



Volume Booster Relay CR-100-A1

GENERAL DESCRIPTION

The Model CR100-A1 Volume Booster Relay is a proportioning unit designed for use in industrial pneumatic control systems where the application requires amplifying the volume of air. The relay components are made of steel and aluminum and the diaphragms are Buna-N on Nylon.,

SPECIFICATIONS

DESIGN DATA

Input Pressure Range:

0-20 psig (0-1.4 bar) nominal
0-50 psig (0-3.5 bar) maximum

Supply Pressure:

30 psig (2.1 bar) nominal
50 psig (3.5 bar) maximum

Ambient Temperature Limits:

-40° F. to 180° F. (-40° C. to 82° C.)

Gain: Ratio of output to input 1:1

Action:Proportional

Connections: 1/4" female NPT
(Exhaust connection is 1 / 16" female NPT)

Weight: 1.0 lb. (0.45 Kg.)

PERFORMANCE DATA

Ultimate Sensitivity:01 in. H2O

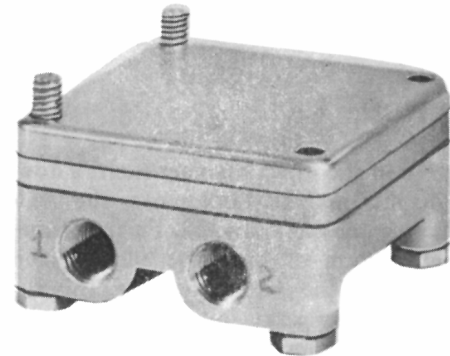
Supply Pressure Effect: Change in output pressure for 5 psig (0.35 bar) supply pressure change, less than 1% of full range.

Ambient Temperature Effect: Change in output for a 75 F. (24° C.) rise in ambient temperature, 0.5% of full range.

Air Consumption: Maximum 7.0 SCFH
For Maximum Flow:

Supply output capacity 3.0 SCFM nominal

Exhaust output capacity 5.0 SCFM nominal



ORDERING INFORMATION:

Specify: Model CR100-A1

DIMENSIONS

1. This relay will operate properly when mounted in any position.

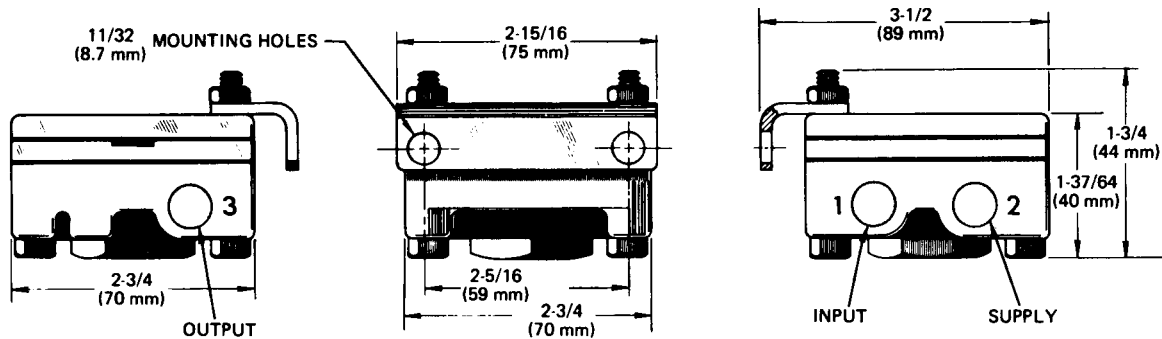


Figure 1

OPERATION

Air pressure in the input chamber exerts a downward force on the diaphragm. This force moves the center assembly down, closing the exhaust valve. Further movement opens the lower portion of the valve allowing the supply air pressure to enter the output chamber. This air acts on the diaphragm and also passes out through the output port. As the increasing output pressure approaches the input pressure, the center assembly will rise, permitting the valve to close throttling the flow of supply air. When the output pressure equals the input pressure both surfaces of the valve will be closed and the relay will be in balance.

A further increase in the input pressure will cause the lower portion of the valve to open until the output pressure again equals the input pressure. A decrease in input pressure will allow the output pressure to force the center assembly upward, opening the exhaust valve until the output pressure is equal to the input pressure.

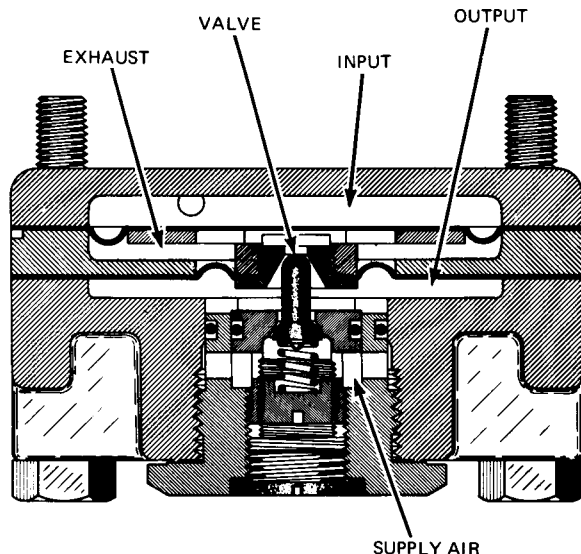


Figure 2

Robertshaw

U.S.A. and CANADA

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Exports

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INDUSTRIAL PRODUCTS DIVISION

GENERAL DESCRIPTION

The Model CR100 Series A and B Ratio Relays comprise a group of proportioning units designed for use in industrial pneumatic control systems where the application requires amplifying the volume of control air in a pre-determined ratio. They are available in output to input ratios of 1:2 through 1:6 and 2:1 through 6:1. The relay components are made of steel and aluminum, and the diaphragms are Buna-N on nylon.

SPECIFICATIONS

DESIGN DATA

Output-Input Ratios:

Amplifying	Reducing
2:1	1:2
3:1	1:3
4:1	1:4
5:1	1:5
6:1	1:6

Input Pressure Range:

- 0-20 psig (0-1.4 bar) nominal
- 0-50 psig (0-3.5 bar) maximum

Supply Pressure:

- 30 psig (2.1 bar) nominal
- 50 psig (3.5 bar) maximum

Output Pressure: 50 psig (3.5 bar) maximum

Action: Proportional

Ambient Temperature Limits:

-40° F. to 180° F. (-40° C. to 82° C.)

Connections: 1/4" female NPT
(Exhaust connection is 1 / 16" female NPT)

Weight: 1.0 lb. (0.45 Kg.)

PERFORMANCE DATA

Ultimate Sensitivity:01 in. H₂O

Supply Pressure Effect: Change in output pressure for 5 psig (0.35 bar) supply pressure change, less than 1% of full range.

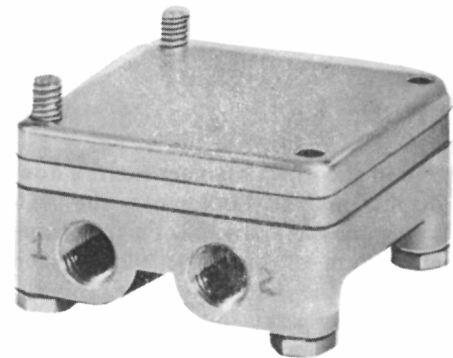
Ambient Temperature Effect: Change in output for a 75 F. (24° C.) ambient temperature change - 0.5% of full range.

Air Consumption: Maximum 7.0 SCFH

For Maximum Flow:

- Supply output capacity 3.0 SCFM nominal
- Exhaust output capacity 5.0 SCFM nominal

Ratio Relay CR-100-Series A/B



ORDERING INFORMATION

Specify Ratio of Output to Input.

<i>Amplifying Relays</i>		<i>Reducing Relays</i>	
Model No.	Ratio	Model No.	Ratio
CR100-A2	2:1	CR100-B2	1:2
CR100-A3	3:1	CR100-133	1:3
CR100-A4	4:1	VR100-B4	1:4
CR100-A5	5:1	CR100-B5	1:5
CR100-A6	6:1	CR100-B6	1:6



DIMENSIONS

1. This relay will operate properly when mounted in any position.

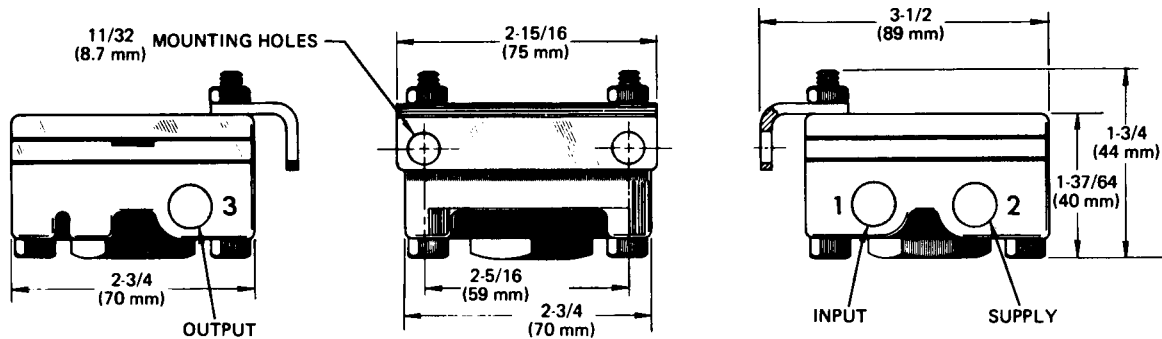


Figure 1

OPERATION

The output pressure is proportional to the input pressure as the effective area of the input diaphragm is to the effective area of the output diaphragm. The illustration shows a 1:6 relay.

Air pressure in the input chamber exerts a downward force on the diaphragm. This force moves the center assembly down, closing the exhaust valve. Further movement opens the lower portion of the valve allowing the supply air pressure to enter the output chamber. This air acts on the diaphragm and also passes out through the output port. Since the effective area of the input diaphragm, in this case, is six times as large as the effective area of the output diaphragm, it will take six times as much output pressure to balance the unit. As the increasing output pressure approaches the balance point, the center assembly will begin to rise, permitting the valve to close, throttling the flow of supply air. When the output pressure balances the input pressure, both surfaces of the valve will be closed and the relay will be in balance.

A further increase in the input pressure will cause the lower portion of the valve to open until the output pressure again equals the input pressure. A decrease in input pressure will allow the output pressure to force the center assembly upward, opening the exhaust valve until the output pressure is equal to the input pressure.

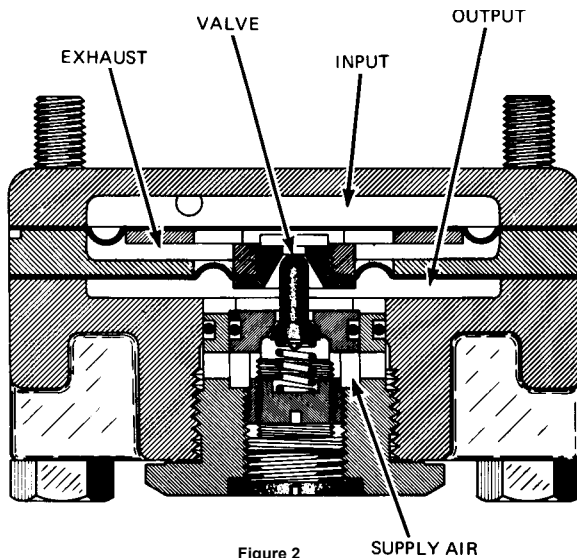


Figure 2

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