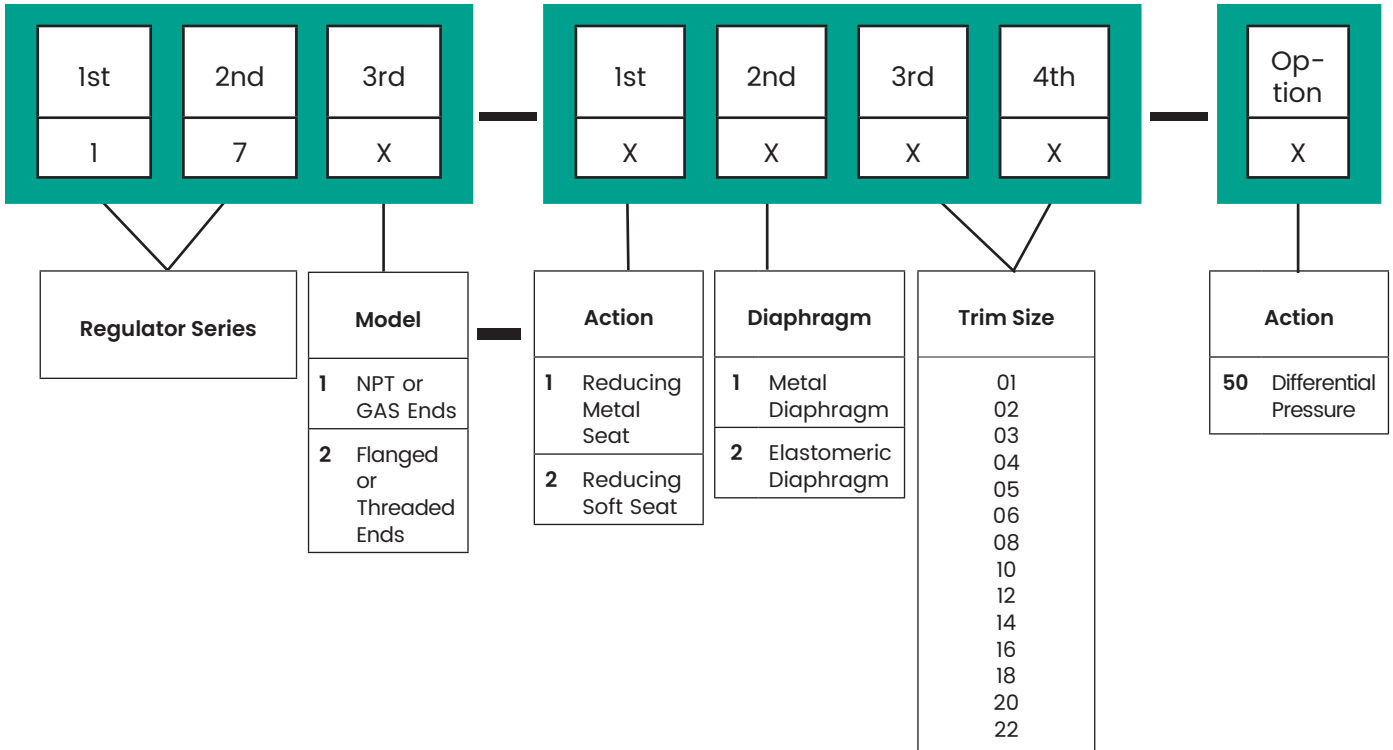


Masoneilan™ 171-172 Series

Direct-Operated, Pressure
Reducing Regulator



Numbering System



171 Series

NPT or Gas End Connections Cast Iron Construction

The 171 series are direct-operated, pressure reducing regulators. They are available in 1/2 through 1 1/2 inch (DN15 through DN40) with NPT or GAS threaded connections. The regulators are available only in cast iron. The robust construction can sustain rugged use. The design can handle inlet pressures up to 580 psig (40 barg).

Features

- Economical design
- In-line maintenance
- Elastomer discs for tight shutoff
- Rugged construction

Specifications

Body

- **Body Sizes and End Connections:**
1/2" through 1 1/2" (DN15 through DN40) NPT or GAS
- **Maximum Inlet Pressure:**
580 psig (40 barg)
- **Maximum Outlet Pressure:**
see 171-table 1
- **Set Point Range:**
3 to 217 psig (0.21 to 15 barg)
see 171-table 1
- **Temperature Range:**
see 171-tables 3, 4
- **Pressure Sensing:**
internal (external on request)
- **Capacities:**
see 171-table 6
- **Weight:**
see 171-table 5



172 Series

Threaded or Flanged End Connections Carbon Steel, Stainless Steel & Alloy Construction

The 172 series are direct-operated, pressure reducing regulators. They are available in 1/2 through 2 inch (DN15 through DN50) body sizes and can be supplied with a wide range of different end connections. The flanged design provides flexibility to meet custom face to face dimensions as required. The regulators have a compact design and durable construction to sustain rugged use.

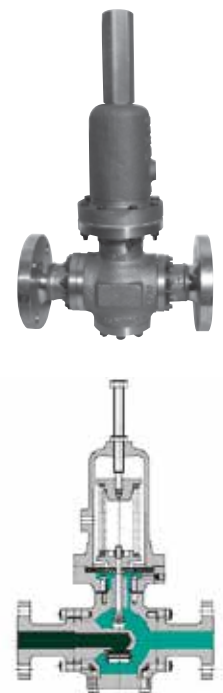
Features

- Versatility
- In-line maintenance
- High stability
- Rugged construction

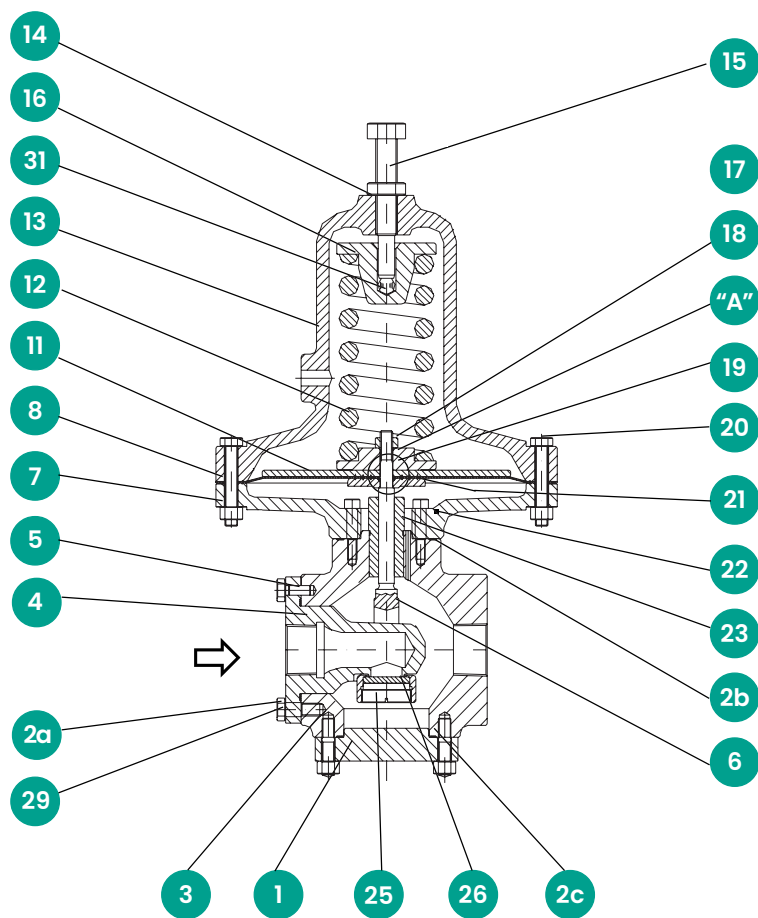
Specifications

Body

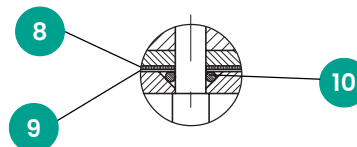
- **Body Sizes and End Connections:**
see 172-table 1
- **Maximum Inlet Pressure:**
see 172-table 5
- **Set Point Range:**
see 172-table 2
- **Materials of Construction:**
see 172-table 4
- **Temperature Range:**
see 172-tables 4, 8, 9
- **Pressure Sensing:**
internal (external on request)
- **Capacities:**
see 172-tables 5, 6
- **Allowable Pressure Drop:**
see 172-tables 10-14 English units,
15-19 Metric units
- **Weight:**
see 172-tables 20, 21



171 Series Materials



Part "A" (only on request)



Parts	
1	Cover
2	Gasket
3	L.P. Body
4	H.P. Body
5	Pin
6	Plug
7	Servomotor Flange
8	Diaphragm
9	Protection (if requested)
10	O-ring Gasket
11	Diaphragm Plate
12	Spring
13	Spring Cover
14	Lock Nut
15	Adjusting Screw
16	Spring Loader
17	Nut
18	Spring Guide
19	Screw
20	Nut
21	Little Plate
22	Screw
23	Guide
24	Spring
25	Plug Tap
26	Disc

171 - Table 1 - Standard Set Pressure Ranges

psig	barg
10.5 to 31	0.72 to 2.2
16 to 36	1.1 to 2.5
21 to 57	1.4 to 4.0
52 to 91	3.6 to 6.3
88 to 140	6.0 to 9.7
133 to 217	9.1 to 15.0

Maximum Outlet Pressure

Actuator Size	Max Outlet Pressure
140	145 psig (10 barg)
130	350 psig (24.1 barg)
120	470 psig (32.4 barg)

Set pressure ranges shown are representative only. For optimum accuracy, final selection should be made using the Masonellan ValSpeQ™ sizing and selection software.

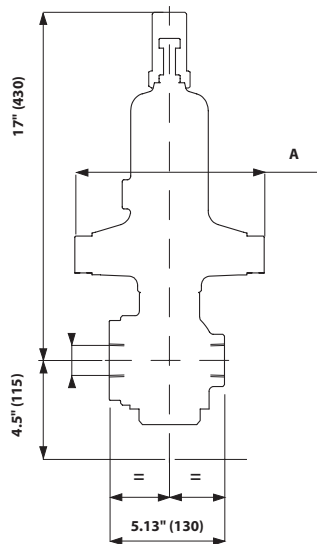
171 Series Materials and Dimensions

171 - Table 2 - Standard Material Combinations on Spring CrV Steel

Body	
	Cast Iron*
	32°F < T < 450°F (0°C < T < 232°C)
LP Body	Cast Iron
HP Body	316 SS
Cover	Carbon Steel
Studs	Carbon Steel
Gasket	PTFE
Trim	
Disc	FKM* Air, Gas, Liquids 316 SS** Steam Service
Plug Stem	316 SS
Guide Bushing	303 SS
Actuator	
Spring Casing	Cast Iron
Actuator Lower Casing	Cast I
Diaphragm	CR (Polychloroprene)*
	FPM***
	Ethylene-Propylene (EPDM + PTFE)** Steam Service

Configurations/Material Availability

*	Standard - Except Steam Service
**	Steam Service
***	Non Standard - Manufactured on Request



Dimensions with Seal Cap

171 - Table 3 - Temperature Ranges for Diaphragms

Chloroprene (CR)*	32 to 194°F (0 to 90°C)
Ethylene-Propylene (EPDM+PTFE)**	32 to 450°F (0 to 232°C)
Fluoroelastomer (FKM+FPM)***	32 to 392°F (0 to 200°C)
Stainless Steel**	32 to 450°F (0 to 232°C)

171 - Table 4 - Temperature Ranges for Disc Elastomers

Fluoroelastomer (FKM)*	32 to 392°F (0 to 200°C)
Polytetrafluoroethylene (PTFE)***	32 to 450°F (0 to 232°C)
Stainless Steel**	32 to 450°F (0 to 232°C)

171 - Table 5 - Assembly Weights

Size	Actuator Size	
	100/120/130/140	220
1/2" (DN15)	36.8 lbs (16.7 kg)	46.7 lbs (21.2 kg)
3/4" (DN20)	36.8 lbs (16.7 kg)	46.7 lbs (21.2 kg)
1" (DN25)	36.6 lbs (16.6 kg)	46.5 lbs (21.1 kg)
1-1/2" (DN40)	36.4 lbs (16.5 kg)	46.3 lbs (21 kg)

171 - Table 6 - Rated C_v for All Body Sizes with Elastomer Diaphragm

Trim Number	Body Size			
	1/2" (DN15)	3/4" (DN20)	1" (DN25)	1 1/2" (DN40)
1	0.031	0.031	0.031	0.031
2	0.15	0.15	0.16	0.16
3	0.35	0.35	0.35	0.35
4	0.57	0.59	0.59	0.59
5	1.0	1.0	1.0	1.0
6	1.2	1.2	1.2	1.2
8	2.1	2.1	2.2	2.3
10	3.0	3.1	3.1	3.3
12	4.3	4.3	4.4	4.7
14	-	5.5	5.5	6.0
16	-	5.9	6.1	6.6
18	-	-	7.5	8.2 (8.0)
20	-	-	8.2	10.4 (9.8)
22	-	-	-	12.8 (12.5)

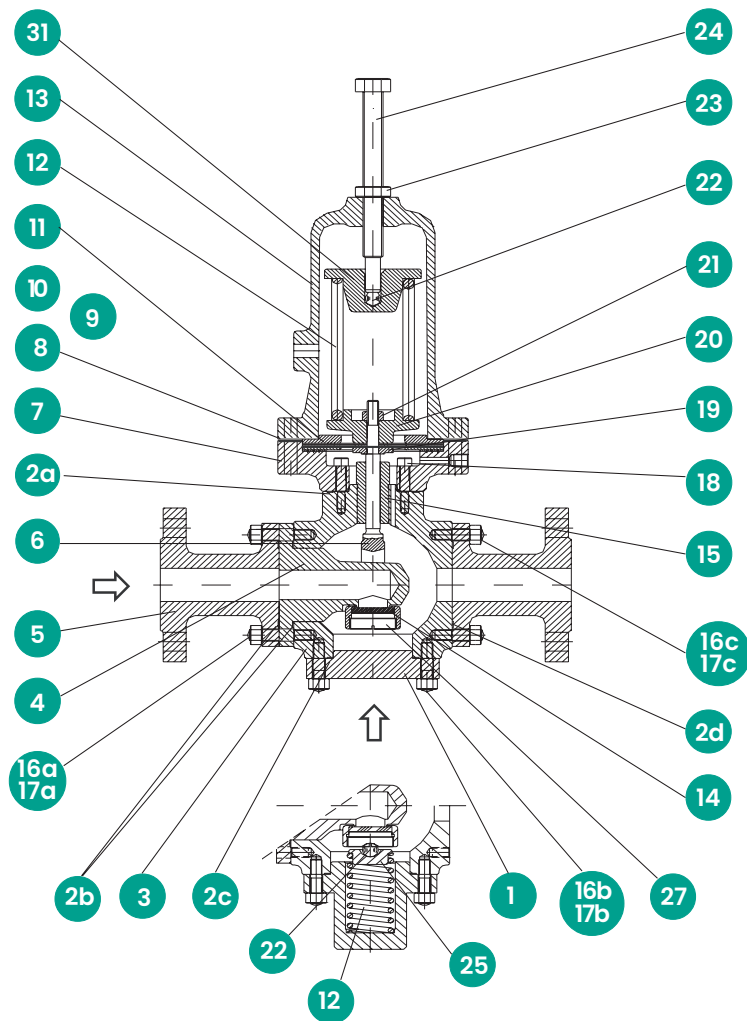
1. Reduced C_v for Actuator 100

171 - Table 7 - Actuator Case Dimensions

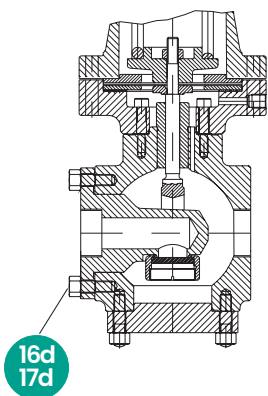
Actuator Model	A
100/120/130	5.2" (132mm)
140	5.5" (140mm)
220	8.7" (220mm)

172 Series Construction

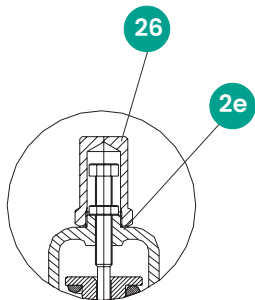
Actuator Sizes 100 to 140



Flanged Construction



Threaded Construction



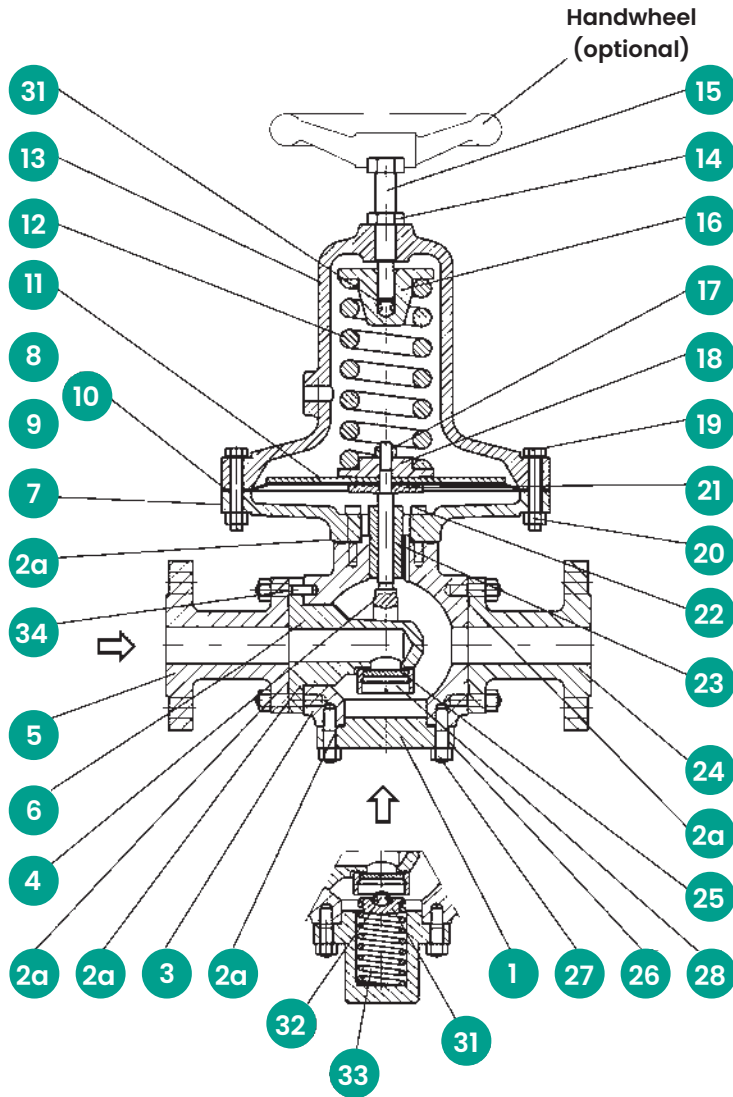
Optional Sealed Cap

Parts

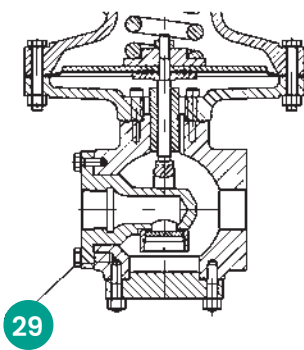
1	Blindhead
2	(a,b,c,d,e) Gasket Set
3	Body
4	H.P. Insert
5	Inlet Flange
6	Plug
7	Actuator Diaphragm Case
8	Diaphragm
9	Protection
10	O-Ring
11	Diaphragm Plate (upper)
12	Spring
13	Spring Case
14	Disc
15	Guide
16	(a,b,c,d) Nut
17	(a,b,c,d) Stud
18	Screw
19	Diaphragm Plate (lower)
20	Spring Button (lower)
21	Nut
22	Ball
23	Adjusting Screw Locknut
24	Adjusting Screw
25	Ball Seat
26	Seal Cap
27	Plug Screw
31	Spring Button (upper)

172 Series Construction

Actuator Size 220



Flanged Construction



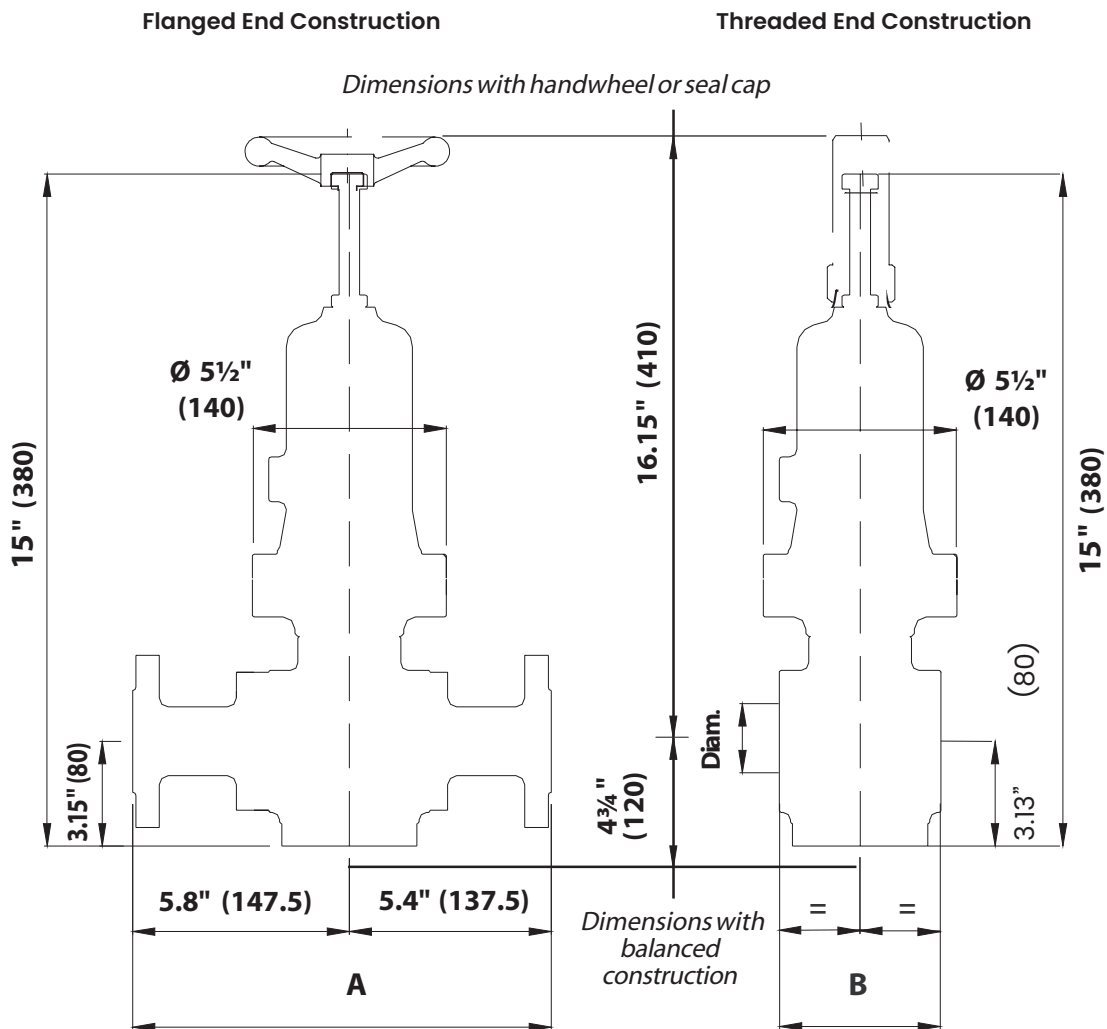
Threaded Construction

Parts

1	Blindhead
2	Gaskets Set
3	Body
4	Plug
5	Inlet Flange
6	H.P. Insert
7	Actuator Diaphragm Case
8	Diaphragm
9	Protection (Option)
10	O-Ring
11	Diaphragm Plate (upper)
12	Spring
13	Spring Case
14	Adjusting Screw Locknut
15	Adjusting Screw
16	Spring Button (upper)
17	Nut
18	Spring Button (lower)
19	Screw
20	Nut
21	Diaphragm Plate (lower)
22	Screw
23	Guide
24	Outlet Flange
25	Disc
26	Stud
27	Nut
28	Plug Screw
29	Screw
31	Ball Seat
32	Ball
33	Spring
34	Pin

172 Series Dimensions

Actuator Sizes 100 to 140



172 - Table 1 - Body Sizes and Face-to-Face Dimensions¹

DN	Flanged		Threaded
	PN 16	ASME 150RF	NPT-F
	PN 25	ASME 300RF	GAS-F Con.
	PN 40	ASME 600RF	BSP-F
	A		B
1/2" (DN15)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
3/4" (DN20)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
1" (DN25)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
1 1/2" (DN40)	11 1/4" (285mm)	11 1/4" (285mm)	-

1. Special face-to-face dimensions available on request

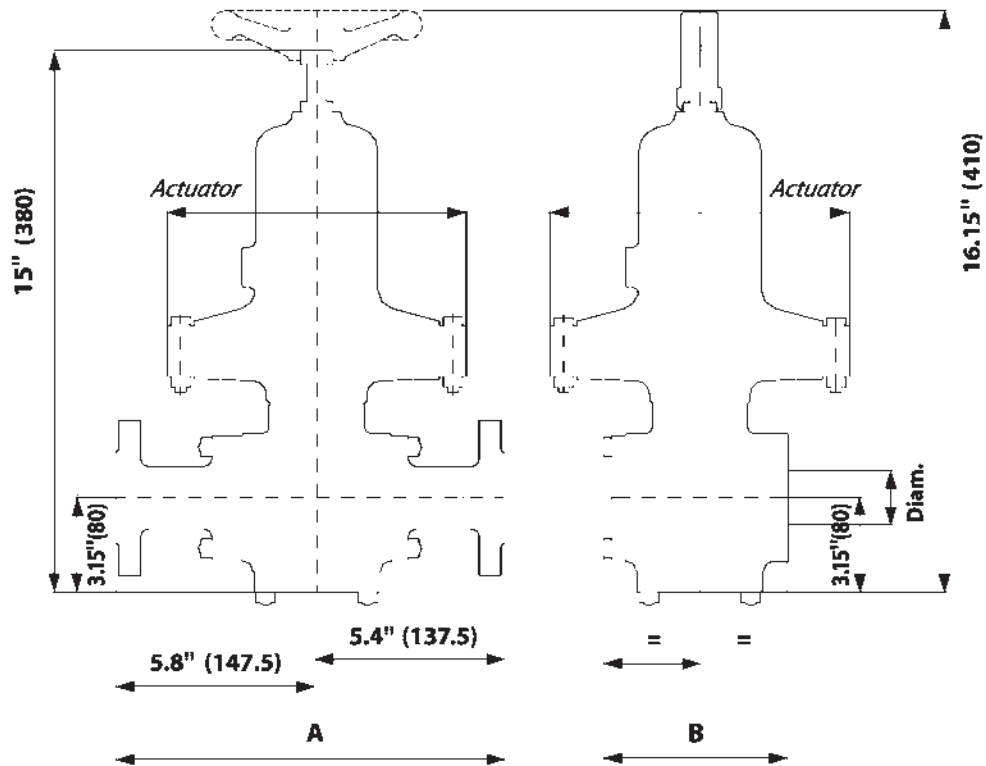
172 Series Dimensions

Actuator Size 220

Flanged End Construction

Threaded End Construction

Dimensions with handwheel or seal cap



172 - Table 2 - Body Sizes and Face-to-Face Dimensions¹

DN	Flanged		Threaded
	PN 16	ASME 150RF	NPT-F
	PN 25	ASME 300RF	GAS-F Con.
	PN 40	ASME 600RF	BSP-F
	A		B
1/2" (DN15)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
3/4" (DN20)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
1" (DN25)	11 1/4" (285mm)	11 1/4" (285mm)	5 1/8" (130mm)
1 1/2" (DN40)	11 1/4" (285mm)	11 1/4" (285mm)	-

1. Special face-to-face dimensions available on request

172 Series Set Pressure Ranges

172 - Table 3 - Standard Set Pressure Ranges

psig	barg	Actuator Size	Maximum Outlet Pressure
1.36 to 1.80	0.094 to 0.12	220	42 psig (2.9 barg)
1.54 to 3.0	0.106 to 0.20		
1.84 to 3.4	0.127 to 0.24		
2.1 to 5.4	0.144 to 0.37		
3.8 to 8.7	0.26 to 0.60		
5.8 to 13.4	0.40 to 0.93		
8.4 to 14.3	0.58 to 0.99		
13 to 21	0.89 to 1.5		
16 to 24	1.1 to 1.6		
20 to 26	1.4 to 1.8		
23 to 39	1.6 to 2.7	140	145 psig (10 barg)
10 to 19	0.7 to 1.3		
16 to 31	1.1 to 2.1		
23 to 47	1.6 to 3.3		
32 to 50	2.2 to 3.5		
48 to 75	3.3 to 5.2		
60 to 83	4.1 to 5.7		
74 to 91	5.1 to 6.3		
82 to 133	5.7 to 9.2		
25 to 44	1.7 to 3.0		
39 to 74	2.7 to 4.9		
55 to 110	3.8 to 7.6		
76 to 116	5.2 to 8.0		
113 to 175	7.8 to 12.1		
141 to 192	9.7 to 13.2		
174 to 211	12.0 to 14.5		
193 to 320	13.3 to 22.1	120	470 psig (32.4 barg)
37 to 59	2.6 to 4.1		
56 to 95	3.8 to 6.6		
77 to 147	5.3 to 10.1		
105 to 156	7.3 to 10.8		
156 to 235	10.8 to 16.2		
193 to 258	13.3 to 17.8		
238 to 283	16.4 to 19.5	100	754 psig (52 barg)
263 to 428	18.1 to 29.5		
65 to 126	4.5 to 8.7		
105 to 203	7.2 to 14.0		
151 to 314	10.4 to 21.6		
211 to 334	14.6 to 23.0		
319 to 502	22.0 to 34.6		
397 to 550	27.4 to 37.9		
494 to 604	34.1 to 41.7		
548 to 667	37.8 to 46.0		

 Represents standard spring ranges. others are optional, provided upon request.

172 Series Materials

172 – Table 4 – Standard Material Combinations

Body				
	Carbon Steel* 32°F < T < 392°F (0°C < T < 200°C)	Full Carbon Steel*** -20°F < T < 482°F (-29°C < T < 250°C)	316 SS* -20°F < T < 482°F (-29°C < T < 250°C)	Full 316 SS*** -320.8°F < T < 482°F (-196°C < T < 250°C)
Body	Carbon Steel	Carbon Steel	316 SS	316 SS
Blindhead	Carbon Steel	Carbon Steel	316 SS	316 SS
Gasket	P T F E	P T F E	P T F E	P T F E
Trim				
Seat	316 SS	316 SS	316 SS	316 SS
Disc	See table 8	See table 8	See table 8	See table 8
Plug Stem	316 SS	316 SS	316 SS	316 SS
Guide Bushing	304 SS / 17-4PH	304 SS / 17-4PH	304 SS / Nitronic 60	304 SS / Nitronic 60
Actuator				
Spring Case	Cast Iron	Carbon Steel	Carbon Steel	316 SS
Diaphragm Case	Carbon Steel	Carbon Steel	316 SS	316 SS
Spring	CrV Steel	CrV Steel	CrV Steel	316 SS
Diaphragm	See table 9			

Note: Special constructions are available in LCB, WCC (N.A.C.E.), 316L, 317, Duplex, Superduplex, Monel, Hastelloy B/C

Configurations/Material Availability

*	Standard – Except Steam Service
***	Non Standard – Manufactured on Request

172 Series C_v Ratings

172 - Table 5 - Maximum Inlet Pressures

End Connection	Construction	P Max				
		68°F (20°C)	212°F (100°C)	392°F (200°C)	482°F (250°C)	572°F (300°C)
Flanged	CS	1566 psig (108 barg)	1566 psig (108 barg)	1566 psig (108 barg)	1566 psig (108 barg)	1566 psig (108 barg)
	Full CS					
	SS					
	Full SS	1175 psig (81 barg)	1088 psig (75 barg)	899 psig (62 barg)	841 psig (58 barg)	783 psig (54 barg)
	Full CS NACE	1262 psig (87 barg)	1262 psig (87 barg)	1262 psig (87 barg)	1262 psig (87 barg)	1262 psig (87 barg)
	SS NACE					
	Full SS NACE	1059 psig (73 barg)	899 psig (62 barg)	841 psig (58 barg)	812 psig (56 barg)	798 psig (55 barg)
Threaded	1/2" - 1"	4061 psig (280 barg)	3437 psig (237 barg)	2886 psig (199 barg)	2741 psig (189 barg)	2567 psig (177 barg)
	1-1/2"	1392 psig (96 barg)	1189 psig (82 barg)	986 psig (68 barg)	928 psig (64 barg)	870 psig (60 barg)

172 - Table 6 - Rated C_v for All Body Sizes with Elastomer Diaphragm

Trim Number	Body Size				
	1/2" (DN15)	3/4" (DN20)	1" (DN25)	1-1/2" (DN40)	2" (DN25)
1	0.031	0.031	0.031	0.031	0.031
2	0.15	0.15	0.16	0.16	0.16
3	0.35	0.35	0.35	0.35	0.35
4	0.57	0.59	0.59	0.59	0.59
5	1.0	1.0	1.0	1.0	1.0
6	1.2	1.2	1.2	1.2	1.2
8	2.1	2.1	2.2	2.3	2.3
10	3.0	3.1	3.1	3.3	3.5
12	4.3	4.3	4.4	4.7	4.7
14	-	5.5	5.5	6.0	6.0
16	-	5.9	6.1	6.6	7.9
18	-	-	7.5	8.2 (8.0)	9.2 (9.0)
20	-	-	8.2	10.4 (9.8)	10.4 (10.1)
22	-	-	-	12.8 (12.5)	12.8 (12.5)

I. Reduced C_v for Actuator 100

172 Series C_v Ratings

172 - Table 7 - Rated C_v for All Body Sizes with Metal Diaphragm

Trim Number	Body Size				
	1/2" (DN15)	3/4" (DN20)	1" (DN25)	1 1/2" (DN40)	2" (DN25)
1	0.031	0.031	0.031	0.031	0.031
2	0.11	0.12	0.13	0.15	0.15
3	0.24	0.24	0.24	0.24	0.24
4	0.40	0.40	0.40	0.40	0.40
5	0.44	0.44	0.44	0.44	0.44
6	0.67	0.67	0.67	0.67	0.67
8	1.2	1.3	1.4	1.4	1.4
10	1.7	1.7	1.7	1.9	1.9
12	2.0	2.0	2.0	2.0	2.0
14	-	2.4	2.4	2.4	2.4
16	-	2.7	2.7	2.7	2.7
18	-	-	3.0	3.0	3.0
20	-	-	3.5	4.0	4.0
22	-	-	-	4.3	4.3

172 - Table 8 - Temperature Ranges and Pressure Limits for Disc Elastomers

Material	Minimum Temperature		Maximum Temperature		Maximum Pressure	
	°C	°F	°C	°F	barg	psig
Fluorocarbon (FKM-FPM)*	-10	14	200	392	40	580
Polytetrafluoroethylene (PTFE)***	-200	-328	250	482	200	2900
Stainless Steel**	-196	-321	455	851	280	4060

172 - Table 9 - Temperature Ranges for Diaphragms

Material	Minimum Temperature		Maximum Temperature	
	°C	°F	°C	°F
Chloroprene (CR)*	-20	-4	90	194
Fluorocarbon (FKM-FPM) + polyester***	-10	14	150	302
Fluorocarbon (FKM-FPM) + polyarylamide***	-10	14	200	392
Ethylene-Propylene (EPDM)**	-35	-31	160	320
Stainless Steel**	-196	-320.8	455	851

Note: Special diaphragms are available in NBR (nitrile butadiene, Buna-N or equivalent), HNBR (hydrogenated nitrile), VMQ (silicone), FVMQ (fluorosilicone), TFE/P (Aflas or equivalent)

Configurations/Material Availability

*	Standard - Except Steam Service
**	Steam Service
***	Non Standard - Manufactured on Request

172 Series Weights

172 - Table 20 - Weights

Actuator Sizes 100-140					
	NPT/GAS	ASME Class 150 RF	PN 16/25/40	ASME Class 300 RF	ASME Class 600 RF
1/2" (DN15)	36.8 lbs (16.7 kg)	43.2 lbs (19.6 kg)	44.5 lbs (20.2 kg)	43.7 lbs (19.8 kg)	44.3 lbs (20.1 kg)
3/4" (DN20)	36.8 lbs (16.7 kg)	43.9 lbs (19.9 kg)	45.9 lbs (20.8 kg)	46.1 lbs (20.9 kg)	47 lbs (21.3 kg)
1" (DN25)	36.6 lbs (16.6 kg)	45.4 lbs (20.6 kg)	47.2 lbs (21.4 kg)	47.4 lbs (21.5 kg)	48.1 lbs (21.8 kg)
1-1/2" (DN40)	36.4 lbs (16.5 kg)	47.6 lbs (21.6 kg)	49.8 lbs (22.6 kg)	52.5 lbs (23.8 kg)	54.7 lbs (24.8 kg)
2" (DN50)	N/A	50.9 lbs (23.1 kg)	53.9 lbs (24.1 kg)	54.2 lbs (24.6 kg)	57.5 lbs (26.1 kg)

172 - Table 21 - Weights

Actuator Size 220					
	NPT/GAS	ASME Class 150 RF	PN 16/25/40	ASME Class 300 RF	ASME Class 600 RF
1/2" (DN15)	46.7 lbs (21.2 kg)	53.1 lbs (24.1 kg)	44.5 lbs (20.2 kg)	54.5 lbs (24.7 kg)	54.2 lbs (24.6 kg)
3/4" (DN20)	46.7 lbs (21.2 kg)	53.8 lbs (24.4 kg)	45.9 lbs (20.8 kg)	56 lbs (25.4 kg)	56.9 lbs (25.8 kg)
1" (DN25)	46.5 lbs (21.1 kg)	55.3 lbs (25.1 kg)	47.2 lbs (21.4 kg)	57.3 lbs (26 kg)	58 lbs (26.3 kg)
1-1/2" (DN40)	46.3 lbs (21 kg)	57.5 lbs (26.1 kg)	49.8 lbs (22.6 kg)	62.4 lbs (28.3 kg)	64.6 lbs (29.3 kg)
2" (DN50)	N/A	60.9 lbs (27.6 kg)	53.9 lbs (24.1 kg)	64.2 lbs (29.1 kg)	67.5 lbs (30.6 kg)



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