

# 173 Series

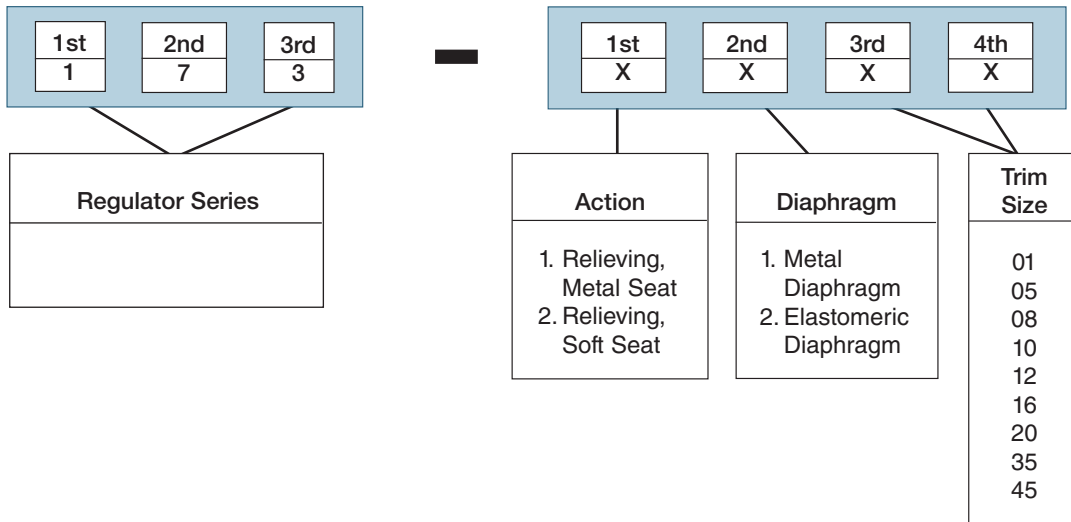
Spring Loaded, Direct-Operated,  
Back-Pressure Regulator



## Table of Contents

Numbering System .....	2
Features/Specifications .....	3
Materials .....	4
Dimensions .....	6
Materials .....	7

## Numbering System



## 173 Series: Threaded or Flanged Connections Carbon Steel, Stainless Steel & Alloy Constructions

The 173 Series are direct operated, pressure relieving or back pressure regulators designed for steam, gas and liquid services. Available in body sizes 1/2" through 2" (DN15 through DN50) in a variety of end connections to suit most applications. These regulators are designed for continuous, rugged industrial use to provide years of reliable service.

### Features

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

### Specifications

#### Body

##### Body Sizes and End Connections

- see table 1

##### Maximum Inlet Pressure

- see table 2

##### Set Point Range

- 1.36 to 667 psig (0.094 to 46.0 barg) - see table 2

##### Temperature Range

- see tables 3, 6, 7

##### Pressure Sensing

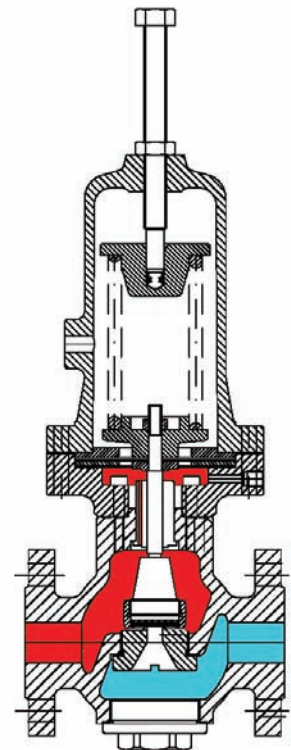
- internal (external on request)

##### Capacities

- see tables 4, 5

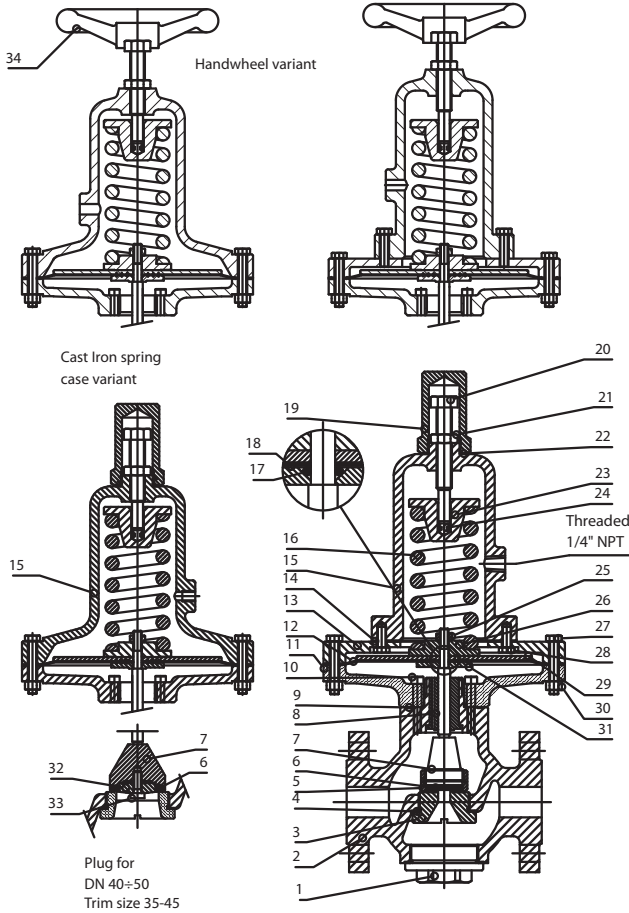
##### Weight

- see tables 8, 9



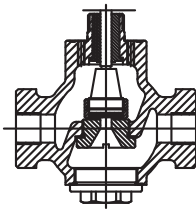
# Materials

## Actuator Size 220

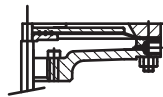


### Flanged Construction

Materials			
1	Blindhead	18	Protector (Optional)
2	Body	19	Cap (Optional)
3	Seat	20	Adjusting Screw
4	Gasket	21	Adjusting Screw Locknut
5	Ring	22	Spring Button (Upper)
6	Plug Seal Elastomer	23	Spring Loader
7	Plug	24	Ball
8	Guide Bushing	25	Nut
9	Gasket	26	Spring Button (Lower)
10	Screw	27	Screw
11	Diaphragm Case	28	Screw
12	Diaphragm	29	Diaphragm Plate (Upper)
13	Actuator Upper Flange	30	Nut
14	Gasket	31	Diaphragm Plate (Lower)
15	Spring Case	32	Soft Seat Retainer
16	Spring	33	Plug Screw
17	O-Ring	34	Handwheel (Optional)



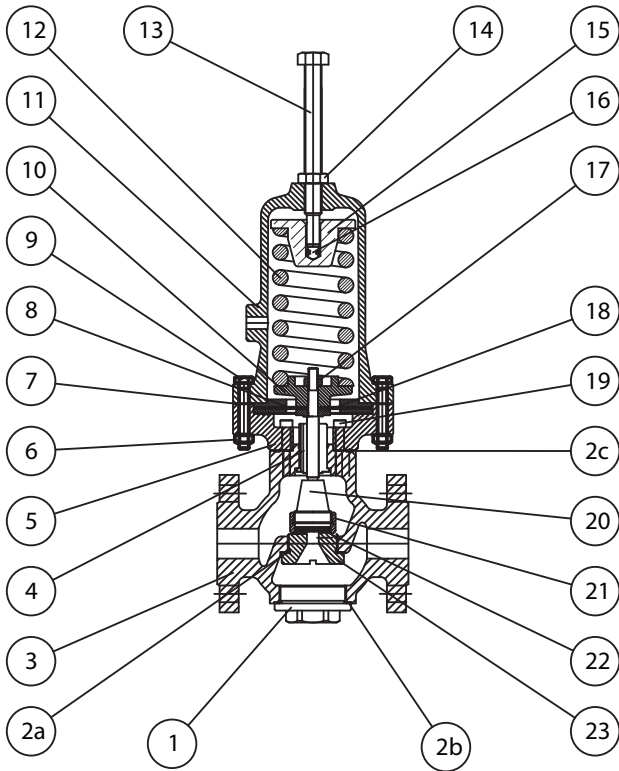
### Threaded Construction



### External Pressure Sensing (Optional)

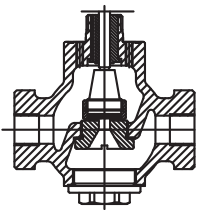
# Materials

## Actuator Sizes 100 to 140

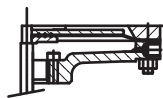


Flanged Construction

Materials			
1	Blindhead	13	Adjusting Screw
2	Gaskets	14	Adjusting Screw Locknut
3	Valve Body	15	Spring Button (Upper)
4	Guide	16	Ball
5	Diaphragm Case	17	Spring Button (Lower)
6	Nut	18	Diaphragm Plate (Upper)
7	Diaphragm Plate (Lower)	19	Screw
8	Diaphragm	20	Plug
9	Protector (Optional)	21	Plug Screw
10	O-Ring	22	Disc
11	Spring Case	23	Seat
12	Spring		



Threaded Construction



External Pressure Sensing  
(Optional)

# Dimensions

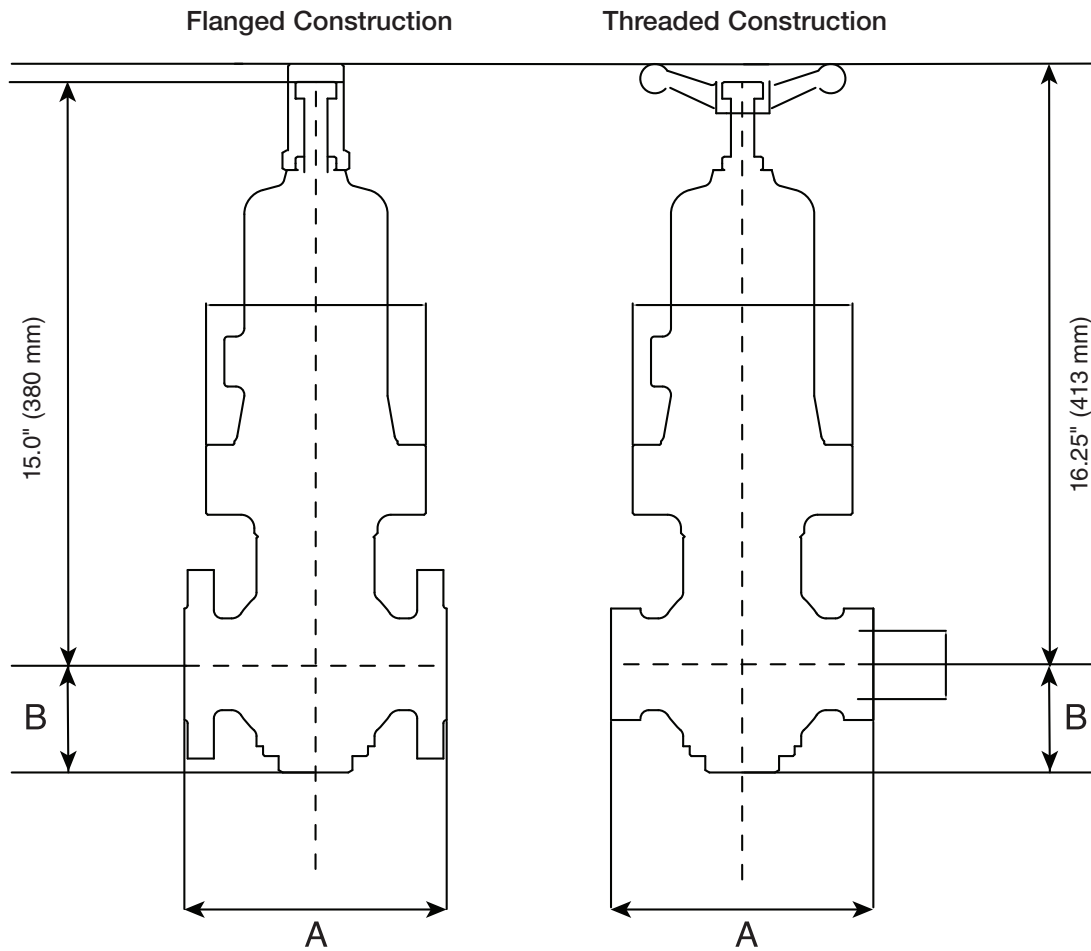


Table 1 - Body Sizes and Face to Face Dimensions

Size (DN)	Flanged			Threaded		All end connections
	PN16	ANSI 150RF	ANSI 300RF	NPT-F	B	
	PN25			GAS-F Con.		
	PN40			BSP-F		
A			A			
1/2" (DN15)	6.3" (160mm)	6.3" (160mm)	6.3" (160mm)	5.8" (148mm)	2.6" (66mm)	
3/4" (DN20)	6.3" (160mm)	6.3" (160mm)	6.3" (160mm)	5.8" (148mm)		
1" (DN25)	6.3" (160mm)	6.3" (160mm)	6.3" (160mm)	5.8" (148mm)		
1 1/2" (DN40)	7.25" (185mm)	7.25" (185mm)	7.25" (185mm)	6.7" (170mm)	3.25" (82mm)	
2" (DN50)	7.25" (185mm)	7.25" (185mm)	7.25" (185mm)	6.7" (170mm)		

## Materials

**Table 2 - Standard Set Pressure Ranges**

psig	barg	Actuator Size	Maximum Inlet 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				
10 to 19	0.7 to 1.3			140	145 psig (10 barg)
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	130	362 psig (25 barg)		
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				
37 to 59	2.6 to 4.1	120	470 psig (32.4 barg)		
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				
263 to 428	18.1 to 29.5				
65 to 126	4.5 to 8.7	100	754 psig (52 barg)		
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.

## Materials

Table 3 - Standard Material Combinations

Table 3 - Standard Material Combinations				
Body				
	Carbon Steel*	Full Carbon Steel***	316 SS*	Full 316 SS***
	32° F < T < 392° F	-20° F < T < 392° F	-20° F < T < 392° F	-320.8° F < T < 392° F
	(0° C < T < 200° C)	(-29° C < T < 200° C)	(-29° C < T < 200° C)	(-196° C < T < 200° C)
<b>Body</b>	Carbon Steel	Carbon Steel	316 SS	316 SS
<b>Blindhead</b>	Carbon Steel	Carbon Steel	316 SS	316 SS
<b>Gasket</b>	P T F E	P T F E	P T F E	P T F E
Trim				
<b>Seat</b>	316 SS	316 SS	316 SS	316 SS
<b>Disc</b>	See table 6	See table 6	See table 6	See table 6
<b>Plug Stem</b>	316 SS	316 SS	316 SS	316 SS
<b>Guide Bushing</b>	304 SS / 17-4PH	304 SS / 17-4PH	304 SS / Nitronic 60	304 SS / Nitronic 60
Actuator				
<b>Spring Case</b>	Cast Iron	Carbon Steel	Carbon Steel	316 SS
<b>Diaphragm Case</b>	Carbon Steel	Carbon Steel	316 SS	316 SS
<b>Spring</b>	CrV Steel	CrV Steel	CrV Steel	316 SS
<b>Diaphragm</b>	See table 7			
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
**	Steam Service
***	Non Standard - Manufactured on Request



## Materials

Table 4 - Rated Cv for All Body Sizes With Elastomer Diaphragm

Trim Number	Body Size				
	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	1 1/2" (DN 40)	2" (DN 25)
1	0.033	0.033	0.033	0.033	0.033
5	0.6	0.6	0.6	0.6	0.6
8	1.6	1.6	1.6	1.6	1.6
10	2.5	2.5	2.5	2.5	2.5
12	3.4	3.4	3.4	3.4	3.4
16		7	7	7	7
20			9	9	9
35				19	19
45					35

Table 5 - Rated Cv for All Body Sizes With Metal Diaphragm

Trim Number	Body Size				
	1/2" (DN 15)	3/4" (DN 20)	1" (DN 25)	1 1/2" (DN 40)	2" (DN 25)
1	0.033	0.033	0.033	0.033	0.033
5	0.2	0.2	0.2	0.2	0.2
8	0.33	0.33	0.33	0.33	0.33
10	0.4	0.4	0.4	0.4	0.4
12	0.5	0.5	0.5	0.5	0.5
16		0.9	0.9	0.9	0.9
20			1.4	1.4	1.4
35				3	3
45					5.5

## Materials

Table 6 - Temperature Ranges for Disc Elastomers

	min		max	
	°C	°F	°C	°F
Fluorocarbon (FKM-FPM)*	-10	14	200	392
Polytetrafluoroethylene (PTFE)***	-200	-328	250	482
AISI 316**	-196	-321	455	851

Table 7 - Temperature Ranges for Diaphragms

Material	T min		T max	
	°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	150	302
AISI 316**	-196	-320.8	455	851

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

Table 8 - Weights - Actuator Sizes 100, 120, 130 & 140

	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	36.6 lbs (16.6 kg)	36.4 lbs (16.5 kg)	38.6 lbs (17.5 kg)	40.8 lbs (18.5 kg)
3/4" (DN20)	36.6 lbs (16.6 kg)	37.5 lbs (17.0 kg)	39.7 lbs (18.0 kg)	43.0 lbs (19.5 kg)
1" (DN25)	36.4 lbs (16.5 kg)	38.6 lbs (17.5 kg)	40.8 lbs (18.5 kg)	44.1 lbs (20.0 kg)
1 1/2" (DN40)	41.0 lbs (18.6 kg)	44.3 lbs (20.1 kg)	47.4 lbs (21.5 kg)	52.9 lbs (24.0 kg)
2" (DN50)	40.8 lbs (18.5 kg)	48.5 lbs (22.0 kg)	50.9 lbs (23.1 kg)	58.0 lbs (26.3 kg)

Table 9 - Weights - Actuator Size 220

	NPT/GAS	Class 150 RF	PN 16/25/40	Class 300 RF
1/2" (DN15)	41.0 lbs (18.6 kg)	40.8 lbs (18.5 kg)	43.0 lbs (19.5 kg)	45.2 lbs (20.5 kg)
3/4" (DN20)	41.0 lbs (18.6 kg)	41.9 lbs (19.0 kg)	44.1 lbs (20.0 kg)	47.4 lbs (21.5 kg)
1" (DN25)	40.8 lbs (18.5 kg)	43.0 lbs (19.5 kg)	45.2 lbs (20.5 kg)	48.5 lbs (22.0 kg)
1 1/2" (DN40)	45.4 lbs (20.6 kg)	48.7 lbs (22.1 kg)	51.8 lbs (23.5 kg)	57.3 lbs (26.0 kg)
2" (DN50)	45.2 lbs (20.5 kg)	52.9 lbs (24.0 kg)	55.3 lbs (25.1 kg)	62.4 lbs (28.3 kg)

### Configurations/Material Availability

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

## Notes

# DIRECT SALES OFFICE LOCATIONS

<b>BELGIUM</b> Phone: +32-2-344-0970 Fax: +32-2-344-1123	<b>INDIA</b> Mumbai Phone: +91-22- 8354790 Fax: +91-22-8354791 New Delhi Phone: +91-11-2-6164175 Fax: +91-11-5-1659635	<b>RUSSIA</b> Veliky Novgorod Phone: +7-8162-15-7898 Fax: +7-8162-15-7921 Moscow Phone: +7 495-585-1276 Fax: +7 495-585-1279	<b>UNITED KINGDOM</b> Skelmersdale, Phone: +44-1695-52600 Fax: +44-1695-52601 Uxbridge Phone: +44-1895-454-900 Fax: +44-1895-454-919
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