

15 Frame Plunger Pumps

Standard Models

650, 660

Stainless Steel Models

651, 661

FEATURES

Superior Design

- Triplex plunger design gives smoother fluid flow.
- High pressure seals are completely lubricated and cooled by the fluid being pumped.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- Lubricated low pressure seal provides double protection against external leakage.
- Oil bath crankcase assures optimum lubrication.
- Close tolerance concentricity of the ceramic plunger offers perfect alignment and maximizes seal life.

Quality Materials

- All stainless steel valves are heat treated and seats are roller burnished for a positive seal and extended valve life.
- Brass or 316 Stainless Steel manifolds are strong and corrosion resistance.
- Special hardened, polished surface of solid ceramic plunger is abrasion resistant and results in extended seal life.
- Optional FPM and EPDM elastomers for special compatibility.
- Specially formulated, CAT PUMP exclusive, Hi-Pressure Seal offers 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.
- Valve assemblies are accessible without disturbing piping, for quick service.
- Preset packings mean no packing gland adjustment is necessary, reducing maintenance costs.

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

DETERMINING THE REQUIRED H.P. $\frac{\text{GPM} \times \text{PSI}}{1460} = \text{Electric Brake H. P. Required}$

DETERMINING MOTOR PULLEY SIZE $\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}} = \frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$

Note: Consult engine manufacturer when using gas or diesel engine.
Refer to pump Service Manual for important Inlet Condition Check-List, Start-up Procedure, Tech Bulletins and Pump Maintenance information.

SPECIFICATIONS

MODELS 650, 651

	U.S. Measure	Metric Measure
Volume	7.0 GPM	(27 L/M)
Discharge Pressure	100 to 3000 PSI	(7 to 210 BAR)
Inlet Pressure	-5 to +60 PSI	(-0.35 to +4 BAR)
RPM	1000 RPM	(1000 RPM)

MODELS 660, 661

Volume	10 GPM	(38 L/M)
Discharge Pressure	100 to 3000 PSI	(7 to 210 BAR)
Inlet Pressure	+ 10 to +60 PSI	(+0.7 to +4 BAR)
RPM	1429 RPM	(1429 RPM)

*Intermittent Duty operation. Frequent cycle with Dump gun only.

COMMON SPECIFICATIONS

Bore.....	.787"	(20 mm)
Stroke.....	1.181"	(30 mm)
Crankcase Capacity	42 oz.	(1.26 L)
Maximum Fluid Temperature	160°F	(71°C)
Inlet Ports (2)	3/4" NPT	(3/4" NPT)
Discharge Ports (2)	1/2" NPT	(1/2" NPT)
Pulley Mounting	Either Side	(Either Side)
Shaft Diameter	1.181"	(30 mm)
Weight.....	44 lbs.	(19.9 kg)
Dimensions 650, 660.....	16.14" x 12.99" x 6.46"	(410 x 330 x 164 mm)
651, 661	15.83" x 12.99" x 6.46"	(402 x 330 x 164 mm)

HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE			MOTOR PULLEY SIZE	
	U.S. GPM	L/M	PSI 2000	PSI 2500	PSI 3000	Using 1725 RPM Motor 10" O.D. Pump Pulley*	Pulley O.D.
650/651	7.0	27	9.6	12.0	14.4	1000	5.7
	6.0	23	8.2	10.3	12.4	858	4.9
	5.0	19	6.9	8.6	10.3	715	4.1
660/661	10.0	38	13.7	17.2	20.6	1429	8.1
	9.0	34	12.4	15.4	18.5	1286	7.3

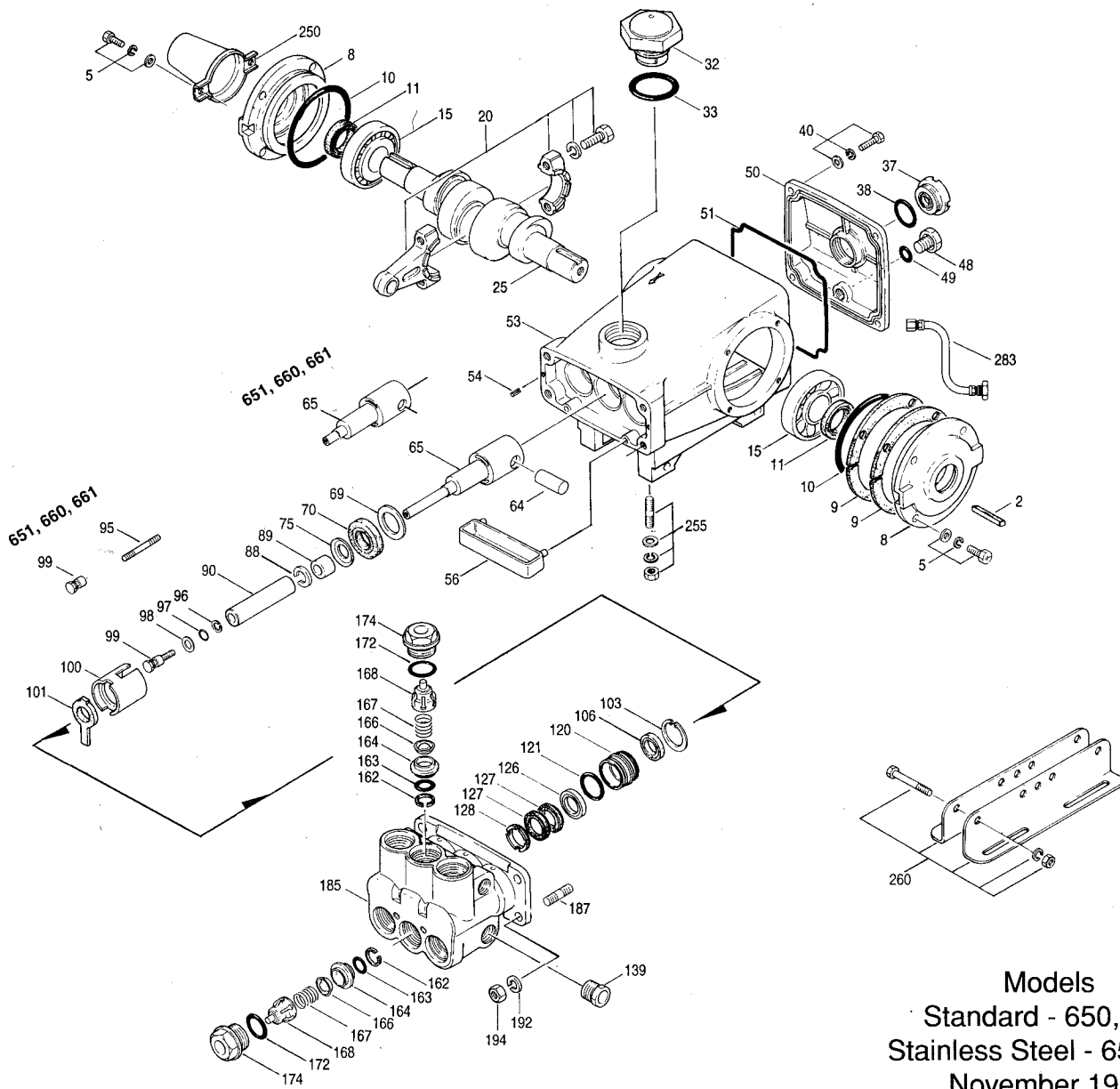
*See Complete Accessory Drive Packages [Inclds: Pulleys, Belts, Hubs, Key] Tech Bulletin 03.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM	PART NUMBER								DESCRIPTION	QTY
	Model 650		Model 651		Model 660		Model 661			
2	30067	STL	30067	STL	30067	STL	30067	STL	Key (M8)	1
5	92519	STZP	92519	STZP	92519	STZP	89618	S	Screw, HH (M6x16)	8
	—		19933	S	—		19933	S	Washer (M6)	8
	—		15849	S	—		15849	S	Lockwasher, Split (M6)	8
8	43496	AL	43496	AL	43496	AL	43496	AL	Cover, Bearing - Outer	2
9	43520		43520		43520		43520		Split Shim, Bearing Cover, 2 Pc.	2
	—		45387	S	—		45387	S	Split Shim, Bearing Cover, 2 Pc.	2
10	11340	NBR	11340	NBR	11340	NBR	11340	NBR	O-Ring, Bearing Case	2
11	43495	NBR	43495	NBR	43495	NBR	43495	NBR	Seal, Oil, Crankshaft	2
15	39060	STL	39060	STL	39060	STL	39060	STL	Bearing	2
20	43497	ZZ	43497	ZZ	45111	HS	45111	HS	Rod Assy, Connecting	3
25	43494	FCM	43494	FCM	43494	FCM	43494	FCM	Crankshaft - Dual End	1
32	43211		43211		43211		43211		Cap, Oil Filler	1
33	14177	NBR	14177	NBR	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap	1
37	43987		43987		43987		43987		Gauge, Oil, Bubble	1
38	44428	NBR	44428	NBR	44428	NBR	44428	NBR	Gasket, Flat. Flex., Oil Gauge	1
40	92520	STZP	92542	SS	92520	STZP	92542	SS	Screw, HHC (M6x20)	4
48	25625	CPBB	25625	CPBB	25625	CPBB	25625	CPBB	Plug, Drain 1/4" Str.x 11	1
49	23170	NBR	23170	NBR	23170	NBR	23170	NBR	O-Ring, Drain Plug	1
50	43491	AL	43491	AL	43491	AL	43491	AL	Cover, Crankcase	1
51	43492	NBR	43492	NBR	43492	NBR	43492	NBR	O-Ring, Crankcase Cover	1
53	43488	AL	43488	AL	43488	AL	43488	AL	Crankcase w/Guide Pins	1
54	27488	S	27488	S	27488	S	27488	S	Pin, Guide	2
56	44664	POP	44664	POP	44664	POP	44664	POP	Pan, Oil	1
64	43507	S	43507	S	43507	S	43507	S	Pin, Piston Rod	3
65	43501	SZZ	—		48228	SHS	—		Rod, Plunger - Long	3
	—		45258	SSZZ	—		48360	SSHS	Rod, Plunger - Short	3
69	43504	S	43504	S	43504	S	43504	S	Washer, Seal, Flat	3
70	43500	NBR	43500	NBR	43500	NBR	43500	NBR	Seal, Oil, Crankcase	3
75	43506	S	43506	S	43506	S	43506	S	Slinger, Barrier	3
88	45675	SS	45675	SS	45675	SS	45675	SS	Washer, Keyhole	3
89	■ 43505	BB	■ 45880	SS	■ 43505	BB	■ 45880	SS	Spacer, Plunger	3
90	43300	CC	43300	CC	43300	CC	43300	CC	Plunger (M77)	3
95	—		89651	SS	—		89651	SS	Stud, Plunger Retainer (M6x70)	3
96	43235	PTFE	43235	PTFE	43235	PTFE	43235	PTFE	Back-up Ring	3
97	17399	NBR	17399	NBR	17399	NBR	17399	NBR	O-Ring, Plunger Retainer	3
	14160	FPM	14160	FPM	14160	FPM	14160	FPM	O-Ring, Plunger Retainer	3
	46204	EPDM	46204	EPDM	46204	EPDM	46204	EPDM	O-Ring, Plunger Retainer	3
98	45891	CU	44041	SS	45891	CU	44041	SS	Gasket, Plunger Retainer	3
99	—		44031	SS	—		44031	SS	Retainer, Plunger (M5)	3
	104360	S	—		104360	S	—		Retainer w/stud, Plunger (M5)	3
100	43509	PVDF	43509	PVDF	43509	PVDF	43509	PVDF	Retainer, Seal	3
101	43508		43508		43508		43508		Wick, Long Tab	3
103	44036	SS	44036	SS	44036	SS	44036	SS	Ring, Retaining	3
106	44071	NBR	44071	NBR	44071	NBR	44071	NBR	Seal, LPS	3
	44381	FPM	44381	FPM	44381	FPM	44381	FPM	Seal, LPS	3
	701577	EPDM	701577	EPDM	701577	EPDM	701577	EPDM	Seal, LPS	3
120	■ 46065	NAB	■ 45977	SS	■ 46065	NAB	■ 45977	SS	Case, Seal	3
121	14762	NBR	14762	NBR	14762	NBR	14762	NBR	O-Ring, Seal Case	3
	11737	FPM	11737	FPM	11737	FPM	11737	FPM	O-Ring, Seal Case	3
	46205	EPDM	46205	EPDM	46205	EPDM	46205	EPDM	O-Ring, Seal Case	3
126	43515	BB	44164	SS	43515	BB	44164	SS	Adapter, Female	3
127	44607	PTFE	44607	PTFE	44607	PTFE	44607	PTFE	V-Packing	6
	44386	FPM	44386	FPM	44386	FPM	44386	FPM	V-Packing	6
128	43517	BB	44165	SS	43517	BB	44165	SS	Adapter, Male	3
139	20326	CPBB	44382	SS	20326	CPBB	44382	SS	Plug, Inlet 3/4"	1
162	43248	PTFE	43248	PTFE	43248	PTFE	43248	PTFE	Back-up Ring, Seat	6
163	43249	NBR	43249	NBR	43249	NBR	43249	NBR	O-Ring, Seat	6
	44383	FPM	44383	FPM	44383	FPM	44383	FPM	O-Ring, Seat	6
	46206	EPDM	46206	EPDM	46206	EPDM	46206	EPDM	O-Ring, Seat	6
164	43722	S	44037	SS	43722	S	44037	SS	Seat	6
166	43721	S	44038	SS	43721	S	44038	SS	Valve	6
167	43751	S	44039	SS	43751	S	44039	SS	Spring	6
168	44564	PVDF	44564	PVDF	44564	PVDF	44564	PVDF	Retainer, Spring	6
172	17617	NBR	17617	NBR	17617	NBR	17617	NBR	O-Ring, Valve Plug	6
	11691	FPM	11691	FPM	11691	FPM	11691	FPM	O-Ring, Valve Plug	6
	46207	EPDM	46207	EPDM	46207	EPDM	46207	EPDM	O-Ring, Valve Plug	6
174	43851	BB	44384	SS	43851	BB	44384	SS	Plug, Valve	6
	43850	BB	—		43850	BB	—		Plug, Valve	6
185	■ 45975	NAB	■ 45976	SS	■ 45975	NAB	■ 45976	SS	Head, Manifold	1
187	14050	STZP	44005	S	14050	STZP	44005	S	Stud Bolt (M10x45)	4
192	12503	STZP	15847	S	12503	STZP	15847	S	Lockwasher, Split (M10)	4
194	81048	STZP	81258	S	81048	STZP	81258	S	Nut, Hex (M10)	4

EXPLODED VIEW



Models
 Standard - 650, 660
 Stainless Steel - 651, 661
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250	30764 NY	30764 NY	30764 NY	30764 NY	Protector, Shaft w/2 Screws	1
255	30264 STZP	30264 STZP	30264 STZP	30264 STZP	Kit, Direct Mount	1
	14050 STZP	14050 STZP	14050 STZP	14050 STZP	Stud (M10x45)	4
	12490 STZP	12490 STZP	12490 STZP	12490 STZP	Washer, Flat (M10)	4
	12503 STZP	12503 STZP	12503 STZP	12503 STZP	Lockwasher, Split (M10)	4
260	30613 STZP	30613 STZP	30613 STZP	30613 STZP	Mounting Assy - A, Angle (30635,30903,30921,30912)	1
	990550 STZP	990550 STZP	990550 STZP	990550 STZP	Rail Assembly, Angle (Required on Diesel/Gas)	1
269	30206 F	30206 F	30206 F	30206 F	Pulley, 9.75", 2 Groove, "H"	1
274	30059 STL	30059 STL	30059 STL	30059 STL	Hub w/Screws (M30) Key (M8)	1
					[See complete Accessory Drive Packages, Tech Bulletin 03]	
283	34334	34334	34334	34334	Kit, Oil Drain	1
299	814561 BB	814712 SS	814561 BB	814712 SS	Head, Complete	1
300	30798 NBR	30798 NBR	30798 NBR	30798 NBR	Kit, Seal (Incls: 97,103,106,121,127) (Standard)	1
	31033 FPM	31033 FPM	31033 FPM	31033 FPM	Kit, Seal & O-Ring (Incls: 97,103,106,121,127,163,172) 1	1
	33919 EPDM	33919 EPDM	33919 EPDM	33919 EPDM	Kit, Seal & O-Ring (Incls: 97,103,106,121,127,163,172) 1	1
310	30820 S	30987 SS	30820 S	30987 SS	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
350	43523 STZP	43523 STZP	43523 STZP	43523 STZP	Tool, Seal Case Removal	1
	33006 STZP	33006 STZP	33006 STZP	33006 STZP	Socket, Seal Case 1/2" Drive	1
351	30696 STZP	30696 STZP	30696 STZP	30696 STZP	Tool, Valve Seat Removal	1
—	6565.1	6565.1	6565.1	6565.1	Video, Plunger Pump Service - Section I	1

Bold print part numbers are standard or unique to a particular pump model. Italics are optional items.

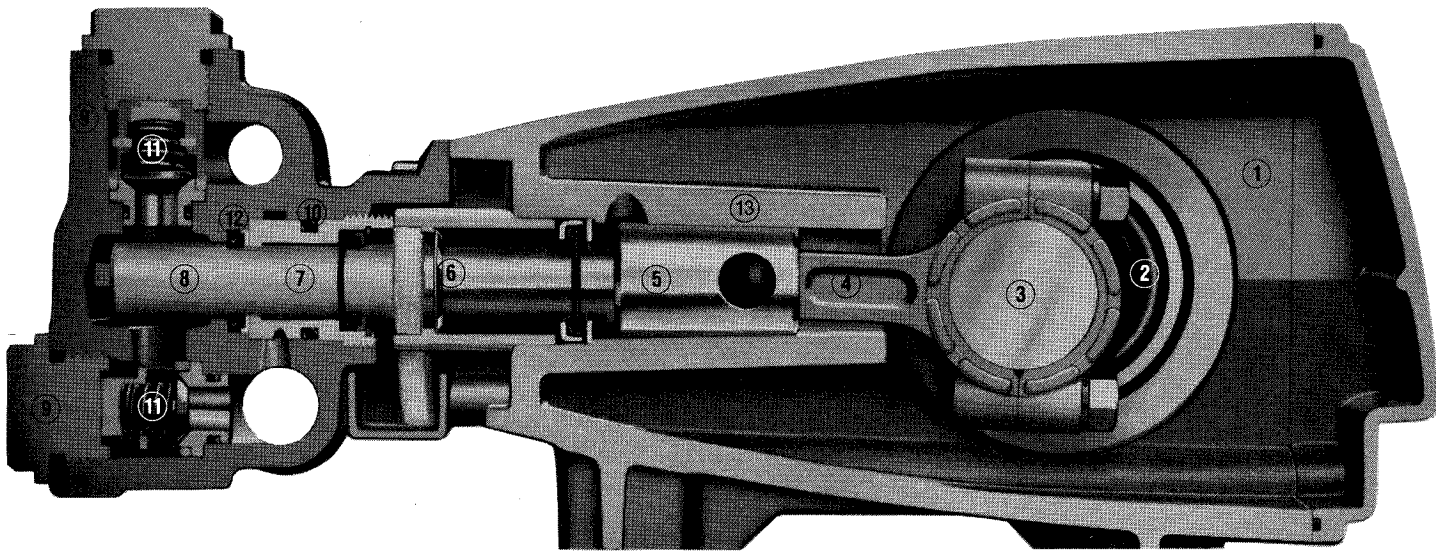
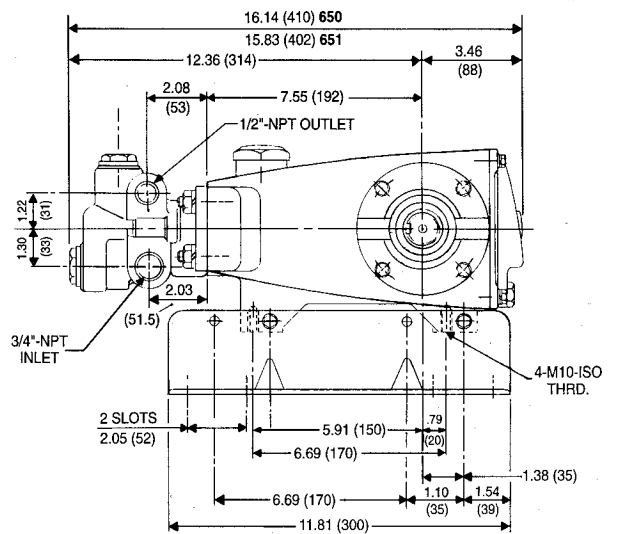
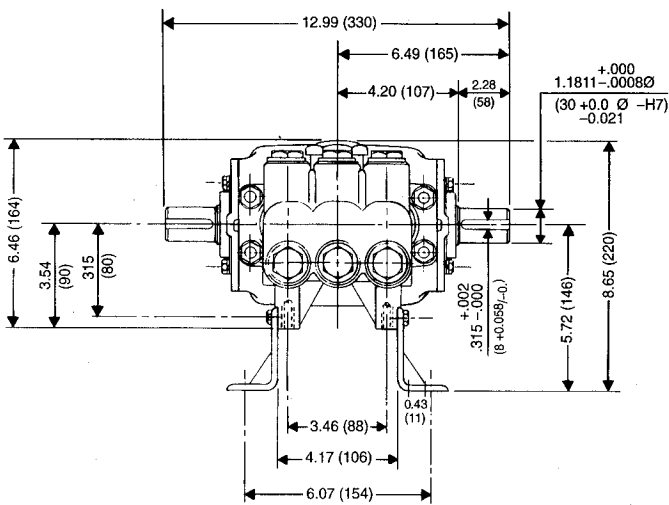
After 1/95 production FPM (Viton) optional for both models. See Tech Bulletins 03, 24, 27, 35, 36, 43, 45, 48, 49, 52, 53, 62, 74 and 77 for additional information

MATERIAL CODES (Not Part of Part Number) AL=Aluminum BB=Brass CC=Ceramic CP=Chromeplated CU=Copper

EPDM=Ethylene Propylene Diene Monomer FCM=Forged Chrome-Moly FPM=Fluorocarbon (Viton) HS=High Strength NAB=Nickel Aluminum Bronze

NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene PVDF=Fluoroplastic (High Strength) PTFE=Polytetrafluoroethylene (Teflon)

S=304SS SS=316SS STL=Steel STZP=Chromeplated Steel ZP=Zinc Plated ZZ=Zamack



- 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 high strength **connecting rods** are noted for superior 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 fluids out of the crankcase.
- 7 Precision-polished solid ceramic **plungers** provide maximum resistance to corrosion and abrasion.
- 8 The close tolerance concentricity of the ceramic **plunger** maximizes seal life.
- 9 **Manifolds** are a high tensile strength forged brass or 316 stainless steel for long term, continuous duty and corrosion resistance.
- 10 100% wet **seal** design adds to service life by allowing pumped fluids to cool and lubricate on both sides.
- 11 Stainless steel **valves, seats and springs** provide corrosion-resistance, positive seating and long life.
- 12 Specially formulated, CAT PUMP exclusive, **Hi-Pressure Seals** offer unmatched performance and seal life.
- 13 **Crossheads** are 360° supported for 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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