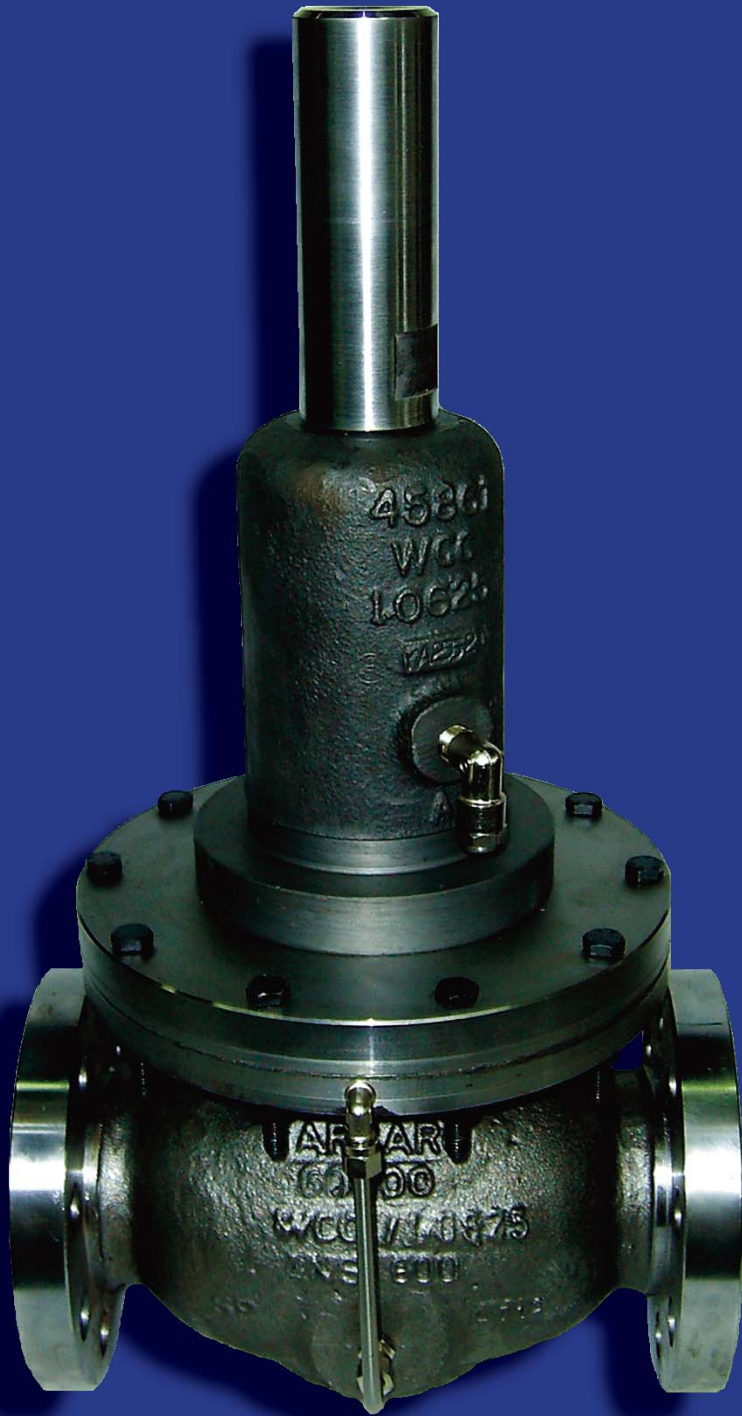


UBR Series

High capacity direct operated pressure reducing valve



Suitable for:



Air & process gases



Liquids



Steam

Markets:



Oil & gas



Blanketing systems



General industry

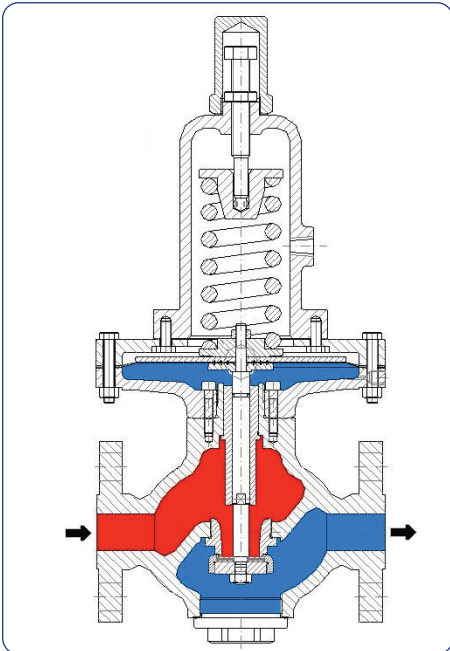


Power

**UBR Series:
Flanged Connections Carbon Steel, Stainless Steel & Alloy Construction**

Valve ID card

Function
Reducing
Seat type
Single
Inlet / Outlet diameters
From ½" up to 2"
Body material
Carbon steel, Stainless steel and Exotic material
End connections
Threaded (F-NPT or GAS/BS) and Flanged (ANSI or PN)
Max rating
ANSI 600
CV
From 1,0 up to 52,6
Trim materials
Stainless steel (std.) and Exotic materials
Diaphragms
Polychloroprene, EPDM, FKM, Stainless steel, other



■ Inlet pressure
■ Outlet pressure

The UBR series are “high capacity” direct operated, spring loaded pressure reducing regulators. They are available in ½ up to 2 inches (DN15 up to DN50) body sizes and flanged end connections. The flanged version is designed with ISA face to face dimensions. These regulators have a compact design and durable construction to sustain rugged use and their construction makes them easy to install and to maintain.

General features:

- Flow to open design
- Available with ISA Face to face dimensions
- From 2 to 8 different CV's for each size to assure high accuracy in regulation
- Metal or Soft Seat (featuring leakage from II to VI, according to Carraro Technical Instruction based on ANSI/FCI 70-3)
- Internal pressure sensing (external on request)
- Packingless construction
- Wide range of actuators according to the requested regulation range
- Wide range of elastomeric diaphragms or in AISI 316
- Fully sealed construction available (suitable for dangerous medium; ATEX compliant)
- Balanced construction available for high pressure drops

Special constructions:

- UBR regulators are also available in special configurations:
- Exotic materials in short lead times (e.g. duplex, superduplex, alloy steel, monel, inconel etc.)
 - Differential versions (with single or double diaphragm) for applications where the differential pressure between two spots has to be controlled and maintained constant
 - Special welding (BW / SW)

Index of tables and specifications

- Fluid applications** • see table 1
- Capacities** • see table 2
- Actuators operating range** • see table 3
- Materials of Construction** • see table 4
- Temperature Range** • see tables 5 - 9
- Spring Range** • see table 10
- Weight** • see tables 11 - 14
- Body Sizes and End Connections** • see table 15
- Actuators dimension** • see table 16

Tab. [1] - Fluid applications

Gas	Air, inert gas, CO ₂ , CO, hydrocarbons, O ₂ , H ₂ , F, NH ₃ , frigorific gas.
Steam	Steam H ₂ O, alcoholic steams, organic steam, sulphuric acid.
Liquids	Water, aqueous solutions, hydrocarbons, alcohol, lubricating oils, diathermic oils, solvents, frigorific fluids, acrylic compounds.

Tab. [2] - Capacities

Nozzle	Body Size									
	½" (DN15)		¾" (DN20)		1" (DN25)		1½" (DN40)		2" (DN50)	
12	1,0	0,52	1,0	0,52	1,0	0,52	1,0	0,52	1,0	0,52
15	4,5	1,7	4,5	1,7	4,5	1,7	4,5	1,7	4,5	1,7
18			8 (7,7*)	2,0	8 (7,7*)	2,0	8 (7,7*)	2,0	8 (7,7*)	2,0
22					10 (9,5*)	2,5	10 (9,5*)	2,5	10 (9,5*)	2,5
26					12,8 (12*)	3,0	12,8 (12*)	3,0	12,8 (12*)	3,0
32							22,2 (20*)	3,6	22,2 (20*)	3,6
40							32 (26,6*)	4,1	32 (26,6*)	4,1
48									52,6 (30*)	4,7

 Cv for all body sizes with **elastomer diaphragm**
 Cv for all body sizes with **metal diaphragm**

* Reduced Cv for actuator 100

Tab. [3] - Actuators operating range

Actuators	Actuators spring ranges	Maximum allowable pressure
100	4.5 to 46.0 Barg	52 Barg
120	2.6 to 29.5 Barg	33 Barg
130	1.7 to 22.1 Barg	25 Barg
140	0.7 to 9.2 Barg	10 Barg
220	0,094 to 2,7 Barg	3 Barg
360	0,0025 to 0,84 Barg	1 Barg
515	0,0012 to 0,23 Barg	0,25 Barg

Tab. [4] - Material Combination

Body				
	Carbon steel (AF1/AS1)	Full Carbon steel (AF2/AS2)	316 SS (IF2/IS2)	Full 316 SS (IF3/IS3)
	0°C ≤ T ≤ 200°C (32°F ≤ T ≤ 392°F)	-29°C ≤ T ≤ 250°C (-20°F ≤ T ≤ 482°F)	-29°C ≤ T ≤ 250°C (-20°F ≤ T ≤ 482°F)	-196°C ≤ T ≤ 250°C (-320°F ≤ T ≤ 482°F)
Body	ASME SA-316 WCC	ASME SA-316 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Blindhead	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Gaskets set	See Tab. [5]			
Trim				
Disc (standard)	See Tab. [6]			
Seat	ASTM A-479 316	316 SS ASTM A-479 316	ASTM A-479 316	ASTM A-479 316
Plug	ASTM A-479 316	ASTM A-479 316	ASTM A-479 316	ASTM A-479 316
Guide	ASTM 17-4 PH	AST 17-4 PH	ASTM A-479 304	ASTM A-479 304
Actuator				
Spring case	ASME SA-278 35	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M
Actuator diaphragm case	ASME SA-216 WCC	ASME SA-216 WCC	ASME SA-351 CF8M	ASME SA-351 CF8M
Spring	ASTM A-401	ASTM A-401	ASTM A-401	ASTM A-313 316
Diaphragm	See Tab. [7]			

NOTE: SS = Stainless steel

Tab. [5] - Temperature range for flat Gaskets

Materials	Temperature limits
Polytetrafluoroethylene (PTFE)	-200 to 250°C (-328 to 482°F)
No asbestos	-50 to 200°C (-58 to 392°F)

Tab. [6] - Temperature range and inlet pressure limits for Disc material

Materials	Temperature limits	Maximum pressure
Fluoroelastomer (FKM-FPM)	-10 to 200°C (-14 to 392°F)	40barg (580psig)
Polytetrafluoroethylene (PTFE)	-200 to 250°C (-328 to 482°F)	200barg (2900psig)
Stainless Steel	-196 to 455°C (-321 to 851°F)	280barg (4060psig)

Tab. [7] - Temperature range for Diaphragms

Materials	Temperature limits
Chloroprene (CR)	-20 to 90°C (-4 to 194°F)
NBR	-25 to 90°C (-13 to 194°F)
HNBR	-15 to 120°C (5 to 248°F)
Fluorocarbon (FKM-FPM)	-10 to 200°C (14 to 392°F)
Ethylene-Propylene (EPDM)	-35 to 160°C (-31 to 320°F)
Tetrafluoroethylene/propylene (TFE/P)	5 to 200°C (41 to 392°F)
Silicone (VMQ)	-50 to 150°C (-58 to 300°F)
Fluorosilicone (FVMQ)	-50 to 150°C (-58 to 300°F)
Stainless Steel	-196 to 455°C (-321 to 851°F)

Tab. [8] - Temperature range for O-Rings

Materials	Temperature limits
Polytetrafluoroethylene (PTFE)	-200 to 250°C (-328 to 482°F)
Fluorocarbon (FKM-FPM)	-10 to 200°C (14 to 392°F)

Tab. [9] - Temperature range for Metal part

Materials	Temperature limits
Cast Iron	0 to 232°C (32 to 449,6°F)
Carbon Steel	-29 to 425°C (-20 to 797°F)
Stainless Steel	-196 to 455°C (-321 to 851°F)



Gauge



Safety device on actuator



Bolts & Nuts PTFE coated

Optionals:

- Bolts & Nuts PTFE coated (or other)
- Gauge
- Safety device on actuator
- External pressure sensing
- Bug screen

Special configurations:

- Exotic materials
- Differential valves:
 - D1 single Diaphragm
 - D2 double Diaphragm

■ UB REGULATORS

Spring ranges are based on the following assumptions:

- Stroke from setpoint is $\pm 3\text{mm}$
- Offset max 20% for minimum set pressure
- Low unbalancing forces on the plug

If different operating conditions are required please contact Carraro Technical Dept.

* Thin diaphragm (FKM 0,18mm) and upside down installation.

Upright installation

Upsidedown installation

Tab. [10] - Spring ranges

Actuator	Spring	Spring ranges			
		minimum set pressure		maximum set pressure	
	Name	barg	psig	barg	psig
100	4BIS	4,5	65	8,7	126
	6	7,2	105	14,0	203
	7	10,4	151	21,6	314
	8	14,6	211	23,0	334
	9	22,0	319	34,6	502
	9BIS	27,4	397	37,9	550
	10	34,1	494	41,7	604
	10BIS	37,8	548	46,0	667
120	4BIS	2,6	37	4,1	59
	6	3,8	56	6,6	95
	7	5,3	77	10,1	147
	8	7,3	105	10,8	156
	9	10,8	156	16,2	235
	9BIS	13,3	193	17,8	258
	10	16,4	238	19,5	283
	10BIS	18,1	263	29,5	428
130	4BIS	1,7	25	3,0	44
	6	2,7	39	4,9	71
	7	3,8	55	7,6	110
	8	5,2	76	8,0	116
	9	7,8	113	12,1	175
	9BIS	9,7	141	13,2	192
	10	12,0	174	14,5	211
	10BIS	13,3	193	22,1	320
140	4BIS	0,7	10	1,3	19
	6	1,1	16	2,1	31
	7	1,6	23	3,3	47
	8	2,2	32	3,5	50
	9	3,3	48	5,2	75
	9BIS	4,1	60	5,7	83
	10	5,1	74	6,3	91
	10BIS	5,7	82	9,2	133
220	2bis	0,094	1,36	0,12	1,8
	3	0,106	1,54	0,20	3,0
	4	0,127	1,84	0,24	3,4
	4bis	0,144	2,1	0,37	5,4
	6	0,26	3,8	0,60	8,7
	7	0,40	5,8	0,93	13,4
	8	0,58	8,4	0,99	14,3
	9	0,89	13	1,5	21,5
	9bis	1,1	16	1,6	23,6
	10	1,4	20	1,8	25,9
360	10bis	1,6	23	2,7	38,7
	1*	0,0025	0,036	0,014	0,21
	1bis	0,015	0,22	0,018	0,25
	2bis	0,019	0,27	0,039	0,56
	3	0,023	0,33	0,063	0,92
	4	0,029	0,42	0,073	1,1
	4bis	0,035	0,50	0,12	1,7
	6	0,071	1,0	0,19	2,7
	7	0,11	1,6	0,29	4,2
	8	0,17	2,4	0,31	4,4
	9	0,27	3,9	0,46	6,7
	9bis	0,34	4,9	0,50	7,3
10	0,43	6,2	0,55	8,0	
515	10bis	0,48	6,9	0,84	12,2
	1*	0,0012	0,017	0,0077	0,11
	1bis	0,0059	0,09	0,010	0,14
	2bis	0,0080	0,12	0,021	0,30
	3	0,0100	0,15	0,034	0,50
	4	0,014	0,20	0,04	0,6
	4bis	0,016	0,24	0,06	0,9
	6	0,036	0,5	0,10	1,5
	7	0,06	0,9	0,16	2,3
8	0,09	1,3	0,17	2,4	
9	0,14	2,1	0,23	3,3	

Tab. [11] - **Weights** | Actuators: **100, 120, 130, 140.**

	Class 150 RF	Class 300 RF
DN15 (½")	16,5kg (36,4lbs)	18,5kg (40,8lbs)
DN20 (¾")	17kg (37,5lbs)	19,5kg (43lbs)
DN25 (1")	17,5kg (38,6lbs)	20kg (44,1lbs)
DN40 (1½")	20,1kg (44,3lbs)	24kg (52,9lbs)
DN50 (2")	22kg (48,5lbs)	26,3kg (58lbs)

Tab. [12] - **Weights** | Actuator: **220.**

	Class 150 RF	Class 300 RF
DN15 (½")	18,5kg (40,8lbs)	20,5kg (45,2lbs)
DN20 (¾")	19kg (41,9lbs)	21,5kg (47,4lbs)
DN25 (1")	19,5kg (43lbs)	22kg (48,5lbs)
DN40 (1½")	22,1kg (48,7lbs)	26kg (57,3lbs)
DN50 (2")	24kg (52,9lbs)	28,3kg (62,4lbs)

Tab. [13] - **Weights** | Actuator: **360.**

	Class 150 RF	Class 300 RF
DN15 (½")	33,4kg (73,6lbs)	35,4kg (78lbs)
DN20 (¾")	33,9kg (74,7lbs)	36,4kg (80,3lbs)
DN25 (1")	34,4kg (75,8lbs)	36,9kg (81,4lbs)
DN40 (1½")	37kg (81,6lbs)	40,9kg (92,2lbs)
DN50 (2")	38,9kg (85,8lbs)	43,2kg (95,2lbs)

Tab. [14] - **Weights** | Actuator: **515.**

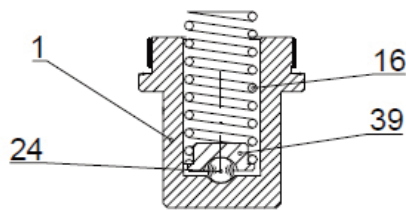
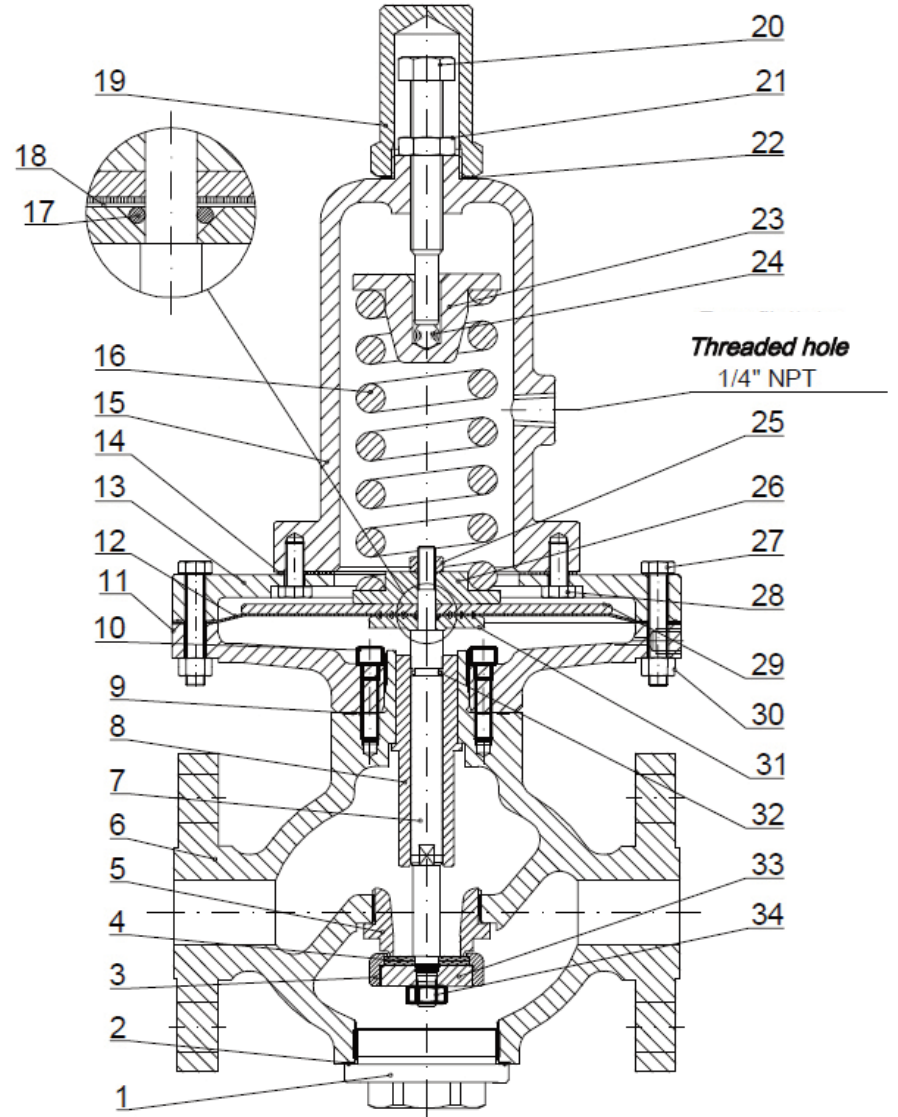
	Class 150 RF	Class 300 RF
DN15 (½")	23,7kg (52,3lbs)	25,7kg (56,7lbs)
DN20 (¾")	24,2kg (53,4lbs)	26,7kg (58,9lbs)
DN25 (1")	24,7kg (54,5lbs)	27,2kg (60lbs)
DN40 (1½")	27,3kg (60,2lbs)	31,2kg (68,8lbs)
DN50 (2")	29,2kg (64,4lbs)	33,5kg (73,9lbs)

■ UB REGULATORS

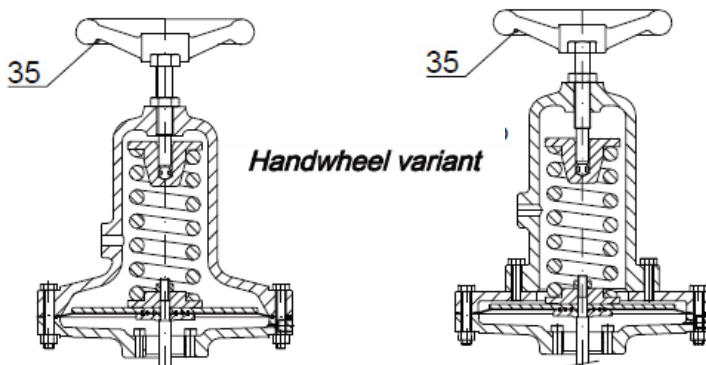
Parts list:

- 1 - Seal Plug
- 2 - Gaskets
- 3 - Ring
- 4 - Plug seal elastomer
- 5 - Seat
- 6 - Valve body
- 7 - Stem
- 8 - Stem guide bushing
- 9 - Gasket
- 10 - Screw
- 11 - Actuator diaphragm case (Lower)
- 12 - Diaphragm
- 13 - Actuator diaphragm case (Upper)
- 14 - Gasket
- 15 - Spring case
- 16 - Spring
- 17 - O-ring
- 18 - Diaphragm protection
- 19 - Cap
- 20 - Adjusting screw
- 21 - Adjusting screw locknut
- 22 - Gasket
- 23 - Spring loader
- 24 - Ball
- 25 - Nut
- 26 - Spring button
- 27 - Screw
- 28 - Screw
- 29 - Diaphragm plate (upper)
- 30 - Nut
- 31 - Diaphragm plate (lower)
- 32 - O-ring
- 33 - Plug seal holder
- 34 - Nut
- 35 - Handwheel (optional)
- 36 - Fitting
- 37 - Pipe
- 38 - Fitting

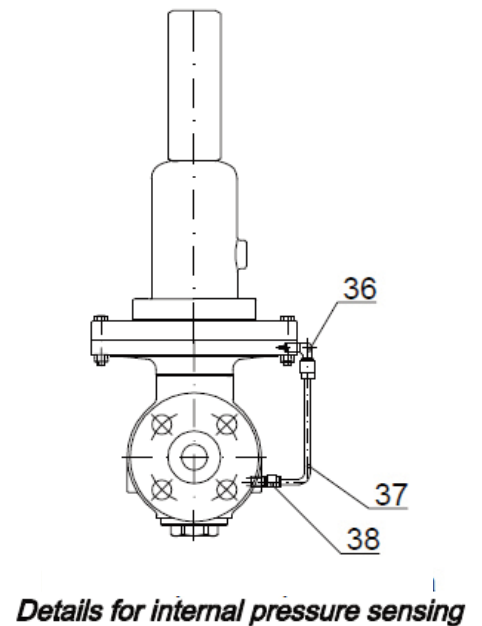
UBR valve section drawing



Balanced plug construction

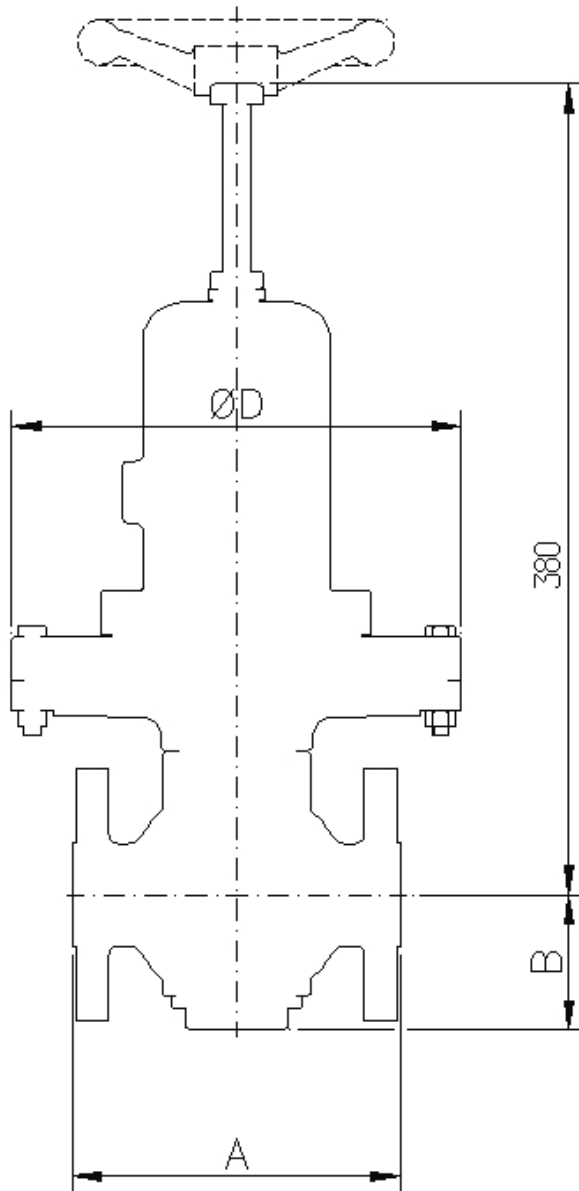


Handwheel variant



Details for internal pressure sensing

UBR valve dimensional drawing

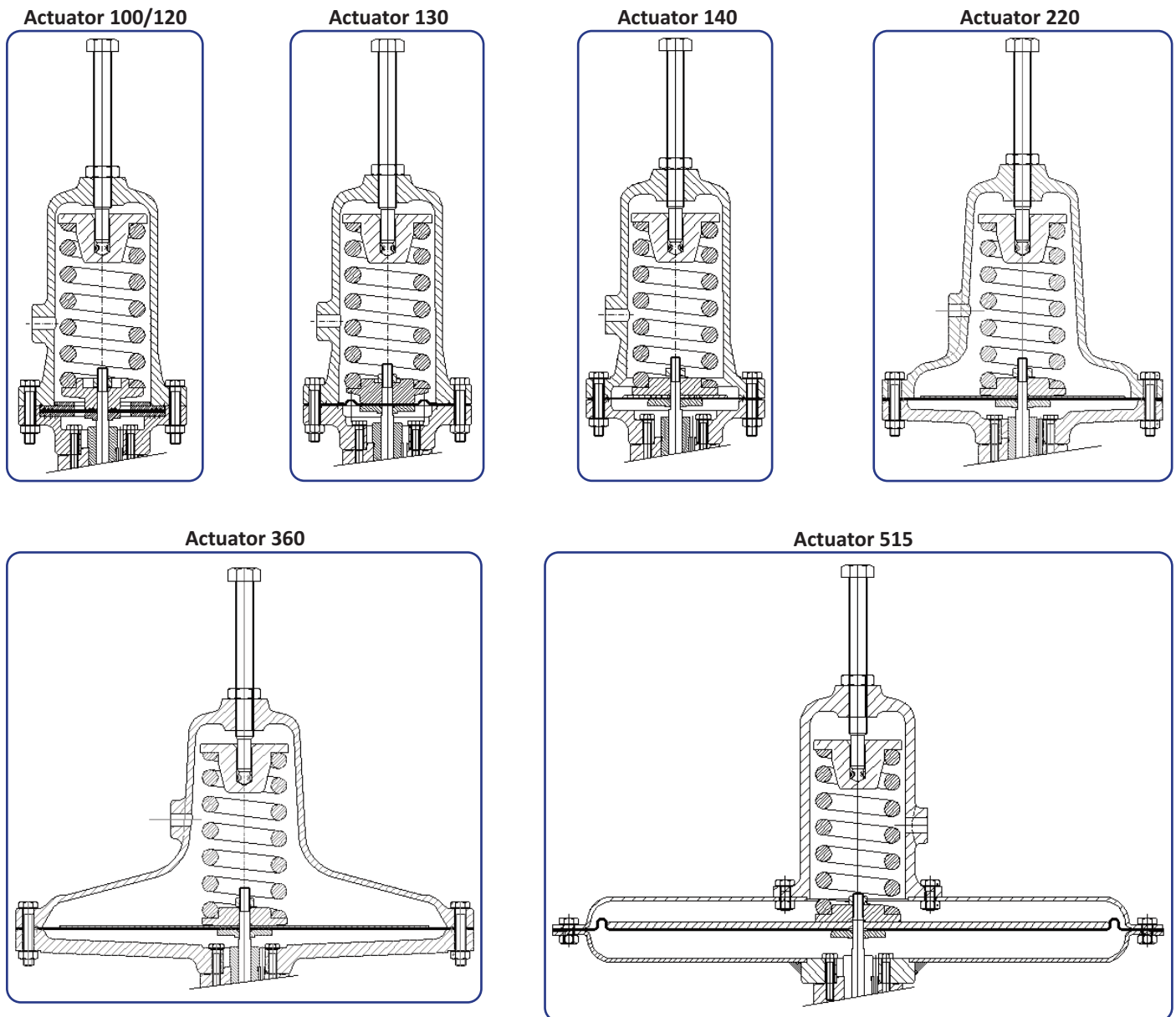


Tab. [15] - Body sizes and face to face dimensions

Size (DN)	A			B	
	ANSI 150RF	ANSI 300RF	ANSI		All End connections
			600RF	600RJ	
½" (DN15)	184mm (7¼")	190mm (7½")	203mm (8")		66mm (2¾")
¾" (DN20)		194mm (7⅝")	206mm (8⅛")		
1" (DN25)		197mm (7¾")	210mm (8¼")		
1½" (DN40)	222mm (8¾")	235mm (9")	251mm (9⅝")		82mm (3¼")
2" (DN50)	254mm (10")	267mm (10½")	286mm (11¼")	289mm (11⅜")	

face to face dimensions are according to ISA

■ UB REGULATORS



UBR actuators:

The above drawings show all our available actuators, which are perfectly interchangeable the one with the others according to the desired pressure regulation (please refer also to Tab. 3 on page 3). The table below shows the actuators dimensions.

Tab. [16] - Actuators dimension

Actuator	Outer diameter	Surface
	mm	cm ² (in ²)
100	132	9,7 (1,5)
120	132	20,7 (3,2)
130	132	27,8 (4,3)
140	140	64,5 (10)
220	220	226,5 (35,1)
360	360	730,1 (113,2)
515	480	1346 (208,6)

About Carraro

Carraro Srl is a private independent company, operative since 1924 in the field of industrial valves. The firm produces and commercializes worldwide a broad range of industrial pressure regulators, desuperheaters and safety valves for fluids such as steam, process gases and liquids.

The flexible organization of Carraro allows a great customization of the products and the production of "taylor made" constructions. Most of the Carraro's product range can be realized also in "exotic" materials such as e.g. duplex, superduplex, monel, hastelloy, aluminum bronze and others. Supported by a global network of sales offices, representatives and distributors, Carraro offers a wide range of solutions for the Oil&Gas, the Power industry and all other diversified industrial applications.

Carraro: product range

UB Regulators: direct-operated pressure regulators with compact design

Maxomatic Series: multifunction pilot-operated regulators for liquids

MM-BPM series: direct-operated, spring pressure regulators

AT series: direct-operated temperature regulators

M51 series: direct-operated, weight and lever pressure regulators

CS series: safety valves for vapours, gas, liquids

CSV series: safety valves for steam and gases

VRE series: electrically operated control valves

MCP - ACP series: pneumatically operated control valves

AIRMATIC series: electropneumatic safety valves

DSH series: desuperheaters

Approvals and certifications

UNI EN ISO 9001: 2008	✓
UNI EN ISO 14001: 2004	✓
97 / 23 / CE (PED)	✓
94 / 09 / CE (ATEX)	✓
RINA	✓
GOST R+RTN	✓
CRN Canada	✓

Cooperations with notified bodies

LLOYD's REGISTER	✓
ABS	✓
BV	✓
DNV	✓

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