

V-Twin Mfg.
DELL'ORTO CARBURETOR 40MM COMPLETE KIT
FITS ALL SHOVEL AND XL MODELS PRE-1985
VT No. 35-0031

This is a custom application and rider safety depends on proper installation. This product should only be installed by a knowledgeable and trained motorcycle technician. V-Twin Mfg. accepts no responsibility for improper installation.

Tuning Instructions Dell'Orto PHM and PHF Single Throat

Installation is a straight forward process, using the kit supplied. As with any engine work, cleanliness is of utmost importance. Be certain that your gas tank is clean and that existing gas is not contaminated with water or debris. Gaskets must not be too frayed, folded or mutilated. Install them dry. Do not use shellac or gasket sealants. If you wish, use locking compound screws to prevent premature loosening. Adjust the throttle cable so that 1/32 inch free play exists, with throttle slide closed. This will be necessary for consistent idle.

Operating Stages - The engine operates through four distinct stages, each controlled by and dependent on the position of the throttle slide.

Stage 1 - low speed. The throttle slide is between the full closed position and 1/8 open. All adjusting in this condition is accomplished by the idle-speed screw and the idle-mixture screw.

Stage 2 - Midrange. The throttle slide is between 1/8 and 1/4 open. All tuning is accomplished by selection of the idle jet and the throttle slide is cutaway.

Stage 3 - High Speed. The throttle slide is between 1/4 and 3/4 open. All tuning is accomplished by the selection of the emulsion tube and the tapered needle.

Stage 4 - Full throttle. The throttle is between 3/4 and wide open. All tuning is accomplished by the selection of the main jet alone.

When fine tuning, concentrate on a particular RPM range, select the stage of operation indicated by your problem. Only the adjustments and selection of components listed above have any control over the stage in question. Refer to this guide if carburetion problems develop. It has been our experience that most problems arise as the result of air leaks. Be sure to eliminate that potential before continuing.

It has been determined which combination of components will deliver the highest efficiency for wide range of normal and adverse conditions. If the situation at your locale is extreme, such as very high altitude or if the gas in your area is consistently substandard, some tinkering and additional tuning may be necessary. Also remember that replacing the air filter with a velocity stack, or removing it entirely usually results in an increase amount of air drawn into the engine, and consequently it may be necessary to increase the size of the main jet.

The Full System

In order to insure an adequate and continuous flow of fuel from the tank to the carburetor, it is advisable to use a shut-off valve and lines of ample size. A small fuel filter is located in the carburetor's inlet banjo fitting. In addition to this, it is advisable to include an accessory in-line filter between the shut-off valve and the banjo fitting. A regular inspection and cleaning program should be established to prevent blockage problems.

The Float Level

Check the float level as follows: Position the carburetor body in the position shown in the drawing and measure the distance from the face of the body to the bottom of the float. The distance should be 23/32 to 11/16 inches (18.5 - 17.5mm). If the floats do not correspond to the specified setting, carefully bend the float-arms to correct.

Starting from Cold

Although there are normally no difficulties starting the engine when it is hot. It is necessary to introduce another system to the carburetor when the engine is cold. The carburetor contains a starter circuit, including a starter jet, emulsion tube and a starter valve which is independent of much of the balance of the system. Start the engine from cold with the throttle closed and the starter valve open by pulling the lever all the way up. After a reasonable warm up period, lower the lever and operate the carburetor in a normal manner.

The Idle

After a thorough engine warm-up proceed as follows:

1. Turn idle speed screw (8) in to obtain a slightly higher rpm than normal (about 1200 RPM). Turn the mixture adjusting screw (9) in or out until the engine runs smoothly as possible. Back off on the Idle speed screw (8) until the desired idle rpm is reached.
2. To obtain the smoothest Idle, make a final adjustment with the idle mixture screw (9). In order to select the proper size of Idle jet, proceed as follows:
 - A. Slowly open the twist grip until the proper size of idle jet until a quarter throttle is reached. A sluggish uneven increase in rpm indicates the idle jet may be too small. The same effect is evident when the idle mixture screw is open too much.

Mid Range

By midrange, we mean the transition or progression period between mixture delivery from the main circuit.

In addition to the selection of the idle jet mentioned above, the midrange stage is controlled by a cutaway in the piston slide. If your engine hesitates or falters in this range, even though you are reasonably certain everything is in correct working order, the throttle slide cutaway may require attention. Briefly, a small cutaway creates a greater vacuum and consequently a greater volume of fuel is drawn into the engine, enriching the mixture. Conversely, a larger cutaway lowers the vacuum, accounting for less fuel and a leaner mixture. The slide cutaway has been tailored to your engine and probably will be satisfactory in most circumstances.

Full Throttle Operation

Beyond the midrange phase, on further opening of the twistgrip, the full throttle circuit begins to operate. In order to tune for full throttle efficiency the following parts are involved; the throttle slide cutaway, the tapered needle, the emulsion tube and the main jet affects performance. The throttle slide has been discussed in the midrange discussion above. The determining features of the tapered needles are the diameter "A" of the cylindrical portion, the length "C" of the tapered portion, and the diameter "B" of the tip. Of course, "A", "B" and "C" constitute how aggressive the taper is. The cylindrical portion affects the mixture strength up to 1/4 throttle, when this part of the needle is adjacent to the mouth of the spray bar. A smaller diameter would produce a richer mixture and vice versa. The tapered portion is adjacent to the mouth of the spray bar between a quarter and three-quarter throttle and therefore supplied a calibrated amount of fuel during this stage. Therefore if the length of "C" or the tip diameter "B" is increased, the mixture will be leaned and vice versa. With the tip diameter and cylindrical diameter remaining the same, an increase in length of the tapered portion results in an enrichment in the mixture. By changing the notch positions, it is possible to raise or lower the needle, in order to enrich or lean the mixture. Up for rich, down for lean. Several needle profiles are available. Check the table to determine what type of performance might be expected from other needles. The needle is designed to be spring loaded against the inner wall of the spray bar, a feature intended to lessen wear due to vibration to both the needle and the spray bar. In order to determine the correct main jet size there is no substitute for a full throttle road or dynamometer test. When at full throttle with the starting lever extended, the engine should become sluggish, due to an over-rich mixture provided by the starter circuit. If the engine RPM does not drop it indicates an inadequate supply of fuel is being provided by the main jet. A larger jet is then called for.

Accelerator Pump

When the throttle is suddenly opened, the air speed in the venturi slows, and consequently, the vacuum drops, reducing the delivery of fuel. For this reason an accelerator pump is provided. The pump consists of a diaphragm controlled by a cam cast into the outside wall of the throttle slide. As the slide is raised the diaphragm is cammed forcing fuel through a jet into the venturi. On closing the slide, the diaphragm is relaxed, an action which draws another charge of fuel to the diaphragm. The accelerator pump may be adjusted by turning the screw provided for that purpose, by selecting throttle slides with various cam profiles and by varying jet size. The adjusting screw limits the travel of the diaphragm, thereby controlling the volume of pumped fuel. The cam profile controls the timing of the pump. Some cams cause the diaphragm to pump the instant the slide begins to open. Other cams delay the action. The size of the pump jet selected determines the duration of the fuel delivery. A large jet provides a short squirt interval and vice versa. The quantity remains constant as determined by the diaphragm limits (see adjusting screw above). Pump jet selection must be effected under rapid full throttle acceleration from idle. The optimum should permit the engine to accelerate smoothly and promptly, rapidly increasing speed in each acceleration speed range. Failure to do so may indicate the need for fine tuning the accelerator pump.

Mounting end Tuning Instructions for PHM 38 & 40 MM "Pumper" Oell'Orto Carburetors Mounting:

Install the manifold according to the service manual. We suggest installing a new set of O-rings to correct air leaks. If you own a 1981 and up motorcycle, we can supply you with a set of spacers to eliminate the o-ring grooves cut in the manifold. It will then be possible to install our manifold using the rubber band type seal found on the 1981 and up models . If you have an earlier model your heads have been machined for the o-ring groove and will accept the manifold straightforward. Part number adapters RE-EAD-8183. Are only necessary for 1981-up. Level the manifold and install the leveling bracket supplied with the kit. One end will bolt on the boss underneath the manifold, the other to the center case bolt. Install the coupler onto the manifold. **Note:** The coupler has two distinct sides, one side has a letter M embossed into the rubber. This side will go onto the manifold. Install one clamp supplied with kit onto the coupler and tighten securely. Loosely install the other clamp onto the coupler in preparation for the mounting of the carburetor. The carburetor has the throttle cable installed. The cable has a plastic sleeve over the steel to protect the cable as it enters the top of the carburetor. This will give the cable long life and smooth operation.

FX Style Gas Tanks: The carburetor can be mounted in an up-right position by pushing the carburetor into the other end of the coupler. Move the second clamp installed over the coupler end that received the carburetor, tighten the clamp securely. The coupler has o-ring grooves built into both sides matching the o-ring grooves in the manifold and carburetor body. This helps in firming up a solid connection. Install cable into hand grip supplied and check for correct pull of slide, adjust the cable accordingly with adjuster in center of cable. There should be a 1/16" free play in cable when properly adjusted. Be positive the piston is pulled all the way to the top before securing the cable adjuster. Install the fuel line and fill the carburetor to be sure the needle has not stuck in the seat during shipping. The last step is to install the Air Cleaner. We must caution you at his time that both the carburetor and the air cleaner are threaded, the air cleaner doe NOT thread onto the mouth of the carburetor. The threads are for greater contact. Push the air cleaner onto the carburetor mouth, center to center and clamp securely. **WARNING:** Do not Squeeze the center of the air cleaner as it will collapse. Use the metal frame on the front to push onto the carburetor. Lightly oil the element in air cleaner and wash with solvent every 1000 miles and re-oil for the best possible use. This is a one piece air cleaner and It does not come apart.

3 1/2 and 5 Gallon Fuel Tanks: This Installation will be the same with one exception. When the carburetor is installed it must be turned sideways, then pushed onto the coupler and swung up underneath the tanks.

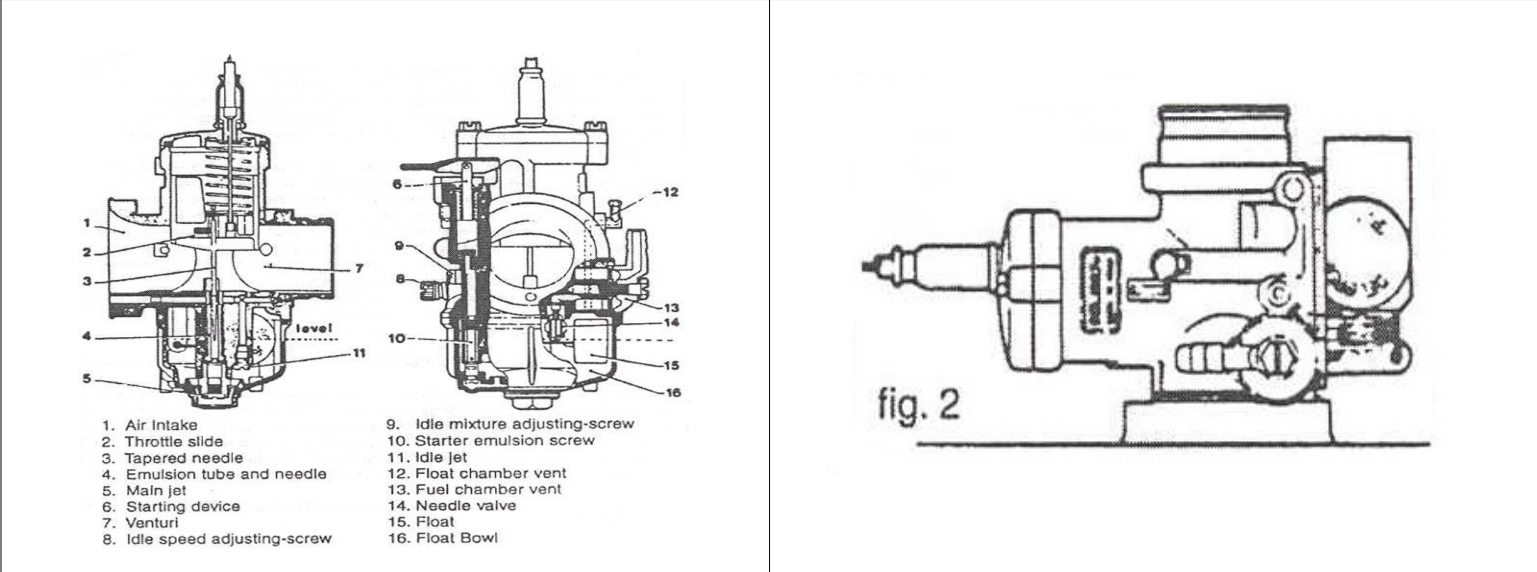
Note: All Carburetors are sent pre-jetted for stock installation.

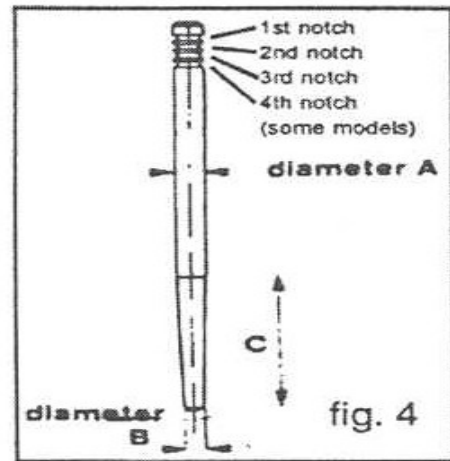
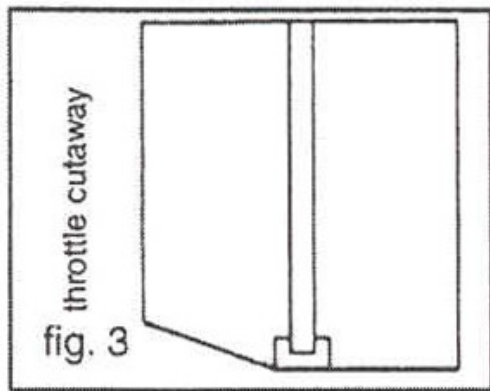
Tuning Instructions for PHM 38 & 40 MM Pumper Dell'Orto Carburetors
All carburetors are pre-jetted for stock installations.

Stock Jetting: PHM 38 MM			Stock Jetting: PHM 40 MM		
60	Starter Jet		65	Starter Jet	
50	Idle Jet		55	Idle Jet	
145	Main Jet		148	Main Jet	
265	Emulsion tube		265	Emulsion tube	
K4	needle		K4	needle	
60/5	Piston		60/5	Piston	
38	Pump Jet		38	Pump Jet	

We ship all carburetors semi-tuned.

Jetting: Included in each kit will be a spare idle jet, a spare emulsion tube and a spare main jet. Please keep In mind that the smaller the number on all jetting will indicate leaner jetting, for example a number 60 idle jet will be richer than a number 55, a 265 emulsion tube will be leaner than a 268. Unless special ordered, all carburetors will be set up for stock engines.





VT No. 35-0030 38mm Dell'orto Carb Kit

VT No. 35-0031 40mm Dell'orto Carb Kit

Qty	VT No.	Description		Qty	VT No.	Description
1	35-0238	38 mm Carb		1	35-0239	40mm Carb
1	35-0098	Adapter		1	35-0098	Adapter
1	15-0144	Gasket		1	15-0144	Gasket
1	34-1060	AC adapter		1	34-1060	AC adapter
1	36-2550	Cable		1	36-2550	Cable
1	35-0215	Throttle		1	35-0215	Throttle
1	35-0385	55 Jet Primary		1	35-0389	50 Jet Primary
1	35-0386	45 Jet Primary		1	35-0390	60 Jet Primary
1	35-0387	140 Jet Main		1	35-0391	145 Jet Main
1	35-0388	150 jet Main		1	35-0388	150 Jet Main
1	35-0251	Choke Lever		1	35-0251	Choke Lever