NATIONAL SERVICE MANUAL

CARBURETION SUPPLEMENT 1931—1932—1933

NATIONAL AUTOMOTIVE SERVICE

SAN FRANCISCO, CALIFORNIA

CARBURETORS USED ON 1931—1932—1933 CAR MODELS

Page	Car Model	Year	Carburetor Make	Carburetor Model No.
C-13	ESSEX TERRA. KT-8	(1933)	Carter	261-S
C-46	FORD A, B	(1931-33)	Zenith	
C-22	" V-8	(1932)	Detroit	18-9510
C-22	" V-8-112	(1933)	Detroit	40-9510
C-6	FORD FUEL PUMPS. V-8 and Four Cylinder Types (used on 1932-33 Models).			
C-32	FRANKLIN 15	(1931)	Stromberg	U-2
C-32	" 16	(1932)	Stromberg	U-2
C-39	" 17	(1932)	Stromberg	EE-2
C-33	" 16-B	(1933)	Stromberg	UR-2
C-39	" 17-B	(1933)	Stromberg	EE-2
C-33	" 18	(1933)	Stromberg	UR-2
C-44	FRONTENAC 6-70	(1932)	Tillotson	J-4A
C-44	" 6-85	(1932)	Tillotson	J-7A
C-23	" C-400	(1933)	Marvel	AC 10-1530
C-23	" C-600	(1933)	Marvel	B 10-1540
C-20	GRAHAM 53, 54	(1931)	Detroit	51
C-20	" 49	(1931)	Detroit	51
C-20	" 42 Cust.	(1931)	Detroit	51
C-20	" 58 Six	(1932)	Detroit	51
C-20	" 57 Eight	(1932)	Detroit	51
C-20	" 65 Six	(1933)	Detroit	51
C-20	" 64 Eight	(1933)	Detroit	51
C-20	" 57A Cust.	(1933)	Detroit	51
C-25	HUDSON Eight	(1931)	Marvel	VH-4 10-949
C-25	" Eight	(1932)	Marvel	VH-4 10-989
C-25	" Six	(1933)	Marvel	VE-3 10-1533
C-25	" Eight	(1933)	Marvel	VH-4 10-1536
C-32	HUPMOBILE S-6	(1931)	Stromberg	U-2
C-32	" L-8	(1931)	Stromberg	UU-2
C-32	" C	(1931)	Stromberg	UU-2
C-37	" H, U	(1931)	Stromberg	DD-3
C-36	" 216 B	(1932)	Stromberg	DXR-2
C-34	" 222 F	(1932)	Stromberg	UUR-2
C-34	" 226 I	(1932)	Stromberg	UUR-2
C-13	" 321 K	(1933)	Carter	258-S
C-34	" 322 F	(1933)	Stromberg	UUR-2
C-34	HUPMOBILE 326 I	(1933)	Stromberg	UUR-2
C-19	LA SALLE 345	(1931)	Cadillac	
C-19	" 345-B	(1932)	Cadillac	
C-19	" 345-C	(1933)	Cadillac	
C-37	LINCOLN V-8	(1931-32)	Stromberg	DD-3
C-37	" V-12	(1932)	Stromberg	DD-3
C-39	" V-12-136	(1933)	Stromberg	EE-22
C-37	" V-12-145	(1933)	Stromberg	DD-3
C-32	MARMON 70	(1931)	Stromberg	UX-2
C-28	" 88	(1931)	Schebler	S Duplex
C-34	" 8-125	(1932)	Stromberg	UUR-2
C-37	" 16	(1931-33)	Stromberg	DDR-3
C-12	NASH 6-60	(1931)	Carter	147-S
C-13	" 8-70	(1931)	Carter	167-S, 186-S
C-24	" 8-80	(1931)	Marvel	DN 10-941
C-34	" 8-90	(1931)	Stromberg	UUR-2
C-12	" 9-60	(1931-32)	Carter	147-SA
C-36	" 9-70	(1931-32)	Stromberg	DXR-2
C-34	" 9-80	(1931-32)	Stromberg	UUR-2
C-34	" 9-90	(1931-32)	Stromberg	UUR-2
C-38	" 10-60	(1932)	Stromberg	E-2
C-39	" 10-70	(1932)	Stromberg	EE-2
C-34	" 10-80	(1932)	Stromberg	UUR-2
C-34	" 10-90	(1932)	Stromberg	UUR-2
C-38	" 11-20	(1933)	Stromberg	EX-22
C-38	" 11-30	(1933)	Stromberg	EX-22
C-39	" 11-70	(1933)	Stromberg	EE-2
C-34	" 11-80	(1933)	Stromberg	UUR-2
C-34	" 11-90	(1933)	Stromberg	UUR-2
C-24	OAKLAND 301	(1931)	Marvel	DO 10-952
C-36	OLDSMOBILE F-31	(1931)	Stromberg	DXR-2
C-38	" F-32	(1932)	Stromberg	EC-2
C-39	" L-32	(1932)	Stromberg	EE-2
C-39	" F-33	(1933)	Stromberg	EC-22
C-40	" L-33	(1933)	Stromberg	EE-22
C-20	PACKARD 8-26, 33	(1931)	Detroit	51
C-20	" 8-40, 45	(1931)	Detroit	51

SISSON AUTOMATIC CHOKE

EQUIPMENT ON DE SOTO SD (1933)

DESCRIPTION:—The Sisson Automatic Choke is designed to correctly choke the carburetor for starting under all conditions of engine temperature and also to control the position of the choke valve during the warming up period. When the engine is started cold, the Automatic Choke fully closes the choke valve until the engine begins to fire and the valve is then progressively opened through the action of a thermostatic spring as the engine warms up until the choke is entirely open with the engine at the proper operating temperature. When the engine is warm when started, the choke valve is not fully closed, the amount of choke being determined by the engine temperature. When the engine is hot when started, no choke at all is applied.

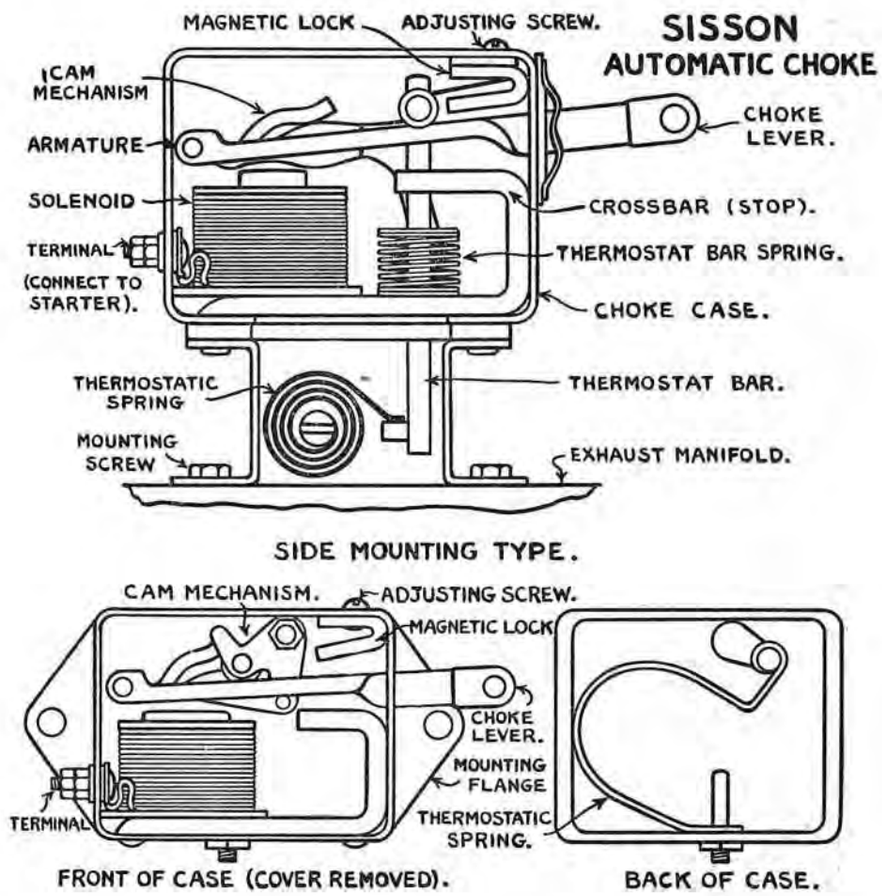
The device is supplied in two types, for side and top mounting on the exhaust manifold, and can be installed on any car with an offset choke valve and a relief valve on the wing of the choke valve. If the choke valve in the carburetor is not of this design it will be necessary to replace the choke valve when the Automatic Choke is installed.

OPERATION:—See illustration for details of construction. The solenoid terminal on the end of the choke case is connected to the starter side of the starting switch so that the solenoid is energized whenever the starter is in operation and the solenoid circuit is broken when the starting switch is released. When the starting switch is closed, the solenoid pulls down the armature or operating lever which is connected to the carburetor choke valve lever. If the engine is cold the lever completely closes the choke valve. However if the engine is warm a cam in series with the thermostat regulates the amount of choke by preventing the full stroke of the operating lever. If the engine is hot a magnetic lock holds the operating lever in place so that no choke is applied. When the engine begins to fire and the starting switch is opened, the solenoid circuit is broken and the choke operating lever is controlled entirely by the thermostatic spring. The amount of choke then depends on the engine temperature and the choke valve is opened progressively to the wide open position as the engine warms up.

INSTALLATION:—The choke may be mounted on the top or side of the exhaust manifold (separate models are supplied for each type of mounting). The operating lever should be connected to the choke valve lever with the connecting linkage supplied. The terminal on the side of the choke case must be connected to the starter side of the starting switch so that the solenoid circuit is completed only when the starter is operating.

ADJUSTMENT:—With the Automatic Choke connected to the carburetor choke valve, adjust position of choke valve lever so that the clearance between the operating lever and the cross bar which serves as a stop (within the Automatic Choke case) is .015-.020 inch with choke valve closed tight. Then raise operating lever to extreme uppper position, see that choke valve is wide open, and adjust magnetic lock position by turning adjusting screw on top of choke case until operating lever rests against magnetic lock. On the De Soto the adjustment should be made so that the operating lever rests against the magnetic lock with .015 inch clearance between the choke valve lever and the choke valve lever stop screw.

TESTING:—With the engine cold watch the Automatic Choke action when the starter switch is closed. The choke valve on the carburetor should snap closed. Operate engine until it is thoroughly warmed up. See that operating lever rests against magnetic lock. Watch Automatic Choke action when starter switch is closed with engine hot. The operating lever should not move and the choke valve should not be closed.



FORD FUEL PUMPS

V-8 AND FOUR CYLINDER TYPES

SERVICING:—If the above operations do not correct pump trrouble or if it is necessary to disassemble pump to replace diaphragm or correct leakage at pullrod, spot upper and lower pump bodies to assure correct reassembly, remove pump cover by taking off pump cover nut, remove upper pump body by taking out upper body screws. This will expose diaphragm assembly. In replacing diaphragms, diaphragm assembly must be completed off the pump on both the new V-8 and 4 cylinder pumps. This will require disengaging the pullrod from the operating link and mounting the pullrod in a vise.

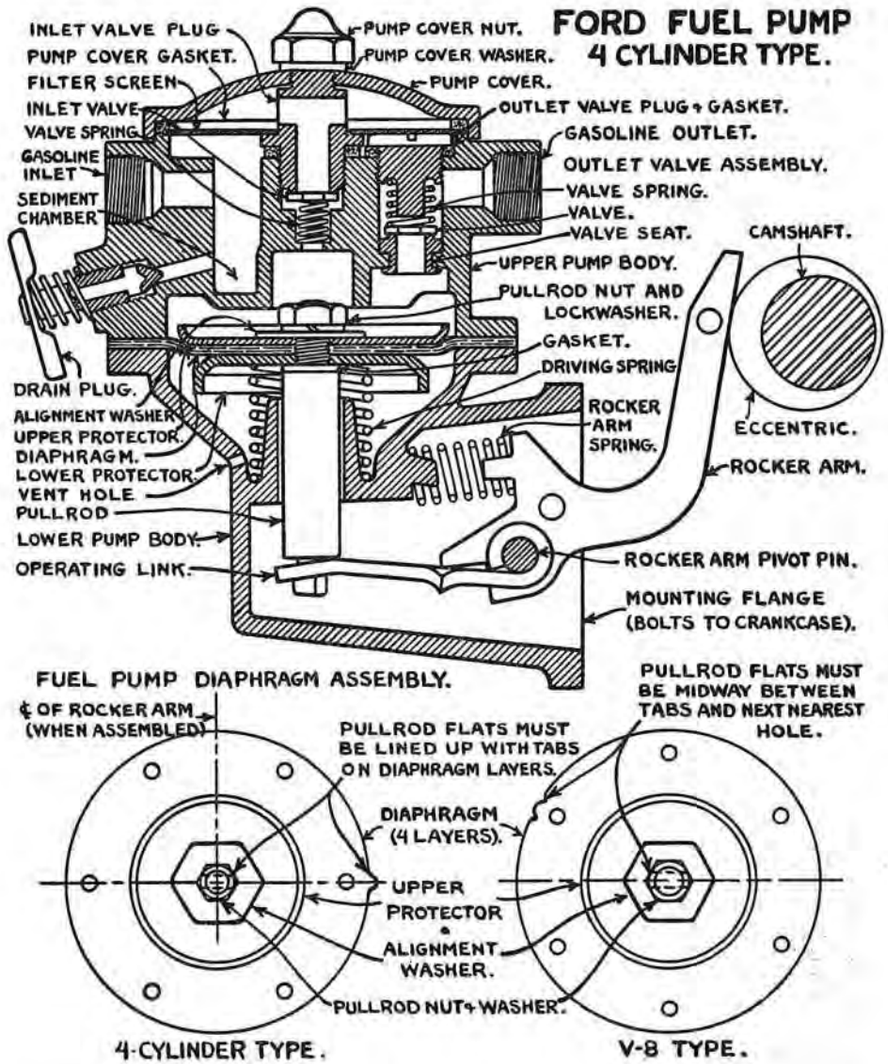
Diaphragm Assembly. Clamp flatted end of pullrod in jaws of bench vise (Type B-9393 rod, 2⅛" long over all on 4 cyl. pump. Type 18-9405-B rod, 1 13/16" long over all on new type V-8 pump). Place pullrod gasket over threaded end of pullrod. Place lower diaphragm protector washer with dished side down on pullrod above gasket. Place four layers of diaphragm material on pullrod (these must all be new—never use some old layers), lining up tabs on circumference of diaphragm with center line of flats on pullrod (4 cyl. pump), or so that center line of flats is midway between tabs and next nearest hole (V-8 pump)—see illustration. Place upper diaphragm protector on pullrod above diaphragm with dished side up. Assemble alignment washer, pullrod lock washer, and pullrod nut in order and tighten nut loosely with the fingers. Then hold diaphragm alignment washer from turning with special wrench No. V-83 and tighten pullrod nut securely. It is very important that the diaphragm should not turn or become wrinkled while tightening the nut and the position of the tabs must be checked after the nut is tight.

Remove diaphragm assembly from vise, clamp pump body in vise, place diaphragm spring in position in pump body with lower end over boss, dip diaphragm assembly and pullrod in kerosene and install in pump. The tabs on the diaphragm should be in line with the pullrod on the 4 cylinder pump and 30° to one side of the center line of the rocker arm on the new type V-8 pump. Push downward on the diaphragm compressing the spring until the flatted end of the pullrod is engaged in link and turn diaphragm 90° to correct position. If holes in diaphragm do not line up with holes in mounting flange when diaphragm assembly is turned 90°, turn slightly so that holes line up and tabs are at point nearest 90° from original position (see illustration).

Important. In assembling upper pump body, place upper pump body over diaphragm, insert cover screws and turn down cover screws loosely or until they touch the lock washers. Then press in on pump lever (4 cyl. pump), or use a small rod to press up on lower pump link (V-8 pump) so that diaphragm is at the lowest possible position. Hold diaphragm in this position and tighten the cover screws evenly and securely. This is necessary in order to secure the correct pump stroke.

Valve Assembly. See illustration for details of valve assemblies. Fibre valves are used. If valves stick, take out valve plugs and remove valves and valve springs. Wash valves and valve springs in gasoline, examine valve seats and see that valve seat is tight in pump body. Put a drop of oil on the valve before reassembling. The inlet valve spring is assembled under the valve and the outlet valve spring over the valve in the pump body. Use new gaskets under the valve plugs and tighten plugs securely. See that filter screen is not warped or distorted (use new type fiilter screen if necessary to replace filter), see that cover gasket and cover nut gasket are in good condition.

OPERATING TEST:—The pump may be tested by connecting a piece of rubber tubing approximately 30 inches long to inlet opening, immersing the end of the tubing in a pail of gasoline and operating the pump by hand. The pump should raise gasoline 30 inches and should deliver fuel at the outlet after not more than forty strokes. If fuel does not flow from the outlet after forty strokes, the pump will not perform satisfactorily on the car. The pump suction and pressure may be tested by holding the finger alternately over the inlet and outlet openings while the pump is operated. When installed on the car, the pump should prime itself and deliver fuel to the outlet in twenty seconds or less with the engine being turned over by the starter.



STEWART-WARNER FUEL PUMP

ELECTRIC MODEL 544

rheostat which is connected to the pump terminal. This inserts an increasing amount of resistance in the coil circuit and will slow down the pump action until the pressure in the discharge chamber exactly balances the regulating spring (4 pounds).

SERVICING OF PUMP:—The pump requires no attention in service and should not be disassembled except as an emergency measure. To disassemble the pump, take out the three mounting screws at the lower end of the pump housing, lift off the pump housing and the entire pump assembly will drop out of the housing. The pump assembly can be dismounted by taking out three screws holding pumping chamber on top of power unit, lifting off pump chamber, taking out three screws in armature mounting ring, lifting out piston assembly. This will free all serviceable parts. The valve in the center of the piston is held in place by a snap ring which can be pried out. The other valves may be removed by lifting the valve spring while holding the valve down.

Assembling Pump. Assemble parts in reverse order as given above. Check all valves, check piston rings and replace when clearance between rings and inner wall of pumping chamber is more than .015"—manufacturer states that ring life will average more than 2000 hours or more than 40,000 gallons so that rings should require replacement only infrequently. Make certain that piston assembly moves freely in coil bearing, see that contact springs make good contact with contact ring or terminal washer (springs should exert slight pressure on terminal washer), see that lower coil terminal spring exerts slight pressure on spring retainer. Replace all gaskets in reassembling pump.

TROUBLE SHOOTING:—Pump does not deliver sufficient fuel—check following points until trouble has been located and corrected:

1. Air leaks at sediment bowl. Examine gasket, see that bowl bears evenly against gasket and tighten bail nut securely.
2. Air leaks in supply line or at fittings. Check gasoline line, tighten all couplings and coat threads with white lead if necessary.
3. Tubing from pump to carburetor too small or fittings restricted. Use at least 5/16 inch outside diameter tubing and see that all fittings have inside diameter of not less than ¼ inch.
4. Discharged battery or poor electrical connections. Test battery and replace line.
5. Foreign matter or dirt in pump. Disassemble pump and wash all parts in gasoline.
6. Weak Plunger Spring. Replace spring if necessary.
7. Worn piston rings. Replace rings when clearance in pump chamber is more than .015 inch.
8. Sticking piston. Clean pump unit thoroughly and replace piston if necessary.
9. Valves leaking. Clean valve seats and replace valves if necessary.

Pump will not deliver any fuel. Make the following tests in order:

1. See if pump is operating by feeling pump housing. The vibration of the piston strokes should be perceptible. If not felt, connect ammeter in line at pump terminal and check current. If ammeter does not indicate current flowing through pump, check wiring to switch and battery.
2. If ammeter indicates correct current flow, check pump for binding or sticking piston. Clean pump thoroughly and replace assembly if necessary.
3. If ammeter indicates open circuit in pump, check pump ground and if necessary connect ground wire between pump body and frame. See that contact springs make good contact with terminal washer and if necessary bend contacts so they exert slight pressure on terminal washer.
4. Check the lower coil terminal. Spring must exert slight pressure on regulating spring retainer.
5. Check upper coil terminal on armature mounting ring and see that connecting wire is not broken. If necessary replace coil. See that coil is of correct type for voltage used (specified voltage for coil is stamped on bottom of coil case.
6. Check for foreign matter between armature and plunger. These surfaces form the contacts and any insulating material lodged between them will prevent pump from operating.
7. Check for short-circuited coil by touching one wire of test battery to the lower coil terminal and the other to the side of the pump unit. Sparks indicating a current flow mean that coil is short-circuited and must be replaced. Examine all insulators, see that they are correctly assembled and replace any found cracked or defective.

Pump will not shut off. Pump is designed to shut off or stop pumping whenever carburetor float valve closes but since it is impossible to prevent very slight leaks past the float valve and the pump valves, the pump will normally make several strokes per minute. When the pump operates rapidly with the engine stopped, check carburetor float valve, delivery line and fittings, for leaks. If the trouble is in the pump, examine sediment bowl gasket and tighten sediment bowl bail nut, tighten pump housing screws and replace gasket if necessary. Examine terminal at top of pump for leaks and if necessary replace insulators. If this does not correct trouble, disassemble pump and check valves and piston assembly.

SEDIMENT BOWL:—The glass sediment bowl at the bottom of the pump should be removed regularly by loosening the bail nut and swinging the bail to one side and water and sediment dumped. The filter screen directly above the bowl should be examined and cleaned if necessary. Examine gasket before replacing bowl and tighten nut securely.

HEAT CONTROLS

TYPES:—On most cars some device is provided to heat the fuel mixture after it leaves the carburetor. The usual practise is to jacket the riser above the carburetor (updraft installations) or the central portion of the intake manifold (downdraft installations) and deflect part of the exhaust gases through this passage. In most cases a valve is provided to control the amount of the gasses passing through this passage and the position of this valve is adjusted by means of a 'heat control' button on the instrument board (manual dash adjustment), (2) is interconnected with the throttle (manual throttle adjustment), (3) is adjustable at the manifold for seasonal changes (manual engine adjustment), (4) the valve is controlled by an automatic thermostatic spring and requires no attention.

In all cases where manual adjustment is provided, the position of the valve should be checked when the carburetor is checked or adjusted and the valve setting should be changed if it does not correspond with the average temperature range of the car operation. Where the heat control is placed on the dash and is properly an operating adjustment no attention is necessary except where the heat control must be operated in adjusting the carburetor (see individual carburetor instructions). Some types of automatic thermostatic require seasonal adjustment. Several of these types are described below.

PONTIAC HEAT CONTROL

DESCRIPTION:—Pontiac control consists of a thermostatic spring assembled on the heat control valve shaft under an adjustable shutter. The thermostatic spring closes the control valve as the engine warms up, decreasing the heat applied to the fuel mixture. One lug of the thermostat cover is marked 'top' and should be placed at the top when the cover is mounted on the manifold.

ADJUSTMENT:—Both the position of the shutter and the location of the thermostatic spring hook stud are adjustable for summer and winter temperatures. The shutter should be 'open' for winter operation and 'closed' for summer operation. In the closed position the shutter is not entirely closed but should be rotated toward the closed position until it is against the stop. The stud on which the end of the thermostatic spring is hooked can be located in one of three holes provided for this purpose. For winter operation the stud should be located in the right hand end hole, providing maximum spring tension. For summer operation the stud should be located in the center mounting hole. For extremely hot temperatures the stud should be placed in the left hand end hole, providing minimum spring tension.

BUICK HEAT CONTROL

DESCRIPTION:—On Buick models the 'damper' or heat control valve is offset so that it can be opened by the exhaust gas pressure as the thermostatic spring unwinds. One end of the thermostatic spring is hooked through a slot on the valve shaft and the other end is hooked over a stud. The thermostatic spring is enclosed within a cover provided with a shutter. This shutter is connected to the throttle control so that the shutter is opened proportionally to the throttle opening at car speeds from 30 to 70 M.P.H. Cold air from the fan is directed through a tunnel against the shutter and cools the thermostatic spring when the shutter is opened so that more heat is applied at part-throttle positions. At wide open throttle the shutter is closed.

ADJUSTMENT:—The operation of the heat control mechanism is entirely automatic and no seasonal or other attention is required. The normal setting of the thermostatic spring is approximately ½ turn wound up so that the valve is held in the horizontal or 'heat on' position at normal room temperatures. Thermostatic spring tension can be checked by using a special testing arm designed to be clamped on the rear end of the control valve shaft (after the cotter pin has been removed). The testing arm should be made with a hole exactly 1½" from the center of the control valve shaft hole so that a spring scale can be attached at this point. With the spring scale attached at this point the scale reading when the control valve just begins to open against the tension of the thermostatic spring should be 1 lb. 7 oz.-1 lb. 10 oz. (Models 50, 60) or 1 lb. 11 oz.-1 lb 14 oz. (Models 80, 90). This test can only be made when the temperature of the thermostatic spring is 70°F. and the engine must be allowed to cool off to this temperature or the heat control and entire manifold must be chilled to this temperature by means of an air hose.

STUDEBAKER HEAT CONTROL

DESCRIPTION:—The Studebaker heat control consists of a thermostatic spring latch which engages a roller on the heat control valve lever and holds the heat control valve closed when the engine is cold. As the engine warms up thermostatic spring bends down and releases the heat control valve lever. Heat control valve is offset and is controlled by the exhaust gas pressure after the lever is released.

ADJUSTMENT:—With the engine cold so that the valve control spring is tight against the reinforcing strip and the valve is latched and against the stop, the clearance between the control lever roller and the control spring latch should be .005". This clearance is adjustable by loosening the screws and shifting the control spring (screw holes are elongated).

CARTER CARBURETORS

156-S—PLYMOUTH, MODEL 30-U (1931).

209-S—PLYMOUTH, MODEL PA (1931).

TYPE:—These types are not interchangeable. Carburetors are plain tube, updraft type similar to other Carter updraft models except for design and adjustment of accelerating pump (see instructions below). Idling adjustment and accelerating pump setting are the only points requiring attention.

IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, retard spark control (30-U), adjust throttle stop screw if necessary to secure correct idling speed of 300 R.P.M. Turn idling adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw clowly in or clockwise until engine fires smoothly. Correct setting of idling screw should be ½-1 (156-S) or 1-1½ (209-S) turns open. Idling screw operates on air and should be turned out to secure leaner mixture and in for richer mixture. Readjust throttle stop screw after completing idling adjustment if necessary to secure correct idling speed. Do not idle engine below 300 R.P.M.

If correct idling adjustment cannot be secured, take out idling tube (low speed jet tube) and clean with compressed air. See that soldered joint on tube is tight and that tube is seated airtight in body casting at top and bottom. If necessary replace with new tube of same characteristics.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Well jet can be replaced to secure cleaner-than-standard mixtures. This change is made ordinarily to compensate for special fuels or operating conditions such as high altitudes. Economizing device (metering rod attached to throttle which is raised in multiple jet nozzle as throttle is opened) is not adjustable and will not require attention.

ACCELERATING PUMP:—Accelerating pump discharges fuel through pump jet into mixing chamber. Pump discharge is controlled by needle valve in carburetor body casting directly below pump cylinder. For winter operation, needle valve should be ⅛-¼ turn open (turn needle valve to right until it is seated, then back off ⅛-¼ turn). For summer driving, needle valve should be 1-1½ turns open.

NOTE:—If increased resistance on foot throttle is noticed, take out pump discharge jet and clean with compressed air or replace jet. Poor acceleration may be caused by incorrect pump setting (above), damaged or worn pump plunger leather, loose pump cylinder, bent pump arm, or clogged ball check strainer or valve. If pump plunger is removed from pump cylinder, use loading tool to install plunger in order to avoid damaging plunger leather.

FLOAT LEVEL:—To check float level, take out float bowl nut, remove float bowl, take off bowl gasket, invert carburetor, measure distance from gasket seat (machined surface) to nearest point on float (top of float when not inverted) at a point opposite needle valve. This distance should be 11/16". Float level can be adjusted by bending lip of float lever.

CHOKE:—Compensating cone type consisting of a cone shaped restriction which rests normally on the lower end of the standpipe and is raised in the venturi by the choke cone arm when the choke control button is pulled out. This increases the air flow through the standpipe and the fuel discharge of the multiple jet nozzle. Choke lever and throttle lever are interconnected so that throttle is opened slightly whn carbureteor is choked. Connecting lever should not require adjustment and should not be disturbed.

167-S—NASH EIGHT, SERIES 8-70 (1931).

TYPE:—Superseded by Model 186-S. Plain tube downdraft type with throttle operated accelerating pump and economizer. This type has some characteristics of updraft types, such as concentric float bowl and compensating cone type choke. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLE ADJUSTMENT:—Air bleed type operating on air. Engine must be warmed up before adjustment is made. Pull out heat control button on instrument panel and leave in this 'Heat On' position in warming up engine and while adjusting carburetor. With engine warm and running, close throttle, adjust throttle stop screw if necessary to secure correct idling speed of 5 M.P.H. Turn idling adjusting screw out or counter-clockwise slowly until engine begins to miss (mixture too lean), then turn screw in or clockwise until engine fires smoothly. Correct setting is approximately ¾ turn open. Idling screw operates on air and should be turned out to secure leaner mixture and in for richer mixture. Readjust throttle stop screw after completing idling adjustment, if necessary, to secure correct idling speed of 5 M.P.H. (car speed in high gear).

ACCELERATING PUMP:—Accelerating pump is operated by throttle shaft through a vertical pump rod and a cross shaft on the top of the carburetor. Pump lever on cross shaft has two holes for engagement of pump link pin. Pin should be engaged in end hole marked 'W', providing maximum pump stroke for winter driving or cold temperatures. Engage pin in inner hole marked 'S' for summer driving or warm temperatures.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Economizer consists of metering rod which restricts fuel flow through metering jet with throttle partly open. When throttle is opened, metering rod is raised in metering jet, permitting greater flow for full power operation. Metering rod is attached to pump cross shaft on top of carburetor and is operated by the throttle. It is not adjustable.

FLOAT LEVEL:—To check float level with carburetor disassembled, take off gasket on float bowl cover, invert cover and measure distance from gasket seat (machined surface) on cover to nearest point of float (top when not inverted) at a point opposite the needle valve. This distance should be ⅝". Float level can be adjusted by bending lip of float lever.

212-S —CHEVROLET CONFEDERATE, SERIES BA (1932).

222-SA—CHEVROLET TRUCK, SERIES BB (1932).

235-S —CHEVROLET CONFEDERATE, SERIES BA (1932).

259-S —CHEVROLET MASTER SIX, SERIES CB (1933).

260-S —CHEVROLET STANDARD SIX, SERIES CC (1933).

243-S —ESSEX TERRAPLANE SIX, SERIES K (1932), SERIAL NOS. 350000 TO 367858.

267-S —ESSEX TERRAPLANE SIX, SERIES K, KU (1933), SERIAL NOS. 367858 UP.

261-S —ESSEX TERRAPLANE EIGHT, SERIES KT (1933).

258-S —HUPMOBILE SIX, SERIES K (1933).

186-S —NASH EIGHT, SERIES 8-70 (1931).

255-S —PONTIAC EIGHT, SERIES 601 (1933), BEFORE SERIAL NO. 778380.

266-S —PONTIAC EIGHT, SERIES 601 (1933), AFTER SERIAL NO. 778380.

280-S PONTIAC EIGHT, SERIES 601 (1933), AFTER SERIAL NO. 827801.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizing device (metering rod). Main nozzle is located at an angle in the upper or primary venturi with a secondary and a main venturi directly below this point in the mixing chamber. Fuel for main nozzle is metered by metering jet and metering rod. Accelerating pump discharges through a pump jet against the wall of the secondary venturi. Idle adjustment and accelerating pump setting are the only points requiring attention.

IDLE ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw if necessary to secure correct idling speed of 300 R.P.M. or approximately 5-6 M.P.H. Turn idling adjusting screw out or counter-clockwise until engine begins to miss (mix-

CARTER (B & B) CARBURETORS

6-A1, 6-B1, 6-B2—CHRYSLER SIX, MODEL CI (1932).

6-B, 6-B1—DE SOTO SIX, MODEL SC (1932, TO MOTOR NO. 17543.

6-B2—DE SOTO SIX, MODEL SC (1932), AFTER MOTOR NO. 17543.

6-B2—DODGE SIX, MODEL DL (1932) (VACUUM CLUTCH CONTROL).

6-A2—DODGE SIX, MODEL DL (1932) (WITHOUT VACUUM CLUTCH CONTROL).

4-A2—PLYMOUTH, MODEL PB (1932), MOTORS NOS. PB-1001 TO 32668.

4-A3—PLYMOUTH, MODEL PB (1932), MOTORS NOS. PB-32669 UP.

TYPES:—Plain tube updraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel for main nozzle is metered by main metering jet (under float bowl) and power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, a lower or non-adjustable port (below the throttle), and an upper port (above throttle in closed throttle position) which is controlled by the idling adjustment screw. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only point requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires smoothly. Idling screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting should be ¼-1 turn open (Chrysler, De Soto, Dodge) or ½-1¼ turns open (Plymouth). Check idling speed after completing adjustment and readjust throttle stop screw if necessary. Do not idle engine below 300 R.P.M.

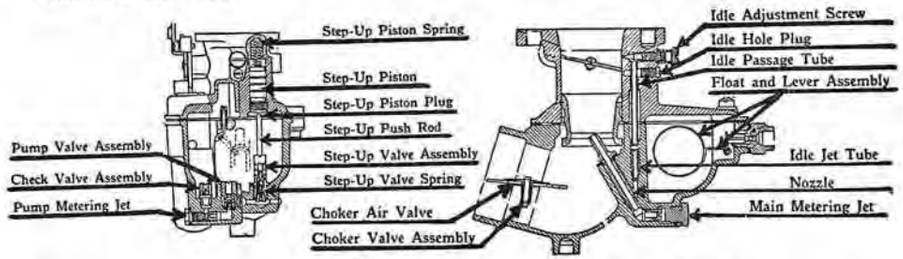
NOTE:—If correct idling adjustment cannot be secured or engine stalls while idling, take out idling adjustment screw and lower idle port plug and see that ports are clear, remove idle passage tube and idle jet tube and clean with compressed air.

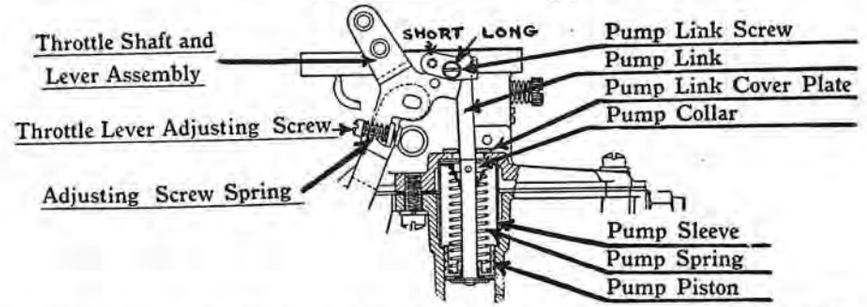
ACCELERATING PUMP:—Low pressure delayed action type. Accelerating pump is connected to throttle shaft lever and discharges fuel through main nozzle when throttle is opened. Pump discharge is metered by pump metering screw in body casting adjacent to lower end of pump cylinder (4A2, 6A1, 6B, 6B1) or by pump discharge jet in pump valve cage assembly (4A3, 6A2, 6B2). Pump metering screw hole is closed with a plug on models using a discharge jet. Throttle lever has two holes for engagement of pump link screw to provide varied pump stroke.

Adjustment:—Pump link screw should be engaged in outer hole in throttle lever (long pump stroke) for winter driving or cold temperatures. Engage screw in inner hole (short pump stroke) for summer driving (hot climates), high altitudes, or high test gasoline.

NOTE:—If acceleration is unsatisfactory, check pump setting (above), remove main metering jet, pump metering jet, check valve assembly, and pump valve assembly and clean with compressed air.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuels or operating conditions such as high altitude (see Specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up piston is not binding, and that step-up push rod moves freely in upper and lower guides. Check float level.





FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve, place a metal rule across top of float bowl and check distance from top of float (not float seam) to top of bowl edge. Float should be flush with top of bowl or not more than 1/32" below bowl top. Float level can be adjusted by bending lip of float lever (not bracket). To raise float level, bend lip of lever toward needle valve. To lower float level, bend lip of float lever toward float.

CHOKE:—Carburetors have interconnected choke valve and throttle valve levers so that throttle valve is opened slightly when carburetor is choked. Throttle is returned to closed position when choke valve is opened wide. Choke valve is fitted with a compensating or relief poppet valve to prevent overchoking. Adjust choke linkage so that choke valve is fully closed with choke control button pulled all the way out and wide open with choke button pushed in.

CARTER UPDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Standard Size	Standard Part No.	Well Jet Assem. 1 Size Lean Size	Well Jet Assem. 1 Size Lean Part No.	2 Sizes Lean Size	2 Sizes Lean Part No.	Mult. Jet Nozzle Part No.	Low Speed Jet Tube Size	Low Speed Jet Tube Part No.	Pump Jet Assem. Size	Pump Jet Assem. Part No.	Pump Adj. Screw	Metering Rod Top Diam.	Metering Rod Bott. Diam.	Metering Rod Length
CHEVROLET AE	1931	150-S	#56	43-43S	#56½	43-33S	#57	43-29S	12-153	#65	11-91S	#75	48-23S	——	.071"	.064"	4 57/64"
DE SOTO CK	1931	159-S	#55	43-41S	#55½	43-47S	#56	43-43S	12-128	#70	11-99S	#76	48-27S	——	.070"	.060"	5 1/64"
" SA	1931	188-S	#53	43-55S	#53½	43-59S	—	——	12-128	#70	11-99S	#73	48-33S	——	.072"	.057"	5 1/64"
" SA	1931	200-S	#53	43-55S	#53½	43-59S	—	——	12-158	#70	11-118S	#74	48-26S	——	.070"	.055"	5 1/64"
DODGE DH	1931	181-S	#53	43-55S	#53½	43-59S	—	——	12-128	#70	11-99S	#73	48-33S	——	.072"	.057"	5 1/64"
" DH	1931	187-S	#53½	43-59S	#54	43-45S	—	——	12-158	#57	11-118S	#74	48-26S	——	.070"	.055"	5 1/64"
" DH, DL	'31-32	215-S	#53½	43-59S	#54	43-45S	—	——	12-158	#57	11-118S	#74	48-26S	——	.070"	.055"	5 1/64"
NASH 6-60	1931	147-S	#56	43-43S	#57	43-29S	#58	43-35S	12-144	#66	11-90S	#74	48-26S	——	.066"	.051"	4 57/64"
" 9-60	'31-32	147-SA	#56	43-43S	#57	43-29S	#58	43-35S	12-144	#66	11-90S	#74	48-26S	——	.066"	.051"	4 57/64"
PLYMOUTH 30-U	1931	156-S	#56½	43-33S	#57	43-29S	#58	43-35S	12-151	#68	11-102S	#78	48-20	30A-32	.064"	.058"	5 1/64"
" PA	1931	209-S	.0485"	43-61S	#56	43-43S	—	——	12-157	#65	11-120S	#78	48-20	30A-32	.068"	.062"	5 1/64"

NOTE:—Sizes of Jets given as '#53' are wire drill sizes.

CARTER (B & B) UPDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Standard Flow	Standard Part No.	Main Metering Screw 1 Size Lean Part No.	Main Metering Screw 2 Sizes Lean Part No.	Main Nozzle Size	Main Nozzle Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Idle Passage Tube	Pump Met. Screw	Pump Valve Assem.
CHRYSLER CI	1932	6A1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023"	162-10	.0256"	123-14	123-12	159-11	149-15S
" CI	1932	6B1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023"	162-10	.0275"	123-14	123-12	159-11	149-15S
" CI	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032"	162-13	.024"	123-16	123-12	——	149-19S
DE SOTO SC	1932	6B	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023"	162-10	.0256"	123-14	123-12	159-11	149-15S
" SC	1932	6B1	222cc.	159-15	—	159-16	—	159-17	#30	12-160	.023"	162-10	.0275"	123-14	123-12	159-11	149-15S
" SC	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032"	162-13	.024"	123-16	123-12	——	149-19S
DODGE DL	1932	6A2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032"	162-13	.024"	123-16	123-12	——	149-19S
" DL	1932	6B2	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.032"	162-13	.024"	123-16	123-12	——	149-19S
PLYMOUTH PB	1932	4A2	222cc.	159-15	—	159-16	—	159-17	#30	12-164	.0197"	162-12	.0256-.0275	123-14	123-12	159-11	149-18S
" PB	1932	4A3	222cc.	159-15	—	159-16	—	159-17	#33	12-166	.0256"	162-14	.0236"	123-16	123-12	——	149-23S

Main Metering Screw column 'Flow' indicates capacity in cubic centimeters per minute. Do not gauge these jets with wire drills.

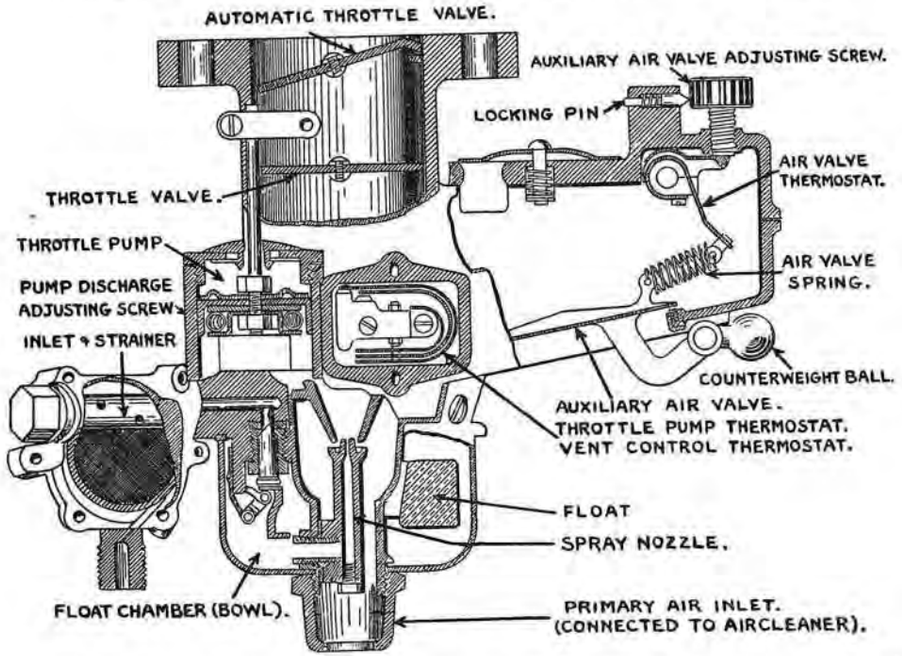
20-37 WASHERS

CADILLAC CARBURETORS

CADILLAC V-8, MODEL 355 (1931).
LA SALLE V-8, MODEL 345 (1931).

TYPE:—Air valve updraft type with positively operated pneumatic accelerating pump (throttle pump). All fuel is metered by spray nozzle located in center of primary air passage. Auxiliary air valve in air horn is controlled by air valve spring and thermostat and is adjustable. This adjustment is the only point on the carburetor requiring attention. Throttle pump is provided with an adjustment (pump discharge by-pass needle valve) which can be opened to cut down pump discharge when necessary. Special adjustment procedure given below should be followed closely.

PRELIMINARY ADJUSTMENT:—Check choke control linkage to see that choke lever on carburetor is against stop when choke control button is pulled all the way out. With carburetor fully choked see that free movement of air valve tip is 1/16-3/32" at room temperatures (65-80°F.). If this requires adjustment, take out air valve cover screws, lift cover slightly and unhook air valve spring (if air valve spring is stretched or distorted it must be replaced), remove cover, loosen two screws on bracket carrying thermostatic arm, turn shaft slightly and tighten screws, reassemble air valve spring and cover. Run engine until thoroughly warmed up, close throttle and adjust throttle lever stop screw until engine idles at approdimately 300 R.P.M.



AIR VALVE ADJUSTMENT:—With engine warm and idling at approximately 300 R.P.M. turn adjusting screw to right or clockwise until engine speed decreases or engine begins to roll, then turn screw to left or counter-clockwise until speed decreases or engine begins to miss. Correct setting should be midway between these points. Setting can be determined accurately by counting the number of notches on the adjusting screw between extreme rich and extreme lean positions and then turning screw back one-half this number of notches. With air intake elbow removed setting can be checked by pressing lightly up and down on air valve counterweight. If setting is correct, engine speed should decrease slightly in each case. If engine speed increases when counterweight is pressed up, setting is too lean. If engine speed decreases when counterweight is pressed up and increases when counterweight is pressed down, setting is too rich. In making the air valve adjustment the adjusting screw should be turned one or two notches at a time and the engine performance noted.

THROTTLE PUMP:—Throttle pump discharges air in pump chamber into float chamber when throttle is opened, increasing the pressure above the gasoline and causing an increased fuel discharge from the spray nozzle. Throttle pump thermostat opens at 74-78°F., providing a vent for part of the pump discharge and decreasing the float bowl pressure. A second thermostat controlling a float chamber vent is set to open at 125-130°F. (or 115-120°F. when high test gasoline is used). Thermostats should not require adjustment unless tampered with.

Adjustment:—Throttle pump adjusting screw (by-pass needle valve) on side of pump cylinder should be turned down against its seat for normal operating conditions. For hot weather operation or with high test gasoline, adjusting screw can be backed off 2-3 turns. To make this adjustment loosen lock nut and turn adjusting screw counter-clockwise. Adjusting screw must be turned seven full turns to completely open by-pass valve.

AUTOMATIC THROTTLE:—Carburetors are fitted with an automatic (spring loaded) throttle valve above the regular throttle valve. Automatic throttle should not require adjustment and a special tool or testing spring must be used to check setting. With carburetor off the engine and held horizontally with the test tool clipped to the edge of the automatic throttle valve, the weight of the tool should be sufficient to open throttle to within 1/32" of the stop pin. If it does not and throttle shaft is free, loosen the two screws on the spring housing at the end of the throttle shaft and turn the center adjusting screw clockwise to increase spring tension or counter-clockwise to decrease spring tension. Tighten locking screws and check setting.

FLOAT LEVEL:—Float level should be 7/16-15/32" above flange on central tube of carburetor body. To check float level with carburetor off engine, remove float bowl, invert carburetor, take off gasket on float bowl seat, measure distance from bottom of float (bottom when not inverted) to top edge of flange on central tube of carburetor body (float bowl seat). This distance should be 7/16-15/32". Float level can be corrected by bending the hinge bracket slightly.

CHOKE:—Adjust choke linkage so that choke lever on carburetor is against stop when choke button on instrument panel is pulled all the way out.

USED ON—CADILLAC V-8, MODEL 355-B (1932).
CADILLAC V-8, MODEL 355-C (1933).
LA SALLE V-8, MODEL 345-B (1932).
LA SALLE V-8, MODEL 345-C (1933).

TYPE:—Air valve updraft type. Carburetor on these models has been redesigned and an air cleaner added. The main air intake elbow is bolted over the air valve and a smaller elbow leads from the main air intake to the primary intake at the bottom of the bowl. Auxiliary air valve adjustment screw is located on the top of the carburetor body in the same position as on the previous model. This is the only adjustment requiring attention and is adjusted in the same manner as the 1931 model. Choke control should not require adjustment.

CADILLAC V-12, MODEL 370 (1931).
CADILLAC V-16, MODEL 452 (1931).

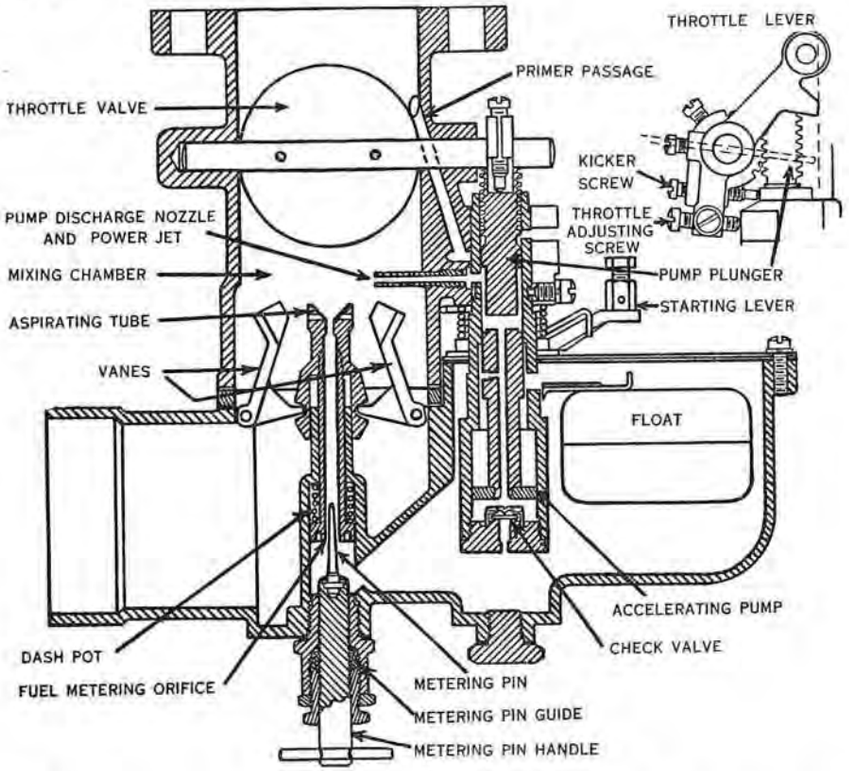
TYPE:—Twin installation consisting of two carburetors of the same design as used on V-8 model (see previous article). One carburetor is used to supply fuel for each bank of cylinders. Carburetors must be equalized as well as adjusted in order to assure smooth running. Special adjustment procedure is given below. This should be followed closely.

NOTE:—Throttle pump on these carburetors has been changed slightly and throttle pump thermostat is mounted on the pump body under a flat cover. Thermostat is set to operate at 75-80°F. The vent thermostat is not used. Automatic throttle is not used and a flapper valve mounted on the air valve takes its place.

PRELIMINARY ADJUSTMENT:—Check choke control linkage to see that choke lever on carburetor is against stop when choke control button on instrument panel is pulled all the way out. With carburetor fully choked see that free

DETROIT CARBURETORS

FLOAT LEVEL:—Fuel level in float chamber is 13/16-15/16" below the top of the float chamber. Carburetor is not sensitive to fuel level and should not require adjustment. If fuel level indicates that float level has been tampered with, this should be corrected by replacing such parts as are necessary to secure correct fuel level.



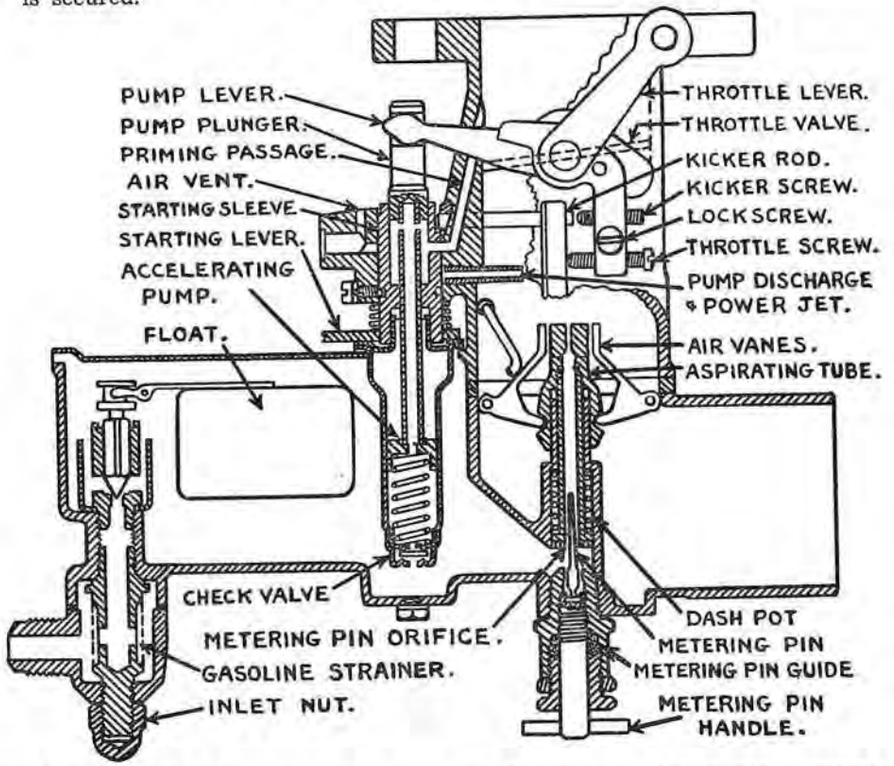
CHOKE CONTROL:—Adjust choke linkage so that starting sleeve is rotated until choke lever on carburetor is against stop screw on float chamber cover when choke control button on instrument panel is pulled all the way out. This is very important in order to line up priming port passages properly for starting. The conventional choke valve is not used.

MODEL 51—CADILLAC V-12, MODEL 370-B (1932).
CADILLAC V-16, MODEL 452-B (1932).
CADILLAC V-12, MODEL 370-C (1933).
CADILLAC V-16, MODEL 452-C (1933).

TYPE:—Twin installation consisting of two Model 51 carburetors (see previous article for complete description and data). One carburetor is used to supply fuel for each bank of cylinders ('V' type engine). Carburetors must be equalized as well as adjusted in order to assure smooth running. Special adjustment procedure is given below. This should be followed closely.

PRELIMINARY ADJUSTMENT:—See that starting sleeve on carburetor is rotated so that choke lever is against stop on float chamber cover when choke control button on instrument panel is pulled out. This is important in order to line up priming port passages in pump housing and carburetor body for starting. If carburetors are completely out of adjustment, turn turn metering pin up until it seats in aspirating tube orifice and then back metering pin off exactly 3½ turns. Run engine until it is thoroughly warmed up, close throttle and allow engine to idle. Idling speed should be 320 R.P.M. This can be checked by taking off oil filler cap on valve cover on one cylinder bank and counting the movement of one of the rocker arms. Rocker arm should move 40 times in 15 seconds with engine running at 320 R.P.M.

METERING PIN (IDLING) ADJUSTMENT:—Metering pin of each carburetor should be adjusted by turning pin up or clockwise until engine begins to miss or speed decreases and then turning pin down or counter-clockwise until engine fires smoothly. This adjustment should be made slowly so that metering pin will not be turned beyond the point where smooth running is secured.



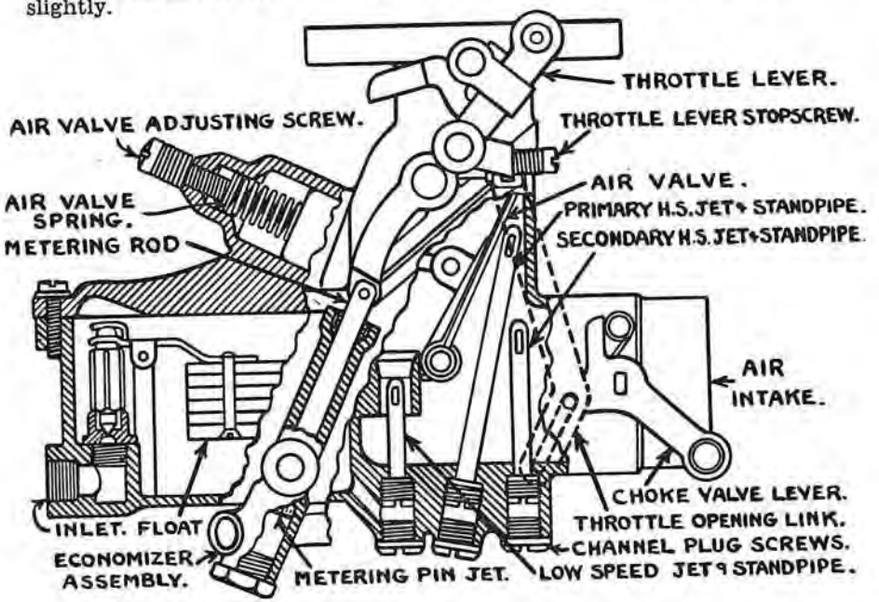
EQUALIZING CARBURETORS:—Use special Cadillac equalizing gauge consisting of a 'U' tube partly filled with mercury which should be hung vertically on one of the radiator brace rods and connected to each intake manifold. A piece of rubber tubing is connected to each leg of the 'U' tube and special fittings can be secured so that the other end of the tubing can be connected to the vacuum fittings on the manifold after the brake booster and windshield wiper lines have been disconnected. Disconnect right hand carburetor throttle rod. With equalizing gauge in place, idle engine and note mercury level in tube. If mercury level is at same height in both legs of the tube, and engine idles at 320 R.P.M. (check rocker arm to see that it operates 40 times in 15 seconds), carburetors are correctly equalized. If mercury level is even and engine idles too fast, back off throttle stop screw in each carburetor an equal amount until correct speed is secured. If mercury levels are not equal and engine idles too fast, back off the throttle stop screw on the carburetor feeding the bank on which the mercury level is lower. If mercury levels are not equal and engine speed is too slow, turn up the throttle stop screw on the carburetor feeding the bank on which

MARVEL CARBURETORS

AC-10-1530—CONTINENTAL, BEACON MODEL C-400 (1933). FRONTENAC, MODEL C-400 (1933).

TYPE:—Automatic air valve updraft type with fixed jets and thottle operated economizer. Low speed jet is located in small venturi in mixing chamber. Primary and secondary jets are located directly under automatic air valve. All jets are of the 'fixed opening' type and are non-adjustable. Automatic air valve is controlled by a dash pot plunger and spring in the housing directly under the air valve adjusting screw. The air valve adjusting screw regulating the air valve spring tension is the only adjustment on the carburetor.

ADJUSTMENT:—Engine should be thoroughly warmed up before adjustment is made. With engine warm and running, adjust throttle stop adjusting screw so that engine runs at approximately 6 M.P.H. (correct idling speed). If engine stops or hesitates and stumbles, turn air valve adjusting screw in slightly. To adjust air valve turn air valve adjusting screw to the left or out slowly until engine begins to miss or hesitate, indicating that mixture is too lean. Then turn adjusting screw to the right or in until engine fires smoothly (turn screw 1/16 turn at a time until correct setting is secured). Check setting by quickly opening throttle about one-half and then allowing it to snap back to closed position. If engine stalls, indicating a too lean mixture, turn air valve adjusting screw to right or in slightly. If engine rolls, indicating a too rich mixture, turn adjusting screw to left or out slightly.



ECONOMIZER:—Economizer consists of a metering jet and metering pin connected to the throttle lever. The fuel supply to the primary and secondary jets is controlled by the economizer at all speeds below 50 M.P.H. to assure maximum economy. At speeds above 50 M.P.H. or with wide open throttle the economizer permits a greater fuel flow for maximum power. Economizer is entirely automatic and requires no attention. No adjustments are provided.

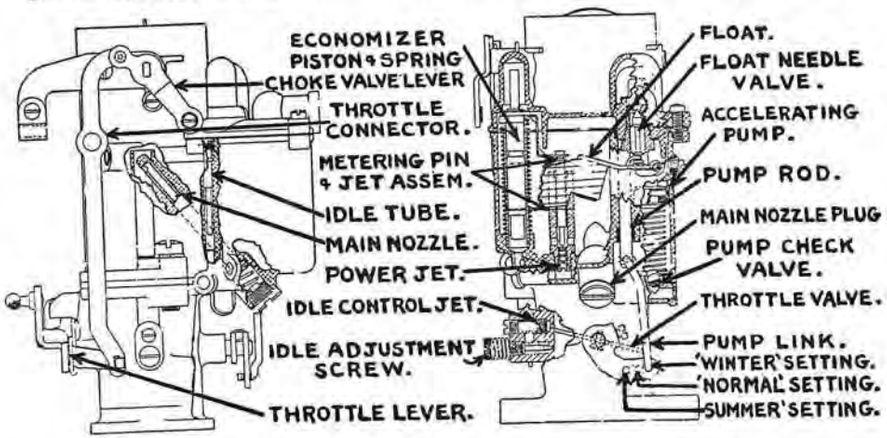
PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if air valve adjustment (above) is correct. Jets should not be changed except for permanent operation at elevations above 3000 feet.

CHOKE:—Choke valve is provided with a relief poppet valve and is interconnected with the throttle lever so that throttle is opened slightly when carburetor is choked. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled out and fully open with choke button pushed in.

FLOAT LEVEL:—Float chamber is sealed and is vented through an air tube in the carburetor air horn. This prevents mixture becoming richer if air cleaner is allowed to become clogged. To check float level, take off float chamber cover (upper carburetor body), being careful not to damage air valve mechanism, measure distance from top of float to top edge of float chamber bowl. Correct setting should be 11/32" with float valve held closed by pressing up on float lever. Float valve and float valve seat should be replaced as matched sets and not individually.

B-10-1549—CONTINENTAL FLYER, MODEL C-600 (1933).
10-1545—CONTINENTAL ACE, MODEL 6-85 (1933).
10-1549—FRONTENAC, MODEL C-600 (1933).

TYPE:—Plain tube downdraft type with accelerating pump and vacuum operated economizer. Fuel from float chamber flows through power jet (in lower end of metering jet assembly) and metering jet to main nozzle in carburetor venturi. Main nozzle supplies principal charge at all speeds except idling. Metering pin in metering jet is controlled by economizer piston. The lower end of the economizer piston chamber is connected to the carburetor passage below the throttle and at all positions of partly-opened-throttle the manifold vacuum will hold the piston at the lower end of the stroke (against the tension of the spring) so that the metering pin is held in position in the metering pin jet, limiting the fuel flow. When the throttle is opened the resulting fall in vacuum will allow the spring to force the piston upward, lifting the metering pin and increasing the fuel flow for



acceleration and full-throttle operation. Fuel for idling is taken through a cross passage after passing through the power jet and metering jet up through the idling tube to a second cross passage in which the idle air vent is located. From this point the mixture flows downward to upper idle port (above throttle valve) and past idling adjustment needle valve to lower idling port. Idling mixture adjusting screw and throttle adjusting screw for idling speed are the only adjustments on the carburetor (except for seasonal adjustment of accelerating pump stroke).

IDLING ADJUSTMENT:—Needle valve type operating on gasoline mixture. With engine thoroughly warmed up, set throttle valve adjusting screw so that engine runs at approximately 7 M.P.H. Then adjust idling adjusting screw until engine fires evenly (turn screw in for leaner mixture and out

MARVEL CARBURETORS

T-3—10-894 —BUICK, MODEL 8-50 (1931).
TD-1S—10-982 —BUICK, MODEL 32-50 (1932).
TD-2S—10-975 —BUICK, MODEL 8-60 (1931), FIRST CARS.
10-983 —BUICK, MODEL 8-60 (1931), LATE CARS.
10-1501—BUICK, MODEL 32-60 (1932).
TD-3—10-796 —BUICK, MODELS 8-80, 8-90 (1931), FIRST CARS.
10-984 —BUICK, MODELS 8-80, 8-90 (1931), LATE CARS.
10-1503—BUICK, MODELS 32-80, 32-90 (1932).
ED-1S—10-1515—BUICK, MODEL 33-50 (1933).
ED-2S—10-1518—BUICK, MODEL 33-60 (1933).
ED-3—10-1514—BUICK, MODELS 33-80, 33-90 (1933).

TYPE:—Automatic air valve updraft dual type (except T-3 single barrel) with throttle operated economizer and Marvel Heat Control (throttle operated, dash regulated control on 1931-32 models—see description below; automatic thermostat control on 1933 models—see special article on Heat Controls). Dual types have independent mixing chambers, jet assemblies, air valves, and throttle valves (throttle valves are mounted on the same shaft and do not require synchronization). Both air valves are regulated by a single adjusting screw assembly and instructions given below apply to all models.

All jets are 'fixed' type and non-adjustable. Low speed jet is located in venturi at side of air valve and is fed directly from the float chamber (1932 and 1933 models have a deeper well under the jet and jet is provided with a quill which extends down into the well). Primary and secondary high speed jets are located directly under air valve and operate when air valve opens. These jets are fed by fuel metered through economizer metering jet which restricts fuel for partial throttle operation. Air valve is controlled by air valve spring and dashpot built in air valve adjusting screw. Air valve adjustment is only point on carburetor requiring attention.

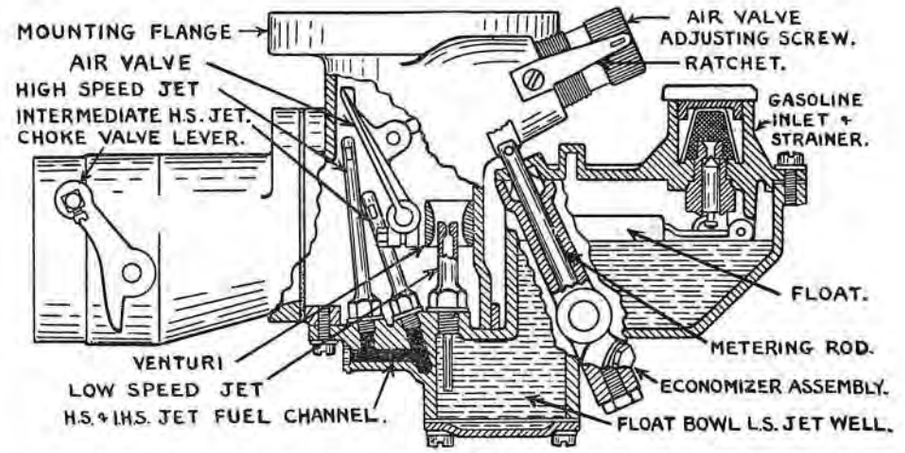
ADJUSTMENT:—Engine must be warmed up before adjustment is made. On 1931-32 cars place heat control button on dash in 'on' position in warming up engine and leave the control in this position while adjustment is being made. This is important. Make a preliminary adjustment of air valve adjusting screw by turning screw in or out until end of screw is flush with end of ratchet, warm up engine, close throttle, retard spark, adjust throttle stop screw if necessary to keep engine from stalling. Turn air valve adjusting screw to left or counter-clockwise until engine hesitates or misses, indicating that mixture is too lean, then turn screw slowly in or clockwise until engine fires smoothly. Check adjustment by opening throttle part way and then snapping it closed. If engine stalls (mixture too lean), turn screw in or clockwise slightly. If engine rolls (mixture too rich), turn screw out or counter-clockwise slightly.

PERFORMANCE:—If air valve adjustment has been correctly made, performance should be satisfactory throughout entire driving range. Jets should be changed only to compensate for high altitudes (permanent operation at elevations greater than 3000 feet). Air valve spring length should be exactly 1½". If air valve spring has been tampered with or if length is not 1½", replace spring.

ECONOMIZER:—Economizer consists of a metering jet and metering pin connected to the throttle lever. Fuel supply for high speed jets is controlled by economizer for all partial throttle positions to assure maximum economy. At high speeds or with wide open throttle economizer permits a greater fuel flow for maximum power. Economizer is entirely automatic, is not adjustable and requires no attention.

FLOAT LEVEL:—Needle valve assembly on T and TD carburetor models is mounted in the bottom of the float bowl casting. Float level on these models should be 19/64" below the top edge of the float bowl casting with the gasket removed. Measure distance from top edge of bowl to top surface of float cork with needle valve held closed. On 1933 Type 'E' carburetors, needle valve assembly is mounted on float bowl cover. To check float level on these models, take off float cover, remove gasket, invert cover and measure distance from gasket seat on cover to top of float (top when not inverted). Correct setting should be 1 3/16". Do not attempt to change float level by bending float lever.

HEAT CONTROL:—Carburetor header on 1931-32 models is jacketed for exhaust gas heating, exhaust gas being carried to and from the header by a double concentric pipe connected to the exhaust manifold. Exhaust gas flow in this piping is controlled by a throttle operated valve through a cam and lever actuated rod. Throttle connection is designed to open valve and decrease heat as throttle valve is opened. The amount of exhaust gas heat applied for closed throttle and partial throttle positions is determined by the position of the cam controlled by the heat button on the instrument board. This is an operating adjustment and should not require attention



except that button must be placed in 'On' position when carburetor is adjusted (see special article for description and adjustment on 1933 automatic thermostat heat control).

CHOKE:—Adjust choke linkage so that choke valve is fully closed with choke control button on instrument panel pulled all the way out and wide open with choke control button pushed in.

VE-3—10-947—ESSEX SUPER SIX (1931).
10-995—ESSEX SUPER SIX (1932), FIRST CARS.
10-1505-ESSEX SUPER SIX (1932), LATE CARS.
10-1533-HUDSON SUPER SIX (1933).

VH-4—10-949—HUDSON EIGHT MODEL (1931)
10-989—HUDSON GREATER EIGHT MODEL (1932).
10-1536-HUDSON GREATER EIGHT MODEL (1933).

TYPE:—Automatic air valve updraft type with throttle operated economizer and accelerating pump (VE-3 only) and Marvel Heat Control (throttle operated adjustable control on 1931 models, automatic thermostat control on 1932-33 models—see description below). All jets are 'fixed' type. Low speed or idling jet is located in venturi at one side of air valve and is fed directly from the float chamber. High speed and intermediate high speed jets are located directly under air valve and operate when air valve opens. These jets are fed by fuel flowing through economizer metering jet, which restricts fuel for partial throttle operation, insuring maximum economy. A by-pass passage in the carburetor and header body controlled by a by-pass valve operated by the choke permits the idling mixture to flow from a point above the idling jet past the throttle into the intake manifold. This provides fast idling speed of 14-15 M.P.H. for warming up with closed throttle (idling by-pass operative only with choke valve closed). Air valve is controlled by dashpot and air valve spring assembled in air valve adjusting screw. Air valve adjustment is the only point requiring attention.

ADJUSTMENT:—On 1931 models heat control adjustment on manifold must be placed in 'warm' position (see instructions below) while adjustment is being made. This is important. Make a preliminary adjustment of air valve adjusting screw by turning screw in or out until end of screw is flush with end of ratchet. Warm up engine. With engine warm and running, close

MARVEL CARBURETORS

ture too lean), then turn air screw in until engine fires smoothly. Final setting should be midway between the extreme rich and extreme lean positions. Readjust throttle stop screw to secure correct idling speed. Do not idle engine below 5 M.P.H.

ECONOMIZER:—Economizer consists of a metering rod attached to the lower end of the accelerating pump plunger and operated by the throttle. At partial throttle or low speeds (up to approximately 50 M.P.H.) the larger diameter section of the metering pin will partially close the metering pin jet opening so that the fuel flow to the high speed and intermediate high speed jets is restricted, assuring maximum economy. At high speeds or with wide open throttle the metering pin is depressed so that the smaller diameter section of the pin permits a greater fuel flow through the metering pin jet for full power operation. Economizer is not adjustable and should not require attention.

PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if air valve adjustment (above) has been correctly made. Jets should be changed only for permanent operation at altitudes greater than 4000 feet.

ACCELERATING PUMP:—Accelerating pump is operated by throttle lever and discharges additional fuel through high speed jets when throttle is opened. A check valve in the bottom of the float chamber prevents the fuel discharged by the pump flowing back into the float bowl. Accelerating pump is not adjustable.

FLOAT LEVEL:—The top of the float should be 11/32" below the top edge of the float bowl. To check float level, take off bowl cover and gasket, see that float needle valve is seated, measure distance from top of float to top edge of bowl.

CHOKE:—Choke valve is held in position on its shaft by a spring which permits choke valve to open slightly when engine begins to fire, preventing over-choking and assisting in warming up. See that choke linkage is adjusted so that choke valve is closed with choke control button on instrument panel pulled out and wide open with choke control button pushed in.

MARVEL CARBURETORS

			Standard Parts Nos.					High Altitude Parts Nos.						
Car Model	Yr.	Carb. No.	Low Speed Nozzle	Int. High Spd. Nozzle	High Speed Nozzle	Metering Pin Jet	Low Speed Nozzle	Int. High Speed Nozzle	High Speed Nozzle	Metering Pin Jet	Air Spring	M. P. Assem.	Heel Clearance
BUICK 8-50	1931	10-894	47-130-A	49-135-E-22	49-120-C-24	84-088-C	47-120-A	49-120-E-22	49-100-C-24	84-088-C	24-315	173-528	.018-.022"
" 8-60	1931	10-795	47-105-A	49- 80-E-22	49- 90-C-20	84-088-C	47- 95-A	49- 80-E-22	49- 75-C-20	84-088-C	24-315	173-528	.018-.022"
" 8-60	Late '31	10-983	47-100-B	49- 85-E-22	49- 80-C-20	84-090-C	———	———	———	84-090-C	24-315	173-528	.018-.022"
" 8-80, 90	1931	10-796	47-120-A	49-120-E-24	49-120-C-26	84-091-C	47-115-A	49-110-E-24	49- 90-C-20	84-091-C	24-214	173-528	.918-.022"
" 8-80, 90	Late '31	10-984	47-115-B	49-125-E-24	49-115-C-26	84-094-C	———	———	———	84-094-C	24-214	173-528	.018-.022"
" 32-50	1932	10-982	47- 95-B	49- 90-E-22	49- 75-C-18	84-091-C	47- 85-B	49- 85- E-22	49- 70-C-20	84-091-C	24-316	173-528	.008-.012"
" 32-60	1932	10-1501	47-100-B	49- 85-E-22	49- 80-C-20	84-091-C	47- 90-B	49- 85-E-22	49- 70-C-20	84-091-C	24-315	173-528	.018-.022"
" 32-80, 90	1932	10-1503	47-115-B	49-120-E-16	49-105-C-26	84-093-C	47-110-B	49-110-E-16	49- 90-C-20	84-093-C	24-214	173-528	.018-.022"
" 33-50	1933	10-1515	47-100-B	49-100-E-24	49- 80-C-18	84-100-C	47-90 -B	49-90- E-22	49-75- C-20	84-100-C	24-316	173-606-B	.008-.012"
" 33-60	1933	10-1518	47-100-B	49- 85-E-22	49- 80-C-20	84-098-C	47- 90-B	49-85- E-22	49-70- C-20	84-098-C	24-315	173-605-B	.018-.022"
" 33-80, 90	1933	10-1514	47-120-B	49-115-E-16	49-105-C-26	84-098-C	47-110-B	49-110-E-16	49- 90-C-20	84-098-C	24-214	173-604-B	.018-.022"
CONT. BEACON	1933	10-1530	49- 85-A-10	49- 90-E-22	49- 70-C-16	84-084-C	49-85- A-10	49-90- E-16	49- 70-C-16	84-084-C	24-415	173-607	.016-.020"
ESSEX S. S.	1931	10-947	49-120-A-10	49-105-E-24	49- 90-C-28	84-102-B	49-120-A-10	49- 85-E-24	49-80- C-28	84-102-B	24-414	173-577	.007-.011"
" S. S.	1932	10-995	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	49-120-A-10	49-120-E-24	49-85- C-28	84-101-B	24-414	173-577	.007-.011"
"	Late '32	10-1505	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	———	———	———	84-101-B	24-414	173-577	.007-.011"
HUDSON 8	1931	10-949	47-150-A	49-200-E-24	49-100-C-28	84-088-C	47-150-A	49-170-E-24	49-85- C-28	84-088-C	24-114	173-528	.010-.014"
"	1932	10-989	47-150-A	49-250-E-24	49-100-C-28	84-092-C	47-150-A	49-215-E-24	49-85 -C-28	84-092-C	24-214	173-528	.010-.014"
" S. S.	1933	10-1533	49-120-A-10	49-140-E-24	49-100-C-28	84-101-B	49-120-A-10	49-120-E-24	49-85- C-28	84-101-B	24-414	173-577	.007-.011"
" 8	1933	10-1536	47-150-A	49-250-E-24	49-100-C-28	84-092-C	47-150-A	49-215-E-24	49-85- C-28	84-092-C	24-214	173-589	.010-.014"
NASH 8-90	1931	10-941	47-175-52	49-290-E-28	48-200-54	84-138-B	47-165-52	49-240-E-28	48-160-54	84-136-B	24-214	173-571	.008-.013"
OAKLAND 301	1931	10-952	49-160-A-10	49-280-E-28	49-160-C-28	84-144-B	49-160-A-10	49-240-E-28	49-140-C-28	84-138-B	24-117	173-576	-.008-.013"
PONTIAC 401	1931	10-995	49-115-A-10	———	49-230-C-32	84-100-B	49-115-A-10	———	49-145-C-26	84-100-B	24-415	173-556	.008-.012"
" 402	1932	10-992	49-110-A-10	49-180-E-20	49-120-C-26	84-101-B	49-110-A-10	49-140-E-20	49-105-C-26	84-101-B	24-416	173-583	.010-.014"
" 302	1932	10-993	47-150-56	49-270-E-28	49-230-C-28	84-138-B	47-159-56	49-230-E-28	49-195-C-28	84-138-B	24-214	173-588	.008-.013"

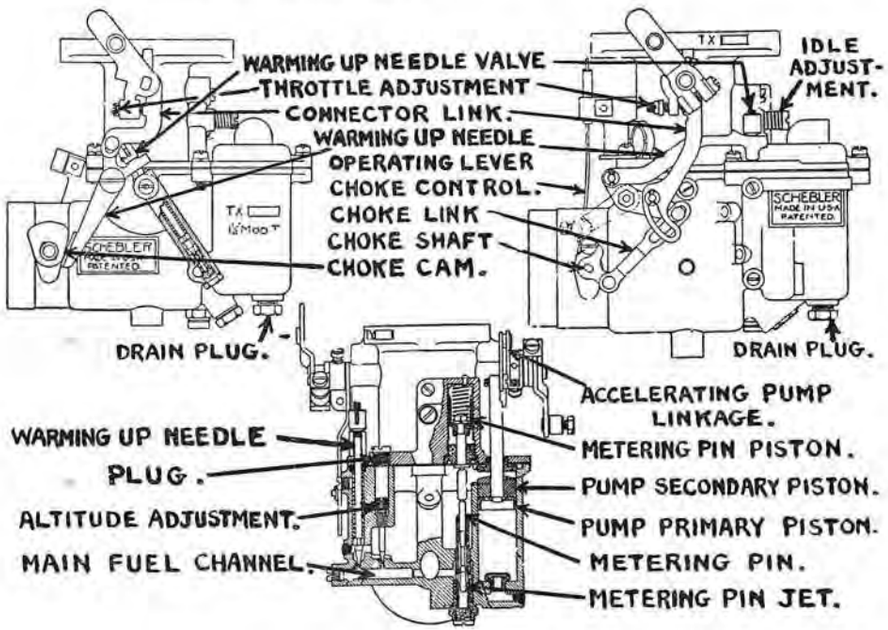
MARVEL TYPE 'B' DOWNDRAFT

Car Model	Yr.	Carb. No.	IdleJet	H. S. Nozzle	Power Jet	Metering Pin and Jet Assem.	Idle Adj. Needle	Idle Air Vent	Pump Disch. Jet	Float Valve and Seat
CONT. FLYER	1933	10-1549	49-587-I	47- 85-C	49-270-F	280-501	43-16	49-H-57	49-47	233-524
" ACE	1933	10-1545	49-578-I	47-110-C	49-290-F	280-502	43-16	49-H-47	49-47	233-524

SCHEBLER CARBURETORS

IDLING ADJUSTMENT:—Idling adjustment should be made with engine hot. With engine thoroughly warmed up, close throttle, retard spark, adjust throttle lever stop screw (idling speed adjustment) so that engine will not idle at less than 5 M.P.H. Tighten the locking screw after making this adjustment. For cold weather operation, turn idling adjustment screw in or clockwise until engine begins to roll (mixture too rich), then back screw out slowly until engine fires smoothly. For warm weather operation, turn idling adjustment screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw slowly in until engine fires smoothly. Idling screw controls air and should be turned out for leaner mixture and in for richer mixture. After completing idling adjustment, check idling speed and readjust throttle stop screw if necessary. Do not idle engine below 5 M.P.H.

NOTE:—For cold weather operation idling adjustment should be set just under the rolling point and for warm weather operation adjustment should be set just over the missing point. These settings will be secured by making the adjustment as directed above.



ECONOMIZER:—This device consists of a metering pin controlled by a vacuum piston which restricts the fuel flow through the metering jet. For partial throttle positions (when vacuum piston is held up) the larger diameter section of the metering pin restricts the fuel flow, assuring maximum economy. For high speed or wide open throttle operation the vacuum piston is forced down by the piston spring so that the smaller diameter section of the metering pin permits a greater fuel flow to the main nozzle. Economizer is not adjustable and does not require attention. For permanent operation at high altitudes the metering pin may be changed.

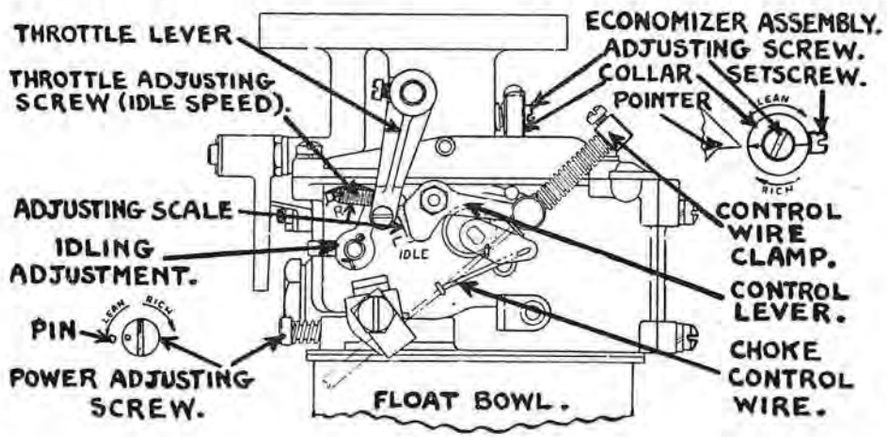
HIGH SPEED:—A needle valve which by-passes a small amount of fuel to the main nozzle is located under a plug in the body casting at the left of the idle adjustment. This adjustment is permanently set at the factory by means of a flow-meter test and should not be changed. The setting (in number of 'clicks' open) is stamped on the carburetor flange directly above the idle adjustment screw. This factory setting should always be followed except for special conditions such as temporary operation at high altitudes, extremely warm climates or high test gasoline.

ACCELERATING PUMP:—Accelerating pump is operated by the throttle lever and discharges fuel to the main nozzle when the throttle is opened. The pump is of the 'delayed action' type and consists of a primary piston or plunger attached to the pump rod which discharges part of the fuel in the pump cylinder and permits the remainder to flow through holes in the plunger into the upper part of the cylinder. This portion of the fuel is discharged by the secondary piston which falls by reason of its weight, thus prolonging the pump discharge. Accelerating pump is not adjustable and should not require attention.

CHOKE CONTROL:—The dash control tubing should be fastened in the dash control clamp on the carburetor body so that the end of the tubing extends about 1/16" through the clamp. The dash control wire should be fastened in the choke lever clamp screw or binding post so that the control button on the instrument panel is about 1/16" out when the lever is against the stop (choke valve wide open).

U—PEERLESS MASTER EIGHT, MODEL B (1931-32).
REO FLYING CLOUD SIX, MODEL 25 (1931).
REO FLYING CLOUD SIX, MODEL 6-21 (1931-32).

TYPE:—Air valve updraft type with throttle operated accelerating pump. Main nozzle is located in venturi (fixed air intake) and is fed with fuel metered by lift lever needle valve controlled by air valve. Needle valve is lifted in valve seat as air valve opens, permitting a greater fuel flow to the nozzle. For starting and warming up, the control lever operated by the dash control holds the air valve closed and raises the needle valve, resulting in a richer mixture. No choke valve is used although some models are fitted with a venturi choke operated by the choke wire linked on the dash control wire (see illustration). Carburetors have an idling adjustment, economy adjustment, and power adjustment.



IDLING ADJUSTMENT:—All adjustments should be made with engine hot (170°F.). With engine thoroughly warmed up, retard spark, close throttle, set idling adjustment so that pointer is in center of scale (midway between 'R' and 'L' marks). Allow engine to idle and note performance. If engine rolls (mixture too rich), move idle adjustment handle up (toward 'L' end of scale) one click at a time until engine fires smoothly. If engine misses or is rough (mixture too lean), move adjustment handle down (toward 'R' end of scale) one click at a time until engine fires smoothly. For cold weather operation idling adjustment should be set just under the rolling point. For hot weather operation idling adjustment should be set just over

STROMBERG AUTOMATIC CHOKE

MODEL B (1932), MODEL C (1933).

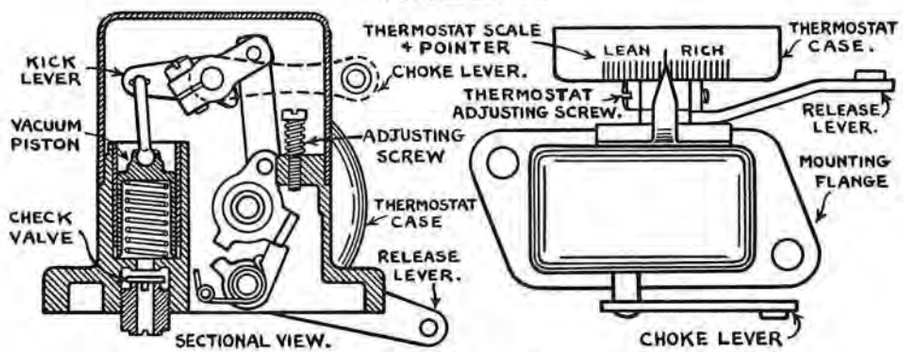
DESCRIPTION:—The Stromberg Automatic Choke Control is a device designed to automatically choke the carburetor when the engine is started cold and to automatically control the choke valve during the warming up period of the engine. It is designed to be mounted on the manifold and is operated by the engine heat and manifold vacuum. The choke is connected to the carburetor choke valve lever by means of a suitable connecting rod.

OPERATION:—The coiled thermostat spring in the thermostat case on the side of the unit will close the carburetor choke valve at an engine temperature of 70°. The choke will thus be in position for starting and is held closed during the cranking operation by the locking of the roller 'M' against the cam 'L'. When the engine begins to fire, the vacuum in the manifold will act to pull down the piston 'G' (since the lower end of the piston cylinder is connected to the manifold), unlocking the roller 'M' and cam 'L'. As soon as the engine begins to fire regularly the piston will be drawn down to the end of the stroke so that cam 'L' bears against lever 'H', opening the choke valve by a pre-determined amount against the tension of the thermostatic spring. The distance between the cam and lever is adjustable by means of the lever adjusting screw 'K'. As the engine warms up, the thermostatic spring opens the choke valve until the choke valve is wide open when the temperature of the water reaches 120°.

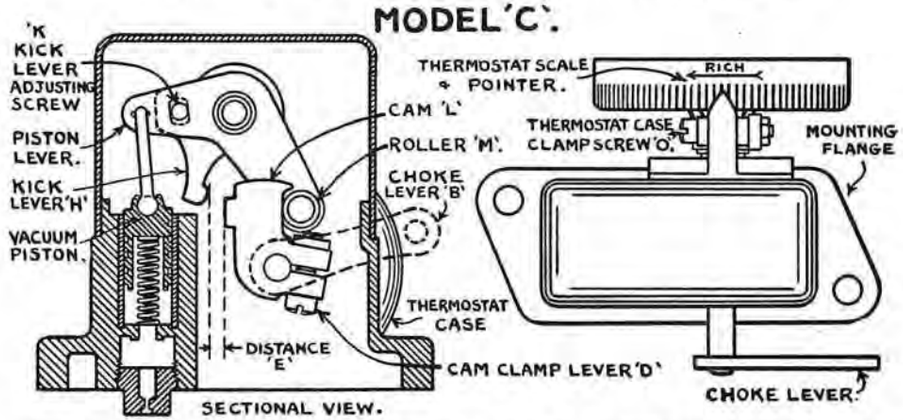
ADJUSTMENT:—(1932). Choke can be removed from engine by disconnecting control levers and taking out two mounting screws. Choke thermostat must be at normal room temperature of 70°F. before any adjustments are made. If engine has been running, remove choke and allow to cool off. If choke case temperature is under 70°, take choke into warm room and allow to come up to room temperature. The release lever must be held in a horizontal position (parallel to base) while the choke is being tested or adjusted. To check choke, unhook thermostat spring from prong in case, set the case at correct figure for car (5 notches lean for Oldsmobile F-32, 8 notches lean for Oldsmobile L-32, 16 notches lean for Packard 905, 6), raise choke lever to highest position and check distance from thermostat spring hook to prong on case. Correct figure should be .002-.020". Distance can be set by loosening set screw and turning the shaft. Tighten the set screw and see that thermostat does not bind on case. Invert choke, lift choke lever and allow it to drop. It should drop freely and the linkage should come back to the 'lock' position. Assemble thermostat spring hook on prong, set thermostat case at '0'. With this setting, choke lever should catch in the closed position but should yield to a light pressure. Revolve thermostat case one quarter turn so that prong is under pointer. With this setting, choke lever should resist slight pressure but should yield to a tap by hand. There should be a noticeable difference between the two settings. The amount of resistance offered by the choke lever is controlled by the adjusting screw in the choke case. Turn this screw down or clockwise to decrease resistance and up or counter-clockwise to increase resistance. Set the thermostat case for the correct figure, securely tighten the thermostat case clamp screw, assemble choke on engine, see that backlash between choke control and carburetor choke levers is not more than .006". This can be adjusted by changing position of carburetor choke lever on choke valve shaft. Release lever should be connected to accelerator rod. This release lever opens the choke valve when the accelerator is opened wide.

ADJUSTMENT (1933):—When the Automatic Choke requires adjustment, it should be removed from the engine by disconnecting the carburetor connecting rod and taking out the two mounting screws. The Choke should then be allowed to cool off to 70° before any attempt is made at adjusting (this is particularly important if engine has been running and Choke is heated). However if temperature is under 70° choke should be taken into a room heated to 70° (this is normal room temperature) and allowed to come up to room temperature before adjustment is made. To adjust, first take off Choke case cover and see that all working parts operate freely. With roller 'M' in locked position against first notch of cam 'L' the distance between the center of the hole in the choke lever 'B' and the lower surface of the Choke base plate should be 1 5/16" (Studebaker models), 1 15/32" (Packard models), or 1 19/32" (Oldsmobile models). If this distance is not correct, loosen cam clamp lever 'D' and shift position of control lever until correct setting is secured. The distance 'E' between the face of the cam 'L' and the surface of the kick lever 'H' is set at the factory by means of a #17 drill (Studebaker Models 56, 73, 82, 92, Packard Models 1001, 2, 3, 4) or #20 drill (Oldsmobile models) and can be adjusted by loosening kick lever adjusting screw 'K'. Then unhook thermostat spring end 'A' from prong 'N' in thermostat case, loosen clamp screw 'O' and rotate thermostat case 'Q' until the zero mark of the scale on the rim of the case is directly under

MODEL 'B'.



MODEL 'C'.



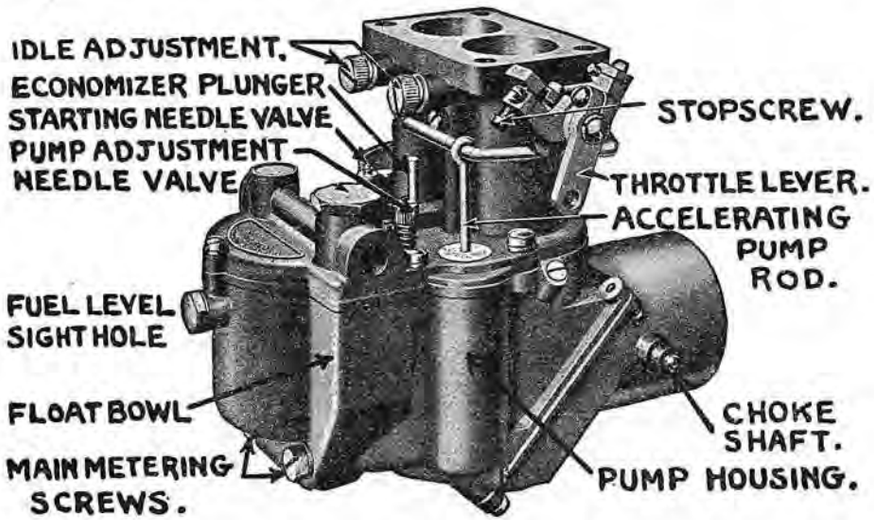
the pointer. In this position the hook of the thermostat should be flush with the prong in the case. Place the hook on the prong, revolve the thermostat case the correct number of divisions toward the 'rich' or 'lean' side of the scale (see specific setting given for each car model), securely tighten clamp screw 'O'. See that piston operates freely and does not stick in any position, assemble Choke case cover, mount choke on manifold, making certain that gasket is in good condition and that mounting screws are pulled down evenly and securely. Then connect control rod to carburetor choke lever and see that there is only .006 inch backlash between levers. If it is necessary to adjust control rod to secure correct backlash, loosen the clamp screw on the carburetor choke lever and shift the carburetor choke lever on its shaft. See that the carburetor air cleaner does not interfere with the free movement of the control rod.

STROMBERG CARBURETORS

setting the screw midway between these points. Idling screws operate on fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Throttle lever stop screw should be readjusted after idling adjustment has been completed to secure correct idling speed if necessary.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets are of the 'fixed' type and not adjustable. Metering jet size is stamped on the outer face of the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions, such as high altitudes.

Economizer is operated by accelerating pump lever. At all positions of partial throttle economizer needle valve will be closed so that all fuel for main discharge jets will be supplied by main metering jets. When the throttle is opened the pump lever depresses the economizer needle plunger, opening the economizer valve and allowing additional fuel to flow through the economizer by-pass jet to the main discharge jets. Economizer is not adjustable and does not require attention.



ACCELERATING PUMP:—Accelerating pump is operated by throttle lever and supplies an extra charge of fuel to the main discharge jet when the throttle is opened. Accelerating pump discharge is regulated by a needle valve in the pump discharge channel. Needle valve adjusting screw is located on float chamber cover adjacent to pump.

Adjustment:—Average setting for accelerating pump adjusting screw is ½ turn open (summer) to 3 turns open (winter). To check pump setting, run engine until well warmed up, close throttle and retard spark. Accelerate engine by opening throttle quickly and note engine performance. If engine hesitates, pump setting is too small and adjusting screw should be turned out slightly. If engine stumbles in picking up speed, pump setting is too large and adjusting screw should be turned down (or in) slightly. Check setting by operating car in high gear on a level road at approximately 5 M.P.H. and open throttle suddenly. Ir car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticeable as engine warms up.

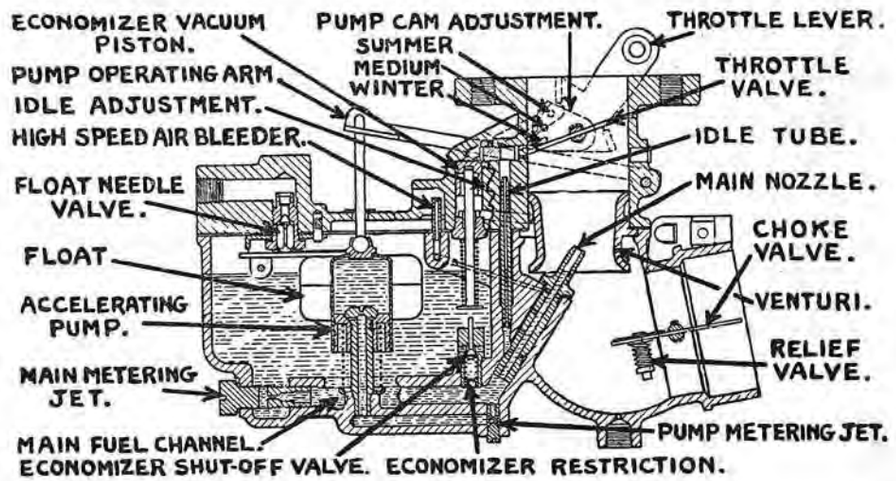
FLOAT LEVEL:—Fuel level in float chamber should be even with the bottom of the sight hole in the float chamber casting with the engine not running. To check fuel level, remove plug in sight hole directly above metering jets on end of carburetor body. Float level can be changed if necessary to correct fuel level by bending the float lever at the corner between the float and the needle valve.

CHOKE:—Choke valve linkage should be adjusted so that choke valve is closed tight when choke control button on instrument panel is pulled all the way out and wide open with choke control button pushed in. The choke valve is connected to an auxiliary control valve for starting. This linkage should be checked to see that clearance between choke lever cam and operating lever is sufficient so that needle valve is seated when choke valve is open. It will ordinarily not require adjustment.

UR-2—CHRYSLER SIX, MODEL CM (1931).
ROCKNE, MODEL 65 (1932).
ROCKNE, MODEL 75 (1932).
ROCKNE, MODEL 10-31 (1933).
STUDEBAKER SIX, MODEL 55 (1932).

URO-2—AUBURN EIGHT, MODEL 8-100 (1932).
AUBURN EIGHT, MODEL 8-101 (1933).
FRANKLIN, SERIES 16-B (1933).
FRANKLIN OLYMPIC, SERIES 18 (1933).

TYPE:—Plain tube updraft type with positively operated accelerating pump and vacuum economizer. Auburn Model is fitted with a 'throttle-cracking' device connected to the choke valve lever for starting (see data below). Main discharge jet is air bled to control mixture so that fuel flow through jet is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). All fuel for main discharge jet is metered by main metering jet under float bowl (except for high speed or open throttle when additional fuel is by-passed through economizer by-pass jet). Idle adjustment and accelerating pump adjustment (summer-normal-winter setting) are the only points requiring attention.



IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine from stalling). Turn idling adjusting screw out until engine begins to hesitate or miss, then turn screw in until engine fires smoothly and maximum speed is attained. Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. After idling adjustment has been completed readjust throttle stop screw if necessary to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idle discharge hole plug and clean out idling ports with compressed air. The idling tube can also be taken out and cleaned with air if the carburetor is disassembled.

STROMBERG CARBURETORS

At speeds up to 60 M.P.H. vacuum in economizer piston chamber (chamber is connected to carburetor barrel) will be sufficient to hold piston up against economizer spring tension so that economizer valve will remain closed. At speeds of 60-70 M.P.H. the drop in vacuum will allow spring to force piston downward, opening economizer valve and allowing additional fuel to flow past the economizer valve seat and through the economizer jet to the main metering jet channels. Economizer does not require attention.

ACCELERATING PUMP:—Pump is operated through a cam-and-lever arrangement by the throttle shaft and discharges fuel through the pump discharge tube in each carburetor barrel when the throttle is opened. Pump discharge is controlled by an adjustable needle valve located in the pump discharge channel so that all fuel discharged by the pump passes through this valve.

Adjustment:—Accelerating pump adjusting needle valve is located on float chamber cover directly below idling adjustments. Correct setting for normal conditions should be 1-1½ turns open. To check throttle pump setting, retard spark, run engine at idling speed and note performance when throttle is opened. If engine hesitates opening is too small and needle valve should be backed out or opened slightly. If engine stumbles in picking up speed opening is too large and needle valve should be turned down slightly. Check adjustment by operating car at speed of 5 M.P.H. on level road in high gear. Open throttle suddenly and note performance. If car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticebale as engine warms up.

FLOAT LEVEL:—There is a float level sight hole closed by a plug on the side of the float chamber. With the engine not running gasoline level in float chamber should be even with the lower edge of the sight hole. To correct float level, take off top half of carburetor body by taking out body connecting screws and accelerating pump adjusting needle valve. To raise float level, bend float lever arm at the corner where it touches float and float needle valve so that float is raised the desired amount. To lower float level, hold float lever tight against needle valve and bend float downward. Top of float should be approximately 17/64" below top face of float chamber (gasket removed) with float needle seated.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire so that engine will continue to run. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and fully open when button is pushed all the way in.

DX-3—CHRYSLER EIGHT, MODEL CD (1931).
CHRYSLER EIGHT, MODEL CDX (1931).
DE SOTO EIGHT, MODEL CF (1931).
DODGE EIGHT, MODEL DG (1931).

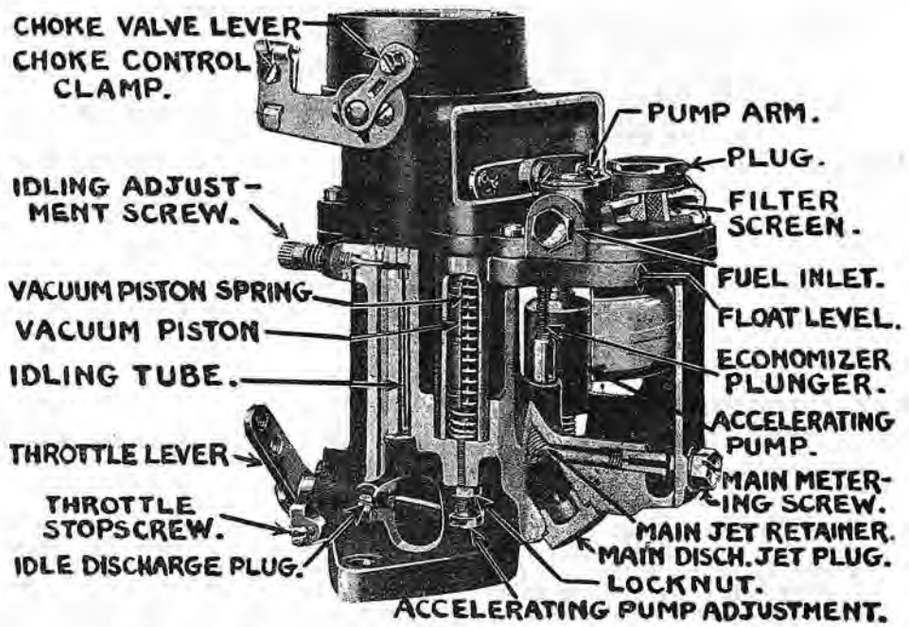
TYPE:—Plain tube downdraft type with vacuum controlled accelerating pump and economizer. Main discharge jet is located at an angle in the venturi and is air bled by means of a high speed air bleeder tube mounted vertically on the jet near the tip. Main metering jet is located under float bowl and meters all fuel for main discharge jet except for high speed or wide open throttle operation (with economizer by-pass jet valve open). Idle adjustment and accelerating pump adjustment are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on air. Engine must be warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust idling adjustment screw until engine fires smoothly and speed is at maximum for throttle position (turn idling screw out until engine begins to miss and then turn screw in until engine fires smoothly). Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. Adjust throttle lever stop screw after completing idling adjustment, if necessary, to secure correct idling speed.

NOTE:—If correct idling adjustment cannot be secured, take out idle discharge plug and blow out idle ports with compressed air. The idling tube can also be removed and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet (under float bowl) which meters all fuel except for high speed or wide open throttle operation is of the 'fixed' type and is not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch.

The spring on the economizer plunger will hold the plunger on its seat (closing economizer valve) for partial throttle operation so that all fuel for main discharge jet is metered by main metering jet. At high speeds or with wide open throttle the drop in vacuum in the vacuum piston chamber will allow the vacuum piston spring to force the piston upward, depressing the economizer needle plunger, opening the economizer valve and permitting additional fuel to flow through the economizer restriction (by-pass jet) to the main discharge jet. Economizer is not adjustable and does not require attention.



ACCELERATING PUMP:—Pump is similiar in design to that used on 'U' type carburetors except that it is operated through a walking beam connection by a vacuum controlled, spring operated piston (vacuum piston) instead of being positively connected to the throttle lever.

Adjustment:—Accelerating pump stroke is adjustable by means of an adjusting screw and lock nut located directly below the vacuum piston. Pump stroke is set at the factory for normal operating conditions. To increase pump stroke for cold weather operation, loosen lock screw and turn adjusting screw down or counter-clockwise. To decrease pump stroke for hot weather operation, loosen lock nut and turn adjusting screw up or clockwise. Tighten lock nut after making adjustment. To check pump setting, run engine at idling speed, retard spark, open throttle quickly and note engine performance. If engine hesitates, pump setting should be increased by turning screw down slightly. If engine stumbles in picking up speed, pump stroke should be decreased by turning screw up slightly. In adjusting pump the adjusting screw should be turned one turn at a time and the setting checked. A more satisfactory test can be made by running the car in high gear on a level road at approximately 5 M.P.H. and noting performance when engine is quickly accelerated.

STROMBERG CARBURETORS

DD-3—CHRYSLER IMPERIAL EIGHT, MODEL CG 1931).
CHRYSLER IMPERIAL EIGHT, MODEL CH (1932).
CHRYSLER CUSTOM IMPERIAL, MODEL CL (1932).
HUPMOBILE, MODELS H & U (1931).
LINCOLN V-8 MODEL (1931).
LINCOLN V-8 MODEL (1932).
LINCOLN MODEL V-12 (1932).
LINCOLN V-12-145 MODEL (1933).

DDR-3—MARMON, SIXTEEN CYLINDER MODEL (1931-32-33).

TYPE:—Dual barrel plain tube downdraft type with vacuum controlled accelerating pump and economizer. There are two carburetor barrels with independent main metering jets, auxiliary jets (Lincoln), main discharge jets, throttle pump jets, throttle valves and idling adjustments. Throttle valves operate on separate shafts and are geared together so that both throttles are operated by a lever on one shaft (throttle valves will not require adjustment until factory setting has been tampered with). Main metering jets and auxiliary jets (when used) are located at bottom of float chamber and meter all fuel flowing to main discharge jets except for high speed or wide open throttle operation (when economizer will by-pass additional fuel). Main discharge jets are mounted at an angle in the venturi and are air bled by high speed air bleed tubes mounted vertically on the jets near the tip. Idle adjustments and accelerating pump adjustment are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner idling adjusting screw (left hand) until fastest and smoothest running position is found (turn screw out until engine begins to hesitate or miss and then turn screw in until engine fires smoothly). Adjusting screws operate on air and should be turned out for leaner mixture and in for richer mixture. Adjust outer or right hand idling adjustment screw controlling the other carburetor barrel similarly. If necessary readjust inner idling screw slightly to secure smooth running. Idling adjustments should be set slightly rich. Correct idling adjustment cannot be secured if throttles are not synchronized. If engine does not fire smoothly with both idling adjustments correctly set, the adjusting screw on the right hand barrel throttle shaft should be turned clockwise to open right hand barrel throttle valve, or counter-clockwise to close throttle valve (relative to throttle valve in left hand barrel). It will not be necessary to change this adjustment unless factory setting has been tampered with. After idling setting has been completed, adjust throttle lever stop screw, if necessary, to secure correct idling speed.

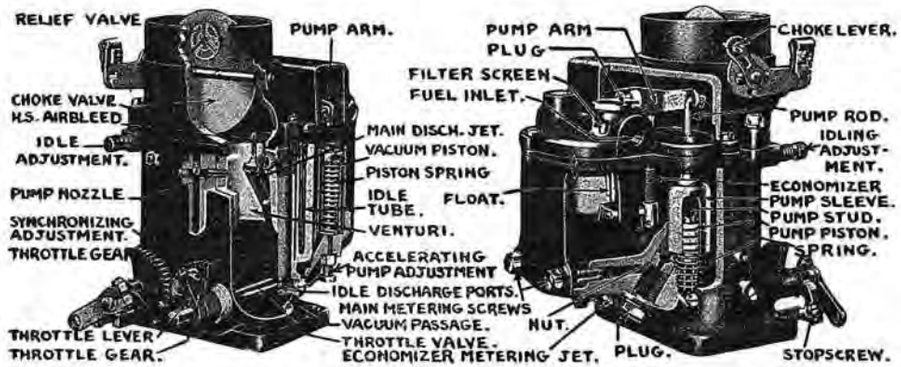
On engines with two ignition coils where ignition for four cylinders or one bank of 'V' type engines is provided by one coil, ignition can be cut off for the cylinders fed by one carburetor barrel by disconnecting one coil primary lead or grounding the coil high tension lead to the engine block. The engine will then idle on the remaining cylinders fed by the second carburetor barrel and the idling adjustment for this barrel can then be made. After each carburetor barrel has been adjusted in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running.

If correct idling adjustment cannot be secured, remove idle discharge plugs and blow out idle ports with compressed air. Idling tubes can also be removed and cleaned with compressed air if carburetor is disassembled.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—All fuel for speeds up to approximately 60 M.P.H. is metered by main metering jet or main metering jet and auxiliary jets on Lincoln. Jets are of the 'fixed' type and are not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jet sizes should be changed only to compensate for fuel changes or operating conditions, such as high altitude. Lincoln jets have been changed in service and on some models main metering jet is plugged and all fuel is metered by auxiliary jets in bottom of float chamber (see Lincoln Specifications below).

At car speeds up to approximately 60 M.P.H. economizer needle plunger is held against its seat by the tension of the spring on the plunger so that no fuel can flow through by-pass jet (economizer restriction) and all fuel for main discharge jets is metered by main metering jets and auxiliary jets. At speeds above 60 M.P.H. or with wide open throttle, the drop in vacuum in the vacuum piston chamber will allow the vacuum piston spring to force the piston up, depressing the economizer needle plunger, opening the economizer valve and permitting additional fuel to flow through the by-pass jet to the main discharge jets. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump design and operation is exactly the same as on 'D' type carburetors (see article on DX-3 Carburetor) except on Marmon Model DDR-3, where accelerating pump is positively connected to throttle shaft lever and is operated by the throttle.



Adjustment:—For all DD Carburetors. Accelerating pump stroke is adjustable by means of an adjusting screw and lock nut on the bottom of the vacuum piston housing. Pump stroke is set for normal operating conditions at the factory. To increase pump stroke for cold weather operation, loosen lock nut and turn adjusting screw down or counter-clockwise. To decrease pump stroke for hot weather, loosen lock nut and turn adjusting screw up or clockwise. Tighten lock nut after making adjustment. To check pump setting, run engine at idling speed with retarded spark, open throttle quickly and note engine performance. If engine hesitates, pump stroke should be increased by turning adjusting screw down slightly. If engine stumbles in picking up speed, pump stroke should be decreased by turning adjusting screw up slightly. In making this adjustment, adjusting screw should be changed one turn at a time and setting checked. A more satisfactory test can be made by running the car in high gear on a level road at approximately 5 M.P.H. and noting performance when engine is quickly accelerated.

FLOAT LEVEL:—Fuel level in float bowl is set exactly 1" below top edge of float chamber on Chrysler models. To check float level with carburetor disassembled, measure distance from gasket seat on float bowl cover (with gasket removed) to the top of the float at the center. Correct setting should be 13/32" (Chrysler) or 15/32" (Lincoln). Float level can be corrected by bending float lever at the corner between the float and the needle valve. To lower float level, bend float down away from cover. To raise float level, hold lever tight against needle valve and bend float up toward cover.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and wide open with choke button pushed all the way in.

STROMBERG CARBURETORS

EC-22—OLDSMOBILE SIX, MODEL F-33 (1933).
EX-22—STUDEBAKER SIX, MODEL 56 (1933).
These models equipped with Stromberg Automatic Choke and Fast Idle.

TYPE:——Plain tube downdraft type. These models are similar in design and operation to other EC and EX types except for 'Fast Idle' mechanism. Fast idle is set to idle engine at speed of approximately 15 M.P.H. when engine is cold and idling adjustment should not be made until engine warms up sufficiently to return to slow idle (6 M.P.H.). See special articles on Stromberg Automatic Choke and Fast Idle.

Special Settings	EC-22	EX-22
Fast idle—Engine speed cold	15 M.P.H.	15 M.P.H.
Slow idle—Engine speed warm	6 M.P.H.	8 M.P.H.
Automatic Choke Setting	14 Notches Rich	16 Notches Rich.

Fast idle speed is set by loosening lock nut and turning adjusting screw on Fast Idle control linkage (see special article). Slow idle speed is set by adjusting throttle lever stop screw after idling adjustment has been completed. Automatic Choke setting is adjusted by turning automatic choke case (see special article).

E-2—PIERCE ARROW TWELVE, MODELS 51, 52, 53 (1932).
EX-2—AUBURN TWELVE, MODEL 12-160 (1932).
AUBURN TWELVE, MODEL 12-161 (1933).
AUBURN TWELVE, MODEL 12-165 (1933).
EX-32-PIERCE ARROW TWELVE, MODELS 1236, 1242, 1247 (1933).
Model EX-32 is equipped with Stromberg Automatic Choke and Fast Idle.

TYPE:—Twin installation consisting of two single barrel, downdraft, plain tube carburetors with inter-connected throttle and choke controls. Each carburetor supplies one bank of the 'V' type engine. Carburetors are similar to other 'E' type carburetors in design, operation and adjustment except that throttles must be synchronized as part of idle adjustment and choke control must be adjusted so that both choke valves open and close together. Model EX-32 on 1933 Pierce Arrow Twelve is fitted with Automatic Choke and Fast Idle (see special article). Idle adjustment on this model should not be made until engine has warmed up sufficiently so that engine speed has decreased to 'slow idle'.

IDLE ADJUSTMENT:—Throttle shaft connecting throttles of right and left hand carburetors is provided with an adjustment so that throttles can be synchronized. This is part of idling adjustment. Engines must be warmed up before idling adjustment is made. With engine warm and running, close throttle, disconnect primary lead of coil supplying ignition for right hand cylinder bank (or ground high tension lead to engine), adjust throttle lever stop screw of left hand carburetor so that engine idles somewhat fast, unlock adjusting screw at right hand end of throttle connecting shaft, back out adjusting screw and throttle lever stop screw of right hand carburetor until throttle valve of right hand carburetor is closed, then adjust idling adjusting screw of left hand carburetor by turning screw in or out until smoothest running position is found. Idling screw operates on fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Then unlock adjusting screw at left hand end of throttle connecting shaft and turn screw out until compression of spring under this screw is sufficient to hold right hand carburetor throttle valve closed, lock adjusting screw. Connect ignition for right hand cylinder bank and disconnect ignition for left hand bank. Adjust throttle lever stop screw of right hand carburetor for correct engine speed, adjust idling screw of right hand carburetor by turning screw in or out until smoothest running position is found. Then turn up adjusting screw at right hand end of connecting shaft until it just touches the throttle lever. Note speed of right hand cylinder bank, cut off ignition for right hand bank, connect ignition for left hand bank and note idling speed. If speed is not the same for both banks this should be equalized by turning throttle lever stop screws on each carburetor, being careful that the adjusting screw at the right hand end of the connecting shaft is in contact with the throttle lever at all times. After adjustment is completed this screw should be locked.

1933 Auburn Model 12-165. On this model a new type throttle connecting shaft is used consisting of an independently mounted cross shaft connected to the throttle valve of each carburetor through a short adjustable rod with ball and socket connections. On this type throttles are synchronized by increasing or decreasing the length of the left hand rod (adjusting the idle for each bank separately as above).

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—All jets are fixed. Economizer is not adjustable (see article on 'EX' type carburetors).

ACCELERATING PUMP:—Similar in design and operation to pump used on other 'E' type carburetors. Throttle shaft lever has two holes for engagement of pump rod to provide for varied pump stroke. Pump rod should be connected in inner hole (shorter radius) providing shorter pump stroke for normal temperatures or summer operation. Outer hole (longer radius) providing maximum pump stroke should be used for winter operation.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16" below top edge of float bowl with gasket removed. Float level can be changed to correct fuel level by bending float lever at the point where it is connected to the float.

CHOKE:—See special article on Stromberg Automatic Choke for Pierce Arrow model on which this equipment is used. Where conventional choke control is used, choke valves must be synchronized so that they open and close together. With choke valves wide open and choke control button pushed in toward dash, connect choke control operating wire securely to each choke valve lever. Pull out control button to limit of travel and see if both choke valves are closed tightly. If one valve is not closed, loosen the clamp screw, close choke valve tightly and tighten screw. Choke valve is fitted with a relief poppet valve to prevent over-choking.

EE-2— FRANKLIN TWELVE CYLINDER, MODEL 17 (1932).
FRANKLIN TWELVE CYLINDER, MODEL 17-B (1933).
NASH EIGHT, SERIES 1070 (1932).
NASH EIGHT, SERIES 1170 (1933).
***OLDSMOBILE EIGHT, MODEL L-32 (1932).**
EE-22— LINCOLN TWELVE, MODEL V-12-136 (1933).
EE-3 —*PACKARD TWELVE, MODELS 905, 906 (1932).
***PACKARD TWELVE, MODELS 1005, 1006 (1933).**
***STUTZ DUAL VALVE EIGHT, MODEL DV-32 (1933).**

***See special articles on Stromberg Automatic Choke.**

TYPE:—Dual barrel plain tube downdraft type. These models are similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on a single shaft and will not require synchronization. Accelerating pump is positively operated by the throttle through a 'walking beam' connection mounted on the carburetor upper body. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

See special article on Stromberg Automatic Choke for complete description of adjustment and 'Choke' paragraph below for setting on each car model.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner (left hand) idling adjustment screw for smoothest and fastest running position by turning idling screw in until engine begins to miss and speed decreases, then turn screw out until engine begins to roll, finally turn screw in until engine fires smoothly (final setting should be approximately half way between missing and rolling points). Adjust outer (right hand) idling adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can

STROMBERG UPDRAFT CARBURETORS

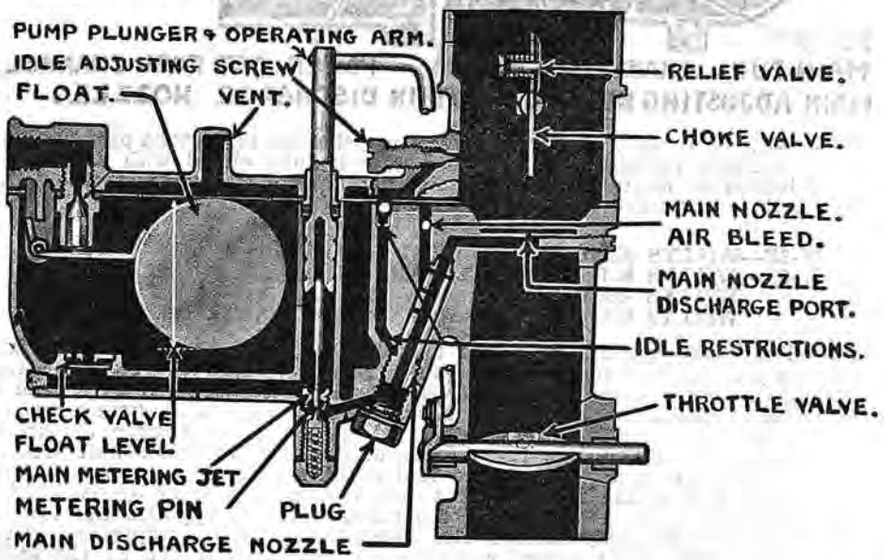
Car Model	Year	Carb. No.	Main Metering Jet		By-Pass Jet		Main Disc. Jet		H. S. Bleeder		Pump Reducer		Pump Disc. Tubes	
			Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.	Size	Part No.
AUBURN 8-100	1932	URO-2	.063"	P-12512	.030"	P-15405	#26	P-15376	—	—	#59	P-17144	—	—
" 8-101	1933	URO-2	.063"	P-12512	.030"	P-15405	#26	P-15376	—	—	#59	P-17144	—	—
CHRYSLER CM	1931	UR-2	.055"	P-15384	.038"	P-15405	—	P-15376	#65	P-15379	#66	P-15859	—	—
CUNNINGHAM V-9	1931	UUR-2	.054"	P-15494	Red.#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" V-10	1932-3	UUR-2	.054"	P-15494	#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
DURANT 6-12, 6-14	1931	U-2	.058"	P-12512	.032"	P-12768	#32	P-14681	—	—	#66	P-13588	—	—
FRANKLIN 15	1931	U-3	.070"	P-12512	.049"	P-12768	A34-B28	P-14739	#64	P-12870	#60	P-14053	—	—
" 16	1932	U-3	.073"	P-12512	.049"	P-12768	A34-B28	P-14739	#64	P-12870	#57	P-14053	—	—
" 16-8	1933	URO-2	.062"	P-12512	.030"	P-15405	#24	P-15376	—	—	#60	P-15749	—	—
" 18	1933	URO-2	.062"	P-12512	.030"	P-15405	#24	P-15376	—	—	#60	P-15749	—	—
HUPMOBILE S-6	1931	U-2	.060"	P-12512	.040"	P-12768	#32	P-15340	—	—	—	P-13137	—	—
" L	1931	UU-2	.039"	P-14281	—	P-13127	A28-B20	P-13388	#70	P-12359	—	—	—	—
" C	1931	UU-2	.043"	P-14281	—	P-13127	A28-B20	P-13388	#70	P-12359	—	—	—	—
" L	1932	UUR-2	.044"	P-15494	—	P-15405	#30	P-13829	#70	—	—	—	#70	P-15491
" C	1932	UUR-2	.046"	P-15494	—	P-15405	#28	P-16455	#68	—	—	—	#70	P-15491
" F-222	1932	UUR-2	.044"	P-15494	—	P-15405	#30	P-13829	#70	—	—	—	#70	P-15491
" I-226	1932	UUR-2	.047"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
" F-322	1933	UUR-2	.043"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
" I-326	1933	UUR-2	.047"	P-15494	.020"	P-15405	#28	P-13829	#70	—	—	—	#70	P-15491
MARMON 70	1931	UX-2	—	P-12512	.031"	P-12768	#32	P-12750	—	—	—	P-13135	—	—
" 8-125	1931	UUR-2	.052"	P-12512	.048"	P-15405	#40	P-16445	#60	—	—	—	#74	P-15491
NASH 8-90	1931	UUR-2	.046"	—	Red.#68	—	#30	P-13829	#70	—	—	—	#70	—
" 9-80	1932	UUR-2	.043"	P-13395	.042"	P-15405	#40	P-13829	#70	—	—	—	#74	—
" 9-90	1932	UUR-2	.046"	—	Red.#68	—	#30	P-13829	#70	—	—	—	#70	—
" 10-80	1932	UUR-2	.051"	P-15384	.050"	P-15405	#40	P-13829	#70	—	—	—	#74	—
" 10-90	1932	UUR-2	.051"	P-15384	.050"	P-15405	#40	P-13829	#70	—	—	—	#74	—
PIERCE ARROW 51,2,3	1931	UUR-2	.050"	P-15494	Red.#68	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
ROCKNE 65	1932	UR-2	.054"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 75	1932	UR-2	.054"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 10-31	1933	UR-2	.054"	P-15384	.036	P-15405	#32	P-15376	#65	P-15379	#68	P-15870	—	—
STUDEBAKER 54	1931	U-2	.060"	P-12512	—	P-12768	#32	P-14671	—	P-12870	#62	P-13135	—	—
" 61	1931	UU-2	.033"	P-14281	—	P-13127	—	P-13388	—	P-12359	—	—	—	—
" 70	1931	UU-2	.033"	P-14281	—	P-13127	—	P-13388	—	P-12359	—	—	—	—
" 61	1931	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 70	1931	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 80, 90	1931	UUR-2	.050"	P-15494	Red.#70	P-13127	#30	P-13829	—	—	—	—	#65	P-15491
" 55	1932	UR-2	.050"	P-15384	.036"	P-15405	#32	P-15376	#65	P-15379	#70	P-15857	—	—
" 62	1932	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" 71	1932	UUR-2	.046"	P-15494	#72	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491
" 81, 91	1932	UUR-2	.050"	P-15494	#70	P-13127	#30	P-13829	#70	—	—	—	#65	P-15491

TILLOTSON CARBURETORS

D-1A—WILLYS FOUR, MODEL 77 (1933).
D-2A—WILLYS SIX, MODEL 99 (1933).

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizer (metering rod and metering jet assembly). Fuel for main nozzle (located above a plug at the side of the barrel) is metered by a metering pin and jet assembly at the bottom of the accelerating pump. Metering pin is pressed down by accelerating pump piston, permitting an increased fuel flow for high speed or wide open throttle operation. Main nozzle is air bled by a vent tube and hole in the carburetor body casting. Fuel for idling is taken from the main nozzle well up through the idle channel riser and is metered by restrictions at the bottom and top of the channel. The idle passage at the top of the idle channel is air bled by a vent in the carburetor barrel below the choke valve. This vent is controlled by the idle adjustment screw. Fuel mixture is taken down through a passage in the body casting and discharged through two ports opposite the throttle edge (closed throttle position). Idle adjustment is the only point requiring attention.

IDLE ADUSTMENT:—Make a preliminary adjustment of the idle adjusting screw by turning screw in or clockwise until it is seated, then turn screw out or counter-clockwise exactly 1¼ turns. Run engine until it is thoroughly warmed up, close throttle, adjust throttle lever stop screw so that engine runs at correct idling speed. Turn idle adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw in slowly until engine fires smoothly. Idle screw operates on air and should be turned out for leaner mixture and in for richer mixture. Check idling speed and readjust throttle stop screw if necessary. Correct idling speed should be 7 M.P.H.



ACCELERATING PUMP:—Accelerating pump cylinder is supplied with fuel from main fuel channel under float bowl and discharges through metering jet to main nozzle when throttle is opened. A check valve in the bottom of the float chamber prevents fuel being discharged back into the float bowl. Accelerating pump should not require adjustment.

ECONOMIZER:—Metering pin in metering jet is pressed up by a spring below the pin for partial throttle operation so that the larger diameter section of the pin restricts the fuel flow through the jet. The upper end of the metering pin stem is engaged in a hole in the accelerating pump plunger so that the metering pin is pressed down when the throttle is opened, the smaller diameter section of the metering pin then permitting a larger fuel flow through the metering jet. Metering pin and jet assembly is not adjustable and should not require attention.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper casting), invert cover, measure distance from gasket face to bottom of float (bottom when not inverted). This distance should be ——". Float level can be corrected by bending float lever. See that float lever stop permits full travel of float.

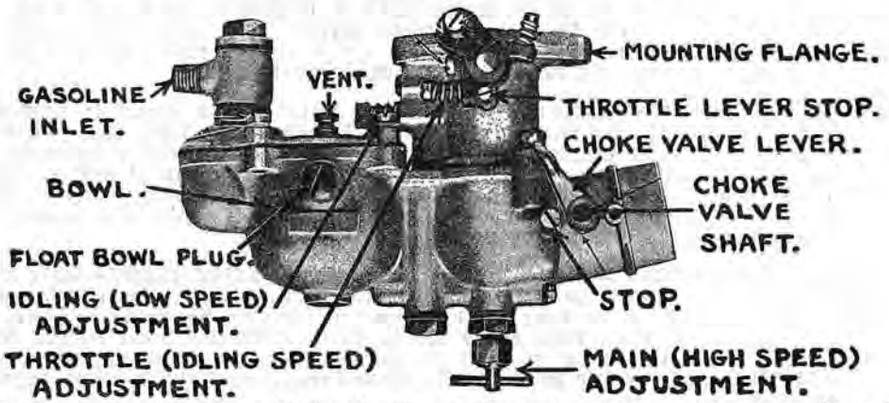
CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Check choke linkage to see that choke valve is fully closed when choke control button on dash is pulled all the way out and wide open when choke control button is pushed in.

M-10A—AUSTIN BANTAM MODEL (1931-32-33).

TYPE:—Plain tube updraft type. Carburetor has two adjustments. The main or high speed needle valve controls the fuel for the main nozzle. The idle or low speed adjustment screw controls the fuel mixture for the idle discharge ports in the wall of the mixing chamber opposite the throttle edge. Adjustments should be made in the order given below.

PRELIMINARY ADJUSTMENT:—Turn main or high speed adjustment needle valve in or clockwise until it is seated, then open or back off needle valve exactly 1½ turns. Turn idling or low speed adjusting screw in or clockwise until it is seated, then back off adjusting screw ½ turn. Start engine and run until it is thoroughly warmed up.

MAIN (HIGH SPEED) ADJUSTMENT:—With engine warm and running, open throttle until engine speed is approximately 30 M.P.H. Turn main adjusting needle valve in or clockwise until engine begins to slow down for want of fuel. Then slowly turn adjusting handle out or counter-clockwise until engine runs smoothly. The correct setting should be approximately ⅛-¼ turn from the first position. This adjustment should be made slowly and needle valve should not be opened beyond the point where smooth running and power is secured in order to assure maximum economy.



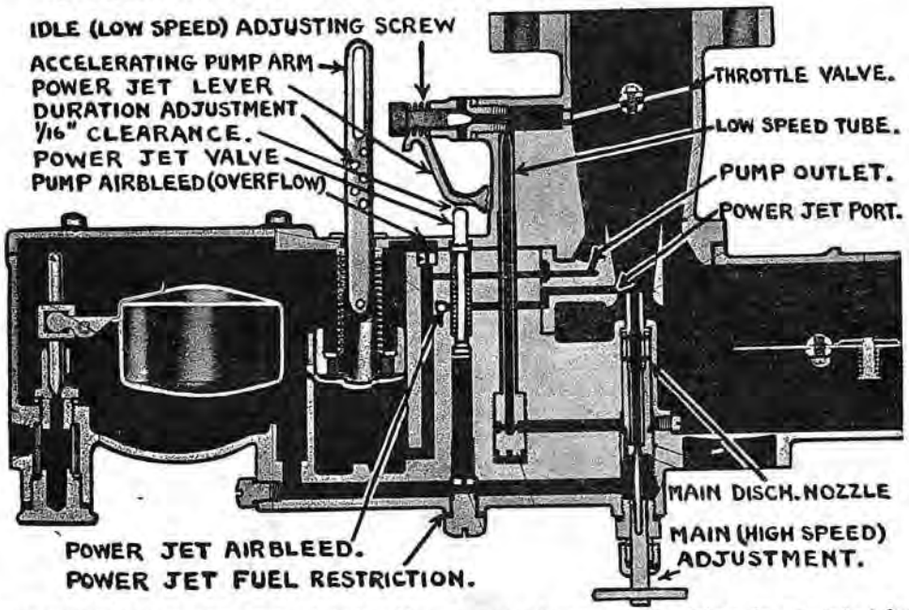
IDLING (LOW SPEED) ADJUSTMENT:—With engine running, close throttle and adjust throttle lever stop screw so that idling speed is somewhat faster than normal. Turn idling adjustment screw in or clockwise until engine begins to miss, then turn screw slowly out or counter-clockwise until engine fires smoothly. Adjusting screw controls fuel mixture and should be turned in for leaner mixture and out for richer mixture. After completing adjustment, adjust throttle lever stop screw to secure correct idling speed.

CHOKE CONTROL:—Choke valve is held in place on choke valve shaft by a spring which allows choke valve to open slightly when engine begins to fire, preventing over-choking. Adjust choke linkage so that choke valve is closed (engine not running) when choke control button on instrument panel is pulled all the way out and wide open with control button pushed in.

TILLOTSON CARBURETORS

HIGH SPEED ADJUSTMENT:—Retard spark, open throttle until engine speed is equivalent to 25 M.P.H. Turn the main adjusting needle up or clockwise until engine begins to slow down. Then turn needle down or counter-clockwise until speed picks up and engine runs smoothly (this should not be more than ⅛-¼ turn from first position. This adjustment must be made slowly and the needle should not be turned beyond the point where good power and free running is secured in order to assure maximum economy.

IDLING ADJUSTMENT:—After completing high speed adjustment, close throttle, adjust throttle stop screw so that idling speed is somewhat fast. Turn idling adjustment screw to left or out until engine begins to miss (mixture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Adjust throttle stop screw for correct idling speed. Open throttle and speed up engine, close throttle, recheck idling adjustment.



ACCELERATING PUMP:—Accelerating pump plunger and piston is operated by the throttle lever and discharges fuel through a discharge hole in the small venturi support arm when the throttle is opened. Pump discharge riser passage is connected to the float chamber at its upper end and excess fuel delivered by the pump flows through the air bleed restriction (at the top of the passage) back to the float chamber. This vent also serves as an air bleed for the discharge port when the pump is not operating. Accelerating pump should not require adjustment. Pump plunger link is provided with a series of holes (duration adjustment) on some types or the connector link has an adjustable stop screw.

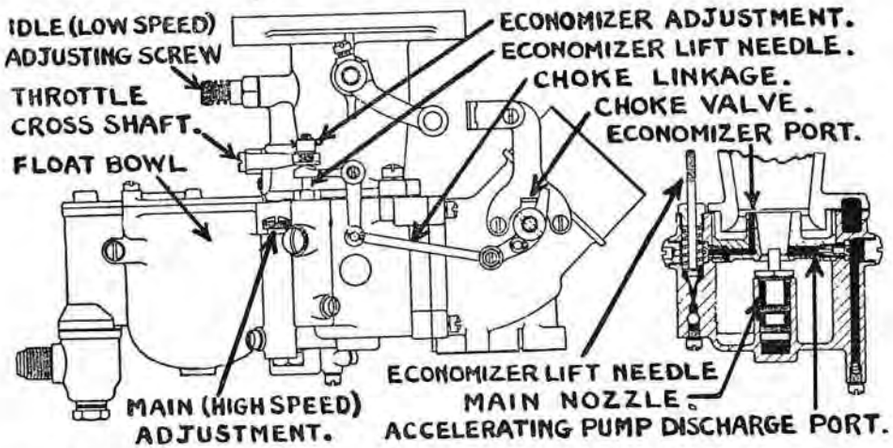
POWER JET:—Clearance between face of operating lever and power jet valve plunger should be 1/16" with throttle closed and choke valve wide open. The operating lever is connected to the choke valve so that the power jet valve is open with the choke valve closed (at all positions of choke valve except when wide open). This assists in starting and warming up the engine. Power jet valve is also opened by the throttle lever when throttle is wide open, permitting an extra fuel discharge for full power operation. Fuel for the power jet is taken from the main fuel channel through a metering restriction and up through the power jet valve to a discharge port in the throat of the small venturi. The discharge passage is air bled to control the fuel discharge through the power jet. Power jet is not adjustable except for clearance between operating valve plunger and operating lever (above).

FLOAT LEVEL:—Gasoline level in float bowl should be ¾" below top edge of bowl. To check level, take off bowl cover, remove gasket, measure fuel level from top edge of bowl. Float level can only be changed by changing position of the spool on the needle valve stem. Float lever should not be bent.

CHOKE:—Choke valve is connected to power jet valve operating lever so that power jet valve is opened when choke valve is closed (see Power Jet for adjustment of linkage). Choke valve is fitted with a relief poppet valve to prevent over-choking. Check choke control linkage to see that choke valve is fully closed with choke control button on instrument panel pulled out and wide open with button pushed in.

V-5B—WILLYS KNIGHT MODEL 66-D (1931-32). WILLYS KNIGHT STREAM LINE MODEL 66-E (1932-33).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and economizer (power jet). All fuel for main discharge nozzle is metered by high speed adjusting needle (located on top of carburetor at left of economizer valve plunger or lift needle). Main nozzle is air bled by an air passage with three air vents. Air vents are located in the mixing chamber below the large venturi, in the large venturi slightly above the venturi throat, and in the carburetor wall (external air vent). Fuel for idling is taken from the lower end of the main nozzle through a cross passage to the low speed or by-pass tube and is discharged through two ports in the carburetor wall opposite the throttle edge (closed throttle position). Uppper idling discharge port is above the throttle edge while the lower port is practically closed by the throttle edge with the throttle closed tight. Idling passage at the upper end of the low speed tube is air bled and this air vent is controlled by the idling adjustment screw. Idling screw adjustment and high speed adjustment are the only points requiring attention. Adjustments should be made in the order given below.



PRELIMINARY ADJUSTMENT:—Turn high speed adjusting needle down or clockwise until it is seated, then open needle by turning to left or counter-wise exactly 2¾ full turns. Turn idling adjustment screw in or clockwise until it is seated, then back off screw by turning to left or counter-clockwise exactly ¾ turn. Start engine and run until thoroughly warmed up.

HIGH SPEED ADJUSTMENT:—Retard spark, open throttle until engine speed is equivalent to 25 M.P.H. Turn the main adjusting needle down (clockwise) until engine begins to slow down for want of fuel, then turn needle slowly back (counter-clockwise) until engine picks up speed and runs smoothly. This adjustment must be made slowly and needle should not be turned beyond the point where good power and free running is secured in order to assure maximum economy.

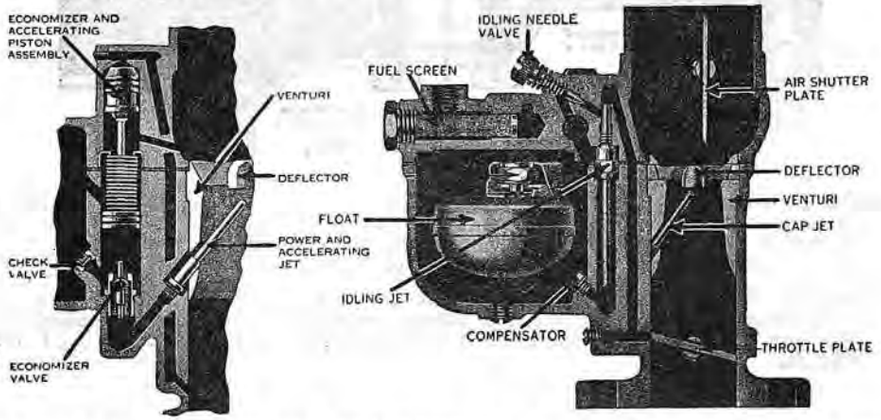
IDLING ADJUSTMENT:—Close throttle, adjust throttle stop screw so that idling speed is faster than normal. Turn idling adjustment screw to left or out until engine begins to miss (mixture too lean), then turn screw to right

ZENITH CARBURETORS

MODELS IN154½X, IN155, IN156B, IN157.
REO FLYING CLOUD SIX, MODEL S-1 (1932).

TYPE:—Plain tube downdraft type with vacuum controlled accelerating pump and economizer. Discharge jets are located in venturi directly under a cone shaped deflector and fuel is discharged against the concave lower surface of the deflector and is then carried into the air stream. Main jet is fed directly from the float bowl. Idle jet located in idle well is fed by fuel flowing through compensator jet. Fuel for idling is metered by idling jet. The idle passage at the top of the idle jet is air bled by a vent leading to the float chamber and this vent is controlled by the idling adjustment screw. From this idle passage the fuel mixture is taken down through a passage in the carburetor body and discharged opposite the throttle edge. The idle operates only with closed throttle or at low speeds and the fuel from the idle well is discharged through the cap jet in the mixing chamber with the throttle open. Idle adjustment is the only point requiring attention.

IDLING ADJUSTMENT:—Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, turn idling adjustment out or counter-clockwise until engine begins to miss or is rough (mixture too lean), then turn screw slowly in or clockwise until engine fires smoothly. Adjusting screw controls air and should be turned out for leaner mixture and in for richer mixture. Adjust throttle lever stop screw for correct idling speed. Recheck idling adjustment. Correct setting should be between 1-3 turns open. If carburetor is entirely out of adjustment a preliminary setting may be made by turning idling screw in until it is seated and then backing screw off 1½ turns. This will allow engine to be warmed up.



ACCELERATING PUMP AND ECONOMIZER:—Accelerating pump and economizer are controlled by vacuum piston. The chamber above the vacuum piston is connected to the carburetor barrel below the throttle so that the vacuum in the manifold will hold the piston up for all partial throttle positions. When the throttle is opened for acceleration the collapse of the vacuum will allow the piston to fall, discharging the fuel in the pump cylinder through the economizer valve to the power and accelerating jet in the mixing chamber. A check valve prevents the fuel flowing back into the float bowl.

Economizer valve at lower end of accelerating pump is spring loaded and prevents fuel being discharged through the power jet when the throttle is closed. When the throttle is opened for acceleration or is held open for full power operation the economizer valve is opened by the piston, allowing fuel to flow to the power jet. Accelerating pump and economizer discharge is metered by the discharge jet. Accelerating pump and economizer are not adjustable and do not require attention.

FLOAT LEVEL:—Fuel level in float bowl is set at ⅝" below the top edge of the bowl. This can be checked by a special gauge, Part No. C-4088, which is designed to be attached to the drain hole at the bottom of the bowl. Float level should not require adjustment. Float hinge must not be bent.

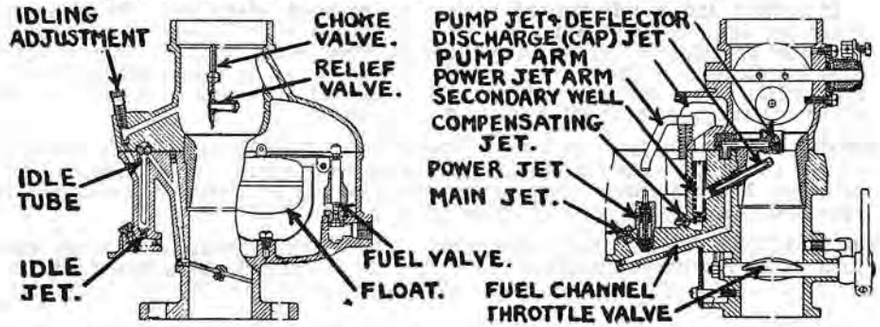
CHOKE CONTROL:—Choke valve is offset and is held in position with relation to choke valve lever by a spring. The spring allows the choke valve to open slightly when engine begins to fire, preventing over-choking and assisting in warming up. Adjust choke linkage so that choke valve is fully closed when choke control button is pulled all the way out (engine not running) and wide open with choke control button pushed in.

MODELS IN175, IN175½.

REO FLYING CLOUD, MODEL S-1 (1932).

TYPE:—Plain tube updraft type with throttle operated accelerating pump and power jet. Discharge jets (cap jet) are located in venturi directly under a cone shaped deflector and fuel is discharged against the concave lower face of the deflector. Main jet is located in float bowl. On some models a main jet adjusting needle valve by-passes some fuel past the main jet. Compensating jet (in float bowl) meters fuel flowing to secondary well and idling tube. Secondary well is air vented at the top. Fuel for idling is taken up through the idling tube located in the idling well and is discharged through ports opposite the throttle edge. The idling well is air bled by a vent in the upper part of the carburetor barrel (below the choke valve) and this vent is controlled by the idling adjustment screw. This idling adjustment is the only point requiring attention.

IDLE ADJUSTMENT:—Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, turn idling adjustment screw out or counter-clockwise until engine begins to miss or is rough, then turn screw slowly in or clockwise until engine fires smoothly. Adjusting screw controls air and should be turned in for richer mixture and out for leaner mixture. After completing adjustment, check idling speed and adjust throttle lever stop screw for correct idling speed.



POWER JET:—Power jet consists of a shut-off valve in the float chamber which is opened by an arm on the accelerating pump rod when the throttle is wide open. This permits fuel to be by-passed through the valve past the main jet for full power operation. This fuel is metered by the restriction in the lower end of the power jet assembly. Power jet should not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by the throttle lever. Fuel is drawn into the pump cylinder through a ball-check valve from the float bowl when the throttle is opened and is discharged through another ball-check valve to the discharge port in the deflector assembly in the venturi. Pump discharge is metered by the discharge opening in the deflector. Pump should not require attention.

FLOAT LEVEL:—Fuel level in float bowl should be 45/64" below the top edge of the float bowl when tested with a 6' head on the intake. This is equivalent to 1½ pounds pressure.

CHOKE CONTROL:—Choke valve is fitted with a relief poppet valve to prevent over-choking and to assist in warming up. See that choke linkage is adjusted so that choke valve is closed with choke control button on instrument pulled all the way out and wide open with control button pushed in.

1934 CARBURETION INDEX

AC. FUEL PUMP

SERIES E, O, P

SERIES E

DESCRIPTION:—This fuel pump is of the mechanical, diaphragm type. It differs from previous designs in that the linkage has been simplified and the rocker arm spring relocated (see illustration). An air dome over the outlet valve is used. In servicing (replacing diaphragm), a preliminary assembly must be made with the pullrod out of the pump and the complete assembly then installed (see complete directions below).

OPERATION:—The down stroke of the diaphragm is positively actuated by the rocker arm 'D', which is connected to the pullrod 'F' through the link 'R'. The down stroke of the diaphragm causes a vacuum in the pump chamber and gasoline is drawn through inlet into the sediment chamber, through the filter screen 'L', and the inlet valve 'N' into the pump chamber 'M'. The rocker arm is forced to follow the eccentric driving cam by the rocker arm spring 'S', releasing the pullrod linkage, and the diaphragm is then forced up by the driving spring 'C', forcing the gasoline in the pump chamber through the outlet valve 'O' and the pump outlet to the carburetor. Fuel delivery is controlled by the back pressure of the gasoline in the carburetor float bowl so that when the carburetor float valve closes the back pressure will hold the diaphragm at the bottom of its stroke with the driving spring compressed. The rocker arm continues to move with the rotation of the eccentric cam but this action is absorbed by the pump linkage. Whenever the carburetor float valve reopens, the pumping action is resumed.

TROUBLE SHOOTING:—Trouble shooting and servicing of this type pump is similar to previous types except for replacement of diaphragm. See page on 'Servicing Fuel Pumps', except for diaphragm replacement directions given below.

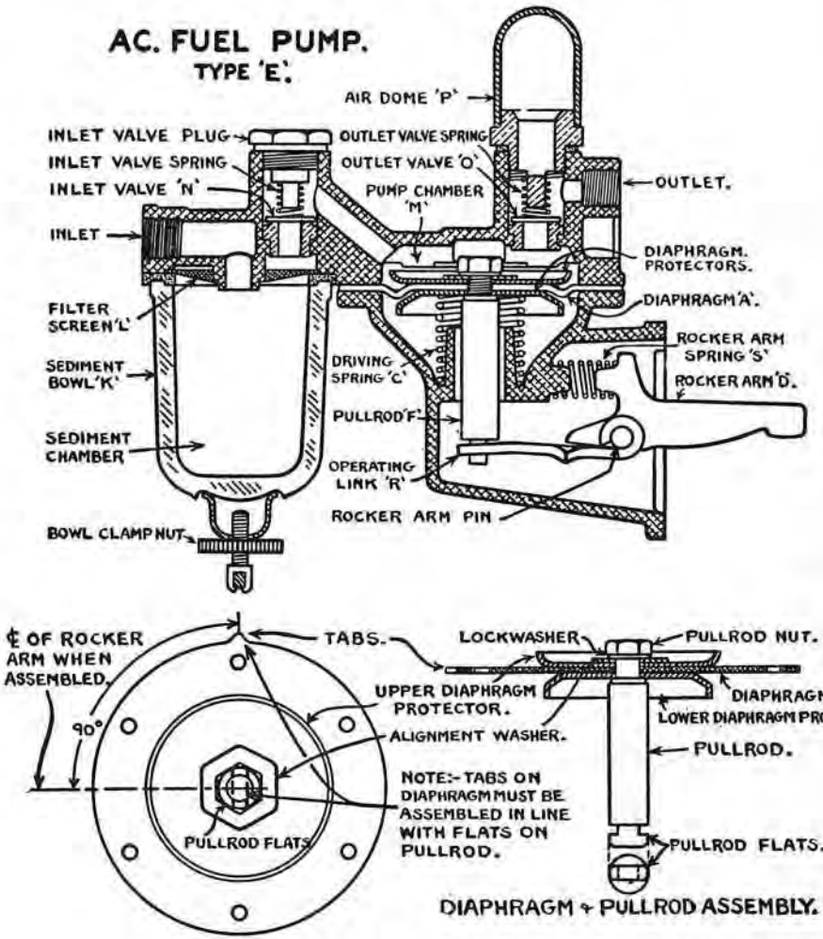
DIAPHRAGM REPLACEMENT:—With pump disassembled (pullrod out of pump body) and old diaphragm removed, clamp pullrod in vise, engaging flatted end of pullrod between vise jaws. Assembled pullrod gasket, lower diaphragm protector (cupped side down), four layers of diaphragm cloth, upper diaphragm protector (cupped side up), alignment washer, lock washer, pullrod nut, on pullrod in order given. Line up tabs on diaphragm and turn diaphragm layers so that tabs are in line with flatted end of pullrod (see illustration). Use special alignment washer wrench (#846291) and keep diaphragm from twisting or turning while pullrod nut is being tightened. Remove complete assembly from vise, clamp pump body in vise, place driving spring in position, insert diaphragm assembly, push down on diaphragm assembly (compressing driving spring), engage flatted end of pullrod in rocker arm link, turn diaphragm assembly 90° to right or left until holes in diaphragm line up with holes in pump body. Place pump cover in position, engage cover screws, flex diaphragm to extreme high position while tightening cover screws. Diaphragm gauge (#846295) used in testing assembly on previous pump designs should not be used on Type E pumps.

Rocker Arm Linkage. Whenever rocker arm or rocker link is removed from pump, make certain that link is replaced with loop upward (see illustration). Rocker arm pin must be secured with retaining rings.

TESTING:—See Fuel Pump Servicing page for details of bench testing and priming action test on fuel pumps. Pump should be tested before being replaced on car.

SERIES O AND P

These types are assembled from parts used on other pump types. For servicing information see data on previous types, as follows:
Series O:—Pump body—Series B. Pump cover—Series E.
Series P:—Pump body—Series E. Pump cover—Series B.



AC FUEL PUMP

SERIES R AND T

DESCRIPTION:—These pumps are mechanically operated, diaphragm type pumps and are similar in operation to previous pump types. The pump design is not similar to previous designs (see illustration). The sediment chamber (H) is located in the pump body and the external glass sediment bowl is not used. The sediment chamber can be drained by removing the screw (N). The pull rod is assembled as a unit with the diaphragm and diaphragm protectors (upper end of pull rod is riveted) and it is necessary to replace this entire assembly as a unit whenever the diaphragm is found defective.

OPERATION:—As in previous pump designs, the down stroke of the diaphragm is positive, the diaphragm being pulled down by the action of the rocker arm (A), which is connected to the pull rod by the linkage (C). This creates a vacuum in the pump chamber and gasoline is drawn in through inlet (G), sediment chamber (H), filter screen (I), and inlet valve (J) into pump chamber (F). The rocker arm is forced to follow the face of the eccentric cam by the rocker arm spring (M), releasing the pull rod linkage and the diaphragm is then pushed upward by the driving spring (E). This forces the gasoline out through the outlet valve (K) and the pump outlet (L) to the carburetor. Fuel delivery is controlled by the back pressure of the gasoline in the carburetor float bowl so that when the carburetor float valve closes, this back pressure holds the diaphragm at the bottom of its stroke with the driving spring compressed. The rocker arm continues to move with the rotation of the eccentric cam but this motion is absorbed by the linkage. Whenever the carburetor float valve opens, the pumping action is resumed.

TROUBLE SHOOTING:—If fuel pump action is not satisfactory, check in accordance with the following table:

No fuel or insufficient fuel at carburetor.

(1) Gasoline tank empty.

(2) Bent, kinked, leaky tubing or connections. Tighten all pipe connections. Check condition of tubing. Replace if necessary.

(3) Dirty Filter Screen. Take off pump cover, clean filter screen. Examine cover gasket. Replace gasket if necessary, tighten cover screw securely.

(4) Loose Cover Plate (no vacuum). Examine cover plate gasket. Tighten cover plate screw securely.

Fuel Leakage through vent in pump body.

(1) Worn or punctured diaphragm. Replace diaphragm (unit with pull rod).

Fuel Leakage at edge of diaphragm.

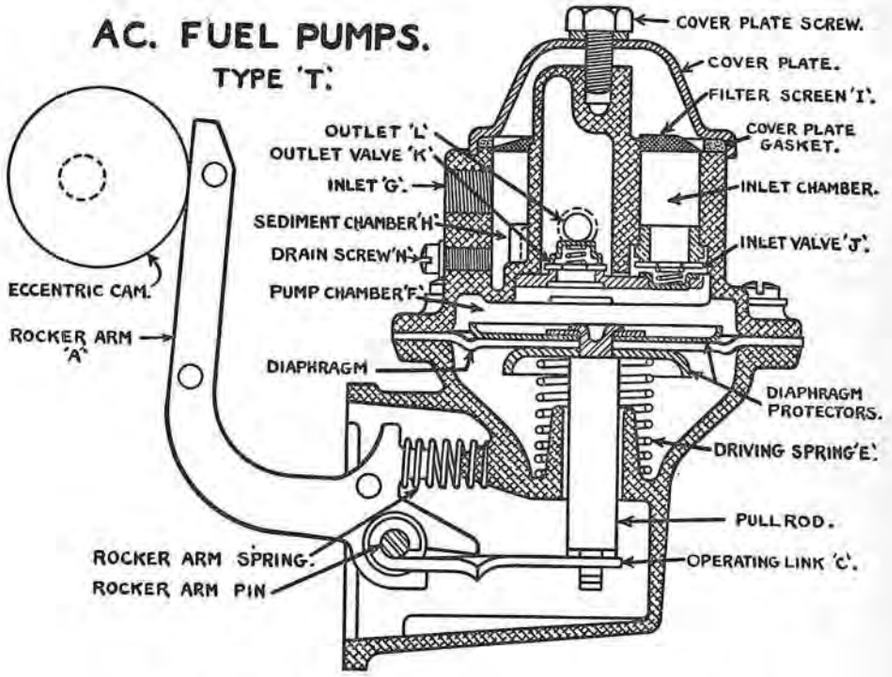
(1) Loose Cover Screws. Tighten cover screws securely (alternately around pump body).

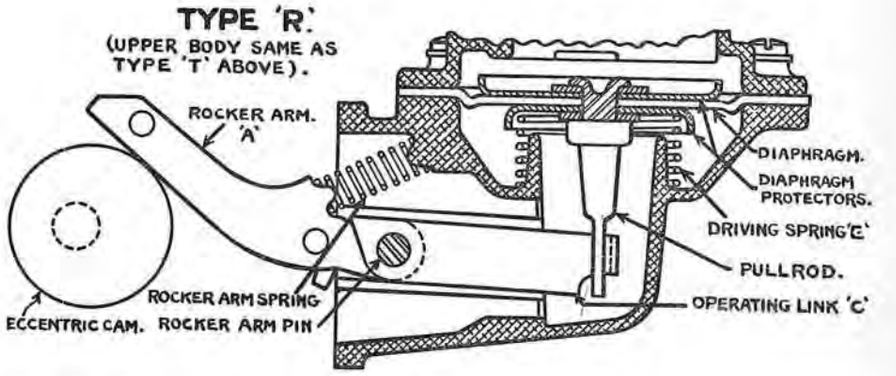
(2) Loose Connections. Check inlet and outlet connections.

Carburetor Flooding.

(1) Carburetor float valve not seating. Check for worn valve, seat or sediment or other obstruction in float bowl. Check float level.

NOTE:—Manufacturer recomemnds that pump not be disassembled further than indicated in table above as special fixtures are necessary for reassembly. See special page in Equipment Section on Fuel Pump Servicing.





DELCO-REMY AUTOMATIC CARBURETOR CONTROL

MODELS 498-C, 498-D
STANDARD EQUIPMENT ON BUICK MODELS 34-40, 50, 60, 90 (1934)

DESCRIPTION:—The Automatic Carburetor Control is an automatic choke designed to choke the carburetor for cold starting and to control the choking action under all operating conditions during the warming up period. It employs a combination of engine temperature (thermostatic spring), manifold vacuum (bellows mechanism), and carburetor inlet air velocity (accelerating piston) to control the choke action, The choke valve operating lever is linked to one end of a spiral thermostatic spring so that the lever is rotated and the choke valve opened when the spring unwinds as the engine warms up. The collapsible bellows is linked to the other end of the thermostatic spring and the collapse of the bellows, when the engine begins to fire and manifold vacuum is built up, releases the thermostatic spring tension slightly and opens the choke valve to prevent over-choking. The floating piston of the accelerating piston assembly is likewise held down against spring tension by manifold vacuum and is forced up by the spring when the vacuum collapses as the engine is accelerated. This transfers air to the top of the accelerator piston, forcing the piston down, and increasing the choke action momentarily since the piston is linked to the operating lever shaft. The accelerating piston action after the engine warms up, with choke valve open, is negligible.

INSPECTION AND ADJUSTMENT:—If the action of the Automatic Choke is not satisfactory, check the following points in order:

Binding of Parts. Disconnect link connecting carburetor choke valve and operating lever of automatic choke, see that choke valve lever moves freely. Operate automatic choke by hand. Lever should move freely and should return to initial position when released. All moving parts should be clean and free from oil. Do not oil any part of the choke mechanism.

Initial Choke Position. With operating linkage disconnected, hold both choke valve lever and choke operating lever down as far as they will go, check length of control rod or connecting link. The end of the link should rest in the notch in the upper face of the choke operating lever. Adjust by loosening lock nut and turning turnbuckle to increase or decrease length of link. Reassemble linkage. Starting mixture will be too rich if connecting link is too long, or too lean if connecting link is too short.

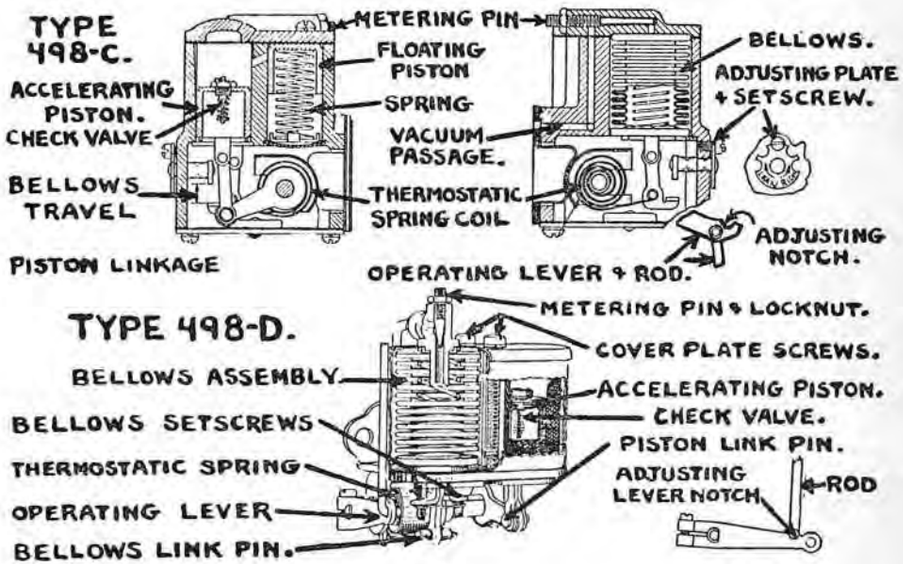
Part Throttle Position (Bellows travel). The time required for the full stroke of the bellows (⅜" on 498-C, ¼" on 498-D) is regulated by the metering pin at the top of the unit and should be 12-15 seconds. To adjust, loosen lock nut on metering pin and turn pin in or clockwise to increase 'take-off' time, and out or counter-clockwise to decrease 'take-off' time. The length of the bellows stroke is regulated by the adjusting plate on the side of the case (498-C) or by two set screws in the bellows connecting linkage below the bellows and within the case (498-D). On the 498-C model, the adjusting plate should be turned midway between the 'rich' and 'lean' positions so that the set screw engages the center notch. The bellows end cup should rest against the support plate with the bellows fully extended. If it does not, replace bellows assembly.

TROUBLE SHOOTING:—To disassemble control unit for inspection, disconnect control rod, take off bottom cover, take out link pin in thermostatic spring, being careful not to distort spring or change spring tension, take out piston link pin, disconnect vacuum line, remove top screws. The head and bellows can then be removed (498-C). On the 498-D the cylinders and bellows are removed by rotating the top cover until the bracket at the bottom end of the bellows can be withdrawn through the hole in the support plate. Examine cylinders and pistons. Cylinders should be dry and free from oil or dirt. Do not stretch or compress bellows (see instructions below). Use a new head gasket when reassembling and retime vacuum 'take-off' (bellows stroke timing) as directed above.

Obstructions in Vacuum Passage. Take out metering pin, clean out any dirt in metering pin passage, dry out unit if moisture is found in the bellows.

Bellows or Vacuum Passage Leaking. With metering pin removed, collapse bellows by hand (do not compress bellows solid—bellows stroke is ⅜" or ¼"), hold a finger tightly over metering pin hole and vacuum passage hole in head, note whether bellows remains collapsed. If bellows extends to original length, bellows or vacuum passage leaks.

Bellows Travel. Check bellows travel. Travel should be ⅜" on 498-C with adjusting plate set at midpoint between rich and lean, or ¼" on 498-D (adjusting set screw clearance with bellows fully extended). See that bellows end cup rests against support plate with bellows fully extended. If it does not, bellows should be replaced.



Accelerating Piston Check Valve. Inspect check valve in top of accelerating piston. See that valve opens freely and that face of valve and valve seat are free from dirt or oil. Check valve spring tension by inverting piston. Spring tension should be sufficient to hold valve closed in this position. If valve is removed, be careful not to distort valve seat when replacing in piston (do not tighten excessively). A leaking check valve will cause a lean mixture on acceleration or the 'hop-off' or momentary opening of the choke valve when engine begins to fire will not occur. If check valve sticks or remains closed, the choke valve will not close again after this momentary opening.

STROMBERG AUTOMATIC CHOKE

WITH INTEGRAL FAST IDLE
STANDARD EQUIPMENT ON STUDEBAKER DICTATOR, MODEL A, COMMANDER, MODEL B, LA SALLE MODEL 350, OLDSMOBILE MODEL F-34 (1934)

DESCRIPTION:—This type automatic choke is similar to previous designs in that it employs a thermostatic spring coil (mounted in a case on the exhaust manifold) to close the choke valve, and a vacuum piston (built in the carburetor body casting) to assist in controlling the choke action during the warming up period. The location of the units is different, and in addition a high idle cam is built in the choke mechanism on the carburetor. The fast idle stop screw on the throttle valve lever rests on this cam, and the cam is rotated to this high idle position when the choke valve is closed by the automatic choke. The operation of the vacuum piston when the engine begins to fire opens the choke valve slightly and also rotates the high idle cam so that the stop screw rests on the second step or intermediate idle position. Finally when the choke valve is entirely open, the cam is revolved so that the stop screw drops off to the slow idle or flat portion of the cam and the idling speed is then controlled by the throttle stop screw.

OPERATION:—The thermostatic spring coil on the exhaust manifold or exhaust pipe is linked directly with the choke valve lever through a connecting rod and is designed to close the choke valve completely at a temperature of 70° (engine not running). When the throttle is opened for starting, the high idle cam will be revolved to the high idle position, holding the throttle partly open, providing a high idling speed. When the engine begins to fire, the vacuum piston in the carburetor body will be drawn up (updraft carburetors) or down (downdraft carburetors) so that the choke valve is opened partly and the high idle cam is revolved to the intermediate idle position. As the engine temperature increases, the tension of the thermostatic spring coil decreases, allowing the off-center mounted choke valve to open. At an engine temperature of 120°, the choke valve should be wide open.

ADJUSTMENT:—High Idle Speed. The throttle stop screw should first be adjusted for correct hot or slow idle speed. To make this adjustment, engine must be thoroughly warm so that the choke valve is wide open and high idle cam is revolved to slow idle position so that throttle stop screw is operative. Adjust throttle stop screw so that idling speed is 6 M.P.H. on La Salle, 8 M.P.H. on Studebaker Dictator and Commander, and 6 M.P.H. on Oldsmobile (on Oldsmobile, throttle stop screw and high idle adjusting screw are the same so this is the only adjustment necessary). Then adjust high idle speed as follows:

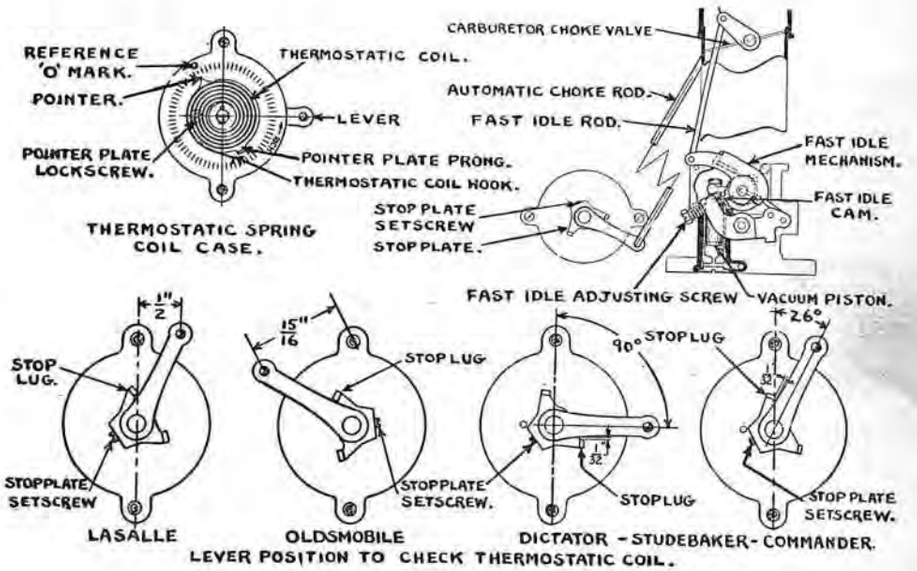
La Salle 350. Turn high idle adjusting screw until is makes contact with the low or small diameter step on the high idle cam, then back off screw about ½ turn until clearance between screw and cam is .010". Use a feeler gauge to check this setting. Choke valve must be open when adjustment is made.

Studebaker Dictator and Commander. Insert a feeler gauge .034" (Dictator) or .060" (Commander) between the low idle screw (throttle stop screw) and the carburetor body. Open throttle, rotate high idle cam so that high idle adjusting screw rests on largest step or high idle portion of cam, close throttle, turn high idle adjusting screw in or out until it has a slight drag on the cam. This adjustment can also be made without using a feeler gauge by first turning the low idle screw (throttle stop screw in one turn (Dictator) or 1⅝ turn (Commander) from the correct or 8 M.P.H. position and then adjusting the high idle screw as directed above. In this case it will be necessary to reset the low idling speed by turning the stop screw out one turn (Dictator), or 1⅝ turns (Commander), after adjustment is completed.

TO CHECK OR ADJUST THERMOSTATIC COIL:—Disconnect operating rod and remove thermostatic coil assembly from position on manifold. Check position of operating lever as follows:

La Salle Model 350. With lever held in closed choke position (lever pointing up and to right of vertical line through mounting screw holes) and against upper lug or stop on thermostat case hub, the distance between the center of the upper mounting screw hole and center of lever connecting hole (outer end of lever) should be ½". To adjust, with lever held in correct position, loosen set screw in hub, rotate hub until lug is against lever, tighten set screw. This is a preliminary adjustment for thermostatic coil testing. After testing, the stop lug should be adjusted so that clearance is not more than 1/32" with choke valve closed.

Studebaker Dictator. Hold lever in closed choke position at right angles (90°) to right of vertical line through mounting screw holes, check clearance between lever and lower lug or stop on thermostat case hub. This clearance must be exactly 1/32". Adjust by loosening set screw in hub and rotating hub. Tighten set screw after making adjustment.



Studebaker Commander. Hold lever in closed choke position. Lever should be 26° to right of vertical line through mounting screw holes and pointing upward. Check clearance between lever and upper stop or lug on thermostat case hub. Adjust by loosening set screw in hub and rotating hub. Tighten set screw.

Oldsmobile F-34. Hold lever in closed choke position. Center of hole in outward end of lever should be 15/16" from center of upper mounting screw hole. Loosen set screw in thermostat case hub, rotate hub until the upper lug or stop on the hub is against the lever, tighten set screw. This is a preliminary setting for testing of thermostatic coil. After testing is completed, adjust hub so that clearance between lever and lug is 1/32" with choke valve closed.

FAST IDLE ADJUSTMENTS

Instructions for adjustment of Fast Idle mechanisms on 1934 car models are given below. In a number of instances, the Fast Idle mechanism requires no adjustment, or is built in the carburetor as the throttle stop screw stop-plate so Fast Idle adjustment is taken care of in setting the idling speed (throttle stop screw adjustment). See articles on individual carburetor models for idling speed adjustment.

AUBURN:—Model 6-52X, 6-52Y. Throttle and choke valve interconnected so that throttle valve is opened .031-.035″ with carburetor fully choked. Should not require adjustment.

Model 8-50X. Throttle valve and choke valve interconnected by 'throttle-cracking' device so that throttle valve is opened slightly when carburetor is choked for starting. See article on URO-2 Carburetors.

Model 8-50Y. Stromberg lever type fast idle mechanism. See separate article on this device. Does not require adjustment.

BUICK:—Models 34-40, 50, 60, 90. All models equipped with fast idle thermostatic spring coil and cam. See separate article on Marvel Cold Idle control for complete checking and adjusting directions.

CHRYSLER:—Model CA, CB Six. Throttle valve and choke interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

Models CU, CV Airflow Eights. Model CW Custom Imperial. To adjust, back off throttle stop screw so that throttle valve is completely closed. See that choke valve is completely closed, back off fast idle set screw until it just contacts fast idle counterweight, then turn this screw down exactly two turns, tighten locknut. This will give a fast idle speed of 15 M.P.H. Readjust throttle stop screw for 6 M.P.H. hot or slow idle speed.

DE SOTO:—Model SE. Throttle valve and choke valve interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

DODGE:—Model DR, DS. Throttle valve and choke valve interconnected so that throttle is opened slightly with choke valve more than ½ on. With choke valve fully closed, throttle stop screw should rest on the high point of the fast idle cam.

GRAHAM:—Model 68 Six, 69 Supercharged Custom Eight. Throttle valve and choke valve interconnected so that throttle is opened slightly when carburetor is choked for starting. Should not require adjustment.

Model 67 Eight. Throttle valve and choke valve interconnected by 'throttle-cracking' device so that throttle is opened slightly when carburetor is choked. See article on URO-2 carburetors.

HUDSON:—Models LL, LT. Fast idle bar connected to choke valve lever serves as auxiliary stop for throttle stop screw for cranking and warming up period. Controlled by automatic choke. See article on Carter Climatic Control.

LA SALLE:—Model 350. Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

OLDSMOBILE:—Model F-34 (EX-23 Carburetor). Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

Model L-34. Stromberg Lever type fast idle mechanism. See separate article. Does not require adjustment.

PLYMOUTH:—Models PF, PG, PE. Throtttle valve and choke valve interconnected so that throttle is opened to fast idle position with choke valve more than ½ on. No adjustment required.

STUDEBAKER:—Dictator Model A, Commander Model B. Fast idle mechanism is integral with automatic choke. See separate article on Stromberg Automatic Choke with integral Fast Idle.

President Model C. Fast Idle mechanism is similar in design and adjustment to that used on 1933 President models. See article in Carburetion Section of Manual.

TERRAPLANE:—Models K, KU. Fast idle bar connected to choke valve lever serves as auxiliary stop for throttle stop screw for cranking and warming up. Controlled by automatic choke. See article on Carter Climatic Control.

THROTTLE CONTROL ADJUSTMENT (CRANKING)

FOR CHRYSLER SIX, DODGE, PLYMOUTH

On these cars, starting switch pedal and carburetor throttle valve are interconnected so that throttle is opened ½-1/3 while engine is being cranked. To adjust, loosen nut on movable plate on starting pedal, shift plate until gap between edge of adjusting plate and throttle cross shaft is 3/16″ with throttle valve at idling (closed) position and starting pedal released. Tighten the adjusting nut. A smaller gap than specified will result in a greater throttle opening and excessive engine speed when engine begins to fire.

CARTER (B & B) CARBURETORS

E6C1—CHRYSLER SIX, MODELS CA, CB (1934).
x-E6B1—DE SOTO SIX, MODEL SE (1934).
C6B1—PLYMOUTH STANDARD & DE LUXE SIX, MODELS PF, PG, PE (1934)
x- Sisson Automatic Choke standard on this model and optional on Chrysler and Plymouth. See separate article on Sisson Automatic Choke.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel is metered by main metering screw under float chamber and by power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, an upper port (above the throttle valve) and a lower port (below valve when throttle is closed) which is controlled by idling adjustment screw. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle shaft dog adjusting screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires evenly. Adjusting screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting for adjusting screw is shown on table below. Check idling speed after completing adjustment and readjust as necessary. Do not idle engine at less than 300 R.P.M.

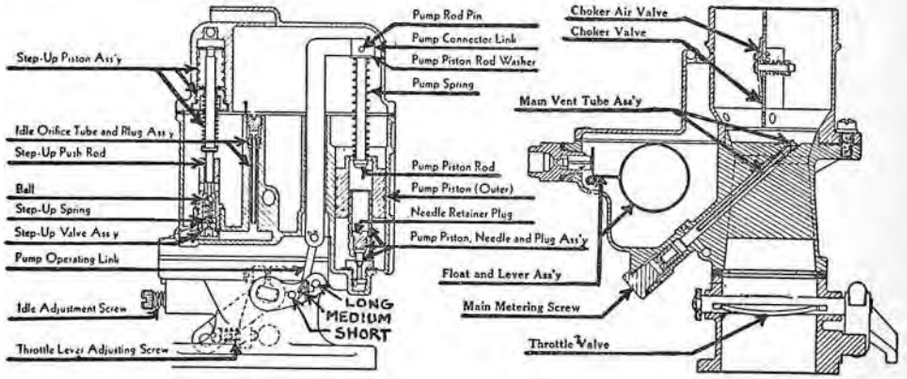
Car Model	Idling Screw Setting	Idling Speed
Chrysler CA, CB	½-1¼ turns open	300 R.P.M., 6 M.P.H.
De Soto SE	½-1¼ turns open	300 R.P.M., 6 M.P.H.
Plymouth PF, PG, PE	½-1¼ turns open	300 R.P.M., 6 M.P.H.

NOTE:—If correct idling adjustment cannot be secured, engine stalls while idling, or low speed operation is unsatisfactory, take out idle hole plug and idle adjustment screw and see that ports are not clogged, take out idle passage tube and idle jet tube and clean with compressed air.

ACCELERATING PUMP:—Accelerating pump is connected to throttle shaft lever and discharges fuel through a pump jet located in the venturi when the throttle is opened, supplying the extra fuel required for acceleration. Pump lever on throttle valve shaft has two or three holes for engagement of pump operating link to secure varied pump stroke. Pump operating link pin should be engaged in outer or end hole, providing maximum pump stroke for winter driving or extreme cold temperatures. Pin should be engaged in inner hole, providing minimum pump stroke for summer driving (hot climates), high altitudes, or high test gasoline. Center hole in lever provides an intermediate pump stroke and should be used for normal temperature ranges.

NOTE:—If acceleration is unsatisfactory, check pump setting (above), remove main metering jet and pump jet and clean with compressed air. Pump piston needle and seat assembly in lower part of pump cylinder should also be taken out and cleaned or replaced.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixture to compensate for special fuels or operating conditions such as high altitudes (see specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up push rod moves freely in upper and lower guides, and that step-up piston is not binding Check float level.



FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve and measure distance from top edge of float bowl to top of float (not soldered seam). Use special gauge, Part No. 15222, or place a straightedge or metal rule across top of float bowl and measure distance from under side of rule to top of float. Distance should be as follows:

Car Model	Carburetor Model	Float Setting
Chrysler CA, CB	E6C1	5/64"
De Soto SE	E6B1	5/64"
Plymouth PF, PG, PE	C6B1	5/64"

Float level can be corrected by bending lip of float lever (not the bracket). To lower float level, bend lip of float lever toward needle valve. To raise float level, bend lip of float lever toward float.

CHOKE:—Choke valve is fitted with poppet type relief valve to prevent overchoking. Choke valve and throttle valve are interconnected so that throttle is opened to 'fast idle' position when choke valve is more than one-half closed. Throttle valve returns to closed position when choke valve is opened.

DETROIT CARBURETORS

X-8244—CADILLAC V-8, MODEL 355-D (1934).
51—CADILLAC V-12, MODEL 370-D (1934).
CADILLAC V-16, MODEL 452-D (1934).

NOTE:—The V-12 and V-16 cars are equipped with two carburetors each. One carburetor is used for each cylinder bank. Carburetors must be equalized as well as adjusted in order to assure smooth running. Complete adjustment procedure is given below and should be followed closely. The V-8 cars use only one carburetor and esualizing instructions can be disregarded for this model.

TYPE:—Expanding air valve updraft type with auxiliary unit consisting of starting device or priming jet, accelerating pump and power jet. Main metering unit consists of two hinged air valves or vanes which engage an aspirating tube so that aspirating tube is raised as vanes open. Aspirating tube is attached to a spring-loaded metering orifice tube so that orifice is withdrawn from metering pin and fuel supply automatically increased as vanes open to admit more air. Fuel is automatically and correctly proportioned to air for all positions of the throttle valve.

When carburetor is choked for starting, choke lever on carburetor rotates starting sleeve (pump housing) holding the main air vanes closed through a spring-operated lever and lining up passages in the upper end of the pump housing and carburetor body so that fuel is drawn up through the hollow stem of the accelerating pump and discharges through a priming port above the throttle valve directly into the mixing chamber. Throttle valve must be kept closed when engine is started (kicker rod on throttle lever will open throttle correct amount for starting—see adjustment below). Metering pin adjustment and kicker rod clearance (for starting) are the only points requiring attention.

PRELIMINARY ADJUSTMENT:—See that starting sleeve on carburetor is rotated so that choke lever is against stop on float chamber cover when choke control button on instrument panel is pulled out. This is important in order to line up priming port passages in pump housing and carburetor body for starting. If carburetors are completely out of adjustment, turn metering pin up until it just seats in aspirating tube orifice and then back metering pin off exactly 2¾ turns (355-D) or 4 turns (370-D), 452-D). Run engine until it is thoroughly warmed up. Close throttle and allow engine to idle. Idling speed should be 320 R.P.M. See idling adjustment below.

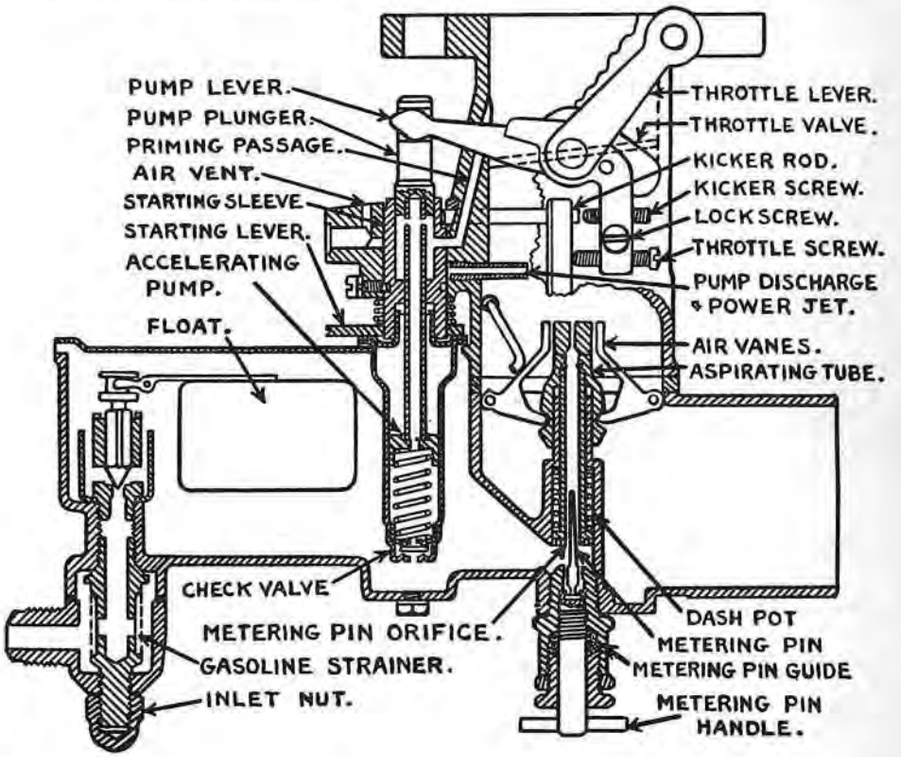
IDLING ADJUSTMENT:—Idling speed is controlled by throttle lever stop screw. With carburetor off the engine, adjustment can be checked by using a feeler gauge to check distance between edge of throttle valve and carburetor wall. Turn stop screw until this clearance is .006″ (355-D) or .004″ (370-D, 452-D) with throttle closed. To adjust on the engine, turn stop screw until engine speed is 320 R.P.M. This can be checked on the V-12 and V-16 models by removing oil filler cap on valve cover on one cylinder bank and noting rocker arm movement. Rocker arm should move 40 times in 15 seconds with engine running at 320 R.P.M.

METERING PIN (IDLING) ADJUSTMENT:—Metering pin of each carburetor should be adjusted by turning pin up or clockwise until engine begins to miss or speed decreases and then turning pin down or counter-clockwise until engine fires smoothly. This adjustment should be made slowly so that metering pin will not be turned beyond the point where smooth running is secured. Standard metering pins are listed in table below. No optional metering pins are supplied.

Car Model	Metering Pin Sizes
355-D V-8	#14
370-D V-12	#12
452-D V-16	#14

EQUALIZING CARBURETORS:—Use special Cadillac equalizing gauge consisting of a 'U' tube partly filled with mercury which should be hung vertically on one of the radiator brace rods and connected to each intake manifold. A piece of rubber tubing is connected to each leg of the 'U' tube and special fittings can be secured so that the other end of the tubing can be connected to the vacuum fittings on the manifold after the brake booster and windshield wiper lines have been disconnected. Disconnect right hand carburetor throttle rod. With equalizing gauge in place, idle engine and note mercury level in tube. If mercury level is at same height in both legs of the tube, and engine idles at 320 R.P.M. (check rocker arm to see that it operates 40 times in 15 seconds), carburetors are correctly equalized. If mercury level is even and engine idles too fast, back off throttle stop screw in each carburetor an equal amount until correct speed is secured. If mercury levels are not equal and engine idles too fast, back off the throttle stop screw on the carburetor feeding the bank on which the mercury level is lower. If mercury levels are not equal and engine speed is too slow, turn up the throttle stop screw on the carburetor feeding the bank on which the mercury level is higher. With correct adjustment engine should idle at exactly 320 R.P.M. and mercury level should be equal in both tubes.

Check metering pin setting on each carburetor by turning pin in or clockwise until engine begins to miss, and out or counter-clockwise until engine begins to roll and then set metering pin exactly midway between these points. Recheck idling speed and mercury level in equalizing gauge. Adjust right hand carburetor throttle rod so that it can be connected without disturbing position of throttle valve, connect throttle rod, open throttle and run engine at 1000 R.P.M. If mercury levels are not even at this speed, readjust right hand throttle rod slightly. Close throttle and check mercury level at idling speed.



KICKER ROD (STARTING) ADJUSTMENT:—With carburetor off engine and choke in open position, check clearance between edge of throttle valve and carburetor wall (throttle must be closed). Adjust by turning kicker screw in or out until clearance is .017″ (355-D), .013″ (370-D, 452-D). Use a feeler gauge to set this clearance.

AUTOMATIC CHOKE:—All models are fitted with a semi-automatic choke which is designed to control choke during the warming up period. Manual choke control should be used in the usual manner to start a cold engine but should be pushed in immediately when the engine starts. The semi-automatic choke consists of a thermostatic spring mounted on the carburetor riser which is linked to the main air vane control lever. Tension on the air vanes is progressively lessened as the engine warms up.

MARVEL CARBURETORS

ACCELERATING PUMP:—Accelerating pump is connected through a connecting rod to a lever on the throttle valve shaft. Throttle shaft lever has three holes for engagement of connecting rod to provide varied pump stroke. 'Normal' setting with connecting rod engaged in center hole of lever should be used for normal temperature ranges. For extreme warm climates connecting rod should be engaged in inner hole, giving minimum pump stroke. For winter driving or extremely cold temperatures connecting rod should be engaged in outer hole for maximum pump stroke and greatest accelerating charge.

PERFORMANCE:—Carburetor performance throughout entire operating range should be satisfactory if idling adjustment and accelerating pump connection are correct (above). Jets should not be changed except for permanent operation at elevations above 3000 feet.

ECONOMIZER:—Economizer consists of a metering pin and jet controlled by a vacuum piston. The lower end of the vacuum piston chamber is connected to the carburetor barrel below the throttle valve. For all part-throttle positions, manifold vacuum will hold the piston at the lower end of the stroke (against the tension of the piston spring) so that the metering pin is held in position in the metering pin jet, limiting the fuel flow. When the throttle is opened, the fall in vacuum will allow the spring to force the piston upward, lifting the metering pin in the jet and permitting a greater fuel flow to the nozzle for acceleration and full power operation. The spring is calibrated to allow maximum economy (metering pin in jet) for all car speeds up to 65 M.P.H. on level road.

Metering Pin Timing Height. To check metering pin timing height (which controls economizer action), remove float bowl cover, hold vacuum piston down on seat (lower end of stroke with metering pin in metering jet), measure distance from top of metering pin to top of metering pin housing. This should be 13/64". Adjust by bending metering pin fork or lifter.

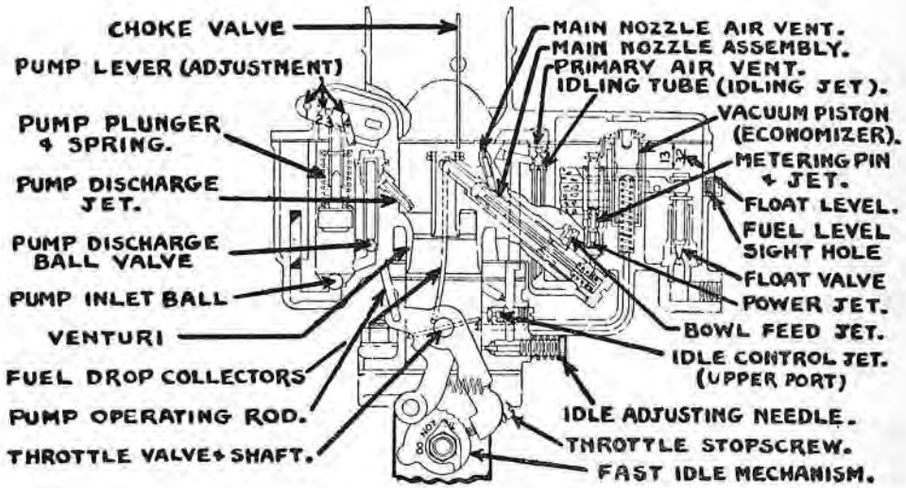
FLOAT LEVEL:—To check float level, take off float bowl cover, take off gasket, invert bowl cover, measure distance from gasket seat on bowl cover to top of float (bottom of float when not inverted) at point directly opposite needle valve assembly. Correct setting should be 1⅜". There is a fuel level sight hole on the side of the bowl closed normally by a plug. With engine idling, fuel level in bowl should be even with the lower edge of the sight hole.

CHOKE:—Choke valve is fitted with a spring-controlled relief valve or fly to prevent over-choking. Check choke linkage and see that choke valve is closed with choke control button pulled out and wide open with button pushed all the way in.

BB-1 10-1633—BUICK, MODEL 34-40 (1934).

TYPE:—Plain tube, downdraft, dual type with 'Cold Idle' (fast idle) control, throttle operated accelerating pump, and vacuum economizer or 'step-up' device. Carburetors have two independent mixing chambers, main nozzle systems, idle systems, and throttle valves (valves mounted on same shaft and will not require synchronization). A single accelerating pump and vacuum economizer (metering pin and metering jet) serve both carburetor barrels. Fuel for main nozzles is fed directly from the float bowl to the nozzle through the 'bowl feed jet' and also through the metering pin-and-jet (economy device). Main nozzle is air-bled through a separate nozzle air vent within the mixing chamber. Fuel for idling is taken from the main nozzle channel below the metering pin and jet through the idle fuel channel and is metered by the idle jet. This fuel is mixed with air admitted through the primary air vent in the cross passage and the fuel mixture is then taken down through a passage to the idle ports opposite the throttle valve. The lower idle port below the throttle (when throttle is closed) is controlled by the idle adjusting needle and supplies all fuel for closed-throttle idling, the secondary idle air vent and upper idle port (in which the idle control jet is located) acting as additional air-bleeds. As soon as the throttle is opened slightly, the upper idle port discharges additional fuel. All fuel for car speeds up to 18 M.P.H. is supplied by the idle system. At this point the main nozzle comes into action and supplies more fuel progressively up to 40 M.P.H. when fuel delivery from the idle ports ceases, the main nozzle then supplying all fuel. The fuel drop collectors on the main nozzles have the effect of evening up the fuel delivery and make the main nozzle discharge smoother at car speeds less than 25 M.P.H. The idle adjusting needles and accelerating pump adjustment (seasonal setting) are the only two points requiring attention.

IDLE ADJUSTMENT:—Needle valve type controlling fuel mixture. Engine must be warm when adjustments are made (cold idle not operative). With engine thoroughly warm and running, close throttle, adjust throttle stop screw so that engine speed is equivalent to 7-8 M.P.H. Adjust idle adjusting needle for each carburetor barrel in turn. Turn idle adjusting needle in or clockwise until engine hesitates or misses (mixture too lean), then turn needle out or counter-clockwise until engine rolls (mixture too rich), finally turn needle in just enough to eliminate rolling. This will give the richest setting possible without rolling and will give smoother road performance than a leaner setting. Correct setting should be ½-¾ turn open. After adjusting both idle adjustment needles, check idling speed and readjust throttle stop screw to secure correct (7-8 M.P.H.) speed.



PERFORMANCE:—Performance should be satisfactory throughout entire driving range if idling adjustment has been correctly made and accelerating pump setting and vacuum economizer operation are correct. All metering jets are 'fixed' type and non-adjustable. Jets should be changed only for permanent operation at elevations greater than 3000 feet.

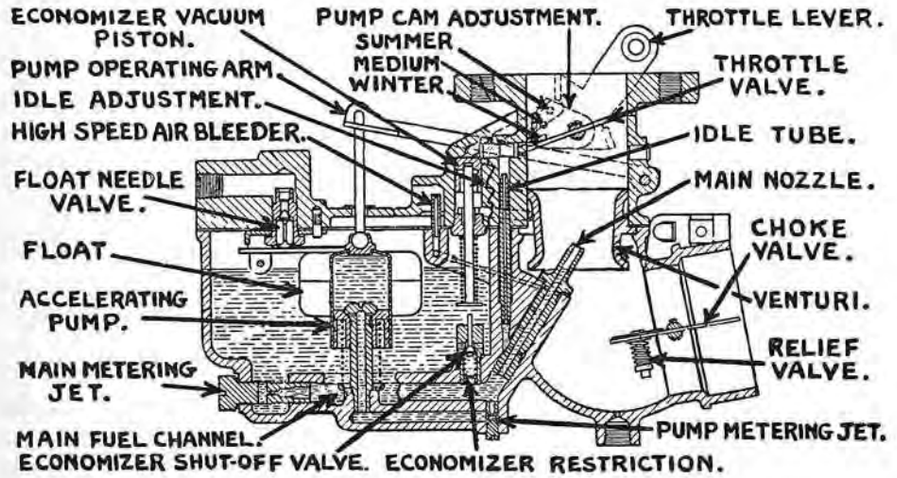
ACCELERATING PUMP:—Accelerating pump is operated by the throttle valve lever and discharges fuel through a pump discharge jet into the mixing chamber when the throttle is opened. The pump follow-up spring above the pump plunger prolongs the pump stroke. Accelerating pump lever has four holes marked 1-2-3-4 for connection of the pump operating link. Minimum pump discharge (shortest stroke) is secured with link connected in hole #1. Hole #4 provides maximum pump discharge (longest stroke). #3 is correct connection for normal operating conditions. Use #2 (or #1 for extreme conditions) for extremely hot weather or high test gasoline. Use #4 for extremely cold weather or low grade fuel.

STROMBERG CARBURETORS

UR-23—STUDEBAKER, DICTATOR MODEL A (1934).
URO-2—FRANKLIN, SERIES 18 AND 19 (1934).
GRAHAM, STANDARD EIGHT MODEL 67 (1934).

NOTE:—See separate articles on Stromberg Automatic Choke and Fast Idle mechanisms for complete data where they are used. Model UR-2 Studebaker Dictator fitted with built-in automatic choke and fast-idle. In all cases where fast-idle mechanisms are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open.

TYPE:—Plain tube updraft type with positively operated accelerating pump and vacuum economizer. Graham model is fitted with a 'throttle-cracking' device connected to the choke valve lever for starting (see data below). Main discharge jet is air bled to control mixture so that fuel flow through jet is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). All fuel for main discharge jet is metered by main metering jet under float bowl (except for high speed or open throttle when additional fuel is by-passed through economizer by-pass jet). Idle adjustment and accelerating pump adjustment (summer-normal-winter setting) are the only points requiring attention.



IDLING ADJUSTMENT:—Air bleed type operating on air. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle (adjust throttle lever stop screw if necessary to keep engine from stalling). Turn idling adjusting screw out until engine begins to hesitate or miss, then turn screw in until engine fires smoothly and maximum speed is attained. Idling screw operates on air and should be turned out for leaner mixture and in for richer mixture. After idling adjustment has been completed readjust throttle stop screw if necessary to secure correct idling speed.

If correct idling adjustment cannot be secured, take out idle discharge hole plug and clean out idling ports with compressed air. The idling tube can also be taken out and cleaned with air if the carburetor is disassembled.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet is of the 'fixed' type and is not adjustable. Jet size is stamped on outer face of jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuel or operating conditions of the engine such as high altitudes.

Economizer is controlled by a vacuum piston. At intermediate speeds below 60 M.P.H. or partial throttle positions, economizer valve remains closed so that all fuel for main discharge jet is metered by main metering jet. When the throttle is opened the economizer needle plunger is forced down, opening the economizer valve, and allowing additional fuel to flow through the economizer restriction (by-pass jet) to the discharge jet. Economizer is not adjustable and should not require attention.

ACCELERATING PUMP:—Accelerating pump is operated by a lever and cam on the throttle valve shaft. The pump reducer or metering jet located on the bottom of the carburetor meters the fuel delivered by the pump.

Adjustment:—Pump operating cam on throttle valve lever has three holes to secure varied pump stroke. The center hole providing a medium pump stroke should be used for ordinary temperature ranges and ordinary gasoline. The upper connecting hole providing a minimum pump stroke should be used for hot weather or high test gasoline. Lower connecting hole providing maximum pump stroke should be used for very low temperatures.

FLOAT LEVEL:—Fuel level in float chamber is set at exactly 9/16″ below the top edge of the float chamber (gasket removed) with engine not running. Float level can be changed to correct fuel level by bending float lever at the corner between the float and the needle valve. To check float level, measure distance from gasket seat on float chamber cover (gasket removed) to top of float at center. This distance should be 11/64″. On Studebaker model, check distance from gasket seat on float cover to bottom of float. This distance should be 1 5/16″.

THROTTLE-CRACKING DEVICE:—On the Model URO-2 carburetor choke valve and throttle valve are connected so that throttle valve is opened .046″ with choke valve fully closed to facilitate starting. This can be checked by fully closing choke valve and noting throttle position. To set 'throttle-cracking' linkage, insert a #56 drill between the edge of the throttle valve and the carburetor barrel, close throttle against the drill, loosen adjusting screws on linkage, close choke tightly and tighten adjusting screws. Check adjustment to make certain that choke valve opens completely.

CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Adjust choke valve linkage so that choke valve is closed tightly with choke control button on instrument panel pulled all the way out and wide open with control button pushed all the way in.

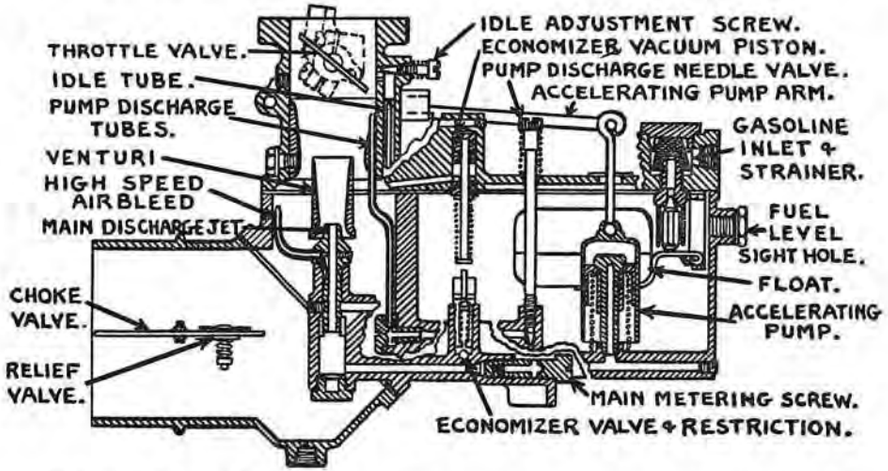
UUR-2—CUNNINGHAM, MODEL V-10 (1934).
HUPMOBILE, MODEL 422 (1934).
HUPMOBILE, MODEL 426 (1934).
NASH, AMBASSADOR EIGHT, SERIES 1290 (1934).

TYPE:—Twin updraft type with accelerating pump and vacuum economizer. There are two carburetor barrels with independent main discharge jet assemblies and throttle valves (throttle valves operate on the same shaft so that synchronization of throttles is not necessary). Barrels are fed from the main metering jet channels so that all fuel for main discharge jets is metered by main metering jets (under float bowl) and controlled by the vacuum economizer. Main discharge jets are air bled (by tubes on discharge jets in mixing chamber) to control mixture so that fuel flow through jets is restricted at partial throttle (high vacuum) and increased at open throttle (low vacuum). An independent idle adjustment is provided for each carburetor barrel. The idle adjustment and accelerating pump adjustment are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type operating on gasoline. There are two idle ports in each carburetor barrel, an upper port (controlled by idle adjustment needle valve) which supplies fuel for car speeds of 5-10 M.P.H. and a lower port (non-adjustable) which operates in conjunction with the upper port to supply fuel for car speeds of 10-20 M.P.H. Both idle ports operate in conjunction with the main discharge jet to supply fuel for speeds of 20 M.P.H. to appproximately 30 M.P.H. when all fuel is supplied by the main discharge jet.

STROMBERG CARBURETORS

Adjustment:—If carburetor is out of adjustment, turn both idling adjustment screws in until they seat and then back off 2 or 3 turns. Start engine and adjust throttle lever stop screw until engine runs at approximately 5-6 M.P.H. Run engine until it is thoroughly warmed up. Turn in idling screw on inner carburetor barrel until it seats. This will cut off fuel supply to four cylinders on eight cylinder engines so that engine will fire on four cylinders. Adjust idling screw of outer barrel until engine fires smoothly. Then turn out idling screw on inner barrel until engine fires smoothly on all eight cylinders. Readjust throttle lever stop screw if necessary to secure correct idling speed.



If is not desired to adjust one barrel at a time with engine firing on four cylinders, adjust each idling adjustment individually by turning idling screw in until engine begins to miss or is rough and then turn screw out until engine fires smoothly. This point can also be determined by turning screw in until engine begins to miss and then out until engine begins to roll. The correct setting should be midway between these points. Idling screws operate on gasoline mixture and turning serew in or clockwise causes a leaner mixture and out or counter-clockwise a richer mixture.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets are fixed and cannot be adjusted. Metering jet size is stamped on the outer face of the jet in decimal fractions of an inch. To determine whether jet size is too small for particular operating conditions of the engine, with engine running at speed above 20-30 M.P.H., gradually close choke valve and note whether engine speed increases. If engine picks up speed as choke is closed the main metering jet is clogged or is too small. Clean jet with compressed air and repeat test.

At speeds up to 60 M.P.H. vacuum in economizer piston chamber (chamber is connected to carburetor barrel) will be sufficient to hold piston up against economizer spring tension so that economizer valve will remain closed. At speeds of 60-70 M.P.H. the drop in vacuum will allow spring to force piston downward, opening economizer valve and allowing additional fuel to flow past the economizer valve seat and through the economizer jet to the main metering jet channels. Economizer does not require attention.

ACCELERATING PUMP:—Pump is operated through a cam-and-lever arrangement by the throttle shaft and discharges fuel through the pump discharge tube in each carburetor barrel when the throttle is opened. Pump discharge is controlled by an adjustable needle valve located in the pump discharge channel so that all fuel discharged by the pump passes through this valve.

Adjustment:—Accelerating pump adjusting needle valve is located on float chamber cover directly below idling adjustments. Correct setting for normal conditions should be 1-1½ turns open. To check throttle pump setting, retard spark, run engine at idling speed and note performance when throttle is opened. If engine hesitates opening is too small and needle valve should be backed out or opened slightly. If engine stumbles in picking up speed opening is too large and needle valve should be turned down slightly. Check adjustment by operating car at speed of 5 M.P.H. on level road in high gear. Open throttle suddenly and note performance. If car hesitates, setting is too small. If car stumbles, setting is too large. This will be particularly noticeable as engine warms up.

FLOAT LEVEL:—There is a float level sight hole closed by a plug on the side of the float chamber. With the engine not running gasoline level in float chamber should be even with the lower edge of the sight hole. To correct float level, take off top half of carburetor body by taking out body connecting screws and accelerating pump adjusting needle valve. To raise float level, bend float lever arm at the corner where it touches float and float needle valve so that float is raised the desired amount. To lower float level, hold float lever tight against needle valve and bend float downward. Top of float should be approximately 17/64″ below top face of float chamber (gasket removed) with float needle seated.

CHOKE:—Choke valve is fitted with a relief poppet valve which opens when engine begins to fire so that engine will continue to run. Choke linkage should be adjusted so that choke valve is fully closed with choke button on instrument panel pulled all the way out and fully open when button is pushed all the way in.

EX-22—DODGE SIX, MODELS DR, DS (1934).
GRAHAM SIX, STANDARD & SPECIAL MODEL 68 (1934).
OLDSMOBILE SIX, MODEL F-34 (1934).
EX-23—OLDSMOBILE SIX, MODEL F-34 (1934).
EX-32—AUBURN, MODEL 8-50X (1934).
GRAHAM, SPECIAL MODEL 67, CUSTOM MODEL 69 (1934).
HUPMOBILE, MODEL 417-W (1934).
HUPMOBILE, AERODYNAMIC MODEL 421-J (1934).
NASH SIX, SERIES 1220 (1934).
REO, MODEL S-4 (1934).
EX-3 (2)—PIERCE ARROW, MODELS 1240-A, 1248-A (1934).
E-33—STUDEBAKER, COMMANDER EIGHT, MODEL B (1934).

NOTE:—Where Automatic Chokes or any type fast-idle mechanism is used, see separate articles for complete data. In all cases where fast-idle mechanisms are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open. On the Pierce Arrow Twelve with two carburetors (one carburetor for each bank of cylinders), accelerator linkage and choke control linkage must be synchronized so that throttle valves in each carburetor work together and so the choke valves in each carburetor likewise work together.

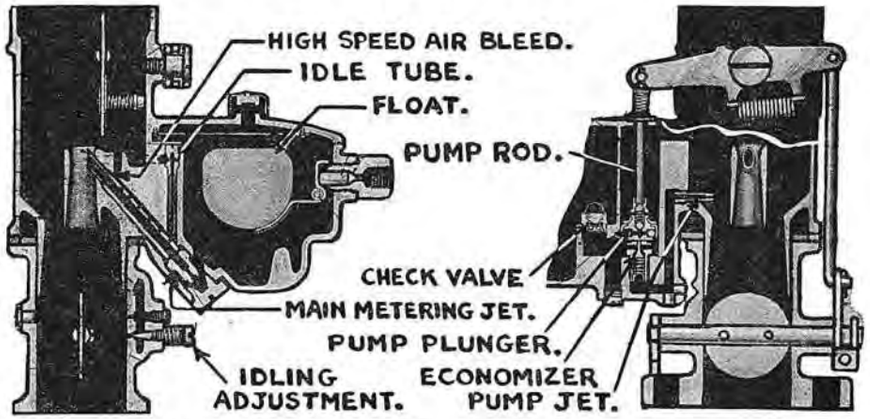
TYPE:—Plain tube downdraft type with positively operated accelerating pump and economizer (connected to throttle valve). Main discharge jet is located at an angle in the venturi and is air bled by means of an air bleed hole drilled in the auxiliary venturi support. Main metering jet is located directly under main discharge jet and meters all fuel for discharge jet. Accelerating pump and economizer discharge fuel into mixing chamber through pump discharge nozzle located within primary venturi. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on gasoline. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and idling, close throttle and idle engine (adjust throttle lever stop screw if necessary). Turn idling adjustment screw in until engine begins to miss and then back off screw until engine fires smoothly and maximum speed is attained for the throttle position. Adjusting screw operates on

STROMBERG CARBURETORS

adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can then be adjusted. The coil should then be reconnected and the other coil disconnected so that the engine will fire on the cylinders of the other bank. The idle adjustment for the carburetor barrel feeding this bank can then be adjusted. After both idling adjustments have been completed in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running. The throttle stop screw can then be adjusted to secure correct idling speed.



If correct idling adjustment cannot be secured, take out idle adjusting screw and upper idling port plug and clean out idling ports with compressed air. The idling tubes located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions such as high altitudes.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 70 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve, so that additional fuel flows through the valve and is discharged into the mixing chamber through the pump discharge nozzle. Economizer is not adjustable and does not require attention.

ACCELERATING PUMP:—Accelerating pump is operated through a walking beam arrangement by the throttle lever. Pump chamber is filled with fuel from the float chamber (flowing through the pump check valve) when the throttle is closed. When the throttle is opened, this fuel is discharged through the economizer valve and the pump discharge nozzle into the mixing chamber. Check valve prevents fuel being discharged back into the float chamber. When the throttle is held open, the piston opens the economizer needle valve so that fuel flows straight through the pump and is discharged through the pump nozzle. The pump discharge nozzle meters this fuel.

Adjustment:—Throttle lever has two holes for engagement of pump rod to provide varied pump stroke. Inner hole (shorter radius) providing short pump stroke should be used for average temperatures or summer operation. Outer hole providing maximum pump stroke should be used for winter operation.

FLOAT LEVEL:—Fuel level in float bowl (distance to top edge of float bowl) for all models is given in table below. Float height can be changed to correct fuel level by bending float lever at the point where it is attached to the float.

Car Model	Carburetor Model	Fuel Level
Auburn 8-50Y	EE-1	15/32″
Chrysler CU, CV	EE-22	9/16″
Chrysler CW	EE-3	9/16″
Ford V-8-112	EE-1	15/32″
Hupmobile 427T	EE-22	5/8″
La Salle 350	EE-23	5/8″
Lincoln V-12-136, 145	EE-22	9/16″
Nash 1280	EE-22	9/16″
Oldsmobile L-34	EE-1	15/32″
Packard 1100, 1, 2, 3, 4, 5	EE-22	9/16″
Packard 1106, 7	EE-3	9/16″
Pierce Arrow 836A, 840A	EE-3	9/16″
Studebaker President C	EE-22	9/16″

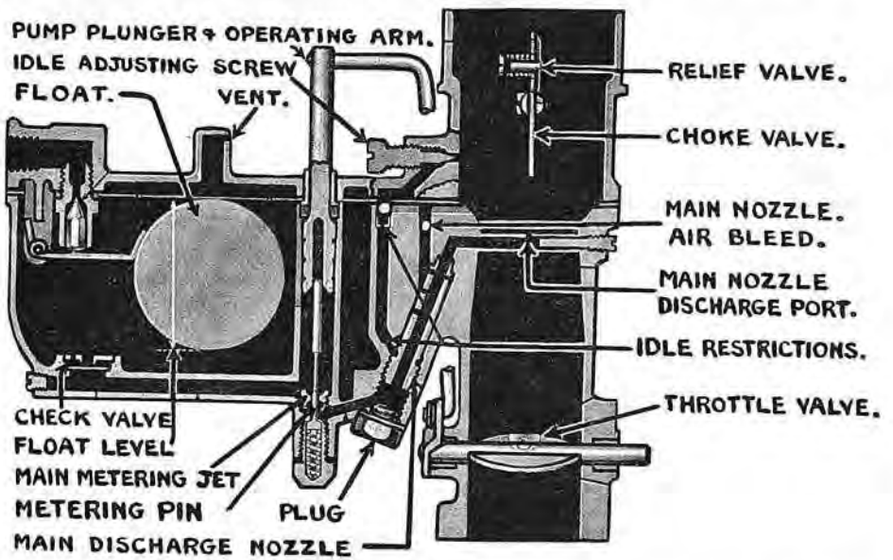
CHOKE:—See special article on Stromberg Automatic Choke. Choke valve is provided with a relief poppet valve to prevent over-choking. On cars with conventional choke control, see that choke valve is fully closed with choke control button on instrument panel pulled all the way out and wide open with choke button pushed in.

TILLOTSON CARBURETORS

D-1A—WILLYS FOUR, MODEL 77 (1934).

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizer (metering rod and metering jet assembly). Fuel for main nozzle (located above a plug at the side of the barrel) is metered by a metering pin and jet assembly at the bottom of the accelerating pump. Metering pin is pressed down by accelerating pump piston, permitting an increased fuel flow for high speed or wide open throttle operation. Main nozzle is air bled by a vent tube and hole in the carburetor body casting. Fuel for idling is taken from the main nozzle well up through the idle channel riser and is metered by restrictions at the bottom and top of the channel. The idle passage at the top of the idle channel is air bled by a vent in the carburetor barrel below the choke valve. This vent is controlled by the idle adjustment screw. Fuel mixture is taken down through a passage in the body casting and discharged through two ports opposite the throttle edge (closed throttle position). Idle adjustment is the only point requiring attention.

IDLE ADUSTMENT:—Make a preliminary adjustment of the idle adjusting screw by turning screw in or clockwise until it is seated, then turn screw out or counter-clockwise exactly 1¼ turns. Run engine until it is thoroughly warmed up, close throttle, adjust throttle lever stop screw so that engine runs at correct idling speed. Turn idle adjusting screw out or counter-clockwise until engine begins to miss (mixture too lean), then turn screw in slowly until engine fires smoothly. Idle screw operates on air and should be turned out for leaner mixture and in for richer mixture. Check idling speed and readjust throttle stop screw if necessary. Correct idling speed should be 7 M.P.H.



ACCELERATING PUMP:—Accelerating pump cylinder is supplied with fuel from main fuel channel under float bowl and discharges through metering jet to main nozzle when throttle is opened. A check valve in the bottom of the float chamber prevents fuel being discharged back into the float bowl. Accelerating pump should not require adjustment.

ECONOMIZER:—Metering pin in metering jet is pressed up by a spring below the pin for partial throttle operation so that the larger diameter section of the pin restricts the fuel flow through the jet. The upper end of the metering pin stem is engaged in a hole in the accelerating pump plunger so that the metering pin is pressed down when the throttle is opened, the smaller diameter section of the metering pin then permitting a larger fuel flow through the metering jet. Metering pin and jet assembly is not adjustable and should not require attention.

FLOAT LEVEL:—To check float level, take off float bowl cover (upper casting), invert cover, measure distance from gasket face to bottom of float (bottom when not inverted). This distance should be ——". Float level can be corrected by bending float lever. See that float lever stop permits full travel of float.

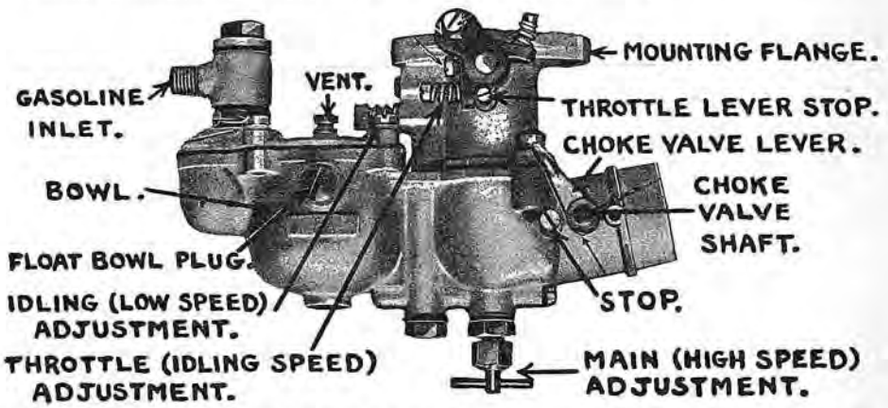
CHOKE:—Choke valve is fitted with relief poppet valve to prevent over-choking. Check choke linkage to see that choke valve is fully closed when choke control button on dash is pulled all the way out and wide open when choke control button is pushed in.

M-10A—AUSTIN, BANTAM MODEL (1934).

TYPE:—Plain tube updraft type. Carburetor has two adjustments. The main or high speed needle valve controls the fuel for the main nozzle. The idle or low speed adjustment screw controls the fuel mixture for the idle discharge ports in the wall of the mixing chamber opposite the throttle edge. Adjustments should be made in the order given below.

PRELIMINARY ADJUSTMENT:—Turn main or high speed adjustment needle valve in or clockwise until it is seated, then open or back off needle valve exactly 1½ turns. Turn idling or low speed adjusting screw in or clockwise until it is seated, then back off adjusting screw ½ turn. Start engine and run until it is thoroughly warmed up.

MAIN (HIGH SPEED) ADJUSTMENT:—With engine warm and running, open throttle until engine speed is approximately 30 M.P.H. Turn main adjusting needle valve in or clockwise until engine begins to slow down for want of fuel. Then slowly turn adjusting handle out or counter-clockwise until engine runs smoothly. The correct setting should be approximately ⅛-¼ turn from the first position. This adjustment should be made slowly and needle valve should not be opened beyond the point where smooth running and power is secured in order to assure maximum economy.



IDLING (LOW SPEED) ADJUSTMENT:—With engine running, close throttle and adjust throttle lever stop screw so that idling speed is somewhat faster than normal. Turn idling adjustment screw in or clockwise until engine begins to miss, then turn screw slowly out or counter-clockwise until engine fires smoothly. Adjusting screw controls fuel mixture and should be turned in for leaner mixture and out for richer mixture. After completing adjustment, adjust throttle lever stop screw to secure correct idling speed.

CHOKE CONTROL:—Choke valve is held in place on choke valve shaft by a spring which allows choke valve to open slightly when engine begins to fire, preventing over-choking. Adjust choke linkage so that choke valve is closed (engine not running) when choke control button on instrument panel is pulled all the way out and wide open with control button pushed in.

1935 CARBURETION INDEX

*—Refers to page number in 1934 Carburetion Section.
†—Refers to page number in latest edition of Manual.

A.C. FUEL PUMP

TYPES R AND W—WITH OIL SEALS

TYPE R—LEATHER OIL SEAL

DESCRIPTION:—This pump differs from other Type R pumps only in that an Oil Seal is assembled on the lower end of the pull rod below the diaphragm. The Oil Seal assembly consists of an upper retainer (with a flange at its lower end serving as lower seat for the driving spring), two leather oil seal washers, and a lower retainer. The entire assembly is locked in place on the pull rod stem by the shoulder on the lower end of the pull rod and rests on the pump boss in the pump body (see illustration). The operation of the pump is entirely similar to other Type R pumps.

SERVICING:—Trouble Shooting and servicing for this pump are the same as for other Type R pumps except for the special directions given below for the removal of the diaphragm assembly, assembling of oil seal on the pull rod, and replacing of diaphragm assembly in the pump.

To Remove Diaphragm Assembly from Pump:—Use special tool #1521556, which is designed to free lower retainer from boss on pump body (if this tool is not used, it will be necessary to remove rocker arm pin in order to free pull rod from rocker arm linkage). To remove diaphragm assembly (with pump cover or upper body removed), invert pump body, force edge of special tool under edge or flange of upper oil seal retainer, pry on tool to move flange on retainer up onto top edge of pump boss. Hold pump link against upper stop by wedging a screwdriver between the link and the bottom of the pump body, push down on diaphragm and away from end of link. This will unhook the pull rod from the link and diaphragm assembly can then be removed. Diaphragm assembly should be replaced as a unit (see directions below for assembly of oil seal on pull rod).

To Assemble Oil Seal on Diaphragm Assembly:—Place driving spring (E) in position on pull rod against lower diaphragm protector, place upper oil seal retainer in position on lower end of driving spring with cupped portion within spring, compress spring by pressing on oil seal retainer until retainer is below shoulder on pull rod, then rotate retainer ¼ turn so that it is locked in place. Force two leather oil seal washers down on pull rod stem until they rest against upper retainer, assemble lower retainer below washers and lock in place by rotating ¼ turn. The complete assembly is then ready to be installed in the pump.

To Install Diaphragm Assembly in Pump:—Invert the pump body, hold link against upper stop by wedging screwdriver between link and bottom of pump body, insert diaphragm assembly in pump body, tilting assembly so that flange on upper oil seal retainer rests on top edge of pump boss and pull rod clears end of link (see illustration). Press down on diaphragm assembly and hook pull rod over end of link, then push diaphragm back into vertical position and center in pump body so that oil seal retainer snaps into place around pump boss. The upper pump body can then be put in place and the screws installed.

TYPE W—LEATHER OR RUBBER OIL SEAL

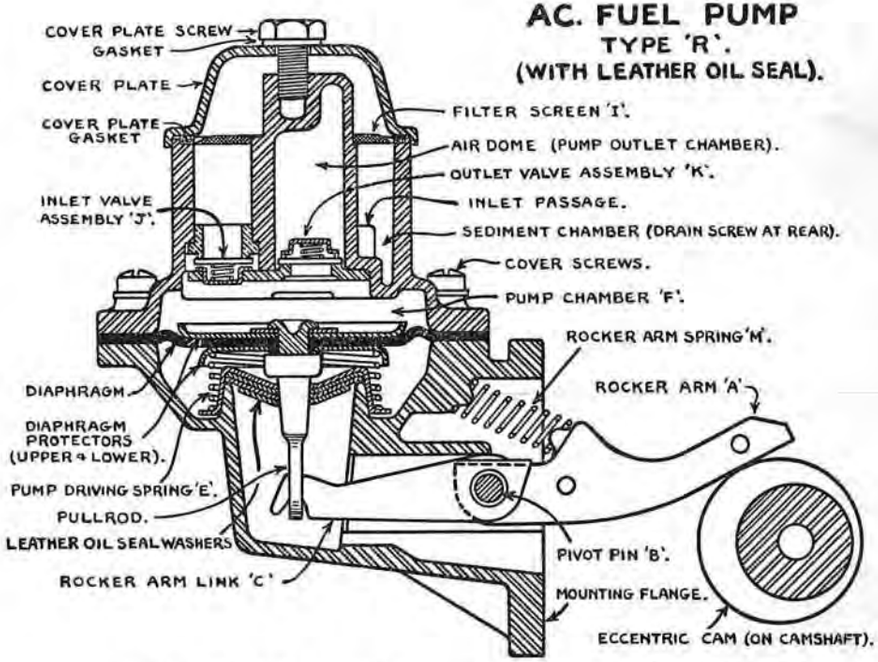
NOTE:—The Type W pumps are assembled from parts as listed below:

Body (including Linkage) .....Type R
Top Cover Assembly .....Type B

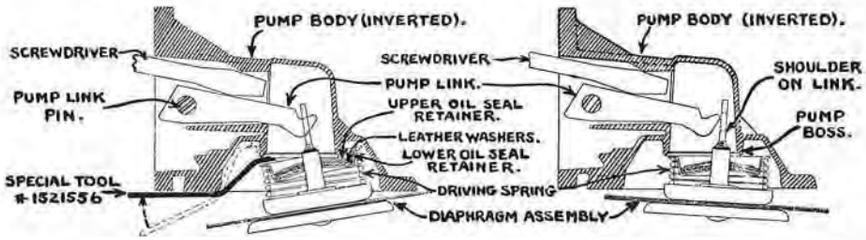
See previous articles on these types for complete service data and description of the design and operation of these pumps. Oil seal design differs from that used on Type R pumps and is described below.

OIL SEALS:—Both leather and rubber oil seal washers have been used on these pumps. On pumps with leather oil seal washers, the upper oil seal washer retainer is held in place by a separate spring assembled above the retainer and below the lower diaphragm protector. Assemble the oil seal as follows:

With the diaphragm assembly inverted, place the retainer spring over the pullrod, so that it rests on the lower diaphragm protector, then assemble following parts in order: (1) upper oil seal washer retainer with concave side toward spring (cupped portion away from spring), (2) two leather oil seal washers, (3) lower retainer with concave side toward leather seals. Install diaphragm and oil seal assembly in pump as directed for Type R above.



REMOVING DIAPHRAGM ASSEMBLY. INSTALLING DIAPHRAGM ASSEMBLY.



DELCO-REMY AUTOMATIC CARBURETOR CONTROLS

ONE, TWO, AND THREE CYLINDER TYPES

MODEL 492-C SINGLE CYLINDER TYPE

DESCRIPTION:—This device is an automatic choke designed to choke the carburetor for cold starting and to control the choking action during the warming up period. It is similar to previous designs except that the accelerating feature is omitted (accelerating piston on two cylinder types, or accelerating piston and floating piston on three cylinder types) and the single cylinder contains the spring-loaded bellows mechanism. The accelerating feature is taken care of in the carburetor design. The choking action is controlled by a thermostatic spring coil linked to the operating lever with the opposite end of the spring coil linked to the bellows, as in previous designs.

OPERATION:—As the engine cools off the thermostatic spring coil tends to wind up, rotating the shaft and operating lever, so that the choke valve is fully closed at a temperature of 55°F. The choke valve is thus in the correct position for cold starting. When the engine begins to fire the manifold vacuum tends to collapse the bellows, rotating the end of the thermostatic spring coil, so as to release the tension of the spring and allow the choke valve to open partially. As the engine warms up, the thermostatic spring coil unwinds until the choke valve is fully open with the engine at normal running temperature. The choke does not operate again until the engine is stopped and allowed to cool off.

TROUBLE SHOOTING:—If the action of the Carburetor Control is not satisfactory, check the following points:

Binding—Disconnect control rod (link connecting operating lever and choke valve lever) at operating lever and move rod up and down to see that choke valve operates freely without binding at any point. On carburetors with auxiliary fly or split choke valves see that the spring controlled fly moves freely. Operate automatic choke by hand and see that lever moves freely and returns to initial position when released. All moving parts should be free and clean. Do not oil any part of the Automatic Choke.

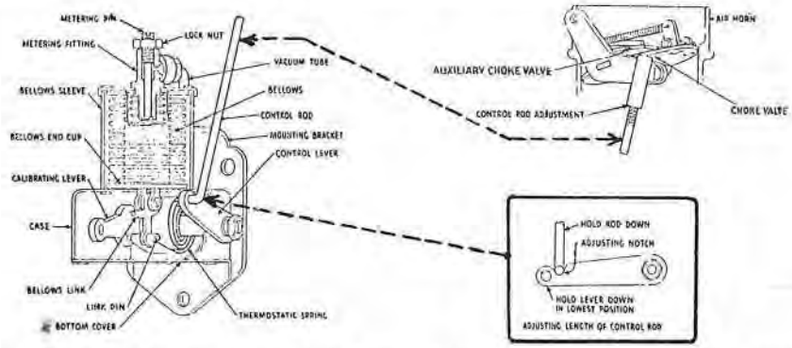
Control Rod Adjustment—Hold automatic choke operating lever and choke valve lever down at end of stroke (choke valve will be closed) and check length of control rod. Lower end of rod should fit in adjusting notch on upper face of operating lever. Adjust by turning rod in or out of socket at upper end. Starting mixture will be too rich if rod is too long, or too lean if rod is too short.

Manifold Leaks—See that mounting screws are tight. Examine gasket between mounting flange and manifold. Use new gasket whenever automatic choke is removed from engine. Shellac or any other gasket compound must not be used on this gasket.

Improper Choking or Flooding—If carburetor floods while checking automatic choke action, open choke valve by hand and crank engine to correct this condition. Then start engine and note operating lever action when engine begins to fire. Lever should travel 5/16″ up in 12-15 seconds time to partially open choke valve and prevent overchoking. Incorrect bellows or lever travel may be caused by incorrect bellows travel setting, vacuum leak at mounting flange, leaky bellows, or obstruction in vacuum passage. See Servicing directions below.

ADJUSTMENT:—Bellows travel and timing can be checked on the bench by connecting to the windshield wiper connection on the engine and operating engine at idling speed. In any event the vacuum source should be equivalet to a vacuum of 15-20″ of mercury. Check movement of operating lever and time required for this travel when vacuum is applied. Lever should move 5/16″ upward in 12-15 seconds (this is not total lever movement). To adjust, loosen locknut on metering pin and turn pin in (clockwise) to increase time or out (counter-clockwise) to decrease time. Tighten locknut after completing adjustment. If no lever travel is observed, remove and examine metering pin. With metering pin out and vacuum source connected to automatic choke, close metering pin hole momentarily and note bellows action. Bellows should collapse and move lever up rapidly. If bellows action is correct, metering pin orifice was probably clogged and metering pin should be reseated as directed below. If no bellows action is observed, bellows are leaky and should be replaced as directed below. A leak too small to be detected by this test may be checked by noting length of time required for lever to drop after vacuum is cut off. This test should be made with metering pin in place and properly timed (12-15 seconds for 5/16″ travel of lever). When vacuum is cut off, lever should require not less than 30 seconds to return to original position at bottom of stroke.

SERVICING:—Metering Pin and Orifice—If metering pin is found to be gummed or dirty when removed, clean in alcohol. The tapered hole or metering pin orifice can be cleaned with a #000 taper pin reamer (use reamer carefully and remove only dirt or gum—do not enlarge hole or remove any metal), or a tool can be made by grinding the threads off the end of a regular metering pin so that a rotating or wiping action can be secured. The pin should be dipped in alcohol and then turned in the orifice. This should be repeated until all dirt has been removed. Bellows travel must be retimed when automatic choke is reassembled and installed on the engine.



Replacing Bellows—Bend back small ears at lower end of choke case and remove bottom cover. Take out small 'hairpin' retainer on upper link pin coupling bellows end bracket and link, withdraw pin. Unscrew tube compression nut on metering pin fitting. Bend back three ears on cover at top of choke case, lift off bellows and cover assembly. When new bellows are installed see that bellows end cup rests against support plate below bellows when fully extended. Bellows travel is not adjustable. Do not disassemble choke unnecessarily to avoid damaging ears holding top and bottom covers. Do not stretch or compress bellows.

Thermostatic Spring and Shaft Assembly—It should not be necessary to disturb thermostatic spring coil assembly. To remove, unscrew nut on end of shaft at operating lever, remove bearing bushing through case by pulling off retainer spring within case. Assembly can then be removed. Extreme care should be taken if link pin in end of thermostatic coil is removed not to distort spring or change relative position of spring and calibrating lever.

MODELS 498-C, D, E, F, G TWO & THREE CYLINDER TYPES

These Carburetor Controls are used on current car models as follows:

Car Model	Carburetor Control	Control Type
Buick Model 40	498-D, E, F	Two Cylinder
Buick Models 50, 60, 90	498-C	Three Cylinder
Oldsmobile Model L-35	498-G	Two Cylinder

SERVICING AND ADJUSTMENT:—See previous article on Models 498-C (three cylinder type), and Model 498-D (two cylinder type) for complete description, illustration, and servicing instructions.

STROMBERG AUTOMATIC CHOKE

WITH INTEGRAL FAST IDLE ON EX-23 AND EE-23 CARBURETORS

DESCRIPTION:—This type Automatic Choke and Fast Idle is similar in design to the type used previously on these carburetor models (thermostatic spring coil mounted on manifold, vacuum piston built in carburetor throttle valve body, fast idle cam on carburetor serving as stop for throttle valve lever fast idle screw) except that the thermostatic spring coil lever stop-plate is not used. A small stop lug integral with the pointer plate lockscrew is provided and this serves as a stop for the lever in the fully closed position.

OPERATION:—The thermostatic spring coil lever is linked directly to the choke valve lever by a rod. A second rod links the choke valve lever with the fast idle cam so that the cam is rotated as the choke valve opens and closes. The thermostatic spring is designed to completely close the choke valve at 70°F. This action does not take place until the throttle valve is opened to the 20 M.P.H. position, lifting the fast idle screw off the low or hot idle portion of the cam and allowing the cam to be rotated to the fast idle position as the choke valve closes. Choke valve is offset and is not locked in position while the engine is being cranked. As soon as the engine begins to fire and vacuum is built up in the manifold, the vacuum piston is drawn down, opening the choke valve slightly and rotating the fast idle cam to the second or intermediate idle position. As the engine warms up, the tension of the thermostatic spring decreases, allowing the offset choke valve to open fully and rotate the fast idle cam to the low or hot idling position.

Choke Opening to Correct Flooding—The choke valve can be opened manually to correct a flooded carburetor by opening the throttle valve wide open. In this position the cam on the end of the throttle lever contacts the ear on the fast idle lever, rotating the lever and opening the choke valve.

ADJUSTMENT:—Slow Idle Screw. The hot or slow idling speed is controlled by the throttle stopscrew (see Carburetor Adjustment). This adjustment should be made only when the engine is warm with the fast idle screw resting on the low or slow idle portion of the fast idle cam. Standard settings for these models are 1 turn (Graham), ½ turn (La Salle), ¾ turn (Studebaker) from the closed throttle position.

Fast Idle Screw. On some models a separate screw is used to control the fast idle speed. This screw should be set at ½ turn or .010" clearance between screw and low idle (small diameter) step of fast idle cam with throttle valve closed on La Salle, or turned in to provide a throttle opening of .016-.020" on Packard.

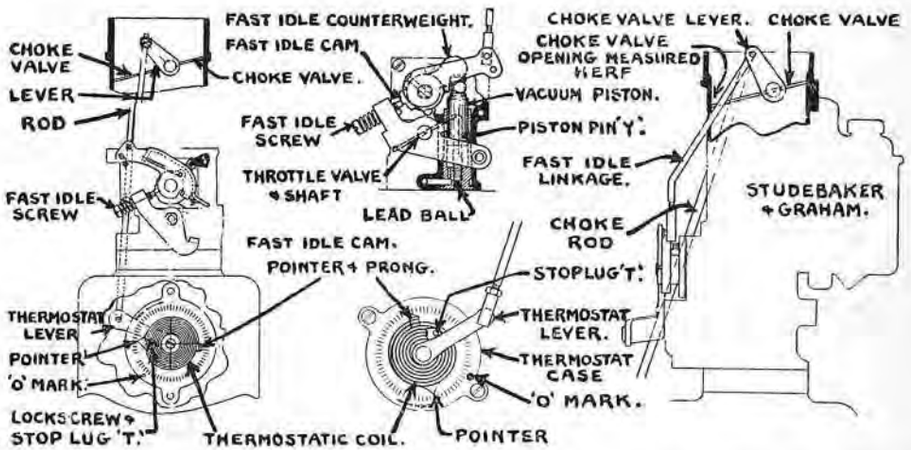
Choke Rod Linkage. The rod connecting the thermostatic spring coil lever and the choke valve lever should be adjusted so the choke valve is fully closed with the thermostat lever against the stop lug (T).

Fast Idle Linkage. The rod connecting the choke valve lever and the fast idle lever should be adjusted so that the choke valve is open 27/64" (EX-23), 5/16" (EE-23) with the vacuum piston down at the end of its stroke so that the fast idle screw rests on the middle step or intermediate idle position of the fast idle cam (see Vacuum Piston Servicing below). Choke valve opening should be checked on the long side of the valve (offset mounting) and can be measured by passing a drill rod of the correct size between the edge of the valve and the carburetor wall.

THERMOSTATIC SPRING:—To check the thermostatic spring, remove unit from manifold, allow unit to stand until it has cooled off or warmed up to room temperature (70°F). Temperature can be checked with an accurate thermometer held near the thermostat. Tests should be made at 70° as thermostat spring changes one notch for each 5° above or below 70°. Unhook end of thermostat coil from prong on pointer plate, loosen pointer plate lockscrew (T), revolve pointer until it is opposite '0' on scale, see that lever is against stop lug (T), note position of thermostat spring hook. If hook is flush with prong, thermostatic spring tension is correct and can be reset as directed below. If hook is not flush with prong, indicating that thermostat has a permanent 'set', thermostatic coil should be recalibrated (see Servicing paragraph below). Thermostatic coils which have been deformed by rough handling should be replaced.

Setting—After completing tests (above), engage coil hook on prong, revolve pointer to rich or lean side of scale the correct number of notches for each car model as indicated in table below, tighten lockscrew (T), replace thermostat on manifold, connect choke valve rod, adjusting rod so that choke valve is fully closed with thermostatic spring coil lever against the stop (T).

Car Model	Carburetor Model	Thermostat Setting
Graham Model 73	EX-23	17 notches rich
La Salle Model 50	EE-23	6 notches rich
Packard Model 1200, 1, 2, 3, 4, 5	EE-23	11 notches rich
Studebaker Dictator	EX-23	10 notches rich



SERVICING:—Recalibrating Thermostatic Coil. If thermostatic coil hook is not flush with prong at 70°F with pointer set at '0' on scale and lever against stop, loosen pointer plate lockscrew (T), revolve pointer plate and prong until prong and hook are flush, tighten lockscrew, stamp a new '0' mark on the case opposite the pointer. Obliterate the old '0' mark and proceed with the setting, using the new '0' mark as the reference point.

Vacuum Piston. Vacuum piston stroke is regulated by pin (Y) mounted on vacuum piston sleeve within the piston. If pin or sleeve are replaced, piston stroke should be regulated by turning pin up or down until choke valve opening (measured on the long side of the valve) is 27/64" (EX-23), 5/16" (EE-23) with the piston down against the pin. The pin setting should be sealed by a lead ball inserted in the pin hole below the pin. See Fast Idle Linkage adjustment above.

WITH INTEGRAL FAST IDLE ON EE-14 CARBURETORS

DESCRIPTION:—This type Automatic Choke and Fast Idle employs a thermostatic spring coil mounted on the manifold and a vacuum piston built in the throttle valve body. The Fast Idle consists of a fuel channel and by-pass passage around the throttle valve controlled by the vacuum piston. The entire fast idle mechanism is located within the carburetor body and no adjustment is required.

OPERATION:—Thermostatic spring coil lever is linked directly to choke valve lever and is designed to completely close the choke valve at 70°F. Choke valve is offset and is not locked while the engine is being cranked. The vacuum piston is linked to the choke valve through the arm (C) so that the piston will be lifted to the top of its stroke when the choke valve is closed, uncovering the fuel cross-channel and opening the by-pass passage. The increased fuel discharge through this by-pass passage provides the fast idle with closed throttle. When the engine begins to fire, the vacuum built up in the manifold pulls the vacuum piston down (part stroke only) until the air vent in the piston is uncovered, relieving the vacuum and stopping the piston. In this position the choke valve is opened slightly but the by-pass and fuel channel remain open so that the fast idle remains operative during the warming up period. As the engine warms up, the thermostatic spring tension decreases, allowing the choke valve to open and the vacuum piston to complete its stroke, closing off the fuel channel and by-pass passage. The engine then idles at the hot or slow idling speed controlled by the throttle valve stopscrew and fuel is supplied by the regular idling system.

SISSON AUTOMATIC CHOKE

STANDARD OR OPTIONAL EQUIPMENT ON CHRYSLER, DE SOTO, DODGE, PLYMOUTH

DESCRIPTION:—Two types are being used on current car models as follows:

Oval Type

Chrysler Airstream Six C-6, Eight CZ, Airflow Eight C-1.
De Soto Airstream Six SF, Airflow Six SG.
Dodge Model DU.
Plymouth Standard and Deluxe PJ (Special Equipment).

Oblong Type

Chrysler Airflow Imperial C-2, Custom Imperial C-3.
Chrysler Airflow Custom Imperial (150 H.P.), Model CW*.

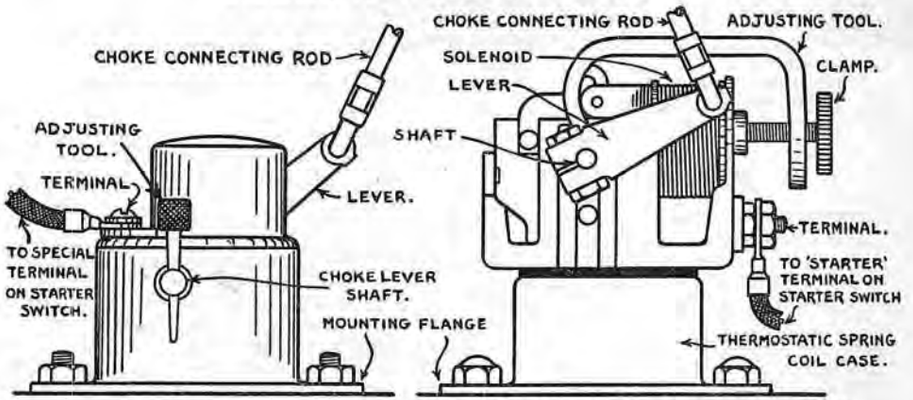
These models are entirely similar in design and operation but are adjusted differently (see instructions below). The design is similar to that of previous Sisson models and employs a solenoid coil (to close choke valve when starter is operated with engine cold) and a thermostatic spring (to control choking action during warming up period). The terminal on the top or side of the choke case is connected to the starter side of the starting switch and in most cases a Choke Release Switch is connected in this lead. The switch can be operated to cut out the choke action if the carburetor becomes flooded so that the engine can be cranked with the choke valve open.

OPERATION:—When the starter is operated to crank the engine, the automatic choke solenoid is energized, attracting the armature, and rotating the choke lever, which is attached to the choke valve lever through a control rod so that the choke valve is closed if the engine is cold. When the engine is warm this armature movement does not take place and no choking action results. When the engine begins to fire and the starting switch is opened, the solenoid circuit is broken. The choke lever is then controlled entirely by the thermostatic spring within the choke case and this tends to rotate the lever and open the choke valve as the engine warms up. With the engine at normal operating temperatures, the choke valve will be entirely open.

ADJUSTMENT:—Oval Type—Remove air cleaner so that position of choke valve can be noted. Insert special adjusting tool (obtainable from Pierce Governor Co., Anderson, Ind.), or #42 wire drill in hole in choke valve shaft (opposite end from lever), operate choke by hand to close choke valve until adjusting tool engages slot in choke housing. This will lock choke mechanism in closed position. Then loosen clamp screw on shaft end of choke lever, lift up on lever until carburetor choke valve is entirely closed. Hold lever in this position and tighten clampscrew. Remove adjusting tool and test to see that there is no backlash or play between choke lever and choke valve. These chokes are shipped from the factory with a cotter pin in the adjusting hole. The cotter pin must be removed when the choke is installed on the engine and the adjustment tested as above.

Oblong Type—Take off automatic choke cover, remove air cleaner so that position of choke valve can be checked. Clamp special adjusting tool (obtainable from Pierce Governor Co., Anderson, Ind.) in place on choke so that end of tool enters and lines up the holes in the armature and magnet core. This will lock choke in closed position. Then loosen clamp screw on shaft end of operating lever, press down on lever until carburetor choke valve is fully closed, tighten clampscrew. Remove adjusting tool and see that there is no backlash or play between automatic choke lever and carburetor choke valve. Replace air cleaner and choke cover and check to see that choke mechanism operates freely without binding or striking these parts.

SISSON AUTOMATIC CHOKE.



OVAL TYPE. OBLONG TYPE (COVER REMOVED).

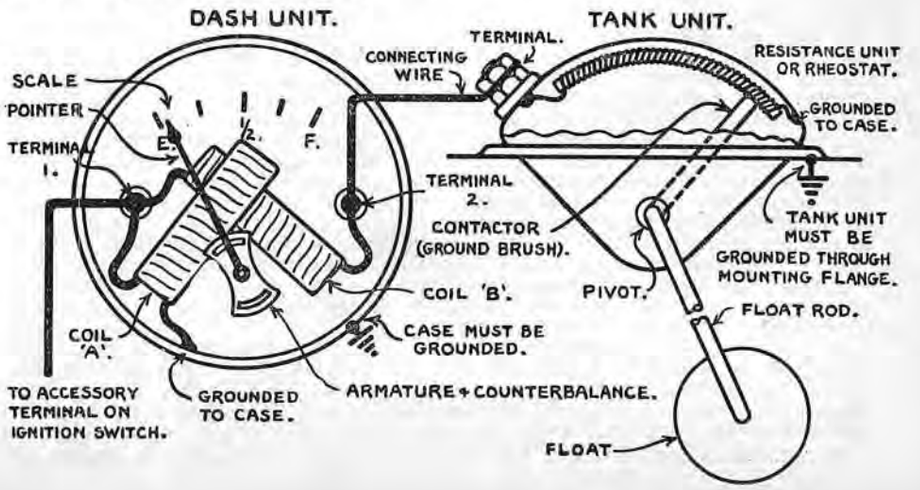
INSTALLATION (PLYMOUTH):—A mounting pad is provided on the exhaust manifold for the automatic choke. Position choke on mounting pad with operating lever pointing toward carburetor, drill two 3/16" holes in line with mounting holes in base flange, tap with ¼x20 USS. tap, use studs furnished to mount choke on manifold. Take off all hand choke linkage, replace with control rod linking choke valve lever and choke operating lever. Connect terminal on choke case to special terminal on side of switch case on starter (do not connect to battery side of starting switch). On cars where this terminal is not provided, remove starter switch, mount pad on end of cable under switch with copper strip against starter terminal post and solder in place.

STEWART ELECTRIC GASOLINE GAUGE

DESCRIPTION:—This is an electric gauge of the 'balanced' coil type and consists of a dash unit or recording device and a tank unit or measuring device. The two units are connected by an insulated wire and each unit is grounded. The feed wire on the dash unit is connected to the accessory terminal of the ignition switch (or coil side of switch) so that the gauge is operative only with the ignition turned 'on'.

OPERATION:—The two coils in the dash unit are connected in parallel to the switch terminal (1) on the gauge case. Coil (A) is grounded to the gauge case so that the current flow through this coil is constant. The other end of coil (B) is connected to the tank terminal on the gauge case so that the coil is in series with the resistance unit in the tank unit. The resistance unit is grounded through the contactor on the upper end of the gasoline tank float rod so that the resistance is cut in or out of the coil (B) circuit as the float rises and falls.

When the gasoline tank is empty (float in lowest position) all of the resistance coil in the tank unit will be in coil (B) circuit so that the current flow through coil (B) will be less than that through coil (A). This causes the dash unit armature to swing toward coil (A) so that the pointer (mounted on the armature) will be opposite the 'E' or empty end of the dial. As the float rises, the contactor cuts the resistance out of the coil (B) circuit so that when the tank is full, the resistance is entirely cut out and



FAST IDLE & THROTTLE CRACKING ADJUSTMENTS

DESCRIPTION:—Fast idle and throttle cracking devices are used on a number of the 1935 car models. Fast Idles consist of attachments on the carburetor which hold the throttle valve open slightly so that the engine operates at a higher or 'cold idle' speed during the warming up period, and decreases to the slow or 'hot idle' speed when the engine warms up, or when the choke valve is opened. Throttle Cracking devices consist of a linkage between the carburetor throttle valve and choke valve so that the throttle is opened when the carburetor is choked for starting, or a linkage between the throttle valve and the starting pedal so that the throttle is opened while the starter is being operated to crank the engine.

OPERATION:—Auburn Model 651 Carter Carburetor. Throttle and choke valves interconnected so that throttle is opened .031-.035″ when carburetor is choked for starting. No adjustment required.

Auburn Model 851. Stromberg lever type fast idle (throttle stopscrew stop plate linked to choke valve). No adjustment required.

Buick Models 40, 50, 60, 90. Fast Idle—Buick Cold Idle Control (thermostatically controlled cam which serves as throttle stopscrew stop). See separate article for description and setting.

Throttle Cracking—Accelerator pedal control of starting switch. Vacuum switch or accelerator linkage adjustment as follows:

Buick Model 34-40. Warm up engine (water temperature should be 140°F.). Close hand throttle (push button in), check idling speed, adjust to correct 'hot' or slow idling speed of 8 M.P.H. Check accelerator pedal position (distance from top of pedal to floor should be 2 29/32″—adjust by changing length of pedal rod). Rotate 'fast' or cold idle control cam on carburetor counterclockwise until it is against the stop, see that cam remains in this position while vacuum switch adjustment is being made. Disconnect vacuum switch operating rod at vacuum switch, rotate switch lever until pointer lines up with line on case marked 'Fast Idle', adjust rod length so that it can be connected to switch lever without disturbing position of lever. Check operation of starter and see that gap between idle adjustment screw and throttle opening cam on carburetor is at least 7/32″ at the instant when vacuum switch makes contact and operates starting motor.

Buick Models 34-50, 60, 90. Warm up engine (water temperature should be 140°F.). Check idling speed, adjust to correct 'hot' or slow idling speed of 8 M.P.H. See that throttle rod shoulder is screwed up as close as possible to the trunnion on the throttle valve lever, check accelerator pedal position. Distance from top of accelerator pedal to floor should be 4⅛″ (50), 4⅜″ (60), 4⅝″ (90). Adjust by disconnecting accelerator pedal rod and changing position of trunnion on lower end. Rotate cold idle control cam clockwise by hand until it is against the stop, see that cam remains in this position while vacuum switch adjustment is being made. Take out cotter pin in lower end of vacuum switch lever operating rod, turn switch lever so that pointer lines up with line marked 'Fast Idle' on switch case, adjust rod length by turning rod in or out of switch lever trunnion until lower end of rod can be inserted in hole in lower bell crank without disturbing position of switch lever. Check operation of starter and see that gap between idler adjustment screw and throttle opening cam is at least 3/32″ at the instant when vacuum switch makes contact and operates starting motor.

Chrysler Airstream Model C6. Fast Idle—Throttle stopscrew dog (stop cam which is pivoted below throttle valve) linked to choke valve so that throttle is opened to fast idle position with choke valve more than half closed. No adjustment required.

Throttle Cracking—Adjusted by shortening or lengthening rod connecting starting pedal and throttle cross shaft so that throttle valve is opened 1/4-1/3 with starter cranking engine.

Chrysler Airstream Eight CZ. Throttle and choke valves interconnected so that throttle is opened to fast idle position with choke valve more than half closed. No adjustment required.

Throttle Cracking—Design and adjustment same as Chrysler C6.

Chrysler Airflow Eight C1. Fast Idle—Throttle and choke valves interconnected so that throttle is opened to fast idle position with choke valve more than half closed. No adjustment required.

Chrysler Imperial C2, Custom Imperial C3, CW* (150 H.P.). Fast Idle—Stromberg type (see separate article). Setting should be 2 turns of the fast idle adjusting screw, providing a throttle opening of .016-.020″ with the throttle stopscrew (slow idle speed adjustment) backed off so as to be inoperative. Throttle stopscrew must be reset for slow or hot idling speed of 6 M.P.H.

DeSoto Airstream SF, Airflow SG. Same as for Chrysler C6.

Throttle Cracking (SF only)—Same as for Chrysler C6.

Dodge Model DU. Fast Idle—Throttle and choke valves interconnected so that throttle is opened to fast idle position with choke valve more than half closed. No adjustment required.

Throttle Cracking—Starting pedal and throttle cross shaft interconnected. Adjustment same as for De Soto SF above.

Ford V8 Model. Fast Idle—Stromberg. Special design with throttle stopscrew mounted on pivoted lever connected to choke valve lever. No adjustment required other than regular idling speed adjustment.

Graham Six Model 74. Throttle Cracking—Consists of lever and adjusting screw (kicker screw) pivoted on throttle valve shaft and linked to choke valve lever. Adjusting screw contacts ear on throttle valve lever and holds throttle open with choke valve closed. To adjust, hold choke valve closed, turn adjusting screw in or out until throttle opening is .073″ (check by passing #49 drill between edge of throttle valve and carburetor wall).

Graham Special Six Model 73. Fast Idle—Integral with automatic choke. See article on Automatic Choke and Fast Idle on Model EX-23 Carburetor.

Graham Eight Model 72. Fast Idle—Integral with automatic choke. See article on Automatic Choke and Fast Idle on Model EE-14 Carburetor. Starting motor (solenoid pinion shift type) is controlled by accelerator pedal so that throttle is opened while starter is cranking engine.

Graham Supercharged Model 75. Throttle Cracking—Design and adjustment same as for Model 74 except that throttle opening should be checked with #52 drill (go) and #48 drill (no go). Throttle opening while cranking is same as for Model 72 (accelerator pedal operation of starting control).

Hudson Six GH, Eight HT, HU, HHU. Fast Idle—Carter drop-bar type. Consists of bar linked to choke lever which drops down behind throttle lever stopscrew so that throttle is held open in fast idling position while choke is operative. No adjustment required.

La Salle Model 50 (Early 1935). Fast Idle—Integral with Automatic Choke. See article on Automatic Choke and Fast Idle on Model EE-23 Carburetor.

La Salle Model 35-50 (Late 1935). Fast Idle—Integral with Automatic Choke. See article on Automatic Choke and Fast Idle on Model EE-15 Carburetor.

Oldsmobile Six F-35, Eight L-35. Fast Idle—Stromberg type. See special article. Linkage should be adjusted so that clearance between top edge of throttle stopscrew and notch on intermediate step of fast idle cam should be 1/16″ with choke valve wide open.

Throttle Cracking—Starting pedal lever and throttle cross shaft interconnected so that throttle is opened to provide 1/16″ clearance between throttle stopscrew and high lobe of fast idle cam. This clearance is nectssary to allow automatic choke mechanism to close choke valve and revolve fast idle cam to fast idle position. To adjust, loosen capscrew on throttle cross shaft lever, shift lever until clearance between lever and pin on starting pedal lever is ¼″, tighten capscrew. Check to see that this setting provides 1/16″ clearance between throttle stopscrew and high lobe of fast idle cam.

Packard Model 120. Fast Idle—Integral with Automatic Choke. See article on Automatic Choke and Fast Idle on Model EE-14 Carburetor.

Packard Eight 1200, 1201, 1202; Super Eight 1203, 1204, 1205. Fast Idle—Integral with Automatic Choke. See article on Automatic Choke and Fast Idle used on Model EE-23 Carburetor.

Packard Twelve 1207, 1208. Fast Idle—Stromberg type (see separate article). Setting should be 6¾ turns of the fast idle screw with the throttle stopscrew (slow idle speed adjustment) backed off so as to be inoperative. Throttle stopscrew should be set for 8 M.P.H. idling speed after adjustment

Pierce Arrow Eight 845, Twelve 1245, 55. Fast Idle—Stromberg type (see separate article). Setting should be 1⅛ turns (845), ¾ turn (1245, 55) turns of the fast idling screw from throttle closed position with throttle stopscrew (hot or slow idling speed adjusting screw) backed off so as to be inoperative. Throttle stopscrew must be set for hot idling speed of 38 (37-39) explosions per 15 seconds after adjustment is completed.

Plymouth Standard & DeLuxe PJ. Fast Idle and Throttle Cracking adjustments same as for Chrysler C6.

CARTER CARBURETORS

307-S—AUBURN, MODEL 651 FIRST 3036 CARS (1935).
284-S—CHEVROLET, STD. MODEL EC, MASTER MODELS EA, ED (1935).
284-S—CHEVROLET, COMMERCIAL MODEL EB, TRUCKS MODEL Q (1935).
321-S—CHEVROLET, FLEET MODEL (1935).
X 309-S—HUDSON SIX, MODEL GH (1935).
X 310-S—HUDSON EIGHT, MODELS HT, HU, HHU (1935).
316-S—HUPMOBILE, AERODYNAMIC SIX MODEL 518-D (1935).
306-S—PONTIAC SIX, MODELS 701A, 701B FIRST CARS (1935).
314-S—PONTIAC SIX, MODELS 701A, 701B AFTER 19,475 CARS (1935).
X 298-S—PONTIAC EIGHT, MODEL 605 FIRST CARS (1935).
X 315-S—PONTIAC EIGHT, MODEL 605 AFTER 11.007 CARS (1935).
311-S—TERRAPLANE STANDARD SIX, MODEL G (1935).
X 309-S—TERRAPLANE DELUXE SIX, MODEL GU (1935).

X These models are fitted with Carter Climatic Control (Automatic Choke) and Fast Idle. Adjustments should not be made until engine has been warmed up so that choke valve is wide open and Fast Idle bar lifted away from throttle stopscrew.

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and economizing device (metering rod). Main nozzle is located at an angle in the upper or primary venturi with a secondary and a main venturi directly below this point in the mixing chamber. Fuel for main nozzle is metered by metering jet and metering rod. Accelerating pump discharges through a pump jet against the wall of the secondary venturi. Idle adjustment and accelerating pump setting are the only points requiring attention.

IDLE ADJUSTMENT:—Needle valve type controlling fuel mixture. Engine must be thoroughly warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle stop screw if necessary to keep engine from stalling (correct idling speed 300 R.P.M. or approximately 5-6 M.P.H.). Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires smoothly. Idling screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct idling settings are as follows:

Car Model	Idling Screw Setting	Idling Speed
Auburn 651	½-1⅛ turns open	360 R.P.M., 6 M.P.H.
Chevrolet, all models	½-1½ turns open	350 R.P.M.
Hudson Six and Eight	⅜-1 turn open	350 R.P.M.
Hupmobile 518-D	⅜-1 turn open	300 R.P.M.
Pontiac Six	½-1 turn open	360 R.P.M., 6 M.P.H.
Pontiac Eight	½-1¼ turns open	350 R.P.M., 6 M.P.H.
Terraplane, all models	⅜-1 turn open	350 R.P.M., 6 M.P.H.

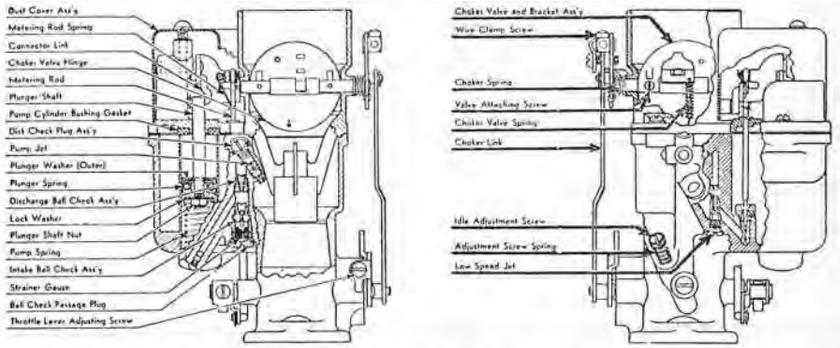
Check idling speed after completing idling adjustment and readjust throttle stop screw if necessary. Do not idle engine below 350 R.P.M. If correct idling adjustment cannot be secured, remove low speed jet tube and clean with compressed air. See that tube is seated airtight in casting at top and bottom. If necessary replace with new tube of same characteristics.

ACCELERATING PUMP:—Pump arm (on countershaft under dust cover) has three holes for engagement of pump plunger connector link to provide varied pump stroke. Medium setting with pin engaged in center hole is correct for ordinary temperature ranges and standard gasoline. Engage pin in inner hole (short pump stroke) for operation in hot climates, high altitudes, or with high test gasoline. Upper hole (long stroke) should be used for extremely cold temperatures. Accelerating pump countershaft should be lubricated at 5000 mile intervals. Take out dust cover screw (on top of cover) and fill threaded hole with a good grade of graphite grease.

METERING ROD (ECONOMIZER):—Fuel is metered by a two or three step metering rod being raised in the metering jet as the throttle is opened, allowing an increased fuel flow through the jet. No adjustment is provided but metering rods can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuel or operating conditions, such as high altitudes. To change metering rod, take off dust cover, take off pin spring, turn rod one-quarter turn to left to disengage pump arm, lift rod out, being careful not to lose disc on rod. Insert new rod (with disc in place), holding rod vertically so that lower end of rod will enter jet in float chamber. Turn rod one-quarter turn to engage pin on pump arm (throttle must be closed). If rod is correctly assembled no difficulty will be experienced in connecting rod to the pin and rod will hang vertically. Replace pin spring and dust cover.

NOTE:—Metering rod setting should be checked whenever carburetor is serviced or when rods are changed. This will require a special gauge (see table below for correct gauge for each carburetor model). To check rod setting, remove dust cover, disengage upper end of throttle connector rod, back off throttle lever adjusting screw so that throttle closes tight, remove metering rod (see above), insert gauge in place of rod so that beveled end is seated in metering rod jet and gauge is held in vertical position. See that metering rod pin rests on top of gauge with throttle closed and upper end of connecting rod centering freely in the hole in the pump arm. If setting is not correct, bend lower end of throttle connector rod so that upper end centers freely in hole. Replace metering rod and dust cover and adjust throttle stop screw for correct idling speed.

Car Model	Carburetor Model	Gauge Part No.	Length
Auburn 651	307-S	T109-20	2.795″
Chevrolet, all	284-S, 321-S	T109-20	2.795″
Hudson, all	309-S, 310-S	T109-20	2.795″
Hupmobile 518-D	316-S	T109-21	2.718″
Pontiac Six	306-S, 314-S	T109-21	2.718″
Pontiac Eight	398-S, 315-S	T109-21	2.718″
Terraplane, all	311-S, 309-S	T109-20	2.795″



ANTI-PERCOLATOR:—This device consists of a vent above the main jet well controlled by a cap linked to the accelerating pump rod so that the vent is opened with the throttle closed to prevent any 'percolating' discharge of fuel through the main jet with the carburetor hot. The setting of the Anti-percolating device should be checked as follows:

Pontiac Six (314-S)—Cap must be off seat (vent open) with throttle closed and must be seated with throttle open slightly beyond idling position (.030″ clearance between edge of throttle valve and carburetor wall). Adjust by bending cap arm slightly up or down.

Pontiac Eight (315-S)—Cap must be off seat (vent open) with throttle closed to idling position and choke valve open sufficiently to raise fast idle bar from behind throttle stopscrew (slow idling position). Cap must be seated with throttle open wide enough to clear fast idle bar (bar will drop behind throttle stopscrew only when engine is cold and automatic choke operating). Adjust by bending cap arm slightly up or down. If cap does not seat properly mixture will be lean at high speeds.

FLOAT LEVEL:—To check float level, take off float bowl cover, remove gasket, invert cover, measure distance from gasket seat (machined surface) on cover to nearest point on float (top when not inverted) at a point opposite the needle valve. Float level can be reset by bending lip of float lever. Correct float level settings are as follows:

Car Model	Carburetor Model	Float Setting
Auburn 651	307-S	⅜″
Chevrolet, all models	284-S, 321-S	⅜″
Hudson, all models	309-S, 310-S	⅜″
Hupmobile 518-D	316-S	⅜″
Pontiac, all models	298-S, 306-S, 314-S, 315-S	⅜″
Terraplane, all models	311-S, 309-S	⅜″

CARTER (B & B) CARBURETORS

E6F1—CHRYSLER, AIRSTREAM SIX MODEL C6 FIRST CARS (1935).
DESOTO, AIRSTREAM MODEL SF FIRST CARS (1935).
DESOTO, AIRFLOW MODEL SG FIRST CARS (1935).
E6F2—CHRYSLER, AIRSTREAM SIX MODEL C6 AFTER 18,268 CARS (1935).
DESOTO, AIRSTREAM MODEL SF AFTER 15,846 CARS (1935).
DESOTO, AIRFLOW MODEL SG AFTER 4,788 CARS (1935).
C6D1—PLYMOUTH, STANDARD & DELUXE MODELS PJ FIRST CARS (1935).
PLYMOUTH, STD. & DELUXE MODELS PJ AFTER 145,872 CARS (1935)1
B6E1—PLYMOUTH, BUSINESS AND FLEET MODEL PJ(E) (1935).
303-S—REO, FLYING CLOUD MODEL 6-A SERIAL NOS. 6A100 TO 251 (1935).
304-S—REO, FLYING CLOUD MODEL 6-A, SERIAL NOS. 6A252 TO 2038 (1935).
320-S—REO, FLYING CLOUD MODEL 6A, SERIAL NOS. 6A2039 UP (1935).

TYPE:—Plain tube downdraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel is metered by main metering screw under float chamber and by power orifice or step-up jet (for high speed or wide open throttle operation with step-up valve open). There are two idling ports, an upper port (above the throttle valve) and a lower port (below valve when throttle is closed) which is controlled by idling adjustment screw. Idle adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type operating on fuel mixture. Engine must be warmed up before adjustment is made. With engine warm and running, close throttle, adjust throttle shaft dog adjusting screw so that engine idles at approximately 300 R.P.M. or 6 M.P.H. Turn idling adjusting screw in or clockwise until engine begins to miss (mixture too lean), then turn screw slowly out or counter-clockwise until engine fires evenly. Adjusting screw controls fuel mixture and should be turned in to secure leaner mixture and out for richer mixture. Correct setting for adjusting screw is shown on table below. Check idling speed after completing adjustment and readjust as necessary. Do not idle engine at less than 300 R.P.M.

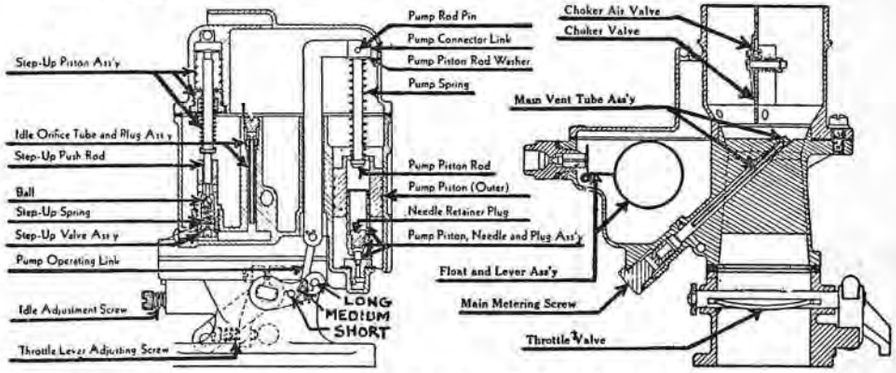
Car Model	Idling Screw Setting	Idling Speed
Chrysler C6	¼-1 turn open	300 R.P.M., 6 M.P.H.
DeSoto SF, SG	¼-1 turn open	300 R.P.M., 6 M.P.H.
Plymouth PJ (C6D1 Carb.)	¼-1 turn open	300 R.P.M., 6 M.P.H.
Plymouth PJ (C6D2 Carb.)	⅛-¾ turn open	300 R.P.M., 6 M.P.H.
Plymouth PJ(E)	¼-1 turn open	300 R.P.M., 6 M.P.H.
Reo 6-A	¼-¾ turn open	300 R.P.M., 6 M.P.H.

NOTE:—If correct idling adjustment cannot be secured, engine stalls while idling, or low speed operation is unsatisfactory, take out idle hole plug and idle adjustment screw and see that ports are not clogged, take out idle passage tube and idle jet tube and clean with compressed air.

ACCELERATING PUMP:—Accelerating pump is connected to throttle shaft lever and discharges fuel through a pump jet located in the venturi when the throttle is opened, supplying the extra fuel required for acceleration. Pump lever on throttle valve shaft has two or three holes for engagement of pump operating link to secure varied pump stroke. Pump operating link pin should be engaged in outer or end hole, providing maximum pump stroke for winter driving or extreme cold temperatures. Pin should be engaged in inner hole, providing minimum pump stroke for summer driving (hot climates), high altitudes, or high test gasoline. Center hole in lever provides an intermediate pump stroke and should be used for normal temperature ranges.

NOTE:—If acceleration is unsatisfactory, check pump setting (above), remove main metering jet and pump jet and clean with compressed air. Pump piston needle and seat assembly in lower part of pump cylinder should also be taken out and cleaned or replaced.

PERFORMANCE AND ECONOMY:—All jets are 'fixed' type (non-adjustable). Main metering screw is flow-tested and rated in accordance with capacity. It should not be gauged for size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixture to compensate for special fuels or operating conditions such as high altitudes (see specifications). If performance and economy are not satisfactory, examine step-up valve cage assembly, see that ball check is free and seats properly, that valve cage is screwed tight against its seat, that step-up push rod moves freely in upper and lower guides, and that step-up piston is not binding Check float level.



FLOAT LEVEL:—To check float level, take off float bowl cover (upper carburetor body casting), remove gasket, hold lip of float lever firmly against needle valve and measure distance from top edge of float bowl to top of float (not soldered seam). Use special gauge Part No. 1522-B (5/64") or 15222 (1/64") to check float level or place a straightedge or metal rule across top of float bowl and measure distance from lower edge of rule to float. Distances should be as follows:

Car Model	Carburetor Model	Float Setting
Chrysler C6	E6F1, E6F2	5/64"
DeSoto SF, SG	E6F1, E6F2	5/64"
Plymouth, all Models	C6D1, C6D2, B6E1	5/64"
Reo 6-A	303-S, 304-S, 320-S	1/64"

Float level can be corrected by bending lip of float lever (not the bracket). To lower float level, bend lip of float lever toward needle valve. To raise float level, bend lip of float lever toward float.

CHOKE:—Choke valve is fitted with poppet type relief valve to prevent overchoking. Choke valve and throttle valve are interconnected so that throttle is opened to 'fast idle' position when choke valve is more than one-half closed. Throttle valve returns to closed position when choke valve is opened.

CARTER (B&B) DOWNDRAFT CARBURETORS

Car Model	Yr.	Carb. No.	Main Metering Screw Standard Flow	Main Metering Screw Standard Part No.	Main Metering Screw 1 Size Lean Less	Main Metering Screw 1 Size Lean Part No.	Main Metering Screw 2 Sizes Lean Less	Main Metering Screw 2 Sizes Lean Part No.	Main Vent Air Bleed Size	Tube Assem. Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Pump Valve Cage Assem. Jet Size	Pump Valve Cage Assem. Part No.
CHRYSLER C6	1935	E6F1	280-284cc.	159-51	—	151-52	—	151-53	.0315"	145-14S	.0374"	162-18	.0276"	123-18S	.0354"	48-44
CHRYSLER C6 Late	1935	E6F2	282-286cc.	159-63S	—	159-59	—	159-51S	.0315"	145-14S	#63	149-43S	.0276"	123-21S	.0354"	48-44
DE SOTO SF,SG	1935	E6F1	280-284cc.	159-51	—	151-52	—	151-52	.0315"	145-14S	.0374"	162-18	.0276"	123-18S	.0354"	48-44
DE SOTO SF,SG Late	1935	E6F2	282-286cc.	159-63S	—	159-59	—	159-51S	.0315"	145-14S	#63	139-43S	.0276"	123-21S	.0354"	48-44
PLYMOUTH PJ	1935	C6D1	262-266cc.	159-48	—	151-49	—	151-50	.0315"	145-14S	#62	162-22	.0276"	123-18S	.0315"	48-39
PLYMOUTH PJ Late	1935	C6D2	262-266cc.	159-56S	—	159-58	—	159-60S	.0315"	145-25S	#65	149-41S	.0276"	123-21S	.0315"	48-39
PLYMOUTH PJ(E)	1935	B6E1	154-158cc.	159-38	—	—	—	—	.0315"	145-18S	.0236"	162-10	.0276"	123-18S	.0276"	48-12
REO 6A	1935	303S	240-244cc.	159-19	—	159-10	—	159-15	.0394"	145-23S	.0335"	162-15	.0276"	123-18S	.0315"	48-39
REO 6A	1935	304S	268-272cc.	159-46	—	159-53	—	159-54	.0315"	145-14S	.0345"	162-17	.0276"	123-14S	.0354"	48-40
REO 6A	1935	320S	268-272cc.	159-46	—	159-53	—	159-54	.0315"	145-14S	.0394"	162-19	.0276"	123-18S	.0315"	48-39

MARVEL CARBURETORS

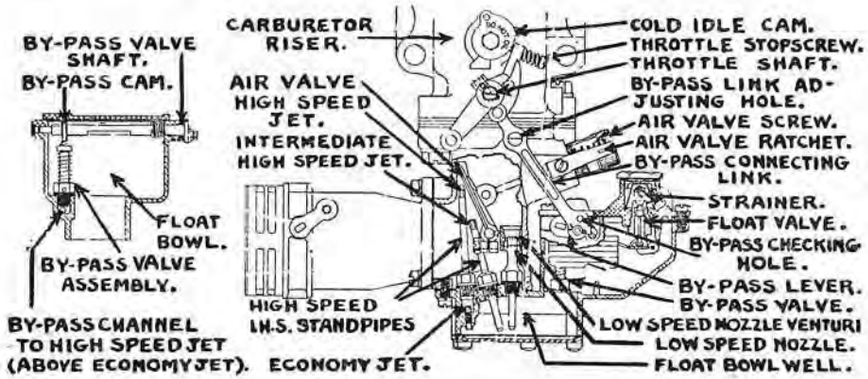
ED1S 10-1577—BUICK, MODEL 50 (1935).
ED2S 10-1579—BUICK, MODEL 60 (1935).
ED3 10-1581—BUICK, MODEL 90 (1935).

Delco-Remy Carburetor Control Model 498-C (Automatic Choke) used on all models. See separate article for complete data on Automatic Choke.

TYPE:—Automatic air valve, updraft, dual type with 'fast idle', throttle operated economizer, and Marvel Heat Control (automatic thermostatic control). Carburetors have independent mixing chambers, jet assemblies, air valves, and throttle valves (throttle valves are mounted on the same shaft and do not require synchronization). Both air valves are controlled by a single dashpot and adjusting screw assembly so that both carburetor barrels are adjusted simultaneously.

All jets are 'fixed' type and non-adjustable. Low speed jet is located in venturi at side of air valve and is fed directly from the float bowl well. High Speed and Intermediate High Speed jets are located directly under air valve and operate when air valve opens. Intermediate high speed jet is fed directly from the float bowl well in the same manner as the low speed jet. High speed jet is fed with fuel metered by Economy Jet located directly below high speed jet standpipe for all intermediate speeds, but additional fuel is by-passed to the high speed jet by the throttle-operated economizer for high speed or full-throttle operation (economizer is normally closed and does not meter fuel for high speed jets as in previous Buick carburetor designs). Adjust idle screw for correct idling speed of 8 M.P.H. See separate article on 'Fast Idle'.

ADJUSTMENT:—Engine must be thoroughly warm when adjustments are made. If necessary, make a preliminary adjustment of air valve screw by turning screw in or out until end of screw is flush with end of ratchet, warm up engine, close throttle, allow engine to idle. Turn air valve adjusting screw to left or counter-clockwise until engine hesitates or misses, indicating that mixture is too lean, then turn screw in or clockwise slowly (three or four notches at a time) until engine runs smoothly. Check adjustment by opening throttle slightly and then snapping it closed. If engine stalls (mixture too lean), turn air screw in or clockwise slightly. If engine rolls (mixture too rich), turn screw out or counter-clockwise slightly.



PERFORMANCE:—If air valve adjustment has been properly made, performance should be satisfactory throughout entire driving range. Jets should be changed only to compensate for high altitudes (permanent operation at elevations greater than 3000 feet). Air valve spring length should be exactly 1½". If air valve spring has been tampered with or length is not 1½", replace spring.

ECONOMIZER:—Economizer consists of a by-pass valve which supplies additional fuel to the high speed jets when the car is operated at high speeds or with wide open throttle (heavy pulling or acceleration). This fuel from the by-pass valve enters the lower end of the high speed jet standpipe directly above the economy jet which meters all fuel for the high speed jet for part-throttle operation when by-pass valve is closed. Economizer is not adjustable and should not require attention except when carburetor is disassembled and by-pass valve cut-in point setting has been lost.

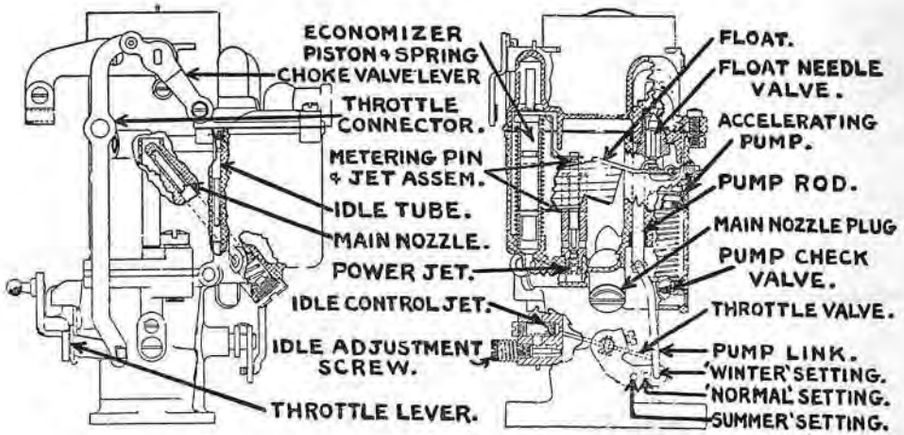
To set cut-in point, disconnect lower end of by-pass valve connecting link, back off idle screw until it is clear of cold idle control cam, move idle screw lever to extreme idle position. Hold the lever in this position, then turn by-pass valve shaft lever counter-clockwise until the cam on the shaft makes contact with the by-pass valve (this point will be felt as the shaft is turned). Hold the by-pass valve shaft lever in this position and adjust length of connecting link by expanding or contracting the shaft at the hole near the upper end until the checking hole in the lower end of the link (directly above regular shaft hole in link) fits freely over small end of by-pass valve shaft lever stud. Then connect the by-pass lever stud in the regular connecting hole on the link and replace the cotter pin. A special tool is available for adjustment of connecting link. With this tool the hole in the link should be expanded at right angles to link axis to shorten the link length, or parallel to the link axis to lengthen the link.

FLOAT LEVEL:—To check float level, take off float cover, invert and measure distance from gasket seat on float cover to top of float cork (bottom when not inverted). This distance should be 1 7/32".

CHOKE:—Choke valve is conventional butterfly type mounted in air horn (off-center pivot) and is controlled by the automatic choke mechanism. See special article on Delco-Remy Carburetor Control Model 498-C.

B 10-1603—LAFAYETTE, SERIES 3510 (1935), 3610 (1935-36).

TYPE:—Plain tube, downdraft type with throttle operated accelerating pump and vacuum economizer or 'step-up device'. All fuel is metered by metering pin and jet and power jet (in lower end of metering jet assembly). Metering pin is controlled by vacuum economizer piston (see Economizer Section below). Fuel for idling is taken from the main nozzle channel up through the idle tube to a cross passage in which the idle air vent jet is located. The fuel mixture is then taken down through a passage and discharged through two ports opposite the throttle edge. The lower idle port (controlled by the idle adjusting needle) supplies all fuel for closed throttle idling, the upper port (above the throttle edge when the throttle is closed) acting as an additional air



bleed. When the throttle is opened slightly the upper port comes into action and all fuel for car speeds up to approximately 18 M.P.H. is supplied by the idle system. The main nozzle comes into action at about 18 M.P.H. and acts in conjunction with the idle system at speeds up to 35 M.P.H. At speeds greater than 35 M.P.H. all fuel is supplied by the main nozzle. Idling adjusting needle and accelerating pump (seasonal setting) are the only points requiring attention.

STROMBERG DOWNDRAFT CARBURETORS

Car Model	Year	Carb. No.	Venturi Size	Main Metering Jet Size	Main Metering Jet Part No.	By-Pass Jet Size	By-Pass Jet Part No.	Main Discharge Jet Size	Main Discharge Jet Part No.	H.S. Bldr.	Idle Tube Size	Idle Tube Part No.	Idle Air Bld. Jet Size	Idle Air Bld. Jet Part No.	Pump Discharge Nozzle Size	Pump Discharge Nozzle Part No.
AUBURN 653	1935	EX-22	1 3/32"	.057"	P-17004	4#56	P-18149	#32	P-20638	#70	#72	P-20821	#52	—	#70	P-18126
AUBURN 851	1935	EE-1	1 1/32"	.050"	P-19442	1#61	P-19724	#36	P-19440	#65	#70	P-19424	#42	—	#60	—
AUBURN Superch. 851	1935	EX-32	1⅜"	.082"	P-17004	4#56	P-18149	#28	P-17167	#70	#68	P-17228	#56	P-15477	#66	P-18126
BUICK 35-40	1935	EE-1	1 1/32"	.049"*	P-19442	1#64	P-19523	#32-36	P-20420	#70	#55-70	P-20419	#54	—	#65	—
CHRYSLER CZ	1935	EX-32	1 5/16"	.067"	P-17004	4#56	P-18126	#28	P-20877	#70	#70	P-17007	#56	P-15477	#64	P-18126
CHRYSLER CZ	1935	EXV-3	1 3/16"	.067"	P-17004	4#53	P-21076†	#28	P-20877	#70	#70	P-17007	#56	P-15477	#68	P-18126
CHRYSLER C-1	1935	EX-32	1 5/16"	.065"	P-17004	4#56	P-18149	#28	P-20877	#70	#70	P-17007	#56	P-15477	#64	P-18126
CHRYSLER C-2, C-3	1935	EE-22	1 3/32"	.053"	P-17004	1#53	P-19481	#28-36	P-19840	#65	#72	P-18264	#46	P-15477	#71	P-18852
CHRYSLER CW*	1935	EE-3	1 3/16"	.058"	P-17004	.060"	P-16965	#30	P-20236	#70	#70	P-19579	#42	P-15477H	#72	P-17454
DODGE DU	1935	EX-22	1 5/32"	.058"	P-17004	4#56	P-18149	#28-36	P-18226	#70	#70	P-17007	#55	P-15477	#65	P-18126
DUESENBERG J	1935	EE-3	1⅜"	.076"	P-17004	.080"	P-16965	#36	P-17015	#65	#70	P-17007	#46	P-15477L	#63	P-17454
FORD V-8	1935	EE-1	1 1/32"	.048"§	P-19442	1#63	P-19447	#36	P-19440	#65	#70	P-19424	#40	—	#60	—
GRAHAM 74	1935	EX-22	1 1/32"	.050"	P-17004	4#56	P-18149	#32	P-19545	#70	#70	P-17007	#60	P-15477	#68	P-18126
GRAHAM 74	1935	EXV-2	1 1/32"	.050"	P-17004	4#53	P-21076‡	#32	P-20228	#70	#70	P-19874	#60	P-15477	—	—
GRAHAM 73	1935	EX-23	1 5/32"	.061"	P-17004	4#56	P-18149	#32	P-20969	#70	#70	P-17007	#54	P-15477	#66	P-18126
GRAHAM 72	1935	EE-14	1 1/32"	.048"	P-19442	1#64	P-19523	#32	P-20940	#70	#55	P-20419	#54	—	#65	—
GRAHAM Superch. 75	1935	EX-32	1 5/16"	.069"	P-17004	4#56	P-18149	#28	P-19798	#70	#70	P-17007	#56	P-15477	#65	P-18126
HUPMOBILE 517-W	1935	EX-32	1 3/16"	.059"	P-17004	4#56	P-18149	#28	P-20886	#70	#70	P-17007	#54	P-15477	#70	P-18126
HUPMOBILE 521-J	1935	EX-32	1 5/16"	.068"	P-17004	4#56	P-18149	#28	P-17005	#70	#70	P-17007	#52	P-15477	#69	P-18126
HUPMOBILE 527-T	1935	EE-22	1 3/32"	.053"	P-17004	4#56	P-18149	#28-36	P-18413	#65	#70	P-17007	#42	P-15477	#74	P-18852
LA SALLE 50	1935	EE-23	1 1/32"	.049"	P-17004	1#63	P-19953	#36	P-18338	#68	#72	P-18264	#42	P-15477	#60	—
LA SALLE 35-50	1935	EE-15	1 1/32"	.050"	P-19442	1#65	P-20467	#32-36	P-20753	#70	#63-55	P-21161	#50	—	—	—
LINCOLN V-12	1935	EE-22	1 3/16"	.058"	P-17004	1#53	P-19481	#28-36	P-19364	#65	#70	P-17007	#46	P-15477	#67	P-18852
NASH 3520	1935	EX-32	1 3/16"	.064"	P-17004	4#56	P-18149	#32	P-20885	#70	#70	P-17007	#50	P-15477	#67	P-18126
NASH 35, 3640	1935	EX-22	1 5/32"	.057"	P-17004	4#56	P-18149	#28-32	P-19702	#70	#70	P-17007	#54	P-15477	#64	P-18126
NASH 3580	1935	EE-22	1 1/32"	.050"	P-17004	4#56	P-18149	#36	P-17969	#70	#70	P-17007	#42	P-15477	#67	P-18852
NASH 3580	1935	EE-1	1 1/32"	.048"	P-19442	1#63	P-19447	#32-36	P-20853	#70	#55-70	P-20419	#54	—	#65	—
OLDSMOBILE F-35	1935	EX-22	1 5/32"	.059"	P-17004	4#56	P-18149	#28-32	P-20748	#70	#68	P-20627	#56	In I. Tube	#66	P-18126
OLDSMOBILE L-35	1935	EE-1	1 1/32"	.049"	P-19442	1#63	P-19447	#32-36	P-20753	#70	#55-68	P-20772	#50	—	#65	—
PACKARD 120	1935	EE-14	1 1/32"	.049"	P-19442	1#62	P-20911	#32-36	P-20753	#70	#55	P-20419	#52	—	#65	—
PACKARD 1200, 1, 2	1935	EE-23	1 3/32"	.052"	P-17004	1#64	P-20823	#28-36	P-19364	#65	#70	P-17007	#42	P-15477	#60	—
PACKARD 1203, 4, 5	1935	EE-23	1 3/16"	.056"	P-17004	1#54	P-20895	#28-36	P-19364	#65	#70	P-17007	#44	P-15477	#60	—
PACKARD 1207, 8	1935	EE-3	1 5/16"	.060"	P-17004	.060"	P-16965	#28	P-20647	#65	#70	P-17007	#44	P-15477L	#62	P-17769
PIERCE ARROW 845	1935	EE-3	1 3/16"	.060"	P-17004	.060"	P-16965	#28	P-18969	#70	#70	P-17007	#41	P-15477	#72	P-17454
PIERCE ARROW 1245,55	1935	EX-32(2)	1 3/16"	.059"	P-17004	4#56	P-18149	#28	P-17005	#70	#70	P-17007	#48	P-15447K	#68	P-18126
REO Royale 7-S	1935	EX-32	1 3/16"	.056"	P-17004	4#56	P-18149	#28-32	P-19702	#70	#70	P-19579	#54	P-15477	#70	P-18126
STUDEBAKER Dict.	1935	EX-23	1 3/32"	.058"	P-17004	4#56	P-18149	#32	P-20638	#70	#68	P-20636	#54	In I. Tube	#69	P-18126
STUDEBAKER Comm.	1935	EE-1	1 1/32"	.047"	P-19442	1#63	P-19447	#32-36	P-20646	#70	#70	P-20614	#44	—	#65	—
STUDEBAKER Pres.	1935	EE-1	1 1/32"	.047"	P-19442	1#63	P-19447	#32-36	P-20646	#70	#70	P-20614	#44	—	#65	—
STUTZ DV-32	1935	EE-3	1⅛"	.059"	P-17004	.060"	P-16965	#36	P-17015	#65	#70	P-17007	#48	P-15477	#62	P-17454

*—.045" on cars with Triplex Air Cleaner.
§—.043" for use in High Altitudes.
†—P-19447 (By Pass Jet in Vacuum Economizer).
‡—P-20854 (By Pass Jet in Vacuum Economizer).

STROMBERG [redacted] CARBURETORS

CHOKE:—See special articles on Stromberg and Sisson Automatic Chokes. Choke valve is provided with a relief poppet valve which will open when engine begins to fire and will prevent over-choking. On cars with conventional choke control, see that choke linkage is adjusted so that choke valve is fully closed with choke button pulled all the way out and wide open with choke control button pushed all the way in.

EX-23—GRAHAM SPECIAL SIX, MODEL 73 (1935).
STUDEBAKER DICTATOR, MODELS 1-A, 2A (1935).

This model is fitted with a built-in Automatic Choke (vacuum piston in throttle valve body, thermostatic spring coil mounted separately on manifold) and a Fast Idle. See separate article in 'Stromberg Automatic Choke and Integral Fast Idle' for complete data on these units.

TYPE:—Single barrel, plain tube, downdraft type. Design and operation entirely similar to other 'E' type carburetors except for Automatic Choke and Fast Idle mechanism. Engine must be warmed up so that choke valve is wide open and engine idling at slow or hot idling speed when adjustments are made. Fast Idle design requires that throttle be opened to 20 M.P.H. position before starting a cold engine in order to allow choke valve to close and Fast Idle mechanism to become operative.

IDLING ADJUSTMENT:—With engine warm and idling at slow or hot idling speed, set throttle lever stopscrew for 7-8 M.P.H. idling speed. Idle adjustment controls fuel mixture and should be turned in for leaner mixture or out for richer mixture. Turn screw in until engine begins to miss or run irregularly, turn screw out until engine begins to roll, then turn screw in slowly until engine fires smoothly and speed is at maximum. Check idling speed and, if necessary, readjust throttle stopscrew for 8 M.P.H. idling speed.

ACCELERATING PUMP:—Adjustable in usual manner by shifting pump rod connecting link to inner or outer hole in throttle valve lever. Use inner hole (minimum pump stroke) for normal summer temperatures, and outer hole (maximum pump stroke) for winter temperatures. Pump capacity when operated slowly with pump set for maximum stroke is 17-19 cc. (Graham), 13-15 cc. (Studebaker) for 10 strokes.

FLOAT LEVEL:—Fuel level in float bowl set at 5/8" below top edge of bowl with 3 lbs. pressure (engine idling). Float level can be changed to correct fuel level by bending float lever at the point where it is attached to the float.

CHOKE:—See separate article for data on Automatic Choke Control.

EX-32—PIERCE ARROW, MODELS 1245, 1255 (1935).

This is a double installation with one carburetor being used for each cylinder bank (Twelve cylinder, Vee type engine). Carburetors are fitted with Fast Idles and an automatic choke. See separate articles for complete data on these units.

TYPE:—Single barrel, plain tube, downdraft type. Design and operation entirely similar to other 'E' type carburetors. Special adjustment instructions are necessary in order to equalize idle setting and idle speed on each carburetor and to synchronize throttle valves and choke valves. Complete directions are given below. Engine must be warmed up so that choke valve is wide open and engine idling at slow or hot idling speed when adjustments are made.

IDLING ADJUSTMENT:—Adjust one carburetor at a time. Cut out the six cylinders of the other bank by grounding the high tension lead of the coil firing that bank. Idle adjustment screw controls fuel mixture (turn screw in or clockwise for leaner mixture, out or counter-clockwise for richer mixture). Turn adjusting screw on carburetor feeding cylinders which are firing in or out until engine fires smoothly. Then check idling speed by taking out plug in exhaust manifold and counting explosions or form small gap by disconnecting one high tension lead at spark plug and count sparks. Adjust throttle lever stopscrew so that there are 37-39 explosions in 15 seconds. Recheck idling adjusting screw setting (this must be reset if idling speed has been changed). After adjusting each carburetor for smoothest firing position of idling screw and correct idling speed of 37-39 explosions in 15 seconds, connect both coils, idle engine on all twelve cylinders and check throttle valve synchronization.

Throttle Valve Synchronization—Use mercury tube equalizing gauge, Pierce Arrow Part #HMJ-477, or pull throttle open slightly and note whether both throttle valves leave the idle stop at the same instant. If they do not, turn the adjusting screw located on the upper right hand side of the cross shaft connecting the two carburetor throttle valves in or out until throttles open simultaneously (if throttles do not open together the increased tension on the rod as the second throttle begins to open can be felt as the rod is moved).

ACCELERATING PUMP:—Adjustable in usual manner by shifting pump rod to inner or outer hole in throttle valve lever. Use inner hole for normal summer temperatures and outer hole, providing maximum pump stroke, for winter temperatures. Pump capacity is 12-14 cc. per 10 strokes with pump set for minimum stroke (summer setting).

FLOAT LEVEL:—Fuel level in float bowl is set at 9/16" below top edge of bowl. Adjustable by bending lever at point where it is attached to the float.

CHOKE:—Type 'C' automatic choke control is used (see separate article). Choke valve fitted with relief poppet valve to prevent over-choking. Check choke valves to see that both valves are fully closed for cold starting (if one valve is not closed, loosen clampscrew, close valve, tighten clampscrew).

EE-22—CHRYSLER, AIRFLOW IMPERIAL C2, CUSTOM IMPERIAL C3 (1935).
HUPMOBILE, AERODYNAMIC EIGHT MODEL 527-T (EARLY 1935).
LINCOLN, MODELS V-12-136, V-12-145 (1935).
NASH, ADVANCED EIGHT MODEL 3580 (1935).

EE-3—CHRYSLER, AIRFLOW CUSTOM IMPERIAL CW* (1935).
DUESENBERG, MODEL J (1935).
PACKARD TWELVE, MODELS 1207, 1208 (1935).
PIERCE ARROW EIGHT, MODEL 845 (1935).
STUTZ, MODEL DV-32 (1935).

NOTE—Some models are fitted with Automatic Chokes and Fast Idles. See separate articles for complete data on Stromberg Fast Idles and Type 'C' Automatic Choke, and Sisson Automatic Choke. On these models engines must be thoroughly warmed up so that choke valve is wide open and engine idling at slow or hot idling speed when adjustments are made.

TYPE:—Dual barrel plain tube downdraft type. These models are similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on a single shaft and will not require synchronization. Accelerating pump is positively operated by the throttle through a 'walking beam' connection mounted on the carburetor upper body. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Two needle valves controlling fuel mixture. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner (left hand) idling adjustment screw for smoothest and fastest running position by turning idling screw in until engine begins to miss and speed decreases, then turn screw out until engine begins to roll, finally turn screw in until engine fires smoothly (final setting should be approximately half way between missing and rolling points). Adjust outer (right hand) idling adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can then be adjusted. The coil should then be reconnected and the other coil disconnected so that the engine will fire on the cylinders of the other bank. The idle adjustment for the carburetor barrel feeding this bank can then be adjusted. After both idling adjustments have been completed in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running. The throttle stop screw can then be adjusted to secure correct idling speed.

STROMBERG CARBURETORS

EE-1—AUBURN EIGHT, MODEL 851 (1935).
BUICK, MODEL 35-40 (1935).
FORD, V8 MODEL (1935).
NASH ADVANCED EIGHT, MODEL 3580 (1935).
OLDSMOBILE EIGHT, MODEL L-35 (1935).
STUDEBAKER COMMANDER, MODEL 1-B (1935).
STUDEBAKER PRESIDENT, MODEL 1-C (1935).

NOTE—Some models are fitted with Fast Idles and Automatic Chokes. See separate articles for complete data on Stromberg Fast Idles, Buick Cold Idle Control, Stromberg Type 'C' Automatic Choke (Studebaker models), and Delco-Remy Type 498-G Carburetor Control (Oldsmobile). Engines must be thoroughly warmed up so that choke valve is wide open and engine idling at slow or hot idling speed when adjustments are made.

TYPE:—Duplex or dual barrel, plain tube, downdraft type. Similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on the same shaft and do not require synchronization. Accelerating pump is positively operated by the throttle lever through a 'walking beam' linkage on the carburetor body casting. Idling adjustment and accelerating pump adjustment (some models only) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type controlling fuel mixture. Adjusting screws control discharge through lower or closed throttle discharge ports below throttle valves (upper ports also discharge fuel when throttle is opened slightly) and should be turned in for leaner mixture or out for richer mixture. Engine must be warmed up when adjustments are made. With engine warm and idling with closed throttle (adjust throttle stopscrew, if necessary, so that idle speed is approximately 7-8 M.P.H.) adjust each idle adjusting screw in turn by turning screw in until engine begins to hesitate or miss, and out until engine begins to roll, and then turning screw in slowly until engine fires smoothly. Final setting should be approximately midway between the missing (lean) and rolling (rich) positions. After adjusting both screws, recheck idling speed and readjust throttle stopscrew if necessary.

If correct idling adjustment cannot be secured, take out idling adjusting screws and upper idling port plugs and clean out idling ports with compressed air. The idling tubes located in the upper carburetor body can also be taken out and cleaned with compressed air.

NOTE—The slow idle screw on the Ford carburetor should be set 2¼ turns from the closed throttle position.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions, such as permanent operation in high altitudes.

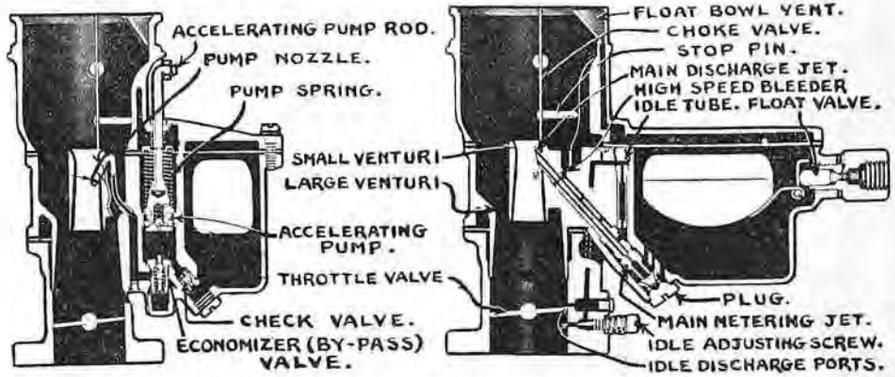
Economizer is built in lower end of accelerating pump and is operated by the pump piston. At speeds above 65 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve so that additional fuel flows through this valve and is discharged through the pump discharge nozzle. Economizer should not require attention but setting can be checked by noting throttle opening when pump piston contacts by-pass valve seat (economizer). Throttle valve opening at this point as checked by drill passed between throttle valve edge and carburetor wall should be 21/64" plus or minus 1/64" on all models except Ford, and 5/16" plus or minus 1/64" on the Ford model.

ACCELERATING PUMP:—Accelerating pump is operated through a walking beam linkage by the throttle valve lever. Pump chamber is filled with fuel (flowing through check-valve) when throttle is closed. When the throttle is opened, this fuel is discharged through the pump discharge nozzle in each carburetor barrel. The check-valve prevents the fuel flowing back into the float bowl. When the throttle is held open, the pump piston opens the economizer by-pass valve so that fuel flows straight through the pump chamber to the discharge nozzles. No adjustment is ordinarily provided for the accelerating pump but on some models a summer and winter setting is provided (see adjustment below). Pump capacity in cc. per 10 strokes when pump is operated slowly is given in table below (on Nash and Auburn the pump adjustment should be set for maximum stroke).

Car Model	Pump Capacity (10 strokes)
Auburn 851	12-14 cc.
Buick 35-40	18-22 cc.
Ford V8	13-17 cc.
Nash 3580	21-25 cc.
Oldsmobile L-35	17-19 cc.
Studebaker Comm. and Pres.	14-18 cc.

Adjustment:—This adjustment, when furnished, consists of two holes in the throttle valve lever for the engagement of the pump connecting rod. Rod should be engaged in inner hole (short radius), providing minimum pump stroke for normal summer temperatures and in the outer hole (longer radius), providing maximum pump stroke for winter temperatures.

FLOAT LEVEL:—Fuel level in float bowl is set at 15/32" (½" on Nash carburetor) below top edge of float bowl with 3 lbs. pressure (engine idling). Float height can be changed to correct fuel level by bending float lever at the point where it is attached to the float.



CHOKE CONTROL:—See separate articles for complete data on Automatic Chokes used with these models. Choke valves are offset and some models are fitted with relief valves to prevent overchoking when engine begins to fire. On cars using a hand choke control button on the instrument panel, see that choke valve is fully closed with button pulled out, and wide open with button pushed all the way in toward the dash.

EE-14—GRAHAM EIGHT, MODEL 72 (1935).
PACKARD EIGHT, MODEL 120 (1935).
EE-15—LA SALLE, NEW MODEL 35-50 (1935).

NOTE—These models fitted with an Automatic Choke (thermostatic coil mounted on manifold, vacuum piston built in carburetor body), and a new type Fast Idle incorporating a by-pass passage around the throttle valve controlled by the vacuum piston. See Fast Idle paragraph below and separate article on Automatic Choke for complete data. Engines must be warmed up so that choke valve is wide open and Fast Idle by-pass closed by vacuum piston when adjustments are made.

TYPE:—Duplex or dual barrel, plain tube, downdraft type. Similar in design to other EE type carburetors except for fast idle and choke control vacuum piston and by-pass passage (see note under Fast Idle paragraph for special directions necessary for disassembling carburetor to avoid damage to vacuum piston linkage). All specifications and adjustments for these models same as given for Model EE-1 (preceding article) except as noted below.

IDLE ADJUSTMENT:—See Model EE-1. Set idle speed at 6 M.P.H.

FAST IDLE MECHANISM:—The vacuum piston in the cylinder in the carburetor body casting is linked to the choke valve. When the engine is cold, the vacuum piston is raised to the upper end of its stroke by the closing of the choke valve, so that the by-pass passage around the throttle valve is open and the cross channel from the idle fuel channel which terminates in the by-pass passage is uncovered. In this position an extra quantity of fuel mixture will be drawn from the idle fuel channel and discharged into the manifold below the throttle valve, providing a fast idle when the engine begins to fire. When vacuum builds up in the manifold, the vacuum piston will be drawn down until the side port in the piston is uncovered, admitting

1936

CARBURETION EQUIPMENT INDEX

* Page number in latest edition of manual. See supplementary Equipment Index listing in earlier editions.

This type automatic choke used as standard equipment on Carter carburetors on the following current car models:

Car Model	Carburetor
Hudson Six, Model 63	329-S
Hudson Eight, Models 64, 65, 66, 67	330-S
Oldsmobile Six, Model F-36	327-S, 339-S, 342-S
Pontiac Six, Models 36-26A, 36-26B	324-S, 340-S
Pontiac Eight, Model 36-28	322-S
Reo Flying Cloud, Model 6-D	338-S
Terraplane, Custom Model 62	329-S

DESCRIPTION:—Design has been changed slightly and piston housing plate now mounted on air horn by single rivet or screw. Lower edge of plate is flat and rests on ledge on main body casting (vacuum passage in carburetor body terminates at this point and connects with vacuum passage to vacuum cylinder in plate). Vacuum cylinder now located vertically with conventional piston linked to choke valve shaft. Hot air stove on manifold with flexible tubing connection to thermostatic coil case continued but tubing now connected at case by compression type coupling. Fast idle design changed slightly and new Unloader has been added.

OPERATION:—Same as for previous model employing thermostatic spring coil to close choke valve when engine cold and to control valve during warming up period (choke valve offset so that it tends to open as thermostatic spring coil tension decreases when engine warms up). Vacuum piston opens choke valve slightly when engine begins to fire (vacuum builds up in manifold) to prevent over-choking.

SERVICING:—Disassembly—Take out attaching screws and remove two retainers on rim of piston housing plate which holds thermostatic coil housing in place. Turn thermostatic coil to right or clockwise to disengage coil hook from prong, lift coil and housing assembly off. Remove strainer screen. Take out choke valve screws, lift choke valve out. Loosen clamp screw on choke lever pin and screw assembly, bend lip under screw with screwdriver (see Unloader adjustment when reassembling) so that it will clear portion of choke valve shaft which is not flat, remove fast idle block and link assembly by taking out two screws in fast idle block, revolve choke shaft so that piston clears cylinder edge, remove choke shaft, piston, piston lever and link as an assembly. Remove suction passage gasket from air horn. Do not remove piston housing plate from air horn. These parts are line-reamed at the factory and must be lined up so that choke valve, shaft and piston work freely.

Servicing—Wash all parts in gasoline except thermostatic coil and housing assembly and cork gaskets. Clean thermostatic coil assembly with air. Blow out all passages with air. Replace all worn or damaged parts. Use all new gaskets when reassembling.

Reassembly—Connect fast idle block and link assembly to choke lever pin and screw assembly. Install choke piston lever, piston and link, and shaft assembly in air horn and see that choke lever pin and screw assembly correctly located on shaft. Tighten screw on choke lever and see that these parts work freely. Install choke valve using new valve screws. Turn screws down loosely, then close choke valve and tap lightly to centralize valve in air horn, tighten screws securely, see that choke valve operates freely without binding in air horn. Install strainer in piston plate housing. Install new suction passage gasket in air horn (do not use old gasket). Install air horn assembly on carburetor, tightening screws securely. Install attaching screw and lockwasher under piston housing plate. Insert fast idle block screws, see that fast idle operates freely with screws tight. See that cork insulating strip on thermostatic coil housing is in good condition and has not shrunk, turn housing so that word 'Climatic' is at bottom, install in this position, turn counter-clockwise until center mark on piston plate housing is in line with reference mark on housing, install retainers and tighten attaching screws which hold housing in place.

Installing Carburetor on Engine—See that flexible tubing connection at housing is tight. This is important as any air leak at this point will interfere with correct performance. See that choke valve operates freely throughout range without any binding at any point in the mechanism. Check choke setting and Unloader operation as directed below.

SETTING & ADJUSTMENT:—Setting indicated above (thermostatic coil case revolved so that reference mark lined up with center line of calibrations on piston housing plate) is standard setting and may require changing to compensate for special fuel or operating conditions.

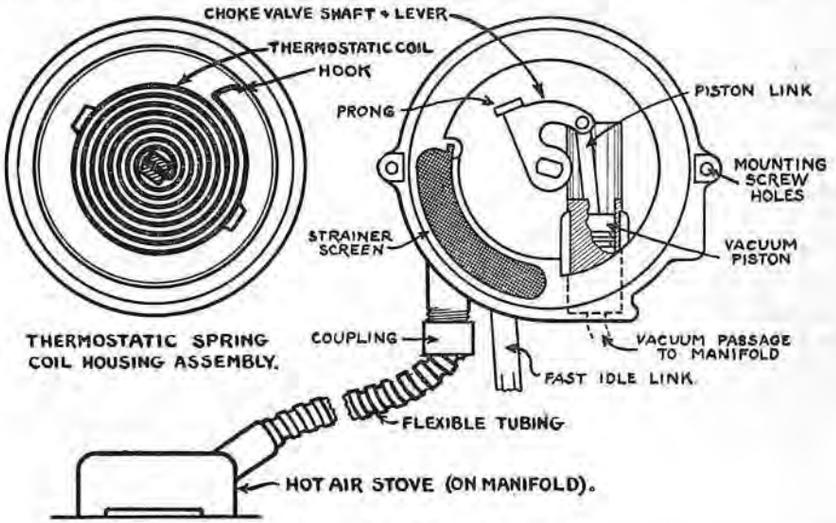
To Check Setting—Note engine performance during warming up period after engine has been started cold. Engine must be cold so that choke is operating (if engine is warm when started choke valve will not close). If engine has a tendency to run lean, thermostatic coil housing should be turned counter-clockwise one graduation. If engine runs rich or has a tendency to load up, coil housing should be turned one graduation clockwise. See adjusting instructions below.

To Adjust—Loosen retainer screws on rim of thermostatic coil case, rotate one graduation, tighten screws. Adjustments should always be made with engine cold (allow four hours for engine to cool off after it has been running) and setting should again be checked as directed above. Repeat until satisfactory operation is secured.

CARTER FAST IDLE

DESCRIPTION:—Consists of fast idle bar or block linked to choke valve lever which drops down behind throttle lever stopscrew when choke is closed so that throttle is held open in fast idle position. Does not operate until throttle is opened (accelerator pedal must be depressed to place fast idle in operation). Carburetor adjustments should be made only with fast idle inoperative (block raised clear of stopscrew so that throttle returns to hot or slow idling position).

SERVICING:—No service operations necessary except to see that block slides freely on mounting screws. See that block is down behind stopscrew with cold engine (70°F) after throttle has been opened momentarily. Fast idle block operates Unloader and choke valve lock (see below).



CARTER UNLOADER

DESCRIPTION:—Consists of an ear on the fast idle block which strikes the throttle lever when throttle is opened (fast idle block down in fast idle position). When this contact is made, further movement of the throttle lever pushes the fast idle block up opening the choke valve so that a flooded condition can be corrected. Choke valve is locked open with throttle and choke valve wide open.

Adjustment—With throttle valve held wide open, adjust curved lip on fast idle block so that lower edge of choke valve is held away from inner wall of air horn by amount shown in table below. Then hold choke valve and throttle valve wide open, adjust lip on choke lever so that choke valve locked open. See that choke valve released when throttle valve closed.

NOTE—Clearance between lip on choke lever and top end of fast idle link should be 1/16″ with choke valve and throttle valve held wide open. Adjust by removing fast idle block and link assembly from carburetor and filing not more than 1/32″ from top of link. Do not change original shape of link. See that all burrs removed. See that entire choke mechanism operates freely without binding.

Car Model	Carburetor Model	Unloader Setting
Hudson (all models)	329-S, 330-S	7/16″
Oldsmobile	327-S, 339-S, 342-S	1/2″
Pontiac Six	324-S, 340-S	1/2″
Pontiac Eight	322-S	1/4″
Reo	338-S	1/2″
Terraplane	329-S	7/16″

TYPE C

NOTE:—This type automatic choke used as standard equipment on the following car models:

Car Model	Carburetor	Choke Type No.
Packard Twelve 1407, 8 (1936)	EE-3	A-17290
Pierce Arrow 8, 1601 (1936)	EE-3	A-17630
Pierce Arrow 12, 1602, 3 (1936)	EX-32	A-16090
Studebaker Pres. 2-C (1936)	EE-1	A-17590
Studebaker 2C (Eng. No. B11876 Up)	EE-1	A-17940
Stutz DV-32	EE-3	A-17380

SERVICING & ADJUSTMENT:—Same as for previous installations. See previous article (manual Carburetion Section) for complete instructions. Settings are as follows:

Car Model & Year	Table #1 Lever Height	Table #2 Distance 'E'	Table #3 Setting Notches
Packard 12 (1936	1 15/16"	#12 drill	28 Rich.
Pierce Arrow 8 (1936)	1 1/32"	#17 drill	10 Rich.
Pierce Arrow 12 (1936)	41/64"	#17 drill	12 Rich.
Studebaker 2C ('36) all models	1 3/32"	#20 drill	16 Rich.
Stutz DV-32	1 15/16"	#22 drill	3/8" (x)

(x) On this model thermostat case should be revolved until the hook on the spring coil is this distance from the prong on the case with the choke at 70°F.

EX-23, EE-23 CARBURETOR TYPE—INTEGRAL FAST IDLE

DESCRIPTION:—This type Automatic Choke and Fast Idle is similar in design to the type used previously with these carburetor models.

OPERATION:—The thermostatic spring coil lever is linked directly to the choke valve lever by a rod. A second rod links the choke valve lever with the fast idle cam so that the cam is rotated as the choke valve opens and closes. The thermostatic spring is designed to completely close the choke valve at 70°F. This action does not take place until the throttle valve is opened to the 20 M.P.H. position, lifting the fast idle screw off the low or hot idle portion of the cam and allowing the cam to be rotated to the fast idle position as the choke valve closes. Choke valve is offset and is not locked in position while the engine is being cranked. As soon as the engine begins to fire and vacuum is built up in the manifold, the vacuum piston is drawn down, opening the choke valve slightly and rotating the fast idle cam to the second or intermediate idle position. As the engine warms up, the tension of the thermostatic spring decreases, allowing the offset choke valve to open fully and rotate the fast idle cam to the low or hot idling position.

Choke Opening to Correct Flooding—The choke valve can be opened manually to correct a flooded carburetor by opening the throttle valve wide open. In this position the cam on the end of the throttle lever contacts the ear on the fast idle lever, rotating the lever and opening the choke valve.

ADJUSTMENT:—Slow Idle Screw. The hot or slow idling speed is controlled by the throttle stopscrew (see Carburetor Adjustment). This adjustment should be made only when the engine is warm with the fast idle screw resting on the low or slow idle portion of the fast idle cam. Standard settings for these models are ½ turn (Packard), ¾ turn (Studebaker), from the closed throttle position.

Fast Idle Screw. On some models a separate screw is used to control the fast idle speed. This screw should be turned in 2½ - 3 turns to provide throttle opening of .016-.020" on Packard.

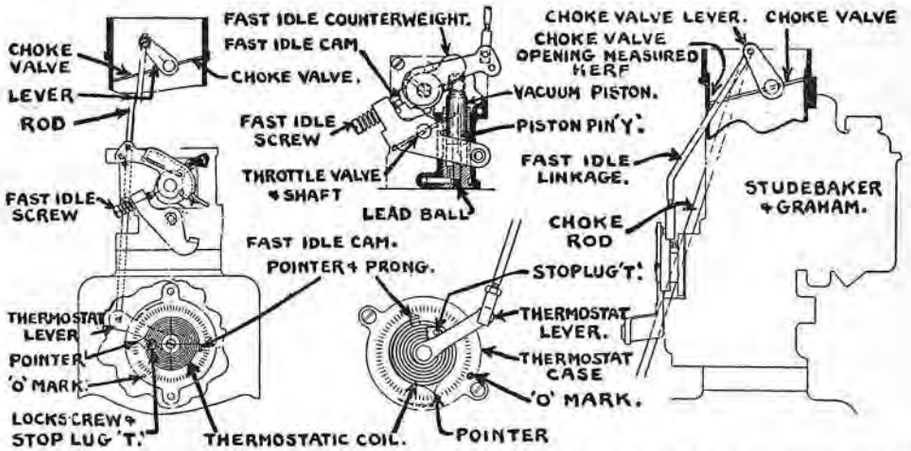
Choke Rod Linkage. The rod connecting the thermostatic spring coil lever and the choke valve lever should be adjusted so the choke valve is fully closed with approximately 1/32" clearance between thermostat lever and stop lug (T).

Fast Idle Linkage. The rod connecting the choke valve lever and the fast idle lever should be adjusted so that the choke valve is open 29/64" (EX-23), 5/16" (EE-23) with the vacuum piston down at the end of its stroke so that the fast idle screw rests on the middle step or intermediate idle position of the fast idle cam (see Vacuum Piston Servicing below). Choke valve opening should be checked on the long side of the valve (offset mounting) and can be measured by passing a drill rod of the correct size between the edge of the valve and the carburetor wall.

THERMOSTATIC SPRING:—To check the thermostatic spring, remove unit from manifold, allow unit to stand until it has cooled off or warmed up to room temperature (70°F). Temperature can be checked with an accurate thermometer held near the thermostat. Tests should be made at 70° as thermostat spring changes one notch for each 5° above or below 70°. Unhook end of thermostat coil from prong on pointer plate, loosen pointer plate lockscrew (T), revolve pointer until it is opposite '0' on scale, see that lever is against stop lug (T), note position of thermostat spring hook. If hook is flush with prong, thermostatic spring tension is correct and can be reset as directed below. If hook is not flush with prong, indicating that thermostat has a permanent 'set', thermostatic coil should be recalibrated (see Servicing paragraph below). Thermostatic coils which have been deformed by rough handling should be replaced.

Setting:—After completing tests (above), engage coil hook on prong, revolve pointer to rich side of scale 11 notches (Packard), 10 notches (Studebaker), tighten lockscrew (T), replace thermostat on manifold, connect choke valve rod and adjust length of rod so that choke valve is fully opened with approximately 1/32" clearance between thermostatic spring coil lever and stop (T).

SERVICING:—Recalibrating Thermostatic Coil. If thermostatic coil hook is not flush with prong at 70°F with pointer set at '0' on scale and lever against stop, loosen pointer plate lockscrew (T), revolve pointer plate and prong until prong and hook are flush, tighten lockscrew, stamp a new '0' mark on



the case opposite the pointer. Obliterate the old '0' mark and proceed with the setting, using the new '0' mark as the reference point.

Vacuum Piston. Vacuum piston stroke is regulated by pin (Y) mounted on vacuum piston sleeve within the piston. If pin or sleeve are replaced, piston stroke should be regulated by turning pin up or down until choke valve opening (measured on the long side of the valve is 29/64" (EX-23), 5/16" (EE-23) with the piston down against the pin. The pin setting should be sealed by a lead ball inserted in the pin hole below the pin. See Fast Idle Linkage adjustment above.

EE-14 CARBURETOR TYPE—INTEGRAL FAST IDLE

DESCRIPTION:—This type Automatic Choke and Fast Idle employs a thermostatic spring coil mounted on the manifold and a vacuum piston built in the throttle valve body. The Fast Idle consists of a fuel channel and bypass passage around the throttle valve controlled by the vacuum piston. The entire fast idle mechanism is located within the carburetor body and no adjustment is required.

OPERATION:—Thermostatic spring coil lever is linked directly to choke valve lever and is designed to completely close the choke valve at 70°F. Choke valve is offset and is not locked while the engine is being cranked. The vacuum piston is linked to the choke valve through the arm (C) so that

CAPACITY AND PRESSURE TESTS FOR ALL TYPES

NOTE:—Manufacturer recommends that Fuel Pump Analyzer No. 1521551 be used in making these tests. All tests should be made with the fuel pump in place on the engine and the engine running to drive the pump. Engine speed should be 30-35 M.P.H. (for capacity test) or lowest possible idling speed (for pressure test).

TESTING:—Test equipment should be connected at pump outlet. Disconnect fuel line from pump to carburetor at pump, use special fitting and connect 'T' connection, use rubber tubing to join gasoline line to end of 'T', connect test equipment (bleeder line, pressure gauge and shut-off valve to open and close bleeder line) to side opening of 'T' connection. Operate engine and make tests in following order.

CAPACITY TEST

Bleeder tube end must be at carburetor level or slightly higher. Shut-off valve should be open permitting fuel delivery through bleeder tube. Operate engine at 30-35 M.P.H. note quantity of fuel pumped in 45 seconds or 1 minute (see table below). Pressure gauge not used in making this test. If pump capacity in excess of 1 pint, check pump pressure (see test below), and if pressure not excessive pump need not be checked further. Delivery capacity of 1 pint is ample for all engine operation.

Fuel Pump Model	Minimum Cap. (1 Pt. delivered)
A, B, E, G, J, L, N, O, P, R, S, T, V, W, X, Y, Z, AC, AD, AE	1 minute
C, D, F, H, I, Q, AA, AB	45 seconds

PRESSURE TEST

Idle engine at lowest possible speed to secure static pressure reading. Close shut-off valve. Note pressure gauge reading. Pressure should not exceed figure in table below. If pressure does not exceed this figure and capacity is satisfactory, fuel pump operation is OK. Excessive pressure may cause rich fuel mixture and in extreme cases flooding of carburetor (if carburetor floods and pressure is not excessive, check carburetor float level setting and see that float needle valve shuts off tightly).

Fuel Pump Model	Maximum Pressure
AC	3 lbs.
A, B, E, G, J, L, N, O, P, R, S, T, V, W, X, Y, Z, AD, AE	3½ lbs.
C, D, H, Q	4¼ lbs.
F, I, AA, AB	4½ lbs.

SISSON AUTOMATIC CHOKE

STANDARD OR OPTIONAL EQUIPMENT ON CHRYSLER, DE SOTO, DODGE, PLYMOUTH

DESCRIPTION:—Two types of Sisson automatic chokes, AC-600 series, and AC-700 series, are being used on current car models as follows:

Car Model	Choke Type Number
Chrysler, Airstream Six C7, Eight C8	AC-751
Chrysler, Airflow C9	AC-751
Chrysler, Airflow Imperials C10, C11	AC-600
De Soto, Airstream S1, Airflow S2	AC-751
Dodge, Models D2, D3, D4	AC-751B
Plymouth, Standard P1, Deluxe P2 (Optl.)	AC-751B

These models are entirely similar in design and operation but are adjusted differently (see instructions below). The design is similar to that of previous Sisson models and employs a solenoid coil (to close choke valve when starter is operated with engine cold) and a thermostatic spring (to control choking action during warming up period). The terminal on the top or side of the choke case is connected to the starter side of the starting switch and in most cases a Choke Release Switch is connected in this lead. The switch can be operated to cut out the choke action if the carburetor becomes flooded so that the engine can be cranked with the choke valve open.

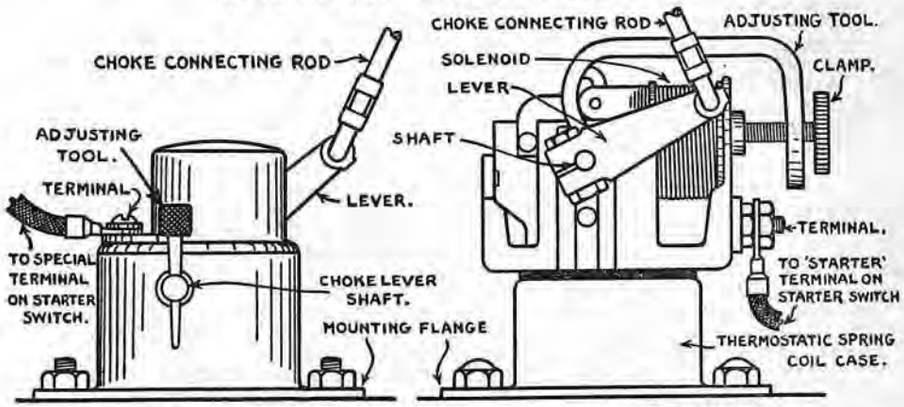
OPERATION:—When the starter is operated to crank the engine, the automatic choke solenoid is energized, attracting the armature, and rotating the choke lever, which is attached to the choke valve lever through a control rod so that the choke valve is closed if the engine is cold. When the engine is warm this armature movement does not take place and no choking action results. When the engine begins to fire and the starting switch is opened, the solenoid circuit is broken. The choke lever is then controlled entirely by the thermostatic spring within the choke case and this tends to rotate the lever and open the choke valve as the engine warms up. With the engine at normal operating temperatures, the choke valve will be entirely open.

ADJUSTMENT:—AC-700 Series—Remove air cleaner so that the choke valve can be noted. Insert special adjusting tool (obtainable from Pierce Governor Co., Anderson, Ind.), or #42 wire drill in hole in choke valve shaft (opposite end from lever), operate choke by hand to close choke valve until adjusting tool engages slot in choke housing. This will lock choke mechanism in closed position. Then loosen clamp screw on shaft end of choke lever, lift up on lever until carburetor choke valve is entirely closed. Hold lever in this position and tighten clampscrew. Remove adjusting tool and test to see that there is no backlash or play between choke lever and choke valve. These chokes are shipped from the factory with a cotter pin in the adjusting hole. The cotter pin must be removed when the choke is installed on the engine and the adjustment tested as above. When replacing this type choke, always install the special Steelbestos gasket on the exhaust manifold under the choke base. This gasket will prevent excessive heat from damaging the choke mechanism.

NOTE—If choke operation is not satisfactory, see that choke valve is free (air cleaner clamp must not be so tight as to cause valve to bind), and that all linkage operates freely. If internal mechanism of choke sticks, thoroughly clean unit (installation of steelbestos gasket noted above will prevent rust forming within unit). Do not lubricate any part of choke mechanism and be careful not to bend the thermostat.

AC-600 Series—Take off automatic choke cover, remove air cleaner so that position of choke valve can be checked. Clamp special adjusting tool (obtainable from Pierce Governor Co., Anderson, Ind.) in place on choke so that end of tool enters and lines up the holes in the armature and magnet core. This will lock choke in closed position. Then loosen clamp screw on shaft end of operating lever, press down on lever until carburetor choke valve is fully closed, tighten clampscrew. Remove adjusting tool and see that there is no backlash or play between automatic choke lever and carburetor choke valve. Replace air cleaner and choke cover and check to see that choke mechanism operates freely without binding or striking these parts.

SISSON AUTOMATIC CHOKE.



AC-700 SERIES AC-600 SERIES

INSTALLATION (PLYMOUTH):—A mounting pad is provided on the exhaust manifold for the automatic choke. Position choke on mounting pad with operating lever pointing toward carburetor, drill two 3/16" holes in line with mounting holes in base flange, tap with ¼x20 USS. tap, use studs furnished to mount choke on manifold. Take off all hand choke linkage, replace with control rod linking choke valve lever and choke operating lever. Connect terminal on choke case to special terminal on side of switch case on starter (do not connect to battery side of starting switch). On cars where this terminal is not provided, remove starter switch, mount pad on end of cable under switch with copper strip against starter terminal post and solder in place.

ment should be made only after engine warmed up so that choke valve open and fast idle block raised so that it clears throttle stopscrew.

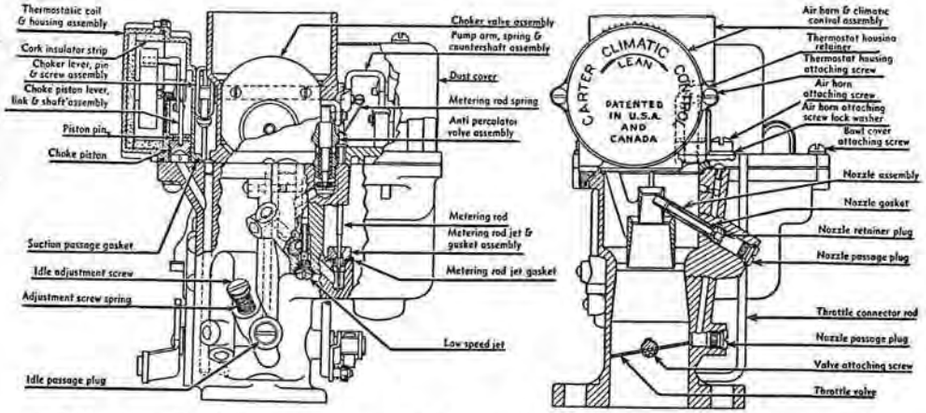
ACCELERATING PUMP:—Same design as on other models. See previous article for description and lubrication; see tune up data on car pages for settings and recommended seasonal changes.

METERING ROD (ECONOMIZER):—Same design as on other models. See previous article for removal, installation and checking directions. When checking metering rods, use special gauge for each type as follows:

Car Model	Carburetor	Gauge Part No.	Length
Hudson (all)	329-S, 330-S	T-109-25	2.795"
Oldsmobile	327-S, 339-S, 342-S	T-109-25	2.795"
Pontiac (all)	322-S, 324-S, 340-S	T-109-26	2.718"
Reo	338-S	T-109-25	2.795"
Terraplane	329-S	T-109-25	2.795"

ANTI-PERCOLATOR:—Same design as on other models. See previous article for description and instructions for setting Anti-Percolator. Throttle opening when setting valve closing point should be .030" (329-S, 330-S), .020" (all others—Carter gauge Part No. T-109-29 may be used to hold throttle open on these

UNLOADER:—Consists of an ear on the fast idle block which strikes the throttle lever when throttle is opened (with fast idle block down in fast idle position). When this contact is made, further movement of the throttle lever pushes the fast idle block up, opening the choke valve so that a flooded condition can be corrected. Choke valve is locked open with throttle valve and choke valve wide open.



Adjustment—Adjustments made by bending ear on fast idle block and choke lever lip. See article on Carter Climatic Control for complete directions and settings for each carburetor model.

FLOAT LEVEL:—To check float level, take off float bowl cover, remove gasket, invert cover, measure distance from gasket seat to nearest point on float (top when not inverted and at free end). Float level can be corrected by bending lip of float lever. Settings should be as follows:

Car Model	Carburetor Model	Float Setting
Hudson (all)	329-S, 330-S	3/8"
Oldsmobile	327-S	1/2"
Oldsmobile	339-S, 342-S	3/8"
Pontiac (all)	322-S, 324-S, 340-S	3/8"
Reo	338-S	7/16"
Terraplane	329-S	3/8"

CHOKE:—Choke valves on all models except Pontiac (322-S, 324-S, 340-S) fitted with poppet type relief valve. All valves are offset. See separate article on Carter Climatic Control for automatic choke adjustments.

TROUBLE SHOOTING:—Same as for other Carter models (see previous article).

SERVICING:—Disassembly—Same as for other Carter models (see previous article) except that two screws in fast idle block must be taken out before air horn and complete Climatic Control assembly can be removed. See separate article on servicing the Climatic Control. Nozzles should be removed as an assembly and no attempt made to take nozzle apart. Do not immerse cork gaskets in gasoline.

Assembly—When installing throttle valves, place valve on shaft with trademark facing up, use new valve screws and turn screws in loosely, see that throttle stopscrews backed off so that throttle is closed tightly, tap throttle valve lightly to centralize in barrel, tighten valve screws securely.

317-S—HUPMOBILE EIGHT, MODEL 621-N (1936).
328-S—OLDSMOBILE EIGHT, MODEL L-36 (1936). FIRST 27,334 CARS.
341-S—OLDSMOBILE EIGHT, MODEL L-36 (1936). SERIAL NO. L-127334 UP.

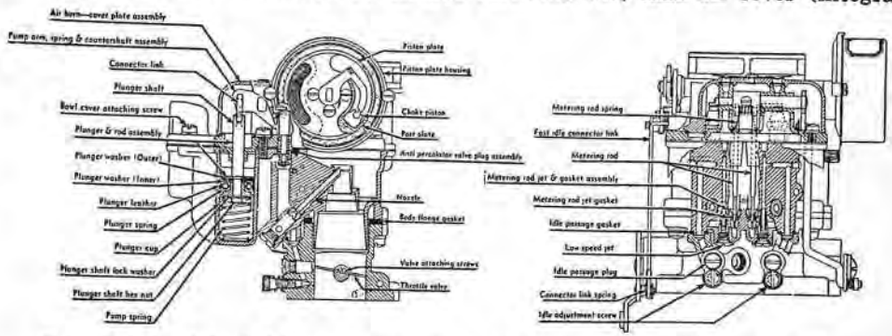
NOTE:—These models fitted with Carter Climatic Control (automatic choke) and choke-operated Fast Idle and Unloader. See separate article on Carter Climatic Control.

TYPE:—Dual barrel, plain tube, downdraft type. Similar in design to other Carter models except that carburetor has two barrels or mixing chambers and that main nozzles, accelerating pump discharge jets, throttle valves, and idling systems duplicated for each barrel. Anti-Percolator is used.

IDLE ADJUSTMENT:—See that engine is thoroughly warmed up with choke valve wide open and fast idle mechanism inoperative. With engine idling at hot or slow idling speed, adjust throttle stopscrew, if necessary, to prevent engine from stalling. Turn each idle adjusting screw (one at a time—see note below) in or clockwise until engine begins to hesitate or miss, then turn screw slowly out until engine fires smoothly. Check idling speed and make any necessary readjustment to throttle stopscrew. Correct setting of idle adjusting screws should be ¾-1¼ turn open. See tune-up data on car model page for instructions on each car model.

NOTE—If desired, a preliminary setting of the idling screws may be made by turning the screws in until they seat and then backing each screw off exactly one turn. If this is done it will be possible to adjust both idling screw simultaneously by turning each in or out exactly same amount.

METERING ROD (ECONOMIZER):—Fuel is metered by a three-step metering rod being raised in the metering jet as the throttle is opened, allowing a greater fuel flow through the jet. No adjustment is provided but metering rods can be changed to secure leaner-than-standard fuel mixtures to compensate for special fuel or operating conditions, such as high altitude (see Jet Specification Tables). To change metering rod, take off cover (integral



with air horn) by taking out two attaching screws on outside and third screw under choke valve on inside and disconnecting throttle connector rod. Back off throttle stopscrew so that throttles close tight. Remove pin screws from metering rod pins (metering rod for each barrel mounted side by side), slide pins from metering rod arms being careful not to lose springs or bend rods, lift out metering rods. Check metering rod setting (see directions below) before installing new rods. Insert metering rods vertically so that they are guided in brass disc at top and enter metering rod jet at bottom. If rods correctly installed they should engage arms freely.

To Check Metering Rod Setting—With metering rods out of carburetor, remove retainer plate by taking out small brass screw, remove metering rod discs under plate. Insert two metering rod gauges Carter Part No. T-109-27 (Oldsmobile No. J-510) in place of metering rods, seating tapered ends in metering jets, install metering rod pin. Pin should rest lightly on lower end of notch in gauge with throttle closed and upper end of connector rod centering freely in hole in pump arm. If connector rod does not center in hole, adjust by bending rod. Remove gauges, reinstall metering rod discs, install metering pins, lubricate by putting graphite grease in metering rod arm holes. Throttle stopscrew must be adjusted for correct idling speed.

ACCELERATING PUMP:—Fuel drawn into pump chamber through strainer and disc-type check valve on upstroke of piston and discharged through outlet disc-type check valve and pump jet in carburetor wall opposite secondary venturi on downstroke when throttle opened for acceleration.

Adjustment—Pump arm on countershaft provided with two holes for pump rod link engagement. See tune-up data on car model page for recommended settings.

E6G1—CHRYSLER AIRSTREAM SIX, MODEL C7 (1936).
DE SOTO AIRSTREAM SIX, MODEL S1 (1936).
DE SOTO AIRFLOW SIX, MODEL S2 (1936).
C6E1—PLYMOUTH, STD. & DELUXE P1, P2 (1936) BEFORE ENG. NO. 269323.
C6E2—PLYMOUTH, STD. & DELUXE P1, P2 (1936) AFTER ENG. NO. 269323.
B6F1—PLYMOUTH, 'ECONOMY' MODELS P1, P2 (1936).

NOTE:—On Plymouth models with standard carburetors (C6E1, C6E2), main metering screw was changed in production from Part No. 159-56S to No. 159-58S. Fuel economy on first cars equipped with this 159-56S (262-266cc.) jet will be improved by installing the new type 159-58S (248-252cc.) jet.

TYPE:—Plain tube, downdraft type with throttle operated accelerating pump and vacuum operated 'step-up' device (economizer). Fuel for main nozzle metered by fixed metering screw at bottom of main nozzle under float bowl and by power jet when step-up valve open (high speed or wide open throttle operation). Fuel for idling metered by idle orifice tube in fuel channel riser and then taken through cross-passage (in which idle air vent located) to channel leading to idle ports opposite throttle edge. Idle adjustment screw controls fuel discharge through lower idle port (closed throttle idling fuel mixture). Idle adjustment and accelerating pump adjustment only points requiring attention.

IDLING ADJUSTMENT:—Idle adjustment screw controls fuel discharge through lower idle port and should be turned in for leaner mixture or out for richer mixture. Setting should be ¼-1 turn open (Chrysler, De Soto), ⅛-¾ turn open (Plymouth). See tune-up data on car model page for adjustment on engine for each car model.

ACCELERATING PUMP:—Delayed action type positively operated by throttle valve shaft. Fuel drawn into pump chamber past piston needle on upstroke of piston and discharged through pump jet in side of venturi on downstroke (when throttle opened for acceleration). Pump piston constructed in two sections, inner or lower piston carrying inlet valve needle, and outer or upper piston being linked to pump rod through spring. Outer piston lags behind (compressing spring) when throttle opened suddenly and subsequent piston movement when spring expands continues piston movement and draws out pump discharge.

Adjustment—Pump lever on throttle shaft provided with three holes for pump rod link engagement. Inner hole (short radius) provides minimum pump stroke and outer hole (long radius) maximum stroke. See tune-up on car model page for recommended settings and changes for seasonal requirements on each car model.

VACUUM STEP-UP (ECONOMIZER):—Spring-loaded ball-check valve controls fuel flow through power jet and is normally seated with vacuum step-up piston held up at top of stroke against spring tension by manifold vacuum. Low vacuum at high speed or when throttle opened wide allows spring to force piston down, opening ball-check valve and permitting additional fuel flow through power jet to main nozzle.

PERFORMANCE & ECONOMY:—All jets are fixed (non-adjustable). Main metering screw flow-tested and rated in accordance with capacity. Do not check size with wire drills. Main metering screw can be changed to secure leaner-than-standard fuel mixture (high altitude calibration) for special fuels and operating conditions. See Carter (B & B) Jet Specification Table.

FLOAT LEVEL:—Top of float should be 5/64" below top edge of bowl. To check, take off float bowl cover (upper body casting), hold lip of float lever firmly against needle valve, use gauge Part No. 1522-B to check float height (not soldered seam on float). To adjust, bend lip of float lever toward needle valve to lower float level, or toward float to raise float level.

CHOKE:—Choke valve mounted off-center and choke control connected through spring providing semi-automatic action. Poppet type relief valve mounted on choke valve to prevent over-choking.

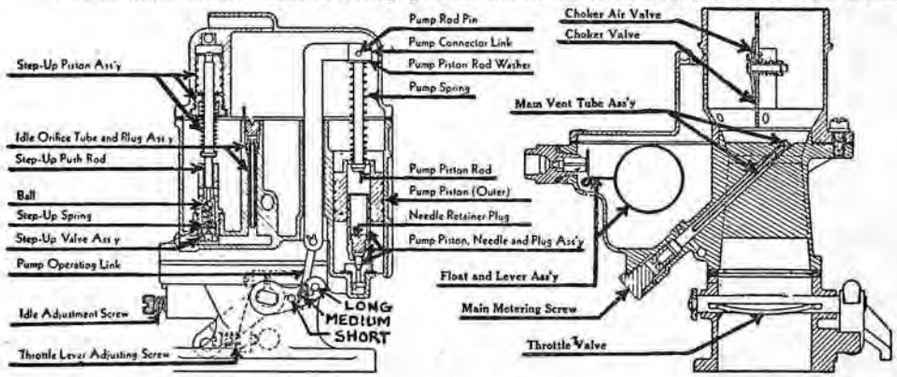
FAST IDLE:—Throttle valve stopscrew stop-cam pivoted below throttle shaft and linked to choke lever so that throttle opened to fast idle position when choke valve in use. Linkage should not require adjustment.

TROUBLE SHOOTING:—Poor Idling Performance—If correct adjustment cannot be secured, engine stalls, or low speed performance is unsatisfactory, take out idle hole plug and idle adjusting screw, examine ports and clean with air, take out idle passage tube and idle jet tube and clean with air.

Acceleration Unsatisfactory—Check pump setting, remove main metering jet and pump discharge jet, clean with air. Examine pump piston needle and seat assembly, replace if necessary.

High Speed Operation & Economy Unsatisfactory—Disassemble and examine Step-up valve cage assembly, see that ball-check is free and seats properly, that valve cage is screwed tight against its seat, that step-up piston is not sticking and push-rod moves freely in upper and lower guides. Check float level.

SERVICING:—To Disassemble Carburetor—Remove air horn (upper body casting) attaching screws, lift off air horn, remove step-up piston push-rod, drain carburetor, remove float lever pin and plug assembly, remove float needle valve and seat assembly, unscrew and remove step-up valve assembly and any ball-checks in carburetor bowl, remove pin spring on pump link at throttle lever, remove pump link, remove pump rod and piston assembly (pull out from above), remove pump piston assembly (inner piston, needle, plug) by inverting carburetor and catching parts as they fall out (do not drop this assembly or needle will be damaged), remove pump piston needle seat and gasket assembly being



careful not to lose steel ball, remove idle orifice tube assembly, remove pump jet plug and pump jet being careful not to damage jet with screwdriver, remove main metering screw, main vent tube and plug assembly, idle adjustment screw and spring, and idle hole plug. Take out throttle valve body attaching screws, lift off main body casting, remove gasket, remove step-up piston assembly and small gasket under piston, remove power orifice jet from assembly being careful not to lose ball and spring in assembly.

Servicing—Wash all parts and body in gasoline, blow out all passages in body and dry with air. Replace all worn and damaged parts.

Reassembling Carburetor—Assemble in reverse order from disassembly instructions, use new gaskets soaking metering jet gasket and step-up jet gasket in water for 15 minutes before installing. See that all jets and plugs are tightened securely. In assembling step-up valve assembly, insert steel ball in housing first, then spring, finally screw in jet. When replacing steel ball in pump cylinder see that ball is not placed in center hole in pump cylinder. See that small inner pump piston moves freely in outer piston and install pump assembly by turning carburetor down on one side and guiding connector link in guide and piston in cylinder (do not allow inner piston to drop out of outer piston). When replacing air horn (upper body) casting see that bushing is in place in step-up vacuum passage. This bushing should be installed on all carburetors not originally equipped. Check float level and adjust carburetor on engine.

CARTER (B & B) DOWNDRAFT CARBURETOR JET SPECIFICATIONS

Car Model	Yr.	Carb. No.	Main Metering Screw: Standard Flow	Main Metering Screw: Standard Part No.	Main Metering Screw: 1 Size Lean Less	Main Metering Screw: 1 Size Lean Part No.	Main Metering Screw: 2 Sizes Lean Less	Main Metering Screw: 2 Sizes Lean Part No.	Main Vent Air Bleed Size	Tube Assem. Part No.	Stepup Jet Power Orifice Size	Stepup Jet Power Orifice Part No.	Idle Orifice Tube Size	Idle Orifice Tube Part No.	Pump Valve Cage Assem. Jet Size	Pump Valve Cage Assem. Part No.
CHRYSLER C-7	1936	E6G1	282-286cc.	159-63S	5%	159-61S	10%	159-59S	.0315"	145-14S	#63	149-43S	.0276"	123-21S	.0354"	48-44
DE SOTO S1, S2	1936	E6G1	282-286cc.	159-63S	5%	159-61S	10%	159-59S	.0315"	145-14S	#63	149-43S	.0276"	123-21S	.0354"	48-44
PLYMOUTH P1,P2early	1936	C6E1	262-266cc.	†159-56S	5%	159-58S	10%	159-60S	.0315"	145-25S	#65	149-41S	.0276"	123-21S	.0315"	48-39
PLYMOUTH P1,P2 late	1936	C6E2	248-252cc.	159-58S	5%	159-60S	10%	159-64S	.0315"	145-25S	#65	149-41S	.0276"	123-21S	.0315"	48-39
PLYMOUTH Econ. Eng.	1936	B6F1	160-164cc.	159-68S	—	159-69S	—	—	.0315"	145-25S	#71	149-50S	.0276"	123-21S	.0276"	48-39

† Superseded by 159-58S.

B—10-1603—LAFAYETTE, MODEL 3610 (1936)—FIRST CARS.

B2SU—10-1673—GRAHAM CRUSADER, MODELS 80, 80A (1936).

B2—10-1678—GRAHAM CAVALIER, MODELS 90, 90A (1936).

B3—10-1680—GRAHAM SUPERCHARGER, MODEL 110 (1936).

NOTE:—Production changes have been made in jet calibrations for all Graham models. These new jets should be installed on earlier carburetors (before Serial No. given) to correct performance complaints as follows:

Crusader Model B2SU-10-1673—Changes made beginning with Serial No. 5093894 (stamped on flange of die casting above idle adjustment). To correct lean part-throttle performance on earlier models, change Idle Air Vent No. 49-79H (.079") to new smaller size No. 49-63H, (.063").

Cavalier Model B2-10-1678—Changes made beginning with Serial No. 5092447. To correct lean part-throttle performance on earlier models, change Idle Air Vent No. 49-79H to new smaller size No. 49-71H and change matched Metering-Pin and Jet No. 280-1108F to new size No. 280-1109F. For better acceleration performance, change standard pump setting from No. 3 hole in pump lever to No. 2 hole.

Supercharger Model B3-10-1680—Beginning with Serial No. 5090942, Power Jet changed from 49-890T to 49-660T and Main Nozzle from 47-100J to 47-125J. Beginning with Serial No. 6002388, Complete Pump Assembly changed from 149-539 to 149-540. To correct lean action at high speeds, change Power Jet and Main Nozzle as above and change pump setting to No. 2 hole in lever (No. 1 standard setting as specified for first cars was incorrect and should have been No. 2). Not necessary to change pump assembly to correct performance. (On cars with new pump assembly, pump standard setting is No. 3 hole). Vacuum Spring No. 24-275 was changed to No. 24-225 after first 300 cars.

Choke Valve on all Models—Choke valve control modified to include double end finger which kicks choke valve off the open position when dash control lever pulled out, and returns choke valve to off position when control pushed in. Not intended to be installed on earlier models but obviates service check to see that spring-controlled choke valves operate freely on first carburetors to insure complete opening and closing.

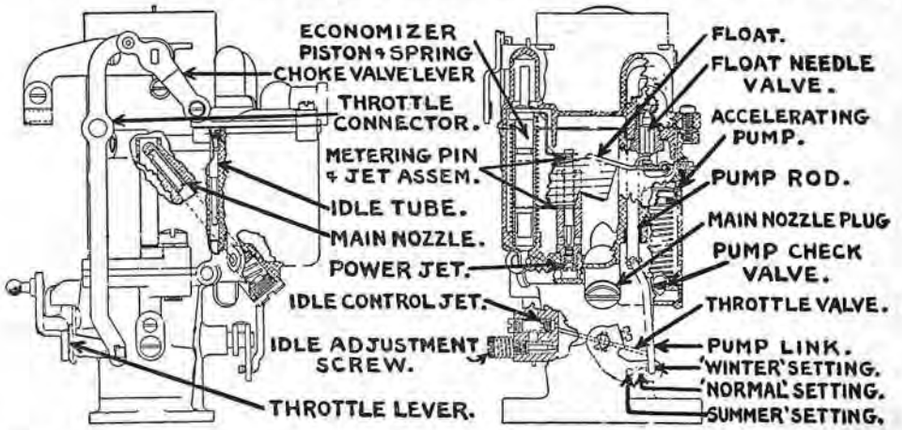
TYPE:—Plain tube, downdraft type with throttle operated accelerating pump and vacuum economizer or 'step-up device'. All fuel is metered by metering pin and jet and power jet (in lower end of metering jet assembly). Metering pin is controlled by vacuum economizer piston (see Economizer Section below). Fuel for idling is taken from the main nozzle channel up through the idle tube to a cross passage in which the idle air vent jet is located. The fuel mixture is then taken down through a passage and discharged through two ports opposite the throttle edge. The lower idle port (controlled by the idle adjusting needle) supplies all fuel for closed throttle idling, the upper port (above the throttle edge when the throttle is closed) acting as an additional air bleed. When the throttle is opened slightly the upper port comes into action and all fuel for car speeds up to approximately 18 M.P.H. is supplied by the idle system. The main nozzle comes into action at about 18 M.P.H. and acts in conjunction with the idle system at speeds up to 35 M.P.H. At speeds greater than 35 M.P.H. all fuel is supplied by the main nozzle. Idling adjusting needle and accelerating pump (seasonal setting) are the only points requiring attention.

ACCELERATING PUMP:—Positively actuated by throttle valve lever. Fuel drawn into pump chamber through ball-check valve on upstroke of piston (when throttle closed) and discharged through ball-check outlet valve and pump discharge jet (in upper mixing chamber) on downstroke of piston (when throttle opened for acceleration). Outlet valve normally held closed by cylindrical plunger in channel above ball. On Graham models, pump piston is spring-loaded and free on shaft so that some lag occurs when throttle opened suddenly and spring action to return piston to seat lengthens pump discharge period. This feature not used on LaFayette carburetor.

Adjustment—Pump lever on throttle valve shaft provided with four holes for pump rod link engagement. Holes numbered 1 to 4 out from shaft (#1 minimum stroke, #4 maximum stroke). See Note above and tune-up data on car model page for standard setting and adjustments for seasonal requirements on each car model.

IDLING ADJUSTMENT:—Idle adjusting screw controls fuel discharge from lower idle port (closed throttle idling fuel feed). Screw should be turned in for leaner mixture and out for richer mixture. See tune-up instructions for each car model for adjustment on engine.

PERFORMANCE & JET SPECIFICATIONS:—Performance should be satisfactory throughout entire operating range if idling adjustment and accelerating pump settings are correct. See Note above and Marvel Jet Specification Table for jet calibrations and changes to improve performance. 'High Altitude Jet' calibraions intended for permanent operation at elevations greater than 3000 feet only.



ECONOMIZER:—Economizer consists of a metering pin and jet controlled by a vacuum piston. The lower end of the vacuum piston chamber is connected to the carburetor barrel below the throttle valve. For all part-throttle positions, manifold vacuum will hold the piston at the lower end of the stroke (against the tension of the piston spring) so that the metering pin is held in position in the metering pin jet, limiting the fuel flow. When the throttle is opened, the fall in vacuum will allow the spring to force the piston upward, lifting the metering pin in the jet and permitting a greater fuel flow to the nozzle for acceleration and full power operation. The spring is calibrated to allow maximum economy (metering pin in jet) for all car speeds up to 65 M.P.H. on level road.

Metering Pin Timing Height. To check metering pin timing height (which controls economizer action), remove float bowl cover, hold vacuum piston down on seat (lower end of stroke with metering pin in metering jet), measure distance from top of metering pin to top of metering pin housing. This should be 13/64". Adjust by bending metering pin fork or lifter.

FLOAT LEVEL:—To check float level, take off float bowl cover, take off gasket, invert bowl cover, measure distance from gasket seat on bowl cover to top of float (bottom of float when not inverted) at point directly opposite needle valve assembly. Correct setting should be 1⅜". There is a fuel level sight hole on the side of the bowl closed normally by a plug. With engine Idling, fuel level in bowl should be even with the lower edge of the sight hole or 13/16" below top edge of float bowl.

CHOKE:—Choke valve offset on shaft. Choke lever linked to shaft by coiled spring so that choke valve action is spring-controlled and automatic during warming up period. See that choke valve operates freely throughout range to insure choke valve following lever when dash control is manipulated.
NOTE—On later Graham models two fingers incorporated in choke lever one of which 'kicks' choke valve off the open position when dash control lever pulled out, and the second returns choke valve to open position when dash control pushed all the way in.

FAST IDLE LINKAGE:—Throttle lever stopscrew stop-plate pivoted on throttle shaft and linked to choke valve lever so that throttle is opened to fast idle position when choke valve is in use. Linkage should not require adjustment.

AX-2 —LAFAYETTE, MODEL 3610 (1936).
NASH '400' MODEL 3640A (1936).
EX-22—AUBURN SIX, MODEL 654 (1936).
EX-32—AUBURN SUPERCHARGED MODEL 852 (1936).

NOTE:—Where Automatic Chokes or any type fast-idle mechanism is used, see separate articles for complete data. In all cases where fast-idle mechanisms are used, carburetor adjustments should not be made until engine is thoroughly warmed up and idling speed has returned to hot or 'slow' idle with choke valve wide open. Adjustments on the Supercharged Auburn model are made in same manner as on other car models.

TYPE:—Plain tube downdraft type with positively operated accelerating pump and economizer (connected to throttle valve). Main discharge jet is located at an angle in the venturi and is air bled by means of an air bleed hole drilled in the auxiliary venturi support. Main metering jet is located directly under main discharge jet and meters all fuel for discharge jet. Accelerating pump and economizer discharge fuel into mixing chamber through pump discharge nozzle located within primary venturi. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type controlling fuel mixture (screw turned in for leaner mixture and out for richer mixture). Engine must be thoroughly warm and idling at slow or hot idle speed with choke valve wide open when adjustments are made. With engine warm, close throttle, adjust throttle lever stopscrew until engine speed is approximately 6-7 M.P.H. Turn idling adjustment screw in or clockwise until engine lags or fires irregularly, turn screw out until engine begins to roll, then turn screw in slowly until engine fires smoothly and speed is at maximum. Check idling speed, and, if necessary, readjust throttle stopscrew. See tune-up data on each car model page for complete instructions.

NOTE:—There are two idling ports, an upper idling port (for low speed) above the throttle valve, and a lower port (for idling with closed throttle) below the throttle valve. The idling adjusting screw controls the fuel mixture supply for the lower port. If correct idling adjustment cannot be secured or if low speed operation is unsatisfactory, take out idling adjustment screw and upper idling port plug and blow out ports with compressed air. The idle tube located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jet which meters all fuel for main discharge jet is of the 'fixed' type and is not adjustable. Jets should not be changed except for special fuels or to compensate for special operating conditions such as high altitude (permanent operation at elevations greater than 3000 feet). See table at end of Stromberg section for standard jet calibration.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 60 M.P.H. or with wide open throttle, economizer needle valve pin will be forced down, opening the economizer valve, and allowing additional fuel to flow through the valve and be discharged into the mixing chamber through the pump discharge nozzle. Economizer is correctly set at the factory and the adjustment should not be changed. If carburetor is disassembled, the position of the adjustment nut (at upper end of pump piston rod) should be noted so that adjustment will not be changed when pump is reassembled. Economizer setting can be checked by noting throttle valve opening when pump piston rests on by-pass valve seat (less over-travel) with pump set for maximum stroke. Check throttle opening by placing a 3/8" drill (EX-22), 27/64" drill (EX-32) between throttle valve edge and carburetor wall. Exceptions to these standard settings are given in table below:

Car Model	Carburetor	Economizer Setting	Pump Setting
Auburn 654	EX-22	3/8"	Max.
Auburn Schgd. 852	EX-32	27/64"	Max.
La Fayette 3610	AX-2	5/16"	Max.
Nash 3640A	AX-2	21/64"	Max.

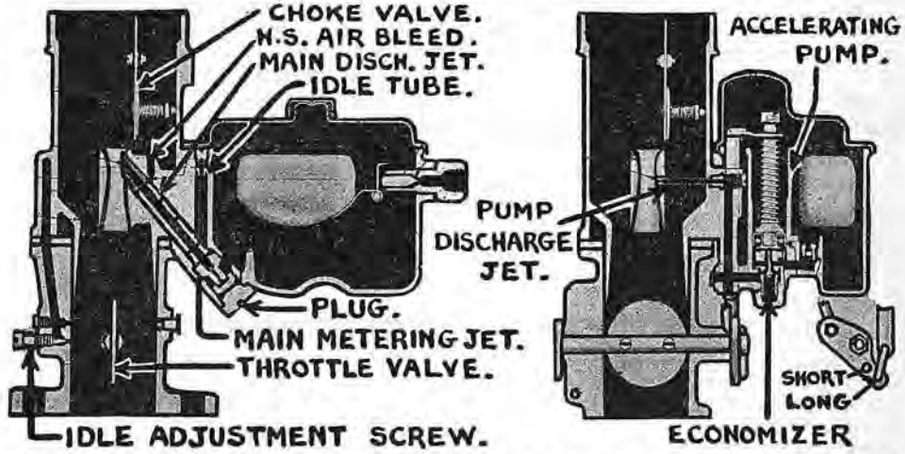
Adjustment—Take out cotter pin in adjusting nut at top of pump piston stem, turn nut, see that cotter pin replaced to lock adjustment.

ACCELERATING PUMP:—Accelerating pump piston rod is connected to a pump operating rod under float cover (pump in float bowl). On the upstroke **of the pump piston gasoline is drawn from the float chamber through the** pump check valve into the pump chamber. On the downstroke of the piston when the throttle is opened, this fuel is forced out through the economizer needle valve and discharged through the pump discharge nozzle into the mixing chamber. The closing of the check valve prevents fuel flowing back into the float chamber. When the throttle is held open the economizer needle valve is opened by the pump piston and additional fuel is discharged through the pump nozzle. This fuel is metered by the pump discharge nozzle. Standard pump capacity is 19-21 cubic centimeters per 10 strokes with pump set for maximum stroke. Exceptions to this standard capacity are shown in table below. Letter 'S' indicates that pump should be operated slowly.

Car Model	Carburetor	Pump Capacity	Pump Setting
Auburn 654	EX-22	19-21 cc	Max.
Auburn Schgd. 852	EX-32	19-21 cc	Max.
La Fayette 3610	AX-2	22-26 cc. (S)	Max.
Nash 3640A	AX-2	18-22 cc. (S)	Max.

Adjustment—Throttle lever has two or three holes for engagement of pump rod link to provide minimum (inner hole), medium (center hole), maximum (outer hole) stroke. See tune-up data on car model page for recommended settings and changes for seasonal requirements.

FLOAT LEVEL:—Fuel level in float bowl (distance from surface of fuel to top edge or gasket seat on bowl) is set at 5/8" with 3 lbs. pressure.



THROTTLE CRACKING DEVICE:—Auburn models fitted with interconnected linkage between choke valve and throttle valve so that throttle is opened slightly when carburetor is choked for starting as follows:

Auburn 654—Throttle stopscrew stop-cam pivoted above valve shaft. Should not require adjustment. See that stopscrew rests on high point of cam with choke valve fully closed.

Auburn Schgd. 852—Adjust linkage so that when choke valve fully closed, #52 drill may be passed between throttle valve edge and carburetor wall but #48 drill will be 'no go'.

CHOKE:—Valve is provided with a relief poppet valve which will open when engine begins to fire and will prevent over-choking. **On cars with conventional choke control, see that choke linkage is adjusted so that choke valve is fully closed with choke button pulled all the way out and wide open with choke control button pushed all the way in.**

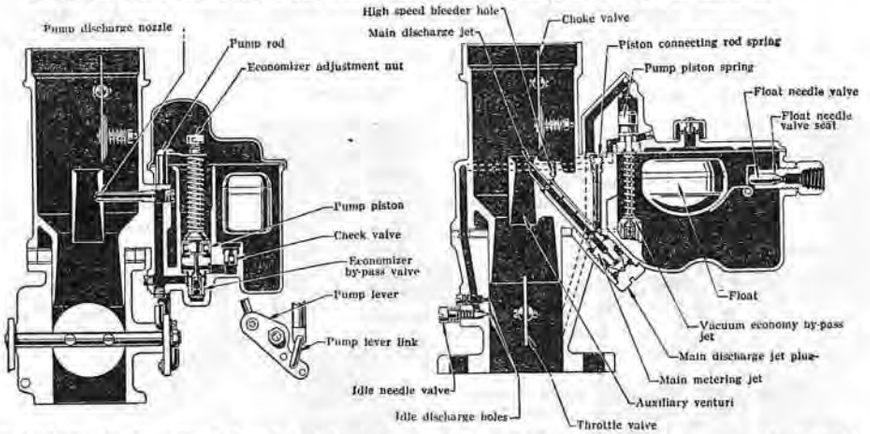
EX-23—STUDEBAKER DICTATOR, MODELS 3A, 4A (1936).

This model is fitted with a built-in Automatic Choke (vacuum piston in throttle valve body, thermostatic spring coil mounted separately on manifold) and a Fast Idle. See separate article in 'Stromberg Automatic Choke and Integral Fast Idle' for complete data on these units.

NOTE:—For increased fuel economy with slight performance loss, standard main metering jet (.058"—Part No. P-17004) may be replaced by a one-size-smaller (.056") metering jet. The two-size-smaller jet (.054") should be used only for high altitude operation. See Stromberg Jet Specification Table for complete specifications.

ACCELERATING PUMP:—Pump piston rod linked positively to throttle lever. Fuel is drawn into pump cylinder through check valve in intake channel from float bowl on upstroke of piston and is discharged through outlet (by-pass) valve to pump jet located in side of auxiliary venturi on downstroke of piston when throttle opened for acceleration. When throttle is held open pump piston depresses by-pass valve at bottom of cylinder allowing continuous fuel flow through valve to pump jet. Pump capacity in cc. per 10 strokes when operated slowly is 15-19 cc. with pump set for medium stroke.

Adjustment—Throttle lever provided with three holes for engagement of pump rod link to provide varied pump stroke as follows: inner hole—minimum stroke; center hole—medium stroke; outer hole—maximum stroke. See tune-up data on car model page for recommended setting on each car model.



FLOAT LEVEL:—Fuel level in float bowl set at 5/8" below top edge or gasket seat of bowl. Float level can be changed to correct fuel level by bending lever at the point where it is attached to the float.

CHOKE:—Choke valve provided with relief poppet valve to prevent over-choking. These models used with Sisson Type AC-600 automatic choke (standard or optional equipment). See separate article for data on this equipment.

EE-1—AUBURN EIGHT, MODEL 852 (1936).
BUICK SPECIAL EIGHT, MODEL 36-40 (1936).
FORD V8, ALL MODELS (1936)—SEE NOTE.
LINCOLN ZEPHYR, MODEL H (1936).
NASH AMBASSADOR EIGHT, MODEL 3680 (1936).
STUDEBAKER PRESIDENT, MODEL 2C (1936).

NOTE:—Ford Models—Carburetor changed in production from Ford Part No. 48-9510-D to Part No. 67-9510-A. This new carburetor has smaller main metering jet and venturi and gives better fuel economy. An additional model (Ford Part No. SE-67-9510) is available as optional equipment and has smaller main metering jet and venturi than regular 67-9510-A. This model intended for light work such as house-to-house delivery. See Stromberg Jet Specification Table for complete specifications on all models.

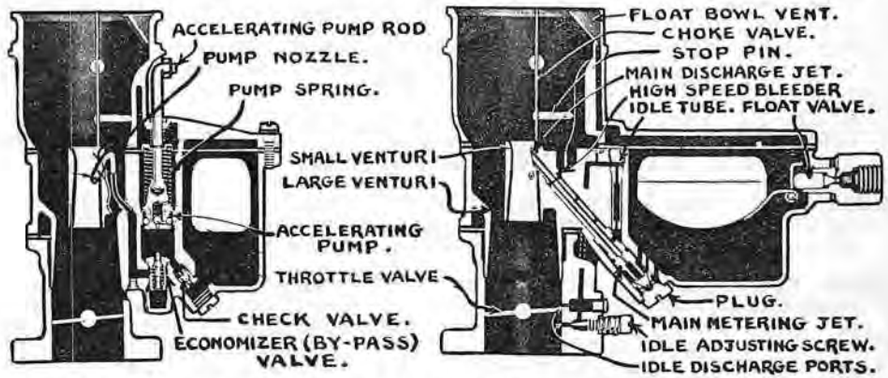
Buick Model 40—The standard main metering screw (.048—Part No. 19442) must be replaced with slightly smaller (.044") metering jet when installing the optional Triplex Air Cleaner.

Studebaker Pres. 2C—For increased fuel economy with slight performance loss, standard main metering jet (.047"—Part No. P-19442) may be replaced by one-size-smaller (.045") metering jet. The two-size-smaller jet (.043") should be used only for high altitudes. Main metering jets for both carburetor barrels must be same size and should be replaced as a unit.

Automatic Chokes & Fast Idles—See separate article for data on these units when used with the EE-1 carburetor on these car models.

TYPE:—Duplex or dual barrel, plain tube, downdraft type. Similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on the same shaft and do not require synchronization. Accelerating pump is positively operated by the throttle lever through a 'walking beam' linkage on the carburetor body casting. Idling adjustment and accelerating pump adjustment (some models only) are the only points requiring attention.

IDLING ADJUSTMENT:—Needle valve type controlling fuel mixture. Adjusting screws control discharge through lower or closed throttle discharge ports below throttle valves (upper ports also discharge fuel when throttle is opened slightly) and should be turned in for leaner mixture or out for richer mixture. Engine must be warmed up when adjustments are made. With engine warm and idling with closed throttle (adjust throttle stopscrew, if necessary, so that idle speed is approximately 7-8 M.P.H.) adjust each idle adjusting screw in turn by turning screw in until engine begins to hesitate or miss,



and out until engine begins to roll, and then turning screw in slowly until engine fires smoothly. Final setting should be approximately midway between the missing (lean) and rolling (rich) positions. After adjusting both screws, recheck idling speed. See tune-up data on car model pages for complete adjustment instructions on each car model.

If correct idling adjustment cannot be secured, take out idling adjusting screws and upper idling port plugs and clean out idling ports with compressed air. The idling tubes located in the upper carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions, such as permanent operation in high altitudes.

Economizer is built in lower end of accelerating pump and is operated by the pump piston. At speeds above 65 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve so that additional fuel flows through this valve and is discharged through the pump discharge nozzle. Economizer should not require attention but setting can be checked by noting throttle opening when pump piston contacts by-pass valve seat (economizer). Throttle valve opening at this point as checked by drill passed between throttle valve edge and carburetor wall is shown in table below. No adjustment provided but pump arm (walking beam connector) may be bent slightly to correct economizer action.

Car Model	Economizer Setting
Auburn Model 852	21/64"
Buick Model 40	21/64"
Ford, all models	19/64"
Lincoln Zephyr	19/64"
Nash 3680	7/32"
Studebaker 2C	21/64"

Adjustment—No adjustment provided but pump arm (walking beam) may be bent slightly to correct economizer action.

EE-22—BUICK, CENTURY 60, ROADMASTER 80, LIMITED 90 (1936).
CHRYSLER, IMPERIAL C10, CUSTOM IMPERIAL C11 (1936).
LINCOLN V12, MODEL K (1936).

EE-3 —DUESENBERG, MODEL J (1936).
PACKARD TWELVE, MODELS 1407, 8 (1936).
PIERCE ARROW EIGHT, MODEL 1601 (1936).
STUTZ, MODEL DV-32 (1936).

NOTE:—On Buick models, standard main metering jets (.052"—Part No. P-17004) must be replaced by smaller (.051") jets when optional Triplex Air Cleaner is installed.

TYPE:—Dual barrel plain tube downdraft type. These models are similar in design to other 'E' type carburetors except that each carburetor barrel has independent main discharge jets, main metering jets, throttle valves and idling adjustments. Throttle valves are mounted on a single shaft and will not require synchronization. Accelerating pump is positively operated by the throttle through a 'walking beam' connection mounted on the carburetor upper body. Idling adjustment and accelerating pump adjustment (summer and winter setting) are the only points requiring attention.

NOTE—Some models are fitted with Automatic Chokes and Fast Idles. See separate articles for complete data on Stromberg Fast Idles and Type 'C' Automatic Choke, and Sisson Automatic Choke. On these models engines must be thoroughly warmed up so that choke valve is wide open and engine idling at slow or hot idling speed when adjustments are made.

IDLING ADJUSTMENT:—Two needle valves controlling fuel mixture. Engine must be thoroughly warmed up before idling adjustment is made. With engine warm and running, close throttle and allow engine to idle. Adjust inner (left hand) idling adjustment screw for smoothest and fastest running position by turning idling screw in until engine begins to miss and speed decreases, then turn screw out until engine begins to roll, finally turn screw in until engine fires smoothly (final setting should be approximately half way between missing and rolling points). Adjust outer (right hand) idling adjustment screw in the same manner. Idling screw operates on fuel mixture and should be turned in for leaner mixture and out for richer mixture. See tune-up data on car model page for complete adjustment instructions on each car model.

On 'V' type engines with two ignition coils where one coil furnishes ignition for one bank, ignition can be cut off for one bank by disconnecting the coil primary or grounding the coil high tension lead to the engine block so that the engine will idle on the remaining cylinders. The idle adjustment for the carburetor barrel feeding the cylinders which are firing can then be adjusted. The coil should then be reconnected and the other coil disconnected so that the engine will fire on the cylinders of the other bank. The idle adjustment for the carburetor barrel feeding this bank can then be adjusted. After both idling adjustments have been completed in this manner, engine should be idled on all cylinders and any necessary readjustment made to secure smooth running. The throttle stop screw can then be adjusted to secure correct idling speed.

Pierce Arrow—Manufacturer recommends that idling speed be set at 37-39 explosions in 15 seconds (check by removing inspection plug in exhaust manifold) and idling adjustment then made by disconnecting and grounding spark plug cables on end cylinders (1, 2, 7, 8) while inner barrel adjustment is made. Then ground cables on cylinders 3, 4, 5, 6 while adjusting outer barrel. Finally idle engine on all eight cylinders and recheck idling speed. This same method of adjustment may be used on other car models.

Chrysler—Manufacturer recommends that an initial setting be made by turning both screws in until they seat and then backing screws off exactly one turn. Adjustment should then be made by turning both screws in or out simultaneously and exactly the same amount. This method may be used on other car models.

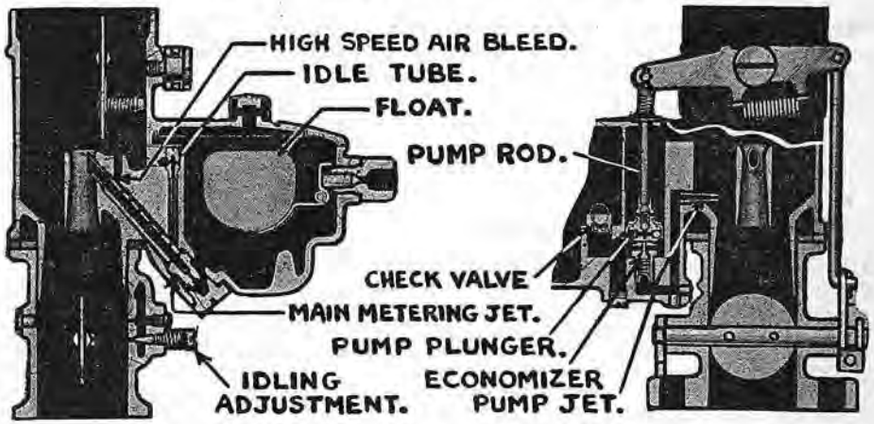
If correct idling adjustment cannot be secured, take out idle adjusting screw and upper idling port plug and clean out idling ports with compressed air. The idling tubes located in the carburetor body can also be taken out and cleaned with compressed air.

HIGH SPEED ADJUSTMENT AND ECONOMIZER:—Main metering jets which meter all fuel for main discharge jets are of the 'fixed' type and not adjustable. Jet size is stamped on the jet in decimal fractions of an inch. Jets should be changed only to compensate for special fuels or operating conditions such as high altitudes.

Economizer is built in lower end of accelerating pump and is operated by pump piston. At speeds above 70 M.P.H. or with wide open throttle, economizer needle valve is forced down, opening the economizer valve, so that additional fuel flows through the valve and is discharged into the mixing chamber through the pump discharge nozzle. Economizer should not require attention but setting can be checked by noting throttle opening (pass wire drill of correct size between edge of throttle valve and carburetor wall) at point where pump piston contacts economizer by-pass valve seat with pump set for maximum stroke. Settings are as follows:

Car Model	Carburetor	Economizer Setting
Buick (first cars)	EE-22	3/16"
Buick (after No. 2873362)	EE-22	15/64"
Chrysler C10, C11	EE-22	21/64"
Duesenberg J	EE-3	7/32"
Lincoln V12	EE-22	21/64"
Packard V12	EE-3	7/32"
Pierce Arrow 1601	EE-3	7/32"
Stutz DV-32	EE-3	3/16"

NOTE—On Buick carburetors, economizer is adjusted by loosening locknut and turning pump operating rod in or out of connector at throttle lever.



ACCELERATING PUMP:—Accelerating pump is operated through a walking beam arrangement by the throttle lever. Pump chamber is filled with fuel from the float chamber (flowing through the pump check valve) when the throttle is closed. When the throttle is opened, this fuel is discharged through the economizer valve and the pump discharge nozzle into the mixing chamber. Check valve prevents fuel being discharged back into the float chamber. When the throttle is held open, the piston opens the economizer needle valve so that fuel flows straight through the pump and is discharged through the pump nozzle. The pump discharge nozzle meters this fuel. Pump capacity in cc. per 10 strokes when pump is operated slowly is given in table below. Pump should be set for maximum (Max.) or minimum (Min.) stroke as indicated.

Car Model	Carburetor	Pump Capacity	Pump Setting
Buick 60, 80, 90	EE-22	23-27 cc.	Max.
Chrysler C10, C11	EE-22	20-24 cc.	Max.
Duesenberg J	EE-3	20-22 cc.	Min.
Lincoln V12	EE-22	20-24 cc.	Max.
Packard V12	EE-3	20-22 cc.	Min.
Pierce Arrow 1601	EE-3	20-22 cc.	Min.
Stutz DV-32	EE-3	20-22 cc.	Min.

Adjustment:—Throttle lever has two holes for engagement of pump rod to provide varied pump stroke. Inner hole (shorter radius) providing short pump stroke should be used for average temperatures or summer operation. Outer hole providing maximum pump stroke should be used for winter operation. See tune-up data on car model page for specific settings and recommended seasonal changes.