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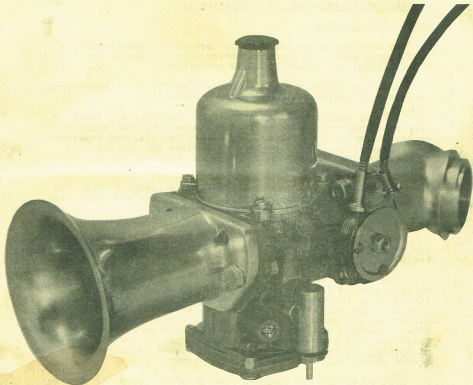
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**TUNING INSTRUCTIONS: ELIMINATOR II
S.U. CARBURETOR**



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RIVERA'S SU "ELIMINATOR I & ELIMINATOR II

TUNING INSTRUCTIONS

We hope you enjoy our fine SU Carburetor. Many years of development have been spent in making this carburetor the finest available for all HARLEY DAVIDSON conversions.

A good picture is worth a thousand words, our instructions include many pictures with detailed explanations.

All our carburetor kits are set-up for stock applications unless ordered otherwise. We include in each kit two extra fuel metering needles, one leaner, one richer for altitude corrections. We carry a large variety of tapered needles for special needs. If a carburetor is ordered for a special purpose, the correct needle will be installed.

When installing a new carburetor it is always a good idea to check the valve clearance, install new points and plugs, set the timing. Many problems are blamed on carburetion when in reality the blame is a badly tuned engine.

The following pages will instruct you in the installation and tuning of the "ELIMINATOR II SU". Please take the time to fully review all the instructions.

The fuel inlet on all "ELIMINATOR II" carburetors is a full $\frac{1}{4}$ " for improved flow. We install a 3.5 mm Viton tipped needle to assure flow. Installation of a good fuel filter would assure longer life and less problems in the needle & seat area. Viton is the best sealer for all gasoline engines, the tips will wear into the seats after prolonged use. We suggest cleaning the carburetor on a yearly basis, at this time install a new viton needle. Develop the habit of turning off the fuel valve when the engine is shut off, if the needle should stick, a washdown could occur.

Use no oil in the dampner. Once a month remove the dome nut and lightly spray with WD-40 inside the dome. If you use the carburetor in dusty conditions clean the foam in warm soap and water on a monthly basis. Use no oil on the foam.

Take your time during the installation. Double check all mounting bolts once a month. Air leaks are the SU's worst enemy, causing uneven plug readings, and idle problems.



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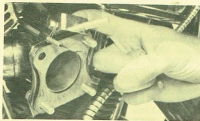
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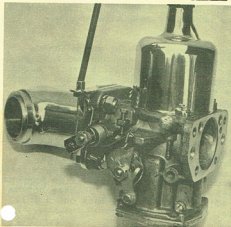
Our Tickler Pump US Patent 4,228,110 is a device to induce fuel into the venturi by pressure. It also serves as an overflow in the event the fuel needle should stick in the open position, fuel would flow out the tickler instead of into the engine. The tickler is a press fit into the body and should not be removed.

A complete parts list is included for both the ELIMINATOR I and the ELIMINATOR II. Please use the correct part number when ordering spares.



1

Install the manifold in the usual manner. We advise using teflon tape to cover the "O" rings before clamping. 1981 and up use band type seals. Install clamps lightly as manifold will require leveling. The standard leveling bracket is mounted from the center case bolt of the engine to the bottom left manifold hole, for later models mount in same position as stock mounted bracket.



2

Remove dome and piston. Install the "ELIMINATOR II" body (shown) to the manifold with the hardware supplied. The standard bracket for cable holder mounts on the outside top of manifold. (shown in Fig 7). There is a cable holder on top of the bracket.

1973 & later models:

We have developed a push pull cable rotor and cable holder for those that wish to use their stock cables. It can be used push & pull, or just pull. 1973 to 1980 PULL ONLY--1981 UP use both the push & pull. This system was designed for the "ELIMINATOR II" and cannot be used for earlier models. Part No. RE-PP-1.

Instructions for mounting are supplied with each Push-Pull kit.

NOTE: All "ELIMINATOR II" SU Carburetors have a double ended throttle shaft. The Push-Pull device was designed with that in mind. The rotor would be used on the right side looking into the mouth of the carburetor. The cable bracket mounts on the inside top flange of the carburetor body.



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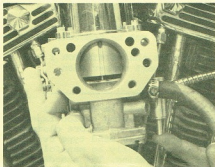
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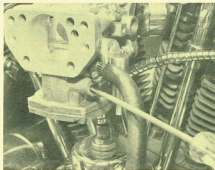


After carburetor is installed on manifold, with leveling bracket in position level the carburetor and tighten the manifold clamps securely. Install the Piston & Dome carefully as the tapered needle will bend if abused. Secure the dome and check for free piston up and down movement. If piston is sticky, loosen dome screws and re-locate until piston moves free. Attach Fuel line to $\frac{1}{8}$ " fitting. Turn fuel on.

STARTING

Hold the piston lifting pin up with a finger of the left hand while pushing the plunger of the tickler pump up and down with a finger of the right hand. Six to eight tickles is usually enough to induce fuel into the venturi, then the heads. We advise one kick with the key off to allow the fuel to enter the heads, then turn the key on and kick or push the button. Priming the tickler will not be necessary on a warm engine.

4



All carburetors are sent rough tuned. All "ELIMINATOR II" carburetors have an adjustable main jet that is easily tuned. The main jet adjusting screw (see Photo) tunes the mixture over the entire RPM range. Turning the screw to the right or clockwise richens the mixture, turning the screw to the left or counter-clockwise leans the mixture. Two full turns from a neutral position is all that should be used, if more turns are required a different needle should be used. The neutral position is the one the carburetor is set when you receive it, if it happens to get out of adjustment, lightly bottom the adjusting screw and back out 4 full turns, this is neutral.

TUNING A NEW INSTALLATION

Start the engine, allow a warm-up period. Set the RPM to 1200 with the idle adjustment screw. Adjust the MIXTURE to the highest RPM available. Lower the RPM to normal and road test for any further adjusting.



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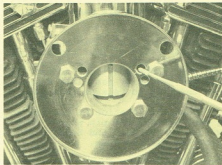
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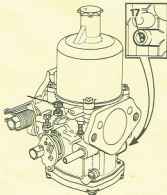
4



- 5 The float level is carefully adjusted before shipping. Transporting could alter the setting which would affect the mixture.
ADJUSTMENT Remove the four screws that secure the bottom plate onto the body. Invert the carburetor, lay a flat rule over the body and float. The rule should just clear the bottom of the float. If any adjustment is necessary adjust the brass tang on the float CAREFULLY.
- 6 Make all final adjustments with the air cleaner installed. Do not use any air filtration system that blocks the holes shown by the scribe.

COLD START PROCEDURE Turn the fuel on, raise the piston and tickle the carburetor as outlined on page three. When engine starts lock on lever 10 (page 5). This lever has been grooved to locate on screw 5. In this position you can obtain a fast idle slight choke condition. The amount of RPM is determined by the amount of throttle opening. Use screw 5 to adjust idle. When engine is warm a twist of the throttle grip will release the cam and drop the idle to the pre-set position. All tuning should be done on a warm engine with plug readings.

7 NUMBER 17



The main jet adjusting screw. We have covered this adjustment previously, it is important to understand why and how it works.
This adjustment moves the main jet up or down depending on which way it is turned. As the needle is tapered, by moving the main jet up you would locate the fuel discharge on a fatter portion of the needle, hence leaning the mixture. The metering needle rides inside the main jet at all times.
Mixture strength can vary up to .005 with one turn either rich or lean depending on the way it is turned. REMEMBER 2 FULL turns from neutral either way is the maximum allowed. To locate neutral lightly bottom the adjusting screw and back out 4 FULL turns. If you ever change needles always start from the neutral position when tuning.



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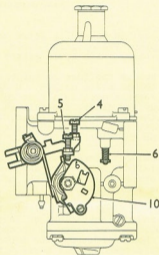
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NUMBER 4 The idle adjusting screw. Used for initial tuning and correct idle speed. Final idle adjustments are made with a warm engine.

Number 5 Fast idle screw (picture may not be representative of your carburetor.) Used to lock onto notch in cam 10 for fast idle-semi-choke position. Adjust the screw for the amount of fast idle desired. Twist the throttle to release fast idle.

Number 6 Physical location of the piston lifting pin. Lifting the pin allows fuel to flow into the venturi and heads with the use of the tickler pump.

Number 10 Rotary choke lever. This lever has been slotted so # 5 may lock it in a pre-determined position. By locking the lever onto # 5 a fast idle will result. Use # 5 to determine the correct RPM for fast idle.

8 Part Number RE-PP-1

Picture on left shows our new push-pull cable holder and rotor. Designed to accommodate all stock cables on machines from 1973 to present.

1973 to 1980 Use PULL only. The rear cable holder and rear hole on rotor.

1981- to present Stock push-pull cables easily attach to this combination and will adjust exactly the same as on a stock carburetor. Provides the safety of a controllable throttle under all riding conditions. Combined with our dual throttle return springs this throttle system is the ultimate in aftermarket conversions.



NOTE: RE-PP-1 was designed for the "ELIMINATOR II" SU Carburetor. It cannot adapt to the older SU Carburetors. All "ELIMINATOR II" carburetors have dual throttle springs.

ELIMINATOR II SU CARBURETOR

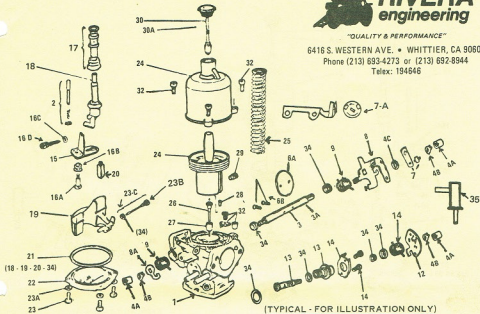


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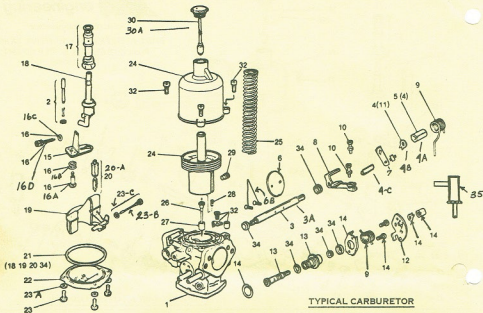
PARTS LIST: ELIMINATOR II SU CARBURETOR

Number	Description	Part No.	List Price
1	Body	LZX-1755	\$ 49.00
2	Piston Lift Kit	WXZ-1106	\$ 2.75
3	Throttle Spindle Kit (Includes spindle, screws, seals, gaskets)	WXZ-1128	\$ 19.00
3-A	Throttle Spindle (shaft)	JZX-1669	\$ 16.50
4	Throttle Spindle Kit (Sundries) (Includes: 2 nuts, 2 washers, 1 bushing, and 3 screws).	WXZ-1501	\$ 9.00
4-A	Nut, Spindle (1)	AJD-8104	.75
4-B	Washer, Tab (1)	AUD-5323	.50
4-C	Tube, Bushing	JZX-1343	\$ 2.50
6	Throttle Disc Kit (Includes disc, screws, gaskets).	WXZ-1183	\$ 9.00
6-A	Throttle Disc	AUD-3005	\$ 8.00
6-B	Throttle Disc Screws (2)	AUC-1358	\$.60
7	Throttle Lever (with cable holder)	RE-TL-1	\$ 3.50
7-A	Push-Pull Throttle (holder & rotor)	RE-PP-1	\$ 9.95
8	Throttle Stop Lever	JZX-1603	\$ 8.00
8-A	Throttle Spring Retainer	JZX-1603-A	\$ 1.00
9	Throttle Return Cam Spring (2)	WXZ-1115	\$ 3.95
12	Cam Lever, Choke	JZX-1609	\$ 7.95
13	Choke Starter Assembly	CUD-2791	\$ 17.50
14	Choke Spindle Kit	WXZ-1489	\$ 7.95
5	Bi-Metallic Lever	CUD-2399	\$ 23.50
6	Bi-Metallic Kit (parts below)	WXZ-1430	\$ 7.40
16-A	Screw	AUD-3584	.95
16-B	Spring	AUD-3583	.65
16-C	Seal, Washer	AUD-3586	.50
16-D	Screw, Main Jet Adjuster	AUD-3585	\$ 3.00
17	Jet Bearing	WXZ-1441	\$ 7.95

Number	Description	Part No.	List Price
18	Main Jet (.100) Stock	WXZ-1453	\$ 7.50
18-A	Main Jet (.1015) 84" to 90" Strokers	WXZ-1453A	\$ 7.50
18-B	Main Jet (.1024) 90" & over Strokers	WXZ-1453B	\$ 7.50
19	Float	LZX-1601	\$ 9.95
20	Gross Jet	RE-GR-2	\$ 6.00
21	Seal "O" Ring	AUD-3588	\$ 1.90
22	Float Lid	JZX-1005	\$ 7.90
23	Screws, Float Lid (4)	AUD-3590	\$ 1.10
23-A	Washers, Float Lid (4)	AUD-2246	.80
23-B	Float Spindle Screw	CUD-2082	\$ 6.50
23-C	Piston Spring 12 oz. (Green)	AUC-4127	.75
24	Suction Chamber (with piston)	AUD-9999	\$ 65.00
25	Piston Spring 4 1/2 oz. (Red)	RE-350	\$ 3.00
25-A	Piston Spring 8 oz. (Silver)	RE-360	\$ 3.00
25-B	Piston Spring 12 oz. (Green)	RE-370	\$ 3.00
26	Jet Needle BBX - Standard	RE-430	\$ 7.50
26-A	Jet Needle BBT	RE-435	\$ 7.50
26-B	Jet Needle BBD	RE-440	\$ 7.50
26-C	Jet Needle BCJ	RE-450	\$ 7.50
26-D	Jet Needle BBZ	RE-460	\$ 7.50
27	Jet Needle Guide	JZX-1039	\$ 3.50
28	Jet Needle Spring	AUD-3306	.40
29	Jet Needle Screw (Retainer)	AUD-4232	\$ 4.50
30	Piston Damper (Plastic)	AUC-8103	\$ 5.95
30-A	Piston Damper (Chrome No Stern)	RE-8103C	\$ 7.50
32	Piston Key Set	WXZ-1490	\$ 4.25
34	Gasket Pack (All items shown as 34)	WXZ-1505	\$ 13.00
35	Tickler Pump, Complete	RE-TP-1	\$ 13.95
35-A	Tickler Pump, Rebuild Kit (Includes 2 springs, viton cup and washer).	RE-TP-2	\$ 3.45

ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

ELIMINATOR I SU CARBURETOR



TYPICAL CARBURETOR

PARTS LIST: ELIMINATOR I SU CARBURETOR

Number	Description	Part No.	List Price
1	Body	LZX-1455	\$ 60.00
2	Piston Lifting Kit	WZX-1106	\$ 2.75
3	Throttle Spindle Kit (Includes shaft, screws, seals, gaskets)	WZX-1128	\$ 19.00
3 - A	Throttle Spindle (shaft)	AUD-4774	\$ 16.50
4	Throttle Shaft Sundries Kit	WZX-1501	\$ 9.00
4 - A	Nut, Throttle Shaft (1)	AJD-8104	.75
4 - B	Washer, Tab (1)	AUD-3323	.50
4 - C	Tube, Bushing	JZX-1343	\$ 2.50
5	Same as 4 - A		
6	Throttle Shaft Disc (Includes gaskets, disc, screws).	WZX-1183	\$ 9.00
6 - A	Throttle Diaz Screws (2)	AUD-3005	\$ 8.00
6 - B	Throttle Diaz Screws (2)	AUC-1358	\$.40
7	Throttle Lever RE-TL-1 (with cable holder)	RE-TL-1	\$ 3.50
8	Throttle Stop Lever	JZX-1323	\$ 8.00
9	Spring, Throttle Return (1)	WZX-1466	\$ 3.50
10	Idle Screw Kit	WZX-1429	\$ 5.00
12	Cam Lever, Choke	CUC-2819	\$ 7.95
13	Choke, Starter Assembly	CUC-2791	\$ 17.50
14	Choke Spindle Kit	WZX-1454	\$ 7.95
15	Bi-Metallic Lever	CUC-2399	\$ 23.50
16	Bi-Metallic Kit, Complete	WZX-1430	\$ 7.40
16 - A	Screw	AUD-3584	\$.99
16 - B	Spring	AUD-3583	\$.85
16 - C	Seal, Washer	AUD-3586	\$.30
16 - D	Screw, Main Jet Adjuster	AUD-3585	\$ 5.50
17	Jet Bearing	WZX-1441	\$ 7.00

Number	Description	Part No.	List Price
18	Main Jet	WZX-1453	\$ 7.50
19	Float	LZX-1601	\$ 9.95
20	Needle & Seat 3.5 MM	RE-1199	\$ 4.95
20 - A	Needle & Seat 5.0 MM (NOTE) (Body must be modified for 5.0 MM)	RE-1199-L	\$ 4.95
21	"O" Ring Seal	AUD-3588	\$ 1.90
22	Float Lid	JZX-1005	\$ 7.50
23	Screws, Float Lid (4)	AUD-3590	\$ 1.10
23 - A	Washers, Float Lid (4)	AUD-2248	\$.80
23 - B	Screw, Float Spindle	CUD-2082	\$ 6.50
23 - C	Washer, Crush, Spindle Screw	AUC-4127	\$.75
24	Suction Chamber (Includes Piston)	AUD-9999	\$ 65.00
25	Piston Spring 4 1/2 oz.	RE-350	\$ 3.00
25	Piston Spring 8 oz. (Standard)	RE-360	\$ 3.00
25	Piston Spring 12 oz.	RE-370	\$ 3.00
26	Jet Needle - BBX (Standard)	RE-430	\$ 7.50
	Jet Needle - BBT	RE-435	\$ 7.50
	Jet Needle - BBD	RE-440	\$ 7.50
	Jet Needle - BCJ	RE-450	\$ 7.50
	Jet Needle - BBZ	RE-460	\$ 7.50
27	Jet Needle Guide	JZX-1038	\$ 3.50
28	Jet Needle Spring	AUD-3306	\$.80
29	Jet Needle Screw	AUD-4252	\$ 4.50
30	Piston Damper (Plastic)	AUC-8103	\$ 5.95
30 - A	Piston Damper (Chrome)	RE-8103-C	\$ 7.50
32	Piston Key Kit	WZX-1490	\$ 4.25
34	Gasket Pack (all items shown as 34)	WZX-1505	\$ 13.00
35	Tie-rod Pump, Complete	RE-TF-1	\$ 15.95



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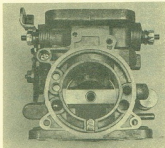
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The picture on the left is the body of the new "ELIMINATOR II". It can be distinguished by the dual throttle springs and the enclosed housing for the idle adjustment. This model will accept the new PUSH-PULL throttle lever and rotor. See parts list for part no. of Push-Pull parts. The standard holder supplied with each kit will pull only.

The picture on the left shows a 25 degree adaptor used with 5 gallon fuel tanks and the RE-20 long manifold. It does have one major advantage in allowing maximum leg clearance. It is available in all finishes, part No. RE-CC-25. If you have clearance or leg room problems, consider this part for an alternative. Most riders can utilize forward controls with this part. This machine has our all-chrome SU. The new Push-Pull levers work very well with such an installation.

SETTING THE FLOAT LEVEL

The float level is carefully checked before shipping. Transporting could alter the setting. To check the float level it will be necessary to remove the carburetor from the motorcycle. Remove the four screws holding the bottom plate. Turn the carburetor upside down and lay a flat rule across the bottom as shown in picture. The rule should just clear the center of the float. If adjustment is required carefully bend the brass tang on the float.



The "ELIMINATOR II" SU is manufactured by the SU Factory to RIVERA ENGINEERING blueprints. Each carburetor is completely dis-assembled, modified, and re-assembled before sold. "QUALITY CONTROL" is assured.

"ELIMINATOR SU" NEEDLE GUIDE

----LEANER		RICHER----		
BBD	BBT	BBX	BCJ	BBZ
.099	.099	.099	.0995	.098
.095	.096	.095	.0967	.0954
.092	.0932	.0932	.0939	.0924
.099	.0993	.0995	.0999	.0892
.088	.0877	.0875	.0881	.0862
.0862	.0860	.0852	.0848	.0819
.0844	.0827	.0829	.0781	.0780
.0825	.0807	.0806	.0740	.0751
.0819	.0792	.0782	.0703	.0713
.0808	.0778	.0755	.0671	.0673
.0798	.0785	.0730	.0650	.0653
.0788	.0753	.0702	.0630	.0629
.0778	.0740	.0675	.0610	.0605
.0769	.0725	.0650	.0590	.0580
.0758	.0713	.0624	.0570	.0580
.0748	.0700	.0598	.0560	.0540

(Standard)

All needles included above are supplied with collar attached to shank for use as spring-loaded needles. All sizes taken every 1/8" from top shoulder.

From leanest to richest: BBD - BBT - BBX - BCJ - (BBX - Standard Installation).

All "ELIMINATOR SU" Carburetors are supplied with a standard .100 Main Jet.

For Stroked Engines, the Main Jet must be changed to Rivers Part No. RE-1015 or RE-1024 - See Below.

TUNING - THE TUNING INSTRUCTIONS ARE A GUIDELINE ONLY:

STOCK 74's, 80's or 1000cc SPORTSTER'S - Use BBX Needle with .100 Main Jet - Silver Spring - 8 oz. (Standard).

STOCK 900cc SPORTSTER'S - Use BBX or BBT Needle with .100 Main Jet - Silver Spring - 8 oz. (Standard).

MODIFIED SHOVELHEAD ENGINES - Cams, Head Work etc: Use BBX Needle with Green Spring, or BCJ Needle with Silver Spring - 8 oz. (Standard).

MODIFIED SPORTSTER ENGINES - Cams, Head Work etc: Use BBX Needle with Green Spring, or BCJ Needle with Silver Spring - 8 oz. (Standard).

STROKED SHOVELHEAD ENGINES TO 93 cu. in. - Use BBX Needle with .1015 Main Jet, Silver Spring - 8 oz. (Standard) or 12 oz. Green.

STROKED SHOVELHEAD ENGINES OVER 93 cu. in. - Use Part No. .1024 Main Jet - BBX or BCJ Needle. Springs used are: Green or Silver. Call for more information.

STROKED SPORTSTER ENGINES - Call for information - Up to 80 cu. in. use .1015 Main Jet - BBX Needle - 8 oz. Silver Spring or 12 oz. Green.

All "ELIMINATOR SU" Carburetors supplied by Rivers Engineering for stock or near stock applications are supplied with a BBX Needle, .100 Main Jet and Silver Spring. - 8 oz. (Standard).

The range of mixture adjustment is great for each needle. Each full turn, richer or leaner can change the mixture up to .005, creating greater tuning flexibility.

The Main Jet is adjusted for starting purposes when shipped. If it ever becomes necessary in tuning to raise or lower the Main Jet more than 2 full turns, a different tapered needle should be substituted. (See Needle Guide).

The tapered mixture needle is fixed inside the piston. Never loosen the set-screw and raise or lower the needle. As the needle is tapered from top to bottom, any change, richer or leaner will affect the entire RPM range.

Standard needle and seats are of the Grose Jet Type and will flow enough fuel for any Harley Davidson. In the event the machine is used for racing we suggest using our extended fuel bowl, Part No. RE-670.

Our primer pump (Pat. No. 4,228,110) is a pressure system inside the float bowl. The pump is a press fit inside the body and should Not be removed. The brass nut can be removed to clean the inside or change the Viton cup if it ever becomes necessary.

If fuel should ever drip or flow from the tickler pump, check the float level or needle and seat. The pump is above the normal fuel level inside the bowl.

Piston springs are tuning assets. By changing strengths we can sometimes accommodate a slight mixture change. A stronger piston return spring will slightly richen the mixture, while a lighter one will lean the mixture. The entire RPM range will be affected.

The Piston springs are color coded: Green 12 oz. - Silver 8 oz. - Red 4 oz. - (8 oz. Standard).

The Carburetor set up for stock machines utilizes a BBX needle, .100 Main Jet and a Silver Spring. If this combination proves to be too RICH for your particular machine, and you have already turned the main jet adjustment to the left the 2 full turns allowed, use the following procedure: Lightly turn the main jet adjustment in to the right until it lightly bottoms. Then screw it out by turning it to the left 4 full turns. This is the neutral position that allows you to richen the mixture 2 full turns if necessary or lean mixture 2 full turns if necessary. Keep in mind that left turn leans, right turns richen, always return to neutral when changing needles. Remove the Piston and Dome, loosen set screw on the side of the piston and remove the spring loaded needle carefully. As the needle retainer is slotted, the needle will only fit one way. Use the next leanest needle, BBT, refit into piston, tighten set screw on slotted part of needle retainer taking care the bottom of the retainer is flush with the base of the piston. Install piston and dome on carburetor, adjust for mixture strength. When changing needles it is important to set the main jet back, as there will be 2 full turns richer or leaner available for tuning.

Follow the same procedure when changing to a richer needle (BCJ).