DATA SHEET
3 FRAME PISTON PUMPS

The Pumps with Nine Lives

Brass Models: **280, 290**

Stainless Steel Models: **281, 291**

Model 280 Shown
(Shaft protector and mounting rails sold separately)

SPECIFICATIONS	U.S. Measure	Metric Measure
Models 280, 281		
Flow	3.0 gpm	11.4 lpm
Pressure Range	100–1000 psi	6.9–89 bar
Pump RPM*	1330 rpm	1330 rpm
Bore	0.787"	20 mm
Stroke	0.394"	10 mm
Weight	11.7 lbs	5.3 kg
Models 290, 291		
Flow	3.5 gpm	13.2 lpm
Pressure Range	100–1200 psi	6.9–83 bar
Pump RPM*	1200 rpm	1200 rpm
Bore	0.787"	20 mm
Stroke	0.472"	12 mm
Weight	12.1 lbs	5.5 kg

*Pump minimum is 100 RPM.

FEATURES

- Triplex Uniflow design provides continuous forward liquid flow, promoting smooth operation.
- Wetted cups and floating pistons are lubricated and cooled by pumped liquid, resulting in longer cup life.
- Mechanically-actuated inlet valves create strong lift and an easier prime.
- Optional 316 stainless steel manifolds provide added corrosion resistance.
- Pump comes standard with NBR seals. Alternative seal materials are available for higher temperature or chemical compatibility.

COMMON SPECIFICATIONS	U.S.	Metric
Crankcase Capacity	10 oz	0.3 l
Max. Liquid Temperature (NBR)	160° F	71° C
Alternative seals available for higher temperatures up to 180° F		
Inlet Pressure Range	-8.5 to 40 psi	-0.6 to 2.8 bar
Inlet Port (1)	½" NPT(F)	½" NPT(F)
Auxilary Port (1)	¼" NPT(F)	¼" NPT(F)
Discharge Ports (2)	⅜" NPT(F)	⅜" NPT(F)
Discharge Port (1)	½" NPT(F)	½" 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

ALTERNATIVE SEAL CONFIGURATION

MATERIAL	SUFFIX CODE	MAXIMUM TEMPERATURE	
NBR	—	160° F	(71° C)
FPM	.0110	180° F	(82° C)
HT	.3000	180° F	(82° C)

See **Tech Bulletin 002** for inlet conditions and RPM at high-temperature.

DETERMINING THE PUMP RPM

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

DETERMINING THE REQUIRED HP

$$\frac{\text{hp (Electric Brake)}}{} = \frac{\text{gpm x psi}}{1460}$$

DETERMINING MOTOR PULLEY SIZE

$$\frac{\text{Motor Pulley OD}}{\text{Pump rpm}} = \frac{\text{Pump Pulley OD}}{\text{Motor rpm}}$$

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

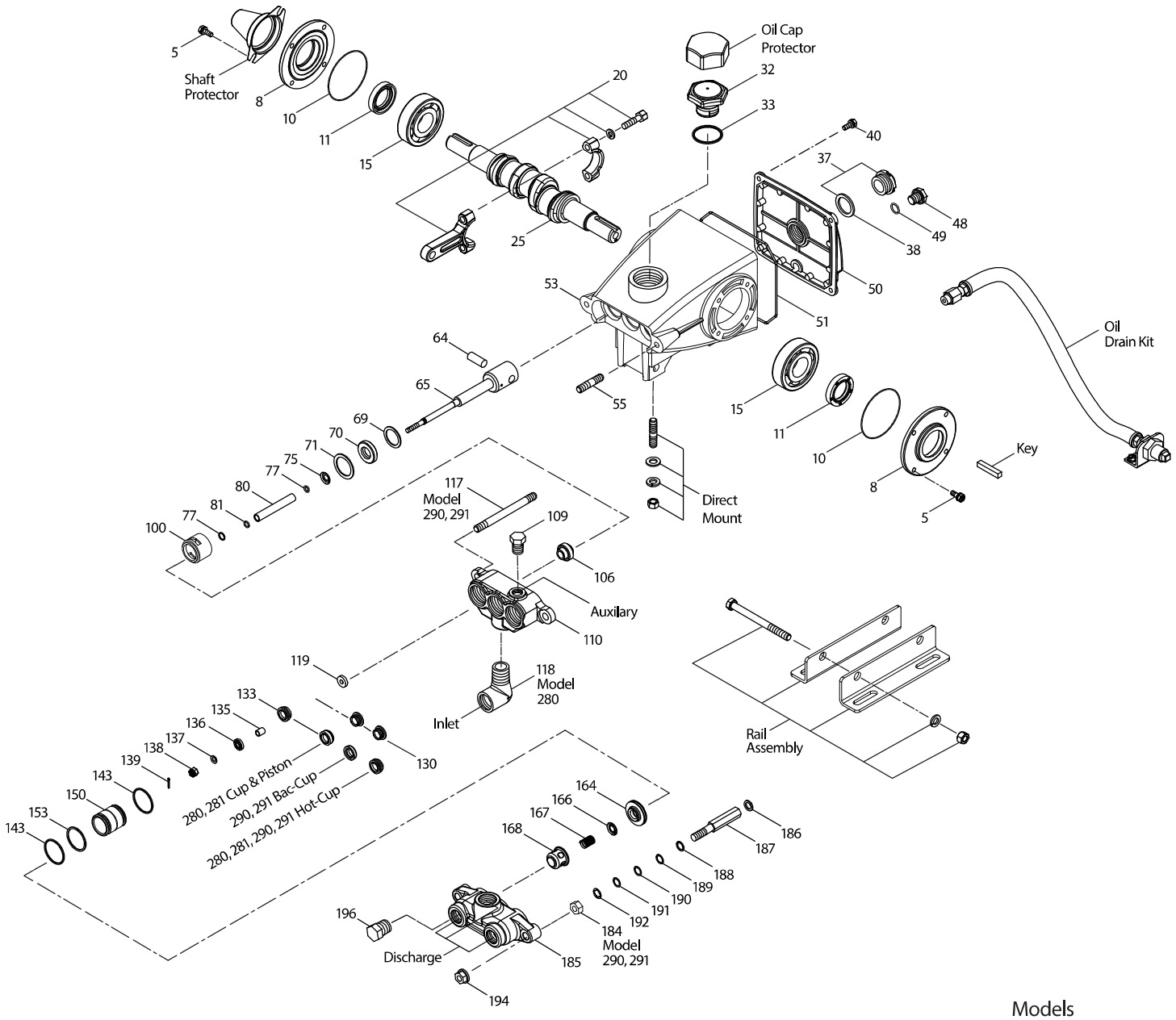
PARTS LIST

ITEM	PART NUMBER				DESCRIPTION	QTY
	280, 281	MATL	290, 291	MATL		
5	125824	STCP R	125824	STCP R	Screw, HHC Sems (M6 x 16) (See Tech Bulletin 074)	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, Crankshaft	2
15	14487	STL R	14487	STL R	Bearing, Ball	2
20	**122041**	TNM	**48867**	TNM	Assembly, Connecting Rod (See Tech Bulletin 074)	3
25	**26239**	FCM	**43804**	FCM	Crankshaft	1
32	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap–70D	1
37	92241	PC	92241	PC	Gauge, Oil Bubble with Gasket–80D	1
38	44428	NBR	44428	NBR	Gasket, Flat, Oil Gauge–80D	1
40	126541	STCP R	126541	STCP R	Screw, HHC Sems (M6 x 20) (See Tech Bulletin 074)	4
48	25625	STCP	25625	STCP	Plug, Drain (¼" x 19 BSP)	1
49	23170	NBR	23170	NBR	O-Ring, Drain Plug–70D	1
50	48772	AL	48772	AL	Cover, Rear (See Tech Bulletin 104)	1
51	48773	NBR	48773	NBR	O-Ring, Rear Cover (See Tech Bulletin 104)	1
53	128361	AL	128361	AL	Crankcase, 4 Screws (See Tech Bulletin 104)	1
55	**126546**	STCP R	—	—	Stud (M8 x 41.4)	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 Seal	3
70	25301	NBR	25301	NBR	Seal, Oil	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
80	29614	SCP	29614	SCP	Sleeve	3
	29743	*S*	*29743*	*S*	*Sleeve (Unchromed)*	*3*
81	—	—	**29003**	PTFE	Backup Ring, Sleeve	3
100	28597	PVDF	28597	PVDF	Retainer, Seal	3
106	30315	NBR	30315	NBR	Seal, LPS	3
109	22177	BBCP	22177	BBCP	Plug HH (¼" NPT)	1
110	25128	BBCP	25128	BBCP	Manifold, Inlet	1
	25635	*SS*	*25635*	*SS*	*Manifold, Inlet*	*1*
117	—	—	**85680**	STCP	Stud (M8 x 99.5) (Models 290, 291)	2
118	**22160**	BBCP	—	—	Elbow [½" NPT(F)] (Model 280)	1
119	27004	S	27004	S	Valve, Inlet	3
130	**22021**	S	—	—	Piston	3
133	**43172**	FPM	—	—	Bac-Cup	3
	—	—	**43474**	FPM	Assembly, Bac-Cup (Includes: Piston, Bac-Cup Ring, Cup)	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 (M1.6 x 10)	3
143	23172	NBR	23172	NBR	O-Ring, Cylinder–70D	6
150	**26112**	SCP	**101802**	SCP	Cylinder	3
	28774	*S*	***43834***	*S*	*Cylinder (Unchromed)*	*3*
153	—	—	**21985**	PTFE	Backup Ring, Cylinder	3
164	43434	S	43434	S	Seat	3
166	43723	S	43723	S	Valve	3
167	43360	S	43360	S	Spring	3
168	43442	S	43442	S	Retainer, Spring	3
184	—	—	**126521**	STCP R	Nut, Hex (M8) (Models 290, 291)	2
185	24459	BBCP	24459	BBCP	Manifold, Discharge	1
	25634	*SS*	*25634*	*SS*	*Manifold, Discharge*	*1*
186	**126232**	STCP R	—	—	Lockwasher (M8)	2
187	**126565**	STCP R	—	—	Bolt, Cylinder (M8 x 62.5) (Models 280, 281)	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) (See Tech Bulletin 074)	2
196	22187	BBCP	22187	BBCP	Plug HH [⅜" NPT(M)]	1

Bold part numbers are unique to a particular pump model. *Italics are optional items.* [ ] Date of latest production change.
R Components comply with RoHS Directive. For additional technical information see www.catpumps.com/literature/tech-bulletins.
MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic ALE=Aluminum Epoxy BBCP=Brass/Chrome Plated CM=Chrome-Moly
FCM=Forged Chrome-Moly FPM=Fluorocarbon NY=Nylon PC=Poly Carbonate 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

Optional Parts and Accessories and Service parts listed on Page 3. Standard and optional Seal Kits, Sleeve and Seal Kits, Cup Kits, Piston Kits and Valve Kits listed on page 4.

EXPLODED VIEW



Models
Standard – 280, 290
Stainless Steel – 281, 291
June 2021

OPTIONAL PARTS AND ACCESSORIES

PART	DESCRIPTION	QTY
30047	Key (M5 x 5 x 24)	1
30612	Assembly, Rail	1
30243	Mount, Direct	1
828710	Protector, Oil Cap	1
25130	Protector, Shaft	1
34334	Kit, Oil Drain	1
30246	Pulley and Key Assembly	1
30942	Hub and Key Assembly	3

SERVICE PARTS

PART	DESCRIPTION	QTY
30305	Kit, Seal – Standard NBR	1
30686	Kit, Valve – Standard NBR	1
6107	Oil, Bottle (21 oz) ISO 68 Hydraulic (Fill to Specified Crankcase Capacity Prior to Start-up)	1
6124	Gasket, Liquid (3 oz)	1
6119	Lubricant, Anti-Seize (2 oz) (Models 281, 291)	1

Kits – Additional Seal Kits, Sleeve & Seal Kits, Cup Kits, Piston Kits and Valve Kits listed on Page 4.

SEAL KITS One (1) seal kit required per pump

PUMP MODELS	NBR (STD)		
280, 281, 290, 291	30305		
ITEM (Included in Seal Kits)		**DESCRIPTION**	**QTY**
106	30315*	Seal, Low-Pressure	3
139	14158	Cotterpin	3

*Use PN 30325 for FPM

SLEEVE AND SEAL KIT One (1) sleeve and seal kit required per pump

PUMP MODELS	NBR (STD)		
280, 281, 290, 291	30431		
ITEM (Included in Sleeve and Seal Kits)		**DESCRIPTION**	**QTY**
75	25327	Slinger, Barrier	3
77	25392*	O-Ring, Sleeve	6
80	29614	Sleeve	3
106	30315**	Seal, Low-Pressure	3
139	14158	Cotterpin	3

* Use PN 28771 for FPM or PN 702026 for PTFE, **Use PN 30325 for FPM (Ungreased)

CUP KITS One (1) cup kit required per pump

Pump Models	280, 281	280, 281	280, 281	290, 291	290, 291	290, 291		
	NBR (STD)	**NBR (HOT)**	**TG (Cup-Piston)**	**NBR (STD)**	**NBR (HOT)**	**TG (Cup-Piston)**		
	30023	**30272**	**701443***	**76023**	**30272**	**701443***		
ITEM (Included in Cup Kits)							**DESCRIPTION**	**QTY**
131				30544			Ring, Bac-Cup	3
133	43172	29089	76515	43172	29089	76515	Cup	3
139	14158	14158	14158	14158	14158	14158	Cotterpin	3
143	23172**	23172**	11377	23172**	23172**	11377	O-Ring, Cylinder	6
355	22130			22130			Inserter, Cup	1

* 76515 comes with a FPM O-ring, ** Use PN 11377 for FPM or PN 703244 for PTFE

PISTON KITS One (1) piston kit required per pump

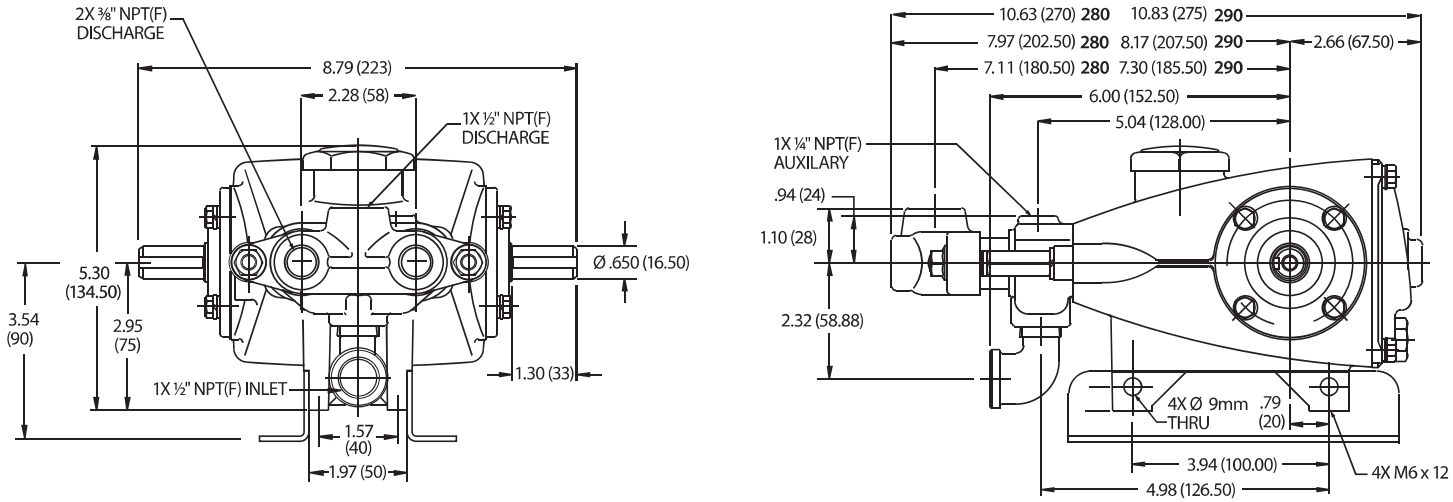
PUMP MODELS	280, 281	290, 291		
	NBR (STD)	**NBR (STD)**		
	30202	**30860**		
ITEM (Included in Piston Kits)			**DESCRIPTION**	**QTY**
119	27004	27004	Valve, Inlet	3
130	**22021**		Piston	3
133		**43474**	Assembly, Bac-Cup (Includes: Piston, Bac-Cup Ring, Cup)	3
133	**43172**		Cup	3
135	27003	27983	Spacer, Piston	3
136	27002	27002	Retainer, Piston	3
137	27006	27006	Washer, Conical	3
138	27000	27000	Nut, Slotted	3
139	14158	14158	Cotterpin	3
143	23172*	23172*	O-Ring, Cylinder	6
153		**21985**	Backup Ring, Cylinder	3
355	22130		Inserter, Cup	1

*Use PN 11377 for FPM or PN 703244 for PTFE

VALVE KITS One (1) valve kit required per pump

PUMP MODELS	**NBR (Quiet)**	**NBR (Flat)**		
280, 281, 290, 291	**30686**	**30024**		
ITEM (Included in Valve Kits)			**DESCRIPTION**	**QTY**
143	23172 *	23172 *	O-Ring, Cylinder	6
164	43434	29487	Seat	3
166	43723	22842	Valve	3
167	43360	22031	Spring	3
168	43442	22841	Retainer, Spring	3

*Use PN 11377 for FPM or PN 703244 for PTFE



Models 280, 281

⚠ 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/dynamic-literature/cautions-and-warnings or can be requested directly from Cat Pumps.

WARRANTY

View the Limited Warranty online at www.catpumps.com/literature/cat-pumps-limited-warranty

CAT PUMPS 1681 94th Lane N.E., Minneapolis, MN 55449-4324 P: (763) 780-5440 F: (763) 780-2958 E: techsupport@catpumps.com www.catpumps.com

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