

## 5 Frame Plunger Pump

Standard Models 310, 340, 350

Sleeved Models 310S, 340S, 350S

### FEATURES

#### Superior Design

- Triplex plunger design provides 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 electric motor options.

#### Quality Materials

- Precision design 304 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- Forged brass or sleeved forged brass manifolds for strength and corrosion resistance.
- Special concentric, high-density, polished, solid ceramic plungers provide a true wear surface and 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

#### MODEL 310, 310S

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

#### MODEL 340, 340S Direct Drive

|                      | U.S. Measure      | Metric Measure     |
|----------------------|-------------------|--------------------|
| Flow                 | 4.0 GPM           | (15 L/M)           |
| Pressure Range       | 100 to 1800 PSI   | (7 to 125 BAR)     |
| RPM                  | <b>1725 RPM</b>   | <b>(1725 RPM)</b>  |
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Stroke               | <b>0.394"</b>     | <b>(10 mm)</b>     |

#### MODEL 350, 350S Direct Drive

|                      | U.S. Measure      | Metric Measure     |
|----------------------|-------------------|--------------------|
| Flow*                | 5.0 GPM           | (19 L/M)           |
| Pressure Range       | 100 to 1500 PSI   | (7 to 105 BAR)     |
| RPM                  | <b>1725 RPM</b>   | <b>(1725 RPM)</b>  |
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Stroke               | <b>0.472"</b>     | <b>(12 mm)</b>     |

\*This specification for intermittent, fresh water duty.

### COMMON SPECIFICATIONS

|  |                      |                      |
|--|----------------------|----------------------|
| Bore   | 0.787"               | (20 mm)              |
| Crankcase Capacity   | 18 oz.               | (0.55 L)             |
| Maximum Liquid Temperature   | 160°F                | (71°C)               |
| Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations. |                      |                      |
| 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   | 19.8 lbs.            | (9 kg)               |
| Dimensions   | 11.73 x 10.0 x 5.24" | (298 x 254 x 133 mm) |

### ELECTRIC HORSEPOWER REQUIREMENTS

| MODEL | FLOW     |      | PRESSURE |          |          |          |          | MOTOR PULLEY SIZE                          |              |
|-------|----------|------|----------|----------|----------|----------|----------|--|--------------|
|       |          |      | PSI 1200 | PSI 1500 | PSI 1800 | PSI 2000 | PSI 2200 | Using 1725 RPM Motor & Std. 8" Pump Pulley |              |
|       | U.S. GPM | L/M  | BAR 85   | BAR 105  | BAR 125  | BAR 140  | BAR 155  | RPM  | Pulley O.D.  |
| 310   | 5.0      | 19   | 4.1      | 5.1      | N/A      | N/A      | N/A      | 1190                                       | 5.5          |
|       | 4.0      | 15   | 3.3      | 4.1      | 5.0      | 5.5      | 6.0      | 950  | 4.4          |
|       | 3.0      | 11.4 | 2.5      | 3.1      | 3.7      | 4.2      | 4.5      | 713  | 3.3          |
| 340   | 4.0      | 15   | 3.3      | 4.1      | 5.0      | N/A      | N/A      | 1725                                       | Direct Drive |
| 350   | 5.0      | 19   | 4.1      | 5.1      | N/A      | 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. "Desired" R.P.M.

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

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

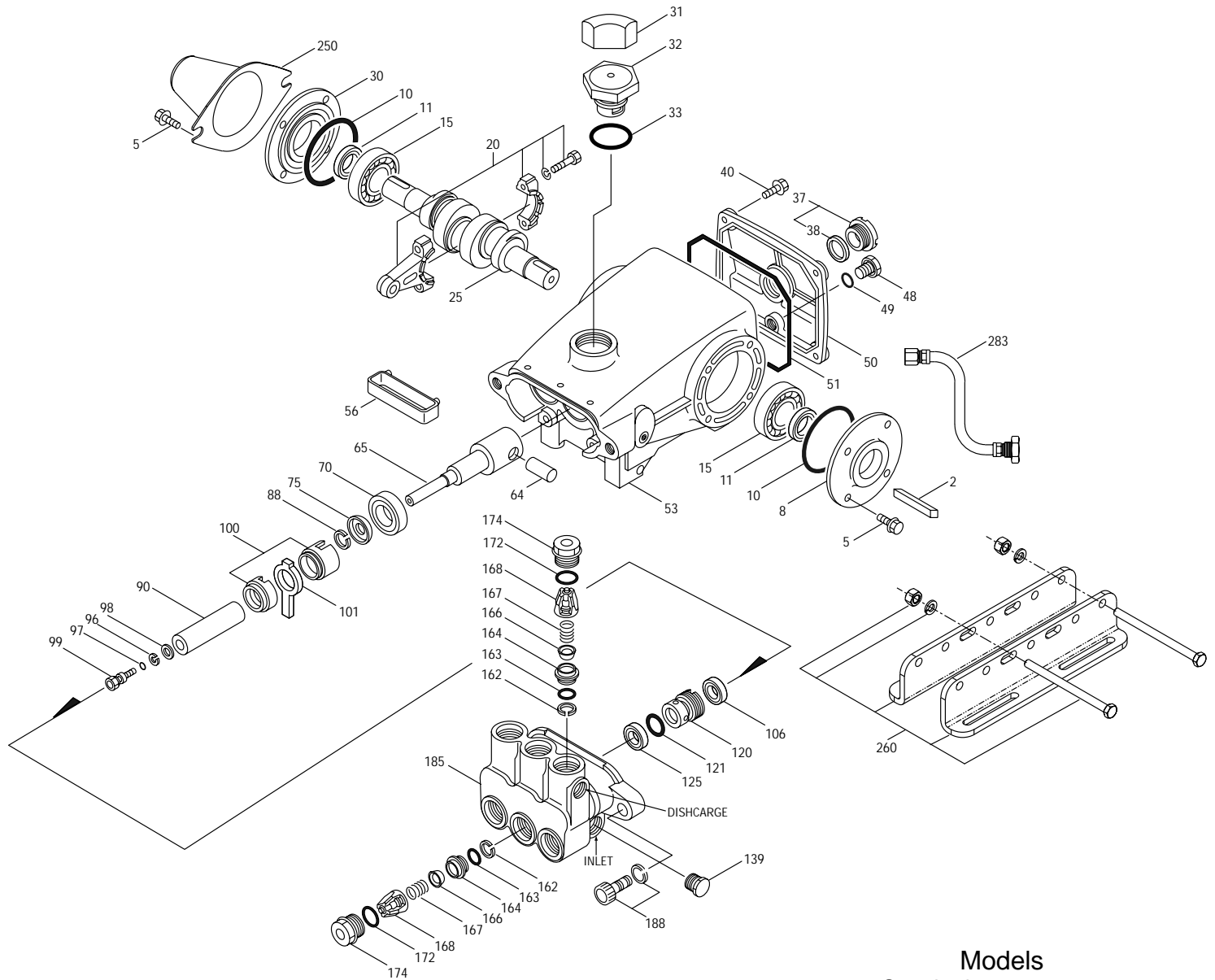
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.  
Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

*"Customer confidence is our greatest asset"*

# PARTS LIST

| ITEM | PART NUMBER     |                  | DESCRIPTION   | QTY |
|------|-----------------|------------------|---|-----|
|      | <b>310</b>      | <b>310S</b>      |   |     |
|      | <b>340</b>      | <b>340S</b>      |   |     |
|      | <b>350 MATL</b> | <b>350S MATL</b> |   |     |
| 2    | 30057 STL       | 30057 STL        | Key (M6x6x25)   | 1   |
| 5    | 92519 STZP      | 92519 STZP       | Screw, HHC, Sems (M6x16)                                    | 8   |
|      | 125824 STCP R   | 125824 STCP R    | Screw, HHC, Sems (M6x16)                                    | 8   |
| 8    | 43344 AL        | 43344 AL         | Cover, Bearing  | 1/2 |
| 10   | 43343 NBR       | 43343 NBR        | O-Ring, Bearing Cover - 70D                                 | 2   |
| 11   | 43222 NBR       | 43222 NBR        | Seal, Oil, Crankshaft - (310, 350-2) (340-1)                | 1/2 |
| 15   | 14480 STL       | 14480 STL        | Bearing, Ball   | 2   |
| 20   | 45883 HS        | 45883 HS         | Rod, Connecting Assy [09/05]                                | 3   |
| 25   | 43342 FCM       | 43342 FCM        | Crankshaft, Dual End - 310, 310S                            | 1   |
|      | 44945 FCM       | 44945 FCM        | Crankshaft, Single End - 340, 340S                          | 1   |
|      | 43838 FCM       | 43838 FCM        | Crankshaft, Dual End - 350, 350S                            | 1   |
| 30   | 44949 AL        | 44949 AL         | Cover, Blind Shaft - 340                                    | 1   |
| 31   | 828710 —        | 828710 —         | Protector, Oil Cap w/Foam Gasket                            | 1   |
| 32   | 43211 ABS       | 43211 ABS        | Cap, Oil Filler   | 1   |
| 33   | 14177 NBR       | 14177 NBR        | O-Ring, Filler Cap - 70D                                    | 1   |
| 37   | 92241 —         | 92241 —          | Gauge, Oil, Bubble w/Gasket                                 | 1   |
| 38   | 44428 NBR       | 44428 NBR        | Gasket, Flat, Oil Gauge - 80D                               | 1   |
| 40   | 92520 STZP      | 92520 STZP       | Screw, HHC, Sems (M6x20)                                    | 4   |
|      | 126541 STCP R   | 126541 STCP R    | Screw, HHC, Sems (M6x20)                                    | 4   |
| 48   | 25625 STCP      | 25625 STCP       | Plug, Drain (1/4"x19 BSP)                                   | 1   |
| 49   | 23170 NBR       | 23170 NBR        | O-Ring, Drain Plug - 70D                                    | 1   |
| 50   | 48772 AL        | 48772 AL         | Cover, Rear [10/01]   | 1   |
| 51   | 48773 NBR       | 48773 NBR        | O-Ring, Rear Cover [10/01]                                  | 1   |
| 53   | 48769 AL        | 48769 AL         | Crankcase [05/02]   | 1   |
| 56   | 43355 POP       | 43355 POP        | Pan, Oil  | 1   |
| 64   | 43351 CM        | 43351 CM         | Pin, Crosshead  | 3   |
| 65   | 43365 ZZCP      | 43365 ZZCP       | Rod, Plunger  | 3   |
| 70   | 43228 NBR       | 43228 NBR        | Seal, Oil, Crankcase  | 3   |
| 75   | 43328 S         | 43328 S          | Slinger, Barrier  | 3   |
| 88   | 45697 S         | 45697 S          | Washer, Keyhole (M18)                                       | 3   |
| 90   | 43367 CC        | 43367 CC         | Plunger (M20x72)  | 3   |
| 96   | 43235 PTFE      | 43235 PTFE       | Back-up-Ring, Plunger Retainer                              | 3   |
| 97   | 17399 NBR       | 17399 NBR        | O-Ring, Plunger Retainer - 80D                              | 3   |
|      | 14160 FPM       | 14160 FPM        | O-Ring, Plunger Retainer - 70D                              | 3   |
|      | ◆ 46204 EPDM    | ◆ 46204 EPDM     | O-Ring, Plunger Retainer - 70D                              | 3   |
| 98   | 45891 CU        | 45891 CU         | Gasket  | 3   |
| 99   | 104360 S        | 104360 S         | Retainer, Plunger w/Stud                                    | 3   |
| 100  | 45688 PVDF      | 45688 PVDF       | Retainer, Seal, 2-Pc [04/06]                                | 3   |
| 101  | 43302 —         | 43302 —          | Wick, Long Tab  | 3   |
| 106  | 43305 NBR       | 43305 NBR        | Seal, LPS w/S-Spg   | 3   |
|      | 45153 FPM       | 45153 FPM        | Seal, LPS w/SS-Spg  | 3   |
|      | ◆ 48429 EPDM    | ◆ 48429 EPDM     | Seal, LPS w/SS-Spg  | 3   |
| 120  | 45679 BB        | 45679 BB         | Case, Seal  | 3   |
| 121  | 14200 NBR       | 14200 NBR        | O-Ring, Seal Case - 70D                                     | 3   |
|      | 11719 FPM       | 11719 FPM        | O-Ring, Seal Case   | 3   |
|      | ◆ 48907 EPDM    | ◆ 48907 EPDM     | O-Ring, Seal Case   | 3   |
| 125  | 43307 SNG       | 43307 SNG        | Seal, HPS w/S   | 3   |
|      | 44936 FPM       | 44936 FPM        | Seal, HPS w/SS  | 3   |
|      | 46667 HT*       | 46667 HT*        | Seal, HPS "Hi-Temp", 2-Pc w/S-Support                       | 3   |
| 139  | 22179 BBCP      | 22179 BBCP       | Plug, Inlet (1/2" NPT)                                      | 1   |
| 162  | 48361 D         | 48361 D          | Back-up-Ring, Seat  | 6   |
| 163  | 43358 NBR       | 43358 NBR        | O-Ring, Seat - 70D  | 6   |
|      | 44938 FPM       | 44938 FPM        | O-Ring, Seat - 70D  | 6   |
|      | ◆ 48908 EPDM    | ◆ 48908 EPDM     | O-Ring, Seat  | 6   |
| 164  | 43725 S         | 43725 S          | Seat  | 6   |
| 166  | 43723 S         | 43723 S          | Valve   | 6   |
| 167  | 43750 S         | 43750 S          | Spring, Valve   | 6   |
| 168  | 44565 PVDF      | 44565 PVDF       | Retainer, Valve Spring                                      | 6   |
| 172  | 17615 NBR       | 17615 NBR        | O-Ring, Valve Plug - 75D                                    | 6   |
|      | 15855 FPM       | 15855 FPM        | O-Ring, Valve Plug - 70D                                    | 6   |
|      | ◆ 48431 EPDM    | ◆ 48431 EPDM     | O-Ring, Valve Plug - 75D                                    | 6   |
| 174  | 43849 BBCP      | 43849 BBCP       | Plug, Valve   | 6   |
| 185  | 44837 BBCP      | —                | Head, Manifold  | 1   |
|      | —               | 46278 FBB        | Head, Manifold, Sleeved                                     | 1   |
| 188  | 126520 STCP R   | 126520 STCP R    | Screw, HSH, Sems (M10x35)                                   | 2   |
| 250  | 118672 STCP     | 118672 STCP      | Protector, Shaft (Belt Drive Only)                          | 1   |
| 255  | 30243 STZP      | 30243 STZP       | Mount, Direct (Belt Drive Only)                             | 1   |
| 260  | 30611 STZP      | 30611 STZP       | Mounting, Angle Rail (Belt Drive Only)                      | 1   |
| 265  | 30659 —         | 30659 —          | Mount, Assy (Incls: 30611, 30633, 118672) (Belt Drive Only) | 1   |
| 270  | 30633 STL       | 30633 STL        | Assy, Pulley & Key (Incls: 30058, 30057) (Belt Drive Only)  | 1   |
| 275  | 30944 STL       | 30944 STL        | Assy, Hub & Key (Incls: 30057, 30945) (Belt Drive Only)     | 1   |
| 283  | 34334 —         | 34334 —          | Kit, Oil Drain  | 1   |
| 298  | 34962 STZP      | 34962 STZP       | Clutch Assy, Single Groove, 20mm, 12VDC                     | 1   |
|      | 34963 STZP      | 34963 STZP       | Clutch Assy, Dual Groove, 20mm, 12VDC                       | 1   |
| 299  | 810027 BBCP     | 816551 FBB       | Head, Complete  | 1   |

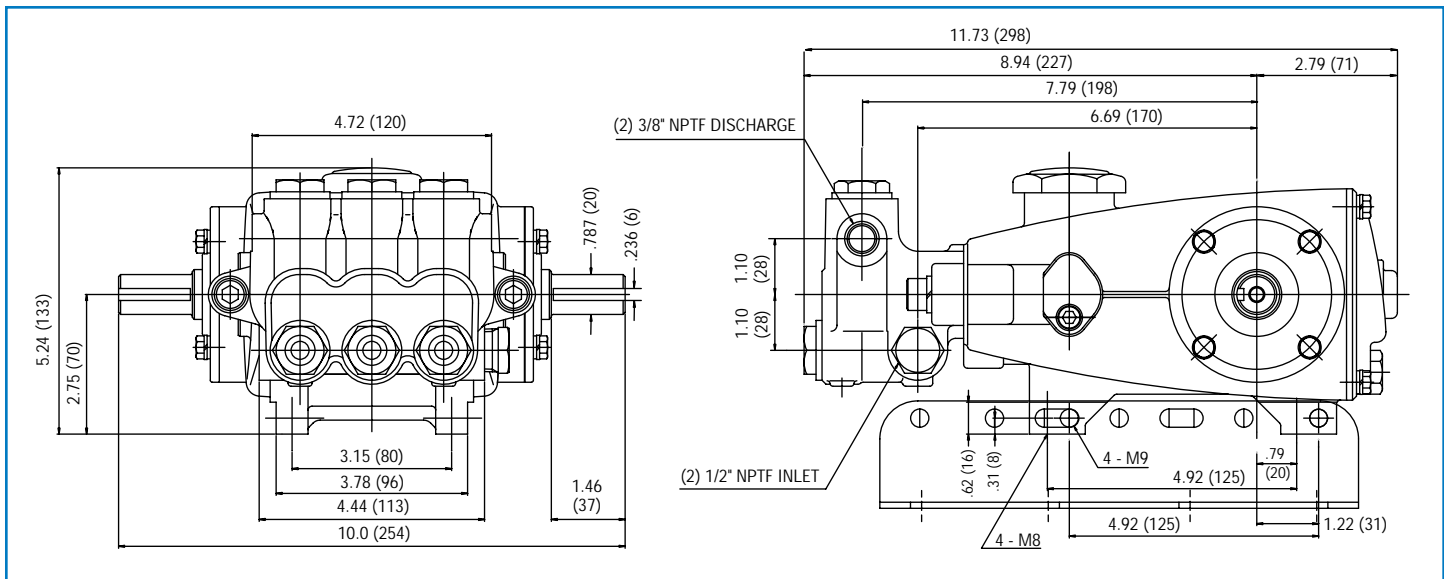
# EXPLODED VIEW



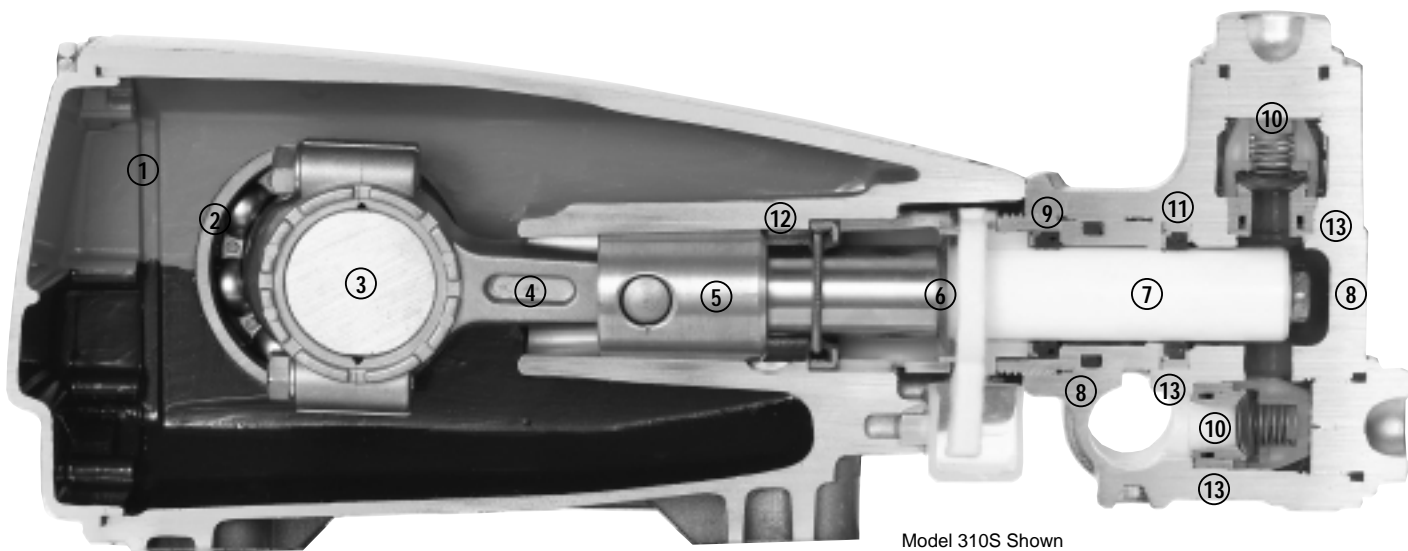
**Models**  
 Standard - 310, 340, 350  
 Sleeved - 310S, 340S, 350S  
 April 2008

|     | <b>310</b> | <b>340</b> | <b>350</b> | <b>MATL</b> | <b>310S</b> | <b>340S</b> | <b>350S</b> | <b>MATL</b> |   |   |
|-----|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|---|---|
| 300 | 30623      | 30623      | 30623      | NBR         | 30623       | 30623       | 30623       | NBR         | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
|     | 34155      | 34155      | 34155      | FPM         | 34155       | 34155       | 34155       | FPM         | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
|     | 33623      | 33623      | 33623      | HT          | 33623       | 33623       | 33623       | HT          | Kit, Seal, "Hi-Temp" (Incls: 97,101,106,121,125)  | 1 |
|     | ◆ 31163    | ◆ 31163    | ◆ 31163    | EPDM*       | ◆ 31163     | ◆ 31163     | ◆ 31163     | EPDM*       | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
| 310 | 30821      | 30821      | 30821      | NBR         | 30821       | 30821       | 30821       | NBR         | Kit, Valve (Incls: 162-164,166-168,172)   | 2 |
|     | 31821      | 31821      | 31821      | FPM         | 31821       | 31821       | 31821       | FPM         | Kit, Valve (Incls: 162-164,166-168,172)   | 2 |
|     | ◆ 31162    | ◆ 31162    | ◆ 31162    | EPDM        | ◆ 31162     | ◆ 31162     | ◆ 31162     | EPDM        | Kit, Valve (Incls: 162-164,166-168,172)   | 2 |
| 350 | 30696      | 30696      | 30696      | STZP        | 30696       | 30696       | 30696       | STZP        | Plier, Reverse  | 1 |
| 351 | 33004      | 33004      | 33004      | STZP        | 33004       | 33004       | 33004       | STZP        | Socket, Seal Case (1/2" Drive)  | 1 |
| —   | —          | —          | —          | —           | —           | —           | —           | —           | BD Motors - See Individual Data Sheet   | — |
| —   | 6107       | 6107       | 6107       | —           | 6107        | 6107        | 6107        | —           | Oil, Bottle (21 oz.) ISO 68 Multi-viscosity Hydraulic<br>(Fill to specified crankcase capacity prior to start-up) | 1 |

**Bold print part numbers are unique to a particular pump model. Italics are optional items.** ◆Silicone oil/grease required. R Components comply with RoHS Directive.  
 [ ] Date of latest production change. \*Review material codes for individual items (HT generally may be used as alternate).  
 See Tech Bulletins 002, 003, 008, 024, 027, 032, 035, 036, 043, 045, 046, 049, 052, 053, 054, 073, 074, 077, 079, 083, 090 and 106 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=Acetal EPDM=Ethylene Propylene Diene Monomer FBB=Forged Brass FCM=Forged Chrome-moly FPM=Fluorocarbon HS=High Strength  
 HT=High Temp (EPDM Alternative) NBR=Medium Nitrile (Buna-N) POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride  
 S=304SS SNG=Special Blend (Buna) SS=316SS STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated ZZCP=Chrome Plated/Steel - Zamak



Models 310, 340, 350, 310S, 340S, 350S



Model 310S Shown

- 1 Die cast aluminum **crankcase** means high strength, lightweight, 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 high strength **connecting rods** noted for superior tensile strength and bearing quality.
- 5 Special high strength **plunger rods** with Zamak crossheads for longevity and corrosion resistant.
- 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, solid ceramic **plungers** provide a true wear surface and extended seal life.
- 8 **Manifolds** are a high tensile strength forged brass for long life, continuous duty and compatibility.
- 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, ultimate seating and extended life.
- 11 Specially formulated, CAT PUMP exclusive, **Hi-Pressure Seals** offer unmatched performance and seal life.
- 12 **Crossheads** are 360° supported for uncompromising alignment.
- 13 Precision, press-fit, **304 stainless steel sleeves** in both the seal and valve chambers provide extended life (S models only).

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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