

AquFlow Metering Pumps

Aquflow hydraulically-actuated diaphragm metering pumps are by design both rugged and leakproof. However in some difficult and/or critical chemical feeding applications it is often desirable to add diaphragm leak detection - whether to protect the pump from hostile chemicals, or to protect the process from possible contamination by hydraulic fluid.

For these applications AquFlow has developed two highly reliable diaphragm leak detection systems. Your NPA sales representative can help you determine which system is best suited to your particular needs.

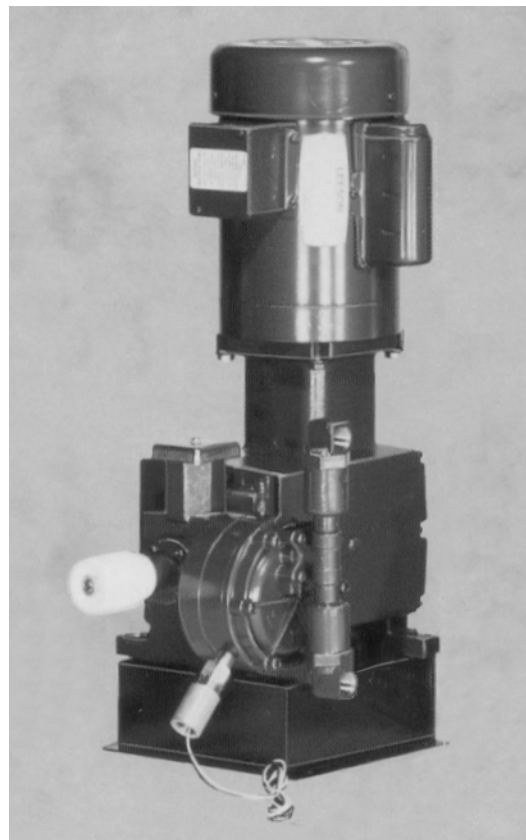
Conductivity-Type Leak Detection System

The conductivity-type leak detection system can be furnished on either tubular/disc diaphragm or double disc type diaphragm liquid ends. The system consists of a conductivity probe mounted in the pump intermediate chamber between the diaphragms. This intermediate chamber is filled with process compatible non-conductive fluid.

In the event of a diaphragm failure, process fluid leaking into the intermediate chamber results in a change of conductivity. This change in conductivity of the intermediate fluid increases probe current through the sensing circuit of the solid state control module. When the probe current exceeds the set point current, the control module energizes a relay output.

The relay output is a dry contact, and can be used to signal a customer's PLC or SCADA system, or can be wired to sound an alarm and/or shut-off pump. The U.L. listed SPDT relay is rated 10 amp at 120/240 VAC, and is furnished in a NEMA 4X or optional NEMA 7 enclosure.

The system utilizes a variable sensitivity type solid state control relay - which is easily field adjustable. This allows set point resistor values to be easily changed in the field when process conditions change, or when the pump is moved to a different application.



Series 2000 double disc diaphragm liquid end pump showing conductivity-type probe

The conductivity-type system is available on all tubular diaphragm and double-disc diaphragm liquid ends, and works only with process fluids that are conductive.

Conductivity Leak Detection System Selection Guide		
Relay Enclosure	Voltage	Model Number
NEMA 4	120 VAC, 60 Hz, 1 phase	11460-1204
	240 VAC, 60 Hz, 1 phase	11460-2404
NEMA 7	120 VAC, 60 Hz, 1 phase	11460-1207
	240 VAC, 60 Hz, 1 phase	11460-2407
Complete system includes relay in appropriate NEMA enclosure and probe.		

Vacuum-Type Leak Detection System

The vacuum-type leak detection system is a highly reliable means of sensing diaphragm failure, and is frequently used when the process fluid will not allow a conductivity-type system. The vacuum-type system consists of two PTFE diaphragms held together under vacuum and separated by a thin, metallic intermediate ring. In this system diaphragm failure is detected by sensing a change in vacuum pressure between the two diaphragms.

The complete leak detection system includes a vacuum gauge, tubing, purge valve, vacuum accumulator, and a factory preset vacuum switch. The U.L. listed SPDT vacuum switch is rated 15 amp at 125/250/480 VAC, and can be furnished in a NEMA 4 or optional NEMA 7 enclosure. The vacuum switch can be wired to sound an alarm and/or shut-off the pump in the event of a diaphragm failure.

The accumulator provides the system with extra volume to maintain vacuum - minimizing

maintenance requirements and virtually eliminating false alarms. A 1-1/2" diameter vacuum gauge provides operators with a visual indication of system operating performance.

The vacuum-type leak detection system, which is unaffected by changes in pump discharge pressure, is available on all hydraulically actuated diaphragm metering pumps, except tubular diaphragm liquid ends.

Specifications

- Vacuum Gauge: 1-1/2" Dial
0-30 in Hg scale range
- Vacuum Switch: 15 Amp Rating
S.P.D.T.
125/250/480 VAC
Preset N.C. contact
NEMA 4 - standard
NEMA 7 - option

Vacuum Leak Detection System Selection Guide			
Pump Series		Model Number	
		NEMA 4	NEMA 7
900	Simplex	11441-5064	11441-5067
	Duplex	11441-5164	11441-5167
1000	Simplex	11441-1064	11441-1067
	Duplex	11441-1164	11441-1167
2000	Simplex	11441-2064	11441-2067
	Duplex	11441-2164	11441-2167
3000	Simplex	11441-3064	11441-3067
	Duplex	11441-3164	11441-3167
4000	Simplex	11441-4064	11441-4067
	Duplex	11441-4164	11441-4167

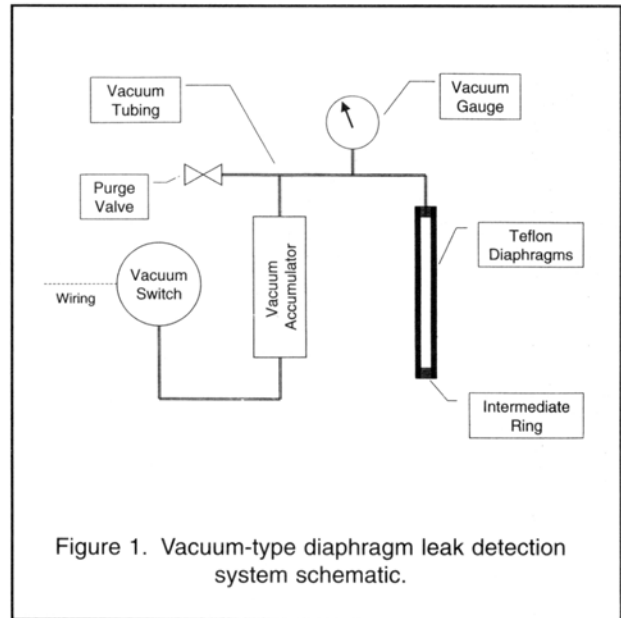


Figure 1. Vacuum-type diaphragm leak detection system schematic.