SERVICE REPAIR

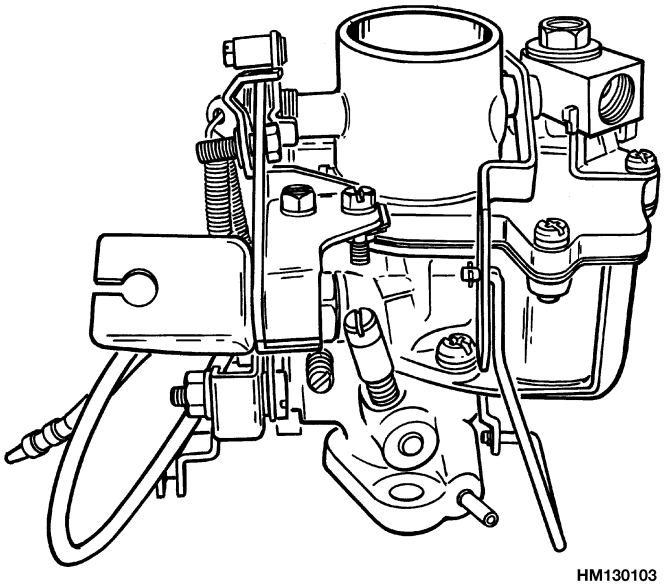
MANUAL

Hyster E001 (H25XM, H30XM, H35XM, H40XM, H40XMS) Forklift

HYSTER

GASOLINE FUEL SYSTEM

H1.50-1.75XM (S/H25-35XM) [C010, D001, D010, E001]; H2.00XMS (S/H40XMS) [C010, D001, D010, E001]



HM130103

HYSTER

PART NO. 897591

900 SRM 547

SAFETY PRECAUTIONS
MAINTENANCE AND REPAIR

- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks.
- Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the **Operating Manual** or the **Periodic Maintenance** section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use **HYSTER APPROVED** parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the **WARNING** and **CAUTION** notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:

WARNING

Indicates a condition that can cause immediate death or injury!

CAUTION

Indicates a condition that can cause property damage!

TABLE OF CONTENTS

This section is for the following models:

H1.50-1.75XM (S/H25-35XM) [C010, D001, D010, E001];
H2.00XMS (S/H40XMS) [C010, D001, D010, E001]

"THE
QUALITY
KEEPERS"

HYSTER
APPROVED
PARTS

Description

The fuel tank is part of the frame weldment. See Figure 1. 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.

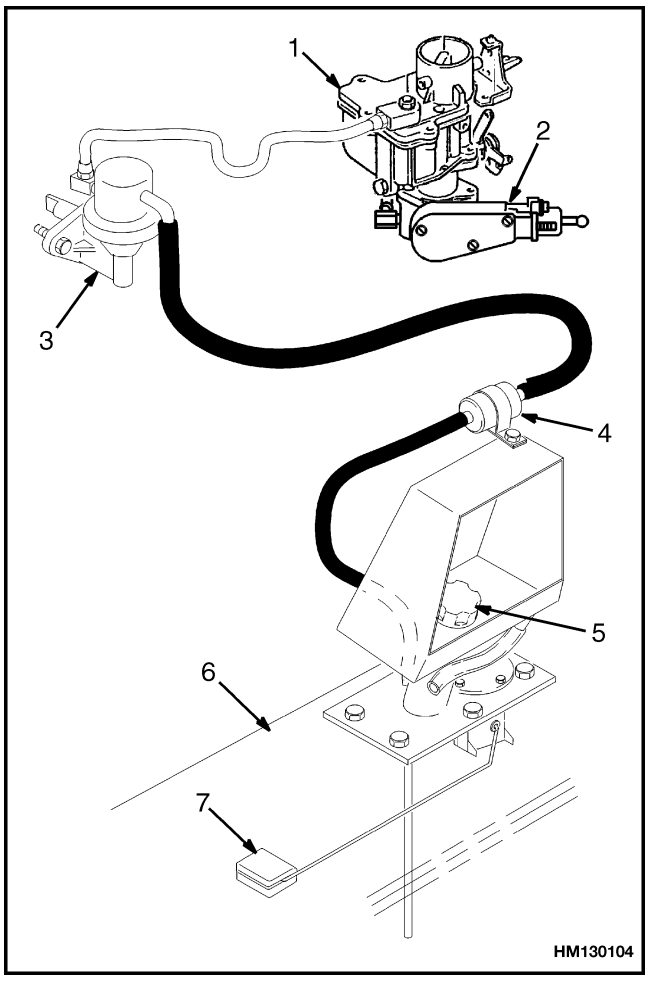
NOTE: Parts are not available for repairing the fuel pump. If the fuel pump needs repair, install a new fuel pump.

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 Governor Checks and Adjustments.

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.



1. CARBURETOR
2. GOVERNOR
3. FUEL PUMP
4. FILTER
5. CAP, FUEL TANK
6. FUEL TANK (PART OF FRAME)
7. FLOAT, FUEL LEVEL SENDER

Figure 1. Gasoline Fuel System

Carburetor Repair

REMOVE

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.

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

1. Disconnect air filter hose and vacuum hoses at air inlet tube on carburetor.
2. Disconnect fuel line at carburetor. Put cap on open fuel line.
3. Disconnect throttle cable at carburetor. Disconnect solenoid wire at connector.
4. Disconnect vacuum hoses at governor.
5. Disconnect engine coolant lines at carburetor and governor.
6. Remove two nuts from studs that fasten carburetor and governor to inlet manifold. Remove carburetor and governor from inlet manifold. See Figure 2.

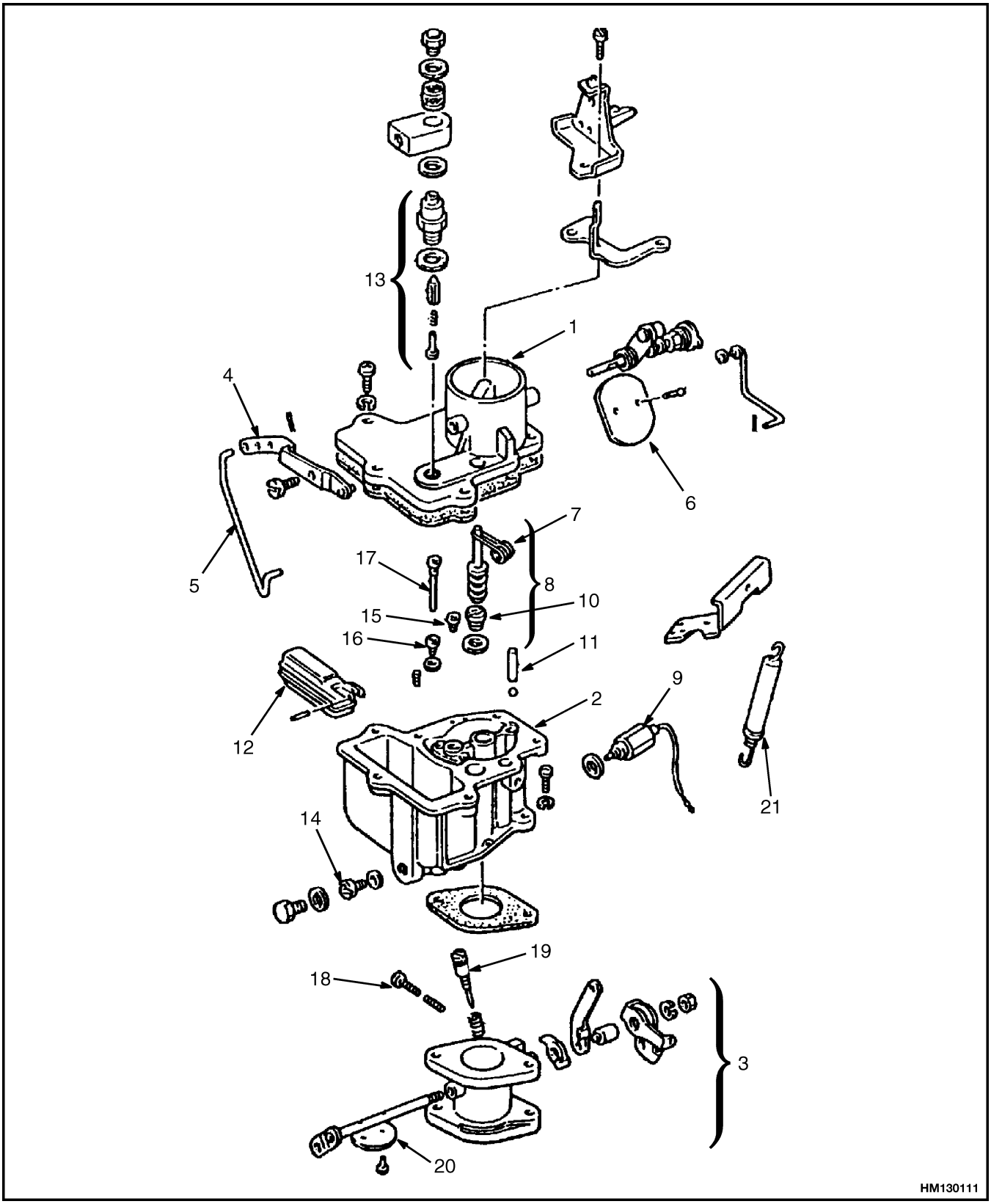


Figure 2. Carburetor Parts

Legend for Figure 2

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

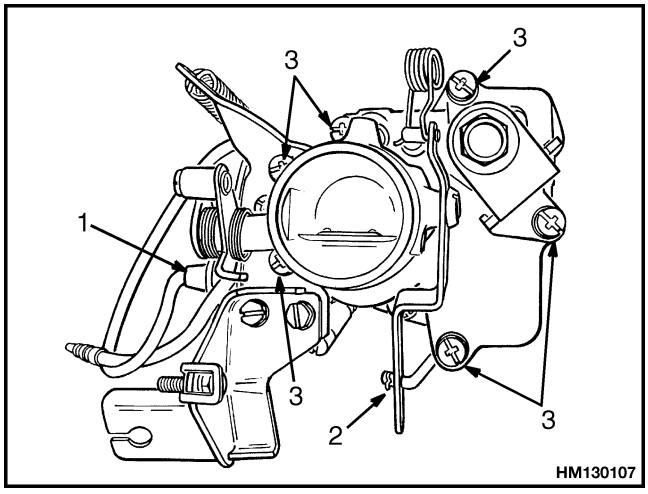
DISASSEMBLE

Disassemble carburetor as follows:

STEP 1.
Remove fuel shutoff solenoid.

Remove pins and clips and disconnect connecting rod from accelerator pump.

Remove screws that fasten air horn to float bowl housing.

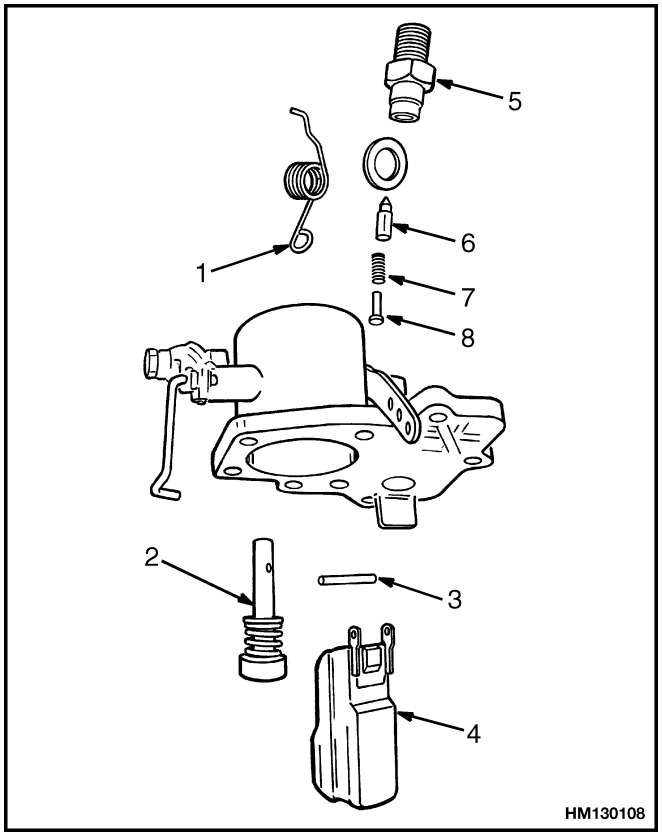


1. SOLENOID
2. CONNECTING ROD
3. SCREW

STEP 2.
Remove mounting spring and accelerator pump from air horn.

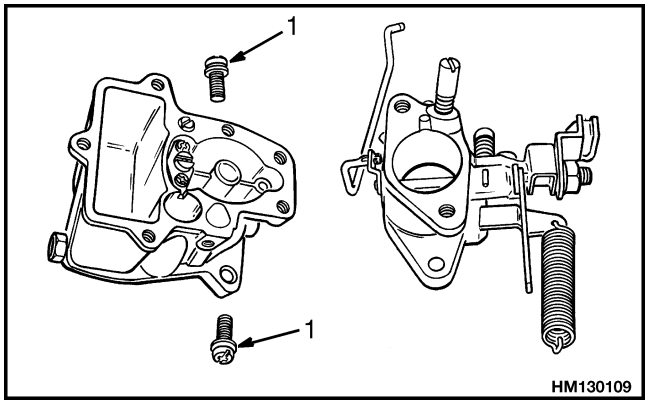
Remove pin that holds float. Remove float.

Remove float valve seat, needle valve, spring, and spring seat.



1. MOUNTING SPRING
2. ACCELERATOR PUMP
3. PIN
4. FLOAT
5. VALVE SEAT
6. NEEDLE VALVE
7. SPRING
8. SPRING SEAT

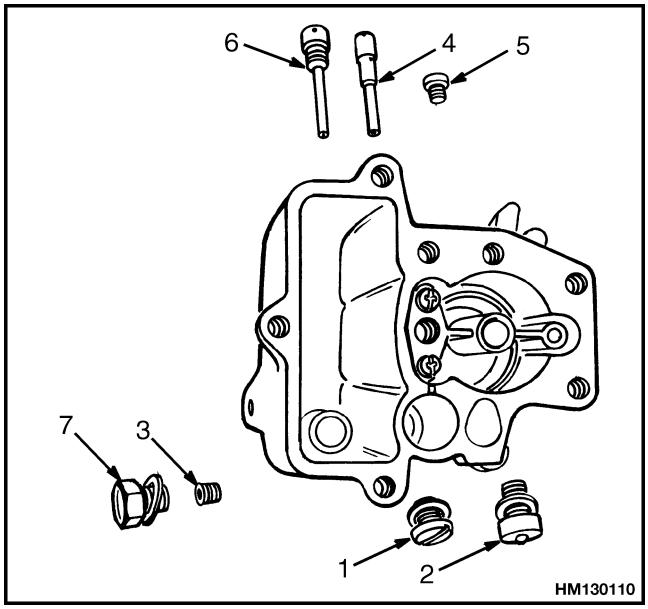
STEP 3.
Remove screws. Separate float bowl housing from throttle body assembly.



1. SCREW

STEP 4.
Remove following components from float bowl housing:

Check Valve
Power Valve
Main Jet
Fuel Jet for Slow Speed
Small Air Jet for Slow Speed
Air Jet for Main Nozzle
Plug



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

CLEAN

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.

1. Clean metal carburetor parts with carburetor cleaning solvent. See Figure 2. Do not use cleaning solvent to clean float, solenoid valve, and parts that are not metal (seals and gaskets).

Be careful when cleaning plastic and nylon parts on carburetor. Follow instructions of cleaning solvent manufacturer for cleaning plastic parts.

WARNING

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

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.

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

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

INSPECT

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

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

2. Inspect choke plate, shaft, and linkage for wear and damage. Check for rough edges on choke plate. Make sure shaft for choke plate rotates

freely in air horn. Inspect choke return springs for distortion and damage.

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

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

5. Make sure carburetor jets are clean.

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

7. Inspect carburetor screws and nuts for damaged threads.

8. Inspect hoses for damage and good seal at ports.

9. Check fuel shut-off solenoid. See Figure 3. Touch body of solenoid to negative terminal of 12-volt battery. Touch connector to positive terminal of battery. Solenoid shaft should retract into body of solenoid.

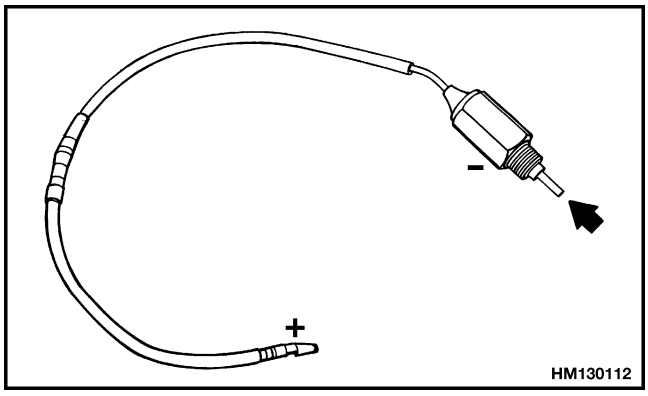


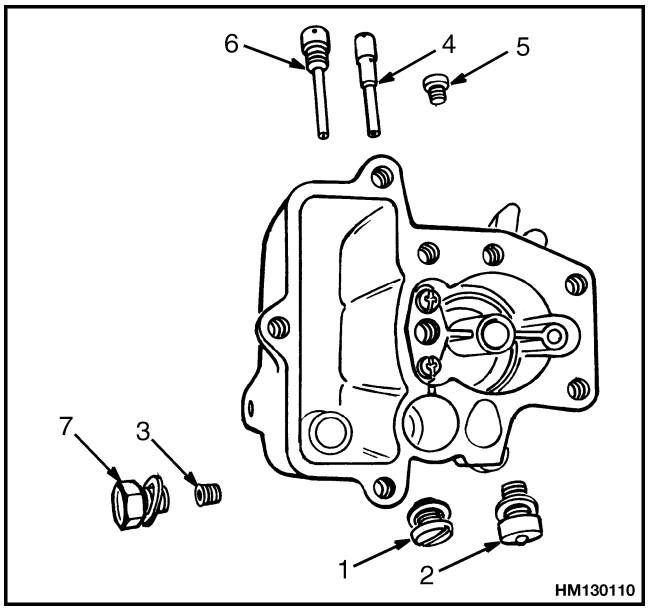
Figure 3. Fuel Shutoff Solenoid

ASSEMBLE

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

Assemble carburetor as follows:

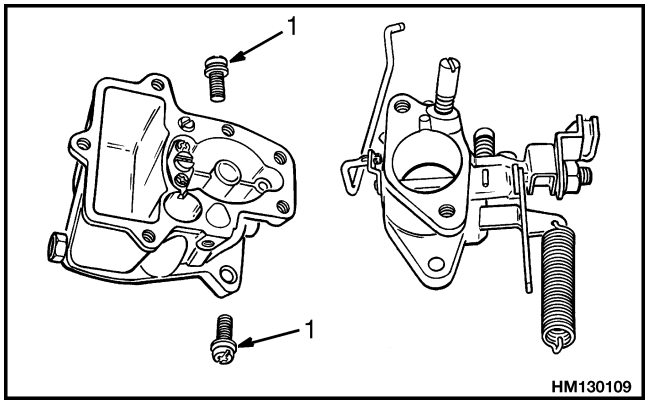
STEP 1.
Install following components into float bowl housing:
- Check Valve
- Power Valve
- Main Jet
- Fuel Jet for Slow Speed
- Small Air Jet for Slow Speed
- Air Jet for Main Nozzle
- Plug



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 float bowl housing on throttle body assembly. Install screws.

Install idle mixture screw and spring in throttle body.

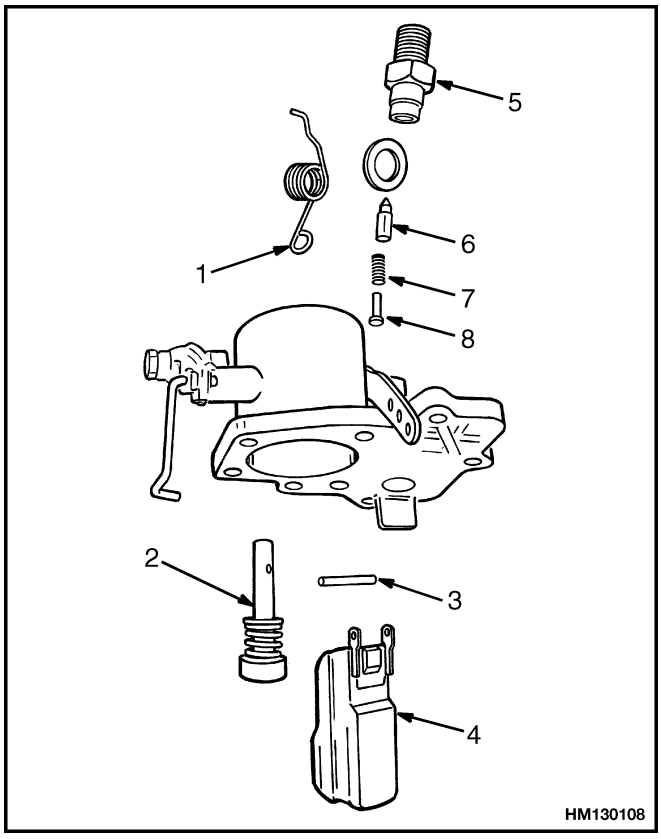


1. SCREW

STEP 3.
Install float valve seat, spring, needle valve, and spring seat.

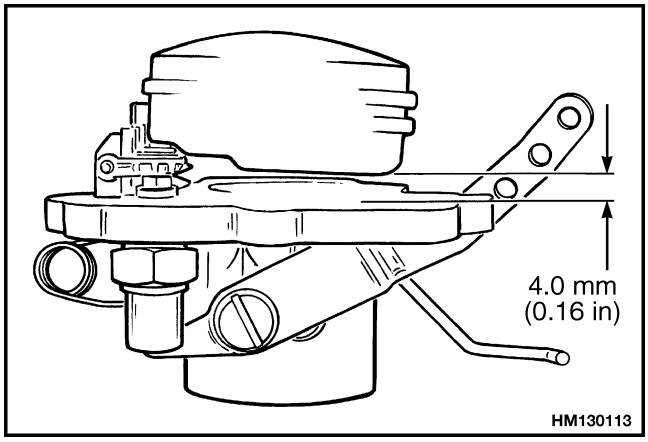
Install accelerator pump into air horn. Install mounting spring.

Install float and pin that holds float.



1. MOUNTING SPRING
2. ACCELERATOR PUMP
3. PIN
4. FLOAT
5. VALVE SEAT
6. NEEDLE VALVE
7. SPRING
8. SPRING SEAT

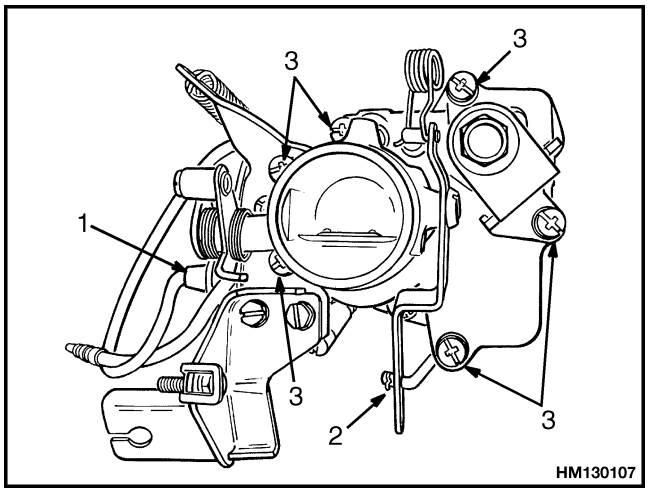
STEP 4.
Check float level as shown. Adjust valve seat against needle valve to get correct float level.



STEP 5.
Install air horn on float bowl housing. Install screws.

Install connecting rod to connect accelerator pump to lever. Install pins and clips.

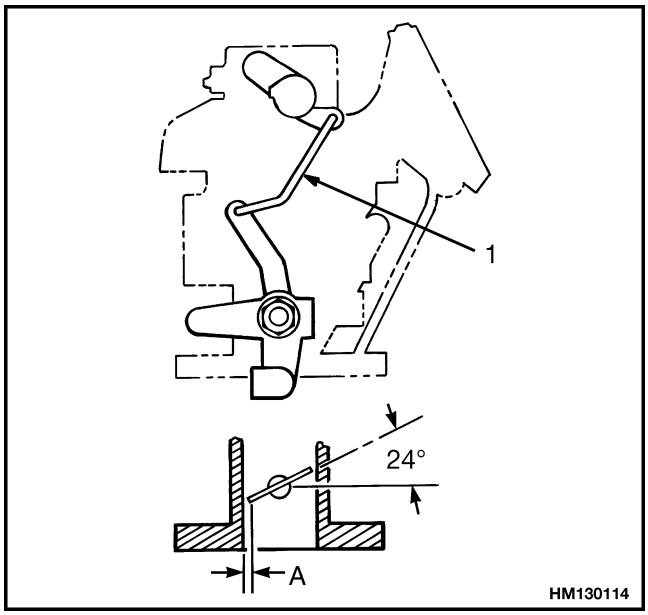
Install fuel shutoff solenoid.



1. SOLENOID
2. CONNECTING ROD
3. SCREW

STEP 6.
Choke plate is connected to throttle valve through link. When choke cable is pulled, choke plate closes, and throttle valve is opened approximately 24 degrees so that engine can start.

Hold choke plate closed and measure dimension A. Correct measurement is 1.0 mm (0.039 in.). Bend link to adjust dimension A.



INSTALL

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.

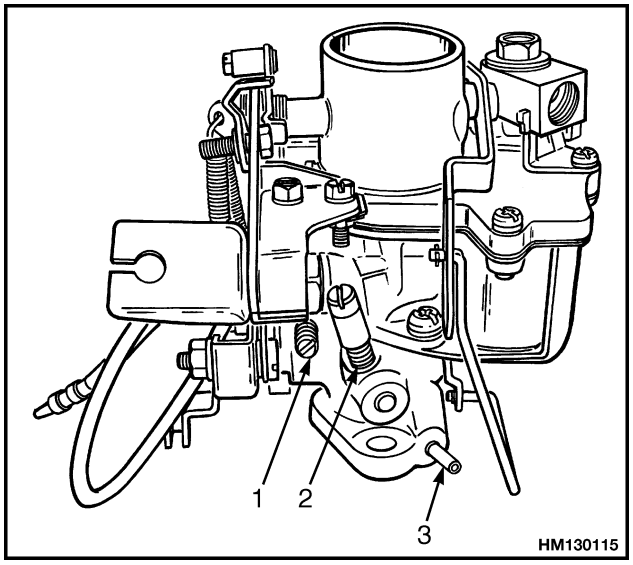
1. Install gasket and governor on engine manifold studs. Install gasket and carburetor on governor. Install and tighten nuts on studs.
2. Connect vacuum hoses to carburetor and governor.
3. Connect engine coolant hoses to governor.
4. Connect wire for solenoid shutoff valve.
5. Connect throttle cable to carburetor.
6. Install air inlet adapter on carburetor. Connect inlet adapter to air filter hose. Connect vacuum hose to idle control actuator. Make sure delay valve is installed so that arrow on valve body points toward idle control actuator.

Carburetor Checks and Adjustments

IDLE SPEED AND MIXTURE, ADJUST

NOTE: The engine must be at the normal operating temperature.

1. Stop engine and apply parking brake.
2. Check that choke plate is fully open. Connect tachometer to engine.
3. Put transmission in **NEUTRAL**. Start engine.
4. Turn idle mixture screw until it is against its seat. See Figure 4. Loosen screw 1-1/2 to 2 turns. Loosen idle speed screw until engines runs roughly.
5. Adjust idle mixture screw until engine runs smoothly. Adjust idle speed screw until idle speed is 700 to 750 rpm.
6. Repeat Step 4 and Step 5 until engine runs smoothly at idle speed.
7. Use exhaust gas analyzer to check that CO level is below 4.5%.
8. Stop engine. See Figure 5. Adjust idle control actuator so there is 1 to 2 mm (0.04 to 0.08 in.) between bottom of rod and throttle lever.



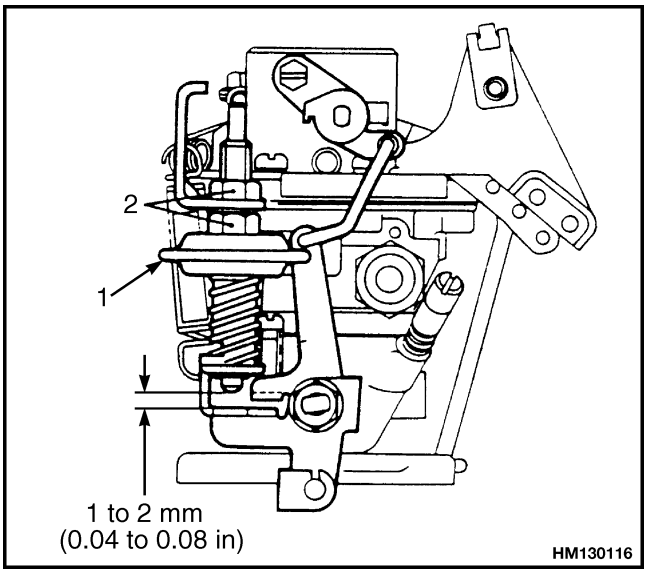
1. IDLE SPEED SCREW
2. IDLE MIXTURE SCREW
3. VACUUM HOSE CONNECTION

Figure 4. Carburetor Adjustments, Idle Speed and Air/Fuel Mixture

THROTTLE LINKAGE, ADJUST

NOTE: Whenever the throttle linkage is disassembled, the throttle cable must be adjusted.

1. Connect throttle cable at pedal. Tighten jam nut at pedal bracket . See Figure 6.



1. IDLE CONTROL ACTUATOR
2. ADJUSTMENT NUTS

Figure 5. Carburetor Adjustments, Idle Control Actuator

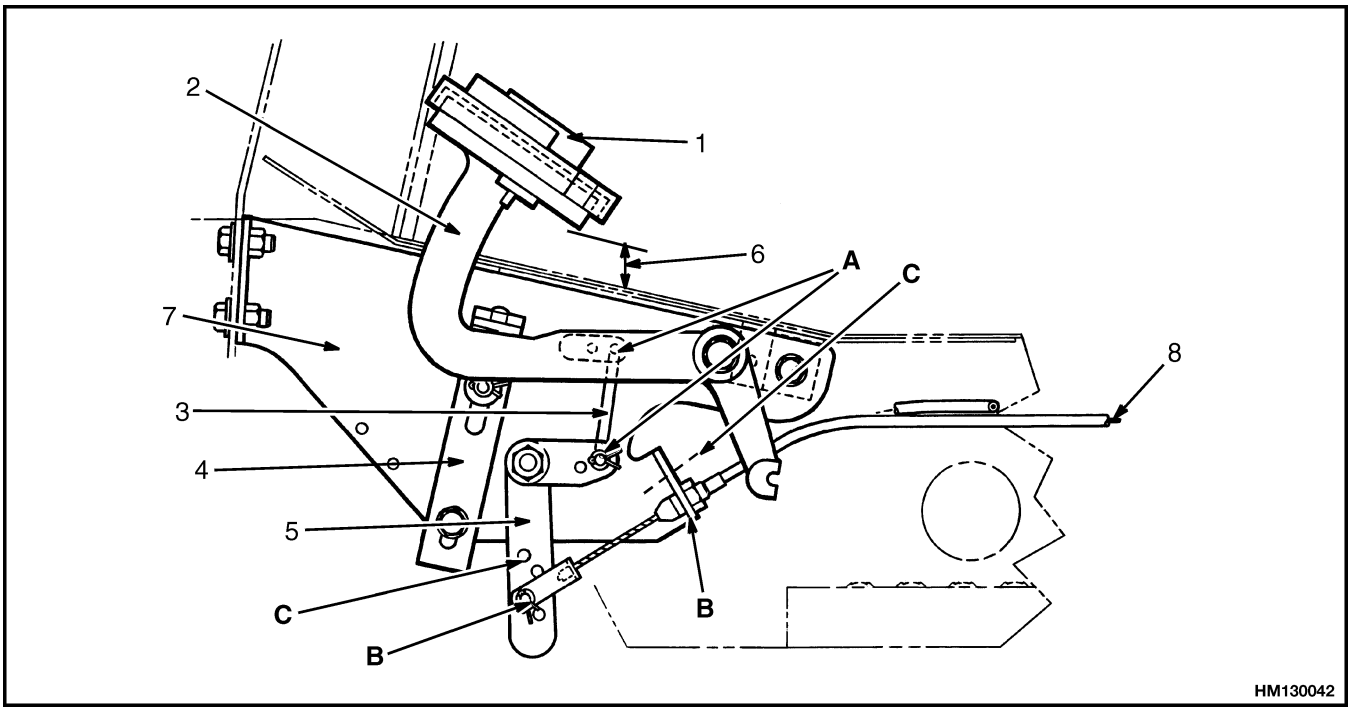
2. Adjust idle speed of engine by turning idle adjustment screw on carburetor. Correct idle speed is 700 to 750 rpm.

3. Adjust pedal stop until pedal height is 46.3 mm (1.82 in.).

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

5. Check that engine speed with 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 adjustment screw on carburetor to set engine speed at wide open throttle.



NOTE: MONOTROL®PEDAL SHOWN.

NOTE: LINKAGE CONNECTIONS: A = ALL UNITS, **B** = GASOLINE/LPG UNITS, **C** = DIESEL UNITS

1. PEDAL PAD
2. PEDAL FRAME
3. LINK
4. PEDAL STOP
5. CRANK
6. PEDAL HEIGHT
7. PEDAL BRACKET

8. THROTTLE CABLE

Figure 6. Throttle Arrangement Linkage

Governor Checks and Adjustments

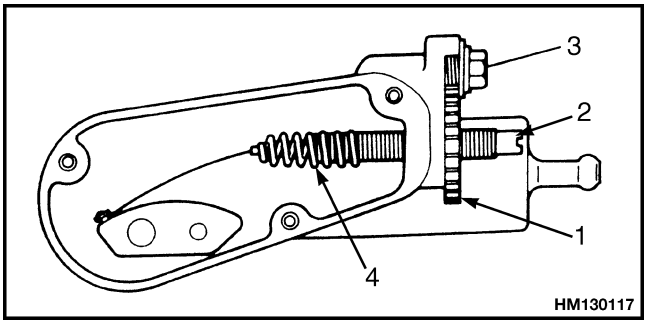
The governor does not normally need adjustment. If adjustment is necessary, do not turn the adjustment screws more than 1/4 turn at a time. If the adjustment screws are turned more than this, the governor can be difficult to adjust.

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.

1. Apply parking brake. Run engine at operating temperature.

2. Remove lock wire from lock screw. Loosen lock screw. See Figure 7.



1. ADJUSTMENT WHEEL
2. ADJUSTMENT SCREW
3. LOCK SCREW
4. SPRING

Figure 7. Governor Adjustment Components

3. With no load, run engine at full open throttle to obtain maximum engine speed. See Figure 8.

To adjust maximum no load engine speed, hold adjustment screw and turn adjustment wheel. Turn adjustment wheel clockwise to increase engine speed or counterclockwise to decrease engine speed. Set maximum no load engine speed as follows:

Mazda M4-1.5G engine - 2500 to 2900 rpm
Mazda M4-2.0G engine - 2600 to 2700 rpm

4. When maximum no load engine speed is set, tighten lock screw.

5. Run engine with throttle fully open, then pull TILT FORWARD lever to increase load on 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.

- If engine speed changes, loosen lock screw and turn adjustment screw 1/4 turn clockwise. Set maximum no load engine speed by turning adjustment wheel counterclockwise. Repeat this procedure until engine speed is steady.
- If engine speed difference between load and no load conditions is greater than specification, turn adjustment wheel 1/4 turn clockwise. Set maximum no load engine speed by turning adjustment screw counterclockwise. Repeat this procedure until engine runs correctly.

6. When governor adjustment is correct, tighten lock screw. Install lock wire between lock screw and adjustment screw.

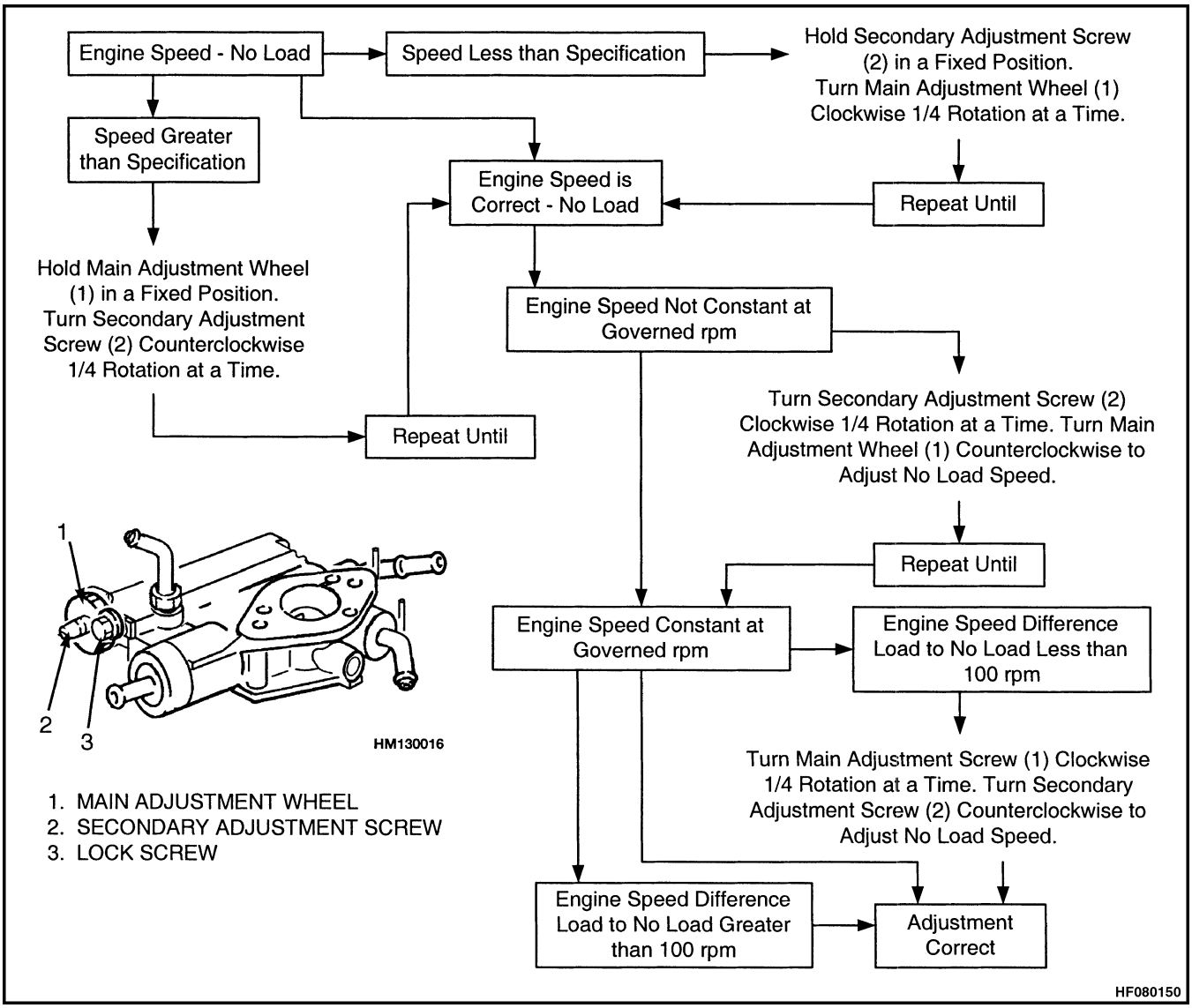


Figure 8. Governor Adjustments

Troubleshooting

PROBLEM	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 screen.
	The inlet valve needle does not move.	Check, clean, or install new parts as required.