

Globe Valve

NORI 40 ZXLB/ZXSB

Type Series Booklet



Legal information/Copyright

Type Series Booklet NORI 40 ZXLB/ZXSB

All rights reserved. The contents provided herein must neither be distributed, copied, reproduced, edited or processed for any other purpose, nor otherwise transmitted, published or made available to a third party without the manufacturer's express written consent.

Subject to technical modification without prior notice.

© KSB SE & Co. KGaA, Frankenthal 2022-11-15

Contents

Globe Valves..... 4

 Bellows-type Globe Valves to DIN/EN 4

 NORI 40 ZXLB/ZXSB 4

 Main applications..... 4

 Fluids handled 4

 Operating data..... 4

 Valve body materials..... 4

 Design details 4

 Product benefits 5

 Product information 5

 Related documents 5

 Purchase order specifications 5

 Pressure/temperature ratings 6

 Materials 6

 Variants..... 8

 Dimensions and weights..... 9

 Installation instructions 11

 Further installation instructions 11

Globe Valves

Bellows-type Globe Valves to DIN/EN

NORI 40 ZXLB/ZXSB



Main applications

- Process engineering
- Chemical industry
- Petrochemical industry
- Sugar industry
- Heat recovery systems
- Boiler feed applications
- Nuclear power stations

Fluids handled

- Water
- Steam
- Thermal oil
- Other non-aggressive fluids such as gas or oil on request.

Operating data

Table 1: Operating properties

Characteristic	Value
Nominal pressure	PN 25/40
Nominal size	DN 10 - 200
Max. permissible pressure [bar]	40
Min. permissible temperature [°C]	≥ -10
Max. permissible temperature [°C]	≤ +450

Selection as per pressure/temperature ratings (⇒ Page 6)

Valve body materials

Model with flanged ends, DN 10-40, and model with butt weld ends, DN 10-50

Table 2: Overview of available materials

Material	Material number	Temperature limit
P 250 GH	1.0460	≤ 450 °C

Model with flanged ends, DN 50-200, and butt weld ends, DN 65-200

Table 3: Overview of available materials

Material	Material number	Temperature limit
GP 240 GH+N	1.0619+N	≤ 450 °C

Design details

Design

- Plug-type valve disc, replaceable
- Two-piece stem
- Back seat
- Back-up gland packing with gland follower
- Position indicator
- Outside confined cover gasket
- Materials free from non-ferrous metals
- EC type-tested (Module B), component mark TÜ.A.-209
- Exterior coating: blue, RAL 5002
- TA-Luft-compliant design to VDI 2440

Variants

- Throttling plug
- Valve disc with Gylon gasket (240 °C max.)
- Balanced plug ≥ DN 125
- Locking device
- Travel stop
- Studs and nuts made of A4-70 (low-temperature steel)
- Oil and grease free (wetted parts)
- Stellite seat/disc interface
- Seal-welded body/bonnet joint
- Leakage detection hole
- PTFE-encapsulated gasket (max. 300 °C)
- Serrated gasket (PTFE or graphite coated)
- PTFE gland packing (300 °C max.)
- Chlorine, dry
- Upper section with single-piece non-rotating stem for mounting electric and pneumatic actuators (DIN ISO 5210)
- Electric actuators
- Pneumatic actuators
- Limit switch(es)
- Other flange designs

- Other butt weld end versions
- Other socket weld end versions
- Inspections to technical codes such as TRD/TRB/AD2000 – German Steam Boiler / Pressure Vessel Regulations – or to customer specification

Product benefits

- High functional reliability and long service life
 - Two-piece stem. Burnished, non-rotating lower stem makes for minimal wear and long service life of the gland packing.
 - Hard-faced valve seat made of wear and corrosion-resistant materials.
- Leak-proof and easy to service. The double-walled bellows is welded to the stem at the lower end, and to the intermediate piece at the upper end. No vibrations transmitted from valve disc to bellows. Valve disc and bellows assembly inexpensive to replace.
- Reliable sealing. Bonnet gasket fully confined to prevent creep.
- Additional stem seal for emergency operation and blow-out protection by standard back seat as well as back-up gland packing made of pure graphite.
- Reliable shut-off due to tapered valve disc with angled seat/disc interface. Can also be used for contaminated fluids thanks to self-cleaning properties.
- Easy to repair due to corrosion-protected bolts/screws and nuts

Product information

Product information as per Regulation No. 1907/2006 (REACH)

For information as per European chemicals regulation (EC) No. 1907/2006 (REACH) see <https://www.ksb.com/en-global/company/corporate-responsibility/reach>.

Product information as per Directive 2014/34/EU (ATEX)

The valves do not have a potential internal source of ignition and can be used in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zone 2+22) to ATEX 2014/34/EU.

Product information as per Pressure Equipment Directive 2014/68/EU (PED)

The valves satisfy the safety requirements of Annex I of the European Pressure Equipment Directive 2014/68/EU (PED) for fluids in Groups 1 and 2.

Product information as per UK Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016

The valves do not have a potential internal source of ignition and can be used in accordance with the UK's Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres Regulations 2016 in potentially explosive atmospheres, Group II, category 2 (zones 1+21) and category 3 (zone 2+22).

Product information as per UK Pressure Equipment (Safety) Regulations 2016

The valves satisfy the safety requirements of the UK Pressure Equipment (Safety) Regulations 2016 (PER) for fluids in Groups 1 and 2.

Related documents

Table 4: Information/documents

Document	Reference number
NORI 40 ZXL/ZXS type series booklet (globe valves with gland packing and rotating stem)	7621.1
NORI 40 ZXL/ZXS type series booklet (globe valves with gland packing and non-rotating stem)	7622.1
NORI 40 RXL/RXS type series booklet (lift check valves)	7673.1
NORI 40 ZXLBV/ZXS BV type series booklet (bellows-type globe valves with two-piece stem)	7168.1
NORI 40 ZYLB/ZYSB type series booklet (Y-pattern bellows-type globe valves)	7160.1
NORI 40 FSL/FSS type series booklet (strainers)	7127.1
Operating manual	0570.82

Purchase order specifications

Please specify the following information in all enquiries or purchase orders:

1. Type
2. Nominal pressure
3. Nominal size
4. Operating pressure
5. Differential pressure
6. Operating temperature
7. Fluid handled
8. Pipe connection
9. Variants
10. Reference number

Pressure/temperature ratings

Table 5: Permissible operating pressure [bar] (to EN 1092-1) ¹⁾

PN	Material	[°C]								
		RT ²⁾	100	150	200	250	300	350	400	450
25	P 250 GH	25,0	23,2	22,0	20,8	19,0	17,2	16,0	14,8	8,2
40	GP 240 GH+N	40,0	37,1	35,2	33,3	30,4	27,6	25,7	23,8	13,1

Materials

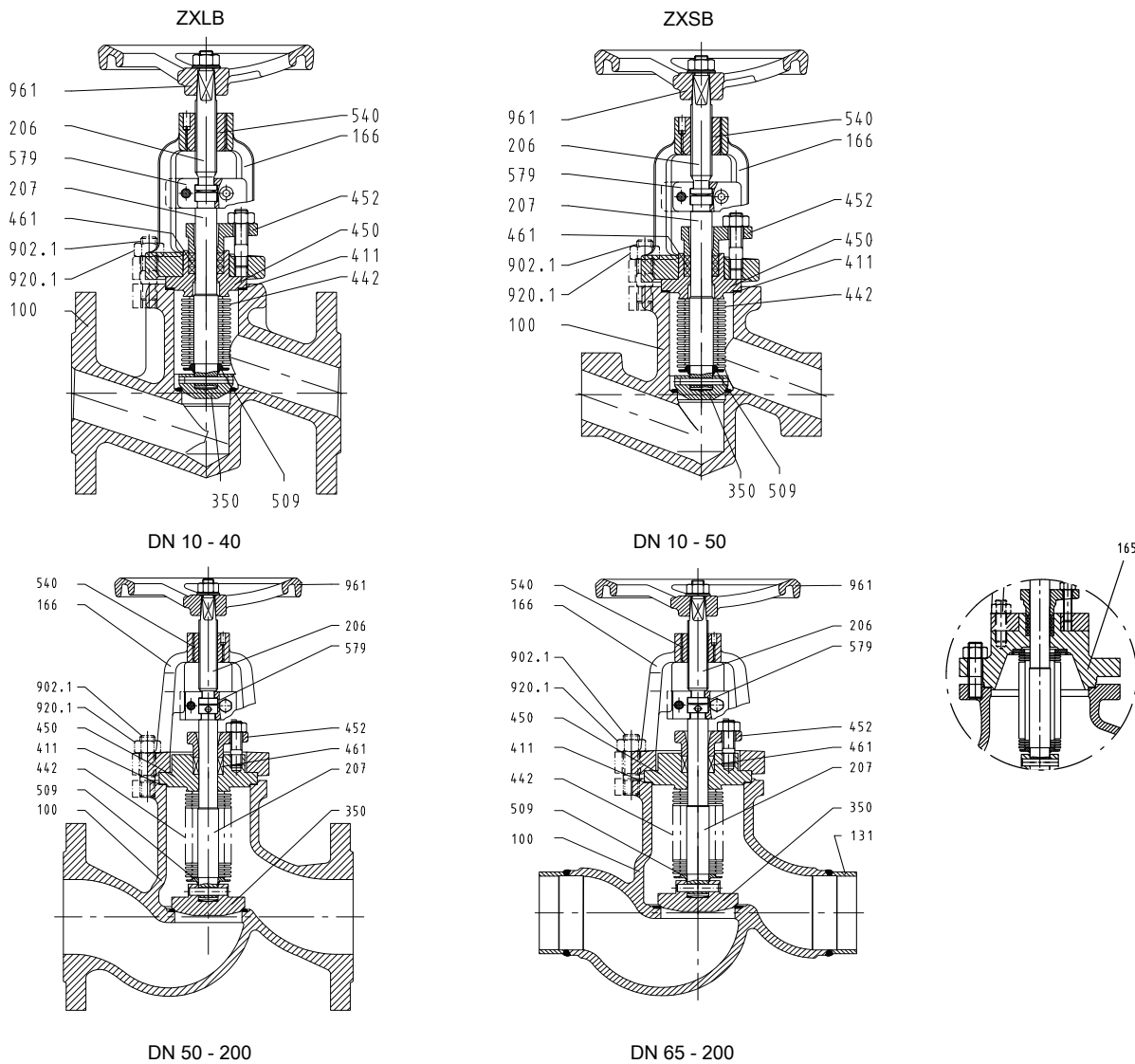


Fig. 1: Sectional drawings

Table 6: Parts list

Part No.	Description	DN	Material	Material number	Note
100	Body	10-40 type ZXLB 10-50 type ZXSB	P 250 GH	1.0460	Hard-faced with stainless steel (1.4370)
		50-200 type ZXLB 65-200 type ZXSB	GP 240 GH+N	1.0619+N	
131	Connection branch	From DN 65	P 235 GH	1.0305	-
166	Yoke	DN 10 - 50	P 250 GH	1.0460	-
		DN 65 - 200	GP 240 GH	1.0619	-

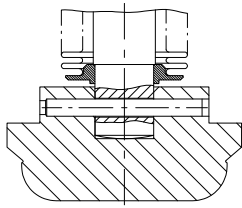
¹⁾ Operating pressures to DIN 2401 are also permissible.

²⁾ RT: room temperature (-10 °C to +50 °C)

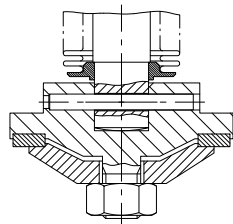
Part No.	Description	DN	Material	Material number	Note
206 ³⁾	Upper stem	-	X 20 Cr 13 V	1.4021	Nitrided
350 ³⁾	Valve disc	DN 10 - 100	X 39 CrMo 17-1	1.4122	-
		DN 125 - 200	P 250 GH	1.0460	Hard-faced (1.4115)
411 ³⁾	Joint ring	-	CrNi steel/graphite	-	-
440 ³⁾	Bellows assembly comprising:				
165	Bonnet	DN 125 - 200	P 250 GH	1.0460	-
200	Stem	-	X 20 Cr 13 V	1.4021	-
207	Lower stem	-	X 20 Cr 13 V	1.4021	-
442	Bellows	-	X 6 CrNiMoTi 17-12-2	1.4571	-
450	Stuffing box part	DN 10 - 100	P 250 GH	1.0460	-
509	Intermediate ring	-	X 6 CrNiMoTi 17-12-2	1.4571	-
452	Gland follower	DN 10 - 50	GP 240 GH+N	1.0619+N	-
		DN 65 - 200	P 250 GH	1.0460	-
461 ³⁾	Gland packing	-	Graphite	-	-
540 ³⁾	Yoke bush	-	11 SMn30+C	1.0715	Nitrided
544	Threaded bush	-	C 45 N	1.0503	-
579	Stop	DN 10 - 65	G-X 20 Cr 14 G	1.4027	-
		DN 80 - 200	St 37 K	1.0120	Corrosion-protected
902.1	Stud	-	21 CrMoV 5-7	1.7709	Corrosion-protected
920.1	Hexagon nut	-	25 CrMo 4	1.7218	
961	Handwheel	-	EN-GJL-200	5.1300	-

³ Recommended spare parts

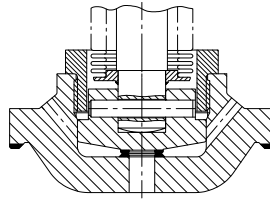
Variants



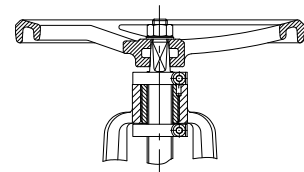
Throttling
plug



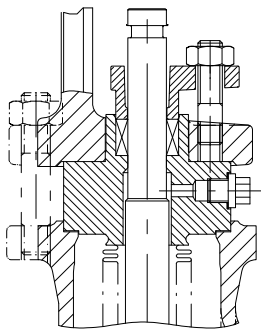
Valve disc with Gylon
gasket



Balanced plug

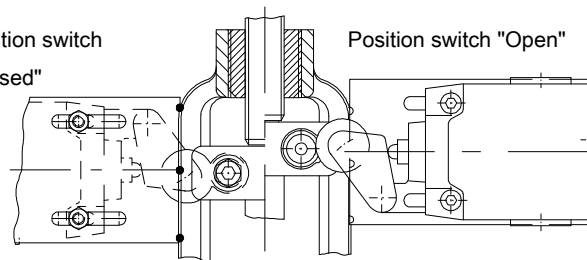


Locking device / travel
stop



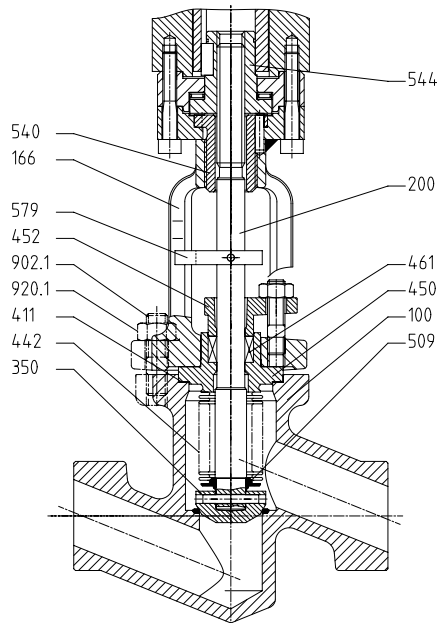
Leakage detection
hole

Position switch
"Closed"

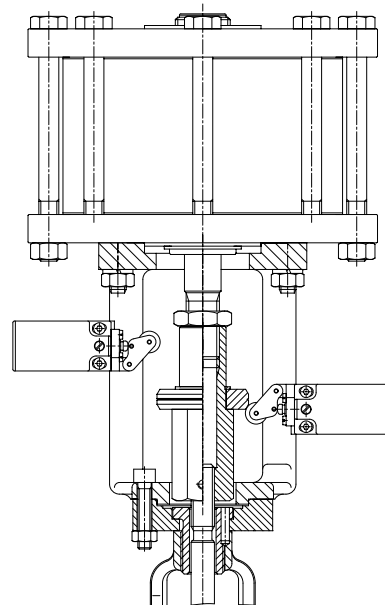


Position switch "Open"

Limit switches



Mounting of electric
actuators



Mounting of pneumatic actuators

Dimensions and weights

Dimensions and weights of NORI 40 ZXLB

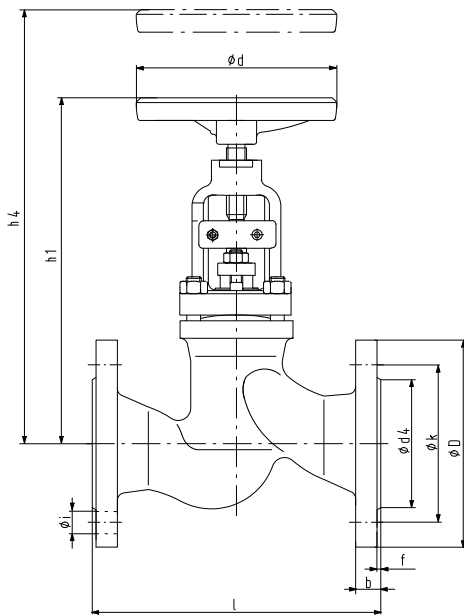


Fig. 2: NORI 40 ZXLB

Table 7: Dimensions and weights

PN	DN	l	ø D	ø k	No. of bolt holes z	Bolt hole dia. i	ø d ₄ × f	b	h ₁ ⁴⁾	h ₄ ⁵⁾	ø d	[kg]
25/40	10	130	90	60	4	14	40 × 2	16	215	270	125	4,1
	15	130	95	65	4	14	45 × 2	16	215	270	125	4,3
	20	150	105	75	4	14	58 × 2	18	230	300	125	6,0
	25	160	115	85	4	14	68 × 2	18	230	300	125	6,5
	32	180	140	100	4	18	78 × 2	18	270	340	160	9,0
	40	200	150	110	4	18	88 × 3	18	270	360	160	10,0
	50	230	165	125	4	18	102 × 3	20	290	380	160	14,5
	65	290	185	145	8	18	122 × 3	22	320	470	160	26,0
	80	310	200	160	8	18	138 × 3	24	385	560	200	32,0
	100	350	235	190	8	22	162 × 3	24	425	630	250	42,0
	125	400	270	220	8	26	188 × 3	26	530	660	315	65,0
150	480	300	250	8	26	218 × 3	28	570	700	315	95,0	
25	200	600	360	310	12	26	278 × 3	30	645	820	400	160,0
40	200	600	375	320	12	30	285 × 3	34	645	820	400	175,0

Mating dimensions as per standard

Face-to-face lengths: DIN EN 558-1/1; ISO 5752/T1

Flanges: DIN EN 1092

Flange facing: Type B

Other flange designs

- E.g. groove (type D), tongue (type C), recess (type F), spigot (type E) to EN 1092-1 at both ends
- Other flange designs on request

⁴ Open

⁵ Vertical clearance for removal

Dimensions and weights of NORI 40 ZXSB

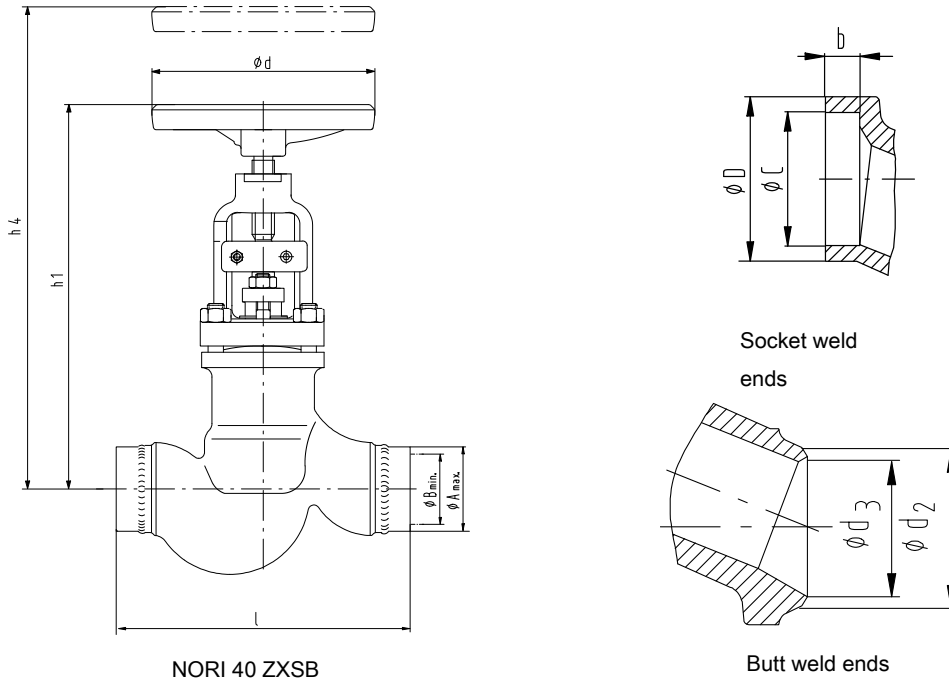


Table 8: Dimensions and weights

PN	DN	l	Butt weld ends, unmachined			Butt weld ends to DIN EN 12627			Socket weld ends to DIN EN 12760			h ₁ ⁶⁾	h ₄ ⁷⁾	ø d	[kg]
			ø A _{max.}	ø B _{min.}	ø d ₂	ø d ₄	Pipe dimensions	ø D _{-0,5}	ø C ^{+0,2}	b _{min.}					
			[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]					
25/40	10	130	44,0	10,0	18,0	13,0	17,2 × 2,0	25,0	17,6	10	230	300	125	3,8	
	15	130	44,0	15,0	22,0	17,0	21,3 × 2,0	30,5	21,7	10	230	300	125	3,8	
	20	130	44,0	20,0	28,0	22,0	26,9 × 2,3	36,5	27,1	13	230	300	125	3,8	
	25	130	44,0	24,0	34,0	28,5	33,7 × 2,6	44,5	33,8	13	230	300	125	3,8	
	32	160	60,0	33,0	43,0	37,0	42,4 × 2,6	53,5	42,5	13	270	340	160	8,0	
	40	180	60,0	38,0	49,0	43,0	48,3 × 2,6	60,5	48,7	13	270	360	160	8,0	
	50	210	73,0	48,0	61,0	54,0	60,3 × 3,2	73,5	61,1	16	290	380	160	11,5	
	65	290	76,1	64,9	76,1	69,0	76,1 × 3,6	-	-	-	320	470	160	20,0	
	80	310	88,9	79,9	88,9	81,0	88,9 × 4,0	-	-	-	385	560	200	26,0	
	100	350	114,3	100,1	114,3	104,0	114,3 × 5,0	-	-	-	425	630	250	36,0	
	125	400	139,7	125,5	139,7	130,5	139,7 × 4,5	-	-	-	530	660	315	55,0	
	150	480	168,3	148,3	168,3	156,5	168,3 × 5,6	-	-	-	570	700	315	80,0	
200	600	219,1	199,1	219,1	204,5	219,1 × 7,1	-	-	-	645	820	400	130,0		

Mating dimensions as per standard

Face-to-face length: EN 12982/64
 Butt weld ends: DIN EN 12627 Figure 2
 Socket weld ends: DIN EN 12760

Different designs of butt weld ends, socket weld ends and welding groove types are possible, but only within the dimensions A_{max.} and B_{min.}.

Butt weld ends to DIN 3239/1 or socket weld ends to ASME B16.11 and DIN 3239/2 are possible.

⁶ Open
⁷ Vertical clearance for removal

Installation instructions

Install shut-off globe valves in such a way that the fluid enters the valve beneath the valve disc and flows out above the valve disc. Installation in piping with alternating flow is also possible.

If the max. permissible differential pressures for shut-off are exceeded for valves from DN 125 to 200, a balanced plug design is required. In this case the valve must be installed in such a way that the pressure to be sealed off lies above the valve disc.

The balanced plug works on the bypass principle and can only serve its purpose if backpressure builds up after opening, so that the max. permissible differential pressures for shut-off (see table) are not exceeded.

Table 9: Differential pressure [bar] for standard valve disc

DN	Δp
125	33
150	21
200	14

For globe valves with throttling plug, detailed information about the operating mode is required for optimum valve selection.

Further installation instructions

Durability of bellows

Table 10: Number of load cycles at 20 °C

DN	Operating pressure [bar]			
	10	16	25	40
10-150	34000	32000	28000	20000
200	17000	16000	14000	10000



KSB SE & Co. KGaA
Bahnhofplatz 1 • 91257 Pegnitz (Germany)
Tel. +49 9241 71-0
www.ksb.com