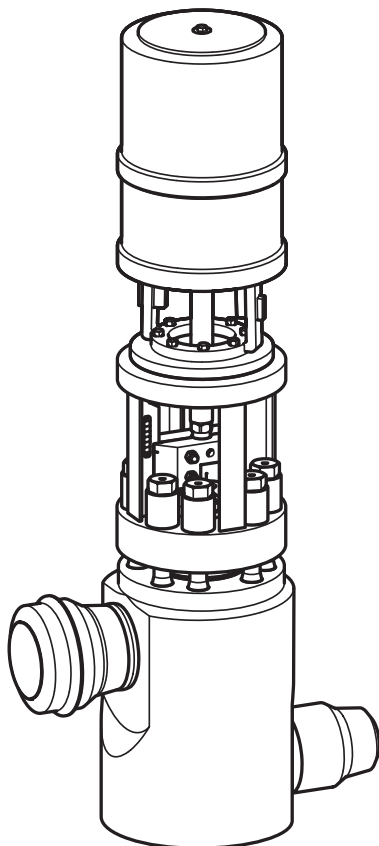


ZK 613-E3/14



ZK 613-Z2/20

## Control Valve with ZK Radial Stage Nozzle

### ZK 610/613

DN100 - DN300

#### Description

The ZK 610/613 control valve with radial stage nozzle is designed for reducing high differential pressures in industrial installations and power plants and used as:

- Warm-up valve
- Drain valve
- Steam control valve
- Feedwater control valve
- Boiler vent valve
- Boiler blowdown valve

All internals are exchangeable. Leakage rate A acc. to EN 12266-1. Available body styles: Z-type or angle pattern. Version with or without pressure compensation.

#### Actuator and operation

The following actuators are available:

- 14: Electric rotary actuator
- 20: Pneumatically operated diaphragm actuator or piston actuator
- 13: Electric linear actuator
- 40: Hydraulic cylinder

#### Available end connections

- Butt-weld ends
- Optional flanged ends

#### Pressure and temperature ratings

Admissible service pressure [barg] for valve body made from EN materials (calculated to EN12516-2)

Temperature [°C]	1.5415	1.7383
100	546	610
150	512	603
200	477	566
250	455	553
300	395	526
350	382	487
400	368	461
450	355	434
500	239	358
530	114	239
560	–	154

The indicated values are for guidance only and depend on the equipment version.

#### Materials of construction

Component part	EN
Body	1.5415
	1.7383
Upper part of body	1.4903
	1.4922
Threaded bolt	1.4980
	1.7709
Nuts	1.4980
	1.7709

Further EN / ASME materials available on request.

#### Max. admissible differential pressure $\Delta PMX$

	Water A1	Steam A2	Two-phase outlet B
	[barg]		
Single stage	40	50	40
Two stages	80	100	80
Three stages	120	150	120

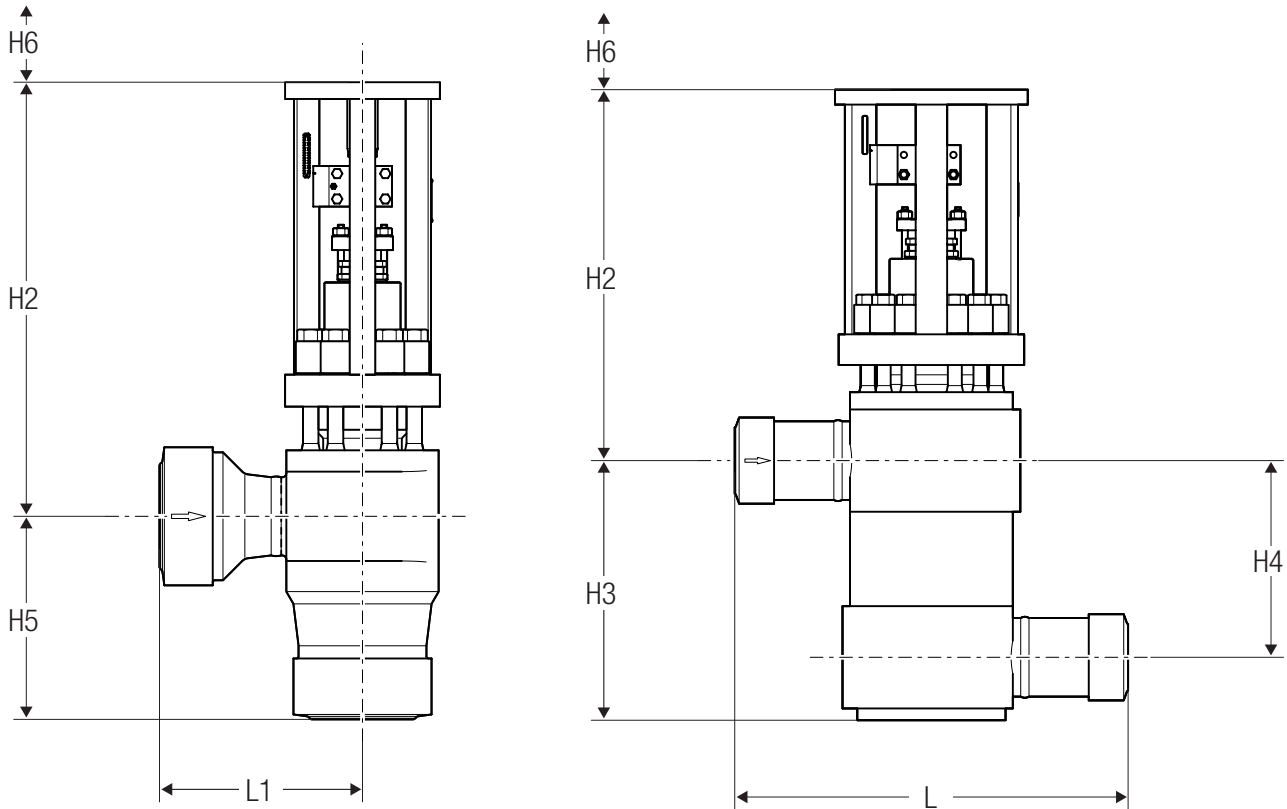
#### Flow Characteristics $Kvs$ Values

Size	$Kvs$ linear [m <sup>3</sup> /h]									Lift [mm]	$\varnothing$ Stem [mm]
	Single stage			Two stages			Three stages				
	A1	A2	B	A1	A2	B	A1	A2	B		
1	98	89	61	54	52	54	44	47	47	50	30
2	154	140	96	84	82	85	69	74	74	62	35
3	243	221	152	132	129	134	110	117	117	78	40
4	385	350	241	208	204	212	174	185	185	98	50
5	611	555	382	330	324	336	276	294	294	123	63
6 <sup>1)</sup>	969	880	606	524	513	533	437	465	465	155	80

Size	$Kvs$ equal-percentage [m <sup>3</sup> /h]									Lift [mm]	$\varnothing$ Stem [mm]
	Single stage			Two stages			Three stages				
	A1	A2	B	A1	A2	B	A1	A2	B		
1	84	77	52	46	45	46	38	40	40	50	30
2	132	120	83	72	70	73	59	64	64	62	35
3	209	190	130	114	111	115	94	100	100	78	40
4	330	300	207	179	175	182	149	159	159	98	50
5	524	476	328	283	278	288	237	252	252	123	63
6 <sup>1)</sup>	931	755	520	449	440	457	375	399	399	155	80

<sup>1)</sup> only ZK610

## Dimensions and weights



The following values are intended for guidance only. The equipment is made to order, which means that the size, connections and weight will be in accordance with the customer's specification.

### Dimensions [mm]

Size	1	2	3	4	5	6 <sup>1)</sup>
H2 max.	470	850	860	880	1130	1000
H4	150	300	350	400	450	450
H3	220	400	450	520	600	600
H6 (space required for servicing)	100	180	200	250	270	250
L	600	700	800	900	1000	1000
L1	300	350	400	500	600	600
H5	320	350	400	450	550	690

<sup>1)</sup> only ZK610

### Weight [kg], without actuator

Size approx.kg	1	2	3	4	5	6 <sup>1)</sup>
Angle pattern	120	340	570	650	1700	1700
Z-type	215	390	620	750	1900	1900

<sup>1)</sup> only ZK610

### Function

The ZK radial stage nozzle guarantees maximum wear resistance and ultra tight shut-off while combining the function of a control valve with a shut-off valve.

This system consists of several sleeves nesting within one another, containing radial orifices drilled in them.

The flowrate through the ZK radial stage nozzle is set by means of the valve plug. Depending on its position, this valve plug opens up the individual orifices partially or completely, thus producing different flowrates.

As a result of this design, the pressure drop is reduced in steps and the medium flowing through is split up into many partial flows. This ensures high resistance to wear and reduces the noise level.

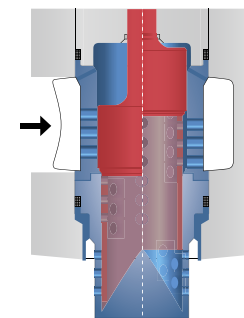
### Function of the control edge

The valve plug is provided with a control edge arranged above the sealing surface. The control edge lowers until it covers the lowest orifice of the radial stage nozzle, while the seating surface remains above the seat. As a result, wear is prevented on the surface of the seat.

Because of the multiple, step-by-step expansion, the pressure drop in the region of the seat is minimized.

### Modular system of the ZK Radial Stage Nozzle® for ZK610, ZK 613

The multi-stage pressure reduction is exactly adapted to the operating conditions.



eg pressure reduction in three stages

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