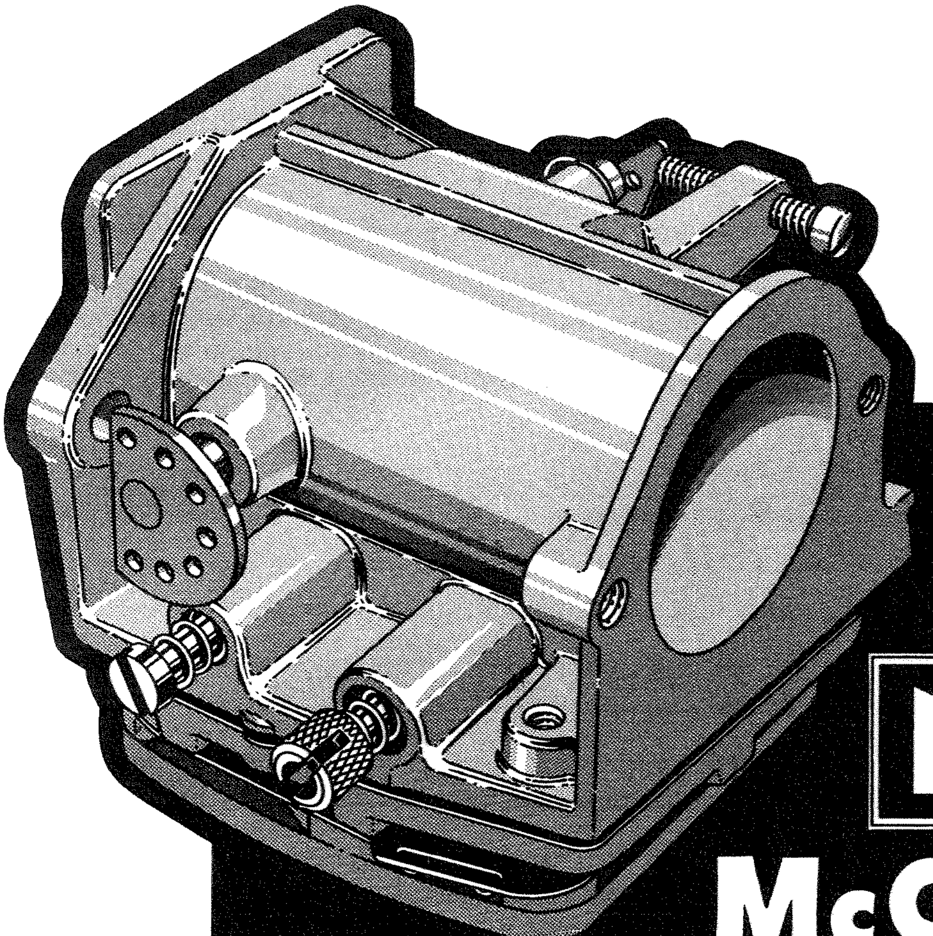


McCulloch

Pressure Pulse Carburetor

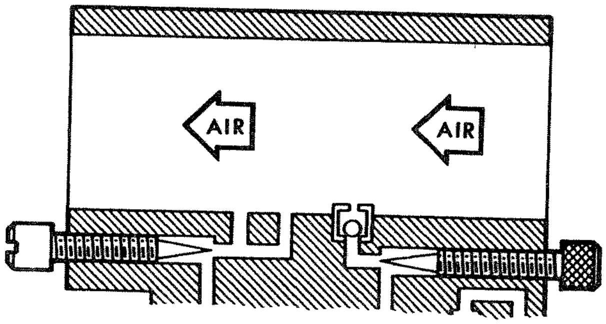
ST-136

NET PRICE - 50 CENTS

FAST FACTS ABOUT THE McCULLOCH PRESSURE PULSE CARBURETOR

What it is . . .

The McCulloch Pressure Pulse Carburetor is a radical new design. It features a straight barrel air passage and controlled pressure pumping of fuel into the air stream at open throttle speeds.



It does not have a venturi and does not depend on the venturi effect to "suck" fuel into the air stream. It provides the correct fuel mixture at full throttle speeds from 2000 to over 10,000 RPM.

What it requires . . .

Because the McCulloch Pressure Pulse Carburetor pumps fuel into the air stream, the carburetor cannot function unless fuel is supplied to the carburetor under pressure. A diaphragm fuel pump is normally a part of the carburetor unit, but a separate fuel pump can be used.

How it operates . . .

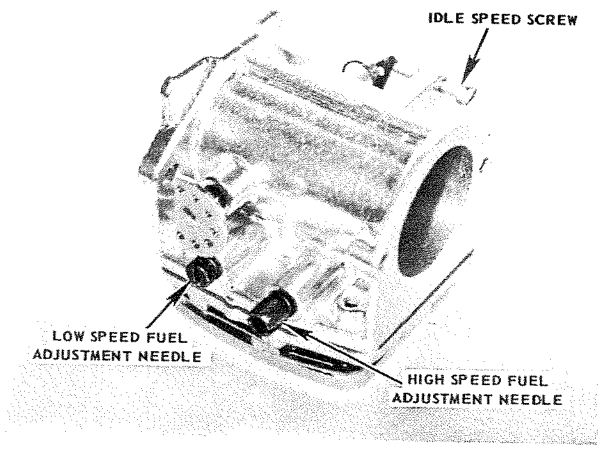
The Pressure Pulse Carburetor uses crankcase pressures and a fixed-orifice pressure-bleed to create a signal pressure. The signal pressure acts on the carburetor diaphragm which in turn regulates the amount of fuel entering the carburetor.

Low engine speeds permit most of the crankcase pressures to bleed-off and result in a low signal pressure. High engine speeds cause a build up of high signal pressure because the pressure cannot bleed-off as fast as it is developed.

At idle speeds with low signal pressure, crankcase suction draws fuel into the carburetor air stream. The function of the signal pressure at idle is to replace the fuel that has been drawn off. At high speeds and with high signal pressure, fuel is forced by fuel pump pressure into the carburetor air stream. Changes in signal pressure cause almost instantaneous changes in the amount of fuel passing into the air stream. Because of this balanced control, the carburetor operates efficiently at all speeds and in any mounting position.

Its adjustments . . .

The carburetor is equipped with low and high speed fuel adjustment needles and an idle speed screw. The idle speed screw controls the idle speed of the engine by regulating the closed position of the throttle plate. The low speed fuel adjustment needle controls the fuel mixture at idle speed. The high speed fuel adjustment needle controls the fuel mixture during acceleration and at high speed.



It is most important to remember that the low speed fuel adjustment needle does not control the acceleration mixture. If attempts are made to make it do this, the engine will run lean at high speeds and suffer severe damage through lack of proper lubrication.

How to adjust it . . .

1. Turn both low and high speed fuel adjustment needles all the way in. Then back each needle out one full turn.
2. Start the engine and run it until it is warmed up.
3. Adjust the low speed fuel adjustment needle to provide the best idling characteristics.
4. Adjust the idle speed screw to provide an idle speed just below the point of clutch engagement.
5. Adjust the high speed fuel adjustment needle to provide best acceleration and maximum power under load. Do not adjust the needle to a lean condition. It is always best to run slightly rich. It is impossible to obtain the correct adjustment of the carburetor unless the engine is pulling the load under which it will be working.

McCulloch Pressure Pulse Carburetor

The McCulloch pressure pulse carburetor is a new straight barrel, compact carburetor designed specially for two-cycle engines. Instead of a venturi which assists in sucking liquid fuel into the air stream as in the common carburetor, the pressure pulse carburetor pumps liquid fuel into the air stream by controlled pressure. This results in more rapid and even acceleration, delivery of the correct fuel mixture at full throttle from less than 2000 to over 10,000 RPM and better breathing for the engine because of the straight through air passage. The carburetor can operate efficiently when mounted in any position.

Although the theory and operation sections of this booklet treat the fuel pump as a part of the carburetor, these carburetors can be constructed without an integral fuel pump as long as a means of supplying fuel under pressure is provided.

The Pressure Pulse Theory

While McCulloch pressure pulse carburetors can appear in various shapes and sizes, the essential parts of these carburetors are the same. The schematic illustrations used in this section are representative of all McCulloch pressure pulse carburetors.

Fuel Pump

The operation of the pressure pulse carburetor requires the fuel supply to the carburetor to be under pressure. A diaphragm fuel pump driven by crankcase pressure pulsations is built into the carburetor to supply the fuel under pressure (Figure 1). In the fuel pump, crankcase pulsations are delivered to a chamber on the dry side of the fuel pump diaphragm by a passage from the crankcase. The dry side chamber has no vent to the atmosphere, since both pressure and suction are required to operate the pump.

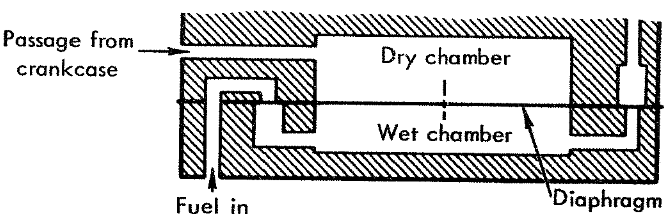


FIGURE 1

As the piston moves away from the crankshaft, minus pressure or suction is developed in the crankcase. This suction is transferred by means of the connecting passage, to the dry chamber of the fuel pump diaphragm. Suction pulls the diaphragm toward the dry chamber and the movement of the diaphragm draws fuel through a one-way fuel pump inlet valve into the wet or fuel chamber of the pump (Figure 2).

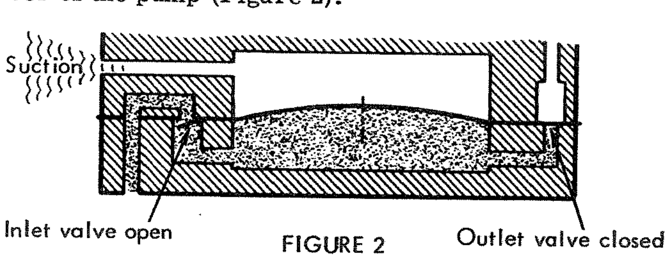


FIGURE 2

As the piston passes the top of its stroke and moves toward the crankcase, suction gives way to pressure in the crankcase. The pressure is transferred to the dry chamber of the fuel pump diaphragm and forces the diaphragm toward the wet chamber of the fuel pump.

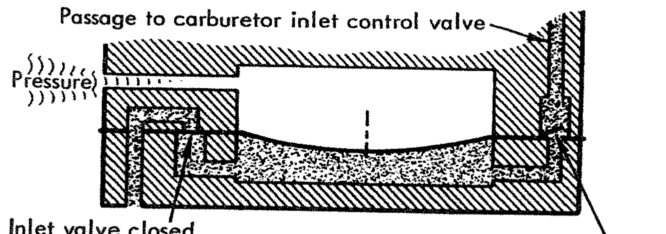


FIGURE 3

This movement causes the fuel to flow out of the wet chamber through a one way outlet valve and a passage to the carburetor. Flow of fuel into the carburetor is controlled by a carburetor fuel inlet valve regulated by the position of the carburetor diaphragm. As long as the carburetor fuel inlet valve is closed, the fuel in the fuel pump and fuel pump passages remains essentially static or without movement.

The Venturi Carburetor

In the common venturi carburetor, the air stream sucks fuel from the fuel side of the carburetor diaphragm into the venturi passage. The reduced pressure of the fuel against the diaphragm permits the diaphragm to move and opens the fuel inlet valve. When the pressure of new fuel reaches a pre-determined point, the diaphragm closes the fuel inlet valve and cuts off the flow of fuel into the carburetor. The venturi type carburetor is commonly used in two-cycle gasoline engines.

The Pressure Pulse Carburetor

The pressure pulse carburetor makes use of only the pressure pulses of the crankcase to create a signal pressure on the carburetor diaphragm (Figure 4). The suction pulses from the crankcase are cut off by a one way duck valve. The duck valve (Figure 5) is also known as a "duck-bill" valve, a "raspberry" valve, and a "Bronx cheer" valve. To prevent the pressure pulses from pumping up the carburetor signal chamber like a balloon, a bleed-down passage containing a carefully sized orifice releases pressure into the atmosphere from the signal chamber of the carburetor. The size of the orifice is determined by the capacity of the crankcase, the pressures created by the movement of the piston, and the desired operating characteristics of the carburetor. Thus, a carburetor designed for

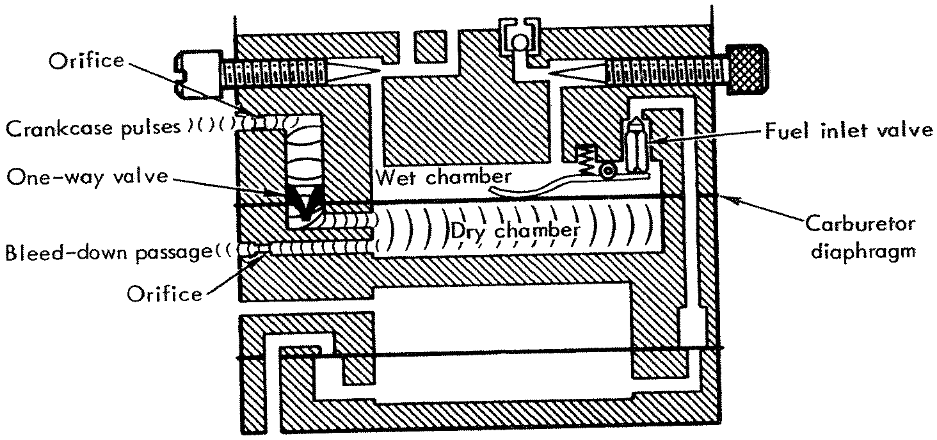


FIGURE 4

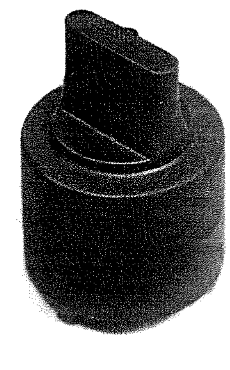


FIGURE 5

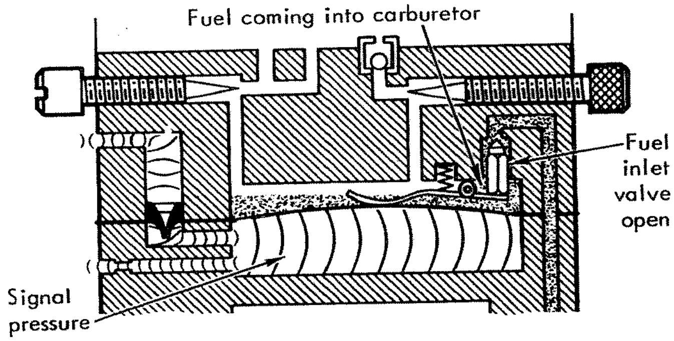


FIGURE 6

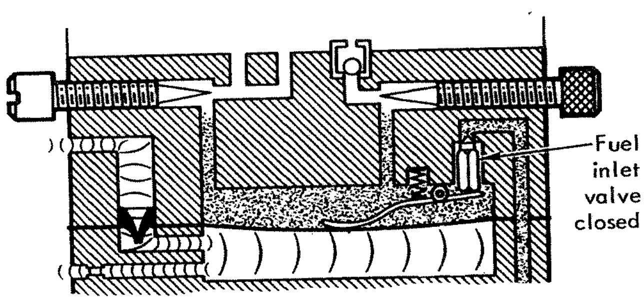


FIGURE 7

a particular application may not operate as efficiently in another application.

The difference between the pressures created by the pressure pulses and the bleed-down orifice at different engine speeds is the signal pressure. Signal pressure acts on the carburetor diaphragm to open the fuel inlet valve (Figure 6). When the pressure of fuel against the diaphragm exceeds the signal pressure, the diaphragm closes the fuel inlet valve (Figure 7).

At idle speed, pressure pulses are bled off quickly and the diaphragm moves only slightly (Figure 8). At high speeds, pressure builds up in the signal chamber and diaphragm movement is greater. This permits larger quantities of fuel to flow through the fuel inlet valve and demands a higher fuel pressure against the diaphragm to close the inlet valve.

Pressure pulses and the bleed-down orifice operate very much as a balloon with a small escape hole cut in it. As air is blown into the balloon, the balloon expands. If no more air is blown into the balloon, the balloon contracts as the air escapes through the small hole. If small puffs of air are blown into the balloon, the size of the balloon will be balanced between the puffs of pressure and the escaping air. If the amount of air blown in is increased, the balloon will grow

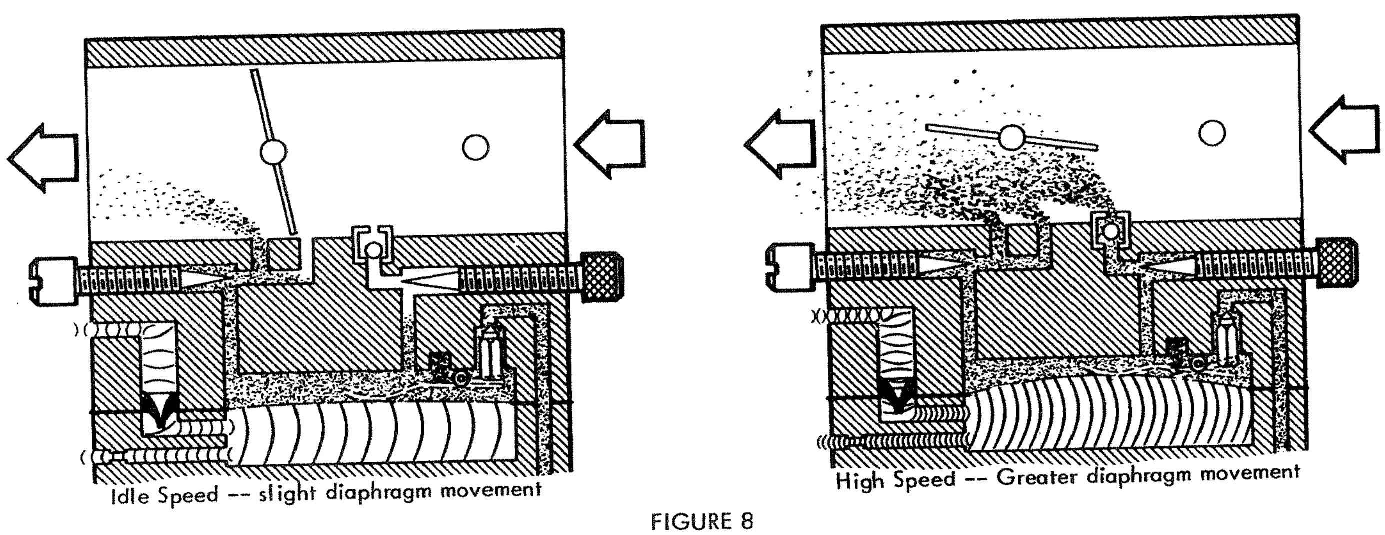


FIGURE 8

larger until entering air and escaping air are again in balance or until the balloon bursts. If less air is blown into the balloon than escapes through the exit hole, the balloon will shrink until the air is in balance again.

Low speed pulsations create a low signal pressure which allows a small amount of fuel to enter the fuel chamber before the fuel pressure on the diaphragm closes the fuel inlet valve. The fuel inlet control lever spring assists in this closing operation, and helps prevent fuel pump pressure from forcing the fuel inlet valve open.

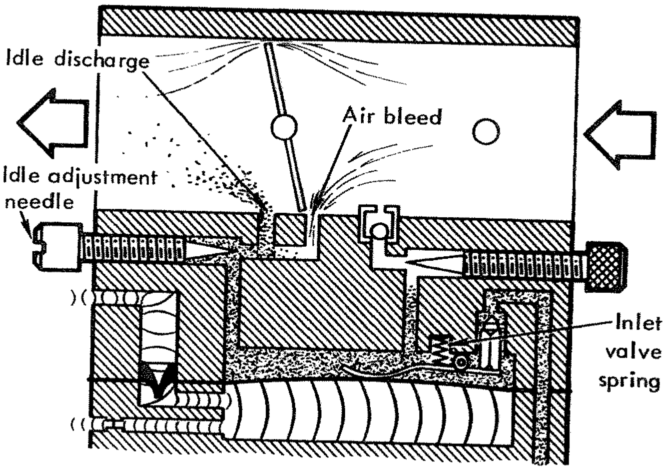


FIGURE 9

High speed pulsations create high signal pressures which easily overcome the pressure of the fuel inlet control lever spring and the fuel inlet valve remains almost constantly open at high speed. This permits the fuel pump pressure to force fuel through the main discharge system into the air stream (Figure 10). Because the same pressure is applied to the idle system fuel also emerges from the idle discharge and air bleed.

Idle and main discharge systems have fuel adjustment needles for regulation of the amounts of fuel passing through each system (Figure 11). In addition, the main system has a fuel discharge check valve. The check valve prevents air from the air passage entering the main discharge system during idle operation.

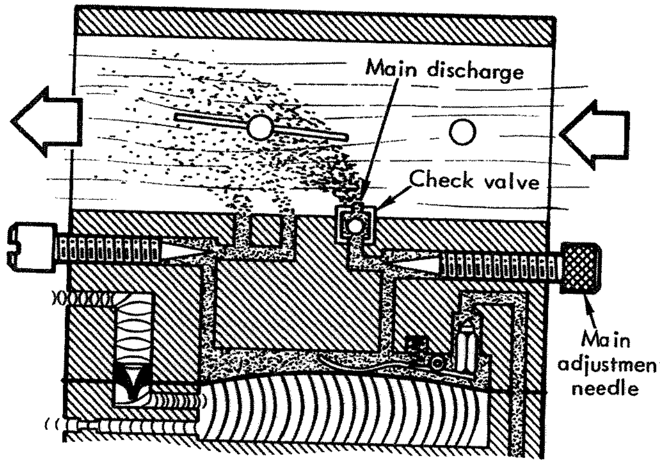


FIGURE 10

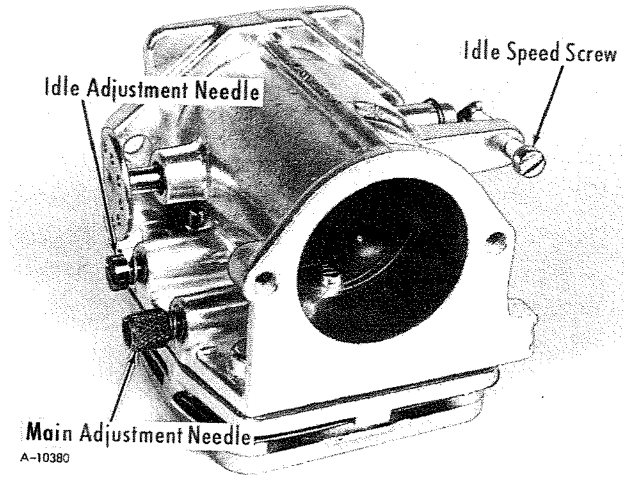


FIGURE 11

Operation of the Pressure Pulse Carburetor

Pressure pulse carburetors may or may not be equipped with a choke. Carburetors used on McCulloch kart engines are not so equipped since kart engines are usually choked by hand. The operational effect of a mechanical choke and a hand choke are the same. A mechanical choke is shown in the schematic drawings used in this section.

Starting

A cold engine requires a very rich fuel mixture when starting because the fuel does not vaporize easily in a cold engine. The function of the choke is to supply the rich fuel mixture. The choke is a round plate located upstream of the fuel discharge orifices in the air passage which, when closed, blocks the air passage (Figure 12). The plate contains a small hole to permit the flow of a small quantity of air. When the choke is in the open position, it has little effect on carburetor operation.

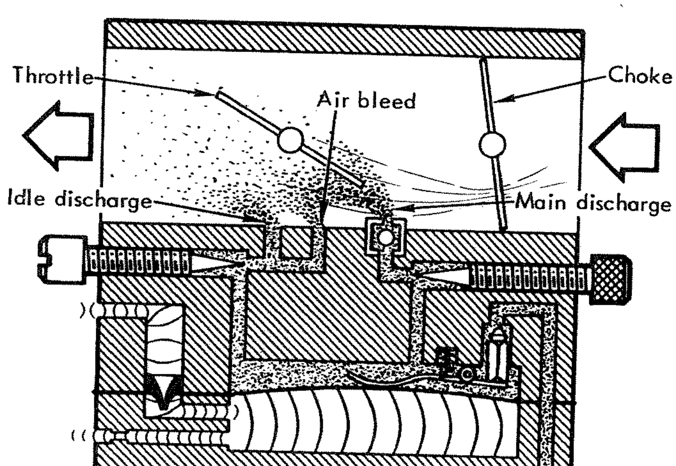


FIGURE 12

When the choke is closed and the throttle partly open, as in starting a cold engine, the choke permits only a small flow of air to rush through the hole in the choke plate into the air passage. Because of this small air flow the suction in the crankcase, as the piston moves away from the crankshaft, is greater than during normal idle operation. The greater suction in the air passage acts through the fuel discharge orifices to draw fuel from the fuel chamber of the carburetor. This action reinforces the signal pressure on the diaphragm and keeps the fuel inlet valve in the open position. Fuel pump pressure now assists crankcase suction in drawing fuel into the air passage where it mixes with the flow of air through the hole in the choke plate. The large quantities of fuel and the relatively small quantity of air make the required rich fuel mixture.

As the engine warms up after starting, the rich mixture will tend to be too rich and to flood the engine and stop it. This is because the fuel vaporizes more efficiently in the warming engine and upsets the fuel-to-air balance established by the choke. After the engine is started, the choke should be used only as necessary to keep the engine running. Once the engine is warmed up, the choke should not be used.

Idle Speed

During idle operation the amount of air which can enter the crankcase is regulated by the idle speed screw (Figure 11) which controls the closed position of the throttle plate (Figure 13). Crankcase suction now acts only on the idle system since the main fuel discharge check valve prevents air from the air passage entering through the main system. Suction on the idle discharge draws fuel from the fuel chamber. It also draws air through the air bleed which is upstream of the throttle plate. The air mixes with the fuel in the idle discharge passage and the atomization process begins. The fuel-to-air ratio can be adjusted for best idling characteristics by a low speed fuel adjustment needle.

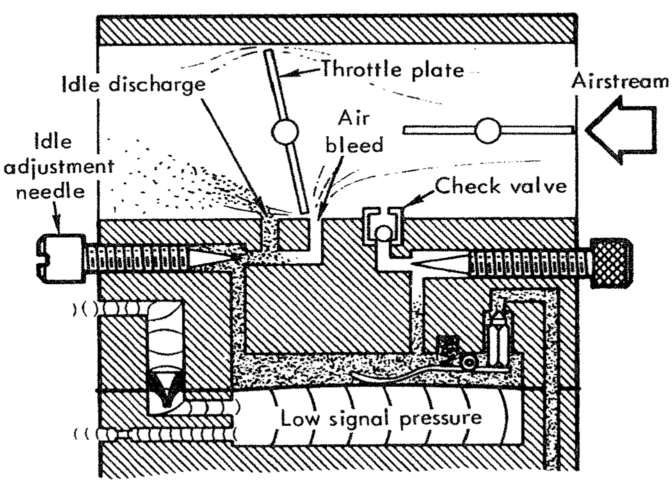


FIGURE 13

At idle speed, the signal pressure increases very slightly over the "choked" condition. At the same time suction in the air passage is reduced because more air flows through the air passage. With less suction, the pressure of the fuel inlet control lever spring against the inlet control lever and diaphragm prevents large quantities of fuel entering the fuel chamber. Under these conditions, fuel is drawn into the air passage by suction rather than by being forced into the air passage by fuel pump pressure.

Increasing Speed

The throttle is now opening (Figure 14). Air ceases to enter the air bleed of the idle system because the edge of the throttle plate has swung past it. The air bleed is now a "fuel discharge" and supplements the idle discharge. Signal pressure becomes greater as the engine speeds up and the fuel inlet valve is now partly open all the time. Spring pressure against the diaphragm has been overcome. Fuel pump pressure combines with the increased suction caused by the increased speed of the engine to force increasing amounts of fuel into the air passage.

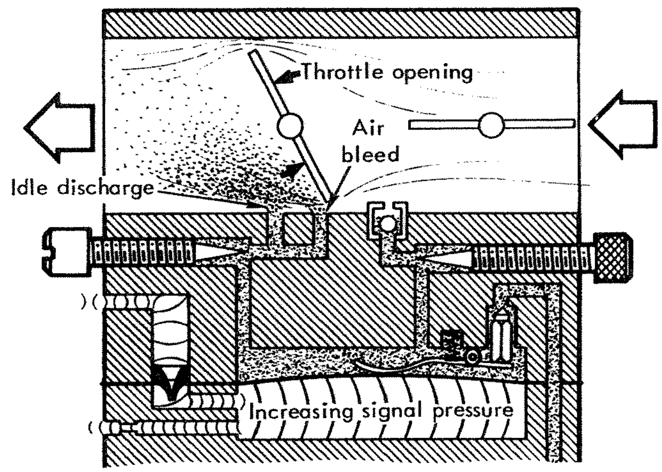


FIGURE 14

High Speed

As the throttle continues to open and engine speed continues to increase, signal pressure becomes greater (Figure 15). The fuel inlet valve remains in the open position demanded by the signal pressure. Fuel pump pressure now forces fuel into the air passage through the main and idle systems. As signal pressure continues to increase in proportion to the increasing speed

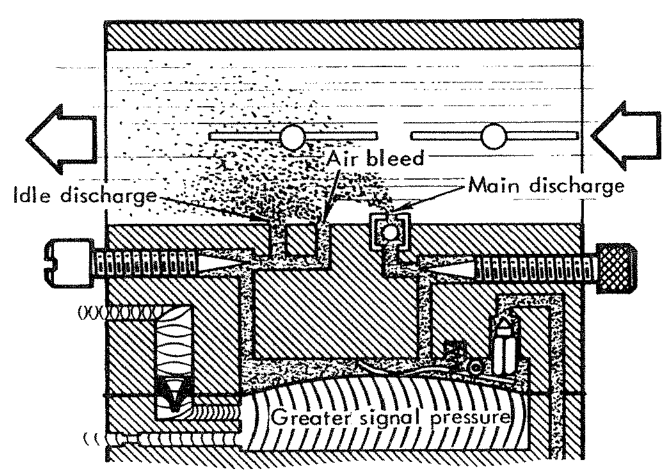


FIGURE 15

of the engine, the inlet valve opens wider and greater amounts of fuel are forced into the air passage by the fuel pump.

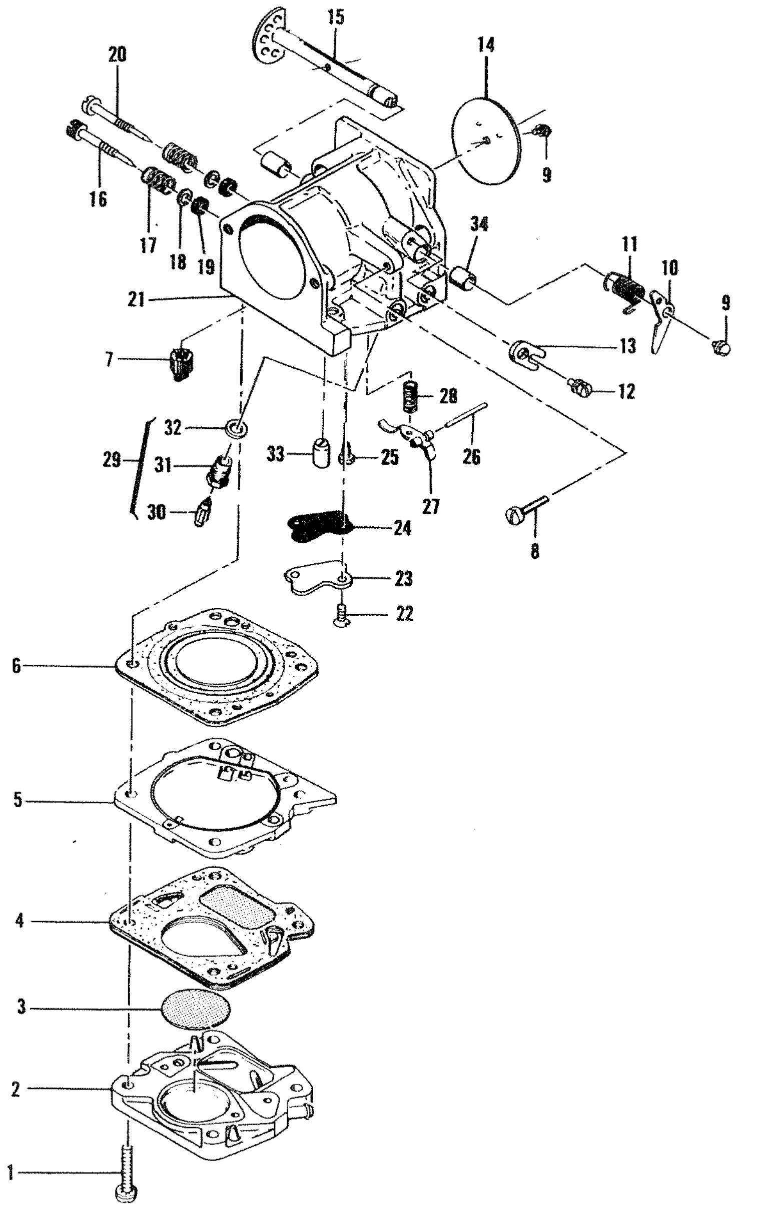
At all times the quantity of fuel delivered by the pump to the air passage is matched by the signal pressure to the speed of the engine. The fuel-to-air mixture can be adjusted for acceleration and for best high speed performance by turning the high speed fuel adjustment needle.

Decreasing Speed

When the throttle begins to close, reducing engine speed, signal pressure is reduced and the fuel inlet valve begins to close. This reduces the quantity of fuel being delivered by fuel pump pressure into the air passage. Again the fuel is balanced to the quantity of air moving through the air passage into the crankcase.

This balancing of fuel to the requirements of the engine occurs at all speeds between 2000 and 10,000 plus RPM. Once properly adjusted, the optimum fuel-to-air ratio is automatically maintained by the signal pressure and the carburetor is equally efficient throughout this speed range.

Servicing the Pressure Pulse Carburetor



1. Fuel Pump Body Screw
2. Fuel Pump Body
3. Fuel Pump Filter
4. Fuel Pump Diaphragm
5. Diaphragm Plate
6. Carburetor Diaphragm
7. One-way Duck Valve
8. Idle-speed Screw
9. Throttle Shaft & Throttle Plate Screw
10. Throttle Shaft Arm
11. Throttle Shaft Spring
12. Throttle Shaft Clip Screw
13. Throttle Shaft Clip
14. Throttle Plate
15. Throttle Shaft
16. High-speed Fuel Adjustment Needle
17. Needle Spring
18. "O" Ring Washer
19. "O" Ring
20. Low-speed Fuel Adjustment Needle
21. Carburetor Body
22. Idle Cluster Cover Screw
23. Idle Cluster Cover
24. Idle Cluster Gasket
25. Contol Lever Pin Screw
26. Control Lever Pin
27. Fuel Inlet Control Lever
28. Fuel Inlet Control Lever Spring
29. Fuel Inlet Valve
30. Fuel Inlet Valve Needle
31. Fuel Inlet Valve Body
32. Fuel Inlet Valve Gasket
33. Main Fuel Discharge Check Valve
34. Throttle Shaft Bushing

FIGURE 16

The steps in this section should be read and understood prior to performing any servicing operations on the pressure pulse carburetor. Plunging headlong into an overhaul of the carburetor without reading this section, can lead to unnecessary work and, in some cases, to actual damage of carburetor parts.

The pressure pulse carburetor will require cleaning, inspection and adjustment periodically, depending on the usage of the engine and the conditions under which it is operated. Operation under extreme dusty conditions will necessitate frequent cleaning. Operations requiring maximum power or with varying fuels may demand frequent resetting of the high speed fuel adjustment needle for maximum power and speed.

Always work in a clean area on the bench. Use clean tools and lintless wiping cloths. Do not take chances on getting dirt into a carburetor you are servicing.

Cleaning

The exterior of the carburetor can be washed in kerosene or solvent without disassemblying the carburetor. The carburetor can be dried with low pressure compressed air but do not use air under pressure to blow out the interior passages of an assembled carburetor because the diaphragms can be damaged.

To thoroughly clean the carburetor and its parts, disassemble the carburetor. It is not advisable to remove the main fuel discharge check valve or the fuel inlet valve body. The diaphragms, one way duck valve, idle cluster gasket, adjustment needle "O" rings and the inlet valve needle, all of which contain synthetic materials, should be washed only in solvent or kerosene. Metal parts can be washed in solvent, kerosene or commercial carburetor cleaners. Metal parts can be scrubbed with a soft fiber brush (a toothbrush is excellent). Interior passages can be cleaned by soaking and then blowing out with compressed air. Always blow from the interior of the carburetor body toward the exterior; do not blow from the air passage into the interior. Do not use any type of tool to clean the interior passages. The fuel pump filter can be soaked in solvent or cleaner and blown from the rear side (the side the fuel emerges from) with compressed air to drive out any embedded foreign particles.

Disassembly

Disassemble the carburetor only enough to do the actual desired work. Exterior parts can be removed without disassembly of the entire carburetor. Interior parts can be removed after removing the fuel pump body, diaphragm plate and the two diaphragms. See Figure 16 for an exploded view of the carburetor. It is not advisable to remove the main fuel discharge check valve or the fuel inlet valve body unless these parts are to be replaced. The main fuel discharge check valve should be pressed out of the carburetor body from the fuel chamber toward the air passage. A new check valve should be pressed in in the same direction. The fuel inlet valve body can be unscrewed from the carburetor body.

Inspection

All parts should be given a general inspection for damage. Particular attention should be paid to the following parts:

1. Adjustment needles - Inspect high and low speed fuel adjustment needles for damage to the threads and to the needle tips resulting from improper adjustment procedures. If the tips are broken or have seating rings because of being screwed into their seats, the needles should be replaced. Always replace a main needle with a main needle and an idle needle with an idle needle. Correct and incorrect needle tips are shown in Figure 17.

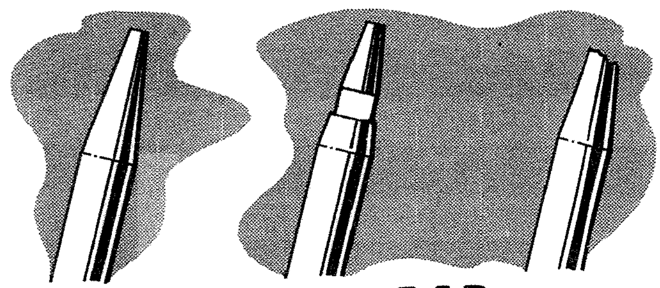


FIGURE 17

2. Fuel inlet valve needle - The rubber-like tip of the inlet needle must be unbroken and unmarked by the fuel inlet valve body. The tip should appear as shown in Figure 18.

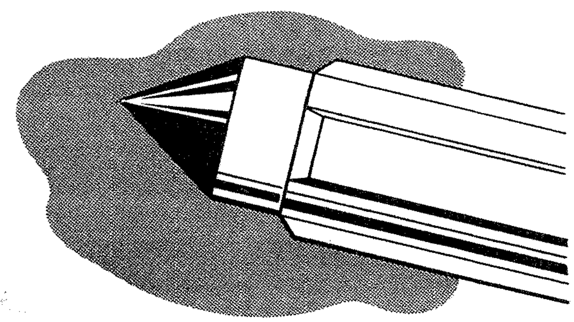


FIGURE 18

3. Carburetor and fuel pump diaphragms - Make sure the diaphragms are not torn or broken. Hold them against the light and check for pin-hole leaks. The two check valves at the side of the fuel pump diaphragm must be undamaged (Figure 19). The metal plate on the carburetor diaphragm must not be loose or missing.

4. One way duck valve - The duck valve must not be broken or cracked. The material must be flexible and not hardened. The valve has three legs and each of these legs must be present (Figure 20).

5. Fuel pump filter - The fuel pump filter must not be damaged or clogged with foreign material.

6. Fuel inlet control lever spring - The spring must not be bent or twisted. Compare the free length

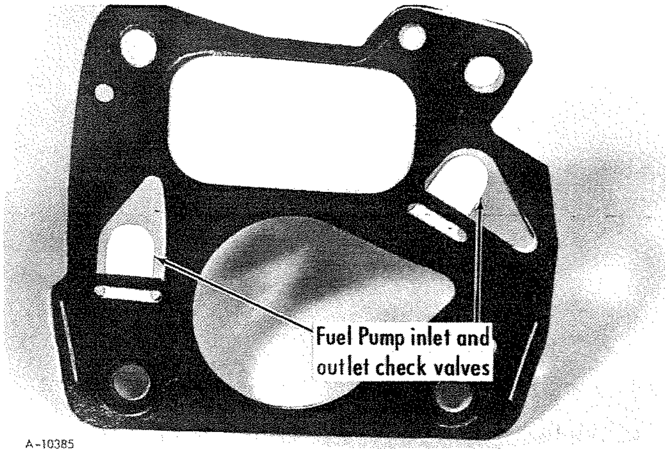


FIGURE 19

of the spring with the free length of an unused fuel inlet control lever spring of the same part number. If there is any difference in the free lengths of the old spring and the new, discard the old spring and install the new one.

7. Fuel inlet control lever - The inlet control lever must not be cracked or otherwise damaged. If it is necessary to bend the lever to obtain proper in-

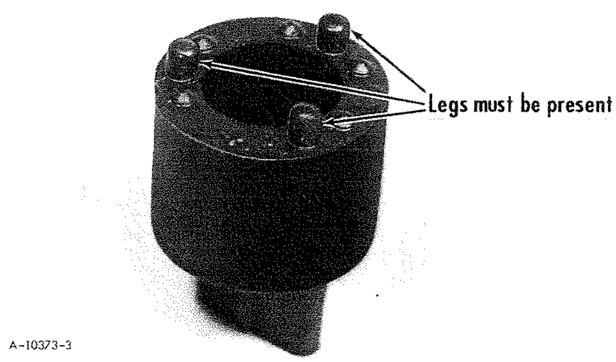


FIGURE 20

let control, make the bend at the point indicated by the arrow in Figure 21. The control lever should only be bent during the reassembly operation.

8. Check the mating surfaces of the carburetor body, idle cluster cover, diaphragm plate and fuel pump body for scratches and dents. Lay the parts on a flat glass surface to make sure they are flat. If the idle cluster cover is bent as shown in Figure 22, treat it as indicated in the figure.

Reassembly

Reassembly of the carburetor usually follows the reverse order of disassembly. Always refer to the proper parts list when installing replacement parts to make sure you are using the correct parts. The following reassembly operations should be observed:

1. Make sure that no dirt or other foreign material

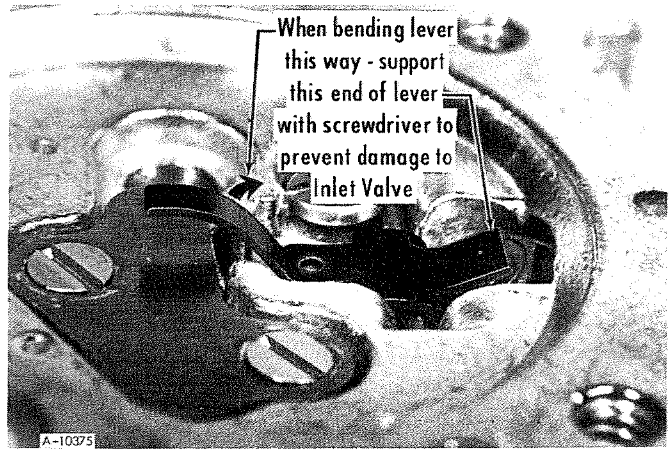


FIGURE 21

enters the carburetor during reassembly. Keep all mating surfaces clean.

2. If a new main fuel discharge check valve is to be installed, press it in as shown in Figure 23 to 0.020 to 0.030 inch above the bottom of the carburetor body.

3. If a new inlet valve body is to be installed, install

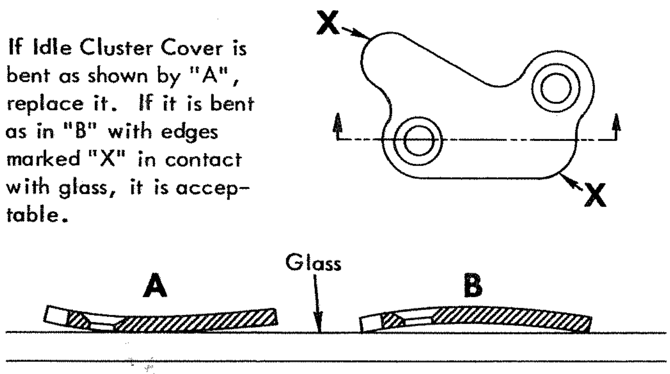


FIGURE 22

a new inlet valve gasket before installing the body and tighten the body to 30 to 40 inch-pounds (2-1/2 to 3-1/2 ft-lbs or .34 to .45 m-kg) torque.

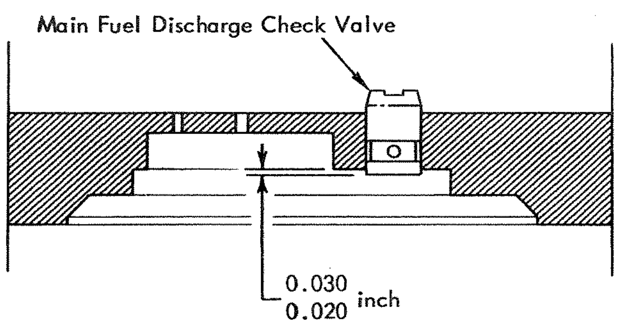


FIGURE 23

4. When installing the control lever, make sure the inlet valve needle is in place and that the free end of the inlet lever spring is seated on the dimple of the control lever. The lever should be flush to 0.010 inch below the mating surface of the carburetor body (Figure 24). Adjust the lever by bending it at the point shown in Figure 21.

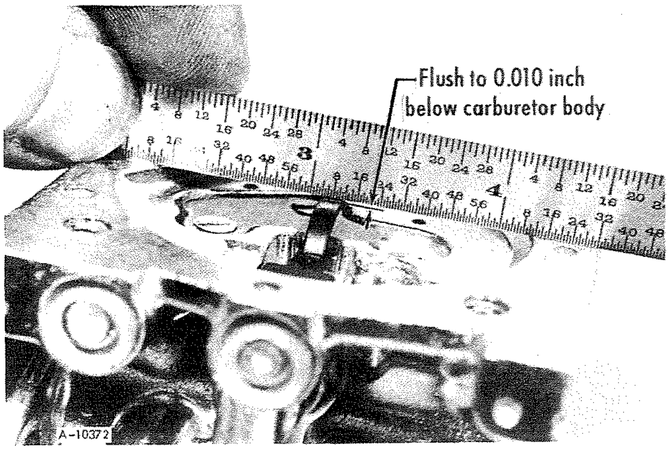


FIGURE 24

5. When installing the throttle plate in the shaft, the nipples on the plate go toward the check valve. This will place the bevel on the edges of the plate in the correct relationship to the air passage (Figure 25). Install the throttle shaft return spring. Slide the plate into the shaft. Then open the throttle and let the spring snap the plate closed several times in order to center the plate in the air passage. Install the throttle plate screw, tighten it securely and swage it to prevent its loosening under vibration. Do not install the throttle plate backwards. Installation of the choke plate on choke-equipped carburetors is similar to this procedure. Plates must always be centered in the air passage.

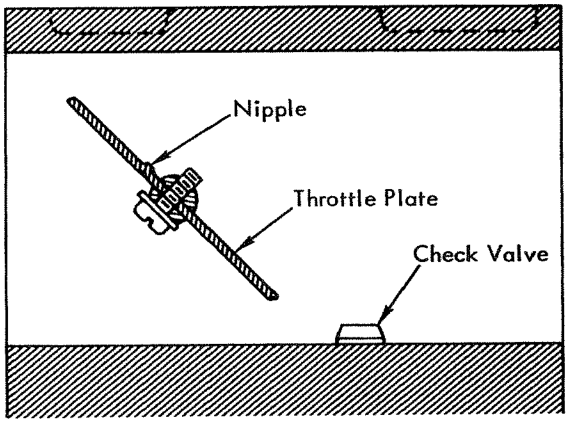


FIGURE 25

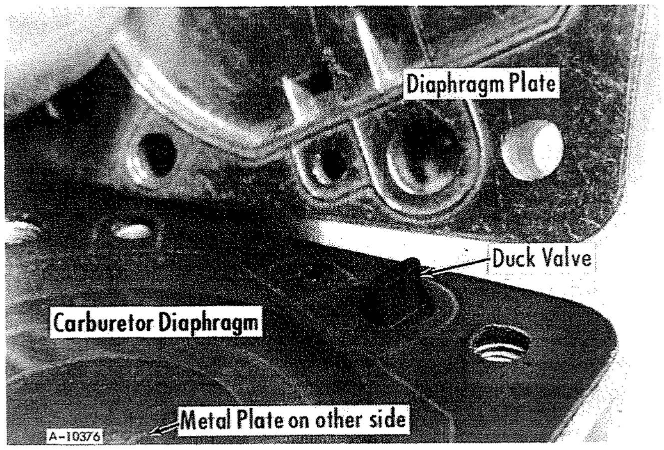


FIGURE 26

6. Make sure the metal side of the carburetor diaphragm goes next to the inlet control lever. Put the one way valve in place, then put on the diaphragm and diaphragm plate. The "bill" of the one way valve projects through the diaphragm and into the plate (Figure 26).

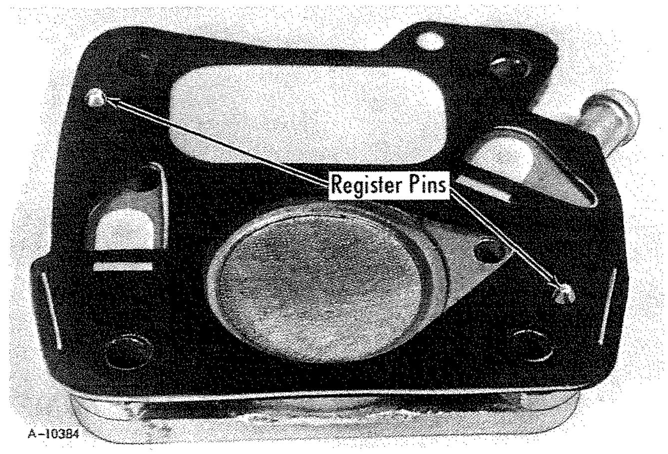


FIGURE 27

7. Place the fuel pump diaphragm on the fuel pump body with the diaphragm registered on the two centering pins of the body (Figure 27). Then place the body and diaphragm on the diaphragm plate with the pins again in register on the plate.

8. When installing the adjustment needles, turn them in carefully so as not to damage the tip until resistance is felt and then stop turning in at once.

Pressure Testing the Carburetor

If equipment is available, pressure test the carburetor through the fuel inlet connection. The use of the McCulloch Pressure Test Tool, P/N 62849, is recommended.

Apply five pounds pressure through the fuel inlet connection. Never use more than six pounds pressure. If pressure drops immediately after pressurizing is stopped or if pressure will not rise to five pounds, place the carburetor in water and re-apply pressure. Follow any stream of bubbles to its source.

1. If leaks occur at discharge or air bleed holes in the air passage (Figure 28), the fuel inlet valve and/or valve body is defective. Install a new inlet valve needle and recheck for leakage. If after a new valve needle has been installed there is still leakage, install a new valve body.

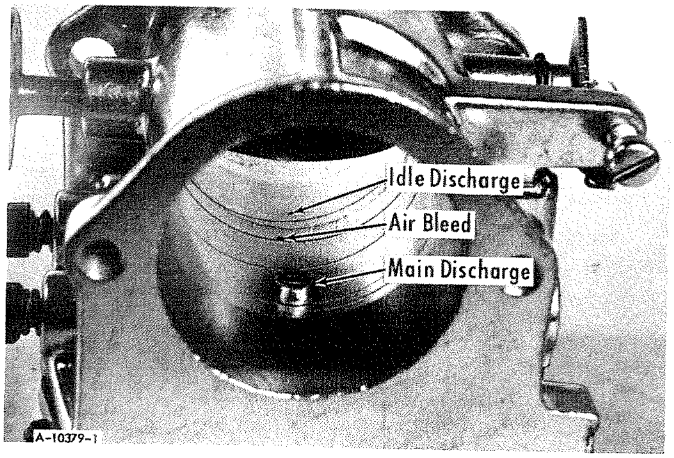


FIGURE 28

2. If bubbles occur at edges of the diaphragms and mating surfaces of the body or diaphragm plate (Figure 29), make sure the four fuel pump body screws are securely tightened. Then if leaks continue, install new diaphragm(s).

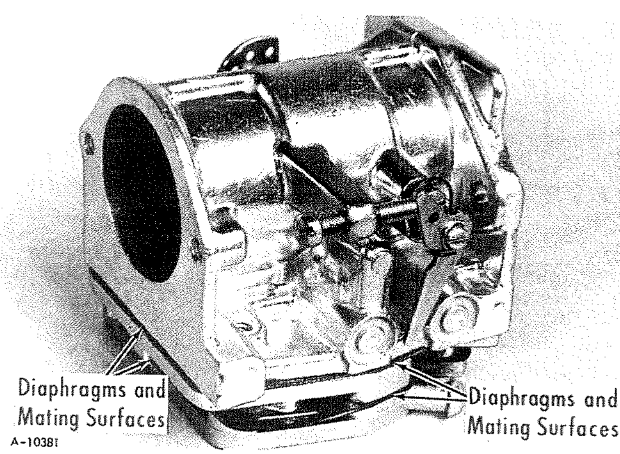


FIGURE 29

3. If bubbles occur at the pulsation hole of the fuel pump (Figure 30), the fuel pump diaphragm is leaking and should be replaced.

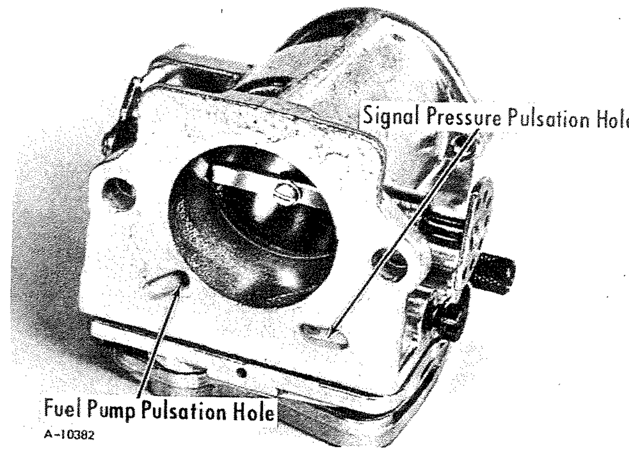


FIGURE 30

Carburetor Adjustment

1. Turn both low and high speed fuel adjustment needles (Figure 31) all the way in. Then back each needle out one full turn.

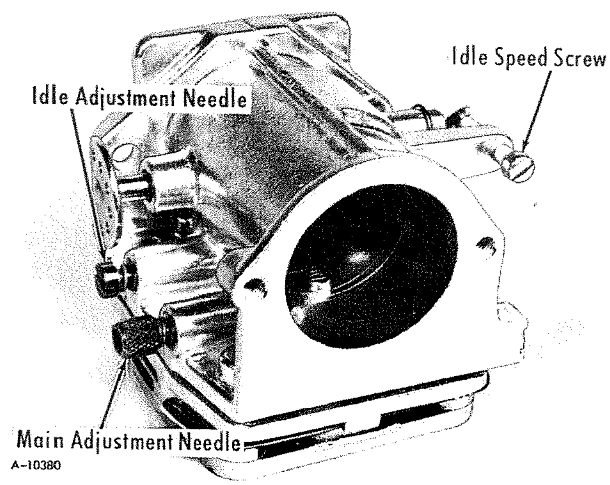


FIGURE 31

2. Start the engine and run it until it is warmed up.

3. Adjust the low speed needle to provide the best idling characteristics. The low speed needle adjusts only the low speed fuel mixture. It has very little effect, if any, on acceleration.

4. Adjust the idle speed screw to provide an idle speed just below the point of clutch engagement.

5. Adjust the high speed needle to provide best acceleration and maximum power under load. If the engine on which the carburetor is mounted is equipped with an air filter and adjustments must be made with the filter removed, reinstall the air filter during all tests of the high speed needle adjustment. Always test the adjustment under load; it is impossible to obtain the correct adjustment of the carburetor unless the engine is pulling the load under which it will be working.

Trouble-Shooting Chart

Trouble	Possible Cause	Remedy
Engine will not accelerate.	High speed fuel adjustment needle set too lean.	Readjust high speed fuel needle.
	Fuel inlet control lever set too low.	Adjust lever flush to 0.010 inch below level of mating surface of carburetor body.
	Carburetor loose on engine.	Tighten attaching screws.
	Fuel pump body, diaphragm plate or diaphragms loose.	Tighten fuel pump body screws.
	Diaphragms leaking.	Install new diaphragms.
	Fuel or pulse passages clogged.	Disassemble carburetor, soak body and diaphragm plate in cleaner and blow out with low pressure air.
Engine will not idle.	Low speed fuel adjustment needle set too lean.	Readjust low speed fuel needle.
	Fuel filter dirty.	Clean filter or replace with new filter.
	Idle speed screw set too slow or too fast.	Readjust idle speed screw.
	Fuel inlet control lever set incorrectly.	Adjust flush to 0.010 inch below level of mating surface of carburetor body.
	Fuel passages clogged.	Disassemble carburetor, soak body and diaphragm plate in cleaner and blow out with low pressure air.
	Sticking fuel inlet valve needle or fuel inlet control lever.	Replace with new part.
	Pump pulse hole not aligned with hole in diaphragm plate.	Align.
	Throttle plate cocked in air passage causing fast idle.	Align.
	Idle cluster cover loose or cover gasket damaged.	Tighten cover; replace both parts if necessary.
	Diaphragm air bleed passage plugged.	Disassemble carburetor, soak diaphragm plate in cleaner and blow out with low pressure air.
	Fuel tank not venting.	Check fuel system and correct functional failure.

Trouble	Possible Cause	Remedy
Carburetor floods.	Dirt or foreign particles preventing inlet needle from seating.	Remove needle, clean out valve body and reinstall needle.
	Stuck fuel inlet control lever.	Remove lever, clean and reinstall or replace with new part.
	Spring not seated on inlet control lever.	Seat spring on dimple on control lever.
	Carburetor diaphragm improperly installed.	Reinstall correctly.
	Fuel tank not venting; pressure build-up in fuel tank.	Check fuel system and correct functional failure.
	Diaphragm air bleed passage plugged.	Disassemble carburetor, soak diaphragm plate in cleaner and blow out with low pressure air.
	High and/or low fuel adjustment needles damaged.	Install new needle(s).
Engine runs out lean.	Leak in fuel system between pump and tank.	Replace fuel line, check out fuel system.
	Fuel tank not venting.	Check fuel system and correct functional failure.
	Pulse holes plugged or not aligned.	Align pulse holes; disassemble carburetor, soak and blow out passages and holes with low pressure air.
	Fuel filter dirty.	Clean filter or replace with new filter.
	Clogged fuel passages.	Disassemble carburetor, soak and blow out passages with low pressure air.
	Fuel inlet control lever out of adjustment.	Adjust flush to 0.010 inch below level of mating surface of carburetor body.
	Fuel inlet valve not functioning properly.	Check condition of fuel inlet needle and seat; make sure needle and seat are correct for fuel being used.
Carburetor runs rich with high speed adjustment needle shut off.	Idle cluster cover loose or cover gasket damaged.	Tighten cover, replace gasket if necessary.
	Ruptured pump diaphragm.	Replace.
	Defective high speed adjustment needle.	Install new high speed adjustment needle.

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