

Service Information

CLINTON RH-SERIES CARBURETORS

DESCRIPTION and OPERATION

DESCRIPTION

The RH-Series Carburetor is of the single barrel updraft design, with a single venturi, twin floats, and a semi-concentric fuel bowl to permit operation at quite extreme angles without flooding or starving the engine. It is of the "balanced" and "sealed" type since all air for fuel bowl ventilation and idle operation must enter through the air cleaner. The fuel supply system is made up of the threaded fuel inlet, fuel valve (needle and seat), float assembly and the float chamber. The idle system consists of two idle

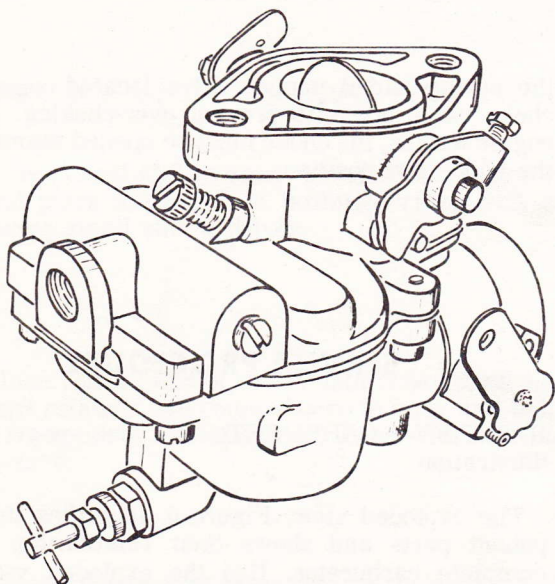


Fig. 1. External View

discharge holes, idle air passage, idle adjusting needle, idle jet, and fuel pick-up passage. The high speed (main metering) system consists of the venturi, main jet, main discharge and well vent. Some models also include a main jet adjustment. The choke system is of the semi-automatic type and is made up of a choke valve, with a spring loaded poppet valve, mounted on a shaft located within the air intake and operated externally by a lever attached to the choke shaft.

OPERATION

FUEL SUPPLY SYSTEM - By gravity fuel is supplied through the fuel inlet fitting, fuel valve (needle and seat) to the float chamber, see Figure 2. The float in the float chamber automatically regulates the opening through the fuel valve (needle and seat) to maintain the proper level of fuel in the fuel bowl and to meet the demands of the engine according to engine load and speed.

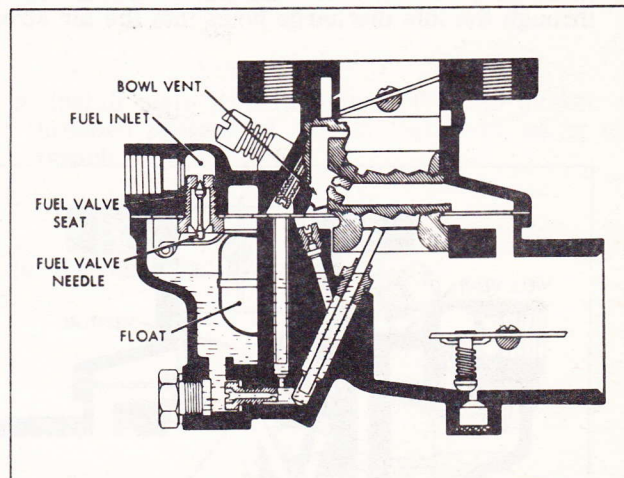


Fig. 2. Fuel Supply System

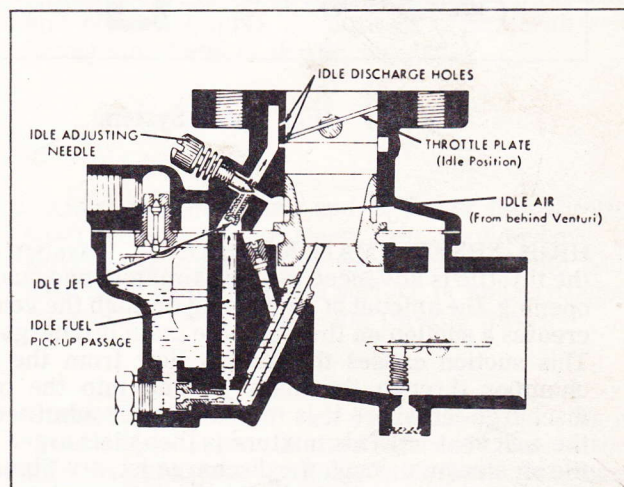


Fig. 3. Idle System

IDLE SYSTEM - At idle speed the throttle valve is advanced slightly to expose the upper idle discharge hole to engine manifold vacuum (suction), see Figure 3. This suction is transmitted to the idle jet through a passage connecting the idle discharge holes with the idle jet. Fuel for idle is supplied through the main jet to a well at the bottom of the discharge jet. The fuel for idle flows out of this well through a restricted drilling at the bottom of the idle fuel pick-up passage. From here the fuel is metered through the idle jet calibration before entering the vacuum passage leading to the idle discharge holes. As the fuel leaves the idle jet it is mixed with air that originates back of (or from behind) the venturi. The position of the idle

adjusting needle in this passage controls the suction of the idle jet and thereby the idle fuel-air mixture. Turning the idle adjusting needle IN (clockwise) results in a greater suction on the idle jet with a smaller amount of air admitted to give a richer mixture. Turning the needle OUT (counter-clockwise) increases the amount of idle air admitted and reduces the suction on the idle jet resulting in a leaner mixture. This idle fuel-air mixture is then discharged through the idle discharge holes into the air stream.

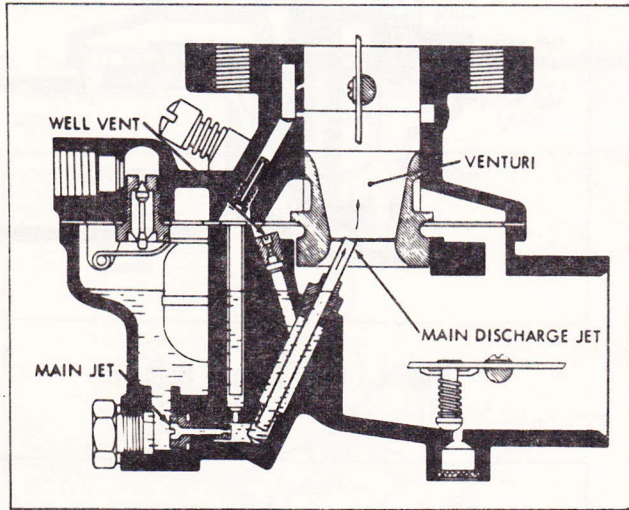


Fig. 4. High Speed System

HIGH SPEED (MAIN METERING) system - As the throttle is advanced to approximately one-quarter opening, the amount of air passing through the venturi creates a suction on the tip of the main discharge jet. This suction causes the fuel to flow from the fuel chamber through the main jet and into the main discharge jet where it is mixed with air admitted by the well vent jet. This mixture is then discharged into the air stream through the discharge jet, see Figure 4. The main jet controls the fuel delivery from about one-quarter to full throttle opening. To maintain a proper mixture ration a small amount of air is admitted through the well vent into the discharge jet through air bleed holes located in the discharge jet at a point below the level of fuel in the metering well.

CHOKE SYSTEM - Closing the choke valve when starting a cold engine restricts the air entering the carburetor through the air cleaner and creates an increase in suction on the jets. This increase in suction causes more fuel to be drawn into the engine and provides a richer mixture necessary for starting a cold engine. As soon as the engine starts to operate,

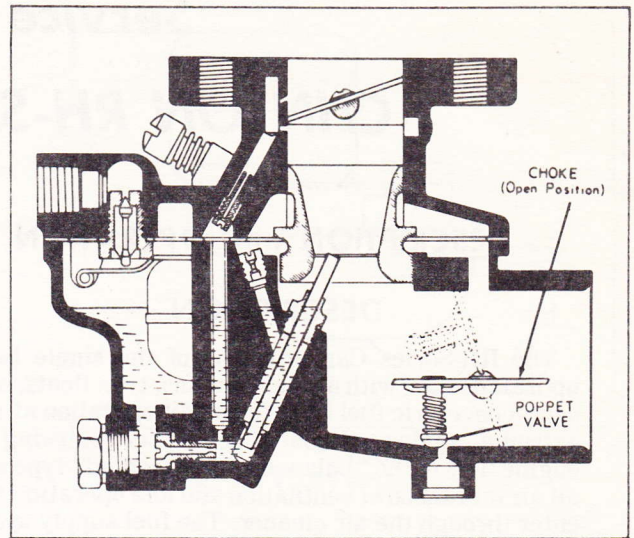


Fig. 5. Choke System

the spring-loaded poppet valve located within the choke valve opens to prevent over-choking. As the engine warms, the choke must be opened manually to the wide open position.

SERVICE PROCEDURE

IDENTIFY CARBURETOR - See page 3 for illustration.

The exploded view, Figure 6, identifies the component parts and shows their relationship to the complete carburetor. Use the exploded view key numbers to identify and locate the position of parts when performing both the dis-assembly and the assembly operation. For correct Repair Kit to use and for parts identification refer to Clinton Parts Catalog, Specification Sheet for the carburetor that is to be repaired.

DISASSEMBLY

SEPARATION OF THROTTLE AND FUEL BOWL BODIES

1. Remove four bowl to body screw and lock washer assemblies (28), using a screw-driver.
2. Raise throttle body slightly and separate gasket from fuel bowl flange, then lift off throttle body assembly being careful not to damage float assembly.

Clinton RH Series Carburetor

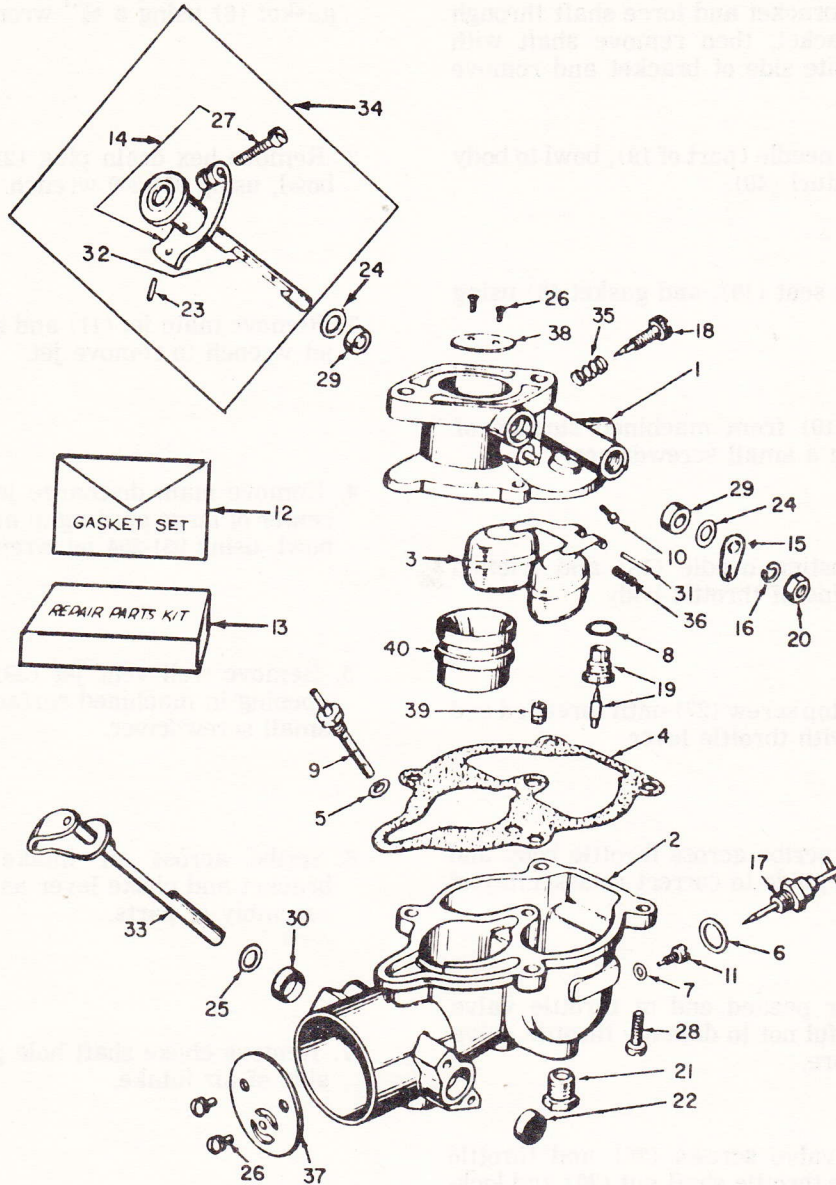


Fig. 6. Exploded View

KEY NO.	PART NAME	KEY NO.	PART NAME	KEY NO.	PART NAME
1.	BODY - Throttle	15.	LEVER - Throttle	29.	SEAL - Throttle Shaft
2.	BOWL - Fuel	16.	LOCKWASHER	30.	SEAL - Choke Shaft
3.	FLOAT ASSEMBLY	17.	NEDDLE ASSY - Main Adj.	31.	SHAFT - Float
4.	GASKET - Body	18.	NEEDLE - Idle Adj.	32.	SHAFT - Throttle
5.	GASKET - Discharge Jet	19.	NEEDLE & SEAT ASSY	33.	SHAFT & LEVER ASSY - Choke
6.	GASKET - Plug	20.	NUT	34.	SHAFT & LEVER ASSY - Throttle
7.	GASKET - Main Jet	21.	PLUG - Drain	35.	SPRING - Idle Needle
8.	GASKET - Valve Seat	22.	PLUG - Choke Shaft	36.	SPRING - Float
9.	JET- Discharge	23.	PIN - Throttle Stop	37.	VALVE - Choke
10.	JET - Idle	24.	RETAINER - Throttle Seal	38.	VALVE - Throttle
11.	JET - Main	25.	RETAINER - Choke Shaft Seal	39.	VENT - Well
12.	KIT - Gasket	26.	SCREW & LOCKWASHER	40.	VENTURI
13.	KIT - Repair	27.	SCREW - Throttle Stop		
14.	LEVER & STOP ASSY	28.	SCREW & LOCKWASHER		

DISASSEMBLY OF THROTTLE BODY

1. Press screwdriver against float shaft (31) at slotted side of float hinge bracket and force shaft through slotted side of bracket, then remove shaft with fingers from opposite side of bracket and remove float assembly (3).
2. Remove fuel valve needle (part of 19), bowl to body gasket (4) and venturi (40).
3. Remove fuel valve seat (19), and gasket (8) using 951-253 wrench.
4. Remove idle jet (10) from machined surface of throttle body, using a small screwdriver.
5. Remove idle adjusting needle (18) and friction spring (35) from side of throttle body.
6. Unscrew throttle stop screw (27) until threaded end of screw is flush with throttle lever.
7. Close throttle and scribe across throttle body and throttle levers as a guide to correct re-assembly of parts.
8. File off riveted or peened end of throttle valve screws, being careful not to damage throttle valve or throttle body bore.
9. Remove throttle valve screws (26) and throttle valve (38). Remove throttle shaft nut (20) and lock-washer (16). Using 951-250 wrench.
10. To remove throttle shaft seal and seal retainer from throttle shaft hole, screw a 5-16" fine thread taper tap into packing retainer (24) until firmly seated. Insert long punch or rod in opposite shaft hole and drive punch against end of tap until retainer is free of throttle body. Remove tap and repeat operation for removal of seal and retainer from opposite shaft hole.

NOTE: Do not disassemble throttle valve, throttle shaft, and stop lever assembly, throttle seals and seal retainers from throttle body unless throttle shaft is bent or otherwise damaged or unless there is damage or visible wear to other components of throttle assembly.

DISASSEMBLY OF FUEL BOWL BODY

1. Remove main jet adjustment assembly (11) and gasket (6) using a 1/2" wrench.
2. Remove hex drain plug (21) from bottom of fuel bowl, using 951-249 wrench.
3. Remove main jet (11) and gasket (7) using 951-248 jet wrench to remove jet.
4. Remove main discharge jet (9) and gasket from center of large opening in machined surface of fuel bowl, using 951-254 jet wrench.
5. Remove well vent jet (39) from center of large opening in machined surface of fuel bowl, using a small screwdriver.
6. Scribe across air intake body section, choke bracket and choke lever as a guide to correct re-assembly of parts.
7. Remove choke shaft hole plug (22) from opposite side of air intake.
8. Remove choke valve screws (26), choke valve (37) and choke shaft (33) from air intake section.
9. To remove choke shaft seal and seal retainer from choke shaft holes, screw a 5-16" fine thread taper tap into seal retainer (25) until firmly seated. Then insert long punch or rod in opposite shaft hole and drive punch against end of tap until retainer is free of air intake body. Remove tap from retainer.

NOTE: Do not disassemble choke levers, shaft and choke valve unless there is damage to any of above parts or damage to any of the other component parts of the assembly.

CLEANING

Thoroughly clean all metal parts in Bendix Metalclene or Speedclene and rinse in solvent. Blow out all passages and channels in the castings with compressed air. Reverse the air flow through each passage to insure the removal of all dirt particles. NEVER USE A WIRE OR DRILL TO CLEAN OUT THE JETS.

INSPECTION

Inspect all parts and replace any that are damaged or worn. Replace throttle shaft if shaft is bent or if shaft shows evidence of wear on the bearing surfaces. Always use a Clinton Repair Kit. For correct Repair Kit, refer to Clinton Parts Catalog Specification Page. Follow procedure outlined below for Removal and Replacement of Throttle Shaft Bushings.

ASSEMBLY OF FUEL BOWL BODY

1. Insert seal (30) in open side of seal retainer (25) and place assembly on bushing driver with seal facing small end of driver.
2. Insert small end of driver into choke shaft hole; start retainer into counter bore in body and lightly drive retainer into body until flush with machined surface.
3. Insert choke shaft lever (33), as the case may be, into the air intake and install choke valve (37) in same position in air intake with poppet valve facing the same way as it was before dis-assembly.
4. Align holes in valve with holes in shaft and install choke valve screws (26), leaving screws loose. Close choke valve for best closing and then tighten screws, using a small screwdriver.
5. Install choke shaft hole plug (22).
6. Install main discharge jet (9) and gasket in fuel bowl and tighten jet firmly, using jet wrench.
7. Install well vent jet (39) in fuel bowl and tighten, using a small screwdriver.
8. Place gasket (7) on main jet (11) and install jet in threaded opening at side of fuel bowl, using 951-254 jet wrench.
9. Install main jet adjustment (17) and gasket, in threaded passage at side of fuel bowl, using 1/2" wrench.
10. Replace bowl drain plug (21).

ASSEMBLY OF THROTTLE BODY

1. Insert seal (29) in open side of seal retainer (24) and place assembly on bushing driver with seal facing small end of driver. 951-252.
2. After inserting small end of driver into throttle shaft hole, start retainer into counter-bore in throttle body and lightly drive retainer into body until flush with machined surface or slightly below the surface to avoid striking throttle lever.
3. Insert throttle shaft and lever assembly (14) in throttle body. Rotate shaft to wide open; then insert throttle valve (38) in shaft and rotate to closed position, holding valve in position with fingers. Make certain beveled sides of valve fit against throttle bore when valve is closed.
4. Start throttle valve screws (26) leaving screws loose. Close throttle valve several times, making sure valve is centered in throttle bore. Then tighten screws, using small screwdriver.
5. Install idle adjusting needle (18) and friction spring (35) in threaded passage at side of throttle body. Turn needle in lightly against its seat, then back out needle 1/4 turns as a preliminary adjustment.

6. Install idle jet (10) in machined surface of throttle body, using a small screwdriver.

7. Install fuel valve seat (19) and gasket (8), using a 951-253 wrench.

8. Install venturi (40) in throttle bore, large opening end first. Then place new bowl to body gasket (4) on machined surface of throttle body, making sure venturi flange is set in throttle body recess below gasket.

9. Install fuel valve needle (19) in seat and position float assembly (3) in hinge bracket. Figure (7) float spring.

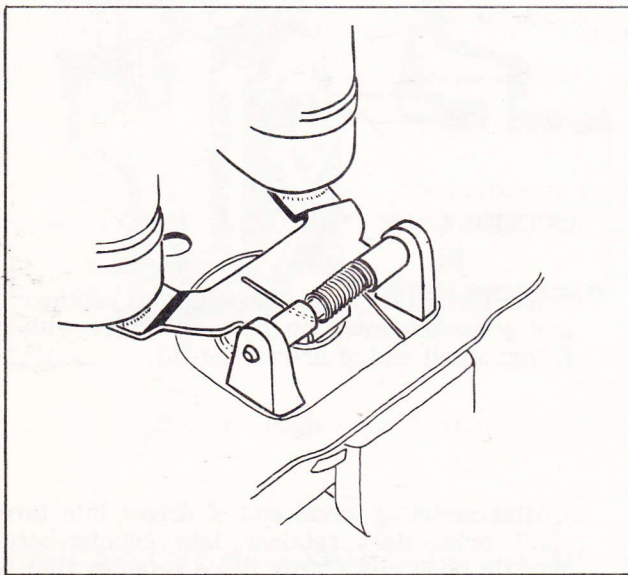


Fig. 7. Float Setting

10. Insert float shaft through hinge bracket and float lever bushing from side opposite slot in hinge bracket with fingers only. Install float spring as shown Figure 7 above. Then press float shaft (31) through slotted side of bracket, using handle of screwdriver.

11. To insure correct fuel level in the float chamber, check distance "A" from top of floats to machined surface of throttle body (no gasket) with throttle body inverted, see Figure 8. This dimension should be 1 and 5-32" plus or minus 1-32". To increase or decrease distance from top of float bodies to machined surface, use long nose pliers and bend lever close to float body.

NOTE: Do not bend, twist or apply pressure on the float bodies. The float bodies when viewed from the free end of the bodies must be centered and at right angles to the machined surface and must move freely on the float axle.

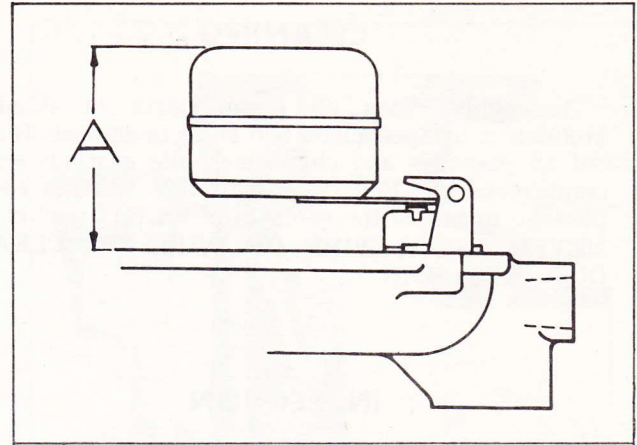


Fig. 8. Float Setting

ASSEMBLY OF THROTTLE AND FUEL BOWL BODIES

1. Place fuel bowl assembly in position on throttle body, being careful not to damage floats. Then align holes in fuel bowl with holes in gasket and throttle body.
2. Install four bowl to body screw and lockwasher assemblies (22) and tighten screws securely, using screwdriver.
3. With throttle held in closed position, turn throttle stop screw (27) in until stop screw just contacts throttle stop and then turn stop screw IN 1½ additional turns as a preliminary idle speed setting.

Assembly is now completed.

SPECIAL TOOLS REQUIRED

951-248	Main Discharge Wrench
951-249	Plug Wrench
951-250	Shaft Nut Wrench
951-252	Bushing Driver
951-253	Fuel Valve Seat Wrench
951-254	Main Jet Wrench