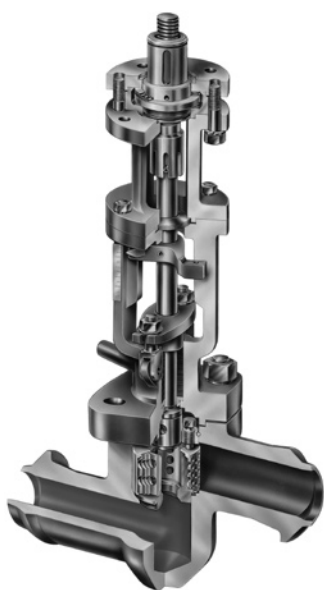
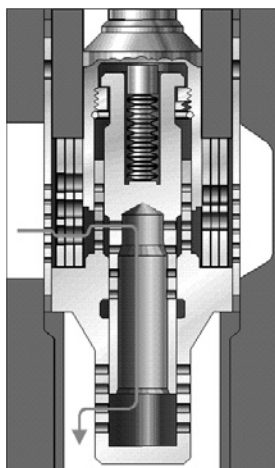




ZK 29/14 DN 50 with lift restriction (optional extra)



Radial stage nozzle with tandem shut-off
for ZK 213

Application

For the decrease of high pressure drops in industrial plants and power stations as:

- Level control valve
- Warm-up valve
- Level control valve
- Injection cooling valve
- Feedwater control valve
- Leak-off valve
- Start-up pot drain valve
- And more applications

Features

- Extremely wear resistant
- Excellent sealing and control characteristic (EN 12266-1 Leckrate A)
- Variable valve characteristics (linear and equal-percentage)
- Easy assembly and inspection of nozzle insert
- Tandem shut-off for ZK 313 and ZK 213
- Low sound level
- Different actuators available

Materials

Type	Body 1)	
ZK 29, DN 25, 50	13 CrMo 4 4	(1.7335)
ZK 29, DN 80, 100, 150	GS-17 CrMo 5 5	(1.7357)
ZK 210	13 CrMo 4 4	(1.7335)
ZK 313	16 Mo 3	(1.5415)
	A182 F1	(1.5423)
	10 CrMo 9 10	(1.7383)/A182 F22
	X 10 CrMo VNb 9 1 (P 91)	(1.4903)/A182 F91
ZK 213	16 Mo 3	(1.5415)
	WB 36	(1.6368)

1) Butt-weld ends of other material by welding of pipe ends possible.

Actuators

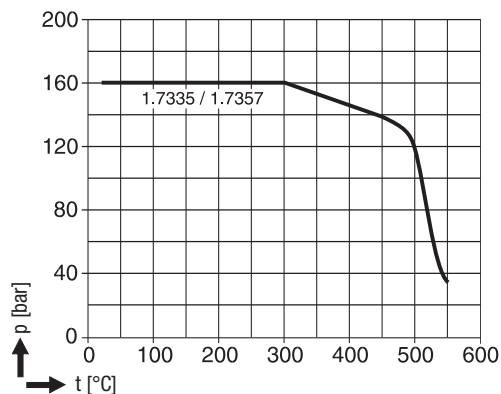
Type	ZK 29	ZK 210	ZK 313	ZK 213	ZK 610 ZK 613
Handwheel	●	●	●	—	—
Electric rotary actuator	●	●	●	●	●
Electric linear actuator	●	●	●	●	●
Electro-hydraulic linear actuator	—	—	●	●	●
Pneumatic actuator	●	●	●	—	●
Part-turn actuator	●	—	●	●	●

Technical Data

K_{vs} -values [m³/h] (linear characteristics), design, pressure/temperature ratings

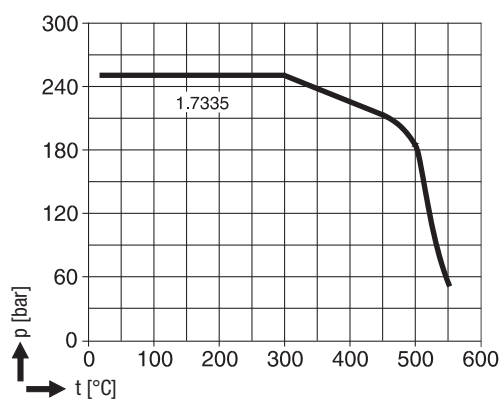
ZK 29				
DN	Δp 100 bar			
25	0.7	1.4	2.1	
50	3	6	9	
65				
80	14	21	28	
100	20	33	46	
125				
150	70	100	130	
200				
250				
300				
350				
400				

Straight-through / angle



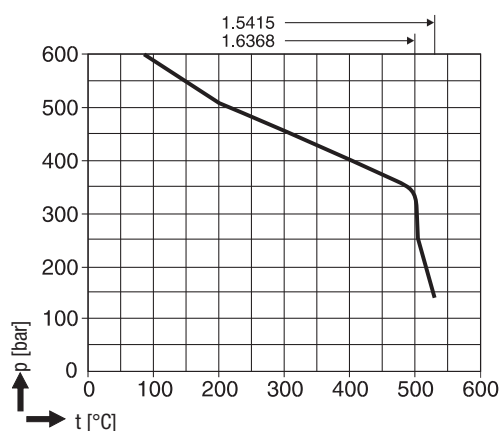
ZK 210				
DN	Δp 100 bar			Δp 180 bar
25	0.8	1.5	2.3	0.5
50	3.3	6.5	10	2
65				
80	9.5	18	28	5
100				
125				
150				
200				
250				
300				
350				
400				

Straight-through / angle



ZK 213 sizes 1-5										
DN	Δp 300 bar					Δp 560 bar				
Bg.	1	2	3	4	5	1	2	3	4	5
25										
50										
65										
80	13					10				
100	13	26				10	20			
125	13	26	39			10	20	30		
150		26	39	60			20	30	46	
200			39	60	90			30	46	70
250				60	90				46	70
300					90					70
350										
400										

Angle / Z pattern

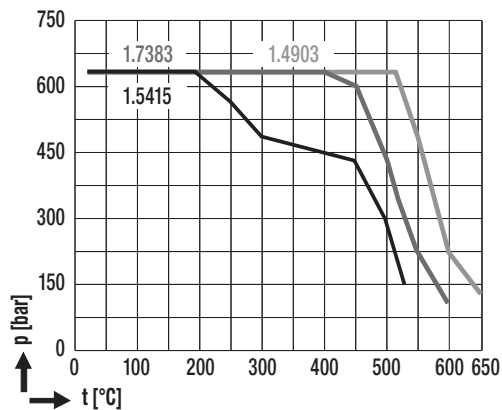


Adaptation of nominal sizes is possible

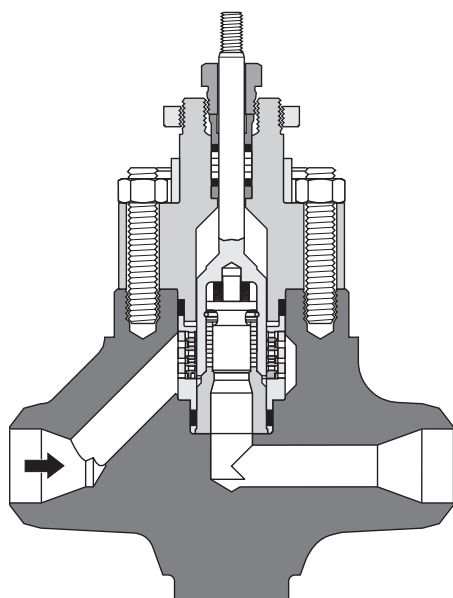
Technical Data

K_{vs} -values [m³/h] (linear characteristics), design, pressure/temperature ratings

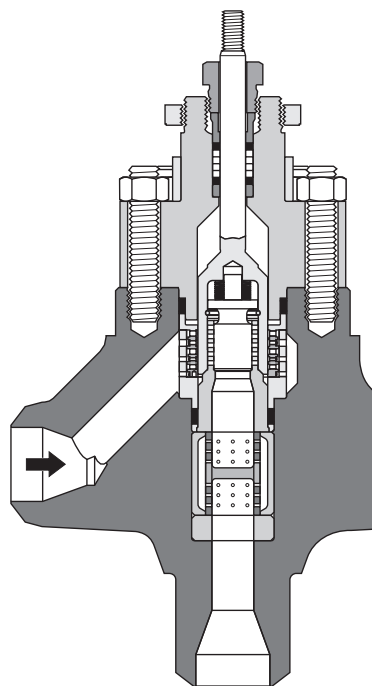
ZK 313												Straight-through / angle DN 25 – 65		Angle / Z pattern up to DN 80	
DN	Δp 300 bar								Δp 370 bar						
25	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5					
50	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5					
65	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5					
80						11	14.5	17	4.5	9.5					
100						11	14.5	17	4.5	9.5					
125						11	14.5	17	4.5	9.5					
150															
200															
250															
300															
350															
400															



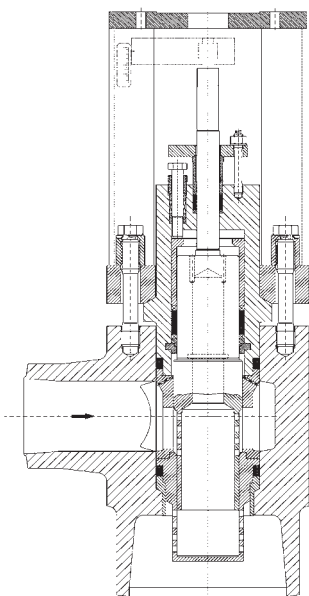
Throttle variants ZK 313



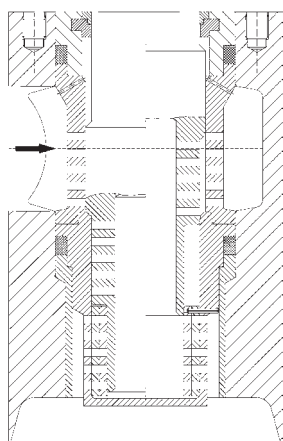
Standard throttle Δp_{max} 300 bar



Special throttle Δp_{max} 370 bar
(only angle-type)



2-stage expansion with balanced pressure
for ZK 613



Throttling unit A1/A2
with 4-stage expansion

Application

For large flowrates;
used as

- Feedwater control valve
- Heating steam valve
- Start-up vessel drain valve

Features

- Excellent sealing and control characteristics

- Extremely wear resistant
- Valve designed on modular assembly principle
- Low sound level
- Easy assembly and inspection of nozzle insert
- Variable valve characteristics (linear and equal-percentage)
- k_{vs} range from 18 to 969 m^3/h
- Leakage-free pressure-balanced design

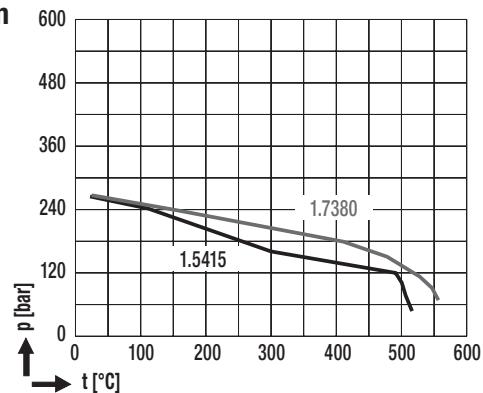
Technical Data

Max. k_{vs} values [m^3/h], designs, pressure/temperature ratings

ZK 610/ZK 613 Angle / Z pattern

Δp (bar)	40	80	120	150	> 150
DN	1-stage	2-stage	3-stage	4-stage	5-stage
100	44 – 98	38 – 54	33 – 47	14 – 19	13 – 18
125	71 – 154	61 – 85	51 – 74	22 – 31	20 – 29
150	112 – 243	95 – 134	81 – 117	35 – 48	32 – 46
200	177 – 385	150 – 212	128 – 185	55 – 76	50 – 73
250	281 – 611	238 – 336	216 – 294	86 – 121	78 – 116
300	446 – 969	378 – 533	322 – 465	137 – 191	125 – 184

ZK 610 Angle / Z pattern



ZK 613 Angle / Z pattern

