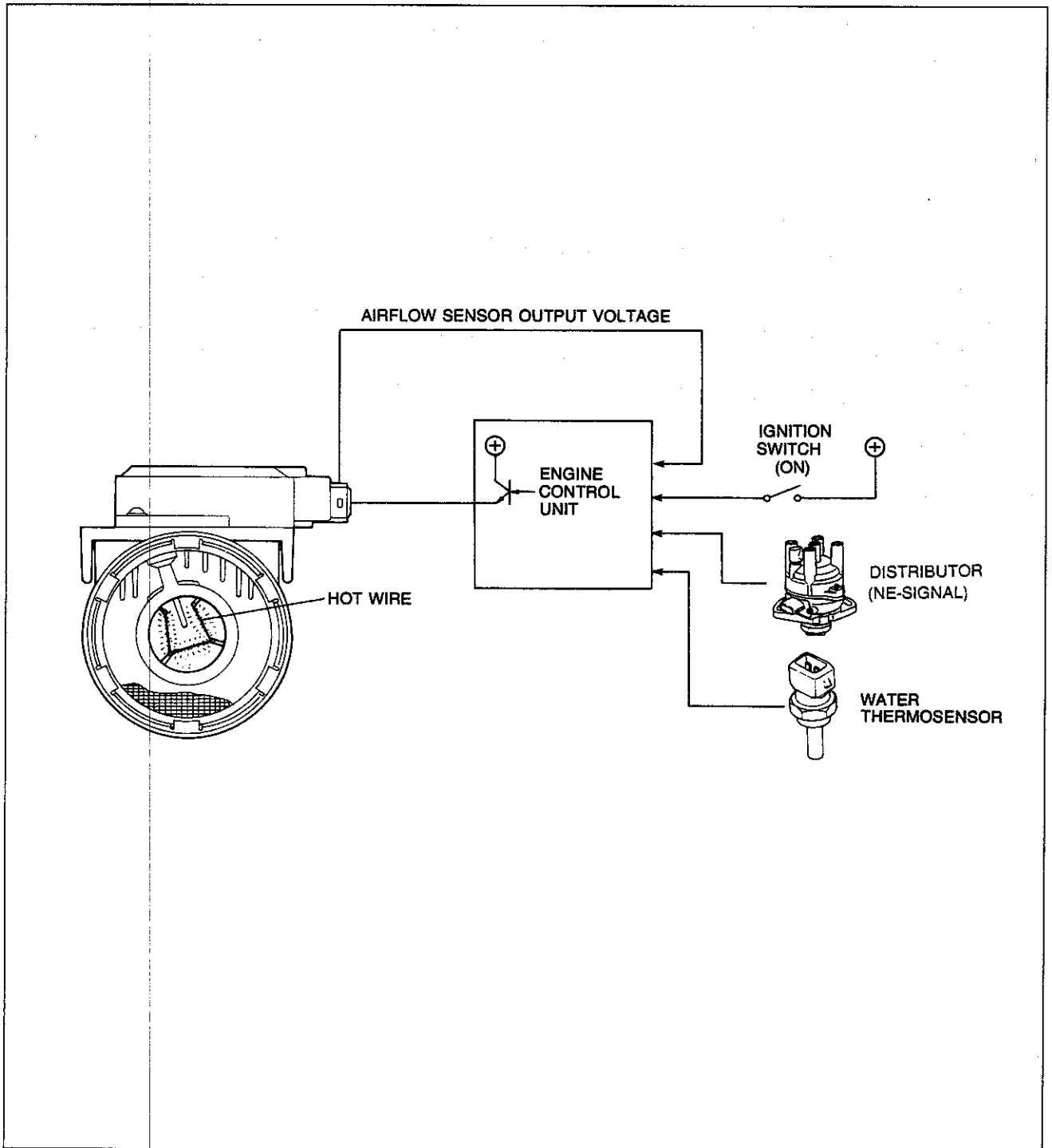
9BU0F2-111

INSPECTION

1. Shift the transmission into gear.
2. Turn the ignition switch, A/C, and blower switch ON. Condenser fan operates.
3. Fully open the throttle valve and check that the condenser fan stops.
4. Shift the transmission into neutral.
5. Start the engine.
6. **Check that the magnetic clutch of A/C compressor does not operate for approx. 5 seconds after starting.**
7. If not as specified, check the throttle sensor (Refer to page F2-181) and engine control unit (1J) terminal voltage (Refer to page F2-176).

BURN-OFF CONTROL SYSTEM

DESCRIPTION



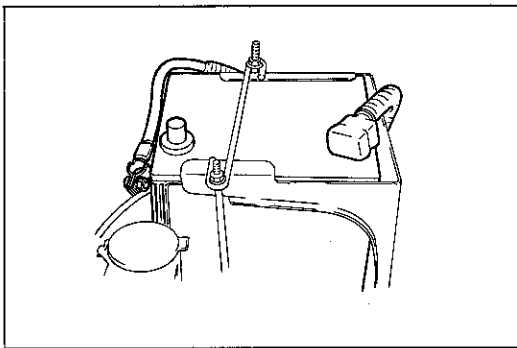
9MU0F2-201

The airflow sensor is equipped with a self-cleaning feature that momentarily super-heats the hot wire to burn off contaminants that may have collected on the wire.

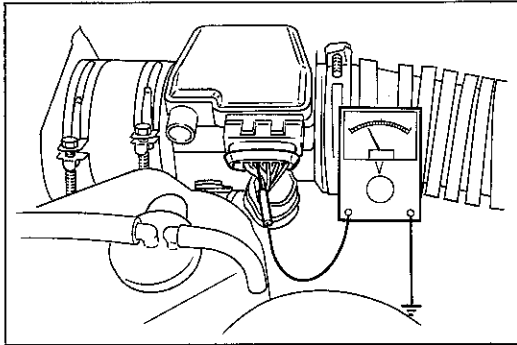
Operation

Burn-off occurs after the engine has been stopped (ignition switch OFF), and the following conditions are met.

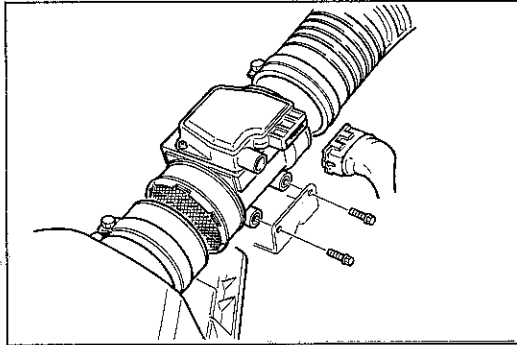
- Engine has run at **more than 1,500 rpm for 5 seconds** after warm-up.
- More than the prescribed amount of intake air has passed through the airflow sensor since the previous burn-off operation.



2BU0F2-036



1BU0F2-087



1BU0F2-088

INSPECTION

Only if the airflow sensor output voltage is not as specified

1. Disconnect the negative battery terminal for more than 20 seconds and reconnect it.

2. Warm up the engine to the normal operating temperature.
3. Remove the rubber boot from the airflow sensor connector.
4. Run the engine for three minutes at **approx. 2,000 rpm** in neutral.
5. Turn the ignition switch OFF and check the voltage at the airflow sensor terminal wire (G/O) and terminal (2H) of the engine control unit. (Refer to page F2-177.)

Voltage:

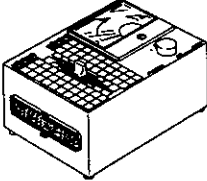
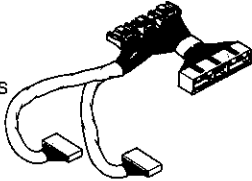
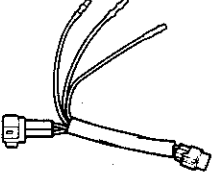
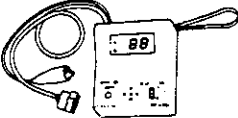
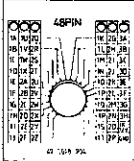
Approx. 0V just after ignition switch OFF.

Approx. 8—12V momentarily 2—5 seconds after ignition switch OFF.

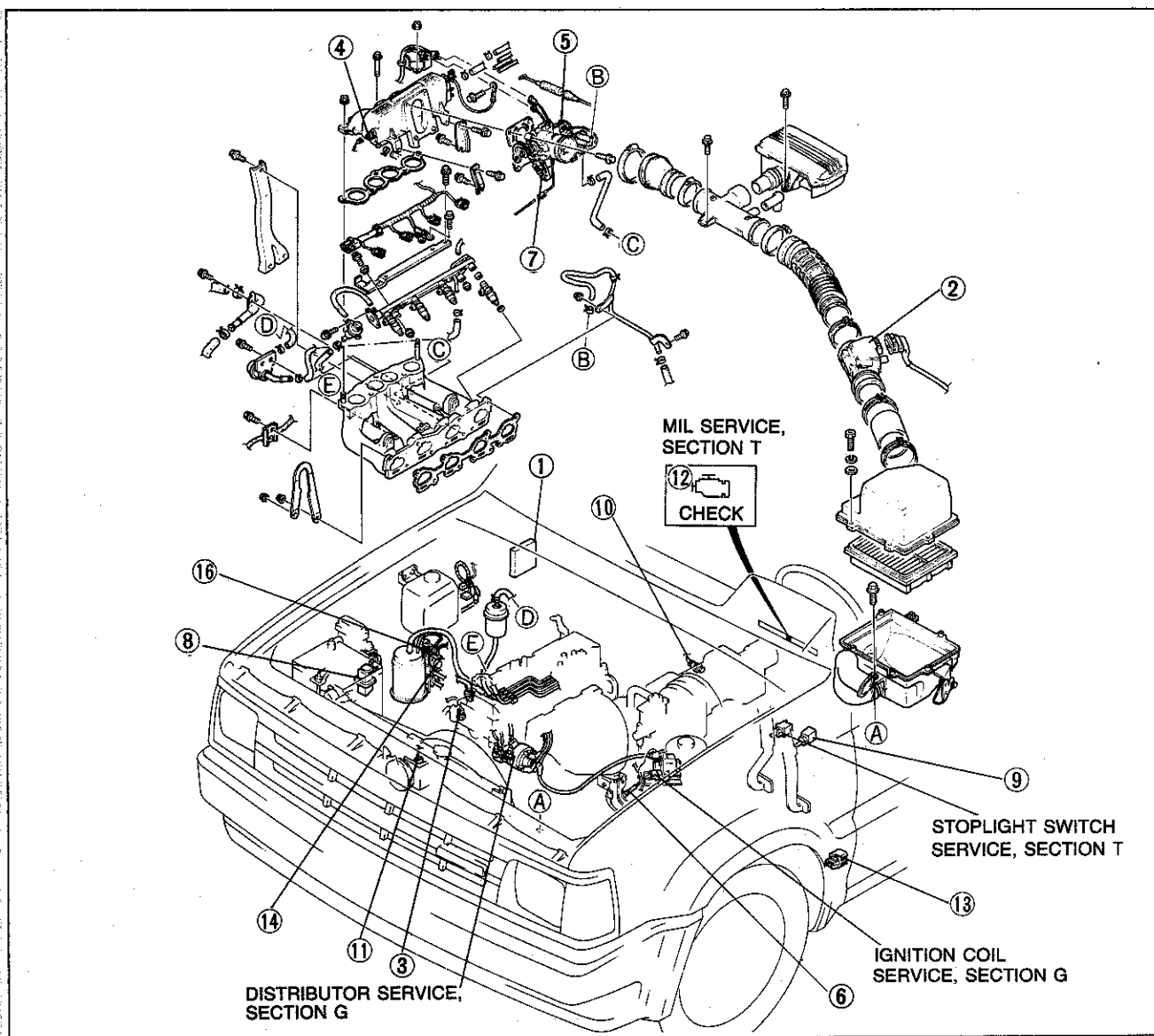
6. If as specified, replace the airflow sensor.
7. If not as specified, check the voltage at the engine control unit (2P), (2Q), and (1I) terminals (Refer to page F2-177.) and the related wiring harness.

CONTROL SYSTEM

PREPARATION
SST

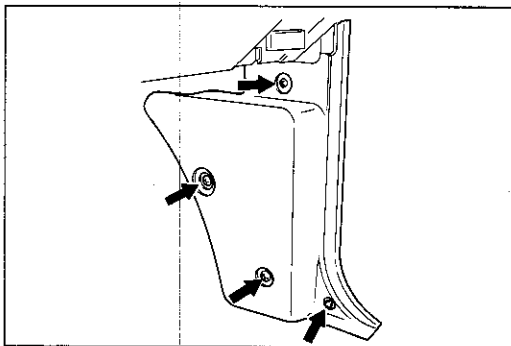
<p>49 9200 162 Engine signal monitor</p>		<p>49 G018 903 Adapter harness</p> 	<p>49 G018 901 Adapter harness</p> 
<p>49 H018 9A1 Self-diagnosis checker</p>		<p>49 G018 904 Sheet</p> 	<p>OBU0F2-075</p>

STRUCTURAL VIEW

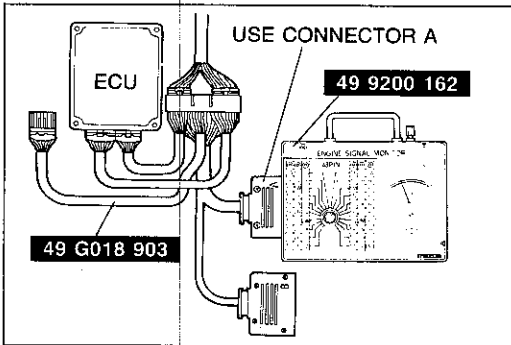


1BU0F2-089

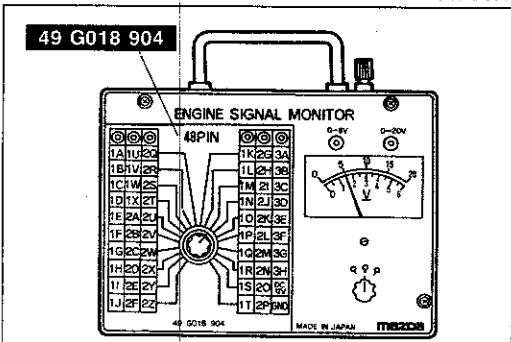
- | | | |
|--|--|--|
| 1. Engine control unit
Inspection page F2-175 | 6. Oxygen sensor
Inspection page F2-182
Replacement
..... page F2-183 | 11. P/S pressure switch
Inspection and
Replacement
..... page F2-185 |
| 2. Airflow sensor
Inspection and
Replacement
..... page F2-179 | 7. Idle switch
Inspection page F2-183 | 12. Malfunction indicator lamp
(MIL)
How to reset
MIL page F2-187 |
| 3. Water thermosensor
Removal and Inspection
..... page F2-179
Installation page F2-180 | 8. Main relay
Inspection page F2-184 | 13. Circuit opening relay
Inspection, Removal, and
Installation... page F2-153 |
| 4. Intake air thermosensor
Inspection and
Replacement
..... page F2-180 | 9. Clutch switch
Inspection and
Replacement
..... page F2-184 | 14. Solenoid valve (PRC)
Inspection page F2-160 |
| 5. Throttle sensor
Inspection and Adjustment
..... page F2-181
Replacement
..... page F2-182 | 10. Neutral switch
Inspection and
Replacement
..... page F2-184 | 15. Solenoid valve (Purge control)
Inspection page F2-165 |



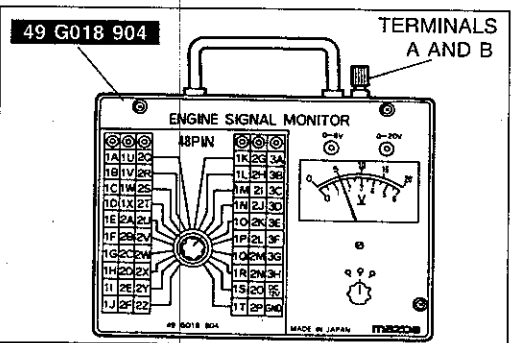
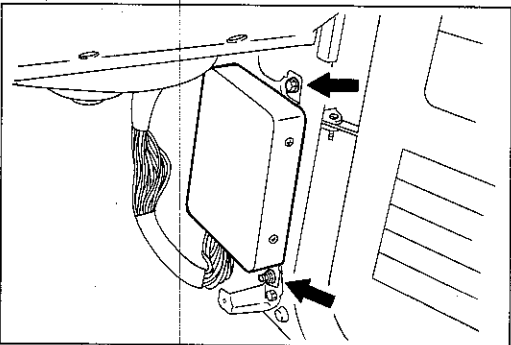
9BU0F2-116



0BU0F2-077



1BU0F2-090



9MU0F2-191

ENGINE CONTROL UNIT

Inspection

1. Remove the front side trim on the passenger's side.

2. Connect the **SST** to the engine control unit.

3. Place the **SST (Sheet)** on the **Engine Signal Monitor**.

4. Measure the voltage at each terminal.
(Refer to pages F2-176 to F2-178.)

5. If any ECU terminal voltage is incorrect, check the related input or output devices and wiring. If no problem is found, replace the ECU. (Refer to above.)

Caution

Never apply voltage to SST terminals A and B.

Terminal voltage

V_B: Battery voltage

Terminal	Input	Output	Connection to	Test condition	Voltage	Remarks
1A	—	—	Battery	Constant	V _B	For backup
1B	○		Main relay	Ignition switch OFF	0V	
				Ignition switch ON	V _B	
				During burn-off (airflow sensor)		
1C	○		Ignition switch (Start position)	While cranking	0V	
				Ignition switch ON	0V	
1D		○	Self-Diagnosis Checker (Monitor lamp)	Test connector (Green: 1-pin) grounded For 3 seconds after ignition switch OFF→ON (Lamp illuminates)	4.5—5.5V	With Self-Diagnosis Checker
				After 3 seconds (Lamp does not illuminated)	V _B	
				Test connector (Green: 1-pin) not grounded at idle. Monitor lamp ON	4.5—5.5V	
				Test connector (Green: 1-pin) not grounded at idle. Monitor lamp OFF	V _B	
1E		○	Malfunction indicator lamp (California only)	For 3 seconds after ignition switch OFF→ON (Lamp illuminates)	Below 2.5V	Test connector (Green: 1-pin) grounded
				After 3 seconds (Lamp does not illuminate)	V _B	
				Lamp illuminates	Below 2.5V	
				Lamp not illuminate	V _B	
1F		○	Self-Diagnosis checker (Code number)	For 3 seconds after ignition switch OFF→ON (Buzzer sounds)	Below 2.5V	<ul style="list-style-type: none"> • With Self-Diagnosis Checker • Test connector (Green: 1-pin) grounded
				After 3 seconds (Buzzer does not sound)	V _B	
				Buzzer sounds	Below 2.5V	
				Buzzer not sounded	V _B	
1G		○	Main relay	Ignition switch OFF	V _B	
				During burn-off (airflow sensor)	0V	
				Ignition switch ON		
1H		○	Circuit opening relay	Ignition switch ON	V _B	
				During cranking or at idle	Below 2.5V	
1I	○		Ignition switch (ON position)	Ignition switch OFF	0V	
				Ignition switch ON	V _B	
1J		○	A/C relay	Ignition switch ON	V _B	Blower motor: ON
				For 10 seconds After fully depressing accelerator pedal with A/C switch ON (A/C does not operate) (in-gear, ignition switch ON)	V _B	
				After 10 seconds	Below 2.5V	
				For 5 seconds after cranking with A/C switch ON (A/C does not operate)	V _B	
				After 5 seconds (A/C operates)	Below 2.5V	
				A/C switch ON at idle	Below 2.5V	
A/C switch OFF at idle	V _B					
1K	○		Test connector	Test connector (Green: 1-pin) not grounded	V _B	Ignition switch ON
				Test connector (Green: 1-pin) grounded	0V	
1L	○		Ground (M/T)	Ignition switch ON	0V	
				Open (A/T)	V _B	
1M	○		Speed sensor (A/T)	Ignition switch ON	0 or 4.5V—5.5V	
				Idle	4.5—5.5V	
1N	○		Idle switch	Accelerator pedal released	0V	Ignition switch ON
				Accelerator pedal depressed	V _B	
1O	○		Stoplight switch	Brake pedal released	0V	Ignition switch ON
				Brake pedal depressed	V _B	
1P	○		P/S pressure switch	Ignition switch ON	V _B	
				P/S ON (at idle)	0V	
				P/S OFF (at idle)	V _B	
1Q	○		A/C switch	A/C switch ON (Ignition switch ON)	Below 2.5V	Blower motor: ON
				A/C switch OFF (Ignition switch ON)	V _B	

Terminal voltage

V_B: Battery voltage

Terminal	Input	Output	Connection to	Test condition	Voltage	Remarks
1R	○		Ground (EC-AT) Open (M/T, HAT)	Ignition switch ON	0V	For G6
				Ignition switch ON	V _B	
1S	○		Blower switch	Blower OFF	V _B	Ignition switch ON
				Blower ON	Below 1.5V	
1T	—	—	—	—	—	—
1U	○		Headlight switch	Headlight ON	V _B	
				Headlight OFF	Below 1.5V	
1V	○		Neutral or clutch switch (Inhibitor switch)	Neutral or clutch pedal depressed (P or N ranges)	0V	Ignition switch ON
				Other condition	V _B	
2A	—	—	Ground (E01)	Constant	0V	
2B	—	—	Ground (E02)	Constant	0V	
2C	—	—	Ground (E1)	Constant	0V	
2D	—	—	Ground (E2)	Constant	0V	
2E		○	Distributor	Ignition switch ON	0 or 5V	Ne-Signal
				Idle	2V	
2F		○	Igniter	Ignition switch ON	0 or 5V	Ignition-timing signal
				Idle	Approx. 0.5V	
2G	○		Distributor	Ignition switch ON	0 or 5V	G-Signal
				Idle	Approx. 1.2V	
2H		○	Airflow sensor (Burn-off)	Just after ignition switch OFF	0V	Burn-off functions momentarily
				Burn off (2-5 seconds after ignition switch OFF) (Refer to page F2-174)	8-12V	
2I	—	—	—	—	—	—
2J	—	—	—	—	—	—
2K		○	Vref	Ignition switch ON	4.5-5.5V	
2L	○		Intake air thermosensor (Dynamic chamber)	At 20°C (68°F)	Approx. 2.5V	
2M	○		Throttle sensor	Accelerator pedal released	Approx. 0.5V	Ignition switch ON
				Accelerator pedal fully depressed	Approx. 4.3V	
2N	○		Oxygen sensor	Ignition switch ON	0V	Needle moves from 0V to 1V
				Idle (Cold engine)	0V	
				Idle (After warm up)	0-1.0V	
				Increase engine speed (After warm up)	0.5-1.0V	
				Deceleration	0-0.4V	
2O	○		Airflow sensor (Intake air mass)	Ignition switch ON	1.0-2.0V	
				Idle (After warm up)	1.9-2.6V	
				Increase engine speed (After warm up)	2-5V	
2P	○		Airflow sensor (Ground)	Constant	0V	
2Q	○		Water thermosensor	Engine coolant temperature 20°C (68°F)	Approx. 2.5V	Ignition switch ON
				After warm up	Approx. 0.4V	
2R	—	—	—	—	—	—
2S	—	—	—	—	—	—
2T		○	Solenoid valve (PRC)	For 120 seconds after ignition switch OFF→ON	Below 2.5V	During hot condition. Coolant temp. above 90°C (194°F) Intake air temp. above 75°C (167°F)
				For 120 seconds after starting	Below 2.5V	
				Ignition switch ON	V _B	
2U		○	Injector G6 (No.3, 4) F2 (No.1, 3)	Ignition switch ON	V _B	* Engine Signal Monitor: Green and red lights flash
				Idle	V _B	

Terminal voltage

V_B: Battery voltage

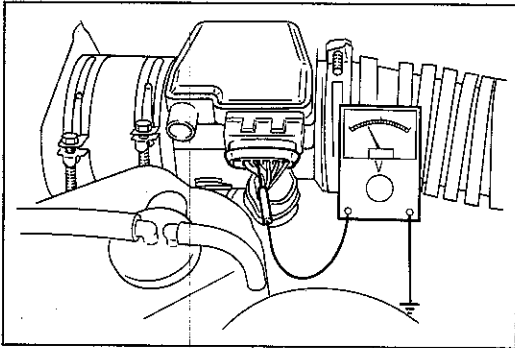
Terminal	Input	Output	Connection to	Test condition	Voltage	Remarks
2V		○	Injector G6 (No.1, 2) F2 (No.2, 4)	Ignition switch ON	V _B	* Engine Signal Monitor: Green and red lights flash
				Idle	V _B	
2W		○	Solenoid valve (Idle speed control)	Ignition switch ON	Approx. 11V	Engine signal monitor: Green and red lights flash
				Idle	Approx. 10V	
2X		○	Solenoid valve (Purge control)	Ignition switch ON	V _B	* Engine signal monitor: Green and red lights flash
				Idle	V _B	
				Driving in gear	5—1.5V*	
2Y		○	HAT control unit	Ignition switch ON	V _B	For G6 HAT
				Accelerator for pedal fully depressed	0V	
2Y		○	EC-AT control unit	At sea level	V _B	For G6 EC-AT Ignition switch ON
				At high altitude (800 m [2,624 ft])	0V	
2Z	—	—	—	—	—	—

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Terminal location

2Y	2W	2U	2S	2Q	2O	2M	2K	2I	2G	2E	2C	2A	U	S	Q	O	M	K	I	G	E	C	A
2Z	2X	2V	2T	2R	2P	2N	2L	2J	2H	2F	2D	2B	V	T	R	P	N	L	J	H	F	D	B

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AIRFLOW SENSOR

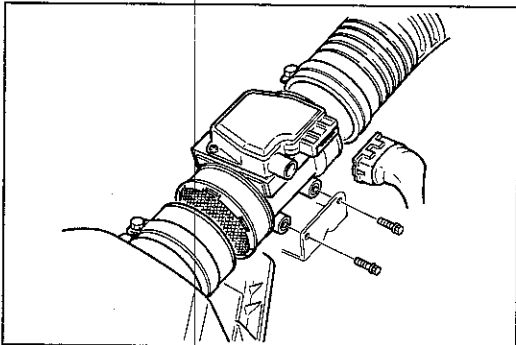
Inspection

1. Remove the rubber boot from the airflow sensor connector.
2. Check terminal voltages with a voltmeter.

Terminal wire	Condition	Ignition switch ON	Engine running
B/Y (Power supply)		Battery voltage	
G/O (Burn-off)		0V	
G/B (Airflow mass)		1.0—2.0V	1.9—5V
G/Y (Ground)		0V	
B/O (Ground)		0V	

3. If not as specified, check the wiring harness for an open or short circuit.
If the wiring harness is OK, check the burn-off operation. (Refer to page F2-172.)
4. If the burn-off operation is as specified, replace the airflow sensor.

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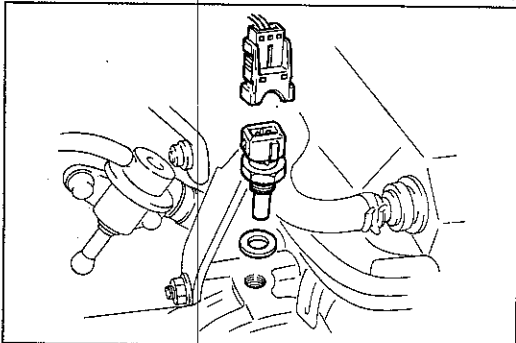
Replacement

1. Disconnect the connector.
2. Loosen the air hose clamps.
3. Remove the bolts.
4. Remove and replace the airflow sensor.

Caution

Install the airflow sensor with the arrow on the sensor aligned with airflow direction.

5. Tighten the hose clamps.
6. Reconnect the connector to the sensor.

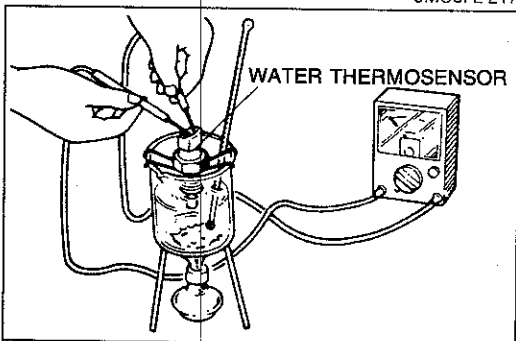


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WATER THERMOSENSOR

Removal

1. Disconnect the water thermosensor connector.
2. Remove the water thermosensor.



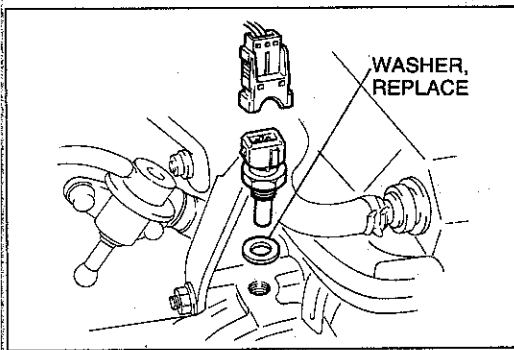
9MU0F2-218

Inspection

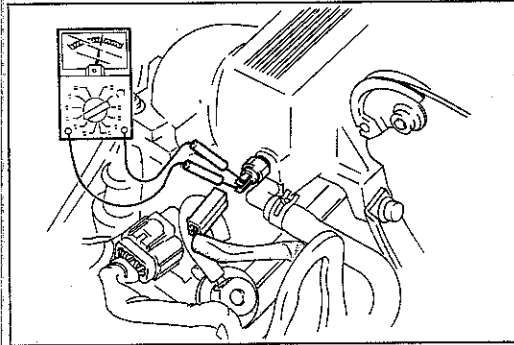
1. Place the sensor in water with a thermometer and heat the water gradually.
2. Check resistance of the sensor with an ohmmeter.

Coolant	Resistance
-20°C (-4°F)	14.5 — 17.8 kΩ
20°C (68°F)	2.2 — 2.7 kΩ
80°C (176°F)	0.28— 0.35 kΩ

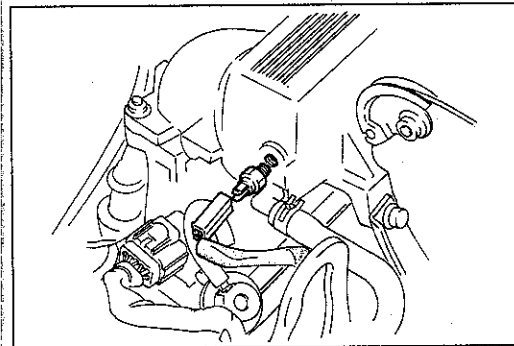
3. If not as specified, replace the water thermosensor.



9MU0F2-219



9MU0F2-220



9MU0F2-221

Installation

1. Install the water thermostatsensor and a new washer.

Tightening torque:

25—29 N·m (2.5—3.0 m·kg, 18—22 ft·lb)

2. Connect the water thermostatsensor connector.

INTAKE AIR THERMOSENSOR (IN DYNAMIC CHAMBER)

Inspection

1. Disconnect the intake air thermostatsensor connector.
2. Connect an ohmmeter to the sensor terminals.
3. Check resistance of the sensor.

Temperature	Resistance
25°C (77°F)	29.7—36.3 kΩ
85°C (185°F)	3.3— 3.7 kΩ

4. If not as specified, replace the intake air thermostatsensor.

Replacement

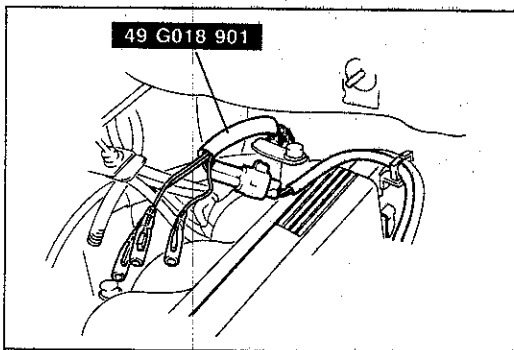
1. Disconnect the intake air thermostatsensor connector.
2. Remove the sensor.
3. Install the sensor.

Note

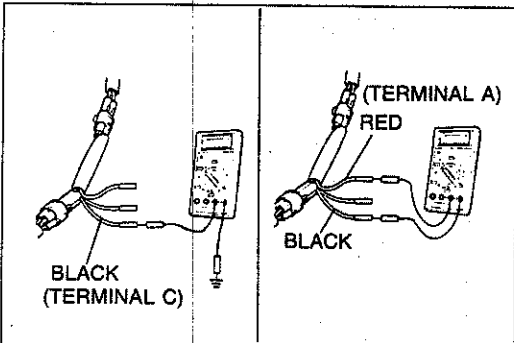
When installing the sensor, tighten to the specified torque.

Tightening torque:

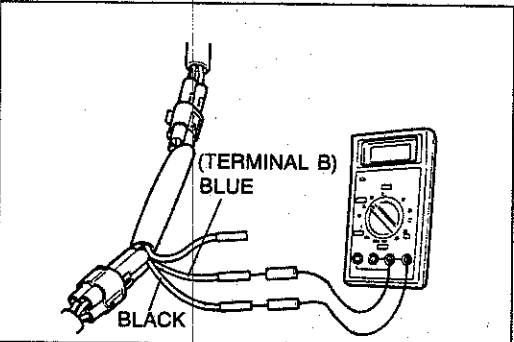
6.9—8.8 N·m (70—90 cm·kg, 61—78 in·lb)



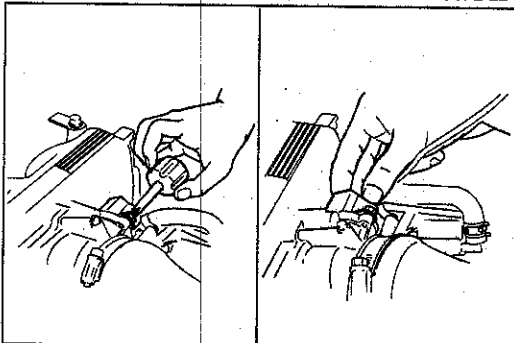
9MU0F2-222



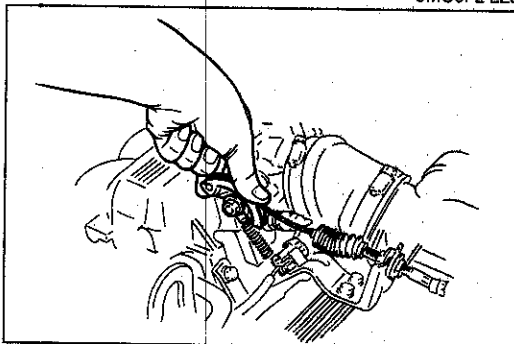
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9MU0F2-224



9MU0F2-225



9MU0F2-226

THROTTLE SENSOR

Caution

Use a precision voltmeter with a scale of 0.01V to inspect or adjust the throttle sensor.

Inspection and Adjustment

1. Remove the air hose from the throttle body.
2. Disconnect the throttle sensor connector (3-pin).
3. Connect the **SST** between the throttle sensor and the wiring harness.
4. Turn the ignition switch ON.
5. Make sure that the throttle valve is fully closed.
6. Measure BLACK and RED wire voltages. Check that the voltages are as specified.

Voltage

BLACK wire: 0V

RED wire : 4.5—5.5V

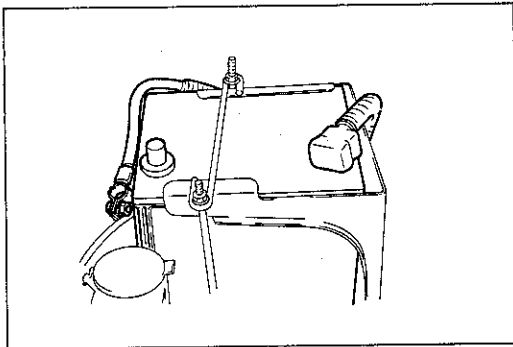
7. If not as specified, check the battery voltage and wiring harness. If these are OK, replace the engine control unit.
8. Record the RED wire voltage.
9. Check that BLUE wire voltage for the recorded RED wire voltage is as specified.

RED wire voltage (V)	BLUE wire voltage (V)	RED wire voltage (V)	BLUE wire voltage (V)
4.50—4.59	0.37—0.54	5.10—5.19	0.42—0.61
4.60—4.69	0.38—0.55	5.20—5.29	0.43—0.62
4.70—4.79	0.39—0.56	5.30—5.39	0.44—0.63
4.80—4.89	0.40—0.57	5.40—5.49	0.44—0.64
4.90—4.99	0.40—0.58	5.50	0.44—0.66
5.00—5.09	0.41—0.60		

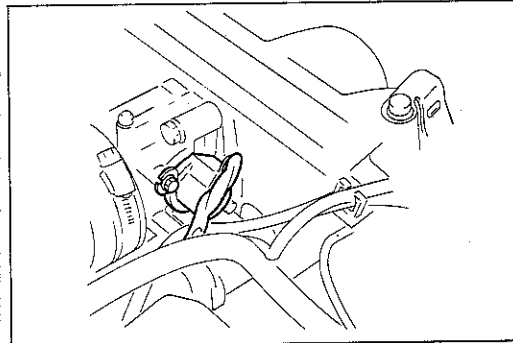
10. If not as specified, loosen the throttle sensor mounting screws and adjust BLUE wire voltage by rotating the throttle sensor.
After adjusting the voltage, tighten the throttle sensor mounting screws and recheck the voltage.

11. Hold the throttle valve fully open.
12. Check that BLUE wire voltage for the recorded RED wire voltage is as specified.

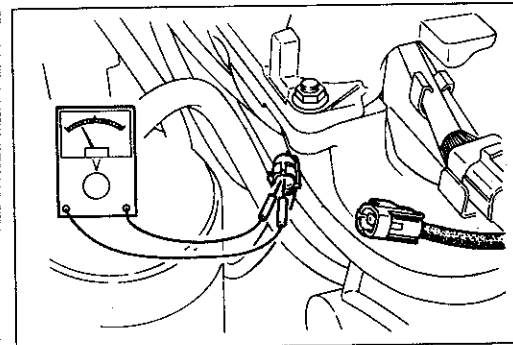
RED wire voltage (V)	BLUE wire voltage (V)	RED wire voltage (V)	BLUE wire voltage (V)
4.50—4.59	3.58—4.23	5.10—5.19	4.05—4.79
4.60—4.69	3.66—4.32	5.20—5.29	4.13—4.88
4.70—4.79	3.74—4.41	5.30—5.39	4.21—4.98
4.80—4.89	3.82—4.51	5.40—5.49	4.29—5.07
4.90—4.99	3.90—4.60	5.50	4.29—5.17
5.00—5.09	3.97—4.70		



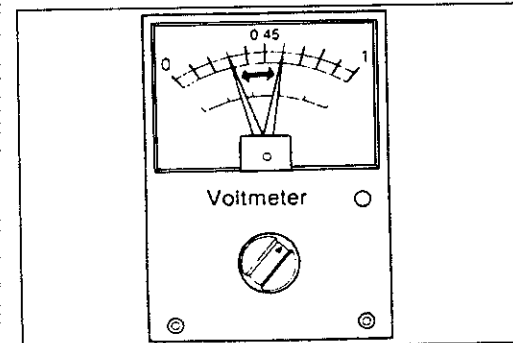
9MU0F2-227



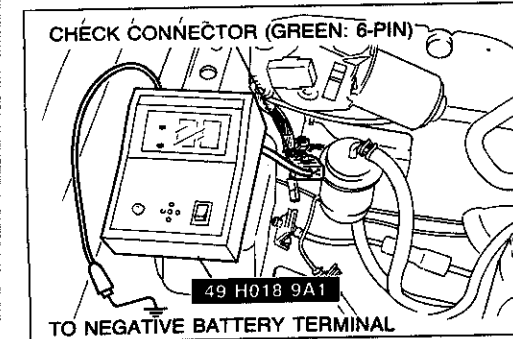
9MU0F2-228



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9MU0F2-230



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13. If not as specified, replace the throttle sensor.
14. Turn the ignition switch OFF.
15. Disconnect the **SST** and reconnect the throttle sensor connector.
16. Disconnect the negative battery terminal and depress the brake pedal for **at least 5 seconds** to eliminate the control unit malfunction memory created during inspection.

Replacement

1. Disconnect the throttle sensor connector.
2. Remove the throttle sensor mounting screws and the sensor.
3. Install the throttle sensor and tighten the screws.

OXYGEN SENSOR

Inspection of Terminal Voltage

1. Warm up the engine and run it at idle.
2. Disconnect the oxygen sensor connector.
3. Connect a voltmeter between the oxygen sensor and a ground.
4. Run the engine at **4,500 rpm** until the voltmeter indicates **approx. 0.7V**.

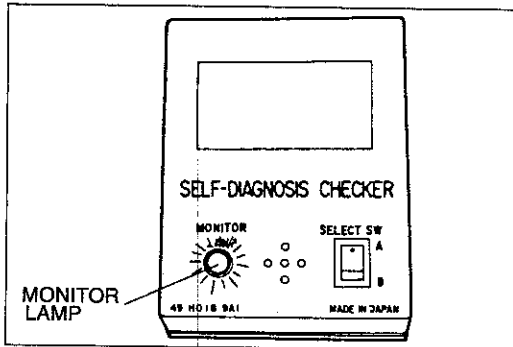
5. Increase and decrease the engine speed suddenly several times. Check to see that when the speed is increased the meter reads between **0.5V—1.0V** and when the speed is decreased it reads between **0V—0.4V**.
6. If not as specified, replace the oxygen sensor.

Inspection of Sensitivity

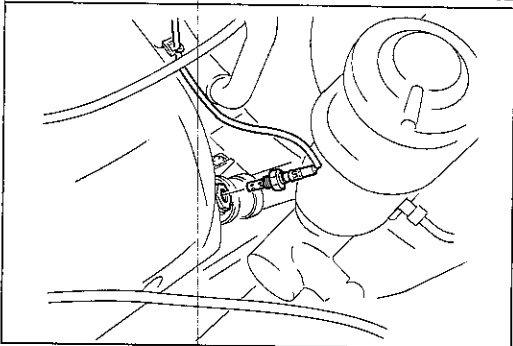
1. Warm up the engine to the normal operating temperature.
2. Connect the **SST** to the check connector (Green: 6-pin) and the negative battery terminal.

Note

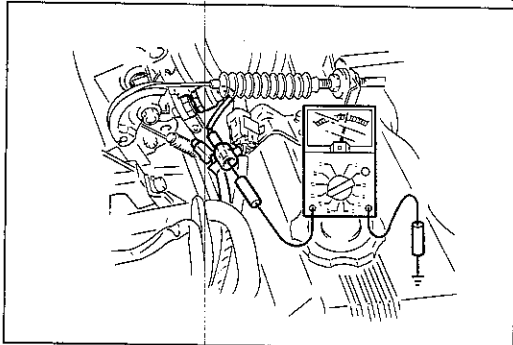
Do not ground the test connector (Green: 1-pin) during inspecting the oxygen sensor sensitivity.



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1BU0F2-093

- Increase the engine speed to **between 2,000 and 3,000 rpm**, and check that the monitor lamp flashes for **10 seconds**.

Monitor lamp: Flashes more than 8 times/10 seconds

Replacement

- Disconnect the oxygen sensor connector.
- Remove the oxygen sensor.
- Install and tighten the oxygen sensor to specified torque.

Tightening torque:

29—49 N·m (3—5 m·kg, 22—36 ft·lb)

- Connect the oxygen sensor connector.

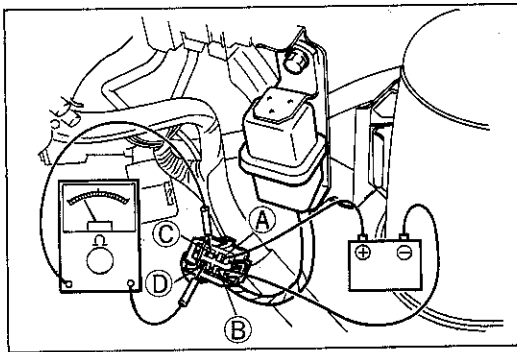
IDLE SWITCH

Inspection

- Disconnect the idle switch connector.
- Check continuity between the switch and a ground.

Throttle valve	Continuity
Fully closed	Yes
Open	No

- If not as specified, check the condition of the wiring harness of the idle switch. Replace the idle switch and the throttle body as an assembly, if necessary. (Refer to page F2-136.)



2BU0F2-040

MAIN RELAY Inspection

1. Check that a clicking sound is heard at the main relay when turning the ignition switch ON and OFF.
2. Apply battery voltage to terminal (A) and ground terminal (B) of the main relay.
3. Use an ohmmeter to check continuity of the terminals as shown.

V_B: Battery voltage

Operation	V _B not applied	V _B applied
Terminals		
C-D	NO continuity	Continuity

4. If not as specified replace the main relay.

CLUTCH SWITCH Inspection

1. Disconnect the clutch switch connector.
2. Connect an ohmmeter to the switch.
3. Check continuity of the switch.

Pedal	Continuity
Depressed	Yes
Released	No

4. If not as specified, replace the clutch switch.

NEUTRAL SWITCH Inspection

1. Disconnect the neutral switch connector.
2. Connect an ohmmeter to the switch.
3. Check continuity of the switch.

Transmission	Continuity
In neutral	Yes
In other range	No

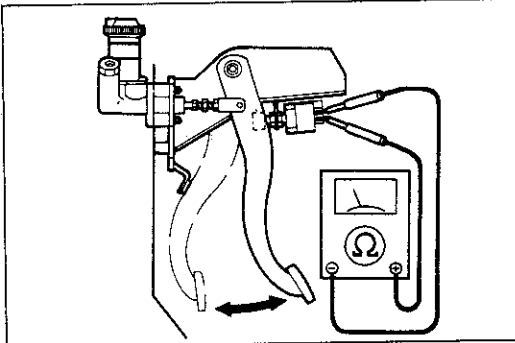
4. If not as specified, replace the neutral switch.

Replacement

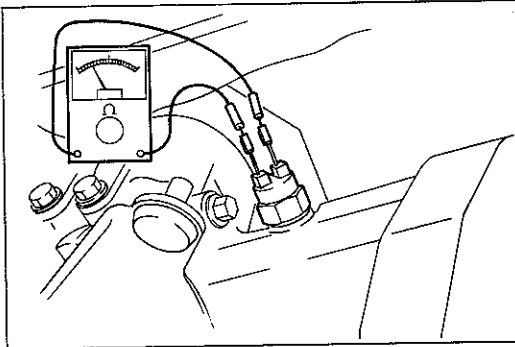
Replace the neutral switch as shown in the figure.

Tightening torque:

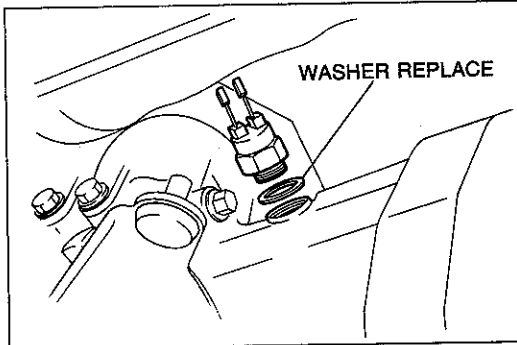
39—59 N·m (4—6 m·kg, 29—43 ft·lb)



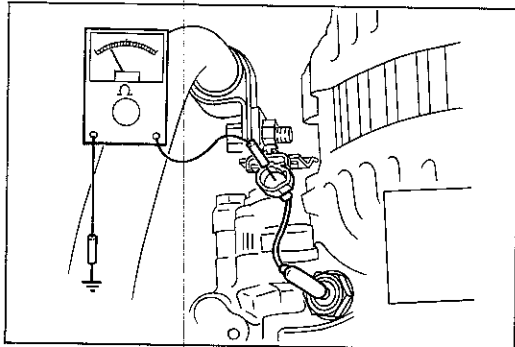
9BU0F2-122



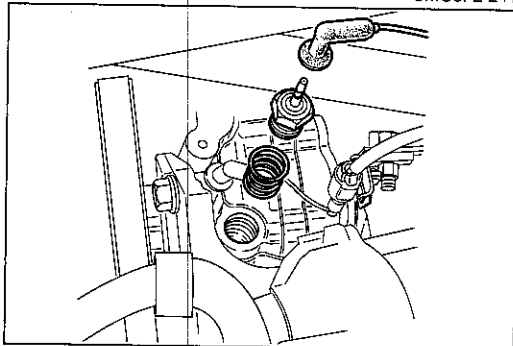
9BU0F2-123



0BU0F2-084



9MU0F2-241



0BU0F2-085

POWER STEERING PRESSURE SWITCH

Inspection

1. Disconnect the P/S pressure switch connector.
2. Connect an ohmmeter to the switch.
3. Start the engine. Check continuity of the switch while turning the steering wheel at idle.

P/S	Continuity
Turning	Yes
Not turning	No

4. If not as specified, replace the P/S pressure switch.

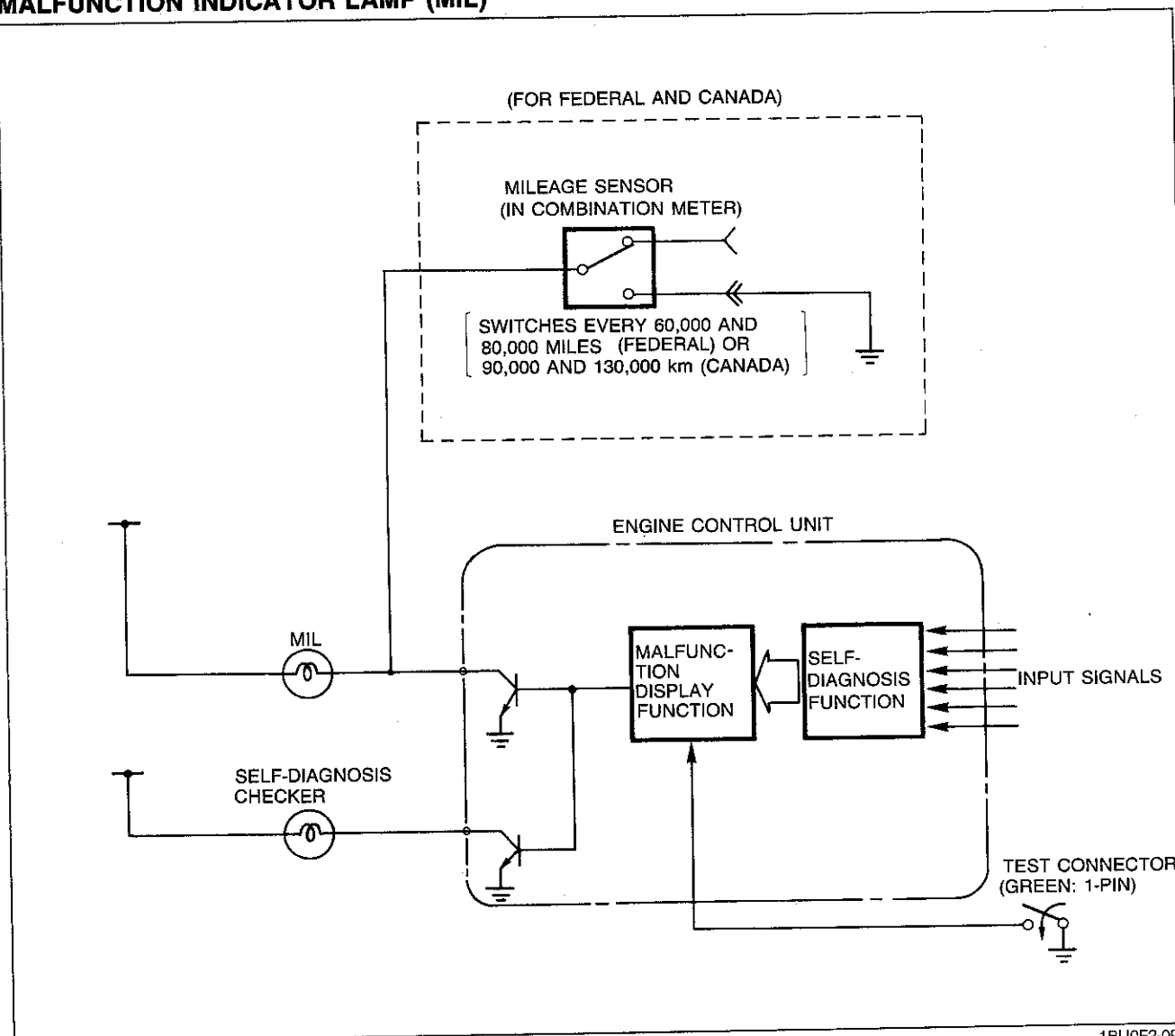
Replacement

Replace the P/S pressure switch as shown in the figure.

Tightening torque:

29—39 N·m (3—4 m·kg, 22—29 ft·lb)

MALFUNCTION INDICATOR LAMP (MIL)

**(For Federal and Canada)**

The MIL is equipped to indicate the maintenance schedule for the emission control system. The MIL comes on **every 60,000 and 80,000 miles (Federal) or 90,000 and 130,000 km (Canada)** by the operation of the mileage sensor in the combination meter.

Note

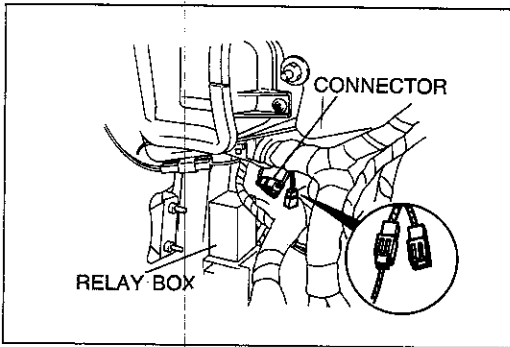
- When the MIL comes on, replace the specified emission control system part. (Refer to Scheduled Maintenance.)
- After replacing the specified emission control system part, reset the MIL. (Refer to page F2-187.)

Caution

If the combination meter assembly is replaced, remove the odometer from the old unit and install it in the new meter assembly.

(For California)

The MIL comes on to warn the driver of an input device malfunction as it is occurring during driving or engine running (test connector [Green: 1-pin] not grounded). The MIL flashes in the same pattern as the Self-Diagnosis Checker to indicate to the technician a malfunction of an input or output device when the test connector (Green: 1-pin) is grounded. (Refer to page F2-121.)



How To Reset the MIL (For Federal and Canada)
To reset the MIL, change the connection of the connector as shown in the figure.

9BU0F2-125

