

Optional Regulator sold separately.

Nickel Aluminum Bronze Direct-Drive Plunger Pump

Models 2SF10CEE
2SF20CEE
2SF22CEEL

PUMP FEATURES

- UNIFLOW design provides continuous liquid flow forward through the pump, reduces cavitation risk and increases pump life.
- Unique spring loaded Inlet Valves and flow through ceramic plungers assure smooth, consistent liquid flow through pump.
- Nickel Aluminum Bronze Head for strength and corrosion resistance.
- OPTIONAL Stainless Steel Regulator for system pressure control and pump protection.
- Ultimate portability: weighs less than 11 pounds and is only 10 inches long.
- OPTIONAL 3450 or 1725 RPM direct-drive motors for ultra compact assembly.

SPECIFICATIONS

| | U.S. Measure | Metric Measure |
|------------------------|-----------------|-------------------|
| MODEL 2SF10CEE | | |
| Flow..... | 1.0 GPM | (3.8 L/M) |
| Pressure Range | 100 to 1200 PSI | (7 to 85 BAR) |
| RPM | 3450 RPM | (3450 RPM) |
| Stroke..... | 0.067" | (1.7 mm) |
| MODEL 2SF20CEE | | |
| Flow..... | 2.0 GPM | (7.6 L/M) |
| Pressure Range | 100 to 1200 PSI | (7 to 85 BAR) |
| RPM | 3450 RPM | (3450 RPM) |
| Stroke..... | 0.122" | (3.1 mm) |
| MODEL 2SF22CEEL | | |
| Flow..... | 2.2 GPM | (8.3 L/M) |
| Pressure Range | 100 to 1200 PSI | (7 to 85 BAR) |
| RPM | 1725 RPM | (1725 RPM) |
| Stroke..... | 0.248" | (6.3 mm) |

COMMON SPECIFICATIONS

| | | |
|-----------------------------|-------------------|----------------------|
| Inlet Pressure Range | Flooded to 60 PSI | (Flooded to 4 BAR) |
| Shaft Diameter | 5/8" | (15.9 mm) |
| Bore..... | 0.709" | (18 mm) |
| Max. Fluid Temperature..... | 160° F | (71° C) |
| Crankcase Capacity | 12.0 oz. | (0.36 L) |
| Inlet Port (1)..... | 3/8" NPTF | (3/8" NPTF) |
| Discharge Ports (2)..... | 3/8" NPTF | (3/8" NPTF) |
| By-Pass Port (1) | 1/4" NPTF | (1/4" NPTF) |
| Weight..... | 10.6 lbs. | (4.8 kg) |
| Dimensions | 8.3 x 7.5 x 6.3" | (213 x 191 x 160 mm) |

Refer to pump Service Manual for important Inlet Condition Check-List, Start-up Procedure, Tech Bulletins and Pump Maintenance information.

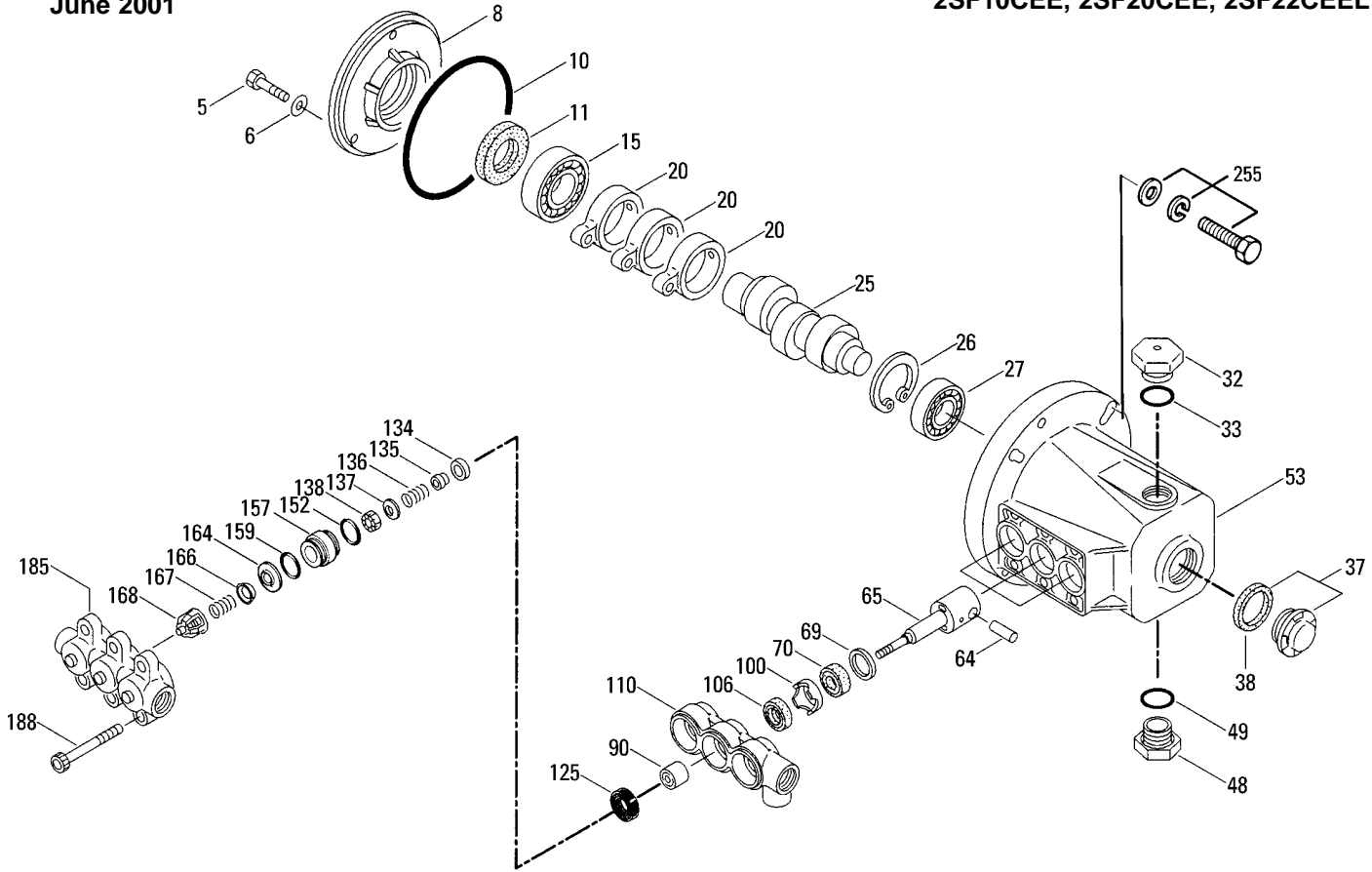
“Customer confidence is our greatest asset”

EXPLODED VIEW

June 2001

SF PLUNGER PUMP MODELS

2SF10CEE, 2SF20CEE, 2SF22CEEL



PARTS LIST

| ITEM | P/N | MATL | DESCRIPTION | QTY | ITEM | P/N | MATL | DESCRIPTION | QTY |
|------|--------|------|-------------------------------|-----|------|--------|------|--|-----|
| 5 | 543686 | S | Screw, HHC (M6x16) | 3 | 125 | 44652 | SNG | Seal, HPS w/SS | 3 |
| 6 | 150810 | NBR | Washer, Seal (M6) | 3 | 134 | 543691 | SS | Valve, Inlet | 3 |
| 8 | 44857 | AL | Cover, Bearing, Inner | 1 | 135 | 543689 | SS | Spacer, Inlet | 3 |
| 10 | 14044 | NBR | O-Ring | 1 | 136 | 543690 | SS | Spring, Inlet Valve | 3 |
| 11 | 44859 | NBR | Seal, Oil | 1 | 137 | 88575 | S | Washer, Conical (M6) | 3 |
| 15 | 14488 | STL | Bearing, Ball, Inner | 1 | 138 | 543692 | SS | Nut, Hex (M6) | 3 |
| 20 | 45876 | HS | Rod, Connecting | 3 | 152 | 26089 | NBR | O-Ring, Adapter, Inner - 80D | 3 |
| 25 | 543135 | FCM | Crankshaft, 1.7 mm (10CEE) | 1 | 157 | 544292 | SS | Adapter | 3 |
| | 45092 | FCM | Crankshaft, 3.1 mm (20CEE) | 1 | 159 | 26089 | NBR | O-Ring, Adapter, Outer - 80D | 3 |
| | 45160 | FCM | Crankshaft, 6.3 mm (22CEEL) | 1 | 164 | 544293 | SS | Seat | 3 |
| 26 | 12385 | STL | Ring, Retaining | 1 | 166 | 543669 | SS | Valve | 3 |
| 27 | 15710 | STL | Bearing, Ball, Outer | 1 | 167 | 543700 | SS | Spring | 3 |
| 32 | 45690 | RTP | Cap, Oil Filler | 1 | 168 | 44565 | PVDF | Retainer, Spring | 3 |
| 33 | 14179 | NBR | O-Ring - 70D | 2 | ●185 | 543642 | NAB | Manifold, Discharge | 1 ● |
| 37 | 92241 | | Gauge, Oil, w/Gasket - 80D | 1 | 188 | 543701 | S | Screw, HSH (M8x75) | 6 |
| 38 | 44428 | NBR | Gasket, Flat, Oil Gauge - 80D | 1 | 255 | 30517 | STZP | Mount, Bolt, Assy | 1 |
| 48 | 44842 | NY | Plug, Drain | 1 | | 30980 | STZP | Washer, Flat (3/8") | 4 |
| 49 | 14179 | NBR | O-Ring - 70D | 1 | | 30921 | STZP | Lockwasher, Split (3/8") | 4 |
| ●53 | 45702 | AL | Crankcase | 1 ● | | 34100 | STZP | Screw (3/8"-16x1-3/8") | 4 |
| 64 | 16948 | CM | Pin, Crosshead | 3 | | 6106 | | Lubricant, Antiseize | 1 |
| 65 | 543687 | SS | Rod, Plunger | 3 | | 30050 | STL | Key (3/16"x3/16"x1-1/4") | 1 |
| 69 | 20017 | STZP | Washer, Oil Seal | 3 | 300 | 34973 | NBR | Kit, Seal (Incls: 106, 125, 152, 159) | 1 |
| 70 | 25461 | NBR | Seal, Oil | 3 | 310 | 34972 | NBR | Kit, Valve (Incls: 152, 159, 164, 166, 167, 168) | 1 |
| 90 | 45847 | CC | Plunger (M18x14) | 3 | 311 | 34974 | NBR | Kit, Inlet Valve (Incls: 134-138, 152, 159) | 1 |
| 100 | 44869 | PVDF | Retainer, Seal | 3 | 352 | 44050 | STZP | Tool, Oil Gauge | 1 |
| 106 | 543693 | NBR | Seal, LPS w/SS-Spg | 3 | — | 6565.8 | | Service Video, Section 8 | 1 |
| ●110 | 543640 | NAB | Manifold, Inlet | 1 ● | | | | | |

● Industrial Discount. Italics are optional items. See Tech Bulletins 36, 43, 55, 60, 64, 65, 70, 73 and 74 for additional information.

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

MATERIAL CODES (Not Part of Part Number): AL=Aluminum CC=Ceramic CM=Chrome-moly FCM=Forged Chrome-moly NAB=Nickel Aluminum Bronze

NBR=Medium Nitrile (Buna-N) NY=Nylon PVDF=Fluoroplastic (High Strength) RTP=Reinforced Composite

S=304SS SS=316SS SNG=Special Blend (Buna) STL=Steel STZP=Steel/Zinc Plated

OPTIONAL PRESSURE REGULATOR/RELIEF VALVE

Models 7070, 7077

SPECIFICATIONS

U.S. Measure Metric Measure

MODEL 7070

Flow Range1.0-12.0 GPM (3.8-45 L/M)
 Pressure Range600-1000 PSI (40-70 BAR)

MODEL 7077

Flow Range0.5-5.0 GPM (1.9-19 L/M)
 Pressure Range50-500 PSI (3.45-35 BAR)

COMMON SPECIFICATIONS

Maximum Temperature180°F (82°C)
 Inlet Port1/4" NPTF (1/4"F NPTF)
 By-Pass Port.....3/8" NPTF (3/8"F NPTF)
 Weight.....1.2 lbs. (0.55 kg)
 Dimensions.....6.2 x 2.5" (158 x 64 mm)

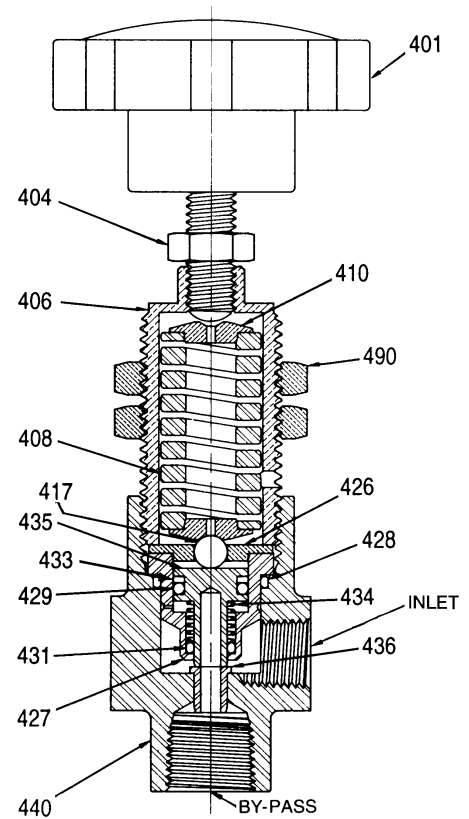
OPERATION

This pump does not come standard with a regulating device. Determine the system pressure and low and select one of the above pressure regulators. The optional Stainless Steel Regulator will set and maintain system pressure. It offers pump protection by going into by-pass with any obstruction in the discharge line.

This pump is designed for use in saltwater reverse osmosis systems. **A fresh water flush is recommended prior to any dormant cycle** to eliminate stagnant water sitting in the pump and premature wear.

High RPM may require 316SS construction for optimum pump life.

EXPLODED VIEW Models 7070, 7077



PARTS LIST

| ITEM | PN | MATL | DESCRIPTION | QTY |
|------|-------|------|--------------------------------------|-----|
| 401 | 33963 | NYSS | Knob, Adjusting w/Screw (7070) | 1 |
| | 34295 | NYSS | Knob, Adjusting w/Screw (7077) | 1 |
| 404 | 30933 | S | Nut, Lock | 1 |
| 406 | — | BBCP | Body, Upper | 1 |
| 408 | 32106 | S | Spring - 1000 PSI (7070) | 1 |
| | 34293 | S | Spring - 500 PSI (7077) | 1 |
| 410 | — | BB | Retainer | 2 |
| 417 | 34001 | SSSS | Ball | 1 |
| 426 | — | BB | Guide | 1 |
| 427 | — | SS | Insert | 1 |
| 428 | — | FPM | O-Ring | 1 |
| 429 | — | FPM | O-Ring | 1 |
| 431 | — | FPM | O-Ring | 1 |
| 433 | — | PTFE | Back-up-Ring | 1 |
| 434 | 34012 | S | Spring | 1 |
| 435 | 32109 | SS | Piston | 1 |
| 436 | 32102 | SS | Seat | 1 |
| 440 | — | SS | Body, Lower | 1 |
| 468 | 32140 | FPM | Kit, O-Ring (Incls: 428,429,431,433) | 1 |
| 490 | 34090 | STL | Mount, Panel | 1 |

Italics are optional items.

MATERIAL CODES (Not Part of Part Number):

BB=Brass BBCP=Brass/Chrome Plated FPM=Fluorocarbon (Viton®)
 PTFE=Pure Teflon® S=304SS SS=316SS STL=Steel SSSS=440SS

MOTOR SPECIFICATIONS

Model 8050

| | |
|----------------------|----------------|
| Horsepower | 1.5 |
| Shaft Diameter | 5/8" |
| Max. Volts | 115/230 |
| FULL LOAD AMPS | 12.1 |
| RPM | 3450 |
| Weight | 48 lbs. |
| Phase | Single |
| Frame Size | 56-C TEFC |
| Service Factor | 1.15 |

Model 8052

| | |
|----------------------|----------------|
| Horsepower | 2.0 |
| Shaft Diameter | 5/8" |
| Max. Volts | 115/230 |
| FULL LOAD AMPS | 17.0/9.2-8.5 |
| RPM | 3450 |
| Weight | 43 lbs. |
| Phase | Single |
| Frame Size | 56-C TEFC |
| Hertz | 60 |
| Service Factor | 1.15 |

* Model 8060

| | |
|----------------------|----------------|
| Horsepower | 1.5 |
| Shaft Diameter | 5/8" |
| Max. Volts | 115/230 |
| FULL LOAD AMPS | 14.0/7.0 |
| RPM | 1725 |
| Weight | 48.10 lbs. |
| Phase | Single |
| Frame Size | 56-C TEFC |
| Service Factor | 1.20 |

* Use with 2SF10CEE or 2SF20CEE to reduce flow by 50%

* Model 8062

| | |
|----------------------|----------------|
| Horsepower | 2.0 |
| Shaft Diameter | 5/8" |
| Max. Volts | 115/230 |
| FULL LOAD AMPS | 17.0/8.5 |
| RPM | 1725 |
| Weight | 55 lbs. |
| Phase | Single |
| Frame Size | 56-C TEFC |
| Service Factor | 1.15 |

* Use with 2SF10CEE or 2SF20CEE to reduce flow by 50%

Common Motor Specifications

| | |
|---------------------------------------|---------|
| Max. Operating Temp. | 104°F |
| Capacitor Start | Yes |
| Thermal Overload-Manual Reset | Yes |
| U.L. Construction Reference | |
| (8050) | E49747 |
| (8052, 8060, 8062) | E44549 |
| U.L. Insulation Reference (All) | E37878 |
| CSA Reference | |
| (8050) | LR45148 |
| (8052, 8060, 8062) | LR4642 |

Note: Motor Start-Up AMPS may vary, then settle within FULL LOAD AMPS rating after initial run in time.

★ ★ Before mounting pump on motor, apply P.N. 6106

Antiseize Lubricant to pump shaft.

★ ★ Refer to Tech Bulletin #55 for instructions on removing pump from gas engine or electric motor.

Add .50 for 50 Hz (1450 or 2850 RPM)

For warranty consideration contact CAT PUMPS for the local **Authorized Service Center**. If you are uncertain as to the cause of failure (Pump or Motor), secure **Returned Goods Authorization number** and return complete assembly **PREPAID** to CAT PUMPS for evaluation.

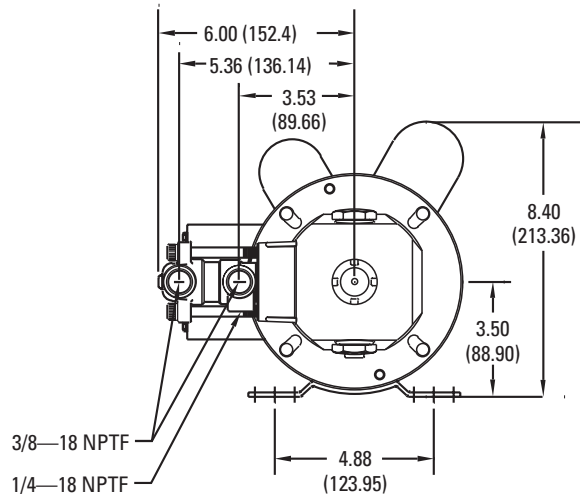
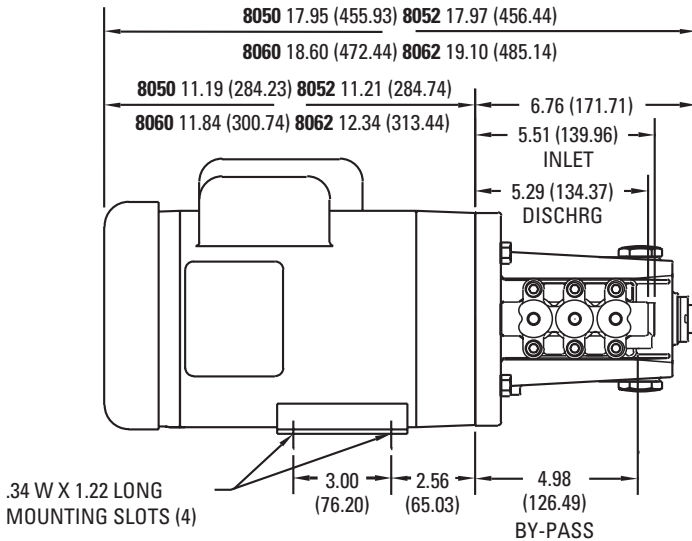
HORSEPOWER REQUIREMENTS

| FLOW | | PRESSURE | | | PUMP RPM |
|-------------|---------------|------------|-------------|-------------|----------|
| | | PSI 700 | PSI 1000 | PSI 1200 | |
| U.S. GPM | Metric L/M | BAR 50 | BAR 70 | BAR 85 | |
| 1.0 | 3.78 | .47 | .68 | .82 | 3450 |
| 2.0 | 7.6 | .95 | 1.37 | 1.64 | 3450 |
| 2.2 | 8.3 | 1.05 | 1.51 | 1.81 | 1725 |

DETERMINING THE REQUIRED H.P.

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

2SF10CEE, 2SF20CEE, 2SF22CEEL DIMENSIONAL



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World Headquarters

CAT PUMPS

1681 - 94th Lane N.E. Minneapolis, MN 55449-4324

Phone (763) 780-5440 — FAX (763) 780-2958

e-mail: sales@catpumps.com

www.catpumps.com

International Inquiries

FAX (763) 785-4329

e-mail: intl@catpumps.com



"The World's Most Dependable Pumps"

CAT PUMPS (U.K.) LTD.

1 Fleet Business Park, Sandy Lane, Church Crookham, Fleet

Hampshire GU52 8BF, England

Phone Fleet 44 1252-622031 — Fax 44 1252-626655

e-mail: sales@catpumps.co.uk

N.V. CAT PUMPS INTERNATIONAL S.A.

Heiveldekens 6A, 2550 Kontich, Belgium

Phone 32-3-450.71.50 — Fax 32-3-450.71.51

e-mail: cpi@catpumps.be www.catpumps.be

CAT PUMPS DEUTSCHLAND GmbH

Buchwiese 2, D-65510 Idstein, Germany

Phone 49 6126-9303 0 — Fax 49 6126-9303 33

e-mail: catpumps@t-online.de www.catpumps.de