

## 7 Frame Plunger Pump

**Standard Models** 56, 57, 59, 60

**Gearbox Models** 56G1, 59G1, 60G1

### FEATURES

#### Superior Design

- Triplex plunger design gives smoother liquid flow.
- V-Packings are completely lubricated and cooled by the liquid being pumped.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- Lubricated Lo-Pressure Seals provide double protection against external leakage.
- Oil bath crankcase assures optimum lubrication.
- Close tolerance concentricity of the ceramic plunger maximizes seal life.
- Optional Gearbox version for direct mounting to gas engine.

#### Quality Materials

- Precision design 304 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- Forged brass manifold 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, V-Packings offers 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

| MODELS               | U.S. Measure    |                | Metric Measure   |                |
|----------------------|-----------------|----------------|------------------|----------------|
|                      | U.S. Measure    | Metric Measure | U.S. Measure     | Metric Measure |
| <b>56</b>            |                 |                |                  |                |
| Flow .....           | 5.5 GPM         | (21 L/M)       | 8 GPM            | (30 L/M)       |
| Pressure Range ..... | 100 to 3500 PSI | (7 to 245 BAR) | 100 to 1800 PSI  | (7 to 125 BAR) |
| RPM .....            | <b>1210 RPM</b> | (1210 RPM)     | <b>1760 RPM</b>  | (1760 RPM)     |
| Stroke .....         | <b>0.945"</b>   | (24 mm)        | <b>0.945"</b>    | (24 mm)        |
| <b>MODEL</b>         |                 |                | <b>57</b>        |                |
| Flow .....           |                 |                | 4.5 GPM          | (17 L/M)       |
| Pressure Range ..... |                 |                | 100 to 4000 PSI  | (7 to 275 BAR) |
| RPM .....            |                 |                | <b>1285 RPM</b>  | (1285 RPM)     |
| Stroke .....         |                 |                | <b>0.728"</b>    | (18.5 mm)      |
| <b>MODELS</b>        |                 |                | <b>60, 60G1*</b> |                |
| Flow .....           | 5.5 GPM         | (21 L/M)       | 4.5 GPM          | (17 L/M)       |
| Pressure Range ..... | 100 to 3500 PSI | (7 to 245 BAR) | 100 to 4000 PSI  | (7 to 275 BAR) |
| RPM .....            | <b>1570 RPM</b> | (1570 RPM)     | <b>1570 RPM</b>  | (1570 RPM)     |
| Stroke .....         | <b>0.728"</b>   | (18.5 mm)      | <b>0.591"</b>    | (15 mm)        |

#### COMMON SPECIFICATIONS

|  |                          |                             |
|--|--------------------------|-----------------------------|
| Bore.....  | 0.708"                   | (18 mm)                     |
| Inlet Pressure Range .....   | <b>Flooded to 60 PSI</b> | ( <b>Flooded to 4 BAR</b> ) |
| Crankcase Capacity .....   | 25 oz.                   | (0.75 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 .....   | 0.945"                   | (24 mm)                     |
| Weight.....  | 29.25 lbs.               | (13.3 kg)                   |
| Weight w/Gearbox .....   | 36.8 lbs.                | (16.7 kg)                   |
| Dimensions.....  | 13.93 x 8.2 x 6.41"      | (354 x 208 x 163 mm)        |

\*See Gearbox Data Sheet 8051-8078 for maximum engine RPM.

### ELECTRIC HORSEPOWER REQUIREMENTS

| MODEL           | FLOW     |     | PRESSURE |          |          |          |          | MOTOR PULLEY SIZE                         |             |
|-----------------|----------|-----|----------|----------|----------|----------|----------|---|-------------|
|                 | U.S. GPM | L/M | PSI 1800 | PSI 2500 | PSI 3000 | PSI 3500 | PSI 4000 | Using 1725 RPM Motor and Std. Pump Pulley |             |
|                 |          |     | BAR 125  | BAR 175  | BAR 210  | BAR 245  | BAR 275  | RPM                                       | Pulley O.D. |
| <b>56</b>       | 5.5      | 21  | 6.8      | 9.4      | 11.3     | 13.2     | N/A      | 1210                                      | 6.9         |
| Alternate       | 6.0      | 23  | 7.4      | 10.3     | 12.4     | N/A      | N/A      | 1320                                      | 7.5         |
| <b>57</b>       | 4.5      | 17  | 5.6      | 7.7      | 9.3      | 10.8     | 12.3     | 1285                                      | 7.3         |
| <b>56G1</b>     | 8.0      | 30  | 9.9      | N/A      | N/A      | N/A      | N/A      | 1760                                      | Gearbox     |
| <b>59, 59G1</b> | 5.5      | 21  | 6.8      | 9.4      | 11.3     | 13.2     | N/A      | 1570                                      | Gearbox     |
| <b>60, 60G1</b> | 4.5      | 17  | 5.6      | 7.7      | 9.3      | 10.8     | 12.3     | 1570                                      | Gearbox     |

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

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

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

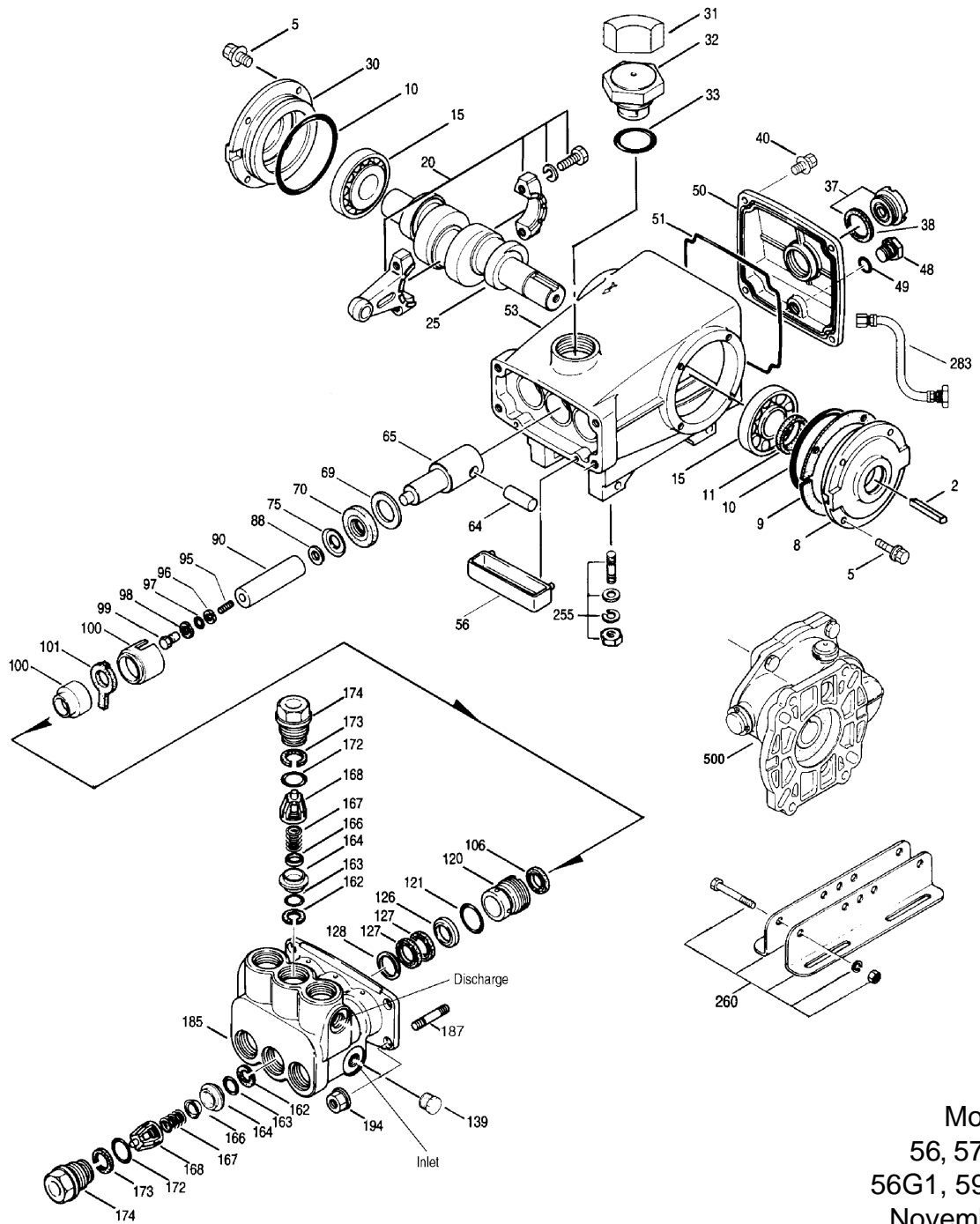
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.  
Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

*"Customer confidence is our greatest asset"*

# PARTS LIST

| ITEM | PART NUMBER |        |        |        |        |        |        |        | DESCRIPTION   | QTY |
|------|-------------|--------|--------|--------|--------|--------|--------|--------|---|-----|
|      | 56          | MATL   | 57     | MATL   | 59     | MATL   | 60     | MATL   |   |     |
| 2    | 30067       | STL    | 30067  | STL    | 30067  | STL    | 30067  | STL    | Key (M8x7.5x25)   | 1   |
| 5    | 92519       | STZP   | 92519  | STZP   | 92519  | STZP   | 92519  | STZP   | Screw, HHC Sems (M6x16)   | 4/8 |
|      | 125824      | STCP R | 125824 | STCP R | 125824 | STCP R | 125824 | STCP R | Screw, HHC Sems (M6x16)   | 4/8 |
| 8    | 43466       | AL     | 43466  | AL     | 43466  | AL     | 43466  | AL     | Cover, Bearing  | 1   |
| 9    | 815280      | FBR    | 815280 | FBR    | 815280 | FBR    | 815280 | FBR    | Shim, Split, 2-Pc   | 1   |
| 10   | 12393       | NBR    | 12393  | NBR    | 12393  | NBR    | 12393  | NBR    | O-Ring, Bearing Cover   | 2   |
| 11   | 43222       | NBR    | 43222  | NBR    | 43222  | NBR    | 43222  | NBR    | Seal, Oil Crankshaft - 70D  | 1   |
| 15   | 43221       | STL    | 43221  | STL    | 43221  | STL    | 43221  | STL    | Bearing, Roller   | 2   |
| 20   | 48863       | TNM    | 48863  | TNM    | 48863  | TNM    | 48863  | TNM    | Rod, Connecting [6/02]  | 3   |
| 25   | 43464       | FCM    | 44947  | FCM    | 46131  | FCM    | 44591  | FCM    | Crankshaft, Single End  | 1   |
| 30   | 44967       | AL     | 44967  | AL     | 44967  | AL     | 44967  | AL     | Cover, Bearing, Blind   | 1   |
| 31   | 828710      | —      | 828710 | —      | 828710 | —      | 828710 | —      | Protector, Oil Cap w/Foam Gasket                                  | 1   |
| 32   | 44666       | RTP    | 44666  | RTP    | 44666  | RTP    | 44666  | RTP    | Cap, Oil Filler, Domed-Gearbox Models                             | 1   |
| 33   | 14177       | NBR    | 14177  | NBR    | 14177  | NBR    | 14177  | NBR    | O-Ring, Oil 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 Flex, Oil Gauge - 80D                                | 1   |
| 40   | 92520       | STZP   | 92520  | STZP   | 92520  | STZP   | 92520  | STZP   | Screw, HHC Sems (M6x20)   | 4   |
|      | 126541      | STCP R | 126541 | STCP R | 126541 | STCP R | 126541 | STCP R | Screw, HHC Sems (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   | 46509       | AL     | 46509  | AL     | 46509  | AL     | 46509  | AL     | Cover, Rear   | 1   |
| 51   | 44836       | NBR    | 44836  | NBR    | 44836  | NBR    | 44836  | NBR    | O-Ring, Rear Cover - 70D  | 1   |
| 53   | 45361       | AL     | 45361  | AL     | 45361  | AL     | 45361  | AL     | Crankcase (M10)   | 1   |
| 56   | 43240       | POP    | 43240  | POP    | 43240  | POP    | 43240  | POP    | Pan, Oil  | 1   |
| 64   | 43237       | CM     | 43237  | CM     | 43237  | CM     | 43237  | CM     | Pin, Crosshead  | 3   |
| 65   | 48913       | SHS    | 48913  | SHS    | 48913  | SHS    | 48913  | SHS    | Rod, Plunger, Short [5/02]  | 3   |
| 69   | 43227       | STZP   | 43227  | STZP   | 43227  | STZP   | 43227  | STZP   | Washer, Oil Seal  | 3   |
|      | 126589      | STCP R | 126589 | STCP R | 126589 | STCP R | 126589 | STCP R | Washer, Oil Seal  | 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   | 43232       | CC     | 43232  | CC     | 43232  | CC     | 43232  | CC     | Plunger (M18x77)  | 3   |
| 95   | 89649       | STZP   | 89649  | STZP   | 89649  | STZP   | 89649  | STZP   | Stud, Plunger Retainer (M6x70)                                    | 3   |
|      | 126559      | STCP R | 126559 | STCP R | 126559 | STCP R | 126559 | STCP R | Stud, Plunger Retainer (M6x70)                                    | 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, Plunger Retainer  | 3   |
| 99   | 46504       | S      | 46504  | S      | 46504  | S      | 46504  | S      | Retainer, Plunger (M6)  | 3   |
| 100  | 45686       | PVDF   | 45686  | PVDF   | 45686  | PVDF   | 45686  | PVDF   | Retainer, Seal, Rear  | 3   |
|      | 45687       | PVDF   | 45687  | PVDF   | 45687  | PVDF   | 45687  | PVDF   | Retainer, Seal Adapter, Front                                     | 3   |
| 101  | 43239       | FBR    | 43239  | FBR    | 43239  | FBR    | 43239  | FBR    | Wick, Long Tab  | 3   |
| 106  | 43243       | NBR    | 43243  | NBR    | 43243  | NBR    | 43243  | NBR    | Seal, LPS w/S-Spg   | 3   |
|      | 44926       | FPM    | 44926  | FPM    | 44926  | FPM    | 44926  | FPM    | Seal, LPS w/SS-Spg  | 3   |
| 120  | 45685       | BB     | 45685  | BB     | 45685  | BB     | 45685  | BB     | Case, Seal  | 3   |
| 121  | 20285       | NBR    | 20285  | NBR    | 20285  | NBR    | 20285  | NBR    | O-Ring, Seal Case - 70D   | 3   |
|      | 11693       | FPM    | 11693  | FPM    | 11693  | FPM    | 11693  | FPM    | O-Ring, Seal Case   | 3   |
| 126  | 44550       | BB     | 44550  | BB     | 44550  | BB     | 44550  | BB     | Adapter, Female   | 3   |
| 127  | 44549       | SNG    | 44549  | SNG    | 44549  | SNG    | 44549  | SNG    | V-Packing   | 6   |
|      | 45617       | SFG    | 45617  | SFG    | 45617  | SFG    | 45617  | SFG    | V-Packing   | 6   |
|      | 48300       | STG    | 48300  | STG    | 48300  | STG    | 48300  | STG    | V-Packing   | 6   |
| 128  | 45618       | BB     | 45618  | BB     | 45618  | BB     | 45618  | BB     | Adapter, Male   | 3   |
| 139  | 43448       | BB     | 43448  | BB     | 43448  | BB     | 43448  | BB     | Plug, Inlet, (1/2" NPT)   | 1   |
| 162  | 43248       | PTFE   | 43248  | PTFE   | 43248  | PTFE   | 43248  | PTFE   | Back-up-Ring, Seat  | 6   |
| 163  | 43249       | NBR    | 43249  | NBR    | 43249  | NBR    | 43249  | NBR    | O-Ring, Seat - 80D  | 6   |
|      | 44383       | FPM    | 44383  | FPM    | 44383  | FPM    | 44383  | FPM    | O-Ring, Seat - 70D  | 6   |
| 164  | 43722       | S      | 43722  | S      | 43722  | S      | 43722  | S      | Seat  | 6   |
| 166  | 43721       | S      | 43721  | S      | 43721  | S      | 43721  | S      | Valve   | 6   |
| 167  | 43751       | S      | 43751  | S      | 43751  | S      | 43751  | S      | Spring  | 6   |
| 168  | 44564       | PVDF   | 44564  | PVDF   | 44564  | PVDF   | 44564  | PVDF   | Retainer, Spring  | 6   |
| 172  | 14179       | NBR    | 14179  | NBR    | 14179  | NBR    | 14179  | NBR    | O-Ring, Valve Plug - 70D  | 6   |
|      | 15855       | FPM    | 15855  | FPM    | 15855  | FPM    | 15855  | FPM    | O-Ring, Valve Plug - 70D  | 6   |
| 173  | 20213       | PTFE   | 20213  | PTFE   | 20213  | PTFE   | 20213  | PTFE   | Back-up-Ring, Valve Plug  | 6   |
| 174  | 45939       | BB     | 45939  | BB     | 45939  | BB     | 45939  | BB     | Plug, Valve, Extended   | 6   |
| 185  | 45937       | FBB    | 45937  | FBB    | 45937  | FBB    | 45937  | FBB    | Head, Manifold, (M10)   | 1   |
| 187  | 46868       | S      | 46868  | S      | 46868  | S      | 46868  | S      | Stud, Manifold (M10x35)   | 4   |
| 194  | 45550       | STZP   | 45550  | STZP   | 45550  | STZP   | 45550  | STZP   | Nut, Hex Flanged (M10)  | 4   |
|      | 126567      | STCP R | 126567 | STCP R | 126567 | STCP R | 126567 | STCP R | Nut, Hex Flanged (M10)  | 4   |
| 255  | 30243       | STZP   | 30243  | STZP   | —      | —      | —      | —      | Kit, Direct Mount   | 1   |
| 260  | 30611       | STZP   | 30611  | STZP   | —      | —      | —      | —      | Assy, Angle Rail, B, U.S. (Incls: 28499,30900,30910,30920)        | 1   |
|      | 30645       | STZP   | 30645  | STZP   | —      | —      | —      | —      | Assy, Angle Rail, A, U.S. (Incls: 30635,31129,990777,30910,30920) | 1   |
| 269  | 30206       | F      | 30206  | F      | —      | —      | —      | —      | Pulley, (10") AB (See Drive Packages, Tech Bulletin 003)          | 1   |
| 274  | 33000       | STL    | 33000  | STL    | —      | —      | —      | —      | Hub (M24), H Series (See Drive Packages, Tech Bulletin 003)       | 1   |
| 283  | 34334       | —      | 34334  | —      | 34334  | —      | 34334  | —      | Kit, Oil Drain  | 1   |
| 298  | 34628       | STZP   | 34628  | STZP   | 34628  | STZP   | 34628  | STZP   | Clutch Assy, Single Groove, 24mm, 12VDC                           | 1   |
|      | 34630       | STZP   | 34630  | STZP   | 34630  | STZP   | 34630  | STZP   | Clutch Assy, Dual Groove, 24mm, 12VDC                             | 1   |
|      | 34959       | STZP   | 34959  | STZP   | 34959  | STZP   | 34959  | STZP   | Clutch Assy, Eight Groove Poly L, 24mm, 12VDC                     | 1   |
| 299  | 814618      | FBB    | 814618 | FBB    | 814618 | FBB    | 814618 | FBB    | Head, Complete  | 1   |

# EXPLODED VIEW



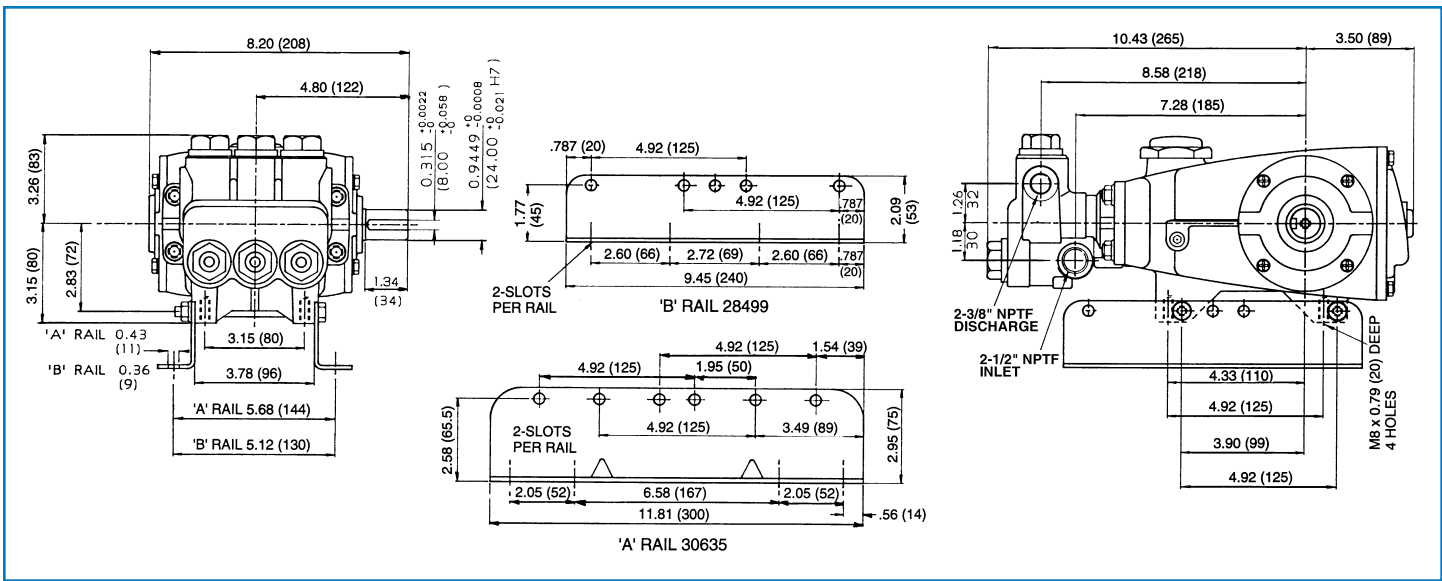
Models  
56, 57, 59, 60  
56G1, 59G1, 60G1  
November 2006

|     | <b>56</b> | <b>MATL</b> | <b>57</b> | <b>MATL</b> | <b>59</b> | <b>MATL</b> | <b>60</b> | <b>MATL</b> |   |   |
|-----|-----------|-------------|-----------|-------------|-----------|-------------|-----------|-------------|---|---|
| 300 | 30799     | NBR         | 30799     | NBR         | 30799     | NBR         | 30799     | NBR         | Kit, Seal (Incls: 97,101,106,121,127)   | 1 |
|     | 34237     | FPM         | 34237     | FPM         | 34237     | FPM         | 34237     | FPM         | Kit, Seal (Incls: 97,101,106,121,127)   | 1 |
| 310 | 33820     | NBR         | 33820     | NBR         | 33820     | NBR         | 33820     | NBR         | Kit, Valve (Incls: 162-168,172,173) [Effect. 8/90]  | 2 |
|     | 34238     | FPM         | 34238     | FPM         | 34238     | FPM         | 34238     | FPM         | Kit, Valve (Incls: 162-168,172,173)   | 2 |
| 350 | 30696     | STZP        | 30696     | STZP        | 30696     | STZP        | 30696     | STZP        | Plier, Reverse  | 1 |
| 351 | 43257     | STZP        | 43257     | STZP        | 43257     | STZP        | 43257     | STZP        | Tool, Seal Case Removal   | 1 |
|     | 33005     | STZP        | 33005     | STZP        | 33005     | STZP        | 33005     | STZP        | Socket, Seal Case, 1/2" Drive   | 1 |
| 352 | 44050     | STZP        | 44050     | STZP        | 44050     | STZP        | 44050     | STZP        | Tool, Oil Gauge Removal   | 1 |
| 500 | 8071      | —           | —         | —           | 8071      | —           | 8071      | —           | Gearbox-1" (See individual Data Sheet)  | 1 |
|     | 8078      | —           | —         | —           | 8078      | —           | 8078      | —           | Gearbox-1-1/8" (See individual Data Sheet)  | 1 |
| —   | 6575      | —           | 6575      | —           | 6575      | —           | 6575      | —           | Plunger Pump Service DVD  | 1 |
| —   | 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. [ ]** Date of latest production change. R Components comply with RoHS Directive.

See Tech Bulletins 002, 003, 024, 027, 035, 036, 043, 051, 054, 058, 067, 074, 077 and 083 for additional information.

MATERIAL CODES (Not Part of Part Number): AL=Aluminum BB=Brass CC=Ceramic CM=Chrome-Moly CU=Copper F=Cast Iron FBB=Forged Brass  
FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) POP=Polypropylene PTFE=Pure Polytetrafluoroethylene  
PVDF=Polyvinylidene Fluoride RTP=Reinforced Composite S=304SS SFG=Special Blend FPM SHS=304SS/High Strength SNG=Special Blend (Buna)  
STCP=Steel/Chrome Plated STG=Special Blend PTFE White STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength



Models 56, 57, 59, 60, 56G1, 59G1, 60G1



- 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 TNM **connecting rods** noted for superior tensile strength and bearing quality.
- 5 Special stainless steel **plunger rods** with high strength 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, solid ceramic **plungers** provide a true wear surface and 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, ultimate seating and extended life.
- 11 Specially formulated, CAT PUMP exclusive, **V-Packings** 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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