Plunger Pump Model 3515

SPECIFICATIONS

<table>
<thead>
<tr>
<th></th>
<th>U.S. Measure</th>
<th>Metric Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume</td>
<td>14 G.P.M.</td>
<td>(53 L/M)</td>
</tr>
<tr>
<td>Discharge Pressure</td>
<td>3000 P.S.I.</td>
<td>(210 BAR)</td>
</tr>
<tr>
<td>Max. Inlet Pressure</td>
<td>Flooded to 70 P.S.I.</td>
<td>(10 4.9 BAR)</td>
</tr>
<tr>
<td>RPM</td>
<td>800 RPM</td>
<td>(800 RPM)</td>
</tr>
<tr>
<td>Bore</td>
<td>0.084&quot;</td>
<td>(25 mm)</td>
</tr>
<tr>
<td>Stroke</td>
<td>1.890&quot;</td>
<td>(48 mm)</td>
</tr>
<tr>
<td>Crankcase Capacity</td>
<td>4.2 Qts.</td>
<td>(4 L)</td>
</tr>
<tr>
<td>Maximum Fluid Temperature</td>
<td>160°F</td>
<td>(71°C)</td>
</tr>
<tr>
<td>Inlet Ports (2)</td>
<td>1-1/2&quot; NPT</td>
<td>(1-1/2&quot; NPT)</td>
</tr>
<tr>
<td>Discharge Ports (2)</td>
<td>1&quot; NPT</td>
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</tr>
<tr>
<td>Pulley Mounting</td>
<td>Either side</td>
<td>(Either side)</td>
</tr>
<tr>
<td>Shaft Diameter</td>
<td>1.378&quot;</td>
<td>(35 mm)</td>
</tr>
<tr>
<td>Weight</td>
<td>152 lbs.</td>
<td>(69 kg)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>24.33&quot; x 18.11&quot; x 9.33&quot;</td>
<td>(618 x 460 x 237 mm)</td>
</tr>
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HORSEPOWER REQUIREMENTS

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<tr>
<th>Flow</th>
<th>PSI 2000</th>
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<th>Pump RPM</th>
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<tbody>
<tr>
<td>GPM</td>
<td>L/M</td>
<td>BAR</td>
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<td>14</td>
<td>53</td>
<td>19.2</td>
<td>24.0</td>
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<tr>
<td>12</td>
<td>45</td>
<td>16.5</td>
<td>20.6</td>
<td>24.7</td>
</tr>
<tr>
<td>10</td>
<td>38</td>
<td>13.7</td>
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**DETERMINING THE PUMP R.P.M.**

**Rated G.P.M.** = "Desired" G.P.M. / "Desired" R.P.M.

**DETERMINING THE REQUIRED H.P.**

GPM x PSI = Electric Brake

1460 = H.P. Required

**DETERMINING MOTOR PULLEY SIZE**

Motor Pulley O.D. = Pump Pulley O.D.

Pump R.P.M. = Motor R.P.M.

Note: Consult engine manufacturer when using gas or diesel engine.

FEATURES

**SUPERIOR DESIGN**
- Triplex plunger design gives smoother fluid flow.
- Welded seal port keeps high pressure seals completely lubricated and cooled.
- Inlet and discharge valve and seat assemblies interchange for easier maintenance.
- Lubricated low pressure seal provides double protection against external leakage.
- Oil bath crankcase assures proper lubrication.
- Plunger design results in extra quiet operation.
- The close tolerance concentricity of the ceramic plunger maximizes seal life.

**QUALITY MATERIALS**
- Special 316 stainless steel valve and seat for extended life.
- Heavy duty Nickel Aluminum Bronze inlet and discharge manifold for strength and corrosion resistance.
- Polished surface of solid ceramic plungers results in extended seal life.
- Extra hard finish of ceramic plunger is durable and abrasion resistant.
- Die cast aluminum crankcase provides lightweight strength and precision tolerance control.
- Forged, nitrided chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings mean longer bearing life.

**EASY MAINTENANCE**
- Wet end is easily serviced without entering crankcase, requiring less time and effort.
- Valve assemblies are accessible without disturbing piping, for quick service.
- Preset packings mean no packing gland adjustment is necessary, reducing maintenance costs.

WORLD LEADER IN TRIPLEX HIGH PRESSURE PUMPS
Matched oversized connecting rods are of Zamak, a material noted for strength and bearing quality.

Main bearings are oversized for longer pump life.

Crankshaft is nitrided chrome-moly forged. Cat Pumps is the only pump manufacturer in the world utilizing this quality.

Diecast aluminum crankcase means high strength, light weight and excellent tolerance control.

Stainless steel plunger rod for strength.

Polished, solid ceramic plunger for resistance to corrosion and abrasion which means a longer service life.

Heavy duty Aluminum Bronze inlet and discharge manifold for strength and corrosion resistance.

Pre-set seals require no adjustment. 100% wetted seal design lubricated and cooled by pumped fluid on both sides for extended seal life.

Special 316 stainless steel valve and seal for extended life.

Completely interchangeable inlet and discharge valves, for easy service.

3515-S-685 5M

Products described herein are covered by one or more of the following U.S. patents 3556244, 3652188, 3809506, 3920356, and 3930756
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DETERMINING Rated G.P.M. = "Desired" G.P.M.
DETERMINING THE PUMP R.P.M. = "Desired" R.P.M.

SPECIFICATIONS

U.S. Measure | Metric Measure
---|---
Volume | 14 G.P.M. | (53 L/M)
Discharge Pressure | 3000 P.S.I. | (210 BAR)
Max. Inlet Pressure | Flooded to 70 P.S.I. | (to 4.9 BAR)
RPM | 800 RPM | (800 RPM)
Bore | 0.984" | (25 mm)
Stroke | 1.890" | (48 mm)
Crankcase Capacity | 4.2 Ots. | (4 L)
Maximum Fluid Temperature | 160°F | (71°C)
Inlet Ports (2) | 1-1/4" NPT | (1¼" NPT)
Discharge Ports (2) | 1" NPT | (1" NPT)
Pulley Mounting | Either side | Either side
Shaft Diameter | 1.378" | (35 mm)
Weight | 152 lbs. | (69 kg)
Dimensions | 24.3" x 18.11" x 9.33" | (618 x 460 x 237 mm)

LUBRICATION—Before starting pump, fill crankcase per specification with Pump Crankcase Oil ISO 68 multi-viscosity petroleum-based lubricating oil with anti-wear and rust inhibitor additives. Change initial fill after 50 hours running period. Change oil every 3 months or at 500 hour intervals thereafter. Oilier set at three drops per hole, twice per month is sufficient for normal operation. Oiliper adjustment is vertical to start feed, horizontal to stop feed. 45° to drain reservoir. Additional lubrication may be required with increased hours of operation and temperature.

INLET CONDITION CHECK-LIST FOR LARGE CAPACITY SYSTEMS

Inadequate inlet conditions can cause serious malfunctions in the best designed pump. Surprisingly, the simplest of things can cause the most severe problems. Some of these conditions can go unnoticed to the unfamiliar or untrained eye. To help eliminate some of these costly headaches, we have put together a check list of probable cause areas which should be evaluated before operation of any system. Remember, no two systems are alike, so there can be no ONE best way to set-up a system. All factors must be carefully considered.

INLET SUPPLY should be adequate to accommodate the maximum flow being delivered by the pump.
☐ Avoid closed loop systems, especially at higher temperatures and larger volumes. By-pass should be returned to a holding tank.
☐ Low vapor pressure fluids, such as solvents, require a booster pump for adequate inlet supply.
☐ Higher viscosity fluids require a positive NPSH for adequate inlet supply.
☐ Higher temperature fluids tend to vaporize and require a positive NPSH for adequate supply.
☐ When using an inlet holding tank, size it to provide adequate fluid to accommodate the maximum output of the pump, generally a minimum of five times the GPM (however, a combination of system factors can change this requirement significantly); provide adequate baffling in the tank to eliminate air bubbles and turbulence; install diffusers on all return lines to the tank.

INLET LINE SIZE should be adequate to avoid starving the pump.
☐ The line should generally be 1-1/2 to 2 times the specified pump inlet port size.
☐ The line MUST be a FLEXIBLE hose, NOT a rigid pipe, and reinforced on SUCTION systems to avoid collapsing.
☐ The smaller the inlet plumbing the less the potential for the problems. Keep the length to a minimum, the number of elbows and joints to a minimum (ideally no elbows) and the inlet accessories to a minimum.
☐ Use pipe sealant to assure air-tight, positive sealing pipe joints.

INLET PRESSURE should fall within the specifications of the pump. These conditions vary slightly from the plunger to the piston pumps.
☐ Higher temperatures require pressurized inlet.
☐ Higher pump RPM’s can increase the acceleration loss of the pumped fluid and may require pressurized inlet. This acceleration loss is also increased by higher temperatures, low vapor pressures and higher viscosity.
☐ Optimised pump performance is achieved with a flooded or pressurised inlet, however, negative feed is possible under ideal conditions.

INLET ACCESSORIES are designed to protect against overpressurization, monitor inlet flow, control contamination, control temperature and provide ease of servicing.
☐ All accessories should be sized to avoid restricting the inlet flow.
☐ A pressure gauge is recommended to monitor the inlet pressure and should be mounted AS CLOSE TO THE PUMP INLET as possible.
☐ All accessories should be compatible with the solution being pumped to avoid malfunction.

BY-PASS TO INLET Care should be exercised when deciding the method of by-pass. It is recommended the by-pass be directed to a baffled reservoir tank, with at least one baffle between the by-pass line and the inlet line to the pump. Although not recommended, by-pass fluid may be returned to the inlet line of the pump if the system is properly designed to protect your pump. When using this method a PRESSURE REDUCING VALVE should be installed on the by-pass line to avoid excessive pressure to the inlet of the pump. (REDUCING VALVE SHOULD BE INSTALLED BETWEEN THE BY-PASS CONNECTION AND THE INLET TO THE PUMP) It is also recommended that a TEMPERATURE SENSING VALVE be used to monitor the temperature build-up in the by-pass loop to avoid premature seal failure.
☐ A low-pressure, flexible cloth braid (not metal braid) hose should be used from the by-pass connection to the inlet of the pump.
☐ It is recommended to use a minimum 24" by-pass hose.
☐ On any new installation or during periodic maintenance or troubleshooting, it is recommended that the pressure in the by-pass line be checked to avoid overpressurizing the inlet.