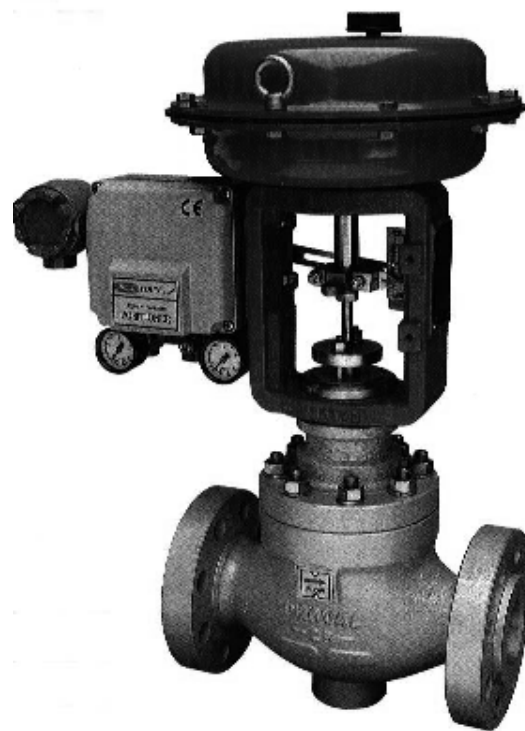




CONTROL VALVE STANDARD SPECIFICATION

QUICK CHANGE TYPE

2-WAY GLOBE VALVE



YAD-122Q1 Series



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

PROVAL PROVAL Co., Ltd.

[B-1]

PROVAL

TOP GUIDE SINGLE SEATED TYPE

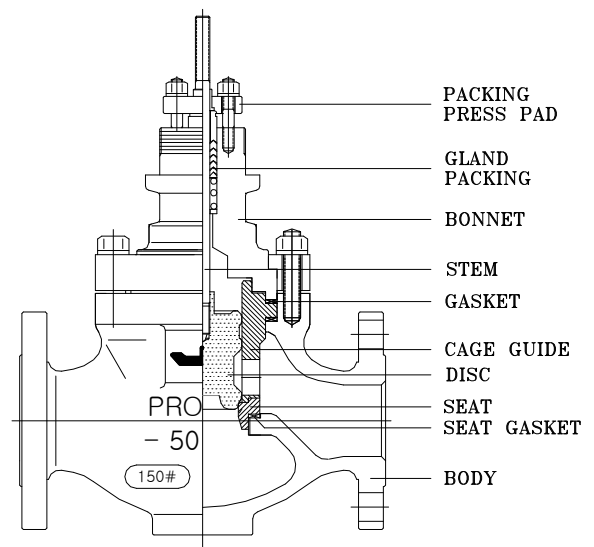
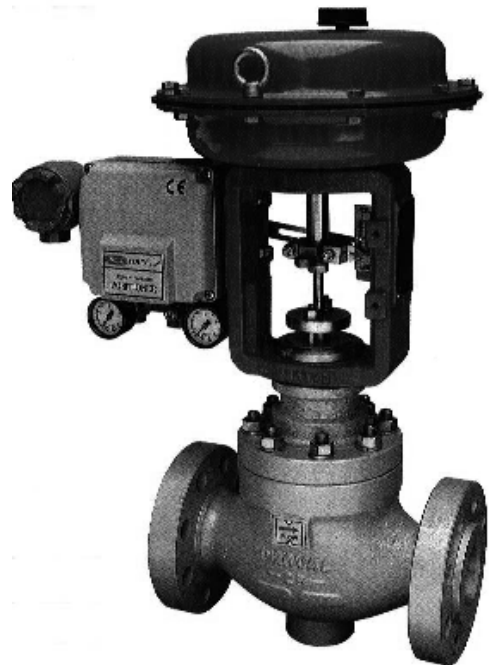
GENERAL

The design of **PROVAL** Quick Change type control valves are designed for low and medium duty service. The compact valve, simple construction having low pressure loss, allows large flow capacity rangeability, and high accuracy flow characteristics.

It is available with bellows seal, extension, fin, jacket bonnet. The flow shut-off performance complies with the JIS, ANSI standards. Standard combined actuators are multi-spring diaphragm actuator.

FEATURES

- **Reliability** – The screwed-in seat ring on a tapered seating to minimize fluid leakage and erosion at the back of the seat ring.
- **Valve plug stability** – Two rugged and widely spaced packing box guide bushings stabilize and guide the valve plug at all point in its travel range to minimize vibration, mechanical noise, and trim wear.
- **Application flexibility** – The design of **PROVAL** valve accepts a full range of equal percentage, linear, and quick opening valve plugs designed to handle a wide range of flow requirements. Restricted-capacity trim can be easily replaced with full-capacity trim. Hardened trim materials are available to increase trim life and improve performance.
- **Economy** – The design of **PROVAL** valve delivers outstanding performance over an extended lifetime and is economical in cost of equipment, installation, and, maintenance.



STANDARD SPECIFICATION

Model No.		YAD-122Q1, 121(3)Q1, 122Q3, 121(3)Q3, 132Q1, 13231 YAD-222Q1, 221(3)Q1, 222Q3, 221(3)Q3, 232Q1 23231																
Valve Type		Diaphragm or Cylinder Actuator operated globe control valve.																
BODY	Valve Size	(mm)	15	20	25	32	40	50	65	80	100	125	150	200	250	300		
		(inch)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12		
	Pressure Rating		ANSI 150# ~ 2500# / JIS 10K ~ 63K															
	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 196°C / Extension: -100°C ~ -20°C															
	Guide		Top guide															
	Gland Packing		V-PTFE, PTFE yarn, Graphite yarn															
	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		SUS630 (H.T), SUS304 (STL.), SUS316 (STL.), SUS316L (STL.)															
Treatment of Trim		See page "MATERIAL DATA" page 3 ~ 5 / "MICRO TRIM" page 8																
PERFORMANCE	Control Mode		Throttling control, On-Off control.															
	Valve Action		Direct action, Reverse action.															
	Allowable Differential Pressure		See "ALLOWABLE PRESSURE DROP" page 9 / "MICRO TRIM" page 6															
	Rated Cv Value		See "FLOW CHARACTERISTICS" page 8 / "MICRO TRIM" page 7															
	Flow Characteristics		See "FLOW CHARACTERISTICS" page 8 / "MICRO TRIM" page 7															
	Rangeability		50:1 / "MICRO TRIM" page 7															
	Allowable Seat Leakage Ratio	Metal Seat	Control	0.01% of rated Cv (ANSI B16. 104 Class IV)												※ Tight shut off (Valve size).....(% of rated Cv) 25mm or less.....0.0001% 80mm or less.....0.001% 125mm or less.....0.005%		ANSI B16. 104 Class IV
			On-Off	(Valve size) (% of rated Cv) 25mm or less.....0.0001% 100mm or less.....0.001% 150mm or less.....0.005%														
		Soft Seat	Control & On-Off	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
		(inch)	½	¾	1	1¼	1½	2	2½	3	4	5	6	8	10	12
ACTUATOR	Model	A-220M, A-270M, A-360M, A-430M, A-520M or CYLINDER TYPE														
	Actuator Type	Multi-spring diaphragm type.														
	Actuator Size (Diaphragm Size)	Ø220			Ø270			Ø360			Ø430			Ø520		
	Max. Stroke (mm)	25			30			45			53			90		
	Supply Air Pressure kPa (kgf/cm ² G)	140 (1.4), 240 (2.4), 280 (2.8), 320 (3.2)														
	Spring Range kPa (kgf/cm ² G)	20~98 (0.2~1.0), 40~200 (0.4~2.0) 60~220 (0.6~2.2), 80~240 (0.8~2.4)														
	Action	Direct action, Reverse action														
	Materials	Diaphragm: EPDM, York: A216-WCB, FCD450 Case: Al-Alloy														
	Air Connection	Rc 1/4"														
	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	SUS630 (H.T), SUS 316 (STL.), SUS304 (STL.), RTFE		SUS 316 (STL.)
	Valve Plug	SUS630 (H.T), SUS 316 (STL.), SUS304 (STL.)		
	Valve stem	SUS 316 (Hcr plated)		
	Guide Bushing	SUS 420J2		SUS 316 (Hcr)
Stud Bolt & Nut		SNB7/S45C(H), Class150 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.

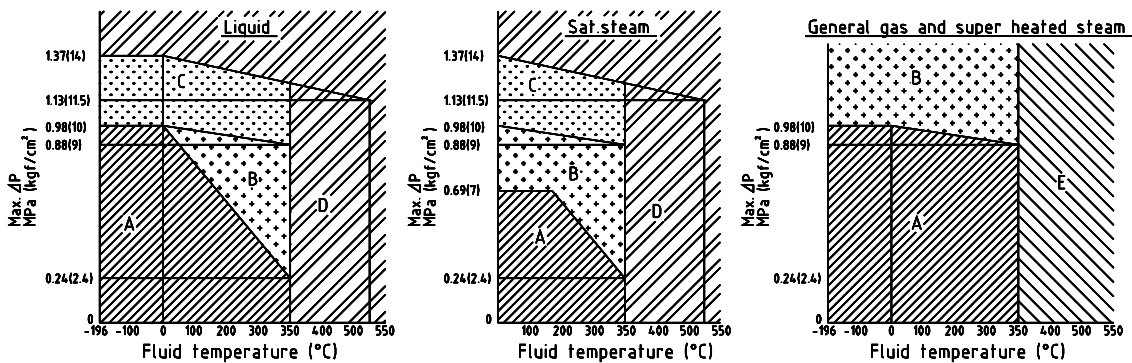
2. Body material & operating pressure-temperature rating.

2-1 ANSI		[Unit: MPa]					
Temp. (°C)	Material	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		1.25	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)	Material	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.

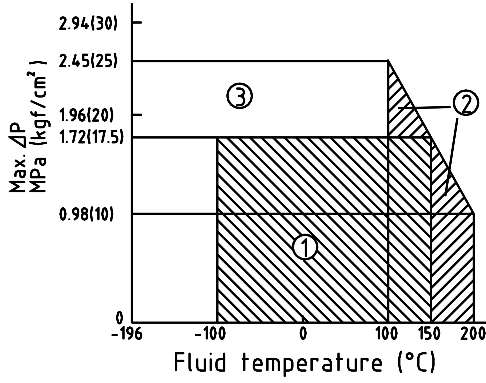
A: Stellite standard (Plug & Seat) B: Stellite standard and ion treatment C: Stellite face D: Stellite face + Stellite of guide bushing and guide post E: Stellite seat + Stellite of guide bushing and guide post



- (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 by Stellite treatment.
- (4) In case of saturated steam, if inlet pressure is 0.69 MPa (7 kg/cm²G) and over, seat ring is hard faced at area of Stellite seat and over.

4. Soft seat operating pressure-temperature ratings.

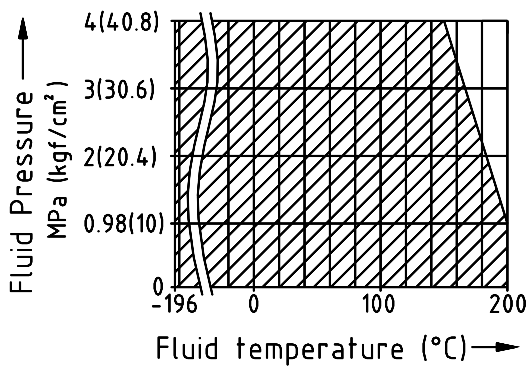
- Disc materials:
- ① PTFE
 - ② Glass reinforced PTFE
 - ③ PCTFE [Note]



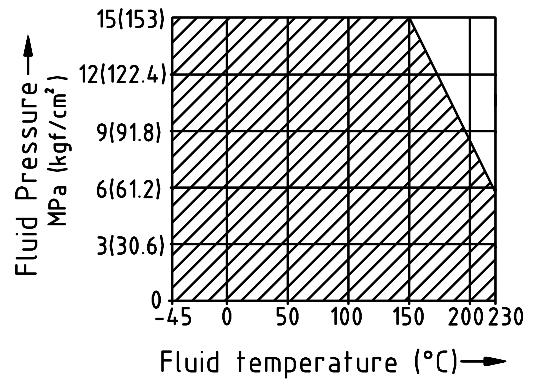
[Note] Poly-chlorotrifluoro ethylene

5. Gland packing operating pressure-temperature ratings.

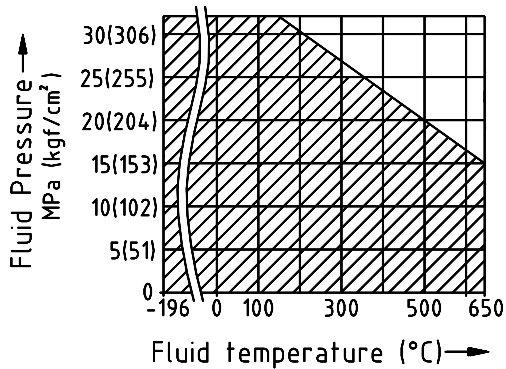
- ① V-PTFE



- ② PTFE yarn

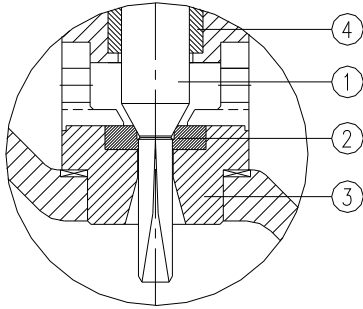


- ③ Graphite yarn



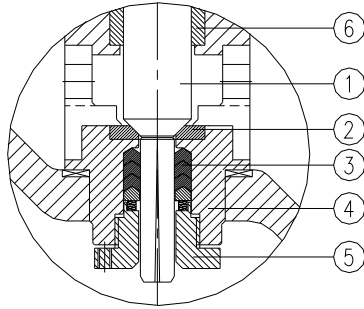
MICRO TRIM

1. Structure



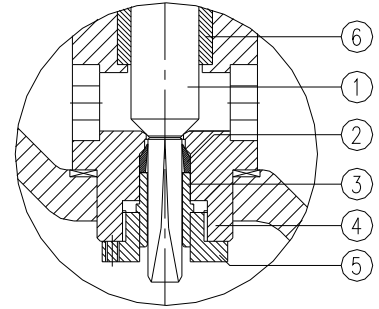
1-1 Standard Trim
(Cv 0.7 to 0.001)

No.	Parts name	Materials
①	Plug	SUS316..
②	Seat ring	RTFE..
③	Seat	SUS316..
④	Guide	RTFE..



1-2 Type 1
(Cv 0.001 to 0.0005)

No.	Parts name	Materials
①	Plug	SUS316..
②	Seat ring	RTFE..
③	Sleeve	RTFE..
④	Seat	SUS316..
⑤	Sleeve cap	SUS316..
⑥	Guide	RTFE..



1-3 Type 2
(High pressure, temperature)

No.	Parts name	Materials
①	Plug	SUS316..
②	Sleeve	SUS316..
③	Sleeve ring	RTFE..
④	Seat	SUS316..
⑤	Seat cap	SUS316..
⑥	Guide	SUS316..

2. Max. Allowable pressure drop

Actuator type: Multi-spring diaphragm operated (A-220M ~ A-270M only).

Shaded zone represents standard application.

[Unit: Kgf/cm²G]

Action	Air Supply (kgf/cm ² G)	Spring Range (kgf/cm ² G)	Port Size		
			Ø5	Ø8	Ø10
Reverse Action (R.A)	1.4	0.2 ~ 1.0	45	39	30
	2.4	0.4 ~ 2.0	90	78	60
Direct Action (D.A)	1.4	0.2 ~ 1.0	84	72	54
	2.4	0.4 ~ 2.0	168	144	108

FLOW CHARACTERISTICS (MICRO TRIM)

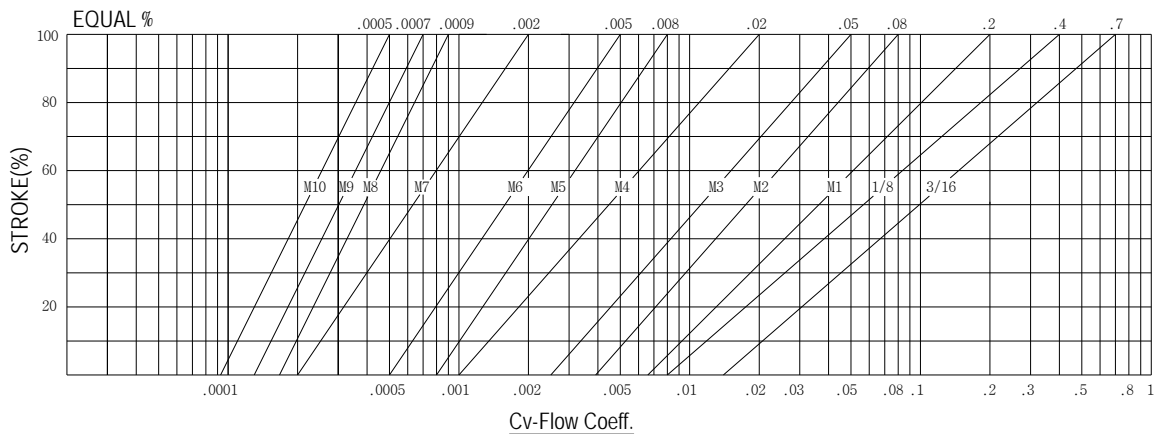
1. Rated Cv Value

[Unit: gal/min]

Port size or Port no.		6A (3/16")	4A (1/8")	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Cv value		0.7	0.4	0.2	0.08	0.05	0.02	0.008	0.005	0.002	0.0009	0.0007	0.0005
Range ability	EQ, Linear	50:1		30:1	20:1			10:1			5:1		
	Modify EQ	50:1											
Port Size		Ø5		Ø10						Ø8			
Travel (mm)		20~25											

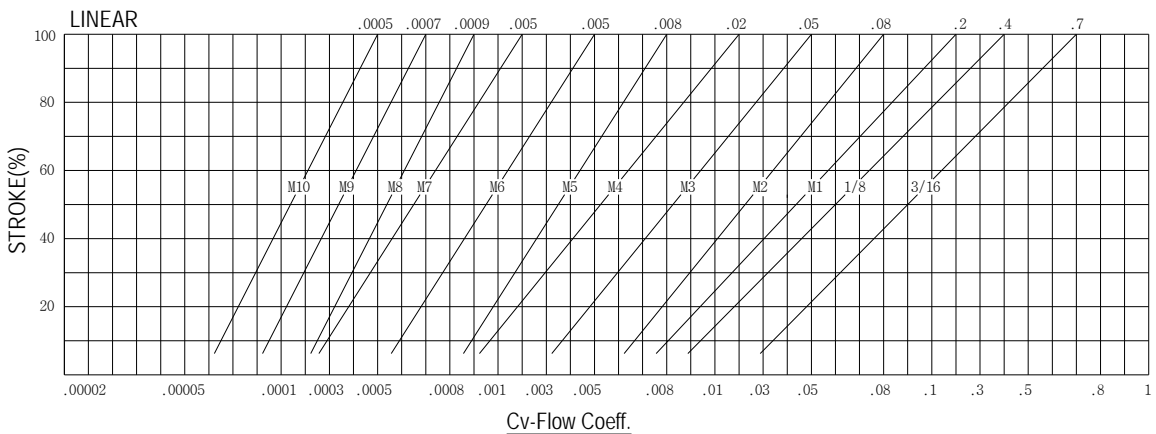
2. Flow Characteristics

2-1 Equal %



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

2-2 Linear



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

FLOW CHARACTERISTICS

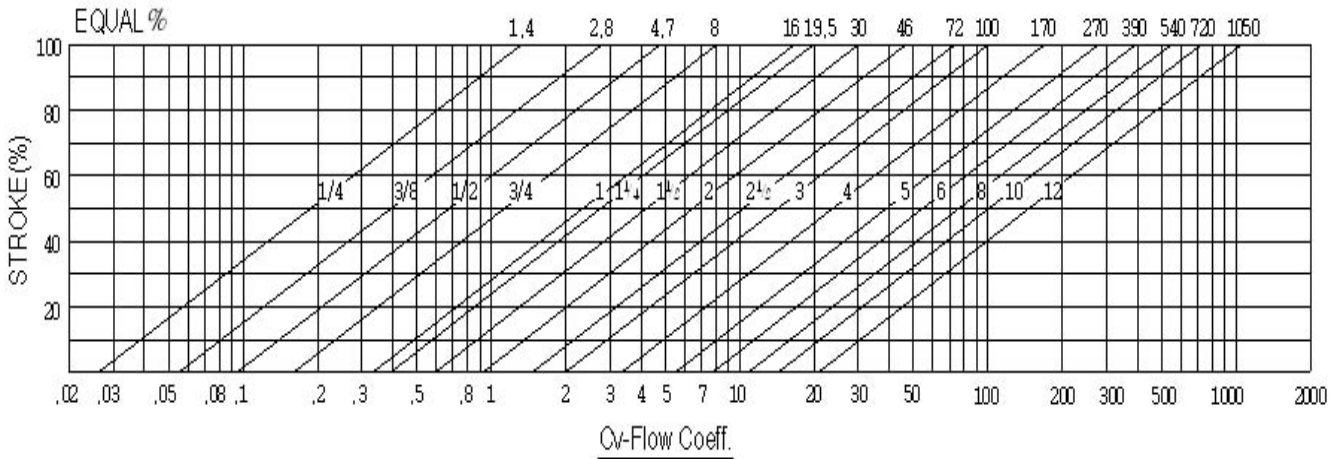
1. Rated Cv Value

[Unit: gal/min]

Port Size	8	10	15	20	25	32	40	50	65	80	100	125	150	200	250	300
	1/4"	3/8"	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"	5"	6"	8"	10"	12"
Cv Value	1.4	2.8	4.7	8	16	19.5	30	46	72	100	170	270	390	540	720	1050

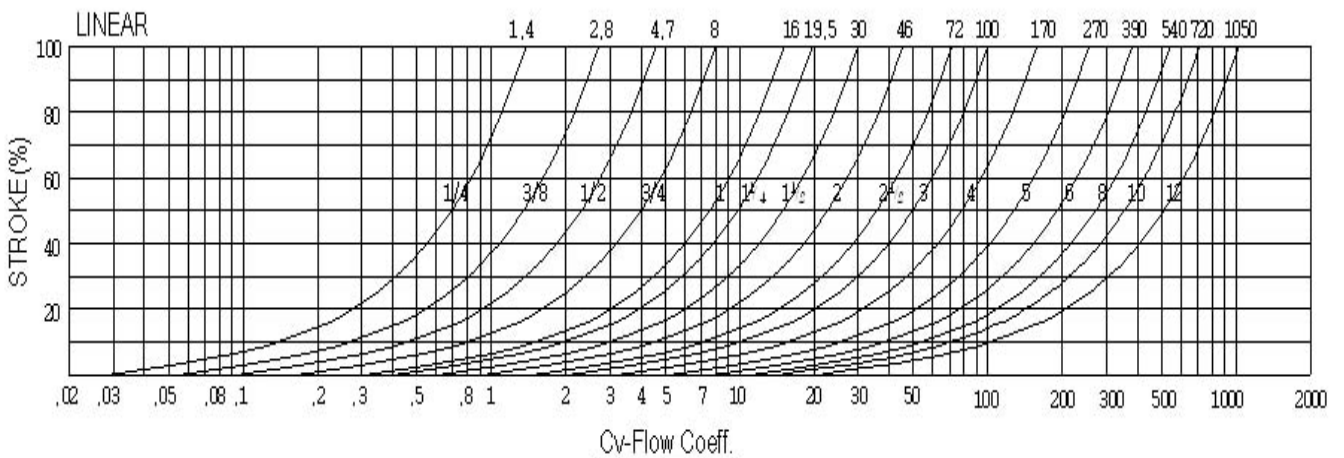
2. Flow Characteristics

2-1 Equal %



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

2-2 Linear



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

1. Diaphragm Actuator: Single seat. Reverse Action (RA, Air to Open)

■ Shaded zone represents standard application.

[Unit: Kg/cm²G]

Actuator Model	Air Supply (Kg/cm ² G)	Spring Range (Kg/cm ² G)	Port Size															
			10A (3/8")	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")	
A-220M	1.4	0.2 ~ 1.0	26.4	11.4	6.3	3.9												
	2.4	0.4 ~ 2.0		23.7	13.2	8.7												
	3.2	0.8 ~ 2.4			22.2	15												
A-270M	1.4	0.2 ~ 1.0		28.5	16	10	6.5	3.8	2.8									
	2.4	0.4 ~ 2.0		57	32.5	21	12	8	4.5	3.8								
	3.2	0.8 ~ 2.4			64.5	42	24	15	9	7.2								
A-360M	1.4	0.2 ~ 1.0						8	4.5	3.5	1.6	1.2						
	2.4	0.4 ~ 2.0						16	10	7	3.6	2.2						
	3.2	0.8 ~ 2.4						32.5	20.5	14	8	5						
A-430M	2.4	0.4 ~ 2.0											3	2				
	3.2	0.8 ~ 2.4											6	4				
A-520M	2.4	0.4-2.0														2.9	1.9	1.3
	3.2	0.8-2.4														5.8	3.8	2.6

2. Diaphragm Actuator: Single seat. Direct Action (DA, Air to Close)

■ Shaded zone represents standard application.

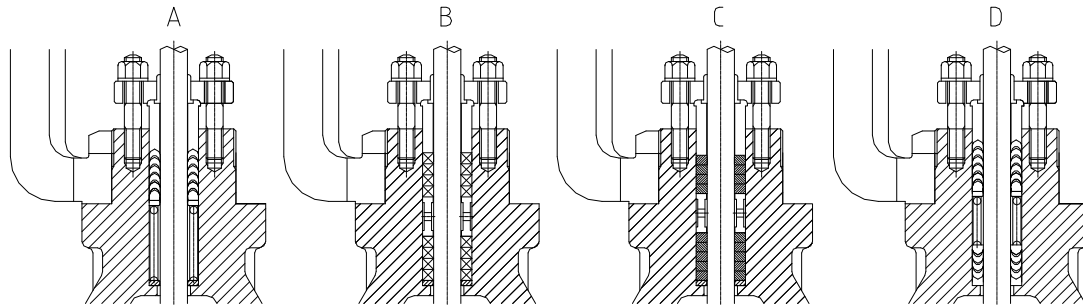
[Unit: Kg/cm²G]

Actuator Model	Air Supply (Kg/cm ² G)	Spring Range (Kg/cm ² G)	Port Size															
			10A (3/8")	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")	
A-220M	1.4	0.2 ~ 1.0	52.5	23.4	13.2	8.7												
	3.2	0.4 ~ 2.0			39.3	25.2												
A-270M	1.4	0.2 ~ 1.0				21	12.4	7.5	4.5	3.8								
	3.2	0.4 ~ 2.0				62	38	24	15.2	10.5								
A-360M	1.4	0.2 ~ 1.0						16	10	7	3.5	2.5						
	3.2	0.4 ~ 2.0						48.5	31.5	22	12.5	7.5						
A-430M	1.4	0.2 ~ 1.0										4.5	3	2	1.2			
	3.2	0.4 ~ 2.0										13.5	9	6	3.5			
A-520M	1.4	0.2-1.0														2.9	1.9	1.3
	3.2	0.4-2.0														8.5	5.5	3.7

GLAND PACKING

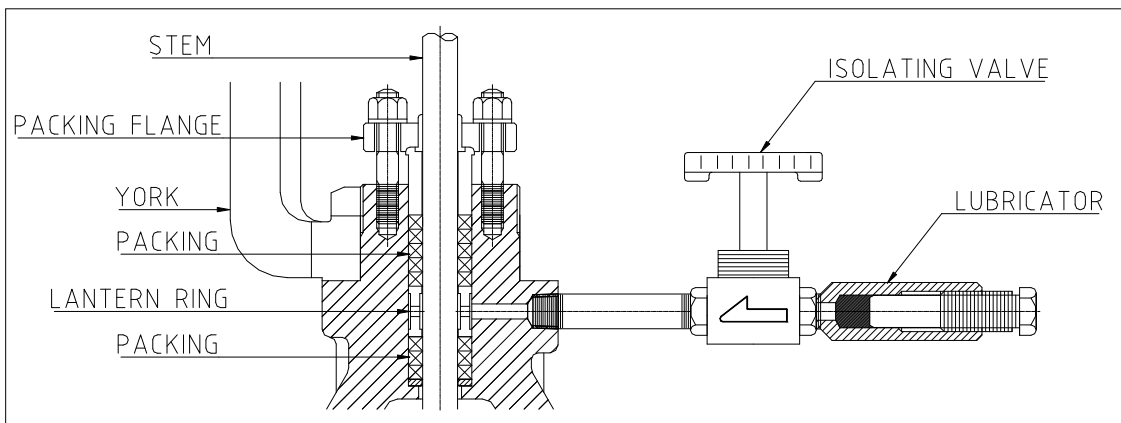
Packing type	Fluid	1					2					3			4		Remarks		
		Vapor	High temperature gas	Feed water	Drain	Similar ones	Air, Gas	Fresh water, sea water	Lubricating oil	Similar ones	Petroleum products	LPG	LAG	LNG	Similar ones	Oxygen	Highest Service Temp. (°C)	Highest Service Pressure (kgf/cm ²)	Lubrication
A	V-type PTFE			○	○	○	○	○	○	○	○	○	○	○	○	○	196	40	Not required
B	PTFE yarn packing	○		○	○	○	○	○	○							230	150	Required	
C	Graphite yarn packing	○	○	○	○	○	○	○	○	○	○	○	○	○	○	650	300	Required	
D	Vacuum			○	○	○	○	○	○	○	○	○	○	○	○	200	40	Not required	

1. Types of packing



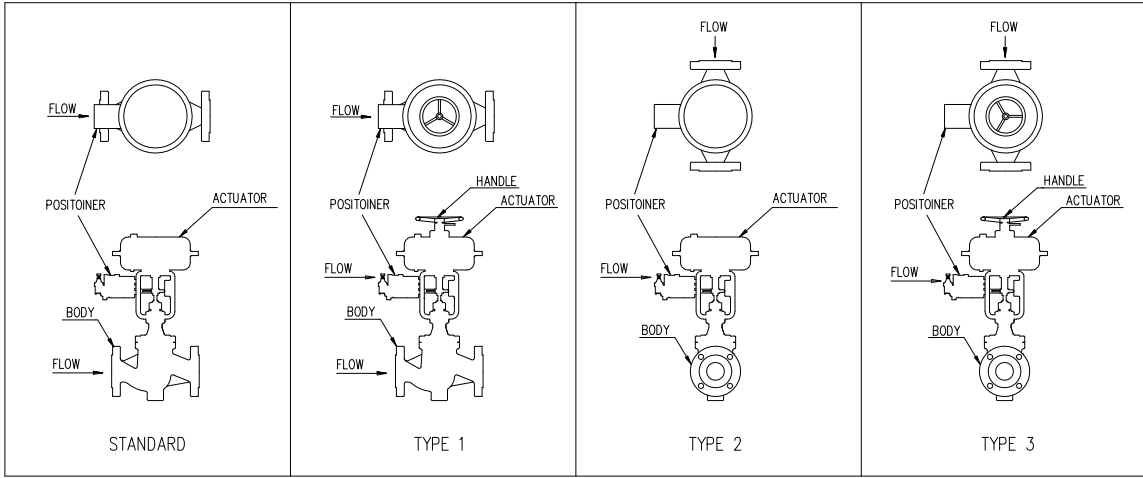
- : V-Shape molded PTFE
- : Graphite molded (Grapoil)
- : White asbestos yarn impregnated PTFE powder and special lubricant.
- : Lantern Ring (SUS316)
- : Packing Washer (SUS316)

2. For Lubrication

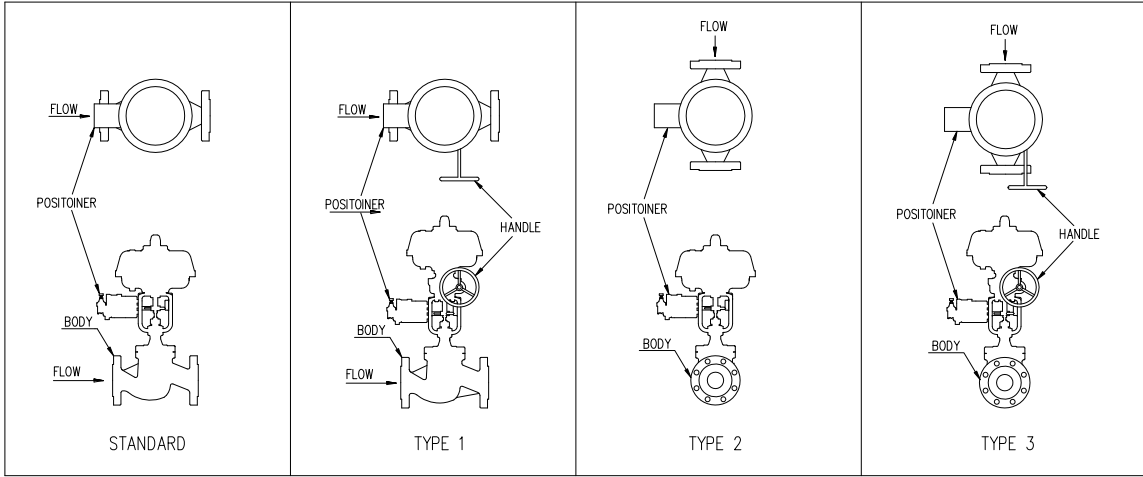


ACTUATOR MOUNTING FORMS

ACTUATOR : A-220M ~ A-270M



ACTUATOR : A-360M ~ A-520M



WEIGHT

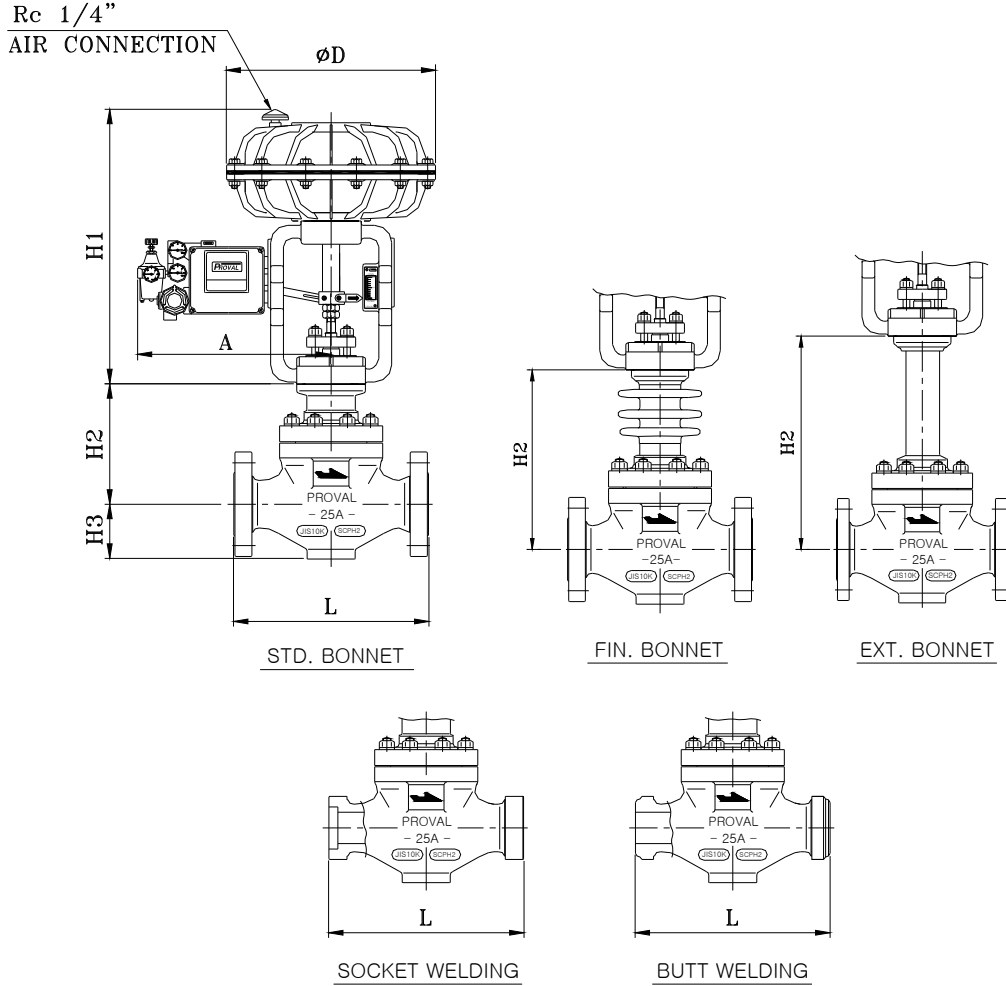
※ Only standard types are represented. Weight of accessories, a hand wheel and the like are not included.

[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	Rating	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	48	49	49	50	51	52	52	53	53	54	54	55														
A-270M					71	72	72	73	73	74	74	77	84	86	92	95											
A-360M										110	113	120	123	128	132	152	157	173	239								
A-430M																280	294	300	308	315	322	322	329				
A-520M																						441	459	441	459	738	967

DIMENSION DRAWING

ACTUATOR : A-220M



DIMENSIONS

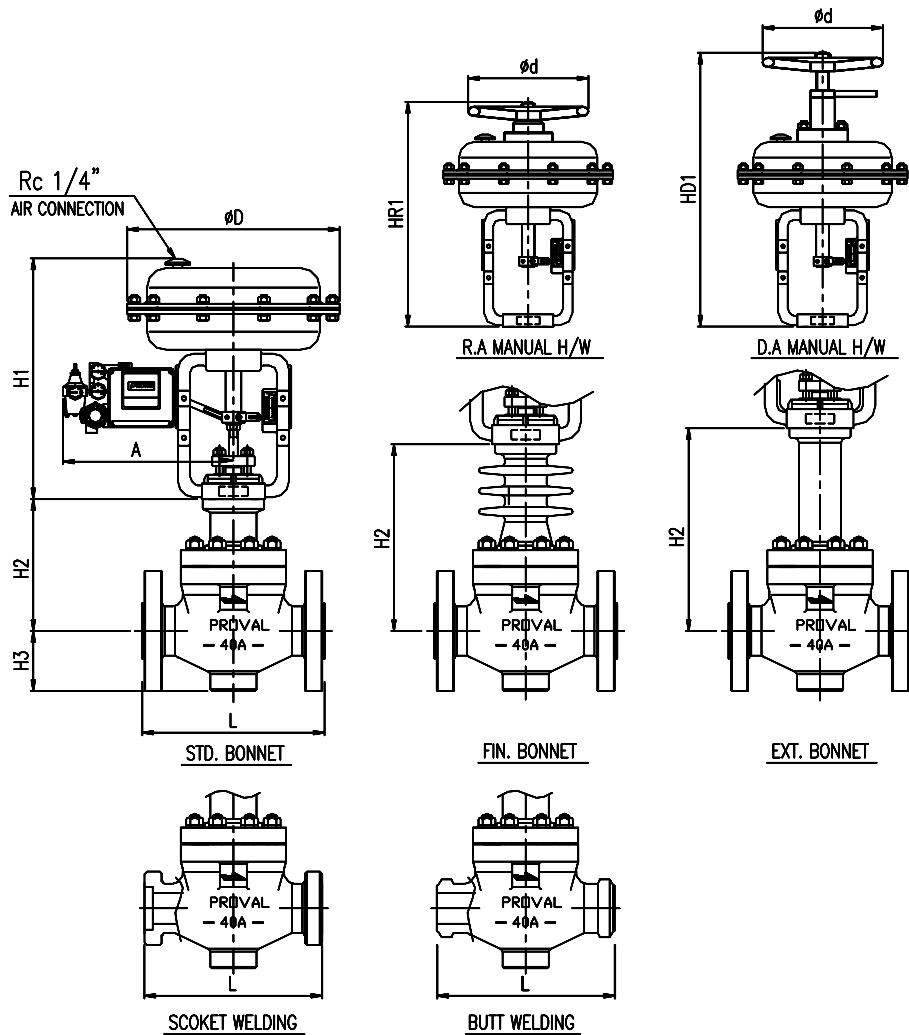
[Unit: mm]

Valve Size		Face to Face : L		H3	H2			Actuator size (ØD)	H1	A
mm	inch	JIS 10K, 20K ANSI 150#. JPI 150#	ANSI 300#		STD.	FIN.	EXT.			
15	½	185	185	62	150	265	285	225	280	310
20	¾	185	185	62	150	265	285	225	280	310
25	1	185	185	62	150	265	285	225	280	310
32	1¼	223	228	75	160	280	300	225	280	310
40	1½	223	228	75	160	280	300	225	280	310
50	2	256	264	80	180	300	400	225	280	310

MODEL	YAD-122Q1, YAD-121Q1, YAD-121Q3, YAD-132Q1 YAD-222Q1, YAD-221Q1, YAD-221Q3, YAD-232Q1	SIZE	15A - 50A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-270M



DIMENSIONS

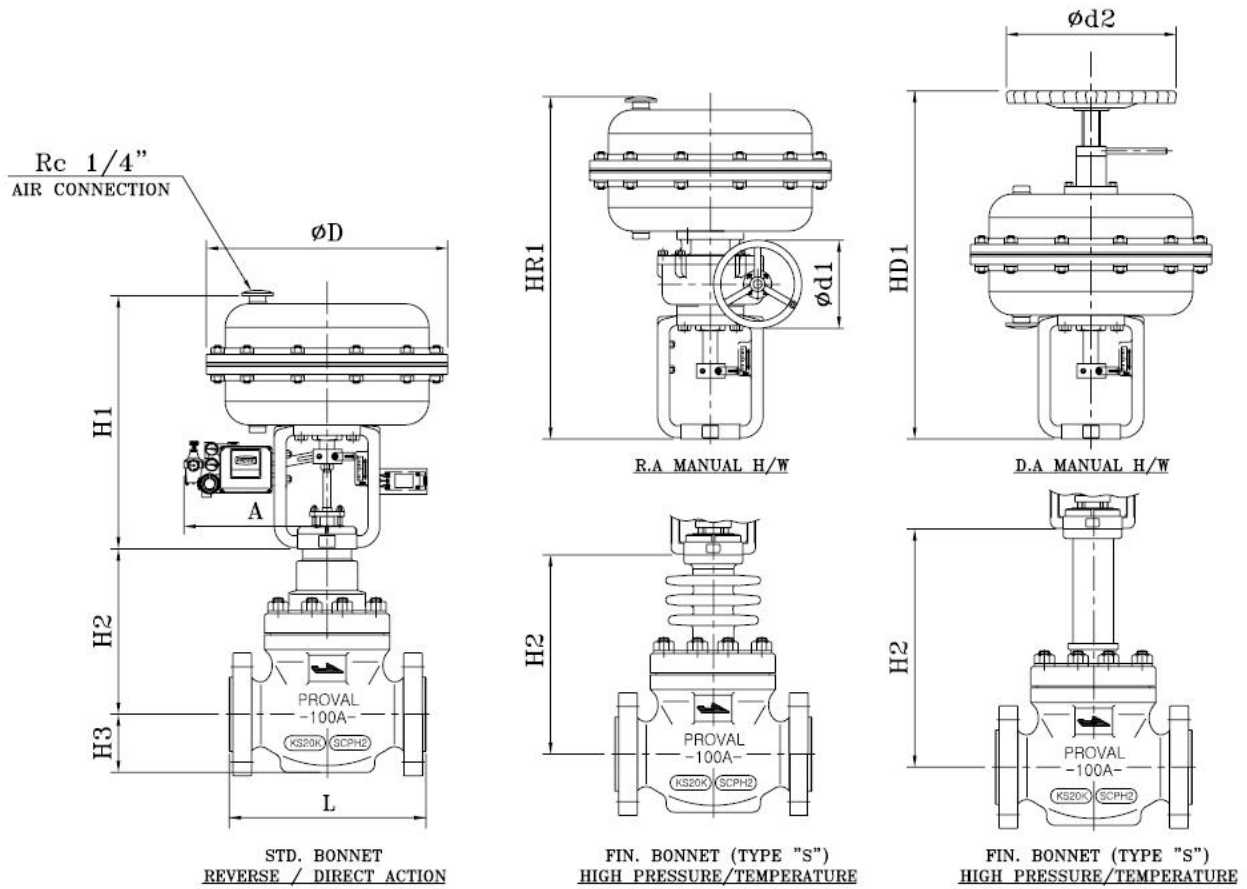
[Unit: mm]

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#		STD.	FIN.	EXT.			HR1	HD1		
25	1	185	185	62	150	265	285	270	310	360 ~ 390	442 ~ 422	325	200
32	1¼	223	228	75	160	280	300	270	310	360 ~ 390	442 ~ 422	325	200
40	1½	223	228	75	160	280	300	270	310	360 ~ 390	442 ~ 422	325	200
50	2	256	264	80	180	300	320	270	310	360 ~ 390	442 ~ 422	325	200
65	2½	283	294	70	185	315	335	270	310	360 ~ 390	442 ~ 422	325	200
80	3	300	320	80	205	375	395	270	310	360 ~ 390	442 ~ 422	325	200

MODEL	YAD-122Q1, 121Q1, 121Q3, 132Q1, 13231, 112Q1 YAD-222Q1, 221Q1, 221Q3, 232Q1, 23231	SIZE	15A ~ 50A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-360M



DIMENSIONS

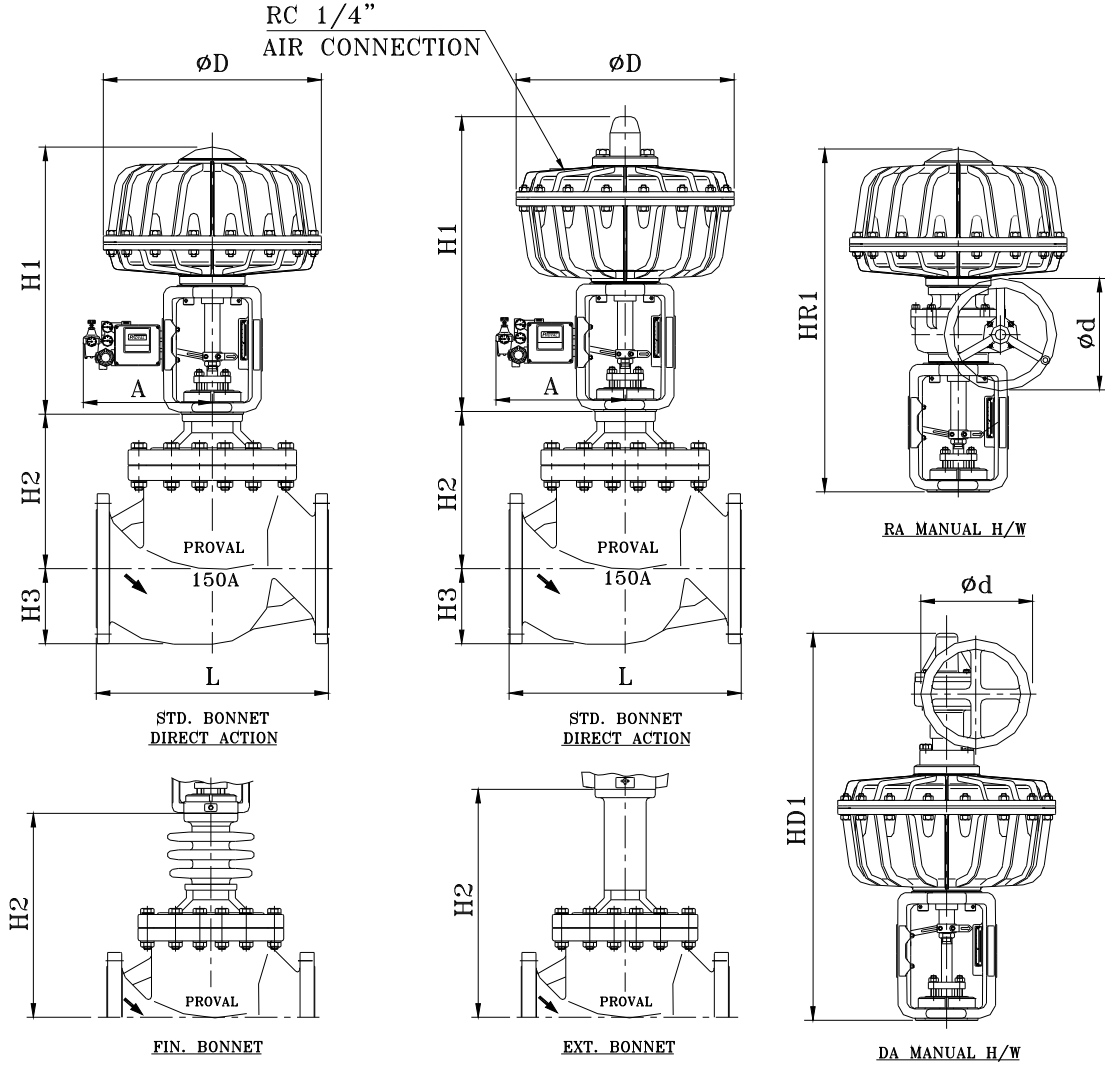
[Unit: mm]

Valve Size		Face to Face : L		H3	H2			Actuator size (ØD)	H1		With Manual H/W		A	Ød1	Ød 2
mm	inch	JIS 10K ANSI 150# JPI 150#	ANSI 300#		STD.	FIN.	EXT.		R.A.	D.A.	HR1	HD1			
50	2	256	264	80	180	300	320	360	458	427	590	588 ~ 548	330	200	315
65	2½	283	294	70	185	315	335	360	458	427	590	588 ~ 548	330	200	315
80	3	300	320	80	205	375	395	360	458	427	590	588 ~ 548	330	200	315
100	4	358	373	100	215	395	415	360	458	427	590	588 ~ 548	330	200	315
125	5	400	417	110	273	495	515	360	458	427	590	588 ~ 548	330	200	315

MODEL	YAD-122Q1, 121Q1, 121Q3, 132Q1, 13231 YAD-222Q1, 221Q1, 221Q3, 232Q1, 23231	SIZE	50A ~ 125A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-430M



DIMENSIONS

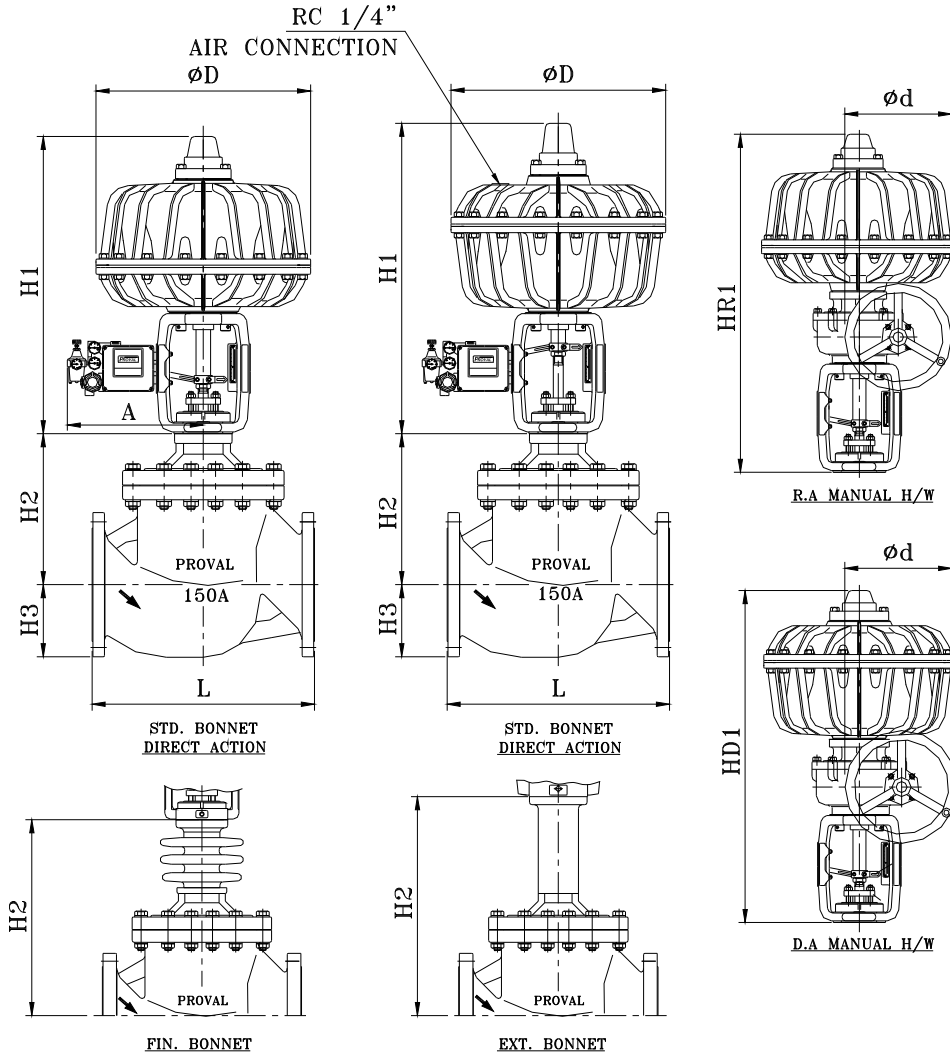
[Unit: mm]

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#		STD.	FIN.	EXT.		R.A.	D.A.	HR1	HD1		
100	4	358	373	100	215	395	415	430	554	643	880	910	350	315
125	5	400	417	110	273	495	515	430	554	643	880	910	350	315
150	6	462	479	136	299	515	535	430	554	643	880	910	350	315

MODEL	YAD-122Q1, YAD-123Q1, YAD-123Q3 YAD-222Q1, YAD-223Q1, YAD-223Q3	SIZE	100A ~ 150A
PROVAL Co., Ltd.			

DIMENSION DRAWING

ACTUATOR : A-520M



DIMENSIONS

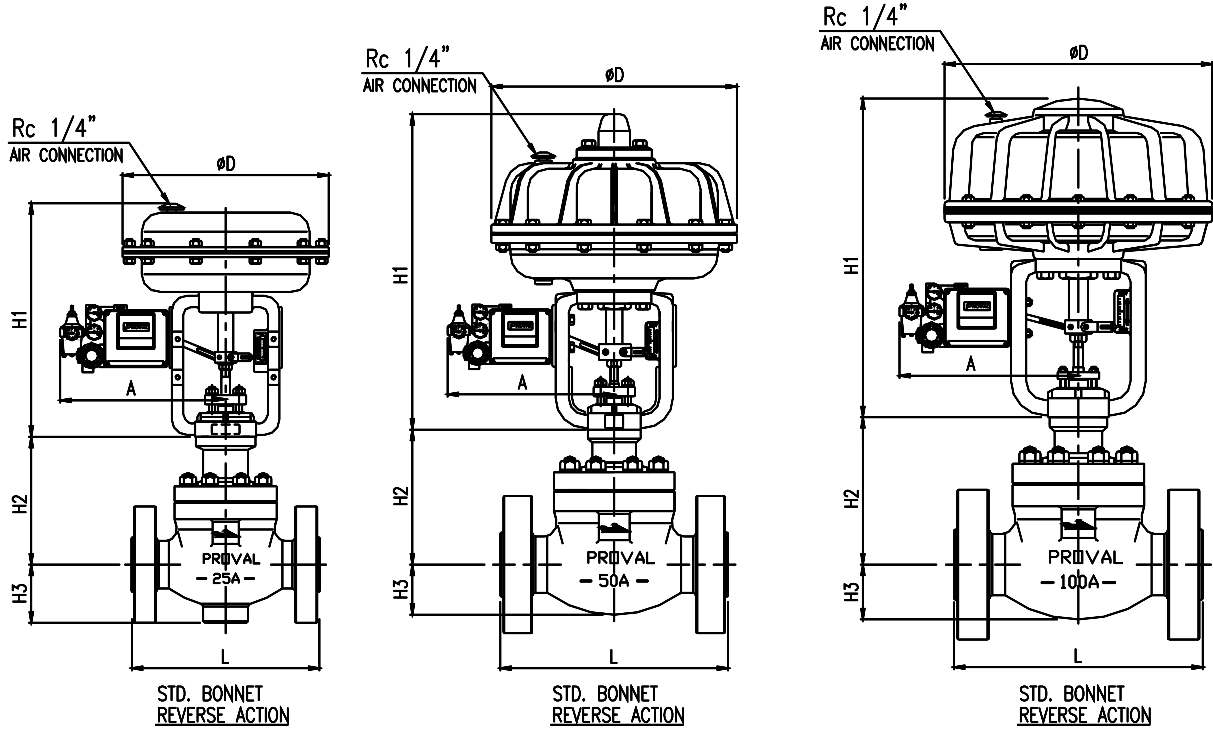
[Unit: mm]

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#	STD.		FIN.	EXT.	R.A.		D.A.	HR1	HD1			
150	6	462	479	136	299	515	535	520	735	795	990	1060	370	315	
200	8	554	567	176	380	650	670	520	735	795	990	1060	370	315	
250	10	676	703	195	450	750	770	520	735	795	990	1060	370	315	
300	12	799	830	385	565	840	860	520	735	795	990	1060	370	315	

MODEL	YAD-122Q1, 121Q1, 121Q3, 132Q1, 13231 YAD-222Q1, 221Q1, 221Q3, 232Q1, 23231	SIZE	150A - 250A
PROVAL Co., Ltd.			

DIMENSION DRAWING

RATING : JIS 30K, ANSI 600#



DIMENSIONS

[Unit: mm]

Valve Size		Face to Face : L JIS 30K R.F, ANSI 600# R.F	Actuator size (ØD)	H1	H2	H3	A
mm	inch						
15	½	201	270	310	170	62	325
20	¾	201	270	310	170	62	325
25	1	201	270	310	190	62	325
32	1¼	245	360	458	185	75	330
40	1½	245	360	458	185	75	330
50	2	286	360	458	210	80	330
65	2½	315	430	554	280	77	350
80	3	345	430	554	320	90	350
100	4	397	430	554	360	101	350

MODEL	YAD-122Q1, YAD-121(3)Q1, YAD-121(3)Q3 YAD-222Q1, YAD-221(3)Q1, YAD-221(3)Q3	SIZE	15A ~ 100A
PROVAL Co., Ltd.			