

SU "ELIMINATOR I & II"

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We are confident that you will enjoy the *PERFORMANCE* and *ECONOMY* of this fine carburetor. The "SU" Carburetor has become the standard of the industry; it has no peers.

At Rivera Engineering each carburetor is completely disassembled then modified to Rivera Engineering's specifications prior to re-assembly and shipping. All carburetors are jetted for stock applications unless ordered for a special application. Great care has been taken to assure you a quality product that will be virtually trouble-free for many years.

Complete bolt-on kits include a choice of manifolds, all necessary hardware, gaskets, two spare needles for tuning purposes (see tuning section), and your choice of one of the two different air cleaners. When applicable, vacuum fittings are attached to the manifold. Our Tuning Instructions are easy to understand and include parts diagrams of the Eliminator II carburetor with price list.

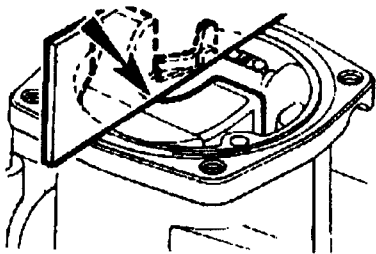
Prior to the installation of a new carburetor we suggest a tune up of the engine including spark plugs, valve clearance, and engine timing. This will eliminate any problems that are blamed on carburetion when a badly tuned engine is at fault.

Take your time during the installation. Double check all the mounting bolts. Follow the instructions carefully and you will receive many years of Happy Riding.

All fuel inlets are 1/4" for adequate flow. For performance engines we suggest a high flow petcock and fuel filter. The carburetor should be cleaned on a yearly basis depending on the amount of use. Develop the habit of turning off the fuel petcock when the engine is not running. **Use no oil in the dampner.** Once a month remove the dome cap and lightly spray WD-40 inside on the piston shaft. If the carburetor is used in dusty conditions we suggest cleaning the foam inside the air cleaner once a month. For best results use warm soapy water when cleaning the foam filter. (Use no oil on the foam.)

The "TICKLER" pump, U.S. Patent 4,228,110, is a device to create pressure inside the fuel bowl which in turn will cause fuel to flow through the main jet into the venturi of the carburetor. It also is a safety device and serves as an overflow in the event the fuel needle should stick open. As the "Tickler" pump is installed **above the normal** full position of the fuel bowl, the fuel would **flow out the tickler** eliminating wash-down of the engine. Another good reason to SHUT THE FUEL OFF WHEN STOPPED.

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.

Installation Instructions

"O" Ring Manifolds

Panhead, Shovelhead and Sportster to 1984

Install the manifold in the usual manner. Slip the "O" rings over the manifold flanges. Position the manifold to the heads. Slip one "O" ring off the manifold flange and install the clamp lightly. Use the same procedure on the other side just snugging up the clamp. The manifold will have to be leveled when the carburetor body is installed so do not tighten the clamps securely at this time. The standard leveling bracket is mounted from the center case bolt of the engine to the bottom right manifold hole. The brackets will be different from kit to kit, most will mount as described above. In some cases two brackets will be supplied one for the center case bolt, the other to mount to a threaded hole in the head or both heads. Looking at the brackets will show how they should mount. We manufacture over 20 different manifolds and 15 different brackets for SU carburetor kits.

"RUBBER" Band Type Manifolds

Shovelhead 1979-1984, Sportster 1979-1985

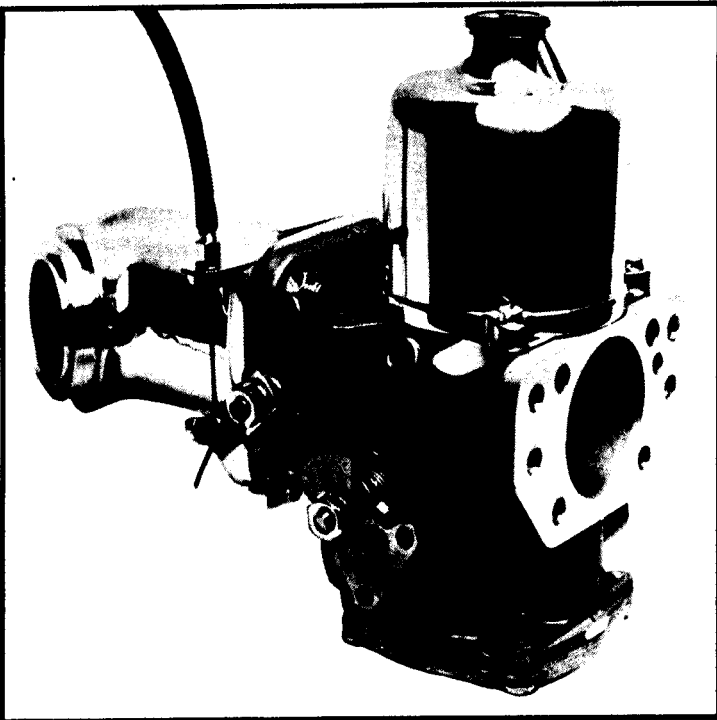
As outlined above, the procedure is the same with one exception. Supplied with each kit is a pair of fiberglass "O" rings. The purpose of using these rings on a rubber band manifold is to make the manifold ends longer and smoother. Apply glue to the rings then place them over the machined ends of the spicket on the manifold. After they are dry, lightly sand them so they are smooth and are the same O.D. size as the manifold. This will stop any air leaks. Install the manifold as outlined above.

Throttle Cable Connections

All early Knucklehead, Panhead, Sportster, and some Shovelhead engines use one PULL-type cable only. For all early kits we supply the following parts:

- 1) Lever with brass cable holder attached on the LEFT side of the carburetor shaft.
- 2) A stamped bracket that mounts on the outside top flange of the carburetor body using the two top bolts that secure the manifold to the carburetor body. On this bracket there is a cable holder that will accept a stock Harley Davidson cable. You will have to cut the end to slip the cable into the brass cable holder to secure and adjust the cable. There is a locking screw on the cable holder.

Adjustments can be made at the threaded portion of the cable or at the cable holder on the throttle shaft. This is the standard installation for all SINGLE CABLE operated throttles. (see photo below)



Throttle Cable Connectors - Push-Pull (see photo on cover)

1981-Up Shovelhead and Evolution

All "ELIMINATOR II" SU Carburetors have a double ended throttle shaft. There are two reasons for this. First, the pull is more equally divided using two springs. Second, in 1980 Push-Pull throttles became the law for all street machines. We have developed a Push-Pull rotor and stamped cable holder with bracket for all who use a push-pull throttle. The rotor is secured to the right side of the carburetor body on the throttle shaft. Be sure to install the small brass spacer on the shaft before installing the rotor. The push-pull bracket is mounted with the cable holders toward the right side of the carburetor directly above the rotor. The cable holder will mount on the inside top flange of the carburetor body using the two top bolts to secure. Install the cables in the normal manner making adjustments at the cable. Be sure that the throttle opens all the way and closes tight. If properly adjusted it should return freely.

Carburetor Installation

We suggest installing the body without the piston and dome. The reason for removing the dome is to visually align the throat of the carburetor to the manifold. When this is done install the manifold gasket and tighten the four retaining bolts to secure the carburetor to the manifold. Check the clamps on the manifold to head connection, secure them tightly at this time. Use all support brackets supplied. Carefully install the Piston and dome on to the carburetor body. Care should be used as the needle can bend easily if not aligned with the hole in the main jet. Secure the dome, install the air cleaner. Install the fuel line, and vacuum fittings if required. Prior to start-up read the start up procedures.

Carburetor Installation - Evolution Big Twins

As the Up-Swept Manifold is the most popular, we will show with pictures a normal installation using our up-swept manifold. Rivera's **NEW** Up-Swept manifold incorporates a newly designed "D" port for increased velocity and flow advantages. It utilizes manifold flanges to replace the stock compliance fittings. Figure 1 - A complete manifold kit with necessary hardware. The bolts used are 3/8" head size for access with a box wrench.



FIGURE 1



FIGURE 2



FIGURE 3

1) Loosen clamps on compliance fittings (pre-1990) and remove. Clean area around head flange. Install the metal flanges onto the machined end of the manifold. Flanges are stamped "F" for front and "R" for rear. The flat, smooth side of the flange faces the manifold. Figure 3 - Install the rubber seals onto the machined end of the manifold, tapered end toward manifold. Push the seal on until the flange is flat with the manifold. Lightly screw two bolts into the lower holes on each head. This will help locate manifold. Figure 2 - This picture shows the slotted end of the flanges about to be installed on an Evolution head. Note the slotted ends fit onto the rear bolts. Next install the other two small head bolts and snug all four bolts evenly. Do not tighten at this time.

2) Remove the dome and piston from the carburetor body. Use the remaining two small head bolts for the top mounting holes between the manifold and carburetor body. Use gasket supplied between the carburetor and manifold. Install the cable holder on the top two bolts on the outside of the body. Install the remaining two bolts and the leveling bracket attached to the bottom right bolt on the carburetor body and the center case bolt on the engine. Install lock washers and nuts on mounting bolts, lightly snugged. Visually align the carburetor bore in relation to the intake manifold by opening the throttle disc. Level the carburetor and tighten the mounting bolts on the manifold and carburetor. Install the Push-Pull throttle cables onto the rotor. Adjust the cables now to assure the throttle disc is opening exactly halfway and closes to the throttle stop on the carburetor body. The throttle stop is the idle adjustment screw. After you have adjusted the cables securely, tighten the adjusting nuts on the cables. (Figure 4)

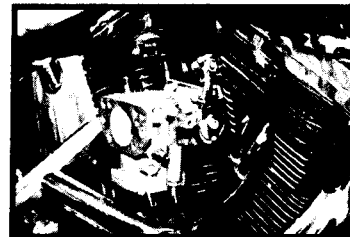


FIGURE 4

3) Install the piston and dome. Use care when installing the piston as the needles are thin and can bend. Secure the dome with three screws then push up on the piston to be sure it is not binding. If it does not readily fall, re-adjust the dome. If you are installing an air cleaner, disassemble the cleaner and mount the backing plate, gasket first, with the four bolts and lock washers supplied. Install the cover and bolt securely. Go over the intake connectors to be sure they are securely tightened, then the carburetor to manifold bolts should be re-tightened. Install the vacuum line to the fitting on the manifold. Install the fuel line. (Please read Start-Up and Tuning Instruction)

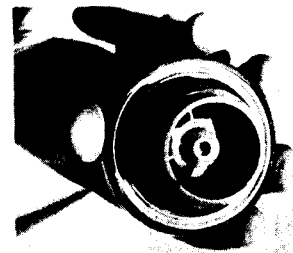


FIGURE 5

NOTE: We strongly suggest drilling a small hole in the center of one of the gas caps to allow pressure equalization. This prevents the tank from becoming too pressurized or de-pressurized which could restrict fuel delivery in a gravity flow feed system. (Figure 5.)

COLD STARTING AND TUNING INFORMATION - ALL "SU" ELIMINATOR CARBURETORS

Turn the fuel on allowing a reasonable time for the fuel bowl to fill. NOTE: If any fuel runs from the hollow shaft on the end of the tickler pump, shut fuel off. (If this occurs the needle is stuck in the open position and must be corrected - see setting the fuel level.) Assuming no fuel is running from the overflow, place a finger from your left hand on the piston lift pin located on the left side of the carburetor body near the center top. Push up and hold this pin while pumping the tickler a half dozen times. This procedure will induce fuel into the venturi by pressurizing the fuel bowl and forcing fuel through the main jet into the venturi. By lifting the piston you allow no obstruction to the fuel flow. Release the lifting pin and set the choke to the on position by rotating the choke lever clockwise until it locks into a pre-cut groove on the cam. Use of the choke is optional, in warm weather it may not be necessary. With the choke on, press the button or kick the engine to life. Allow a few minutes for a warm up period noting the increase of RPM as the engine warms. It is a good idea to cut off the choke as soon as possible as it may load up your engine if left on for over a few minutes. To automatically turn off the choke simply twist the throttle grip, it will release the cam lever. All tuning should be done on a warm engine. Ride the motorcycle until it reaches normal operating temperature, if the engine seems strong and pulls well throughout the RPM range it is probably tuned very close. If there is a question we suggest running the motorcycle at a sustained speed of 55 MPH for a few miles. Pull in the clutch, turn off the key and brake to a stop. At this time a plug reading can be obtained from either cylinder which will indicate a rich or lean condition.

All carburetors are shipped with a standard needle and spring unless ordered for a specific purpose. The standard needle can be changed to a richer or leaner as two extra needles are sent with each carburetor kit. The main jet adjustment (see Diagram T below) on the bottom right side of the carburetor adjusts the main jet up or down on the taper needle installed. All carburetors are shipped with the main jet in the neutral position which allows an adjustment of two full turns either way for mixture strength. Turning the adjustment screw clockwise or to the right will richen the mixture. Turning the adjusting screw counter clockwise will lean the mixture. The adjustment on the main jet affects the position of the main jet in relation to the taper on the needle. By turning the adjustment clockwise or richer we effectively drop the main jet down onto a smaller taper on the needle which allows more area for fuel to flow. Hence a richer mixture.

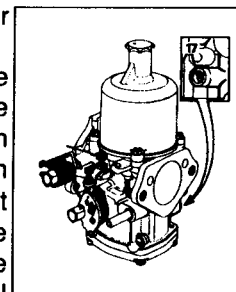


DIAGRAM T

The normal or standard position is pre-set at Rivera Engineering. If you want to find neutral on a carburetor that you may have been tuning, simply screw the main jet adjustment in to a light bottom then back it out 6 full turns. A much better way to find neutral is to remove the dome and piston and visually look at the position of the main jet in relation to the main jet holder which is the part the main jet moves inside. The correct position for neutral is when the main jet is 1/16" below the bottom edge of the main jet holder. Then you will have 2 turns either way to correct any mixture problem you may have. For altitude we suggest using the leanest needle supplied with the kit. Any altitude above 3000 ft. will benefit from a leaner needle. A motor that has ported heads may very well require a leaner needle as the efficiency of the engine increases with such modifications.

There are no set rules for tuning as no two engines will ever run exactly the same. We will make some recommendations based on 15 years of experience plus feed back from customers on tuning tips. They may vary and not apply to your particular requirements so use them as a guide only.

Stock Applications

Shovelhead, Sportster, Evolution

Supplied with kit as STANDARD - .100 Main Jet - Red Spring 4-1/2 oz., BBT needle.

Stock 900cc Sportster use BBD needle, 4-1/2 oz. spring, .100 Main jet.

Modified Shovelhead and Evolution engines - head work, cams, etc. Use BBT needle, .100 Main jet, silver spring 8 oz., (BBX alternative needle).

Stroked Shovelhead engines to 93 cu. in. Use .1015 Main Jet, BBT needle, 8 oz. silver spring.

Stroked Evolution engines to 93 cu. in. Use BBT needle, .1015 Main jet, 8 oz. spring, BBX alternate needle.

All needles for both Eliminator I & II are supplied with collar attached to shank for use as spring loaded needles. Needles: LEANEST to RICHEST - BBD, BBT, BBX, BCJ, BBZ. BBT standard.

For STROKED engines the main jet should be changed to Rivera Part No. RE-1453A (.1015) or RE-1453B (.1024).

All Eliminator SU Carburetors supplied by Rivera Engineering for stock or near stock applications are supplied with a BBT needle, .100 main jet, and a 4-1/2 oz. spring. Spare jetting includes a richer needle (BBX) and a leaner needle (BBD) or substitutes.

The main jet is adjusted for starting purposes when shipped. If it ever becomes necessary during tuning procedures to turn the main jet adjustment screw more than two full turns either way, a different tapered needle should be installed and the main jet set to the neutral position for further tuning.

The tapered needle is fixed inside the piston. NEVER loosen the set-screw and raise or lower the needle. The needle guide which holds the needle should be flush with the bottom of the piston.

Standard installed needle and seats are of the GROSE-JET type, designed for gravity flow. For racing purposes or large stroker engines we suggest using our fuel bowl spacer, Part No. RE-680-S. This part will double the float bowl capacity.

Our PRIMER PUMP (Pat. No. 4,228,110) is a pressure system. 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 necessary.

If FUEL should drip or flow from the tickler pump, shut off the fuel immediately. The bottom cover will have to be removed to visually check the GROSE JET or the fuel level. It is possible dirt will cause the ball to stick inside the seat. It can be removed for cleaning or lightly blown out with an air hose.

The float level should also be checked and adjusted as shown in SETTING THE FLOAT LEVEL illustration.

Piston springs are a tuning asset. Stock carburetors have the weakest spring installed (4-1/2 oz.). By changing springs we can accommodate a slight mixture change. A stronger spring will richen the mixture over the entire RPM range.

NEVER use any oil inside the dampner. Oil will slow the rise of the piston causing an overly rich mixture. Every 30 days unscrew the dome cap and lightly spray around the piston shaft with WD-40. The piston must float freely at all times to accomplish the constant velocity principle of allowing the engine to determine its position.

Rivera Engineering manufactures stroker size manifolds for popular stroker kits. If you require a stroker manifold please ask when placing carburetor orders.

The Eliminator II SU is manufactured by the SU factory to Rivera Engineering blueprints. Each carburetor is completely disassembled, modified and reassembled before sold. QUALITY CONTROL is assured.

All Chrome or Half Chrome carburetor kits are supplied without a rod on the dampner cap. As we manufacture this dome cap and use no oil in the dampner a rod is not necessary. If for some reason you require a complete dampner we will exchange the chrome cap for a plastic cap with a rod.

LEANER ELIMINATOR SU NEEDLE GUIDE RICHER

<u>BBD</u>	<u>BBT</u>	<u>BBX</u>	<u>BCJ</u>	<u>BBZ</u>
.099	.099	.099	.0995	.098
.095	.096	.095	.0967	.0954
.092	.0932	.0932	.0939	.0924
.090	.0903	.0905	.0909	.0892
.088	.0877	.0875	.0881	.0862
.0862	.0850	.0852	.0848	.0819
.0844	.0827	.0829	.0781	.0780
.0825	.0807	.0806	.0740	.0751
.0818	.0792	.0782	.0703	.0713
.0808	.0778	.0755	.0671	.0673
.0798	.0765	.0730	.0650	.0653
.0788	.0753	.0702	.0630	.0629
.0778	.0740	.0675	.0610	.0605
.0768	.0725	.0650	.0590	.0580
.0758	.0713	.0624	.0570	.0560
.0748	.0700	.0598	.0560	.0540

(Standard)

NOTE:

The numbers under each needle is the profile dimension of that needle.

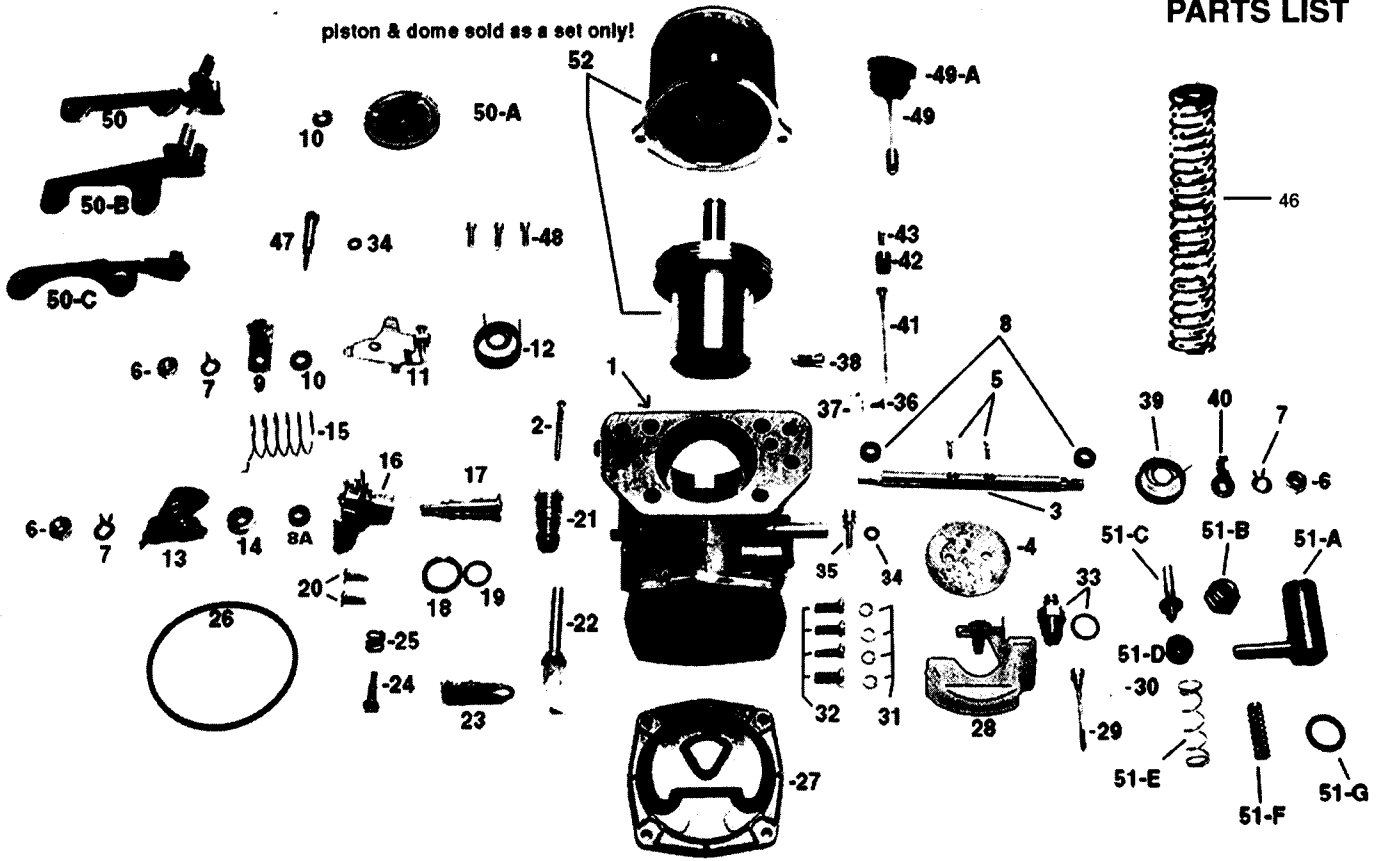
Dimensions taken every 1/8" from top shoulder.

Prior to 1996

ELIMINATOR II SU CARBURETOR

PARTS LIST

piston & dome sold as a set only!



1	carb body	DUZX-1051	\$145.00	35	main jet adj screw	QUZX-1004	\$.95
2	piston lift pin	AUD-4265	\$ 4.00	36	piston guide screw	SM103081	\$.40
2A	piston lift spring	AUC-1151	\$.50	37	piston guide	AUC-2054	\$ 1.25
2B	circ-clip	AUD-4150	\$.35	38	jet needle screw ret.	AUD-4252	\$ 3.00
3	throttle spindle	JZX-1669	\$ 12.00	39	throttle return spring	JZX-1333	\$ 2.00
4	throttle disc	AUD-3005	\$ 10.00	40	spring retainer	JZX-1019	\$.30
5	throttle disc screws	AUC-1358	\$.30	41	jet needle BBX	RE-430	\$ 9.75
6	nut spindle	AJD-8104Z	\$.30	41-A	jet needle BBT	RE-435	\$ 9.75
7	tab washer	AUD-3323	\$.30	41-B	jet needle BBD	RE-440	\$ 9.75
8	shaft spindle seal	JZX-1994	\$.90	41-C	jet needle BCJ	RE-450	\$ 9.75
8A	choke spindle seal	AUD-3577	\$.90	42	jet needle guide	JZX-1039	\$ 2.50
9	throttle lever	RE-TL-1	\$ 4.25	43	jet needle spring	AUD-3306	\$ 2.00
	(with cable holder)			46	piston return spring(4oz)	RE-350	\$ 4.00
10	spacer bushing	RB-2	\$.90	46-A	piston return spring(8oz)	RE-360	\$ 4.00
11	idle stop lever	AUZ1047	\$ 4.00	46-B	piston return spring(12oz)	RE-370	\$ 4.00
12	throttle return spring	JZX-2053	\$ 3.00	47	idle speed screw	RIV-1	\$ 4.95
13	choke cam lever	JZX-1609	\$ 3.50	48	dome screw	JZX-1394	\$.15
14	choke body cap	AUD-4217	\$.30	49	plastic dome cap	AUC-8103	\$ 2.50
15	choke spring	AUD-4417	\$.50	49-A	chrome dome cap	AUC-8103-C	\$ 8.50
16	choke body	LZX-1589	\$ 11.00	50	push/pull bracket	RE-PP-6	\$ 9.95
17	choke spindle	CUD-2791	\$ 9.95	50-A	push/pull rotor	RE-PP-5	\$ 6.50
18	choke body gasket	AUD-3605	\$ 2.50	50-AA-KIT	push pull bkt/rotor/bushing (1973-1989)	RE-PP-1	\$ 17.50
19	choke body O-ring	AUD-3602	\$.20	50-B-KIT	push pull bkt/rotor (no bushing)(1990 & up)	RE-PP-1-L	\$ 17.50
20	choke body screws	AUD-3606	\$.30	50-C	throttle cable holder	RE-PP-4	\$ 8.50
21	jet bearing	WZX-1441	\$ 10.00		(pre-1990)		
22	main jet .100	LZX-1029	\$ 11.00	51	tickler pump complete	RE-TP-1	\$ 19.95
22A	main jet .1015	LZX-1029A	\$ 11.00	51-A	tickler pump body	RE-TP-B	\$ 13.50
22B	main jet .1024	LZX-1029B	\$ 11.00	51-B	tickler nut	RAF-3	\$ 3.50
23	bi-metallic lever	CUD-2399	\$ 10.00	51-C	tickler stem	RAT-2	\$ 3.50
24	bi-metallic screw	AUD-3584	\$ 2.00	51-D	Viton cup	64-184-1	\$ 3.50
25	spring	AUD-3583	\$.65	51-E	large tickler spring	RE-LTS	\$ 2.00
26	float lid O-ring seal	AUD-3588	\$ 2.00	51-F	small tickler spring	66-118	\$.50
27	float lid	JZX-1005	\$ 7.50	51-G	tickler gasket	G49	\$.35
28	float	LZX-1601	\$ 6.25	52	piston & dome	EUZX-1067	\$ 80.00
29	float spindle screw	CUD-2082	\$ 1.75	53	gasket pack	WZX-1505	\$ 16.00
30	crush washer (float spindle)	AUC-4127	\$.30				
31	float lid washers	AUC-2246	\$.10				
32	float lid screws	AUD-3590	\$.30				
33	needle & seat	RE31-752	\$ 9.90				
34	O-ring (adj screw)	AUD-3586	\$.50				