spirax sarco

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CH Issue 4

SPIRA-TROL
DN125 to DN200
KE, KF and KL Two-port Control Valves

Description

SPIRA-TROL is a range of two-port single seat globe valves with cage retained seats conforming to EN standards. These valves are available in three body materials in sizes ranging from DN125 to DN200. When used in conjunction with a pneumatic or electric linear actuator they provide characterised modulating or on/off control.

SPIRA-TROL valve characteristic - options:

KE	**Equal percentage modified (E) -** Suitable for most modulating process control applications providing good control at all flowrates.
KF	**Fast opening (F) -** For on/off applications only.
KL	**Linear (L) -** Primarily for liquid flow control where differential pressure across the valve is constant.

Important note: Throughout this document, reference has been made to the standard KE control valve. With the exception of trim type, the KE, KF and KL control valves are identical.

SPIRA-TROL valve options:

Stem sealing	**PTFE seals**	Standard
	Graphite packing	High temperature applications
Seating	**Metal-to-metal**	431 stainless steel - standard
	Soft seating	PTFE for tight shut-off
	Hard facing	316L stainless steel with Stellite 6 facing - for more arduous applications
Bonnet type	**Standard bonnet**	
Trim	**Standard trim**	
	Low noise cage	

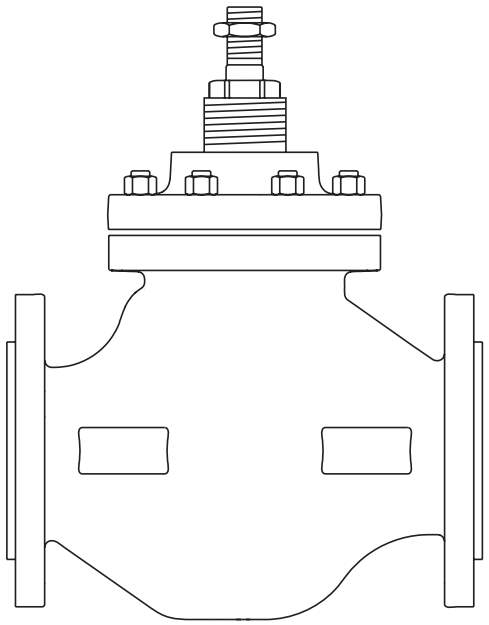
SPIRA-TROL two-port control valves are compatible with the following actuators and positioners:

Electric	EL5600 series
Pneumatic	PN1000, PN9400 and TN2000
Positioners	PP5 (pneumatic) or EP5 (electropneumatic)
	ISP5 (intrinsically safe electropneumatic)
	SP200is and SP200 (microprocessor based electropneumatic)
	SP300 (digital communications)

Refer to the relevant Technical Information sheet for further details.

Sizes and pipe connections

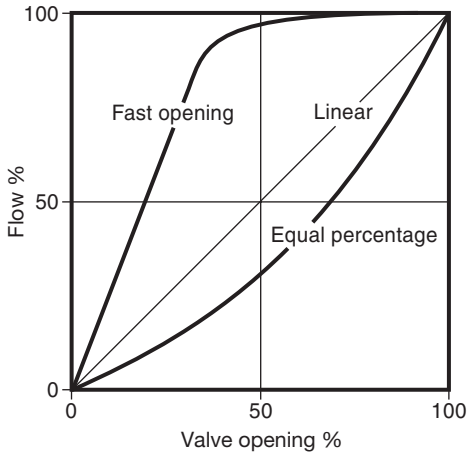
Type	Body material	Connections	Size range
KE43	Cast steel	Flanged PN16, PN25, PN40, JIS 10, JIS 20, KS 10 and KS 20	DN125, DN150 and DN200
KE63	Stainless steel	Flanged PN16, PN25, PN40, JIS 10, JIS 20, KS 10 and KS 20	DN125, DN150 and DN200
KE73	SG iron	Flanged PN16, PN25, JIS 10 and KS 10	DN125, DN150 and DN200



Technical data

Plug design			Parabolic
Leakage	Metal-to-metal		Class IV
	Soft seal	Unbalanced	Class VI
		Balanced	Class IV
Rangeability			50:1
Travel	DN125 to DN200		70 mm

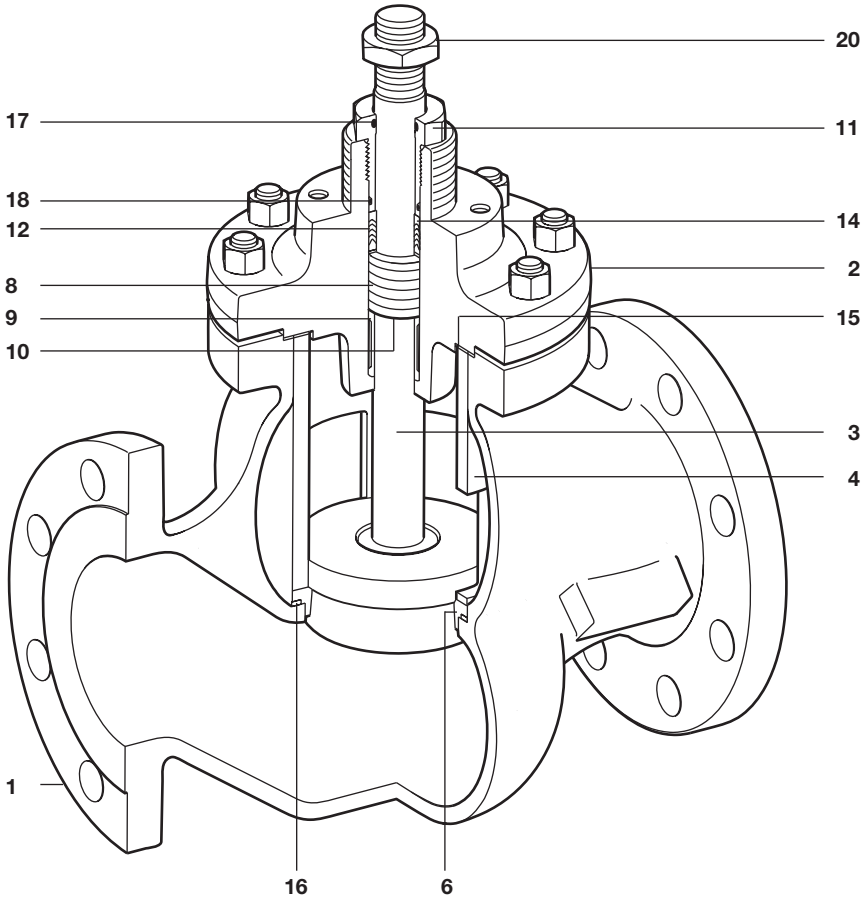
Typical flow characteristic curves



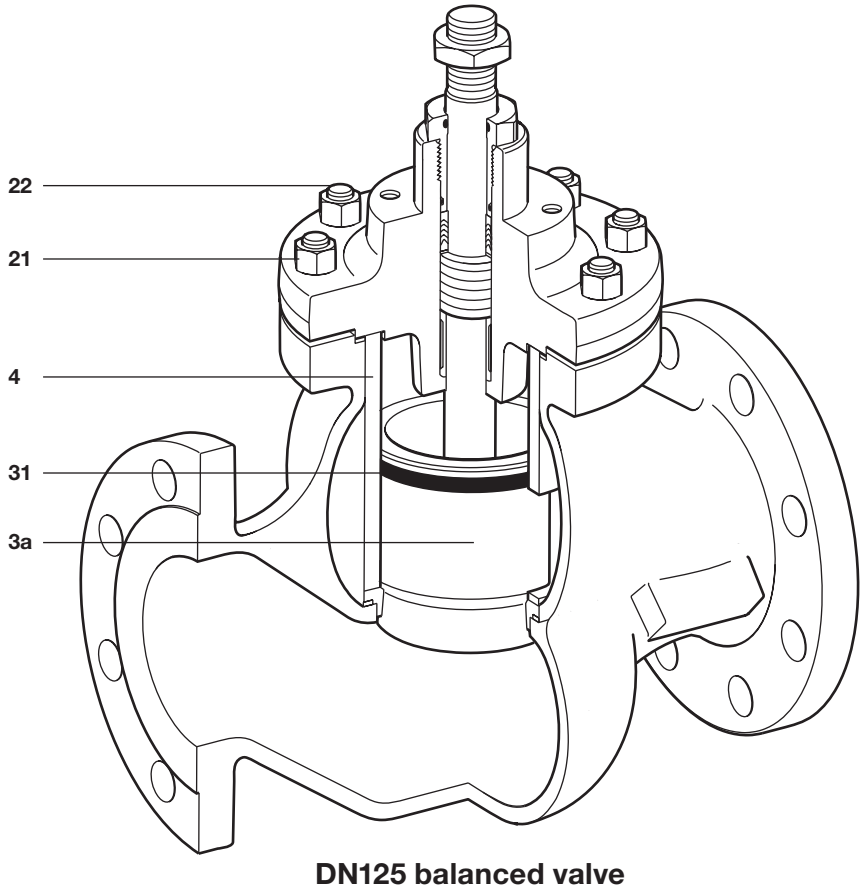
Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to change the specification without notice.

Materials

Type	No.	Part		Material	
KE43	1	Body		Cast steel	BS EN 10213 GP240GH+N (1.0619)
	2	Bonnet		Cast steel	BS EN 10213 GP240GH+N (1.0619)
KE63	1	Body		Stainless steel	EN 10213 (1.4408)
	2	Bonnet		Stainless steel	EN 10213 (1.4408)
KE73	1	Body		SG iron	EN-GJS-400-18U-LT
	2	Bonnet		SG iron	EN-GJS-400-18U-LT
All versions	3	Plug and stem assembly		Stainless steel	
	4	Cage		Stainless steel	
	6	Valve seat ring		Stainless steel	
	9	Bearing		Stellite	
	10	Spacer (not used in DN125 valves)		Stainless steel	
	11	Gland nut		Stainless steel	
	14	Washer		Stainless steel	
	15	Bonnet gasket		Stainless steel / graphite	
	16	Seat gasket		Stainless steel / graphite	
	20	Stem nut		Stainless steel	
	21	Standard bonnet nut	KE43	Carbon steel	BS EN ISO 898-1 Grade 8.8
			KE63	Stainless steel	A2-80
			KE73	Carbon steel	BS EN ISO 898-1 Grade 8.8
		High temperature bonnet nut		Stainless steel	DIN ISO 3506 A2-80
	22	Standard stud	KE43	Carbon steel	BS EN ISO 898-1 Grade 8.8
			KE63	Stainless steel	A2-80
			KE73	Carbon steel	BS EN ISO 898-1 Grade 8.8
		High temperature bonnet nut		Stainless steel	DIN ISO 3506 A2-80
PTFE gland versions	8	Spring		Stainless steel	
	12	Chevron packing set		PTFE	
	17	Stem 'O' ring		Viton	
	18	Bonnet 'O' ring		Viton	
High temperature gland versions	26	Gland packing		Graphite	
Balanced versions	3a	Plug and stem assembly		Stainless steel	
	4	Cage		ENP / stainless steel	
	31	Balanced seal		Graphite	



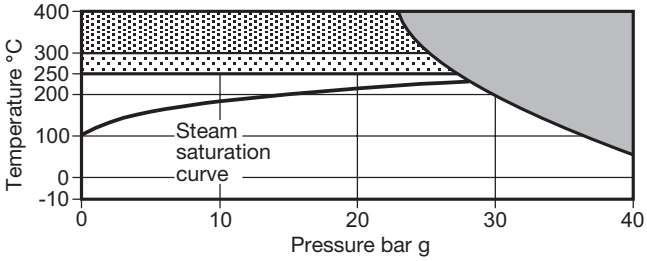
DN125 unbalanced valve



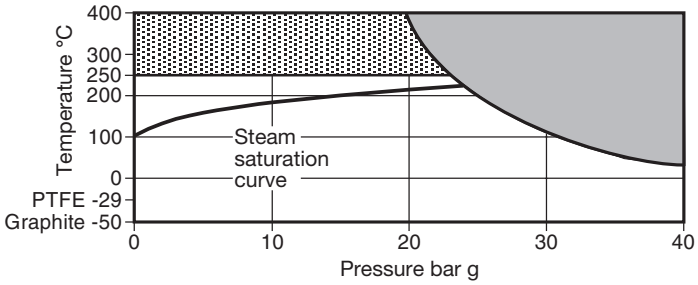
DN125 balanced valve

Pressure/temperature limits

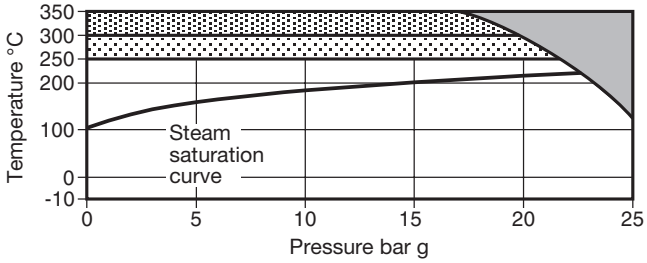
KE43 (Cast steel)



KE61 and KE63 (Stainless steel)



KE71 and KE73 (SG iron)



The product **must not** be used in this region.

High temperature packing is required for use in this region.

High temperature bolting and packing is required for use in this region.

Body design conditions	KE4_		PN40
	KE6_		PN40
	KE7_		PN25
Maximum design pressure	KE4_		40 bar g @ 50°C
	KE6_		36.4 bar g @ 50°C
	KE7_		25 bar g @ 120°C
Maximum design temperature	KE4_		400°C
	KE6_		400°C
	KE7_		350°C
Minimum design temperature	KE4		-10°C
	KE6_		-50°C
	KE7_		-10°C
Maximum operating temperature	Standard packing PTFE chevron		250°C
	PTFE soft seat (G)		200°C
	PEEK seat (K)		250°C
	High temperature packing (H)		400°C
	Extended bonnet (E) with PTFE chevron		250°C
	Extended bonnet (E) with graphite packing		400°C
	Bellows (B)		250°C
	Bellows (C)		400°C
	Bellows (D)		400°C
Minimum operating temperature	KE4		-10°C
	KE6_	PTFE packing	-29°C
		Graphite packing	-50°C
	KE7_		-10°C

Note: For lower operating temperatures consult Spirax Sarco.

Maximum differential pressures:	See relevant actuator Technical Information sheet	
Maximum cold hydraulic test pressure of:	KE4_	60 bar g
	KE6_	60 bar g
	KE7_	38 bar g

Warning: If the valve is fitted with a bellows it must be removed if hydraulic testing is to be done.

Notes:

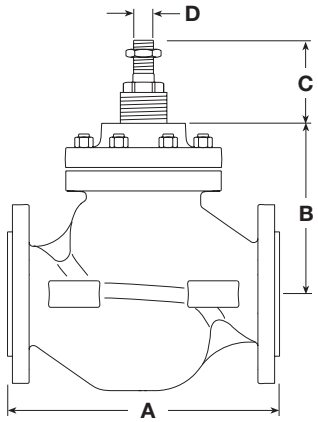
1. Where the process fluid temperature is sub-zero and the ambient temperatureis below +5°C, the external moving parts of the valve and actuator must be heat traced to maintain normal operation.
2. When selecting a valve with a bellows sealed bonnet, the pressure/temperature limits of the bellows must be read in conjunction with the valve pressure/temperature limits shown below.

K_{VS} values

Size				**DN125**	**DN150**	**DN200**
Travel					**70 mm**	
Trim	Full port		Equal %	245	370	580
			Linear	260	390	640
			Fast opening	260	390	640
	Reductions	Trim 1	Equal %	200	287	370
			Linear	200	287	550
		Trim 2	Equal %	100	132	232
			Linear	100	132	232
		Trim 3	Equal %	63	103	163
			Linear	63	103	163
Low noise trim	Full port		Linear	245	300	516
	Reductions	Trim 1	Linear	219	255	457
		Trim 2	Linear	115	200	350
		Trim 3	Linear	75	152	265

Dimensions / weights for the SPIRA-TROL (approximate) in mm and kg

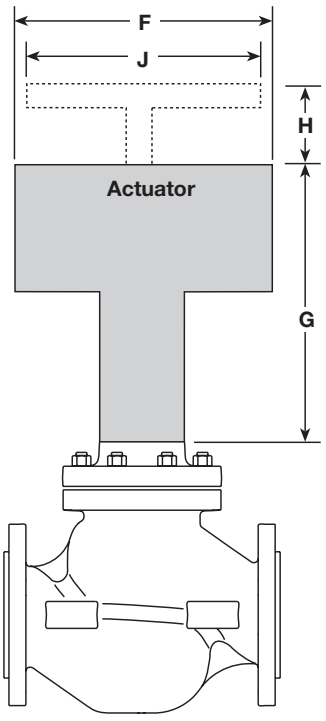
Valve size	A			B	C	D	Weights	
	PN16 PN25 PN40	KS 10 JIS 10	KS 20 JIS 20				Unbalanced	Balanced
DN125	400	403	425	257	125	M30	81	83
DN150	480	451	473	275	125		121	124
DN200	600	543	568	341	125		210	220



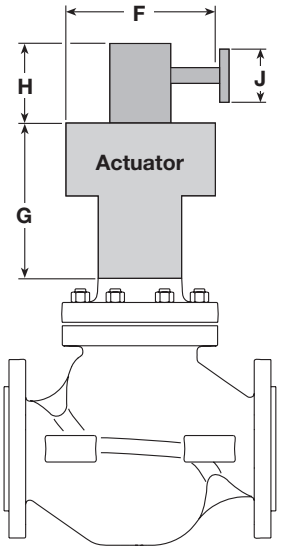
Flanged version

Dimensions / weights for the PN actuator range (approximate) in mm and kg

Actuator range	F	G	H	J	Weight	
					Actuator	With handwheel
PN1600 and PN2600	465	1 116	-	-	70	+ 21
PN9400 and variants	520	-	719	-	120	+ 24
TN2277E and variants	532	863	330	330	116	+ 21
TN2277NDA and variants	532	863	-	-	98	-



Top mounted handwheel



Side mounted handwheel

Dimensions / weights for the EL actuator (approximate) in mm and kg

Actuator range	F	G	Weight
EL565_	227	807	20.0

Spare parts - SPIRA-TROL (unbalanced valve)

The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares.

Note: When placing an order for spare parts please specify clearly the full product description as found on the label of the valve body, as this will ensure that the correct spare parts are supplied.

Available spares - KE, KF and KL

Gasket set		**B, G**
Stem seal kits	**PTFE** chevrons	**C**
	Graphite packing	**C2**
PTFE to Graphite conversion kit		**C1**
Plug stem and seat kit	* **Equal percentage trim** (No gaskets supplied)	**D, E**
	Fast opening trim (No gaskets supplied)	**D1, E**
	Linear trim (No gaskets supplied)	**D2, E**
PFTE soft seal		**H**
Soft seat conversion kit		**J**

* Specify if reduced trim.

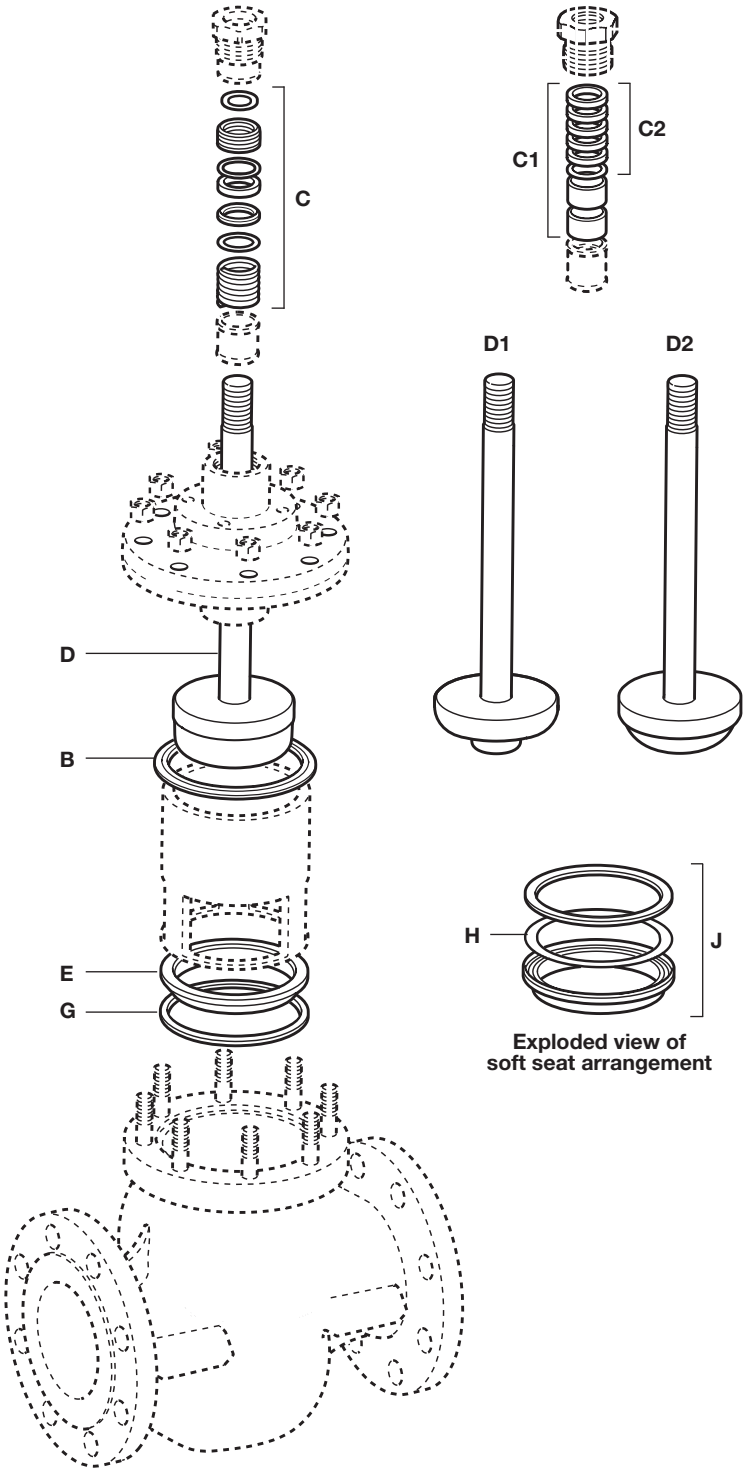
How to order spares

Always order spares by using the description given in the column headed 'Available spares', and state the size and type of valve including the full product description of the product.

Example: 1 - PTFE stem seal kit for a Spirax Sarco DN150 SPIRA-TROL two-port PTSUSS.2 K_V 370 control valve.

How to fit spares

Full fitting instructions are given in the Installation and Maintenance Instructions supplied with the spare.



Exploded view of soft seat arrangement

Spare parts - SPIRA-TROL (balanced)

The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares.

Note: When placing an order for spare parts please specify clearly the full product description as found on the label of the valve body, as this will ensure that the correct spare parts are supplied.

Available spares - KE, KF and KL

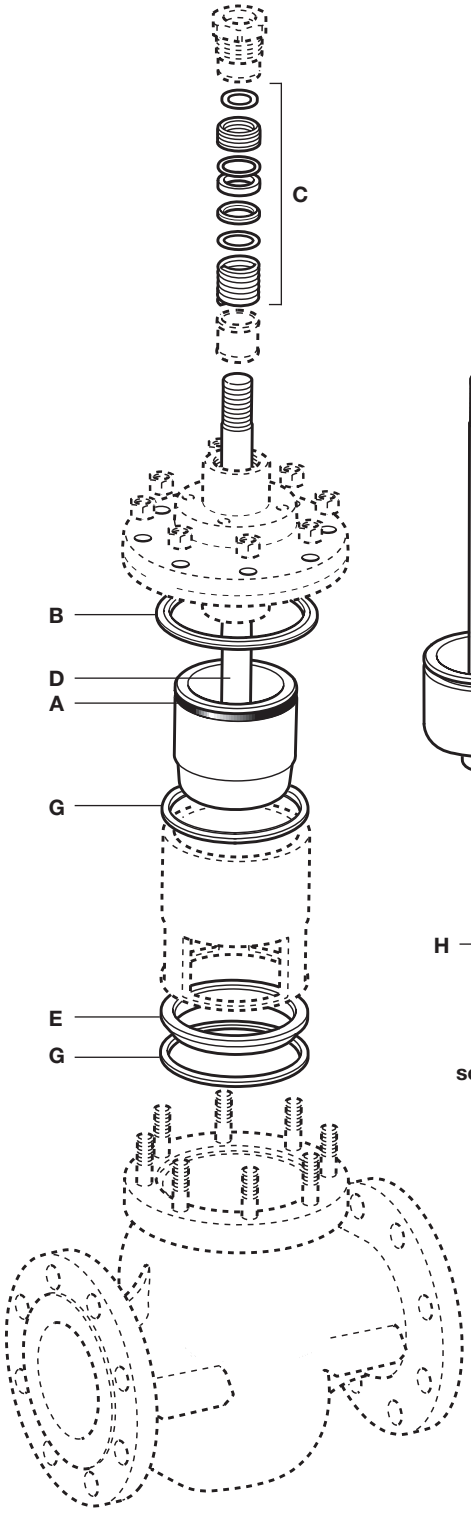
Gasket set		**A, B, G**
Stem seal kits	**PTFE** chevrons	**C**
	Graphite packing	**C2**
PTFE to Graphite conversion kit		**C1**
Plug stem and seat kit	* **Balanced equal percentage trim** (No gaskets supplied)	**A, D, E**
	Balanced fast opening trim (No gaskets supplied)	**A, D1, E**
	Balanced linear trim (No gaskets supplied)	**A, D2, E**
PFTE soft seal		**H**
Soft seat conversion kit		**J**

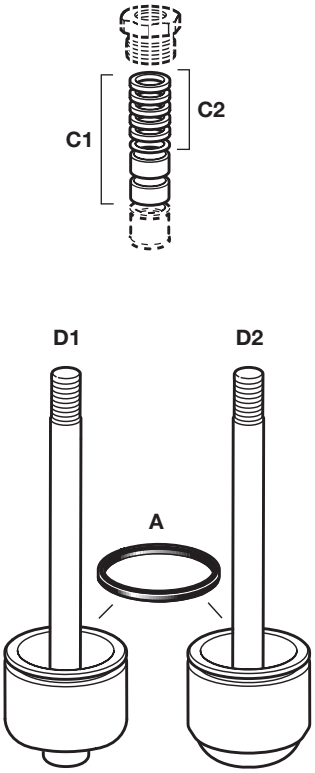
* Specify if reduced trim.

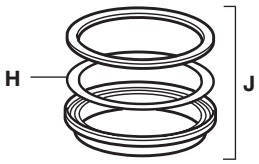
How to order spares
Always order spares by using the description given in the column headed 'Available spares', and state the size and type of valve including the full product description of the product.

Example: 1 - PTFE stem seal kit for a Spirax Sarco DN150 SPIRA-TROL two-port KE43 PTSBSS.2 Kv 370 control valve.

How to fit spares
Full fitting instructions are given in the Installation and Maintenance Instructions supplied with the spare.







Exploded view of soft seat arrangement

SPIRA-TROL selection guide:

Valve size	DN125, DN150 and DN200	**DN150**
Valve series	K = K series 2-port control valve	**K**
Valve characteristic	E = Equal percentage (not available for low noise option) F = Fast opening (not available for low noise option) L = Linear	**E**
Flow direction	T = Flow over Blank = Flow under	
Body material	4 = Carbon steel 6 = Stainless steel 7 = SG iron	**4**
Connections	3 = Flanged	**3**
Stem sealing	P = PTFE H = Graphite	**P**
Seating	T = 431 stainless steel G = PTFE soft seat W = 316L with stellite 6 facing	**T**
Type of trim	S = Standard trim P = Low noise cage (Linear balanced trim only)	**S**
Trim balancing	B = Balanced U = Unbalanced	**U**
Bonnet type	S = Standard	**S**
Bolting	S = Standard H = High temperature	**S**
Series	2 = .2	**.2**
K_{VS}	To be specified	**K_{VS} 370**
Connection type	To be specified	**Flanged PN40**

Selection example:

DN150	-	K	E	4	3	P	T	S	U	S	S	.2	-	K_{VS} 370	-	Flanged PN40

How to order

Example: 1 off Spirax Sarco DN150 SPIRA-TROL KE43PTSUSS.2 K_{VS} 370 two-port control valve having flanged PN40 connections.