GENERAL SERVICE PUMPS
INSTALLATION-OPERATION-MAINTENANCE

SERIES GSP

For Parts and Service contact Penn Pump and Equipment Co., Inc.
www.pennpump.com

INSPECT YOUR UNIT. Occasionally, products are damaged during shipment. If the unit is damaged, contact the transportation company or your dealer. Save the unit's packing materials until the claim is settled.

CAREFULLY READ THE LITERATURE PROVIDED. Familiarize yourself with the specific details regarding installation and use. These materials should be retained for future reference.

ACCEPTABLE FLUIDS

- Hot and cold water
- Clean, thin, non-aggressive and non-explosive fluids. For fluids other than water, a special mechanical seal other than the standard mechanical seal may be required. Consult factory.

TEMPERATURE AND PRESSURE LIMITATIONS

- Pumps must be located where ambient temperatures are not so excessive as to be detrimental to the operation of the motor, which is rated for operation at 104°F (40°C) continuous duty.
- The mechanical seal is cooled and lubricated by the fluid being pumped. The mechanical seals are supplied for fluid temperatures between -30°F (-35°C) and 211°F (99.5°C). The maximum fluid temperature is 180°F (82°C) continuous duty, and 211°F (99.5°C) intermittent duty. Avoid thermal shock, which can crack the ceramic seat of the mechanical seal. This can occur by a sudden drastic change in the temperature on the ceramic seat. For higher temperature applications, a special mechanical seal is required. Consult factory.
- The maximum safe working pressure is the maximum pressure of the pumping *system* (fluid inlet pressure plus pressure developed by the pump). The maximum working pressure is determined by safe and reasonable life expectancy limits of such elements as the mechanical seal, gasket design, bolt strength, bursting strength of pump castings, etc. Avoid water hammer conditions.

INSTALLATION

LOCATION: The pump should be located in an accessible area as close as possible to the source of the liquid to be pumped. Location of the pump should allow for easy removal of drain/vent plugs as required for maintenance and priming of the pump. Pumps and motors should be protected against flooding. Provide enough clearance at the rear of the motor so that it and the bracket/impeller assembly can be removed from the pump casing for service.

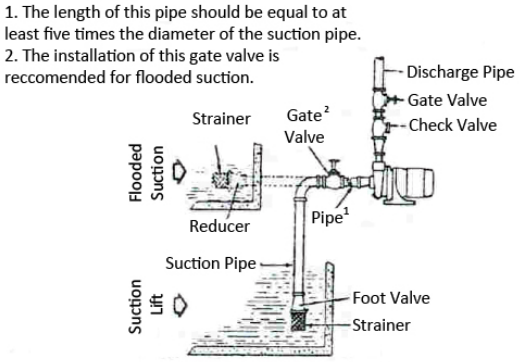
FOUNDATION: The foundation should be able to absorb vibration and provide a permanent rigid support for the pump. A concrete foundation on a solid base is a good example. Foundation bolts of correct size should be embedded in the concrete.

PIPING: Use pipe sealant compound or Teflon® tape on all male threads. Wherever possible, avoid use of unnecessary elbows, valves or accessory items, especially near the pump suction and discharge openings. Shim where necessary, under mounting feet of the pump, so that the unit is level. To avoid strain on the pump, all pipes should be aligned and supported independently at a point near the pump before making any corrections. When installing extra-long pipe, provide a means to take care of elongation in pipes due to pressure and temperature.

The ***suction pipe*** should never be smaller than the suction tapping of the pump, and should be larger if the suction piping is long. The suction pipe should run straight, short, and with as few elbows as possible to keep friction losses to a minimum. If necessary, install a strainer at the open end of the suction line to prevent foreign matter from entering the pump. To maintain prime for pumps operating under suction lift, a foot valve must be installed at the opening of the suction line. The strainer should have 3 to 4 times the area of the suction pipe, and the foot valve should be 1-1/2 to 2 times the area of the suction pipe; otherwise excessive friction loss will be caused. Use extreme care in making up suction pipe fittings, since air leaks will cause the pump to lose prime. Also, if the pump is operating under suction lift, horizontal suction piping must rise gradually from the source to the pump and contain no high spots, which allow air pockets to form. If the pump is operating under flooded or positive pressure conditions, it is recommended that a gate valve be installed in the suction line as a means of isolating the pump.

The ***discharge pipe*** should have a check valve installed to prevent backflow, which could damage the pump upon shut down. A gate valve should also be installed as a means of isolating the pump for maintenance purposes; it will also be of assistance when priming the pump. Pipe, valves, and fittings should be at least the same size as the discharge tapping of the pump, to keep friction losses to a minimum.

A ***bypass*** or pressure relief valve should be installed in the discharge line if there is any possibility that the pump may operate against a closed valve in the discharge line. Flow through the pump is required to keep the mechanical seal cooled and lubricated. Damage to the pump may result if the liquid becomes hot enough to vaporize.

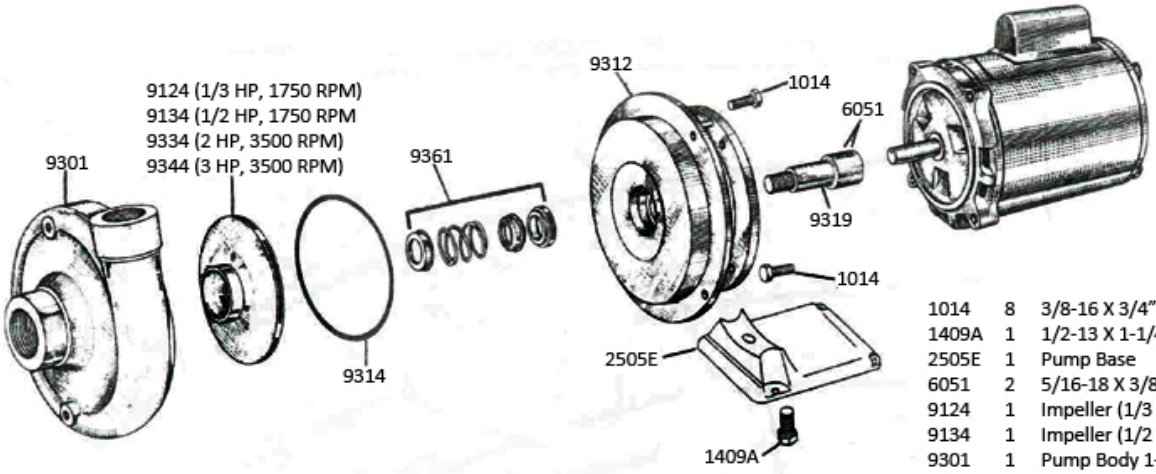


WIRING THE MOTOR: ***Wire the electric motor in accordance with the latest edition of the National Electric Code and local codes and regulations. A qualified electrician is recommended.*** Wiring instructions are given on the motor nameplate. Note: Single phase fractional (56C Frame) motors are protected by an internal, automatic reset, thermal overload switch; no external protection is required. All three phase motors (56C and JM Frame) must be provided with a manual starter that incorporates overload protection. For overload protection as well as automatic operation (in conjunction with a float or pressure switch) a magnetic starter with proper overload relays ("heaters") installed must be used.

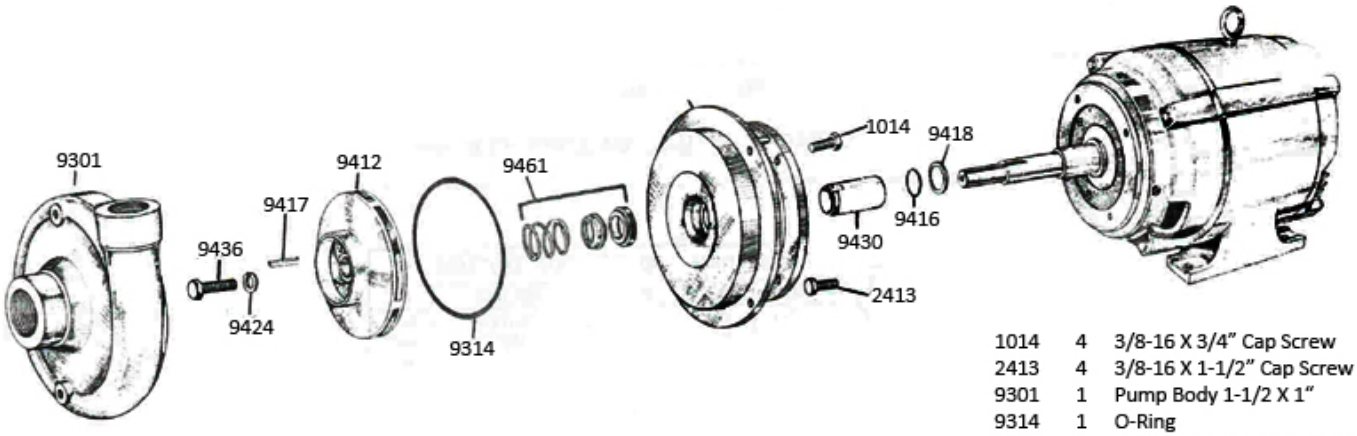
SPECIFY WITH CONFIDENCE, SPECIFY PENN PUMP SYSTEMS

GENERAL SERVICE PUMPS

GSP PARTS LIST



1014	8	3/8-16 X 3/4" Cap Screw
1409A	1	1/2-13 X 1-1/4" Cap Screw
2505E	1	Pump Base
6051	2	5/16-18 X 3/8" Set Screw
9124	1	Impeller (1/3 HP, 1750 RPM)
9134	1	Impeller (1/2 HP, 1750 RPM)
9301	1	Pump Body 1-1/2 X 1"
9312	1	Motor Support
9314	1	O-Ring
9319	1	Pump Shaft
9334	1	Impeller (2 HP, 3500 RPM)
9344	1	Impeller (3 HP, 3500 RPM)
9361	1	3/4" Rotart Seal Assy.



1014	4	3/8-16 X 3/4" Cap Screw
2413	4	3/8-16 X 1-1/2" Cap Screw
9301	1	Pump Body 1-1/2 X 1"
9314	1	O-Ring
9354	1	Impeller (5 HP, 3550 RPM)
9412	1	Motor Support
9416	1	O-Ring
9417	1	Square Key
9418	1	O-Ring
9424	1	Impeller Wash
9430	1	Rotary Seal Sleeve
9436	1	3/8-16 X 3/4" Cap Screw, SS
9461	1	1-1/4" Rotary Seal Assy.

WHEN ORDERING PARTS, INCLUDE PUMP SERIAL NUMBER

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