

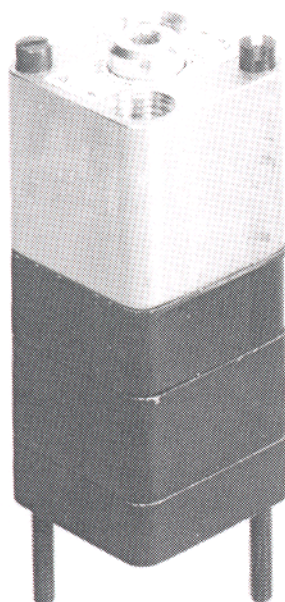
PARTS LIST

ARO PNEUMATIC LOGIC CONTROL LOGIC FUNCTION ASSEMBLY

MODEL 59178-

FORM 5051
REV. 3/88

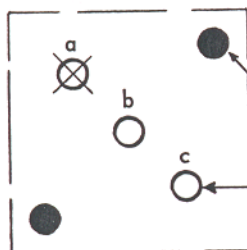
DIFFERENTIAL PRESSURE SENSOR - NON-PASSING



INTERNAL CIRCUIT

LOGIC SYMBOL	LOGIC FUNCTION	PORT DESIGNATION
	$\Delta A \rightarrow C$ Output c on if there is a differential in A pressures and vice-versa	a = blocked b = supply c = output A1 = input A2 = input

CIRCUIT PATTERN



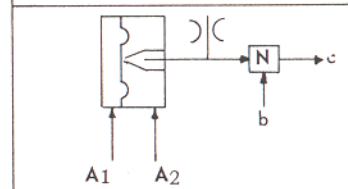
Port a is blocked by the element:
Space in module can be used for
other circuit passages

(2) MOUNTING HOLES

(3) CIRCUIT HOLES

**NOTE: THE ELEMENT CAN BE
ROTATED 180° SO THAT POSITION
a,b,c, BECOMES c,b,a.**

INTERNAL CIRCUIT



DESCRIPTION

The differential pressure sensor (non-passing) has three inputs and one output. There is an output if there is a difference in A inputs. There is no output when there is no difference in the A inputs. The element has three bottom ports which are designated a,b,c. These ports connect to the circuit board or function base and through passages in the circuit module allow the required circuitry to be performed.

OPERATING PRESSURE

Optimum range; 50 to 125 P.S.I.G.
Maximum range: 25 to 150 P.S.I.G.
Maximum ΔA , (A1 - A2) = 25 P.S.I.G.

TEMPERATURE

Optimum range: 32° F to 160° F

RESPONSE TIME

ΔA on \rightarrow c on = 10 MS (approx.)
 ΔA off \rightarrow c off = 10 MS (approx.)

INSTALLATION

Pressure regulation is mandatory for applications where optimum repeatability is required
Lubrication is not required
Filtration is recommended to assure clean dry air supply for optimum repeatability.

FLOW CHARACTERISTICS

Flow b \rightarrow c @ 100 P.S.I.G. = 16.2 CFM free air:
Capacity factor, C_v = 0.28

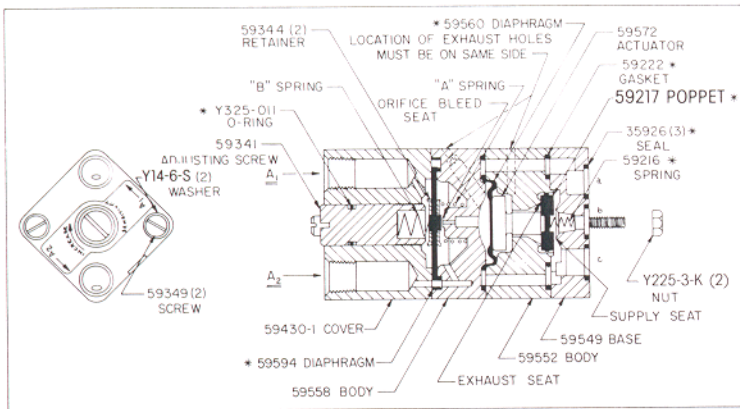
NOTE: Under steady state conditions ($\Delta A=0$) A1 = A2 = b (supply and control pressure must be equal). Always connect the pressure which will be highest under operating conditions to the A1 port. When sensing a decreasing pressure, connect the control pressure to port A1 and the decreasing pressure to port A2. When sensing an increasing pressure, connect the control pressure to port A2 and the increasing pressure to port A1.

OPERATING DESCRIPTION

When inputs A1 and A2 are equal ($\Delta A=0$), diaphragm 59594 is lifted off the orifice bleed seat allowing air from port A2 to flow through the orifice bleed seat and act upon diaphragm 59560 forcing actuator 59572 and poppet 58049 downward, which opens output c to exhaust and closes the supply seat. Therefore output c is off. When input A2 decreases (or input A1 increases) diaphragm 59594 is forced against the orifice bleed seat sealing it. Pressure acting upon diaphragm 59560 bleeds out the orifice exhaust and supply pressure forces actuator 59572 and poppet 58049 upward. The poppet is forced against the exhaust seat closing it. Supply air can pressurize port c. Therefore c is on.

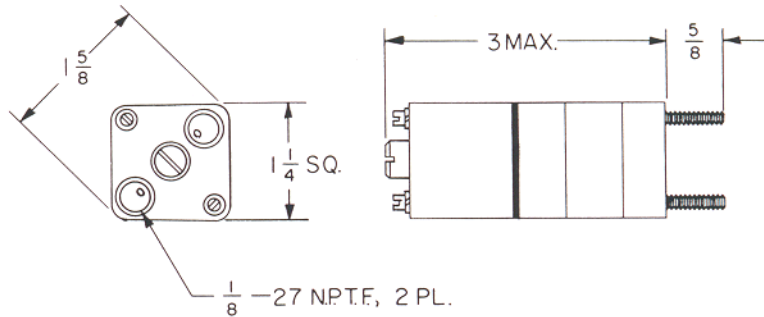
The pressure differential (ΔA) at which the element will shift is controlled by the adjustment of adjusting screw 59341. Turning the adjusting screw clockwise will increase the sensitivity causing the element to shift at a lower pressure differential. Turning the adjusting screw counter-clockwise will decrease the sensitivity causing the element to shift at a higher pressure differential. Screws 59349 thread into the base to assemble element and extend beyond the base for insertion into mounting holes in the circuit board assembly (or function base). Nuts Y225-3-K are used to attach the assembly to the circuit board. 35926 Seals provide sealing between the circuit base & plate and element ports.

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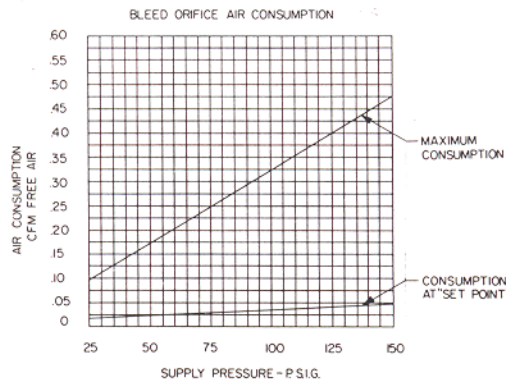
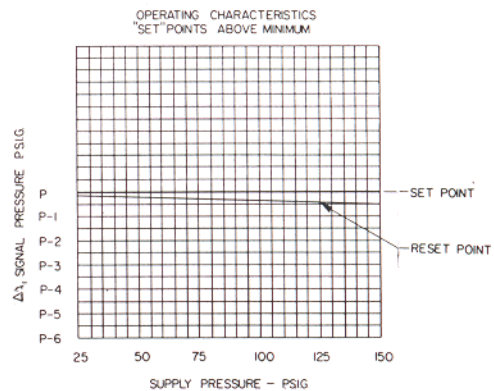
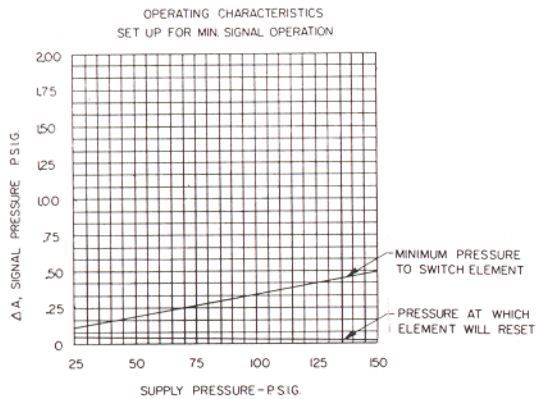
MODEL	"A"	"B"
59178-1	59343-1	59342-1
59178-2	59343-2	59342-2

*Parts included in repair kit.



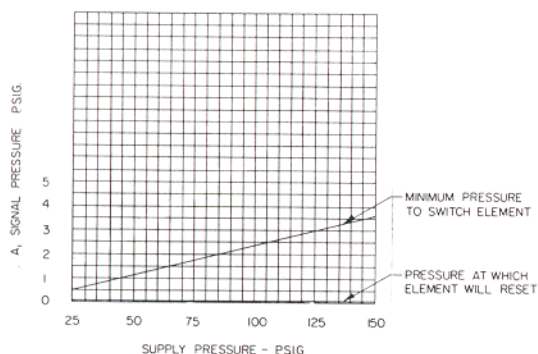
SPRING CHARACTERISTICS

59178-1

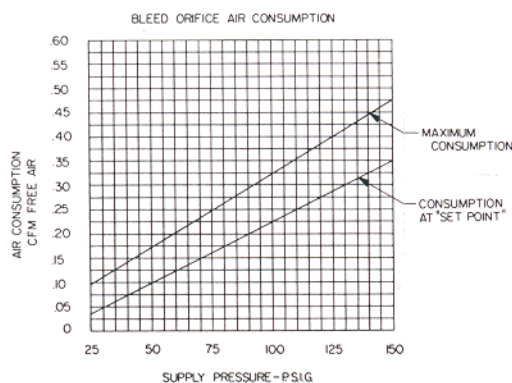
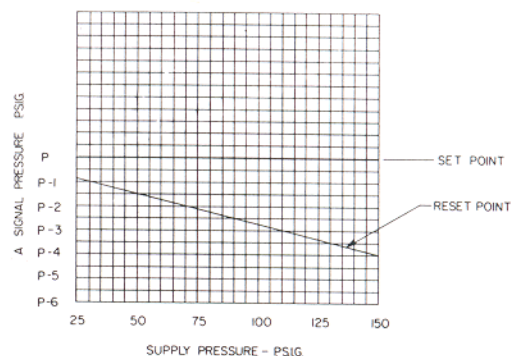


59178-2

OPERATING CHARACTERISTICS
SET UP FOR MIN. SIGNAL OPERATION



OPERATING CHARACTERISTICS
SET POINTS ABOVE MINIMUM



SERVICE (Use Repair Kits No. 58162 & 59573)

In the event of a malfunction

Check Adjustment of adjusting screw 59341

Check for proper pressure connections to A1 and A2

Check O-ring Y325-O11 for rupture or defects

Check orifice bleed seat for damage

Check orifice for plugging

Check diaphragm 59560 for rupture or defects

Check diaphragm 59594 for rupture or defects

Check poppet 59217 for excessive wear or defects

Check poppet and exhaust seats for damage

Check 35926 seals and gasket 59222 for

imperfections if external leakage occurs

TESTING (element mounted on function base)

Apply pressure at port b only. Output should appear at port c. No leakage from exhaust ports.

Apply pressure at port b and equal pressures at ports A1 and A2. Output should disappear at port c.

Decrease pressure at port A2 (less than 25 P.S.I.G. differential). Output should appear at port c.