

Electric motor or gas engine must be purchased separately.

## Sleeved Direct-Drive Plunger Pumps

**Electric Models** 4SF32ELS  
4SF40ELS, 4SF45ELS  
4SF50ELS

**Gas Models** 4SF30GS1  
4SF35GS1, 4SF40GS1  
4SF45GS1, 4SF50GS1

### PUMP FEATURES

- Triplex design provides continuous liquid flow forward through the pump, reduces cavitation risk and increases pump life.
- Unique spring loaded inlet valves and the flow through ceramic plungers allow excellent suction capabilities.
- Compact, hollow shafted pump for direct mounting to either gas or electric motor, eliminates the need for pulleys, belts, gearboxes.
- Regulating Unloader mounts directly on each pump to assure system pressure control and pump protection.
- Convenient multiple porting provides installation flexibility.

### COMMON PUMP SPECIFICATIONS

Inlet Pressure Range (Electric).....	-2 to 75 PSI	(-0.14 to 5.25 BAR)
Inlet Pressure Range (Gas).....	Flooded to 75 PSI	(Flooded to 5.25 BAR)
Bore.....	0.787"	(20 mm)
Maximum Liquid Temperature.....	160°F	(71°C)
Above 130°F call CAT PUMPS for inlet conditions and elastomer recommendations.		
Crankcase Capacity.....	23.66 oz.	(0.70 L)
Inlet Port (1).....	1/2" NPTF	(1/2" NPTF)
By-Pass Port (1).....	3/8" NPTF	(3/8" NPTF)
Discharge Ports 2).....	3/8" NPTF	(3/8" NPTF)
Auxiliary Port (1).....	1/4" NPTF	(1/4" NPTF)
Weight (Pump Only).....	24.31 lbs.	(11.0 kg)
Dimensions (Pump Only).....	8.27 x 11.06 x 12.28"	(210x281x312 mm)

#### **⚠ 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	U.S. Measure	Metric Measure
<b>Models - Electric</b>				
		<b>4SF32ELS</b>		<b>4SF40ELS</b>
Flow .....	3.2 GPM	(12.1 L/M)	4.0 GPM	(15 L/M)
Max. Discharge Pressure	<b>3500 PSI</b>	<b>(245 BAR)</b>	<b>3500 PSI</b>	<b>(245 BAR)</b>
Max. RPM.....	<b>1725 RPM</b>	<b>(1725 RPM)</b>	<b>1725 RPM</b>	<b>(1725 RPM)</b>
Stroke .....	0.311"	(7.9 mm)	0.382"	(9.7 mm)
<b>Model - Electric</b>				
		<b>4SF45ELS</b>		<b>4SF50ELS</b>
Flow .....	4.5 GPM	(17 L/M)	5.0 GPM	(19 L/M)
Max. Discharge Pressure	3000 PSI	(210 BAR)	<b>3000 PSI</b>	<b>(210 BAR)</b>
Max. RPM.....	<b>1725 RPM</b>	<b>(1725 RPM)</b>	<b>1725 RPM</b>	<b>(1725 RPM)</b>
Stroke .....	0.437"	(11.1 mm)	0.453"	(11.5 mm)
<b>Models - Gas</b>				
		<b>4SF30GS1</b>		<b>4SF35GS1</b>
Flow .....	3.0 GPM	(11.4 L/M)	3.5 GPM	(13.2 L/M)
Max. Discharge Pressure	<b>3500 PSI</b>	<b>(245 BAR)</b>	<b>3500 PSI</b>	<b>(245 BAR)</b>
Max. RPM.....	<b>3200 RPM</b>	<b>(3200 RPM)</b>	<b>3200 RPM</b>	<b>(3200 RPM)</b>
Stroke .....	0.173"	(4.4 mm)	0.197"	(5.0 mm)
<b>Models - Gas</b>				
		<b>4SF40GS1</b>		<b>4SF45GS1,GS118</b>
Flow .....	4.0 GPM	(15 L/M)	4.5 GPM	(17 L/M)
Max. Discharge Pressure	<b>3500 PSI</b>	<b>(245 BAR)</b>	3000 PSI	(210 BAR)
Max. RPM.....	<b>3200 RPM</b>	<b>(3200 RPM)</b>	<b>3200 RPM</b>	<b>(3200 RPM)</b>
Stroke .....	0.224"	(5.7 mm)	0.256"	(6.5 mm)
<b>Models - Gas</b>				
				<b>4SF50GS1</b>
Flow .....			5.0 GPM	(19 L/M)
Max. Discharge Pressure .....			<b>3000 PSI</b>	<b>(210 BAR)</b>
Max. RPM.....			<b>3200 RPM</b>	<b>(3200 RPM)</b>
Stroke .....			0.276"	(7.0 mm)

ELS = **Electric 1-1/8"** hollow shaft with bolt mount  
 GS1 = **Gas 1"** hollow shaft with bolt and adapter mount  
 GS118 = **Gas 1-1/8"** hollow shaft with bolt and adapter mount  
 S = Sleeved piston rod

• For **MAXIMUM SUCTION** capability, Regulating Unloader should be remounted on discharge manifold, OPPOSITE from inlet port.

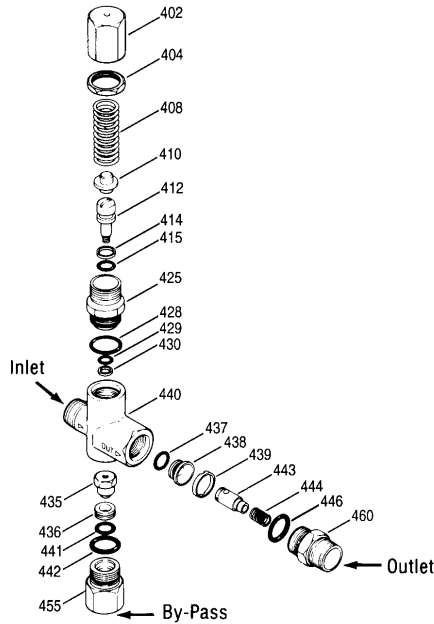
Refer to pump Service Manual for repair procedures and additional technical information.

*"Customer confidence is our greatest asset"*



# UNLOADER SPECIFICATIONS

Model 7600S	U.S. Measure	Metric Measure
GPM .....	2.0-5.0 GPM	(7.6-19 L/M)
PSI (7600S).....	700-3500 PSI	(50-245 BAR)
Inlet Port - Rear.....	3/8" NPTM	(3/8" NPTM)
Discharge Port - Front.....	3/8" NPTM	(3/8" NPTM)
By-Pass Port - Bottom.....	3/8" NPTF	(3/8" NPTF)
Weight .....	21.4 oz.	(0.65 kg)
Dimensions.....	3.25 x 1.0 x 4.81"	(76 x 25 x 108mm)



ITEM	PN	MATL	DESCRIPTION	QTY.
402	45197	BB	Cap, Hex Adjusting	1
404	45201	BB	Nut, Lock (M25x1)	1
408	45198	ZP	Spring, Pressure	1
410	45199	BB	Retainer, Spring	1
412	45694	S	Stem, Piston (M5)	1
414	20184	PTFE	Back-up-Ring, Piston Stem	1
415	14190	NBR	O-Ring, Piston Stem - 70D	1
425	45200	BB	Retainer, Piston	1
428	26133	NBR	O-Ring, Piston Guide - 80D	1
429	14759	NBR	O-Ring, Body	1
430	107675	PTFE	Back-up-Ring, Body	1
435	45716	S	Valve and Ball Assembly (M5)	1
436	107680	S	Seat	1
437	26127	NBR	O-Ring, Seat	1
438	45206	S	Seat, C-Valve	1
439	45205	BB	Collar	1
440	—	BB	Body	1
441	13963	NBR	O-Ring, Seat - 70D	1
442	26133	NBR	O-Ring, Adapter - 80D	1
443	35203	BB	Valve, Check w/O-Ring	1
444	45924	S	Spring - 85G	1
446	26133	NBR	O-Ring, Discharge Fitting - 80D	1
455	45695	BB	Fitting, By-Pass (3/8" NPT)	1
460	107681	BB	Fitting, Discharge (3/8" NPT)	1
465	7091	BB	By-Pass Hose (1/2x24") 160°F	1
466	7091.41	BB	By-Pass Hose w/Thermo Valve	1
468	32098	NBR	Kit, O-Ring (Incls: 414, 415, 428, 429, 430, 441, 442, 437, 446)	1
485	7141	BB	Valve, Thermo 145°F	1

*Italics are optional items.*  
MATERIAL CODES (Not Part of Part Number): BB=Brass NBR=Medium Nitrile (Buna-N)  
PTFE=Pure Teflon® S=304SS STZP=Steel/Zinc Plated ZP=Zinc Plated

## OPERATION

A Regulating Unloader comes with each SF pump to provide system pressure regulation and pump protection.

For **MAXIMUM SUCTION** capability, Regulating Unloader should be remounted on discharge manifold, **OPPOSITE** from pump inlet port.

By-pass for the regulating unloader may drain to the ground, drain to a reservoir or connect to the special 3/8" by-pass port on the underside of the inlet manifold. A 3/8" flexible hose is recommended.

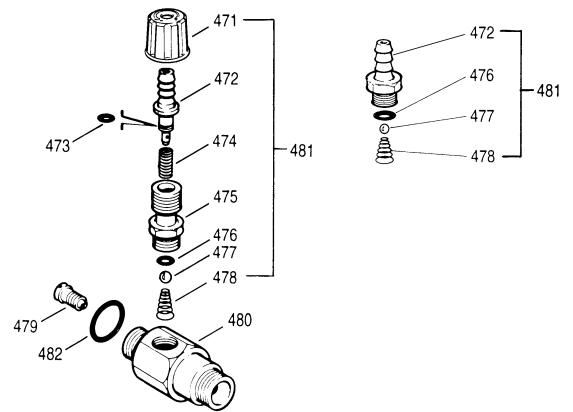
**BY-PASS HOSE ASSEMBLY** is designed for cold water or ambient temperature operation. **DO NOT EXCEED 6 MINUTES** in **BY-PASS** operation. Excessive temperatures will cause premature wear or damage to the pump and **VOID THE WARRANTY**.

Standard units may return the by-pass back to the inlet of the pump by installing a *Thermo Valve* in the by-pass line using 7091.41.

If unit is **INFREQUENTLY USED OR PERIODICALLY STORED**, seals may become dry. **UNDER SUCTION FEED**, system must be **PURGED BEFORE**

# CHEMICAL INJECTOR SPECIFICATIONS

Model	Standard 7194	Optional 7193
Flow .....	4-5 GPM	3-4 GPM
Nozzle Orifice .....	2.3mm	2.1mm
Hose Barb .....	1/4"	1/4"
Inlet Port .....	M18 x 1.0	M18 x 1.0
Discharge Port.....	3/8" NPTM	3/8" NPTM
Weight .....	6.3 oz.	6.3 oz.
Dimensions.....	2 x 1 x 3"	2 x 1 x 3"



ITEM	PN	MATL	DESCRIPTION	MODEL USED	QTY.
471	33949	NY	Handle, Adjustment	All Models	1
472	32941	BB	Barb, Adjustable	All Models	1
	33505	BB	Barb, Fixed	All Models	1
473	—	NBR	O-Ring, Hose Barb	All Models	1
474	33500	S	Spring	All Models	1
475	33946	BB	Retainer, Ball Seat	All Models	1
476	33504	FPM	O-Ring, Retainer	All Models	1
477	34620	SS	Ball	All Models	1
478	33501	SS	Spring, Tapered	All Models	1
479	32374	S	Orifice, Injector (2.3 mm) Standard	7194	1
	32373	S	Orifice, Injector (2.1mm)	7193	1
480	—	BB	Body	All Models	1
481	33481	BBNY	Barb Assembly, Adjustable (Incls: 471, 472, 473, 474, 475, 476, 477, 478)	All Models	1
	33480	BB	Barb Assembly, Fixed (Incls: 472, 476, 477, 478)	All Models	1
482	26133	NBR	O-Ring, Body - 80D	All Models	1

*Italics are optional items.*  
MATERIAL CODES (Not Part of Part Number): BB=Brass FPM=Fluorocarbon (Viton®)  
NBR=Medium Nitrile (Buna-N) NY=Nylon S=304SS SS=316SS

Desired Pump Flow	Injector Orifice Size	SF Injector Model	Lo-Pressure Nozzle	Max. Chem. Draw	Hi-Press Nozzle
			(Maximum injecting pressure less hose friction loss)	(0 PSI) (Downstream)	"Deduction" (Press. drop across Inj.)
3.5	2.1 mm	7193	300 PSI	50 oz/min	200 PSI
3.5	2.3 mm	7194	185 PSI	56 oz/min	175 PSI
4.0	2.1 mm	7193	375 PSI	54 oz/min	250 PSI
4.0	2.3 mm	7194	225 PSI	50 oz/min	225 PSI
4.5	2.1 mm	7193	485 PSI	54 oz/min	325 PSI
4.5	2.3 mm	7194	260 PSI	50 oz/min	285 PSI
5.0	2.3 mm	7194	300 PSI	50 oz/min	350 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. **Deduct hose friction loss from above low PSI Nozzle. Contact CAT PUMPS for assistance with other options.** Refer to Hose Friction Loss Chart in the Service Manual for pressure loss with longer hose.

**OPERATION** (system liquid must flow through the pump without discharge restriction) to assure full system pressure is reached.

An optional, **specialty ported chemical injector** may be mounted directly to the discharge of the unloader. Remove o-ring, check valve and spring from discharge fitting of unloader; insert into injector and thread into unloader discharge port. **Discard o-ring and discharge fitting.** Refer to the performance chart to determine the orifice size best suited to the system flow. **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 optimum performance when using a chemical injector, use a **single wire braid hose** on the discharge line. Too flexible a hose will prevent the unloader from receiving the full pressure signal to activate the by-pass mode.

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.

# MOTOR SPECIFICATIONS

## Model 8041

Horsepower.....	<b>5.0 H.P.</b>
Frame Size.....	184 TC TEFC
Phase.....	<b>Single</b>
Max. Volts.....	230 V
Amps.....	26.0 AMPS.
RPM.....	1725 RPM
Motor Only Weight....	90.1 lbs.
Shipping Weight.....	97.1 lbs.
Capacitor Start.....	Yes
Service Factor.....	1.0

## Model 8043

Horsepower.....	<b>7.5 H.P.</b>
Frame Size.....	215 TCZ TEFC w/184C FACE
Phase.....	<b>Single</b>
Max. Volts.....	208-230 V
Amps.....	34/31 AMPS.
RPM.....	1725 RPM
Motor Only Weight....	133.4 lbs.
Shipping Weight.....	144.5 lbs.
Capacitor Start.....	Yes
Service Factor.....	1.0

## Model 8046

Horsepower.....	<b>10.0 H.P.</b>
Frame Size.....	215 TCZ TEFC w/184C FACE
Phase.....	<b>Three</b>
Max. Volts.....	208-230/460 V
Amps.....	28/26/13 AMPS.
RPM.....	1725 RPM
Motor Only Weight....	140.1 lbs.
Shipping Weight.....	151.1 lbs.
Service Factor.....	1.15

## Model 8042

Horsepower.....	<b>5.0 H.P.</b>
Frame Size.....	184 TC TEFC
Phase.....	<b>Three</b>
Max. Volts.....	208-230/460 V
Amps.....	15/13.2/6.6 AMPS.
RPM.....	1725 RPM
Motor Only Weight....	84.0 lbs.
Shipping Weight.....	95.0 lbs.
Service Factor.....	1.15

## Model 8044

Horsepower.....	<b>7.5 H.P.</b>
Frame Size.....	215 TCZ TEFC W/184C FACE
Phase.....	<b>Three</b>
Max. Volts.....	208-230/460 V
Amps.....	21.5/20/10 AMPS.
RPM.....	1725 RPM
Motor Only Weight....	110.2 lbs.
Shipping Weight.....	121.3 lbs.
Service Factor.....	1.15

## Common Motor Specifications

Thermal Overload-Manual Reset.....	No
Cycle.....	60 HZ
Max. Operating Temp.....	104°F
Shaft Diameter.....	1-1/8"
U.L. Reference.....	E-46145
CSA Reference No.....	LR-2262

- ★ ★ Before mounting pump on motor, apply P.N. 6106 Antiseize Lubricant to pump shaft.
- ★ ★ Refer to Tech Bulletin #055 for instructions on removing pump from gas engine or electric motor.

For warranty consideration contact CAT PUMPS for the local Authorized Baldor Service Center or call direct to Baldor 501\*646\*4711 for assistance. 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

MODEL	FLOW		PRESSURE					PUMP RPM
			PSI 1500	PSI 2000	PSI 2500	PSI 3000	PSI 3500	
	U.S. GPM	Metric L/M	BAR 105	BAR 140	BAR 175	BAR 210	BAR 245	
4SF32ELS	3.2	12.1	3.3	4.4	5.5	6.6	7.7	1725
4SF40ELS	4.0	15	4.1	5.5	6.9	8.3	9.5	1725
4SF45ELS	4.5	17	4.6	6.2	7.7	9.3	N/A	1725
4SF50ELS	5.0	19	5.1	6.9	8.6	10.3	N/A	1725

## DETERMINING THE REQUIRED H.P.

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

## 4SF DIMENSIONAL

	A	B	C	D	E	F	G	H	I	J	K	L	M
<b>4SF30GS1, 4SF35GS1, 4SF40GS1, 4SF45GS1, 4SF45GS118, 4SF50GS1</b>	7.44(189)	4.92(125)	11.06(281)	11.85(301)	8.27(210)	4.01(102)	12.28(312)	8.31(211)	8.66(220)	9.44(210)	3.43(87)	6.18(157)	2.68(68)
<b>4SF32ELS, 4SF40ELS, 4SF45ELS, 4SF50ELS</b>	7.44(189)	4.92(125)	11.06(281)	—	8.27(210)	4.01(102)	12.28(312)	8.31(211)	8.66(220)	—	3.43(87)	6.18(157)	2.68(68)

	N	O	P	P2	Q	R	S	T	U	V	W
<b>8041</b>	13.94(354)	12.81(325)	11.56(294)	—	22.60(574)	7.5(190)	.41 DIA(10)	3.5(89)	5.5(140)	5.88(149)	—
<b>8042</b>	13.94(354)	12.81(325)	—	9.00(229)	22.60(574)	7.5(190)	.41 DIA(10)	3.5(89)	5.5(140)	5.88(149)	—
<b>8043</b>	16.75(425)	13.40(340)	10.06(269)	—	25.41(645)	8.5(216)	.41 DIA(10)	4.25(108)	5.5(140)	—	8.75(222)
<b>8044</b>	15.56(395)	13.40(340)	—	12.44(316)	24.22(615)	8.5(216)	.41 DIA(10)	4.25(108)	5.5(140)	—	8.75(222)
<b>8046</b>	15.56(395)	13.40(340)	—	12.44(316)	24.22(615)	8.5(216)	.41 DIA(10)	4.25(108)	5.5(140)	—	8.75(222)

Products described hereon are covered by one or more of the following U.S. patents 3558244, 3652188, 3809508, 3920356, 3930756 and 5035580

## World Headquarters

### CAT PUMPS

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

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

e-mail: techsupport@catpumps.com

www.catpumps.com

## International Inquiries

FAX (763) 785-4329

e-mail: intl@catpumps.com



The Pumps with Nine Lives

## 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 32-3-450.7150 — Fax 32-3-450.7151

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