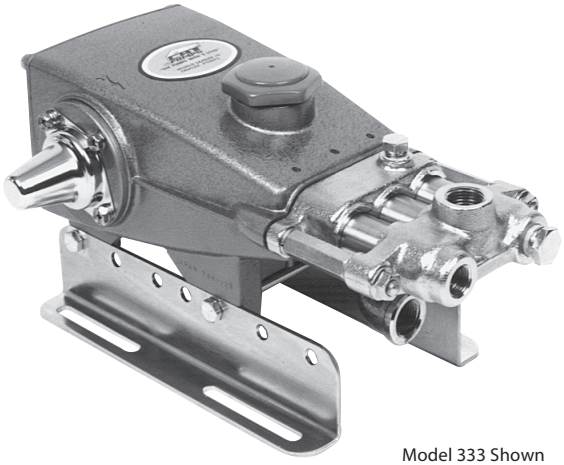


Model 333 Shown
(Rails and shaft Protector sold seperately)

# 4 Frame Piston Pump

***Standard Brass Models*** **333, 430**

***Stainless Steel Models*** **331, 431**

***Pulse Pump Models*** **335, 435**

## FEATURES

- Triplex Uniflow design provides a smooth, low-pulsation flow with strong suction capabilities.
- Hard chrome-plated 304S cylinders and sleeves provide long life with mild liquids within a range of 5-9 PH.
- Optional 316 Stainless Steel manifolds for added strenght and corrosion resistance.
- Optional FPM and PTFE elastomers for liquid compatibility.

## COMMON SPECIFICATIONS

| | | |
|---|---|---|
| Stroke | 0.768″ | (19.5 mm) |
| Crankcase Capacity | 21 oz. | (0.6 l) |
| Maximum Liquid Temperature | 160° | (71°C) |
| Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations. | | |
| Inlet Pressure Range | –8.5 to +40 psi | (–0.6 to +2.8 bar) |
| Inlet Ports (1) | 1/2″ NPTF | (1/2″ NPTF) |
| Auxiliary Port (1) | 1/4″ NPTF | (1/4″ NPTF) |
| Discharge Ports (2) | 3/8″ NPTF | (3/8″ NPTF) |
| (1) | 1/2″ NPTF | (1/2″ NPTF) |
| Pulley Mounting | Either Side | (Either Side) |
| Shaft Diameter | 0.650″ | (16.5 mm) |
| Weight | 17.7 lbs. | (8.0 kg) |
| Dimensions | 12.56 x 8.80 x 5.33″ | (319 x 223 x 135.5mm) |

### ⚠ 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 or can be requested directly from CAT PUMPS.

### WARRANTY

View the Limited Warranty on-line at www.catpumps.com/warranty.

## SPECIFICATIONS

| | U.S. Measure | Metric Measure |
|---|---|---|
| **MODEL 333, 331, 335** | | |
| Flow | 4.0 gpm | (15 lpm) |
| Pressure Range | 100 to 1200 psi | (7 to 85 bar) |
| RPM | 1070 rpm | (1070 rpm) |
| Bore | 0.709″ | (18 mm) |
| **MODEL 430, 431, 435** | | |
| Flow | 5.0 gpm | (19 lpm) |
| Pressure Range | 100 to 1000 psi | (7 to 70 bar) |
| RPM | 1040 rpm | (1040 rpm) |
| Bore | 0.787″ | (20 mm) |

## ELECTRIC HORSEPOWER REQUIREMENTS

| MODEL | FLOW | | PRESSURE | | | MOTOR PULLEY SIZE | |
|---|---|---|---|---|---|---|---|
| | | | psi 800 | psi 1000 | psi 1200 | Using 1725 rpm Motor & Std. 8″ Pump Pulley O.D. | |
| | U.S. gpm | lpm | bar 55 | bar 70 | bar 85 | rpm | Pulley O.D. |
| 333,331,335 | 4.0 | 15 | 2.2 | 2.7 | 3.3 | 1070 | 5.0 |
| | 3.0 | 11.4 | 1.6 | 2.1 | 2.5 | 803 | 3.8 |
| | 2.0 | 7.6 | 1.1 | 1.4 | 1.6 | 535 | 2.5 |
| 430,431,435 | 5.0 | 19 | 2.7 | 3.4 | N/A | 1040 | 5.1 |
| | 4.0 | 15 | 2.2 | 2.7 | N/A | 832 | 4.1 |
| | 3.0 | 11.4 | 1.6 | 2.1 | N/A | 624 | 3.1 |

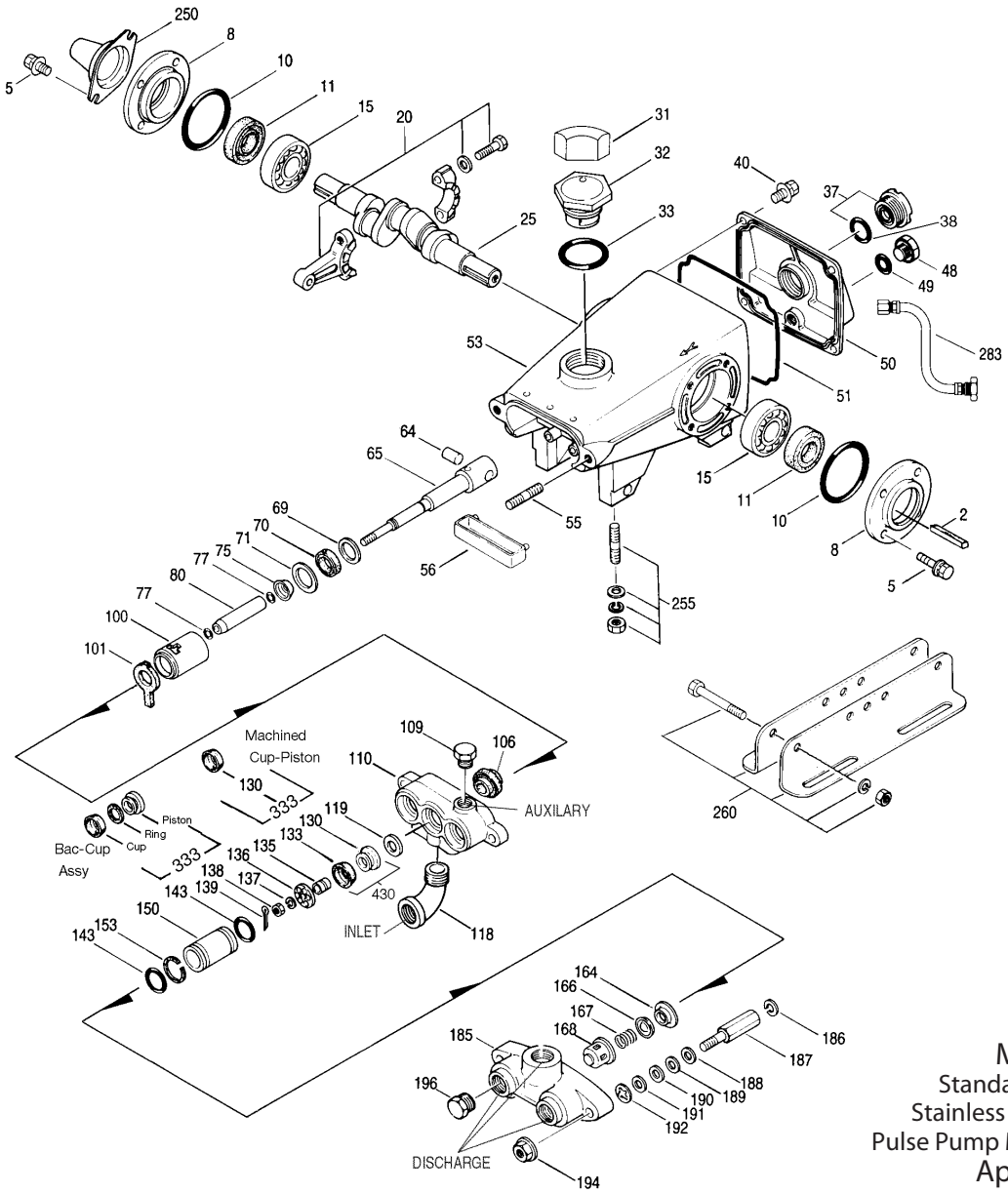
| | | | |
|---|---|---|---|
| **DETERMINING THE PUMP R.P.M.** | Rated gpm / Rated rpm | = | "Desired" gpm / "Desired" rpm |
| **DETERMINING THE REQUIRED H.P.** | gpm x psi / 1460 | = | Electric Brake H. P. Required |
| **DETERMINING MOTOR PULLEY SIZE** | Motor Pulley O.D. / Pump rpm | = | Pump Pulley O.D. / Motor rpm |

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

# PARTS LIST

| ITEM | PART NUMBER 333 / 331 / 335 | MATL | PART NUMBER 430 / 431 / 435 | MATL | DESCRIPTION | QTY |
|---|---|---|---|---|---|---|
| *2* | *30047* | *STL* | *30047* | *STL* | *Key (M5x5x24)* | *1* |
| 5 | 92519 | STZP | 92519 | STZP | Screw, HHC, Sems (M6x16) | 8 |
| | *125824* | *STCP R* | *125824* | *STCP R* | *Screw, HHC, Sems (M6x16)* | *8* |
| 8 | 27950 | AL | 27950 | AL | Cover, Bearing | 2 |
| 10 | 26536 | NBR | 26536 | NBR | O-Ring, Bearing Cover - 70D | 2 |
| 11 | 24159 | NBR | 24159 | NBR | Seal, Oil | 2 |
| 15 | 14487 | STL R | 14487 | STL R | Bearing, Ball | 2 |
| 20 | 48734 | TNM | 48734 | TNM | Rod, Connecting [3/02] | 3 |
| 25 | 43163 | FCM | 43163 | FCM | Crankshaft, Dual End, Tapped (M8x1.25) | 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, Oil Bubble w/Gasket - 80D | 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 [10/04] | 1 |
| 51 | 48773 | NBR | 48773 | NBR | O-Ring, Rear Cover [10/04] | 1 |
| 53 | 76953 | AL | 76953 | AL | Crankcase [10/04] | 1 |
| *55* | *126546* | *STCP R* | *126546* | *STCP R* | *Stud (M8x41.4)* | *2* |
| 56 | 27712 | POP | 27712 | POP | Pan, Oil (use with Blue-Dot Seals and Wick) | 1 |
| 64 | 16948 | CM | 16948 | CM | Pin, Crosshead | 3 |
| 65 | 27981 | SZZ | 27981 | SZZ | Rod, Piston, Stepped | 3 |
| 69 | 126259 | STCP R | 126259 | STCP R | Washer, Oil Seal | 3 |
| 70 | 25301 | NBR | 25301 | NBR | Seal, Oil, Crankcase - 80D | 3 |
| 71 | 126189 | STCP R | 126189 | STCP R | Washer, Oil Seal | 3 |
| 75 | 25327 | S | 25327 | S | Slinger, Barrier | 3 |
| 77 | 25392 | NBR | 25392 | NBR | O-Ring, Sleeve - 70D | 6 |
| | *28771* | *FPM* | *28771* | *FPM* | *O-Ring, Sleeve* | *6* |
| | *28772* | *PTFE* | *28772* | *PTFE* | *O-Ring, Sleeve* | *6* |
| 80 | 25299 | SCP | 25299 | SCP | Sleeve | 3 |
| | *28460* | *S* | *28460* | *S* | *Sleeve* | *3* |
| 100 | 27710 | PVDF | 27710 | PVDF | Retainer, Seal | 3 |
| 101 | 27711 | — | 27711 | — | Wick, Long Tab (use with Blue-Dot Seals and Oil Pan) | 3 |
| 106 | 30315 | NBR | 30315 | NBR | Seal, LPS, Prrrrrm-A-Lube - 80D | 3 |
| | *30325* | *FPM* | *30325* | *FPM* | *Seal, LPS, Prrrrrm-A-Lube* | *3* |
| | *25153* | *NBR* | *25153* | *NBR* | *Seal, LPS, Blue-Dot (use with Wick and Oil Pan)* | *3* |
| 109 | 22177 | BBCP | 22177 | BBCP | Plug (1/4" NPT) | 1 |
| 110 | 25128 | BBCP | 25128 | BBCP | Manifold, Inlet | 1 |
| | *25635* | *SS* | *25635* | *SS* | *Manifold, Inlet (331, 431)* | *1* |
| 118 | 22160 | BBCP | 22160 | BBCP | Elbow, Street (1/2" NPTM) | 1 |
| 119 | **28339** | **S** | **27004** | **S** | Valve, Inlet | 3 |
| 130 | — | — | **22021** | **S** | Piston | 3 |
| 133 | — | — | **43172** | **FPM** | Cup, Piston | 3 |
| 133 | **28955** | **NBR** | — | — | Cup-Piston, Machined w/304S | 3 |
| *133* | ***43826*** | ***FPM*** | — | — | *Assy, Bac-Cup (Incld: 43784, 43719,43717)* | *3* |
| *133* | ***29088*** | ***SNG*** | ***29089*** | ***SNG*** | *Cup-Piston, V-Hot* | *3* |
| *133* | ***34019*** | ***TG*** | ***30145*** | ***TG*** | *Cup-Piston, w/O-Ring (1000 PSI Max)* | *3* |
| 135 | 27983 | S | 27983 | S | Spacer, Piston | 3 |
| 136 | 27002 | S | 27002 | S | Retainer, Piston | 3 |
| 137 | 27006 | S | 27006 | S | Washer, Conical (M6) | 3 |
| 138 | 27000 | S | 27000 | S | Nut, Slotted (M6) | 3 |
| 139 | 14158 | S | 14158 | S | Cotterpin (M1.6x10) | 3 |
| 143 | 23172 | NBR | 23172 | NBR | O-Ring, Cylinder - 70D | 6 |
| | *11377* | *FPM* | *11377* | *FPM* | *O-Ring, Cylinder - 80D* | *6* |
| | *26961* | *PTFE* | *26961* | *PTFE* | *O-Ring, Cylinder* | *6* |
| 150 | **25660** | **SCP** | **24285** | **SCP** | Cylinder | 3 |
| | — | | ***29044*** | ***S*** | *Cylinder* | *3* |
| 153 | **21985** | **PTFE** | — | | Back-up-Ring, Cylinder | 3 |
| 164 | 43434 | S | 43434 | S | Seat, Quiet Valve | 3 |
| | *29487* | *S* | *29487* | *S* | *Seat, Flat Valve* | *3* |
| 166 | 43723 | S | 43723 | S | Valve, Quiet Valve | 3 |
| | *22842* | *S* | *22842* | *S* | *Valve, Flat Valve* | *3* |
| 167 | 43360 | S | 43360 | S | Spring, Quiet Valve | 3 |
| | *22031* | *S* | *22031* | *S* | *Spring, Flat Valve* | *3* |
| 168 | 43442 | S | 43442 | S | Retainer, Spring, Quiet Valve | 3 |
| | *22841* | *S* | *22841* | *S* | *Retainer, Spring, Flat Valve* | *3* |
| 185 | 24459 | BBCP | 24459 | BBCP | Manifold, Discharge | 1 |
| | *25634* | *SS* | *25634* | *SS* | *Manifold, Discharge (331, 431)* | *1* |
| | *6400* | *BB* | *6400* | *BB* | *Manifold, Pulse Pump (335, 435)* | *1* |
| | *6300* | *BBSS* | *6300* | *BBSS* | *Pump, Pulse (335, 435)* | *1* |
| 186 | 126232 | STCP R | 126232 | STCP R | Lockwasher (M8) | 2 |
| 187 | 126564 | STCP R | 126564 | STCP R | Bolt, Cylinder (M8) | 2 |
| 188 | 126591 | STCP R | 126591 | STCP R | Washer, Shim (M13x8x2) | 2/4 |
| 189 | 126813 | STCP R | 126813 | STCP R | Washer, Shim (M13x8x1)) | 2/4 |
| 190 | 126576 | STCP R | 126576 | STCP R | Washer, Shim (M13x8x.5) | 2/4 |
| 191 | 126590 | STCP R | 126590 | STCP R | Washer, Shim (M13x8x.3) | 2/4 |
| 192 | 26676 | S | 26676 | S | Lockwasher (M8) | 2 |
| 194 | 126201 | STCP R | 126201 | STCP R | Nut, Hex Flange (M8) | 2 |
| 196 | 22187 | BBCP | 22187 | BBCP | Plug (3/8" NPT) | 1 |
| *250* | *25130* | *STCP* | *25130* | *STCP* | *Protector, Shaft* | *1* |
| *255* | *30243* | *STZP* | *30243* | *STZP* | *Kit, Direct Mount* | *1* |

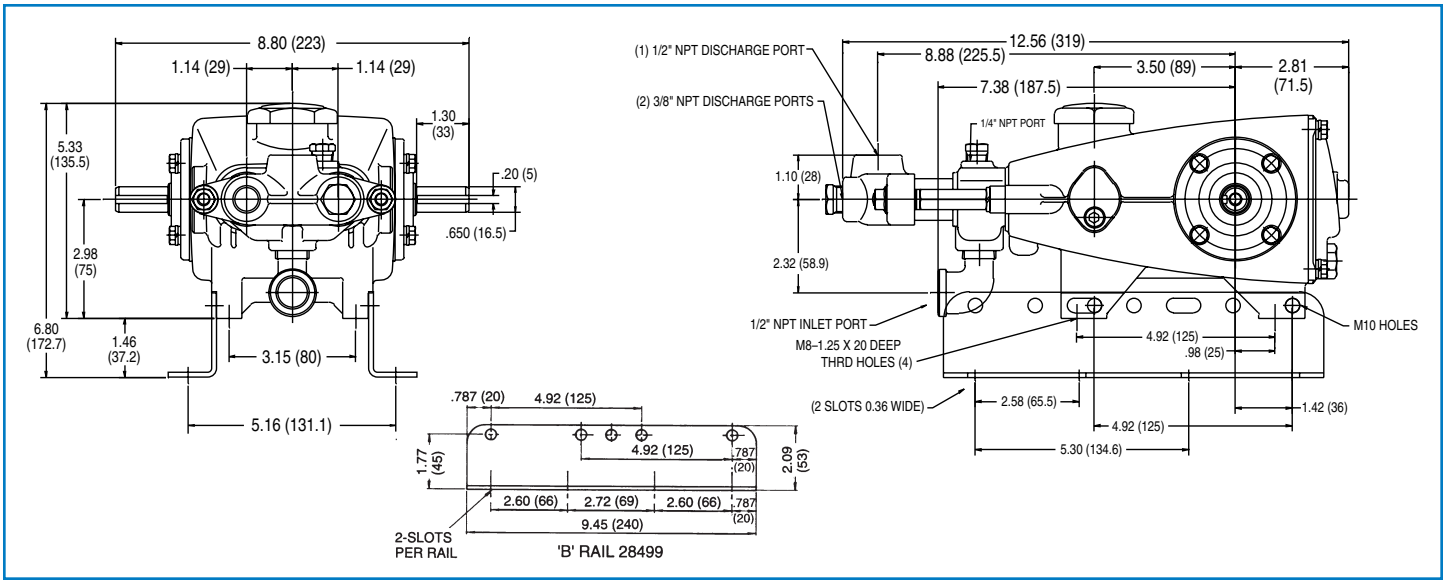
# EXPLODED VIEW



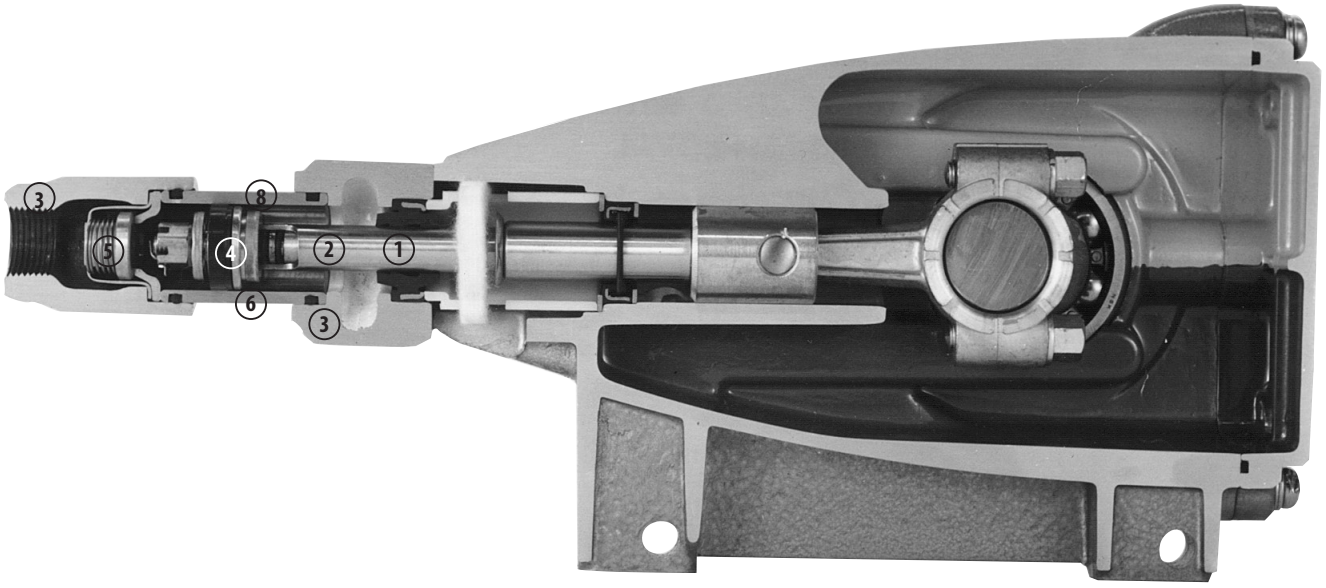

Models
Standard - 333, 430
Stainless Steel - 331, 431
Pulse Pump Manifold - 335, 435
April 2011

| | 333<br>331<br>335 | MATL | 430<br>431<br>435 | MATL | | |
|---|---|---|---|---|---|---|
| *260* | *30611* | *STZP* | *30611* | *STZP* | *Assy, Rail Mount* | *1* |
| *265* | *30652* | *—* | *30652* | *—* | *Assy, Mount (Incld: 30611, 30048, 30047, 25130)* | *1* |
| *270* | *30244* | *STL* | *30244* | *STL* | *Assy, Pulley (Incld: 30048, 30047)* | *1* |
| *283* | *34334* | *—* | *34334* | *—* | *Kit, Oil Drain* | *1* |
| *300* | ***30239*** | ***NBR*** | *—* | *—* | *Kit, Mach Cup (Incld: 133,139,143,153)* | *1* |
| | *—* | *—* | ***30023*** | ***FPM*** | *Kit, Cup (Incld: 133,139,143)* | *1* |
| *301* | ***30841*** | ***FPM*** | *—* | *—* | *Kit, Bac-Cup (Incld: 133,139,143,153)* | *1* |
| *302* | ***30240*** | ***NBR*** | *—* | *—* | *Kit, Piston (Incld: 119,133,135-139,143,153)* | *1* |
| | *—* | *—* | ***30210*** | ***NBR*** | *Kit, Piston (Incld: 119,130,133,135-139,143)* | *1* |
| | ***30842*** | ***NBR*** | *—* | *—* | *Kit, Bac-Cup Piston (Incld: 119,133,135-139,143,153)* | *1* |
| *304* | *—* | *—* | ***30272*** | ***NBR*** | *Kit, Hot Cup (Incld: 133, 139, 143)* | *1* |
| *305* | *30312* | *NBR* | *30312* | *NBR* | *Kit, Sleeve & Prrrrrm-A-Lube Seal (Incld: 75,77,80,106,139)* | *1* |
| | *30230* | *NBR* | *30230* | *NBR* | *Kit, Sleeve & Blue-Dot Seal (Incld: 75,77,80,101,106,139)* | *1* |
| *306* | *30305* | *NBR* | *30305* | *NBR* | *Kit, Prrrrrm-A-Lube Seal (Incld: 106,139)* | *1* |
| | *30229* | *NBR* | *30229* | *NBR* | *Kit, Blue-Dot Seal (Incld: 101,106,139)* | *1* |
| *310* | *30686* | *NBR* | *30686* | *NBR* | *Kit, Valve - Quiet Valve (Incld: 143,164,166,167,168)* | *1* |
| | *30024* | *NBR* | *30024* | *NBR* | *Kit, Valve - Flat Valve (Incld: 143,164,166,167,168)* | *1* |
| *—* | *6107* | *—* | *6107* | *—* | *Oil, Bottle (21 oz.) ISO 68 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.
View Tech Bulletins 002, 016, 017, 020, 024, 025, 026, 030, 034, 036, 037, 038, 043, 074, 077, 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 FCM=Forged Chrome-moly FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SCP=304SS/Chrome Plated SS=316SS SNG=Special Blend (Buna) STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak TG=PTFE Graphite Compound (GIT) TNM=Special High Strength




Models 333, 331, 430, 431




1 The **patented stepped piston rod** with hard chrome-plated stainless steel sleeve provides a durable wear surface and easy wet-end servicing.

2 The **cylinder** and **sleeve** wear surfaces are hard chrome-plated 304 stainless steel for longer service life.

3 **Manifolds** are of high tensile strength chrome-plated brass or 316 stainless steel for special corrosion resistance.

4 100% wet **cup/seal** design adds to service life by allowing pumped liquids to cool and lubricate the elastomers on both sides.

5 304 stainless steel **valves, seats, and springs** provide corrosion-resistance, ultimate seating and extended life.

6 Mechanically actuated **inlet valves** provide strong lift and easy prime.


The Pumps with Nine Lives

**CAT PUMPS**
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For International Inquiries go to www.catpumps.com and navigate to the "Contact Us" link.

PN 993140 Rev D 4/11 31126