



3 Frame Piston Pump Models

280 290

FEATURES

Superior Design

- Triplex Uniflow design provides continuous forward liquid flow for smooth operation.
- Wetted cups and floating pistons are lubricated and cooled by pumped liquid for long cup life.
- Mechanically actuated inlet valves give strong lift and easy prime.
- 304 stainless steel discharge valves for wear resistance.
- Oil bath crankcase assures optimum lubrication.

Quality Materials

- Cylinder and sleeve wear surfaces are hard chrome plated 304 stainless steel for maximum durability and abrasion resistance.
- Chrome plated, brass manifolds and optional stainless steel manifolds are strong and corrosion resistant.
- Heavy duty connecting rods are made of high quality Zamak offering superior bearing quality strength.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity mean longer bearing life.

Easy Maintenance

- Stepped stainless steel piston rod with chrome-plated, stainless steel sleeve allows easy replacement from front of pump.
- All wet-end wear parts are easily serviced without entering crankcase, requiring less time and effort.
- Wear parts are available in convenient kits.

$$\frac{\text{DETERMINING THE PUMP R.P.M.}}{\text{Rated G.P.M.}} = \frac{\text{“Desired” G.P.M.}}{\text{Rated R.P.M.}}$$

$$\frac{\text{DETERMINING THE REQUIRED H.P.}}{\text{GPM} \times \text{PSI}} = \frac{\text{Electric Brake H. P. Required}}{1460}$$

$$\frac{\text{DETERMINING MOTOR PULLEY SIZE}}{\text{Motor R.P.M.}} = \frac{\text{Pump R.P.M.}}{\text{Motor R.P.M.}}$$

Note: Consult engine manufacturer when using gas or diesel engine. Refer to pump Service Manual for important Inlet Condition Check-List, Start-up Procedure, Tech Bulletins and Pump Maintenance information.

SPECIFICATIONS

MODEL 280

| | U.S. Measure | Metric Measure |
|---------------------|-----------------|----------------|
| Flow..... | 3.0 GPM | (11 L/M) |
| Pressure Range..... | 100 to 1000 PSI | (7 to 70 Bar) |
| RPM | 1330 RPM | (1330 RPM) |
| Stroke..... | 0.394" | (10 mm) |
| Weight..... | 11.7 lbs. | (5.3 kg) |

MODEL 290

| | U.S. Measure | Metric Measure |
|---------------------|-----------------|----------------|
| Flow..... | 3.5 GPM | (13 L/M) |
| Pressure Range..... | 100 to 1200 PSI | (7 to 85 BAR) |
| RPM | 1200 RPM | (1200 RPM) |
| Stroke..... | 0.472" | (12 mm) |
| Weight..... | 12.1 lbs. | (5.5 kg) |

COMMON SPECIFICATIONS

| | | |
|-----------------------------------|----------------------|-----------------------|
| Inlet Pressure Range | -8.5 to 40 PSI | (-0.6 to + 2.8 BAR) |
| Bore..... | 0.787" | (20 mm) |
| Crankcase Capacity | 10 oz. | (.3 L) |
| Maximum Liquid Temperature | 160°F | (71°C) |
| Inlet Port (1) | 1/2" NPTF | (1/2" NPTF) |
| Chemical Injection Port (1) | 1/4" NPTF | (1/4" NPTF) |
| Discharge Ports (2)..... | 3/8" NPTF | (3/8" NPTF) |
| Discharge Port (1)..... | 1/2" NPTF | (1/2" NPTF) |
| Pulley Mounting | Either side | (Either side) |
| Shaft Diameters | 0.650" | (16.5 mm) |
| Dimensions (280) | 10.63 x 8.79 x 5.30" | (270 x 223x 134.5 mm) |
| Dimensions (290) | 10.83 x 8.79 x 5.30" | (275 x 223x 134.5 mm) |

HORSEPOWER REQUIREMENTS

| MODEL | FLOW | | PRESSURE | | | MOTOR PULLEY SIZE | |
|-------|----------|------|----------|----------|----------|---|-------------|
| | | | PSI 800 | PSI 1000 | PSI 1200 | Using 1725 Nom. RPM Motor & 5.0" Pump Pulley O.D. | |
| | U.S. GPM | L/M | BAR 55 | BAR 70 | BAR 85 | RPM | Pulley O.D. |
| 280 | 3.0 | 11.4 | 1.6 | 2.1 | N/A | 1330 | 3.9 |
| | 2.5 | 9.5 | 1.4 | 1.7 | N/A | 1108 | 3.2 |
| | 2.0 | 7.6 | 1.1 | 1.4 | N/A | 887 | 2.8 |
| 290 | 3.5 | 13.2 | 1.9 | 2.4 | 2.9 | 1200 | 3.5 |
| | 3.0 | 11.4 | 1.6 | 2.1 | 2.5 | 1029 | 3.0 |
| | 2.5 | 9.5 | 1.4 | 1.7 | 2.1 | 858 | 2.5 |

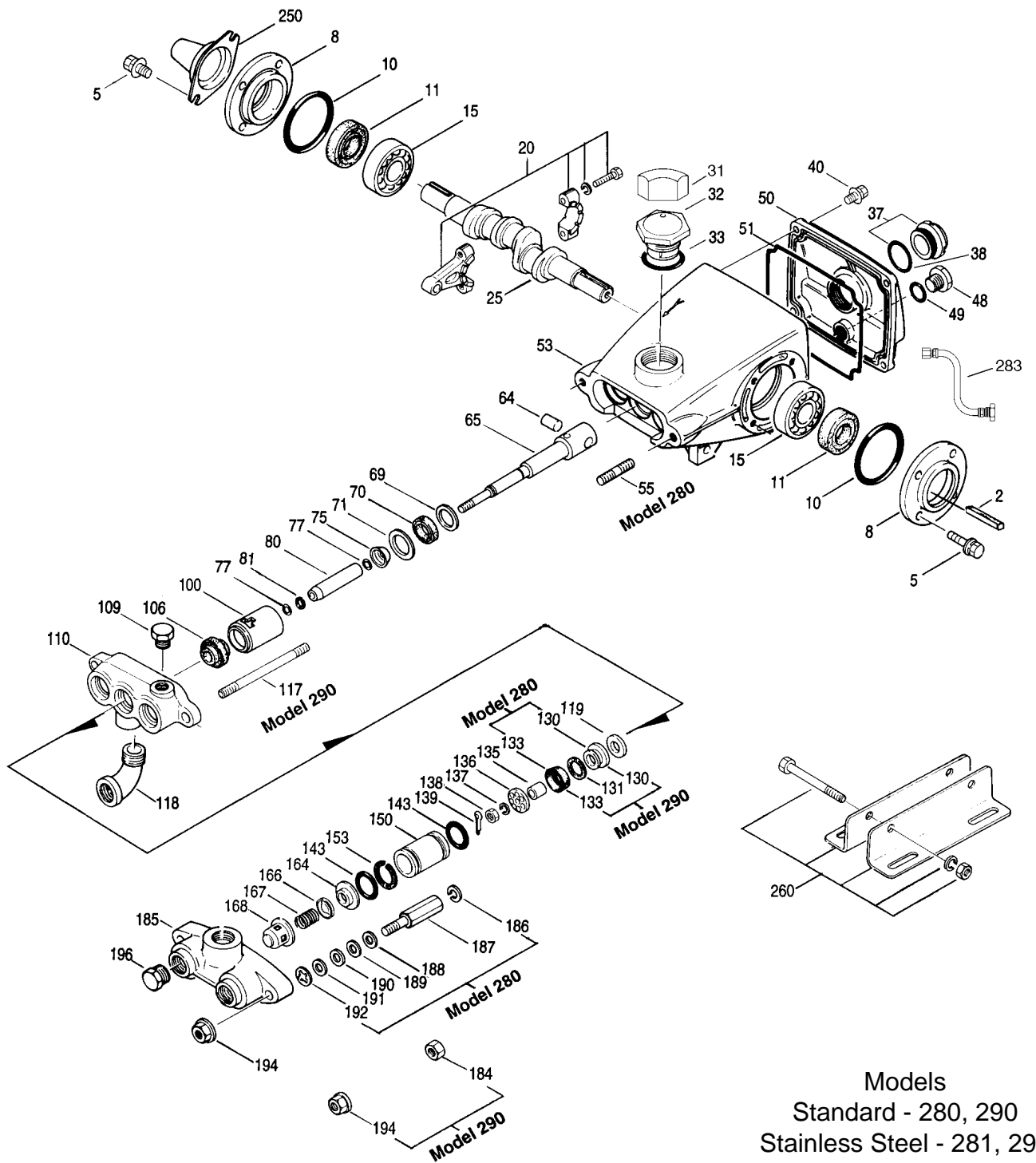
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 03.

“Customer confidence is our greatest asset”

PARTS LIST

| ITEM | PART NUMBER | | DESCRIPTION | | QTY | |
|------|--------------|-------------|---------------|-------------|--|-----|
| | 280 | MATL | 290 | MATL | | |
| 2 | 30047 | STL | 30047 | STL | Key (M5x5x24) | 1 |
| 5 | 92519 | STZP | 92519 | STZP | Screw, Sems (M6x16) | 8 |
| 8 | 27950 | AL | 27950 | AL | Cover, Bearing | 2 |
| 10 | 26536 | NBR | 26536 | NBR | O-Ring, Bearing Cover | 2 |
| 11 | 24159 | NBR | 24159 | NBR | Seal, Oil, Crankshaft | 2 |
| 15 | 14487 | STL | 14487 | STL | Bearing | 2 |
| 20 | 17556 | ZZ | 101799 | ZZ | Rod, Assy Connecting | 3 |
| 25 | 26239 | FCM | 43804 | FCM | Crankshaft | 1 |
| 31 | 828710 | | 828710 | | Protector, Oil Cap | 1 |
| 32 | 43211 | ABS | 43211 | ABS | Cap, Oil Filler | 1 |
| 33 | 14177 | NBR | 14177 | NBR | O-Ring, Oil Filler Cap - 70D | 1 |
| 37 | 92241 | | 92241 | | Gauge, Oil Bubble w/Gasket - 80D | 1 |
| 38 | 44428 | NBR | 44428 | NBR | Gasket, Flat, Oil Gauge - 80D | 1 |
| 40 | 92520 | STZP | 92520 | STZP | Screw, Sems (M6x20) | 4 |
| 48 | 25625 | STCP | 25625 | STCP | Plug, Drain (1/4"x19BSP) | 1 |
| 49 | 23170 | NBR | 23170 | NBR | O-Ring, Drain Plug - 70D | 1 |
| 50 | 43339 | AL | 43339 | AL | Cover, Rear | 1 |
| 51 | 43340 | NBR | 43340 | NBR | O-Ring, Rear Cover | 1 |
| 53 | 44658 | AL | 44658 | AL | Crankcase, 4 Screws | 1 |
| 55 | 14137 | STCP | — | | Stud (M8x41.4) | 2 |
| 64 | 16948 | CM | 16948 | CM | Pin, Crosshead | 3 |
| 65 | 29612 | SZZ | 101800 | SZZ | Rod, Piston | 3 |
| 69 | 20017 | STZP | 20017 | STZP | Washer, Oil Seal | 3 |
| 70 | 25301 | NBR | 25301 | NBR | Seal, Oil | 3 |
| 71 | 26854 | STZP | 26854 | STZP | Washer, Oil Seal | 3 |
| 75 | 25327 | S | 25327 | S | Slinger, Barrier | 3 |
| 77 | 25392 | NBR | 25392 | NBR | O-Ring, Sleeve | 6 |
| | 28771 | FPM | 28771 | FPM | O-Ring, Sleeve | 6 |
| 80 | 29614 | SCP | 29614 | SCP | Sleeve | 3 |
| | 29743 | S | 29743 | S | Sleeve | 3 |
| 81 | — | | 29003 | PTFE | Back-up-Ring, Sleeve | 3 |
| 100 | 28597 | PVDF | 28597 | PVDF | Retainer, Seal | 3 |
| 106 | 30315 | NBR | 30315 | NBR | Seal, LPS, Prrrrrm-A-Lube | 3 |
| | 30325 | FPM | 30325 | FPM | Seal, LPS, Prrrrrm-A-Lube | 3 |
| 109 | 22177 | BBCP | 22177 | BBCP | Plug (1/4" NPT) | 1 |
| 110 | 25128 | BBCP | 25128 | BBCP | Manifold, Inlet | 1 |
| | 25635 | SS | 25635 | SS | Manifold, Inlet | 1 |
| 117 | — | | 85680 | STZP | Stud (M8x99.5) | 2 |
| 118 | 22160 | BBCP | 22160 | BBCP | Elbow (1/2" NPT) | 1 |
| 119 | 27004 | S | 27004 | S | Valve, Inlet | 3 |
| 130 | 22021 | S | 30543 | S | Piston | 3 |
| 131 | — | | 30544 | PTFE | Bac-Cup Ring | 3 |
| 133 | 43172 | FPM | 43172 | FPM | Cup, Piston | 3 |
| 133 | — | | 43474 | FPM | Assy, Bac-Cup (Incls: 130, 131, 133) (290 Only) | 1 |
| 133 | 29089 | NBR | 29089 | NBR | Cup, V-Hot | 3 |
| 135 | 27003 | S | 27983 | S | Spacer, Piston | 3 |
| 136 | 27002 | S | 27002 | S | Retainer, Piston | 3 |
| 137 | 27006 | S | 27006 | S | Washer, Conical (M6) | 3 |
| 138 | 27000 | S | 27000 | S | Nut (M6) | 3 |
| 139 | 14158 | S | 14158 | S | Cotterpin (M1.6x10) | 3 |
| 143 | 23172 | NBR | 23172 | NBR | O-Ring, Cylinder -70D | 6 |
| | 11377 | FPM | 11377 | FPM | O-Ring, Cylinder -80D | 6 |
| | 26961 | PTFE | 26961 | PTFE | O-Ring, Cylinder | 3 |
| 150 | 26112 | SCP | 101802 | SCP | Cylinder | 3 |
| | 28774 | S | 43834 | S | Cylinder | 3 |
| 153 | — | | 21985 | PTFE | Back-Up-Ring, Cylinder | 3 |
| 164 | 43434 | S | 43434 | S | Seat, Q.V. | 3 |
| | 29487 | S | 29487 | S | Seat, F.V. | 3 |
| 166 | 43723 | S | 43723 | S | Valve, Q.V. | 3 |
| | 22842 | S | 22842 | S | Valve, F.V. | 3 |
| 167 | 43360 | S | 43360 | S | Spring, Q.V. | 3 |
| | 22031 | S | 22031 | S | Spring, F.V. | 3 |
| 168 | 43442 | S | 43442 | S | Retainer, Spring, Q.V. | 3 |
| | 22841 | S | 22841 | S | Retainer, Spring, F.V. | 3 |
| 184 | — | | 81109 | STZP | Nut, Hex (M8) | 2 |
| 185 | 24459 | BBCP | 24459 | BBCP | Manifold, Discharge | 1 |
| | 25634 | SS | 25634 | SS | Manifold, Discharge | 1 |
| 186 | 15845 | STZP | — | | Lockwasher (M8) | 2 |
| 187 | 26245 | STZP | — | | Bolt, Cylinder (M8x62.5) | 2 |
| 188 | 22902 | STZP | — | | Shim (M8x13x1.0) | 2-4 |
| 189 | 13533 | STZP | — | | Shim (M8x13x0.5) | 2-4 |
| 190 | 43258 | STZP | — | | Shim (M8x13x0.3) | 2-4 |
| 191 | 43425 | STZP | — | | Shim (M8x13x2.0) | 2-4 |
| 192 | 26676 | STZP | — | | Lock, Washer (M8) | 2 |
| 194 | 101804 | STZP | 101804 | STZP | Nut, Hex Flange (M8) | 2 |
| 196 | 22187 | BBCP | 22187 | BBCP | Plug (3/8" NPT) | 1 |
| 250 | 25130 | STCP | 25130 | STCP | Protector, Shaft | 1 |
| 260 | 30612 | STZP | 30612 | STZP | Assy, Angle Rail (Incls: 26246, 30901, 30920, 30910) | 1 |
| 270 | 30246 | STL | 30246 | STL | Pulley Assy (Incls: 30032, 30047) | 1 |

EXPLODED VIEW



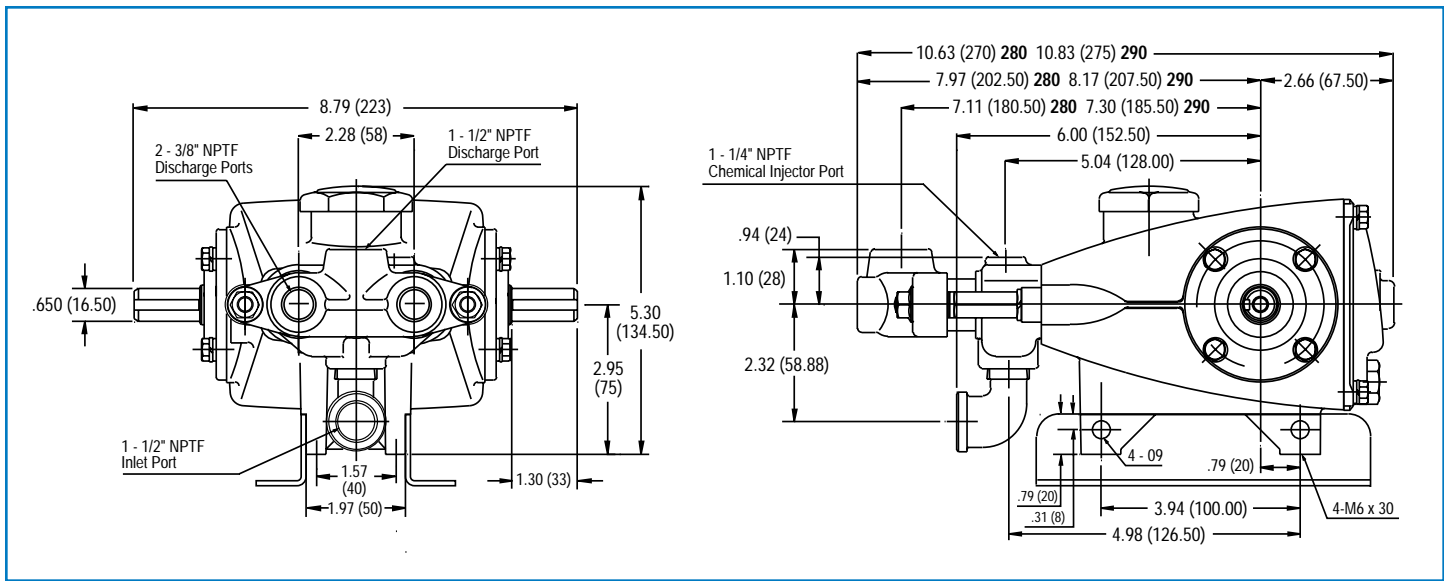
Models
Standard - 280, 290
Stainless Steel - 281, 291
February 2001

| | 280 | MATL | 290 | MATL | | |
|-------|--------------|-------------|--------------|-------------|---|-----|
| ● 275 | 30942 | STL | 30942 | STL | Hub & Key Assy (Incls: 30943, 30047) | 1 ● |
| ● 283 | 34334 | | 34334 | | Kit, Oil Drain | 1 ● |
| 300 | 30023 | FPM | 30023 | FPM | Kit, Cup (Incls: 133, 139, 143) | 1 |
| 302 | 30202 | NBR | 30860 | NBR | Kit, Piston (Incls: 119-139, 143, 153) | 1 |
| 305 | 30431 | NBR | 30431 | NBR | Kit, Sleeve & Seal (Incls: 75, 77, 80, 106, 139) | 1 |
| 306 | 30305 | NBR | 30305 | NBR | Kit, Seal (Incls: 106, 139) | 1 |
| 310 | 30686 | NBR | 30686 | NBR | Kit, Valve, Q.V. (Incls: 143, 164, 166, 167, 168) | 1 |
| | 30024 | NBR | 30024 | NBR | Kit, Valve, F.V. (Incls: 143, 164, 166, 167, 168) | 1 |
| 355 | 22130 | NY | 22130 | NY | Insertor, Cup | 1 |

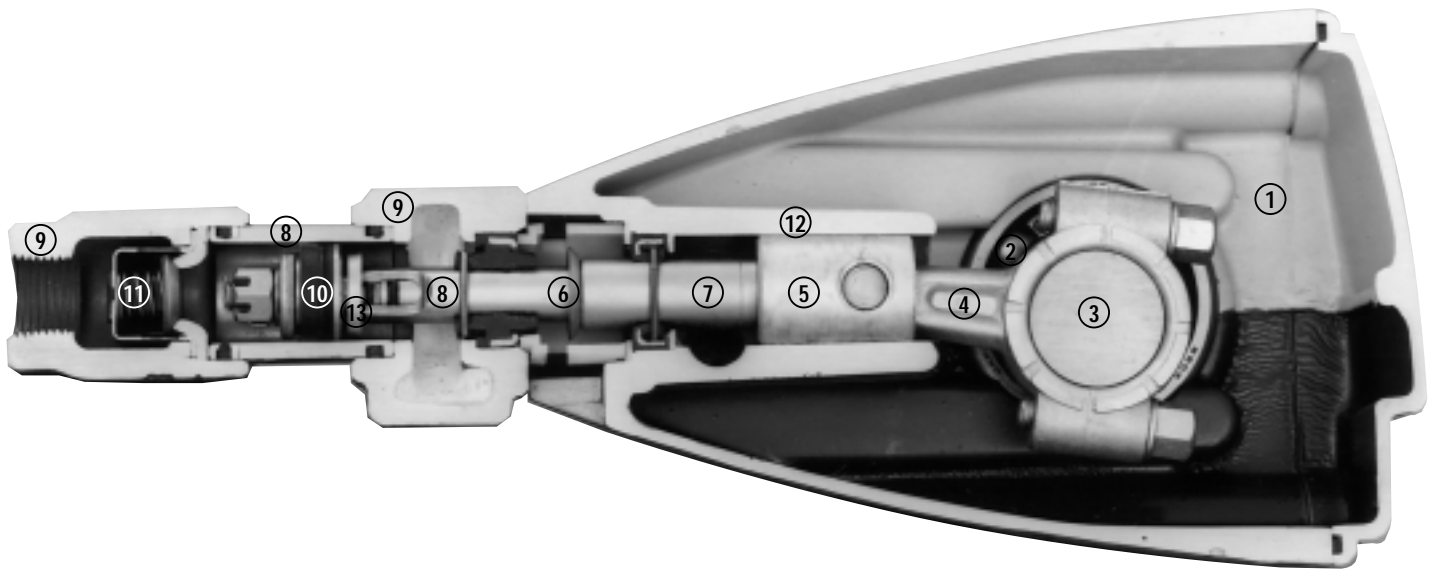
● Industrial discount. **Bold print part numbers are unique to a particular pump model. Italics are optional items.**
See Tech Bulletins 02, 03, 12, 16, 17, 20, 24, 26, 30, 33, 34, 36, 74, 77 and 83 for additional information.

All Q.V. parts are necessary for conversions, Q.V. and F.V. parts cannot be mixed.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BCCP=Brass/Chrome Plated CM=Chrome-moly
FCM=Forged Chrome-moly FPM=Fluorocarbon (Viton®) NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Teflon® PVDF=Fluoroplastic (High Strength)
S=304SS SCP=304SS/Chrome Plated SS=316SS STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak ZZ=Zamak



Models 280, 290



- | | | |
|--|---|---|
| <p>1 Die cast aluminum crankcase means high strength, lightweight, and excellent tolerance control.</p> <p>2 Oversized crankshaft bearings provide extended bearing life and pump performance.</p> <p>3 Chrome-moly crankshaft provides unmatched strength and surface hardness for long life.</p> <p>4 Matched oversized high strength connecting rods are noted for strength and superior bearing quality.</p> | <p>5 Special stainless steel piston rod with Zamak crossheads for longevity and corrosion resistance.</p> <p>6 The stainless steel slinger provides backup protection for the crankcase seal, keeping pumped liquids out of the crankcase.</p> <p>7 The patented stepped piston rod with hard chrome-plated stainless steel sleeve provides a durable wear surface and easy wet-end servicing.</p> <p>8 The cylinder and sleeve wear surfaces are hard chrome-plated 304 stainless steel for longer service life.</p> | <p>9 Manifolds are of high tensile strength chrome-plated brass or 316 stainless steel for special corrosion resistance.</p> <p>10 100% wet cup/seal design adds to service life by allowing pumped liquids to cool and lubricate the elastomers on both sides.</p> <p>11 304 stainless steel valves, seats, and springs provide corrosion-resistance, positive seating and long life.</p> <p>12 Crossheads are 360° supported for uncompromising alignment.</p> <p>13 Mechanically actuated inlet valves provide strong lift and easy prime.</p> |
|--|---|---|

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

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