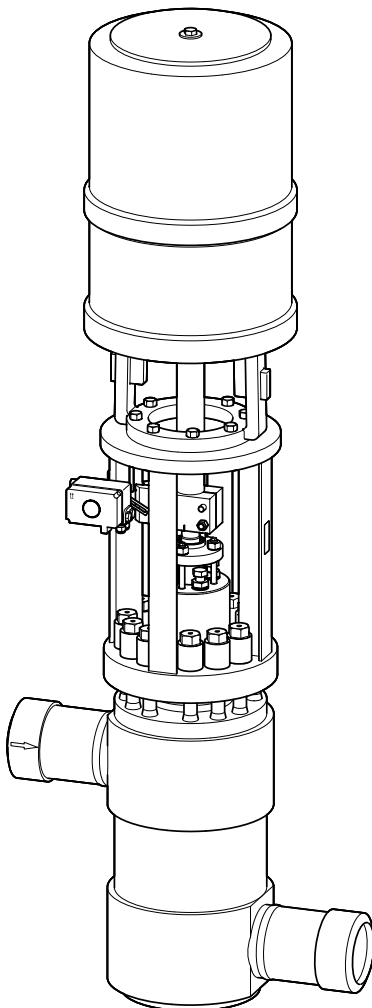


ZK 213-E3/40



ZK 213-Z5/20

## Control Valve with ZK Radial Stage Nozzle and Tandem Shut-off

### ZK 213 DN80 - DN300

#### Description

The ZK 213 control valve with radial stage nozzle and tandem valve plug is designed for reducing high differential pressures in industrial installations and power plants and used as:

- Leak-off valve
- 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

13: Electric linear actuator

20: Pneumatically operated diaphragm actuator or piston actuator

40: Hydraulic cylinder

#### Pressure and temperature ratings

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

Temperature [°C]	1.5415 / 1.6368
100	580
150	545
200	510
250	480
300	450
350	423
400	400
450	375
500	280

**Admissible differential pressure  $\Delta$  PMX:**

	[barg]
Four stages	300
Six stages	560

#### Materials of construction

Component part	EN
Body	1.5415
	1.6368
Upper part of body	1.4922
	1.7335
Threaded bolt	1.7225
	1.7709
	1.4980
Nuts	1.7709
	1.4980

Further EN / ASME materials available on request.

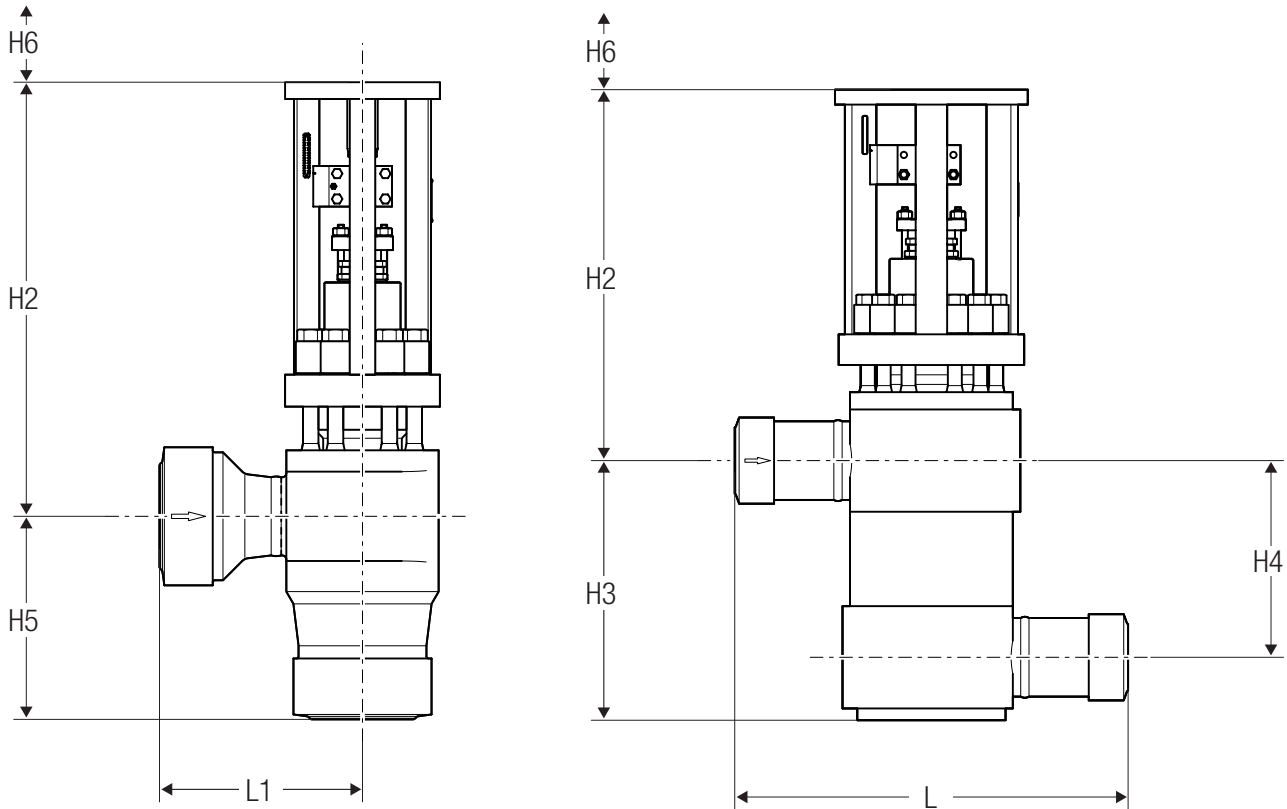
#### Types of end connections

- Butt-weld ends
- Optional flange

#### Flow Characteristics Kvs Values

Size	Kvs		Lift	Ø Stem
	[m <sup>3</sup> /h]			
	linear		[mm]	[mm]
	$\Delta p$ 300 bar	$\Delta p$ 560 bar		
1	20	12	50	40
2	40	30	60	50
3	50	40	70	40
4	65	46	70	40
5	90	70	77	50

## 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
H2 max.	620	740	860	880	940
H4	180	190	300	320	500
H3	250	320	430	500	660
H6 (space required for servicing)	160	180	220	250	270
L	600	700	700	800	1000
L1	300	350	350	400	500
H5	300	350	350	400	450

### Weight [kg], without actuator

Type	1	2	3	4	5
Angle pattern	120	370	490	600	970
Z-type	150	400	540	800	1200

## 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.

Each control valve is equipped with a ZK radial stage nozzle.

This system consists of several sleeves nesting within one another, containing radial orifices drilled in them. By rotation of the sleeves, the orifices are shifted relative to one another, thus forming a large number of throttling points in parallel, with turbulence chambers (expansion chambers) in between.

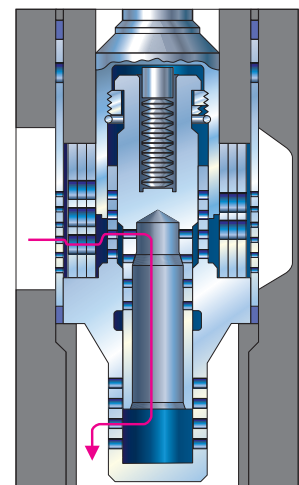
The flowrate through the ZK radial stage nozzle is set by means of the valve plug. Depending on its position, this valve plug opens up the individual orifices partially or completely, thus producing different flowrates.

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.

In addition the ZK 213 is provided with a dual shut-off system (tandem seat).

### Function of the tandem seat

At the beginning of the opening process the valve plug first lifts off the main seat. The valve cone follows only after a certain lift of the valve plug. As a result, the flow velocities across the sealing surface are almost zero during the opening and closing process and, consequently, wire drawing is eliminated.



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