

4 Frame Piston Pump

Standard Brass Models 333, 430

Stainless Steel Models 331, 431

Pulse Pump Models 335, 435

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.
- 304 stainless steel discharge valves for wear resistance.
- 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 and optional stainless steel manifolds are strong and corrosion resistant.
- 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 333, 331, 335

Flow4.0 GPM (15 L/M)
 Pressure Range100 to 1200 PSI (7 to 85 BAR)
 RPM1070 RPM (1070 RPM)
 Bore0.709" (18 mm)

MODEL 430, 431, 435

Flow5.0 GPM (19 L/M)
 Pressure Range100 to 1000 PSI (7 to 70 BAR)
 RPM1040 RPM (1040 RPM)
 Bore0.787" (20 mm)

COMMON SPECIFICATIONS

Stroke0.768" (19.5 mm)
 Crankcase Capacity21 oz. (0.6 L)
 Maximum Liquid Temperature160° (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 MountingEither Side (Either Side)
 Shaft Diameter0.650" (16.5 mm)
 Weight17.7 lbs. (8.0 kg)
 Dimensions12.56 x 8.8 x 5.33" (319 x 223 x 135.5mm)

ELECTRIC HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE			MOTOR PULLEY SIZE	
	U.S. GPM	L/M	PSI 800	PSI 1000	PSI 1200	Using 1725 RPM Motor & Std. 8" Pump Pulley O.D.	
			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. $\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}}$ = $\frac{\text{"Desired" G.P.M.}}{\text{"Desired" R.P.M.}}$

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

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

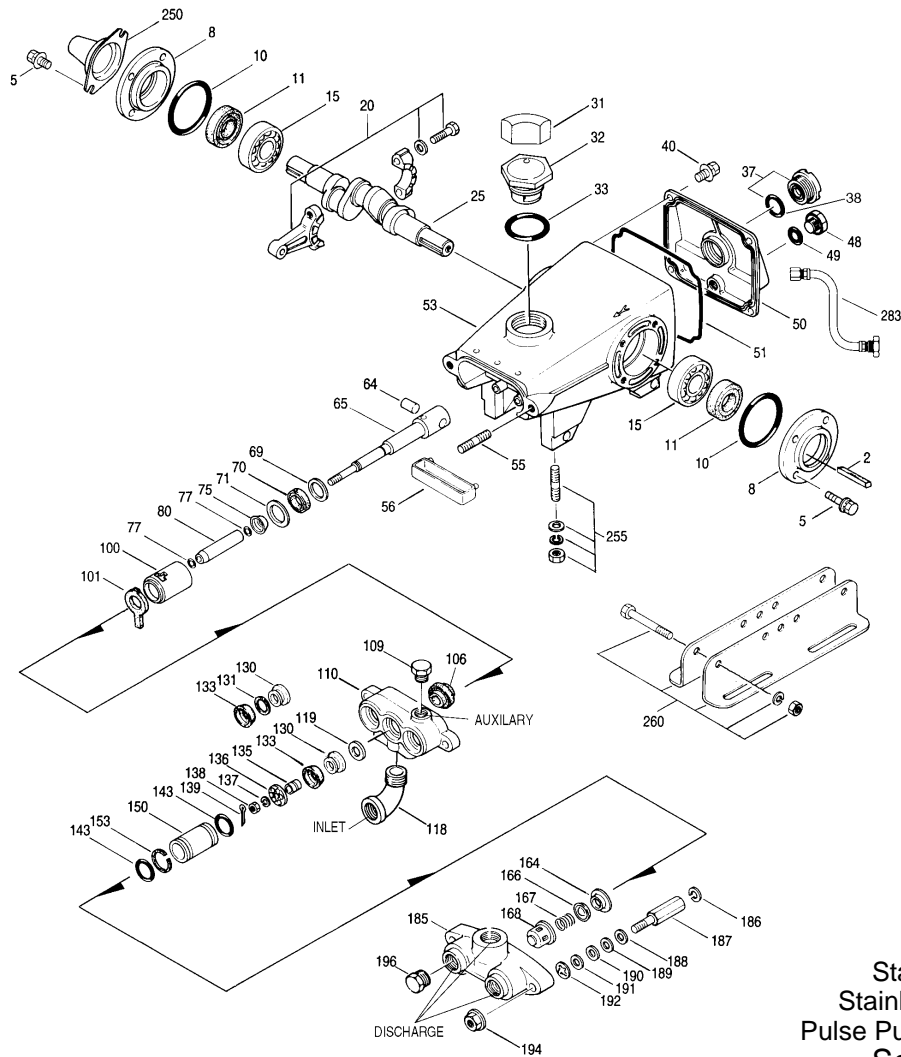
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.
 Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM	PART NUMBER		DESCRIPTION		QTY	
	333	MATL	430	MATL		
	331		431			
	335		435			
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	14487	STL	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	48912	AL	48912	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, Prrrrm-A-Lube - 80D	3
	30325	FPM	30325	FPM	Seal, LPS, Prrrrm-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	43784	S	22021	S	Piston	3
131	43719	PTFE	—	—	Back-up-Ring, Bac-Cup	3
133	43717	FPM	43172	FPM	Cup, Piston	3
133	43826	FPM	—	—	Assy, Bac-Cup (Incls: 130,131,133) (333 only)	3
133	28955	NBR	—	—	Cup, Piston, Machined	3
133	29088	SNG	29089	SNG	Cup, 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
	29013	S	29044	S	Cylinder	3
153	21985	PTFE	—	—	Back-up-Ring, Cylinder	3
164	43434	S	43434	S	Seat, Q.V.	3
	29487	S	29487	S	Seat, F.V.	3
166	43723	S	43723	S	Valve, Q.V.	3
	22842	S	22842	S	Valve, F.V.	3
167	43360	S	43360	S	Spring, Q.V.	3
	22031	S	22031	S	Spring, F.V.	3
168	43442	S	43442	S	Retainer, Spring, Q.V.	3
	22841	S	22841	S	Retainer, Spring, F.V.	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	15845	STZP	15845	STZP	Lockwasher (M8)	2
	126232	STCP R	126232	STCP R	Lockwasher (M8)	2
187	126564	STCP R	126564	STCP R	Bolt, Cylinder (M8)	2
188	43425	STZP	43425	STZP	Washer, Shim (M13x8x2)	2/4
	126591	STCP R	126591	STCP R	Washer, Shim (M13x8x2)	2/4
189	126813	STCP R	126813	STCP R	Washer, Shim (M13x8x1)	2/4

EXPLODED VIEW



Models
 Standard - 333, 430
 Stainless Steel - 331, 431
 Pulse Pump Manifold - 335, 435
 September 2007

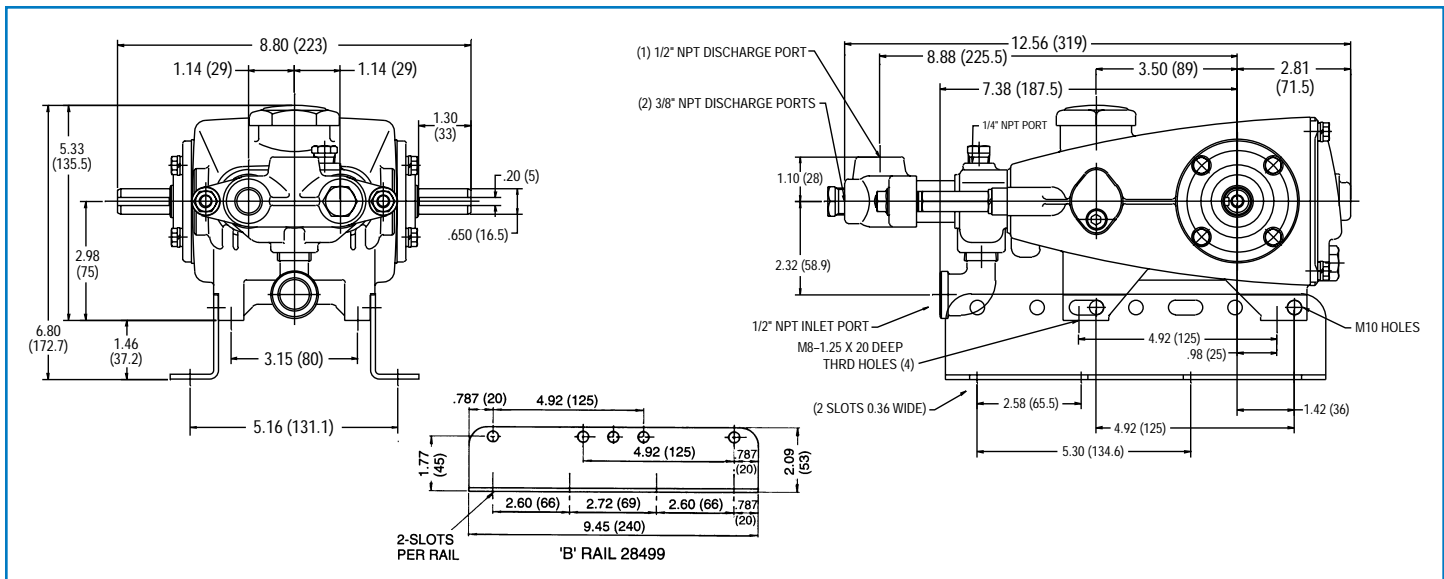
	333	MATL	430	MATL		
190	126576	STCP R	126576	STCP R	Washer, Shim (M13x8x.5)	2/4
191	43258	STZP	43258	STZP	Washer, Shim (M13x8x.3)	2/4
	<i>126590</i>	<i>STCP R</i>	<i>126590</i>	<i>STCP R</i>	<i>Washer, Shim (M13x8x.3)</i>	<i>2/4</i>
192	26676	S	26676	S	Lockwasher (M8)	2
194	126201	STCP R	126201	STCP 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
260	30611	STZP	30611	STZP	Assy, Rail Mount	1
265	30652	—	30652	—	Assy, Mount (Incls: 30611, 30048, 30047, 25130)	1
270	30244	STL	30244	STL	Assy, Pulley (Incls: 30048, 30047)	1
283	34334	—	34334	—	Kit, Oil Drain	1
300	30239	NBR	—	—	Kit, Mach Cup (Incls: 133,139,143,153)	1
	—	—	30023	FPM	Kit, Cup (Incls: 133,139,143)	1
301	30841	FPM	—	—	Kit, Bac-Cup (Incls: 133,139,143,153)	1
302	30240	NBR	—	—	Kit, Piston (Incls: 119,133,135-139,143,153)	1
	—	—	30210	NBR	Kit, Piston (Incls: 119,130,133,135-139,143)	1
	30842	NBR	—	—	Kit, Bac-Cup Piston (Incls: 119,133,135-139,143,153)	1
304	—	—	30272	NBR	Kit, Hot Cup (Incls: 133, 139, 143)	1
305	30312	NBR	30312	NBR	Kit, Sleeve & Prrrrm-A-Lube Seal (Incls: 75,77,80,106,139)	1
	30230	NBR	30230	NBR	Kit, Sleeve & Blue-Dot Seal (Incls: 75,77,80,101,106,139)	1
306	30305	NBR	30305	NBR	Kit, Prrrrm-A-Lube Seal (Incls: 106,139)	1
	30229	NBR	30229	NBR	Kit, Blue-Dot Seal (Incls: 101,106,139)	1
310	30686	NBR	30686	NBR	Kit, Valve - Q.V. (Incls: 143,164,166,167,168)	1
	30024	NBR	30024	NBR	Kit, Valve - F.V. (Incls: 143,164,166,167,168)	1
—	6107	—	6107	—	Oil, Bottle (21 oz.) ISO 68 Multi-viscosity Hydraulic (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.

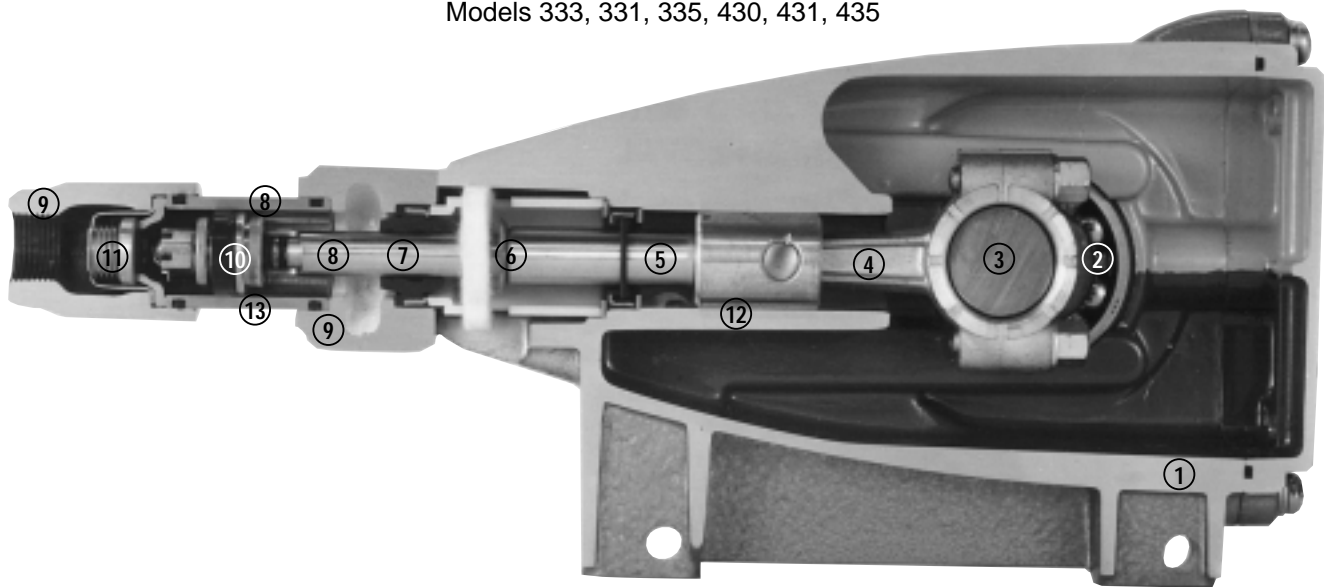
[] Date of latest production change. R Components comply with RoHS Directive.

See Tech Bulletins 002, 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, 335, 430, 431, 435



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

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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