INTRODUCTION

DESCRIPTION

See FIGURE 1. The fuel tank is part of the frame weldment. Gasoline flows from the fuel tank through a filter to the fuel pump. The fuel pump is operated by a cam on the engine. The fuel pump sends the gasoline to the carburetor. The carburetor makes sure the correct air to fuel mixture goes to the combustion chambers during the different operating conditions of the engine.

The carburetor has a single venturi. A choke cable from the instrument panel controls the choke plate and the fast idle cam. A fuel solenoid valve quickly stops fuel to the engine when the ignition switch is turned to the **OFF** position.

NOTE: Parts are not available for repairing the fuel pump. If the fuel pump needs repair, install a new fuel pump.

GOVERNOR

The governor keeps the engine speed at the specification limit under all load conditions when the throttle plate in the carburetor is fully open. The governor measures the air pressure above and below the carburetor throttle plate. A piston adjusts the governor throttle plate as needed to control the maximum engine speed. A leaf spring and a coil spring are used to control the tension of the governor throttle plate. The adjustment screw changes the number of coils used by the coil spring. The adjustment wheel changes the tension of the coil spring.

NOTE: Parts are not available for repairing the governor. If the governor needs repair, install a new governor. If a new governor is installed, adjust the governor as described in CHECKS AND ADJUSTMENTS**.**

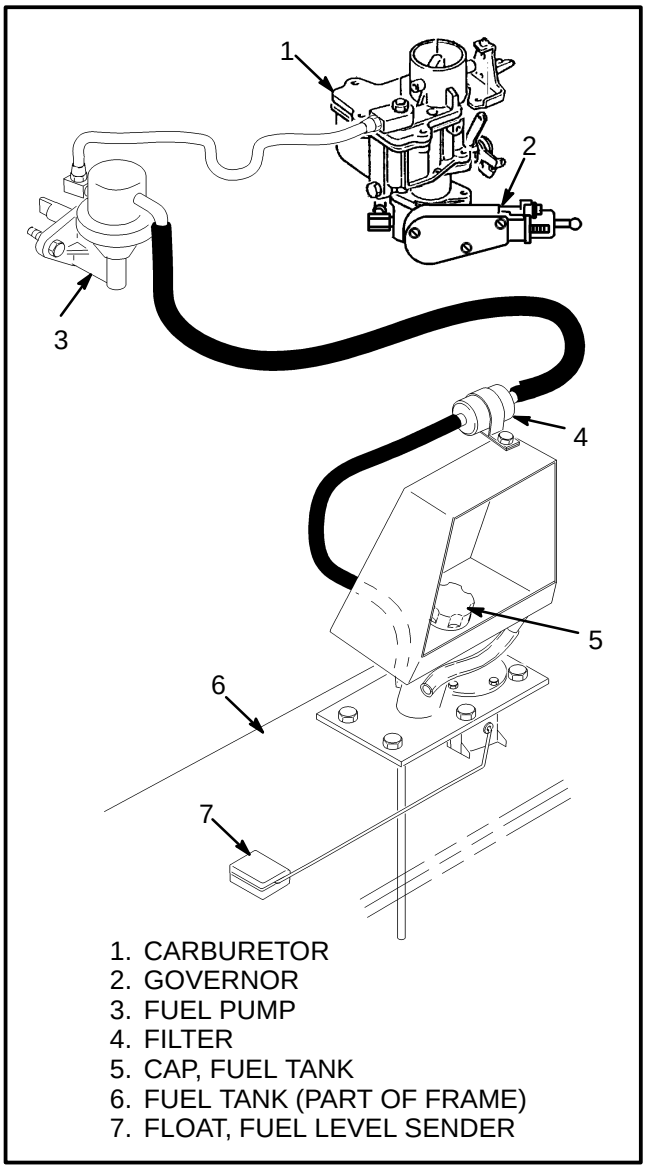


FIGURE 1. GASOLINE FUEL SYSTEM

REPAIRS

NOTE: The vacuum hoses installed on the governor are made of special high–temperature material. If new hoses are installed, make sure the correct hoses are installed.

CARBURETOR

Removal

⚠ WARNING

Keep all fire and sparks away from the area used for removal and disassembly. Disconnect the negative cable at the battery to prevent electrical sparks.

1. Use tags for the identification and location of the vacuum and engine coolant hoses before the removal of the carburetor and the governor.

2. Disconnect the air filter hose and the vacuum hoses at the air inlet tube on the carburetor.

3. Disconnect the fuel line at the carburetor. Put a cap on the open fuel line.

4. Disconnect the throttle cable at the carburetor. Disconnect the solenoid wire at the connector.

5. Disconnect the vacuum hoses at the governor.

6. Disconnect the engine coolant lines at the carburetor and the governor.

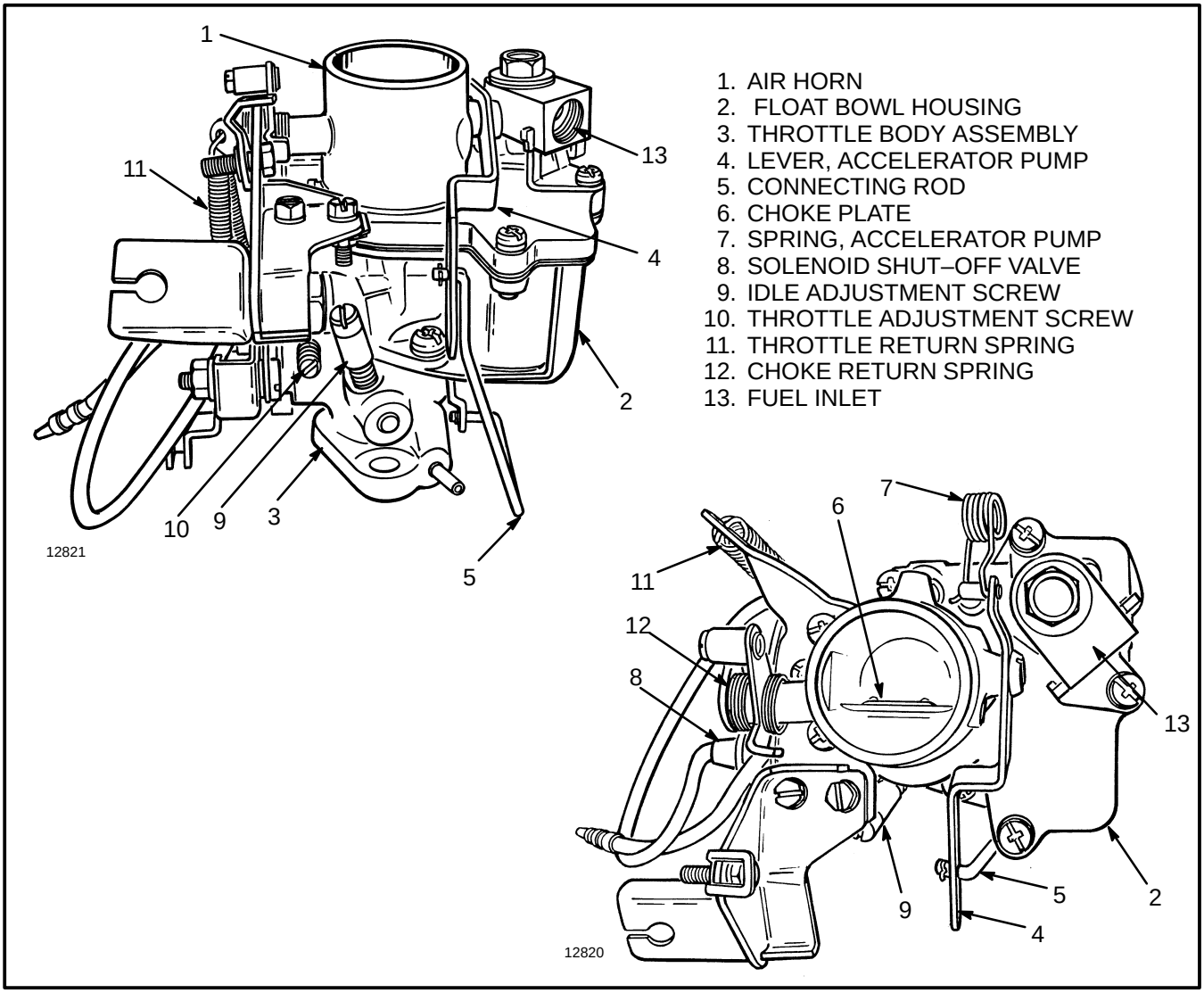


FIGURE 2. PARTS OF THE CARBURETOR

(More Content includes: Brake system, Capacities, and specifications, Frame, Hydraulic, System, Industrial battery, Main control, Valve, Mast repair, Fasteners, Schematics diagrams, Steering axle, Steering system, Wire harness repair And more)

7. Remove the two nuts from the studs that fasten the carburetor and the governor to the inlet manifold. Remove the carburetor and the governor from the inlet manifold.

Disassembly (See FIGURE 4.)

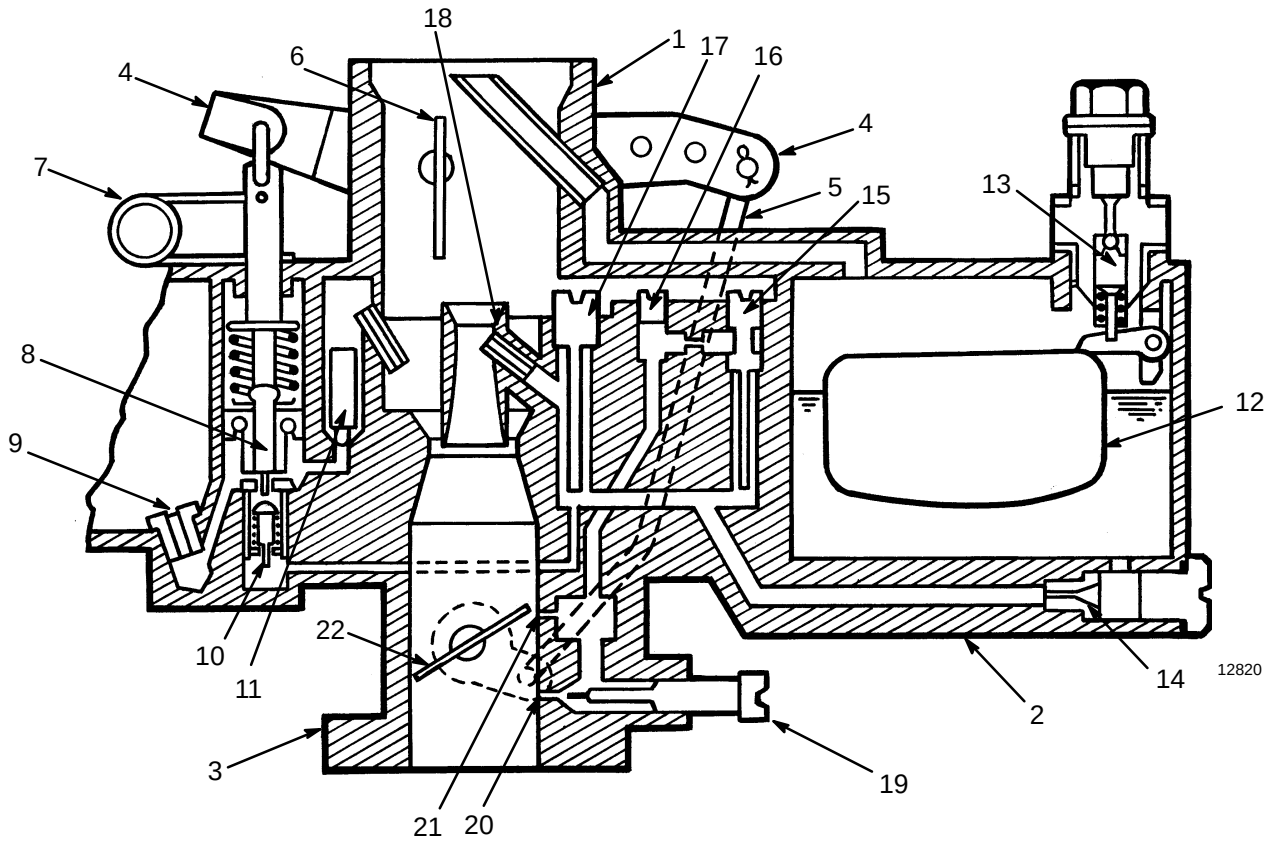
Cleaning

⚠ WARNING

The solvent for cleaning carburetors is flammable. Carefully follow the instructions of the manufacturer.

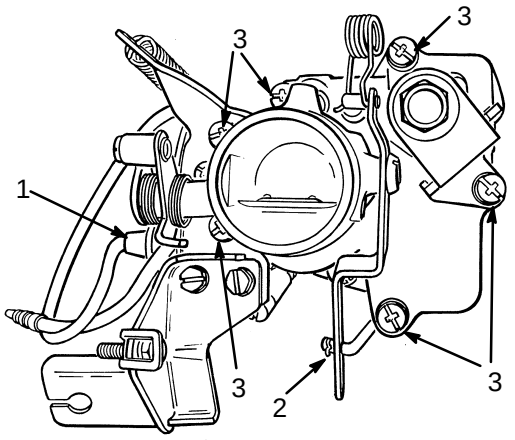
Dirt or water inside or outside the carburetor is often the cause of carburetor problems. It is important that the parts of the carburetor be clean before assembly.

Clean the metal carburetor parts with a carburetor cleaning solvent. Do not use cleaning solvent to clean the float, solenoid valve and parts that are not metal (seals and gaskets). Be careful when cleaning the plastic and nylon parts on the carburetor. Follow the instructions of the manufacturer of the cleaning solvent for cleaning plastic parts.



1. AIR HORN
2. FLOAT BOWL HOUSING
3. THROTTLE BODY
4. LEVER, ACCELERATOR PUMP
5. CONNECTING ROD
6. CHOKE PLATE
7. SPRING, ACCELERATOR PUMP
8. ACCELERATOR PUMP
9. CHECK VALVE
10. POWER VALVE
11. ACCELERATOR WEIGHT
12. FLOAT
13. NEEDLE VALVE, FLOAT
14. MAIN JET
15. FUEL JET FOR SLOW SPEED
16. SMALL AIR JET FOR SLOW SPEED
17. AIR JET FOR MAIN NOZZLE
18. MAIN NOZZLE
19. IDLE ADJUSTMENT SCREW
20. IDLE PORT
21. SLOW SPEED PORT
22. THROTTLE PLATE

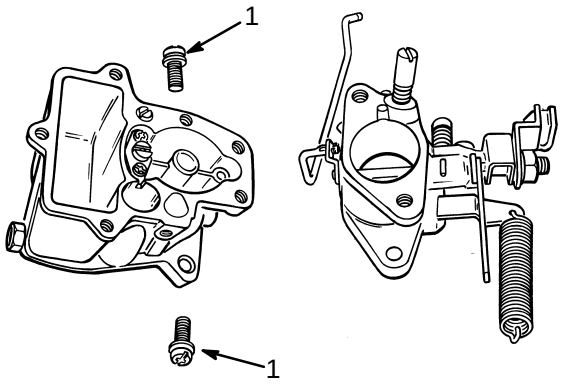
FIGURE 3. PARTS OF THE CARBURETOR



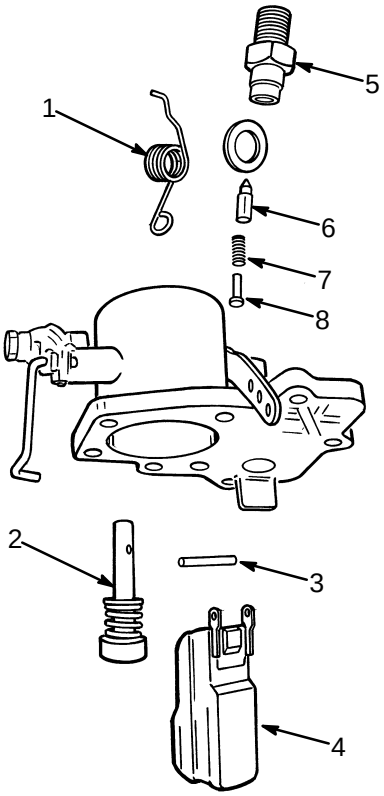
STEP 1. Remove the fuel shut–off solenoid (1).

Remove the pins and clips and disconnect the connecting rod (2) to the accelerator pump.

Remove the screws (3) that fasten the air horn to the float bowl housing.



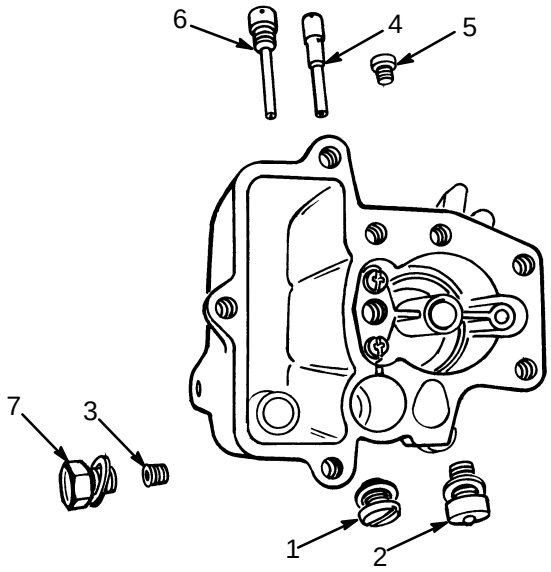
STEP 3. Remove the screws (1) and separate the float bowl housing from the throttle body assembly.



STEP 2. Remove the spring (1) and remove the accelerator pump (2) from the air horn.

Remove the pin (3) that holds the float (4). Remove the float.

Remove the float valve seat (5) and remove the needle valve (6), spring (7), and spring seat (8).



STEP 4. Remove the jets from the float bowl housing:

1. Check Valve
2. Power Valve
3. Main Jet
4. Fuel Jet For Slow Speed
5. Small Air Jet For Slow Speed
6. Air Jet For Main Nozzle
7. Plug

FIGURE 4. DISASSEMBLY OF THE CARBURETOR

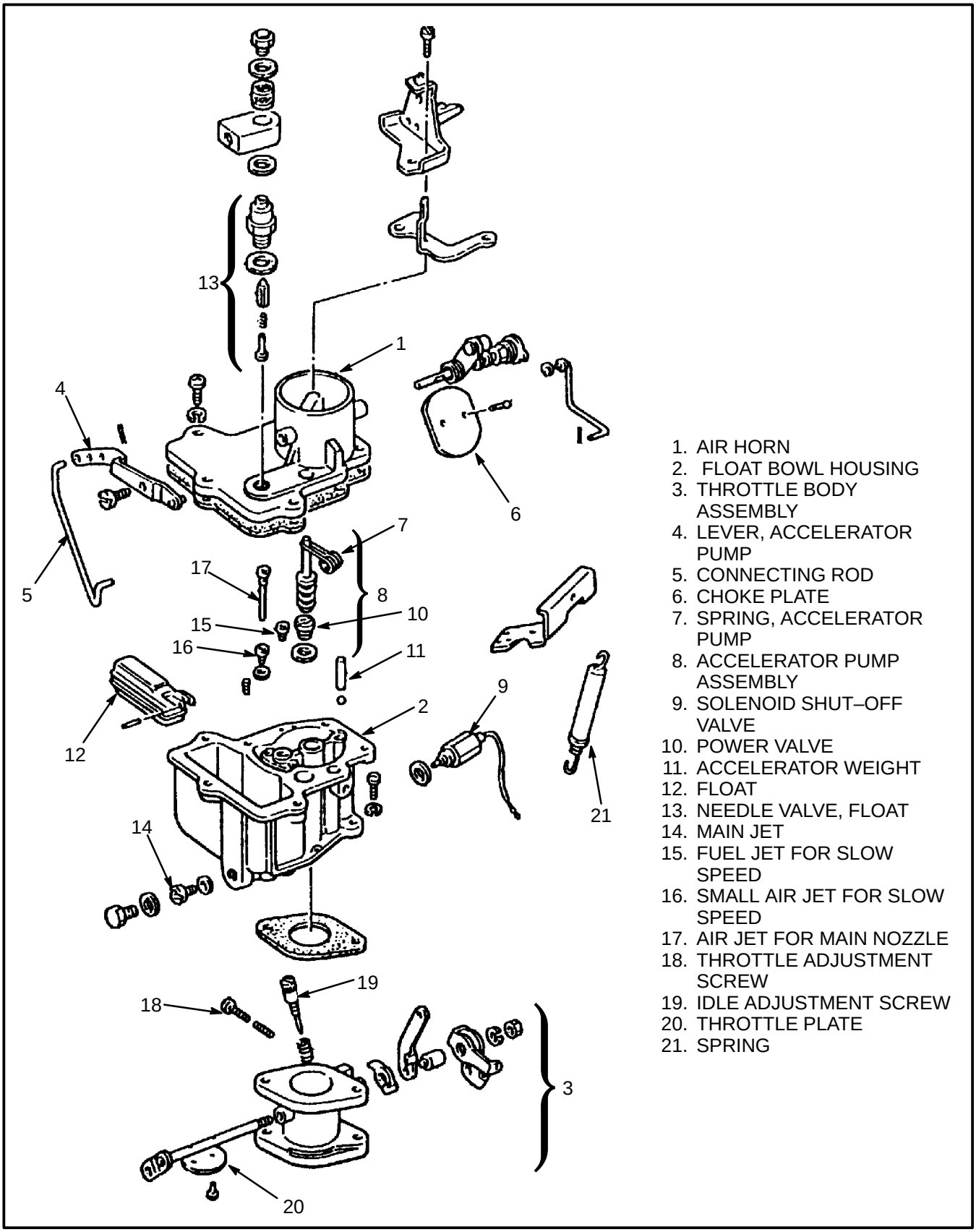


FIGURE 5. PARTS OF THE CARBURETOR

⚠ CAUTION

Do not use a wire brush to clean any parts of the carburetor. Do not use a drill or wire to clean the jets or passages of the carburetor.

⚠ WARNING

Compressed air can move particles so that they cause injury to the user or to other personnel. Make sure that the path of the compressed air is away from all personnel. Wear protective goggles or a face shield to prevent injury to the eyes.

Use compressed air to clean the jets and passages of the carburetor.

Use a clean cloth to clean the parts that cannot be cleaned in solvent.

Inspection

Inspect the carburetor parts for correct operation, wear, or damage. Install new carburetor parts as necessary.

1. Inspect the carburetor body for cracks, distortion, or other damage. Inspect each gasket surface for damage.

2. Inspect the choke plate, shaft and linkage for wear and damage. Check for rough edges on the choke plate. Make sure the shaft for the choke plate rotates freely in the air horn. Inspect the choke return springs for distortion and damage.

3. Inspect the throttle plate, shaft, and linkage for wear or damage. Check for rough edges on the throttle plate. Make sure the shaft for the throttle plate rotates freely in the throttle body. Inspect the throttle bushings and return springs for wear.

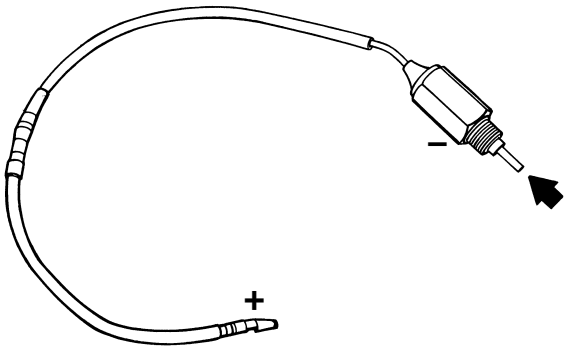
4. Inspect the accelerator pump and return spring for wear. Make sure the passage in the power valve is open.

5. Make sure the carburetor jets are clean.

6. Inspect the float and inlet valve for wear. Make sure the needle moves freely in the seat.

7. Inspect the carburetor screws and nuts for damaged threads.

8. Inspect the hoses for damage. Check the hoses for a good seal at the ports.

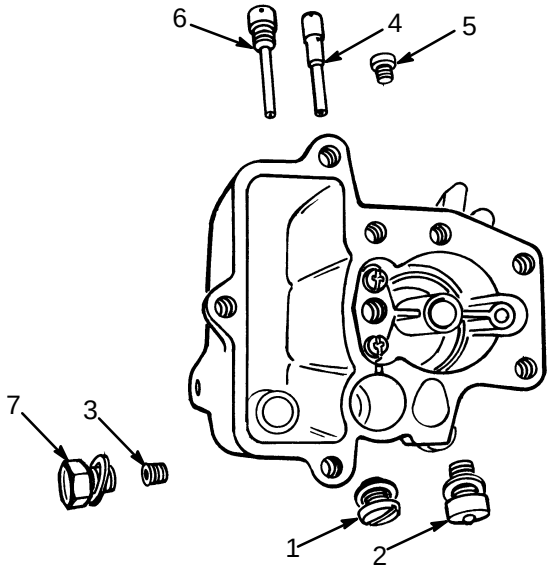


Check the fuel shut–off solenoid. Touch the body of the solenoid to the negative terminal of a 12 volt battery. Touch the connector to the plus terminal of the battery. The shaft of a good solenoid will retract into the body of the solenoid.

FIGURE 6. FUEL SHUT–OFF SOLENOID

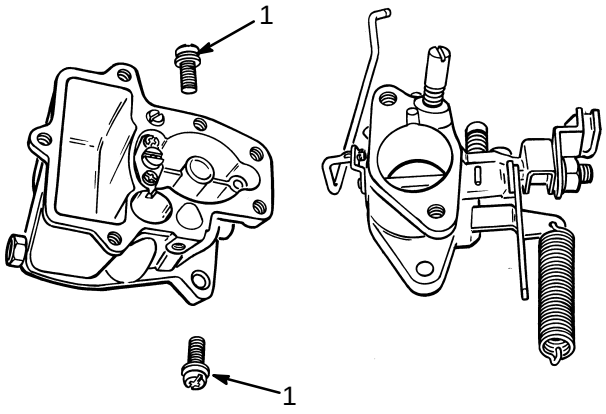
Assembly (See FIGURE 7.)

NOTE: Use new gaskets during the assembly of the carburetor.



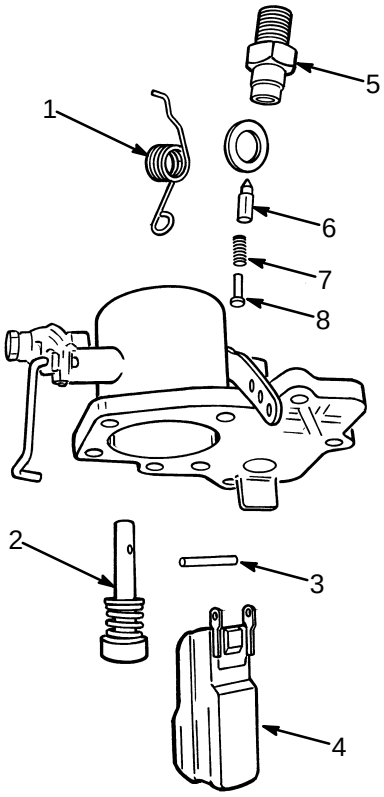
STEP 1. Install the jets into the float bowl housing:

1. Check Valve
2. Power Valve
3. Main Jet
4. Fuel Jet For Slow Speed
5. Small Air Jet For Slow Speed
6. Air Jet For Main Nozzle
7. Plug



STEP 2. Install the float bowl housing on the throttle body assembly and install the screws (1).

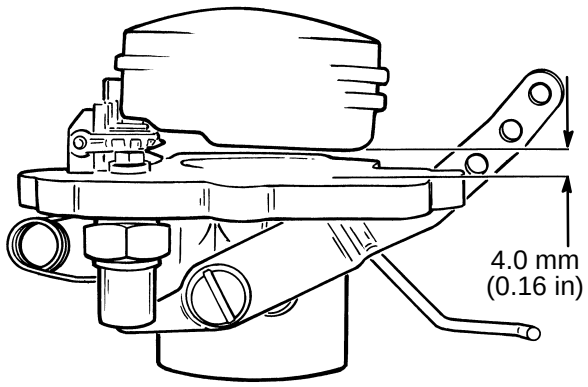
Install the idle mixture screw and spring in the throttle body.



STEP 3. Install the float valve seat (4) and install the needle valve (5), spring (6), and spring seat (7).

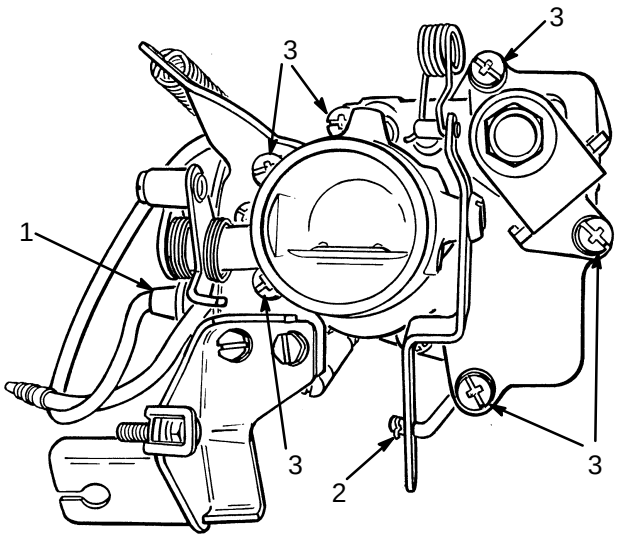
Install the accelerator pump (2) into the air horn. Install the spring (1)

Install the float (4). Install the pin (3) that holds the float.



STEP 4. Check the float level as shown. Adjust the valve seat against the needle valve for the correct float level.

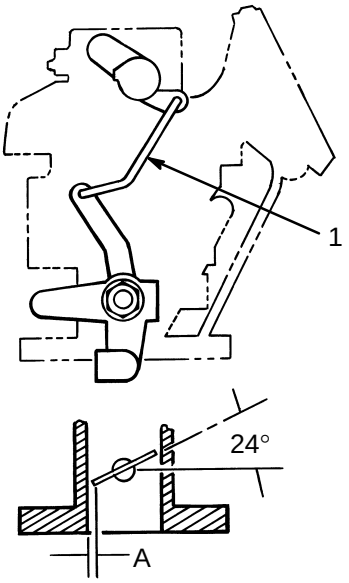
FIGURE 7. ASSEMBLY OF THE CARBURETOR (1 of 2)



STEP 5. Install the air horn on the float bowl housing. Install the screws (3).

Install the connecting rod (2) to connect the accelerator pump to the lever. Install the pins and clips.

Install the fuel shut–off solenoid (1).



STEP 6. The choke plate is connected to the throttle valve through a link (1). When the choke cable is pulled, the choke plate closes and the throttle valve is opened approximately 24 degrees so that the engine can start. Hold the choke plate closed and measure Dimension “A”. The correct measurement is 1.0 mm (0.384 in). Bend the link (1) to adjust Dimension “A”.

FIGURE 7. ASSEMBLY OF THE CARBURETOR (2 of 2)

Installation

NOTE: The vacuum and engine coolant hoses installed on the carburetor and governor are made of special high–temperature material. If any of the hoses are replaced, make sure the correct hoses are installed.

1. Install the governor and gasket on the engine manifold studs. Install the carburetor and gasket on the governor. Install and tighten the nuts on the studs.

2. Connect the vacuum hoses to the carburetor and governor.

3. Connect the engine coolant hoses to the and governor.

4. Connect the wire for the solenoid shut–off valve.

5. Connect the throttle cable to the carburetor.

6. Install the air inlet adapter on the carburetor. Connect the inlet adapter to the air filter hose. Connect the vacuum hose to the idle control actuator. Make sure the delay valve is installed so that the arrow on the valve body points toward the idle control actuator.

CHECKS AND ADJUSTMENTS

CARBURETOR

Idle Speed And Mixture Adjustment (See FIGURE 8.)

1. The engine must be at the normal operating temperature. Stop the engine. Apply the parking brake. Check that the choke plate is fully open. Connect a tachometer to the engine.

2. Put the transmission in NEUTRAL. Start the engine. See FIGURE 8. Turn the idle mixture screw (2) until it is against its seat. Loosen the screw 1.5 to 2 turns. Loosen the idle speed screw (1) until the engines runs rough.

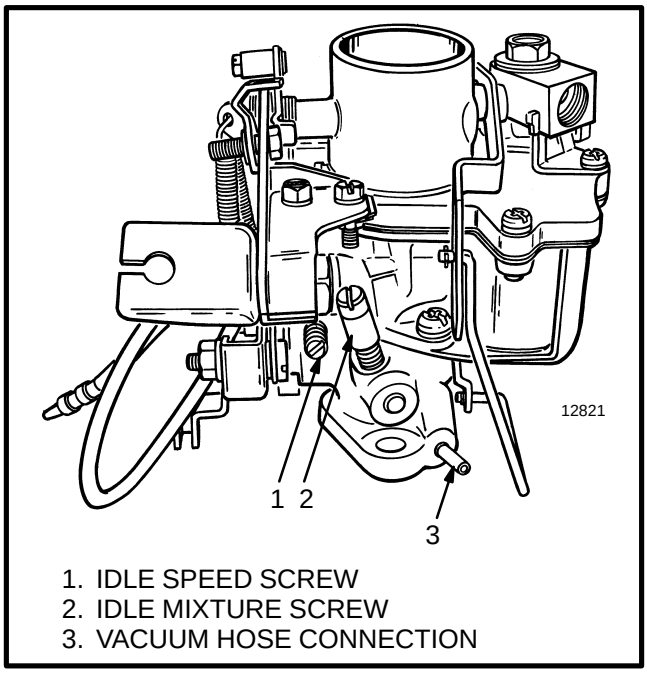


FIGURE 8. CARBURETOR ADJUSTMENTS

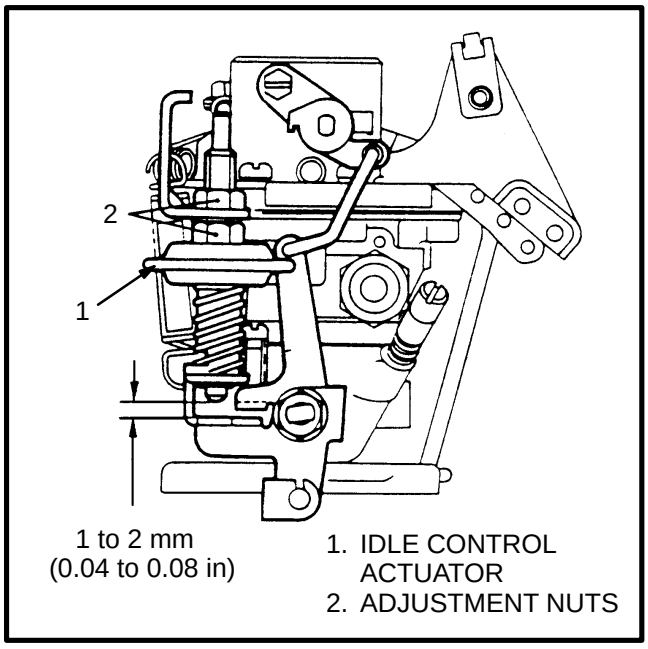


FIGURE 9. CARBURETOR ADJUSTMENTS

3. Adjust the idle mixture screw (2) until the engine runs smoothly. Adjust the idle speed to 700 to 750 rpm with the idle speed screw (1).

4. Repeat step 2 and step 3 until the engine runs smoothly at idle speed.

5. Use an exhaust gas analyzer to check that the CO level is below 4.5%.

6. Stop the engine. See FIGURE 9. Adjust the idle control actuator so that there is 1 to 2 mm (0.04 to 0.08 in) between the bottom of the rod and the throttle lever.

Throttle Linkage Adjustment (See FIGURE 10.)

NOTE: Each time the throttle linkage is disassembled, it is important to adjust the throttle cable.

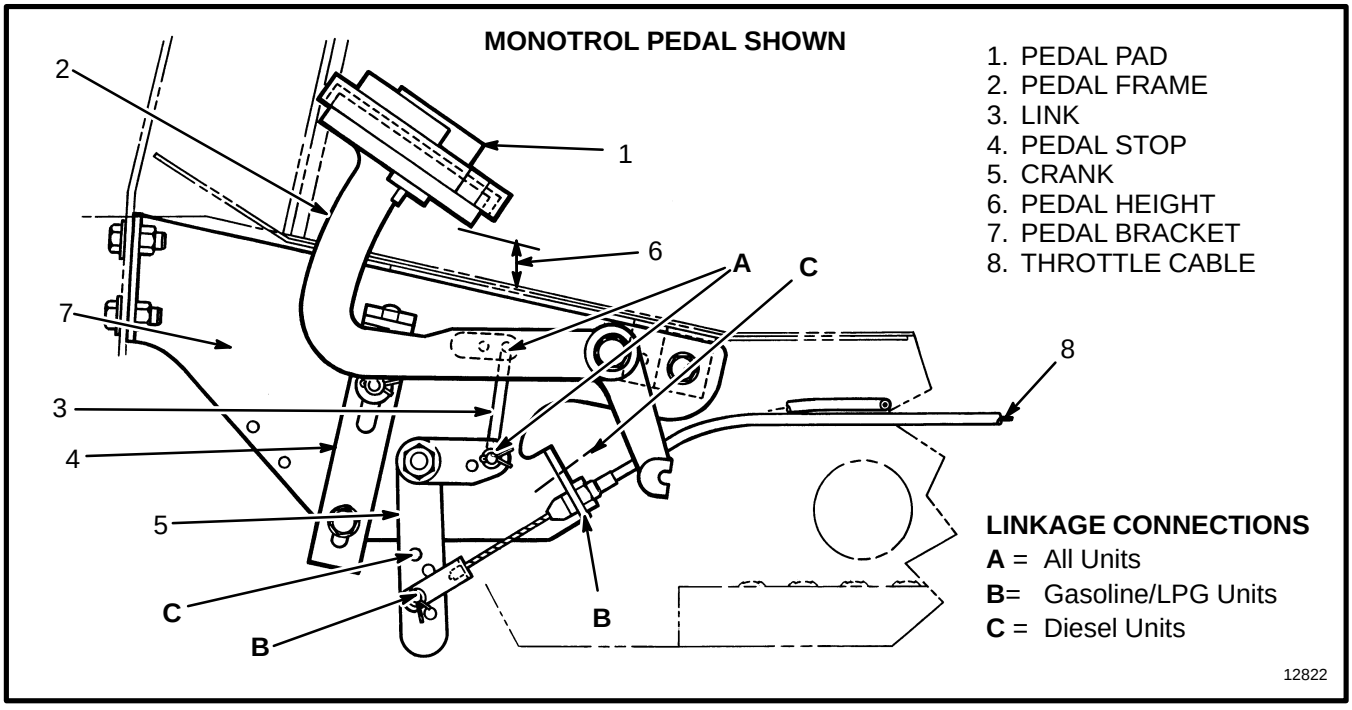


FIGURE 10. THROTTLE ARRANGEMENT LINKAGE

1. Connect the throttle cable at the pedal. Tighten the jam nut at the pedal bracket (7).

2. Adjust the idle speed of the engine. The idle adjustment screw on the carburetor controls the idle speed. The correct idle speed is 700 to 750 rpm.

3. Adjust the pedal height to 46.3 mm (1.82 in) using the pedal stop (4).

4. Connect the cable at the carburetor. Adjust the length of the cable housing so that the cable is not loose. With the engine running at the correct idle speed, change the position of the cable housing with the nuts at the bracket.

5. Check that the engine speed with the throttle wide open and no load is as follows:

Mazda M4–1.5G engine – 2500 to 2900 rpm

Mazda M4–2.0G engine – 2600 to 2700 rpm

Use the adjustment screw on the carburetor to set the engine speed at wide open throttle.

GOVERNOR
(See FIGURE 11. and FIGURE 12.)

The governor does not normally need adjustment. If adjustment is necessary, do not turn the adjustment screws more than 1/4 turn at a time. If the adjustment screws are turned more than this the governor can be difficult to adjust.

Before making any adjustments to the governor, check the following:

- Make sure the mechanical, electrical and fuel systems are operating correctly.
- Make sure the tachometer will work with the ignition system.
- Make sure the air filter is clean and connected to the carburetor.

Apply the parking brake. Run the engine at operating temperature. Do the following procedure to adjust the governor. See FIGURE 11.

1. Remove the lock wire from the lock screw (3). Loosen the lock screw.

2. With no load on the engine, run the engine at full open throttle to obtain maximum engine speed. To adjust the maximum no load speed, hold the adjustment screw (2) and turn the adjustment wheel (1). Turn the adjustment wheel clockwise to increase engine speed and counterclockwise to decrease engine speed. Set the maximum engine speed as follows:

Mazda M4–1.5G engine – 2500 to 2900 rpm

Mazda M4–2.0G engine – 2600 to 2700 rpm

3. Tighten the lock screw.

4. Run the engine with the throttle fully open, then pull the TILT FORWARD lever to increase the load on the engine. The governor setting is correct when the engine runs smoothly (without speed changes), and the difference in speed between the load and no load conditions is within the limits of the specifications.

5. If the engine speed changes, loosen the lock screw and turn the adjustment screw (2) 1/4 turn clockwise. Set the maximum no load engine speed by turning the adjustment wheel (1) counterclockwise. Repeat this procedure until the engine speed is steady.

6. If the engine speed difference between the load and no load conditions is greater than specified, turn the adjustment wheel (1) 1/4 turn clockwise. Set the maximum no load engine speed by turning the adjustment screw (2) counterclockwise. Repeat this procedure until the engine runs correctly.

7. When the governor adjustment is correct, tighten the lock screw (3) and install lock wire between the lock screw and the adjustment screw (2).

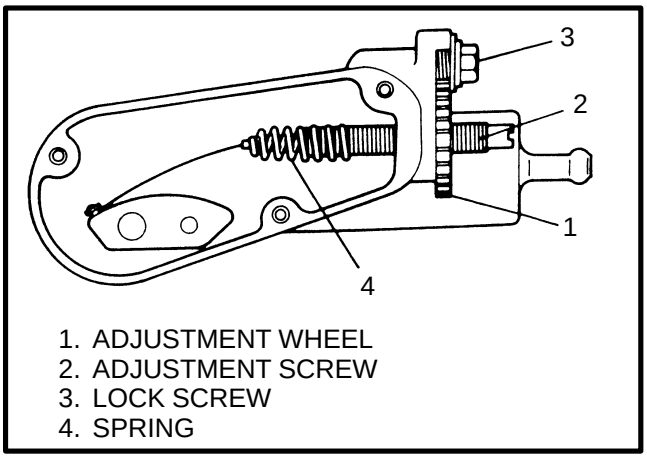


FIGURE 11. GOVERNOR ADJUSTMENT

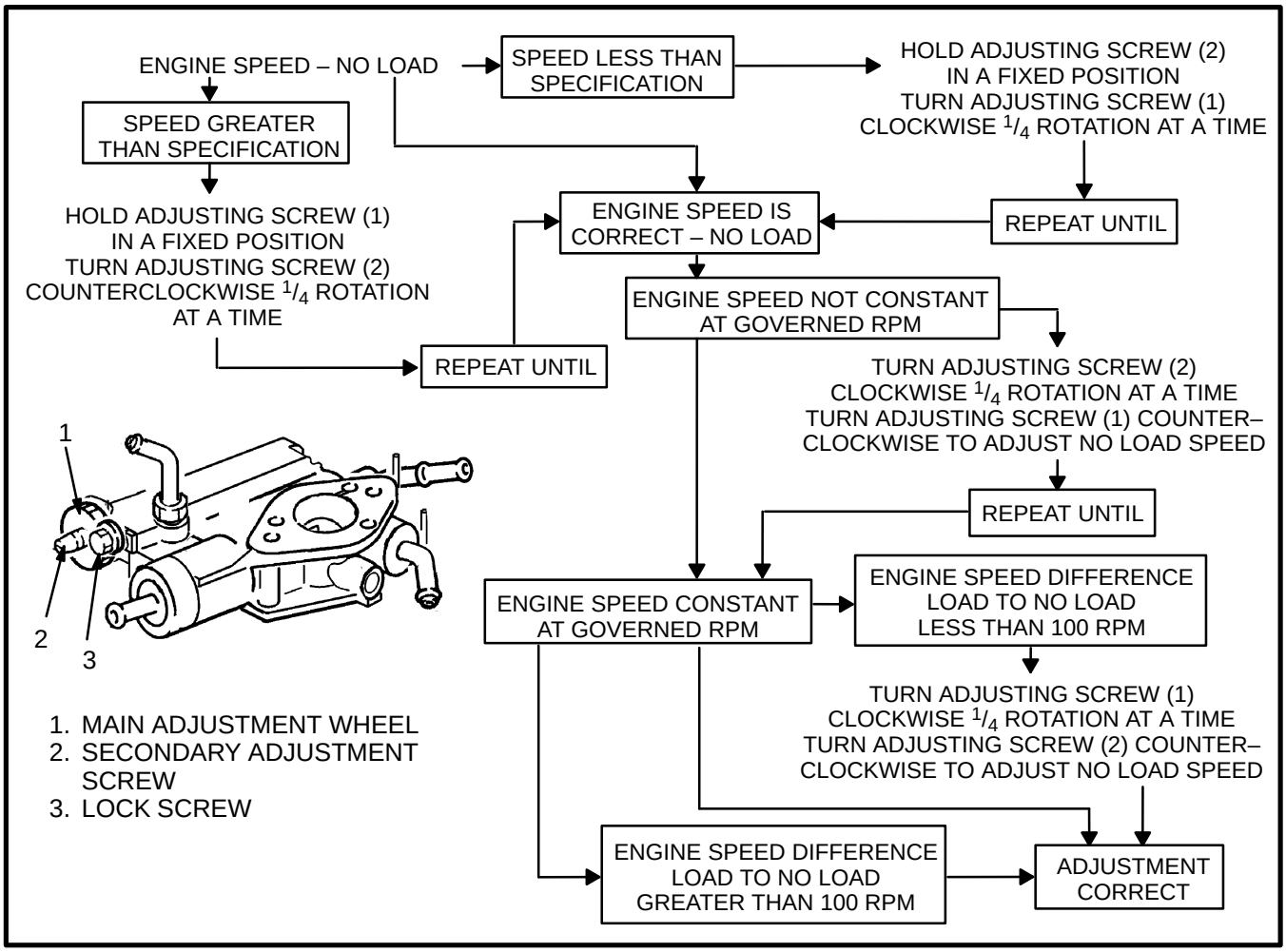


FIGURE 12. GOVERNOR ADJUSTMENTS

TROUBLESHOOTING

TROUBLE	POSSIBLE CAUSE	PROCEDURE OR ACTION
The engine will not start or is difficult to start.	The fuel solenoid valve is not operating correctly.	Install new fuel solenoid valve.
	The screen at the fuel inlet valve has a restriction.	Clean the screen.
	The inlet valve needle does not move.	Check, clean, or install new parts as required.
	The choke plate does not move correctly.	Repair choke plate or overhaul carburetor.
The engine speed is faster than the specified governor limit.	The adjustment of the governor is not correct.	Adjust governor.
	The governor is not operating correctly.	Install new governor.
	Ice is on the throttle plate at 32 to 40°F (0 to 5°C) air temperature.	Heat inlet air. Operate in warmer and dryer air.

TROUBLE	POSSIBLE CAUSE	PROCEDURE OR ACTION
The engine does not run smoothly at idle.	The vacuum hose has restrictions.	Remove restriction or install new hose.
	The fuel solenoid valve is not operating correctly.	Install new fuel solenoid valve.
	The choke system does not operate correctly.	Check, clean, and repair choke system.
	The adjustment for the float mechanism is not correct.	Check and adjust float level.
	The fuel inlet screen has restrictions.	Clean the screen.
	The throttle assembly is worn or bent.	Repair throttle assembly. Overhaul carburetor. Install new carburetor.
	The fast idle speed is too slow.	Adjust fast idle speed.
	The idle speed is too slow.	Adjust idle speed.
	The adjustment for the idle mixture is not correct.	Adjust the idle mixture.
	The PCV system is not operating correctly.	Check and clean PCV system. Install new PCV valve.
	The air filter has restrictions.	Check air restriction indicator. Clean or install new filter element.
	The air jets have restrictions.	Clean or install new air jets.
	Ice is on the throttle plate at 32 to 40°F (0 to 5°C) air temperature.	Heat inlet air. Operate in warmer and dryer air.
The smoke from the exhaust is black.	The air filter has restrictions.	Check air restriction indicator. Clean or install new filter element.
	The engine inlet valve/s will not close or has damage.	Adjust valves. Grind valves. Install new valve springs.
	The carburetor float adjustment is not correct (fuel level is too high).	Check and adjust float level.
	The float has damage.	Install new float. Check and adjust float level.
	The choke plate does not move.	Repair choke plate or overhaul carburetor.
	The coolant hose has a restriction.	Remove restriction. Install new hose.
	The choke linkage is not connected.	Connect and adjust choke linkage.
	The coolant temperature sensor is not operating correctly.	Replace the coolant temperature sensor.

TROUBLE	POSSIBLE CAUSE	PROCEDURE OR ACTION
The engine does not accelerate smoothly.	The fuel pressure is too low.	Check fuel pressure. Install new fuel pump.
	The air filter has a restriction.	Check air restriction indicator. Clean or install new filter element.
	The adjustment of the carburetor float mechanism is not correct.	Adjust float level.
	The fuel inlet screen has a restriction.	Clean the screen.
	The main jet has a restriction.	Clean or install new main jet.
	The operation of the throttle valve is not correct.	Repair throttle assembly. Overhaul carburetor. Install new carburetor.
	The operation of the fuel solenoid valve is not correct.	Install new fuel solenoid valve.
	The operation of the power piston is not correct.	Check, clean, or install new power piston. Overhaul carburetor.
	The operation of the power valve is not correct.	Check, clean, or install new power valve. Overhaul carburetor.
	The accelerator pump is not operating correctly.	Repair, clean, or install new acceleration pump.
	The inlet check valve has a restriction or is damaged.	Check, clean, or install new parts as required.
	The outlet check valve has a restriction or is damaged.	Check, clean, or install new parts as required.
The engine does not run smoothly at idle with light load or hot conditions.	The idle compensator valve does not open when hot.	Repair or install new idle compensator valve.
	The idle speed diaphragm has leaks.	Install new diaphragm.
	The delay valve is not operating correctly.	Install new delay valve.
	The delay valve is not installed correctly.	Install delay valve correctly.
	The vacuum hose to the idle speed diaphragm has leaks.	Check vacuum hose. Install new hose.