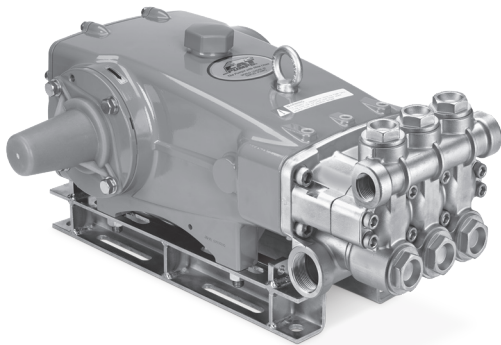


# DATA SHEET

## 35 FRAME PLUNGER PUMPS



Brass	Stainless Steel	Stainless Steel Flushed	Nickel Aluminum Bronze
<b>3535HS</b>	<b>3531DHS</b>	<b>3531CHS</b>	<b>3537HS</b>



Model 3535HS Shown  
(Shaft protector included, mounting rails sold separately)

### FEATURES

- Triplex plunger ensures delivers high efficiency and low pulsation.
- V-packings and low-pressure seals are completely lubricated and cooled by pumped liquid.
- Special high-density, polished, concentric ceramic plungers provide a true wear surface and extended seal life.
- Model 3531CHS provides an external flush for high-temperature or low-lubricity liquids.
- Pump comes standard with NBR seals. Alternative seal materials are available for higher temperature or chemical compatibility.

### SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow*	40 gpm	151 lpm
Pressure Range*	100 to 2000 psi	6.9 to 138 bar
Pump RPM**	888 rpm	888 rpm
Inlet Pressure Range	Flooded to 70 psi	Flooded to 4.8 bar
Maximum Liquid Temp. (NBR)	160° F	71° C

Alternative seals available for higher temperatures up to 200° F

Bore	1.575"	40 mm
Stroke	1.890"	48 mm
Crankcase Capacity	4.2 qts	4 l
Inlet Ports (2)	1½" NPT(F)	1½" NPT(F)
Flush Ports (2)	¼" NPT (F)	¼" NPT (F)
Discharge Ports (2)	1" NPT(F)	1" NPT(F)
Shaft Diameter	1.378"	35 mm
Pulley Mounting	Either Side	Either Side
Weight	139 lbs	63 kg
Dimensions	24.33 x 18.11 x 9.72"	618 x 460 x 247 mm

\* Intermittent Duty Only

\*\* Pump minimum is 100 RPM.

### Intermittent Duty Cycle Defined As:

Operating pump at stated flow and pressure for no more than 50% of time in any given hour.

### ALTERNATIVE SEAL CONFIGURATION

MATERIAL	SUFFIX CODE	MAXIMUM TEMPERATURE	
NBR	—	160° F	(71° C)
FPM	.0110	180° F	(82° C)
EPDM	.0220	160° F	(71° C)
IPFE	.0770	200° F	(93° C)

See **Tech Bulletin 002** for inlet conditions and RPM at higher temperatures.

### DETERMINING THE PUMP RPM

$$\frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{Desired gpm}}{\text{Desired rpm}}$$

### DETERMINING THE REQUIRED HP

$$\frac{\text{hp (Electric Brake)}}{1460} = \frac{\text{gpm} \times \text{psi}}{1460}$$

### DETERMINING MOTOR PULLEY SIZE

$$\frac{\text{Motor Pulley OD}}{\text{Pump rpm}} = \frac{\text{Pump Pulley OD}}{\text{Motor rpm}}$$

Refer to pump **Service Manual** for repair procedure and additional technical information.

# PARTS LIST

ITEM	PART NUMBER		3531DHS		DESCRIPTION		QTY	
	3535HS	MATL	3531CHS	MATL	3537HS	MATL		
5	96049	S	96049	S	96049	S	Screw, HHC Sems (M10x25) (See Tech Bulletins 074, 125)	8
8	134604	ALE	134604	ALE	134604	ALE	Cover, Bearing (See Tech Bulletins 118, 125)	2
9	815279	FBR	815279	FBR	815279	FBR	Shim, Split 2-Piece (See Tech Bulletin 125)	2
10	12398	NBR	12398	NBR	12398	NBR	O-Ring, Bearing Cover-70D	2
11	13296	NBR	13296	NBR	13296	NBR	Seal, Oil, Crankshaft	2
12	855049	S	855049	S	855049	S	Shim, Split 2-Piece	0-2
15	29326	STL	29326	STL	29326	STL	Bearing, Roller	2
20	126725	BZ R	126725	BZ R	126725	BZ R	Rod, Connecting Assembly (Includes: 21, 22, 23) (See Tech Bulletin 074)	3
21	126749	STCP R	126749	STCP R	126749	STCP R	Locking Washer (M10)	3
22	126593	STCP R	126593	STCP R	126593	STCP R	Washer, Flat (M10.5)	6
23	122045	STZP	122045	STZP	122045	STZP	Screw, HH (M10 x 55)	6
25	29325	FCM	29325	FCM	29325	FCM	Crankshaft, Dual End	1
31	828710	PE	828710	PE	828710	PE	Protector, Oil Cap with 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 (M12 x 1.75) (For Lifting Pump Only)	1
37	92241	PC	92241	PC	92241	PC	Gauge, Oil, Bubble with 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 (M8 x 25)	8
48	25625	STCP	25625	STCP	25625	STCP	Plug, Drain (1/4" x 19 BSP) (See Tech Bulletin 074)	1
49	23170	NBR	23170	NBR	23170	NBR	O-Ring, Drain Plug-70D	1
50	45936	ALE	45936	ALE	45936	ALE	Cover, Rear (See Tech Bulletin 118)	1
51	16612	NBR	16612	NBR	16612	NBR	O-Ring, Crankcase Cover-70D	1
53	134784	ALE	134784	ALE	134784	ALE	Crankcase Assembly (Includes 54) (See Tech Bulletin 118, 125)	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 (M6 x 16)	2
64	43864	CM	43864	CM	43864	CM	Pin, Crosshead	3
65	49166	SSHB	49166	SSHB	49166	SSHB	Rod, Plunger	3
69	126587	STCP R	126587	STCP R	126587	STCP R	Washer, Oil Seal	3
70	100488	NBRS	100488	NBRS	100488	NBRS	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 (M40 x 145)	3
95	† 89778	SS	89778	SS	89778	SS	Stud, Plunger Retainer (M10 x 135)	3
96	20189	PTFE	20189	PTFE	20189	PTFE	Backup Ring, Plunger Retainer	3
97	11345	NBR	11345	NBR	11345	NBR	O-Ring, Plunger Retainer-70D	3
98	44085	SS	44085	SS	44085	SS	Gasket, Retainer	3
99	† 44084	SS	44084	SS	44084	SS	Retainer, Plunger (M10) (See Tech Bulletin 074)	3
100	814279	PVDF	814279	PVDF	814279	PVDF	Retainer, Seal, 2-Piece (See Tech Bulletin 105)	3
101	44112	—	44112	—	44112	—	Wick, Long Tab	3
106	† 44113	NBR	44113	NBR	44113	NBR	Seal, Low-Pressure, with SS-Spring	3
107	—	—	<b>45381</b>	SS	<b>44115</b>	NAB	Spacer, Low-Pressure, Seal	3
110	<b>49464</b>	BBCP R	<b>45365</b>	SS	<b>45124</b>	NAB	Manifold, Inlet	1
—	—	—	<b>125397</b>	SS	—	—	Manifold, Inlet, Flushed (1/4" Flush)	1
112	11379	NBR	11379	NBR	11379	NBR	O-Ring, Inlet Manifold-70D	3
117	44585	S	44585	S	44585	S	Screw, HSH (M14 x 40) (See Tech Bulletin 074)	4
126	<b>46494</b>	BB	<b>48391</b>	D	<b>48391</b>	D	Adapter, Female (See Tech Bulletin 087)	3
—	—	—	<b>45367</b>	SS	<b>45367</b>	SS	Adapter, Female	3
127	44609	STG	44609	STG	44609	STG	V-Packing	6
128	<b>43928</b>	BB	<b>45368</b>	SS	<b>45368</b>	SS	Adapter, Male	3
141	49519	SS	49519	SS	49519	SS	Spring, Large Coil (See Tech Bulletin 108)	3
155	48860	NBR	48860	NBR	48860	NBR	O-Ring, V-Packing Spacer-90D	6
—	48362	D	48362	D	48362	D	Backup Ring, V-Packing Spacer	6
157	<b>49478</b>	BB	<b>49520</b>	SS	<b>49521</b>	NAB	Spacer, V-Packing (See Tech Bulletin 108)	3
162	48363	D	48363	D	48363	D	Backup Ring, Valve Seat	6
163	26142	NBR	26142	NBR	26142	NBR	O-Ring, Seat-80D	6
164	<b>44727</b>	S	<b>44612</b>	SS	<b>44612</b>	SS	Seat, Stepped	6
166	<b>43932</b>	S	<b>44108</b>	SS	<b>44108</b>	SS	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 (70 kg), Valve Plug	6
172	89827	NBR	89827	NBR	89827	NBR	O-Ring, Valve Plug-90D	6
173	48364	D	48364	D	48364	D	Backup Ring, Valve Plug	6
174	<b>46444</b>	FBB	<b>49300</b>	SSD	<b>44643</b>	NAB	Plug, Valve	6
185	<b>49465</b>	BBCP R	<b>49299</b>	SSD	<b>76335</b>	NAB	Manifold, Discharge (See Tech Bulletins 099 and 109)	1
188	89981	S	89981	S	89981	S	Screw, HSH (M12 x 70) (See Tech Bulletin 074)	8
250	855042	NY	855042	NY	855042	NY	Protector, Shaft with 2 Screws, Lockwashers and Washers (Included with Pump) (See Tech Bulletin 125)	1

**Bold Part Numbers are unique to a particular pump model. Italics are optional items.**

† Production parts are different from repair parts. \* Review individual parts in each kit for material identification.

R Components comply with RoHS Directive. For additional technical information see [www.catpumps.com/literature/tech-bulletins](http://www.catpumps.com/literature/tech-bulletins).

MATERIAL CODES (Not Part of Part Number): ABS=ABS Plastic AL=Aluminum ALE=Aluminum Epoxy BB=Brass BBCP=Brass/Chrome Plated

BZ=Bronze CC=Ceramic CM=Chrome-Moly D=Acetal EPDM=Ethylene Propylene Diene Monomer FBB=Forged Brass FBR=Fiber FCM=Forged Chrome-moly

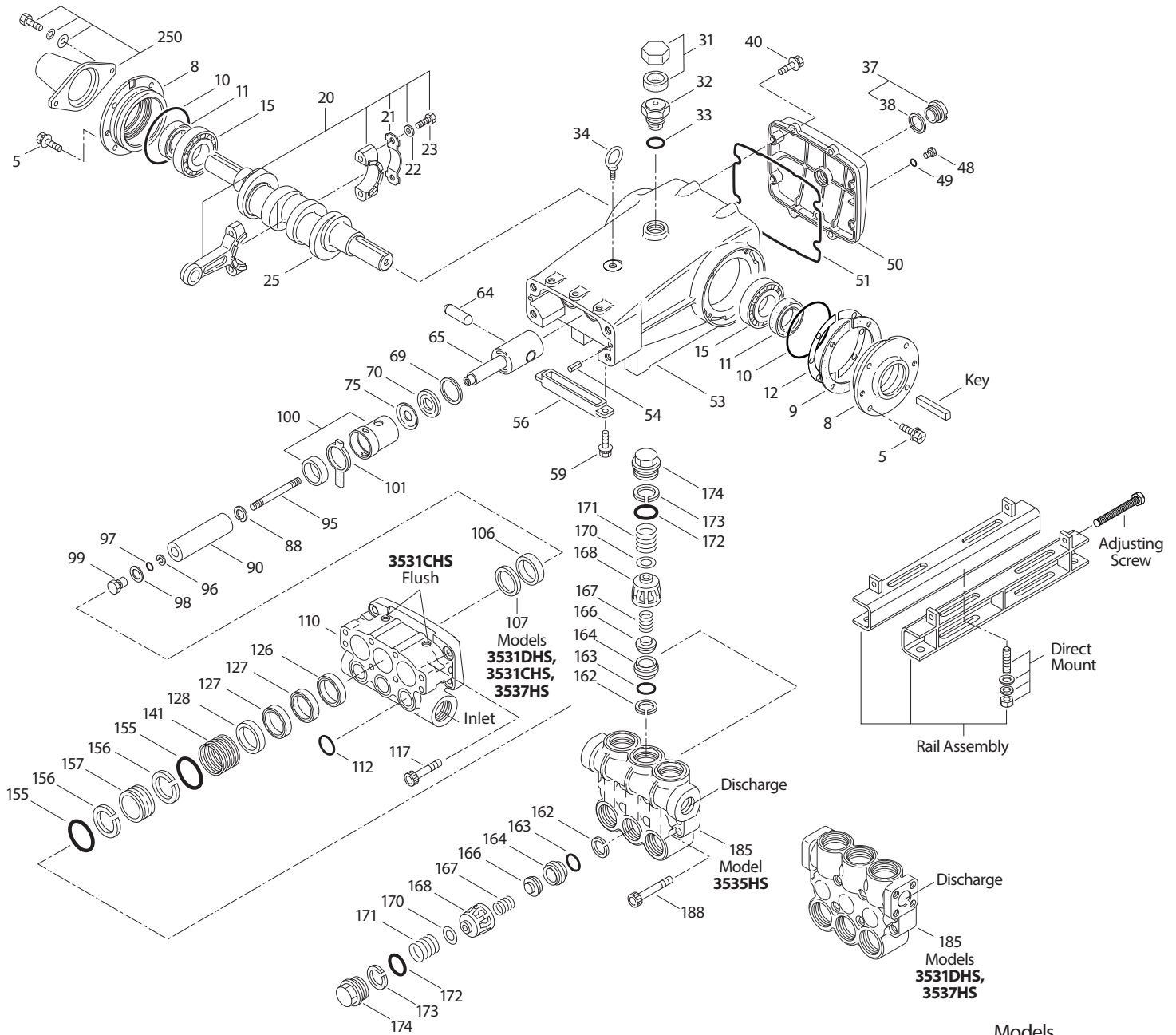
FPM=Fluorocarbon NAB=Nickel Aluminum Bronze NBR=Medium Nitrile (Buna-N) NBRS=Buna, Silicone Free NY=Nylon PC=Poly Carbonate POP=Polypropylene

PTFE=Pure Polytetrafluoroethylene PVDF=Polyvinylidene Fluoride S=304SS SS=316SS SSHB=316SS/High Strength Brass STCP=Steel/Chrome Plated

SFG=Special Blend (FPM) STG=Special Blend (PTFE) White SSD=Duplex Stainless Steel STL=Steel STZP=Steel/Zinc Plated ZP=Zinc Plated

**Optional Parts and Accessories and Service parts listed on Page 3. Standard and optional Seal Kits and Valve Kits listed on page 4.**

# EXPLODED VIEW



Models  
 Brass 3535HS  
 Stainless Steel 3531DHS, 3531CHS  
 Nickel Aluminum Bronze 3537HS  
 March 2022

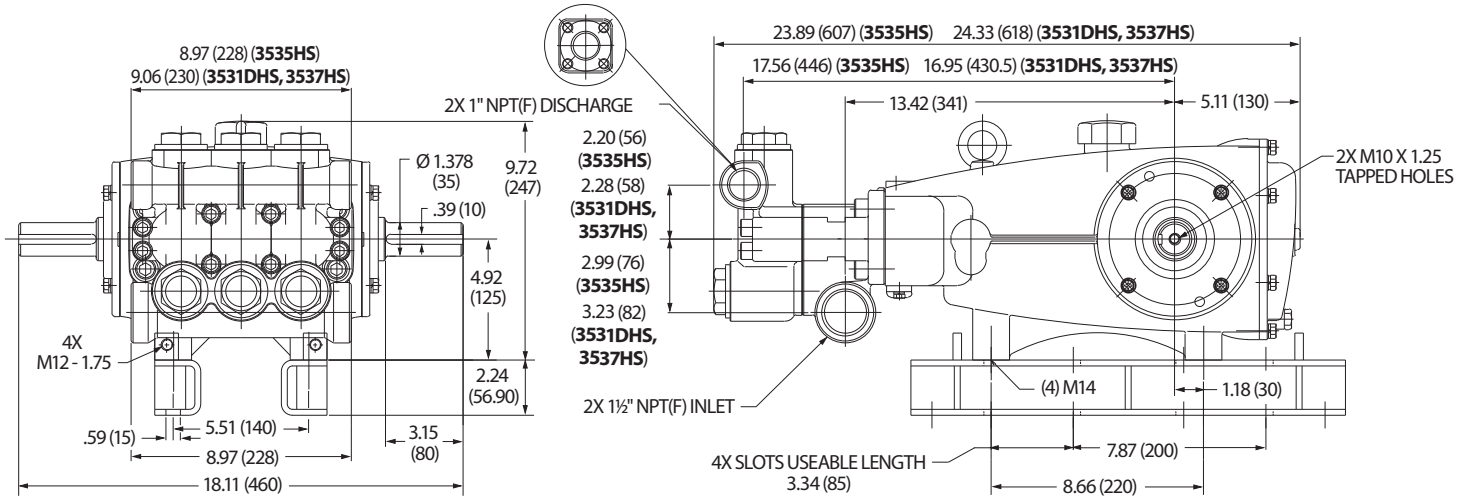
## OPTIONAL PARTS AND ACCESSORIES

PART	DESCRIPTION	QTY
34021	Key (M10 x 8 x 70)	1
92674	Rail Assembly (STZP R)	1
76514	Rail Assembly (S)	1
34018	Mount, Direct (STZP R)	1
34039	Mount, Direct (S)	1
990013	Hub, "B", 35 mm (Not Shown)	1
80540	Screw, Adjusting M12 x 100	2
30278	Oiler (1 oz) (Not Shown)	3
34314	Kit, Oil Drain (3/8" x 48") (Not Shown)	1
819000	Assembly, Crankcase, Cast Iron Conversion (Not Shown)	1

## SERVICE PARTS

PART	DESCRIPTION	QTY
31040	Kit, Seal – Standard NBR	1
34235	Kit, Valve (3535HS, 3535CHS) – Standard NBR	2
34017	Kit, Valve (3531DHS, 3531CHS, 3537HS) – Standard NBR	2
6100	Oil, Case (12–21 oz bottles) (Fill to Specific Crankcase Capacity Prior to Start-up)	1
6124	Gasket, Liquid (3 oz)	1
6139	Lubricant, Anti-Seize (8 oz) (3531DHS, 3531CHS) (See Tech Bulletin 095)	1
818427	Head, Complete – 3535HS with NBR Seals and O-Rings	1
818372	Head, Complete – 3531DHS with NBR Seals and O-Rings	1
814522	Head, Complete – 3537HS with NBR Seals and O-Rings	1

Models 3531DHS, 3537HS Only



Models 3535HS, 3531DHS, 3537HS

### SEAL KITS One (1) seal kit required per pump

PUMP MODELS	NBR (STD)	FPM (.0110)	EPDM (.0220) ◆	IPFE (.0770)
3535HS, 3531DHS, 3531CHS, 3537HS	<b>31040 *</b>	<b>33055</b>	<b>33262 *</b>	<b>76948</b>

ITEM (Included in Seal Kits)					DESCRIPTION	QTY
97	11345	11375	701490	702961	O-Ring, Plunger Retainer	3
106	44113	44740	46955	76398	Seal, Low-Pressure, with SS-Spring	3
112	11379	14183	701491	702705	O-Ring, Inlet Manifold	3
127	44609	44741	44609	76780	V-Packing	6
155	48860	20137	701492	703159	O-Ring, V-Packing Spacer	6
156	48362	48362	48362	202164	Backup Ring, V-Packing Spacer	6

◆ Silicone oil/grease required \*Review material codes for individual items (STG generally by be used as alternative)

### VALVE KITS Two (2) valve kits required per pump

PUMP MODELS	NBR (STD)	FPM (.0110)	EPDM (.0220) ◆	IPFE (.0770)
3535HS	<b>34235</b>	<b>31955</b>	<b>31952</b>	<b>76617</b>
3531DHS, 3531CHS, 3537HS	<b>34017</b>	<b>31955</b>	<b>31952</b>	<b>76617</b>

ITEM (Included in Valve Kits)					DESCRIPTION	QTY
162	48363	48363	48363	44614	Backup Ring, Valve Seat	3
163	26142	14330	701493	702808	O-Ring, Valve Seat	3
164	44727				Seat (3535HS, 3535CHS)	3
		44612	44612	44612	Seat (3531DHS, 3531CHS, 3537HS)	3
166	43932				Valve (3535HS, 3535CHS)	3
		44108	44108	44108	Valve (3531DHS, 3531CHS, 3537HS)	3
167	44109	44109	44109	44109	Spring	3
168	44728	44728	44728	44728	Retainer, Spring	3
170	44729	44729	44729	44729	Washer, Spring Retainer	3
172	89827	11747	701494	701369	O-Ring, Valve Plug	3
173	48364	48364	48364	20388	Backup Ring, Valve Plug	3

◆ Silicone oil/grease required

#### ⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high-pressure system. Read all CAUTIONS and WARNINGS before commencing service or operation of any high-pressure system. The CAUTIONS and WARNINGS are included in each Service Manual and with each Accessory Data sheet. CAUTIONS and WARNINGS can also be viewed online at [www.catpumps.com/dynamic-literature/cautions-and-warnings](http://www.catpumps.com/dynamic-literature/cautions-and-warnings) or can be requested directly from Cat Pumps.

#### WARRANTY

View the Limited Warranty online at [www.catpumps.com/literature/cat-pumps-limited-warranty](http://www.catpumps.com/literature/cat-pumps-limited-warranty)