



Model 390 shown

## 5 Frame Piston Pump

### Models

# 323 390

### 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.
- Precision design 304 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- Oil bath crankcase assures optimum lubrication.
- 100% wetted seal design allows pumped liquid to cool and lubricate for longer life.

#### Quality Materials

- Cylinder and sleeve wear surfaces are hard chrome plated 304 stainless steel for maximum durability and abrasion resistance.
- Chrome plated, brass manifolds for strength and corrosion resistance.
- Special high strength TNM connecting rods offer 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.

#### **⚠ 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 323

|  |                     |                      |
|--|---------------------|----------------------|
| Flow .....   | 5.0 GPM             | (19 L/M)             |
| Pressure Range .....   | 100 to 1500 PSI     | (7 to 105 BAR)       |
| Inlet Pressure .....   | -8.5 to + 40 PSI    | (-0.6 to + 2.8 BAR)  |
| RPM .....  | 1000 RPM            | (1000 RPM)           |
| Bore .....   | 0.866"              | (22 mm)              |
| Stroke .....   | 0.669"              | (17 mm)              |
| Maximum Liquid Temperature .....   | 160°F               | (71°C)               |
| Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations. |                     |                      |
| Inlet Ports (1) .....  | 1/2" NPTF           | (1/2" NPTF)          |
| Injection Port (1) .....   | 1/4" NPTF           | (1/4" NPTF)          |
| Weight .....   | 16.6 lbs.           | (7.5 kg)             |
| Dimensions .....   | 12.4 x 10.0 x 5.28" | (315 x 254 x 134 mm) |

#### MODEL 390

|  |                     |                       |
|--|---------------------|-----------------------|
| Flow .....   | 12.0 GPM            | (45 L/M)              |
| Pressure Range .....   | 100 to 600 PSI      | (7 to 40 BAR)         |
| Inlet Pressure (up to 8 GPM) .....   | -8.5 to +40 PSI     | (-0.6 to +2.8 BAR)    |
| Inlet Pressure (8 to 12 GPM) .....   | Flooded to 40 PSI   | (Flooded to +2.8 Bar) |
| RPM .....  | 1200 RPM            | (1200 RPM)            |
| Bore .....   | 1.260"              | (32 mm)               |
| Stroke .....   | 0.629"              | (16 mm)               |
| Maximum Liquid Temperature .....   | 140°F               | (60°C)                |
| Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations. |                     |                       |
| Inlet Ports (1) .....  | 1" NPTM             | (1" NPTM)             |
| Weight .....   | 18.8 lbs.           | (8.5 kg)              |
| Dimensions .....   | 14.3 x 10.0 x 5.28" | (363 x 254 x 134 mm)  |

#### COMMON SPECIFICATIONS

|                           |             |               |
|---------------------------|-------------|---------------|
| Discharge Ports (3) ..... | 1/2" NPTF   | (1/2" NPTF)   |
| Crankcase Capacity .....  | .21 oz.     | (0.6 L)       |
| Pulley Mounting .....     | Either side | (Either side) |
| Shaft Diameter .....      | 0.787"      | (20 mm)       |

### ELECTRIC HORSEPOWER REQUIREMENTS

| MODEL | FLOW        |     | PRESSURE   |            |            |             |             |             | MOTOR PULLEY SIZE<br>Using 1725 RPM Motor & Std. Pump Pulley O.D. |       |
|-------|-------------|-----|------------|------------|------------|-------------|-------------|-------------|---|-------|
|       | U.S.<br>GPM | L/M | PSI<br>400 | PSI<br>500 | PSI<br>600 | PSI<br>1000 | PSI<br>1200 | PSI<br>1500 | RPM   | DRIVE |
| 323   | 5           | 19  | N/A        | N/A        | N/A        | 3.4         | 4.1         | 5.1         | 1000  | 4.6   |
|       | 4           | 15  | N/A        | N/A        | N/A        | 2.7         | 3.3         | 4.1         | 800   | 3.7   |
|       | 3           | 11  | N/A        | N/A        | N/A        | 2.1         | 2.5         | 3.1         | 600   | 2.8   |
| 390   | 12          | 45  | 3.3        | 4.1        | 4.9        | N/A         | N/A         | N/A         | 1200  | 5.6   |
|       | 10          | 38  | 2.8        | 3.4        | 4.1        | N/A         | N/A         | N/A         | 1000  | 4.6   |
|       | 8           | 30  | 2.2        | 2.8        | 3.3        | N/A         | N/A         | N/A         | 800   | 3.7   |

**DETERMINING  
THE PUMP R.P.M.**

Rated G.P.M. = "Desired" G.P.M.  
Rated R.P.M. "Desired" R.P.M.

**DETERMINING  
THE REQUIRED H.P.**

GPM x PSI = Electric Brake  
1460 H. P. Required

**DETERMINING  
MOTOR PULLEY SIZE**

Motor Pulley O.D. = Pump Pulley O.D.  
Pump R.P.M. Motor R.P.M.

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

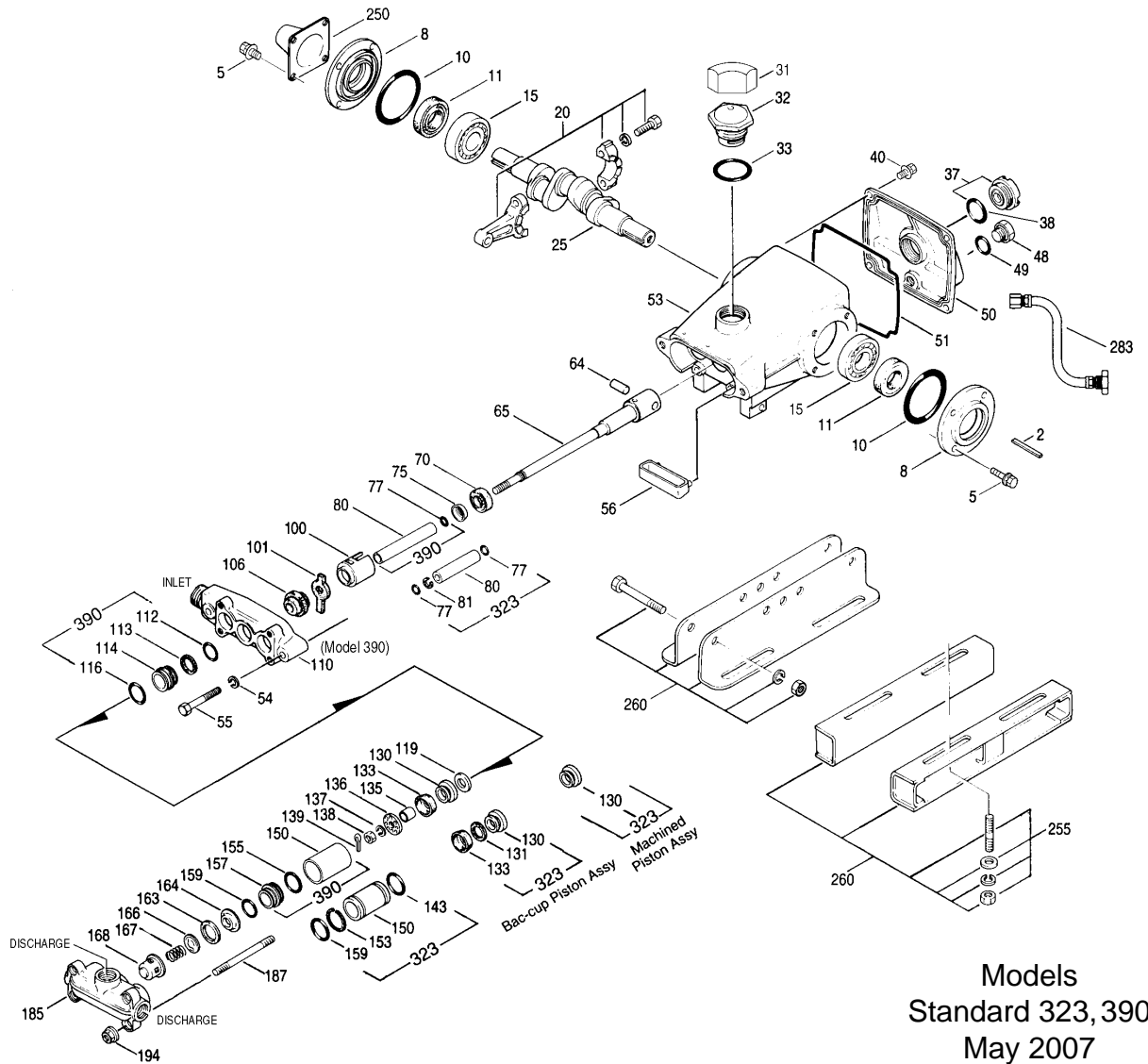
*"Customer confidence is our greatest asset"*

# PARTS LIST

| ITEM | PART NUMBER |             |            |             | DESCRIPTION  | QTY |
|------|-------------|-------------|------------|-------------|--|-----|
|      | <b>323</b>  | <b>MATL</b> | <b>390</b> | <b>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                                     | 2   |
| 10   | 43343       | NBR         | 43343      | NBR         | O-Ring, Bearing Cover - 70D                        | 2   |
| 11   | 43222       | NBR         | 43222      | NBR         | Seal, Oil - 70D                                    | 2   |
| 15   | 14480       | STL         | 14480      | STL         | Bearing, Ball                                      | 2   |
| 20   | 45883       | HS          | 45883      | HS          | Rod, Connecting                                    | 3   |
| 25   | 43342       | FCM         | 43342      | FCM         | Crankshaft   | 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, Oil Filler Cap - 70D                       | 1   |
| 37   | 92241       | —           | 92241      | —           | Gauge, Bubble Oil w/Gasket                         | 1   |
| 38   | 44428       | NBR         | 44428      | NBR         | Gasket, Flat Flex, 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 [10/01]                                  | 1   |
| 54   | 12503       | STZP        | 12503      | STZP        | Lockwasher (M10)                                   | 2   |
|      | 126231      | STCP R      | 126231     | STCP R      | Lockwasher (M10)                                   | 2   |
| 55   | 80288       | STZP        | 87936      | STZP        | Screw, (HH-M10x30) (HSH-M10x50)                    | 2   |
|      | 126531      | STCP R      | 126516     | STCP R      | Screw, (HH-M10x30) (HSH-M10x50)                    | 2   |
| 56   | 43355       | POP         | 43355      | POP         | Pan, Oil   | 1   |
| 64   | 43351       | CM          | 43351      | CM          | Pin, Crosshead                                     | 3   |
| 65   | 43775       | SZZ         | 44312      | SZZ         | Rod, Piston  | 3   |
| 70   | 43527       | NBR         | 43527      | NBR         | Seal, Oil  | 3   |
| 75   | 25327       | S           | 25327      | S           | Slinger, Barrier                                   | 3   |
| 77   | 25392       | NBR         | 25392      | NBR         | O-Ring, Sleeve- 70D                                | 6/3 |
|      | 28771       | FPM         | 28771      | FPM         | O-Ring, Sleeve                                     | 6/3 |
| 80   | 25299       | SCP         | 44311      | SCP         | Sleeve   | 3   |
|      | 28460       | S           | 44625      | S           | Sleeve   | 3   |
| 81   | 29003       | PTFE        | —          | —           | Back-up-Ring, Sleeve                               | 3/0 |
| 100  | 43530       | PVDF        | 43530      | PVDF        | Retainer, Seal                                     | 3   |
| 101  | 43532       | —           | 43532      | —           | Wick, Long Tab                                     | 3   |
| 106  | 25153       | NBR         | —          | —           | Seal, LPS, Blue Dot                                | 3   |
|      | —           | —           | 100015     | FPM         | Seal, LPS, Ungreased                               | 3   |
|      | 30315       | NBR         | 30315      | NBR         | Seal, LPS, Prrrrm-A-Lube                           | 3   |
|      | 30325       | FPM         | 30325      | FPM         | Seal, LPS, Prrrrm-A-Lube                           | 3   |
| 110  | 43767       | BBCP        | 44286      | BBCP        | Manifold, Inlet (323 Bottom Port) (390 Sideport)   | 1   |
| 112  | —           | —           | 43781      | NBR         | O-Ring, Inlet Adapter, Inner - 75D                 | 3   |
|      | —           | —           | 11337      | FPM         | O-Ring, Inlet Adapter, Inner - 75D                 | 3   |
| 113  | —           | —           | 11261      | FBR         | Spacer, Cylinder (Center Only)                     | 0/1 |
| 114  | —           | —           | 44287      | BB          | Adapter, Inlet                                     | 0/3 |
| 116  | —           | —           | 27536      | NBR         | O-Ring, Inlet Adapter, Outer - 70D                 | 0/6 |
|      | —           | —           | 43174      | FPM         | O-Ring, Inlet Adapter, Outer - 70D                 | 0/6 |
| 119  | 43533       | S           | 27944      | S           | Valve, Inlet                                       | 3   |
| 130  | —           | —           | 27945      | S           | Piston   | 0/3 |
|      | 103741      | NBR         | —          | —           | Cup-Piston, Machined                               | 3/0 |
|      | 43787       | S           | —          | —           | Piston, Bac-Cup                                    | 3/0 |
| 131  | 43788       | PTFE        | —          | —           | Ring, Bac-Cup                                      | 3/0 |
| 133  | 43792       | NBR         | —          | —           | Bac-Cup  | 3/0 |
|      | 43789       | FPM         | —          | —           | Bac-Cup  | 3/0 |
|      | —           | —           | 27946      | FPM         | Cup  | 0/3 |
|      | —           | —           | 29093      | SNG         | Cup-Piston, V-Hot                                  | 0/3 |
| 135  | 27983       | S           | 27796      | S           | Spacer, Piston                                     | 3   |
| 136  | 29588       | S           | 27947      | S           | Retainer, Piston                                   | 3   |
| 137  | 27006       | S           | 15850      | S           | Washer   | 3   |
| 138  | 27000       | S           | 26546      | S           | Nut, Slotted                                       | 3   |
| 139  | 14158       | S           | 14158      | S           | Cotterpin  | 3   |
| 143  | 43781       | NBR         | —          | —           | O-Ring, Cylinder - 75D                             | 3   |
|      | 11337       | FPM         | —          | —           | O-Ring, Cylinder - 75D                             | 3   |
| 150  | 43768       | SCP         | 44288      | SCP         | Cylinder   | 3   |
|      | 43835       | S           | 44627      | S           | Cylinder   | 3   |
| 153  | 21986       | PTFE        | —          | —           | Back-up-Ring, Cylinder                             | 3   |
| 155  | —           | —           | 27536      | NBR         | O-Ring, Adapter, Inner - 70D                       | 3   |
| 157  | —           | —           | 44310      | BB          | Adapter, Discharge                                 | 0/3 |
| 159  | 43781       | NBR         | 43781      | NBR         | O-Ring, Adapter (390), Cylinder (323) - 75D        | 3   |
|      | 11337       | FPM         | 11337      | FPM         | O-Ring, Adapter (390), Cylinder (323) - 75D        | 3   |
| 163  | 43793       | NBR         | 43793      | NBR         | O-Ring, Seat - 90D                                 | 3   |
|      | 43791       | FPM         | 43791      | FPM         | O-Ring, Seat - 90D                                 | 3   |
| 164  | 43779       | S           | 103956     | S           | Seat   | 3   |
| 166  | 43721       | S           | 104302     | S           | Valve  | 3   |
| 167  | 43251       | S           | 43251      | S           | Spring   | 3   |
| 168  | 43780       | S           | 103957     | S           | Retainer, Spring                                   | 3   |
| 185  | 43770       | BBCP        | 43770      | BBCP        | Manifold, Discharge                                | 1   |
| 187  | 85661       | STZP        | 85191      | STZP        | Stud, Discharge Manifold (323 M8x100) (390 M8x110) | 4   |
|      | 126782      | STCP R      | 126551     | STCP R      | Stud, Discharge Manifold (323 M8x100) (390 M8x110) | 4   |

Replace as a set

# EXPLODED VIEW

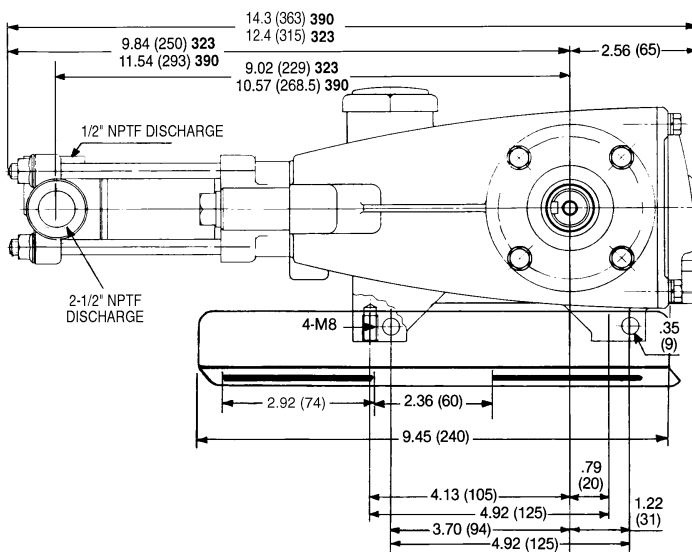
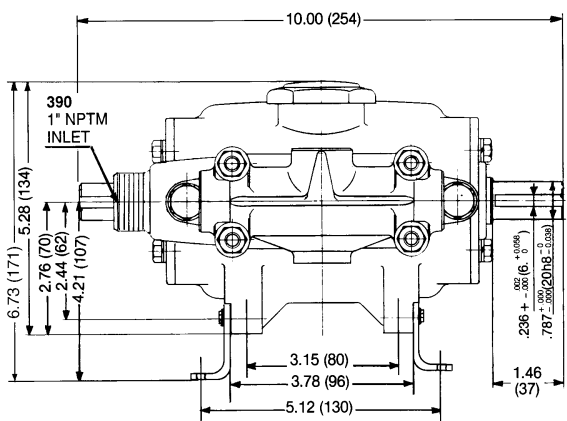


Models  
Standard 323, 390  
May 2007

|     | <b>323</b>   | <b>MATL</b> | <b>390</b>   | <b>MATL</b> |   |     |
|-----|--------------|-------------|--------------|-------------|---|-----|
| 194 | 101804       | STZP        | 101804       | STZP        | Nut, Hex Flange   | 4   |
|     | 126201       | STCP R      | 126201       | STCP R      | Nut, Hex Flange   | 4   |
| 250 | 118672       | STCP        | 118672       | STCP        | Protector, Shaft  | 1   |
| 255 | 30243        | STZP        | 30243        | STZP        | Kit, Direct Mount   | 1   |
|     | 30633        | STL         | 30633        | STL         | Assembly, Pulley (Incls: 30058, 30057)  | 1   |
| 260 | 30611        | STZP        | 30611        | STZP        | Assembly, Angle Rail  | 1   |
|     | 30241        | STZP        | 30241        | STZP        | Assembly, Box Rail (Incls: 23950, 30243)  | 1   |
| 265 | 30659        | —           | 30659        | —           | Kit, Mounting (Incls: 30611, 30633, 118672)   | 1   |
| 275 | 30944        | STL         | 30944        | STL         | Assembly, Hub & Key (Incls: 30945, 30057)   | 1   |
| 283 | 34334        | —           | 34334        | —           | Kit, Oil Drain  | 1   |
| 300 | <b>30993</b> | <b>NBR</b>  | <b>31822</b> | <b>FPM</b>  | Kit, Cup, Standard ( <b>323</b> Incls: 130, 139, 143) ( <b>390</b> Incls: 116, 133, 139, 143, 355)                | 1   |
| 301 | <b>30858</b> | <b>NBR</b>  | —            | —           | Kit, Bac-Cup <b>323</b> (Incls: 133, 139, 143, 355)   | 1/0 |
| 302 | <b>30992</b> | <b>NBR</b>  | —            | —           | Kit, Piston, Standard ( <b>323</b> Incls: 119, 130, 135, 136, 137, 138, 139, 143, 153)                            | 1/0 |
|     | —            | —           | <b>31823</b> | <b>NBR</b>  | Kit, Piston, Standard ( <b>390</b> Incls: 116, 119, 130, 133, 135, 136, 137, 138, 139, 155, 355)                  | 0/1 |
|     | <b>30857</b> | <b>NBR</b>  | —            | —           | Kit, Bac-Cup Piston (Incls: 119, 130, 131, 133, 135, 136, 137, 138, 139, 143, 153)                                | 1/0 |
| 306 | <b>30305</b> | <b>NBR</b>  | —            | —           | Kit, Prrrrm-A-Lube Seal (Incls: 106, 139)   | 1/0 |
|     | <b>34011</b> | <b>NBR</b>  | —            | —           | Kit, Seal, Blue Dot (Incls: 101, 106, 139)  | 1/0 |
|     | —            | —           | <b>31825</b> | <b>FPM</b>  | Kit, Seal, LPS, Ungreased (Incls: 101, 106, 139)  | 0/1 |
|     | <b>30312</b> | <b>NBR</b>  | —            | —           | Kit, Sleeve and Seal, Prrrrm-A-Lube (Incls: 75, 77, 80, 106, 139)   | 1/0 |
|     | —            | —           | <b>31824</b> | <b>NBR</b>  | Kit, Sleeve and Seal, Ungreased (Incls: 75, 77, 80, 101, 106, 139)  | 0/1 |
| 310 | <b>30859</b> | <b>NBR</b>  | —            | —           | Kit, Valve, Q.V. Std for <b>323</b> (Incls: 163, 164, 166, 167, 168)  | 1/0 |
| 310 | —            | —           | —            | —           | Kit, Valve, F.V. Std for <b>390</b> (Incls: 155, 159, 163, 164, 166, 167, 168)                                    | 0/1 |
| 355 | <b>43548</b> | <b>NY</b>   | <b>27964</b> | <b>NY</b>   | Cup Inserter  | 1   |
| —   | 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 024, 034, 036, 037, 038, 039, 064, 074, 083 and 090 for additional information.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CM=Chrome-Moly FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon HS=High Strength NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SCP=304SS/Chrome Plated SNG=Special Blend (Buna) STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak



Models 323, 390



- 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 The **piston rods** are high tensile strength 304 stainless steel with Zamak crossheads.
- 6 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 The **patented stepped piston rod** with hard chrome-plated **stainless steel sleeve** provides a durable wear surface and easy wet end servicing.
- 8 The **cylinder** and **sleeve** wear surfaces are hard chrome-plated 304 stainless steel for longer service life.
- 9 **Manifolds** are a high tensile strength chrome-plated brass for long-term continuous duty.
- 10 100% wet **cup/seal** design adds to service life by allowing pumped liquids to cool and lubricate the elastomers on both sides.
- 11 304 stainless steel **valves, seats, and springs** provide corrosion-resistance, ultimate seating and extended life.
- 12 **Crossheads** are 360° supported for uncompromising alignment.
- 13 Mechanically actuated **inlet valves** provide strong lift and easy prime.

**World Headquarters**

CAT PUMPS

1681 - 94th Lane N.E. Minneapolis, MN 55449-4324

Phone (763) 780-5440 — FAX (763) 780-2958

e-mail: techsupport@catpumps.com

www.catpumps.com

**International Inquiries**

FAX (763) 785-4329

e-mail: intlsales@catpumps.com



The Pumps with Nine Lives

**CAT PUMPS (U.K.) LTD.**

1 Fleet Business Park, Sandy Lane, Church Crookham

FLEET, Hampshire, GU52 8BF, England

Phone Fleet 44 1252-622031 — Fax 44 1252-626655

e-mail: sales@catpumps.co.uk

**N.V. CAT PUMPS INTERNATIONAL S.A.**

Heiveldkens 6A, B-2550 Kontich, Belgium

Phone 32-3-450.71.50 — Fax 32-3-450.71.51

e-mail: cpi@catpumps.be www.catpumps.be

**CAT PUMPS DEUTSCHLAND GmbH**

Buchwiese 2, D-65510 Idstein, Germany

Phone 49 6126-9303 0 — Fax 49 6126-9303 33

e-mail: catpumps@t-online.de www.catpumps.de