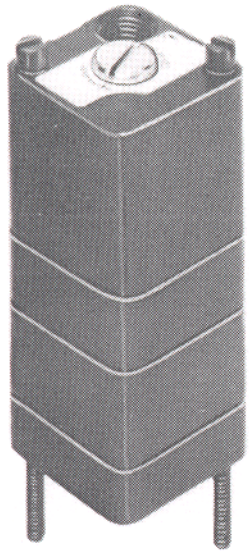
PARTS LIST

ARO PNEUMATIC LOGIC CONTROL
LOGIC FUNCTION ASSEMBLY

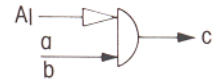
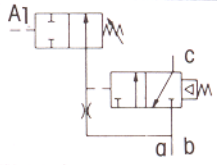
AMPLIFIER VALVE

MODEL 59175-( )

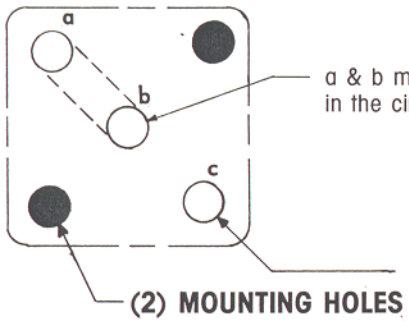
FORM 5049
REV. 3/88



AMPLIFIER VALVE OPERATION

LOGIC SYMBOL	LOGIC FUNCTION	PORT DESIGNATION
	A1. (a,b) → c output c (on) with input at A1 and a supply at a,b	A1 = input a = supply b = supply c = output
VALVE SYMBOL	**VALVE FUNCTION**	**PORT DESIGNATION**
	3-way nc (Non Passing)	A1 = pilot a = supply b = supply c = output

CIRCUIT PATTERN



a & b must be interconnected in the circuit module

(3) CIRCUIT HOLES

(2) MOUNTING HOLES

NOTE: 1. THE ELEMENT CAN BE ROTATED 180° SO THAT POSITION a,b,c, BECOMES c,b,a.

2. Port A1 is located on top of element in a position corresponding to circuit hole "c".

DESCRIPTION AMPLIFIER VALVE OPERATION

This element performs the basic logic function "**AND**" with the exception that the output "c" is greater than the input "A1. 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

59175-1

a,b Supply	50 to 125 PSIG
A1 Signal	.24 to 1.5 PSIG (Adjustable Range when a,b = 50 PSIG).

59175-2

a,b Supply	50 to 125 PSIG
A1 Signal	1.5 to 15 PSIG (Adjustable Range when a,b = 50 PSIG),

CAUTION: DO NOT apply pressure in excess of 25 PSIG to port A1.

TEMPERATURE RANGE

32° to 160°F.

RESPONSE TIME

A1 on → c on = 10 MS (approximate)
A1 off → c off = 10 MX (approximate)

FLOW CHARACTERISTICS

Flow b → c @100 PSIG = 9.3 SCFM
Capacity factor C_V = 0.14
Exhaust c → Atmosphere

OVERBOARD BLEED

.18 SCFM @ 50 PSIG

Filtration (to assure clean, dry air), and pressure regulation are recommended for applications where optimum repeatability is required. Lubrication is not required.

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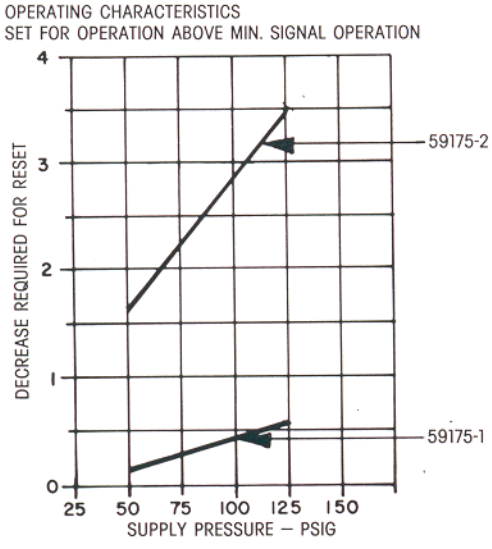
OPERATING DESCRIPTION
AMPLIFIER VALVE OPERATION –

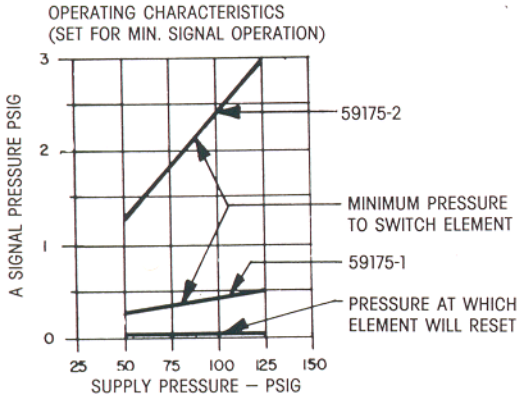
When inputs A1 and b are off, output c is connected to exhaust
When input b only is on, poppet 59217 is forced against the poppet seat. Supply air bleeds through the orifice (a must be connected to b) and out the bleed exhaust. Output c is connected to exhaust.
When input A1 only is on, diaphragm 59594 is forced against the orifice bleed seat, closing it. Since b is off, there is no air flow through the orifice to actuate diaphragm 59560. Output c is connected to exhaust.
When both inputs A1 and b are on, air bleeding through the orifice acts upon diaphragm 59560, forcing actuator 59572 and poppet 59217 donward. 59378 O-Ring closes the exhaust seat. The poppet seat is open thereby making the connection b → c. Therefore output c is on.

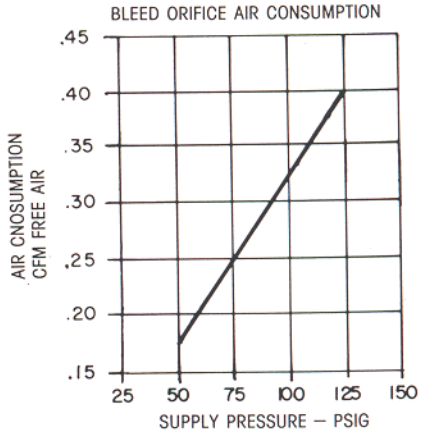
For optimum performance, the adjusting screw (59341) should be adjusted clockwise until a point is reached where the element will not reset when input A1 is removed. Then adjust counter-clockwise to a point just beyond where the element will reset when input A1 is removed. This adjusts the element to operate with a minimum A1 input.
For operation at an A1 input level greater than minimum, adjust adjusting screw 59341 counter-clockwise to the desired sensitivity level.
Diaphragm 59594 is designed for low pressure operation and can be damaged by high pressure.
Screws 59349 thread into the base to assemble the 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 the element ports.

JET SENSOR OPERATION

Operation as a jet sensor is identical to the operation as an amplifier valve.

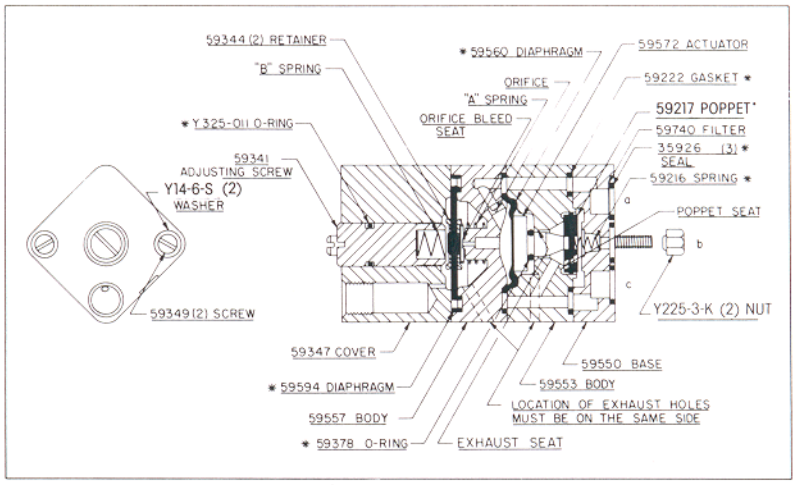




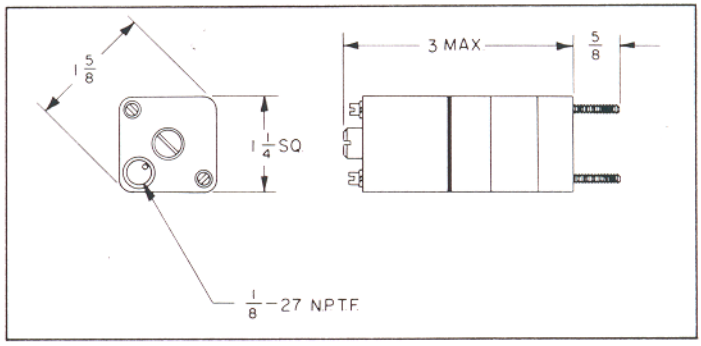


PARTS LIST

MODEL	"A"	"B"
59175-1	59343-1	59342-1
59175-2	59343-2	59342-2



*Parts included in repair kit.



SERVICE: Use repair Kits 58162 & 59573

In the event of a malfunction:
Check adjustment of adjusting screw 59341
Check O-ring Y325-011 for rupture or defects
Check orifice bleed seat for damage
Check orifice for plugging
Check diaphragm 59594 for rupture or defects
Check diaphragm 59560 for rupture or defects
Check poppet 59217 for excessive wear or defects
Check O-ring 59387 for wear or rupture
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 A1 (less than 25 P.S.I.G.), no output should appear at c.
Apply pressure at port b, no output should appear at c.
Apply pressure at ports A1 and b. Output should appear at c. No leakage at exhaust ports.