



Series 102/103 Differential Pressure Switches

Form 388

Series 102/103 differential pressure switches

are robust field-mounted instruments. The 102 pressure sensing assembly is a piston; the 103 pressure sensing assembly is a diaphragm-piston combination. The 102/103 can be configured for service in non-hazardous and hazardous locations. Switching elements are SPDT or DPDT. See Principle on page 2.

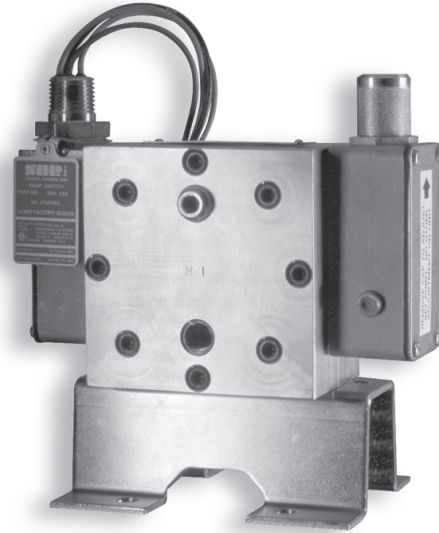
Design and specifications are subject to change without notice.

Application Information

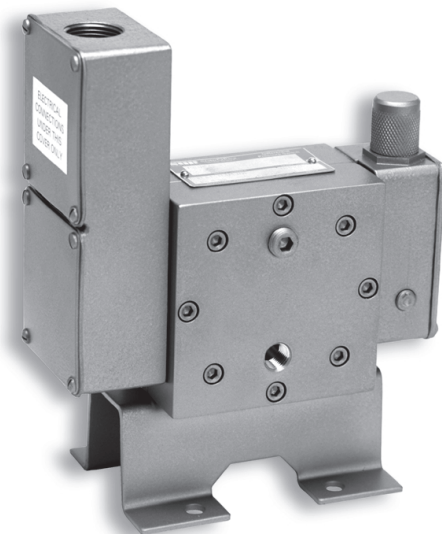
Basic models with standard wetted parts are normally suitable for air, oil, water and non-corrosive process fluids. See Quick Selection Guide on page 4.

Corrosive service and particular user requirements may require optional components. See How to Order on page 3.

Series 102 is suited for low-to-high differential pressure process or fluid power applications where high and varying static pressures, high overrange, proof, shock pressure or cycle rates are expected. Series 103 is suited for low-to-medium differential pressure process or fluid power applications where similar system behavior is expected.



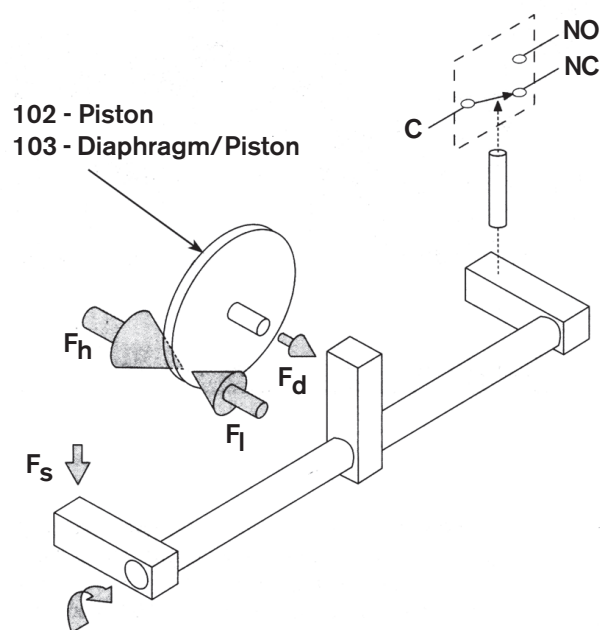
103AD: **Explosion Proof**



103W1: **Weathertight**

Series 102/103 Differential Pressure Switches

Principle



Process pressure is sensed by a piston on the 102 and a diaphragm-piston combination on the 103. Hi-side system pressure acts on the piston to produce force F_h . It is counteracted by the adjustable range spring force F_s and Lo-side system pressure acting on the backside of the piston to produce force F_l . The resultant force F_d acts on the piston and overcomes the force of the adjustable range spring [$F_d = F_h - (F_l + F_s)$] and moves a lever that is connected to a torsionally stiff cross shaft. One end of the cross shaft is connected to a lever that is biased by the range spring; the other end is connected to a lever that actuates (deactuates) an electrical switch element.

F_h = Force, Hi Pressure

F_l = Force, Lo Pressure

F_s = Force, Range Spring

F_d = Force, Resultant Differential
 $= F_h - (F_l + F_s)$

Built-In Quality

- Rigid quality standards maintained from raw material to finished product.

Delivery

- Routine shipments 7 to 10 working days emergency shipments via air same day.

Service

- Factory service engineers and area factory representatives provide effective and prompt worldwide service.

Warranty

- 3 years from date of manufacture.

Complete Product Line

- Standard models with many options cover pressure range 7 inch wcd to 2500 psid. Customized specials available.

Wetted Parts

- Wide selection of materials

Instrument Quality

- High repeatability, narrow dead band, negligible temperature effect and static influence.

Field Adjustable

- Excellent resolution of Set Points, self-locking adjustment, no special tools required. No-charge factory calibration.

Construction

- Rugged, high cycle rate tolerance, long life, not critical to vibration, high overrange and proof pressures, withstands full Hi and Lo side pressure reversals, excellent corrosion resistance to hostile environments.

Snap-Action Electrical Switching

- Wide selection UL Listed and CSA Certified switching elements for AC and DC service

Agency Listings/Certification

- CENELEC (BASEEFA), CSA, JIS/RIIS

Quick Selection Guide

Basic Series 102/103 differential pressure switches with standard wetted parts are normally suitable for air, oil, water and non-corrosive process. Refer to the Quick Selection Guide on page 4. Corrosive service and particular customer requirements may require optional components. Refer to How to Order on this page or the dedicated page to locate optional components, such as: housings, switching elements, diaphragm systems, pressure ports and accessories. Each position in the model number, except Accessories, must have a designator.

Applications

The Series 102/103 differential pressure switches in this catalog are suitable for a wide variety of process and fluid power applications. Specific application requirements can normally be met by selecting optional components, such as, switching elements and diaphragm systems. Certain applications may require customized specials. Consult the factory representative in your area or the factory. Weathertight and explosion proof models with hermetically sealed switching element capsules are presented in this catalog. They are well suited for use in hazardous locations and extremely harsh environments.

How to Order

Steps 1 through 5 are required; Step 6 is optional. Orders must have complete model numbers, i.e. each component must have a designator.

Step 1: Select **Adjustable Range** according to Set Point

Step 2: Select **Housing** for type of service

Step 3: Select **Electrical Switching Element** for housing and electrical service

Step 4: Select **Diaphragm and O-Ring** for process compatibility and containment

Step 5: Select **Pressure Port** for process connection

Step 6: Select **Accessories** as required for service

If Agency Listed, Certified or Approved pressure switches are required components that must be specified.

Series 102/103 Differential Pressure Switches

Quick Selection Guide

Weathertight Model Number	Adjustable Range Increasing Differential Pressure psid (in. wc)	Typical Dead Band		Explosion Proof Model Number
		K-switch psi (in. wc)	EF-Switch psi (in. wc)	
103W1 - K212 - N4 - C1A	(7 to 100)	(1.5)	(4.5)	103AD - EF212 - N4 - C1A
103W1 - K502 - N4 - C1A	(20 to 150)	(3.0)	(9)	103AD - EF502 - N4 - C1A
103W1 - K805 - N4 - C1A	(100 to 1000)	(14)	(42)	103AD - EF805 - N4 - C1A
102W1 - K912 - P1 - C1A	5 to 25	0.5	1.5	102AD - EF912 - P1 - C1A
102W1 - K903 - P1 - C1A	8 to 40	0.8	2.4	102AD - EF903 - P1 - C1A
102W1 - K905 - P1 - C1A	10 to 60	1.0	3.0	102AD - EF905 - P1 - C1A
102W1 - K603 - P1 - C1A	20 to 100	5.0	15	102AD - EF603 - P1 - C1A
102W1 - K403 - P1 - C1A	40 to 200	7.0	21	102AD - EF403 - P1 - C1A
102W1 - K405 - P1 - C1A	50 to 300	10	30	102AD - EF405 - P1 - C1A
102W1 - K305 - P1 - C1A	100 to 500	17	51	102AD - EF305 - P1 - C1A
102W1 - K105 - P1 - C1A	500 to 2500	35	105	102AD - EF105 - P1 - C1A
Piston-Spring 103-212 103-502, 805 All others	Maximum System Pressure 1500 psi 3000 psi 3000 psi	Maximum Differential Pressure 1500 psid 1500 psid 3000 psid		Proof Pressure 1500 psi 5000 psi 5000 psi
Standard Construction				
Housing		Diaphragm		
W1 (weathertight)	Cast iron	N4 103-212	Teflon Coated Polyimide	
AD (explosion proof)	316SS	103-502	Kapton Polyimide Film	
		103-805	Kapton Polyimide Film	
Switching Element		O-Ring		
K	SPDT 15A @ 250 VAC	P1	Buna-N	
EF	SPDT 5A @ 250 VAC	Pressure Port		
		C1A	1/4" NPT(F); 316SS	

Notes

1. The typical dead band column is divided to show different values for the K switching element in the weathertight housing and the EF switching element in the explosion proof housing for use in hazardous locations and flammable atmospheres.
2. Model 102-603 may have longer delivery than normal due to limited stock.