Flow: is created by the pump.

Pressure: is created by resistance to flow. This resistance is usually the result of a load.
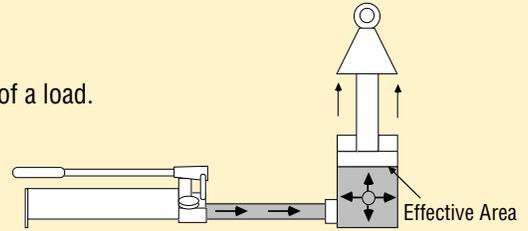
Effective Area

Force: The amount of force a hydraulic cylinder can generate is equal to hydraulic pressure times the effective area of the cylinder. (**Effective area is the surface area of the piston face in square inches.**) For multiple cylinder systems, multiply the effective area times the number of cylinders times pressure to determine system force.

Formula for Calculation of Output Force:

$$\frac{\text{PSI x Cylinder Effective Area x No. of Cylinders}}{2,000} = \text{TONS}$$

Speed: When using a "**power pump**" the speed at which your cylinder will lift is determined by dividing the pump's flow by the cylinder's effective area.

Formula for Calculation of Lifting Speed:

$$\frac{\text{Pump Flow Per Minute}}{\text{Cylinder Effective Area x No. of Cylinders}} = \begin{array}{l}\text{in./min.}\\ \text{Piston}\\ \text{Travel}\end{array}$$

1 Gallon = 231 cu. in. • 1 Ounce = 1.8 cu. in. • 1 "KIP" = 1,000 lbs.

METRIC CONVERSION CHART

|			
1 U.S. Gallon	=3.785 Liters	1 kPa	= 6.9 psi
	=3.785 cu./cm	1 Inch	= 2.54 cm
			=25.4 mm
1 Cubic Inch	=16.39 cu./cm	1 Meter	=39.37 in.
1 Bar	=14.7 psi	1 Horsepower	=745.7 Watts
		Centigrade	=5/9 (F-32)
1 Metric Ton	=2,205 lbs.	Fahrenheit	=9/5 (C+32)
	=1,000 kg`		
1 Ton (Short)	=2,000 lbs.		
	-907.18 kg		

Now you can avoid the complex and confusing plumbing requirements of inline manifolds. Hydraulic connections are quick and convenient when you use our M1 and M2 pump mounted manifolds to control up to 4 double-acting cylinders.

M1
Pump Mounted
Advance
Manifold

M2
Pump Mounted
Return Manifold

Gauge

Return Line

V10E Check Valve
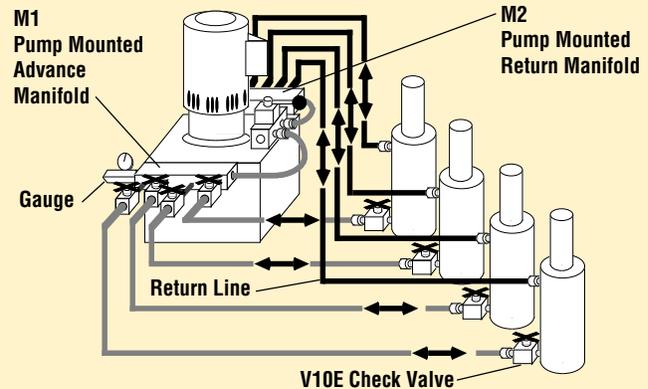
BASIC HYDRAULIC CONFIGURATIONS

Here is a basic hydraulic system consisting of a single acting cylinder, a pump, and a hose. The pump shown is a typical electric/hydraulic power pump, however, other hand, air, or gas powered pumps may be substituted.
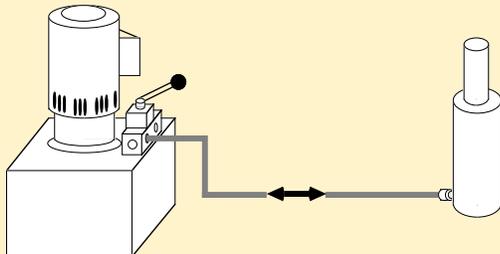
Many different system arrangements can be achieved by using a remote mounted directional valve. Remote valves are ideal when system control is desired away from the pump.

VR3
3 Pos. 3 Way Remote
Mount Valve

F11
Tee