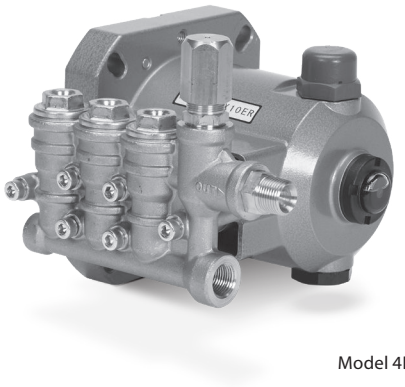
DATA SHEET
DIRECT DRIVE PLUNGER PUMPS

The Pumps with Nine Lives

Brass Models: 4DX10ER, 4DX15ER, 4DX20ER, 4DX27ER, 4DX30ER

See page 8 for complete pump model number selection.



Model 4DX10ER Shown

FEATURES

- Fits standard 56C face electric motors.
- Stacked stainless steel valve design promotes long-life and easy servicing.
- Integral pressure regulator or unloader with built-in bypass ensures system pressure control and pump protection.
- Pump comes standard with NBR seals. Alternative seal materials are available for higher temperature or chemical compatibility.
- Includes crankcase oil.

SPECIFICATIONS	U.S. Measure	Metric Measure
4DX10ER		
Flow	1.0 gpm	3.8 lpm
Pump RPM	3450 rpm	3450 rpm
Stroke	0.078"	2.0 mm
4DX15ER		
Flow	1.5 gpm	5.7 lpm
Pump RPM	3450 rpm	3450 rpm
Stroke	0.118"	3.0 mm
4DX20ER		
Flow	2.0 gpm	7.6 lpm
Pump RPM	3450 rpm	3450 rpm
Stroke	0.157"	4.0 mm
4DX27ER		
Flow	2.7 gpm	10.2 lpm
Pump RPM	3450 rpm	3450 rpm
Stroke	0.220"	5.6 mm
4DX30ER		
Flow	3.0 gpm	11.4 lpm
Pump RPM	3450 rpm	3450 rpm
Stroke	0.244"	6.2 mm

COMMON SPECIFICATIONS	U.S.	Metric
Maximum Discharge Pressure	2000 psi	138 bar
Inlet Pressure Range	Flooded to 60 psi	Flooded to 4.1 bar
Bore	0.630"	16 mm
Maximum Liquid Temp. (NBR)	140° F	60° C
Alternate Seals Available for Higher Temperatures up to 180° F		
Crankcase Capacity	8.5 oz	0.25 l
Inlet Port	⅜" NPT(F)	⅜" NPT(F)
Accessory Port	¼" NPT(F)	¼" NPT(F)
Discharge Ports	⅜" NPT(M)	⅜" NPT(M)
Shaft Diameter (Hollow)	⅝"	15.8 mm
Weight	10.7 lbs	4.9 kg
Dimensions (ER versions)	7.17 x 7.72 x 6.22"	182 x 196 x 158 mm

ALTERNATIVE SEAL CONFIGURATION

MATERIAL	SUFFIX CODE	MAXIMUM TEMPERATURE	
NBR	—	140° F	(60° C)
FPM	.0110	180° F	(82° C)
ST	.4410	180° F	(82° C)

See **Tech Bulletin 002** for inlet conditions and RPM at high temperature.

DETERMINING THE PUMP RPM

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

DETERMINING THE REQUIRED HP

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

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

PARTS LIST

ITEM		PART NUMBER	MATERIAL	DESCRIPTION	QTY
5		549360	STCP R	Screw, HH (M6 x 14) (See Tech Bulletin 074)	3
8		547153	AL	Cover, Bearing	1
10		14041	NBR	O-Ring, Bearing Cover–70D	1
11		55337	NBR	Seal, Oil	1
15		14488	STL	Bearing, Ball, Inner	1
20		547048	TNM	Rod, Connecting	3
25		**132183**	CM	Crankshaft, ⅝", (2.0 mm), 4DX10ER	1
		132185	CM	Crankshaft, ⅝", (3.0 mm), 4DX15ER	1
		132186	CM	Crankshaft, ⅝", (4.0 mm), 4DX20ER	1
		132187	CM	Crankshaft, ⅝", (5.6 mm), 4DX27ER	1
		132188	CM	Crankshaft, ⅝", (6.2 mm), 4DX30ER	1
27		15710	STL	Bearing, Ball, Outer	1
32		549726	—	Cap, Vented with O-Ring (Rain Cap)	1
33		14179	NBR	O-Ring, Oil Filler Cap–70D	1
37		92241	PC	Gauge, Bubble Oil with Gasket (See Tech Bulletin 074)	1
38		44428	NBR	Gasket, Flat Flex, Oil Gauge–80D	1
48		44842	NY	Plug, Drain	1
49		14179	NBR	O-Ring, Drain Plug–70D	1
53		49801	AL	Crankcase	1
64		46229	CM	Pin, Crosshead	3
65		132190	BB	Rod, Plunger	3
70		47215	NBR	Seal, Oil	3
90		542403	CC	Plunger (M16 x 27)	3
98		46730	NBR	Washer, Seal–90D	3
99		542405	S	Retainer, Plunger (M6 x 35) (See Tech Bulletin 074)	3
100		46233	D	Retainer, Seal	3
106	†	48222	NBR	Seal, Low-Pressure, with SS–Spring	3
120		547357	BB	Case, Seal	3
121		13976	NBR	O-Ring, Seal Case–70D	3
125		46240	NBR	Seal, High-Pressure	3
160		13965	NBR	O-Ring, Seat, Inlet–70D	3
161		545177	S	Seat, Inlet	3
163		19285	NBR	O-Ring, Seat, Discharge–70D	3
164		545178	S	Seat, Discharge	3
166		547098	S	Valve	6
167		134579	S	Spring	6
168		543988	PVDF	Retainer, Spring, Inlet	3
169		49764	PVDF	Retainer, Spring, Discharge	3
172		142807	NBR	O-Ring, Plug–90D	3
174		547104	BB	Plug, Valve (M20 x 1.5) (See Tech Bulletin 074)	3
185		132192	FBB	Head, Manifold with Integral Regulator/Unloader Body	1
188		549357	STCP R	Screw, HSH (M6 x 60) (See Tech Bulletin 074)	6
196		101556	BB	Plug, Accessory	1
255		30516	STZP R	Assembly, Bolt Mount	1
400		—	—	Regulator/Unloader, Integral (See Individual Parts)	1
460		107681	BB	Fitting, Discharge (⅜" NPT[M])	1

Bold part numbers are unique to a particular pump model.

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

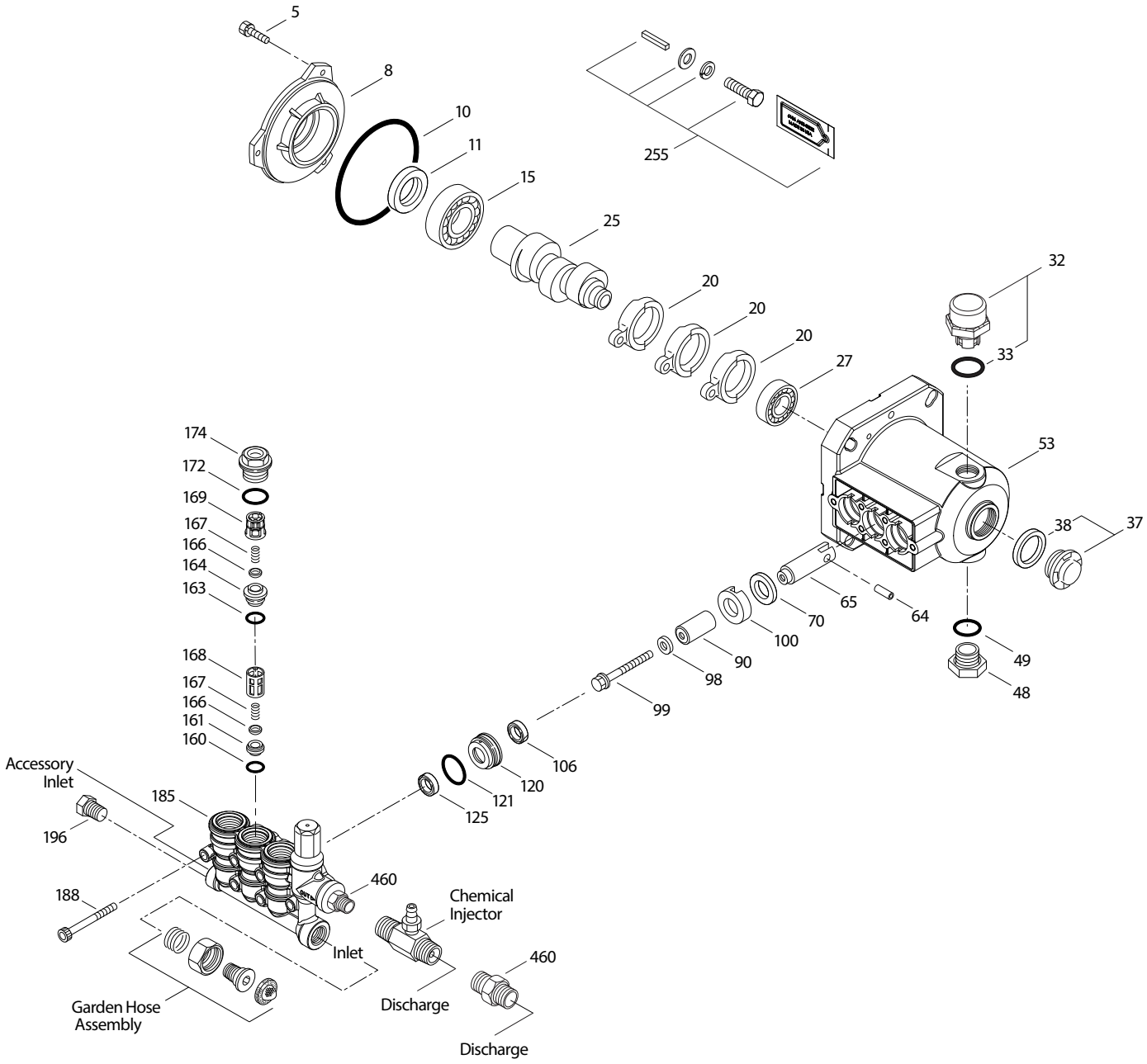
*Review individual parts in each kit for material code identification. For additional technical information see www.catpumps.com/literature/tech-bulletins.

MATERIAL CODES (Not Part of Part Number): AL=Aluminum BB=Brass CC=Ceramic CM-Chrome-moly D=Acetal FBB=Forged Brass FPM=Flurocarbon NBR=Medium Nitrile (Buna-N) NY=Nylon PC=Poly Carbonate PVDF=Polyvinylidene Fluoride S=304SS ST2=Special PTFE 2 STL=Steel STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated TNM=Special High Strength

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

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
4DX10ER, 4DX15ER, 4DX20ER,
4DX27ER, 4DX30ER
September 2022

Note: Pump is shipped with two black caps with O-rings for shipping purposes.
Remove black cap with O-ring on top of pump and replace with loose red cap with O-ring as supplied in box.

OPTIONAL PARTS AND ACCESSORIES

PART	DESCRIPTION	QTY
941516	Assembly, Garden Hose (⅜" NPT[M])	1
134670	Plug, Valve with ¼" NPT(F) Port (Not shown)	1
990394	Kit, Oil Drain (⅜" NPT[M] x 24") (Not shown)	1
7231	Injector, Chemical, Fixed (1.8mm)	1
7232	Injector, Chemical, Fixed (2.1mm)	1

SERVICE PARTS

PART	DESCRIPTION	QTY
33053	Seal Kit – Standard NBR	1
76978	Valve Kit – Standard NBR	1
6107	Oil, Bottle (21 oz) (Fill to Specified Crankcase Capacity Prior to Start-up)	1

Kits – NBR, FPM (0110), ST (.4410) listed on Page 4.

SEAL KITS One (1) seal kit required per pump

PUMP MODELS	NBR (STD)	FPM (.0110)	ST (.4410)
4DX10ER, 4XD15ER, 4DX20ER, 4DX27ER, 4DX30ER	**33053**	**76453***	**76878**

ITEM (Included in Seal Kits)				DESCRIPTION	QTY
98	46730	48394	48394	Washer, Seal	3
106	48222	670019	76089	Seal, Low-Pressure with S–Spring	3
121	13976	48522	48522	O-Ring, Seal Case	3
125	46240	76088	76088	Seal, High-Pressure	3

*Review material codes for individual items (ST2 generally by be used as an alternative)

VALVE KITS One (1) valve kit required per pump

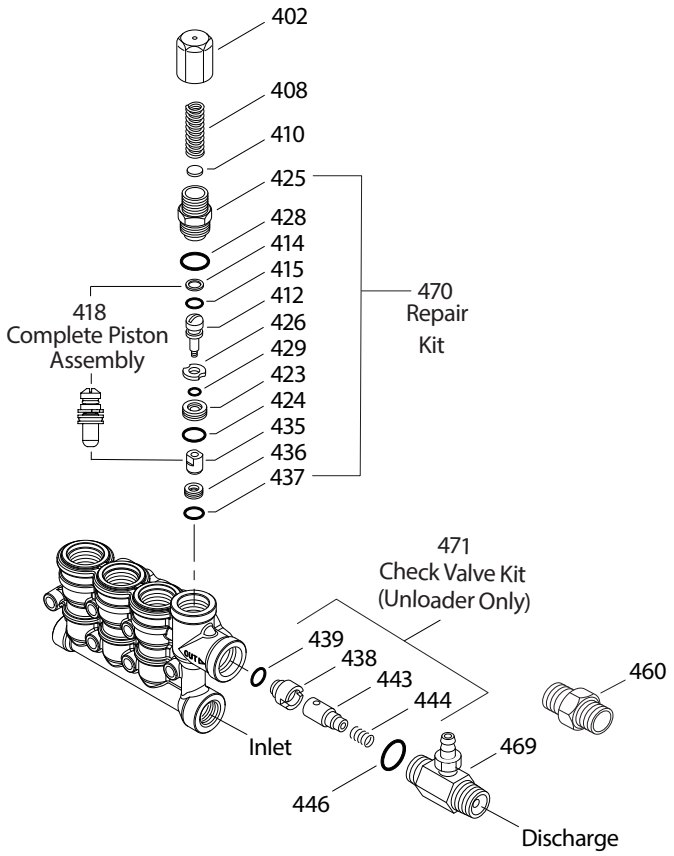
PUMP MODELS	NBR (STD)	FPM (.0110)	ST (.4410)
4DX10ER, 4XD15ER, 4DX20ER, 4DX27ER, 4DX30ER	**76978**	**76463**	**76463**

ITEM (Included in Valve Kits)				DESCRIPTION	QTY
160	13965	76656	76656	O-Ring, Seat, Inlet	3
161	545177	545177	545177	Seat, Inlet	3
163	19285	14166	14166	O-Ring, Seat, Discharge	3
164	545178	545178	545178	Seat, Discharge	3
166	547098	547098	547098	Valve	6
167	134579	134579	134579	Spring	6
168	543988	543988	543988	Retainer, Spring, Inlet	3
169	49764	49764	49764	Retainer, Spring, Discharge	3
172	142807	547743	547743	O-Ring, Valve Plug	3

INTEGRAL REGULATOR/UNLOADER

SPECIFICATIONS	U.S.	Metric
Flow	3.1 gpm	11.7 lpm
PSI Range	100–2000 psi	6.9–138 bar
Inlet Port	⅜" NPT(F)	⅜" NPT(F)
Discharge Port	⅜" NPT(M)	⅜" NPT(M)

EXPLODED VIEW



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
401	*32088*	*NY*	*Handle, Adjustable (Not Shown)*	*1*
402	46570	BB	Cap, Adjusting	1
408	33394	STZP R	Spring, Pressure	1
410	549352	STCP R	Retainer, Spring	1
412	46251	BB	Stem, Piston	1
414	28338	PTFE	Backup Ring, Piston Stem	1
415	22056	NBR	O-Ring, Piston Stem–70D	1
	76643	*FPM*	*O-Ring, Piston Stem–70D*	*1*
418	—	—	*Assembly, Piston (Included In Repair Kit)*	*1*
423	46249	BB	Retainer, Valve	1
424	13966	NBR	O-Ring, Valve Retainer (Outer)–70D	1
	76638	*FPM*	*O-Ring, Valve Retainer (Outer)–70D*	*1*
425	46248	BB	Retainer, Piston	1
426	46250	S	Washer	1
428	26133	NBR	O-Ring, Piston Retainer–80D	1
	14320	*FPM*	*O-Ring, Piston Retainer–75D*	*1*
429	17399	NBR	O-Ring, Valve Retainer (Inner)–80D	1
	14160	*FPM*	*O-Ring, Valve Retainer (Inner)–80D*	*1*
435	548193	S	Valve	1

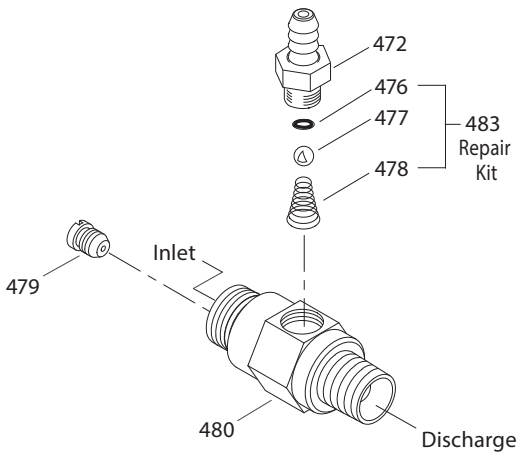
ITEM	PN	MATL	DESCRIPTION	QTY
436	46253	S	Seat	1
437	13963	NBR	O-Ring, Seat–70D	1
	14303	*FPM*	*O-Ring, Seat–70D*	*1*
438	46254	NY	Seat, Check Valve	1
439	13963	NBR	O-Ring, Seat, Check Valve–70D	1
	14303	*FPM*	*O-Ring, Seat, Check Valve–70D*	*1*
443	541060	BB	Valve, Check with O-Ring	1
444	45924	S	Spring	1
446	26133	NBR	O-Ring, Body–80D	1
	14320	*FPM*	*O-Ring, Body–75D*	*1*
460	107681	BB	Fitting, Discharge (⅜" NPT[M])	1
468	*76754*	*NBR*	*Kit, O-Ring (Includes: 414, 415, 424, 428, 429, 437)* ***Standard***	*1*
	76467	*FPM*	*Kit, O-Ring (Includes: 414, 415, 424, 428, 429, 437)* ***.0110***	*1*
469	*7231*	*BB*	*Injector, Chemical Fixed (1.8 mm)*	*1*
	7232	*BB*	*Injector, Chemical Fixed (2.1 mm)*	*1*
470	*76031*	*NBR*	*Kit, Repair (Includes: 418, 425, 428, 436, 437)* ***Standard***	*1*
	76468	*FPM*	*Kit, Repair (Includes: 418, 425, 428, 436, 437)* ***.0110***	*1*
471	*† 76146*	*NBR*	*Kit, Check Valve (Includes: 438, 439, 443, 444, 446)* ***Standard***	*1*
	† 76469	*FPM*	*Kit, Check Valve (Includes: 438, 439, 443, 444, 446)* ***.0110***	*1*

Italics are optional items. R Components comply with RoHS Directive. † Production parts are different than repair parts.
MATERIAL CODES (Not Part of Part Number): BB=Brass FPM=Fluorocarbon NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Polytetrafluoroethylene
S=304SS STCP=Steel/Chrome Plated STZP=Steel/Zinc Plated

MODELS 7231, 7232 FIXED CHEMICAL INJECTOR

SPECIFICATIONS	U.S.	Metric
GPM	3.1 gpm	11.7 lpm
Nozzle Orifice (7231)	1.8 mm	1.8 mm
Nozzle Orifice (7232)	2.1 mm	2.1 mm
Hose Barb	¼"	¼"
Tapped Barb	8/32" UNF	8/32" UNF
Inlet Port	M18 x 1.0	M18 x 1.0
Discharge Port	⅜" NPT(M)	⅜" NPT(M)
Weight	5.3 oz	0.15 kg
Dimensions	2 x 1 x 1.75"	52 x 25 x 45 mm

EXPLODED VIEW



PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
472	46630	BB	Barb, Tapped	1
476	—	NBR	O-Ring, Barb–70D	1
	—	*FPM*	*O-Ring, Barb*	*1*
477	—	S	Ball	1
478	—	S	Spring	1
479	46257	S	Orifice (1.8 mm)	1
	—	S	Orifice (2.1 mm)	1
480	—	BB	Body	1
483	*76176*	*NBR*	*Kit, Repair (Includes: 476, 477, 478)* ***Standard***	*1*
	76476	*FPM*	*Kit, Repair (Includes: 476, 477, 478)* ***.0110***	*1*

MATERIAL CODES (Not Part of Part Number):
BB=Brass FPM=Flurocarbon NBR=Medium Nitrile (Buna-N) S=304SS

PERFORMANCE CHART

Orifice Size	Maximum Injecting Pressure	Minimum Chemical Draw	Pressure Drop Across Orifice
1.8 mm	100 psi	52 oz/min	100 psi
2.1 mm	250 psi	37.2 oz/min	141 psi

NOTE: Optimum performance of Chemical Injector occurs with a 35 ft. high-pressure hose with a minimum ⅜" ID. The type of hose, extended lengths, reduced ID and fittings may create additional backpressure above the maximum injecting pressure rating of the injector and prevent it from drawing chemicals.

REGULATING DEVICE

An integral regulator or unloader with built-in bypass is part of the discharge manifold to provide system pressure regulation and pump protection. An optional fixed chemical injector is available. (See back page for proper model identifications)

OPERATION

Pump should be purged of air before commencing with operation. Liquid must flow through the pump without discharge restriction to ensure 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 regulator or unloader pressure must be done with the system turned on. Start the system with the regulator or 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.

NOTE: Pressure is not set at the factory.

SERVICE

The regulator or unloader should be serviced on the same schedule as the seals in the pump. Refer to 4DX Service Manual for start-up, servicing of seals and valves, torque requirements and diagnosis and maintenance chart.

ELECTRIC MOTOR OPTIONS

60 HERTZ

1750 RPM, 1PH

HP	Part #	Voltage	Enclosure
0.5	8105	115/208–230	TEFC
0.75	8175	115/208–230	TEFC
1	8110	115/208–230	TEFC
1.5	8115	115/208–230	TEFC
2	8120	115/208–230	TEFC
2.5	8125	115/208–230	TEFC

1750 RPM, 3PH

HP	Part #	Voltage	Enclosure
0.33	990324	208–230/460	TEFC
0.5	997671	208–230/460	TEFC
1	999189	208–230/460	TEFC
1.5	998843	208–230/460	TEFC
2	899247	208–230/460	TEFC
2.5	8126	208–230/460	TEFC

3450 RPM, 1PH

HP	Part #	Voltage	Enclosure
1.5	8054	115/230	TEFC
2	8052	115/230	TEFC
3	992139	115/208–230	ODP

3450 RPM, 3PH

HP	Part #	Voltage	Enclosure
1.5	994794	208–230/460	TEFC
3	8053	230/460	TEFC

50 HERTZ

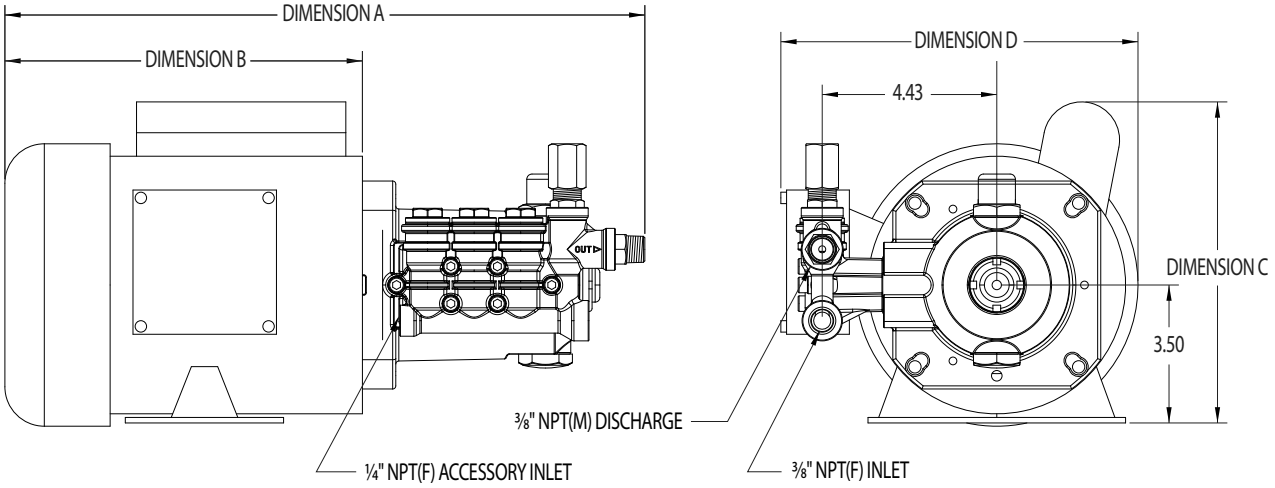
1450 RPM, 1PH

HP	Part #	Voltage	Enclosure
1	8064	110/220	TEFC
1.5	8115	110/220	TEFC
2.0	8120	110/220	TEFC
2.2	8125	110/220	TEFC

2850 RPM, 1PH

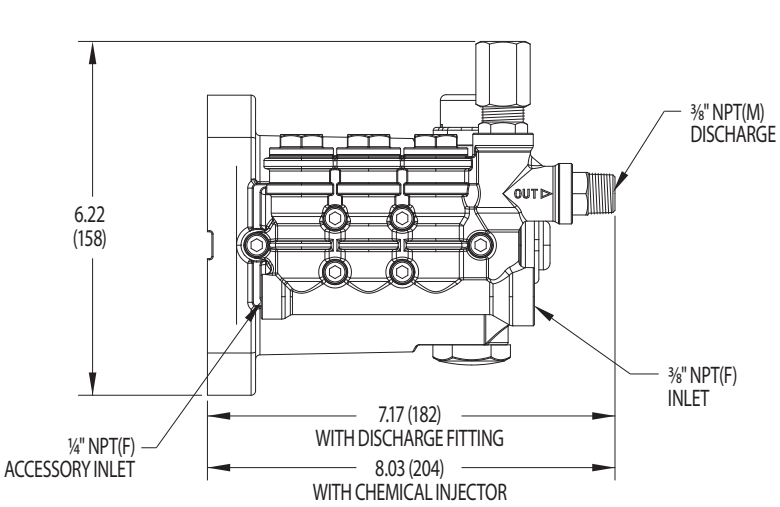
HP	Part #	Voltage	Enclosure
1.5	999943	110/220	TEFC

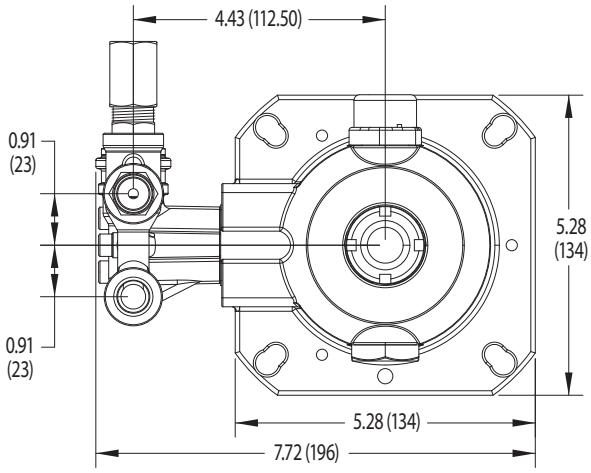
MOTOR DIMENSION 4DX SERIES



MODEL	8053	8054	8064	8105	8110	8115	8120	8125
Dimension A	18.8"	17.5"	18.0"	16.2"	19.0"	19.3"	19.3"	19.3"
Dimension B	11.7"	10.3"	10.8"	9.1"	11.8"	12.4"	12.4"	12.4"
Dimension C	7.3"	8.7"	8.7"	8.2"	18.8"	9.7"	9.7"	9.7"
Dimension D	9.7"	9.5"	9.3"	9.1"	9.7"	9.7"	9.7"	9.7"

MODEL	8126	8175	899247	990324	992139	994794	997671	998843	999189	999943
Dimension A	21.7"	16.2"	18.6"	16.6"	19.0"	18.0"	16.5"	17.4"	17.4"	18.0"
Dimension B	14.0"	9.1"	11.4"	9.4"	11.8 "	10.9"	9.3"	10.3"	10.3"	10.8"
Dimension C	7.3"	8.2"	7.1"	7.3"	8.15"	7.3"	7.3"	7.1"	8.2"	8.7"
Dimension D	9.7"	9.1"	9.0"	9.7"	8.3"	9.7"	9.7"	9.7"	9.1"	9.3"





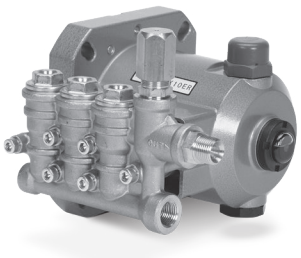
Base Models 4DX10ER, 4DX15ER, 4DX20ER, 4DX27ER, 4DX30ER

4DX Pump Series Selection Chart

Pump Series										Pump Flow/RPM			
4	D	X								GPM	RPM	Alt. GPM	Alt. RPM
			1	0						1.0	3450	0.5	1750
			1	5						1.5	3450	0.75	1750
			2	0						2.0	3450	1.0	1750
			2	7						2.7	3450	1.35	1750
			3	0						3.0	3450	1.5	1750
					E					Electric, 5⁄8" Hollow Shaft			
						R				Regulating Device = Regulator			
						U				Regulating Device = Unloader			
							I			Fixed Chemical Injector			
								F		Garden Hose Fitting			
									.0110	FPM Seals			

Examples:

4DX10ER = 1 gpm (3450 rpm), Regulator, standard inlet - 3⁄8" NPT(F)
4DX15EUIF = 1.5 gpm (3450 rpm), Unloader, Chemical Injector, Garden Hose Inlet Fitting
4DX30ER.0110 = 3 gpm (3450 rpm), Regulator, standard inlet - 3⁄8" NPT(F), with FPM Seals and O-rings



Model 4DX10ER



Model 4DX15EUIF

⚠ CAUTIONS AND WARNINGS

All high-pressure systems require a primary pressure regulating device (e.g. regulator, unloader) and a secondary pressure relief device (e.g. 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 or can be requested directly from Cat Pumps.

WARRANTY

View the Limited Warranty online at www.catpumps.com/literature/cat-pumps-limited-warranty

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