

Model "V" Carbureter

Used on 1929 Essex Super-Six Cars

The carbureter measures the fuel charges for the engine and automatically mixes them with the proper amount of air to form a highly combustible gas. The Marvel model "V" carbureter is of the automatic air valve, heat controlled type. Its outstanding advantages are:

1. Simplicity of adjustment and operation.
2. Quick starting in any weather.
3. Automatic and manually controlled heat application to insure complete vaporization of fuel and maximum quick warming-up in coldest weather, thereby reducing over-use of the choker and resultant crankcase dilution to the minimum.
4. Economy in fuel consumption.
5. Ease of adjustment of heat control to meet varied driving and climatic conditions.

CONSTRUCTION

The construction embodies a main body or mixing chamber and a conventional float chamber bowl with fuel strainer attached at point of entrance of fuel to bowl. Within the mixing chamber are two nozzles which proportion the amount of gasoline used in the mixture. These nozzles are both of the fixed opening non-adjustable type. One of these nozzles, called the "low speed" is situated in a fixed air opening, the venturi, and the other, called the "high speed," is controlled by the automatic air valve, and located under same. An air screw is provided which regulates the pressure of the air valve spring enclosed therein. This constitutes the only mixture adjustment on the carbureter. Within this screw is also enclosed a plunger connected by a link to the air valve.

The function of this plunger is to provide a resistance in addition to that of the air valve spring to assist in acceleration. This arrangement of plunger and air valve screw is termed the dash pot.

A further control of the high speed jet is provided by the "economizer" which is a fuel metering valve operated by the carburetor throttle. This valve provides the maximum fuel feed to the "high speed" nozzle when the throttle is fully opened for high speeds, hill power and for quick "pick-up." During the ordinary driving ranges this valve controls the amount of fuel being used, thus providing all the economy possible. This valve is entirely automatic and requires no adjustment.

Built in with this valve also, is an accelerating pump. Quick opening of the throttle provides with this pump a forced fuel charge from the high speed nozzle to assist in acceleration and quick get-away.

Reference to the top of fuel bowl of carburetor will show a little seasonal control lever for this acceleration charge, marked "Summer" and "Winter." The "Winter" setting should always be used in cool and cold weather. In this setting all pressure from accelerating pump, due to quick opening of the throttle, forces fuel from high speed nozzle. With the control set at "Summer" for hot weather driving conditions, a check valve in fuel line between fuel bowl and pump is kept from closing, thus allowing pump pressure to force but little fuel from high speed nozzle by-passing most of it thru check valve, back into fuel bowl.

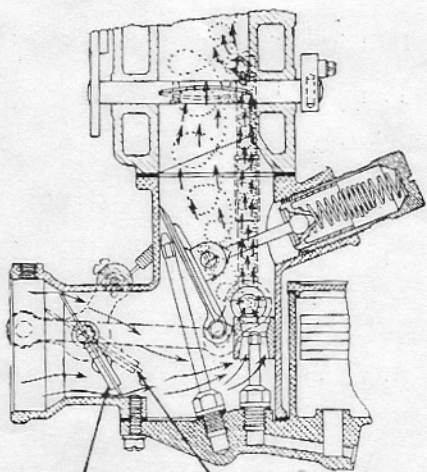
"Summer" setting of accelerating device on carburetor is only necessary in extremes of hot weather, when quick opening of throttle makes car momentarily sluggish if control is left in "Winter" setting.

A heat control lever is placed in the car-

buretor heat elbow to provide for manual regulation of heat in addition to the automatic heat control mechanism of the carburetor.

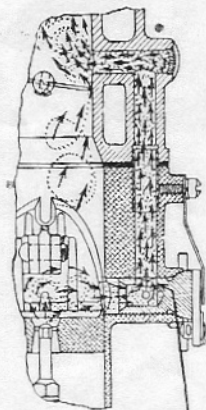
CHOKER AND BY-PASS

A choke button is provided on the instrument board to assist in starting. Pulling out this button does two things in the carburetor. First, it closes a butterfly choker valve in the air inlet of carburetor, which restricts the air opening and consequently produces a very rich mixture for starting. Second, thru interconnection of the choker lever and by-pass valve (See cuts p. 4-5), this motion likewise opens a passage between mixing chamber, just above low speed nozzle, and the intake manifold passage, just above the throttle. (See sketch page 5). Due to the higher suction existing above the throttle, the over-rich starting mixture is therefore immediately drawn thru the fixed opening in by-pass valve, up past the throttle and on into the engine. Partial release of choker button on instrument board after starting, releases choker valve so that it positions itself to the needs of the engine, due to the action of the counterweights attached to this choker valve, which now becomes automatic in its action, the weights allowing the valve to open or close automatically, depending on the engine speed and quantity of air passing thru carburetor. This partial release of choker button does not, however, change position of by-pass valve opening, which remains open, and engine therefore runs at an increased idling speed during this period, same as would be obtained if the throttle were manually opened slightly and there was no by-pass valve. This gives the car a speed of approximately 14 to 15 miles per hour on the road automatically, without the necessity of opening throttle, and is of great assistance in getting under way after starting a cold engine.

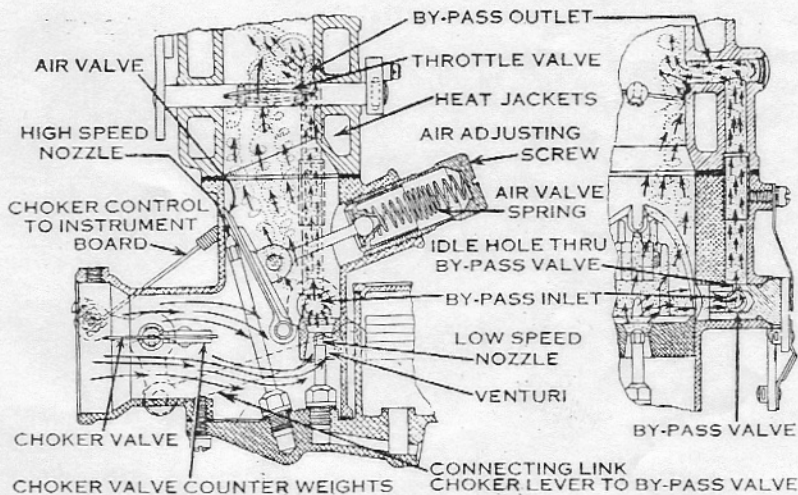


CHOKER-15 MPH CHOKER-30 MPH

Showing action of automatic choker, and showing action thru by-pass valve on starting and warming up



STARTING HOLE THRU BY-PASS VALVE



Showing choker in normal open position and showing idle action thru by-pass valve in normal running position

Reference to sketch on page 4 will show this action, and likewise the position of choker valve.

As soon as engine is sufficiently warmed up to drive with choker button completely released, by-pass valve returns to its normal position shown in sketch on page 5 and choker valve is automatically locked in wide open position.

It will be noted in sketch on page 5 that there is still a very small hole in by-pass valve in this position connecting to passage above throttle. This is to provide for a proportion of the idling mixture to pass above the throttle, as shown in sketch, stabilizing the idling action of the engine, and insuring positive idling performance, especially in cold weather.

Some idling mixture is, however, allowed to pass in normal way past throttle, and by the regulation of this amount, by adjustment of throttle opening, the desired idling speed is obtained.

HEAT CONTROL

The carbureter and manifolds have been designed to utilize the exhaust gases of the engine to insure complete vaporization and a consequent minimum consumption of fuel. This is accomplished by an exhaust jacket in a double walled elbow casting placed between the carbureter and the intake port in cylinder block. This elbow casting is connected to the exhaust manifold in such a manner that the exhaust gases pass between the walls of the elbow, through the heat jacket and back to the exhaust manifold. The amount of heat thus furnished to the elbow is controlled by a damper valve in the main exhaust above the elbow and situated between the exhaust outlet and the exhaust inlet to elbow heat jackets.

The damper valve in the main exhaust is connected to the throttle lever of carbureter

in such a manner that the greatest proportion of heat is deflected to the jackets of elbow when the throttle is only partly open, as in idling and at low speeds, and a decreasing amount as the throttle is opened further for higher speeds. By means of the heat control lever attached to the damper valve this automatic action of the damper valve may be varied to suit weather and driving conditions.

An adjustment for seasonal control of heat also is provided on the damper valve lever "J" (See Cuts), whereby the amount of exhaust heat deflected by the damper to the elbow jackets may be decreased by moving damper adjusting stud "L" in damper connecting rod "K" from hook-up hole in damper lever marked "Warm", to hook-up hole marked "Medium" or to hook-up hole marked "Cool," thus initially opening damper valve at closed throttle positions and greatly reducing the heat application.

Gases from exhaust manifold are deflected by damper valve "A" and pass thru extension "C" of exhaust manifold into elbow jackets "D," passing around dividing well or baffle "E", circulating around carbureter throttle, and back up thru passages "D", and again into exhaust manifold on rear side of valve "A", and thence in the normal way to muffler.

It will be noted in cuts that valve "A" is connected by means of damper lever "J", and damper connecting rod "K" to the driver lever "I", which is fastened to the same shaft as throttle bell crank "G", which is connected by means of throttle connecting rod "H" to carbureter throttle lever "F". Movement of the accelerator lever when driving, which is fastened to the throttle bell crank, is therefore transmitted simultaneously to carbureter throttle and exhaust damper valve. As throttle is opened, valve "A" is also opened, due to this interconnection. Thus the volume

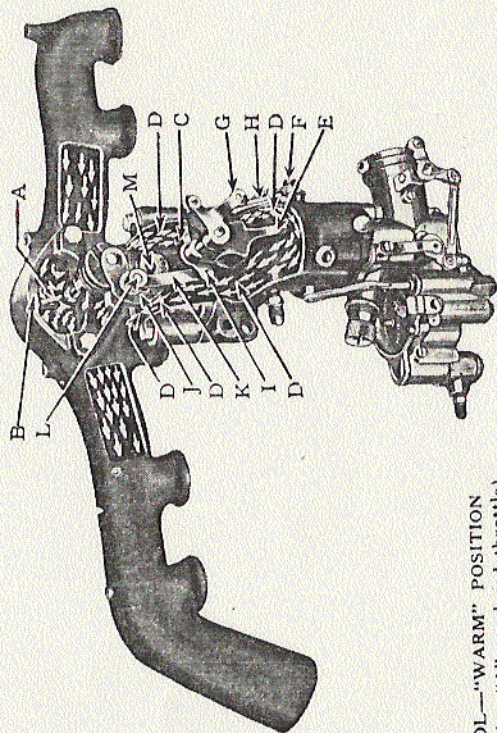
of heat thru heat jackets of elbow will be lessened as the engine speed is increased, the amount of decrease depending upon position of damper lever adjusting stud "L" in damper lever "I" — whether in hole for "Warm", "Medium", or "Cool" position.

In the cut on page 9 showing "Warm" heat position, note shape of exhaust manifold at "B" adjacent to edge of valve in closed position. At closed throttle, valve "A" is at extreme left side edge of the land "B" in exhaust manifold. As throttle is opened, valve "A" rotates clockwise so that its edge passes across this land "B", but the valve itself does not open until it clears the land "B", thus insuring maximum heat circulation thru elbow jackets up to this amount of throttle opening, or until car has obtained a speed of approximately 45-50 miles per hour, after which in higher speeds, further opening of the throttle automatically moves "A" beyond land "B", valve "A" rapidly opening then to insure against overheating.

This "Warm" position of the heat control should be used always in severe winter weather and thruout the cold season.

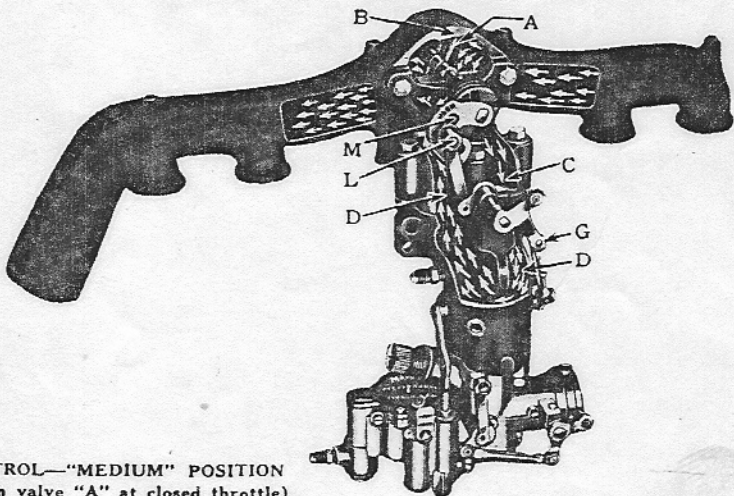
In the cut on page 10 showing "Medium" heat position, it will be noted, that due to damper adjusting stud "L" having been moved thru slot "M" in damper lever, "I" to the hook-up hole marked "Medium", that this movement has initially moved valve "A" so that at closed throttle valve "A" is near the extreme edge of land "B" in exhaust manifold, and ready to open with very little throttle opening. This setting therefore insures less deflection of exhaust heat to elbow jackets than in the "Warm" position, and valve "A" as before moves rapidly toward its open position as throttle is opened to full open.

This "Medium" position of heat control should be used thruout the normal seasons,



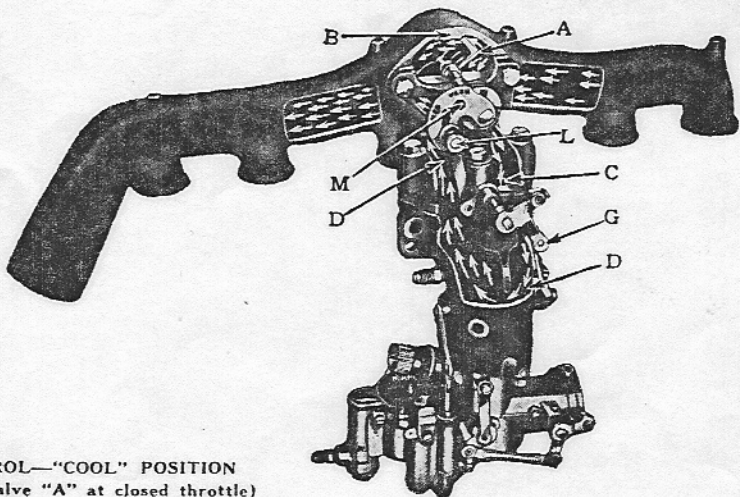
HEAT CONTROL—"WARM" POSITION
(Note position valve "A" at closed throttle)

10



HEAT CONTROL—"MEDIUM" POSITION
 (Note position valve "A" at closed throttle)

11



HEAT CONTROL—"COOL" POSITION
 (Note position valve "A" at closed throttle)

when the weather is neither the extreme of hot or cold.

In cut on page 11 it will be noted that the adjusting stud "L" has been moved to the hook-up hole marked "Cool" in the damper lever "L". This initially places the valve "A", at closed throttle, past the land "B" in exhaust manifold, or opened considerably. As throttle is opened, valve "A" then rapidly moves toward full open position. This is the position of heat control to give the least deflection of heat thru elbow jackets.

This "Cool" position should only be used in climates where extreme hot weather is experienced or in foreign territories where very high test or light fuels are used.

It should be remembered that the adjustment of heat control is purely seasonal, and this adjustment largely controls the car performance, or the effect of a "rich" or "lean" action in the carbureter. Therefore, in cold weather, drive with adjustment set at "Warm" to provide quick warming-up after starting, and sufficient heat for good performance. In extremely warm weather, place adjustment at "Cool", and for all intermediate seasons, at "Medium" for most normal driving.

STARTING

To start engine, pull out choke button all the way. Advance spark lever about half-way and depress starter pedal.

The moment the engine fires the choke button should be pushed in very slightly and engine allowed to run at fairly good speed for a few minutes. If engine hesitates, pull out choke button slightly and push back in to a point where engine runs smoothly during this short period, the object being to secure momentarily a richer mixture to assist engine in warming up. Even in zero weather it is not necessary to run with choker out, except momentarily when just starting cold engine.

It should be borne in mind that the automatic heating system of the carbureter makes it entirely unnecessary to drive with choker pulled out and one of the objects of the heating system is for this purpose, thereby obviating the common practice of diluting the oil in the crankcase by using an excess amount of fuel from over-choking while engine is warming up.

It should be remembered in cold weather, as stated above, that the setting of the heat control largely controls the performance. Therefore, in cold weather, drive with heat enough to provide same, which will not be obtained if control is in "Cool" position.

ADJUSTMENT

No change should be made in the carbureter adjustment until after an inspection has been made to determine if the trouble is in some other unit. It should be noted that the gasoline lines and strainer are clear, that there is gasoline in the vacuum tank, that there are no leaks at connections between carbureter and engine, that the ignition system is in proper condition, and that there is even compression in all cylinders.

If it is necessary to test adjustment or to make a readjustment proceed as follows:

Set air screw so that end is flush with the end of ratchet spring bearing against it.

Set heat control in "Warm" position, and leave in this position while making adjustment. Pull out choker to closed position and start engine in usual manner. As soon as engine has fired, slightly release choker. Run for a few minutes until engine has warmed up, remembering never to use choker more than necessary, as **when not needed** it has a tendency to foul up engine and ruin the lubricating oil in the crankcase.

Next, set air screw for good idle by either turning in to the right a little or backing out

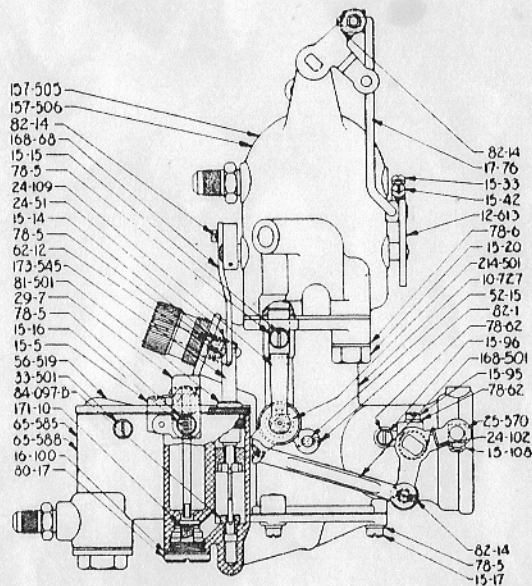
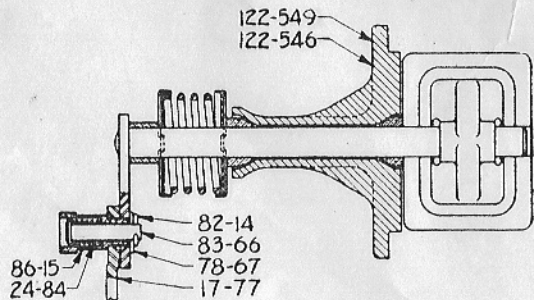
to the left as the needs of the engine requires. With the engine **warmed up**, the adjustment of the air screw for proper idling is easily accomplished by using a little care. If the air screw is turned in too tight, the motor will roll or appear sluggish. If the air screw is not tight enough, the motor will hesitate and stumble, and perhaps stop entirely. To make a nice clean adjustment for idle turn air screw back to the left until engine hesitates, indicating that mixture has too much air and is too lean; next turn air screw in to the right three or four notches at a time until engine runs smoothly. **This idle setting accomplished, by proceeding as directed above, the proper carbureter adjustment for the entire range of the engine will have been attained.**

If the engine idle too fast with throttle closed, the latter may be adjusted by means of the throttle lever adjusting screw.

ALTITUDE CHANGES

No change is necessary for touring through mountainous country but for cars operating **permanently** in territory of 4000 feet elevation or over we advise going to the nearest Hudson-Essex dealer or Marvel service station and changing to 49-110-C-24 High Speed Jet for the best results in such altitude territory.

Do not, under any circumstances, make this change unless operating **permanently** above 4000 feet elevation.



Showing Part Numbers of Service Parts