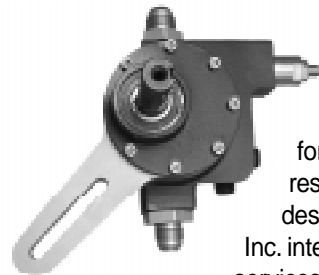


INSTALLATION INSTRUCTIONS

EXTERNAL AND INTERNAL BYPASS FUEL PUMPS

WARNING: These instructions must be read and understood fully before beginning installation. Failure to follow these instructions may result in poor performance, vehicle damage or personal injury. If these instructions are not fully understood, installation should not be attempted. Please consult with BLP Technical Services or a qualified engine builder.



INTRODUCTION: This instruction sheet contains all needed information to install this fuel system properly. Please read all WARNINGS and NOTES. They contain valuable information that can save you time and money. BLP Products, Inc. cannot and will not be responsible for any alleged or actual engine or other damage, or other conditions resulting from misapplication of the fuel pumps described herein. However, it is BLP Products, Inc. intent to bring the highest quality products and services to our customers. Should you need

additional information or parts assistance please contact BLP Monday - Thursday 8:00 a.m. - 5:00 p.m. EST and Friday 8:00 a.m. - 4:00 p.m. EST at (800) 624-1358.

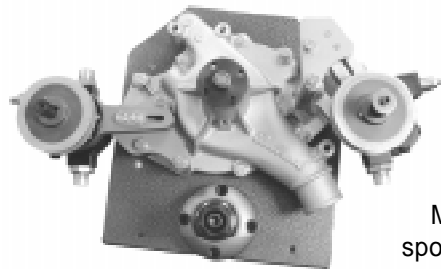


WARRANTY: 1 full year parts and labor to the original purchaser. Physical damage or debris in the pump is not included in the warranty. Must have proof of purchase.

WHICH FUEL PUMP IS BEST - Internal Bypass or Return Line?

In our opinion, it is always best to use a -8 return line when using a belt driven fuel pump. This type fuel pump will handle fuel spikes better than an internal type fuel pump. It also keeps the fuel cooler when using gasoline.

Having said that, BLP sells more adjustable, internal by-pass fuel pumps than we do the return line style fuel pumps. The reason for this is they are simple to plumb and easy to adjust. Used for the correct application and maintained properly they are virtually trouble free.



PUMP MOUNTING

In most applications the fuel pump mount bolts to the right hand side (passenger side) of the water pump using the (2) water pump bolts. New water pump bolts and the correct spacers are furnished in the kit.

Make sure the bolt hole spot face area on the water pump is flat where the spacers seat. This mount is designed to keep the pump low and compact. With this mount you can use either a 28th or a 32th pulley with the same length belt. Place a protractor on the face of the balancer and make sure the mount is on the same angle as the balancer face.



DRIVE MANDREL S/B CHEVROLET

Make sure the balancer bore is free from burrs and the mandrel will slide in and out easily. Install the mandrel in the balancer using anti-seize in the balancer bore. There is a shoulder on the mandrel and it must seat against the balancer. Install the drive gear and space it to line up with pump pulley using mandrel spacers. The pump pulley is also adjustable in and out. When installing the gear and spacers always use anti-seize. If it is a wet sump engine then the spacing on the mandrel is already set. Use a small amount of Loc-tite on the balancer bolt and torque to 60-65 lbs. If for some reason your application requires a longer or shorter mandrel we can furnish the correct length.

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DRIVE MANDREL B/B CHEVROLET

The big block drive mandrel fits in the counter bore of the harmonic balancer and this counter bore must be concentric. If you are using an aftermarket balancer such as an ATI the counter bore is concentric and requires no machining. The mandrel is furnished with (2) 1/8" roll pins that must be installed in the balancer if you are driving a dry sump pump. If you are driving only the fuel pump and not a dry sump pump then you will not need the drive pins. To locate the drive pins install the mandrel in the balancer and drill two holes through the mandrel with a 1/8" drill bit. Install the drive pins in the balancer. Use anti-seize in the balancer counterbore when installing the mandrel. When installing the mandrel bolt use a small amount of Loc-tite. Use the same procedure as the small block to install the drive gear. Torque the balancer bolt to 100-110 pounds.

CHRYSLER MANDREL

We only furnish one mandrel for the Chrysler engine and the 1.000" portion is 4.000" long. You can use as is by adding spacers or you can machine to the length you want. We **do not** furnish a crank bolt.

BELT INSTALLATION

Install the pump pulley using anti-seize on the pump shaft. Align the pump pulley with the crank pulley. Use a small amount of Loc-Tite and tighten the set screw over the key way first. Install the remaining set screw using a small amount of Loc-Tite. Install the belt and adjust the belt to 1/8" to 1/4" deflection. Do not over tighten the belt. The BLP part number for a spare belt is _____. The end of the pump shaft has 1/4 x 28 female threads. It is a good safe guard to install a large washer and bolt here. If for some reason the pulley got loose then the washer would contain the pulley.

FUEL LINE FITTING LOCATION

We have incorporated a design in this fuel pump to enable you to rotate the pump arm in relation to the body. The arm can be rotated in 22 degree increments or a total of 16 different positions. This will allow you to position the pump on the engine for the best possible fuel line inlet and outlet location. The mounting position can be changed with the pump on or off the engine.

1. Remove the pump from the engine then lay the pump on its back with the shaft pointing upwards.
2. Remove the (7) front Allen head bolts using a 9/64" Allen wrench.
3. Hold main body and rotate the arm until you have the desired position. Install and tighten the bolts.



CAUTION: Do Not Pull the Pump Sections Apart with the Screws Out.

FUEL LINE ROUTING

It is very important to keep the fuel line from the tank to the pump as low as possible. After you route the line over the rear end housing then route the line as low as possible to the pump. DO NOT route the line along the top frame rail and never route the line higher than the fuel pump.

FUEL CELL

Make sure the fuel cell is vented with a -8AN line, nothing smaller. If you are using foam in your fuel cell you will need to use some sort of screen to keep the foam away from the suction line. The suction from the pump can pull the foam into the line causing a loss of pressure.

DRAG RACE FUEL CELLS

We recommend using a front mounted tank if your 60 foot times are quicker than 1.20. On a rear tank mount make sure your fuel cell is mounted as high as possible.

FUEL FILTERS

Carburetors require a good filtration system especially when using alcohol for fuel. Our answer to this problem is a unique fuel filter that is constructed out of .150" wall tubing with an O.D. of 2.500". Removable end caps are threaded for easy removal and sealed with o-rings. End caps have female 1/2" pipe threads so any fitting size can be installed. The housing is lightened and all parts are anodized for appearance and corrosion resistance. The filters are available with both cellulose and stainless filter elements and are available in (2) lengths. Mounting clamps (2) come with the filter.

7500 FUEL FILTERS

The total length of this filter including the end caps is 10.5". The cellulose filter element is 7 micron that can flow 750 gallons of fuel per hour.



75001 FUEL FILTERS

This filter is designed to fit in limited space such as a dragster chassis yet still maintain the high fuel flow that is needed. The total length of this filter including the end caps is 6.5". The cellulose filter element is 10 micron that can flow 350 gallons of fuel per hour.



INLET FUEL LINE FITTINGS

Make sure the you have a good seal at every fitting on the inlet side. Remember this is a sucker type pump and any air leak can cause the pump to loose prime or the pressure to fluctuate. **You can have an air leak and not have a visible fuel leak.**

PRIMING THE PUMP

To prime a dry fuel system jack the rear of the car up. Remove the pump from the mounting bracket but leave the inlet line hooked up. Hold the pump and lower it as far as you can then turn the pump clockwise by hand to prime. After you see fuel coming out of the outlet side, then mount the pump and install the belt. If for some reason you run the engine out of fuel or the engine sets a long time you can use this same method to prime the pump.

CAUTION: **Do not spin the pump without some fuel or a little synthetic oil in the pump.**

RECOMMENDED PSI PRESSURES		
Gas	2-6 lbs. Idle	7-9 lbs. at Full Throttle
Alky	2-6 lbs. Idle	9-12 lbs. at Full Throttle

FUEL PRESSURE

It is very important to use a fuel pressure gauge. If your racing sanctioning body does not let you run a gauge in the cockpit then Autometer makes an electric fuel pressure gauge that is accurate and dependable. When you are using large jets especially in the .180 to .200 range and you make a large jet change it can actually raise or lower your fuel pressure. This is something that you need to be aware of and check.

PRESSURE SETTING FOR INTERNAL BY PASS FUEL PUMPS

The pressure is preset when we assemble and test the pump and it should be very close. Always set your pressure for the top end and do not be concerned about the idle pressure. If it is a Drag car then read the pressure at the top of low gear or near the finish line. If it is a Circle Track car then read the pressure at the end of the straightaway. If the idle falls within 2-6 pounds don't be concerned. To raise the pressure loosen the lock nut on the brass pump adjuster and turn the adjuster in to raise the pressure and back the adjuster out to lower the pressure. It takes roughly 1 turn per pound of pressure.

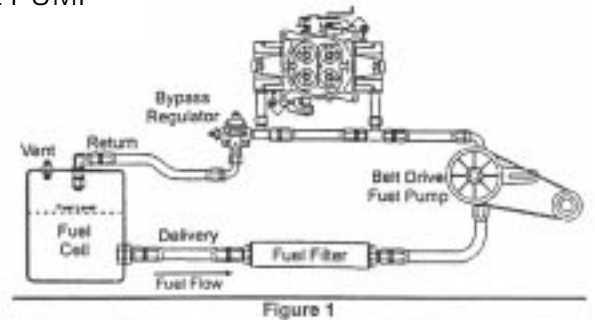
PRESSURE SETTING WHEN USING A BLP NON BY-PASS FUEL PUMP AND A 7490 RETURN LINE REGULATOR

IDLE ADJUSTMENT

An idle bleed is used to adjust idle pressure (3) idle jets provided with this kit. The larger bleed, the lower the idle pressure, a smaller bleed increases your idle pressure. Suggested idle pressure 3-6 lbs.

HIGH SPEED ADJUSTMENT

Top end pressure adjustment is set by loosening the lock-nut and turning the adjustment set screw. Turn in for increased fuel pressure and out for less. After setting screw, be sure to retighten lock-nut.



TOP OIL

When using alcohol for fuel we recommend you mix a synthetic top oil with the alcohol. This keeps the pump lubricated as well as the valve guides and helps keep corrosion down in all the rubber hoses. Our part number KL107 Top Oil works very well.

WARNING: **Never mix petroleum base oil with alcohol.**

STORING THE PUMP

If you do not use the pump every week then remove the inlet and outlet line and drain the pump. Install the inlet line first. Pour a small amount of synthetic oil in the outlet fitting, rotate the pump a few revolutions by hand and install the outlet line. To start the engine refer to the priming procedure.

MAINTENANCE

If you are going to leave the engine idle for a long period of time or store the pump, take the outlet line off and pour a small amount of synthetic oil in the pump and rotate the pump by hand.

On the internal bypass pump about every six months you need to service the pressure bypass poppet valve. Remove the pump from the engine. Remove the brass adjuster and pressure spring; note how the spring goes in. The spring is a progressive wound spring and the soft end always goes in first.

Position the pump so the hole in the side of the pump that houses the poppet will be pointed down toward the palm of your hand. The poppet will then fall out into your hand. Clean the brass bushing in the pump housing with brake clean or alcohol. Polish the poppet with scotch bright or 600 grit sandpaper and clean with alcohol. Make sure the poppet is free in the bore. Install the poppet with the window pointed down toward the bottom of the pump. Install the spring on the adjuster with the soft end of the spring going into the pump. The poppet has a recess machined into the spring end to locate the spring. Check spring length with dial calipers. If the spring is short then stretch to the proper length.

Spring lengths using alcohol spring:

.500 wide gear pump	1.800
.600 wide gear pump	1.670

Spring lengths using gas spring:

.400 wide gear pumps	1.600
.500 wide gear pumps	1.600

Make sure when you install the adjuster and spring assembly that the spring goes inside the recess of the poppet.

NOTE: *Never use a petroleum based lube in the pump. Always use a synthetic based lube when you work on the pump. The KL107 Top Lube makes an excellent assembly lube.*



INSTALLATION TIPS

- Size the pump correctly and do not use any larger pump than necessary. ***Bigger is not better.***
- Turn the pump the right RPM for your engine combination. BLP offers several different ratios.
- Route your fuel inlet lines as low as possible. Never route the fuel line where it is higher than the pump inlet fitting.
- The fuel pump uses up a certain amount of its efficiency to suck the fuel from the fuel cell to the pump. For that reason we recommend a -8 or -10 fuel line and not a -12 inlet line.
- The fuel cell must be vented with a -8AN line, nothing smaller.
- On Drag cars a rear-mounted fuel cell should be mounted as high as possible.
- On Drag cars with 60 foot times quicker than 1.20 should have a front mounted fuel cell.
- Use a high flow fuel filter and mount the filter as close to the tank as possible. Not all filters are suitable for a belt driven pump. If you have a doubt about your filter then contact BLP Products.
- When you select a pump mounting position always select the lowest mount possible. Note: all of the mounting positions shown in the catalog will work but, if you have a choice, pick the lowest mount.
- Do not over tighten the belt.
- You can use an Internal By-Pass fuel pump to run gasoline in a Drag car but not a Circle Track car. If you want to run gas on a Circle Track application then you need a standard pump that uses a return line with a regulator. When using an Internal By-Pass pump under certain temperature conditions gas will vapor lock where alcohol will not.
- If you are currently using a water pump drive pulley or a crank trigger that is bolted to the balancer then you will have to machine a 1.000" hole in the part. The mandrel will now center the part and insure it runs true with the crankshaft. Do not depend on the (3) attaching bolts to center the part.

TROUBLE SHOOTING

PUMP WILL NOT PRIME

- The inlet line to the pump cannot have any vacuum leaks. Make sure all the fittings are tight and do not have a suction leak. NOTE: ***A fitting can have a suction leak and not leak fuel.*** Make sure the fuel line is not soft where it goes through the hose end. This can cause the line to collapse when the pump is trying to pull fuel from the tank but the line will relax then the pump is not turning.
- Poppet not seated. Remove adjuster and make sure poppet is free and seated, clean if necessary. (See Maintenance section). Check spring length with dial calipers. If the spring is short then stretch to the proper length.
- Spring lengths using alcohol spring:
 - .500 wide gear pump 1.800
 - .600 wide gear pump 1.670
- Spring lengths using gas spring:
 - .400 wide gear pumps 1.600
 - .500 wide gear pumps 1.600
- Internal damage to pump.
- Fuel cell not vented.

ERRATIC OR LOW FUEL PRESSURE

- Fuel cell not vented.
- Suction leak in fuel inlet line.
- Poppet sticking, Internal By-Pass type pump (see Maintenance section).
- Key missing from pump gear.
- Return line regulator needs serviced, Non By-Pass type fuel pump.
- Internal damage to pump.
- Fuel filter too restrictive.
- Foam in the fuel cell is sucked into the fitting. Construct a screen to keep the foam away from the outlet fitting in the fuel cell.

FUEL SHUT OFF VALVES

- NHRA requires a fuel shut off valve to be installed. These are some recommendations if you have to use a Shut Off Valve.
- Do not close the shut off valve and run the engine out of fuel. This can damage the fuel pump.
- Always make sure the shut off valve is open when starting.
- Never close the shut off valve with the engine running.
- If you want the shut off valve to be functional then purchase a 3-way shut off valve and run one line to the fuel cell.

POSSIBLE FUEL SIPHON FROM FUEL CELL

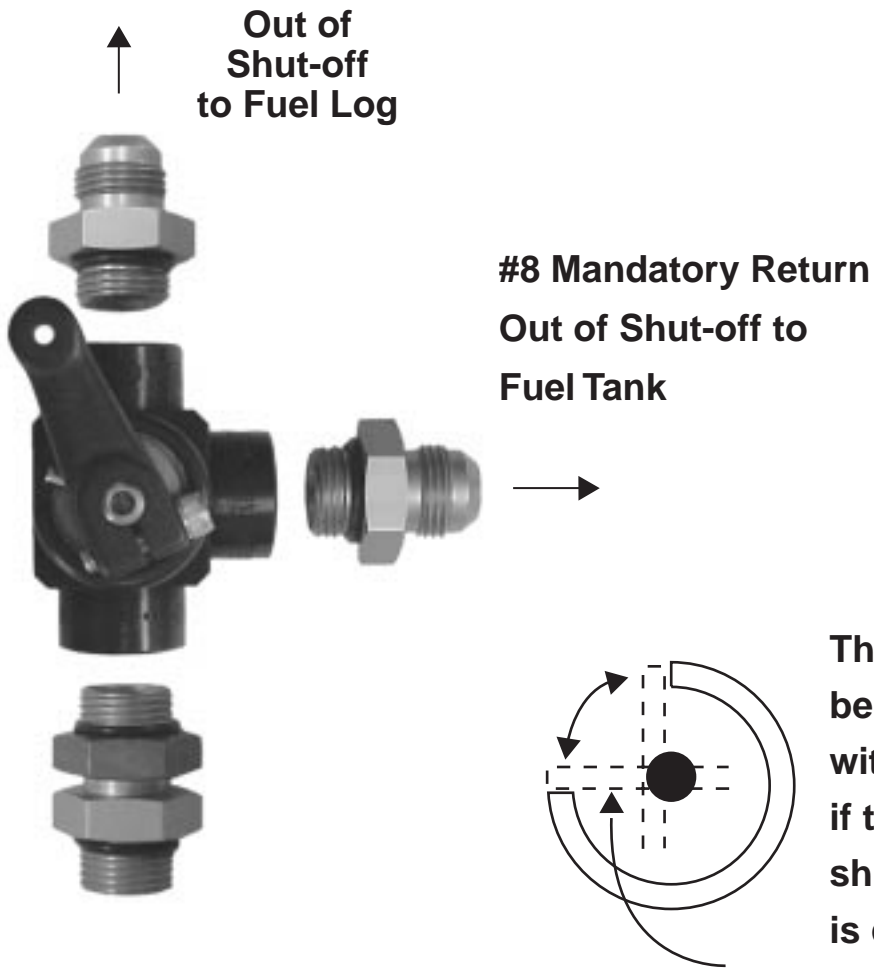
- If you have a full fuel cell and the pump is lower than the fuel cell (which it should be) then there is the possibility that fuel could siphon through the fuel pump, past the carburetor needle and seat and then into the engine.
- If the car sets overnight or longer then you should be aware of this and remove and plug the fuel line at the carburetor.
- Belt or cam driven fuel pumps do not contain any check valves and fuel can siphon through the pump.

PRESSURE SPIKES IN THE CORNERS CAUSING THE CARBURETOR TO FLOOD

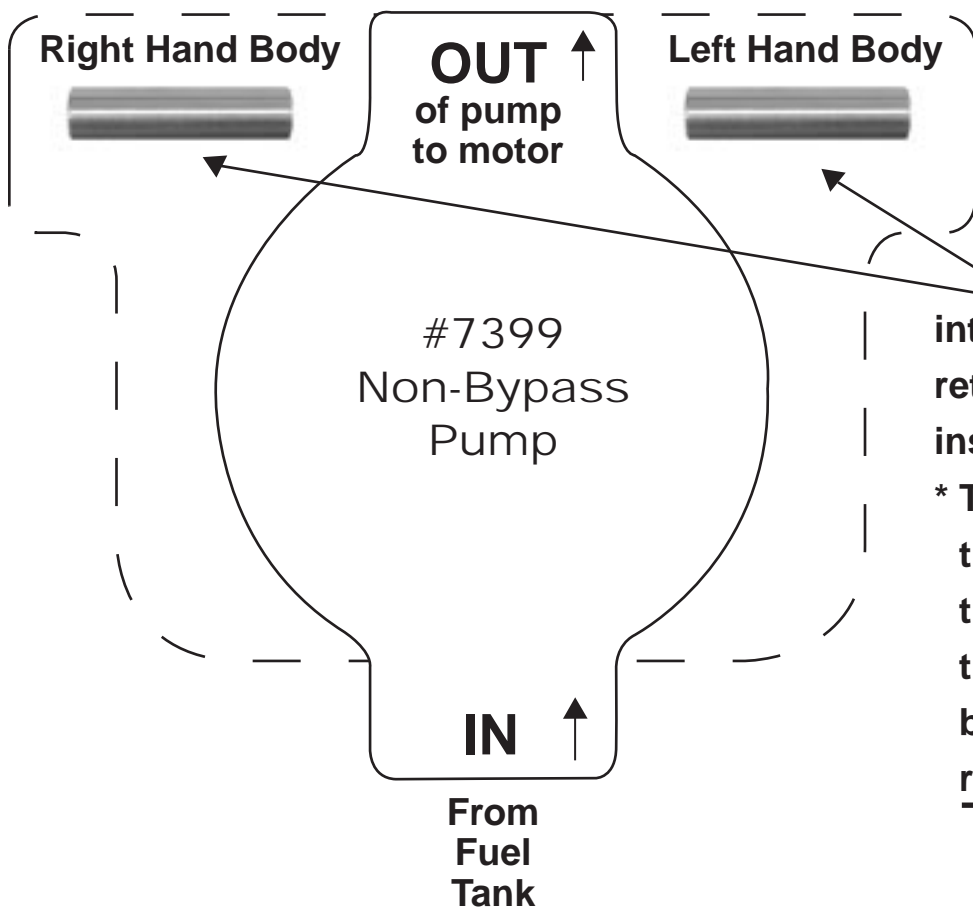
- Pump speed too high. Check the RPM that you are turning the fuel pump compared to the RPM you are turning the engine. If you are using a return line then you may need to service the regulator. Call us on the free tech line.

FUEL PUMP DRIVE BELTS

PART NUMBER	LENGTH	NO. OF TEETH	PART NUMBER	LENGTH	NO. OF TEETH	PART NUMBER	LENGTH	NO. OF TEETH	PART NUMBER	LENGTH	NO. OF TEETH	PART NUMBER	LENGTH	NO. OF TEETH
195L050	19.5"	52	210L050	21.0"	56	225L050	22.5"	60	240L050	24.0"	64	255L050	25.5"	68
285L050	28.5"	76	300L050	30.0"	80	322L050	32.2"	84	345L050	34.5"	86			



The Shut-off lever can be clocked anywhere within 360°, but at a glance if the pin is across the shut-off body the valve is closed.



You can convert your internal by-pass pump to a return line type pump by installing a 74581 sleeve.
 * The 74581 sleeve will replace the pressure spring and lock the poppet closed, converting the 7400 series pump to a non by-pass pump that requires a return line.