

CHAPTER 9

TYPE Y-S CARBURETOR, MODEL 637S

Section I. DESCRIPTION AND DATA

89. Description

The type Y-S carburetor (fig. 55) is a single throat unit of water-proof design for use on deep fording vehicles.

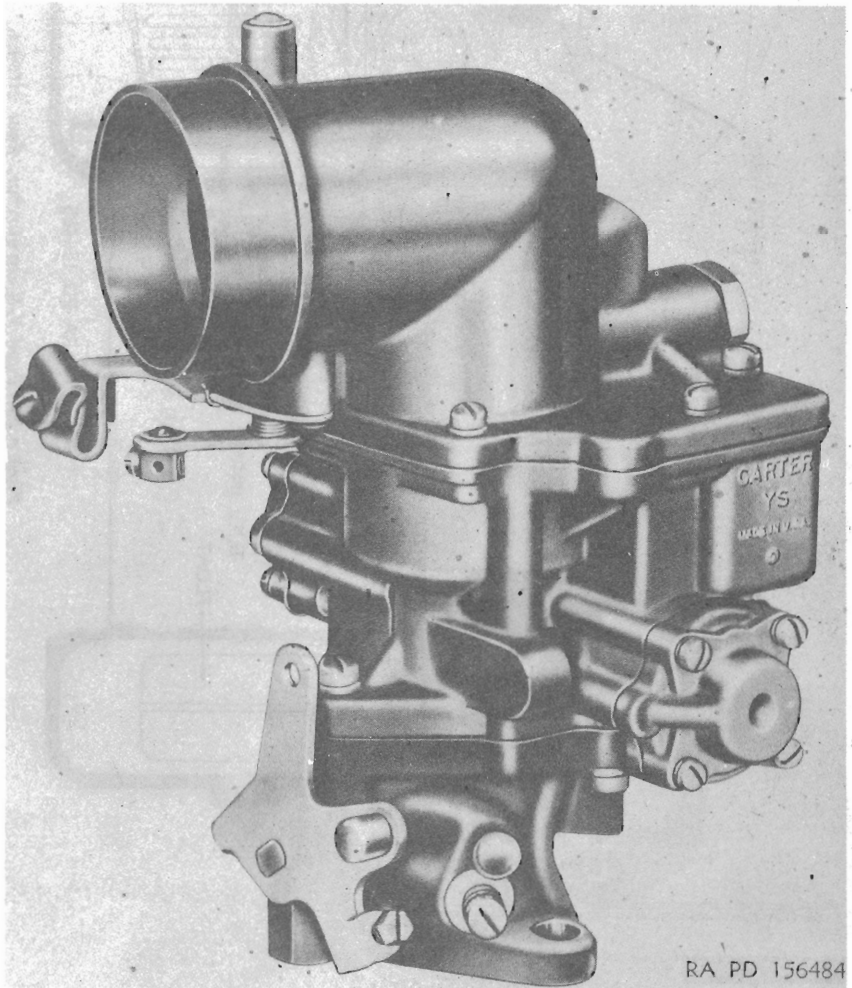


Figure 55. Type Y-S carburetor, model 637S.

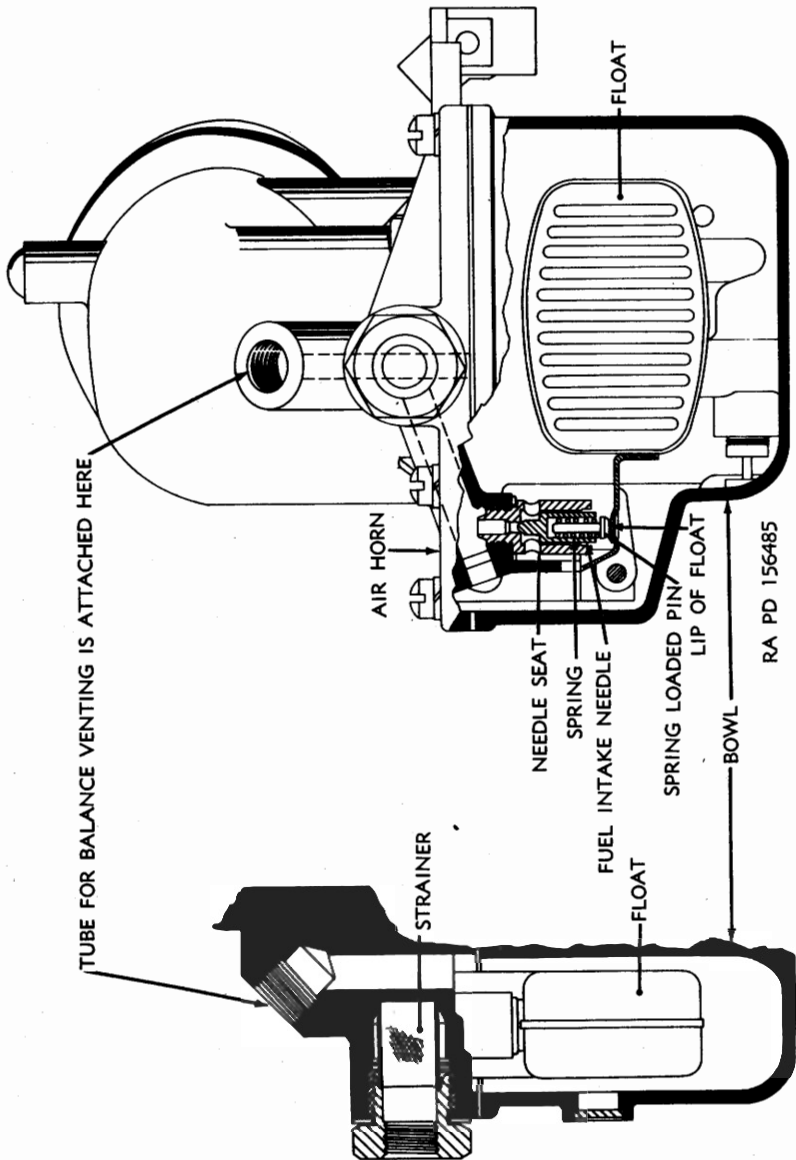


Figure 56. Type Y-S carburetor, float circuit.

90. Float Circuit

(fig. 56)

The operation of the float circuit is conventional (par. 13). The fuel intake needle is hollow to permit the insertion of a spring and pin. The lip of the float bears on this spring loaded pin, which serves to prevent flooding due to needle chatter, caused by excessive vibration. The bowl is "balance" vented by means of an external tube which connects the air horn to the air cleaner.

91. Low-Speed Circuit

(fig. 57)

Fuel, which passes through the metering rod jet, is metered to the low-speed circuit by the low-speed jet tube. The fuel passes through two orifices in the tube, one at the bottom and another in the side (auxiliary jet). The second orifice is at a point about three-quarters of an inch from the end of the low-speed jet tube, inside the bleeder tube. The fuel passes through the low-speed jet tube, the upper end of which is pressed into the air horn, across the passage in the air horn, where it is mixed with air entering from the bypass through the economizer, and down through the passage cast into the main body flange, and then down through the passage in the throttle body. Fuel is discharged from the idle port and idle adjustment screw hole. Note that the main body gasket forms one side of the cross passage in the main body. It is important that no air be allowed to leak in at this point.

92. High-Speed Circuit

(fig. 58)

a. General. Fuel is metered to the high-speed circuit by the orifice provided by the metering rod jet and metering rod. It flows through the high-speed passage, where it is mixed with air entering from the bowl by way of the bleeder tube. The mixture is then discharged from the high-speed nozzle at the throat of the primary (inner) venturi.

b. Vacuum Operated Metering Rod. The metering rod is vacuum operated by means of a neoprene metering rod diaphragm. The metering rod is loosely pinned to a brass sleeve which is riveted to the diaphragm. One side of the diaphragm is exposed to intake manifold vacuum by means of a passage leading to an opening in the carburetor bore, below the throttle valve. The other side of the diaphragm is acted upon by the pressure in the bowl. The manifold pressure side of the diaphragm is acted upon by a compression spring in addition to the manifold vacuum. Under low or intermediate load conditions, when intake manifold vacuum is high, the diaphragm is

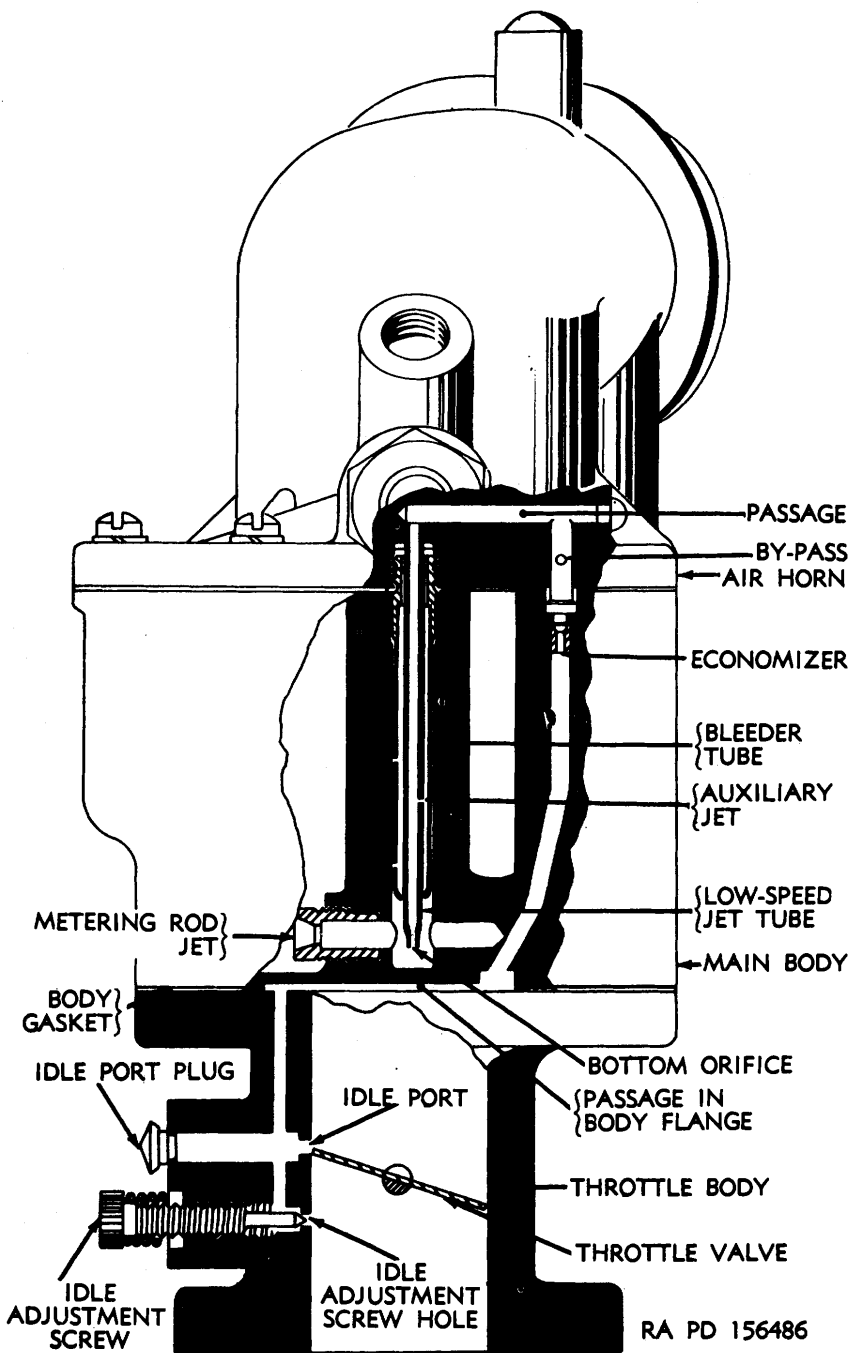
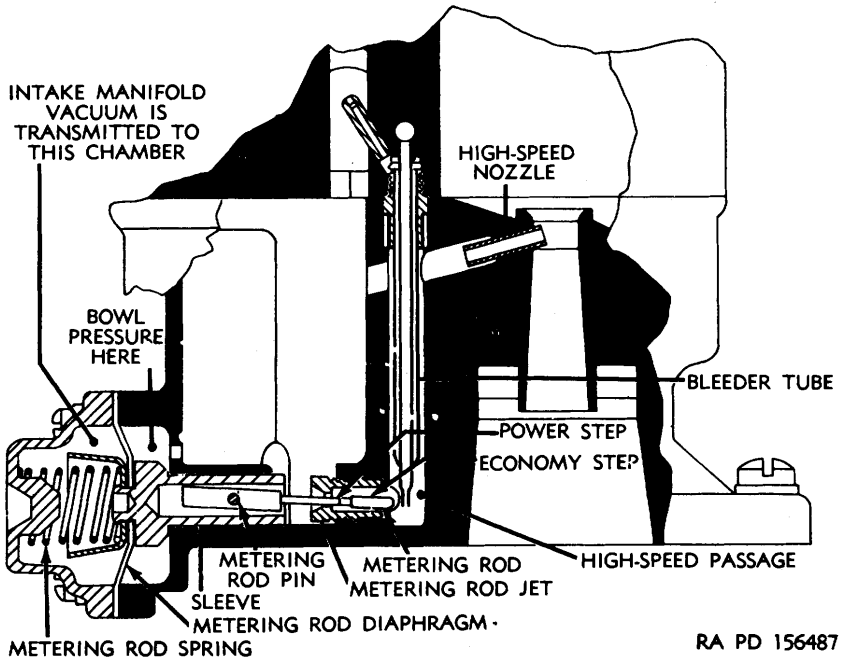


Figure 57. Type Y-8 carburetor, low-speed circuit.



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Figure 58. Type Y-S carburetor, high-speed circuit.

held back against the force of the spring. This results in the positioning of the larger (economy) step of the metering rod in the jet. When manifold vacuum drops, under high load conditions, the spring forces the diaphragm forward, positions the smaller (power) step of the metering rod in the jet and permits the required additional fuel to flow.

93. Pump Circuit (fig. 59)

The operation of the pump circuit is quite similar to that described for the vacuum operated metering rod; however, the movement of the diaphragm, instead of positioning the metering rod, is used to pump a small quantity of fuel from the bowl into the carburetor bore. When the throttle is opened, intake manifold vacuum drops, the spring forces the diaphragm forward, closing the intake check valve and forces a charge of fuel through the discharge check and out of the pump jet into the bore of the carburetor. When the throttle is closed, the intake manifold vacuum increases and the diaphragm is pulled back. This action closes the discharge check valve and draws a supply of fuel from the bowl into the pump via the open intake check valve.

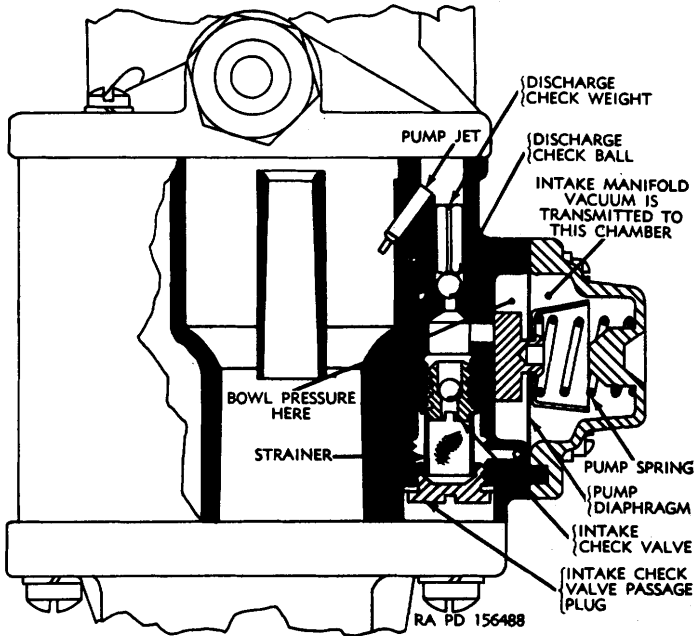


Figure 59. Type Y-S carburetor, pump circuit.

94. Choke Circuit

A manually operated choke is used. A poppet valve, built into the choke valve plate, gives inward relief to prevent flooding when the choke is closed.

95. Data

Table VIII gives the following data for the Y-S carburetor: sizes of main venturi, bypass, and economizer; stock numbers of the metering rod, metering rod jet, low-speed jet, repair parts package, gasket assortment, float level setting, and gage number.

Table VIII. Y-S carburetor, model 6378.

Main venturi (diam-in).....	1½	Metering rod jet.....	7372519
Bowl vent.....	Balance vented, by		CAR-120-157
	means of tube	Repair parts package.....	7372520
	from air horn		CAR-1500
	to air cleaner.	Gasket assortment	737251L
Bypass (drill size).....	No. 52		CAR-188
Economizer (drill size).....	No. 56	Float level (in).....	¼
Metering rod	7372528	Float level gage.....	CAR-T100-31
	CAR-75-5958	Set idle adjustment (turns	
		open).....	1 to 1¼

Section II. REBUILD OF TYPE Y-S CARBURETORS

96. General

Most carburetor troubles are caused by dirt which restricts jets and air bleeds or interferes with the free operation of moving parts. The instructions which follow cover the procedures for completely cleaning and adjusting the carburetor. If the carburetor is to be rebuilt, it is advised that a complete repair parts package be installed. Obviously, if this is done, those parts which are to be replaced need not be cleaned and inspected. Whenever the carburetor is serviced a new gasket assortment should be installed.

97. Disassembly

(fig. 60)

a. Disassemble Main Body.

- (1) Remove air horn lock washer screws (AJ) and lift air horn (AH) and gasket off.
- (2) Remove discharge check ball (HH) and discharge check ball weight (JJ) by inverting carburetor.
- (3) Remove pump diaphragm housing lock washer screw (V), pump diaphragm housing (W), pump spring (X), and pump diaphragm (Y).
- (4) Remove metering rod diaphragm housing (FF), metering rod spring (BB), metering rod (CC), and metering rod diaphragm (DD). Detach metering rod pin (EE) and metering rod (CC) from diaphragm.
- (5) Unscrew metering rod jet (AA).
- (6) Remove main body lock washer screw (D) and gasket (Q) from main body (Z) and throttle body (E).
- (7) Remove intake passage plug (R), intake passage plug gasket (S), pump strainer (T), and intake check valve (U).

b. Disassemble Air Horn.

- (1) Remove float pin (AL) and float (LL).
- (2) Remove fuel intake needle (PP), needle seat (QQ), needle seat gasket (RR), intake needle pin (MM), and intake needle spring (NN).
- (3) Remove choke tube bracket lock washer screw (XX), choke tube bracket (YY), and choke spring (WW).
- (4) Remove choke valve plate screw (AE), choke valve plate (AF), and choke shaft and lever (TT).
- (5) Drive out choke shaft plug (AG).
- (6) Remove choke shaft seal washer (AC) and choke shaft seal (AD).

A—THROTTLE VALVE PLATE
 SCREW
 B—THROTTLE VALVE PLATE
 C—EXPANSION PLUG
 D—MAIN BODY LOCK WASHER
 SCREW
 E—THROTTLE BODY
 F—THROTTLE SHAFT SEAL
 G—THROTTLE SHAFT SEAL
 WASHER
 H—THROTTLE SHAFT AND
 LEVER
 J—THROTTLE ADJUSTMENT
 SCREW
 K—IDLE PORT PLUG
 L—IDLE ADJUSTMENT SCREW
 DUST SEAL
 M—IDLE ADJUSTMENT SCREW
 DUST SEAL WASHER
 N—IDLE ADJUSTMENT SCREW
 SPRING
 P—IDLE ADJUSTMENT SCREW
 Q—MAIN BODY GASKET
 R—INTAKE PASSAGE PLUG
 S—INTAKE PASSAGE PLUG
 GASKET
 T—PUMP STRAINER

U—INTAKE CHECK VALVE
 V—DIAPHRAGM HOUSING
 LOCK WASHER SCREW
 W—PUMP DIAPHRAGM HOUS-
 ING
 X—PUMP SPRING
 Y—PUMP DIAPHRAGM
 Z—MAIN BODY
 AA—METERING ROD JET
 BB—METERING ROD SPRING
 CC—METERING ROD
 DD—METERING ROD DIA-
 PHRAGM
 EE—METERING ROD PIN
 FF—METERING ROD DIA-
 PHRAGM HOUSING
 GG—MAIN BODY LOCK WASHER
 SCREW
 HH—DISCHARGE CHECK BALL
 JJ—DISCHARGE CHECK BALL
 WEIGHT
 KK—AIR HORN GASKET
 LL—FLOAT
 MM—INTAKE NEEDLE PIN
 NN—INTAKE NEEDLE SPRING
 PP—FUEL INTAKE NEEDLE
 QQ—NEEDLE SEAT

RR—NEEDLE SEAT GASKET
 SS—BLEEDER TUBE
 TT—CHOKE SHAFT AND LEVER
 UU—CHOKE WIRE CLAMP
 SCREW
 VV—TUBE CLAMP NUT
 WW—CHOKE SPRING
 XX—CHOKE TUBE BRACKET
 LOCK WASHER SCREW
 YY—CHOKE TUBE BRACKET
 ZZ—TUBE CLAMP
 AB—TUBE CLAMP SCREW
 AC—CHOKE SHAFT SEAL WASHER
 AD—CHOKE SHAFT SEAL
 AE—CHOKE VALVE PLATE
 SCREW
 AF—CHOKE VALVE PLATE
 AG—CHOKE SHAFT PLUG
 AH—AIR HORN
 AJ—AIR HORN LOCK WASHER
 SCREW
 AK—STRAINER
 AL—FLOAT PIN
 AM—STRAINER NUT GASKET
 AN—STRAINER NUT

Figure 60. Type Y-S carburetor, model 637S—exploded view.

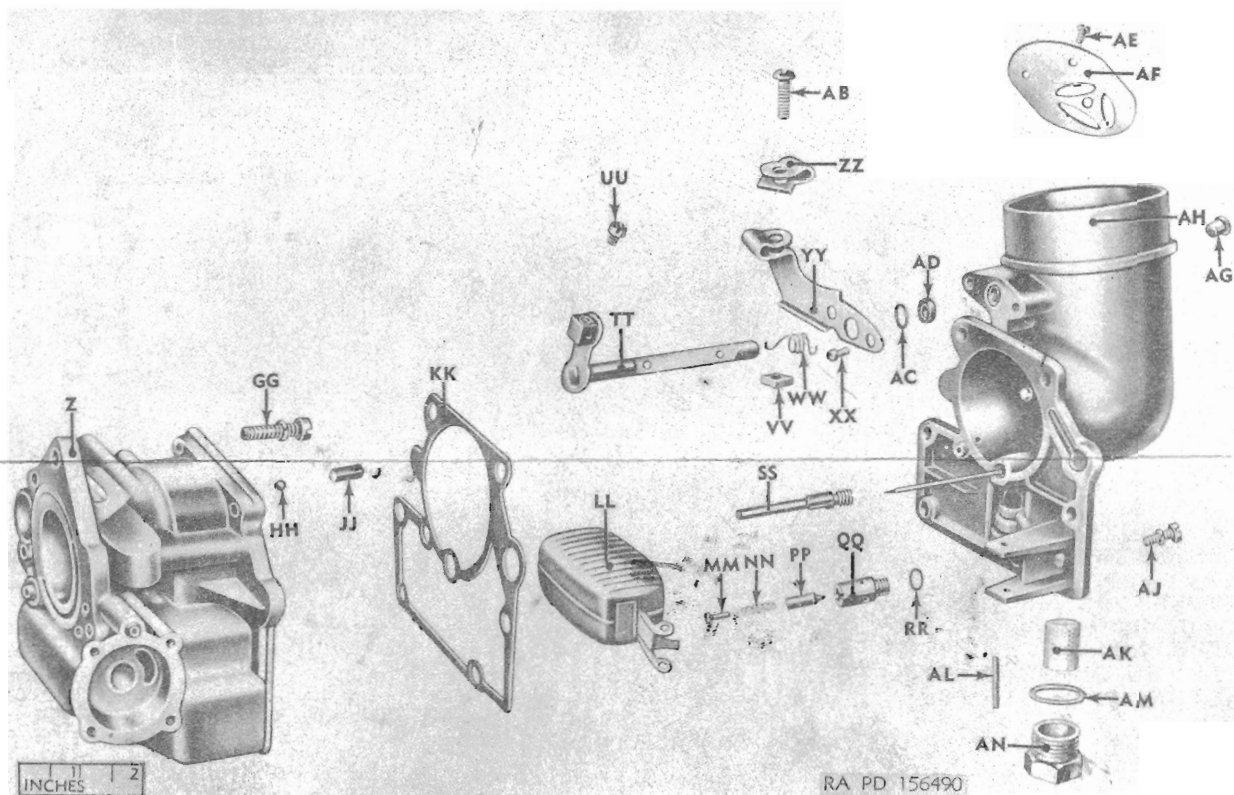
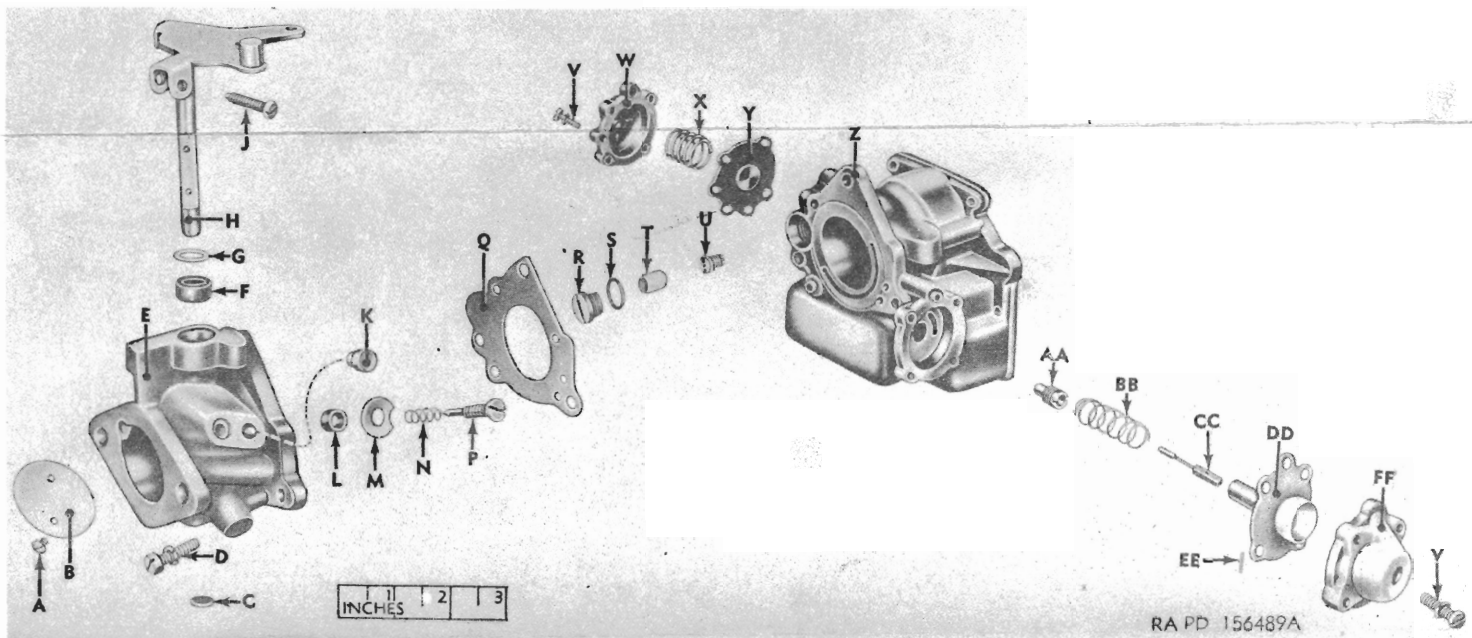


Figure 60. Type Y-S carburetor, model 6378—exploded view—Continued

- (7) Remove strainer nut (AN), strainer nut gasket (AM), and strainer (AK).
 - (8) Remove bleeder tube (SS) (use 1/4-inch open end wrench).
- c. Disassemble Throttle Body.*
- (1) Remove idle adjustment screw (P), idle adjustment screw spring (N), idle adjustment screw dust seal washer (M), and idle adjustment screw dust seal (L).
 - (2) Remove idle port plug (K).
 - (3) Remove throttle valve plate screw (A), throttle valve plate (B) and throttle shaft and lever (H).
 - (4) Drive out throttle shaft seal (F) and throttle shaft seal washer (G).

98. Cleaning

Soak all parts, except seals and diaphragms, in dry-cleaning solvent or volatile mineral spirits for at least 20 minutes. Blow out all castings with compressed air. Blow out all passages by applying tip of blow gun directly to the opening into the passage. Remove any carbon accumulation from the bore of the throttle body by scraping or with wet or dry sandpaper.

Caution: Do not use emery cloth.

Blow out all nozzles and jets, and bleeder tube with compressed air.

99. Inspection and Repair

(fig. 60)

a. Air Horn, Main Body, and Throttle Body:

- (1) Check air horn (AH) for warpage, out of roundness, and wear on the choke shaft bearings. Replace if necessary.
- (2) Inspect throttle body (E) for wear on the throttle shaft bearings. Replace if worn.
- (3) Be sure that all passages in air horn (AH), main body (Z), and throttle body (E) are clear.

b. Float Circuit.

- (1) Check fuel intake needle (PP) and needle seat (QQ) for wear (par. 31b(1)). Replace if necessary.
- (2) Inspect float (LL) for loading, damage, and wear. Replace if necessary. If lip of float is worn, it should be smoothed with fine emery cloth.

Note.—Do not file.

- (3) Inspect float pin (AL) for wear. Replace if worn.

c. High-Speed Circuit. Be sure that metering rod diaphragm housing (FF) is not warped. If it is, true the surface by draw filing. Carefully inspect the diaphragm for damage or wear. Replace if there is any doubt as to its serviceability.

d. Pump Circuit.

- (1) Make certain that the intake check valve (U) is operating properly by blowing through it.
- (2) Be sure that pump diaphragm housing (W) is not warped. If it is, true the surface by draw filing. Carefully inspect the pump diaphragm (Y) for damage or wear. Replace if there is any doubt as to its serviceability.

100. Assembly

(fig. 60)

a. Group Parts.

Note.—Parts for the five circuits listed in (1) through (5) below when grouped as directed will greatly facilitate assembly of the carburetor.

- (1) Group all float circuit parts including fuel intake needle (PP), needle seat (QQ), needle seat gasket (RR), float (LL), float pin (AL), strainer (AK), strainer nut (AN), and strainer nut gasket (AM).
- (2) Group all low-speed circuit parts including throttle valve plate (B), throttle shaft and lever (H), throttle shaft seal (F), throttle shaft seal washer (G), idle adjustment screw (P), idle adjustment screw spring (N), idle adjustment screw dust seal (L), idle adjustment screw dust seal washer (M), and idle port plug (K).
- (3) Group all high-speed circuit parts including metering rod (CC), metering rod pin (EE), metering rod diaphragm (DD), metering rod spring (BB), metering rod diaphragm housing (FF), metering rod jet (AA), and bleeder tube (SS).
- (4) Group all pump circuit parts including pump diaphragm (Y), pump spring (X), pump diaphragm housing (W), intake check valve (U), pump strainer (T), intake passage plug (R), intake passage plug gasket (S), discharge check ball (HH), and discharge check ball weight (JJ).
- (5) Group all choke circuit parts including choke valve plate (AF), choke shaft and lever (TT), choke shaft seal (AD), choke shaft seal washer (AC), choke tube bracket (YY), and choke shaft plug (AG).

b. Install Float Circuit Parts.

- (1) Install strainer (AK), strainer nut (AN), and strainer nut gasket (AM).
- (2) Install needle seat gasket (RR), needle seat (QQ), fuel intake needle (PP), intake needle spring (NN), and intake needle pin (MM).

- (3) Install float (LL) and float pin (AL).
 - (4) Set float level (par. 101).
- c. Install Low-Speed Circuit Parts.*
- (1) Install new throttle shaft seal (F).
 - (2) Install throttle shaft seal washer (G).
 - (3) Install throttle shaft and lever (H), throttle valve plate (B), and throttle valve plate screw (A). Before tightening screws, centralize valve by tapping against seat.
 - (4) Install idle port plug (K).
 - (5) Install idle adjustment screw dust seal (L), idle adjustment screw dust seal washer (M), idle adjustment screw (P), and idle adjustment screw spring (N).
- d. Install Pump Circuit Parts.*
- (1) Install intake check valve (U), pump strainer (T), intake passage plug (R), and intake passage plug gasket (S).
 - (2) Install main body (Z) and main body gasket on throttle body (E) with main body lock washer screw (D).
 - (3) Install discharge check ball (HH) and discharge check ball weight (JJ).
 - (4) Install pump diaphragm (Y), pump spring (X), and pump diaphragm housing (W) with diaphragm housing lock washer screw (V).
- e. Install High-Speed Circuit Parts.*
- (1) Install bleeder tube (SS) in air horn (AH).
 - (2) Assemble air horn (AH) and air horn gasket (KK) to main body (Z) with main body lock washer screw (GG).
 - (3) Install metering rod jet (AA).
 - (4) Assemble metering rod (CC) to sleeve with metering rod pin (EE).
 - (5) Install metering rod spring (BB), metering rod diaphragm (DD) (as assembled), and metering rod diaphragm housing (FF) using diaphragm housing lock washer screw (V).
- f. Install Choke Circuit Parts.*
- (1) Install new choke shaft seal (AD).
 - (2) Install choke shaft seal washer (AC).
 - (3) Install choke tube bracket (YY) and choke spring (WW) with choke tube bracket lock washer screw (XX).
 - (4) Install choke shaft and lever (TT).
 - (5) Install choke valve (with stem of poppet valve pointing out) and choke valve plate screw (AE). Centralize valve by tapping against bore before tightening screws.
 - (6) Install choke shaft plug (AG).

Section III. ADJUSTMENT OF TYPE Y-S CARBURETORS

101. General

The only adjustment which can be made on this carburetor is float level setting. It is important that this be done accurately since the proper functioning of the high-speed circuit depends to a large extent upon the maintaining of the correct fuel level.

102. Float Level Adjustment

(fig. 61)

Invert the air horn and hold it level so that only the weight of the float is on the needle. The distance from the lowest point on the seam of the float to the machined surface of the bowl cover should be one-quarter inch as measured with float level gage CAR-T109-31. Adjust level by bending lip of float. Do not bend float.

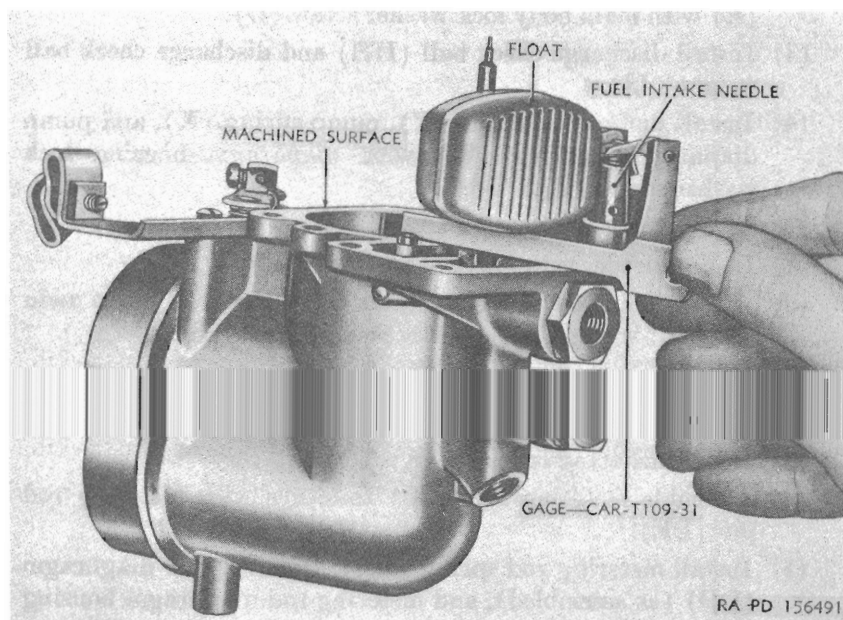


Figure 61. Adjusting float level with gage CAR-T109-31, type Y-S carburetor.