

Model 311 Shown

## FEATURES

- Triplex design offers high efficiency and low pulsation.
- Durable high pressure seals are lubricated and cooled by pumped liquid.
- Pre-set Lo-Pressure Seals provide secondary protection against external leaks and require no packing adjustment.
- Optional FPM and EPDM elastomers for compatibility with many liquids.
- Special flushed inlet manifold with 311C permits external flush for added cooling with high temperature liquids and lubrication with low lubricity liquids.

## 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)         |
| Flushed Ports (2) (311C Only).....   | 1/8" NPTF            | (1/8" NPTF)         |
| Discharge Ports (2).....   | 3/8" NPTF            | (3/8" NPTF)         |
| Shaft Diameter .....   | 0.787"               | (20 mm)             |
| Weight.....  | 19.8 lbs.            | (9 kg)              |
| Dimensions.....  | 11.81 x 10.0 x 5.24" | (300x 254 x 133 mm) |

### ⚠ CAUTIONS AND WARNINGS

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

Read all CAUTIONS and WARNINGS before commencing service or operation of any high pressure system. The CAUTIONS and WARNINGS are included in each service manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at [www.catpumps.com/cautions-warnings](http://www.catpumps.com/cautions-warnings) or can be requested directly from CAT PUMPS.

### WARRANTY

View the Limited Warranty on-line at [www.catpumps.com/warranty](http://www.catpumps.com/warranty).

# 5 Frame Plunger Pump

*Stainless Steel Models*

## 311, 341, 351

*Stainless Steel Flushed Model*

## 311C

*Nickel Aluminum Bronze Models*

## 317, 347, 357

## SPECIFICATIONS

|                             | U.S. Measure    | Metric Measure   |
|-----------------------------|-----------------|------------------|
| <b>MODEL 311, 311C, 317</b> |                 |                  |
| Flow .....                  | 4.0 gpm         | (15 l/m)         |
| Pressure Range.....         | 100 to 2200 psi | (7 to 155 bar)   |
| Pump rpm .....              | 950 rpm         | (950 rpm)        |
| Inlet Pressure Range.....   | -5 to 60 psi    | (-0.35 to 4 bar) |
| Stroke .....                | 0.709"          | (18 mm)          |

### ALTERNATE SPECIFICATIONS MODEL 311, 311C

|                     |                 |               |
|---------------------|-----------------|---------------|
| Flow .....          | 5.0 gpm         | (19 l/m)      |
| Pressure Range..... | 100 to 1500 psi | (7 to 105bar) |
| Pump rpm .....      | 1190 rpm        | (1190 rpm)    |

### ALTERNATE SPECIFICATIONS MODEL 317

|                     |                 |                |
|---------------------|-----------------|----------------|
| Flow .....          | 5.0 gpm         | (19 l/m)       |
| Pressure Range..... | 100 to 2000 psi | (7 to 140 bar) |
| Pump rpm .....      | 1190 rpm        | (1190 rpm)     |

### MODEL 341, 347 Direct Drive

|                           |                   |                    |
|---------------------------|-------------------|--------------------|
| Flow .....                | 4.0 gpm           | (15 l/m)           |
| Pressure Range.....       | 100 to 1800 psi   | (7 to 125 bar)     |
| Pump rpm .....            | 1725 rpm          | (1725 rpm)         |
| Inlet Pressure Range..... | Flooded to 60 psi | (Flooded to 4 bar) |
| Stroke .....              | 0.394"            | (10 mm)            |

### MODEL 351, 357 Direct Drive

|                            |                   |                    |
|----------------------------|-------------------|--------------------|
| Flow .....                 | 5.0 gpm           | (19 l/m)           |
| Pressure Range .....       | 100 to 1500 psi   | (7 to 105 bar)     |
| Pump rpm .....             | 1725 rpm          | (1725 rpm)         |
| Inlet Pressure Range ..... | Flooded to 60 psi | (Flooded to 4 bar) |
| Stroke .....               | 0.472"            | (12 mm)            |

## ELECTRIC HORSEPOWER REQUIREMENTS

| MODELS                | FLOW     |          | PRESSURE                                   |          |          |             |     | rpm  | MOTOR PULLEY SIZE |
|-----------------------|----------|----------|--|----------|----------|-------------|-----|------|-------------------|
|                       |          |          | Using 1725 rpm Motor & Std. 8" Pump Pulley |          |          |             |     |      |                   |
|                       | psi 1200 | psi 1500 | psi 1800                                   | psi 2000 | psi 2200 | Pulley O.D. |     |      |                   |
| <b>311, 311C, 317</b> | 4.0      | 15       | 3.3  | 4.1      | 5.0      | 5.5         | 6.0 | 950  | 4.4               |
| <b>311, 311C Alt.</b> | 5.0      | 19       | 4.1  | 5.1      | N/A      | N/A         | N/A | 1190 | 5.5               |
| <b>317 Alt.</b>       | 5.0      | 19       | 4.1  | 5.1      | 6.1      | 6.9         | N/A | 1190 | 5.5               |
| <b>340</b>            | 4.0      | 15       | 3.3  | 4.1      | 5.0      | N/A         | N/A | 1725 | Direct Drive      |
| <b>350</b>            | 5.0      | 19       | 4.1  | 5.1      | N/A      | N/A         | N/A | 1725 | Direct Drive      |

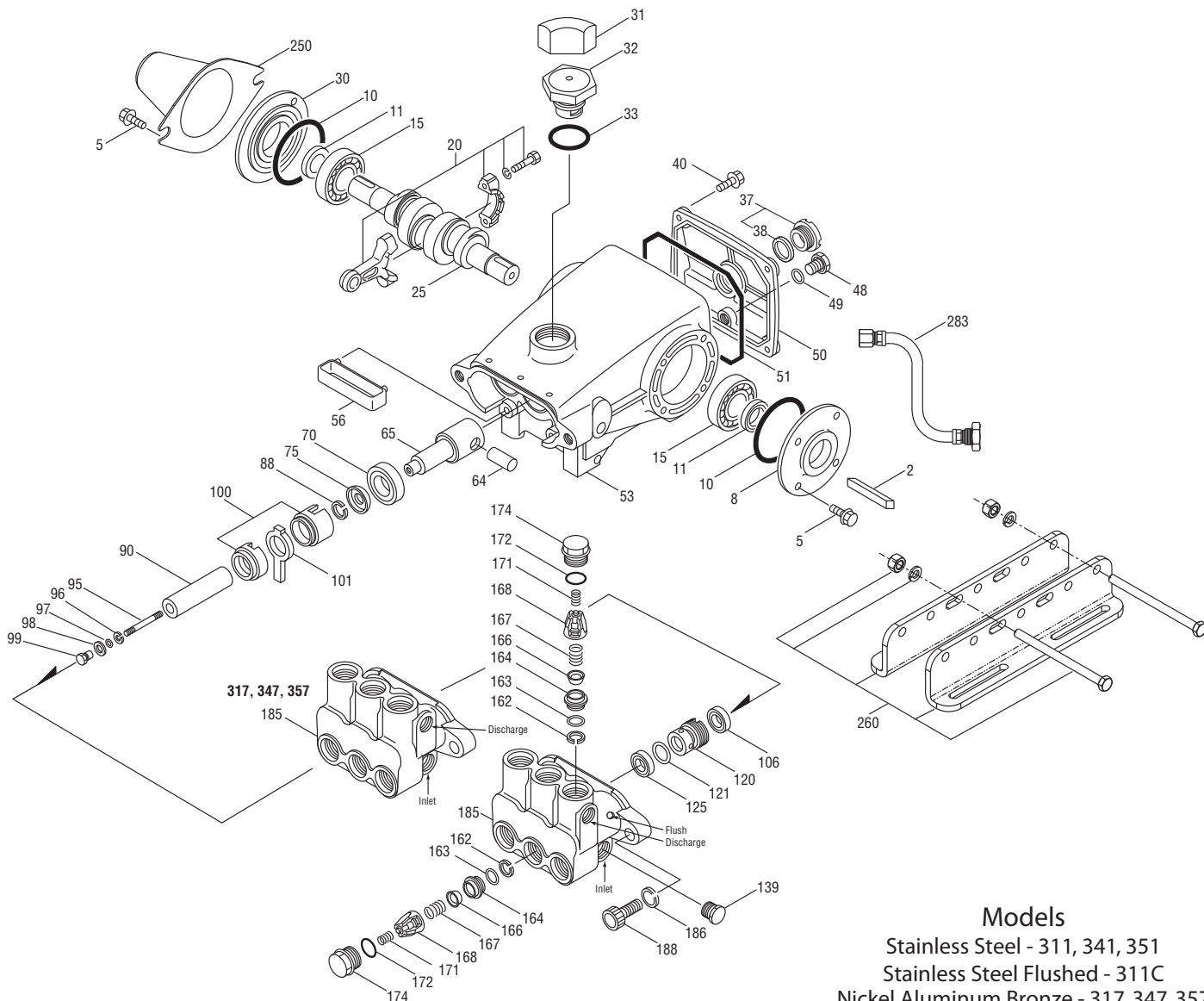
|                                      |  |   |   |
|--------------------------------------|--|---|---|
| <b>DETERMINING THE PUMP rpm</b>      | $\frac{\text{Rated gpm}}{\text{Rated rpm}}$        | = | $\frac{\text{"Desired" gpm}}{\text{"Desired" rpm}}$ |
| <b>DETERMINING THE REQUIRED H.P.</b> | $\frac{\text{gpm} \times \text{psi}}{1460}$        | = | Electric Brake H. P. Required                       |
| <b>DETERMINING MOTOR PULLEY SIZE</b> | $\frac{\text{Motor Pulley O.D.}}{\text{Pump rpm}}$ | = | $\frac{\text{Pump Pulley O.D.}}{\text{Motor rpm}}$  |

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

# PARTS LIST

| ITEM | PART NUMBER     |                  | DESCRIPTION  | QTY |
|------|-----------------|------------------|--|-----|
|      | <b>311,311C</b> | <b>317</b>       |  |     |
|      | <b>341</b>      | <b>347</b>       |  |     |
|      | <b>351 MATL</b> | <b>357 MATL</b>  |  |     |
| 2    | 30057 STL       | 30057 STL        | Key (M6x6x25)  | 1   |
| 5    | 92538 S         | 92538 S          | Screw, Sems HHC (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 - (311, 311C, 351-2) (341-1)                 | 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 - 311, 311C, 317                              | 1   |
|      | 44945 FCM       | 44945 FCM        | Crankshaft, Single End - 341, 347                                  | 1   |
|      | 43838 FCM       | 43838 FCM        | Crankshaft, Dual End - 351, 357                                    | 1   |
| 30   | 44949 AL        | 44949 AL         | Cover, Blind Shaft - 341   | 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   | 92542 S         | 92542 S          | Screw, Sems HHC (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] (See Tech Bulletin 090)                        | 1   |
| 51   | 48773 NBR       | 48773 NBR        | O-Ring, Rear Cover [10/01] (See Tech Bulletin 090)                 | 1   |
| 53   | 48769 AL        | 48769 AL         | Crankcase [05/02] (See Tech Bulletin 090)                          | 1   |
| 56   | 43355 POP       | 43355 POP        | Pan, Oil   | 1   |
| 64   | 43351 CM        | 43351 CM         | Pin, Crosshead   | 3   |
| 65   | 45256 SSZZ      | 45256 SSZZ       | 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 (M18x10)   | 3   |
| 90   | 43367 CC        | 43367 CC         | Plunger (M20x72)   | 3   |
| 95   | 89653 SS        | 89653 SS         | Stud, Plunger Retainer (M6x58)                                     | 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 - 80D                                     | 3   |
|      | ◆46204 EPDM     | ◆46204 EPDM      | O-Ring, Plunger Retainer - 70D                                     | 3   |
| 98   | 44041 SS        | 44041 SS         | Gasket   | 3   |
| 99   | 44031 SS        | 44031 SS         | Retainer, Plunger  | 3   |
| 100  | 45688 PVDF      | 45688 PVDF       | Retainer, Seal 2-PC [04/06] (See Tech Bulletin 105)                | 3   |
| 101  | 43302 —         | 43302 —          | Wick, Long Tab   | 3   |
| 106  | 44127 NBR       | 44127 NBR        | Seal, LPS w/SS-Spg   | 3   |
|      | 45153 FPM       | 45153 FPM        | Seal, LPS w/SS-Spg   | 3   |
|      | ◆48429 EPDM     | ◆48429 EPDM      | Seal, LPS w/SS-Spg   | 3   |
| 120  | 45680 SS        | 45680 SS         | 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  | 44649 SNG       | 44649 SNG        | Seal, HPS w/SS   | 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  | <b>45156 SS</b> | <b>44563 NAB</b> | 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  | 44128 SS        | 44128 SS         | Seat   | 6   |
| 166  | 44057 SS        | 44057 SS         | Valve  | 6   |
| 167  | 44056 SS        | 44056 SS         | Spring, Valve  | 6   |
| 168  | 44565 PVDF      | 44565 PVDF       | Retainer, Valve Spring   | 6   |
| 171  | 44832 S         | 44832 S          | Spring, Coil   | 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  | <b>49296 SS</b> | <b>44833 NAB</b> | Plug, Valve [05/06]  | 6   |
| 185  | <b>45151 SS</b> | <b>44124 NAB</b> | Manifold Head (See Tech Bulletin 079 - NAB Only)                   | 1   |
|      | 49583 SS        | —                | Manifold Head-Flushed (311C Only)                                  | 1   |
| 186  | 15847 S         | 15847 S          | Lockwasher (M10)   | 2   |
| 188  | 87950 S         | 87950 S          | Screw HSH (M10x35) [01/04]   | 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       | Mount, Assy Rail - B (Belt Drive Only)                             | 1   |
| 265  | 30659 —         | 30659 —          | Mount, Assy (30611,30633,118672) (Belt Drive Only)                 | 1   |
| 270  | 30633 STL       | 30633 STL        | Assy, Pulley & Key (30058,30057) (Belt Drive Only)                 | 1   |
| 275  | 30944 STL       | 30944 STL        | Assy, Hub & Key (M20 w/M6 Keyway) (30945, 30057) (Belt Drive Only) | 1   |
|      |                 |                  | [See Drive Packages, Tech Bulletin 003]                            |     |
| 283  | 34334 —         | 34334 —          | Kit, Oil Drain (See Tech Bulletin 077)                             | 1   |

# EXPLODED VIEW



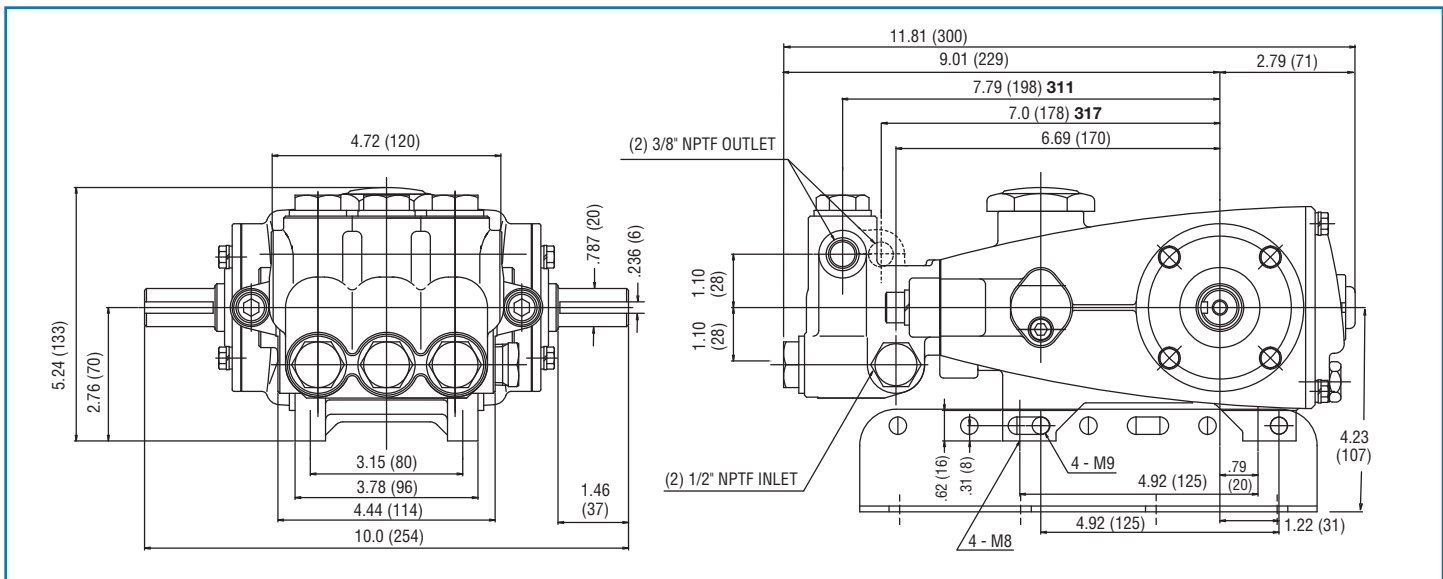
Models  
 Stainless Steel - 311, 341, 351  
 Stainless Steel Flushed - 311C  
 Nickel Aluminum Bronze - 317, 347, 357  
 June 2012

|     | <b>311, 311C</b> |             | <b>317</b> |             |   |   |
|-----|------------------|-------------|------------|-------------|---|---|
|     | <b>341</b>       |             | <b>347</b> |             |   |   |
|     | <b>351</b>       | <b>MATL</b> | <b>357</b> | <b>MATL</b> |   |   |
| 298 | 34962            | STZP        | 34962      | STZP        | Clutch Assy, Single Groove, 20mm, 12VDC   | 1 |
|     | 34963            | STZP        | 34963      | STZP        | Clutch Assy, Dual Groove, 20mm, 12VDC   | 1 |
| 299 | 812207           | SS          | 814559     | NAB         | Head, Complete  | 1 |
|     | 818444           | SS          | —          | —           | Head, Complete-Flushed (311C Only)  | 1 |
| 300 | 34153            | NBR         | 34153      | NBR         | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
|     | 34155            | FPM         | 34155      | FPM         | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
|     | 33623            | HT          | 33623      | HT          | Kit, Seal, "Hi-Temp" (Incls: 97,101,106,121,125)  | 1 |
|     | ◆ 31163          | EPDM*       | ◆ 31163    | EPDM*       | Kit, Seal (Incls: 97,101,106,121,125)   | 1 |
| 310 | 31152            | NBR         | 31152      | NBR         | Kit, Valve pre-assembled (Incls: 162-164,166-168,171,172)   | 2 |
|     | 34152            | FPM         | 34152      | FPM         | Kit, Valve pre-assembled (Incls: 162-164,166-168,171,172)   | 2 |
| 350 | 30696            | STZP        | 30696      | STZP        | Plier, Reverse  | 1 |
| 351 | 33004            | STZP        | 33004      | STZP        | Socket, Seal Case (1/2" Drive)  | 1 |
| —   | 6107             | —           | 6107       | —           | Oil, Bottle (21 oz.) ISO 68 Hydraulic<br>(Fill to specified crankcase capacity prior to start-up) | 1 |
| —   | 6119             | —           | —          | —           | Lubricant, Antiseize (1 oz.) (See Tech Bulletin 095)  | 1 |

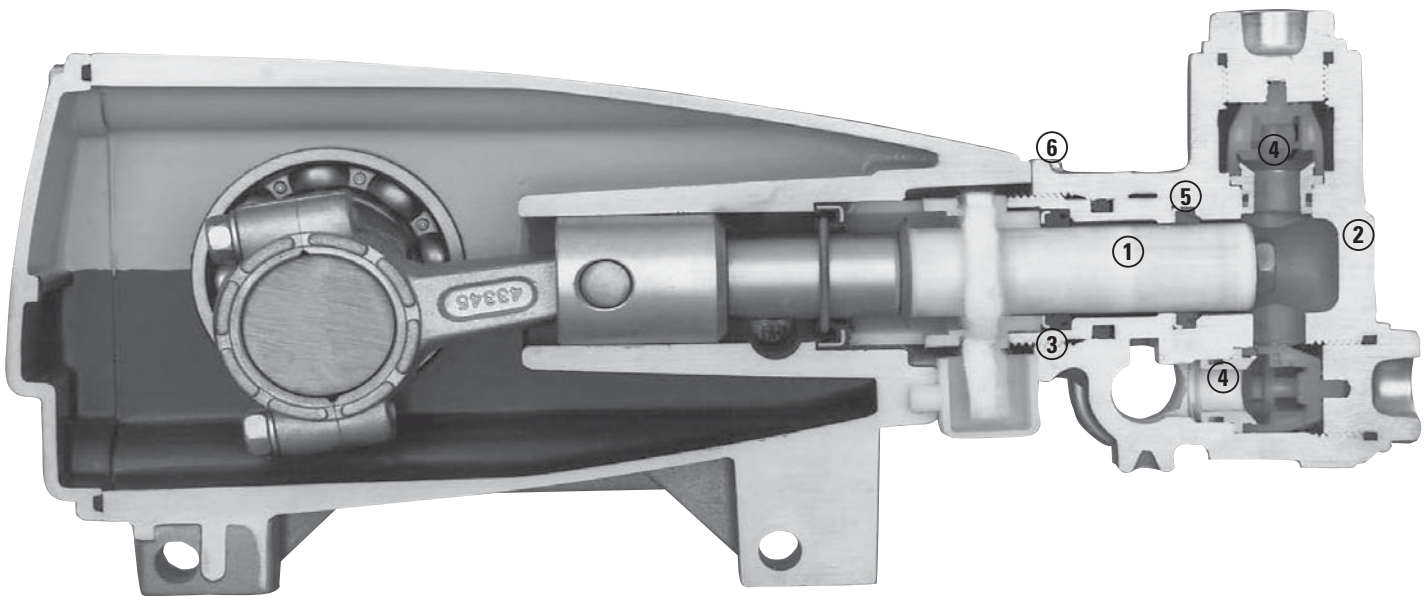
**Bold print part numbers are unique to a particular pump model. Italics are optional items. ◆ Silicone oil/grease required.**

[ ] Date of latest production change. \*Review individual parts in each kit for material code information.

View Tech Bulletins 002, 003, 008, 024, 027, 032, 035, 036, 043, 045, 046, 049, 052, 053, 054, 073, 074, 077, 079, 083, 090, 095 and 105 for additional information.  
 MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum CC=Ceramic CM=Chrome-moly D=Acetal EPDM=Ethylene Propylene Diene Monomer  
 FCM=Forged Chrome-moly FPM=Fluorocarbon HS=High Strength HT=High Temp (EPDM Alternative) NAB=Nickel Aluminum Bronze NBR=Medium Nitrile (Buna-N)  
 POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SNG=Special Blend (Buna) SS=316SS  
 SSZZ=316SS/Zamak STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated



Models 311, 311C, 317, 341, 347, 351, 357



- 1 Special concentric, high-density, polished, solid ceramic **plungers** provide a true wear surface and extended seal life.
- 2 **Manifolds** are a high tensile strength 316 stainless steel or nickel aluminum bronze for long life, continuous duty and compatibility.
- 3 100% wet **seal** design adds to service life by allowing pumped liquids to cool and lubricate on both sides.
- 4 Stainless steel **valves, seats and springs** provide corrosion-resistance, ultimate seating and extended life.
- 5 Specially formulated, Cat Pump exclusive, **Hi-Pressure Seals** offer unmatched performance and seal life.
- 6 Special flushed **Inlet Manifold** permits external flush for added cooling with high temperature liquids and lubrication with low lubricity liquids.



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