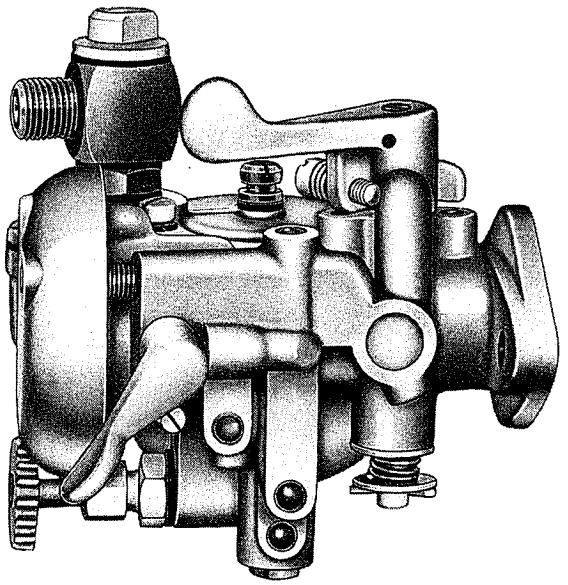
Tillotson CARBURETORS —

MS SERIES, TYPE F

HORIZONTAL CARBURETOR



SIZE.....*½-inch and ⅝-inch S.A.E. horizontal carburetors.*

DESIGN.....*Idle and high speed systems.*

ADJUSTMENTS...*Idle and main nozzle*

FLOAT.....*One, attached to a single lever*

THROTTLE LEVER.*Zinc die-cast with friction spring*

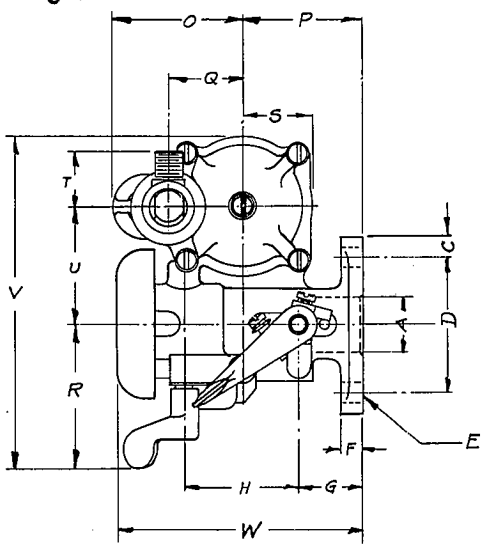
CHOKE LEVER....*Zinc die-cast, friction controlled*

FLANGE.....*Horizontal*

CASTING METAL. *Zinc die-cast, cronak treated to minimize corrosion*

WEIGHT.....*Approximately 1½ lbs.*

The Tillotson MS Series, Type F carburetor is a specially designed unit of finest quality zinc base die-cast alloys for production uniformity for attachment to engines of 2 or 4 cycle. Its air bled nozzles are ajustable, providing operator with complete control of economy and performance without jet change regardless of altitude. Both throttle and choke levers are friction controlled. Venturi sizes available to and including ⅝-inch.



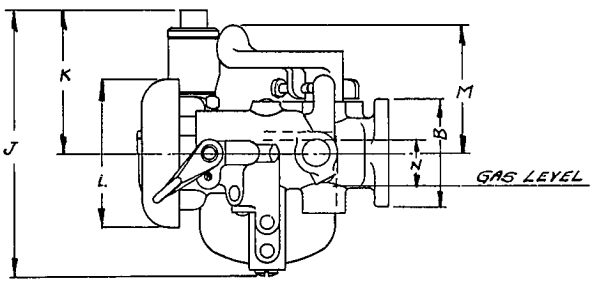
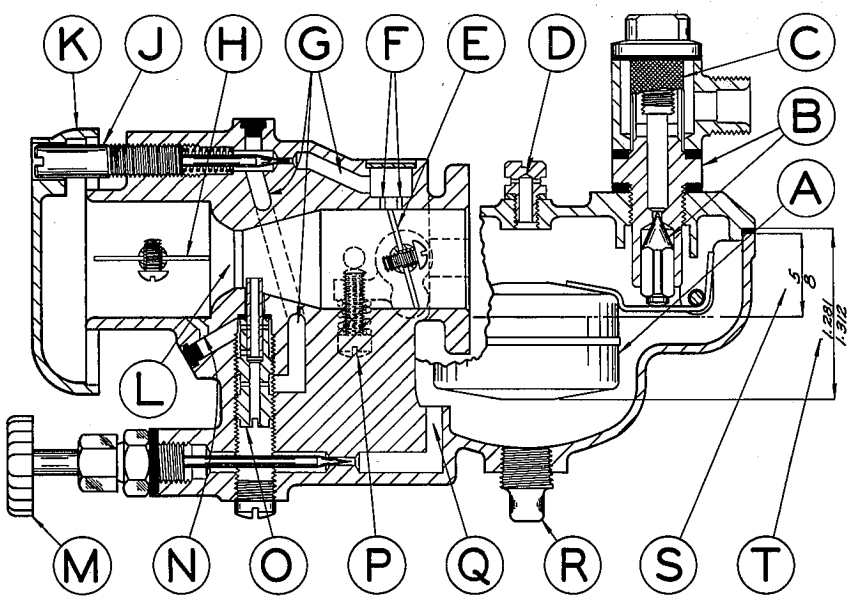


TABLE OF DIMENSIONS IN INCHES

SIZE	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z		SIZE
½	¾	1 7/16	9/32	1 13/16	9/32	5/16	⅞	1 17/32	3 5/8	1 15/16	2	1¾	⅝	1⅞	1⅝	1	2	1	¾	1 9/16	4½	3⅜					½
⅝	13/16	1 7/16	9/32	1 13/16	9/32	5/16	⅞	1 17/32	3 5/8	1 15/16	2	1¾	⅝	1⅞	1⅝	1	2	1	¾	1 9/16	4½	3⅜					⅝

MS SERIES TYPE "F" ...HOW IT OPERATES



A Float
B Inlet Needle and Seat
C Inlet Screen
D Bowl Vent
E Throttle Shutter
F Idle Discharge Ports
G Idle Fuel Supply Channels
H Choke Shutter
J Idle Adjustment
K Air Horn Cap
L Venturi
M Main Adjustment
N Main Nozzle Air Bleed
O Main Nozzle
P Idle Speed Regulating Screw
Q Main Fuel Supply Channel
R Bowl Drain Plug
S Gasoline Level
T Float Setting

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

IDLE AND SLOW SPEEDS: Fuel reaching its level in the carburetor passes through Main Fuel Supply Channel (Q) past Main Adjustment (M) and Main Nozzle (O) and into Idle Fuel Supply Channel (G). High manifold vacuum or suction at Throttle Shutter (E) draws this fuel upward past Idle Adjustment (J) through Channel (G) and into air stream at Idle Discharge Ports (F) where it mixes with additional air passing the slightly opened Throttle Shutter (E).

HIGH SPEEDS AND FULL POWER: When engine is pulling a load, Throttle Shutter (E) has opened further reducing suction and minimizing fuel discharge at (F) and increasing air flow to a high velocity through Venturi (L). This air draws fuel from Main Nozzle (O) supplied from bowl through Channel (Q) and past Main Adjustment (M). As engine speed or load increases, air is automatically bled into the main nozzle through Main Nozzle Air Bleed (N) which causes a proper proportion of fuel in relation to adjustment to be metered at that speed range.

GASOLINE LEVEL: To set correctly (T) remove carburetor float cover assembly and gasket. Turn upside down and with the float lever resting on the Inlet Needle bend lever, if necessary, to give a distance of 1-9/32" to 1-5/16" from free edge, machined face of Float cover to the then top edge of Float (A).

When inspection indicates level continues to rise beyond setting point, remove inlet needle and seat, clean their seating surfaces with a soft, clean cloth. Place inlet needle in its seat and tap very lightly, turning inlet needle with the thumb and forefinger several times to reseat. Re-install, then if proper level is not maintained, install a new inlet needle and seat assembly. DO NOT CHANGE GASOLINE LEVEL FROM MANUFACTURERS SPECIFICATIONS.

TO ADJUST: Before starting engine close Main Adjustment (M) by turning to the right, or in, to its seat. (Do not force adjustment against seat) then open two complete turns. Close Idle Adjustment to its seat then open ¾ of a turn. Open Throttle approximately ½ of its travel, choke carburetor in the usual manner, then start engine and run until thoroughly warm.

When attached to an outboard engine—run engine at or near wide open throttle. Adjust spark lever for maximum speed, then close Main Adjustment (M) until engine slows down for want of fuel. Then turn in opposite direction, usually from ⅛ to ¼ of a turn, to that position where engine runs at its maximum speed.

Close Throttle and set Idle Speed Regulating Screw (P) to run engine slightly faster than normal idling speed. Turn Idle Adjustment (J) to the right or in slowly until a noticeable slowing or missing of engine occurs; then turn in the opposite direction until engine fires evenly. Set Idle Speed Regulating Screw (P) to run engine at desired idling speed. A smooth idle is often times obtained by setting Idle Speed Regulating Screw (P) for a speed slightly faster than normal idle, then reducing speed by further retarding the spark.

The approximate correct adjustment of this carburetor below 5,000 feet altitude are, Idle Adjustment (J) ⅜ to ⅝ of a turn open—Main Adjustment 1 to 1½ turns open.

When adjusting carburetor to engines having automatic spark advance disregard information relative to spark advance and retard—otherwise adjustment instructions are the same.

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

ENGINE PERFORMANCE

To eliminate carburetor complaints of all natures, regular maintenance or tune-up service performed by expert servicemen equipped with modern testing apparatus is essential. Spark plugs, complete distributor mechanism, ignition timing, valve setting, compression and carburetor are all important factors controlling good engine performance and fuel economy. These factors should be checked and serviced to manufacturers specifications in the above sequence to obtain results.

To correctly service the carburetor, check the adjustments, gasoline level and other factors outlined on this page. The carburetor must be free of all water, dirt and grit and when cleaning use compressed air—never a wire or drill in cleaning its small holes, but a wooden toothpick if necessary. All plug screws and nozzles must be tight. All gaskets must be in their proper place and we recommend that new gaskets be used. Choke Shutter (H) must be in full open position when choke control is pushed all the way in.

FLATNESS WHEN ACCELERATING: Re-adjust carburetor in accordance with rules outlined above, bearing in mind that either a rich or lean adjustment causes flatness. Check and correct gasoline level. Remove dirt restricting gasoline flow thru idle tube or at idle outlet (F). Remove collection of lint from Main Adjustment (M).

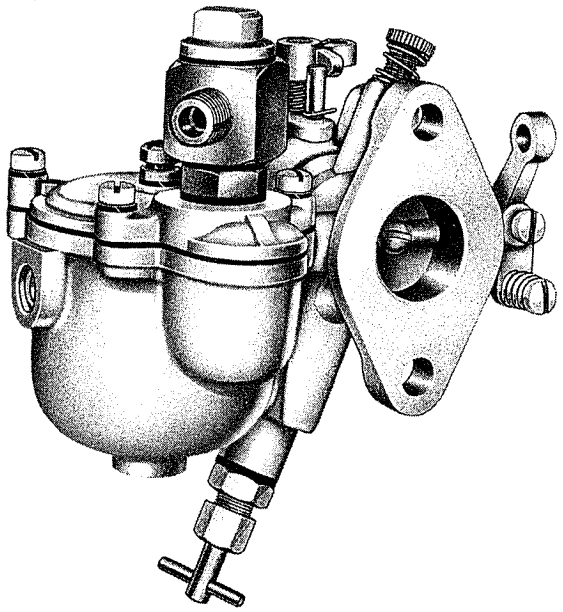
STALLING OF ENGINE: Tighten throttle lever to shaft; reset Idle Speed Regulating Screw (P); check and correct gasoline level; inspect Idle Adjustment (J)—its adjustment point must not be ringed; check and correct conditions under heading of "Flatness when accelerating." Inspect throttle shaft for undue wear.

THE TILLOTSON MANUFACTURING CO.
TOLEDO, OHIO

Tillotson CARBURETORS—

MS SERIES, TYPE A

HORIZONTAL CARBURETOR



SIZE . . . . . *⅜-inch and ½-inch S.A.E., horizontal carburetors.*

DESIGN . . . . . *Idle and high speed systems*

ADJUSTMENTS . . . *Both idle and main nozzle*

FLOAT . . . . . *One, attached to a single lever*

BUSHINGS . . . . . *Steel at throttle shaft*

THROTTLE LEVER . *Die-cast zinc with connection attached*

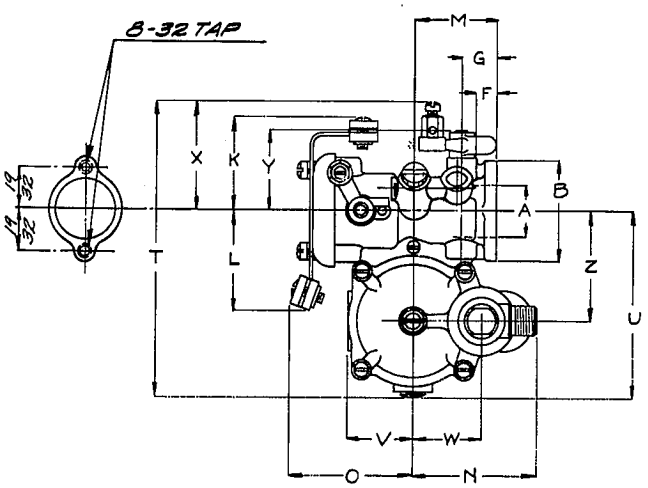
CHOKE LEVER . . . . *Die-cast zinc with connection attached*

FLANGE . . . . . *Vertical*

CASTING METAL . *Die-cast zinc, cronac treated to minimize corrosion.*

WEIGHT . . . . . *Approximately 1 lb., 3 oz.*

The Tillotson MS Series, Type A carburetor is a precision built instrument, incorporating the highest quality of workmanship and materials. It is ruggedly constructed, of proven design, using zinc die-castings for production uniformity, calibrated for engines of 2 or 4 cycle. Venturi sizes available to and including ⅝-inch.



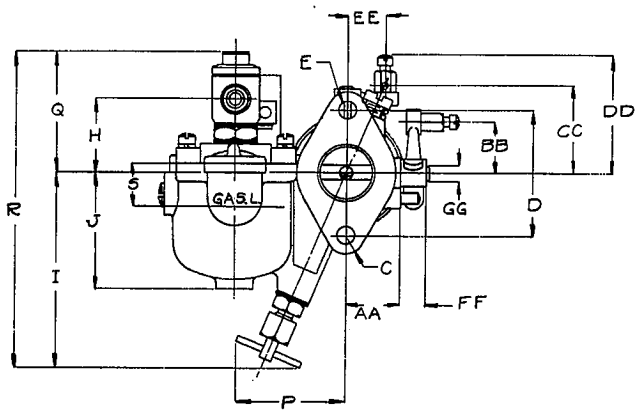
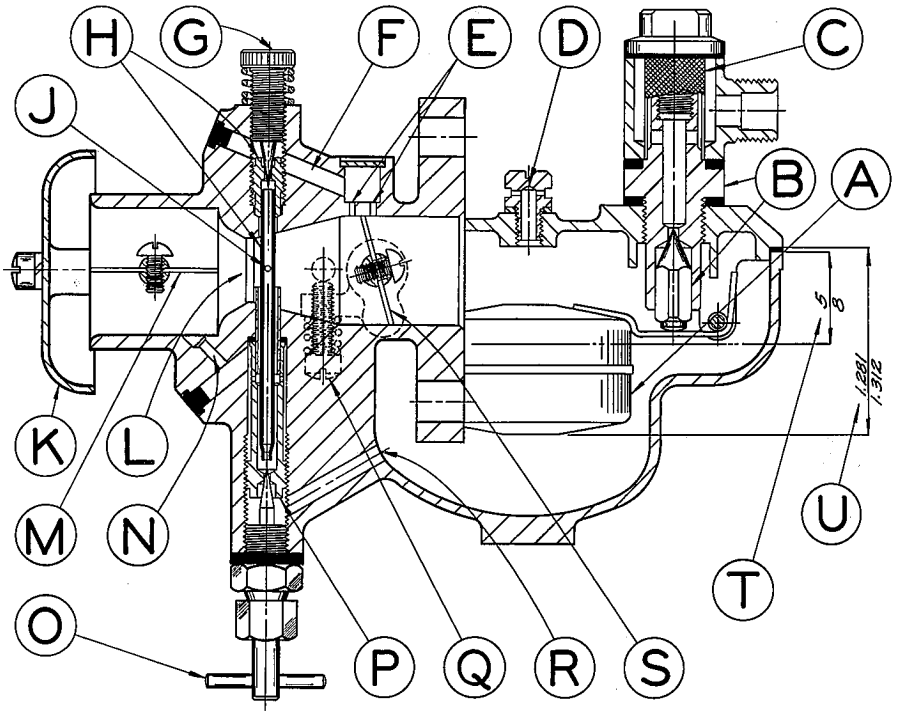


TABLE OF DIMENSIONS IN INCHES

SIZE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	BB	CC	DD	EE	FF	GG	SIZE
½	¾	1 7/16	9/32	1 13/16	9/32	5/16	½	1 3/32	2 13/16	1 11/16	1 11/32	1 7/16	1 3/16	1 13/16	1 29/32	1 5/8	1 25/32	4 19/32	5/8	4 9/32	2 23/32	15/16	1	1 9/16	1 5/32	1 19/32	25/32	7/8	1 1/4	1 21/32	5/8	3/8	7/32	½
⅜	9/16	1 7/16	9/32	1 13/16	9/32	5/16	½	1 3/32	2 13/16	1 11/16	1 11/32	1 7/16	1 3/16	1 13/16	1 29/32	1 5/8	1 25/32	4 19/32	5/8	4 9/32	2 23/32	15/16	1	1 9/16	1 5/32	1 19/32	25/32	7/8	1 1/4	1 21/32	5/8	3/8	7/32	⅜

MS SERIES "A" HOW IT OPERATES



A Float
B Inlet Needle and Seat
C Inlet Screen
D Bowl Vent
E Idle Discharge Ports
F. Idle Mixture Supply Channel
G Idle Adjustment
H Idle Tube
J Idle Air Bleed Hole
K Air Horn Cap
L Venturi
M Choke Shutter
N Main Nozzle Air Bleed
O Main Adjustment
P Main Nozzle
Q Idle Speed Regulating Screw
R Main Fuel Supply Channel
S Throttle Shutter
T Gasoline Level
U Float Setting

INLET NEEDLE AND SEAT: A constant gasoline level is maintained in the bowl and channels of the carburetor by Inlet Needle and Seat Assembly (B) and Float (A).

IDLE AND SLOW SPEED: Gasoline reaching its level in the carburetor passes through channel (R) past Main Adjustment (O) through Adjustment orifice of Main Nozzle (P) and into Idle Tube (H). Manifold vacuum or suction at Throttle Shutter (S) draws fuel up through the tube where it mixes with air at Idle Air Bleed Hole (J). This mixture continues upward past Idle Adjustment (G) through channel (F) where it enters the air stream at Idle Discharge Ports (E) and mixes with additional air passing the slightly opened Throttle Shutter (S).

HIGH SPEEDS AND FULL POWER: When engine is pulling a load Throttle Shutter (S) has further opened minimizing fuel discharge at (E) and increasing air flow to a high velocity through Venturi (L). This air draws fuel from Main Nozzle Outlet (P), supplied from bowl through Channel (R) Main Adjustment (O) and Main Nozzle Adjustment Orifice (P). As engine speed or load increases air is automatically bled into Main Nozzle through internal Air Bleed (N) causing a proper proportion of fuel in relation to adjustment to be metered at that speed range.

GASOLINE LEVEL: To set correctly, remove carburetor Float Cover Assembly and gasket. Turn upside down and with the float lever resting on the Inlet Needle, bend float lever if necessary to give a distance of 1-9/32" to 1-5/16" from the free edge, machined face of float cover to the then top edge of Float (U).

When inspection indicates level to rise beyond setting point, remove Inlet Needle and Seat, clean their seating surfaces with a soft clean cloth. Place Inlet Needle in its seat and tap very lightly, turning Inlet Needle with the thumb and forefinger several times to reseat. Re-install, then if proper level is not maintained install a new Inlet Needle and Seat Assembly. **DO NOT CHANGE GASOLINE LEVEL FROM MANUFACTURERS SPECIFICATIONS.**

TO ADJUST: Before starting engine close Main Adjustment (O) by turning to the right, or in, to its seat. (Do not force adjustment against seat) then open one full turn. Close Idle Adjustment (G) to its seat then open 1 full turn.

Open Throttle about ⅓ of its travel. Choke carburetor in usual manner, start engine and run until thoroughly warm. With engine running (Throttle open ⅓) slowly close main adjustment (O) until engine begins to lose speed, then open this adjustment (usually ⅛ to ¼ of a turn) to permit engine to regain full speed. This will be found the leanest adjustment for maximum engine power. Next, close the Throttle then set Idle Speed Regulating Screw (Q) to run engine slightly faster than normal idling speed. Slowly turn Idle Adjustment (G) to the right, or in, until a noticeable missing or slowing of engine occurs, then turn in the opposite direction (approximately ⅛ of a turn) until engine runs smoothly. Recheck adjustment after running engine at a faster speed for a few seconds, cleaning the manifold. Set Idle Speed Regulating Screw (Q) to run engine at a good idling speed.

The approximate correct adjustments of this carburetor below 5,000 feet altitude are, Idle Adjustment ¾ to 1 turn open; Main Adjustment (O) ¾ to 1¼ turns open.

Regardless of altitude or climatic conditions a proper carburetor adjustment can be made by following these rules thereby eliminating jet changes.

ENGINE PERFORMANCE

To eliminate carburetor complaints of all natures, regular maintenance or tune-up service performed by expert servicemen equipped with modern testing apparatus is essential. Spark plugs, complete distributor mechanism, ignition timing, valve setting, compression and careburetor are all important factors controlling good engine performance and fuel economy. These factors should be checked and serviced to manufacturers specifications in the above sequence to obtain results.

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FLATNESS WHEN ACCELERATING: Re-adjust carburetor in accordance with rules outlined above, bearing in mind that either a rich or lean adjustment causes flatness. Check and correct gasoline level. Remove dirt restricting gasoline flow through idle tube or at idle outlet (E). Remove collection of lint from Main Adjustment (O).

STALLING OF ENGINE: Tighten throttle lever to shaft; reset Idle Speed Regulating Screw (Q); check and correct gasoline level; inspect Idle Adjustment (G)—its adjustment point must not be ringed; check and correct conditions under heading of "Flatness when accelerating." Inspect throttle shaft for undue wear.

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TOLEDO, OHIO