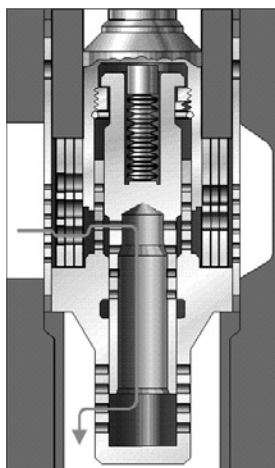


ZK 29/14 DN 50 with lift restriction (optional extra)



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 leakage rate 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 <sup>1)</sup>	
ZK 29, DN 25, 50	13 CrMo 4 4	(1.7335) / A182 F12
ZK 29, DN 80, 100, 150	GS-17 CrMo 5 5	(1.7357) / A 217 WC6
ZK 210	13 CrMo 4 4	(1.7335) / A 182 F12
ZK 313	16 Mo 3	(1.5415)
	C 22.8	(1.0460) / A 105
	10 CrMo 9 10	(1.7383) / A182 F22
	X 10 CrMo VNb 9 1	(1.4903) / A182 F91
ZK 213	16 Mo 3	(1.5415)
	WB 36	(1.6368)
ZK 610 / 613	16 Mo 3	(1.5415)
	10 CrMo 9 10	(1.7383)

<sup>1)</sup> 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	●	–	●	●	●

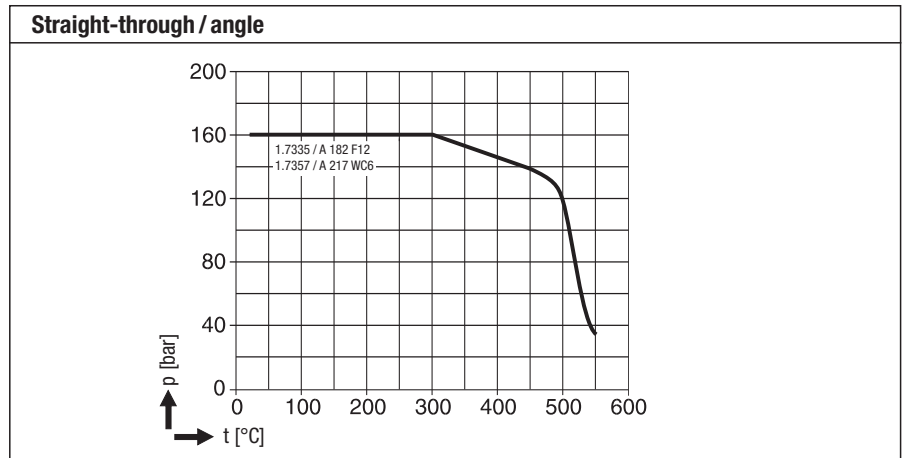
## Controls

Complete PLC-based controls for applications such as injection cooler, leak-off valve etc. designed and manufactured according to customers' specifications.

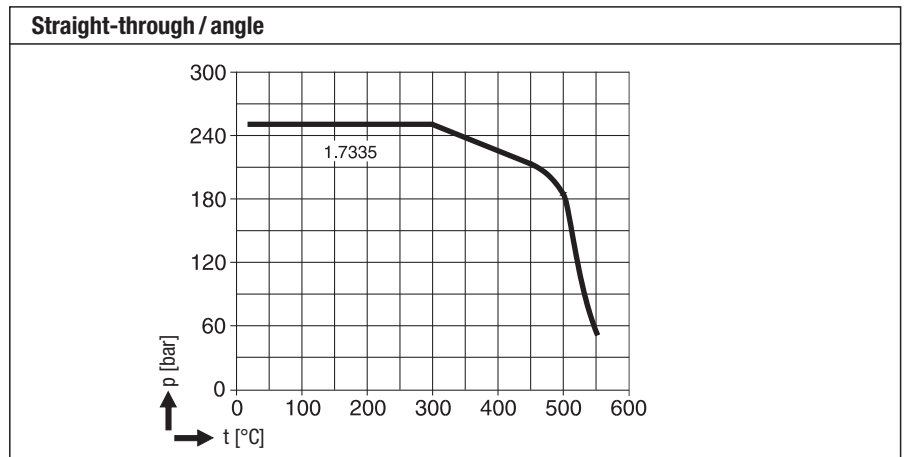
Technical Data

$K_{vs}$ -values [m<sup>3</sup>/h] (linear characteristics), design, pressure/temperature ratings

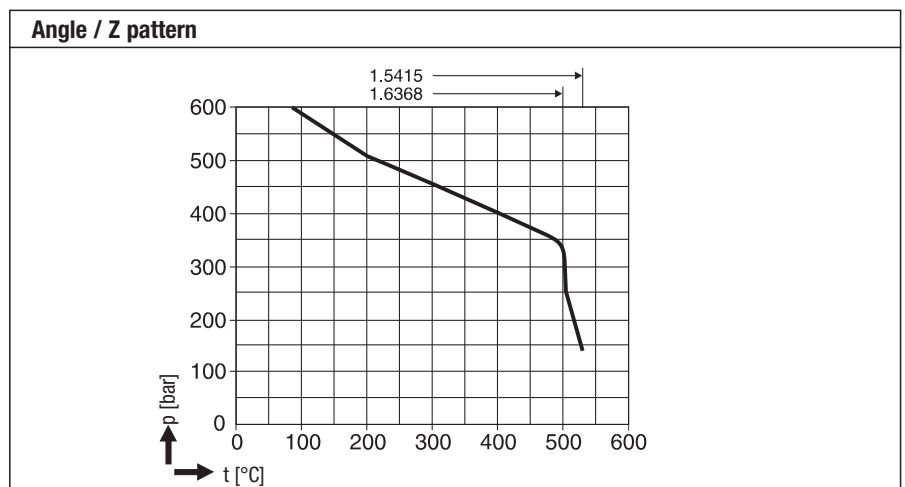
ZK 29				
DN	Øp 100 bar			
25	0.7	1.4	2.1	
50	3	6	9	
65				
80	14	21	28	
100	20	33	46	
125				
150	70	100	130	
200				
250				
300				
350				
400				



ZK 210				
DN	Øp 100 bar			Øp 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				



ZK 213 sizes 1-5										
DN	Øp 300 bar					Øp 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										



Adaptation of nominal sizes is possible

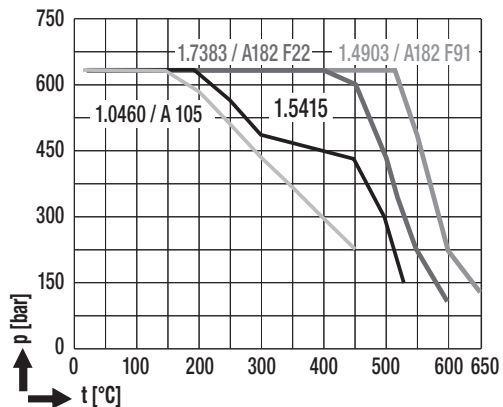
## Technical Data

$K_{vs}$ -values [m<sup>3</sup>/h] (linear characteristics), design, pressure/temperature ratings

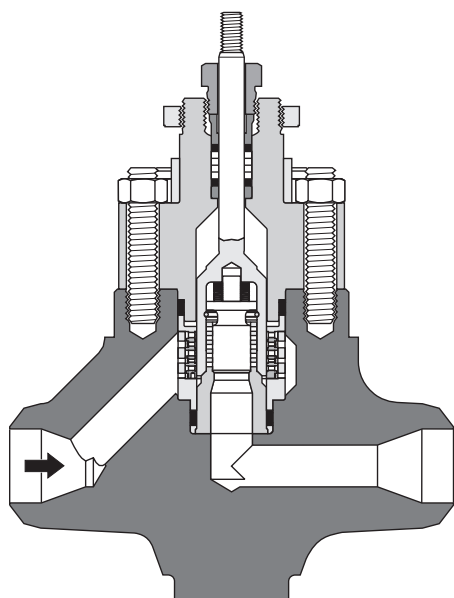
ZK 313											
DN	$\Delta p$ 300 bar								$\Delta p$ 370 bar		
25	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5	
50	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5	
65	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5	
80	1	1.5	2.3	3.6	5.5	11	14.5	17	4.5	9.5	
100						11	14.5	17	4.5	9.5	
125						11	14.5	17	4.5	9.5	
150											
200											
250											
300											
350											
400											

Straight-through / angle DN 25–80

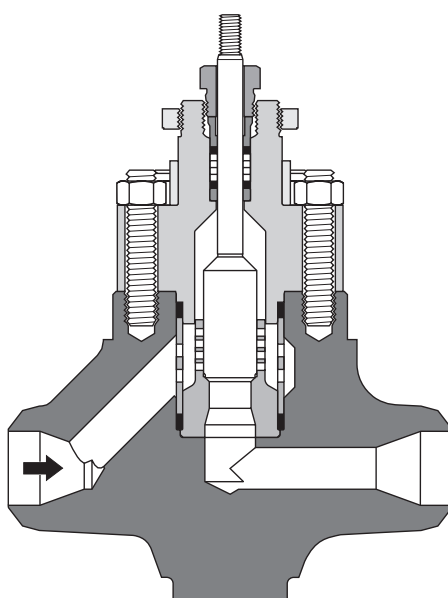
Angle / Z pattern up to DN 80



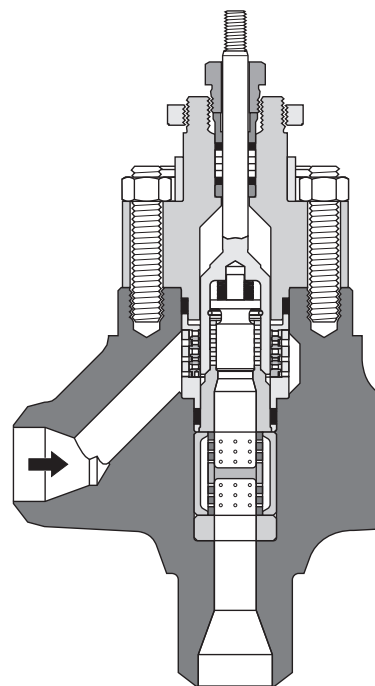
## Throttle variants ZK 313



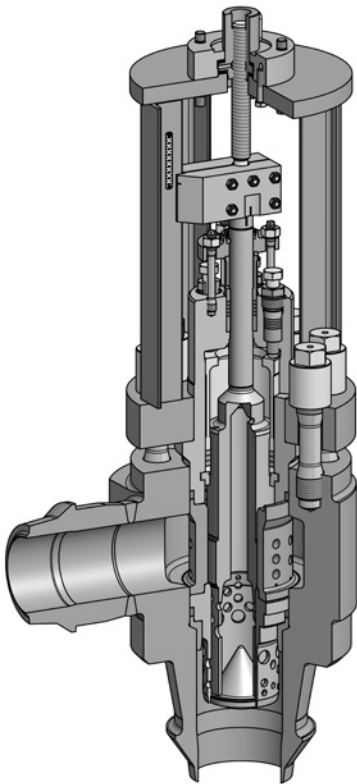
Standard throttle  $\Delta p_{max}$  300 bar



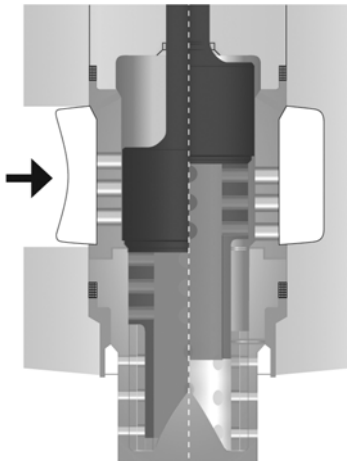
Special throttle  $\Delta p_{max}$  40 bar  
(without tandem nozzle)



Special throttle  $\Delta p_{max}$  370 bar  
(only angle-type)



3-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

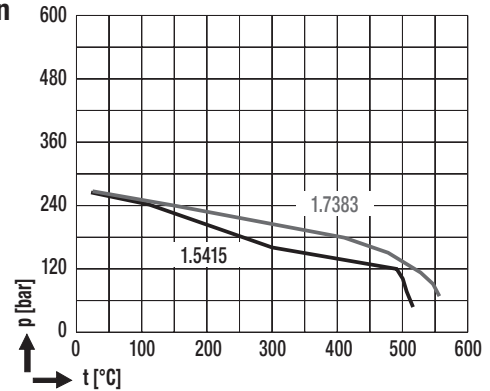
**Technical Data**

Max.  $K_{VS}$  values [ $m^3/h$ ], designs, pressure/temperature ratings

**ZK 610/ZK 613 Angle / Z pattern**

DN	$\Delta p$ (bar)				
	40 1-stage	80 2-stage	120 3-stage	150 4-stage	> 150 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**

