

OPERATOR'S MANUAL

INCLUDING: OPERATION, INSTALLATION & MAINTENANCE

PE03X-XXX-XXX-XXXX
PE05X-XXX-XXX-XXXX
PE07X-XXX-XXX-XXXX

ELECTRONIC INTERFACE

for Diaphragm Pumps

RELEASED: 3-26-13
 REVISED: 10-30-15
 (REV: C)



READ THIS MANUAL CAREFULLY BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

It is the responsibility of the employer to place this information in the hands of the operator. Keep for future reference.

PUMP DATA

PE03X-XXX-XXX-XXXX is PE series 3/8" Compact Diaphragm Pumps with electronic interface

PE05X-XXX-XXX-XXXX is PE series 1/2" Compact Diaphragm Pumps with electronic interface

PE07X-XXX-XXX-XXXX is PE series 3/4" Compact Diaphragm Pumps with electronic interface.

GENERAL DESCRIPTION

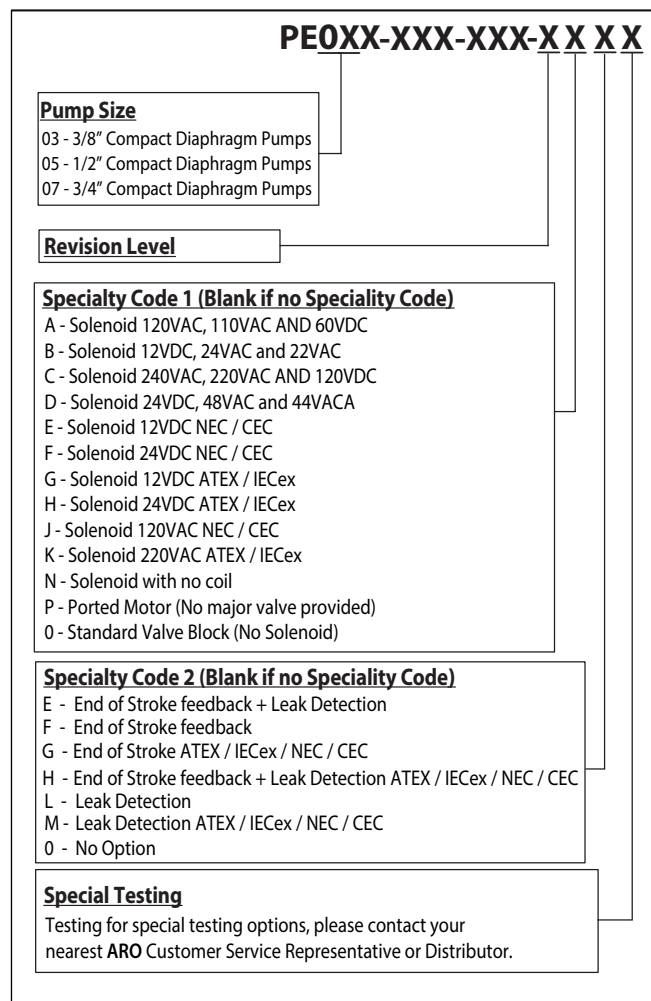
This manual is supplemental information for the electronic interface options on the PE series of pumps. For complete pump installation, disassembly and reassembly, safety information, and other general pump information, please refer to the PD pump manual that was also included with the pump. This electronic interface includes options for solenoid control, end of stroke feedback, leak detection (diaphragm failure), cycle counting on the major valve, and a ported motor with no major valve for user-supplied control directly to the two diaphragm air chambers.

Solenoid control allows the cycle rate of the pump to be controlled electronically. With Solenoid control, when the solenoid is energized, the pump strokes and dispenses the fluid in one chamber. When the solenoid is de-energized, the pump strokes in the opposite direction, dispensing the fluid in the other chamber. By providing continuous ON - OFF signals to the solenoid, the fluid transfer rate may be increased or decreased remotely. End of stroke feedback can be used in conjunction with the solenoid valve to cycle the pump based upon completion of each stroke.

The leak detection option incorporates an optical fluid sensor in each air chamber to provide a signal when a diaphragm has failed and fluid is leaking through the pump. The cycle counter option provides a closed contact output each time the pump completes a cycle. This option is not available combined with solenoid control.

The ported motor with no major valve is provided as an option for users who want to supply compressed air directly to each diaphragm and control the operation of the pump with their own external air controls.

MODEL DESCRIPTION CHART



PARTS LIST / PEOXX-XXX-XXX-XXXX

Item	Description	Part no	Qty
1	Connecting Rod (PE03)	97122	(1)
	(PE05 & PE07)	97132	(1)
101	Center Body (PE03)	97008	(1)
	(PE05 & PE07)	97006	(1)
	(PE05A)	95978	(1)
107	Plug, Small	96353	(1)
111	Major Valve Spool (PE0XX-XXX-XXX-X0XX)	95919	(1)
	(PE0XX-XXX-XXX-XAXX, PE0XX-XXX-XXX-XBXX, PE0XX-XXX-XXX-XCXX, PE0XX-XXX-XXX-XDXX, PE0XX-XXX-XXX-XEXX, PE0XX-XXX-XXX-XFXX PE0XX-XXX-XXX-XGXX, PE0XX-XXX-XXX-XHXX, PE0XX-XXX-XXX-XJXX, PE0XX-XXX-XXX-XKXX, PE0XX-XXX-XXX-XNXX)	96955	(1)
126	Pipe Plug (1/4 - 18 NPT x 7/16") (PE0XX-XXX-XXX-XXFX, PE0XX-XXX-XXX-XX0X, PE0X-XXX-XXX-XGX)	93832-3	(2)
128	Plug (#10 - 32 x 5/32") (PE0XX-XXX-XXX-XPXX)	59632-1	(1)
129	Muffler Sensor Assembly (PE03X-XXX-XXX-XXEX, PE03X-XXX-XXX-XXFX)	97048	(1)
	Cover Sensor Assembly (PE05X-XXX-XXX-XXEX, PE05X-XXX-XXX-XXFX) (PE07X-XXX-XXX-XXEX, PE07X-XXX-XXX-XXFX)	97053	(1)
	Muffler Sensor Assembly (PE03X-XXX-XXX-XXGX, PE03X-XXX-XXX-XXHX)	97405	(1)
	Cover Sensor Assembly (PE05X-XXX-XXX-XXGX, PE05X-XXX-XXX-XXHX) (PE07X-XXX-XXX-XXGX, PE07X-XXX-XXX-XXHX)	97406	(1)
132	Air Manifold Gasket	96214-1	(1)
135	Valve Block	96204	(1)
	(for PE0XA-XXX-XXX-XXXX)	95980	(1)
	Porting Plate (ported motor only) (for PE0XX-XXX-XXX-XPXX)	96382	(1)
	(for PE0XA-XXX-XXX-XPXX)	96382-4	(1)
136	Plug, Large (PE0XX-XXX-XXX-X0XX, PE0XX-XXX-XXX-XSXX)	96352	(1)
	(PE0XX-XXX-XXX-XAXX, PE0XX-XXX-XXX-XBXX, PE0XX-XXX-XXX-XCXX, PE0XX-XXX-XXX-XDXX, PE0XX-XXX-XXX-XEXX, PE0XX-XXX-XXX-XFXX, PE0XX-XXX-XXX-XGXX, PE0XX-XXX-XXX-XHXX, PE0XX-XXX-XXX-XJXX, PE0XX-XXX-XXX-XKXX, PE0XX-XXX-XXX-XNXX)	96971	(1)
137	"O" Ring (1/16" x 1-5/8" o.d.)	Y325-29	(3)
138	"U" Cup Packing (1/8" x 1" o.d.)	94395	(1)
139	"U" Cup Packing (1/8" x 1-7/16" o.d.)	96383	(1)
140	Valve Insert	93276	(1)
141	Valve Plate	96173	(1)

Item	Description	Part no	Qty
166	"O" Ring (1/16" x 1-1/4" o.d.)	Y325-24	(1)
200	Porting Gasket	96364	(1)
201	Muffler (PE05/PE07 Metallic)	93110	(1)
	(PE05/PE07 PP)	93110-1	(1)
283	Leak Detection Sensor (PE0XX-XXX-XXX-XXEX, PE0XX-XXX-XXX-XXLX)	96270-1	(2)
	Leak Detection Sensor ATEX / IECex / NEC / CEC (PXXXX-XXX-XXX-XXHX, PXXXX-XXX-XXX-XXMX)	96270-2	(2)
	Barrier Amplifier, End of Stroke (PEXXX-XXX-XXX-XXGX), (PEXXX-XXX-XXX-XXHX)	97412	(1)
	ZENER Barrier Leak Detection (PEXXX-XXX-XXX-XXHX), (PEXXX-XXX-XXX-XXMX)	97414	(1)
403	Valve (All PE0XX with Solenoid)	114102	(1)
413	Coil Nut (All PE0XXX with Solenoid)	119380	(1)
414	Coil, 120VAC (PE0XX-XXX-XXX-XAXX)	116218-33	(1)
	Coil, 240VAC (PE0XX-XXX-XXX-XCXX)	116218-35	(1)
	Coil, 12VDC (PE0XX-XXX-XXX-XBXX)	116218-38	(1)
	Coil, 24VDC ATEX / IECex (PE0XX-XXX-XXX-XHXX)	117345-39	(1)
	Coil, 24VDC (PE0XX-XXX-XXX-XDXX)	116218-39	(1)
	Coil, 220VAC ATEX / IECex (PE0XX-XXX-XXX-XKXX)	117345-35	(1)
	Coil, 12VDC ATEX / IECex (PE0XX-XXX-XXX-XGXX)	117345-38	(1)
	Coil, 12VDC NEC / CEC (PXXXX-XXX-XXX-XEXX)	114772-38	(1)
	Coil, 24 VDC NEC / CEC (PXXXX-XXX-XXX-XFXX)	114772-39	(1)
	Coil, 120 VDC NEC / CEC (PXXXX-XXX-XXX-XJXX)	114772-33	(1)
415	O-Ring (All PE0XX with Solenoid)	114103	(1)
416	O-Ring (All PE0XX with Solenoid)	114104	(1)
417	Screw (All PE0XX with Solenoid)	96728647	(2)
418	Tube (All PE0XX with Solenoid)	15309974	(1)
419	Seal (All PE0XX with Solenoid)	96957	(1)
420	Snap Ring (All PE0XX with Solenoid)	Y147-43	(1)
421	Retainer (All PE0XX with Solenoid)	15309990	(1)
429	Solenoid Muffler (All PE0XX with Solenoid)	116464	(1)

SOLENOID

GENERAL DESCRIPTION

Without end of stroke feedback, solenoid control can only be used to cycle the pump based on timing. The following curves represent the flow rates of a pump based on timed operation of the solenoid at a common operating point of 70 psig air pressure and 30 psig of back pressure.

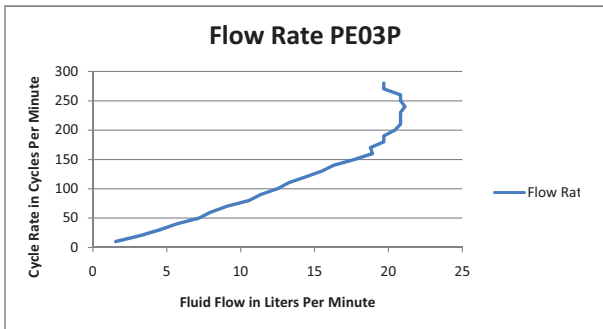
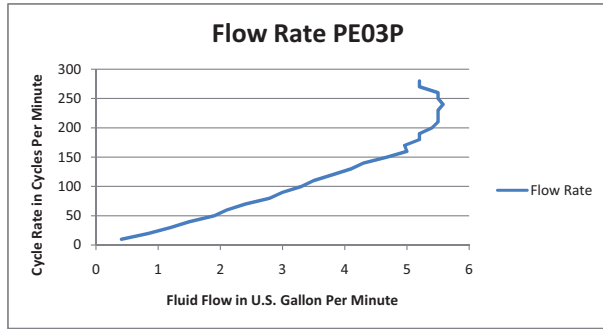


Figure1

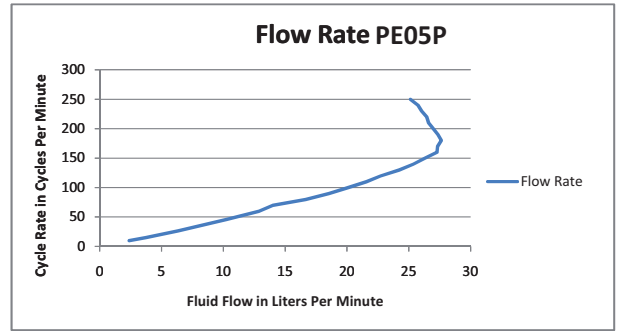
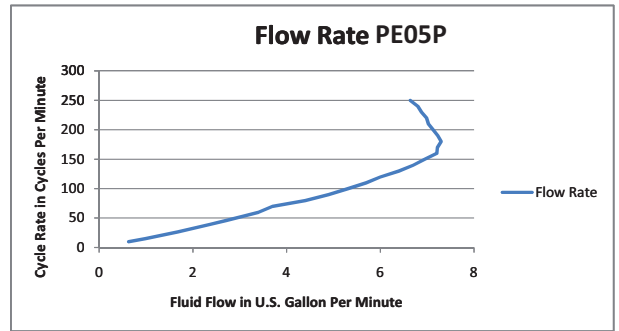
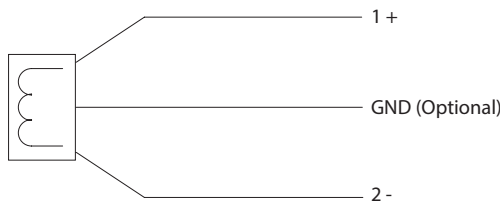
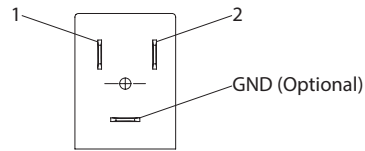
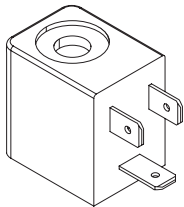


Figure 2

NON - HAZARDOUS DUTY SOLENOID WIRING DIAGRAM



NON - HAZARDOUS DUTY SOLENOID PART LIST / PE0XX-XXX-XXX-XXXX

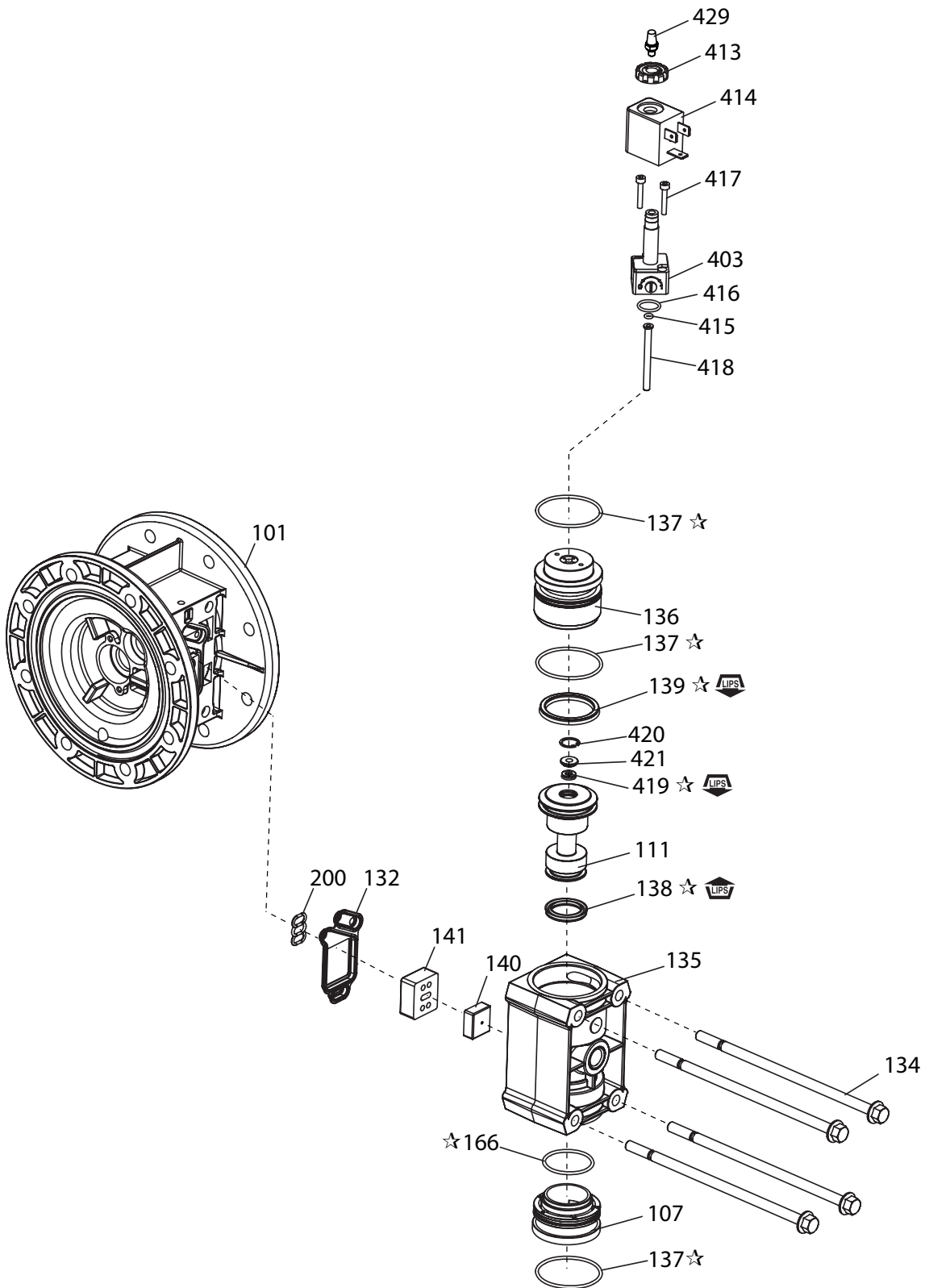


Figure 3

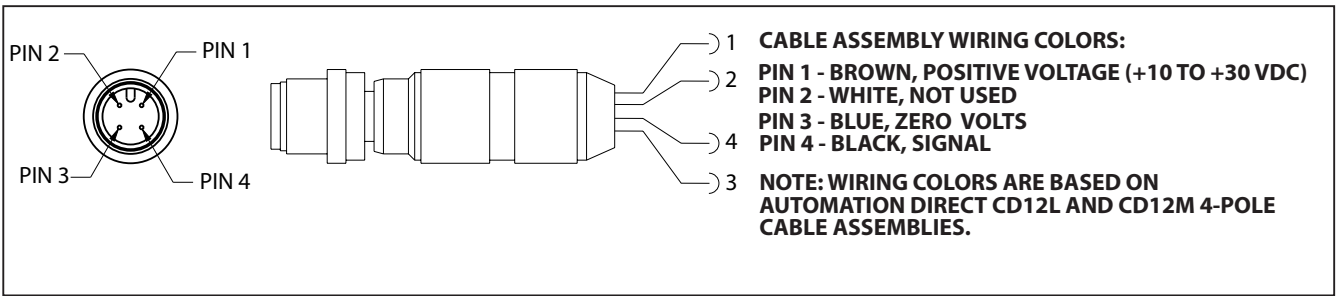
LUBRICATION / SEALANTS

☆ Apply Lubriplate FML-2 grease (94276) to all "O" rings, "U" cups and mating parts.

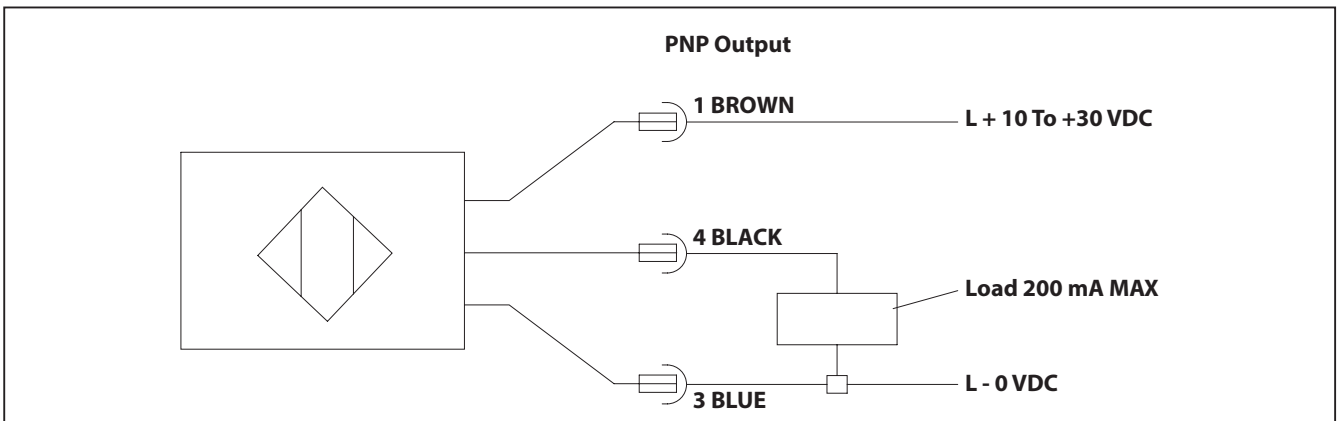
NON - HAZARDOUS DUTY END OF STROKE

With End of Stroke feedback, The End of stroke sensor detects when the diaphragm rod has reached the end of each stroke. This allows closed loop control of the diaphragm pump, verifying each stroke is complete.

End of Stroke / Cycle Sensor Pinout, M12 Connector



End of Stroke / Cycle Sensor Pinout, Wiring Diagram (No Connector)



PART LIST

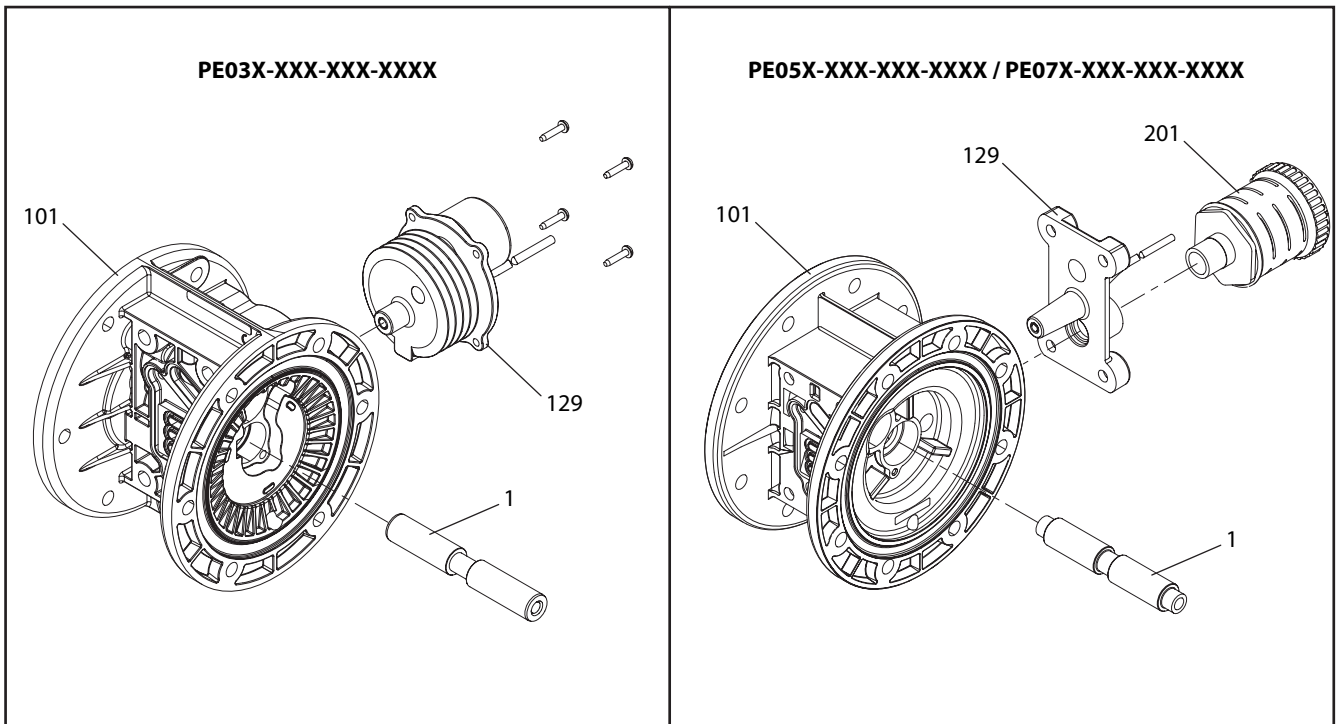


Figure 4

NON - HAZARDOUS DUTY LEAK DETECTION

GENERAL DESCRIPTION

An ARO® diaphragm pump equipped with the ARO Leak Detection Sensor warns of a diaphragm failure by sensing the presence of liquid in the air chamber of the pump. This system uses a liquid sensor in each of the two air chambers which will send an output signal when fluid is detected.

INSTALLATION AND WARNINGS

NOTE: ALL WIRING MUST COMPLY WITH ALL LOCAL AND / OR NATIONAL ELECTRICAL CODES.

- Electrical codes that apply must be strictly adhered to; failure to do so may lead to shock hazard or serious injury.
- Some local electrical codes may require the installation of rigid conduit.

- The diaphragm failure detector components must be installed by a qualified electrician in compliance with all national, state and local codes and regulations to reduce the risk of electrical shock or other serious injury during installation and operation.
- ARO is not responsible for accidents resulting from improper installation of components or hardware.
- **HAZARDOUS VOLTAGE.** Do not attempt any service without disconnecting all electrical supply sources.

PART LIST / PE0XX-XXX-XXX-XXEX, PE0XX-XXX-XXX-XXLX

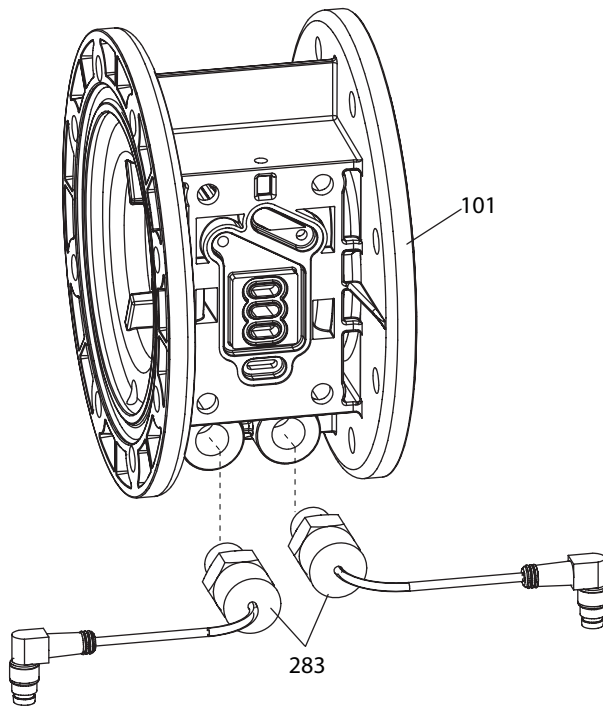
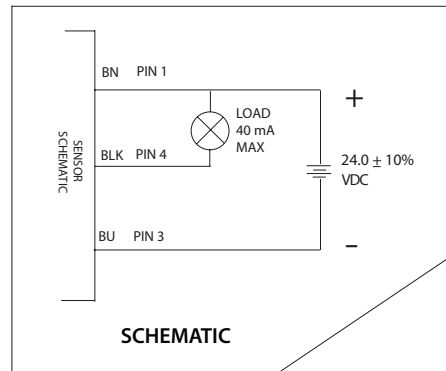
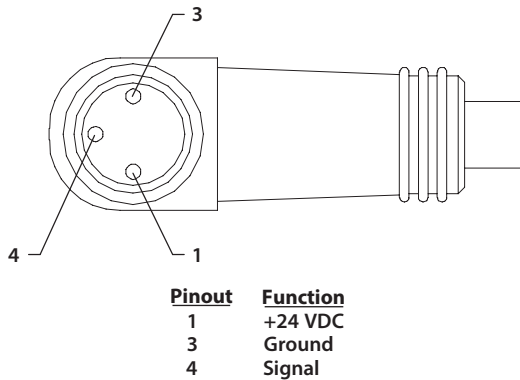


Figure 5

LEAK DETECTION (DIAPHRAGM FAILURE DETECTOR) - PINOUT DESCRIPTIONS

96270-1 SENSOR PINOUTS



TURCK (PICOFAST) Connector PSW 3M -2/90

Figure 6

INSTALLATION OF ELECTRONIC INTERFACE COMPONENTS FOR HAZARDOUS DUTY APPLICATIONS

Pumps that will operate in environments defined as "hazardous locations" must only be installed, connected and set-up by qualified personnel with knowledge and understanding of protection classes, regulations and provisions for apparatus in hazardous areas, for the region where the pump will operate, because these regulations and provisions, along with the definition of what constitutes hazardous areas vary by location.

Make sure the pump and its accessories comply with the specific requirements of the area it will be installed in. ARO Electronic interface Pumps (PE series) and its components are available with the following certifications:

- United States
 - Class I, Division 1, Groups A-D, T4
 - Class II, Division 1, Groups E-G, T135°C
 - Class I, Zone 1, Group IIC, T4
 - Zone 20, Group IIIC, T135°C

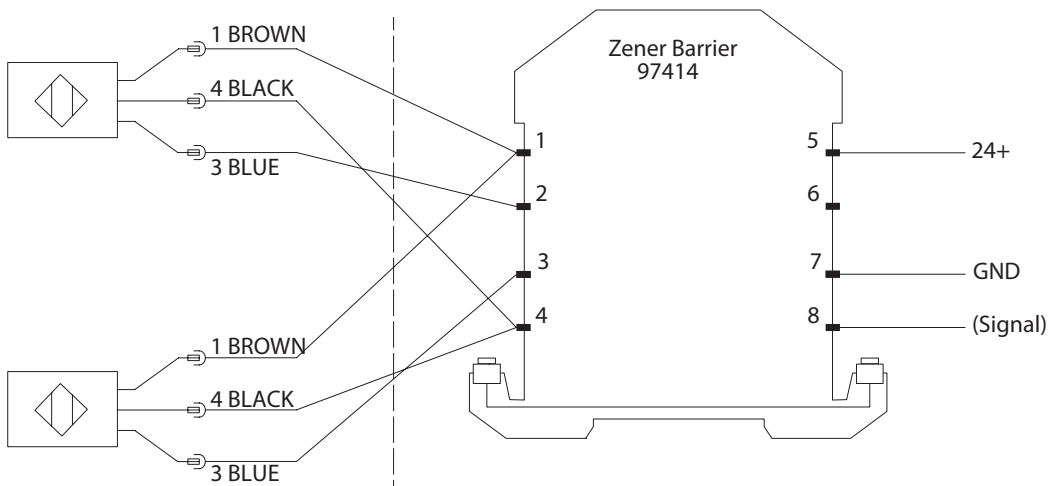
- Canada
 - Class I, Division 1, Groups A-D, T4
 - Class II, Division 1, Groups E-G, T135°C
 - Class I, Zone 1, Group IIC, T4
 - Zone 20, Group IIIC, T135°C

- ATEX (Europe)
 - ATEX Category 2
 - Zone 1, Group IIC, T4
 - Zone 21, Group IIIC, T135°C

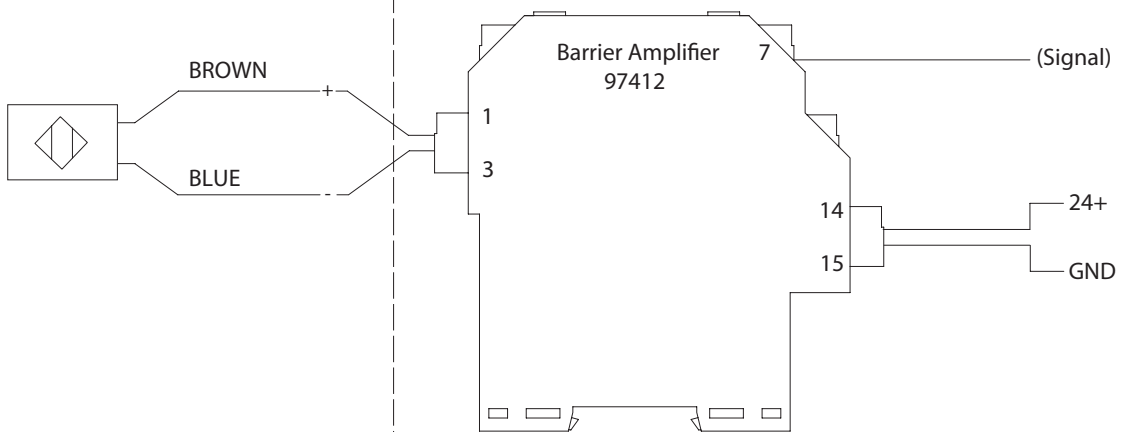
- IEC
 - IEC Category 2
 - Zone 1, Group IIC, T4
 - Zone 21, Group IIIC, T135°C

HAZARDOUS DUTY EI PUMP WIRING DIAGRAM

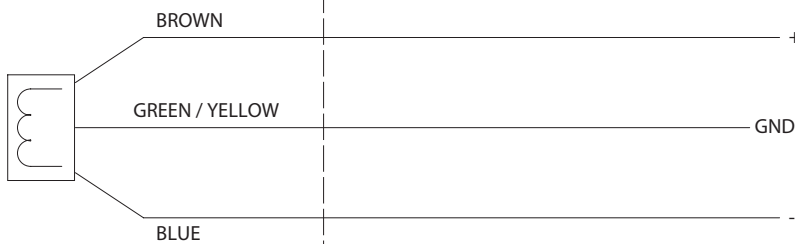
LEAK DETECTION SENSORS



END OF STROKE SENSOR



SOLENOID COIL



HAZARDOUS ZONE

SAFE ZONE

NOTE: Installer is responsible for extending cables and bringing them outside hazardous area using approved methods and components.