

SPECIFICATIONS

GENERAL SPECIFICATIONS

N14CA-B

Items	Specifications
Fuel Tank capacity lit (gal.) Return system Filter	75 (19.8) Equipped High pressure type
Fuel pump Type Driven by	Electrical, in-tank type Electric motor
Throttle body Identification model No. Throttle bore mm (in.) Throttle position sensor Idle speed control servo Idle position switch	AC54-102 54 (2.126) Variable resistor type Stepper motor type The stepper motor type by-pass air control system with the First Idle Air Valve Rotary contact type
Engine control unit Identification model No. For Federal For California	E2T34672 E2T34671
Input sensor Air flow sensor Barometric pressure sensor Intake air temperature sensor Engine coolant temperature sensor Oxygen sensor Vehicle-speed sensor Inhibitor switch Top dead center sensor Crank angle sensor EGR temperature sensor (California only) Power steering oil pressure switch	Karman vortex type Semiconductor diffusion-type sensor Thermistor type Thermistor type Zirconia sensor Reed switch type Contact switch type Photo diode sensor Photo diode sensor Thermistor type Contact switch type
Output actuator Control relay identification mode No. Injector type and number Injector identification mark Purge control solenoid valve EGR control solenoid valve (M/T)	E8T06571 Electromagnetic, 6 B210H ON/OFF type solenoid valve Duty cycle type solenoid valve
Fuel pressure regulator Regulated pressure kPa (psi)	335 (47.6)

SERVICE SPECIFICATIONS

N14CB-B

Items	Specifications
Standard value	
Basic ignition timing	5° ± 2° BTDC at curb idle
Curb idle speed rpm	700 ± 100
Idle speed when air conditioner ON rpm	
<M/T>	900 at neutral position
<A/T>	650 at D range
Basic idle speed rpm	700 ± 50
Throttle position sensor output voltage V	0.4–1.0
Throttle position sensor resistance kΩ	3.5–6.5
Idle speed control servo (stepper motor) coil resistance Ω	28–33 [at 20°C (68°F)]
Intake air temperature sensor resistance kΩ	2.7 [at 20°C (68°F)]
Engine coolant temperature sensor resistance kΩ	
20°C (68°F)	2.5
80°C (176°F)	0.3
Fuel pressure regulator pressure kPa (psi)	
Vacuum hose disconnection	330–370 (47–53)
Vacuum hose connection	270 (38)
Injector coil resistance Ω	13–16 [at 20°C (68°F)]

TORQUE SPECIFICATIONS

N14CC-B

Items	Nm	ft.lbs.
Engine Coolant temperature sensor	20–40	15–29
Throttle body mounting bolts	10–13	7–9
Fuel-pressure regulator attaching bolts	7–11	5–8
Delivery pipe mounting bolts	10–13	7–9
Throttle position sensor attaching screws	1.5–2.5	1.1–1.8
Idle speed control servo attaching screws	2.5–4.5	1.8–3.3
High pressure hose to delivery pipe attaching bolt	4–6	3–4
Accelerator cable attaching bolt	4–6	3–4
High pressure hose to fuel pump	30–40	22–29
Fuel tank installation nut	20–30	18–22
Fuel tank protector installation nut	9–14	6.5–10
Drain plug	15–20	11–14
High pressure hose to main pipe	30–40	22–29
Eye bolt	25–35	18–25

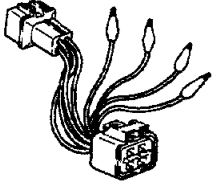
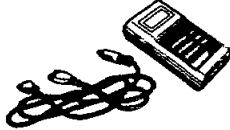

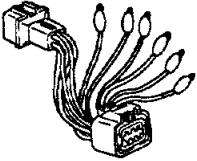
SEALANT

N14CE-B

Items	Specified sealant	Quantity
Engine coolant temperature sensor threaded portion	3M NUT locking No.4171 or equivalent	As required

SPECIAL TOOLS

N14DA-B

Tool	Number	Name	Use
	MD998464	Test harness (4 pin, square)	<ul style="list-style-type: none"> ● Throttle position sensor inspection and adjustment ● Idle position switch inspection ● Motor position sensor inspection
	MB991269	Multi-use tester assembly	<ul style="list-style-type: none"> ● Reading diagnosis code ● MPI system inspection
	MB991307	ROM pack (for multi-use tester)	<ul style="list-style-type: none"> ● Reading diagnosis code ● MPI system inspection
	MD998463	Harness connector (6 pin, square)	<ul style="list-style-type: none"> ● Idle speed control servo inspection

TROUBLESHOOTING

N14EBBL

When checking and correcting engine troubles, it is important to start with inspection of the basic systems.

In case you have such troubles as (1) engine start failure, (2) rough idling or (3) poor acceleration, therefore, you should first check the following basic systems:

- (1) Power supply
- Battery
 - Fusible link
 - Fuse
- (2) Body ground
- (3) Fuel supply
- Fuel line
 - Fuel filter
 - Fuel pump

- (4) Ignition system
- Spark plug
 - High tension cable
 - Distributor
 - Ignition coil
- (5) Emission control system
- Crankcase ventilation system
 - Exhaust gas recirculation system
 - Vacuum leak
- (6) Others
- Ignition timing
 - Idle speed

Troubles with the MPI system are often caused by poor contact of harness connector. It is, therefore, important to check harness connector contact.

Symptom	Probable cause	Remedy
Engine will not start or start too hard (Crank OK)	Trouble in the MPI system	Check for output of self-diagnosis code. Read the code with a voltmeter or multi-use tester (MB991307).
	Malfunction of the fuel pump drive control system	perform cranking check with a multi-use tester (MB991307). Check the fuel pump drive control system and the fuel pump.
	Malfunction of the ignition timing	Perform cranking check with a multi-use tester (MB991307).
	Malfunction of the power transistor	Check the power transistor as a single unit.
	Power is not supplied to the engine control unit.	Perform cranking check with a multi-use tester (MB991307). Check the power supply circuit.
	Malfunction of the control relay	Replace
	Malfunction of the injector	Perform cranking check with a multi-use tester (MB991307). Check the injector drive circuit. Check the injector as a single unit.
	The fuel pressure is not proper.	Check the fuel pressure.
	Vacuum hose disconnected or damaged	Repair or replace
	Malfunction of the engine control unit.	Replace
	Wire breakage or short circuit occurs in the harness, or the connector is improperly connected.	Repair or replace
Rough idle or engine stables	Trouble in the MPI system	Check for output of self-diagnosis code Read the code with a voltmeter or multi-use tester (MB991307).
	Malfunction of the sensor <ul style="list-style-type: none"> ● Inake air temperature sensor ● Engine coolant temperature sensor ● Barometric pressure sensor ● Ignition switch ● Idle position switch ● Throttle position sensor ● Top dead center sensor, crank angle sensor ● Power steering oil pressure switch ● Air conditioner switch ● Inhibitor switch ● Air-flow sensor ● Oxygen sensor 	Check the sensor with a multi-use tester (MB991307). (Check the sensor-related circuit. Check the sensor as a single unit.)
	Malfunction of the engine control system <ul style="list-style-type: none"> ● Stepper motor ● Injector ● Power transistor 	Check the power supply circuit. Check the actuator with a multi-use tester (MB991307).
	Malfunction of the vehicle-speed reed switch	Check the vehicle speed reed switch.
	The fuel pressure is not proper.	Check the fuel pressure.
	Vacuum hose disconnected or damaged.	Repair or replace.
	Malfunction of the engine control unit.	Replace.
	Wire breakage or short circuit occurs in the harness, or the connector is improperly connected.	Repair or replace.

Symptom	Probable cause	Remedy
Engine hesitates or poor acceleration	Trouble in the MPI system	Check for output of self-diagnosis code Read the code with a voltmeter or multi-use tester (MB991307).
	Malfunction of the sensor <ul style="list-style-type: none"> ● Intake air temperature sensor ● Engine coolant temperature sensor ● Barometric pressure sensor ● Ignition switch ● Idle position switch ● Throttle position sensor ● Top dead center sensor, crank angle sensor ● Power steering oil pressure switch ● Air conditioner switch ● Inhibitor switch ● Air-flow sensor ● Oxygen sensor 	Check the sensor with a multi-use tester (MB991307) Check the sensor-related circuit. Check the sensor as a single unit.
	Malfunction of the engine control system <ul style="list-style-type: none"> ● Steppet motor ● Injector ● Power transistor 	Check the power supply circuit. Check the actuator with a multi-use tester (MB991307).
	Malfunction of the air conditioner power relay control system	Check the system, and the components if the system is found defective.
	The fuel pressure is not proper.	Check the fuel pressure.
	Vacuum hose disconnected or damaged.	Repair or replace.
	Malfunction of the engine control unit.	Replace.
	Wire breakage or short circuit occurs in the harness, or the connector is improperly connected.	Repair or replace.
Poor fuel mileage	Trouble in the MPI system	Check for output of self-diagnosis code Read the code with a voltmeter or multi-use tester (MB991307).
	Malfunction of the sensor <ul style="list-style-type: none"> ● Intake air temperature sensor ● Engine coolant temperature sensor ● Barometric pressure sensor ● Ignition switch ● Idle position switch ● Throttle position sensor ● Top dead center sensor, crank angle sensor ● Power steering oil pressure switch ● Air conditioner switch ● Inhibitor switch ● Air-flow sensor ● Oxygen sensor 	Check the sensor with a multi-use tester (MB991307) (Check the sensor-related circuit.) Check the sensor as a single unit.)
	Malfunction of the engine control system <ul style="list-style-type: none"> ● Stepper motor ● Injector ● Power transistor 	Check the power supply circuit. Check the actuator with a multi-use tester (MB991307).
	The fuel pressure is not proper.	Check the fuel pressure.

CONTROL FUNCTIONS

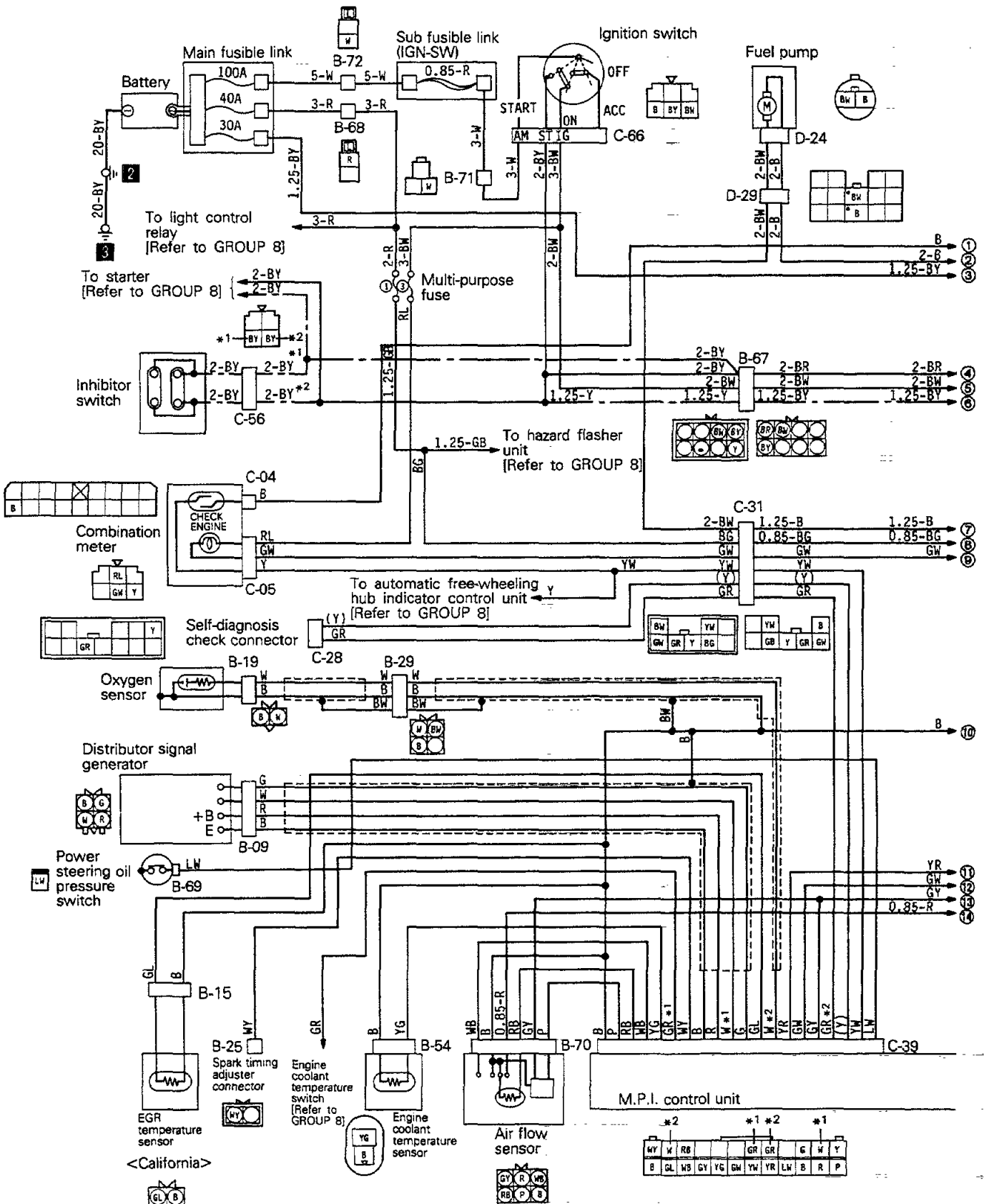
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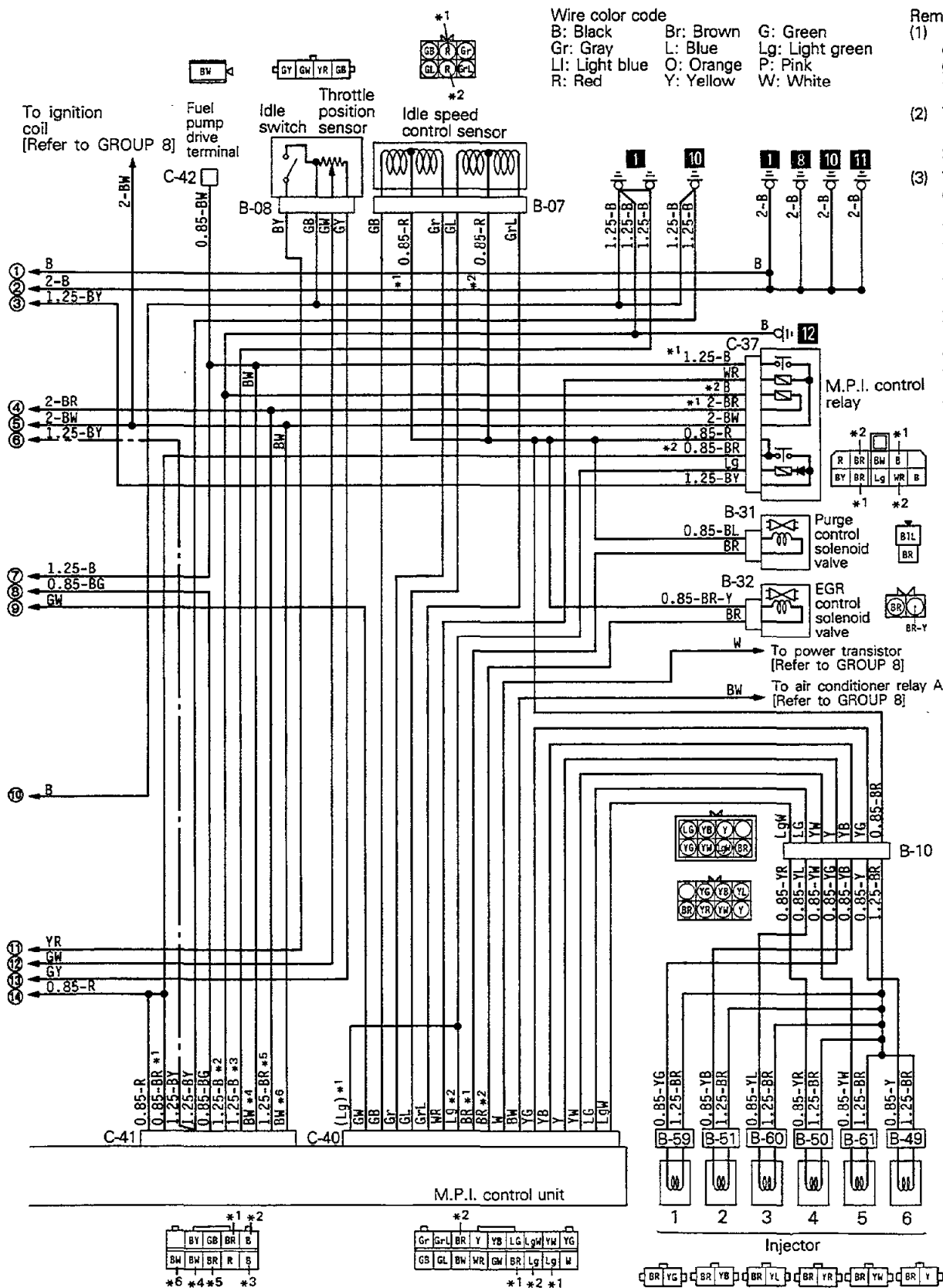
Function		Air/ fuel mixture control	Ignition timing control	Idle speed control	Air conditioner power relay control	Fuel pump drive control	Purge air control	EGR control
		Related components						
Input	Power supply (ignition switch coupled)	×	×	×	×	×	×	×
	Power supply (battery backup)	×	×	×	×	×	×	×
	Air-flow sensor	×	×				×	×
	Barometric pressure sensor	×	×	×			×	
	Intake air temperature sensor	×	×	×			×	
	Engine coolant temperature sensor	×	×	×			×	×
	Throttle position sensor	×	×	×	×*			
	Idle position switch	×	×	×				
	Top dead center sensor	×	×	×	×	×		×
	Crank angle sensor		×					
	Oxygen sensor	×						
	Vehicle-speed sensor		×	×				
	Air conditioner switch			×	×*		×	
	Inhibitor switch (A/T models only)		×	×	×			
	Power steering oil pressure switch			×				
	Ignition switch	×		×		×		
Ignition switch terminal (start signal)	×	×	×					
Output	Injector	×						
	Idle speed control servo (Stepper motor)			×				
	Power transistor		×					
	Air conditioner power relay				×			
	Control relay					×		
	Purge control solenoid valve						×	
	EGR control solenoid valve (M/T models only)							×

NOTE

* Vehicles with an automatic transmission

CIRCUIT DIAGRAMS





FUEL TANK AND FUEL LINE

N14EAAA2

Symptom	Probable cause	Remedy
Engine malfunctions due to insufficient fuel supply	Bent or kinked fuel pipe or hose	Repair or replace
	Clogged fuel pipe or hose	Clean or replace
	Clogged fuel filter or in-tank fuel filter	Replace
	Water in fuel filter	Replace the fuel filter or clean the fuel tank and fuel line
	Dirty or rusted fuel tank interior	Clean or replace
	Malfunctioning fuel pump (Clogged filter in the pump)	Replace
Evaporative emission control system malfunctions (When tank cap is removed, pressure releasing noise is heard)	Misrouting of vapor line	Correct
	Disconnect vapor line piping joint	Correct
	Folded, bent, cracked or clogged vapor line	Replace
	Faulty fuel tank cap	Replace
	Malfunctioning overfill limiter (two-way valve)	Replace

SERVICE ADJUSTMENT PROCEDURES

CURB IDLE SPEED INSPECTION

N14FHACa

Caution

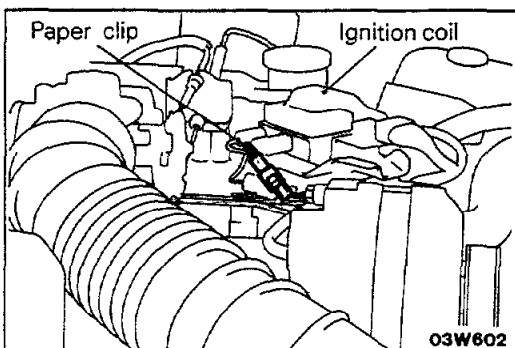
1. The improper setting (throttle valve opening) will increase exhaust gas temperature at deceleration, reducing catalyst life greatly and deteriorating exhaust gas cleaning performance. It also has effect on fuel consumption and engine braking.
2. When the battery's terminal is re-connected, the engine rpm can become high. When this happens, refer to GROUP INTRODUCTION AND MASTER TROUBLESHOOTING – Precautions Before Service (Servicing Electrical System).

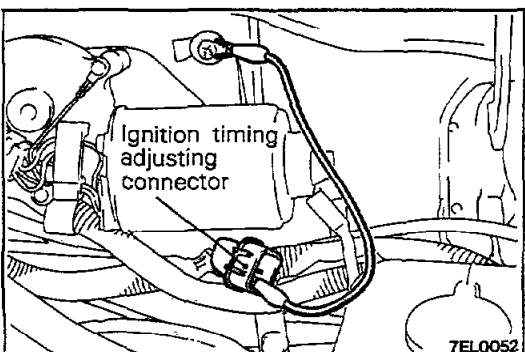
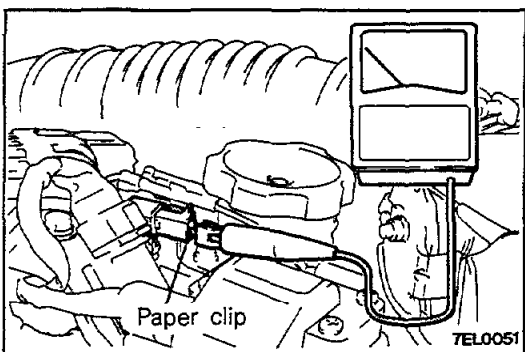
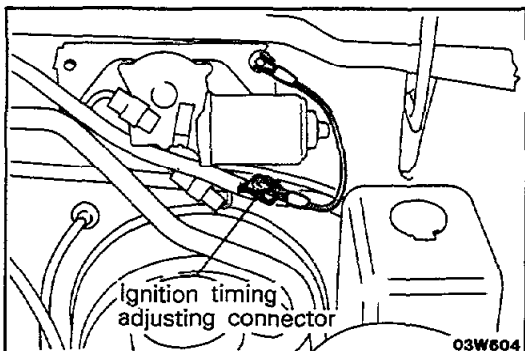
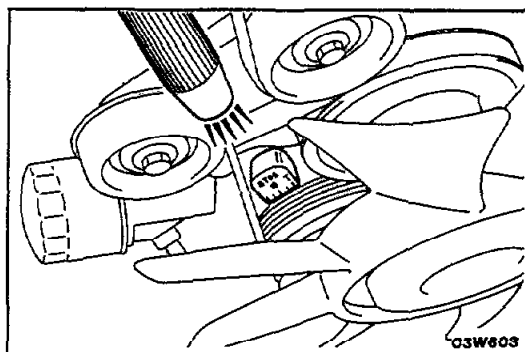
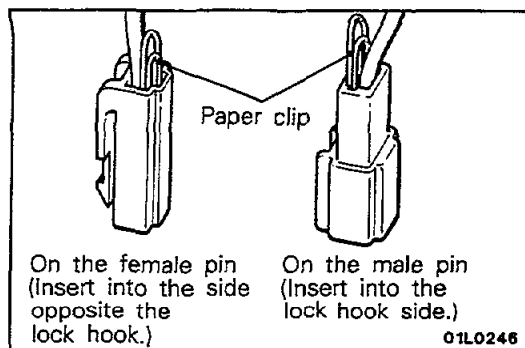
Pre-conditions for checking

- Engine coolant temperature: 85–95°C (185–205°F)
 - Lights and accessories: OFF
 - Transmission: neutral (N or P for vehicles with automatic transmission)
 - Steering wheel: neutral position
- (1) Place the timing light in position.
 - (2) Connect the tachometer.

NOTE

Insert a paper clip from the harness side to the connector (1 pin) between the primary side and noise filter of the ignition coil, and connect the tachometer.



**Caution**

Insert a paper clip along the terminal cables.

- (3) Start the engine and let it idle.
- (4) Check the standard ignition timing.
Adjust the ignition timing if necessary.

Standard ignition timing: 5°BTDC ± 2°*

* When checking the standard ignition timing, disconnect (with the engine stopped) the female connector for waterproofing the connector for adjustment of the ignition timing, and then connect a lead wire with alligator clip to the ignition timing adjusting terminal to ground it.

NOTE

For details regarding ignition timing checking and adjustment procedures, refer to GROUP 8 – Ignition System.

- (5) Run the engine for more than 5 seconds at an engine speed of 2,000 to 3,000 rpm.
- (6) Run the engine at idle for 2 minutes.
- (7) Read the idling rpm.
If it is not within the specified limits, check the ISC system.

NOTE

Adjustment of the idling speed is usually unnecessary, because this system controls the idling speed.

Curb idle speed: 700 ± 100 rpm

BASIC IDLE SPEED ADJUSTMENT

N14FHF

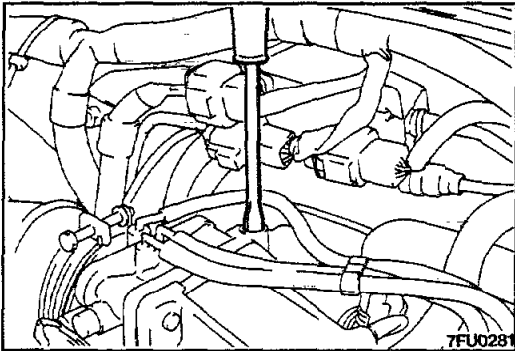
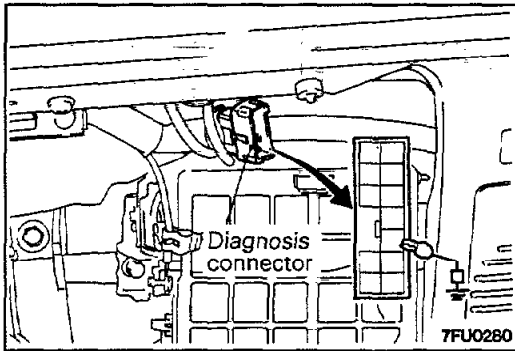
Caution

There should usually be no need to adjust the basic idle speed because it has been precisely adjusted by the manufacturer.

Pre-conditions for inspection

- Engine coolant temperature: 85–95°C (185–205°F)
- Lights and accessories: OFF
- Transmission: neutral (N or P for vehicles with automatic transmission)
- Steering wheel: neutral position

- (1) Connect a tachometer if the multi-use tester is not used.
- (2) Disconnect the female connector for waterproof from the connector for ignition timing adjustment.
- (3) Using a lead wire with alligator clips, ground the terminal for adjustment of the ignition timing.



- (4) Using a lead wire with alligator clips, ground the No. 10 terminal of the self-diagnosis connector or connect the multi-use tester to the self-diagnosis connector.

NOTE

By connecting the multi-use tester, ground the No.10 terminal of the self-diagnosis connector.

- (5) Start the engine and run at idle.
- (6) Check to be sure that the engine idling speed is the basic idle speed.

Basic idle speed: 700±50 rpm

If there is a deviation of the engine speed from the basic idle speed, first determine whether or not the conditions described below exist, and then use the speed adjustment screw to adjust to the basic idle speed.

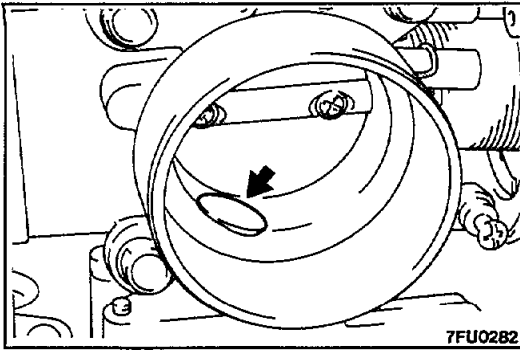
- (a) The engine speed may be 20–100 rpm low for a new vehicle [driven about 500 km (300 miles) or less], but adjustment is not necessary.
- (b) If engine stalling occurs or the engine speed is low even though the vehicle has been driven about 500 km (300 miles) or more, it is probable that there are deposits adhered to the throttle valve, so it should be cleaned. (Refer to P.14-65.)
- (c) If the engine speed is higher than the standard value even though the speed adjusting screw is fully close, check for any indication that the (fixed SAS position has changed; if there is such an indication, adjust the fixed SAS).

If there is no evidence of a change of position, it is probable that there is leakage resulting from deterioration of the fast-idle air valve so replace the throttle body.

NOTE

If the multi-use tester is used, select item No.22 and read out the engine rpm.

- (7) Turn OFF the ignition switch and stop the engine.
- (8) Disconnect the lead wire for grounding from the connector for self diagnosis.
Or disconnect the multi-use tester.
- (9) Disconnect the lead wire for grounding from the connector for the ignition timing, and then connector the waterproofing connector.
- (10) Disconnect the tachometer.
- (11) Start the engine and let it idle for about five minutes; check to be sure that the idling condition is normal.



THROTTLE BODY (THROTTLE VALVE AREA) CLEANING

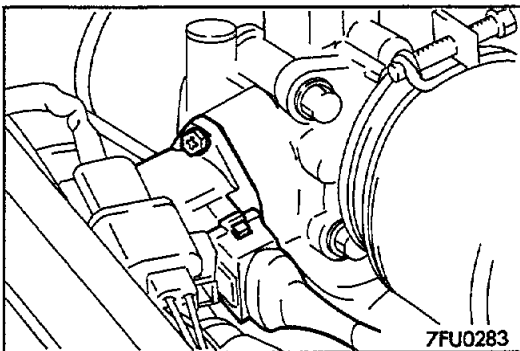
N14F1C1

- (1) Warm up the engine, then stop it.
- (2) Remove the air intake hose from the throttle body.
- (3) Plug the bypass passage inlet of the throttle body.

Caution

Do not allow cleaning solvent to enter the bypass passage.

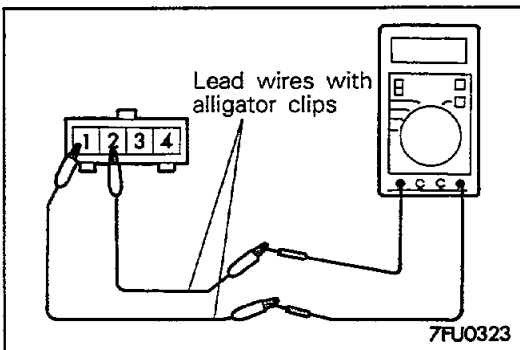
- (4) Spray washing solution into the valve through the throttle body intake port and leave it for about 5 minutes.
- (5) Start the engine, race it several times and idle it for about 1 minute. If the idling speed becomes unstable (or if the engine stalls) slightly open the throttle valve to keep the engine running.
- (6) If the throttle valve deposits are not removed, repeat steps (4) and (5).
- (7) Unplug the bypass passage inlet.
- (8) Attach the air intake hose.
- (9) Disconnect the battery terminal for 10 seconds or more, and then reconnect it.
- (10) Adjust the basic idle speed. (Refer to P.14-63.)



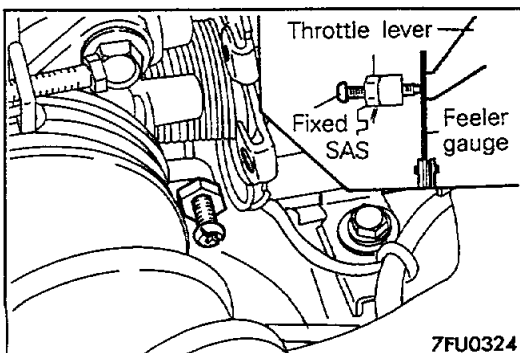
IDLE POSITION SWITCH AND THROTTLE POSITION SENSOR ADJUSTMENT

N14F1A0

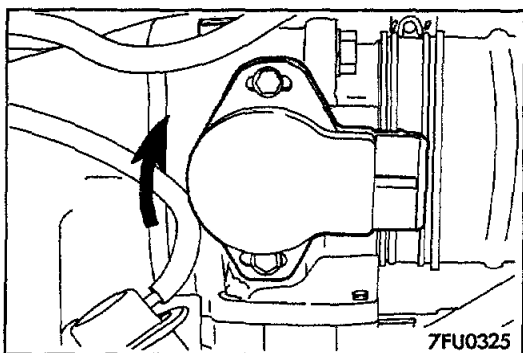
- (1) Loosen the tension of the accelerator cable sufficiently.
- (2) Disconnect the connector of the throttle-position sensor.



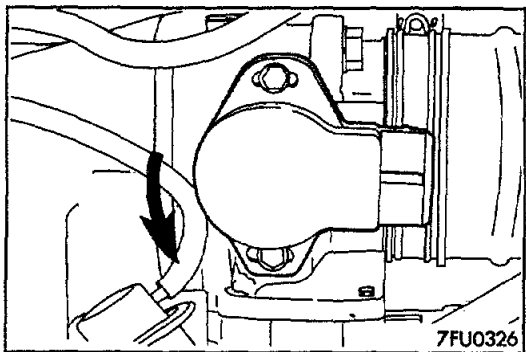
- (3) Using lead wires with alligator clips between terminals (1) and (2), connect an ohmmeter.



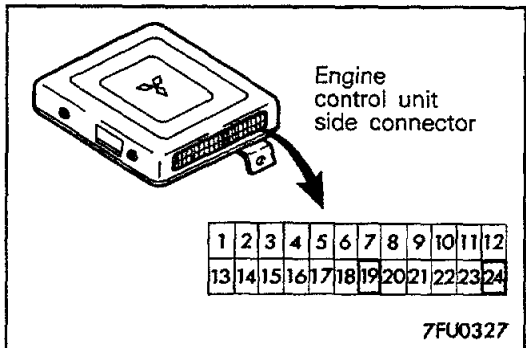
- (4) Insert a feeler gauge with a thickness of 0.65 mm (.0256 in.) between the fixed SAS and the throttle lever.



- (5) Loosen the throttle-position sensor installation screw; then turn fully clockwise.
- (6) In this condition, check for continuity between terminals (1) and (2).



- (7) Slowly turn the throttle-position sensor in the counter-clockwise direction until the point where there is no longer continuity is found; then securely tighten the throttle-position installation screw at this point.
- (8) Connect the connector of the throttle-position sensor.



- (9) Connect a voltmeter between terminal 19 (throttle-position sensor output voltage) of the engine control unit and terminal 24 (ground) or connect the multi-use tester to the diagnosis connector.
- (10) Switch ON the ignition switch (but do not start the engine), and check the output voltage of the throttle-position sensor.

Standard value : 0.4-1.0V

NOTE

If the multi-use tester is used, select item No.14 and read out the throttle-position sensor output voltage.

- (11) If there is a deviation from the standard value, check the throttle-position sensor and the related harness.
- (12) Remove the feeler gauge.
- (13) Switch OFF the ignition switch.
- (14) Adjust the tension of the accelerator cable. (Refer to P.14-103.)

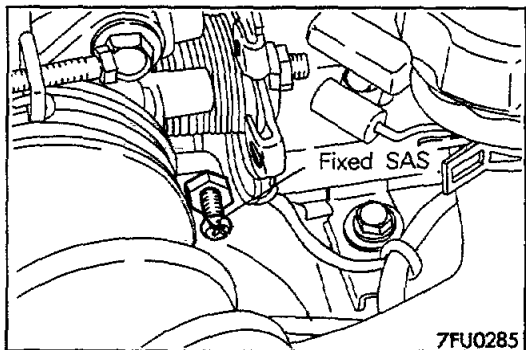
FIXED SAS ADJUSTMENT

N14F1BB

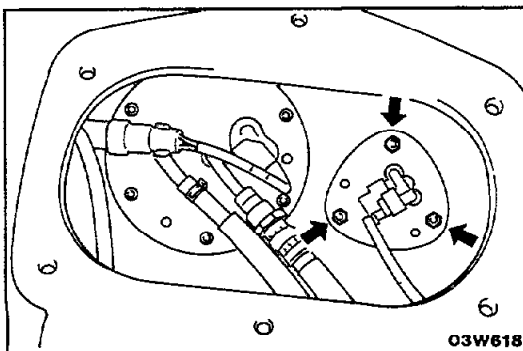
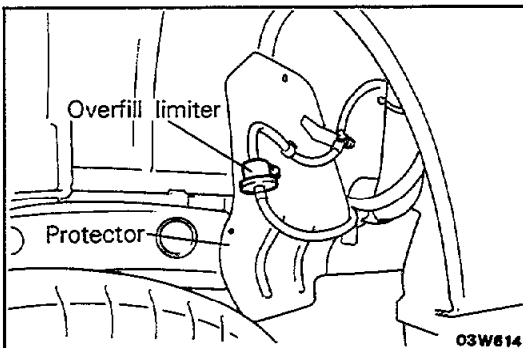
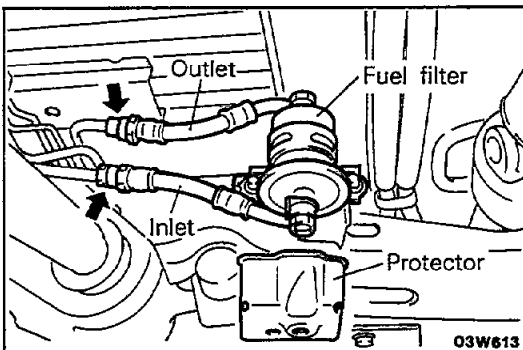
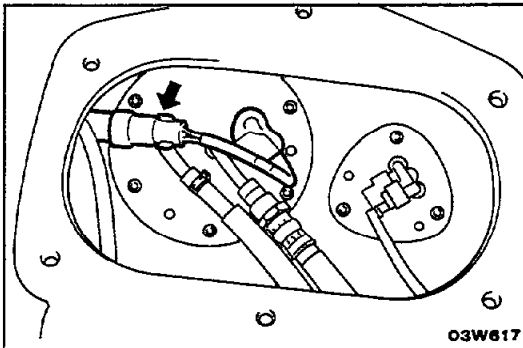
Caution

1. The fixed SAS should not be moved unnecessarily; it has been precisely adjusted by the manufacturer.
2. If the adjustment for any reason is disturbed, readjust as follows.

- (1) Loosen the tension of the accelerator cable sufficiently.
- (2) Loosen the fixed SAS lock nut; then turn the fixed SAS in the counterclockwise direction until the throttle valve is completely closed.



- (3) Begin tightening the fixed SAS; tighten it to a point $1\frac{1}{4}$ turns beyond the point where there is contact to the throttle lever (in other words, to the point where the throttle valve begins to open).
- (4) While holding the fixed SAS so that it doesn't move, tighten the lock nut securely.
- (5) Adjust the tension of the accelerator cable.
- (6) Adjust the idling-position switch and throttle-position sensor. (Refer to P.14-65.)
- (7) Adjust the basic idling speed (SAS).



FUEL PUMP CONNECTOR DISCONNECTION (HOW TO REDUCE THE FUEL LINE INTERNAL PRESSURE)

N14FGAC

Make the following operations to release the pressure remaining in fuel pipe line so that fuel will not flow out.

- (1) Disconnect the fuel pump harness connector at the fuel tank rear side.
- (2) Start the engine and after it stops by itself, turn the ignition switch to OFF.
- (3) Disconnect the battery (–) terminal.
- (4) Connect the fuel pump harness connector.

FUEL FILTER REPLACEMENT

N14FCBI

- (1) Reduce the internal pressure of the fuel pipes and hose
- (2) Remove the protector of the fuel filter.
- (3) Disconnect the connection between the main pipe and the high pressure hose. (Inlet and outlet)
- (4) Disconnect the fuel filter mounting bolt, and then the fuel filter and high-pressure hose assembly

OVERFILL LIMITER (TWO-WAY VALVE) REPLACEMENT

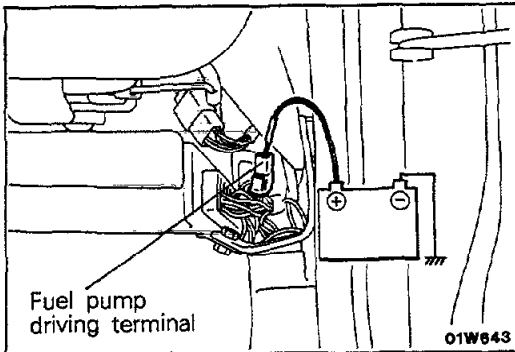
N14FEAG2

- (1) Remove the fuel filter hose protector.
- (2) Disconnect the vapor hoses, and then remove the overfill limiter.

FUEL GAUGE UNIT REPLACEMENT

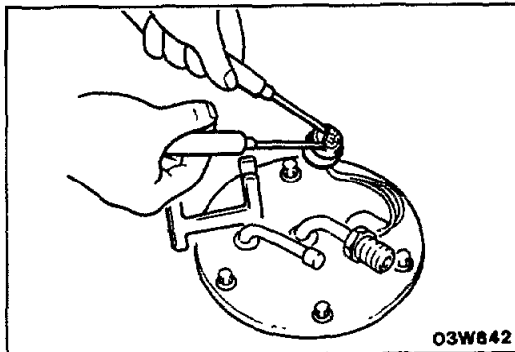
N14FFAJ

- (1) Remove the fuel tank cap and lower the fuel tank's internal pressure.
- (2) Disconnect the harness connector from the fuel gauge unit.
- (3) Remove the fuel tank unit installation nuts, and then remove the fuel gauge unit from the fuel tank.

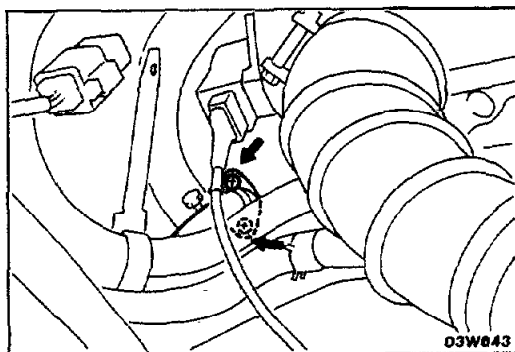
**FUEL PUMP OPERATION CHECK**

N14FDAD

- (1) Connect the (+) battery terminal to the fuel pump drive terminal and the (-) terminal to the chassis. Confirm that the fuel pump operates at this time.



- (2) Disconnect the fuel pump connector.
- (3) Check the terminals, wiring, etc., for damage.
- (4) Using an ohmmeter, check the motor continuity.

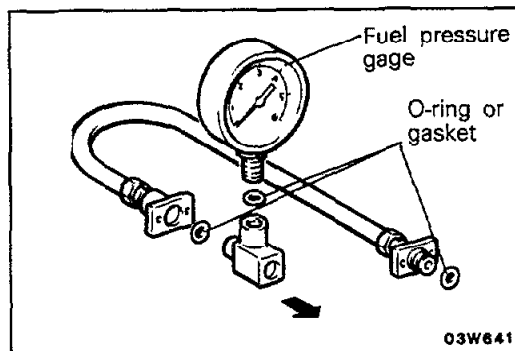
**FUEL PRESSURE MEASUREMENT**

N14FVAD

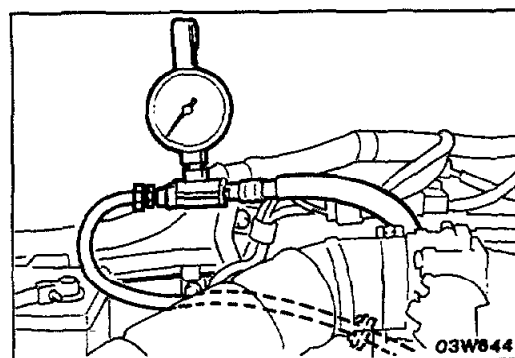
- (1) Reduce the internal pressure of the fuel pipes and hoses. (Refer to P.14-67.)
- (2) Disconnect the fuel high pressure hose at the delivery pipe side.

Caution

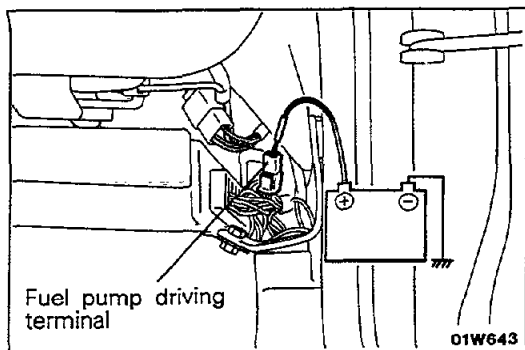
Cover the hose connection with rags to prevent splash of fuel that could be caused by some residual pressure in the fuel pipe line.



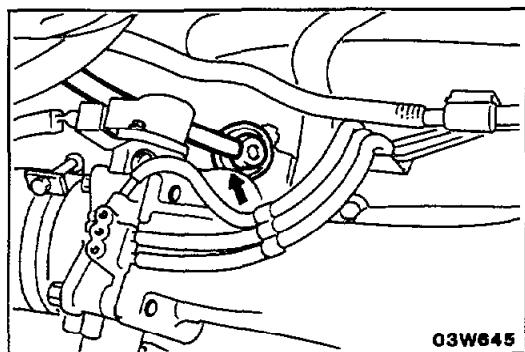
- (3) Set a fuel pressure gage on the special tool, placing an adequate O-ring or gasket between the gage end special tool prevent fuel leaks.



- (4) Attach the special tool set in step (3) to the delivery pipe.
- (5) Connect the (-) battery terminal.



- (6) Apply the battery voltage to the fuel pump drive terminal to run the fuel pump. Confirm that no fuel leaks under pressure around the fuel pressure gage connection areas and special tool.



- (7) Disconnect the pressure regulator vacuum hose. Measure the fuel pressure during idling.
Standard value : 330–370 kPa (47–53 psi)
- (8) Measure the fuel pressure when the vacuum hose is connected to the pressure regulator.
Standard value : 270 kPa (38 psi)
- (9) If the results of the measurements made in steps (7) and (8) above are not within the standard value, use the table below to determine the probable cause, and then make the necessary repair.

Symptom	Probable cause	Remedy
Fuel pressure is lower than standard value	Clogged fuel strainer	Replace fuel strainer
	Faulty pressure regulator	Replace pressure regulator
	Faulty fuel pump	Replace fuel pump
Fuel pressure is higher than standard value	Faulty pressure regulator	Replace pressure regulator
	Clogged fuel return hose or pipe	Clean or replace hose or pipe
Fuel pressure does not vary even if the vacuum hose is connected	Leakage around vacuum hose	Replace the vacuum hose.

- (10) Stop the engine and check the varying reading on the fuel pressure gage. It is correct if the reading does not drop within 2 minutes. If the reading drops, observe the dropping speed. Then, referring to the below table, isolate the cause and repair it.

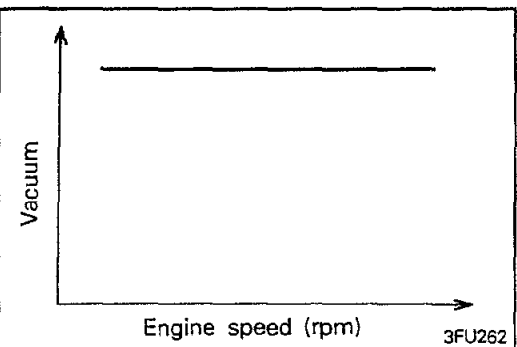
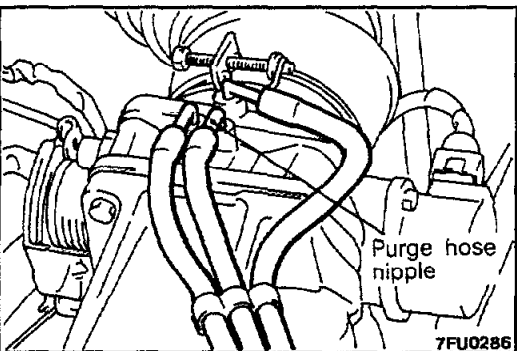
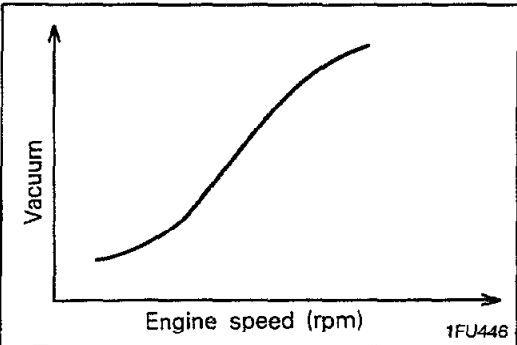
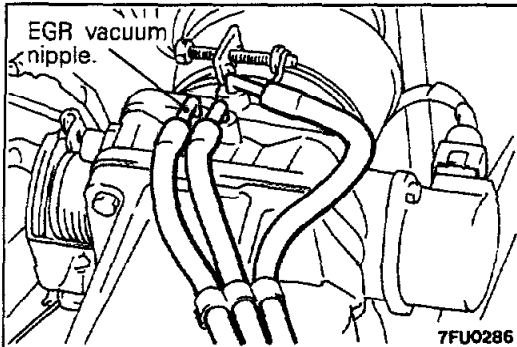
Symptom	Probable cause	Remedy
Fuel pressure drops slowly after engine is stopped	Faulty injector (leaks)	Replace injector
Fuel pressure drops sharply immediately after engine is stopped	Faulty fuel pump (pump inside check valve binding)	Replace fuel pump

- (11) Release residual pressure from the fuel pipe line.
- (12) Disconnect the fuel-pressure gage and the special tools from the delivery pipe.

Caution

Cover the hose connection with rags to prevent splash of fuel that could be caused by some residual pressure in the fuel pipe line.

- (13) Connect the fuel high-pressure hose, and tighten it securely.
- (14) Check for fuel leaks.
 - ① Apply battery voltage to the fuel pump drive terminal to operate the fuel pump.
 - ② With fuel pressure acting, check the fuel line for leaks.

**EGR VALVE CONTROL VACUUM CHECK** N14FVBH**Check Condition**

Engine coolant temperature : 85–95°C (185–205°F)

- (1) Disconnect the vacuum hose from the throttle body EGR vacuum nipple and connect a hand vacuum pump to the nipple.
- (2) Start the engine and check to see that, after raising the engine speed by racing the engine, vacuum raises proportionately with the rise in engine speed.

NOTE

If there is a problem with the change in vacuum, it is possible that the throttle body port may be clogged and require cleaning.

PURGE PORT VACUUM CHECK N14FVBC**Check Condition**

Engine coolant temperature : 85–95°C (185–205°F)

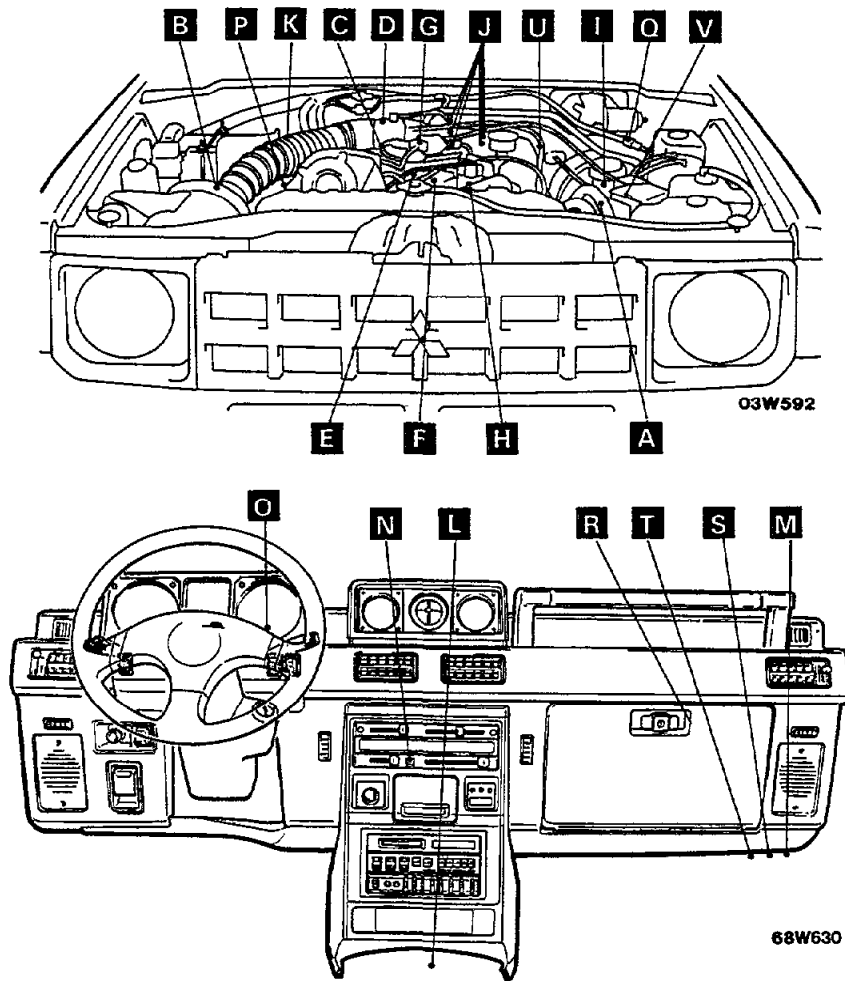
- (1) Disconnect the vacuum hose from the throttle body purge hose nipple and connect a hand vacuum pump to the nipple.
- (2) Start the engine and check to see that, after raising the engine speed by racing the engine, vacuum remains fairly constant.

NOTE

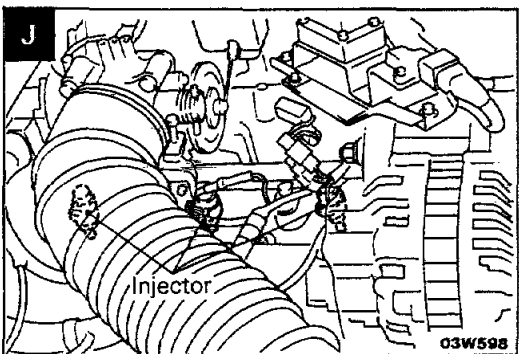
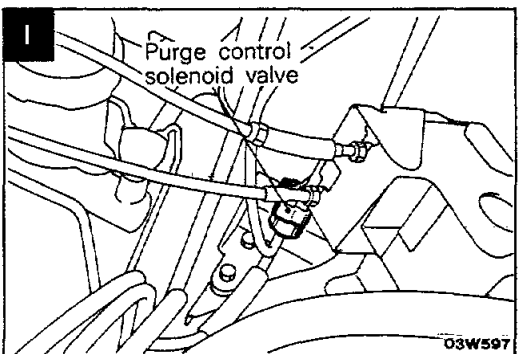
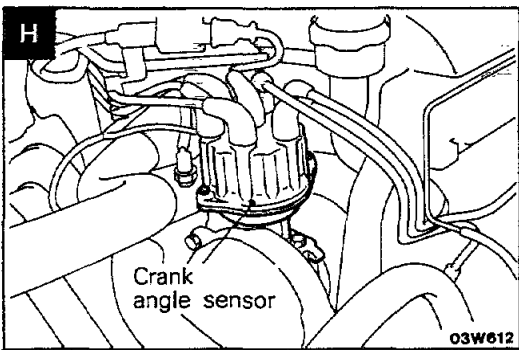
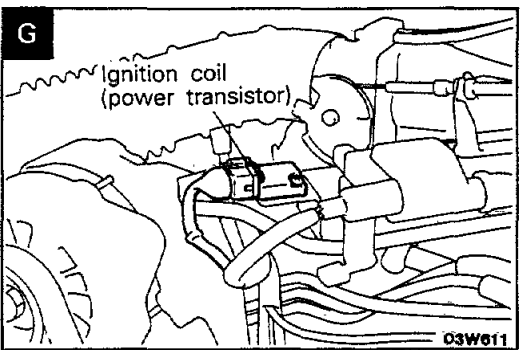
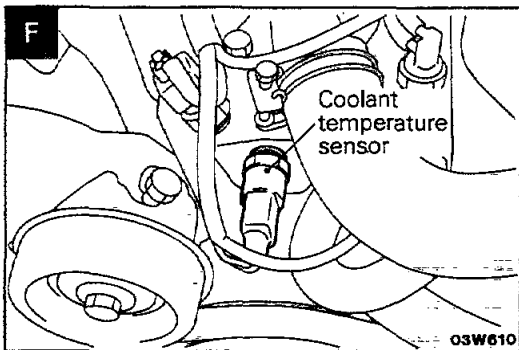
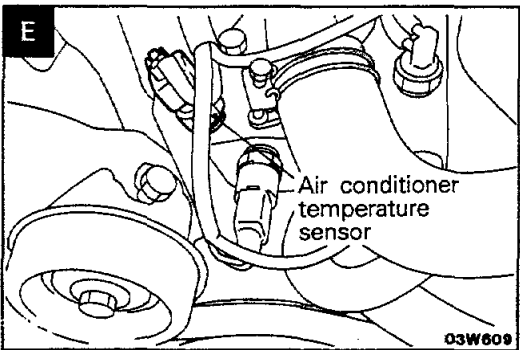
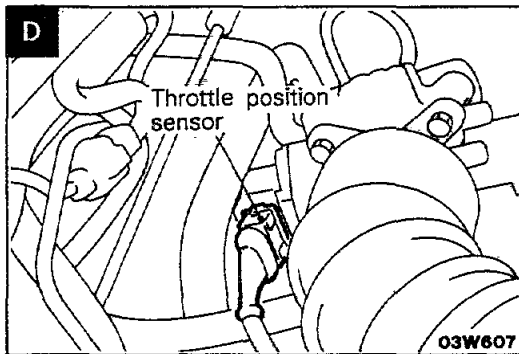
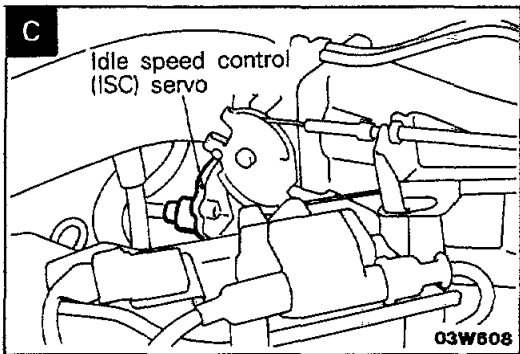
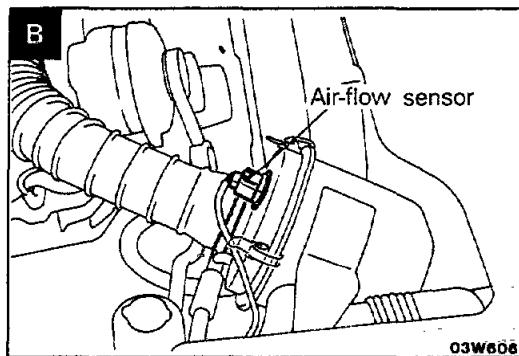
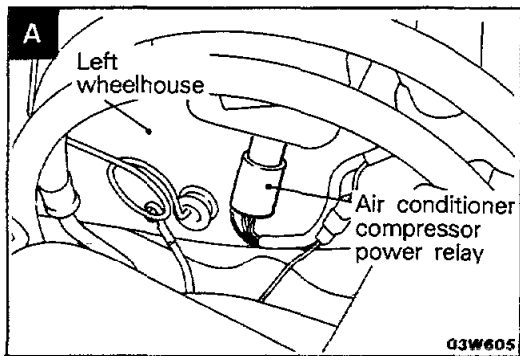
If there is no vacuum created, it is possible that the throttle body port may be clogged and require cleaning.

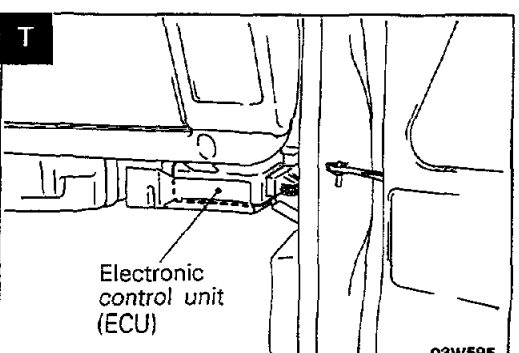
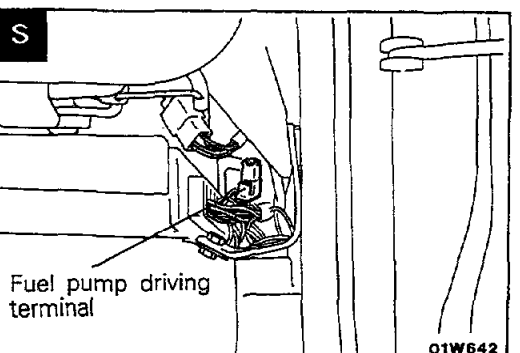
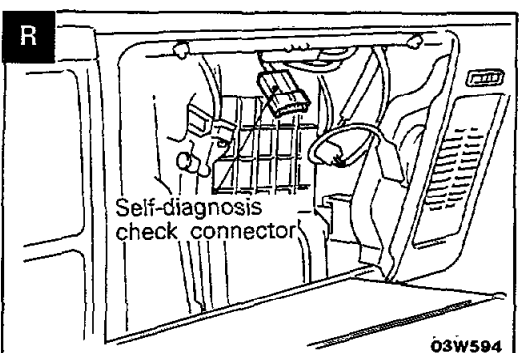
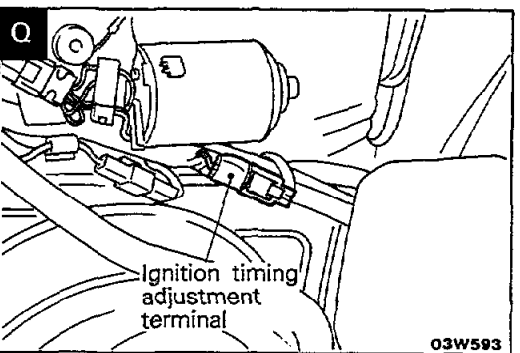
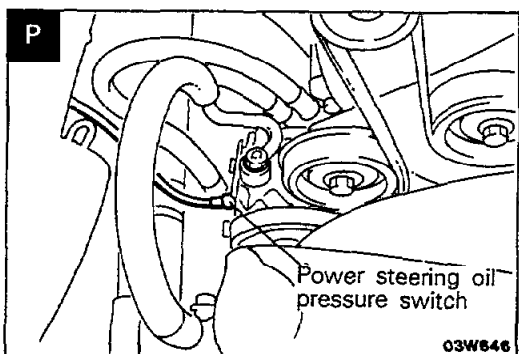
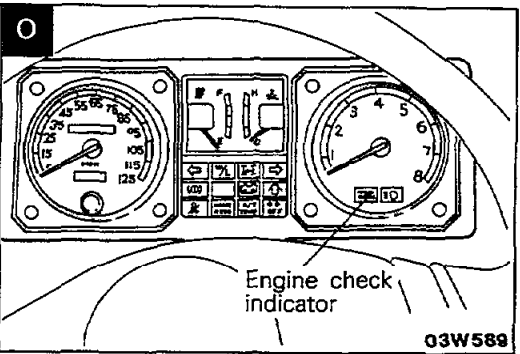
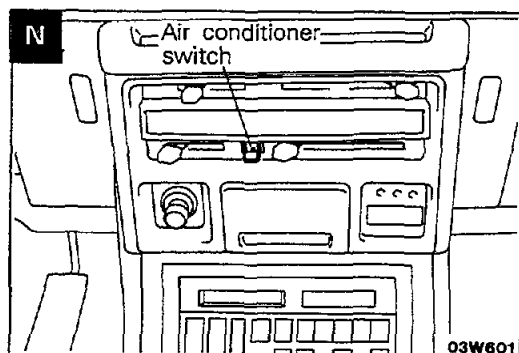
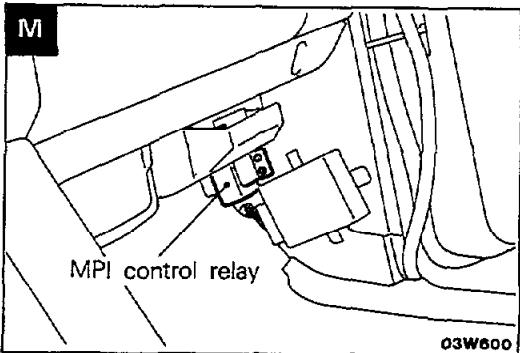
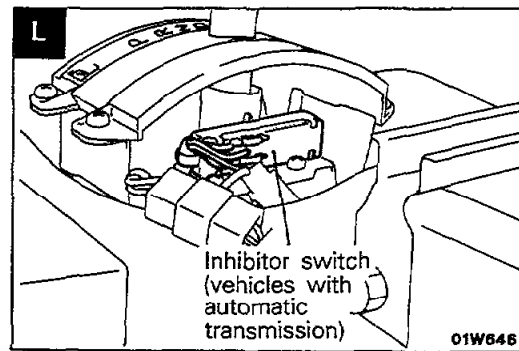
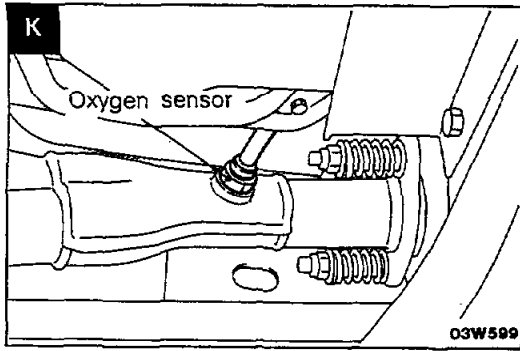
**MPI SYSTEM INSPECTION
COMPONENTS LOCATION**

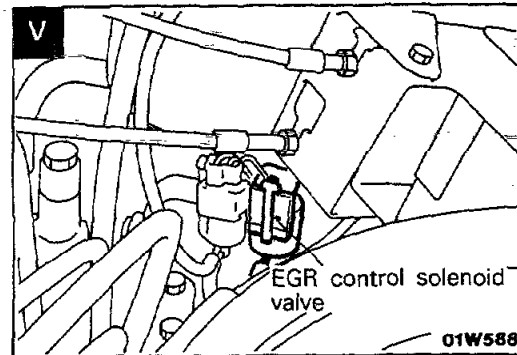
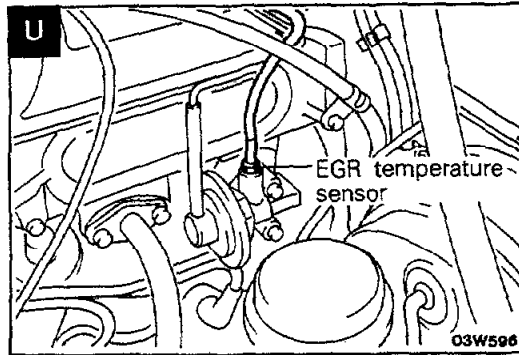
N141B-



Name	Symbol	Name	Symbol
Air conditioner relay	A	Inhibitor switch (Vehicles with automatic transaxle)	L
Air-flow sensor (incorporating intake air temperature sensor and barometric pressure sensor)	B	MPI control relay	M
Idle speed control (ISC) servo	C	Air conditioner switch	N
Throttle position sensor (with idle switch)	D	Engine check indicator	O
Air conditioner temperature sensor	E	Power steering oil pressure switch	P
Engine coolant temperature sensor	F	Ignition timing adjustment terminal	Q
Ignition coil (power transistor)	G	Self-diagnosis check connector	R
Crank angle sensor	H	Fuel pump drive terminal	S
Purge control solenoid valve	I	Electronic control unit	T
Injector	J	EGR temperature sensor	U
Oxygen sensor	K	EGR control solenoid valve <M/T>	V







MALFUNCTION INDICATOR LIGHT

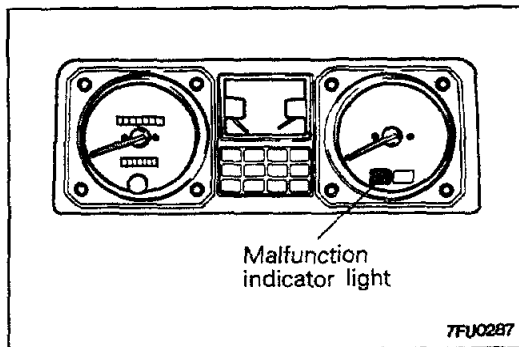
N14POAD

Among the self-diagnosis items, a malfunction indicator light comes on to notify the driver of the emission control items when an irregularity is detected.

However, when an irregular signal returns to normal and the engine control unit judges that it has returned to normal, the malfunction indicator light goes out.

Moreover, when the ignition switch is turned off, the light goes out. Even if the ignition switch is turned on again, the light does not come on until the irregularity is detected.

Here, immediately after the ignition switch is turn on, the malfunction indicator light is lit for 2.5 seconds to indicate that the malfunction indicator light operates normally.



Items indicated by the lightening malfunction light

Computer
Oxygen sensor
Air-flow sensor
Intake air temperature sensor
Throttle position sensor
Engine coolant temperature sensor
Crank angle sensor
Top dead center sensor
Barometric pressure sensor
Injector
Fuel pump
EGR*

* marked is applicable to vehicles for California only.

Malfunction indicator light inspection

(1) When turning on the ignition switch, check that the light comes on:

NOTE

If the light does not come on, check the harness and light for breakage.

SELF-DIAGNOSIS

N14PAAH

The engine control unit monitors the input/output signals (some signals at all times and the others under specified conditions) of the engine control unit.

When it is noticed that an irregularity has continued for a specified time or longer from when the irregular signal is initially monitored, passing a certain number, the engine control unit judges that an irregularity has occurred, memorizes the trouble code, and outputs the signal to the self-diagnosis output terminal.

There are 12 diagnosis items, and the diagnosis results can be read out with a voltmeter or multi-use tester.

Moreover, since memorization of the trouble codes

is backed up directly by the battery, the diagnosis results are memorized even if the ignition key is turned off. The trouble codes will, however, be erased when the battery terminal or the engine control unit connector is disconnected.

Caution

If the sensor connector is disconnected with the ignition switch turned on, the diagnosis code is memorized. In this case, disconnect the battery terminal (-) for 10 seconds or more, and the diagnosis memory will be erased.

The 12 diagnosis items are provided as follows, and if plural items are activated, they are all indicated sequentially from the smallest code number.

Malfunction code	Diagnosis item	Malfunction code	Diagnosis item
11	Oxygen sensor	23	Top dead center sensor
12	Air-flow sensor	24	Vehicle-speed reed switch
13	Intake air temperature sensor	25	Barometric pressure sensor
14	Throttle position sensor	41	Injector
21	Engine coolant temperature sensor	42	Fuel pump
22	Crank angle sensor	43	EGR*

* The diagnosis item marked * is applicable to vehicles for California only.

CHECK PROCEDURE (SELF-DIAGNOSIS)

N14PCAЕ

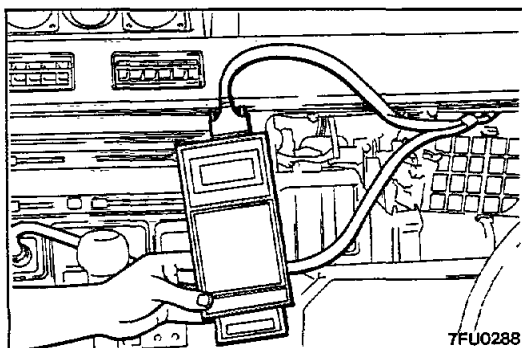
Precautions for operation

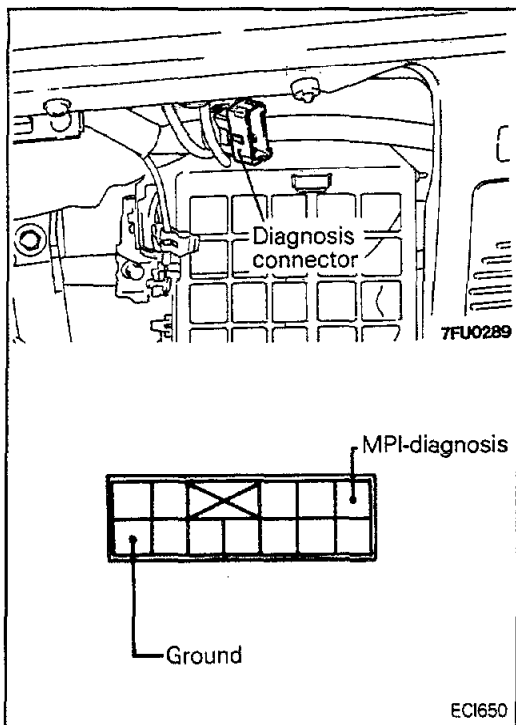
- (1) When battery voltage is low, no detection of failure is possible. Be sure to check the battery for voltage and other conditions before starting the test.
- (2) Diagnosis item is erased if the battery or the engine control unit connector is disconnected. Do not disconnect the battery before the diagnosis result is completely read.
- (3) After check and correction are over, disconnect ground cable for 10 seconds or more from negative terminal of battery and connect it again to make sure that failure code is erased.

INSPECTION PROCEDURE-(USING MULTI-USE TESTER)

N14PCAJ

- (1) Switch OFF the ignition switch.
- (2) Connect the tester side connector of the multi-use tester to the connector for diagnosis (located in the glove box compartment).
- (3) Connect the power-source terminal of the multi-use tester to the cigarette lighter socket.





- (4) Switch ON the ignition switch.
- (5) Use the multi-use tester to check the self-diagnosis codes.
- (6) After completion of the repair or correction of the problem, switch OFF the ignition switch; then disconnect the battery terminals for ten seconds or longer and then, after reconnecting them, check to be sure that no malfunction code is displayed by the multi-use tester.
- (7) Disconnect the multi-use tester.

INSPECTION PROCEDURE-(USING VOLTMETER)

N14PCAG

- (1) Connect an analogue voltmeter to the self-diagnosis connector.
- (2) Turn ignition switch to ON, and indication of engine control unit memory contents will immediately start. If the system is in normal condition, pointer of voltmeter indicates normal pattern. If any abnormality is in memory, the pointer of voltmeter will deflect, indicating abnormal item as described in "Diagnosis Chart".
After recording the abnormal item, check and repair each part according to the check items in "Diagnosis Chart".
- (3) If the defective parts have been repaired, disconnect the negative terminal of battery cable for 10 seconds or more and connect it again to make sure that the abnormal code has been erased.

DIAGNOSIS CHART (FAULT TREE)

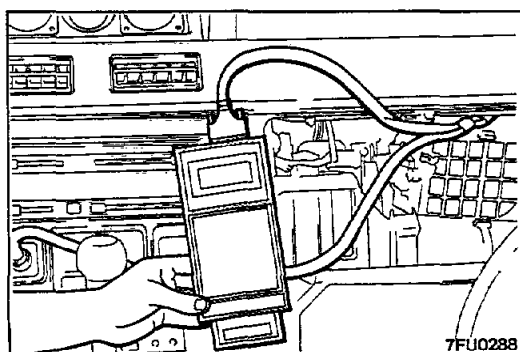
N14PRAH

Output preference order	Diagnosis item	Malfunction code			Check item (Remedy)
		Output signal pattern	No.	Memory	
1	Engine control unit		—	—	(Replace engine control unit)
2	Oxygen sensor		11	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Oxygen sensor ● Fuel pressure ● Injectors (Replace if defective) ● Intake air leaks
3	Air flow sensor		12	Retained	<ul style="list-style-type: none"> ● Harness and connector (If harness and connector are normal, replace air flow sensor assembly.)
4	Intake air temperature sensor		13	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Intake air temperature sensor
5	Throttle position sensor		14	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Throttle position sensor ● Idle position switch
6	Engine coolant temperature sensor		21	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Engine coolant temperature sensor

Output preference order	Diagnosis item	Malfunction code			Check item (Remedy)
		Output signal pattern	No.	Memory	
7	Crank angle sensor	H L	22	Retained	<ul style="list-style-type: none"> ● Harness and connector (If harness and connector are normal, replace Distributor assembly.)
8	Top dead center sensor	H L	23	Retained	<ul style="list-style-type: none"> ● Harness and connector (If harness and connector are normal, replace Distributor assembly.)
9	Vehicle speed sensor (reed switch)	H L	24	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Vehicle speed sensor (reed switch)
10	Barometric pressure sensor	H L	25	Retained	<ul style="list-style-type: none"> ● Harness and connector (If harness and connector are normal, replace barometric pressure sensor assembly.)
11	Injector	H L	41	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Injector coil resistance
12	Fuel pump	H L	42	Retained	<ul style="list-style-type: none"> ● Harness and connector ● Control relay
13	EGR*	H L	43	Retained	<ul style="list-style-type: none"> ● Harness and connector ● EGR thermo sensor ● EGR valve ● EGR valve control solenoid valve <M/T models> ● Thermo valve <A/T models> ● EGR valve control vacuum
14	Normal state	H L	-	-	-

NOTE

1. Replace the engine control unit if a malfunction code is output although the inspection reveals that there is no problem with the check items.
2. *: <California>



CHECKING BY USING THE MULTI-USE TESTER

- (1) Switch OFF the ignition switch.
- (2) Connect the tester side connector of the multi-use tester to the connector for diagnosis (located beside the fuse block).
- (3) Connect the power-source terminal of the multi-use tester to the cigarette lighter socket.
- (4) Switch ON the ignition switch.
- (5) Use the multi-use tester to make the various checks, and repair if a problem is found.

NOTE

If the malfunction indicator lamp (CHECK ENGINE lamp) illuminates while the checks are being made, check the self-diagnosis output.

- (6) After repair, check once again to be sure the problem has been corrected.
- (7) Switch OFF the ignition switch.
- (8) Disconnect the multi-use tester.
- (9) Disconnect the battery terminals for ten seconds or longer. This erases the self-diagnosis code.
- (10) Restart the engine. Check (by a driving test and other means) to be sure that the problem has been corrected.

Checking the cranking (Check when the engine can't be started or when it is started.)

Check items	Check description		Probable cause of malfunction (or action)	
	Check conditions	Normal value		
Power-supply voltage ● Data reading ● Item No. 16	<ul style="list-style-type: none"> ● Ignition switch: ON 	11-13 V	<ul style="list-style-type: none"> ● Low battery voltage ● Power not supplied to the engine control unit (1) Check the power-supply circuit. (2) Check the ignition switch, ignition signal and input circuit. (3) Check the control relay. (4) Check the control relay control circuit. ● Malfunction of the engine control unit earth circuit. 	
Throttle position sensor ● Data reading ● Item No. 14	<ul style="list-style-type: none"> ● Ignition switch: ON ● Throttle valve: idling position (When the Throttle position sensor output voltage is 1200 mV or lower, the engine control unit diagnoses the injector signal.) 	300-1000 mV	<ul style="list-style-type: none"> ● Maladjustment of the throttle position sensor ● Malfunction of the throttle position sensor or related circuitry 	
Self-diagnosis output	<ul style="list-style-type: none"> ● Crank the engine for four seconds or longer. ● Ignition switch: ON (Check for injector or top dead center sensor circuitry disconnection or damage.) 	Normal	<ul style="list-style-type: none"> ● Check in accordance with the diagnosis code. (Note that the diagnosis code will be erased if there is disconnection or damage of the engine control unit back-up power-supply circuit.) ● If various diagnosis codes are output, the most frequent cause is damage or disconnection of the power-supply or earth circuit. 	
Fuel pump ● Actuator test ● Item No. 7	<ul style="list-style-type: none"> ● Make the test with relation to both engine cranking and fuel pump forced actuation. 	Pinch closed the return hose. Listen close to the fuel tank.	The pulsations of fuel flow can be felt by the finger. The pump operation sound can be heard.	<ul style="list-style-type: none"> ● Power is not supplied to the fuel pump. (1) Check the ignition switch (IG and ST). (2) Check the control relay. (3) Check related circuitry. ● Fuel pump malfunction
Ignition switch – ST ● Data reading ● Item No. 18	<ul style="list-style-type: none"> ● Ignition switch: ON 	Engine stopped Cranking	OFF ON	<ul style="list-style-type: none"> ● Ignition switch – ST signal circuit check ● Ignition switch check

Check items	Check description			Probable cause of malfunction (or action)
	Check conditions		Normal value	
Top dead center sensor ● Data reading ● Item No. 22	● Engine cranking ● Tachometer connection (Use the tachometer to check the cut-off of the ignition coil's primary currents.)	Cranking rpm	rpm	● If the tachometer's indicated read-out is 0, there is no cut-off of the ignition coil primary currents. (1) Check the power transistor unit and control circuit. (2) Check the ignition coil and the coil power-supply circuit. ● If the multi-use tester rpm. read-out is abnormal (1) Malfunction of the top dead center sensor circuit (2) Malfunction of the top dead center sensor (3) Malfunction of the timing belt
		Approx. 200	Approx. 200	
Injector ● Data reading ● Item No. 41	● Engine cranking	Listen for operation sound.	Operation sound of injector is audible.	● Injector malfunction ● Improper contact of connector and relay contacts ● Engine coolant temperature sensor malfunction ● Ignition switch ST malfunction
		Coolant temperature °C (°F)	Actuation time *2 (msec)	
		0 (32) *1	Approx. 14	
		20 (68)	Approx. 40	
		80 (176)	Approx. 9	

Checking the sensors

Check items	Check description			Probable cause of malfunction (or action)
	Check conditions		Normal value	
Self-diagnosis output	● Engine: idling (2 minutes or more after engine start)		Normal	● Check in accordance with the diagnosis code. (Note that the diagnosis code will be erased if there is disconnection or damage of the engine control unit back-up power-supply circuit.) ● If various diagnosis codes are output, the most frequent cause is damage or disconnection of the power-supply or earth circuit.
Oxygen sensor ● Data reading ● Item No. 11	● Engine warm-up (Make the mixture lean by engine speed reduction, and rich by racing.)	Engine condition	Voltage (mV)	● If the oxygen sensor output voltage is high during sudden deceleration (1) Check for injector leakage. (2) Check the oxygen sensor signal circuit. ● If the oxygen sensor output voltage is low during engine racing (1) Check the oxygen sensor and signal circuit.
		When sudden deceleration from 4,000 rpm	200 or lower	
		When engine is suddenly raced	600–1,000	

NOTE

*1: When the engine coolant temperature is 0°C (32°F), injectors inject simultaneously at 6 cylinders.

*2: Injector activation times are indicated at a battery voltage of 11V and a cranking speed of 250 rpm or lower.

Check items	Check description			Probable cause of malfunction (or action)
	Check conditions		Normal value	
Oxygen sensor <ul style="list-style-type: none"> • Data reading • Item No. 11 	<ul style="list-style-type: none"> • Engine warm-up (Using the oxygen sensor signal, check the air/ fuel mixture ratio, and also check the condition of control by the engine control unit.) 	Engine speed (rpm.)	Voltage (mV)	<ul style="list-style-type: none"> • If the oxygen sensor signal is normal, the engine control unit is regulating the air/ fuel mixture ratio normally. • If the oxygen sensor output voltage is low at all times, check whether or not there is intake of air. • If the oxygen sensor output voltage is high at all times, check for leakage of the injector.
		700 (idle)	400 or lower	
Air flow sensor <ul style="list-style-type: none"> • Data reading • Item No. 12 	<ul style="list-style-type: none"> • Engine warm-up 	Engine condition	Frequency (Hz)	<ul style="list-style-type: none"> • If the air flow sensor output frequency suddenly changes greatly, improper contact of the air flow sensor or connector is probable. • If the output frequency of the air flow sensor is unusually high or low, check the air cleaner element. • If the output frequency of the air flow sensor is high, an increase of engine resistance or leakage of compression pressure is probable.
		700 rpm (Idling)	25–45	
		2,000 rpm	85–105	
		Racing	Increase caused by racing	
Intake air temperature sensor <ul style="list-style-type: none"> • Data reading • Item No. 13 	<ul style="list-style-type: none"> • Ignition switch: ON, or engine running 	Intake-air temperature °C (°F)	Temperature °C (°F)	<ul style="list-style-type: none"> • Malfunction of intake air temperature sensor or related circuitry
		–20 (–4)	–20 (–4)	
		0 (32)	0 (32)	
		20 (68)	20 (68)	
		40 (104)	40 (104)	
		80 (176)	80 (176)	
	<ul style="list-style-type: none"> • Ignition switch: ON 	Warm by using hair dryer or other method.	Increases.	
Throttle position sensor <ul style="list-style-type: none"> • Data reading • Item No. 14 	<ul style="list-style-type: none"> • Ignition switch: ON 	Throttle valve	Voltage (mV)	<ul style="list-style-type: none"> • Throttle position sensor maladjustment • Throttle position sensor or related circuitry malfunction • If there is any indication that the fixed SAS has been moved, adjust the fixed SAS.
		Idling position	300–1000	
		Opens slowly.	Becomes higher in proportion to valve opening.	
		Fully open	4,500–5,500	
Ignition switch – ST <ul style="list-style-type: none"> • Data reading • Item No. 18 	<ul style="list-style-type: none"> • Ignition switch: ON 		OFF	<ul style="list-style-type: none"> • Ignition switch – ST signal circuit check • Ignition switch check

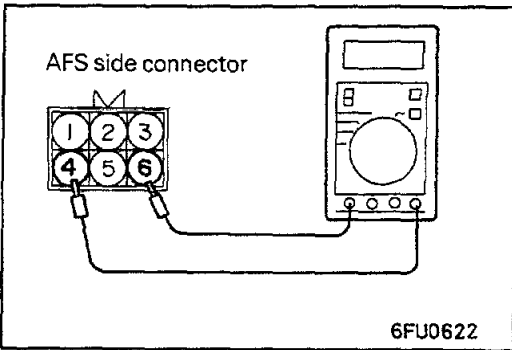
Check items	Check description			Probable cause of malfunction (or action)
	Check conditions		Normal value	
Engine coolant temperature sensor ● Data reading ● Item No. 21	● Ignition switch: ON, or engine running	Coolant temperature °C (°F)	Temperature °C (°F)	● Engine coolant temperature sensor or related circuitry malfunction
		-20 (-4)	-20 (-4)	
		0 (32)	0 (32)	
		20 (68)	20 (68)	
		40 (104)	40 (104)	
		80 (176)	80 (176)	
Top dead center sensor ● Data reading ● Item No. 22	● Engine: idling (Check with the Idle position switch ON.)	Coolant temperature °C (°F)	Idling rpm	● If the rpm suddenly becomes greater a malfunction of the crank angle sensor or improper contact of the connector is probable. ● If the rpm is low when cold, clogging of the fast-idling air valve is probable.
		-20 (-4)	1,450-1,650	
		0 (32)	1,250-1,450	
		20 (68)	1,050-1,250	
		40 (104)	850-1,050	
		80 (176)	600-800	
Barometric pressure sensor ● Data reading ● Item No. 25	● Ignition switch: ON	Altitude m (ft.)	Pressure mm Hg	● Barometric pressure sensor or related circuitry malfunction. (If the barometric pressure sensor pressure is low at high speed, clogging of the air cleaner element is probable.)
		0 (0)	760	
		600 (1,969)	710	
		1,200 (3,937)	660	
		1,800 (5,906)	610	
	● Engine: racing at 2,000 rpm	Gradually close the air-intake duct by using a hand.	Decreases.	
Idle position switch ● Data reading ● Item No. 26	● Ignition switch: ON (Checking by using the accelerator pedal several times.)	Throttle valve idling position	ON	● Idle position switch or related circuitry malfunction ● Improper adjustment of the accelerator cable or the auto-cruise cable ● Idling-position switch: improper adjustment.
		Open the throttle valve slightly.	OFF	
Power steering oil pressure switch ● Data reading ● Item No. 27	● Engine: idling	Steering wheel neutral position (wheels straight-ahead direction)	OFF	● Power steering oil pressure switch or signal circuit malfunction
		Steering wheel half turn	ON	

Check items	Check description		Probable cause of malfunction (or action)	
	Check conditions	Normal value		
Air conditioner switch ● Data reading ● Item No. 28	● Engine: idling (The air conditioner compressor could be activated when the air conditioner switch is ON.)	Air conditioner switch "OFF"	OFF	● Check air conditioner system.
		Air conditioner switch "ON"	ON	
EGR temperature sensor (California only) ● Data reading ● Item No. 43	● Engine: warmed up (Engine is maintained in a constant state for 2 minutes or more.)	Engine condition	Temperature °C (°F)	● Check the EGR temperature sensor. ● Check the EGR control system. ● Check the EGR valve. ● Check the thermo valve (A/T models only) ● Check the EGR control solenoid valve (M/T models only) ● Check the EGR control vacuum.
		700 (idling)	100°C (212°F) or lower	
		● Intake air temperature: 10–40°C (50–104°F) ● Water temperature: 70°C (158°F) or higher ● While driving continuously for more than 30 seconds at a vehicle speed of 80–90 km/h (50–56 mph)	120°C (248°F) or higher	

Checking the actuator

Check items	Check description		Probable cause of malfunction (or action)	
	Check conditions	Normal value		
Injectors ● Actuator test ● Item No. 1-4	● Engine: warmed up (Cut off the injectors in sequence during idling after engine warm-up; check the idling condition of a cylinder that doesn't change.)	Injector No.	Engine	● If the idling condition of one cylinder doesn't change, check that cylinder. (1) Check the injector operation sound. (2) Check the spark plug and high-tension cable. (3) Check the power transistor unit and control circuit.
		1	Idling condition changes more. (Becomes more unstable, or engine stalls.)	
		2		
		3		
		4		
		5		
6				
Injector ● Data reading ● Item No. 41	● Engine: warmed up	Engine condition	Actuation time (msec.)	● If the injector activation times is unusually long or short, there is a malfunction of the air-flow sensor, Engine coolant temperature sensor, intake air temperature sensor, or barometric pressure sensor. ● If the injector activation time is long, increased engine resistance or leakage of compression pressure is probable.
		700 rpm (Idling)	2,7–3,2	
		2,000 rpm	2,4–2,9	
		Rapid racing	Increases.	

Check items	Check description		Probable cause of malfunction (or action)		
	Check conditions	Normal value			
Ignition advance (power transistor) ● Data reading ● Item No. 44	<ul style="list-style-type: none"> ● Engine: warmed up ● Timing light: set (The timing light is set so as to check the actual ignition timing.) 	Engine rpm	Ignition advance (°BTDC)	<ul style="list-style-type: none"> ● If the ignition advance and actual ignition timing are different, adjust the ignition timing. [The ignition timing may fluctuate during idling, but this is not a problem. The advance is greater (approx. 5°) at high altitude.] 	
		700 (Idling)	13-20		
		2,000	38-42		
Stepper motor ● Data reading ● Item No. 45	<ul style="list-style-type: none"> ● Engine: idling after warm-up (Idle position switch must be ON.) <p>(The compressor clutch should be activated when the air conditioner switch is ON.)</p>	Engine condition	Step	<ul style="list-style-type: none"> ● If the number of steps increases to 100 or 120 or decreases to 0, a malfunction of the stepper motor or the activation circuit is probable. ● If the number of steps is small, check whether or not air is being sucked in. ● If the number of steps is large, either of the following is probable: (1) Deposits adhered to the throttle valve part (2) Increased engine resistance ● If the number of steps is abnormal even though the engine is normal, adjust the basic idle speed. 	
		700 rpm (Idling)	2-12		
		Air conditioner switch ON (900 rpm)	30-70		<ul style="list-style-type: none"> ● Check the air conditioner system. ● If the engine speed does not increase when the air conditioner switch is switched from OFF to ON, check the stepper motor or the activation circuit.
		Air-conditioner switch ON shift lever "D" range (650 rpm)	20-60		<ul style="list-style-type: none"> ● Check the inhibitor switch and the signal circuit.
Air conditioner relay ● Data reading ● Item No. 49	<ul style="list-style-type: none"> ● Engine: idling after warm-up 	Air conditioner switch	Air conditioner relay	<ul style="list-style-type: none"> ● If the air conditioner relay output is abnormal, check the air conditioner signal input circuit and the air conditioner system. ● If the activation of the air conditioner compressor clutch is not normal, check the compressor clutch and the relay circuit. 	
		OFF	OFF (compressor clutch non-activation)		
		ON	ON (compressor clutch activation)		
Purge control solenoid valve ● Actuator test ● Item No. 8	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine Stop) 	Actuator forced actuation	Operation sound audible during activation	<ul style="list-style-type: none"> ● Check the purge control solenoid valve ● Check the purge control solenoid valve drive circuit. 	
EGR control solenoid valve (M/T models only)	<ul style="list-style-type: none"> ● Ignition switch: ON (Engine stop) 	Actuator forced actuation	Operation sound audible during activation	<ul style="list-style-type: none"> ● Check the EGR control solenoid valve ● Check the EGR control solenoid valve drive circuit 	



AIR-FLOW SENSOR

N14QGAD

BAROMETRIC PRESSURE SENSOR

Use multi-use tester for inspection. (Refer to P.14-75.)

INTAKE AIR TEMPERATURE SENSOR INSPECTION

N14QHAB

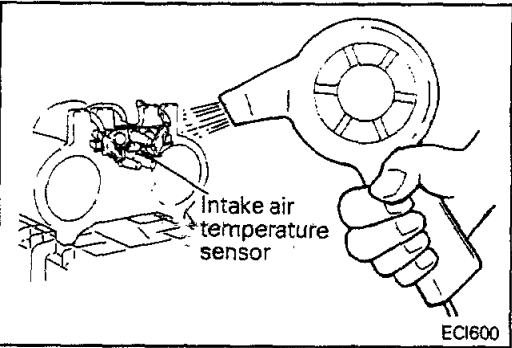
- (1) Disconnect the air-flow sensor connectors.
- (2) Measure resistance between terminals ④ and ⑥.

Temperature °C (°F)	Resistance (kΩ)
0 (32)	6.0
20 (68)	2.7
80 (176)	0.4

- (3) Measure resistance while heating the sensor using a hair drier.

Temperature °C (°F)	Resistance (kΩ)
Higher	Smaller

- (4) If the value deviates from the standard value or the resistance remains unchanged, replace the air-flow sensor assembly.



ENGINE COOLANT TEMPERATURE SENSOR

N14QABB

INSPECTION

- (1) Remove engine coolant temperature sensor from the intake manifold.
- (2) With temperature sensing portion of engine coolant temperature sensor immersed in hot water check resistance. The sensor should be held with its housing 3 mm (.12 in.) away from the surface of the hot water.

Temperature °C (°F)	Resistance (kΩ)
0 (32)	5.9
20 (68)	2.5
40 (104)	2.7
80 (176)	0.3

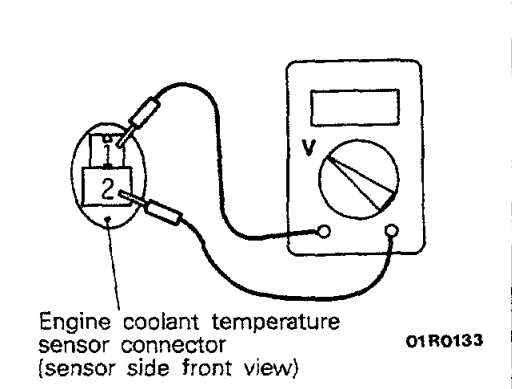
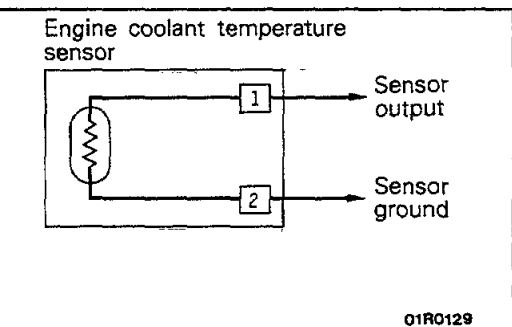
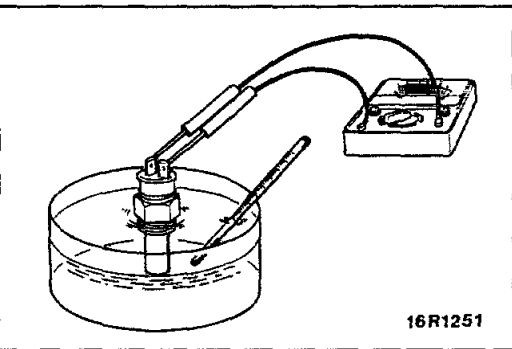
- (3) If the resistance deviates from the standard value greatly replace the sensor.

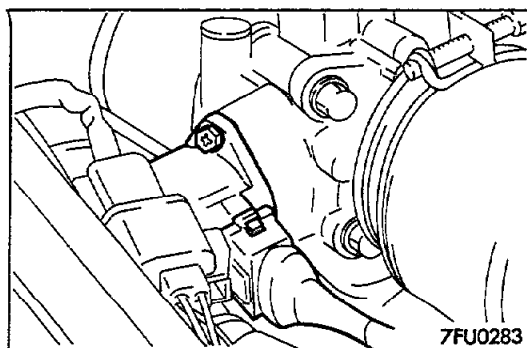
INSTALLATION

- (1) Apply sealant 3M NUT locking No. 4171 or equivalent to threaded portion.
- (2) Install coolant temperature sensor and tighten it to specified torque.

Sensor tightening torque : 20–40 Nm (15–29 ft.lbs.)

- (3) Fasten harness connectors securely.

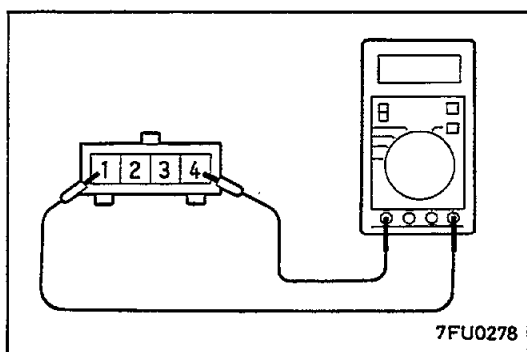




THROTTLE POSITION SENSOR INSPECTION

N14QBBH

(1) Disconnect the throttle position sensor connector.

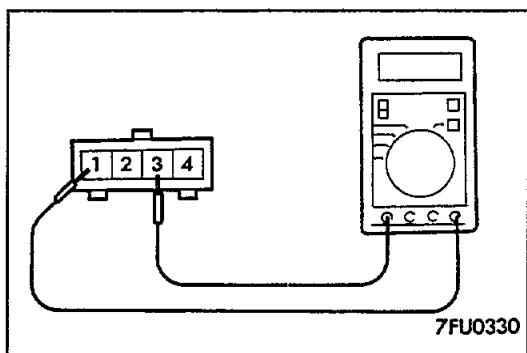


(2) Measure resistance between terminal 1 (sensor earth) and terminal 4 (sensor power).

Standard value : 3.5–6.5 kΩ

(3) Correct a pointer type ohmmeter between terminal 1 (sensor earth) and terminal 3 (sensor output).

(4) Operate the throttle valve slowly from the idle position to the full open position and check that the resistance changes smoothly from in proportion with the throttle valve opening angle.



(5) If the resistance is out of specification, or fails to change smoothly, replace the throttle position sensor.

Throttle position sensor installation torque : 1.5–2.5 Nm (1.1–1.8 ft.lbs.)

For the Idle position switch and throttle position sensor adjusting procedure, refer to P.14-65.

IDLE POSITION SWITCH INSPECTION

N14QKAF

(1) With the accelerator pedal released, check to be sure that the throttle valve lever or the fixed SAS is pushed.

NOTE

If it is not pushed, adjust the fixed SAS (Refer to P.14-66.)

(2) Disconnect the throttle position sensor connector.

(3) Check the continuity across the throttle position sensor connector terminal 1 (Sensor earth) and 2 (Idle position switch).

Accelerator pedal	Continuity
Depressed	Non-conductive ($\infty\Omega$)
Released	Conductive (0Ω)

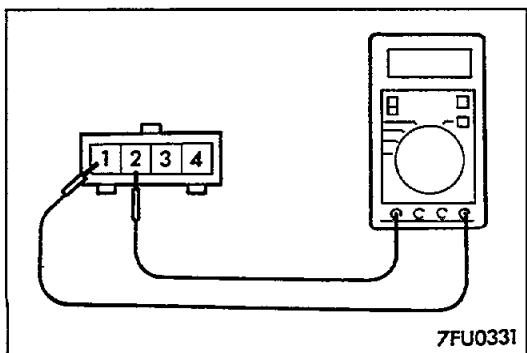
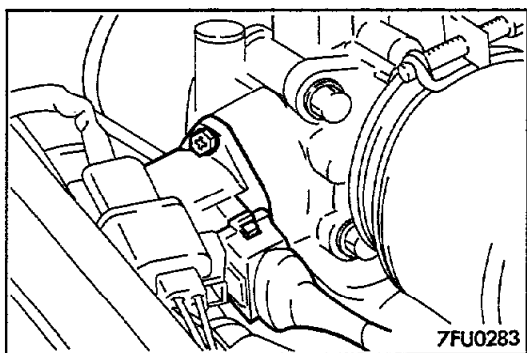
NOTE

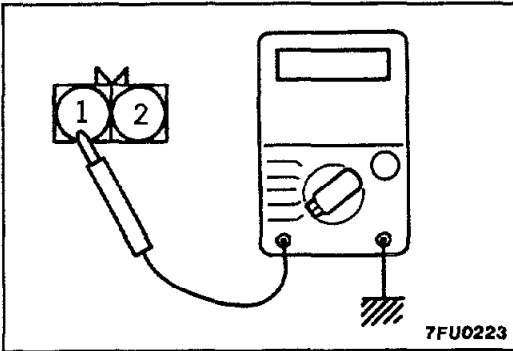
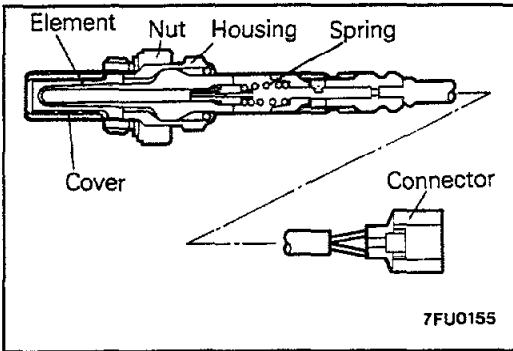
If there is no continuity when the accelerator pedal is returned, loosen the throttle-position sensor installation screw; then, after turning all the way in the clockwise direction, check again.

(4) Replace the throttle-position sensor (idling-position switch incorporated) if there is a malfunction.

NOTE

For replacement procedure, refer to the idle position switch and throttle position sensor adjustment section (P.14-65).





OXYGEN SENSOR

N14QDBG

Caution

1. Before checking, warm up the engine until engine coolant temperature reaches 85 to 95°C (185 to 205°F).
2. Use an accurate digital voltmeter.

INSPECTION

- (1) Disconnect the oxygen sensor connector and connect a voltmeter to the oxygen sensor connector.
- (2) While repeating engine racing, measure the oxygen sensor output voltage.

Engine	Oxygen sensor output voltage	Remarks
Race	Approx. 1V	Make air-fuel mixture rich by accelerator operation

INSTALLATION

1. For removal and installation of oxygen sensor, refer to GROUP 15.
2. Oxygen sensor tighten to specified torque
Specified torque : 40–50 Nm (29–36 ft.lbs.)

TOP DEAD CENTER SENSOR

N14RCEH

CRANK ANGLE SENSOR

Use multi-use tester for inspection. (Refer to P.14-75.)

EGR TEMPERATURE SENSOR (California only)

N14RCHC

Refer to GROUP 25 – Exhaust Gas Recirculation System.

VEHICLE SPEED SENSOR

N14QEBB_a

Refer to GROUP 8 – Meters and Gauges.

AIR CONDITIONER SWITCH

N14QOAB_a

Refer to GROUP 8 – Column Switch.

INHIBITOR SWITCH

N14QRAC_a

Refer to GROUP 21 – Service Adjustment Procedure.

POWER STEERING OIL PRESSURE SWITCH

N14RCJB_a

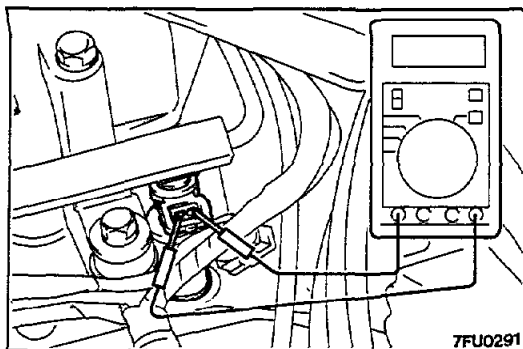
Refer to GROUP 19 for power steering system inspection.

INJECTORS

N14QTAJ

OPERATIONAL CHECK

- (1) Using the multi-use tester, conduct the check procedures described below.
 - ① Cut off the injector fuel injection one after another in sequence.
 - ② Check the injector activation time.
(Refer to the section concerning checking by using the multi-use tester.)

**MEASUREMENT OF RESISTANCE BETWEEN TERMINALS**

- (1) Disconnect the connector for the injectors.
- (2) Measure the resistance between terminals.

Standard value : 13–16 Ω at 20°C (68°F)

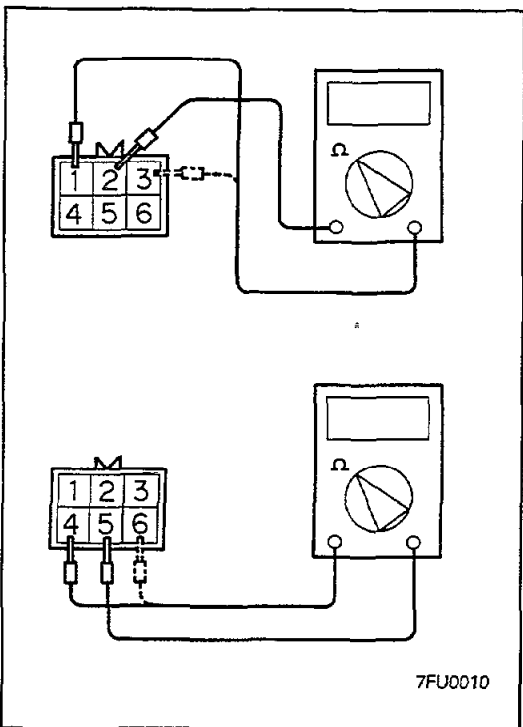
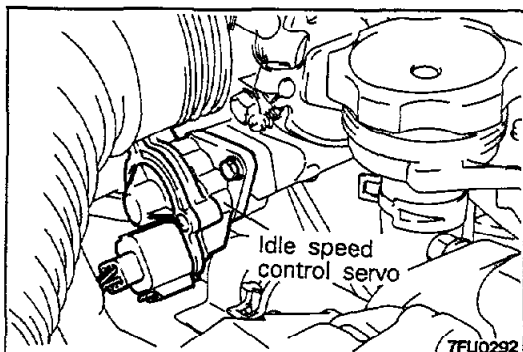
- (3) Connect the connector for the injectors.

IDLE SPEED CONTROL SERVO (STEPPER MOTOR)

N14QUAG

Checking the operation sound

- (1) Check to be sure that the sound of operation of the stepper motor can be heard from the Idle speed control servo when the ignition switch is switched ON (without starting the engine).
- (2) If the operation sound cannot be heard, check the stepper motor actuation circuit.
(If the circuit is normal, the probable cause is a malfunction of the stepper motor or of the Engine control unit.)
- (3) Using the multi-use tester, check the relationship between the stepper motor's step and the engine rpm.
(Refer to the sub section "Actuator" or the section concerning checking by the multi-use tester.)

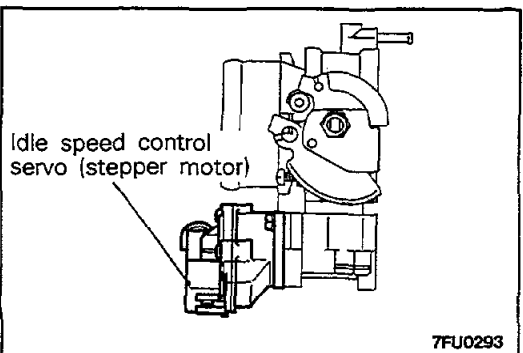
**Checking the coil resistance**

- (1) Disconnect the Idle speed control servo connector and connect the special tool (test harness).
- (2) Measure the resistance between terminal ② (white clip of the special tool) of the connector at the Idle speed control servo side and terminal ① (red clip) or terminal ③ (blue clip).

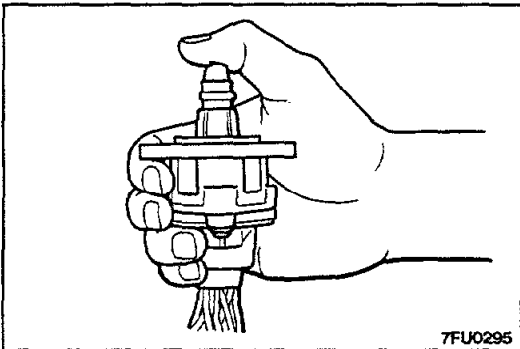
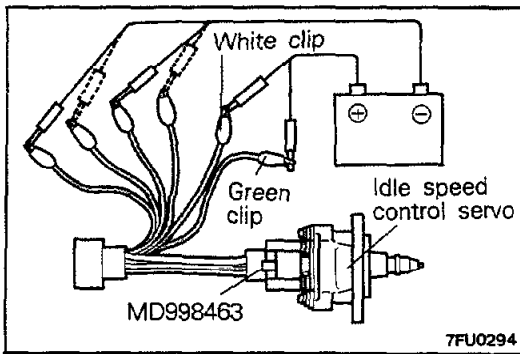
Standard value : 28–33 Ω [at 20°C (68°F)]

- (3) Measure the resistance between terminal ⑤ (green clip of the special tool) of the connector at the Idle speed control servo side and terminal ⑥ (yellow clip) or terminal ④ (black clip).

Standard value : 28–33 Ω [at 20°C (68°F)]

**Checking the operation**

- (1) Remove the throttle body.
- (2) Remove the stepper motor.



- (3) Connect the special tool (test harness) to the Idle speed control servo connector.
- (4) Connect the positive \oplus terminal of a power source (approx. 6V) to the white clip or the green clip.
- (5) Holding the Idle speed control servo as shown in the illustration, connect the negative \ominus terminal of the power source to each clip in the sequence described below, and check whether or not there is vibration (a feeling of very slight shaking of the stepper motor) as a result of activation of the stepper motor.
 - ① Connect the negative \ominus terminal of the power source to the red and yellow clips.
 - ② Connect the negative \ominus terminal of the power source to the red and yellow clips.
 - ③ Connect the negative \ominus terminal of the power source to the red and black clips.
 - ④ Connect the negative \ominus terminal of the power source to the blue and black clips.
 - ⑤ Connect the negative \ominus terminal of the power source to the blue and yellow clips.
 - ⑥ Repeat the test in the reverse (⑤-①) sequence.
- (6) If, as a result of this test, vibration is felt, the stepper motor can be considered to be normal.

CONTROL RELAY

N14QYAC

INSPECTION

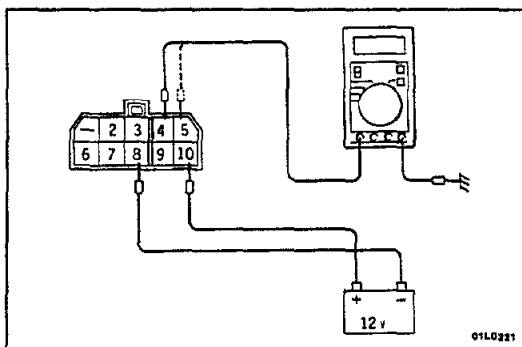
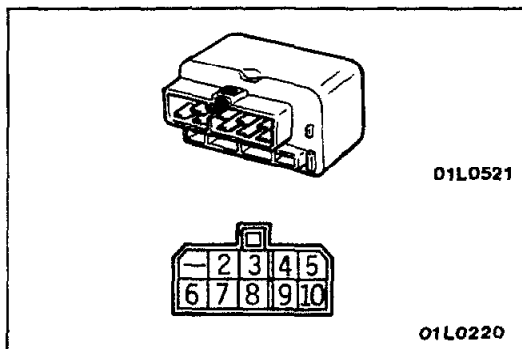
Caution

When applying battery voltage directly, make sure that it is applied to correct terminal. Otherwise, the relay could be damaged.

NOTE

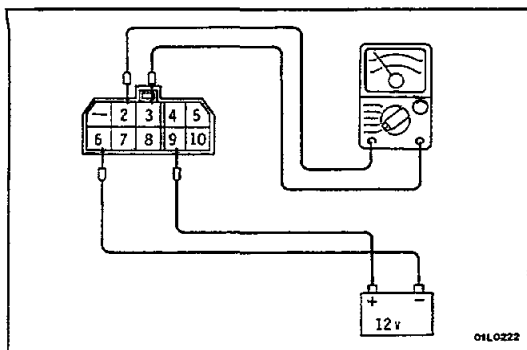
Failure of the control relay prevents power supply to the fuel pump, injectors, engine control unit, resulting in start failure.

- (1) Remove the cover under the glove box and the glove box.
- (2) Disconnect the control relay and connector.



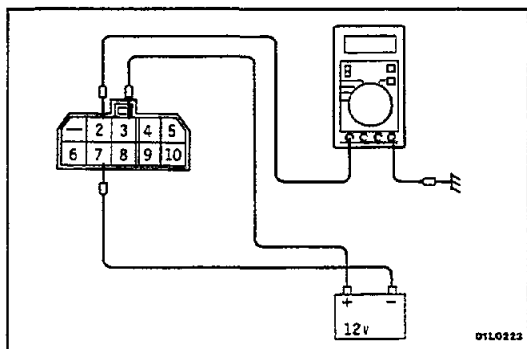
- (3) Connect a 12V power supply \oplus terminal to the terminal ① of the control relay and measure the voltages at terminals ④ and ⑤ when the \ominus terminal is connected to and disconnected from the terminal ①.

Terminal ① and 12V power supply \ominus terminal	Terminal ④	Terminal ⑤
Connected	12V	12V
Disconnected	0V	0V



- (4) Connect a 12V power supply ⊖ terminal to the terminal to the terminal ③ of the control relay and check the continuity between terminal ③ and ② when the ⊕ terminal is connected to and disconnected from the terminal ③.

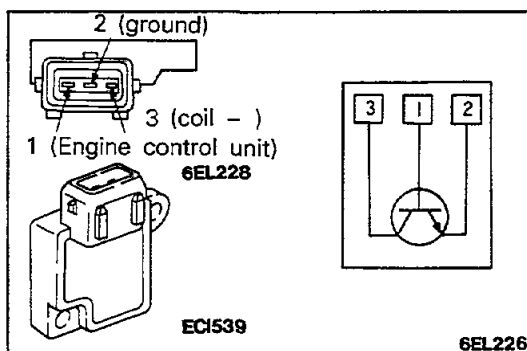
Terminal ③ and 12V power supply + terminal	Terminal ③ and terminal ②
Connected	Continuity
Disconnected	Discontinuity



- (5) Connect a 12V power supply ⊕ terminal to the terminal ③ of the control relay and measure the voltages at the terminal ② when the ⊖ terminal is connected to and disconnected from the terminal ⑦.

Terminal ⑦ and – terminal	Terminal ②
Connected	12V
Disconnected	0V

- (6) If one of the above is improper, replace the control relay.



POWER TRANSISTOR INSPECTION

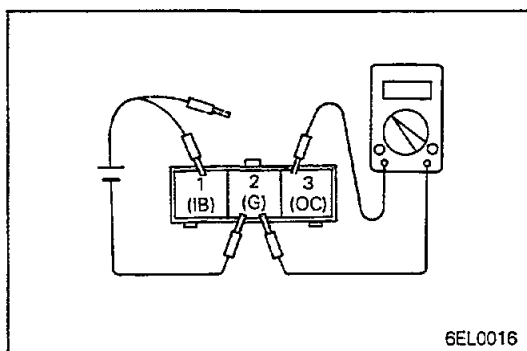
N14RCGG

- Disconnect the power transistor connector.
- Connect a power supply of 1.5V to terminals ① (+) and ② (-) of the power transistor and then check for continuity between terminals ③ and ② under power-ON and power-OFF conditions.

NOTE

- When checking for continuity, connect the circuit-tester to terminal ② on the positive side and terminal ③ on the negative side.
- Check by using an analog-type circuit tester.

①-② Terminal	③-② Terminal
Power ON	Continuity
Power OFF	Non-continuity



AIR CONDITIONER POWER RELAY

N14RCLB

Refer to GROUP 24 – Air Conditioner.

PURGE CONTROL SOLENOID VALVE

N14RCKA

Refer to GROUP 25 – Evaporative Emission Control System.

EGR CONTROL SOLENOID VALVE (M/T MODELS ONLY)

N14RCLAa

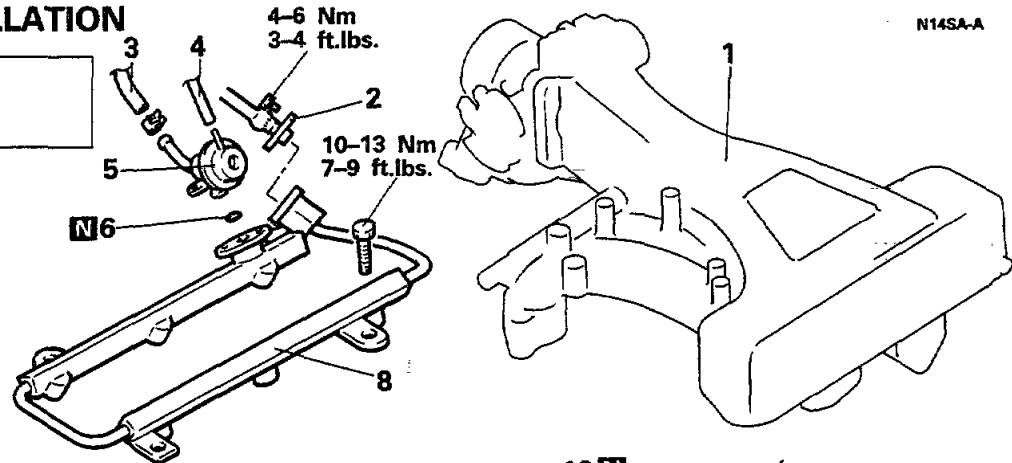
Refer to GROUP 25 – Exhaust Gas Recirculation System.

INJECTOR

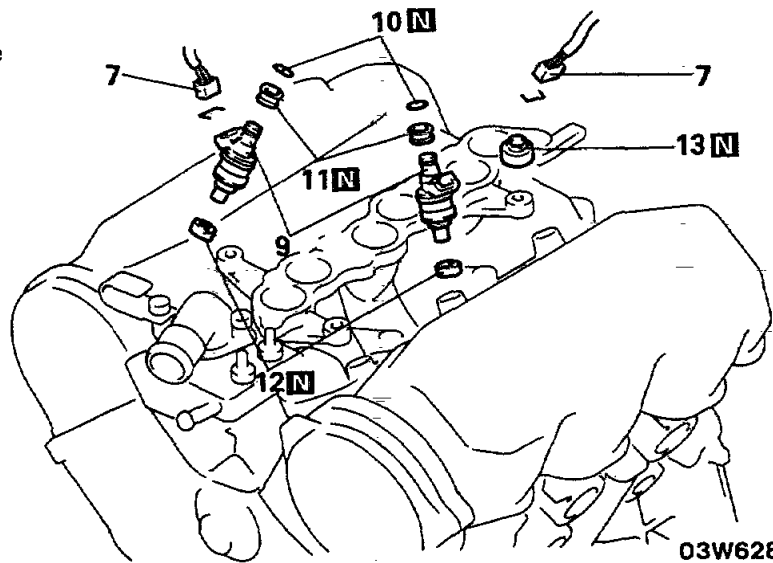
REMOVAL AND INSTALLATION

Post-installation Operation

- Measuring the fuel pressure. (Refer to P.14-72.)

**Removal steps**

- ↔ 1. Air intake plenum
- ↔ ↔ 2. Connection for high-pressure hose
- ↔ 3. Connection for return hose
- ↔ 4. Connection for vacuum hose
- ↔ 5. Pressure regulator
- ↔ 6. O-ring
- ↔ 7. Connection for harness connector
- ↔ ↔ 8. Delivery pipe
- ↔ ↔ 9. injector
- ↔ 10. O-ring
- ↔ 11. Grommet
- ↔ 12. Insulator
- ↔ 13. Insulator

**NOTE**

- (1) Reverse the removal procedures to reinstall.
- (2) ↔ : Refer to "Service Point of Removal".
- (3) ↔ : Refer to "Service Point of Installation".
- (4) N : Non-reusable parts

SERVICE POINTS OF REMOVAL

N14SBACa

1. AIR INTAKE PLENUM

For removal of the air intake plenum, refer to GROUP 11 - Intake Manifold.

2. HIGH PRESSURE HOSE DISCONNECTION

Reduce the internal pressure in the fuel pipe line. (Refer to P.14-67.)

Caution

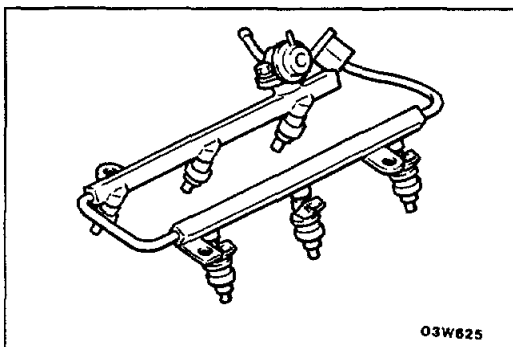
Since slight residual pressure remains even after disconnection, cover the hose end with a rag, etc. to prevent the fuel from spilling.

8./9. REMOVAL OF DELIVERY PIPE WITH INJECTOR

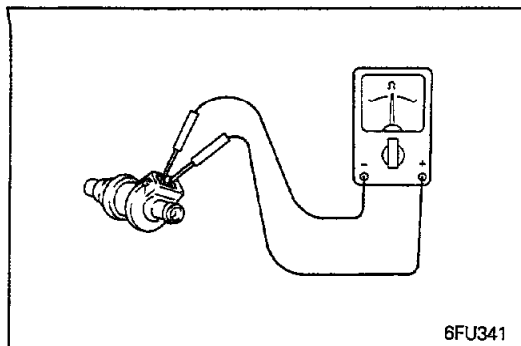
Disconnect the delivery pipe with the injector attached to the delivery pipe.

Caution

- 1. Be careful not to drop the injector when removing the delivery pipe.
- 2. Be aware that fuel will flow out when the injector is removed.



03W625



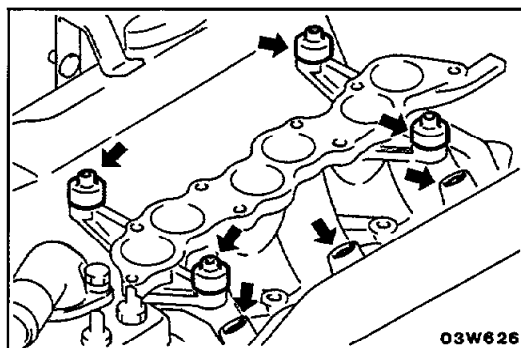
INSPECTION INJECTORS

N14SCAA

- (1) Measure resistance between terminals of injector using a circuit tester.

Standard value : 13–16 Ω at 20°C (68°F)

- (2) If the resistance is out of specification, replace the injector.

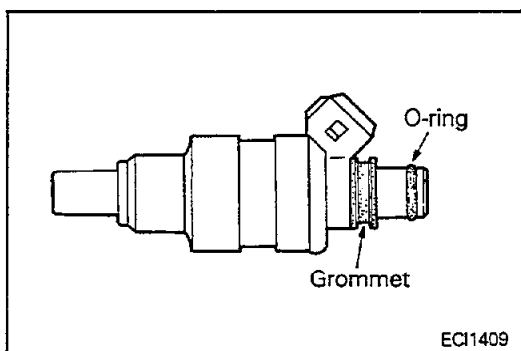


SERVICE POINTS OF INSTALLATION

N14SDAG

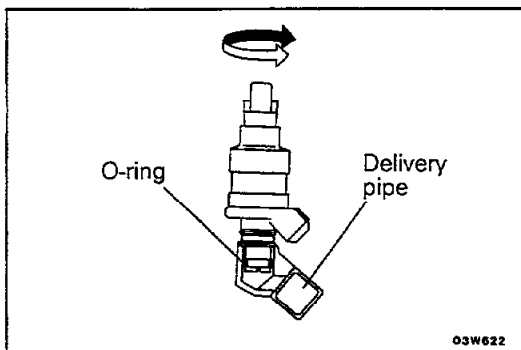
13./12. INSTALLATION OF INSULATOR

- (1) Attach a new six injector purpose insulator to the intake manifold.
- (2) Attach a new four delivery pipe purpose insulator to the intake manifold.



11./10./9. INSTALLATION OF GROMMET, O-RING AND INJECTOR

- (1) Install a new grommet and O-ring to the injector. Apply a coating of spindle oil or gasoline to the O-ring of the injector.

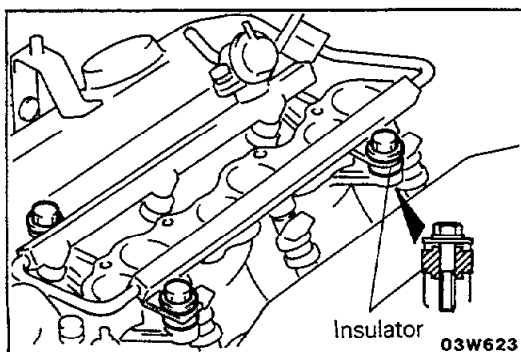


- (2) While turning the injector to the left and right, install it to the delivery pipe.

- (3) Check to be sure that the injector turns smoothly.

NOTE

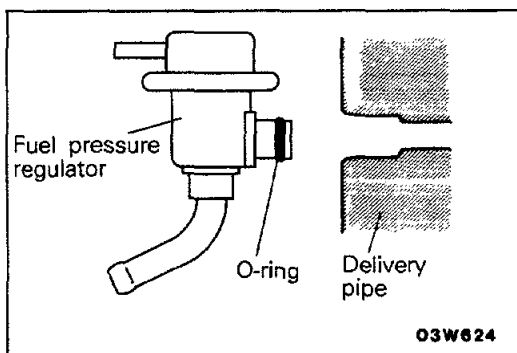
If it does not turn smoothly, the O-ring may be jammed; remove the injector, check O-ring and then re-insert it into the delivery pipe and check once again.



8. INSTALLATION OF DELIVERY PIPE

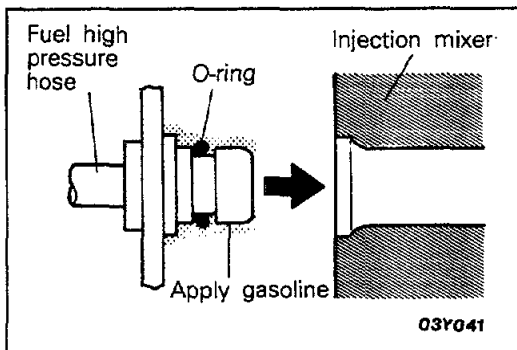
Attach the delivery pipe.

At this time, confirm that the insulator is properly inserted into the pipe mounting hole.



5. INSTALLATION OF FUEL PRESSURE REGULATOR

When connecting the fuel-pressure regulator to the delivery pipe, apply light oil or petrol to the O-ring, and then insert, being careful not to damage the O-ring.

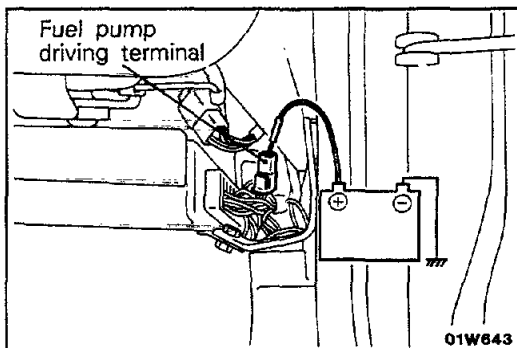


2. CONNECTION OF HIGH PRESSURE HOSE

- (1) Apply engine oil to the hose union. Then insert the hose, being careful not to damage the O-ring, and tighten securely.

Caution

Because there is high pressure applied between the fuel pump and the delivery pipe, be especially sure that there is no fuel leakage in this area.



- (2) Check fuel leakage in the following manner.

- ① Apply battery voltage on to fuel pump driving terminal which is branched off from control harness on an upper part of firewall to put fuel pump in motion.
- ② Check for fuel leakage in the system, particularly from connection between fuel high pressure hose and pipe with fuel line under regular pressure.

THROTTLE BODY REMOVAL AND INSTALLATION

N14SA-B

Pre-removal Operation

- Draining the Engine Coolant (Refer to GROUP 7 - Service Adjustment Procedures)

Post-installation Operation

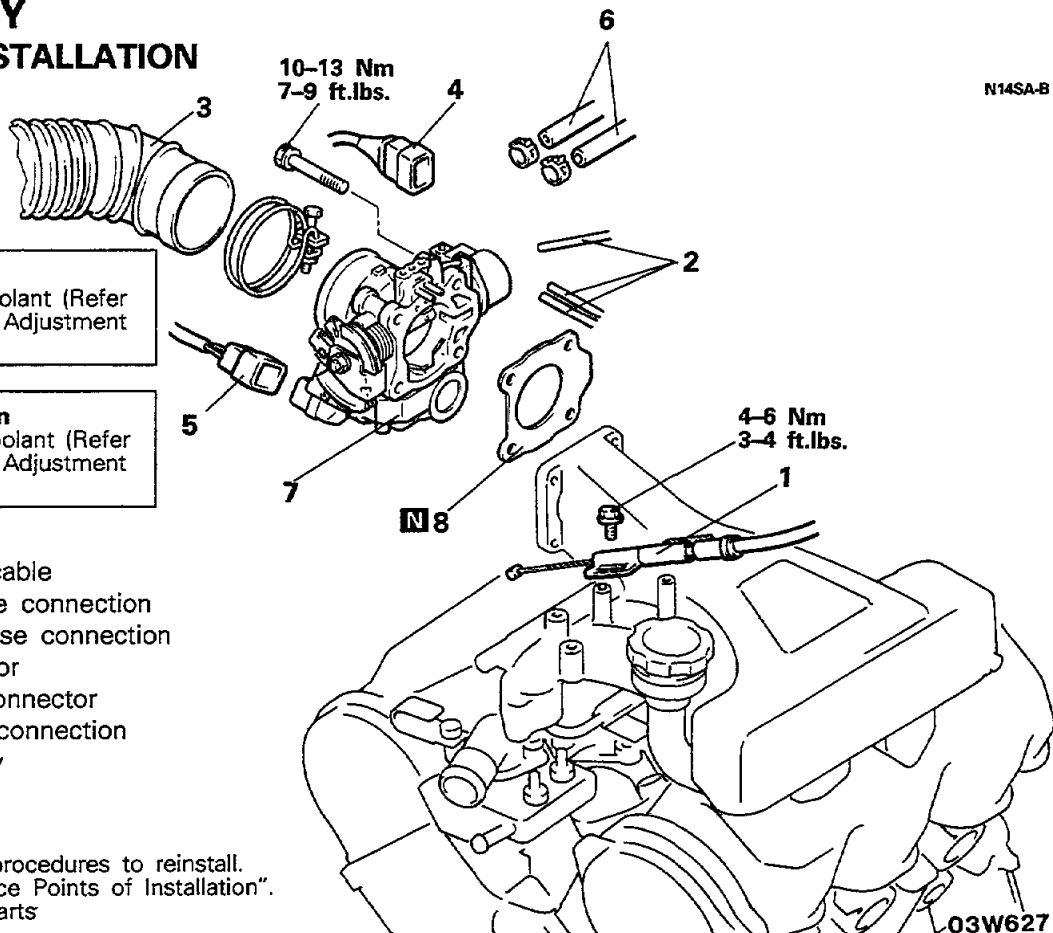
- Supplying of Engine Coolant (Refer to GROUP 7 - Service Adjustment Procedures)

Removal steps

- ➡➡ 1. Accelerator cable
- ➡➡ 2. Vacuum hose connection
- ➡➡ 3. Air intake hose connection
- ➡➡ 4. TPS connector
- ➡➡ 5. ISC motor connector
- ➡➡ 6. Water hose connection
- ➡➡ 7. Throttle body
- ➡➡ 8. Gasket

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ➡➡ : Refer to "Service Points of Installation".
- (3) **N** : Non-reusable parts



SERVICE POINTS OF INSTALLATION

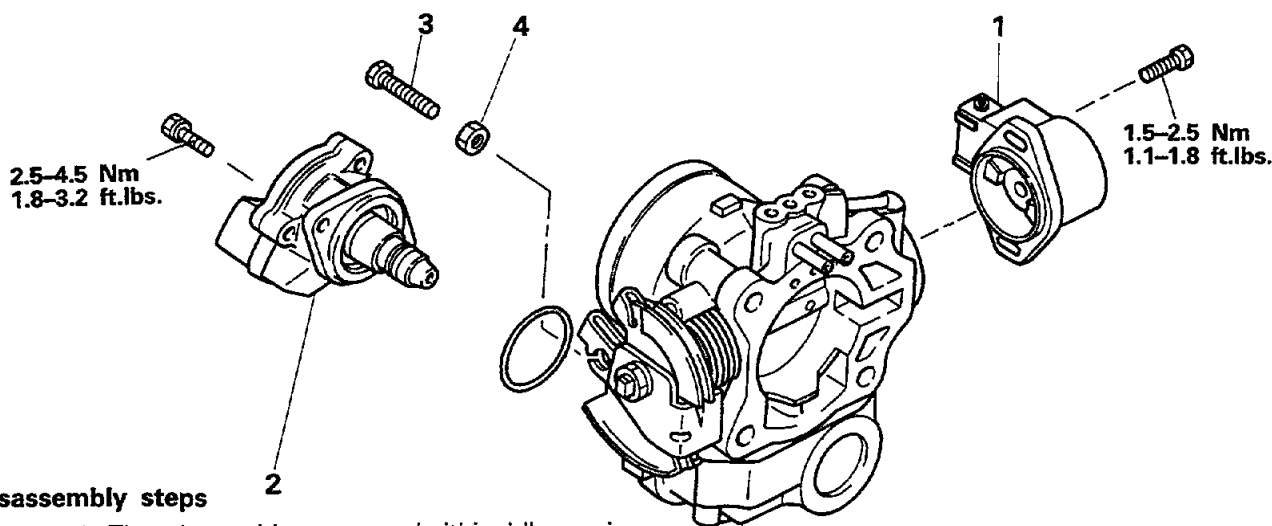
N14SDAF

1. ACCELERATOR CABLE ADJUSTMENT

For information concerning adjustment of the accelerator cable, refer to P.14-103.

DISASSEMBLY AND REASSEMBLY

N14SE-



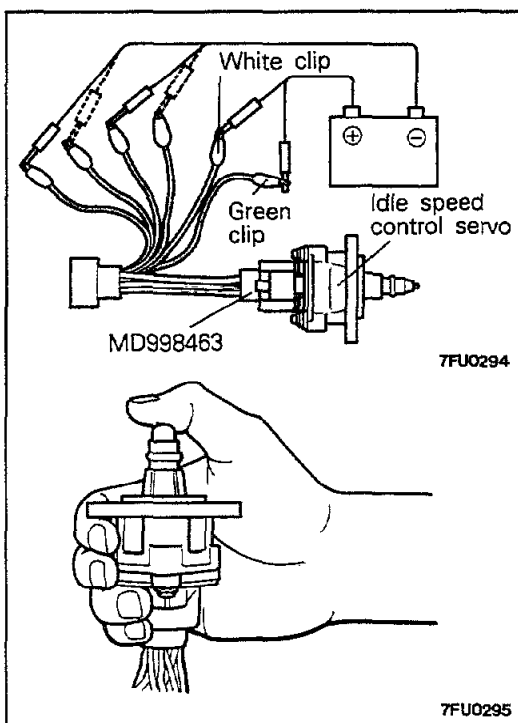
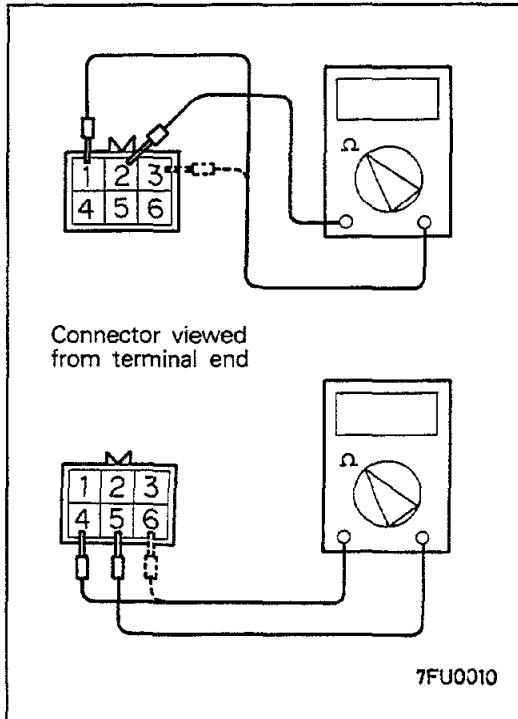
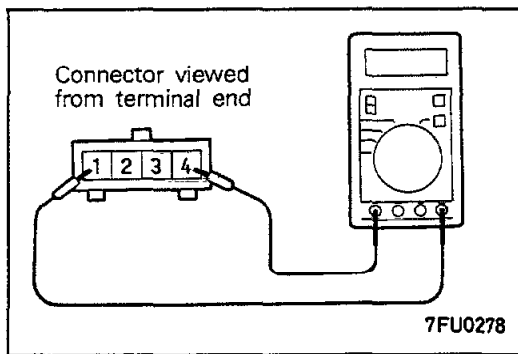
Disassembly steps

- ➡➡ 1. Throttle position sensor (within Idle position switch)
- ➡➡ 2. Idle speed control servo assembly
- ➡➡ 3. Fixed SAS
- ➡➡ 4. Adjusting nut
- ➡➡ 5. Throttle body

NOTE

- (1) Reverse the disassembly procedures to reassemble.
- (2) ➡➡ : Refer to "Service Points of Reassembly".

7FU0275



SERVICE POINTS OF DISASSEMBLY

N14SFAG

Caution

- When loosening a Phillips screw which has been firmly tightened, use a Phillips screwdriver that is an exact fit for the screw.
- Do not remove the throttle valve.
- Be careful when removing the throttle position sensor and idle speed control servo mounting screws, as adhesive has been applied these screws.

INSPECTION

N14SHAF

THROTTLE POSITION SENSOR CONTINUITY TEST

- (1) Disconnect the throttle position sensor connector.
- (2) Using a circuit tester, measure the resistance between terminals 4 (power) and 1 (ground).

Standard value : 3.5–6.5 k Ω

- (3) Check the sensor body for cracks and damage.

IDLE SPEED CONTROL SERVO ASSEMBLY CONTINUITY TEST

Measure the resistance between the respective terminals.

Standard value:

Terminal ②-① and ③ 28–33 Ω [at 20°C (68°F)]
Terminal ⑤-⑥ and ④ 28–33 Ω [at 20°C (68°F)]

IDLE SPEED CONTROL SERVO ASSEMBLY OPERATION TEST

- (1) Connect the special tool (test harness) to the Idle speed control servo connector.
- (2) Connect the positive \oplus terminal of a power source (approx. 6V) to the white clip or the green clip.
- (3) Holding the Idle speed control servo as shown in the illustration, connect the negative \ominus terminal of the power source to each clip in the sequence described below, and check whether or not there is vibration (a feeling of very slight shaking of the stepper motor) as a result of activation of the stepper motor.

- ① Connect the negative \ominus terminal of the power source to the red and yellow clips.
- ② Connect the negative \ominus terminal of the power source to the red and yellow clips.
- ③ Connect the negative \ominus terminal of the power source to the red and black clips.
- ④ Connect the negative \ominus terminal of the power source to the blue and black clips.
- ⑤ Connect the negative \ominus terminal of the power source to the blue and yellow clips.
- ⑥ Repeat the test in the reverse (⑤–①) sequence.

- (4) If, as a result of this test, vibration is felt, the stepper motor can be considered to be normal.

CLEANING THROTTLE BODY PARTS

(1) Clean all throttle body parts.

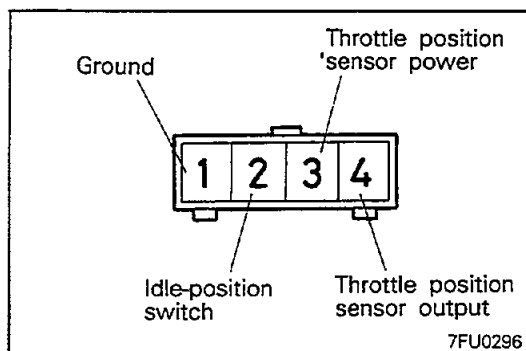
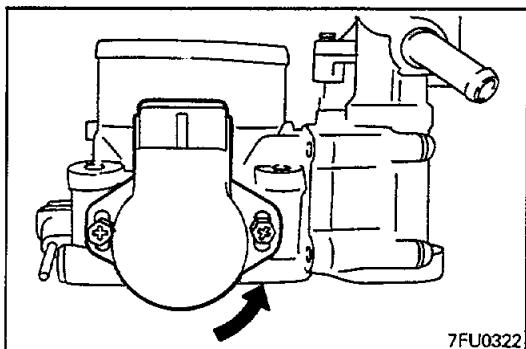
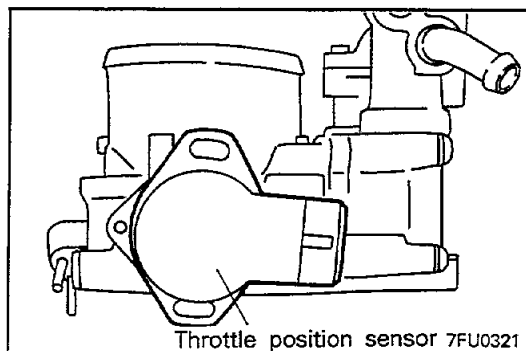
Do not use solvent to clean the following parts:

- Throttle position sensor
- Idle speed control servo
- Idle position switch

If these parts are immersed in solvent, their insulation will deteriorate.

Wipe them with cloth only.

(2) Check if the vacuum port or passage is clogged. Use compressed air to clean the vacuum passage.

**SERVICE POINTS OF REASSEMBLY**

N14SGAG

1. INSTALLATION OF THROTTLE POSITION SENSOR

(1) Set the throttle position sensor to the throttle body as shown in the diagram.

(2) After turning the throttle position sensor 90° in the counterclockwise direction to set it, tighten by turning the screw.

(3) Connect the circuit tester between 1 (ground) and 3 (output), or between 3 (output) and 4 (power). Then, make sure that the resistance changes smoothly when the throttle valve is slowly moved to the fully open position.

(4) Check for continuity across terminals 2 (Idle position switch) and 1 (ground) with the throttle valve both fully closed and fully open.

Throttle valve position	Continuity
Fully closed	Conductive
Fully open	Non-conductive

If there is not continuity with the throttle valve fully closed, turn the throttle-position sensor itself completely in the clockwise direction, and then check again.

(5) If the above specifications are not met, replace the idle position switch.

FUEL TANK

REMOVAL AND INSTALLATION

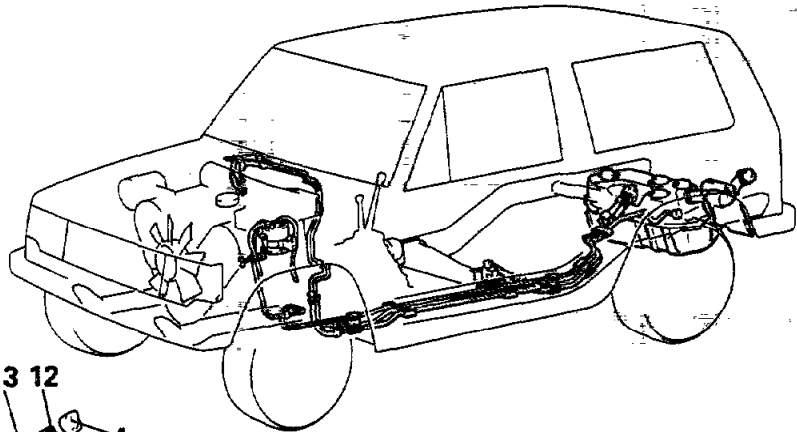
N14GA-B

Pre-removal Operation

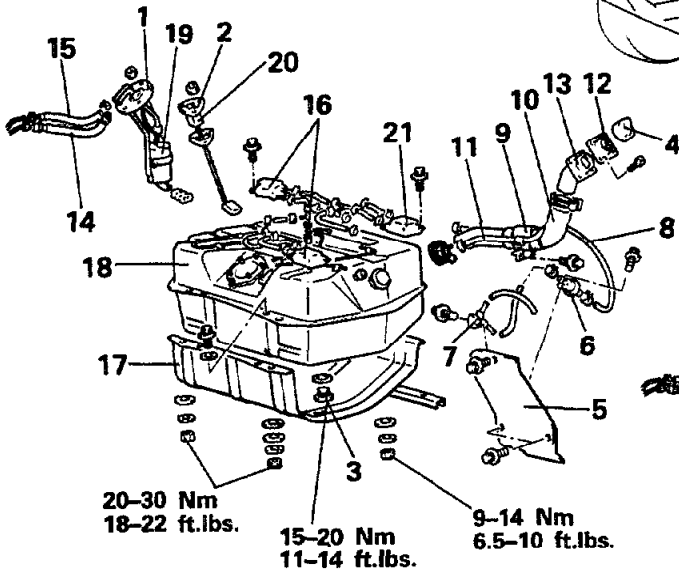
- Disconnection of fuel pump connection (Refer to P.14-67.)
- Draining of the Fuel.

Post-installation Operation

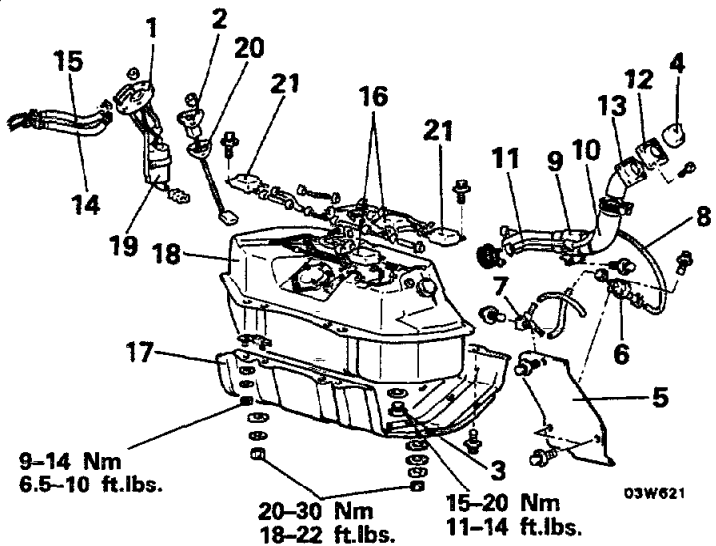
- Supplying of the Fuel.



4-door vehicles



2-door vehicles



Removal steps

1. Fuel pump connector connection
2. Fuel gauge unit connector connection
3. Drain plug
4. Fuel filler cap
5. Fuel filler hose protector
- ◆◆ 6. Overfill limiter (Two-way valve)
- ◆◆ 7. Check valve
- ◆◆ 8. Vapor hose
9. Clamp assembly
- ◆◆ 10. Fuel filler hose
- ◆◆ 11. Breather hose
12. Packing
13. Fuel filler neck
- ◆◆◆◆ 14. High pressure hose
- ◆◆ 15. Return hose
16. Separator tanks

17. Fuel tank protector
18. Fuel tank
19. Fuel pump
20. Fuel gauge unit
21. Separator tanks

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ◆◆ : Refer to "Service Points of Removal".
- (3) ◆◆◆ : Refer to "Service Points of Installation".

SERVICE POINTS OF REMOVAL

N14GBAF

14. REMOVAL OF HIGH PRESSURE HOSE TO FUEL PUMP CONNECTION**Caution**

Cover the hose connection with rags to prevent splash of fuel that could be caused by some residual pressure in the fuel pipe line.

INSPECTION

N14GCAG2

- Check the hoses and the pipes for crack or damage.
- Check the fuel tank cap for malfunction.
- Check the fuel tank for deformation, corrosion or crack.
- Check the fuel tank for dust or foreign material.

NOTE

If the inside of the fuel tank is to be cleaned, use any one of the following:

- (1) Kerosene
- (2) Trichloroethylene
- (3) A neutral emulsion type detergent

- Check the in-tank fuel filter for damage or clogging.
- Check the check valve for malfunction.

CHECKING TWO-WAY VALVE

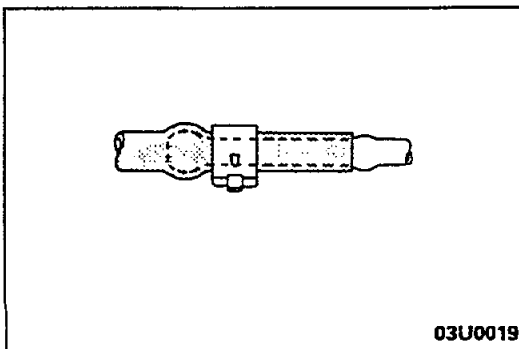
A simple way of inspection, however, may be adopted in which the overfill limiter is removed and then air is lightly blown into either the inlet or outlet. If the air passes after a slight resistance, overfill limiter is in good condition.

SERVICE POINTS OF INSTALLATION

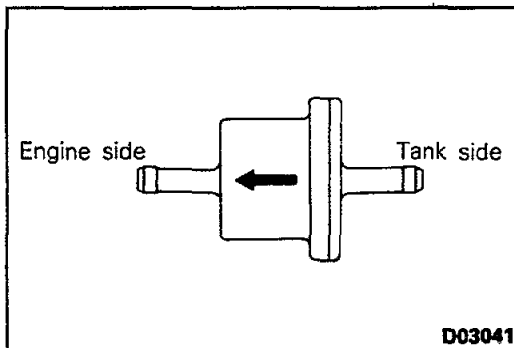
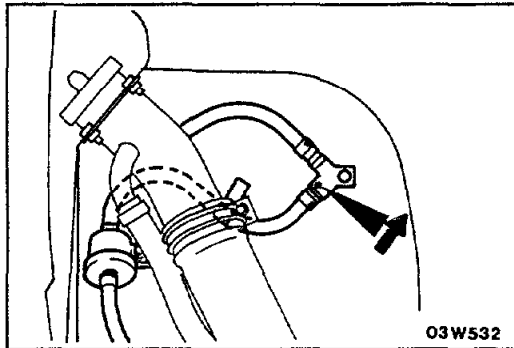
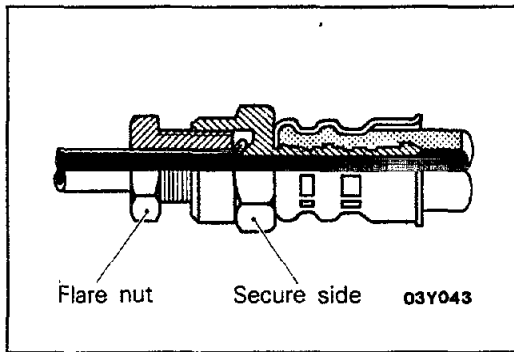
N14GDAK

15. INSTALLATION OF RETURN HOSE/8. VAPOR HOSE

When attaching the hoses to the pipes, be sure that the hose is attached until its end comes in touch with the bulge of the pipe as shown in the illustration.



03U0019



14. CONNECTION OF HIGH PRESSURE HOSE TO FUEL PUMP

Temporarily tighten the flare nut by hand, and then tighten it to the specified torque, being careful that the fuel hose does not become twisted.

Caution

When tightening flare nut, be careful not to bend or twist line to prevent damage to fuel pump low connection.

11. INSTALLATION OF BREATHER HOSE/10. FUEL FILLER HOSE

Insert the hoses until their ends contact the fuel tank.

7. INSTALLATION OF CHECK VALVE

Install the check valve to the fuel filler hose protector so that the check valve's arrow faces as shown in the figure.

6. INSTALLATION OF TWO-WAY VALVE

Install so that the two-way valve is facing in the direction shown in the figure.

REPLACEMENT OF FUEL PUMP

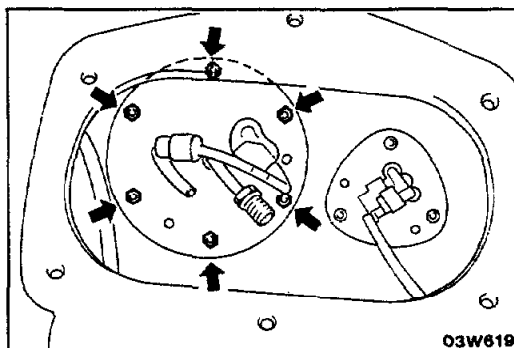
N14GFAE

- (1) Disconnect the fuel pump connector.
(Refer to P.14-67.)
- (2) Remove the fuel tank cap.
- (3) Drain the fuel.
- (4) Disconnect the fuel high pressure hose and main pipe.

Caution

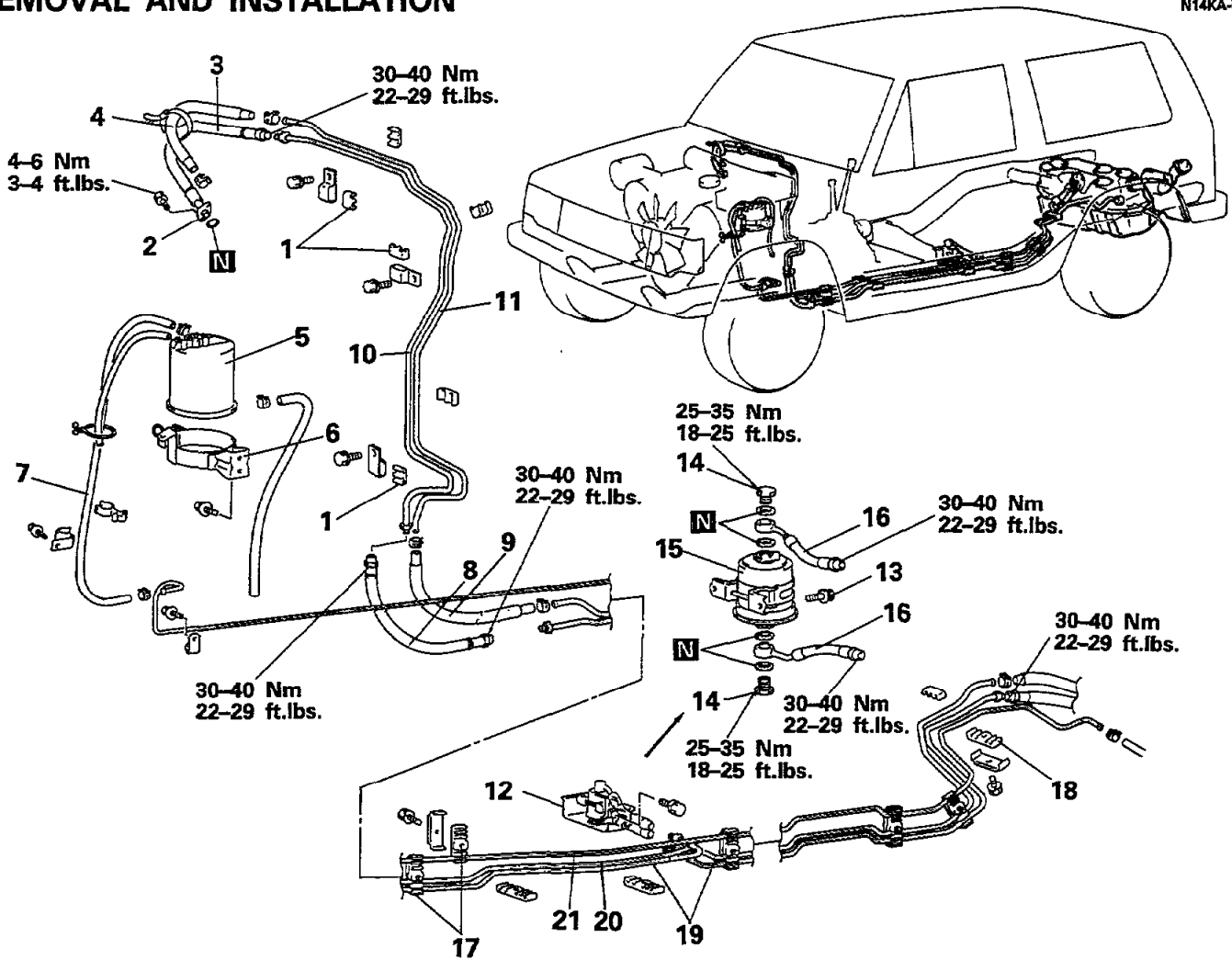
Cover the hose connection with rags to prevent splash of fuel that could be caused by some residual pressure in the fuel pipe line.

- (5) Remove the fuel pump installation nuts and then remove the fuel pump from the fuel tank.



**FUEL LINE AND VAPOR LINE
REMOVAL AND INSTALLATION**

N14KA-B



Removal steps

- 1. Clip
- ↔ ↔ 2. Connection for high pressure hose
- ↔ ↔ 3. Pressure hose
- ↔ 4. Fuel return hose
- 5. Canister
- 6. Canister holder
- ↔ 7. Vapor hose
- ↔ ↔ 8. Pressure hose
- ↔ 9. Fuel return hose
- 10. Main pipe
- 11. Return pipe
- 12. Protector
- 13. Bolts
- ↔ 14. Eye bolts

- 15. Fuel filter
- ↔ 16. Pressure hose
- 17. Clips
- 18. Clips
- 19. Main pipes
- 20. Return pipe
- 21. Vapor pipe

NOTE

- (1) Reverse the removal procedures to reinstall.
- (2) ↔ : Refer to "Service Points of Removal".
- (3) ↔ : Refer to "Service Points of Installation".
- (4) N : Non-reusable parts

SERVICE POINTS OF REMOVAL

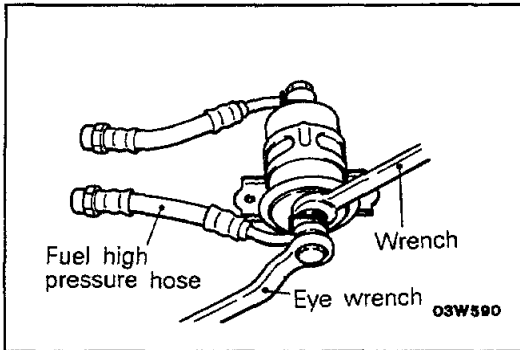
N14KBAJ

2. DISCONNECTION OF HIGH PRESSURE HOSE TO FUEL DELIVERY PIPE 3./8. MAIN PIPE TO HIGH PRESSURE HOSE**Caution**

Cover the high pressure hose connection with rags to prevent splash of fuel that could be caused by some residual pressure in the fuel pipe line.

14. REMOVAL OF EYE BOLTS

Hold fuel filter with a wrench and remove eye bolt retaining fuel high pressure hose with an eye wrench.

**INSPECTION**

N14KCAG

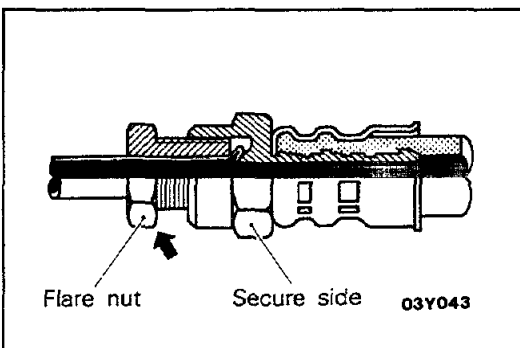
- Check the hose and pipes for cracks, bend, deformation and clogging.
- Check the canister for clogging.
- Check the check valve for malfunction.
- Check the fuel filter for clogging and damage.

SERVICE POINTS OF INSTALLATION

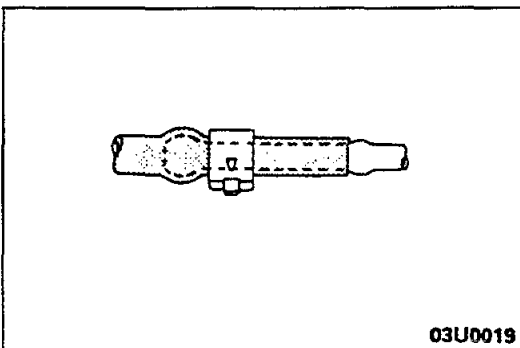
N14KDAM

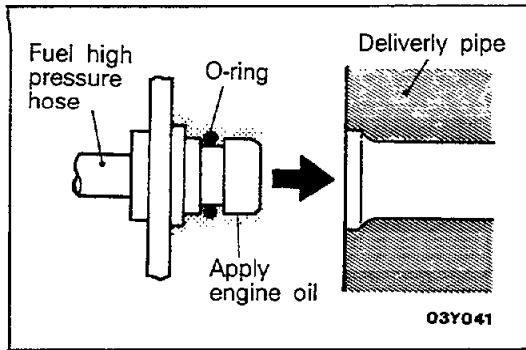
16./8./3. INSTALLATION OF HIGH PRESSURE HOSE

Temporarily tighten the flare nut by hand, and then tighten it to the specified torque, being careful that the fuel hose does not become twisted.

**9./7. INSTALLATION OF VAPOR HOSE/4. RETURN HOSE**

When attaching the hose to the pipes, be sure that the hose is attached until its end comes in touch with the bulge of the pipe as shown in the illustration.



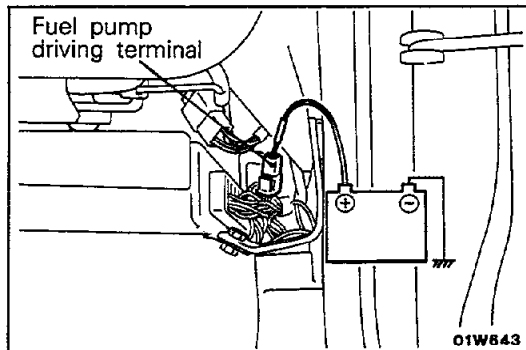


2. CONNECTION OF HIGH PRESSURE HOSE

- (1) Apply engine oil to the hose union. Then insert the hose, being careful not to damage the O-ring, and tighten securely.

Caution

Because there is high pressure applied between the fuel pump and the delivery pipe, be especially sure that there is no fuel leakage in this area.



- (2) Check fuel leakage in the following manner.
 - ① Apply pattery voltage on to fuel pump driving terminal which is branched off from control harness on an upper part of firewall to put fuel pump in motion.
 - ② Check for fuel leakage in the system, particularly from connection between fuel high pressure hose and pipe with fuel line under regular pressure.