



# TECHNICAL BULLETIN

## **Valtek FlowTop**

*General Service Control Valve*

*Type V746 and V748*

*NPS 0.5 - 6, Class 150 / 300*

*FCD VLENTB8610A4 02/19*



***Experience In Motion***

## FlowTop “General Service Control Valve”

The FlowTop control valve (type V746 and V748) is a fully integrated valve-actuator-instrumentation package for continuous process flow loop control throughout the plant. From its beginning, the FlowTop has achieved optimum performance at minimum total cost. It does this by pursuing the simple design philosophy of building an instrumented control valve package that is “exactly what it needs to be,” providing the breadth and depth of engineered control within the Valtek trusted name.

Based upon technology and experience, the FlowTop integrated control valve packaging consists of the FlowTop globe body assembly, the Logix digital positioner (with automatic calibration), and the FlowAct pneumatic diaphragm actuator. Its clamped seat ring ensures tight shut-off and easy maintenance. The integrated design makes it a low total cost value to buy, install, operate, and maintain. Yet, it delivers best-in-class performance with:

- Quick installation and simple setup by maintenance technicians without the need for instrument or process engineering skills
- Finite flow control accuracy
- Direct mounted digital positioner without tubing (air-to-open)
- Trim and material options to handle virtually all general service requirements
- Severe service trim managing noise and cavitation damage
- Excellent rangeability, repeatability, and high flow rates

The FlowTop integrated control valve package provides process plant operators that perfect balance of performance versus cost without compromise to product quality or integrity.

**Maximum Capacity Flow Rates:** The FlowTop handles a wide selection of process control applications for high-flow, general service applications in the oil and gas, chemical, power and general service industries.

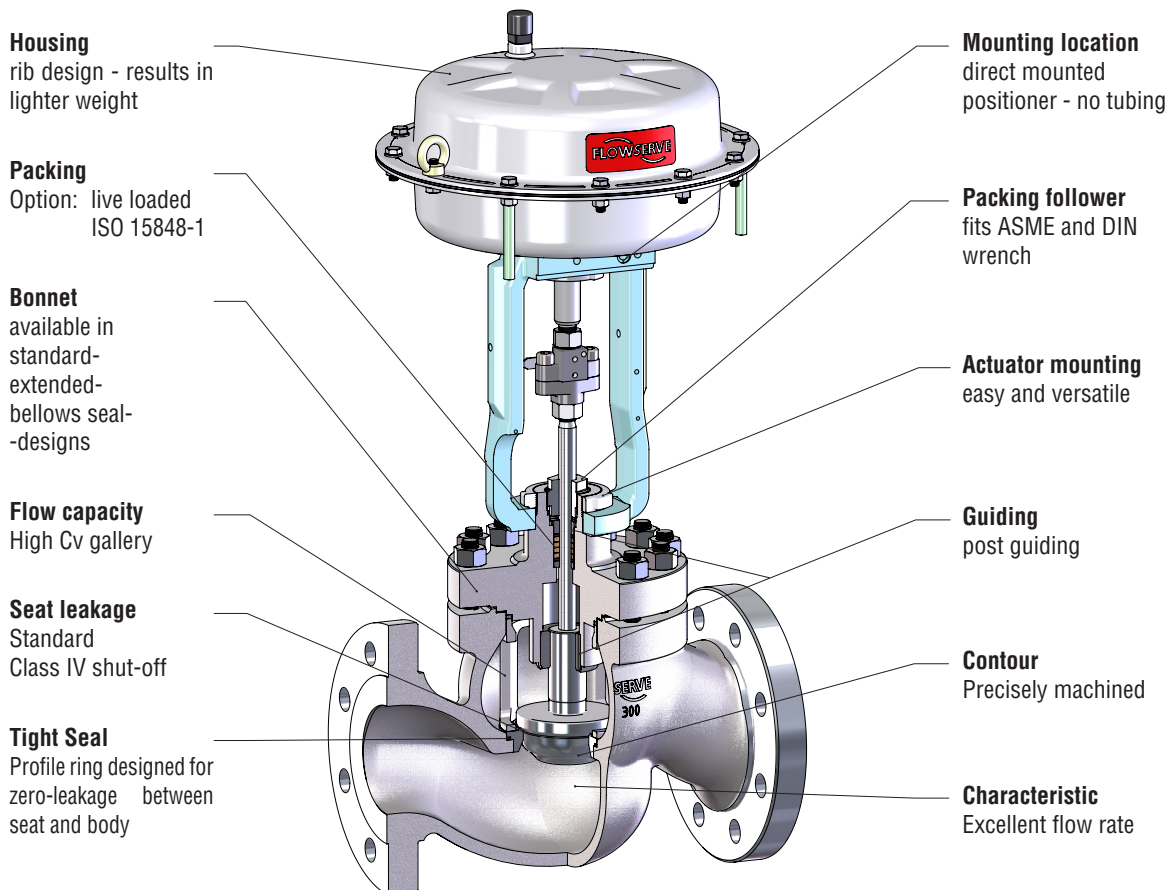
**Smaller, lighter, cost effective:** Achieves maximum-flow capacity that outperforms competing brands with a smaller, lighter, and cost-effective control valve.

**Deep Packing Box:** Permits a variety of packing configurations in addition to the standard ISO 15848-1 and optional live-loaded emission control packing. The packing set is positioned far enough away from the flow in the body to avoid damage from the flowing medium.

**Contoured Plug Design:** Is readily adaptable for modified equal percentage, linear, and quick-open flow characteristics. And it can be matched to a variety of trim types, providing excellent rangeability, repeatability, and resolution.

**Guiding Solutions:** post guiding ensures stabilized plug and stem during valve travel; minimizes vibration and wear.

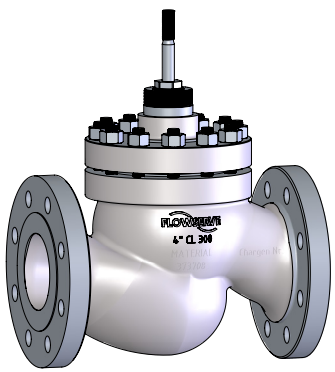
**Clamped Seat Ring:** comes standard and offers tight-shutoff and easy removal without special tools or galling problems associated with threaded seat rings.



# Specifications

Style	Globe, integral flange, ASME B16.34	Trim material	Stainless steel 410, 316, 316L
Sizes	½ to 6 inch	Trim types	standard, pressure balanced
Pressure Classes	ASME 150 and 300	Plug & seat facing	seat or full contour Alloy 6, hardened
End Connection	Flanged, RF	Characteristic	= %, linear, quick open
Body Materials	A216WCC A351CF8M, A351CF3M	Low noise and anti-cavitation	MegaStream 1-stage CavStream 1-stage
Face to Face	ISA 75.08.01	Leakage rates	Class IV, V and VI with optional soft seat
Bonnet	standard, extended, bellows seal	Actuator	pneumatic diaphragm spring actuator
Packing	PTFE and Graphite, live loaded, ISO 15848-1 or vacuum	Standard positioner	Logix 420, direct mounted without tubing

## Body Design - “Integral Flange”

Body Design	Type ( Body ) / Size	Body Material	Bonnet Design	Packing Design	Trim Design
Integral flange	 <p>Class <b>150</b> <b>300</b></p> <p>NPS 1/2 3/4 1 1 1/2 2 3 4 6</p>	A216 WCC A351 CF8M A351 CF3M	<p><b>Unbalanced</b></p> <p>Standard Bonnet Bellow Seal Bonnet Extended Bonnet</p> <p><b>O-Ring pressure balanced</b></p> <p>Standard Bonnet Extended Bonnet</p> <p><i>see page 4 - 6</i></p>	<p><b>Unloaded</b></p> <p>PTFE Graphite</p> <p><b>live loaded</b></p> <p>PTFE Graphite ISO 15848-1 vacuum</p> <p><i>see page 6</i></p>	<p><b>Contoured Plug</b></p> <p>Standard Seat surface - Alloy 6 Full contour - Alloy 6 Soft Seated</p> <p><b>Quick Open</b></p> <p>Standard Soft Seated</p> <p><b>Severe Service Trim</b></p> <p>MegaStream 1-stage CavStream 1-stage</p> <p><i>see page 7</i></p>

## Body Connecting Design - “Detail”

Body Design	Face to Face		End Connections		
Integral flange	Raised Face	ASME / ISA 75.08.01-2002	according to <b>ASME B16.5</b>	<b>Raised-face RF</b>	Ra = 125 - 250 µin. (3,2 - 6,3 µm)

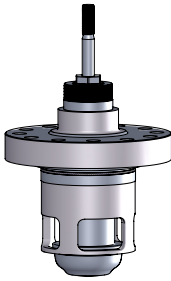
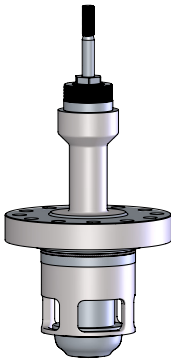
## Body Pressure - Temperature Ratings

Class	Body Material	Maximum Allowable Working Pressure	Service Temperature in °F												
			- 51	- 20	14	122	212	302	392	482	572	662	752	797	
150	A216 WCC	psig		287	287	282	256	229	200	175	147	121	94	79	
	A351 CF8M		275	275	275	266	235	214	198	175	147	121	94	79	
	A351 CF3M		275	275	275	266	235	214	198	175	147	121	94	79	
300	A216 WCC			749	749	749	747	728	704	671	622	580	503	417	
	A351 CF8M		719	719	719	697	612	558	517	484	458	439	426	422	
	A351 CF3M		719	719	719	697	612	558	517	484	458	439	426	422	
			Service Temperature in °C												
			- 46	- 29	- 10	50	100	150	200	250	300	350	400	425	
150	A216 WCC		bar		19,8	19,8	19,5	17,7	15,8	13,8	12,1	10,2	8,4	6,5	5,5
	A315 CF8M			19,0	19,0	19,0	18,4	16,2	14,8	13,7	12,1	10,2	8,4	6,5	5,5
	A351 CF3M			19,0	19,0	19,0	18,4	16,2	14,8	13,7	12,1	10,2	8,4	6,5	5,5
300	A216 WCC				51,7	51,7	51,7	51,5	50,2	48,6	46,3	42,9	40,0	34,7	28,8
	A315 CF8M	49,6		49,6	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,3	29,4	29,1	
	A351 CF3M	49,6		49,6	49,6	48,1	42,2	38,5	35,7	33,4	31,6	30,3	29,4	29,1	

## Bonnet Design - “Unbalanced” for NPS ½ to 6

Bonnet Design	Type ( Bonnet )	Body / Bonnet Material	Temperature Range <sup>1)</sup>	Application	Packing Design
Unbalanced	Standard Bonnet	dependent on body material A216 WCC / <b>A105 WCC</b>	- 20 to + 482 °F - 29 to + 250 °C	Universal use	
		dependent on body material A351 CF8M / <b>F316 CF8M</b>	- 51 to + 482 °F - 46 to + 250 °C		
		dependent on body material A351 CF3M / <b>F316L CF3M</b>			
	Extended Bonnet	dependent on body material A216 WCC / <b>A105 WCC</b>	+ 483 to + 797 °F + 251 to + 425 °C	Universal use dependent on temperature	see page 6
		dependent on body material A351 CF8M / <b>F316 CF8M</b>			
		dependent on body material A351 CF3M / <b>F316L CF3M</b>			
	Bellows Seal Bonnet	dependent on body material A216 WCC / <b>A105 WCC</b>	- 20 to + 752 °F - 29 to + 400 °C	Use for hazardous, costly media or vacuum	
		dependent on body material A351 CF8M / <b>F316 CF8M</b>	- 51 to + 752 °F - 46 to + 400 °C		
		dependent on body material A351 CF3M / <b>F316L CF3M</b>			

## Bonnet Design - “Pressure balanced” for NPS 3 to 6

Bonnet Design	Type ( Bonnet )	Body / Bonnet Material	Temp. Range <sup>1)</sup> / Balancing	Application	Packing Design	
O-Ring pressure balanced	 Standard Bonnet	dependent on body material A216 WCC / <b>A105 WCC</b>	- 40 to + 250 °F - 40 to + 121 °C ————— - 51 to + 350 °F - 46 to + 177 °C	Buna-N + Filled PTFE ————— EPDM + PEEK	Universal use	see page 6
		dependent on body material A351 CF8M / <b>F316 CF8M</b>	- 15 to + 400 °F - 26 to + 204 °C	Viton + Filled PTFE ————— Viton + PEEK		
		dependent on body material A351 CF3M / <b>F316L CF3M</b>	- 10 to + 482 °F - 12 to + 250 °C	Kalrez 4079 + Filled PEEK ————— Chemraz 555 + Filled PEEK		
	 Extended Bonnet	dependent on body material A216 WCC / <b>A105 WCC</b>	Kalrez 4079 + Filled PEEK	Universal use dependent on temperature		
		dependent on body material A351 CF8M / <b>F316 CF8M</b>	+ 484 to + 599 °F + 251 to + 315 °C			
		dependent on body material A351 CF3M / <b>F316L CF3M</b>	Chemraz 555 + Filled PEEK			

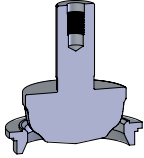
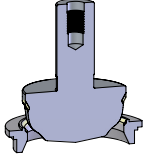
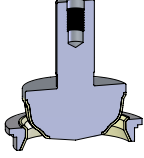
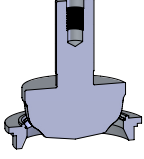
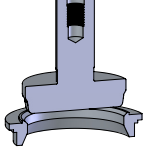
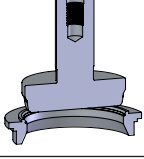
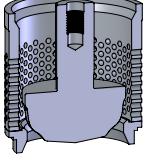
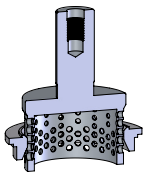
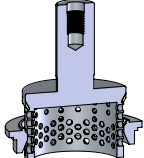
<sup>1)</sup> The actual temperature range is limited by the used stem material and packing material.

Stem Material		Standard	NACE
Temp. Range	Plug / Seat		
- 51 to + 482 °F	410SS	17 - 4 PH cond. H1150D	17 - 4 PH cond. H1150D
- 46 to + 250 °C	316SS	316L strain hardened level 2	Duplex S31803 316L reduced stem force
	316L	316L strain hardened level 2	Duplex S31803 316L reduced stem force
+ 483 to + 662 °F	410SS	17 - 4 PH cond. H1150D	17 - 4 PH cond. H1150D
+ 251 to + 350 °C	316SS	Duplex S31803	Duplex S31803
	316L	Duplex S31803	Duplex S31803
+ 663 to + 797 °F	410SS	A479 XM19-H	A479 XM19-H
+ 351 to + 425 °C	316SS	A479 XM19-H	A479 XM19-H
	316L	A479 XM19-H	A479 XM19-H

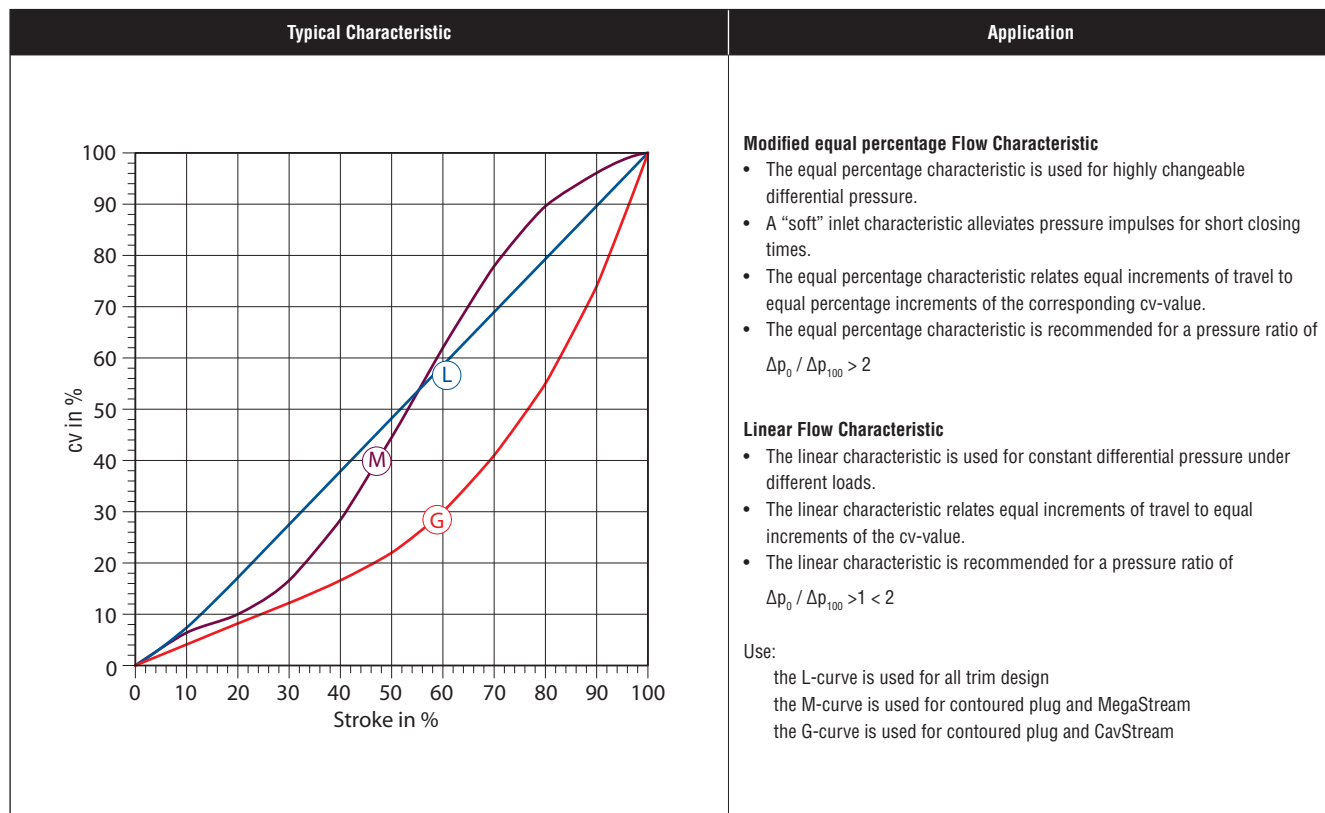
## Packing Design - "Detail"

Packing Design	Type ( Packing )	Material	Temperature Range	Application	Approvals / Supplier
unloaded	Braided PTFE	<b>Packing Rings</b> Braided PTFE  <b>Chamber Washers</b> PTFE-Carbon	Standard Bonnet - 50 to + 482 °F - 46 to + 250 °C  Extended Bonnet - 50 to + 572 °F - 46 to + 300 °C	Universal chemical resistance	-
	Braided Graphite	<b>Packing Rings</b> Braided Graphite	+ 573 to + 797 °F + 301 to + 425 °C		
live loaded	Braided PTFE	<b>Packing Rings</b> PTFE  <b>Chamber Washers</b> PTFE-Carbon	Standard Bonnet - 50 to + 482 °F - 46 to + 250 °C	Universal chemical resistance  vacuum < 0,3 mbar	ISO 15848-1 ( 10 <sup>-4</sup> mg * s <sup>-1</sup> * m <sup>-1</sup> ) Tightness class -> B Endurance class -> CC1  Latty
			Extended Bonnet - 50 to + 572 °F - 46 to + 300 °C	Universal chemical resistance	-
	Braided Graphite	<b>Packing Rings</b> Graphite Rib-Braid	+ 573 to + 752 °F + 301 to + 400 °C	Universal chemical resistance  vacuum < 0,3 mbar	ISO 15848-1 ( 10 <sup>-2</sup> mg * s <sup>-1</sup> * m <sup>-1</sup> ) Tightness class -> C Endurance class -> CC1  Latty
			+ 573 to + 797 °F + 301 to + 425 °C  (Below 250 °C increased friction)	Universal chemical resistance	-

## Trim Design - "Standard"

Type ( Trim ) / Material		Medium	Flow	max. allowable Differential Pressure	Noise Reduction
Contoured Plug Characteristic: mod. equal per. or linear	standard 410 SS, 316 SS 	<ul style="list-style-type: none"> <li>• clean</li> <li>• marginally contaminated with particles</li> <li>• low clogging potential for dirty service</li> </ul>	gases, vapors and liquids	It is necessary to have specialist knowledge for the proper choice of trim	none - Noise Insulating provided by customer
	seat surface - Alloy 6 316 SS from seat Ø 53 mm 				
	full contour - Alloy 6 316 SS 				
	soft seated 410 SS, 316 SS + PTFE 				
Quick Open with Throttle Lip Characteristic: On / Off	standard 410 SS, 316 SS 			It is necessary to have specialist knowledge for the proper choice of trim	none - Noise Insulating provided by customer
	soft seated 410 SS, 316 SS + PTFE 				
Contoured Plug with MegaStream	all Standard Trim 		Gases and Vapors	Flow direction <b>under</b> the plug	max. - 12 dB(A)
CavStream	standard 410 SS HT 316 SS tenifer treated 	<ul style="list-style-type: none"> <li>• clean</li> <li>• high clogging potential for dirty service</li> </ul>	Liquids	Flow direction <b>over</b> the plug	max. - 10 dB(A)
	seat surface - Alloy 6 316 SS 316L SS 				

# Valve Characteristic



## Contoured Plug

Characteristic: modified - equal percentage resp. linear

cv (gpm)	Seat Ø (mm)	Balancing	Material / Design								Possible seat diameter depends on nominal size							
			410 SS			316 SS, 316 L					1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"
			standard	hardened	soft seated <sup>1)</sup>	standard	seat surface - Alloy 6	full contour - Alloy 6	soft seated <sup>1)</sup>	Stroke = 20 mm / 0.787 in.			40 / 1.574		60 / 2.362			
1.16	8		•	•	•	•	•	•	•	•	•	•	•					
1.8	8		•	•	•	•	•	•	•	•	•	•	•					
2.9	10		•	•	•	•	•	•	•	•	•	•	•					
4.6	12		•	•	•	•	•	•	•	•	•	•	•					
6.5	16		•	•	•	•	•	•	•	•	•	•	•					
7.3	16		•	•	•	•	•	•	•	•	•	•	•					
9.2	20		•	•	•	•	•	•	•	•	•	•	•					
11.6	20		•	•	•	•	•	•	•	•	•	•	•					
16.2	25		•	•	•	•	•	•	•	•	•	•	•					
18.5	25		•	•	•	•	•	•	•	•	•	•	•	•	•			
29	34		•	•	•	•	•	•	•	•	•	•	•	•	•			
36	40		•	•	•	•	•	•	•	•	•	•	•					
46	42		•	•	•	•	•	•	•	•	•	•	•	•	•			
55	50		•	•	•	•	•	•	•	•	•	•	•	•	•			
73	53	• <sup>2)</sup>	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
110	67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
116	67	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
185	84	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
190	90	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
289	105	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	
410	130	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	

<sup>1)</sup> Maximal Allowable Working Temperature with PTFE soft seat = - 46 to + 250 °C / - 51 to + 482 °F only.  
<sup>2)</sup> Pressure Balancing not for 6".



## Contoured Plug linked to MegaStream

Characteristic: modified - equal percentage resp. linear

CV (gpm)	Seat Ø (mm)	Balancing	Material / Design							Possible seat diameter depends on nominal size					
			410 SS			316 SS, 316 L				1"	1 1/2"	2"	3"	4"	6"
			standard	hardened	soft seated <sup>1)</sup>	standard	seat surface - Alloy 6	full contour - Alloy 6	soft seated <sup>1)</sup>	Stroke = 20 mm / 0.787 in.			40 / 1.574		60 / 2.362
6.4	16		•	•	•	•		•	•		•				
10.1	20		•	•	•	•		•	•		•				
14.4	25		•	•	•	•		•	•		•				
16	25		•	•	•	•		•	•			•			
26	34		•	•	•	•		•	•			•			
33	40		•	•	•	•		•	•			•			
41	42		•	•	•	•		•	•			•			
51	50		•	•	•	•		•	•			•			
65	53	•	•	•	•	•	•	•	•				•	•	
99	67	•	•	•	•	•	•	•	•				•	•	
165	84	•	•	•	•	•	•	•	•						•
173	90	•	•	•	•	•	•	•	•					•	
257	105	•	•	•	•	•	•	•	•						•
370	130	•	•	•	•	•	•	•	•						•

<sup>1)</sup> Maximal Allowable Working Temperature with PTFE soft seat = - 46 to + 250 °C / - 51 to + 482 °F only.

## CavStream

Characteristic: linear resp. modified - equal percentage

CV (gpm)		Seat Ø (mm)	Balancing	Material / Design			Possible seat diameter depends on nominal size								
linear	mod. equal percentage			410 SS	316 SS, 316 L		1"	1 1/2"	2"	3"	4"	6"			
				hardened	tenifer treated	seat surface - Alloy 6	Stroke = 20 mm / 0.787 in.			40 / 1.574		60 / 2.362			
4.2	3.4	20		•	•	•	•								
7.1	5.8	25		•	•	•	•								
8.0	6.5	25		•	•	•	•		•						
15	12	34		•	•	•	•		•						
17	13	34		•	•	•	•			•					
20	16	40		•	•	•	•			•					
20	17	42		•	•	•	•				•				
30	25	50		•	•	•	•				•				
37	29	42		•	•	•	•					•			
57	46	53	•	•	•	•	•						•		
60	48	53	•	•	•	•	•							•	
73	58	67	•	•	•	•	•								•
79	61	67	•	•	•	•	•								•
122	100	90	•	•	•	•	•								•
145	116	84	•	•	•	•	•								•
203	163	105	•	•	•	•	•								•
271	217	130	•	•	•	•	•								•

## Quick Open

Characteristic: on / off

CV (gpm)	Seat Ø (mm)	Balancing	Material / Design				Possible seat diameter depends on nominal size								
			410 SS		316 SS, 316 L		1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"	
			standard	soft seated <sup>1)</sup>	standard	soft seated <sup>1)</sup>	Stroke = 20 mm / 0.787 in.					40 / 1.574		60 / 2.362	
7.3	16		•	•	•	•	•								
10.4	20		•	•	•	•	•		•						
18.5	25		•	•	•	•	•			•					
41	40		•	•	•	•	•				•				
61	50		•	•	•	•	•					•			
133	67	•	•	•	•	•	•						•		
215	90	•	•	•	•	•	•							•	
410	130	•	•	•	•	•	•								•

<sup>1)</sup> Maximal Allowable Working Temperature with PTFE soft seat = - 46 to + 250 °C / - 51 to + 482 °F only.

## Seat Leakage

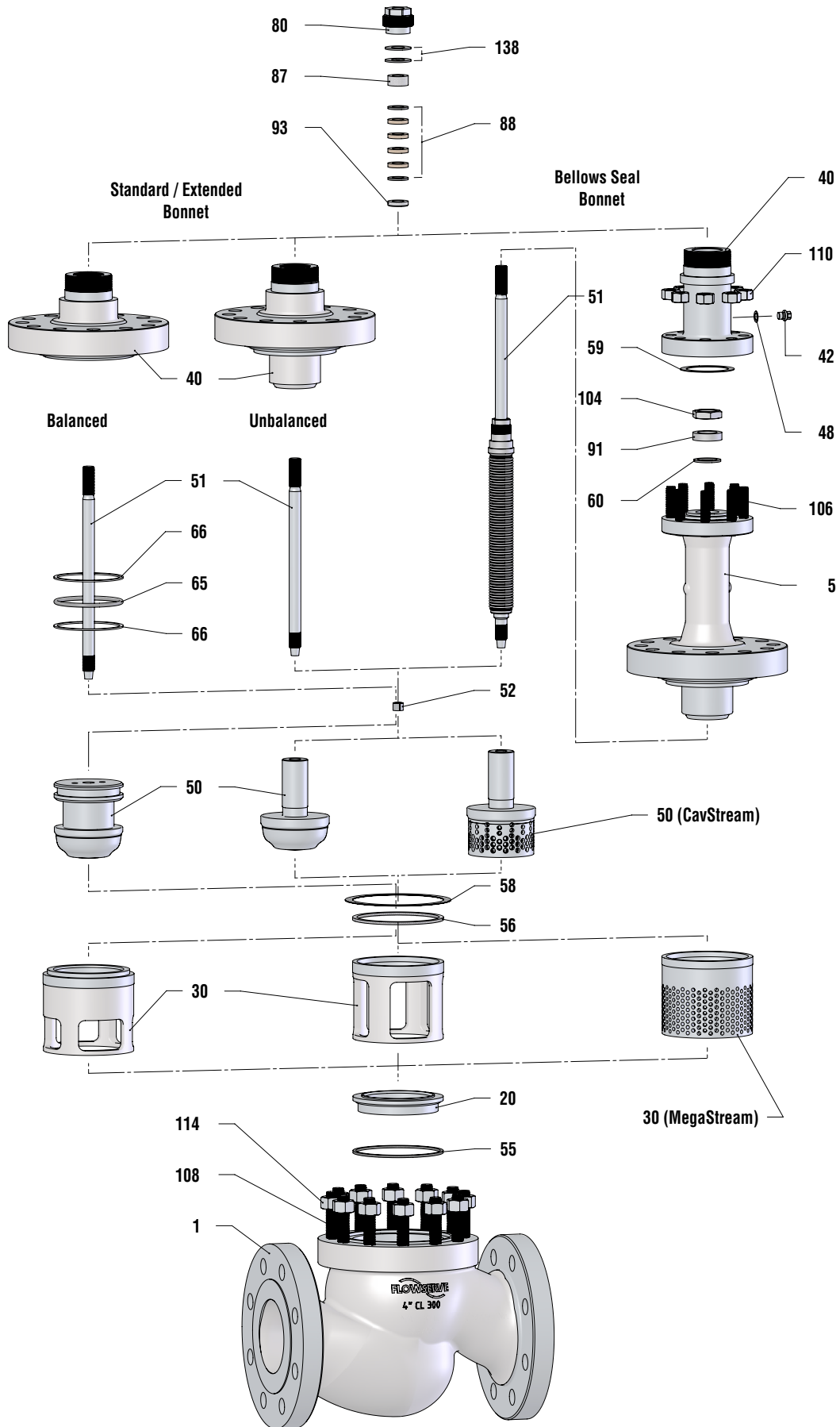
<sup>1)</sup> Ø d = Seat Ø  
<sup>2)</sup> LF = Leakage Factor → see IEC 60534-4 Remark 2

acc. Standard	Balancing	Plug design	Leakage Class	Test Medium	Test Pressure	max. Seat Leakage	Leakage Code
ASME / FCI 70-2	Without	metal to metal seated	IV	Liquid	Working Pressure	0,000 1 · kvs 0,000 1 · cv	IV L 2
				Gas	Working Pressure, max. 3,5 bar	0,000 1 · kvs	IV G 1
		Working Pressure, max. 50.7 psi	0,000 1 · cv				
		metal to metal seated, lapped seat, increased seal force	V	Liquid	Working Pressure	0,000 018 · Δp · Ø d <sup>1)</sup>	V L 2
				Gas	Working Pressure, max. 3,5 bar	0,000 010 8 · Ø d	V G 1
		Working Pressure, max. 50.7 psi					
	soft seated	VI	Gas	Working Pressure, max. 3,5 bar	0,3 · Δp · LF <sup>2)</sup>	VI G 1	
				Working Pressure, max. 50.7 psi			
	O-Ring	metal to metal seated	IV	Liquid	Working Pressure	0,000 1 · kvs 0,000 1 · cv	IV L 2
				Gas	Working Pressure, max. 3,5 bar	0,000 1 · kvs	IV G 1
		Working Pressure, max. 50.7 psi	0,000 1 · cv				
		metal to metal seated, lapped seat, increased seal force	V	Liquid	Working Pressure	0,000 018 · Δp · Ø d	V L 2
				Gas	Working Pressure, max. 3,5 bar	0,000 010 8 · Ø d	V G 1
		Working Pressure, max. 50.7 psi					
soft seated	VI	Gas	Working Pressure, max. 3,5 bar	0,3 · Δp · LF	VI G 1		
			Working Pressure, max. 50.7 psi				

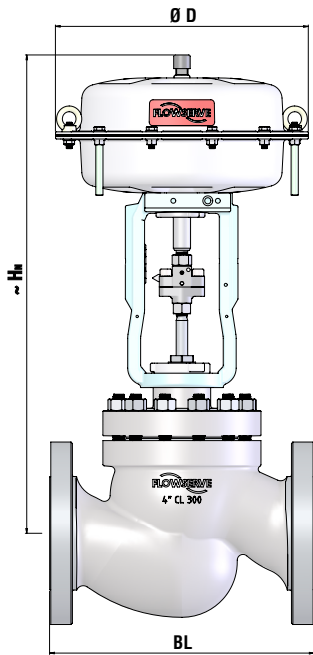
## Parts List

Standard Materials of Construction (for rough orientation only, non NACE)

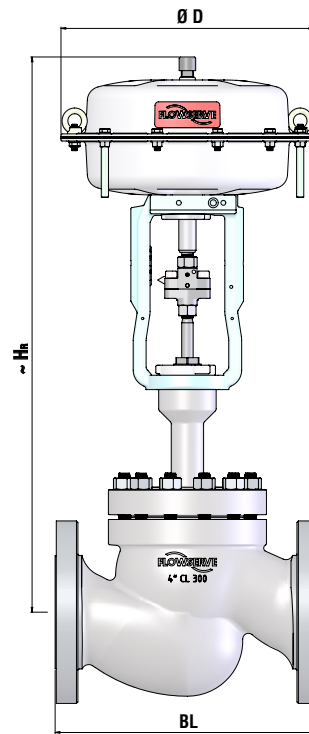
Item	Part	Available Materials		
1	Body	A216 WCC	A351 CF8M	A351 CF3M
5	Bonnet	A105 or WCC	F316 or CF8M	F316L or CF3M
20	Seat ring	410SS	316SS	316L
30	Seat retainer	410SS	316SS	316L
	Sleeve	410HT	316SS (nitrided)	316L (nitrided)
40	Bonnet / Head	A105 or WCC	F316 or CF8M	F316L or CF3M
42	Plug screw	A2		
48	Plug gasket	Pure Graphite		
50	Plug	410SS	316SS	316L
51	Stem	17-4PH (con. H1150D) or 316L (strain hardened level 2) or S31803 or A479 XM19-H		
52	Lock pushing	316SS		
55	Profile ring	Pure Graphite		
56	Seat retainer gasket	316SS - Graphite Layer		
58	Bonnet gasket	316SS - Graphite Layer		
59	Head gasket	Pure Graphite		
60	Profile ring	Pure Graphite		
65	O-ring	Buna-N, Viton, EPDM, Kalrez or Chemraz depending on the operating temperature		
66	Backup ring	PTFE or PEEK depending on the operating temperature		
80	Packing follower	316SS		
87	Upper guiding	316SS (nitrided)		
88	Packing	PTFE or Graphite		
91	Seal carrier	316 SS		
93	Packing box ring	316SS		
104	Hex nut	316 SS		
106	Stud bolt	A193 B7	A193 B8 Cl 2	
108	Stud bolt	A193 B7	A193 B8 Cl 2	
110	Hex nut	A194 2H	A194 8	
114	Hex nut	A194 2H	A194 8	
138	Belleville spring	1.4310		



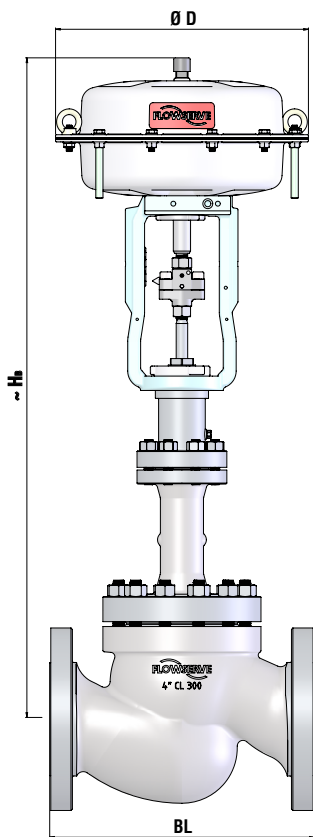
# Dimensional Drawing



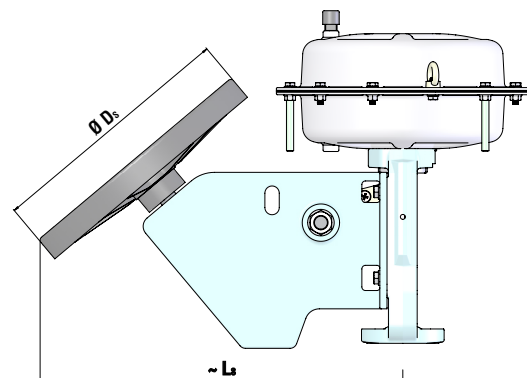
Valve with Standard Bonnet and Pneumatic Actuator



Valve with Extension Bonnet and Pneumatic Actuator



Valve with Bellows Seal Bonnet and Pneumatic Actuator



Actuator with side-mounted Handwheel, further data see Technical Bulletin FlowAct

## Dimensions and Weights *(for rough orientation only)*

Description	Actuator		Nominal Size							
			1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"
ASME - Valves	Size	Ø D	Stroke 20 mm / 0.787 in.				40 / 1.574		60 / 2.362	
BL Face to Face Dimension acc. to ASME/ISA 75.08.01 (inch)	Class 150 RF		7.25	7.25	7.25	8.75	10.00	11.75	13.88	17.75
	Class 300 RF		7.50	7.62	7.75	9.25	10.50	12.50	14.50	18.62
~ H <sub>h</sub> for Standard Bonnet and Actuator (inch)	IG 253	10.4	18.0	18.0	18.0	18.7	18.8			
	IG 503	13.9	22.7	22.7	22.7	23.7	23.7	26.2	26.3	
	IG 701	15.4				26.4	26.5	29.0	29.0	31.7
~ H <sub>e</sub> for Extension Bonnet and Actuator (inch)	IG 253	10.4	21.7	21.7	21.7	21.9	22.0			
	IG 503	13.9	26.7	26.7	26.7	26.9	26.9	30.4	30.5	
	IG 701	15.4				29.6	27.7	33.2	33.3	38.5
~ H <sub>s</sub> for Bellows Seal Bonnet and Actuator (inch)	IG 253	10.4	24.0	24.0	24.0	24.2	24.2			
	IG 503	13.9	28.7	28.7	28.7	28.9	28.9	36.4	36.4	
	IG 701	15.4				30.5	30.5	38.0	38.0	48.6
~ Weight in lbs for Standard Bonnet and Actuator	IG 253		42.9	42.9	42.9	63.2	70.5			
	IG 503		64.9	64.9	64.9	85.0	92.6	145	195	
	IG 701					110	117	170	221	367
~ Weight in lbs for Extension Bonnet and Actuator	IG 253		44.6	44.6	44.6	64.3	71.4			
	IG 503		66.6	66.6	66.6	86.3	93.4	148	199	
	IG 701					112	119	173	224	376
~ Weight in lbs for Bellows Seal Bonnet and Actuator	IG 253		44.1	48.5	48.5	66.1	72.8			
	IG 503		66.1	70.5	70.5	88.2	94.8	163	212	
	IG 701					112	120	187	235	396
Flanges drilled and dimensioned according to			ASME B16.5, Raised Face							
BL Face to Face Dimension acc. to ASME/ISA 75.08.01 (mm)	Class 150 RF		184	184	184	222	254	298	352	451
	Class 300 RF		190	194	197	235	267	318	368	473
~ H <sub>h</sub> for Standard Bonnet and Actuator (mm)	IG 253	265	457	457	457	475	478			
	IG 503	352	577	577	577	602	602	665	668	
	IG 701	390				671	673	737	737	805
~ H <sub>e</sub> for Extension Bonnet and Actuator (mm)	IG 253	265	551	551	551	556	559			
	IG 503	352	678	678	678	683	683	772	775	
	IG 701	390				752	754	843	846	978
~ H <sub>s</sub> for Bellows Seal Bonnet and Actuator (mm)	IG 253	265	610	610	610	615	615			
	IG 503	352	730	730	730	735	735	925	925	
	IG 701	390				775	775	965	965	1235
~ Weight in kg for Standard Bonnet and Actuator	IG 253		19.0	19.0	19.0	29	32			
	IG 503		29	29	29	39	42	66	89	
	IG 701					50	53	77	100	166
~ Weight in kg for Extension Bonnet and Actuator	IG 253		20	20	20	29	32			
	IG 503		30	30	30	39	42	67	90	
	IG 701					51	54	79	102	171
~ Weight in kg for Bellows Seal Bonnet and Actuator	IG 253		20	22	22	30	33			
	IG 503		30	32	32	40	43	74	96	
	IG 701					51	54	85	107	180

# General Service Control Valve - order code

FlowTop	Type						Size	PN	Body material / Certificate						Plug						Seat	cv	Trim															
	V746	D	F	V	N	A			2"	150	A216WCC	N	O	A	O	P	O	N	D	1				M	G	50	55	410 SS										
Type	Class 150	V746																																				
	Class 300	V748																																				
Body design	globe, flanged end		D																																			
Flange connection	Integral Flange ASME B16.5 RF			F																																		
Balancing	without						V																															
	NBR O-ring + PTFE (Buna-N)						A																															
	FKM O-ring + PTFE (Viton)						B																															
	FKM O-ring + PEEK (Viton)						C																															
	EPDM O-ring + PEEK						D																															
	FFKM O-ring + PEEK (Kalrez)						E																															
	FFKM O-ring + PEEK (Chemraz)						F																															
Bonnet	Standard bonnet						N																															
	Standard Bonnet - reduced stem force						M																															
	Extension bonnet - stem up to + 350 °C						R																															
	Extension bonnet - stem above + 350 °C						S																															
	Bellows seal bonnet						B																															
Stuffing box packing	Braided PTFE - standard						A																															
	Braided Graphite - standard						T																															
	Braided PTFE - live loaded						N																															
	Braided PTFE - live loaded - ISO 15848-1						Q																															
	Braided PTFE - live loaded - vacuum						C																															
	Braided Graphite - live loaded						R																															
	Rib-Braid Graphite - live loaded - ISO 15848-1						V																															
Nominal Size	1/2" - 3/4" - 1" - 1 1/2" - 2" - 3" - 4" - 6"						1/2" - 6"																															
Nominal pressure	V746							150																														
	V748						Class	300																														
Body material								A216WCC																														
							ASME	A351CF8M																														
									A351CF3M																													
Regulation for material	without							N																														
	NACE					MR0175		M																														
Material certificate	without								O																													
	2.2							Z																														
	EN 10204								D																													
	3.1 with copy of certificates (CMTR of body & bonnet)								E																													
3.1 with copy of certificates (CMTR of body & bonnet & bolting)																																						
Regulation for final test																																						
Final test certificate	without								O																													
	EN 10204						2.2		Z																													
	3.1								B																													
	SPP 817								S																													
Plug type	Contoured plug			control service																																		
	Quick Open			on - off service																																		
	CavStream																																					
Trim equipment	without			additional trim equipment																																		
	One-stage			MegaStream																																		
Plug and seat design	standard																																					
	Seat surface - Alloy 6																																					
	Full contour - Alloy 6																																					
	Tenifer treated																																					
	Hardened																																					
	Soft seat																																					
Seat leakage	Class IV	IEC / FCI		Test medium		Water																																
						Gas																																
	Class V	IEC / FCI				Water																																
						Gas																																
	Class VI	IEC / FCI				Water																																
						Gas																																
Plug guiding	Post guiding / Cage guided with pressure balanced design																																					
Characteristic	Modified equal percentage			Curve - Type M																																		
	Modified equal percentage																																					

# Pneumatic multi spring actuator - FlowAct order code

FlowAct				Order code								
				I	T	503	B	FY	O	Z	B	S
Actuator design	Internal Air Supply for Yoke Code G			I								
Yoke design	Multi function - yoke with SMHW interface				G							
Actuator size (cm <sup>2</sup> /inch <sup>2</sup> )	250	38.75	Stroke	10, 20	0.39, 0.79		253					
	500	77.50	(mm/inch)	20, 40	0.79, 1.57		503					
	700	108.50		20, 40, 60	0.79, 1.57, 2.36		701					
Color	white, powder coated						B					
Spring range (bar/psi)	Stroke (mm) <sup>1)</sup>		Actuator	253	503	701						
	0,2 - 1,0	3 - 15		20, 40, 60	Actuator force ( N )	500	1 000	1 400		AD		
	0,5 - 1,9	7 - 28	20, 40, 60		1 250	2 500	3 500		BL			
	1,0 - 2,4	15 - 35	20, 40, 60		2 500	5 000	7 000		DY			
	1,5 - 2,7	22 - 39	20, 40		3 750	7 500	10 500		VC			
	1,5 - 3,8	22 - 55	20, 40, 60		3 750	7 500	10 500		VI			
	1,8 - 2,7	26 - 39	20				12 600		JC			
2,0 - 4,8	29 - 70	20, 40, 60		5 000	10 000	14 000		FY				
Handwheel	without									O		
	top mounted "light design"									L		
	top mounted "heavy design"									H		
	side mounted									S		
Stroke Limitation	not adjustable - "bottom"									E		
	not adjustable - "top"									F		
	"adjustable"									U		
Handwheel and Stroke Limitation	side mounted Handwheel and "adjustable" Stroke Limitation									A		
Safety position at air failure	spring to close										Z	
	spring to open										A	
	fail in place by spring to close										S	
	fail in place by spring to open										T	
Stroke (mm/inch)	20	0.79									A	
	40	1.57									B	
	60	2.36									C	
Temperatur Range	Standard	- 40 °C to + 80 °C										S

<sup>1)</sup> Not every spring range / stroke combination are possible for each actuator size.



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