



# **ALL STREET AVENGER & HOLLEY UNIVERSAL MODEL 2300 2BBL CARBURETORS**

## **INSTALLATION, TUNING, AND ADJUSTMENT MANUAL**

**199R11515**

**NOTE:** These instructions must be read and fully understood before beginning installation. If this manual is not fully understood, installation should not be attempted. Failure to follow these instructions, including the pictures may result in subsequent system failure.

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# INTRODUCTION:

**CONGRATULATIONS** on your purchase of a Holley® carburetor! We feel that you have purchased the finest performance carburetor manufactured today. Should you need information or parts assistance, please contact our Technical Service Department at 1-270-781-9741, Monday through Friday, 7 a.m. to 5 p.m. CST. Please have the part number of the product you purchased on hand when you call.

**NOTE:** These 2BBL model 2300 carburetors are designed as universal type units and should bolt directly to most Ford 2BBL V-8 manifolds.

**To preserve the warranty, these instructions must be read and followed thoroughly before and during installation.**

**NOTE:** These carburetors are not designed to meet any emission requirements for 1968 and later applications. Therefore, they should be used only for competition/off road vehicles or vehicles not required to comply with late model exhaust emission standards.

**WARNING:** If you are using this carburetor with a GM overdrive transmission TH700R4 or a TH200R4, you must use a transmission kickdown cable bracket (Holley® P/N 20-95) and stud (Holley® P/N 20-40). Otherwise, SEVERE transmission damage WILL result. This carburetor is not designed to work with ANY other automatic overdrive transmission.

# REMOVAL:

1. Remove the air cleaner, exercising care to detach any vacuum lines from the air cleaner without damage. Note the original locations so they can be reassembled to the air cleaner in the same manner.
2. Remove the existing carburetor by the following procedure:
  - A. Carefully disconnect the fuel line.

**WARNING:** Carefully protect the open end of the fuel lines, so that no foreign particles can enter. Wrap the end of the fuel line with a clean lint-free cloth.

- B. Disconnect and mark all vacuum lines and wiring (if any) to the carburetor.
  - C. Disconnect the PCV hose.
  - D. Disconnect the choke rod or heat tubes (if equipped).
  - E. Disconnect and remove the throttle linkage and automatic kickdown linkage. **Save all retaining clips.**
  - F. Unbolt and remove the carburetor from the manifold. Use care not to let anything (i.e. old gasket material) fall into the intake manifold.
  - G. Lay a clean cloth across the intake manifold opening to guard against any foreign matter entering the intake manifold.
3. If the intake manifold is being changed at this time, install the new manifold according to the manifold's manufacturer's directions. Since we are not familiar with all manifold instructions, Holley® cannot accept responsibility for their validity.

# INSTALLATION NOTES:

## CHRYSLER APPLICATIONS

**WARNING:** This carburetor is not designed for use with any Chrysler automatic overdrive transmission. SEVERE transmission damage may result from improper application use.

1. Unless you are replacing an existing Holley® carburetor (which already has a lever extension arm), you may need to purchase and install a throttle lever extension (Holley® P/N 20-7) on the carburetor. Remove the throttle stud and nut from the original carburetor. You can purchase a new stud from your Holley® dealer (Holley® P/N 20-67). Install the stud in the throttle extension lever (Figure 1).

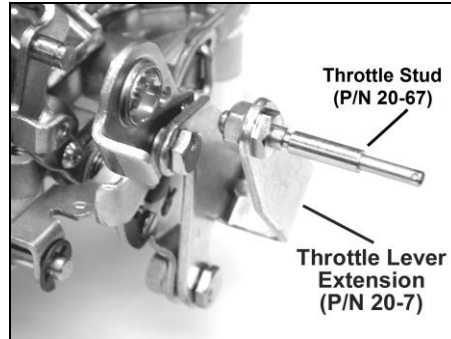


Figure 1—Chrysler applications

## FORD APPLICATIONS

**WARNING:** This carburetor is not designed for use with any Ford automatic overdrive transmission. SEVERE transmission damage may result from improper application use.

**NOTE:** Holley P/N 20-91, transmission kickdown spring & bracket kit (included), is required for Ford automatic transmission applications.

1. Reuse the existing ball stud, lock washer, and retaining nut or purchase Holley P/N 20-2.
2. Insert the transmission kickdown screw and lock nut with the retaining clip on the transmission kickdown lever (Figure 2).

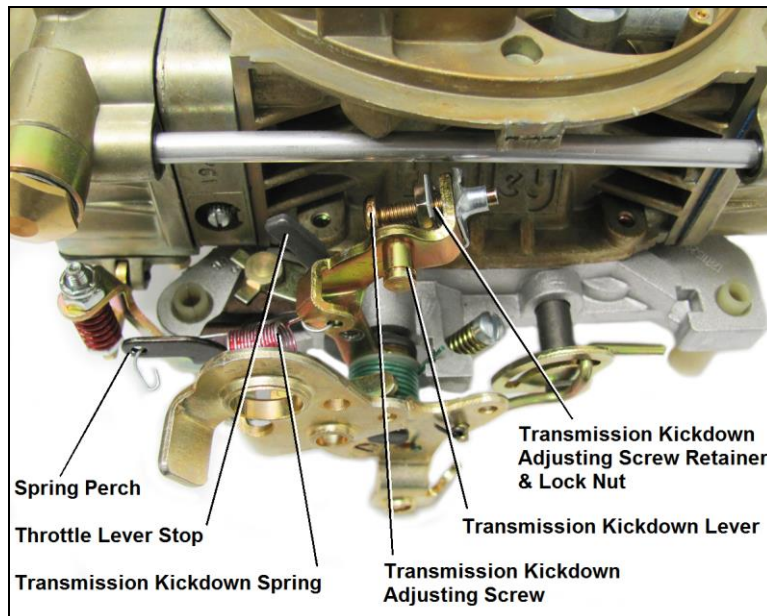


Figure 2—Ford applications

3. Remove the lock out screw from the kickdown lever (Figure 3).
4. Install the transmission kickdown spring between the transmission kickdown lever and spring perch (Figure 2).

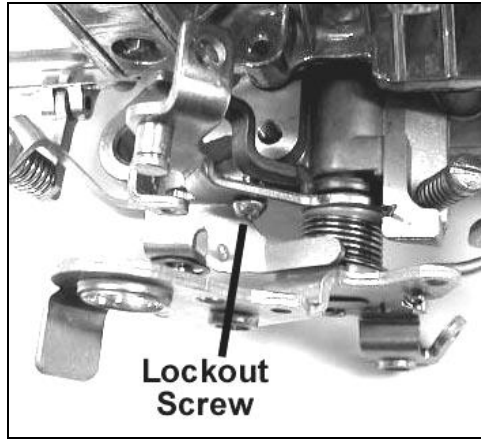


Figure 3—Ford applications

## GM APPLICATIONS

**WARNING:** If you are using this carburetor with a GM overdrive transmission TH700R4 or a TH200R4, you must use a transmission kickdown cable bracket (Holley® P/N 20-95) and stud (Holley® P/N 20-40). Otherwise, SEVERE transmission damage WILL result. This carburetor is not designed to work with ANY other automatic overdrive transmission.

1. Remove the throttle cable ball and automatic transmission kickdown stud (if any) from the original carburetor, and mount these in similar locations on the Holley® throttle lever. If the original throttle cable is too large, a new throttle ball or stud is needed (Holley® P/N 20-2 or 20-38).

## INSTALLATION:

1. Install the carburetor-mounting studs (not provided) in the proper location on the intake manifold carburetor flange.
2. Place the new carburetor flange gasket, provided with the carburetor, in the proper position on the intake manifold.
3. Place the carburetor on top of the flange gasket on the manifold. Install the hold down nuts and snug down progressively in a “crisscross” pattern (60-80 in./lbs.), as shown in Figure 4.

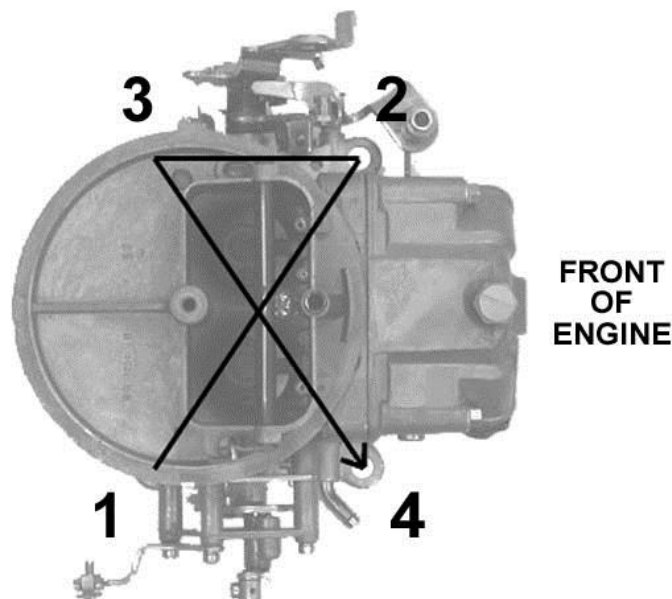


Figure 4 - Carburetor torque sequence

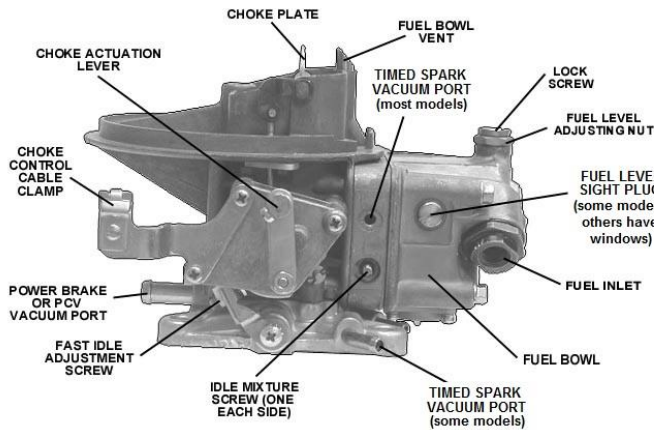
**WARNING:** Overtightening may result in a warped or cracked carburetor throttle body.

4. Before connecting the linkage, operate the throttle lever to assure the correct travel (no sticking or binding), by opening to wide-open throttle and back to closed throttle several times. Correct any sticking or binding conditions before proceeding.

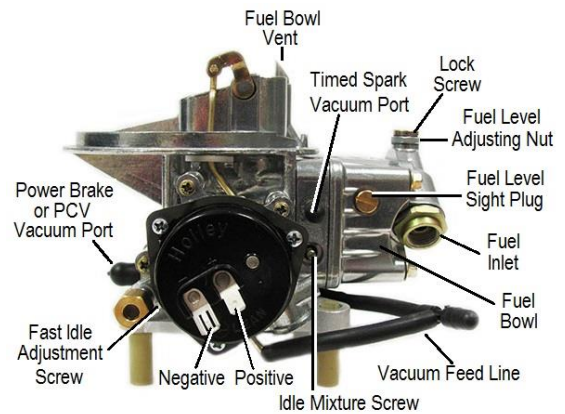
**WARNING: Any sticking, binding, or other interference in the throttle linkage could result in uncontrolled engine speed. This could result in engine damage or personal injury.**

5. Reconnect the throttle and transmission kickdown linkage and throttle return spring (Holley® P/N 20-89). Operate the carburetor throttle lever by hand to assure the correct travel (no sticking or binding) by opening to wide open throttle and back to closed throttle several times. Correct any sticking or binding conditions before proceeding.

**NOTE: With the engine turned off**, have an assistant slowly press the accelerator pedal to the floor, while you watch the throttle for any sticking or binding. Correct any sticking or binding conditions before proceeding. Also ensure that you are reaching full throttle. Many performance problems are traced to partial throttle openings from improperly adjusted linkage.

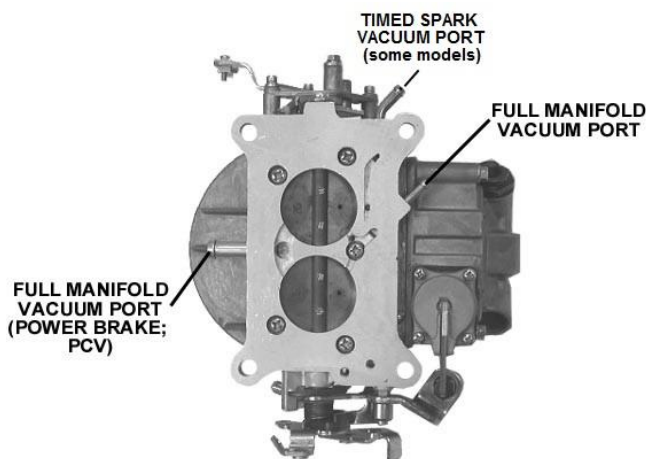


**Figure 6A**

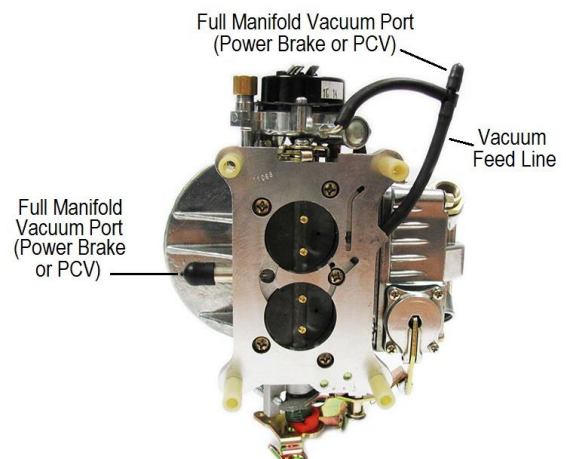


**Figure 6B**

6. Reconnect the appropriate vacuum hoses to the carburetor, noting the correct fitting from Figure 6 and 7. Replace any cracked or dry rotted hoses at this time to prevent any vacuum leaks.
  - A. The full manifold vacuum source in the front of the throttle body provides vacuum for proper operation of the air cleaner, the pump diverter valve (if equipped), AC/Cruise, and/or the temperature sensing valve. If vacuum for more than one component is needed, use small plastic vacuum "T"s (available at most automotive stores).
  - B. The timed spark fitting in the choke side of the primary metering block provides vacuum for the operation of the distributor vacuum advance. Connect the hose to the distributor, spark delay valve, and/or temperature sensing valve as originally connected. Again use "T"s as necessary. If any questions arise about the hose connections, consult the proper service manual.
  - C. Plug any vacuum source not used.
7. Connect the PCV hose to the PCV fitting in the carburetor.
8. Connect the power brake hose to the fitting as shown in Figures 6 or 7.



**Figure 7A**



**Figure 7B**

**WARNING:** During the fuel line installation, **DO NOT** allow any foreign particles to enter the fuel lines, which could then cause flooding and may result in a fire.

**WARNING:** Keep the fuel line away from the EGR valve (if equipped) on the intake manifold.

If installation requires cutting the metal fuel line, cut the fuel line with a good tube cutter. This will minimize the chance of producing metal chip particles. If a hacksaw must be used then metal chips must be removed.

**WARNING:** In all cases where the fuel line has been cut, it is essential that it be clean to insure that no metal particles enter the fuel bowl after the new carburetor installation. Remove the fuel line at the pump and blow the line clean with compressed air. **DO NOT** use the procedure where the coil wire is disconnected, the engine cranked for a few revolutions, and the fuel collected in a container. This procedure is unsafe because sparking can occur either at the coil or at the distributor end of the coil wire and ignite any fuel spilled in the engine compartment.

**CAUTION:** The use of a quality in line fuel filter, such as Holley® P/N 162-523 is mandatory as a safeguard against possible flooding, which could result from unfiltered particles becoming lodged between the fuel inlet needle and its seat. This can result in fire if a spark is present or backfire occurs in the engine compartment. Air cleaner filter elements should be blown clean with compressed air at 6,000 miles and replaced at 12,000 miles to assure maximum protection. Now would be the perfect time to upgrade to a Holley® Powershot air filter (Holley® P/N 120-146).

9. For hand choke, connect the choke control cable (Holley® P/N 45-228) to the choke actuation lever, and mount the outer sleeve to the cable clamp. Actuate the choke cable through its full range of motion to ensure full choke operation. Adjust, as necessary.
10. **For electric choke hookup**, attach the bayonet end of the long electrical lead supplied to the positive terminal on the choke cap. **The other end must be connected to an ignition activated 12-volt source.** The distributor side of the ignition coil is **NOT** a 12-volt source. It is a 7-9-volt source after cranking. Check the voltage source with a volt-ohm meter to ensure proper voltage and choke operation.

**WARNING:** Connecting the choke cap to the ignition or ignition coil could result in unacceptable choke operation, poor fuel economy, and possible engine misfiring, since the voltage delivered to the spark plugs will be severely reduced by the drain imposed by the choke cap. Suitable ignition activated 12-volt sources are most electrical relays, as well as the leads to accessories, such as windshield wipers. **DO NOT** connect this wire to the original equipment (O.E.) electric choke source. This may not be a 12V source.

11. Start the engine and check the fuel lines and inlet fitting for possible leaks.

**NOTE:** The recommended fuel pressure is 5-7 psi.

12. Recheck to assure all existing vacuum hoses are attached properly. Plug any fittings not used.
13. With the engine at operating temperature, set the idle speed to the manufacturer's specifications (see page 9 for idle adjustment).
14. Shut off the engine and readjust the throttle operated transmission linkage, if necessary. On installations that have a kickdown-actuating switch on the passenger's side of the firewall, it might be necessary to readjust it according to the manufacturer's service manual.

**FORD APPLICATIONS WITH AUTOMATIC TRANSMISSIONS:** With the engine off, push the transmission kickdown rod rearward until it stops and hold it in position. Push the throttle lever rearward to its wide-open throttle position and adjust the transmission kickdown screw to come in contact with the transmission kickdown lever tang.

**WARNING:** With the engine off, recheck the assembled linkage for sticking and/or proper return to the idle position.

15. Place the air cleaner gasket (supplied) on the sealing flange, and install the air cleaner.
16. With some air cleaner configurations, it may be necessary to use an air cleaner spacer to provide adequate clearance between the carburetor and the air cleaner. Holley® offers such a spacer (Holley® P/N 17-13). Depending on the overall height, obtain the proper length 1/4 x 20 stud and install in the carburetor airhorn. Close the hood slowly to ensure adequate clearance between the air cleaner stud and the hood.

**WARNING:** Inadequate clearance between the air cleaner and the throttle lever could result in throttle sticking and uncontrolled engine speed. Check the clearance between the throttle lever and air cleaner for proper operation. Check the clearance between the air cleaner and the hood before closing the hood completely.

**MAINTENANCE WARNING:** Fuel system components, including fuel lines and the carburetor, should be inspected periodically to assure no fuel leakage and to ensure the soundness of the hoses. Today's clean emissions engines



provide higher temperatures in the engine compartment. These high temperatures promote faster aging of non-metallic materials.

Hoses that exhibit surface cracks, when bent to 180°, should be replaced. The presence of liquid fuel demands tightening of fittings, hose replacement, and retorquing of the fuel system component flange nuts. Periodically check the torque on the fuel bowl screws to 25-30 in./lbs. to assure proper fuel metering.

**GENERAL:** Some very important factors to optimize efficiency and performance include: Correct engine timing, correct spark plug gap and heat range, ignition components in good working order, and correct operation of exhaust heat valve.

**WARNING:** On automatic transmission vehicles only, install the transmission kickdown adjustment screw and black retaining clip, as correctly indicated. Failure to attend to this detail may result in a sticking wide-open throttle or dangerous uncontrolled engine speed.

## ELECTRIC CHOKE ADJUSTMENTS:

**IMPORTANT:** Your Holley® carburetor has been factory wet flowed and calibrated. The “out of the box” settings should be very close for all adjustments. The following tuning section is included ONLY to aid you in fine tuning adjustments.

**NOTE:** All vacuum ports must be plugged at this time.

1. You can control the choke operation by rotating the choke cap. If the choke comes off too soon, loosen the three screws and rotate the choke cap counterclockwise one notch at a time, until the choke operation is satisfactory. Rotate the choke cap clockwise, if the choke comes off too late. After making the final adjustments, start the engine and make sure the choke plate opens completely.
  - A. A choke that comes off too soon could exhibit one or more of the following symptoms: stalling, surging, backfiring, stumbles, or poor vehicle driveability when the vehicle is cold.
  - B. A choke that comes off too late could exhibit one or more of the following symptoms: black smoke from the tail pipe, poor driveability when cold, poor gas mileage, misses, or rough idle.
2. From the factory, the choke cap has built-in limiters. If choke operation is unsatisfactory and you have adjusted the choke cap in either direction to the limiters with unsatisfactory results, recheck your positive electrical line connection.

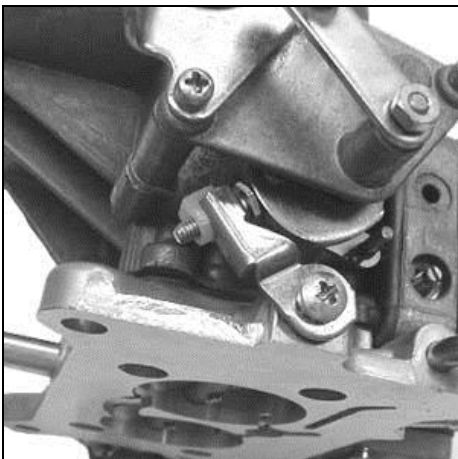


Figure 8A

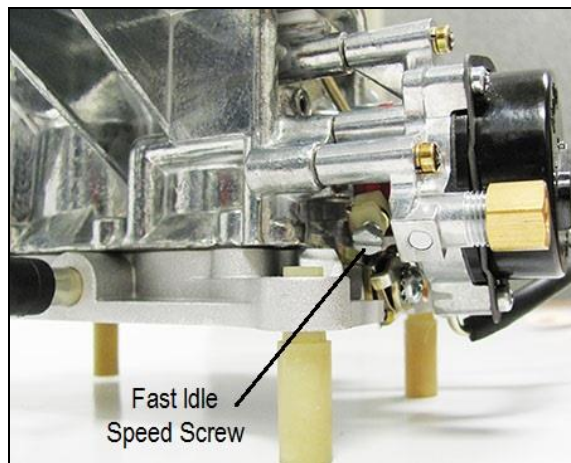


Figure 8B

## FAST IDLE ADJUSTMENTS FOR HAND CHOKE OR ELECTRIC CHOKE:

**NOTE:** Fast idle RPM adjustments should be made with largest step of fast idle cam in position behind the fast idle lever, typically when engine is cold and choke plate is in the closed best running cold condition. It is important that all vacuum ports must be plugged at this time.

1. If the fast idle RPM is too low or too high for your preferences, TURN THE ENGINE OFF. Advance the throttle to wide-open, exposing the fast idle set screw below the choke housing (See Figure 8A & 8B).
2. Using a flat blade screwdriver or 1/4" open end wrench, turn the screw clockwise to increase the RPM or counterclockwise to decrease the RPM. The factory setting should give you a 1500-1600 RPM fast idle speed.



# IDLE MIXTURE NEEDLES:

Idle mixture needles control the air/fuel mixture at idle. These have been preset at the factory and SHOULD NOT need any adjustments. However, if you feel that adjustment is necessary, you can use the following procedure to do so. When tuning the idle mixture, you're actually tuning for the best manifold vacuum. Idle mixture needles are found on the primary metering blocks. If you change one idle mixture needle, you must change the other idle mixture needle by the same amount. Here are the proper steps for setting the idle mixture needles.

1. Attach the vacuum gauge to a manifold vacuum port.
2. Adjust each idle mixture screw (Figures 9 & 10) 1/8 turn at a time, alternating between each screw. Turn them equally, until you achieve the highest possible vacuum reading without adjusting the curb idle speed screw. Turn screws in to lean the mixture. Turn them out to richen the mixture.

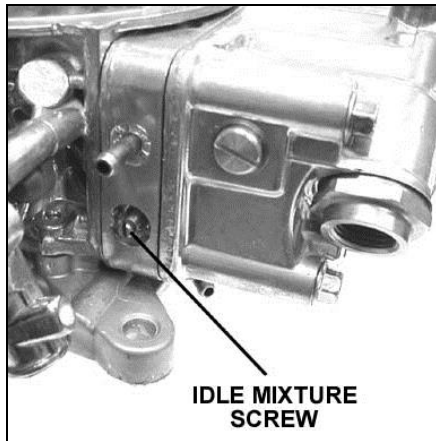


Figure 9

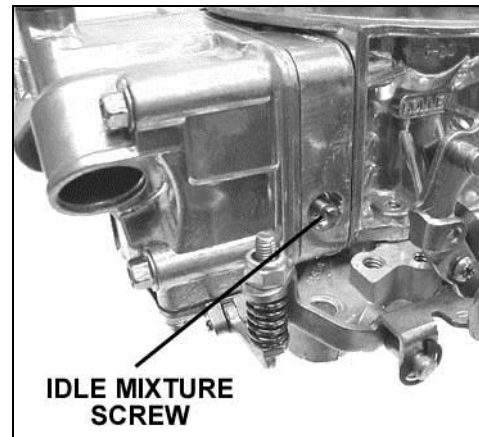


Figure 10



Figure 11

3. Now that the idle mixture is set, it may be necessary to go back and reset the idle speed using the curb idle speed screw, as shown in Figure 11.
4. If a vacuum gauge is not available, use a tachometer to obtain the highest RPM.

**ROUGH IDLE AND VACUUM LEAKS:** If a rough idle persists after the engine has been started and the mixture screws adjusted, check for manifold vacuum leaks. These could result from unplugged vacuum fittings or a carburetor flange gasket that was torn during installation. Recheck for proper attachment of all vacuum lines and check the lines for cracks. If the manifold was changed, a manifold vacuum leak could occur at the cylinder head/manifold surface due to damaged gaskets or improper torquing. Frequently, manifold vacuum leaks occur from the valley side of the manifold. These are very difficult to detect, unless a discernible whistle can be heard.

**NOTE:** In most cases, when rough idle occurs after a carburetor/manifold change, they result from manifold vacuum leaks similar to those described above. Assuring a proper manifold installation rather than assuming the carburetor is not functioning properly will ultimately save time.

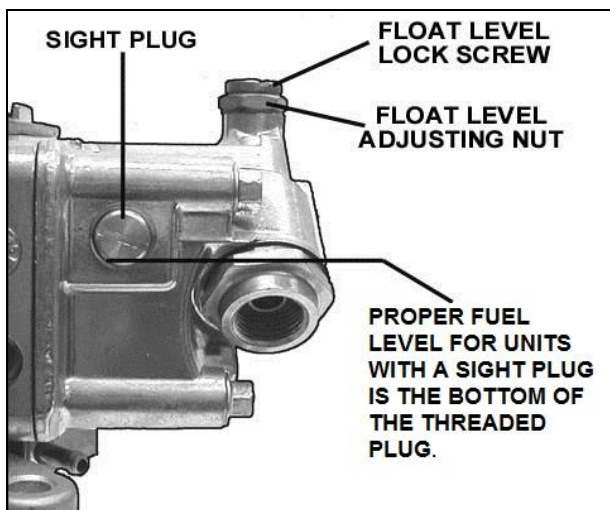
# FLOAT LEVEL CHECK AND ADJUSTMENT:

**NOTE:** Vehicle should be on level surface during float adjustment.

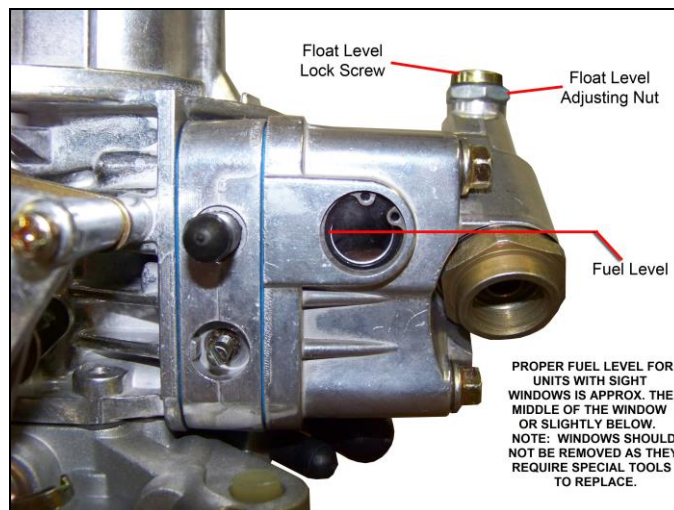
Float adjustments are set at the factory, but variations in fuel pressure could cause a change in these settings. The following procedure shows how to make these adjustments:

1. Start the vehicle.
2. Remove the fuel bowl sight plug (some models). Models with windows do not need to be removed.
3. Observe the sight plug hole for the fuel level. If none is seen, the level is too low. Fuel should be even with the bottom of the sight plug hole or approximately in middle of window. If fuel comes pouring out of the sight hole or is above the middle of the window, the float is set too high.

**NOTE:** A properly set float level will have the fuel level located at the bottom edge of the sight hole, as shown by the line in **Figure 12** or in the middle of the window as shown in **Figure 13**.



**Figure 12**



**Figure 13**

4. To adjust, shut down the engine.
5. Loosen the lock screw on top of the fuel bowl just enough to allow you to turn the adjusting nut. Hold the screw in position with the screwdriver.
6. Using a 5/8" wrench, turn the adjusting nut in the appropriate direction: Clockwise to lower float and counterclockwise to raise float.
7. Turn the adjusting nut in increments of 1/4 of a rotation.
8. Retighten the lock screw.
9. Restart the vehicle and observe the sight plug hole or window.
10. Repeat steps 1 through 8, as necessary.

## JETTING (MAIN JETS):

Due to varied applications that a universal performance carburetor will work with, a few tips on jetting are provided to help you understand their purpose.

1. Out of the box jetting is extremely close for most applications.
2. Carburetors are calibrated at 70° at sea level. Decrease the jet size primary and secondary, one number for every 2000 ft. increase in altitude.
3. Holley® jets are broached, flowed, and stamped according to flow rate. **NEVER** drill jets, as this seriously alters flow characteristics. Stamped numbers are reference numbers and **DO NOT** indicate drill size.
4. In most cases it will be **unnecessary** to increase jet size more than four numbers greater than out of the box jetting. Exceptions could arise when the carburetor is mounted on a very large volume, plenum-ram manifold.
5. Spark plugs provide the best indication of proper jetting. Consult an ignition manual for proper reading of spark plugs.

## POWER VALVES:

The number stamped on a power valve, such as 65, indicates the manifold vacuum below which the power valve is operational. In this case, all manifold vacuums below 6.5" Hg, the power valve is operating. Generally, a 65 power valve is sufficient for most high performance applications that have a manifold vacuum of 12" Hg or higher. However, some problems can result with radically cammed machines equipped with automatic transmissions. These vehicles often "idle" at 2000 rpm, approx. 6.0" Hg. At this point the main nozzles are starting to feed and richen the mixture (supplied by the power valve) and the engine will probably "load up". To correct this problem, install a 45 or 35 power valve. If the engine has a manifold vacuum of 12" Hg or less, a good way to determine power valve size is take the manifold vacuum at idle and divide that number by two. The answer is the power valve size. This will provide idling and proper fuel flow under wide open throttle conditions when manifold vacuums seldom rise above 1" Hg.

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