

## 25 Frame Piston Pump

**Standard Models** 1020, 2020  
1520, 2520

**Hi-Temp Model** 2520C

### FEATURES

#### Superior Design

- Triplex Uniflow design provides continuous forward liquid flow for smooth operation.
- Wetted cups and floating pistons are lubricated and cooled by pumped liquid for long cup life.
- Mechanically actuated inlet valves give strong lift and easy prime.
- 304 stainless steel flat valve design offers positive seating and greater suction capabilities.
- Oil bath crankcase assures optimum lubrication.

#### Quality Materials

- Cylinder and sleeve wear surfaces are hard chrome plated 304 stainless steel for maximum durability and abrasion resistance.
- Chrome plated, brass manifolds and optional stainless steel manifolds are strong and corrosion resistant.
- Special high strength connecting rods offer superior bearing quality strength.
- Chrome-moly crankshaft gives unmatched strength and surface hardness.
- Oversized crankshaft bearings with greater loading capacity mean longer bearing life.

#### Easy Maintenance

- Stepped stainless steel piston rod and with chrome-plated, stainless steel sleeve allows easy replacement from front of pump.
- All wet-end wear parts are easily serviced without entering crankcase, requiring less time and effort.
- Wear parts are available in convenient kits.

#### **⚠ 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
<b>MODEL 1020</b>		
Flow .....	10 GPM	(38 L/M)
Pressure Range .....	100 to 1200 PSI	(7 to 85 BAR)
RPM .....	720 RPM	(720 RPM)
Bore .....	.984"	(25 mm)

<b>MODEL 2020</b>		
Flow .....	20 GPM	(76 L/M)
Pressure Range .....	100 to 800 PSI	(7 to 55 BAR)
RPM .....	870 RPM	(870 RPM)
Bore .....	1.260"	(32 mm)

<b>MODEL 1520</b>		
Flow .....	15 GPM	(57 L/M)
Pressure Range .....	100 to 1000 PSI	(7 to 70 BAR)
RPM .....	830 RPM	(830 RPM)
Bore .....	1.122"	(28.5 mm)

<b>MODEL 2520 and 2520C Hi-Temp</b>		
Flow .....	25 GPM	(95 L/M)
Pressure Range .....	100 to 800 PSI	(7 to 55 BAR)
RPM .....	772 RPM	(772 RPM)
Bore .....	1.490"	(38 mm)
Inlet Pressure Range .....	Flooded to +40 PSI	(Flooded to +2.8 BAR)
Maximum Liquid Temperature .....	210°F	(98°C)
Cooling Ports (2) .....	1/4" NPTF	(1/4" NPTF)
Dimensions .....	21.42 x 15.04 x 7.8"	(544 x 382 x 198 mm)

#### COMMON SPECIFICATIONS

Stroke .....	1.417"	(36 mm)
Inlet Pressure Range .....	-8.5 to +40 PSI	(-0.6 to +2.8 BAR)
Crankcase Capacity .....	84 oz.	(2.5 L)
Maximum Liquid Temperature .....	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (1) .....	1-1/4" NPTF	(1-1/4" NPTF)
Discharge Ports (3) .....	1" NPTF	(1" NPTF)
Pulley Mounting .....	Either side	(Either side)
Shaft Diameters .....	1.181"	(30 mm)
Weight .....	69.3 lbs.	(31.5 kg)
Dimensions .....	21.62 x 15.04 x 7.8"	(549.15 x 382 x 198 mm)

### HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE			MOTOR PULLEY SIZE	
	U.S. GPM	L/M	PSI 800	PSI 1000	PSI 1200	Using 1725 RPM Motor & Std. 9.75" Pulley O.D.	
			BAR 55	BAR 70	BAR 85	RPM	Pulley O.D.
1020	10	38	5.5	6.9	8.2	720	4.1
2020	20	76	11.0	13.7	N/A	870	4.9
1520	15	57	8.2	10.3	N/A	830	4.7
	12	45	6.6	8.2	N/A	660	3.8
	10	38	5.5	6.9	N/A	550	3.1
2520 and 2520C	25	95	13.7	N/A	N/A	772	4.4
	20	76	11.0	N/A	N/A	620	3.5
	15	57	8.2	N/A	N/A	465	2.7

**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**  $\frac{\text{Motor Pulley O.D.}}{\text{Pump R.P.M.}}$  =  $\frac{\text{Pump Pulley O.D.}}{\text{Motor R.P.M.}}$

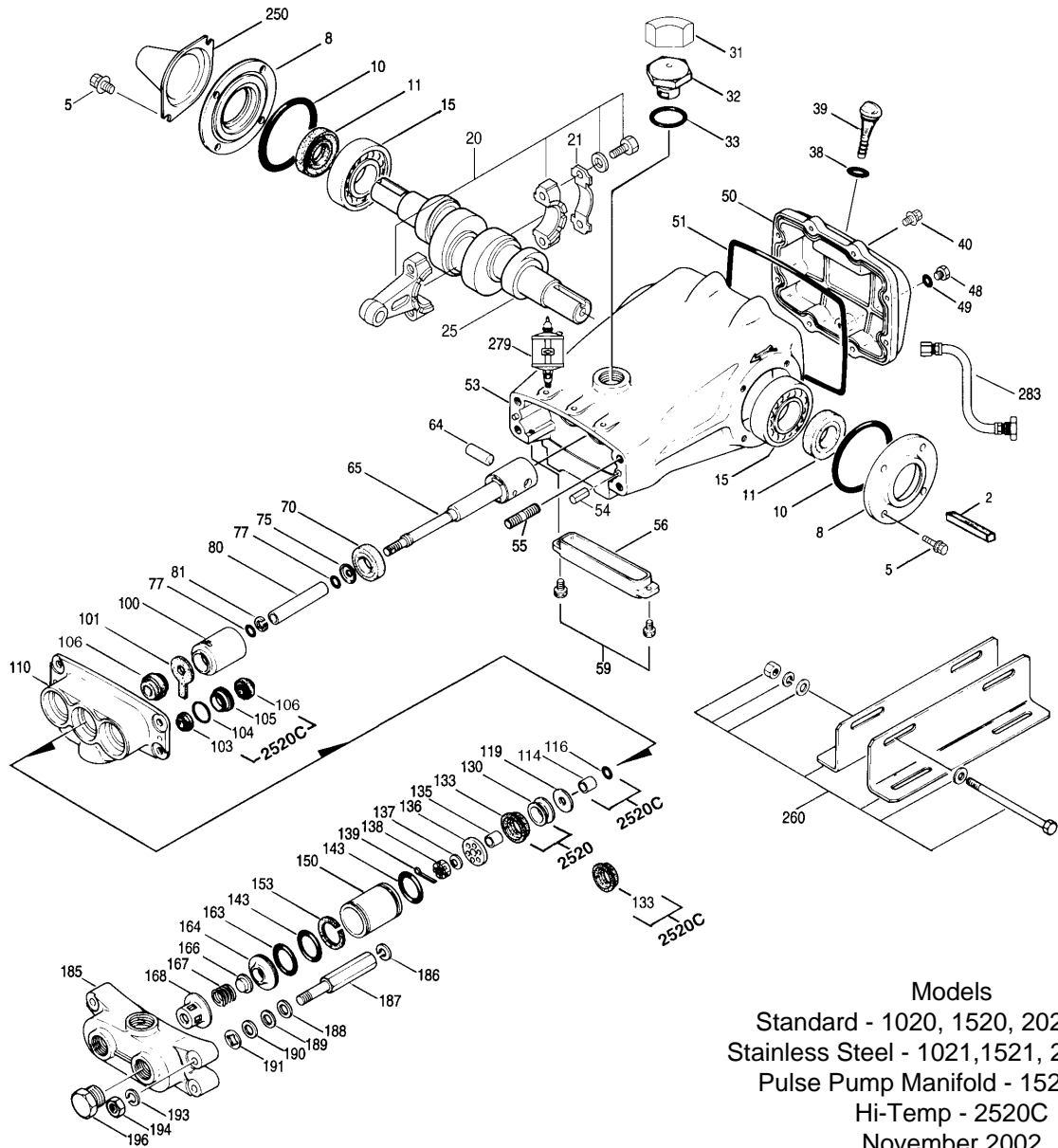
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003.  
Refer to pump Service Manual for repair procedure and additional technical information.

*"Customer confidence is our greatest asset"*

# PARTS LIST

ITEM	PART NUMBER										DESCRIPTION	QTY
	1020	MATL	2020	MATL	1520	MATL	2520	MATL	2520C	MATL		
● 2	990036	STL	990036	STL	990036	STL	990036	STL	990036	STL	Key (M8x7x40) [3/00]	1 ●
5	92508	STZP	92508	STZP	92508	STZP	92508	STZP	92508	STZP	Screw, Sems HHC (M8x25)	8
8	27773	AL	27773	AL	27773	AL	27773	AL	27773	AL	Cover, Bearing	2
10	27772	NBR	27772	NBR	27772	NBR	27772	NBR	27772	NBR	O-Ring, Bearing Cover - 70D	2
11	27771	NBR	27771	NBR	27771	NBR	27771	NBR	27771	NBR	Seal, Oil, Crankshaft - 70D	2
15	26512	STL	26512	STL	26512	STL	26512	STL	26512	STL	Bearing, Ball	2
20	48613	TNM	48613	TNM	48613	TNM	48613	TNM	48613	TNM	Rod, Connecting	3
21	48533	STZP	48533	STZP	48533	STZP	48533	STZP	48533	STZP	Washer, Tab	3
25	48704	FCM	48704	FCM	48704	FCM	48704	FCM	48704	FCM	Crankshaft [3/00]	1
31	828710		828710		828710		828710		828710		Protector, Oil Cap	1
32	43211	ABS	43211	ABS	43211	ABS	43211	ABS	43211	ABS	Cap, Oil Filler	1
33	14177	NBR	14177	NBR	14177	NBR	14177	NBR	14177	NBR	O-Ring, Oil Filler Cap - 70D	1
38	11338	NBR	11338	NBR	11338	NBR	11338	NBR	11338	NBR	O-Ring, Dipstick - 70D	1
39	27769	ABS	27769	ABS	27769	ABS	27769	ABS	27769	ABS	Dipstick	1
40	92508	STZP	92508	STZP	92508	STZP	92508	STZP	92508	STZP	Screw, Sems HHC (M8x25)	8
48	25625	STCP	25625	STCP	25625	STCP	25625	STCP	25625	STCP	Plug, Drain (1/4"x19BSP)	1
49	23170	NBR	23170	NBR	23170	NBR	23170	NBR	23170	NBR	O-Ring, Drain Plug - 70D	1
50	27768	AL	27768	AL	27768	AL	27768	AL	27768	AL	Cover, Rear	1
51	27767	NBR	27767	NBR	27767	NBR	27767	NBR	27767	NBR	O-Ring, Rear Cover - 70D	1
● 53	27762	AL	27762	AL	27762	AL	27762	AL	27762	AL	Crankcase, w/Guide Pins	1 ●
54	27488	S	27488	S	27488	S	27488	S	27488	S	Pin, Guide	2
55	27764	STZP	27764	STZP	27764	STZP	27764	STZP	27764	STZP	Stud (M12x53)	4
56	27790	PE	27790	PE	27790	PE	27790	PE	27790	PE	Pan, Oil	1
59	92519	STZP	92519	STZP	92519	STZP	92519	STZP	92519	STZP	Screw, Sems HHC (M6x16)	2
64	27784	CM	27784	CM	27784	CM	27784	CM	27784	CM	Pin, Crosshead	3
65	29229	SZZ	29229	SZZ	29229	SZZ	29229	SZZ	43266	SZZ	Rod, Piston (M8)	3
70	27785	NBR	27785	NBR	27785	NBR	27785	NBR	27785	NBR	Seal, Oil, Crankcase - 70D	3
75	27786	S	27786	S	27786	S	27786	S	27786	S	Slinger, Barrier	3
77	26531	NBR	26531	NBR	26531	NBR	26531	NBR	14198	FPM	O-Ring, Sleeve	6
	14198	FPM	14198	FPM	14198	FPM	14198	FPM	—	—	O-Ring, Sleeve	6
80	43122	SCP	43122	SCP	43122	SCP	43122	SCP	43122	SCP	Sleeve (M16)	3
	43123	S	43123	S	43123	S	43123	S	43123	S	Sleeve (M16)	3
81	29246	PTFE	29246	PTFE	29246	PTFE	29246	PTFE	29246	PTFE	Back-up-Ring, Sleeve	3
100	27788	PVDF	27788	PVDF	27788	PVDF	27788	PVDF	27788	PVDF	Retainer, Seal	3
101	43126		43126		43126		43126		43126		Wick, Long Tab (M16)	3
103	—	—	—	—	—	—	—	—	43269	FPM	Seal w/Lip	3
104	—	—	—	—	—	—	—	—	14178	NBR	O-Ring, Seal Adapter	3
105	—	—	—	—	—	—	—	—	43268	S	Adapter, LPS	3
106	43124	NBR	43124	NBR	43124	NBR	43124	NBR	43272	FPM	Seal (M16)/Seal w/Grease Pocket	3
	43125	FPM	43125	FPM	43125	FPM	43125	FPM	—	—	Seal (M16)	3
110	27791	BBCP	27791	BBCP	27791	BBCP	27791	BBCP	43270	BBCP	Manifold, Inlet	1
	28595	SS	28595	SS	28595	SS	28595	SS	—	—	Manifold, Inlet	1 ●
114	—	—	—	—	—	—	—	—	46148	S	Spacer, Inlet Valve	3
116	—	—	—	—	—	—	—	—	14198	FPM	O-Ring, Spacer	3
119	29242	S	29234	S	29232	S	29240	S	29240	S	Valve, Inlet (M8)	3
130	27820	S	27945	S	27814	S	27840	S	—	—	Piston	3
133	27821	FPM	27946	FPM	27815	FPM	28409	FPM	—	—	Cup, Piston	3
	—	—	—	—	30189	TG	30498	TR	30498	TR	Cup-Piston, Assy (1000 PSI MAX)	3
	29091	SNG	29093	SNG	29092	SNG	29094	SNG	—	—	Cup, V-Hot	3
135	29231	S	29231	S	29231	S	29231	S	29231	S	Spacer, Piston (M8)	3
136	29241	S	29235	S	29233	S	29239	S	29239	S	Retainer, Piston (M8)	3
137	27871	S	27871	S	27871	S	27871	S	27871	S	Washer, Conical (M8)	3
138	27510	S	27510	S	27510	S	27510	S	27510	S	Nut, Slotted (M8)	3
139	29589	S	29589	S	29589	S	29589	S	29589	S	Cotterpin (M2x18)	3
143	25495	NBR	25495	NBR	25495	NBR	25495	NBR	11748	FPM	O-Ring, Cylinder - 70D	6
	11748	FPM	11748	FPM	11748	FPM	11748	FPM	—	—	O-Ring, Cylinder - 70D	6
150	27823	SCP	28533	SCP	27817	SCP	27844	SCP	27844	SCP	Cylinder, (M65)	3
	29046	S	29048	S	29047	S	29049	S	29049	S	Cylinder, (M65)	3
153	48371	D	48371	D	48371	D	—	—	—	—	Back-up-Ring, Cylinder	3
163	28395	NBR	28395	NBR	28395	NBR	28395	NBR	28769	FPM	O-Ring, Valve Seat	3
	28769	FPM	28769	FPM	28769	FPM	28769	FPM	—	—	O-Ring, Valve Seat	3
164	28396	S	28396	S	28396	S	28396	S	28396	S	Seat	3
166	43133	S	43133	S	43133	S	43133	S	43133	S	Valve	3
167	26548	S	26548	S	26548	S	26548	S	26548	S	Spring	3
168	43134	S	43134	S	43134	S	43134	S	43134	S	Retainer, Spring	3
185	27805	BBCP	27805	BBCP	27805	BBCP	27805	BBCP	27805	BBCP	Manifold, Discharge	1
	28594	SS	28594	SS	28594	SS	28594	SS	—	—	Manifold, Discharge	1 ●
	—	—	—	—	6425	BB	6425	BB	—	—	Manifold, Pulse Pump, Ported	1
186	30908	STZP	30908	STZP	30908	STZP	30908	STZP	30908	STZP	Lockwasher	4
187	27803	STCP	27803	STCP	27803	STCP	27803	STCP	43277	STCP	Bolt, Cylinder	4
188	27804	STZP	27804	STZP	27804	STZP	27804	STZP	27804	STZP	Washer (12x0.3)	4/8
189	26553	STZP	26553	STZP	26553	STZP	26553	STZP	26553	STZP	Washer (12x0.5)	4/8
190	26554	STZP	26554	STZP	26554	STZP	26554	STZP	26554	STZP	Washer (12x1.0)	4/8
191	27933	STZP	27933	STZP	27933	STZP	27933	STZP	27933	STZP	Washer, Retaining (M12)	4
193	30908	STZP	30908	STZP	30908	STZP	30908	STZP	30908	STZP	Lockwasher	4
194	81060	STZP	81060	STZP	81060	STZP	81060	STZP	81060	STZP	Nut, Hex (M12)	4
196	27807	BBCP	27807	BBCP	27807	BBCP	27807	BBCP	27807	BBCP	Plug (1"NPT)	1

# EXPLODED VIEW



Models  
 Standard - 1020, 1520, 2020, 2520  
 Stainless Steel - 1021, 1521, 2021, 2521  
 Pulse Pump Manifold - 1525, 2525  
 Hi-Temp - 2520C  
 November 2002

	1020 MATL	2020 MATL	1520 MATL	2520 MATL	2520C MATL		
250	26516 STCP	26516 STCP	26516 STCP	26516 STCP	26516 STCP	Protector, Shaft	1
260	30614 STZP	30614 STZP	30614 STZP	30614 STZP	30614 STZP	Assy, Angle Rail (Incls: 27808,30902,30930,30911,30908)	1
● 269	30206 F	30206 F	30206 F	30206 F	30206 F	Pulley (10") (See Drive Packages, Tech Bulletin 003)	1 ●
● 275	30059 STL	30059 STL	30059 STL	30059 STL	30059 STL	Hub, "H" M30 (M8 Keyway) [3/00] (See Drive Packages, Tech Bulletin 003)	1 ●
● 279	30278 STZP	30278 STZP	30278 STZP	30278 STZP	30278 STZP	Oiler (1 oz.)	3 ●
281	30967	30967	30967	30967	30967	Oiler, Glass	3
282	10069 NBR	10069 NBR	10069 NBR	10069 NBR	10069 NBR	Gasket, Oiler	1
● 283	34334	34334	34334	34334	34334	Kit, Oil Drain	1 ●
295	—	—	6300 BBSS	6300 BBSS	—	Pump, Pulse (1 qt.) 1000 PSI	1
295	—	—	6305 BBSS	6305 BBSS	—	Pump, Pulse (1 gal.) 1000 PSI	1
300	—	—	<b>30254 FPM</b>	<b>30256 FPM</b>	—	Kit, Cup (Incls: 133,139,143,153,355)	1
302	—	—	<b>30839 NBR</b>	<b>30252 NBR</b>	—	Kit, Piston (Incls: 119-143,153,355)	1
305	30819 NBR	30819 NBR	30819 NBR	30819 NBR	—	Kit, Sleeve & Seal (Incls: 75,77,80,101,106,139)	1
306	30482 NBR	30482 NBR	30482 NBR	30482 NBR	—	Kit, Seal (Incls: 101,106,139)	1
310	30767 NBR	30767 NBR	30767 NBR	30767 NBR	30767 NBR	Kit, Valve (Incls: 143,153,163,164,166,167,168)	1
355	<b>16981 NY</b>	<b>27964 NY</b>	<b>15770 NY</b>	<b>27853 NY</b>	—	Insertor, Cup	1
—	6100	6100	6100	6100	6100	Oil, Case (12 Bottles) ISO 68 Multi-viscosity Hydraulic (Fill to specified crankcase capacity prior to start-up)	1

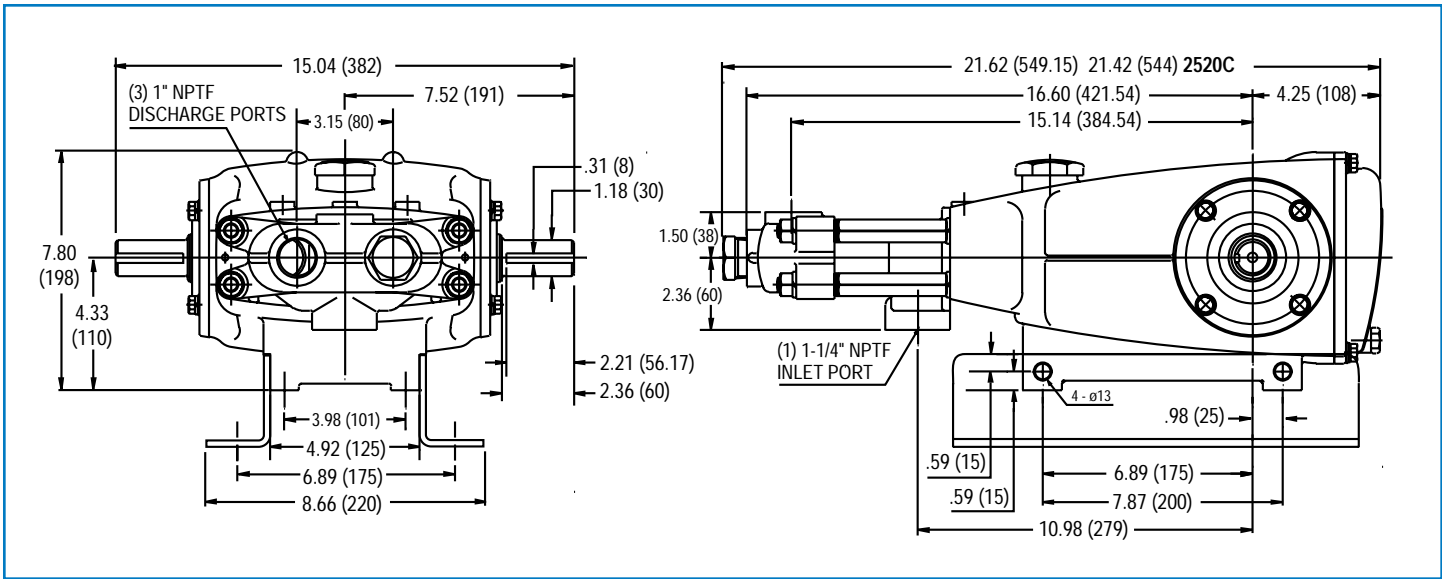
● Industrial discount. **Bold print part numbers are unique to a particular pump model.** *Italics are optional items.*

[ ] Date of latest production change. See Tech Bulletins 002, 003, 008, 009, 017, 021, 024, 034, 036, 063, 064, 074 and 083 for additional information.

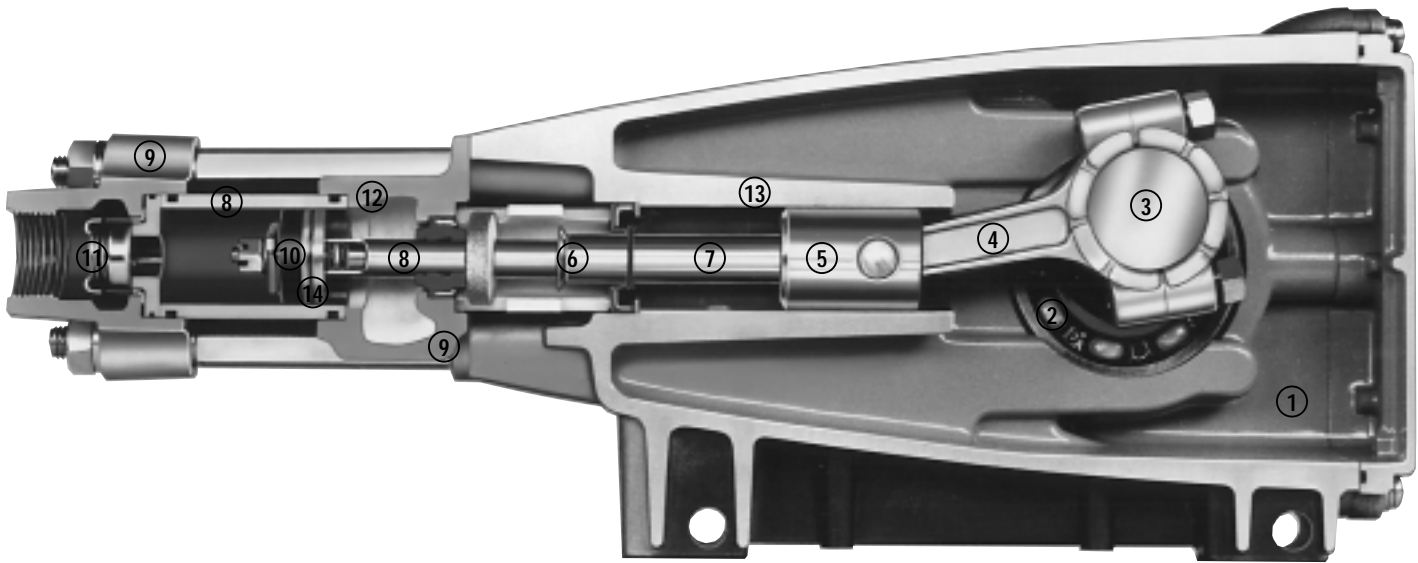
MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BBSP=Brass/Chrome Plated CM=Chrome-moly D=Acetal

F=Cast Iron FCM=Forged Chrome-moly FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) PE=Polyethylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SCP=304SS/Chrome Plated SNG=Special Blend (Buna) SS=316SS STCP=Steel/Chrome Plated

STL=Steel STZP=Steel/Zinc Plated SZZ=304SS/Zamak TG=PTFE Graphite Compound (GIT) TNM=Special High Strength TR=PTFE-RLN



Models 1020, 2020, 1520, 2520, 2520C



- 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 The **piston rods** are high tensile strength 304 stainless steel with Zamak crossheads.
- 6 The stainless steel **slinger** provides back-up protection for the crankcase seal, keeping pumped liquids out of the crankcase.
- 7 The patented **stepped piston rod** with hard chrome-plated stainless steel **sleeve** provides a durable wear surface and easy wet end servicing.
- 8 The **cylinder** and **sleeve** wear surfaces are hard chrome-plated 304 stainless steel for longer service life.
- 9 **Manifolds** are of high tensile strength chrome-plated brass or 316 stainless steel for special corrosion resistance.
- 10 100% wet **cup/seal** design adds to service life by allowing pumped liquids to cool and lubricate the elastomers on both sides.
- 11 304 stainless steel **valves, seats, and springs** provide corrosion-resistance, positive seating and long life.
- 12 Special **dual inlet seals** with cooling ports allow pumped liquids up to 210°F.
- 13 **Crossheads** are 360° supported for uncompromising alignment.
- 14 Mechanically actuated **inlet valves** provide strong lift and easy prime.

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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