

MODELS MA4-5, MA4-5AA, MA5, MA6AA AIRCRAFT CARBURETOR SERVICE MANUAL

Warranty

Marvel-Schebler Division, Borg-Warner Corporation, warrants its products against defects in material and workmanship for a period of ninety days. Defective merchandise will be replaced without charge but labor charges incurred in the removal, disassembly or reinstallation of such products will not be allowed. No merchandise can be returned without written permission from the factory, transportation charges must be prepaid. The factory shall be the sole judge of defects in products returned. A

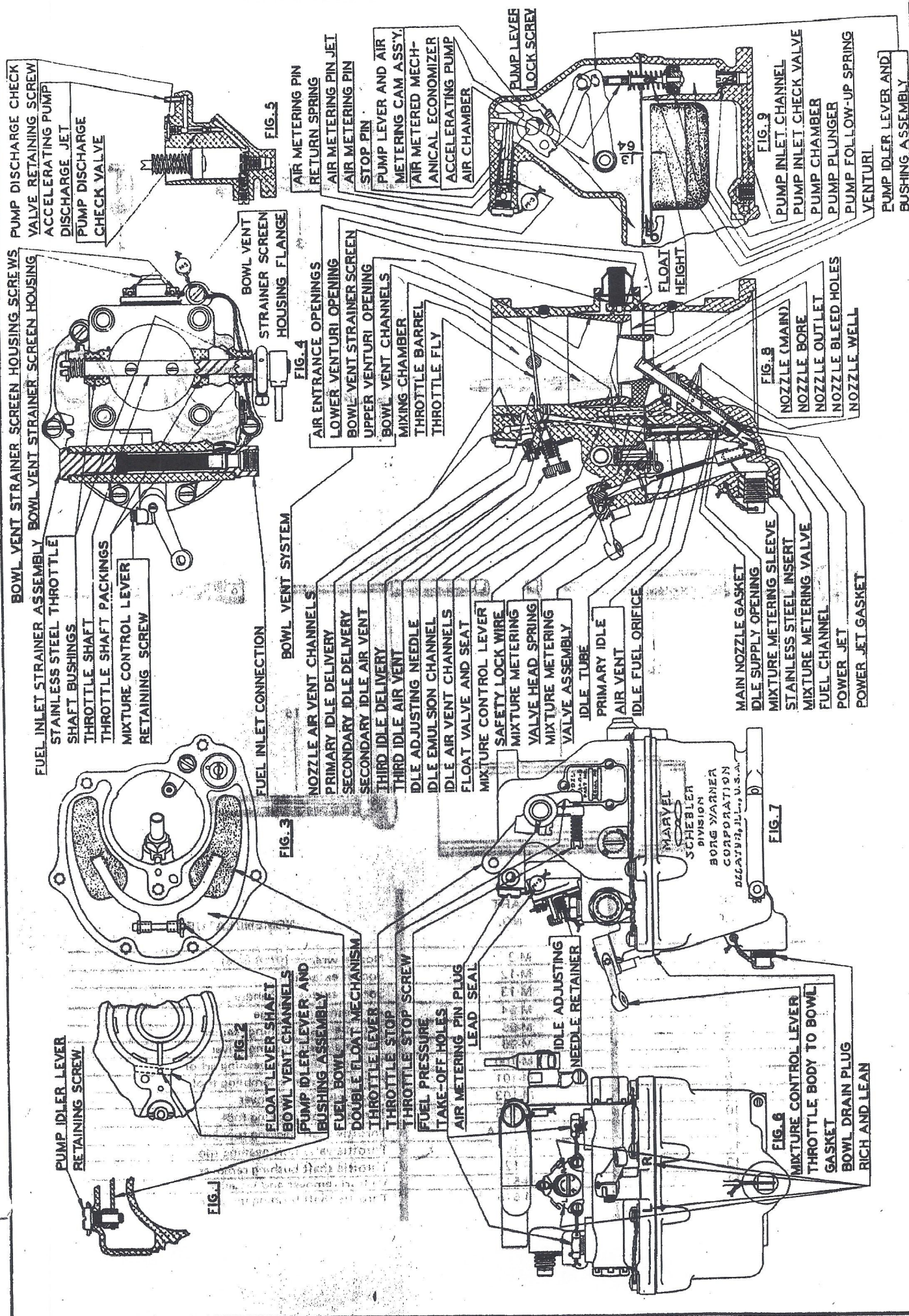
ten per cent handling charge will be made for all merchandise returned that is not defective. All prices are subject to change without notice, and we reserve the right to limit quantities and to make partial shipments unless specifically instructed otherwise. The obligation of the company under this warranty is limited to replacing at the factory, any complete units or parts thereof which shall be returned and which our examination shall disclose to have been defective.

MARVEL-SCHLEBLER
DIVISION OF BORG-WARNER CORPORATION
DECATUR, ILLINOIS

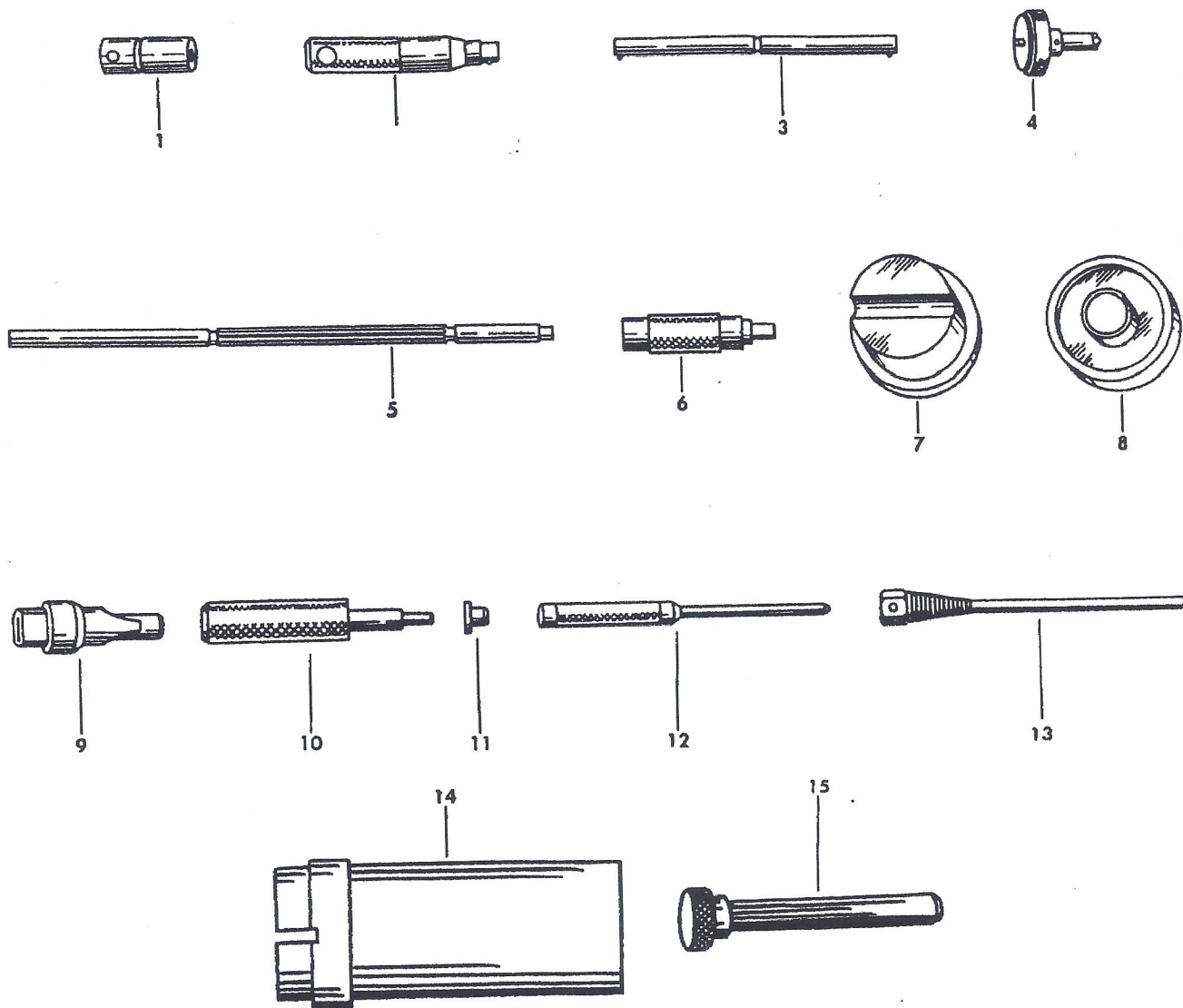


CONTENTS

SPECIAL TOOLS	Page 5
DISASSEMBLY PROCEDURE	Page 6
THROTTLE BODY DISASSEMBLY	Page 6
FUEL BOWL DISASSEMBLY	Page 8
CLEANING AND INSPECTION	Page 8
INSPECTION	Page 9
EXPLODED VIEW OF CARBURETOR	Pages 10 and 11
REASSEMBLY PROCEDURE	Page 12
SPECIAL TEST PROCEDURE	Page 13
ECONOMIZER SETTINGS	Page 14
ECONOMIZER SETTINGS USING M-94 GAGE TOOL	Page 15
FUEL BOWL ASSEMBLY	Page 17
ASSEMBLY OF THROTTLE BODY TO FUEL BOWL ASSEMBLY	Page 17
TEST PROCEDURE	Page 17
PRESERVATIVE TREATMENT	Page 18
SPECIAL SCREW TORQUE SPECIFICATIONS	Page 18
SUPPLEMENT	Page 18



SPECIAL TOOLS



REF. NO.	PART NO.	NOMENCLATURE
1	M-3	Nozzle wrench (9/16-inch)
2	M-12	Socket extension
3	M-13	Socket extension handle
4	M-94	Air metering pin gage
5	M-95	Throttle shaft bushing reamer
6	M-96	Throttle shaft bushing driver
7	M-100	Throttle valve bolt peening arbor
8	M-101	Primary venturi assembling tool
9	M-103	Float valve seat remover
10	M-105	Throttle shaft packing tool
11	M-105A	Throttle shaft packing tool arbor
12	M-107	Throttle valve bolt peening tool
13	M-122	Throttle shaft bushing remover
14	M-512	Venturi remover and installer
15	M-516	Throttle shaft bushing installer

All Marvel Schebler Aircraft Carburetors in this section are basically the same. Variations requiring special attention will be found in the Variations Section on page 18.

EXAMPLE

Some models have an automatic altitude adjustment feature (AMC) unit instead of manual mixture control. Idle fuel cut off may be either in the throttle body idle channel or in the bowl at the nozzle base.

Engineering improvements have and will continue to generate minor differences - refer to the specific parts list in all cases.

Standard MA 4-5 procedures: Refer to pages 18 and 19 for special instructions.

STANDARD MA 4-5 DISASSEMBLY PROCEDURE

Refer to exploded view, pages 10 and 11 for reference numbers

Bend tabs on safety washers (2) and remove Body to Bowl screws (1). (Old models may have safety wire and cross hole drilled screws.)

Tap casting (3) lightly with a soft hammer to loosen gasket and pull the casting straight apart to keep from damaging the float.

THROTTLE BODY DISASSEMBLY

Remove float shaft cotter pin (5), float shaft (6), float (7), retraction clip (8), and gasket (9).

Slip pump assembly (10) out of pump idler lever (11).

NOTE: The pump plunger assembly should be replaced at each major overhaul - however if it is serviceable and needs to be disassembled, press down on spring seat (12) and remove pin (13), spring (14), seat (15), plunger (16), spring (17) from plunger (18).

Remove throttle lever (19), and clamp screw (20).

Remove float valve (21), seat (22), and gasket (23). Use tool No. M-103 or larger screwdriver.

Remove float bracket screws (24) and bracket (25).

Remove mixture control clamp screw (26), safety washer (27), lever (28), safety spring (29), compression spring (30), thrust washer (31), and gasket (32).

Remove horseshoe washer (33), mixture metering valve (34), and washer (35).

Remove pump idler lever cotter pin (36), washer (37), pump idler lever screw (38), and safety washer (39).

Remove throttle valve screws (40), and throttle valve (41).

Remove throttle opening safety spring (74) (if used).

Loosen pump lever clamp screw (42) and slide out throttle shaft (43).

This will allow the pump idler and pump lever to be removed. Separate pump lever assembly (44) from idler lever (11) by removing cotter pin (45).

Remove fuel inlet filling (46), and washer (47).

Remove inlet strainer assembly (48), and safety washer (49).

Remove throttle adjusting screw (50), and spring (51).

Remove idle needle (52), spring (53), washer or gasket (54).

Remove idle needle retainer plate screws (55), safety washers (56), plate (57), and gasket (58).

Remove economizer channel plug safety wire (59), and seal (60), plug (61), and gasket (62).

Using tool No. M-94, remove economizer jet (63), economizer pin (64), and spring (65).

Remove pressure take off plugs (66), and idle drilling plug (67). (NOTE: The idle drilling access hole may have a temperature probe installed or may have been delivered for overhaul with no plug installed which would indicate the use of a probe - always install the plug (67) when returning unit to customer).

Remove bowl vent strainer screws (68), safety washers (69), flange (70), housing (71), gasket (72), and strainer (73). (NOTE: The strainer should not be re-used.)

Remove throttle shaft packing retainer (75), packing (76), with a small screw driver or awl.

Remove throttle shaft bushings (77) with tool No. M-122. See figures No. 1 and 2.

FIGURE 1

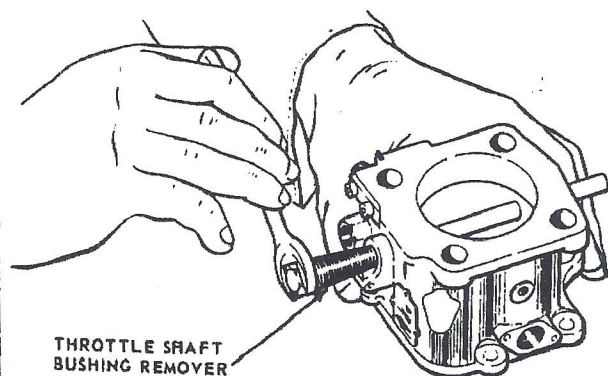
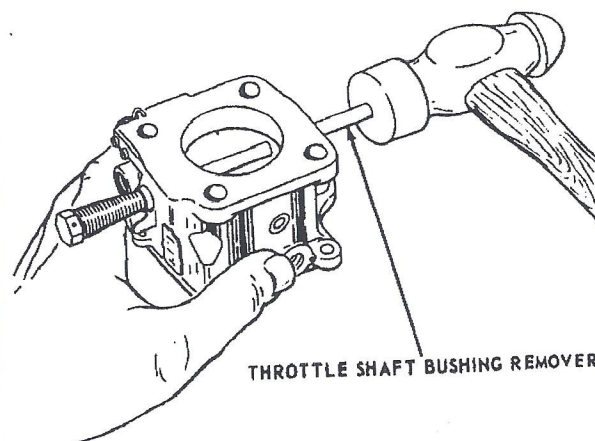


FIGURE 2



Remove inner throttle shaft packing (78), and retainer (79), and outer packing (opposite end of shaft) if used. (NOTE: A packing will be used on the throttle opening spring end of the throttle shaft on turbo-charged models only.)

Venturii or venturi assembly (80) seldom need service, however, if necessary, press out the venturi from the throttle valve side using tool No. M-512 as shown in figure 3.

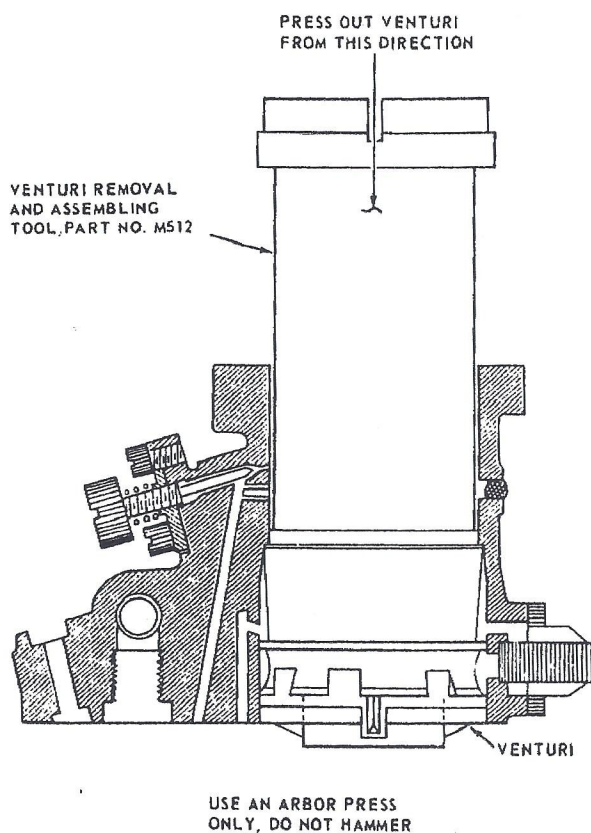


FIGURE 3

FUEL BOWL DISASSEMBLY

Remove idle tube (81).

Remove nozzle (82) by bending tabs on safety washer (83), and remove washer.

Remove lower nozzle gasket (84). (NOTE: This gasket may remain down in the base of the nozzle bore in casting - make sure it is removed.)

Remove drain plug (85) and channel plug (86).

Remove fuel baffle screw (87), safety washer (88), and baffle (89) if used.

Remove pump inlet check valve assembly (90).

Remove pump discharge valve retainer plug (91), spring (92) - if used - and valve (93).

Helicoil inserts (94) seldom require attention - if service is required, remove and replace in accordance with recommended Helicoil procedures.

CLEANING AND INSPECTION

Cleaning Process

Use a recommended carburetor cleaner and the cleaner manufacturer's procedure to soak, rinse, and blow out to assure complete cleaning.

Always replace: *

All gaskets

Seals and packing

Bushings

Float shaft

Retainers

Float valve and seat assembly

Accelerator pump

*Do not reuse any parts which in your opinion are not airworthy.

Carefully inspect the castings for cracks, warping or unusual wear or damage. Replace if not reusable.

Carburetor and carburetor parts have by design requirements very small passages, channels, and orifices. These are quite difficult to inspect. You will find invaluable the use of a medical tool. It is the Otoscope. This is the tool the doctor uses to examine your ears. We use this tool in our shop to inspect, build, and repair. They can be obtained from any medical supply house and can be used for inspecting many other aircraft parts.

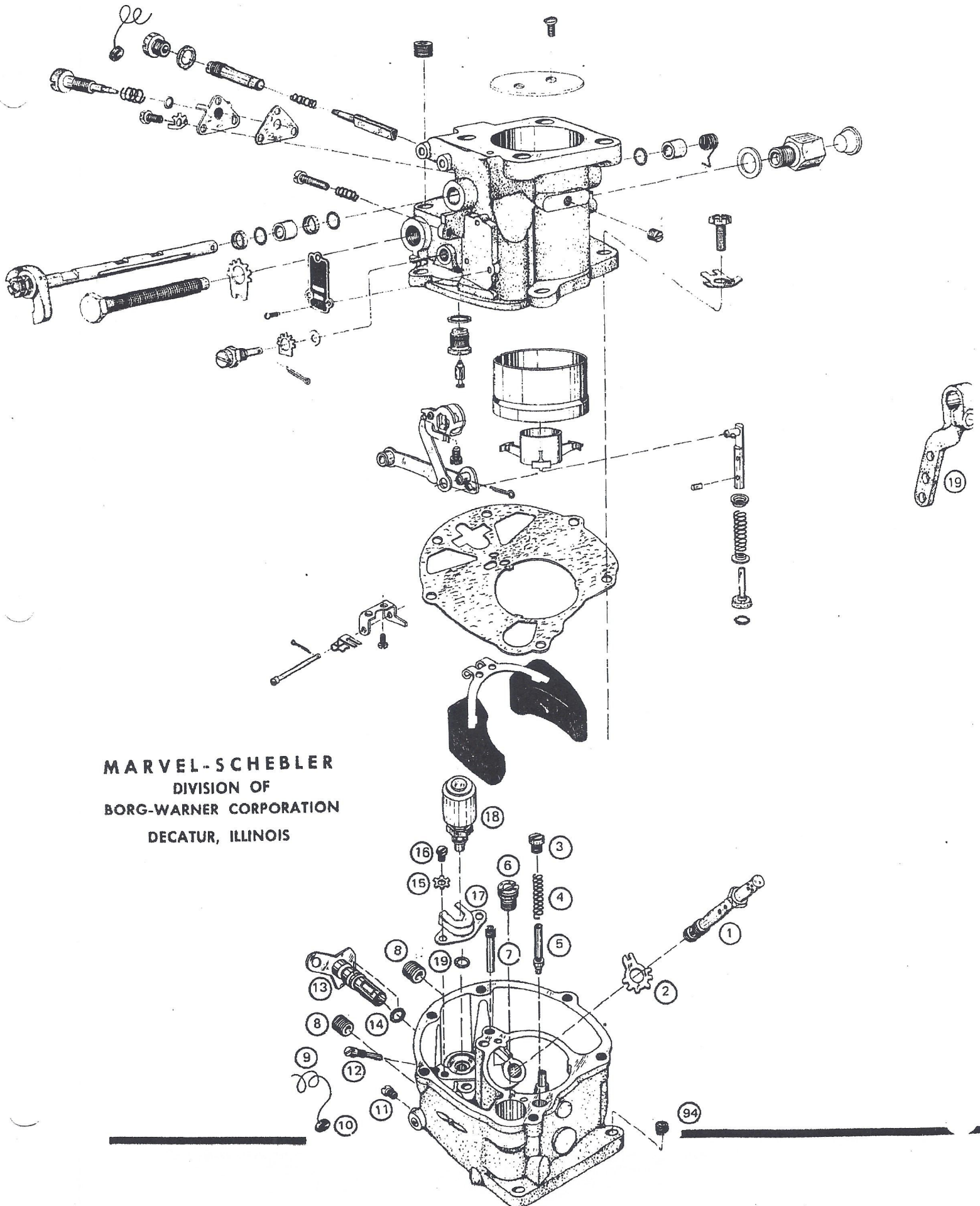
IMPORTANT: Do not clean passages in castings or calibrated parts with wire or small drills.

Inspection

Normal aircraft quality inspection techniques can determine reusability of carburetor components. Abnormal wear, cracks, warping damage are, of course, just cause for rejection.

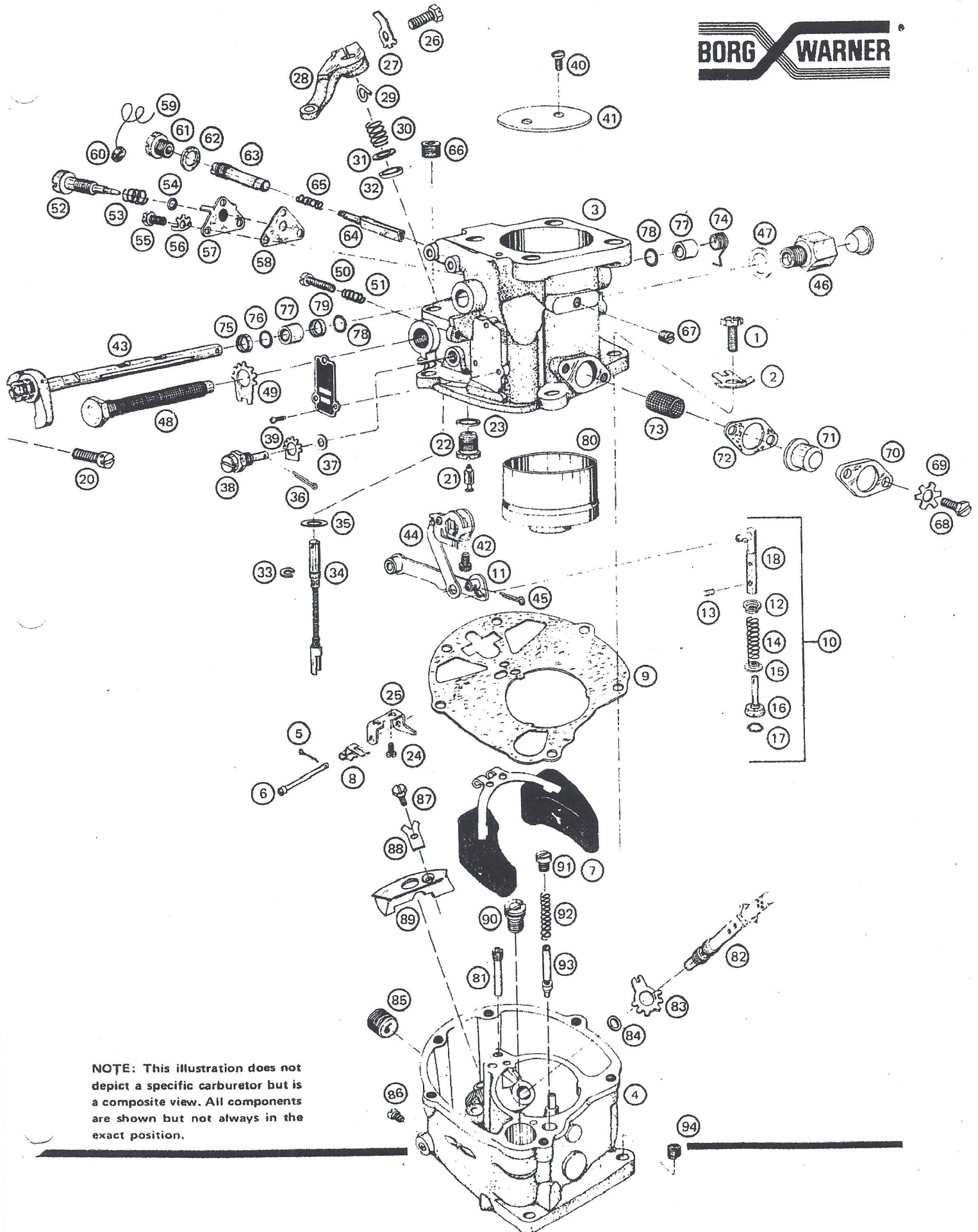
Late model aircraft are all equipped with soft engine mounts. This has created a more severe vibration environment, causing different carburetor wear characteristics in different aircraft. Careful inspection is required.

MANUAL MIXTURE CONTROL MODELS



MARVEL-SCHEBLER
DIVISION OF
BORG-WARNER CORPORATION
DECATUR, ILLINOIS

MANUAL MIXTURE CONTROL MODELS



NOTE: This illustration does not depict a specific carburetor but is a composite view. All components are shown but not always in the exact position.

MODEL MA 4-5 REASSEMBLY PROCEDURE

Throttle Body

Install throttle shaft bushings (77) using tool No. M-516 as shown in figure 4.

Lightly coat the bushing with Loctite Retaining Compound 75. No need to degrease bushing. Press bushing "A" in place first. Repeat as shown with bushing "B". Cure in location as shown from two to four hours. Heat not to exceed 110° may be used to speed curing.

NOTE: Repeated rebushing of older models with the old style steel bushings may have enlarged the bore with resultant loss of press fit. Make sure in this case that the loose bushings are in location as shown.

M-516 tool is an alignment tool also and line reaming should not be necessary. If necessary, use tool No. M-95. See figure 5.

Install inner throttle shaft packing (78) and retainer (79) on tool M-105A, hold in location with pliers and drive flush with tool M-105. See figure 6.

FIGURE 4

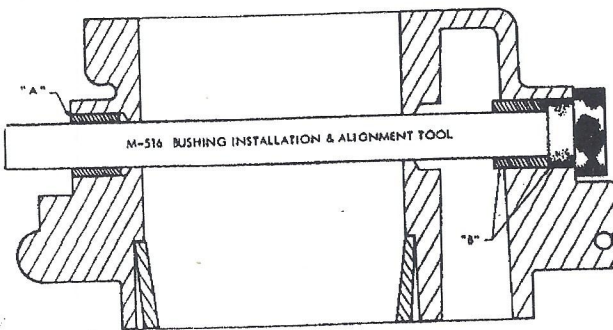
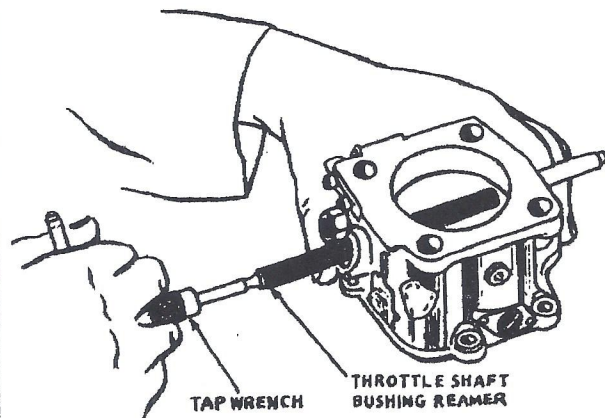


FIGURE 5



THROTTLE SHAFT PACKING
ASSEMBLING TOOL

PLIERS

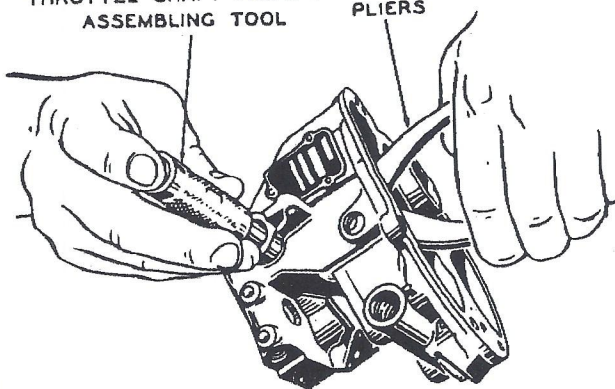
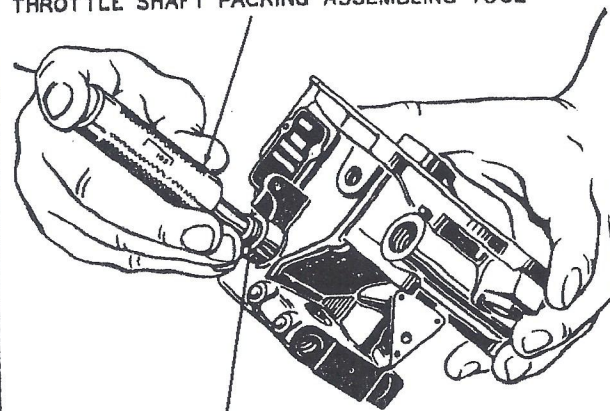


FIGURE 6

THROTTLE SHAFT PACKING ASSEMBLING TOOL



OUTSIDE THROTTLE SHAFT PACKING FIGURE 7

Install outer packing (76) and retainer (75) with tool M-105. See figure 7.

Carburetors used on turbo-charged engines use a packing "O" ring on the opposite end of shaft. It can be inserted at this time in the cavity at the base of the bushing counterbore. See figure 4, bushing "A".

Assemble pump idler lever (11) to pump lever assembly (44) with cotter pin (45) and bend cotter ends all the way back.

Hold the pump lever in location. See figure 8. Very carefully slide throttle shaft (43) through the bore and pump lever. NOTE: Extreme care should be exercised to keep from damaging the packings during this installation. Lightly lubricating the shaft will help. Secure the pump lever (44) in place in the flat provided on the throttle shaft and tighten it in place with special screw (42).

Install throttle valve (41) with screws (40). Tap throttle valve lightly to seat it accurately in bore.

FIGURE 8

PUMP IDLER LEVER
AND BUSHING ASSEMBLY

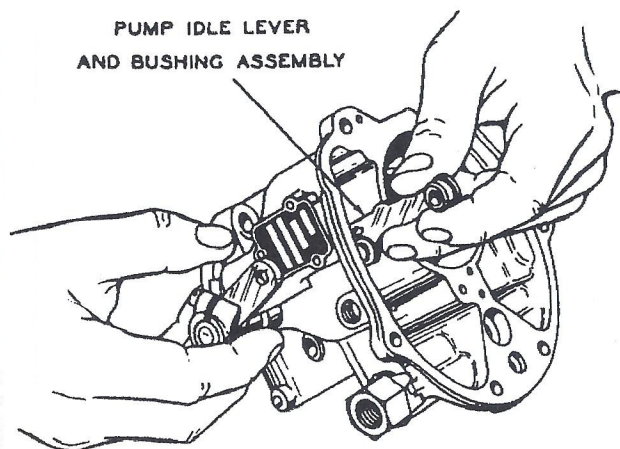
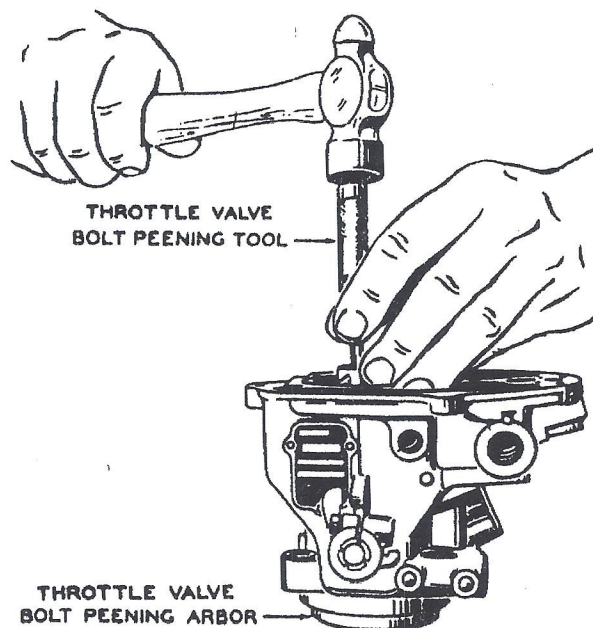


FIGURE 9

THROTTLE VALVE
BOLT PEENING TOOL

THROTTLE VALVE
BOLT PEENING ARBOR



SPECIAL TEST PROCEDURE

Leaking packings cause considerable trouble and an easy method to check before proceeding is recommended. Invert casting and pour a test liquid into the cavity to cover packings. Blow compressed air from the outside. If leaking is observed, replace the packings and retainers. A LEAKING OR WORN INNER PACKING CREATES A LEAN CONDITION. A LEAKING OUTER PACKING CAUSES A RICH CONDITION.

Safety peen throttle valve screws in place with peening tool M-107 on arbor tool M-100 as shown in figure 9.

Install venturi (if removed) with extreme care in accordance with figure 10.

Install bowl vent strainer (73), gasket (72), housing (71), flange (70), safety washer (69), and screws (68). Tighten and bend tabs to safety.

Install idle channel drill plug (67) and pressure take-off plug (66).

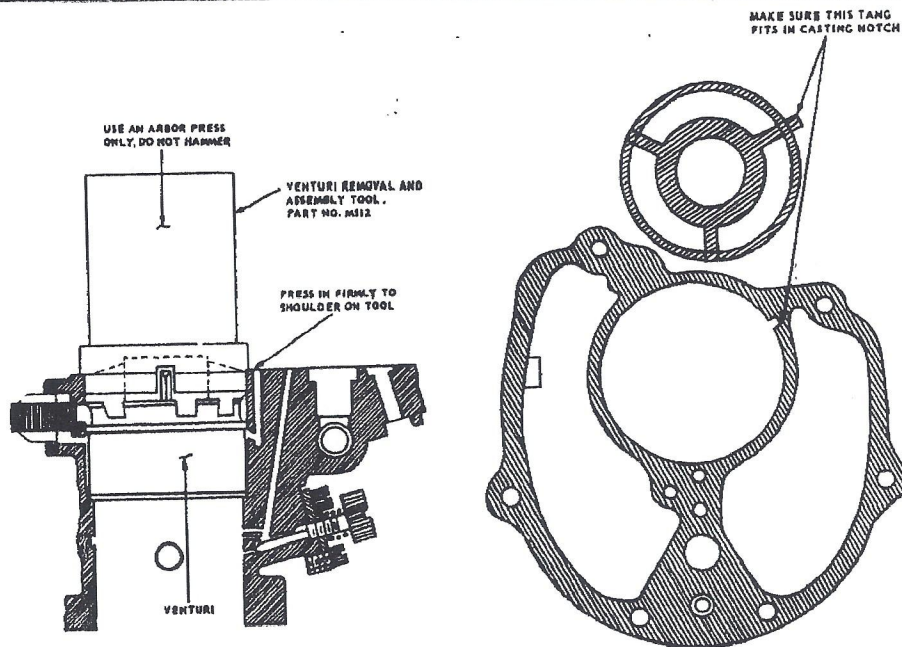
Install pump idler lever screw (38) into casting and through safety washer (39) and pump idler lever and bushing (11). Tighten to 80 - 100 inch pounds. Install washer (37), and safety with cotter pin (36). Bend ends all the way around.

Install throttle stop screw (50) and spring (51).

Install packing (54) in the idle needle casting counter bore (when used).

Install idle needle retainer plate (57) on its gasket (58), and secure in place with the three screws (55) over the safety washers (56) and bend safety tabs.

FIGURE 10



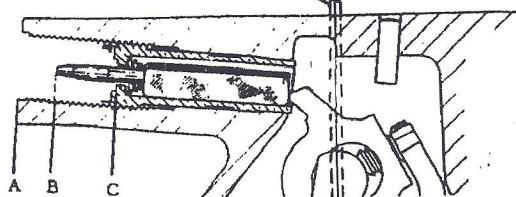
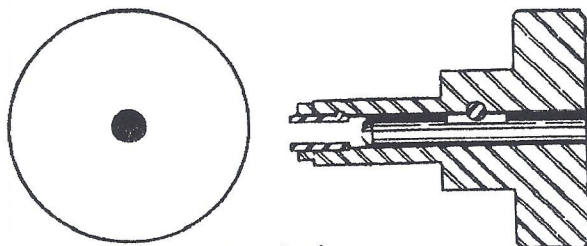
ECONOMIZER SETTINGS

CARB. ASSY. No.	"B" "C"
A10-2301	.376
A10-2518	.346
A10-2594	.346
A10-2827	.390
A10-2827S	.274
A10-2883	.346
A10-3007	.376
A10-3063-1	.376
A10-3063-2	.376
A10-3148-1	.376
A10-3168	.346
A10-3323	.346
A10-3391	.306
A10-3391-1	.428
A10-3479	.376
A10-3634	.428
A10-3649	.376
A10-3649-1	.376
A10-3759	.376
A10-3847	.376
A10-3856	.376
A10-3856-1	.376
A10-3856-11	.376
A10-3856-12	.376
A10-3859	.376
A10-3859-1	.376
A10-3878	.428
A10-3878-M	.438
A10-3965	.376
A10-3965-1	.376
A10-3965-11	.418
A10-3965-12	.324

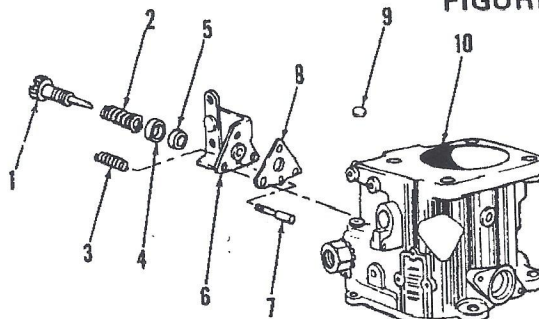
CARB. ASSY. No.	"B" "C"
A10-4025	.376
A10-4025-1	.376
A10-4025-11	.376
A10-4025-12	.376
A10-4057	.346
A10-4057-1	.346
A10-4164	.438
A10-4164-1	.438
A10-4171	.444
A10-4191	.324
A10-4206	.407
A10-4218	.261
A10-4218-1	.266
A10-4401	.428
A10-4401-1	.360
A10-4404	.360
A10-4404-1	.360
A10-4438	.407
A10-4438-1	.397
A10-4495	.418
A10-4744	.438
A10-4809	.438
A10-4865	.376
A10-4893	.324
A10-4909	.376
A10-4975	
A10-5034	.438
A10-5042	
A10-5043	.324
A10-5045	
A10-5054	

FIGURE 11

THROTTLE IN FULL OPEN POSITION

**FIGURE 12**

M-94 Flush Pin Gage Tool

FIGURE 13

000802

1. Needle and Head Assembly
2. Idle Adjusting Needle Spring
3. Idle Cutoff Spring
4. Idle Adjusting Needle Retainer
5. Preformed Packing
6. Idle Cutoff Lever and Retainer Assembly
7. Idle Cutoff Valve
8. Idle Adjusting Needle Retainer Gasket
9. Expansion Plug
10. Throttle Body

ECONOMIZER SETTING USING M-94 GAGE TOOL

CARB. ASSY. No.	VARIATIONS	CARB. ASSY. No.	VARIATIONS
A10-2301	M-94	A10-3965-12	M-94 Minus 1 1/4
A10-2518	M-94 Minus 3/4	A10-4025 & -1 & -11 & -12	M-94
A10-2594	M-94 Minus 3/4	A10-4057 & -1	M-94 Minus 3/4
A10-2827	M-94 Plus 1/3	A10-4164 & -1	M-94 Plus 1 1/2
A10-2827S	Depth Gage only (Sweden)	A10-4171	M-94 Plus 1 5/8
A10-2883	M-94 Minus 3/4	A10-4191	M-94 Minus 1 1/4
A10-3007	M-94	A10-4206	M-94 Plus 3/4
A10-3063-1 & -2	M-94	A10-4218 & -1	M-94D Minus 5/16
A10-3148-1	M-94	A10-4329	M-94 Plus 1 1/4
A10-3168	M-94 Minus 3/4	A10-4401 & -1	M-94 Plus 1 1/4
A10-3323	M-94 Minus 3/4	A10-4404 & -1	M-94 Minus 3/8
A10-3391	M-94 Minus 1 3/4	A10-4438	M-94 Plus 3/4
A10-3391-1	M-94 Plus 1 1/4	A10-4438-1	M-94 Plus 1/2
A10-3479	M-94	A10-4495	M-94 Plus 1
A10-3634	M-94 Plus 1 1/4	A10-4744	M-94 Plus 1 1/2
A10-3649 & -1	M-94	A10-4809	M-94 Plus 1 1/2
A10-3759	M-94	A10-4865	M-94
A10-3847	M-94	A10-4893	M-94 Minus 1 1/4
A10-3856	M-94	A10-4909	M-94
A10-3856-1 & -11 & -12	M-94	A10-4975	M-94D Minus 1/2
A10-3859 & -1	M-94	A10-5034	M-94 Plus 1 1/2
A10-3878	M-94 Plus 1 1/4	A10-5042	M-94 Minus 1/4
A10-3878-M	M-94 Plus 1 1/2	A10-5043	M-94 Minus 1 1/4
A10-3965 & -1	M-94	A10-5045	M-94 Plus 2 1/2
A10-3965-11	M-94 Plus 1	A10-5054	M-94 Minus 1/8

One model of altitude compensated carburetor incorporated a cut-off valve in the throttle body idle channel, operated by a walking beam lever which is part of the idle needle retainer plate. Assemble this type as shown in figure 13.

Install idle needle spring (53) on idle needle (52) and insert into casting. Lubricate lightly to install. (Approximate setting 1 1/2 turns from seat.)

Place small end of air metering return spring (65) over small section of air metering pin (64), insert this assembly into the economizer jet (63) and screw into casting with tool M-94 to the setting as shown on page 15 or using a depth micrometer procedure as shown on page 15. See figure 12.

Install economizer channel plug (61) over washer (62) and tighten in place and safety to casting through hole provided with wire (59). Crimp over wire ends a lead seal (60).

Install float bracket (25) with screws (24). Torque in place 8-11 inch pounds.

Place horseshoe washer (33) in its slot on mixture control valve (34), and insert into its channel through washer (35).

Install mixture control valve packing (32), thrust washer (31) and spring (30).

Turn mixture control valve until the locating hole is aligned with the mixture control lever (28) clamping slot. Compress this assembly into place with the safety pilot spring (29) extension in the locating hole in valve and install the clamp screw (26) through lever, safety washer (27), pilot safety spring, and clamp in place. Bend tabs to safety.

Install fuel strainer (48) through safety washer (49) into casting and bend tabs to safety.

FIGURE 14

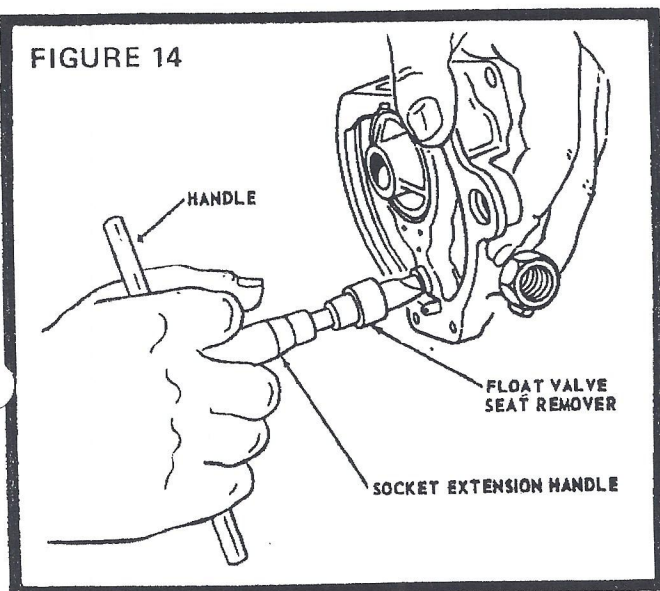
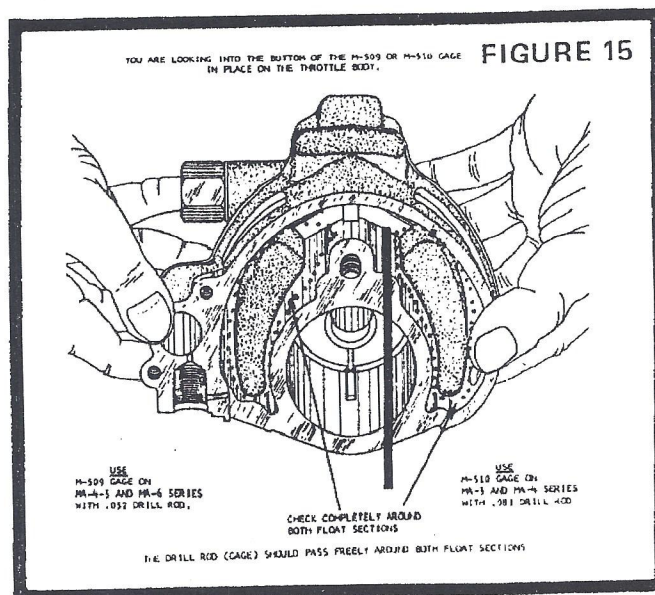


FIGURE 15



Install fuel inlet fitting (46) and gasket (47), and tighten.

Install float valve seat (22) and gasket (23) with tool M-103 or a large screw driver. See figure 14.

Place casting flange down on bench and install pump plunger (10). The tongs on the pump stem slide through the elongated holes in pump idler lever (11).

Place throttle body to bowl gasket (9) in place on casting.

Install the float valve (21) with under cut section between the retraction clip (8), tongs in place on the float (7), lower into place and slide float shaft (6) through the bracket-clip and float.

The float setting, measured at the outer end of the float to gasket should be $13/64$ ". Measure at this time before safetying the shaft. Minimum float bending is always desirable and an approximate setting can be obtained by the use of two different thickness washer-shims (23) supplied with the float valve and seat. A .015 and .031 shim is supplied. Use either or both to acquire the $13/64$ " setting. If additional bending is required do so very carefully near the hinge pin area. NOTE: DO NOT APPLY PRESSURE ON THE VALVE AND SEAT DURING BENDING.

Install cotter pin (5) in float shaft and bend ends all the way back.

Check to see that this assembly is free to travel with no binding between the assembled parts. Check for float clearance with tool M-509. See figure 15. Install throttle lever (19) and clamp screw (20). Torque to 20-28 inch pounds.

NOTE: On models using a clamping bolt and self locking nut, torque to 35-40 inch pounds.

FUEL BOWL ASSEMBLY

Install drain plug or plugs (85) and channel plug (86) with a suitable thread lube.

NOTE: Make sure no thread lube can get into any passage ahead of the plug.

Install idle tube (81) carefully, seat firmly.

Install pump inlet check valve assembly (90).

NOTE: Older models used a ball safety ratchet against a knurled valve head as a safety. New models use a long-lock nylon insert in the threads to safety. You can use the new style to replace all past production but do not use the knurled headed version in the newer castings as no provision to safety exists.

Install pump discharge check valve (93), spring (29) - if used - and tighten in place the plug (91).

Some models incorporate a fuel baffle over the mixture metering valve seat. If so, slide baffle (89) in place and secure with safety tab washer (88) and screw (87).

Install lower nozzle gasket (84) if used on shoulder at base of nozzle. Install nozzle (82) with safety washer gasket (83) and bend tabs to safety.

ASSEMBLY OF THROTTLE BODY TO FUEL BOWL ASSEMBLY

Hold the throttle body inverted in one hand and place the bowl down over the throttle body with the other. Carefully guide the pump plunger into its cavity. Do not fold the leather or bind.

Carefully guide the mixture metering valve into its seat in bowl. The two castings then should guide into place.

Secure in place with screws (1) and safety washers (2). Torque to 40-50 inch pounds, and bend tabs to safety.

TEST PROCEDURE

General

After the carburetors have been overhauled and the checks performed as specified throughout the overhaul procedures, the carburetors should be equal to new units in every respect. Final adjustments should be made at the time the carburetor is installed on the engine.

Float Valve and Seat Test

(See Figure 16)

Connect the inlet fitting of the carburetor to a fuel pressure supply of 0.4 psi.

Remove the bowl drain plug and connect a glass tube to the carburetor drain connection with a piece of rubber hose. The glass tubing should be positioned vertically beside the carburetor.

Allow the fuel pressure at 0.4 psi to remain for a period of at least 15 minutes and then raise the fuel pressure to 6.0 psi. (There will be a slight rise in fuel level as the pressure is increased.) Allow the 6.0 psi pressure to remain for at least five minutes after the fuel level has stabilized.

If the fuel rises to the level of the parting surface of the castings or runs out of the nozzle, the bowl and throttle body must be separated and the float valve and seat cleaned or replaced.

CAUTION: Under no circumstances change the float level from the established setting to correct flooding or to change the fuel level.

With fuel supplied to the carburetor as shown in figure 14, operate the throttle lever for several strokes to fill the accelerating pump and passages. Then close the throttle, open it fully again, and hold it for a few seconds. If the accelerating pump is operating correctly, a solid stream of fuel will be discharged from the

accelerating pump discharge tube or jet and will gradually die away after the spring on the pump plunger reaches its limit.

WARNING: DO NOT STAND DIRECTLY OVER THE CARBURETOR FLANGE AS FUEL WILL BE DIRECTED INTO THE FACE OF THE OPERATOR.

If the fuel discharge from the discharge tube or jet is weak, or if air is dispelled, it is an indication that the pump plunger or pump discharge or inlet check valve are not functioning properly. Disassemble the carburetor and make necessary repairs.

Remove the bowl drain plug to allow the fuel to drain out. Operate the pump to clear the fuel out of the pump cylinder and passages.

PRESERVATIVE TREATMENT

- If the carburetor is to be placed in storage after overhaul, the bowl drain plug should be removed and the carburetor slushed internally with soluble corrosion preventive oil, Military Specification MIL-C-4339. After draining the surplus oil from the carburetor, enough will cling to the parts to provide internal protection during storage. Replace the bowl drain plug.

SPECIAL SCREW TORQUE SPECIFICATIONS

Float bracket screws (63)	8 - 11 inch pounds
Throttle lever clamp screw (29)	20 - 28 inch pounds
Bowl to Body screw (2)	35 - 45 inch pounds
Pump idler screw (38)	80 - 100 inch pounds

SUPPLEMENT

Model MA 4-5AA, 5AA to 6AA Series are the automatic altitude versions of the standard models. They incorporate an AMC bellows assembly circuit to accomplish the necessary leaning function for altitude metering control. This series is used exclusively on helicopters.

All normal repair procedures in this overhaul that apply to the manual metering series apply with exception of the AMC operated metering feature and idle cut off system.

Refer to the specific parts list for the exact part numbers required.

OVERHAUL PROCEDURE

See exploded view on pages 10 and 11

For THROTTLE BODY REPAIR, refer to standard section

FUEL BOWL REPAIR (Typical of Part A10-4438-1 Type)

Remove nozzle (1) by bending tabs and removing safety washer (2).

Remove pump discharge check valve plug (3), spring (4), and valve (5).

Remove pump inlet check valve (6).

Remove idle tube (7).

Remove drain plug or plugs (8), safety wire (9), and seal (10), and channel plug (11).

Remove idle cut off valve retaining screw (12), cut off valve (13), and "O" ring (14). Discard "O" ring.

Unsafety the AMC retaining screw washers (15), and remove screws (16), AMC retainer (17), and AMC unit (18). Remove and discard "O" ring (19).

Clean and inspect parts and castings in accordance with procedures outlined previously.

NOTE: CAUTION. The AMC unit is a precision metering mechanism and requires special care. Do not blow compressed air into or near this unit or use compressed air to blow out any carburetor equipped with AMC metering units as this will destroy the bellows.

AMC units cannot be tested in the field. This is a factory established setting only.

If there is any doubt about the function of the unit it must be sent to the factory for tests.

REASSEMBLY OF FUEL BOWL

Blow out casting to remove any foreign material.

- Install channel plug (11) and drain plugs (8).

Slide a new "O" ring (14) into its slot on cut off valve (13), lightly lubricate the "O" ring and carefully insert this valve (13) in place in the casting.

Secure in place with special screw (12), safety wire (9), and seal (10).

Carefully install idle tube (7), and seat firmly in casting.

Install pump inlet check valve (6). This valve has a nylon insert in the thread section as a safety feature.

Install pump discharge check valve (5), spring (4), and plug (3).

Slide a new "O" ring (19) on tested AMC unit (18).

Insert the AMC retainer (17) in place on the hex section of the AMC seat and lower into place in casting. Make sure the unit is seated in place in the counterbore seat and secure in place with screws (16) and safety washers (15).

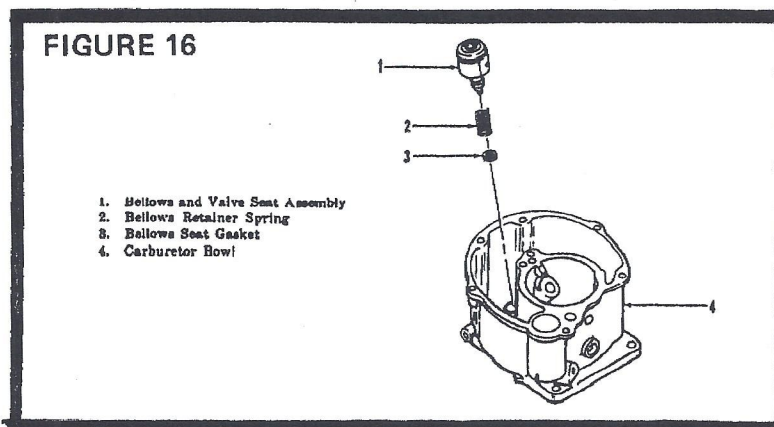
Install nozzle (1) through safety washer (2) and tighten in place. Bend the tab washers to secure.

Reassemble the completed castings in accordance with previously outlined procedures.

The standard fuel level test procedure and preservation apply as outlined on page 18.

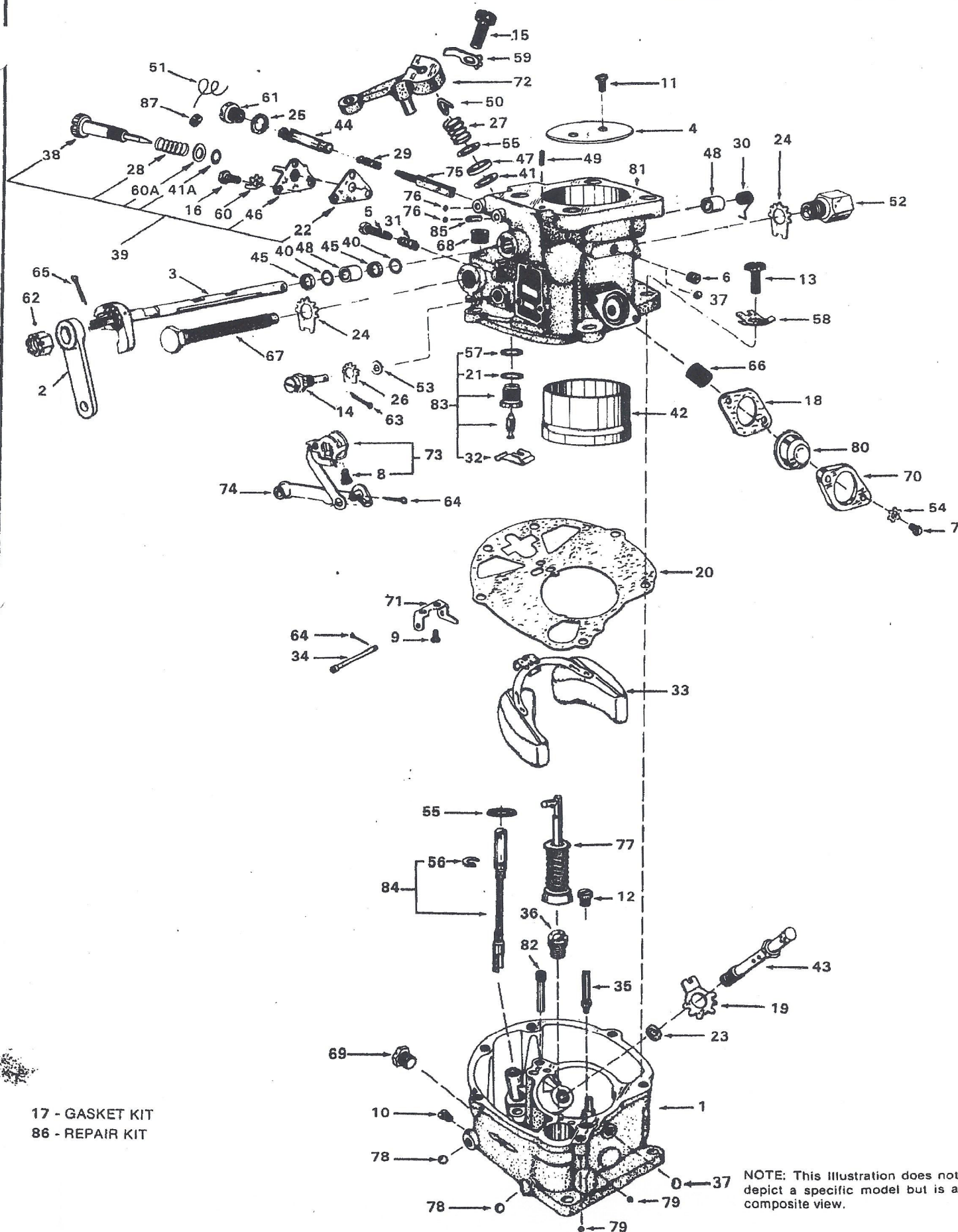
NOTE: (Typical Part No. A10-4025-12) Some of the older models use an AMC unit which is threaded into a bowl casting and uses a tension spring as shown in figure 16. Insert finger tight only.

NOTE: One earlier version used as an AMC retention feature, a stud which was pressed into the bottom side of the throttle body in the location where the manual mixture control valve was located. In all cases refer to the specific parts list to make sure that the exact parts can be ordered and replaced.



MARVEL-SCHEBLER
DIVISION BORG-WARNER CORPORATION





ENGINE MAKE Franklin
OEM CARBURETOR NO. .. 14738

CARBURETOR NO. A10-3007
MODEL NO. MA-4-5
FLOAT SETTING 13/64"
ECONOMIZER SETTING M-94 GAGE
FLUSH

Ref. No.	Part No.	Qty.	Description	Ref. No.	Part No.	Qty.	Description
1	10-3037	1	Carburetor Bowl Assy.	47	55-A139	1	Retainer - "O" Ring, Mixture Metering Valve Head
2	12-859	1	Lever - Throttle, Serrated	48	60-A160	2	Bushing - Throttle Shaft
3	13-1533	1	Throttle Shaft & Stop Assy., Serrated Stop	49	62-226	1	Pin - Air Metering Pin Stop
4	14-187	1	Valve - Throttle	50	66-18	1	Lockwire - Mixture Control Valve Head
5	15-126	1	Screw - Throttle Adjusting	51	66-20	1	Lockwire - Air Metering Plug
6	15-223	1	Screw - Idle Drill Plug (when used)	52	68-93	1	Fitting - Fuel Inlet
7	15-A14	2	Screw - Bowl Vent Strainer Housing	53	78-1	1	Washer - Pump Idler Lever
8	15-A15	1	Screw - Pump Lever Lock	54	78-121	2	Washer - Bowl Vent Strainer Housing Screw
9	15-A21	2	Screw - Float Bracket	55	78-184	2	Washer - Mixture Control Valve Spring (1) Mixture Control Valve Thrust (1)
10	15-A22	1	Screw - Pump Channel Plug	56	78-356	1	Washer - Horseshoe (Mixture Control Valve Head)
11	15-A23	2	Screw - Throttle Valve	57	78-A40	1	Washer - Spacer (Float Valve Seat - As Required)
12	15-A27	1	Screw - Plug (Pump Discharge Check Valve)	58	78-A97	6	Washer - Throttle Body to Bowl Screw
13	15-B98	6	Screw - Throttle Body to Bowl	59	78-A109	1	Washer - Mixture Control Lever Screw
14	15-B105	1	Screw - Pump Idler Lever	60	78-A111	3	Washer - Idle Adjusting Needle Retainer Plate Screw
15	15-B108	1	Screw - Mixture Control Lever	61	80-151	1	Plug - Air Metering Pin Jet
16	15-B109	3	Screw - Idle Adjusting Needle Retainer	62	81-311	1	Nut - Lock, Throttle Lever
17	16-625	1	Gasket - Kit	63	82-1	1	Pin - Cotter (Pump Idle Lever Screw)
18	16-A16	1	Gasket - Bowl Vent Strainer Housing	64	82-11	2	Pin - Cotter (Float Lever Shaft (1) (Pump Idler Lever (1))
19	16-A30	1	Gasket - Nozzle	65	82-14	1	Pin - Cotter, Throttle Lever Lock Nut
20	16-A31	1	Gasket - Throttle Body to Bowl	66	95-63	1	Screen - Bowl Vent Strainer
21	16-A32	1	Gasket - Float Valve Seat	67	95-506	1	Fuel Inlet Strainer Assy.
22	16-A39	1	Gasket - Idle Adjusting Needle Retainer	68	99-34	2	Plug - Pressure Take Off
23	16-A42	1	Gasket - Power Jet	69	99-44	1	Plug - Bowl Drain
24	16-A48	2	Gasket - Fuel Inlet Fitting (1) Fuel Inlet Strainer (1)	70	110-173	1	Retainer Flange - Bowl Vent Strainer Housing
25	16-A56	1	Gasket - Air Metering Pin Plug	71	136-62	1	Bracket - Float
26	16-B44	1	Gasket - Pump Idler Lever Screw	72	155-238	1	Lever - Mixture Control
27	24-480	1	Spring - Mixture Control Valve Head	73	155-560	1	Pump Lever Assy.
28	24-A1	1	Spring - Idle Adjusting Needle	74	155-568	1	Pump Idler Lever & Bushing Assy.
29	24-A30	1	Spring - Air Metering Pin Return	75	173-133	1	Pin - Air Metering
30	24-A33	1	Spring - Throttle Opening	76	179-45	2	Plug - Expansion (Air Metering Pin Ratchet (1) (Nozzle Air Vent Channel (1))
31	24-A39	1	Spring - Throttle Adjusting Screw	77	194-580	1	Pump Plunger Assy.
32	29-182	1	Clip - Float Valve	78	206-21	2	Ball - Pump Inlet Channel Plug - (5/32" Diameter - Steel)
33	30-764	1	Float & Lever Assy.	79	206-22	2	Ball - Pump Discharge Channel Plug - (3/32" Diameter - Steel)
34	32-35	1	Shaft - Float Lever	80	221-76	1	Housing - Bowl Vent Strainer Screen
35	34-72	1	Valve - Pump Discharge Check	81	227-1081	1	Throttle Body Assy.
36	36-587	1	Pump Inlet Check Valve Assy.	82	229-560	1	Idle Tube Assy.
37	37-7	2	Ball - Lead Plug (Nozzle Well Vent)	83	233-614	1	Float Valve, Seat & Gasket Assy
38	43-648	1	Needle - Idle Adjusting	84	242-525	1	Mixture Control Metering Valve Assy.
39	43-649	1	Idle Adjusting Needle Assy.	85	261-501	1	Safety Ratchet Assy. (Air Metering Jet)
40	44-220	2	Packing - "O" Ring (Throttle Shaft)	86	286-783	1	Repair Kit
41	44-223	1	Packing - "O" Ring, Mixture Metering Valve Head	87	298-1	1	Seal - Lead (Air Metering Plug Lockwire)
42	46-A226	1	Venturi				
43	47-613	1	Nozzle Assy.				
44	49-199	1	Jet - Air Metering Pin				
45	55-255	2	Retainer - Throttle Shaft Packing				
46	55-524	1	Idle Adjusting Needle Retainer Assy.				
For later models which do not use idle adjusting needle retainer assembly 55-524 use the following parts:				28	24-B247	1	Spring - Idle Adjusting Needle
				38	43-362	1	Needle - Idle Adjusting
				41A	44-224	1	Packing - "O" Ring - Idle Needle
				60A	78-A226	1	Washer - Idle Needle

Part numbers shown in **bold type** are included in Repair Kit
Exploded view shown on reverse side