Air/Fuel Mixture

A suction effect is created each time the piston moves upward in the cylinder. This suction draws air through the throat of the carburetor. A restriction in the throat, called a venturi, controls air velocity and has the effect of reducing air pressure at this point.

The difference in air pressures at the throat and in the fuel chamber, causes the fuel to be pushed out of metering jets extending down into the fuel chamber. When the fuel leaves the jets, it mixes with the air passing through the venturi. This air/fuel mixture should then be in the proper proportion for burning in the cylinder/s for maximum engine performance.

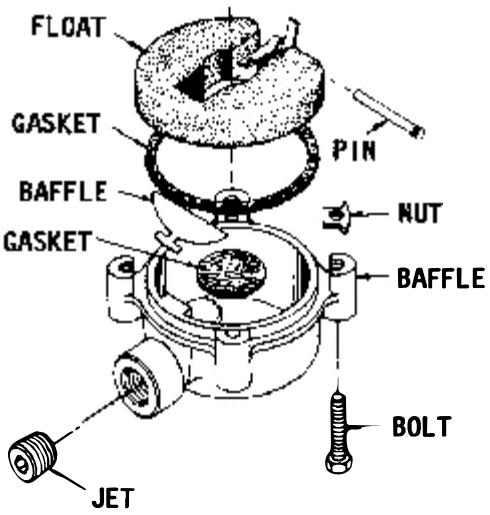
In order to obtain the proper air/fuel mixture for all engine speeds, high and low speed jets are provided. These jets have adjustable needle valves which are used to compensate for changing atmospheric conditions. In almost all cases, the high-speed circuit has fixed high-speed jets that are not adjustable.

Engine operation at sea level compared with performance at high altitudes is quite noticeable. A jet/altitude chart is provided in the Appendix for operation from sea level to above 7500 ft (2,300m).

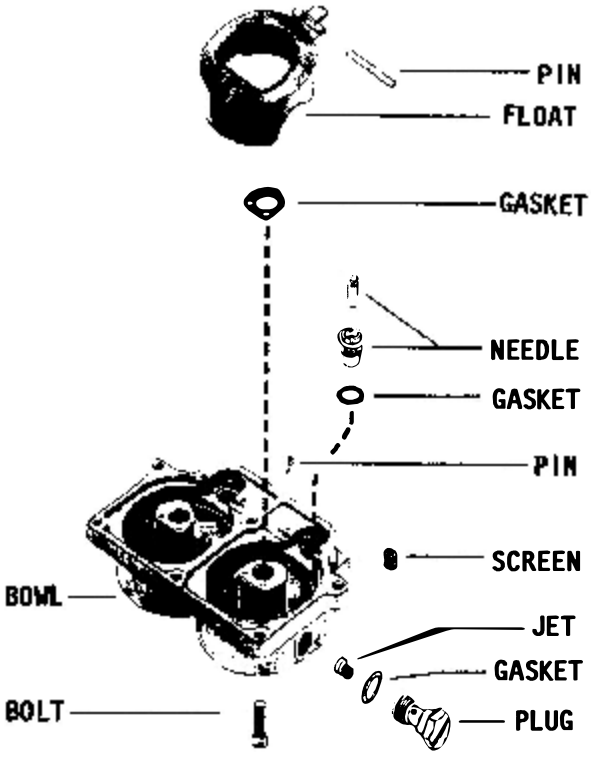
A throttle valve controls the volume of air/fuel mixture drawn into the engine. A cold engine requires a richer fuel mixture to start and during the brief period it is warming to normal operating temperature. A choke valve is placed ahead of the metering jets and venturi to provide the extra amount of air required for start and while the engine is cold.

When this choke valve is closed, a very rich fuel mixture is drawn into the engine.

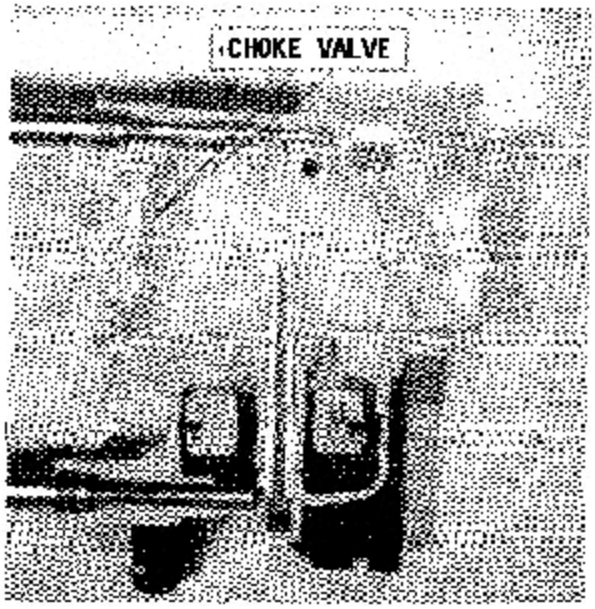
The throat of the carburetor is usually referred to as the "barrel." Carburetors with single, double, or four barrels have individual metering jets, needle valves, throttle and choke plates for each barrel. Single and two barrel carburetors are fed by a single float and chamber.



Exploded view of a single float system.



Exploded view of a double float system carburetor.



Choke valve location in the carburetor venturi. The choke valve on most carburetors covered in this manual is located in front of the venturi.

4-3 TROUBLESHOOTING

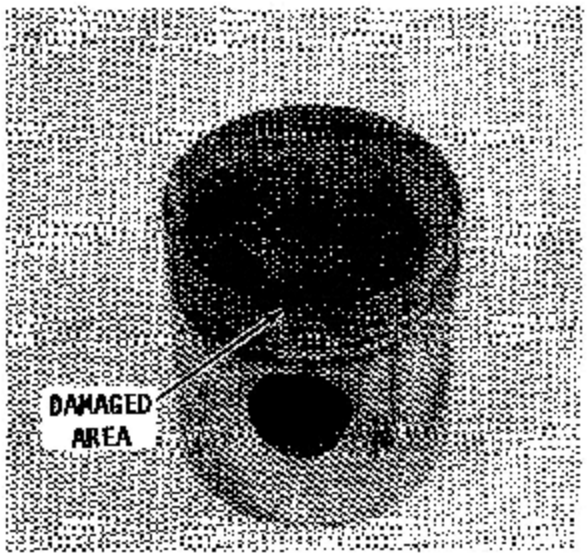
The following paragraphs provide an orderly sequence of tests to pinpoint problems in the system. It is very rare for the carburetor by itself to cause failure of the engine to start.

FUEL PROBLEMS

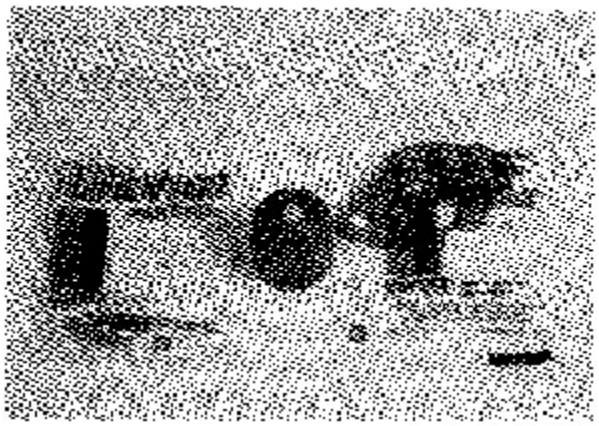
Many times fuel system troubles are caused by a plugged fuel filter, a defective fuel pump, or by a leak in the line from the fuel tank to the fuel pump. A defective choke may also cause problems. **WOULD YOU BELIEVE,** a majority of starting troubles which are traced to the fuel system are the result of an empty fuel tank or aged, "sour", fuel.

"SOUR" FUEL

Under average conditions (temperate climates), fuel will begin to breakdown in about four months. A gummy substance forms in the bottom of the fuel tank and in other areas. The filter screen between the tank and the carburetor and small passages in the carburetor will become clogged. The gasoline will begin to give off an odor similar to rotten eggs. Such a condition can cause the owner much frustration, time in cleaning components, and the expense of replacement or overhaul parts for the carburetor.



Damaged piston, possibly caused by insufficient oil mixed with the fuel; using too-low an octane fuel; or using fuel that has "soured" (stood too long without a preservative added).



Major parts found in carburetor repair kits.

Even with the high price of fuel, removing gasoline that has been standing unused over a long period of time is still the easiest and least expensive preventative maintenance possible. In most cases, this old gas can be used without harmful effects in an automobile using regular gasoline.

The gasoline preservative additive Quicksilver Gasoline Stabilizer and Conditioner, shown below, will keep the fuel

Quicksilver Gasoline Stabilizer and Conditioner may be used to prevent the fuel from "souring" for up to twelve full months.

"fresh" for up to twelve months. If this particular product is not available in your area, other similar additives are produced under various trade names.

LEADED GASOLINE AND GASOHOL

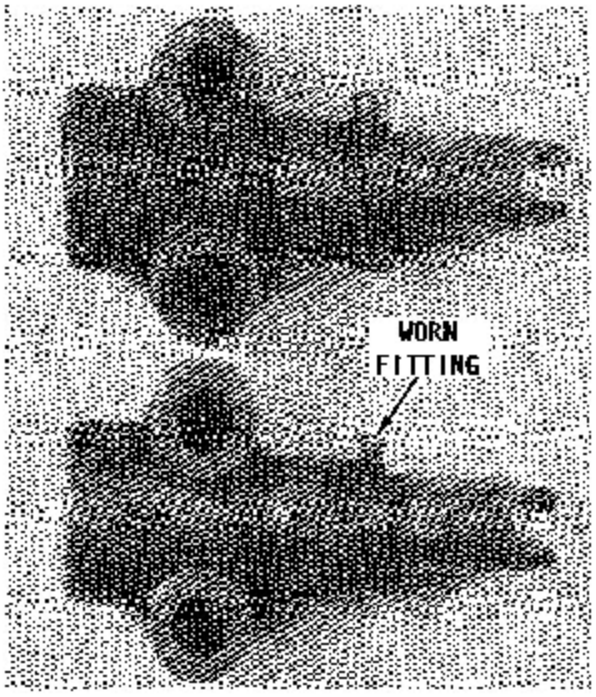
In the United States, the Environmental Protection Agency (EPA) has slated a proposed national phase-out of leaded fuel, "Regular" gasoline, by 1988. Lead in gasoline boosts the octane rating (energy). Therefore, if the lead is removed, it must be replaced with another agent. Unknown to the general public, many refineries are adding alcohol in an effort to hold the octane rating.

Alcohol in gasoline can have a deteriorating effect on certain fuel system parts. Seals can swell, pump check valves can swell, diaphragms distort, and other rubber or neoprene composition parts in the fuel system can be affected.

Since 1980, the manufacturer has made every effort to use materials that will resist the alcohol being added to fuels.

Fuels containing alcohol will slowly absorb moisture from the air. Once the moisture content in the fuel exceeds about 1/2 of 1% , it will separate from the fuel taking the alcohol with it. This water/alcohol mixture will settle to the bottom of the fuel tank. The engine will fail to operate. Therefore, storage of this type of gasoline for use in marine engines is not recommended for more than just a few days.

One temporary, but aggravating, solution to increase the octane of "Unleaded" fuel is to purchase some aviation fuel from the local airport. Add about 10 to 15 percent of the tank's capacity to the unleaded fuel.

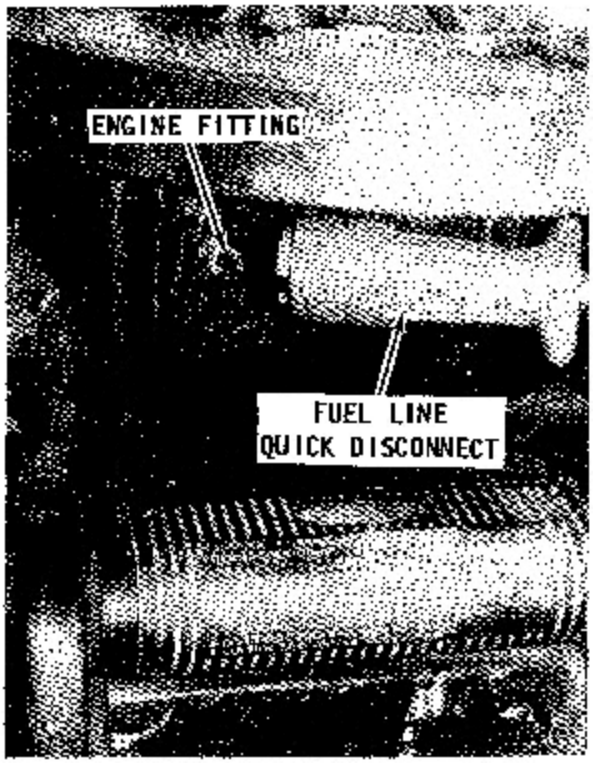


Comparison of a new (top) and worn (bottom) male fuel connector. The pins on the bottom connector are worn -- smaller and tapered, therefore, the connector will fail to maintain adequate fuel flow.

REMOVING FUEL FROM THE SYSTEM

For many years there has been the widespread belief that simply shutting off the fuel at the tank and then running the engine until it stops is the proper procedure before storing the engine for any length of time. Right? **WRONG.**

It is **NOT** possible to remove all of the fuel in the carburetor by operating the engine until it stops. Some fuel is trapped in the float chamber and other passages and in the line leading to the carburetor. The **ONLY** guaranteed method of removing **ALL** of the fuel is to take the time to remove the carburetor, and drain the fuel.



Female portion of the quick disconnect fitting ready to be mated with the male portion on the powerhead.

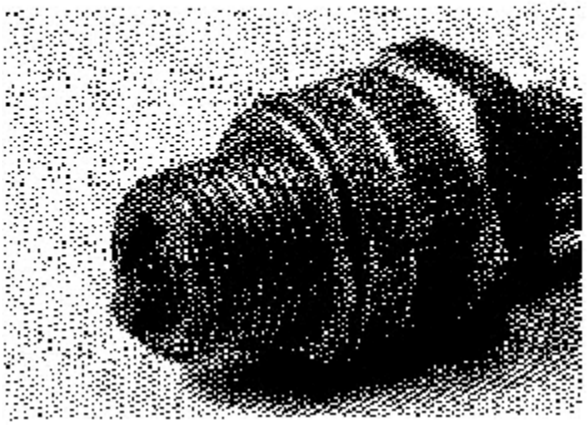
If the engine is operated with the fuel supply shut off until it stops, the fuel and oil mixture inside the engine is removed, leaving bearings, pistons, rings, and other parts with little protective lubricant, during long periods of storage.

Proper procedure involves: Shutting off the fuel supply at the tank; disconnecting the fuel line at the tank; operating the engine until it begins to run **ROUGH;** then stopping the engine, which will leave some fuel/oil mixture inside; and finally removing and draining the carburetor. By disconnecting the fuel supply, all **SMALL** passages are cleared of fuel even though some fuel is left in the carburetor. A light oil should be put in the combustion chamber as instructed in the Owners Manual. On some model carburetors, the high-speed jet plug can be removed to drain fuel from the carburetor.

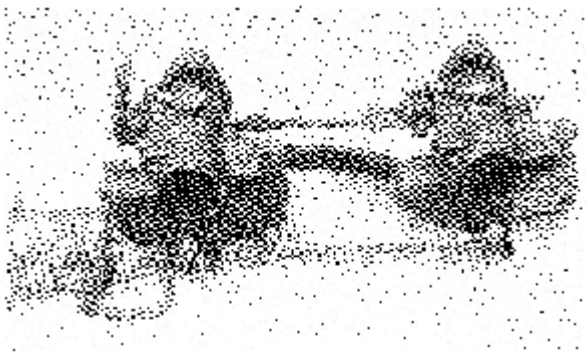
For short periods of storage, simply running the carburetor dry may help prevent severe gum and varnish from forming in the carburetor. This is especially true during hot weather.

Choke Problems

When the engine is hot, the fuel system can cause starting problems. After a hot engine is shut down, the temperature inside the fuel bowl may rise to 200°F and cause the fuel to actually boil and vaporize in the bowl. All carburetors are vented to allow this gas or pressure to escape to the atmosphere. Sometimes, if a hot engine is restarted, a condition known as "vapor lock" may exist causing the engine to stall. The vaporized fuel escapes through the vents in the float bowl and starves the engine of fuel. As soon as sufficient fuel cooling takes place, the engine in most cases, can be started, but will stall again once the temperature rises to vaporize the fuel.



Fouled spark plug, possibly caused by the operator's habit of overchoking or a malfunction holding the choke closed. Either of these conditions delivered a too-rich fuel mixture to the cylinder.



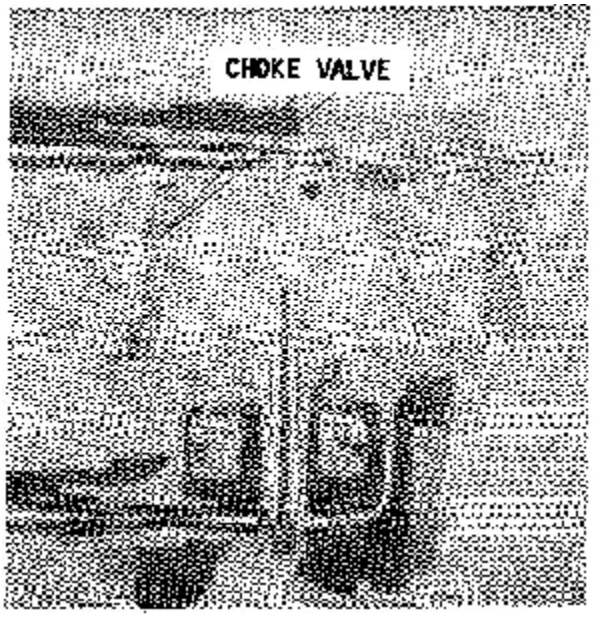
Typical choke linkage set-up for a dual carburetor installation.

One solution to a "vapor lock" condition is patience -- wait for the powerhead to cool down to a normal operating temperature.

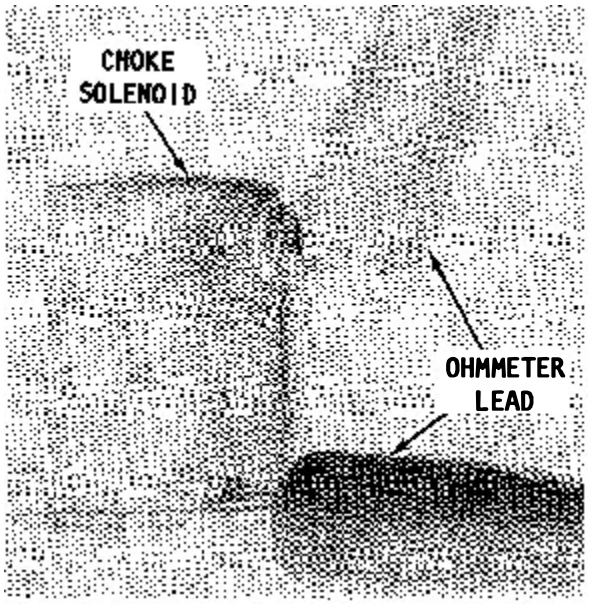
If the choke should stick in the open position, the engine will be hard to start. If the choke should stick in the closed position, the engine will flood making it very difficult to start.

In order for this raw fuel to vaporize enough to burn, considerable air must be added to lean out the mixture. Therefore, the only remedy is to remove the spark plugs; ground the leads; crank the engine about 10 times; clean the plugs; install the plugs again; and start the engine.

If the needle valve and seat assembly is leaking, an excessive amount of fuel may



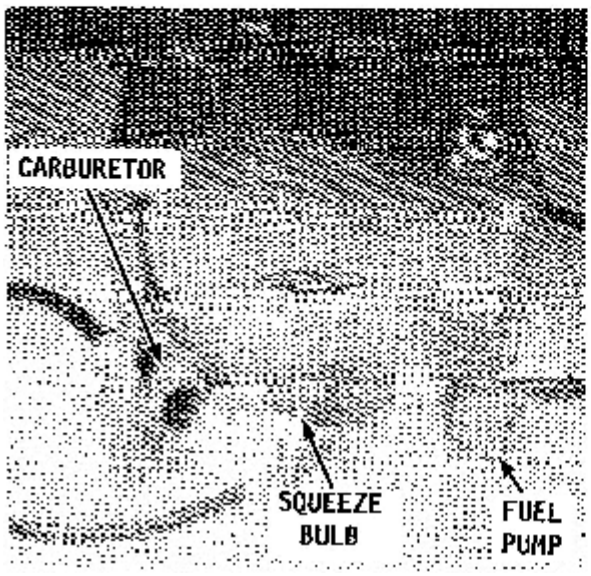
Choke valve location in the carburetor venturi. The choke valve on most carburetors covered in this manual is located in front of the venturi.



A choke solenoid may be tested with an ohmmeter. If the meter indicates continuity, the solenoid is satisfactory for further service. If continuity is not indicated, the unit cannot be repaired, it must be replaced.

enter the intake manifold in the following manner: After the engine is shut down, the pressure left in the fuel line will force fuel past the leaking needle valve. This extra fuel will raise the level in the fuel bowl and cause fuel to overflow into the intake manifold.

A continuous overflow of fuel into the intake manifold may be due to a sticking inlet needle or to a defective float which would cause an extra high level of fuel in the bowl and overflow into the intake manifold.



Major parts of a complete outboard motor fuel system from the tank to the carburetor.

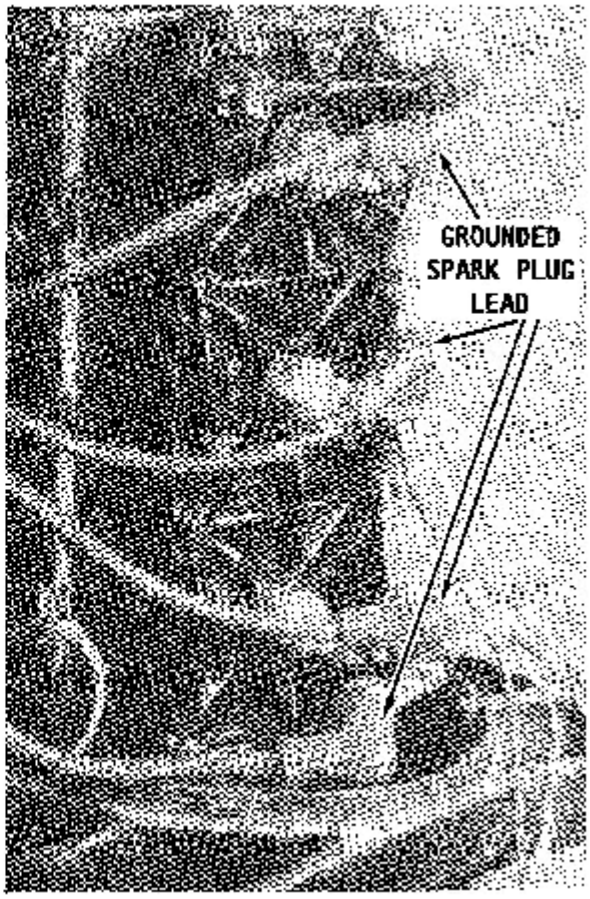
FUEL PUMP TEST

CAUTION: Gasoline will be flowing in the engine area during this test. Therefore, Guard against fire by grounding the high-tension wire to prevent it from sparking.

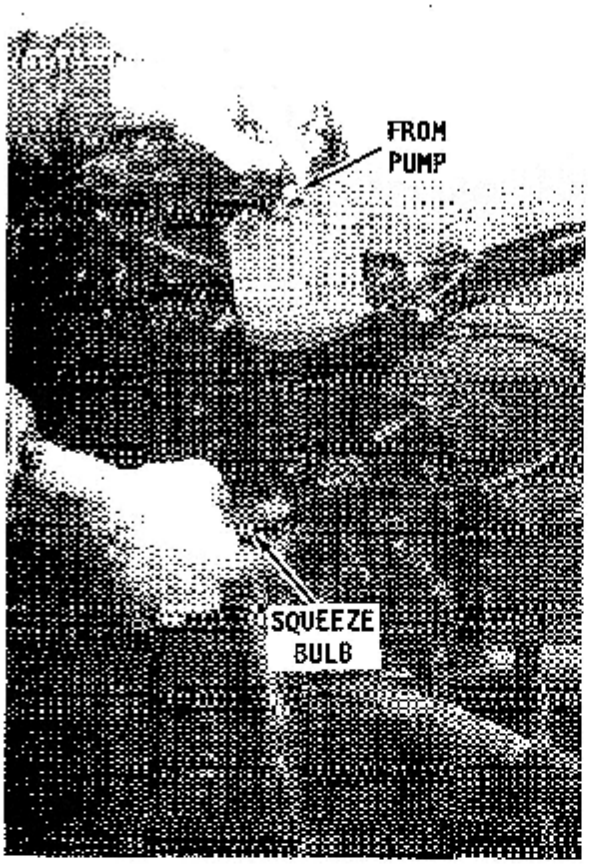
The high-tension wire between the coil/s and the distributor can be grounded by either pulling it out of the coil and grounding it, or by connecting a jumper wire from the primary (distributor) side of the ignition coil to a good ground. An alternate safety method, and perhaps a better one, is to ground each spark plug lead. Disconnect the fuel line at the carburetor. Place a suitable container over the end of the fuel line to catch the fuel discharged. Now, squeeze the primer bulb and observe if there is satisfactory flow of fuel from the line.

If there is no fuel discharged from the line, the check valve in the squeeze bulb may be defective, or there may be a break or obstruction in the fuel line.

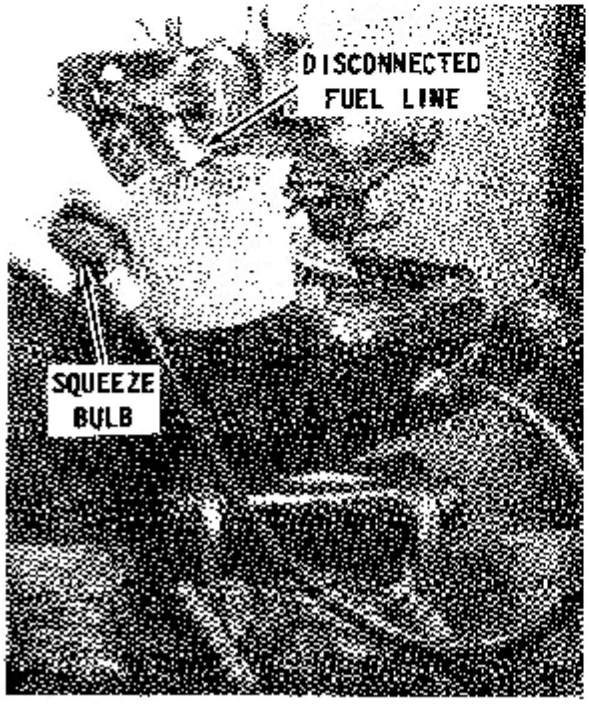
If there is a good fuel flow, then crank the engine. If the fuel pump is operating



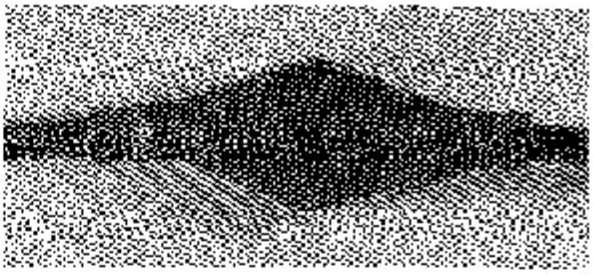
*Grounding the spark plug leads to the powerhead in preparation to making fuel flow tests. The grounding is **NECESSARY** to prevent a spark from igniting fuel being handled in the open.*



*Testing the fuel pickup in the fuel tank **AND** operation of the squeeze bulb by observing fuel flow from the line disconnected at the fuel pump and discharged into a suitable container.*



Working the squeeze bulb and observing the fuel flow from the line diconnected at the carburetor and discharged into a suitable container. This verifies fuel flow through the fuel pump. (The two photographs in this column were taken with a smaller powerhead than those covered in this manual. However, the procedure is the same.)



Common squeeze bulb used with outboard engine fuel systems.

properly, a healthy stream of fuel should pulse out of the line.

Continue cranking the engine and catching the fuel for about 15 pulses to determine if the amount of fuel decreases with each pulse or maintains a constant amount. A decrease in the discharge indicates a restriction in the line. If the fuel line is plugged, the fuel stream may stop. If there is fuel in the fuel tank but no fuel flows out of the fuel line while the engine is being cranked, the problem may be in one of four areas:

1- The line from the fuel pump to the carburetor may be plugged as already mentioned.

2- The fuel pump may be defective.

3- The line from the fuel tank to the fuel pump may be plugged; the line may be leaking air; or the squeeze bulb may be defective.

*If tests indicate a satisfactory fuel flow to the carburetor, but adequate fuel quantity is not reaching the cylinders, then the carburetor **MUST** be removed and serviced.*

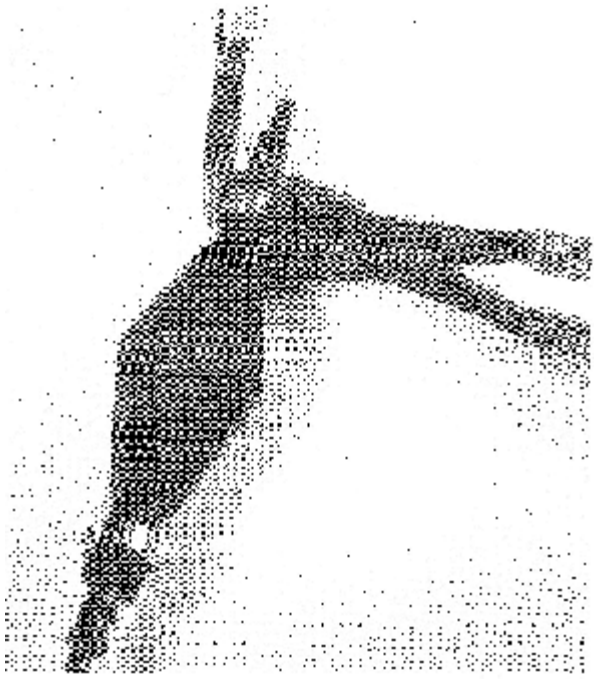
4- If the engine does not start even though there is adequate fuel flow from the fuel line, the fuel filter in the carburetor inlet may be plugged or the fuel inlet needle valve and the seat may be gummed together and prevent adequate fuel flow.

FUEL LINE TEST

Possible cause of fuel line problems may be deterioration of the inside lining of the fuel line which may cause some of the lining to develop a blockage similar to the action of a check valve. Therefore, if the fuel line appears the least bit questionable, replace the entire line.

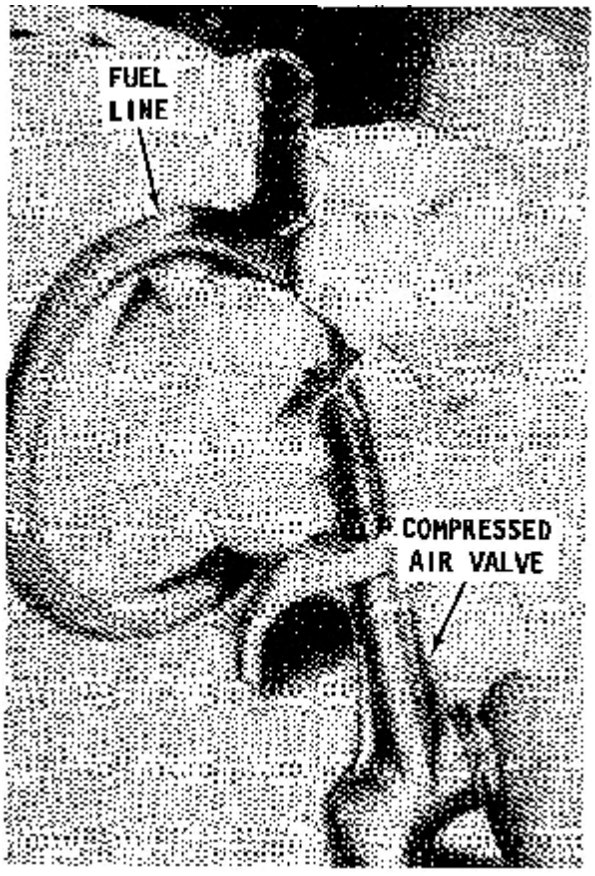
Another possible restriction in the fuel line may be caused by some heavy object lying on the line -- a tackle box, etc.

The fuel line from the tank to the fuel pump can be quickly tested by disconnecting the existing fuel line at the fuel pump and connecting a spare portable tank and fuel line. This simple substitution eliminates the fuel tank and fuel lines in the boat. Now, start the engine and check the performance.

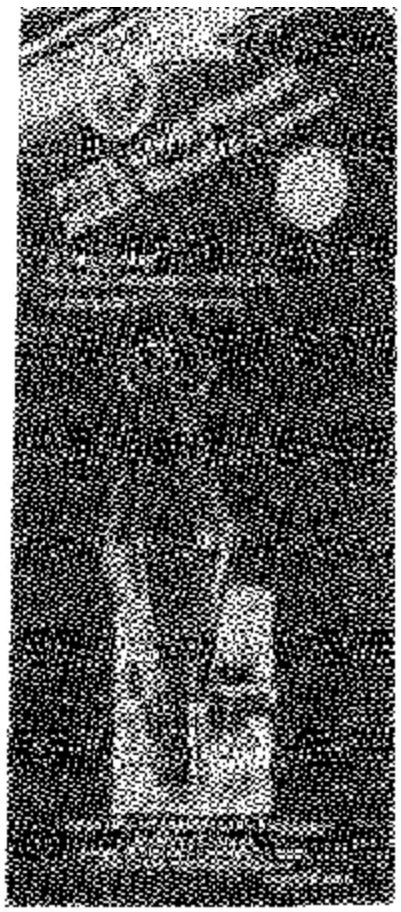


Using the proper tools to install a clamp around the squeeze bulb check valve.

If the problem has been corrected, the fuel system between the fuel pump inlet and the fuel tank is at fault. This area includes



Many times, restrictions such as foreign material may be cleared from the fuel line using compressed air. Use ***CARE*** *to be sure the open end of the hose is pointing clear to avoid personal injury to the eyes.*



A replacement squeeze bulb kit includes parts necessary to return this section of the fuel line to service.

take manifold close to the carburetor mounting flanges.

As soon as the ignition key is released, electrical current to the system is cutoff; the valve closes; and fuel through the valve stops.

Troubleshooting the enrichener system is described in Chapter 7, beginning on Page 7-20.

SPECIAL WORDS ON CARBURETOR "C"

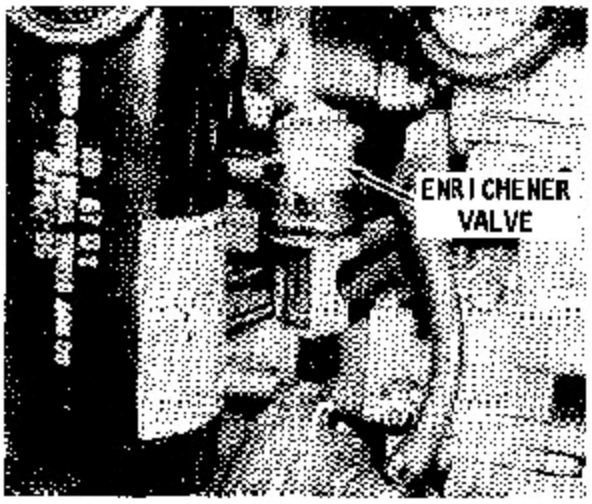
An "enrichment" valve is installed on the following powerheads equipped with Carburetor **"C":** 50hp and 60hp prior to 1991, all 70hp 3-Cylinder powerheads, all 75hp, and 80hp 4-Cylinder powerheads.

This type carburetor is equipped with a choke solenoid but not a choke shutter valve in the carburetor throat. An enrichment valve performs the same function as the choke shutter and is linked to the choke solenoid. The enrichment valve is a mechanical valve and should not be confused with an enrichener valve which is an electrically operated valve installed on larger horsepower late model powerheads.

4-5 2+2 SYSTEM WITH ACCELERATOR PUMP 100HP AND 115HP 4-CYLINDER POWERHEADS

A 4-cylinder powerhead normally operates on all four cylinders. However, on the 100hp and 115hp 4-cylinder powerhead, the manufacturer introduced a **2+2** concept. The principle of the **2+2** is to restrict the flow of fuel to the No. 3 and No. 4 cylinders, while the powerhead is idling. By restricting the fuel flow, the mixture of air/fuel becomes so lean it will not ignite and burn in the cylinders. With this arrangement, the No. 1 and No. 2 cylinders continue to operate in the normal manner, at idle speed, while the No. 3 and No. 4 cylinder are "along for the ride".

The firing order for this powerhead is 1-3-2-4. Therefore, at idle speed, every other cylinder fires to provide smooth operation and fuel economy. To meet the demand for sudden acceleration, a mechanical accelerator pump is built into the **2+2** system.



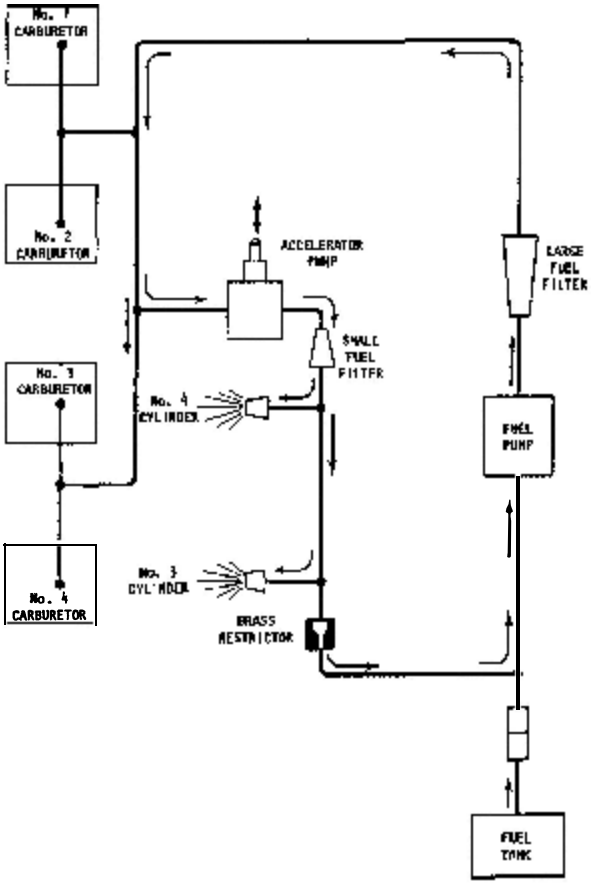
An enrichener valve mounted on the port side of the powerhead replaces the choke circuit on other powerheads.

Fuel Flow

The fuel flow circuit for a powerhead equipped with the **2+2** system is slightly different from normal fuel flow on other powerheads.

Fuel is drawn from the fuel tank through typical hose and hose connection joints by the fuel pump. Fuel is then routed from the pump through a large fuel filter to the No. 1 and No. 2 carburetors. This supply line also feeds the No. 3 and No. 4 carburetors.

A tee fitting between the No. 2 and No. 3 carburetors routes fuel to an acceler-



The acceleration pump and fuel flow circuit for the 2+2 fuel system, explained in the text.

ator pump for the 2+2 system. From the accelerator pump, fuel is forced at a higher pressure through a small fuel filter, and then on to the No. 3 and No. 4 cylinders.

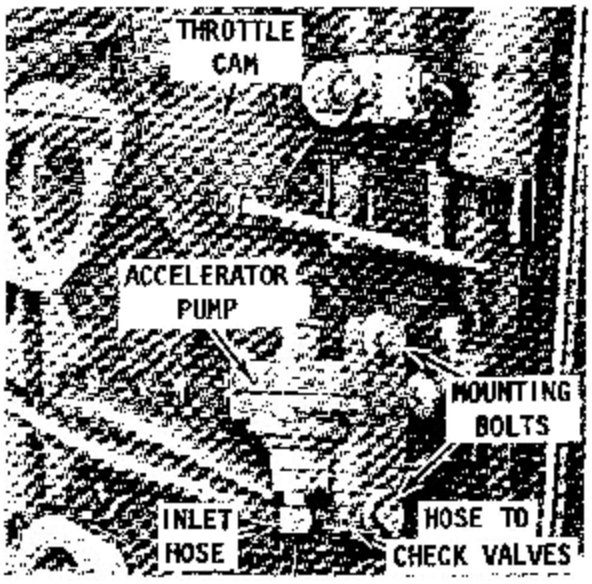
Two spring loaded check valves, one for the No. 3 and the other for the No. 4 cylinder are installed in the cylinder block transfer ports. These valves only unseat at the higher fuel pressure and permit fuel to be sprayed into the two lower cylinders, from the injector nozzles at the transfer ports. This additional fuel will meet an acceleration demand.

Excess fuel not used by the two lower cylinders is routed back to the normal fuel line through a brass restrictor which reduces fuel pressure before it is returned to the normal fuel circuit, as indicated on the accompanying flow diagram.

Carburetor Differences

All four carburetors are identical, except for a slight design modification on the two lower carburetors. The off-idle progression holes for these two lower carburetors have been relocated further from the powerhead. The end result of this new carburetor design is to delay the activation of the off-idle circuit until the throttle plate is moved to a position corresponding to 1800 rpm. At powerhead speeds above 1800 rpm, the two lower carburetors function normally.

The upper carburetors have adjustable idle mixture screws. The idle mixture screw on the two lower carburetors is replaced with a premanently installed plug.



The accelerator pump of the 2+2 fuel system is mounted on the starboard side of the powerhead.

Therefore, anytime a carburetor is removed from the powerhead, the location **MUST** be identified to **ENSURE** it is installed back in its original position.

As explained earlier, while the powerhead is operating at speeds below 1800 rpm, only No. 1 and No. 2 cylinders fire normally. Cylinders No. 3 and No. 4 are supplied with a too lean air/fuel mixture to burn. However, this mixture does contain sufficient oil for adequate cylinder lubrication.

Acceleration

The purpose of the accelerator pump is to satisfy the increased demand for fuel for quick acceleration. The accelerator pump is a mechanically operated device, located on the starboard side of the powerhead, and is **NOT** any part of the carburetor accelerator circuit bearing the same name.

The accelerator pump has an exposed plunger shaft on top. The end of this short shaft rides under the throttle cam. Therefore, the action of the pump is directly dependent on throttle position.

When the operator demands a sudden quick acceleration from idle speed below 1800 rpm, the accelerator pump plunger is depressed one time by action of the throttle cam.

4-6 CARBURETOR IDENTIFICATION

Four different type carburetors are used on Mercury powerheads covered in this manual. Complete detailed procedures for each carburetor are outlined in a separate section of this chapter. To determine which carburetor is installed on your powerhead, check the table in the Appendix, under outboard model and manufactured year. The carburetor identification used in the Appendix and throughout this book and service procedures for each are as follows:

A Side bowl -- back drag carburetor -- covered in Section 4-7.

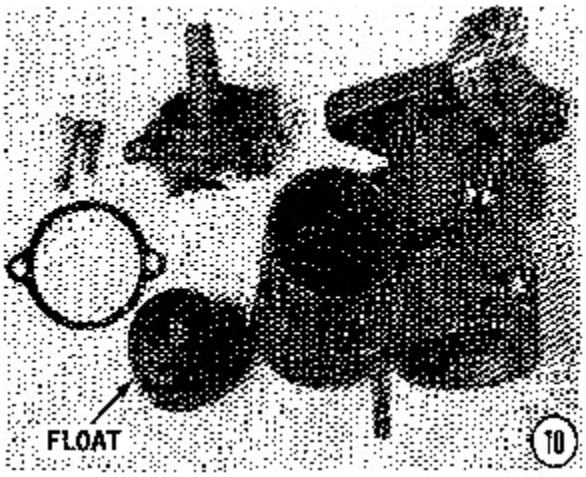
B Integral fuel pump carburetor with enrichment -- covered in Section 4-8.

C Center square bowl carburetor --covered in Section 4-9.

D Series WME center square bowl carburetor -- covered in section 4-10.

Service procedures for the fuel pump are outlined in Section 4-11.

Service procedures for the oil injection system are outlined in Section 4-12.

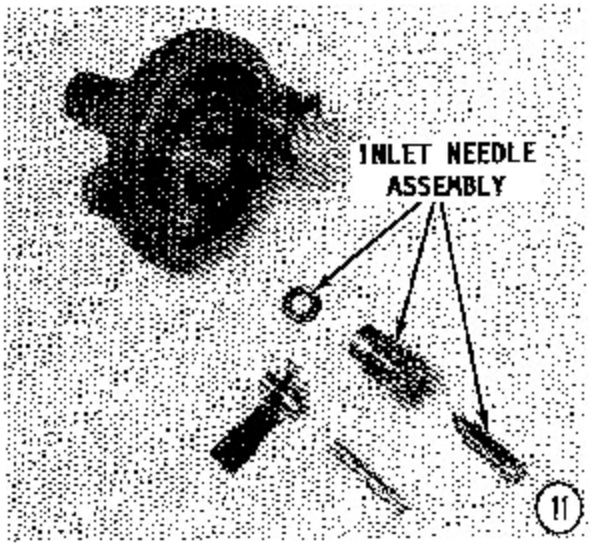


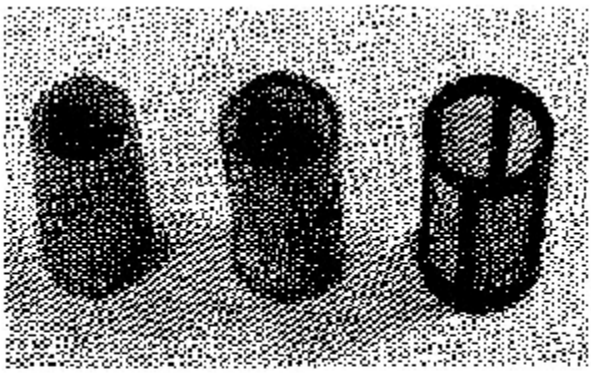
remove the tube unless absolutely necessary. Only check to make sure it is tight. Use the **PROPER** size screwdriver and remove the main fuel jet and gasket.

10- Remove the float assembly by removing the two screws from the top of the carburetor. Lift the float assembly from the carburetor body, and then remove the gasket.

11- Turn the float cover upside down and notice the assembly has two levers. Remove the top lever pin and hinge back the other lever. Now, remove the inlet needle from the needle seat. Use the proper size socket and remove the needle seat. This seat has a standard right-hand thread. Reach into the body with a small punch and gently remove the gasket.

12- To remove the Welch plug on the side of the carburetor, use a sharp punch to puncture the center of the plug, and then pry out the plug A new Welch plug is **ONLY** available in a carburetor overhaul kit.





Filters used with the side-bowl Type "A" carburetor. The two on the left are obsolete and should be replaced with the new type on the far right.

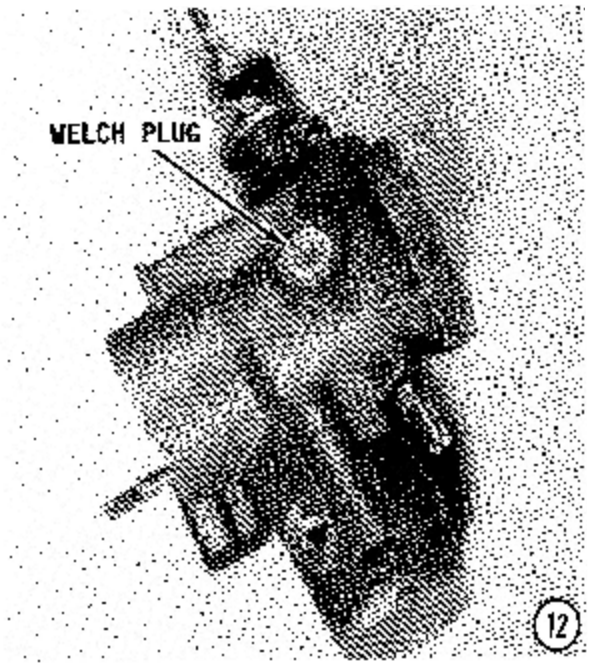
A GOOD WORD: Further disassembly of the carburetor is not necessary.

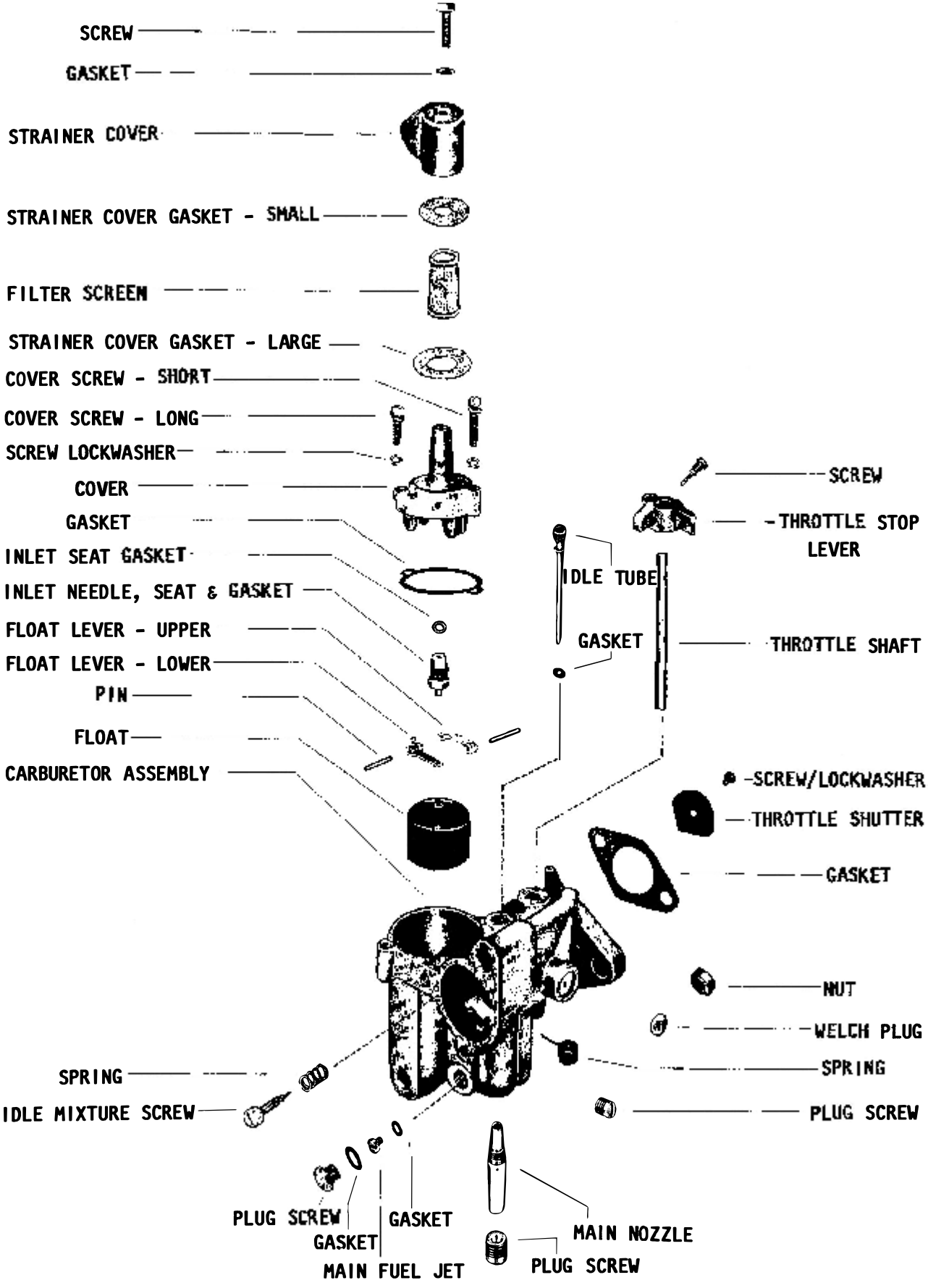
CLEANING AND INSPECTING

NEVER dip rubber parts, plastic parts, diaphragms, or pump plungers in carburetor cleaner. These parts should be cleaned **ONLY** in solvent, and then blown dry with compressed air.

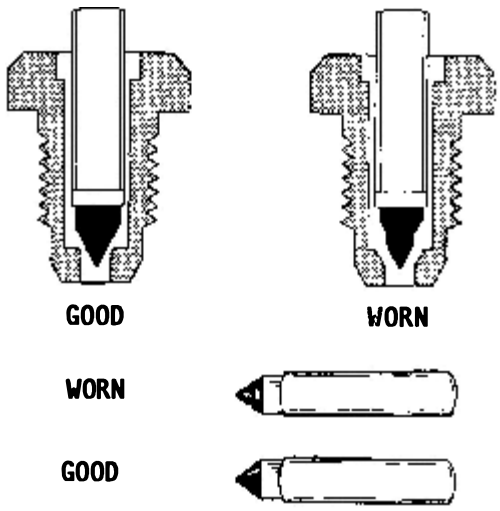
Place all of the metal parts in a screen-type tray and dip them in carburetor cleaner until they appear completely clean, then blow them dry with compressed air.

Blow out all of the passages in the castings with compressed air. Check all of the parts and passages to be sure they are not clogged or contain any deposits. **NEVER** use a piece of wire or any type of pointed instrument to clean drilled passages or calibrated holes in a carburetor.





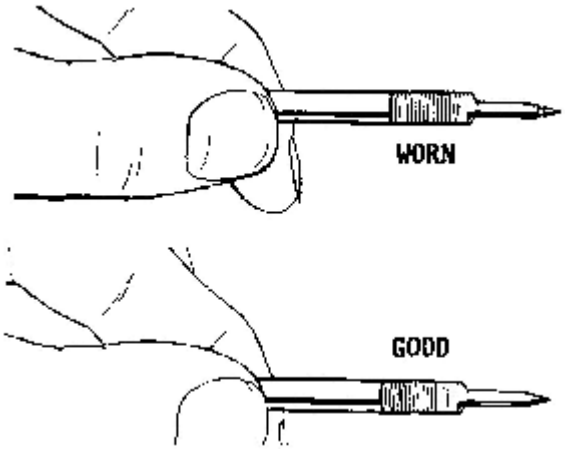
Exploded view of a side bowl — back drag carburetor showing arrangement of major parts. This carburetor is identified as an "A" carburetor in the text and Appendix.



Needle and seat arrangement on the carburetor covered in this section, showing a worn and new needle for comparison.

Move the throttle shaft back-and-forth to check for wear. If the shaft appears to be too loose, replace the complete throttle body because individual replacement parts are **NOT** available.

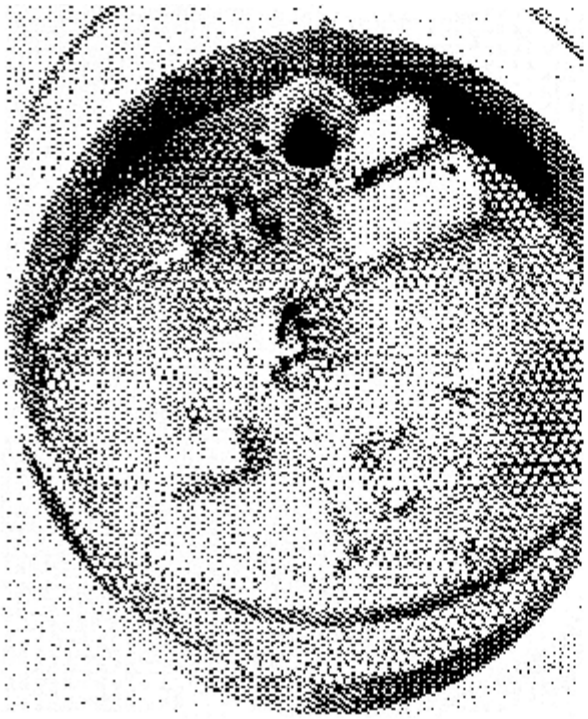
Inspect the main body, airhorn, and venturi cluster gasket surfaces for cracks and burrs which might cause a leak. If a hollow float is used, check to be sure it does not contain any fluid. Check the float for deterioration. Check to be sure the float spring has not been stretched. If any part of the float is damaged, the unit must be replaced. Check the float arm needle contacting surface and replace the float if this surface has a groove worn in it.



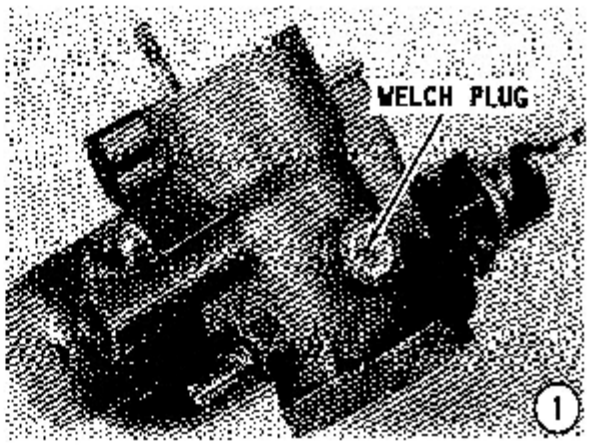
Carburetor idle mixture adjustment needles. The top needle is worn and unfit for service. The bottom needle is new.

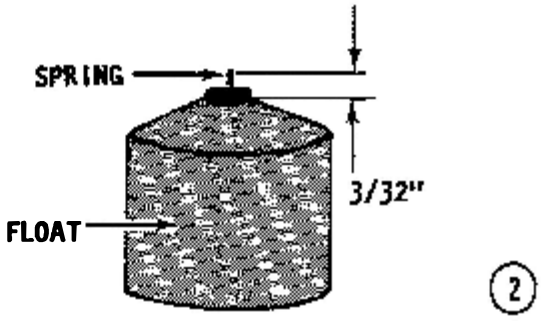
Inspect the tapered section of the idle adjusting needles and replace any that have developed a groove.

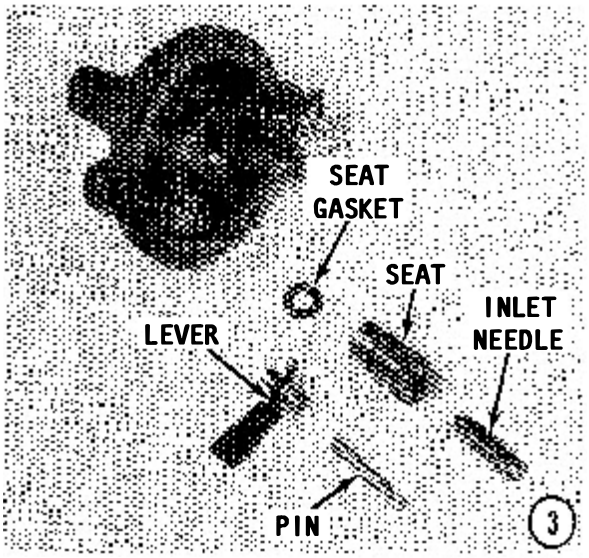
Most of the parts that should be replaced during a carburetor overhaul are included in overhaul kits available from your local marine dealer. One of these kits will contain a matched fuel inlet needle and seat. This combination should be replaced each time the carburetor is disassembled as a precaution against leakage.



*All rubber and plastic parts **MUST** be removed before carburetor parts are placed in a basket to be submerged in carburetor cleaner.*







ASSEMBLING

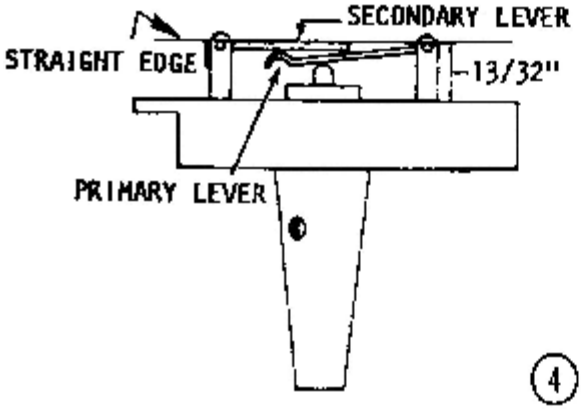
1- If the Welch plug was removed, insert a new plug in position, and then tap it into place. Seal the outside edge of the plug with Gasketcinch, or equivalent.

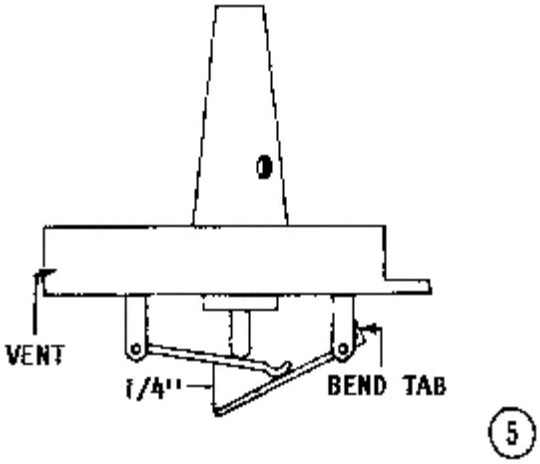
2- Check the spring on the top of the float. If it does not extend out 3/32" (2.40 mm) the float **MUST** be replaced. Install the float onto the float pin, and then slide the float into the carburetor body.

3- Insert a new needle seat gasket into place. Thread the inlet seat into the body and tighten the seat with the proper size socket to a torque value of 60 in.-lbs (6.78Nm). Discharge a drop of oil into the center of the seat, and then insert the inlet needle into the seat. Hinge over the lever that was not removed on top of the inlet needle. Install the other lever on top of the lever in place, and then install the hinge pin.

Float Lever Adjustment

4- Turn the float bowl cover upside down. Measure the distance from the face of the shoulder to the secondary lever. This



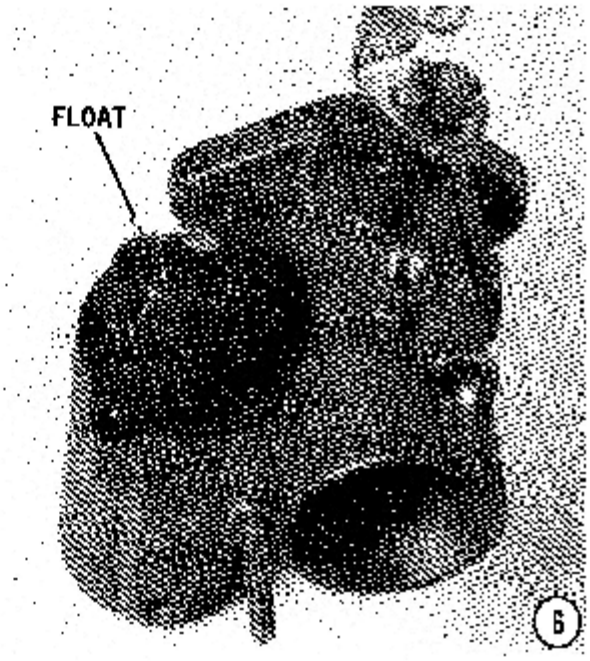


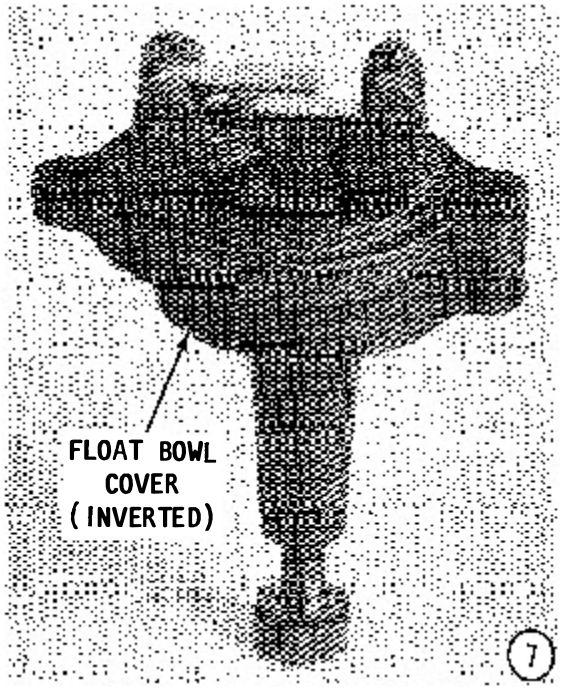
measurement should be 13/32" ± 1/64" (10.32mm ± 0.40mm). **CAREFULLY** bend the primary lever as required to obtain the correct measurement.

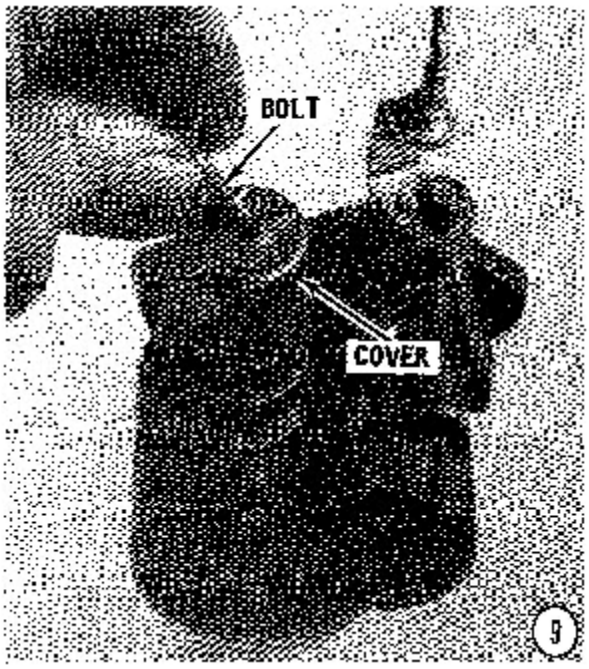
Float Drop Adjustment

5- Turn the float bowl cover upright. Check to be sure the needle moves freely on the actuating primary lever and that it is not sticking in the seat. Hold the bowl cover upright and measure the distance between the primary and secondary levers. This distance should be 1/4" (6.35mm). **CAREFULLY** bend the secondary lever stop tang to obtain the proper measurement.

6- Place a **NEW** gasket onto the float bowl. Then place the float into the float chamber. The vent hole in the cover **MUST** be installed toward the carburetor mounting flange. Invert the carburetor and check the float for free movement.







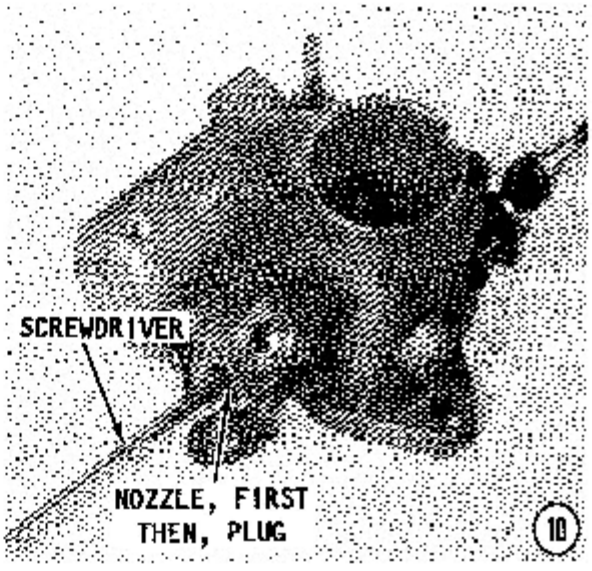
7- Place the float bowl cover over the float. Install the two screws and lockwashers, and tighten them alternately.

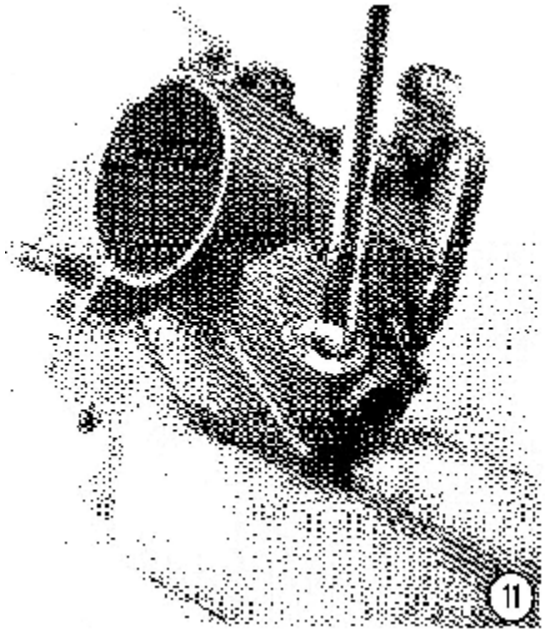
8- Position the large gasket over the tower of the float bowl cover. Install the filter screen. Insert a **NEW** gasket inside the strainer cover. Place the strainer cover over the float bowl cover. **ONE WORD:** If the strainer cover was left attached to the fuel line during disassembly, and is therefore, still on the engine, then bypass the next instruction. The cover will be installed in Step 14. **BE SURE** the strainer cover is setting squarely on the float bowl cover, because if it is not positioned properly, the tower assembly on the float bowl cover will be broken when the strainer bolt is tightened.

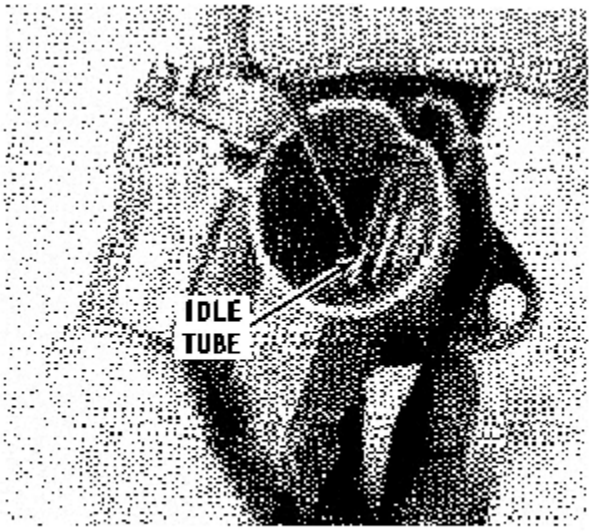
9- Slide a **NEW** gasket onto the strainer bolt, and then install the bolt into the float bowl cover.

10- Thread the main nozzle into the bottom of the carburetor, and then tighten it securely using the **PROPER** size screwdriver. Install the nozzle plug. Use a wood toothpick or Mercury special tool (high-speed jet).

ONE WORD: Main fuel (high-speed) jet size recommendations are intended as a guide. If any change in size is to be made, check the Jet Size/Elevation Chart in the Appendix.







*The idle restriction tube **MUST** contact the front of the venturi tube.*

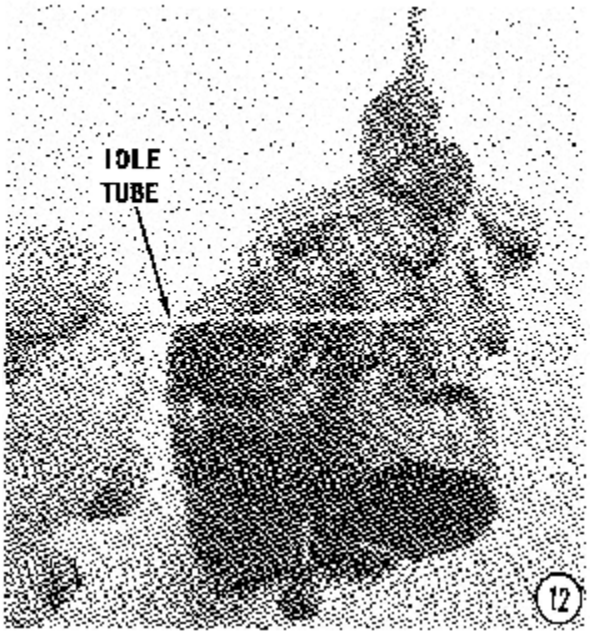
11- Slide a **NEW** gasket onto the main fuel jet. (On some models, this gasket is not used.) Use the **PROPER** size screwdriver and install the jet into the carburetor body. Position a **NEW** gasket onto the 7/16" brass plug, and then install the plug into the carburetor body.

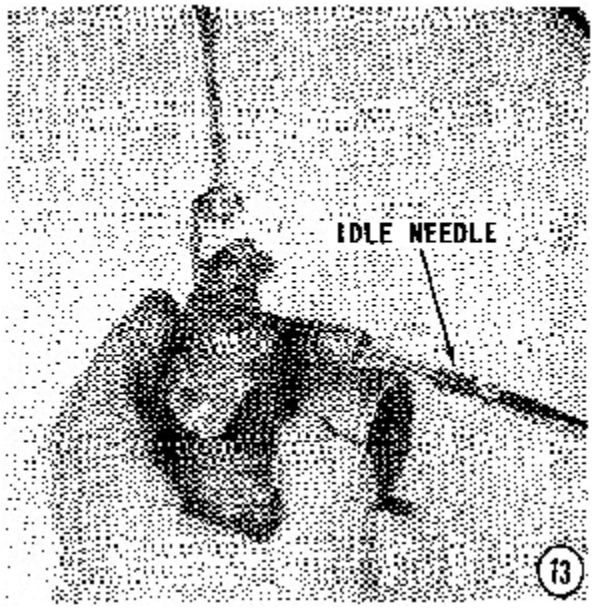
12- Slide a **NEW** gasket onto the idle tube. (On some models, this gasket is not used.) Thread the tube into the top of the carburetor and tighten it securely. When properly installed, the idle tube **MUST** touch the front of the venturi tube.

13- Position the spring over the idle adjusting screw, and then **SLOWLY** thread it into the carburetor body, until you can feel it seat. **DO NOT** tighten the screw or you will damage the tip. Now, as a preliminary adjustment, back the screw out 1 to 1½ full turns. Check the throttle shutters to be sure they do not bend in the carburetor venturi.

INSTALLATION

14- Install **NEW** carburetor flange gaskets. Attach the carburetor assembly to the crankcase. Tighten the attaching hardware alternately to a torque value of 100in lb (11Nm). Connect the fuel lines to the strainer cover of the carburetor/s. If the strainer cover was not installed in Step 8, then place the cover over the tower assemb-





ly of the carburetor. **BE SURE** the strainer cover is setting squarely on the float bowl cover, because if it is not positioned properly, the tower assembly on the float bowl cover will be broken when the strainer bolt is tightened.

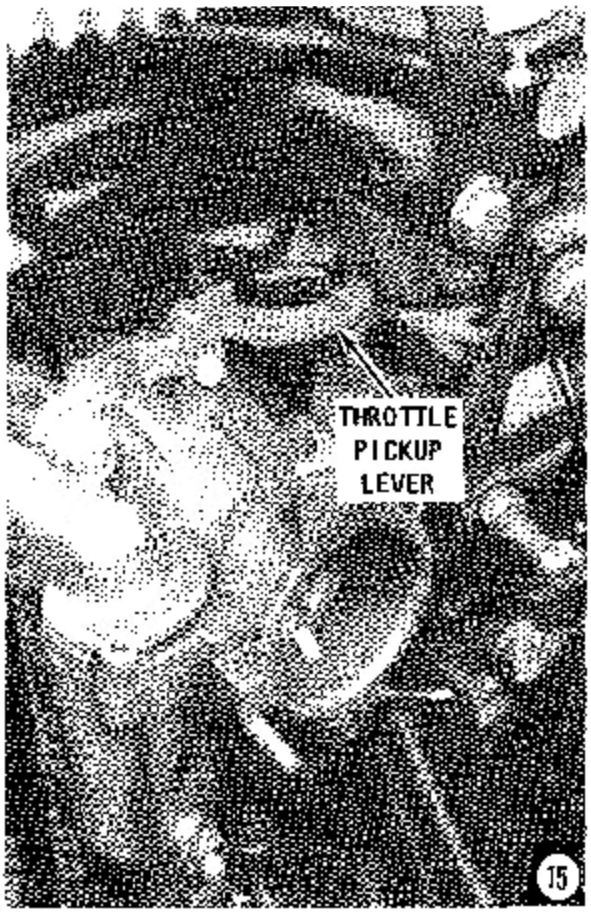
Replace the choke valves and springs by screwing in the choke lever pivot pins. Install the choke levers and the choke lever rod on the choke lever pivot pins. Insert the cotter pins to secure the rod to the lever pivot. **BE SURE** to insert the choke lever pins into the choke springs and the slot in the choke valve while installing it on the pivot pin. Connect the choke rod, positioning the spring on the choke rod pin. Secure the rod to the carburetor adjustment screw.

15- Install the throttle pickup bracket and the throttle pickup lever with the mounting screw on the lower carburetor, sliding the throttle pickup lever into the throttle valve shaft slot of the top carburetor. Check to be sure the cam on the carburetor is in front of the cam on the magneto plate.

On a single carburetor installation, connect the throttle and choke linkage.

Synchronizing

To synchronize the fuel and ignition systems, see Chapter 6.



ADJUSTMENTS

FIRST A WORD: Before fine carburetor adjustments can be properly made, the following conditions must exist:

a. The correct engine-propeller combination must be used.

b. The power unit must be in forward gear.

c. The lower unit must be in the water.

d. The engine must be warmed to normal operating temperature.

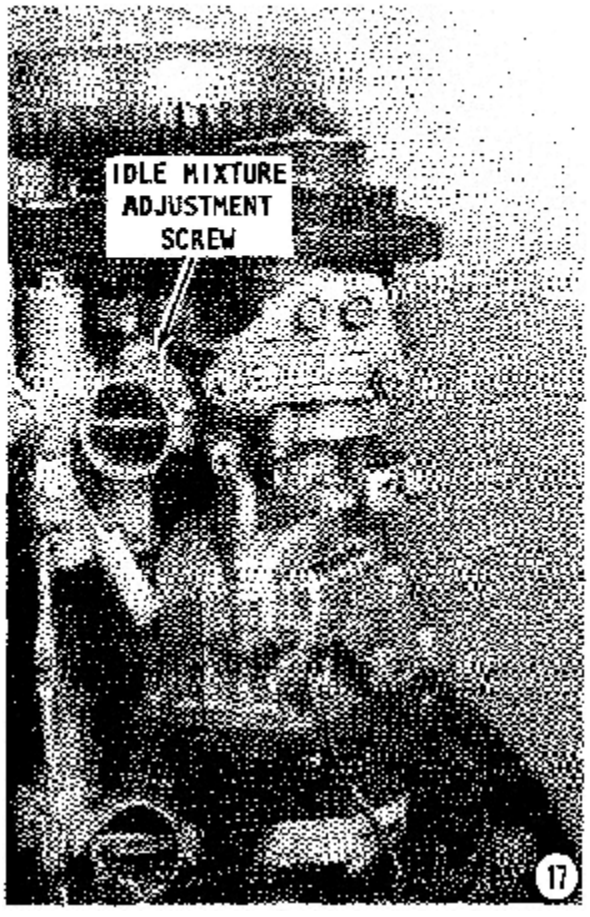
Idle-Speed Adjustment

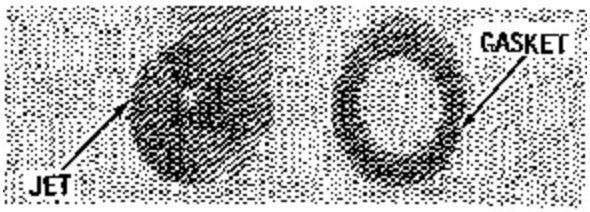
16- After the engine has been warmed to operating temperature, turn the idle speed adjusting screw on the stop bracket until the engine idles at approximately 650 rpm in forward gear.

Idle Mixture Adjustment

17- Turn the adjusting screw **CLOCKWISE** until the engine fires evenly and rpm begin to increase. Continue turning the adjusting screw until the mixture is so lean that the rpm begins to drop and the engine begins to misfire. Set the adjusting screw halfway between the rich and lean points.

ADVICE: It is better to have the mixture set slightly on the rich side, rather than too lean.

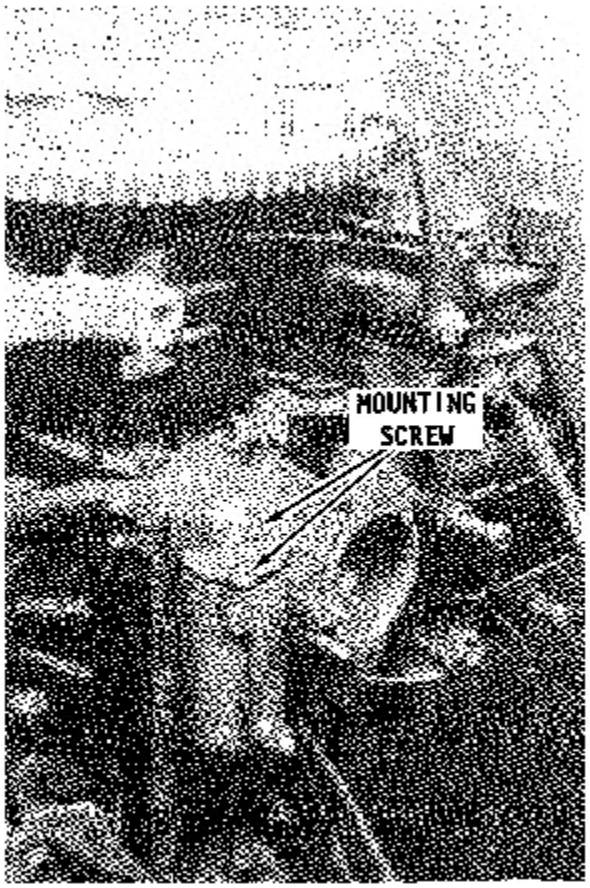




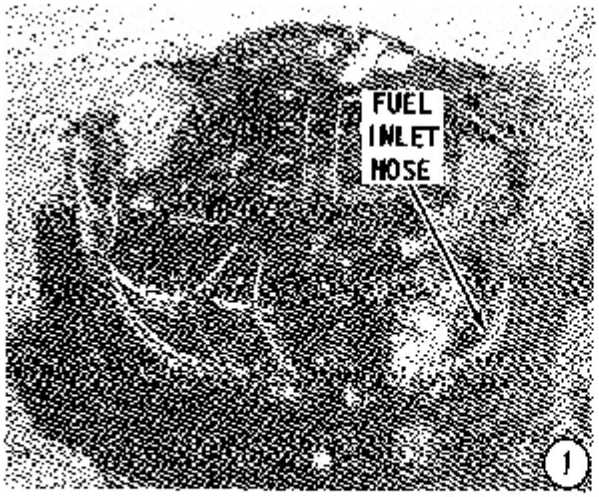
The main (high-speed) jet is not adjustable, but it is available in varying sizes. The jet may be replaced if the engine is to be operated at different elevations.

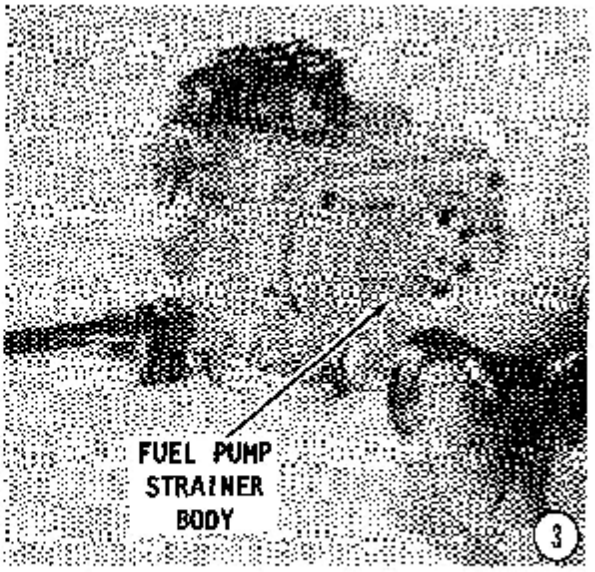
High-Speed Adjustment

The main (high-speed) fuel jet is not adjustable. If the engine is to be operated at elevations above 4000 ft., replace the main metering jet as indicated in the Jet Size/Elevation Chart in the Appendix.



Two different type strainer covers are used on the Type "A" carburetor covered in this section. One uses a 3/8" cap screw securing the strainer to the carburetor, the other has two small screws on either side of the fuel inlet connection. Both have the fuel inlet line connected to the strainer cover.

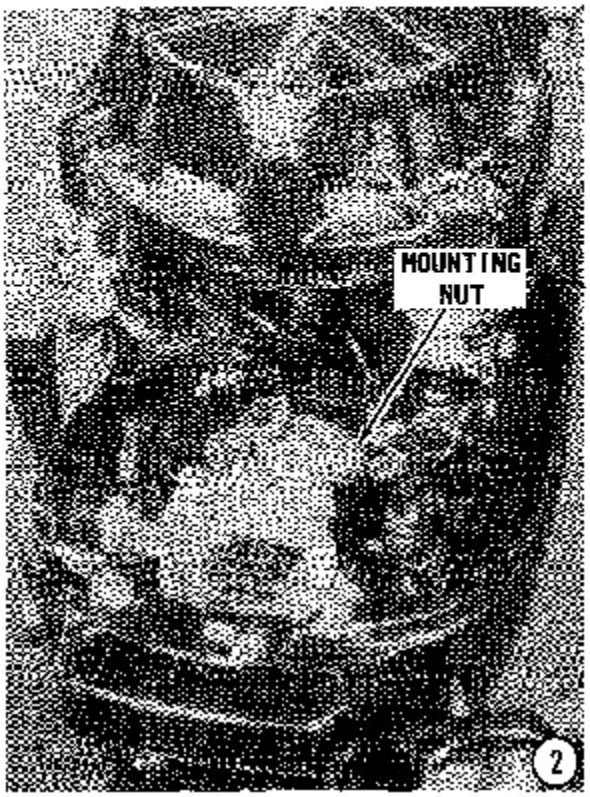




4-8 INTEGRAL FUEL PUMP CARBURETOR — REFERENCED "B" IN THE APPENDIX

This section provides complete detailed procedures for removal, disassembly, cleaning and inspecting, assembling including bench adjustments, installation, and operating adjustments for the integral fuel pump carburetor. To synchronize the fuel and ignition systems, see Chapter 6.

This new carburetor has an integral fuel pump, which should be overhauled every time the carburetor is disassembled.



REMOVAL AND DISASSEMBLING

1- Remove the battery leads from the battery terminals. Remove the hood assembly. Disconnect the fuel line at the fuel