Chapter Four
Emission Controls and Fuel System

Emission Controls

There are three types of automotive pollutants; crankcase fumes, exhaust gases and gasoline evaporation. The equipment that is used to limit these pollutants is commonly called emission control equipment.

CRANKCASE EMISSION CONTROLS

The crankcase emission control equipment consists of a positive crankcase ventilation valve (PCV), a closed or open oil filler cap and hoses to connect this equipment.

When the engine is running, a small portion of the gases which are formed in the combustion chamber during combustion leak by the piston rings and enter the crankcase. Since these gases are under pressure they tend to escape from the crankcase and enter into the atmosphere. If these gases were allowed to remain in the crankcase for any length of time, they would contaminate the engine oil and cause sludge to build up. If the gases are allowed to escape into the atmosphere, they would pollute the air, as they contain unburned hydrocarbons. The crankcase emission control equipment recycles these gases back into the engine combustion chamber where they are burned.

Crankcase gases are recycled in the following manner: while the engine is running, clean filtered air is drawn into the crankcase through the carburetor air filter and then through a hose leading to the rocker cover. As the air passes through the crankcase it picks up the combustion gases and carries them out of the crankcase, up through the PCV valve and into the intake manifold. After they enter the intake manifold they are drawn into the combustion chamber and burned.

The most critical component in the system is the PCV valve. This vacuum controlled valve regulates the amount of gases which are recycled into the combustion chamber. At low engine speeds the valve is partially closed, limiting the flow of gases into the intake manifold. As engine speed increases, the valve opens to admit greater quantities of the gases into the intake manifold. If the valve should become blocked or plugged, the gases will be prevented from escaping from the crankcases by the normal route. Since these gases are under pressure, they will find their own way out of the crankcase. This alternate route is usually a weak oil seal or gasket in the engine. As the gas escapes by the gasket, it also creates an oil leak. Besides causing oil

leaks, a clogged PCV valve also allows these gases to remain in the crankcase for an extended period of time, promoting the formation of sludge in the engine.

The above explanation and the troubleshooting procedure which follows applies to all engines with PCV systems.

Testing

Check the PCV system hoses and connections, to see that there are no leaks; then replace or tighten, as necessary.

To check the valve, remove it and blow through both of its ends. When blowing from the side which goes toward the intake manifold, very little air should pass through it. When blowing from the crankcase (valve cover) side, air should pass through freely.

Replace the valve with a new one, if the valve fails to function as outlined.

NOTE: *Do not attempt to clean or adjust the valve; replace it with a new one.*

Removal and Installation

To remove the PCV valve, simply loosen the hose clamps and remove the valve from the manifold-to-crankcase hose. Install the PCV valve in the reverse order of removal.

EVAPORATIVE EMISSION CONTROL SYSTEM

When raw fuel evaporates, the vapors contain hydrocarbons. To prevent these nasties from escaping into the atmosphere, the fuel evaporative emission control system was designed.

The system consists of a sealed fuel tank with a fuel and vapor separator, a carbon-filled vapor storage canister, a vacuum switching valve and hoses used to connect these components (in the above order) leading from the gas tank to the intake manifold.

In operation, the vapor formed in the fuel tank passes through the separator and enters into the charcoal canister. The charcoal absorbs the fuel vapor and stores it in the canister. When a predetermined speed is reached and there is sufficient vacuum present in the intake manifold, the vacuum switching valve opens. This allows the stored fuel vapor, along with fresh air, to be routed into the intake manifold and combustion chamber.

Inspection and Service

The fuel and vapor lines, hoses, pipes and connections should be in good condition with no signs of leakage.

Clean and inspect the storage canister for damage every 12,000 miles. Replace the canister every five years.

Inspect the fuel vapor check valve every year and replace it every two years or 24,000 miles.

Removal and Installation

Removal and installation of the various evaporative emission control system components consists of disconnecting the hoses, loosening retaining screws, and removing the part which is to be replaced or checked. Install in the reverse order. When replacing hose, make sure that it is fuel and vapor-resistant.

EXHAUST EMISSION CONTROL

Air Injection System

The air injection system controls exhaust emissions by burning the hydrocarbons and carbon monoxide in the exhaust ports of the cylinder head.

Air is pumped into the exhaust ports near each exhaust valve. The oxygen in the air plus the heat of the exhaust gases causes further combustion of the gases.

Air drawn from the carburetor air cleaner into the air pump is pressurized and routed through the air by-pass valve, check valve, the air injection manifold, and finally, into the air injection nozzles and the exhaust ports.

When the carburetor throttle plates are suddenly closed (deceleration), there is a sudden overly-rich air/fuel mixture present in the intake manifold, which will cause more hydrocarbons and carbon monoxide in the exhaust manifold. To prevent backfiring during deceleration, the air by-pass valve routes the air coming from the air pump into the intake manifold during deceleration, leaning out the mixture in the intake manifold.

In the event that the engine should backfire in the exhaust manifold, the check valve at the air injection manifold will close and block the reverse flow of

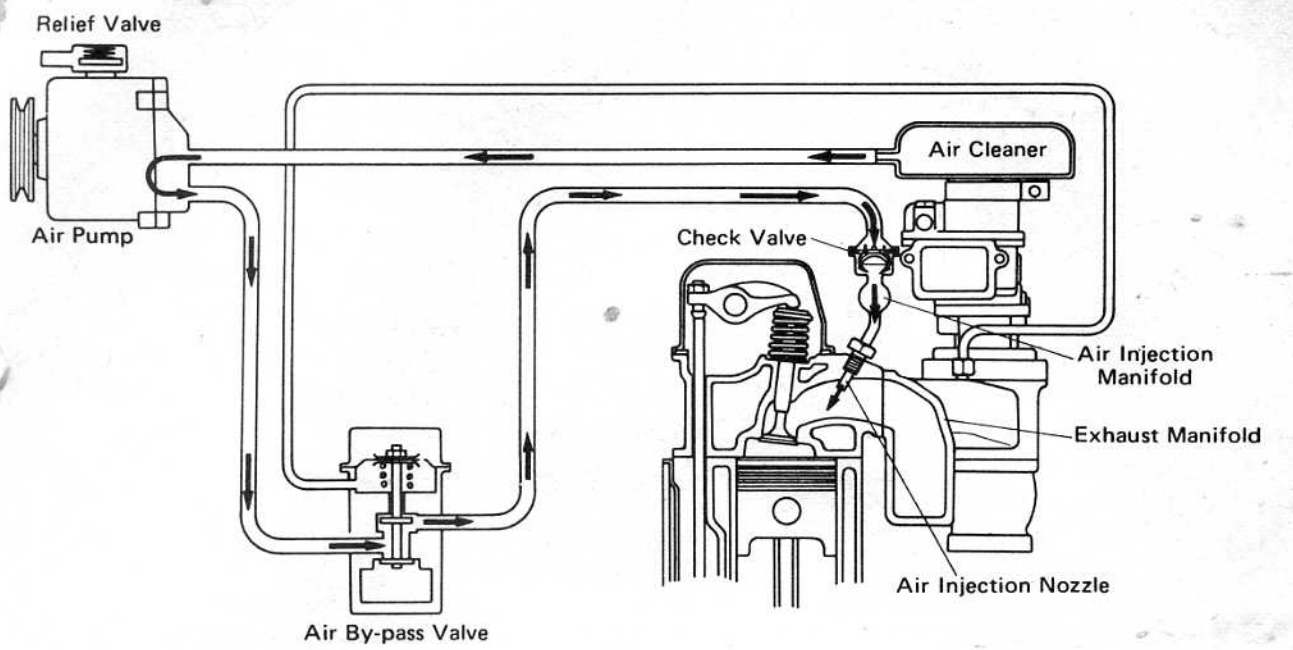


Diagram of the Air Injection Reactor (AIR) system used in 1973–75—except California

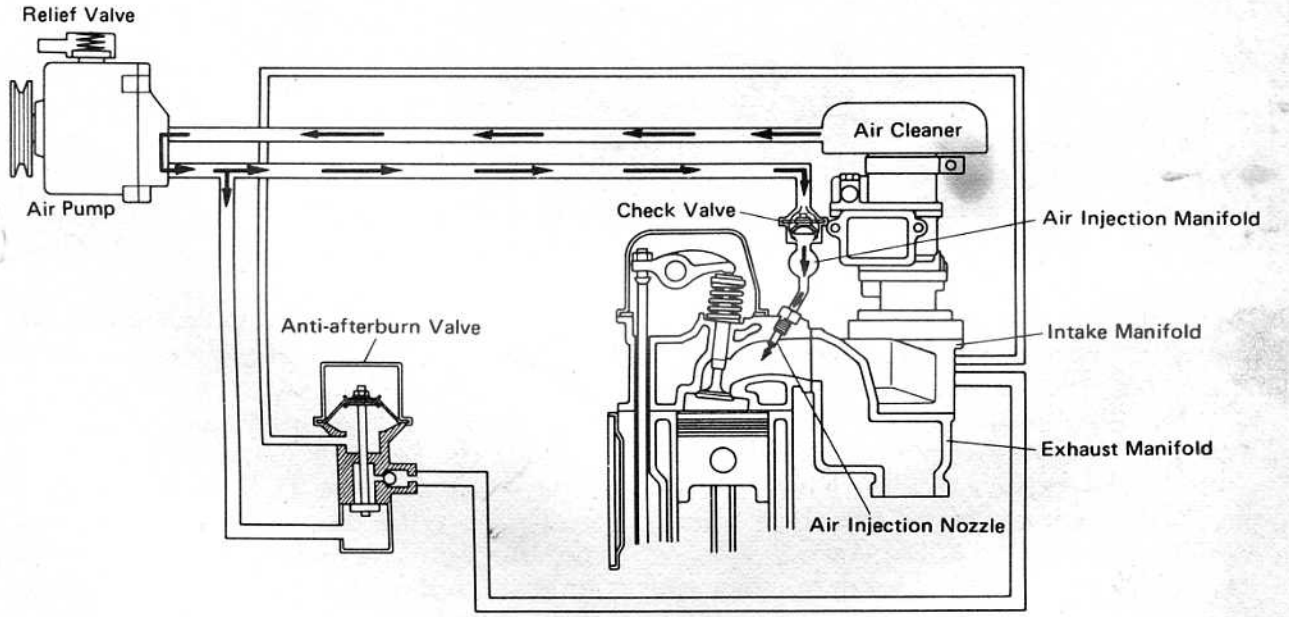


Diagram of the Air Injection Reactor (AIR) system used in 1974–75—California

air, preventing possible damage to the air pump.

Throttle Positioner

The throttle positioner system is designed to stop the throttle valve, when it is suddenly closed during deceleration, at a position which will leave the throttle valve open slightly more than at idle. This will allow more air to be drawn into the intake manifold to alleviate the overly-rich air/fuel mixture present during deceleration. This promotes better combustion and lower hydrocarbon emissions.

The system incorporates a speed sensor, which senses vehicle speed, an electrical computer, a vacuum switching valve (VSV), and a vacuum diaphragm-operated throttle positioner with an adjusting screw.

When the vehicle speed reaches the On range, the computer closes an electrical circuit leading to the vacuum switching valve. The flow of electrical current to the VSV causes atmospheric

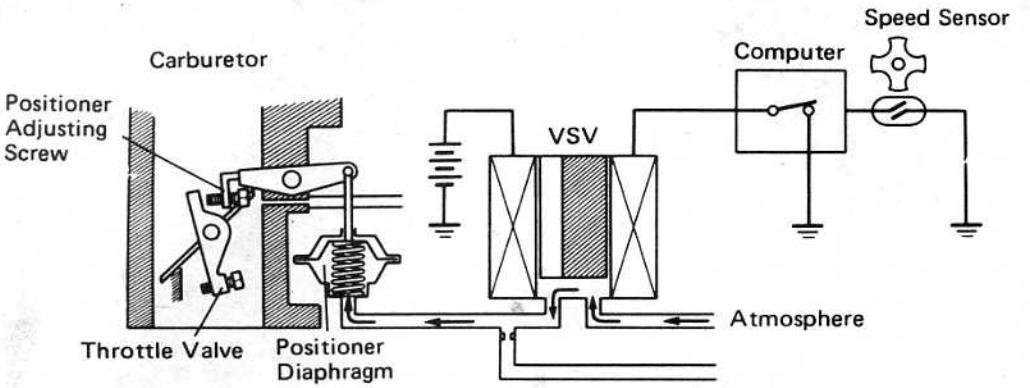


Diagram of the Throttle Positioner system—system On, positioner set

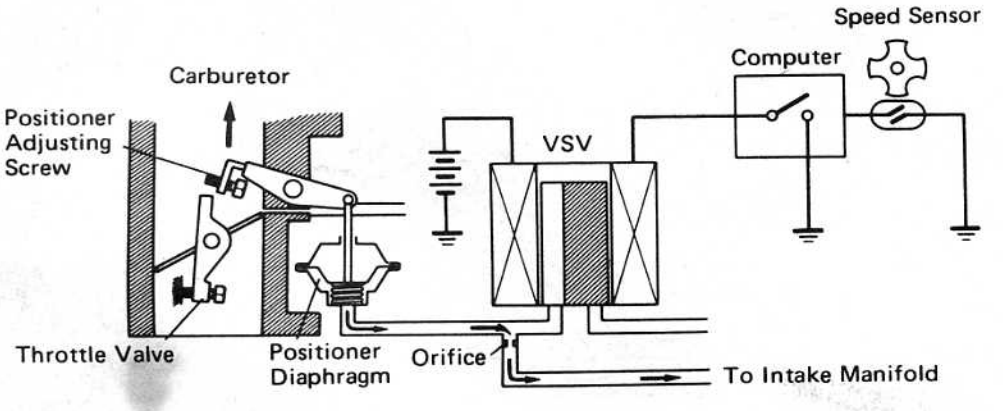


Diagram of the Throttle Positioner system—system Off, positioner released

pressure to be routed to the throttle positioner vacuum diaphragm, allowing the spring in the diaphragm to place the throttle positioner in the On position. When the vehicle suddenly decelerates, the throttle valve lever will rest on the throttle positioner lever adjusting screw, remaining slightly open. As the vehicle slows down and the speed reaches the Off range, the speed sensor causes the computer to open the electrical circuit to the VSV. The VSV will close the opening to atmospheric pressure, allowing intake manifold vacuum to act on the positioner diaphragm. The vacuum working against the diaphragm overcomes the spring pressure and moves the positioner lever to the Off position, allowing the throttle valve to close more to the idle position.

Transmission Controlled Spark (TCS)

The TCS system controls the engine's ignition timing by removing and applying intake manifold vacuum to the distributor vacuum advance (retard) mechanism. On models equipped with TCS, the distributor vacuum diaphragm only retards the ignition spark timing.

Operation of the TCS system is in accordance with the engine coolant temperature and vehicle speed. When the engine coolant temperature is between 140° F and 208° F (113° F and 217° F in California) and when the vehicle speed during acceleration is between 13 ± 2 mph (13 ± 3 mph in California) and 41 ± 2 mph (41 ± 3 mph in California) or during deceleration is between 31 ± 3 mph (26 ± 8 mph in California) and 9 ± 4 mph (same in California), the computer closes an electrical circuit leading to the VSV which routes intake manifold vacuum to the distributor vacuum diaphragm, retarding the ignition timing. When any of the above conditions does not exist, the vacuum to the distributor vacuum diaphragm is removed and the diaphragm exposed to atmospheric pressure, advancing the timing.

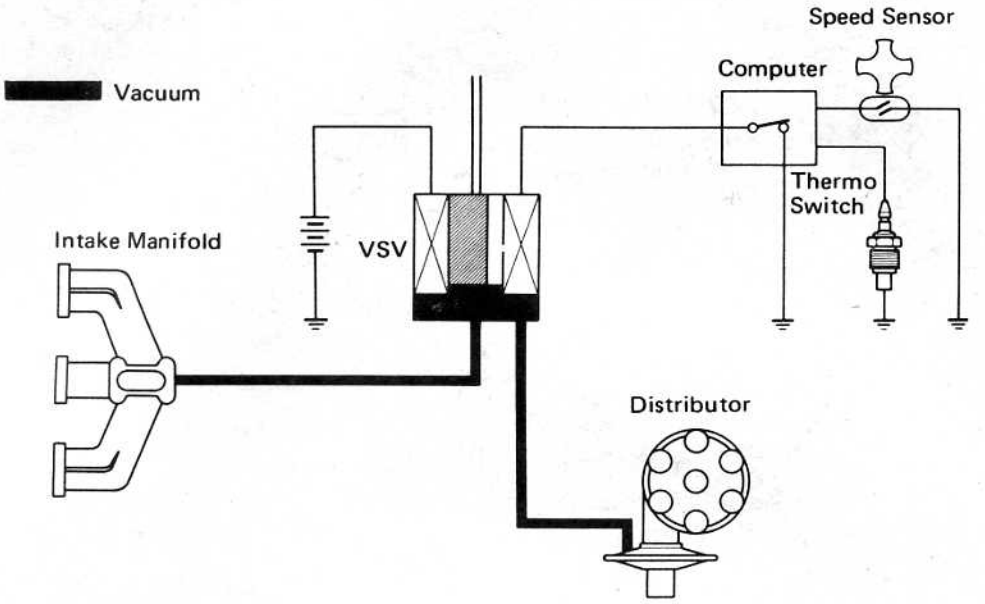


Diagram of the Transmission Controlled Spark system—vacuum retard applied to the distributor

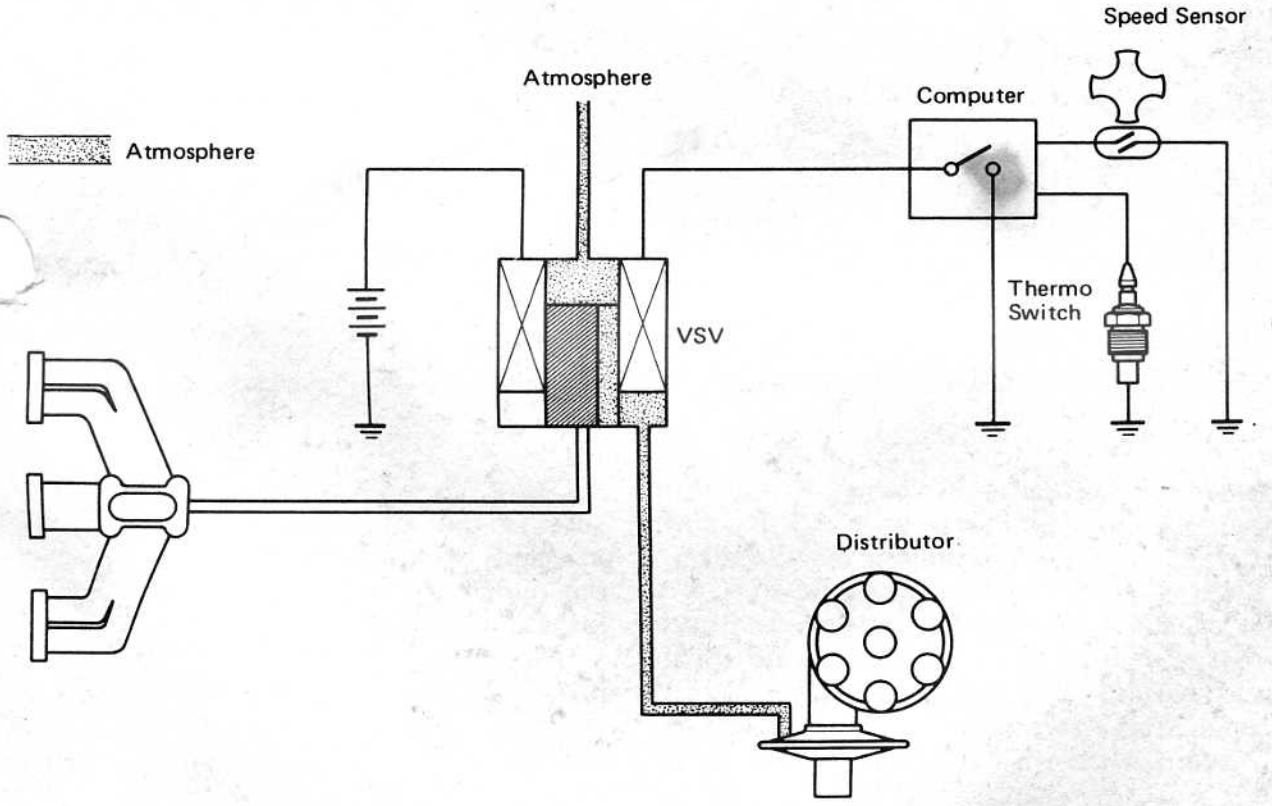


Diagram of the Transmission Controlled Spark system—vacuum retard not applied to the distributor

Exhaust Gas Recirculation (EGR)

The Land Cruiser F Series engine is equipped with EGR in 1974 for models sold in California only.

The EGR system recirculates a metered amount of exhaust gases into the intake system at the base of the carburetor. This lowers the peak combustion temperature, thereby reducing oxide of nitrogen (NO_x) emissions.

The operation of the EGR system is controlled by the vehicle speed, coolant temperature, and the temperature of the EGR valve. When the engine coolant temperature rises, the EGR system will operate when the temperature is between 113° F and 217° F. When the temperature starts to fall from above 217° F,

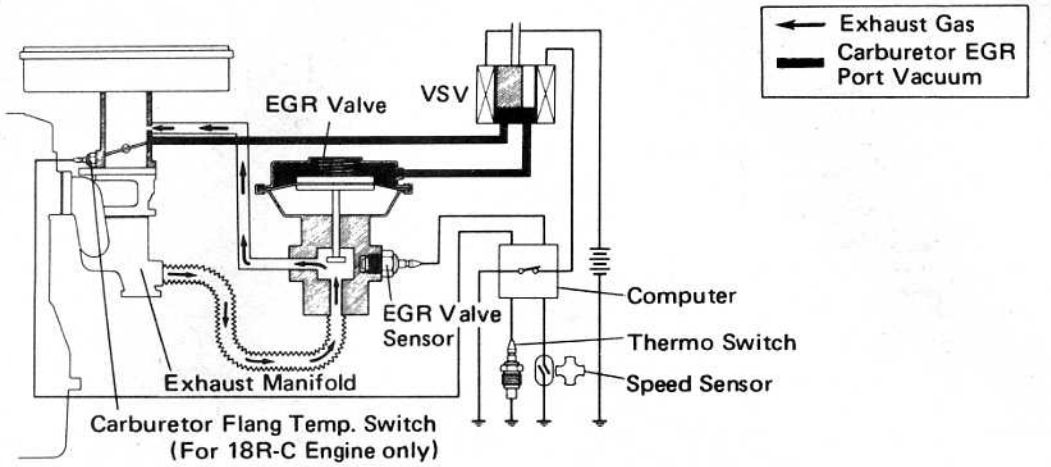


Diagram of the Exhaust Gas Recirculation (EGR) system—On condition

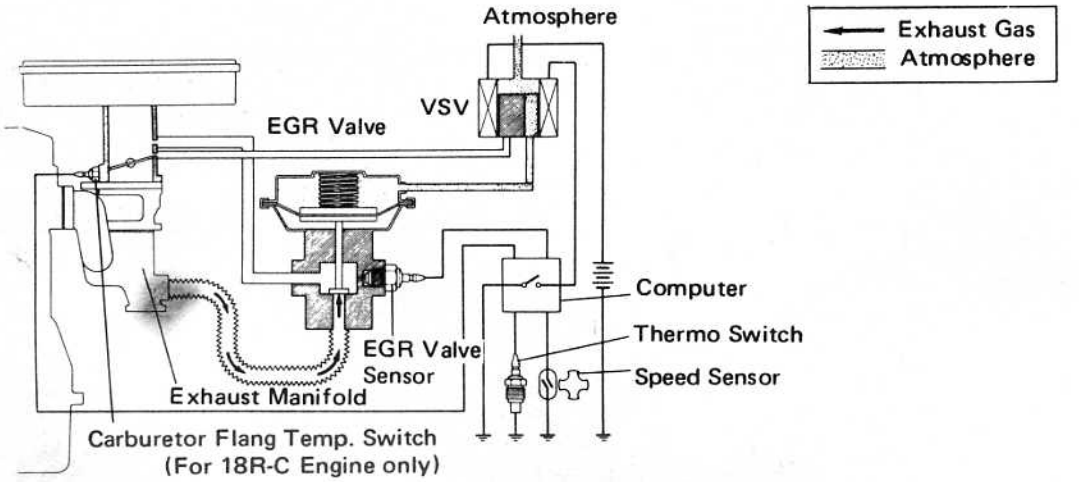


Diagram of the Exhaust Gas Recirculation (EGR) system—Off condition

the EGR system will operate when the temperature is between 213° F and 101° F. When the vehicle is accelerating, the EGR system will operate up to 65 ± 3 mph. When the vehicle is decelerating, the EGR system does not operate until the vehicle speed decreases to 13 ± 3 mph. When the temperature of the EGR valve rises, the EGR system will operate up until the temperature of the EGR valve reaches 320° F. When the temperature of the EGR valve falls, the EGR system will begin to operate when the temperature of the EGR valve reaches 248° F.

Inspection and Service

Air Pump

Operate the air pump and listen for any abnormal noise that would indicate a damaged bearing, vane, etc.

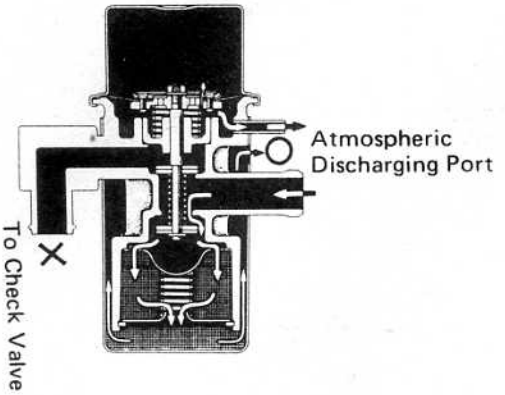
Check the air pump discharge pressure of the air pump by connecting a pressure gauge into the outlet hose of the pump. The pressure should be at least 2 psi at 1,000 engine rpm.

Check the operation of the air pump relief valve. The valve should release pressure when the output pressure of the air pump reaches 3–5 psi.

Air By-Pass Valve

The air by-pass valve is installed all models equipped with the AIR system except those sold in California in 1974.

At idle speed there should not be any compressed air released from the atmospheric discharge port. When the engine is raced, air should be released from the atmospheric discharge port for a short time.

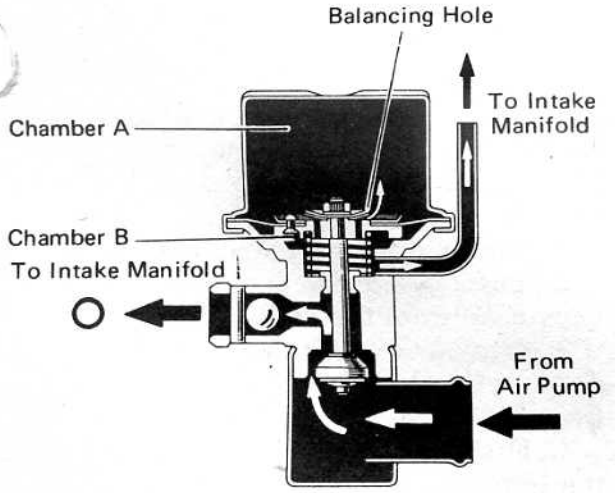


When the engine is raced, air should be discharged from the atmospheric discharge port of the air by-pass valve momentarily

Anti-Backfire (Anti-Afterburn) Valve

The anti-backfire valve is installed in place of the air by-pass valve on 1974 vehicles sold in California.

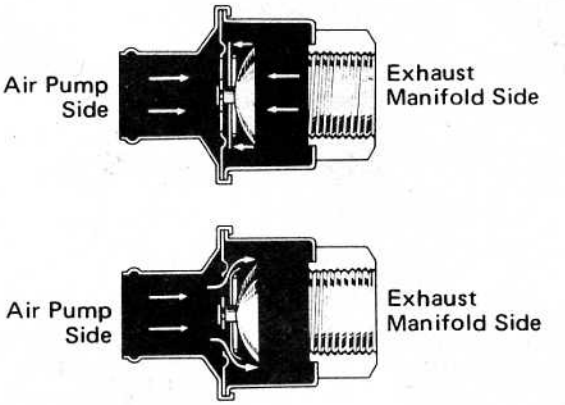
At idle, compressed air should not be felt at the intake manifold side of the valve. When the engine is raced, air should be released from the atmospheric intake manifold side for a short time.



When the engine is raced, air from the air pump should be discharged from the anti-backfire valve intake manifold discharge port

Check Valve

Air should pass only from the air pump side of the valve, not from the exhaust manifold side.



The check valve should only allow air to pass to the exhaust manifold side

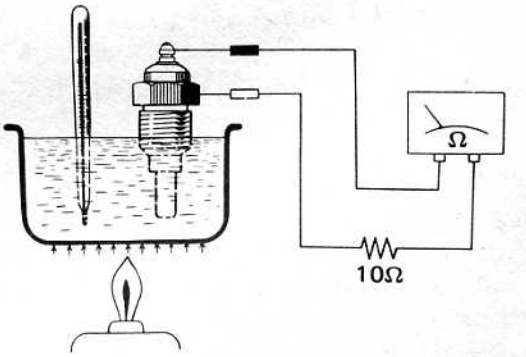
Throttle Positioner

With the engine at idle, disconnect the vacuum hose from the throttle positioner diaphragm. The spring inside the diaphragm should cause the throttle positioner lever adjusting screw to contact the throttle lever. When the vacuum hose is reconnected, the vacuum should overcome the action of the spring and cause the throttle positioner lever adjusting screw to move off the throttle lever.

To adjust the throttle positioner mechanism, warm up the engine and actuate the throttle positioner lever by removing the vacuum hose. Adjust the engine speed with the throttle positioner lever adjusting screw to 1,200 rpm. Reinstall the vacuum hose.

Temperature Sensing Switch (for TCS)

Use a test light to check for conductivity when the temperature of the engine coolant is in the Off range; and for no conductivity when the temperature is within the On range.



Checking the operation of the coolant temperature switch (for TCS)

Distributor Vacuum Diaphragm

Check the operation of the vacuum diaphragm by removing the distributor cap and observing the operation of the breaker plate when vacuum is applied to the vacuum diaphragm.

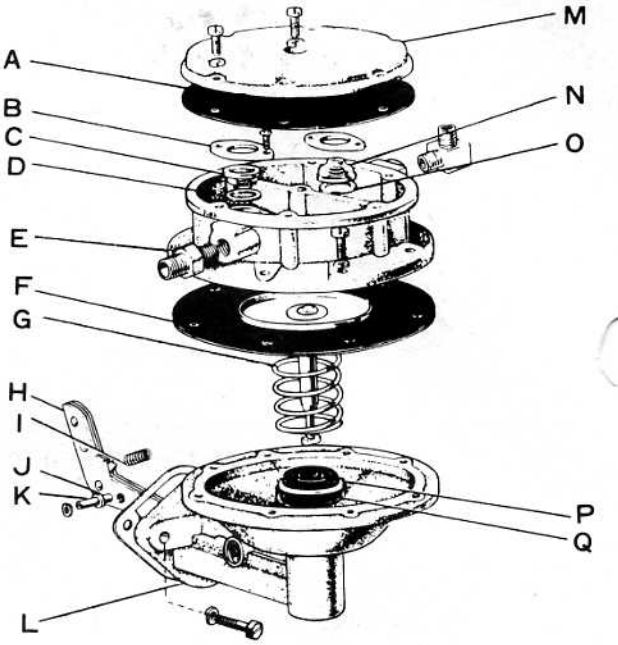
EGR Valve

When the intake manifold vacuum acts on the EGR valve while the engine is at idle, the EGR valve is normal if the engine rpm drops from 650 to 600 rpm.

Temperature Sensing Switch (for EGR valve)

Heat the switch to 320° F and measure the resistance between the center electrode and the case. If the resistance is about 2,000 ohms, the switch is normal.

NOTE: *If after performing all of the above checks and replacing any parts or components found to be defective and malfunction is still suspected, have the particular system checked further by a Toyota dealer. Operation of the computer, speed sensor, and the VSV involves special equipment and running the vehicle either on a dynamometer or with the wheels raised off the ground.*



Exploded view of the fuel pump

A. Fuel pump cover gasket
B. Valve retainer
C. Inlet valve
D. Valve gasket
E. Union
F. Diaphragm
G. Diaphragm spring
H. Rocker arm
I. Rocker arm spring
J. Rocker arm spacer
K. Rocker arm pin
L. Fuel pump lower body
M. Fuel pump cover
N. Outlet valve
O. Valve gasket
P. Oil seal retainer
Q. Oil seal

Fuel System

FUEL PUMP

Removal and Installation

1. Disconnect the fuel inlet and outlet lines from the fuel pump.
2. Remove the mounting bolts and remove the fuel pump and gasket from the engine.
3. Install in the reverse order of removal, using a new gasket.

Pressure Check

Disconnect the fuel line at the carburetor. Install a T-fitting on the open end of the fuel line and refit the line to the carburetor. Plug a pressure gauge into the remaining opening of the T-fitting. The hose leading to the pressure gauge should not be any longer than 6 inches. Start the engine and let it run at idle speed. Pressure readings are given in the "Tune-Up Specifications" chart.

CARBURETORS

The carburetor used on the F Series engine in the Land Cruiser until 1969 was a conventional one-barrel downdraft type. On 1970 and later models, a two-barrel downdraft carburetor is used.

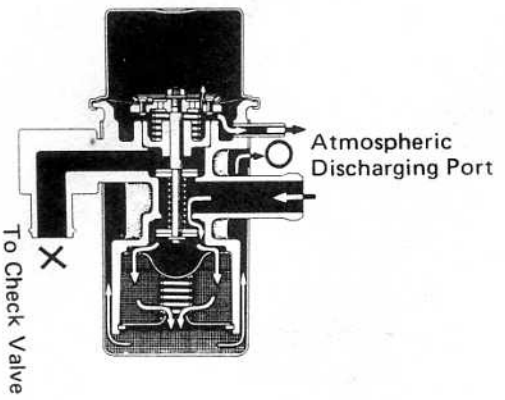
Removal and Installation

1. Remove the air cleaner assembly.
2. Disconnect the fuel line and vacuum hose from the carburetor.
3. Disconnect the throttle wire (if so equipped), choke, and accelerator wires from the carburetor.
4. Disconnect the solenoid wire from the ignition coil terminal.
5. Loosen and remove the carburetor mounting nuts, and remove the carburetor from the intake manifold. After removing the carburetor, cover the intake manifold opening with a clean cloth to prevent the entrance of dirt.
6. Install the carburetor in the reverse order of removal.

Overhaul

All Types

Efficient carburetion depends greatly on careful cleaning and inspection during overhaul, since dirt, gum, water, or



When the engine is raced, air should be discharged from the atmospheric discharge port of the air by-pass valve momentarily

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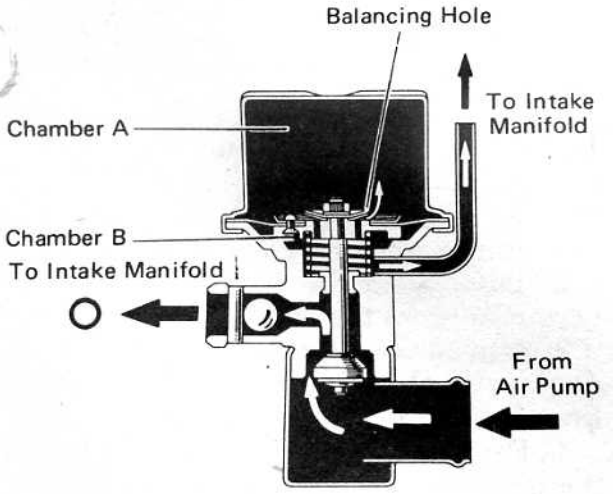
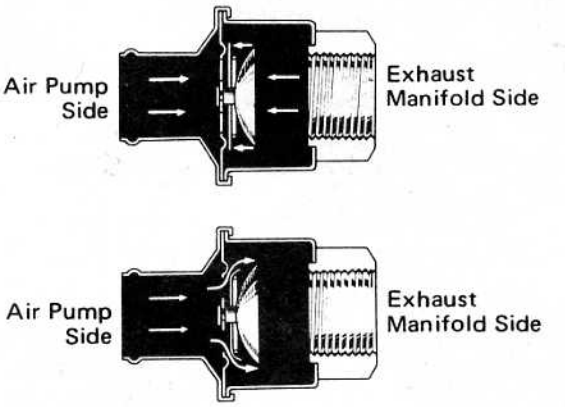


When the engine is raced, air from the air pump should be discharged from the anti-backfire valve intake manifold discharge port

Check Valve

Air should pass only from the air pump side of the valve, not from the exhaust manifold side.



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Throttle Positioner

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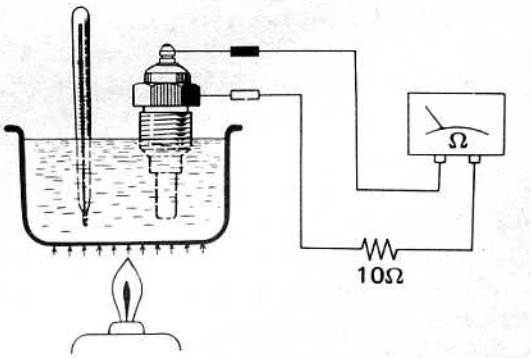


Checking the operation of the coolant temperature switch (for TCS)

Distributor Vacuum Diaphragm

Check the operation of the vacuum diaphragm by removing the distributor cap and observing the operation of the breaker plate when vacuum is applied to the vacuum diaphragm.

varnish in or on the carburetor parts are often responsible for poor performance.

Overhaul your carburetor in a clean, dust-free area. Carefully disassemble the carburetor, referring often to the exploded views. Keep all similar and look-alike parts segregated during disassembly and cleaning to avoid accidental interchange during assembly. Make a note of all jet sizes.

When the carburetor is disassembled, wash all parts (except diaphragms, electric choke units, pump plunger, and any other plastic, leather, fiber, or rubber parts) in clean carburetor solvent. Do not leave parts in the solvent any longer than is necessary to sufficiently loosen the deposits. Excessive cleaning may remove the special finish from the float bowl and choke valve bodies, leaving these parts unfit for service. Rinse all parts in clean solvent and blow them dry with compressed air or allow them to air dry. Wipe clean all cork, plastic, leather, and fiber parts with a clean, lint-free cloth.

Blow out all passages and jets with compressed air and be sure that there are no restrictions or blockages. Never use wire or similar tools to clean jets, fuel passages, or air bleeds. Clean all jets and valves separately to avoid accidental interchange.

Check all parts for wear or damage. If wear or damage is found, replace the defective parts. Especially check the following:

1. Check the float needle and seat for wear. If wear is found, replace the complete assembly.

2. Check the float hinge pin for wear and the float(s) for dents or distortion. Replace the float if fuel has leaked into it.

3. Check the throttle and choke shaft bores for wear or an out-of-round condition. Damage or wear to the throttle arm, shaft, or shaft bore will often require replacement of the throttle body. These parts require a close tolerance of fit; wear may allow air leakage, which could affect starting and idling.

NOTE: *Throttle shafts and bushings are not included in overhaul kits. They can be purchased separately.*

4. Inspect the idle mixture adjusting needles for burrs or grooves. Any such condition requires replacement of the needle, since you will not be able to obtain a satisfactory idle.

5. Test the accelerator pump check valves. They should pass air one way but not the other. Test for proper seating by blowing and sucking on the valve. Replace the valve if necessary. If the valve is satisfactory, wash the valve again to remove breath moisture.

6. Check the bowl cover for warped surfaces with a straightedge.

7. Closely inspect the valves and seats for wear and damage, replacing as necessary.

8. After the carburetor is assembled, check the choke valve for freedom of operation.

Carburetor overhaul kits are recommended for each overhaul. These kits contain all gaskets and new parts to replace those which deteriorate most rapidly. Failure to replace all parts supplied with the kit (especially gaskets) can result in poor performance later.

Some carburetor manufacturers supply overhaul kits of three basic types: minor repair; major repair; and gasket kits. Basically, they contain the following:

Minor Repair Kits:
- All gaskets
- Float needle valve
- Volume control screw
- All diaphragms
- Spring for the pump diaphragm

Major Repair Kits:
- All jets and gaskets
- All diaphragms
- Float needle valve
- Volume control screw
- Pump ball valve
- Main jet carrier
- Float
- Complete intermediate rod
- Intermediate pump lever
- Complete injector tube
- Some cover hold-down screws and washers

Gasket Kits:
- All gaskets

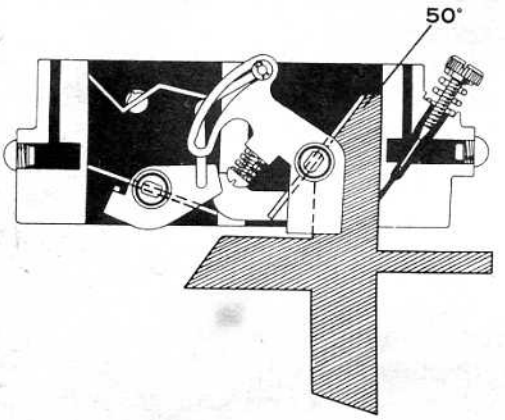
After cleaning and checking all components, reassemble the carburetor, using new parts and referring to the exploded view. When reassembling, make sure that all screws and jets are tight in their seats, but do not overtighten as the tips will be distorted. Tighten all screws

gradually, in rotation. Do not tighten needle valves into their seats; uneven jetting will result. Always use new gaskets. Be sure to adjust the float level when reassembling.

Throttle Linkage Adjustment

2 BBL Only

To check the adjustment of the primary and secondary throttle linkage, open the primary throttle valve fully and check the opening of the secondary throttle valve. The secondary throttle valve should be wide-open.



Throttle linkage adjustment on the 2 bbl carburetor only

When the primary throttle valve is opened to an angle of 50° from its closed position, the throttle shaft link should be at the end of its travel in the upper end of the slot in the throttle shaft arm, ready to open the secondary throttle valve.

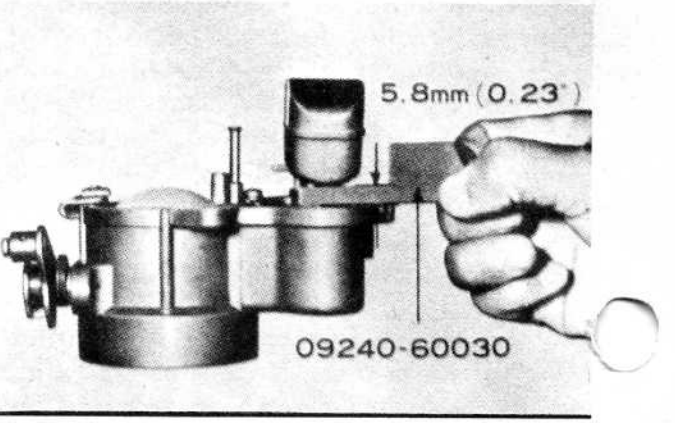
To adjust the linkage, bend the throttle shaft link to obtain the proper angle of the primary throttle valve upon the opening of the secondary throttle valve.

Float and Fuel Level Adjustment

NOTE: *Final adjustment should be made with the fuel level in the float chamber aligning with the level glass gauge indent on both 1 and 2 bbl carburetors.*

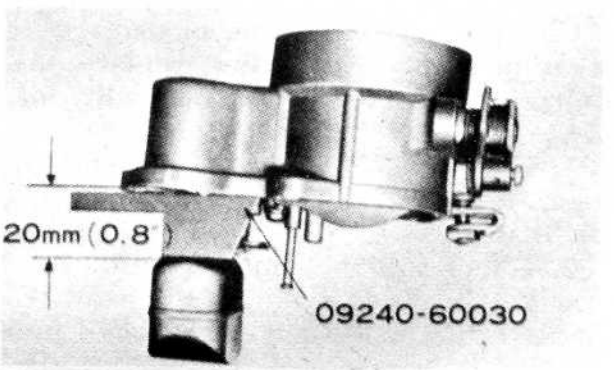
1 BBL Carburetor

1. With the vehicle resting on level ground, remove the air horn of the carburetor assembly.
2. Invert the air horn, allowing the weight of the float to rest on the needle valve.



Measuring the float level in the raised position on the 1 bbl carburetor

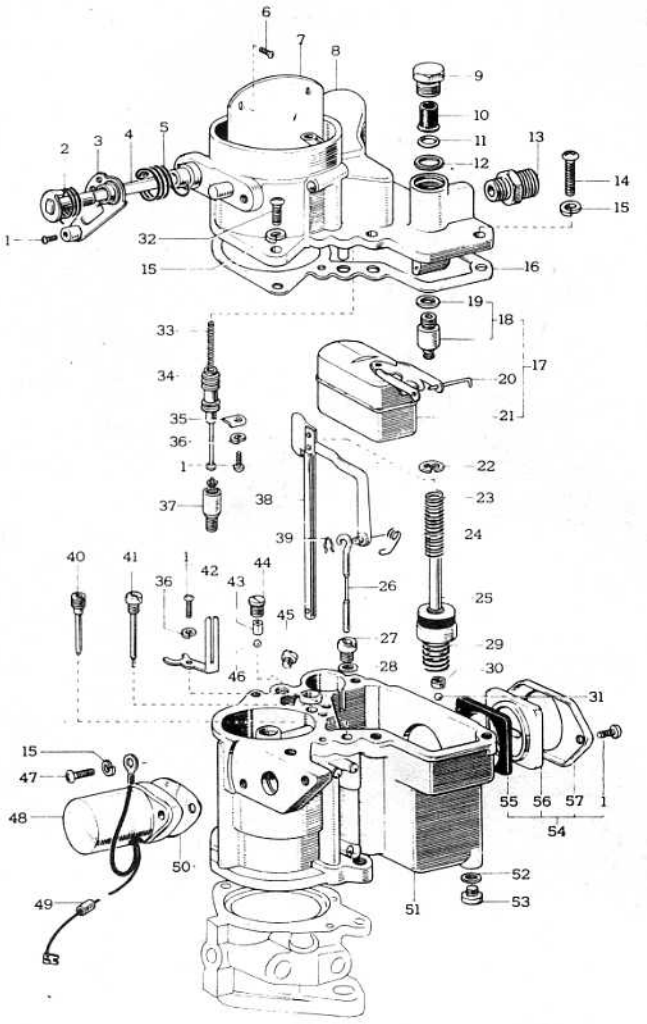
3. Measure the clearance between the end of the float opposite the hinge and the gasket surface of the air horn. The clearance should be 0.23 in.
4. To adjust the clearance, bend the center tang at the float hinge.
5. Turn over the air horn assembly to its normal position and allow the float to hang down by its own weight.
6. Measure the clearance between the air horn gasket surface and the end of the float opposite the hinge. The clearance should be 0.80 in. To obtain the proper clearance, bend the float tabs at either side of the center tang at the hinge end of the float.



Measuring the float level in the dropped position on the 1 bbl carburetor

2 BBL Carburetor

1. Remove the air horn assembly from the carburetor and invert it, allowing the float to rest on the needle valve.
2. Measure the clearance between the upper surface of the float and the gasket surface of the air horn. The clearance should be 0.161 in. To obtain the proper clearance, bend the center tab at the hinge end of the float.

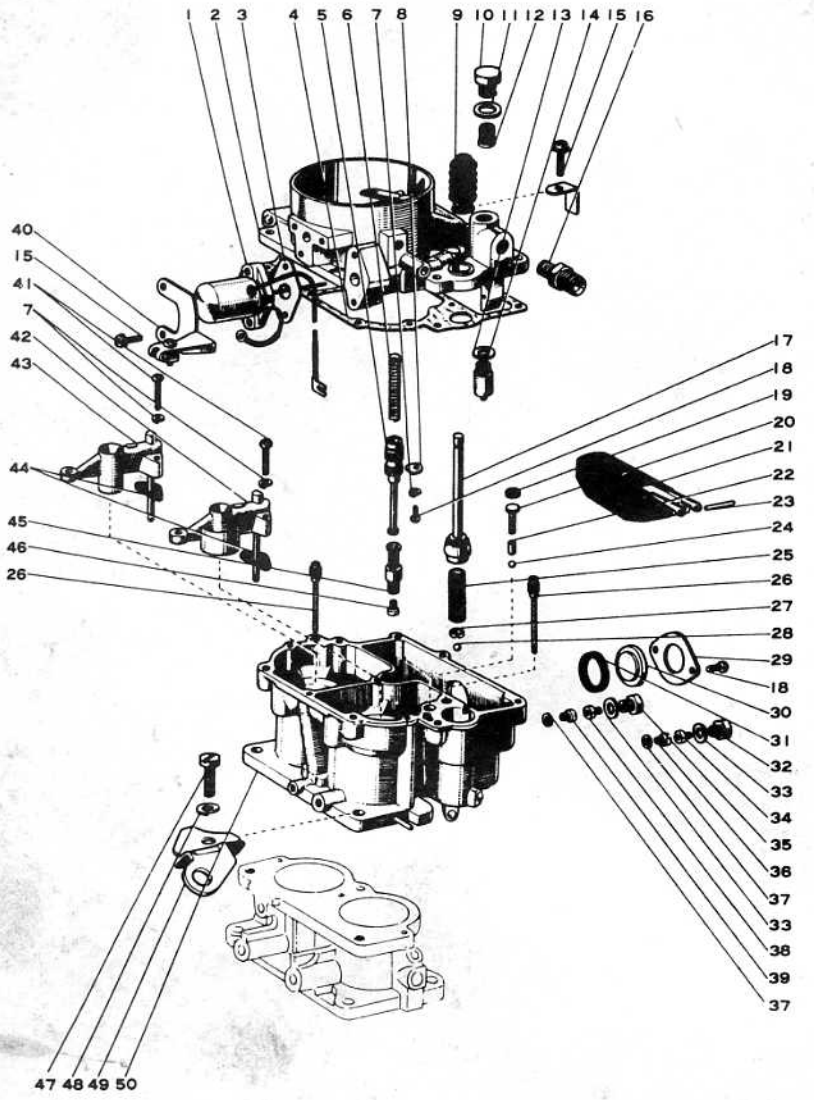


Exploded view of the 1 bbl carburetor air horn and float assemblies

1. Screw
2. Choke back spring
3. Choke lever
4. Choke shaft
5. Choke valve relief spring
6. Choke valve set screw
7. Choke valve
8. Air horn
9. Main passage plug
10. Strainer
11. Strainer cap
12. Inlet strainer gasket
13. Fitting
14. Screw
15. Spring washer
16. Air horn gasket
17. Float and needle valve assembly
18. Needle valve assembly
19. Needle valve seat gasket
20. Float lever pin
21. Float
22. Pump spring retainer
23. Pump spring
24. Step up rod spring *
25. Pump plunger
26. Step up rod *
27. Main jet
28. Main jet gasket
29. Spring
30. Steel ball retainer
31. Steel ball
32. Set screw
33. Power piston spring
34. Power piston
35. Power piston stop
36. Spring washer
37. Power valve
38. Lifter rod
39. Snap-ring
40. Slow jet
41. Main air bleeder
42. Guide
43. Pump discharge weight
44. Plug
45. Pump jet plug
46. Steel ball
47. Set screw
48. Valve solenoid
49. Ring
50. Gasket
51. Carburetor body
52. Pump jet screw gasket
53. Nut plug
54. Carburetor level gauge assembly
55. Gasket
56. Level gauge glass
57. Level gauge clamp cover

* Up to engine No. F-257653 (April, 1968)

3. With the air horn assembly still in an inverted position, raise the float with your fingers until it is against the two stops and measure the clearance between the needle valve push pin and the float tab. The clearance should be 0.04 in. Use a wire gauge to measure the distance. To adjust the clearance, bend the two tabs (stops) on either side of the center tab at the hinge end of the float.

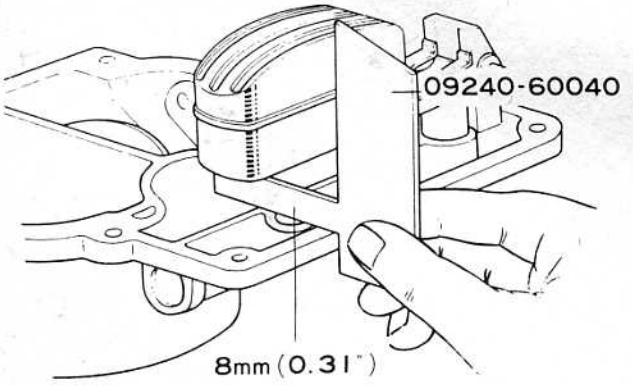


1. Valve subassembly
2. Air horn
3. Gasket
4. Air horn gasket
5. Power piston
6. Power piston spring
7. Lockwasher
8. Power piston stopper
9. Boot
10. Main passage plug
11. Strainer gasket
12. Strainer
13. Needle valve seat gasket
14. Needle valve subassembly
15. Screw
16. Fitting
17. Pump plunger
18. Screw
19. Gasket
20. Stopper
21. Float subassembly
22. Pump discharge weight
23. Float lever pin
24. Steel ball
25. Spring
26. Slow jet subassembly
27. Check ball retainer
28. Steel ball
29. Level gauge
30. Level gauge glass
31. Gasket
32. Main passage plug
33. Gasket
34. Primary main jet (spare)
35. Plug
36. Primary main jet
37. Gasket
38. Power jet (spare)
39. Secondary main jet

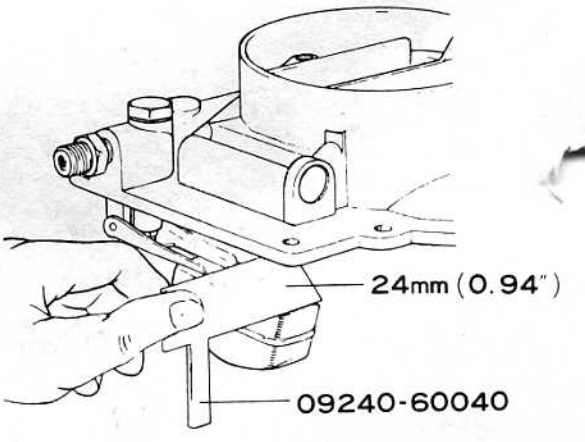
Exploded view of the 2 bbl carburetor float body and air horn

40. Choke wire clamp
41. Screw
42. Primary main venturi
43. Secondary small venturi
44. Venturi gasket
45. Power valve subassembly
46. Power jet
47. Bolt
48. Lockwasher
49. Accelerator wire support
50. Carburetor body

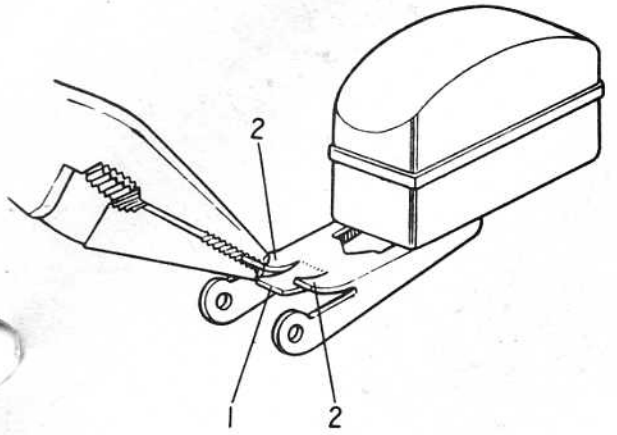
* FJ ..... Up to E. No. 29492
FA ..... Up to E. No. 30175



Measuring the float level in the raised position on the 2 bbl carburetor



Measuring the float level in the dropped position on the 2 bbl carburetor



Bend the center tang (1) to adjust the raised position of the float and the two outer tangs (2) to adjust the dropped position of the float on the 1 bbl and 2 bbl carburetors

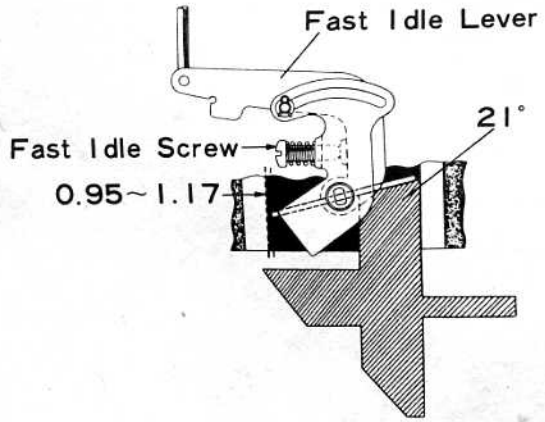
Fast Idle Adjustment

1 BBL Carburetor

1. With the carburetor removed from the engine, close the choke valve completely, and check the opening angle of the throttle valve.
2. The throttle valve should be opened to an angle of 30° from its closed position.
3. Adjust the opening angle of the throttle valve by bending the fast idle connecting link.

2 BBL Carburetor

1. Position the throttle opening angle at 4°30′. To do this, tighten the throttle adjusting screw 1–½ turns after it contacts the throttle arm.
2. Tighten the fast idle screw until it contacts the fast idle lever.
3. Position the choke valve at its fully closed position and loosen the fast idle screw until the clearance between the throttle valve and the throttle bore is 0.039 in. (throttle valve open at a 21° angle).

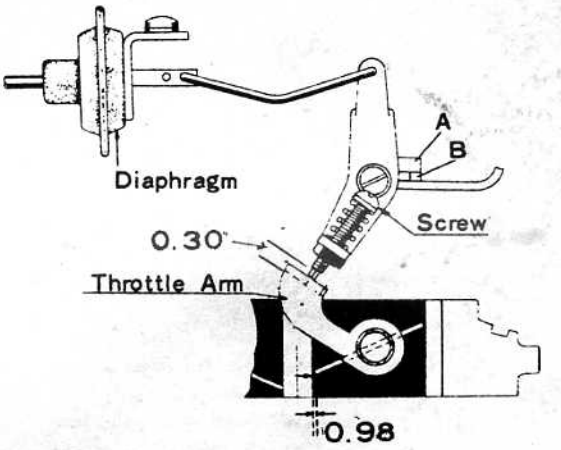


Adjusting the fast idle on the 2 bbl carburetor

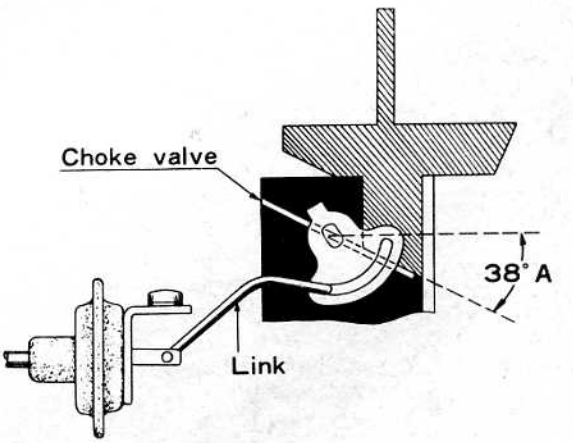
Throttle Positioner

2 BBL Carburetor Only

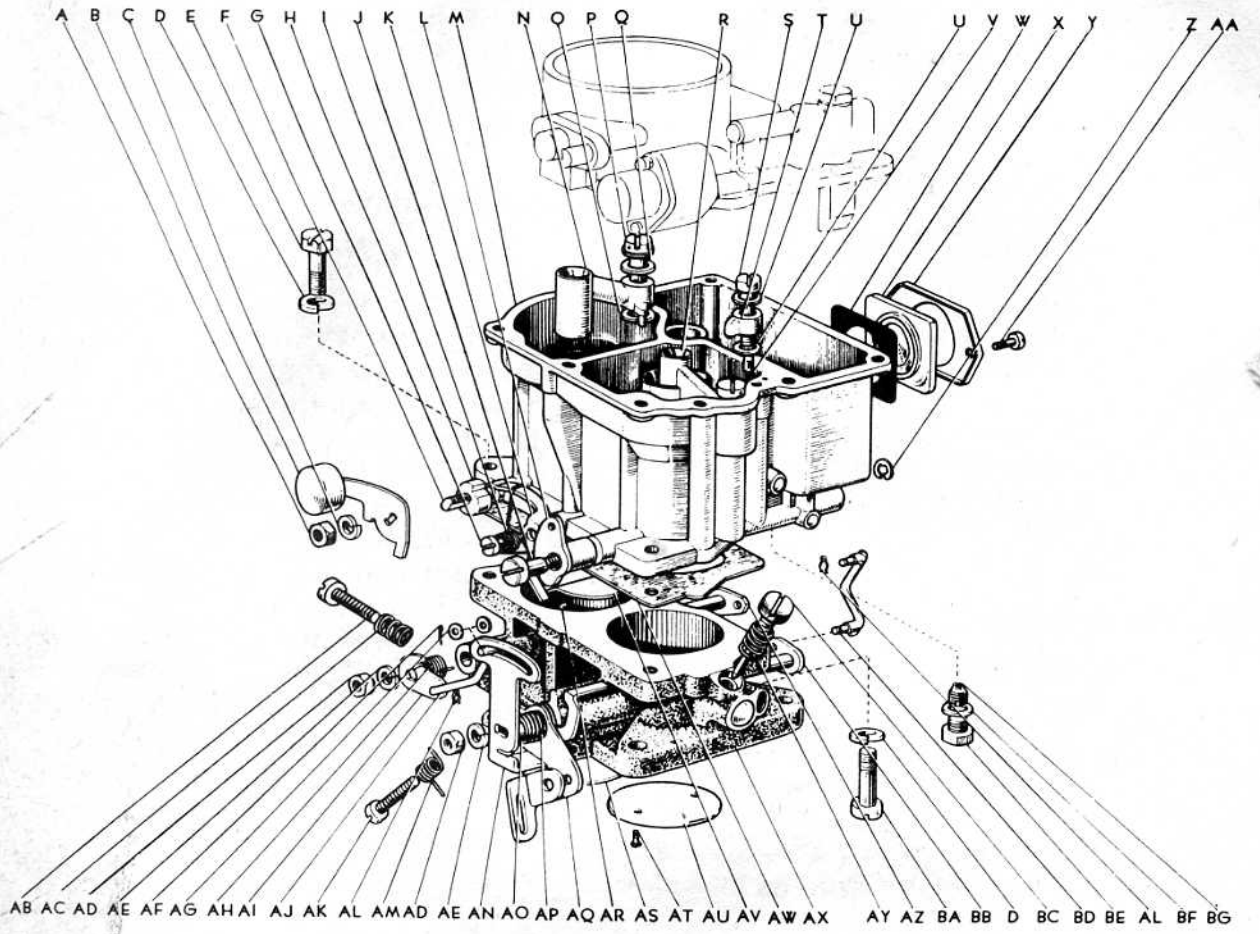
1. With the vacuum diaphragm disconnected, turn the throttle positioner screw against the throttle arm until the clearance between the throttle valve and the throttle bore is 0.030 in. Hold this position for the throttle valve.
2. Adjust the stop level and link so that the clearance between the throttle arm stopper end and the screw will be 0.078–0.118 in.
3. Confirm that the end of the screw completely disengages from the throttle arm when pushing the diaphragm link rod with your finger.



Throttle positioner adjustment on the 2 bbl carburetor

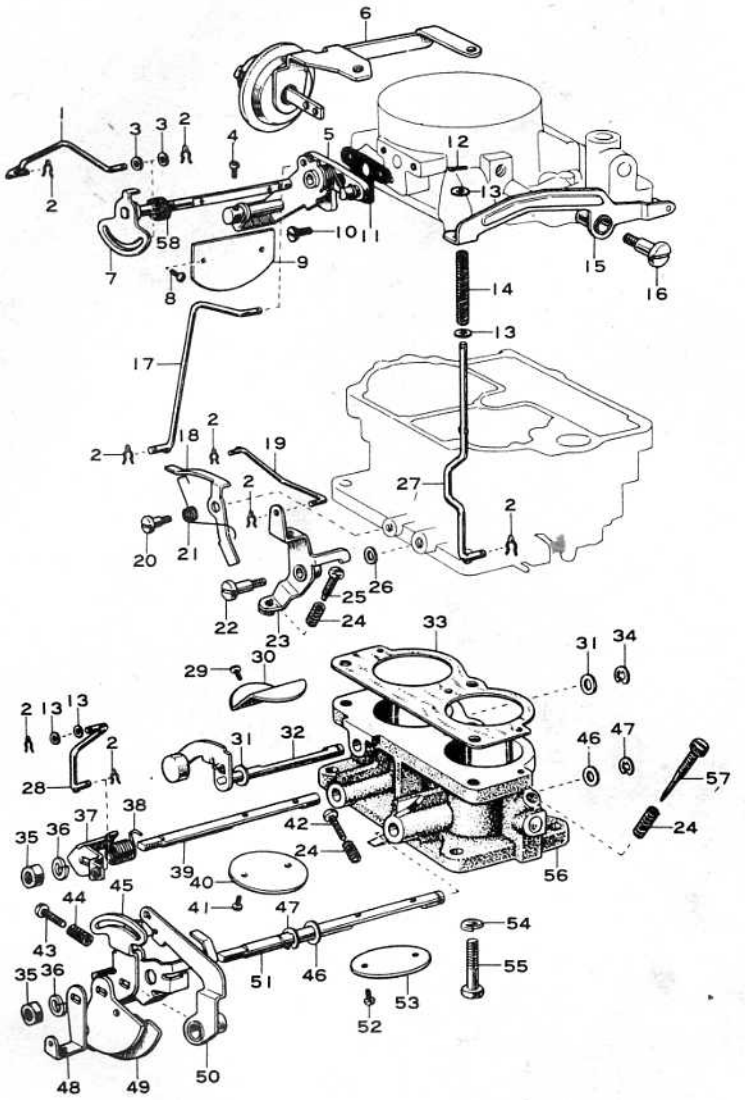


Choke pulling angle adjustment on the 2 bbl carburetor



Exploded view of the 2 bbl carburetor float body and throttle body

A. Nut
B. High speed valve shaft lever
C. Lockwasher
D. Lockwasher
E. Retaining bolt
F. High speed shaft
G. Stop lever set screw
H. High speed valve stopper
I. High speed valve stop lever spring
J. Fast idle set screw
K. High speed valve stop lever
L. Fast idle cam
M. Carburetor body
N. Secondary small venturi
O. Gasket
P. Primary main air bleeder
Q. Gasket
R. Primary small venturi
S. Pump jet screw
T. Pump jet
U. Gasket
V. Pump discharge weight
W. Level gauge gasket
X. Level gauge glass
Y. Level gauge retainer
Z. Retainer ring
AA. Screw
AB. Throttle adjusting screw
AC. Spring
AD. Nut
AE. Lockwasher
AF. Cotter pin
AG. Throttle shaft washer
AH. Secondary throttle return spring
AI. Secondary throttle lever
AJ. Throttle shaft link
AK. Fast idle adjusting screw
AL. Snap-ring
AM. Spring
AN. Throttle shaft arm
AO. Throttle lever collar
AP. Primary throttle return spring
AQ. Throttle lever
AR. Screw
AS. Secondary throttle valve
AT. Screw
AU. Primary throttle valve
AV. High speed valve
AW. Flange gasket
AX. Flange
AY. Idle adjusting screw spring
AZ. Secondary throttle shaft
BA. Screw
BB. Primary throttle shaft
BC. Idle adjusting screw
BD. Pump connecting link
BE. Nut plug
BF. Gasket
BG. Discharge check valve



1. Connecting link
2. Snap-ring
3. Plate washer
4. Screw
5. Choke lever
6. Diaphragm subassembly
7. Choke shaft
8. Screw
9. Choke valve
10. Screw
11. Gasket
12. Cotter pin
13. Washer
14. Spring
15. Pump arm
16. Pump arm set screw
17. Fast idle connector
18. High speed valve stop lever
19. Connector
20. Stop lever set screw
21. High speed valve stop lever spring
22. Screw
23. Lever
24. Idle adjust screw spring
25. Screw
26. Washer
27. Pump connecting link
28. Throttle shaft link
29. Screw
30. High speed valve
31. Shim
32. High speed shaft

Exploded view of the 2 bbl carburetor throttle body and linkage

33. Flange gasket
34. Retainer ring
35. Nut
36. Lockwasher
37. Secondary throttle lever
38. Secondary throttle return spring
39. Secondary throttle shaft
40. Secondary throttle valve
41. Screw
42. Throttle adjusting screw
43. Screw
44. Spring
45. Primary throttle shaft arm
46. Primary throttle shaft shim
47. Retainer ring
48. Return spring arm
49. Throttle lever
50. Fast idle adjusting lever
51. Primary throttle shaft
52. Screw
53. Primary throttle valve
54. Lock washer
55. Screw
56. Flange
57. Idle adjusting screw
58. Choke valve relief spring

NOTE: *Perform the throttle positioner adjustment after completing the fast idle adjustment given above:*

Choke Pulling Angle Adjustment

2 BBL Carburetor

With the choke valve fully closed, push the diaphragm link rod all the way in to the end of its stroke (5.12 in. Hg vacuum) and adjust by bending the link so that the choke valve will be at 38° from horizontal.

Release the diaphragm link rod and make sure that the choke valve closes fully when the choke lever is pulled.

NOTE: *Perform the choke pulling angle adjustment only after performing the fast idle and throttle positioner adjustments.*

Carburetor Specifications

(All specifications given in inches)
(2 Bbl Carburetor)

Main Jet Diameter		Idle Jet Diameter		Econo-mizer Jet Diameter	Pump Jet Diameter	Power Jet Diameter	Float Level		Fuel Level	Accelerator Pump Stroke
Primary	Secondary	Primary	Secondary				Raised	Lowered		
0.0465	0.0709	0.019	0.031	0.047	0.019	0.027	0.161①	0.039②	0.79③	0.31

① Measured from the air horn gasket surface to the free end of the float
② Measured from the needle valve push pin and the float tab at the hinge end of the float
③ Measured from the upper edge of the carburetor body-to-air horn mating surface
NOTE: *See text for all necessary specifications for the 1 bbl carburetor.*