Safe Pressure Select
RSe Series 5/2 Double Valves

Product Catalog

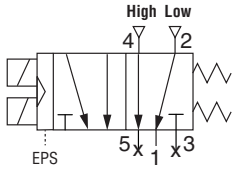
a global family

Control Reliable 5/2 Double Valves RSe Series – for Safe Pressure Select Applications
Product Overview

Safety Function

The RSe Series valve safety function is to safely control the pressure applied to a machine operation.

Simplified Schematic



Plugs not included.

The 5/2 RSe Series valve can be utilized for Safe Pressure Select Applications in order to safely control the pressure applied to a machine operation, such that a specified pressure is the default pressure and only when an appropriate signal is given supplies a different pressure. The default pressure would be used whenever safe operator access is required for production-related tasks and/or when a fault in the safety valve occurs. For example, a device such as a clamp may use full force when normally operating but revert to a reduced force, and therefore risk, when an operator has to intervene in the process and access a potential hazard. The safety function of the 5/2 RSe Series pressure select valve is to supply the pressure supplied to port 2 whenever a fault occurs within the valve. However, the RSe Series does this with the same level of control, up to Category 4 PL e, expected of the machine's/system's safety circuit.

The RSe Series valves are designed for external monitoring for safe, redundant operation of the valves. Such a monitoring system must be capable of inhibiting the operation of the valve. The RSe Series valves are constructed of redundant 5/2 spool type valves, and have an overall function of a single solenoid pilot-operated, spring return valve. Each single valve in the RSe Series is equipped with a PNP proximity sensor. Monitoring both of these sensors on each actuation and de-actuation of the RSe Series valve provides a diagnostic coverage of 99%. Monitoring of these sensors is to be done by an external monitoring system.

VALVE FEATURES

Redundant Control	Redundant control can achieve Category 4, PL e, when used with proper safety controls
External Monitoring	Each single valve in the RSe Series is equipped with a PNP proximity sensor. Monitoring both of these sensors on each actuation and de-actuation of the RSe Series valve provides a diagnostic coverage up to 99%. Monitoring of these sensors is to be done by an external monitoring system.
Spool Type Design	Redundant spool type valve with two operating solenoids that must be operated simultaneously in order to actuate the valve. In addition each valve element has a single, proximity sensor that is wired as a PNP type sensor for position sensing.
Valve Reset	Automatic reset by de-energizing the solenoids
Mounting	Base mounted – with G or NPT pipe threads. Inlet and outlet ports on both sides provide for flexible piping (plugs for unused ports included). Captive valve-to-base mounting screws.
Silencer	Included
SISTEMA Library	Available for download at rosscontrols.com

These valves are not designed for controlling clutch/brake mechanisms on mechanical power presses, see DM²® Series D double valves for mechanical power press applications.

Specifications

STANDARD SPECIFICATIONS

GENERAL	Function		Safe Pressure Select
	Construction Design		5/2 Normally Closed Valve, Dual Spool and Sleeve
	Actuation		Electrical – Solenoid pilot operated with air assisted spring return. One solenoid per valve element (2 total) – both to be operated synchronously.
	Mounting	Type	Base
		Orientation	Any, preferably vertical
	Connection		Threaded; G, NPT
	Monitoring		Dynamic, cyclical, external with customer supplied equipment. Monitoring should check state of both valve position sensors with any and all changes in state of valve control signals.
	Minimum Operation Frequency		Once per month, to ensure proper function
	Maximum Recommended Allowable Discordance Time		250 msec
OPERATING CONDITIONS	Temperature	Ambient	40° to 120°F (4° to 50°C)
		Media	
	Flow Media		Compressed air according to ISO 8573-1 Class 7:4:4
	Pilot Supply		Internal or External
	Operating Pressure	With Internal Pilot Supply	43 to 145 psig (3 to 10 bar)
		With External Pilot Supply	0 to 145 psig (0 to 10 bar)
	Pressure Sensors (2 per valve)		PNP solid state
	Pressure Sensors Current Consumption (each sensor)		<23mA (each without contacts)
ELECTRICAL DATA	Solenoids		Version as per VDE 0580. Rated for continuous duty Electrical connection according to EN 175301-803 Form C
	Operating Voltage		24 volts DC
	Power Consumption (each solenoid)		15 watts
	Enclosure Rating		DIN 400 50 IP 65
	Electrical Connection		Connector socket according to DIN EN 175301-803 Form C
	Proximity Sensors (2 per valve)		PNP
	Current Consumption (each sensor)		<23mA
CONSTRUCTION MATERIAL	Valve Body		Cast Aluminum
	Poppet		Stainless Steel
	Seals		Buna-N
SAFETY DATA	Functional Safety Data	Category	CAT 4, PL e
		B_{10D}	20,000,000
		PFH_D	$7.71x10^{-9}$
		$MTTF_D$	301.9 (n_{op}: 662400)
	Vibration/Impact Resistance		Tested to DIN EN 60068-2-6

IMPORTANT NOTE: Please read carefully and thoroughly all of the CAUTIONS, WARNINGS on the inside back cover.

PRODUCT CREDENTIALS

Safety Category	DGUV (German Social Accident Insurance)	CE Conformity Declaration	EAC Conformity Declaration	ISO Standard	CSA Certificate of Compliance
Cat. 4 PL e / SIL 3 Functional Safety	HSM 21830 Sicherheit geprüft tested safety	CE	EAC	ISO 13849-1:2015	C SP US

Ordering Information

MODEL NUMBER CONFIGURATOR

5-Way 2-Position Valves

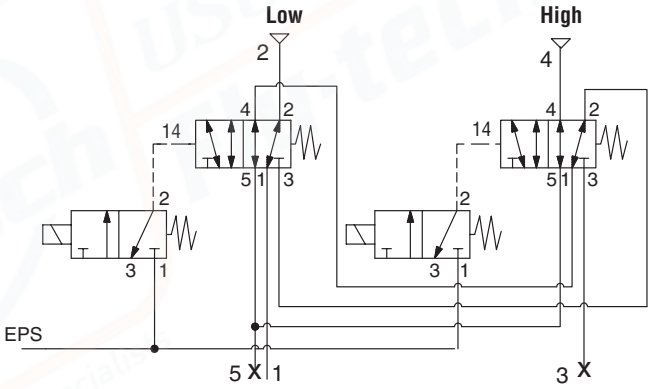
RSe	6	E	D	A10	A	3	1	P
Series	Type/Function: 5/2	Monitoring: External	Thread: G D, NPT N	Base Port Size	Voltage: 24 volts DC	Reset Type: Automatic	Feedback: Sensor	Sensor: Sensor Output PNP

Base Port Size

Inlet	Outlet	
1/8	1/8	A10
1/4	1/4	B20
1/2	1/2	B40

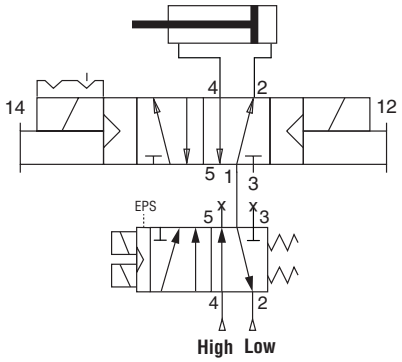
Port Size	C_v		Weight lb (Kg)
	2-1	4-1	
1/8	0.87	0.65	2.9 (1.3)
1/4	1.14	0.84	3.7 (1.7)
1/2	3.48	1.76	6.6 (2.99)

Valve Schematic

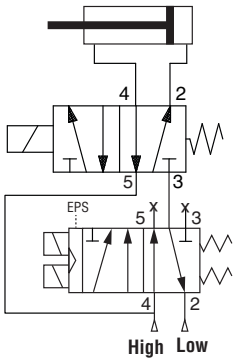


Application Examples

Typical Clamping Circuit



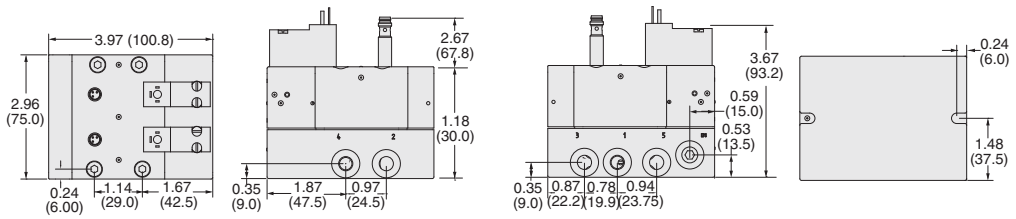
Typical Welding Circuit



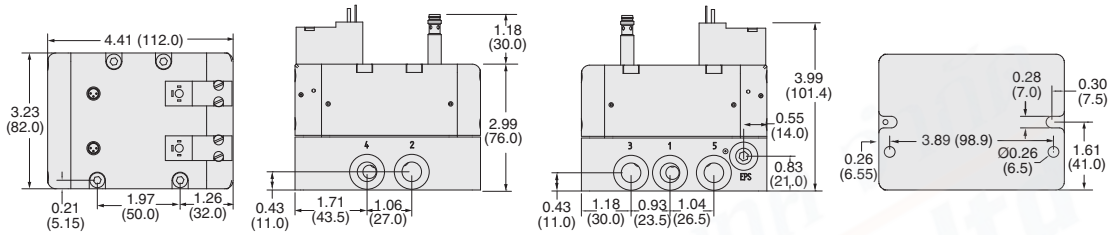
DIMENSIONS

Inches (mm)

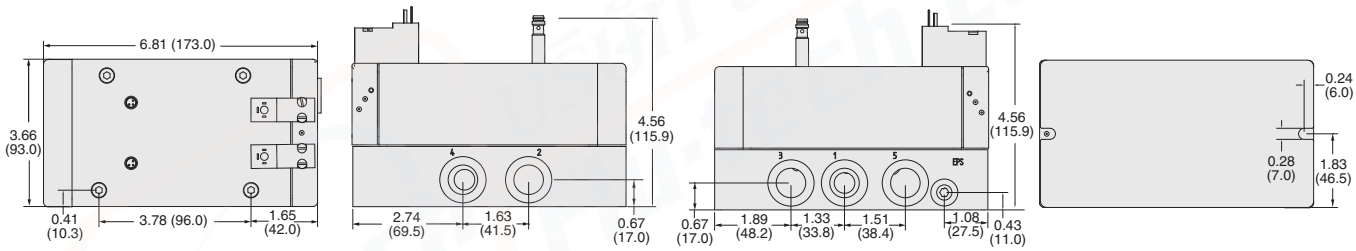
Port Size 1/8



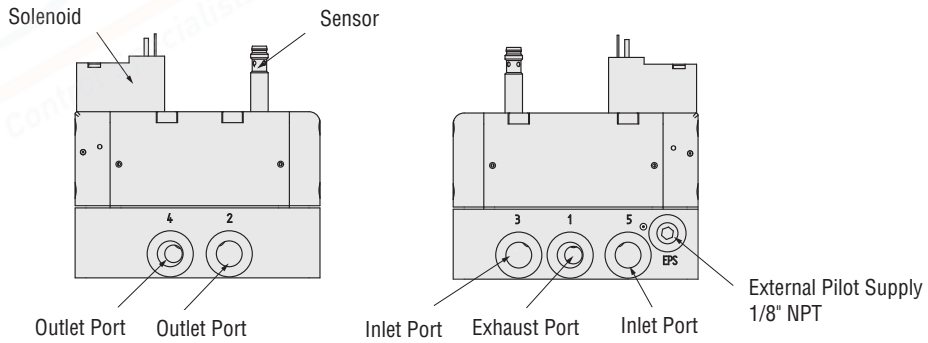
Port Size 1/4



Port Size 1/2



For additional information, and to assist you with piping and connectivity designs, our products are available in downloadable 2D drawings and 3D CAD models in a wide range of options including native formats, visit www.rosscontrols.com.



Accessories & Options

ENERGY RELEASE VERIFICATION

Pressure Switches

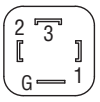
Verification Type	Installation Location	Connector Type	Model Number	Port Thread	Factory Preset psi (bar)
Electrical	Downstream	DIN EN 175301-803 Form A	586A86	1/8 NPT	5 (0.3) falling

Redundant Pressure Switch Assembly

Verification Type	Installation Location	Connector Type	Model Number	Port Size	Factory Preset psi (bar)
Electrical (Dual)	Downstream	DIN EN 175301-803 Form A	RC026-13	3/8 NPT	5 (0.3) falling

Connectors Pinout

DIN EN 175301-803 Form A



1 - Common
2 - Normally Closed
3 - Normally Open
G - Ground

ELECTRICAL CONNECTORS

Pre-wired Connector Kits

Connection Type		Connector Type	Quantity	End 1	End 2	Length meters (feet)	Kit Number Without Light
Solenoid & Sensor	Solenoid	DIN EN 175301-803 Form C	2	Connector	Flying leads	2 (6.5)	2657B77
	Sensor	M8	2				

Pre-wired Connectors

Connection Type	Connector Type	Quantity	End 1	End 2	Length meters (feet)	Cord Diameter	Model Number Without Light	Model Number Lighted Connector 24 V DC
Solenoid	DIN EN 175301-803 Form C	1	Connector	Flying leads	3 (10)	8-mm	2449K77	2450K77-W
Sensor	M8	1	Connector	Flying leads	2 (6.5)	–	249L74	–

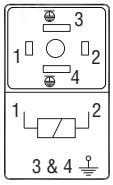
Connectors (no cable)

Connection Type	Connector Type	Quantity	Model Number Without Light	Model Number Lighted Connector 24 V DC
Solenoid	DIN EN 175301-803 Form C	1	2452K77	2453K77-W

Connectors Pinout

Solenoid

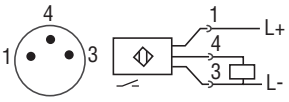
DIN EN 175301-803 Form C



1 - Brown
2 - Blue
3 - Green/Yellow (Ground)
4 - Green/Yellow (Ground)

Sensor

M8



1 - Common
2 - Normally Closed
3 - Not Used

SILENCERS

Silencers

Port Size	Thread Type	Model Number R Thread	Model Number NPT Thread	Flow Avg. C_V	Pressure Range psig (bar)
1/8	Male	D5500A1003	5500A1003	1.2	0-290 (0-20) maximum
1/4	Male	D5500A2003	5500A2003	2.1	
1/2	Male	D5500A4003	5500A4003	4.7	