

Gas engine must be purchased separately.

Direct-Drive Plunger Pumps

Models **3DNX25GSI**
3DNX27GSI

PUMP FEATURES

- Triplex plunger design provides a smooth liquid flow.
- Specially formulated V-Packings and concentric solid ceramic plungers assure true wear surface and extended seal life.
- Ultra-compact, hollow-shafted pump for direct mounting to gas engine.
- Integral Regulating Unloader with built-in by-pass standard on all units to assure system pressure control and pump protection.
- 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 3DNX25GSI

Flow2.5 GPM (9.5 L/M)
 Max. Discharge Pressure2850 PSI (196 BAR)
 Max. RPM.....3450 RPM (3450 RPM)
 Stroke0.268" (6.8 mm)

MODEL 3DNX27GSI

Flow2.7 GPM (10.2 L/M)
 Max. Discharge Pressure2850 PSI (196 BAR)
 Max. RPM.....3450 RPM (3450 RPM)
 Stroke0.280" (7.2 mm)

COMMON PUMP SPECIFICATIONS

Inlet Pressure Range.....Flooded to 60 PSI (Flooded to 4 Bar)
 Bore0.551" (14 mm)
 Max. Liquid Temperature140°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)
 Accessory Port (1)1/4" NPTF (1/4" NPTF)
 Discharge Port (1).....M18x1.0 (M18x1.0)
 Chemical Discharge Port (1).....3/8" NPTM (3/8" NPTM)
 Chemical Injection Hose Barb1/4" UNF (1/4" UNF)
 Shaft Diameter.....3/4" (19.0 mm)
 Weight10.7 lbs. (4.9 kg)
 Dimensions8.03 x 7.83 x 6.61" (204 x 199 x 168 mm)

ELECTRIC HORSEPOWER REQUIREMENTS

MODEL	FLOW		PRESSURE					RPM
			PSI 1000	PSI 1200	PSI 1500	PSI 2000	PSI 2850	
	U.S. GPM	L/M	BAR 70	BAR 85	BAR 105	BAR 140	BAR 196	
3DNX25GSI	2.5	9.5	1.7	2.0	2.6	3.4	4.9	3450
3DNX27GSI	2.7	10.2	1.8	2.2	2.8	3.7	5.3	3450

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

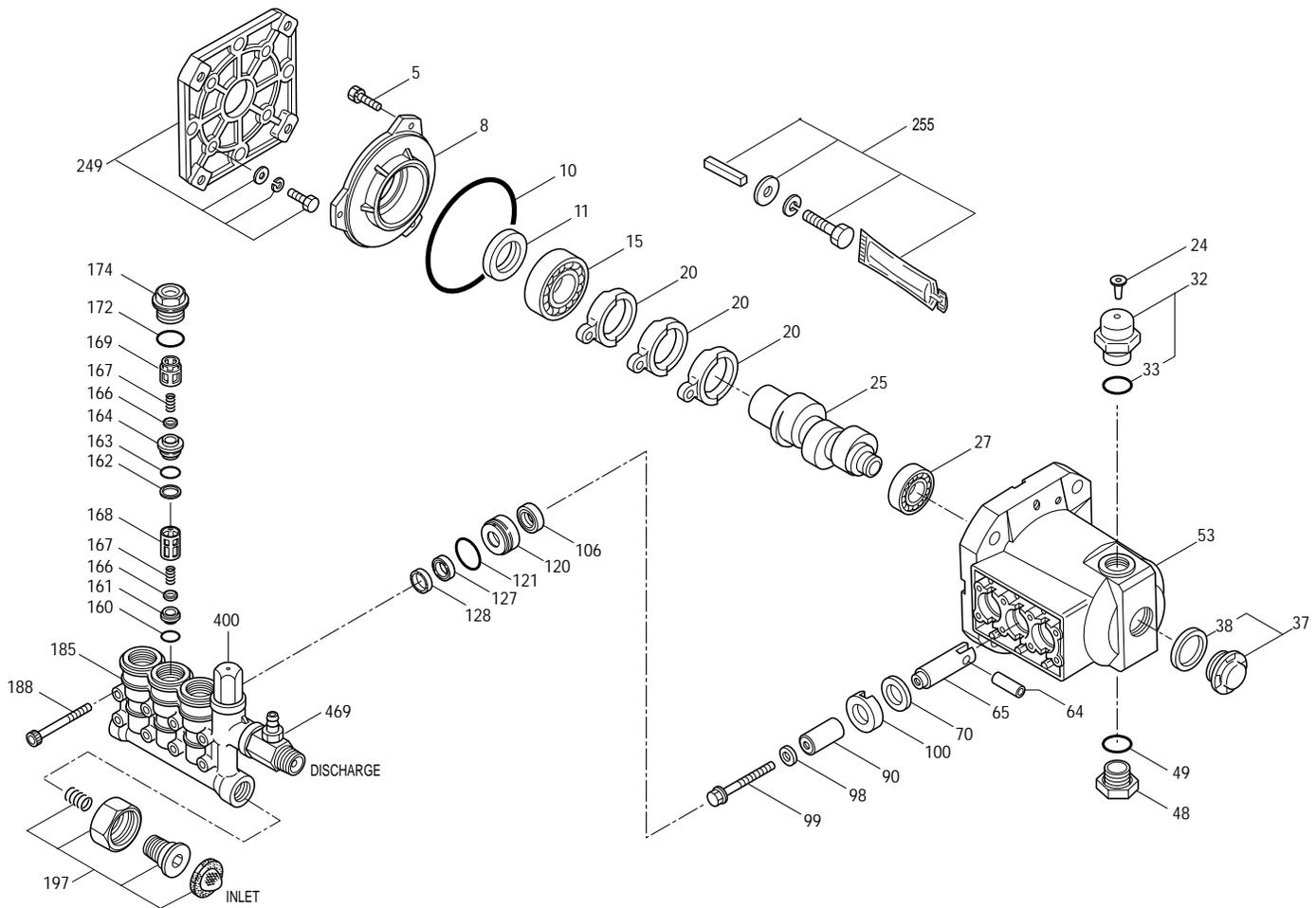
Note: Consult engine manufacturer when using gas or diesel engine. Refer to pump Service Manual for repair procedure, additional technical information and pump warranty.

"Customer confidence is our greatest asset"

EXPLODED VIEW

3DNX PLUNGER PUMP MODEL

3DNX25GSI, 3DNX27GSI



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY	ITEM	PN	MATL	DESCRIPTION	QTY
5	547161	STCP	Screw, HHC Sems (M6x14)	3	128	547083	PVDF	Adapter, Male	3
	<i>549360</i>	<i>STCP R</i>	<i>Screw, HHC Sems (M6x14)</i>	<i>3</i>	160	17428	NBR	O-Ring, Inlet Seat - 80D	3
8	547153	AL	Cover, Bearing	1	161	547077	S	Seat, Inlet	3
10	14041	NBR	O-Ring, Bearing Cover - 70D	1	162	48361	D	Back-up-Ring, Discharge Seat	3
11	55337	NBR	Seal, Oil - 70D	1	163	43358	NBR	O-Ring, Discharge Seat - 70D	3
15	14488	STL	Bearing, Ball	1	164	547076	S	Seat, Discharge	3
20	547048	TNM	Rod, Connecting	3	166	547098	S	Valve	6
24	76045	LDPE	Plug, Oil Cap	1	167	46865	S	Spring	6
25	549446	CM	Crankshaft, 3450 RPM, 3/4", 6.8 mm	1	168	543988	PVDF	Retainer, Spring, Inlet	3
	548558	CM	Crankshaft, 3450 RPM, 3/4", 7.2 mm	1	169	547441	PVDF	Retainer, Spring, Discharge	3
27	56084	STL	Bearing, Ball	1	172	142807	NBR	O-Ring, Plug - 90D	3
32	547961	RTP	Cap, Oil Filler w/O-Ring	1	174	547078	BB	Plug, Valve (M22x1.5)	3
33	14179	NBR	O-Ring, Oil Filler Cap - 70D	1	185	548509	BB	Head, Manifold w/Integral Unloader Body	1
37	92241	—	Gauge, Bubble Oil w/Gasket	1	188	542406	STZP	Screw, HSH (M6x60)	8
38	44428	NBR	Gasket, Flat Flex, Oil Gauge - 80D	1		<i>549357</i>	<i>STCP R</i>	<i>Screw, HSH (M6x60)</i>	<i>8</i>
48	44842	NY	Plug, Drain	1	197	941516	BB	Assy, GH, 3/8" NPTM	1
49	14179	NBR	O-Ring, Drain Plug - 70D	1		—	—	Nut, Swivel (3/4" FGH)	1
53	548062	AL	Crankcase	1		—	—	Fitting, (3/8" NPTM)	1
64	46229	CM	Pin, Crosshead	3		—	—	Screen, Inlet	1
65	542402	BB	Rod, Plunger	3		—	—	Spring	1
70	47215	NBR	Seal, Oil - 70D	3	249	30520	—	Assy, Adapter Mount	1
90	547091	CC	Plunger (M14x25.5)	3	255	30516	STZP R	Assy, Bolt Mount	1
98	46730	NBR	Washer, Seal - 90D	3	283	<i>990394</i>	—	<i>Kit, Oil Drain (Not Shown)</i>	<i>1</i>
99	542405	S	Retainer, Plunger (M6x35)	3	300	<i>31684</i>	<i>NBR</i>	<i>Kit, Seal (Incls: 98,106,121,127,128)</i>	<i>1</i>
100	46233	NY	Retainer, Seal	3	310	<i>31647</i>	<i>NBR</i>	<i>Kit, Valve</i>	<i>1</i>
106	45188	NBR	Seal, LPS w/S-Spg	3		—	—	<i>(Incls: 160,161,162,163,164,166,167,168,169,172)</i>	
120	548559	BB	Case, Seal	3	400	—	—	Unloader, Integral (See Individual Parts)	1
121	13976	NBR	O-Ring, Seal Case - 70D	3	469	7332	BB	Injector, Chemical Fixed	1
127	547082	SNG	V-Packing	3					

Italics are optional items. [] Date of latest production change. R Components comply with RoHS Directive.

See Tech Bulletins 002, 024, 036, 043, 055, 074 and 083 for additional information.

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

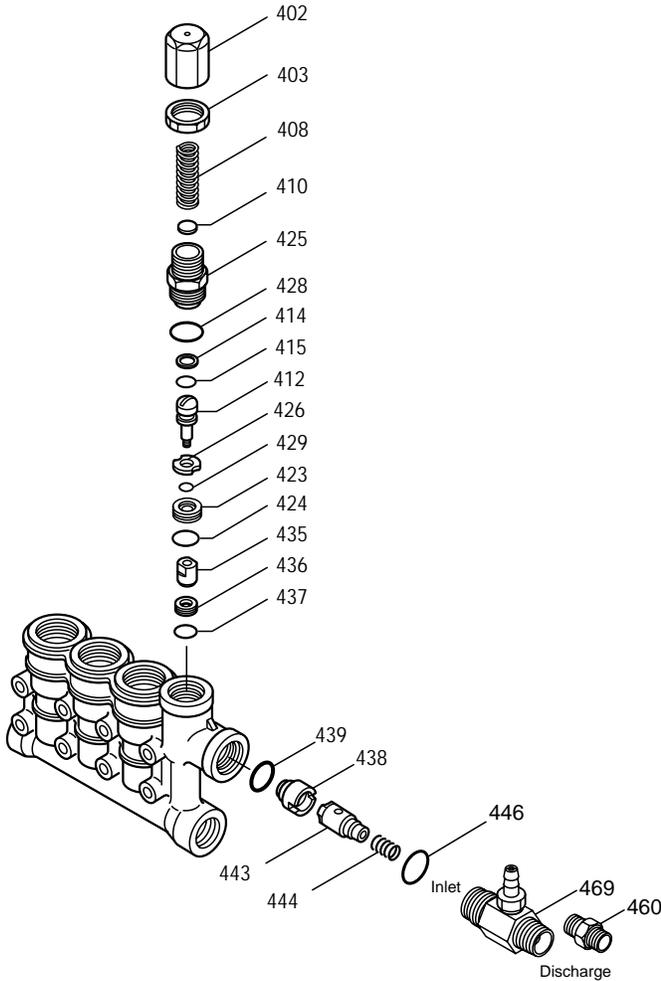
NOTE: Discard Key which may come standard with most engines and **use only the key included in this kit.**

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.

INTEGRAL UNLOADER

SPECIFICATIONS

	U.S. Measure	Metric Measure
Flow.....	3.0 GPM	(11.4 L/M)
PSI Range.....	100-2850 PSI	(7-196 BAR)
Inlet Port	3/4" GHF	(3/4" GHF)
Discharge Port	M18x1.0	(M18x1.0)



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY.
402	547798	BB	Cap, Adjusting	1
403	45070	BB	Nut, Lock (M18x1)	1
408	32094	STZP R	Spring, Pressure	1
410	549352	STCP R	Retainer, Spring	1
412	45694	S	Stem, Piston	1
414	20184	PTFE	Back-up-Ring, Piston Stem	1
415	14190	NBR	O-Ring, Piston Stem - 70D	1
423	46249	BB	Retainer, Valve	1
424	13966	NBR	O-Ring, Valve Retainer (Outer) - 70D	1
425	547799	BB	Retainer, Piston	1
426	46250	S	Washer	1
428	26133	NBR	O-Ring, Piston Retainer - 80D	1
429	17399	NBR	O-Ring, Valve Retainer (Inner) - 80D	1
435	547800	S	Valve	1
436	547801	S	Seat	1
437	13963	NBR	O-Ring, Seat - 70D	1
438	46254	NY	Seat, Check Valve	1
439	13963	NBR	O-Ring, Check Valve Seat - 70D	1
443	541060	BB	Valve, Check w/O-Ring	1
444	45924	S	Spring	1
446	26133	NBR	O-Ring, Body - 80D	1
460	107681	BB	Fitting, Discharge (3/8" NPTM)	1
468	31767	NBR	Kit, O-Ring (Incls: 414,415,424,428,429,437)	1
	31465	NBR	Kit, Repair (Incls: 412,414,415,423,424,425,426,428,429,435)	1
469	7332	BB	Injector, Chemical Fixed	1

Italics are optional items. R Components comply with RoHS Directive.

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

NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Polytetrafluoroethylene

S=304SS STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated

UNLOADER TYPE

An integral unloader with built-in by-pass is part of the discharge manifold to provide system pressure regulation and pump protection. This pump also includes a fixed chemical injector for chemical application.

OPERATION:

Pump should be purged of air before commencing with operation. Liquid must flow through the pump without discharge restriction to assure full system pressure is reached.

Install a pressure gauge close to the manifold head of the pump to assist in setting system pressure and to periodically monitor system pressure.

Setting and adjusting the unloader pressure must be done with the system turned on. Start the system with the unloader backed off to the lowest pressure setting (counterclockwise direction). Squeeze the trigger and read the pressure on the gauge at the pump. Do not read pressure at the gun or nozzle. If more pressure is desired, release the trigger, turn adjusting cap one quarter turn in a clockwise direction. Squeeze the trigger and read the pressure. Repeat this process until the desired system pressure is reached. Thread locking nut up to adjusting cap.

NOTE: Pressure is not set at the factory.

SERVICE:

The unloader should be serviced on the same schedule as the seals in the pump. Refer to 3DNX Service Manual for start-up, servicing of seals and valves, torque requirements and Diagnosis/Maintenance chart.

7332 FIXED CHEMICAL INJECTOR

SPECIFICATIONS

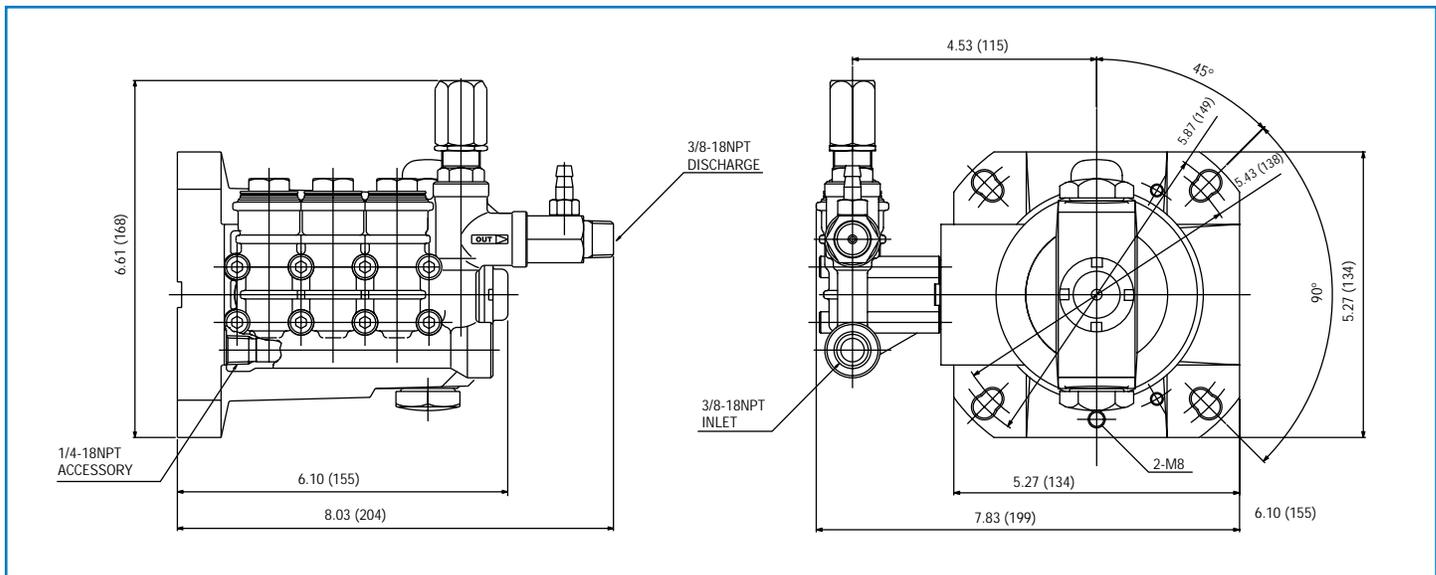
	U.S. Measure	Metric Measure
Flow.....	3.0 GPM	(11.4 L/M)
Nozzle Orifice.....	2.1 mm	(2.1 mm)
Hose Barb.....	1/4"	(1/4")
Inlet Port.....	M18x1.0	(M18x1.0)
Discharge Port	3/8" NPTM	(3/8" NPTM)
Weight	5.3 oz.	(0.15 kg)
Dimensions.....	2 x 1 x 1.75"	(52 x 25 x 45 mm)

CHEMICAL INJECTOR PERFORMANCE CHART

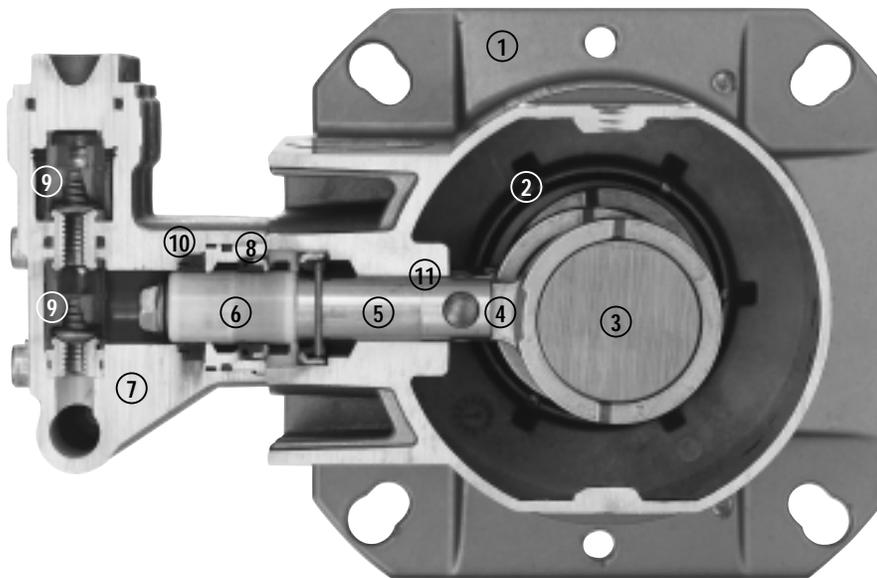
Orifice Size	Maximum Injecting Pressure	Maximum Chemical Draw	Pressure Drop Across Injector At System Pressure (2850 PSI)
2.1 mm	250 PSI	37.2 oz/min	141 PSI

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.



Models 3DNX25GSI, 3DNX27GSI



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

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