

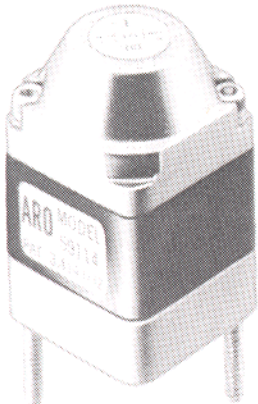
PARTS LIST

**ARO® PNEUMATIC LOGIC CONTROL
LOGIC FUNCTION ASSEMBLY**

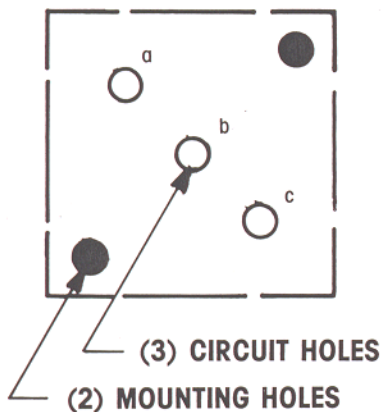
DIFFERENTIATOR LOGIC ELEMENT

MODEL 59114

FORM 5047
REV. 6/88



CIRCUIT PATTERN



LOGIC SYMBOL	LOGIC FUNCTION	PORT DESIGNATION
	$b \rightarrow c$ pulse	a = not connected b = input c = output
VALVE SYMBOL	VALVE FUNCTION	PORT DESIGNATION
	pulse	a = not connected b = input c = output

For other Functions see Technical Manual

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

DESCRIPTION

The differentiator element has one input and one output. A 80 ms. output pulse is emitted each time a maintained full pressure signal is present at input "b". No signal is obtained when the input is switched off. The element has three bottom ports which are designated a, b, c and are marked on the cover to correspond to position on the base. These ports connect to the circuit board, or function bases, and through circuit passages in the circuit module allow the required circuitry to be performed.

OPERATING PRESSURE RANGE

30 to 150 P.S.I.G.

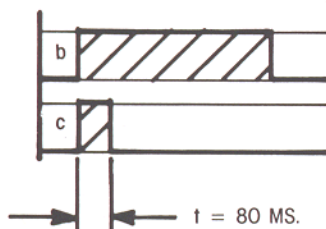
TEMPERATURE RANGE

+32°F to +160°F.

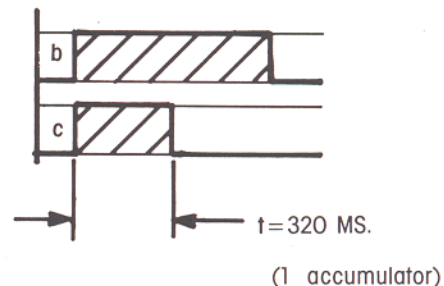
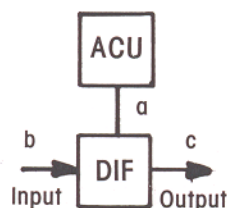
FLOW CHARACTERISTICS

Flow $b \rightarrow c$ at 100 P.S.I.G. = 16.2 C.F.M. free air
Capacity Factor $C_v = 0.28$

DURATION OF OUTPUT SIGNAL



PULSE EXTENSION



Pulse duration can be extended by adding accumulator volume.
Accumulator Model 59117 are connected to port a of differentiator.

INSTALLATION

Pressure regulation is recommended for applications where optimum repeatability is required.

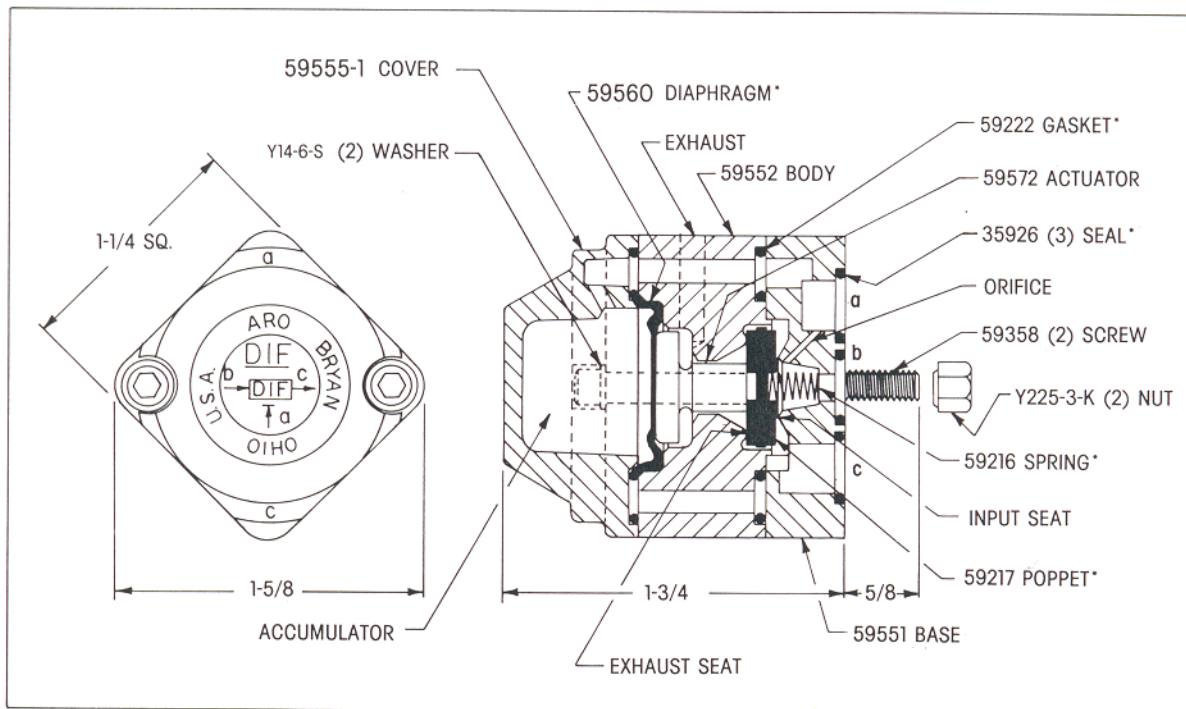
Lubrication is not required.

Filtration is recommended to assure a clean, dry air supply for optimum repeatability.

OPERATION DESCRIPTION

A pressure signal applied to input b pressurizes output c immediately. At the same time air is metered through the orifice into the accumulator, and after a short delay, pressure builds up and diaphragm 59560 forces actuator 59572 and poppet 59217 downward. Input seat becomes closed and output c is vented to exhaust. The element remains in this down position as long as the input at b is present. Therefore, it emits a short pressure pulse, regardless of input b duration. When input b is removed, the poppet will return to the up position, but there will be no output signal.

Screws 59358 thread into base to assemble element, but also extend beyond the base for insertion into mounting holes in the circuit board assembly (or function bases). Y225-3-K nuts are used to attach assembly to the circuit board. 35926 seals provide sealing between circuit base plate and element ports.



***Parts included in Repair Kit**

Service (Use Repair Kit No. 59573)

In the event of a malfunction;

Check diaphragm 59560 for excessive wear or defects.

Check input and exhaust seals for damage.

Check orifice for possible plugging.

Check 59222 gasket and 35926 seals for imperfections if external leakage occurs.

Check poppet 59217 for excessive wear or defects.

Testing (element mounted on function base).

Block port a, apply pressure at port b, output pressure should appear at port c, but should remain on for short pulse only, then disappear.