

# DATA SHEET

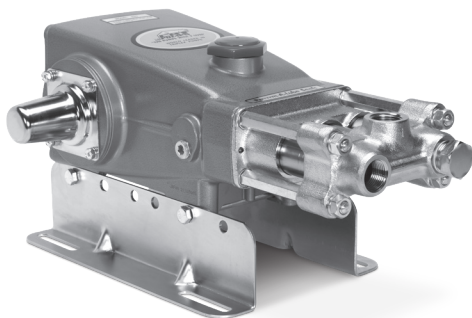
## 10FR PISTON PUMPS



The Pumps with Nine Lives

**Brass Models: 623, 820, 1010**

**Stainless Steel Models: 621, 821, 1011**



Model 820 Shown  
(Shaft protector and mounting rails sold separately)

### FEATURES

- Triplex Uniflow design provides continuous forward liquid flow for 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.
- 100% wetted seal design increases life by allowing pumped liquid to cool and lubricate for longer life.
- Pump comes standard with NBR seals. Alternative seal materials are available for higher temperature or chemical compatibility.

### COMMON SPECIFICATIONS

	U.S.	Metric
Crankcase Capacity	40 oz	1.181 l
Max. Liquid Temperature (NBR)	160° F	71° C

### Alternative seals available for higher temperatures up to 180° F

	U.S.	Metric
Inlet Pressure Range	-8.5 to +40 psi	-6 to +2.8 bar
Inlet Ports (1)	1" NPT(F)	1" NPT(F)
Discharge Ports (3)	3/4" NPT(F)	3/4" NPT(F)
Shaft Diameter	0.984"	25 mm
Weight	27.0 lbs	12.25 kg
Dimensions	17.28 x 11.42 x 6.30"	439 x 290 x 160 mm

### SPECIFICATIONS

#### U.S. Measure

#### Metric Measure

#### Models 623, 621

Flow	6.0 gpm	23 lpm
Pressure Range	100–1200 psi	7–85 bar
Pump RPM*	850 rpm	850 rpm
Bore	0.787"	20 mm
Stroke	1.122"	28.5 mm

#### Models 820, 821

Flow	10.0 gpm	38 lpm
Pressure Range	100–1000 psi	7–70 bar
Pump RPM*	940 rpm	940 rpm
Bore	0.984"	25 mm
Stroke	1.102"	28 mm

#### Models 1010, 1011

Flow	13 gpm	49 lpm
Pressure Range	100–700 psi	7–50 bar
Pump RPM*	900 rpm	900 rpm
Bore	0.122"	28.5 mm
Stroke	1.102"	28 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.

$$\text{DETERMINING THE PUMP RPM} \quad \frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{Desired gpm}}{\text{Desired rpm}}$$

$$\text{DETERMINING THE REQUIRED HP} \quad \frac{\text{hp}}{\text{(Electric Brake)}} = \frac{\text{gpm} \times \text{psi}}{1460}$$

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

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

## PARTS LIST

ITEM	PART NUMBER		PART NUMBER		PART NUMBER		DESCRIPTION	QTY
	623, 621	MATL	820, 821	MATL	1010, 1011	MATL		
5	125824	STCP R	125824	STCP R	125824	STCP R	Screw, HHC Sems (M6 x 16) (See Tech Bulletin 074)	8
8	27331	AL	27331	AL	27331	AL	Cover, Bearing	2
10	26965	NBR	26965	NBR	26965	NBR	O-Ring, Bearing Cover-70D	2
11	27330	NBR	27330	NBR	27330	NBR	Seal, Oil, Crankshaft	2
15	47080	STL	47080	STL	47080	STL	Bearing, Ball	2
20	48733	TNM	48733	TNM	48733	TNM	Rod, Connecting, Assembly [5/02] (See Tech Bulletin 074)	3
25	27329	FCM	27329	FCM	27329	FCM	Crankshaft, Dual End (M28.5)	1
32	43211	ABS	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap-70D	1
37	92241	PC	92241	PC	92241	PC	Gauge, Oil Bubble with Gasket-80D (See Tech Bulletin 074)	1
38	44428	NBR	44428	NBR	44428	NBR	Gasket, Flat, Oil Gauge-80D	1
40	126541	STCP R	126541	STCP R	126541	STCP R	Screw, HHC Sems (M6 x 20) (See Tech Bulletins 074, 111)	4
48	25625	STCP	25625	STCP	25625	STCP	Plug, Drain (1/4" x 19 BSP)	1
49	23170	NBR	23170	NBR	23170	NBR	O-Ring, Drain Plug-70D	1
50	49712	AL	49712	AL	49712	AL	Cover, Rear (See Tech Bulletin 111)	1
51	14070	NBR	14070	NBR	14070	NBR	O-Ring, Cover (See Tech Bulletin 111)	1
53	49710	AL	49710	AL	49710	AL	Crankcase with Guide Pins (See Tech Bulletin 111)	1
55	126545	STCP R	126545	STCP R	126545	STCP R	Stud (M10 x 45)	4
56	27911	POP	27911	POP	27911	POP	Pan, Oil (Use With Items 100, 101, 106) For Blue-Dot Seals	1
64	20251	CM	20251	CM	20251	CM	Pin, Crosshead	3
65	27337	SZZ	27337	SZZ	27337	SZZ	Rod, Piston	3
69	126585	STCP R	126585	STCP R	126585	STCP R	Washer, Oil Seal	3
70	27339	NBR	27339	NBR	27339	NBR	Seal, Oil, Crankcase	3
75	25327	S	25327	S	25327	S	Slinger, Barrier	3
77	25392	NBR	25392	NBR	25392	NBR	O-Ring, Sleeve-70D	6
80	27340	SCP	27340	SCP	27340	SCP	Sleeve	3
	28782	S	28782	S	28782	S	Sleeve (Unchromed)	3
81	29003	PTFE	29003	PTFE	29003	PTFE	Backup Ring, Sleeve	3
100	27341	PVDF	27341	PVDF	27341	PVDF	Retainer, Seal	3
101	27910	—	27910	—	27910	—	Wick, Long Tab (Use With Items 56, 100, 106) For Blue-Dot Seals	3
106	30315	NBR	30315	NBR	30315	NBR	Seal, LPS, (Greased)	3
110	27344	BBCP	27344	BBCP	27344	BBCP	Manifold, Inlet (Models 623, 820, 1010)	1
	30247	SS	30247	SS	30247	SS	Manifold, Inlet (Models 621, 821, 1011)	1
119	27347	S	27497	S	27813	S	Valve, Inlet	3
130	—	—	27820	S	27814	S	Piston	3
133	30340	NBR	27821	FPM	27815	FPM	Cup, Piston (Models 623 - Machined)	3
135	27348	S	27499	S	27499	S	Spacer, Piston	3
136	27002	S	27500	S	20324	S	Retainer, Piston	3
137	27006	S	27006	S	27006	S	Washer, Conical (M6)	3
138	27000	S	27000	S	27000	S	Nut, Slotted (M6) (See Tech Bulletin 074)	3
139	14158	S	14158	S	14158	S	Cotterpin (M1.6 x 10)	3
143	26969	NBR	26969	NBR	26969	NBR	O-Ring, Cylinder-70D	6
150	28342	SCP	28340	SCP	28341	SCP	Cylinder (M50)	3
	28776	S	28778	S	28780	S	Cylinder (M50) (Unchromed)	3
153	28204	PTFE	28204	PTFE	—	—	Backup Ring, Cylinder (Models 621, 623, 820, 821)	3
162	43062	PTFE	43062	PTFE	43062	PTFE	Backup Ring, Seat	3
163	26966	NBR	26966	NBR	26966	NBR	O-Ring, Seat-70D	3
164	43428	S	43428	S	43428	S	Seat	3
166	43721	S	43721	S	43721	S	Valve	3
167	43251	S	43251	S	43251	S	Spring	3
168	43429	S	43429	S	43429	S	Retainer, Spring	3
185	43046	BBCP	43046	BBCP	43046	BBCP	Manifold, Discharge (Models 623, 820, 1010)	1
	30248	SS	30248	SS	30248	SS	Manifold, Discharge (Models 621, 821, 1011)	1
186	126593	STCP R	126593	STCP R	126593	STCP R	Washer, Shim (M10.5 x 1.5)	4-8
187	43047	STCP	43047	STCP	43047	STCP	Stud, Hex, Manifold "B"	4
188	126582	STCP R	126582	STCP R	126582	STCP R	Washer, Shim (M10.5 x 1.0)	4-8
189	126583	STCP R	126583	STCP R	126583	STCP R	Washer, Shim (M10 x 0.5)	4-8
190	126584	STCP R	126584	STCP R	126584	STCP R	Washer, Shim (M10 x 0.3)	4-8
191	27357	STZP	27357	STZP	27357	STZP	Lockwasher (M10)	4
192	126231	STCP R	126231	STCP R	126231	STCP R	Lockwasher (M10)	4
194	126522	STCP R	126522	STCP R	126522	STCP R	Nut, Hex (M10 x 1.5) (See Tech Bulletin 074)	4
196	20326	BBCP	20326	BBCP	20326	BBCP	Plug, Discharge Manifold [3/4" NPT(M)]	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. For additional technical information see [www.catpumps.com/literature/tech-bulletins](http://www.catpumps.com/literature/tech-bulletins).

When replacing Prrrrrm-A-Lube Seals with Blue-Dot Seals, wick must be installed. MATERIAL CODES (Not Part of Part Number):

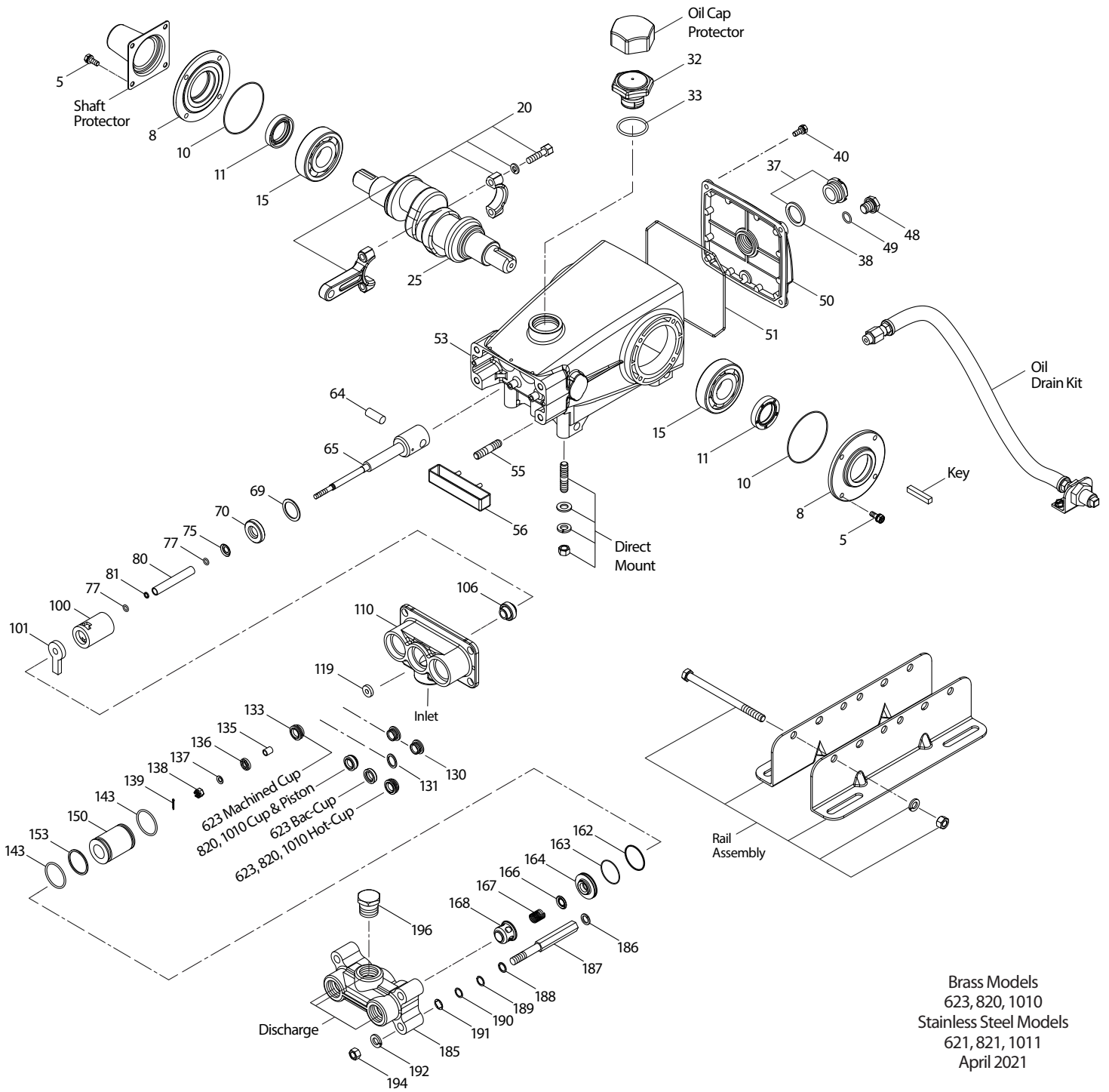
ABS=ABS Plastic AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CM=Chrome-Moly F=Cast Iron FCM=Forged Chrome-moly FPM=Fluorocarbon

NBR=Medium Nitrile (Buna-N) NY=Nylon PC=Poly Carbonate POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride

S=304SS SCP=304SS/Chrome Plated SNG=Special Blend (Buna) SS=316SS STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated

SZZ=304SS/Zamak ST4=Special PTFE 4 TNM=Special High Strength

# EXPLODED VIEW



## OPTIONAL PARTS AND ACCESSORIES

PART	DESCRIPTION	QTY
50146	Key, M7 x 7 x 40	1
30613	Assembly, Rail	1
30653	Assembly, Mount	1
30264	Mount, Direct	1
828710	Protector, Oil Cap	1
43139	Protector, Shaft	1
34334	Kit, Oil Drain	1
30284	Hub and Key Assembly	1

## SERVICE PARTS

PART	DESCRIPTION	QTY
<b>30305</b>	Kit, Seal – Standard NBR	1
<b>30687</b>	Kit, Valve – Standard NBR	1
6107	Oil, Bottle (21 oz) ISO 68 Hydraulic (Fill to Specified Crankcase Capacity Prior to Start-up)	2
6124	Gasket, Liquid (3 oz)	1
6119	Lubricant, Anti-Seize (2 oz) (Models 621, 821, 1011)	1

**SEAL KITS** One (1) seal kit required per pump

PUMP MODELS	NBR (STD)	Blue Dot*
621, 623, 820, 821, 1010, 1011	30305	30226

ITEM (Included in Seal Kits)	DESCRIPTION			QTY
106	30315**	25153**	Seal, Low-Pressure	3
139	14158	14158	Cotterpin	3
101	N/A	27910	Wick	3

\*Use with oil pan PN 27911, \*\*Use PN 30325 for FPM, and use PN 100015 for FPM (Ungreased)

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

PUMP MODELS	NBR (STD)	Blue Dot*
621, 623, 820, 821, 1010, 1011	30397	30227

ITEM (Included in Sleeve and Seal Kits)	DESCRIPTION			QTY
75	25327	25327	Slinger, Barrier	3
77	25392**	25392**	O-Ring, Sleeve	3
80	27340	27340	Sleeve	3
101	N/A	27910	Wick	3
106	30315***	25153***	Seal, Low-Pressure	3
139	14158	14158	Cotterpin	3

\*Use with oil pan PN 27911, \*\*Use PN 28771 for FPM, \*\*\*Use PN 30325 for FPM, and use PN 100015 for FPM (Ungreased)

**CUP KITS** One (1) cup kit required per pump

Pump Models	623	623	623	623	623	820	820	820	1010	1010	1010
	621	621	621	621	621	821	821	821	1011	1011	1011
	NBR	NBR	NBR	FPM	ST4	NBR	NBR	ST4	NBR	NBR	ST4
(STD)	(HOT)	(BAC)	(BAC)	(CUP-Piston)	(STD)	(HOT)	(CUP-Piston)	(STD)	(HOT)	(CUP-Piston)	
	30220	76238	30822	43474	76515	30222	30437	76333	30224	30300	76189

ITEM (Included in Cup Kits)	DESCRIPTION											QTY	
130					30543							Piston (Bac-Cup)	3
131					30544							Bac-Cup Ring	3
133	30340	29089	43172	43172	76515*	27821	29091	76333*	27815	29092	76189**	Cup	3
139	14158	14158	14158			14158	14158		14158	14158		Cotterpin	3
143	26969	26969	26969			26969	26969		26969	26969		O-Ring, Cylinder	6
153	28204	28204	28204			28204						Backup Ring, Cylinder	3
355			22130			16981			15770			Insertor, Cup	1

\*76515 and 76333 are only CUPS with a FPM O-ring, \*\*76189 is only a CUP with a FPM O-ring and 76189.0220 is only a CUP with a EPDM O-ring

**PISTON KITS** One (1) piston kit required per pump

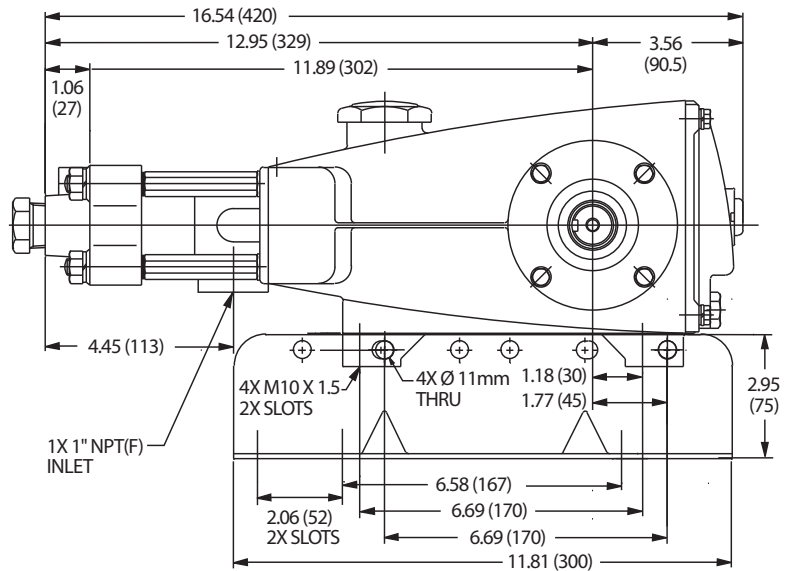
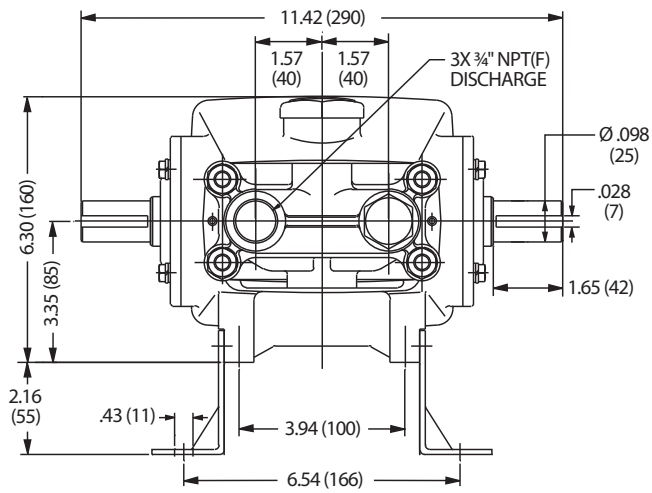
PUMP MODELS	621, 623	621, 623	820, 821	1010, 1011
	NBR (STD)	FPM (BAC-CUP)	NBR (STD)	NBR (STD)
	30219	30843	30221	30223

ITEM (Included in Piston Kits)	DESCRIPTION				QTY	
119	27347	27347	27497	27813	Valve, Inlet	3
130	N/A		27820	27814	Piston	3
133	30340	43474	27821	27815	Cup	3
135	27348		27499	27499	Spacer, Piston	3
136	27002		27500	20324	Retainer, Piston	3
137	27006		27006	27006	Washer, Conical	3
138	27000		27000	27000	Nut, Slotted	3
139	14158	14158	14158	14158	Cotterpin	3
143	26969	26969	26969	26969	O-Ring, Cylinder	6
153	28204	28204	28204	N/A	Backup Ring, Cylinder	3
355		22130	16981	15770	Insertor, Cup	1

**VALVE KITS** One (1) valve kit required per pump

PUMP MODELS	NBR (STD)	NBR (FLAT)
621, 623, 820, 821, 1010, 1011	30687	30449

ITEM (Included in Valve Kits)	DESCRIPTION		QTY	
143	26969	26969	O-Ring, Cylinder	6
153	28204	28204	Backup Ring, Cylinder	3
162	43062	43062	Backup Ring, Seat	3
163	26966	26966	O-Ring, Seat	3
164	43428	43063	Seat	3
166	43721	20262	Valve	3
167	43251	20265	Spring	3
168	43429	43135	Retainer, Spring	3



Model 1010

**⚠ 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](http://www.catpumps.com/dynamic-literature/cautions-and-warnings) or can be requested directly from Cat Pumps.

**WARRANTY**

View the Limited Warranty on-line at [www.catpumps.com/literature/cat-pumps-limited-warranty](http://www.catpumps.com/literature/cat-pumps-limited-warranty)

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