

18 Frame Block-Style Stainless Steel Plunger Pump

**Standard
Model**

1861

**Flushed
Model**

1861K

FEATURES

Superior Design

- Triplex plunger design provides 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 K Models: Special ported inlet manifold permits an external flush liquid providing cooling for hi-temp liquids and lubrication for low lubricity 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 provide a true wear surface and extended seal life.
- Specially formulated, CAT PUMP exclusive, V-Packings offer unmatched performance and seal life.
- Die cast aluminum crankcase provides high strength, minimum weight and precision tolerance control.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity mean longer bearing life.

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	10.0 GPM	(38 L/M)
Pressure Range	100 to 3000 PSI	(7 to 210 BAR)
Inlet Pressure Range.....	+10 to 60 PSI	(0.70 to 4 BAR)
RPM	1429 RPM	(1429 RPM)
Bore.....	0.787"	(20 mm)
Stroke.....	1.181"	(30 mm)
Crankcase Capacity	42 oz.	(1.26 L)
Maximum Liquid Temperature	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (2)	1" NPTF	(1" NPTF)
Flushing Ports (2)*	1/4" NPTF	(1/4" NPTF)
Discharge Ports (2).....	1/2" NPTF	(1/2" NPTF)
Pulley Mounting	Either Side	(Either Side)
Shaft Diameter	1.181"	(30 mm)
Weight.....	67 lbs.	(30.4 kg)
Dimensions	18.37 x 12.99 x 6.49"	(450 x 330 x 165 mm)

* Flushed K Models: Special ported inlet manifold permits an external flush liquid providing cooling for hi-temp liquids and lubrication for low lubricity liquids.

ELECTRIC HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE							MOTOR PULLEY SIZE	
			PSI 1500	PSI 1800	PSI 2000	PSI 2200	PSI 2500	PSI 3000	RPM	Pulley O.D.	
	U.S. GPM	L/M	BAR 105	BAR 125	BAR 140	BAR 155	BAR 175	BAR 210			
1861	10.0	38	10.3	12.4	13.7	15.1	17.2	20.5	1429	8.1	
1861K	9.0	34	9.3	11.1	12.4	13.6	15.4	18.5	1286	7.3	

DETERMINING THE PUMP R.P.M. $\frac{\text{Rated G.P.M.}}{\text{Rated R.P.M.}}$ = "Desired" G.P.M. / "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 $\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}}$ = $\frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$

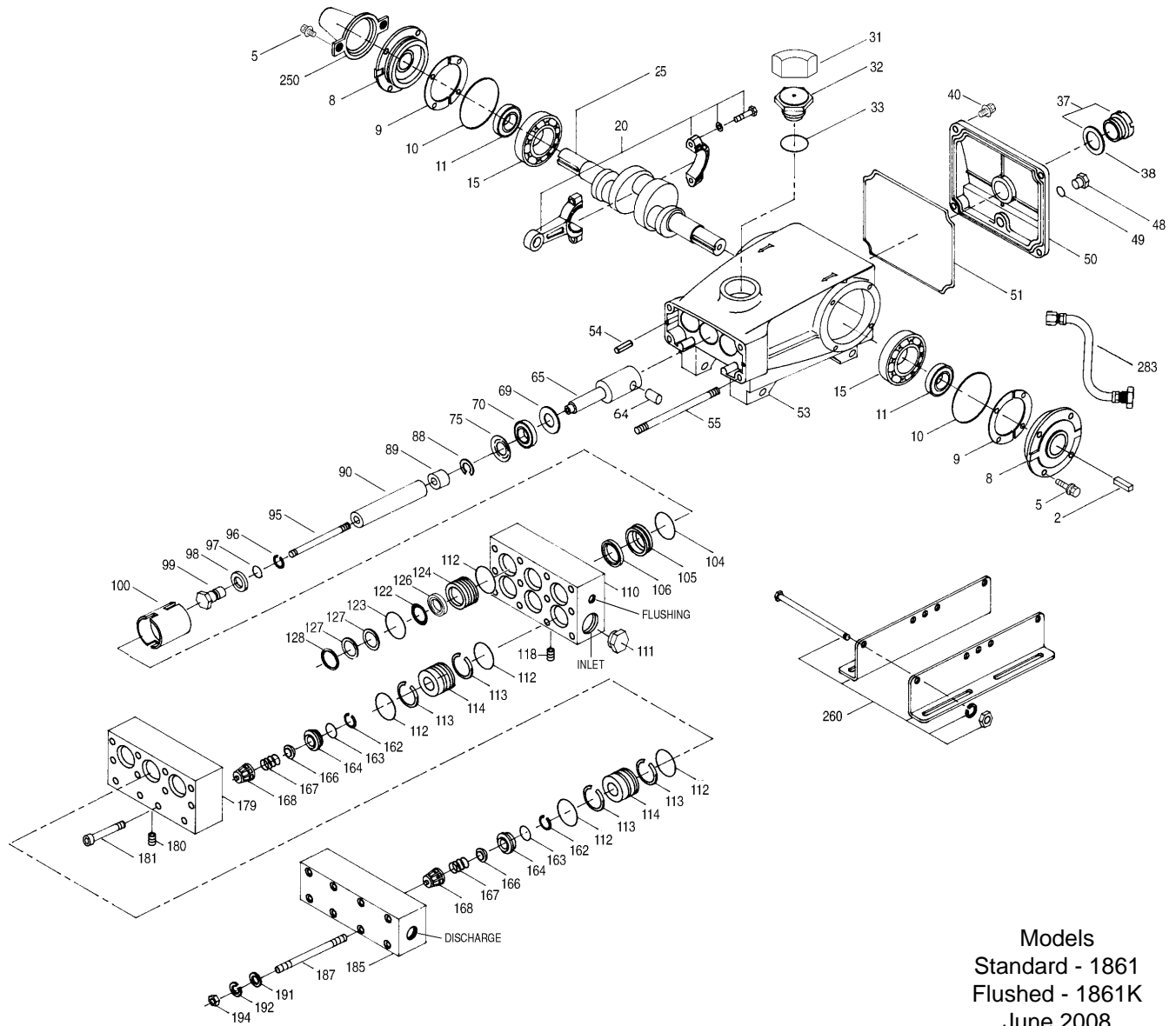
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003. Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM	PART NUMBER		DESCRIPTION	QTY	
	1861	1861K			
	MATL	MATL			
2	30067	STL	30067 STL	Key (M8x7.5x25)	1
5	92538	S	92538 S	Screw, HHC, Sems (M6x16)	8
8	43496	AL	43496 AL	Cover, Bearing	2
9	815281	FBR	815281 FBR	Shim, Split 2-Pc,	0/2
	814800	S	814800 S	Shim, Split 2-Pc	0/2
10	11340	NBR	11340 NBR	O-Ring, Bearing Cover - 70D	2
11	43495	NBR	43495 NBR	Seal, Oil, Crankshaft - 70D	2
15	39060	STL	39060 STL	Bearing, Roller	2
20	48600	TNM	48600 TNM	Rod, Connecting Assy [11/00]	3
25	43494	FCM	43494 FCM	Crankshaft, Dual End	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, 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	92542	S	92542 S	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	43491	AL	43491 AL	Cover, Rear	1
51	44834	NBR	44834 NBR	O-Ring, Rear Cover - 70D	1
53	115471	AL	115471 AL	Crankcase w/Guide Pins	1
54	27488	S	27488 S	Pin, Guide	2
55	701268	SS	701268 SS	Stud, Manifold (M10x180)	4
64	43507	CM	43507 CM	Pin, Crosshead	3
65	48892	SSHB	48892 SSHB	Rod, Plunger [3/02]	3
69	126592	STCP R	126592 STCP R	Washer, Seal, Flat	3
70	43500	NBR	43500 NBR	Seal, Oil, Crankcase - 80D	3
75	43506	S	43506 S	Slinger, Barrier	3
88	45675	S	45675 S	Washer, Keyhole (M12)	3
89	45880	SS	45880 SS	Spacer, Collar	3
90	43300	CC	43300 CC	Plunger (M20x77)	3
95	89651	SS	89651 SS	Stud, Plunger Retainer (M6x70)	3
96	43235	PTFE	43235 PTFE	Back-up-Ring, Plunger Retainer	3
97	17399	NBR	17399 NBR	O-Ring, Plunger Retainer - 80D	3
	14160	FPM	14160 FPM	O-Ring, Plunger Retainer - 70D	3
	◆ 46204	EPDM	◆ 46204 EPDM	O-Ring, Plunger Retainer - 70D	3
98	44041	SS	44041 SS	Gasket, Plunger Retainer	3
99	44031	SS	44031 SS	Retainer, Plunger (M6)	3
100	43509	POP	43509 POP	Retainer, Seal	3
104	11379	NBR	11379 NBR	O-Ring, Inlet Adapter - 70D	3
	700134	FPM	700134 FPM	O-Ring, Inlet Adapter	3
	◆ 701491	EPDM	◆ 701491 EPDM	O-Ring, Inlet Adapter - 70D	3
105	701270	SSL	701270 SSL	Adapter, LPS	3
106	44071	NBR	44071 NBR	Seal, LPS w/SS-Spg	3
	44381	FPM	44381 FPM	Seal, LPS w/SS-Spg	3
	◆ 701974	SFTB*	◆ 701974 SFTB*	Seal, LPS w/SS-Spg	3
110	701299	SSL	—	Manifold, Inlet, Block-Style	1
	—	—	701309 SSL	Manifold, Inlet, Block-Style, Flushed	1
111	701342	SS	701342 SS	Plug, Inlet (1"NPTM)	1
112	26969	NBR	26969 NBR	O-Ring, Spacer - 70D	15
	28459	FPM	28459 FPM	O-Ring, Spacer	15
	◆ 701863	EPDM	◆ 701863 EPDM	O-Ring, Spacer	15
113	28204	PTFE	28204 PTFE	Back-up-Ring, Spacer	12
114	701272	SS	701272 SS	Adapter, Valve, IMDM	6
118	701077	SS	701077 SS	Plug (1/4"NPTM)	3
122	43519	PTFE	43519 PTFE	Back-up-Ring, Spacer	3
123	13984	NBR	13984 NBR	O-Ring, Spacer	3
	14333	FPM	14333 FPM	O-Ring, Spacer	3
	◆ 701945	EPDM	◆ 701945 EPDM	O-Ring, Spacer	3
124	701271	SSL	701271 SSL	Cylinder, V-Packing	3
126	44164	SS	44164 SS	Adapter, Female	3
127	44607	STG*	44607 STG*	V-Packing	6
	44386	FPM	44386 FPM	V-Packing	6
128	44165	SS	44165 SS	Adapter, Male	3
162	43248	PTFE	43248 PTFE	Back-up-Ring, Seat	6
163	43249	NBR	43249 NBR	O-Ring, Seat - 80D	6
	44383	FPM	44383 FPM	O-Ring, Seat - 70D	6
	◆ 46206	EPDM	◆ 46206 EPDM	O-Ring, Seat - 70D	6
164	44037	SS	44037 SS	Seat	6
166	48793	SSL	48793 SSL	Valve	6
167	44039	SS	44039 SS	Spring, Valve	6
168	44564	PVDF	44564 PVDF	Retainer, Spring	6
179	701265	SSL	701265 SSL	Manifold, Valve Block, Block-Style	1
180	701078	SS	701078 SS	Plug (3/8"NPTM)	3
181	89628	S	89628 S	Screw, HSH (M12x65)	4
185	701300	SSL	701300 SSL	Manifold, Discharge, Block-Style	1
187	701269	SS	701269 SS	Stud, Manifold (M10x132)	4
191	19934	SS	19934 SS	Washer, Flat (M10)	8
192	15847	S	15847 S	Lockwasher (M10)	8
194	81258	S	81258 S	Nut (M10)	8

EXPLODED VIEW



Models
Standard - 1861
Flushed - 1861K
June 2008

	1861	MATL	1861K	MATL		
250	30764	NY	30764	NY	Protector, Shaft w/2 Screws	1
255	30264	STZP	30264	STZP	Mount, Direct	1
260	30613	STZP	30613	STZP	Mount, Rail, Assy	1
265	30661	—	30661	—	Kit, Complete Mounting - U.S. (30613, 30206, 30059, 30067, 30764)	1
269	30206	F	30206	F	Pulley, 10.0" AB [See Drive Packages, Tech Bulletin 03]	1
274	30059	STL	30059	STL	Hub, H (M30) [See Drive Packages, Tech Bulletin 03]	1
283	34334	—	34334	—	Kit, Oil Drain	1
290	6124	—	6124	—	Gasket, Liquid (3 oz.)	1
299	901308	SSL	—	—	Head, Complete, Block-Style	1
	—	—	901309	SSL	Head, Complete, Block-Style, Flushed	1
300	701275	NBR*	701275	NBR*	Kit, Seal (Incls: 97, 104, 106, 112, 113, 122, 123, 127)	1
	701809	FPM	701809	FPM	Kit, Seal (Incls: 97, 104, 106, 112, 113, 122, 123, 127)	1
	◆ 701808	EPDM*	◆ 701808	EPDM*	Kit, Seal (Incls: 97, 104, 106, 112, 113, 122, 123, 127)	1
310	701695	NBR	701695	NBR	Kit, Valve (Incls: 112, 113, 162, 163, 164, 166, 167, 168)	2
	701434	FPM	701434	FPM	Kit, Valve (Incls: 112, 113, 162, 163, 164, 166, 167, 168)	2
	◆ 701804	EPDM	◆ 701804	EPDM	Kit, Valve (Incls: 112, 113, 162, 163, 164, 166, 167, 168)	2
350	30696	STZP	30696	STZP	Plier, Reverse	1
370	—	—	990663	—	Assembly, Flushing, 5 gal, 115V, 1.1Amp, 1/2" NPT	1
—	711500	SS	711500	SS	C.A.T. (Inlet pressure stabilizer for RO and boosted inlet applications)	1
—	711504	SS	711504	SS	Adapter (2 per C.A.T.) (See Data Sheet for complete selection)	2
—	6100	—	6100	—	Oil, Case (12-21 oz. Bottles) 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. ◆ Silicone oil/grease required.

R Components comply with RoHS Directive. *Review material codes for individual items (STG and SFTB generally may be used as alternates).

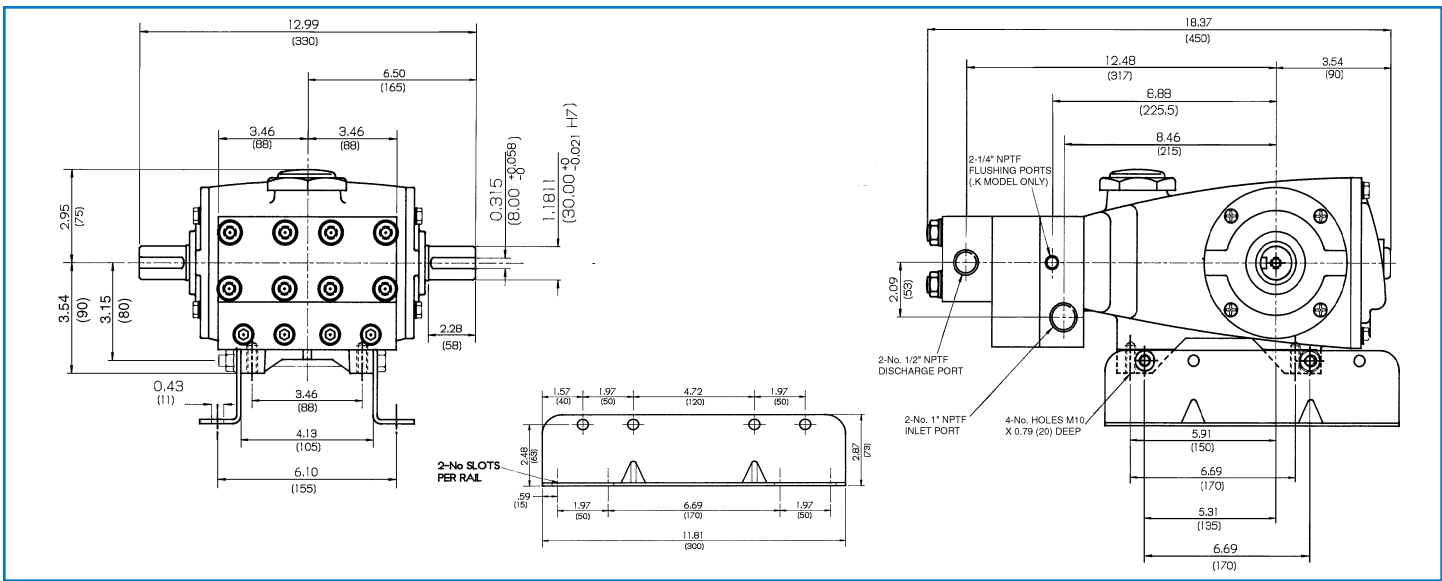
See Tech Bulletins 002, 003, 024, 035, 036, 043, 074, 077, 083 and 089 for additional information. **C. A.T. highly recommended for pressurized inlet, R.O. and Industrial applications.**

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

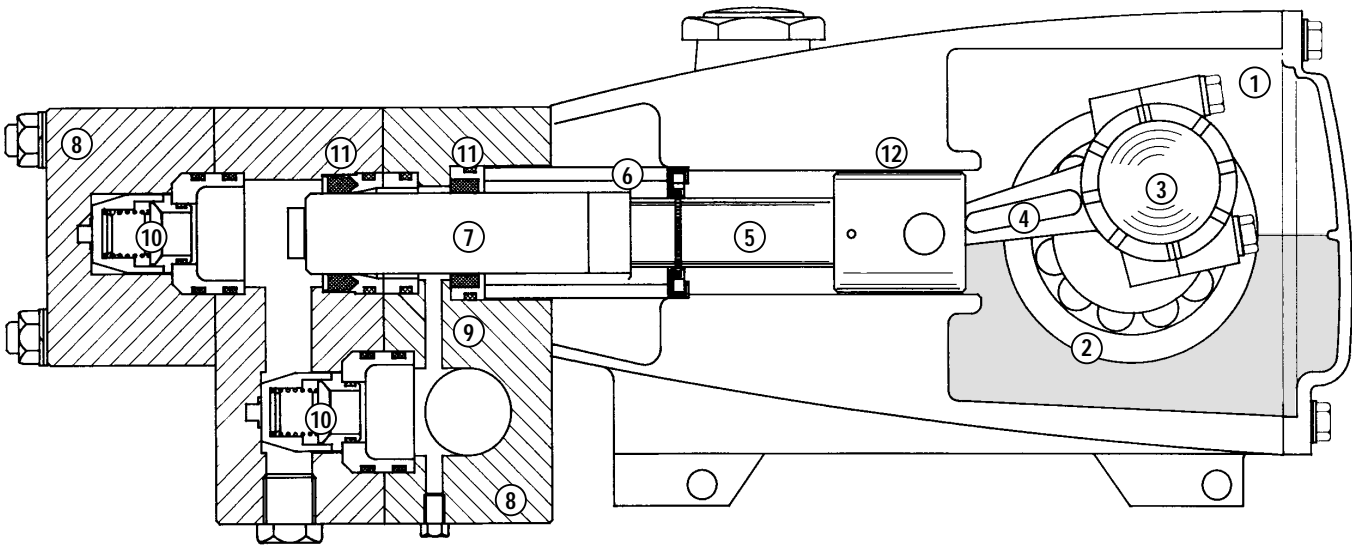
FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene

PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SFTB=Special Blend PTFE Black SS=316SS SSHB=316SS w/High Strength Brass

SSL=316SS/Low Carbon STCP=Steel/Chrome Plated STG=Special Blend PTFE White STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength



Models 1861 and 1861K



- 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 Special stainless steel **plunger rods** with high strength crossheads for longevity and corrosion resistance.
- 6 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 Special concentric, high-density, polished, solid ceramic **plungers** provide a true wear surface and extended seal life.
- 8 **Manifolds** are 316 SSL block-style for long term continuous duty and corrosion resistance.
- 9 **Standard Models:** Lo-Pressure Seals and V-Packings are completely lubricated and cooled by the liquid being pumped.
- 9 **Flushed Models:** Optional special ported Flushed Inlet Manifold permits external flush for lubricating and cooling seals when pumping liquids such as DI water, Hi-Temp or low lubricity.
- 10 Stainless steel **valves, seats and springs** provide corrosion-resistance, ultimate seating and extended life.
- 11 Specially formulated, CAT PUMP exclusive, **V-Packings** offer unmatched performance and seal life.
- 12 **Crossheads** are 360° supported providing uncompromising alignment.

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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