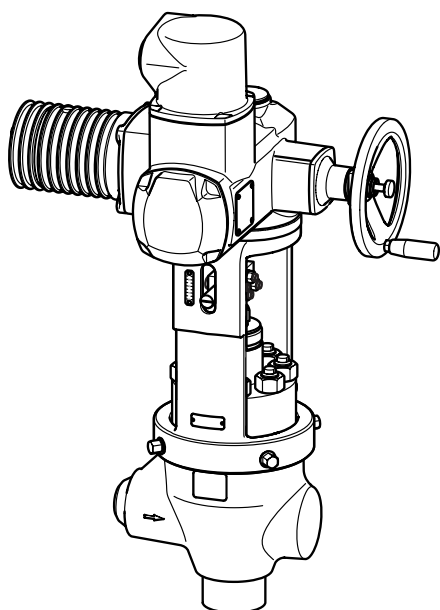
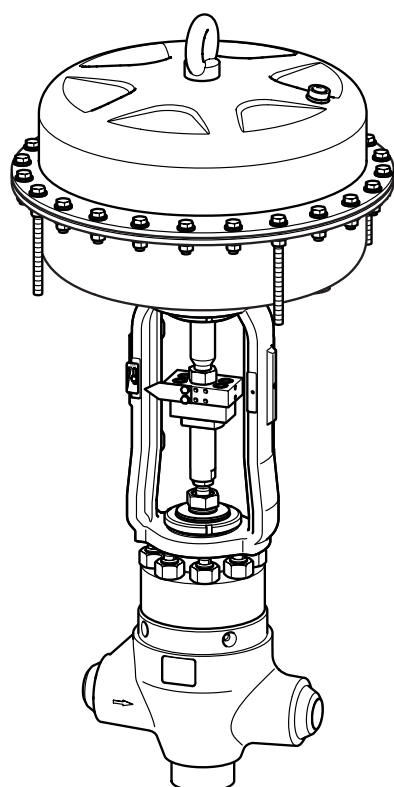




ZK 313-E/11 DN 25-80



ZK 313-D/20 DN 25-80

Control Valve with ZK Radial Stage Nozzle® and Tandem Shut-Off

ZK 313 DN 25 – DN 150

Description

Control valve ZK 313 with ZK radial stage nozzle® designed for reducing high differential pressures in industrial installations and power plants and used as:

- Injection-cooling valve
- Continuous blowdown valve
- Warm-up valve
- Feedwater control valve
- Drain valve
- Leak-off valve
- Steam control valve

All internals are exchangeable. Leakage rate A acc. to EN 12266-1.

For equipment in sizes DN25 - 80 two body types are available: straight-through and angle pattern. The body of equipment sizes DN 100 - 150 is hammer forged and of the angle or Z-type.

A sampling valve is available as optional extra on request.

Actuator and operation

The following actuators are available:

- 02: Handwheel (standard), retrofitting of an electric rotary actuator possible
- 13: Electric linear actuator
- 11: Electric rotary actuator B1-F10 EN ISO 5210
- 20: Pneumatically operated diaphragm actuator or piston actuator
- 12: Electric rotary actuator B1-F14 EN ISO 5210
- 31: Lever actuator equipped with quarter-turn actuator
- 40: Hydraulic cylinder

Pressure & temperature ratings

Admissible service pressure [barg] for valve body made from EN materials

(calculated to EN12516-2)

Temperature [°C]	1.0460	1.5415	1.7383	1.4903
100	654	757	822	920
200	561	612	757	920
300	435	483	709	920
400	290	451	628	920
450	225	435	596	810
500		299	435	778
530		151	290	652
570			164	467
600			109	316
630				216
650				154

Admissible differential pressure Δ PMX:

	[barg]
Single stage	40
Three stages	300
Three stages with additional nozzle	370

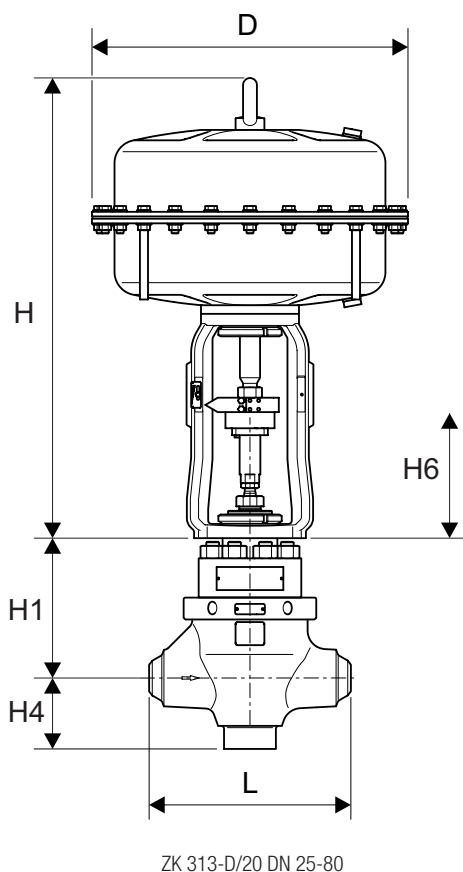
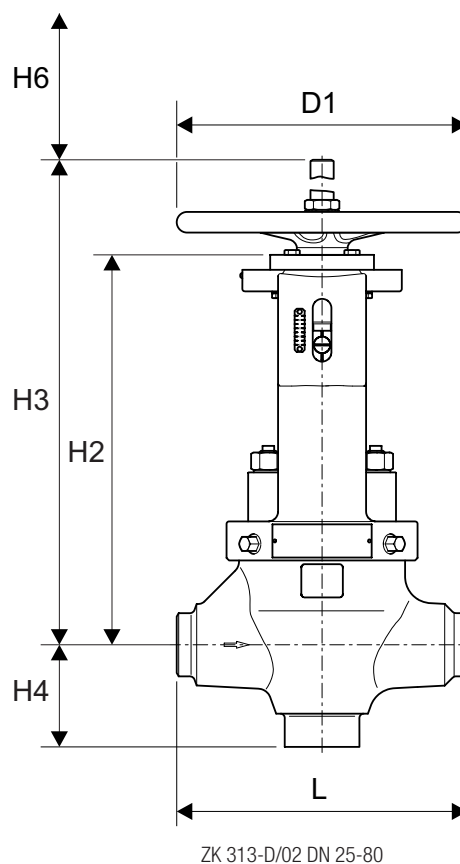
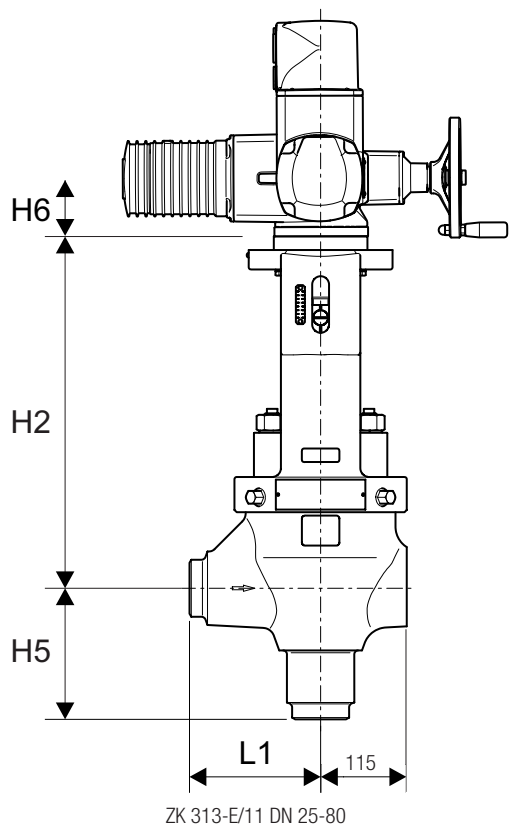
Materials

Component part	EN
Body	1.0460
	1.5415
	1.7383
	1.4903
Upper part of body	1.0460
	1.4903
Threaded bolt	1.7709
	1.4980
Nuts	1.7709
	1.4980

Types of end connections

- Butt-weld ends
- Socket-weld ends
- Optional flange

Dimensions and weights



Dimensions [mm]

Valve size	DN 25 – 80	DN 100 – 150
H1	243	243
H2 max.	484	484
H3 (design/02)	585	585
H4	123	–
H5	175	260
H6 (space required for servicing)	120	120
H6 (space required for servicing, design/02)	290	290
L	350	–
L1	175	260
D1	315	315

Other dimensions available on request.

Weight [kg], without actuator

Type	DN 25 – 80	DN 100 – 150
ZK313/02	100	–
ZK313/11	90	–
ZK313/12	90	–
ZK313/20	70	–
ZK313-E0, ZK313-Z0	–	on request

Dimensions and weights of pneumatic diaphragm actuator

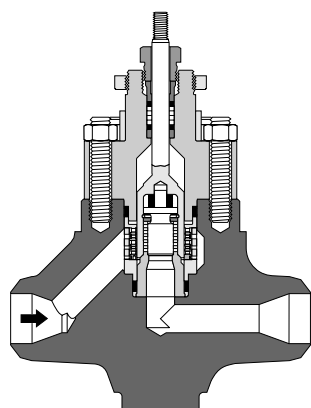
	PB 700	PB 1502	PB 3002
D [mm]	405	548	548
H [mm]	600	800	1,140
Weight [kg]	40	124	240

Flow characteristics

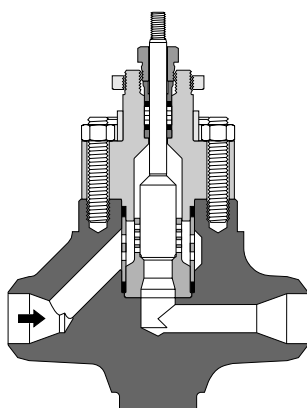
Kvs values

	Kv _s											Lift	
	[m³/h]												
	equal percentage / linear									linear			[mm]
	Δp 300 bar							Δp 370 bar		Δp 40 bar			
DN 25 – 80	1	1.5	2.3	3.6	5.5	8	11	13	4.5	9.5	30	35	
DN 100 – 150	–	–	2.3	3.6	5.5	11	14.5	17	4.5	9.5	46	35	

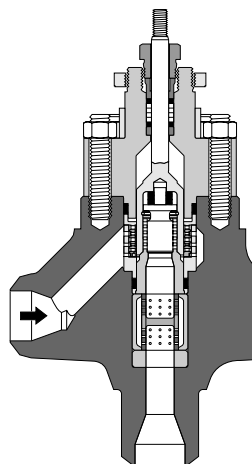
ZK Radial stage nozzle



Standard nozzle
Δp_{max} 300 bar



Special nozzle without tandem seat
Δp_{max} 40 bar



Special nozzle
Δp_{max} 370 bar

Function

The ZK radial stage nozzle guarantees maximum wear resistance and ultra tight shut-off, 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 valve plug determines the flowrate through the ZK radial stage nozzle. Depending on its position, this valve plug opens up the individual orifices partially or completely, thus producing different flowrates.

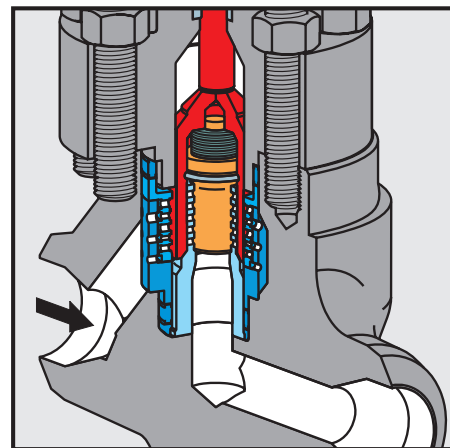
As a result of this design, the pressure drop is reduced in steps and the medium flowing through is split up into many partial flows. This ensures high resistance to wear and reduces the noise level.

In addition the ZK 313 is provided with a dual shut-off system (tandem seat).

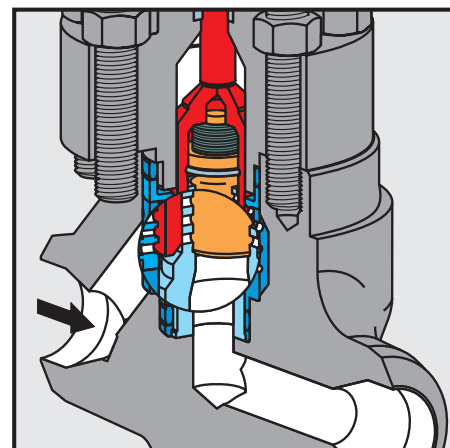
Function of the tandem seat

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.

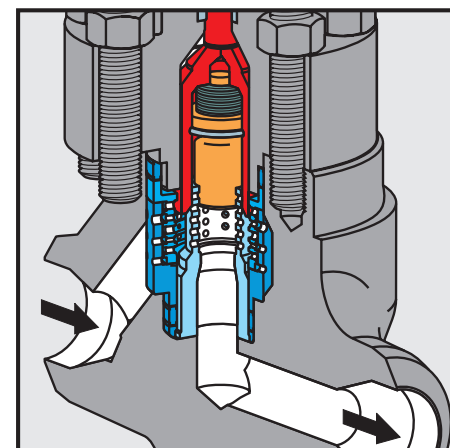
ZK Radial stage nozzle® with tandem seat



Valve plug in closed position



Valve no longer in closed position,
but inner valve cone still closed



Valve plug in control position

Control Valve with ZK Radial Stage Nozzle® and Tandem Shut-Off

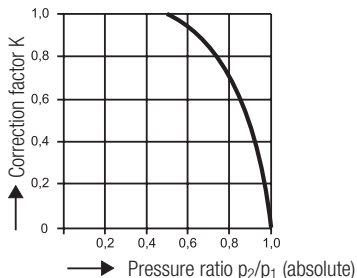
ZK 313

DN 25 – DN 150

Capacity Charts

The charts show the max. flowrates of cold and hot (condensed) water at the extreme regulation position with linear characteristic curves and maximum K_v value.

Backpressure chart for hot water



	K_v value
1	1
2	1.5
3	2.3
4	3.6
5	5.5
6	8
7	11
8	13
9	30

Specification Text

GESTRA Control Valve with Radial Stage Nozzle® ZK 313.

Design data: $p = \dots$ barg, $t = \dots$ °C or PN

Operation: Load conditions (1 to 3)

	1	2	3
P_1 [bara]			
t_1 [°C]			
P_2 [bara]			
M [kg/h]			

Please enter data.

Fluid:

Actuation: Electric (make)

ON / OFF or MODULATING CONTROL

Voltage/Hz

Actuation: Pneumatic (make)

Spring to open:

Spring to close:

Handwheel: yes/no

Positioner: yes/no

Inspection & Certification

Documentation regarding material tests and in-house examination with inspection certificate to EN 10204-3.1 or EN 10204-3.2 available at extra cost.

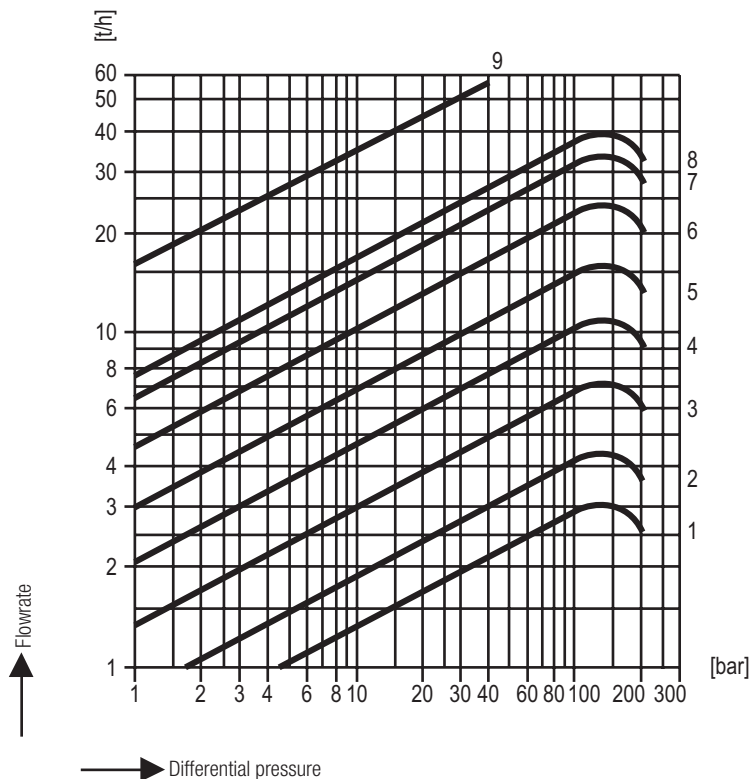
Please state the inspection and certification requirements when inquiring or ordering. After supply of the equipment certification cannot be established.

Charges and extent of the above mentioned certificates as well as the different tests confirmed therein are listed in our price list "Test and Inspection Charges for Standard Equipment".

For other test certificates please consult us.

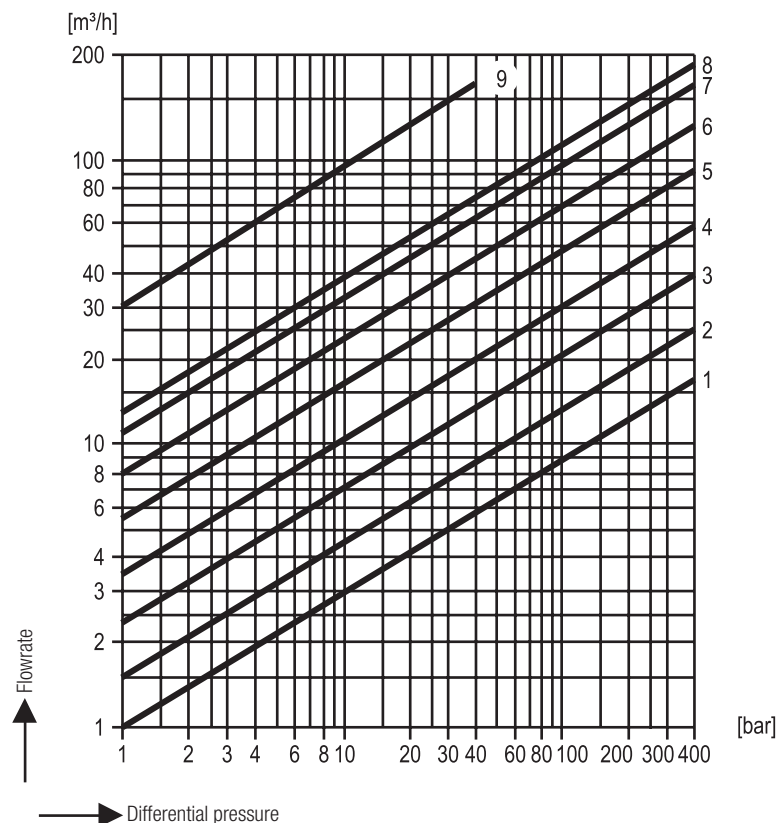
Supply in accordance with our general terms of business.

Capacity chart, hot water $t_s - 5K$



If $p_2/p_1 > 0.5$ multiply the capacity value by the correction factor K taken from the backpressure chart.

Capacity chart for cold water



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