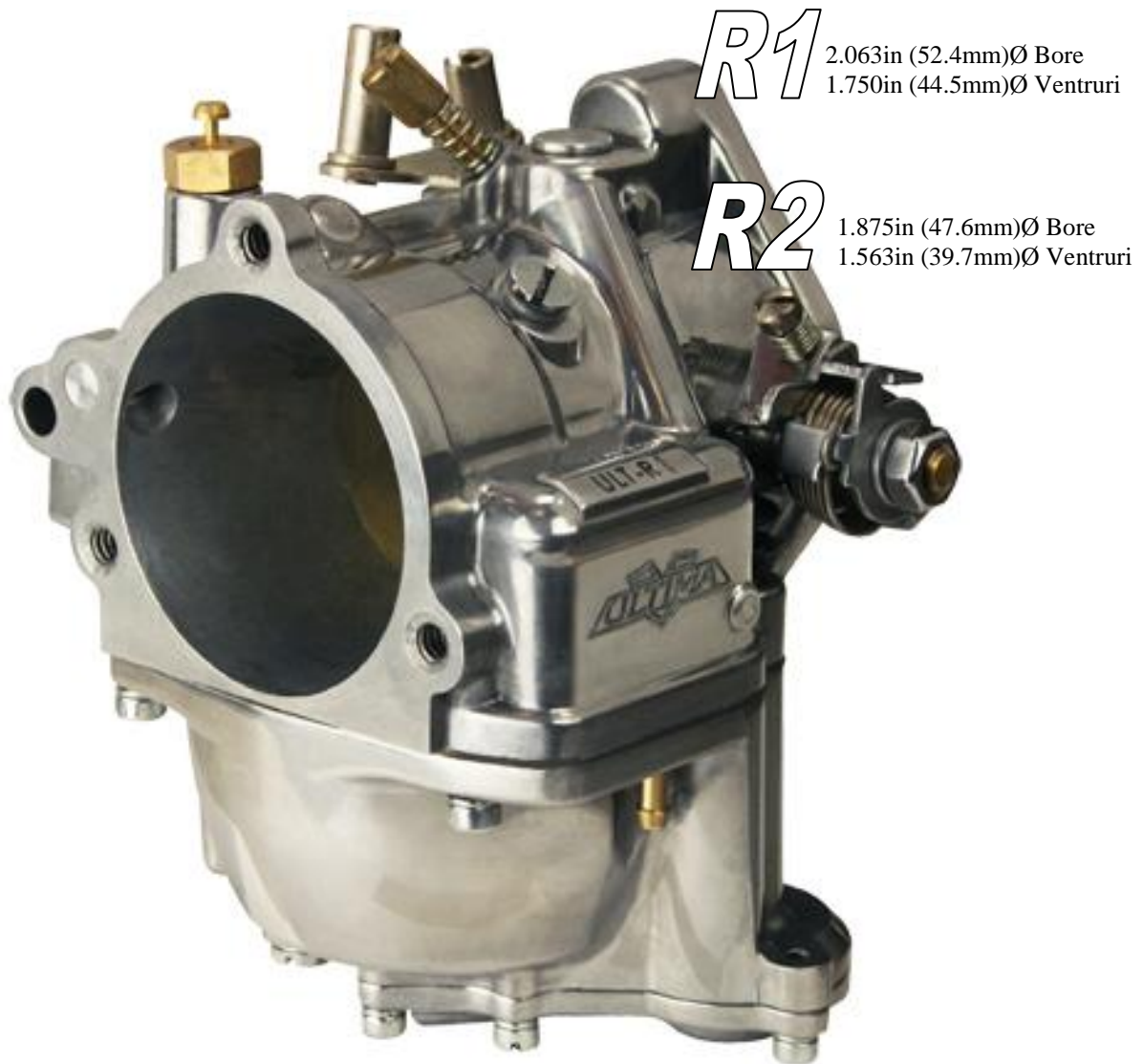




CARBURETOR

Installation and Tuning



R1 2.063in (52.4mm)Ø Bore
1.750in (44.5mm)Ø Venturi

R2 1.875in (47.6mm)Ø Bore
1.563in (39.7mm)Ø Venturi

WARNING: Serious injury, death and property damage can result from the improper use, control alteration or maintenance of motorcycles. The dealer and dealers customers must exercise good judgment in the use, control, alteration, part selection and installation, and maintenance of motorcycles. ULTIMA® Company LLC has no control over the judgement of others and assumes no responsibility or liability of any nature for the failure of others to use good judgment.

Installing your new ULTIMA® carburetor:

Inspect your new carburetor:

- Make sure the correct throttle cable bracket is installed with thread locker.
- Make sure all bolts are secure.
- Make sure the flange mount o-ring is installed.
- Check for smooth butterfly rotation and motion.

If you know what jets are needed for your displacement skip to the tuning section.

ULTIMA® Carburetors use a flange mount intake manifold system. The insulator block (sold separately) should go between the intake manifold and the carburetor (figure 1).

The carburetor will have an o-ring installed in a groove that will go towards the flat part of the insulator block. The o-ring side of the insulator block will then install against the intake manifold (figure 2).

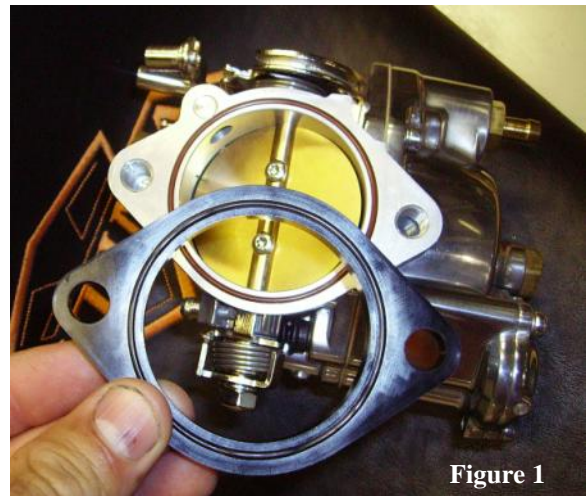


Figure 1

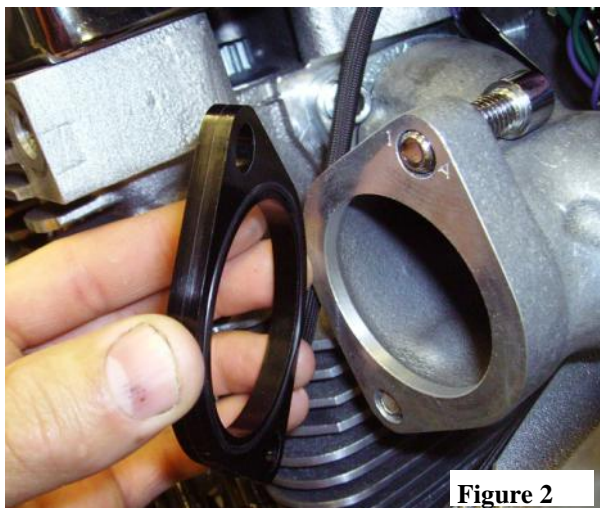


Figure 2



Figure 3

Part Number 78-112 is used with R1 Carburetor.
Part Number 78-113 is used with R2 Carburetor.

The two insulator block sizes correspond with the two sizes of carburetors (R1 and R2), shown in figure 3.

There are two available throttle cable brackets, see figure 4. The short bracket is used with '36-'89 butterfly style carb cables. The long bracket is used for '90/L CV carburetor type cables.



Figure 4

Mounting the Carburetor

Using 3/8-16 socket head cap screws - install from the manifold side and thread into the carburetor (figure 5).

Check to make sure the lower bolt is not too long, making unwanted contact with the fuel bowl (figure 6). This could cause damage. If it does, then source a shorter lower bolt.

Manifold bolt lengths will vary due to manifold and insulator block thickness. A common size is 3/8-16 x 1.25".

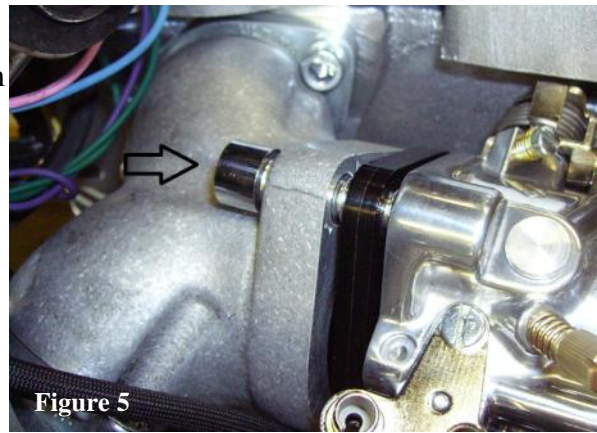


Figure 5

Selecting Throttle Cables

ULTIMA® Carburetors are designed to use a dual throttle cable setup for rider safety (figure 7). When dual throttle cables are used one cable is used to pull open the throttle plate and the other cable is used to pull the throttle plate closed. This control is given to you at your throttle grip and provides additional control of the motorcycle.

ULTIMA® strongly recommends that a dual throttle cable setup be used. If your motorcycle does not currently use two throttle cables it is strongly recommended to update to the two throttle cable setup.



Figure 7

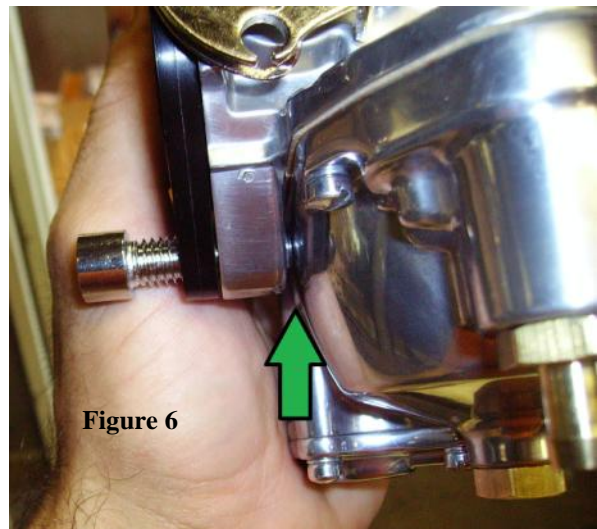


Figure 6

Routing Throttle Cables: Make sure the throttle cables are clear from getting pinched between moving parts such as the steering head and the steering stops.

If cables are routed as shown in figure 8 and external steering stops are installed then this could be an example of a hazardous cable route as the cables could get pinched between the triple tree steering stops and the motorcycle frame.

Please use good judgment when routing throttle cables.



Figure 8

Throttle Cable Installation

Lubricating the throttle cables with the proper lubricant before installation is recommended to aid in smooth cable operation.

Install the proper throttle cable barrel in the appropriate cable barrel housing location on the throttle wheel. See figures 9 and 10.

When twisting the hand throttle open one cable will appear to shorten in length.

This cable should attach to the cable barrel housing on the side that pulls open the butterfly.

Second cable will go to the remaining side (spring returns throttle to closed position).

Slack in the cables may be required to install the cables. Both will need to be adjusted after you have connected the cables.

Adjust throttle “pull” cable to achieve a “wide open” butterfly position when throttle is twisted. Then adjust the “return” cable to remove excessive free-play.

Once throttle cables are adjusted, check full motion of steering to make sure the butterfly does not move due to excessive tension in the cables.

If this happens you will need to re-adjust.

Make sure throttle cables do not make any excessive bends that could lead to the cable housing pinching the cable. This could cause an un-wanted stuck throttle situation.

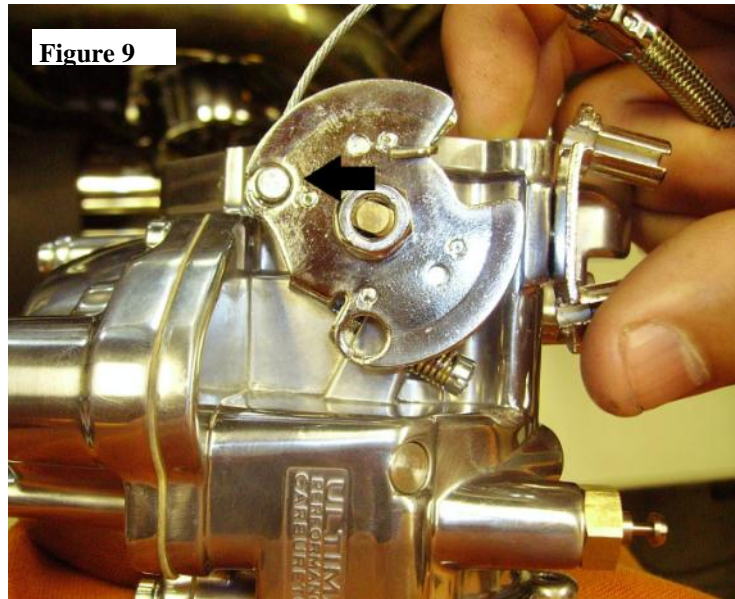


Figure 9



Figure 10

Connecting the Fuel Hose

Use fuel approved hose to connect from fuel tank (fuel petcock or fuel filter) to carburetor fitting. Secure using an appropriate sized hose clamp. Always check for leaks before use. See figure 11a.

WARNING: The presence of fuel represents a potential health and fire hazard.

Fuel Overflow

Connect fuel approved hose to the fuel overflow fitting on the bottom of the carburetor (figure 11b). Route the vent hose as far from heat as possible, ending at a safe point preferably below the transmission and frame rails. Failure to use a vent hose can cause a siphoning effect and cause erratic behavior.

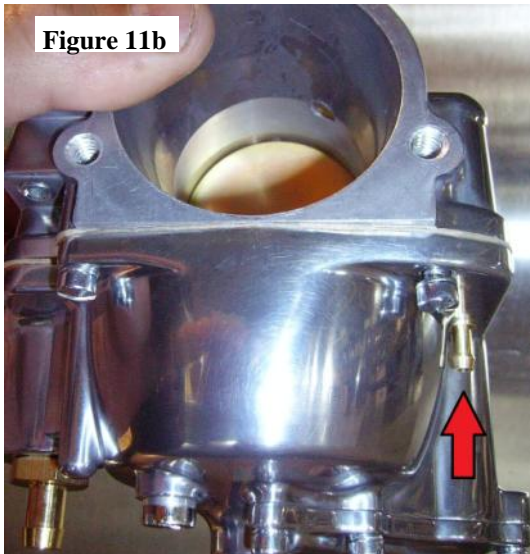


Figure 11b

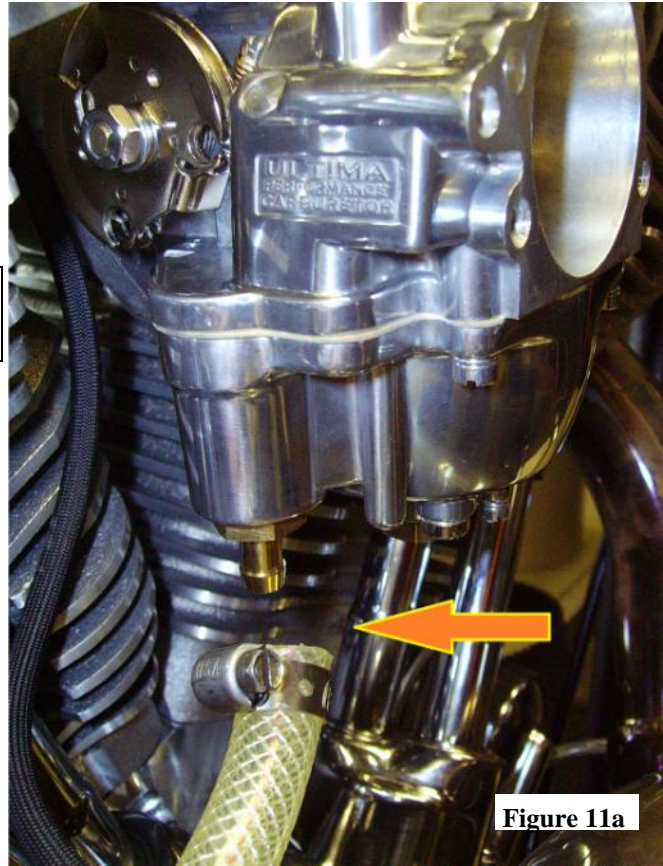


Figure 11a

Choke/Enrichener

The choke knob (figure 12) will need to be mated to the lever supplied with the ULTIMA® air cleaner assembly. See air cleaner instructions.

A stand alone choke knob assembly may also be installed and used.

Use Midwest Part #42-89



Figure 12

The next step is installing your air cleaner assembly. Please see the appropriate air cleaner assembly installation instructions.

Carburetor Adjustments

Idle Mixture Screw

As a starting point we recommend turning the idle mixture screw (figure 13) in until lightly seated and then turning the screw out 1 and 1/4 rotations. Be careful not to over tighten the idle mixture screw. Over tightening could damage the carburetor. Turning the screw in makes the idle mixture more lean. Turning the screw out makes the idle mixture more rich.



Figure 13

With a warm motor and an idle around 1000rpms (see throttle stop/engine rpm adjustment) turn the idle mixture screw in until the motor starts to lose idle quality and sustainability. Next turn the idle mixture screw out until the rpm's start to taper off. The correct mixture should be halfway between these two idle mixture screw positions.

Throttle Stop and Idle Adjustment

Turning the throttle stop screw will adjust the initial position of the throttle plate (also known as butterfly).

Turning this screw (figure 14) in will open the throttle plate, making rpm's go up .

Turning the screw out will close the throttle plate dropping engine rpm's.

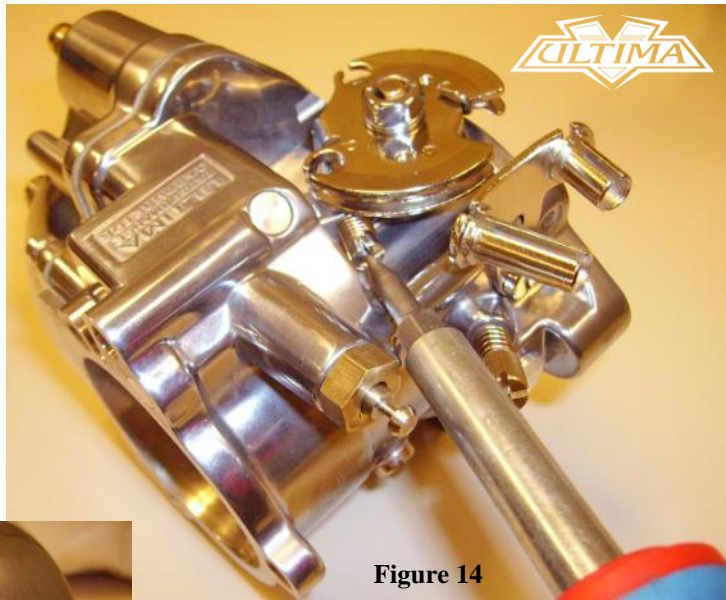


Figure 14

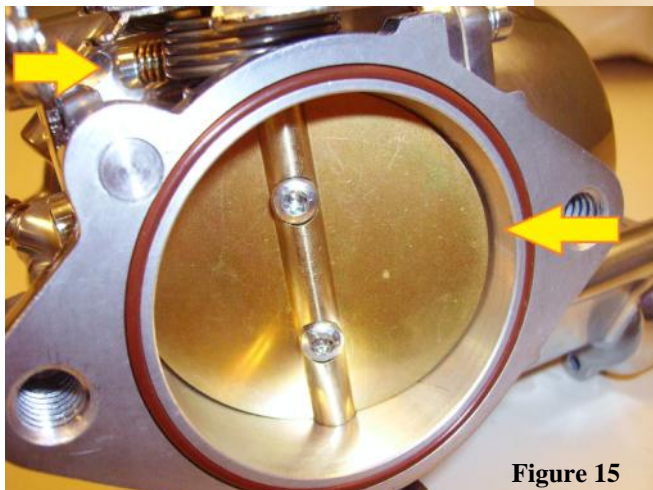


Figure 15

Shown in figure 15 is the relationship between the adjustment screw (top left) and the throttle plate (middle right).

Warning:

Setting your idle too low can cause inadequate or low oil pressure.

Setting your idle too high can cause excessive heat.

Carburetor Adjustments

Accelerator Pump:

The accelerator pump is used to push fuel into the venturi of the carburetor when quick throttle movements are made.

This improves throttle response. The amount of fuel pumped can be adjusted using the accelerator pump travel screw (figure 16).

Turning this screw in will decrease the travel of the pump and decrease the volume of fuel pumped by the accelerator pump. See figure 16.

Turning this screw out will increase the volume of fuel pumped by the accelerator pump. See figure 17.

Removing the Fuel Bowl

The fuel bowl must be removed in order to access the main jet, intermediate jet, emulsion tube, and the air bleed.

The fuel bowl can be removed by loosening the 4 screws shown in figures 18 & 19.

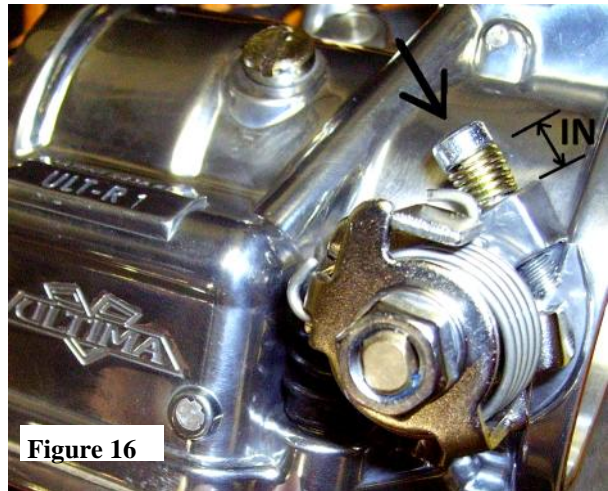


Figure 16



Figure 17



Figure 19

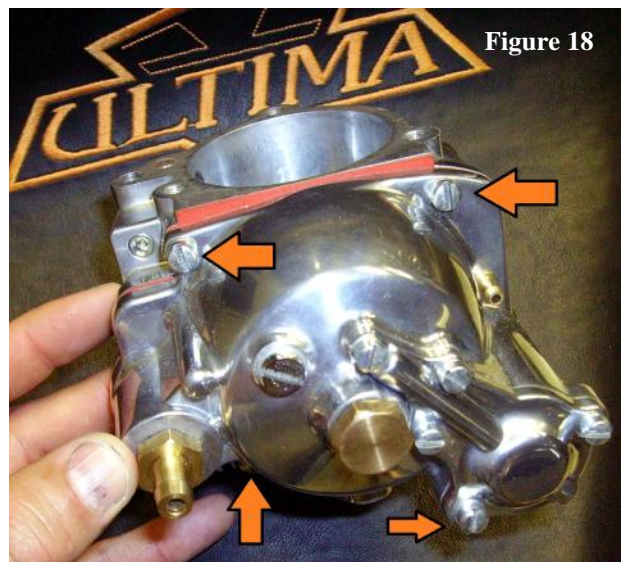


Figure 18

Carburetor Tuning - Carburetor tuning will be most effective when power/dyno feedback is available. Dealers with dyno facilities can assist with tuning. It is wise to monitor air/fuel ratios when engine/carburetor tuning.

Changing Jets:

Main Jet: This can be changed either with the fuel bowl installed or off the carburetor. Access this jet by removing the large (centrally located on the bowl) main jet access plug (figures 20 & 21). The alternative procedure that is common when changing other jets is by removing the fuel bowl. There are four screws that hold the fuel bowl (figure 18). This jet affects the top end of the rpm range.

Intermediate Jet: Changing this jet requires the removal of the fuel bowl. There are four screws that hold the fuel bowl. This jet affects the bottom end of the rpm range. See figure 22.

Main Air Bleed: Changing this jet requires the removal of the fuel bowl. There are four screws that hold the fuel bowl. This air bleed jet (see figure 22) uses the same outer dimensions as the main jet. These jets typically have a smaller jet size (through hole) than the main jet and pass air instead of fuel. This main air bleed jet controls when the fuel jets are activated. The larger the air jet is the greater the air velocity through the venturi must be before pulling fuel. This for example would affect when (in the rpm range) the main jet begins.



Figure 20

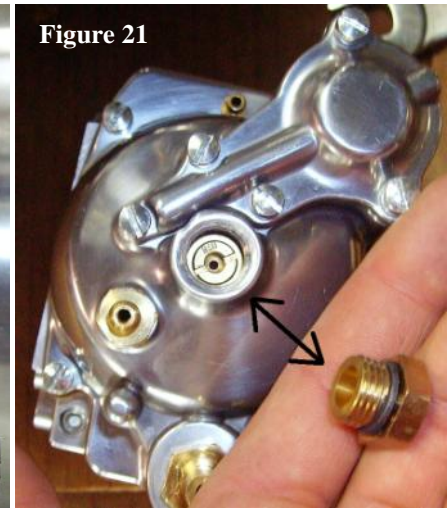


Figure 21

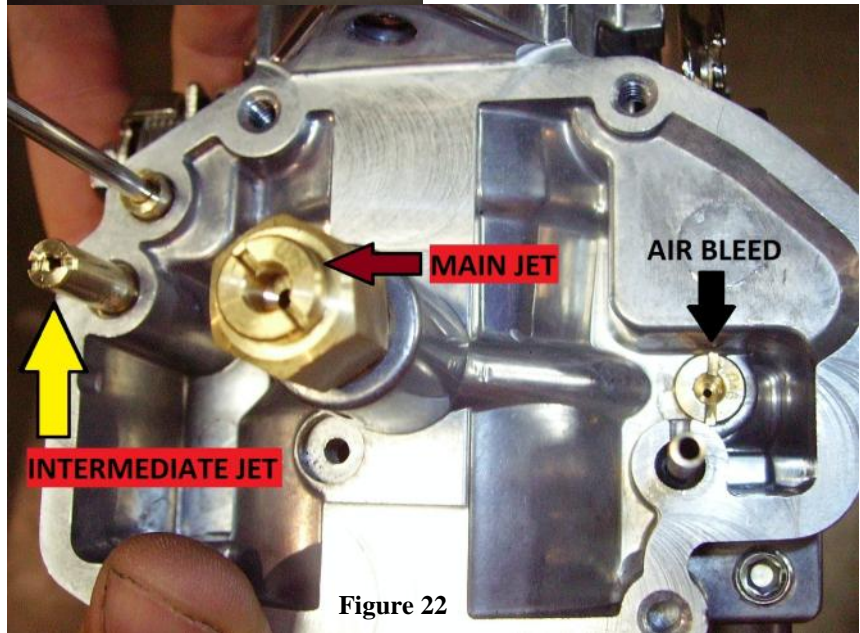


Figure 22

Factory Installed Jetting is as follows:

	Main Jet	Intermediate Jet	Air Bleed
R1 Carburetor	0.078	0.0295	0.046
R2 Carburetor	0.074	0.0295	0.040

Typical jetting for the ULTIMA R1 Carburetor is listed on the table below.

Motor	Main Jet	Intermediate Jet	Air Bleed
ULTIMA 100ci	0.076	0.028	0.046
ULTIMA 107ci	0.078	0.0295	0.046
ULTIMA 113ci	0.078	0.0295	0.046
ULTIMA 120ci	0.080	0.031	0.046
ULTIMA 127ci	0.084	0.031	0.046

Installing a ThunderJet®?

ULTIMA® Carburetors have threaded holes included to ease the installation of a ThunderJet® kit. Please use these locations to mount the ThunderJet® (figure 23). One location is on the top right side of the carburetor body. This is where the ThunderJet® should be placed. The second location is on the bottom of the carburetor bowl. This is where the fuel fitting and line to feed the ThunderJet® should be installed.

Please refer to the ThunderJet® instructions to aid in the installation and tuning of your carburetor when using a ThunderJet®.

**Please consider the following option before drilling and tapping for an external air bleed. Ultima R1 and R2 carburetors have a replaceable/tunable air jet inside the float chamber (figure 24).

By simply installing the recommended size air jet in the air jet location (figure 24), no machining is required to install a ThunderJet®.



The included jet chart has been provided with recommended jetting ranges for each jet:



Figure 23

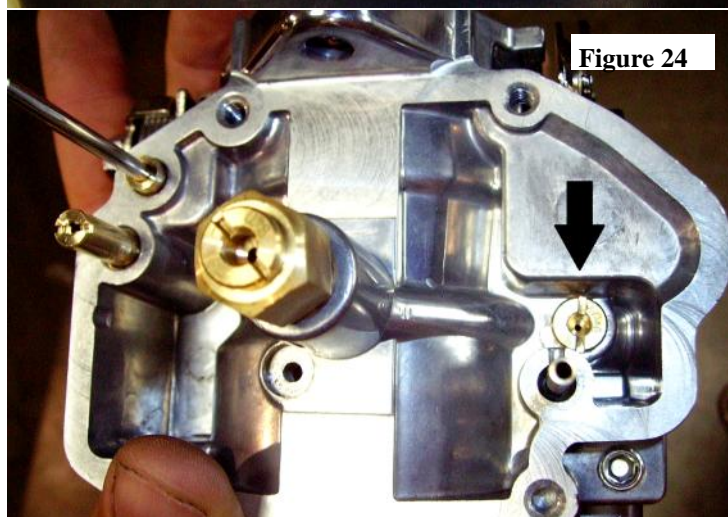
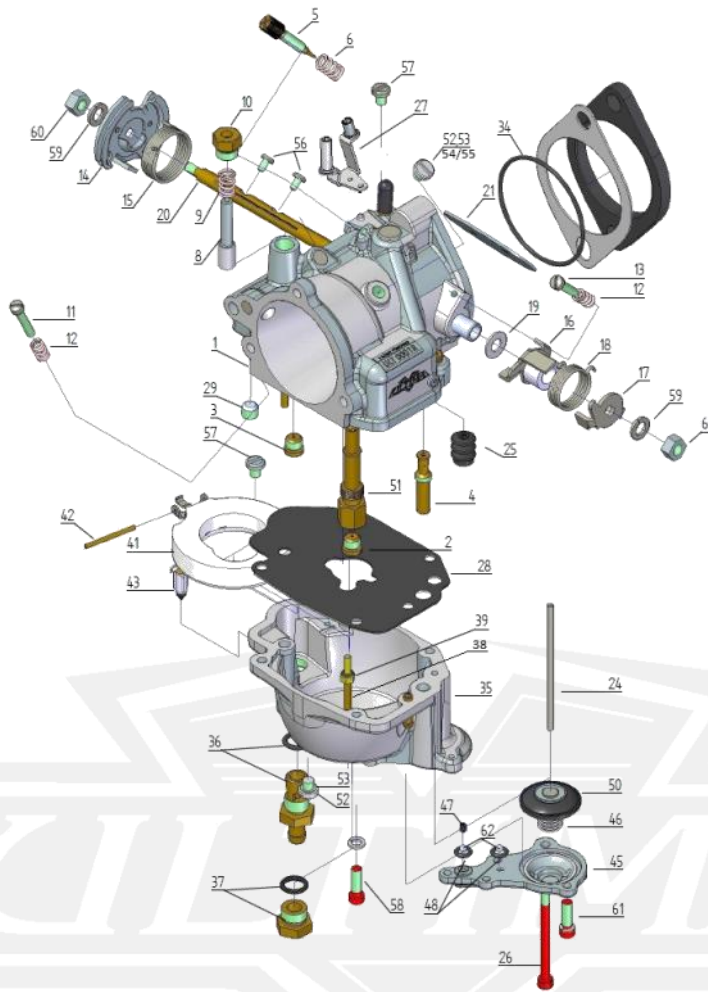


Figure 24

Engine Size	ULTIMA Carburetor	Intermediate Jet	Main Jet	Internal Air Jet	ThunderJet Fuel
XL 1200	R2	.029-.033	.064-.068	.055-.068	100-135
80ci EVO	R2	.031-.035	.066-.074	.055-.068	100-135
88ci TC	R2	.031-.035	.066-.074	.055-.078	100-135
95ci TC	R1	.031-.033	.070-.078	.070-.082	100-135
100ci - Up	R1	.032-.036	.070-.078	.070-.078	120-140

The middle of the recommended jet range is a good starting point for intermediate jet, main jet, and air jet. We recommend starting with the smallest ThunderJet® fuel jet.



39-408 ACCELERATOR PUMP REBUILD KIT

ACCEL. PUMP DIAPHRAM (ASSEMBLED)
SPRING
DUST BOOT
O-RING

ULTIMA® FLANGE MOUNT MANIFOLDS

69-141 Use with R1 Carburetor. Fits Ultima 100/107/113 CI engines

69-142 Use with R1 Carburetor. Fits Ultima 120/127 CI engines

39-412 MAIN BODY REBUILD KIT

MOUNT O-RING
THROTTLE RETURN SPRING
THROTTLE SHAFT
THROTTLE PLATE
THROTTLE PLATE SCREWS
THROTTLE SHAFT BUSHING SHORT
THROTTLE SHAFT BUSHING LONG
THROTTLE SHAFT NYLON WASHER
FLOAT BOWL GASKET

PART #	INT JET SIZE
39-362	0.025
39-401	0.0265
39-363	0.028
39-370	0.0295
39-6	0.031
39-402	0.032
39-7	0.033
39-403	0.036
39-404	0.040

PART #	MAIN JET SIZE
39-15	0.048
39-13	0.050
39-14	0.052
39-16	0.054
39-371	0.056
39-372	0.058
39-373	0.060
39-374	0.063
39-8	0.064
39-9	0.066
39-375	0.068

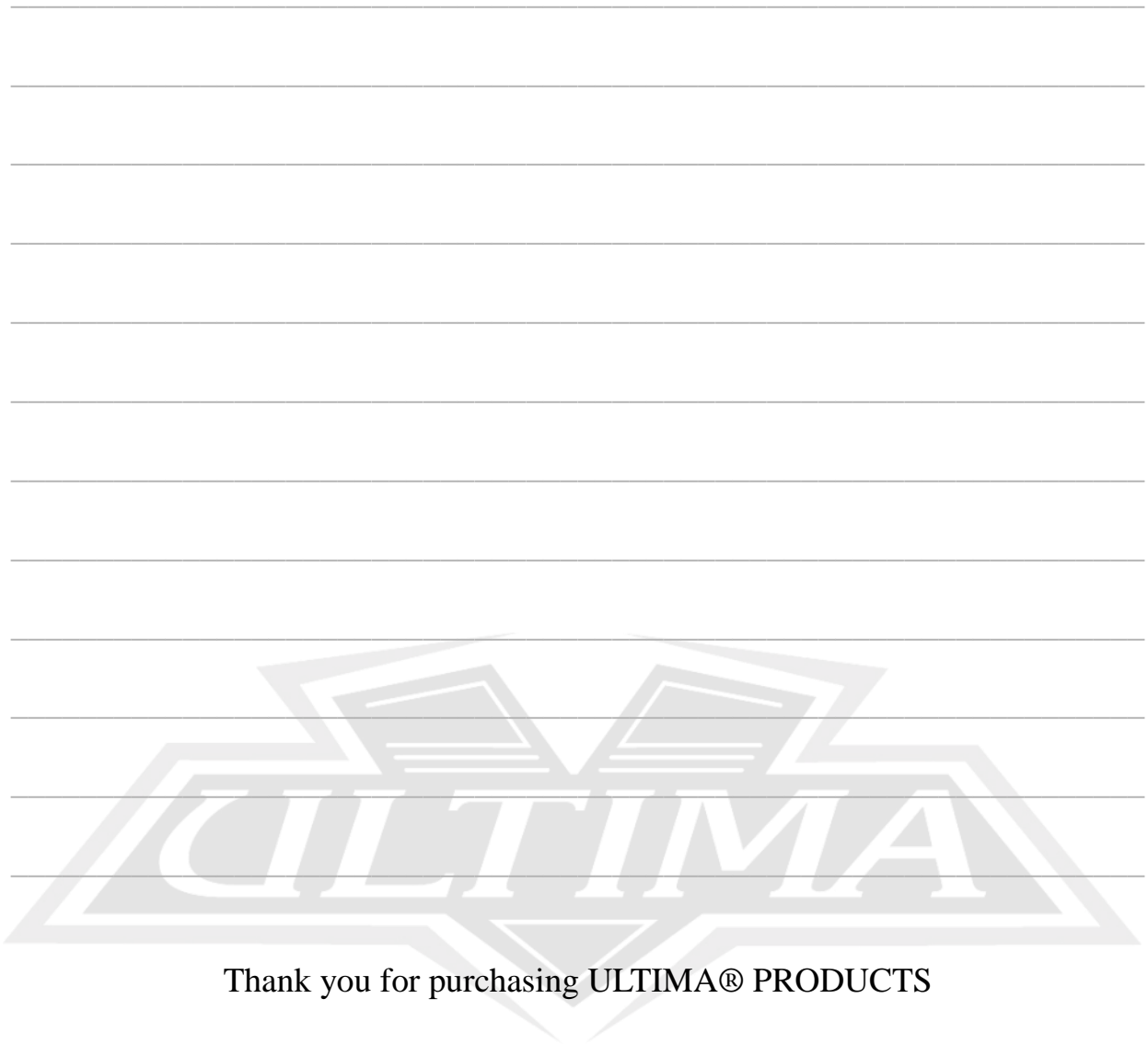
PART #	MAIN JET SIZE
39-10	0.070
39-11	0.072
39-12	0.074
39-376	0.076
39-377	0.078
39-378	0.080
39-379	0.082
39-380	0.084
39-381	0.086
39-382	0.088
39-383	0.090

Motorcycles modified with some aftermarket parts, accessories, and performance parts may be restricted from use on public roads and/or limited to closed courses. Please see U.S. EPA and your respective state regulations.

WARNING: Use caution when working with fuel. The presence of fuel represents the potential for health and fire hazards. Work in a well ventilated area and use the proper protective gear.

WARNING: Never run a motor in an enclosed space. A running motor represents a presence of carbon-monoxide and the potential for death. Work in a well ventilated area and use the proper protective gear.

Notes:



Thank you for purchasing ULTIMA® PRODUCTS