

THREE WAY CONTROL VALVES

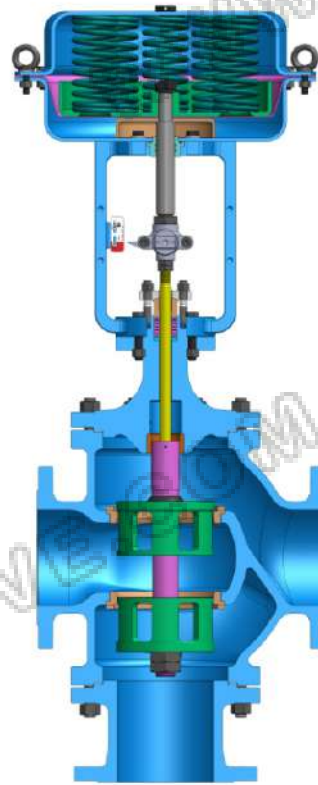


SERIES
13F
13H

► **Three Way Control Valves**

▲ **Overview**

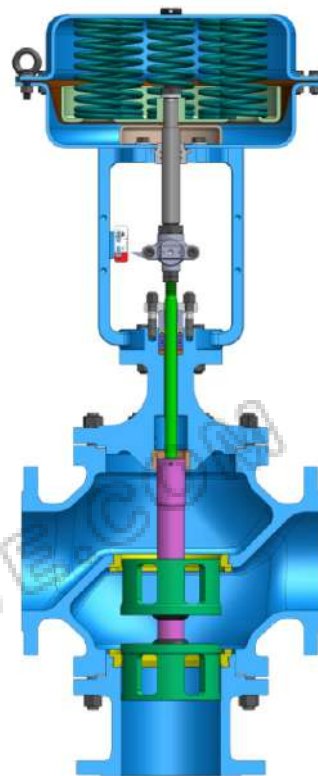
The valve model 13F is a three-way control valve for diverting service. The three way diverting service control valves are mainly used for diverting one fluid into two fluids.



Model 13F–Diverting Service

▲ **Overview**

The valve model 13H is a three-way control valve for mixing service. The three way mixing service control valves are mainly used for mixing two fluids into a third fluid.



Model 13H–Mixing Service

► Three Way Control Valves

Standard Specification

Type	13F: Diverting Service 13H: Mixing Service
Body size	1"~20"(DN25~DN500)
Plug form	Pressure unbalanced plug type
Characteristic	Linear
Body rating	ANSI Class 150, 300, 600 ; PN 16, 40, 63, 100
Body connections	Flanged (RF RTJ MFM)
	Butt Weld, Socket Weld
Body & Bonnet Material	WCB, WC6, LCB, CF8, CF8M , and other alloy steels.
Trim Material	Ss304, SS316, SS316L, and other alloy steels.
Trim treatment	HT: Heat treatment
	STL: Stellite seat surface
Bonnet type	Standard type : -5~+230°C
	Fin-Extension type : -45~ 5°C or over 230°C
	Note the allowable operating pressure-temperature limitation for each material.
Packing	Teflon V-ring, Teflon fiber, Teflon-Asbestos, Grafoil, etc.
Gasket	Spiral wound metal, with Grafoil or Teflon filler.
Painting	Silver, or other specified color.
	In the case of stainless steel body, no painting is standard.
Actuator type	Pneumatic diaphragm, Pneumatic cylinder, Electric

Performance

Rated Kvs	See Table 2.
Flow characteristics	Linear
Rangeability	50:1
Seat Leakage	ANSI Class IV Option : ANSI Class VI(Soft seat)

► **Three Way Control Valves**

Table 1 Body/Trim Standard Material Combination, Operating Temperature And Seat Leakage.

Table 1-1 Body Material : Carbon Steel

Body material	A216 WCB, A217 WC6, A352 LCB	
Seat	Material	SS304
	Treatment	HT, STL
Plug	Material	SS304
	Treatment	HT, STL
Stem	Material	SS304
	Treatment	Hcr(Hard chrome plated)
Seat leakage	ANSI	Class IV
	Rated Cv _x	0.01%
Operating Temperature °C	WCB Body	-5~+425
	WC6 Body	
	LCB Body	-45~+350

Table 1-2 Body Material : Stainless Steel

Body material	A351 CF8, A351 CF8M, A351 CF3M	
Seat	Material	SS316, SS316L
	Treatment	HT, STL
Plug	Material	SS316, SS316L
	Treatment	HT, STL
Stem	Material	SS316, SS316L
	Treatment	Hcr(Hard chrome plated)
Seat leakage	ANSI	Class IV
	Rated Cv _x	0.01%
Operating Temperature °C	CF8 Body	
	CF8M Body	-55~+538
	CF3M Body	

► Three Way Control Valves

Table 2. Kvs value and travel

Nominal size inch(mm)	Port size inch(mm)	Rated Kvs	Stroke mm	Nominal size inch(mm)	Port size inch(mm)	Rated Kvs	Stroke mm
		Linear				Linear	
1(25)	1(25)	8.5	16	6(150)	6(150)	340	60
1 1/4(32)	1 1/4(32)	13	16	8(200)	8(200)	535	60
1 1/2(40)	1 1/2(40)	21	25	10(250)	10(250)	800	100
2(50)	2(50)	34	25	12(300)	12(300)	1260	100
2 1/2(65)	2 1/2(65)	53	40	14(350)	14(350)	1600	130
3(80)	3(80)	85	40	16(400)	16(400)	2000	130
4(100)	4(100)	125	40	18(450)	18(450)	2500	150
5(125)	5(125)	210	60	20(500)	20(500)	2000	150

Table 3. Flow direction

Body structure	Service	Flowrate characteristic	Actuator	Valve action	Flow direction
Three Way	Mixing	Characteristic(1): A→AB	Direct action	Figure 1.a	B→AB
		Characteristic(2): B→AB	Reverse action	Figure 1.b	A→AB
	Diverting	Characteristic(1): AB→A	Direct action	Figure 1.c	AB→B
		Characteristic(2): AB→B	Reverse action	Figure 1.d	AB→A

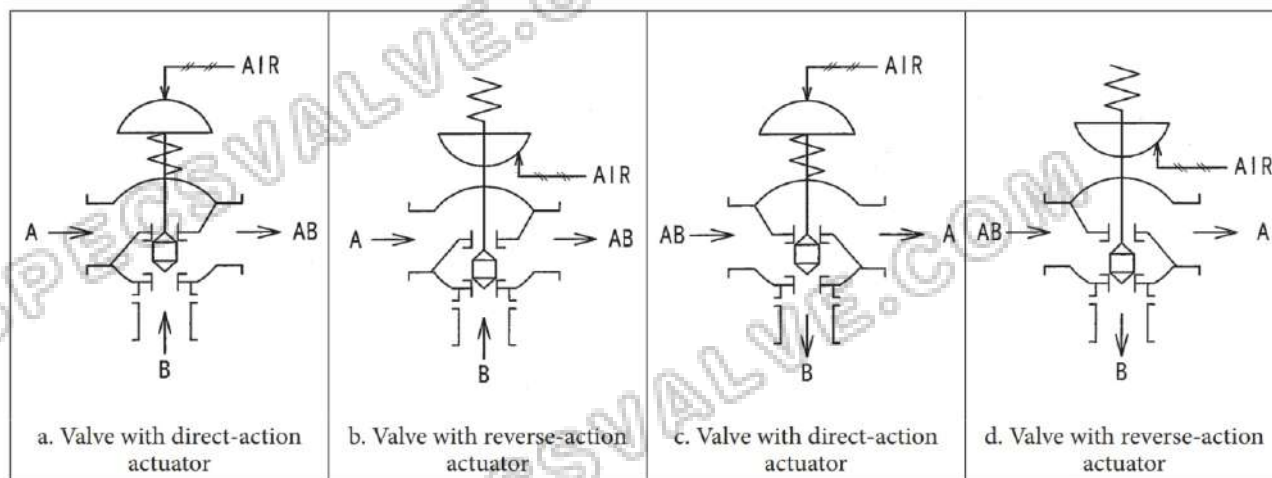


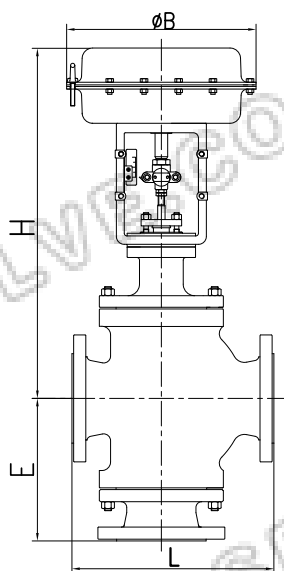
Figure 1. Valve action

► Three Way Control Valves

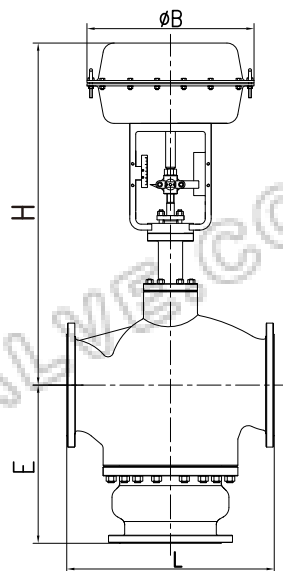
Dimensions

Table 4. Face-to-face and external dimensions(13F-Diverting Service)

Model 13F-Diverting Service



Nominal size: 1"~8"



Nominal size: 10"~20"

[Unit: mm]

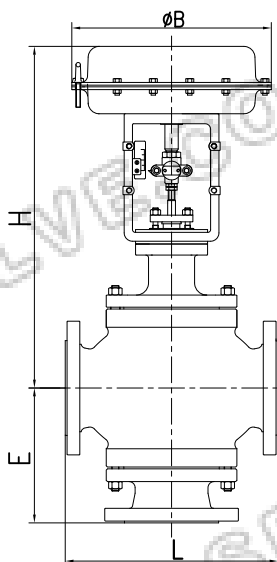
Nominal size inch(mm)	Actuator model	L		E		H		ØB
		ANSI 150/300 PN16/40	ANSI 600 PN63	ANSI 150/300 PN16/40	ANSI 600 PN63	Standard bonnet	Extended bonnet	
1(25)	ZHA/B22	185	200	142	162	459	545	290
1 1/4(32)	ZHA/B22	200	210	150	166	465	551	290
1 1/2(40)	ZHA/B23	220	235	167	181	477	563	290
2(50)	ZHA/B23	250	265	183	201	492	578	290
2 1/2(65)	ZHA/B34	275	295	201	223	639	789	365
3(80)	ZHA/B34	300	320	234	258	710	860	365
4(100)	ZHA/B34	350	370	247	286	824	974	365
5(125)	ZHA/B45	410	440	326	326	952	1122	475
6(150)	ZHA/B45	450	475	351	348	989	1159	475
8(200)	ZHA/B45	550	570	412	412	1062	1232	475
10(250)	ZHA/B56	730	775	532	532	1275	1475	590
12(300)	ZHA/B56	770	800	589	589	1333	1533	590
14(350)	ZHA/B56	889	889	692	692	1360	1560	590
16(400)	/	991	991	650	650	1430	1630	/
18(450)	/	1016	1016	/	/	/	/	/
20(500)	/	1150	1150	/	/	/	/	/

► Three Way Control Valves

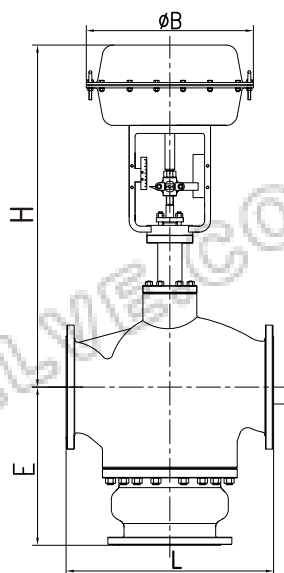
Dimensions

Table 5. Face-to-face and external dimensions(13H-Mixing Service)

Model 13H-Mixing Service



Nominal size: 1"~8"



Nominal size: 10"~20"

[Unit: mm]

Nominal size inch(mm)	Actuator model	L		E		H		ØB
		ANSI 150/300 PN16/40	ANSI 600 PN63	ANSI 150/300 PN16/40	ANSI 600 PN63	Standard bonnet	Extended bonnet	
1(25)	ZHA/B22	185	200	142	162	459	545	290
1 1/4(32)	ZHA/B22	200	210	150	166	465	551	290
1 1/2(40)	ZHA/B23	220	235	167	181	477	563	290
2(50)	ZHA/B23	250	265	183	201	492	578	290
2 1/2(65)	ZHA/B34	275	295	201	223	639	789	365
3(80)	ZHA/B34	300	320	217	241	642	792	365
4(100)	ZHA/B34	350	370	222	261	640	796	365
5(125)	ZHA/B45	410	440	301	301	821	991	475
6(150)	ZHA/B45	450	475	326	326	831	1001	475
8(200)	ZHA/B45	550	570	382	382	866	1036	475
10(250)	ZHA/B56	730	775	432	432	1275	1475	590
12(300)	ZHA/B56	770	800	456	456	1333	1533	590
14(350)	ZHA/B56	889	889	512	512	1360	1560	590
16(400)	/	991	991	577	577	1430	1630	/
18(450)	/	1016	1016	/	/	/	/	/
20(500)	/	1150	1150	/	/	/	/	/



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