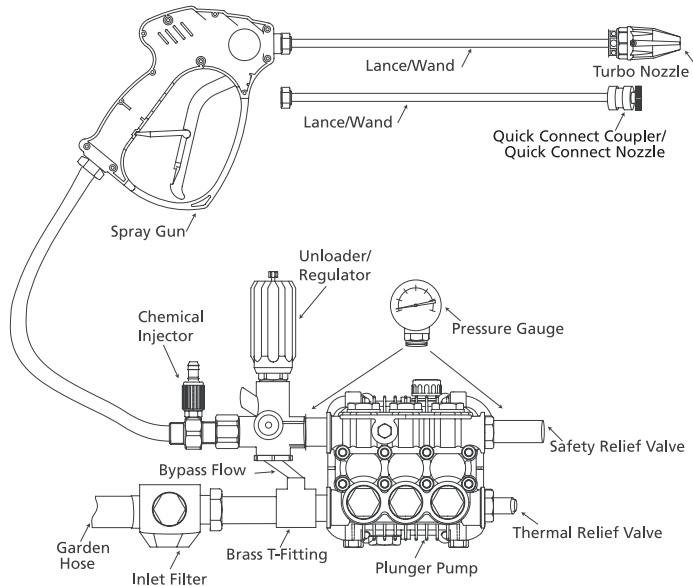


High Pressure Washer Pump Selection Guide



DEFINITIONS:

Reciprocating Positive Displacement Pump

A reciprocating pump is a positive displacement pump that traps a fixed volume of liquid at the inlet, compresses it to a discharge pressure, and pushes it out the discharge port. For a given bore, stroke, and RPM, the pump will pass that given amount of fluid. (What goes in, comes out.)

NOTE: While positive displacement pumps are running, they will always be moving a fluid. A safety valve—either an unloader or a regulator—must always be installed on the pump. Otherwise, the system will deadhead, and system damage may occur.

Performance Curve and Electric Brake

Horsepower Required:

The curve for a positive displacement pump is linear. It's easy to calculate the electric horsepower for this type of pump. For a given flow (GPM) and a given pressure (PSI), use the following formula: $GPM \times PSI / 1457 = EBHP$ required. Example: $4 \text{ GPM} @ 3000 \text{ PSI}$. The required $HP = 4 \times 3000 / 1457 = 8.24 \text{ EBHP}$.

Pressure Regulator

A regulator will always maintain system pressure; whether the discharge is open or closed, the pump head pressure and line pressure will remain at load. The regulator will bypass the working fluid by overcoming a set spring resistance.

Pressure Unloader

An unloader does what the name implies. When the system discharge is closed, the valve relieves the working pressure on the pump when in bypass.

Thermal Relief Valve

Helps protect the pump from overheating when in extended bypass or closed gun operation.

Calculations

Calculating the pump flow at a given RPM: $\text{Desired GPM} = \text{Rated GPM} \times \text{Desired RPM} / \text{Rated RPM}$.

Calculating the pump speed at a given flow: $\text{Desired RPM} = \text{Rated RPM} \times \text{Desired GPM} / \text{Rated GPM}$.

Calculating the motor or pump pulley diameter when one or the other is known:

$\text{Motor Pulley } \varnothing = \text{Pump Pulley } \varnothing \times \text{Pump RPM} / \text{Motor RPM}$

$\text{Pump Pulley } \varnothing = \text{Motor Pulley } \varnothing \times \text{Motor RPM} / \text{Pump RPM}$.

Inlet Feed Systems

Pressurized Inlets

Never use a feed line smaller than the pump inlet. It is recommended that you go one size larger. Always use an inlet filter. Try to avoid long runs of hose.

Gravity Feed Inlets

The minimum inlet hose diameter should be twice the size of the inlet. Use a "Y" style inlet filter; avoid 90° fittings. Have the inlet design as clean and simple as possible. The inlet hose length should not be more than 4 - 5 feet.

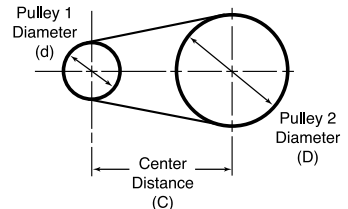
Components

Low Pressure

Inlet Filter
Hose Connection
Thermal Relief Valve

High Pressure

Pump
Unloader or Regulator
EZ start valve
Pressure Gauge
Chemical Injector
Spray gun hose
Spray gun
Wand
Nozzle



Pulleys

Use the following formula to calculate belt length:

$$L = 2(C) + 1.57(D + d) + \frac{(D - d)^2}{4C}$$

L = Effective outside length of belt(s) in inches.

C = Distance between centers of pulleys in inches.

D = Outside diameter of pump pulley in inches.

d = Outside diameter of motor/engine pulley in inches.