



1100HP Six Valve High Performance Mechanical Fuel Pump

Part Number: 1021

Application: Ford 351C/M/400 V8 engines up to 1100 horsepower

Maximum Output Volume: 205 gallons per hour free flow; 159 gallons per hour at 4.5 psi.

Maximum Output Pressure: Adjustable from 7 to 14 psi. (approx)

Recommended Fuel: Gasoline or Gasoline/Ethanol blends (methanol not recommended)

Recommended Pressure Regulator: RobbMc PN 1046 or 1050

Recommended **Minimum** Line Size from Tank to Pump:

3/8" (or -6AN) up to 450 horsepower

1/2" (or -8AN) up to 750 horsepower

5/8" (or -10AN) up to 1100 horsepower

Recommended **Minimum** Line Size from Pump to Regulator and Carb:

5/16" (or -5AN) up to 450 horsepower

3/8" (or -6AN) up to 750 horsepower

1/2" (or -8AN) up to 1100 horsepower

Side Inlet Port: 1/2 NPT (National Pipe Thread, tapered)

Bottom Outlet Port: 1/2 NPT (National Pipe Thread, tapered)

Fittings for the Side Inlet: Nearly any 1/2 NPT fitting can be used on the inlet. Try to use a straight fitting to reduce restriction, especially on the inlet. Do not use a sharp 90 degree fitting. RobbMc offers steel fittings to connect -6, -8 or -10AN line. Fittings to connect rubber hose or inverted flare line are available at most hardware & auto parts stores. Steel/brass fittings are preferred because aluminum fittings may gall in the aluminum pump ports and be difficult to remove later. Use Teflon thread sealant on the NPT threads.

Fittings for the Bottom Outlet: Nearly any 1/2 NPT fitting can be used on the outlet. While a straight fitting is preferred, a 45 or smooth 90 degree fitting on the outlet is acceptable. RobbMc offers steel fittings to connect -6, -8 or -10AN line. Fittings to connect rubber hose or inverted flare line are available at most hardware & auto parts stores. Steel/brass fittings are preferred because aluminum fittings may gall in the aluminum pump ports and be difficult to remove later. Use Teflon sealant on the NPT threads.

Bolting the Pump to the Engine: (Note: Removing the power steering pump & rotating the engine so the pump arm is on the low side of the eccentric makes installation easier). Rotate the pressure adjustment screw on the top of the pump so that about 3/4" of threads are showing above the jam nut. Remove the factory mounting stud from the engine & install the supplied stud using Loctite. Bolt the pump to the engine using the supplied washers, jet nut, and 5/16-18 x 1" socket head cap screw.

Oil Filter Clearance: The pump will be very close to (or even touch) the oil filter. Since there is no relative motion between the two, this is not a great concern. However, it can make it more difficult to install the pump and filter. It also prevents rotation of the valve body (which can make it easier to connect the fuel lines). Replacing the standard size oil filter with a smaller version such as Motorcraft FL-400S will produce plenty of clearance between the pump and filter.

Rotating The Valve Body: The valve body is the bottom portion of the pump with the inlet and outlet ports. By loosening the six screws (four long and two short) on the bottom of the pump which thread into the steel clamp ring, the valve body can be rotated to any position. Be sure to loosen the screws enough so the valve body rotates easily. If the screws are not loose enough, the diaphragm may be damaged when the valve body is rotated.

Adjusting the Pump Maximum Output Pressure: On the top of the pump there is a pressure adjustment screw and a jam nut. Loosen the jam nut and turn the screw to adjust the pressure. The pump will produce a maximum pressure of about 14 psi with the screw turned all the way in until there are no threads showing above the jam nut. The pump will produce a minimum pressure of about 7 psi with the screw adjusted so there are about 3/4" of threads above the jam nut. There is a 1/8" NPT gauge port in the bottom of the pump near the 1/2" NPT outlet port. To check the pump maximum output pressure, remove the plug in the gauge port and install a fuel pressure gauge. Then, with the engine running, turn the adjustment screw until the desired pressure is reached. Once the pump output pressure is adjusted, tighten the jam nut to prevent the adjustment screw from turning. Do not overtighten the jam nut or the housing may crack.

NOTE: It may be necessary to modify the power steering bracket to adjust the pressure to less than about 9 psi.

Pressure Regulator: The amount of fuel the pump will flow is proportional to the pump output pressure. The higher the pump output pressure, the greater the fuel flow. If a regulator is not used and the pressure is set at 7 psi, the pump will only flow about 60% as much fuel as it will at 14 psi. Therefore, the use of a regulator is highly recommended for racing and for engines producing over 550 horsepower. For engines up to 750 horsepower, use a regulator and set the pump output pressure at 10 to 11 psi. For engines over 750 horsepower, use a regulator and set the pump output pressure at 12 to 14 psi. Do not run more pump pressure than necessary to feed the engine as higher pressure increases the loads on the pump and eccentric. Use only a dead-head (non-return) style regulator such as RobbMc PN 1046 or 1050. Adjust the regulator to the pressure recommended by the carb manufacturer.

Vapor Return Line: A RobbMc metered vapor return fitting PN 1010 can be used to reduce fuel vaporization during hot weather. It will also improve hot restarts and help prevent the pressure creep at idle that sometimes occurs when using some dead-head regulators. Install the fitting in the outlet side of the regulator (such as the gauge port) or anywhere between the regulator and the carb(s). Connect a 1/4" or larger return line from the fitting back to the gas tank.

Fuel Filters: If the in-tank filter has been removed (which is a good idea in most cases), a large, free flowing filter (90 to 200 microns) such as RobbMc PN 1025 should be installed between the tank and the pump. One or more filters (30 to 50 micron) should also be used between the pump and the carb(s).

Troubleshooting

This pump will supply enough fuel for at least 550 horsepower (at least 1100 horsepower when the pump is adjusted to 13 or 14 psi and used with a regulator). If a fuel delivery problem is suspected, install a pressure gauge that can be seen by the driver and monitor fuel pressure entering the carb(s). Note the pressure during full throttle acceleration. If the fuel pressure does not drop below 4 psi, the problem is not with the fuel system. (Note: Some nitrous systems require more than 4 psi.)

DO NOT TRUST PRESSURE GAUGES MOUNTED IN THE ENGINE COMPARTMENT: Most fuel pressure gauges (especially liquid filled) read lower as the temperature of the gauge increases. If the fuel pressure at idle appears to decrease as the engine warms up, and the gauge is mounted in the engine compartment, it is most likely a problem with the gauge. Use a hose to mount the gauge outside the engine compartment to verify.

If the pressure drops below 4 psi, check the following:

~Make sure the fuel lines between the tank and the pump are at least 3/8". Engines over 450 hp may require 1/2" lines. Engines over 750 horsepower may require 5/8" lines. RobbMc offers 1/2" sending units for many cars.

~Make sure there are no kinks or smashed sections in the feed line. Remove any sharp 90 degree fittings.

~Replace any rubber lines showing signs of cracking.

~Make sure all fittings and hose clamps are tight so air cannot be sucked into the fuel.

~There must be a vent somewhere on the tank. If a vent tube is used, make sure it is not plugged or kinked.

The addition of a vented gas tank cap may help.

~Make sure the pickup tube is not uncovering during hard acceleration. Try filling the tank completely with fuel. If this fixes the fuel pressure problem, run the tank at least half full when racing, add a sump to the tank, or switch to a fuel cell.

~Make sure the pump output pressure is adjusted correctly. (See "Pressure Regulator" above).

~Make sure there are no obstructions in the fuel line. Remove the gas cap. Remove the hose from the pump inlet and use compressed air to blow air into the hose until you hear a steady flow of air coming from the tank. If this corrects the fuel pressure problem, it is an indication that the tank needs to be removed and cleaned. If the tank is removed for cleaning, remove the factory in-tank filter sock. Add an external filter (such as RobbMc 1025) in the line between the tank and the pump.

~If a filter is used between the tank and the pump, make sure it is not restricting flow. Replace or clean the filter element or install a freer flowing filter.

~On hot days, fuel vaporization can *greatly* reduce pump efficiency and cause erratic fuel pressure.

Vaporization can best be reduced by keeping engine coolant temperature under 180 degrees F.

Vaporization can also be reduced by using a vapor return line, running race/aviation gas, using a "cool can" to cool the fuel, rerouting the fuel away from the exhaust, wrapping the fuel lines with insulating material, and by reducing the restriction in the lines by using larger lines or fewer bends.

~If a vapor return line is connected to the regulator, the RobbMc VR fitting must be used. Using a different fitting will cause a severe loss of pressure unless the fitting has a .030" to .040" diameter restriction.

If none of the above fixes the problem, there may be a problem with the pump. If a problem with the pump is suspected, email us at robb@robbmcperformance.com and we will arrange to have the pump checked and/or repaired at the factory. If the pump was purchased in the last 90 days, it will be repaired at no charge if defective. If the pump has been damaged or purchased more than 90 days ago, it can be repaired for no more than half the price of a new pump.