7C.405-E
Issue 4 - 2016

595-K/L and 596-K/L Series Self Operated Valves

Description

Self-operated diaphragm pressure control valves are available in 2 different models:

- **595-K/L:** Single Seated Self operated Pressure reducing Valves (to control the downstream pressure).
- **596-K/L:** Single Seated Self operated Pressure Relief Valves (to control the upstream pressure).

They are both self-operated, and easy to install and servicing. 595-K/L and 596-K/L Series Self Operated Valves are used in most industrial applications to control the pressure of liquid, steam and gasses, without resorting to the use of servo-control fluids or pneumatic controllers.

The 595-K/L and 596-K/L valve body is exactly the same of the K/L Series Spira-trol valves; therefore all options supplied for the series of above mentioned valves are available.
The actuator is suitable for receiving directly the working fluid pressure pulse.
In case of applications on hot or not chemically compatible fluids, the diaphragm must be protected by installing a water seal pot (cooling barrel) on the pressure signal line to the actuator.
To achieve a Class VI air-tight, it is possible to utilize a soft sealing trim, compatibly with the fluid type, the pressure drop and the operating temperature.

Standards
These products fully comply with the requirements of the European Pressure Equipment Directive 2014/68/EU,
ATEX Directive 2014/34/EU and carry the CE and Ex II2 GD IICTX marks when so required.

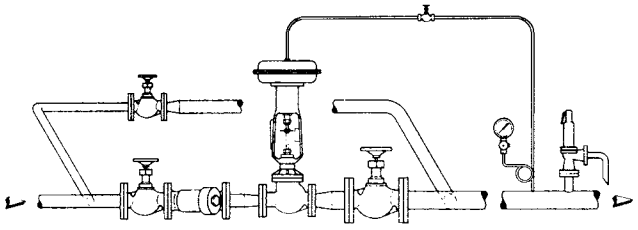


Fig. 1 - 595-K/L Pressure Reducing Valve

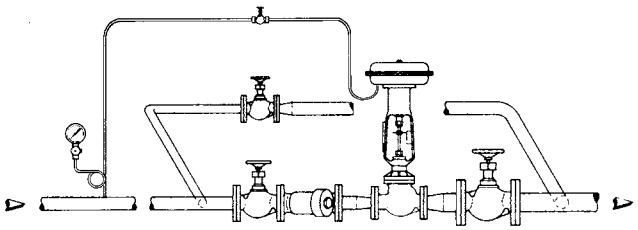


Fig. 2 - 596-K/L Pressure Relief Valve

Options

Stem sealing	**PTFE seals**	Standard
	Bellows / graphite	Suitable for thermal fluids
	Graphite packing	For high temperature applications
Seat	**Metal-to-metal**	431 Stainless Steel as standard
		316L Stainless Steel
	Soft seat	PTFE for tight shut-off
	Hard facing	316L stainless steel with Stellite 6 facing for heavy duty applications
Bonnet	**Standard bonnet**	
	Extended bonnet	For large pipe insulating covering or extremely hot / cold applications

Technical data

Plug design		Parabolic
Leakage	Metal-to-metal	Classe IV
	Soft seat	Classe VI

Valve body

For all other characteristics of the valve body, as:
- Materials
- Connections type and sizes
- Body design conditions
- Spare parts

Please refer to monographic technical specifications: TI-S24-70 e TI-S24-71.

Note: the body design conditions for the body/actuator assembly, consider the actuator limitations given in Tab. 1.

Table 1 - K_{VS} Values

Dimensions	Nominal dimensions								
	DN15	DN20	DN25	DN32	DN40	DN50	DN65 (*)	DN80 (*)	DN100 (*)
Stroke	11 mm								
Full	4	6,3	10	18	28	50	85	117	180
Reduced 1	2,2	4	6,3		18	28		85	117
Reduced 2	1,4	2,2	4			18			
Reduced 3	0,9	1,4	2,2						
Reduced 4	0,6	0,9	1,4						
Reduced 5		0,6	0,9						
Reduced 6			0,6						

* Only relief valve version available.

Actuators

Self-regulating Valves are fitted with 595 Diaphragm Actuators for direct action or 596 Diaphragm Actuators for reverse action. The operating principle for Reducing and for Relief Valves is the same. The pressure to be regulated acts on the diaphragm against the action of the spring that is previously rated at the required pressure. Any variation from the set value of the pressure changes the balance between diaphragm and spring, causing a movement of the stem and of the plug. In this way, varying the flowrate of the fluid, the pressure tries to reach the set value. The PN rating listed in Table 1 do not consider the dynamic imbalance due to differential pressure; the plug weight; the inlet (reducing valves) and output (relief valves) pressure values.

Table 2 - Actuators characteristics and related pressure ranges

Actuator size		150/A1	250A/1
Effective working area	cm^2	83	295
Maximum allowable pressure on diaphragm chamber	bar g	15	4.5
Maximum allowable temperature on diaphragm chamber: 110°C			
Valve	**Spring VI**	**Pressure rangeability (bar g)**	
595-K/L	**509**	8÷10.5	1.7÷3.4
	508	7÷9.5	1.4÷2.8
	507	4÷7.5	0.7÷2.1
	505	3.5÷6	-
	504	2÷3.5	-
596-K/L	**509**	7÷10.5	1÷2.5
	508	6.5÷8	0.8÷2
	507	3.8÷6.3	0.5÷1.5
	505	3.3÷5	-
	504	1.9÷3.3	-

Note: referring to the valve type and diameter, verify if the calibration pressure is ammisible, using the tables 5, 6 and 7.

Table 3 - Actuators Dimensions (mm)

Actuator size	D	E	F
150/A1	200	401	136
250/A1	285	422	164

Table 4 - Weight (Kg)

Actuator size	Weight	
	Actuator	With handweel
150/A1	23	+ 2
250/A1	30	+ 2

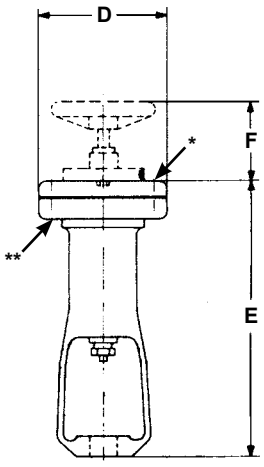


Fig. 3 - Actuator Size 150/A1

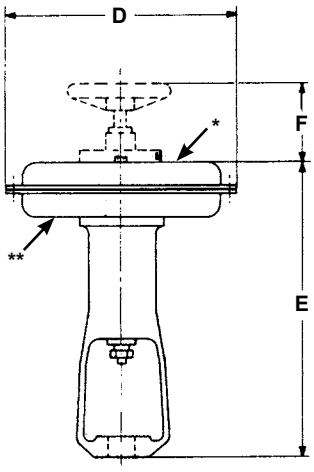
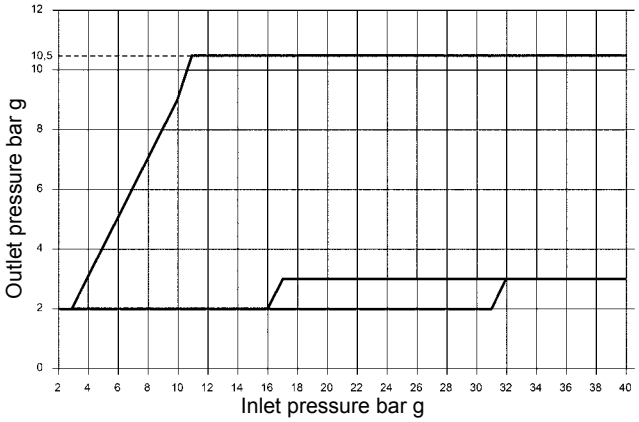


Fig. 4 - Actuator Size 250/A1

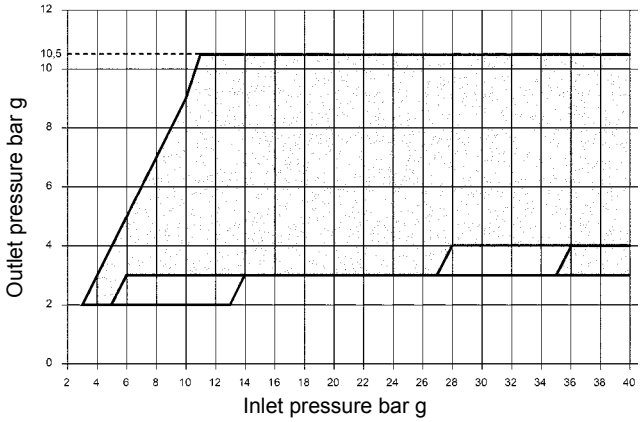
* **595:** ½" NPT pressure control connection size
** **596:** ¼" NPT pressure control connection size

Table 5 - Allowable pressure range with size 150/A1 actuator, only for 595-K/L pressure reducing valve

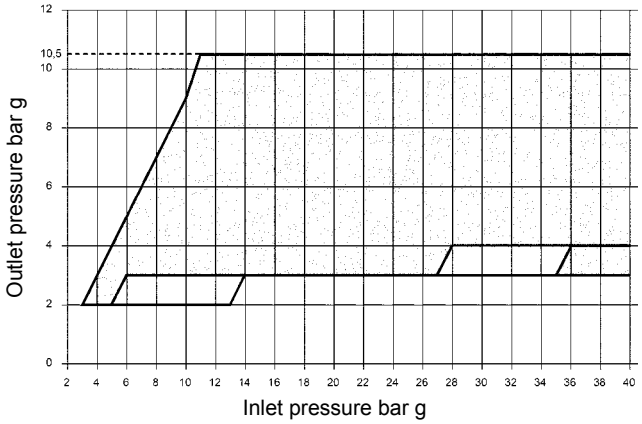
VL. 595 - K/L DN15



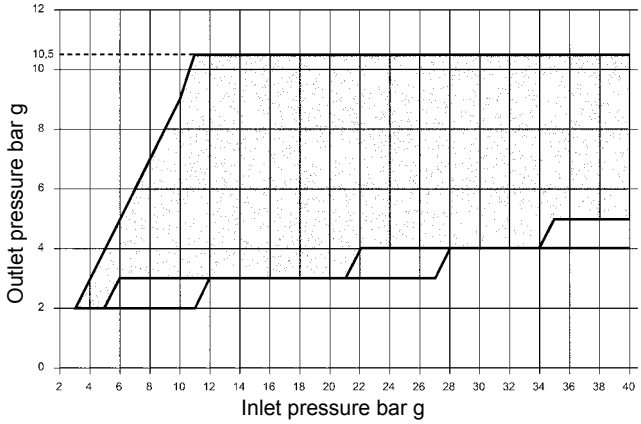
VL. 595 - K/L DN20



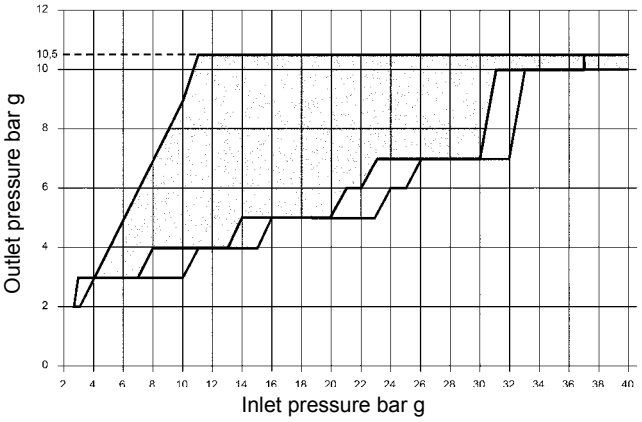
VL. 595 - K/L DN25



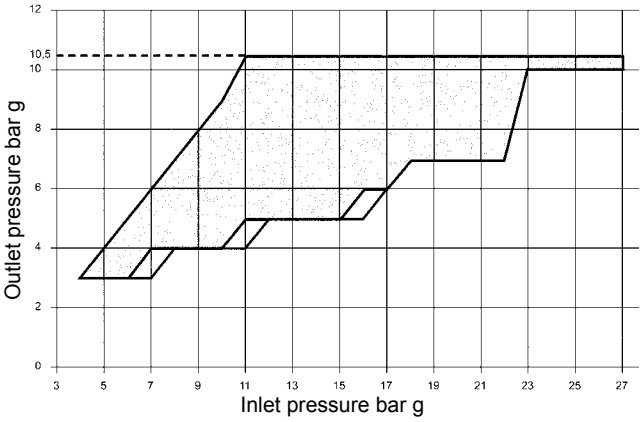
VL. 595 - K/L DN32



VL. 595 - K/L DN40



VL. 595 - K/L DN50



Region of use with PTFE and Graphite gland

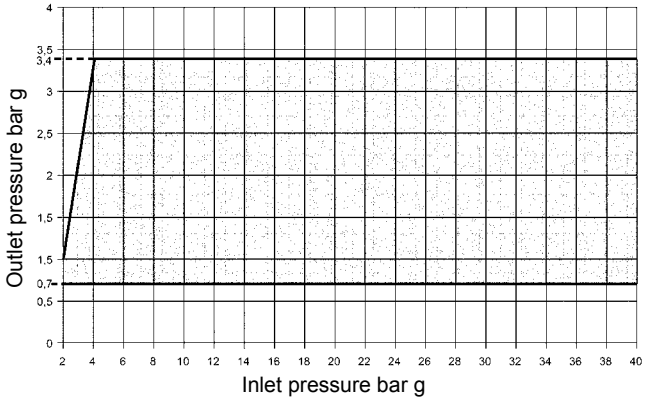
Region of use only with PTFE gland

The product must not be used in this region

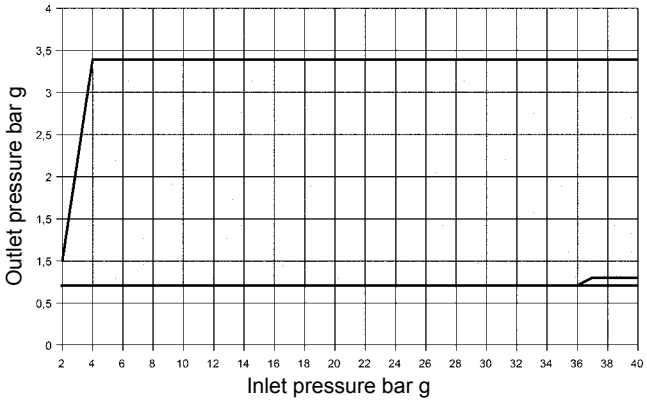
Note: Pressure limits of use, should be read in conjuction with the pressure limits of the selected valve body.

Table 6 - Allowable pressure range with size 250/A1 actuator, only for 595-K/L pressure reducing valve

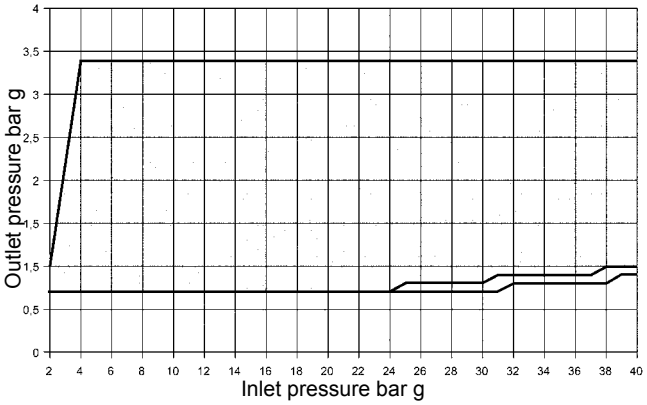
VL. 595 - K/L DN15



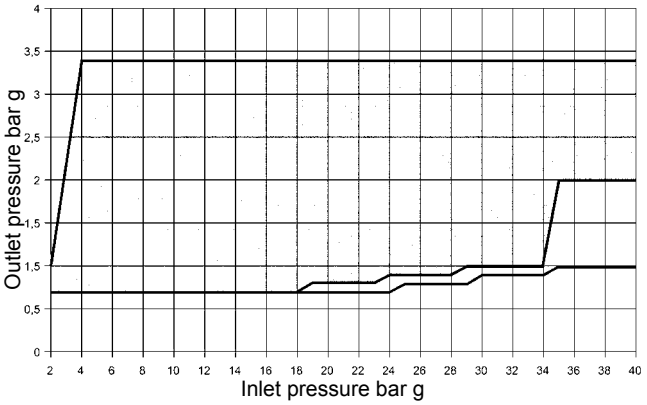
VL. 595 - K/L DN20



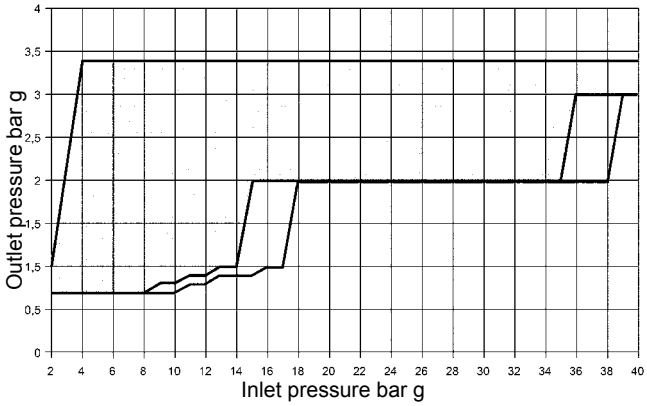
VL. 595 - K/L DN25



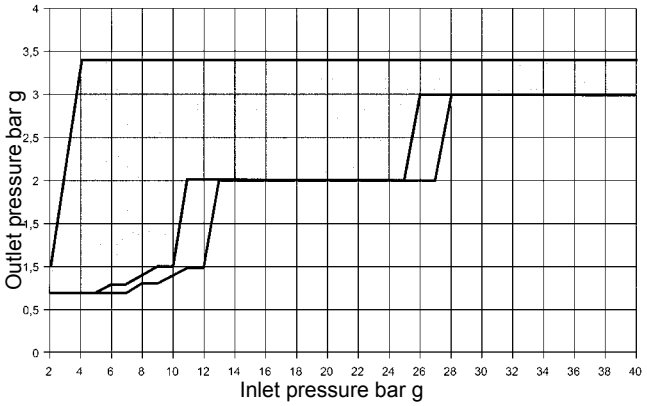
VL. 595 - K/L DN32



VL. 595 - K/L DN40



VL. 595 - K/L DN50



Region of use with PTFE and Graphite gland

Region of use only with PTFE gland

The product must not be used in this region

Note: Pressure limits of use, should be read in conjuction with the pressure limits of the selected valve body.

Table 7 - Allowable pressure range for 596-K/L pressure relief valve

596 - T150 - PTFE											
Max relief pressure (bar g)	10,5	10	9	8	7	6	5	4	3	2	1,9
DN15											
DN20											
DN25											
DN32											
DN40											
DN50											
DN65											
DN80											
DN100											

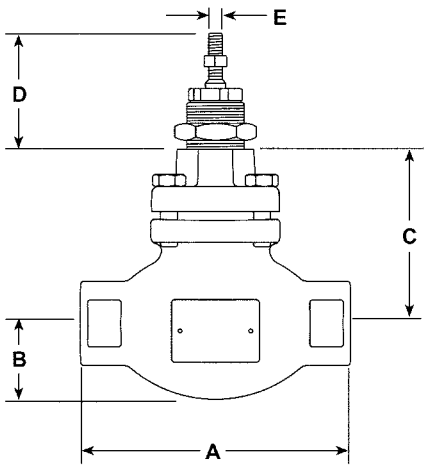
596 - T150 - GRAPHITE											
Max relief pressure (bar g)	10,5	10	9	8	7	6	5	4	3	2	1,9
DN15											
DN20											
DN25											
DN32											
DN40											
DN50											
DN65											
DN80											
DN100											

596 - T250 - PTFE							
Max relief pressure (bar g)	3, 4	3	2	1,9	0,8	0,6	0,5
DN15							
DN20							
DN25							
DN32							
DN40							
DN50							
DN65							
DN80							
DN100							

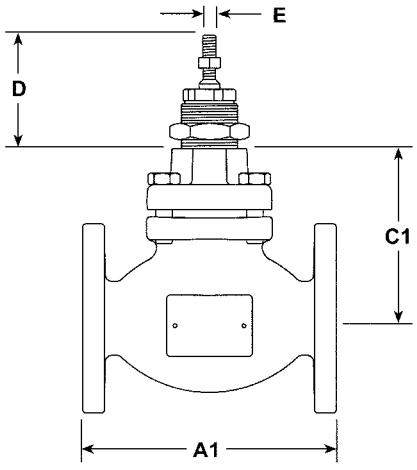
596 - T250 - GRAPHITE							
Max relief pressure (bar g)	3, 4	3	2	1,9	0,8	0,6	0,5
DN15							
DN20							
DN25							
DN32							
DN40							
DN50							
DN65							
DN80							
DN100							

Dimension (aproximate in mm and inches) for SPIRA-TROL™ valves - 2 port L Series

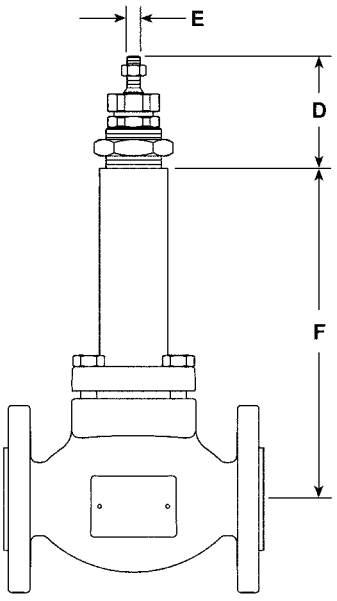
Valve dimension	Screwed						Flanged									
	BSP			NPT			LE				LEA				F	
	A	B	C	A	B	C	A1			C1	A1	C1	D	E		
							PN16	JIS/KS10 LE33	JIS/KS10 LE43 LE63					Therad	Bellows	Extended bonnet
DN15 (½")	130	40	103	165 (6½")	44 (1¾")	102 (4")	130	130	123	103	184 (7¼")	102 (4")	69 (2¾")	M8	237 (9")	238 (9")
DN20 (¾")	155	45	103	165 (6½")	44 (1¾")	102 (4")	150	150	144	103	184 (7¼")	102 (4")			237 (9")	238 (9")
DN25 (1")	160	50	103	197 (7¾")	57 (2¼")	102 (4")	160	160	160	103	184 (7¼")	102 (4")			237 (9")	238 (9")
DN32 (1¼")	185	60	132	216 (8½")	57 (2¼")	127 (5")	180	180	176	132	222 (8¾")	127 (5")			266 (10½")	267 (10½")
DN40 (1½")	205	65	132	235 (9¼")	63 (2½")	127 (5")	200	200	198	132	222 (8¾")	127 (5")			266 (10½")	267 (10½")
DN50 (2")	230	80	132	267 (10½")	76 (3")	127 (5")	230	230	222	132	254 (10")	127 (5")			266 (10½")	267 (10½")
DN65 (2½")							290	290	290	200	267 (10½")	200 (7⅞")	81 (3 3/16")	M12	367 (14½")	360 (14 1/8")
DN80 (3")							310	310	310	200	298 (11¾")	200 (7⅞")			367 (14½")	360 (14 1/8")
DN100 (4")							350	350	350	216	349 (13¾")	216 (8½")			382 (15")	375 (14¾")



Screwed version



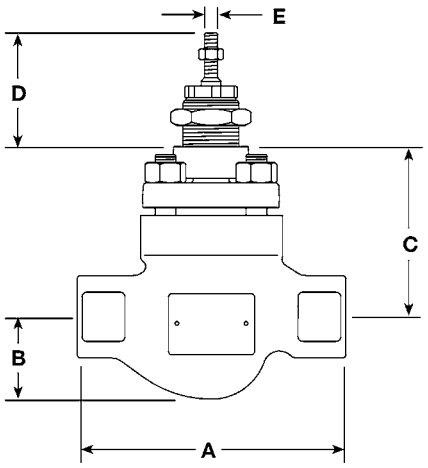
Flanged version



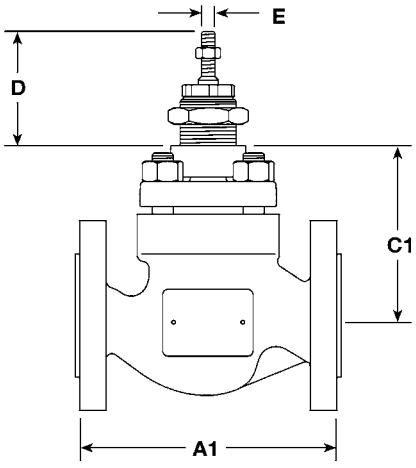
Bellows sealed or extended bonnet version

Dimension (aproximate in mm and inches) for SPIRA-TROL™ valves - 2 port K Series

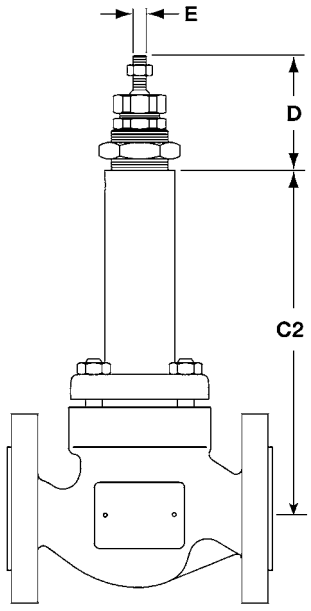
Valve dimension	Screwed						Flanged							D	E	F	
	BSP			NPT			KE				KEA						
	A	B	C	A	B	C	A1			C1	A1		C1				
							PN16 PN25 PN40	JIS/KS 10	JIS/KS 20		KS10 ASME 125 e 150	KS20 ASME 250 e 300			Therad	Bellows	Extended bonnet
DN15 (½")	130	40	103	165 (6½")	44 (1¾")	102 (4")	130	123	130	103		190 (7¼")	102 (4")	69 (2¾")	M8	237 (9")	336 (13.25")
DN20 (¾")	155	45	103	165 (6½")	44 (1¾")	102 (4")	150	143	150	103		190 (7¼")	102 (4")				
DN25 (1")	160	50	103	197 (7¾")	57 (2¼")	102 (4")	160	153	160	103	184 (7¼")	197 (7¼")	102 (4")				
DN32 (1¼")	185	60	132	216 (8½")	57 (2¼")	127 (5")	180	177	180	132						267 (10½")	354 (19.94")
DN40 (1½")	205	65	132	235 (9¼")	63 (2½")	127 (5")	200	195	200	132	222 (8¾")	235 (9¼")	127 (5")				
DN50 (2")	230	80	132	267 (10½")	76 (3")	127 (5")	230	223	230	132	254 (10")	267 (10½")	127 (5")				
DN65 (2½")							290	286	290	201	267 (10½")	292 (11½")	200 (7⅞")	81 (3")	M12	367 (14½")	416 (19.38")
DN80 (3")							310	302	310	201	298 (11¾")	317 (12½")	200 (7⅞")				
DN100 (4")							350	338	350	216	349 (13¾")	368 (14½")	216 (8½")			382 (15")	431 (17")



Screwed version



Flanged version



Bellows sealed or extended bonnet version

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