

RS Series

Three way rotary valves for temperature control systems



First for Steam Solutions

spirax
sarco

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RS

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RS 3-way rotary valve for temperature control systems

High Efficiency Mixing and Diverting Valve

RS Valves are 3-way control valves provide a high degree of accuracy and repeatability for accurate temperature control. They consist of a valve body with rotary plug and a quarter-turn electric actuator suitable for heavy duty service, equipped with a complete drive and control panel for a power unit, 4-20 mA remote control signals driven or locally operated. As an alternative, variants are available, including the use of pneumatic actuators.

SPIRAX-SARCO RS valves have been designed and built for very low operating forces with higher overall flow capacities, resulting in lower pressure losses and in the possibility to select valves with lower dimensions than the equivalent globe valves.

RS 3-way rotary valves are suitable for mixing or diverting service for a wide range of flowrates and for a variety of fluids such as mains water, glycoled water, lubricating oils and hydraulic oils.

Piping design can be simplified, providing low installation cost, through the compact valves design and the selectability of the rotation direction depending on the operating mode.

RS 3-way rotary valves Additional features:

- Reliability
- Non-fouling, non-sticking design
- Easy maintainability
- Compact size
- Fine adjustment
- Mixing or diverting flow capability
- Drive and control panel fitted as standard
- Reversible action valve
- Handwheel for manual override
- Position indicator
- Sizes: DN100 - DN400



Fig. 1

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Applications

For Refineries, Chemical Plants & Exhaust Oil Regeneration:

- Heat Recovery from Steam Generators
- Cooling Systems
- Heating Systems
- Condensing Systems

For Engines, Turbines, Gear Boxes & Heat Exchanges:

- Charge Air Cooling
- Secondary Cooling Systems
- Preheating of Fuel & Lube Oil
- Co-Generation
- Cooling of Engine Jacket

Compact size plus a reliable, long-life operation, in combination with a complete range of electronic control devices, make the RS 3-way Rotary Valve the best choice for almost all temperature control applications with by-pass line.

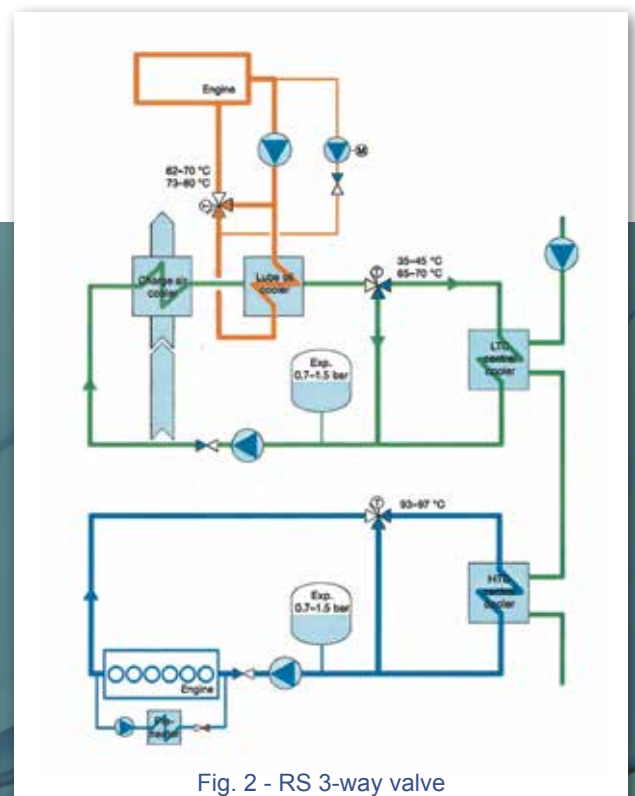


Fig. 2 - RS 3-way valve

RS 3-way rotary valve

Principles of operation

Operation of the 3-way rotary valve is simple and straightforward:

According to the application the service of the valve can be: diverging or converging.

Diverging Valve: flow enters the common port A or B and flows out of the other ports depending upon the position of the rotor.

Mixing Valve: flow enters from A and C or B and C depending upon position of rotor and leaves through the common port.

All sizes have an external position indicator. Valve action can be reversed without removing the valve from the line and without additional parts.

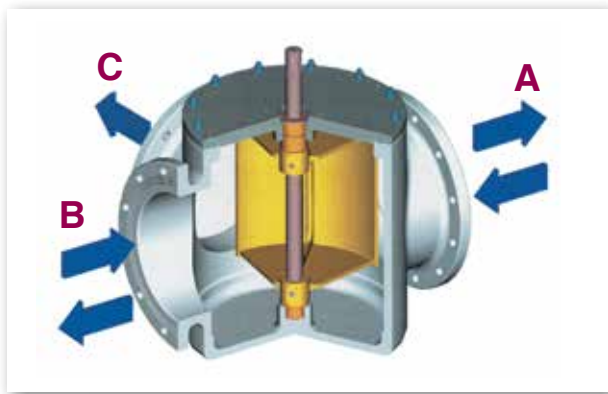


Fig. 3 - Diverging Valve

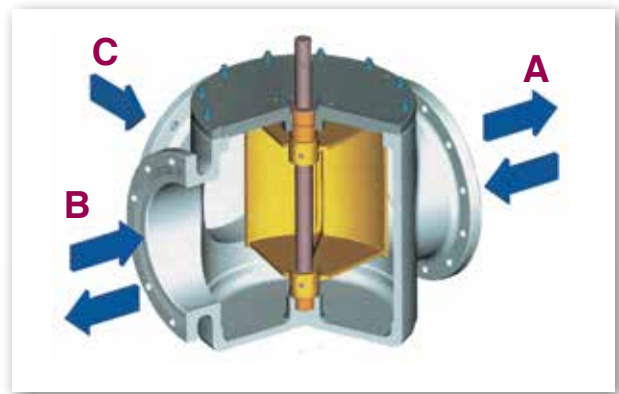


Fig. 4 - Converging Valve

Table 1 - Specification

Type	RS				
Fluids	- Mains water - Glycoled water - Lubricating oil - Hydraulic oil				
Electric Actuators	Valve size and Actuator Combinations		Output Torque	Operating times	
	DN100-200 SxS mod. SG1 230V-3Ph-50/60 Hz		100 Nm	50 Hz	60 Hz
	DN250-300 SxS mod. SG2 230V-3Ph-50/60 Hz		300 Nm	15 s	13 s
	DN350-400 SxS mod. SG3 230V-3Ph-50/60 Hz		1000 Nm	36 s	30 s
Body Material	Nodular Cast Iron EN1563 GJS-400-18-LT				
Rotor Material	Bronze DIN1705 CuSn5Zn5Pb5				
Shaft Material	Stainless Steel ASTM A351 CF8M				
Cover material	Stainless Steel ASTM A216 WCB				
Gaskets	O'rings Viton				
Sizes	DN100-400	DN100-250			
Connections	UNI-DIN PN6	UNI-DIN PN10-16			
Inlet Pressure	6 bar (maximum)	10-16 bar (maximum) according to flanges			
Differential Pressure	Through the valve:	- Full port	- 15 psi max		
Max Leakage Rate	All sizes:	- Diverging Valve	- 1,6%		
		- Mixing Valve	- 1,8%		
Temperature Range	0-110°C				
Accessories coming with the actuator	SxS Motor Drive Unit				
Options:	- Local temperature Control - Pneumatic Actuation - Other types of flange connections and electric power supplies				
Arranged for 4-20 mA input signal from the controller and 4-20 mA output signal of valve position					

N.B.: On request the electric actuator can supply with, 380V or 440V and 50 or 60 Hz.

Table 2 - Valve Configurations

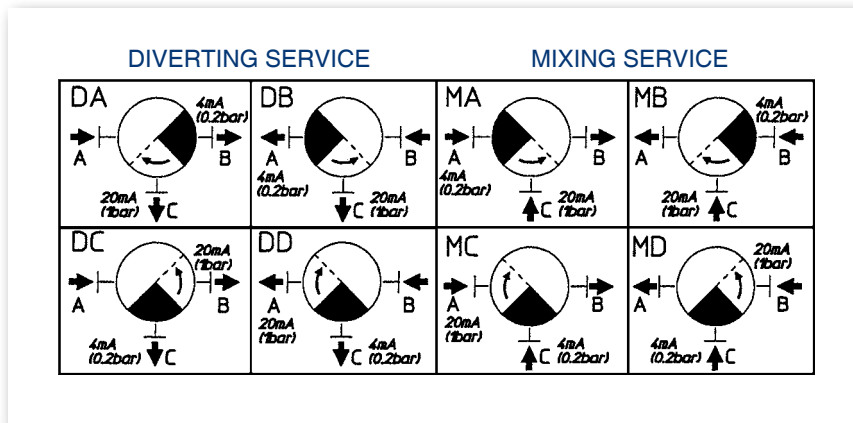


Table 2 configuration shows the valve rotor in the 4 mA or 0,2 bar (3 psi) position, which also corresponds to the position of the signal failure.

Table 3 - K_{VS} Flow rate coefficients

Full Port							
	DN100	DN150	DN200	DN250	DN300	DN350	DN400
K_{VS}	304	671	1234	1836	2782	3856	4480

Table 4 - Valve nomenclature guide

	Description	Example
Valve size	DN100, 125, 150, 200, 250, 300, 350, 400	DN250
Valve Model	RS	RS
Body / Rotor / Shaft / Gasket / Materials	7 = S. G. Iron / Bronze / Stainless steel / Viton	7
Connection	3 = Flanged	3
Configuration (see Tab. 3)	Converging MA-MB-MC-MD Diverging DA-DB-DC-DD	MA
Stem sealing material	= Viton	
Rotor size	0 = Standard full port	0
Flow Coefficient	K_{VS} (to be specified)	$K_{VS} = 1836$
Connection type	PN6 PN10 PN16	PN6
Actuator Model	SG1 = for DN100-200 valve sizes SG2 = for DN250-300 valve sizes SG3 = for DN350-400 valve sizes	SG2

Valve spares

Always order spares by using the description given in the Tab. 5 “Available Spares”. Also state the information shown in the RS series “Valve nomenclature guide”, the serial number.

Table 5 - Available spares

Description	Item
Valve gaskets kit	5
Rotor, shaft, bushes, kit	3, 4, 6
Busches	6

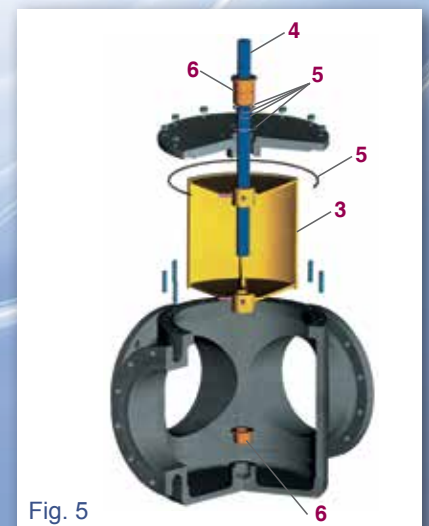


Fig. 5

Dimensions

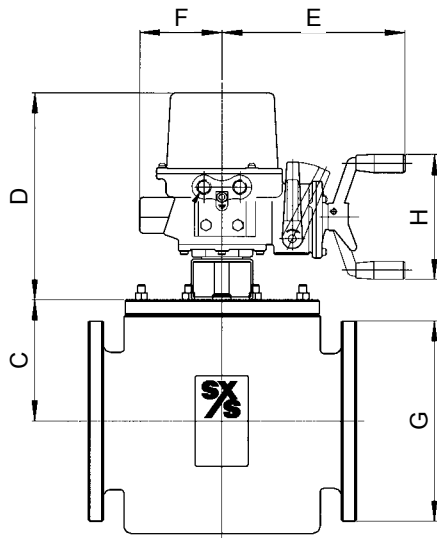


Fig. 6

mod. SG1 - DN100÷200

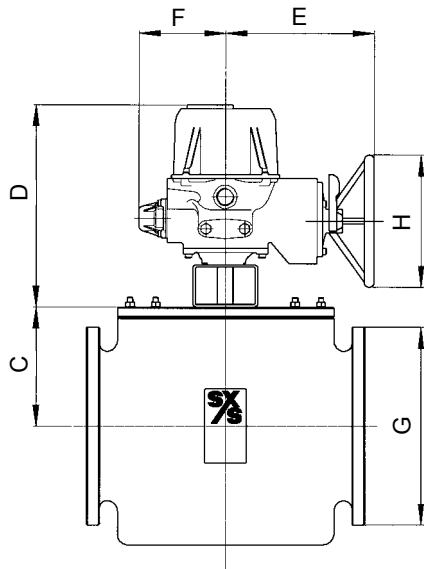


Fig. 7

mod. SG2 - DN250÷300

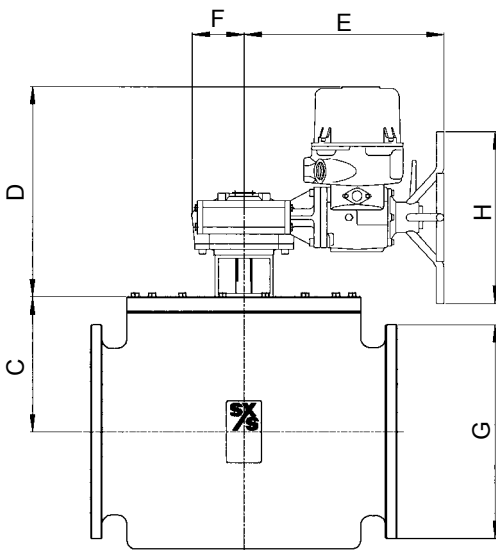
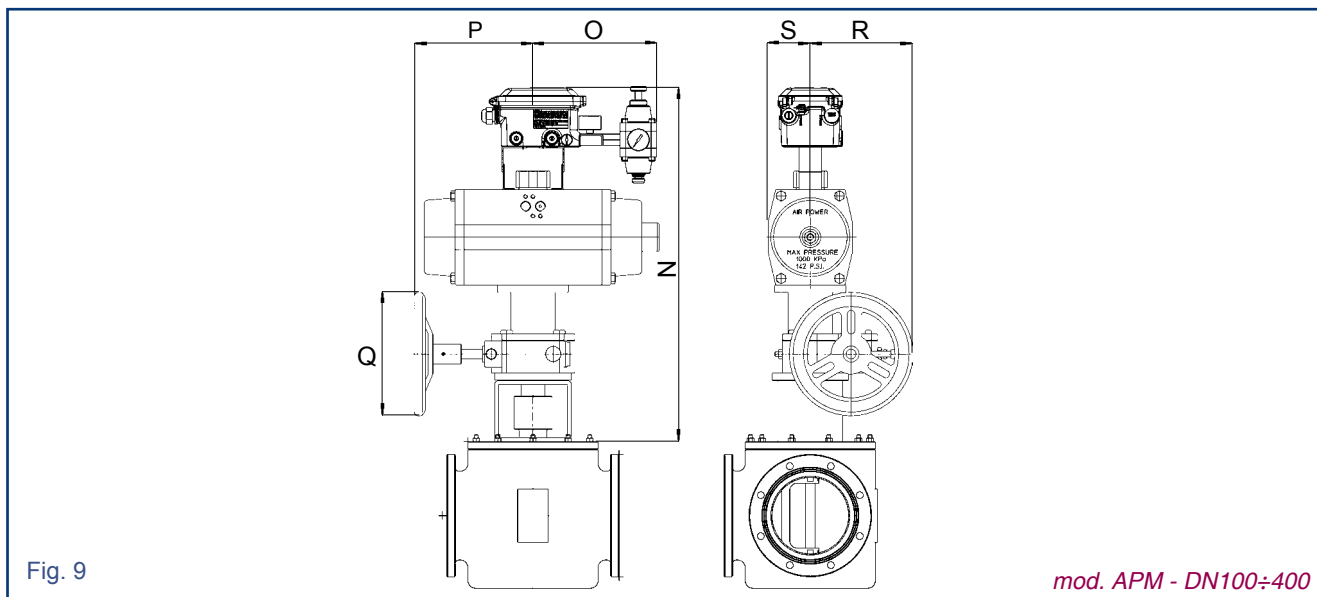


Fig. 8

mod. SG3 - DN350÷400



Dimensions (in mm)

Table 6 - Valve body and dimensions

DN	A	B	C	Flanged PN6				Flanged PN10				Flanged PN16			
				G	n° holes	on Φ	Φ holes	G	n° holes	on Φ	Φ holes	G	n° holes	on Φ	Φ holes
100	300	150	131	210	4*	170	18	220	8	180	18	220	8	180	18
150	355	178	160	265	8	225	18	285	8	240	22	285	8	240	22
200	450	225	194	320	8	280	18	340	8	295	22	340	12	295	22
250	525	263	226	375	12	335	18	395	12	350	22	405	12	355	25
300	600	300	282	440	12	395	22	445	12	400	22	-	-	-	-
350	700	350	309	490	12	445	22	505	16	460	22	-	-	-	-
400	800	400	330	540	16	495	22	565	16	515	25	-	-	-	-

* Local Normatives can restrict the use with oils.

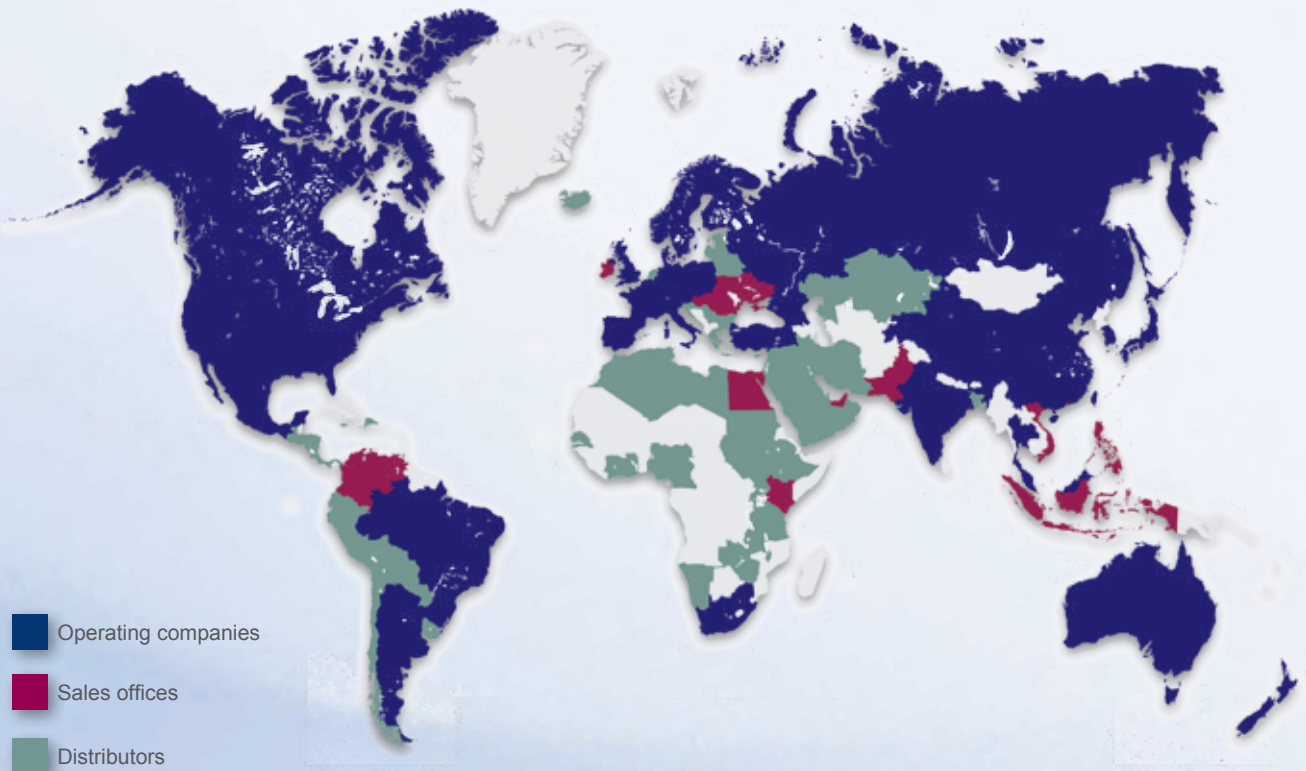
Table 7 - Electric and pneumatic actuators dimensions

DN	Electric Actuators							Pneumatic Actuators										
								Double Effect						Simple Effect				
	D	E	F	H	L	M	N	O	P	Q	R	S	N	O	P	Q	R	S
100	300	245	110	165	100	236	643	220	277	200	155	55	658	220	277	200	155	70
150	300	245	110	165	100	236	643	220	277	200	155	55	658	220	277	200	155	70
200	300	245	110	165	100	236	643	220	277	200	155	55	658	220	277	200	155	70
250	380	280	165	250	130	300	739	220	338	200	155	73	823	220	345	300	225	108
300	380	280	165	250	130	300	739	220	338	200	155	73	823	220	345	300	225	108
350	470	420	105	430	315	300	803	220	338	300	213	108	908	220	345	500	325	145
400	470	420	105	430	315	300	803	220	338	300	213	108	908	220	345	500	325	145

Weights (approximate in Kg)

Valve Size	DN100	DN150	DN200	DN250	DN300	DN350	DN400
Electric Actuator	50	71	116	173	232	364	450
Pneumatic Actuator (Double Effect)	51	72	117	158	245	347	433
Pneumatic Actuator (Simple Effect)	59	80	125	196	281	411	497

Global coverage



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