

15 Frame Plunger Pumps

Standard Models

650, 660

Stainless Steel Models

651, 661

FEATURES

Superior Design

- Triplex plunger design gives smoother liquid flow.
- V-Packings are completely lubricated and cooled by the liquid 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 Duplex 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.
- 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.

⚠ 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

MODELS 650, 651

Flow.....	7.0 GPM	(27 L/M)
Pressure Range.....	100 to 3000 PSI	(7 to 210 BAR)
Inlet Pressure Range.....	-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 Range	+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 Liquid Temperature	160°F	(71°C)
Inlet Ports (2)	3/4" NPTF	(3/4" NPTF)
Discharge Ports (2).....	1/2" NPTF	(1/2" NPTF)
Pulley Mounting	Either Side	(Either Side)
Shaft Diameter	1.181"	(30 mm)
Weight.....	44 lbs.	(19.9 kg)
Dimensions.....	16.28x12.99x6.44"	(413.50x330x163.50 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	
			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

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. $\frac{\text{GPM x PSI}}{1460}$ = Electric Brake H. P. Required

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

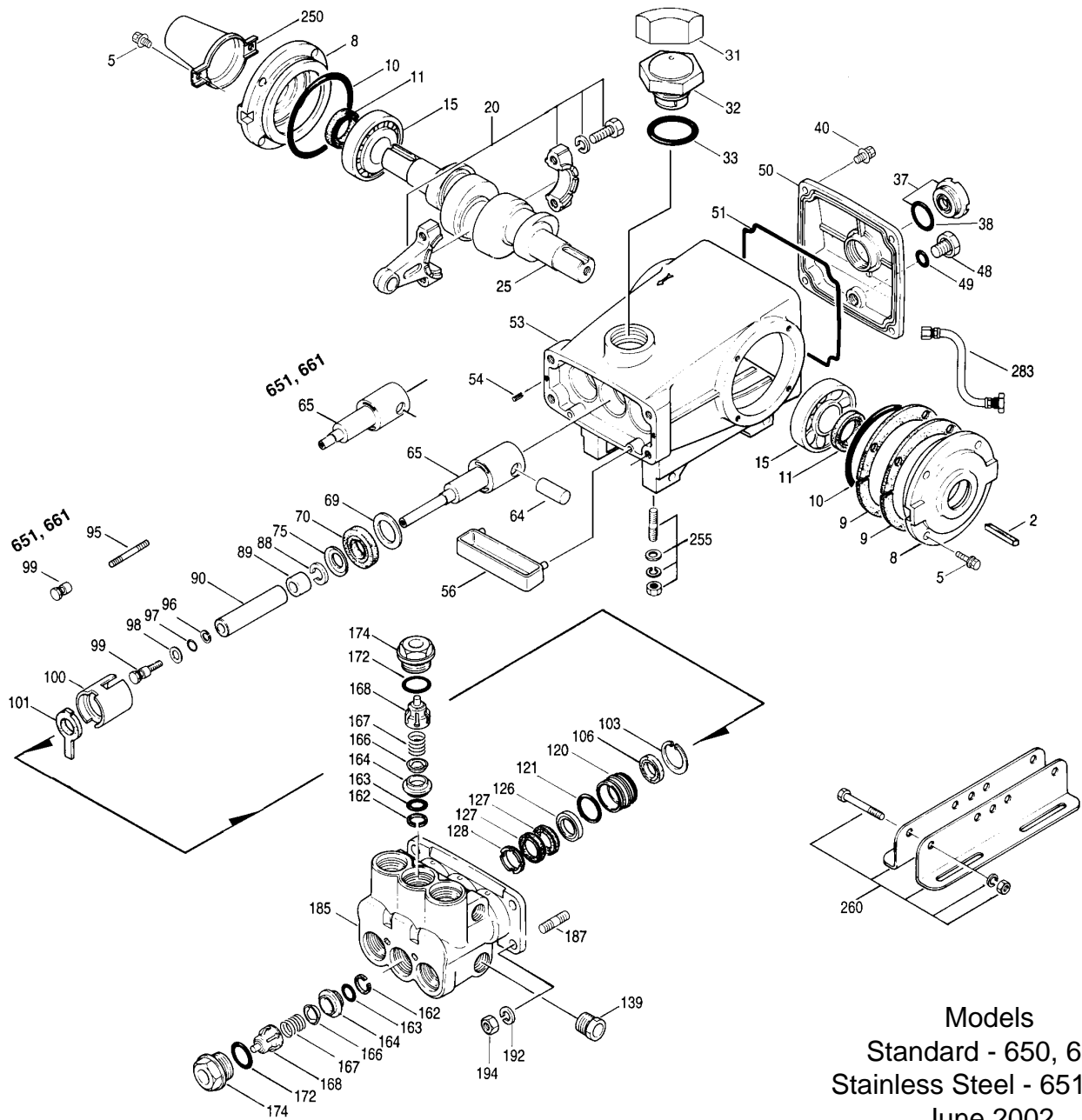
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.
Refer to pump Service Manual for repair procedure and additional technical information.

"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	92538 S	92519 STZP	92538 S	Screw, Sems, HHC (M6x16)	8
8	43496 AL	43496 AL	43496 AL	43496 AL	Cover, Bearing	2
9	43520 FBR	43520 FBR	43520 FBR	43520 FBR	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 - 70D	2
11	43495 NBR	43495 NBR	43495 NBR	43495 NBR	Seal, Oil, Crankshaft - 70D	2
15	39060 STL	39060 STL	39060 STL	39060 STL	Bearing, Roller	2
20	48600 TNM	48600 TNM	48600 TNM	48600 TNM	Rod Assy, Connecting [11/00]	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 ABS	43211 ABS	43211 ABS	43211 ABS	Cap, Oil Filler	1
33	14177 NBR	14177 NBR	14177 NBR	14177 NBR	O-Ring, Filler Cap - 70D	1
37	92241	92241	92241	92241	Gauge, Oil, Bubble w/Gasket - 80D	1
38	44428 NBR	44428 NBR	44428 NBR	44428 NBR	Gasket, Flat, Oil Gauge - 80D	1
40	92520 STZP	92542 S	92520 STZP	92542 S	Screw, Sems HH (M6x20)	4
48	25625 STCP	25625 STCP	25625 STCP	25625 STCP	Plug, Drain (1/4"x19BSP)	1
49	23170 NBR	23170 NBR	23170 NBR	23170 NBR	O-Ring, Drain Plug - 70D	1
50	43491 AL	43491 AL	43491 AL	43491 AL	Cover, Rear	1
51	44834 NBR	44834 NBR	44834 NBR	44834 NBR	O-Ring, Rear Cover - 70D	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 CM	43507 CM	43507 CM	43507 CM	Pin, Crosshead	3
65	43501 SZZ	—	48228 SHS	—	Rod, Plunger, Long	3
	—	48892 SSHS	—	48892 SSHS	Rod, Plunger, Short [3/02]	3
69	43504 STZP	43504 STZP	43504 STZP	43504 STZP	Washer, Seal	3
70	43500 NBR	43500 NBR	43500 NBR	43500 NBR	Seal, Oil, Crankcase - 80D	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 (M20x77)	3
95	—	89651 SS	—	89651 SS	Stud, Plunger Retainer (M6x70)	3
96	43235 PTFE	43235 PTFE	43235 PTFE	43235 PTFE	Back-up-Ring, Plunger Retainer	3
97	17399 NBR	17399 NBR	17399 NBR	17399 NBR	O-Ring, Plunger Retainer - 80D	3
	14160 FPM	14160 FPM	14160 FPM	14160 FPM	O-Ring, Plunger Retainer - 80D	3
	46204 EPDM	46204 EPDM	46204 EPDM	46204 EPDM	O-Ring, Plunger Retainer - 70D	3
98	45891 CU	44041 SS	45891 CU	44041 SS	Gasket, Plunger Retainer	3
99	—	44031 SS	—	44031 SS	Retainer, Plunger (M6)	3
	104360 S	—	104360 S	—	Retainer w/stud, Plunger (M5)	3
100	43509 POP	43509 POP	43509 POP	43509 POP	Retainer, Seal	3
101	43508	43508	43508	43508	Wick, Long Tab	3
103	44036 S	44036 S	44036 S	44036 S	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 SFTB*	701974 SFTB*	701974 SFTB*	701974 SFTB*	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 - 70D	3
	11737 FPM	11737 FPM	11737 FPM	11737 FPM	O-Ring, Seal Case - 75D	3
	46205 EPDM	46205 EPDM	46205 EPDM	46205 EPDM	O-Ring, Seal Case - 70D	3
126	43515 BB	48388 D	43515 BB	48388 D	Adapter, Female	1
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 - 80D	6
	44383 FPM	44383 FPM	44383 FPM	44383 FPM	O-Ring, Seat - 70D	6
	46206 EPDM	46206 EPDM	46206 EPDM	46206 EPDM	O-Ring, Seat - 70D	6
164	43722 S	44037 SS	43722 S	44037 SS	Seat	6
166	43721 S	48793 SSL	43721 S	48793 SSL	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 - 90D	6
	11691 FPM	11691 FPM	11691 FPM	11691 FPM	O-Ring, Valve Plug - 90D	6
	46207 EPDM	46207 EPDM	46207 EPDM	46207 EPDM	O-Ring, Valve Plug - 70D	6
174	43851 BBBCP	48463 SSNP	43851 BBBCP	48463 SSNP	Plug, Valve	6
	43850 BB	—	43850 BB	—	Plug, Valve	6
185	45975 NAB	48780 SSD	45975 NAB	48780 SSD	Head, Manifold	1
187	14050 STZP	44005 S	14050 STZP	44005 S	Stud (M10x45)	4
192	12503 STZP	15847 S	12503 STZP	15847 S	Lockwasher (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
269	30206 F	30206 F	30206 F	30206 F	Pulley (10") AB	1
					[See Drive Packages, Tech Bulletin 003]	
274	30059 STL	30059 STL	30059 STL	30059 STL	Hub, "H" (M30) (Keyway M8)	1
					[See Drive Packages, Tech Bulletin 003]	

EXPLODED VIEW



Models
 Standard - 650, 660
 Stainless Steel - 651, 661
 June 2002

	650 MATL	651 MATL	660 MATL	661 MATL		
● 283	34334	34334	34334	34334	Kit, Oil Drain	1 ●
● 299	814561 BB	816780 SS	814561 BB	816780 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
	◆ 33919 EPDM*	◆ 33919 EPDM*	◆ 33919 EPDM*	◆ 33919 EPDM*	Kit, Seal (Incls: 97,103,106,121,127)	1
310	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	Plier, Reverse	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
—	6107	6107	6107	6107	Oil, Bottle (21 oz.) ISO 68 Multi-viscosity Hydraulic	1
					(Fill to specified crankcase capacity prior to start-up)	
—	6565.1	6565.1	6565.1	6565.1	Plunger Pump Service Video	

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

[] Date of latest production change. *Review material codes for individual items (STG generally may be used as alternate).

See Tech Bulletins 002, 003, 024, 027, 035, 036, 043, 045, 048, 049, 052, 053, 062, 074, 077 and 083 for additional information.

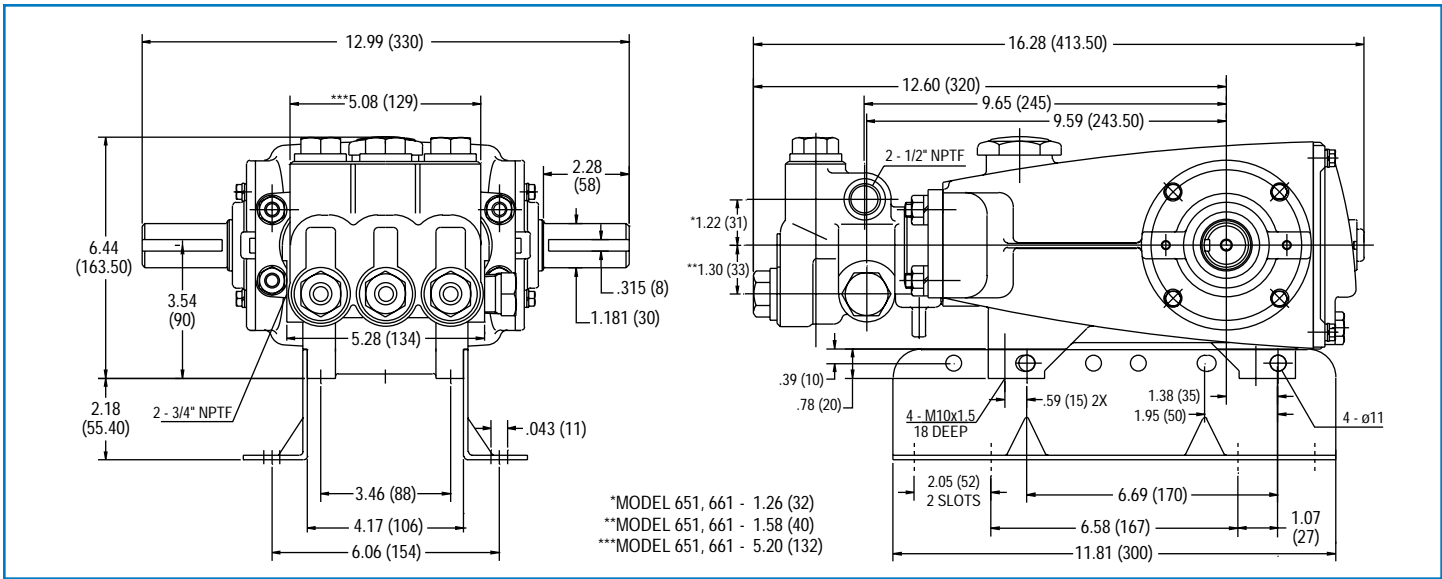
After 1/95 production FPM (Viton®) optional for both models.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass CC=Ceramic CU=Copper

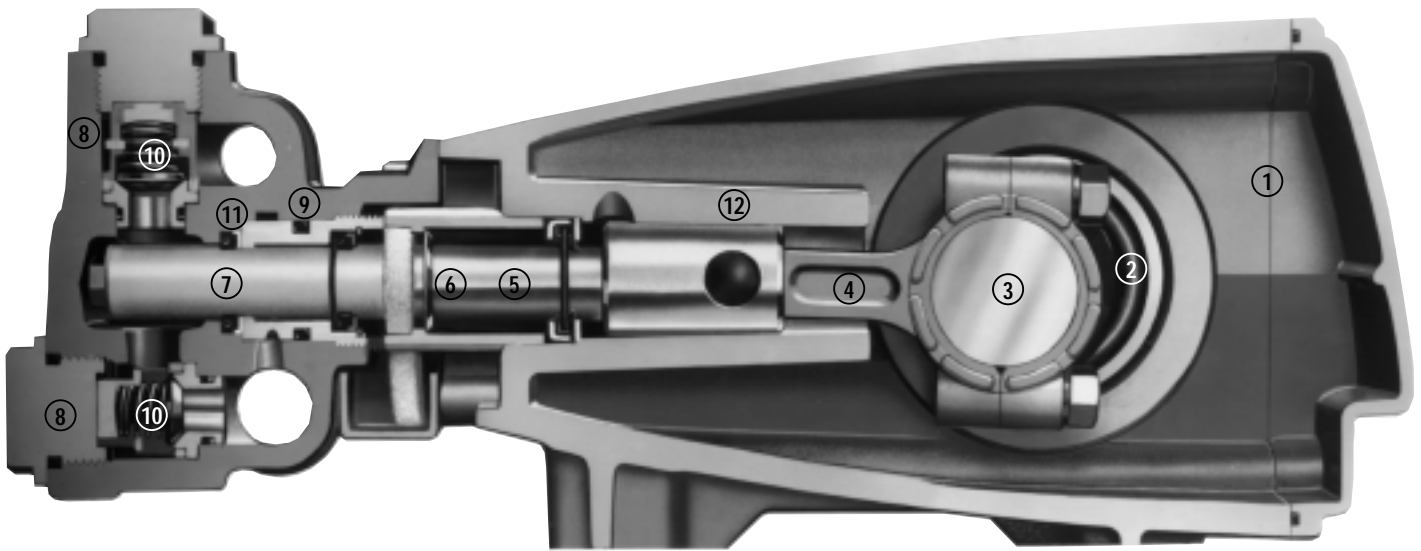
EPDM=Ethylene Propylene Diene Monomer FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon (Viton®) NAB=Nickel Aluminum Bronze

NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene PVDF=Fluoroplastic (High Strength) PTFE=Pure Teflon® S=304SS SFTB=Special Blend (Teflon®) Black

SS=316SS SSD=Duplex STG=Special Blend (Teflon®) White STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated TNM=Special High Strength



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 liquids 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 Duplex stainless steel for long term, continuous duty and corrosion resistance.
- 9 100% wet **seal** design adds to service life by allowing pumped liquids 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

World Headquarters
CAT PUMPS
 1681 - 94th Lane N.E. Minneapolis, MN 55449-4324
 Phone (763) 780-5440 — FAX (763) 780-2958
 e-mail: sales@catpumps.com
 www.catpumps.com
International Inquiries
 FAX (763) 785-4329
 e-mail: intlsales@catpumps.com



CAT PUMPS (U.K.) LTD.
 1 Fleet Business Park, Sandy Lane, Church Crookham, Fleet
 Hampshire GU52 8BF, England
 Phone Fleet 44 1252-622031 — Fax 44 1252-626655
 e-mail: sales@catpumps.co.uk
N.V. CAT PUMPS INTERNATIONAL S.A.
 Heiveldekens 6A, 2550 Kontich, Belgium
 Phone 32-3-450.71.50 — Fax 32-3-450.71.51
 e-mail: cpi@catpumps.be www.catpumps.be
CAT PUMPS DEUTSCHLAND GmbH
 Buchwiese 2, D-65510 Idstein, Germany
 Phone 49 6126-9303 0 — Fax 49 6126-9303 33
 e-mail: catpumps@t-online.de www.catpumps.de