FLOWSERVE

Valtek - FlowTop™

High Performance Valve

1/2“ - 16“, Class 150 / 300

Experience In Motion

FlowTop - Features

Actuator
FlowAct is the standard pneumatic linear actuator. Further interfaces for:
- Haselhofer Electric linear Actuator
- PSL Electric linear Actuator
- Linear thrust Unit „light“ or „heavy“ for Electric multi turn Actuator
- Manual Operation

(see page 18, 19)

***Compact design** up to six Spring Ranges available for use with or without a Positioner.*

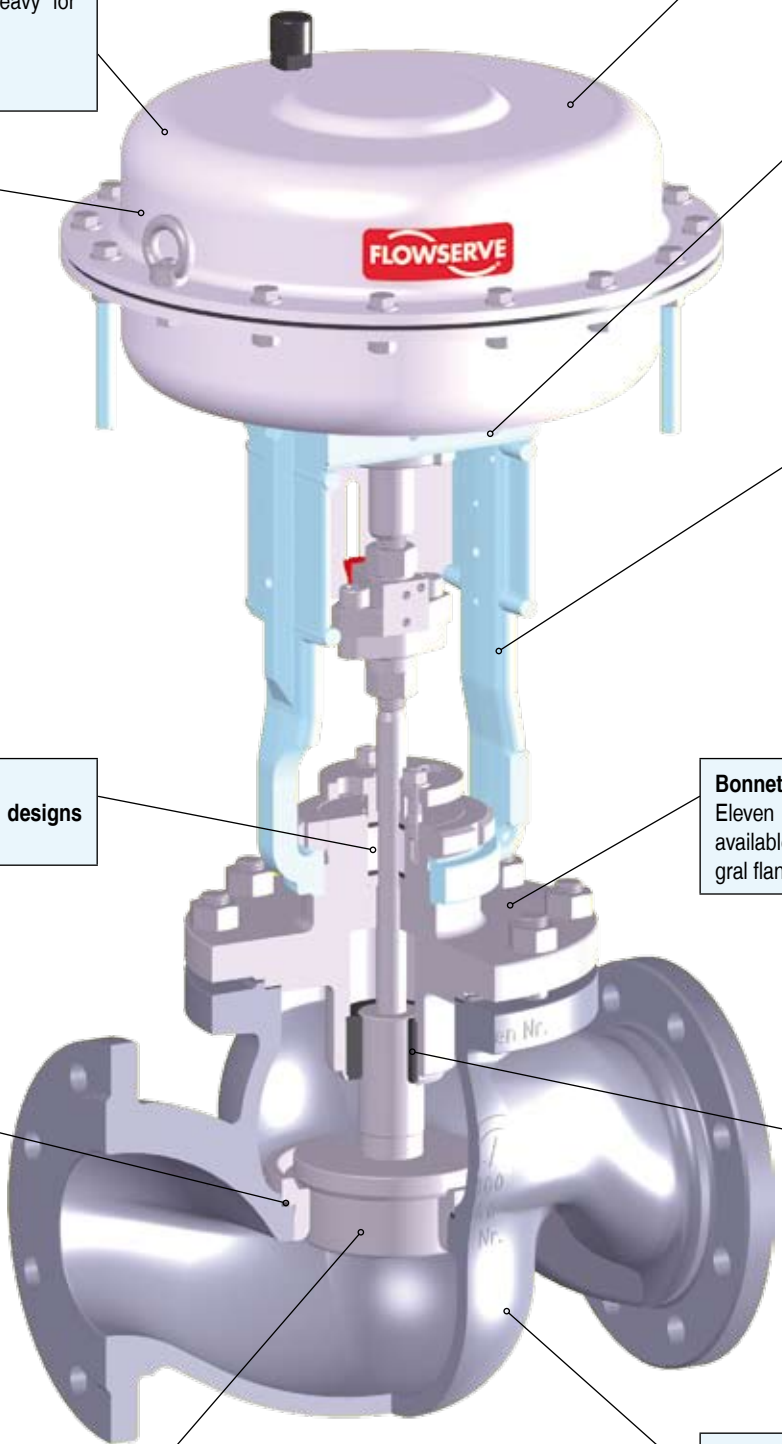
***High quality long life springs** properly aligned by spring plates.*

*Uninterrupted **linear travel** and **no loss of operating force**, due to reinforced rolling type diaphragm with minimum area variation during stroke.*

***High quality powder painted** carbon steel actuator cases - extremly corrosion resistant. Paint is durable and resistent to chipping or flaking.*

***Direct air supply** is ported through the internal passage in the yoke. Available only with direct mounting positioner or accessories on air to open application. **No tubing is required**.*

*A **high quality durable solid ductile iron yoke** is delivered as standard. It´s a universal yoke which accepts different industry standard mountings available on the market.*



Packing
Seven **high quality packing designs** are available. *(see page 11)*

Bonnet
Eleven different bonnet designs are available. Extremly **robust** design integral flange. *(see page 8 - 10)*

*The gasket seal provides **zero leakage** between seat and body.*

*Minimised vibration and wear because of oversized **solid, sturdy plug guiding**.*

Trim
Nine standard trim designs and fourteen special trim designs are available.
(see page 12 - 17 resp. Special Brochure)

Body
Nine different body designs available. The enlarged gallery enables **higher cv** per trim and valve size than competitive products.
(see page 4 - 6)

FlowTop - Advantages

Modular Design	The same bodies can be used for various different types of bonnet, packing, trim and actuators. This concept of a modular valve design allows the reduction of spare parts and offers an interchangeable valve for all applications.
Tight Shut - Off	FlowTop control valves offer Class IV shut-off as standard without the need for lapping plug and seat. Class VI shut-off is also available for FlowTop with a soft seat design.
Plug head guided	One solid guide stabilises the stem and plug during valve travel and minimises vibration and wear. A double plug guiding is also available depending on the service application and the trim selection.
Compact	Designed and engineered for applications with a limited installation envelope.
Low Noise and Anti - Cavitation Trim	SilentPack, MultiStream, Multi - Hole Plug, RLS, Silencer, reducing noise levels generated by vapours and gases and eliminating cavitation.
Versatile Packing Configuration	Available in Teflon and Graphite. Live loading kits are retrofittable without modification to the valve.
Fugitive Emission Packing	Environmental packing design is available in accordance with „TA-Luft“ up to + 450 °C operating temperature.
Easy Maintenance	By using a seat ring gasket between the body and the seat, the FlowTop allows faster maintenance without the necessity to remachine the body seat surface. The top entry design allows the valve body to remain in line whilst the trim is changed or replaced.
Wide Variety of Trim Sizes	Up to 17 cv values per valve size.
Multifunction Yoke	The standard multifunction yoke is designed to accept all of the standard mountings available on the market including NAMUR (IEC 534.6) and the direct VDI / VDE 3847 / 3845 mounting.
High-Thrust Diaphragm	The actuator is compact, light weight and suitable for 6 bar air supply; multiple spring combinations reduces installation size and initial expenditure.
Dynamic Stability	Solid, sturdy plug head guiding minimises vibration and wear.
Field Reversible Actuator	Failure mode is easily reversed, using standard equipment.
Certifications and Approvals *(sample)*	Quality assurance system certificated according to EN ISO 9001:2000 inc. product development. EC-Type-Examination according to PED 97/23/EC Module B + D ATEX - Declaration of Conformity according Derictive 94/9/EC TA-Luft - Certificate and Fugitive Emission according ISO 15848-1 SIL - Certificate according IEC 61508 DVGW - Certificate according EC Type Examination 90/396/EWG RTN - Certificate according Safety Derictive GOST - R DNV - Type Approval for Classification of Ships
Multiple Application Usage	High-performance, general-service control valve used in many process industries including chemical, refinery, power, food and beverage, HVAC.

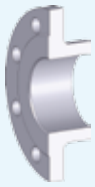
Body Design - „Three Flange“

Body Design	Type (Body) / Size	Body Material	Bonnet Design	Packing Design	Trim Design
3-Flange	**D** . . . . Flanged Class **150** **300** Size **1/2“** **3/4“** **1“** **1 1/2“** **2“** **3“** **4“** **6“** **8“** 	A216 WCB A352 LCB A217 WC6 A351 CF8M A351 CF8	**Without Balancing** VN Standard Bonnet VB Bellow Seal Bonnet VR High Temperature Bonnet VK Low Temperature Bonnet VI Insulating Bonnet **V-Ring Balancing** ON Standard Bonnet OK Low Temperature Bonnet OI Insulating Bonnet **Piston-Ring Balancing** KR High Temperature Bonnet **Heavy Duty Design** SN Standard Bonnet *see page 8 - 10*	**adjustable** A Teflon B Graphite **spring loaded** N Teflon O Graphite Q Teflon TA-Luft V Graphite TA-Luft S Teflon-V-Ring System *see page 11*	**Parabolic Plug** PON Standard POD Partial Stellited POK Contour Stellited POW Soft Seated **Disk Plug** TON Standard TOW Soft Seated **Special Trim Equipment** see Special Brochure *see page 12 - 17*
	DW . . . Welded Class **150** **300** Size **1/2“** **3/4“** **1“** **1 1/2“** **2“** **3“** **4“** **6“** **8“** 	A216 WCB A217 WC6 A351 CF8M A351 CF8			
	H . . . . Flanged with Heating Jacket Class **150** **300** Size **1“** **1 1/2“** **2“** **3“** **4“** **6“** **8“** Heating Jacket Class **150** Size **1“** 	A216 WCB A351 CF8M	**Without Balancing** VN Standard Bonnet VB Bellow Seal Bonnet VR High Temperature Bonnet VK Low Temperature Bonnet **V-Ring Balancing** ON Standard Bonnet OK Low Temperature Bonnet **Piston-Ring Balancing** KR High Temperature Bonnet **Heavy Duty Design** SN Standard Bonnet *see page 8 - 10*		
	HW . . . Welded with Heating Jacket	On Request			

Body Design - „Four Flange“

Body Design	Type (Body) / Size	Body Material	Bonnet Design	Packing Design	Trim Design
4-Flange	**V** . . . . Flanged Class **150** **300** Size **8“** **10“** **12“** **16“** 	A216 WCB A352 LCB A217 WC6 A351 CF8M A351 CF8	**Without Balancing** VN Standard Bonnet VB Bellow Seal Bonnet VR High Temperature Bonnet VK Low Temperature Bonnet VI Insulating Bonnet **V-Ring Balancing** ON Standard Bonnet OK Low Temperature Bonnet OI Insulating Bonnet **Piston-Ring Balancing** KR High Temperature Bonnet **Heavy Duty Design** SN Standard Bonnet *see page 8 - 10*	**adjustable** A Teflon B Graphite **spring loaded** N Teflon O Graphite Q Teflon TA-Luft V Graphite TA-Luft S Teflon-V-Ring System *see page 11*	**Parabolic Plug** PON Standard POD Partial Stellited POK Contour Stellited POW Soft Seated **Disk Plug** TON Standard TOW Soft Seated **Special Trim Equipment** see Special Brochure *see page 12 - 17*
	VS . . . Welded Class **150** **300** Size **8“** **10“** **12“** **16“** 	A216 WCB A217 WC6 A351 CF8M A351 CF8			
	G . . . . Flanged with Heating Jacket Class **150** **300** Size **8“** **10“** **12“** **16“** Heating Jacket Class **150** Size **1“** 	A216 WCB A351 CF8M	**Without Balancing** VN Standard Bonnet VB Bellow Seal Bonnet VR High Temperature Bonnet VK Low Temperature Bonnet **V-Ring Balancing** ON Standard Bonnet OK Low Temperature Bonnet **Piston-Ring Balancing** KR High Temperature Bonnet **Heavy Duty Design** SN Standard Bonnet *see page 8 - 10*		
	GS . . . Welded with Heating Jacket	On Request			

Body Connecting Design - „Detail“

Body Design	Type (Body)		Design	
3-Flange 4-Flange	. **F** . . . Raised Face		according to **ASME B16.5-2003**	**Form RF**
3-Flange 4-Flange	. **J** . . . Ring Joint			**Form RTJ**
3-Flange 4-Flange	. **W** . . . Welded		according to **ASME B 16.25-2003**	Welding End Detail **Fig. 2** - (**a**) Schedule **No. 40**

Body Pressure - Temperature Ratings

NOTICE → according to the relevant version of standards !
[1] MAWP = Maximum Allowable Working Pressure
[2] Not to be used over 345 °C resp. 653 °F

Class	Body Material	Service Temperature in °C	-196	-60	- 46	-29	-10	38	100	150	200	250	300	350	400	427	500	538
150	A216 WCB	MAWP [1] in bar				19,6	19,6	19,6	17,7	15,8	13,8	12,1	10,2	8,4	6,5	5,5		
	A352 LCB				18,4	18,4	18,4	18,4	17,4	15,8	13,8	12,1	10,2	8,6 [2]				
	A351 CF8M			19,0	19,0	19,0	19,0	19,0	16,2	14,8	13,7	12,1	10,2	8,4	6,5	5,4		
	A217 WC6					19,8	19,8	19,8	17,7	15,8	13,8	12,1	10,2	8,4	6,5	5,4	-	-
	A351 CF8		19,0	19,0	19,0	19,0	19,0	19,0	15,7	14,2	13,2	12,1	10,2	8,4	6,5	5,4		
300	A216 WCB	MAWP [1] in bar				51,1	51,1	51,1	46,6	45,1	43,8	41,9	39,8	37,6	34,7	28,3		
	A352 LCB				48,0	48,0	48,0	48,0	45,3	43,9	42,5	40,8	38,7	36,6 [2]				
	A351 CF8M			49,6	49,6	49,6	49,6	49,6	42,2	38,5	35,7	33,4	31,6	30,3	29,4	29,1		
	A217 WC6					51,7	51,7	51,7	51,5	49,7	48,0	46,3	42,9	40,3	36,5	35,1	25,7	14,9
	A351 CF8		49,6	49,6	49,6	49,6	49,6	49,6	42,2	38,5	35,7	33,4	31,6	30,3	29,4	29,1		
		Service Temperature in °F	**-321**	**-76**	**-51**	**-20**	**14**	**100**	**212**	**302**	**392**	**482**	**572**	**662**	**752**	**801**	**932**	**1000**
150	A216 WCB	MAWP [1] in psig				284	284	284	257	229	200	175	148	122	94	80		
	A352 LCB				267	267	267	267	252	229	200	175	148	125 [2]				
	A351 CF8M			276	276	276	276	276	235	215	199	175	148	122	94	78		
	A217 WC6					287	287	287	257	229	200	175	148	122	94	78	-	-
	A351 CF8		276	276	276	276	276	276	228	206	191	175	148	122	94	78		
300	A216 WCB	MAWP [1] in psig				741	741	741	676	654	635	608	577	545	503	410		
	A352 LCB				696	696	696	696	657	637	616	592	561	531 [2]				
	A351 CF8M			719	719	719	719	719	612	558	518	484	458	439	426	422		
	A217 WC6					750	750	750	747	721	696	672	622	585	529	509	373	216
	A351 CF8		719	719	719	719	719	719	612	558	518	484	458	439	426	422		

Permissible Ambient / Storage Temperature Range for Valves are - 40 ÷ + 80 °C → finally depending on the used Accessories !

Permissible Ambient / Storage Temperature Range for Valves are - 40 ÷ + 176 °F → finally depending on the used Accessories !

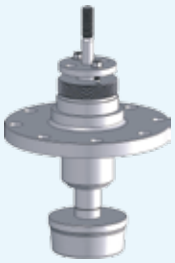
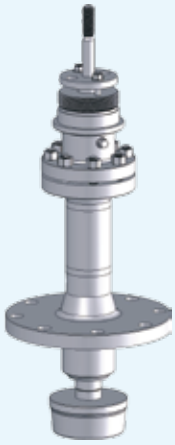
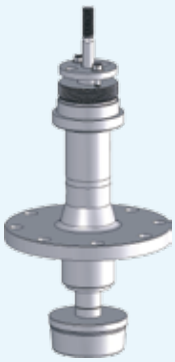
Working Temperature Range depending on Body / Bonnet / Trim / Packing

[1] recommended operating conditions, suitable up to - 10°C !

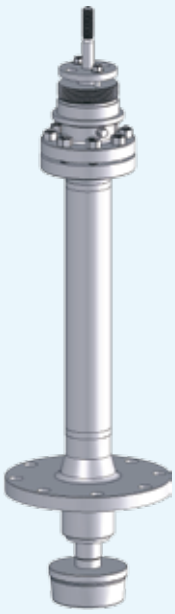
[2] Maximal Allowable Working Temperature are finally depending on the Trim Temperature Range → 316 SS + PTFE = -196 ÷ + 250 °C only !

Body Material	Bonnet Design	Trim Material [2]		Adjustable Packing A Teflon	Adjustable Packing B Graphite [1]	Spring loaded Packing N Teflon	Spring loaded Packing O Graphite [1]	Spring loaded Packing Q Teflon TA-Luft	Spring loaded Packing V Graphite [1] TA-Luft	Spring loaded Packing S Teflon V-Ring
A216 WCB	**VN** Standard Bonnet	316 SS	°C	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
		1.4122		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	VB Bellows Seal Bonnet	316 SS		- 29 ÷ + 250	+ 250 ÷ + 427	- 29 ÷ + 250	+ 250 ÷ + 427	- 29 ÷ + 250	+ 250 ÷ + 427	- 29 ÷ + 250
	VR High Temperature Bonnet	316 SS		-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-
		1.4122		-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-
	VK Low Temperature Bonnet	316 SS		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
		1.4122		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	ON Standard Bonnet V-Ring balanced	316 SS		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	KR High Temp. Bonnet Piston-Ring balanced	1.4122		-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-
	SN Standard Bonnet Heavy Duty Design	1.4122		- 29 ÷ + 250	+ 250 ÷ + 427	- 29 ÷ + 250	+ 250 ÷ + 427	-	-	-
A352 LCB	**VK** Low Temperature Bonnet	316 SS		- 46 ÷ + 250	-	- 46 ÷ + 250	-	- 46 ÷ + 250	-	- 46 ÷ + 250
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 46 ÷ + 250	-	- 46 ÷ + 250	-	- 46 ÷ + 250	-	- 46 ÷ + 250
A351 CF8M	**VN** Standard Bonnet	316 SS		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	VB Bellows Seal Bonnet	316 SS		- 60 ÷ + 250	+ 250 ÷ + 427	- 60 ÷ + 250	+ 250 ÷ + 427	- 60 ÷ + 250	+ 250 ÷ + 427	- 60 ÷ + 250
	VR High Temperature Bonnet	316 SS		-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-	+ 250 ÷ + 427	-
	VK Low Temperature Bonnet	316 SS		- 60 ÷ + 250	-	- 60 ÷ + 250	-	- 60 ÷ + 250	-	- 60 ÷ + 250
	ON Standard Bonnet V-Ring balanced	316 SS		- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250	-	- 29 ÷ + 250
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 60 ÷ + 250	-	- 60 ÷ + 250	-	- 60 ÷ + 250	-	- 60 ÷ + 250
	SN Standard Bonnet Heavy Duty Design	316 SS		- 60 ÷ + 250	+ 250 ÷ + 427	- 60 ÷ + 250	+ 250 ÷ + 427	-	-	-
A217 WC6	**VR** High Temperature Bonnet	1.4122		-	+ 250 ÷ + 450	-	+ 250 ÷ + 450	-	+ 250 ÷ + 450	-
		1.4922		-	+ 450 ÷ + 538	-	-	-	-	-
	KR High Temp. Bonnet Piston-Ring balanced	1.4122		-	+ 250 ÷ + 450	-	+ 250 ÷ + 450	-	+ 250 ÷ + 450	-
	SN Standard Bonnet Heavy Duty Design	1.4122		- 29 ÷ + 250	+ 250 ÷ + 450	- 29 ÷ + 250	+ 250 ÷ + 450	-	-	-
		1.4922		-	+ 450 ÷ + 538	-	-	-	-	-
A351 CF8	**VB** Bellows Seal Bonnet	316 SS		- 196 ÷ + 250	-	- 196 ÷ + 250	-	- 196 ÷ + 250	-	- 196 ÷ + 250
	VI Insulating Bonnet	316 SS		- 196 ÷ + 250	-	- 196 ÷ + 250	-	- 196 ÷ + 250	-	- 196 ÷ + 250
	OI Insulating Bonnet V-Ring balanced	316 SS		- 196 ÷ + 80	-	- 196 ÷ + 80	-	- 196 ÷ + 80	-	- 196 ÷ + 80
A216 WCB	**VN** Standard Bonnet	316 SS	°F	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
		1.4122		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	VB Bellows Seal Bonnet	316 SS		- 20 ÷ + 482	+ 482 ÷ + 801	- 20 ÷ + 482	+ 482 ÷ + 801	- 20 ÷ + 482	+ 482 ÷ + 801	- 20 ÷ + 482
	VR High Temperature Bonnet	316 SS		-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-
		1.4122		-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-
	VK Low Temperature Bonnet	316 SS		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
		1.4122		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	ON Standard Bonnet V-Ring balanced	316 SS		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	KR High Temp. Bonnet Piston-Ring balanced	1.4122		-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-
	SN Standard Bonnet Heavy Duty Design	1.4122		- 20 ÷ + 482	+ 482 ÷ + 801	- 20 ÷ + 482	+ 482 ÷ + 801	-	-	-
A352 LCB	**VK** Low Temperature Bonnet	316 SS		- 51 ÷ + 482	-	- 51 ÷ + 482	-	- 51 ÷ + 482	-	- 51 ÷ + 482
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 51 ÷ + 482	-	- 51 ÷ + 482	-	- 51 ÷ + 482	-	- 51 ÷ + 482
A351 CF8M	**VN** Standard Bonnet	316 SS		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	VB Bellows Seal Bonnet	316 SS		- 76 ÷ + 482	+ 482 ÷ + 801	- 76 ÷ + 482	+ 482 ÷ + 801	- 76 ÷ + 482	+ 482 ÷ + 801	- 76 ÷ + 482
	VR High Temperature Bonnet	316 SS		-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-	+ 482 ÷ + 801	-
	VK Low Temperature Bonnet	316 SS		- 76 ÷ + 482	-	- 76 ÷ + 482	-	- 76 ÷ + 482	-	- 76 ÷ + 482
	ON Standard Bonnet V-Ring balanced	316 SS		- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482	-	- 20 ÷ + 482
	OK Low Temp. Bonnet V-Ring balanced	316 SS		- 76 ÷ + 482	-	- 76 ÷ + 482	-	- 76 ÷ + 482	-	- 76 ÷ + 482
	SN Standard Bonnet Heavy Duty Design	316 SS		- 76 ÷ + 482	+ 482 ÷ + 801	- 76 ÷ + 482	+ 482 ÷ + 801	-	-	-
A217 WC6	**VR** High Temperature Bonnet	1.4122		-	+ 482 ÷ + 842	-	+ 482 ÷ + 842	-	+ 482 ÷ + 842	-
		1.4922		-	+ 842 ÷ + 1000	-	-	-	-	-
	KR High Temp. Bonnet Piston-Ring balanced	1.4122		-	+ 482 ÷ + 842	-	+ 482 ÷ + 842	-	+ 482 ÷ + 842	-
	SN Standard Bonnet Heavy Duty Design	1.4122		- 20 ÷ + 482	+ 482 ÷ + 842	- 20 ÷ + 482	+ 482 ÷ + 842	-	-	-
		1.4922		-	+ 842 ÷ + 1000	-	-	-	-	-
A351 CF8	**VB** Bellows Seal Bonnet	316 SS		- 321 ÷ + 482	-	- 321 ÷ + 482	-	- 321 ÷ + 482	-	- 321 ÷ + 482
	VI Insulating Bonnet	316 SS		- 321 ÷ + 482	-	- 321 ÷ + 482	-	- 321 ÷ + 482	-	- 321 ÷ + 482
	OI Insulating Bonnet V-Ring balanced	316 SS		- 321 ÷ + 176	-	- 321 ÷ + 176	-	- 321 ÷ + 176	-	- 321 ÷ + 176

Bonnet Design - „Unbalanced“ for Size 1/2“ - 16“

Bonnet Design	Type (Bonnet)		Material	Temperatur Range	Application	Packing Design
Without Balancing	. . **VN** . Standard Bonnet		depending on body material A216 WCB → **A 105** A351 CF8M → **F 316**	- 29 ÷ + 250 °C - 20 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal use	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*
	. . **VB** . Bellows Seal Bonnet		depending on body material A216 WCB → **A 105** A351 CF8M → **F 316** A351 CF8 → **F 304**	- 196 ÷ + 427 °C - 321 ÷ + 801 °F *see also Working Temperature Range on Page 7*	Use by toxic, smell strong, fleeting, costly media or vacuum	**adjustable** A Teflon B Graphite **spring loaded** N Teflon O Graphite Q Teflon TA-Luft V Graphite TA-Luft S Teflon-V-Ring System *see page 11*
	. . **VR** . High Temperature Bonnet		depending on body material A216 WCB → **A 105** A351 CF8M → **A 182** A217 WC6 → **A 182**	+ 250 ÷ + 538 °C + 482 ÷ + 1000 °F *see also Working Temperature Range on Page 7*	Use by possible overheating of packing and/or actuator	**adjustable** B Graphite **spring loaded** O Graphite V Graphite TA-Luft *see page 11*
	. . **VK** . Low Temperature Bonnet		depending on body material A216 WCB → **A 105** A352 LCB → **LF2** A351 CF8M → **F 316**	- 60 ÷ + 250 °C - 76 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Use by possible icing of the packing	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*

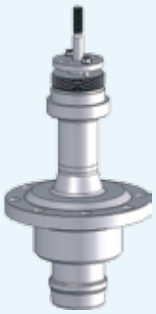
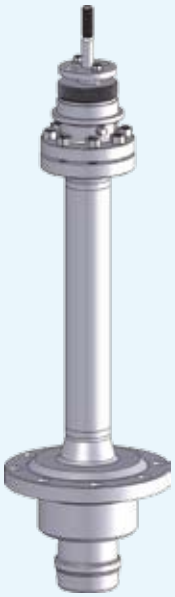
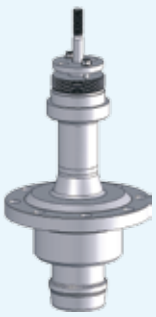
Bonnet Design - „Unbalanced“ for Size 1/2“ - 16“

Bonnet Design	Type (Bonnet)	Material	Temperature Range	Application	Packing Design
Without Balancing	. . **VI** . Insulating Bonnet 	depending on body material A351 CF8 → **F 304**	- 196 ÷ + 250 °C - 321 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Use by cryogenic service	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*

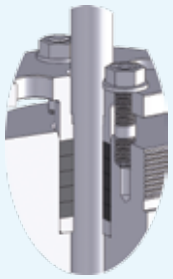
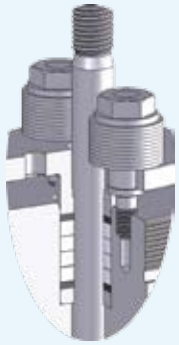
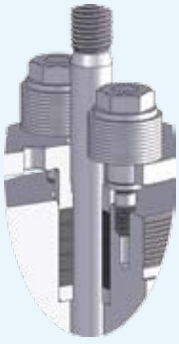
Bonnet Design - „Heavy Duty“ for Size 1“ - 16“

Bonnet Design	Type (Bonnet)	Material	Temperatur Range	Application	Packing Design
Heavy Duty Design	. . **SN** . Standard Bonnet 	depending on body material A216 WCB → **A 105** A351 CF8M → **A 182** A217 WC6 → **A 182**	- 60 ÷ + 538 °C - 76 ÷ + 1000 °F *see also Working Temperature Range on Page 7*	Universal use by Electric multi turn Actuators Class 300 only !	**adjustable** A Teflon B Graphite **spring loaded** N Teflon O Graphite *see page 11*

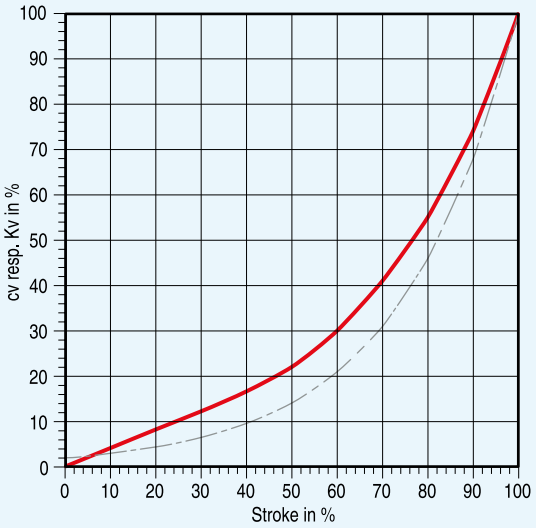
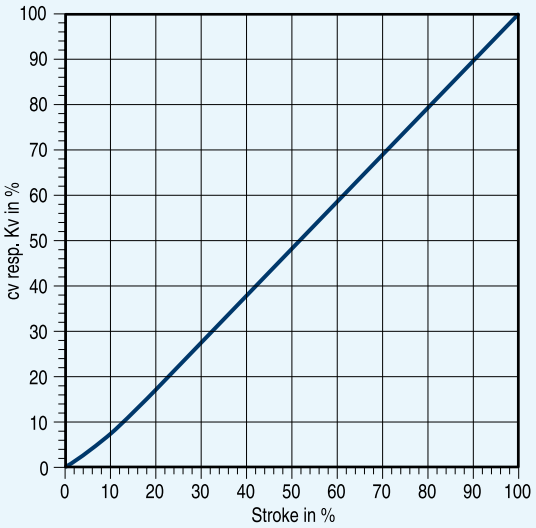
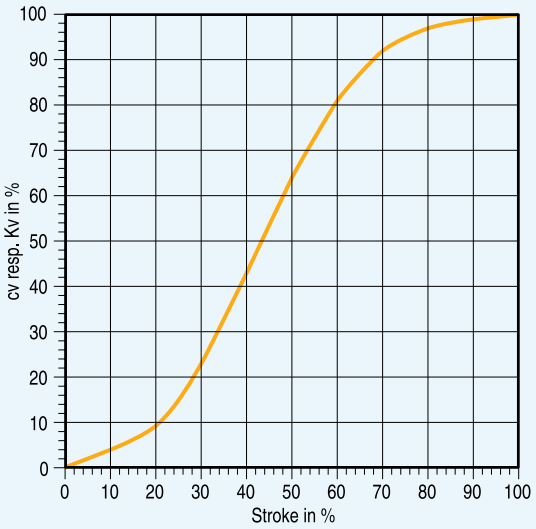
Bonnet Design - „Pressure Balanced“ for Size 3“ - 16“

Bonnet Design	Type (Bonnet)	Material	Temperature Range	Application	Packing Design
V-Ring Balancing	. . **ON** . Standard Bonnet 	depending on body material A216 WCB → **A 105** A351 CF8M → **F 316**	- 29 ÷ + 250 °C - 20 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal use	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*
	. . **OK** . Low Temperature Bonnet 	depending on body material A216 WCB → **A 105** A352 LCB → **LF2** A351 CF8M → **F 316**	- 60 ÷ + 250 °C - 76 ÷ + 482 °C *see also Working Temperature Range on Page 7*	Use by possible icing of the packing	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*
	. . **OI** . Insulating Bonnet 	depending on body material A351 CF8 → **A 182**	- 196 ÷ + 80 °C - 321 ÷ + 176 °F *see also Working Temperature Range on Page 7*	Use by cryogenic service	**adjustable** A Teflon **spring loaded** N Teflon Q Teflon TA-Luft S Teflon V-Ring System *see page 11*
Piston-Ring Balancing	. . **KR** . High Temperature Bonnet 	depending on body material A216 WCB → **A 105** A217 WC6 → **A 182**	+ 250 ÷ + 450 °C + 482 ÷ + 842 °F *see also Working Temperature Range on Page 7*	Use by possible overheating of packing and/or actuator	**adjustable** B Graphite **spring loaded** O Graphite V Graphite TA-Luft *see page 11*

Packing Design - „Detail“

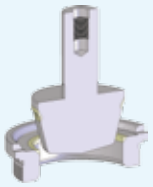
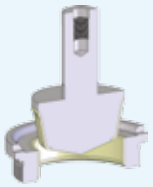
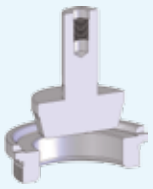
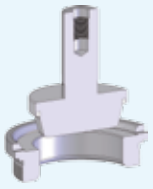
Packing Design	Type (Packing)		Material	Temperature Range	Application	Approvals
adjustable	. . . . **A** Teflon		**Packing Rings** Braided PTFE-Yarn impregnated with PTFE-Dispersion **Chamber Washers** PTFE-Carbon	- 196 ÷ + 250 °C - 321 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance.	BAM for gaseous oxigen FMPA for food application
	. . . . **B** Graphite		**Packing Rings** Braided Graphite made out of expanded pure Graphite-Yarn lubricated with a slip additive	- 10 ÷ + 538 °C 14 ÷ + 1000 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance. Not suitable for oxidising media !	-
spring loaded	. . . . **N** Teflon		**Packing Rings** Braided PTFE-Yarn impregnated with PTFE-Dispersion **Chamber Washers** PTFE-Carbon	- 196 ÷ + 250 °C - 321 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance.	BAM for gaseous oxigen FMPA for food application
	. . . . **Q** Teflon „TA-Luft“		**Packing Rings** Braided Carbon-Yarn, covered with a sleeve of impregnated and lubricated PTFE-Yarn **Chamber Washers** PTFE-Carbon	- 196 ÷ + 250 °C - 321 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance.	BAM for gaseous oxigen TA-Luft ISO 15848-1
	. . . . **O** Graphite		**Packing Rings** Braided Graphite made out of expanded pure Graphite-Yarn lubricated with a slip additive	- 10 ÷ + 450 °C 14 ÷ + 842 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance. Not suitable for oxidising media !	-
	. . . . **V** Graphite „TA-Luft“					TA-Luft ISO 15848-1
	. . . . **S** Teflon „V-Ring“ System		**Packing Rings** Compression-molded PTFE-Yarn resp. PTFE-Carbon	- 196 ÷ + 250 °C - 321 ÷ + 482 °F *see also Working Temperature Range on Page 7*	Universal chemical resistance. Not suitable for abrasive media !	-

Valve Characteristic

Type (Trim)	**Application**
. . . . . **G** . Modified equal percentage Flow Characteristic *(Equal Percentage 1:50 only on request and shown as an example)* 	• The equal percentage characteristic is used for highly changeable differential pressure. • A „soft" inlet characteristic alleviates pressure impulses for short closing times. • The equal percentage characteristic relates equal increments of travel to equal percentage increments of the corresponding kv-value. • The equal percentage characteristic is recommended for a pressure ratio of $\Delta p_0 / \Delta p_{100} > 2$
. . . . . **L** . Linear Flow Characteristic 	• The linear characteristic is used for constant differential pressure under different loads. • The linear characteristic relates equal increments of travel to equal increments of the Kv-value. • The linear characteristic is recommended for a pressure ratio of $\Delta p_0 / \Delta p_{100}$ 1 - 2
. . . . . **A** . On / Off Flow Characteristic with Throttle Lip 	• On / Off characteristic is mainly used for closing operations. • The stroke of the On / Off characteristic shows an approximate linear run up to a 1/4 of the seat diameter and furthermore enables the full flow area when open.

Trim Design - „Standard“

NOTICE → expert knowledge is required for the selection of Trim !
The specified datas are used for a rough orientation only and may not taken for dimensioning !

Type (Trim) **/ Material**			**Medium**		**Flow**	**max. allowable Differential Pressure in bar**	**Noise Reduction**
Parabolic Plug Characteristic: . . . . . **G** . ↓ mod. equal per. . . . . . **L** . ↓ linear	**PON** . . . . standard 316 SS		• clean • marginally contaminated with particles • low clogging potential for dirty service	gases, vapors and liquids	. . . . . **G** Flow direction **under** the plug	$\Delta p_l < x_{FZ} \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	none - noise reduction with Special Trim Equipment or Noise Insulating provided by customer
	PON . . . . standard 1.4122 1.4922 **POH** . . . . hardened 1.4122 1.4922					$\Delta p_l < (x_{FZ} + 0{,}10) \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
						$\Delta p_l < (x_{FZ} + 0{,}15) \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
	POD . . . . partial stellited *(seat surface)* 316 SS					$\Delta p_l < (x_{FZ} + 0{,}10) \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
	POK . . . . full stellited *(contour)* 316 SS					$\Delta p_l < (x_{FZ} + 0{,}15) \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
	POW . . . . soft seated 316 SS + PTFE					$\Delta p_l < x_{FZ} \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
Disk Plug with Throttle Lip Characteristic: . . . . . **A** . ↓ On / Off	**TON** . . . . standard 316 SS				. . . . . **G** Flow direction **under** or . . . . . **I** **over** the plug	$\Delta p < MAWP$	
	TON . . . . standard 1.4122 1.4922						
	TOW . . . . soft seated 316 SS + PTFE						

Characteristic values of incompressible fluids $\Delta p_l \rightarrow x_{FZ} \rightarrow$ **0,79 - 0,24** respectively compressible fluids $\Delta p_C \rightarrow x_T \rightarrow$ **0,82 - 0,61** according to Flowserve Villach Operation (see also VDI/VDE 2173)

Noise Reduction Trim Sets see Page 17 and Special Brochure

Contoured Plug

Characteristic: modified - equal percentage

[1) 2)] if Body Material **A216 WCB** respectively **A217 WC6** up to 450 °C then Trim Material **316 SS** or **1.4122** !
if Body Material **A217 WC6** up to 538 °C then Trim Material **1.4922** only !
if Body Material **A351 CF8M** or **A352 LCB** respectively **A351 CF8** then Trim Material **316 SS** only !

EXCLUSION:
if Body Material **A216 WCB** respectively **A217 WC6** and **SN** Standard Bonnet then Trim Material **1.4122** only !

cv (gpm)	kvs (m^3/h)	Seat Ø	Guide of Plug [4)]	Material / Design								Possible seat diameter depends on nominal size											
				316 SS [1)]				1.4122 [2)]		1.4922 [2)]		1/2“	3/4“	1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
				standard	partial stellited	full stellited	soft seated	standard	hardened	standard	hardened	Stroke = 20 mm					40 mm		60	80 mm			100
0.012	0,010	3	1			●						●	●	●									
0.018	0,016	3	1			●						●	●	●									
0.029	0,025	3	1			●						●	●	●									
0.046	0,040	3	1			●						●	●	●									
0.073	0,063	4	1			●						●	●	●									
0.12	0,10	4	1			●						●	●	●									
0.18	0,16	4	1			●			●		●	●	●	●									
0.29	0,25	4	1			●			●		●	●	●	●									
0.46	0,40	4	1	●		●		●	●	●	●	●	●	●									
0.73	0,63	6	1	●		●	● [3)]	●	●	●	●	●	●	●									
1.16	1,0	8	1	●		●	● [3)]	●	●	●	●	●	●	●									
1.8	1,6	8	1	●		●	● [3)]	●	●	●	●	●	●	●									
2.9	2,5	10	1	●		●	●	●	●	●	●	●	●	●									
4.6	4,0	12	1	●	●	●	●	●	●	●	●	●	●	●									
6.5	5,6	16	1	●	●	●	●	●	●	●	●	●											
7.3	6,3	16	1	●	●	●	●	●	●	●	●		●	●	●								
9.2	8,0	20	1	●	●	●	●	●	●	●	●		●										
11.6	10	20	1/2	●	●	●	●	●	●	●	●			●	●	●							
16.2	14	25	1/2	●	●	●	●	●	●	●	●			●									
18.5	16	25	1/2	●	●	●	●	●	●	●	●				●	●							
29	25	34	1/2	●	●	●	●	●	●	●	●				●	●							
36	31,5	40	1/2	●	●	●	●	●	●	●	●				●								
46	40	42	1/2	●	●	●	●	●	●	●	●					●	●						
55	47,5	50	1/2	●	●	●	●	●	●	●	●					●							
73	63	53	1/2	●	●	●	●	●	●	●	●						●	●					
116	100	67	1/2	●	●	●	●	●	●	●	●						●	●	●				
145	125	80	1/2	●	●	●	●	●	●	●	●						●						
185	160	84	1/2	●	●	●	●	●	●	●	●							●	●				
208	180	100	1/2	●	●	●	●	●	●	●	●							●					
231	200	100	1/2	●	●	●	●	●	●	●	●									●			
289	250	105	1/2	●	●	●	●	●	●	●	●								●				
410	355	125	1/2	●	●	●	●	●	●	●	●									●	●		
410	355	130	1/2	●	●	●	●	●	●	●	●								●				
520	450	150	1/2	●	●	●	●	●	●	●	●									●	●	●	
821	710	200	1/2	●	●	●	●	●	●	●	●										●	●	
1040	900	200	1/2	●	●	●	●	●	●	●	●												●
1156	1000	250	1/2	●	●	●	●	●	●	●	●											●	
1272	1100	250	1/2	●	●	●	●	●	●	●	●												●
1618	1400	300	1/2	●	●	●	●	●	●	●	●												●
2081	1800	350	1/2	●	●	●	●	●	●	●	●												●

EXCLUSION:
Stroke = 10 mm only !

[3)] if Seat ø **< 10 mm** then Soft Seat Facing **= 10,5 mm** only !

[4)] if Guide of Plug = **2** (Top and Bottom) then **4-Flange Body** only !

Contoured Plug

Characteristic: linear

[1) 2)] if Body Material **A216 WCB** respectively **A217 WC6** then Trim Material **316 SS** or **1.4122** !
if Body Material **A2117 WC6** up to 538 °C then Trim Material **1.4922** only !
if Body Material **A315 CF8M** or **A352 LCB** respectively **A351 CF8** then Trim Material **316 SS** only !

EXCLUSION:
if Body Material **A216 WCB** respectively **A217 WC6** and **SN** Standard Bonnet then Trim Material **1.4122** only !

cv (gpm)	kvs (m^3/h)	Seat Ø	Guide of Plug [3)]	Material / Design							Possible seat diameter depends on nominal size DN											
				316 SS [1)]			1.4122 [2)]		1.4922 [2)]		1/2“	3/4“	1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
				standard	partial stellited	soft seated	standard	hardened	standard	hardened	Stroke = 20 mm					40 mm		60	80 mm			100
4.6	4,0	12	1	●	●	●	●	●	●	●	●	●	●									
6.5	5,6	16	1	●	●	●	●	●	●	●	●											
7.3	6,3	16	1	●	●	●	●	●	●	●		●	●	●								
9.2	8,0	20	1	●	●	●	●	●	●	●		●										
11.6	10	20	1/2	●	●	●	●	●	●	●			●	●	●							
16.2	14	25	1/2	●	●	●	●	●	●	●			●									
18.5	16	25	1/2	●	●	●	●	●	●	●				●	●							
29	25	34	1/2	●	●	●	●	●	●	●				●	●							
36	31,5	40	1/2	●	●	●	●	●	●	●				●								
46	40	42	1/2	●	●	●	●	●	●	●					●	●						
55	47,5	50	1/2	●	●	●	●	●	●	●					●							
73	63	53	1/2	●	●	●	●	●	●	●						●	●					
116	100	67	1/2	●	●	●	●	●	●	●						●	●	●				
145	125	80	1/2	●	●	●	●	●	●	●						●						
185	160	84	1/2	●	●	●	●	●	●	●							●	●				
208	180	100	1/2	●	●	●	●	●	●	●							●					
231	200	100	1/2	●	●	●	●	●	●	●									●			
289	250	105	1/2	●	●	●	●	●	●	●								●				
410	355	125	1/2	●	●	●	●	●	●	●									●	●		
410	355	130	1/2	●	●	●	●	●	●	●								●				
520	450	150	1/2	●	●	●	●	●	●	●									●	●	●	
821	710	200	1/2	●	●	●	●	●	●	●										●	●	
1156	1000	250	1/2	●	●	●	●	●	●	●											●	
1445	1250	200	1/2	●	●	●	●	●	●	●												●
2081	1800	250	1/2	●	●	●	●	●	●	●												●
2890	2500	300	1/2	●	●	●	●	●	●	●												●
3237	2800	350	1/2	●	●	●	●	●	●	●												●

[3)] if Guide of Plug = **2** (Top and Bottom) then **4-Flange Body** only !

Disk Plug

Characteristic: on / off

[1) 2)] if Body Material **A216 WCB** respectively **A217 WC6** then Trim Material **316 SS** or **1.4122** !
if Body Material **A2117 WC6** up to 538 °C then Trim Material **1.4922** only !
if Body Material **A315 CF8M** or **A352 LCB** respectively **A351 CF8** then Trim Material **316 SS** only !

EXCLUSION:
if Body Material **A216 WCB** respectively **A217 WC6** and **SN** Standard Bonnet then Trim Material **1.4122** only !

cv (gpm)	kvs (m^3/h)	Seat Ø	Guide of Plug	Material / Design					Possible seat diameter depends on nominal size DN											
				1.4571 [1)]			1.4122 [2)]	1.4922 [2)]	1/2“	3/4“	1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
				standard	soft seated	standard	standard	standard	Stroke = 20 mm					40 mm		60	80 mm			100
7.3	6,3	16	1	●	●	●	●	●	●											
10.4	9	20	1	●	●	●	●	●		●										
18.5	16	25	1	●	●	●	●	●			●									
41	35,5	40	1	●	●	●	●	●				●								
61	53	50	1	●	●	●	●	●					●							
162	140	80	1	●	●	●	●	●						●						
231	200	100	1	●	●	●	●	●							●					
462	400	130	1	●	●	●	●	●								●				
728	630	150	1	●	●	●	●	●									●			
1156	1000	200	1	●	●	●	●	●										●		
1850	1600	250	1	●	●	●	●	●											●	
3641	3150	350	1	●	●	●	●	●												●

Rangeability

EXCLUSION:
Stroke = 10 mm only !

Rangeability		Seat Diameter																									
		3	4	6	8	10	12	16	20	25	34	40	42	50	53	67	80	84	100	105	125	130	150	200	250	300	350
Standard	1 : 30	●	●																								
	1 : 50		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Special	1 : 70		●	●	●	●	●	●	●																		
	1 : 100									●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●

Leakage Class for Control Function acc. IEC 60534-4:2006-06 resp. ANSI / FCI 70-2

[1] LF = Leakage rate factor → see IEC 60534-4 Remark 2

Bonnet Design	Type / Trim Design		Leakage Class acc. IEC 60534	Test Medium	Test Pressure (bar)	max. Seat Leakage	Leakage Code
Without Balancing	. . . **P** . . .	metal to metal seated	IV	Liquid	Working Pressure	0,000 1 · kvs	IV L 2
	. . . **Q** . . .	metal to metal seated, ground in	IV-S1 (IEC only)	Liquid	Working Pressure	0,000 005 · kvs	IV-S1 L 2
	. . . **S** . . .	metal to metal seated, ground in, incrased seal force	V	Liquid	Working Pressure	0,000 000 18 · Δp · DN	V L 2
	. . . **T** . . .	soft seated	VI	Gas	Working Pressure, max. 4	0,003 · Δp · LF [1]	VI G 1
V-Ring Balancing	. . . **P** . . .	metal to metal seated	IV	Liquid	Working Pressure	0,000 1 · kvs	IV L 2
	. . . **Q** . . .	soft seated	IV-S1 (IEC only)	Liquid	Working Pressure	0,000 005 · kvs	IV-S1 L 2
Piston-Ring Balancing	. . . **O** . . .	metal to metal seated	III	Liquid	Working Pressure	0,001 · kvs	III L 2

Leakage Class for On / Off Function acc. DIN EN 12266-1:2003-06

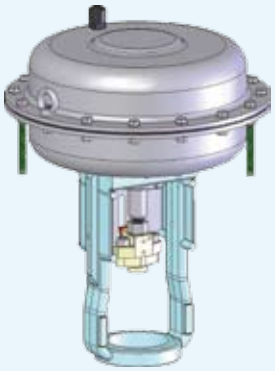
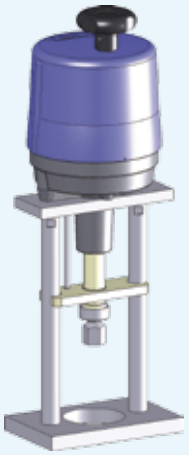
Bonnet Design	Type / Trim Design		Leakage Class acc. EN 12266	Test Medium	Test Pressure (bar)	max. Seat Leakage
Without Balancing	. . . **A** . . .	metal to metal seated	A	Liquid	Working Pressure · 1,1	no leakage viewable
	. . . **B** . . .	metal to metal seated, ground in		Gas	Working Pressure, max. 6	
	. . . **B** . . .	soft seated			Working Pressure, max. 6	

Special Trim Equipment - Details see Special Brochure SAENBRNOIS-00

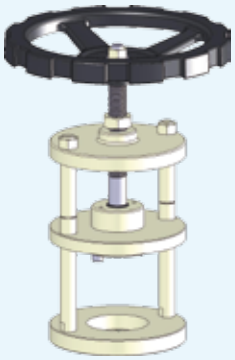
NOTICE → expert knowledge is required for the selection of Trim !
The specified datas are used for a rough orientation only and may not taken for dimensioning !

Type (Trim) Characteristic ..... **G** . → mod. equal per. or ..... **L** . → linear			**Medium**		**Flow**	**Differenrial Pressure**	**Noise Reduction**
SilentPack	**PK**		• clean • high clogging potential for dirty service	Gases and Vapors	..... **G** Flow direction **under** the plug	Type all Standard Trim $\Delta p_C < 0{,}5 \cdot p_1$	max. - 18 dB(A)
MultiStream	**PC**		• clean • marginally contaminated with particles • low clogging potential for dirty service			Type all Standard Trim $\Delta p_C < x_T \cdot p_1$	max. - 10 dB(A)
	PE						max. - 15 dB(A)
	PG						max. - 20 dB(A)
	PD			Liquids		Type PxN → 316 SS PxW → 316 SS $\Delta p_l < x_{FZ} \cdot (p_1 - p_V)$	max. - 4 dB(A)
	PF					Type PxN → 1.4122 PxD → 316 SS $\Delta p_l < (x_{FZ}+0{,}10) \cdot (p_1 - p_V)$	max. - 8 dB(A)
	PH					Type PxH → 1.4122 PxK → 316 SS $\Delta p_l < (x_{FZ}+0{,}15) \cdot (p_1 - p_V)$	max. - 10 dB(A)
	PI					Type PxN → 316 SS PxW → 316 SS $\Delta p_l < (x_{FZ}+0{,}10) \cdot (p_1 - p_V)$	max. - 6 dB(A)
	PQ					Type PxN → 1.4122 PxD → 316 SS $\Delta p_l < (x_{FZ}+0{,}15) \cdot (p_1 - p_V)$	max. - 12 dB(A)
	PW					Type PxH → 1.4122 PxK → 316 SS $\Delta p_l < (x_{FZ}+0{,}20) \cdot (p_1 - p_V)$	max. - 16 dB(A)
Multi Hole Plug	**LO**		• clean • high clogging potential for dirty service	Gases, Vapors and Liquids	..... **G** Flow direction **under** or ..... **I** **over** the plug for Gases and Vapors ..... **G** Flow direction **under** the plug for Liquids only	$\Delta p_l < (x_{FZ}+0{,}20) \cdot (p_1 - p_V)$	max. - 15 dB(A)
RLS Radial Multi-Step System	**AO**					$\Delta p_C < x_T \cdot p_1$	max. - 30 dB(A)
	BO					$\Delta p_l < (x_{FZ}+0{,}10) \cdot (p_1 - p_V)$ $\Delta p_C < x_T \cdot p_1$	
	DO						

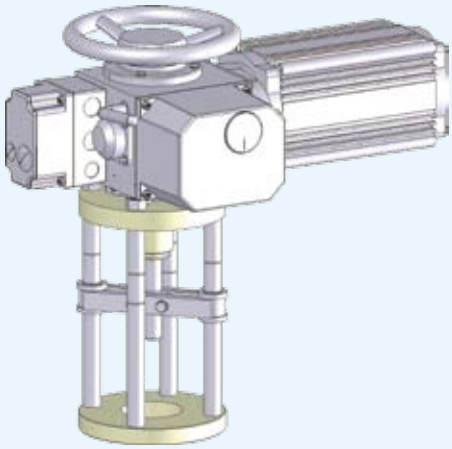
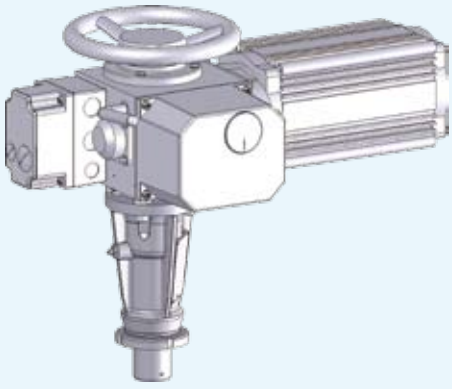
Actuator - „Linear Style“

Actuator Design	Type (Actuator) / Size	min. - max. Force	Air / Power Supply	Failure Position	Hand Wheel
pneumatic operated	**IT 127 252 502 700** **PB 127 252 502 700 1502 3002** Manufacturer: **Flowserve Villach Operation** 	250 N ÷ 60 000 N *depending on Actuator Size*	1,2 bar ÷ 6,0 bar *depending on Actuator Size*	Stem • retracted • extended	• without • top mounted *(option)* • side mounted *(option)* *depending on Actuator Size*
electric operated	**AB 201 202 204 208 210** Manufacturer: **PS Automation GmbH** „Flowserve Design“ 	1 000 N ÷ 10 000 N *depending on Actuator Size*	220 - 240 V → 50 Hz 110 - 115 V → 50 Hz 24 V → 50 Hz 400 V → 50 Hz *depending on Actuator Size*	Stem • locked	• top mounted
	EB 1,2 / 1,2 4,5 / 4,5 8 / 8 12 / 12 20 / 15 20 / 20 25 / 25 Manufacturer: **Haselhofer Feinmechanik GmbH** „Flowserve Design“ 	1 200 N ÷ 25 000 N *depending on Actuator Size*	230 V → 50 Hz 400 V → 50 Hz 24 V DC *depending on Actuator Size*	Stem • locked	• side mounted

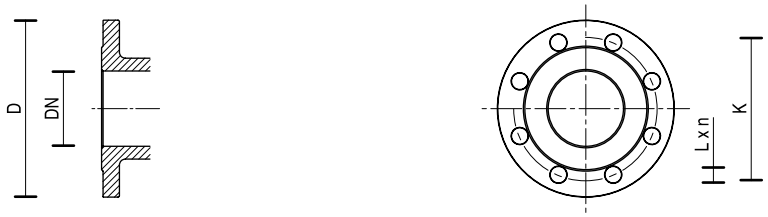
Actuator - „Linear Style“

Actuator Design	Type / Size	min. - max. Force	Power Supply	Failure Position	Hand Wheel
hand operated	**HB 12** **16** **20** Manufacturer: **Flowserve Villach Operation** 	1 300 N ÷ 30 000 N *depending on Actuator Size*	bi-manual Hand operating Force 200 N	Stem • locked	• top mounted

Actuator - „Multi Turn Style“

Actuator Design	Type	max. Force	max. Torque	Actuator Interface	Actuator
Linear thrust Unit „light“ linked to an electric multi turn actuator	**LB 12** **16** **20** Manufacturer: **Flowserve Villach Operation** 	10 400 N ÷ 27 700 N *depending on Linear thrust Unit Size*	30 Nm ÷ 80 Nm *depending on Linear thrust Unit Size*	Output drive ISO 5210 A Connection Flange ISO 5210 F10	adapted for electrical multi turn actuators with output drives version „stem nut“ with trapezoid thread 24 x 5 left
Linear thrust Unit „heavy“ only linked to the bonnet **SN** and an electric multi turn actuator	**SI 15** **35** **36** **75** **120** **200** **300** Manufacturer: **Flowserve Villach Operation** 	15 000 N ÷ 288 000 N *depending on Linear thrust Unit Size*	30 Nm ÷ 1700 Nm *depending on Linear thrust Unit Size*	Output drive ISO 5210 B3 Connection Flange ISO 5210 F10 F14 F16 F25 *depending on Linear thrust Unit Size*	adapted for electrical multi turn actuators with output drives version „bore“ with keyway

Flanged Body Connecting Dimensions



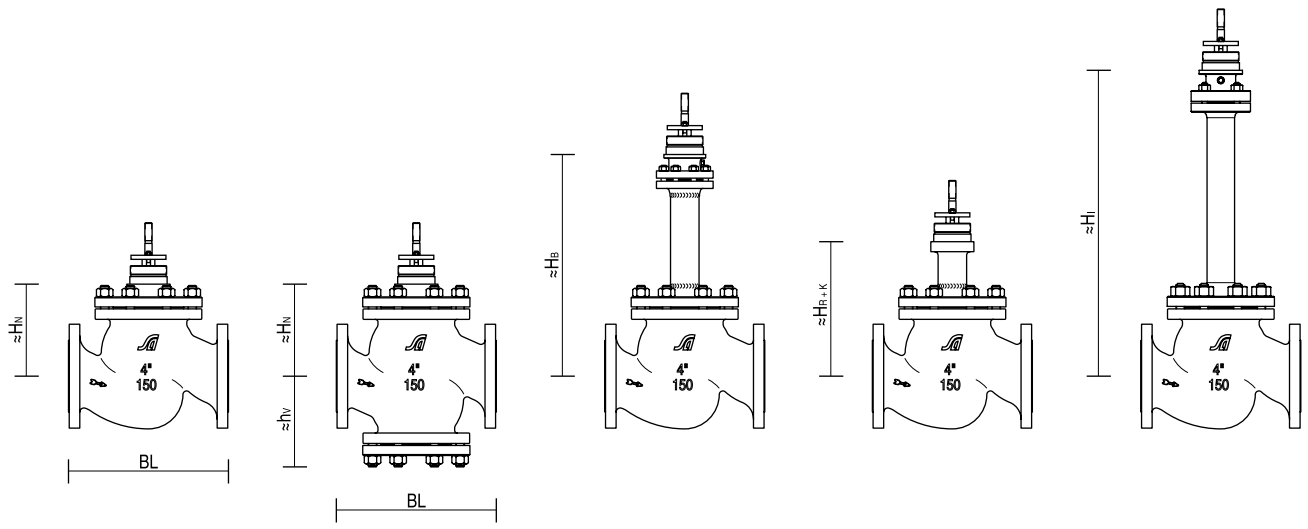
Size (DN)			1/2“	3/4“	1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
Class 150	D	Outside Diameter	90	100	110	125	150	190	230	280	345	405	485	595
	K	Pitch Circle Diameter	60,3	69,9	79,4	98,4	120,7	152,4	190,5	241,3	298,5	362,0	431,8	539,8
	n	Number of Bolts	4	4	4	4	4	4	8	8	8	12	12	16
	L	Hole Diameter	15,9	15,9	15,9	15,9	19,1	19,1	19,1	22,2	22,2	25,4	25,4	28,6
Class 300	D	Outside Diameter	95	115	125	155	165	210	255	320	380	445	520	650
	K	Pitch Circle Diameter	66,7	82,6	88,9	114,3	127,0	168,3	200,0	269,9	330,2	387,4	450,8	571,5
	n	Number of Bolts	4	4	4	4	8	8	8	12	12	16	16	20
	L	Hole Diameter	15,9	19,1	19,1	22,2	19,1	22,2	22,2	22,2	25,4	28,6	31,8	34,9
Connecting Dimensions according to ASME B16.5-2003 in Millimeters														
Class 150	D	Outside Diameter	3.50	3.88	4.25	5.00	6.00	7.50	9.00	11.00	13.50	16.00	19.00	23.50
	K	Pitch Circle Diameter	2.38	2.75	3.12	3.88	4.75	6.00	7.50	9.50	11.75	14.25	17.00	21.25
	n	Number of Bolts	4	4	4	4	4	4	8	8	8	12	12	16
	L	Hole Diameter	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1	1	1 1/8
	Gw	Size of Bolts	1/2“ 13 UNC	1/2“ 13 UNC	1/2“ 13 UNC	1/2“ 13 UNC	5/8“ 11 UNC	5/8“ 11 UNC	5/8“ 11 UNC	3/4“ 10 UNC	3/4“ 10 UNC	7/8“ 9 UNC	7/8“ 9 UNC	1“ 8 UNC
Class 300	D	Outside Diameter	3.75	4.62	4.88	6.12	6.50	8.25	10.00	12.50	15.00	17.50	20.50	25.50
	K	Pitch Circle Diameter	2.62	3.25	3.50	4.50	5.0	6.62	7.88	10.62	13.00	15.25	17.75	22.50
	n	Number of Bolts	4	4	4	4	8	8	8	12	12	16	16	20
	L	Hole Diameter	5/8	3/4	3/4	7/8	3/4	7/8	7/8	7/8	1	1 1/8	1 1/4	1 3/8
	Gw	Size of Bolts	1/2“ 13 UNC	5/8“ 11 UNC	5/8“ 11 UNC	3/4“ 10 UNC	5/8“ 11 UNC	3/4“ 10 UNC	3/4“ 10 UNC	3/4“ 10 UNC	7/8“ 9 UNC	1“ 8 UNC	1 1/8“ 7 UNC	1 1/4“ 7 UNC
Connecting Dimensions according to ASME B16.5-2003 in inches														

Welded Body Connecting Dimensions

Size (DN)			1/2“	3/4“	1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
Class 150 Class 300	d_3	Outside Diameter	21,3	26,7	33,7	48,3	60,3	88,9	114,3	168,3	219,1	273,0	323,8	406,4
	s	Pipe thickness	2,75	2,9	3,4	3,7	3,9	5,5	6,0	7,1	8,2	9,2	9,5	12,7
Preferred proposal for pipe Connecting Dimensions according to ASME B 16.25-2003, Schedule 40 in Millimeters														
Class 150 Class 300	d_3	Outside Diameter	0.84	1.05	1.33	1.90	2.37	3.50	4.50	6.63	8.63	10.75	12.75	16.00
	s	Pipe thickness	0.11	0.11	0.13	0.15	0.15	0.22	0.24	0.28	0.32	0.36	0.37	0.50
Preferred proposal for pipe Connecting Dimensions according to ASME B 16.25-2003, Schedule 40 in inches														

Dimensions and Weights - Class 150

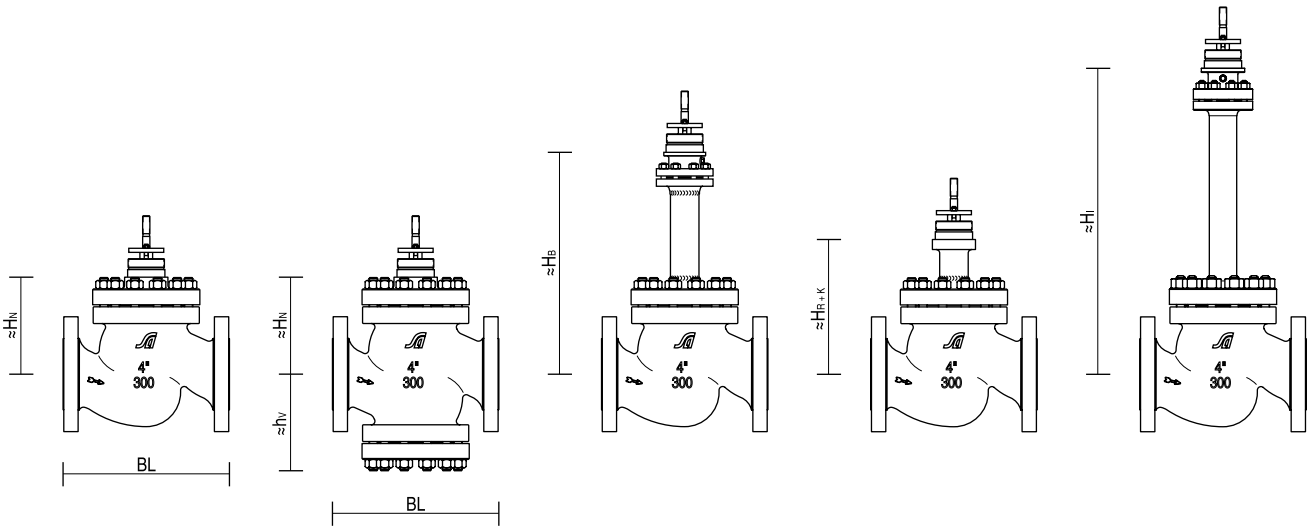
Three Flange, Four Flange



Description		Nominal Size											
		1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"
Stroke (mm)		20					40		60	80			100
BL	Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002 Raised Face	184	184	184	222	254	298	352	451	543	673	737	1016
≈ h V	Centerline to Bottom Flange Dimension (mm)									350	430	470	540
≈ Height (mm)	H N for Standard Bonnet	115	115	115	140	140	205	205	270	370	460	490	560
	H B for Bellows Seal Bonnet	265	265	265	265	265	420	420	660	760	765	770	1280
	H R + K for High / Low Temperature Bonnet	220	220	220	220	220	310	310	445	510	600	630	700
	H I for Insulating Bonnet	650	650	650	650	650	650	650	670	800	800	800	800
≈ Weight (kg) for Valves with Three-Flange Body	and Standard-Bonnet	6,2	7,3	7,3	13,4	17,4	42	62	91	203			
	and Bellows Seal Bonnet	10	11	11	17	21	49	69	105	223			
	and High / Low Temperature Bonnet	7,5	8,6	8,6	14,2	18,2	43	63	95	206			
	and Insulating Bonnet	9,2	10,3	10,3	16,4	20,4	45	65	104	218			
≈ Weight (kg) for Valves with Four-Flange Body	and Standard Bonnet									261	499	674	1377
	and Bellows Seal Bonnet									280	517	691	1407
	and High / Low Temperature Bonnet									264	501	677	1382
	and Insulating Bonnet									280	517	691	1387
Flanges drilled and dimensioned acc. to		ASME B16.5-2003 in Millimeters											
Welded ends comply with		ASME B16.25-2003, Schedule 40 in Millimeters											
BL	Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002 Raised Face	7.25	7.25	7.25	8.75	10.00	11.75	13.88	17.75	21.38	26.50	29.00	40.00
≈ h V	Centerline to Bottom Flange Dimension (in.)									13.77	16.93	18.50	21.26
≈ Height (in.)	H N for Standard Bonnet	4.53	4.53	4.53	5.51	5.51	8.07	8.07	10.63	14.57	18.11	19.29	20.05
	H B for Bellows Seal Bonnet	10.43	10.43	10.43	10.43	10.43	16.55	16.55	25.98	29.92	30.12	30.32	50.39
	H R + K for High / Low Temperature Bonnet	8.66	8.66	8.66	8.66	8.66	310	12.20	17.52	20.08	23.62	24.80	27.56
	H I for Insulating Bonnet	25.59	25.59	25.59	25.59	25.59	25.59	25.59	26.38	31.50	31.50	31.50	31.50
≈ Weight (lbs) for Valves with Three-Flange Body	and Standard-Bonnet	13.7	16.1	16.1	29.5	38.4	92.6	137	201	448			
	and Bellows Seal Bonnet	22.0	24.3	24.3	37.5	46.3	108.0	152	232	492			
	and High / Low Temperature Bonnet	16.5	19.0	19.0	31.3	40.1	94.8	139	209	454			
	and Insulating Bonnet	20.3	22.7	22.7	36.2	45.0	99.2	143	229	481			
≈ Weight (lbs) for Valves with Four-Flange Body	and Standard Bonnet									575	1 100	1 486	3 035
	and Bellows Seal Bonnet									617	1 140	1 523	3 102
	and High / Low Temperature Bonnet									582	1 105	1 493	3 047
	and Insulating Bonnet									617	1 140	1 523	3 058
Flanges drilled and dimensioned acc. to		ASME B16.5-2003 in inches											
Welded ends comply with		ASME B16.25-2003, Schedule 40 in inches											

Dimensions and Weights - Class 300

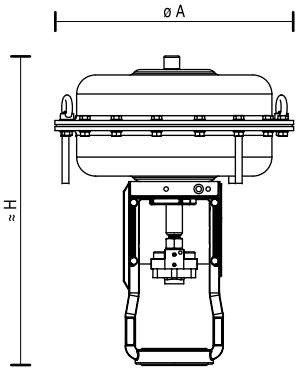
Three Flange, Four Flange



Description			Nominal Size										
			1/2"	3/4"	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"	16"
		Stroke (mm)	20					40		60	80			100
BL	Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002	Raised Face	190	194	197	235	267	318	368	473	568	708	775	1057
		Ring Joint Face	202	206	210	248	283	333	384	489	584	724	791	1073
≈ hV	Centerline to Bottom Flange Dimension (mm)										350	430	470	540
≈ Height (mm)	HN	for Standard Bonnet	115	115	115	140	140	205	205	270	370	460	490	560
	HB	for Bellows Seal Bonnet	265	265	265	265	265	420	420	660	760	765	770	1280
	HR+K	for High / Low Temperature Bonnet	220	220	220	220	220	310	310	445	510	600	630	700
	HI	for Insulating Bonnet	650	650	650	650	650	650	650	670	800	800	800	800
≈ Weight (kg) for Valves with Three-Flange Body		and Standard-Bonnet	6,3	8,1	8,1	15,5	18,6	47	72	134	231			
		and Bellows Seal Bonnet	10	12	12	19	22	54	79	150	251			
		and High / Low Temperature Bonnet	7,6	9,4	9,4	16,3	19,4	49	74	138	234			
		and Insulating Bonnet	9,3	11,1	11,1	18,5	21,6	50	75	147	246			
≈ Weight (kg) for Valves with Four-Flange Body		and Standard Bonnet									289	542	724	1455
		and Bellows Seal Bonnet									308	560	741	1485
		and High / Low Temperature Bonnet									292	544	727	1460
		and Insulating Bonnet									308	560	741	1465
Flanges drilled and dimensioned acc. to			ASME B16.5-2003 in Millimeters											
Welded ends comply with			ASME B16.25-2003, Schedule 40 in Millimeters											
BL	Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002	Raised Face	7.50	7.62	7.75	9.25	10.50	12.50	14.50	18.62	22.38	27.88	30.50	40.62
		Ring Joint Face	7.94	8.12	8.25	9.75	11.12	13.12	15.12	19.24	23.00	28.50	31.12	42.24
≈ hV	Centerline to Bottom Flange Dimension (in.)										13.77	16.93	18.50	21.26
≈ Height (in.)	HN	for Standard Bonnet	4.53	4.53	4.53	5.51	5.51	8.07	8.07	10.63	14.57	18.11	19.29	20.05
	HB	for Bellows Seal Bonnet	10.43	10.43	10.43	10.43	10.43	16.55	16.55	25.98	29.92	30.12	30.32	50.39
	HR+K	for High / Low Temperature Bonnet	8.66	8.66	8.66	8.66	8.66	310	12.20	17.52	20.08	23.62	24.80	27.56
	HI	for Insulating Bonnet	25.59	25.59	25.59	25.59	25.59	25.59	25.59	26.38	31.50	31.50	31.50	31.50
≈ Weight (lbs) for Valves with Three-Flange Body		and Standard-Bonnet	13.9	17.9	17.9	34.2	41.0	104	159	295	509			
		and Bellows Seal Bonnet	22.0	26.5	26.5	41.9	48.5	119	174	331	553			
		and High / Low Temperature Bonnet	16.8	20.7	20.7	35.9	42.8	108	163	304	519			
		and Insulating Bonnet	20.5	24.5	24.5	40.8	47.6	110	165	324	542			
≈ Weight (lbs) for Valves with Four-Flange Body		and Standard Bonnet									637	1 195	1 596	3 208
		and Bellows Seal Bonnet									679	1 235	1 633	3 274
		and High / Low Temperature Bonnet									645	1 199	1 603	3 219
		and Insulating Bonnet									679	1 235	1 634	3 230
Flanges drilled and dimensioned acc. to			ASME B16.5-2003 in inches											
Welded ends comply with			ASME B16.25-2003, Schedule 40 in inches											

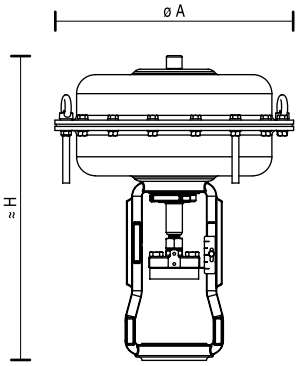
Pneumatic linear Actuator
with multi-function Yoke

Description	Area (cm²)	125	250	500		700	
	Stroke (mm)	10 / 20		20	40	20	40
Ø A (mm)		198	265	352	352	405	405
≈ H (mm)		320	335	455	560	545	550
≈ Weight (kg)		11	16	31	40	46	46
Ø A (in.)		7.80	10.43	13.86	13.86	15.94	15.94
≈ H (in.)		12.60	13.20	17.91	22.05	21.46	21.65
≈ Weight (lbs)		24	35	68	88	101	101

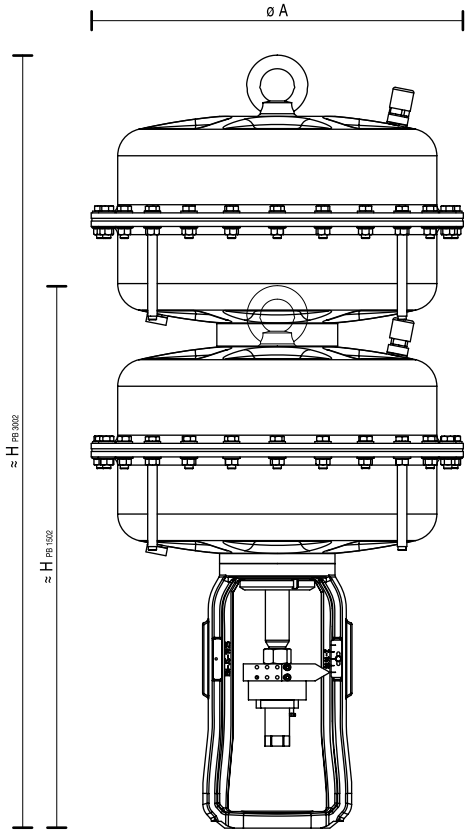


Pneumatic linear Actuator
with NAMUR-Yoke

Description	Area (cm²)	250	500		700		
	Stroke (mm)	10 / 20	20	40	20	40	60
Ø A (mm)		265	352	352	405	405	405
≈ H (mm)		330	420	450	545	545	600
≈ Weight (kg)		16	31	40	46	46	46
Ø A (in.)		10.43	13.86	13.86	15.94	15.94	15.94
≈ H (in.)		12.99	16.54	17.72	21.46	21.46	23.62
≈ Weight (lbs)		35	68	88	101	101	101

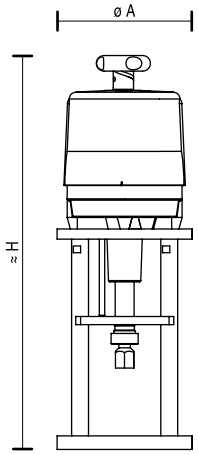


Description	Area (cm²)	1500	3000
	Stroke (mm)	20 / 40 / 60 / 80 / 100	40 / 60 / 80 / 100
Ø A (mm)		548	548
≈ H (mm)		800	1140
≈ Weight (kg)		124	240
Ø A (in.)		21.57	21.57
≈ H (in.)		31.49	44.88
≈ Weight (lbs)		273	529



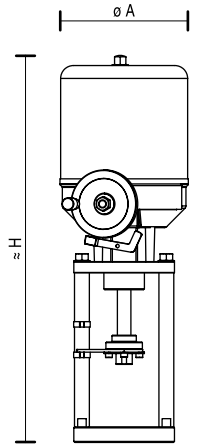
PSL - Electric linear Actuator

Description	Electric linear Actuator	AB 201	AB 202	AB 204	AB 208	AB 210
	Stroke (mm)	20	20 / 40			
Ø A (mm)		219	219	219	236	236
≈ H (mm)		462	462	462	585	585
≈ Weight (kg)		5,5	5,7	9,5	12	12
Ø A (in.)		8.62	8.62	8.62	9.29	9.29
≈ H (in.)		18.19	18.19	18.19	23.03	23.03
≈ Weight (lbs)		12	13	21	26	26



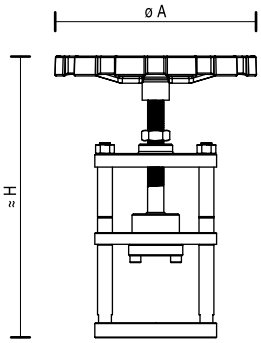
Haselhofer - Electric linear Actuator

Description	Electric linear Actuator	EB 1,2	EB 4,5	EB 8	EB 12	EB 20	EB 25
	Stroke (mm)	10 / 20	20 / 40 / 60 / 80			40 / 60 / 80	
Ø A (mm)		145	145	184	184	216	216
≈ H (mm)		505	535	570	570	660	660
≈ Weight (kg)		6,5	7,5	13	13	19	19
Ø A (in.)		5.71	5.71	7.24	7.24	8.50	8.50
≈ H (in.)		19.88	21.06	22.44	22.44	25.98	25.98
≈ Weight (lbs)		14	17	29	29	42	42



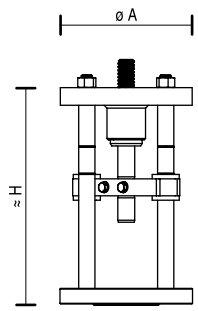
Manual Operation

Description	Manual Operation	HB 12	HB 16	HB 20
	Stroke (mm)	20	40	60 / 80
Ø A (mm)		300	300	400
≈ H (mm)		400	450	480
≈ Weight (kg)		17	17	18
Ø A (in.)		11.81	11.81	15.75
≈ H (in.)		15.75	17.72	18.90
≈ Weight (lbs)		37	37	40



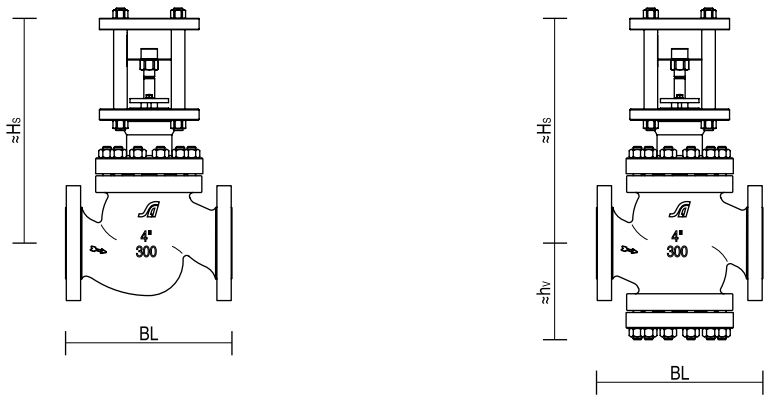
Linear thrust Unit „light“

Description	Linear thrust Unit	LB 12	LB 16	LB 20
	Stroke (mm)	20	40	60 / 80
Ø A (mm)		196	196	196
≈ H (mm)		240	320	407
≈ Weight (kg)		12	17	20
Ø A (in.)		7.72	7.72	7.72
≈ H (in.)		9.45	12.60	16.02
≈ Weight (lbs)		26	37	44



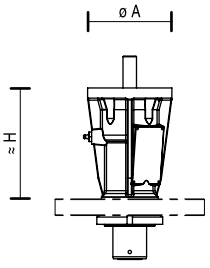
Dimensions and Weights - Class 300

Three Flange, Four Flange with „Heavy Duty“ Bonnet only



Description		Nominal Size									
		1“	1 1/2“	2“	3“	4“	6“	8“	10“	12“	16“
	Stroke (mm)	20			40		60	80			100
BL Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002	Raised Face	197	235	267	318	368	473	568	708	775	1057
	Ring Joint Face	210	248	283	333	384	489	584	724	791	1073
≈ h v Centerline to Bottom Flange Dimension (mm)								350	430	470	540
≈ H s for Standard Bonnet „Heavy Duty Design“ (mm)		275	290	290	460	475	600	790	890	930	1000
≈ Weight (kg)	Three Flange Valve and Standard-Bonnet „HDD“	13,1	19,5	22	64	84	150	318			
	Four Flange Valve and Standard-Bonnet „HDD“							376	686	945	1600
Flanges drilled and dimensioned acc. to		ASME B16.5-2003 in Millimeters									
Welded ends comply with		ASME B16.25-2003, Schedule 40 in Millimeters									
BL Face to Face Dimensions acc. to ANSI/ISA-75.08.01-2002	Raised Face	7.75	9.25	10.50	12.50	14.50	18.62	22.38	27.88	30.50	40.62
	Ring Joint Face	8.25	9.75	11.12	13.12	15.12	19.24	23.00	28.50	31.12	42.24
≈ h v Centerline to Bottom Flange Dimension (in.)								13.77	16.93	18.50	21.26
≈ H s for Standard Bonnet „Heavy Duty Design“ (in.)		10.83	11.42	11.42	18.11	18.70	23.62	31.10	35.04	36.61	39.37
≈ Weight (lbs)	Three Flange Valve and Standard-Bonnet „HDD“	29	43	49	141	185	331	701			
	Four Flange Valve and Standard-Bonnet „HDD“							829	1 512	2 083	3 527
Flanges drilled and dimensioned acc. to		ASME B16.5-2003 in inches									
Welded ends comply with		ASME B16.25-2003, Schedule 40 in inches									

Linear thrust Unit „heavy“



Description	Linear thrust Unit	SI 15	SI 35	SI 36	SI 75	SI 120	SI 200	SI 300
	Stroke (mm)	20 / 40		60 / 80 / 100				
Ø A (mm)		125	127	175	175	175	210	300
≈ H (mm)		165	165	290	280	280	335	410
≈ Weight (kg)		7,5	7,5	25	22	22	46	93
Ø A (in.)		4.92	5.00	6.89	6.89	6.89	8.27	11.81
≈ H (in.)		6.50	6.50	11.42	11.02	11.02	13.19	16.14
≈ Weight (lbs)		17	17	55	49	49	101	205

SPM - Code

Type	Size	Class	Body / Cert.	Plug	Seat	cv	Trim	Actuator
V738 DFVNA	**2“**	**150**	**A216WCB/OOAO**	**PONP1GG**	**50**	**55**	**316SS**	

Valve Model

ANSI 150	V738
ANSI 300	V740

Body Form

Three-Flange	D
Three-Flange with Heating Jacket	H
Four-Flange	V
Four-Flange with Heating Jacket	G

Form of Connection

Flage acc. to ASME B16.5	Form RF	F
	Form RTJ	J
Welded Ends acc. to ASME B 16.25		W

Bonnet Form

without Pressure Balancing	V
with V-Ring Balancing	O
with Piston-Ring Balancing	K
with Heavy Duty Design	S

Bonnet Assembly

Standard Bonnet	N
Bellows seal Bonnet	B
HT Extension Bonnet	R
LT Extension Bonnet	K
Insulating Bonnet	I

Packing Box Assembly

Teflon-Rings, adjustable BAM	A
Graphite-Rings, adjustable BAM	B
Teflon-Rings, loaded, BAM	N
Graphite-Rings, loaded, BAM	O
Teflon with Graphite, loaded, "TA"	Q
Graphite-Rings, loaded, "TA"	V
V-Ring Packing System	S

Nominal Size 1/2“ - 16“

Nominal Pressure

V738	Class	150
V740	Class	300

Body Material

A216 WCB
A352 LCB
A351 CF8M
A217 WC6
A351 CF8

Materials acc. to international Standards for Pressure Stressed Parts

Standards for Materials

without	DGRL (Standard)	O . . .

Certificates for Materials

without		. O . .
EN 10 204	2.2	. Z . .
	3.1 (Survay of. Cert)	. B . .
	3.1 (CMTR: B+B)	. D . .
	3.1 (CMTR: B+B+B)	. E . .
	3.1 (CMTR: B+B+B+T)	. H . .
	3.2	. A . .

Plug, Seat Material

316SS
1.4122
1.4922

cv - Value 0.012 - 3 237

Port Size 3 - 250

Flow under the plug G
Flow over the plug I

Characterstic

modified - equal percentage	G
linear	L
on / off	A
modified - equal percentage with Special Rangeability	H

Plug Guiding

Top	1
Top and Bottom	2

Seat Leakage

IEC 60534	Class III	O
	Class IV	P
	Class IV - S1	Q
	Class V	S
	Class VI	T
EN 12 266	LR A (DIN 3230 BN)	A
	LR A (DIN 3230 BO)	B

Plug Form

standard	N
partial stellited	D
contour stellited	K
soft seated	W
hardened	H
tenifer treaded	T

Plug

Contured Plug without Silent-Set	P O
with Silentpack	P K
with MultiStream Type C	P C
with MultiStream Type D	P D
with MultiStream Type E	P E
with MultiStream Type F	P F
with MultiStream Type G	P G
with MultiStream Type H	P H
with MultiStream Type I	P I
with MultiStream Type Q	P Q
with MultiStream Type W	P W
Disk Plug	T O
Multi-Hole Plug	L O
RLS-Unit, 2-step, Series I	A O
RLS-Unit, 2-step, Series II	B O
RLS-Unit, 3-step, Series II	D O

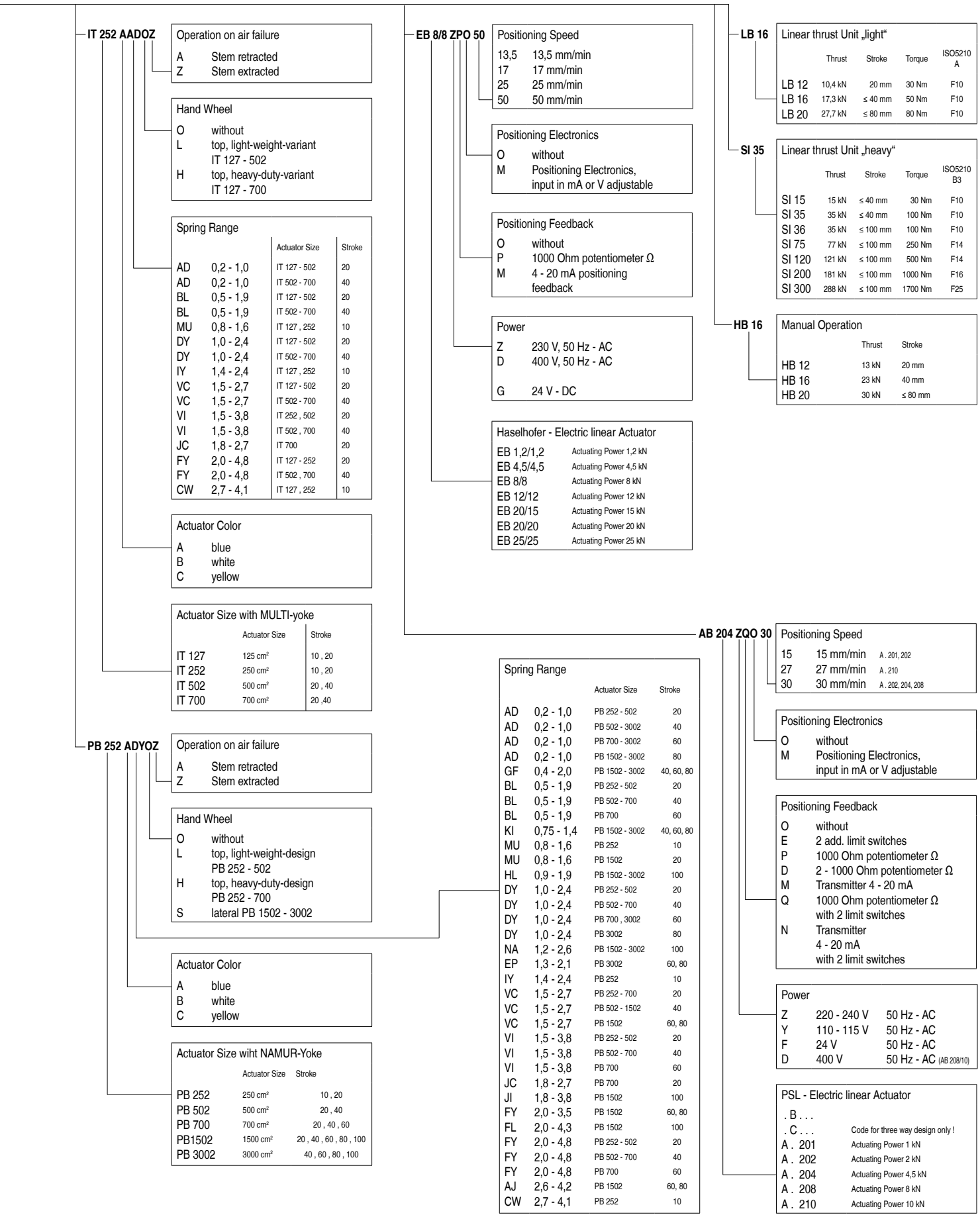
Standards and Certificates for final test

Standards for final test

without	EN 1349 (Standard)	. . A .
DGRL	Kat. IV	. . M .

Certificates for final test

without		. . . O
EN 10 204	2.2	. . . Z
	3.1	. . . B
	3.2	. . . A


IT 252 AADOZ
Operation on air failure
A Stem retracted
Z Stem extracted
Hand Wheel
O without
L top, light-weight-variant IT 127 - 502
H top, heavy-duty-variant IT 127 - 700
Spring Range
AD 0,2 - 1,0 IT 127 - 502 20
AD 0,2 - 1,0 IT 502 - 700 40
BL 0,5 - 1,9 IT 127 - 502 20
BL 0,5 - 1,9 IT 502 - 700 40
MU 0,8 - 1,6 IT 127 , 252 10
DY 1,0 - 2,4 IT 127 - 502 20
DY 1,0 - 2,4 IT 502 - 700 40
IY 1,4 - 2,4 IT 127 , 252 10
VC 1,5 - 2,7 IT 127 - 502 20
VC 1,5 - 2,7 IT 502 - 700 40
VI 1,5 - 3,8 IT 252 , 502 20
VI 1,5 - 3,8 IT 502 , 700 40
JC 1,8 - 2,7 IT 700 20
FY 2,0 - 4,8 IT 127 - 252 20
FY 2,0 - 4,8 IT 502 , 700 40
CW 2,7 - 4,1 IT 127 , 252 10
Actuator Color
A blue
B white
C yellow
Actuator Size with MULTI-yoke
IT 127 125 cm² 10 , 20
IT 252 250 cm² 10 , 20
IT 502 500 cm² 20 , 40
IT 700 700 cm² 20 ,40
PB 252 ADYOZ
Operation on air failure
A Stem retracted
Z Stem extracted
Hand Wheel
O without
L top, light-weight-design PB 252 - 502
H top, heavy-duty-design PB 252 - 700
S lateral PB 1502 - 3002
Actuator Color
A blue
B white
C yellow
Actuator Size wiht NAMUR-Yoke
PB 252 250 cm² 10 , 20
PB 502 500 cm² 20 , 40
PB 700 700 cm² 20 , 40 , 60
PB1502 1500 cm² 20 , 40 , 60 , 80 , 100
PB 3002 3000 cm² 40 , 60 , 80 , 100
EB 8/8 ZPO 50
Positioning Speed
13,5 13,5 mm/min
17 17 mm/min
25 25 mm/min
50 50 mm/min
Positioning Electronics
O without
M Positioning Electronics, input in mA or V adjustable
Positioning Feedback
O without
P 1000 Ohm potentiometer Ω
M 4 - 20 mA positioning feedback
Power
Z 230 V, 50 Hz - AC
D 400 V, 50 Hz - AC
G 24 V - DC
Haselhofer - Electric linear Actuator
EB 1,2/1,2 Actuating Power 1,2 kN
EB 4,5/4,5 Actuating Power 4,5 kN
EB 8/8 Actuating Power 8 kN
EB 12/12 Actuating Power 12 kN
EB 20/15 Actuating Power 15 kN
EB 20/20 Actuating Power 20 kN
EB 25/25 Actuating Power 25 kN
LB 16
Linear thrust Unit „light“
LB 12 10,4 kN 20 mm 30 Nm F10
LB 16 17,3 kN ≤ 40 mm 50 Nm F10
LB 20 27,7 kN ≤ 80 mm 80 Nm F10
SI 35
Linear thrust Unit „heavy“
SI 15 15 kN ≤ 40 mm 30 Nm F10
SI 35 35 kN ≤ 40 mm 100 Nm F10
SI 36 35 kN ≤ 100 mm 100 Nm F10
SI 75 77 kN ≤ 100 mm 250 Nm F14
SI 120 121 kN ≤ 100 mm 500 Nm F14
SI 200 181 kN ≤ 100 mm 1000 Nm F16
SI 300 288 kN ≤ 100 mm 1700 Nm F25
HB 16
Manual Operation
HB 12 13 kN 20 mm
HB 16 23 kN 40 mm
HB 20 30 kN ≤ 80 mm
AB 204 ZQO 30
Positioning Speed
15 15 mm/min A . 201, 202
27 27 mm/min A . 210
30 30 mm/min A . 202, 204, 208
Positioning Electronics
O without
M Positioning Electronics, input in mA or V adjustable
Positioning Feedback
O without
E 2 add. limit switches
P 1000 Ohm potentiometer Ω
D 2 - 1000 Ohm potentiometer Ω
M Transmitter 4 - 20 mA
Q 1000 Ohm potentiometer Ω with 2 limit switches
N Transmitter 4 - 20 mA with 2 limit switches
Power
Z 220 - 240 V 50 Hz - AC
Y 110 - 115 V 50 Hz - AC
F 24 V 50 Hz - AC
D 400 V 50 Hz - AC (AB 208/10)
PSL - Electric linear Actuator
. B . . .
. C . . . Code for three way design only !
A . 201 Actuating Power 1 kN
A . 202 Actuating Power 2 kN
A . 204 Actuating Power 4,5 kN
A . 208 Actuating Power 8 kN
A . 210 Actuating Power 10 kN
Spring Range
AD 0,2 - 1,0 PB 252 - 502 20
AD 0,2 - 1,0 PB 502 - 3002 40
AD 0,2 - 1,0 PB 700 - 3002 60
AD 0,2 - 1,0 PB 1502 - 3002 80
GF 0,4 - 2,0 PB 1502 - 3002 40, 60, 80
BL 0,5 - 1,9 PB 252 - 502 20
BL 0,5 - 1,9 PB 502 - 700 40
BL 0,5 - 1,9 PB 700 60
KI 0,75 - 1,4 PB 1502 - 3002 40, 60, 80
MU 0,8 - 1,6 PB 252 10
MU 0,8 - 1,6 PB 1502 20
HL 0,9 - 1,9 PB 1502 - 3002 100
DY 1,0 - 2,4 PB 252 - 502 20
DY 1,0 - 2,4 PB 502 - 700 40
DY 1,0 - 2,4 PB 700 , 3002 60
DY 1,0 - 2,4 PB 3002 80
NA 1,2 - 2,6 PB 1502 - 3002 100
EP 1,3 - 2,1 PB 3002 60, 80
IY 1,4 - 2,4 PB 252 10
VC 1,5 - 2,7 PB 252 - 700 20
VC 1,5 - 2,7 PB 502 - 1502 40
VC 1,5 - 2,7 PB 1502 60, 80
VI 1,5 - 3,8 PB 252 - 502 20
VI 1,5 - 3,8 PB 502 - 700 40
VI 1,5 - 3,8 PB 700 60
JC 1,8 - 2,7 PB 700 20
JI 1,8 - 3,8 PB 1502 100
FY 2,0 - 3,5 PB 1502 60, 80
FL 2,0 - 4,3 PB 1502 100
FY 2,0 - 4,8 PB 252 - 502 20
FY 2,0 - 4,8 PB 502 - 700 40
FY 2,0 - 4,8 PB 700 60
AJ 2,6 - 4,2 PB 1502 60, 80
CW 2,7 - 4,1 PB 252 10

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SAEEBRV740-01 02.09

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Experience In Motion