TYPENBLATT TY005.047 EN

Rotary Plug Valve Type 62.7 with AT (SC/SO) and BR31a

DIN and ANSI Version

Application:

Double eccentric control valve for process engineering and industrial applications.

	DIN	ANSI	
Valve size	DN 25 to 200	NPS 1 to 8	
Pressure rating	PN 10 to 40	Class 150 and 300	
Temperature Range for medium	-10 to +220 °C	14 to 428 °F	(For soft seat limited to 120 °C / 248 °F)

Fields of application

Especially suitable for:

- Control of clean liquid, gaseous and neutral media
- Water processing
- District heating, district cooling

Not suitable for: adhesive, highly viscous, dirty, solid, toxic, and critical media.

Features

Type 62.7 rotary plug valve with Type AT pneumatic piston actuator, single-acting (Fig. 1) and optionally with manual override (Fig. 2).

The control valves designed in the modular system can be equipped with various peripheral devices: Positioners, limit switches, solenoid valves and other accessories according to DIN EN 60534-6-1 and NAMUR recommendation.

Valve body made of

- Cast carbon steel
- Cast stainless steel

Seat version

- Metal sealing
- Soft sealing

Temperature design actuator

For ambient temperatures from -40 to +80 °C/ -40 to +176 °F.

Further versions

Different seat factors: F1 (100 %); F0,4 (40 %)

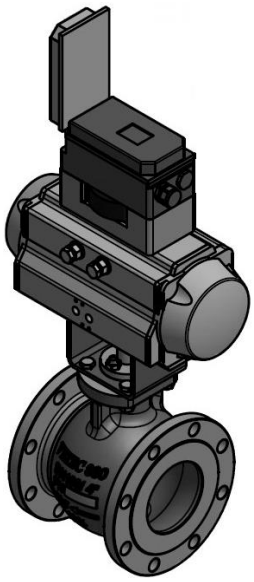

Fig. 1: Type 62.7 with AT / BR31a actuator

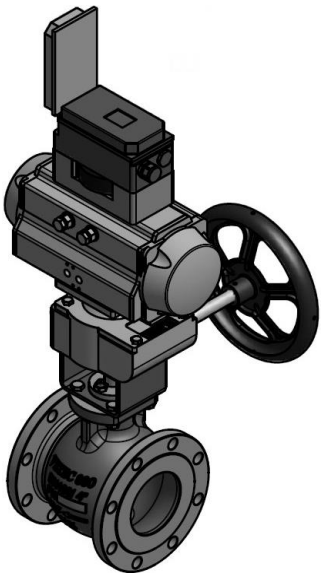

Fig. 2: Type 62.7 with AT / BR31a actuator and manual override

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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 (Kvs / Cv) 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.3 and 4). When opening and closing the valve, this double eccentric design allows the plug to lift smoothly off the seat without any friction. This smooth opening also allows for stable control, even at small opening angles.

Fail-safe Action
In combination with the Type AT/BR31a actuators, the control valve has two fail-safe actions, which become effective when the piston is relieved of pressure or when the supply air fails.

- **FO** = **spring force opens** (fail open) → If the supply air fails, the valve is opened by the spring force of the actuator.
- **FC** = **spring force closes** (fail close) → If the supply air fails, the valve is closed by the spring force of the actuator.

Flow direction
The rotary plug valve is used in one flow direction (Fig. 5):

- Flow to open (FTO)

Installation
When installing the valve in the pipeline observe the direction of flow indicated by the arrow on the valve body (Fig. 5).

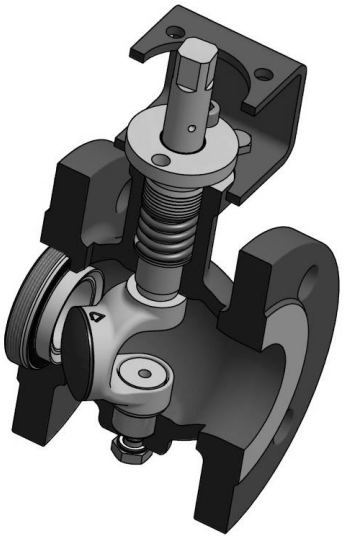


Fig. 6: Assembly drawing of Type 62.7 valve

Type 62.7 closes clockwise and has an opening angle of 90°.

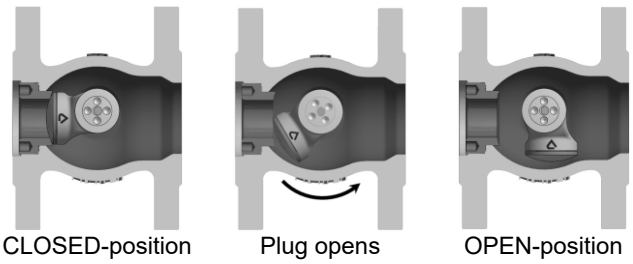


Fig. 3: Plug movement (rotation)

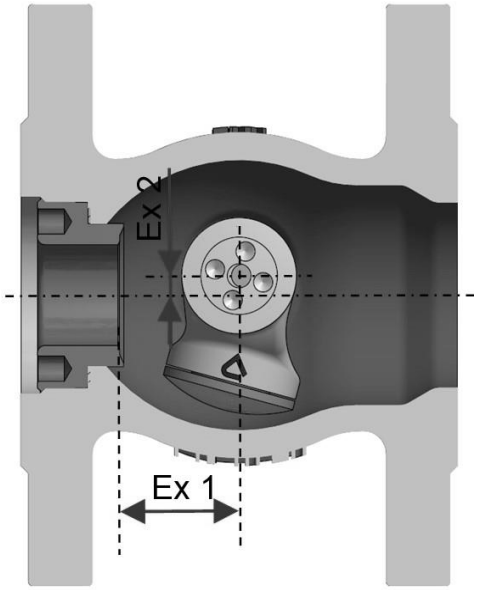


Fig. 4: Double eccentric design

Fig. 5: Marking the flow direction

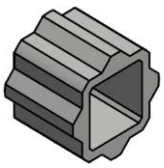
Technical Data

Table 1: Technical Data Valve Type 62.7

Version	**DIN**	**ANSI**
Valve size	DN 25 to 200	NPS 1 to 8
Pressure rating	PN 10/16/25/40	CL 150 / 300
Overall length	EN 558, Series 36	
Style	flange	
Flange form	DIN EN 1092 B1	ASME B16.5
Seat-plug-sealing	metal sealing · soft sealing	
Seat factor	F1 (100 %) · F0,4 (40 %)[1]	
Characteristic	natural · equal percentage or linear (positioned characteristic)	
Rangeability	up to 200:1	
Opening angle	90°	
Plug movement	plug closes clockwise	
Flow Direction	flow to open (FTO)	
Permissible temperatures of the medium	-10 to +220 °C	14 to 428 °F
	-10 to +120 °C (for soft seat)	14 to 248 °F (for soft seat)
Leakage class	DIN EN 60534-4	ANSI/FCI 70-2
	metal sealing: leakage class IV • soft sealing: leakage class VI	
Coating	wet paint, colour RAL 1019 grey-beige	

[1] Except nominal size DN 25, soft seat

Table 2: Technical Data for Actuator Type AT (SC/SO) and BR31a

SC (fail-safe action CLOSE)	**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
SO (fail-safe action OPEN)	**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
Type	pneumatic, single-acting piston rotary actuator									
Angle of rotation	90°									
Manual override	manual gearbox									
Springs	4/4									
Supply air pressure	4 barg									
Flange connection (V/A)[3] DIN EN ISO 5211	F07	F07	F07	F10	F10	F10/F12	F10/F12	F10/F12	F10/F12	F12
Square connection (W/A)[4]	S12	S17	S17	S22	S22	S22	S22	S22	S22	S22
Adapter	12/17	-	-	-	-	22/27	22/27	22/27	22/27	22/27
										

[2] V/A = Valve/Actuator; [3] W/A = Shaft/Actuator

For further information see: www.airtorque.com

Materials

Table 3: Materials for Valve

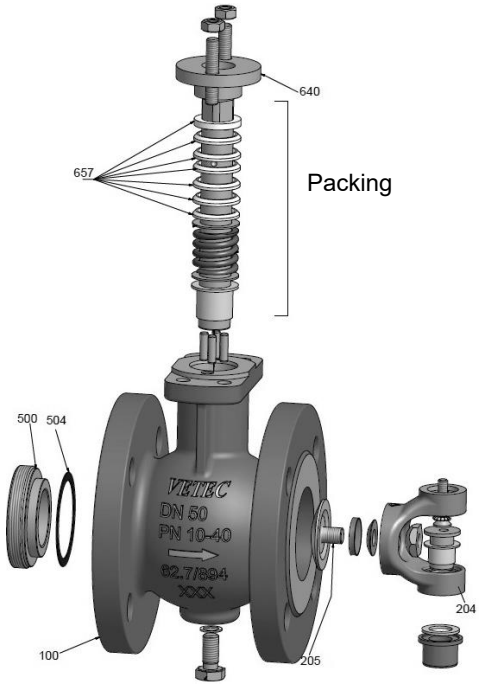
Pos.	Part Designation	Materials		Drawing Valve Type 62.7
100	Body	1.0619/ A216WCC	1.4408 / A351CF8M	
204	Plug-body	1.4408		
205	Plug-cap	1.4404		
300	Shaft	1.4404		
500	Seat ring (Metal or soft sealing)	1.4404 or 1.4404/PTFE		
657	Spring loaded packing	PTFE V-rings		
504	Gaskets	VA/Graphite		

Fig. 7: Drawing Valve Type 62.7

Table 4: Materials for Actuator

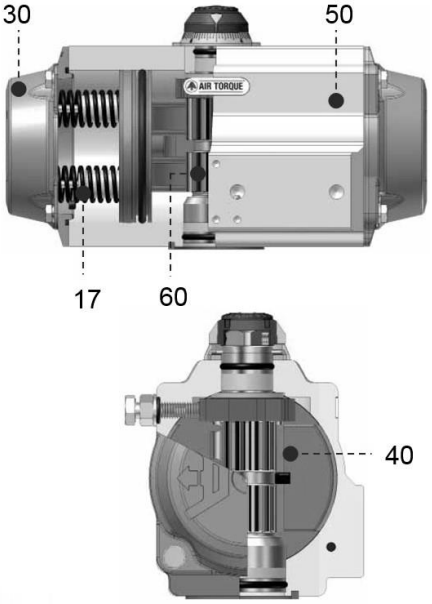
Pos.	Part Designation	Materials	Drawing Actuator Type AT (SC, SO) / BR31a
50	Body	Aluminium casting alloy	
17	Spring cartridge	Spring steel	
30	End cap	Anodized and coated die-cast aluminium alloy	
40	Piston	Anodized and coated die-cast aluminium alloy	
60	Drive shaft	Steel	

Fig. 8: Drawing Actuator Type AT (SC, SO) / BR31a

Flow Characteristic • Kvs/Cv Values
The natural design characteristic (Fig. 9) can be modified to achieve a linear or equal percentage (logarithmic) characteristic using a positioner (Fig. 10).
The flow coefficient (Kvs/Cv) depends on the opening angle of the valve.

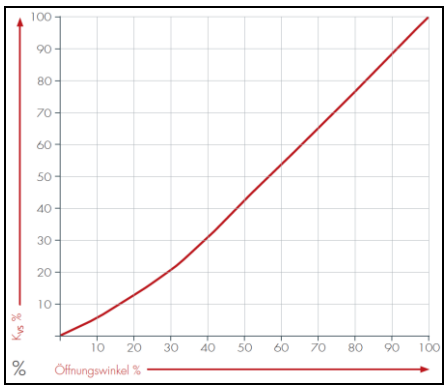


Fig. 9: Naturale (inherent) characteristic curve

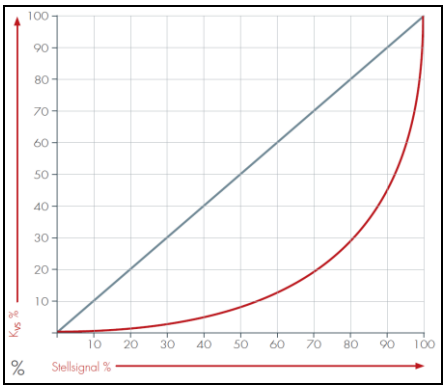


Fig. 10: linear/equal % (logarithmic) characteristic curve

Flow coefficient Kvs/Cv

Table 5: Metal sealing · Flow to open (FTO)

Body size	DN	25	40	50	80	100	150	200
	NPS	1	1½	2	3	4	6	8
Valve Type 62.7		Flow coefficient						
Seat factor (F1) 100%	Kvs	16	36	80	243	386	703	968
	Cv	18	42	92	281	446	813	1119
	Seat Ø	18	26	36	60	76	105	135
Seat factor* (F0,4) 40%	Kvs	10	17	32	104	148	265	348
	Cv	12	20	37	120	171	306	402
	Seat Ø	14	18,5	25,5	44	53	73	88

* Except nominal size DN 25, soft seat

Table 6: Soft sealing · Flow to open (FTO)

Body size	DN	25	40	50	80	100	150	200
	NPS	1	1½	2	3	4	6	8
Valve Type 62.7		Flow coefficient						
Seat factor (F1) 100%	Kvs	11	34	80	212	364	636	904
	Cv	13	39	92	245	421	735	1045
	Seat Ø	14	23	35	55	70	95	125
Seat factor* (F0,4) 40%	Kvs	-	17	32	104	148	265	348
	Cv	-	20	37	120	171	306	402
	Seat Ø	-	18,5	25,5	44	53	73	88

* Except nominal size DN 25, soft seat

Differential Pressure

Table 7: Max. permissible differential pressures in bar • Springs 4/4 • Supply air pressure 4 barg

Actuator Size			**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
FA-Actuator			F07	F07	F07	F10	F10	F10/F12	F10/F12	F10/F12	F10/F12	F12
Adapter			12/17	-	-	-	-	22/27	22/27	22/27	22/27	22/27
Valve Type 62.7			**Max. permissible differential pressures**									
DN	**NPS**	**FA-Valve**										
25	1	VF80	16	-	-	-	-	-	-	-	-	-
40	1½	VF80	-	16	-	-	-	-	-	-	-	-
50	2	VF80	-	8	16	-	-	-	-	-	-	-
80	3	VF85	-	-	-	11	16	-	-	-	-	-
100	4	F10	-	-	-	-	8	14	16	-	-	-
150	6	F12	-	-	-	-	-	5	7	10	16	-
200	8	F12	-	-	-	-	-	-	-	5	8	16

*FA= Flange connection • VF= Flange connection acc. to VETEC Standard

Table 8: Max. permissible differential pressures in psi • Springs 4/4 • Supply air pressure 58 psi

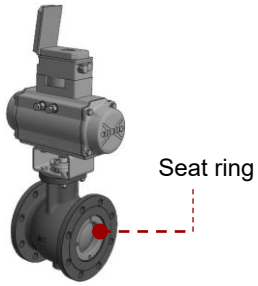
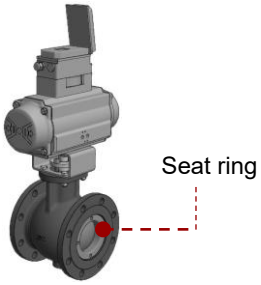
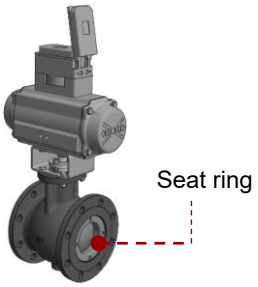
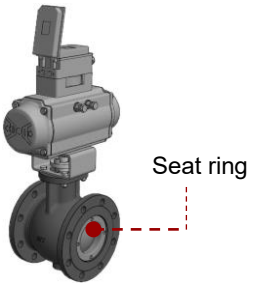
Actuator Size			**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
FA-Actuator			F07	F07	F07	F10	F10	F10/F12	F10/F12	F10/F12	F10/F12	F12
Adapter			12/17	-	-	-	-	22/27	22/27	22/27	22/27	22/27
Valve Type 62.7			**Max. permissible differential pressures**									
DN	**NPS**	**FA-Valve**										
25	1	VF80	232	-	-	-	-	-	-	-	-	-
40	1½	VF80	-	232	-	-	-	-	-	-	-	-
50	2	VF80	-	116	232	-	-	-	-	-	-	-
80	3	VF85	-	-	-	160	232	-	-	-	-	-
100	4	F10	-	-	-	-	116	203	232	-	-	-
150	6	F12	-	-	-	-	-	72	101	145	232	-
200	8	F12	-	-	-	-	-	-	-	72	116	232

*FA= Flange connection • VF= Flange connection acc. to VETEC Standard

Attachment Types of the Actuator

Mounting types, A, B*, C, D* are possible for mounting the actuators.

* For control valves with manual gearboxes, mounting types B and D must be checked due to the risk of collision with the pipeline.

A	B
 Fig. 11	 Fig. 12
C	**D**
 Fig. 13	 Fig. 14

Mounting Positions of the Control Valve

Control valves that include type AT (SC/SO) and BR31a actuator can be mounted in any desired position.

HINWEIS

The plug must not swing downwards. Deposits of the medium can cause the plug to jam!

HINWEIS

The permissible installation position of the accessories must be observed!

HINWEIS

In the case of condensate-containing media, the condensate must be able to drain off.

Sample installations 1: horizontal pipeline • control valve Type 62.7/AT/BR31a

Fig. 15: Control Valve Type 62.7/AT • horizontal mounting position • attachment types of the actuator A, B, C, D

Sample installations 2: horizontal pipeline • control valve Type 62.7/AT/BR31a with gear box

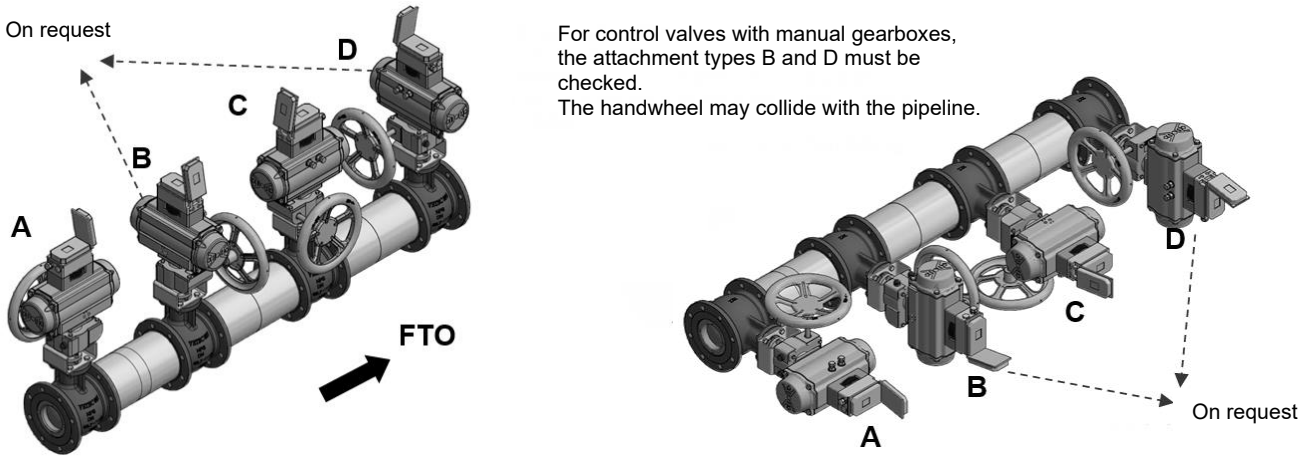


Fig. 16: Control Valve Type 62.7/AT-GB • horizontal mounting position • attachment types of the actuator A, B, C, D

Sample installations 3: horizontal pipeline • control valve Type 62.7/AT/BR31a with handwheel

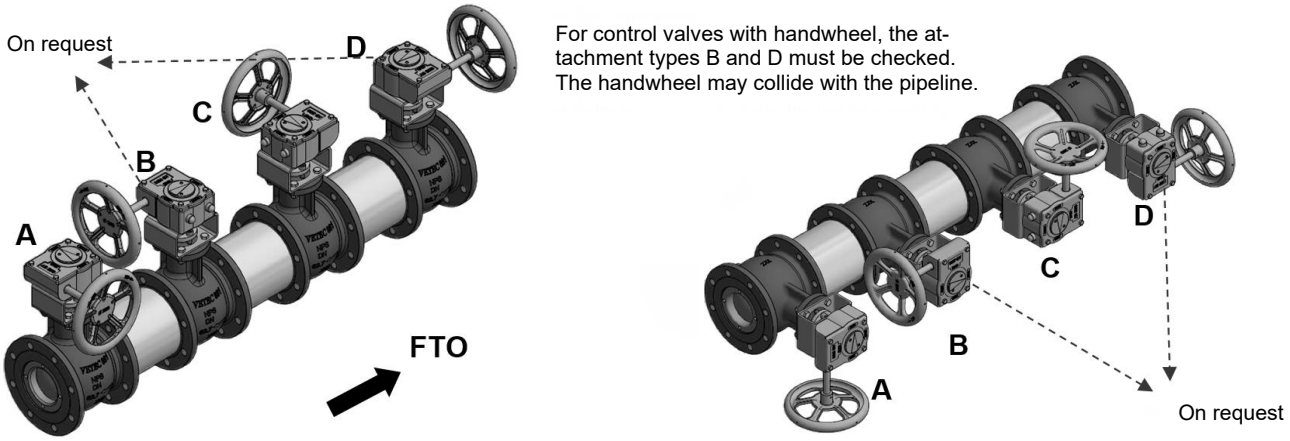


Fig. 17: Control Valve Type 62.7-HW • horizontal mounting position • attachment types of the actuator A, B, C, D

Table 9: Valve Overall Length acc. to DIN EN 558

Valve Size	DN	25	40	50	80	100	150	200
	NPS	1	1½	2	3	4	6	8
Pressure Rating		DIN → PN 10, 16, 25, 40 • ANSI→ CL 150, 300						
Overall length → mm		102	114	124	165	194	229	243
Overall length → in		4.02	4.49	4.88	6.50	7.64	9.02	9.57
Series acc. to DIN EN 558		36						

Weights

Table 10: Weights in **kg** for Control Valve without Accessories

Actuator Size			**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
Weights Actuator			4	5	6	9	12	17	22	33	42	67
Valve Type 62.7			**Weights → Valve + Actuator (incl. Bracket)**									
DN	**NPS**	**Weights**										
25	1	5	9	-	-	-	-	-	-	-	-	-
40	1½	7	-	12	-	-	-	-	-	-	-	-
50	2	9	-	14	15	-	-	-	-	-	-	-
80	3	19	-	-	-	28	31	-	-	-	-	-
100	4	26	-	-	-	-	38	43	48	-	-	-
150	6	46	-	-	-	-	-	63	68	79	88	-
200	8	67	-	-	-	-	-	-	-	100	109	134

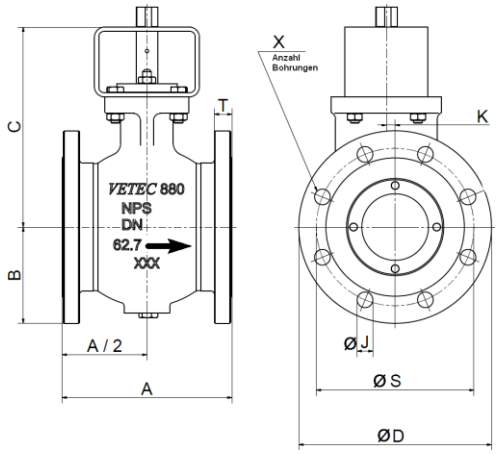
Table 11: Weights in **lbs** for Control Valve without Accessories

Actuator Size			**60**	**100**	**150**	**220**	**300**	**450**	**600**	**900**	**1200**	**2000**
Weights Actuator			9	11	14	20	27	38	49	73	93	148
Valve Type 62.7			**Weights → Valve + Actuator (incl. Bracket)**									
DN	**NPS**	**Weights**										
25	1	11	20	-	-	-	-	-	-	-	-	-
40	1½	16	-	27	-	-	-	-	-	-	-	-
50	2	20	-	31	34	-	-	-	-	-	-	-
80	3	42	-	-	-	62	69	-	-	-	-	-
100	4	58	-	-	-	-	85	96	107	-	-	-
150	6	102	-	-	-	-	-	140	151	175	195	-
200	8	148	-	-	-	-	-	-	-	221	241	296

Installation Dimensions

Table 12: Dimensions for Valve with Bracket

Valve size	Pressure Rating	A		B		C		D		K		J		S		T		X
DN/NPS	**PN/CL**	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	-
DN 25	PN 10… 40	102	4.02	57,5	2.26	132	5.20	115	4.52	4	0.16	14	0.55	85	3.35	18	0.71	4
NPS 1	CL 150			54	2.13			108	4.25			15,7	0.61	79,2	3.12	14,2	0.56	
	CL 300			62	2.44			124	4.88			19,1	0.75	88,9	3.50	17,5	0.69	
DN 40	PN 10… 40	114	4.49	75	2.95	156	6.14	150	5.91	5	0.20	18	0.71	110	4.33	18	0.71	4
NPS 1½	CL 150			63,5	2.50			127	5.00			15,7	0.62	98,6	3.88	17,5	0.69	
	CL 300			78	3.07			156	6.14			22,4	0.88	114,3	4.50	20,6	0.81	
DN 50	PN 10… 40	124	4.88	82,5	3.25	162	6.38	165	6.50	6	0.24	18	0.71	125	4.92	20	0.79	4
NPS 2	CL 150			76,5	3.01			153	6.02			19,1	0.75	120,7	4.75	19,1	0.75	
	CL 300			82,5	3.25			165	6.50			22,4	0.88	127	5.00	22,4	0.88	8
DN 80	PN 10, 16	165	6.50	100	3.94	221	8.70	200	7.87	8	0.31	18	0.71	160	6.30	20	0.79	8
	PN 25, 40			100	3.94			200	7.87			18	0.71	160	6.30	24	0.94	
NPS 3	CL 150			95,5	3.76			191	7.52			19,1	0.75	152,4	6.00	23,9	0.94	4
	CL 300			105	4.13			210	8.27			22,4	0.88	168,1	6.62	28,4	1.12	8
DN 100	PN 10, 16	194	7.64	110	4.33	229	9.02	220	8.66	10	0.39	18	0.71	180	7.09	20	0.79	8
	PN 25, 40			117,5	4.62			235	9.25			22	0.87	190	7.48	24	0.94	
NPS 4	CL 150			114.5	4.51			229	9.02			19,1	0.75	190,5	7.50	23,9	0.94	
	CL 300			127	5.00			254	10.00			22,4	0.88	200,2	7.88	31,8	1.25	
DN 150	PN 10, 16	229	9.02	142,5	5.61	285	11.22	285	11.22	12	0.47	22	0.87	240	9.45	22	0.87	8
	PN 25, 40			150	5.90			300	11.81			26	1.02	250	9.84	28	1.10	
NPS 6	CL 150			140	5.51			280	11.02			22,4	0.88	241,3	9.50	25,4	1.00	
	CL 300			159	6.26			318	12.52					269,7	10.62	36,6	1.44	12
DN 200	PN 10	243	9.57	170	6.69	300	11.81	340	13.38	14	0.55	22	0.87	295	11.61	24	0.94	8
	PN 16			170	6.69			340	13.38									12
	PN 25			180	7.09			360	14.17			26	1.02	310	12.20	30	1.18	
	PN 40			187,5	7.38			375	14.76			30	1.18	320	12.60	34	1.34	
NPS 8	CL 150			171,5	6.75			343	13.50			22,4	0.88	298,5	11.75	28,4	1.12	8
	CL 300			190,5	7.50			381	15.00			25,4	1.00	330,2	13.00	41,1	1.62	12



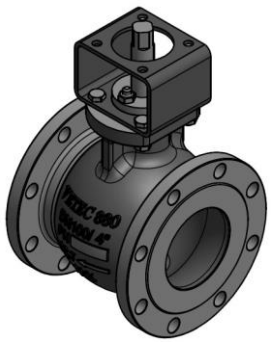


Table 13: Dimensions for Actuator Type AT / BR31a

Actuator Size	E		F		G		H	
	mm	in	mm	in	mm	in	mm	in
60	102	4.02	204	8.03	43	1.69	51	2.01
100	115	4.53	241	9.49	50	1.97	57	2.24
150	127	5.00	259	10.20	56	2.20	63	2.48
220	145	5.71	304	11.97	64	2.52	72	2.83
300	157	6.18	333	13.11	70	2.76	77	3.03
450	177	6.97	395	15.55	80	3.15	86	3.39
600	196	7.72	423	16.65	88	3.46	93	3.66
900	220	8.66	474	18.66	99	3.90	101	3.98
1200	245	9.65	528	20.79	110	4.33	112	4.41
2000	299	11.77	605	23.82	131	5.16	131	5.16

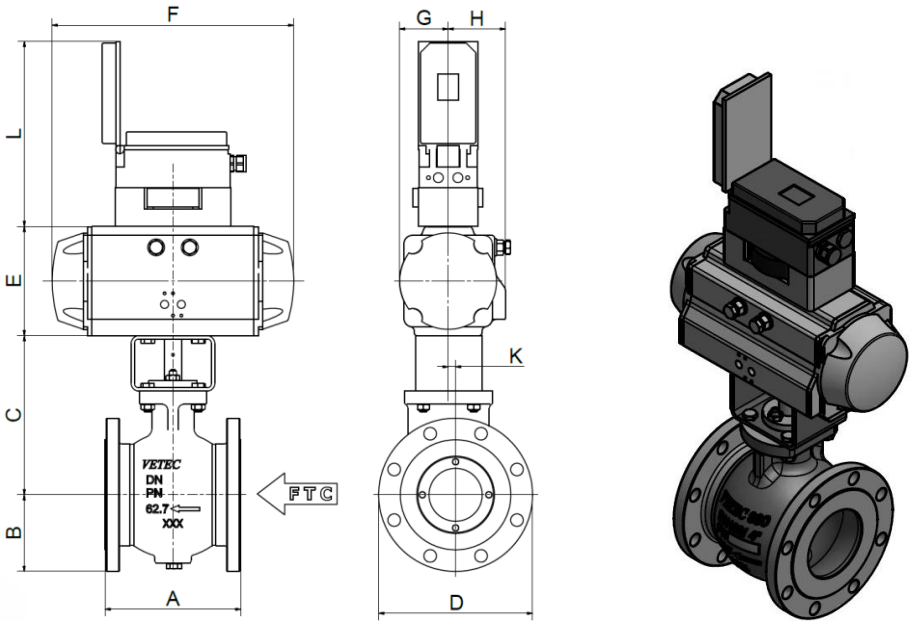


Table 14: Dimensions for SAMSON Positioner (with open Cover)

Actuator Size	SAMSON Positioner Type 3725		SAMSON Positioner Type 3730	
	L		L	
	mm	in	mm	in
60	205	8.07	265	10.43
100	205	8.07	265	10.43
150	205	8.07	265	10.43
220	205	8.07	265	10.43
300	205	8.07	265	10.43
450	205	8.07	265	10.43
600	205	8.07	265	10.43
900	235	9.25	295	11.61
1200	235	9.25	295	11.61
2000	235	9.25	295	11.61

The following information is required when ordering the valve:

Order text

Rotary Plug Valve	Type 62.7
Valve Size	DN/NPS …
Pressure Rating	PN/CL …
Body Material	lt. Table 3 and 4
Connection	flange form
Seat-Plug-Sealing	metal, soft sealing
Characteristic curve	linear or equal percentage (logarithmic)
Rotary Actuator	Type AT (SC/SO) or BR31a
Fail-safe-action	FC or FO
Process medium	density and temperature
Maximum flow rate	kg/h or m³/h
Operating pressure	p1 and p2 in bar (absolute pressure)
Accessories	positioner, Supply pressure regulator, etc.
Documentation	technical and test documentation, certificates etc.