

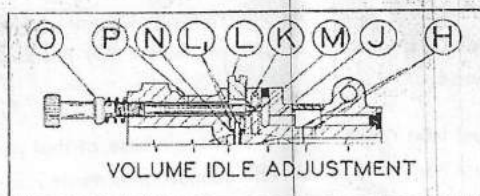
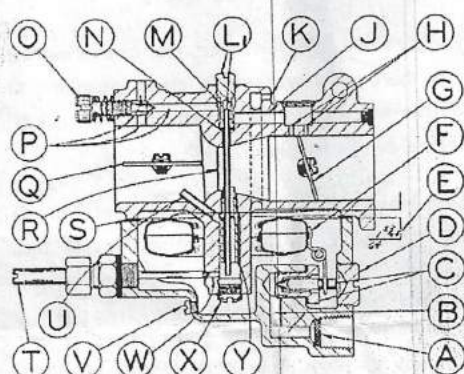
Tillotson

"MD" SERIES CARBURETORS

SERVICE INSTRUCTION DATA

"A" TYPE - 1 (Without Strainer Bowl)

HOW IT OPERATES



"A" TYPE - 1 Parts Nomenclature

- A—Fuel Inlet Screen
- B—Fuel Inlet Supply Channel
- C—Inlet Needle and Seat
- D—Fuel Bowl Plug Screw
- E—Float Setting
- F—Float
- G—Throttle Shutter
- H—Idle Fuel Discharge Ports
- J—Idle Fuel Channel
- K—Fuel Bowl Air Vent
- L—Idle Tube Plug Screw
- L-1—Idle Tube
- M—Idle Tube Fuel Outlet Orifice
- N—Idle Tube Gasket
- O—Idle Adjustment Screw
- P—Idle Air Bleed Supply Channels
- Q—Choke Shutter
- R—Venturi
- S—Body Gasket
- T—Main Adjustment Screw
- U—Main Nozzle Air Bleed Tube
- V—Fuel Bowl Drain Screw
- W—Main Fuel Adjustment Orifice
- X—Main Nozzle Channel Plug Screw
- Y—Main Nozzle

INLET NEEDLE & SEAT: A constant gasoline level in the bowl and all channels of this carburetor is maintained by Inlet Needle & Seat Assembly (C) and Float (F).

IDLE AND SLOW SPEEDS: Fuel reaching its level in the carburetor passes Main Adjustment Screw (T) through Channel (W) and into Idle Tube (L-1). High manifold vacuum at Throttle Shutter (G) draws this fuel upward past Idle Tube Outlet Orifice (M) where it mixes with air from Channel (P) adjusted to requirements by Idle Adjustment (O) through Channel (J) and into air stream at Idle Discharge Ports (H) where it mixes with additional air passing the slightly opened Throttle Shutter (G).

HIGH SPEEDS & FULL POWER: When engine is pulling a load Throttle Shutter (G) has opened further reducing suction and minimizing fuel discharge at (H) and increasing air

flow to a high velocity through Venturi (R). This air draws fuel from Main Nozzle (Y) supplied from Bowl, past Main Adjustment (T) through Channel (W). As engine speed or load increases air is automatically bled into the Main Nozzle through Tube (U) which causes a proper proportion of fuel in relation to adjustment to be metered at that speed range.

FLOAT SETTING: To check (E) correctly, separate Fuel Bowl Assembly from Upper Body Assembly and Gasket (see disassembly instructions No. 1 and 2 below). Then with Fuel Bowl Assembly held in upside down position the then lowest point of Float at free end should project 1/64th of an inch below rim of Float Bowl. If resetting is required remove Float (disassembly instruction No. 3) and bend vertical Float Lever Tang at point nearest the juncture of the horizontal float flange. Extreme care must be exercised to

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insure that the arms of the forked float lever lie in the same plane. When inspection indicates fuel level continues to rise beyond Float setting point, remove Inlet Needle and Seat, clean their seating surfaces with a clean soft cloth, place Inlet Needle in its Seat and tap very lightly turning Inlet Needle with thumb and forefinger several times to re-seat. Reinstall, then if proper Fuel Level is not maintained, install new Inlet Needle & Seat Assembly. (DO NOT CHANGE FLOAT SETTING FROM MANUFACTURER'S SPECIFICATIONS.)

TO START COLD ENGINE: First completely close both Idle (O) and Main Adjustment Screws (T) by turning to the right, or in, then open them approximately one (1) turn. Next close Choke (Q) and pull starter rope. After engine has been in operation a few seconds and starts to roll or lope, slowly open choke to full open position.

TO ADJUST: After engine has become thoroughly warm and while running at a constant half open throttle speed, adjust Main Adjustment Screw (T) to obtain maximum engine speed and smoothness.

Now close Throttle to very slow or trolling speed as indicated on panel or with the idle speed screw in the case of an industrial application and adjust Idle Adjustment Screw until smooth slow speed performance is obtained.

Regardless of altitude or climatic conditions a proper carburetor adjustment can be made by following the above rules - which eliminates jet changes.

IMPORTANT

HOW TO DISASSEMBLE FOR CLEANING OR REPAIR: To correctly disassemble, the following parts must be removed separately and in order indicated.

1. Complete Main Adjustment Screw (T) and Gland Assembly from fuel bowl.
2. Body retaining screws and lockwashers, to separate upper body and fuel bowl assemblies.
3. Float Lever Pinion Pin and Float (F) from Fuel Bowl.

4. Large Plug Screw (D), then Inlet Needle, Seat (C) and Gasket Assembly from Fuel Bowl.
5. Idle Adjustment Screw (O), Spring, Idle Tube (L) and Gasket, also Main Nozzle channel plug Screw (X) from Upper Body.
6. Throttle Shutter (G) Shaft and Lever Assembly.

To reassemble reverse the above instructions when installing parts indicated.

SERVICE HINTS

After carburetor is disassembled, per above instructions and all parts thoroughly washed in clean gasoline, three sections of the unit should be carefully blown out with clean compressed air as follows:

1. Main Nozzle (Y) and Air Bleed Vent Tube (U). It is only necessary to remove Main Nozzle from Upper Body casting when visual inspection reveals mutilation due to careless usage.
2. Idle Fuel Supply Channel (J). Install Idle Tube (L) and Gasket in Upper Body casting and then place air hose at open end of Idle Fuel Supply Channel (J) at that point where Idle Adjustment Screw (O) installation is made.
3. Fuel Inlet Channel (A). Place air hose at that point of Fuel Body, where fuel line connection is made and carefully blow out fuel Inlet Channel. Be certain that Inlet Connection Screen is clean and in place.

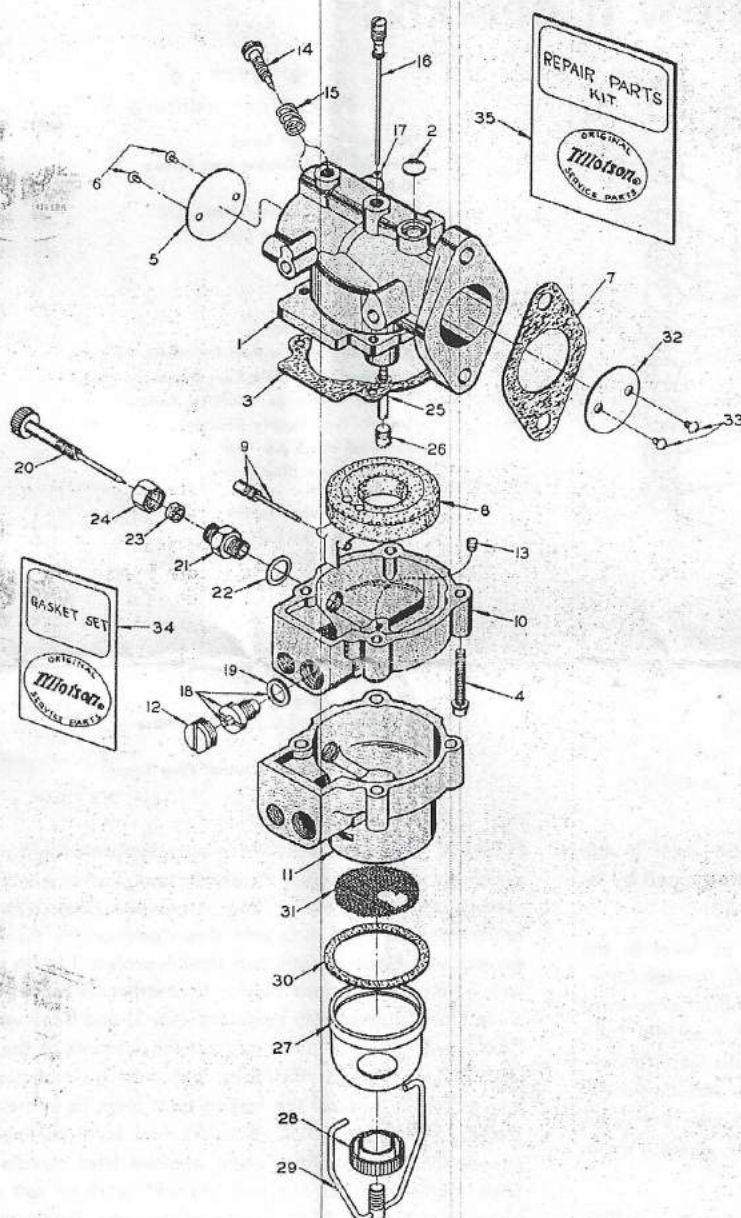
Choke Shaft and Primer Plunger Assemblies, or parts thereof, should not require removal or replacement unless accidentally damaged or broken. However, Choke Shaft Friction Pin and Spring may require replacement if found badly worn after lengthy service.

When installing Float (F) be sure the Yoke, or slotted end of Float Lever is inserted through the groove around blunt end of Inlet Needle so that Float movement will control Inlet Needle.



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VERTICAL FLANGE BASIC DRAWING



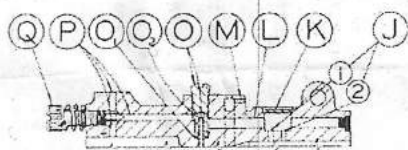
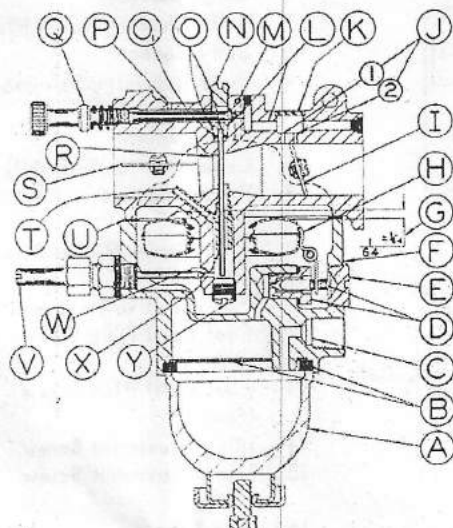
PARTS ILLUSTRATED ARE
TYPICAL IN APPEARANCE, AND
MAY NOT LOOK EXACTLY LIKE
THE PART REQUIRED

REF. NO.	PART NAME
1	Body (Service)
2	Body Channel Welch Plug
3	Body Gasket
4	Body Retaining Screw & Lockwasher (4)
5	Choke Shutter
6	Choke Shutter Screw (2)
7	Flange Gasket
8	Float
9	Float Lever Pinion Screw
10	Fuel Bowl
11	Fuel Bowl w/Strainer
12	Fuel Bowl Plug Screw (Large)
13	Fuel Bowl Plug Screw (Small)
14	Idle Adjustment Screw
15	Idle Adjustment Screw Spring
16	Idle Tube
17	Idle Tube Gasket
18	Inlet Needle, Seat & Gasket
19	Inlet Seat Gasket
20	Main Adjustment Screw
21	Main Adjustment Screw Gland
22	Main Adjustment Screw Gland Gasket
23	Main Adjustment Screw Packing
24	Main Adjustment Screw Packing Nut
25	Main Nozzle
26	Main Nozzle Channel Plug Screw
27	Strainer Bowl
28	Strainer Bowl Cup & Thumb Nut
29	Strainer Bowl Clamp Wire & Stud
30	Strainer Bowl Gasket
31	Strainer Bowl Screen
32	Throttle Shutter
33	Throttle Shutter Screw (2)
34	Gasket & Packing Set
35	Repair Parts Kit

Tillotson MD SERIES CARBURETOR

"B" TYPE - 2 (With Strainer Bowl)

HOW IT OPERATES



AIR IDLE ADJUSTMENT

"B" TYPE - 2 Parts Nomenclature

- A—Fuel Strainer Bowl
- B—Fuel Bowl Gasket and Screen
- C—Fuel Inlet
- D—Inlet Needle and Seat
- E—Fuel Bowl Plug Screw
- F—Fuel Bowl
- G—Float Setting
- H—Float
- I—Throttle Shutter
- J-1—Primary Idle Fuel Discharge Port
- J-2—Secondary Idle Fuel Discharge Port
- K—Idle Discharge Chamber Welch Plug
- L—Idle Fuel Supply Channel
- M—Fuel Bowl Air Vent
- N—Idle Tube Plug Screw
- O—Idle Tube
- O-1—Idle Tube Gasket
- O-2—Idle Tube Restriction
- P—Idle Air Bleed Supply Orifice
- Q—Idle Adjustment Screw
- R—Venturi
- S—Choke Shutter
- T—Main Nozzle Air Bleed Tube
- U—Body Gasket
- V—Main Adjustment Screw
- W—Main Fuel Adjustment Orifice
- X—Main Nozzle
- Y—Main Nozzle Channel Plug Screw

INLET NEEDLE & SEAT: A constant gasoline level in the bowl and all channels of this carburetor is maintained by Inlet Needle & Seat Assembly (D) and Float (H).

IDLE AND SLOW SPEEDS: Fuel reaching its level in the carburetor passes Main Adjustment Screw (V), through Channel (W) and into Idle Tube (O). High manifold vacuum at Throttle Shutter (I) draws this fuel upward past Idle Tube outlet (O) where it mixes with air from Idle Air Bleed Supply Orifice (P) adjusted to requirements by Idle Adjustment (Q) through Channel (L) and through Idle Discharge Ports (J-1 and J-2) into air stream at Throttle Shutter (I) where it mixes with additional air.

HIGH SPEEDS AND FULL POWER: When engine is pulling a load Throttle Shutter (I) has opened further reducing suction and minimizing fuel discharge at J-1 and J-2 and increasing air flow to a high velocity through Venturi (R). This air draws fuel from Main Nozzle (X) supplied from Bowl past Main Adjustment (V) through Channel (W). As engine speed or load increases air is automatically bled into the Main Nozzle through Tube (T) which causes a proper proportion of fuel in relation to adjustment to be metered at that speed range.

FLOAT SETTING: To check (G) correctly, separate Fuel Bowl Assembly from Upper Body Assembly and Gasket (see disassembly instructions No. 1 and 2 below). Then with Fuel Bowl Assembly held in upside down position the then lowest point of Float at free end should project 1/64th of an inch below rim of Float Bowl. If resetting is required remove Float (disassembly instruction No. 3) and bend vertical Float Lever Tang at point nearest the juncture of the horizontal float flange. Extreme care must be exercised to insure that the arms of the forked float lever lie in the same plane. When inspection indicates fuel level continues to rise beyond Float setting point, remove Inlet Needle and Seat, clean their seating surfaces with a clean soft cloth, place Inlet Needle in its Seat and tap very lightly turning Inlet Needle with thumb and forefinger several times to reseat. Reinstall, then if proper Fuel Level is not maintained, install new Inlet Needle & Seat Assembly. (DO NOT CHANGE FLOAT SETTING FROM MANUFACTURER'S SPECIFICATIONS.)

TO START COLD ENGINE: First completely close both Idle (Q) and Main Adjustment Screws (V) by turning to the right, or in, then open them approximately one (1) full turn. Next

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close Choke (S) and pull starter rope. After engine has been in operation a few seconds and starts to roll or lope, slowly open Choke to full open position.

TO ADJUST: After engine has become thoroughly warm and while running at a half open throttle speed, adjust Main Adjustment Screw (V) to obtain maximum engine speed and smoothness. Now close Throttle to very slow or trolling speed, as indicated on panel (or with the idle speed screw in the case of an industrial application) and adjust Idle Adjustment Screw until smooth slow speed performance is obtained. Regardless of altitude or climatic conditions, a proper carburetor adjustment can be made by following the above rules - which eliminates jet changes.

IMPORTANT

HOW TO DISASSEMBLE FOR CLEANING OR REPAIR: To correctly disassemble the following parts must be removed separately and in order indicated.

1. Complete Main Adjustment Screw (V) and Gland Assembly from Fuel Bowl.
2. Body Retaining Screws and Lockwasher, to separate Upper Body and Fuel Bowl Assemblies.
3. Float Lever Pinion Pin and Float (H) from Fuel Bowl.
4. Large Plug Screw (E) then Inlet Needle, Seat (D) and Gasket Assembly from Fuel Bowl.
5. Idle Adjustment Screw (Q), Spring, Idle Tube Channel Plug Screw (N), Idle Tube (O) and Gasket, also Main Nozzle Channel Screw (Y) from Upper Body.

6. Throttle Shutter (I) Shaft & Lever Assembly.

To reassemble reverse the above instructions when installing parts indicated.

SERVICE HINTS

After carburetor is disassembled per instructions and all parts washed in clean gasoline, three sections of the unit should be carefully blown out with clean compressed air as follows:

1. Main Nozzle (X) and Air Bleed Vent Tube (T). It is only necessary to remove Main Nozzle from Upper body casting when visual inspection reveals mutilation due to careless usage.
2. Idle Fuel Supply Channel (L). Install Idle Tube (O) and Gasket in Upper Body Casting; then place air hose at open end of Idle Fuel Supply Channel (L) at that point where Idle Adjustment Screw (Q) installation is made.
3. Remove Fuel Strainer Bowl (A) from Lower Body Casting (F) to reach and remove Fuel Bowl Gasket and Screen (B). Carefully blow off Screen before reassembly in carburetor.

Choke Shaft and Primer Plunger Assemblies or parts thereof should not require removal or replacement unless accidentally damaged or broken. However, Choke Shaft Friction Pin and Spring may require replacement if found badly worn after lengthy service.

When installing Float (H) be sure the Yoke or slotted end of Float Lever is inserted through the groove around blunt end of Inlet Needle so that Float movement will control same.

Models available in the MD series carburetors with variations in the main Adjustment position, Flange position and Bowl selection are listed below.

TYPE A Horizontal Flange Without Bowl						TYPE B Hor'ztl Flange With Bowl	TYPE C Hor'ztl Flange Side Main Adj.	TYPE E Vert. Flange Without Bowl	TYPE F Vert. Flange With Bowl
MD-1A	MD- 9B	MD-17A	MD-31A	MD-46B	MD-63A	MD- 7B	MD-22A	*MD-43A	MD-32A
2A	10A	20A	34A	*MD-48A	64A	18A	22B	*MD-43B	32B
3A	11A	21A	34B	*MD-48B	66A	19A	23A	52A	42A
4A	12A	24A	*MD-35A	50A	71A	33A	23B	76A	42B
5A	13A	25A	*MD-36A	51A	72A	38A	49A		45A
5B	14A	26A	*MD-36B	53A	73A	39A	56A		47A
6A	14B	27A	*MD-37A	54A	74A	39AX	*MD-62A		61A
7A	15A	28A	40A	55A	75A	57A	65A		
8A	15B	29A	41A	55B		57B	67A		
8B	16A	29B	44A	58A		59A			
9A	16B	30A	46A	60A		68A			
						68B			
						69A			

*Incorporates drain valve

TILLOTSON MANUFACTURING COMPANY
TOLEDO 12, OHIO

ADJUSTMENT & SERVICE INSTRUCTIONS

FLOAT SETTING: To check correctly, separate Fuel Bowl Assembly from Upper Body Assembly and Gasket. Now with Fuel Bowl Assembly held in upside down position the then lowest point of float, at free end, should project $1/64$ th of an inch below rim of fuel bowl. If resetting is required remove Float and slightly bend vertical Float Lever only to obtain proper measurement. When inspection indicates Fuel Level continues to rise beyond float setting point, remove Inlet Needle and Seat, clean their seating surfaces with a soft cloth. Place Inlet Needle in its seat and tap very lightly while turning Inlet Needle with thumb and forefinger several times to reseal. Reinstall, then if proper Fuel Level is not maintained, install new Inlet Needle and Seat Assembly. (DO NOT CHANGE FLOAT SETTING FROM MANUFACTURERS SPECIFICATIONS.)

ADJUSTMENT INSTRUCTIONS

Before starting engine check for proper fuel mixture supply in tank, open Fuel Line Shut Off Valve and be certain air valve on Fuel Tank cap is open.

Separate manual carburetor adjustments are provided: Main Adjustment Screw controlling power range mixture and Idle Adjustment Screw governing idle mixture at closed throttle.

INITIAL ADJUSTMENT: Completely close Idle Adjustment Screw by turning in (clockwise) until seated (without forcing) then turn back in opposite direction about one full turn. Proceed in like manner with Main Adjustment Screw except open about one full turn after first being closed (if a numbered Main Adjustment Knob or Lever is being used open to number specified in

Engine Manual or "Rich" position indicated on panel). Now choke and start engine in usual manner and run until thoroughly warm.

POWER RANGE ADJUSTMENT: With engine running at a constant speed of approximately one-half ($1/2$) open throttle position, slowly turn Main Adjustment inward (clockwise) until motor begins to lose speed, then turn back in opposite direction (usually $1/8$ th to $1/4$ th of a turn) until maximum speed and power is obtained. Final setting should be approximately three-fourths to one ($3/4$ -1) turn open.

IDLE MIXTURE ADJUSTMENT: This adjustment should only be made AFTER the above mentioned power range adjustment has been completed. With engine idling at closed throttle position, slowly turn Idle Adjustment Screw inward (clockwise) until motor begins to lose speed and miss or flutter, then turn back in opposite direction (usually about $1/8$ th of a turn) until engine functions smoothly and steadily. Final setting should be about one-half to three-fourths ($1/2$ - $3/4$) of a turn open.

FINAL ADJUSTMENT: Alternately open and close throttle a few times for adjustment test. If acceleration hesitancy or stalling at idle speed occurs, entire adjustment procedure outlined above, should be repeated. Preceding instructions cover Cold Motor start only. Warm Motor only requires opening of throttle and one or two vigorous pulls on starter rope without further carburetor adjustment. Regardless of altitude or climatic conditions a proper carburetor adjustment can be made by following the above rules - which eliminates jet changes.