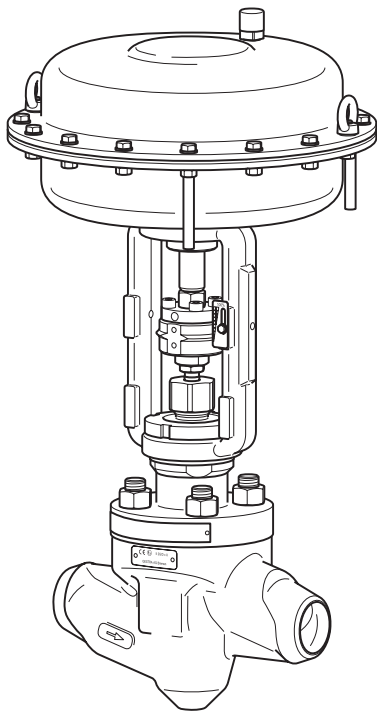


ZK 29/14, DN 50



ZK 29/20, DN 50

Control Valve with ZK Radial Stage Nozzle®

ZK 29 DN 25 – DN 150

Description

Control valve ZK 29 with ZK radial stage nozzle® designed for reducing high differential pressures in industrial installations and power plants and used as:

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

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

Optional extras:

- Connection for sealing fluid
- Self-tightening stuffing box
- Adjustable lift stop in the closing direction
- Sample valve (on request)

Special angle-type bodies are available for all equipment versions.

Types of actuators and operation

The following actuators are available:

- | | |
|---|--|
| 01: Handwheel (retrofitting of an electric rotary actuator not possible)
02: Handwheel (standard, retrofitting of an electric rotary actuator - with insert bush form B1 to EN ISO 5210 - possible)
12: Electric rotary actuator (with threaded bush form A to EN ISO 5210) | 13: Electric linear actuator
14: Electric rotary actuator (with insert bush form B1 to EN ISO 5210)
20: Pneumatic diaphragm actuator
30: Lever actuator without part-turn actuator attached
31: Lever actuator equipped with quarter-turn actuator
40: Hydraulic cylinder |
|---|--|

Pressure & temperature ratings

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

(calculated to EN12516-2)

Temperature [°C]	1.7335	1.7357
20	314	272
200	290	218
300	278	189
400	266	165
500	138	81
550	49	36

Admissible differential pressure Δ PMX:

	[barg]
Single stage	40
Multi stage	100

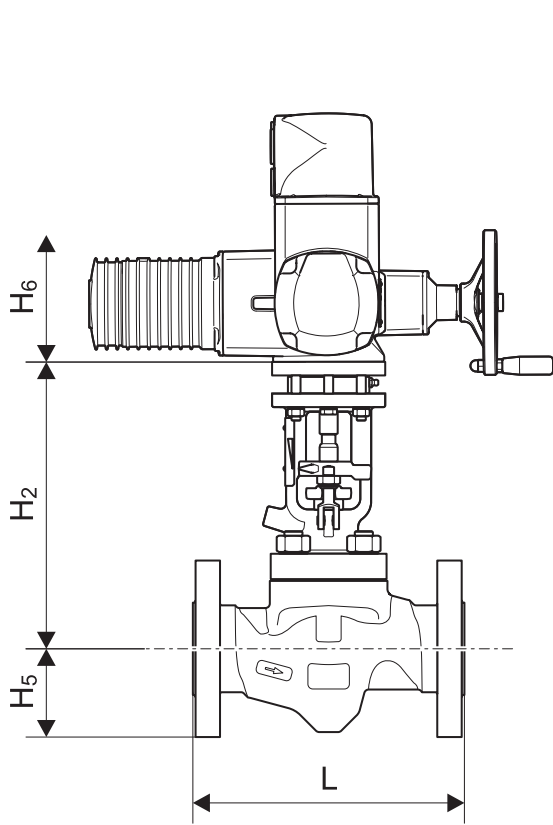
Materials

Component part	EN
Body DN 25, DN 50	1.7335
Body DN 80, DN 100, DN 150	1.7357
Bonnet	1.7357
Cover	1.7335
Threaded bolt	1.7709 1.4980
Nuts	1.7709 1.4980

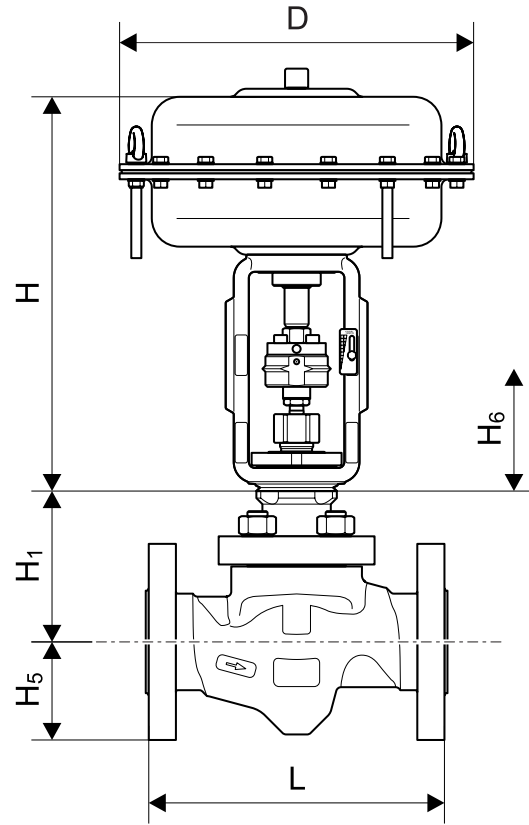
Types of end connections

- Butt-weld ends
 - Socket-weld ends
 - Flange PN63, PN100, PN160
- Other sizes available on request.

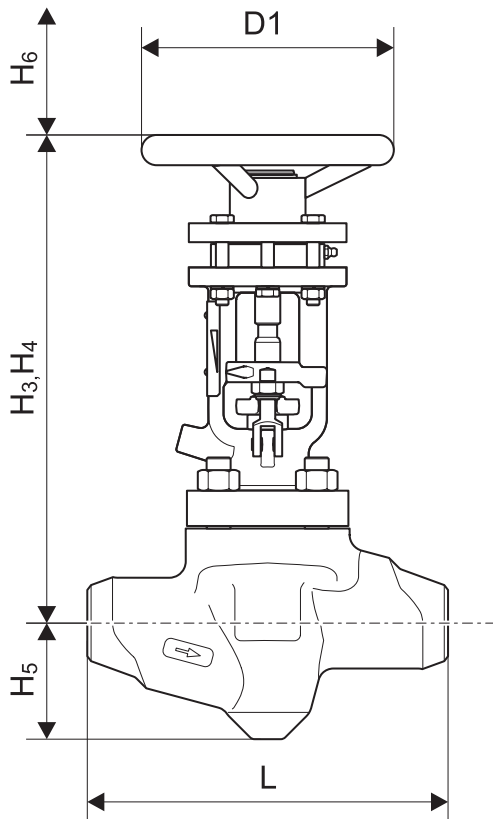
Dimensions and weights



ZK 29/14



ZK 29/20



ZK 29/01 and ZK 29/02

Dimensions [mm]

Valve size	DN 25	DN 50	DN 80	DN 100	DN 150
H1	123	150	213	242	275
H2	266	317	402	545	661
H3 (ZK 29/01)	272	330	415	–	–
H4 (ZK 29/02)	322	387	472	595	740
H5	55	92	100	114	162
H6 (space required for servicing)	103	115	156	209	135
D1	125	200	200	320	500
Overall length L	230	300	380	430	550
Connection (e. g. for tube)	33.7 × 3.2	60.3 × 4.0	88.9 × 6.3	114.3 × 8.0	168.3 × 12.5

Other dimensions available on request.

Weight [kg], without actuator

Type	DN 25	DN 50	DN 80	DN 100	DN 150
ZK 29/01 FL	18	44	69	–	–
ZK 29/01 BW	15	25	54	–	–
ZK 29/02 FL	21	47	71	121	208
ZK 29/02 BW	14	26	50	82	162
ZK 29/14 FL	20	45	69	115	193
ZK 29/14 BW	13	24	48	76	147
ZK 29/20 FL	16	45	67	103	183
ZK 29/20 BW	9	24	46	64	137

FL: Flange, BW: Butt-weld ends

Dimensions and weights - continued -

Dimensions and weights of pneumatic diaphragm actuator

	PB 502	PB 700	PB 1502	PB 3002
D [mm]	352	405	548	548
H [mm]	460	600	800	1,140
Weight [kg]	28	40	124	240

Flow characteristics

Kvs value

Valve size	Characteristic	Kvs [m ³ /h]				Lift [mm]
		Δp 100 bar		Δp 40 bar		
DN 25	linear	0.7	1.4	2.1	2.5	16
	equal percentage				–	
DN 50	linear	3	6	9	12	33
	equal percentage		5.5	8	–	
DN 80	linear	14	21	28	35	45
	equal percentage	9	15	21	–	
DN 100	linear	20	33	46	55	60
	equal percentage	15	25	35	–	
DN 150	linear	70	100	130	158	90
	equal percentage	60	85	110	–	

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.

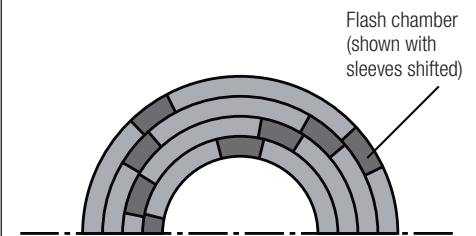
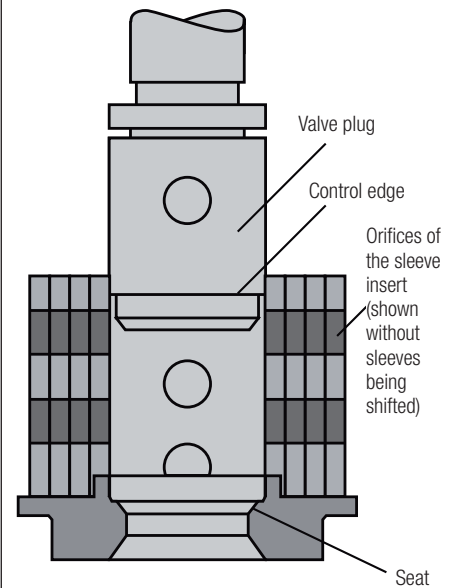
As a result of this design, the pressure drop is reduced in steps and the medium flowing through is split up into many partial flows. This ensures high resistance to wear and reduces the noise level.

Function of the control edge

On the valve plug, there is a control edge which is separate from the seat surface and which closes the orifices of the sleeve insert before the valve plug comes to rest completely against the seat ring. As a result, wear is prevented on the surface of the seat.

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

Sectional view of ZK radial stage nozzle



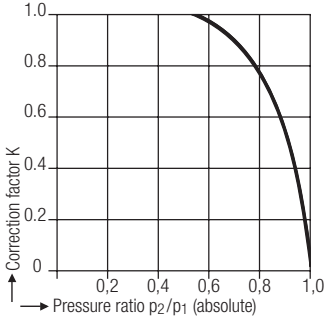
Flow through ZK 29 radial stage nozzle

Control Valve with
ZK Radial Stage Nozzle®
ZK 29
DN 25 – DN 150

Capacity Charts

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

Backpressure chart for hot water



Order & Enquiry Specification

GESTRA Control Valve with Radial Stage Nozzle® ZK 29
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 /

Pneumatic.....(make)

Spring to open:

Spring to close:

Handwheel:

Positioner:

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.

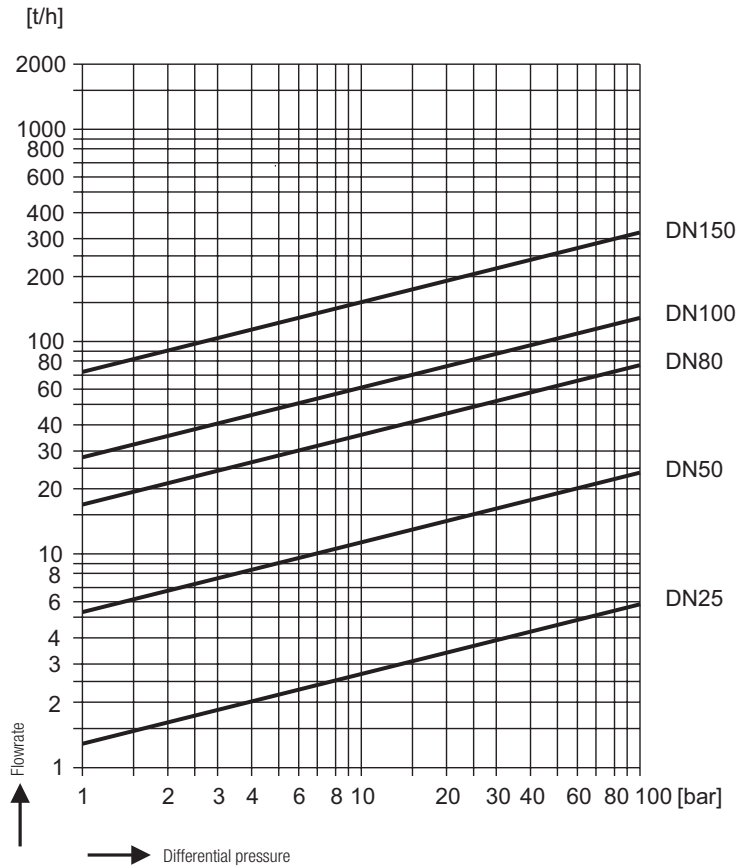
Please state the inspection and certification requirements when inquiring or ordering. After supply of the equipment certification cannot be established.

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.

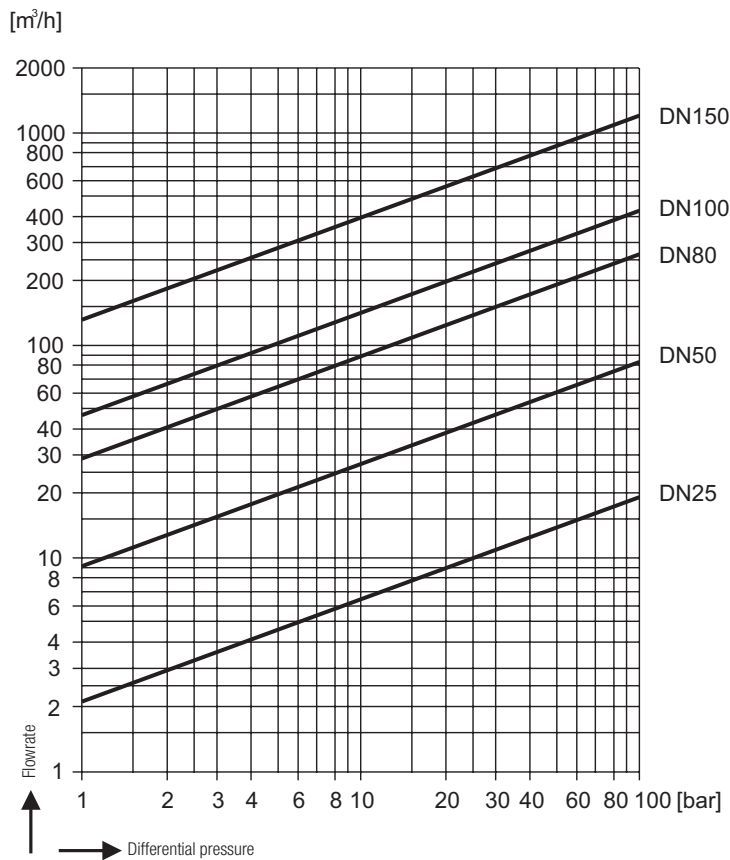
Supply in accordance with our general terms of business.

Capacity chart for 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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