

Direct-Drive Plunger Pump

Models

3DX25GSI
3DX27GSI
3DX30GSI

PUMP FEATURES

- Triplex plunger design provides a smooth liquid flow.
- Specially formulated Hi-Pressure Seals and concentric solid ceramic plungers assure true wear surface and extended seal life.
- Ultra-compact, hollow-shafted pump for direct mounting to gas engine.
- Modular Regulating Unloader with built-in by-pass standard on all units to assure system pressure control and pump protection.
- Built-in fixed Chemical Injector standard on all units offers cleaning flexibility.
- Stacked valve design for ease in servicing.
- Swivel garden hose fitting with filter screen for easy inlet connection.

⚠ 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
MODEL 3DX25GSI		
Flow	2.5 GPM	(9.5 L/M)
Max. Discharge Pressure	2500 PSI	(175 BAR)
Max. RPM.....	3450 RPM	(3450 RPM)
Stroke	0.204"	(5.2 mm)
MODEL 3DX27GSI		
Flow	2.7 GPM	(10.2 L/M)
Max. Discharge Pressure	2500 PSI	(175 BAR)
Max. RPM.....	3450 RPM	(3450 RPM)
Stroke	0.220"	(5.6 mm)
MODEL 3DX30GSI		
Flow	3.0 GPM	(11.4 L/M)
Max. Discharge Pressure	2500 PSI	(175 BAR)
Max. RPM.....	3450 RPM	(3450 RPM)
Stroke	0.244"	(6.2 mm)

COMMON PUMP SPECIFICATIONS

Inlet Pressure Range	Flooded to 60 PSI	(Flooded to 4 Bar)
Bore	0.630"	(16 mm)
Max. Liquid Temperature	140° F	(60° C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Crankcase Capacity.....	8.5 oz.	(0.25 L)
Inlet Port (1).....	3/4" GHF	(3/4" GHF)
Discharge Port (1).....	M18x1.0	(M18x1.0)
Chemical Discharge Port (1).....	3/8" NPTM	(3/8" NPTM)
Chemical Injection Barb.....	8/32" UNF	(8/32" UNF)
Shaft Diameter.....	3/4"	(19.0 mm)
Weight	10.7 lbs.	(4.9 kg)
Dimensions	7.99 x 7.75 x 6.29"	(203 x 197 x 160 mm)

ELECTRIC HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE					RPM
			PSI 1000	PSI 1200	PSI 1500	PSI 2000	PSI 2500	
	U.S. GPM	L/M	BAR 70	BAR 85	BAR 105	BAR 140	BAR 175	
3DX25GSI	2.5	9.5	1.7	2.0	2.6	3.4	4.3	3450
3DX27GSI	2.7	10.2	1.8	2.2	2.8	3.7	4.6	3450
3DX30GSI	3.0	11.4	2.1	2.5	3.1	4.1	5.2	3450

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

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

Note: Consult engine manufacturer when using gas or diesel engine.
Refer to pump **Service Manual** for repair procedure, additional technical information and **pump warranty**.

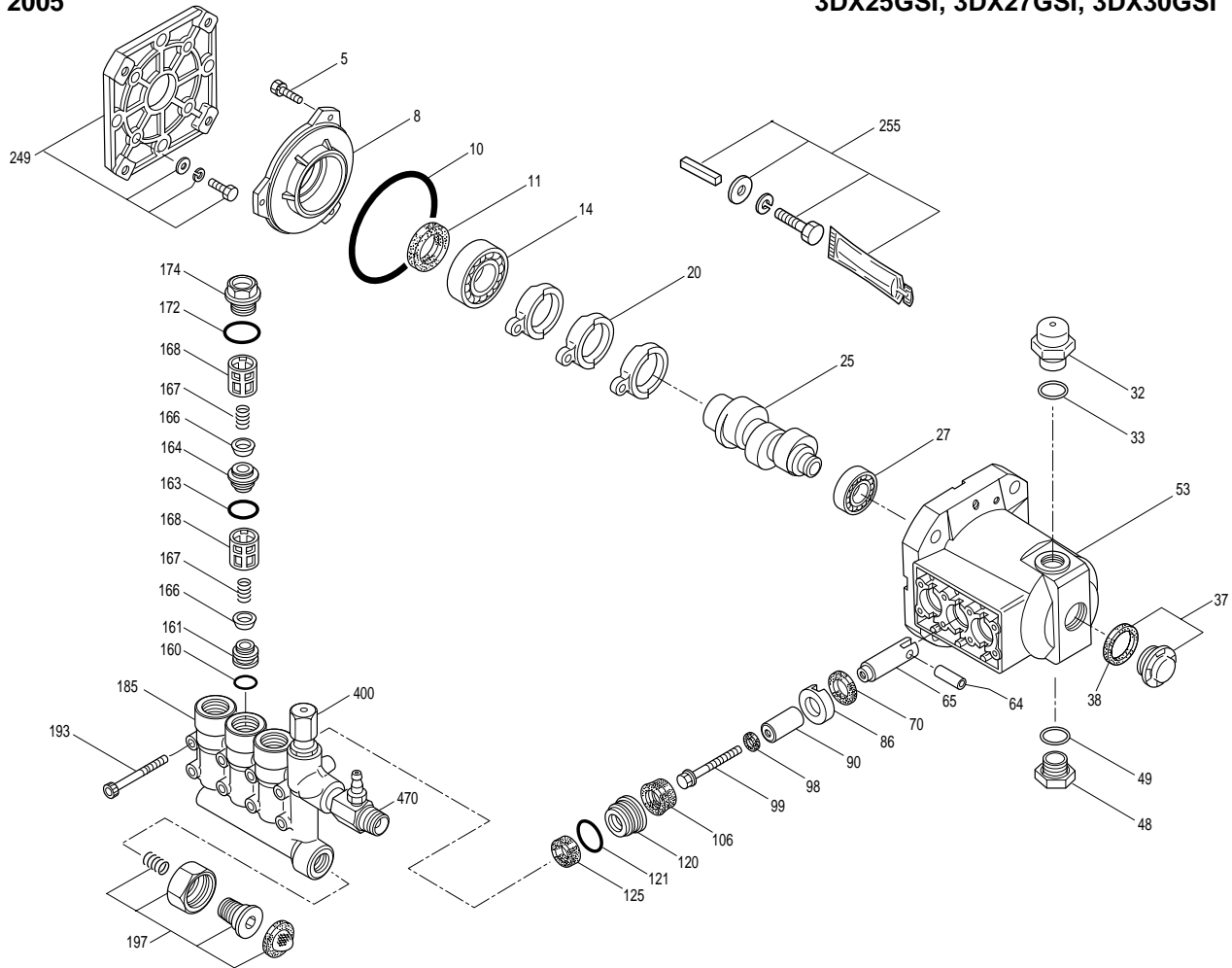
"Customer confidence is our greatest asset"

EXPLODED VIEW

May 2005

3DX PLUNGER PUMP MODEL

3DX25GSI, 3DX27GSI, 3DX30GSI



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY	ITEM	PN	MATL	DESCRIPTION	QTY
5	817003	STZP	Screw, HHC w/Seal Washer (M6x12)	3	164	545178	S	Seat, Discharge [1/04]	3
8	547169	AL	Cover, Bearing [4/05]	1	166	46764	S	Valve	6
10	14041	NBR	O-Ring, Bearing Cover - 70D	1	167	46865	S	Spring	6
11	55337	NBR	Seal, Oil - 70D	1	168	543988	PVDF	Retainer, Spring	6
15	14488	STL	Bearing, Ball	1	172	142807	NBR	O-Ring, Plug - 90D	3
20	547048	TNM	Rod, Connecting	3	174	46759	BB	Plug, Valve (M22x1.5)	3
25	547307	CM	Crankshaft, 3450 RPM, 3/4", 5.2 mm [01/04]	1		35759	BB	Plug, Valve w/1/4" NPT Port for Accessory	1
	548195	CM	Crankshaft, 3450 RPM, 3/4", 5.6 mm [01/04]	1	185	548595	BB	Head, Manifold w/Modular Unloader Body	1
	548196	CM	Crankshaft, 3450 RPM, 3/4", 6.2 mm [01/04]	1	193	542406	STZP	Screw, HSH (M6x60)	8
27	56084	STL	Bearing, Ball [11/03]	1	197	941516	BB	Assy, GH, 3/8" NPTM	1
32	547961	RTP	Cap, Oil Filler [01/04]	1				Nut, Swivel (3/4" FGH)	1
33	14179	NBR	O-Ring, Oil Filler Cap - 70D	1				Fitting, (3/8" NPTM)	1
37	92241		Gauge, Bubble Oil w/Gasket	1				Screen, Inlet	1
38	44428	NBR	Gasket, Flat Flex, Oil Gauge - 80D	1				Spring	1
48	44842	NY	Plug, Drain	1	249	30520		Assy, Adapter Mount, Standard, GAS	1
49	14179	NBR	O-Ring, Drain Plug - 70D	1		46271	AL	Flange	1
53	548062	AL	Crankcase [11/03]	1		44843	STZP	Screw, HH (5/16"-24UNFx20)	4
64	46229	CM	Pin, Crosshead	3		15845	STZP	Lockwasher (M8)	4
65	542402	BBCP	Rod, Plunger	3		12489	STZP	Washer, Flat (M8)	4
70	47215	NBR	Seal, Oil - 70D	3	255	30516	STZP	Assy, Bolt Mount, GAS	1
90	542403	CC	Plunger (M16x27)	3		34100	STZP	Screw, HH (3/8"-16UNCx1-3/8")	4
98	46730	NBR	Washer, Seal - 90D	3		30980	STZP	Washer, Flat (3/8")	4
99	542405	S	Retainer, Plunger (M6x35)	3		30921	STZP	Lockwasher (3/8")	4
100	46233	NY	Retainer, Seal	3		6106		Lubricant, Antiseize	1
106	48222	NBR	Seal, LPS w/S-Spg	3		34050	STL	Key (3/16x3/16x27 HD)	1
120	547357	BB	Case, Seal	3	300	30530	NBR	Kit, Seal (Incls: 98,106,121,125)	1
121	13976	NBR	O-Ring, Seal Case - 70D	3	310	33057	NBR	Kit, Valve	1
125	547157	SNG	Seal, HPS w/S	3				(Incls: 160,161,163,164,166,167,168,172)	
160	13965	NBR	O-Ring, Inlet Valve Seat - 70D	3	400			Unloader, Modular (See Individual Parts)	1
161	545177	S	Seat, Inlet	3	470	7232		Injector, Chemical Fixed	1
163	19285	NBR	O-Ring, Seat - 70D	3					

Italics are optional items. [] Date of latest production change. See Tech Bulletins 02, 024, 036, 043, 055, 074 and 083 for additional information.

MATERIAL CODES (Not Part of Part Number): AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CC=Ceramic CM=Chrome-moly NBR=Medium Nitrile (Buna-N) NY=Nylon PVDF=Polyvinylidene Fluoride RTP=Reinforced Composite S=304SS SNG=Special Blend (Buna) STL=Steel STZP=Steel/Zinc Plated TNM=Special High Strength

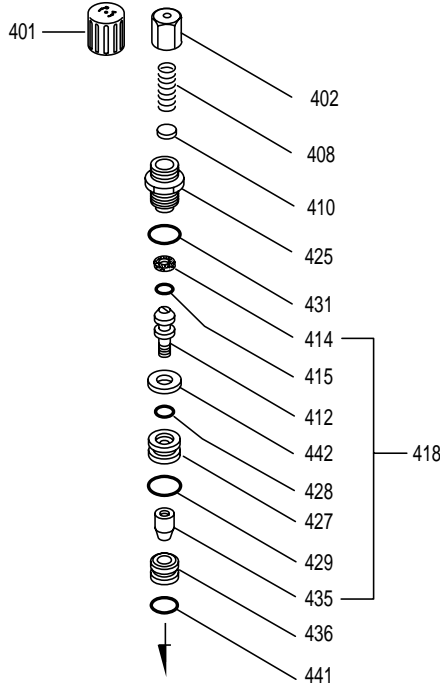
NOTE: Discard Key which may come standard with most engines and use only the key included in this kit.

Center raised pilot guide on the **Adapter Plate** assures proper alignment of pump and engine. Before mounting pump onto engine inspect engine for **recessed seal and bearing guide** to permit adapter to completely seat into recess and four bosses to be flush with engine face.

MODULAR UNLOADER

SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow.....	3.0 GPM	(11.4 L/M)
PSI Range.....	100-2500 PSI	(7-175 BAR)
Inlet Port.....	3/4" GHF	(3/4" GHF)
Discharge Port.....	M18x1.0	(M18x1.0)



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY.
401	32088	NY	Handle, Adjustable	1
402	46570	BB	Cap, Adjusting	1
408	33394	STZP	Spring, Coil	1
410	45862	STZP	Retainer, Spring	1
412	46251	BB	Stem, Piston	1
414	28338	PTFE	Back-up-Ring, Piston Stem	1
415	22056	NBR	O-Ring, Piston Stem - 70D	1
418	548230	BB	Assy, Piston (Incls: 412,414,415,427,428,429,435,442)	1
425	46248	BB	Retainer, Piston	1
427	46249	BB	Retainer, Valve	1
428	17399	NBR	O-Ring, Valve Retainer (Inner) - 80D	1
429	13966	NBR	O-Ring, Valve Retainer (Outer) - 70D	1
431	13969	NBR	O-Ring, Piston Retainer - 70D	1
435	547969	S	Valve	1
436	548075	S	Seat	1
437	13963	NBR	O-Ring, Seat - 70D	1
438	46254	NY	Seat	1
441	13963	NBR	O-Ring, Seat - 70D	1
442	46250	SS	Washer	1
443	541060	BB	Valve, Check w/O-Ring	1
444	45924	S	Spring	1
468	33099	NBR	Kit, O-Ring (Incls: 414,415,428,429,431,441)	1
—	30378	NBR	Kit, Repair (Incls: 418,431,436,441)	1

Italics are optional items.

MATERIAL CODES (Not Part of Part Number): BB=Brass

NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Polytetrafluoroethylene
S=304SS SS=316SS STZP=Steel/Zinc Plated

The modular Regulating Unloader with built-in by-pass is part of the discharge manifold and is very easily serviced from the top. Remove Hex Adjusting Cap and lift parts from body.

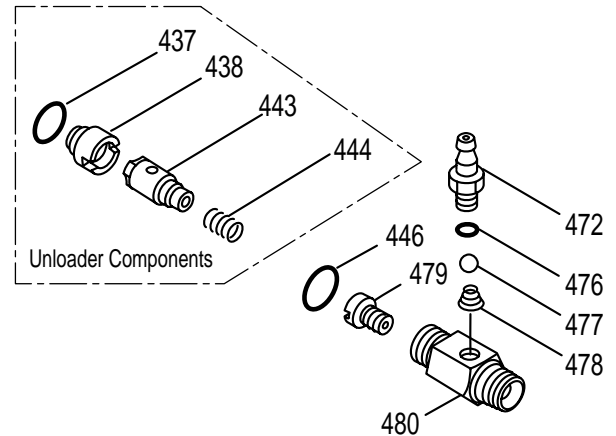
If unit is INFREQUENTLY USED OR PERIODICALLY STORED, seals may become dry. System should be PURGED OF AIR BEFORE OPERATION (system liquid must flow through the pump without discharge restriction) to assure full system pressure is reached.

SERVICE: The unloader should be serviced on the same schedule as your pump. Replacing the O-rings is generally all that is required. Lubricate the O-rings for ease of installation and replace all O-rings and Back-up-Rings included in the kit. Examine the seating surfaces of the seat and valve assembly and replace as needed. **NOTE: The seat will be damaged during removal.** See Service Manual for additional information.

7232 FIXED CHEMICAL INJECTOR

SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow.....	3.0 GPM	(11.4 L/M)
Nozzle Orifice.....	2.1 mm	(2.1 mm)
Hose Barb.....	1/4"	(1/4")
Tapped Barb.....	8/32" UNF	(8/32" UNF)
Inlet Port.....	M18x1.0	(M18x1.0)
Discharge Port.....	3/8" NPTM	(3/8" NPTM)
Weight.....	5.3 oz.	(0.15 kg)
Dimensions.....	2 x 1 x 1.75"	(52 x 25 x 45 mm)



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY.
446	13969	NBR	O-Ring, Adapter - 70D	1
472	46630	BB	Barb, Tapped	1
476	14187	NBR	O-Ring, Barb - 70D	1
477	46259	S	Ball, Seat	1
478	46260	S	Spring, Injector Valve	1
479	46531	BB	Orifice (2.1 mm)	1
	46257	BB	Orifice (1.8 mm)	1
480	—	BB	Body	1

MATERIAL CODES (Not Part of Part Number):

BB=Brass NBR=Medium Nitrile (Buna-N) NY=Nylon S=304SS

CHEMICAL INJECTOR PERFORMANCE CHART

Orifice Size	Injector Model	Maximum Injecting Pressure	Maximum Chemical Draw	Pressure Drop Across Injector At System Pressure (2500 PSI)
2.1 mm	7232	250 PSI	37.2 oz/min	141 PSI

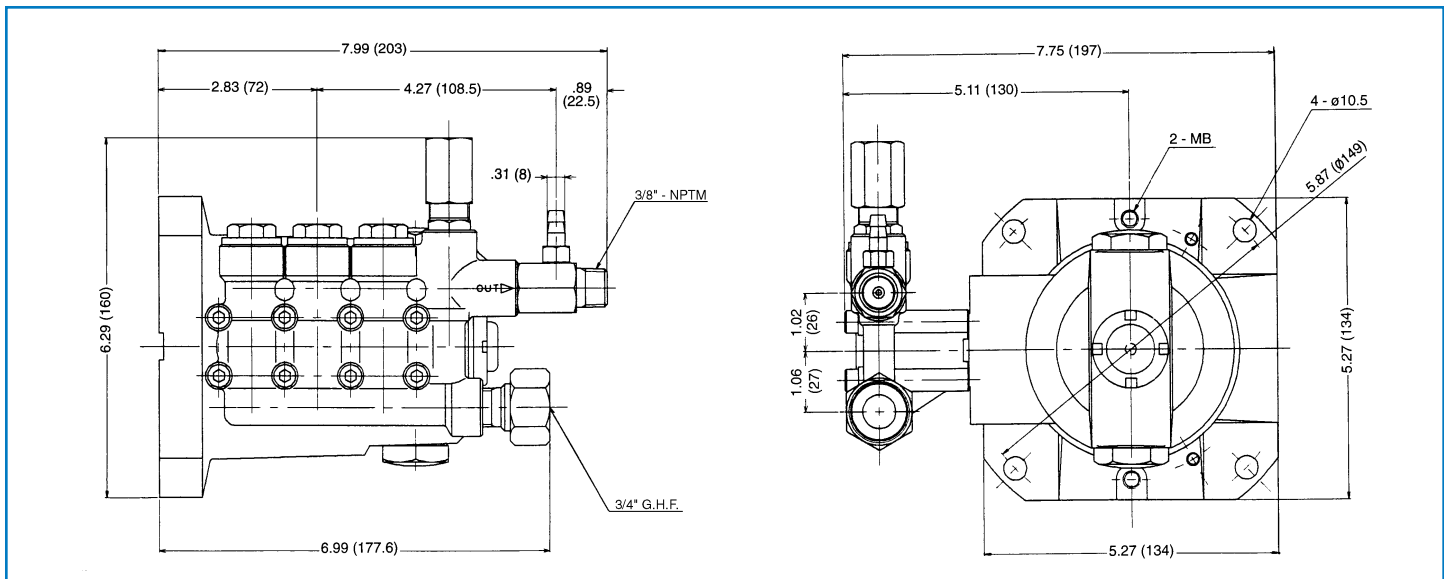
Optimum performance of chemical injector occurs with a 35 ft. high pressure hose and a minimum 3/8" I.D. The type of hose, extended lengths, reduced I.D. and fittings may create back pressures in excess of the low pressure nozzle rating and prevent the injector from drawing chemical. See Hose Friction Loss Chart in Service Manual. **Deduct hose friction loss from above low PSI Nozzle. Contact CAT PUMPS for assistance with other options.**

CAUTION: Deduct the pressure drop shown in the performance chart from your desired system pressure to arrive at the maximum high pressure nozzle rating. This is essential to avoid over-pressurizing the pump.

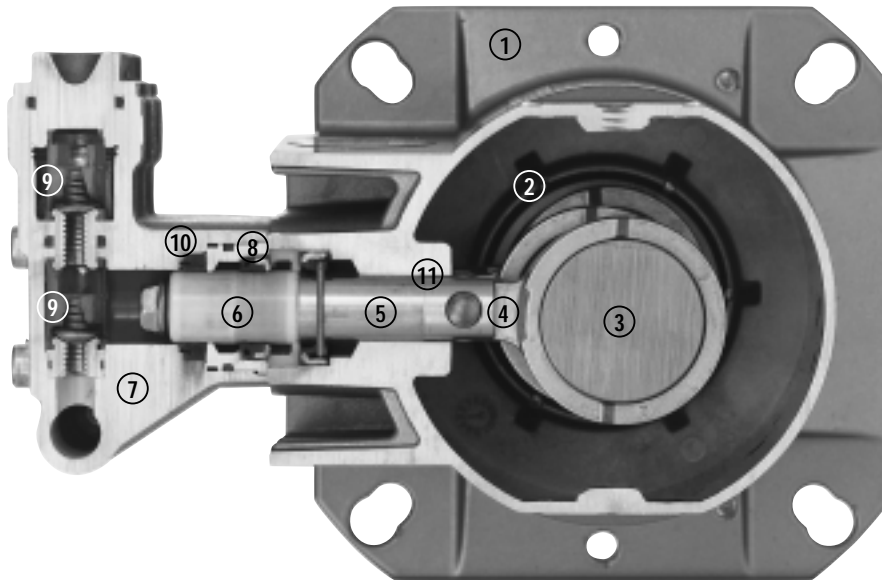
Check for worn pressure spring and replace as needed. Examine check valve with O-ring and replace as needed. Thread the adjusting cap onto the unloader and reset system pressure.

The Chemical Injector is mounted directly to the discharge of the unloader. **Chemical draw occurs under low pressure.** Select the *Change Over Nozzle* (32149), *Adjustable Nozzle* (32151), or *Vari-Nozzle* (7930-7945) to permit the adjustment from low to high pressure

For correct nozzle selection, **read system pressure at the pump. DO NOT READ SYSTEM PRESSURE AT THE HIGH PRESSURE GUN.** Incorrect pressure reading may result in: pump operation at excessive pressures, inconsistent chemical draw or possible damage to the pump or unloader.



Models 3DX25GSI, 3DX27GSI, 3DX30GSI



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|--|---|---|
| <p>1 Die cast flange-style aluminum crankcase means high strength, lightweight, and excellent tolerance control.</p> <p>2 Heavy-duty dual crankshaft bearings provide extended drive-end life.</p> <p>3 Chrome-moly crankshaft provides unmatched strength and surface hardness for long life.</p> <p>4 High strength connecting rods assure durability and bearing quality.</p> | <p>5 Strong chrome plated brass plunger rods with chrom-moly crosshead pins.</p> <p>6 Special, concentric, high-density, polished solid ceramic plungers provide a true wear surface and extended seal life.</p> <p>7 High tensile strength, forged brass manifold head with built-in modular unloader and eight mounting screws for exceptional strength.</p> <p>8 100% wet seal design adds to service life by allowing pumped liquids to cool and lubricate on both sides.</p> | <p>9 Stainless steel valves, seats and springs provide corrosion-resistance, ultimate seating and extended life.</p> <p>10 Unique design and specially formulated Hi-Pressure Seals offer unmatched performance and seal life.</p> <p>11 Crossheads are 360° supported for uncompromising alignment.</p> |
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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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