Two Port Valves

Pneumatically actuated

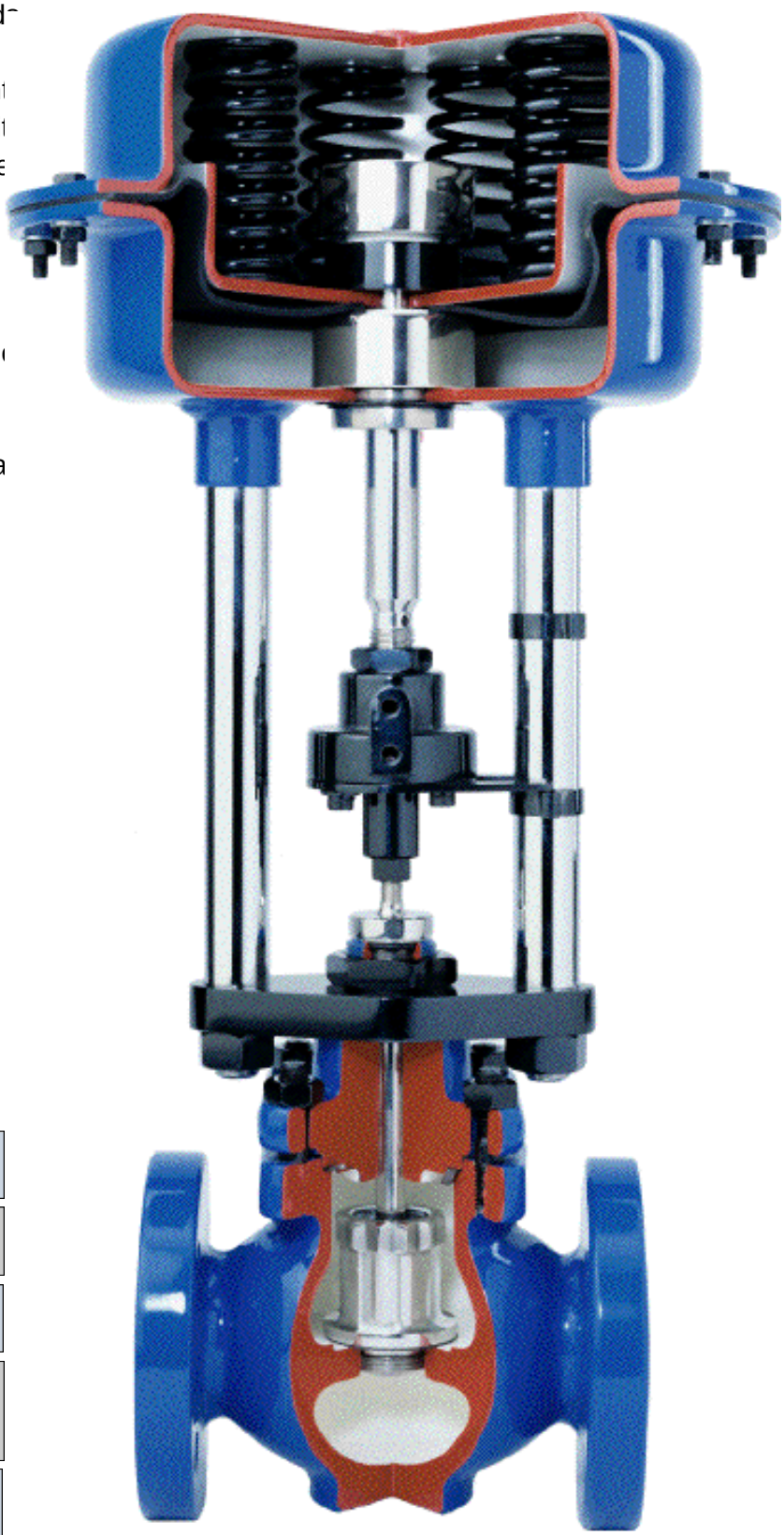
spirax sarco®

Two Valve Ranges — so many options...

The Spirax Sarco range of control valves and pneumatic actuators are designed to give a comprehensive selection of valves for use on steam, water, oils and most industrial fluid-

Modular in design, the K and L series con valve range incorporates many options wi one body envelope. It is this highly flexible system which allows one valve to satisfy the needs of numerous industrial requirements.

When coupled to either a fail close or fail pneumatic diaphragm actuator, the K and control valve range provides a complete solution to most flow, pressure or tempera applications.



User benefits

- Designed and engineered by Spirax Sarco, ensuring long life and reliability.
- Numerous valve options for wide range of applications.
- Air-to-open or air-to-close option by the same actuator reduces overall costs.
- The amalgamation of valves, actuators and positioners in various configurations reduces costs and stock holding.
- Spirax Sarco's guarantee of worldwide technical support, knowledge and service.

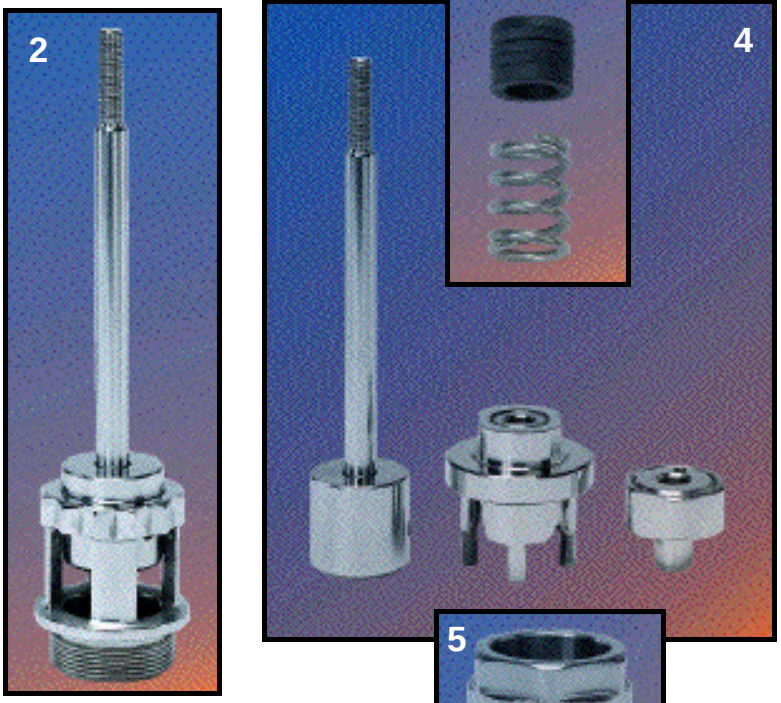
so many solutions!

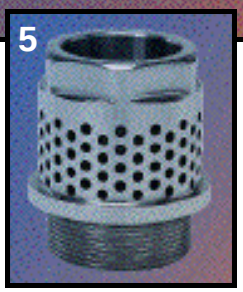
1. Reduced capacity trims
Optional trim sizes to optimize control valve performance

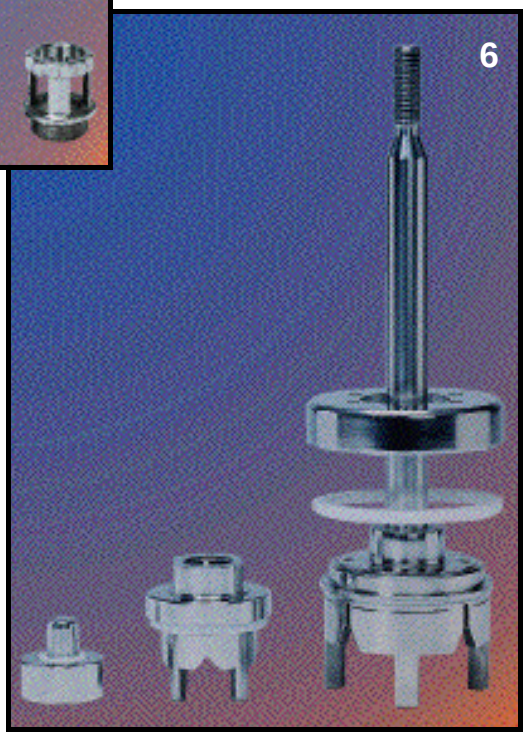
2. Hard facing
Stellite faced seat and plug for high erosion resistance during cavitation, flashing and two phase flow applications

3. Chevron seal
Standard self regulating chevron rings for constant stem friction and minimum maintenance

4. Characterized plugs
Equal percentage, linear and fast opening trim options for process characteristic matching







5. Noise reducing trim
Flow divider reduces noise and erosion from high velocity conditions

6. Soft seal trim
Soft seal trims for bubble tight shut off to ANSI class VI

7. High temperature graphite
Graphite braided rings for high temperatures provide cost effective alternative to bellows seal

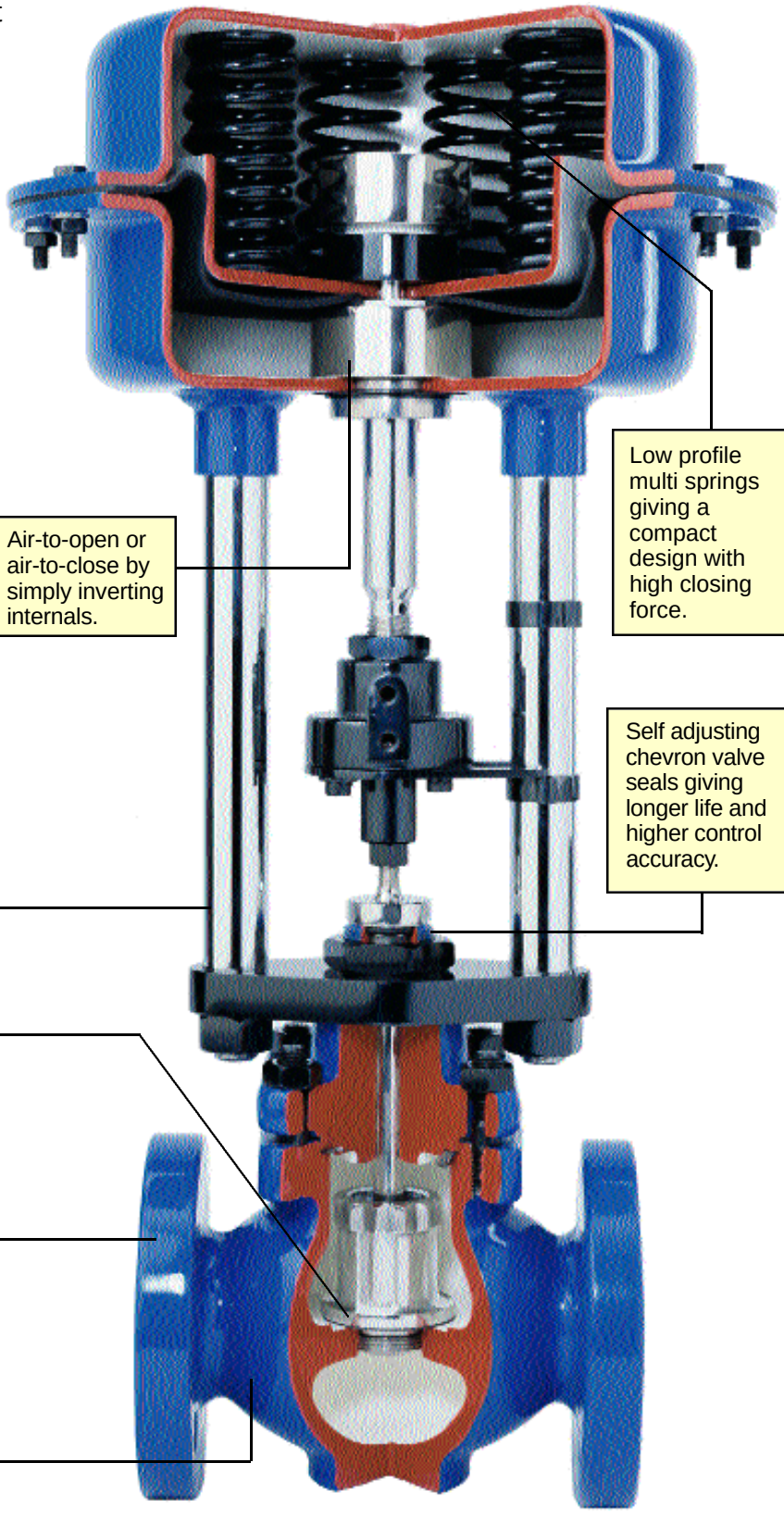
Quality is assured

K Series Control Valve with PN5000/6000 Pneumatic Actuator

Spirax Sarco's reputation has been built on the quality of its knowledge, service and products. For this reason every valve and actuator combination is fully tested prior to dispatch to ensure installation and commissioning is quick and trouble free, and that this trouble free operation continues during the service life of the product.

Our testing includes:

- Valve envelope pressure integrity test according to DIN 3230 and ANSI B16.34
- Stem seal emission test
- Seat and plug shut-off test to ANSI B16.104
- Control valve and actuator assembly function test



Air-to-open or air-to-close by simply inverting internals.

Low profile multi springs giving a compact design with high closing force.

Self adjusting chevron valve seals giving longer life and higher control accuracy.

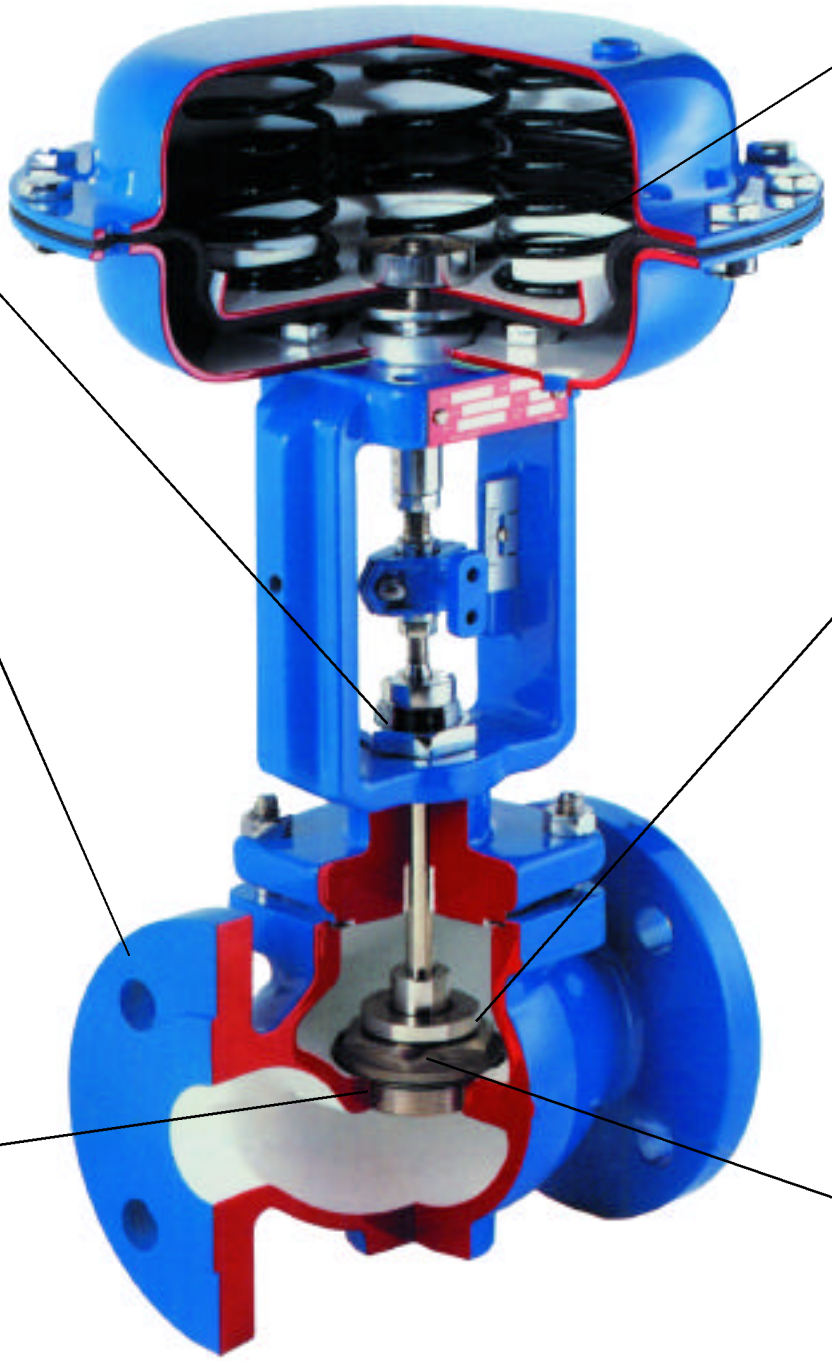
Namur mounted:
- Electro / pneumatic and pneumatic / pneumatic positioners.
- Air and electrical switch boxes.
- Feedback potentiometer.

Cage guided stem and plug for extended valve. life.

Connections
Screwed to BSP or NPT
Flanged to ANSI 125 and ANSI 250
Flanged to BS 4504 PN16, PN25 and PN40
BST F and BST H
ANSI 150 and ANSI 300
JIS 10 and JIS 20
KS 10 and KS 20

Body materials include ductile iron, carbon steel and stainless steel depending on the process requirements.

L Series Control Valve with PN3000/4000 Pneumatic Actuator



Standard chevron ring seal with high temperature graphite or bellows seal option.

Compact multi-spring actuator with fail open or fail closed operation. Optional handwheel is available.

Body constructed of cast iron, screwed or flanged ANSI 125 connections, available in sizes 1/2" to 4".

Equal percentage flow characteristic as standard with quick opening option.

Replaceable screw in seats for ease of maintenance and reduced capacity for load matching.

Soft seal option for bubble tight shut off to ANSI Class VI.

For temperature, pressure or flow control, Spirax Sarco has the answer

Full range of 2-port Control Valves

	Material		Ductile iron		Carbon steel		Stainless steel		Cast Iron	
	Valve type		***KEA71**	***KEA73**	***KEA41**	***KEA43**	***KEA61**	***KEA63**	****LEA31**	****LEA33**
	Body design rating		**ANSI 250**	**ANSI 125 ANSI 250**	**ANSI 300**	**ANSI 150 ANSI 300**	**ANSI 300**	**ANSI 150 ANSI 300**	**ANSI 250**	**ANSI125**
Sizes	1/2"	DN15	✓	✓	✓	✓	✓	✓	✓	
	3/4"	DN20	✓	✓	✓	✓	✓	✓	✓	
	1"	DN25	✓	✓	✓	✓	✓	✓	✓	✓
	1-1/4"	DN32	✓		✓		✓		✓	
	1-1/2"	DN40	✓	✓	✓	✓	✓	✓	✓	✓
	2"	DN50	✓	✓	✓	✓	✓	✓	✓	✓
	2-1/2"	DN65		✓	✓	✓		✓		✓
	3"	DN80		✓	✓	✓		✓		✓
	4"	DN100		✓	✓	✓		✓		✓
	6"	DN150								
	8"	DN200								
	Screwed	NPT	✓		✓		✓		✓	
		BSP	✓		✓		✓		✓	
		ANSI 125		✓						✓
		ANSI 250		✓						
	BS4504 PN16 & PN25					✓		✓		
	BS4504 PN40					✓		✓		
	Flanged	ANSI 150				✓		✓		
		ANSI 300				✓		✓		
	JIS 10			✓						
	JIS 20					✓		✓		
	High temperature graphite braided rings		✓	✓	✓	✓	✓	✓	✓	✓
	Standard self regulating chevron rings		✓	✓	✓	✓	✓	✓	✓	✓
	Optional valve seals									
	Equal percentage, linear, and quick opening		✓	✓	✓	✓	✓	✓	■	■
	Stelite trim		✓	✓	✓	✓	✓	✓		
	Reduced capacity trim		✓	✓	✓	✓	✓	✓	✓	✓
	Noise reducing trim		✓	✓	✓	✓	✓	✓		

■ Equal percentage and quick opening trims only.

*KEA denotes K Series control valve with equal percentage trim.
**LEA denotes L Series control valve with equal percentage tim.

Control valve sizing and selection

Step 1 Determine the valve C_V

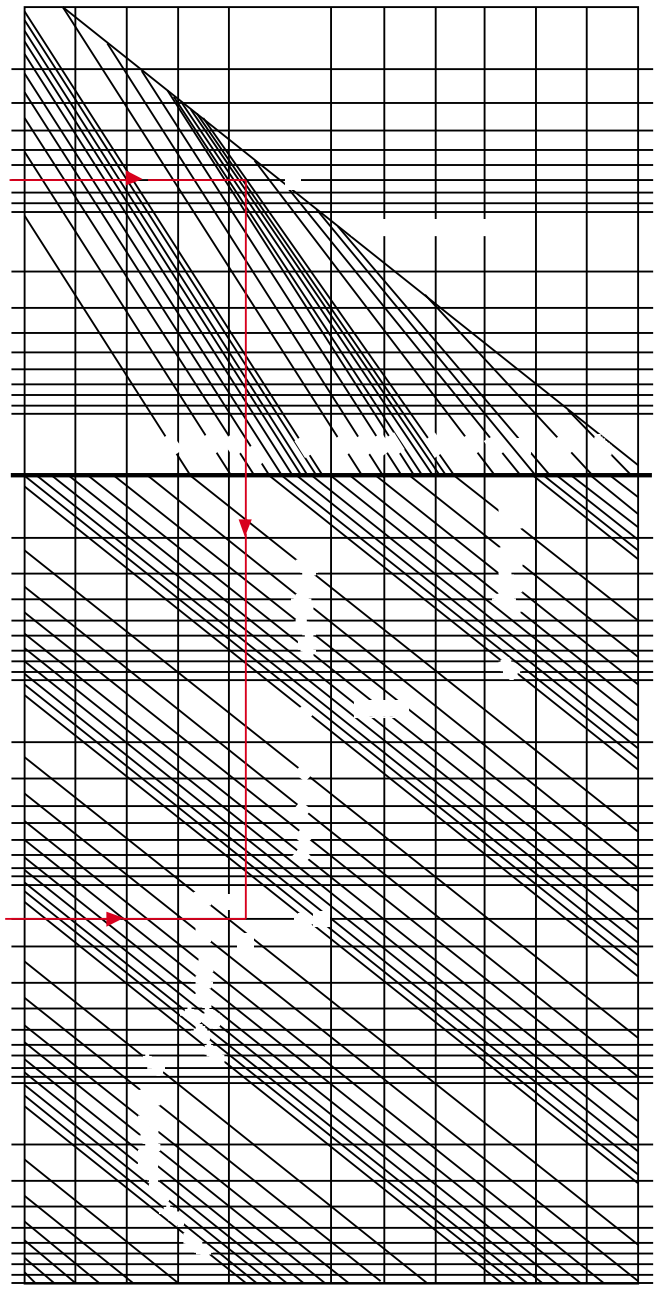
C_V calculation is an iterative process requiring knowledge of valve dynamics, piping geometry factors, and outlet velocities.

In practice, the sizing chart below is based on empirical values and will cater for most applications.

C_V selection example
Steam demand of heat exchanger = 1500 lb/h of saturated steam
Steam pressure upstream of valve = 55 psig or 70 psia
Steam pressure required in exchanger = 45 psig or 60 psia
Valve pressure drop = 70 -60 = 10 psi

Draw line at 1500 lb/hr flowrate (A-B) and from 70 psia inlet pressure to the I0 psi pressure drop line (C-D)
Drop vertical line (D-E) to meet the 1500 lb/hr flow line and read the C_V value at the crossing point (F)
i.e.: C_V = 18
For valve size refer to step 2 below.

Saturated/superheated steam sizing chart



C_V selected is 18.7

Step 2 Determine the valve size

Sizes	1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
C_{VS}	4.7	7.4	11.7	18.7	29.3	42	74	117	187
	1.9	4.7	7.4	11.7	18.7	29.3	42	74	117
	1.2	1.9	4.7	7.4	11.7	18.7	29.3	42	74
	0.5	1.2	1.9	4.7	7.4	11.7	18.7	29.3	42

A C_V of 19 requires a standard valve size of 1-1/2”

Step 3 Select the control valve

Example - From the previous page, the valve size is determined as 1-1/2". Reference to the technical literature below allows selection by pressure and temperature. Reference to the control valve selection guide opposite allows selection of the valve depending on the available choices as shown.
This example shows a 1-1/2" KE73, C_{VS} 19, Flanged to ANSI125.

Valve technical information

LEA31 / 33 range		
Body	Cast iron	ASTM A126 Class B
Bonnet	Ductile Iron	ASTM A 395
KEA71 / 73 range		
Body	Ductile iron	ASTM A395
Bonnet	Ductile Iron	ASTM A395
KEA41 / 43 range		
Body	Cast steel	ASTM A216 WCB
Bonnet	Cast steel	ASTM A216 WCB
KEA61 / 63 range		
Body	Stainless steel	ASTM A351 CF8M
Bonnet	Stainless steel	ASTM A351 CF8M

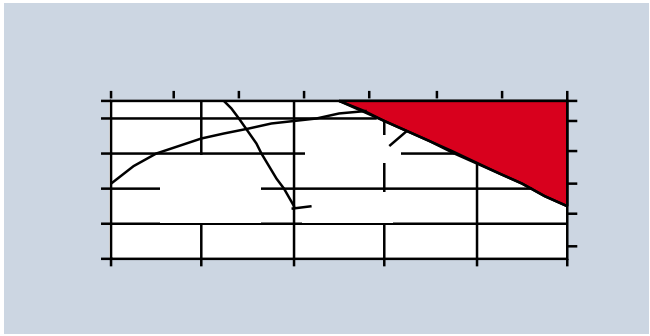
Maximum valve differential pressures - Refer to operating range graphs.

Technical data

Plug design	1/2" - 1-1/4" 1-1/2" - 4"		Caged parabolic Vee port
Leakage			0.01% of C_{VS}
Flow characteristic (standard)			Equal percentage
Rangeability			50:1
Travel	1/2" to 2" 2-1/2" to 4"	= =	3/4" 1-3/16"

Materials *All valve ranges*

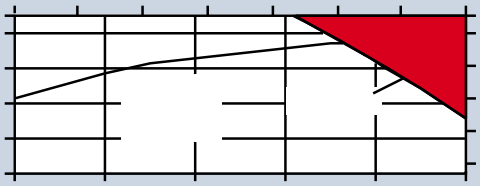
Valve plug	Stainless steel	LEA31/33 & KEA71/73/41/43 ASTM A276 Gr. 431 KEA61/63 ASTM A276 Gr.316L
Valve seat	Stainless steel	LEA31/33 & KEA71/73/41/43 ASTM A276 Gr. 431 KEA61/63 ASTM A276 Gr.316L
Valve stem	Stainless steel	LEA31/33 & KEA71/73/41/43 ASTM A276 Gr. 431 KEA61/63 ASTM A276 Gr.316L
Gland rings	PTFE chevrons	
Bonnet gasket	Semi - rigid graphite laminate	

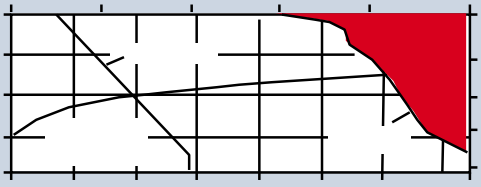


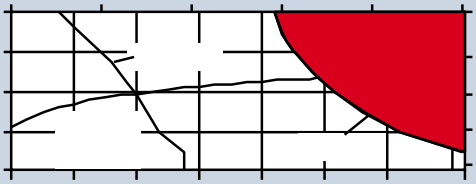
Control valve selection guide

Valve size	Specified from page 7	1 1/2"
Valve series	K series - 2-port	K
Valve characteristics	E = Equal percentage L = Linear F = Quick opening	E
Body material	4 = Cast steel 6 = Stainless steel 7 = SG iron	7
Connections	1 = Screwed 3 = Flanged	3
Stem sealing option *	H = High temperature packing	
Seating option *	G = Soft seating (PTFE) W = Stellite C = Anti-Cavitation	
Trim *	N = Low noise	
C_{VS}	To be specified	19
Connection type	See valve range on page 5	ANSI 125

* If standard option leave blank.







Step 4 Select a spring to close actuator

Actuator selection example:
Valve C_V = 18.7
Maximum differential pressure = 55 psig
Air pressure available = 50 psig
Control signal is 4 - 20 mA
Move vertically downwards from the 1-1/4" valve. The smallest actuator, which will effect closure is a PN5123 actuator with 30 to 60 spring rating. Air pressure required is 65 psig and a positioner is recommended.

K Series Control Valves								
1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
20 mm (.75")			30 mm (1.25")					
4.7	7.4	11.7	18.7	29	42	74	117	187

PN 5000 Series Actuators (Spring extend Spindle)

For complete actuator range offering see Spirax Sarco Technical Info Sheet TIS 1.512

Type	Model	Spring Range psig	Min. Air Pressure Required psig	Positioner Required	Maximum Valve Differential Pressure (ΔP) psi For soft seated valves reduce APby 40%								
PN5100 Series	5120	3 – 15	18	Optional	110	70	15	–	–	–	–	–	–
		6 – 18	20	Optional	255	146	60	–	–	–	–	–	–
	5121	3 – 9	20	Yes	110	70	15	–	–	–	–	–	–
	5122	9 – 15	20	Yes	400	225	110	–	–	–	–	–	–
PN5200 Series	5123	30 – 60	65	Yes	580	580	440	215	145	75	–	–	–
	5220	3 – 15	18	Optional	305	175	80	30	25	10	–	–	–
		6 – 18	20	Optional	580	355	190	85	65	30	–	–	–
	5221	3 – 9	20	Yes	305	175	80	30	25	10	–	–	–
PN5300 Series	5223	30 – 60	65	Yes	580	580	580	550	370	200	–	–	–
	5320	3 – 15	18	Optional	495	275	145	60	45	20	–	–	–
		6 – 18	20	Optional	580	470	320	150	105	55	–	–	–
	5321	3 – 9	20	Yes	495	275	145	60	45	20	–	–	–
	5322	9 – 15	20	Yes	580	580	500	245	170	90	–	–	–
	5323	30 – 60	65	Yes	580	580	580	580	440	320	–	–	–
	5330	6 – 18	20	Optional	–	–	–	–	–	–	10	–	–
	5333	30 – 60	65	Yes	–	–	–	–	–	–	165	105	65

L Series Control Valves								
1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
20 mm (.75")			30 mm (1.25")					
4.7	7.4	11.7	18.7	29	42	74	117	187

PN 3000 Series Actuators (Spring extend Spindle)

For complete actuator range offering see Spirax Sarco Technical Info Sheet TIS 1.515

Actuator PN 3220	Spring Range Closed	Spring Range Open	Minimum Air Pressure	Positioner Required	Maximum Differential Pressure (psi)								
	3	15	20	Optional	235	165	85	40	–	–	–	–	–
PN 3320 PN 3325 PN 3326	6	30	35	Optional	235	235	200	100	55	30	–	–	–
	3	15	20	Optional	235	235	195	95	50	30	–	–	–
	6	30	35	Optional	235	235	235	210	120	70	–	–	–
PN 3420 PN 3425 PN 3326 PN 3430 PN 3435 PN 3436	15	45	50	Yes	235	235	235	235	235	200	–	–	–
	3	15	20	Optional	–	–	235	150	85	50	–	–	–
	6	30	35	Optional	–	–	235	235	190	115	–	–	–
	15	45	50	Yes	–	–	235	235	235	235	–	–	–
	3	15	20	Optional	–	–	–	–	–	–	25	–	–
	6	30	35	Optional	–	–	–	–	–	–	60	40	25
	15	45	50	Yes	–	–	–	–	–	–	180	115	70

Actuator Note:
For all spring ranges, actuators must be operated from a self relieving controller, 3-way solenoid valve or a positioner. Consult factory for actuator selections on valves with high temperature graphite seals.

Actuator Technical Data

Temperature range	PN 3000	14°F to 390°F
	PN 5000	4°F to 230°F
Maximum Operating Pressure	PN 3200 and PN 3300	90 psi
	PN 3400	60 psi
	PN3500 and PN 3600	40 psi
	PN5100 to PN 5400	90 psi
	PN 5500 and PN 5600	35 psi
Linearity		2%
Hysteresis		3% Maximum

Materials

Diaphragm Housing	Pressed Steel
Diaphragm	Fabric reinforced nitrile rubber
Spring	Spring Steel
Yoke (PN 5120)	Aluminum
(PN 3000 & PN 4000)	Cast iron
Pillars	Steel
Spindle	Stainless Steel

Air Supply Connection

PN 3000	1/4" NPT
PN 5100/PN 5200	1/8" NPT
PN 5300 to PN 5600	1/4" NPT

Compressed Air Consumption

	Travel	Volume (cu.in.)
PN 3200	3/4"	36.6
PN 3300	3/4"	61
PN 3400	3/4" / 1-3/16"	85.4 / 128.1
PN 3500	3/4" / 1-3/16"	146.5 / 219.7
PN 3600	3/4" / 1-3/16"	231.9 / 347.8
PN 5100	3/4"	20.1
PN 5200	3/4"	60.4
PN 5300	3/4" / 1-3/16"	84.8 / 100.69
PN 5400	3/4" / 1-3/16"	144 / 169.6
PN 5500	3/4" / 1-3/16"	378.3 / 433.3
PN 5600	3/4" / 1-3/16"	512.6 / 585.8

Step 4 Select a spring to open actuator

Actuator selection example:
Valve C_V = 29
Maximum differential pressure = 55 psig
Air pressure available = 90 psig
Control signal 4-20mA
Move vertically downwards from the 1 1/2" valve. The smallest actuator to close against differential pressure is a PN6120 actuator with 3 to 15 spring rating. Air pressure required is 60 psig and a positioner is required.

K Series Control Valves

1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
20 mm (.75")			30 mm (1.25")					
4.7	7.4	11.7	18.7	29	42	74	117	187

PN 6000 Series Actuators (Spring extend Spindle) For complete actuator range offering see Spirax Sarco Technical Info Sheet TIS 1.513

Type	Model	Spring Range psig	Min. Air Pressure Required psig	Positioner Required	Maximum Valve Differential Pressure (ΔP) psi For soft seated valves reduce AP by 40%								
PN6100 Series	6120	3 – 15	18	Optional	110	70	15	–	–	–	–	–	–
		3 – 15	20	Optional	255	145	60	–	–	–	–	–	–
		3 – 15	60	Yes	580	580	580	330	215	115	–	–	–
	6121	3 – 9	20	Yes	110	70	15	–	–	–	–	–	–
	6122	9 – 15	20	Yes	110	70	15	–	–	–	–	–	–
PN6200 Series	6220	3 – 15	18	Optional	305	175	80	30	25	10	–	–	–
		3 – 15	20	Optional	580	355	190	85	65	30	–	–	–
		3 – 15	60	Yes	305	175	80	30	25	10	–	–	–
	6221	3 – 9	20	Yes	580	580	580	550	370	200	–	–	–
PN6300 Series	6320	3 – 15	18	Optional	495	275	145	60	45	20	–	–	–
		3 – 15	20	Optional	580	470	320	150	105	55	–	–	–
	6321	3 – 15	60	Yes	495	275	145	60	45	20	–	–	–
	6322	9 – 15	20	Yes	580	580	500	245	170	90	–	–	–
	6323	3 – 15	20	Yes	580	580	580	580	440	320	–	–	–
	6330	3 – 15	20	Optional	–	–	–	–	–	–	10	–	–
		3 – 15	60	Yes	–	–	–	–	–	–	165	105	65
		3 – 15	18	Optional	580	450	250	120	85	40	–	–	–

L Series Control Valves

1/2"	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
20 mm (.75")			30 mm (1.25")					
4.7	7.4	11.7	18.7	29	42	74	117	187

PN 4000 Series Actuators (Spring extend Spindle) For complete actuator range offering see Spirax Sarco Technical Info Sheet TIS 1.516

Actuator	Spring Range Closed	Spring Range Open	Minimum Air Pressure	Positioner Required	Maximum Differential Pressure (psi)								
PN 4220	15	3	20	Optional	230	135	75	30	–	–	–	–	–
	15	3	30	Yes	230	230	230	225	130	75	–	–	–
	15	3	45	Yes	230	230	230	230	230	165	–	–	–
	15	3	60	Yes	230	230	230	230	230	230	–	–	–
	15	3	75	Yes	230	230	230	230	230	230	–	–	–
	15	3	90	Yes	230	230	230	230	230	230	–	–	–
PN 4320	15	3	20	Optional	230	230	165	80	40	20	–	–	–
	15	3	30	Yes	230	230	230	230	230	170	–	–	–
	15	3	45	Yes	230	230	230	230	230	230	–	–	–
	15	3	60	Yes	230	230	230	230	230	230	–	–	–
	15	3	75	Yes	230	230	230	230	230	230	–	–	–
	15	3	90	Yes	230	230	230	230	230	230	–	–	–

Actuator Note:
For all spring ranges, actuators must be operated from a self relieving controller, 3-way solenoid valve or a positioner. Consult factory for actuator selections on valves with high temperature graphite seals.

Actuator Technical Data

Temperature range	PN 4000	14°F to 390°F
	PN 6000	4°F to 230°F
Maximum Operating Pressure	PN 4200 and PN 4300	90 psi
	PN 4400	60 psi
	PN4500 and PN 4600	40 psi
	PN6100 to PN 56400	90 psi
	PN 6500 and PN 6600	35 psi
Linearity		2%
Hysteresis		3% Maximum

Materials

Diaphragm Housing	Pressed Steel
Diaphragm	Fabric reinforced nitrile rubber
Spring	Spring Steel
Yoke (PN4000 and PN 6120)	Aluminum
Pillars	Steel
Spindle	Stainless Steel

Air Supply Connection

PN 4000	1/4" NPT
PN 6100/PN 6200	1/8" NPT
PN 6300 to PN 6600	1/4" NPT

Compressed Air Consumption

	Travel	Volume (sq.in.)
PN 4200	3/4"	36.6
PN 4300	3/4"	61
PN 4400	3/4" / 1-3/16"	85.4 / 128.1
PN 4500	3/4" / 1-3/16"	146.5 / 219.7
PN 4600	3/4" / 1-3/16"	231.9 / 347.8
PN 6100	3/4"	20.1
PN 6200	3/4"	60.4
PN 6300	3/4" / 1-3/16"	84.8 / 100.69
PN 6400	3/4" / 1-3/16"	144 / 169.6
PN 6500	3/4" / 1-3/16"	378.3 / 433.3
PN 6600	3/4" / 1-3/16"	512.6 / 585.8

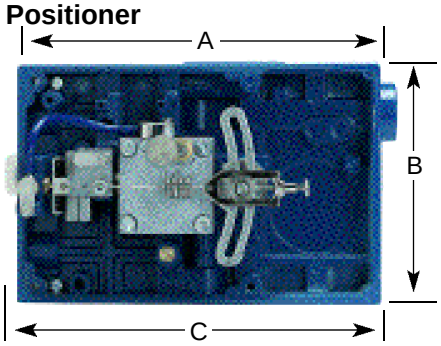
Step 5 Select the positioner

A positioner provides quick response, accurate control, repeatability and higher closing forces for optimum solution.

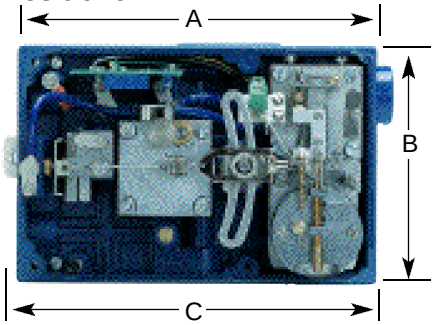
Technical specification

	PP5 Positioner	EP5 Positioner
Operating mode	Pneumatic/Pneumatic	Electro / Pneumatic
Case material	Cast aluminium with anti-corrosive paint	
Enclosure rating	IP54	IP54 (ISP5 to EEx-ia-IIC-T6, T5, T4 CESI)
Air connections	1/4" NPT	1/4" NPT
Maximum air supply pressure	90 psig	90 psig
Air consumption	13.06 ft^3/h at 90 psig	13.06 ft^3/h at 90 psig
Electrical connections	-	PG13.5
Input signal	3-15 psi	4 - 20 mA
Impedance	-	200 ohm
Hysteresis	0.5 %	0.5 %
Sensitivity	-	Less than 0.2 % of span
Ambient temperature operating range	-4 to + 250˚F	0 to + 175˚F
Weight	5.5 lbs	6.5 lbs
FK21 for actuator PN5100 - 5400, 6100 - 6400 FK28 for actuator PN5500 - 5600, 6500 - 6600	Fixing kit to mount compressed air filter regulator MPC2 to the actuator for conditioning of supply air.	

PP5 Positioner



EP5 Positioner



Positioner selected is: EP5
(Nominal) in inches and millimeters

A	B	C	Depth
6.5" (165)	4.3" (110)	6.9" (175)	4.3" (110)

Positioners from Spirax Sarco consist of both pneumatic and electro pneumatic types, with an intrinsicaly safe option, and provide the perfect compliment to the Spirax Sarco range of pneumatic valve actuators.

Operating on the balanced force principle Spirax Sarco positioners provide close control and accuracy just where you need it, in the pipeline.

User benefits

- Provides increased valve closing force independent of the control signal on applications where pipeline pressures dictate the need for actuators with large closing forces.
- Combines the intelligence of electronics with the strength and simplicity of pneumatics
- Lift limiting capability of the positoner offers the ability to reduce the full lift capacity of the control valve.
- Split ranging capability allows the control of two actuators from one control signal.
- Valve action converted to “Soft Landing” which extends valve life by avoiding valve seat and plug slam normally associated with pneumatic control systems.

Ancillary Equipment

IPC4A Electro-Pneumatic Transducer

Model	Type
PP5	Pneumatic to pneumatic signaling
EP5	Electronic to pneumatic signaling
ISP5	Electronic to pneumatic signaling with enclosure ingress protection of IP54 (approximate equivalent of Nema 3 enclosure) and certified intrinsically safe to CENELEC EEx-ia-llc T4, T5, T6 (approximate equivalent of FM Class I and II Div. I, Groups A, B, C, D).
IPC4A	Electronic to pneumatic signaling
IPC4AEx	electronic to pneumatic signaling with enclosure ingress protection of IP54 (approximate equivalent of Nema 3 enclosure) and certified intrinsically safe to CENELEC EEx-ia-llc T4, T5, T6 (approximate equivalent of FM Class I and II Div. I, Groups A, B, C, D).

User benefits

- Fast response time resulting in faster loop control and savings in process materials.
- Compact size permits use in restricted areas.
- Field adjustable for direct or reverse action.

MPC2 Air Filter Regulator

The Spirax Sarco MPC2 high efficiency combination filter coalescing regulator provides high quality compresed air for instruments and contol systems. The MPC2 comes complete with a bracket for easy mounting to PN5000 and PN6000 Series Actuators.

User benefits

- Perfect air quality for precision control.
- Reduce down time.
- Long element life.

Series 600 Pneumatic Controllers

This family of Spirax Sarco Controllers are assembled in a die cast aluminum splash proof housing suitable for wall or flush panel mounting.

Controllers are available for pressure or temperature control for proportional (P) control with 5 to 200% adjustable proportional band and manual reset or proportional plus integral (PI) control with 5 to 200% adjustable proportional and 0.1 to 20 repeat per minute adjustable reset action.

The range of pneumatic controllers can be used in conjuction with Spirax Sarco pneumatic actuators and positoners.

User benefits

- Provides increased valve closing force independent of the control signal on applica tions where pipeline pressures dictate the need for actuators with large closing forces.
- Combines the intelligence of electronics with the strength and simplicity of pneumatics.
- Lift limiting capabilitty of the positoner offers the ability to reduce the full lift capacity of the control valve.
- Split ranging capability allows the control of two actuators from one control signal.
- Valve action converted to “Soft Landing” which extends valve life by avoiding valve seat and plug slam normally associated with pneumatic control systems.

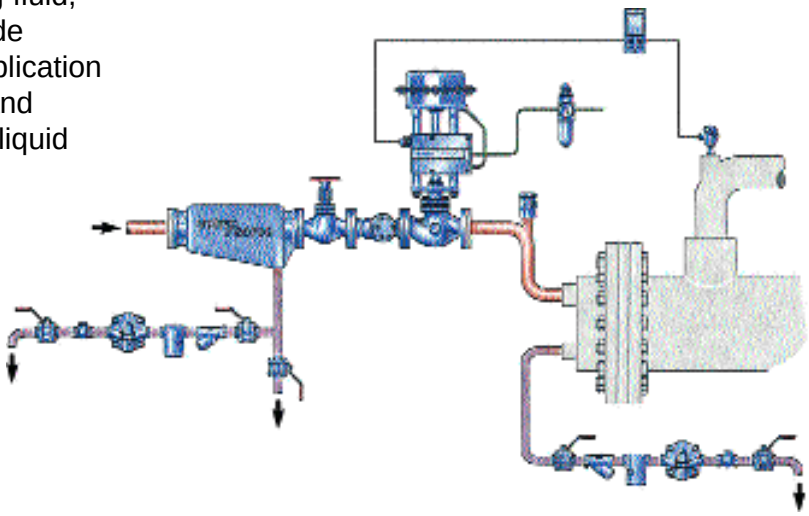
Available Range

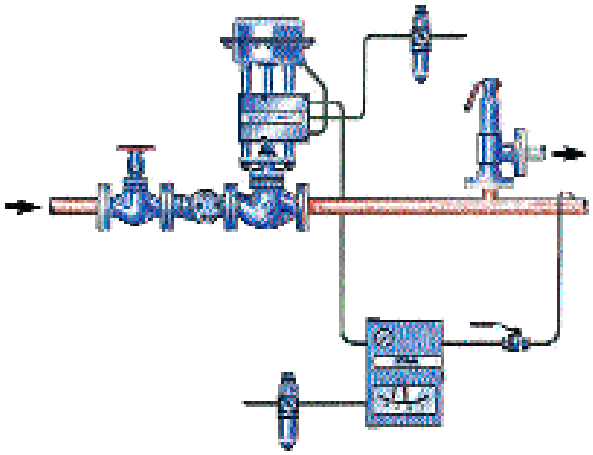
Model	Application	Control Function	Scale Ranges
662-T5-M5	Temperature	Proportional & Manual Reset (P)	0°-50°F, 0°-100°F, 50°F-150°F,
663-T5-M5	Temperature	Proportional & Integral (PI)	100°-200°F, 150°-250°F, 200°-300°F
622	Pressure	Proportional & Manual Reset (P)	0-25 psi, 0-50 psi, 25-100 psi, 50-150 psi,
623	Pressure	Proportional & Integral (PI)	100-200psi, 150-250 psi, 100-300 psi

Typical applications

Temperature control

To control the flow of primary heating fluid, whether steam or hot water, to provide constant secondary temperature. Application shows the use of pneumatic power and electronic intelligence on a steam to liquid heat exchanger.



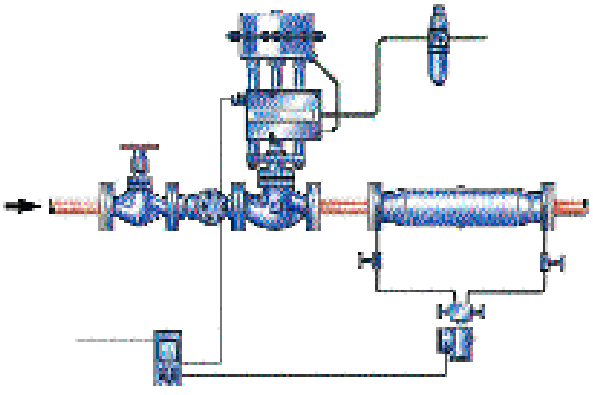


Pressure control

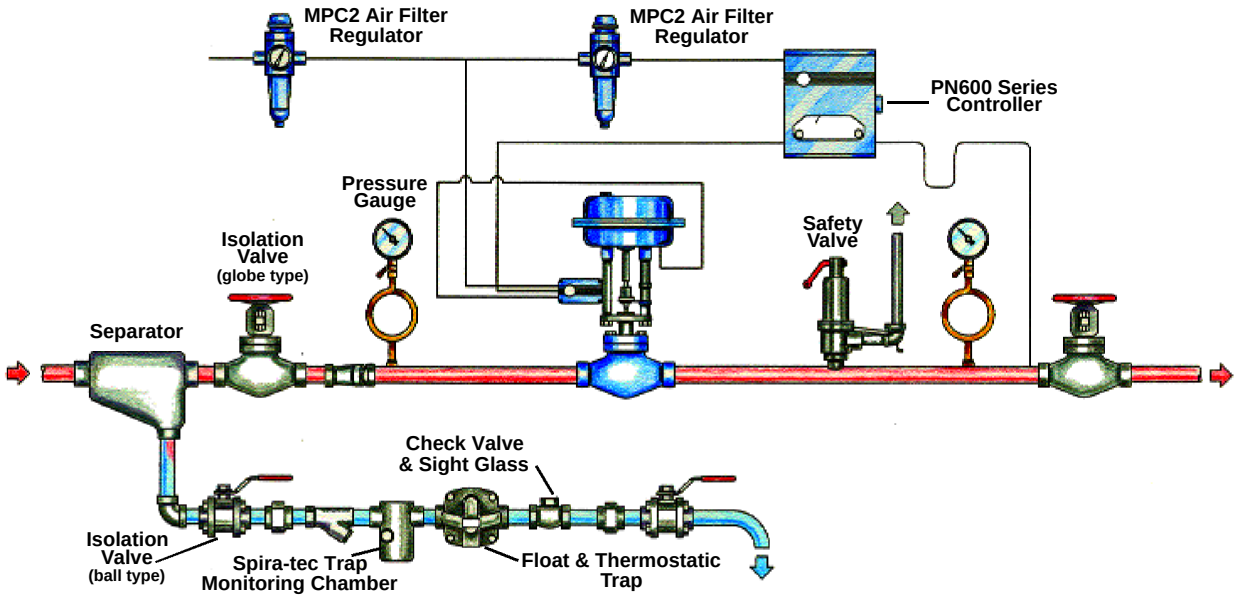
To control steam, water or air distribution lines at precise operating levels. The system shown is a complete pneumatic controls package using a controller with pneumatic valve and positioner.

Flow control

Used in conjunction with flow meters to accurately control the flow of steam, gases or fluids. The example shows the use of an electonic controller signalled from a DP cell. The controller delivers an electronic output to an electro-pneumatic positoner on the valve actuator.



Typical control valve station



Control valve station component overview

Description	Model	Size	Connection
Separator	Model S1, S2, S3, S4A	1/2” - 8”	Screwed & Flanged
Isolation valves (globe type)	A35 & BSA3	1/2” - 8”	–
Strainer	Model ITI CT, Fig. 34	1/2” - 8”	Screwed & Flanged
Pressure/Temperature Gauge	By others	–	–
KEA Valve with Actuator & Positioner	See tables	1/2” - 4”	Screwed & Flanged
Safety Valve	Series 19, SVI	1/2” - 6”	Screwed & Flanged
Spira-tec Trap Monitoring Chamber	Model ST17SG	1/2” - 1”	Screwed
Float & Thermostatic Trap	Model FTI	1/2”, 3/4”	Screwed
Check Valve & Sight Glass	SG	1/2” - 1”	Screwed
Isolation Valves (ball type)	Model 10	1/2” - 2”	Screwed
Air Filter Regulator	MPC2	1/4”	O.D. Tube
Pneumatic Controller-Temp./Pressure	Series 600	–	–

How to order the selected control valve package

Example:
The control valve package comprises:
1 1/2" KEA73 control valve with a C_{VS} of 29, flanged ANSI 125.
PN5123 actuator with 30 - 60 psi
EP5 positioner.
MPC2 filter regulator.

Typical specification

The pneumatic control shall be a 1 1/2" Spirax Sarco KEA73 ductile iron two port control valve with all stainless steel internals and equal percentage flow characteristics flanged to ANSI CL250 and coupled to a Spirax Sarco PN5123 actuator.
The actuator shall incorporate low profile springs and rolling diaphragm and be designed to provide on site conversion from fail open to fail close operation.
An electric to pneumatic EP5 positioner shall be provided with NAMUR standard mountings and MPC2 air coalescing, filter regulator.

Dimensions

K & L valve bodies

Size		1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
A	**screwed**	6.5	6.5	7.8	8.5	9.3	10.5			
	flanged			7.3		8.8	10	10.9	11.8	13.9

PN3200 and PN4200 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**LEA31 / 33**	12.8	12.9	13.3	13.5	13.5	13.7			
C		8.2	8.2	8.2	8.2	8.2	8.2			
	LEA31 (lb)	23.1	23.8	26.7	31.4	32.6	38.4			
	LEA33 (lb)			29.1		35.7	44.4			

PN3300 and PN4300 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**LEA31 / 33**	13.7	13.8	14.2	14.4	14.4	14.6			
C		11.2	11.2	11.2	11.2	11.2	11.2			
	LEA31 (lb)	31.9	32.6	35.5	40.2	41.2	47.2			
	LEA33 (lb)			37.9		44.5	53.2			

PN3400 and PN4400 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**LEA31 / 33**	16.1	16.2	16.6	16.8	16.8	17	18.2	18.4	19.3
C		13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2	13.2
	LEA31 (lb)	51.7	52.4	55.3	60	61.2	67			
	LEA33 (lb)			57.7		64.3	73	97	110	141

PN3500 and PN4500 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**LEA31 / 33**					18.6	18.8	20	20.2	21.2
C						15.9	15.9	15.9	15.9	15.9
	LEA31 (lb)					65.7	71.5			
	LEA33 (lb)					68.8	77.5	101.5	114.5	145.5

PN3600 and PN6500 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**LEA31 / 33**					19.7	19.9	21.1	21.3	22.2
C						18.3	18.3	18.3	18.3	18.3
	LEA31 (lb)					100.9	106.7			
	LEA33 (lb)					104	112.7	136.7	149.7	180.7

PN5100 and PN6100 series actuator - single spring (Total weight (lb) valve / actuator)

B	**KEA71 / 73**	14.8	14.9	15.3	15.5	15.5	15.7			
C		5.8	5.8	5.8	5.8	5.8	5.8			
	KEA71 (lb)	16.8	17	19	29.1	28.2	34			
	KEA73 (lb)	20.7	22.1	52.1		35.3	45.5			

PN5200 and PN6200 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**KEA71 / 73**	16.3	16.4	16.8	17	17	17.2			
		8.6	8.6	8.6	8.6	8.6	8.6			
	KEA71 (lb)	22.5	22.7	24.7	30.8	33.9	39.7			
	KEA73 (lb)	26.4	27.8	35.7		41	51.2			

PN5300 and PN6300 series actuator - multi-spring (Total weight (lb) valve / actuator)

B	**KEA71 / 73**	16.5	16.6	17	17.2	17.2	17.4	18.6	18.8	19.7
C		10	10	10	10	10	10	10	10	10
	KEA71 (lb)	29.7	29.9	31.9	38	41.1	46.9			
	KEA73 (lb)	12.9	13.5	16.3	18.3	19.5	21.8	28.8	34.6	45.3

PN5400 and PN6400 series actuator - multi-spring (Total weight lb) valve / actuator)

B	**KEA71 /73**	18	18.1	18.5	18.7	18.7	18.9	20.1	20.3	21.2
C		12.2	1.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2
	KEA71 (lb)	65.7	44.7	46.7	52.8	55.9	61.7			
	KEA73 (lb)	48.4	49.8	57.7		63	73.2			

PN5500 and PN6500 series actuator - multi-spring (Total weight (lb) valve / actuator)

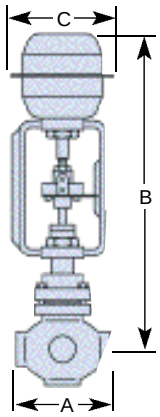
B	**KEA71 / 73**	19	19.1	19.5	19.7	19.7	19.9	21.1	21.3	22.2
C		15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4	15.4
	KEA71 (lb)	66.3	66.5	68.5	74.6	77.7	83.5			
	KEA73 (lb)	70.2	71.6	79.5		84.8	95			

PN5600 and PN6600 series actuator - multi-spring (Total weight (kg) valve / actuator)

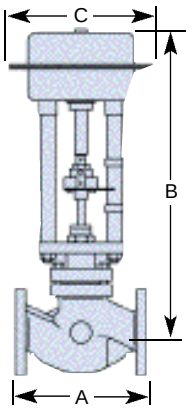
B	**KEA71 / 73**	19	19.1	19.5	19.7	19.7	19.9	21.1	21.3	22.2
C		18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3	18.3
	KEA71 (lb)	88.6	88.8	90.8	96.9	100	105.8			
	KEA73 (lb)	92.5	93.9	101.8		107.1	117.3			

L & K series additional weight increase/decrease

	LEA31 (LB)	-0.7	-0.6	-0.8	-1.6	-2.7	-0.2			
	LEA31 (LB)			-4.4		-5.5	-5.2	-4.3	-4.6	-4.5
	KEA41 (lb)	.7	.7	1.3	1.8	2.1	2.5	6.1	8.9	14.3
	KEA43 (lb)	1.1	1/1	2.2	2.4	2.8	3.7	7.3	10.3	16.7
	KEA61 (lb)	.7	1.1	2.2	2.4	2.8	3.7	7.3	10.3	16.7
	KEA63 (lb)	1.1	1.1	2.2	2.4	2.8	3.7	7.3	10.3	16.7



Single spring actuator



Multi-spring actuator

Dimensions approximate in inches.

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