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# PSH140 Owner's Manual

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Dear valued customer.

Thank you for purchasing a White Knight PSH140 pump.

Our dedicated team designs products to meet your exacting specifications with a demonstrated commitment to quality that goes beyond mere words and fancy slogans.

Our patented designs offer a variety of size and material options to meet stringent requirements of high-pressure chemical delivery systems, hightemperature re-circulation processes, chemical reclaim and bulk transport applications, slurry systems, and more. Our safe, reliable products offer superior performance, optimized efficiency, and simplified maintenance.

White Knight is able to provide the highest quality fluid handling products through controlled, consistent in-house engineering and manufacturing. Through continued significant investments in engineering and manufacturing, we lead the industry with new technologies and products.

White Knight has received numerous awards for innovation and manufacturing programs. We rigorously manage our quality assurance processes to ensure consistency and reliability. Our quality controls include strict cleanliness procedures and consistent manufacturing processes. For example, high-purity product assembly, testing, and packaging is performed in a Class 100 cleanroom.

Please peruse this manual before installing your White Knight product. It details installation requirements and setup instructions, and provides additional information and accessories for enhanced functionality.

Our team has gone to great lengths to ensure our products serve your needs and meet your requirements.

Further, we provide the highest quality products at the best value, and we back them up with excellent warranties and world class support.

Thank you for your confidence and trust in White Knight products.

Sincerely,

Tim White, CEO White Knight Fluid Handling





# 1. Product Information

# 1.1 Specifications & Performance

Мос	lel	PSH140	
Мах	Flow Rate*	118 lpm (31.3 gpm)	
	olacement Cycle*	0.5 liters (0.132 gal)	
Сус	les per min	254 max	
Air Connection		3/8 in	
Wei	ght	18.5 kg (40.87 lb)	
Suc	tion Lift*	1 m (3 ft)	
Sound	Pressure**	71.73 dB(a) at 80 psi 50 CPM 75.42 dB(a) at 80 psi max CPM	
Sol	Power**	70.46 dB(a) at 80 psi 50 CPM 75.27 dB(a) at 80 psi max CPM	

\* May vary by configuration or system. Suction lift diminishes over time. Recommended installation level less than 3 ft above source. To calculate displacement, divide flow rate by CPM. \*\* Sound measured in accordance with ISO9614-2:1997.

Max Fluid Temperatur	e	145°C (293°F)	
Environmen Temperatur		min: 0°C (32°F) max: 50°C (122°F)	
Max Supply Air Pressur		5.5 Bar (80 psi)	
Min Startup Air Pressur		1.4 bar (20 psi)	
Fluid Path Materials		PTFE, PFA	
Non-Fluid F Materials	Path	PTFE, PFA, Ceramic	
Stroke Detection	Fiber optic with or without D10 sensor, or solid state pressure switch (NPN or PNP)		
Leak Detection	Fiber optic with or without sensor, or conductivity		
Electronic Control	CPC, CPT, or custom. Call for details.		

PSH140 Performance 7 100 Air Pressure Air Consumption 90 Cycle Rate 6 80 PSI 80 5 70 **Discharge Pressure** 60 PSI CPM 60 л SCEM 50 3 40 PSI 40 5 SCEN 30 2 20 PSI 10 SCFM 20 1 10 PSI Rar 140 20 40 60 80 100 120 LPM m³/hr 1 0 2.0 3.0 4.0 5 0 6 0 7.0 8.0 14 16 18 20 22 24 26 28 GPM 10 12 30 32 34 36 Liquid Flowrate

#### How to Read Charts

Draw a horizontal line at your discharge pressure and vertical line at desired flow rate. At line intersect, estimate required air pressure, resultant cycle rate and air consumption.

#### Example

At 2 Bar (30 psi) discharge pressure and 80 psi air pressure, PSH140 pumps provide 88 lpm (23.2 gpm) flow rate, cycle at ~200 CPM and exhaust 28 SCFM of air.

\*Graph is for reference only. Performance was measured utilizing 1/2 in (3/8 in ID) air line and 1-1/4 in (1-1/8 in ID) liquid lines with 1 ft flooded suction. Performance may vary in your system.



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80

70

60

50

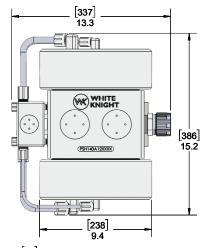
40 30

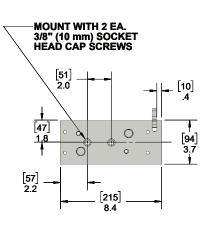
20 PSI

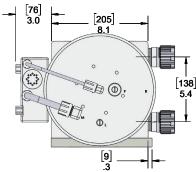
#### **1.2 Temperature Limits** 160°F 180°F 140°F 200°F 220°F 240°F 260°F 280°F 300°F 6 5 Air Supply Pressure 4 3 2 Bar 60°C 70°C 80°C 90°C 100°C 110°C 120°C 130°C 140°C 150°C

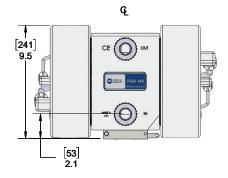
# 1.3 Dimensions

Dimensions in [mm] in









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Ver. 2.2.1 | 22 Dec 2022 | P. 2 Subject to change without notice



# 1.4 Bill of Materials

Shuttle Assembly 14450-TE-0003 28 16 15 28 16 15 14 29 13 12 20 10 14 20 10 10 10 10 10 10 10 10 10 10		END-	<b>y</b> )009			8				
25	22	6° , (	), "l		<u> </u>				TERIALS	
(25) (13)	22	•••• •••	9, .)	$\sim$	4)		Part N	lumber	Description	Qty.
25 13 14	22 1915 - 22	°. °.	9.		<u> </u>	1 2	Part N 1125-T 2127-T	Lumber E-0018 E-0013	Description Pump Body Head, Right,	<b>Qty.</b> 1
	22 19 <sup>16</sup> -	°. °.		$\sim$	<u> </u>	Item 1	Part N 1125-T 2127-T 2127-T 3133-T	Lumber E-0018 E-0013 E-0014 E-0006	Description Pump Body	<b>Qty.</b> 1 1 2
23 13 14 23	22 19 <sup>16</sup> -	· · ·	), .) (10)	$\sim$	<u> </u>	1 2 3 4 5	Part N 1125-T 2127-T 2127-T 3133-T 14200-	lumber E-0018 E-0013 E-0014 E-0006 NP-0007	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly	1 1 1 2 1
23		· · ·		2	£)	<b>Item</b> 1 2 3 4 5 6 7	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M	lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 IP-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow	1 1 2 1 2 2
23 Leak Detect	Fittings (Ty			Assemblies	4 Body Inlet Only (Nut not included)	1 2 3 4 5 6	Part M 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4100-M	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 P-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow 1-1/8° Check Ball	1 1 2 1 2 2 4
23	Fittings (Ty Flaretek	1/2 in.	tion) F08	2 Assemblies 14510-PF-0011	Body Inlet Only (Nut not included) 7200-PF-0015	Item 1 2 3 4 5 6 7 8 9 10	Part N 1125-T 2127-T 3133-T 14200-I 4135-M 4142-M 4142-M 4100-M 4140-T 10040-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0003 E-0004 TE-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow 1-18° Check Ball Top Check Plug 14° NPT Plug	1 1 2 1 2 2 4 2 4 2 4
Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier	Fittings (Ty	1/2 in. 3/4 in.	iion) F08 F12	<b>Assemblies</b> 14510-PF-0011 14510-PF-0008	4 Body Inlet Only (Nat not included) 7200-PF-0015 7200-PF-0009	Item           1           2           3           4           5           6           7           8           9           10           11	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4140-M 4140-T 10040- 10070-	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 TE-0003 PF-0004	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Ball Top Check Plug 1/4" NPT Plug 1/2" PFA Tube	1 1 2 1 2 4 2 4 2 5 7
Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier	Fittings (Ty Flaretek	1/2 in. 3/4 in. 1 in.	ion) F08 F12 F16	<b>Assemblies</b> 14510-PF-0011 14510-PF-0008 14510-PF-0009	Body Inlet Only ( <i>Nut not included</i> ) 7200-PF-0019 7200-PF-0019	Item 1 2 3 4 5 6 7 8 9 10 11 12 13	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4140-M 4140-T 10040- 10070- 10070- 10070- 6080-K	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 P-0003 P-0003 P-0003 PF-0004 PF-0001 F-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Seat, High Flow 1-18° Check Ball Top Check Plug 114° NPT Plug 114° NPT Plug 114° NPT Plug 114° NPT Aube 114° Thick Wall PFA Tubing 114° Cripper	1 1 2 1 2 4 2 4 2 4 2 5 7 4
Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier	Eitings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in.	tion) F08 F12 F16 F20	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010	Body Inlet Only (Nut not included) 7200-PF-0015 7200-PF-0010 7200-PF-0010 7200-PF-0011	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4142-M 4140-T 10040- 10070- 10070- 10070- 10070- 6080-K 6080-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0004 PF-0003 E-0003 E-0003 E-0003 E-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow 1-18' Check Ball Top Check Plug 1/2' PFA Tube 1/2' The A Tube 1/2' Cirpper 1/2' Farule	1 1 2 1 2 2 4 2 2 4 2 5 7 4 2 5 7 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with D10 amplifier	Fittings (Ty Flaretek	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in.	tion) F08 F12 F16 F20 T12	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P	Body Inlet Only (Nut not included) 7200-PF-0015 7200-PF-0010 7200-PF-0010 7200-PF-0011 F-0007	Item 1 2 3 4 5 6 7 8 9 10 11 12 13	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4140-M 4140-T 10040- 10070- 10070- 10070- 6080-K	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 IP-0004 IP-0003 E-0004 PF-0004 PF-0001 FF-0003 E-0003 E-0003 E-0001	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Rel Ital Top Check Plug 114' NPT Plug 114' NPT Plug 114' The Plate Tubing 112' Cripper 112' Gripper 112' Gripper 112' Gripper 112' Farule	1 1 2 1 2 4 2 4 2 4 2 5 7 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-012         LF3         25 ft fiber optic cable with no amplifier	Eitings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in.	tion) F08 F12 F16 F20 T12 T16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0009 7120-P 7120-P	Body Inlet Only (Nat not included) 7200-PF-0015 7200-PF-0009 7200-PF-0010 7200-PF-0011 7200-PF-0011 F-0007 F-0008	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17	Part N 1125-T 2127-T 3133-T 14200-1 4135-M 4142-M 4140-M 4140-M 10040-1 10070-1 10070-1 0080-K 6080-T 6080-K 6080-K 6080-K 6080-K	Lumber E-0018 E-0013 E-0014 E-0004 P-0003 P-0003 E-0004 PF-0003 PF-0004 F-0003 PF-0001 F-0003 E-0001 E-0001 E-0001 E-0001 E-0003	Description Pump Body Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Seat, High Flow 1-1/8* Check Bail Top Check Plug 1/4* VPT Plug 1/2* VPT Plug 1/2* PFA Tube 1/4* Thrick Wall PFA Tubing 1/2* Gripper 1/4* Farule 1/4* Farule 1/4* Gripper Spool	1 1 2 2 2 4 2 4 2 5 7 4 4 4 4 4 4 4 4 1
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/4 in.	ion) F08 F12 F16 F20 T12 T16 T20	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0010 7120-P 7120-P 7120-P	Body Inlet Only (Net not included) 7200-PF-0015 7200-PF-0019 7200-PF-0011 7200-PF-0011 7200-PF-0011 F-0007 F-0008 F-0009	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           18	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4100-M 4140-T 10070- 10070- 10070- 10070- 10070- 10070- 6080-K 6080-T 6080-K 6560-C 10040-	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0003 E-0004 PF-0003 E-0004 PF-0003 E-0001 E-0003 E-0001 E-0001 E-0001 E-0001 E-0001 E-0001 E-0001 E-0002	Description Pump Body Head, Right, Head, Right, Head, Right, Head, Leit Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow 1-18° Check Ball Top Check Plug 112° PFA Tube 112° Check Ball 112° Cripper 112° Ferrule 114° Toripper Spool 18° NPT Plug	1 1 2 2 2 4 2 5 7 4 2 5 7 4 2 5 7 4 4 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0112         LF3         25 ft fiber optic cable with no amplifier           14600-XX-012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-012         LF3         25 ft fiber optic cable with no amplifier	Fittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/4 in. 1-1/2 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P	Body Inlet Only (Nat not included) 7200-PF-0010 7200-PF-0010 7200-PF-0011 F-0007 F-0008 F-0009 F-0010	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17	Part N 1125-T 2127-T 3133-T 14200-1 4135-M 4142-M 4140-M 4140-M 10040-1 10070-1 10070-1 0080-K 6080-T 6080-K 6080-K 6080-K 6080-K	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0004 PF-0004 PF-0004 PF-0004 PF-0001 E-0003 E-0001 E-0003 E-0003 E-0003 E-0003	Description Pump Body Head, Right, Head, Right, Head, Left, Replaceable Seat, Shift, Universal Base Plate Assembly, Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Seat, High Flow 1/8° Check Ball Top Check Plug 1/8° PFA Tube 1/8° Check Ball 1/8° Check Ball 1/2° Erparie 1/8° Therule 1/8° Check Ball 1/8° Gripper 1/8° Spool 1/8° NPT Plug 30 gpm Shuttle End Cap	1 1 2 2 2 4 2 4 2 5 7 4 4 4 4 4 4 4 4 1
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/4 in. 1-1/2 in. 3/4 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7130-P 71300-P	Body Inlet Only (Nut not included) 7200-PF-0015 7200-PF-0019 7200-PF-0019 7200-PF-0010 7200-PF-0010 F-0009 F-0009 F-00010 F-0005	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           18           19           20           21	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4142-M 4142-M 4140-T 10070- 10070- 10070- 10070- 10070- 6080-K 6080-T 6080-T 6080-T 6080-T 6080-T 6080-T 6080-T 6140-F 6140-P	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0004 PF-0004 PF-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 P-0004 P-0004 P-0002	Description Pump Body Head, Right, Head, Right, Head, Right, Left, Replaceable Seat, Shift, Universal Base Plate Assembly, Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Seat, High Flow 1/8' Check Ball Top Check Right 1/8' Check Ball 1/2' Check Ball 1/2' Check Ball 1/2' Check 1/2' Farule 1/2' Farule 1/2' Farule 1/4' Farule 1/4' Farule 1/4' Gripper 1/4' Gripper 1/4' Gripper 1/4' Farule 1/4' Barule 1/4' Bar	1 1 2 1 2 4 2 4 2 4 2 5 7 2 5 7 4 4 4 4 4 4 1 3 2 6 6 6
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fber optic cable with no amplifier           14600-XX-0010         LC1         15 ft conductivity cable	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16	Assemblies 14510-PF-0011 14510-PF-0009 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7300-P 7300-P	Body Inlet Only           (Not not included)           7200-PF-0015           7200-PF-0017           7200-PF-0010           7200-PF-0011           7200-PF-0011           F-0008           F-0009           F-0010           F-0005           F-0005	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           18           20           21           22	Part N 1125-T 2127-T 2127-T 3133-T 14200-I 4135-M 4142-M 4100-M 4140-T 10070-I 10070-I 0080-K 6080-K 6080-T 6080-K 6560-C 10040-I 6530-T 6140-F 6140-F 6030-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0003 E-0003 E-0003 E-0003 E-0001 E-0001 E-0001 E-0003 E-0001 E-0003 E-0003 E-0004 P-0002 E-0004	Description Pump Body Head, Right, Head, Laft Read, Laft Base Plate Assembly Bottom Check Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow 1-18° Check Ball Top Check Reg 112° EPrA Tube 112° EPrA Tube 112° Epravle 112° Epravle 114° Thick Wall PFA Tubing 114° Epravle 114° Epravle 114° Epravle 114° Epravle 114° Epravle 30 gpm Shuttle End Cap Baffle Porous Poly Shuttle Mesh 14° Horp Ellow	1 1 2 2 4 2 4 2 5 7 7 4 4 4 4 4 4 4 4 1 3 2 6
Leak Detect           Part         Description           14500-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         26 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with 10 amplifier           14600-XX-0031         LC0         15 ft conductivity cable           14600-XX-0040         LC1         25 ft conductivity cable           5troke Detect with Fiber Optics         5troke Detect with Fiber Optics	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 1/2 in.	ion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P	Body Inlet Only (Nat not included) 7200-PF-0010 7200-PF-0010 7200-PF-0011 F-0007 F-0008 F-0010 F-0005 F-00005 F-00005 F-00005 F-00005 F-00005	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           18           20           21           22	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4140-M 4140-T 10070- 10070- 10070- 10070- 10070- 10070- 6080-K 6080-T 6080-T 6080-T 6080-T 6080-T 6140-P 6130-T 6140-P 6030-T 6020-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0004 PF-0004 PF-0004 PF-0001 E-0003 E-0001 E-0001 E-0001 E-0001 E-0002 E-0002 E-0002 E-0004 E-0004 E-0004	Description           Pump Body           Head, Rloht,           Head, Rloht,           Head, Rloht,           Head, Rloht,           Base Plate Assembly           Bottom Check Seat, High Flow           Top Check Seat, High Flow           Top Check Real,           Top Check Real,           1/4' NPT Plug           1/2' Ferrule           1/4' Thick Wall PFA Tube           1/4' The Funde           1/4' The Prove           1/4' The Prove           1/3' Stripper           Spool           1/8' NPT Plug           1/8' NPT Plug           1/8' MPT Plug           1/8' NPT Plug           3/9 gam Shuttle End Cap           Baffle Porous Poly           Shuttle Mesh           1/4' Strip Zingrep Elbow           3/8' NPT X 1/2' Gripper Elbow	1 1 2 1 2 4 2 4 2 4 2 5 7 2 5 7 4 4 4 4 4 4 1 3 2 6 6 6
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fber optic cable with no amplifier           14600-XX-0010         LC1         15 ft conductivity cable	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 710-P	Body Inlet Only           (Not not included)           7200-PF-0015           7200-PF-0017           7200-PF-0010           7200-PF-0011           7200-PF-0011           F-0008           F-0009           F-0010           F-0005           F-0005	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           16           16           17           18           20           21           22           23           24           25	Part N 1125-T 2127-T 2127-T 3133-T 14200- 4135-M 4142-M 4140-T 10040- 10070- 10070- 10070- 10070- 6080-K 6080-T 6080-K 6080-T 6080-K 6560-C 10040- 6530-T 6140-F 6140-F 6030-T 6020-T 10010-	Lumber E-0018 E-0013 E-0014 E-0006 P-0004 P-0003 E-0004 F-0003 E-0004 F-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0003 E-0004 P-0004 P-0004 E-0005 FE-0005 FE-0016 E-0005	Description Pump Body Head, Right, Head, Left, Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow Top Check Seat, High Flow Top Check Seat, High Flow 1/2 Pcheck Ball 1/2 Pcheck Ball 1/2 Pcheck Ball 1/2 Pcheck 1/4 'Thick Wall PEA Tubing 1/2 'Gripper 1/4 'Gripper Spool 1/8' NPT Plug 30 gorn Shuttle End Cap Baffle Porous Poly Baffle Porous Poly Baffle Porous Poly Baffle Grope Tlow 3/8' NPT X 1/2' Gripper Elbow	1 1 2 2 2 2 4 2 5 7 4 2 5 7 4 4 2 5 7 4 4 4 4 4 4 4 4 4 4 4 4 4 4 5 6 6 6 6 2 2 2 2 2 2 2 2 2 2 2 5 7 1 1 2 5 7 1 1 2 5 7 1 1 1 2 2 2 5 7 1 2 5 7 1 2 1 2 2 2 5 7 1 2 5 7 1 2 1 2 5 7 1 2 1 2 5 7 1 1 1 1 2 1 2 1 2 5 7 1 1 1 1 2 1 2 1 2 1 2 1 2 1 2 1 2 1 2
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with 10 amplifier           14600-XX-0012         LC3         5 ft conductivity cable           14600-XX-0040         LC1         25 ft conductivity cable           Stroke Detect with Fiber Optics         Part         Description           14700-XX-0013         SF0         15 ft fiber optic cable with the optic cable	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 1 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W12 W16 P08 P12 P16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7300-P 7300-P 7300-P 14530-PF-0011 14530-PF-0001	Body Inlet Only ( <i>Nat not included</i> )           7200-PF-0015           7200-PF-0019           7200-PF-0010           7200-PF-0011           7200-PF-0011           7200-PF-0011           F-0008           F-0009           F-00016           F-0005           F-0005           F-0005           F-0006           7400-TE-0019           7400-TE-0007	Item           1           2           3           4           5           6           7           7           8           9           10           11           12           13           14           15           16           17           18           19           20           21           22           23           24           25           26	Part N 1125-T 2127-T 2127-T 2127-T 14200- 4135-M 4142-M 4102-M 4142-M 4104-T 10040- 10070- 0608-K 6080-T 6080-K 6080-T 6080-K 6080-T 6140-F 6030-T 6140-F 6030-T 10010- 6030-T 6030-T 10010- 6070-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0003 E-0004 F-0003 E-0004 F-0003 E-0001 E-0003 E-0001 E-0003 E-0004 E-0004 E-0004 E-0003 E-0003 E-0004 E-0003	Description Pump Body Head, Right, Head, Right, Head, Left Replaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow 1-16° Check Ball Top Check Reg 1/2' PFA Tube 1/2' PFA Tube 1/2' Forrule 1/2' Forrule 1/4' Thick Wall PFA Tubing 1/4' Thick Wall PFA Tubing 1/4' Gripper Spool 1/8' NPT Plug 30 gm Shuttle End Cap Baffle Porous Poly Shuttle Mesh 1/4' Sripper Elbow 3/8' NPT X 1/4' Grip Elbow 1/2' Fernale 1/2' Griper Nut 1/4' Gripper Nut 1/4'	1 1 2 2 4 2 4 2 FT 2 FT 4 4 4 4 4 4 4 1 3 2 6 6 6 6 2 2 2 2 2 2 2 2
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with D10 amplifier           14600-XX-0011         LF2         15 ft fiber optic cable with D10 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0013         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0014         LC1         25 ft conductivity cable           14600-XX-0010         LC1         25 ft conductivity cable           Stroke Detect with Fiber Optics         Part         Description           14700-XX-0013         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0014         SF1         15 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 1 in. 1 -1/2 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/2 in. 1 -1/2 in. 1 in. 1 in. 1 -1/2 in. 1 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7100-P 71450-PF-0011 14530-PF-0006	Body Inlet Only (Nut not included) 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0009 F-0010 F-0005 F-00005 F-00005 F-00005 7400-TE-0019 7400-TE-0007 7400-TE-0008	Item           1           2           3           4           5           6           7           8           9           10           111           12           13           141           15           16           17           18           19           20           21           22           23           24           25           26           27	Part N 1125-T 2127-T 2127-T 3133-T 14200-0 4135-M 4102-M 4100-M 4100-M 4100-M 4100-0 10070-1 0070-T 0070-T 0080-K 6580-C 6680-T 6080-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0003 PF-0004 PF-0003 E-0003 E-0003 E-0003 E-0003 E-0001 E-0003 E-0003 E-0004 P-0002 E-0004 E-0005 E-0004 E-0005 E-0005 E-0005 E-0005 E-0005 E-0005 E-0001 E-0001 E-0001	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Base Plate Assembly           Base Plate Assembly           Bottom Check Seat, High Flow           Top Check Seat, High Flow           Top Check Seat, High Flow           Top Check Real           Top Check Real           1/2* Origoer           1/2* Ferrule           1/2* Ferrule           1/4* Thick Wall PFA Tubing           1/4* Cripper           Spool           1/8* NPT Plug           30 gpm Shuttle End Cap           Baffle Porous Poly           Shuttle Med           3/8* NPT X 1/2* Graper Elbow           3/8* NPT X 1/2* Graper Graper Nut           1/4* Graper Air Nut           Muffler Cap	1 1 2 2 4 2 2 4 2 5 7 2 5 7 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LC0         15 ft conductivity cable           5troke Detect with Fiber Optics         Part         Description           14700-XX-0013         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0014         SF1         15 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible Tube Out Weldable Pillar S-300	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 1 in. 1 -1/4 in. 1 -1/2 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 -1/2 in. 1 in. 1 -1/4 in. 1 -1/2 in. 1 in. 1 -1/4 in. 1 in. 1 -1/2 in. 1 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 in. 1 -1/4 in. 1 in. 1 -1/2 in. 1 in. 1 in. 1 in. 1 in. 1 in. 1 in. 1 -1/2 in. 1 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20 P24	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 71300-P 744-000 7450-PF-0001 14530-PF-0007 14530-PF-0008 7450-PF-0026 7450	Body Inlet Only (Nat not included) 7200-PF-0010 7200-PF-0011 F-0009 F-0009 F-0009 F-0009 F-0000 F-00005 F-00005 F-00006 F-00005 F-00006 F-00005 F-00006 F-00006 F-00007 F-00006 F-00007 F-00007 F-007 F-007	Item           1           2           3           4           5           6           7           7           8           9           10           11           12           13           14           15           16           17           18           19           20           21           22           23           24           25           26	Part N 1125-T 2127-T 2127-T 2127-T 14200- 4135-M 4142-M 4102-M 4142-M 4104-T 10040- 10070- 0608-K 6080-T 6080-K 6080-T 6080-K 6080-T 6140-F 6030-T 6140-F 6030-T 10010- 6030-T 6030-T 10010- 6070-T	Lumber E-0018 E-0013 E-0014 E-0006 NP-0007 P-0004 P-0003 E-0004 PF-0003 E-0003 FF-0003 E-0003 E-0003 E-0003 E-0003 TE-0001 E-0003 TE-0002 E-0003 TE-0002 E-0003 E-0004 E-0004 E-0005 E-0004 E-0005 E-0005 E-0006 E-0001 E-0017 E-00017 E-00017 E-00017	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Base Plate Assembly           Base Plate Assembly           Bottom Check Seat, High Flow           Top Check Seat, High Flow           Top Check Seat, High Flow           Top Check Relat           Top Check Plug           1/4' NPT Plug           1/2' Fernule           1/2' Fernule           1/4' Toper           Spool           1/8' NPT VI           30 gpm Shuttle End Cap           Baffle Porous Poly           Shuttle Medy           Shuttle Medy           Serrew           1/2' Chapter Elbow           36' NPT X 1/2' Ginper Elbow           36' NPT X 1/2' Ginper Flow           Set Screw           1/2' Fernale Gripper Nut           1/4' Male Gripper Nut           1/2' Male Gripper Nut           1/2' Male Gripper Nut           1/2' Male Gripper	1 1 2 2 4 2 4 2 FT 2 FT 4 4 4 4 4 4 4 1 3 2 6 6 6 6 2 2 2 2 2 2 2 2
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with n0 amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0014         LC3         25 ft fiber optic cable with n0 amplifier           14600-XX-0014         LC1         15 ft conductivity cable           Stroke Detect with Fiber Optics         Part         Description           14700-XX-0013         SF1         15 ft fiber optic cable with n010 amplifier           14700-XX-0013         SF1         15 ft fiber optic cable with n010 amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with n010 amplifier	Entrings (7) Flaretek Compatible Weldable Pillar S-300 FNPT	1/2 in. 3/4 in. 1 in. 1-1/4 in. 1-1/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1/2 in. 3/4 in. 1/2 in. 1/2 in. 1/2 in. 3/4 in. 1.1/2 in.	tion) F08 F12 F16 F20 T12 T16 T20 T24 W16 P08 P12 P16 P20 P24 N12	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 71300-P 7300-P 14530-PF-0006 14530-PF-0006 14530-PF-0008 14530-PF-0008 14530-PF-0008 14530-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500-PF-0028 14500	Body Inlet Only ( <i>Nut not included</i> )           7200-PF-0015           7200-PF-0017           7200-PF-0010           7200-PF-0011           7200-PF-0011           7200-PF-0010           F-0008           F-0009           F-0005           F-0006           F-0005           F-0006           7400-TE-0007           7400-TE-0008	Item           1           2           3           4           5           6           6           7           8           9           10           11           12           33           4           5           6           6           6           10           11           12           13           14           15           16           177           18           18           19           20           21           22           23           24           25           26           27           28           29           30	Part N 1125-T: 2127-T:	Lumber E-0018 E-0018 E-0014 E-0014 E-0006 P-0004 P-0003 P-0003 P-0003 E-0004 E-0003 E-0003 E-0001 E-0003 E-0001 E-0003 E-0001 E-0003 P-0004 E-0004 E-0001 E-0000 E-00000 E-0000 E	Description Pump Body Head, Right, Head, Right, Head, Right, Reglaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow 1-16° Check Ball Top Check Regl 1/2' PFA Tube 1/2' PFA Tube 1/2' PFA Tube 1/2' Ferrule 1/4' Thick Wall PFA Tubing 1/4' Thick Wall PFA Tubing 1/4' Gripper 1/4' Gripper 1/4' Gripper Flow 3/6' NPT X 1/2' Grip Elow 3/6' NPT X 1/4' Grip Elow 3/6' NPT X 1/4' Grip Elow 1/2' Fernale Gripper Nut 1/4' Gripper Nut 1/4' Male Gripper Nut 1/2' Male Gripper Nut 1/2' Male Gripper Nut	1 1 1 1 2 2 4 4 2 2 4 4 2 2 FT 2 FT 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LC1         25 ft conductivity cable           14600-XX-0013         LC0         15 ft conductivity cable           14600-XX-0014         LC1         25 ft conductivity cable           14700-XX-0014         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0014         SF1         15 ft fiber optic cable with no amplifier           14700-XX-0015         SF2         22 ft fiber optic cable with no amplifier           14700-XX-0015         SF2         22 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible Tube Out Weldable Pillar S-300	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1 in. 1/2 in. 3/4 in. 1 in	ion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20 P24 N12 N16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0008 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 71300-P 14530-PF-0011 14530-PF-0008 14530-PF-0008 14530-PF-0008 14530-PF-0008	Body Inlet Only (Nut not included) 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0009 F-0010 F-0006 7400-TE-0006 7400-TE-0006 7400-TE-0006 7400-TE-0006 7400-TE-0008 7400-TE-0008 7400-TE-0008	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           17           17           17           17           17           20           21           22           23           24           25           26           26           27           28           29           30           31	Part N 1125-T 2127-T 2127-T 2127-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 3133-T 10040- 4142-M 4140-M 4140-M 4140-M 4140-M 4140-M 4140-M 6080-T 6080-K 6080-K 6090-K 600-K 60	Lumber E-0018 E-0014 E-0014 E-0014 E-0016 E-0006 E-0006 E-0001 E-0003 E-0001 E-0003 E-0001 E-0003 E-0001 E-0003 E-0001 E-	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Base Plate Assembly,           Base Plate Assembly,           Bottom Check Seat, High Flow           Top Check Seat, High Flow           Top Check Seat, High Flow           Top Check Rulg           1/4" YDF Hug           1/2" Ferrule           1/2" Croper           Spool           1/4" Cripper           Spool           1/4" Stripper           Spool           1/4" Stripper           Spool           1/4" Stripper           Spool           1/4" Stripper           Sold" NPT X 1/4" Grip Elbow           3/8" NPT X 1/2" Gripper Elbow           3/8" NPT X 1/2" Gripper Elbow           3/8" NPT X 1/2" Gripper Nut           1/4" Gripper Ar Nut           Muffler Cap           1/4" Male Gripper Nut           1/4" Male Gripper Nut           1/4" Male Gripper Nut           1/4" Male Gripper Nut           Shuttle Pin, Spacer Alignment	1 1 1 2 2 4 2 4 4 2 2 FT 2 FT 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with n0 amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0014         LC3         25 ft fiber optic cable with n0 amplifier           14600-XX-0014         LC1         15 ft conductivity cable           Stroke Detect with Fiber Optics         Part         Description           14700-XX-0013         SF1         15 ft fiber optic cable with n010 amplifier           14700-XX-0013         SF1         15 ft fiber optic cable with n010 amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with n010 amplifier	Eittings (7) Flaretek Compatible Tube Out Weldable Pillar S-300	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1-1/4 in. 1-1/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1-1/4 in. 1-1/4 in. 1-1/4 in. 1-1/4 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1-1/2 in.	rion) F08 F12 F16 F20 T12 T16 T22 T16 T22 W16 P08 P12 P16 P20 P20 P24 N12 N16 N20	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0009 14510-PF-0010 7120-P 7130-P 7130-P 710-P 710-7 7	Body Inlet Only (Nat not included)           7200-PF-0010           7200-PF-0011           F-0007           F-0008           F-0009           F-0010           7200-PF-0011           F-0008           F-0009           F-0010           7400-TE-0019           7400-TE-0006           7400-TE-0007           7400-TE-0008           F-0009           E-00010	Item           1           2           3           4           5           6           6           7           8           9           10           11           12           33           4           5           6           6           6           10           11           12           13           14           15           16           177           18           18           19           20           21           22           23           24           25           26           27           28           29           30	Part N 1125 T 2127 T 2127 T 2127 T 11200 1135 T 114200 1135 T 114200 114200 114200 114200 114200 114200 110700 100000000	Lumber 6: E.0018 E.0019 E.0019 E.0019 E.0019 E.0001 E.0001 E.0001 E.0001 E.0001 E.0001 E.0001 E.0001 E.0001 E.0003 E.0001 E.0003 E.0001 E.0003 E.0004 E.0003 E.0004 E.0003 E.0004 E.0003 E.0004 E.0	Description Pump Body Head, Right, Head, Right, Head, Right, Reglaceable Seat, Shift, Universal Base Plate Assembly Bottom Check Seat, High Flow 1-16° Check Ball Top Check Regl 1/2' PFA Tube 1/2' PFA Tube 1/2' PFA Tube 1/2' Ferrule 1/4' Thick Wall PFA Tubing 1/4' Thick Wall PFA Tubing 1/4' Gripper 1/4' Gripper 1/4' Gripper Flow 3/6' NPT X 1/2' Grip Elow 3/6' NPT X 1/4' Grip Elow 3/6' NPT X 1/4' Grip Elow 1/2' Fernale Gripper Nut 1/4' Gripper Nut 1/4' Male Gripper Nut 1/2' Male Gripper Nut 1/2' Male Gripper Nut	1 1 1 1 2 2 4 4 2 2 4 4 2 2 FT 2 FT 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with n0 amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0012         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0012         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0012         LC3         25 ft conductivity cable           14600-XX-0012         LC3         15 ft conductivity cable           14700-XX-0013         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0013         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with no amplifier	Eittings (7) Flaretek Compatible Tube Out Weldable Piller S-300 FNPT	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1 in. 1/2 in. 3/4 in. 1 in	ion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20 P24 N12 N16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0008 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 71300-P 14530-PF-0011 14530-PF-0008 14530-PF-0008 14530-PF-0008 14530-PF-0008	Body Inlet Only (Nut not included) 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0009 F-0010 F-0006 7400-TE-0006 7400-TE-0006 7400-TE-0006 7400-TE-0006 7400-TE-0008 7400-TE-0008 7400-TE-0008	Item           1           2           3           4           5           6           7           8           9           9           111           12           13           14           15           16           17           18           9           201           22           23           24           25           26           27           28           29           20           31           32           33           33	Part H 1125-T 2127-T 21	Lumber E-2018 E-2013 E-2013 E-2014 E-2014 E-2014 E-2014 E-2014 E-2014 E-2014 E-2014 E-2004 E-2004 E-2004 E-2004 E-2004 E-2004 E-2004 E-2004 E-2005 E-2017 E-2004 E-2005 E-2001 E-2005 E-2001 E-2005 E-2001 E-2005 E-	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Replaceable Seat, Shift, Universal           Base Plate Assembly.           Bottom Check Seat, High Flow           1-16" Check Keat,	1 1 1 1 2 2 2 4 2 2 4 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect         Description           14600-XX-0009         LF0         15 ft fiber optic cable with n0 amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with n0 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with n0 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with n0 amplifier           14600-XX-0011         LC2         15 ft conductivity cable           14600-XX-0012         LC3         15 ft fiber optic cable with n0 amplifier           14600-XX-0031         LC0         15 ft conductivity cable           14600-XX-0040         LC1         15 ft fiber optic cable with n0 amplifier           14700-XX-0013         SF0         15 ft fiber optic cable with n0 amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with n0 amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with n0 amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with n0 amplifier           14700-XX-0015         SF2         Sft fiber optic cable with n0 amplifier           14700-XX-0016         SF1         Single NPR Switch	Eittings (7) Flaretek Compatible Tube Out Weldable Piller S-300 FNPT	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/4 in. 1-1/2 in. 3/4 in. 1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 -1/2 in. 3/4 in. 1 -1/2 in. 1/2 in. 1 -1/2 in. 3/4 in. 1 -1/2 in. 1 -1	ion) F08 F12 F16 F20 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20 P12 P16 P22 N16 N20 S08	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 710-T 710-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 7100-T 710-T 710-T 710-T 710-T 710-T 710-T	Body Inlet Only ( <i>Nat not included</i> ) 7200-PF-0015 7200-PF-0019 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0008 F-0005 F-0006 F-0005 F-0007 F-0007 F-0006 F-0007 F-0007 F-0007 F-0007 F-0007 F-0007 F-0007 F-0007 F-0008 F-0008 F-0008 F-0008 F-0008 F-0009 F-0009 F-0009 F-0009 F-0009 F-0000 F-0009 F-0000 F-000	Item           1           2           3           4           5           6           7           8           9           10           11           12           13           14           15           16           17           18           19           20           21           22           24           25           26           277           28           30           31           32           33           34	Part H 1125 T 2127 T 21	Lumber E.0018 E.0013 E.0013 E.0014 E.0016 E.0016 E.0001 P.0000 P.	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Base Plate Assembly           Base Plate Assembly,           Top Check Seat, High Flow           1-18' Check Ball           Top Check Reg           1/4' YPT Plug           1/2' Ferrule           1/4' Thick Wall PFA Tubing           1/2' Gripper           Spool           1/4' Thick Wall PFA Tubing           1/4' Cripper           Spool           1/4' Map Shuffue End Cap           Baffle Porous Poly           Shuffle Mesh           1/4' MPT X 1/4' Gripter Mut           1/4' MPT X 1/4' Gripper Nut           1/4' Male Gripper Nut           1/4' Male Gripper Nut           1/4' Male Gripper Nut           1/2' Male Gripper Nut           1'' Super Pillar 300 Insert           ''Super Pil	1 1 1 2 2 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect           Part         Description           14500-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0013         LC0         15 ft conductivity cable           14600-XX-0014         LF1         25 ft fiber optic cable with no amplifier           14600-XX-0014         LF1         25 ft fiber optic cable with no amplifier           14600-XX-0015         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0016         SF1         15 ft fiber optic cable with no amplifier           14700-XX-0016         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with no amplifier           14700-XX-0013         SF2         15 ft ber optic cable with no amplifier <td>Fittings (7) Flaretek Compatible Tube Out Weldable Pillar S-300 FNPT Synchro-</td> <td>1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 -1/2 in. 3/4 in. 1 -1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 -1/2 in. 3/4 in.</td> <td>ion) F08 F12 F16 F20 T12 T16 T20 T22 T16 T20 T22 W16 P08 P12 P16 P20 P24 N16 P20 P24 N12 N12 N12 S08 S12</td> <td>Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0008 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 71300-P 14530-PF-0011 14530-PF-0008 14550-PF-0008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008</td> <td>Body Inlet Only (Nut not included) 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0009 F-0010 F-0006 7400-TE-0008 7400-TE-0008 7400-TE-0008 7400-TE-0008 7400-TE-0008 F-0005 E-0006 F-006 F-</td> <td>Item           1           2           3           4           5           6           7           8           9           9           111           12           13           14           15           16           17           18           9           201           22           23           24           25           26           27           28           29           20           31           32           33           33</td> <td>Part N 1125-T 2127-T 21</td> <td>Lumber 6.0018 6.0018 6.0018 6.0018 6.0018 6.0018 6.0018 6.0008 6.0008 6.0008 6.0009 6.00009 6.00009 6.0000000000</td> <td>Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Replaceable Seat, Shift, Universal           Base Plate Assembly.           Bottom Check Seat, High Flow           1-16" Check Keat,           1-16" Check Keat,</td> <td>1 1 1 1 2 2 2 4 2 2 4 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4</td>	Fittings (7) Flaretek Compatible Tube Out Weldable Pillar S-300 FNPT Synchro-	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 -1/2 in. 3/4 in. 1 -1/2 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 -1/2 in. 3/4 in.	ion) F08 F12 F16 F20 T12 T16 T20 T22 T16 T20 T22 W16 P08 P12 P16 P20 P24 N16 P20 P24 N12 N12 N12 S08 S12	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0008 14510-PF-0010 7120-P 7120-P 7120-P 7120-P 7120-P 7120-P 71300-P 14530-PF-0011 14530-PF-0008 14550-PF-0008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008 14550-PF-008	Body Inlet Only (Nut not included) 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 7200-PF-0010 F-0008 F-0009 F-0010 F-0006 7400-TE-0008 7400-TE-0008 7400-TE-0008 7400-TE-0008 7400-TE-0008 F-0005 E-0006 F-006 F-	Item           1           2           3           4           5           6           7           8           9           9           111           12           13           14           15           16           17           18           9           201           22           23           24           25           26           27           28           29           20           31           32           33           33	Part N 1125-T 2127-T 21	Lumber 6.0018 6.0018 6.0018 6.0018 6.0018 6.0018 6.0018 6.0008 6.0008 6.0008 6.0009 6.00009 6.00009 6.0000000000	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Replaceable Seat, Shift, Universal           Base Plate Assembly.           Bottom Check Seat, High Flow           1-16" Check Keat,	1 1 1 1 2 2 2 4 2 2 4 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect           Part         Description           14600-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-0010         LF1         15 ft fiber optic cable with D10 amplifier           14600-XX-0011         LF2         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with D10 amplifier           14600-XX-0040         LC1         25 ft conductivity cable           14600-XX-0040         LC1         25 ft conductivity cable           14600-XX-0040         LC1         25 ft conductivity cable           14700-XX-0013         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0015         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with D10 amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with D10 amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with D10 amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with D10 amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with D10 amplifier           <	Eittings (7) Flaretek Compatible Tube Out Weldable Piller S-300 FNPT	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 - 1/2 in. 3/4 in. 1 - 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1 - 1/4 in. 1 - 1/2 in. 3/4 in. 1 in. 1 - 1/2 in. 1 in.	ion) F08 F12 F16 F20 T12 T12 T16 T20 T24 W12 W16 P08 P12 P16 P20 P24 N16 P20 P24 N12 N12 S08 S08 S12 S16	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0009 14510-PF-0010 7120-P 7100-T 710-T 710-	Body Iniet Only (Wa not included) 7200-PF-0015 7200-PF-0015 7200-PF-0017 7200-PF-0017 7200-PF-0011 7200-PF-0010 F-0008 F-0008 F-0008 F-0008 7400-TE-0007 7400-TE-0007 7400-TE-0007 7400-TE-0007 7400-TE-0007 7400-TE-0008 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0010 F-0000 F-0010 F-0000 F	Item           1           2           3           4           5           6           7           8           9           11           12           13           14           15           16           17           18           9           20           21           22           24           25           26           27           28           30           31           32           33           35           36           37           38	Part N 1125-T 11	Lumber 6: Lumber 6: E-0018 E-0018 E-0018 E-0018 E-0018 E-0008 E-0004 E-0003 E-0004 E-0003 E-0004 E-0003 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-0001 E-0005 E-005 E-005 E-005 E-005 E-005 E-005 E-005 E-005	Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Base Plate Assembly           Bottom Check Seat, High Flow           Top Check Seat, High Flow           Top Check Seat, High Flow           Top Check Real,           Top Check Real           1/2' Prof Nube           1/2' Prof Tube           1/2' Prof Tube           1/2' Farule           1/2' Farule           1/2' Farule           1/2' Profub           30 gam Shuttle End Cap           Baffle Parous Poly           Shuttle Mean           1/4' NPT Y Ng           30 gam Shuttle End Cap           Baffle Parous Poly           Shuttle Mean           1/4' Gripper Flow           36' NPT X 1/2' Gripper Elbow           36' NPT X 1/2' Gripper Elbow           36' NPT X 1/2' Gripper Elbow           1/4' Male Gripper Nut           1/2' Palae Gripper Nut           1/2' Male Gripper Nut           1/2' Male Gripper Nut           1/2' Male Gripper Nut           1'2' Super Pillar 300 Insert           1'Super Pi	1 1 1 1 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4
Leak Detect           Part         Description           14500-XX-0009         LF0         15 ft fiber optic cable with no amplifier           14600-XX-010         LF1         15 ft fiber optic cable with no amplifier           14600-XX-011         LF2         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0012         LF3         25 ft fiber optic cable with no amplifier           14600-XX-0013         LC0         15 ft conductivity cable           14600-XX-0014         LF1         25 ft fiber optic cable with no amplifier           14600-XX-0014         LF1         25 ft fiber optic cable with no amplifier           14600-XX-0015         SF0         15 ft fiber optic cable with no amplifier           14700-XX-0016         SF1         15 ft fiber optic cable with no amplifier           14700-XX-0016         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF2         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with no amplifier           14700-XX-0016         SF3         25 ft fiber optic cable with no amplifier           14700-XX-0013         SF2         15 ft ber optic cable with no amplifier <td>Pillar S-300 Fireform</td> <td>1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 -1/4 in. 1 -1/2 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/2 in. 3/4 in.</td> <td>hinn) F08 F12 F16 F16 F20 T12 T16 T24 W12 W16 P08 P12 P16 P20 P24 N12 N16 N20 S08 S12 S16 L12</td> <td>Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7100-T 710-T</td> <td>Body Iniet Only (Wat not included)           7200-PF-0015           7200-PF-0015           7200-PF-0019           7200-PF-0010           7200-PF-0011           7200-PF-0010           F-0008           F-0009           F-0006           F-0006           F-0006           F-0007           F-0006           F400-TE-0007           7400-TE-0008           7400-TE-0008           F-0005           E-0009           E-0005           E-00010           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-</td> <td>Item           1           2           3           4           5           6           7           7           8           9           10           11           12           13           4           15           16           17           18           19           0           21           22           23           24           25           26           27           28           29           30           32           33           34           35           36           37</td> <td>Part N 1125-T 2127-T 21</td> <td>Lumber 2: 0018 0018 0019</td> <td>Description           Pump Body           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Right,           Head, Stath,           Base Plate Assembly,           Base Plate Assembly,           Base Plate Assembly,           Base Plate Assembly,           Bottom Check Seat, High Flow           1-18' Check Ball           Top Check Real,           Top Check Real,           Top Check Real,           1/2' Pert Lube           1/2' Ferrule           1/2' Ferrule           1/4' Trick Wall PFA Tubing           1/2' Gripper           Spool           1/4' Torper Sool           30 gm Shuttle End Cap           Baffle Porous Poly           Shuttle Mesh           1/4' NPT X 1/4' Grip Elbow           3/4' NPT X 1/4' Gripper Nut           1/4' Mela Gripper Nut           1/4' Brayer Pillar 300 Insert           1'' Super Pillar 300 Insert           1'' Super Pillar 300 Nut           PFA Soid Shaft           Shitt Bellow Assembly           1'' Pilar Super 300 Gage Ring Shaft Seal</td> <td>1 1 1 2 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4</td>	Pillar S-300 Fireform	1/2 in. 3/4 in. 1 in. 1-1/4 in. 3/4 in. 1 in. 1-1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 in. 1/2 in. 3/4 in. 1 -1/4 in. 1 -1/2 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 1 -1/4 in. 3/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/4 in. 3/4 in. 1 -1/2 in. 3/4 in.	hinn) F08 F12 F16 F16 F20 T12 T16 T24 W12 W16 P08 P12 P16 P20 P24 N12 N16 N20 S08 S12 S16 L12	Assemblies 14510-PF-0011 14510-PF-0008 14510-PF-0009 14510-PF-0010 7120-P 7100-T 710-T	Body Iniet Only (Wat not included)           7200-PF-0015           7200-PF-0015           7200-PF-0019           7200-PF-0010           7200-PF-0011           7200-PF-0010           F-0008           F-0009           F-0006           F-0006           F-0006           F-0007           F-0006           F400-TE-0007           7400-TE-0008           7400-TE-0008           F-0005           E-0009           E-0005           E-00010           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0007           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-0008           7010-TE-	Item           1     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1/2' Ferrule           1/4' Trick Wall PFA Tubing           1/2' Gripper           Spool           1/4' Torper Sool           30 gm Shuttle End Cap           Baffle Porous Poly           Shuttle Mesh           1/4' NPT X 1/4' Grip Elbow           3/4' NPT X 1/4' Gripper Nut           1/4' Mela Gripper Nut           1/4' Brayer Pillar 300 Insert           1'' Super Pillar 300 Insert           1'' Super Pillar 300 Nut           PFA Soid Shaft           Shitt Bellow Assembly           1'' Pilar Super 300 Gage Ring Shaft Seal	1 1 1 2 2 2 4 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4



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# 2. Installation

# 2.1 Precautions

#### Handling

Do NOT lift pump by shuttle valve assembly nor air tubing.

#### Installation Orientation

PSH140 pumps must be installed in an upright position. The check valves are actuated by gravity and/or flow, and they will not seat if the pump is not upright.

#### Timer Mode

PSH140 pumps require an end of stroke detection mechanism (pressure switch) to prevent over stroking in timer mode. Operating a PSH140 in timer mode without stroke detection will void the pump warranty.

#### Required Air Flow (Shuttle Valve)

PSH140 pumps require 3/8 in minimum orifice with unrestricted air flow.

#### Required Air Flow (Solenoid Valve)

PSH140 pumps require a 3 Cv solenoid. Using a reduced Cv will reduce flow rates. Using a valve with more than 20% greater Cv will change operating parameters, reduce pump life and void the warranty.

#### Under Supply of Air

PSH140 pumps operate erratically or stall when air supply is insufficient. Ensure use of air supply pressures higher than averaged air consumption lines in performance charts. Air supply lines and fittings must meet minimal inner diameter requirements shown in the installation instructions.

#### **Air Supply Pressure**

Operating PSH140 pumps ~35% below max air pressure may significantly extend pump life. PSH140 pumps require 20 psi minimum air pressure. Operation above 5.5 Bar (80 psi) may damage the pump and void the warranty.

#### Suction Lift

PSH140 pumps have an initial suction lift capacity of 3 ft. For best results minimize suction lift.

#### Liquid Inlet/Outlet Connections

PSH140 liquid ports are not NPT nor any other standard. Use of connectors other than those supplied by White Knight will damage the pump and void the warranty.

#### Liquid Line Restriction

PSH140 pumps may be controlled by closing liquid outlet lines. However, restricting liquid supply lines increases wear and should be avoided. Do NOT pump against a closed liquid inlet. It will damage the pump and void the warranty.

#### Running Dry

PSH140 pumps use the pumped liquid to lubricate their shafts. The pumps will cycle faster and wear more than normal when run dry, which may cause damage and loss of self-prime abilities. PSH140 pumps should not run dry after start-up and are not warrantied under dry run conditions.

#### Pulse Dampener with Shuttle Valve

Air supply pressure to PSH140 pumps should be at least ten psi higher than the liquid line pressure when using a pulsation dampener. Failure to do so may cause erratic operation.

#### **Cross Contamination**

PSH140 pumps use porous material that may retain chemicals. Take precautions to avoid cross contamination.





# PSH140 Owner's Manual

# 2.2 Warnings

#### **Pressurized Material**



Pumps in use contain pressurized materials. Eliminate liquid and air pressure via shut off valves before pump is serviced or removed from the system.

#### **High Temperature**



Heat may transfer to exterior surfaces when pumps operate with high temperature fluids. Avoid direct contact with the pump when high temperature fluids are present.

#### Hazardous Chemical



Use appropriate personal protective equipment when handling pump. Reference Material Safety Data Sheet (MSDS) for information specific to your chemicals.

#### Loud Noise



Pump exhaust air contributes to work area noise levels. Only operate pumps with approved muffler media, and use ear protection in noisy conditions.

# 2.3 Advantages

### Head Pressure / Dead-Head

PSH140 pumps can be controlled by adjusting their liquid outlet pressures and can be installed with head pressures up to dead-head (e.g. equal liquid and air pressures) with no damage to the pump.

### Thermal Cycling

PSH140 pumps require no maintenance when operated within their performance range, even in thermal cycling applications.

# 2.4 Environment & System

#### Oversized Inlet Line

Pumps operate optimally with liquid inlet lines larger than the liquid outlet lines. This reduces strain on the bellows and may reduce pulsation in the pump outlet.

#### Clean Supply Air (CDA)

PSH140 pumps require use of Class 2 air for particles and moisture per ISO 8573-1. Use 10 micron filter; maintain -40°C dew point. A point-of-use filter is recommended during first six months of operation in new fabs/systems due to high risks of debris that can damage pumps and void warranty.

#### Flammable Solvents

PSH140 pumps are not constructed from conductive materials. System that pump flammable solvents should be properly grounded to avoid ignition by static charge. A River's Edge test of isolative pumps with flammable liquids indicated that liquids must be grounded and other procedures should be followed. Copy of test available.

#### Pumping Liquids Near Boiling Point

Minimizing suction lift reduces pulsation and the potential for boiling or outgassing of liquid in the inlet of the pump. Although reciprocating pumps can pull suction lift, pump performance and life increase when suction lift is minimized or eliminated.

#### Abrasive Slurry

Pumping abrasive slurry may accelerate wear of components. PSH140 pumps are warrantied when used with slurry. However, normal wear is not covered by warranty.

#### **Environmental Temperature**

PSH140 pumps are rated for 0°C (32°F) -50°C (122°F) environmental temperatures. Do not freeze fluid in pump. Operation below 0°C may accelerate wear. Normal wear is not covered by warranty.





# 2.5 Installation Instructions

🔀 WHITE KNIGHT



Move lever to up position.



engineer approved

Slide base plate forward or pump body backward.



Lift pump off of base plate.



Pull-back dismount is standard. See steps 4.1-4.3 for forward dismount.

Screw base plate to surface with 3/8 in or 10 mm socket head cap screws into predrilled holes.



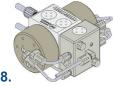
Set pump on base knobs; slide it forward. Set lever to down position.



Attach fittings to pump. Tighten to 80 inch-lbs.



Attach tubes and fittings per manufacturer instructions. Use backer wrench to hold fitting in place at pump.



Affix supply air via 3/8 in FNPT port on shuttle valve. Air line must be 3/8 in minimum orifice.

#### Push-Forward Dismount Configuration Setup

Replace step 5 with steps 4.1-4.3 to re-configure the base plate to push-forward dismount configuration.



Move knobs to opposite sides.



Set pump on base knobs; slide it backward.



Move lever down to locked position.

Install with Rigid Base Plate \*Requires push-forward dismount configuration (steps 4.1-4.3)



Remove L bracket. Set lever in neutral (up) position.



Slide pump forward; lift it off base plate.



Fix base plate to work station. *See step 4 above.* 



Return pump to base plate.



Move lock lever to down position. Reattach L bracket. Tighten to 12 in-lb.

#### Liquid Inlet/Outlet

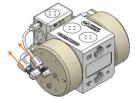
Liquid ports are not NPT nor any other standard. Use of connectors other than those supplied by White Knight will damage the pump.



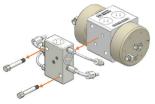


# 2.6 Shuttle Service Instructions

Follow instructions below to inspect or service White Knight shuttle valves. If a pump has stopped, ensure all recommendations in this manual are followed and that there are no air supply issues (i.e. closed air valve, damaged regulator, oil in air line, etc.). Do not lubricate or oil any of the shuttle components. White Knight shuttle valves do not require any lubrication.



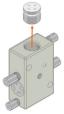
1. Remove nuts on each air fitting on each pump head.



2. Unscrew both shuttle mounting bolts, and pull the shuttle from the pump.



3. Remove the airlines from both sides of the shuttle valve by unscrewing the air fittings.



4. Unscrew top shuttle end cap using the shuttle end cap tool. *Part: 12100-PV-0083* 



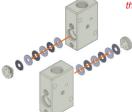
5. Carefully remove ceramic spool from shuttle valve; it may break if dropped.

6. Unscrew bottom end cap using the shuttle end cap tool.

If the ceramic spool in your pump has a flat feature, it is critical that it is oriented towards the bottom of the pump when the shuttle valve is reassembled.



7. Unscrew both 1/8 in NPT plugs that have an orifice in the center.

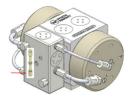


8. Remove muffler cap from left side using the muffler cap tool. Remove muffler media and note the order of the pieces. Repeat this step for muffler cap and muffler media on the right side.



9. Blow out shuttle valve with CDA or N2. Ensure no residue or debris is in any areas indicated above. Debris or residue in these areas may hinder pump performance.

10. Clean the ceramic spool with IPA, and dry it using CDA or N2.



11. Reassemble shuttle and reattach it to the pump by following the above steps in reverse.

If the spool in your pump has the flat feature, ensure it is oriented towards the bottom of the pump when the shuttle valve is reassembled.



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D10 Amplifier Electrical Hookups & Dimensions

with fiber optic stroke and leak detection assemblies.

White Knight recommends Expert<sup>™</sup> D10 amplifier for use

# 3. Control & Monitoring

#### Programmable Control

White Knight CPT-1 controllers monitor and adjust run mode, flow rate, leak detection and other pump operations.



#### Single Sensor Design

PSH140 pumps can use only a single fiber optic sensor at a time. The probe may be installed in the "F" port on either side of the pump. White Knight offers PFA, PFH, and PFU pumps for dual fiber optic use.

#### Standard Models and Main Unit Sub-Units NPN 12-30V dc 10-30V dc Standard Models Connection From Main 12-30V dc Bussable Power Models Unit Bus Load 150 mA max load 4 Remote Teach Wire Key PNP Remote Teach 1 = Brown 12-30V dc Connection From Main 2 = White 3 = Blue Load Unit Bus QD hookup is functionally identical 4 = Black (Pink wire not used) 5 = Gray ŧ. 10.5 ± 0.2 mm (typ.) 14.5 mm FT I MA (0.57") (0.41") TRANSFERING 7.6 mm œ 35.9 mm 0.30" ⊳ æ (1.41") **\_11** œ $\triangleleft$ tœ 9.8 mm Mounting Bracket $\overline{C}$ (0.39") (included with some models) 61.3 mm (2.42")

68.1 mm (2.68")

# 3.1 Fiber Optic Stroke Detection Installation

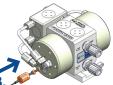


#### 1.

Remove stroke detect probe from fiber optic assembly.



Replace NPT plug in "F" port with stroke detect probe. Hand-tighten.



4. Lower ferrule and gripper until snug against probe

Insert the fiber optic cable until it seats at the bottom of the probe.

against probe and hand tighten female gripper nut.

#### **Fiber Optic Sensors**

Fiber optic sensors melt if used at >130°C (266°F), resulting in leak or end of stroke detection failure.





Open the top and slide the front face of the D10 up. Press the fiber optic ends into the holes on its front. Slide the face down to lock cables in place.





# 3.2 Calibrating D10 Amplifier for Stroke Detection

When calibrating the D10 Amplifier for stroke detection, the pump should be in the same operating conditions it will be in during normal operation (i.e. supply air pressure, back pressure, etc.). The Fiber Optic must be installed as per the instructions in section 3.1.

Calibration	:		
	Push Button	Remote Line	Result
Access Dynamic TEACH Mode	Press and hold dynamic push button >2 seconds.	Hold Remote line low (to ground) >2 Seconds.	Power LED: OFF     Output LED: OFF     Bar graph: LO & DO     Alternately Flashing
TEACH Sensing Conditions	<ul> <li>Hold push button.</li> <li>Operate pump normally for 15 seconds.</li> </ul>	Hold remote line low (to ground).     Operate pump normally for 15 seconds.	Power LED: OFF     Output LED: OFF     Bar graph: LO & DO     Alternately Flashing
Return to	Release button	Release remote line/switch	Teach Accepted Power LED: ON Bar graph: One LED flashes to show relative contrast (successful setup requires minimum value of 4). Sensor returns to Run Mode with new settings.
Run Mode			Teach Unaccepted Power LED: OFF Bar graph: #1, 3, 5, 7 alternately flash to show failure to sense. Sensor returns to Run mode without changing settings. Set up again if value shows <4.

Upon completion of a successful learning cycle, the D10 Amplifier will continuously learn and self-teach to maintain the same cycle rate count readings.





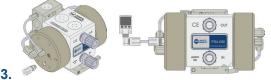
# 3.3 Single Pressure Switch Stroke Detection Installation



Remove plug from "F" port.



Attach NPT gripper to "F" port.

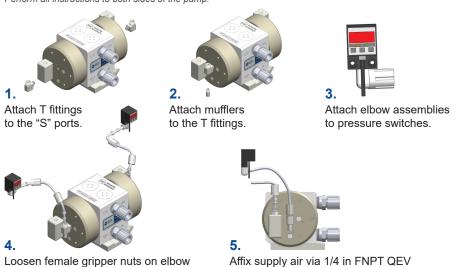


Attach elbow assembly to pressure switch. Loosen female gripper nuts, and insert air tube between them. Hand tighten gripper nuts.

After your device is connected, you must set the switch point. If operating above 60 psi air supply, the set point is 43 psi (0.296 MPa), otherwise it is 18 psi (0.124 MPa). Each system is unique so values may need to be adjusted to your specific application. As the exhaust system loads, it may be necessary to adjust the set point.

# 3.4 Dual Pressure Switch Stroke Detection Installation

Perform all instructions to both sides of the pump.



Loosen female gripper nuts on elbow assemblies and T fittings. Insert tubing and hand-tighten gripper nuts.

Affix supply air via 1/4 in FNPT QEV ports on both sides. Air supply must be 1/4 in minimum orifice to source.

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After your device is connected, you must set the switch point. If operating above 60 psi air supply, the set point is 43 psi (0.296 MPa), otherwise it is 18 psi (0.124 MPa). Each system is unique so values may need to be adjusted to your specific application. As the exhaust system loads, it may be necessary to adjust the set point.

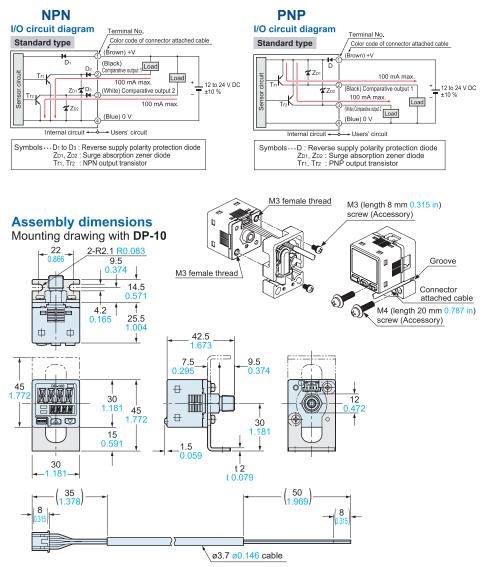


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PSH140 Owner's Manual

# 3.5 Pressure Switch Stroke Detection Electrical Hookups







# 3.6 Conductivity Leak Detection Installation

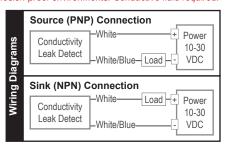
Leaks are identified if conductive fluid contacts a sensor. Sensor provides a Sink (NPN) or Source (PNP) signal, depending on the wire setup. See the wiring diagrams below. *Conductive leak detection does not qualify for use in explosion-proof environments. Conductive fluid required.* 

See below for elbow out configuration.

Remove leak adapter from assembly.

1.

2. Replace NPT plug in "L" port with probe. Hand Tighten. Attach cable to signal translator (e.g. PLC).



# 3.7 Fiber Optic Leak Detection Installation

D10 amplifier must be calibrated before attaching fiber optic probes to the pump. Fiber optic sensors can melt if used at >130°C ( $266^{\circ}F$ ), causing leak detect failure.

2

See below for elbow out configuration.



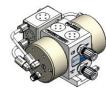
#### 1.

4.

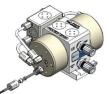
Remove leak adapter and leak detect probe from fiber optic assembly.



Lower ferrule and gripper until snug against the probe. Hand tighten female gripper nut.



For straight out configuration replace NPT plug in "L" port with the probe. Hand-tighten.

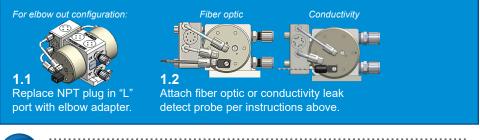


Insert the fiber optic cable until it contacts the bottom of the probe.





Open the top and slide the front face of the D10 up. Press the fiber optic ends into the holes on its front. Slide the face down to lock cables in place.



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# 3.8 Calibrating D10 Amplifier for Leak Detection

Step 1: F	Power On D10 Amp	lifier & Set "Darl	<pre></pre>
	Push Button	Remote Line	Result
	0.04 s ≤ "Click" ≤ 0.8 s	$0.04 \ s \le T \le 0.8 \ s$	
Access Setup Mode	Press and hold both buttons > 2 seconds.	Double-pulse remote line	<ul> <li>Green Power LED turns OFF.</li> <li>Output LED remains active.</li> <li>Icons continue to display current setup.</li> <li>Bargraph turns OFF.</li> </ul>
Select Settings	Press either button until LEDs show desired settings.	Pulse the remote line until LEDs show desired settings. 	Sensor toggles through these setting combinations:         LO       Normal Speed       No Delay (default)         DO       Normal Speed       No Delay         LO       High Speed       No Delay         DO       High Speed       No Delay         DO       High Speed       No Delay         DO       High Speed       Delay         LO       Normal Speed       Delay         DO       Normal Speed       Delay         LO       High Speed       Delay         DO       High Speed       Delay         DO       High Speed       Delay
Return to Run Mode	Press and hold <b>t</b> both buttons >2 seconds.	Hold remote line low > 2 seconds. > 2 seconds	Green Power LED turns ON.     Sensor returns to Run mode with new settings.

#### Step 2: Access "Single-Point Dark Set" Mode

	Push Button	Remote Line	Result
	0.04 s ≤ "Click" ≤ 0.8 s	0.04 s ≤ T ≤ 0.8 s	
Access Set Mode	Press and hold static button > 2 seconds.	Single-pulse remote line	Power LED: OFF.     Output LED: ON (push button) OFF (remote line)     Static LEDs: LO & DO alternately flashing

#### Step 3: Set Sensing Condition

Set condition to "leak detection" sensing while probe tip is submerged in liquid. Then, remove the leak probe from liquid and reinserted into the "L" port. Amplifier will now signal when moisture if detected on the probe tip.

	Push Button	Remote Line	Result	
	0.04 s ≤ "Click" ≤ 0.8 s	$0.04 \ s \le T \le 0.8 \ s$		
Condition	<ul> <li>Present sensing condition</li> <li>Five-click static button</li> </ul>	Present sensing condition • Five-pulse remote lne	Power LED: ON.     Output LED: ON (push button) OFF (remote line)     Bargraph: 4 indicators flash.     Sensor returns to Run mode with new sett	or or ings
Set Sensing	-+		Power LED: ON.     Output LED: ON (push button) OFF (remote line)     Bargraph: #1, 3, 5, 7 flash for failure.     Sensor returns to Set sensing condition.	0         5         0         5           ★         ★         ★         ★         ↓           or         ↓         ↓         ↓         ↓           \$





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# 4. Ordering Instructions

VHITE KNIG

Required (Default Model)Additional Options (Blank if not needed)PSH140-F16-LF0-SF0-TF16-VX0123-LF0567-Rev

engineer approved

Options 1-3 are required. Leave Additional Options blank if not desired. Only add Outlet if different than Inlet.

Default option	ns are high	lighted		
1. Pump N	lodel			
Standard PSH140				
2. Check B	Ball Mate	rial		
PTFE check		blank		
PFA check ba	alls	F		
3. Inlet Fit Front straig				
Flaretek	1/2 in.	F08		
Compatible	3/4 in.	F12		
	1 in.	F16		
0	1-1/4 in.	F20		
Tube Out	3/4 in.	T12		
	1 in.	T16		
	1-1/4 in.	T20		
	1-1/2 in.	T24		
Weldable	3/4 in.	W12		
	1 in.	W16		
Pillar S-300	1/2 in.	P08		
COm .	3/4 in.	P12		
	1 in.	P16		
	1-1/4 in.	P20		
	1-1/2 in.	P24		
FNPT	3/4 in.	N12		
	1 in.	N16		
	1-1/4 in.	N20		
Synchro-	1/2 in.	S08		
Flare	3/4 in.	S12		
	1 in.	S16		
PrimeLock	3/4 in.	L12		
Co Co	1 in.	L16		

1-1/4 in.

L20

4. Leak Detection	
No leak detection	blank
15 ft fiber optic cable with no amplifier	LF0
15 ft fiber optic cable with D10 amplifier	LF1
25 ft fiber optic cable with no amplifier	LF2
$25\ {\rm ft}$ fiber optic cable with D10 amplifier	LF3
15 ft conductivity cable	LC0
25 ft conductivity cable	LC1
5. Stroke Detection	
No stroke detection	blank
15 ft fiber optic cable with no amplifier	SF0
15 ft fiber optic cable with D10 amplifier	SF1
25 ft fiber optic cable with no amplifier	SF2
25 ft fiber optic cable with D10 amplifier	SF3
Single NPN pressure switch	SP1
Dual NPN pressure switches * (Includes two DP2 pressure switches)	SP2
Single PNP pressure switch	SP4
Dual PNP pressure switches * (Includes two DP2 pressure switches)	SP5
7. Shuttle	
Gravity reset with standard exhaust	blank
No shuttle, standard ports * (No pressure switches included) Sensors are required for operation.	VX0
Gravity reset with remote exhaust	VG1
Mag detent with standard exhaust	VM0
Mag detent with remote exhaust	VM1
* White Knight shuttle valve not includ	lad

\* White Knight shuttle valve not included.



Timer mode operation requires end-of-stroke detection. Use of timer mode without stroke detection voids the warranty.

6. Outlet F Straight onl Select Top	ly.	Front	Тор
Same as Inlet		blank	n/a
Flaretek	1/2 in.	FF08	TF08
Compatible	3/4 in.	FF12	TF12
	1 in.	FF16	TF16
0	1-1/4 in.	FF20	TF20
Tube Out	3/4 in.	FT12	TT12
	1 in.	FT16	TT16
	1-1/4 in.	FT20	TT20
	1-1/2 in.	FT24	TT24
Weldable	3/4 in.	FW12	TW12
	1 in.	FW16	TW16
Pillar S-300	1/2 in.	FP08	TP08
1 Con	3/4 in.	FP12	TP12
	1 in.	FP16	TP16
	1-1/4 in.	FP20	TP20
	1-1/2 in.	FP24	TP24
FNPT	3/4 in.	FN12	TN12
0	1 in.	FN16	TN16
	1-1/4 in.	FN20	TN20
Synchro-	1/2 in.	FS08	TS08
Flare	3/4 in.	FS12	TS12
	1 in.	FS16	TS16
PrimeLock	3/4 in.	FL12	TL12
600-	1 in.	FL16	TL16
	1-1/4 in.	FL20	TL20

#### Revision

No revision
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Contact support for revision level or copy exact code activation details. Configured part numbers are not Copy Exact Part Numbers. support@wkfluidhandling.com

blank







# 5. Pump Service

Pumps fully rebuilt by White Knight, certified rebuilders, or technicians certified by White Knight receive full warranty renewal. Details below.

#### White Knight Rebuilds

Request factory rebuilds by web form at: https://wkfluidhandling.com/support/rma/. An RMA# will be provided after processing.

\*Customers must follow decontamination instructions in Section 4.4 when returning a pump to White Knight.

#### Rebuild Pump as Certified Technician

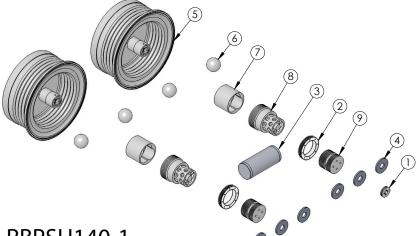
#### **Certified Rebuilders**

White Knight's global network of certified rebuilders expedite rebuild turn-around time and minimize shipping costs. Find certified rebuilders at: https://wkfluidhandling.com/rebuilders/

White Knight offers trainings to certify technicians to rebuild pumps. Technicians who pass the training are issued a two-year certification. During the two years, parts in pumps rebuilt by the technician receive a full warranty. See: https://wkfluidhandling.com/virtual-rebuilds/

# 5.1 Rebuild Kits & Parts

Rebuild kit for PSH140 is RBPSH140-1. To request rebuilds by White Knight, use RBPSH140-5 (labor included). Pump rebuilds require tool kit: 12200-XX-0024 (Legacy# PSH140-170).



# RBPSH140-1

ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	3133-TE-0006	REPLACEABLE SEAT, SHIFT, UNIVERSAL	2
2	5143-MP-0011	SEAL, SHAFT, 140L	2
3	5144-PF-0022	SHAFT, SOLID, PFA, 140L	1
4	6140-FP-0004	BAFFLE POROUS POLY 60L	6
5	14300-MP-0028	BELLOWS, ASSEMBLY	2
6	4100-MP-0003	CHECK BALL- 1-1/8"	4
7	4135-MP-0004	BOTTOM CHECK SEAT-120/140L HIGH FLOW	2
8	4142-MP-0003	TOP CHECK SEAT-30GPM HIGH FLOW	2
9	6530-TE-0003	30GPM SHUTTLE END CAP	2

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# 5.2 Return Pump for Service

Follow decontamination instructions when returning a pump for service.

DO NOT REMOVE PAGE FROM MANUAL.

Copy page from manual or download at https://wkfluidhandling.com/support/rma/.

# Decontamination Instructions

PRINT COMPLETED DECONTAMINATION CERTIFICATION. IT MUST BE INCLUDED IN YOUR RMA SHIPMENT.

White Knight products are designed for use with caustic and otherwise dangerous liquids. Handle every product as if it contains dangerous chemicals whether or not it actually does.

- · Only those with adequate safety training should attempt to handle used pumps.
- Wear adequate safety gear appropriate for chemicals that have been in the pump.
- Review relevant Material Safety Data Sheets (MSDS) before handling the pump.
- · Review emergency numbers for use in event of an accident.
- Prepare Ph papers, showers, antidotes, clean-up equipment, neutralizers, and other safety devices
  used to detect, neutralize or minimize effects of chemicals described in appropriate MSDS documents.

# **Rinse with DI Water**

Circulate DI water through pump for twenty minutes before disassembly and/or double bagging for shipment. If pump is nonfunctional, force DI water from inlet through outlet for 40 minutes before shipment preparations.

# **Remove Pump from Station:**

- 1. Disconnect liquid tubing connectors from front of pump (opposite shuttle valve).
- Plug NPT fittings with PTFE plug, Flare fittings with flare nose cover and cap, another plug as can be recommended by connected symplet
- or other plug or cap as recommended by connector supplier.Disconnect air supply tubing from face of shuttle valve.
- Loosen mount screw from base plate. (Note: do not remove screw from base plate).
- Remove base plate using proper tool for the fastening devices (e.g. Allen wrench or screw driver). Note: Base plate may stay if needed for replacement pump to be used.
- 6. Return all removed parts to the pump.

### **Return Pump to White Knight:**

- 1. Rinse pump with DI water as described above after removing it from its station.
- 2. Drain remaining DI water from the pump inlet and outlet liquid tubing connectors.
- 3. Plug liquid outlets as described in the Remove Pump from Station section above.
- 4. Dry the pump, double bag it, and seal it in thick polyethylene bags.
- 5. Return the pump to its original packaging.
- 6. Include MSDS for the chemical that the pump was handling in the box with the pump.
- 7. Obtain RMA number from White Knight and write it on the outside of the box.
- 8. Ship to White Knight following all rules, regulations and laws regarding shipment of dangerous materials. Ship freight pre-paid. No collect shipments will be accepted. Unauthorized use of White Knight shipping accounts will result in the adding of freight to the bill in addition to a service charge.

# Include All Pump Components:

Pumps returned to White Knight for evaluation, service or repair must be complete with all components, including but not limited to base plate, mount screws, tubing connectors, tubing connector caps, flare noses, shuttle valves, mufflers, and tubing. Missing parts will be added to the pump and charged to the customer.





#### DO NOT REMOVE PAGE FROM MANUAL.

Copy page from manual or download at https://wkfluidhandling.com/support/rma/.

# Decontamination Certification

COMPLETE AND PRINT THIS FORM. IT MUST BE INCLUDED IN YOUR RMA SHIPMENT.

I, the undersigned employee of, decontamination and safety procedures described in Decontamination Instructions been followed for return of product below.						fy that all ion have	
RMA#:							
(We cannot process returns	s without an RMA nur	mber.)					
Serial#:							
(We cannot process returns	s without a product se	erial numbe	r.)				
Metal Exposure: (Check all that apply. Write		cessary.)					
Product was used ir	า a Metal Process.	🗖 Yes	🗖 No				
Product was used ir	า a <u>Copper</u> Metal F	Process.	🗖 Yes	🗖 No			
Product was used w	vith:						
<ul> <li>☐ Aluminum</li> <li>☐ Col</li> <li>☐ Tungsten</li> <li>☐ Zin</li> </ul>	balt 🔲 Gold 🚺 nc 🔲 Other:	Lead	Nickel	Platinum	Silver	∎Tin	Titanium
Chemical Exposit (Check all that apply. Write		necessary.)					
Product was <u>NOT</u> us	sed in chemicals (	DI Water o	only).				
Product was used in	1 chemicals.						
		Hydrochl		Hydrofluoric Ac	_ ,	0	_
Chipping Inform	ation						

#### Shipping Information:

Please indicate metal processes to which the product has been exposed by clearly and conspicuously labeling the outside of the return package with the metal.

Products exposed to Metal Processes	
must be sent to the following address:	

# Products <u>NOT</u> exposed to Metal Processes must be sent to the following address:

White Knight Fluid Handling 187 East 670 South, Suite B Kamas, UT 84036

Print Name: \_\_\_\_\_

White Knight Fluid Handling 187 East 670 South, Suite C Kamas, UT 84036

 Signature:
 Date:

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# 6. Warranty

White Knight follows strict manufacturing, assembly and testing procedures to ensure consistency and reliability.

White Knight warrants PSH140 pumps and components are free from defects in materials and workmanship for two years from our shipment date or your installation date if provided within 90 days of shipment from our facility.

Failures due to normal wear, misuse, abuse or unauthorized disassembly nullify this warranty.

White Knight does not guarantee the suitability of products for specific applications. White Knight is not liable for any damage or expense resulting from use or misuse of its products in any application. Responsibility is limited solely to repair or replacement of defective products or components.

Prior written, faxed or emailed approval must be obtained from White Knight before returning any product or component for warranty consideration. All determinations regarding cause of failure are made by White Knight, and all decisions regarding warranty fulfillment or nullification are made by White Knight.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED. INCLUDING ANY GUARANTEE OF SUITABILITY FOR ANY PURPOSE. NO VARIATIONS OF THIS WARRANTY SHALL BE HONORED NOR CONSIDERED LEGALLY BINDING, EXCEPT WRITTEN AGREEMENTS SIGNED BY THE CEO OF WHITE KNIGHT FLUID HANDLING.

Tim White, CEO White Knight Fluid Handling





### **PSH140 Owner's Manual**



# **Barclay-Phelps**

**CE MARKING SPECIALISTS** Hoi Yuen Road, Kwun Tong, Kowloon, Hong Kong

#### CERTIFICATE & DECLARATION OF CONFORMITY FOR CE MARKING

Company contact details: White Knight Fluid Handling Inc. 187 E. 670 S., Kamas, Utah, 84036, USA

White Knight Fluid Handling Inc. declares that their:

Bellows Pump Line

PSA030, PSA060, PSA140, PSH030, PSH060, PSH140, PSU030, PSU060, PSU140, PSA015, PSR050, PSR025, PFA030, PFA060, PFA140, PFH030, PFH060, PFH140, PFU030, PFU060, PFU140, PXA030, PXA060, PXA140, PXH030, PXH060, PXH140, PXU030, PXU060, PXU140, PFA015, LHA015, LHA030, LHA070

Diaphragm Pump Line (Non Conductive) PSD04TE, PSD06TE, PSD08TE, PSD16TE, PSD24TE, PSD04UH, PSD06UH, PSD08UH, PSD16UH, PSD24UH, PSB100

Diaphragm Pump Line (Conductive) PSD04TC, PSD06TC, PSD08TC, PSD16TC, PSD24TC, PSD04UC, PSD06UC, PSD08UC, PSD16UC, PSD24UC

Legacy Pump Line PLS30, PLS60, PLS120, PLX30, PLX60, PLX120, PX30, PX60, PX120, PLF30, PLF60, PLF120

> Metering Pumps PPM100, PEM100, PEM050

> Plastic Pumps PHC40-2, PPMC300, PPMA

**TPA07** Pressure Transducer

are classified within the following EU Directives as applicable:

Machinery Directive 2006/42/EC Low Voltage Directive 2014/35/EU Electromagnetic Compatibility Directive 2014/30/EU RoHS 2 Directive 2011/65/EU

and further conform with the following EU Harmonized Standards as applicable: EN 809;1998+A1;2009 EN 60204-1;2006 + A1;2009 EN 61000-6-2;2005 EN 61000-6-4;2007+A1;2011

Dated: 16 January 2017 Position of signatory: Product Manager Name of Signatory: Cory Ammon Simmons Signed below: on behalf of White Knight Fluid Handling Inc.





# **Pump Solutions and Accessories**



# **Ultra-Pure Closed-Loop Systems**

Automatically maintain laminar flow or steady pressure with metal-free closed-loop pump systems offering stable temperatures, deadhead and suction lift. Control your high purity chemical processes and delivery systems. Simplify process automation to save time, resources and reduce costs.

https://wkfluidhandling.com/closed-loop/

- ≤ 140 lpm (36 gpm) flow rates
- ≤ 7 Bar (100 psi) pressures
- $\leq 210^{\circ}$ C (410°F) temperatures
- · Maintain stable temperatures
- · No metals, no corrosion
- No elastomer O-rings, no leaks
- No electric motors, no heat rise

### **Pulse Dampeners**

In-line and pump-mounted pulse dampeners reduce pulsation in fluid systems to improve flow control, increase batch yields, protect components, and minimize maintenance and downtime for repairs. DBH030 dampeners fit 30 and 60 lpm pumps. DBH060 dampeners fit 30, 60 and 140 lpm pumps. DBH140 dampeners fit 60 and 140 lpm pumps.

https://wkfluidhandling.com/dampeners/



Pump-mounted pulse dampener





# Pressure Regulators

White Knight pressure regulators offer remote piloting capability to maintain system pressure for high-purity chemical circulation loops and systems with multiple tool drops or dispense points. They feature fully-swept PTFE/PFA flow paths. A single back-pressure regulator equalizes upstream fluid pressure across multiple discharge outlets. Forward-pressure regulators control downstream pressure. https://wkfluidhandling.com/pressure-regulators/



PSH140 Owner's Manual

**Back-pressure regulator** Forward-pressure regulator 40 PSI 20 PSI 1 - Air 40 PSI Liquid 40 PSI 25 PSI 40 PSI 40 PSI 10 PSI 1 15 PS 10 PSI **10 PSI** A single back-pressure regulator equalizes upstream fluid pressure for discharge outlets. Each forward-pressure regulator controls fluid pressure for a single discharge outlet.

# **Filter Housings**

Two-chamber and four-chamber filter housings provide parallel or series (in-line) operation. Their compact, non-metallic PTFE/PFA designs offer superior containment and high-flow performance within a smaller footprint than traditional housings. They fit many filter types, and enable filters to be changed without disconnecting liquid lines. https://wkfluidhandling.com/filter-housings/





# Cycle-Rate Translator

The CPT enables pump replacements in existing tools. It operates a White Knight pump at its optimal cycle rate and scales the operational cycle rate to that expected by the tool. https://wkfluidhandling.com/cpt/



# Catcher<sup>™</sup> Pre-Filters

White Knight Catcher<sup>™</sup> pre-filters protect pumps from wafer shards and other harmful solids. They can be cleaned without disconnecting liquid lines. https://wkfluidhandling.com/catchers/





### White Knight Support

187 E. 670 S. Kamas, UT 84036

Phone: 435.783.6040 Toll Free: 888.796.2476 Fax: 435.783.6128

support@wkfluidhandling.com

https://wkfluidhandling.com/support/



Part No. 18200-LM-0013

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