

Triplex Plunger Pump

Direct-Drive Electric Models

2DX20ES

Direct-Drive Gas Models

2DX27GS

2DX30GS

PUMP FEATURES

- Triplex plunger design provides a smooth liquid flow.
- Specially formulated Hi-Pressure Seals and concentrically ground ceramic plungers assure maximum seal life.
- Ultimate compact, direct-drive unit for maximum portability.
- Modular Regulating Unloader with built-in by-pass standard on all units to assure system pressure control and pump protection.
- Built-in chemical injector standard on all units offers cleaning flexibility.
- Interchangeable, stacked valve design for ease in servicing.
- Inlet, swivel, garden hose fitting with filter screen.

⚠ 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 2DX20ES

Flow.....	2.0 GPM	(7.6 L/M)
Max. Discharge Pressure.....	2000 PSI	(140 BAR)
RPM.....	3450 RPM	(3450 RPM)
Stroke.....	0.157"	(4.0 mm)
Shaft Diameter.....	5/8"	(15.8 mm)

MODEL 2DX27GS

Flow.....	2.7 GPM	(10.2 L/M)
Max. Discharge Pressure.....	2000 PSI	(140 BAR)
RPM.....	3450 RPM	(3450 RPM)
Stroke.....	0.220"	(5.6 mm)
Shaft Diameter.....	3/4"	(19.0 mm)

MODEL 2DX30GS

Flow.....	3.1 GPM	(11.7 L/M)
Max. Discharge Pressure.....	2000 PSI	(140 BAR)
RPM.....	3450 RPM	(3450 RPM)
Stroke.....	0.244"	(6.2 mm)
Shaft Diameter.....	3/4"	(19.0 mm)

COMMON SPECIFICATIONS

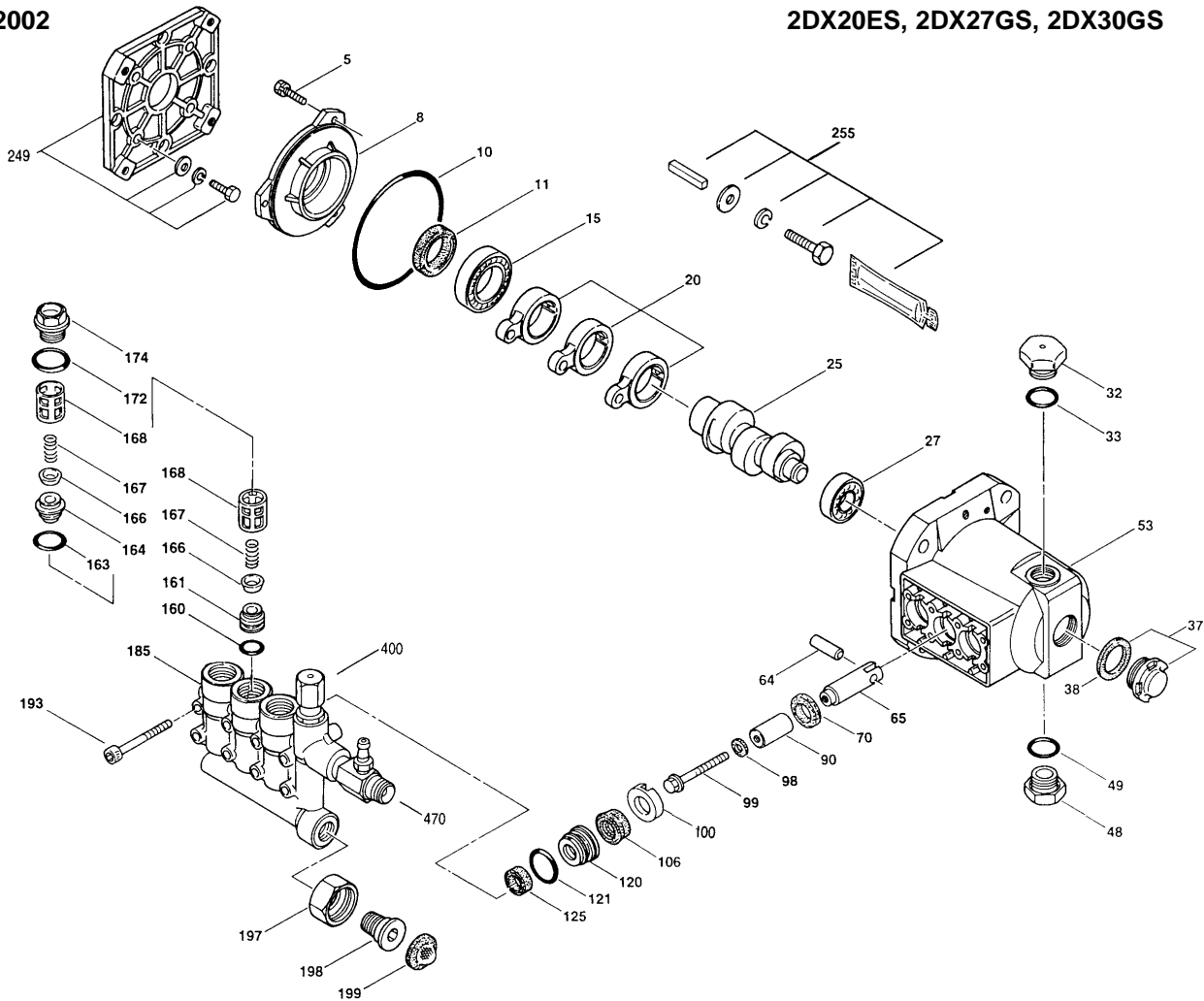
Inlet Pressure Range.....	Flooded to 60 PSI	(Flooded to 4 Bar)
Bore.....	0.630"	(16 mm)
Max. Liquid Temperature.....	140° F	(60° C)
Crankcase Capacity.....	8.5 oz.	(0.25 L)
Inlet Ports (1).....	3/4" GH	(3/4" GH)
Discharge Port (1).....	3/8" NPTM	(3/8" NPTM)
Chemical Injection Barb.....	8/32" UNF	(8/32" UNF)
Weight.....	10.7 lbs.	(4.9 kg)
Dimensions.....	7.99 x 7.75 x 6.29"	(203 x 197 x 160 mm)

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

“Customer confidence is our greatest asset”

EXPLODED VIEW

January 2002



PLUNGER PUMP MODELS

2DX20ES, 2DX27GS, 2DX30GS

PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY	ITEM	PN	MATL	DESCRIPTION	QTY
5	817003	STZP	Screw, HHC w/SW (M6x12)	3	163	19285	NBR	O-Ring, Seat	3
8	46225	AL	Cover, Bearing	1	164	46761	BB	Seat, Discharge	3
10	14041	NBR	O-Ring, Bearing Cover - 70D	1	166	46764	S	Valve	6
11	55337	NBR	Seal, Oil	1	167	46865	S	Spring	6
15	14488	STL	Bearing, Ball	1	168	543988	PVDF	Retainer, Spring	6
20	46228	HS	Rod, Connecting	3	172	11338	NBR	O-Ring, Plug - 70D	3
25	545765	CM	Crankshaft, 3450 RPM, 5/8", 4.0 mm	1	174	46759	BB	Plug, Valve (M22x1.5)	6
	544476	CM	Crankshaft, 3450 RPM, 3/4", 5.6 mm	1	185	542973	BB	Head, Manifold w/Modular Unloader Body	1
	543295	CM	Crankshaft, 3450 RPM, 3/4", 6.2 mm	1	193	542406	STZP	Screw, HSH (M6x60)	8
27	13832	STL	Bearing, Ball	1	197	46488	BB	Nut, Swivel (3/4" FGHIF)	1
32	45690	RTP	Cap, Oil Filler	1	198	46487	BB	Fitting, (3/8" NPT)	1
33	14179	NBR	O-Ring, Oil Filler Cap - 70D	1	199	46489	NBR	Screen, Inlet	1
37	92241		Gauge, Bubble Oil w/Gasket	1	249	30520		Kit, Adapter Mount, Standard, GAS	1
38	44428	NBR	Gasket, Flat Flex, Oil Gauge - 80D	1		46271	AL	Flange	1
48	44842	NY	Plug, Drain	1		44843	STZP	Screw, HH (5/16"-24UNFx20)	4
49	14179	NBR	O-Ring, Drain Plug - 70D	1		15845	STZP	Lockwasher (M8)	4
● 53	542407	AL	Crankcase	1 ●		12489	STZP	Washer, Flat (M8)	4
64	46229	CM	Pin, Crosshead	3	255	30516	STZP	Kit, Bolt Mount, ELECTRIC/GAS	1
65	542402	BBCP	Rod, Plunger	3		34100	STZP	Screw, HH (3/8"-16UNCx1-3/8")	4
70	47215	NBR	Seal, Oil	3		30980	STZP	Washer, Flat (3/8")	4
90	542403	CC	Plunger (M16x27)	3		30921	STZP	Lockwasher (3/8")	4
98	46730	NBR	Washer, Seal	3		6106		Lubricant, Anti-Seize	1
99	542405	S	Retainer, Plunger (M6x35)	3		34050	STL	Key (3/16x3/16x27 HD)	1
100	46233	NY	Retainer, Seal	3	300	33053	NBR	Kit, Seal (Incls: 98, 106, 121, 125)	1
106	48222	NBR	Seal, LPS w/S-Spg	3	310	33057	NBR	Kit, Valve	1
120	46436	BB	Case, Seal	3				(Incls: 160, 161, 163, 164, 166, 167, 168, 172)	
121	13976	NBR	O-Ring, Seal Case	3		31864		Plunger Conversion Kit	1
125	46240	NBR	Seal, HPS w/S	3				(Incls: 65, 70, 90, 98, 99)	
160	13965	NBR	O-Ring, Inlet Valve Seat	3	400			Unloader, Modular (See Individual Parts)	1
161	46760	BB	Seat, Inlet	3	470			Injector, Chemical (See Individual Parts)	1

● Industrial Discount. *Italics are optional items.* See Tech Bulletins 02, 024, 036, 043, 055, 074 and 083 for additional information.

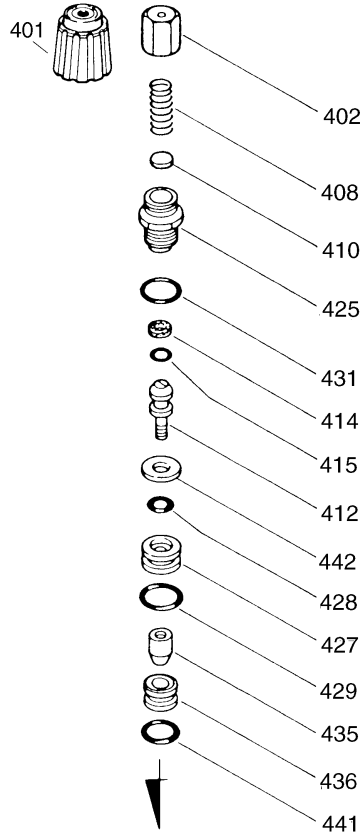
MATERIAL CODES (Not Part of Part Number): AL=Aluminum BB=Brass BBCP=Brass/Chrome Plated CC=Ceramic CM=Chrome-moly HS=High Strength NBR=Medium Nitrile (Buna-N) NY=Nylon PVDF=Fluoroplastic (High Strength) RTP=Reinforced Composite S=304SS STL=Steel STZP=Steel/Zinc Plated

NOTE: Discard Key which may come standard with most motors and 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
GPM	3.1 GPM	(11.7 L/M)
PSI Range	100-2000 PSI	(7-140 BAR)
Discharge Port	3/8" NPTF	(3/8" NPTF)



ITEM	PN	MATL	DESCRIPTION	QTY.
401	32088	NY	Handle, Adjustable	1
402	46570	BB	Cap, Adjusting	1
408	33394	STZP	Spring, Coil (2000 PSI)	1
410	45862	BB	Retainer, Spring	1
412	46251	BB	Stem, Piston	1
—	545869	BB	Assy, Piston	1
414	28338	PTFE	Back-up-Ring, Piston Stem	1
415	22056	NBR	O-Ring, Piston Stem	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)	1
431	13969	NBR	O-Ring, Piston Retainer - 70D	1
435	46733	S	Valve	1
436	46253	S	Seat	1
441	13963	NBR	O-Ring, Seat	1
442	46250	SS	Washer	1
468	33099	NBR	Kit, O-Ring (Incls: 414,415,428,429,431,441)	1
—	31088	NBR	Kit, Repair (Incls: 412,431,436,441)	1

MATERIAL CODES (Not Part of Part Number):
 BB=Brass NBR=Medium Nitrile (Buna-N) NY=Nylon
 PTFE=Pure Teflon® 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.

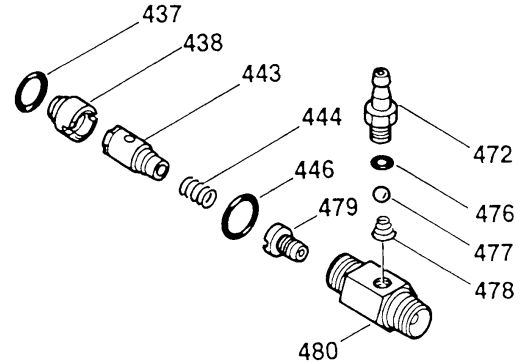
If unit is INFREQUENTLY USED OR PERIODICALLY STORED, seals may become dry. System should be PURGED OF AIR BEFORE OPERATION (system liquid must flow through the pump without discharge restriction) to assure full system pressure is reached.

FIXED CHEMICAL INJECTOR

SPECIFICATIONS	U.S. Measure	Metric Measure
Model 7231		
GPM	2.0 GPM	(7.6 L/M)
Nozzle Orifice	1.8 mm	(1.8 mm)

Model 7232		
GPM	3.0 GPM	(11.4 L/M)
Nozzle Orifice	2.1 mm	(2.1 mm)

Common Specifications	U.S. Measure	Metric Measure
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)



ITEM	PN	MATL	DESCRIPTION	QTY.
437	13963	NBR	O-Ring, Seat	1
438	46254	NY	Seat	1
443	541060	BB	Valve, Check w/O-Ring	1
444	45924	S	Spring	1
446	13969	NBR	O-Ring, Adapter - 70D	1
472	46630	BB	Barb, Tapped	1
476	14187	NBR	O-Ring, Injector Valve	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

Optional Special Ported Chemical Injector for Unloader Mounting

Standard Pump Model	Injector Orifice Size	Injector Model	Lo-Pressure Nozzle Rating (Max. Downstream) (Press for Injector)	Max. Chem. Draw (0 PSI) (Downstream)	Hi-Press Nozzle "Deduction" (Press drop across Inj.)
2DX20ES	1.8 mm	7231	100 PSI	52 oz/min	100 PSI
2DX27GS, 2DX30GS	2.1 mm	7232	150 PSI	50 oz/min	125 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. Consult CAT PUMPS for assistance with other options.**

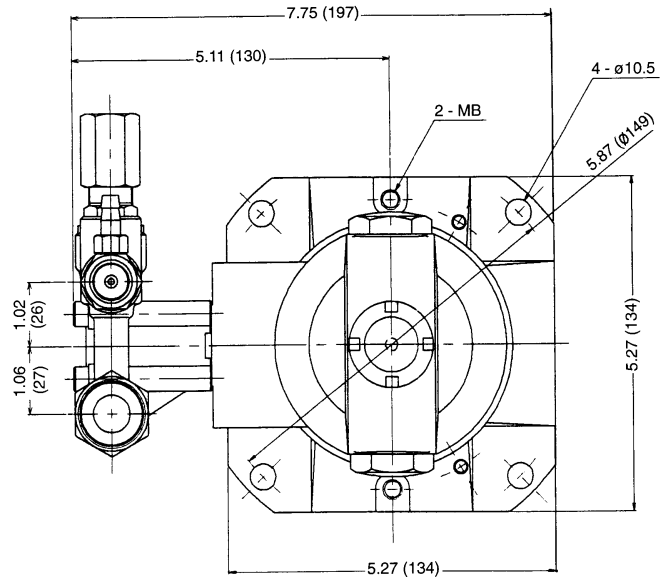
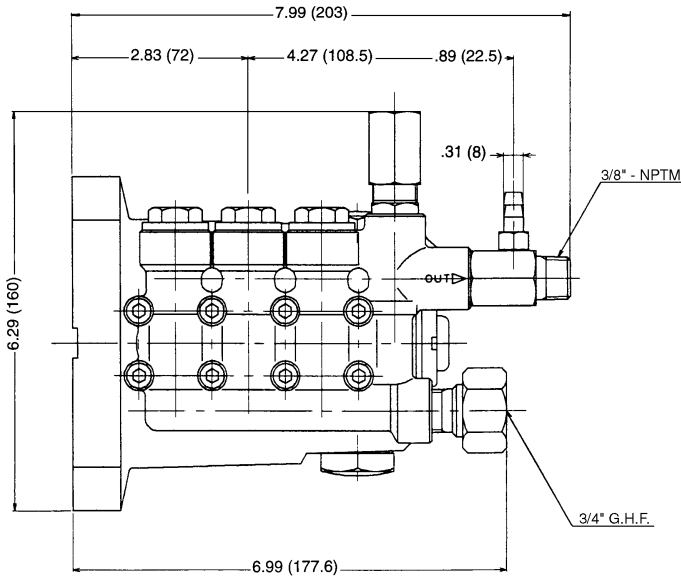
CAUTION:

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.

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* (7930-7980) 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.

2DX DIMENSIONAL



DETERMINING THE REQUIRED H.P.

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

1460

HORSEPOWER REQUIREMENTS

Flow		Pressure				Pump RPM
		PSI 1000	PSI 1200	PSI 1500	PSI 2000	
U.S. GPM	Metric L/M	BAR 70	BAR 85	BAR 105	BAR 140	
2.0	7.6	1.4	1.6	2.1	2.7	3450
2.7	10.2	1.8	2.2	2.8	3.7	3450
3.1	11.7	2.1	2.5	3.2	4.2	3450

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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