AIRCRAFT CARBURETOR SERVICE MANUAL

MODELS
MA3A
MA3PA
MA3SPA
MA4SPA

PRECISION AIRMOTIVE LLC

FSM-OH1 CHANGE 3
AUGUST 1, 2007

14800 40th AVE. NE
Marysville, Washington 98271

OVERHAUL MANUAL
AND ILLUSTRATED PARTS LIST

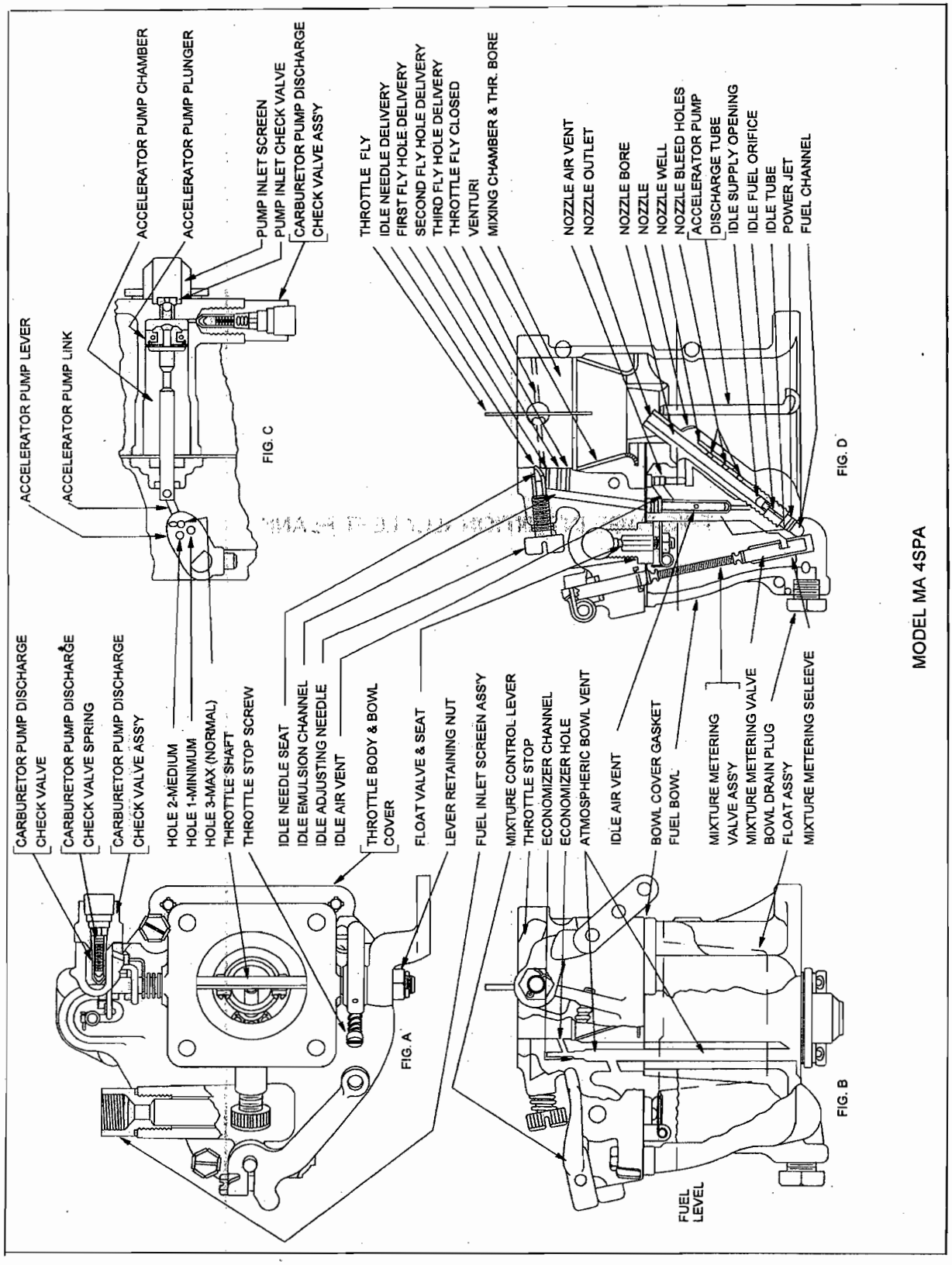
WARNING

This manual has been written and supplied for the service and overhaul of Precision Airmotive aviation carburetors serviced with genuine Precision Airmotive replacement parts.
DO NOT use this manual if installing non-Precision Airmotive replacement parts* because procedures and specifications outlined in this manual do not apply. Consult the manufacturers' installation instructions.

WARRANTY AND LIABILITY INFORMATION:
THE USE OF PARTS NOT AUTHORIZED BY PRECISION AIRMOTIVE IN PRECISION AIRMOTIVE AVIATION CARBURETORS CONSTITUTES AN ALTERATION OR MODIFICATION OF THE CARBURETOR AND VOIDS ALL WARRANTIES. PRECISION AIRMOTIVE WILL ACCEPT NO WARRANTY OR RESPONSIBILITY/LIABILITY FOR CARBURETORS CONTAINING UNAUTHORIZED PARTS.

ANY OPERATOR AND/OR OVERHAUL FACILITY RESPONSIBLE FOR INSTALLATION OF UNAUTHORIZED PARTS MAY HAVE THE SOLE AND FULL LIABILITY FOR PROPERTY DAMAGE OR INJURY, INCLUDING DEATH, ARISING FROM ANY MALFUNCTION OF A CARBURETOR IN WHICH SUCH PARTS ARE INSTALLED.

*Reference Precision Airmotive Service Bulletin MSA-5 and Service Information Letter 10-21-92


CARBURETOR PUMP DISCHARGE
CHECK VALVE
CARBURETOR PUMP DISCHARGE
CHECK VALVE SPRING
CARBURETOR PUMP DISCHARGE
CHECK VALVE ASSY
HOLE 2-MEDIUM
HOLE 1-MINIMUM
HOLE 3-MAX (NORMAL)
THROTTLE SHAFT
THROTTLE STOP SCREW
IDLE NEEDLE SEAT
IDLE EMULSION CHANNEL
IDLE ADJUSTING NEEDLE
IDLE AIR VENT
THROTTLE BODY & BOWL COVER
FLOAT VALVE & SEAT
LEVER RETAINING NUT
FUEL INLET SCREEN ASSY
MIXTURE CONTROL LEVER
THROTTLE STOP
ECONOMIZER CHANNEL
ECONOMIZER HOLE
ATMOSPHERIC BOWL VENT
IDLE AIR VENT
BOWL COVER GASKET
FUEL BOWL
MIXTURE METERING VALVE ASSY
MIXTURE METERING VALVE
BOWL DRAIN PLUG
FLOAT ASSY
MIXTURE METERING SELEEVE
FUEL LEVEL
FIG. A
FIG. B
ACCELERATOR PUMP LEVER
ACCELERATOR PUMP LINK
ACCELERATOR PUMP CHAMBER
ACCELERATOR PUMP PLUNGER
PUMP INLET SCREEN
PUMP INLET CHECK VALVE
CARBURETOR PUMP DISCHARGE
CHECK VALVE ASSY
FIG. C
THROTTLE FLY
IDLE NEEDLE DELIVERY
FIRST FLY HOLE DELIVERY
SECOND FLY HOLE DELIVERY
THIRD FLY HOLE DELIVERY
THROTTLE FLY CLOSED
VENTURI
MIXING CHAMBER & THR. BORE
NOZZLE AIR VENT
NOZZLE OUTLET
NOZZLE BORE
NOZZLE
NOZZLE WELL
NOZZLE BLEED HOLES
ACCELERATOR PUMP DISCHARGE TUBE
IDLE SUPPLY OPENING
IDLE FUEL ORIFICE
IDLE TUBE
POWER JET
FUEL CHANNEL
FIG. D
MODEL MA 4SPA

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CONTENTS

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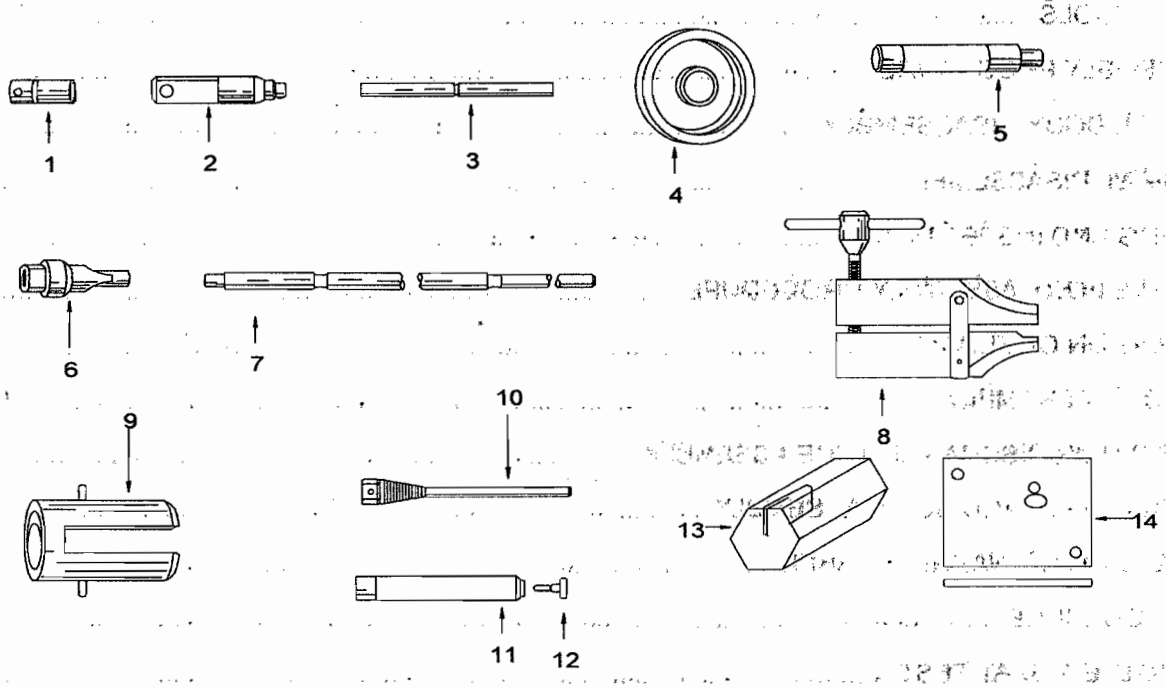
SPECIAL TOOLS



REF NO	PART NO	NOMENCLATURE
1	M-7	Nozzle wrench 1/2 inch
2	M-12	Socket extension
3	M-13	Socket extension handle
4	M-83	Venturi assembling tool
5	M-86	Throttle shaft bushing driver
6	M-104	Float valve seat remover
7	M-108	Throttle shaft bushing reamer
8	M-109	Throttle valve bolt clincher
9	M-120	Venturi extractor
10	M-122	Throttle shaft bushing remover
11	M-123	Pump stem packing stake punch
12	M-123A	Pump stem packing stake pilot
13	M-133	Torque tool for pump discharge tube
14	M-134	Locating tool for pump discharge tube
15	M-510	Float clearance gage (Not shown, Ref. fig 11, pg 11)

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN ADVERSE CARBURETOR PERFORMANCE AND ENGINE OPERATION.

STANDARD MA 3 & 4

DISASSEMBLY PROCEDURE

Refer to exploded view for Complete Parts Reference Numbers

1) Separate the throttle body and bowl by bending tab washers (1) and removing bowl cover screws (2). **NOTE**: Old models may have safety wire and cross hole drilled screws. These should be replaced.
2) Tap casting lightly with a soft faced hammer to loosen and pull castings apart, being careful not to damage the float.

THROTTLE BODY DISASSEMBLY.

3) Remove float shaft cotter pin (3), shaft (4), float (5), and float valve (7).
4) Discard bowl gasket (8).
5) Remove pump link cotter pins (9), pump link (10), and pump plunger assembly (11). Note hole location of pump link in pump lever (13).
6) Remove accelerator pump lever screw (12), lever (13), and throttle opening spring (14). **NOTE:** Some models do not use spring (14). Refer to appropriate parts list section for proper configuration.
7) Remove pump packing washer (15) and pump packing (16) with a pointed tool or small screw driver.
8) Remove mixture control clamp screw (17) and safety washer (18).
9) Remove mixture control lever (19), lock wire loop (20), spring (21), thrust washer (22), and packing (23).
10) Remove mixture control valve (24), horseshoe washer (25), and washer (26).
11) Remove float valve seat (27) and gasket (28) using tool M-104 or a large screw driver. See Figure 1.
12) Make note of throttle lever position before removal. Remove throttle lever cotter pin (29), nut (30), and lever (31).
13) Remove throttle valve screws (32), valve (33), and throttle shaft (34).
14) Remove throttle adjusting screw (35), and spring (36).

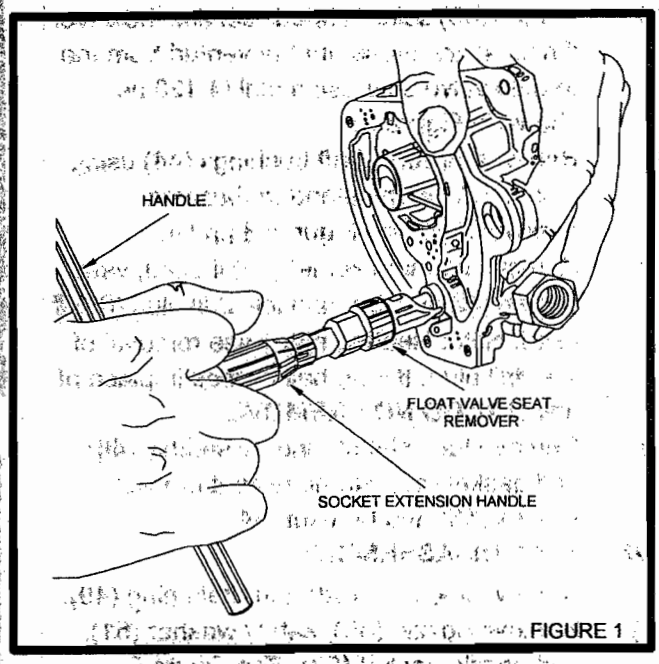


FIGURE 1

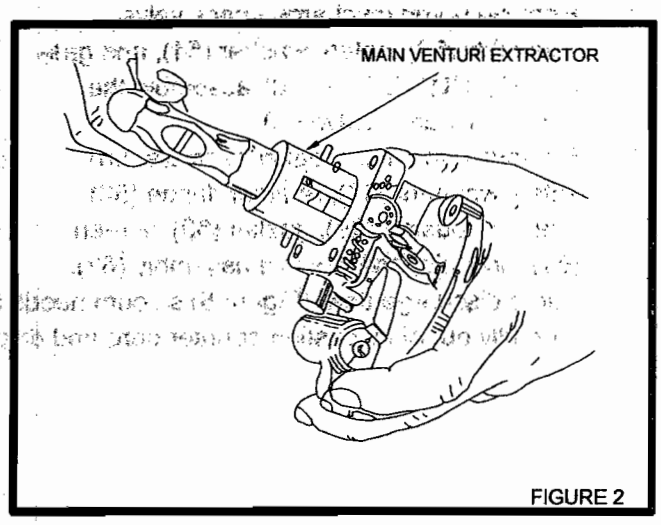


FIGURE 2

15) Remove idle adjusting needle (37), spring (38), and retainer (39).
NOTE: some models do not use retainer (39). Refer to appropriate parts list section for proper configuration.

16) Venturi (43) seldom needs service, however if necessary, press out the venturi from the throttle valve side using tool M-120 as shown in Figure 2.

17) Remove throttle shaft bushings (44) using tool M-122 or any standard bushing removal tool. See Figures 3 and 4.

18) Remove economizer jet (45) if used, vent screen (42) if used, and idle drill plug (66) if used. Note: Heating may ease removal of idle drill plug. If lead ball is used in place of drill plug, **DO NOT REMOVE**.

19) Remove fuel inlet strainer assembly (46) and gasket (47). Remove float bracket screws (63) and bracket (64).

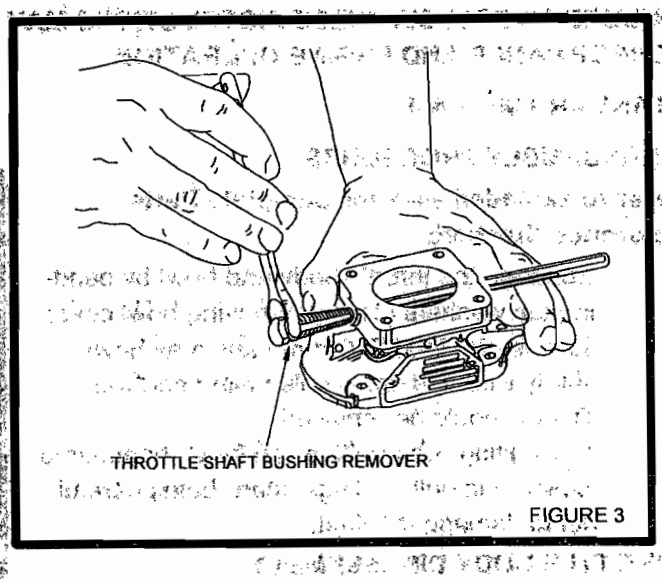


FIGURE 3

FUEL BOWL DISASSEMBLY

20) Remove idle tube (48) and drain plug (49).

21) Remove nozzle (50), safety washer (51), and nozzle gasket (52). See Figure 5.

NOTE: Occasionally the nozzle gasket will stay in the casting when nozzle is removed.

(Make sure it is removed.)

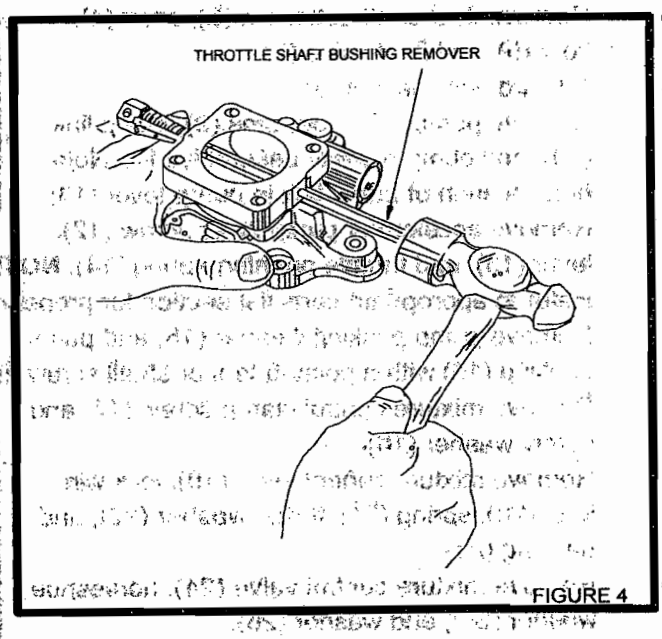


FIGURE 4

22) Remove pump discharge check valve assembly (53), safety washer (54), and gasket (55). **NOTE:** Do not disassemble the pump discharge valve (53).

23) Remove pump inlet retainer screws (56), safety washers (57), retainer flange (58), strainer housing (59), gasket (60), screen (61), and inlet check valve assembly (62).

Pump discharge tube (Figure 5) seldom needs service or removal. If it is damaged or loose pull it carefully out of its casting counter bore and discard.

CLEANING AND INSPECTION

Cleaning Process

24) Use a commercially available carburetor cleaner and the cleaner manufacturer's procedure to soak, rinse, and blow out to assure complete cleaning. Only metal parts are to be placed in carburetor cleaner. Do not expose non metal parts to carburetor cleaner.

25) Carburetors have by design requirements very small passages, channels, and orifices. These are quite difficult to inspect using the naked eye. Using equipment such as an Otoscope or other magnifying device will enable you to see these difficult places.

IMPORTANT: Do not clean passages in castings or calibrated parts (nozzle, idle tube, etc.) with wire or small drills. Compressed air, carburetor cleaner, and a small, soft bristle brush work quite well.

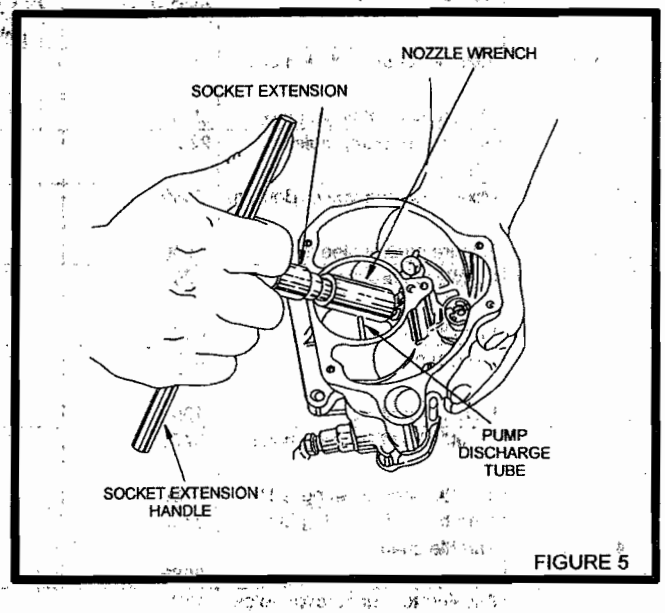


FIGURE 5

Inspection

26) Liquid penetrant examination of the throttle bodies and bowls must be performed. The examination will be made using industry standard procedures, any cracks are cause for rejection, no repairs are authorized.

The following parts are 100% required replacement at overhaul.

All Gaskets	Seals and packings
Throttle shaft bushings	Retainers
Float valve and seat assembly	Accelerator pump
Float shaft	Throttle valve screws
Float bracket screws	Pump discharge check valve
All lock tab type washers	Cotter pins

NOTE: Fuel inlet strainer assembly should be replaced if the strainer screen is broken at any place or cannot be satisfactorily cleaned.

27) Normal aircraft quality inspection techniques can determine reusability of carburetor components. Abnormal wear, cracks, warping, or damage are, of course, just cause for rejection. Wear beyond the limits shown in **TABLE I** is also just cause for rejection.

WEAR LIMITS FOR MA-3 AND MA-4SPA CARBURETORS

INDEX NO.	DESCRIPTION	PERMISSIBLE WORN DIM. (INCHES)	PERMISSIBLE WORN CLEARANCE (INCHES)
T-Body	Mixture control hole In body	.222	.007
24	Mixture control valve (Top)	.215	
T-Body	Accelerator pump hole in T-body	225	.008
24	Mixture control valve (Bottom)	.2480	.002
Bowl	Mixture control sleeve	.2500	
64	Float shaft bracket	.100	.008
4	Float shaft	.092	
4	Float shaft	.092	.008
5	Float lever pivot	.100	
T-Body	Throttle shaft bushing holes	.3775	.002
	Throttle shaft bushing O.D.	.3750	
34	Throttle shaft bushing I.D. Throttle shaft	.3135 .3085	.005
13	Accelerator pump lever holes	.132	.008
10	Accelerator pump link	.122	
5	Float adjustment tab	wear spot =.100 dia.	-
Bowl	Accelerator pump cylinder	.630	-
T-Body	Throttle stop pad on T-body	wear spot =.010 deep	-

TABLE I

NOTE: Late model aircraft are all equipped with soft engine mounts. This has created a more severe vibration environment, causing different wear characteristics in different aircraft.

Careful inspection is required

MODEL MA 3 & 4 ASSEMBLY PROCEDURE
THROTTLE BODY

28) Lightly coat the bushing with Loctite RC-680 per Loctite's recommended instructions. Install throttle shaft bushings using tool M-86 bushing driver. Place bushing (44) on driver and tap into place, repeat on opposite side. See Figure 6. Cure in location from two to four hours. Heat not to exceed 110°F may be used to speed curing.

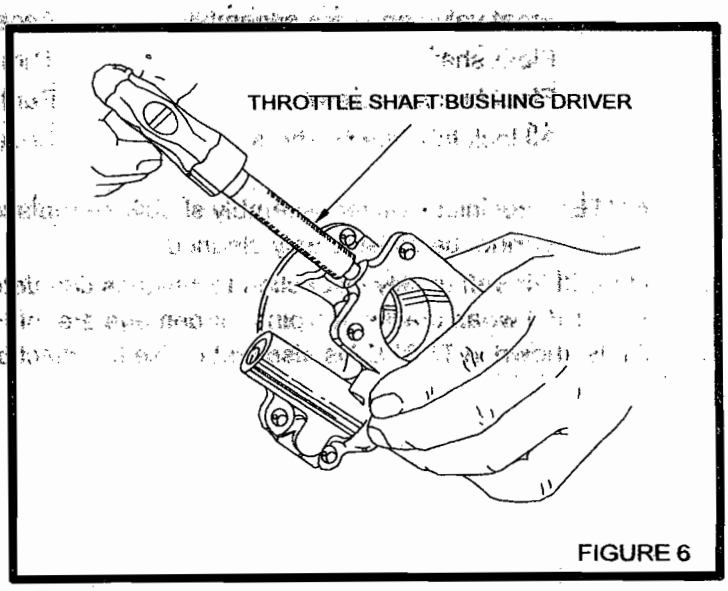


FIGURE 6

29) Line ream the bushings with tool No. M-108. See Figure 7.

30) Install pump stem packing (16) and retainer (15) using tools M-123 and M-123A. Place tool M-123A packing pilot in place on the bottom side of throttle body; slip packing (16) in the cavity on top side. Place retainer (15) over packing and stake in place with tool M-123. Remove pilot.

31) Install venturi (43) using tool M-83. Place the venturi in position so that the notch in the center ring of the venturi will be in alignment with the nozzle and the legs engaged in the grooves in the throttle bore.

32) Install the economizer jet (45) if used. Exercise caution, so as not to damage or burr this jet since this can cause a change in flow. Install vent screen (42) if used.

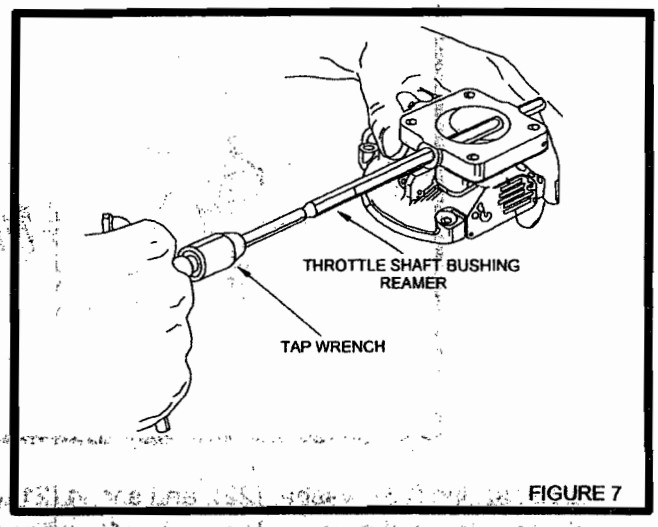


FIGURE 7

33) Install idle drill plug (66) torque to 12-16 inch pounds with Loctite 222 or equivalent mild threadlock.

34) Install throttle shaft (34), throttle valve (33), and throttle valve screws (32). Place a small amount of Loctite 271 on Throttle Valve screws (32). Run screws lightly into place, rotate the shaft to the closed position and tap the valve lightly with the screw driver blade to seat the valve in throttle bore. Hold the throttle valve closed and tighten the screws. Torque screw (32) to 10-15 inch pounds.

35) Safety the throttle valve screws in place with clinching tool M-109. See Figure 8. Carefully installed, the shaft will rotate freely from fully closed to wide open. Note: Certain carburetors do not use a wide open valve and you may notice that the valve is limited up to 15° from the fully open position. This is normal and an important part of the full throttle requirements.

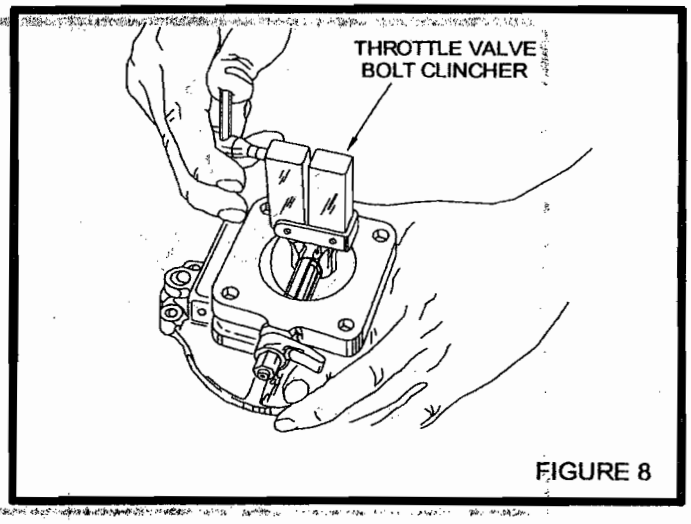


FIGURE 8

DO NOT CHANGE.

36) Install throttle adjusting screw (35) and spring (36).

37) Install retainer (39), spring (38), and idle needle (37). Approximate setting 1-1/2 to 2 turns from seat. **NOTE:** Some models do not use retainer (39). Refer to appropriate parts list section for proper configuration.

38) Place horseshoe washer (25) in its groove on mixture control valve (24). Place washer (26) over valve head and insert into casting from the bottom.

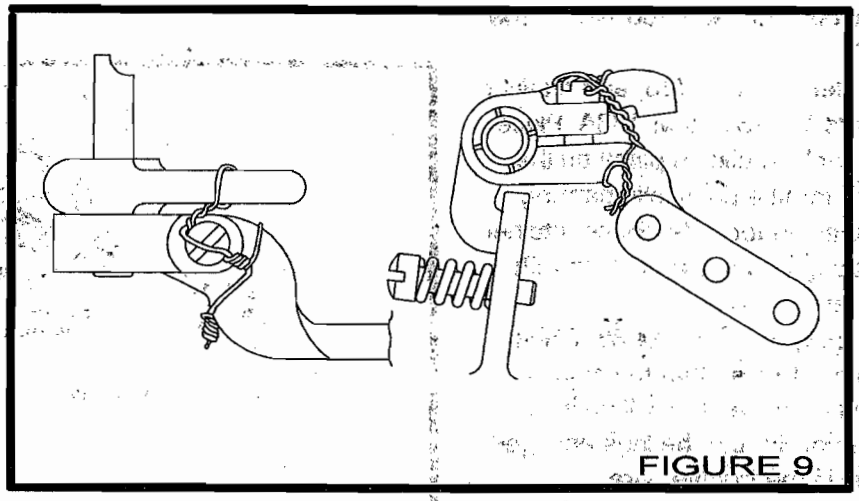


FIGURE 9

39) Slide packing (23), washer (22), and spring (21) over valve head. Place tip of the lock wire loop (20) into its hole in valve head. Align lever (19) with wire loop and push down to compress spring (21). Assure that the loop of the lock wire is toward the valve.

40) Install clamp screw (17) through safety washer (18), lever (19) and lock wire (20), torque screw to 20-28 inch pounds and bend safety tab washer to secure.

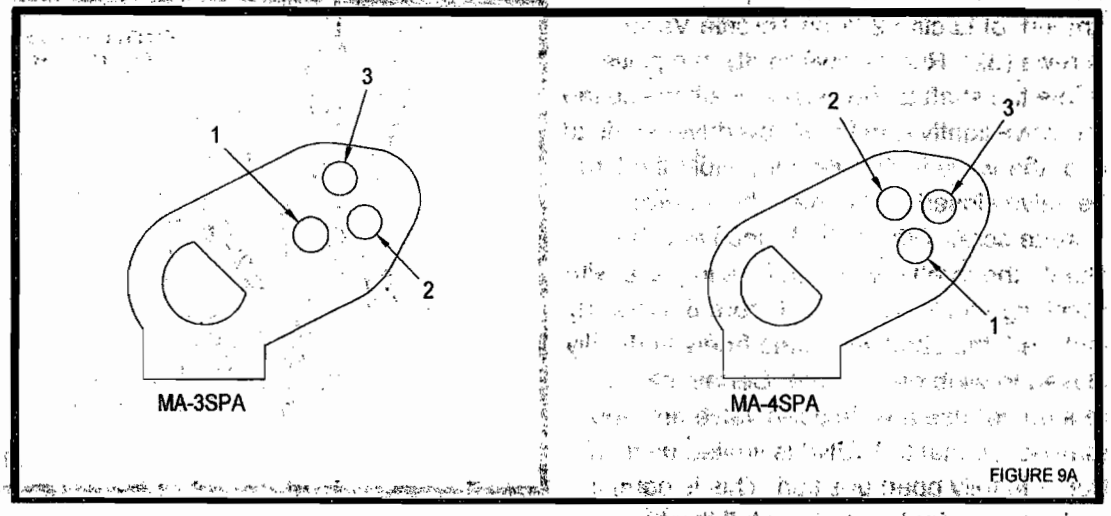


FIGURE 9A

41) Install float bracket (64) with screws (63) torque to 8-11 inch pounds.

42) Slide throttle opening spring (14) (if used) over the end of shaft (34) and insert the end through the hole in casting web. Install accelerating pump lever (13) and secure in place with screw (12). Torque screw (12) to 8-11 inch pounds. Insert the throttle opening spring end through the cross hole drilled screw (12) to safety and bend the end of the spring over to secure. If model does not incorporate spring use safety wire to safety screw (12). Place throttle lever (31) at proper angle location on throttle shaft and secure with retaining nut (30). Torque nut (30) to 20-60 inch pounds. Install cotter pin and bend. **NOTE:** Carburetor without the throttle lever locknut retaining feature on the end of the throttle shaft must have the throttle lever safety wired as shown in Figure 9.

43) Insert the pump (11) carefully through the packing and install pump link (10) and cotter pins (9).

44) **NOTE:** The accelerating pump lever has three holes into which the upper end of the pump connecting rod can be installed.

45) The outer hole, known as the No. 3 hole, is approximately midway in height between the upper and lower holes. The No. 3 hole provides the longest stroke for delivery of maximum amount of accelerating fuel. The lower hole is known as the No. I hole and produces the shortest stroke.The middle hole, or No. 2 hole, produces a medium supply of accelerating fuel. Refer to FIG C, Page 1 and Figure 9A.

46) Install fuel inlet fitting-strainer assembly (46), and gasket (47). Torque fitting (46) to 120-144 inch pounds.

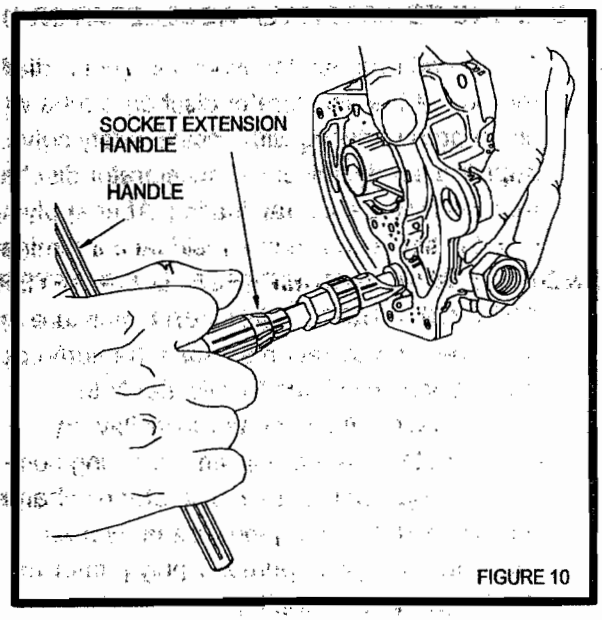


FIGURE 10

INSTALLATION OF FLOATS

CAUTION: Exercise care during the following operations to prevent damage to the float.

47) Install part number 30-864 Float Assembly and related parts in accordance with Instruction Sheet E-1000.

FUEL BOWL ASSEMBLY

48) Install idle tube (48) in casting exercising care not to damage the tube. Torque idle tube (48) to 3-5 inch pounds.

49) Install pump discharge check valve assembly (53), gasket (55), and safety washer (54). Torque valve assembly (53) to 50-70 inch pounds. Bend tabs to safety.

50) **NOTE:** Do not disassemble the pump discharge valve (53). It is factory preset. If it has been disassembled, it must be replaced.

51) Install pump inlet check valve assembly (62), torque to 8-12 inch-pounds. Install inlet screen (61), gasket (60), housing (59), and flange (58) (chamfered side toward casting); and secure with screws (56) and safety washers (57). Torque screws to 14-18 inch-pounds. Bend tabs to secure.

52) Install drain plug (49) with a small amount of thread lube. Torque drain plug (49) to 50-60 inch pounds. **(CAUTION-Make sure no thread lube can be put in ahead of the plug).**

53) Place power jet gasket (52) on shoulder of power jet in the base of nozzle and insert nozzle through gasket safety washer (51), and torque to 45-60 inch pounds. See Figure 16.

NOTE: It is best to install nozzle with bowl inverted to insure that the power jet gasket does not fall into well and block power jet.

54) Bend ALL tabs on washer (51) to secure.

55) The pump discharge tube seldom needs service. However, if it needs to be replaced, it is installed with Loctite mounting compound and cured in place, in accordance with the following instructions:

PROCEDURE TO ASSEMBLE ACCELERATOR DISCHARGE TUBE IN MA 3 AND MA 4 BOWLS

56) Clean and roughen longitudinally (not radially) with #320 emery cloth approximately 1/2 inch length of the end of the accelerator discharge tube which is inserted into the bowl discharge port. Thoroughly clean both surfaces with Loctite safety solvent. Clean surfaces insure consistent bonding results. After applying safety solvent to accelerator discharge port in casting, swab with CLEAN pipe cleaner to remove residual contamination. After applying safety solvent to accelerator discharge tube, wipe with a CLEAN tissue to remove residual contamination.

DO NOT BLOW WITH COMPRESSED AIR AFTER APPLYING SAFETY SOLVENT-moisture and oil in the air may recontaminate the surfaces.

57) Apply Locquic Primer T or Primer N to both surfaces. Allow primer to visibly dry (2-5 minutes) before applying retaining compound, Apply primer to accelerator discharge port in casting with a pipe cleaner wetted (not saturated) with primer. Apply primer to discharge tube by wiping.

58) Apply Loctite Retaining Compound RC-680 to the accelerator pump discharge tube brushing or wiping on approximately one-half inch length of the tube end which is inserted into the accelerator discharge port approximately 1/16 inch from the end of tube. **DO NOT ALLOW RC-680 TO ENTER TUBE.**

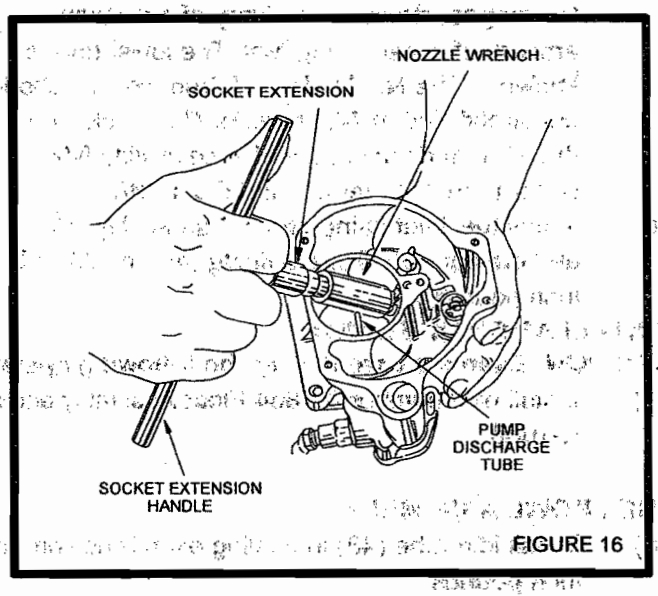


FIGURE 16

59) With template M-134 in place, assemble discharge tube into discharge port with a rotating motion to spread retaining compound. Parts may be repositioned up to one minute after assembly. After inserting pump discharge tube in place, place locating tube part of tool, M-134 thru the hole as indicated and down over the pump discharge tube and allow to cure in place. See Figure 17.

60) If Primer T is used parts must be joined within four minutes after RC-680 is applied. If Primer N is used, parts must be joined within ten minutes after RC-680 is applied.

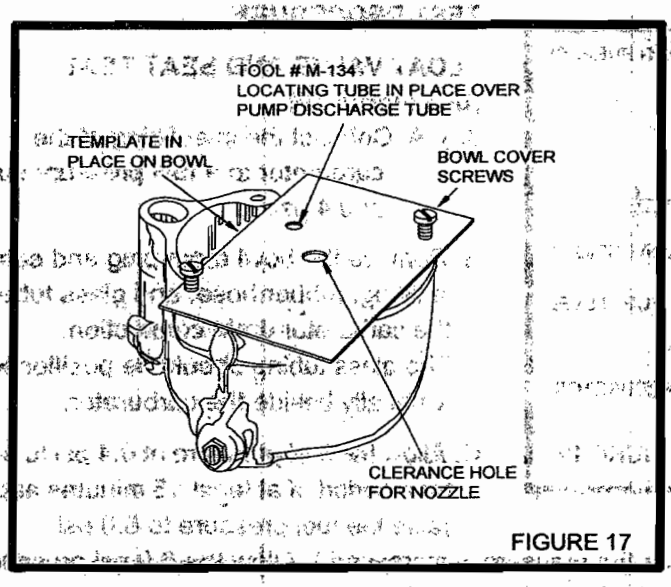


FIGURE 17

61) Allow to cure at room temperature. With Primer T, fixturing occurs within five minutes with full cure in six hours. With Primer N, fixturing occurs in 15-30 minutes and full cure in 12 hours.

62) After full cure - the Loctite joint must be able to withstand 48 inch ounces of torque applied at the rotational axis of the discharge tube entering the discharge port without movement of the discharge tube. See Figure 18.

THROTTLE BODY AND BOWL ASSEMBLY

63) Carefully assemble the castings together by inserting the pump plunger into its cavity in the bowl (extreme care should be exercised to keep from damaging the pump leather), carefully guide the mixture metering valve (24) into its seat in bowl. Assure that the accelerator pump discharge tube is located inside the center ring of the venturi. Install bowl cover screws (2) and safety washers (1) and torque in place 35-45 inch pounds. Bend up a minimum of two tabs on all safety washers.

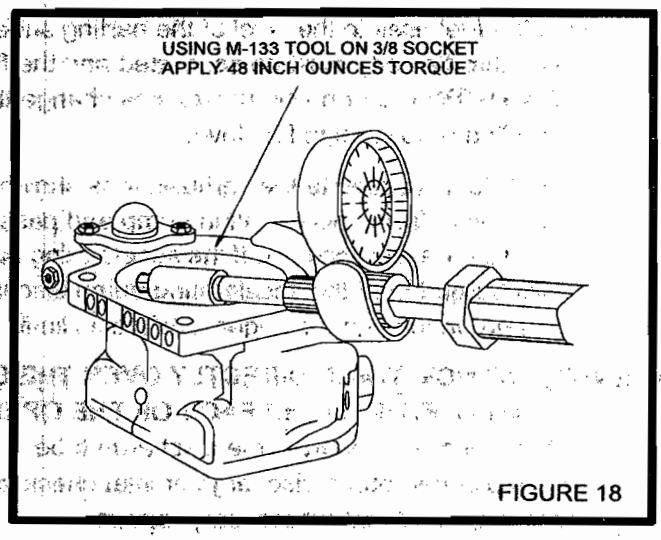


FIGURE 18

CAUTION: To prevent possible damage to the float do not blow on or into the carburetor with compressed air.

INSTALLATION OF WARNING LABEL

64) Clean the side of the carburetor body using acetone or equivalent degreasing solvent. Allow the surface to dry completely. Remove the peel-off backing from the warning label (65) and attach the label to the carburetor body.

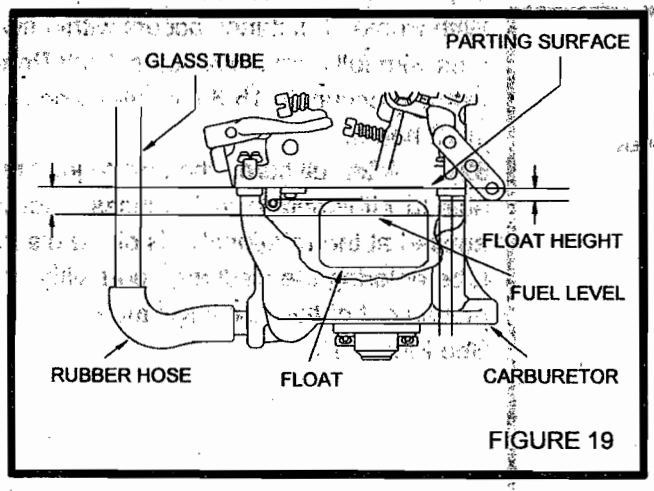


FIGURE 19

TEST PROCEDURE

FLOAT VALVE AND SEAT TEST
(See Figure 19)

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

B. Remove the bowl drain plug and connect a fitting, rubber hose, and glass tube to the carburetor drain connection. The glass tubing should be positioned vertically beside the carburetor.

C. 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.

D. 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 fuel level.

E. With fuel supplied to the carburetor as shown in Figure 19, 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.

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

G. Remove the sight tube fixture and allow the fuel to drain out. Operate the pump to clear the fuel out of the pump cylinder and passages. Reinstall and safety drain plug.

GENERAL

66) Final adjustments to idle speed and mixture should be made at the time the carburetor is installed on the engine.

PRESERVATIVE TREATMENT

67) If the carburetor is to be placed in storage after overhaul, the bowl drain plug should be removed and the carburetor flushed internally with preserving oil. Any good grade of clean #10 oil is satisfactory. 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.

68) If the data tag requires replacement, field Service data tags may be obtained.

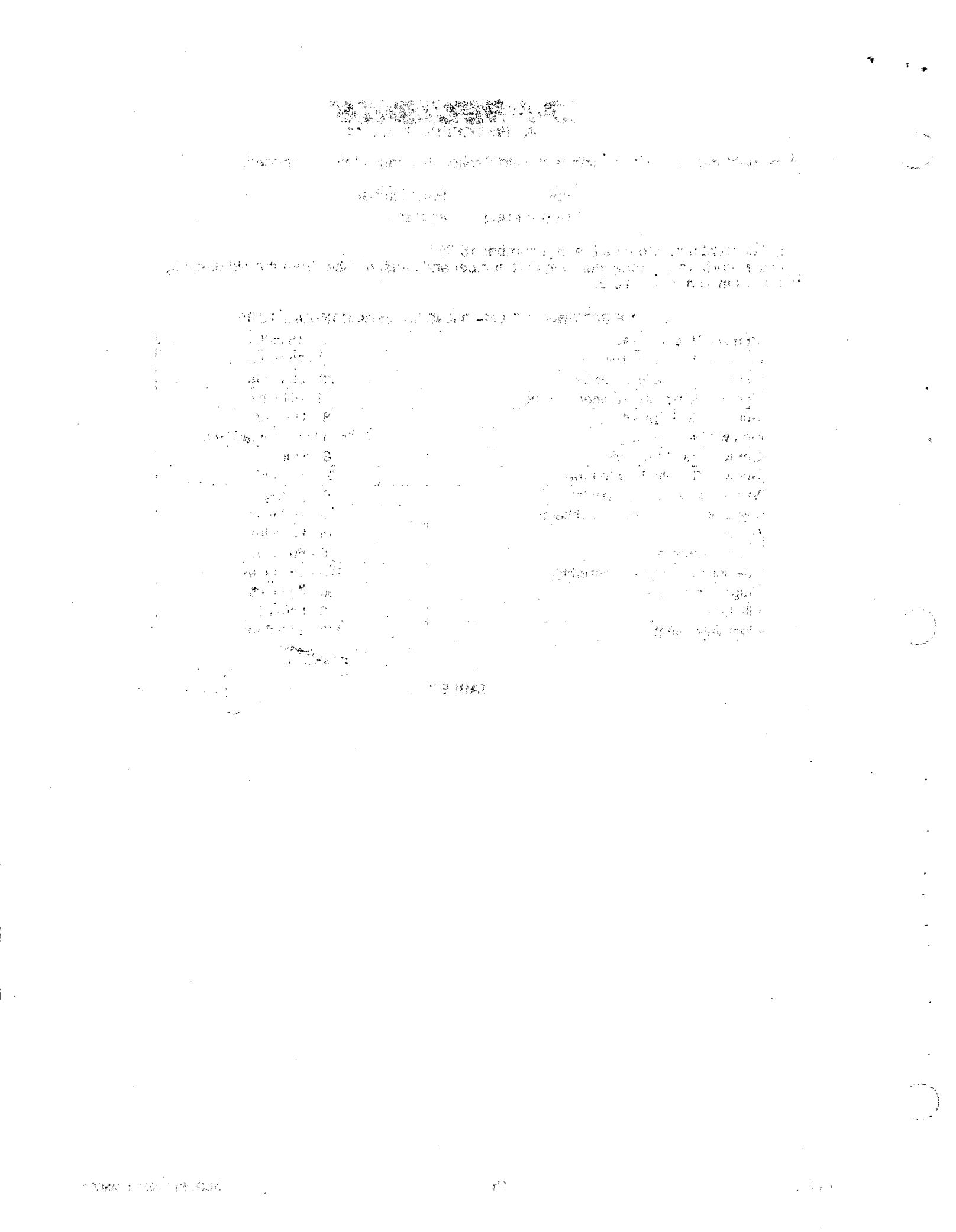
Type	Part Number
MA-3 & MA-4	63-B456

Replacement data tag pins are part number 15-367.
Transfer carburetor model number, part number and serial number from the old data tag to the replacement data tag.

TORQUE SETTINGS FOR MA-3 AND MA-4SPA CARBURETORS

Screw - Throttle valve	10 - 15 in-lbs
Screw - Mixture control lever	15 - 20 in-lbs
Screw - Throttle lever clamp	20 - 28 in-lbs
Screw - Pump inlet strainer housing	14- 18 in-lbs
Screw - Float bracket	8 - 11 in-lbs
Screw - Idle drill plug	12 -16 in-lbs + Thread lock
Screw - Pump lever pin	8 - 11 in-lbs
Screw - Throttle body to bowl	35 - 45 in-lbs
Valve assembly - Pump inlet	8 - 12 in-lbs
Valve assembly - Pump discharge	50 - 70 in-lbs
Nozzle	45 - 60 in-lbs
Nut - Throttle lever	20 - 60 in-lbs
Fuel inlet and strainer assembly	120 - 144 in-lbs
Plug - Bowl drain	50 - 60 in-lbs
Idle tube	3 - 5 in-lbs
Float valve seat	120 - 144 in-lbs

TABLE II



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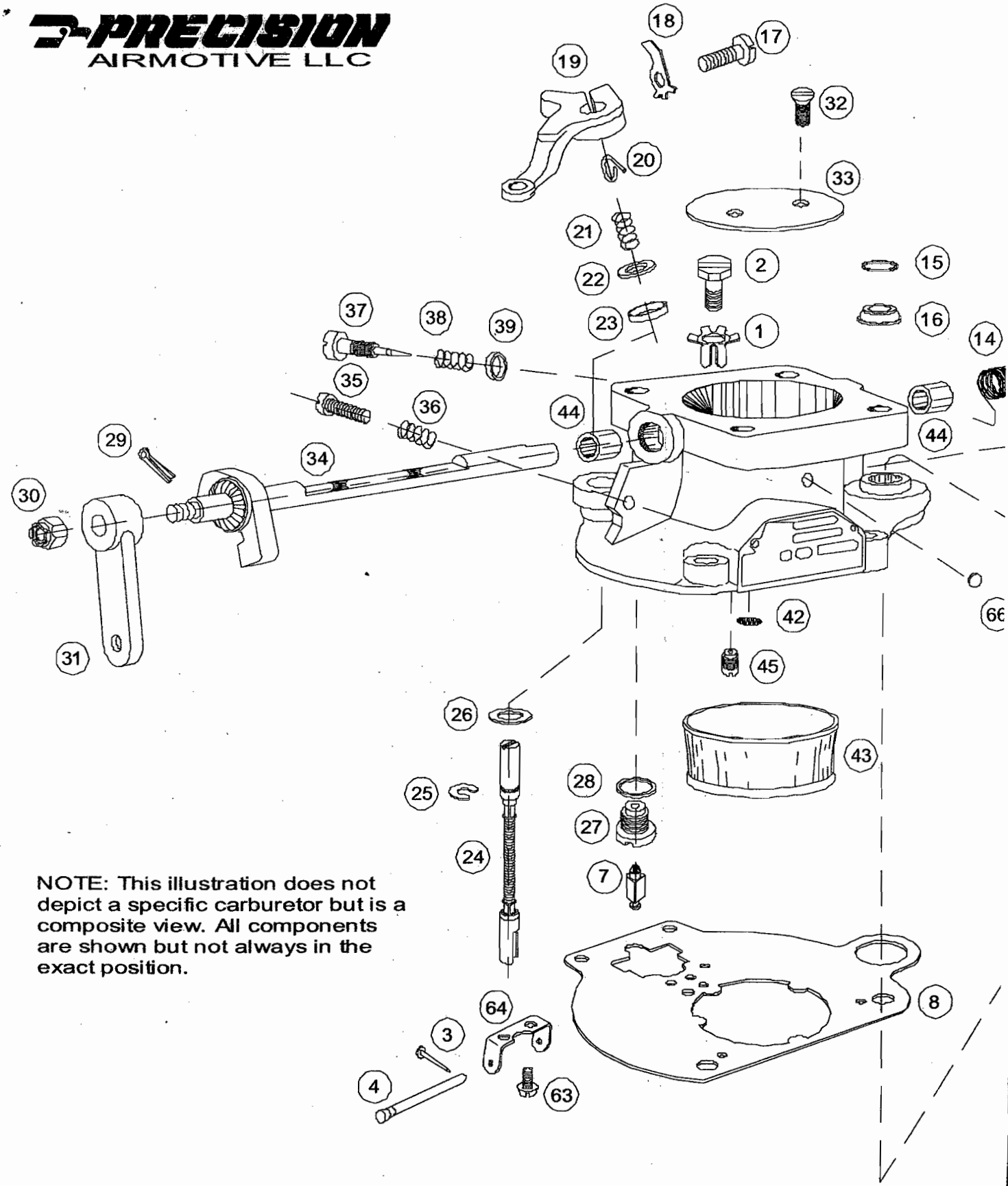
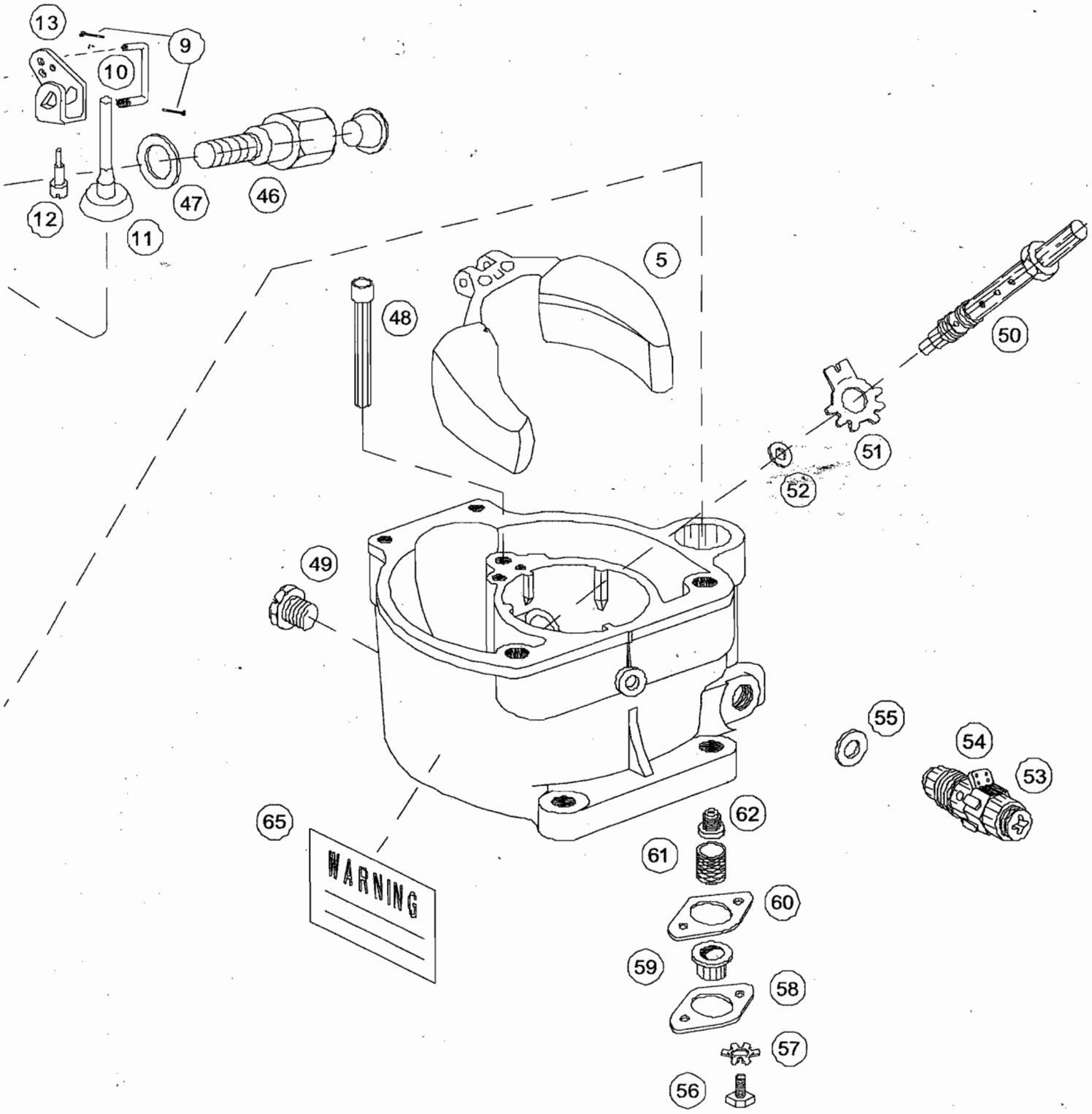


NOTE: This illustration does not depict a specific carburetor but is a composite view. All components are shown but not always in the exact position.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WARNING

INSTALLATION
INSTRUCTION
E-1000

CARBURETOR FLOAT KIT

666-1000
MODELS MA-3 & MA-4SPA

READ ENTIRE INSTRUCTIONS BEFORE PROCEEDING WITH WORK.

REMOVE CARBURETOR FROM ENGINE.

REFER TO THE APPROPRIATE CARBURETOR PART NUMBER EXPLODED VIEW AND PARTS LIST FROM PRECISION AIRMOTIVE CARBURETOR FULL SERVICE MANUAL; FORM #MSAFSM AND AIRCRAFT CARBURETOR SERVICE MANUAL; FORM #FSM-OH1

KIT PARTS DATA

(1) 16-B85 Gasket-Throttle Body to Bowl
(1) 16-B75 Gasket-Throttle Body to Bowl
(1) 16-223 Gasket-Float Valve (.016")
(1) 16-224 Gasket-Float Valve (.031")
(1) 29-184 Clip, Float Valve
(1) 30-864 Float& Baffle Assy
(1) 32-32 Shaft-Float Lever
(4) 78-A110 Washer-Throttle Body to Bowl Screw
(1) 82-11 Pin-Cotter, Float Lever Shaft
(1) E-1000 Instructions

1.0 DISASSEMBLY

1.1 Separate the throttle body and bowl by bending the tabs on the washers and removing throttle body to bowl screws. Discard the washers. NOTE: If necessary to loosen, tap casting lightly with a soft faced hammer and pull apart.

1.2 Remove float shaft cotter pin, float assembly, float shaft, and clip. Discard these pieces.

1.3 Remove and discard the throttle body to bowl gasket. Consult the Precision Airmotive Carburetor Full Service Manual to determine the correct throttle body to bowl gasket. Discard the unused throttle body to bowl gasket.

1.4 Remove the float valve seat and float valve gasket using tool #M-104. Discard the used float valve gasket.

STOP! Further disassembly of the carburetor is not necessary to install the float kit.

2.0 INSPECTION

2.1 Before reassembly, thoroughly inspect the carburetor per Precision Airmotive Aircraft Carburetor Service Manual. If additional maintenance is required, now is the time to do it to assure the airworthiness of the carburetor and your work.

2.2 Inspect the float valve and seat very carefully. If it exhibits indications of wear, replace it.

2.3 Insure that the float valve seat and especially the tip of the float valve are clean when assembled. Wipe the rubber float valve tip between a clean thumb and finger with a rotating motion.

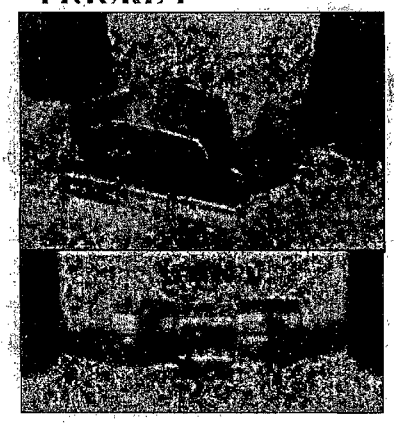
3.0 FLOAT INSTALLATION

CAUTION: Exercise care during the following operations to prevent damage to the float.

3.1 Install the float valve seat and 16-224 (.031") float valve gasket using tool #M-104. Torque to 10-12 foot pounds.
NOTE: Initial run-in torque must be at least 6 inch-pounds. If run-in torque is less than 6 inch-pounds, the nylon locking element is degraded or damaged, and the float valve assembly must be replaced.

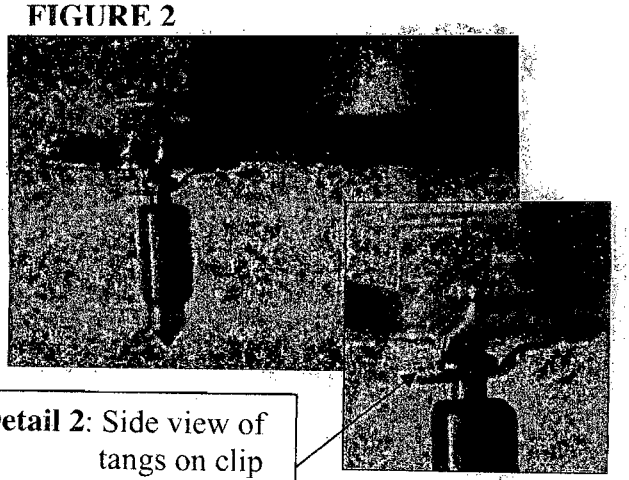
3.2 Position the clip onto the float lever as shown in **Figure 1**.

FIGURE 1



3.3 Place the float valve into the forked clip on float as shown in **Figure 2**.

FIGURE 2



Detail 2: Side view of tangs on clip

DETAIL 2

3.4 To install the float and float valve, place the throttle body with the mounting flange down and install the proper throttle body to bowl gasket.

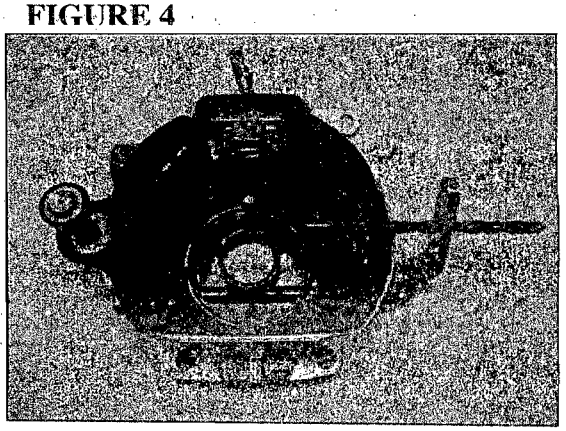
3.5 Place the float and float valve assembly into the float bracket with the float valve in the float valve seat, as shown in **Figure 3**.

FIGURE 3

3.6 Insert the float shaft through the float bracket and float.

3.7 To adjust the float properly it is suggested a 7/32" drill rod be used as shown in **Figure 4** to measure the adjusted clearance between the throttle body to bowl gasket and float, measured near the tip of each pontoon.

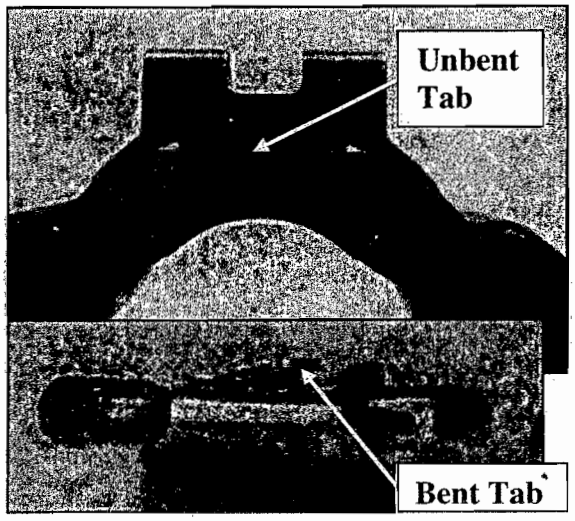
FIGURE 4



3.8 If adjustment is required, remove the float and bend the adjustment tab (**Figure 5**) located over the float valve to achieve the 7/32" setting. A small screwdriver bent 30° approximately ¼ inch from its tip is a useful tool for making this adjustment. Do not bend tab more than .030". Ensure that the

float valve is free and not binding in clip. Reinstall float. If additional adjustment is required, return to step 3.1 and use the 16-223 (.016") float valve gasket or a combination of the 16-223 and 16-224 float valve gaskets.

FIGURE 5



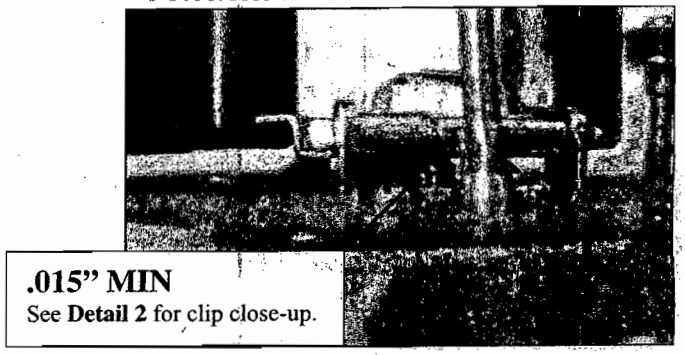
CAUTION: Both Float Pontoons Must Be The Same Height Above The Gasket. Float Lever May Be Bent Slightly If Required to Correct Pontoon Height. DO NOT APPLY PRESSURE TO THE VALVE AND SEAT DURING ADJUSTMENT BENDING.

3.9 Insure that the float shaft is free to rotate in the float and that the float valve movement is not restricted between the fully open and fully closed position of the float valve. If the float shaft binds in the clip, the clip may be removed and bent a small amount to allow the shaft to rotate freely.

3.10 Insure that proper clearance exists between the float and carburetor bowl using gage M-510 and a .081" drill rod as prescribed in Precision Airmotive Aircraft Carburetor Service Manual. If proper clearance does not exist, the float bracket may be repositioned laterally by loosing the attachment screws, repositioning, and re-torqueing as prescribed in Precision Airmotive Aircraft Carburetor Service Manual.

3.11 With the throttle body held inverted, insure that a minimum of .015" clearance exists between the forked clip and the float valve seat, as shown in **Figure 6.** If additional clearance is required, bend the tips of the clip slightly and/or use a thinner float valve gasket. If a thinner float valve gasket is used, return to step 3.1 and repeat adjustment procedure. Ensure that the needle is free to move, and does not bind on the clip.

FIGURE 6



3.12 When the adjustments have been completed, install the float shaft cotter pin through the float shaft. Bend the ends of the float shaft cotter pin all the way back.

4.0 FINAL ASSEMBLY AND TEST

4.1 Assemble the throttle body and bowl as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

4.2 Perform the float valve and seat test as prescribed in the Precision Airmotive Aircraft Carburetor Service Manual.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN ADVERSE CARBURETOR PERFORMANCE AND ENGINE OPERATION.

E-1000
INSTRUCTION
SHEET

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