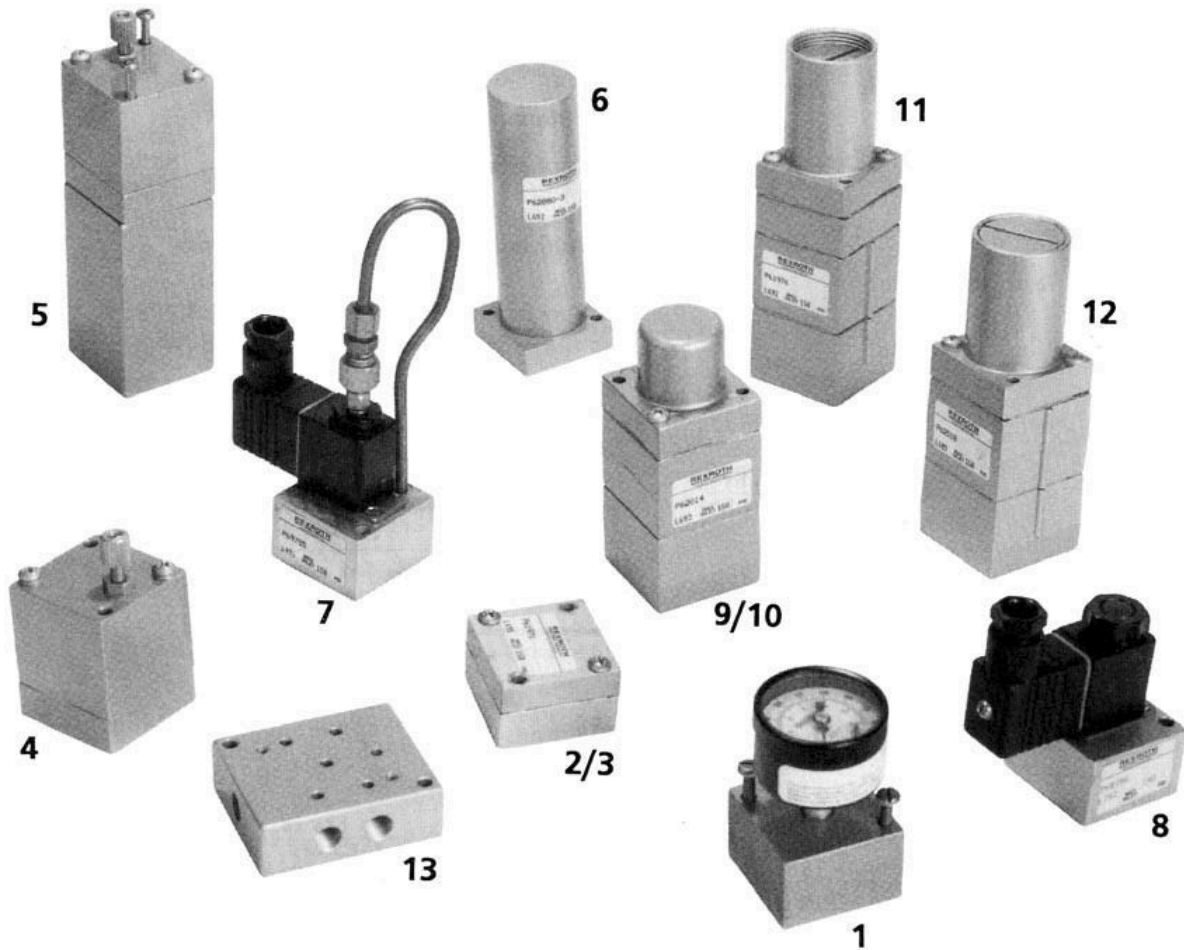




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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories



6

REF.#	DESCRIPTION/Page	PART NO.	OLD PART NO.
1	Gauge Block p. 452	R431006136	P -062885-00000
2	Shuttle Valve , Marine Logic p. 453	R431005928	P -061971-00000
3	Check Valve p. 454	R431009231	P -062988-00002
4	Flow Control Valve p. 455	R431005931	P -061975-00002
5	Timer (Timed Application) p. 456	R431006335	P -064003-00000
5	Timer (Timed Release) p. 456	R431006336	P -064003-00001
6	Volume p. 457	R431006133	P -062880-00003
7	Solenoid Valve (N.O.) p. 458	R431007506	P -069785-00000
8	Solenoid Valve (N.C.) p. 459	R431007507	P -069786-00000
9	Multifunction Pneumatic Valve p. 460	R431005976	P -062016-00000 series
10	Multifunction Hydraulic Valve p. 461	R431005962	P -062014-00000 series
11	Multifunction Adjustable Valve p. 462	R431005932	P -061976-00000 series
12	Pressure Regulator p. 463	R431005985	P -062018-00000
13	Subplate p. 464	R431006017	P -062129-00001



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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Gauge Block



Purpose:

To read a pressure in a Logic System.

Installation:

Gage may be mounted in any position on a logic panel or subplate. Two (2) mounting screws are provided with the subplate version. Screw part number R431001772 (Old part No. P -049467-00013) is used for mounting to logic panel (2 required).

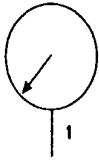
Maintenance:

Replace air gauge if damaged.

Notes:

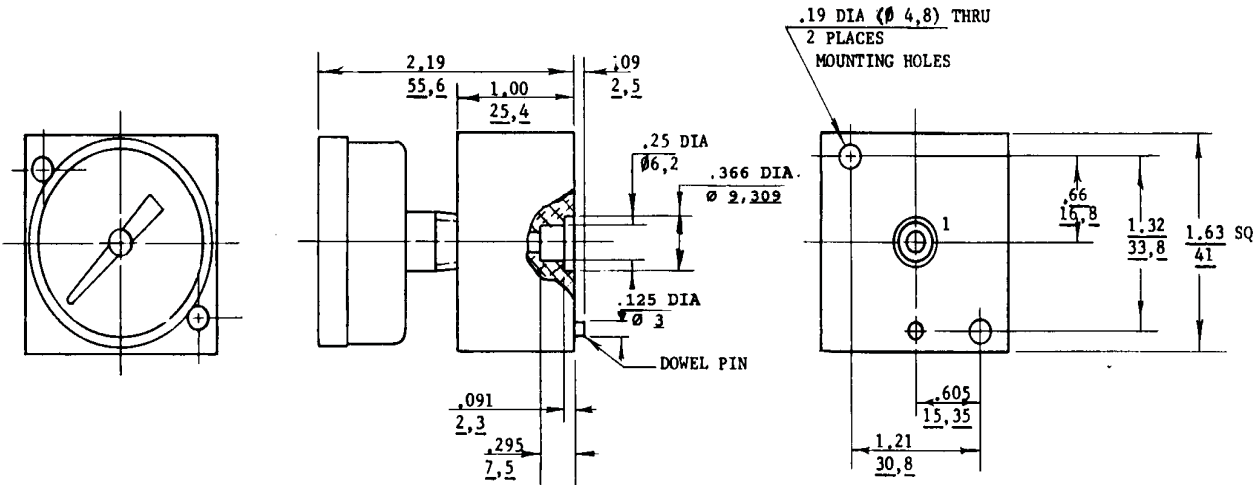
1. Working pressure: 150 psi max.
(10.3 bar)
2. Operating temperature: -40°F to 165 °F
(-40°C to 74°C)
3. Gauge 0 to 160° psig total graduation
20 psig figure intervals
2 psi graduation marks

$$\text{Dimensions} = \frac{\text{IN}}{\text{mm}}$$



Part Number	Old Part No.	Description
R431006136	P -062885-00000	Gauge Block less Subplate
R431009166	P -062885-00001*	Gauge Block with Subplate

* For subject dimensions see Page 464.





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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Shuttle Valve, Marine Logic

Purpose:

The Shuttle Valve automatically selects and directs the flow of air from one or the other of two controlling devices to a common outlet. It serves to connect two independent lines to a common line without destroying the segregation.

Function:

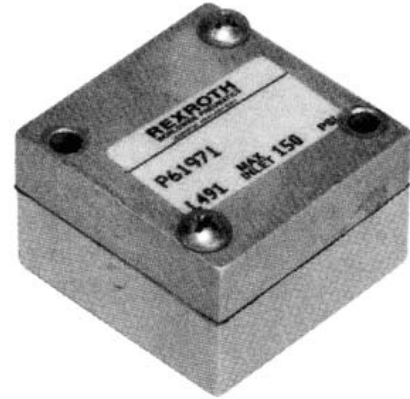
The diaphragm is moved by the higher pressure of the two inlets (ports 1 and 3) to seal off the other and allow the higher pressure to be delivered from port 5. There is always the air connection between the higher pressure inlet and the delivery line (port 5).

Installation:

Shuttle valves may be mounted in any position. The valve must be mounted on a logic panel or subplate. Two mounting screws are provided with the subplate version. Order screw number R431001772 (Old Part No. P -049467-00013) for mounting shuttle valve to a logic panel.

Maintenance:

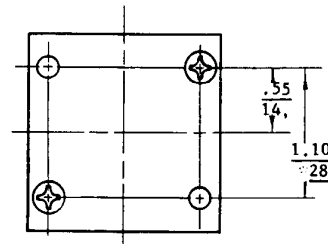
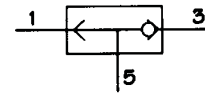
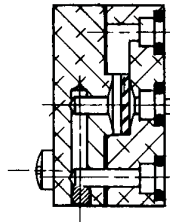
Kit part number R431006240 (Old Part No. P -063400-00000)



DIMENSIONS = $\frac{\text{IN}}{\text{mm}}$

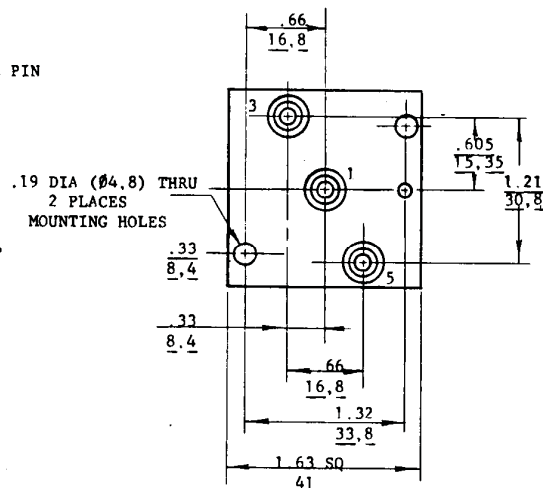
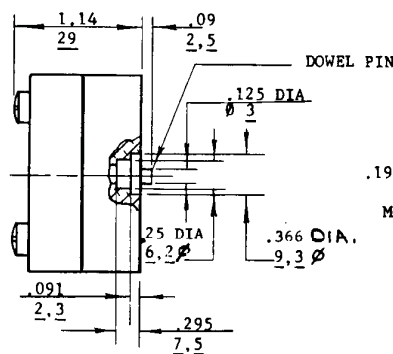
Notes:

1. Working Pressure: 125 psi max. (8.6 bar)
2. Operating temperature: -20°F to 165°F (-28°C to 74°C)
3. Flow rating-flow factor: F = .14
4. Shift differential: 1.0 psi max.



Part Number	Old Part No.	Description
R431005928	P -061971-00000	Valve less Subplate
R431005929	P -061971-00001*	Valve with Subplate

* For subplate dimensions see Page 464.



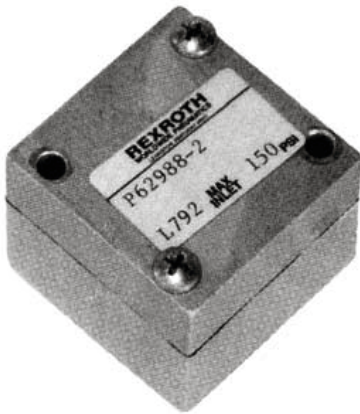


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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Check Valve



Purpose:

The valve allows air to flow freely in one direction, while not allowing any reverse flow.

Function:

In the rest position, the pre-stressed piston cup cuts off the connection between port 2 and 4. When the pressure at Port 2 exceeds the pre-stressing of the cup (3 psi or 0.21 bar), air flows to Port 4. When the pressure at port 4 exceeds the pressure at port 2 (3 psi or 0.21 bar) the piston cup acts as check valve to prevent return flow.

Installation:

Check valves may be mounted in any position. Pay attention to the direction of airflow. The valve must be mounted on a logic panel or subplate. Two mounting screws are provided with the subplate version. Order screw no. R431001772 (Old Part No. P-049467-00013) (2 required) for mounting logic valve to a logic panel.

Maintenance:

Kit part number R431006239 (old P -063398-00000)

Notes:

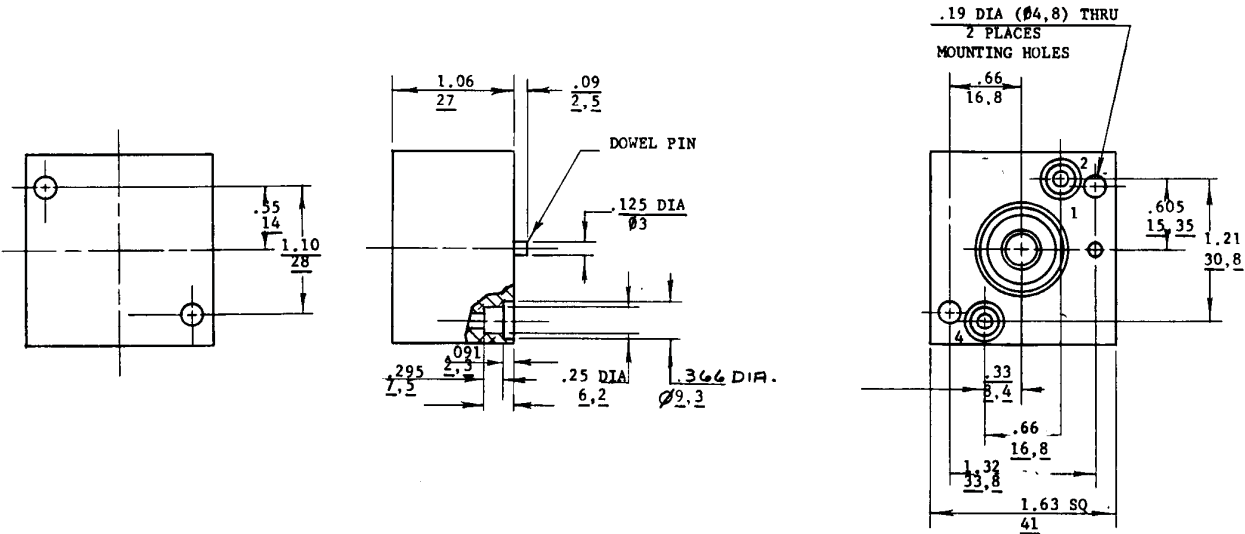
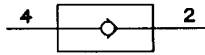
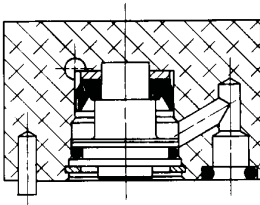
- Working Pressure: 150 psi max. (10.3 bar)
- Operating temperature: -25°F to 165°F (-32°C to 74°C)
- Flow rating-flow factor: F = 0.14
- Cracking pressure: 3.0 psi (0.21 bar) max.

Part No.	Description
R431009231	Check Valve less Subplate

(old part no. P -062988-00002)

* For subplate dimensions see Page 464.

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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Flow Control Valve

Purpose:

To provide adjustable control of the rate of flow in one direction with unrestricted flow in the opposite direction (i.e., timing of pressure increase for speed setting, fast decrease to idle speed.)

Installation:

Flow control valves may be mounted in any position. Pay attention to the direction of airflow. The valve must be mounted on a subplate. For mounting with the Subplate version, two screws are provided. Mounting screws for the logic plate version are part number 431001768 (Old Part No. P-049467-00007) (2 required)

Maintenance:

Kit part number R431006224
(Old Part No. P-063393-00000)

Function:

Air entering port 3 flows against the flexible check valve seal and must pass through the adjustable orifice to port 4. The rate of flow and timing of pressure increase downstream from port 4 is controlled at a rate determined by the orifice setting. When pressure is released from port 3, the flexible check valve seal allows free flow of the downstream air for rapid response.

Notes:

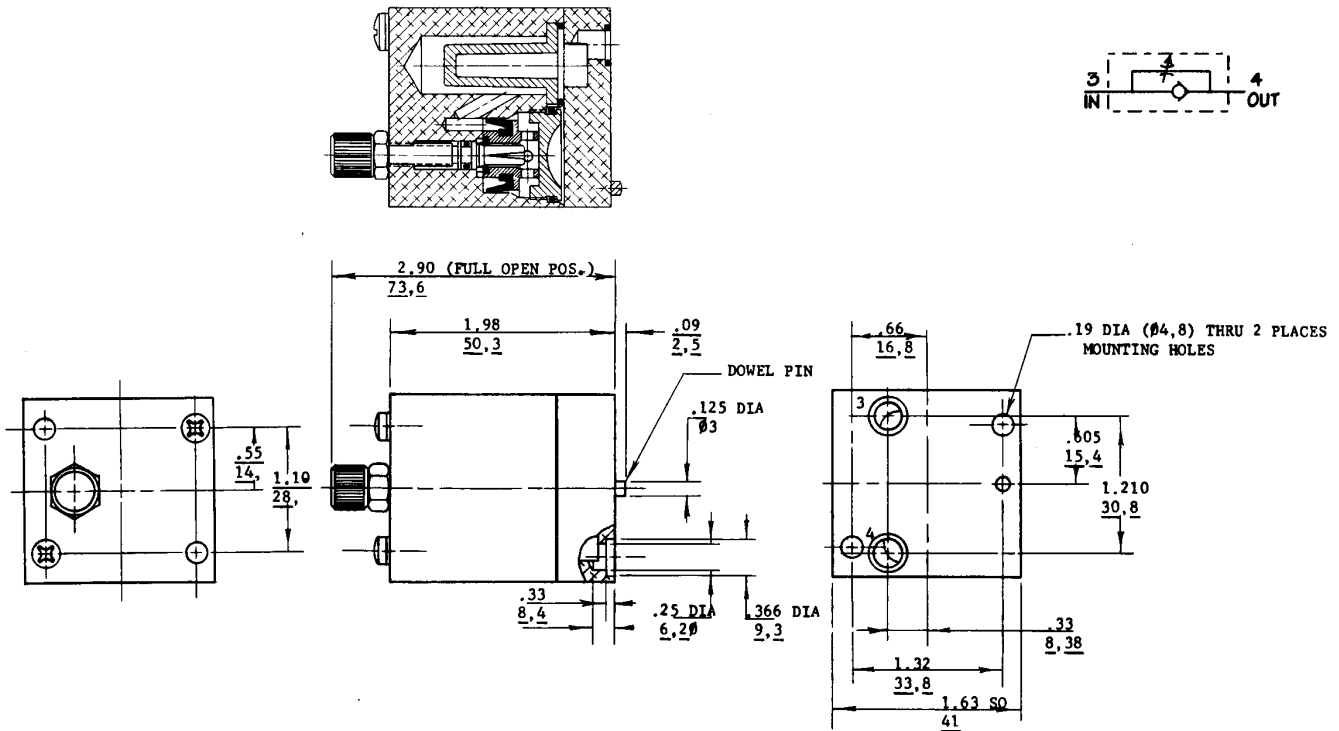
1. Working Pressure: 125 psi max. (8.6 bar)
2. Operating temperature: -25°F to 165°F (-32°C to 74°C)
3. Flow rating-flow factor: F = .14
4. Internal filtering both directions.

$$\text{Dimensions} = \frac{\text{IN}}{\text{mm}}$$



Part Number	Old Part No.	Description
R431005931	P-061975-00002	Flow Control less Subplate
R431009118	P-061975-00001*	Flow Control with Subplate

* For subplate dimensions see Page 464.





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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Air Volume

Purpose:

The volume serves as a reservoir which can be used in conjunction with the flow control valve to provide additional capacity for improved or extended timing operations.

Installation:

Volumes may be mounted in any position. The volume must be mounted on a logic plate or subplate. Two mounting screws are provided with the subplate version. Order screw part number R431001762 (Old part number P-049467-00004) for mounting valve to logic plate.

Maintenance:

Repair by replacement.

Notes:

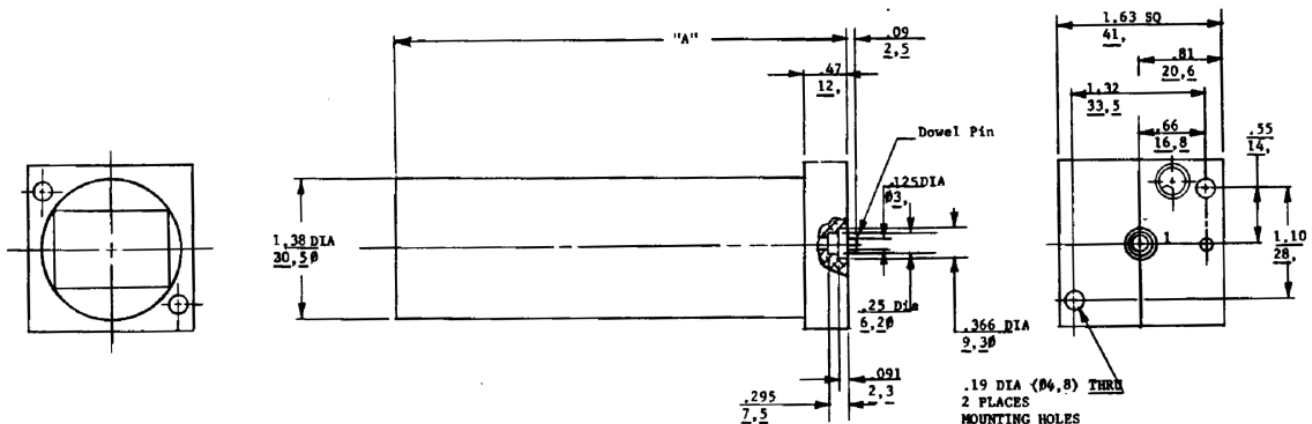
- Working Pressure: 125 psi max.
(8.6 bar)
- Operating temperature: -20°F to 165°F
(-29°C to 74°C)
- Timing Volume: 3 cu. in. (49 cc)



Part Number	Old Part Number	Description
R431006133	P-062880-00003	Volume less Subplate

* For subplate dimensions see Page 464.

Dimensions = $\frac{IN}{MM}$



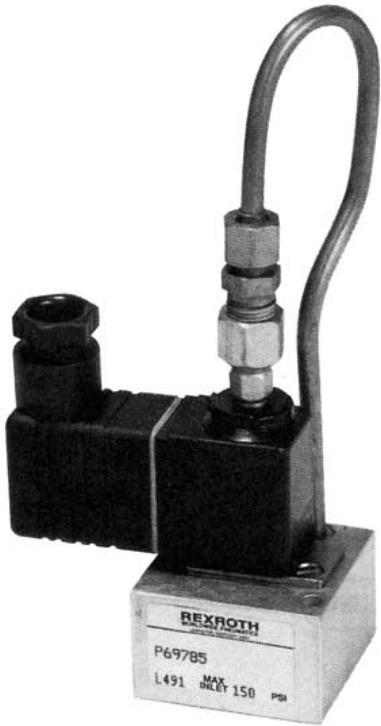


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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

3-Way Normally Open Solenoid Valve



Purpose:

The valve provides operational control from remote locations by an electrical signal.

Function:

The valve functions as a normally open 3-way valve, single solenoid operator, spring return. Port 3 inlet to port 5 outlet normally open, port 1 to exhaust.

Installation:

The valve may be mounted in any position. The valve must be mounted on a subplate or logic plate. Two mounting screws are provided with the subplate version. Order screw part number R431001772 (Old Part No. P-049467-00013) for mounting the valve to a logic plate.

Maintenance:

Kit Part No. P-027420-00000

Notes:

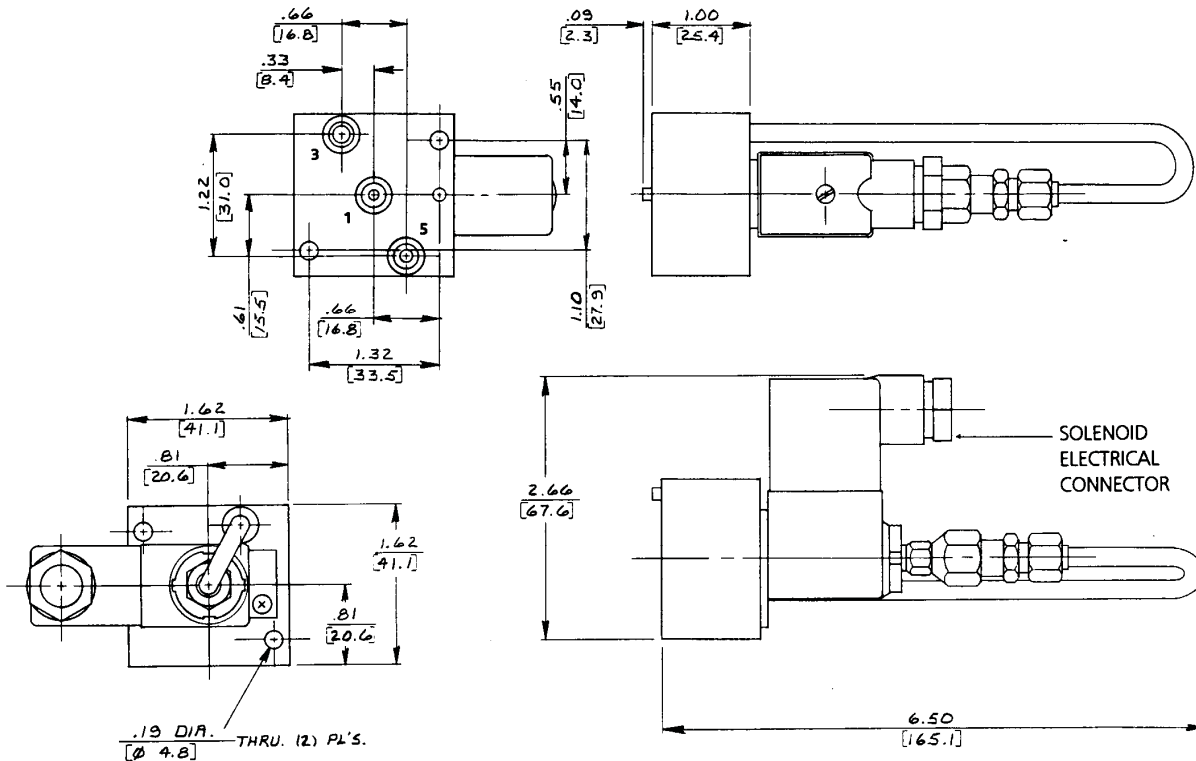
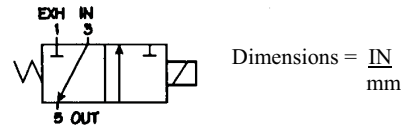
1. Working pressure: 120 psi (8.27 bar) max
2. Operating temperature: 25°F to 165°F (-32°C to 74°C)
3. Flow rating-flow factor: F = .14
4. Cracking pressure: 3.0 psi (0.2 bar) max
5. Voltage: 24 vdc

Replacement Solenoid Connectors

Part Number	Old Part Number	Description
8941004702	H-894100-4702	Non-Lighted
R432013881	P-067858-00000	Lighted

Part Number less Subplate	Old Part Number less Subplate	Part Number with Subplate*	Old Part Number with Subplate	Connector Type
R431007506	P-069785-00000	R431000904	P-028359-00000	Non-Lighted

* For subplate dimensions see Page 464.





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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

3-Way Normally Closed Solenoid Valve

Purpose:

The valve provides operational control from remote locations by an electrical signal.

Function:

The valve functions as a normally closed 3-way valve, single solenoid operator, spring return. Port 1 inlet normally closed, port 5 outlet normally open to port 3, exhaust.

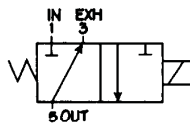
Maintenance:

Kit part number R431000797 (Old part number P -027420-00000)

Installation:

The valve may be mounted in any position. The valve must be mounted on a subplate or logic plate. Two mounting screws are provided with

$$\text{dimensions} = \frac{\text{IN}}{\text{mm}}$$



the subplate version. Order screw part number R431001772 (Old part number P -049467-00013) for mounting the valve to a subplate.

Notes:

- Working pressure: 120 psi (8.27 bar) max
- Operating temperature: -25°F to 165°F (-32°C to 74°C)
- Flow rating-flow factor: F = .14
- Cracking pressure: 3.0 psi (0.2 bar) max
- Voltage: 24 vdc

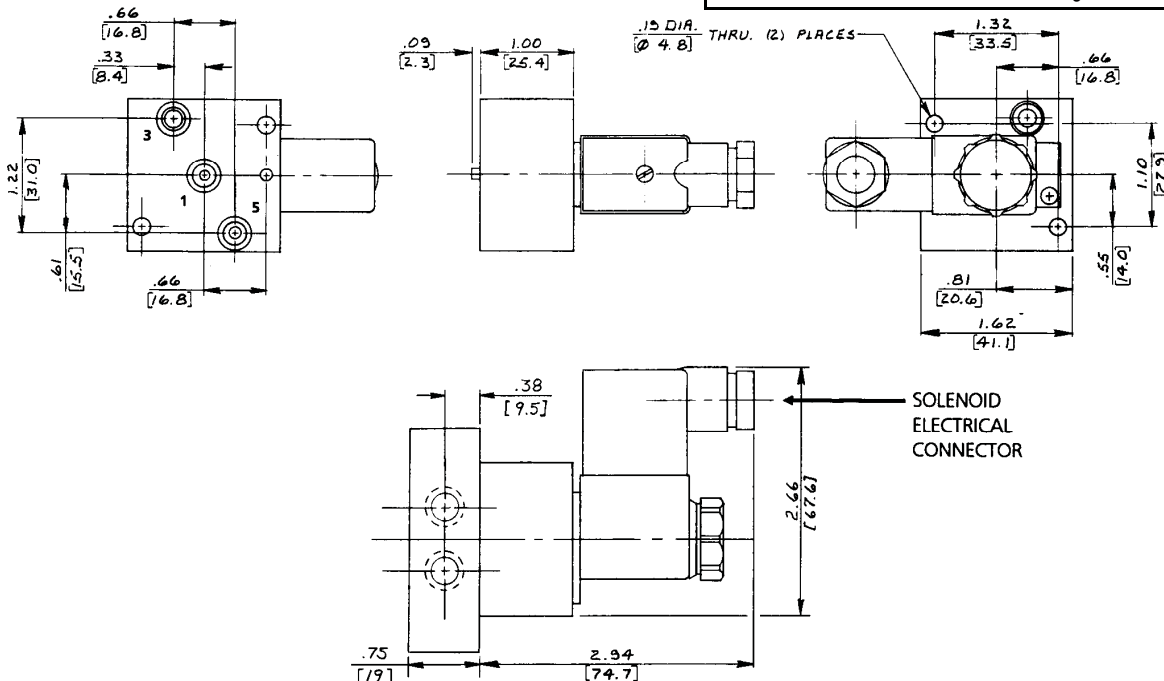


Part Number less Subplate	Old Part Number less Subplate	Part Number with Subplate*	Old Part Number with Subplate	Connector Type
R431007507	P -069786-00000	R431000799	P -027423-00000	Non-Lighted

* For subplate dimensions see Page 464.

Replacement Solenoid Connectors

Part Number	Old Part Number	Description
8941004702	H -894100-4702	Non-Lighted
R432013881	P -067858-00000	Lighted





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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

3-Way Multifunction Logic Preset Actuation Point



Purpose:

The multifunction logic valve is used to sequence and interlock control system operations and can be connected for either normally open or normally closed control operation.

Function:

When the control signal at port 2 is less than the present control spring setting, port 3 and 5 are connected and port 1 is closed. When the control signal at port 2 exceeds the control spring setting, the valve is actuated to connect ports 1 and 5 and port 3 is closed.

Port 4 must be connected to exhaust for proper operation. Under proper conditions, port 4 can be used as an override signal.

Maintenance:

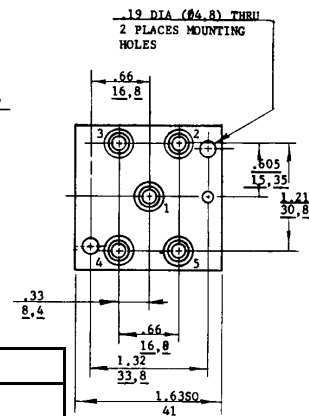
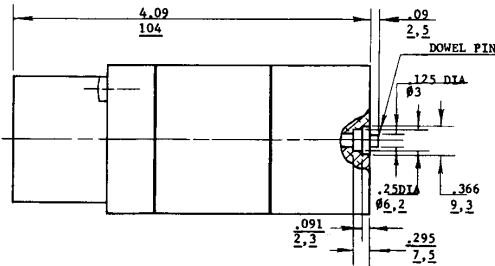
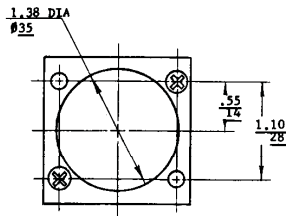
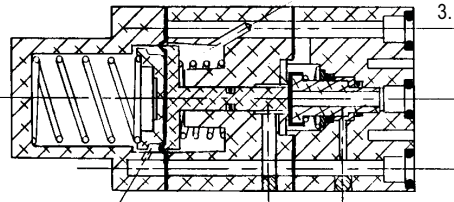
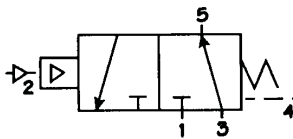
Kit part number R431006223
(Old part number P-063392-00000)

Installation:

The logic valve must be mounted on a subplate or logic plate. The two mounting screws are provided with the subplate version. If the valve is ordered separately for mounting to a logic plate, order mounting screws part no. R431001771 (old part no. (P-049467-00012) (2 required)

Notes:

- Working pressure: 150 psi max (10.3 bar)
- Operating temperature: -20°F to 165°F (-29°C to 74°C)
- Flow rating-flow factor: F = .14



Dimensions = $\frac{IN}{mm}$

Actuation Pressures - PSI

Part Number less Subplate	Old Part No. less Subplate	Part Number with Subplate*	Old Part No. with Subplate*	Actuation Pressures - PSI			
				N.C.		N.O.	
				Max. Increasing Pilot	Min. Decreasing Pilot	Max. Increasing Pilot	Min. Decreasing Pilot
R431005976	P-062016-00000	R431005982	P-062017-00000	18	3	25	10
R431005977	P-062016-00001			32	16	38	22
R431005978	P-062016-00002			47	30	53	36
R431005979	P-062016-00003	R431005983	P-062017-00003	60	40	66	48
R431005980	P-062016-00004	R431005984	P-062017-00004	82	62	88	70
	P-062016-00005	R431009173	P-062017-00005	100	78	104	86
	P-062016-00006†			82	62	88	70
	P-068659-00000†			60	40	66	48

† Valve for use with minimum differential pressure between control pressure and supply pressure.

* For subplate dimensions see Page 464.

Function	Port 1	Port 2	Port 3	Port 4	Port 5
N0 3 Way	Exhaust	Pilot	Input	Vent	Output
NC 3 Way	Input	Pilot	Exhaust	Vent	Output



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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

3-Way Multifunction Logic Hydraulic Control Signal

Purpose:

The hydraulic control signal multifunction logic valve is used to sequence and control system operations and can be connected for either normally open or normally closed control operation.

Function:

When the hydraulic control signal at port 2 is less than the preset control spring setting, port 3 and 5 are connected and port 1 is closed. When the control signal at port 2 exceeds the control spring setting, the valve is actuated to connect ports 1 and 5 and port 3 is closed.

Installation:

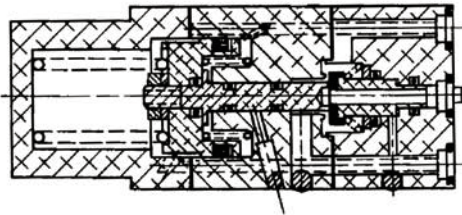
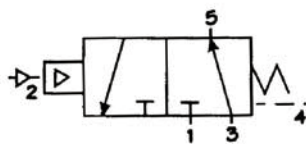
The logic valve must be mounted to a logic plate or subplate. The subplate version includes mounting screws. If the valve is ordered separately for logic plate mounting, order mounting screw part number R431001771 (old part no. P -049467-00012) (2 required)

Maintenance:

Kit part number R431006320
(Old Part No. P -063967-00000)

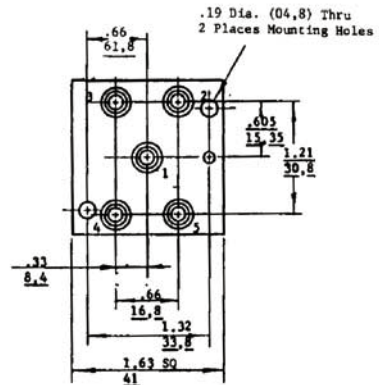
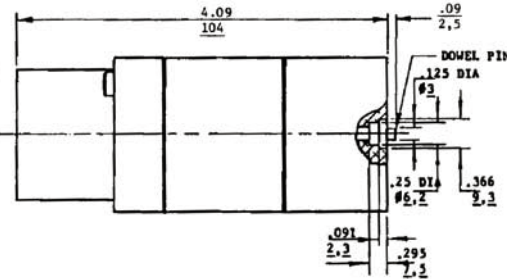
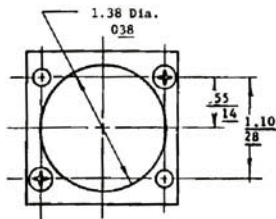


Port 4 must be connected to exhaust for proper operation. It is recommended that port 4 be connected back to the hydraulic sump as a safety return in case of leakage past the control seal.



Notes:

- Working pressure:
 - A. Inlet ports - 150 psi max (10.3 bar) pneumatic (air)
 - B. Pilot port #2 - 350 psi max (24 bar) hydraulic fluid
- Operating temperature: -20°F to 165°F (-29°C to 74°C)
- Flow rating - flow factor: F = .14



Function	Port 1	Port 2	Port 3	Port 4	Port 5
N0 3 Way	Exhaust	Pilot	Input	Vent	Output
NC 3 Way	Input	Pilot	Exhaust	Vent	Output

Part Number less Subplate	Old Part No. less Subplate	Part Number with Sub-plate*	Old Part No. with Subplate*	Actuation Pressures - PSI			
				N.C.		N.O.	
				Max. Increasing Pilot	Min. Decreasing Pilot	Max. Increasing Pilot	Min. Decreasing Pilot
R431005967	P -062014-00000	R431005973	P -062015-00000	110	70	115	75
R431005968	P -062014-00001	R431005974	P -062015-00001	35	10	40	20
R431009161	P -062014-00002	R431009162	P -062015-00002	20	5	25	10
R431005969	P -062014-00003	R431009163	P -062017-00003	225	180	225	180
	P -062014-00004			150	110	150	110
	P -062014-00005			160	120	160	120
	P -062014-00006			85	62	92	70
	P -062014-00008			77	50	86	69

Dimensions = $\frac{IN}{mm}$



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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

3-Way Multifunction Logic Adjustable Actuation Point



Purpose:

The adjustable multifunction logic valve is used to sequence and control system operations and can be connected for either normally open or normally closed control operation.

Function:

When the control signal at port 2 is less than the adjusted control spring setting, port 3 and 5 are connected and port 1 is closed. When the control signal at port 2 exceeds the control spring setting, the valve is actuated to connect ports 1 and 5 and port 3 is closed.

Port 4 must be connected to exhaust for proper operation. Under proper conditions port 4 can be used as an override signal.

Maintenance:

Kit part number R431006380
(Old part number. P -064201-00000)

Adjustments:

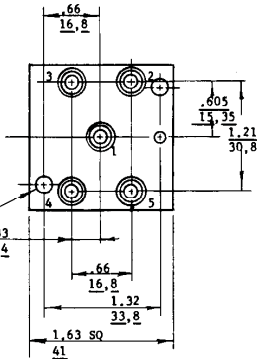
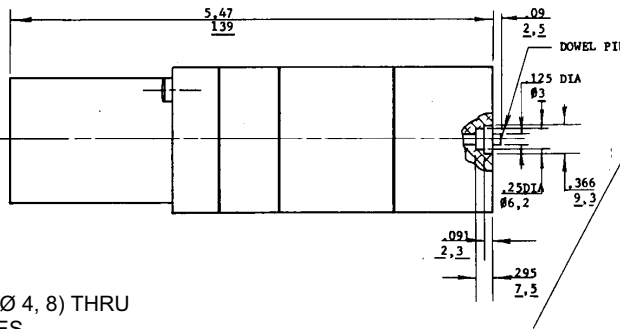
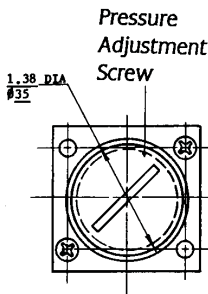
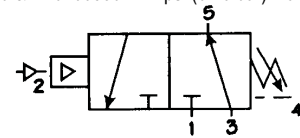
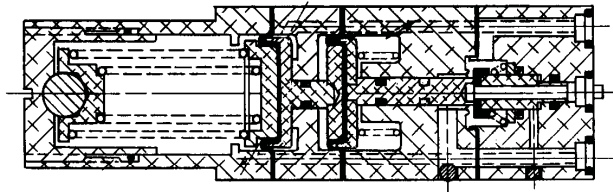
The pressure actuation point setting is adjustable by turning the adjustment screw clockwise for pressure increase, or counter-clockwise for pressure decrease.

Installation:

The valve may be mounted in any position and must be mounted on a subplate or logic plate. Mounting screws are provided with each subplate version. The mounting screws for logic plate mounting are part number R431001778 (2 required).
(Old part no. P -049467-00017)

Notes:

- Working pressure: 150 psi max (10.3 bar)
- Operating temperature: -20°F to 165°F (-29°C to 74°C)
- Flow rating-flow factor: F = .14
- Range: Cracking pressure to reset
R431005932 4 psi (0.28 bar) max
R431005933 & R431005934 7 psi (0.48 bar) max



19 DIA (Ø 4, 8) THRU 2 PLACES MOUNTING HOLES

Dimensions = $\frac{IN}{mm}$

Part Number less Subplate	Old Part No. less Subplate	Part Number with Subplate*	Old Part No. with Subplate	Adjustable Trip Range psi (bar)
R431005932	P -061976-00000	R431005936	P -061978-00000	5-40 (0.34-2.76)
R431005933	P -061976-00001			40-80 (2.76-5.52)
R431005934	P -061976-00002			80-120 (5.52-8.27)
R431005935	P -061976-00003†			80-120 (5.52-8.27)

* For subplate dimensions see Page 464.

† Valve for use with minimum differential pressure between control pressure and supply pressure.

Function	Port 1	Port 2	Port 3	Port 4	Port 5
NO 3 Way	Exhaust	Pilot	Input	Vent	Output
NC 3 Way	Input	Pilot	Exhaust	Vent	Output



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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Pressure Regulator

Purpose:

The pressure regulating valve serves to reduce a primary pressure with a maximum of 150 psi (10.3 bar) to an adjustable outlet pressure within the range of 0 to 140 psi (0 to 9.65 bar) or 0 to 75 psi (0 to 5.2 bar).

Function:

The pressure adjusting screw loads the control spring to determine the output pressure setting. The spring load lifts the inlet valve off its seat and supply pressure flows from port 3 out port 5 and below the control diaphragm. When the diaphragm pressure and adjusted spring load reach a balance, the inlet valve closes off the connection between port 3 and port 5, and the delivery pressure is maintained.

The regulator is self-maintaining. If delivery pressure drops, the inlet valve will reopen to deliver additional pressure to balance the adjusting spring load. If delivery pressure increases, the exhaust valve will open to relieve the excess pressure through port 1.

Port 4 must be connected to exhaust for proper operation.

The outlet pressure may be changed by turning the adjusting screw clockwise for pressure increase, or counter-clockwise for pressure decrease.

Maintenance:

Kit part number R431006319
(old part number P -063966-00000)

Installation:

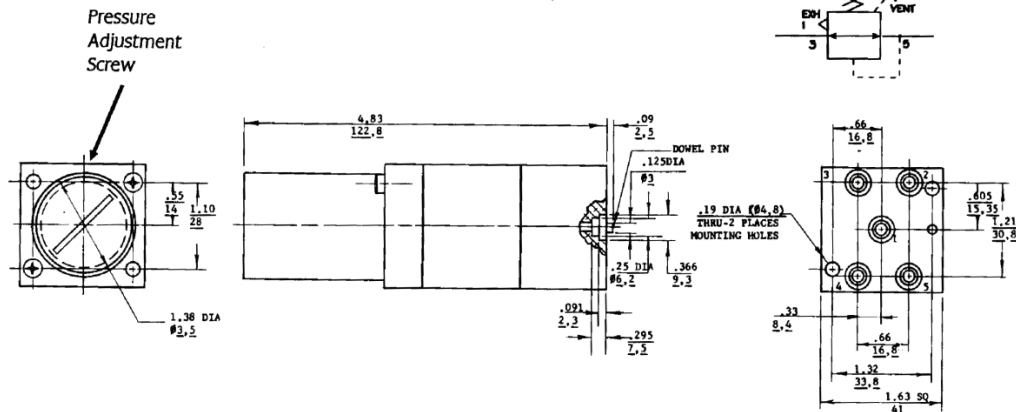
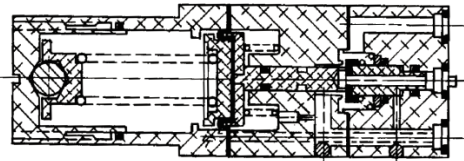
A pressure regulating valve may be mounted in any position. Pay attention to the direction of air flow. The valve has to be mounted on a subplate or logic plate. Two screws are provided with the subplate version. Order screw part number R431001771 (old part number P -049467-00012) if the valve is ordered separately for mounting to a logic plate.



Notes:

- Working pressure: 150 psi max inlet (10.3 bar)
- Operating temperature: -20°F to 165°F (-29°C to 74°C)
- Flow rating-flow factor: F = .14
- Flow characteristics : (Supply pressure @ 100 psi with 50% pressure drop from set pressure)

SETTING	FLOW (SCFM)
25 psi	7
50 psi	14
75 psi	19



Part No. less Subplate	Old Part No. less Subplate	Adjustable Range psi (bar)
R431005985	P -062018-00000	0-75 (0-5.17)
R431005986	P -062018-00001	0-140 (0-9.65)

Dimensions = $\frac{\text{IN}}{\text{mm}}$

* For subplate dimensions see Page 464.



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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories - Subplate

Purpose:

For mounting all logic valves.

Installation:

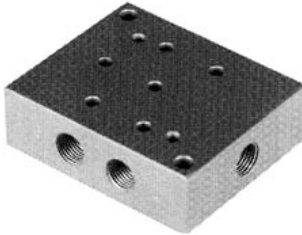
Subplate may be mounted in any position. Two (2) mounting holes are provided in the subplate

Maintenance:

Replace if damaged.

Notes:

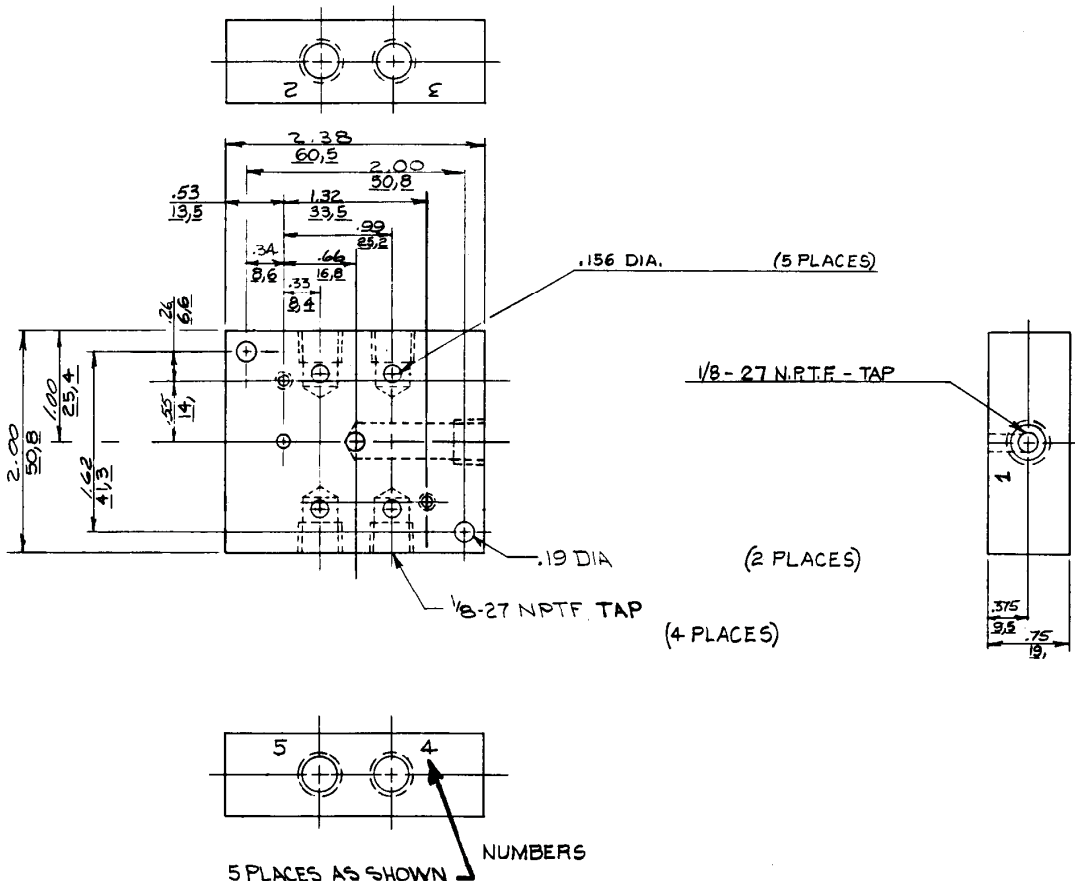
1. Working pressure 150 psi max. (10.3 bar)
2. Operating temperature -40°F to 165°F (-40°C to 74°C)



Part Number	Old Part Number	Description
R431006017	P-062129-00001	Subplate

6

Dimensions = $\frac{\text{IN}}{\text{mm}}$





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HUMCO ENGINE CONTROLS

Rexroth Air Logic Valves and Accessories

Hydraulic Shuttle Valve

Part Number R431006763 (Old Part No. P -066143-00000)

Purpose:

The Hydraulic Shuttle Valve automatically connects pressure from one or the other of two input lines and directs the flow to a common outlet. The valve serves to connect two segregated lines to a common line without destroying the segregation.

applied to one inlet port the ball is forced over to seal the opposite inlet port of the valve and fluid flows out the common outlet. The opposite inlet port is sealed from both the outlet and the pressurized inlet port.

Installation:

The Shuttle Valve can easily be supported by piping alone, but mounting holes are included for installations with vibration or long pipe runs.

Adjustment:

The Shuttle Valve does not require adjustment. Reference service bulletin B6-104.03H for parts.

Operations:

Maximum Operating Pressure is 500 psi (34.5 bar). Temperature range is -40°F to 160°F (-40°C to 71°C) with intermittent exposure up to 200°F (93°C).

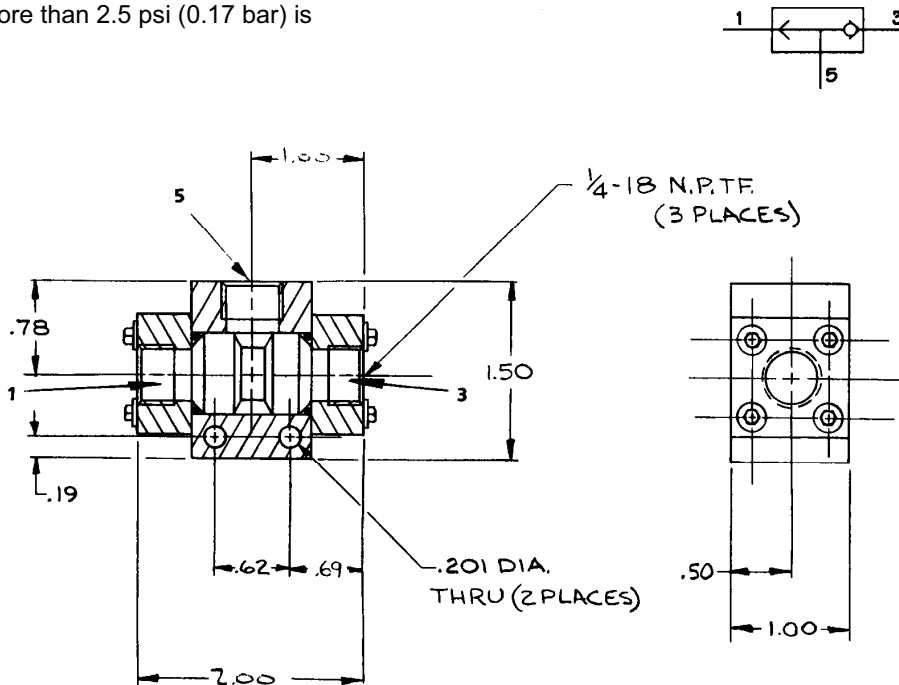
Maintenance:

Note: A 3/32" hex allen wrench is required. Replace the cover seals if damaged or worn. The valve cartridge is a non-serviceable assembly and should be replaced as a complete unit if required.



Dimensions = $\frac{IN}{mm}$

The Shuttle Valve has 3 ports (1/4" NPT) as shown in the assembly view. When pressure of more than 2.5 psi (0.17 bar) is





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HUMCO ENGINE CONTROLS

Rexroth Associated Components - Shuttle Valve, Inline

NPT Ports

Type
Supply Pressure 200 psi max.
Temperature range -40°F to 160°F; intermittent 200°F is permissible.
Media Air or inert gas

Application data

The Shuttle Valve automatically selects and directs the flow of air from one or the other of two controlling devices to a common outlet. It serves to connect two independent lines to a common line without destroying the segregation.



	Port (NPT)	Valve Part No.	Old Part No.	Weight lbs. (kg)	Flow C _v	Repair Kit
	1/8"	R431003347	P -054350-00001	0.44 (0.20)	1.25	R431005614
	1/4"	R431003348	P -054350-00002	0.44 (0.20)	1.58	R431005614
	3/8"	R431003349	P -054350-00003	1.19 (0.54)	3.61	R431005615
	1/2"	R431003350	P -054350-00004	1.19 (0.54)	5.12	R431005615

Repair kits include diaphragm and gasket.

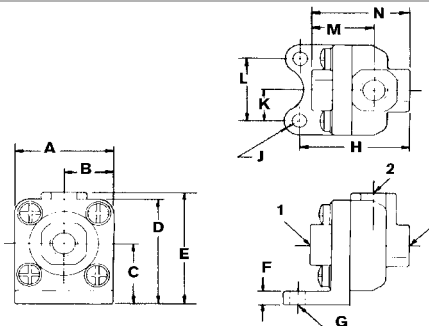
6

Operating Characteristics

FEATURES-
SIMPLE-Contains only one moving part-an easily replaceable fabric reinforced synthetic rubber diaphragm.
 Two body segments, a gasket and four screws complete the assembly.
 It has no spring; nothing can bind or stick. Its compact size presents no installation problems.
LIGHTWEIGHT-The Shuttle Valve can easily be supported by piping alone.
 Mounting feet are included, however, for installations with vibration or long pipe runs.
SENSITIVE-Will seal off the opposite inlet line with less than one psi pressure differential.
LONG LIFE-Tests have shown no diaphragm wear after hundreds of thousands of cycles.

► To order, refer to port size and part number.

When a pressure differential of one psi or more exists at either inlet port, the higher pressure forces the diaphragm to seal against the opposite
 The low (or zero) pressure inlet port is sealed from both the outlet and the opposite inlet port.



DIMENSIONS

DRYSEAL NPTF Ports		
ALL PORTS	1/8"-27 and 1/4"-18	3/8"-18 and 1/2"-14
A	1 7/8"	2 1/2"
B	15/16"	1 1/4"
C	1 1/2"	1 7/8"
D	2 7/16"	3 1/8"
E	2 5/8"	3 3/4"
F	9/32"	5/16"
G dia.	9/32"	9/32"
H	2 1/8"	3 1/4"
J radius	9/32"	21/64"
K	21/32"	29/32"
L	1 5/16"	1 13/16"
M	1 7/32"	2 1/8"
N	1 29/32"	3 3/8"



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HUMCO ENGINE CONTROLS

Rexroth Associated Components - Quick Release Valve, Inline

Technical Data

Type	Aluminum Body, for in-line or right-angle piping
Working Pressure	200 psi (13.8 bar) max. on 1/4" and 3/8" 150 psi (10.3 bar) max. on 1/2" thru 1" sizes
Temperature Range	-40°F to 160°F, 200°F intermittent (-40° to 71°C, 93°C intermittent)
Media	Air or inert gas
Port Size	1/4" to 1" NPTF



Port (NPT)	Piping	Valve Part No.	Old Part No.	Weight lbs. (kg)	C _v in to out	C _v out to exh.	Repair Kit	Old Repair Kit
1/4"	Inline	R431003038	P -052935-00002	0.64 (0.29)	1.77	2.50	R431005410	P -060213-00002
1/4"	Right angle	R431003043	P -052935-00021	0.64 (0.29)	1.77	2.50	R431005410	P -060213-00002
3/8"	Inline	R431003039	P -052935-00003	0.64 (0.29)	2.73	3.08	R431005410	P -060213-00002
3/8"	Right angle	R431003044	P -052935-00031	0.64 (0.29)	2.73	3.08	R431005410	P -060213-00002
1/2"	Inline	R431003040	P -052935-00004	1.44 (0.46)	5.00	5.50	R431005412	P -060214-00002
3/4"	Inline	R431003041	P -052935-00006	2.88 (1.31)	9.70	10.55	R431005414	P -060215-00001
1"	Inline	R431003042	P -052935-00008	3.32 (1.51)	11.95	13.45	R431005414	P -060215-00001

Mounting bracket for 1/4" and 3/8" models: Part no. R431003093 (old part no. P -053067-00000).

Sizes 1/2" through 1" have integral mounting brackets.

Repair kits include diaphragm and gasket.

Inch dimensions: QRV-Aluminum (in-line configuration shown)

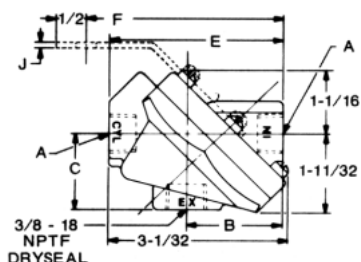
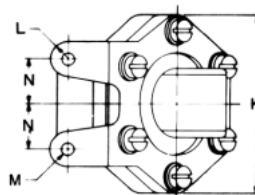
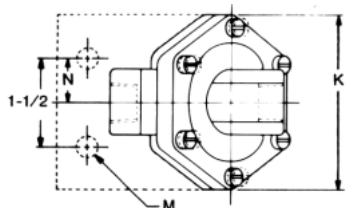


FIGURE 1

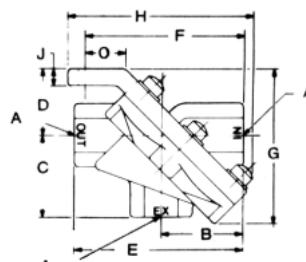


FIGURE 2

Inch dimensions: QRV-Aluminum

Fig. No.	A NPTF Dryseal	B	C	D	E	F	G	H	J	K	L	M (2 Holes)	N	O
Fig. 1	1/4-18	1 3/4	1 11/32	—	3	3 3/8	—	—	1/16	3	—	11/32 Ø	3/4	—
Fig. 1	3/8-14	1 3/4	1 11/32	—	3	3 3/8	—	—	1/16	3	—	11/32 Ø	3/4	—
Fig. 2	1/2-14	1 3/4	1 11/32	1 1/2	3 11/16	3 7/16	3 15/32	4 1/8	3/8	3 15/16	3/8 R.	9/32 Ø	1	7/8
Fig. 2	3/4-14	2 11/16	2 21/32	2 1/16	5 1/4	5	4 13/16	5 1/2	7/16	6 1/2	1/2 R.	13/32 Ø	1 1/2	1 1/8
Fig. 2	1"-11 1/2	2 11/16	2 21/32	2 1/16	5 1/4	5	4 13/16	5 1/2	7/16	6 1/2	1/2 R.	13/32 Ø	1 1/2	1 1/8



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HUMCO ENGINE CONTROLS

Rexroth Associated Components

"H" and "L" Relayair® Valves

Type Pilot operated sequence valve
 Supply Pressure 200 PSI Max. Except P -059158-00045 (300 PSI)
 Control Pressure 140 psi max.
 Temperature range -40°F to 160°F
 Media Air or inert gas
 Port Size:
 Control port (port 10), breather port (port 1): 1/4" NPT
 All other ports: 3/8" NPT



Operating Characteristics

The Relayair® Valve has three basic uses:

1. As a nongraduated relay to provide a large flow of air from a separate source when piloted by small amount of control media and to stop this flow and exhaust the air to atmosphere when the control pressure is vented.
2. As an interlock to govern the flow in one circuit by placing its control in another independent circuit.
3. As a pressure-sensitive sequence valve for such circuit functions as timing, cycling, etc.

Application Notes

RELAYAIR Valves operated by pilot pressures less than 35 psi utilize one control spring while valves operated by pilot pressures greater than 35 psi use two springs. To obtain pilot pressures less than 10 psi, two diaphragms are used in series.

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Model	Part No.	Old Part No.	Pilot Press. (psi)	Max. Supply Press. (psi)	Max. Control Press. (psi)	Weight lbs. (kg)
H-5-D	R431005195	P -059567-00003	3	200	140	15 (6.8)
H-5-D	R431005196	P -059567-00012	12	200	140	15 (6.8)
H-5	R431004910	P -059155-00010	10	200	140	5 (2.3)
H-5	R431004911	P -059155-00015	15	200	140	5 (2.3)
H-5	R431004912	P -059155-00020	20	200	140	5 (2.3)
H-5	R431004913	P -059155-00025	25	200	140	5 (2.3)
H-5	R431004914	P -059155-00030	30	200	140	5 (2.3)
H-5	R431004915	P -059155-00035	35	200	140	5 (2.3)
H-5	R431004916	P -059155-00045	45	200	140	5 (2.3)
H-5	R431004917	P -059155-00050	50	200	140	5 (2.3)
H-5	R431004918	P -059155-00060	60	200	140	5 (2.3)
H-5	R431004919	P -059155-00070	70	200	140	5 (2.3)
H-5	R431004920	P -059155-00080	80	200	140	5 (2.3)
H-5	R431004921	P -059155-00090	90	200	140	5 (2.3)
H-5	R431004922	P -059155-00100	100	200	140	5 (2.3)
H-5	R431004923	P -059155-00110	110	200	140	5 (2.3)
H-5	R431004927	P -059158-00045	45	300	140	5 (2.3)
L-2-A	R431006062	P -062482-00040	4	200	300	5.75 (2.6)
L-2-A	R431006063	P -062482-00070	70	200	300	5.75 (2.6)
L-2-A	R431006064	P -062482-00085	85	200	300	5.75 (2.6)
L-2-A	R431006065	P -062482-00110	110	200	300	5.75 (2.6)
L-2-A	R431006067	P -062482-00135	135	200	300	5.75 (2.6)
L-2-A	R431006068	P -062482-00150	150	200	300	5.75 (2.6)
L-2-A	R431006573	P -065215-00000	220	200	300	5.75 (2.6)

Repair Kits:

H-5-D	R431005479	P -060310-00000	H-5-D rubber parts repair kit
H-5	R431005478	P -060309-K0000	H-5 rubber parts repair kit
L-2-A	R431005480	P -060311-00000	L-2-A rubber parts repair kit
	R431005482	P -060312-K0000	Metal parts repair kit, all models up to 200 psi supply
	R431005483	P -060313-00000	Metal parts repair kit, all models up to 300 psi supply

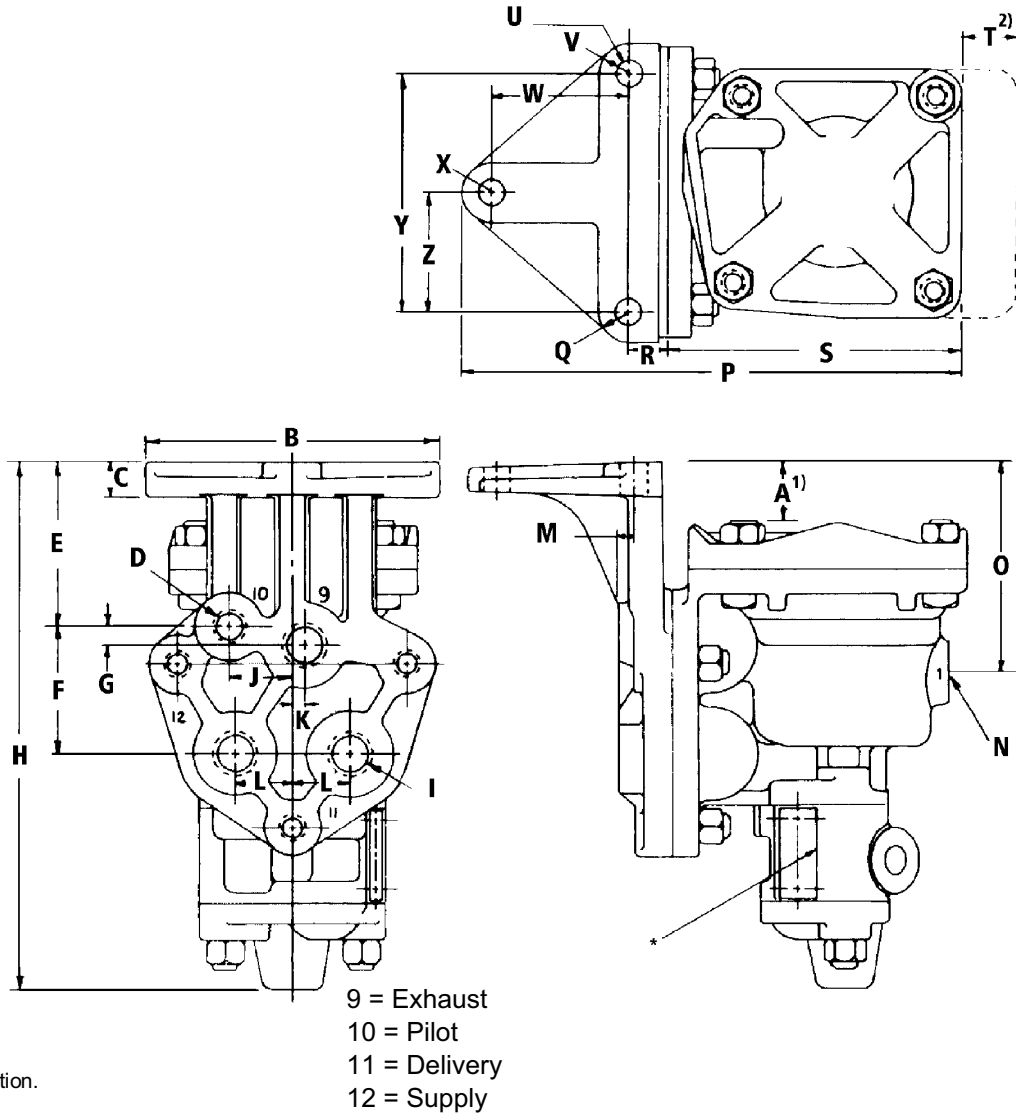


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HUMCO ENGINE CONTROLS

Rexroth Associated Components

H-5 Relay Valve Dimensions



* Nameplate location.

H-5 Relay Dimensions

A ¹⁾	B	C	D - NPTF	E	F	G	H	I - NPTF	J	K	L	M
13/16	4-3/8	1/2	1/4-18	2-7/16	1-7/8	9/32	7-3/4	3/8-18	15/16	3/16	27/32	1/4
N - NPT	O	P	Q	R	S	T ²⁾	U (3 places)	V	W	X	Y	Z
1/4-18	3-1/8	7-3/8	∅7/16	9/16	4-3/8	13/16	13/32	∅7/16	2	∅7/16	3-1/2	1-3/4

1) H-5 shown. "A" for H-5-D = 1/8"; for L-2-A = 5/16".
2) Clearance required for removal.
* Nameplate location.



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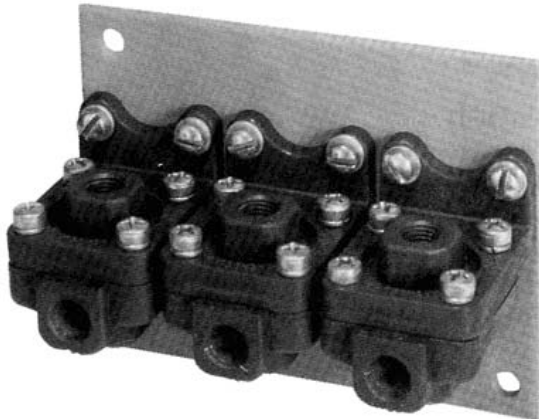
HUMCO ENGINE CONTROLS

Rexroth Shuttle Valve Panel

Shuttle Valve Panel

Two Station, Single Engine

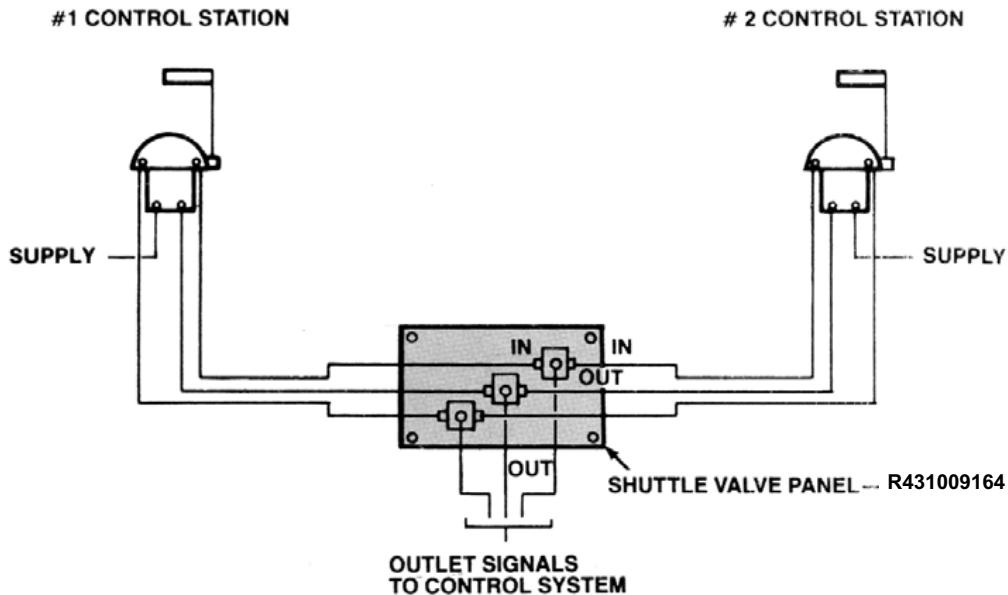
Part Number R431007564 (Old Part Number P -090277-00000)



The Shuttle Valve Panel is designed to mount as a single unit the three Shuttle Valves required for interconnecting two single engine control stations to simplify shipboard control system installations.

Standard 1/4" NPT Shuttle Valves part number R431003348 as covered by sales catalog SC-400 and service bulletin SM-400.09 are utilized. All operation and maintenance conditions and procedures covered in these publications should be observed.

6



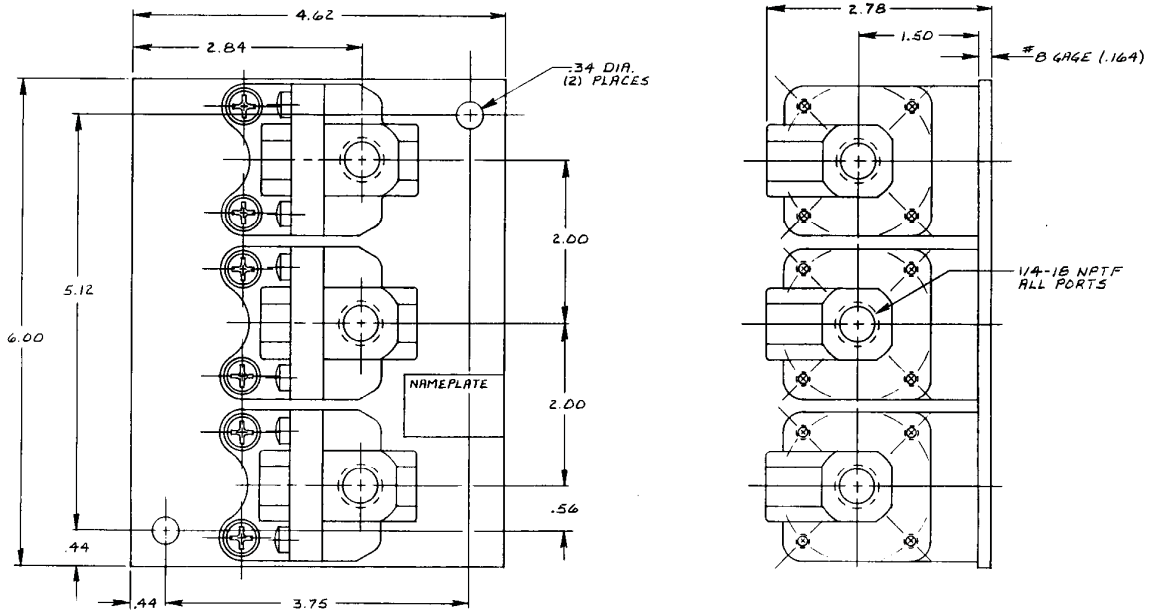


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HUMCO ENGINE CONTROLS

Rexroth Shuttle Valve Panel

Outline View Two Station - Single Engine Shuttle Valve Panel



6

Weight 3.5 lbs (1.6 kg)
 (Dimensions in inches)

Parts List: R431007564 (Complete Panel)				
Ref. No.	Qty.	Description	Part No.	Old Part No.
1	3	Shuttle Valve	R431003348	P-054350-00002
2	6	Screws, 1/4-20	R431002261	P-049835-00037
3	6	Washer, 1/4 Lock	R431002345	P-049866-00009
4	1	Panel	R431000704	P-026892-00001



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HUMCO ENGINE CONTROLS

Rexroth Shuttle Valve Panel

Shuttle Valve Panel

Two Station, Twin Engine

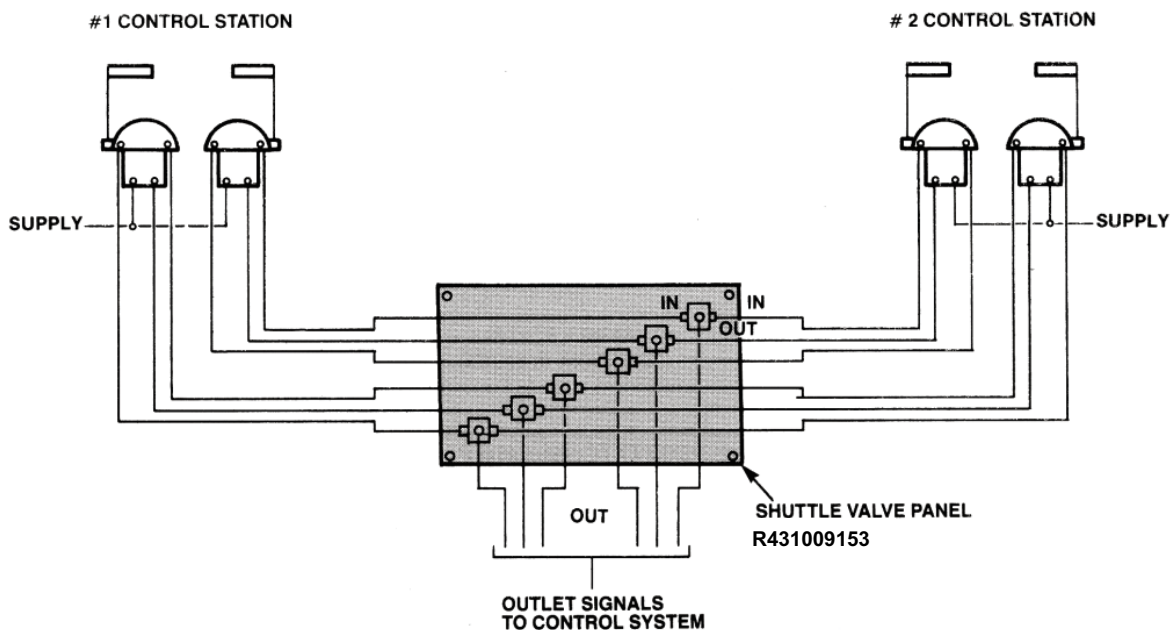
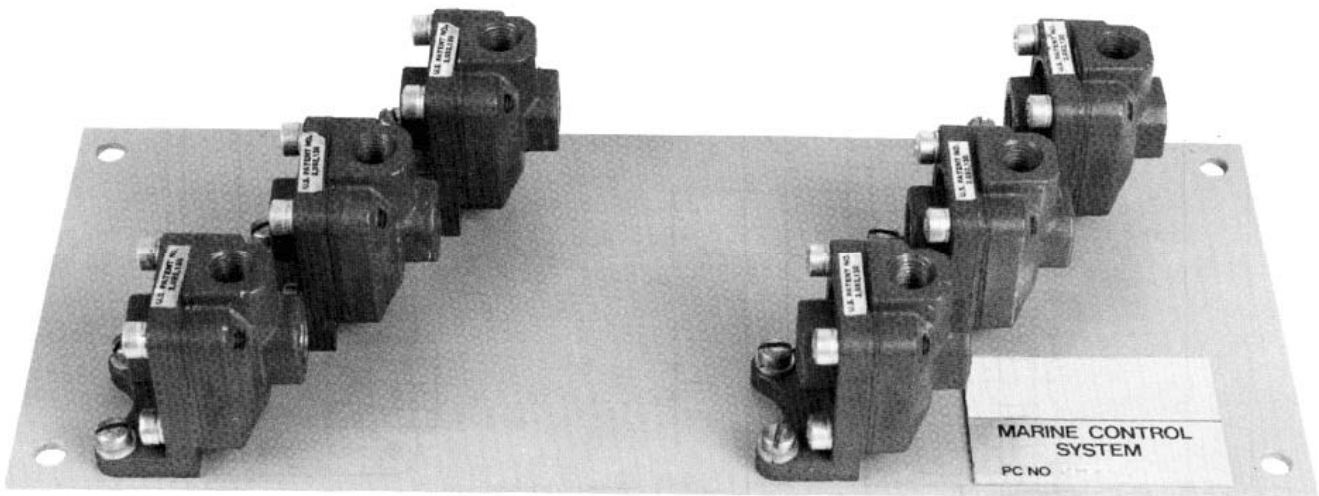
Part Number R431009153 (Old Part No. P -090278-00000)

The Shuttle Valve Panel is designed to mount as a single unit the six Shuttle Valves required for interconnecting two twin engine control stations to simplify shipboard

control system installations. Standard 1/4" NPT Shuttle Valves part number R431002261 as covered by sales catalog SC-400 and service bulletin SM-400.09

are utilized. All operation and maintenance conditions and procedures covered in these publications should be observed.

6



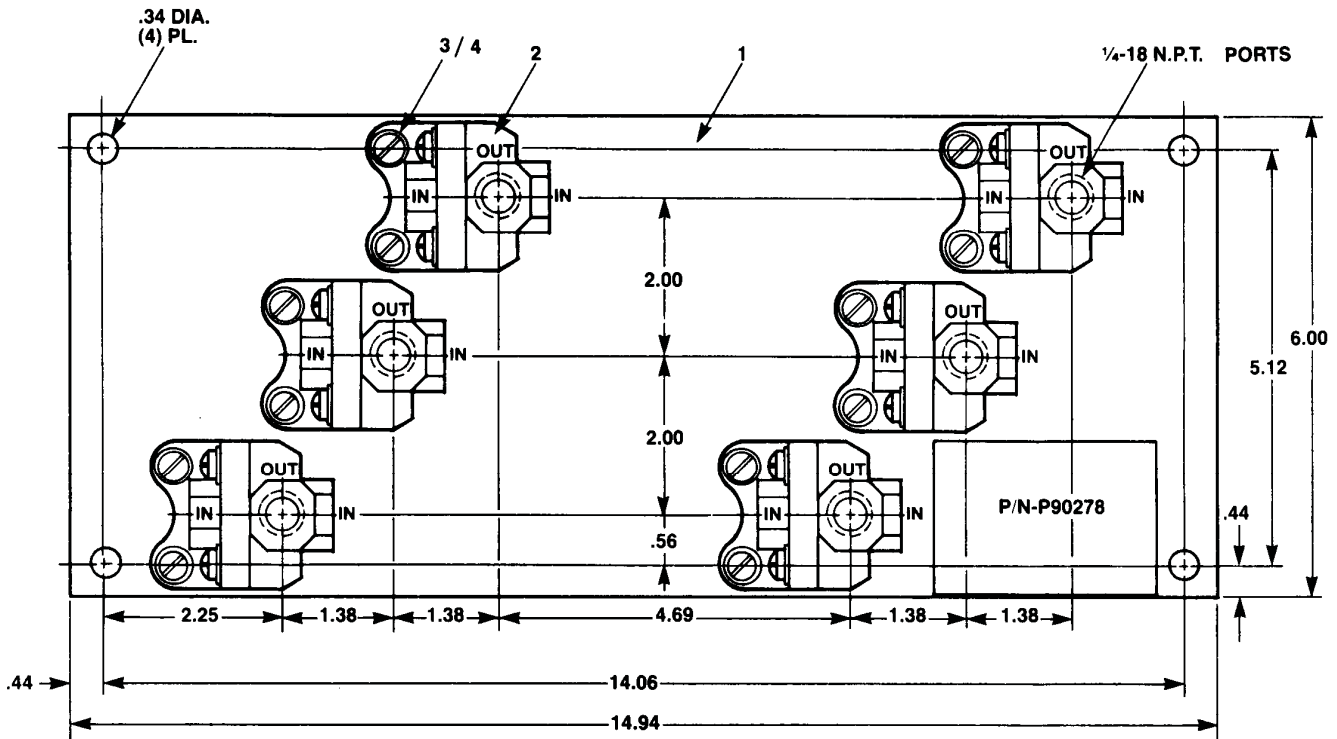


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HUMCO ENGINE CONTROLS

Rexroth Shuttle Valve Panel

Outline View Two Station - Twin Engine Shuttle Valve Panel



6

Weight 7 lbs (3.2 kg)
 (Dimensions in inches)

Parts List: R431009153 (Complete Panel)				
Ref. No.	Qty.	Description	Part No.	Old Part No.
1	1	Panel	R431009157	P-066987-00000
2	6	Shuttle Valve, 1/4" NPTF	R431002261	P-054350-00002
3	6	Screws, 1/4 - 20	R431002261	P-049835-00037
4	6	Washer, 1/4 Lock	R431002345	P-049866-00009



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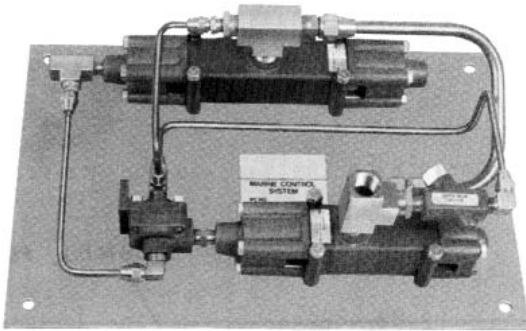
HUMCO ENGINE CONTROLS

Rexroth Control Station Transfer Panel

Control Station Transfer Panel for Two Stations

Attendance Interlock Function

Part Number R431007566 (Old Part Number P -090281-00000)



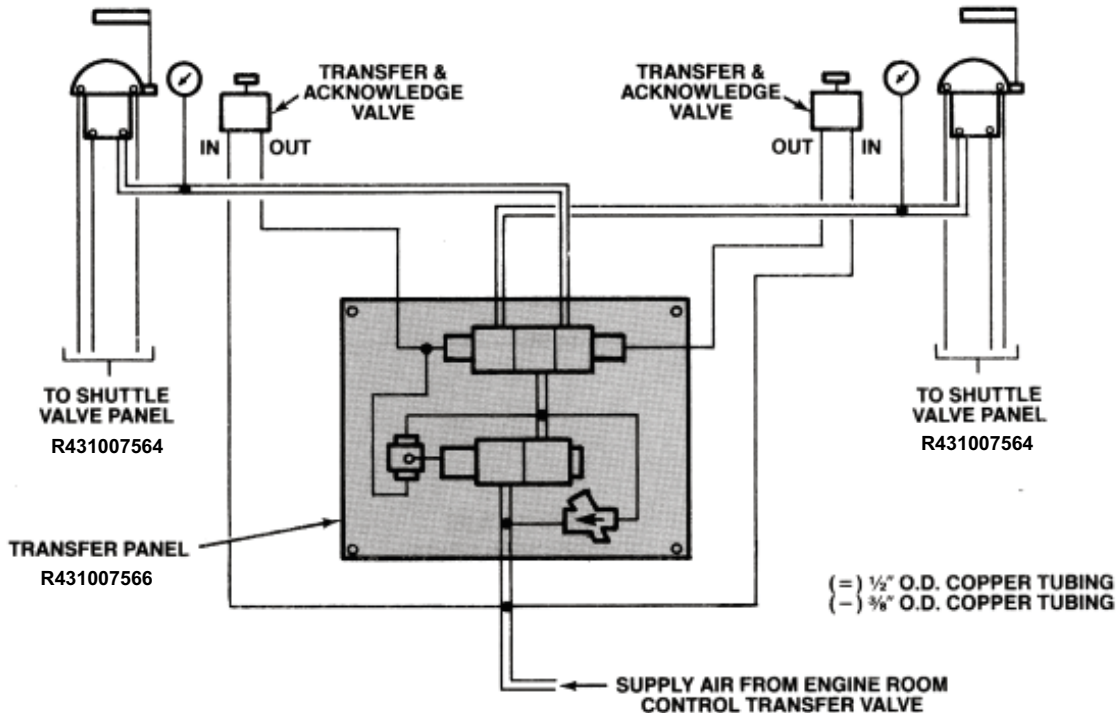
This panel includes the necessary valving mounted as a single unit to provide for attendance interlocked control transfer between the engine room and the above deck control stations. The operation insures that control can not be transferred to the above deck stations unless an operator is in attendance at the receiving station to operate an acknowledge valve and complete the transfer sequence. This insures that control is not inadvertently transferred to an unattended station where the engine control handles may have been left in the operating range. It is the operator's responsibility to check the control handle positions before acknowledging and completing the control transfer operation.

(See page 479 for dimensions.)

6

1 Pilot House Station (Primary Station)

2 Aft Deck Station



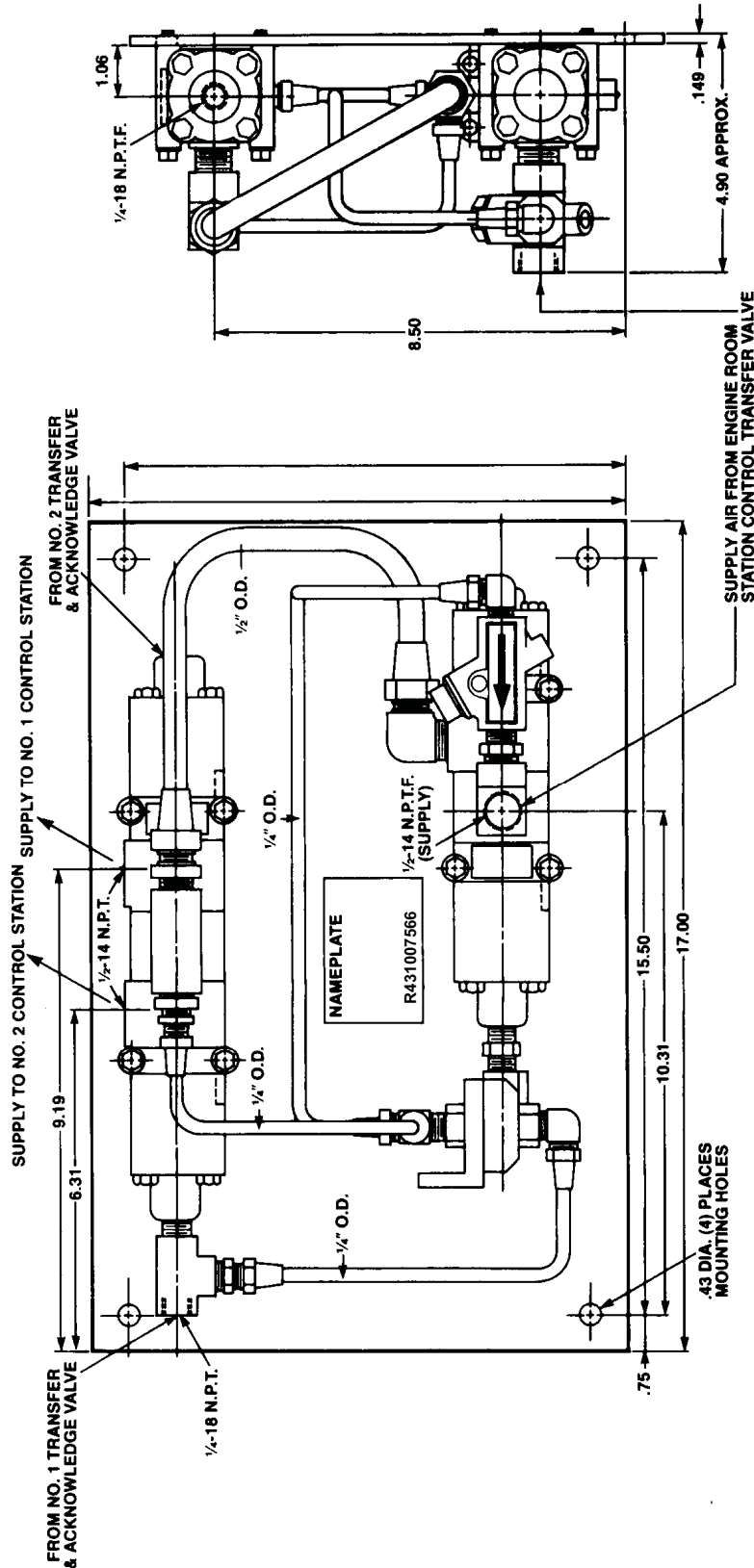


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HUMCO ENGINE CONTROLS

Rexroth Control Station Transfer Panel

OUTLINE VIEW CONTROL STATION TRANSFER PANEL



Weight 18 3/4 lbs (8.5 kg)
(Dimensions in inches)