

Maxifluss Rotary Plug Valve - VETEC Type 82.7

Valve Size NPS 1 to 10
ANSI Pressure Class CL 150 and 300
Temperature Range of Medium -320°F to +1022°F (-196°C to +550°C)

Valve Body Material

- Cast carbon steel
- Low temperature carbon steel
- Cast stainless steel
- Special alloys (Duplex, Hastelloy etc.)
- Other special materials on request

Seat Version

- Metal or soft sealing
- Standard seat factors 1 / 0.6 / 0.4 / 0.25
- Customized seat factors

Standard Version

- For temperatures from: -148°F to 1022°F (-100°C to +550°C)
- Type 82.7/R (fig 1) - with Type R rolling diaphragm spring return pneumatic actuator
- Type 82.7/M (fig 2) - with Type M rolling diaphragm spring return pneumatic actuator
- Type 82.7/AT (fig 3) - with Type AT single acting or double acting rack and pinion pneumatic actuator

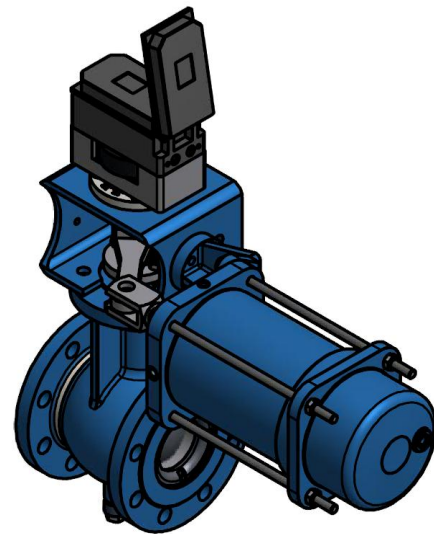


Fig.1 VETEC Type 82.7 with Type R Actuator

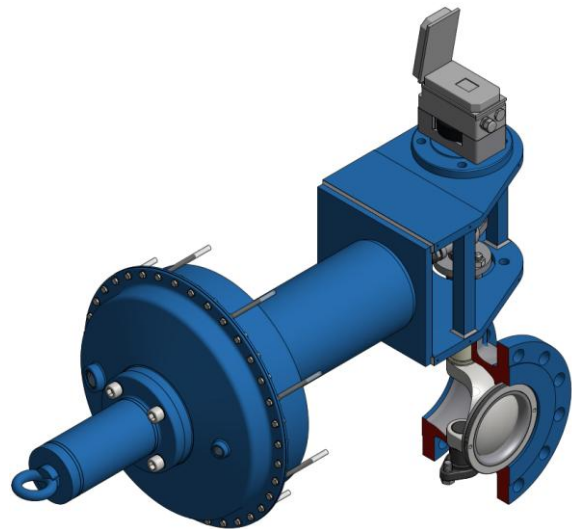


Fig.2 VETEC Type 82.7 with Type M Actuator

TY005.030		Revision	0	1	2	3	4	5	6	7	8	Page 1 of 15
Created	F. Thiede	Created	-/-	fth	fth							
Approved	P. Konzack	Approved	-/-	pko	pko							
Date	23.10.2015	Date	23.10.15	04.11.15	11.11.15							

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Additional Version

- Low emissions packing / double packing
- Noise reduction devices for gaseous mediums
- Anti-cavitations devices for liquids
- Version for low temperature cryogenic applications
- Fire safe version according to API 607 and ISO 10497
- Version to sour gas applications acc. to NACE MR103 / MR0175 / ISO 15156
- Versions acc. to DIN Standards

The modular design and the wide variety of our rotary plug valve make the product universal and suited to all applications.

The valves can be equipped with different accessories, such as positioners, solenoid valves and other accessories (fig.3).

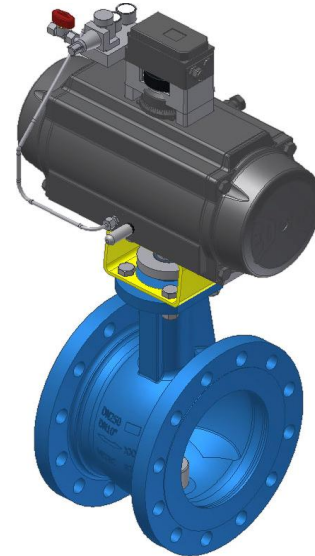


Fig.3 VETEC Type 82.7 with Type AT Actuator

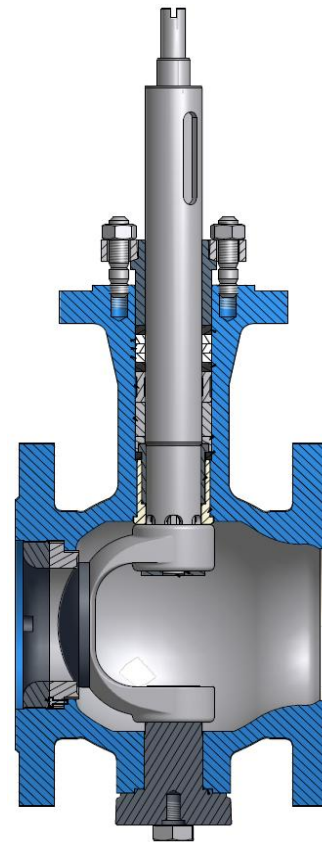


Fig.4 VETEC Type 82.7 Standard – Sectional Drawing

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Principle of Operation

Rotating the plug of the valve in and out of the path of the flow determines the flow coefficient (C_v) of the valve, which is a function of the flow rate and pressure loss through the valve. This principle is used to control either flow rate or differential pressure, as desired.

The offset between the plug face and shaft center and the offset between the shaft center and valve centerline give the rotary plug valve its double eccentric (double offset) design (fig.5/6). When opening and closing the valve, this double eccentric design allows the plug to lift smoothly off the seat without any friction, eliminating any breakaway torque. This smooth opening also allows for stable control, even at small opening angles.

Fail-safe Action

When combined with a Type R, M, AT actuator, the control valve may exhibit one of two fail-safe functions upon failure of supply air pressure.

Fail Close - the rotary plug valve will close upon loss of supply air

Fail Open - the rotary plug valve will open upon loss of supply air

Flow Direction

The rotary plug valve may be used in either flow direction, depending on the medium, operating conditions, and shut-off and flow requirements of the valve (fig.7):

Flow to close = FTC

Flow to open = FTO

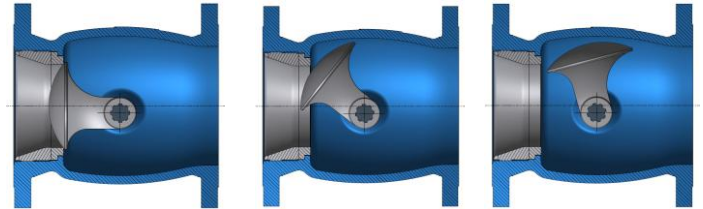


Fig.5 Double-Eccentric Principle

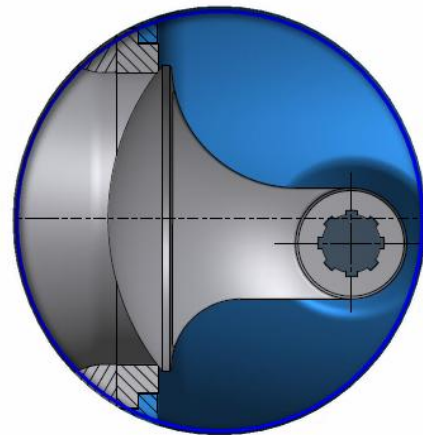


Fig.6 Double-Eccentric Principle

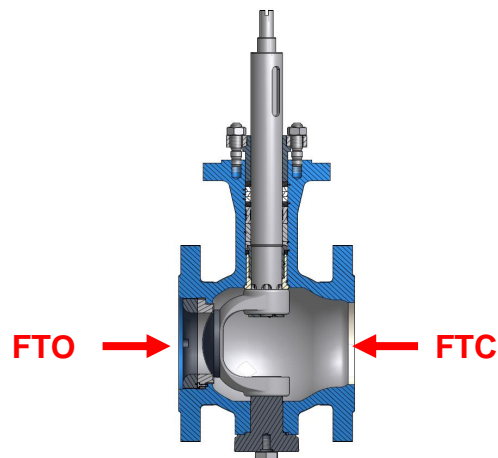


Fig.7 Flow Direction

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An arrow on the valve will indicate the direction of flow the valve has been configured for (fig.8)

For installing the valve into the pipeline we recommend a minimal distance of 6 nominal valve size (6 x NPS) in front of the valve and 6 nominal valve size (6 x NPS) behind the valve.

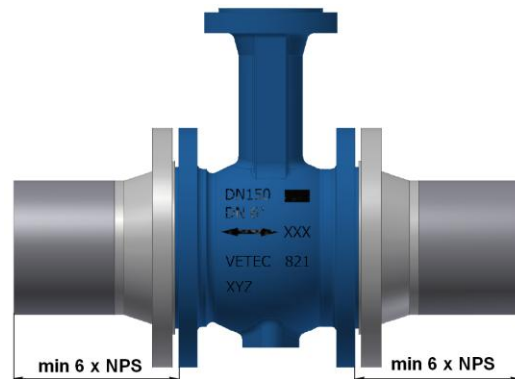


Fig.8 Installation into the pipeline

Flow Characteristic

The rotary plug valve has an inherent characteristic (fig. 9); however, a cam disc or positioner may be used to achieve an equal percentage or linear characteristic (fig. 10)

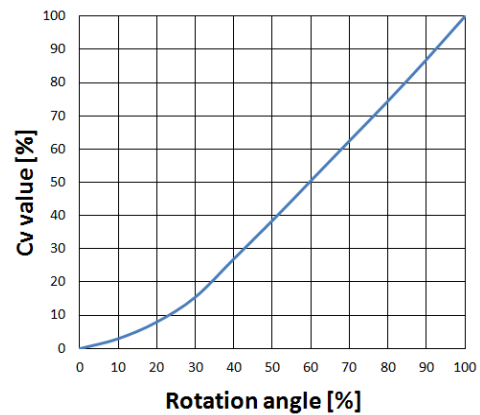


Fig. 9 Inherent Characteristic

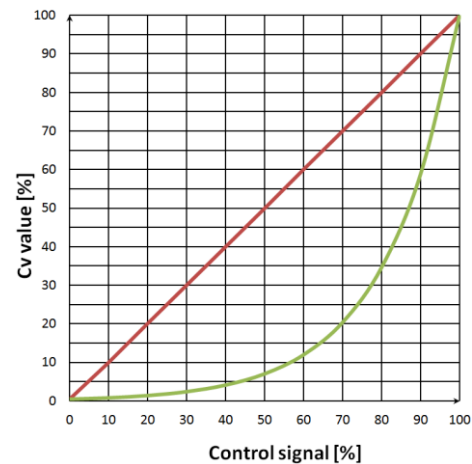
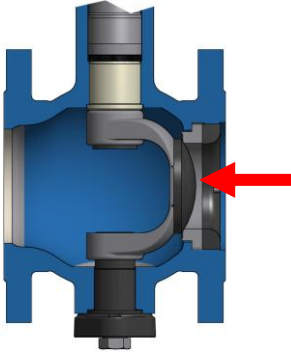
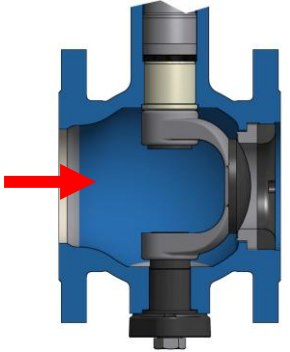


Fig.10 Equal Percentage and Linear Characteristic

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Table 1 - Technical Data

VETEC Type	82.7	
Valve size	NPS 1 to 10	
End Connection	Flanged	
Flange pressure rating	CL 150 / 300	
Max. operating pressure	725 psi (50 bar)	
Overall length	ANSI / ISA 75.08.02 (formerly 75.04) / IEC 60534-3-2	
Flange bore / form	ASME B16.5	
Flow direction	 <p>flow to open</p>	 <p>flow to close</p>
Characteristic	Equal percentage or linear / positioned characteristic / on/off valve	
Rangeability	up to 200 : 1	
Temperature range of medium	-320 to 1022 F (-196 to +550 °C)	
Opening angle	75°	
Leakage class acc. to ANSI/FCI 70-2	Standard - metal seat	Optional - soft seat
	IV	VI

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Table 2 - Materials

Part	Material		
Body	A216WCC	A351CF8M	A352LC3
Shaft	316 L		
Plug	316 L or Stellite 6		
Trunnion bearing	316 L		
Gasket	Graphite or stainless steel or PTFE		
Seat ring	Carbide armored 316 L or 316 L with PTFE soft sealing surface		
Seat retainer	316 L		
O-ring on seat	FPM 80 VR1		
Bearing bushing	316 L / plastic		
Packing bushing	316 L		
O-Ring	FPM 80 VR1		
Packing	PTFE / Graphite		

Table 3 - Face-to-Face Dimensions ANSI (Class 150 / 300)

NPS		1	1½	2	3	4	6	8	10
Length	[in]	4.02	4.49	4.88	6.50	7.64	9.02	9.57	11.69
	[mm]	102	114	124	165	194	229	243	297

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Table 4 - Flow Coefficients Cv
4a. Seat with Metal Sealing / Flow Direction - Flow to Open (FTO)

Seat Factor	NPS		1	1½	2	3	4	6	8	10
1	Cv		18	42	81	254	416	832	1272	2254
	Seat Ø	[in]	0.71	1.02	1.42	2.36	2.99	4.13	5.31	6.69
		[mm]	18	26	36	60	76	105	135	170
0.6	Cv		14	25	50	168	243	497	728	1422
	Seat Ø	[in]	0.63	0.85	1.16	1.97	2.36	3.39	4.17	5.75
		[mm]	16	21.5	29.5	50	60	86	106	146
0.4	Cv		12	18	36	121	173	318	451	983
	Seat Ø	[in]	0.55	0.73	1.00	1.73	2.09	2.87	3.46	4.96
		[mm]	14	18.5	25.5	44	53	73	88	126
0.25	Cv		4.6	14	22	81	116	214	283	578
	Seat Ø	[in]	0.39	0.63	0.83	1.46	1.77	2.44	2.87	4.02
		[mm]	10	16	21	37	45	62	73	102

4b. Seat with Metal Sealing / Flow Direction - Flow to Close (FTC)

Seat Factor	NPS		1	1½	2	3	4	6	8	10
1	Cv		18	42	81	243	393	763	936	1503
	Seat Ø	[in]	0.71	1.02	1.42	2.36	2.99	4.13	5.31	6.69
		[mm]	18	26	36	60	76	105	135	170
0.6	Cv		14	25	50	156	231	370	474	948
	Seat Ø	[in]	0.63	0.85	1.16	1.97	2.36	3.39	4.17	5.75
		[mm]	16	21.5	29.5	50	60	86	106	146
0.4	Cv		12	18	36	110	139	214	289	624
	Seat Ø	[in]	0.55	0.73	1.00	1.73	2.09	2.87	3.46	4.96
		[mm]	14	18.5	25.5	44	53	73	88	126
0.25	Cv		4.6	14	22	65	104	145	185	370
	Seat Ø	[in]	0.39	0.63	0.83	1.46	1.77	2.44	2.87	4.02
		[mm]	10	16	21	37	45	62	73	102

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4c. Seat with Soft Sealing / Flow Direction - Flow to Close (FTC)

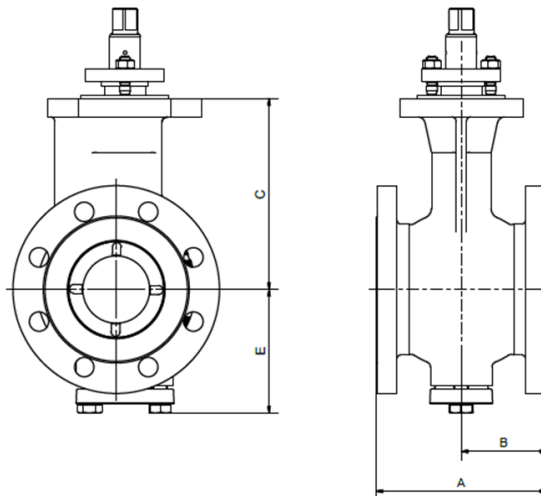
Seat Factor	NPS		1	1½	2	3	4	6	8	10
1	Cv		14	42	79	208	335	618	844	1410
	Seat Ø	[in]	0.63	1.02	1.38	2.13	2.76	3.86	5.04	6.30
		[mm]	16	26	35	54	70	98	128	160
0.6	Cv		13	25	50	156	231	370	474	948
	Seat Ø	[in]	0.59	0.85	1.16	1.97	2.36	3.39	4.17	5.75
		[mm]	15	21.5	29.5	50	60	86	106	146
0.4	Cv		12	18	36	121	139	214	289	624
	Seat Ø	[in]	0.55	0.73	1.00	1.81	2.09	2.87	3.46	4.96
		[mm]	14	18.5	25.5	46	53	73	88	126
0.25	Cv		4.6	14	22	65	104	145	185	370
	Seat Ø	[in]	0.39	0.63	0.83	1.46	1.77	2.44	2.87	4.02
		[mm]	10	16	21	37	45	62	73	102

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Table 5 - Dimensions

Table 5a – Valve Dimensions

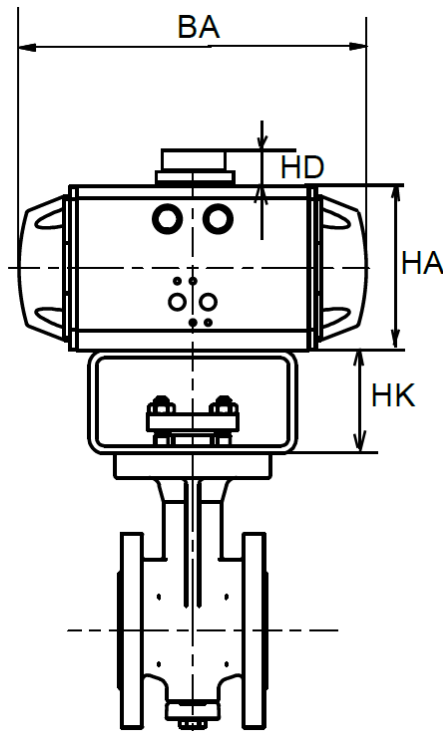
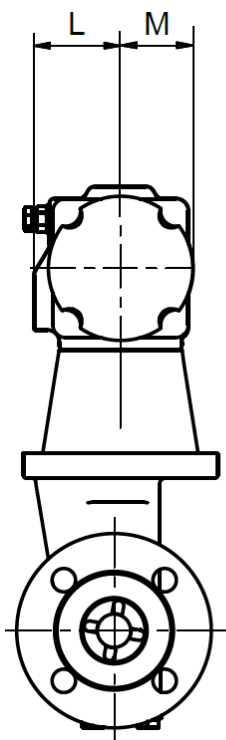
NPS	CL	A		B		C		E	
		[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]
1	150	4.02	102	2.01	51	5.00	127	3.20	81.40
	300								
1½	150	4.49	114	2.24	57	5.39	137	3.74	95.10
	300								
2	150	4.88	124	2.44	62	5.79	147	3.43	87.10
	300								
3	150	6.50	165	3.27	83	7.76	197	4.51	114.60
	300								
4	150	7.64	194	3.82	97	8.50	216	5.10	129.60
	300								
6	150	9.02	229	4.72	120	11.61	295	6.13	155.60
	300								
8	150	9.57	243	5.20	132	12.20	310	7.50	190.50
	300							7.50	190.50
10	150	11.69	297	6.46	164	14.06	357	8.29	210.60
	300							8.75	222.30



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Table 5b - Type AT Actuator and Mounting Bracket Dimensions

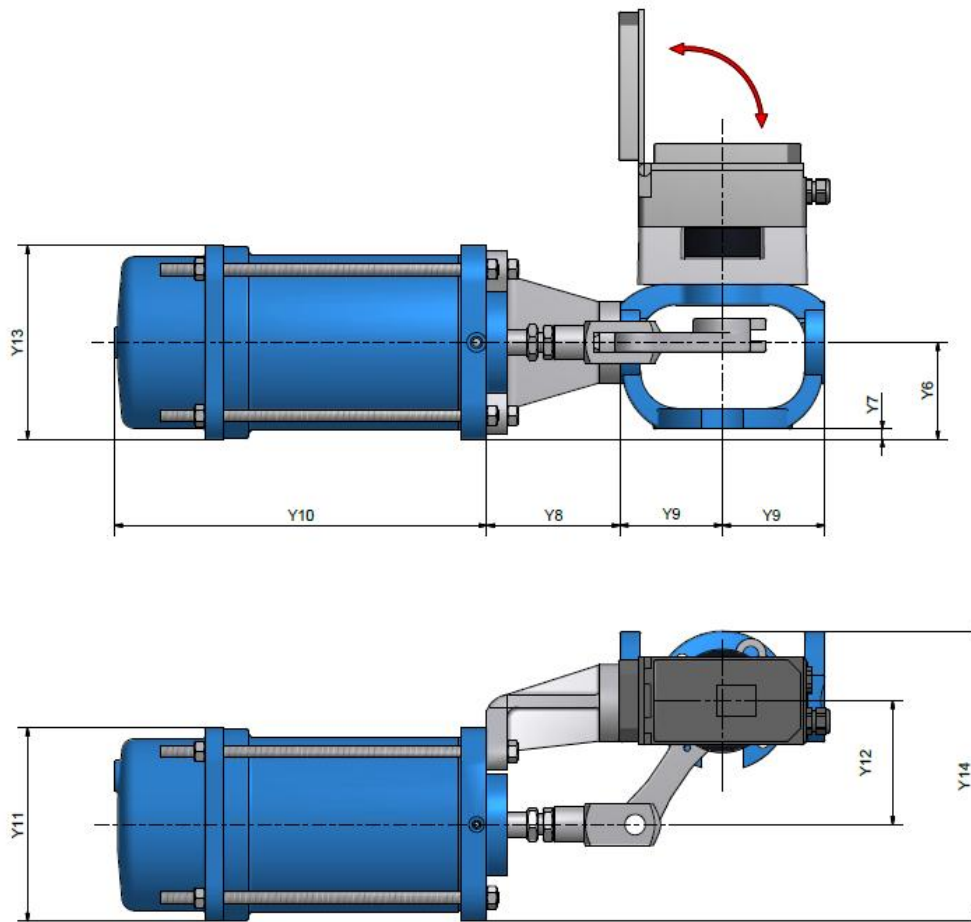
Actuator	HK		HA		BA		L		M		HD	
Type AT	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]
60	3.14	80	4.02	102	8.03	204	1.69	43	2.01	51	0.79	20
100	3.14	80	4.53	115	9.49	241	1.97	50	2.24	57	0.79	20
150	3.14	80	5.00	127	10.20	259	2.20	56	2.48	63	0.79	20
220	3.14	80	5.71	145	11.97	304	2.52	64	2.83	72	1.18	30
300	3.14	80	6.18	157	13.11	333	2.76	70	3.03	77	1.18	30
450	3.94	100	6.97	177	15.55	395	3.15	80	3.39	86	1.18	30
600	3.94	100	7.72	196	16.65	423	3.46	88	3.66	93	1.18	30
900	3.94	100	8.66	220	18.66	474	3.90	99	3.98	101	1.97	50
1200	3.94	100	9.65	245	20.79	528	4.33	110	4.41	112	1.97	50
2000	3.94	100	11.77	299	23.82	605	5.16	131	5.16	131	1.97	50
3000	3.94	100	12.99	330	27.95	710	6.50	165	6.50	165	1.97	50



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Table 5c - Type R Actuator and Mounting Bracket Dimensions

Actuator Type R	Y6		Y7		Y8		Y9		Y10		Y11		Y12		Y13		Y14	
	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]	[in]	[mm]
110	2,95	75	0,39	10	3,54	90	3,94	100	11,34	288	5,87	149	3,39	86	5,87	149	8,94	227
150	3,70	94	0,39	10	5,12	130	3,94	100	14,29	363	7,36	187	4,72	120	7,36	187	11,02	280
200	4,72	120	0,79	20	5,51	140	5,12	130	15,79	401	9,45	240	5,00	127	9,45	240	13,78	350
250	5,83	148	1,89	48	5,71	145	5,12	130	17,24	438	13,23	336	5,00	127	11,65	296	15,51	394
250v	5,83	148	1,89	48	5,71	145	5,12	130	20,59	523	13,23	336	5,00	127	11,65	296	15,51	394
250vv	5,83	148	1,89	48	5,71	145	5,12	130	20,59	523	13,23	336	5,00	127	11,65	296	15,51	394



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Table 6 - Weights

Table 6a - Valve + AT Actuator Weight [lbs]

AT Actuator		60	100	150	220	300	450	600	900	1200	2000	3000
Weight		9	12	14	20	27	38	49	73	94	148	205
Valve		Valve + AT Actuator Weight										
NPS	Weight											
1	18	27	30									
1½	29	38	41	43								
2	35	44	47	49	55							
3	77			91	97	104	115					
4	95				115	122	133	144	168			
6	188					215	226	237	261	282	336	393
8	309					336	347	358	382	403	457	514
10	419							468	492	513	567	624

Table 6b - Valve + AT Actuator Weight [kg]

AT Actuator		60	100	150	220	300	450	600	900	1200	2000	3000
Weight		4	5	6	9	12	17	22	33	42	67	93
Valve		Valve + AT Actuator Weight										
NPS	Weight											
1	8	17	20									
1½	13	22	25	27								
2	16	25	28	30	36							
3	35			49	55	62	52					
4	43				52	55	60	65	76			
6	85					97	123	134	158	179	233	290
8	140					152	178	189	213	234	288	345
10	190							239	263	284	338	395

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Table 6c - Valve + R Actuator Weight [lbs]

R Actuator		110	150	200	250	250v	250vv
Weight		35	60	104	159	210	227
Valve		Valve + R Actuator Weight					
NPS	Weight.						
1	18	53					
1½	29	64					
2	35	70					
3	77		137	181			
4	95		155	199	254	305	
6	188			292	347	398	
8	309			413	468	519	536
10	419			523	578	629	646

Table 6d - Valve + R Actuator Weight [kg]

R Actuator		110	150	200	250	250v	250vv
Weight		16	27	47	72	95	103
Valve		Valve + R Actuator Weight					
NPS	Weight.						
1	8	24					
1½	13	29					
2	16	32					
3	35		62	82			
4	43		70	90	115	138	
6	85			132	157	180	
8	140			187	212	235	243
10	190			237	262	285	293

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Possible Valve Actuator Combinations

Table 7a - AT Actuator

AT Actuator		60	100	150	220	300	450	600	900	1200	2000	3000
Flange Connection		F07	F07	F10	F10	F10	F12	F12	F14	F14	F14	F16
Valve		Possible Combinations										
NPS	F. C											
1	F10	✓	✓									
1½	F12	✓	✓	✓								
2	F12	✓	✓	✓	✓							
3	F12			✓	✓	✓	✓					
4	F14			✓	✓	✓	✓	✓	✓			
6	F16					✓	✓	✓	✓	✓	✓	✓
8	F16					✓	✓	✓	✓	✓	✓	✓
10	F16							✓	✓	✓	✓	✓

Table 7b - R Actuator

R Actuator		110	150	200	250	250v	250vv
Valve		Possible Combinations					
NPS	F. C						
1	F10	✓					
1½	F12	✓	✓				
2	F12	✓	✓				
3	F12		✓	✓	✓		
4	F14		✓	✓	✓	✓	
6	F16			✓	✓	✓	✓
8	F16			✓	✓	✓	✓
10	F16			✓	✓	✓	✓

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Order Specification

Type	According to table
Valve size	NPS
Nominal pressure	CL
Body material	According to table
Seat version	Metal or soft sealing
Characteristic	Equal percentage or linear
Flow Coefficient (Cv)	According to table
Direction of flow	Flow to close (FTC) or flow to open (FTO)
Actuator	Type
Type of mounting	Mounting location of the actuator
Fail-safe action	Fail-Close (FC) or Fail-Open (FO)
Max. differential pressure for actuator	... psi (or bar)
Supply air	... psi (or bar)
Bench range	... psi (or bar)
Accessories	e.g. positioned, limit switch, solenoid valve etc.
Others	e.g. special version, certificates, approvals etc.