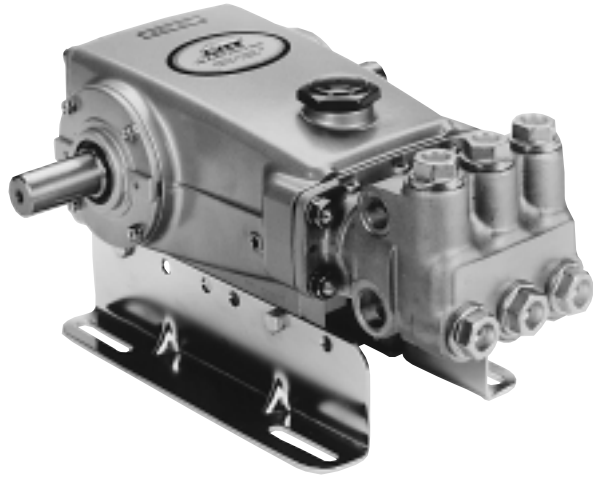




15 Frame Plunger Pump

**Standard Brass
Model**

**Stainless Steel
Model**

**650
651**

FEATURES

Superior Design

- Triplex plunger design provides smoother liquid flow.
- V-Packings are completely lubricated and cooled by the liquid being pumped.
- 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, 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.
- Inlet and discharge valve assemblies interchange for easier maintenance without disturbing piping.
- 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.....	7.0 GPM	(27 L/M)
Pressure Range.....	100 to 3000 PSI	(7 to 210 BAR)
RPM	1000 RPM	(1000 RPM)
Inlet Pressure Range	-5 to +60 PSI	(-0.35 to +4 BAR)
Bore.....	.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)	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)

ELECTRIC HORSEPOWER REQUIREMENTS

FLOW		PRESSURE			MOTOR PULLEY SIZE	
		PSI 2000	PSI 2500	PSI 3000	Using 1725 RPM Motor 10" O.D. Pump Pulley	
U.S. GPM	L/M	BAR 140	BAR 175	BAR 210	RPM	Pulley O.D.
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

DETERMINING THE PUMP R.P.M.	<u>Rated G.P.M.</u>	=	<u>"Desired" G.P.M.</u>
	<u>Rated R.P.M.</u>	=	<u>"Desired" R.P.M.</u>
DETERMINING THE REQUIRED H.P.	<u>GPM x PSI</u>	=	<u>Electric Brake</u>
	<u>1460</u>	=	<u>H. P. Required</u>
DETERMINING MOTOR PULLEY SIZE	<u>Motor Pulley O.D.</u>	=	<u>Pump Pulley O.D.</u>
	<u>Pump R.P.M.</u>	=	<u>Motor R.P.M.</u>

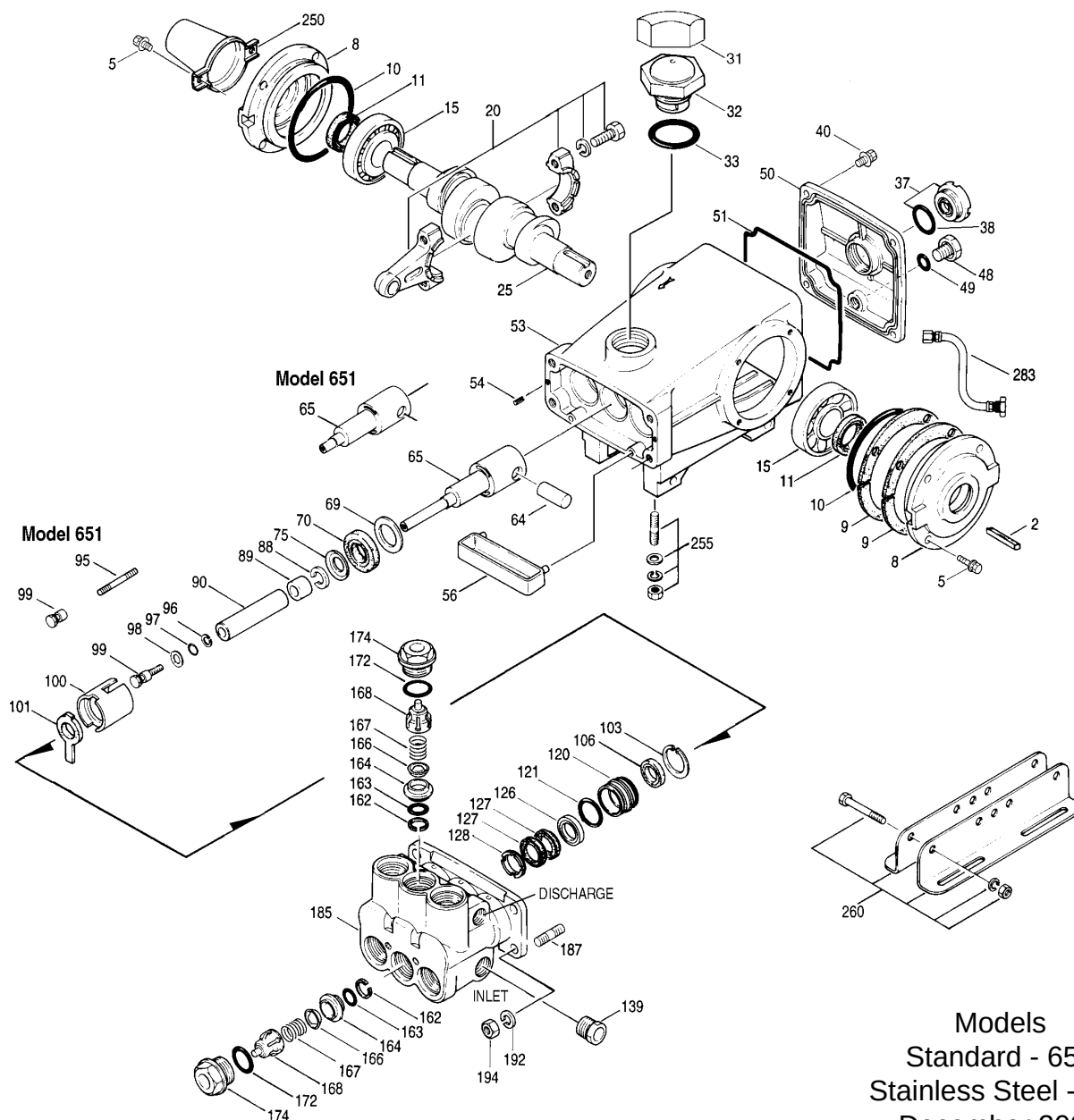
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.
Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

"Customer confidence is our greatest asset"

PARTS LIST

ITEM	PART NUMBER			DESCRIPTION	QTY
	650	MATL	651	MATL	
2	30067	STL	30067	STL	1
5	92519	STZP	92538	S	8
8	43496	AL	43496	AL	2
9	43520	FBR	43520	FBR	2
	—	—	45387	S	2
10	11340	NBR	11340	NBR	2
11	43495	NBR	43495	NBR	2
15	39060	STL	39060	STL	2
20	48600	TNM	48600	TNM	3
25	43494	FCM	43494	FCM	1
31	828710	—	828710	—	1
32	43211	ABS	43211	ABS	1
33	14177	NBR	14177	NBR	1
37	92241	—	92241	—	1
38	44428	NBR	44428	NBR	1
40	92520	STZP	92542	S	4
48	25625	STCP	25625	STCP	1
49	23170	NBR	23170	NBR	1
50	43491	AL	43491	AL	1
51	44834	NBR	44834	NBR	1
53	43488	AL	43488	AL	1
54	27488	S	27488	S	2
56	44664	POP	44664	POP	1
64	43507	CM	43507	CM	3
65	43501	SZZ	—	—	3
	—	—	48892	SSHS	3
69	43504	STZP	43504	STZP	3
70	43500	NBR	43500	NBR	3
75	43506	S	43506	S	3
88	45675	SS	45675	SS	3
89	43505	BB	45880	SS	3
90	43300	CC	43300	CC	3
95	—	—	89651	SS	3
96	43235	PTFE	43235	PTFE	3
97	17399	NBR	17399	NBR	3
	14160	FPM	14160	FPM	3
	◆ 46204	EPDM	◆ 46204	EPDM	3
98	45891	CU	44041	SS	3
99	—	—	44031	SS	3
	104360	S	—	—	3
100	43509	POP	43509	POP	3
101	43508	—	43508	—	3
103	44036	S	44036	S	3
106	44071	NBR	44071	NBR	3
	44381	FPM	44381	FPM	3
	701974	SFTB*	701974	SFTB*	3
120	46065	NAB	48465	SSNP	3
121	14762	NBR	14762	NBR	3
	11737	FPM	11737	FPM	3
	◆ 46205	EPDM	◆ 46205	EPDM	3
126	43515	BB	48388	D	1
127	44607	STG*	44607	STG*	6
	44386	FPM	44386	FPM	6
128	43517	BB	44165	SS	3
139	20326	BBCP	44382	SS	1
162	43248	PTFE	43248	PTFE	6
163	43249	NBR	43249	NBR	6
	44383	FPM	44383	FPM	6
	◆ 46206	EPDM	◆ 46206	EPDM	6
164	43722	S	44037	SS	6
166	43721	S	48793	SSL	6
167	43751	S	44039	SS	6
168	44564	PVDF	44564	PVDF	6
172	17617	NBR	17617	NBR	6
	11691	FPM	11691	FPM	6
	◆ 46207	EPDM	◆ 46207	EPDM	6
174	43851	BBCP	48463	SSNP	6
	43850	BB	—	—	6
185	45975	NAB	48780	SSD	1
187	14050	STZP	44005	S	4
192	12503	STZP	15847	S	4
194	81048	STZP	81258	S	4
250	30764	NY	30764	NY	1
255	30264	STZP	30264	STZP	1
260	30613	STZP	30613	STZP	1
	990550	STZP	990550	STZP	1
269	30206	F	30206	F	1
274	30059	STL	30059	STL	1
				Key (M8x7.5x25)	
				Screw, Sems, HHC (M6x16)	
				Cover, Bearing	
				Split Shim, Bearing Cover, 2 Pc.	
				Split Shim, Bearing Cover, 2 Pc.	
				O-Ring, Bearing Case - 70D	
				Seal, Oil, Crankshaft - 70D	
				Bearing, Roller	
				Rod Assy, Connecting [11/00]	
				Crankshaft - Dual End	
				Protector, Oil Cap	
				Cap, Oil Filler	
				O-Ring, Filler Cap - 70D	
				Gauge, Oil, Bubble w/Gasket - 80D	
				Gasket, Flat, Oil Gauge - 80D	
				Screw, Sems HH (M6x20)	
				Plug, Drain (1/4"x19BSP)	
				O-Ring, Drain Plug - 70D	
				Cover, Rear	
				O-Ring, Rear Cover - 70D	
				Crankcase w/Guide Pins	
				Pin, Guide	
				Pan, Oil	
				Pin, Crosshead	
				Rod, Plunger, Long	
				Rod, Plunger, Short [3/02]	
				Washer, Seal	
				Seal, Oil, Crankcase - 80D	
				Slinger, Barrier	
				Washer, Keyhole	
				Spacer, Plunger	
				Plunger (M20x77)	
				Stud, Plunger Retainer (M6x70)	
				Back-up-Ring, Plunger Retainer	
				O-Ring, Plunger Retainer - 80D	
				O-Ring, Plunger Retainer - 80D	
				O-Ring, Plunger Retainer - 70D	
				Gasket, Plunger Retainer	
				Retainer, Plunger (M6)	
				Retainer w/stud, Plunger (M5)	
				Retainer, Seal	
				Wick, Long Tab	
				Ring, Retaining	
				Seal, LPS w/SS-Spg	
				Seal, LPS w/SS-Spg	
				Seal, LPS w/SS-Spg	
				Case, Seal	
				O-Ring, Seal Case - 70D	
				O-Ring, Seal Case - 75D	
				O-Ring, Seal Case - 70D	
				Adapter, Female	
				V-Packing	
				V-Packing	
				Adapter, Male	
				Plug, Inlet (3/4" NPT)	
				Back-up-Ring, Seat	
				O-Ring, Seat - 80D	
				O-Ring, Seat - 70D	
				O-Ring, Seat - 70D	
				Seat	
				Valve	
				Spring	
				Retainer, Spring	
				O-Ring, Valve Plug - 90D	
				O-Ring, Valve Plug - 90D	
				O-Ring, Valve Plug - 70D	
				Plug, Valve	
				Plug, Valve	
				Head, Manifold	
				Stud (M10x45)	
				Lockwasher (M10)	
				Nut, Hex (M10)	
				Protector, Shaft w/2 Screws	
				Kit, Direct Mount	
				Mount, Rail Assy - A (30635,30903,30921,30912)	
				Mount, Rail (Required on Diesel/Gas)	
				Pulley (10") AB [See Drive Packages, Tech Bulletin 003]	
				Hub, "H" (M30) (Keyway M8) [See Drive Packages, Tech Bulletin 003]	

EXPLODED VIEW



Models
Standard - 650
Stainless Steel - 651
December 2008

	650	MATL	651	MATL		
283	34334	—	34334	—	Kit, Oil Drain	1
299	814561	BB	816780	SS	Head, Complete	1
300	30798	NBR*	30798	NBR*	Kit, Seal (Incls: 97,103,106,121,127)	1
	31033	FPM	31033	FPM	Kit, Seal (Incls: 97,103,106,121,127)	1
	◆ 33919	EPDM*	◆ 33919	EPDM*	Kit, Seal (Incls: 97,103,106,121,127)	1
310	30820	NBR	34387	NBR	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
	31256	FPM	30987	FPM	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
	◆ 31253	EPDM	◆ 31258	EPDM	Kit, Valve (Incls: 162,163,164,166,167,168,172)	2
350	30696	STZP	30696	STZP	Plier, Reverse	1
351	43523	STZP	43523	STZP	Tool, Seal Case Removal	1
	33006	STZP	33006	STZP	Socket, Seal Case 1/2" Drive	1
352	44050	STZP	44050	STZP	Tool, Oil Gauge Removal	1
—	6107	—	6107	—	Oil, Bottle (21 oz.) ISO-68 Hydraulic	1
					(Fill to specified crankcase capacity prior to start-up)	
—	6575	—	6575	—	Plunger Pump Service DVD	

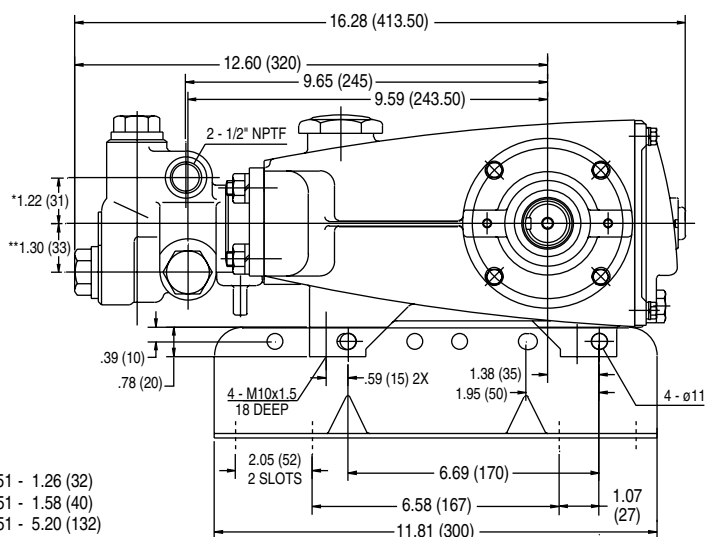
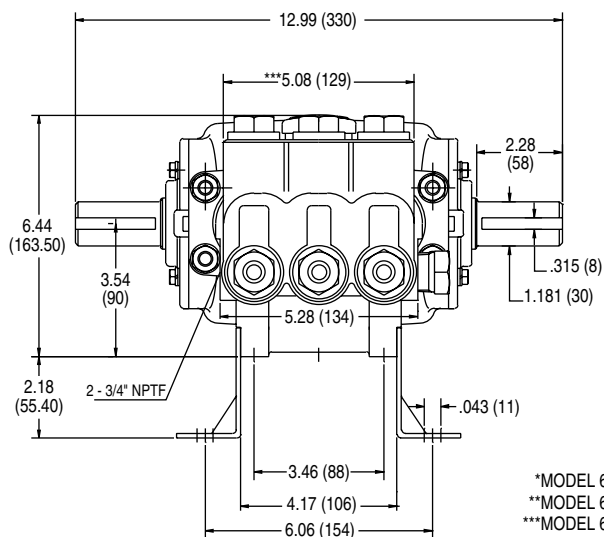
Bold part numbers are unique to a particular pump model. Italics are optional items. [] Date of latest production change.

◆ Silicone oil/grease required. * Review material codes for individual items (HT generally may be used as alternate).

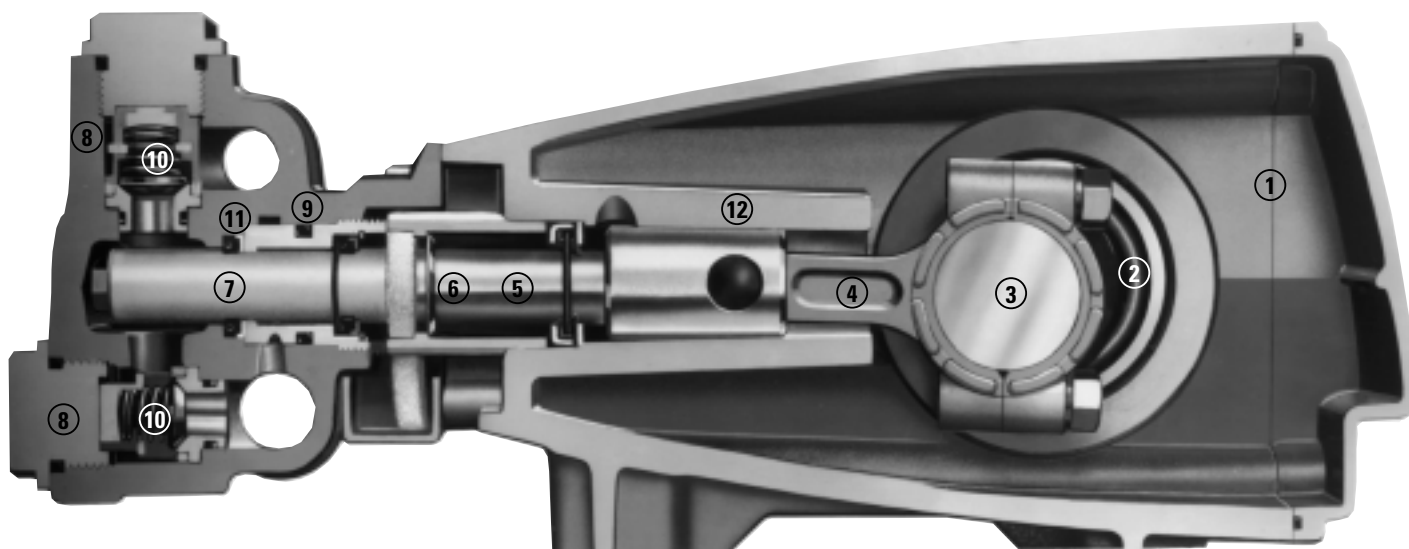
See Tech Bulletins 002, 003, 024, 027, 035, 036, 043, 045, 048, 049, 052, 053, 062, 074, 077 and 083 for additional information.

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 BB=Brass BCBP=Brass/Chrome Plated CC=Ceramic CM=Chrome-Moly CU=Copper
D=Acetal EPDM=Ethylene Propylene Diene Monomer F=Cast Iron FBR=Fiber FCM=Forged Chrome-Moly FPM=Fluorocarbon NAB=Nickel Aluminum Bronze
NBR=Medium Nitrile (Buna-N) NY=Nylon POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS
SFTB=Special Blend PTFE Black SS=316SS SSD=Duplex Stainless SSHS=316SS/High Strength SSL=316SS/Low Carbon SSNP=316SS/Nickel Plated
STCP=Steel/Chrome Plated STG=Special Blend PTFE White STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak TNM=Special High Strength



Models 650, 651



- 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, solid ceramic **plungers** provide a true wear surface and 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.

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