



## 28 Frame Block-Style Stainless Steel Plunger Pump

**Standard  
Model**

**2831**

**Flushed  
Model**

**2831K**

### FEATURES

#### Superior Design

- Triplex plunger design gives smoother liquid flow.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- Oil bath crankcase assures optimum lubrication.
- Close tolerance concentricity of the ceramic plunger maximizes seal life.
- **Standard Models:** Lo-Pressure Seals and V-Packings are completely lubricated and cooled by the liquid being pumped.

**Flushed Models:** Special ported inlet manifold permits liquid to cool or flush between V-Packings and Lo-Pressure Seals providing protection against high temperatures or contaminating pumped liquids.

#### Quality Materials

- Precision design 316 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- 316 SSL block-style manifolds for strength and corrosion resistance.
- Special concentric, high-density, polished, solid ceramic plungers are provide a true wear surface and extended seal life.
- Specially formulated, CAT PUMP exclusive, Hi-Pressure Seals offer unmatched performance and seal life.
- Die cast aluminum crankcase provides high strength, minimum weight and precision tolerance control.
- Optional Cast Iron crankcase for hazardous environments.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.

#### Easy Maintenance

- Wet-end is easily serviced without entering crankcase, requiring less time and effort.
- Preset packings mean no packing gland adjustment is necessary, reducing maintenance costs.

#### **⚠ 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
Flow .....	25 GPM	(95 L/M)
Pressure Range .....	100 to 1000 PSI	(7 to 70 BAR)
RPM .....	1025 RPM	(1025 RPM)

#### Alternate Specifications

Flow .....	21 GPM	(80 L/M)
Pressure Range .....	100 to 1200 PSI	(7 to 85 BAR)
RPM .....	.860 RPM	(860 RPM)

#### COMMON SPECIFICATIONS

Inlet Pressure Range* .....	Flooded to 70 PSI	(Flooded to 4.9 BAR)
Bore .....	1.260"	(32 mm)
Stroke .....	1.516"	(38.5 mm)
Crankcase Capacity .....	.84 oz.	(2.5 L)
Maximum Liquid Temperature .....	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (2) .....	1-1/4" NPTF	(1-1/4" NPTF)
Flushing Ports (2) .....	1/4" NPTF	(1/4" NPTF)
Discharge Ports (2) .....	3/4" NPTF	(3/4" NPTF)
Pulley Mounting .....	Either Side	(Either Side)
Shaft Diameter .....	1.181"	(30 mm)
Weight .....	104 lbs.	(42.7 kg)
Dimensions .....	18.98 x 15.04 x 8.03"	(482 x 382 x 204 mm)

\*"K" models have special inlet ports for cooling/flushing and containment of hazardous liquids. Contact CAT PUMPS for additional information.

### ELECTRIC HORSEPOWER REQUIREMENTS

FLOW		PRESSURE			RPM	DRIVE
U.S. GPM	L/M	PSI 800	PSI 1000	PSI 1200		
		BAR 55	BAR 70	BAR 85		Consult Pulley Mfr. for Pump and Motor Pulley Sizes
25	95	13.7	17.1	—	1025	
21	80	11.5	14.4	17.3	860	
18	68	9.9	12.4	14.8	738	
15	57	8.3	10.3	12.4	615	

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

Rated G.P.M.  
Rated R.P.M.

= "Desired" G.P.M.  
"Desired" R.P.M.

**DETERMINING  
THE REQUIRED H.P.**

GPM x PSI  
1460

= Electric Brake  
H. P. Required

**DETERMINING  
MOTOR PULLEY SIZE**

Motor Pulley O.D.  
Pump R.P.M.

= Pump Pulley O.D.  
Motor R.P.M.

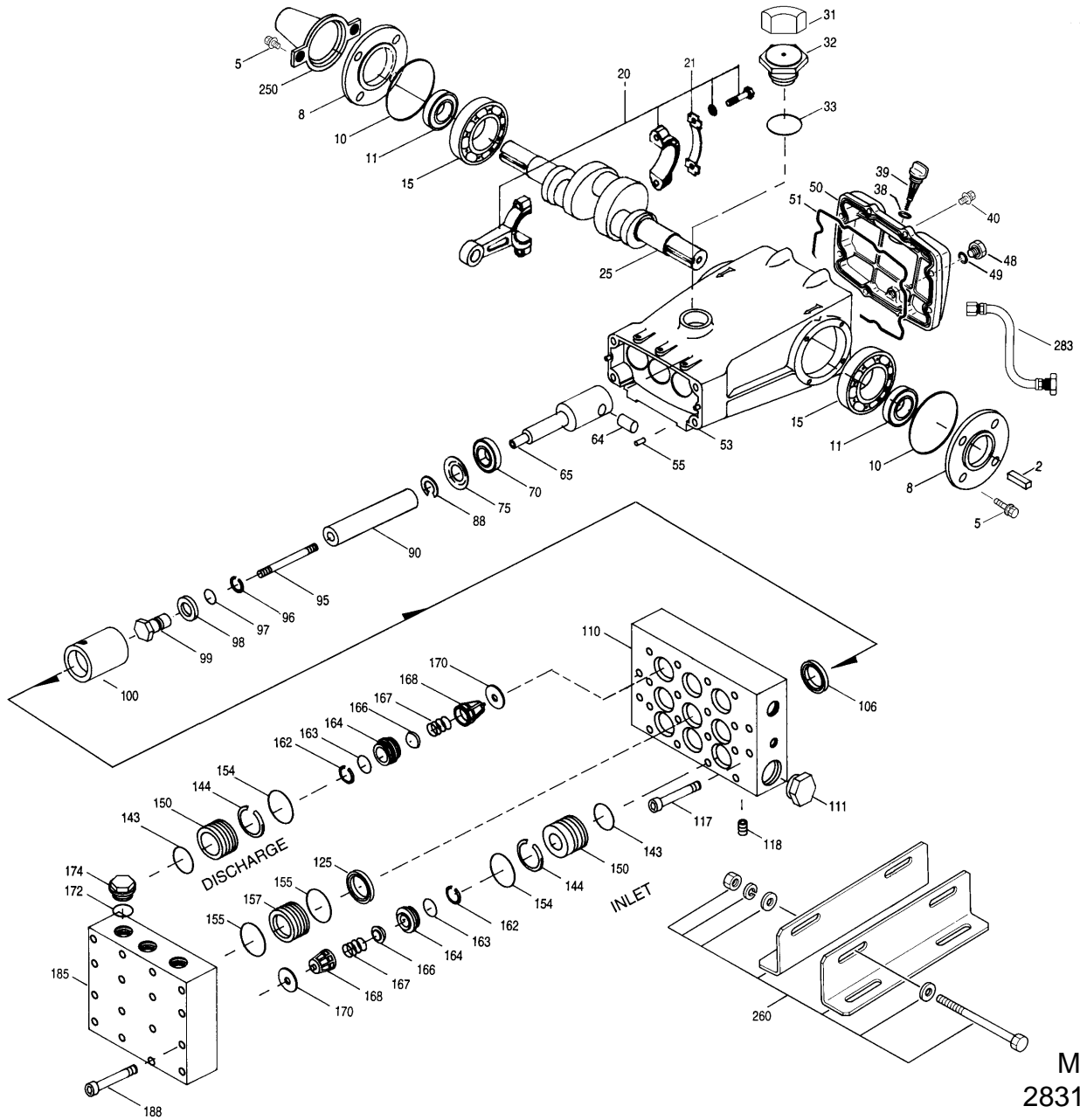
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.  
Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

*"Customer confidence is our greatest asset"*

# PARTS LIST

ITEM	PART NUMBER		DESCRIPTION		QTY	
	2831	MATL	2831K	MATL		
2	990036	STL	990036	STL	Key (M8x7x40) [2/00]	1
5	118824	S	118824	S	Screw, Sems HHC (M8x25)	8
8	27773	AL	27773	AL	Cover, Bearing	2
10	27772	NBR	27772	NBR	O-Ring, Cover, Bearing - 70D	2
11	27771	NBR	27771	NBR	Seal, Oil, Crankshaft - 70D	2
15	26512	STL	26512	STL	Bearing, Ball	2
20	48613	TNM	48613	TNM	Rod, Connecting [10/00]	3
21	48533	STZP	48533	STZP	Washer, Tab	3
25	48704	FCM	48704	FCM	Crankshaft, Dual End [2/00]	1
31	828710	—	828710	—	Protector, Oil Cap	1
32	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap - 70D	1
38	11338	NBR	11338	NBR	O-Ring, Dipstick - 70D	1
39	27769	ABS	27769	ABS	Dipstick	1
40	118824	S	118824	S	Screw, Sems HHC (M8x25)	8
48	25625	STCP	25625	STCP	Plug, Drain (1/4"x19 BSP)	1
49	23170	NBR	23170	NBR	O-Ring, Drain Plug - 70D	1
50	27768	AL	27768	AL	Cover, Rear	1
51	27767	NBR	27767	NBR	O-Ring, Rear Cover - 70D	1
53	27762	AL	27762	AL	Crankcase w/Guide Pins	1
55	27488	S	27488	S	Pin, Guide	2
64	27784	CM	27784	CM	Pin, Crosshead	3
65	48592	SSHS	48592	SSHS	Rod, Plunger	3
70	27785	NBR	27785	NBR	Seal, Crankcase, Oil - 70D	3
75	110669	S	110669	S	Slinger, Barrier	3
88	110670	S	110670	S	Washer, Keyhole	3
90	45749	CC	45749	CC	Plunger (M32x93)	3
95	89835	SSL	89835	SSL	Stud, Retainer, (M7x71)	3
96	20184	PTFE	20184	PTFE	Back-up-Ring, Plunger Retainer	3
97	14190	NBR	14190	NBR	O-Ring, Plunger Retainer - 70D	3
	14161	FPM	14161	FPM	O-Ring, Plunger Retainer - 70D	3
	◆ 48239	EPDM	◆ 48239	EPDM	O-Ring, Plunger Retainer	3
98	44069	SSL	44069	SSL	Gasket, Plunger Retainer	3
99	44068	SSL	44068	SSL	Retainer, Plunger (M7)	3
100	110672	NY	110672	NY	Retainer, Seal	3
106	44098	NBR	44098	NBR	Seal, LPS w/SS-Spg	3
	44827	FPM	44827	FPM	Seal, LPS w/SS-Spg	3
	◆ 48244	EPDM	◆ 48244	EPDM	Seal, LPS w/SS-Spg	3
110	701661	SSL	—	—	Manifold, Inlet, Block-Style	1
	—	—	701719	SSL	Manifold, Inlet Block-Style, Flushed	1
111	701104	SS	701104	SS	Plug, Inlet Manifold, (1-1/4" NPTM)	1
117	701693	S	701693	S	Screw HSH (M12x80)	4
118	701077	SS	701077	SS	Plug, (1/4" NPT), Flush Port	3
125	45832	SNG	45832	SNG	Seal, HPS w/SS	3
	48220	STG	48220	STG	Seal, HPS w/SS	3
143	14200	NBR	14200	NBR	O-Ring, Valve Adapter, Rear - 70D	6
	11719	FPM	11719	FPM	O-Ring, Valve Adapter, Rear	6
	◆ 701654	EPDM	◆ 701654	EPDM	O-Ring, Valve Adapter, Rear - 80D	6
144	28243	PTFE	28243	PTFE	Back-up-Ring, Valve Adapter	6
150	701675	SS	701675	SS	Adapter, Valve	6
154	11379	NBR	11379	NBR	O-Ring, Valve Adapter, Front - 70D	6
	14183	FPM	14183	FPM	O-Ring, Valve Adapter, Front	6
	◆ 701784	EPDM	◆ 701784	EPDM	O-Ring, Valve Adapter, Front	6
155	14520	NBR	14520	NBR	O-Ring, Seal Spacer	6
	11745	FPM	11745	FPM	O-Ring, Seal Spacer	6
	◆ 28240	EPDM	◆ 28240	EPDM	O-Ring, Seal Spacer	6
157	701692	SS	701692	SS	Spacer, HPS	3
162	21985	PTFE	21985	PTFE	Back-up-Ring, Seat	6
163	26089	NBR	26089	NBR	O-Ring, Seat - 80D	6
	11377	FPM	11377	FPM	O-Ring, Seat - 80D	6
	◆ 46647	EPDM	◆ 46647	EPDM	O-Ring, Seat - 80D	6
164	44080	SS	44080	SS	Seat	6
166	44081	SS	44081	SS	Valve	6
167	44082	SS	44082	SS	Spring	6
168	44735	PVDF	44735	PVDF	Retainer, Spring	6
170	44794	SS	44794	SS	Washer, Spring Retainer	6
172	700008	NBR	700008	NBR	O-Ring, Valve Plug	3
	700048	FPM	700048	FPM	O-Ring, Valve Plug	3
	◆ 701782	EPDM	◆ 701782	EPDM	O-Ring, Valve Plug	3
174	701694	SS	701694	SS	Plug, Valve	3
185	701662	SSL	701662	SSL	Manifold, Valve, Block-Style	1
188	89628	S	89628	S	Screw HSH (M12x65)	16
250	26516	STCP	26516	STCP	Protector, Shaft	1
260	30614	STZP	30614	STZP	Rail Assy, Angle (Incls: 27808, 30902, 30930, 30908, 30911)	1
269	30206	F	30206	F	Pulley, 10" AB [See Drive Packages, Tech Bulletin 003]	1
270	30207	STL	30207	STL	Hub, "H", M30 (Keyway M7) [See Drive Packages, Tech Bulletin 003]	1

# EXPLODED VIEW



Models  
2831, 2831K  
August 2005

	<b>2831</b>	<b>MATL</b>	<b>2831K</b>	<b>MATL</b>		
283	34334	—	34334	—	Kit, Oil Drain	1
290	6104	—	6104	—	Gasket, Liquid (1 oz.) [See Tech Bulletin 053]	1
299	<b>901402</b>	<b>SSL</b>	—	—	Head, Complete, Block-Style	1
	—	—	<b>901403</b>	<b>SSL</b>	Head, Complete, Block-Style, Flushed	1
300	701731	NBR	701731	NBR	Kit, Seal (Incls: 96,97,106,125,143,144,154,155)	1
	701806	FPM	701806	FPM	Kit, Seal (Incls: 96,97,106,125,143,144,154,155)	1
	◆ 33604	EPDM	◆ 33604	EPDM	Kit, Seal (Incls: 96,97,106,125,143,144,154,155)	1
310	701732	NBR	701732	NBR	Kit, Valve (Incls: 143,144,154,155,162,163,164,166,167,168,170,172)	2
	701807	FPM	701807	FPM	Kit, Valve (Incls: 143,144,154,155,162,163,164,166,167,168,170,172)	2
	◆ 701796	EDPM	◆ 701796	EPDM	Kit, Valve (Incls: 143,144,154,155,162,163,164,166,167,168,170,172)	2
370	—	—	990663	—	Assembly, Flushing, 5 gal, 115V, 1.1 Amp, 1/2"NPT	1
390	714500	SS	714500	SS	C.A.T. (Captive Acceleration Tube)	1
391	714505	SS	714505	SS	Adapter (2 per C.A.T.) (See Data Sheet for complete selection)	2
—	6100	—	6100	—	Oil, Case (12 Bottles) ISO 68 Multi-viscosity Hydraulic	1
—	6119	—	6119	—	(Fill to specified crankcase capacity prior to start-up)	1
—	—	—	—	—	Lubricant, Antiseize (1 oz.)	1

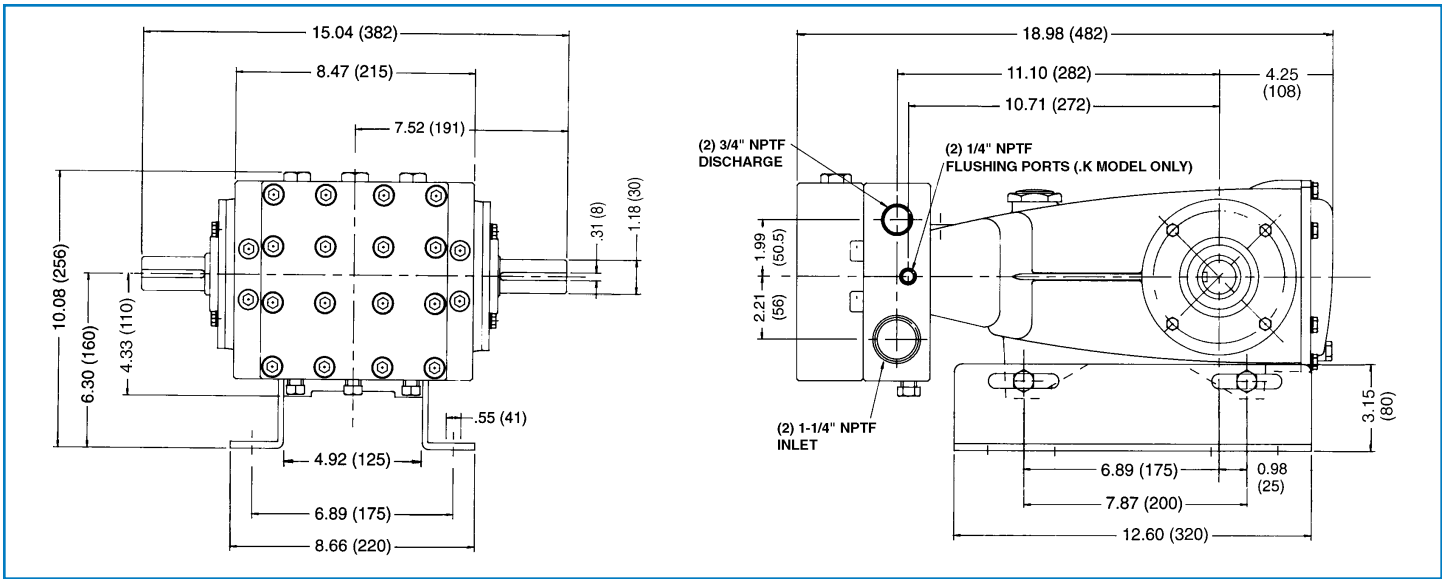
**Bold print part numbers are unique to a particular pump model. Italics are optional items. ◆ Silicone oil/grease required.**

[ ] Date of latest production change. See Tech Bulletins 002, 003, 024, 036, 043, 053, 074, 077, 083 and 085 for additional information.

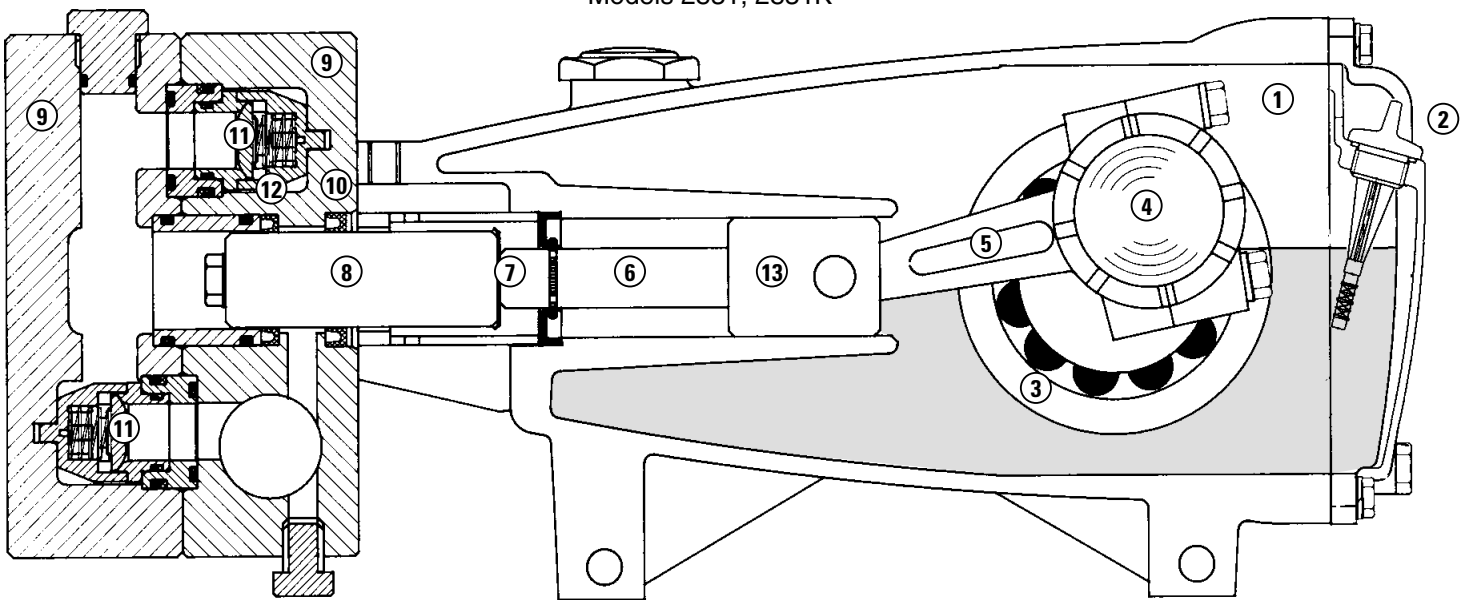
MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum CC=Ceramic CM=Chrome-moly

EPDM=Ethylene Propylene Diene Monomer F=Cast Iron FCM=Forged Chrome-moly FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N)

NY=Nylon PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SS=316SS SNG=Special Blend (Buna) SSL=316SS/Low Carbon  
STG=Special Blend PTFE White SSS=316SS/High Strength STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength



Models 2831, 2831K



- 1 Die cast aluminum **crankcase** means high strength, lightweight, and excellent tolerance control.
- 2 **Dipstick** offers convenient top access for easy oil level check.
- 3 Oversized crankshaft **bearings** provide extended bearing life and pump performance.
- 4 Chrome-moly **crankshaft** provides unmatched strength and surface hardness for long life.
- 5 Matched oversized high strength **connecting rods** are noted for superior endurance and bearing quality.
- 6 Special stainless steel **plunger rods** with high strength crossheads for longevity and corrosion resistance.
- 7 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 8 Special concentric, high-density, polished, solid ceramic **plungers** provide a true wear surface and extended seal life.
- 9 **Manifolds** are 316 SSL block-style for long-term, continuous-duty and corrosion resistance.
- 10 **Standard Models:** Lo-Pressure Seals and Hi-Pressure Seals are completely lubricated and cooled by the liquid being pumped.
- 10 **Flushed Models:** Special ported inlet manifold permits liquid to cool or flush between Hi-Pressure and Lo-Pressure Seals providing protection against high temperatures or contaminating pumped liquids.
- 11 316 stainless steel **valves, seats and springs** provide corrosion-resistance, ultimate seating and extended life.
- 12 Specially formulated, CAT PUMP exclusive, **Hi-Pressure Seals** offer unmatched performance and seal life.
- 13 **Crossheads** are 360° supported for uncompromising alignment.

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