

TYPE RH / RH-S and RH-A

Control plug valve

DN 15 - 600 / PN 10 - 40

NPS ½" - 24" / class 150



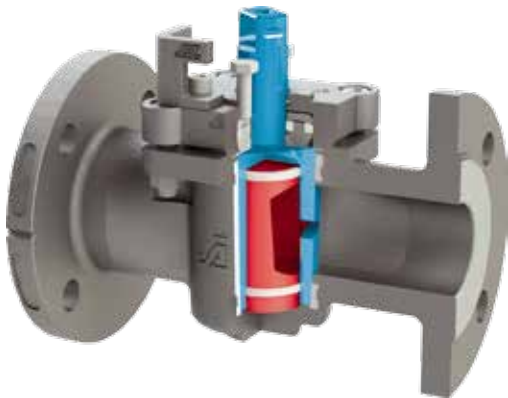
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- different K_{vs} values
- individual control characteristics
- free passage possible with open valve
- equal percentage or linear characteristic line
- cost-effective automation
- readily reproducible control position
- PFA / FEP-lining possible



TYPE RH / RH-S and RH-A

Construction characteristics



- Control plugs
- Internal protection inset (optional)

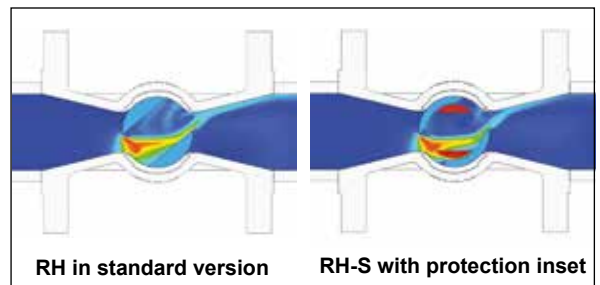


- RH valve with stainless steel control scale (Standard for manually operated valves)

RH - control valves

The construction of the RH and RH-A control valves is based on our standard cavity-free plug valve with PTFE-sleeve, or chemical resistant PFA/FEP-lining. A wide range of materials for housings, plugs, as well as for sleeves or linings are available for different areas of application. If required, the control valves can also be supplied with a heating jacket.

The RH-S series is fitted with an additional internal protection insert. This protection insert is recommended for protecting the sleeves when there is a high flow velocity or pressure loss and/or solid-containing mediums. The protection insert can also contribute to an increase in service life



Examples of control characteristics

equal percentage, plug shape PR + EXTRA

linear, plug shape LR

Plug shapes and control characteristics

As standard, there are ten plugs forms available per valve size, consisting of five linear and five equal percentage control characteristics.

Type "EXTRA" full bore plug valves with equal percentage control characteristics are recommended for very large flow rates (only RH and RH-S types).

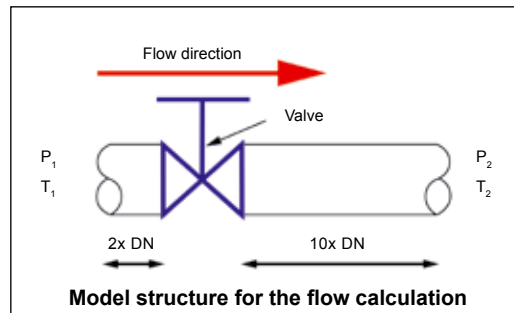
Furthermore, bespoke plug forms can be calculated and designed according to customer-specific requirements that combine, for example, control properties and free passage.

TYPE RH / RH-S and RH-A

Design fundamentals

Model structure

The data was determined by flow simulation and based on the VDI/VDE 2173 with a permissible deviation of +/- 10% (medium = water 20°C, pressure loss $\Delta p = 1$ bar).



Definition K_{vs}

The KVS value designates the maximum possible throughput for a valve with a 100% opening

Definition K_v

The flow coefficient K_v [m³/h] is a specific volume flow for the following conditions:

- The pressure loss (Δp) via the valve is 10⁵ Pa (1 bar)
- The medium is water with a temperature between 278 K and 315 K (5°C to 40°C)

Definition C_v

The flow coefficient C_v is a valve flow coefficient that does not correspond to S.I. units. It represents the number of U.S. gallons of water which flow through a valve with a pressure loss of 1 psi (68.95 mbar) at a temperature of 40°F to 100°F (4°C to 38°C) within a minute. $C_v = K_v/0,865$

Versions

Our standard soft-sealing, cavity-free control valves are recommended for applications in the sub-critical flow area of gaseous or liquid media. For control valves that require specific K_{vs} values and/or control characteristics, these can be designed on request. This also applies to valves with applications in the over-critical areas with high flow rate, flow quantities and, if need be, cavitation or gaseous media.

The following information must be specified for all bespoke customer designs:

1. Temperature (medium) [T]
2. Viscosity (medium) [ν]
3. Density (medium normal condition) [ρ]
4. Inlet pressure [P1]
5. Outlet pressure [P2]
6. Volume flow (medium) [Q]

Conversion factor:

- psi = bar/0.0689
- bar = Pa $\cdot 10^5$
- $C_v = K_v/0.865$
- °F = °C $\cdot 1.8 + 32$
- °C = (°F - 32) $\cdot \frac{5}{9}$

General formula for the calculation of pressure loss

$$\Delta p = \zeta \cdot \frac{\rho w^2}{2}$$







- ζ = drag coefficient zeta [-]
- ρ = density [kg/m³]
- w = speed [m/s]
- Δp = pressure loss [Pa]



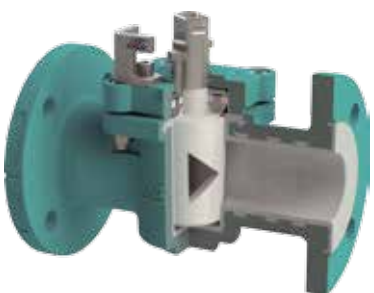





TYPE RH-A

Chemical resistant, lined control valve

RH-A, linear control characteristics

											
Plug shape	DIN / NPS		LR I K _{vs} value	LR II K _{vs} value	LR III K _{vs} value	LR IV K _{vs} value	LR V K _{vs} value				
	DN 15	½"	0,7	1,5	2,7	3,9	-				
	DN 20	¾"	0,6	1,5	2,4	3,5	-				
	DN 25	1"	1,3	2,7	4,1	8,5	16				
	DN 32	1 ¼"	1,8	3,8	5,9	11	21				
	DN 40	1 ½"	2,9	5,7	9,4	18	33				
	DN 50	2"	4,4	8,9	20	27	51				
	DN 65	2 ½"	8,5	19	30	63	141				
	DN 80	3"	9,4	19	29	54	95				
	DN 100	4"	9,2	19	28	49	82				
	DN 100S	4"S	21	45	70	139	343				
	DN 125	5"	21	44	67	127	255				
	DN 150	6"	33	65	112	186	308				
	DN 200	8"	67	139	210	409	687				

RH-A, equal percentage control characteristics

											
Plug shape	DIN / NPS		PR I K _{vs} value	PR II K _{vs} value	PR III K _{vs} value	PR IV K _{vs} value	PR V K _{vs} value				
	DN 15	½"	0,7	1,0	1,6	2,2	3,3				
	DN 20	¾"	0,5	1,0	1,5	2,1	3,3				
	DN 25	1"	1,2	2,5	4,1	6,0	8,1				
	DN 32	1 ¼"	1,8	3,7	5,9	8,6	13				
	DN 40	1 ½"	2,8	5,7	9,0	13	18				
	DN 50	2"	4,3	8,6	14	20	28				
	DN 65	2 ½"	8,5	18	29	45	49				
	DN 80	3"	9,0	18	32	42	62				
	DN 100	4"	8,7	18	27	39	59				
	DN 100S	4"S	20	42	69	94	104				
	DN 125	5"	20	42	65	89	96				
	DN 150	6"	32	63	101	144	181				
	DN 200	8"	66	133	208	297	386				

Valves with operating pressures > PN 40 / class 300 on request.

Order example: F-2-RH-A-PRII-DN50-PN25-ENGJS1049-PFA-1.4408-PTFE







F=Flange, 2= Total flow cock, RH-A= Control valve with lining, PRII-A= Plug control characteristic, DN50=Nominal width, PN25=Nominal pressure, ENGJS1049=housing material+lining, 1.4408-PFA=plug material+lining










TYPE RH

Control valve with sleeve

RH, linear control characteristics

											
Plug shape	DIN / NPS		LR I K _{vs} value	LR II K _{vs} value	LR III K _{vs} value	LR IV K _{vs} value	LR V K _{vs} value				
	DN 15	½"	0,9	1,9	3,1	4,7	6,5				
	DN 20	¾"	0,5	1,5	2,8	4,3	5,3				
	DN 25	1"	1,0	1,9	3,1	5,6	10				
	DN 32	1 ¼"	1,8	3,6	5,8	11	21				
	DN 40	1 ½"	3,0	6,0	9,3	18	36				
	DN 50	2"	5,5	12	27	37	74				
	DN 65	2 ½"	9,6	21	32	62	111				
	DN 80	3"	9,2	19	28	54	97				
	DN 100	4"	9,1	19	28	49	81				
	DN 100S	4"S	23	48	75	160	358				
	DN 125	5"	33	67	105	209	367				
	DN 150	6"	32	64	101	182	315				
	DN 200	8"	63	129	207	380	666				

RH, equal percentage control characteristics

													
Plug shape	DIN / NPS		PR I K _{vs} value	PR II K _{vs} value	PR III K _{vs} value	PR IV K _{vs} value	PR V K _{vs} value	EXTRA K _{vs} value					
	DN 15	½"	0,7	1,4	2,2	3,1	4,9	12					
	DN 20	¾"	0,4	1,1	1,8	2,6	4,6	12					
	DN 25	1"	0,9	2,0	3,1	4,4	6,7	41					
	DN 32	1 ¼"	1,7	3,7	5,9	8,8	12	67					
	DN 40	1 ½"	3,0	6,0	9,5	14	19	98					
	DN 50	2"	5,4	11	18	26	30	177					
	DN 65	2 ½"	9,3	20	32	46	68	285					
	DN 80	3"	8,8	18	29	42	58	445					
	DN 100	4"	8,7	18	28	39	56	686					
	DN 100S	4"S	22	47	76	104	124	-					
	DN 125	5"	32	65	104	151	198	-					
	DN 150	6"	31	64	100	144	193	1500					
	DN 200	8"	62	128	205	290	368	2975					

Valves with larger nominal widths and operating pressures > PN 40 / class 300 on request.


Order example: F-2-RH-EXTRA-DN50-PN25-1.4408-1.4408

F=Flange, 2=Total flow cock, RH=Control valve, EXTRA=Plug control characteristics, DN50=Nominal width, PN25=Nominal pressure, 1.4408=Housing material, 1.4408=Plug material


TYPE RH-S

Control valve with sleeve and protection inset

RH-S, linear control characteristics

Plug shape (with protection inset)	DIN / NPS		LR I	LR II	LR III	LR IV	LR V
			K_{vs} value	K_{vs} value	K_{vs} value	K_{vs} value	K_{vs} value
	DN 15	1/2"	0,8	1,7	2,8	4,2	5,8
	DN 20	3/4"	0,5	1,3	2,5	3,9	4,8
	DN 25	1"	0,9	1,7	2,7	5,0	9,1
	DN 32	1 1/4"	1,6	3,2	5,2	9,8	19
	DN 40	1 1/2"	2,7	5,4	8,3	16	33
	DN 50	2"	5,0	10	24	34	67
	DN 65	2 1/2"	8,6	19	29	55	100
	DN 80	3"	8,3	17	25	49	88
	DN 100	4"	8,2	17	25	44	73
	DN 100S	4"S	21	44	68	144	322
	DN 125	5"	29	61	95	188	330
	DN 150	6"	29	58	91	164	284
	DN 200	8"	57	117	186	342	600

RH-S, equal percentage control characteristics

Plug shape (with protection inset)	DIN / NPS		PR I	PR II	PR III	PR IV	PR V	EXTRA
			K_{vs} value	K_{vs} value	K_{vs} value	K_{vs} value	K_{vs} value	K_{vs} value
	DN 15	1/2"	0,6	1,2	2,0	2,8	4,4	11
	DN 20	3/4"	0,4	0,9	1,6	2,3	4,1	11
	DN 25	1"	0,9	1,8	2,8	4,0	6,1	37
	DN 32	1 1/4"	1,6	3,3	5,3	7,9	10	60
	DN 40	1 1/2"	2,7	5,4	8,6	12	17	88
	DN 50	2"	4,9	10	16	24	27	159
	DN 65	2 1/2"	8,4	19	29	42	61	257
	DN 80	3"	7,9	16	26	37	53	401
	DN 100	4"	7,9	16	25	35	51	617
	DN 100S	4"S	20	42	68	93	112	-
	DN 125	5"	28	59	94	136	178	-
	DN 150	6"	28	57	90	130	174	1350
	DN 200	8"	56	115	184	261	331	2677

Valves with larger nominal widths and operating pressures > PN 40 / class 300 on request.

Order example: F-2-RH-S-LRII-DN50-PN25-1.4408-1.4408: RH-S=Control valve with protection inset, LRII=Plug control characteristics, DN50= Nominal width, PN25=Nominal pressure, 1.4408=housing material., 1.4408=Plug material