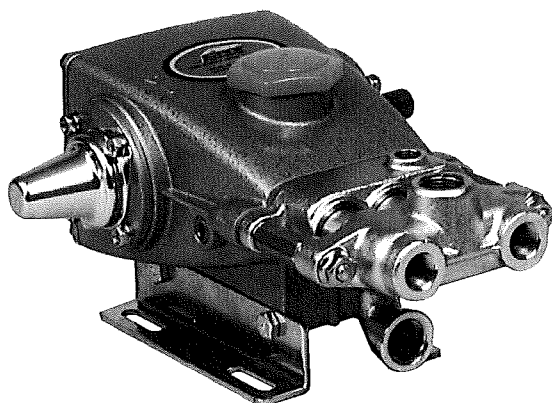




(Ralls and Shaft Protector sold separately)

## 3 Frame Piston Pump Brass Models

## Stainless Steel Models

**280**  
**290**  
**281**  
**291**

### 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 strength and corrosion resistance.
- Optional FPM and PTFE elastomers for liquid compatibility.

### COMMON SPECIFICATIONS

|                                                                                |                      |                        |
|--------------------------------------------------------------------------------|----------------------|------------------------|
| Inlet Pressure Range .....                                                     | -8.5 to 40 psi       | (-0.6 to + 2.8 bar)    |
| Bore .....                                                                     | 0.787"               | (20 mm)                |
| Crankcase Capacity .....                                                       | 10 oz.               | (.3 l)                 |
| Maximum Liquid Temperature .....                                               | 160°F                | (71°C)                 |
| Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations. |                      |                        |
| Inlet Port (1) .....                                                           | 1/2" NPTF            | (1/2" NPTF)            |
| Chemical Injection Port (1) .....                                              | 1/4" NPTF            | (1/4" NPTF)            |
| Discharge Ports (2) .....                                                      | 3/8" NPTF            | (3/8" NPTF)            |
| Discharge Port (1) .....                                                       | 1/2" NPTF            | (1/2" NPTF)            |
| Pulley Mounting .....                                                          | Either side          | (Either side)          |
| Shaft Diameters .....                                                          | 0.650"               | (16.5 mm)              |
| Dimensions (280) .....                                                         | 10.63 x 8.79 x 5.30" | (270 x 223 x 134.5 mm) |
| Dimensions (290) .....                                                         | 10.83 x 8.79 x 5.30" | (275 x 223 x 134.5 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 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).

### SPECIFICATIONS

U.S. Measure

Metric Measure

#### MODEL 280 and 281

|                      |                 |               |
|----------------------|-----------------|---------------|
| Flow .....           | 3.0 gpm         | (11.4 l/m)    |
| Pressure Range ..... | 100 to 1000 psi | (7 to 70 bar) |
| RPM .....            | 1330 rpm        | (1330 rpm)    |
| Stroke .....         | 0.394"          | (10 mm)       |
| Weight .....         | 11.7 lbs.       | (5.3 kg)      |

#### MODEL 290 and 291

|                      |                 |               |
|----------------------|-----------------|---------------|
| Flow .....           | 3.5 gpm         | (13.2 l/m)    |
| Pressure Range ..... | 100 to 1200 psi | (7 to 85 bar) |
| RPM .....            | 1200 rpm        | (1200 rpm)    |
| Stroke .....         | 0.472"          | (12 mm)       |
| Weight .....         | 12.1 lbs.       | (5.5 kg)      |

### ELECTRIC HORSEPOWER REQUIREMENTS

| MODEL | FLOW        |      | PRESSURE   |             |             | MOTOR PULLEY SIZE                                    |                |
|-------|-------------|------|------------|-------------|-------------|------------------------------------------------------|----------------|
|       |             |      | psi<br>800 | psi<br>1000 | psi<br>1200 | Using 1725 Nom. RPM Motor<br>& 5.0" Pump Pulley O.D. |                |
|       | U.S.<br>gpm | l/m  | bar<br>55  | bar<br>70   | bar<br>85   | rpm                                                  | Pulley<br>O.D. |
| 280   | 3.0         | 11.4 | 1.6        | 2.1         | N/A         | 1330                                                 | 3.9            |
|       | 2.5         | 9.5  | 1.4        | 1.7         | N/A         | 1108                                                 | 3.2            |
|       | 2.0         | 7.6  | 1.1        | 1.4         | N/A         | 887                                                  | 2.8            |
| 290   | 3.5         | 13.2 | 1.9        | 2.4         | 2.9         | 1200                                                 | 3.5            |
|       | 3.0         | 11.4 | 1.6        | 2.1         | 2.5         | 1029                                                 | 3.0            |
|       | 2.5         | 9.5  | 1.4        | 1.7         | 2.1         | 858                                                  | 2.5            |

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

$$\frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{"Desired" gpm}}{\text{"Desired" rpm}}$$

**DETERMINING  
THE REQUIRED H.P.**

$$\frac{\text{gpm} \times \text{psi}}{1460} = \text{Electric Brake H. P. Required}$$

**DETERMINING  
MOTOR PULLEY SIZE**

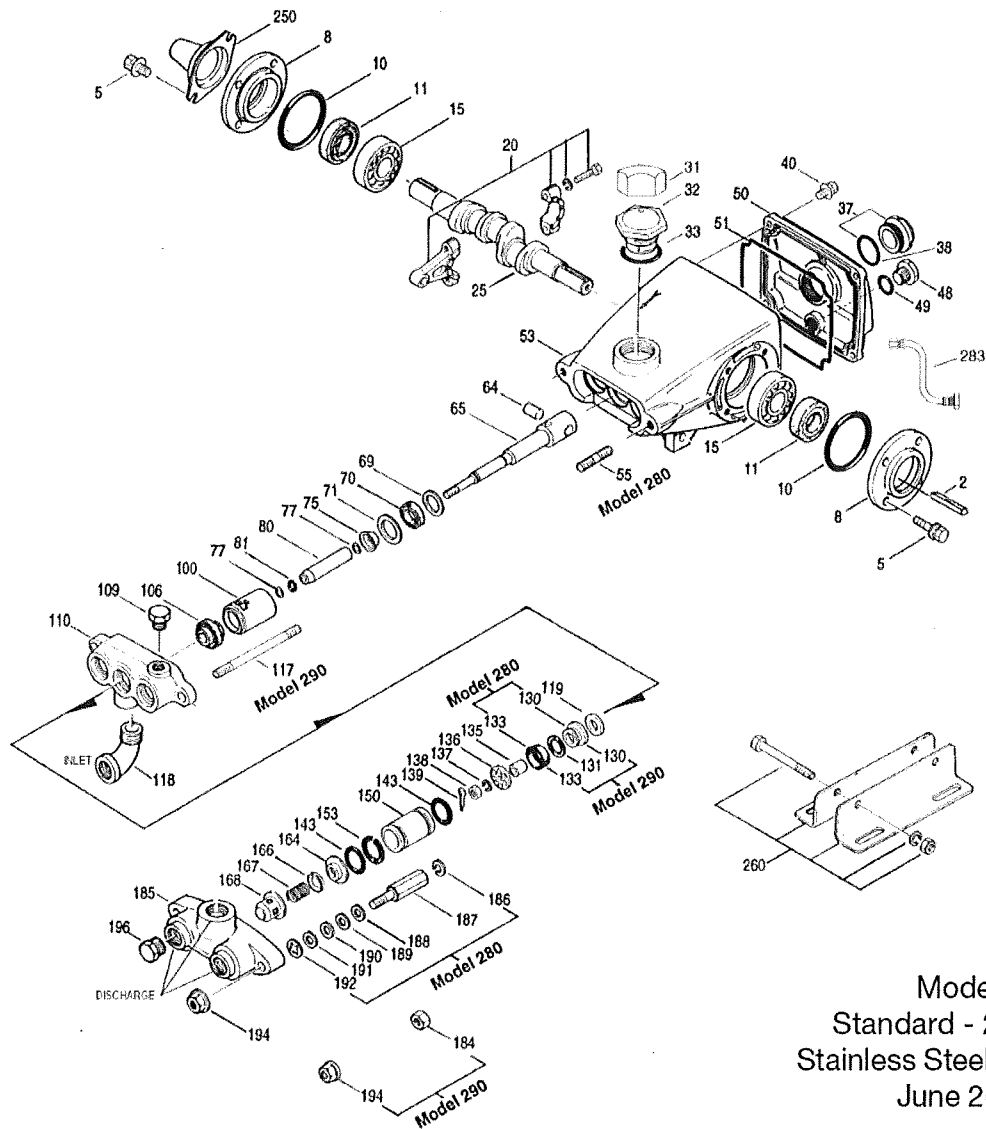
$$\frac{\text{Motor Pulley O.D.}}{\text{Pump rpm}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor rpm}}$$

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

*"Customer confidence is our greatest asset"*



# EXPLODED VIEW



Models  
Standard - 280, 290  
Stainless Steel - 281, 291  
June 2010

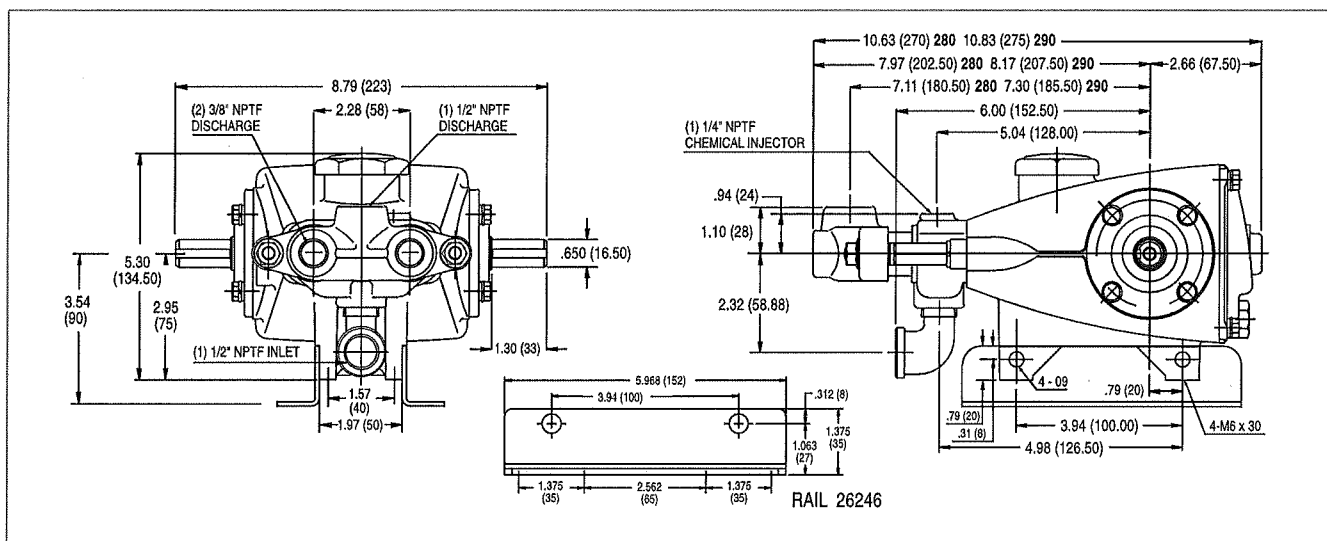
|     | 280          | MATL       | 290          | MATL       |                                                           |   |
|-----|--------------|------------|--------------|------------|-----------------------------------------------------------|---|
|     | <b>281</b>   |            | <b>291</b>   |            |                                                           |   |
| 194 | 126201       | STCP R     | 126201       | STCP R     | Nut, Hex Flange (M8)                                      | 2 |
| 196 | 22187        | BBCP       | 22187        | BBCP       | Plug HH (3/8" NPT)                                        | 1 |
| 250 | 25130        | STCP       | 25130        | STCP       | Protector, Shaft                                          | 1 |
| 260 | 30612        | STZP R     | 30612        | STZP R     | Assy, Angle Rail                                          | 1 |
| 270 | 30246        | STL        | 30246        | STL        | Pulley Assy (Incls: 30032, 30047)                         | 1 |
| 275 | 30942        | STL        | 30942        | STL        | Hub & Key Assy (Incls: 30943, 30047)                      | 1 |
| 283 | 34334        | —          | 34334        | —          | Kit, Oil Drain (3/8"x24") (See Tech Bulletin 077)         | 1 |
| 298 | 34961        | STZP       | 34961        | STZP       | Clutch, Assy, Single Groove, 16.5mm, 12VDC                | 1 |
|     | 34964        | STZP       | 34964        | STZP       | Clutch, Assy, Dual Groove, 16.5mm, 12VDC                  | 1 |
| 300 | <b>30023</b> | <b>FPM</b> | —            | —          | Kit, Cup (Incls: 133, 139, 143, 355)                      | 1 |
|     | —            | —          | <b>76023</b> | <b>FPM</b> | Kit, Cup (Incls: 131, 133, 139, 143, 355)                 | 1 |
|     | 701443       | TG         | 701443       | TG         | Kit, Cup (Incls: 133, 139, 143)                           | 1 |
| 302 | <b>30202</b> | <b>NBR</b> | <b>30860</b> | <b>NBR</b> | Kit, Piston (Incls: 119-139, 143, 153, 355)               | 1 |
| 304 | 30272        | NBR        | 30272        | NBR        | Kit, Hot Cup (Incls: 133, 139, 143)                       | 1 |
| 305 | 30431        | NBR        | 30431        | NBR        | Kit, Sleeve & Seal (Incls: 75, 77, 80, 106, 139)          | 1 |
| 306 | 30305        | NBR        | 30305        | NBR        | Kit, Seal (Incls: 106, 139)                               | 1 |
| 310 | 30686        | NBR        | 30686        | NBR        | Kit, Valve, Quiet Valves (Incls: 143, 164, 166, 167, 168) | 1 |
|     | 30024        | NBR        | 30024        | NBR        | Kit, Valve, Flat Valves (Incls: 143, 164, 166, 167, 168)  | 1 |
| 355 | 22130        | NY         | 22130        | NY         | Insertor, Cup                                             | 1 |
|     | 6107         | —          | 6107         | —          | Oil, Bottle (21 oz.) ISO 68 Hydraulic                     | 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.

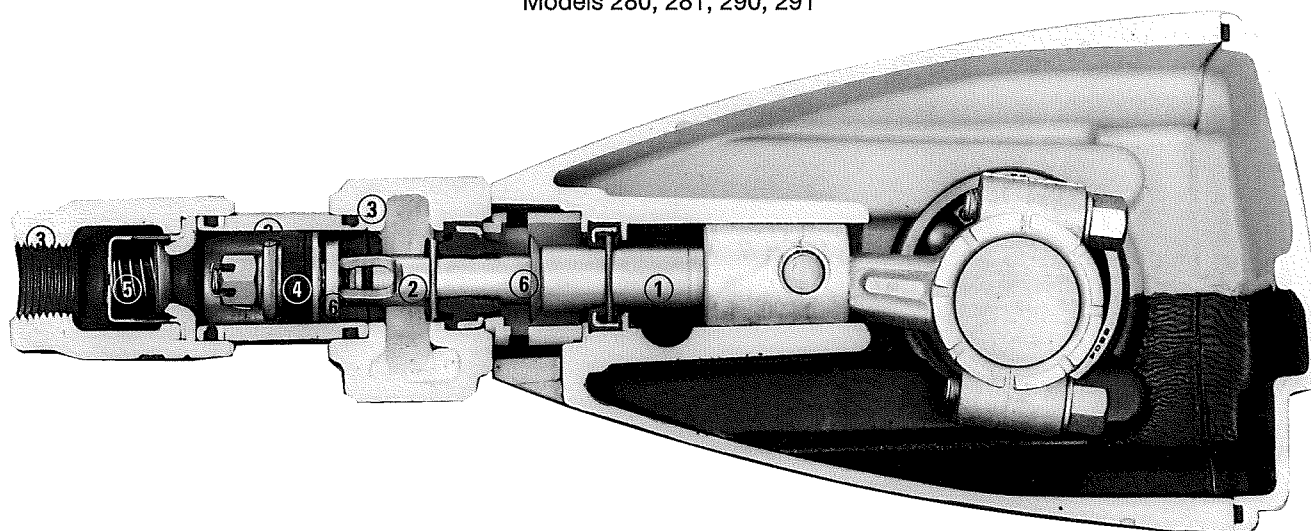
View Tech Bulletins 002, 003, 012, 016, 017, 020, 024, 026, 030, 033, 034, 036, 074, 077, 083 and 104 for additional information.

All Q.V. parts are necessary for conversions, Q.V. and F.V. parts cannot be mixed.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BBCP=Brass/Chrome Plated CM=Chrome-moly FCM=Forged Chrome-moly  
FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SCP=304SS/Chrome Plated  
SNG=Special Blend (Buna) SS=316SS STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak TG= PTFE Graphite Compound (GIT)  
TNM=Special High Strength



Models 280, 281, 290, 291



- 1 The patented stepped piston rod 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 added 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.

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