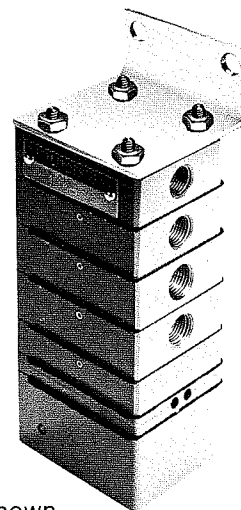


# Multiple Input Low-Pressure Selectors

## FEATURES

- Input signals are dead-ended (non-flowing)
- "Stackable" modules — for up to six inputs
- No accrued-error buildup, as with a series of two-input-type selectors
- Piloted output for high capacity in override circuits

Multiple Input Low-Pressure Selectors are available for two up to six input signals. They transmit an output signal which is equal to the lowest input. These instruments are frequently used in override control systems.



Model 614 Shown

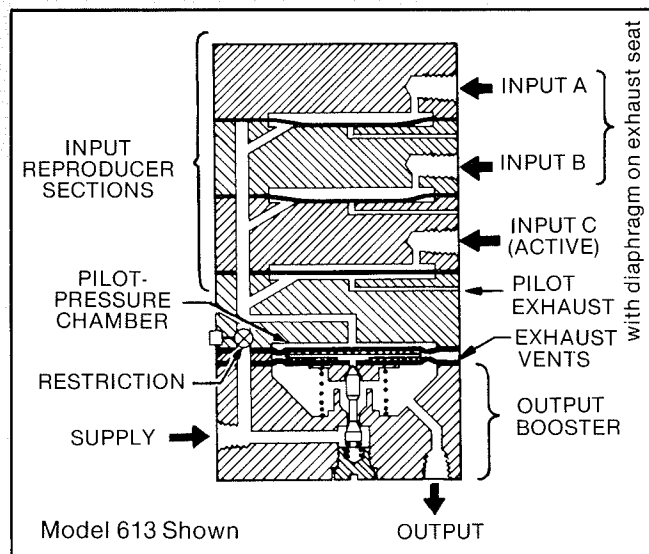
## OPERATION

A multiple input low-pressure selector consists of a number of force-balance input-reproducer sections and an output booster. Each reproducer incorporates a diaphragm which acts on a pilot nozzle. Pilot air is fed to the underside of all reproducers from a common supply restriction.

The input signal is reproduced by the automatic throttling action of the reproducer diaphragm as it regulates the bleed through the pilot nozzle to atmosphere.

When the various inputs to the reproducers are at different levels, the reproducer with the lowest input value will have control; and the diaphragms on all other reproducers will have sealed their respective pilot nozzles.

The booster section, in turn, provides a high-capacity re-transmission of the lowest reproduced pressure.



Model 613 Shown

## MODEL SELECTION

Model No.	No. of Inputs
612	2
613	3
614	4
615	5
616	6

## SPECIFICATIONS

### Input/Output Range

Standard..... 3 to 15 psig (20 to 100 kPa)  
 Maximum..... 3 to 27 psig (20 to 180 kPa)

### Supply Pressure

Standard..... 20 psig (140 kPa)  
 Minimum..... 2 psi (14 kPa) above max. req'd. output  
 Maximum..... 50 psig (345 kPa)  
 Air Consumption..... < 0.1 scfm (0.17 m<sup>3</sup>/h)

Ambient Temp. Limits .. -40° to +180° F  
 (-40° to +82° C)

### Performance Data

Overall Accuracy..... better than ± 1.0% of span  
 1:1 Ratio (Input/Output)..... better than ± 0.5% of span  
 Selection Differential..... < 0.2 in. H<sub>2</sub>O (0.05 kPa)  
 Response Level..... better than 0.1 in. H<sub>2</sub>O (0.025 kPa)  
 Supply Pressure Effect..... 200:1

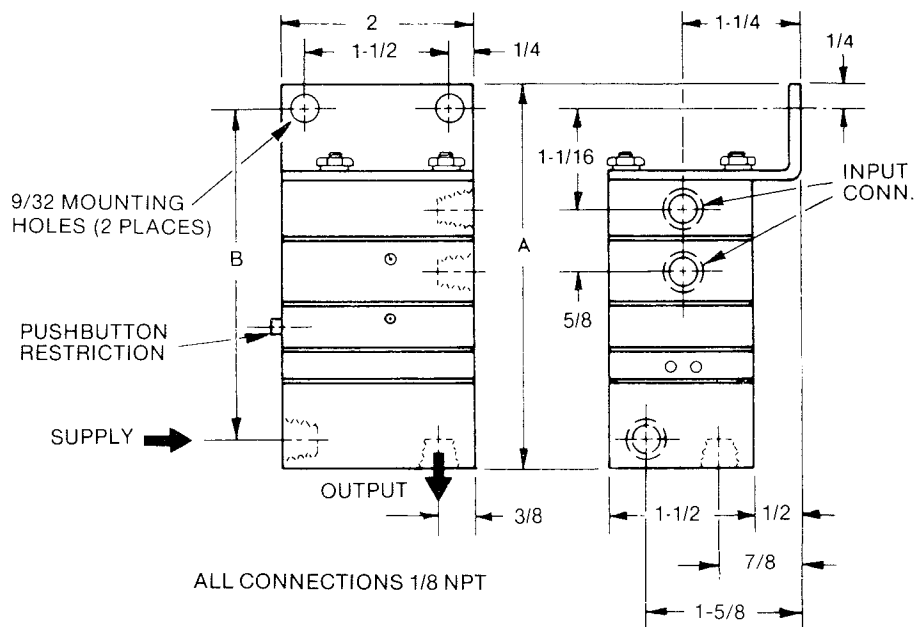
Output Droop with Flow  
 (at 20 psig supply and 9 psig output)

Flow	Pressure Drop-Off
0.12 scfm (0.2 m <sup>3</sup> /h)	0.1 psi (0.7 kPa)
1.9 scfm (3.2 m <sup>3</sup> /h)	1.0 psi (7.0 kPa)

# Multiple Input Low-Pressure Selectors

## MOUNTING DIMENSIONS

MODEL NO.	DIMENSION	
	A	B
612	4	3-3/8
613	4-5/8	4
614	5-1/4	4-5/8
615	5-7/8	5-1/4
616	6-3/8	5-7/8



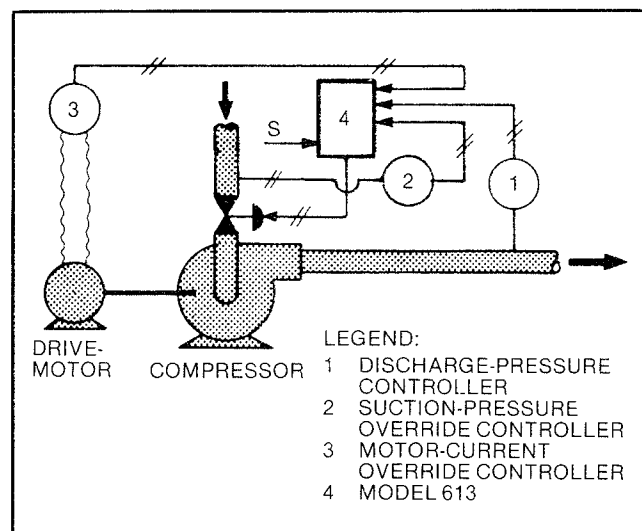
## ORDERING INFORMATION: Specify

1. Model No.

## TYPICAL APPLICATION

The circuit shown is for a motor-driven centrifugal compressor. Primary control is compressor-discharge pressure. As downstream demand fluctuates, the inlet valve must be opened or closed to adjust compressor capacity to match demand. In order to maintain the required discharge pressure when an increased demand occurs, the inlet-valve opening must be increased. To maintain discharge pressure for a reduced demand, the valve opening must be reduced. This is the normal function of the Discharge-Pressure Controller.

Opening and closing the inlet valve also affects other system parameters. Opening the valve will cause the suction pressure to drop and the motor-current load to increase. Suction pressure below design value and excessive motor current are unsafe operating conditions.



When either unsafe condition occurs, it is necessary to override the Discharge-Pressure Controller by closing the inlet valve to bring the parameters back to safe limits. The two Override Controllers (Suction-Pressure & Motor-Current) implement the necessary corrective action. Both Override Controllers are "tied" into the basic circuit by means of the Multiple Input Low-Pressure Selector, Model 613.

Under normal conditions, motor current and suction pressure are within safe limits, and their controller-output signals are high. The Discharge-Pressure Controller, therefore, manipulates the inlet valve through the Model 613.

If an unsafe condition occurs (high motor load or low suction pressure), the respective Override Controller output will fall below the output of the Discharge-Pressure Controller. The resultant low-pressure signal will be selected by the Model 613 as the "corrective" control signal to the inlet valve.

When the unsafe condition is alleviated, normal Discharge-Pressure Control will be resumed automatically.

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