



# *VariCool™* *Desuperheater*

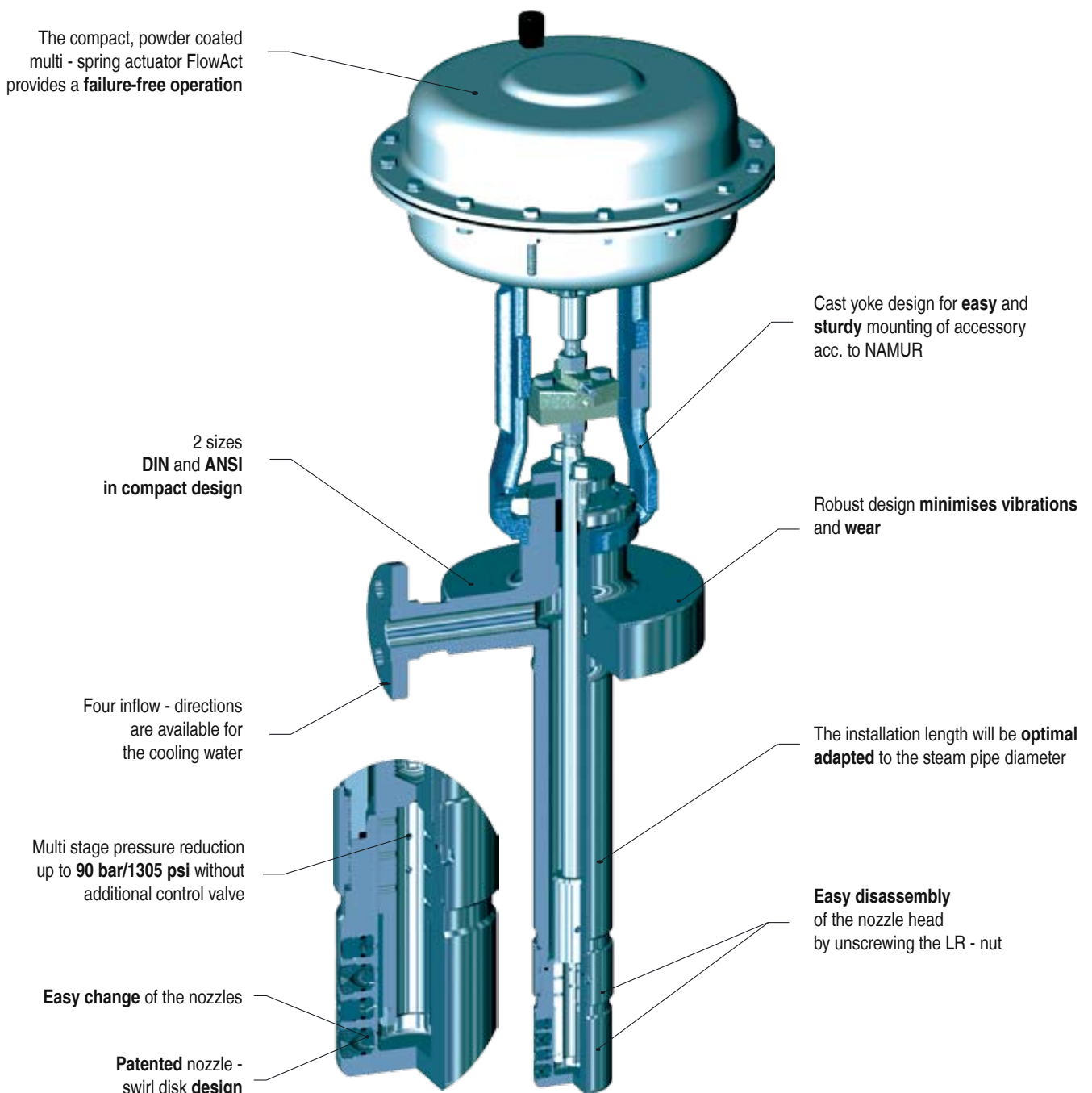
*PN 40 - 160 / Class 300 - 2500*



*Experience In Motion*

## Product description and application range:

- Injection nozzle control valve for direct steam cooling acc. to the principle of secondary injection.  
Advantages of secondary injection: **No thermo shock**  
**Higher life cycle and reliability in service**  
Enabled an **ideal design** of the pressure reducing and injection nozzle valve
- The high quality nozzle- swirl disk - piston tube design provides **ultrafine mist atomisation from minimum - up to maximum flow.**
- By the use of the modular design there are up to **14 kvs / cv** - values available per size
- Seatleakage: **Class IV and V** to DIN / IEC 534, part 4 resp. ANSI / FCI 70-2
- The **modular construction system** provides an **easy mounting** of the multi - spring actuator FlowAct, as well as electrical linear and rotary actuators.



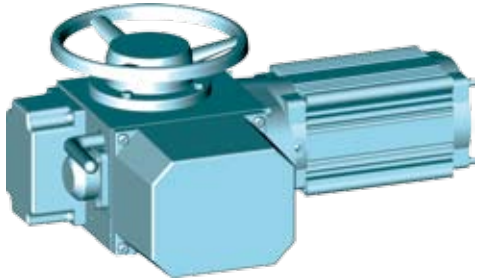
# Actuators



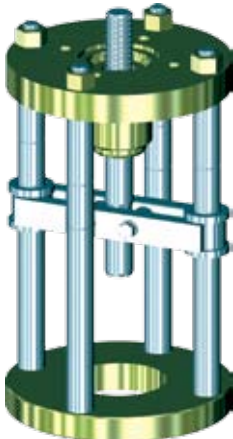
Pneumatic linear Actuator (FlowAct)



Electric linear Actuator (Haselhofer)



Electric rotary Actuator (Schiebel)



Linear thrust Unit „light“ for Electric rotary Actuators



Linear thrust Unit „heavy“ for Electric rotary Actuators



# Injection Nozzle Valve



Within the series the following combinations of valve and actuators for each valve size are possible:

## Operation

The patented SCHMIDT - injection nozzle valve is designed for the requirements of the steam temperature control in power and procedural plants. The injection nozzle valves are designed in a modular construction system to fulfill the requirements of low, middle and high operating pressures. The cooling media will be injected directly into the steam as atomized spray, by controlled exchangeable nozzles. The piston tube opens proportionally the nozzle port in conjunction with the stroke. The SCHMIDT - injection nozzle valves are designed for minimal maintenance. The hardened piston tube and nozzles provide a failure-free operation.

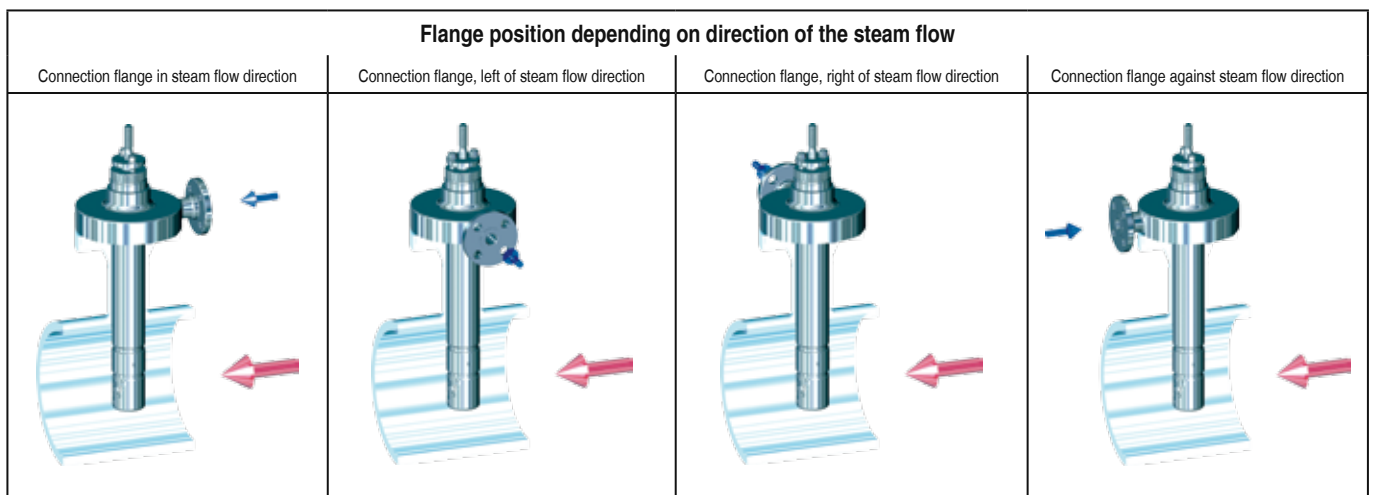
## DIN Body / Material

Body	Material	Valve Connection		PN	Nominal Size DN (Steam Pipe)										
		Water DN	Steam DN		150	200	250	300	350	400	500	600	700	800	900
Size A	1.7335	25	80	40 - 160	•	•	•	•	•	•	•	•			
	1.4571														
Size B	1.7335	40	100				•	•	•	•	•	•	•	•	•
	1.4571														

## DIN Pressure - Temperature Ratings

Body- Material	PN (bar)	Operating Temperature in °C	-10	50	100	150	200	250	300	350	400	450	500	530
			1.4571	40	Max. allowable operating pressure in bar	37	36	34	31	29	28	26	25	24
63	59	57		53		49	46	43	41	39	38	37	36	35,5
100	93	91		84		78	73	69	64	62	60	59	58	57
160	160	160		153		144	136	125	121	117	113	112	111	
1.7335	40	40	40	40		40	39	36	34	32	30	24	14	
	63	63	63	63		63	62	57	53	50	48	38	22	
	100	100	100	100		100	98	91	84	80	76	61	35	
	160	160	160	153		146	138	127	120	116	109	106	57	

## Cooling Media - Flow Direction



## ANSI Body / Material

Body	Material	Valve Connection		Class	Nominal Size DN (Steam Pipe)											
		Water DN	Steam DN		150	200	250	300	350	400	500	600	700	800	900	1000
					6"	8"	10"	12"	14"	16"	20"	24"	28"	32"	36"	40"
Size A	A 182 F12 A 182 F304	1"	3"	300 - 600	•	•	•	•	•	•	•	•	•			
			4"	900 - 1500	•	•	•	•	•	•	•	•	•			
				2500	•	•	•	•	•	•	•	•	•			
Size B	A 182 F12 A 182 F304	1 1/2"	4"	300 - 600			•	•	•	•	•	•	•	•	•	•
			6"	900 - 1500			•	•	•	•	•	•	•	•	•	•
				2500			•	•	•	•	•	•	•	•	•	•

## ANSI Pressure - Temperature Ratings

Body- Material	Class	Operating Temperature in °C													
		-10	50	100	150	200	250	300	350	400	450	500	530		
		Operating Temperature in °F													
		14	122	212	302	392	482	572	662	752	842	932	986		
A 182 F12 Cl.2	300	Max. allowable operating pressure in bar	52	51.7	51	50	48	46	43	40	36	34	25	16.9	
		Max. allowable operating pressure in psi	750	750	746	719	697	670	622	585	529	488	367	244	
	600	Max. allowable operating pressure in bar	103	103	103	100	96	92	86	80	73	68	51	33.7	
		Max. allowable operating pressure in psi	1500	1500	1493	1443	1389	1340	1243	1165	1063	982	733	489	
	900	Max. allowable operating pressure in bar	155	155	154	149	144	139	129	121	110	101	76	50.7	
		Max. allowable operating pressure in psi	2250	2250	2239	2163	2086	2010	1865	1750	1592	1470	1097	735	
	1500	Max. allowable operating pressure in bar	259	259	257	249	240	231	214	201	183	169	126	84.4	
		Max. allowable operating pressure in psi	3750	3750	3732	3606	3476	3349	3108	2915	2655	2452	1829	1224	
	2500	Max. allowable operating pressure in bar	431	431	429	414	400	385	357	335	305	282	210	140.6	
		Max. allowable operating pressure in psi	6250	6250	6220	6009	5793	5581	5179	4862	4422	4089	3047	2039	
	A 182 F304	300	Max. allowable operating pressure in bar	50	47.8	41	37	34	32	31	30	29	27	26	23.2
			Max. allowable operating pressure in psi	720	694	593	539	498	470	443	429	415	397	384	337
600		Max. allowable operating pressure in bar	99	95.6	82	74	69	65	61	59	57	55	53	46.5	
		Max. allowable operating pressure in psi	1440	1387	1185	1078	1002	941	890	857	829	792	770	675	
900		Max. allowable operating pressure in bar	149	143.5	123	112	103	97	92	89	86	82	79	70	
		Max. allowable operating pressure in psi	2160	2081	1778	1617	1500	1412	1333	1286	1243	1193	1152	1015	
1500		Max. allowable operating pressure in bar	248	239.1	204	186	173	163	153	148	143	137	133	116.6	
		Max. allowable operating pressure in psi	3600	3468	2963	2695	2502	2357	2225	2144	2072	1985	1922	1690	
2500		Max. allowable operating pressure in bar	414	398.5	341	310	287	271	256	246	238	228	221	194.2	
		Max. allowable operating pressure in psi	6000	5780	4939	4492	4168	3926	3706	3570	3455	3309	3201	2816	

# Calculation of the kv value (DIN)

The following information is required:

### Steam:

Upstream pressure  $P_{D1}$  (bar)  
 Upstream temperature  $t_{D1}$  (°C)  
 Downstream temperature  $t_{D2}$  (°C)  
 Mass flow rate  $W_D$  (kg/h)

### Cooling water:

Upstream pressure  $P_{W1}$  (bar)  
 Upstream temperature  $t_{W1}$  (°C)  
 Upstream mass flow rate  $W_K$  (kg/h)

### General information about the nozzle valve:

Size of the steam pipe DN  
 Cooling media flange position Z, L, R, U

### Calculation of the injection water flow rate:

$$W_K = W_D = \frac{h_1 - h_2}{h_2 - h_k}$$

Enthalpy of the superheated steam ( $t_{D1}, P_{D1}$ )  $h_1$  (J)  
 Enthalpy of the cooled steam ( $t_{D2}, P_{D2}$ )  $h_2$  (J)  
 Enthalpy of the cooling water  $h_k$  (J)

### Calculation of the kv value:

$$k_v = \frac{Q_k}{31,6} \sqrt{\frac{\rho}{\Delta p}} \quad Q_k = 1000 * \frac{W_K}{\rho}$$

Flow rate coefficient  $k_v$  (m³/h)  
 Cooling water density  $\rho$  (kg/dm³)  
 Differential pressure cooling water/steam  $\Delta p$  (bar)

## Trim Size A Characteristic: linear

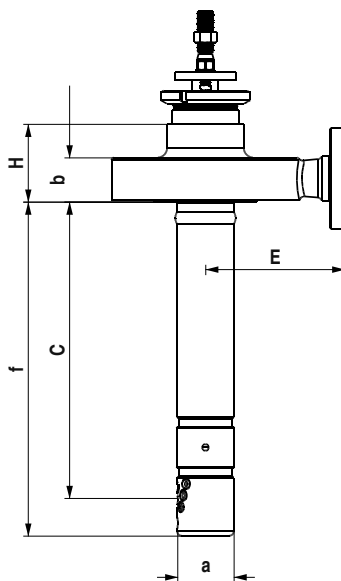
Nozzle Set	Seat $\varnothing$ (mm)	Stroke (mm)	min. $\Delta p$ Cooling Media/ Steam	kvs / cv - values depending on $\Delta p$ - stage									
				A		B		C		D		E	
				up to 40 bar		> 40 - 55 bar		> 55 - 70 bar		> 70 - 85 bar		> 85 - 90	
				up to 580 psi		> 580 - 800 psi		> 800 - 1015 psi		> 1015 - 1230 psi		> 1230 - 1300 psi	
		kvs	cv	kvs	cv	kvs	cv	kvs	cv	kvs	cv		
A	35	40	5 bar 75 psi	0,13	0,15								
B				0,17	0,20								
C				0,20	0,23								
D				0,25	0,29	0,21	0,24						
E				0,30	0,35	0,26	0,30	0,24	0,28				
F				0,40	0,46	0,34	0,39	0,32	0,37				
G			0,50	0,58	0,45	0,52	0,42	0,49	0,38	0,44	0,34	0,39	
H			7 bar 100 psi	0,67	0,77	0,60	0,69	0,53	0,61	0,48	0,55	0,45	0,52
J				0,80	0,92	0,71	0,82	0,67	0,77	0,60	0,69	0,53	0,61
K				1,00	1,16	0,90	1,04	0,85	0,98	0,75	0,87	0,70	0,81
L				1,18	1,36	1,06	1,23	0,95	1,10	0,85	0,98	0,85	0,98
M			8 bar 115 psi	1,50	1,73	1,40	1,62	1,25	1,45	1,18	1,36	1,06	1,23
N				1,70	1,97	1,70	1,97	1,50	1,73	1,40	1,62	1,25	1,45
O				2,00	2,31	2,00	2,31	1,80	2,08	1,70	1,97	1,60	1,85

## Trim Size B Characteristic: linear

Nozzle Set	Seat $\varnothing$ (mm)	Stroke (mm)	min. $\Delta p$ Cooling Media/ Steam	kvs / cv - values depending on $\Delta p$ - stage									
				A		B		C		D		E	
				up to 40 bar		> 40 - 55 bar		> 55 - 70 bar		> 70 - 85 bar		> 85 - 90	
				up to 580 psi		> 580 - 800 psi		> 800 - 1015 psi		> 1015 - 1230 psi		> 1230 - 1300 psi	
		kvs	cv	kvs	cv	kvs	cv	kvs	cv	kvs	cv		
A	45	80	8 bar 115 psi	2,10	2,43	1,80	2,08	1,60	1,85	1,50	1,73	1,30	1,50
B				2,60	3,01	2,40	2,77	2,10	2,43	1,90	2,20	1,80	2,08
C			9 bar 130 psi	3,00	3,47	2,80	3,24	2,50	2,89	2,10	2,43	2,00	2,31
D				4,00	4,62	3,60	4,16	3,40	3,93	3,00	3,47	2,80	3,24
E				4,80	5,55	4,20	4,86	4,00	4,62	3,60	4,16	3,40	3,93
F			10 bar 145 psi	5,30	6,13	5,30	6,13	4,80	5,55	4,20	4,86	4,20	4,86
G				6,30	7,28	6,30	7,28	6,00	6,94	5,60	6,47	5,30	6,13

# Dimensions and Weights

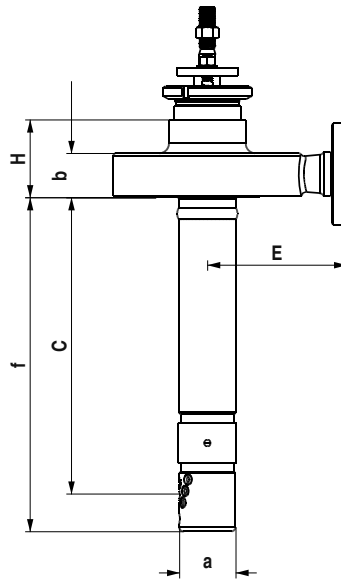
DIN PN 40 - 160



Designation		DN Steam Pipe												
		150	200	250	300	350	400	500	600	700	800	900	1000	
<b>Size A</b> Cooling Media Connection DN 25, PN 160  Steam Connection DN 80, PN 160  Stroke 40 mm	E width across corners	170												
	C installation depth	300			365			465		520				
	f installation length	345			410			510		565				
	b flange leaf strength	54												
	H overall height	95												
	a	71												
	≈ weight ( kg )	31			33			36		37				
<b>Size B</b> Cooling Media Connection DN 40, PN 160  Steam Connection DN 100, PN 160  Stroke 80 mm	E width across corners	195												
	C installation depth				350			425		525		630		680
	f installation length				423			498		698		703		753
	b flange leaf strength	69												
	H overall height	110												
	a	92												
	≈ weight ( kg )				57			61		66		71		74

# Dimensions and Weights

ANSI Class 300 - 600

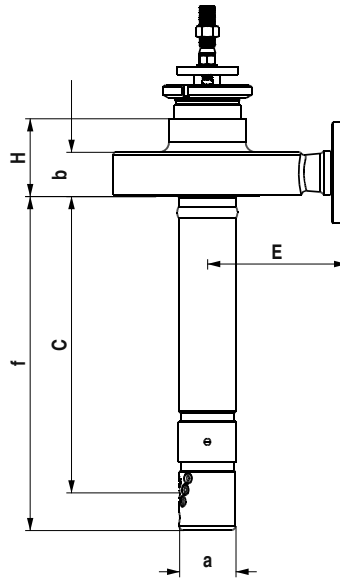


Designation		DN Steam Pipe													
		150	200	250	300	350	400	500	600	700	800	900	1000		
		6"	8"	10"	12"	14"	16"	20"	24"	28"	32"	36"	40"		
Size A	E width across corners	mm	170												
		inch	6.7												
	C installation depth	mm	300			365			465		520				
		inch	11.8			14.4			18.3		20.5				
	f installation length	mm	345			410			510		565				
		inch	13.6			16.1			20.1		22.2				
	b flange leaf strength	mm	54												
		inch	2.1												
	H overall height	mm	95												
		inch	3.7												
a	mm	71													
	inch	2.8													
≈ weight	kg	31			33			36		37					
	lbs	68.3			1.3			1.4		1.5					
Size B	E width across corners	mm	194												
		inch	7.6												
	C installation depth	mm				350			425		525		630		680
		inch				13.8			16.7		20.7		24.8		26.8
	f installation length	mm				423			498		698		703		753
		inch				16.7			19.6		27.5		27.7		29.6
	b flange leaf strength	mm	69												
		inch	2.7												
	H overall height	mm	110												
		inch	4.3												
a	mm	92													
	inch	3.6													
≈ weight	kg				57			61		66		71		74	
	lbs				125.7			2.4		2.6		2.8		2.9	



# Dimensions and Weights

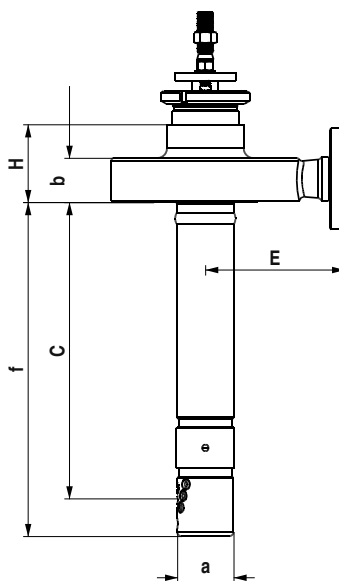
ANSI Class 900



Designation		DN Steam Pipe												
		150	200	250	300	350	400	500	600	700	800	900	1000	
		6"	8"	10"	12"	14"	16"	20"	24"	28"	32"	36"	40"	
Size A	E width across corners	mm	222,3											
		inch	8.8											
	C installation depth	mm	316,6		376,6		478,6		555,2					
		inch	12.5		14.8		18.8		21.9					
	f installation length	mm	361		421		523		599					
		inch	14.2		16.6		20.6		23.6					
	b flange leaf strength	mm	82.6											
		inch	3.3											
	H overall height	mm	124											
		inch	4.9											
Stroke 40 mm	a	mm	84											
	inch	3.3												
≈ weight	kg	57,5		59,5		63,5		67,5						
	lbs	2.3		2.3		2.5		2.7						
Size B	E width across corners	mm			285,8									
		inch			11.3									
	C installation depth	mm			408,2		484,2		606,2		686,2		736,2	
		inch			16.1		19.1		23.9		27		29	
	f installation length	mm			481		557		679		759		809	
		inch			18.9		21.9		26.7		29.9		31.9	
	b flange leaf strength	mm			95,3									
		inch			3.8									
	H overall height	mm			124									
		inch			4.9									
Stroke 80 mm	a	mm			114									
	inch			4.5										
≈ weight	kg			115		118		123		126		128		
	lbs			4.5		4.6		4.8		5		5		

# Dimensions and Weights

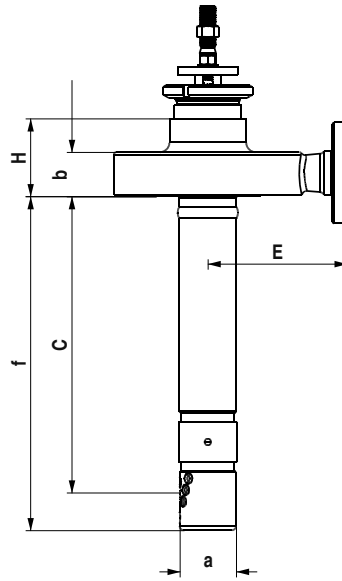
ANSI Class 1500



Designation		DN Steam Pipe												
		150	200	250	300	350	400	500	600	700	800	900	1000	
		6"	8"	10"	12"	14"	16"	20"	24"	28"	32"	36"	40"	
Size A	E width across corners	mm	235											
		inch	9.3											
	C installation depth	mm	316,6		376,6		478,6		555,2					
		inch	12.5		14.8		18.8		21.9					
	f installation length	mm	361		421		523		599					
		inch	14.2		16.6		20.6		23.6					
	b flange leaf strength	mm	82,6											
		inch	3.3											
	H overall height	mm	124											
		inch	4.9											
a	mm	84												
	inch	3.3												
Stroke 40 mm	≈ weight	kg	62		64		68		72					
	lbs	2.4		2.5		2.7		2.8						
Size B	E width across corners	mm			285,8									
		inch			11.3									
	C installation depth	mm			408,2		484,2		606,2		686,2		736,2	
		inch			16.1		19.1		23.9		27		29	
	f installation length	mm			481		557		679		759		809	
		inch			18.9		21.9		26.7		29.9		31.9	
	b flange leaf strength	mm			95,3									
		inch			3.8									
	H overall height	mm			124									
		inch			4.9									
a	mm			114										
	inch			4.5										
Stroke 80 mm	≈ weight	kg			115		118		123		126		128	
	lbs			4.5		4.6		4.8		5		5		

# Dimensions and Weights

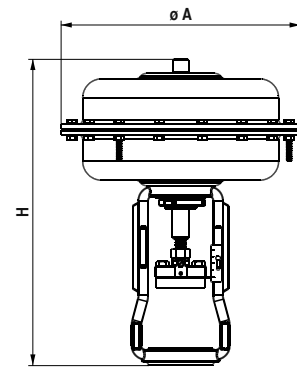
ANSI Class 2500



Designation		DN Steam Pipe													
		150	200	250	300	350	400	500	600	700	800	900	1000		
		6"	8"	10"	12"	14"	16"	20"	24"	28"	32"	36"	40"		
Size A	E width across corners	mm	333,4												
		inch	13.1												
	Cooling Media Connection 1" Class 2500	C installation depth	mm	493,2		543,2		643,2	713,2						
		inch	19.4		21.4		25.3	28.1							
	f installation length	mm	541,6		591,6		691,6	761,6							
		inch	21.3		23.3		27.2	30							
	Steam Connection 6" Class 2500	b flange leaf strength	mm	136,4											
		inch	5.4												
	H overall height	mm	151,4												
		inch	6												
Stroke 40 mm	a	mm	114												
	inch	4.5													
≈ weight	kg	211		214		219	222								
	lbs	8.3		8.4		8.6	8.7								
Size B	E width across corners	mm			355,8										
		inch			14										
	Cooling Media Connection 1 1/2 Class 2500	C installation depth	mm			509,9		585,9	707,9	787,9	837,9				
		inch			20.1		23.1	27.9	31	33					
	f installation length	mm			582,6		659,6	780,6	860,6	910,6					
		inch			22.9		26	30.7	33.9	35.9					
	Steam Connection 6" Class 2500	b flange leaf strength	mm	136,4											
		inch	5.4												
	H overall height	mm	151,4												
		inch	6												
Stroke 80 mm	a	mm	114												
	inch	4.5													
≈ weight	kg			219		222	227	230	232						
	lbs			8.6		8.7	8.9	9.1	9.1						

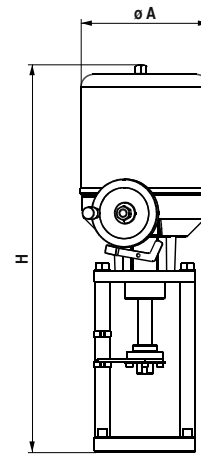
## Pneumatic linear Actuator - FlowAct

Designation	Area (cm <sup>2</sup> )	500	700	1500
	max. Positioning Force kN	7,5	10,5	22,5
	max. Positioning Force lbs	1685	2360	5060
	Stroke mm	40	40 / 80	
	Stroke inch	1.6	1.6 / 3.1	
ø A	mm	352	405	510
	inch	13.9	15.9	20.1
≈ H	mm	436	547	955
	inch	17.2	21.5	37.6
≈ Weight	kg	31	40	82
	lbs	68.3	88.2	180.8



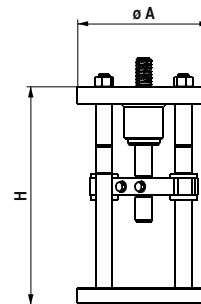
## Electric linear Actuator - Haselhofer

Designation	Actuator	ED 4,5	ED 8	ED 12	ED 20
	max. Positioning Force kN	4,5	8	12	20
	max. Positioning Force lbs	1010	1800	2700	4500
	Stroke mm	40	40 / 80		
	Stroke inch	1.6	1.6 / 3.1		
ø A	mm	145	184	184	216
	inch	5.7	7.2	7.2	8.5
≈ H	mm	535	570	570	660
	inch	21.1	22.4	22.4	26.0
≈ Weight	kg	7,5	13	13	19
	lbs	16.5	28.7	28.7	41.9



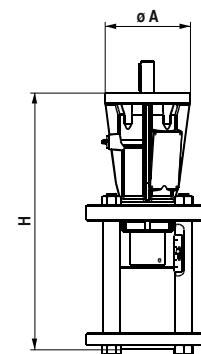
## Linear Unit „light“

Designation	Linear Unit	LD 20
	max. Positioning Force kN	27,7
	max. Positioning Force lbs	6230
	Stroke mm	40 / 80
	Stroke inch	1.6 / 3.1
ø A	mm	196
	inch	7.7
≈ H	mm	407
	inch	16.0
≈ Weight	kg	20
	lbs	44.1



## Linear Unit „heavy“

Designation	Linear Unit	SD 35	SD 36
	max. Positioning Force kN	35	35
	max. Positioning Force lbs	7870	7870
	Stroke mm	40	80
	Stroke inch	1.6	3.1
ø A	mm	125	175
	inch	4.9	6.9
≈ H	mm	380	590
	inch	15.0	23.2
≈ Weight	kg	20	40
	lbs	44.1	88.2



## Operating Mode

The **VariCool** desuperheater integrates the precision of a control valve into a desuperheater to attain maximum rangeability, responsiveness and control.

The multi-stage design of the piston tube allows the **VariCool** to manage a wide spectrum of differential pressures as it directly injects atomized cooling liquid to cool process steam.

Temperature reduction occurs as the atomized cooling liquid rapidly vaporizes into the process steam.

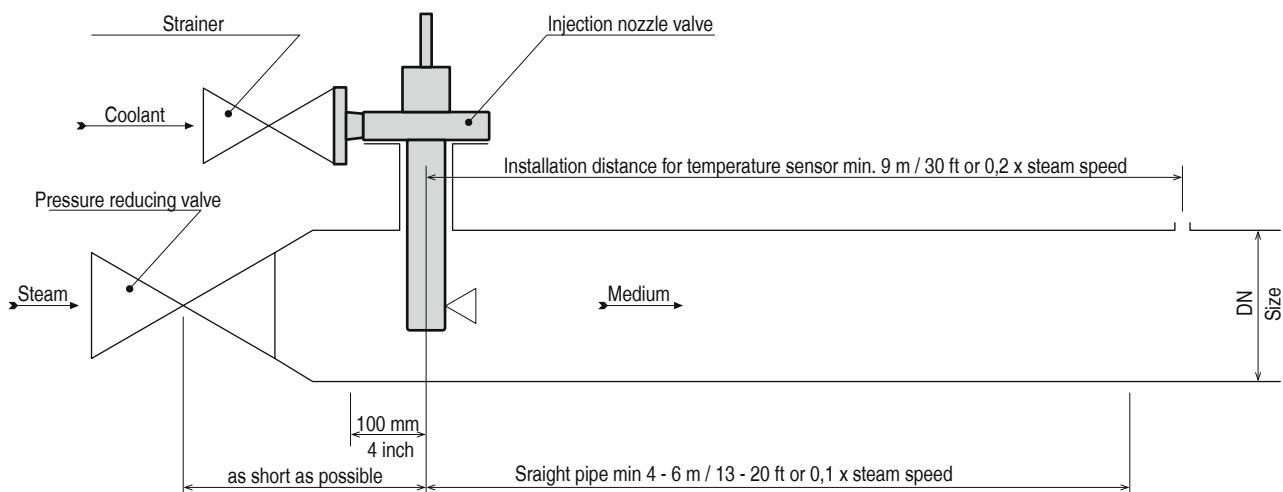
The patented perforated flow-to-close plug and the patented nozzle design maintain accurate control of varying process conditions through precise throttling of the cooling liquid control valve in response to feedback from a controller and downstream temperature sensor.

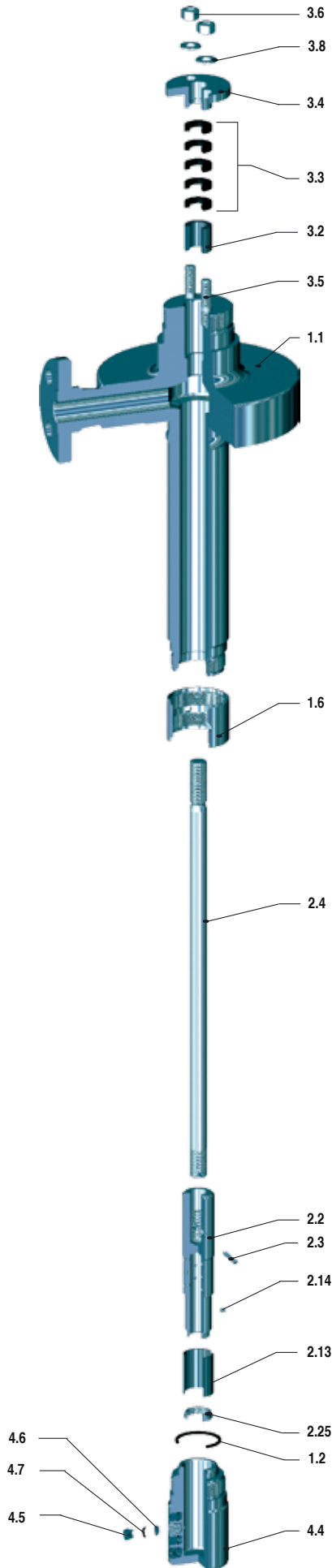
## Physical Requirements

- For an optimal operation, the steam speed should be 10 to 100 m/s / 30 to 300 ft/s
- To avoid condensate the set temperature should be 5 to 10 °C / 41 to 50 °F above the saturated steam temperature.
- Max. operating temperature 530 °C / 986 °F
- Recommended cooling media temperature 120 °C / 248 °F
- Cooling media pressure 5 to 10 bar / 76 to 145 psi (see nozzle table) up to max. 90 bar / 1300 psi above steam pressure.
- We recommend the installation of a strainer into the cooling media pipe (mesh size 0,1mm / 0.004 inch)
- Minimum steam pipe diameter 150 mm / 6 inch
- Recommended straight pipe after injection nozzle valve: 0,1 x steam speed min. 4 to 6 m / 13 to 20 ft
- The distance of the temperature sensor should be 0,2 x steam speed or min. 9 m / 30 ft
- The position of the temperature sensor is important for the measuring quality  
Pay attention to the mounting instruction of the sensor supplier

## VariCool Advantages

- The injection with controlled nozzles ensures an optimal differential pressure for the cooling media.
- The ultrafine atomization provides a quick and complete vaporisation of the cooling water
- No thermo shock pipe and no separate cooling water control valve necessary by using a **VariCool** - injection nozzle valve
- High rangeability of 1:40
- Differential pressure of the cooling media up to 90 bar / 1305 psi (multi - stage pressure reduction)





Designation	Part	Materials				Spare Parts
		DIN		ANSI		
		1.7335	1.4571	A182 F12	A182 F304	
Body	1.1	1.7335	1.4571	A182 F12 Cl.2	A182 F304	
Spiral Wound Gasket	1.2	R901/B	R901/B	R901/B	R901/B	D
LR Nut	1.6	1.4922	1.4922	1.4922	1.4922	
Plug	2.2	1.4922	1.4922	1.4922	1.4922	K
Spring Pin	2.3	A2	A2	A2	A2	K
Stem	2.4	1.4922	1.4922	1.4922	1.4922	K
Piston Tube	2.13	1.4122	1.4122	1.4122	1.4122	K
Fuse Pin	2.14	1.4122	1.4122	1.4122	1.4122	K
Spring Nut	2.25	1.4922	1.4922	1.4922	1.4922	K
Guid Bush	3.2	1.4122	1.4122	1.4122	1.4122	
Packing	3.3	Pure Grafite	Pure Grafite	Pure Grafite	Pure Grafite	D
Stuffing Box	3.4	1.4571	1.4571	1.4571	1.4571	
Stud Bolt	3.5	A2 - 70	A2 - 70	A193 B8M2	A193 B8M2	
Hex Nut	3.6	A2 - 70	A2 - 70	A194 8M	A194 8M	
Washer	3.8	A2	A2	A2	A2	
Nozzle Body	4.4	1.4922	1.4922	1.4922	1.4922	
Nozzle	4.5	1.4122	1.4122	1.4122	1.4122	S
Swirl Disk	4.6	1.4122	1.4122	1.4122	1.4122	S
Profile Ring	4.7	R901/B	R901/B	R901/B	R901/B	S

K Plug, Stem, Piston Tube  
 S Nozzle Set  
 D Gasket Set

Type	DN	PN	Body./Cert.	Plug	Seat	kvs	Trim	Actuator	S
V901 AEVZB	350	160	1.4571/OAO	AHNP2LI	35	0,67	1.4922		

Body  
 Size A A  
 Size B B

Form of Connection  
 Flange acc. to EN 1092-1 Form B1 K  
 EN 1092-1 Form B2 M  
 DIN 2638 Form E  
 ANSI B 16.5 RF F  
 ANSI B 16.5 RJ J

Connection flange position  
 in steam flow direction Z  
 left of steam flow direction L  
 right of steam flow direction R  
 against steam flow direction U

Steam Pipe DN 150 - 1000  
 6" - 40"

Nominal Pressure PN 40 - 160  
 Class 300 - 2500

Body Material 1.4571  
 1.7335  
 A182F304  
 A182F12

Materials acc. to international Standards for Pressure Stressed Parts  
 Standards for Materials  
 without DGRL (Standard) O . . .  
 TRD AG 2 I . . .  
 TRB 801 AG A P . . .  
 Certificates for Materials  
 without . O . . .  
 EN 10 204 2.2 . Z . . .  
 3.1 (Survey of Cert.) . B . . .  
 3.1 (CMTR) . D . . .  
 3.2 . A . . .  
 Standards and Certificates for final test  
 Standards for final test  
 without EN 1349 (Standard) . . A .  
 Certificates for final test  
 without . . . O  
 EN 10 204 2.2 . . . Z  
 3.1 . . . B  
 3.2 . . . A

Differential Pressure Range  
 up to 40 bar one-step A  
 > 40 - 55 bar two-step B  
 > 55 - 70 bar two-step C  
 > 70 - 85 bar three-step D  
 > 85 - 100 bar three-step E

Nozzle Set A - O

Seat Leakage  
 IEC Class IV P  
 Class V S

Seat Diameter 35 resp. 45

kvs Value 0,13 - 6,3

PD 502 BDYOZ  
 Operation on air failure  
 Z Stem extended

Hand Wheel  
 O without  
 H top, heavy-duty  
 S PD 502 - 700  
 lateral,  
 PD 1502

Spring Ranges  
 GF 0,4 - 2,0  
 DY 1,0 - 2,4  
 VC 1,5 - 2,7

Actuator Size  
 PD 502 Area 500 cm<sup>2</sup>  
 PD 700 Area 700 cm<sup>2</sup>  
 PD 1502 Area 1500 cm<sup>2</sup>

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 Ω potentiometer  
 M 4 - 20 mA positioning  
 feedback

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

Haselhofer-Electric linear Actuator  
 ED 4,5/4,5 actuating force 4,5 kN  
 ED 8/6 actuating force 6 kN  
 ED 8/8 actuating force 8 kN  
 ED 12/12 actuating force 12 kN  
 ED 20/15 actuating force 15 kN  
 ED 20/20 actuating force 20 kN

LD 20  
 Linear thrust Unit  
 LD 20 actuating power 27,7 kN



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SAENBRV901-00 05.07

Your contact:

[Empty dashed box for contact information]



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Modifications without notice in line with technical progress.

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