eVALV

Forbes Marshall Control valve

Description

eVALV is a cage retained single seat 2 port globe valve with 'A' series multi-spring actuators and electro pneumatic positioner.

Size and End Connections

Body Material	End connections	Size available
SG Cast Iron	Screwed BSPT/NPT	DN15, 20,25, 40 & 50
SG Cast Iron	SCRD ON Flanged (#150)	DN15,20,25
SG Cast Iron	Flanged (#150)	DN40, 50, 65, 80 & 100
Carbon steel WCB	Flanged (#300)	DN15, 20,25, 40,50 65,80 & 100
Carbon steel WCB	Flanged (#150 & #300)	DN150 & DN 200
SG Cast Iron	Flanged EN1092 PN16	DN15, 20,25, 40,50 65,80 & 100

Body Design Condition

	#150	#300	DIN PN16
Maximum design pressure	17 bar g @ 38 °C	51.1 bar g @ 38 °C	16 bar g @ 38 °C
Maximum design temperature	232 °C @ 13 bar g	425 °C @ 28.8 bar g	232 °C @ 14 bar g
Maximum design temperature for PTFE Soft seated valve	180°C	180°C	180°C
Minimum design temperature	-10 °C	-10 °C	-10 °C
Maximum cold hydraulic test pressure	26 bar g	78 bar g	24 bar g

Operating Characteristic - Options

Equal percentage
Linear
Quick opening (on-off)

Valve Internals and Trim

Trim	Standard trim and reduced Kv trim
Stem Sealing	PTFE V-rings (for class 150) & (DIN PN16 Version) Graphite rings (for class 300)
Seat Sealing	Metal to Metal (class IV sealing) Soft PTFE sealing (class VI sealing) DN15 to DN100

Technical Data

Plug design	Parabolic (Equal percent characteristic) Parabolic (Linear characteristic)
Leakage class	Class IV and VI as per FCI 70.2
Rangeability	50:1
Travel	16 mm-DN15, DN20 and DN25 20 mm-DN40 and DN50 30 mm-DN65, DN80 and DN100 70mm-DN150 & DN200
Face to face	EN558 Series1 for DIN / ISA 75.08.01 for ANSI



Compatible Actuators and Positioners

Actuator	Pneumatic, multi-spring diaphragm A series actuator A0, A1 and A2 & UV
Positioner	Electro-pneumatic

Actuator options

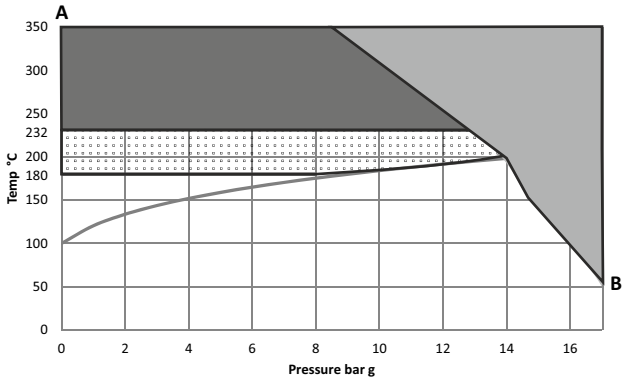
With hand-wheel
Without hand-wheel
Air to open (NC)
Air to close (NO)

Kv Values Equal Percent and Linear Trims (#150, #300)

Size	Travel	Std Kv	Reduction 1	Reduction 2
DN15	16mm	5	3	1.6
DN20	16mm	6.3	5	3
DN25	16mm	10	6.3	5
DN40	20mm	26	10	6.3
DN50	20mm	36	26	10
DN65	30mm	63	36	26
DN80	30mm	102	63	36
DN100	30mm	160	102	63
DN150	70mm	390	NA	NA
DN200	70mm	620	NA	NA

Note: SOFT seat option is available for std Kv's only.

Operating Range - Class 150

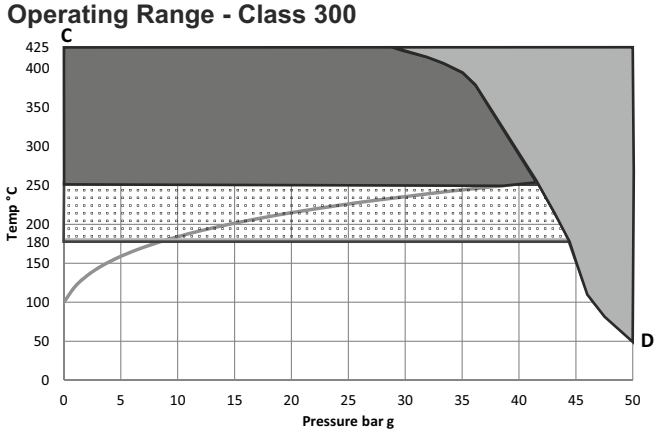


A – B SG Iron PT rating curve ASME B16.42

The product must not be used in this region.
Class 150 valves are PTFE packing valves and hence are limited to a maximum operating temperature 232 °C

SOFT seated valve must not be used in this region.

Operating Range - Class 300



C – D WCB PT rating curve as per ASME B16.34

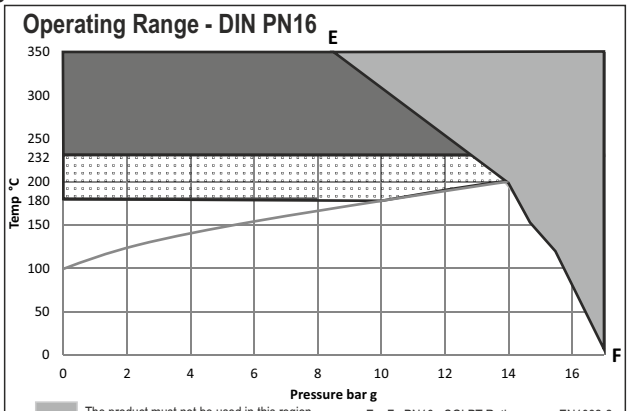
The product must not be used in this region.

SOFT seated valve must not be used in this region.

Dimension details (approx in mm) & weights (approx. in Kg) Class 150 & DIN PN16

Valve size	End conn.	A	B	C	H	H + HO (NC)	H+ HO (NO)	D	Total Wt with handwheel	Total Wt without handwheel
DN15	Threaded	165	51	101	309	328	406	182	14.2	13.2
	DIN FLG PN16	130								
DN20	Threaded	165	51	101	309	328	406	182	14.4	13.2
	DIN FLG PN16	150								
DN25	Threaded	197	51	101	309	328	406	182	14.6	13.6
	DIN FLG PN16	160								
DN40	Threaded	235	66	114	378	400	509	270	23.9	23.6
	ANSI FLG #150	222							25.5	25.2
	DIN FLG PN16	200								
DN50	Threaded	267	74	114	378	400	509	270	25.7	25.2
	ANSI FLG #150	254							28.2	28
	DIN FLG PN16	230								
DN65	ANSI FLG #150	276	93	155	478	726	726	395	61.5	50.5
	DIN FLG PN 16	290								
DN80	ANSI FLG #150	298	97	155	478	726	726	395	71.4	61.4
	DIN FLG PN 16	310								
DN100	ANSI FLG #150	352	119	161	478	726	726	395	82.5	72.5
	DIN FLG PN 16	350								
DN150	ANSI FLG #150	451	175	240	995	1290	1290	530	235	230
DN200	ANSI FLG #150	543	225	286	995	1290	1290	530	320	315

Operating Range - DIN PN16



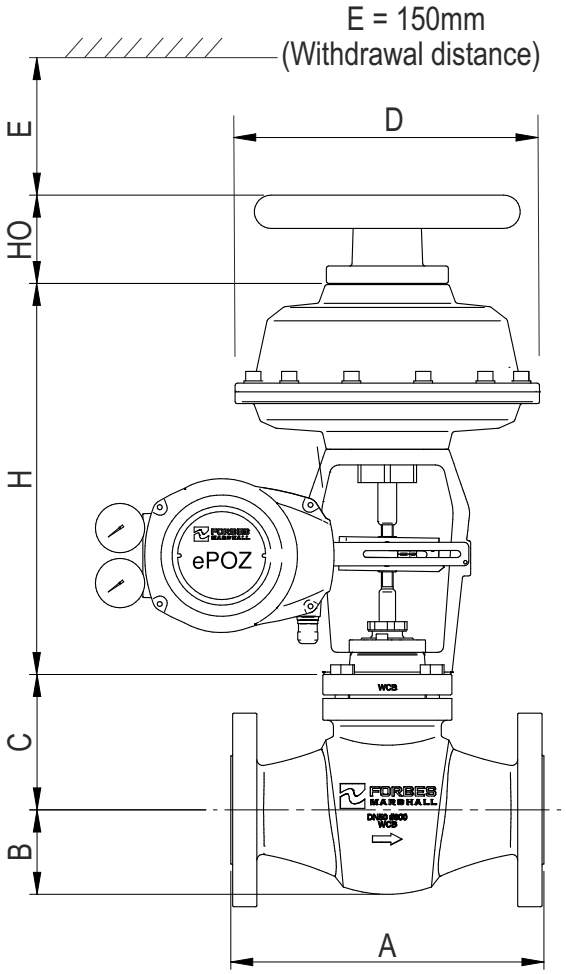
The product must not be used in this region.

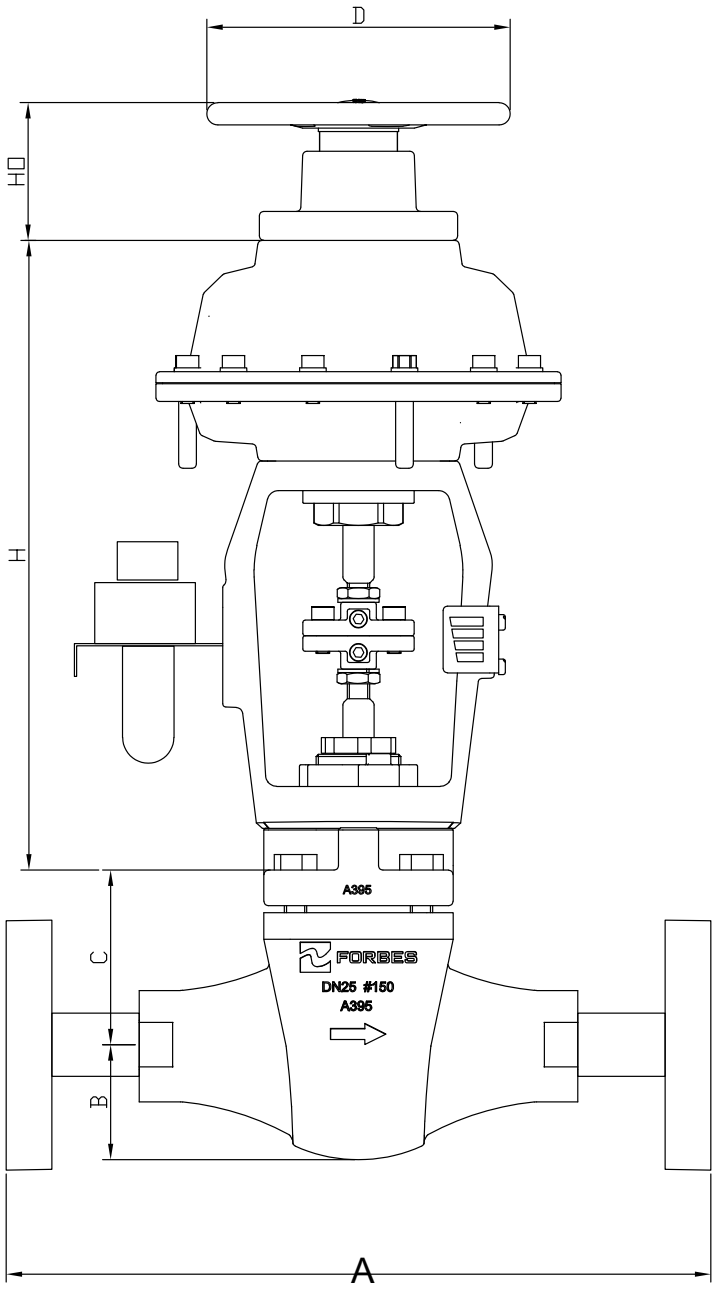
E – F PN16 - SGI PT Rating as per EN1092-2

SOFT seated valve must not be used in this region.

Dimension Details (Approx. in mm) & Weights (Approx. in Kg) Class 300

Valve size	End conn.	A	B	C	H	H + HO (NC)	H+ HO (NO)	D	Total Wt with handwheel	Total Wt without handwheel
DN15	Flanged	190	51	101	309	328	406	182	15.2	14.2
DN20	Flanged	194	51	101	309	328	406	182	16	15
DN25	Flanged	197	51	101	309	328	406	182	17	16
DN40	Flanged	235	66	114	378	400	509	260	27	26.5
DN50	Flanged	267	74	114	378	400	509	260	28.5	28
DN65	Flanged	292	93	155	478	726	726	395	60.4	50.4
DN80	Flanged	318	97	155	478	726	726	395	69.5	59.5
DN100	Flanged	368	119	161	478	726	726	395	93.5	83.5
DN150	Flanged	473	175	240	995	1290	1290	530	255	250
DN200	Flanged	568	232	286	995	1290	1290	530	370	365

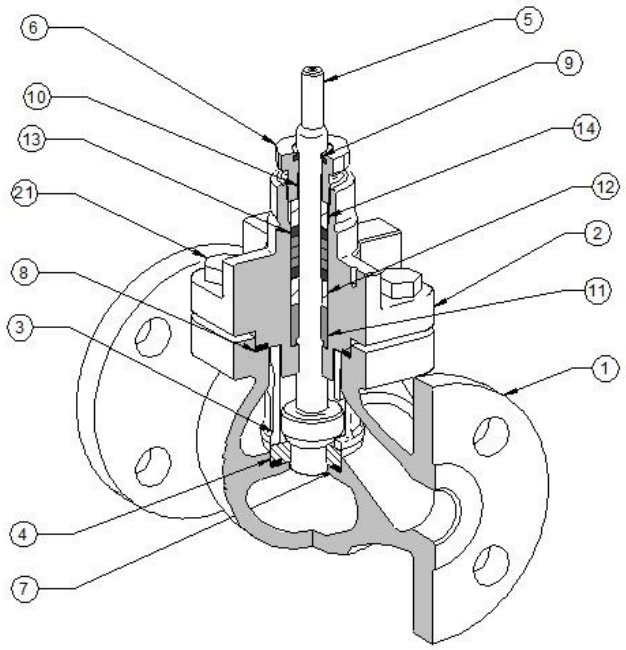




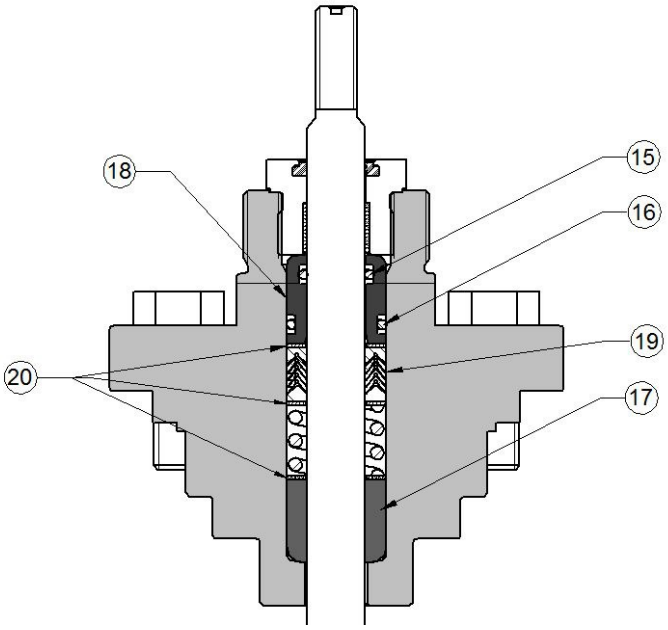
Dimension Details (Approx. in mm) & Weights (Approx. in Kg) screwed on Class 150 Flanges

Valve size	End conn.	A	B	C	H	H + HO	D	Total Wt with handwheel kg	Total Wt without handwheel kg
DN15	Flanged	355	51	101	271	315	182	16.0	15.0
DN20	Flanged	260	51	101	271	315	182	16.4	15.4
DN25	Flanged	295	51	101	271	315	182	16.6	15.6

Materials



Class #150 & DIN PN16 PTFE packing



Materials

Sr.no	Item	Class	Material
1	BODY	DN15 TO DN100 CLASS #150	SG CAST IRON ASTM A395
		DN15 TO 100 DIN PN16	SG Cast Iron EN1563 : EN-GJS-400-18-LT
		DN150 AND DN200 CLASS #150	ASTM A216 WCB
		DN15 TO DN200 CLASS #300	ASTM A216 WCB
2	BONNET	DN15 TO DN100 CLASS #150	SG CAST IRON ASTM A395
		DN15 TO 100 DIN PN16	SG Cast Iron EN1563 : EN-GJS-400-18-LT
		DN150 AND DN200 CLASS #150	ASTM A216 WCB
		DN15 TO DN200 CLASS #300	ASTM A216 WCB
3	CAGE	ALL VERSIONS	BS3146(ANC-2)
4	SEAT	ALL VERSIONS	ASTM A276 TYPE 431 (NITRIDED)
5	SPINDLE / PLUG	ALL VERSIONS	ASTM A276 TYPE 431 (NITRIDED)
6	GLAND NUT	ALL VERSIONS	ASTM A276 TYPE 316
7	SEAT GASKET	ALL VERSIONS	EXFOLIATED GRAPHITE
8	BODY TOP GASKET	ALL VERSIONS	GRAPHITE
9	SCRAPPER RING	ALL VERSIONS	PTFE
10	SLIDING BEARING	ALL VERSIONS	DU BEARING
11	GUIDE BUSH	ONLY FOR CLASS #300	RIGID GRAPHITE
12	SPACER		ASTM A276 TYPE 431
13	GLAND PACKING		GRAPHITE STACK (TOP & BOTTOM BRAIDED + MIDDLE MOULDED RINGS)
14	GLAND BUSH		ASTM A276 TYPE 431
15	TOP O-RING	ONLY FOR CLASS #150	VITON
16	BOTTOM O-RING		VITON
17	GUIDE BUSH		PTFE
18	GLAND BUSH		PTFE
19	V-RING PACKING		CHEVRON PTFE
20	SPACER		ASTM A276 TYPE 316
21	BOLTING	ALL VERSIONS	ASTM A193 GR B7

Spare Parts

The spare parts available are shown in solid outline. Parts drawn in broken line are not supplied as spares. Full fitting instructions are given in the installation and maintenance manual supplied with the spare.

Note: When placing an order for spare parts please specify clearly the full product description as found on the label of the valve body, as this will ensure that the correct spare parts are supplied.

Available Spares : Class 150 Valve & DIN PN16 Valve

Actuator clamping nut		A
Gasket set		D,F
Stem seal kits	PTFE chevrons	B
Plug stem and seat	(No gaskets supplied)	C,E or E1
Stem packing and gasket		F,D,B

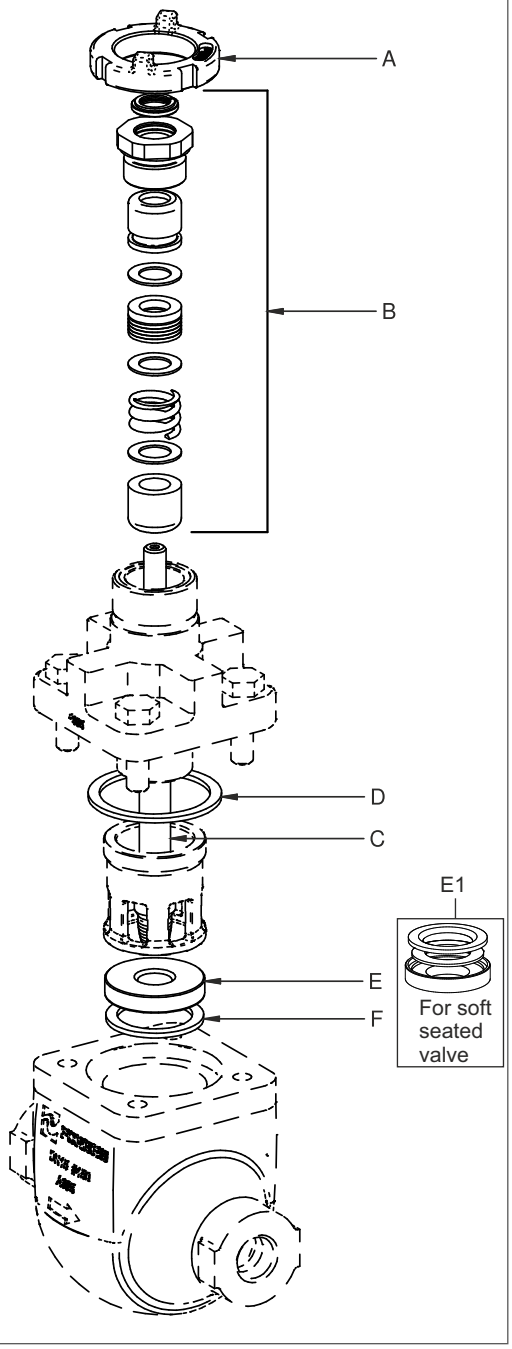
How to Order Spares

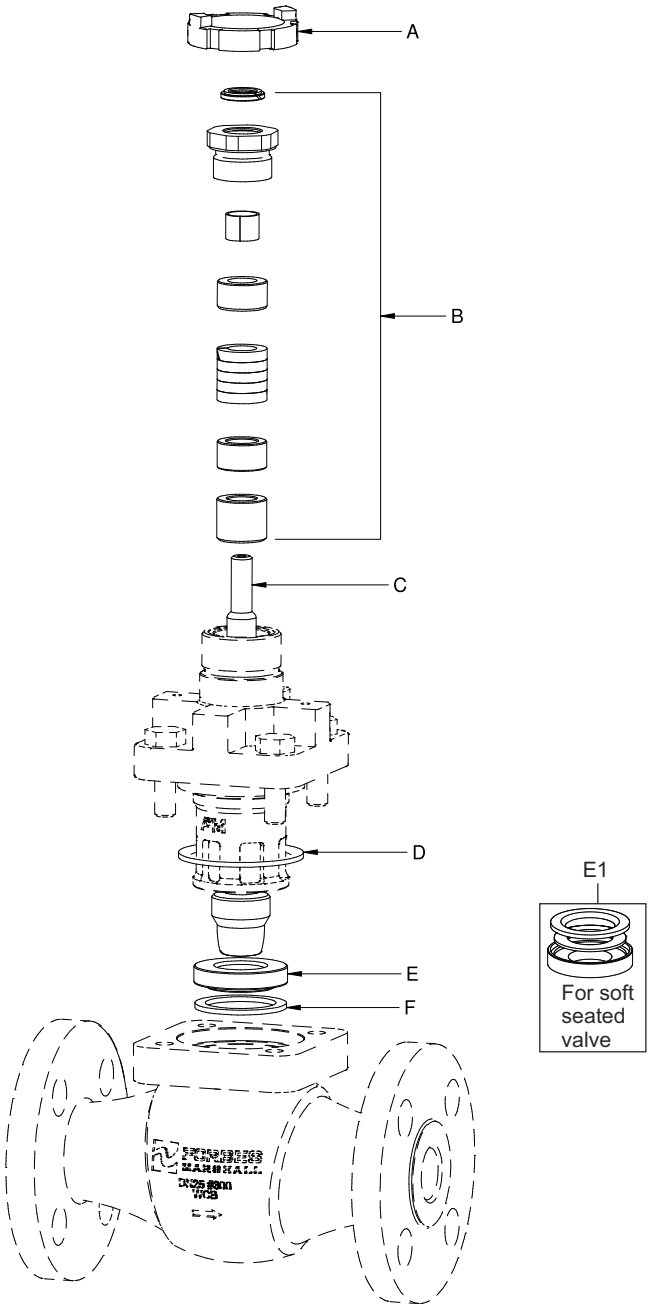
Always order spares by using the description given in the column headed 'Available spares', and state the FG code of the product.

Example: Actuator clamping nut A for Forbes Marshall Control Valve 050EVALV-Q1EGS412MI6-HWNSNN.

Available Spares : Class 300 Valve

Actuator clamping nut		A
Gasket set		D,F
Stem seal kits		B
Plug stem and seat	(No gaskets supplied)	C,E or E1
Stem packing and gasket		F,D,B





A-Series Actuator

Description

Compact range of single acting, spring return, linear stroke actuators that are available in 3 different diaphragm diameters. This is to fulfil opening/closing of valves at various differential pressures.

Size Range

Actuators are available in A0, A1 and A2 model numbers based on valve thrust requirement.

Versions

Depending on process requirement below options are available

NC – Normally closed (Fail safe – closed /Air to open)

NO – Normally open (Fail safe – open/Air to close)

Optional

Without handwheel

With handwheel



Actuator without Handwheel

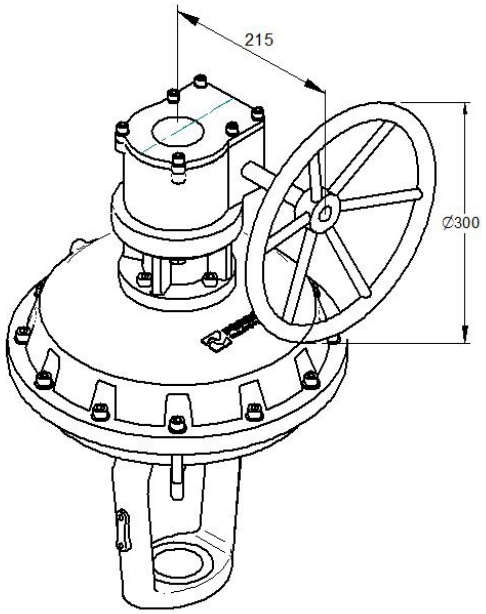


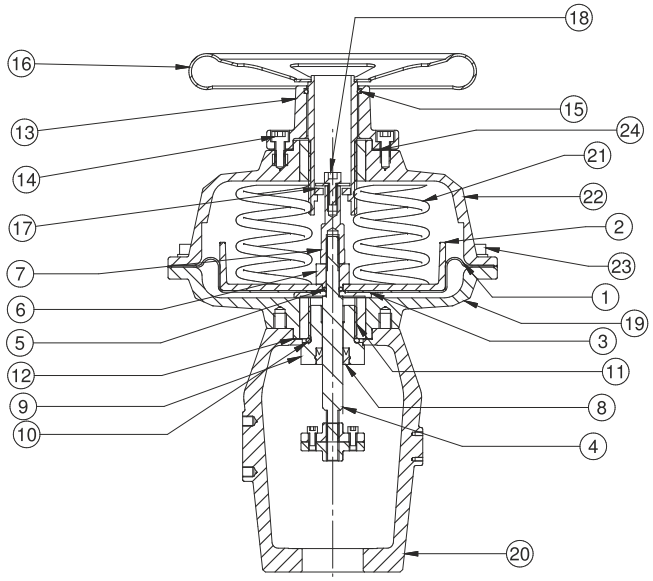
Actuator with Handwheel

Material : Normally Closed Version

Sr.no	Item	Material
1	Diaphragm	Fibre reinforced NBR
2	Piston	BS1490 LM9
3	Supporting Spacer	ASTM A276 TYPE 316
4	Lower Stem	ASTM A276 TYPE 316
5	Stem O Ring	Nitrile
6	Bush	ASTM A276 TYPE 316
7	Upper Stem	ASTM A276 TYPE 316
8	WDB (Stem) Seal	PU-5 (Polyurethane)
9	WDB Seal Holder	ASTM A276 TYPE 316
10	O Ring	Nitrile
11	DU Bearing	P1 ISO 3547-4
12	Gasket	Nitrile
13	O-Ring holder	BS 1490 LM9
14	Soc.HD.Screw	ASTM A276 SS304
15	O Ring	Nitrile
16	Handwheel	MS Powder coated
17	Thrust Bearing	AS1024
18	Allen Bolt Full	ASTM A276 SS304
19	Small Housing	BS 1490 LM9
20	Yoke	ASTM A395 Gr.60-40-18
21	Springs	Chrome Silicon (CS)
22	Upper Housing	BS 1490 LM9
23	Soc Headed Screws	ASTM A276 SS304
24	Gasket	Nitrile

Gear operated handwheel option available for A2 Actuator model only:



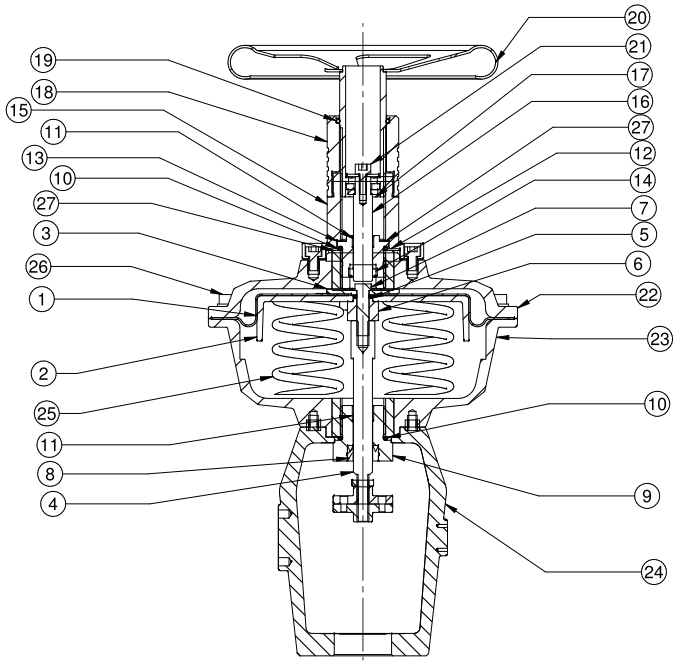


Thrust Data

Normally Close (Air To Open)						
Actuator Size	Diaphragm effective area (cm^2)	No. of springs	Stroke (mm)	Control spring range (bar g) From	To	Thrust Force, (KN)
A0	105	1	16	0.9	1.5	0.85
		2	16	1.5	2.5	1.5
A1	294	3	20	1.1	1.9	3
		6	20	1.5	2.7	4.2
A2	702	6	30	1.5	2.7	10.2
		12	30	2.3	4.2	16

Material : Normally Open Version

Sr.no	Item	Material
1	Diaphragm	Fibre Reinforced NBR
2	Piston	BS 1490 LM9
3	Supporting Spacer	ASTM A276 TYPE 316
4	Lower Stem	ASTM A276 TYPE 316
5	Stem O Ring	Nitrile
6	Bush	ASTM A276 TYPE 316
7	Hex Bolt	ASTM A276 SS316
8	Wdb (Stem) Seal	PU-5 (Polyurethane)
9	Wdb Seal Holder	ASTM A276 TYPE 316
10	O Ring	Nitrile
11	Du Bearing	P1 ISO 3547-4
12	Gasket	Nitrile
13	Lip Seal Holder	ASTM A276 TYPE 316
14	Lip Seal	PU-5 (Polyurethane)
15	Handwheel Holder	FE 37 / WS
16	Handwheel Stem	ASTM A276 TYPE 316
17	Thrust Bearing	AS1024
18	O Ring Holder	HE30TF
19	O Ring	Nitrile
20	Handwheel	MS Powder Coated
21	Soc Headed Screw	ASTM A276 SS304
22	Small Housing	BS 1490 LM9
23	Lower Housing	BS 1490 LM9
24	Yoke	ASTM A395 Gr.60-40-18
25	Springs	Chrome Silicon (CS)
26	Soc Headed Screws	ASTM A276 SS304



Thrust Data

Actuator Size	Diaphragm effective area (cm^2)	Stroke (mm)	No. of Springs	Min. air pressure (bar g)	Thrust Force (KN) Depending on air pressure (bar g)				
					2	3	4	5	6
A0	105	16	1	1.5	0.6	1.6	2.6	3.6	4.7
			2	2.5	-	0.6	1.6	2.6	3.7
A1	294	20	3	1.9	-	3.4	6.2	9.1	12.0
			6	2.7	-	1.0	3.9	6.8	9.6
A2	702	30	6	2.7	-	2.1	9.0	15.9	22.8
			12	4.2	-	-	-	5.5	12.4

Spare Parts

Available Spares : Normally Closed Version

Springs kit	All springs	21
Diaphragm kit	Diaphragm and stem o-ring	1,5
WDB seal holder kit	WDB seal holder, WDB seal, DU bearing and O ring	8, 9, 10, 11
Seal, o-rings and gasket kit	NC all o-rings, WDB seal, all gaskets, lip seal	5, 10, 15, 12, 8
Stem kit	Lower stem and WDB seal	4, 8
Handwheel kit	Handwheel weld assembly, thrust bearing set, o-ring, o-ring holder, gasket	13, 15, 16, 17, 24

Available Spares : Normally Open Version

Springs kit	All springs	21
Diaphragm kit	Diaphragm and stem o-ring	1,5
WDB seal holder kit	WDB seal holder, WDB seal, DU bearing and O ring	8, 9, 10, 11
Seal, o-rings and gasket kit	NC all o-rings, WDB seal, all gaskets, lip seal	5, 8, 10, 12, 14, 15
Stem kit	Lower stem and WDB seal	4, 8
Handwheel kit	Handwheel weld assembly, thrust bearing set, o-ring, o-ring holder, gasket	13, 15, 16, 17,18, 19, 20, 27

Actuator selection guide :

Size	Class	Balancing	Max. Valve Inlet pressure (barg)	Actuator Model & Springs
DN15	#150 & PN16	Non Pr.Bal	17	A0 - 1 Spring
	#300	Non Pr.Bal	32	A0 - 2 Springs
	#300	Non Pr.Bal	51	A1 - 3 Springs
DN20	#150 & PN16	Non Pr.Bal	17	A0 - 2 Springs
	#300	Non Pr.Bal	17	A0 - 2 Springs
	#300	Non Pr.Bal	51	A1 - 3 Springs
DN25	#150 & PN16	Non Pr.Bal	17	A0 - 2 Springs
	#300	Non Pr.Bal	11	A0 - 2 Springs
	#300	Non Pr.Bal	51	A1 - 6 Springs
DN40	#150 & PN16	Non Pr.Bal	17	A1 - 3 Springs
	#300	Non Pr.Bal	17	A1 - 3 Springs
	#300	Non Pr.Bal	25	A1 - 6 Springs
	#300	Non Pr.Bal	51	A2 - 6 Springs
DN50	#150 & PN16	Non Pr.Bal	17	A1 - 6 Springs
	#300	Non Pr.Bal	17	A1 - 6 Springs
	#300	Non Pr.Bal	51	A2 - 6 Springs
DN65	#150 & PN16	Non Pr.Bal	17	A2 - 6 Springs
	#300	Non Pr.Bal	30	A2 - 6 Springs
	#300	Non Pr.Bal	51	A2 - 12 Springs
DN80	#150 & PN16	Non Pr.Bal	17	A2 - 6 Springs
	#300	Non Pr.Bal	17	A2 - 6 Springs
	#300	Non Pr.Bal	30	A2 - 12 Springs
DN100	#150 & PN16	Non Pr.Bal	17	A2 - 12 Springs
	#300	Non Pr.Bal	17	A2 - 12 Springs
DN150	#150 & PN16	Non Pr.Bal	15	UV-60 R
	#300	Non Pr.Bal	15	UV-60 R
DN200	#300	Non Pr.Bal	10	UV-60 R
	#150 & PN16	Non Pr.Bal	10	UV-60 R

Product Codification

Parameter	Code		Example
SIZE (NB)	15NB	015	050
	20NB	020	
	25NB	025	
	40NB	040	
	50NB	050	
	65NB	065	
	80NB	080	
	100NB	100	
	150NB	150	
	200NB	200	
MODEL NAME	EVLV	EVLV	EVLV
CONNECTION DETAILS	Dash	-	-
	BSPT (# 150)	A	A
	NPT (# 150)	B	
	FLANGED #150	Q	
	FLANGED #300	M	
	FLANGED PN16	U	
TRIM TYPE	NON BALANCED	1	1
VALVE CHARACTERISTICS	LINEAR (FTO)	L	E
	EQUAL PERCENT (FTO)	E	
	ON-OFF (FTO)	B	
	LINEAR (FTC)	J	
	EQUAL PERCENT (FTC)	K	
	ON-OFF (FTC)	M	
Kv(SEAT DIA) _STROKE	1.6(9.5)_16	A	G
	3(12)_16	B	
	5 (15.5)_16	C	
	6.3 (18.5)_16	D	
	10.5 (23)_16	E	
	26 (37)_20	F	
	36 (45.5)_20	G	
	26(37)_30	H	
	36(45.5)_30	I	
	63 (52)_30	J	
	102 (76)_30	K	
	160 (96)_30	L	
	390(145)_70	M	
	620 (174)_70	N	
	6.3 (18.5)_20	Q	
	10.5 (23)_20	P	
BONNET DESIGN	STD	S	S
BODY /BONNET MOC	ASTM A 216 GR WCB (All #300) & (DN150 & 200 CLASS #150)	5	
	A395 SG IRON (DN15 to Dn100 Class #150)	4	4
	SGI DIN EN JS 1025	6	
TRIM MOC	SS431 (Nitrided)	1	1

Parameter	Code		Example
GASKET /PKG/ O-RING MOC	GP / PTFE (#300)	1	2
	CHEVRON PTFE (#150)& PN16	2	
SEATING	METAL TO METAL	M	M
	SOFT SEAT (only for 15NB to 100NB)	S	
APPROVAL	IBR	I	I
	NIBR	N	
	3.1 CERTIFICATION + NIBR	A	
	RT	B	
	UT	C	
	Dash	-	-
ACTUATOR MODEL	A0-NC-1 SPRING	S1	M2
	A0-NC-2 SPRINGS	S2	
	A0-NO-1 SPRING	S3	
	A0-NO-2 SPRINGS	S4	
	A1-NC-3 SPRINGS	M1	
	A1-NC-6 SPRINGS	M2	
	A1-NO-3 SPRINGS	M3	
	A1-NO-6 SPRINGS	M4	
	A2-NC-6 SPRINGS	L1	
	A2-NC-12 SPRINGS	L2	
	A2-NO-6 SPRINGS	L3	
	A2-NO-12 SPRINGS	L4	
	UV-60R-NC	UV	
	UV-60R-NO	UO	
HANDWHEEL	WITH HANDWHEEL	H	C
	WITH OUT HANDWHEEL	C	
POSITIONER	NA	N	W
	EPOZ	E	
	SMARTPOZ	S	
	SIEMENS	S	
	830 WP	W	
	830 WP EXPROOF	P	
SOV	NA	N	N
	230V AC	2	
	24 V DC	3	
	EX 230V AC	4	
AFR	SHAVO MAKE	S	S
VOLUME BOOSTER	NA	N	N
	PHILVIN MAKE 1/4"	P	
	PHILVIN MAKE 1/2"	Q	
QUICK EXHAUST VALVE	NA	N	N
	PHILVIN Pe10	Q	
OTHER REQUIREMENTS	NA	X	X

Product Codification

Selection Example																				
050	eVLV	-	A	1	E	G	S	4	1	2	M	I	-	M2	C	W	N	S	N	N	X

FORBES MARSHALL

Forbes Marshall
Krohne Marshall
Forbes Marshall Arca
Codel International
Forbes Solar
Forbes Vyncke
Forbes Marshall Steam Systems

Opp 106th Milestone
Bombay Poona Road
Kasarwadi, Pune - 411 034. INDIA
Tel : 91(0)20-27145595, 39858555
Fax : 91(0)20-27147413

B-85, Phase II, Chakan Indl Area
Sawardari, Chakan, Tal. Khed
Dist. Pune - 410 501. INDIA
Tel : 91(0)2135-393400

A-34/35, MIDC H Block
Pimpri, Pune - 411 018. INDIA.
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