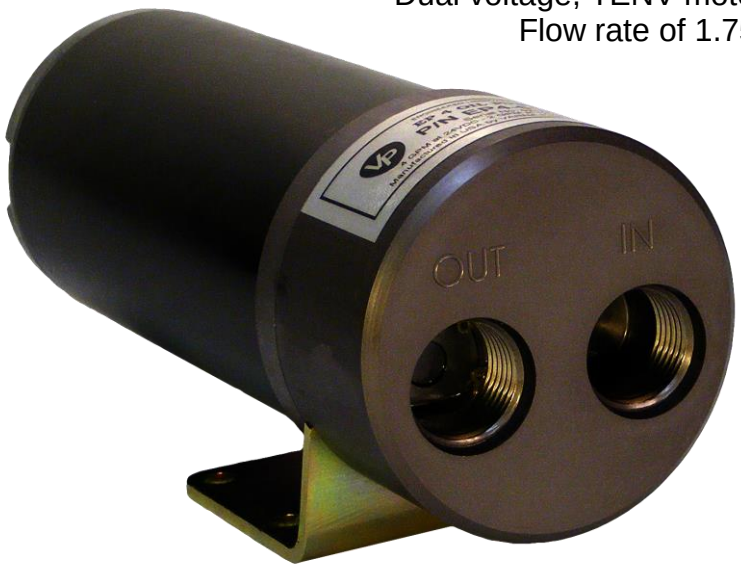
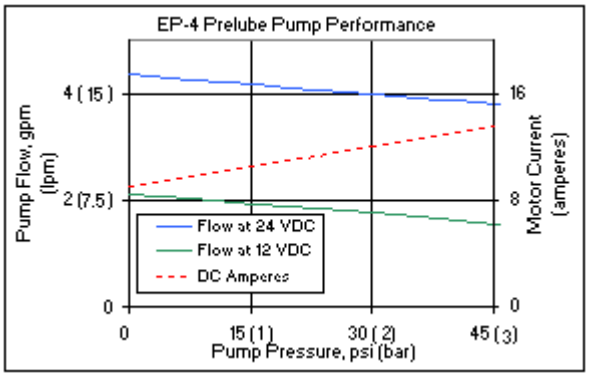
EP-4 Prelube Oil Pump

Compact, Heavy Duty, Industrial, Quality
Dual voltage, TENV motor rated for 12 or 24vdc
Flow rate of 1.75gpm or 4gpm

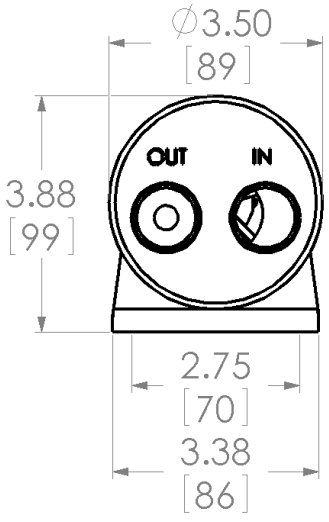


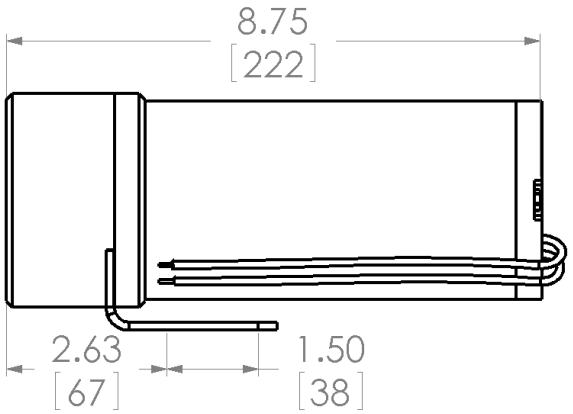


Nominal current draw for the EP-4 pump motor is 15 amps. Motor current varies with pressure. The motor should be fused. See wiring considerations.

Flow rate at 30psi (2 bar)	4 GPM (15 LPM)	1.75 GPM (6.6 LPM)
Attainable Pressure	60+psi (4+ bar)	
Integrated low loss check valve in pressure port	Y	
Whisper-Vane positive displacement technology, Self Priming	Y	
Port Size, SAE straight thread O-ring	3/4"	
Ambient environmental temperature range	0°f(-18°c) to 175°f (80°c)	
Pressure at pump inlet may not be lower than:	-7.5 PSIg (-.5 barg)	
Max oil temperature	300°f (149°c)	
Max oil viscosity	~5,000 cSt	

- Whisper Vane Technology
- Direct shaft coupling, simple, long life
- 4gpm at 24vdc, or 1.75gpm at 12vdc





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Plumbing Considerations

The EP-4 is powered by a self-contained TENV motor, rated for both 12 and 24 Volts DC systems. Both voltages are capable of pressures in excess of 60 psi (4 bar).

The EP4 pump delivers up to 4 gpm (15 l/m) of oil flow. It is a self-priming and quiet-running vane pump. It includes a self-contained, low-pressure loss check valve to prevent backflow. This is particularly valuable in prelube applications to prevent backflow from the main engine lube pump. It can produce up to 60 psi (4 bar) pressure at either 12 or 24vdc.

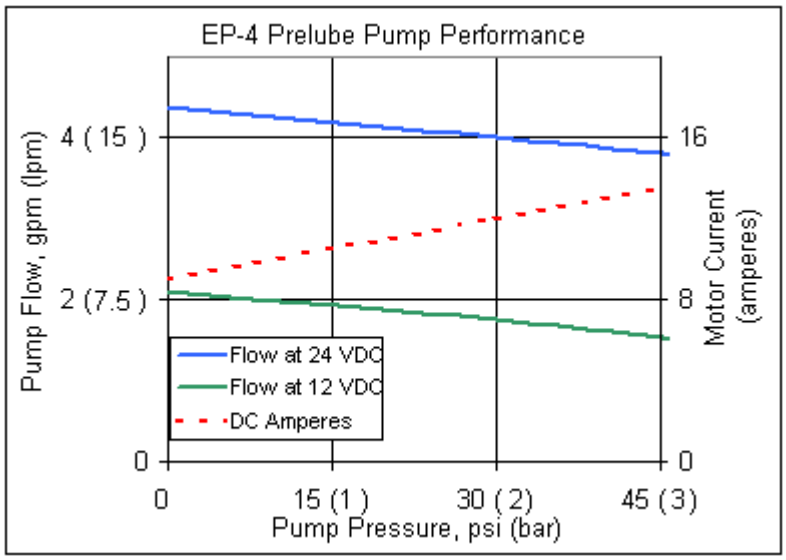
Because these oil pumps do not run at thousands of psi like a hydraulic system, excessive pressure drop caused by small pipes can be detrimental to system performance. Small suction pipes will starve the pump and reduce output flow by causing cavitation. Small pressure pipes will create excessive backpressure that will reduce output flow by slowing down the pump motor. Therefore, elbows and long runs of pipe should be avoided. 4 gpm (15 l/m) of cold oil can easily eat up 60 psi (4 bar) when the plumbing is too restrictive.

The pump itself does not create pressure. It produces flow. Like a turnstile, every rotation of the pump delivers a metered volume of oil to the other side. Whatever system is connected to the pump has flow resistance that produces backpressure as the pump works to maintain flow.

Available pump motor horsepower can develop only a given amount of pressure, in this case about 60 psi (4 bar). Each elbow and each inch of pipe has a cumulative effect. If the plumbing uses up all available pressure there will be no pressure left for the job the pump is intended to do.

It is recommended that hose or pipe no smaller than ¾" (19mm) at 24v or ½" at 12v be used and that the suction hose in particular is kept as short as possible and no longer than 36".

Chart 1- Pump Performance, Pump Flow as a function of Pressure.



This chart shows the approximate flow and motor load for a given pressure using SAE 40w motor oil. The drop in the flow is caused by a combination of volumetric losses in the pump and the reduction in motor speed as it loads up. Note that at about 35 PSI the current crosses the 7 amp line where duty cycle comes into play. See the following chart.

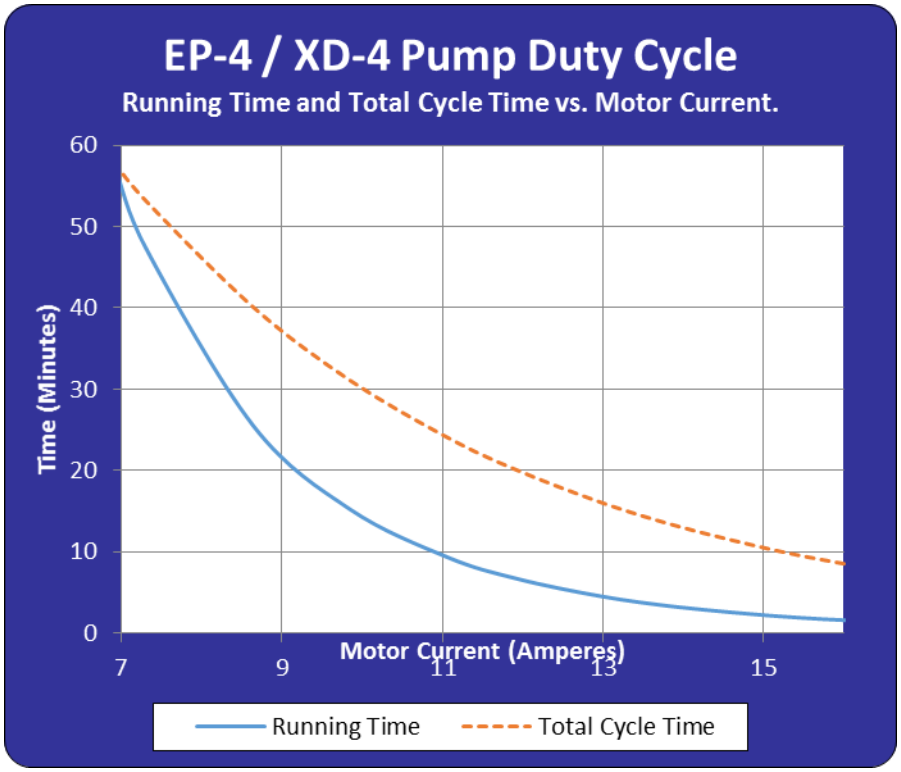
Wiring Considerations

The nominal current draw for the EP4 pump motor is about 15 amperes. The actual motor current varies with the viscosity and the pressure required to pump the oil through the system. The colder the oil, the more current the motor draws. We recommend the Bussmann CB251-15 breaker be used on the power supply line to protect the motor from thermal overload under adverse conditions. This particular breaker has an amp/time curve that closely matches the motor/pump combination to properly protect the pump within it's operating envelope.

The EP4 pump motor is rated for Intermittent Duty. Under normal prelube operation the total accumulated run time during any 15 minute period should not exceed 5 minutes. The maximum run time can be extended if the current draw is less than 15 amperes. For example in a turbo soakback situation when the oil is hot and the pressure requirements are low, the run time can be extended.

While a battery is the best source for the pumps motor, the pump can be run from an AC power supply. The power supply must be chosen with care. Inrush current can be as high as 60 amperes. This will cause most small power supplies to abruptly current limit by reducing the voltage to near zero resulting in the pump stopping. The power supply then attempts to restart and the cycle repeats. This oscillation is sometimes called "hiccup mode". The Mean Well DRP-480S-24 is one power supply that has proven it can start the EP-4 without running into these problems.

Chart 2- Duty Cycle, Run-Time and Total Cycle Time as a function of Motor Current.



This chart shows the duty cycle for the pumps motor under steady running conditions for a given motor load. It does not take into account a cold motor on the first cycle, which would be somewhat longer. In addition, adding active cooling can substantially improve duty cycle. Running time is the length of time where the pump is running. Total Cycle time is the time from turning on to the time it is next tuned on.

Application Engineering

It is challenging to address every possible installation type. We are always happy to help in choosing an appropriate installation package. Give us a call for engineering assistance and support. 888-676-7770

