



5 Frame Plunger Pump

Models

30, 31 34, 35

FEATURES

Superior Design

- Triplex plunger design gives smoother liquid flow.
- Hi-Pressure Seals are completely lubricated and cooled by the liquid being pumped.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- Lubricated Lo-Pressure Seal provides double protection against external leakage.
- Oil bath crankcase assures optimum lubrication.
- Close tolerance concentricity of the ceramic plunger maximizes seal life.
- Convenient direct drive gearbox or electric motor options.

Quality Materials

- All stainless steel valves are heat treated and seats are roller burnished for a positive seal and extended valve life.
- Forged brass manifolds for strength and corrosion resistance.
- Special concentric, high density, polished, graphite impregnated, solid ceramic plungers are abrasion resistant and result in extended seal life.
- Specially formulated, CAT PUMP exclusive, Hi-Pressure Seals offer unmatched performance and seal life.
- Die cast aluminum crankcase provides high strength, minimum weight and precision tolerance control.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity 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.

⚠ WARNING

All systems require both a primary pressure regulating device (i.e., regulator, unloader) and a secondary pressure safety relief device (i.e., pop-off valve, safety valve). Failure to install such relief devices could result in personal injury or damage to the pump or to system components. CAT PUMPS does not assume any liability or responsibility for the operation of a customer's high pressure system.

SPECIFICATIONS

| | U.S. Measure | Metric Measure |
|---|-------------------|--------------------|
| MODEL 30 Direct Drive or Gearbox | | |
| Flow | 3.2 GPM | (12.1 L/M) |
| Pressure Range | 100 to 2200 PSI | (7 to 155 BAR) |
| RPM | 1725 RPM | (1725 RPM) |
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Stroke | 0.315" | (8 mm) |

MODEL 31

| | | |
|----------------------------|-----------------|------------------|
| Flow | 4.0 GPM | (15 L/M) |
| Pressure Range | 100 to 2200 PSI | (7 to 155 BAR) |
| RPM | 950 RPM | (950 RPM) |
| Inlet Pressure Range | -5 to 60 PSI | (-0.35 to 4 BAR) |
| Stroke | 0.709" | (18 mm) |

MODEL 34 Direct Drive or Gearbox

| | | |
|----------------------------|-------------------|--------------------|
| Flow | 4.0 GPM | (15 L/M) |
| Pressure Range | 100 to 1800 PSI | (7 to 125 BAR) |
| RPM | 1725 RPM | (1725 RPM) |
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Stroke | 0.394" | (10 mm) |

MODEL 35 Direct Drive or Gearbox

| | | |
|----------------------------|-------------------|--------------------|
| Flow | 5.0 GPM | (19 L/M) |
| Pressure Range | 100 to 1500 PSI | (7 to 105 BAR) |
| RPM | 1725 RPM | (1725 RPM) |
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Stroke | 0.472" | (12 mm) |

COMMON SPECIFICATIONS

| | | |
|----------------------------------|----------------------|----------------------|
| Bore | 0.787" | (20 mm) |
| Crankcase Capacity | 18 oz. | (0.55 L) |
| Maximum Liquid Temperature | 160°F | (71°C) |
| Inlet Ports (2) | 1/2" NPTF | (1/2" NPTF) |
| Discharge Ports (2) | 3/8" NPTF | (3/8" NPTF) |
| Shaft Diameter | 0.787" | (20 mm) |
| Weight | 20.1 lbs. | (9.1 kg) |
| Dimensions | 11.69 x 8.35 x 5.28" | (297 x 212 x 134 mm) |

HORSEPOWER REQUIREMENTS

| MODEL | FLOW | | PRESSURE | | | | MOTOR PULLEY SIZE | |
|-------|----------|------|----------|----------|----------|----------|--|--------------|
| | U.S. GPM | L/M | PSI 1200 | PSI 1500 | PSI 2000 | PSI 2200 | Using 1725 RPM Motor & Std. 8" Pump Pulley | |
| | | | BAR 85 | BAR 105 | BAR 140 | BAR 155 | RPM | Pulley O.D. |
| 31 | 5.0 | 19.0 | 4.1 | 5.1 | N/A | N/A | 1190 | 5.5 |
| | 4.5 | 17.0 | 3.7 | 4.6 | 6.2 | 6.8 | 1070 | 5.0 |
| | 4.0 | 15.0 | 3.3 | 4.1 | 5.5 | 6.0 | 950 | 4.4 |
| 30 | 3.2 | 12.1 | 2.6 | 3.3 | 4.4 | 4.8 | 1725 | Direct Drive |
| 34 | 4.0 | 15.0 | 3.3 | 4.1 | 5.5 | N/A | 1725 | Direct Drive |
| 35 | 5.0 | 19.0 | 4.1 | 5.1 | N/A | N/A | 1725 | Direct Drive |

| | | | |
|--------------------------------------|---|---|-------------------------------|
| DETERMINING THE PUMP R.P.M. | $\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}}$ | = | "Desired" G.P.M. |
| DETERMINING THE REQUIRED H.P. | $\frac{\text{GPM} \times \text{PSI}}{1460}$ | = | Electric Brake H. P. Required |
| DETERMINING MOTOR PULLEY SIZE | $\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}}$ | = | Pump Pulley O.D. Motor R.P.M. |

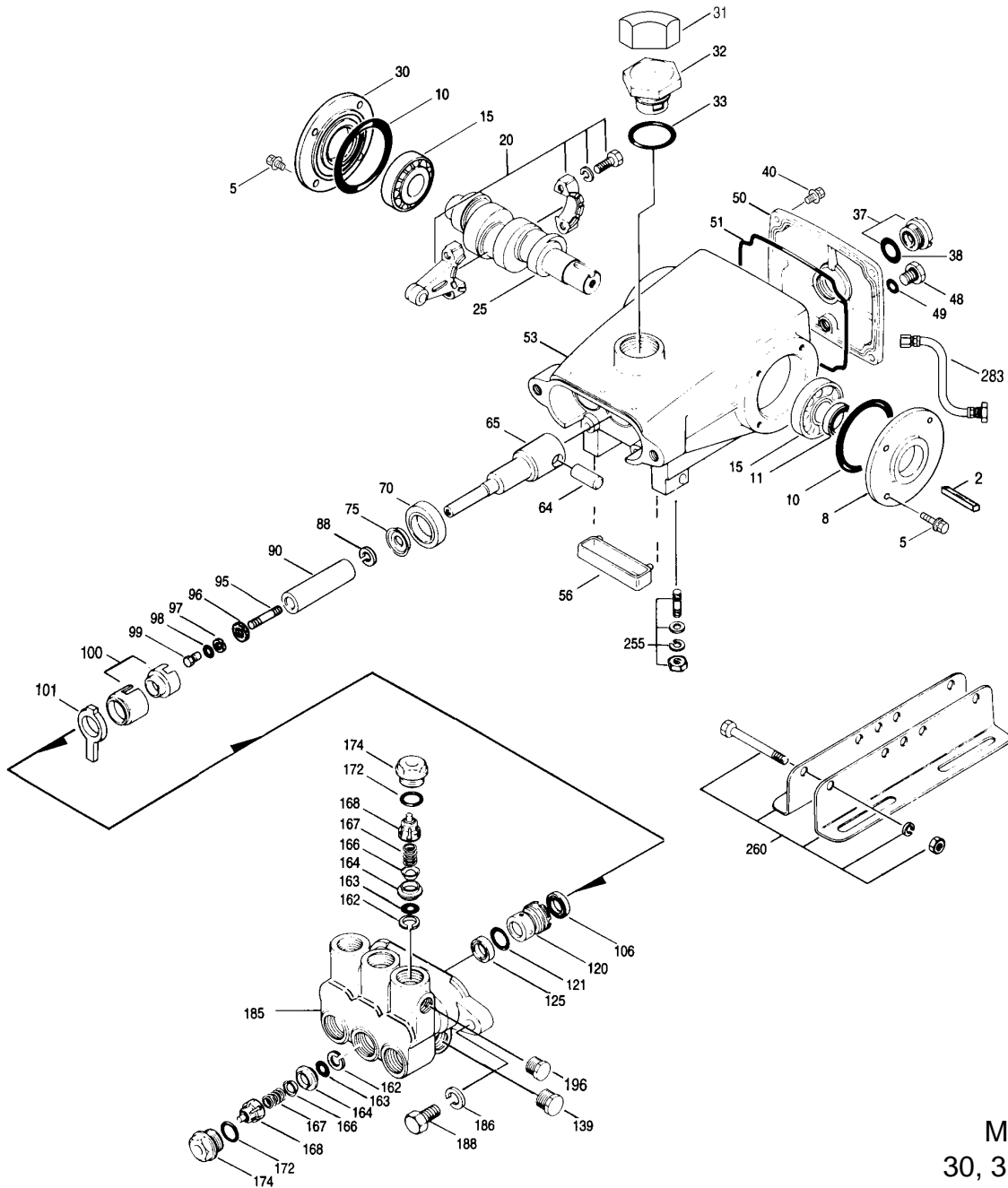
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.
Refer to pump Service Manual for repair procedure and additional technical information.

"Customer confidence is our greatest asset"

PARTS LIST

| ITEM | PART NUMBER | | | | | | | | DESCRIPTION | QTY |
|-------|-------------|------|--------|------|--------|------|--------|------|--|-----|
| | 30 | MATL | 31 | MATL | 34 | MATL | 35 | MATL | | |
| 2 | 30057 | STL | 30057 | STL | 30057 | STL | 30057 | STL | Key (M6x6x25) | 1 |
| 5 | 92519 | STZP | 92519 | STZP | 92519 | STZP | 92519 | STZP | Screw, Sems HHC (M6x16) | 8 |
| 8 | 43745 | AL | 43745 | AL | 43745 | AL | 43745 | AL | Cover, Bearing | 1 |
| 10 | 43343 | NBR | 43343 | NBR | 43343 | NBR | 43343 | NBR | O-Ring, Bearing Case | 2 |
| 11 | 43222 | NBR | 43222 | NBR | 43222 | NBR | 43222 | NBR | Seal, Oil, Crankshaft | 1 |
| 15 | 14480 | STL | 14480 | STL | 14480 | STL | 14480 | STL | Bearing, Ball | 2 |
| 20 | 48737 | TNM | 48737 | TNM | 48737 | TNM | 48737 | TNM | Rod, Connecting, Assy [12/01] | 3 |
| 25 | 44923 | FCM | 45911 | FCM | 44945 | FCM | 44270 | FCM | Crankshaft, Single End | 1 |
| 30 | 44944 | AL | 44944 | AL | 44944 | AL | 44944 | AL | Cover, Blind Shaft | 1 |
| 31 | 828710 | | 828710 | | 828710 | | 828710 | | Protector, Oil Cap | 1 |
| 32 | 43211 | ABS | 43211 | ABS | 43211 | ABS | 43211 | ABS | Cap, Oil Filler | 1 |
| | 44666 | RTP | — | | 44666 | RTP | 44666 | RTP | Cap, Oil Filler, Domed - Gearbox Models | 1 |
| 33 | 14177 | NBR | 14177 | NBR | 14177 | NBR | 14177 | NBR | O-Ring, Filler Cap - 70D | 1 |
| 37 | 92241 | | 92241 | | 92241 | | 92241 | | Gauge, Oil, Bubble w/Gasket - 80D | 1 |
| 38 | 44428 | NBR | 44428 | NBR | 44428 | NBR | 44428 | NBR | Gasket, Flat, Oil Gauge - 80D | 1 |
| 40 | 92520 | STZP | 92520 | STZP | 92520 | STZP | 92520 | STZP | Screw, Sems HHC (M6x20) | 4 |
| 48 | 25625 | STCP | 25625 | STCP | 25625 | STCP | 25625 | STCP | Plug, Drain (1/4"x19BSP) | 1 |
| 49 | 23170 | NBR | 23170 | NBR | 23170 | NBR | 23170 | NBR | O-Ring, Drain Plug - 70D | 1 |
| 50 | 48777 | AL | 48777 | AL | 48777 | AL | 48777 | AL | Cover, Rear [10/01] | 1 |
| 51 | 48773 | NBR | 48773 | NBR | 48773 | NBR | 48773 | NBR | O-Ring, Crankcase Cover [10/01] | 1 |
| ● 53 | 48775 | AL | 48775 | AL | 48775 | AL | 48775 | AL | Crankcase [10/01] | 1 ● |
| 56 | 43355 | POP | 43355 | POP | 43355 | POP | 43355 | POP | Pan, Oil | 1 |
| 64 | 43351 | CM | 43351 | CM | 43351 | CM | 43351 | CM | Pin, Crosshead | 3 |
| 65 | 45908 | ZZCP | 45908 | ZZCP | 45908 | ZZCP | 45908 | ZZCP | Rod, Plunger, Short | 3 |
| 70 | 43228 | NBR | 43228 | NBR | 43228 | NBR | 43228 | NBR | Seal, Oil, Crankcase | 3 |
| 75 | 43328 | S | 43328 | S | 43328 | S | 43328 | S | Slinger, Barrier | 3 |
| 88 | 45697 | S | 45697 | S | 45697 | S | 45697 | S | Washer, Keyhole (M18) | 3 |
| 90 | 43367 | CC | 43367 | CC | 43367 | CC | 43367 | CC | Plunger (M20x72) | 3 |
| 95 | 89648 | STZP | 89648 | STZP | 89648 | STZP | 89648 | STZP | Stud, Plunger Retainer (M6x64.5) | 3 |
| 96 | 43235 | PTFE | 43235 | PTFE | 43235 | PTFE | 43235 | PTFE | Back-up-Ring, Plunger Retainer | 3 |
| 97 | 17399 | NBR | 17399 | NBR | 17399 | NBR | 17399 | NBR | O-Ring, Plunger Retainer - 80D | 3 |
| | 14160 | FPM | 14160 | FPM | 14160 | FPM | 14160 | FPM | O-Ring, Plunger Retainer - 80D | 3 |
| 98 | 45891 | CU | 45891 | CU | 45891 | CU | 45891 | CU | Gasket | 3 |
| 99 | 46504 | S | 46504 | S | 46504 | S | 46504 | S | Retainer, Plunger (M5) | 3 |
| 100 | 45681 | PVDF | 45681 | PVDF | 45681 | PVDF | 45681 | PVDF | Retainer, Seal - Rear | 3 |
| | 45682 | PVDF | 45682 | PVDF | 45682 | PVDF | 45682 | PVDF | Retianer, Seal, Adapter | 3 |
| 101 | 43302 | | 43302 | | 43302 | | 43302 | | Wick, Long Tab | 3 |
| 106 | 43305 | NBR | 43305 | NBR | 43305 | NBR | 43305 | NBR | Seal, LPS w/S-Spg | 3 |
| | 45153 | FPM | 45153 | FPM | 45153 | FPM | 45153 | FPM | Seal, LPS w/SS-Spg | 3 |
| 120 | 45679 | BB | 45679 | BB | 45679 | BB | 45679 | BB | Case, Seal | 3 |
| 121 | 14200 | NBR | 14200 | NBR | 14200 | NBR | 14200 | NBR | O-Ring, Seal Case - 70D | 3 |
| | 11719 | FPM | 11719 | FPM | 11719 | FPM | 11719 | FPM | O-Ring, Seal Case | 3 |
| 125 | 43307 | SNG | 43307 | SNG | 43307 | SNG | 43307 | SNG | Seal, HPS w/S | 3 |
| | 44936 | FPM | 44936 | FPM | 44936 | FPM | 44936 | FPM | Seal, HPS w/SS | 3 |
| | 46667 | HT | 46667 | HT | 46667 | HT | 46667 | HT | Seal, HPS w/S, Hi-Temp | 3 |
| 139 | 22179 | BBCP | 22179 | BBCP | 22179 | BBCP | 22179 | BBCP | Plug, Inlet (1/2" NPT) | 1 |
| 162 | 48361 | D | 48361 | D | 48361 | D | 48361 | D | Back-up-Ring, Seat | 6 |
| 163 | 43358 | NBR | 43358 | NBR | 43358 | NBR | 43358 | NBR | O-Ring, Seat - 70D | 6 |
| | 44938 | FPM | 44938 | FPM | 44938 | FPM | 44938 | FPM | O-Ring, Seat - 70D | 6 |
| 164 | 43725 | S | 43725 | S | 43725 | S | 43725 | S | Seat | 6 |
| 166 | 43723 | S | 43723 | S | 43723 | S | 43723 | S | Valve | 6 |
| 167 | 43750 | S | 43750 | S | 43750 | S | 43750 | S | Spring | 6 |
| 168 | 44565 | PVDF | 44565 | PVDF | 44565 | PVDF | 44565 | PVDF | Retainer, Spring | 6 |
| 172 | 17615 | NBR | 17615 | NBR | 17615 | NBR | 17615 | NBR | O-Ring, Valve Plug - 75D | 6 |
| | 15855 | FPM | 15855 | FPM | 15855 | FPM | 15855 | FPM | O-Ring, Valve Plug - 70D | 6 |
| 174 | 44202 | BB | 44202 | BB | 44202 | BB | 44202 | BB | Plug, Valve | 6 |
| 185 | 45062 | BB | 45062 | BB | 45062 | BB | 45062 | BB | Head, Manifold | 1 |
| 186 | 12503 | STZP | 12503 | STZP | 12503 | STZP | 12503 | STZP | Lockwasher (M10) | 2 |
| 188 | 87931 | STZP | 87931 | STZP | 87931 | STZP | 87931 | STZP | Screw, HSH (M10x35) | 2 |
| 196 | 43633 | BB | 43633 | BB | 43633 | BB | 43633 | BB | Plug, Discharge, (3/8" NPT) | 1 |
| 255 | — | | 30243 | STZP | — | | — | | Mount Kit, Direct (Belt Drive Only) | 1 |
| 260 | — | | 30611 | STZP | — | | — | | Rail Mounting, Angle - B - (Incls: 28499, 30900, 30910, 30920) | 1 |
| 265 | — | | 30659 | | — | | — | | Kit, Complete Mounting (Incls: 30611, 30633, 118672) | 1 |
| 270 | — | | 30633 | STL | — | | — | | Pulley & Key Assy (Incls: 30058, 30057) | 1 |
| ● 275 | — | | 30944 | STL | — | | — | | Hub & Key Assy (M20 w/M6 Keyway) | 1 ● |
| | | | | | | | | | [See Drive Packages Tech Bulletin 003] | |
| 277 | 34131 | AL | 34131 | AL | 34131 | AL | 34131 | AL | Housing, Bell (182TC-184TC) | 1 |
| 278 | 8230 | AL | 8230 | AL | 8230 | AL | 8230 | AL | Flexible Coupling & Key (M20 to 1-1/8") | 1 |
| ● 283 | 34334 | | 34334 | | 34334 | | 34334 | | Kit, Oil Drain | 1 ● |
| ● 298 | 34962 | STZP | 34962 | STZP | 34962 | STZP | 34962 | STZP | Clutch Assy, Single Groove, 20mm, 12VDC | 1 ● |
| | 34963 | STZP | 34963 | STZP | 34963 | STZP | 34963 | STZP | Clutch Assy, Dual Groove, 20mm, 12VDC | 1 ● |
| ● 299 | 812208 | FBB | 812208 | FBB | 812208 | FBB | 812208 | FBB | Head, Complete | 1 ● |

EXPLODED VIEW



Models
30, 31, 34, 35
June 2002

| | 30 | MATL | 31 | MATL | 34 | MATL | 35 | MATL | | |
|-----|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|---|---|
| 300 | 30623 | NBR | 30623 | NBR | 30623 | NBR | 30623 | NBR | Kit, Seal (Incls: 97,101,106,121,125) | 1 |
| | 34155 | FPM | 34155 | FPM | 34155 | FPM | 34155 | FPM | Kit, Seal (Incls: 97,101,106,121,125) | 1 |
| | 33623 | HT | 33623 | HT | 33623 | HT | 33623 | HT | Kit, Seal (Incls: 97,101,106,121,125) | 1 |
| 310 | 30821 | NBR | 30821 | NBR | 30821 | NBR | 30821 | NBR | Kit, Valve (Incls: 162,163,164,166,167,168,172) | 2 |
| | 31821 | FPM | 31821 | FPM | 31821 | FPM | 31821 | FPM | Kit, Valve (Incls: 162,163,164,166,167,168,172) | 2 |
| 350 | 30696 | STZP | 30696 | STZP | 30696 | STZP | 30696 | STZP | Plier, Reverse | 1 |
| 351 | 33004 | STZP | 33004 | STZP | 33004 | STZP | 33004 | STZP | Seal Case Socket, 1/2" Drive | 1 |
| — | 6565.1 | | 6565.1 | | 6565.1 | | 6565.1 | | Plunger Pump Service Video | 1 |
| — | 6107 | | 6107 | | 6107 | | 6107 | | Oil, Bottle (21 oz.) ISO 68 Multi-viscosity Hydraulic (Fill to specified crankcase capacity prior to start-up) | 1 |

● Industrial discount. **Bold print part numbers are unique to a particular pump model.** *Italics are optional items.*

[] Date of latest production change. See Tech Bulletins 003, 024, 036, 074, 077, 078, 083 and 090 for additional information.

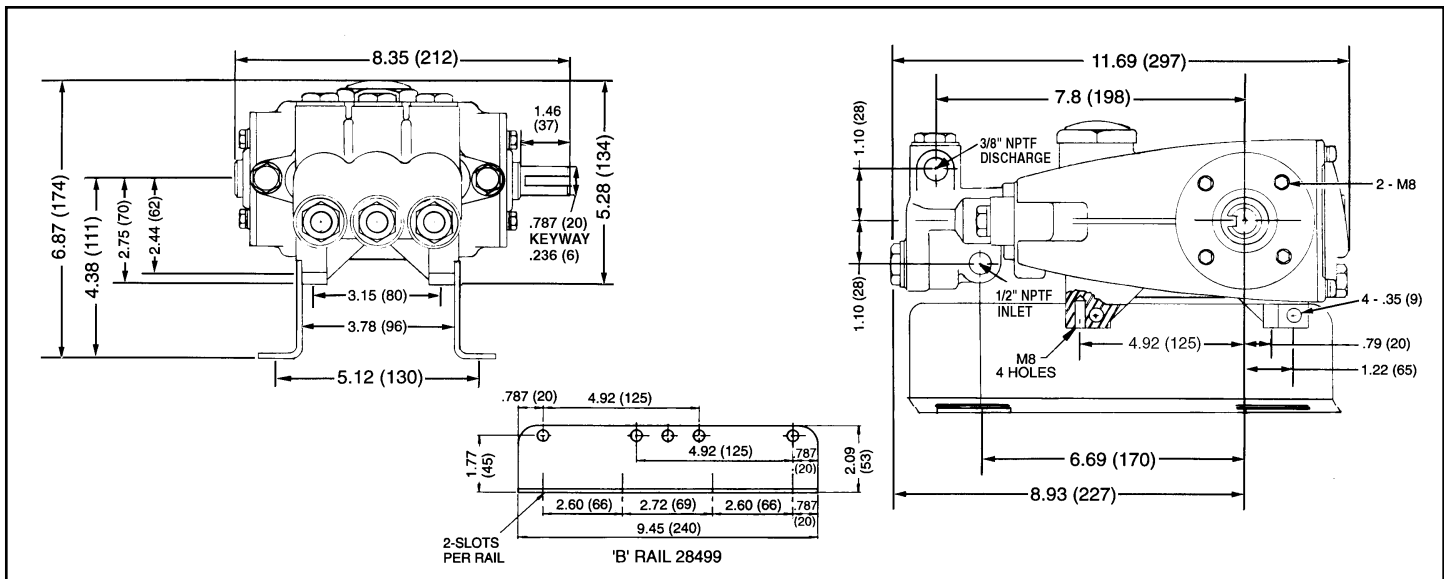
See 8051-8078 Gearbox Gas Engine Drive and 8023ES-8029ES BD Electric Motor Drive data sheets for additional information.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CC=Ceramic CM=Chrome-Moly CU=Copper

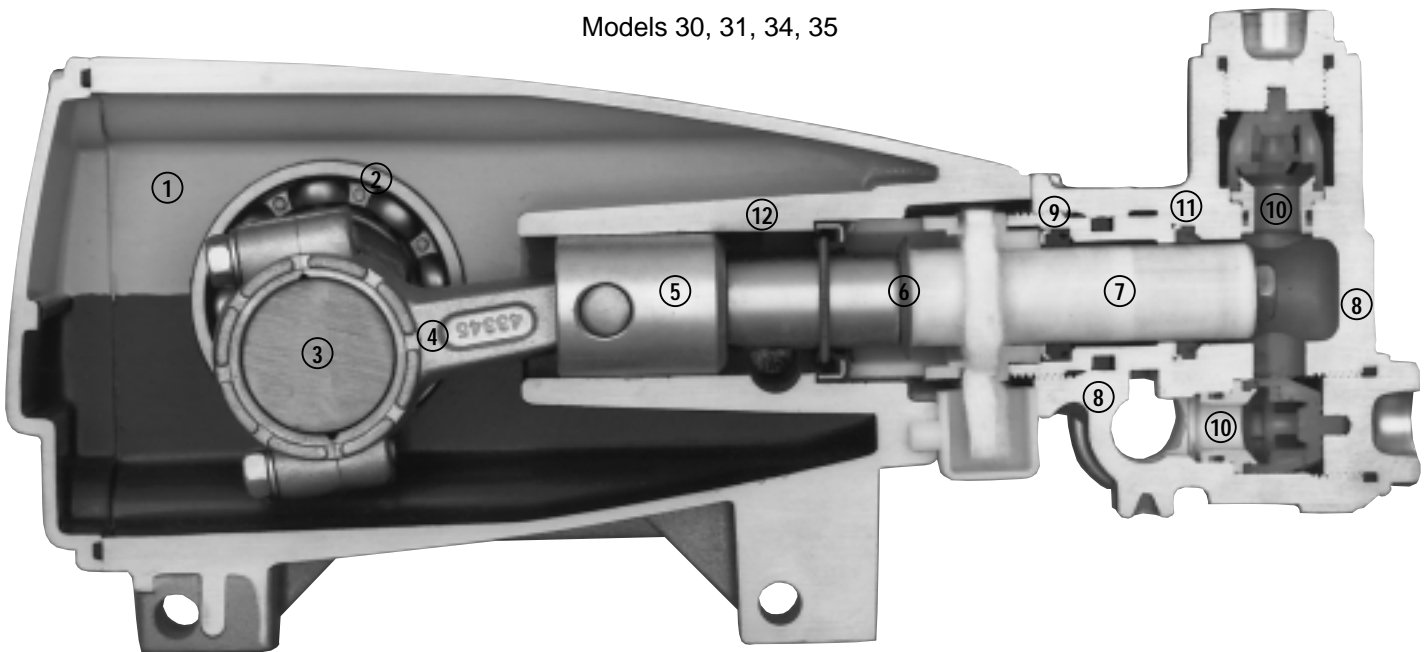
D=Delrin® FBB=Forged Brass FCM=Forged Chrome-moly FPM=Fluorocarbon (Viton®) HT=High Temp (EPDM Alternative) NBR=Medium Nitrile (Buna-N)

POP=Polypropylene PTFE=Pure Teflon® PVDf=Fluoroplastic (High Strength) RTP=Reinforced Composite

S=304SS SNG=Special Blend (Buna) STL=Steel STZP=Steel/Zinc Plated TNM=Special/High Strength ZZ/CP=Zamak/Chrome Plated



Models 30, 31, 34, 35



- 1 Die cast aluminum **crankcase** means high strength, light weight, and excellent tolerance control.
- 2 Oversized crankshaft **bearings** provide extended bearing life and pump performance.
- 3 Chrome-moly **crankshaft** provides unmatched strength and surface hardness for long life.
- 4 Matched oversized **connecting rods** are made of ZAMAK, a material noted for strength and superior bearing quality.
- 5 Special high strength **plunger rods** with ZAMAK crossheads for longevity and corrosion resistance.
- 6 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 Special concentric, high density, polished, graphite impregnated, solid ceramic **plungers** are abrasion resistant and result in extended seal life.
- 8 **Manifolds** are a high tensile strength forged brass for long term, continuous duty.
- 9 100% **wet seal** design adds to service life by allowing pumped liquids to cool and lubricate on both sides.
- 10 Stainless steel **valves, seats and springs** provide corrosion-resistance, positive seating and long life.
- 11 Specially formulated, CAT PUMP exclusive, **Hi-Pressure Seals** offer unmatched performance and seal life.
- 12 **Crossheads** are 360° supported for uncompromising alignment.

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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