

# DATA SHEET

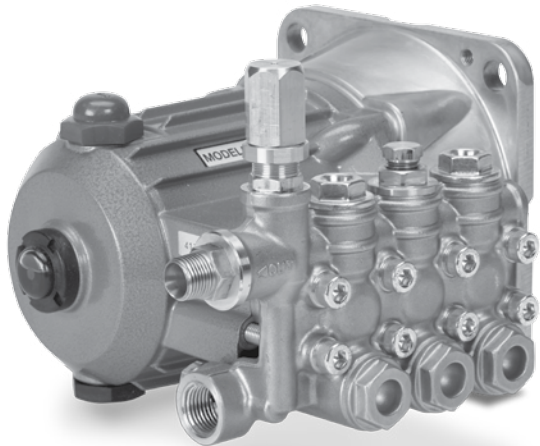
## DIRECT DRIVE PLUNGER PUMPS



### Brass Electric Models:

## 5SP30ELR, 5SP35ELR, 5SP40ELR

See page 4 for complete pump model number selection.



Model 5SP35ELR

### FEATURES

- Fits standard 182/184TC face motors.
- Specially formulated Hi-Pressure Seals and concentric solid ceramic plungers assure true wear surface and extended seal life.
- Tapped 1/4" NPT(F) Valve Plug for pressure gauge.
- Compact, direct drive unit for maximum portability.
- Integral pressure regulator or unloader with built-in by-pass standard on all units to assure system pressure control and pump protection.
- Includes crankcase oil.

### COMMON SPECIFICATIONS

	U.S.	Metric
Pump RPM	1750 rpm	1750 rpm
Inlet Pressure Range	Flooded to 60 psi	Flooded to 4.1 bar
Standard Liquid Temperature	140° F	60° C
Crankcase Capacity	13.5 oz.	0.4 l
Inlet Port (1)	1/2" NPT(F)	1/2" NPT(F)
Accessory Port (3)	1/4" NPT(F)	1/4" NPT(F)
Discharge Ports (1)	3/8" NPT(M)	3/8" NPT(M)
Shaft Diameter	1-1/8"	28.5 mm
Weight	13.2 lbs.	6.0 kg
Dimensions	9.98 x 9.19 x 7.12"	253.5 x 233.5 x 181 mm

Above 130°F call Cat Pumps for inlet conditions and elastomer recommendations.

### SPECIFICATIONS

	U.S. Measure	Metric Measure
<b>5SP30ELR</b>		
Flow	3.0 gpm	11.4 lpm
Pressure Range	100 - 3000 psi	6.9 - 207 bar
Bore	0.630"	16 mm
Stroke	0.433"	11 mm
<b>5SP35ELR</b>		
Flow	3.5 gpm	13.2 lpm
Pressure Range	100 - 2500 psi	6.9 - 172 bar
Bore	0.708"	18 mm
Stroke	0.433"	11 mm
<b>5SP40ELR</b>		
Flow	4.0 gpm	15.1 lpm
Pressure Range	100 - 2000 psi	6.9 - 138 bar
Bore	0.787"	20 mm
Stroke	0.397"	10.1 mm

### ELECTRIC HORSEPOWER REQUIREMENTS

MODELS	FLOW		PRESSURE			RPM
			psi 2000	psi 2500	psi 3000	
	gpm	lpm	bar 138	bar 172	bar 207	
5SP30ELR	3.0	11.4	4.1	5.1	6.2	1750
5SP35ELR	3.5	13.2	4.8	6.0	NA	1750
5SP40ELR	4.0	15.1	5.5	NA	NA	1750

$$\text{DETERMINING THE PUMP R.P.M.} \quad \frac{\text{Rated gpm}}{\text{Rated rpm}} = \frac{\text{"Desired" gpm}}{\text{"Desired" rpm}}$$

$$\text{DETERMINING THE REQUIRED H.P.} \quad \text{Hp (Electric Brake)} = \frac{\text{gpm} \times \text{psi}}{1460}$$

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

## PARTS LIST

ITEM	P/N	MATL	P/N	MATL	P/N	MATL	DESCRIPTION	QTY
	<b>5SP30ELR</b>		<b>5SP35ELR</b>		<b>5SP40ELR</b>			
5	127285	STCP R	127285	STCP R	127285	STCP R	Screw, HH Sems (M8x25)	4
8	134123	AL	134123	AL	134123	AL	Cover, Bearing	1
10	14043	NBR	14043	NBR	14043	NBR	O-Ring, Bearing Cover - 70D	1
11	134797	NBR	134797	NBR	134797	NBR	Seal, Oil, Crankshaft	1
15	134331	STL	134331	STL	134331	STL	Bearing, Ball - Inner	1
20	49364	TNM	49364	TNM	49364	TNM	Rod, Connecting	3
24	549608	LDPE	549608	LDPE	549608	LDPE	Plug, Oil Cap	1
25	<b>134345</b>	CM	<b>134345</b>	CM	—	—	Crankshaft (11 mm)	1
—	—	—	—	—	<b>134329</b>	CM	Crankshaft (10.1 mm)	1
27	49363	STL	49363	STL	49363	STL	Bearing, Ball - Outer	1
31	549726	—	549726	—	549726	—	Cap, Vented w/O-Ring (rain cap) (Not Shown)	1
32	547961	RTP	547961	RTP	547961	RTP	Cap, Oil Filler w/O-Ring	1
33	14179	NBR	14179	NBR	14179	NBR	O-Ring, Filler Cap -70D	1
37	92241	—	92241	—	92241	—	Gauge, Oil Bubble w/Gasket -80D	1
38	44428	NBR	44428	NBR	44428	NBR	Gasket, Flat, Oil Gauge - 80D	1
48	44842	NY	44842	NY	44842	NY	Plug, Drain	1
49	14179	NBR	14179	NBR	14179	NBR	O-Ring, Drain Plug - 70D	1
53	49352	AL	49352	AL	49352	AL	Crankcase	1
64	49366	CM	49366	CM	49366	CM	Pin, Crosshead	3
65	49368	BB	49368	BB	49368	BB	Rod, Plunger	3
70	47215	NBR	47215	NBR	47215	NBR	Seal, Oil Crankcase	3
75	49370	S	49370	S	49370	S	Slinger, Barrier	3
90	<b>134351</b>	CC	—	—	—	—	Plunger (M16 x 30)	3
—	—	—	<b>134346</b>	CC	—	—	Plunger (M18 x 33)	3
—	—	—	—	—	<b>134333</b>	CC	Plunger (M20 x 33)	3
98	46730	NBR	46730	NBR	46730	NBR	Washer, Seal - 90D	3
99	49369	S	49369	S	49369	S	Retainer, Plunger	3
100	49371	NY	49371	NY	49371	NY	Retainer, Seal	3
106	<b>48222</b>	NBR	<b>43243</b>	NBR	<b>43305</b>	NBR	Seal, LPS w/S-Spg	3
120	<b>134352</b>	BB	<b>134347</b>	BB	<b>134334</b>	BB	Case, Seal	3
121	<b>13977</b>	NBR	<b>13977</b>	NBR	<b>13978</b>	NBR	O-Ring, Seal Case -70D	3
125	<b>547157</b>	SNG	—	—	—	—	Seal, HPS	3
—	—	—	<b>43245</b>	SNG	—	—	Seal, HPS W/S	3
—	—	—	—	—	<b>43307</b>	SNG	Seal, HPS W/S	3
160	14181	NBR	14181	NBR	14181	NBR	O-Ring, Valve Seat, Inlet - 70D	3
161	45790	S	45790	S	45790	S	Seat, Inlet	3
163	17428	NBR	17428	NBR	17428	NBR	O-Ring, Seat, Discharge - 80D	3
164	547077	S	547077	S	547077	S	Seat, Discharge	3
165	43723	S	43723	S	43723	S	Valve, Inlet	3
166	547098	S	547098	S	547098	S	Valve, Discharge	3
167	43750	S	43750	S	43750	S	Spring, Inlet	3
168	46583	NY	46583	NY	46583	NY	Retainer, Spring, Inlet	3
169	49764	PVDF	49764	PVDF	49764	PVDF	Retainer, Spring, Discharge	3
170	46865	S	46865	S	46865	S	Spring, Discharge	3
171	17615	NBR	17615	NBR	17615	NBR	O-Ring, Valve Plug, Inlet - 80D	3
172	142807	NBR	142807	NBR	142807	NBR	O-Ring, Valve Plug, Discharge - 90D	3
173	46756	BB	46756	BB	46756	BB	Plug, Valve, Inlet	3
174	547104	BB	547104	BB	547104	BB	Plug, Valve w/O-Ring	2
175	101556	BB	101556	BB	101556	BB	Plug	2
180	134670	BB	134670	BB	134670	BB	Plug, Valve w/ 1/4"NPT(F) threaded port, w/o-ring	1
185	<b>134128</b>	BB	<b>134127</b>	BB	<b>134126</b>	BB	Head, Manifold w/integral unloader	1
188	134340	STCP R	134340	STCP R	134340	STCP R	Screw, HSH (M6 x 55)	8
252	126761	STCP R	126761	STCP R	126761	STCP R	Screw, Set (M5 x 8)	1
253	134760	STL	134760	STL	134760	STL	Key (1/4" x 1/4" x 45)	1
255	134928	STZP R	134928	STZP R	134928	STZP R	Assy, Bolt Mount (Includes: 252, 253)	1
300	<b>76968</b>	NBR	<b>76503</b>	NBR	<b>33628</b>	NBR	Kit, Seal (Incls: 98, 106, 121, 125)	1
310	76302	NBR	76302	NBR	76302	NBR	Kit, Valve, Inlet (Incls: 160, 161, 165, 167, 168, 171)	1
—	76303	NBR	76303	NBR	76303	NBR	Kit, Valve, Discharge (Incls: 163, 164, 166, 169, 170, 172)	1
400	NA	—	NA	—	NA	—	Integral Unloader (See individual parts list)	1
469	<b>134348</b>	BB	<b>134348</b>	BB	—	—	Injector, Chemical (2.0 orifice)	1
—	—	—	—	—	<b>134338</b>	BB	Injector, Chemical (2.1 orifice)	1

**Bold part numbers are unique to a particular pump model. Italics are optional items.**

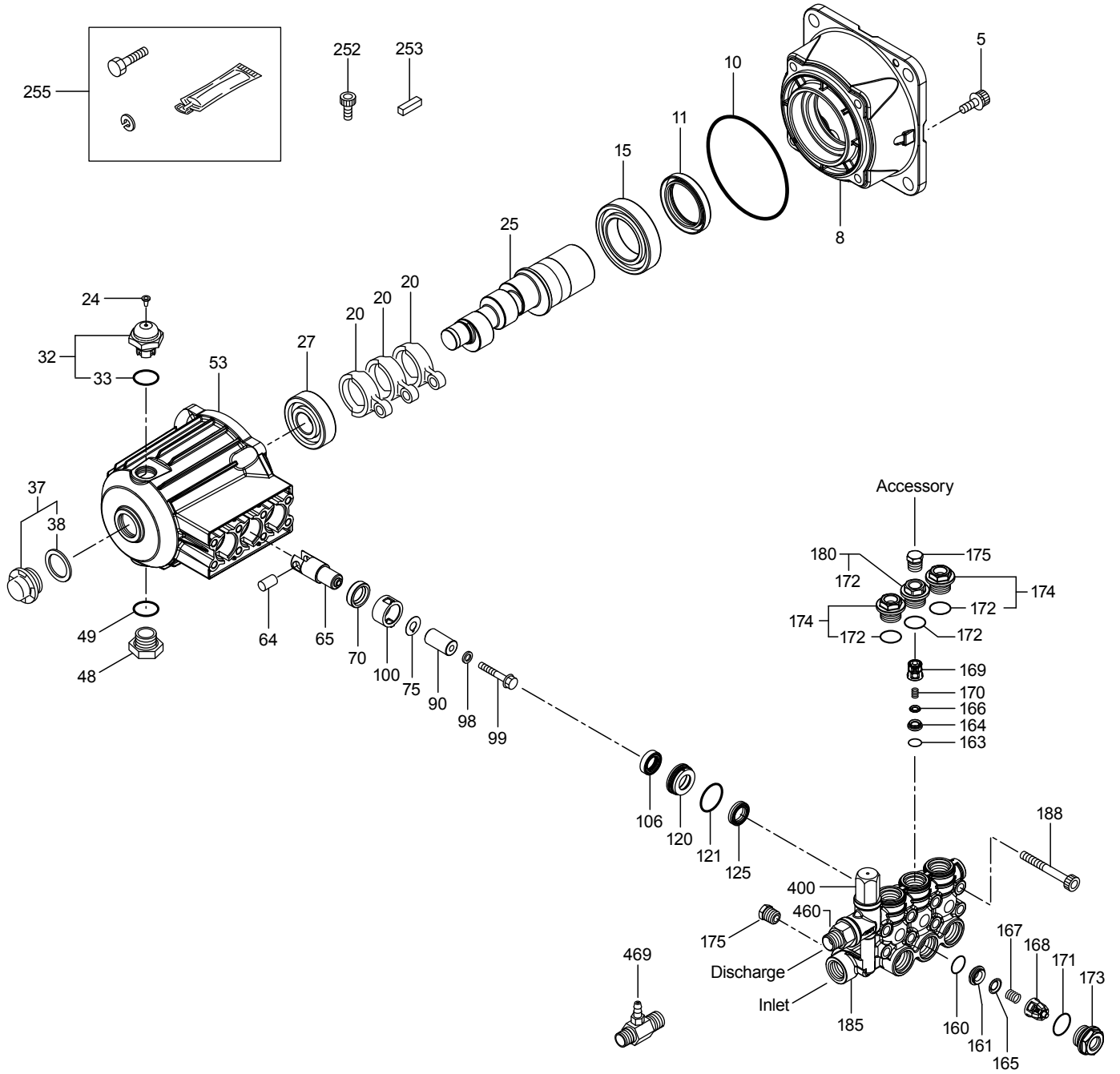
[ ] Date of latest production change. R Components comply with RoHS Directive.

See Tech Bulletins 002, 024, 036, 043, 055, 074 and 083 for additional information.

MATERIAL CODES (Not Part of Part Number): AL=Aluminum BB=Brass CC=Ceramic CM=Chrome-moly D=Acetal LDPE=Low Density Polyethylene  
 NBR=Medium Nitrile (Buna-N) NY=Nylon PVDF=Polyvinylidene Fluoride RTP=Reinforced Composite S=304SS SNG=Special Blend (Buna) 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.**

# EXPLODED VIEW



# INTEGRAL REGULATOR/UNLOADER

SPECIFICATIONS	U.S.	Metric
Flow	4.0 gpm	15.1 lpm
PSI Range	100 - 3000 psi	6.9 - 207 bar
Inlet Port	1/2" NPT(F)	1/2" NPT(F)
Discharge Port	3/8" NPT(M)	3/8" NPT(M)

## PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
402	547798	BB	Cap, Adjusting	1
403	548671	BB	Nut, Locking (M18x1)	1
404	548675	STL	Screw, Set (M4x4)	1
408	32094	STZP R	Spring, Pressure	1
410	549352	STCPR R	Retainer, Spring	1
412	45694	S	Stem, Piston	1
414	20184	PTFE	Back-up-Ring, Piston Stem	1
415	14190	NBR	O-Ring, Piston Stem - 70D	1
418	—	—	Assy, Piston (Included In Repair Kit)	1
423	46249	BB	Retainer, Valve	1
424	13966	NBR	O-Ring, Valve Retainer (Outer) - 70D	1
425	547799	BB	Retainer, Piston	1
426	46250	S	Washer	1
428	26133	NBR	O-Ring, Piston Retainer - 80D	1
429	17399	NBR	O-Ring, Valve Retainer (Inner) - 70D	1
435	547800	S	Valve	1
436	<b>49664</b>	S	Seat (5SP30ELR, 5SP35ELR)	1
	<b>548075</b>	S	Seat (5SP40ELR)	1
437	13963	NBR	O-Ring, Seat - 70D	1
443	134009	D	Valve, Check	1
444	117275	S	Spring	1
446	26133	NBR	O-Ring, Body - 80D	1
460	134757	BB	Fitting, Discharge [3/8" NPT(M)]	1
468	76499	NBR	Kit, O-Ring (Incls: 414,415,424,428,429,437,446)	1
469	<b>134348</b>	BB	Injector, Chemical Fixed (2.0 mm)	1
	<b>134338</b>	BB	Injector, Chemical Fixed (2.1 mm) (5SP40ELU)	1
470	<b>76179</b>	NBR	Kit, Repair (Incls: 418,425,428,436,437)	1
	<b>76505</b>	NBR	Kit, Repair (Incls: 418,425,428,436,437) (5SP40ELR)	1
471	76506	NBR	*Kit, Check Valve (Incls: 443,444,446)	1

\*76506 Kit changes regulator to unloader

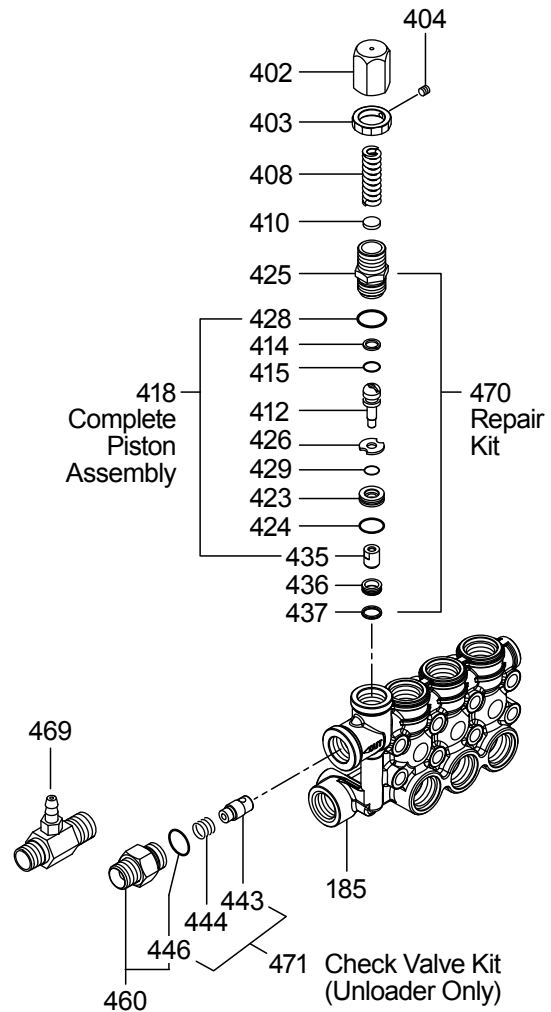
**Bold part numbers are unique to a particular pump model. Italics are optional items.**

R Components comply with RoHS Directive.

MATERIAL CODES (Not Part of Part Number): BB=Brass D=Acetal

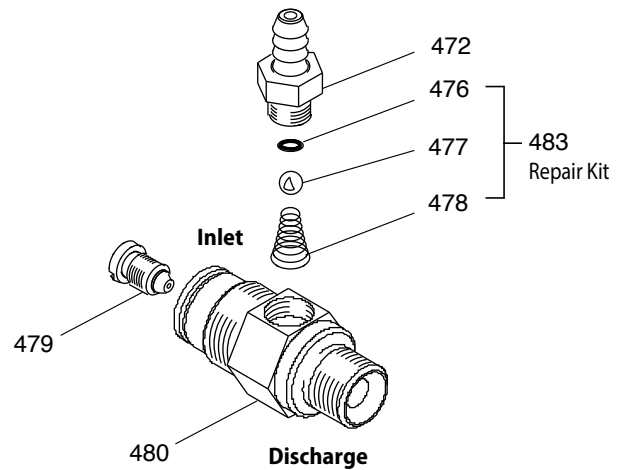
NBR=Medium Nitrile (Buna-N) NY=Nylon PTFE=Pure Polytetrafluoroethylene

S=304SS STCP=Steel/Chrome Plated STL=Steel STZP=Steel/Zinc Plated



## MODELS 134348, 134338 FIXED CHEMICAL INJECTOR

SPECIFICATIONS	U.S.	Metric
GPM	3.1 gpm	11.7 lpm
Nozzle Orifice (134348)	2.0 mm	2.0 mm
Nozzle Orifice (134338)	2.1 mm	2.1 mm
Hose Barb	1/4"	1/4"
Inlet Port	M18x1.0	M18x1.0
Discharge Port	3/8" NPT(M)	3/8" NPT(M)
Weight	5.3 oz.	0.15 kg
Dimensions	2 x 1 x 1.75	52 x 25 x 45 mm



### PARTS LIST

ITEM	PN	MATL	DESCRIPTION	QTY
472	—	BB	Barb	1
476	—	NBR	O-Ring, Barb - 70D	1
477	—	S	Ball	1
478	—	S	Swg	1
479	—	S	Orifice	1
480	—	BB	Body	1
483	—	NBR	Kit, Repair (Includes: 476, 477, 478)	1

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

### REGULATING DEVICE

An integral regulator or unloader with built-in by-pass is part of the discharge manifold to provide system pressure regulation and pump protection. (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 assure 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 SSP Service Manual for start-up, servicing of seals and valves, torque requirements and diagnosis and maintenance chart.

### CHEMICAL INJECTOR PERFORMANCE CHART Optional Special Ported Chemical Injector for Unloader Mounting

Orifice Size	Flow	Maximum Injecting Pressure	Minimum Chemical Draw	Pressure Drop Across Injector at System Pressure
2.0 mm	3.0 gpm	250 psi	52 oz/min	200 psi
2.0 mm	3.5 gpm	350 psi	52 oz/min	300 psi
2.1 mm	4.0 gpm	375 psi	52 oz/min	250 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. 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.

## ELECTRIC MOTOR SPECIFICATIONS

### Model 999839

Horsepower	3.0
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	14.7-13.6/6.8
RPM	1750
Weight	99 lbs.
Phase	Single
Frame Size	184TC
Service Factor	1.15

### Model 999809

Horsepower	3.0
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	8.4-7.6/3.8
RPM	1750
Weight	100 lbs.
Phase	Three
Frame Size	182/184TC TEFC
Service Factor	1.15**

\*\* Service Factor at 208V = 1.00

### Model 997634

Horsepower	5.0
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	22.5-21.4/10.7
RPM	1750
Weight	113 lbs.
Phase	Single
Frame Size	184TC
Service Factor	1.15**

\*\* Service Factor at 208V = 1.00

### Model 996543

Horsepower	5.0
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	14.3-12.9/6.45
RPM	1750
Weight	104 lbs.
Phase	Three
Frame Size	182/184TC TEFC
Service Factor	1.25**

\*\* Service Factor at 208V = 1.15

### Model 998517

Horsepower	7.5
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	32.0-30.6/15.3
RPM	1750
Weight	180 lbs.
Phase	Single
Frame Size	213/215TCZ*
Service Factor	1.15**

\* Frame size - 213/215TC w/ 184C Face

\*\* Service Factor at 208V = 1.00

### Model 999800

Horsepower	7.5
Shaft Diameter	1-1/8"
Maximum Volts	208-230/460
Full Load Amps	19.9-18.4/9.18
RPM	1750
Weight	168 lbs.
Phase	Three
Frame Size	213/215TCZ*
Service Factor	1.25**

\* Frame size - 213/215TC w/ 184C Face

\*\* Service Factor at 208V = 1.15

### Common Motor Specifications

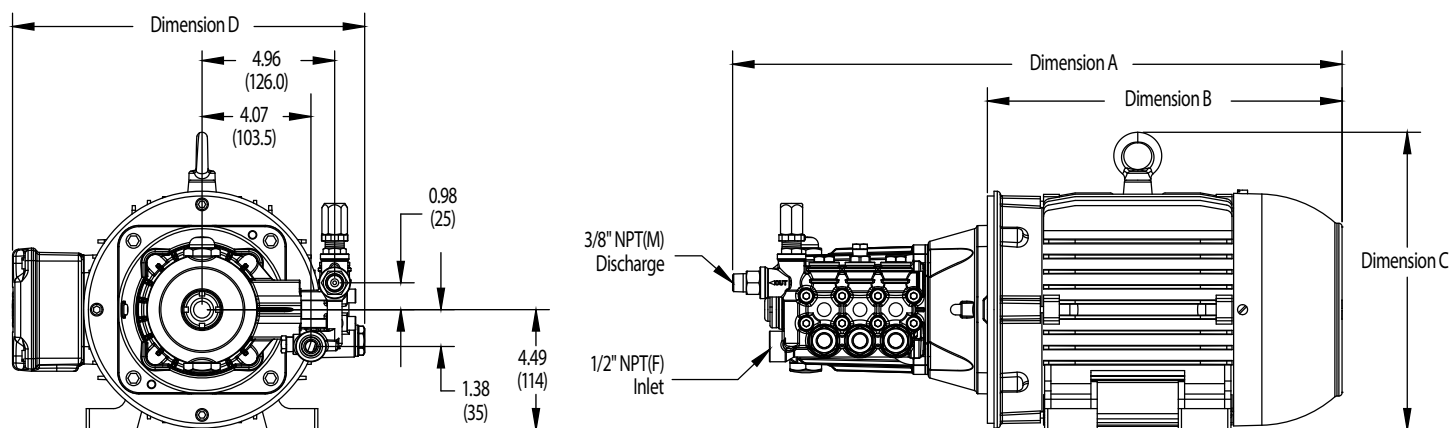
Max. Ambient Temperature	104° F
Hertz	60 Hz
Capacitor Start	Yes

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 055 for instructions on removing pump from electric motor.

## MOTOR DIMENSIONS



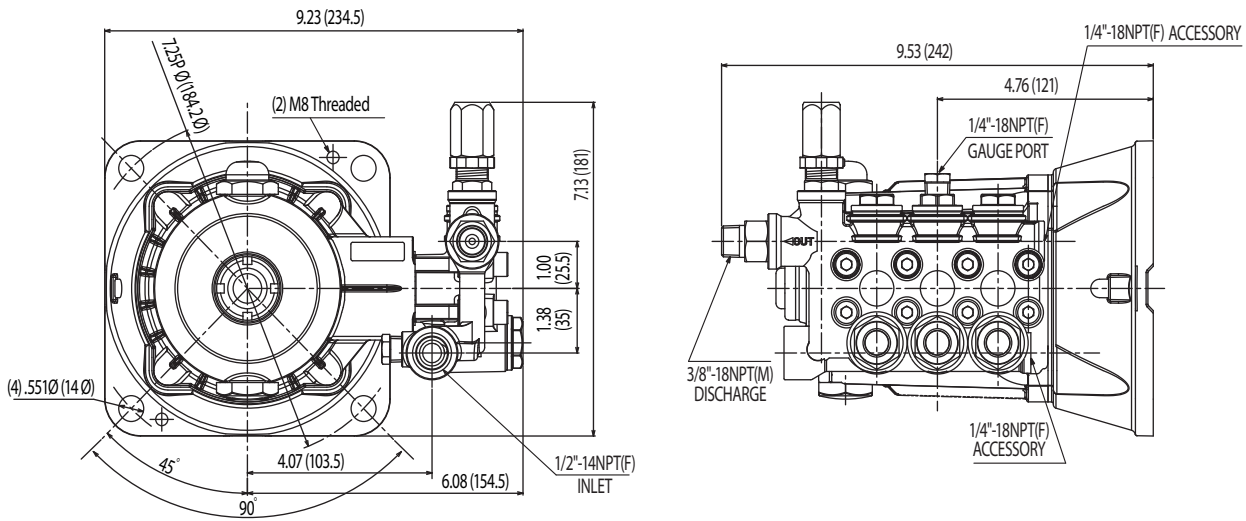
NOTE: Accessory Ports are 1/4" NPT(F)

Model 996543 Shown

MODEL	999809	999839	997634	996543	999800	998517
Dimension A	22.79	23.79	22.79	22.79	25.91	26.35
Dimension B	13.26	14.26	13.26	13.26	16.38	16.82
Dimension C	11.11	9.15	11.11	11.11	12.61	9.15
Dimension D	13.59	12.20	15.80	13.17	14.73	14.60

## ELECTRIC HORSEPOWER REQUIREMENTS

FLOW		PRESSURE			PUMP RPM
		psi 2000	psi 2500	psi 3000	
gpm	lpm	bar 138	bar 172	bar 207	
3.0	11.4	4.1	5.1	6.2	1750
3.5	13.2	4.8	6.0	6.2	1750
4.0	15.1	5.5	N/A	N/A	1750



Base Models 5SP30ELR, 5SP35ELR, 5SP40ELR

### 5SP Pump Series Selection Chart

Pump Series								Pump Flow/RPM	
5	S	P						gpm	rpm
			3	0				3.0	1750
			3	5				3.5	1750
			4	0				4.0	1750
					EL			Electric, 1-1/8" Hollow Shaft	
						R		Regulating Device = Regulator	
						U		Regulating Device = Unloader	
							I	Fixed Chemical Injector	
							F	Inlet Garden Hose Fitting	

**Examples:**

5SP30ELR = 3.0 gpm (1750 rpm), Regulator, Standard Inlet - 1/2" NPT(F)  
 5SP35EUIF = 3.5 gpm (1750 rpm), Unloader, Chemical Injector, Garden Hose Inlet Fitting

**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.

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/cautions-warnings](http://www.catpumps.com/cautions-warnings) or can be requested directly from Cat Pumps.

**WARRANTY**

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



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