FLOWSERVE

FlowPro™

High Performance Valve

1“ - 12“, Class 600

Experience In Motion

Application

Control of gases, vapours and liquids.

The modular concept of valve, multi spring actuator and our standard Positioner facililates trouble free expansion to allow for the communication capability of the **FLOWPRO** Valve System.

With its simple design the **FLOWPRO** modular concept has a wide range of application.

Product features

Body shape gives optimum flow characeristic

- Excellent flow dynamics when correctly selected
- Heavy top guided plug
- Largest possible cv-values

Long service life and operational reliability

- With aggressive or evaporating media due to sturdy design
- Strong guides, give minimum vibration and wear

Replaceable trim

- Simple maintenance as the valve body remains in the piping when trim is replaced
- Screwed seat

Wide range of application

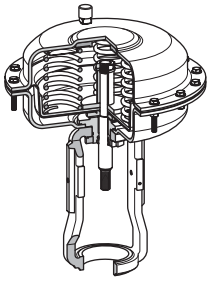
- Up to 8 cv-values are available per size
- Trims are generally interchangeable
- Spring loaded packing available

Certificates and Licenses

- **Quality assurance system certificated acc. EN ISO 9001 : 2000 including product development**
- **PED 97/23/EC Module H**
- **AK 7 Design acc. to DIN V19250/51 for Valves**

The System

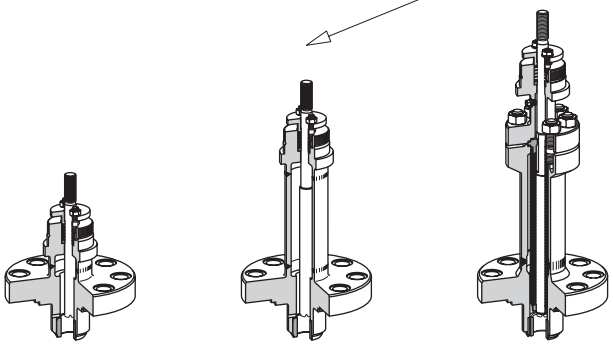
Actuators



Pneumatic linear Actuator

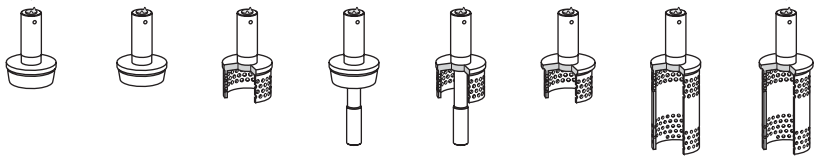
Suitable for pneumatic or electrical linear actuators

Bonnets



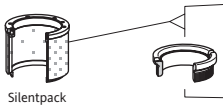
Standard Bonnet | Extension Bonnet | Bellows seal Bonnet

Trim



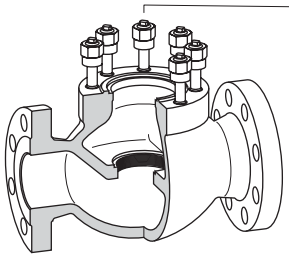
Contoured Plug | Disk Plug | Perfo-rated Plug | Contou-red Plug, top and bottom guided | Perfo-rated Plug, top and bottom guided | RLS two-step Series 1 | RLS two-step Series 2 | RLS three-step Series 2

Screwed Seats



Silentpack

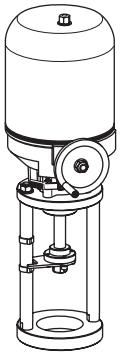
Bodies



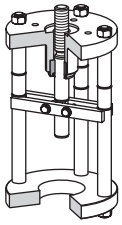
Three-Flange Body, 1" - 4"

Covers

Within the series following combinations of bodies, trim, bonnets and actuators for each valve size are possible:

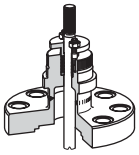


Haselhofer
Electric linear Actuator

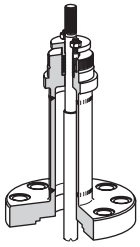


Linear thrust Unit for
Electric rotary Actuators

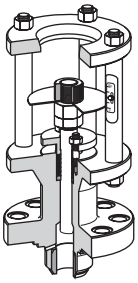
Suitable for linear thrust units and electric rotary actuators



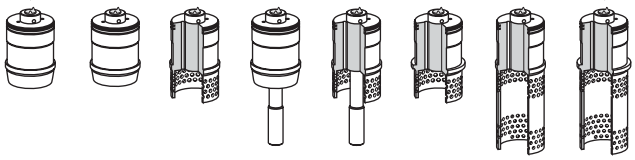
Standard Bonnet,
pressure-balanced



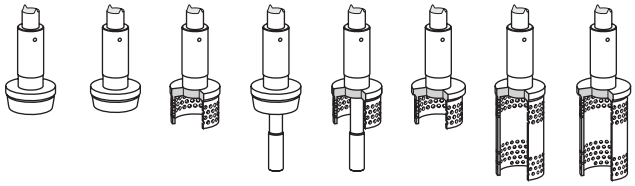
Extension Bonnet,
pressure-balanced



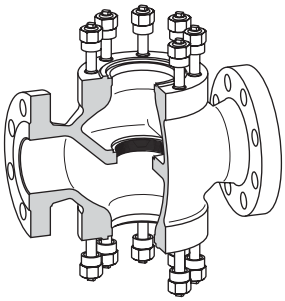
Bonnet (heavy duty design)



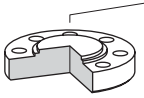
Contoured Plug
Disk Plug
Perfo-rated Plug
Contou-red Plug, top and bottom guided
Perfo-rated Plug, top and bottom guided
RLS two-step Series 1
RLS two-step Series 2
RLS three-step Series 2



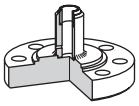
Contoured Plug
Disk Plug
Perfo-rated Plug
Contou-red Plug, top and bottom guided
Perfo-rated Plug, top and bottom guided
RLS two-step Series 1
RLS two-step Series 2
RLS three-step Series 2



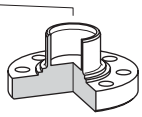
Four-Flange Body, 6" - 12"



Cover



Bottom Flange for Plugs with top and bottom guiding



Bottom Flange with control edge for RLS, Series 2

Body with Flange Connection

Body	Material	Certificate without	Certificate with	Nominal Size DN 1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
Three-Flange	A216 WCB	Material resp. Pressure/ leakage certificate	Material resp. Pressure/ leakage certificate acc. to	●	●	●	●	●				
	A351 CF8M			●	●	●	●	●				
	A217 WC6	Schmidt minimal Valve Standards acc. to	EN 10 204 2.2, 3.1B, 3.1A	●	●	●	●	●				
Four-Flange	A216 WCB		Schmidt valves acc. to						●	●	●	●
	A351 CF8M	PED 97/23EC Kat. III	Customer Standard						●	●	●	●
	A217 WC6		PED 97/23EC Kat. IV						●	●	●	●

Form of Connection, Nominal Pressure Range

Form of Connection		
Flanges acc. to ANSI B16.5	Form RF	●
	Form RTJ	●
No standard	Form RFS	●

ANSI Class	Nominal Size DN 1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
600	●	●	●	●	●	●	●	●	●

Pressure-Temperature Ratings (acc. to ASME B 16.34a)

ANSI Class	Body Material	Service Temperature in		-20	100	212	302	392	482	572	662	752	800	842	932	1000
			°F	-20	100	212	302	392	482	572	662	752	800	842	932	1000
			°C	-29	38	100	150	200	250	300	350	400	427	450	500	538
600	A216 WCB	Working Pressures in	psi	1480	1480	1345	1314	1273	1212	1124	1072	1002	825			
			bar	102	102	93	91	88	84	78	74	69	57			
	A351 CF8M	Working Pressures in	psi	1440	1440	1225	1118	1032	967	915	885	854	845			
			bar	99	99	85	77	71	67	63	61	59	58			
	A217 WC6	Working Pressures in	psi	1500	1500	1493	1443	1389	1340	1243	1165	1063	1015	982	733	430
			bar	103	103	103	100	96	92	86	80	73	70	68	51	30

Bonnet

Pressure Balancing	Body Material	Nominal Size	Bonnet: Standard Bonnet (Use: general, up to 482 °F resp. 250 °C)	Bonnet: Extension Bonnet (Use: in case of possible overheating of packing and/or linear actuator, without pressure balancing up to 1000 °F resp. 538 °C)	Bonnet: Bellows seal Bonnet (Use: toxic, smell strong, fleeting, costly media, up to 752 °F resp. 400 °C)
Unbalanced, shaft guided suitable for linear actuators	A216 WCB	1" to 12"	●	●	●
	A351 CF8M		●	●	●
	A217 WC6		●	●	●
V-Ring balanced, suitable for linear actuators, up to 482 °F resp. 250 °C	A216 WCB	3" to 12"	●		
	A351 CF8M		●		
Piston-Ring balanced, suitable for linear actuators, up to 842 °F resp. 450 °C	A216 WCB	2" to 12"		●	
	A217 WC6			●	
Unbalanced, suitable for linear thrust units, up to 1000 °F resp. 538 °C	A216 WCB	1" to 12"	●		
	A351 CF8M		●		
	A217 WC6		●		

Packing Box

Type of Packing			Bonnet: Standard Bonnet	Bonnet: Extension Bonnet	Bonnet: Bellows seal Bonnet
standard	PTFE-Rings	-20 °F up to 482 °F resp. -29 °C up to 250 °C, general use, BAM	●		●
	Pure Grafite-Rings	-20 °F up to 1000 °F resp. -29 °C up to 538 °C, general use, BAM	●	●	●
loaded	PTFE-Rings	-20 °F up to 482 °F resp. -29 °C up to 250 °C, general use, BAM	●		●
	Pure Grafite-Rings	-20 °F up to 1000 °F resp. -29 °C up to 538 °C, general use, BAM	●	●	●

Plug

Plug Type	Characteristic	Design						Guide of Plug		Flow	
		standard	partial stellited	full stellited	soft [3] seated	hardened	nitrided	Top guided Seat 4 - 250	Top and bottom guided (only Four-Flange) Seat 84 - 250	Flow Action tends to open valve	Flow Action tends to close valve
Contoured Plug general use	equal percentage	●	●	●	●	●		●	●	●	
	linear	●	●		●			●	●	●	
Contoured Plug with Silentpack by gases, vapours, for reducing nois ≤ 18 dB(A)	equal percentage	●	●	●	●			●	●	●	
	linear	●	●		●			●	●	●	
Disk Plug	on / off	●			●			●		●	●
Perforated Plug in case of cavitation, high differential pressure by gases, vapours, for reducing nois ≤ 18 dB(A)	equal percentage	●				●	●	●	●	●	●
	linear	●				●	●	●	●	●	●
RLS -Units for reducing noise ≤ 30 dB(A)	equal percentage	●				●	●	●	●	●	●
	linear	●				●	●	●	●	●	●

Contoured Plug

Characteristic: modified - equal percentage

c_v (gpm)		k_{vs} (m^3/h)		Port Size	Guide of plug	Material / Design						Incorporable seat diameter depends on nominal size								
						316 SS					1.4122 [1]	1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
without Silentpack	with Silentpack [2]	without Silentpack	with Silentpack [2]			stand-ard	partial stellited	full stellited	soft [3] seated	stand-ard	hard-ened	Stroke = 20 mm			40 mm		80 mm			
0.18	-	0,16	-	4	1			●			●	●								
0.29	-	0,25	-	4	1			●			●	●								
0.46	-	0,40	-	4	1			●		●	●	●								
0.73		0,63		6	1	●		●		●	●	●								
1.8		1,6		8	1	●		●		●	●	●								
2.9		2,5		10	1	●		●		●	●	●								
4.6		4,0		12	1	●	●	●	●	●	●	●								
7.3		6,3		16	1	●	●	●	●	●	●	●	●							
11.6		10,0		20	1	●	●	●	●	●	●	●	●	●						
18.5		16,0		25	1	●	●	●	●	●	●		●	●						
-	23	-	20	34	1	●	●	●	●				●							
29	-	25	-	34	1	●	●	●	●	●	●		●	●						
-	29	-	25	34	1	●	●	●	●					●						
-	36.4	-	31,5	42	1	●	●	●	●					●						
46	-	40	-	42	1	●	●	●	●	●	●			●	●					
-	46	-	40	42	1	●	●	●	●						●					
73		63		53	1	●	●	●	●	●	●				●	●				
-	104	-	90	67	1	●	●	●	●						●					
116	-	100	-	67	1	●	●	●	●	●	●				●	●				
-	116	-	100	67	1	●	●	●	●							●				
-	145	-	125	84	1	●	●	●	●							●				
185	-	160	-	84	1	●	●	●	●	●	●					●				
185	-	160	-	84	1/2	●	●	●	●	●	●						●			
-	185	-	160	84	1/2	●	●	●	●								●			
-	208	-	180	100	1/2	●	●	●	●								●			
231	-	200	-	100	1/2	●	●	●	●	●	●						●	●		
-	231	-	200	100	1/2	●	●	●	●									●		
-	324	-	280	125	1/2	●	●	●	●								●			
-	364	-	315	125	1/2	●	●	●	●									●		
410	-	355	-	125	1/2	●	●	●	●	●	●						●	●	●	
-	410	-	355	125	1/2	●	●	●	●										●	
-	410	-	355	150	1/2	●	●	●	●									●		
520	-	450	-	150	1/2	●	●	●	●	●	●							●	●	●
-	520	-	450	150	1/2	●	●	●	●										●	●
820	728	710	630	200	1/2	●	●	●	●	●	●								●	●
1156	925	1000	800	250	1/2	●	●	●	●	●	●									●

[1] Only for body A216 WCB, A217 WC6 !
[2] Only for Contoured Plug and 316 SS !
[3] On request !

Contoured Plug

Characteristic: linear

c_v (gpm) without Silentpack	c_v (gpm) with Silentpack [2]	k_{vs} (m^3/h) without Silentpack	k_{vs} (m^3/h) with Silentpack [2]	Port Size	Guide of plug	Material / Design 316 SS standard	316 SS partial stellited	316 SS soft seated [4]	1.4122 [1] standard	1.4122 [1] hardened	Incorporable seat diameter depends on nominal size: 1" (Stroke = 20 mm)	1 1/2" (Stroke = 20 mm)	2" (Stroke = 20 mm)	3" (40 mm)	4" (40 mm)	6" (80 mm)	8" (80 mm)	10" (80 mm)	12" (80 mm)
4.6		4,0		12	1	●	●	●	●	●	●								
7.3		6,3		16	1	●	●	●	●	●	●	●							
11.6		10,0		20	1	●	●	●	●	●	●	●	●						
18.5		16,0		25	1	●	●	●	●	●		●	●						
-	23	-	20	34	1	●	●	●				●							
29	-	25	-	34	1	●	●	●	●	●		●	●						
-	29	-	25	34	1	●	●	●					●						
-	36.4	-	31,5	42	1	●	●	●					●						
46	-	40	-	42	1	●	●	●	●	●			●	●					
-	46	-	40	42	1	●	●	●						●					
73		63		53	1	●	●	●	●	●				●	●				
-	104	-	90	67	1	●	●	●						●					
116	-	100	-	67	1	●	●	●	●	●				●	●				
-	116	-	100	67	1	●	●	●							●				
-	145	-	125	84	1	●	●	●							●				
185	-	160	-	84	1	●	●	●	●	●					●				
185	-	160	-	84	1/2	●	●	●	●	●						●			
-	185	-	160	84	1/2	●	●	●								●			
-	208	-	180	100	1/2	●	●	●								●			
231	-	200	-	100	1/2	●	●	●	●	●						●	●		
-	231	-	200	100	1/2	●	●	●									●		
-	324	-	280	125	1/2	●	●	●								●			
-	364	-	315	125	1/2	●	●	●									●		
410	-	355	-	125	1/2	●	●	●	●	●						●	●	●	
-	410	-	355	125	1/2	●	●	●										●	
-	410	-	355	150	1/2	●	●	●									●		
520	-	450	-	150	1/2	●	●	●	●	●							●	●	●
-	520	-	450	150	1/2	●	●	●										●	●
820	728	710	630	200	1/2	●	●	●	●	●								●	●
1156	925	1000	800	250	1/2	●	●	●	●	●									●

Rangeability

Standard Rangeability:	Special Rangeability at Contoured Plug and modified-equal percentage Characteristic:
Seat ≤ 20 mm - Rangeability 1 : 30 Seat > 20 mm - Rangeability 1 : 50	Seat ≤ 20 mm - Rangeability 1 : 70 Seat > 20 mm - Rangeability 1 : 100

Disk Plug

Characteristic: on / off

c_v (gpm)	k_{vs} (m^3/h)	Port Size	Guide of plug	Material / Design 316 SS standard	316 SS soft seated [4]	1.4122 [3] standard	Incorporable seat diameter depends on nominal size: 1" (Stroke = 20 mm)	1 1/2" (Stroke = 20 mm)	2" (Stroke = 20 mm)	3" (40 mm)	4" (40 mm)	6" (80 mm)	8" (80 mm)	10" (80 mm)	12" (80 mm)
11.6	10,0	20	1	●	●	●	●								
29	25	34	1	●	●	●		●							
46	40	42	1	●	●	●			●						
116	100	67	1	●	●	●				●					
185	160	84	1	●	●	●					●				
462	400	125	1	●	●	●						●			
728	630	150	1	●	●	●							●		
1156	1000	200	1	●	●	●								●	
1850	1600	250	1	●	●	●									●

[1] Only for body A216 WCB, A217 WC6 and Piston-Ring Balancing !
[2] Only for Contoured Plug and 316 SS !
[3] Only for body A216 WCB, A217 WC6 !
[4] On request !

Perforated Plug

Characteristic: modified - equal percentage

c_v (gpm)	k_{vs} (m^3/h)	Port Size	Guide of plug	Material / Design			Incorporable seat diameter depends on nominal size								
				316 SS	1.4122 [1]		1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
				nitrided	standard	hardened	Stroke = 20 mm			40 mm		80 mm			
2.9	2,5	20	1	●	●	●	●								
4.6	4,0	20	1	●	●	●	●	●							
7.3	6,3	20	1	●	●	●	●	●	●						
11.6	10,0	25	1	●	●	●		●	●						
23	20	34	1	●	●	●		●	●						
29	25	42	1	●	●	●			●						
32	28	42	1	●	●	●				●					
57,8	50	53	1	●	●	●				●	●				
82	71	67	1	●	●	●				●	●				
116	100	84	1	●	●	●					●				
185	160	84	1/2	●	●	●						●			
231	200	100	1/2	●	●	●						●	●		
324	280	125	1/2	●	●	●						●	●	●	
462	400	150	1/2	●	●	●							●	●	●
578	500	200	1/2	●	●	●								●	●
820	710	250	1/2	●	●	●									●

Perforated Plug

Characteristic: linear

c_v (gpm)	k_{vs} (m^3/h)	Port Size	Guide of plug	Material / Design			Incorporable seat diameter depends on nominal size								
				316 SS	1.4122 [1]		1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
				nitrided	standard	hardened	Stroke = 20 mm			40 mm		80 mm			
2.9	2,5	20	1	●	●	●	●								
4.6	4,0	20	1	●	●	●	●	●							
7.3	6,3	20	1	●	●	●	●	●	●						
11.6	10,0	25	1	●	●	●		●	●						
23	20	34	1	●	●	●		●	●						
29	25	42	1	●	●	●			●						
32	28	42	1	●	●	●				●					
57.8	50	53	1	●	●	●				●	●				
104	90	67	1	●	●	●				●	●				
145	125	84	1	●	●	●					●				
185	160	84	1/2	●	●	●						●			
231	200	100	1/2	●	●	●						●	●		
364	315	125	1/2	●	●	●						●	●	●	
578	500	150	1/2	●	●	●							●	●	●
728	630	200	1/2	●	●	●								●	●
1040	900	250	1/2	●	●	●									●

RLS-Design

Characteristic: modified - equal percentage / linear

Plug Type	k_{vq} (m^3/h)	Port Size	Guide of plug	Material / Design			Incorporable seat diameter depends on nominal size								
				316 SS	1.4122 [1]		1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
				nitrided	standard	hardened	Stroke = 20 mm			40 mm		80 mm			
RLS 2-step	4,0 to 600	20 to 250	1	●	●	●	The kvq-values will be adapted on the operating conditions !								
RLS 2-step			2	●	●	●									
RLS 3-step			2	●	●	●									

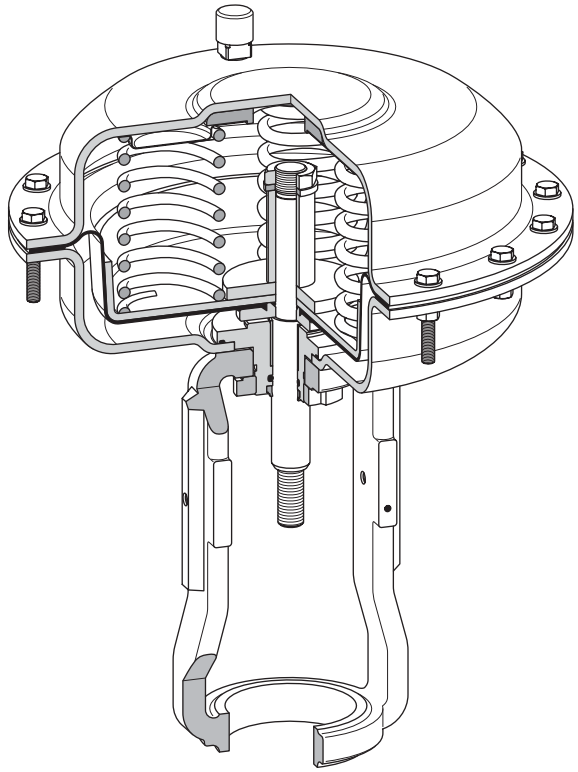
[1] Only for body A216 WCB, A217 WC6 !

Leakage-class acc. DIN/IEC 534 Teil 4 resp. ANSI/FCI 70-2 - 1991

Plug with Pressure Balancing	Plug Design	Leakage-class acc. DIN/IEC 534	Test Medium	Test Pressure (bar)	max. Seat Leakage in % of c_v
Unbalanced	metal-to-metal seated	IV	Water	Working Pressure, max. 4	0,01
	metal-to-metal seated, reseated	IV-S1	Water	Working Pressure, max. 4	0,0005
	mtm-seated, reseated, heightened seal force	IV-S2	Air	Working Pressure, max. 4	0,0001
	mtm-seated, reseated, heightened seal force	V	Water	Working Pressure	0,000001
	soft seated	VI	Air	Working Pressure, max. 4	0,0 - bubble-tight
V-Ring balanced	metal-to-metal seated	IV	Water	Working Pressure, max. 4	0,01
Piston-Ring balanced	metal-to-metal seated	III	Water	Working Pressure, max. 4	0,1

Multi-Spring Actuator

Actuators are selected for use on **FLOWPRO**:



Actuator Size	Stroke (mm)	Spring ranges (psi)		Spring ranges (bar)	
		Spring closes	Spring opens	Spring closes	Spring opens
PD 252	20		1.5 - 14.5		0,1 - 1,0
			7.3 - 27.6		0,5 - 1,9
		14.5 - 34.8		1,0 - 2,4	
		21.8 - 39.2		1,5 - 2,7	
		29.0 - 69.6		2,0 - 4,8	
PD 502	20		2.9 - 14.5		0,2 - 1,0
			7.3 - 27.6		0,5 - 1,9
		14.5 - 34.8		1,0 - 2,4	
		21.8 - 39.2		1,5 - 2,7	
		29.0 - 69.6		2,0 - 4,8	
	40		2.9 - 14.5		0,2 - 1,0
			7.3 - 27.6		0,5 - 1,9
		14.5 - 34.8		1,0 - 2,4	
		21.8 - 39.2		1,5 - 2,7	
		29.0 - 69.6		2,0 - 4,8	
PD 700	20	11.6 - 39.2		0,8 - 2,7	
	40		2,9 - 14,5		0,2 - 1,0
			7,3 - 27,6		0,5 - 1,9
		14.5 - 34.8		1,0 - 2,4	
		21.8 - 39.2		1,5 - 2,7	
		29.0 - 69.6		2,0 - 4,8	
PD 1500	20	11.6 - 23.2		0,8 - 1,6	
	40		2.9 - 14.5		0,2 - 1,0
			5.8 - 17.4		0,4 - 1,2
		11.6 - 23.2		0,8 - 1,6	
		17.4 - 29.0		1,2 - 2,0	
		21.8 - 33.4		1,5 - 2,3	
	80		2.9 - 21.8		0,2 - 1,5
			5.8 - 24.7		0,4 - 1,7
		11.6 - 30.5		0,8 - 2,1	
		17.4 - 36.3		1,2 - 2,5	
		31.9 - 55.1		2,2 - 3,8	
PD 3000	40	11.6 - 23.2		0,8 - 1,6	
	80		2.9 - 21.8		0,2 - 1,5
			5.8 - 24.7		0,4 - 1,7
		11.6 - 30.5		0,8 - 2,1	
		18.9 - 37.7		1,3 - 2,6	

Positioner System

Product features

SRI990 Analog Positioner (direct mounting !)

Product Specification PSS EVE 0107 A

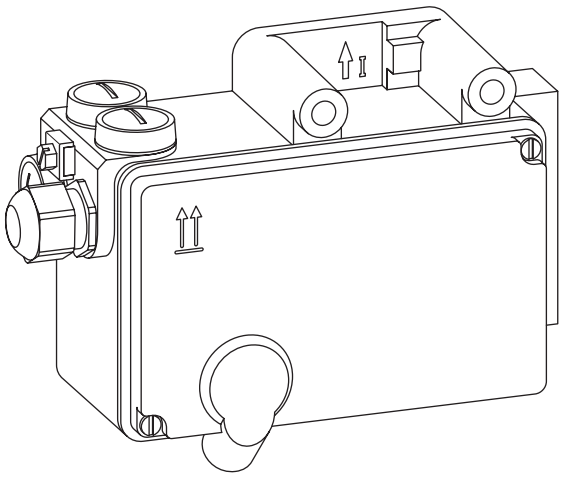
- Configuration by means of switches and potentiometers
- Low air consumption
- Supply air pressure up to 6 bar (90 psig)
- Attachment to stroke actuators directly or acc. to IEC 534 part 6 (NAMUR)
- Protection class IP 65 and NEMA 4X
- Explosion protection: EEx ia IIC acc. to CENELEC or "Intrinsic safety" acc. to FM and CSA
- Additional equipments
- Integrated inductive limit switches
- Gauge attachment
- Booster relay

SRD992 Digital Positioner (direct mounting !)

Product Specification PSS EVE 0106 A

Technical data same as SRI990 with additional features

- Autostart with self-calibration
- Selfdiagnostics
- Configuration by means of local keys and LEDs
- Position feedback



SRD992 Digital Positioner

SRD991 Intelligent Positioner (direct mounting !)

Product Specification PSS EVE 0105 A

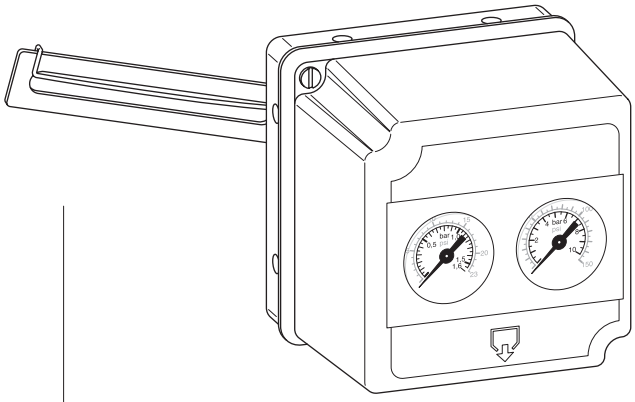
Technical data same as SRD992 with additional features

- Self diagnostics, status- and diagnostic messages
- Communication HART, FoxCom, PROFIBUS-PA or FOUNDATION Fieldbus H1
- Configuration by means of local keys, hand-held terminal, PC or I/A Series system
- Sensors for supply air pressure and output pressure optional
- Additional Inputs / outputs

SRP981 Pneumatic Positioner

Product Specification PSS EVE 0101 A

- Input signal range 0,2 - 1,0 bar (split range up to 4-fold possible)
- Independent adjustment of stroke range and zero
- Low vibration effect in all directions
- Supply pressure up to 6 bar
- Single or double-acting
- Mounting according to IEC 534, part 6 (NAMUR)
- Electrical limit switches optional
- Connection manifold optional
- Booster optional



SRP 981 Pneumatic Positioner

FRS 107 Airset

- Max. supply pressure up to 10 bar
- Output range 0,3 - 10 bar
- Filter 5 µm
- Manually operated drain
- With gauge

MV - valve (direct mounting !)

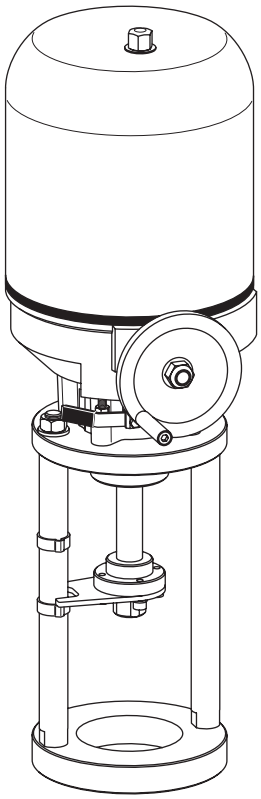
Tubing

- without, by direct mounting
- Steel, chromatised
- Stainless steel

Any further information see product specifications sheet.

Haselhofer-Actuator

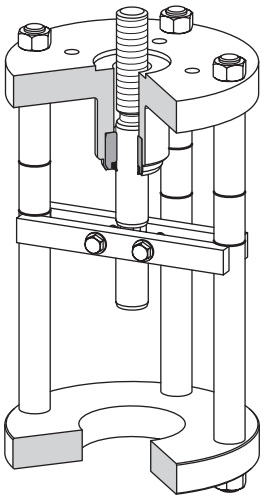
Actuators are selected for use on **FLOWPRO**:



Linear actuator	Voltage	Power input (230V, 50Hz)
ED 1,2	alternating current 230 V, 50 Hz 400 V, 50 Hz direct current 24 V	7 W
ED 4,5		28 W / 32 W
ED 8		60 W / 130 W
ED 12		60 W / 130 W
ED 20		145 W / 165 W
ED 25		145 W / 165 W

Linear thrust Unit

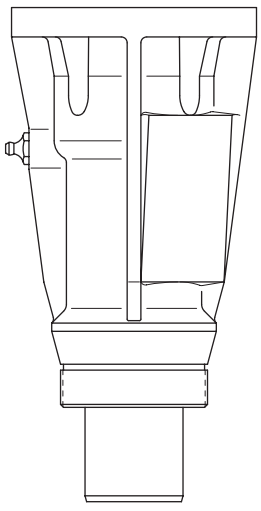
Thrust Unit selected for use on **FLOWPRO**:



Linear thrust Unit	Connection	max. Torque
LD 12	acc. to ISO 5210 form A trapezoid thread 24 x 5 left	30 Nm
LD 16		50 Nm
LD 20		80 Nm

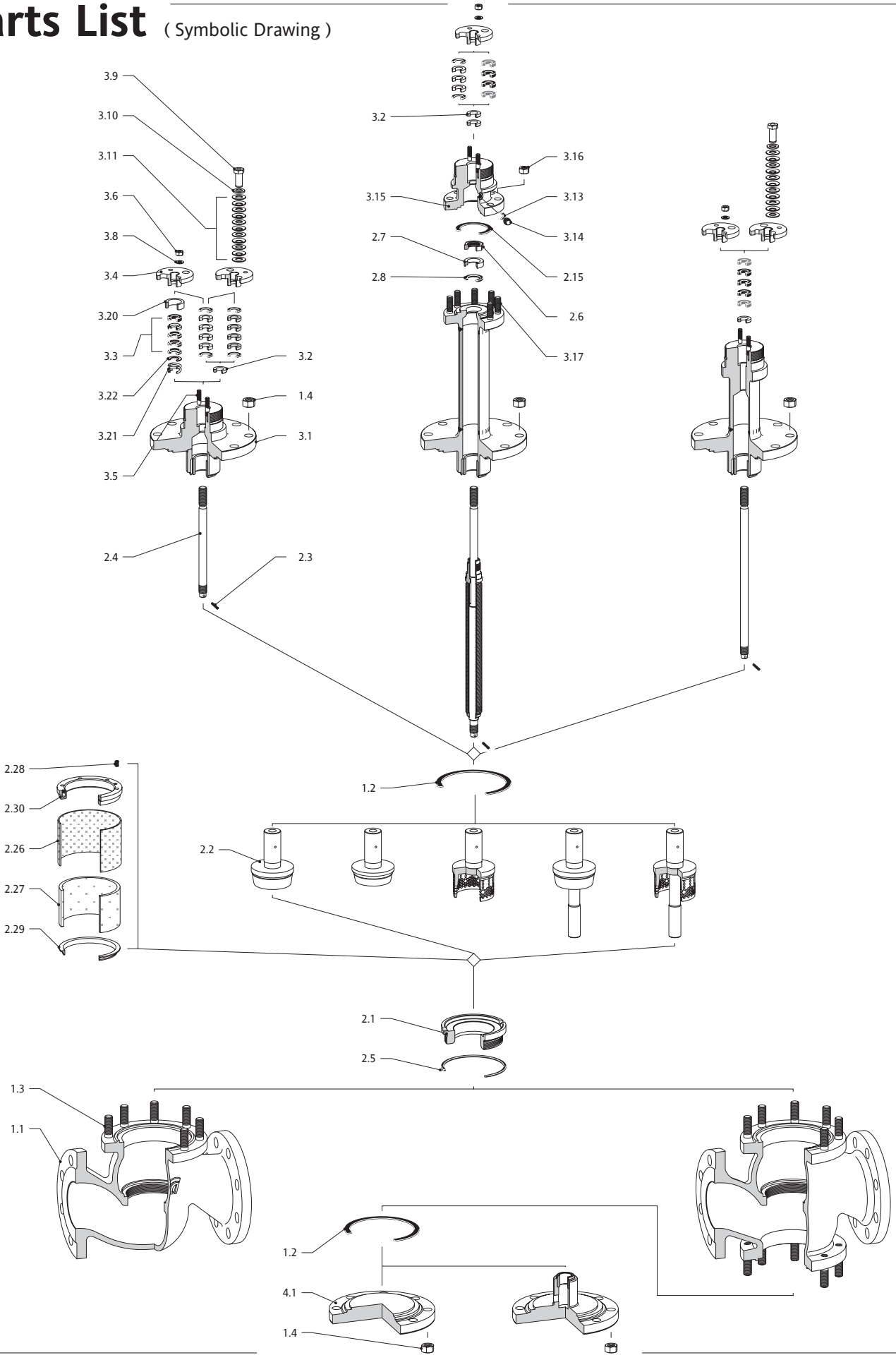
Linear thrust Unit

Thrust Unit selected for use on **FLOWPRO**:



Linear thrust Unit	For Output drives acc. to DIN 3210 type D	max. Torque
SD 15 Stroke 40 mm	Flange size G0	30 Nm
SD 35 Stroke 40 mm		100 Nm
SD 36 Stroke 80 mm		100 Nm
SD 75 Stroke 80 mm	Flange size G1/2	250 Nm
SD 120 Stroke 80 mm		500 Nm
SD 200 Stroke 80 mm	Flange size G3	1000 Nm
SD 300 Stroke 80 mm	Flange size G4	1700 Nm

Parts List (Symbolic Drawing)



Designation	Part	Materials			Spare Parts
Body	1.1	A216 WCB	A217 WC6	A351 CF8M	
Bonnet Gasket	1.2	Pure Grafite [1]			D
Stud Bolt	1.3	A193 B5		A193 B8 M2	
Hex Nut	1.4	A194 3		A194 8 M	
Screwed Seat	2.1	316 SS / 1.4122	316 SS / 1.4122	316 SS	S
Contoured Plug Disk Plug Perforated Plug	2.2	316 SS / 1.4122	316 SS / 1.4122	316 SS	K
Spring Pin	2.3	304			
Stem	2.4	316 SS Cold-finished			
Bellows		316 SS	-	316 SS	
Profil Ring	2.5	Pure Grafite			S
Hex Nut	2.6	316 SS	-	316 SS	
Seal Carrier	2.7	316 SS	-	316 SS	
Profil Ring	2.8	Pure Grafite	-	Pure Grafite	D
Head Gasket	2.15	Pure Grafite [1]	-	Pure Grafite [1]	
Perforated Cage	2.26	316 SS			K
Wire Netting	2.27	1.4404			
Spring	2.28	1.4310			
Internal Ring	2.29	316 SS			
Distance Bush	2.30	316 SS			
Standard Bonnet	3.1	A 105	A 182 F11	A 182 F 316 L	
Bellows-Seal Bonnet			-		
Finned Bonnet			A 182 F11		
Bottom Ring	3.2	316 SS			
Packing Box unloaded	3.3	PTFE-Rings Pure-Grafite Rings			D
Packing Box Spring loaded		PTFE-Rings Pure-Grafite Rings			
Gland Flange	3.4	316 SS			
Stud Bolt	3.5	A193 B8 M2			
Hex Nut	3.6	A194 8 M			
Plain Washer	3.8	304			
Hex Nut	3.9	316 SS			
Plain Washer	3.10	316 SS			
Belleville Spring	3.11	301			
Gasket	3.13	Pure Grafite [2]	-	Pure Grafite [2]	D
Locking Screw	3.14	304	-	304	
Head	3.15	A 105	-	A 182 F 316 L	
Hex Nut	3.16	A194 3	-	A194 8 M	
Stud Bolt	3.17	A193 B5	-	A193 B8 M2	
Cover	4.1	A 105	A182 F11	A 182 F 316 L	

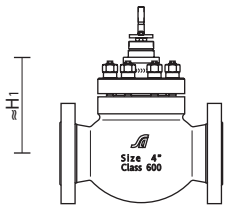
[1] Pure Grafite on Support Plate from 316 SS
[2] Pure Grafite on Support Plate from MYLAR

K Plug Set
S Seat Set
D Gasket Set

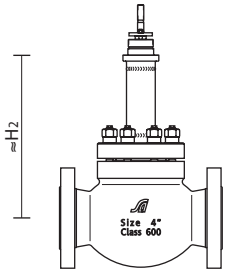
Special Materials on request !

Dimensions

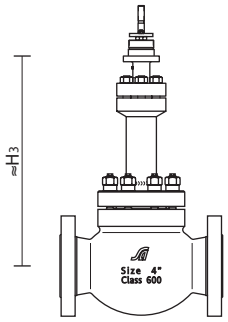
Valve with Three-Flange Body



Valve with
Standard Bonnet

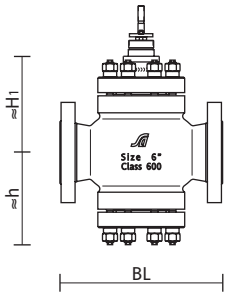


Valve with
Extension Bonnet

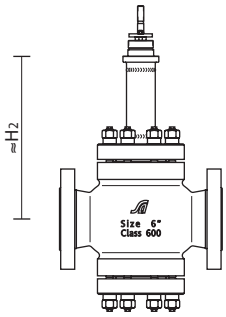


Valve with
Bellows seal Bonnet

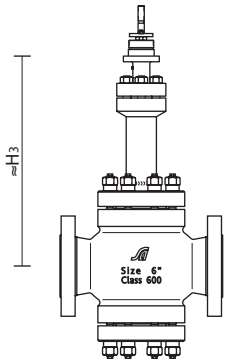
Valve with Four-Flange Body



Valve with
Standard Bonnet



Valve with
Extension Bonnet

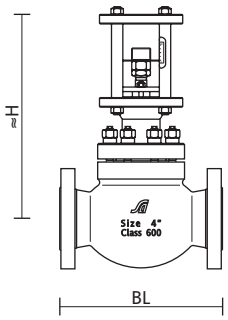


Valve with
Bellows seal Bonnet

Designations			Nominal Size DN								
			1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
			Stroke = 20 mm			40 mm		80 mm			
BL Face to Face Dimensions acc. to ANSI / ISA S75.03	Flange Form RF, RFS	in.	8.25	9.88	11.25	13.25	15.50	20.00	24.00	29.62	32.25
		mm	209,6	251,0	285,8	336,6	393,7	508,0	609,6	752,3	819,2
	Flange Form RTJ	in.	8.25	9.88	11.37	13.37	15.62	20.12	24.12	29.74	32.37
		mm	209,6	251,0	288,8	339,6	396,7	511,0	612,6	755,4	822,2
≈ h		in.						12.40	15.94	18.90	21.06
		mm						315	405	480	535
≈ H_1 Standard Bonnet		in.	6.30	7.68	8.35	8.54	9.92	12.99	16.02	19.02	20.98
		mm	160	195	212	217	252	330	407	483	533
≈ H_2 Extension Bonnet		in.	6.30	7.68	8.35	15.35	16.69	19.76	22.83	25.79	27.76
		mm	160	195	212	390	424	502	580	655	705
≈ H_3 Bellows seal Bonnet		in.	12.80	14.17	14.17	21.65	21.65	35.63	35.63	35.63	35.63
		mm	325	360	360	550	550	905	905	905	905
≈ Weight for Three-Flange Body	Standard Bonnet	lbs	43	66	97	185	293				
		kg	19,5	30	44	84	133				
	Extension Bonnet	lbs	43	66	97	189	299				
		kg	19,5	30	44	86	136				
	Bellows seal Bonnet	lbs	57	84	110	216	317				
		kg	26,0	38	50	98	144				
≈ Weight for Four-Flange Body	Standard Bonnet	lbs						704	1320	2158	2933
		kg						320	600	981	1333
	Extension Bonnet	lbs						711	1327	2165	2939
		kg						323	603	984	1336
	Bellows seal Bonnet	lbs						748	1331	2130	2882
		kg						340	605	968	1310
Flanges Drilled and Dimensioned acc. to			ANSI B16.5, Form RF or RTJ								

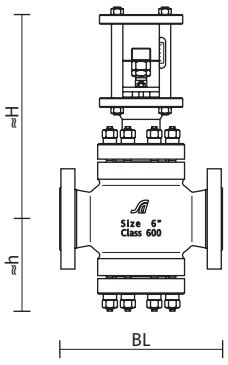
Dimensions for Heavy Duty Bonnet

Valve with Three-Flange Body



Valve with
Standard Bonnet

Valve with Four-Flange Body



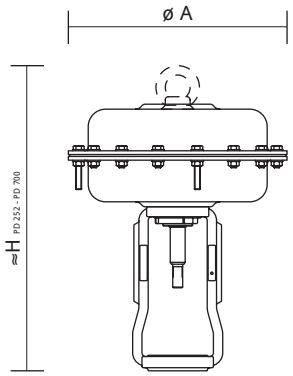
Valve with
Standard Bonnet

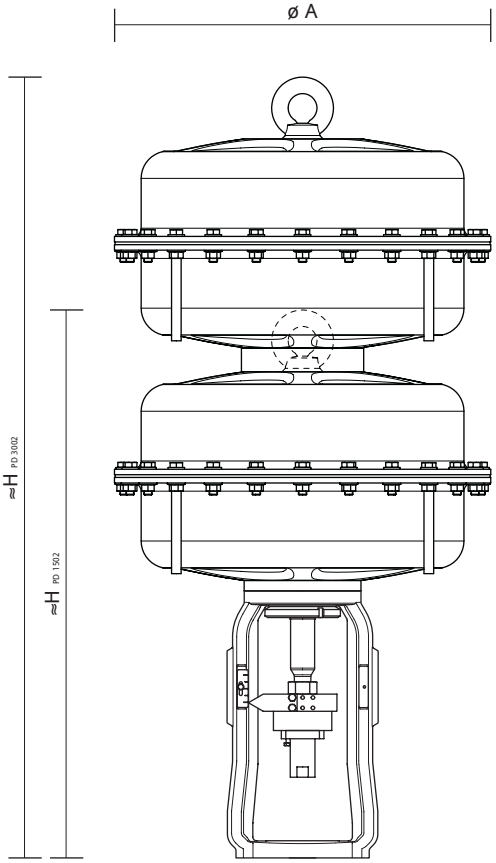
Designations			Nominal Size DN								
			1"	1 1/2"	2"	3"	4"	6"	8"	10"	12"
			Stroke = 20 mm			40 mm		80 mm			
BL Face to Face Dimensions acc. to ANSI / ISA S75.03	Flange Form RF, RFS	in.	8.25	9.88	11.25	13.25	15.50	20.00	24.00	29.62	32.25
		mm	209,6	251,0	285,8	336,6	393,7	508,0	609,6	752,3	819,2
	Flange Form RTJ	in.	8.25	9.88	11.37	13.37	15.62	20.12	24.12	29.74	32.37
		mm	209,6	251,0	288,8	339,6	396,7	511,0	612,6	755,4	822,2
≈ h		in.						12.40	15.94	18.90	21.06
		mm						315	405	480	535
≈ H_1 Standard Bonnet - Heavy Duty Design		in.	13.07	14.61	15.28	22.05	20.08	32.01	35.24	36.42	38.58
		mm	332	371	388	560	510	813	895	925	980
≈ Weight for Three-Flange Body	Standard Bonnet	lbs	66	88	119	231	372				
		kg	30	40	54	105	169				
≈ Weight for Four-Flange Body	Standard Bonnet	lbs						891	1514	2370	3151
		kg						405	688	1077	1432
Flanges Drilled and Dimensioned acc. to			ANSI B16.5, Form RF or RTJ								

Pneumatic linear Actuator

with NAMUR-Yoke

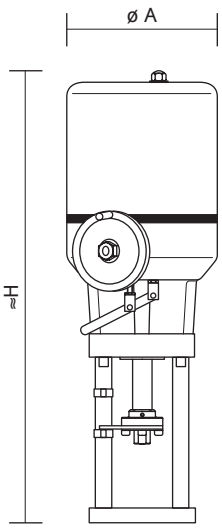
Designation	Area	250	500		700	
	Stroke	20 mm	20 mm	40 mm	20 mm	40 mm
ø A	in.	10.43	13.86	13.86	15.94	15.94
	mm	265	352	352	405	405
≈ H	in.	12.99	16.54	17.72	21.46	21.46
	mm	330	420	450	545	545
≈ Weight	lbs	35	68	88	101	101
	kg	16	31	40	46	46





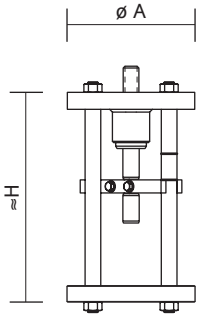
Designation	Area	1500	3000
	Stroke	20, 40, 80 mm	40, 80 mm
ø A	in.	21.57	21.57
	mm	548	548
≈ H	in.	31.49	44.88
	mm	800	1140
≈ Weight	lbs	273	529
	kg	124	240

Haselhofer - Electric linear Actuator



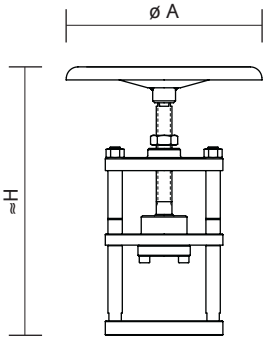
Designation	Actuator	ED 1,2	ED 4,5	ED 8	ED 12	ED 20	ED 25
	Stroke mm	20	20 / 40 / 80			40 / 80	
ø A	in.	5.71	5.71	7.24	7.24	8.50	8.50
	mm	145	145	184	184	216	216
≈ H	in.	19.88	21.06	22.44	22.44	25.98	25.98
	mm	505	535	570	570	660	660
≈ Weight	lbs	14	17	29	29	42	42
	kg	6,5	7,5	13	13	19	19

Linear thrust Unit “light”



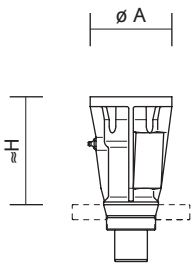
Designation	Linear Unit	LD 12	LD 16	LD 20
	Stroke mm	20	40	80
ø A	in.	7.72	7.72	7.72
	mm	196	196	196
≈ H	in.	9.45	12.60	16.02
	mm	240	320	407
≈ Weight	lbs	26	37	44
	kg	12	17	20

Manual Operation



Designation	Manual Operation	HD 12	HD 16	HD 20
	Stroke mm	20	40	80
ø A	in.	11.8	11.8	15.7
	mm	300	300	400
≈ H	in.	15.7	17.7	18.9
	mm	400	450	480
≈ Weight	lbs	37	37	40
	kg	17	17	18

Linear thrust Unit “heavy”



Designation	Thrust Unit	SD 15	SD 35	SD 36	SD 75	SD120	SD200	SD300
	Stroke	20 / 40 mm		80 mm				
ø A	in.	4.9	4.9	6.9	6.9	6.9	8.3	11.8
	mm	125	125	175	175	175	210	300
≈ H	in.	6.5	6.5	11.4	11.0	11.0	13.2	16.1
	mm	165	165	290	280	280	335	410
≈ Weight	lbs	17	17	55	49	49	101	205
	kg	7,5	7,5	25	22	22	46	93

SPM - Code

Type	DN	PN	Body/Cert.	Plug	Seat	kvs	Trim	Actuator
V760 **DFVNA**	**2”**	**600**	**A216WCB/OOAO**	**PONP1GG**	**42**	**40**	**316SS**	

Body Form

Three-Flange	D
Four-Flange	V

Form of Connection

Flange acc. to ANSI/ASME B16.5	Raised Face	F
	Ring Joint	J

Bonnet Form

without Pressure Balancing	V
with V-Ring Balancing	O
with Piston-Ring Balancing	K
heavy duty	S

Bonnet Assembly

Standard Bonnet	N
Bellows seal Bonnet	F
HT Extension Bonnet	R

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

Nominal Size 1/2” - 12”

Nominal Pressure Class 600

Body Material

A216WCB	
A351CF8M	
A217WC6	

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 . .
	3.1B (Survay of Cert.)	. B . .
	3.1B (CMTR)	. D . .
	3.1A	. A . .

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
	3.1B	. . . B
	3.1A	. . . A

316SS / 1.4122 Plug, Seat Material

kvs - Value 0,16 - 1600

Port Size 4 - 250

Flow tends top open Valve G
Flow tends to close Valve I

Characteristic

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

Plug Guidance

Top	1
Top and Bottom	2

Seat Leakage

IEC	Class III	O
	Class IV	P
	Class IV - S1	Q
	Class IV - S2	R
	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
nitrided	T

Plug

Cont. 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

PD 252 ADYOZ

Operation on air failure

A	Stem retracted
Z	Stem extracted

Hand Wheel

O	without
L	top, light-weight-variant PD 252 + 502
H	top, heavy-duty-variant PD 252 - 700
S	lateral PD 1502 - 3002

Spring Range

		Actuator Size	Stroke
AD	0,2 - 1,0	PD 252 - 502	20
AD	0,2 - 1,0	PD 502 - 3002	40
AD	0,2 - 1,0	PD 1502 - 3002	80
GF	0,4 - 2,0	PD 1502 - 3002	40, 80
BL	0,5 - 1,9	PD 252 - 502	20
BL	0,5 - 1,9	PD 502 - 700	40
KI	0,75 - 1,4	PD 1502 - 3002	40, 80
MU	0,8 - 1,6	PD 1502	20
DY	1,0 - 2,4	PD 252 - 502	20
DY	1,0 - 2,4	PD 502 - 700, 3002	40
DY	1,0 - 2,4	PD 3002	80
EP	1,3 - 2,1	PD 3002	40, 80
VI	1,5 - 2,1	PD 1502	20
VC	1,5 - 2,7	PD 252 - 700	20
VC	1,5 - 2,7	PD 502 - 1502	40
VC	1,5 - 2,7	PD 1502	80
VI	1,5 - 3,8	PD 252 - 502	20
VI	1,5 - 3,8	PD 502 - 700	40
JC	1,8 - 2,7	PD 700	20
FY	2,0 - 3,5	PD 1502	40, 80
FY	2,0 - 4,8	PD 252 - 502	20
FY	2,0 - 4,8	PD 502 - 700	40
AJ	2,6 - 4,2	PD 1502	40, 80

Actuator Color

A	blue
B	white
C	yellow

Actuator Size with NAMUR-Yoke

	Actuator Size	Stroke
PD 252	250 cm²	20
PD 502	500 cm²	20, 40
PD 700	700 cm²	20, 40
PD 1502	1500 cm²	20, 40, 80
PD 3002	3000 cm²	40, 80

ED 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
V	Positioning Electronics, input in V

Positioning Feedback

O	without
P	1000 Ohm potentiometerΩ
M	4 - 20 mA positioning feedback

Mains Power

Z	alternating current 230 V, 50 Hz
D	alternating current 400 V, 50 Hz
G	direct current 24 V

Haselhofer - Electric linear Actuator

ED 1,2/1,2	Actuating Power 1,2 kN
ED 4,5/2	Actuating Power 2 kN
ED 4,5/4,5	Actuating Power 4,5 kN
ED 8/6	Actuating Power 6 kN
ED 8/8	Actuating Power 8 kN
ED 12/12	Actuating Power 12 kN
ED 20/15	Actuating Power 15 kN
ED 20/20	Actuating Power 20 kN
ED 25/25	Actuating Power 25 kN

LD 16

Linear thrust Unit “light”

	Thrust	Stroke	Torque	ISO5210
LD 12	10,4 kN	20 mm	30 Nm	F10
LD 16	17,3 kN	≤40 mm	50 Nm	F10
LD 20	27,7 kN	≤80 mm	80 Nm	F10

SD 15

Linear thrust Unit “heavy”
(only SN-bonnet)

	Thrust	Stroke	Torque	DIN3210
SD 15	15 kN	≤40 mm	30 Nm	G0
SD 35	35 kN	≤40 mm	100 Nm	G0
SD 36	35 kN	≤80 mm	100 Nm	G0
SD 75	77 kN	≤80 mm	250 Nm	G1/2
SD 120	121 kN	≤80 mm	500 Nm	G1/2
SD 200	181 kN	≤80 mm	1000 Nm	G3
SD 300	288 kN	≤80 mm	1700 Nm	G3
SD 300	288 kN	≤80 mm	1700 Nm	G4

HD 16

Manual Operation

	Thrust	Stroke
HD 12	13 kN	20 mm
HD 16	23 kN	40 mm
HD 20	30 kN	80 mm

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EN ISO 9001 DNV Certified Company

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PSS 108293 05/07 V760 en

Experience In Motion