

ORIGINAL



RETROFIT

All the Parts You Need... Before You Need Them!

PARTS REFERENCE GUIDE

FOR
FORMULA X[®]
Wet Well Mounted Pump Stations



Your Helpful Parts Resource

For S&L Product Codes: FX, SC, and 15
(First Two Numbers of Station Serial Number)

Smith & Loveless, Inc.
www.smithandloveless.com

ENGINEERING DATA



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FORMULA X® Wet Well Mounted Pump Stations

S&L Product codes: FX , DX (First Two Letters of Station Serial Number)
(15-04_ _ _ for Modified FX Stations)

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Wet Well Mounted Pump Stations

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MECHANICAL, PIPING, & PARTS

PUMP PARTS

Includes: shaft diameter, impeller, maximum diameter, Suction Side - Diameter Eye, front head, pump stand, volute, gaskets, motor adapter, impeller bolt, impeller washer.

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ELECTRICAL COMPONENTS

ALARM LIGHT - RED

PART DESCRIPTION	PART #
Alarm Light – Complete Assembly - Red, 120V	28B580B
Body Fixture – Alarm Light	5L76
Adapter – Alarm Light	5L77
Globe – Alarm Light	5L78B
Guard – Alarm Light	5L79
Bulb – 12 Volt	4L120
Bulb – 115 Volt	4L95A

AUXILIARY CONTACTS

PART DESCRIPTION	PART #
Auxiliary Contacts one (1) NO (Normally Open)	4L560A
Auxiliary Contacts one (1) NC (Normally Closed)	4L560B
Auxiliary Contacts one (1) NO (Normally Open) & one (1) NC (Normally Closed)	4L560C
Auxiliary Contacts two (2) NO (Normally Open)	4L560D

CONTACTORS

Not descriptive enough. Ask customer if they mean contact terminal block, Auxiliary Relay, Starter, etc.

CONTROLLER – PROTRONIX®

PART DESCRIPTION	PART #
PROTRONIX® I Controller – 4L536A, 4L536B (SOLD THRU RETROFIT ONLY)	Call Retrofits
PROTRONIX® II Controller – 4L536C-1 (SOLD THRU RETROFIT ONLY)	Call Retrofits

DISPLAY FUSE

PART DESCRIPTION	PART #
Fuse, FNQ, 1 AMP	4L371A
Fuse, FNQ-R, ½ AMP	4L371T

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ELECTRICAL COMPONENTS (CONTINUED)

DISPLAY SCREEN PART DESCRIPTION	PART #
Display Screen – HMI – Color Touch Screen - 4L523F – current- (SOLD THRU RETROFIT ONLY) Replaces 4L53C & 4L523E	Call Retrofit
Display Screen – HMI – 2-line LED – 4L523D – obsolete (SOLD THRU RETROFIT ONLY)	Call Retrofit
Display Screen – HMI – 4-line LED – 4L523B – obsolete (SOLD THRU RETROFIT ONLY)	Call Retrofit
Display Screen – HMI – Monochrome Touch Screen – 4L523E – obsolete (SOLD THRU RETROFIT ONLY)	Call Retrofit
Communication Cable (PROTRONIX® II to HMI) 4L536C-4	Call Retrofit

FLOAT (DISPLACEMENT) SWITCHES, BACKUP

Serve as Backup to the Submersible Pressure Transducer

PART DESCRIPTION	PART #
Float Switch (Normally Open Blue), 30 ft. cord	4L291A
Float Switch (Normally Closed Red), 30 ft. cord	4L291B
Float Switch (Normally Open Blue), 45 ft. cord	4L291C
Mercury-Free (Normally Open, Normally Closed) 40ft cord	4L291F
Submersible Pressure Transducer – Wet Well Level Sensor – 25' Cord hangs down inside of wet well. (Replaces 4L563C).	4L563J

FLOAT SWITCH, CORD CONNECTOR

PART DESCRIPTION	PART #
Cord Connector, Float Switch Adjustment	5L57C

GROUND FAULT CIRCUIT INTERRUPTER (GFCI) RECEPTACLES

PART DESCRIPTION	PART #
GFCI Receptacle, 15 Amp, Color: Ivory	5L269C
Receptacle Box, Aluminum	5L98A

HEATER

PART DESCRIPTION	PART #
Heater, Strip/Panel Mount with Thermostat – UL Listed 120 Volt 500 Watt (OBSOLETE P/N 4L364 replaced with P/N 4L364A)	4L364A
Heater, Auxiliary, with Fan, 120 Volt 1320/1650 Watt	4L84
Fan Motor for 4L84 Heater	4L84-1
Temperature Transmitter	5L350AA

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LIGHTNING PROTECTION

PART DESCRIPTION	PART #
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Lightning Arrestor	4L369

PHASE MONITOR RELAYS

PART DESCRIPTION	PART #
Phase Monitor, Voltage: 190 to 270	4L336A
Phase Monitor, Voltage: 430 to 480	4L336B

POWER SUPPLY – 24 VOLT

Powers all 24 volt panel components

PART DESCRIPTION	PART #
Power Supply, 24 VDC (2.3 Amp rating)	4L452C

PRESSURE TRANSDUCERS/SENSORS, SUBMERSIBLE

(Submersible Pressure Transducer hangs down from the pump station and into the wet well, in addition to the float switches used for back-up. Both are used for wet well level sensing.)

PART DESCRIPTION	PART #
0-15 PSI, Submersible Pressure Transducer – 25' Cord (old style) (old PN: 4L563B-now 4L563J + reprogrammed E_PROM through Retrofit)	See Retrofit
0-7.5 PSI, Submersible Pressure Transducer – 25' Cord (<i>Replaces 4L563A</i>) (CURRENT STYLE) (<i>Replaces 4L563C</i>).	4L563J

PROTRONIX® CONTROLLER

PART DESCRIPTION	PART #
PROTRONIX® II Input/Output Module (8 In/8 Out) Expansion Card	4L536C-2
PROTRONIX® II Controller - 4L452C-1 (SOLD THRU RETROFIT ONLY)	Call Retrofit

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ELECTRICAL COMPONENTS (CONTINUED)

PUMP FAILURE ALARM (Check Valve Limit Switch)

PART DESCRIPTION	PART #
Pump Failure Alarm Retrofit Kit for Relay Logic (two pump – LH & RH)	H87A376
Pump Failure Alarm Retrofit Kit for Relay Logic (one pump – RH only)	H87A383A
Pump Failure Alarm Retrofit Kit for Relay Logic (one pump – LH only)	H87A383B
* Pump Failure Alarm – Switch Only – (one pump - RH only)	87B397A
* Pump Failure Alarm – Switch Only – (one pump – LH only)	87B397B
Pump Failure Alarm Tester (Works with all styles)	87B399

**Note: 87B397A & 87B397B are Switch Only & do not include parts required for initial installation of the pump failure alarm. Customer must verify that they have already installed a pump failure alarm. Otherwise, you will either need H87A376, H87A383A, or H87A383B.*

RELAYS

PART DESCRIPTION	PART #
Relay, Vacuum Pump Contactor	4L609C
Relay, Time Delay (for Pump Failure, Prime Failure, Time Delay)	4L304J
Relay, 24 VDC, Din Rail Mounted (Double Pole, Double Throw)	4L571D
Relay, 24 VDC, Din Rail, SPST	4L571A
SONIC START® Operating Module	4L264S

RESISTOR

PART DESCRIPTION	PART #
250 OHM Resistor Wire	4L198A

RUNNING TIME METER-USED WITH PUMPLOGIX & RELAY LOGIC

PART DESCRIPTION	PART #
Running Time Meter (Old) Square face, but fits through round hole NEMA 12	4L587A
Running Time Meter (Current) Rectangular-NEMA 3R	4L198C

SOLENOID VALVE, 2-WAY LARGE PORT

PART DESCRIPTION	PART #
2-Way Solenoid Valve (5/16" orifice) Cannot be used with SONIC START® STREAMLINE™	1L545B conduit connection mounted through panel & backpan
2-Way Solenoid Valve for the FORMULA X® (Old Style arrangement with solenoid next to Float Check Valve, Ref. 87B351)	1L545A
SONIC START® STREAMLINE™ Solenoid Valve/Dome Assembly (New Style arrangement)	87B728A

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SWITCHES

PART DESCRIPTION	PART #
Switch, 3-POS Operator Selector, Spring Return Left, HOA (Hand-Off-Auto)	4L13C
Switch, Limit for Intrusion Alarm	5L241
Actuator, for use with 5L241	5L241A
Switch, 2-POS Operator Selector, Keyed	4L366A
Switch (Alarm), 2-POS Operator Selector, Maintained	4L71
Switch, 3-POS Operator Selector, Spring Return Left, HOA	4L13C
Switch, Push Button	4L561A
Float Switch (Normally Open Blue), 30 ft. cord	4L291A
Float Switch (Normally Closed Red), 30 ft. cord	4L291B
Float Switch (Normally Open Blue), 45 ft. cord	4L291C

TEMPERATURE TRANSMITTER

PART DESCRIPTION	PART #
Temperature Transmitter	5L350AA

TRANSFORMER DESCRIPTION

DESCRIPTION	PART #
2 KVA, 240/480 TO 120/240	4L402A
3 KVA, 240/480 TO 120/240	4L402B
3 KVA, 208 TO 120/240	4L402D
5 KVA, 240/480 TO 120/240	4L402E
5 KVA, 208 TO 120/240	4L402EA

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ELECTRICAL COMPONENTS (CONTINUED)

IEC RATED STARTERS – 4L515 MOTOR CIRCUIT PROTECTORS – 4L531, 4L532						
MOTOR HORSEPOWER	208 VOLTS		230 VOLTS		460 VOLTS	
	STARTER PART #	CIRCUIT PROTECTOR PART #	STARTER PART #	CIRCUIT PROTECTOR PART #	STARTER PART #	CIRCUIT PROTECTOR PART #
1½	4L515G	4L531F	4L515L	4L531F	4L515L	4L531E
2	4L515G	4L531F	4L515G	4L531F	4L515L	4L531E
3	4L515G	4L531F	4L515M	4L531F	4L515L	4L531E
5	4L515C	4L531G	4L515N	4L531G	4L515G	4L531F
7½	4L515H	4L531A	4L515C	4L531G	4L515G	4L531F
10	4L515D	4L531A	4L515D	4L531A	4L515N	4L531G
15	4L515J	4L531B	4L515J	4L531B	4L515C	4L531G
20	4L515K	4L531C	4L515K	4L531C	4L515H	4L531A
25	4L515K	4L531D	4L515K	4L531C	4L515H	4L531A
30	4L515P	4L532G	4L515P	4L532A	4L515J	4L531A
40	4L515Q	4L532H	4L515Q	4L532B	4L515J	4L531B
50			4L515Q	4L532H	4L515K	4L531C
60					4L515E	4L531D
75					4L515P	4L532B
100					4L515Q	4L532B

SPECIAL NOTE: Starter Motor Circuit Protector Sizing has changed slightly over the years.
Consult Factory's BOM for Direct Replacement.

CALL FACTORY FOR DIMENSIONS

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ELECTRICAL COMPONENTS (CONTINUED)

NEMA RATED STARTERS – 4L514 MOTOR CIRCUIT PROTECTORS – 4L531, 4L532						
MOTOR HORSEPOWER	208 VOLTS		230 VOLTS		460 VOLTS	
	STARTER PART #	BREAKER PART #	STARTER PART #	BREAKER PART #	STARTER PART #	BREAKER PART #
3/4	4L514G		4L514G		4L514G	
1	4L514A		4L514A		4L514G	
1½	4L514A	4L531F	4L514A	4L531F	4L514G	4L531E
2	4L514A	4L531F	4L514A	4L531F	4L514G	4L531E
3	4L514B	4L531F	4L514B	4L531F	4L514A	4L531E
5	4L514C	4L531G	4L514C	4L531G	4L514H	4L531F
7½	4L514C	4L531A	4L514C	4L531A	4L514C	4L531G
10	4L514D	4L531A	4L514D	4L531A	4L514C	4L531G
15	4L514E	4L531B	4L514D	4L531B	4L514D	4L531G
20	4L514E	4L531C	4L514E	4L531C	4L514D	4L531A
25	4L514E	4L164P	4L514E	4L531C	4L514D	4L531A
30	4L514E	4L164P	4L514E	4L164P	4L514E	4L531B
40	4L514F	4L532P	4L514E	4L164P	4L514E	4L531C
50	N/A	N/A	4L514F	4L532H	4L514E	4L531C

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ELECTRICAL COMPONENTS *(CONTINUED)*

BREAKERS – “QUICKLAG C” TYPE, SINGLE POLE, 5000 AMPERE INTERRUPTING CAPACITY, 120/240 VAC

PART DESCRIPTION	PART #
10, Continuous Amp Rating	4L82B
15, Continuous Amp Rating	4L82C
20, Continuous Amp Rating	4L82D
30, Continuous Amp Rating	4L82F
35, Continuous Amp Rating	4L82G
40, Continuous Amp Rating	4L82H
50, Continuous Amp Rating	4L82J
Handle Tie (California)	4L82P

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ELECTRICAL COMPONENTS (CONTINUED)

MOTORS – VERTICAL “P”

BASE PUMP MOTORS, ODP, 3/60/230-460 VOLT			STANDARD SEAL
HORSEPOWER	RPM	OLD PART #	NEW PART #
1 hp, Motor	900	95L39-1	95L39041-1AA001R0
1½ hp, Motor	900	95L39-2	95L39051-1AA001R0
2 hp, Motor	900	95L39-3	95L39061-1AA001R0
2 hp, Motor	1200	95L39-4	95L39161-1AA001R0
3 hp, Motor	900	95L39-5	95L39071-1AA001R0
3 hp, Motor	1200	95L39-6	95L39171-1AA001R0
3 hp, Motor	1800	95L39-28	95L39271-1AA001R0
5 hp, Motor	900	95L39-8	95L39081-1AA001R0
5 hp, Motor	1200	95L39-9	95L39181-1AA001R0
5 hp, Motor	1800	95L39-10	95L39281-1AA001R0
7½ hp, Motor	900	95L39-11	95L39091-1AA001R0
7½ hp, Motor	1200	95L39-12	95L39191-1AA001R0
7½ hp, Motor	1800	95L39-13	95L39291-1AA001R0
10 hp, Motor	900	Consult Factory *	Consult Factory *
10 hp, Motor	1200	95L39-15	95L391A1-1AA001R0
10 hp, Motor	1800	95L39-16	95L392A1-1AA001R0
15 hp, Motor	900	95L39-17	95L390B2-1AA001R0
15 hp, Motor	1200	95L39-18	95L391B2-1AA001R0
15 hp, Motor	1800	95L39-19	95L392B1-1AA001R0
20 hp, Motor	900	Consult Factory *	95L390C3-1AA001R0
20 hp, Motor	1200	Consult Factory *	Consult Factory *
20 hp, Motor	1800	Consult Factory *	Consult Factory *
25 hp, Motor	1200	95L39-23	95L391D3-1AA001R0
25 hp, Motor	1800	95L39-24	95L392D2-1AA001R0
30 hp, Motor	1200	95L39-25	95L391E3-1AA001R0
30 hp, Motor	1800	95L39-26	95L392E2-1AA001R0
40 hp, Motor	1200	95L39-46	95L391F3-1AA001R0
40 hp, Motor	1800	95L39-27	95L392F3-1AA001R0
50 hp, Motor	1200	95L39-47	95L391G3-1AA001R0
50 hp, Motor	1800	95L39-34	95L392G3-1AA001R0
60 hp, Motor	1200	95L39-48	95L391H3-1AA001R0
60 hp, Motor	1800	95L39-52	95L392H3-1AA001R0
75 hp, Motor	1200	95L39-49	95L391J3-3BA002B0
75 hp, Motor	1800	95L39-53	95L392J3-3BA000B0

* Need shaft size confirmation to determine correct motor

MOTORS—TEFC, Explosion-proof, Immersible call factory for sizing, pricing, and delivery

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MECHANICAL, PIPING, & PARTS

PUMP PARTS	4B2B*1 Pump	4B2D Pump
<i>VERIFY ALL CASTED PARTS WITH FACTORY</i>		
Shaft Diameter	1 $\frac{7}{8}$ "	1 $\frac{7}{8}$ "
Mechanical Seal Kit	H87A28	H87A28
Impeller, CW (Clockwise)	60D21	60C76
Impeller, CCW (Counter-Clockwise)	60D42	60C75
Maximum Diameter	10 $\frac{1}{8}$ "	10 $\frac{1}{8}$ "
Suction Side - Diameter Eye	4"	4"
Motor Adapter-Also sell S/N NAMEPLATE	60B165A-304	60B165A-304
Suction Piping		
Integral Volute & Front Head, CCW	87B286A-304 – 4" Suc. Piping 87B287A-304 – 6" Suc. Piping	87B286A-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Integral Volute & Front Head, CW	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Mounting Adapter	87B239-304 – 4" Suc. Piping 87B241-304 – 6" Suc. Piping	87B239-304 – 4" Suc. Piping 87B241-304 – 6" Suc. Piping
Flange Gasket	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping
Socket Head Capscrew	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping
Discharge Pipe – 4"	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping
Elbow (Between Discharge Pipe & Tee)	2L7A-304 – 4" piping 2L7B-304 – 6" piping	2L7A-304 – 4" piping 2L7B-304 – 6" piping
Tee (Required only on 4" piping)	2L12A-304	2L12A-304
Flange Filler – Use on 4' diameter Wet Well Only	2L28AH-304	2L28AH-304
4" piping with 5/6' diameter Wet Well doesn't use 6" piping with 5/6' diameter Wet Well	2L86B009J-304	2L86B009J-304
Plug Valve	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd
Elbow (Between Plug Valve & Check Valve) 4" standard elbow, 6" reducing elbow	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"
Check Valve Assembly, LH – 4"	2L153S 87A255 (Flange Gasket)	2L153S 87A255 (Flange Gasket)
Check Valve Assembly, LH – 6"	2L153Q-304 87A224 (Flange Gasket)	2L153Q-304 87A224 (Flange Gasket)
Check Valve Assembly, RH – 4"	2L153T 87A255 (Flange Gasket)	2L153T 87A255 (Flange Gasket)
Check Valve Assembly, RH – 6"	2L153R-304 87A224 (Flange Gasket)	2L153R-304 87A224 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	60A26 (1/32")	60A26 (1/32")
Impeller Bolt	60A12	60A12
Impeller Washer	60A20	60A20

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP PARTS	4B3B	4C2B
<i>VERIFY ALL CASTED PARTS WITH FACTORY</i>	Pump	Pump
Shaft Diameter	1 $\frac{7}{8}$ "	2 $\frac{1}{8}$ "
Mechanical Seal Kit	H87A28	H87A97
Impeller, CW (Clockwise)	60D43	60D63
Impeller, CCW (Counter-Clockwise)	60D1	60D64
Maximum Diameter	12"	10-1/8"
Suction Side - Diameter Eye	4"	4"
Motor Adapter-Also sell S/N NAMEPLATE	60B165D-304	60B165B-304
Suction Piping		
Integral Volute & Front Head, CCW	87D310A-304 – 4" Suc. Piping 87D311A-304 – 4" Suc. Piping	87B286A-304 – 4" Suc. Piping 87B287A-304 – 6" Suc. Piping
Integral Volute & Front Head, CW	87D310B-304 – 4" Suc. Piping 87D311B-304 – 4" Suc. Piping	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Mounting Adapter	87B239-304 - 4" Suc. Piping 87B241-304 – 6" Suc. Piping	87B239-304 - 4" Suc. Piping 87B241-304 – 6" Suc. Piping
Flange Gasket	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping
Socket Head Capscrew	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping
Discharge Pipe	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping
Elbow (Between Discharge Pipe & Tee)	2L7A-304 – 4" piping 2L7B-304 – 6" piping	2L7A-304 – 4" piping 2L7B-304 – 6" piping
Tee (Required only on 4" piping)	2L12A-304	2L12A-304
Flange Filler – Use on 4' diameter Wet Well Only 4" piping with 5'/6" diameter Wet Well doesn't use 6" piping with 5'/6" diameter Wet Well	2L28AJ-304 2L86B014-304	2L28AH-304 2L86B009J-304
Plug Valve	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd
Elbow (Between Plug Valve & Check Valve) 4" standard elbow, 6" reducing elbow	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"
Check Valve Assembly, LH – 4" Check Valve Assembly, LH – 6"	2L153S 87A255 (Flange Gasket) 2L153Q-304 87A224 (Flange Gasket)	2L153S 87A255 (Flange Gasket) 2L153Q-304 87A224 (Flange Gasket)
Check Valve Assembly, RH – 4" Check Valve Assembly, RH – 6"	2L153T 87A255 (Flange Gasket) 2L153R-304 87A224 (Flange Gasket)	2L153T 87A255 (Flange Gasket) 2L153R-304 87A224 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	60A28 (1/32")	60A26 (1/32")
Impeller Bolt	60A12	60A12
Impeller Washer	60A20	60A20

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP PARTS	4C2D *
<i>VERIFY ALL CASTED PARTS WITH FACTORY</i>	Pump
Shaft Diameter	2 1/8"
Mechanical Seal Kit	H87A97
Impeller, CW (Clockwise)	60C77
Impeller, CCW (Counter-Clockwise)	60C78
Maximum Diameter	10-1/8"
Suction Side - Diameter Eye	4"
Motor Adapter-Also sell S/N NAMEPLATE	60B165B-304
Suction Piping	
Integral Volute & Front Head, CCW	87B286A-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Integral Volute & Front Head, CW	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Mounting Adapter	87B239-304 - 4" Suc. Piping 87B241-304 – 6" Suc. Piping
Flange Gasket	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping
Socket Head Capscrew	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping
Discharge Pipe – 4"	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping
Elbow (Between Discharge Pipe & Tee)	2L7A-304 – 4" piping 2L7B-304 – 6" piping
Tee	2L12A-304
Flange Filler – Use on 4' diameter Wet Well Only	2L28AH-304
4" piping with 5/6" diameter Wet Well doesn't use	
6" piping with 5/6" diameter Wet Well	2L86B009J-304
Plug Valve	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd
Elbow (Between Plug Valve & Check Valve)	87B242-304 & 87B243-304 – 4"
4" standard elbow, 6" reducing elbow	87B244-304 & 87B245-304 – 6"
Check Valve Assembly, LH – 4"	2L153S
Check Valve Assembly, LH – 6"	87A255 (Flange Gasket) 2L153Q-304 87A224 (Flange Gasket)
Check Valve Assembly, RH – 4"	2L153T
Check Valve Assembly, RH – 6"	87A255 (Flange Gasket) 2L153R-304 87A224 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	60A26 (1/32")
Impeller Bolt	60A12
Impeller Washer	60A20

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP PARTS <i>VERIFY ALL CASTED PARTS WITH FACTORY</i>	4C3B Pump	4D3B Pump
Shaft Diameter	2 ¹ / ₈ "	3"
Mechanical Seal Kit	H87A97	H87A182
Impeller, CW (Clockwise)	60D44	60D129
Impeller, CCW (Counter-Clockwise)	60D23	60D193
Maximum Diameter	12"	12"
Suction Side - Diameter Eye	4"	4"
Motor Adapter-Also sell S/N NAMEPLATE	60B165E-304	60B165M-304
Suction Piping		
Integral Volute & Front Head, CCW	87B286A-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping	87B286A-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Integral Volute & Front Head, CW	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping	87B286B-304 – 4" Suc. Piping 87B287B-304 – 6" Suc. Piping
Mounting Adapter	87B239-304 - 4" Suc. Piping 87B241-304 – 6" Suc. Piping	87B239-304 - 4" Suc. Piping 87B241-304 – 6" Suc. Piping
Flange Gasket	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping	11L1AA – 4" Suc. Piping 11L1CA – 6" Suc. Piping
Socket Head Capscrew	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping	6L178B – 4" Suc. Piping 6L178F – 6" Suc. Piping
Discharge Pipe	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping	28A549BE-304 – 4" piping 28A550BX-304 – 6" piping
Elbow (Between Discharge Pipe & Tee)	2L7A-304 – 4" piping 2L7B-304 – 6" piping	2L7A-304 – 4" piping 2L7B-304 – 6" piping
Tee (Required only on 4" piping)	2L12A-304	2L12A-304
Flange Filler – Use on 4' diameter Wet Well Only	2L28AJ-304	2L28AJ-304
4" piping with 5/6" diameter Wet Well doesn't use 6" piping with 5/6" diameter Wet Well	2L86B014-304	2L86B014-304
Plug Valve	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd	2L104A-304 – 4" piping 2 req'd 2L148M-304 – 6" piping 1 req'd
Elbow (Between Plug Valve & Check Valve)	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"	87B242-304 & 87B243-304 – 4" 87B244-304 & 87B245-304 – 6"
Check Valve Assembly, LH – 4"	2L153S 87A255 (Flange Gasket)	2L153S 87A255 (Flange Gasket)
Check Valve Assembly, LH – 6"	2L153Q-304 87A224 (Flange Gasket)	2L153Q-304 87A224 (Flange Gasket)
Check Valve Assembly, RH – 4"	2L153T 87A255 (Flange Gasket)	2L153T 87A255 (Flange Gasket)
Check Valve Assembly, RH – 6"	2L153R-304 87A224 (Flange Gasket)	2L153R-304 87A224 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	60A28 (1/32")	60A28 (1/32")
Impeller Bolt	60A12	60A87
Impeller Washer	60A20	60A86

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP PARTS	4B2X*1	4C2X
<i>VERIFY ALL CASTED PARTS WITH FACTORY</i>	Pump	Pump
Shaft Diameter	1 ⁷ / ₈ "	2 ¹ / ₈ "
Mechanical Seal Kit	H87A28	H87A97
X-PELLER® , CW (Clockwise)	(see table on Page 26)	60B252C *
X-PELLER® , CCW (Counter-Clockwise)	(see table on Page 26)	60B252D *
Maximum Diameter	10-1/8"	10-1/8"
Suction Side - Diameter Eye	4"	4"
Motor Adapter-Also sell S/N NAMEPLATE	60B165A-304	60B165A-304
Suction Piping		
Integral Volute & Front Head, CCW	87B286A-304 – 4" Suc. Piping	87B286A-304 – 4" Suc. Piping
	87B287A-304 – 6" Suc. Piping	87B287B-304 – 6" Suc. Piping
Integral Volute & Front Head, CW	87B286B-304 – 4" Suc. Piping	87B286B-304 – 4" Suc. Piping
	87B287B-304 – 6" Suc. Piping	87B287B-304 – 6" Suc. Piping
Mounting Adapter	87B239-304 - 4" Suc. Piping	87B239-304- 4" Suc. Piping
	87B241-304 – 6" Suc. Piping	87B241-304 – 6" Suc. Piping
Flange Gasket	11L1AA – 4" Suc. Piping	11L1AA – 4" Suc. Piping
	11L1CA – 6" Suc. Piping	11L1CA – 6" Suc. Piping
Socket Head Capscrew	6L178B – 4" Suc. Piping	6L178B – 4" Suc. Piping
	6L178F – 6" Suc. Piping	6L178F – 6" Suc. Piping
Discharge Pipe	28A549BE-304 – 4" piping	28A549BE-304 – 4" piping
	28A550BX-304 – 6" piping	28A550BX-304 – 6" piping
Elbow (Between Discharge Pipe & Tee)	2L7A-304 – 4" piping	2L7A-304 – 4" piping
	2L7B-304 – 6" piping	2L7B-304 – 6" piping
Tee (Required only on 4" piping)	2L12A-304	2L12A-304
Flange Filler – Use on 4' diameter Wet Well Only	2L28AH-304	2L28AH-304
4" piping with 5/6' diameter Wet Well doesn't use 6" piping with 5/6' diameter Wet Well	2L86B009J-304	2L86B009J-304
Plug Valve	2L104A-304 – 4" piping 2 req'd	2L104A-304 – 4" piping 2 req'd
	2L148M-304 – 6" piping 1 req'd	2L148M-304 – 6" piping 1 req'd
Elbow (Between Plug Valve & Check Valve) 4" standard elbow, 6" reducing elbow	87B242-304 & 87B243-304 – 4"	87B242-304 & 87B243-304 – 4"
	87B244-304 & 87B245-304 – 6"	87B244-304 & 87B245-304 – 6"
Check Valve Assembly, LH – 4" Check Valve Assembly, LH – 6"	2L153S	2L153S
	87A255 (Flange Gasket)	87A255 (Flange Gasket)
	2L153Q-304	2L153Q-304
Check Valve Assembly, RH – 4" Check Valve Assembly, RH – 6"	87A224 (Flange Gasket)	87A224(Flange Gasket)
	2L153T	2L153T
	87A255 (Flange Gasket)	87A255 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	2L153R-304	2L153R-304
	87A224 (Flange Gasket)	87A224 (Flange Gasket)
Impeller Bolts	60A26 (1/32")	60A26 (1/32")
Impeller Washer	60A12	60A12
	60A20	60A20

PARTS ORDERING NOTE: Remind customer that gaskets may be needed when ordering casted parts

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP PARTS <i>VERIFY ALL CASTED PARTS WITH FACTORY</i>	6B3B Pump	6C3B Pump	6D3B Pump
Shaft Diameter	1 $\frac{7}{8}$ "	2 $\frac{1}{8}$ "	3"
Mechanical Seal Kit	H87A28	H87A97	H87A182
Impeller, CW (Clockwise)	60D45	60D47	60D90
Impeller, CCW (Counter-Clockwise)	60D34	60D46	60D192
Maximum Diameter	12"	12"	12"
Suction Side - Diameter Eye	5 $\frac{1}{8}$ "	5 $\frac{1}{8}$ "	5 $\frac{1}{8}$ "
Motor Adapter-Also sell S/N NAMEPLATE	60B165D-304	60B165F-304	60B165M-304
Suction Piping			
Volute	60D35-304	60D35-304	60D35-304
Front Head	60C88-304	60C88-304	60C88-304
Mounting Adapter	87B241-304	87B241-304	87B241-304
Flange Gasket	11L1CA	11L1CA	11L1CA
Socket Head Capscrew	6L17BF	6L17BF	6L17BF
Front Head	60C88-304	60C88-304	60C88-304
Pump Stand	None	None	None
Discharge Pipe 8" needs 2L28013-304 + 2L201B	2L28013-304 – 6"	2L28013-304 – 6"	2L28013-304 – 6"
Elbow (Between Discharge Pipe & Tee)	2L7B	2L7B	2L7B
Tee	None	None	None
Flange Filler	2L86BO12D-304	2L86BO12D-304	2L86BO12D-304
Plug Valve	2L148M-304	2L148M-304	2L148M-304
Elbow (Between Plug Valve & Check Valve)	87B246-304 & 87B247-304	87B246-304 & 87B247-304	87B246-304 & 87B247-304
Check Valve Assembly, LH – 6"	2L153Q-304 87A224 (Flange Gasket)	2L153Q-304 87A224 (Flange Gasket)	2L153Q-304 87A224 (Flange Gasket)
Check Valve Assembly, RH – 6"	2L153R-304 87A224 (Flange Gasket)	2L153R-304 87A224 (Flange Gasket)	2L153R-304 87A224 (Flange Gasket)
Volute Gasket (1/64 & 1/16 thickness available)	60A28 (1/32")	60A28 (1/32")	60A28 (1/32")
Impeller Bolt	60A12	60A12	60A87
Impeller Washer	60A20	60A20	60A86

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MECHANICAL, PIPING, & PARTS (CONTINUED)

MECHANICAL SEALS

SEAL & SPARE PARTS	B-SHAFT	C-SHAFT	D-SHAFT
	1 ⁷ / ₈ "	2 ¹ / ₈ "	3"
Seal Kit, Mechanical Seal	H87A28	H87A97	H87A182
Bronze Seal Housing	87B2	87B19***	87B73***
Seal Housing – Flat Gasket **	60A11	60A17	60A84
Seal Housing - Quad Ring **	60A110	60A111	60A146
Ceramic Rotating Wear Ring	60A32 *	60A33 *	60A85 *
Carbon Stationary Wear Ring	60A36 *	60A37 *	60A52 *
Rotating O-Ring	60A39 *	60A41 *	60A53 *
Stationary Quad Ring	60A38 *	60A40 *	60A54 *
Spring	60A30 *	60A31 *	60A55 *
Impeller Bolt	60A12	60A12	60A87
Impeller Washer	60A20	60A20	60A86
Volute Gasket	See Volute Gasket Table on Page 26		

* Parts contained in H87A28, H87A97, or H87A182 Mechanical Seal Kits

PARTS ORDERING NOTE: Each time the impeller bolt is removed (required for seal replacement), Smith & Loveless recommends installation of a new impeller bolt that has the embedded Nylock.

PARTS ORDERING NOTE: Each time a new seal, ceramic, carbon or spring is installed, a volute gasket, seal housing gasket or quad ring, and impeller bolt are recommended.

** **PARTS TIP:** Seal Housing - Flat Gasket vs. Quad Ring: The older seal housing has a flat surface and uses the flat gasket for both the single and double mechanical seals. The newer seal housing has a groove and it can use either the flat gasket or the quad ring.

*** **SEAL HOUSING:** Call factory for different seal housings for 4-frame pumps.(4B4B, 6C4V)

**** **BOLDED PARTS:** Always quote all bolded parts when quoting a mechanical seal kit.

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MECHANICAL, PIPING, & PARTS (CONTINUED)

DOUBLE BALANCED (FOR OVER 200' TDH****) MECHANICAL SEALS

SEAL & SPARE PARTS (HIGH HEAD SEALS – For Over 200' TDH**** or Series P.S.)	C-SHAFT 2-1/8"	D-SHAFT 3"
Seal Kit, Mechanical Seal – Double Balanced (DOES NOT INCLUDE <u>BALANCE SLEEVE</u>)	H60A156	H60A137
Complete Assembly including Bronze Seal Housing & Mechanical Seal (Parts include Upper Housing thru Lower Housing) (Order one extra Seal Housing Quad Ring)	87C425	87C427
Bronze Seal Housing, Upper	87C424	87C428
Bronze Seal Housing, Lower	60C95	60C97
Seal Housing Gasket - Flat ***	60A17	60A84
Seal Housing Gasket - Quad Ring ***	60A111	60A112
Ceramic Rotating Wear Ring (requires 2)	60A155 *	60A85 *
Carbon Stationary Wear Ring (requires 2)	60A153 *	60A136 *
Stationary Quad Ring (requires 2)	11L47E *	60A54 *
Spring	60A154 *	60A135 *
O-Ring-Balance Sleeve, Inner (D-Shaft – new style sleeve 60C112/B requires 2, old style sleeve 60C112/A requires 1)	11L207C *	11L207A *
O-Ring Balance Sleeve, Outer (Both old & new require two out O-Rings)	11L207D *	11L207B *
Balance Sleeve	60C159**	60C112**
Impeller Bolts	60A12	60A87
Impeller Washer	60A20	60A86
Volute Gaskets	See the Volute Gasket Table	

BOLDED PARTS: Always quote all bolded parts when quoting a mechanical seal kit.

* Parts contained in H60A156 or H60A137 Double Balanced Mechanical Seal Kits

** **PARTS ORDERING NOTE:** Each time the balance sleeves are replaced, new Balance Sleeve O-Rings are recommended.

PARTS ORDERING NOTE: Each time the impeller bolt is removed (required for seal replacement), Smith & Loveless recommends installation of a new impeller bolt that has the embedded Nylock.

PARTS ORDERING NOTE: Each time a new seal, ceramic, carbon or spring is installed, a volute gasket, seal housing gasket or quad ring, and impeller bolt are recommended.

*** **PARTS TIP:** Seal Housing – Flat Gasket vs. Quad Ring: The older seal housing has a flat surface and uses the flat gasket for both the single and double mechanical seals. The newer seal housing has a groove and it can use either the flat gasket or the quad ring.

**** **NOTE:** Series 4 Pump C&D Shaft WWMPs-See Factory. High Head Seals on Second Stage Pumps may be required For Over 200'TDH. Add Pump 1 & Pump 2 TDH together to determine if more than 200'TDH. See Factory.

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MECHANICAL, PIPING, & PARTS (CONTINUED)

PUMP IMPELLERS & PUMP X-PELLERS® - VACUUM PRIMED

PUMP MODEL	MOTOR RPM	IMPELLER CW PART #	IMPELLER CCW PART #	ADDITIONAL PARTS 1 SET PER IMPELLER PART#
4B2B*1	-	60D21	60D42	60A12, 60A20, 60A26
TURBO 4B2C	-	87D103	87D104	60A12, 60A20, 60A26
4B2D	-	60C76	60C75	60A12, 60A20, 60A26
4B2X*1	-	60B252A	60B252B	60A12, 60A20, 60A26
4B2X*1	-	60B252A	60B252B	60A12, 60A20, 60A26
4B2X*1	-	60B252A	60B252B	60A12, 60A20, 60A26
4B3B	-	60D43	60D1	60A12, 60A20, 60A28
4C2B	-	60D63	60D64	60A12, 60A20, 60A26
4C2D	-	60C77	60C78	60A12, 60A20, 60A26
4C2X	1800	60B252C	60B252D	60A12, 60A20, 60A26
4C3B	-	60D44	60D23	60A12, 60A20, 60A28
4D3B	-	60D129	60D193	60A87, 60A86, 60A28
4D4B	-	60D259	60D258	60A87, 60A86, 60A106B
6B3B (& SERIES)	-	60D45	60D34	60A12, 60A20, 60A28
6B3X	-	60B204	60B209	60A12, 60A20, 60A28
6C3B (& SERIES)	-	60D47	60D46	60A12, 60A20, 60A28
6C3X	-	60B217	60B218	60A12, 60A20, 60A28
6D3B (& SERIES)	-	60D90	60D192	60A87, 60A86, 60A28
6D3X	-	60B219	60B220	60A87, 60A86, 60A28
8C4D	-	60D178	60D179	60A12, 60A20, 60A88
8D4D	-	60D150	60D151	60A87, 60A86, 60A88

GASKETS, VOLUTE PUMP SIZE	STANDARD GASKET PART #	OTHER VOLUTE GASKETS PART #
4B2B*1, 4B2C, 4B2D, 4C2B, 4C2D, 4B2X*1, 4C2X	60A26 (1/32")	60A27 (1/16")
4B3B, 4C3B, 4D3B, 6B3B, 6C3B, 6D3B	60A28 (1/32")	60A29 (1/16")

PARTS ORDERING NOTE: New volute gasket is required each time the rotating assembly (motor, impeller, mechanical seals, &/or volute) is disassembled.

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OTHER PARTS

ALARMS

PART DESCRIPTION	PART #
Horn, 120 VAC, 60 cycle	4L73A
Horn, 12 VDC.	4L73B
Horn, Weatherproof Box	4L73D
RED ALARM LIGHT ASSEMBLY:	
Light, Red 12 VDC	28B580A
Lamp, 12 VDC, 50 W for 28B580A Light	4L120
Light, Red 120 VAC	28B580B
Lamp, 120 VAC, 50 W for 28B580B Light	4L95A
Light Fixture Body	5L76
Light Fixture Adapter	5L77
Red Globe for 5L77	5L78B
Globe Guard for 5L77	5L79
Trickle Charger (CURRENT) Can be used in place of 4L222	4L222C**
Trickle Charger (OLD STYLE)	4L222

***Consult the factory.*

BLOWER - VENTILATION

PART DESCRIPTION	PART #
Blower – 265 CFM	7L195
Electrical Cord – 15' - Coiled	4L379B
Cord Connector	5L15A
Air Discharge Seal (seals blower to hood)	87A86
Blower & Cord Assembly (includes blower, cord connector and 15' coiled cord)	87A414B
Air Discharge Seal (seals blower to hood)	87A86
Louver, Adjustable 6 x 6	11L138A
Seal for Louver (Placed between louver & fiberglass)	87A86

FORM-A-GASKET

PART DESCRIPTION	PART #
Form-A-Gasket, 1.5 oz.	12L90A

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GASKETS	
PART DESCRIPTION	PART #
4" Flange Gasket (check valves & suction/discharge piping)	11L1A
6" Flange Gasket (check valves & suction/discharge piping)	11L1C
Volute/Base Gasket	60A108
Seal Housing Gasket - Quad Ring *	B Shaft: 60A110
	C Shaft: 60A111
	D Shaft: 60A146
Hood Gasket, 64" X 156"	10L122AD
Hood Gasket, 72" X 172"	10L122AD
Baseplate Gasket, 64" X 59"	10L122AB
Baseplate Gasket, 72" X 67"	10L122AB

* **PARTS TIP:** Seal Housing Gasket - Flat vs. Quad Ring. The seal housing has a groove and can use either gasket

PART DESCRIPTION	STANDARD	GLYCERIN-FILLED
	PART #	PART #
Handles Up To 65 TDH (0-30" HG: 0-30 PSI) (Old P/N 1L275CB)	OBSOLETE	1L780B*
Handles Up To 135 TDH (0-30" HG: 0-60 PSI) (Old P/N 1L275DB)	OBSOLETE	1L780C*
Handles Up To 230 TDH (0-30" HG: 0-100 PSI) (Old P/N 1L275EB)	OBSOLETE	1L780D*
Gauge Guard (built into new gauges, Only needed on new gauges if extra protection is desired.)	1L372A	1L372A

* 3-1/2" diameter dial (Customer must verify fit. If smaller dial is needed, contact factory)
PARTS ORDERING TIP: If no gauge is currently in use, order 1L780C. Otherwise, determine correct PSI

HMI MESSAGE PANEL SCREENS – Requires Engineering Programming	
PART DESCRIPTION	PART #
HMI-140 Message Panel – 4 Line Display, 8 Programmable Keys – 4L523D	Retrofit Product
HMI-240 Message Panel – 4 Line Display, 20 Programmable Keys – 4L523B-*	OBSOLETE
HMI-750 Message Panel – Graphic Color Touch Screen – 4L523C-*	OBSOLETE

*Replaced by the 4L523H

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OTHER PARTS (CONTINUED)

HMI MESSAGE PANEL SCREENS – Graphic Color Touch Screen

PART DESCRIPTION	PART #
HMI-8046 Message Panel – Graphic Color Touch Screen – 4L523H The 4L523H replaces the 4L523 B,C,D,E,F,& G. Requires a new cable when replacing with a previous model. 4L523H-1 for PROTRONIX® I , 4L536C-7 for PROTRONIX® II Controller)	Retrofit Product
Connection Cable-Connect the HMI to PROTRONIX® I	4L523-1
Connection Cable-Connect the HMI to PROTRONIX® I	4L536C-7

HOODS

PART DESCRIPTION	NON-GASKET SIDE	GASKET SIDE
	PART #	PART #
Fiberglass Hood 64" X 64" Non-Insulated *	87B186A	87B186B
Fiberglass Hood 64" X 64" Insulated *	87B295A	87B295B
Fiberglass Hood 72" X 72" Non-Insulated *	87B187A	87B187B
Fiberglass Hood 72" X 72" Insulated *	87B296A	87B296B
Hood, Pocket Pull Handle – 2 per hood side, 4 per station - Black		12L216A
Hood, Stainless Steel Lockable Draw Latch		12L233A
Hood Gasket, 64" X 156"		10L122AD
Hood Gasket, 72" X 172"		10L122AD
Louver, Adjustable 6" x 6"		11L138A

* **NOTE:** Hardware is not included with the hood - must be requested separately.

HOODS - MISCELLANEOUS PARTS

PART DESCRIPTION	PART #
Hood Roller Assembly (8 needed per hood)	87A301
S.S. External Retaining Ring	NPN
Roller – 1-1/2" diameter	87A258
Roller Stud	87B259
Roller Washer	87A359
Hood Roller Track – 62" (for 64" X 64" hood)	87B251A
Hood Roller Track – 70" (for 72" X 72" hood)	87B251B
Removable Track Stop – 4 required per station	87A279
Pocket Pull Hood Handle – 2 required per hood side, 4 per station – black	12L216A
Blower & Cord Assembly (includes blower, cord connector and 15' coiled cord)	87A414B
Air Discharge Seal (seals blower to hood)	87A86
Louver, Adjustable 6" x 6"	11L138A
Hood Gasket, 64" X 156"	10L122AD
Hood Gasket, 72" X 172"	10L122AD
Baseplate Gasket, 64" X 59"	10L122AB
Baseplate Gasket, 72" X 67"	10L122AB
FX Roller Replacement Kit	H87A484

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HOOD (FIBERGLASS) REPAIR KIT

PART DESCRIPTION	PART #
Fiberglass Hood Repair Kit (1 pt. S&L light green gel coat, 1 pt. Polyester resin, 3 sq. ft. fiberglass mat.)	12L360A

KEYSTOCK (MOTOR SHAFT KEY)

PART DESCRIPTION	PART #
B Shaft	95L39-0
C Shaft	95L39-0
D Shaft	95L39-01

LABELS

PART DESCRIPTION	PART #
Label, Blower	12A107A
Label, Rotation	12A152
Label, Motor No 1	12A2
Label, Motor No 2	12A3
Label, Low Level	12A537
Label, Low Water	12A538
Label, Notice Mechanical	12A74
Label, Notice Blower	12A76
Label, "OSHA" Warning	12L150AF
Label, "OSHA" Caution Lift Warning	12L150N
Label, S&L Logo 8" x 3-1/4"	12L154B
Label, S&L Logo 5" x 2"	12L154C
Label, Motor Lift Warning	12L166
Label, Control Panel Nameplate	12L170
Label, FORMULA X® Logo	12L217A

LATCHES, FOR LOCKS

PART DESCRIPTION	PART #
Pad Lockable Draw Latch & Striker, S.S. (for hood)	12L223A
Pad Lockable Striker Plate & Latch, S.S. (for wet well access plates)	12L222A

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LEVEL INDICATION CONNECTION PLATE	
PART DESCRIPTION	PART #
Level Indication Connection Plate Complete Assembly (includes all parts listed below)	H87A397
Float Switch Connection Plate Gasket	87B350
Float Switch Connection Plate	87B348
Pipe Plug (2 required for PROTRONIX ® I control panels, 3 required per plate for relay logic control panels)	1L69C
Cord Grip for Floats (3 required for PROTRONIX ® I control panels, 2 required per plate for relay logic control panels)	5L57C
Cord Grip for Submersible Pressure Transducer (1 required for PROTRONIX ® I control panels, 0 required per plate for relay logic control panels)	5L57N
Washer, Stainless Steel (2 required per plate)	6L65F
Lock Washer, Stainless Steel (2 required per plate)	6L94F
Hex Nut, Stainless Steel (2 required per plate)	6L30K
Label, Plastic – LL ALARM/TRANSDUCER/HL ALARM	12A538
Label, Plastic – LL OFF/LL ON/HL ON	12A537
LIFTING STANCHION	
PART DESCRIPTION	PART #
Lifting Stanchion – Top Section – Hemlock	87B39A2-304
Lifting Stanchion – Bottom Section – Hemlock	87B39B2-304
LINE STRAINER	
PART DESCRIPTION	PART #
Vapor Filter 12-Pack Replacement Part Kit Do not use with SONIC START ® STREAMLINE ™	H87A321A
LOUVER, VENT	
PART DESCRIPTION	PART #
Louver, Adjustable – 6" x 6"	11L138A
Seal for Louver (Placed between louver & fiberglass)	87A86

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PAINT (VERSAPOX®) & TOUCH-UP KITS

PART DESCRIPTION	PART #
Touch-Up Paint Kit – Georgian Hemlock	H87A425
Primer (RED), Part A, Gallon	12L138A *
Primer Catalyst, Part B, Gallon	12L138B

* Order one gallon of Catalyst Part B for each gallon of paint/primer – must be mixed before use.

SHADE-AIDE™

PART DESCRIPTION	PART #
SHADE AIDE™ Kit-Small (Covers HMI frame size 7" H x 9.5" W)	H87A379
SHADE AIDE™ Kit-Small Stainless Steel (Covers HMI frame size 7" H x 9.5" W x 2.25" D)	H87A379B
SHADE AIDE™ Kit-Large (Covers HMI frame size 15" W x 11" H x 2.25" D)	H87A485
SHADE AIDE™ Kit-Large (Covers HMI frame size 15" W x 11" H x 2.25" D)	H87A485A
SHADE AIDE™ Kit-Large (Covers HMI frame size 19.875" W x 14" H x 2.25" D)	H87A503A
SHADE AIDE™ Kit-Large (Covers HMI frame size 19.875" W x 14" H x 2.25" D)	H87A503B

SLINGER RINGS (FOR MOTORS)

PART DESCRIPTION	PART #
B Shaft	95L39-B*
C Shaft	95L39-C*
D Shaft	95L39-D*

VENT LOUVER

PART DESCRIPTION	PART #
Vent Louver, Adjustable – 6" x 6"	11L138A

VIDEOS - TRAINING

PART DESCRIPTION	PART #
How To Replace the Single Mechanical Seal – DVD Format	12L318DVD-1
How To Replace the Single Mechanical Seal – VHS Format	12L318VHS-1

*PARTS ORDERING NOTE: Part # extension varied based on manufacturer. Motor manufacturer needs to be identified prior to sale.

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4' WET WELL MANWAY ACCESS LIDS (ALUMINUM)	
PART DESCRIPTION	PART #
4' Wet Well Manway Access Lid Half With Slot (aluminum)	87B184A
4' Wet Well Manway Access Lid Half Without Slot (aluminum)	87B184B
4' Wet Well S.S. Continuous Hinge (2 Required)	87B272B
Gasket (installs where two access lids mate up) U-Shaped Neoprene <i>4' required for 4' wet well</i>	10L122AC
Neoprene Gasket (4' Wet Well Hinge) for Under Continuous Hinge (2 required)	87B182-2A
Center Support Angle	87B250C
Button Socket Headscrew (18 required)	6L221CD
SS Lock Washer (18 required)	6L94G
SS Hex Nut (18 required)	6L30A

5' & 6' WET WELL MANWAY ACCESS LIDS (ALUMINUM)	
PART DESCRIPTION	PART #
5' & 6' Wet Well Manway Access Lid Half With Slot (aluminum)	87B184C
5' & 6' Wet Well Manway Access Lid Half Without Slot (aluminum)	87B184D
5' & 6' Wet Well S.S. Continuous Hinge (2 Required)	87B272D
Gasket (installs where two access lids mate up) U-Shaped Neoprene <i>5' required for 5' & 6' Wet Well</i>	10L122AC
Neoprene Gasket for Under Continuous Hinge (2 required)	87B182-2B
Center Support Angle	87B250C
Button Socket Headscrew (23 required)	6L221CD
SS Lock Washer (23 required)	6L94G
SS Hex Nut (23 required)	6L30A

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VACUUM PRIMING SYSTEM

FLOAT CHECK VALVES

PART DESCRIPTION	PART #
Float Check Valve, 3/8" NPT (Complete Assembly) (Replaces 1L443, 1L443G, and 87A76)	1L443H
Adapter Fitting, 3/8" x 1/4"	1L43D
Body (See drawing - not normally replaced)	
Ball Seat (for 1L443H)	1L443HA
Valve Ball 1 1/2" Diameter	1L443B
O-Ring (for 1L443H)	1L443HB
Bowl Only (for 1L443H) (Also includes O-Ring P/N 1L443B)	1L443HC
Drain Valve	1L333
SONIC START® STREAMLINE™ Float Check Valve Piping Assembly (Connects Float Check Valve to vacuum tubing includes gauge port & shut off valve)	87B739

SOLENOID VALVES

PART DESCRIPTION	PART #
2-Way Solenoid Valve (5/16" orifice)	1L545A
DIN Connector for 1L545A with 8' cord (OLD P/N: 1L545A-1) (Required for initial installation of 1L545A)	87A481-STK
2-Way Solenoid Valve for the FORMULA X® (Old Style arrangement with solenoid next to Float Check Valve, Ref. 87B351)	1L545A
SONIC START® STREAMLINE™ Vacuum Dome /2-Way Solenoid Valve Assembly-Newest Current Arrangement	87B728A

SONIC START® KITS

PART DESCRIPTION	PART #
SONIC START® Upgrade Kit for One Pump	H87A391J
SONIC START® Upgrade Kit for Two Pumps -Must order 2 kits (Old P/N: H87A391B)	H87A391J
SONIC START® Drill & Tap Kit	H87A390A

SONIC START® PROBE

PART DESCRIPTION	PART #
SONIC START® - 120 VAC (PROBE)	4L628F
SONIC START® - 24 VDC (PROBE)	4L628G

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SONIC START® STREAMLINE™ REPLACEMENT PARTS

These parts come standard in the SONIC START® STREAMLINE™ Kits

PART DESCRIPTION	PART #
SONIC START® STREAMLINE™ Replacement Sensor Probe – 120 VAC	4L628F
SONIC START® STREAMLINE™ Replacement Sensor Probe – 24 VAC	4L628G
Explosion Proof SONIC START® STREAMLINE™ Prime Sensing Probe	4L628H
SONIC START® Operating Module	4L264S
SONIC START® DIN Connector Cable (Old PN: 1L545A-2)	87A481-STK
SONIC START® 8 Pin Socket	5L49B
SONIC START® Cord Grip	5L57L
SONIC START® Cable Ties	5L150A
SONIC START® Brass Bulkhead Adapter	87A384
SONIC START® O-Ring for Bulkhead Adapter	11L4J
SONIC START® Jam Nut	6L222A
SONIC START® Reducer Coupling	1L552A
SONIC START® Male Tubing Connector	1L460D
SONIC START® O-Ring for Cord Grip	5L57L-2
SONIC START® Nut for Cord Grip	5L57L-1

VACUUM DOME

PART DESCRIPTION	PART #
Vacuum Dome (one hole at top)	87B133B*
Compression Ring (holds dome in place)	87A226
SONIC START® STREAMLINE™ Vacuum Dome /2-Way Solenoid Valve Assembly (Current Style)	87B728

*PARTS ORDERING NOTE: Small O-Ring (P/N 11L4J) & Quad Ring (11L47D) are recommended (not included with dome)

VACUUM DOME ASSEMBLY

PART DESCRIPTION	PART #
Vacuum Dome Complete Assembly (one hole at top) Used with SONIC START® Probe. Old Style.	87B452A
DO NOT USE WITH SONIC START® STREAMLINE™	
Compression Ring (holds dome in place)	87A226
Ferrule Connection Fitting (Optional replacement for Quick Disconnect Fitting on new style electrodes that are includes with these assemblies.)	1L248A
Ferrule Nut & Sleeve	1L786A
SONIC START® STREAMLINE™ Complete Vacuum Dome Assembly Vacuum Dome/ 2-Way Solenoid Valve Dome Assembly. Current Style	87B728

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VACUUM PUMP - HEAVY DUTY - SINGLE PISTON & SPARE PARTS

PART DESCRIPTION	PART #
Heavy Duty 1/6 HP (For Pumps with 4" Piping) (<i>Complete pump</i>)	8L29
Repair Kit	8L29AB
Inlet Filter	8L29A1
Head Gasket	8L29A4
Valve Outlet	8L29A5
Valve Plate	8L29A6
Inlet Valve	8L29A7
Cylinder Gasket	8L29A8
Piston Ring	8L29A10
Piston Seal	8L29A11
Rider Ring	8L29A12
Fan	8L29A20
Shroud	8L29A21
Motor, 1/6 HP 1725	8L29A22
Vibration Isolator (See Section 6)	87A291

VACUUM PUMP - HEAVY DUTY - DUAL PISTON & SPARE PARTS

PART DESCRIPTION	PART #
Heavy Duty 1/2 HP (For Pumps with 6" Piping) (<i>Complete pump</i>) (replaces 8L40A*)	8L32*
Repair Kit (K262 or K263)	8L32-1
Head Gasket	8L32-2
Outlet Valve	8L32-3
Inlet Valve	8L32-4
Cylinder Gasket	8L32-5
Felt	8L32-6
Piston Ring	8L32-7
Piston Seal	8L32-8
Rider Ring	8L32-9
Valve Plate	8L32-10
Motor 1/2 HP 1725 RPM	8L32-11**
Shroud	8L32-12
Fan	8L32-13
Cylinder Head	8L32-14
Vibration Isolator (See Section 6)	87A291

* SEE SECTION 6 FOR COMBINED EXHAUST CONFIGURATION

**PURCHASE OF NEW 8L32 REQUIRED

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VACUUM PRIMING SYSTEM (CONTINUED)

VACUUM PUMP - COMBINED EXHAUST ASSEMBLY

PART DESCRIPTION	PART #
Vacuum Pump	8L32
Tee	1L37C
Adapter	1L42B
Elbow	1L90H
Tube/NPT Connector	1L248D
Polyethelyne Tubing	1L142CA

VACUUM TUBING

PART DESCRIPTION	PART #
Vacuum Tubing - 1/4"	Natural: 1L142AA
	Green: 1L142AB
	Red: 1L142AC
Vacuum Tubing - 3/8"	Natural: 1L142BA
	Green: 1L142BB
	Red: 1L142BC

VACUUM TUBING FITTINGS (for vacuum domes, solenoid valves, & float check valves)

PART DESCRIPTION	PART #
Ferrule (old style) elbow - 3/8" x 1/4" NPT	1L190B
Ferrule (old style) straight - 3/8" x 1/4" NPT	1L248A
Ferrule Nut & Sleeve	1L786A
Quick Disconnect (new style) elbow - 3/8" x 1/4" NPT	1L546C
Quick Disconnect (new style) straight - 3/8" x 1/4" NPT	1L460D

VAPOR FILTER

PART DESCRIPTION	PART #
Vapor Filter 12-Pack Replacement Part Kit - Recommend H87A391J SONIC START® STREAMLINE™ Upgrade Kit DO NOT USE H87A321A WITH SONIC START® STREAMLINE™	H87A321A

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VALVES

PLUG VALVES

PART DESCRIPTION	PART #
4" Plug Valve	2L104A-304 *
Handle/Wrench Only for 4" Plug Valve (Chilean Red)	2L104AA1
4" Flange Gasket	11L1A
6" 3-Way Tapered Plug Valve	2L148M-304 *
6" Flange Gasket	11L1C
Valve Wrench for Plug Valves – (Chilean Red)	2L104AA1
* PARTS ORDERING NOTE: 2 new Flange Gaskets per Plug Valve will be required.	

SOLENOID VALVES

PART DESCRIPTION	PART #
2-Way Solenoid Valve (5/16" orifice) Uses din connector	1L545A
DIN Connector for 1L545A with 8' cord (OLD P/N: 1L545A-1) (Required for initial installation of 1L545A)	87A481-STK
2-Way Solenoid Valve for the FORMULA X ® (Old Style arrangement with solenoid next to Float Check Valve, Ref. 87B351)	1L545A
SONIC START ® STREAMLINE ™ Vacuum Dome 1/2-Way Solenoid Valve Assembly- Newest, Current Arrangement	87B728

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VALVES (CONTINUED)

WAFER CHECK VALVES, SPRING LOADED

PART DESCRIPTION	PART #
4" Left Hand Wafer Check Valve, Extended Body	2L153S*
4" Right Hand Wafer Check Valve, Extended Body	2L153T*
4" Flange Gasket	11L1A
6" Left Hand Wafer Check Valve	2L153Q-304 *
6" Right Hand Wafer Check Valve	2L153R-304 *
6" Flange Gasket	11L1C

* **PARTS ORDERING NOTE:** 2 new Flange Gaskets per Plug Valve will be required.

WAFER CHECK VALVES – SPRING LOADED, SPARE PARTS

PART DESCRIPTION	4" PART #	6" PART #
	2L153S(-304) (LH) 2L153T(-304) (RH)	2L153Q(-304) (LH) 2L153R(-304) (RH)
Seat Ring	11L207F	11L207G
Brass Arm *	55A32	55A39
Brass Clapper	55B39	55B29
Shoulder Bolt - Stainless Steel	6L184A	6L184B
Roll Pin - Stainless Steel	2L153A6	2L153C-12
Shaft - Stainless Steel *	55B32	55B37
Bronze Bushing (2 required)	55A34	55A35
O-Ring (2 required)	2L153A9	2L153C9
Steel Bar Arm/Handle	55A36	55A37
Pin - Stainless Steel	2L153D11	2L153A11
Eye Bolt (from body to spring)	6L55N	6L55N
Spring - Stainless Steel	11L104N	11L104M
Pipe Plug	1L69C	1L69D
Eye Bolt (from handle to spring)	6L55M	6L55M
Flange Gasket (2 required per valve)	11L1A	11L1C

* **PARTS ORDERING NOTE:** 2 new Flange Gaskets per Plug Valve will be required.

WRENCH, VALVE

PART DESCRIPTION	PART #
Valve Wrench for Plug Valve - Red	2L104AA1

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SUGGESTED SPARE PARTS

LIST OF SUGGESTED SPARE PARTS

PART DESCRIPTION	PART #
Mechanical Seal (Select the correct seal for your pump)	
<input type="checkbox"/> B-Shaft Single Mechanical Seal – 1-7/8"	H87A28
<input type="checkbox"/> C-Shaft Single Mechanical Seal – 2-1/8"	H87A97
<input type="checkbox"/> D-Shaft Single Mechanical Seal – 3"	H87A182
Volute Gasket (Select the correct volute gasket for your pump) <i>A new volute gasket is required each time the rotating assembly (motor, impeller, mechanical seals, and /or volute) is disassembled.</i>	
<input type="checkbox"/> 4B2B*1, TURBO 4B2C, 4B2C, 4B2D, 4C2B, 4C2D	60A26 (¹ / ₃₂ "
<input type="checkbox"/> 4B3B, 4C3B, 4D3B, 6B3B (& SERIES), 6C3B (& SERIES), 6D3B (& SERIES)	60A28 (¹ / ₃₂ "
<input type="checkbox"/> 4D4B	60A106B (¹ / ₃₂ "
<input type="checkbox"/> 8C4D, 8D4D	60A88 (¹ / ₃₂ "
Seal Housing Gasket (Select the correct gaskets for your pump) <i>A new seal housing gasket is required each time the mechanical seal is replaced.</i>	
<input type="checkbox"/> Flat – B-Shaft – 1-7/8" – Older Style	60A11
<input type="checkbox"/> Flat – C-Shaft – 2-1/8" – Older Style	60A17
<input type="checkbox"/> Flat – D-Shaft – 3" – Older Style	60A84
<input type="checkbox"/> Quad Ring – B-Shaft – 1-7/8" – Seal Housing with Groove	60A110
<input type="checkbox"/> Quad Ring – C-Shaft – 2-1/8" – Seal Housing with Groove	60A111
<input type="checkbox"/> Quad Ring – D-Shaft – 3" – Seal Housing with Groove	60A146
Nylock Impeller Bolt (Select the correct bolt for your pump) <i>A new Nylock Impeller Bolt is recommended from a safety standpoint each time it is removed.</i>	
<input type="checkbox"/> B-Shaft & C-Shaft Nylock Impeller Bolt – 1-7/8" & 2-1/8"	60A12
<input type="checkbox"/> D-Shaft Nylock Impeller Bolt – 3"	60A87
Impeller Washer (Select the correct washer for your pump)	
<input type="checkbox"/> B-Shaft & C-Shaft Impeller Washer – 1-7/8" & 2-1/8"	60A20
<input type="checkbox"/> D-Shaft Impeller Washer – 3"	60A86
Prime Sensing Probe (Select the style installed on your pump station)	
<input type="checkbox"/> SONIC START ® Prime Sensing Probe	4L628F
<input type="checkbox"/> SONIC START ® STREAMLINE ™ Vacuum Dome – Solenoid Valve Assembly (If SONIC START ® STREAMLINE ™ is installed on your station.)	87B728
Vacuum Dome (Clear Dome Only) Small O-Ring (P/N 11L4J) & Quad Ring (11L47D) are recommended (not included with dome)	87B133B
Vacuum Dome Top O-Ring	11L4J
Quad Ring (Old PN: 11L4K Vacuum Dome Bottom O-Ring)	11L47D
Vacuum Tubing – 3/8" - Red	1L142BC

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GENERAL LIST OF OTHER POSSIBLE SPARE PARTS

PART DESCRIPTION	PART #
Alternator (Select the correct alternator for your pump)	
<input type="checkbox"/> Alternator, Sequential – New Style 2-Pump P.S. (plug-in with 11 pin)	4L187B
<input type="checkbox"/> Socket Base, 11 pin, for Alternator 4L187B	5L49C
<input type="checkbox"/> Alternator, Sequential – Old Style 2-Pump P.S. (replaces 4L187, 12 Pin)	4L187A
<input type="checkbox"/> Socket Base, 12 pin, for Alternator 4L187A	5L161
<input type="checkbox"/> Alternator/Timer for old stations, 2 Switches, Wire-In 16 Hour (8 on/off) Replaces Zenith 4L282A <i>Customer will require wiring installation instructions if this replaces a PN 4L282A</i>	4L343*
<input type="checkbox"/> Alternator/Timer for new stations, 1 Switch, Wire-In 16 hour (8 on/off)	4L365A
<input type="checkbox"/> Relay, Alternator	4L105A
Blower (Select the correct blower for your pump station)	
<input type="checkbox"/> Blower – 265 CFM (Newer Stations)	7L195
<input type="checkbox"/> Blower – 110 CFM (Older Stations)	7L40
CR Relay (Vacuum Pump Relay) (Select the correct CR Relay for your station)	
<input type="checkbox"/> Relay for Vacuum Pump (1CR, 2CR)	4L107A
<input type="checkbox"/> Relay for Vacuum Pump (1CR, 2CR) “Series Stations”	4L424A
SONIC START® Operating Module	4L264S
Float Check Valve	1L443H
Float Check Valve Drain Valve	1L333
Float Switches (Determine which floats are installed on your pump station)	
<input type="checkbox"/> Normally Open Float Switch (typical)	4L291A
<input type="checkbox"/> Normally Closed Float Switch (Special Alarms only)	4L291B
H-O-A Toggle Switch (3 Position), SPST (Not UL Listed) (replaces 4L207A)	4L272A
Impeller (Must be identified by pump station serial number)	Call Factory
Off-On Test Selector Switch , Toggle Switch, SPST (Not UL Listed)	4L23

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GENERAL LIST OF OTHER POSSIBLE SPARE PARTS (CONTINUED)

PART DESCRIPTION	PART #
Paint (<i>Determine which paint your station requires</i>)	
* Order one gallon of Catalyst Part B for each gallon of paint/primer – must be mixed before use.	
() Dark S&L Green VERSAPOX ®, Part A, Gallon	12L104B *
() Light Green VERSAPOX ®, Part A, Gallon	12L109B *
() Aquamarine VERSAPOX ®, Part A, Gallon	12L181B *
() VERSAPOX ® Catalyst, Part B, Gallon	12L105B
() Primer (RED), Part A, Gallon	12L138A *
() Primer Catalyst, Part B, Gallon	12L138B
() Touch-Up Paint Kit – Aquamarine	H87A424
() Touch-Up Paint Kit – Light Green	H87A426
() Touch-Up Paint Kit – Georgian Hemlock	H87A425
Solenoid Valve (Select the style installed on your pump station)	
() 3-Way Solenoid Valve	1L406E
() 2-Way Solenoid Valve (Remote Mounted & SONIC START ® STREAMLINE ™)	1L545A
() 2-Way Solenoid Valve (Conduit Connection Mounted Through Panel & Backpan)	1L545B
SONIC START ® Operating Module (If SONIC START ® is installed)	4L264S
Temperature Control , 37° to 52° Heater	4L135B
Temperature Control , 90° to 75° Blower	4L135C
Thermostat Switch for Heater	4L84-2
Tubing (<i>Select the correct tubing for your pump station</i>)	
() Vacuum Tubing – 3/8" Natural:	1L142BA
	Green: 1L142BB
	Red: 1L142BC
() Vacuum Tubing – 1/4" Red:	1L142AC
() Vacuum Tubing - 1/2" Natural	1L142CA
Vacuum Pump (Select the correct vacuum pump for your station)	
() Heavy Duty 1/6 hp Single Piston Vacuum Pump – 4" station piping	8L29
() Standard Duty 1/8 hp Single Piston Vacuum Pump – 4" station piping	8L44
() Heavy Duty 1/2 hp Dual Piston Vacuum Pump – 6" station piping	8L32
Valves – Check Valve, Spring Loaded	Call Factory
Valves – Plug Valve	Call Factory
Vapor Filter – 12-Pack Replacement Kit (use with electrodes only)	H87A321A

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Maintenance

the secret to longevity

Maintenance of equipment is the secret of longevity. We at Smith & Loveless firmly believe that if you give a WWMP5 6 hours of maintenance a year, you will have very few problems, if any.

So, what is included in this maintenance?

- Clean the solenoid twice a year.
- Verify that all vacuum pumps pull 24 inches of Hg.
- Lubricate the motor annually (remember over greasing can cause severe damage).
- Inspect or replace all vacuum lines.
- Inspect and clean all fittings.
- Verify the wet well is clean.
- Inspect the motor adapter for any sign of mechanical seal leakage, replace if necessary. Also, twice a year, remove the vacuum line from the electrode dome/priming dome.
- Note the length of time it takes each pump to prime. Periodically check this against your recorded numbers.
- Install gauges on all pumps.

Smith & Loveless now offers a complete set of glycerin gauges with an internal diaphragm. These quality compact gauges can be sized by Smith & Loveless for every station.

If you put the annual 6 hours of maintenance in your schedule, these stations require very little and you're sure to have trouble-free station operation. Just last week, we had a customer come in for an electrode housing and he said he had not done a thing to the station since 2001. While we do not recommend this, it just goes to show how durable Smith & Loveless pump stations are.

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