

# DATA SHEET

## DIRECT DRIVE PLUNGER PUMPS



### Brass Models: **1CX013R, 1CX025R, 1CX050R**

See page 4 for complete pump/motor model number selection for ordering.



Model 1CX050RA2  
Motor-Pump-Unit Without Pulse Hose

#### FEATURES

- Ultra-compact, direct drive motor-pump-unit for portability and small spaces.
- Four-position head mounting for plumbing flexibility.
- Oil bath lubrication assures optimum drive-end lubrication.
- Pressure regulator offers precision pressure setting and over-pressure protection.
- Includes oil in crankcase.

#### COMMON SPECIFICATIONS

	U.S.	Metric
Pump RPM	1750 rpm	1750 rpm
Inlet Pressure Range	Flooded to 60 psi	Flooded to 4.1 bar
Max. Liquid Temp. (NBR)	140° F	82° C
<b>Alternative seals available for high temp up to 180° F</b>		
Bore	0.630"	16 mm
Crankcase Capacity	2.03 oz.	0.06 l
Inlet Port	3/8" NPT(F)	3/8" NPT(F)
Discharge Port	1/4" NPT(F)	1/4" NPT(F)
By-Pass Port	1/4" NPT(F)	1/4" NPT(F)
Shaft Diameter	1/2"	12.7 mm
Weight (Pump Only)	3.45 lbs.	1.56 kg
Dimensions (Pump Only)	3.62 x 5.12 x 6.85"	92 x 130 x 174 mm

SPECIFICATIONS	U.S. Measure	Metric Measure
<b>1CX013R</b>		
Flow	0.13 gpm	0.49 lpm
Pressure Range	100 - 1000 psi	6.9 - 69 bar
Stroke (Single Plunger)	0.079"	2.0 mm
<b>1CX025R</b>		
Flow	0.25 gpm	0.95 lpm
Pressure Range	100 - 1000 psi	6.9 - 69 bar
Stroke (Single Plunger)	0.130"	3.3 mm
<b>1CX050R</b>		
Flow	0.50 gpm	1.89 lpm
Pressure Range	100 - 1000 psi	6.9 - 69 bar
Stroke (Single Plunger)	0.248"	6.3 mm

#### ALTERNATIVE SEAL CONFIGURATION

MATERIAL	SUFFIX CODE	MAXIMUM TEMPERATURE
NBR	—	140° F (60° C)
STHT	.3400	180° F (82° C)

See Reference Document 99REF017 for inlet conditions and RPM at high temperature.

**DETERMINING THE REQUIRED H.P.** 
$$\text{Hp (Electric Brake)} = \frac{\text{gpm} \times \text{psi}}{1060}$$

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

#### CAUTIONS AND WARNINGS

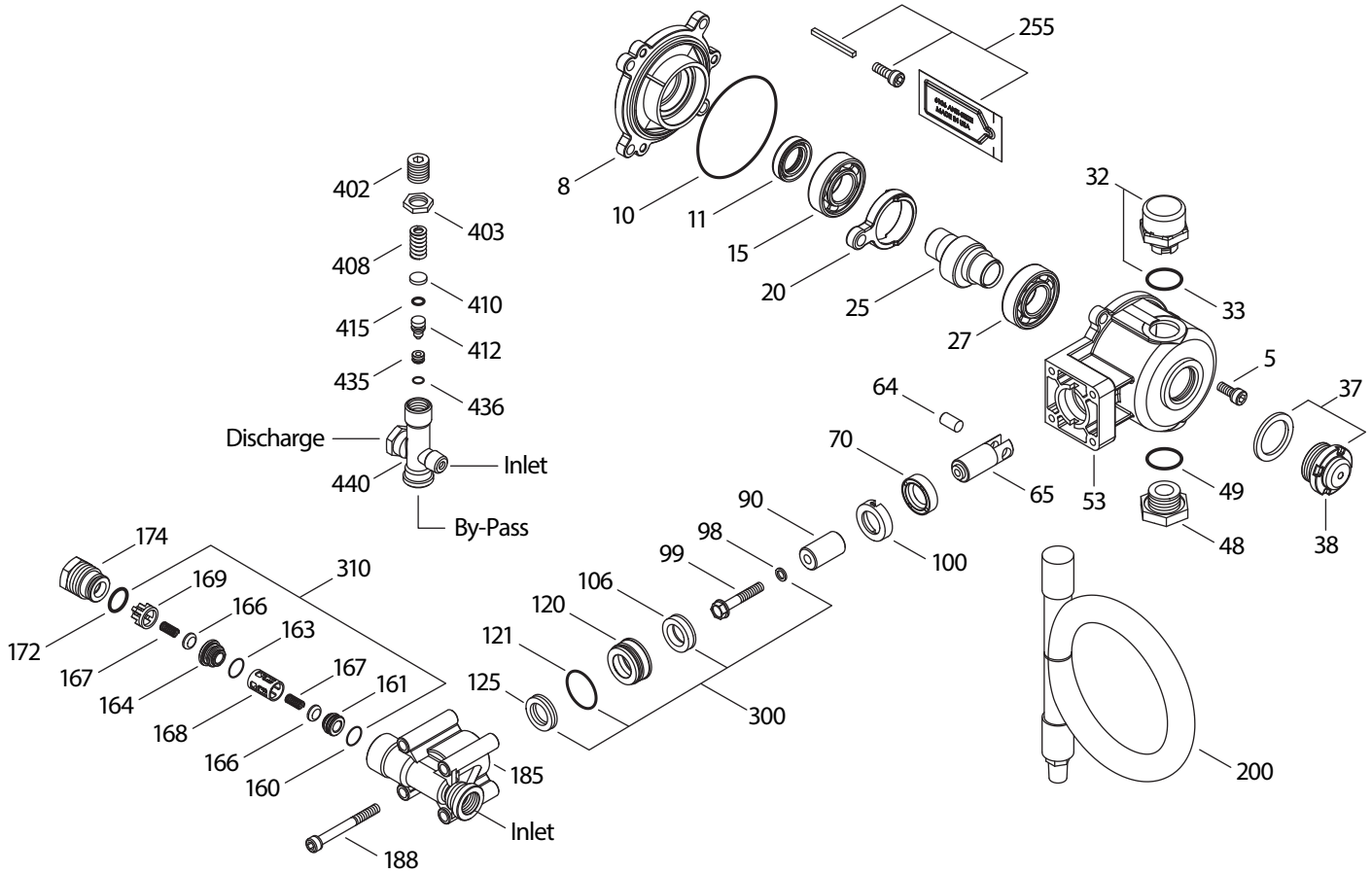
All High Pressure Systems require a primary pressure regulating device (i.e. regulator, unloader) and a secondary pressure relief device (i.e. pop-off valve, relief valve). Failure to install such relief devices could result in personal injury or damage to pump or property. Cat Pumps does not assume any liability or responsibility for the operation of a customer's high pressure system.

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#### WARRANTY

View the Limited Warranty on-line at [www.catpumps.com/warranty](http://www.catpumps.com/warranty).

# EXPLODED VIEW



## PARTS LIST

ITEM	P/N	MATL	DESCRIPTION	QTY
2	76059	STL	Key (1/8sq x 1.5") (Included in 30555)	1
5	180318	STCP R	Screw, Bearing Cover HSH (M6x14)	3
8	49563	AL	Cover, Bearing	1
10	14035	NBR	O-Ring, Bearing Cover - 70D	1
11	49565	NBR	Seal, Oil - 70D	1
15	47862	STL	Bearing, Inner Ball	1
20	49566	TNM	Rod, Connecting	1
25	<b>49560</b>	STL	Crankshaft - 1CX050R, 6.3 mm	1
	<b>49602</b>	STL	Crankshaft - 1CX013R, 2.0 mm	1
	<b>49598</b>	STL	Crankshaft - 1CX025R, 3.3 mm	1
27	47862	STL	Bearing, Outer Ball	1
32	129254	ABS	Cap, Oil Filler w/O-Ring	1
33	14179	NBR	O-Ring, Oil Filler Cap - 70D	1
37	92241	—	Gauge, Bubble Oil w/Gasket - 80D	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	49554	AL	Crankcase	1
64	46229	CM	Pin, Crosshead	1
65	542402	BB	Rod, Plunger	1
70	47215	NBR	Seal, Oil - 70D	1
90	542403	CC	Plunger (M16x27)	1
98	46730	NBR	Washer, Seal - 90D	1
99	542405	S	Retainer, Plunger (M6x35)	1
100	46233	D	Retainer, Seal	1
106	48222	NBR	Seal, LPS w/S-Spg	1
	76089	ST2	Seal, LPS w/SS-Spg	1
120	547357	BB	Case, Seal	1
121	13976	NBR	O-Ring, Seal Case - 70D	1
125	46240	NBR	Seal, HPS w/S	1
	76088	ST2	Seal, HPS	3

ITEM	P/N	MATL	DESCRIPTION	QTY
160	13965	NBR	O-Ring, Inlet Seat - 70D	1
161	545177	S	Seat, Inlet	1
163	19285	NBR	O-Ring, Discharge Seat - 70D	1
164	545178	S	Seat, Discharge	1
166	46764	S	Valve	2
167	46865	S	Spring	2
168	543988	PVDF	Retainer, Inlet Spring	1
169	49569	PVDF	Retainer, Discharge Spring	1
172	11346	NBR	O-Ring, Discharge Fitting - 70D	1
174	49572	BB	Plug, Valve w/1/4" NPT(F) Port, O-Ring	1
185	49515	BB	Head, Manifold	1
188	89953	STCP	Screw, HSH (M6x55)	4
200	76225	—	Hose, Pulse (3/8" x 24")	1
255	30555	STZP R	Assy, Bolt Mount	1
300	76063	NBR	Kit, Seal (Incls: 98, 106, 121, 125)	1
310	76033	NBR	Kit, Valve (Incls: 160, 161, 163, 164, 166, 167, 168, 169, 172)	1
400	7561	BB	Regulator	1
402	49681	BB	Adjuster, Pressure	1
403	49682	BB	Nut, Locking	1
408	49876	STZP	Spring, Coil	1
410	549352	STCP R	Retainer, Spring	1
412	49877	S	Stem, Piston	1
415	14759	NBR	O-Ring, Piston Stem	1
435	49878	S	Seat	1
436	25300	NBR	O-Ring, Seat - 70D	1
440	—	BB	Body	1
468	31555	NBR	Kit, O-Ring (Incls: 172, 415, 436)	1

See Back Page For Motors

**Bold part numbers are unique to a particular pump model. Italics are optional items.** R Components comply with RoHS Directive.

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

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

**NOTE: Pump is shipped with two black caps w/ O-Rings for shipping purposes. Remove black cap w/ O-Ring on top of pump and replace with loose red cap w/ O-Ring as supplied in box.**

**OPERATION**

A pressure regulator is included with each 1CX plunger pump. The regulator is not pre-set at the factory. Set system pressure once the system is started. Start at the lowest pressure reading and adjust the pressure adjuster in small increments until the desired system pressure is attained. Remember to service the regulator on the same schedule as the pump seals and valves. Refer to 1CX service manual for start-up, servicing of seals and valves, torque requirements and diagnosis/maintenance chart.

**INLET**

It is recommended to install a flexible hose at the pump inlet. Assure flooded or up to 60 psi inlet pressure for optimum performance. Install an inlet filter to remove standard water debris.

**DISCHARGE**

All discharge plumbing for the 1CX pump connects to the regulator outlet port.

**PULSE HOSE MOUNTING**

Mount the pulse hose by installing a tee fitting into the regulator outlet port. Install the pulse hose into the top port. Coil hose and tie wrap as shown. Add nipple with a tee to mount pressure gauge. The other end of the pulse hose is plugged to capture the pulse.

**Note:** Without a pulse hose, the pump may draw as much as 2 additional AMPS above full load AMPS.

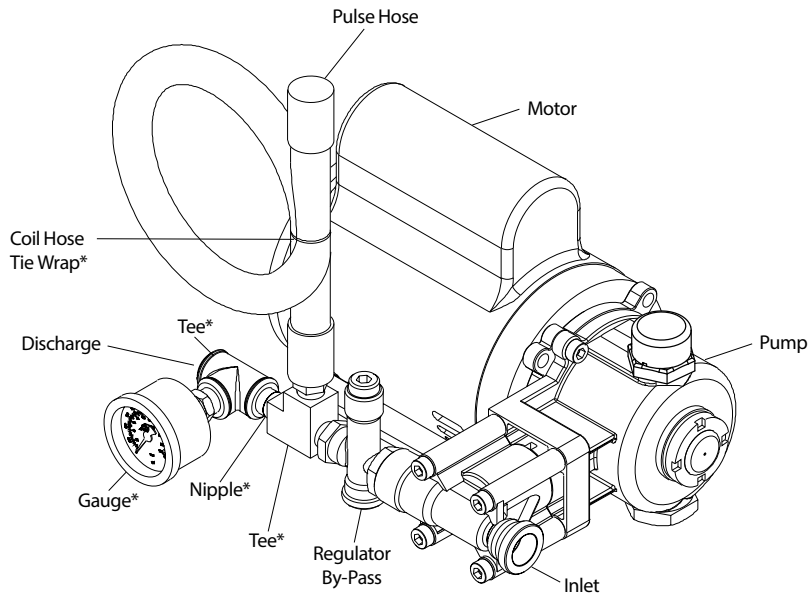
**BY-PASS**

The regulator by-pass is at the bottom. Connect a 1/4" flexible hose and route to inlet of pump, to tank, or to drain.

**NOTICE**

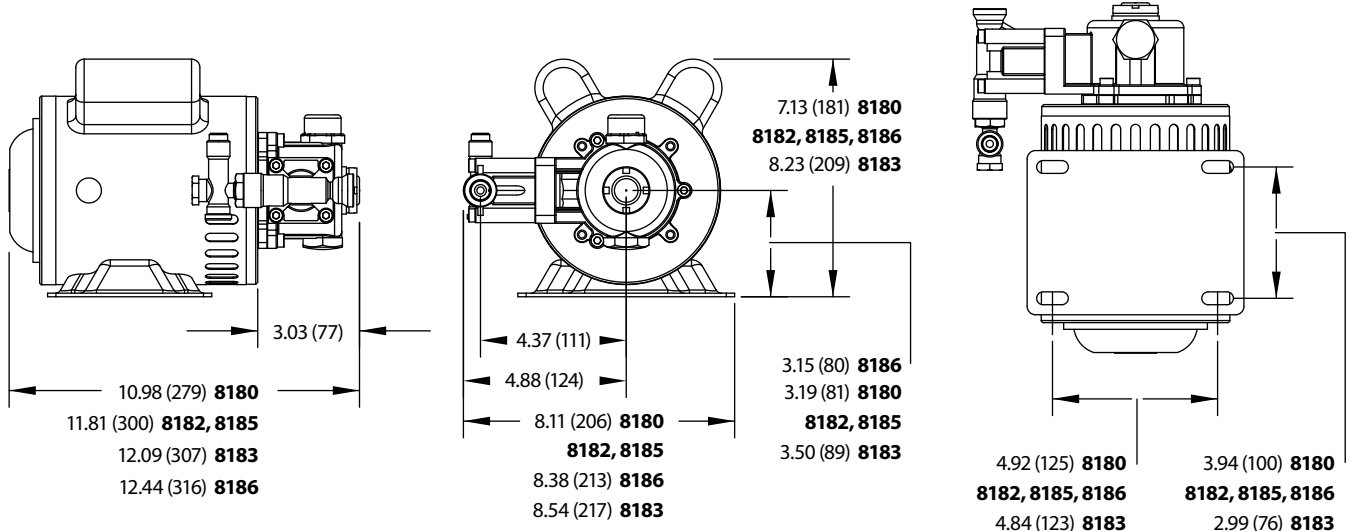
By-pass to the pump inlet is designed for cold water or ambient temperature operation. **DO NOT EXCEED 6 MINUTES IN BY-PASS** operation. Excessive temperatures will cause premature wear or damage to the pump and **VOID THE WARRANTY.**

**TYPICAL SET-UP**



\*Not Supplied With Motorized Pump Unit

**DIMENSIONAL VIEW:**



## Model Number Selection Chart

Series	Flow (1750 rpm)	Regulator	Assemble Option	Motor Option*	Pulse Hose Option
1CX	013 = .13 gpm	R = Regulator Included	D = Pump and Motor shipped together – not assembled	1 = 8180	Blank = No Pulse Hose
	025 = .25 gpm			2 = 8182	
	050 = .5 gpm		A = Pump and Motor assembled together	3 = 8185	P = Pulse Hose Included
		4 = 8183			
				5 = 8186	

**Example:** 1CX050RA2P = .5 gpm, Regulator, 8182 Motor, Assembled, Pulse Hose Included

\* See Motor Options Chart Below

## Motor Options

Motors	8180	8182	8185	8186	8183
Horsepower**	1/4 Hp	1/2 Hp	1/2 Hp	1/2 Hp	1/2 Hp
Phase	Single	Single	Single	Single	Single
Hertz	60 Hz	60 Hz	60 Hz	60 Hz	50 Hz
Voltage	115V / 230V	115V / 230V	115V / 230V	115V / 230V	115V / 230V
RPM	1750 rpm	1750 rpm	1750 rpm	1750 rpm	1450 rpm
Full load amp*	2.8 / 1.4	4.8 / 2.4	4.8 / 2.4	4.8 / 2.4	6.4 / 3.2
Service factor	1.0	1.0	1.0	1.0	1.0
Shaft diameter	1/2"	1/2"	1/2"	1/2"	1/2"
Connection	12" leads	12" leads	Terminal Box	Terminal Box	Terminal Box
Capacitors	Start and Run	Start and Run	Start and Run	Start and Run	Start and Run
Insulation class	E	E	E	E	F
Motor type	ODP	ODP	ODP	TEFC	TEFC
Compliance	RoHS CSA	RoHS CSA	RoHS CSA	RoHS CSA	RoHS, CE UL, CSA
Weight	15.80 lbs	21.75 lbs	22.25 lbs	24.55 lbs	28.85 lbs

\*NOTE: Without pulse hose amp draw will increase as much as 2 amps depending upon pump model and discharge pressure.

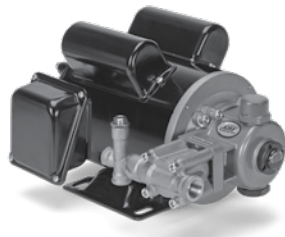
\*\* HP Calculation = (GPM X PSI) ÷ 1060

## Replacement Parts

Fan Cover	999525	999525	999525	999524	N/A
Capacitor Cover	999529	999526	999526	999526	N/A



**8180 and 8182**  
12" wire leads



**8185**  
Terminal Box



**8186**  
Terminal Box



**8183**  
Terminal Box

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