



15 Frame Plunger Pumps

Standard Models

650, 660

Stainless Steel Models

651, 661

FEATURES

Superior Design

- Triplex plunger design gives smoother fluid flow.
- V-Packings are completely lubricated and cooled by the fluid being pumped.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- Lubricated Lo-Pressure Seals provide 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.
- Bronze or 316 Stainless Steel manifolds are strong and corrosion resistance.
- Special concentric, high density, polished, graphite impregnated, solid ceramic plungers are abrasion resistant and result in extended seal life.
- Optional FPM and EPDM elastomers for special compatibility.
- 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.
- Valve assemblies are accessible without disturbing piping, for quick service.
- Preset packings mean no packing gland adjustment is necessary, reducing maintenance costs.

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

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

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

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

U.S. Measure Metric Measure

MODELS 650, 651

Flow	7.0 GPM	(27 L/M)
Pressure Range	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

Flow	10 GPM	(38 L/M)
Pressure Range	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 9.75" O.D. Pump Pulley*	
			BAR 140	BAR 175	BAR 210	RPM	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

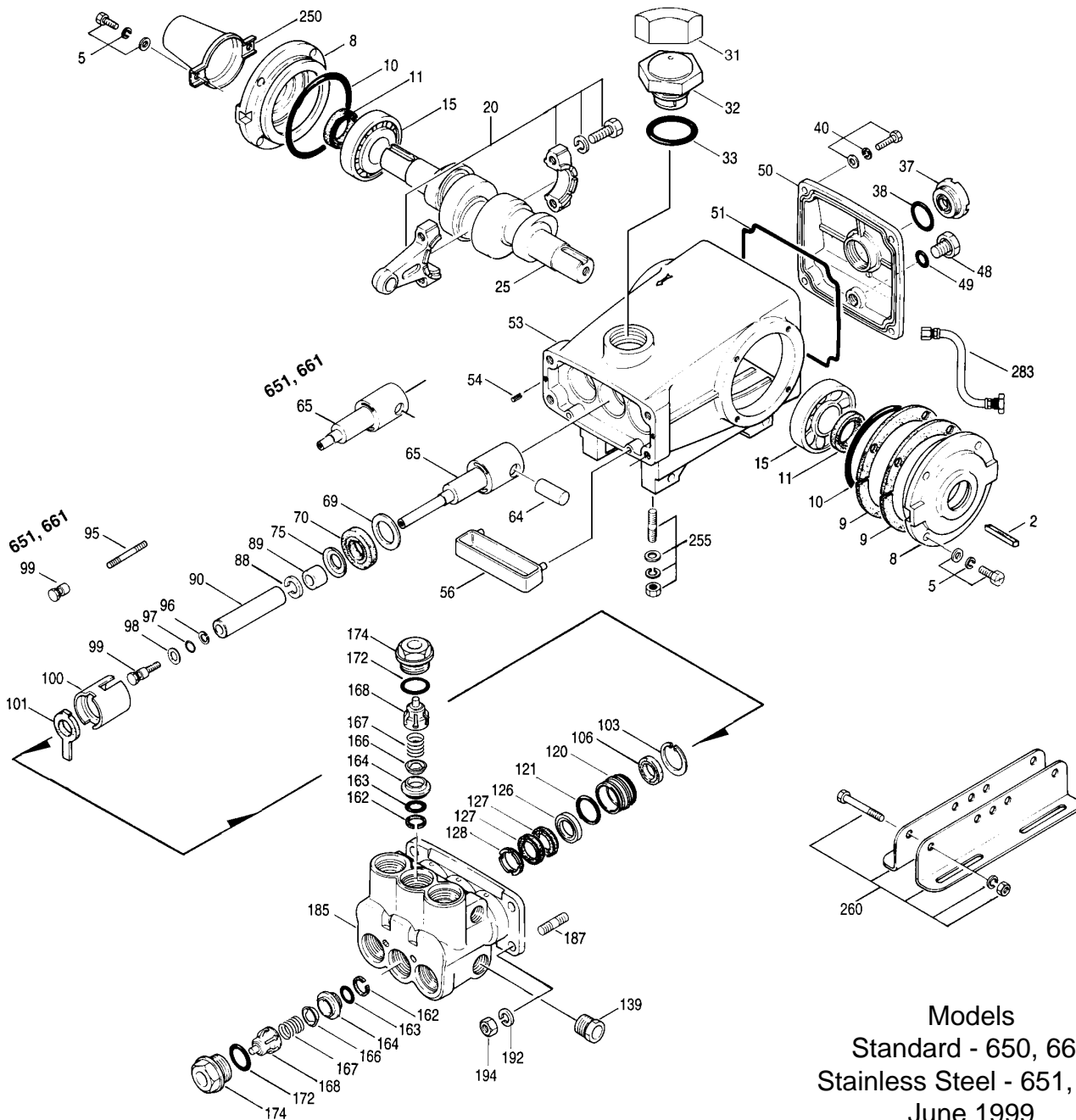
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 03.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM	PART NUMBER				DESCRIPTION	QTY
	650	651	660	661		
	MATL	MATL	MATL	MATL		
2	30067 STL	30067 STL	30067 STL	30067 STL	Key (M8x7.5x25)	1
5	92519 STZP	92519 STZP	92519 STZP	89618 S	Screw, Sems, 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
31	828710	828710	828710	828710	Protector, Oil Cap	1
32	43211	43211	43211	43211	Cap, Oil Filler	1
33	14177 NBR	14177 NBR	14177 NBR	14177 NBR	O-Ring, Filler Cap	1
37	43987	43987	43987	43987	Gauge, Oil, Bubble	1
38	44428 NBR	44428 NBR	44428 NBR	44428 NBR	Gasket, Flat	1
40	92520 STZP	92542 SS	92520 STZP	92542 SS	Screw, Sems, HHC (M6x20)	4
48	25625 STCP	25625 STCP	25625 STCP	25625 STCP	Plug, Drain (1/4"x11)	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, Rist	3
65	43501 SZZ	—	48228 SHS	—	Rod, Plunger, Long	3
	—	45258 SSZZ	—	48360 SSSH	Rod, Plunger, Short	3
69	43504 STZP	43504 STZP	43504 STZP	43504 STZP	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 w/SS-Spg	3
	44381 FPM	44381 FPM	44381 FPM	44381 FPM	Seal, LPS w/SS-Spg	3
	701974 PTFE	701974 PTFE	701974 PTFE	701974 PTFE	Seal, LPS w/SS-Spg	3
120	46065 NAB	48465 SSNP	46065 NAB	48465 SSNP	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	48388 D	43515 BB	48388 D	Adapter, Female	1
	—	44164 SS	—	44164 SS	Adapter, Female	3
127	44607 STG	44607 STG	44607 STG	44607 STG	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 BBBCP	44382 SS	20326 BBBCP	44382 SS	Plug, Inlet (3/4" NPT)	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 BBBCP	48463 SSNP	43851 BBBCP	48463 SSNP	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
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
260	30613 STZP	30613 STZP	30613 STZP	30613 STZP	Mount, Rail Assy - A (30635,30903,30921,30912)	1
	990550 STZP	990550 STZP	990550 STZP	990550 STZP	Mount, Rail (Required on Diesel/Gas)	1

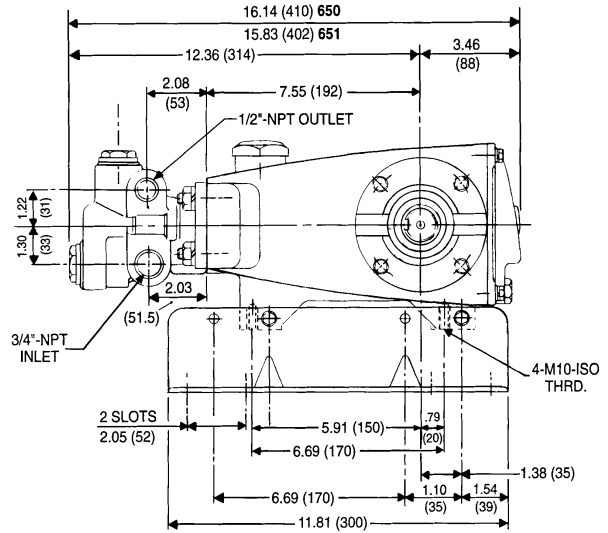
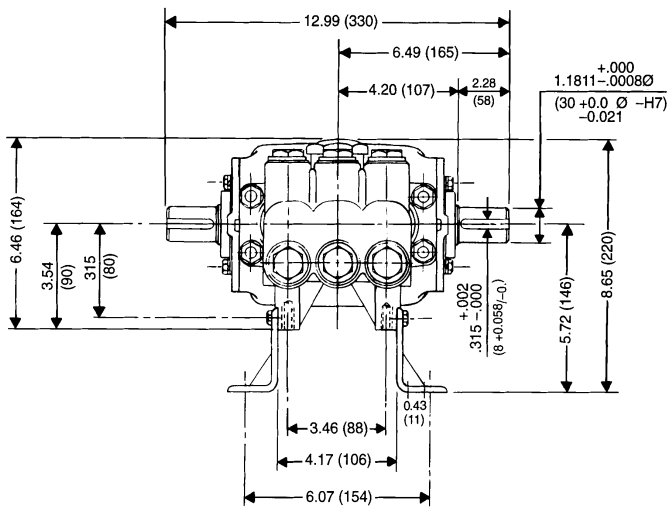
EXPLODED VIEW



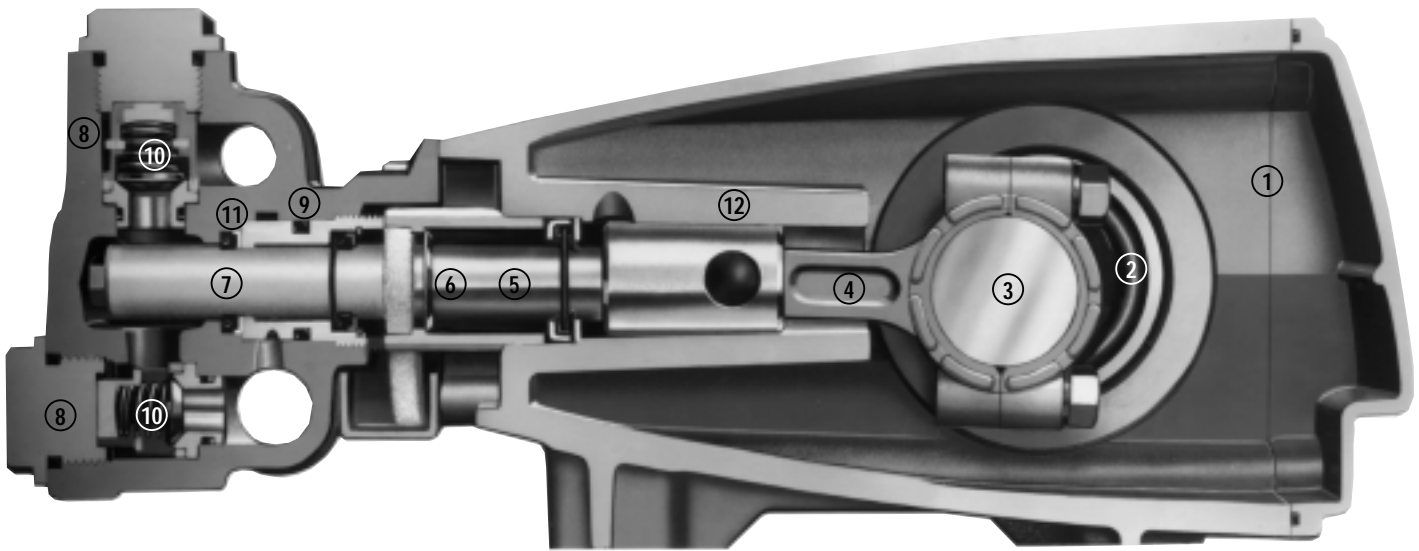
Models
Standard - 650, 660
Stainless Steel - 651, 661
June 1999

	650	MATL	651	MATL	660	MATL	661	MATL		
● 269	30206	F	30206	F	30206	F	30206	F	Pulley (9.75") AB	1 ●
● 274	30059	STL	30059	STL	30059	STL	30059	STL	[See Drive Packages, Tech Bulletin 03] Hub, "H" (M30) (Keyway M8)	1 ●
● 283	34334		34334		34334		34334		[See Drive Packages, Tech Bulletin 03] 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)	1
	31033	FPM	31033	FPM	31033	FPM	31033	FPM	Kit, Seal (Incls: 97,103,106,121,127)	1
310	◆ 33919	EPDM	◆ 33919	EPDM	◆ 33919	EPDM	◆ 33919	EPDM	Kit, Seal (Incls: 97,103,106,121,127)	1
	30820	NBR	34387	NBR	30820	NBR	34387	NBR	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
	31256	FPM	30987	FPM	31256	FPM	30987	FPM	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
	◆ 31253	EPDM	◆ 31258	EPDM	◆ 31253	EPDM	◆ 31258	EPDM	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
350	30696	STZP	30696	STZP	30696	STZP	30696	STZP	Tool, Valve Seat Removal	1
351	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
352	44050	STZP	44050	STZP	44050	STZP	44050	STZP	Tool, Oil Gauge Removal	1
—	6565.1		6565.1		6565.1		6565.1		Plunger Pump Service Video	1

● Industrial discount. **Bold print part numbers are unique to a particular pump model.** *Italics are optional items.* ◆ Silicone oil/grease required.
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 STG=Special Blend (Teflon®) White STL=Steel STZP=Chromeplated Steel ZP=Zinc Plated ZZ=Zamack



Models 650, 651, 660, 661



- 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 Special concentric, high density, polished, graphite impregnated, solid ceramic **plungers** are abrasion resistant and result in extended seal life.
- 8 **Manifolds** are a high tensile strength bronze or 316 stainless steel for long term, continuous duty and corrosion resistance.
- 9 100% **wet seal** design adds to service life by allowing pumped fluids to cool and lubricate on both sides.
- 10 Stainless steel **valves, seats and springs** provide corrosion-resistance, positive seating and long life.
- 11 Specially formulated, CAT PUMP exclusive, **V-Packings** offer unmatched performance and seal life.
- 12 **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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