

## 35 Frame Plunger Pump

**Brass**  
Standard and Flushed 3535, 3535C

**Stainless Steel**  
Standard and Flushed 3531, 3531C

**Nickel Aluminum Bronze**  
Standard and Flushed 3537, 3537C

### FEATURES

#### Superior Design

- Triplex plunger design gives smoother liquid flow.
- V-Packings are completely lubricated and cooled by the liquid being pumped.
- Special flushed inlet manifold lubricates and cools seals for extended life with DI water and high temp liquids.
- Lubricated Lo-Pressure Seals provide double protection against external leakage.
- Oil bath crankcase assures optimum lubrication.
- Close tolerance concentricity of the ceramic plunger maximizes seal life.

#### Quality Materials

- Precision design 304 and 316 stainless steel valves and seats are hardened and polished for ultimate seating and extended valve life.
- Forged Brass, 316 Stainless Steel, Duplex Stainless or Nickel Aluminum Bronze manifolds for strength 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 means 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.
- Inlet and discharge valve assemblies interchange for easier maintenance.
- 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.....	36 GPM	(136 L/M)
Pressure Range.....	100 to 1200 PSI	(7 to 85 BAR)
Inlet Pressure Range .....	Flooded to 70 PSI	(Flooded to 4.9 BAR)
RPM .....	800 RPM	(800 RPM)
Bore .....	1.575"	(40 mm)
Stroke.....	1.890"	(48 mm)
Crankcase Capacity.....	4.2 Qts.	(4 L)
Maximum Liquid Temperature .....	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Inlet Ports (2).....	1-1/2" NPTF	(1-1/2 NPTF)
Flushing Ports (2) (3531C) .....	1/4" NPTF	1/4" NPTF
Discharge Ports (2).....	1" NPTF	(1" NPTF)
Pulley Mounting .....	Either Side	(Either Side)
Shaft Diameter .....	1.378"	(35 mm)
Weight.....	139 lbs.	(63 kg)
Dimensions (3535, 3535C) .....	24.09 x 18.11 x 9.72"	(612 x 460 x 247 mm)
Dimensions (3531-31C, 3537-37C) .....	24.33 x 18.11 x 9.72"	(618 x 460 x 247 mm)

### ELECTRIC HORSEPOWER REQUIREMENTS

FLOW		PRESSURE			RPM	DRIVE
U.S. GPM	L/M	PSI 800	PSI 1000	PSI 1200		
		BAR 55	BAR 70	BAR 85		Consult CAT PUMPS for Pump and Motor Pulley Sizes
36	136	19.8	24.7	29.7	800	
30	114	16.5	20.6	24.7	667	
25	95	13.7	17.2	20.6	556	

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

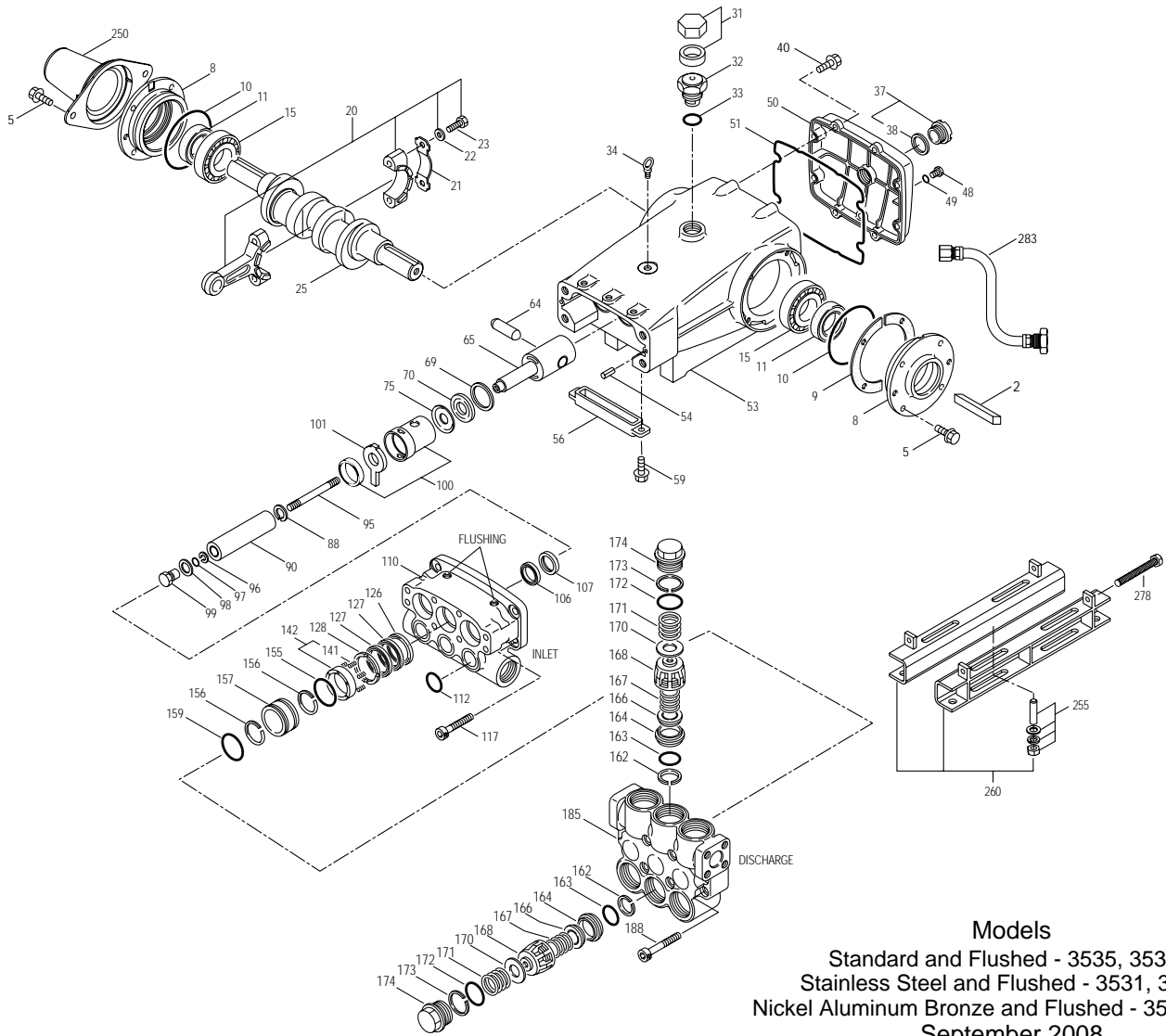
See complete Drive Packages [Incls: Pulleys, Belts, Hubs, Key] Tech Bulletin 003. Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

*"Customer confidence is our greatest asset"*

# PARTS LIST

ITEM	PART NUMBER			DESCRIPTION	QTY
	3535	3531	3537		
	MATL	MATL	MATL		
2	34021 STL	34021 STL	34021 STL	Key (M10x8x70)	1
5	125753 S	125753 S	125753 S	Screw, HHC Sems (M8x25)	8
8	44542 AL	44542 AL	44542 AL	Cover, Bearing	2
9	815279 FBR	815279 FBR	815279 FBR	Shim, Split 2-Pc	4
10	12398 NBR	12398 NBR	12398 NBR	O-Ring, Bearing Cover - 70D	2
11	13296 NBR	13296 NBR	13296 NBR	Seal, Oil, Crankshaft	2
15	29326 STL	29326 STL	29326 STL	Bearing, Roller	2
20	121467 TNM	121467 TNM	121467 TNM	Rod, Connecting Assy (Incls: 21,22,23) [10/00]	3
21	126749 STCP R	126749 STCP R	126749 STCP R	Locking Washer (M10)	3
22	126574 STZP R	126574 STZP R	126574 STZP R	Washer, Flat (M10)	6
23	122045 STZP	122045 STZP	122045 STZP	Screw, HH (M10x55)	6
25	29325 FCM	29325 FCM	29325 FCM	Crankshaft, Dual End	1
31	828710 —	828710 —	828710 —	Protector, Oil Cap w/Foam Gasket	1
32	43211 ABS	43211 ABS	43211 ABS	Cap, Oil Filler	1
33	14177 NBR	14177 NBR	14177 NBR	O-Ring, Oil Filler Cap - 70D	1
34	126743 STCP R	126743 STCP R	126743 STCP R	Bolt, Eye (M12x1.75) (For Lifting Pump Only)	1
37	92241 —	92241 —	92241 —	Gauge, Oil, Bubble w/Gasket	1
38	44428 NBR	44428 NBR	44428 NBR	Gasket, Flat, Oil Gauge - 80D	1
40	125753 S	125753 S	125753 S	Screw, HHC Sems (M8x25)	8
48	25625 STCP	25625 STCP	25625 STCP	Plug, Drain (1/4"x19BSP)	1
49	23170 NBR	23170 NBR	23170 NBR	O-Ring, Drain Plug - 70D	1
50	45936 AL	45936 AL	45936 AL	Cover, Rear	1
51	16612 NBR	16612 NBR	16612 NBR	O-Ring, Crankcase Cover - 70D	1
53	44487 AL	44487 AL	44487 AL	Crankcase Assy (Incls: 34, 54)	1
54	27488 S	27488 S	27488 S	Pins, Guide	2
56	27790 POP	27790 POP	27790 POP	Pan, Oil	1
59	92538 S	92538 S	92538 S	Screw, HHC Sems (M6x16)	2
64	43864 CM	43864 CM	43864 CM	Pin, Crosshead	3
65	† 45116 SSZZ	† 45116 SSZZ	† 45116 SSZZ	Rod, Plunger	3
69	126587 STCP R	126587 STCP R	126587 STCP R	Washer, Oil Seal	3
70	100488 NBR	100488 NBR	100488 NBR	Seal, Oil, Crankcase	3
	44739 FPM	44739 FPM	44739 FPM	Seal, Oil, Crankcase	3
75	43865 S	43865 S	43865 S	Slinger, Barrier	3
88	45676 S	45676 S	45676 S	Washer, Keyhole (M16)	3
90	43921 CC	43921 CC	43921 CC	Plunger (M40x145)	3
95	† 89778 SS	† 89778 SS	† 89778 SS	Stud, Plunger Retainer (M10x135)	3
96	20189 PTFE	20189 PTFE	20189 PTFE	Back-up-Ring, Plunger Retainer	3
97	11345 NBR	11345 NBR	11345 NBR	O-Ring, Plunger Retainer - 70D	3
	11375 FPM	11375 FPM	11375 FPM	O-Ring, Plunger Retainer	3
	◆ 701490 EPDM	◆ 701490 EPDM	◆ 701490 EPDM	O-Ring, Plunger Retainer	3
98	44085 SS	44085 SS	44085 SS	Gasket, Retainer	3
99	44084 SS	44084 SS	44084 SS	Retainer, Plunger (M10)	3
100	814279 PVDF	814279 PVDF	814279 PVDF	Retainer, Seal, 2 Pc.	3
101	44112 —	44112 —	44112 —	Wick, Long Tab	3
106	44113 NBR	44113 NBR	44113 NBR	Seal, LPS w/SS-Spg	3
	44740 FPM	44740 FPM	44740 FPM	Seal, LPS w/SS-Spg	3
	◆ 46955 EPDM	◆ 46955 EPDM	◆ 46955 EPDM	Seal, LPS w/S-Spg	3
107	43925 BB	45381 SS	44115 NAB	Spacer, Lo-Pressure Seal	1
110	46392 BB	45365 SS	45124 NAB	Manifold, Inlet	3
	46392C BB	125397 SS	125975 NAB	Manifold, Inlet, Flushed (1/4" Flush Ports)	1
112	11379 NBR	11379 NBR	11379 NBR	O-Ring, Inlet Manifold - 70D	3
	14183 FPM	14183 FPM	14183 FPM	O-Ring, Inlet Manifold	3
	◆ 701491 EPDM	◆ 701491 EPDM	◆ 701491 EPDM	O-Ring, Inlet Manifold - 70D	3
117	44585 S	44585 S	44585 S	Screw, HSH (M14x40)	4
126	43926 BB	48391 D	48391 D	Adapter, Female	3
	—	45367 SS	† 45367 SS	Adapter Female	3
127	44609 STG*	44609 STG*	44609 STG*	V-Packing	6
	44741 SFG	44741 SFG	44741 SFG	V-Packing	6
128	43928 BB	45368 SS	† 45368 SS	Adapter, Male	3
141	45113 SS	45113 SS	45113 SS	Springs, Coil	6/18
142	46352 BB	45382 SS	† 45382 SS	Spacer, w/Coil Springs	3
155	48860 NBR	48860 NBR	48860 NBR	O-Ring, V-Packing-Spacer - 90D	3
	20137 FPM	20137 FPM	20137 FPM	O-Ring, V-Packing-Spacer - 70D	3
	◆ 701492 EPDM	◆ 701492 EPDM	◆ 701492 EPDM	O-Ring, V-Packing-Spacer	3
156	48362 D	48362 D	48362 D	Back-up-Ring, Spacer	3
157	† 45369 SS	45369 SS	† 45369 SS	Spacer, V-Packing	3
158	48362 D	48362 D	48362 D	Back-up-Ring, V-Packing-Spacer	3
159	48860 NBR	48860 NBR	48860 NBR	O-Ring, V-Packing-Spacer - 90D	3
	20137 FPM	20137 FPM	20137 FPM	O-Ring, V-Packing-Spacer - 70D	3
	◆ 701492 EPDM	◆ 701492 EPDM	◆ 701492 EPDM	O-Ring, V-Packing-Spacer	3
162	48363 D	48363 D	48363 D	Back-up-Ring, Valve Seat	6
163	26142 NBR	26142 NBR	26142 NBR	O-Ring, Seat - 80D	6
	14330 FPM	14330 FPM	14330 FPM	O-Ring, Seat	6
	◆ 701493 EPDM	◆ 701493 EPDM	◆ 701493 EPDM	O-Ring, Seat	6
164	44727 S	44612 SSL	44612 SSL	Seat, Stepped	6
166	43932 S	44108 SSL	44108 SSL	Valve	6
167	44109 SS	44109 SS	44109 SS	Spring	6
168	44728 PVDF	44728 PVDF	44728 PVDF	Retainer, Spring	6
170	44729 SS	44729 SS	44729 SS	Washer, Spring Retainer	6
171	44644 SS	44644 SS	44644 SS	Coil Spring (70kg), Valve Plug	6
172	89827 NBR	89827 NBR	89827 NBR	O-Ring, Valve Plug - 90D	6
	11747 FPM	11747 FPM	11747 FPM	O-Ring, Valve Plug - 90D	6
	◆ 701494 EPDM	◆ 701494 EPDM	◆ 701494 EPDM	O-Ring, Valve Plug - 70D	6
173	48364 D	48364 D	48364 D	Back-up-Ring, Valve Plug	6
174	46444 FBB	49300 SSD	44643 NAB	Plug, Valve	1
185	76394 BB	49299 SSD	76335 NAB	Manifold, Discharge	6
188	89981 S	89981 S	89981 S	Screw, HSH (M12x70)	8

# EXPLODED VIEW



Models  
 Standard and Flushed - 3535, 3535C  
 Stainless Steel and Flushed - 3531, 3531C  
 Nickel Aluminum Bronze and Flushed - 3537, 3537C  
 September 2008

	<b>3535</b>	<b>3531</b>	<b>3537</b>					
	<b>3535C</b>	<b>MATL</b>	<b>3531C</b>	<b>MATL</b>	<b>3537C</b>			
				<b>MATL</b>				
250	44516	NY	44516	NY	44516	NY	Protector, Shaft w/2 Screws, Lockwashers and Washers (Included With Pump)	1
255	34018	STZP R	34018	STZP R	34018	STZP R	Kit, Direct Mount	1
	34039	SS	34039	SS	34039	SS	Kit, Direct Mount	1
260	92674	STZP	92674	STZP	92674	STZP	Mounting, Box Assy (Incls: 34018)	1
275	990013	STL	990013	STL	990013	STL	Hub, 'B' 35mm w/Keyway [See Drive Packages, Tech Bulletin 03]	1
278	80540	ZP	80540	ZP	80540	ZP	Screw, HH (M12x100) (Rail Adjusting Screw)	1
279	30278	STZP	30278	STZP	30278	STZP	Oiler (1 oz.)	3
281	30967	—	30967	—	30967	—	Glass, Oiler	3
282	10069	NBR	10069	NBR	10069	NBR	Gasket, Oiler	3
283	34314	—	34314	—	34314	—	Kit, Oil Drain	1
290	6124	—	6124	—	6124	—	Gasket, Liquid (3 oz.)	1
299	<b>814821</b>	<b>BBCP</b>	<b>818372</b>	<b>SS</b>	<b>814522</b>	<b>NAB</b>	Complete Head	1
300	31040	NBR*	31040	NBR*	31040	NBR*	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
	33055	FPM	33055	FPM	33055	FPM	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
	◆ 33262	EPDM*	◆ 33262	EPDM*	◆ 33262	EPDM*	Kit, Seal (Incls: 97,106,112,127,155,156,158,159)	1
310	<b>34235</b>	<b>NBR</b>	<b>34017</b>	<b>NBR</b>	<b>34017</b>	<b>NBR</b>	Kit, Valve (Incls: 162,163,164,166,167,168,170,172,173)	2
	31955	FPM	31955	FPM	31955	FPM	Kit, Valve (Incls: 162,163,164,166,167,168,170,172,173)	2
	◆ 31952	EPDM	◆ 31952	EPDM	◆ 31952	EPDM	Kit, Valve (Incls: 162,163,164,166,167,168,170,172,173)	2
—	819000	F	819000	F	819000	F	Assy, Crankcase, Cast Iron Conversion	1
—	714500	SS	714500	SS	714500	SS	C.A.T. (Inlet pressure stabilizer for RO and boosted inlet applications)	1
—	714506	SS	714506	SS	714506	SS	Adapter (2 per C.A.T.) (See Data Sheet for complete selection)	2
—	6575	—	6575	—	6575	—	Plunger Pump Service DVD	1
—	6100	—	6100	—	6100	—	Oil, Case (12 Bottles) ISO 68 Multi-viscosity Hydraulic (Fill to specified crankcase capacity prior to start-up)	1
—	—	—	6119	—	—	—	Lubricant, Antiseize (1oz)	1

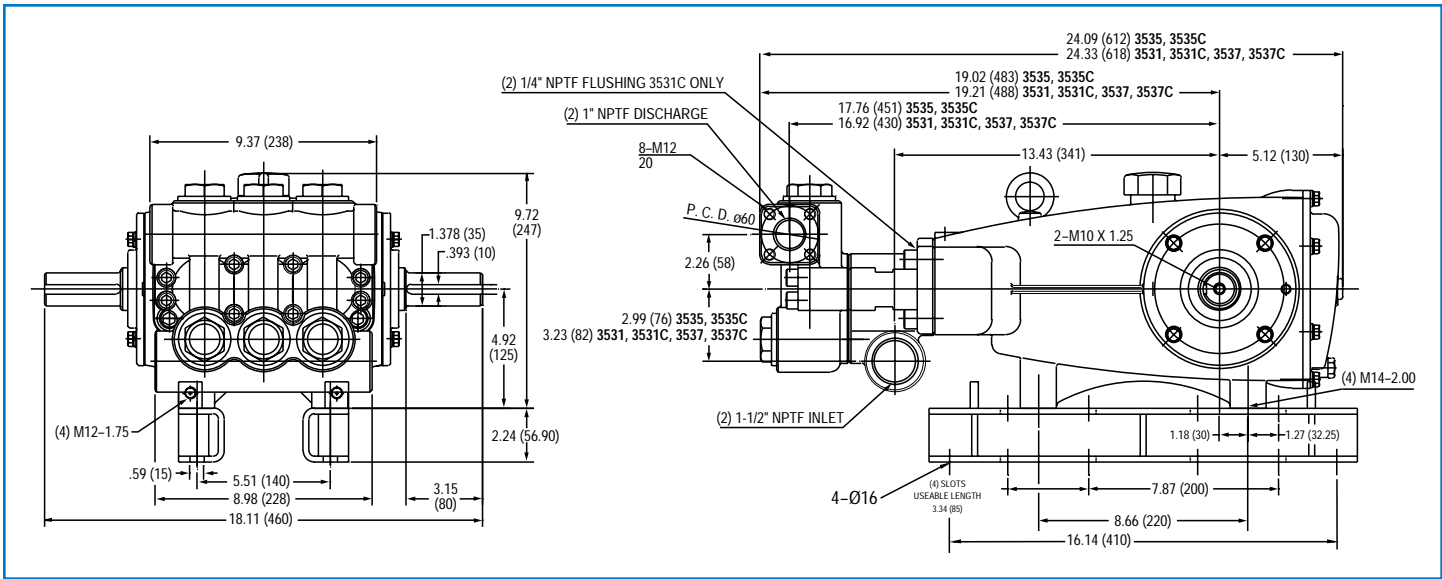
**Bold print part numbers are unique to a particular pump model. Italics are optional items. [ ]** Date of latest production change. **◆** Silicone oil/grease required.

† Production parts are different than repair parts. R Components comply with RoHS Directive.

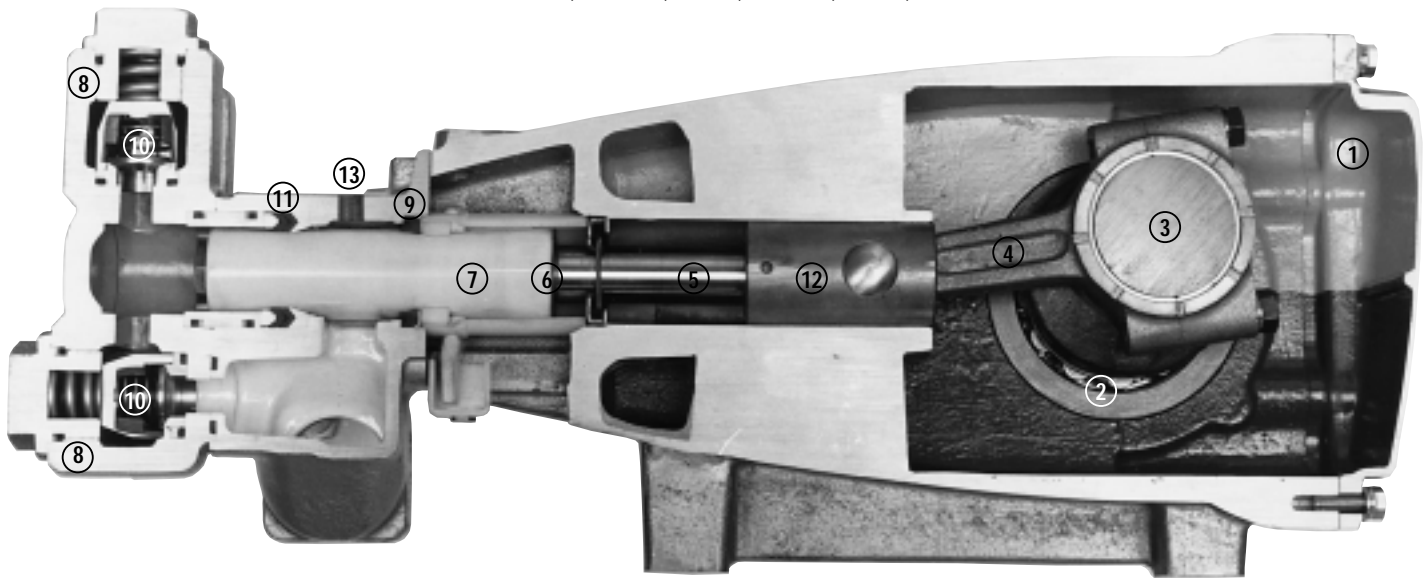
\* Review material codes for individual items (STG generally may be used as alternate). **C.A.T. highly recommended for pressurized inlet, R.O. and Industrial applications.**

See Tech Bulletins 03, 024, 035, 036, 040, 041, 043, 050, 052, 053, 069, 074, 077, 083, 099 and 105 for additional information.

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CC=Ceramic CM=Chrome-Moly D=Acetal EPDM=Ethylene Propylene Diene Monomer F=Cast Iron FBB=Forged Brass FBR=Fiber FCM=Forged Chrome-moly FPM=Fluorocarbon NAB=Nickel Aluminum Bronze NBR=Medium Nitrile (Buna-N) NBRSS=Buna, Silicone Free NY=Nylon POP=Polypropylene PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SS=316SS SSD=Duplex Stainless Steel SSL=316/Low Carbon SSZZ=316SS/Zamak STCP=Steel/Chrome Plated SFG=Special Blend (FPM) STG=Special Blend (PTFE) White STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength ZP=Zinc Plated



Models 3535, 3535C, 3531, 3531C, 3537, 3537C



- 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 TNM **connecting rods** noted for superior tensile 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 forged brass, 316 stainless steel, duplex stainless or nickel aluminum bronze for long term, continuous duty.
- 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, ultimate seating and extended life.
- 11 Specially formulated, CAT PUMP exclusive, **V-Packings** offer unmatched performance and seal life.
- 12 **Crossheads** are 360° supported providing uncompromising alignment.
- 13 Optional special **ported Flushed Inlet Manifold** permits external flush for lubricating and cooling seals when pumping liquids such as DI water, Hi-Temp or low lubricity.

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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