

C-2040 Averaging Cumulator

The C-2040 Averaging Cumulator is a low volume output device designed to operate a controlled device or receiver-controller by averaging the output signals of two, three, or four controllers or transmitters. The C-2040 produces an output signal equal to the average of the input signals.

Operation

Inputs from up to four controllers or transmitters are applied to the pilot connections. Supply pressure, through a .007 in. restrictor, is furnished to the supply/output port.

As the input pressure in any of the pilot air chambers increases, the exhaust port will close until the output pressure reaches the average value of the inputs. On a decrease in any of the pilot pressures, the exhaust port will open until the output pressure drops to the average value of the inputs and the cumulator will again be in balance.

Installation

The C-2040 is designed for in-line mounting in any position. Two #8 sheet metal screws are furnished to secure the integral mounting bracket to a panel if desired.

The supply/output and exhaust ports are marked "0" and "1", respectively. All connections are made with 5/32 in. O.D. polytubing to barbed fittings furnished on the unit.

Note: Any pilot connections not used must be plugged with the caps provided.

The exhaust port of the C-2040 must always be left unplugged to avoid overpressurizing the output chamber.

Because of simplicity in design, field calibration and adjustments are not required.

Operational Checkout

Furnish supply and variable input pressures to the C-2040 and check the output signal to be sure that it is at the average value of the inputs.

Repair Information

If the C-2040 fails to operate within its specifications, unit replacement is required; field repairs cannot be made.



Fig. 1: C-2040 Averaging Cumulator

Note: When checking or replacing the C-2040, be sure that the change in output pressure will not upset the system and cause damage (for example, allow a coil to freeze, burn out a heater, collapse duct work).

Specifications

Product	C-2040-1 Averaging Cumulator	
Supply Pressure	18 to 22 PSIG (126 to 154 kPa) Nominal 20 PSIG (140 kPa) Air Supply Must Be Clean, Dry, and Oil Free	
Input Pressure	0 to 20 PSIG (0 to 140 kPa) From Two, Three, or Four Controllers or Transmitters	
Output Pressure	Equal to Average of Input Pressures	
Air Consumption	38 to 50 SCIM (10 to 14 mL/s)	
Flow Capacity	30 SCIM (8 mL/s) @ 15 PSIG (105 kPa) Output	
Accuracy	± 0.6 PSI (4.2 kPa) @ 10 PSI (70 kPa) Pilot Differential	
Ambient Operating Temperature Limits	40 to 120°F (4 to 49°C)	
Ambient Storage Temperature Limits	- 20 to 150°F (- 29 to 66°C)	
Air Connections	Barbed Fittings for 5/32 in. O.D. Poly tubing	
Mounting	In-Line or Panel Mounting	
Materials	Body	Polysulfone
	Diaphragm	Silicone
Accessories (Order Separately)	R-3710 Series .007 in. Restrictor	
	F-300-30 1/4 x 5/32 in. Coupler	
Shipping Weight	0.2 lb (.09 kg)	

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

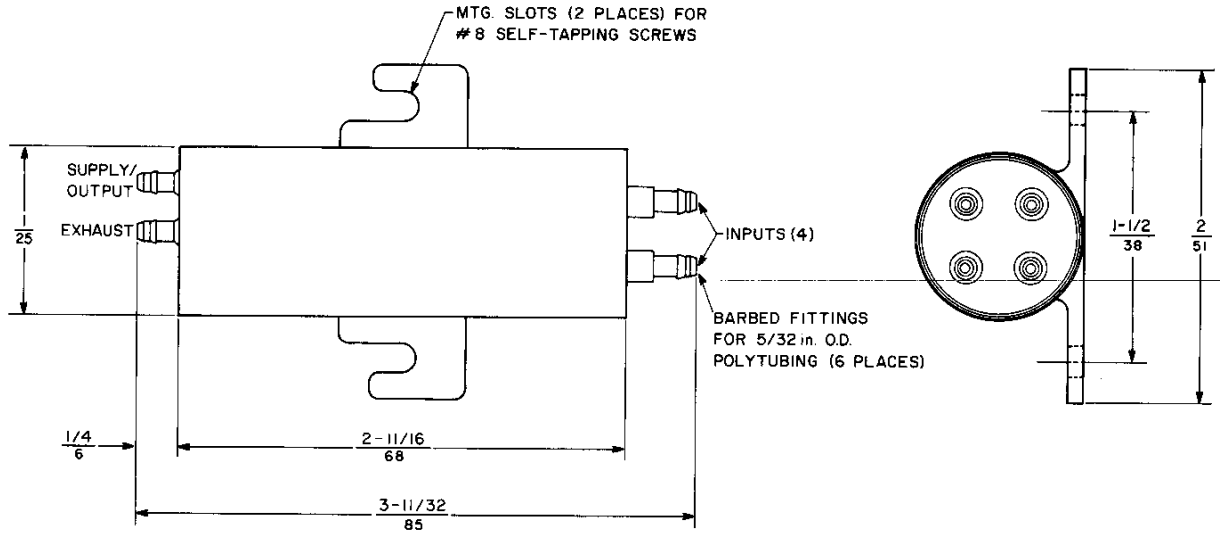


Fig. 2: Dimensions $\frac{\text{in.}}{\text{mm}}$

Application and Drawing Identification

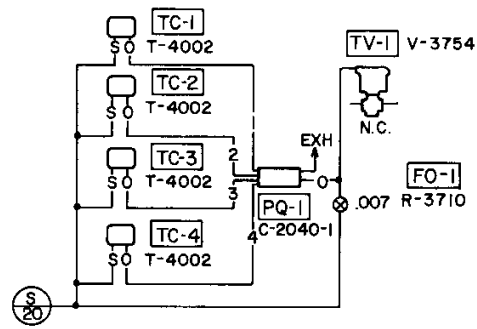
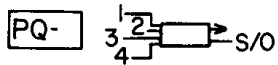


Fig. 3: Typical Application

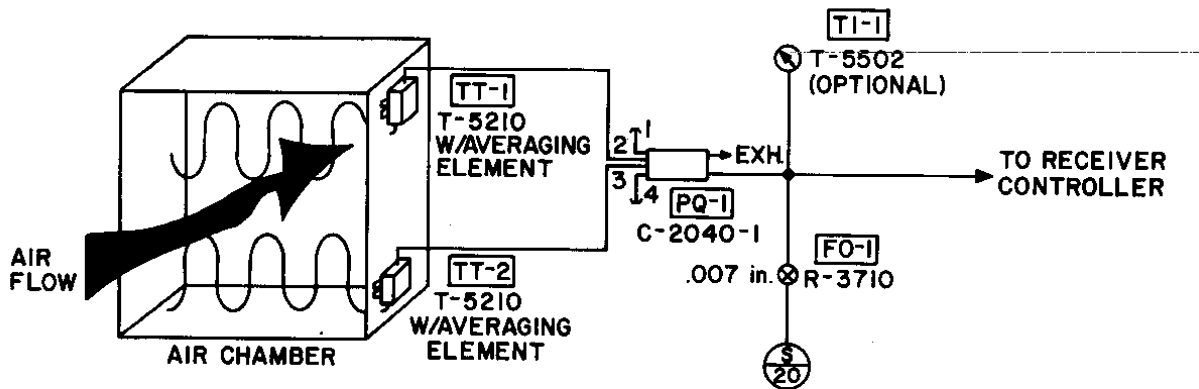


Fig. 4: Typical Application Using C-2040 to Average the Temperature Sensed in a Large Air Chamber

**JOHNSON
CONTROLS**

Controls Group
507 E. Michigan Street
P.O. Box 423
Milwaukee, WI 53202

Printed in U.S.A.