

Accessory Valves - Relay

Relay Valve, Type S

Zinc or aluminum body, 1/4" NPTF pilot port

Rexroth
Bosch Group

Type "S" Relay

Type	3 way pilot operated pressure control	
Supply Pressure	250 psi max. (17.2 bar)	
Pilot Pressure	250 psi max. (17.2 bar)	
Ratio- pilot to delivery	1:1 standard; others noted below.	
Temperature Range	-20°F to 160°F (-29° to 71°C)	
Media	Air or inert gas	
Pilot Port Size	1/4" NPTF	
Body Port size	1/4" and 1" as noted below	
Hysteresis	Less than 5 psi. (0.34 bar)	
Materials	Body	3/8" & 1/2" die cast zinc 3/4" and 1" die cast aluminum
	Diaphragm	Nylon reinforced HYCAR
	Other	Anodized aluminum or plated



Features

Reliability

Automatically sustains pressure directed by the pilot line on a 1 to 1 ratio (optional ratios shown below). The balanced internal valve functions to relieve excess pressure, or to maintain pressure against demand. Rubber seated valves provide zero leakage.

Installation Versatility

Operates in any position. May be supported by piping alone or by a mounting bracket. The IN and OUT ports are plainly marked on the body.

Ease of Maintenance

The valve may be serviced without disturbing line connections. All parts are accessible by removing top cover. No special tools are required.

Large Capacity

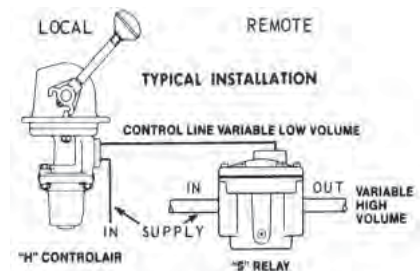
Designed with minimum valving to provide maximum flow (see graph).

Modern Construction

All materials are corrosion resistant. The sturdy die cast body contains wrench flats for ease of installation. Ports have dry seal pipe threads (suitable with standard pipe thread).

Positive Seals

Packing rings are located at all critical points in the assembly to eliminate internal and external leakage.



Application

The "S" Relay Valve is a pilot-operated, 3-way, pneumatic pressure control valve with open exhaust. The large capacity of this valve makes it an ideal volume booster. It receives pressure signals from a remote control valve and repeats this pressure with a greater rate of flow to the component being controlled. The valve serves to speed response time between sending and receiving stations in a pneumatic circuit which involves long piping runs or branch circuits. Where the controlled component is not in a readily accessible location, remote piloting provides a solution.

Model	Port Size NPTF	Version	Valve Part No.	Valve Old Part No.	Weight lbs. (kg)	Repair Kit Part No.
3-S	3/8"-18	Standard	R431003663	P -055160-00000	2.38 (1.08)	R431004153
4-S	1/2"-14	Standard	R431003664	P -055161-00000	2.25 (1.02)	R431004153
6-S	3/4"-14	Standard	R431003665	P -055162-00000	2.63 (1.19)	R431004155
8-S	1"-11	Standard	R431003666	P -055163-00000	2.44 (1.11)	R431004155
4-S	1/2"-14	Multi-function (2:1 ratio), air pilot*	R431006660	P -065671-00001	2.63 (1.19)	**
4-S	1/2"-14	Multi-function, hydraulic pilot 300 psi max., air inlet 150 psi max.*	R431009099	P -064955-00002	2.63 (1.19)	R431006572
2-S	1/4"-18	Adjustable	R431000775	P -027257-00000		**
		Optional tapped exhaust kit for 3-S & 4-S	R431006791	P -066236-00000		**

Mounting bracket included with valves.

*Contact factory for outline drawings.

**Contact factory for repair parts.

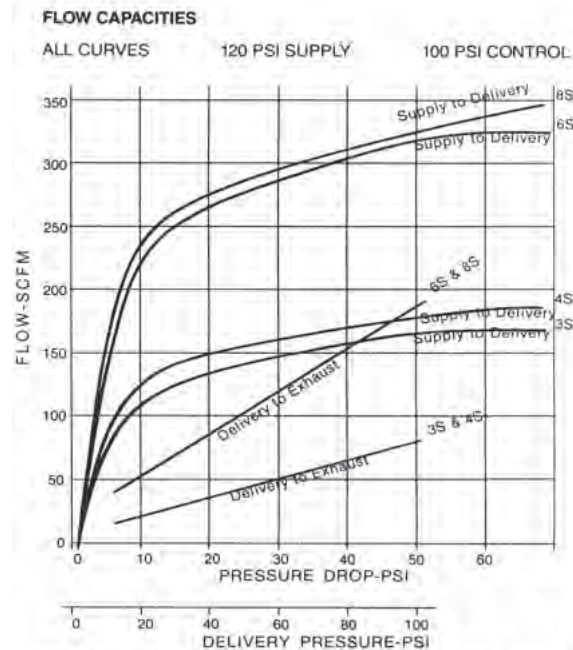
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Operating characteristics

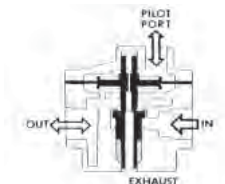


NOTE: Flow capacity of a relay valve is a function of supply pressure; i.e., doubling the supply pressure results in approximately double the flow capacity. EXHAUST CAPACITY is low. Where increased exhaust is necessary, use of our Quick Release Valve is recommended.

Operating characteristics

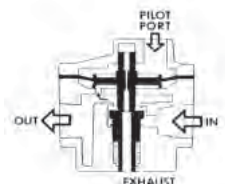
CLOSED CENTER POSITION

When the outlet pressure (pressure below the diaphragm) is equal to the pilot pressure (pressure above the diaphragm), the balance of pressure allows the inlet valve spring to move the valve assembly up. This seats the inlet valve and exhaust valve, sealing the IN and OUT ports.



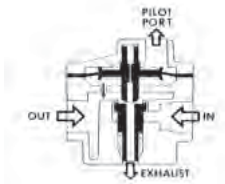
INCREASING PRESSURE

Applying pressure to the pilot port moves the diaphragm assembly down to seat the exhaust valve, unseat the inlet valve plunger, and compress the inlet valve spring. Air pressure from a local source at the IN port flows to the OUT port. A controlled flow of air is also directed to the underside of the diaphragm. Air flow continues until the pressure at the OUT port equals the pressure at the pilot port.



DECREASING PRESSURE

Reducing pressure in the pilot port unbalances the pressure across the diaphragm. The diaphragm assembly and exhaust valve move away from the seated inlet valve, opening the OUT port to exhaust through the hollow inlet valve plunger. Air continues to exhaust until the air pressure at the OUT port under the diaphragm balances the air pressure to the pilot port on the top of the diaphragm.

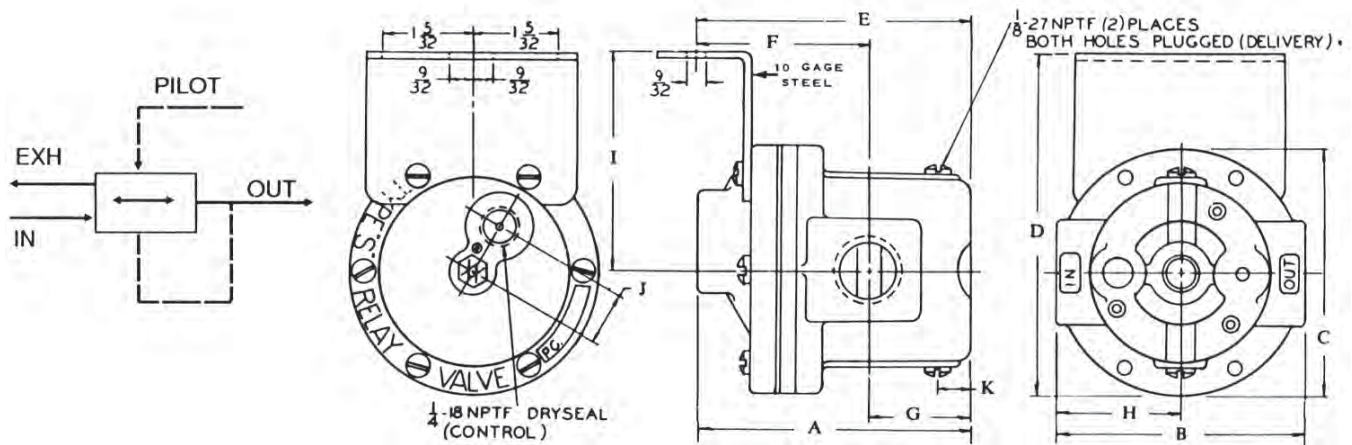


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Dimensions											
Model	A	B	C	D	E	F	G	H	I	J	K
3-S	3 ⁹ / ₁₆	3 ¹ / ₄	3 ¹ / ₄	4 ¹ / ₂	4 ¹ / ₁₆	2 ¹ / ₄	1 ¹¹ / ₃₂	1 ⁵ / ₈	2 ⁷ / ₈	1 ¹ / ₁₆	1 ⁵ / ₃₂
4-S	3 ⁹ / ₁₆	3 ¹ / ₄	3 ¹ / ₄	4 ¹ / ₂	4 ¹ / ₁₆	2 ¹ / ₄	1 ¹¹ / ₃₂	1 ⁵ / ₈	2 ⁷ / ₈	1 ¹ / ₁₆	1 ⁵ / ₃₂
6-S	4 ¹¹ / ₃₂	4 ¹ / ₈	4 ¹ / ₈	5 ¹ / ₄	4 ⁷ / ₈	2 ⁷ / ₈	1 ¹ / ₂	2 ¹ / ₁₆	3 ³ / ₁₆	3 ³ / ₄	1 ³ / ₁₆
8-S	4 ¹¹ / ₃₂	4 ¹ / ₈	4 ¹ / ₈	5 ¹ / ₄	4 ⁷ / ₈	2 ⁷ / ₈	1 ¹ / ₂	2 ¹ / ₁₆	3 ³ / ₁₆	3 ³ / ₄	1 ³ / ₁₆