

USERS MANUAL

Stop valve

zGLO

Fig. 215, 216

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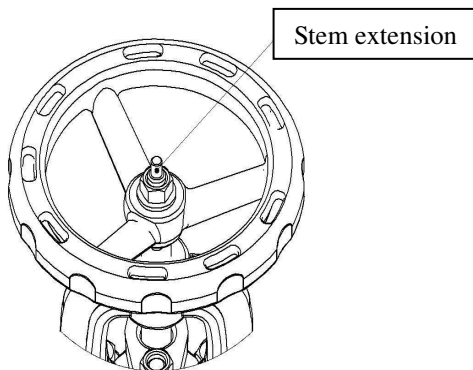


Fig.215

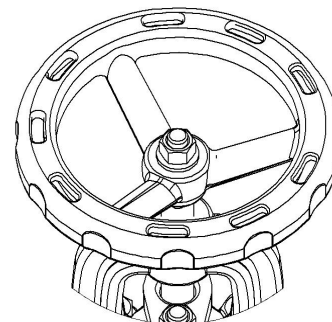
1. PRODUCT DESCRIPTION

Globe valves are manufactured at different executions, they are used as stop valves, throttling valves, SDNR valves. Stop valves are designed only for shut off and open the flow, throttling valves are designed for flow control and SDNR valves are used as non return valves protecting the plant against back flow of medium and additionally they can shut off the flow. SDNR valves visually differ from stop valves having cylinder stem extension on the upper end of the stem.

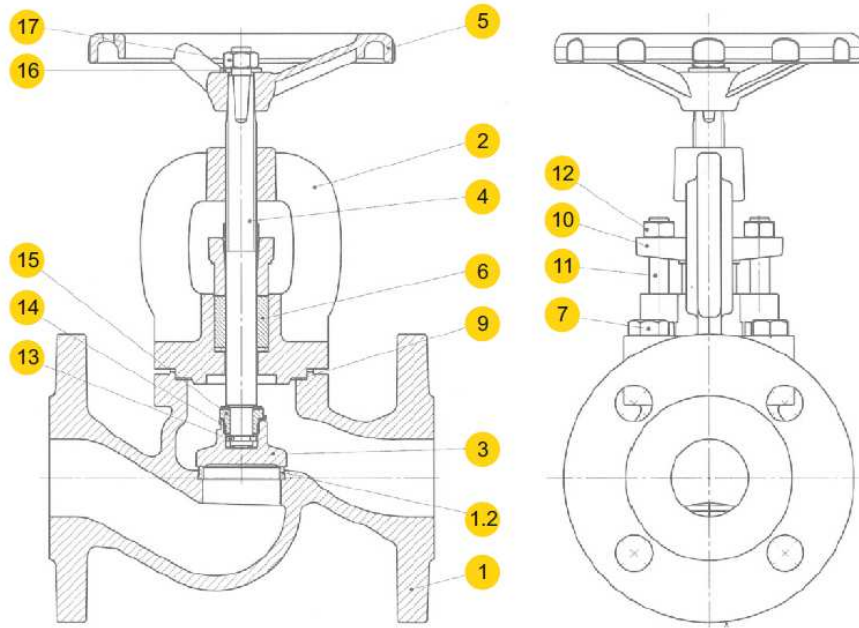
SDNR valve



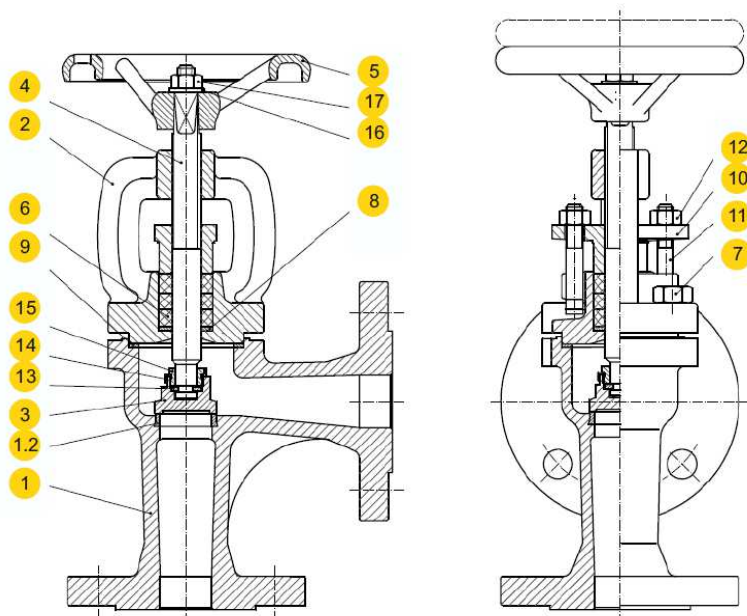
Stop valve



Stop valve Fig 215 A, C, E type 01

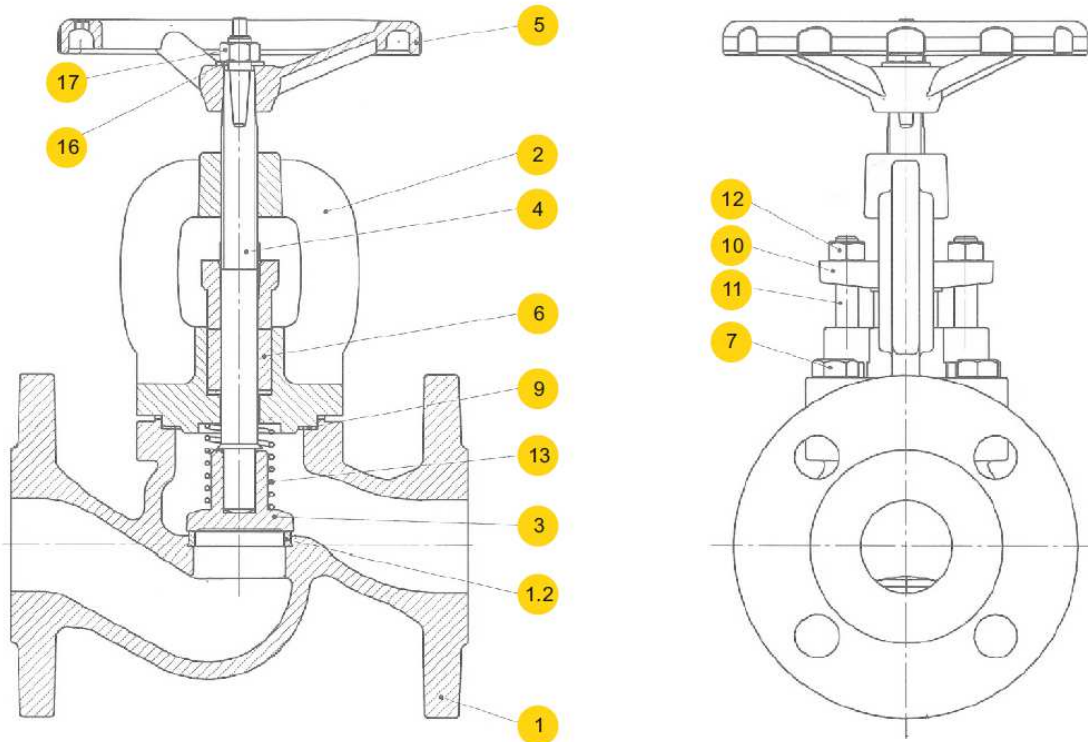


Stop valve Fig 216 A, C, E type 01

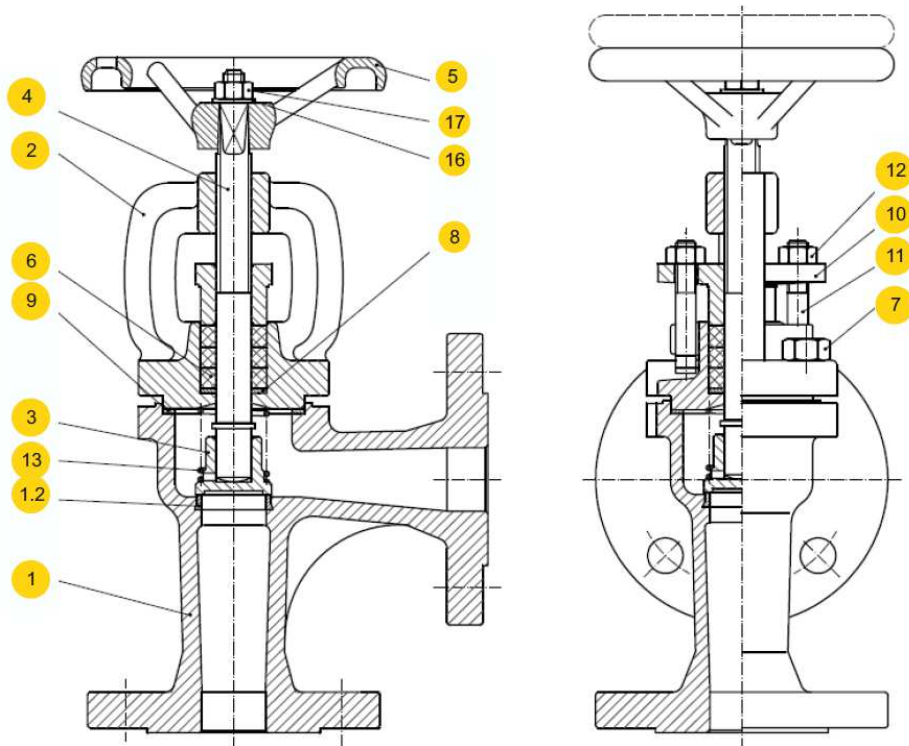


body material		A				C			E
type		00	01;04;71;91	02;05;72;92	03;13	01;04;71;91	02;05;72;92	03;13	03;23;73;93
1	body	EN – GJL-250 5.1301 (ex. JL1040)				EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
1.2	seat ring	X12Cr13 1.4006		CuSn10 – C CC480K		X12Cr13 1.4006		CuSn10 – C CC480K	
2	bonnet	EN – GJL-250 5.1301 (ex. JL1040)				EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
3	disc	X20Cr13 1.4021		CuSn10 – C CC480K		X20Cr13 1.4021		CuSn10 – C CC480K	
4	stem	X20Cr13 1.4021		CuZn40Mn1,5	CuSn10 – C CC480K	X20Cr13 1.4021		CuZn40Mn1,5	CuSn10 – C CC480K
5	hand-wheel	EN-GJS500-7 5.3200 (ex. JS1050)							
6	gland packing	graphite							
7	hexagon bolt	8.8				A2-70	8.8		A2-70
9	gasket	graphite+ NiCr							
10	gland	EN – GJL-250 5.1301 (ex. JL1040)				EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
11	T-bolt	5.8 + zinc galvanized							A2-70
12	nut	8 + zinc galvanized							A2-70
13	ring	-----	X20Cr13 1.4021	CuSn10 – C CC480K		X20Cr13 1.4021	CuSn10 – C CC480K		CuSn5Zn5Pb5-C CC491K
14	washer	-----	X6CrNiTi18-10 1.4541	CuSn6		X6CrNiTi18-10 1.4541	CuSn6		CuSn6
15	screw	-----	X20Cr13 1.4021	CuSn10 – C CC480K		X20Cr13 1.4021	CuSn10 – C CC480K		CuSn5Zn5Pb5-C CC491K
16	washer	carbon steel + zinc galvanized							X5CrNi18-10 1.4301
17	nut	8 + zinc galvanized							A2-70
max. temperature		300°C	300°C	225°C		350°C	225°C	225°C	200°C

Stop valve Fig 215 A, C, E type 31



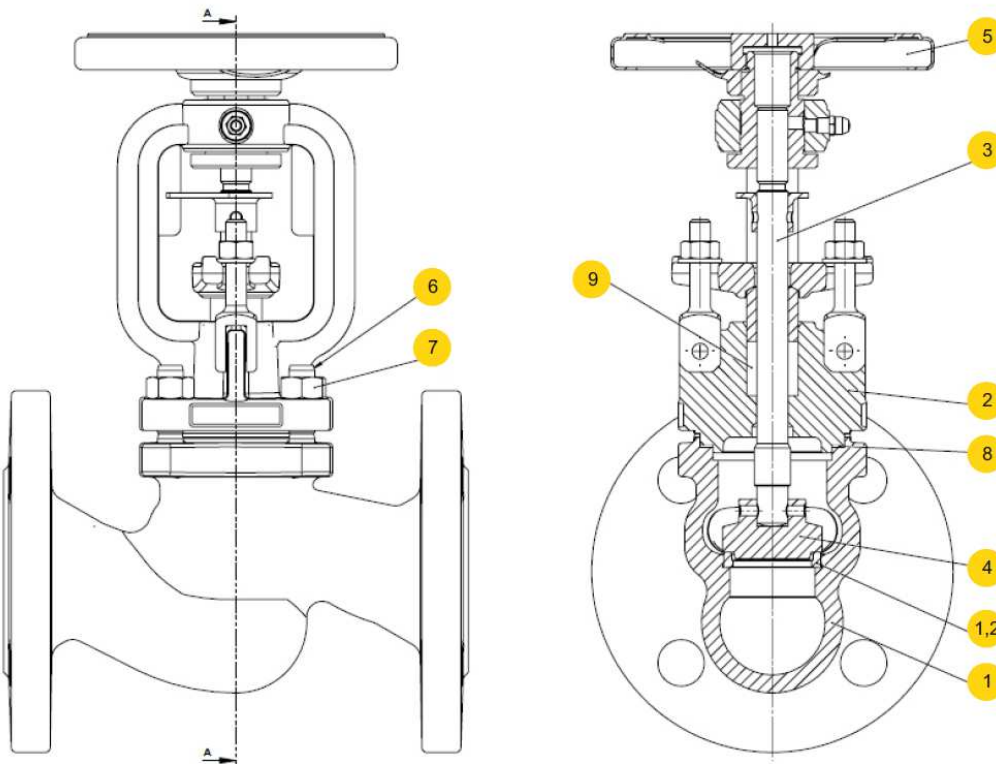
Stop valve Fig 216 A, C, E type 31



body material		A			C			E
type		31;41*	32;42*	33;43*	31;41*	32;42*	33;43*	31;41*
1	body	EN – GJL-250 5.1301 (ex. JI1040)			EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
1.2	seat ring	X12Cr13 1.4006	CuSn10 – C CC480K		X12Cr13 1.4006	CuSn10 – C CC480K		CuSn5Zn5Pb5-C CC491K
2	bonnet	EN – GJL-250 5.1301 (ex. JI1040)			EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
3	disc	X20Cr13 1.4021	CuSn10 – C CC480K		X20Cr13 1.4021	CuSn10 – C CC480K		CuSn5Zn5Pb5-C CC491K
4	stem	X20Cr13 1.4021	CuZn40Mn1,5	CuSn10 – C	X20Cr13 1.4021	CuZn40Mn1,5	CuSn10 – C	CuZn35Ni
5	hand-wheel	EN-GJS500-7 5.3200 (ex. JS1050)						
6	gland packing	all- graphite						
7	hexagon bolt	8.8			A2-70	8.8		A2-70
9	gasket	graphite+ NiCr						
10	gland	EN – GJL-250 5.1301 (ex. JI1040)			EN – GJS-400 – 18-LT 5.3103 (ex. JS1025)			CuSn5Zn5Pb5-C CC491K
11	T-bolt	5.8 + zinc galvanized						A2-70
12	nut	8 + zinc galvanized						A2-70
13	spring	X17CrNi16-2	X17CrNi16-2 1.4057	X17CrNi16-2	X17CrNi16-2 1.4057		CuSn6	
14	washer	carbon steel + zinc galvanized						X5CrNi18-10 1.4301
15	nut	8 zinc galvanized						A2-70
max. temperature		350°C	225°C	225°C	350°C	225°C	225°C	200°C

* without spring

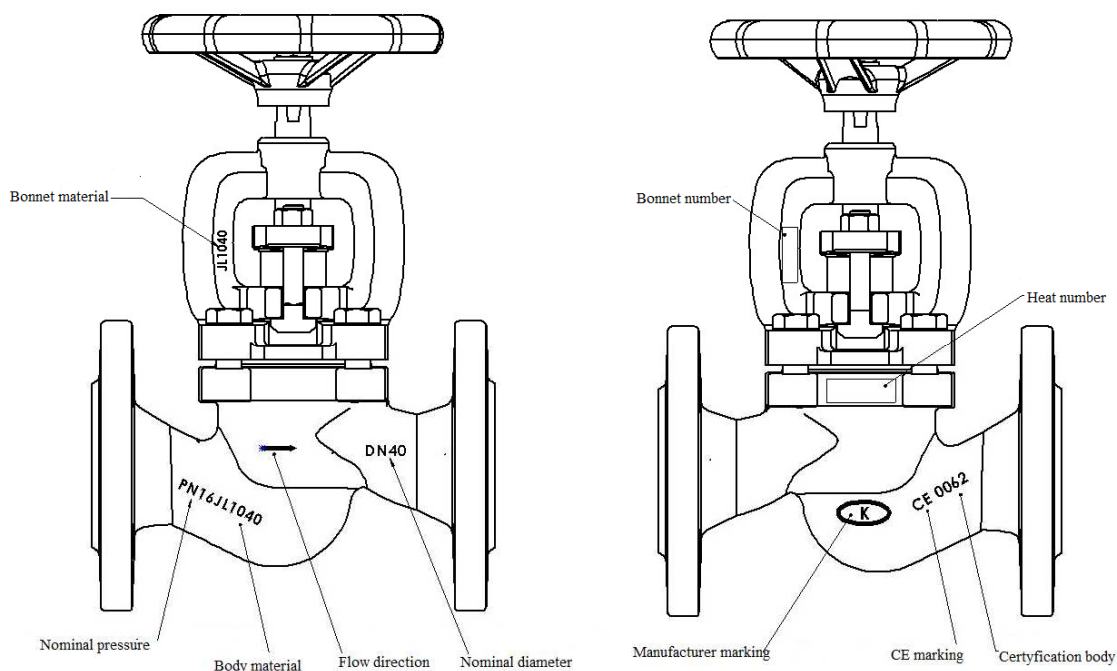
Stop valve Fig 215 F, I



body material		F	I
type		01; 04; 31; 71	09; 10; 40; 71
1	body	GP240GH 1.0619	G-X5CrNiMo19-11-2 1.4408
1,2	seat ring	DN 15-50 X20Cr13 1.4021 DN 65-100 stellit	X5CrNiMo17-12-2 1.4401 DN 65-100 napoina
2	bonnet	GP240GH 1.0619	G-X5CrNiMo19-11-2 1.4408
3	stem		X6CrNiMoTi17-12-2 1.4571
4	disc		X6CrNiMoTi17-12-2 1.4571
5	hand-wheel		steel
6	stud bolt		A4-70
7	nut		A4
8	bonnet gasket		graphite+CrNiSt
9	gland packing		graphite
max. temperature		400°C	

Globe valves are provided with casted marking according to requirements of PN-EN19 standard. The marking facilitates technical identification and contains:

- nominal diameter DN (mm),
- nominal pressure PN (bar),
- body and bonnet material marking,
- arrow indicating medium flow direction,
- manufacturer marking,
- heat number,
- CE marking, for valves subjected 2014/68/UE directive. CE marking starts from DN32

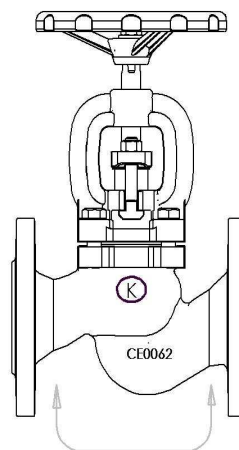
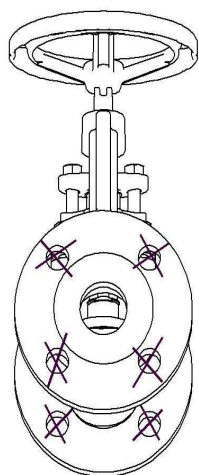


2. REQUIREMENTS FOR MAINTENANCE STAFF

The staff assigned to assembly, operating and maintenance tasks should be qualified to carry out such jobs. If the valve is provided with mechanical actuators, operating manual of actuator should be obeyed. If during valve operation heat parts of the valve, for example handwheel, body or bonnet parts could cause burn, user is obliged to protect them against touch.

3. TRANSPORT AND STORAGE

Transport and storage should be carried out at temperature from -20°C to 65°C , and valves should be protected against external forces influence and destruction of painting layer as well. The aim of painting layer is to protect the valves against rust during transport and storage. Valves should be kept at unpolluted rooms and they should be also protected against influence of atmospheric conditions. There should be applied drying agent or heating at damp rooms in order to prevent condensate formation. The valves should be transported in such a way to avoid handwheel and valve stem damage.



Place of handling globe valves during the transport



It is not allowed to fit lifting devices to connecting holes and handwheel.

4. FUNCTION

Valves with stop disc are designed for shut off medium flow, valves with throttling disc enable to control the flow and SDNR valves are designed to work as non return valves and enable to shut off the valve at any time as well.

Application range was mentioned at catalogue card. The kind of working medium makes some materials to be use or to be prohibited for use.

5. APPLICATION

- industry
- heating
- refrigeration and air conditioning
- hot and cold industrial water
- industrial oils
- steam
- compressed air
- neutral fluids - gases and liquids of group 1 and 2 according to Regulation EC No 1272/2008 resulting from the practice of using

* not all of the applications are suitable for all of the executions

When selecting the valve for specific medium, "List of Chemical Resistance" can be helpful. It can be found at manufacturer website near catalogue cards.

Valves were designed for normal working conditions. In the case that working conditions exceed these requirements (for example for aggressive or abrasive medium) user should ask manufacturer before placing an order.

Working pressure should be adapted to maximum medium temperature according to the table as below.

Acc to EN 1092-2		Temperature [° C]					
Material	PN	-10 do 120	150	200	250	300	350
EN-GJL250	16	16 bar	14,4 bar	12,8 bar	11,2 bar	9,6 bar	-----
EN-GJS400-18 LT	16	16 bar	15,5 bar	14,7 bar	13,9 bar	12,8 bar	11,2 bar
EN-GJS400-18 LT	25	25 bar	24,3 bar	23 bar	21,8 bar	20 bar	17,5 bar

Acc to EN 1092-3		Temperature [° C]			
Material	PN	-10 do 120	150	200	220
CuSn5Zn5Pb5-C	6	6 bar	6,0 bar	5,0 bar	4,0 bar
CuSn5Zn5Pb5-C	10	16 bar	14,4 bar	12,8 bar	11,2 bar
CuSn5Zn5Pb5-C	16	16 bar	15,5 bar	14,7 bar	13,9 bar

Pressure acc EN 1092-1		Temperature [° C]								
Material	PN	-20 < do <-10	-10 do 50	100	150	200	250	300	350	400
GP240GH	40	30 bar	40 bar	37,1 bar	35,2 bar	33,3bar	30,4 bar	27,6 bar	25,7 bar	23,8 bar

Pressure acc EN 1092-1		Temperature [° C]							
Material	PN	-60 < do <-10	-10 do 100	150	200	250	300	350	400
G-X5CrNiMo 19-11-2	40	40 bar	40 bar	36,3 bar	33,7 bar	31,8 bar	29,7 bar	28,5 bar	27,4 bar

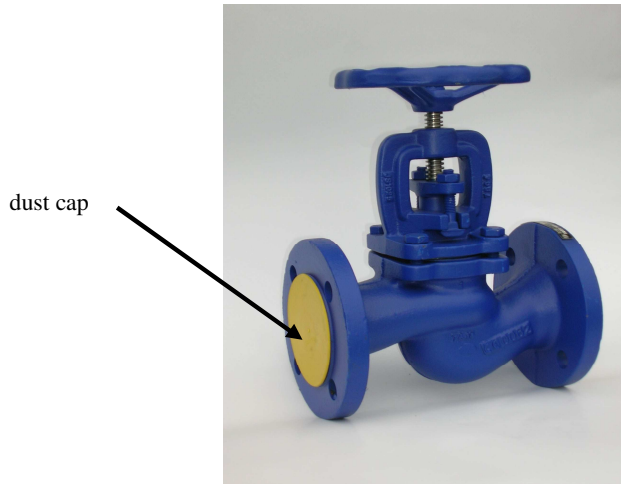


Plant designer is responsible for valve selection suitable for working conditions.

5. ASSEMBLY

During the assembly of balancing valves following rules should be observed:

- to evaluate before an assembly if the valves were not damaged during the transport or storage,
- to make sure that applied valves are suitable for working conditions and medium used in the plant,
- to take off dust caps if the valves are provided with them,



- to protect the valves during welding jobs against splinters and used plastics against excessive temperature,
- steam pipelines should be fitted in such a way to avoid condensate collection; in order to avoid water hammer steam trap should be applied



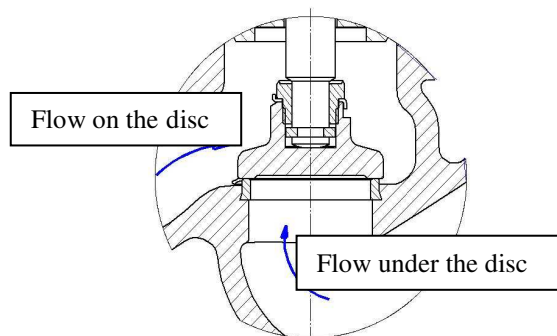
Pipeline where the valves are fitted should be conducted and assembled in such a way that the valve body is not subjected to bending moment and stretching forces.

- **Bolted joints on the pipeline must not cause additional stress resulted from excessive tightening, and fastener materials must comply with working conditions of the plant,**
- during pipeline painting valve stem should be protected,
- stop valves can be assembled in any position, however it is recommended to install the valve with handwheel upwards,
- screw down and non-return valves (version with spring) can be assembled in any position, screw down and non-return valves (version without spring) should be assembled only on the horizontal pipelines with handwheel upwards



It should be take note of medium flow direction, marked with an arrow on the body. Flow direction is established according to the rules as below:

	Stop valve	SDNR valve and throttling valve	Stop valve
	PN6 – PN25	PN6 – PN40	PN40
under the disc	DN15 – DN150	DN15 – DN300	DN15 – DN100
on the disc	DN200 – DN300	-	DN125 – DN200



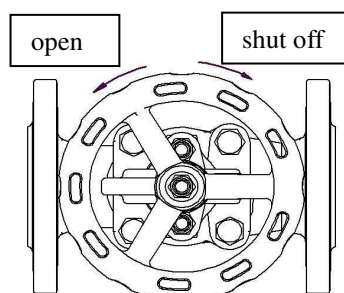
- before plant startup, especially after repairs carried out, flash out the pipeline through entirely open valve, in order to

- avoid solid particles or welding splinters which may be harmful for sealing surfaces,
- strainer (wire mesh filter) installed before the valve increases certainty of its correct action.

6. MAINTENANCE

During maintenance following rules should be observed:

- startup process – sudden changes of pressure and temperature should be avoided when starting the plant,
- valve is closed by turning the handwheel clockwise when looking from above the handwheel (according to arrow direction marked on the handwheel),

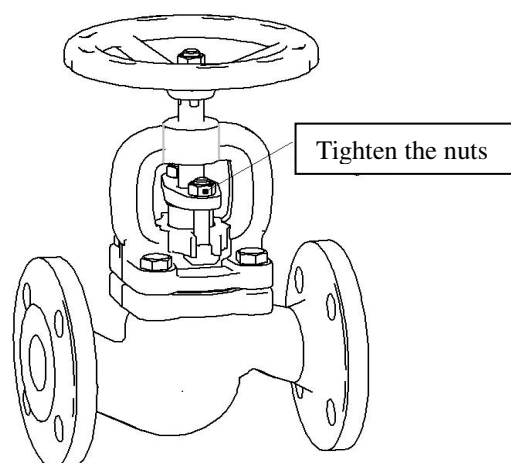


- valve is opened by turning the handwheel counter-clockwise,

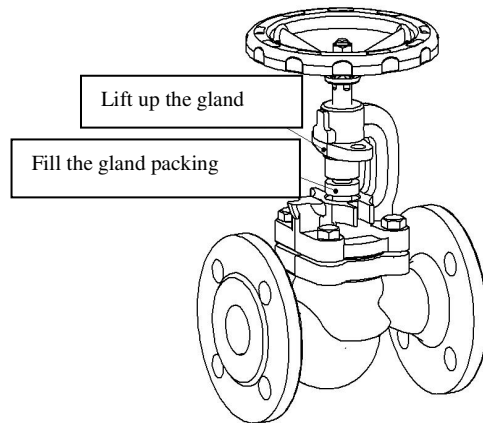


It is prohibited to use additional lever when turning the handwheel,

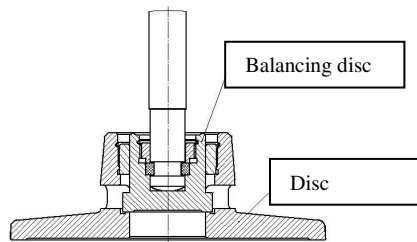
- performance of fitted valves can be checked by multiple closing and opening,
- if leakage on stem occurs for valves Fig.215, 216 (PN6 – PN25) it is necessary to tighten with moderate force two T-bolt nuts pressing the packing gland until the leakage disappear, for SDNR valves Fig.215, Fig.216 (PN40) similar nuts on eye bolts, whereas for stop valves Fig.215 (PN40) packing rings are pressed by tightening threaded gland nut screwed in the bonnet, the nut press the rings by gland,



- in the case of necessity to replace packing rings, it should be done without overpressure inside the valve, when the valve is completely open. In this position inner space of the valve is entirely shut off : stop valves are provided with back seat on the upper part of disc which adheres to bonnet seat, SDNR valves are provided with flange on the stem which adheres to bonnet seat,
- in order to refill packing rings of valves Fig.215 i 216 (PN6 – PN25) unscrew the nuts on T-bolts, move the gland into handwheel direction, working under lifted gland refill cut - packing rings in the stuffing box, then press again these cut packing rings. There are similar procedures for SDNR valves Fig.215 , Fig.216 (PN40) but there are eye bolts instead of T-bolts that can be swing aside. For stop valves Fig.215 (PN40) packing can be refilled when gland nut is unscrewed.



- valves in which there is an inflow over the disc are equipped with a balancing disc as shown below. Turning the handwheel to the left raises the balancing disc which results in equalization of upstream and downstream pressure. After pressure equalization the valve can be opened completely. The balancing disc operation is effective only in closed systems. In an open system where it is impossible to equalize pressure the balancing is ineffective. In this case, one should consider introduction of other structural solutions, e.g. a by-pass.



- The maximum differential pressure that can apply on both sides of the closing valve (the valve is closed) in valves where there is flow under the plug see in the table below.

PN	differential pressure [bar]					
	DN15-100	DN125	DN150	DN200	DN250	DN300
6	6	6	6	6	6	6
16	16	16	16	14	9	6
25	25	25	21	14	9	6
40	40	33	21	14	9	6



In order to assure safety performance, each valve (especially rarely used) should be surveyed on regular basis. Inspection frequency should be laid down by user, but not less than one time per month.

7. SERVICE AND REPAIR

All service and repair jobs should be carried out by authorized staff using suitable tools and original spare parts. Before disassembly of complete valve from the pipeline or before service, the pipeline should be out of operation. During service and repair jobs it is necessary to decrease pressure to 0 bars, valve temperature to ambient temperature and to use personal health protectives in pursuance of existing threat. After valve disassembly it is necessary to replace flange connection gaskets between valve and pipeline.

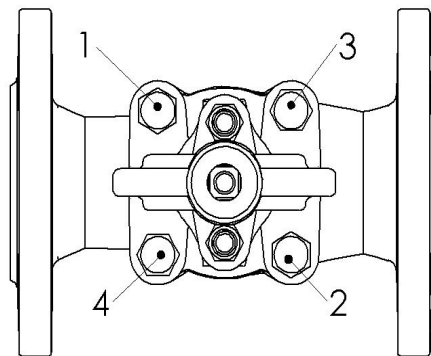


Precautions should be taken when touching gasket between body and valve bonnet. The gasket contains stainless steel stripe that may cause injury,

Gasket



Everytime when valve bonnet was disassembled sealing surface should be cleaned. During assembly it should be applied new gasket of the same type as previously used. Body-bonnet bolt connections should be tighten when the valve is at open position. The bolts should be tighten evenly and crosswise by torque wrench.



- Tighten torques

Ścrew	Torque
M8	15-20 Nm
M10	35 -40 Nm
M12	65 – 70 Nm
M16	140 -150 Nm

- before valves re-assembly in the pipeline it is necessary to check valve operation and tightness of all connections. Tightness test should be carried out with water pressure of 1,5 nominal pressure of the valve.

9. REASONS OF OPERATING DISTURBANCES AND REMEDY

- When seeking of valve malfunction reasons safety rules should be strictly obeyed

Fault	Possible reason	Remedy
No flow	Valve closed	Open the valve
	Flange dust caps were not removed	Remove dust caps on the flanges
Poor flow	Valve is not open enough	Open the valve
	Dirty filter	Clean or replace the screen
	Clogged pipeline	Check the pipeline
Control difficulties	Dry stem	Grease the stem
	Gland packing tighten too much	Slightly slacken gland nuts. Put attention to keep stuffing box tightness
Stem leakage	Too much loose on the gland	Tighten the gland until tightness will be reached
		If necessary add packing rings in stuffing box. Keep special caution.
Seat leakage	Shut off not correct	Tighten the handwheel without any auxiliary tools
	Seat or disc damage	Replace the valve and contact supplier or manufacturer
	Pressure difference too much	Apply the valve with balancing disc. Check if the valve was assembled according to arrow direction marked on the valve.
	Medium polluted with solid particles	Clean the valve. Fit strainer before the valve.
Broken connecting flange	Bolts tighten unevenly	Replace the valve with new one

10. VALVE SERVICE DISCONTINUITY

All obsolete and dismantled valves must not be disposed with household waste. ZETKAMA valves are made of materials which can be re-used and should be delivered to designated recycling centers.

11. WARRANTY TERMS

- ZETKAMA grants quality warranty with assurance for proper operation of its products, providing that assembly of them is done

according to the users manual and they are operated according to technical conditions and parameters described in ZETKAMA's catalogue cards. Warranty period is 18 months starting from assembly date, however not longer than 24 months from the sales date.

- warranty claim does not cover assembly of foreign parts and design changes done by user as well as natural wear.
- immediately after detection the user should inform ZETKAMA about hidden defects of the product
- a claim should be prepared in written form.

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