

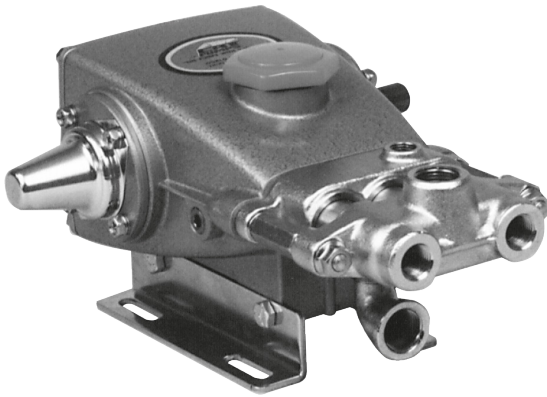
DATA SHEET

3 FRAME PISTON PUMPS



Brass Models: 280, 290

Stainless Steel Models: 281, 291



Mounting rails and shaft protector sold separately

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

	U.S.	Metric
Bore	0.787"	20 mm
Inlet Pressure Range	-8.5 to 40 psi	-0.6 to 2.8 bar
Maximum Liquid Temperature	160° F	71° C
<small>Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.</small>		
Crankcase Capacity	10 oz.	0.3 L
Inlet Port (1)	1/2" NPT(F)	1/2" NPT(F)
Chemical Injection Port (1)	1/4" NPT(F)	1/4" NPT(F)
Discharge Ports (2)	3/8" NPT(F)	3/8" NPT(F)
Discharge Port (1)	1/2" NPT(F)	1/2" NPT(F)
Pulley Mounting	Either side	Either side
Shaft Diameter	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

SPECIFICATIONS	U.S. Measure	Metric Measure
280, 281		
Flow	3.0 gpm	11.4 lpm
Pressure Range	100 to 1000 psi	7 to 70 bar
Pump RPM	1330 rpm	1330 rpm
Stroke	0.394"	10 mm
Weight	11.7 lbs.	5.3 kg
290, 291		
Flow	3.5 gpm	13.2 lpm
Pressure Range	100 to 1200 psi	7 to 85 bar
Pump RPM	1200 rpm	1200 rpm
Stroke	0.472"	12 mm
Weight	12.1 lbs.	5.5 kg

ELECTRIC HORSEPOWER REQUIREMENTS

MODELS	FLOW		PRESSURE		RPM
			psi 1000	psi 1200	
	U.S. gpm	lpm	bar 70	bar 85	
280, 281	3.0	11.4	2.1	-	1330
290, 291	3.5	13.2	2.4	2.9	1200

$$\text{DETERMINING THE PUMP R.P.M.} \quad \frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{"Desired" gpm}}{\text{"Desired" rpm}}$$

$$\text{DETERMINING THE REQUIRED H.P.} \quad \frac{\text{Hp (Electric Brake)}}{1460} = \frac{\text{gpm} \times \text{psi}}{1460}$$

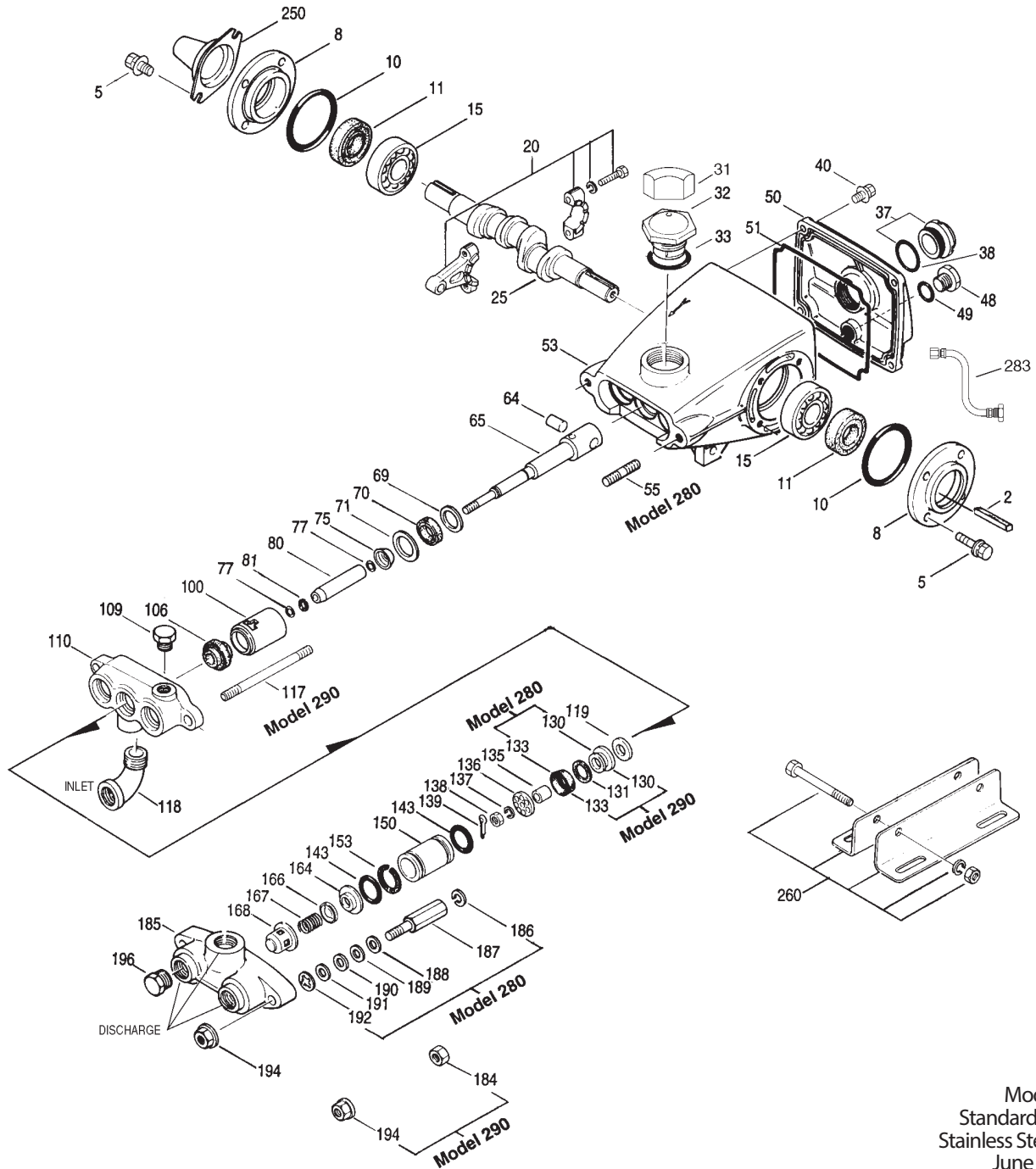
$$\text{DETERMINING MOTOR PULLEY SIZE} \quad \frac{\text{Motor Pulley O.D.}}{\text{Pump rpm}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor rpm}}$$

Refer to pump **Service Manual** for repair procedure and additional technical information.

PARTS LIST

ITEM	PART NUMBER	MATL	PART NUMBER	MATL	DESCRIPTION	QTY
	280, 281		290, 291			
2	30047	STL	30047	STL	Key (M5x5x24)	1
5	125824	STCP R	125824	STCP R	Screw, Sems HHC (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	122041	TNM	48867	TNM	Rod, Connecting Assy [280-8/02, 290-9/02]	3
25	26239	FCM	43804	FCM	Crankshaft	1
31	828710	PE	828710	PE	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	126541	STCP R	126541	STCP R	Screw, Sems HHC (M6x20)	4
48	25625	STCP	25625	STCP	Plug, Drain (1/4"x19BSP)	1
49	23170	NBR	23170	NBR	O-Ring, Drain Plug - 70D	1
50	48772	AL	48772	AL	Cover, Rear [07/08] (See Tech Bulletin 104)	1
51	48773	NBR	48773	NBR	O-Ring, Rear Cover [07/08] (See Tech Bulletin 104)	1
53	128361	AL	128361	AL	Crankcase [07/08] (See Tech Bulletin 104)	1
55	126546	STCP R	—	—	Stud (M8x41.4)	2
64	16948	CM	16948	CM	Pin, Crosshead	3
65	29612	SZZ	101800	SZZ	Rod, Piston	3
69	126259	STCP R	126259	STCP R	Washer, Oil (M24)	3
70	25301	NBR	25301	NBR	Seal, Oil - 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	6
	28771	FPM	28771	FPM	O-Ring, Sleeve	6
	28772	PTFE	28772	PTFE	O-Ring, Sleeve	6
80	29614	SCP	29614	SCP	Sleeve	3
	29743	S	29743	S	Sleeve (Unchromed)	3
81	—	—	29003	PTFE	Back-up-Ring, Sleeve	3
100	28597	PVDF	28597	PVDF	Retainer, Seal	3
106	30315	NBR	30315	NBR	Seal, LPS, Prrrrm-A-Lube	3
	30325	FPM	30325	FPM	Seal, LPS, Prrrrm-A-Lube	3
109	22177	BBCP	22177	BBCP	Plug HH (1/4" NPT)	1
110	25128	BBCP	25128	BBCP	Manifold, Inlet (280, 290)	1
	25635	SS	25635	SS	Manifold, Inlet (281, 291)	1
117	—	—	85680	STCP	Stud (M8x99.5)	2
118	22160	BBCP	22160	BBCP	Elbow (1/2" NPT)	1
119	27004	S	27004	S	Valve, Inlet	3
130	22021	S	30543	S	Piston	3
131	—	—	43476	PTFE	Bac-Cup Ring	3
133	43172	FPM	43172	FPM	Cup, Piston	3
	—	—	43474	FPM	Assy, Bac-Cup (Incls: 130, 131, 133) (290 Only)	3
	29089	SNG	29089	SNG	Cup, V-Hot	3
	76515	ST4	76515	ST4	Cup, Piston	3
135	27003	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 (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
	703244	IPFE	703244	IPFE	O-Ring, Cylinder - 75D	6
150	26112	SCP	101802	SCP	Cylinder	3
	28774	S	43834	S	Cylinder (Unchromed)	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
184	—	—	126521	STCP R	Nut, Hex (M8)	2
185	43720	BBCP	43720	BBCP	Manifold, Discharge (280, 290)	1
	25634	SS	25634	SS	Manifold, Discharge (281, 291)	1
186	15845	STZP	—	—	Lockwasher (M8)	2
	126232	STCP R	—	—	Lockwasher (M8)	2
187	126565	STCP R	—	—	Bolt, Cylinder (M8x62.5)	2
188	126813	STCP R	—	—	Shim (M8x13x1.0)	2-4
189	126576	STCP R	—	—	Shim (M8x13x0.5)	2-4
190	126590	STCP R	—	—	Shim (M8x13x0.3)	2-4
191	126591	STCP R	—	—	Shim (M8x13x2.0)	2-4
192	26676	S	—	—	Lockwasher (M8)	2
194	126201	STCP R	126201	STCP R	Nut, Hex Flange (M8)	2
196	22187	BBCP	22187	BBCP	Plug HH (3/8" NPT)	1

EXPLODED VIEW



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

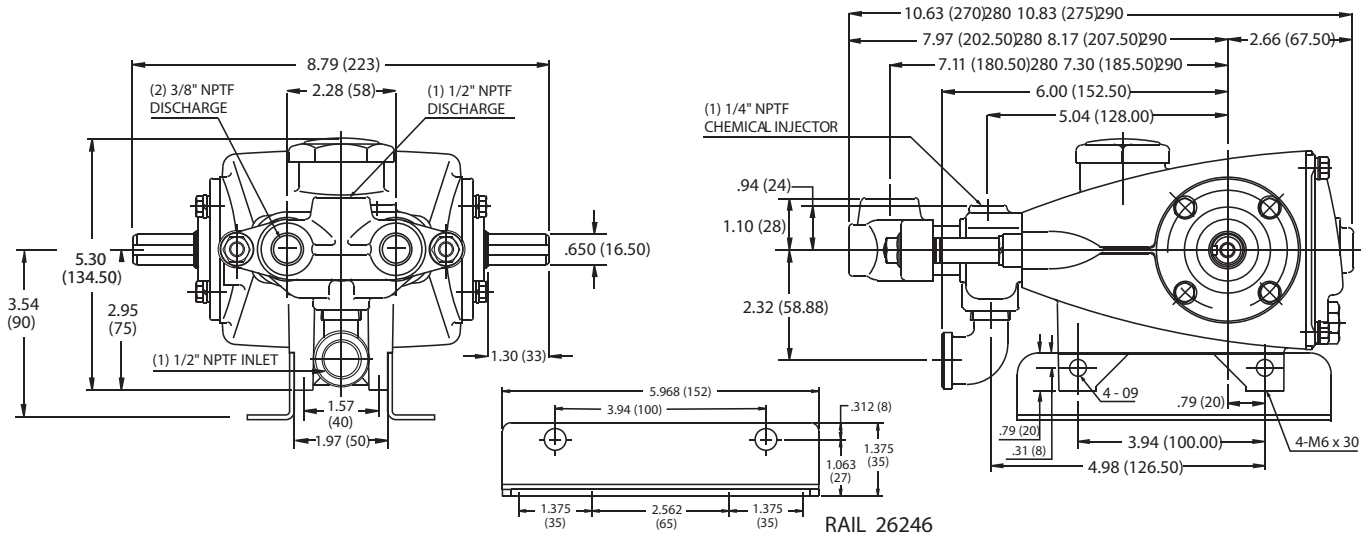
ITEM	PART NUMBER	MATL	PART NUMBER	MATL	DESCRIPTION	QTY
	280, 281		290, 291			
250	25130	STCP	25130	STCP	Protector, Shaft	1
260	126607	STZP	126607	STZP	Assy, Angle Rail	1
283	34334	—	34334	—	Kit, Oil Drain (3/8"x24") (See Tech Bulletin 077)	1
300	30023	FPM	—	—	Kit, Cup (Incls: 133, 139, 143, 355)	1
—	—	—	76023	FPM	Kit, Cup (Incls: 131, 133, 139, 143, 355)	1
—	701443	TG	701443	TG	Kit, Cup (Incls: 133, 139, 143)	1
302	30202	NBR	30860	NBR	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 (Enthält: 106, 139)	1
310	30686	NBR	30686	NBR	Kit, Valve, Quiet Valves Q.V. (Incls: 143, 164, 166, 167, 168)	1
—	30024	NBR	30024	NBR	Kit, Valve, Flat Valves F.V. (Incls: 143, 164, 166, 167, 168)	1
355	22130	NY	22130	NY	Insertor, Cup	1
—	6107	—	6107	—	Oil, Bottle (21 oz. / 0,62 l) ISO 68 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.

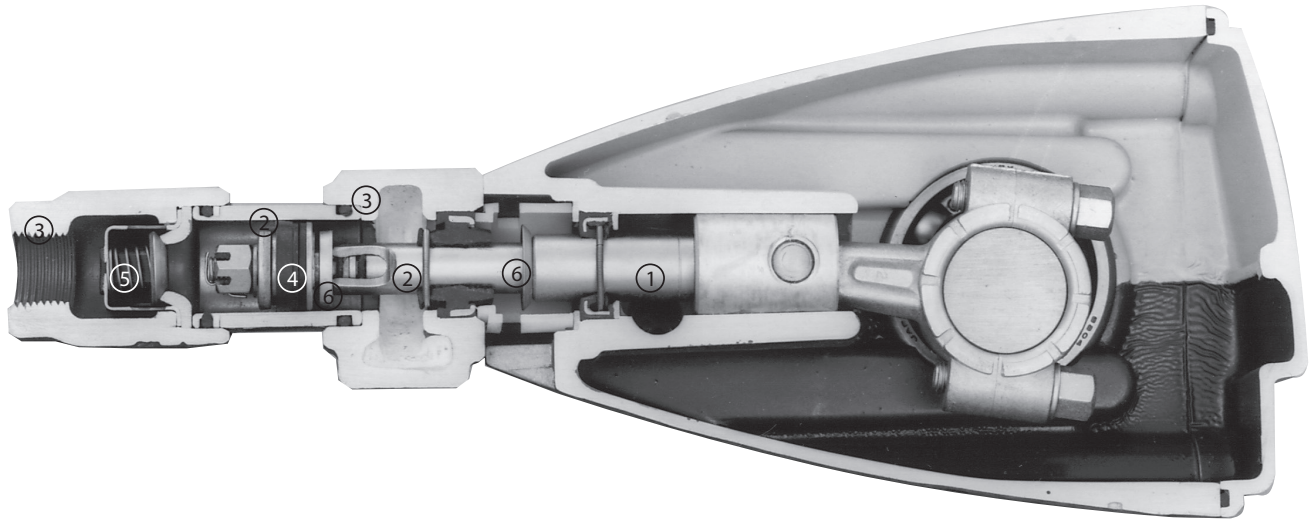
R Components comply with RoHS Directive. View Tech Bulletins 002, 003, 012, 016, 017, 020, 024, 026, 030, 033, 034, 036, 074, 077, 083 and 104 for additional information.

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 IPFE=I-Perfluoroelastomer 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 ST4=Special PTFE 4 SZZ=304SS/Zamak 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.

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



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