spirax sarco®

KA 51, KB 51, KC 51 Bronze 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 EL3500 Series electric actuator with a suitable temperature transmitter and controller.

KA 51
Normally open single seat with screwed connections.

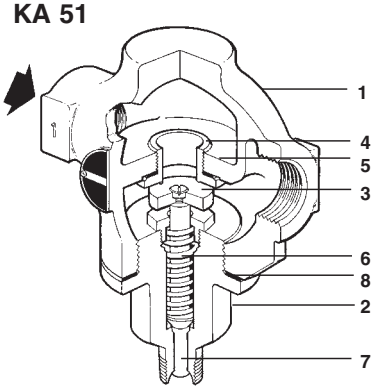
KB 51
Normally open, single seat, with a bronzpressure balancing bellow.

KC 51
Normally open, single seat with stainless steel pressure balancing bellows with screwed connections. The pressure balancing bellows enables the valve to operate against higher differencial pressures.

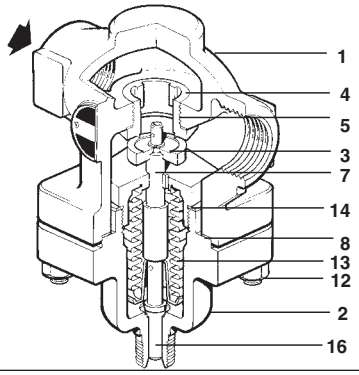
Model	KA 51, KB 51, KC 51
Sizes*	1", 1-1/4", 1-1/2", 2"
Connections	NPT
Construction	Bronze Body Stainless Steel Trim
Options	BSP Connections

* KC 51 available in sizes 1-1/2" and 2".

KA 51



KB & KC 51

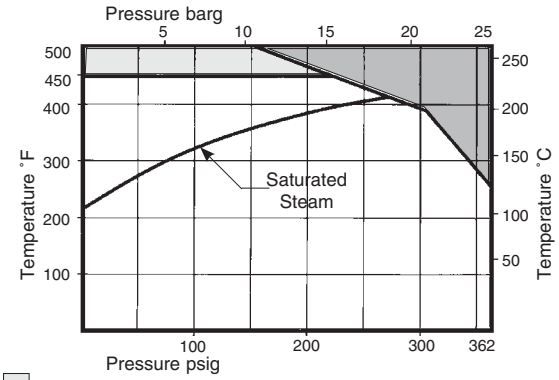


Limiting Operating Conditions

Maximum Differential Pressure

Size	KA 51*		KB 51		KC 51	
1	**65psi**	*4.5 bar*	**150 psi**	*10 bar*	—	—
1-1/4	**43 psi**	*3 bar*	**130 psi**	*9 bar*	—	—
1-1/2	**29 psi**	*2 bar*	**118 psi**	*8.2 bar*	**232 psi**	*16 bar*
2	**22 psi**	*1.5 bar*	**100 psi**	*6.9 bar*	**200 psi**	*13.8 bar*

* On liquid applications, the permissible maximum differential pressure may be affected by high static pressure. Please consult the factory if the application requires a large differential pressure with a high inlet pressure.



If a KA 51 valve is to be used in this region, a spacer (stock #0467000) must be fitted between the valve and the control system to protect the control system from overheating. The KB & KC 51 valves cannot be used with a spacer, and are limited to 450˚F

The valves must not be used in this region

The valves may be used in this region provided that the above maximum differential pressures are not exceeded.

SHUTOFF: ANSI CLASS IV

Pressure Shell Design Conditions

PMA Max. allowable pressure	362 psig/248˚F	*25 barg/120˚C*
	253 psig/428˚F	*17.5 barg/220˚C*
	152 psig/500˚F	*10.5 barg/260˚C*
TMA Max. allowable temperature	500˚F/0-152 psig	*260˚C/0-10.5 barg*

Construction Materials

No.	Part	Material	Material Spec.	Closest Equivalent
1	Body	Bronze	BS 1400 LG2	B62 UNS 83600
2	KA 51, KB 51 Bonnet*	Bronze	BS 1400 LG2	B62 UNS 83600
	KC 51 Bonnet	Steel	DIN 17245 GSC25	A216 Gr. WCB
3	Valve	Stainless Steel	BS 970 431 S29	A276 Type 431
4	Valve Seat	Stainless Steel	BS 970 431 S29	A276 Type 431
5	Valve Seat Gasket			
	1	Mild Steel	BS 1449 CS 4	A366
	1-1/4 to 2	Nickle Reinforced Exfoliated Graphite		
6	Return Spring (KA)	Stainless Steel	BS 970 302 S 25	
7	KA 51, KB 51 Push Rod	Brass	BS 2874 CZ 121	B16M
	KC 51 Push Rod	Stainless Steel	BS 970 321 S20	
8	Bonnet Gasket	Nickle Reinforced Exfoliated Graphite		
12	Bonnet Studs	Steel	BS 4439 Gr. 8.8	A354
	Bonnet Nuts		BS 3692 Gr. 8	ANSI B18.2.4.1 M
	1-1/4 & 1-1/2	M10 x 35 mm		
	2	M12 x 35 mm		
13	Bellows (KB 51)	Phosphor Bronze		
	Bellows (KC 51)	Stainless Steel	AISI 316L	
14	Bellows Gasket (KB)	Nickle Reinforced Exfoliated Graphite		
16	Plunger(KB)	Brass	BS 2874 CZ 121	B16M

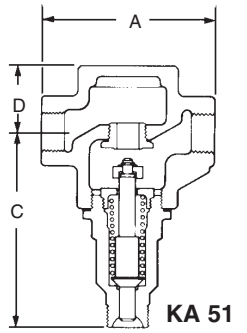
* 1-1/4", 1-1/2" & 2" sizes have a bolted bonnet

Local regulation may restrict the use of this product below the conditions quoted. Limiting conditions refer to standard connections only.
In the interests of development and improvement of the product, we reserve the right to change the specification.

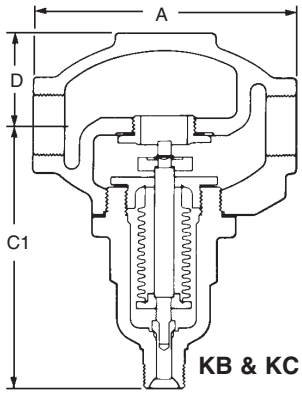
KA 51, KB 51, KC 51 Bronze Valves

Dimensions (nominal) in inches and millimeters

Size	A	C	C1	D	Weight KA	Weight KB/KC
1	**5.3** *136*	**4.2** *107*	**5.4** *138*	**2.0** *51*	**8.7 lb** *3.96 kg*	**9.1 lb** *4.17 kg*
1-1/4	**5.6** *144*	**4.3** *110*	**6.0** *152*	**2.0** *51*	**13.7 lb** *6.20 kg*	**15.4 lb** *7.00 kg*
1-1/2	**5.9** *150*	**4.3** *110*	**6.0** *152*	**2.4** *62*	**16.6 lb** *7.52 kg*	**18.3 lb** *8.32 kg*
2	**7.1** *180*	**4.3** *110*	**6.0** *152*	**2.8** *71*	**20.6 lb** *9.35 kg*	**22.7 lb** *10.30 kg*



KA 51



KB & KC 51

C_v at P Band*

Size	1	1-1/4	1-1/2	2
KA & KB	11.4	19.2	27.6	39.6
P Band (˚F)*	12.4˚	20˚	22.5˚	23.8˚
KC	—	—	19.2	39.6
P Band (˚F)*	—	—	20˚	23.8˚

* The proportional band (P Band) is the difference required between the desired set temperature and the actual controlled temperature to open the valve fully. The above figures apply to valves fitted with 121 or 123 control systems. For 122 or 128 systems, (which cannot be used on valves larger than 1") the P Band will be twice the amount shown.
Example: For a 1" KA 51 valve with a 122 control system, the valve will not fully open until the controlled temperature drops to 24.8˚F below the set point.
For complete sizing information, see TIS 1.011 (steam) or TIS 1.012 (water).

Typical Applications

Industrial or commercial applications using steam or hot water as a heating medium.

Sample Specification (KB)

Control valve shall be bronze body with stainless steel trim and single seated. Valve shall achieve ANSI Class IV Shutoff. For operation against high differential pressures, valve shall be supplied with bronze pressure balancing bellows. Provide with screwed pipe connections.Valve is coupled to the appropriate temperature control system. This combined unit is self acting and provides proportional control action. The temperature control system shall be brass with PVC covered capillary or stainless steel sensor and capillary, oil filled, hydraulically operated; and shall incorporate packless glands and a gas filled overheat protection device. Temperature setting shall be adjustable while control is in service, include ˚F adjustment scale and shall incorporate a tamper proof device. When required, sensor bulb shall be mounted in a separable well for removal from the equipment. Refer to TIS 1.900 or 1.901 for temperature control system details.

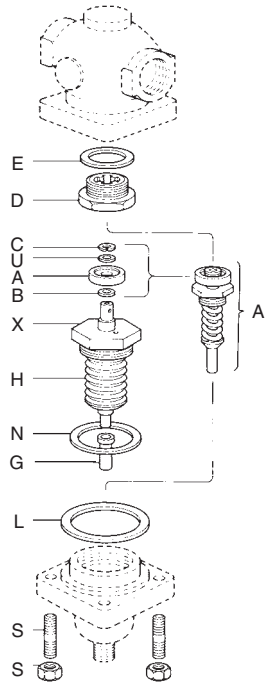
Installation

The valve should be installed in a horizontal section of the heating medium inlet piping. The control system connection must point vertically downward. A bypass with suitable stop valves should be provided to permit servicing, and a Y-pattern strainer should be installed upstream of the valve. If the valve is smaller than the pipeline, eccentric reducers should be used. In a steam system, a steam trap should be installed upstream of the valve to ensure that the steam entering the valve is as dry as possible.

Maintenance

Except for periodic cleaning of the upstream strainer, maintenance or servicing is normally required only if a malfunction is detected. **Complete installation and maintenance instructions are given in the IMI sheet (IM-S21-01), which is available upon request.**

Spare Parts



KB & KC 51

KA 51

KA 51	
Valve & Seat Assembly	A, D, E, L
Set of Gaskets	E, L
Set of Bonnet Studs & Nuts (set of 4)*	S
KB 51 & KC 51	
Valve & Seat Assembly (excluding bellows & Push Rod Assembly)	A, B, C, D, E, G, L, U
Bellows & Push Rod Assembly	L, N, H, G
Set of all Gaskets	B, C, E, L, U, G
Set of Bonnet Studs & Nuts (set of 4)	S
* 1" valves have a screwed bonnet	

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