SERVICE INFORMATION APPLYING TO ALL MODEL "M" LINKERT CARBURETORS ON ARMY MOTORCYCLES

The Model "M" Linkert carburetors used on Army motorcycles are as follows:

Model	Carb. Size	Venturi Size	High Speed Adjustment	Used On	Use For Replacement Carburetor
M-58	1½"	1-1/16"	Adjustable	1942 and later Model U-74" (S. Africa)	--
M-64	1½"	1-1/16"	Fixed jet	1940 Model WLA - 45"	M-88
M-65	1½"	1-1/16"	Fixed jet	1940 and later Model UA - 74"	--
M-84	1½"	1-1/16"	Fixed jet	Early 1941 Model WLA - 45"	M-88
M-88	1½"	15/16"	Fixed jet	1941 and later Models WLA and WLC - 45"	--
M-90	1½"	15/16"	Fixed jet	1941 and later 61" O.H.V. Models ELA & ELC	--
M-97	1½"	1-1/16"	Fixed jet	U.S. Army Tricycle (Field-Car)	M-90
M-17R	1"	13/16"	Fixed jet	42XA (Shaft drive model) right cylinder	--
M-17L	1"	13/16"	Fixed jet	42XA (Shaft drive model) left cylinder	--

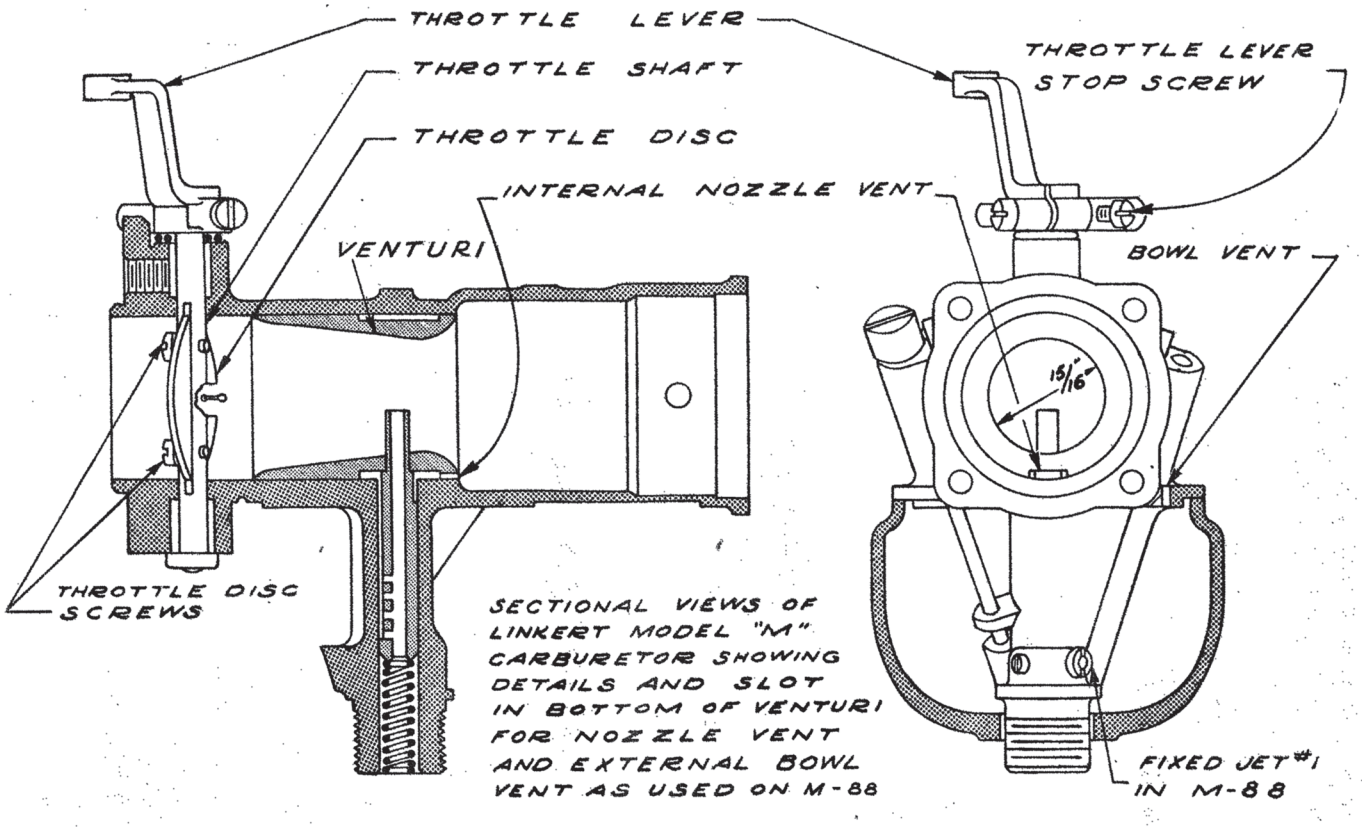
All of these models have model number stamped on "pad" on top of the carburetor body. For example, model M-88 is stamped M-88 . A brief description of these carburetors follows:

The M-58 model has external or outside nozzle and bowl vents; that is, the air bleed to nozzle and bowl are from external holes drilled in body casting. This model is used with an oil bath air cleaner. The M-58 has a standard high speed needle valve adjustment (adjusting needle is near air intake end of carburetor and to the left, looking at air intake end). This needle should be adjusted to 1½ turns open for initial adjustment and then set (when motorcycle is in operation) to the best setting for power.

The M-64 and M-65 models have external or outside nozzle and bowl vents; that is, the air bleed to nozzle and bowl are from external holes drilled in body casting. These two models are exactly alike except that one has a different size fixed high speed jet than the other. (See instructions below). These two models are used with a standard (not oil bath) air cleaner.

The M-84 model has an internal vent in the form of a tube extending back of venturi and pointing into the air stream. This vent supplies the air bleed to nozzle. The bowl is vented through a hole drilled in body and opening externally, or outside. This model is used with an oil bath air cleaner and is equipped with a fixed high speed jet (see instructions below).

The M-88 model has an internal vent to nozzle in the form of a slot cut in lower side of venturi on air intake end. The bowl vent is external and the same as in M-58, M-64, M-65 and M-84. This model is equipped with a fixed high speed jet (see instructions below) and is used with an oil bath air cleaner. This model should be used to replace M-64 or M-84 model carburetors.



SECTIONAL VIEWS OF LINKERT MODEL "M" CARBURETOR SHOWING DETAILS AND SLOT IN BOTTOM OF VENTURI FOR NOZZLE VENT AND EXTERNAL BOWL VENT AS USED ON M-88

The M-90 model has an internal vent to nozzle in the form of a slot cut in lower side of venturi on air intake end. The bowl vent is external, the same as in M-58, M-64, M-65, M-84 and M-88. This model is equipped with fixed high speed jet (see instructions below) and is used with an oil bath air cleaner. Bowl on M-90 model is same as on M-97 but different than on M-58, M-64, M-65, M-84 and M-88 in that this bowl uses a special gasket between upper edge of bowl and lower face of body. This gasket must always be located in its proper place to seal bowl to body. Use a new gasket if old one is the least damaged or defective. If gasket is not properly located, gasoline leakage at bowl will result.

The M-97 model has an internal vent in the form of a tube extending into air stream and back of venturi. This vent supplies both the air bleed for nozzle and the vent for bowl. There are no external vents on this model. The special bowl gasket between upper edge of bowl and lower face of body must always be properly located and in place to seal bowl to body. Use a new gasket if old one is the least damaged or defective. If this gasket is not correctly assembled, leakage of air will take place at bowl edge and will cause internal nozzle and bowl vent to be inoperative. This model is used with an oil bath air cleaner and is equipped with a fixed high speed jet (see instructions below). Use M-90 model when replacement carburetor is needed.

The M-17R and M-17L models are special 1" carburetors used on 42XA (shaft drive model), M-17R being used on right cylinder and M-17L on left cylinder. These two carburetors are not interchangeable on cylinders and must be installed as noted. Nozzle vents for air bleed on both the M-17R and M-17L are external and must always be connected, by the short pipes, to generator housing base on crankcase. This insures clean air to nozzle air bleeds. Bowl vents in both the M-17R and M-17L are external and are located under the air intake end of each carburetor. A special bowl gasket is used in each model, between upper edge of bowl and lower face of body to seal bowl to body, thus preventing gasoline leakage at upper edge of bowl. This gasket must be correctly assembled and "tacked" to lower body face with two

spots of shellac and should be replaced if it is in the least damaged or defective. Both M-17R and M-17L are connected to a common oil bath air cleaner and are equipped with fixed high speed jet (see instructions below). M-17R and M-17L are not interchangeable on the engine and many parts are not interchangeable in the two carburetors. The following items are listed to indicate those parts or assemblies which must not be interchanged from M-17R to M-17L or vice versa:

1. Body castings or body assemblies.
2. Complete bowl assemblies.
3. Float and lever assemblies.
4. Float levers.
5. Throttle shaft and lever assemblies.
6. Throttle shaft tension springs.
7. Lift lever springs (under low speed needle lift levers).
8. Air intake or choke shaft assemblies.
9. Choke lever (should be on M-17R only).
10. Air intake or choke stop friction ball and spring (used only on M-17R, never on M-17L).

FIXED HIGH SPEED JET

The M-64, M-65, M-84, M-88, M-90, M-97, M-17R and M-17L carburetors with fixed high speed jet are equipped with a special short needle valve to shut off the opening provided for variable high speed adjusting needle which is standard, instead of fixed jet, for all commercial motorcycle carburetors and M-58 Army carburetor. A locking plug screwed in above short needle valve locks it in place. This needle valve and its locking plug are located in the same place as just described for high speed adjustment in the M-58 model. This needle valve in M-64, M-65, M-84, M-88, M-90, M-97, M-17R and M-17L carburetors must always be fully seated or screwed down to a tight seat and locking plug must be screwed down firmly to hold this needle valve in place. All high speed fuel in these models is delivered through fixed high speed jet and there is no other adjustment for high speed mixture. Never run drills or wire through fixed high speed jets. Clean in gasoline or acetone only.

CARBURETOR BOWLS

The M-58, M-64, M-65, M-84 and M-88 models have exactly the same carburetor bowls, both in bowl castings and in complete float mechanism. The M-90 and M-97 models have special bowl castings which are milled off straight across upper bowl edge. However, these special bowls contain the same parts as for M-58, M-64, M-65, M-84 and M-88 models. The M-17R and M-17L models have special bowl castings plainly marked "M-17R" and "M-17L" and contain the same parts as all above mentioned models except that the M-17R uses a special short float lever.

SERVICE NOTES APPLYING TO FAULTY CARBURETORS

These notes apply to carburetors which have been in service for some time and have become dirty, full of "crust" in throttle barrel, and are found to be difficult to get adjusted properly. Usually the effect of excessive dirt or "crust" formation in carburetor throttle barrel, around the throttle disc and in fuel mixture passageways, is to cause carburetor to have a lean spot just off idle. This "crust" should be removed, particularly when a lean spot comes in at speeds just off idle up to 30 M.P.H. with low speed (idle) adjustment set properly for idling. The idle adjustment should not be set to the very lean side when checking this point, but to a

point about five to ten notches rich from setting where engine dies from leanness.

HOW TO REMOVE THE CRUST

1. Back off throttle lever stop screw so throttle disc closes tightly. With a sharp pointed tool like a sharp pen knife or scriber, scratch a line deeply on closed throttle disc and also on the throttle barrel so lines on the disc and on the barrel meet. These lines should "line up" again when disc is replaced. Remove throttle lever, throttle disc and shaft, idle hole body plug next to idle holes in throttle barrel, body plugs in carburetor flange and carburetor body idle channels, and low speed (idle) lift lever and needle valve assembly. On M-17R and M-17L models, it is necessary that lift lever pivot screw be removed so lever and needle assembly can be removed as a unit. Otherwise, it will be necessary to loosen and disturb setting of "stop clip" on low speed needle, which will require complete readjustment of needles as outlined in manual TM-10-1293. Also remove venturi and nozzle.

2. Scrape out caking or "crust" in throttle barrel with a scraper or knife, being sure not to cut into the metal. (This "crust" can easily be wiped out with a rag dipped in acetone, if available.)

3. Clean up throttle disc by rubbing it on both sides on fine emery cloth on a fl plate and clean edge of disc all around, being careful not to round the corners or cut into the metal. (Can be cleaned with acetone, if available).

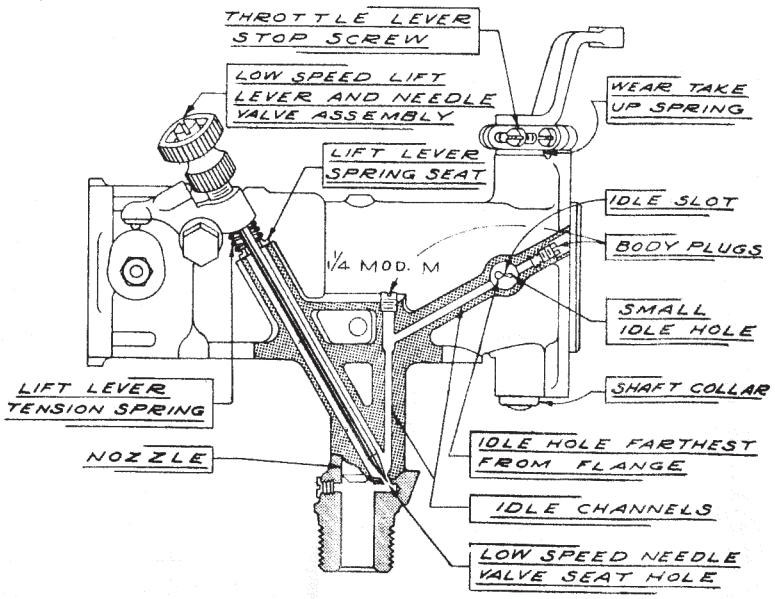
4. Clean out idle holes in the throttle barrel next to disc with correct size drills. See list for correct sizes for both holes for all models of carburetors. Do not enlarge any idle holes by using wrong drills.

Model (Stamped in top of Carb. Body)	Carb. Size	Venturi Size	Small Idle Hole Nearest Manifold Flange Drill Size	Idle Hole Farthest from Manifold Flange Drill Size	Slot Width	Fixed Jet No.
M-58	1¼"	1-1/16"	#70	#55	.009"	---
M-64	1¼"	1-1/16"	#70	#55	.009"	#4
M-65	1¼"	1-1/16"	#70	#55	.009"	#5
M-84	1¼"	1-1/16"	#70	#55	.009"	#5
M-88	1¼"	15/16"	#70	#55	.009"	#1
M-90	1¼"	15/16"	#70	#55	.009"	#1
M-97	1¼"	1-1/16"	#72	#55	.009"	#5
M-17R	1"	13/16"	#71(Use #72drill)	#56	.015"	#63
M-17L	1"	13/16"	#71(Use #72 drill)	#56	.015"	#63

5. Clean out the slot of all models, except M-17R and M-17L, by inserting tool with .009" blade through slot between the two idle holes. Clean out slots in M-17R and M-17L with .014" blade tool (2 rings on handle).

6. Clean out idle channels with #42 drill. When cleaning vertical idle channel do not completely bottom drill as doing so may damage the low speed needle seat. Needle seat in M-17R and M-17L cannot be damaged in this manner.

7. Clean out low speed (idle) needle valve seat hole with the correct size drill. The M-58, M-64, M-65, M-84, M-88, M-90 and M-97 carburetors are cleaned with #53L drill. The M-17R and M-17L are cleaned with #55L drill.

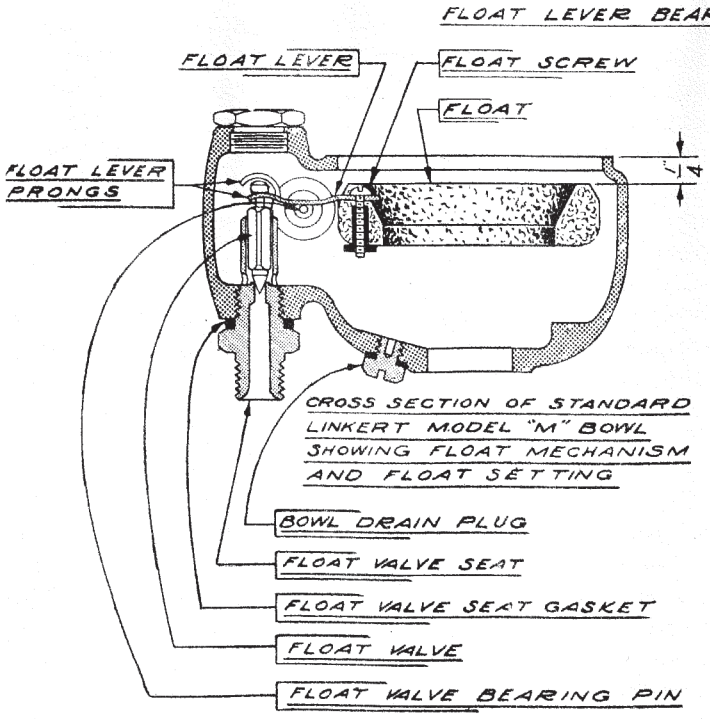


VIEW OF LINKERT MODEL "M" CARBURETOR SHOWING LOW SPEED NEEDLE VALVE, LIFT LEVER SPRING SEAT, LOW SPEED NEEDLE VALVE SEAT HOLE, IDLE HOLES AND SLOT, BODY PLUGS, AND IDLE CHANNELS

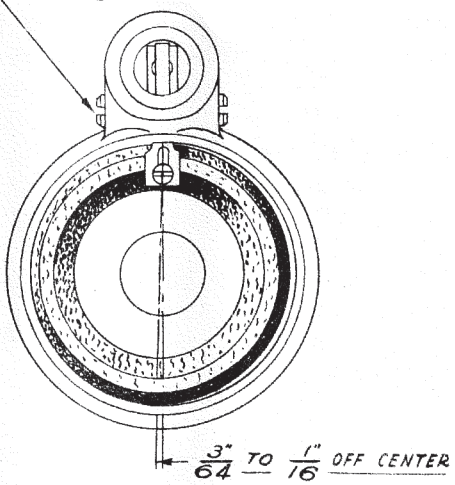
8. Blow out all channels and holes with compressed air and wash all parts in gasoline.

9. Re-assemble parts, being sure lift lever spring seat (washer) is between the spring and carburetor body when assembling low speed lift lever and needle valve assembly back into place. This spring seat or washer limits the air bleed to the idle system and must be in place; otherwise carburetor cannot be adjusted for satisfactory engine idling. Register on spring seat (washer) faces upward on all models. Be sure lift lever spring with open end coil is assembled on M-17L carburetor with open end downward, against spring seat.

Be sure throttle disc is properly assembled in barrel and closes off tight. Have correct side of disc up or toward flange and with lines previously scratched lining up with each other exactly. Push up shaft collar (on throttle shaft) firmly against body before tightening throttle disc screws. Throttle lever should be clamped to shaft with disc wide open and with throttle lever wide open stop against body lug and with wear take-up spring between throttle lever and bearing. On M-17R, wear take-up spring is at bottom of shaft. Be sure throttle shaft tension spring is properly assembled on M-17L carburetor.



CROSS SECTION OF STANDARD LINKERT MODEL "M" BOWL SHOWING FLOAT MECHANISM AND FLOAT SETTING



TOP VIEW OF STANDARD LINKERT MODEL "M" BOWL SHOWING FLOAT MECHANISM AND OFFSET OF FLOAT

ATTENTION TO MODEL "M" LINKERT CARBURETOR BOWLS

10. If the carburetor bowl continually leaks or runs over, remove it from the carburetor body and first remove all dirt by cleaning it out with gasoline and compressed air. Hold the bowl up-side-down so the float valve closes, and suck on bottom of float valve seat. The valve and seat should hold this suction. If valve and seat leak after repeated testing, replace with a new float valve and float valve seat.

11. If the float is damaged or "logged" replace with a new float. Remove old float by cutting the cement around float screw which fastens float to float lever. This cement can be cut with a pocket knife. Remove float screw and assemble new float to lever. This should be done with float valve, float valve lever, float hinge pin and screws, float valve seat and gasket assembled in the bowl. Before tightening float screw securely, adjust as follows: Looking down on bowl, with gasoline inlet side away from you, pull float toward you to limit of slot in float lever and about 1/16" to left of center line. This applies to M-58, M-64, M-65, M-84, M-88, M-90, M-97 and M-17L models. On M-17R bowl, push float toward needle valve to limit of slot in short float lever and about 1/16" to left of bowl center line. This provides necessary body clearance. Tighten float screw and cement top of float screw to float with Dupont Household Cement, or with a mixture of celluloid dissolved in acetone, or with thick shellac. When cement has dried thoroughly, check float height and adjust as explained in 12.

12. Check float level, and if necessary, re-set to 1/4". Measure directly opposite float lever holding bowl up-side-down (top of float to top of bowl). When re-adjusting Linkert carburetor float, do not attempt to do so by simply bending float lever upward in some manner, without dis-assembling from bowl. Re-adjusting in this manner bends and spreads the fingers between which the head of float needle fits, and thus develops lost motion between float and needle. Float and lever assembly should be removed from bowl, and lever then bent as required.

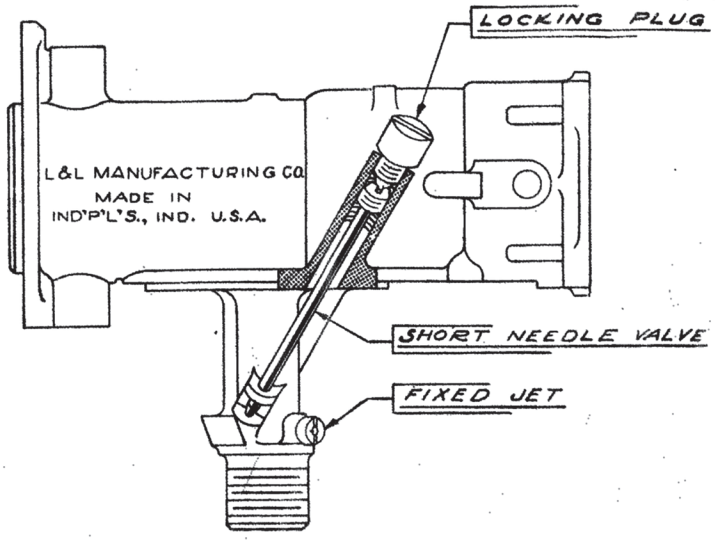
Before re-assembling, see that needle head is a good free fit between lever fingers with not more than approximately .003" play. This clearance can also be checked after lever is assembled in bowl, by carefully placing a small screw driver or a small rod against the valve head in such a position that it will hold the valve firmly against the seat and yet not bind the lever. Moving the lever up and down will then show the amount of actual clearance between the valve head and fingers. If this clearance is excessive, the float mechanism will not feed properly. After assembling, note that float is approximately square with top of bowl.

13. Bowl drain plug now being used in Model "M" carburetors can be removed for quick flushing of the bowl. Before removing this plug, shut off gas at tanks. Be careful not to cross thread this plug when replacing it into bowl. Pull this plug up tight when replacing.

ADJUSTING CARBURETOR ON ENGINE

14. The low speed needle valve is the adjusting needle to right (looking at air intake end). If low speed needle is so far out of adjustment that engine does not start readily, screw it down until needle knurl bottoms, then unscrew it about three to four turns. After starting engine, unscrew it further if too lean or turn it down if too rich. After engine has "warmed up" set needle for smooth idling. Be sure choke is wide open before making idle mixture adjustments. Too rich an idle

adjustment will cause excessive rolling, and too lean an adjustment will result in idle dying or very rough and unsteady operation. Starting and all-around carburetion are better with low speed adjustment slightly rich rather than as lean as it can be made, and with throttle stop screw set for reasonably fast idling. The above applies to all models except M-17R and M-17L. On M-17R and M-17L, engine should idle within limits of movement of "stop clip" on low speed needle valve. See TM-10-1293, issued October, 1942, Operation and Maintenance Manual for model 42XA - Solo (Shaft drive) for detailed instructions.



VIEW OF LINKERT MODEL "M" ARMY CARBURETOR SHOWING FIXED JET, SHORT NEEDLE AND LOCKING PLUG

15. There is no manual high speed adjustment on the M-64, M-65, M-84, M-88, M-90, M-97, M-17R and M-17L carburetors as explained above. These models are equipped with fixed high speed jet as listed in the chart. Fixed high speed jet in these carburetors if effected by replacing one of the small drill hole plugs, near lower end of carburetor body, with a special jet plug. The size of hole in jet plug varies with carburetors of different models. Bear in mind, however, that this special jet plug cannot be duplicated by simply drilling a hole with a drill of certain size through one of the regular solid drill hole plugs. Several plugs drilled with same drill will vary considerably in the amount of fuel they flow. Therefore, each jet made at carburetor factory must be tested individually on a flow meter to be sure of uniform flow, or in other words, uniform carburetor adjustment. In no case should jets be manufactured or re-drilled to different size. If a new jet is needed, order by number from the factory.

All fixed jets are numbered on the face next to screw slot. Be very careful in handling. Particularly do not mar screw driver slot. Use a screw driver blade that fits slot and pull up jet so taper end of jet seats slightly in carburetor body. In all carburetors, except M-17R and M-17L, place fixed jet in carburetor body hole pointing to the rear of motorcycle. In M-17R and M-17L carburetors, place fixed jet in carburetor body hole to left of carburetor, looking at air intake end.

16. To set the High Speed adjustment on the M-58 model, see the instructions given in the note about this model at the beginning of this text.