



CONTROL VALVE STANDARD SPECIFICATION

3-WAY GLOBE VALVE



YAD-12271, 12281 Series



<http://www.youanvalve.co.kr>



PROVAL Co., Ltd.

[B-7]

PROVAL

3-WAY TYPE CONTROL GLOBE VALVES

GENERAL

The design of **PROVAL** 3-Way control globe valves are generally used either to mix flowing medium or to divert on medium into two outlet flows, and are often used when fluid temperature is to be adjusted through heat exchangers.

Mixing-type valves also can be used for diverting service when both the nominal size pressure differential is small.

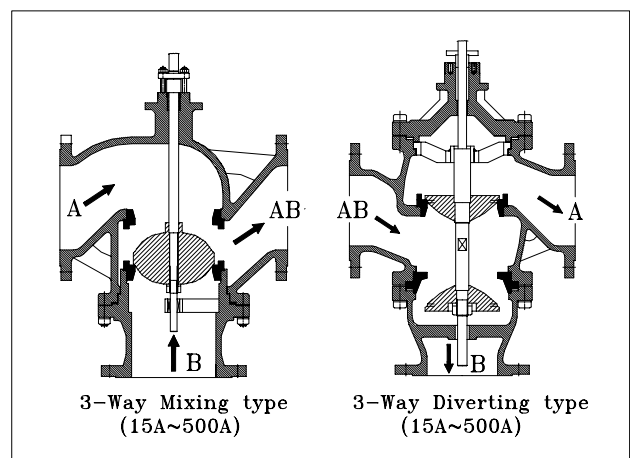
However, the mixing type is more suitable when the nominal size is larger than 4" and the pressure differential is also considerable.

Standard 3-Way valve combine diaphragm actuator with multi-spring.



FEATURES

- LARGE CAPACITY
- REASONABLE FLOW CHARACTERISTICS
- DURABILITY
- ECONOMICAL
- EASY TO INSTALL & MAINTENANCE



STANDARD SPECIFICATION

Model No.		Mixing	YAD-12271 (RA Type), YAD-22271 (DA Type)																		
		Diverting	YAD-12281 (RA Type), YAD-22281 (DA Type)																		
Valve Type			Diaphragm or Cylinder actuator operated 3-way globe control valve.																		
BODY	Valve Size		(mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500
			(inch)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20
	Pressure Rating			ANSI 150#, 900# / JIS 10K-40K / JPI 150# ~ 900#																	
	End Connections			Flanged end: FF, RF, RTJ, M/F(female), T/G(female) ※Welding end: SW, BW																	
	Body Materials			A216-WCB, A351-CF8, CF8M, CF3M																	
	Operating Temperature			Standard Type: -20°C ~ 210°C / Radiating Fin Type: Over 220°C / Extension: -196°C ~ -20°C																	
	Guide			Top & Bottom, Cage Guide																	
	Gasket			SUS316 + Graphite spiral wound, other alloy steels.																	
	Painting Color			Standard is silver. In the case of stainless steel, flange is not painted.																	
	Plug Characteristics			Linear (※ Equal %)																	
	Trim Materials			SUS304 (STL.), SUS316 (STL.), SUS316L (STL.)																	
	Treatment of Trim			See "MATERIAL DATA" page 3																	
PERFORMANCE	Valve Action		Direct action, Reverse action.																		
	Allowable Differential Pressure		See "ALLOWABLE PRESSURE DROP" page 8																		
	Rated Cv Value		See "FLOW CHARACTERISTICS" page 7																		
	Flow Characteristics		See "FLOW CHARACTERISTICS" page 6																		
	Rangeability		30:1 (※ 50:1)																		
	Allowable Seat Leakage Ratio		Standard	ANSI B16. 104 Class III								※ Tight shut off: ANSI B16. 104 Class IV									
			Soft	ANSI B16. 104 Class VI																	
Action Accuracy		Hysteresis	(Without positioner) max. 4% F.S. (With positioner) max. 1% F.S.																		
		Linearity	(Without positioner) max. ±5% F.S. (With positioner) max. ±1% F.S.																		

Valve Size	(mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300	350	400	450	500
	(inch)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12	14	16	18	20
Model	A-220M ~ A-520M																		
Actuator Type	Multi-spring diaphragm type.																		
Actuator Size (Diaphragm Size)	Ø220			Ø270			Ø360			Ø430			Ø520			Cylinder Type			
Max. Stroke (mm)	20			20, 25			30, 40			55, 60			90			Over 100			
Supply Air Pressure kPa (kgf/cm ² G)	200 (2.0), 320 (3.2)																		
Spring Range kPa (kgf/cm ² G)	20-98 (0.2-1.0), 40-200 (0.4-2.0)																		
Action	Direct action, Reverse action.																		
Materials	Diaphragm: EPDM, York: FCD450 & A216-WCB, Case: Al-Alloy																		
Air Connection	Rc 1/4															Rc 3/8			
Ambient Temperature	-20°C ~ +70°C (※ -50°C ~ -20°C, +70°C ~ +100°C)																		
Painting Color	Standard is Cobalt Blue(Munsell No : 2.5 PB3/10) [Request other color]																		

[Notes] (1) Valve performance is represented under the condition of standard packing (V-PTFE).
 (2) ※ : Manufactured and attached as according to customer's order.

MATERIAL DATA

1. Combining the valve body, bonnet and trim material.

Parts Name		Materials		
Body, Bonnet		ASTM A216-WCB	ASTM A351-CF8	ASTM A351-CF8M
Trim	Seat Ring	SUS 316 (STL.), SUS304 (STL.)		SUS 316 (STL.)
	Valve Plug			
	Valve stem	SUS 316 (Hcr plated)		
	Guide Bushing	SUS 420J2 (Hard Face)		SUS 316 (Hcr)
Stud Bolt & Nut		SNB7/S45C(H) S45(H)/S45C(N)	SUS304	

[Notes] (1) This table shows typical combination of materials. The combination may be subject to pressure-temperature and kind of fluid.
 (2) Trim materials may be casting in stead of bar materials in some cases.
 (3) Bonnet may be forged in some cases.

2. Body material & operating pressure-temperature rating.

2-1 ANSI

[Unit: MPa]

Temp. (°C)	150#			300#		
	A216-WCB	A351-CF8	A351-CF8M	A216-WCB	A351-CF8	A351-CF8M
-45 ~ 38	-	1.95	1.95	-	5.00	5.00
-5 ~ 38	2.01	1.95	1.95	5.15	5.00	5.00
50	1.97	1.89	1.89	5.15	5.00	5.00
100	1.81	1.61	1.66	4.68	4.13	4.26
150	1.62	1.44	1.52	4.56	3.67	3.90
200	1.45	1.30	1.42	4.43	3.32	3.61
250	1.250	1.21	1.25	4.21	3.09	3.39
300	1.06	1.06	1.06	3.92	2.96	3.20
350	0.89	0.89	0.89	3.74	2.86	3.08
375	0.78	0.78	0.78	3.69	2.82	3.01
400	0.69	0.69	0.69	3.49	2.79	2.96
425	0.60	0.60	0.60	2.93	2.76	2.92
450	0.52	0.52	0.52	2.04	2.73	2.86
475	0.42	0.42	0.42	1.40	2.70	2.78
500	0.33	0.33	0.33	0.93	2.65	2.72
525	0.23	0.23	0.23	0.56	2.24	2.62
538	0.18	0.20	0.20	0.36	2.23	2.58

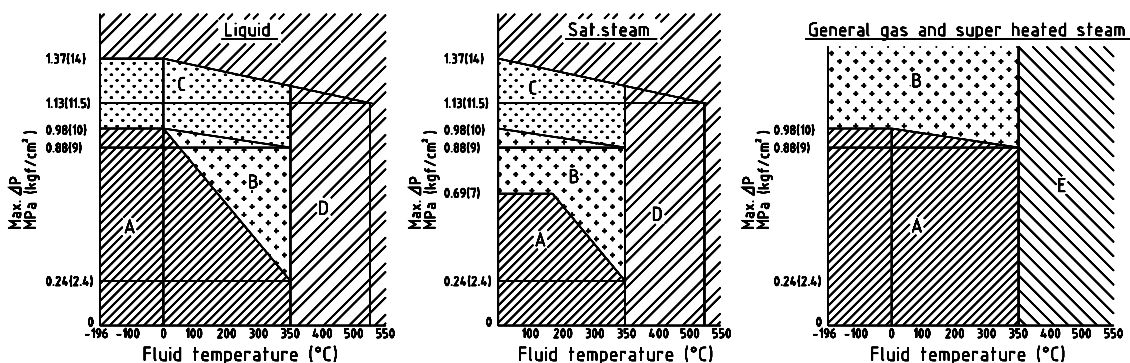
2-2 JIS

[Unit: MPa]

Temp. (°C)	SCPH2		
	10K	20K	30K
-5 ~ 120	1.42	3.38	5.04
~ 220	1.32	3.08	4.55
~ 300	1.03	2.89	4.26
~ 350		2.59	3.87
~ 400		2.30	3.38
~ 425		2.01	2.99
~ 450			
~ 475			
~ 490			
~ 500			
~ 510			

3. Trim treatment & material vs operating pressure-temperature ratings.

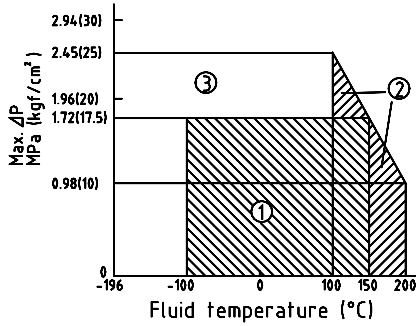
A: Stellite standard (Plug & Seat) B: Stellite standard and ion treatment C: Stellite face D: Stellite face + Stellite of guide bushing and guide post
E: Stellite seat + Stellite of guide bushing and guide post



- (1) Seat ring of on-off control valve and of throttling control valve for tight shut off is hard faced at the area of Stellite seat and over.
- (2) In case of flushing fluid, seat ring is hard faces at the area of Stellite area.
- (3) In spite of fluid sort, at 350°C and over, guide bushing and guide post is hard faced be Stellite treatment.
- (4) In case of saturated steam, if inlet pressure is 0.69 MPa (7 kgf/cm²G) and over, seat ring is hard faced at area of Stellite seat and over.

4. Soft seat operating pressure-temperature ratings.

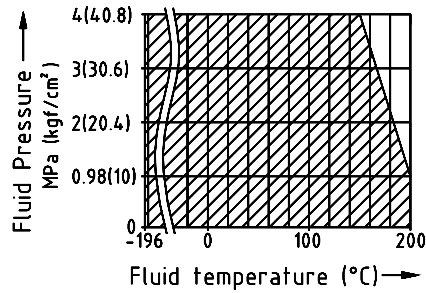
- Disc materials: ① PTFE
 ② Glass reinforced PTFE
 ③ PCTFE [Note]



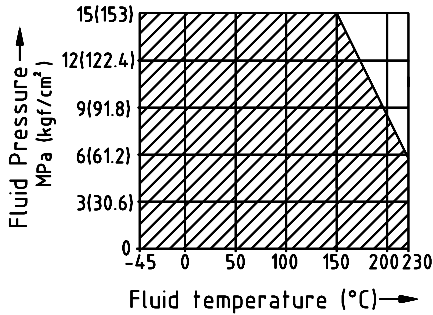
[Note] Poly-chlorotrifluoro ethylene

5. Gland packing operating pressure-temperature ratings.

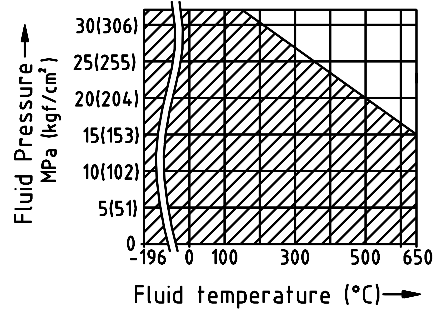
- ① V-PTFE



- ② PTFE yarn



- ③ Graphite yarn



※Only standard types are represented. Weight of accessories, a hand wheel and the like are not included.

[Unit: kg]

Size	15A (½")	20A (¾")	25A (1")	32A (1¼")	40A (1½")	50A (2")	65A (2½")	80A (3")	100A (4")	125A (5")	150A (6")	200A (8")	250A (10")	300A (12")
Actuator Model	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#	JIS 10K, ANSI 150# JIS 20K, ANSI 300#
A-220M	82	83	83	85	86	87	87	89	90	91	92			
A-270M					121	122	122	124	124	126	130	140	143	150
A-360M									187	192	204	210	220	230
A-430M										476	500	510	530	545
A-520M													750	780
													750	780
													1255	1644

FLOW CHARACTERISTICS

1. Flow Direction

Model No.	Type Action	Mixing type		
		15A~500A(1/2"~20")	15A~80A(1/2"~3")	100A~500A(4"~20")
YAD-12271	Air to (Signal to)			
	Air to (Signal less)			
YAD-22271	Air to (Signal to)			
	Air to (Signal less)			
YAD-12281	Air to (Signal to)			
	Air to (Signal less)			
YAD-22281	Air to (Signal to)			
	Air to (Signal less)			
FLOW Direction	Air to (Signal to)			
	Air to (Signal less)			

[Notes] (1) The body for mixing service is used for diverting service in valve size 15A thru 80A.

(2) In case of mixing type, Please keep temperature difference between flow AB and B within 150°C.

FLOW CHARACTERISTICS

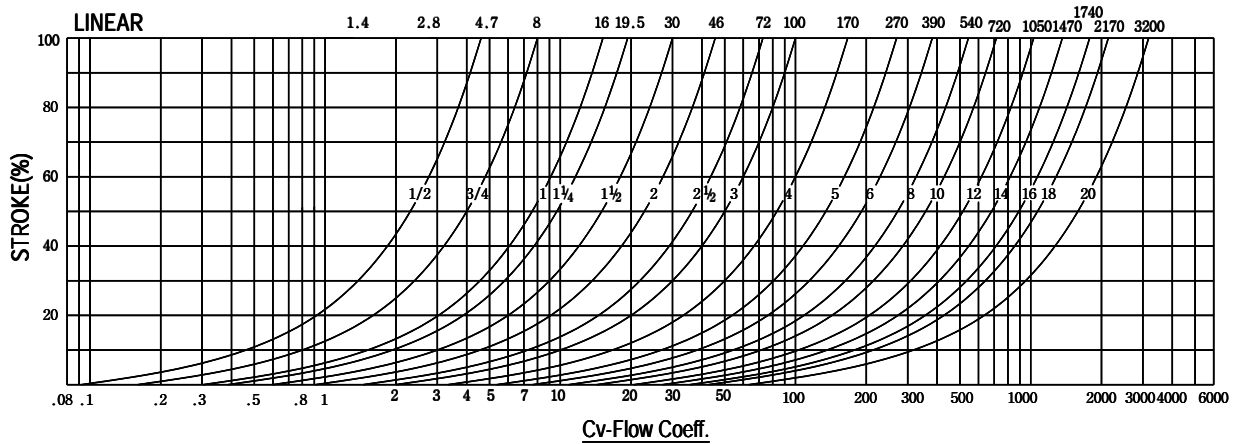
1. Rated Cv Value

Port Size	15A (1/2")	20A (3/4")	25A (1")	32A (1 1/4")	40A (1 1/2")	50A (2")	65A (2 1/2")	80A (3")	100A (4")	125A (5")	150A (6")	200A (8")	250A (10")	300A (12")	350A (14")	400A (16")	450A (18")	500A (20")
Cv Value	4.7	8	15	19	28	40	72	100	170	270	390	540	720	1050	1470	1740	2170	3200
Range ability	50 : 1																	

[Unit: gal/min]

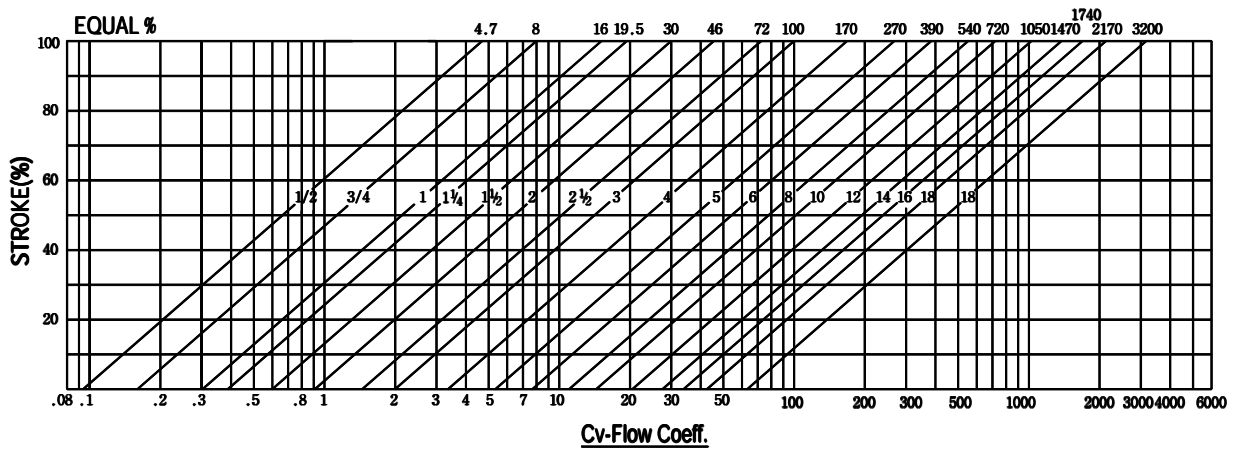
2. Flow Characteristics

2-1 Linear



[Note] Proper throttling control range: 10-90% stroke

2-2 Equal %



[Note] Proper throttling control range: 10-90% stroke

MAX. ALLOWABLE PRESSURE DROP

1. Diaphragm Actuator: A-220M ~ A-520M

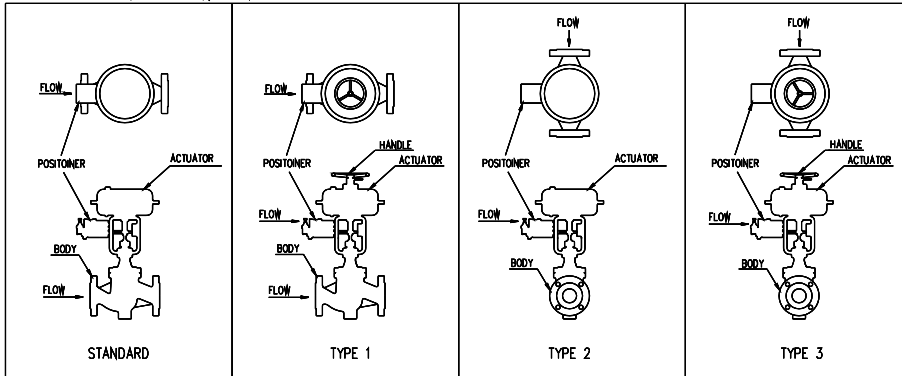
Shaded zone represents standard application.

[Unit: Kg/cm²G]

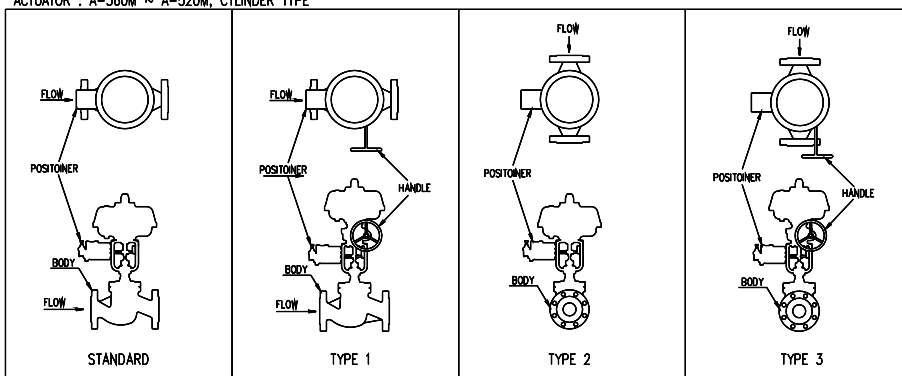
Actuator Model	Air Supply (Kg/cm ² G)	Spring Range (Kg/cm ² G)	Port Size													
			15A (½")	20A (¾")	25A (1")	32A (1¼")	40A (1½")	50A (2")	65A (2½")	80A (3")	100A (4")	125A (5")	150A (6")	200A (8")	250A (10")	300A (12")
A-220M (RA, DA)	2.4	0.4 ~ 2.0	33	18	11											
	3.2	0.8 ~ 2.4		37	24	14										
A-270M (RA, DA)	2.4	0.4 ~ 2.0		34	22	13	8.5	5	4	2						
	3.2	0.8 ~ 2.4			44	26	17	8.7	7	4						
A-360M (RA, DA)	2.4	0.4 ~ 2.0					17	11	8	4	2					
	3.2	0.8 ~ 2.4					34	22	16	8	4					
A-430M (RA, DA)	2.4	0.4 ~ 2.0										3.5	2.4	0.7		
	3.2	0.8 ~ 2.4										7	4.8	1.4		
A-520M (RA, DA)	2.4	0.4 ~ 2.0													0.9	0.5
	3.2	0.8 ~ 2.4													3	2

ACTUATOR MOUNTING FORMS

ACTUATOR : A-220M ~ A-270M, CYLINDER TYPE

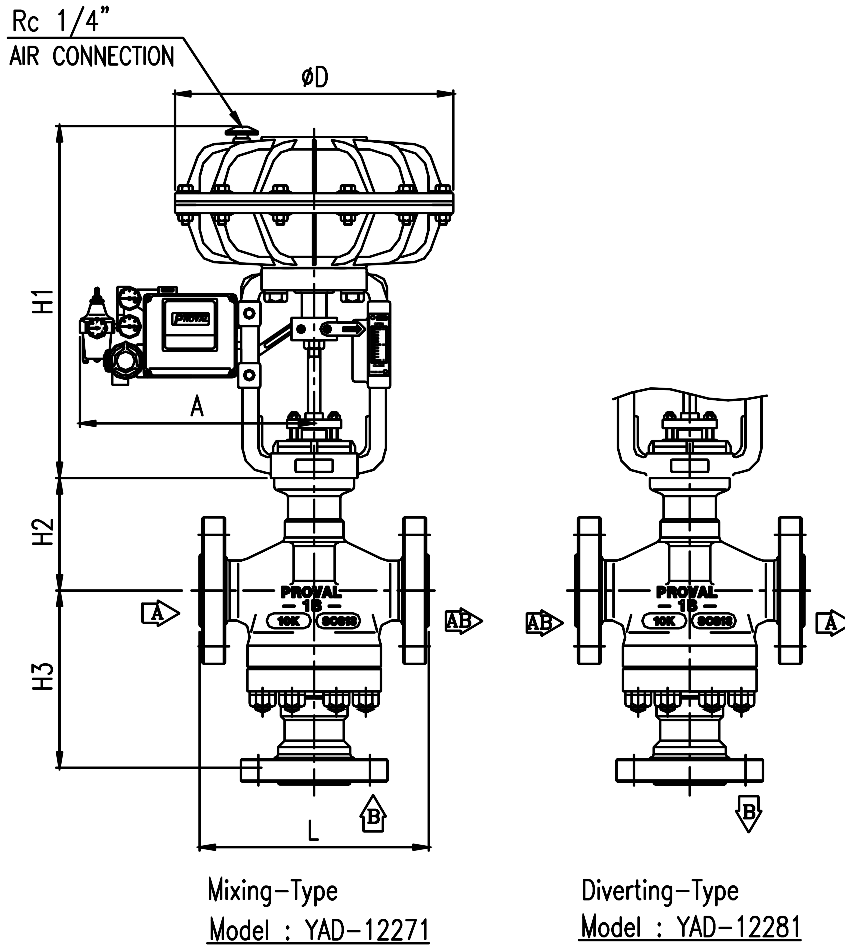


ACTUATOR : A-360M ~ A-520M, CYLINDER TYPE



DIMENSION DRAWING

ACTUATOR : A-220M



DIMENSIONS

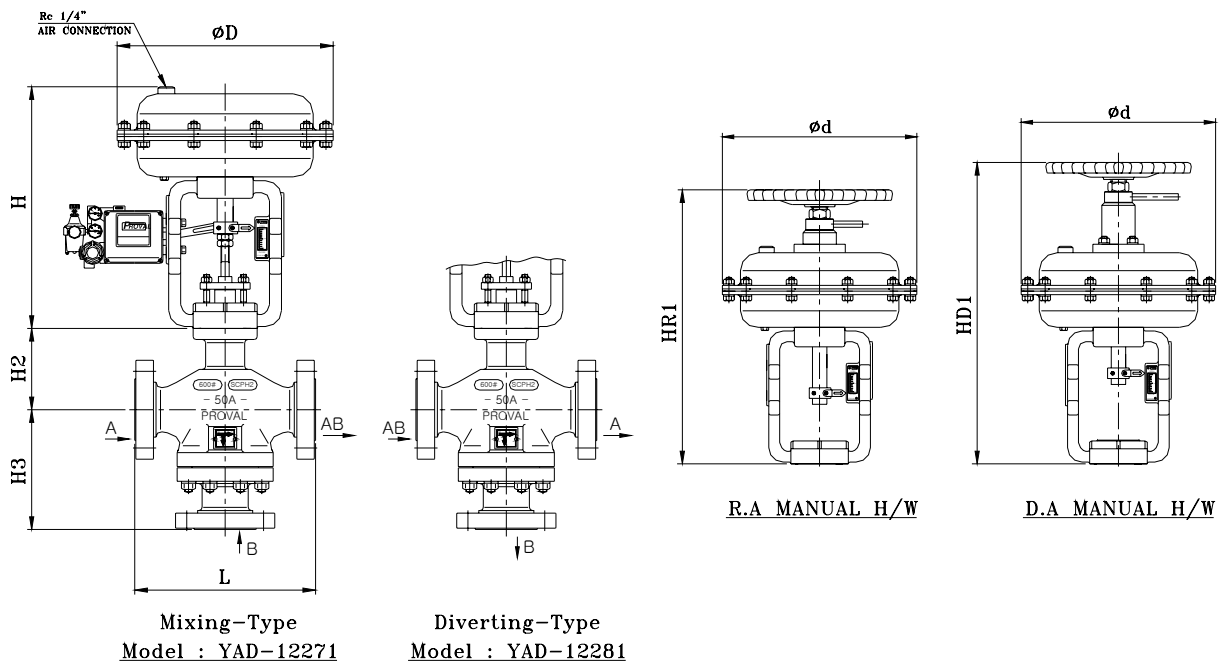
[Unit: mm]

Valve Size		Face to Face : L		H3	H2	Actuator size (ØD)	H1	With Manual H/W		A
mm	inch	JIS 10K, 20K ANSI 150#, JPI 150#	ANSI 300#					HR1	HD1	
15	½	185	185	144	88	225	280	335 ~ 355	400 ~ 420	310
20	¾	185	185	144	88	225	280	335 ~ 355	400 ~ 420	310
25	1	185	185	144	88	225	280	335 ~ 355	400 ~ 420	310
32	1¼	223	228	163	83	225	280	335 ~ 355	400 ~ 420	310
40	1½	223	228	163	83	225	280	335 ~ 355	400 ~ 420	310

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	15A ~ 40A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-270M



DIMENSIONS

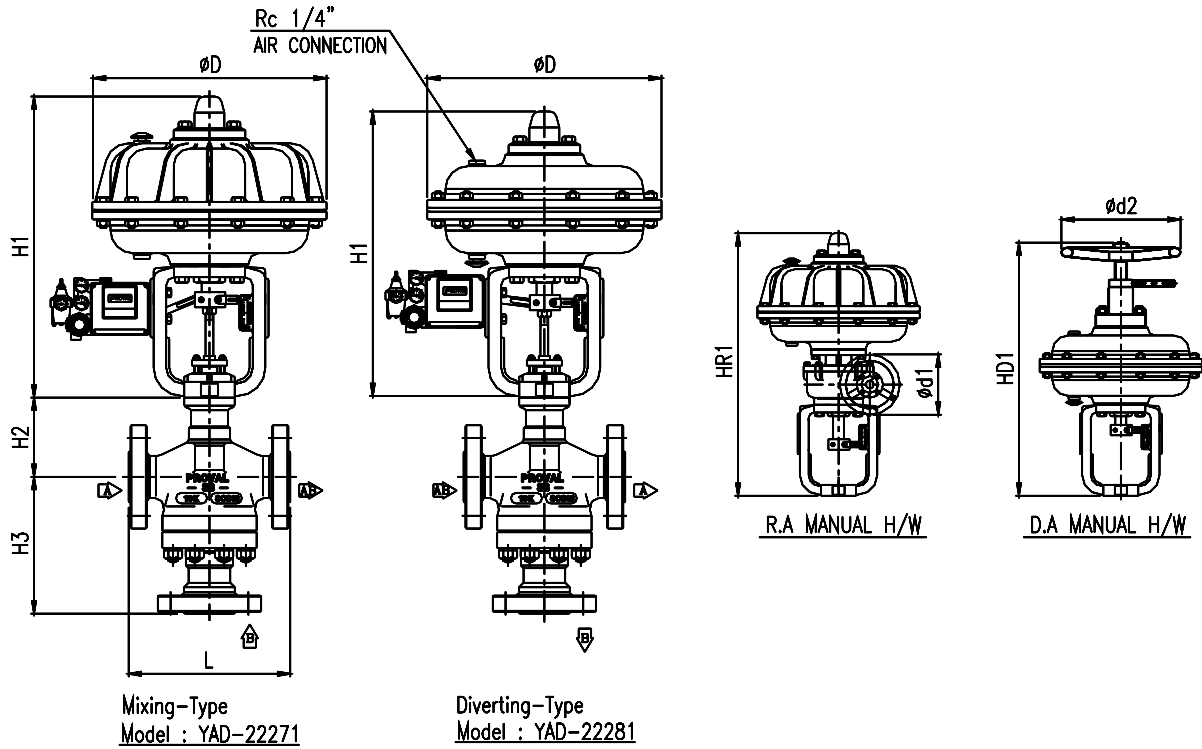
[Unit: mm]

Valve Size		Face to Face : L		H3	H2	Actuator size (ØD)	H1	With Manual H/W		A	Ød
mm	inch	JIS 10K, 20K ANSI 150#, JPI 150#	ANSI 300#					HR1	HD1		
25	1	185	185	135	88	270	310	360 ~ 380	442 ~ 422	322	200
32	1¼	223	228	163	83	270	310	360 ~ 380	442 ~ 422	322	200
40	1½	223	228	163	83	270	310	360 ~ 380	442 ~ 422	322	200
50	2	256	264	178	102	270	310	360 ~ 380	442 ~ 422	322	200

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	25A ~ 50A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-360M



DIMENSIONS

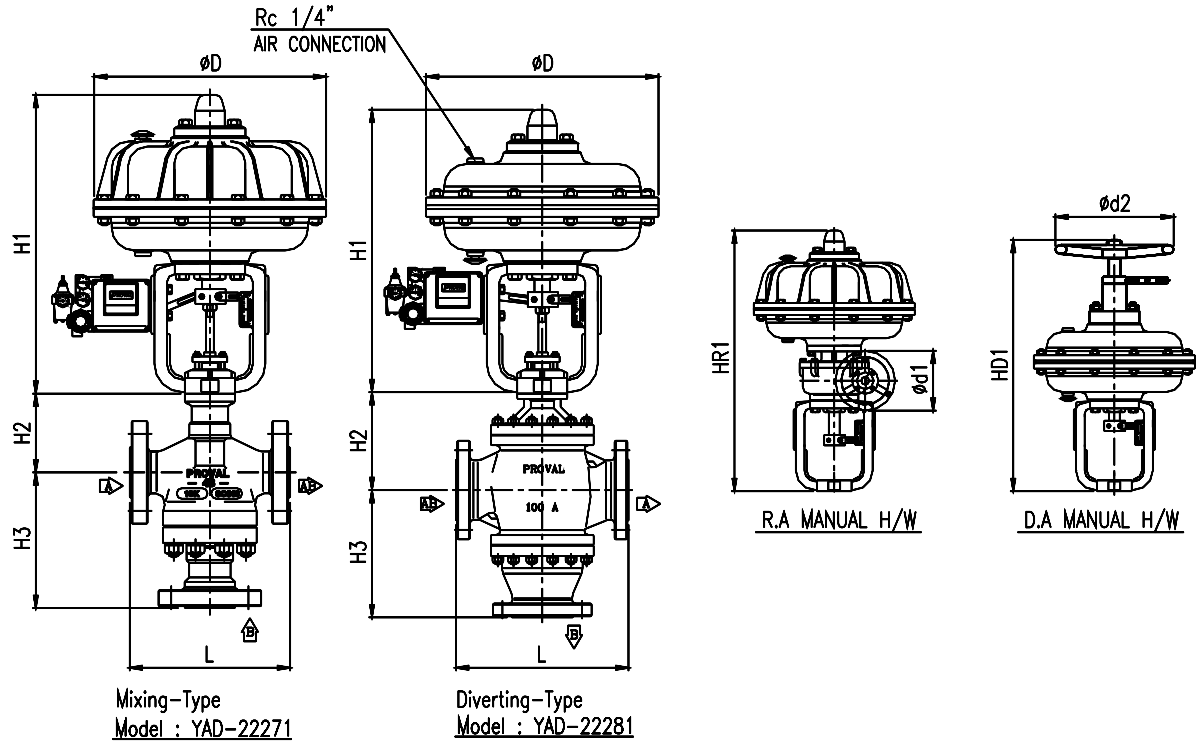
[Unit: mm]

Valve Size		Face to Face : L		H3	H2	Actuator size (ØD)	H1		With Manual H/W		A	Ød1	Ød2
mm	inch	JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#				R.A.	D.A.	HR1	HD1			
65	2½	283	294	197	104	360	458	427	590	588 ~ 548	327	200	315
80	3	300	313	247	128	360	458	427	590	588 ~ 548	327	200	315

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	65A ~ 80A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-360M



DIMENSIONS

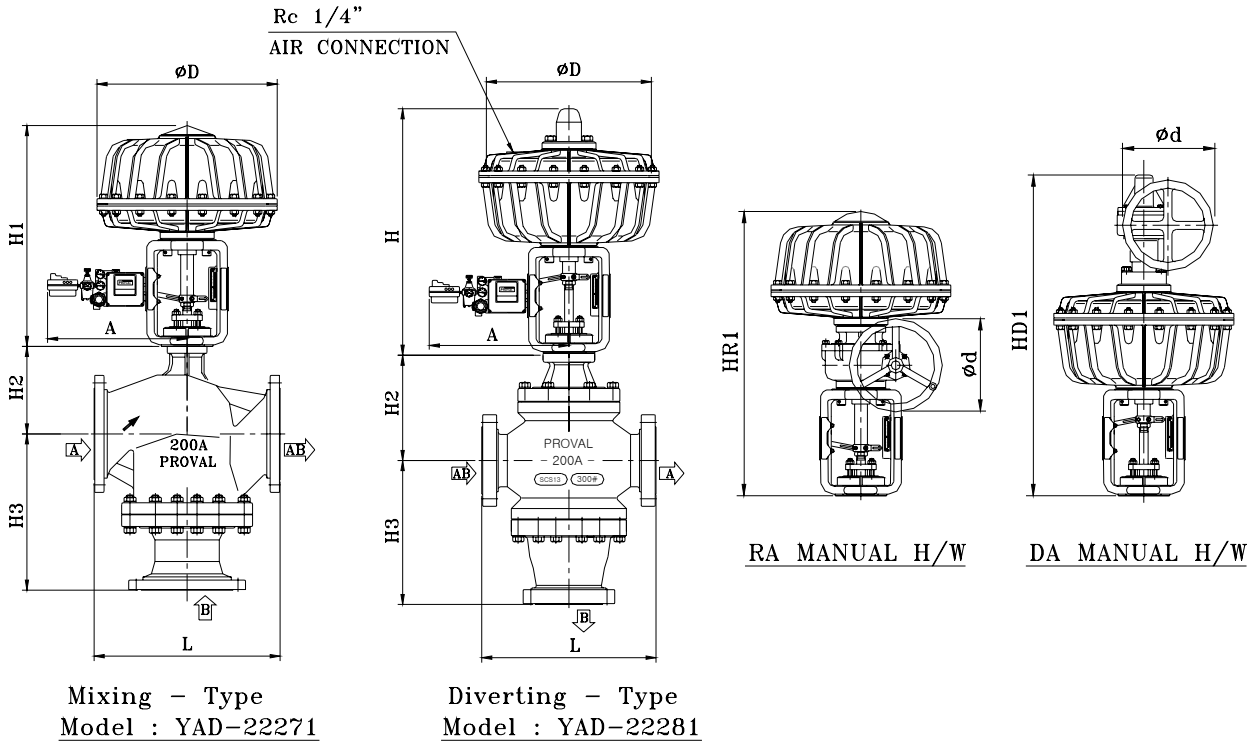
[Unit: mm]

Valve Size		Face to Face : L				Mixing Type		Diverting Type		Actuator size (ØD)	H1		With Manual H/W		A	Ød1	Ød2
mm	inch	Mixing Type		Diverting Type		H2	H3	H2	H3		R.A.	D.A.	HR1	HD1			
		JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#	JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#												
100	4	358	393	400	415	138	280	235	330	360	458	427	590	588 ~ 548	327	200	315

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	100A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-430M



DIMENSIONS

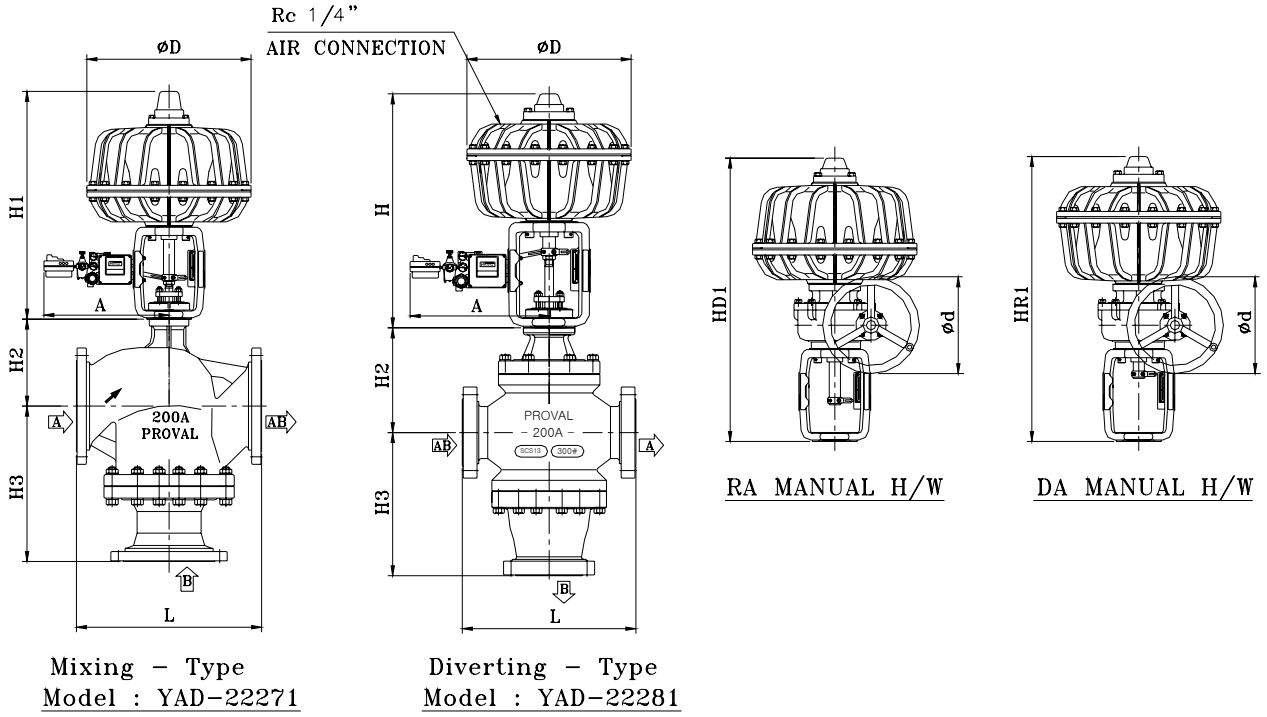
[Unit: mm]

Valve Size		Face to Face : L				Mixing Type		Diverting Type		Actuator size (ØD)	H1		With Manual H/W		A	Ød
mm	inch	Mixing Type		Diverting Type		H2	H3	H2	H3		R.A.	D.A.	HR1	HD1		
		JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#	JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#											
125	5	400	417	450	467	165	310	250	340	430	554	643	880	870 ~ 780	345	315
150	6	462	479	480	497	190	350	270	350	430	554	643	880	870 ~ 780	345	315
200	8	554	592	540	563	240	460	320	460	430	554	643	880	870 ~ 780	345	315

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	125A ~ 200A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-520M



DIMENSIONS

[Unit: mm]

Valve Size		Face to Face : L				Mixing Type		Diverting Type		Actuator size (ØD)	H1		With Manual H/W		A	Ød1
mm	inch	Mixing Type		Diverting Type		H2	H3	H2	H3		R.A.	D.A.	HR1	HD1		
		JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#	JIS 10K, 20K ANSI 150# JPI 150#	ANSI 300#											
200	8	554	592	554	592	240	460	320	460	520	732	795	990	1060	480	315
250	10	676	703	676	703	280	550	280	550	520	732	795	990	1060	480	315
300	12	799	-	799	-	-	-	-	-	520	732	975	990	1060	480	315

MODEL	YAD-12271, YAD-22271 (Mixing) YAD-12281, YAD-22281 (Diverting)	SIZE	200A ~ 300A
PROVAL Co., Ltd.			