PARTS LIST

ARO® PNEUMATIC LOGIC CONTROL
LOGIC FUNCTION ASSEMBLY

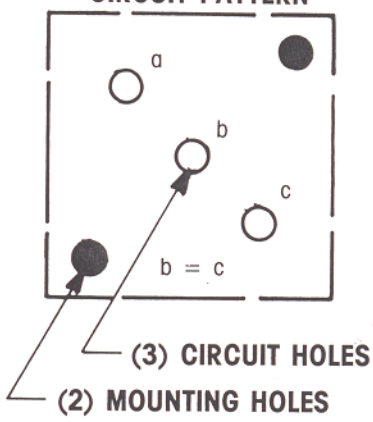
TIMING ELEMENT DIAL CONTROL

MODEL 59116

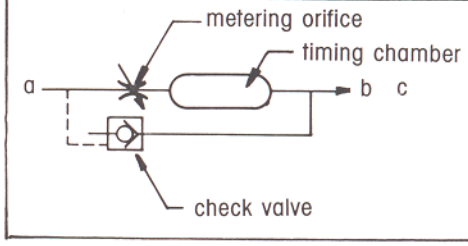
FORM 5713
REV. 3/88

LOGIC SYMBOL	LOGIC FUNCTION	PORT DESIGNATION
a → TIM → b, c	**TIM** in conjunction with "**AND**" or "**NOT**" element for delay function	a = input b,c = output connection to "a" port of **AND** or **NOT** element

CIRCUIT PATTERN



INTERNAL CIRCUIT



See Technical Manual For Detailed Description

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

DESCRIPTION

Time is measured pneumatically by filling a timing chamber thru a metering orifice. Pressure rise in the chamber is used to actuate a pilot operated valve. The pilot operated valve must switch with a snap-action, at a given pressure level, to assure accurate timing and instant output signal switching. The "**AND**" element Model 59111 and the "**NOT** element Model 59112 are used for the delay function in conjunction with the timing element. Both elements are designed for snap action switching.

DELAY CIRCUITS AND FUNCTIONS

The timing element in various combinations with the "**AND**" or "**NOT**" elements will perform six different timing functions 1.) Timing in, 2.) Timing in inverted, 3.) Timing out, 4.) Timing out inverted, 5.) Timing in and out, 6.) Timing in and out inverted. See technical manual for detailed description and circuit diagram for each function.

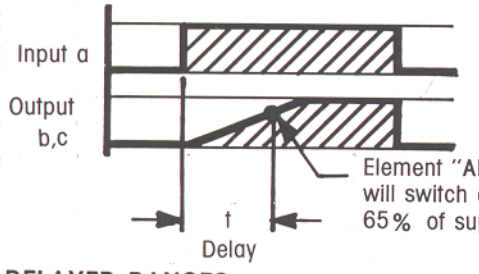
OPERATING PRESURE RANGE

30 to 150 P.S.I.G.

TEMPERATURE RANGE

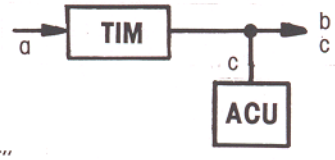
+32°F to +160°F

CHARACTERISTICS



Element "**AND**" or "**NOT**" will switch at approximately 65% of supply pressure.

CIRCUIT FOR EXTENDING TIMING RANGE



Accumulator Model 59117 or additional volume supplied by any other chamber

DELAYED RANGES

Typical delay adjustments over dial range "1-10" (high limits of timing ranges are to be calibrated to digit "10" of dial.) The timing ranges can be extended beyond the data shown by adding additional accumulator volume.

Timing Range Seconds	No. of Auxiliary Accumulators For Extended Delays
+ = .5 2.5	—
+ = .9 5.0	—
+s = 1.4 7.5*+	—
+e = 2.5 15.0	1
+e = 3.0 17.5	1
+e = 4.2 25.0	2
+e = 4.6 27.5	2

The Following Relationship Applies: +e = ts + 10V

+e = extended timing range, seconds.
ts = standard timing range, seconds.
V = Volume in cubic inches of auxiliary accumulator or number of Model 59117 accumulators.

+Timing element is factory set to this timing range.
*Recommended maximum delay for reliable performance.

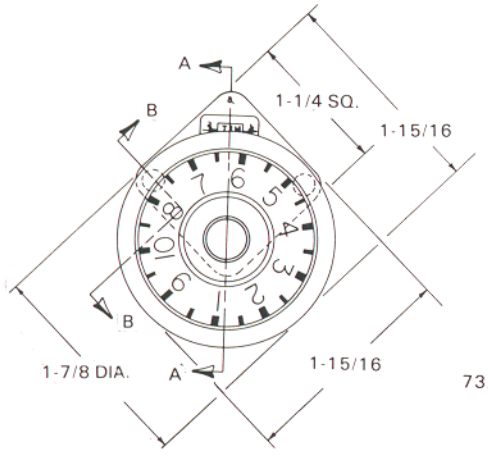
THE ARO CORPORATION
ONE ARO CENTER, BRYAN, OHIO 43506-0151
PH 419-636-4242•TWX 810-443-2994•TELEX 286456•FAX 419-636-2115

INSTALLATION

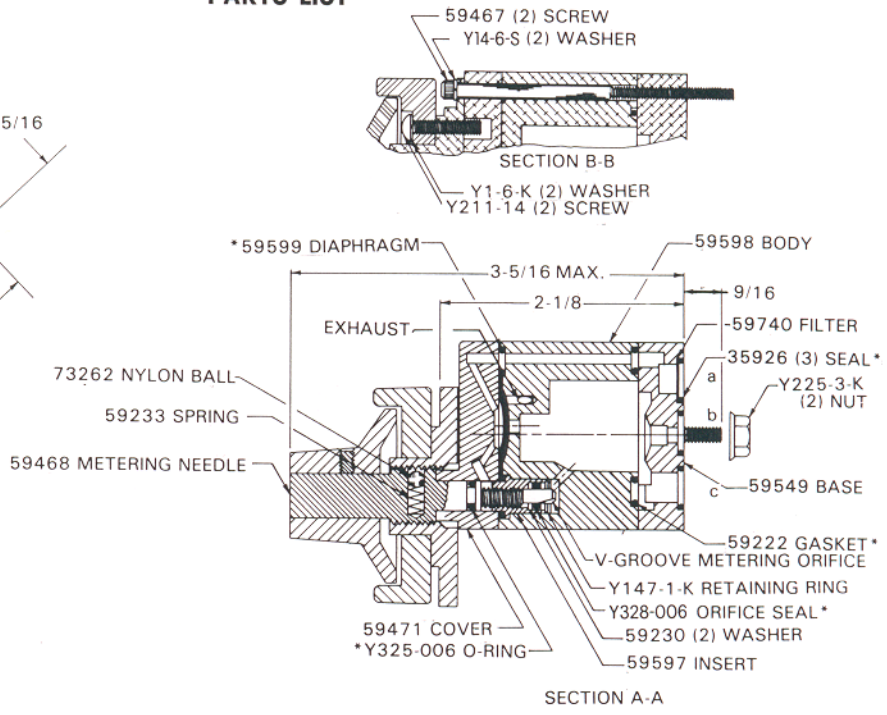
Pressure regulation is mandatory for optimum repeatability.
Lubrication is not required.
Filtration is mandatory to assure a clean, dry air supply for optimum repeatability.

OPERATING DESCRIPTION

Air pressure applied at port **a** is metered through a V-groove in the metering needle. The exposed depth of the groove changes as the 59468 metering needle is moved in relation to Y328-006 O-ring. Pressure on ports **b** and **c** increases at a set rate. Port **c** or **b** must be connected to the input port **a** of the logic element "AND" or "NOT" to obtain the desired delay function. The 59599 diaphragm permits flow to by-pass the metering needle when input **a** is discharged. Two Y225-3-K nuts are used to attach the assembly to the circuit board assembly (or function bases). Three 35926 seals provide sealing between the circuit base plate and the element ports.



PARTS LIST



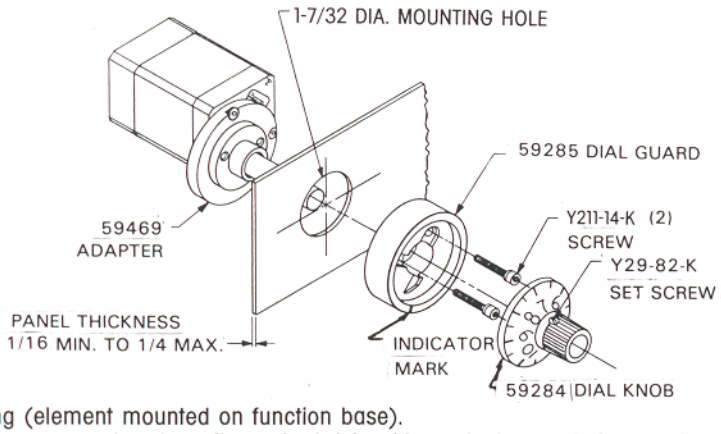
***Parts included in repair kit**

PANEL MOUNTING

To panel mount timing element, loosen Y29-82-K set screw and remove the 59284 dial knob. Remove the two Y211-14-K screws and 59285 dial guard. Insert timing element through the mounting hole in the panel (from back side). Pilot diameter on 59469 adapter will align element in panel. Attach dial guard with the two Y211-14-K screws. Before tightening these two screws, rotate the timing assembly until indicator mark is in the desired location. Replace the dial knob and tighten the Y29-82-K set screw. Adjust timing range as shown below.

TO ADJUST TIMING RANGE

Remove dial knob, and adjust 59468 metering needle to high limit of desired timing range. Replace dial knob so digit "10" is lined up with the indicating mark, and tighten the Y29-82-K set screw. Position knob so stop is engaged. Only one complete turn is possible.



SERVICE (Use Repair Kit No. 59476)

For improper timing:
Check 59599 diaphragm for rupture or defects.
Check seat-diaphragm for damage.
Check V-groove (metering orifice for plugging).
Check Y328-006 orifice seal for excessive wear or defects.
Check Y325-006 O-ring, 35926 seals, 59599 diaphragm, and 59222 gasket for imperfections if external leakage occurs.

Testing (element mounted on function base).
Apply pressure at port **a**, after a short delay (dependent on metering needle adjustment), pressure at port **c** should equal the pressure applied at port **a**. Remove pressure at port **a**, pressure at port **c** should disappear instantly.