



**spirax sarco**

TI-P078-02  
CH Issue 10

**KA31, KA33, KB31, KB33 and KC31  
Cast Iron  
Self-acting Control Valves**

**Description**

The KA, KB and KC range of two-port valves are used in conjunction with Spirax Sarco SA control systems to provide a self-acting temperature control unit. Alternatively, they can be used as electrically actuated temperature control valves by fitting an EL7200 Series electric actuator with a suitable temperature transmitter and controller.

**Available types**

- KA31** Normally open with screwed connections.
- KA33** Normally open with flanged connections.
- KB31** Normally open with phosphor bronze balancing bellows and screwed connections.
- KB33** Normally open with phosphor bronze balancing bellows and flanged connections.
- KC31** Normally open with stainless steel balancing bellows and screwed connections.

**Note:** Pressure balancing bellows enables the valve to operate against higher differential pressures.

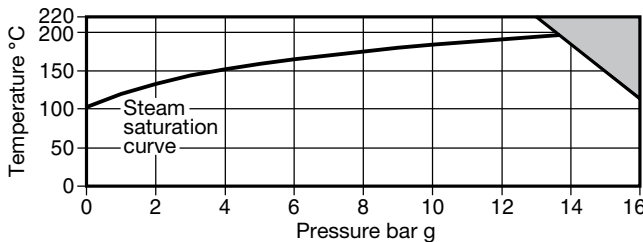
**Standards**

These products fully comply with the requirements of the European Pressure Equipment Directive 97/23/EC and carry the CE mark when so required.

**Certification**

As standard these products are available with a manufacturers' Typical Test Report. **Note:** All certification/inspection requirements must be stated at the time of order placement.

**Pressure / temperature limits**



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

Body design conditions	PN16					
Maximum design pressure	16 bar g @ 120°C					
Maximum design temperature	220°C @ 13.8 bar g					
Minimum design temperature	-10°C					
Maximum operating temperature	220°C					
Minimum operating temperature	0°C					

**Note:** For lower operating temperatures consult Spirax Sarco

	Size	DN15	DN20	DN25	DN32	DN40	DN50
Maximum differential pressure bar	<b>KA31</b>	13.0	10.3	4.5	3.0	2.0	1.5
	<b>KA33</b>	13.0	10.3	4.5	3.0	2.0	1.5
	<b>KB31</b>	-	-	10.3	9.0	8.2	6.9
	<b>KB33</b>	-	-	10.3	9.0	8.2	6.9
	<b>KC31</b>	-	-	-	-	13.0	13.0

Designed for a maximum cold hydraulic test pressure of 24 bar g

**Sizes and pipe connections**

**Screwed** BSP (BS 21 parallel) or NPT:

**KA31** ½", ¾", 1", 1¼", 1½" and 2"

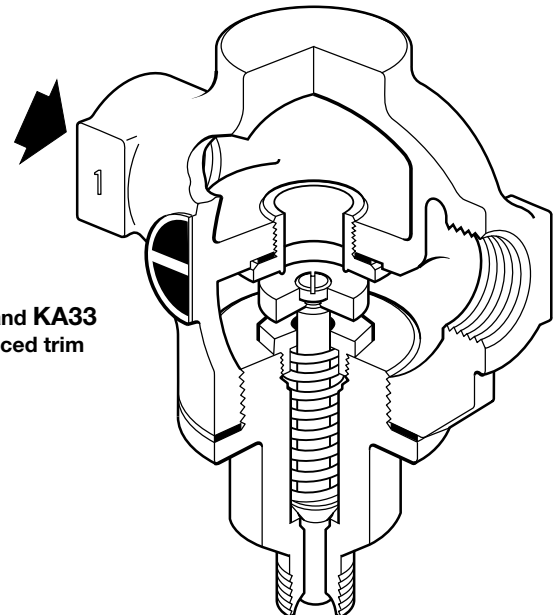
**KB31** 1", 1¼", 1½" and 2"

**KC31** 1½" and 2"

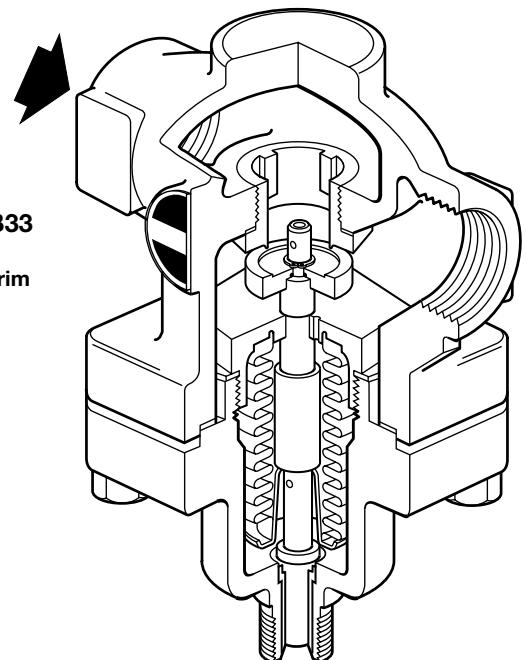
**Flanged** EN 1092 PN16 and BS 10 Table F:

**KA33** DN15, DN20, DN25, DN32, DN40 and DN50

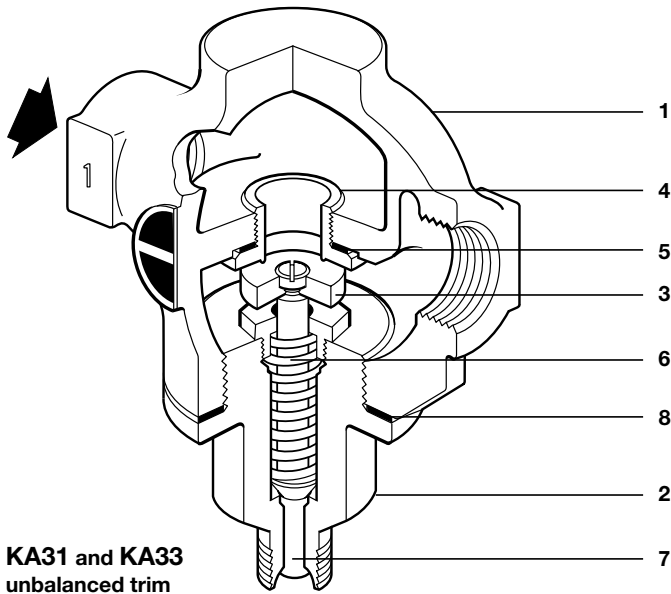
**KB33** DN25, DN32, DN40 and DN50



**KA31 and KA33 unbalanced trim**

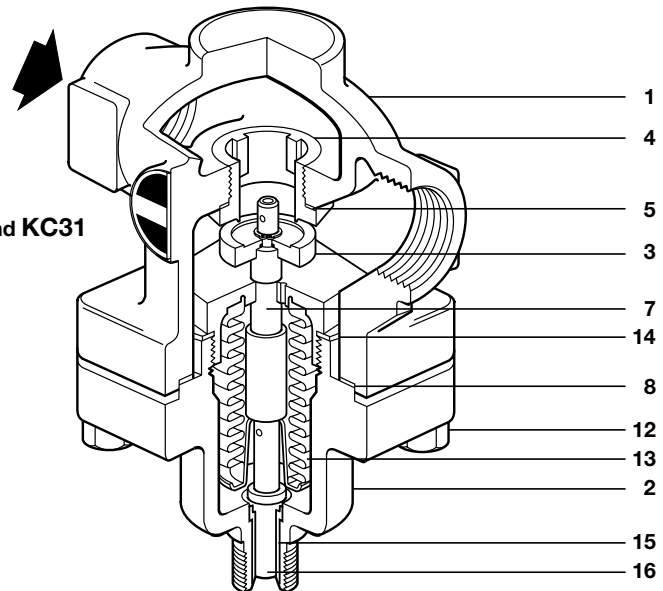


**KB31, KB33 and KC31 balanced trim**



**KA31 and KA33**  
unbalanced trim

**KB31, KB33 and KC31**  
balanced trim



## Materials

No. Part		Material	
1	Body	Cast iron	DIN 1691 GG 25
2	Bonnet	KA and KB	Cast iron DIN 1691 GG 25
		KC - 1½"	Cast iron DIN 1691 GG 25
	KC - 2"	Steel	EN 10213 GP240 GH+N
3	Valve head	Stainless steel	BS 970 431 S 29
4	Valve seat ring	Stainless steel	BS 970 431 S 29
5	Valve seat gasket	DN15 - DN25	Mild steel BS 1449 CS 4
		DN32 - DN50	Reinforced exfoliated graphite
6	Return spring	Stainless steel	BS 2056 302 S 26
7	Stem	KA and KB	Brass BS 2874 CZ 121
		KC	Stainless steel BS 970 321S20
8	Bonnet gasket	Reinforced exfoliated graphite	
12	Bonnet studs	Steel	BS 4439 Gr. 8.8
	Bonnet nuts	Steel	BS 3692 Gr. 8
13	Bellows	KB	Phosphor bronze EN 12449 Cu Sn 6
		KC	Stainless steel AISI 316 L
14	Bellows gasket	Reinforced exfoliated graphite	
15	Bonnet bush	Brass	BS 2874 CZ 121
16	Plunger	Brass	BS 2874 CZ 121

**K<sub>v</sub> values**

Size	DN15	DN20	DN25	DN32	DN40	DN50
KA31, KA33	2.90	4.64	9.80	16.48	23.70	34.00
KB31, KB33	-	-	9.80	16.48	23.70	34.00
KC31	-	-	-	-	16.48	34.00

For conversation: C<sub>v</sub> (UK) = K<sub>v</sub> x 0.963 C<sub>v</sub> (US) = K<sub>v</sub> x 1.156

**Capacities**

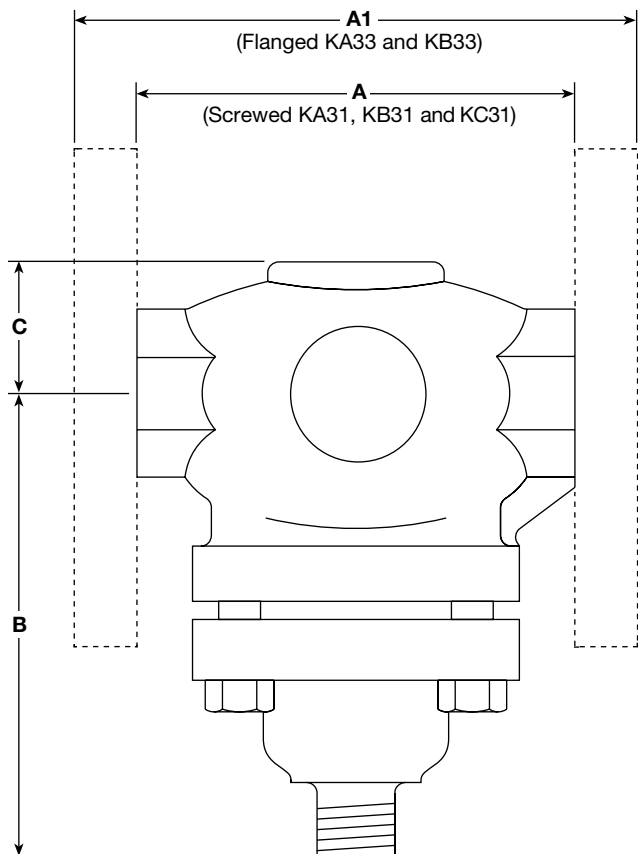
For saturated steam sizing capacities see TI-GCM-08.  
For water valve sizing capacities see TI-GCM-09.

**Dimensions/weights (approximate) in mm and kg  
KA31 and KA33**

Size	PN16		BS 10'F'		Weight		
	A	A1	A1	B	C	Scr.	Flg.
DN15-1/2"	90	130	130	105	37	1.3	3.3
DN20-3/4"	104	150	147	105	37	1.6	4.3
DN25-1"	136	160	157	107	51	3.2	5.7
DN32-1 1/4"	144	180	180	110	-	5.1	8.8
DN40-1 1/2"	150	200	200	110	-	6.3	11.0
DN50-2"	180	230	230	110	-	7.8	13.0

**KB31, KB33 and KC31**

DN25-1"	136	160	157	138	51	3.4	5.9
DN32-1 1/4"	144	180	180	152	51	5.7	9.1
DN40-1 1/2"	150	200	200	152	62	6.9	11.2
DN50-2"	180	230	230	152	71	8.8	13.4



**Spare parts**

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

**Available spares**

**KA31 and KA33**

Valve seat assembly	A, D, E, L
Set of all gaskets	E, L
Set of bonnet studs and nuts (set of 4)	S

**KB31, KB33 and KC31**

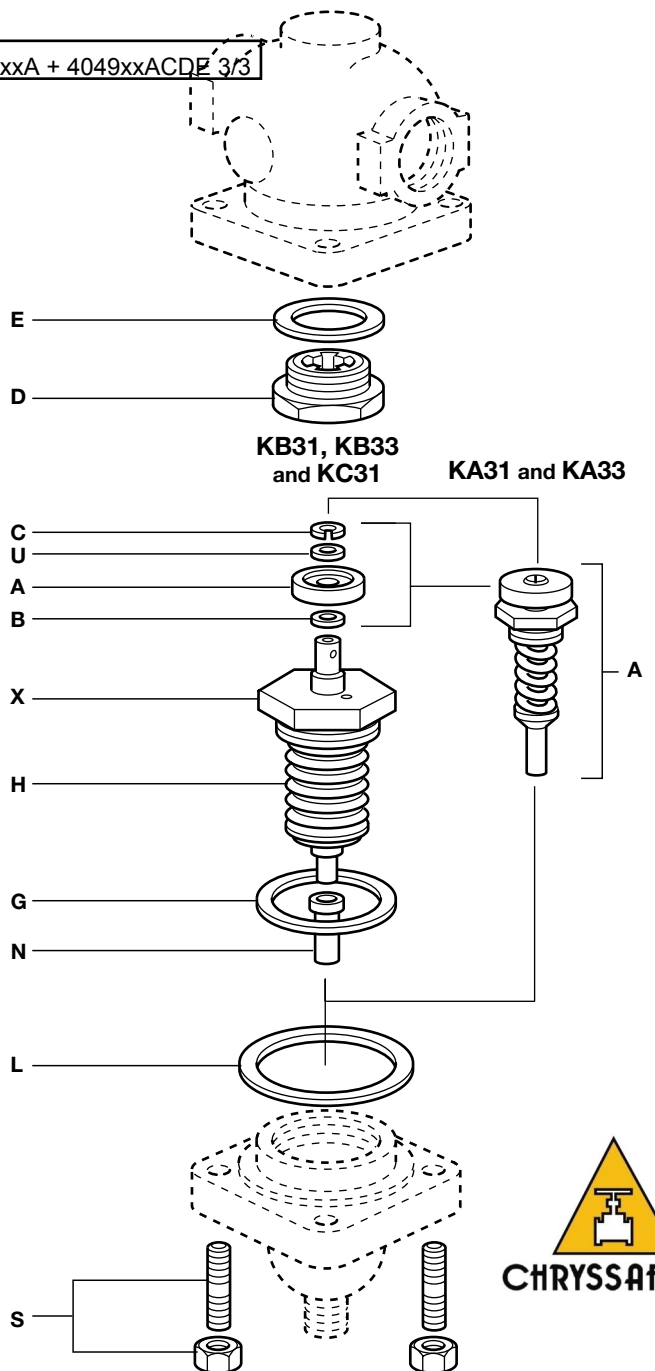
Valve seat assembly (excluding bellows and stem assembly)	A, B, C, D, E, L, U, G
Bellows and stem assembly	G, L, N, H
Set of all gaskets	B, C, E, L, U, G
Set of bonnet studs and nuts (set of 4)	S

**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.

**Example:** 1 - Valve seat assembly for a Spirax Sarco DN32 KB31 self-acting control valve.

4038xxA + 4049xxACDE 3/3



**Safety information, installation and maintenance**

For full details see the Installation and Maintenance Instructions (IM-S21-01) supplied with the product.

**Installation note:**

The valve should be fitted in a horizontal line with the actuator vertically below the pipeline.

**How to order**

**Example:** 1 off Spirax Sarco 1 1/4" screwed BSP KA31 self-acting control valve with cast iron body.

