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who, well, didn't do much this time, since Paul Lee provided the thing already scanned and compiled into a PDF! (Thanks!). Go visit his website: <http://www.iluvmyrx7.com/index.htm> Lots of RX-7 goodness there.

There are several ways to get around in the document. I have provided Bookmarks to all the sections, and thumbnails are also provided in the Thumbnails side bar.

I have also included a label for the spine of a binder, for those who wish to print out all the pages and keep a dead-tree edition handy.☺

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If you really want to send me money, email me and I'll tell you where to send it, but it's not necessary. Consider this payback for all the good advice and information gleaned from the various RX-7 email lists!

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09/16/03

EMISSION CONTROL SYSTEM

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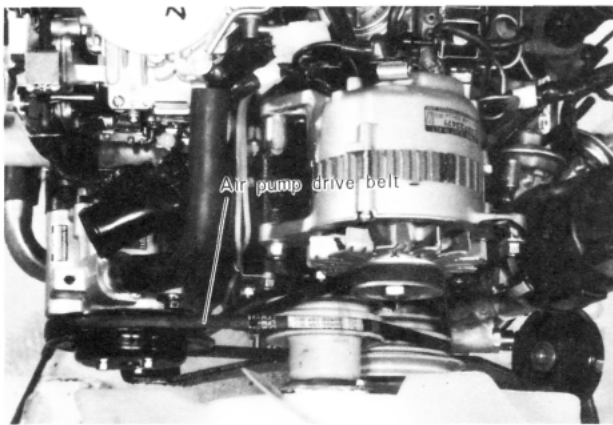


Fig. 1A-1



Fig. 1A-2

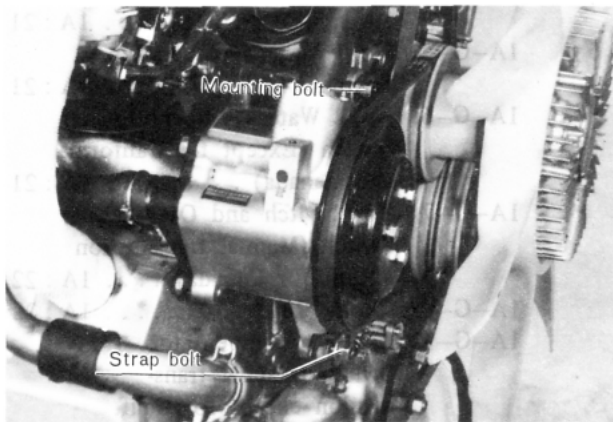


Fig. 1A-3

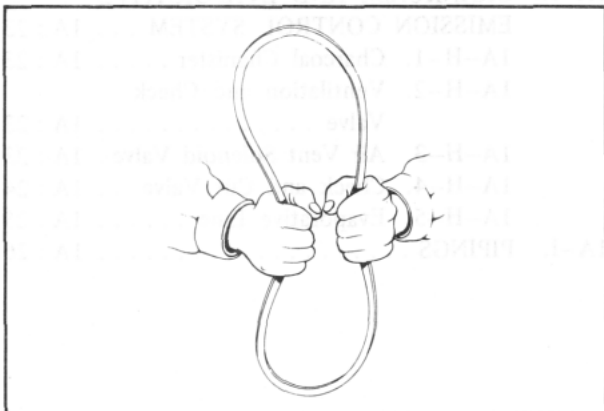


Fig. 1A-4

1A-A. AIR INJECTION AND THERMAL REACTOR SYSTEM

1A-A-1. Air Pump

a. Checking air pump

1. Warm up the engine until it reaches normal operating temperature.
Inspect hoses and connections for leaks.
2. Check the air pump for noise, if excessive, replace the air pump.
3. Check the air pump drive belt tension. Adjust to specification, if necessary.
4. Disconnect the air hose (air pump ~ air control valve) at the air control valve.
5. Connect the air pump gauge set (49 2113 010B) to the air hose and clamp the hose securely to gauge.
6. Install a tachometer to the engine.
7. Start the engine and run it at idle speed.
8. Observe the pressure reading on test gauge. The pressure reading should be more than 0.115 kg/cm² (1.64 lb/in²) at 800 rpm.
9. If the pump pressure does not meet minimum specifications, replace the air pump and repeat test.

b. Replacing air pump

1. Remove the air cleaner.
2. Disconnect the air inlet and outlet hoses.
3. Remove the air pump strap bolt.
4. Remove the air pump mounting bolt.
5. Disengage the air pump drive belt and remove the air pump.
6. Install the air pump in the reverse order of removing and adjust the drive belt tension as described in Par. 1A-A-2.

1A-A-2. Air Pump Drive Belt

a. Checking air pump drive belt

1. Check the drive belt for cracked, deteriorated, stretched, or worn and adherence of oil or grease. Replace if necessary.
2. If the belt is noisy, check the tension of belt and for misaligned pulleys.

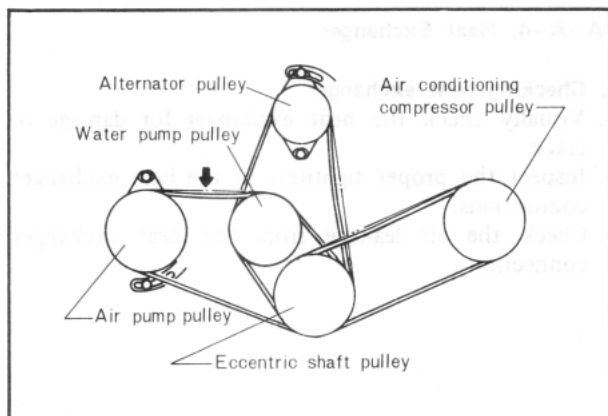


Fig. 1A-5

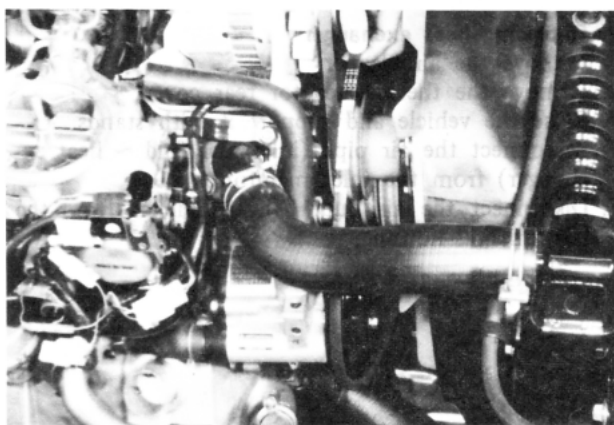


Fig. 1A-6

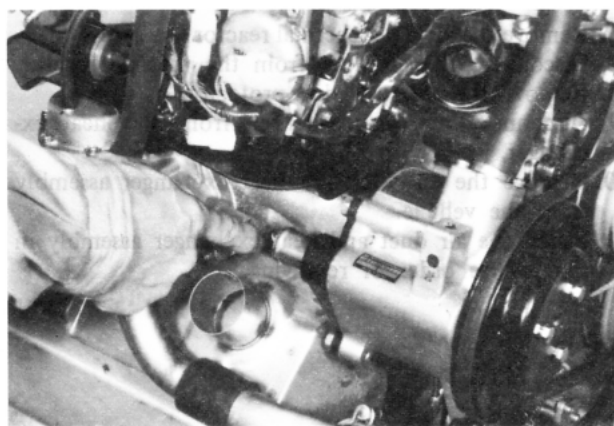


Fig. 1A-7

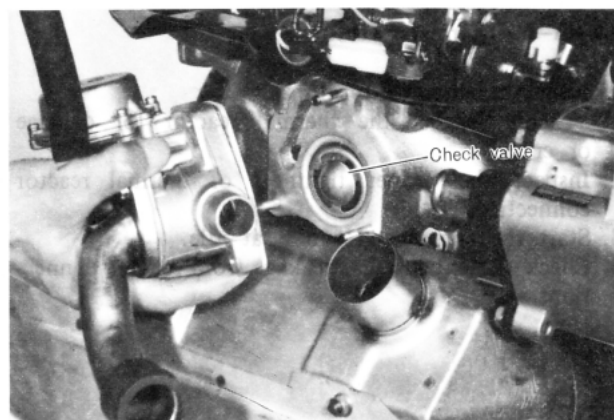


Fig. 1A-8

b. Adjusting air pump drive belt

1. Loosen the air pump strap bolt and mounting bolt.
2. Move the air pump toward or away from the engine until the correct belt tension is obtained.

**Belt tension: 12 ± 1 mm (0.47 ± 0.04 in)
when pressed at 10 kg (22 lb)**

3. Tighten the pump mounting and strap bolts.

c. Replacing air pump drive belt

1. Loosen the air conditioning compressor mounting bolts and move the compressor until the drive belt can be removed (if equipped).
2. Loosen the air pump strap and mounting bolts, then move the air pump until the drive belt can be removed.
3. Install a new belt and adjust the belt tension as explained above.
4. Install the air conditioning compressor drive belt and adjust the belt tension.

**Belt tension (air conditioning compressor):
 9 ± 1 mm (0.35 ± 0.04 in)
when pressed at 10 kg (22 lb)**

1A-A-3. Check Valve

a. Checking check valve

1. Warm up the engine until it reaches normal operating temperature, and connect a tachometer to engine.
2. Disconnect the air hose (air pump ~ air control valve) at the air control valve.
3. Slowly increase the engine speed to **1,500 rpm** and watch for exhaust gas leakage at the air inlet fitting on the air control valve. If there is exhaust gas leakage, replace the check valve.

b. Replacing check valve

1. Remove the air control valve described in Par. 1A-B-2.
2. Remove the gasket and check valve.
3. Install the check valve in the reverse order of removing.

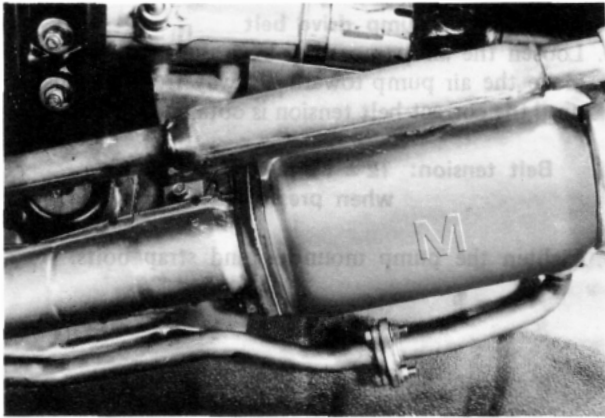


Fig. 1A-9

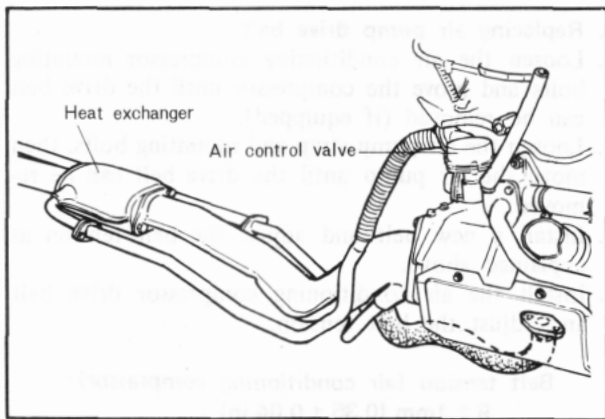


Fig. 1A-10

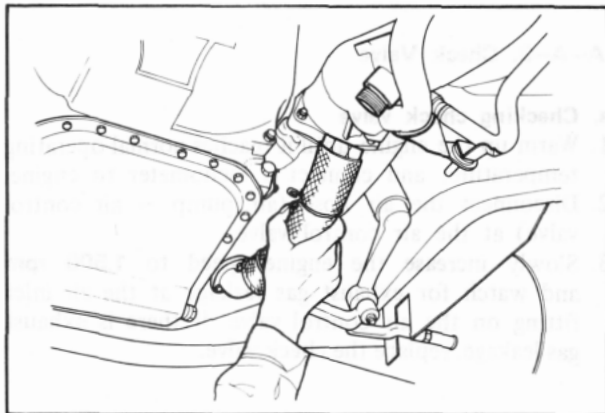


Fig. 1A-11

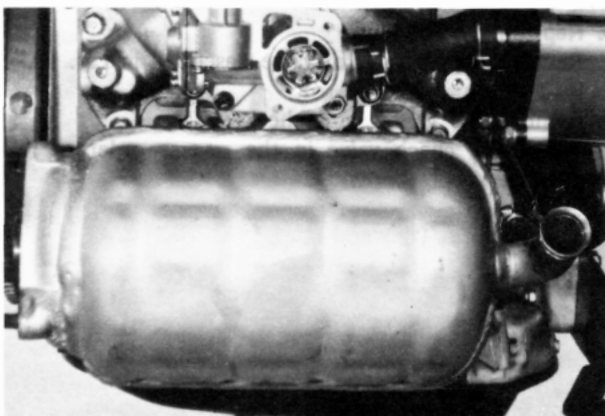


Fig. 1A-12

1A-A-4. Heat Exchanger

a. Checking heat exchanger

1. Visually check the heat exchanger for damage or crack.
2. Inspect the proper tightness of the heat exchanger connections.
3. Check the air leakage from the heat exchanger connections.

b. Replacing heat exchanger

1. Remove the air cleaner.
2. Remove the thermal reactor rear cover.
3. Raise the vehicle and support it with stands.
4. Disconnect the air pipe (inlet manifold ~ heat exchanger) from the inlet manifold.
5. Disconnect the air duct hanger bracket from the transmission housing.
6. Remove the air pipe (thermal reactor ~ air duct).
7. Disconnect the air duct from the thermal reactor.
8. Remove the exhaust pipe protector.
9. Disconnect the main silencer from the heat exchanger.
10. Remove the air duct and heat exchanger assembly from the vehicle.
11. Install the air duct and heat exchanger assembly in the reverse order of removing.

1A-A-5. Thermal Reactor

a. Inspecting thermal reactor

1. Visually inspect the thermal reactor for damage or crack.
2. Inspect the proper tightness of thermal reactor connection.
3. Start the engine and run it at idle.
4. Check the exhaust gas leakage from reactor connections.

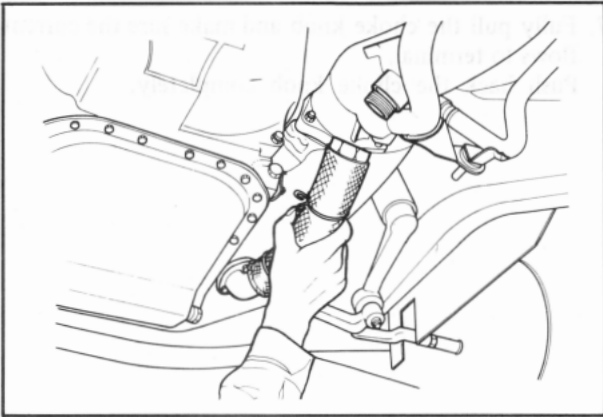


Fig. 1A-13

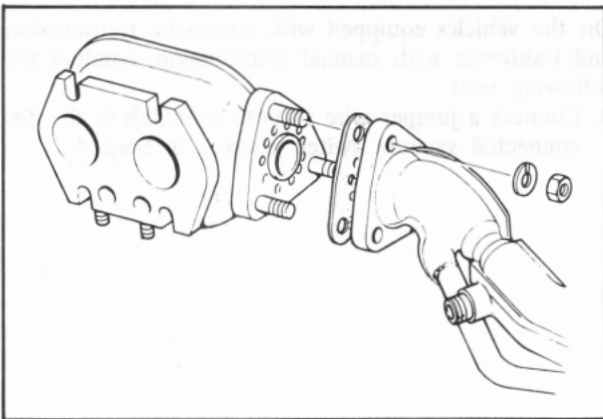


Fig. 1A-14

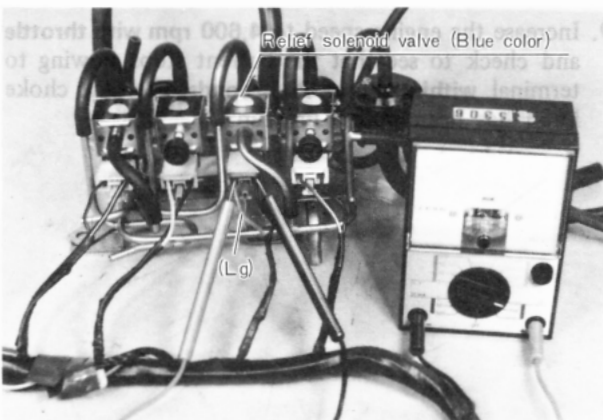


Fig. 1A-15

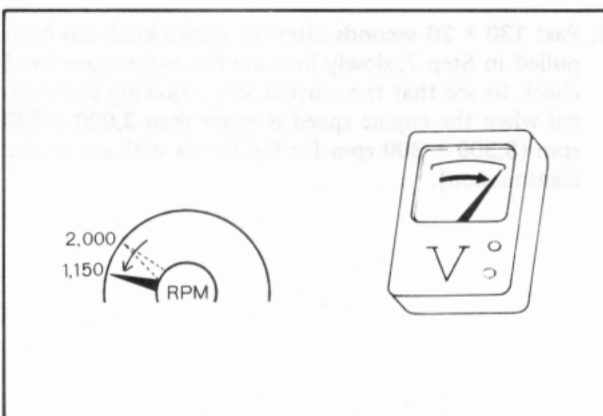


Fig. 1A-16

b. Replacing thermal reactor

1. Remove the air cleaner and hot air duct hose.
2. Disconnect the air pipe (thermal reactor ~ air control valve).
3. Remove the thermal reactor upper, lower and rear covers.
4. Remove the thermal reactor upper side nuts by using **remover** (49 8501 125).
5. Raise the vehicle and support it with stands.
6. Disconnect the air pipe (inlet manifold ~ heat exchanger) from the inlet manifold.
7. Remove the air pipe (thermal reactor ~ air duct).
8. Disconnect the air duct hanger bracket from the transmission housing.
9. Disconnect the air duct from the thermal reactor.
10. Remove the thermal reactor lower side nuts.
11. Remove the thermal reactor.
12. Install the thermal reactor in the reverse order of removing.

1A-B. SECONDARY AIR CONTROL SYSTEM

1A-B-1. Relief Solenoid Valve

a. Checking Signal for relief solenoid valve (U. S. A.)

1. Warm up the engine to the normal operating temperature and stop the engine.
2. Connect a tachometer to the engine.
3. Connect a voltmeter to terminal in the relief solenoid valve coupler.
4. On the vehicles equipped with automatic transmission and California with manual transmission, disconnect the coupler from the vacuum switch.
5. Start the engine and increase the engine speed to **2,000 rpm with throttle**. Slowly decrease the engine speed and record the engine speed at which the current begins flowing to terminal. The engine speed should be **1,150 ± 100 rpm**.
6. Slowly increase the engine speed from idle and check the engine speed at which the current stops flowing. The difference between the engine speeds recorded in Steps 5 and 6 should be **150 ± 70 rpm**.

1A

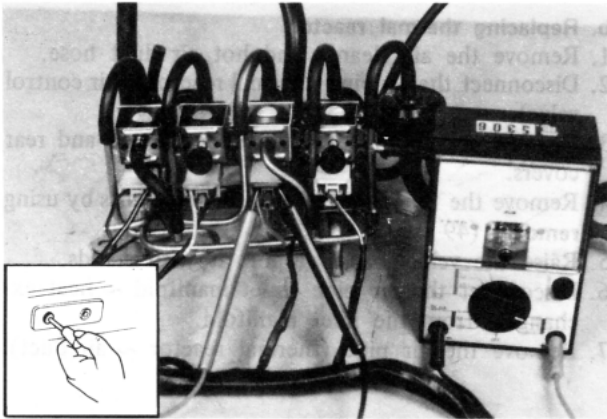


Fig. 1A-17

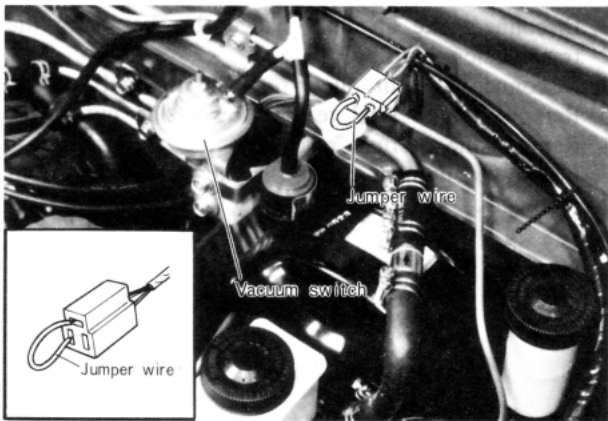


Fig. 1A-18

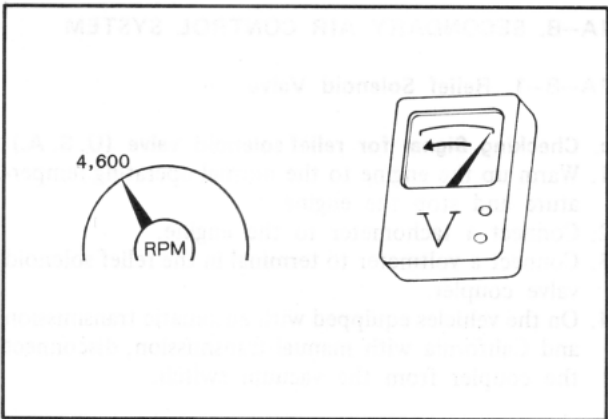


Fig. 1A-19

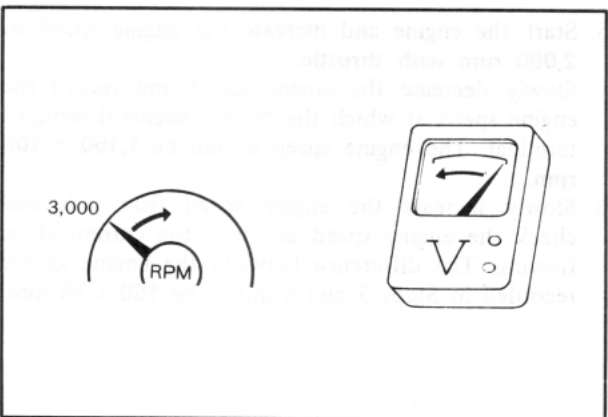


Fig. 1A-20

7. Fully pull the choke knob and make sure the current flows to terminal.
Push back the choke knob completely.

On the vehicles equipped with automatic transmission and California with manual transmission, conduct the following tests.

8. Connect a jumper wire to both terminals in the disconnected vacuum switch coupler in Step 4.

9. Increase the engine speed to **4,600 rpm with throttle** and check to see that the current stops flowing to terminal **within 130 ± 26 seconds** after the choke knob has been pulled in Step 7.

10. **Past 130 ± 26 seconds** after the choke knob has been pulled in Step 7, slowly increase the engine speed and check to see that the current stops flowing to terminal when the engine speed is **more than $3,000 \pm 300$ rpm ($3,300 \pm 300$ rpm for California with automatic transmission)**.

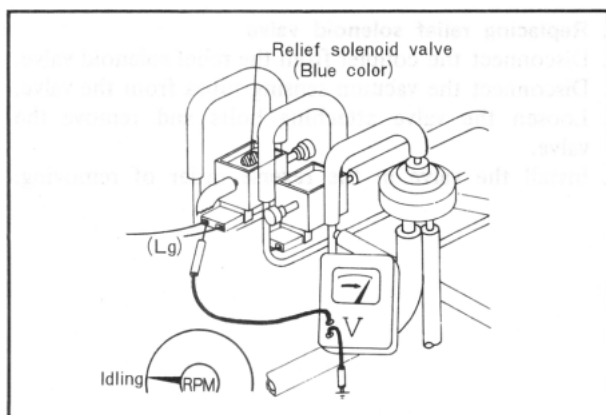


Fig. 1A-21

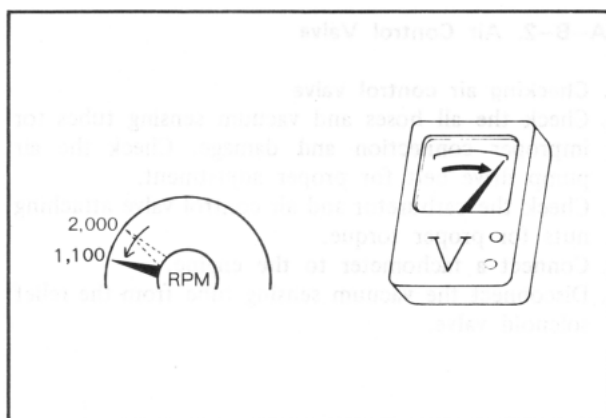


Fig. 1A-22

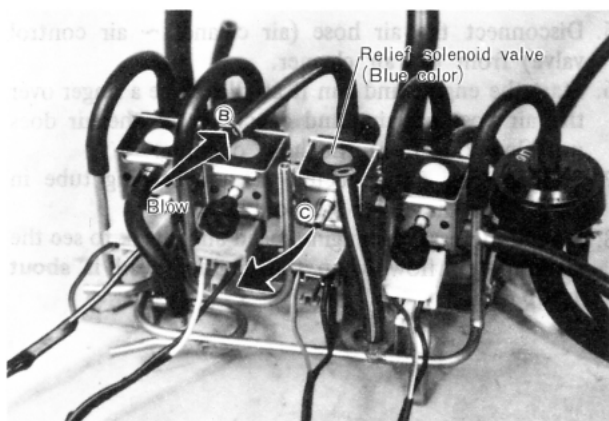


Fig. 1A-23

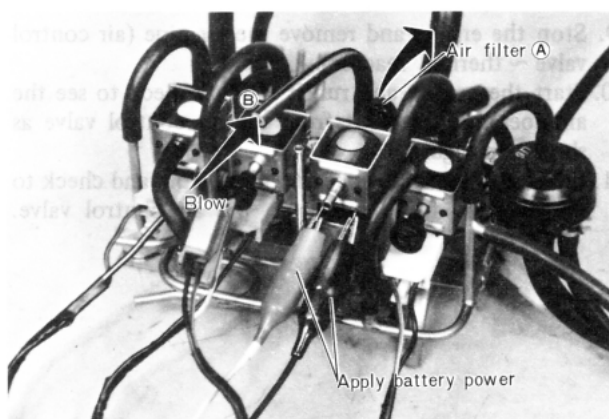


Fig. 1A-24

b. Checking signal for relief solenoid valve (Canada)

1. Warm up the engine to the normal operating temperature.
2. Connect a tachometer to the engine.
3. Connect a voltmeter to terminal (Lg) in the relief solenoid valve coupler.
4. Operate the engine at idle make sure the current flows to terminal.

5. Increase the engine speed to 2,000 rpm with throttle. Slowly decrease the engine speed and record the engine speed at which the current begins flowing to terminal. The engine speed should be $1,100 \pm 100$ rpm.

c. Checking relief solenoid valve

1. Disconnect the vacuum sensing tubes from the solenoid valve and vacuum pipe.
2. Blow through the solenoid valve from the vacuum sensing tube (B). Make sure the air passes through the valve and comes out from the port (C).

3. Disconnect the coupler from the relief solenoid valve and connect the battery power to terminals on the valve.
4. Blow through the valve from the vacuum sensing tube (B). Make sure the air passes through the valve and comes out from the air filter (A) of the valve.



Fig. 1A-25

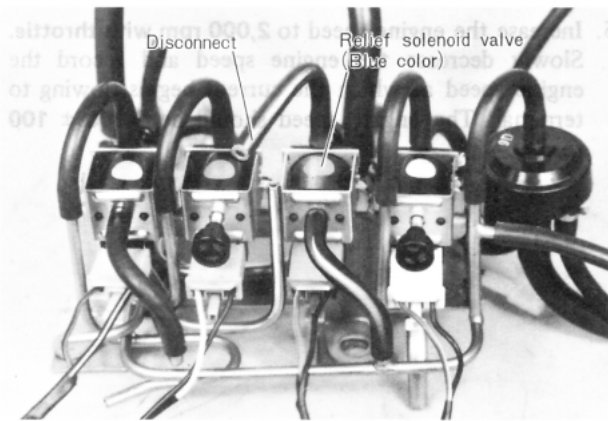


Fig. 1A-26

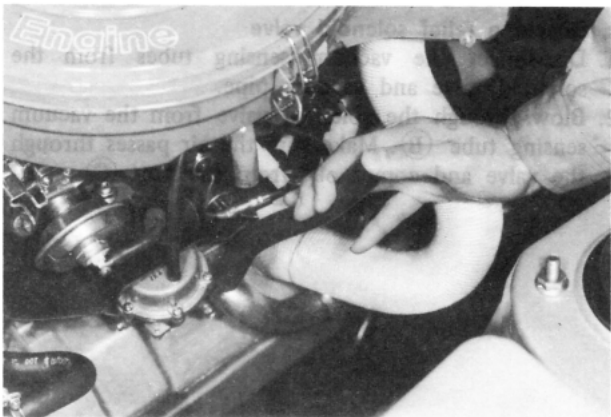


Fig. 1A-27

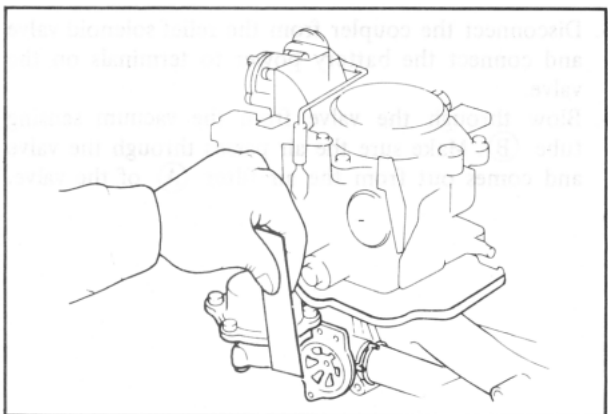


Fig. 1A-28

d. Replacing relief solenoid valve

1. Disconnect the coupler from the relief solenoid valve.
2. Disconnect the vacuum sensing tubes from the valve.
3. Loosen the valve attaching bolts and remove the valve.
4. Install the valve in the reverse order of removing.

1A-B-2. Air Control Valve

a. Checking air control valve

1. Check the all hoses and vacuum sensing tubes for improper connection and damage. Check the air pump drive belt for proper adjustment.
2. Check the carburetor and air control valve attaching nuts for proper torque.
3. Connect a tachometer to the engine.
4. Disconnect the vacuum sensing tube from the relief solenoid valve.
5. Disconnect the air hose (air cleaner ~ air control valve) from the air cleaner.
6. Start the engine and run it at idle. Place a finger over the air hose opening and check to see the air does not flow out from the hose opening.
7. Connect the disconnected vacuum sensing tube in Step 4 to the relief solenoid valve.
8. Slowly increase the engine speed and check to see the air starts to flow when the engine speed is **about 1,300 rpm.**
9. Stop the engine and remove the air pipe (air control valve ~ thermal reactor).
10. Start the engine and run it at idle. Check to see the air does not flow out from the air control valve as shown in figure.
11. Increase the engine speed to **4,500 rpm** and check to see the air flows out from the air control valve.

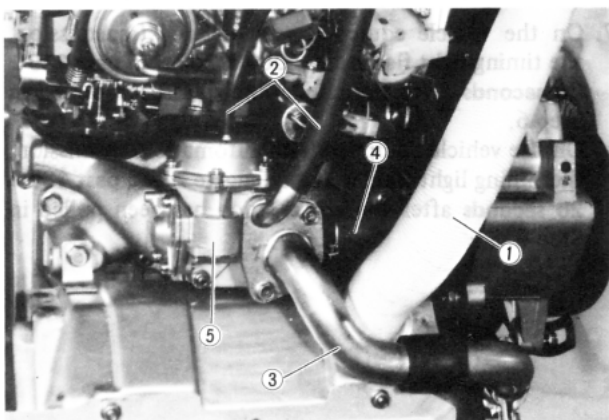


Fig. 1A-29

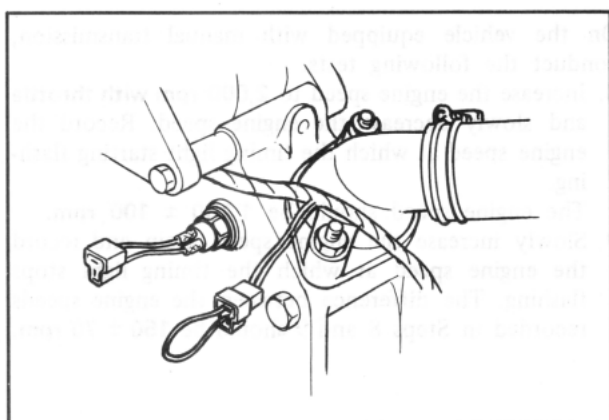


Fig. 1A-30

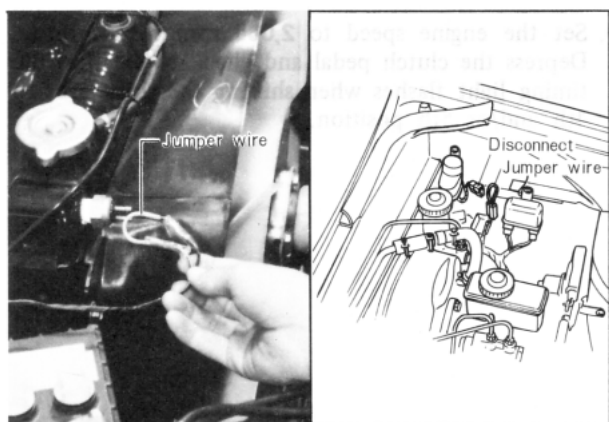


Fig. 1A-31

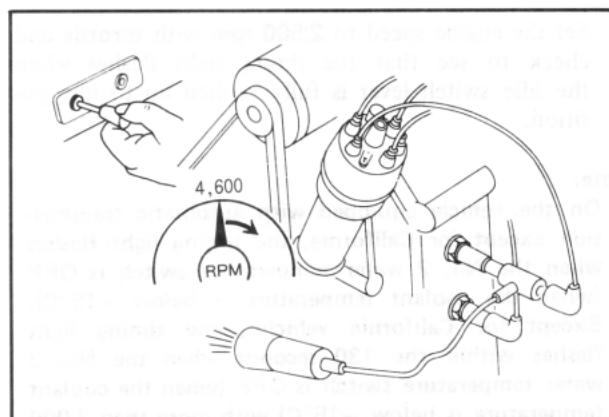


Fig. 1A-32

b. Replacing air control valve

1. Remove the hot air duct.
2. Disconnect the air hose and vacuum sensing tube.
3. Disconnect the air pipe.
4. Disconnect the air hose.
5. Remove the air control valve.
6. Install the air control valve in the reverse order of removing.

1A-B-3. Relative Parts

Check the following parts as described in Par. 1A-G.

1. Control unit, Choke switch
2. Full choke switch, Acceleration sensor
3. Idle switch, Top switch and Over-drive switch (Manual transmission)

1A-C. IGNITION CONTROL SYSTEM

1A-C-1. Ignition Control (U.S.A.)

a. Checking trailing ignition operation

1. Warm up the engine to the normal operating temperature.
 2. Connect a tachometer to the engine.
 3. Connect a timing light to the hightension cord for trailing spark plug on the front rotor housing.
 4. Disconnect the coupler of the No. 1 water temperature switch and connect a jumper wire to both terminals in the coupler (wiring harness side).
 5. Except for California vehicles, disconnect the coupler of the No. 2 water temperature switch and connect a jumper wire to both terminals.
- On the vehicle equipped with manual transmission except for California, disconnect the coupler of the altitude compensator switch and connect a jumper wire to both terminals.

6. Start the engine and set the engine speed to **2,000 rpm with the choke knob.**

Slowly increase the engine speed with throttle and check to see that the timing light flashes when the engine speed is **more than 4,600 ± 400 rpm.**

Push back the choke knob completely and check to see the timing light flashes.

1A

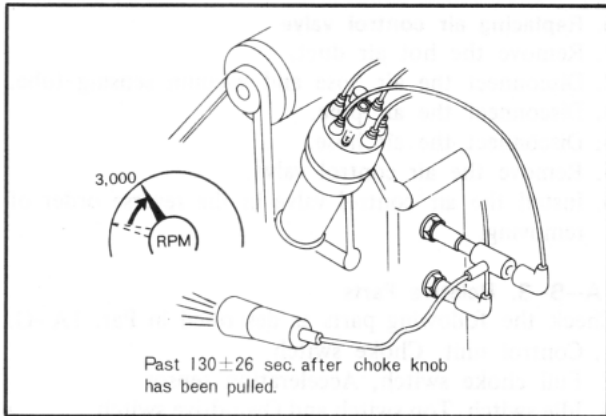


Fig. 1A-33

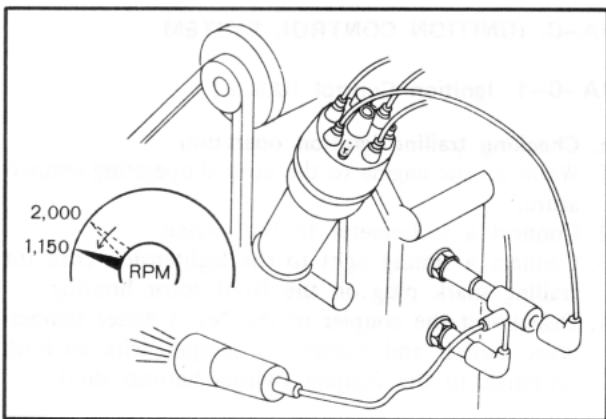


Fig. 1A-34

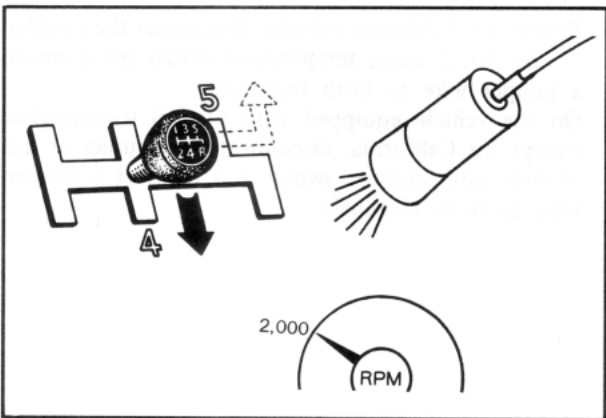


Fig. 1A-35

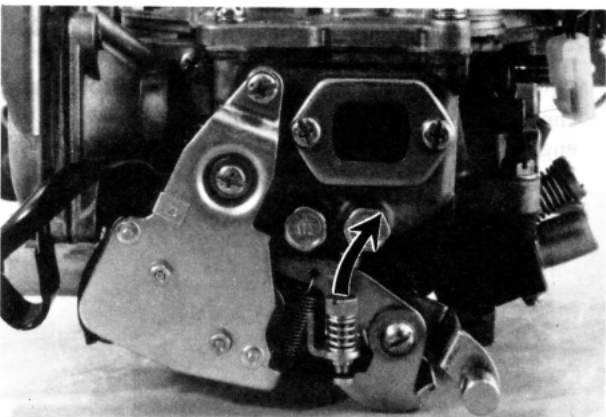


Fig. 1A-36

7. On the vehicle equipped with manual transmission, the timing light flashes at **3,000 ± 300 rpm past 130 ± 26 seconds** after the choke knob has been pulled in Step 6.

On the vehicle equipped with automatic transmission, the timing light flashes at any engine speed **past 130 ± 26 seconds** after the choke knob has been pulled in Step 6.

On the vehicle equipped with manual transmission, conduct the following tests.

8. Increase the engine speed to **2,000 rpm with throttle** and slowly decrease the engine speed. Record the engine speed at which the timing light starting flashing.
The engine speed should be **1,150 ± 100 rpm**.
9. Slowly increase the engine speed again and record the engine speed at which the timing light stops flashing. The difference between the engine speeds recorded in Steps 8 and 9 should be **150 ± 70 rpm**.
10. Set the engine speed to **2,000 rpm with throttle**. Depress the clutch pedal and check to see that the timing light flashes when shifting the shift lever to 4th and/or 5th position.

11. Set the engine speed to **2,500 rpm with throttle** and check to see that the timing light flashes when the idle switch lever is fully pushed up to idle position.

Note:

- a) On the vehicle equipped with automatic transmission except for California, the timing light flashes when the No. 2 water temperature switch is OFF (when the coolant temperature is below -15°C).
- b) Except for California vehicles, the timing light flashes within the 130 seconds when the No. 2 water temperature switch is OFF (when the coolant temperature is below -15°C) with more than 3,000 rpm of engine speed.

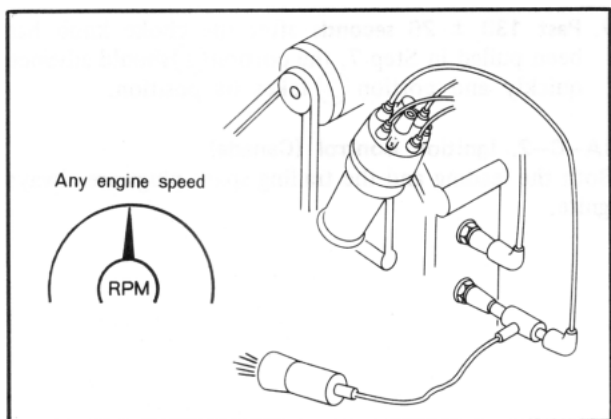


Fig. 1A-37

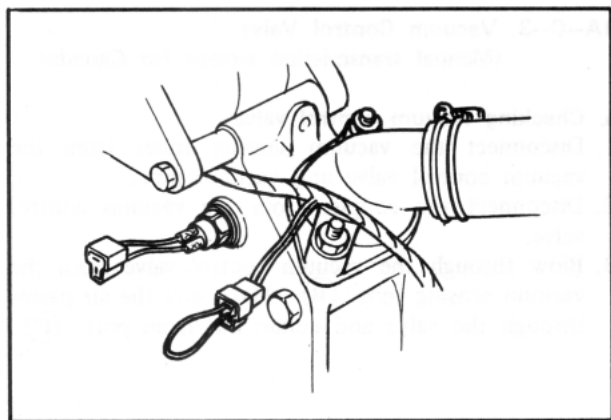


Fig. 1A-38

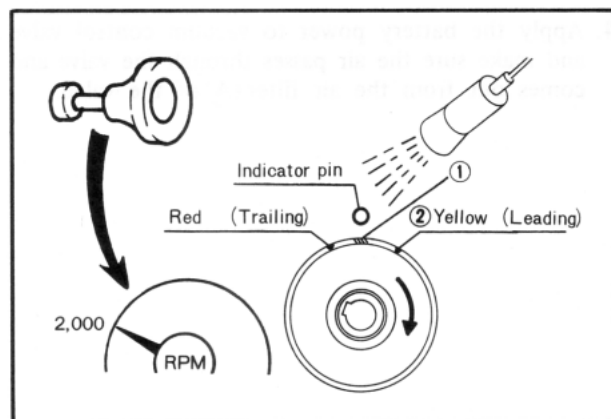


Fig. 1A-39

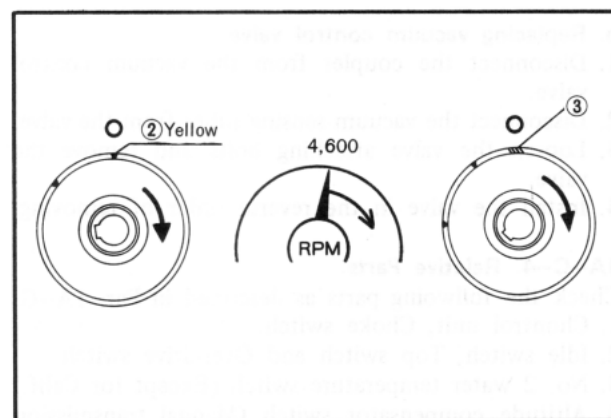


Fig. 1A-40

b. Checking leading ignition operation

1. Warm up the engine to the normal operating temperature.
2. Connect a tachometer to the engine.
3. Connect a timing light to the high-tension cord for leading spark plug on the front rotor housing.
4. Disconnect the coupler of the No. 2 water temperature switch and connect a jumper wire to both terminals in the coupler (Except for California). On the vehicles equipped with manual transmission except for California, disconnect the coupler of the altitude compensator switch and connect a jumper wire to both terminals.
5. Start the engine and check to see the **timing light flashes at any engine speed.**

6. Stop the engine. Disconnect the coupler of the No. 1 water temperature switch and connect a jumper wire to both terminals in the coupler.

7. Start the engine and set the engine speed to **2,000 rpm with the choke knob.** Observe the timing marks on the eccentric shaft pulley, using a timing light. The timing indicator pin should point between the Yellow and Red marks on the pulley (Portion ①).

8. Increase the engine speed with throttle and check to see that the timing mark ② advances and portion ③ takes its position when the engine speed increases to **more than 4,600 ± 400 rpm.**

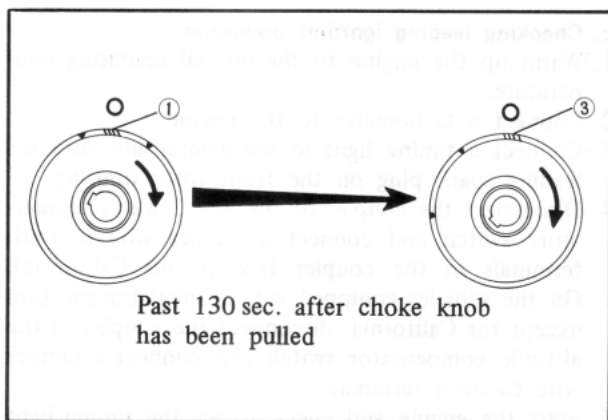


Fig. 1A-41

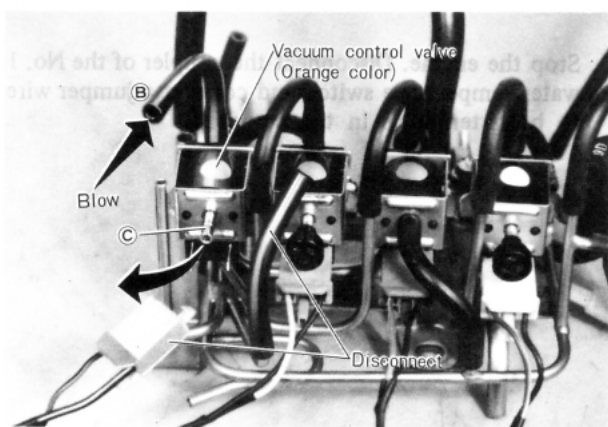


Fig. 1A-42

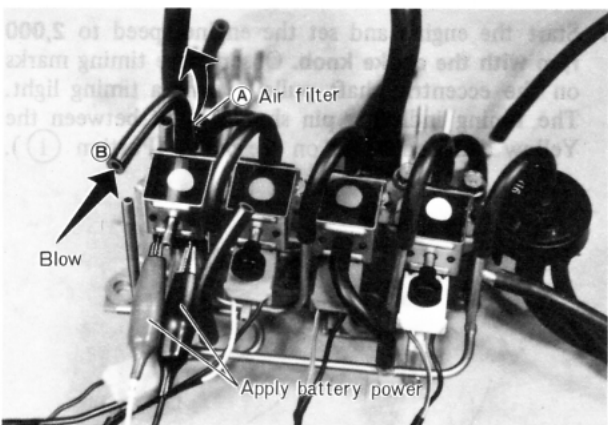


Fig. 1A-43

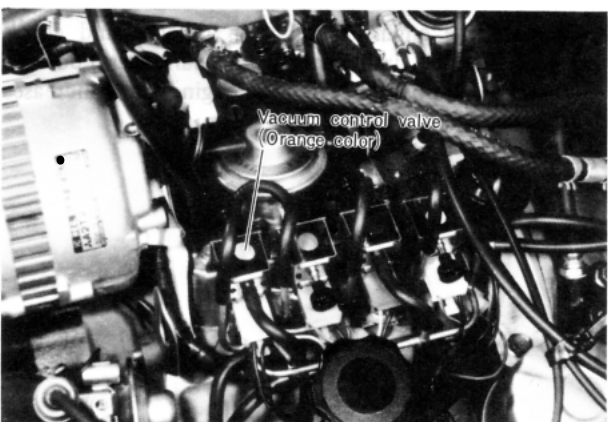


Fig. 1A-44

- Past 130 ± 26 seconds after the choke knob has been pulled in Step 7, the portion ① should advance quickly and portion ③ takes its position.

1A-C-2. Ignition Control (Canada)

Both the leading and the trailing spark plugs are always ignite.

1A-C-3. Vacuum Control Valve (Manual transmission except for Canada)

a. Checking vacuum control valve

- Disconnect the vacuum sensing tubes from the vacuum control valve and vacuum pipe.
- Disconnect the coupler from the vacuum control valve.
- Blow through the vacuum control valve from the vacuum sensing tube ②. Make sure the air passes through the valve and comes out from port ③.
- Apply the battery power to vacuum control valve and make sure the air passes through the valve and comes out from the air filter ① of the valve.

b. Replacing vacuum control valve

- Disconnect the coupler from the vacuum control valve.
- Disconnect the vacuum sensing tubes from the valve.
- Loosen the valve attaching bolts and remove the valve.
- Install the valve in the reverse order of removing.

1A-C-4. Relative Parts

Check the following parts as described in Par. 1A-G.

- Control unit, Choke switch
- Idle switch, Top switch and Over-drive switch
- No. 2 water temperature switch (Except for Calif.)
- Altitude compensator switch (Manual transmission except for Calif.)

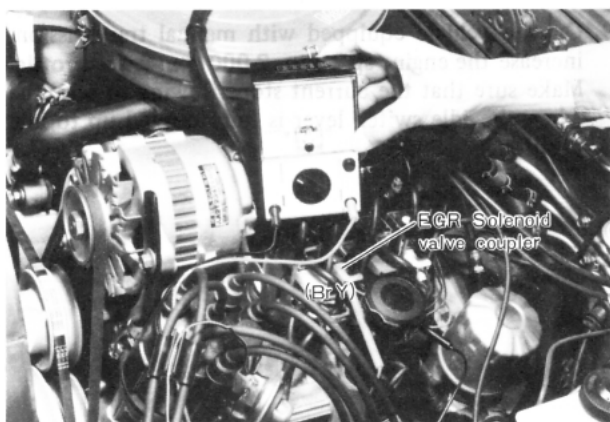


Fig. 1A-45

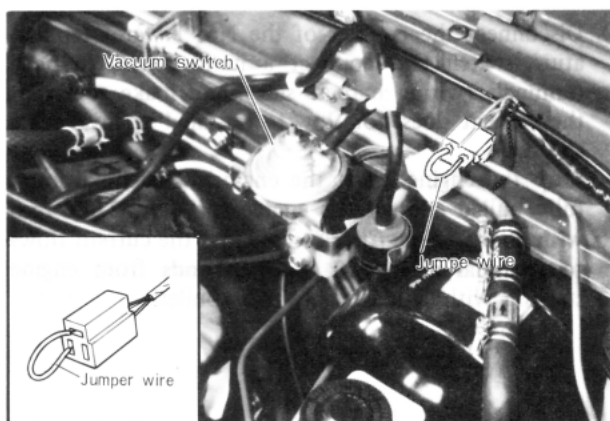


Fig. 1A-46

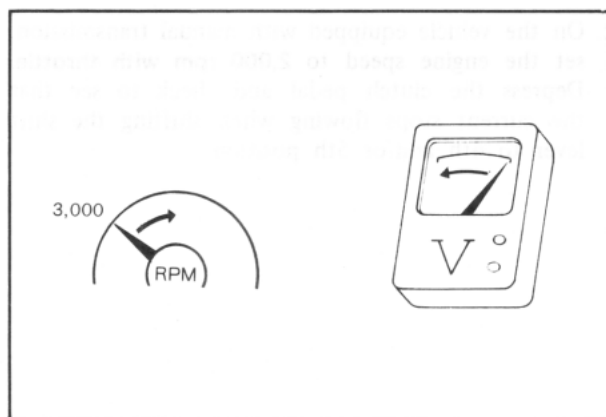


Fig. 1A-47

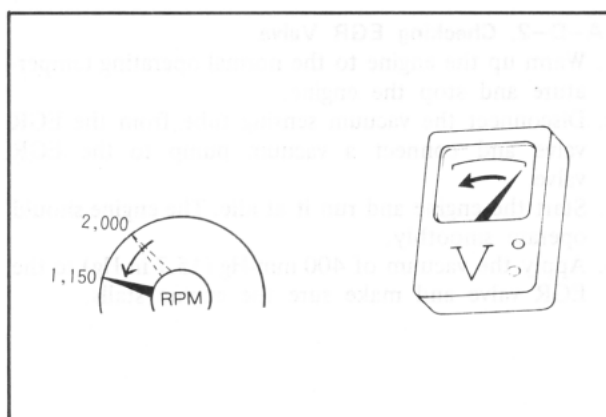


Fig. 1A-48

1A-D. EXHAUST GAS RECIRCULATION (EGR) SYSTEM (CALIFORNIA)

1A-D-1. Checking Signal for EGR Solenoid Valve

1. Warm up the engine to the normal operating temperature.
2. Connect a tachometer to the engine.
3. Connect a voltmeter to terminal (BrY) in the coupler of the EGR solenoid valve.
4. Start the engine and quickly increase the engine speed to **2,500 rpm with throttle**. Make sure that the current flows to terminal for a few seconds and then the current stops flowing.

5. Disconnect the coupler of the vacuum switch and connect a jumper wire to both terminal in the coupler.

6. Increase the engine speed with throttle and check to see that the current stops flowing to terminal when the engine speed is **more than 3,000 ± 300 rpm** for manual transmission and **3,300 ± 300 rpm** for automatic transmission.

7. Increase the engine to **2,000 rpm with throttle**. Slowly decrease the engine speed and record the engine speed at which the current stops flowing to terminal. The engine speed should be **1,150 ± 100 rpm**.

8. Slowly increase the engine speed from idle and check the engine speed at which the current begins flowing. The difference between the engine speeds recorded in Steps 7 and 8 should be **150 ± 70 rpm**.

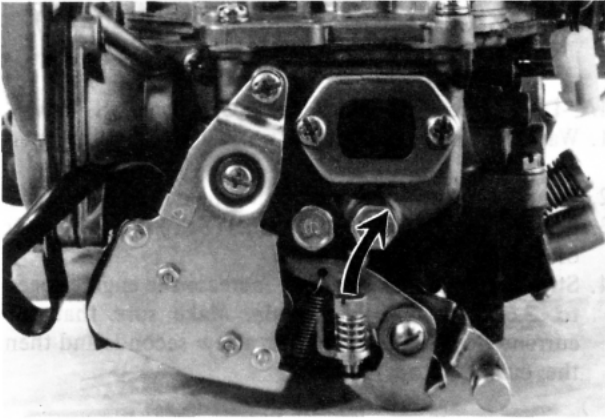


Fig. 1A-49

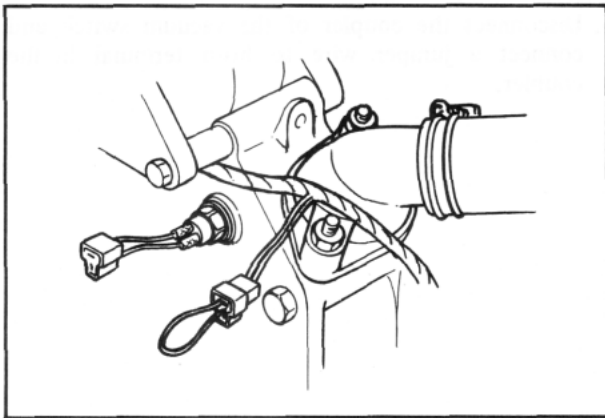


Fig. 1A-50

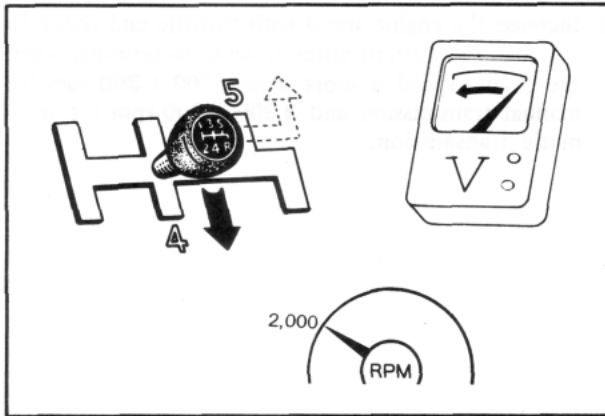


Fig. 1A-51

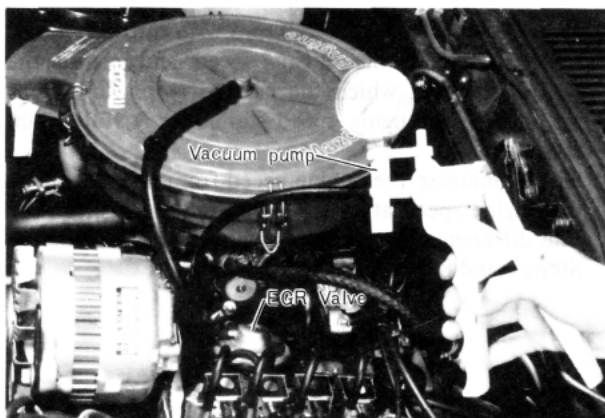


Fig. 1A-52

- On the vehicle equipped with manual transmission, increase the engine speed to, **2,000 rpm with throttle**. Make sure that the current stops flowing to terminal when the idle switch lever is fully pushed up to idle position.

- Disconnect the coupler of the No. 1 water temperature switch and connect a jumper wire to both terminals (wiring harness side), and make sure that the current does not flow to terminal at any engine speed.
- Stop the engine. Start the engine with choke knob fully pulled and set the engine speed to **2,000 rpm with choke knob**. Check to see that the current flows to terminal **after 130 ± 26 seconds** from engine starting with choke knob fully pulled.

- On the vehicle equipped with manual transmission, set the engine speed to **2,000 rpm with throttle**. Depress the clutch pedal and check to see that the current stops flowing when shifting the shift lever to 4th and/or 5th position.

1A-D-2. Checking EGR Valve

- Warm up the engine to the normal operating temperature and stop the engine.
- Disconnect the vacuum sensing tube from the EGR valve and connect a vacuum pump to the EGR valve.
- Start the engine and run it at idle. The engine should operate smoothly.
- Apply the vacuum of 400 mm-Hg (15.7 in-Hg) to the EGR valve and make sure the engine stalls.



Fig. 1A-53

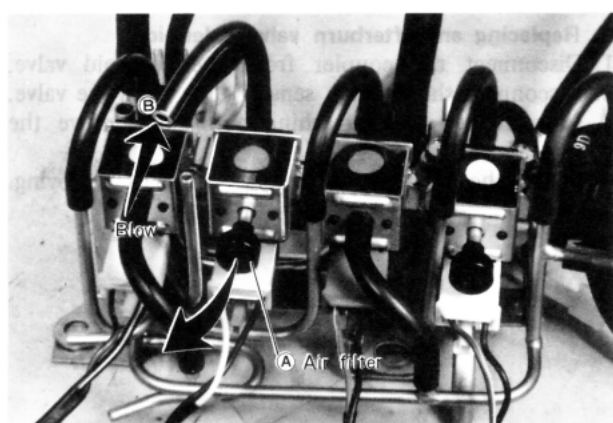


Fig. 1A-54

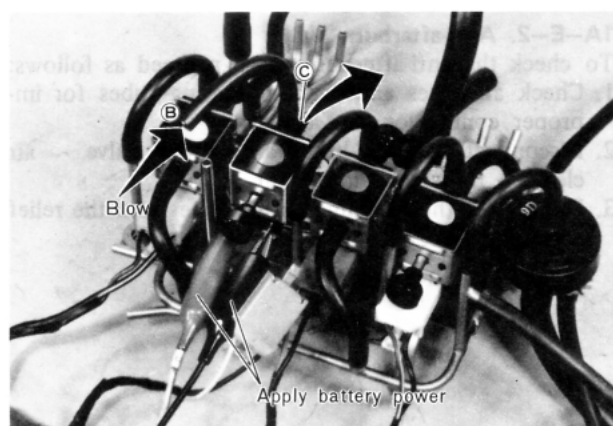


Fig. 1A-55

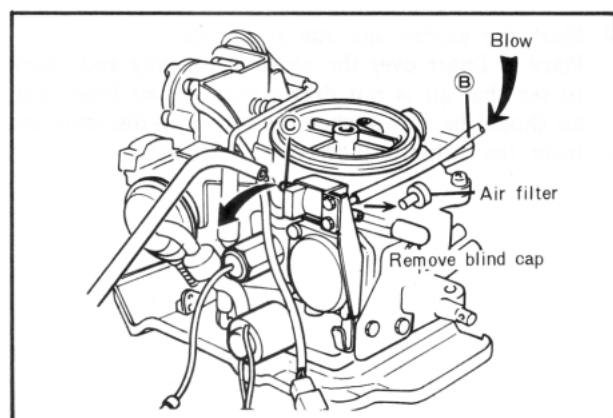


Fig. 1A-56

1A-D-3. Checking EGR Solenoid Valve

1. Disconnect the vacuum sensing tubes from the solenoid valve and vacuum pipe.

2. Blow through the solenoid valve from the vacuum tube **(B)**.

Make sure the air passes through the valve and comes out from the air filter **(A)** of the valve.

3. Disconnect the coupler from the solenoid valve and apply the battery power to terminals on the valve.

4. Blow through the valve from the vacuum tube **(B)**. Make sure the air passes through the valve and comes out from the port **(C)**.

1A-E. DECELERATION CONTROL SYSTEM

1A-E-1. Anti-afterburn Valve Solenoid

a. Checking anti-afterburn valve solenoid

1. Remove the air filter from the anti-afterburn valve solenoid and connect a suitable tube **(B)** to the solenoid.

2. Disconnect the tube from the solenoid valve.

3. Blow through the solenoid valve from the vacuum sensing tube **(B)**. Make sure the air passes through the valve and comes out from the port **(C)**.

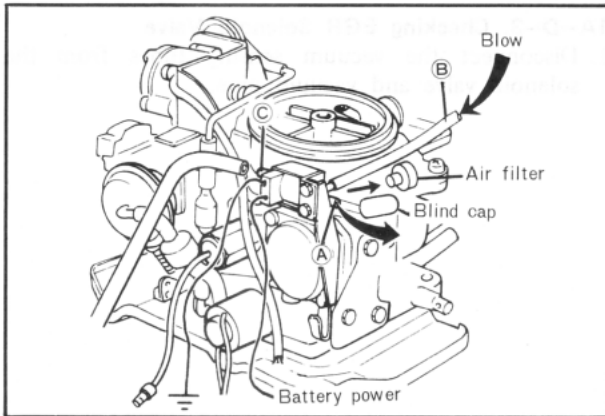


Fig. 1A-57

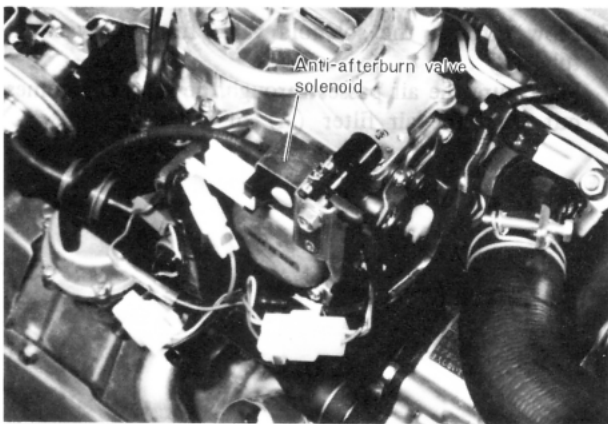


Fig. 1A-58

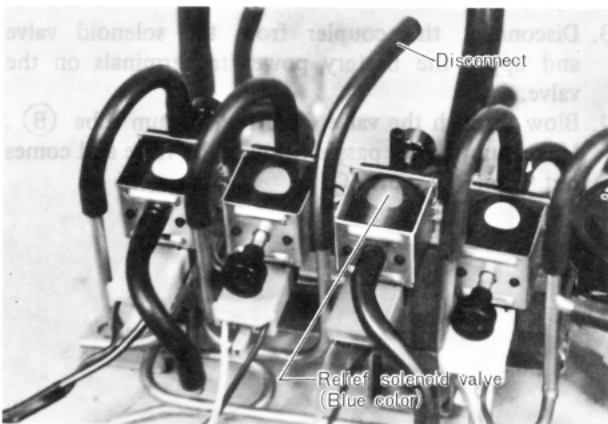


Fig. 1A-59



Fig. 1A-60

4. Disconnect the coupler from the relief solenoid valve and connect the battery power to terminals on the valve.
5. Blow through the valve from vacuum sensing tube (B). Make sure the air passes through the valve and comes out from port (A).

b. Replacing anti-afterburn valve solenoid

1. Disconnect the coupler from the solenoid valve.
2. Disconnect the vacuum sensing tube from the valve.
3. Loosen the valve attaching bolt and remove the valve.
4. Install the valve in the reverse order of removing.

1A-E-2. Anti-afterburn Valve

To check the anti-afterburn valve, proceed as follows:

1. Check all hoses and vacuum sensing tubes for improper connection and damage.
2. Disconnect the air hose (air control valve ~ air cleaner) from the air cleaner.
3. Disconnect the vacuum sensing tube from the relief solenoid valve.

4. Start the engine and run it at idle. Place a finger over the air hose opening and check to see that air is not drawn into the air hose. But, air should be drawn when the coupler is disconnected from the anti-afterburn valve solenoid.

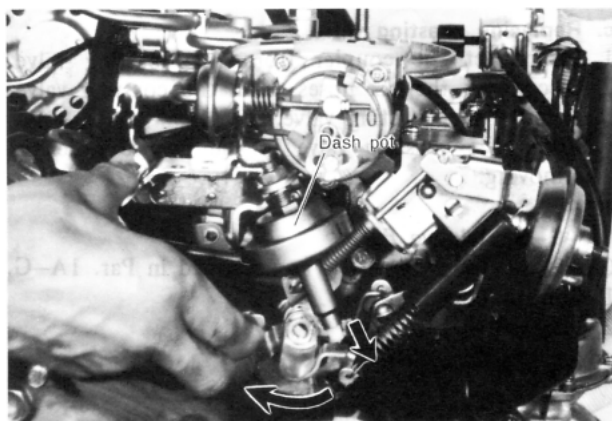


Fig. 1A-61



Fig. 1A-62

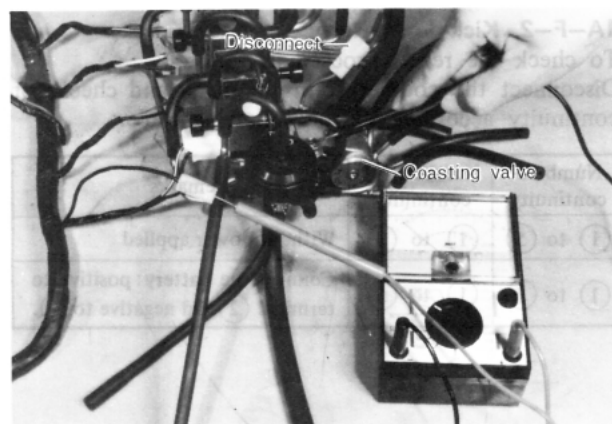


Fig. 1A-63

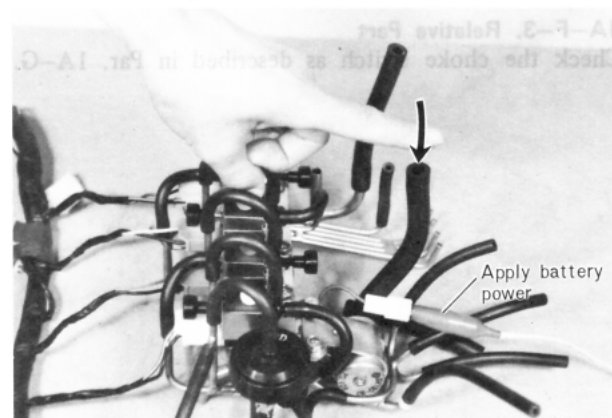


Fig. 1A-64

1A-E-3. Dash Pot (Manual transmission)

To check and adjust the dash pot, proceed as follows:

1. Remove the air cleaner.
2. Check that the dash pot rod does not keep the throttle lever from returning to the idle stop.
3. Quickly operate the throttle lever fully and make sure the dash pot rod extends quickly.

Release the throttle lever and make sure that the throttle lever returns slowly to idle position after it has touched the dash pot rod.

4. Connect a tachometer to the engine.
5. Start the engine and warm up the engine to the normal operating temperature.
Make sure the engine operates at specified idle speed.

Operate the throttle lever until it is away from the dash pot rod.

6. Slowly decrease the engine speed and check the engine speed at which the throttle lever just touches the dash pot rod.

The engine speed should be **3,500 ~ 3,900 rpm**. If the engine speed is not within the specification, loosen the lock nut and adjust the engine speed by turning the dash pot diaphragm.

1A-E-4. Coasting Valve (Manual transmission)

a. Checking signal for coasting valve

1. Connect a tachometer to the engine.
2. Warm up the engine to normal operating temperature.
3. Disconnect the coupler from the coasting valve and connect a voltmeter to the terminal.
4. Start the engine and increase the engine speed to **3,000 rpm with the throttle**.

Quickly release the throttle lever and check to see that the current stops flowing to the terminal. The engine speed should be **1,150 ± 100 rpm** for U.S.A. and **1,100 ± 100 rpm** for Canada vehicles.

b. Checking coasting valve

1. Warm up the engine to the normal operating temperature and run the engine at idle.
2. Disconnect the coupler from the coasting valve solenoid.
3. Disconnect the air hose (coasting valve ~ air cleaner) from the air cleaner.
4. Place a finger over the air hose opening and check to see that the air is not sucked into the air hose. But, air should be sucked when the battery power is applied to the coasting valve solenoid.

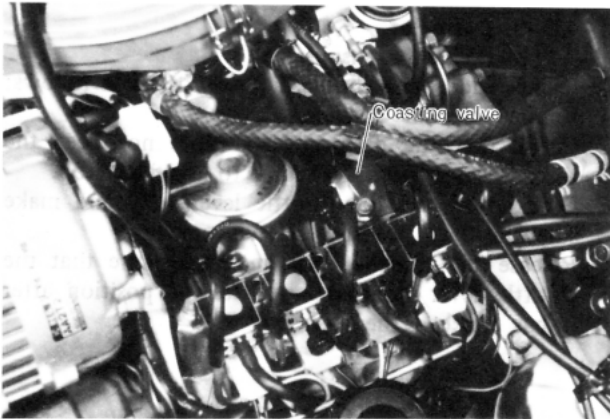


Fig. 1A-65

c. Replacing coasting valve

1. Disconnect the coupler from the coasting valve.
2. Disconnect the air hoses from the coasting valve.
3. Remove the coasting valve.
4. Install the coasting valve in the reverse order of removing.

1A-E-5. Relative Parts

Check the following parts as described in Par. 1A-G.

1. Control unit
2. Idle switch

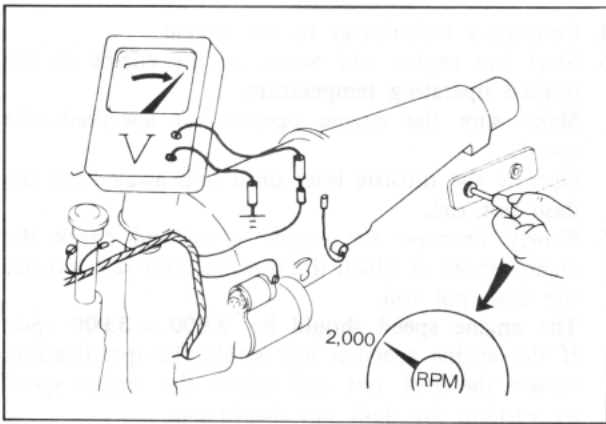


Fig. 1A-66

1A-F. KICK-DOWN CONTROL SYSTEM (AUTOMATIC TRANSMISSION)

1A-F-1. Kick-down Operation

To check the kick-down operation, proceed as follows:

1. Disconnect the kick-down solenoid lead at the coupler.
2. Connect a voltmeter to the solenoid lead coupler.
3. Start the engine and run it at idle.
4. Set the engine speed to **2,000 rpm with choke knob** and check to see the current flows.

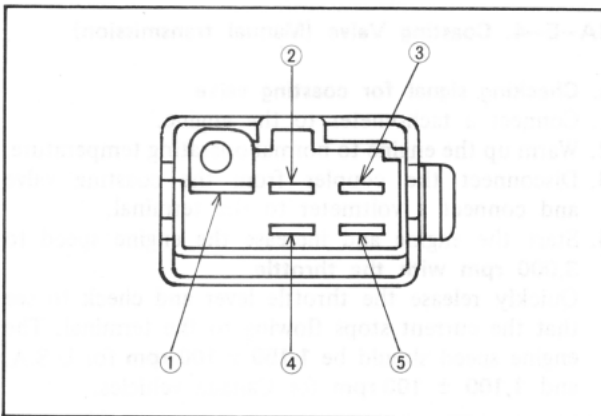


Fig. 1A-67

1A-F-2. Kick-down Relay

To check the relay, proceed as follows:

Disconnect the coupler from the relay and check for continuity according to the following table.

Numbers-continuity	Numbers-No continuity	Remarks
① to ⑤	① to ③	Without power applied
① to ③	① to ⑤	Connect the battery: positive to terminal ② and negative to ④.



Fig. 1A-68

1A-F-3. Relative Part

Check the choke switch as described in Par. 1A-G.

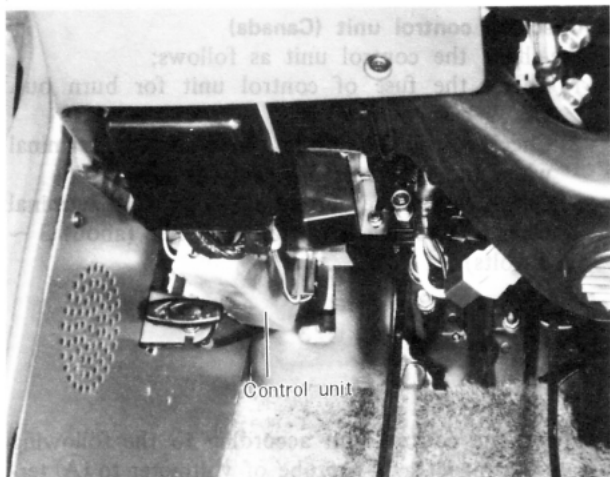


Fig. 1A-69

1A-G. AUXILIARY EMISSION CONTROL DEVICE

1A-G-1. Control Unit

a. Checking control unit (U.S.A.)

1. Pre-check the control unit as follows;
 - 1) Check the fuse of control unit for burn out. Use **5 ampere** fuse.
 - 2) Check to see the current flows to **(B)** terminal when the engine is operating at idle.
 - 3) Check to see the current flows to **(A)** terminal when the engine is operating at idle (about 3 ~ 8 volts).
2. Check the control unit according to the following table. Connect a \ominus probe of voltmeter to **(P)** terminal and \oplus probe to each terminal.

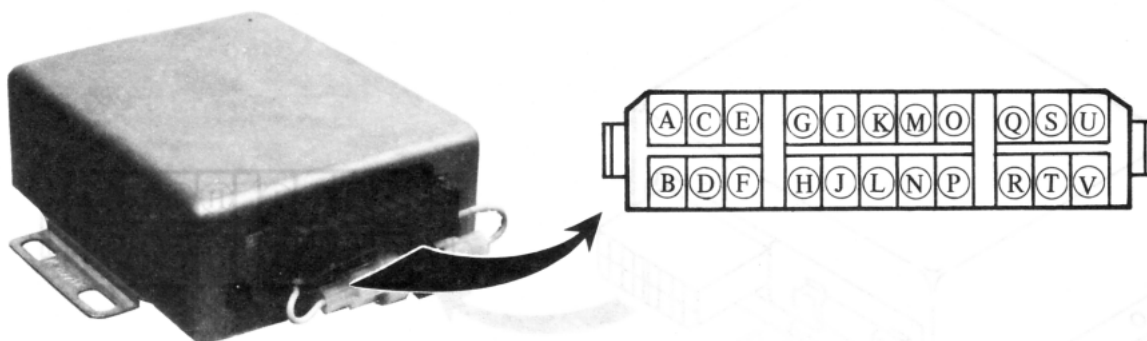


Fig. 1A-70

Terminal	12 V exists under the following condition	Engine condition
J	<ul style="list-style-type: none"> • Less than $1,150 \pm 100$ rpm of engine speed • When applying battery power to (E) or (T) terminals. 	Decreasing engine speed Engine operating
K	<ul style="list-style-type: none"> • When applying battery power to (O) or (T) terminals. 	Engine operating
L	<ul style="list-style-type: none"> • Less than $1,150 \pm 100$ rpm of engine speed 	Decreasing engine speed
M	<ul style="list-style-type: none"> • Apply battery power to (S) terminal. Less than $4,600 \pm 400$ rpm of engine speed within 130 ± 26 seconds after starting engine with choke knob fully pulled. • When applying battery power to (E) terminal. 	Increasing engine speed Engine operating
D	<ul style="list-style-type: none"> • Any time 	Engine operating
Q	<ul style="list-style-type: none"> • Apply battery power to (S) terminal. Less than $4,600 \pm 400$ rpm of engine speed within 130 ± 26 seconds after starting engine with choke knob fully pulled. 	Increasing engine speed
R	<ul style="list-style-type: none"> • Apply battery power to (S) terminal. Less than $3,000 \pm 300$ rpm of engine speed (Less than $3,300 \pm 300$ rpm for Calif. with automatic transmission) • Apply battery power to (S) terminal. Less than $4,600 \pm 400$ rpm of engine speed within 130 ± 26 seconds after starting engine with choke knob fully pulled. 	Increasing engine speed Engine operating
G	<ul style="list-style-type: none"> • More than $1,150 \pm 100$ rpm of engine speed 	Decreasing engine speed
U	California: <ul style="list-style-type: none"> • Any time Except for California: <ul style="list-style-type: none"> • When ignition switch is ON and/or within 60 ± 12 seconds after starting the engine with choke knob fully pulled. 	Engine operating Engine stall and/or operating
V	California only: <ul style="list-style-type: none"> • Apply battery power to (S) terminal. Less than $4,600 \pm 400$ rpm of engine speed within 130 ± 26 seconds after starting engine with choke knob fully pulled. • When applying battery power to (F) or (O) terminals. 	Engine operating Engine operating



Fig. 1A-71

b. Checking control unit (Canada)

1. Pre-check the control unit as follows;
 - 1) Check the fuse of control unit for burn out. Use **5 ampere** fuse.
 - 2) Check to see the current flows to (P) terminal when the engine is operating at idle.
 - 3) Check to see the current flows to (O) terminal when the engine is operating at idle (about 3 ~ 8 volts).
2. Check the control unit according to the following table. Connect a \ominus probe of voltmeter to (A) terminal and \oplus probe to each terminal.

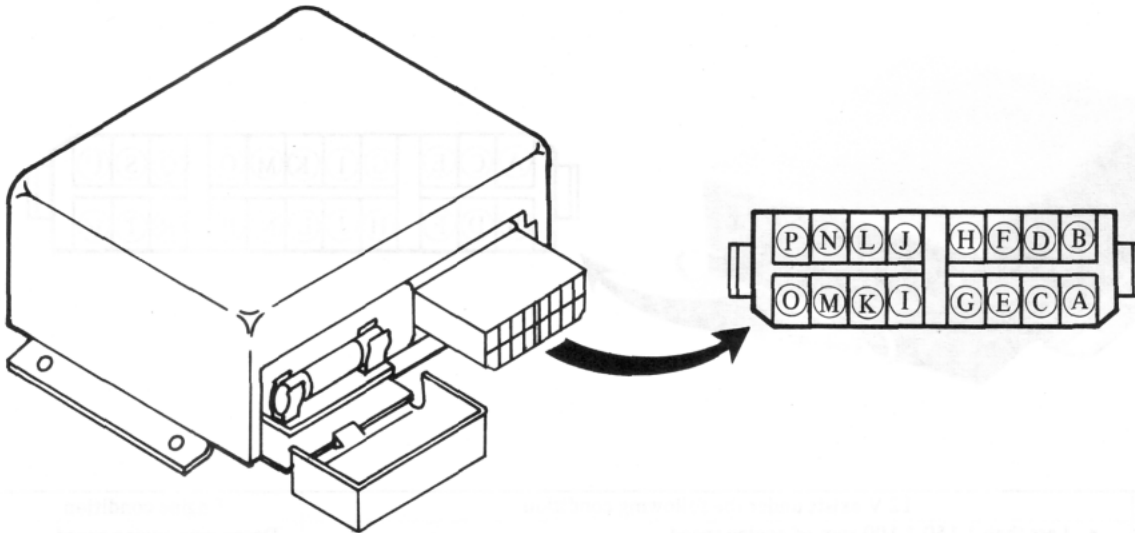


Fig. 1A-72

Terminal	12 V exists under the following condition	Engine condition
F, H	<ul style="list-style-type: none"> • Less than 1,100 \pm 100 rpm of engine speed 	Decreasing engine speed
K	<ul style="list-style-type: none"> • Any engine speed 	Engine operating
I	<ul style="list-style-type: none"> • More than 1,100 \pm 100 rpm of engine speed 	Decreasing engine speed

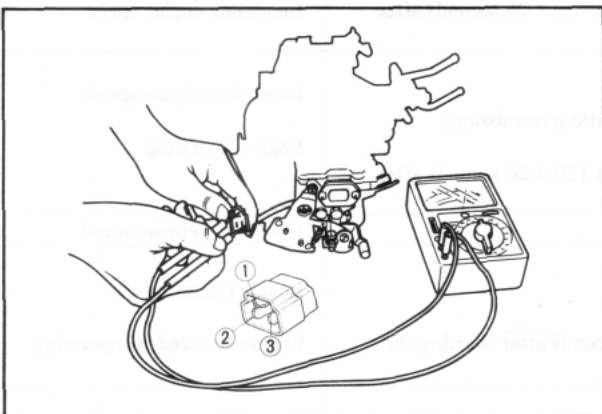


Fig. 1A-73

1A-G-2. Idle Switch (Manual transmission)

a. Checking idle switch

1. Disconnect the coupler from the idle switch.
2. Check the continuity between the numbered terminals in the coupler using an ohmmeter.

Numbers-continuity	Numbers-No continuity	Remarks
(1) - (3)	(1) - (2)	Run the engine at idle.
(1) - (2)	(1) - (3)	Increase the engine speed up to 1,000 \pm 50 rpm with throttle.



Fig. 1A-74

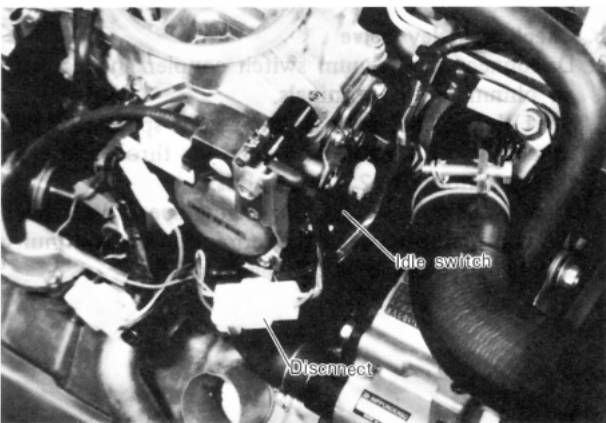


Fig. 1A-75

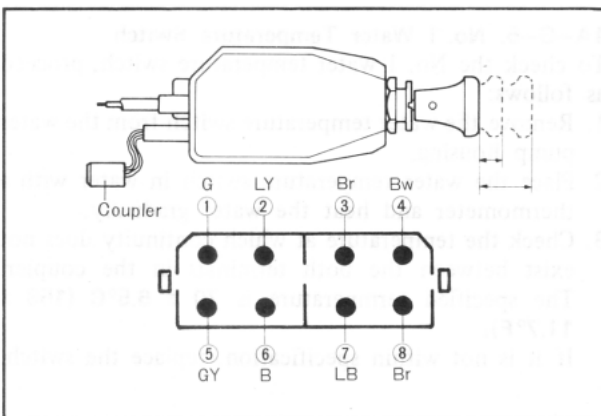


Fig. 1A-76

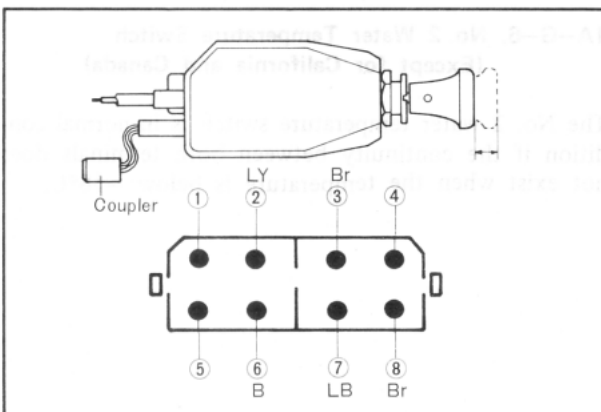


Fig. 1A-77

b. Adjusting idle switch

1. Connect a tachometer to the engine.
2. Remove the limiter cap (plastic cap) from the idle switch adjusting screw.
3. Disconnect the coupler of idle switch and connect an ohmmeter to ① and ③ terminals in the coupler.
4. Start the engine and slowly increase the engine speed with throttle. Turn the adjusting screw so that the continuity between ① and ③ terminals does not exist when the engine speed is $1,000 \pm 50$ rpm.
5. Reinstall the limiter cap so that the cap is positioned at the stopper pin, as shown in figure.

c. Replacing idle switch

1. Remove the air cleaner.
2. Disconnect the coupler of the idle switch.
3. Remove the screws attaching the idle switch and remove the idle switch.
4. Install the idle switch in the reverse order of removing and adjust the idle switch as explained above.

1A-G-3. Choke Switch and Full Choke Switch

To check the choke switch, proceed as follows:

1. Disconnect the coupler from the choke switch.
2. Check the continuity between the numbered terminals in the coupler using an ohmmeter.

U. S. A.

Choke knob pulled at	Numbers-continuity	
	Choke switch	Full choke switch
$10 \pm 2\text{mm}$ ($0.4 \pm 0.08\text{in}$)	③ - ⑦	—
$25.5 \pm 1.5\text{mm}$ ($1.0 \pm 0.06\text{in}$)	—	④ - ⑤

Canada

Choke knob pulled at	Numbers-continuity	
	Choke switch	Full choke switch
$10 \pm 2\text{mm}$ ($0.4 \pm 0.08\text{in}$)	③ - ⑦	None

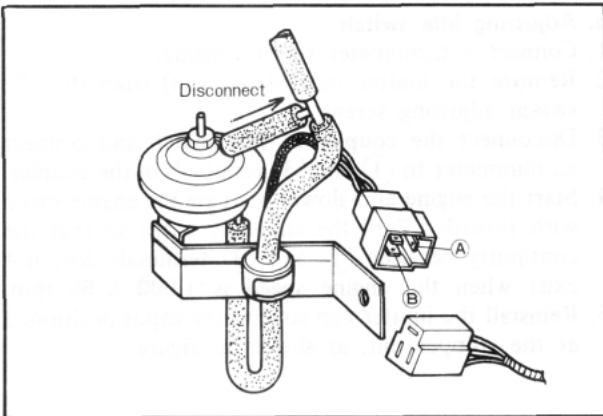


Fig. 1A-78

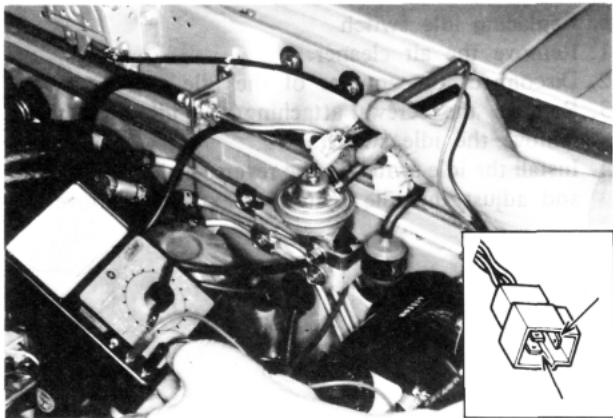


Fig. 1A-79

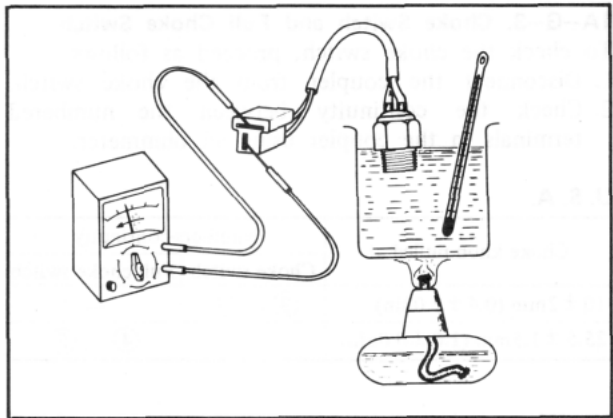


Fig. 1A-80



Fig. 1A-81

1A-G-4. Acceleration Sensor (Automatic transmission and California with manual transmission)

a. Checking vacuum switch

1. Disconnect the vacuum switch coupler and connect an ohmmeter to (A) and (B) terminals.
2. Start the engine and run it at idle. Make sure that continuity does not exist between both terminals.
3. Disconnect the vacuum sensing tube from the vacuum switch and make sure that continuity exists between both terminals.

b. Checking delay valve

1. Disconnect the vacuum switch coupler and connect an ohmmeter to terminals.
2. Start the engine. Increase the engine speed to **3,000 rpm with the throttle** and keep the throttle lever in that position for **2 ~ 3 seconds**. Then, quickly decrease the engine speed and check the continuity between the terminals. The continuity should exist for **3 ~ 25 seconds**.

1A-G-5. No. 1 Water Temperature Switch

To check the No. 1 water temperature switch, proceed as follows:

1. Remove the water temperature switch from the water pump housing.
2. Place the water temperature switch in water with a thermometer and heat the water gradually.
3. Check the temperature at which continuity does not exist between the both terminals in the coupler. The specified temperature is $70 \pm 6.5^{\circ}\text{C}$ ($158 \pm 11.7^{\circ}\text{F}$).

If it is not within specification, replace the switch.

1A-G-6. No. 2 Water Temperature Switch (Except for California and Canada)

The No. 2 water temperature switch is in normal condition if the continuity between both terminals does not exist when the temperature is below -18°C .

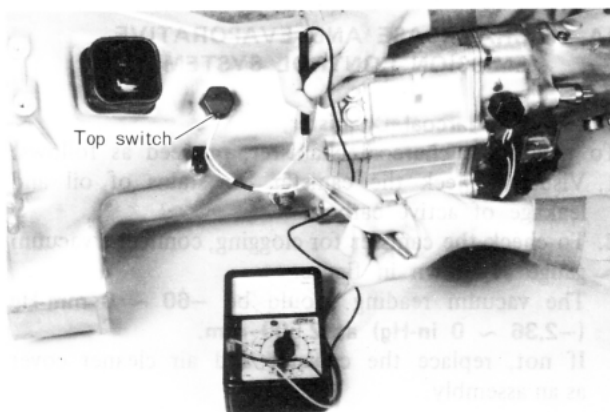


Fig. 1A-82

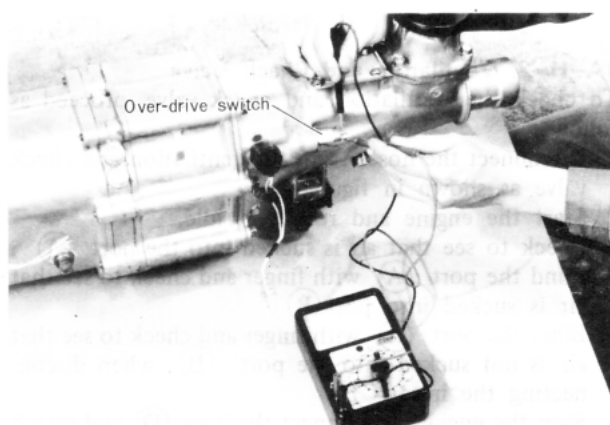


Fig. 1A-83

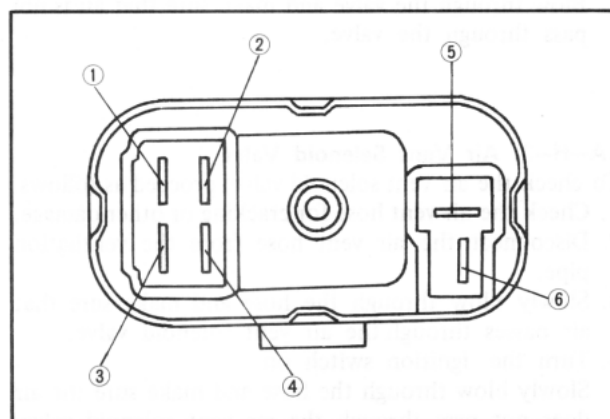


Fig. 1A-84

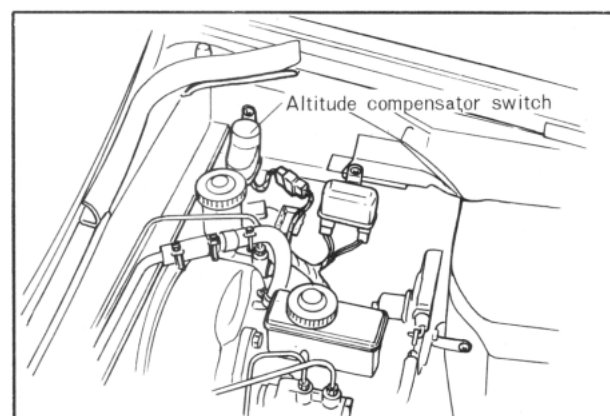


Fig. 1A-85

1A-G-7. Top Switch and Over-drive Switch (Manual transmission except for Canada)

a. Checking top switch

1. Raise the vehicle and support it with stands.
2. Disconnect the bullet connectors of the top switch on the transmission housing and connect an ohmmeter to both connectors (top switch side) as shown in figure.
3. Check to see that the continuity between both connectors does not exist when shifting the shift lever to 4th position.

b. Checking over-drive switch

1. Raise the vehicle and support it with stands.
2. Disconnect the bullet connectors from the over-drive switch on the transmission extension housing and connect an ohmmeter to both terminals on the over-drive switch.
3. Check to see that the continuity between both terminals does not exist when shifting the shift lever to 5th position.

1A-G-8. Choke Relay

To check the relay, proceed as follows:

1. Disconnect the coupler from the relay.
2. Check the continuity between the numbered terminals using an ohmmeter.

Numbers-continuity	Numbers-No continuity	Remarks
① to ②	③ to ④	Without power applied
③ to ④	① to ②	Connect the battery: positive to terminal ⑥ and negative to ⑤.

1A-G-9. Altitude Compensator Switch (Manual transmission except for Calif. and Canada)

The altitude compensator switch is in normal condition if the continuity between both terminals does not exist when the atmospheric pressure is below 675 ± 30 mm-Hg (26.6 ± 1.2 in-Hg).

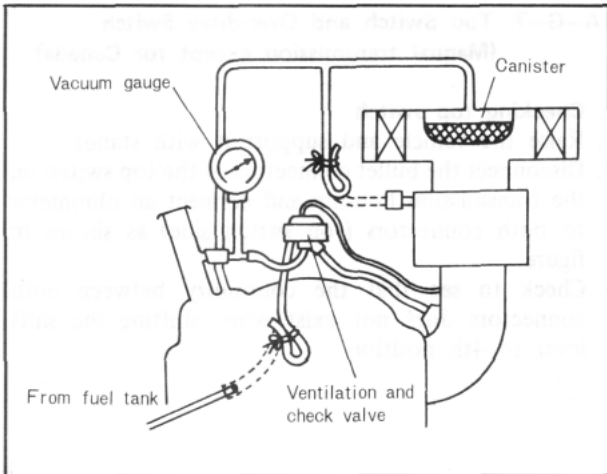


Fig. 1A-86

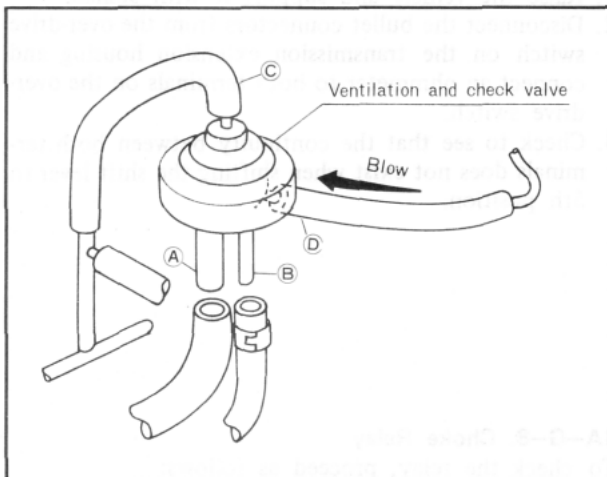


Fig. 1A-87

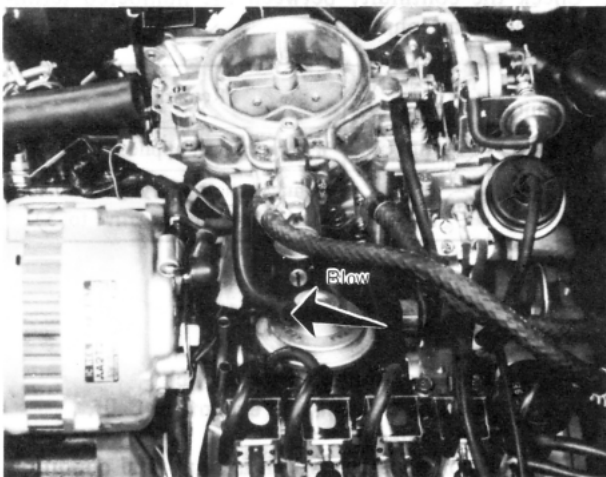


Fig. 1A-88

1A-H. CRANKCASE AND EVAPORATIVE EMISSION CONTROL SYSTEM

1A-H-1. Charcoal Canister

To check the charcoal canister, proceed as follows:

1. Visually check the canister for stains of oil and leakage of active carbon.
2. To check the canister for clogging, connect a vacuum gauge as shown in figure.

The vacuum reading should be $-60 \sim 0$ mm-Hg ($-2.36 \sim 0$ in-Hg) at 2,500 rpm.

If not, replace the canister and air cleaner cover as an assembly.

1A-H-2. Ventilation and Check Valve

To check the ventilation and check valve, proceed as follows:

1. Disconnect the hoses from the ventilation and check valve as shown in figure.
2. Start the engine and run it at idle. Check to see that air is sucked into the port (A).
3. Blind the port (A) with finger and check to see that air is sucked into port (B).
4. Blind the port (A) with finger and check to see that air is not sucked into the port (B) when disconnecting the hose (C).
5. Stop the engine. Disconnect the hose (D) and attach the suitable hose instead. Blow through the valve and make sure that air is not pass through the valve.

1A-H-3. Air Vent Solenoid Valve

To check the air vent solenoid valve, proceed as follows:

1. Check the air vent hose for cracking or other damage.
2. Disconnect the air vent hose from the ventilation pipe.
3. Slowly blow through the hose and make sure that air passes through the air vent solenoid valve.
4. Turn the ignition switch on. Slowly blow through the hose and make sure the air does not pass through the air vent solenoid valve.

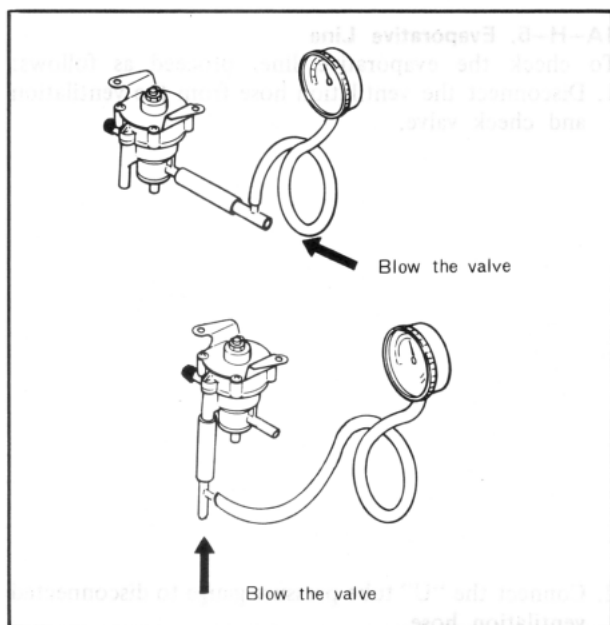


Fig. 1A-89

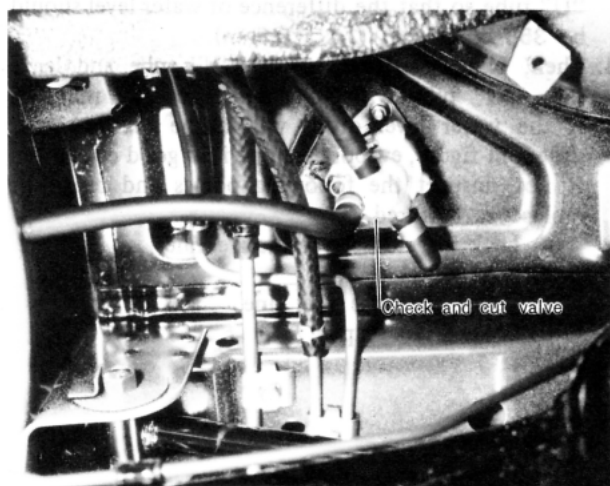


Fig. 1A-90

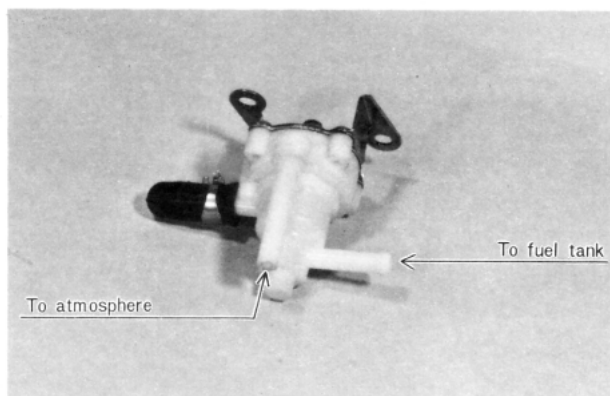


Fig. 1A-91

1A-H-4. Check and Cut Valve

a. Checking check and cut valve

1. Remove the check and cut valve.
2. Connect a pressure gauge to the passage to the fuel tank.
3. Blow through the valve. The valve should open with the pressure of $0.055 \sim 0.07 \text{ kg/cm}^2$ ($0.78 \sim 1.0 \text{ lb/in}^2$).
4. Remove the pressure gauge and connect it to the passage to atmosphere.
5. Blow through the valve and if the valve opens with the pressure of $0.01 \sim 0.05 \text{ kg/cm}^2$ ($0.14 \sim 0.71 \text{ lb/in}^2$), the valve is normal.

Note:

The test should be performed with the valve located horizontally. Otherwise the weight of the valve will move out of the position and cut the line.

b. Replacing check and cut valve

1. Raise the rear end of the vehicle and support it with stands.
2. Unfasten the hose bands and disconnect the evaporative hoses from the check and cut valve.
3. Remove the check and cut valve.
4. Install the check and cut valve in the reverse order of removing noting the hose position.

Note:

- a) When installing the check and cut valve, fully push in the evaporative hoses to the valve and secure the hoses with bands.
- b) When connecting the fuel hoses to the valve, note the direction of the valve fittings.

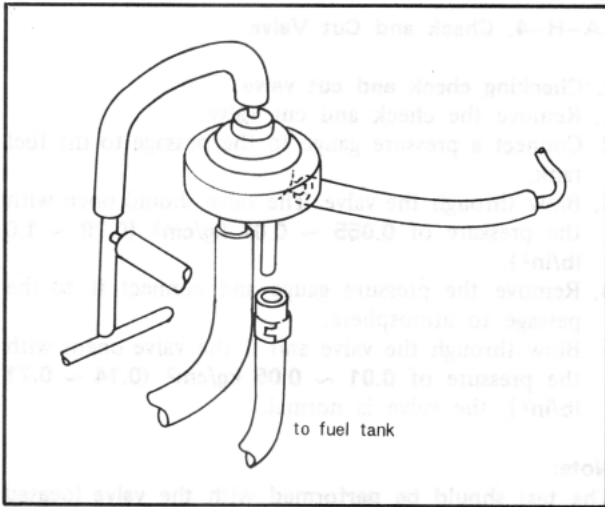


Fig. 1A-92

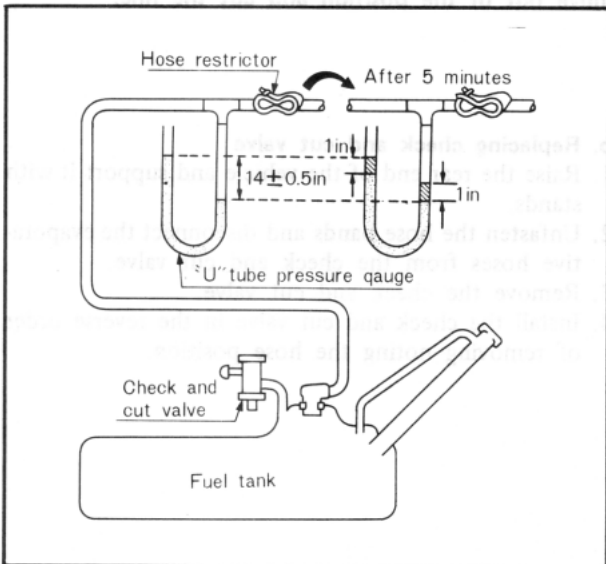


Fig. 1A-93

1A-H-5. Evaporative Line

To check the evaporative line, proceed as follows:

1. Disconnect the ventilation hose from the ventilation and check valve.

2. Connect the "U" tube pressure gauge to disconnected ventilation hose.

3. Gradually apply the low compressed air into the "U" tube so that the difference of water level should be $356 \pm 12 \text{ mm}$ ($14 \pm 0.5 \text{ in}$).

4. Then, blind the inlet of the "U" tube and leave the "U" tube with inlet blind for five minutes. If the water level drops within the hatched lines shown in figure, evaporative line is in good condition. If not, inspect the following points and repair or replace as required.

- a) Leaky or loose evaporative line
- b) Leaky fuel tank
- c) Leaky or loose fuel line
- d) Leaky filler cap

1A-I. PIPINGS

California

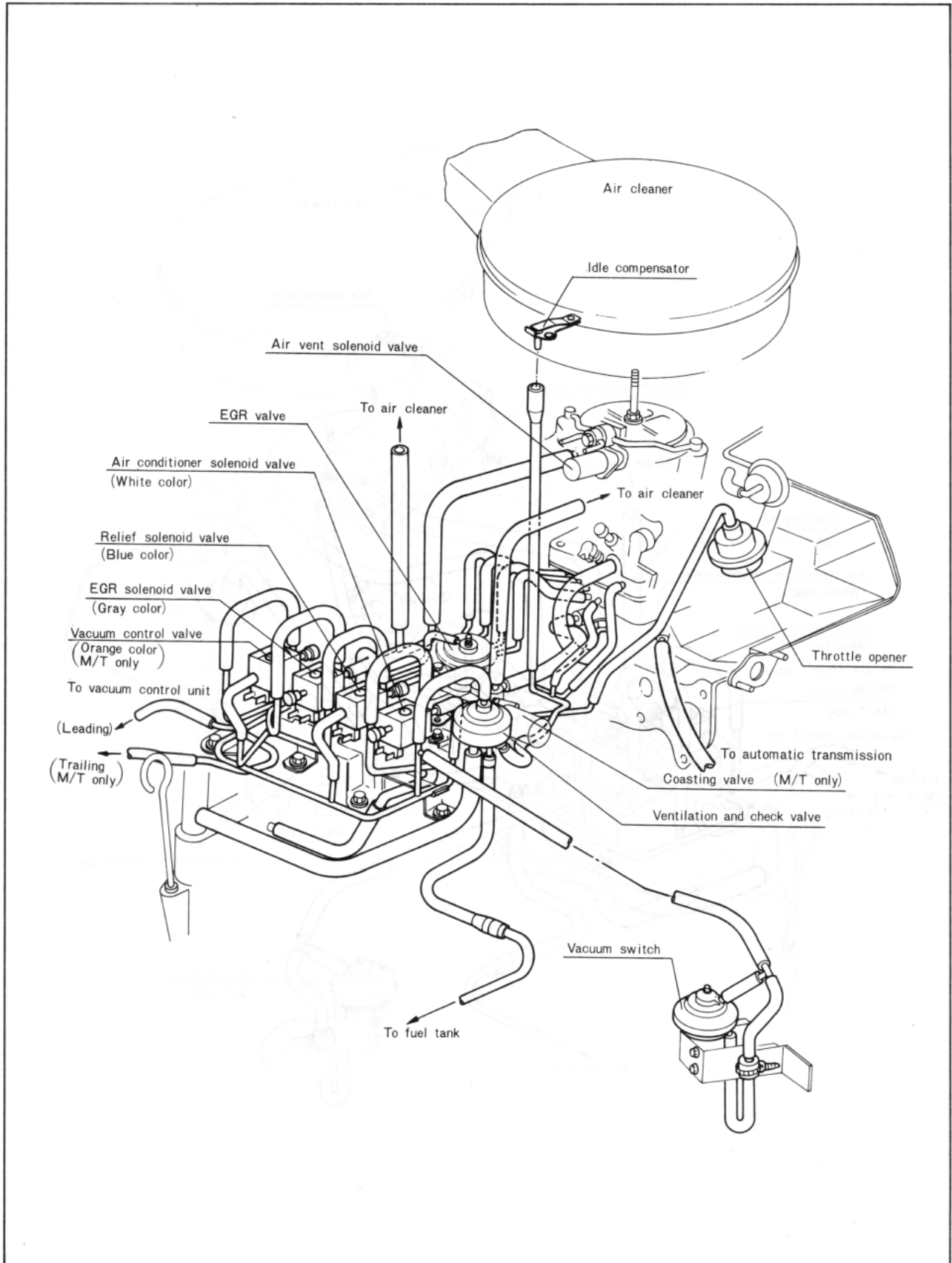


Fig. 1A-94

Except for California and Canada

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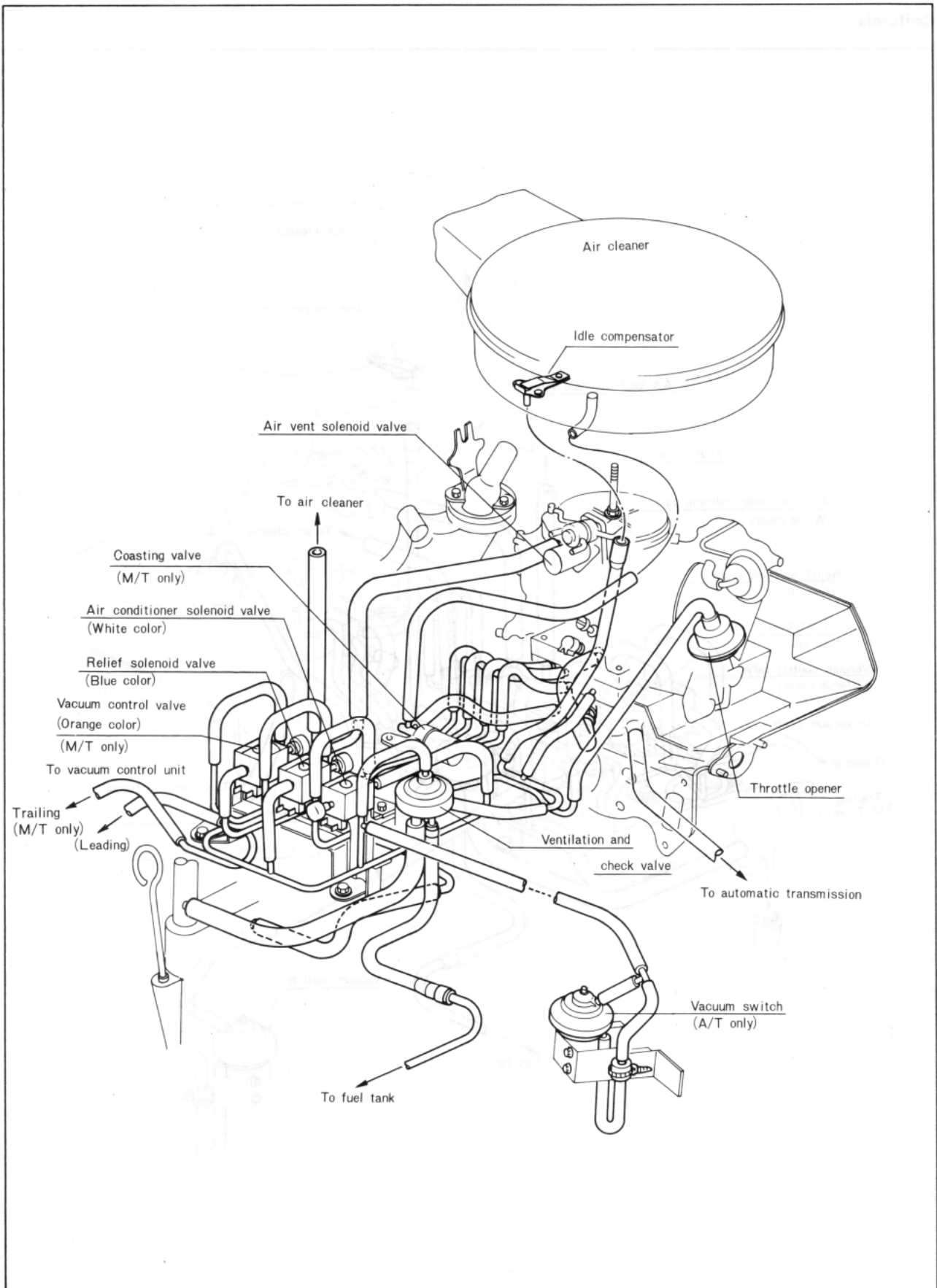


Fig. 1A-95

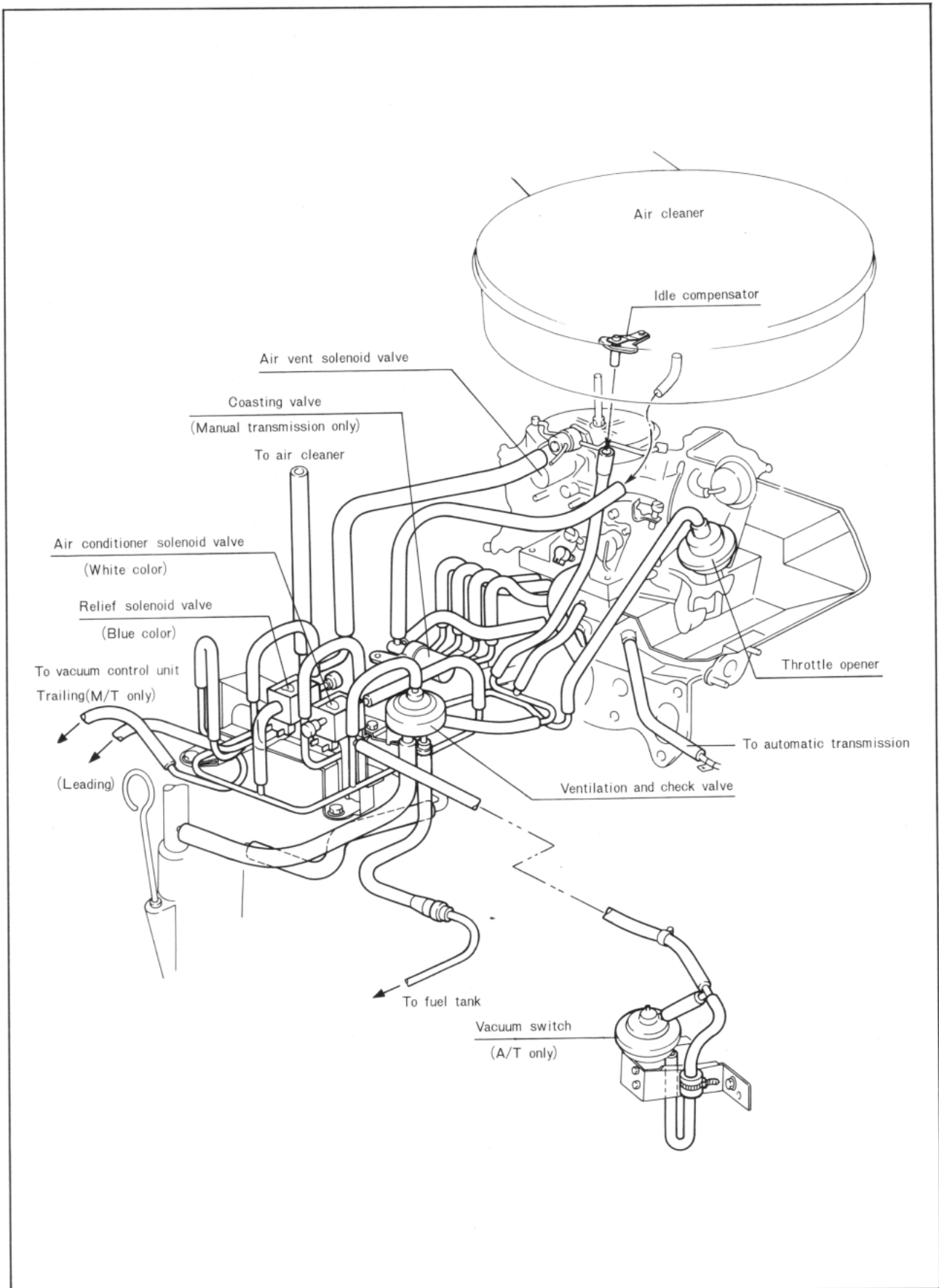


Fig. 1A-96