

## USERS MANUAL

**STOP VALVE**

**Fig. 217; 219**

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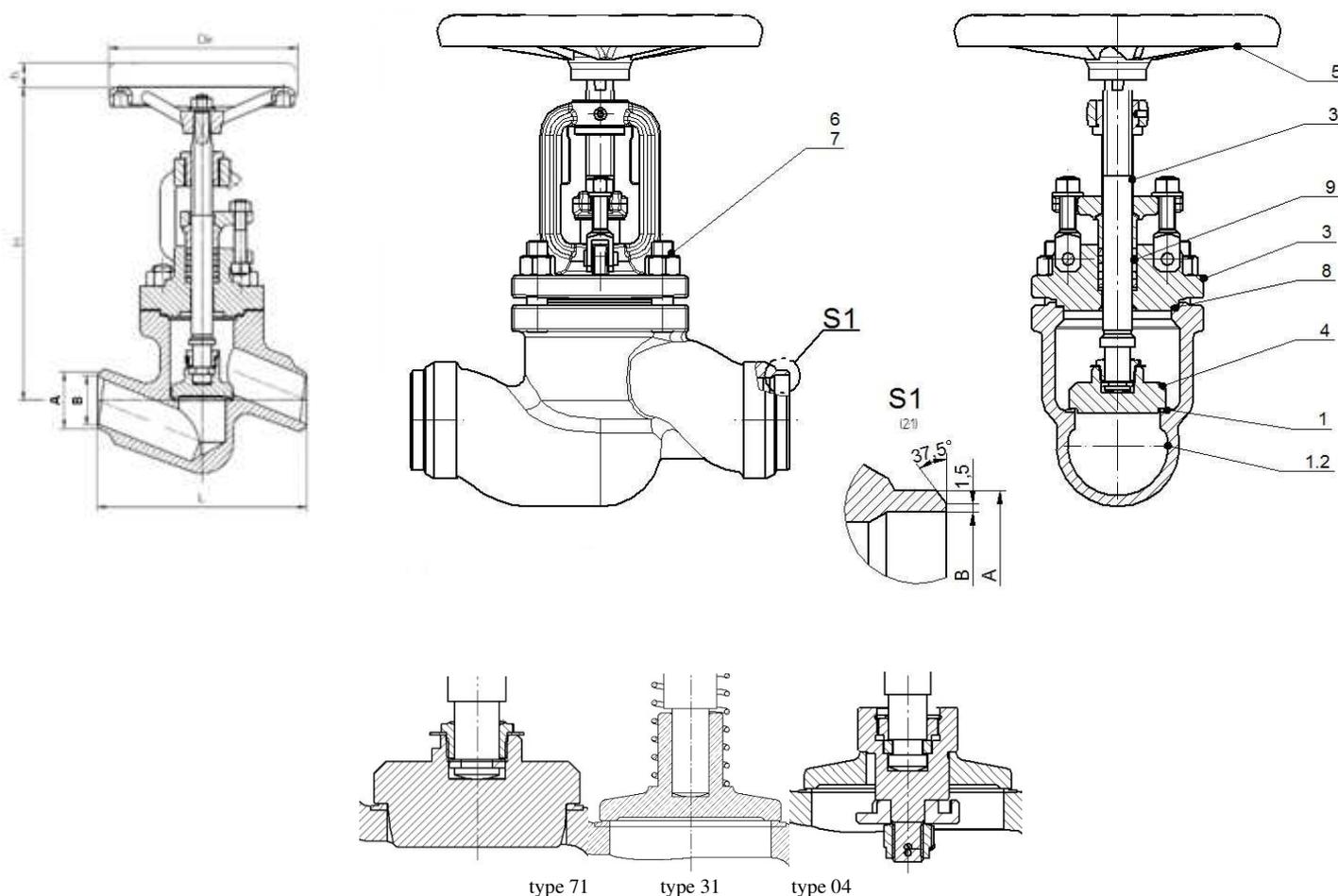
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### 1. PRODUCT DESCRIPTION

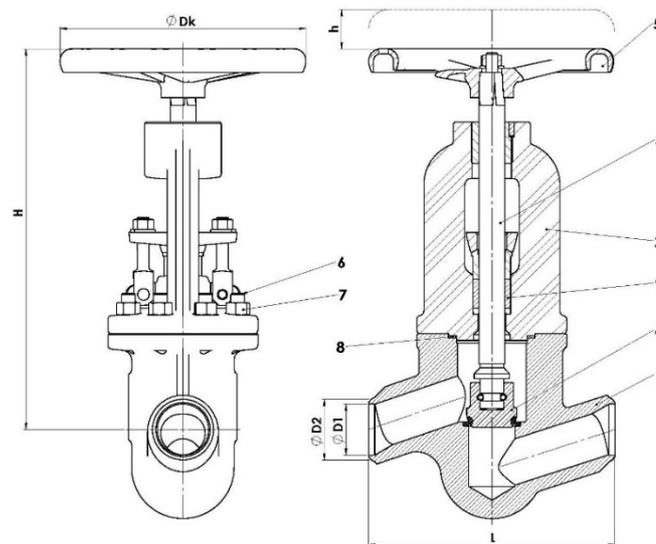
Stop valves are manufactured at different executions, they are used as stop valves, throttling valves, SDNR valves. Stem sealing is done by graphite rings.

Fig.217 DN 15-200 PN40



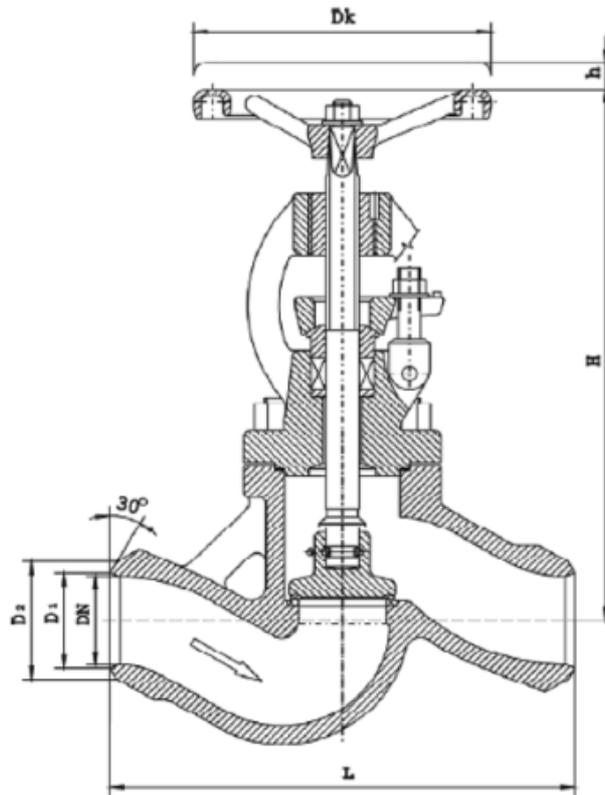
	Body material	G	F		I		
	Type	00	00 01 04 71	31	00 01 04 71	31	
1	Body	P245GH 1.0352	GP240GH 1.0619		GX5CrNiMO19-11-2 1.4408		
1.2	Padding weld	G 19 9 LSi	G 19 9 LSi		G 19 9 LSi		
2	Bonnet	P245GH 1.0352	GP240GH 1.0619		GX5CrNiMO19-11-2 1.4408		
3	Stem	X20Cr13 1.4021	X20Cr13 1.4021		X6CrNiMoTi17-12-2 1.4571		
4	Disc	X20Cr13 1.4021	X20Cr13 1.4021		X6CrNiMoTi17-12-2 1.4571		
5	Hand-wheel	KOZ-120 PN-M-74203					
6	Stud bolt	25CrMo4				A4-70	
7	Nut	25CrMo4				A4	
8	Bonnet gasket	SPETOGRAF GUS 40					
9	Gland packing	GRAFMET 950					
10	Spring	----	X17CrNi16-2		----	X17CrNi16-2	
<b>Max. temperature</b>		<b>450°C</b>				<b>400°C</b>	

Fig.217DN 15-25 PN63, 100  
DN 15-50 PN160



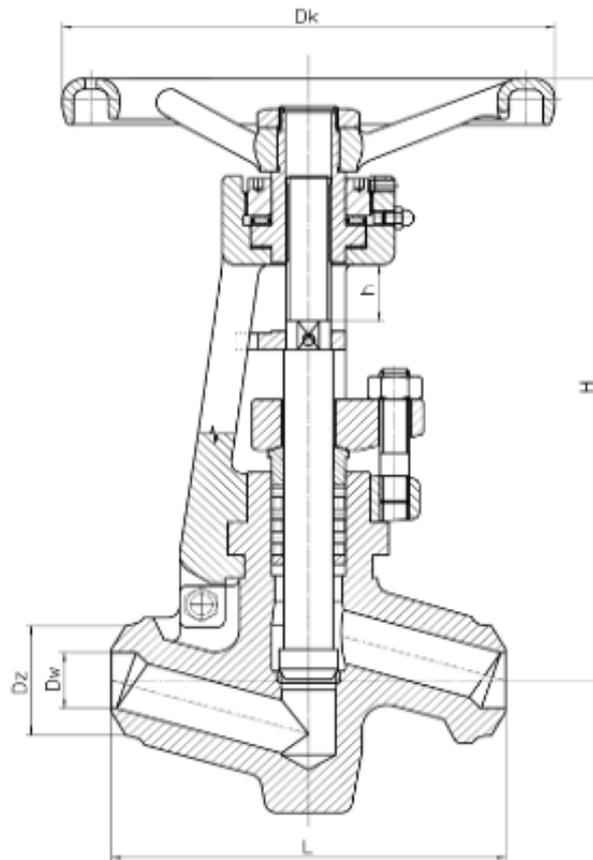
	Body material	G	Q
	Type	00	00
1	Body	P245GH 1.0352	13CrMo4-5 1.7335
2	Bonnet	P245GH 1.0352	13CrMo4-5 1.7335
3	Stem	X20Cr13+QT 1.4021	X22CrMoV12-1+QT 1.4923
4	Disc	X17CrNi16-2+QT 1.4057	13CrMo4-5 + stellite 1.7335
5	Hand-wheel	EN-GJS-500-7	
6	Stud bolt	42CrMo4+QT 1.7225	X22CrMoV12-1+QT 1.4923
7	Nut		
8	Bonnet gasket	spiral gasket(steel + graphite)	
9	Gland packing	Graphite	
<b>Max. temperature</b>		<b>450°C</b>	<b>550°C</b>

Fig.217 DN 32-200 PN63, 100  
 DN 65-200 PN160



	Body material	F	Q
	Type	01 04	01 04
1	Body	GP240GH	G17 Cr Mo 5 5
2	Seat ring (padding)	18-8 Cr-Ni	Stellite
3	Bonnet	GP240GH/P265 GH	G17 Cr Mo 5 5/13 Cr Mo 4 5
4	Stem	X20Cr13	1.4923
5	Disc (padding)	18-8 Cr-Ni	Stellite
6	Gasket	Graphite	Graphite
	<b>Max. temperature</b>	<b>450°C</b>	<b>550 °C</b>

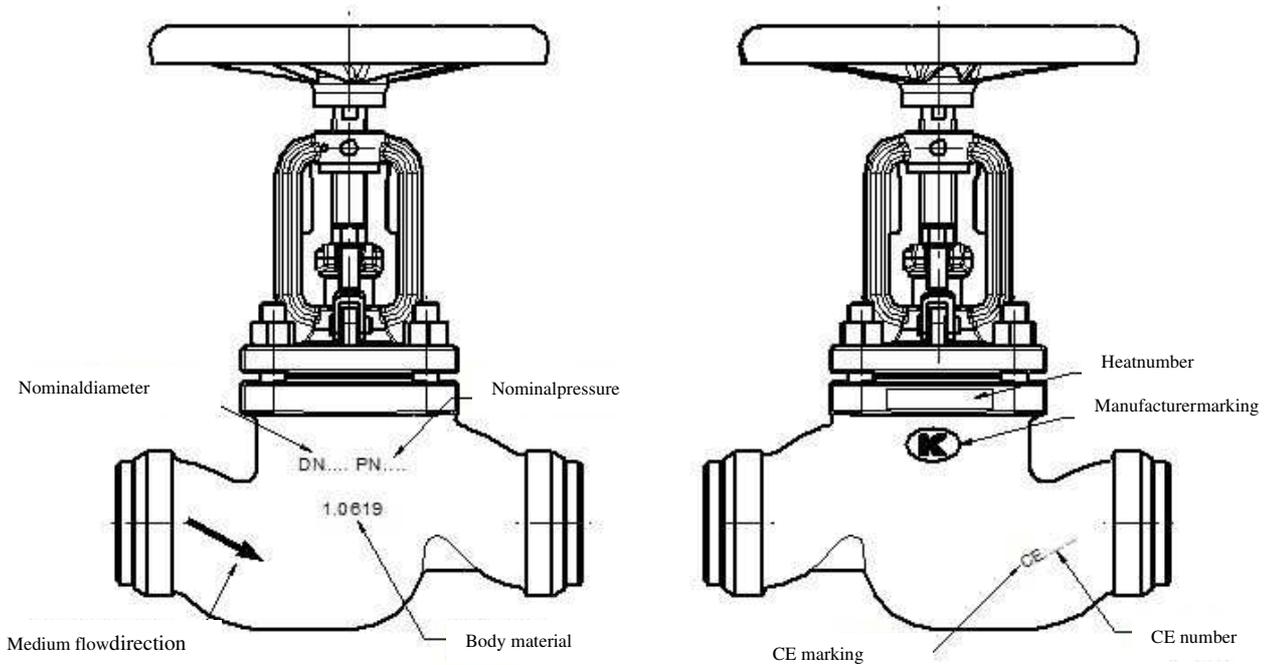
Fig.219 DN 15-50 PN250; 320; 500



	Body material	G	Q			
	Type	00 71	00 71	00 71	00 71	00 71
1	Body	P245GH	13CrMo4-5	11CrMo9-10	16Mo3	X10CrMoVNb9-1
2	Seat ring		Stellite			
3	Bonnet	P245GH	13CrMo4-5	11CrMo9-10 DN 15-25 13CrMo4-5 DN 32-50	13CrMo4-5	X10CrMoVNb9-1
4	Stem	X39CrMo17-1	X22CrMoV12-1			X7CrMoNb16-16
5	Disc		Stellite			
6	Gasket		Graphite			
	<b>Max. temperature</b>	<b>450°C</b>	<b>550°C</b>	<b>580°C</b>	<b>530°C</b>	<b>650°C</b>

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

- diameter nominal DN (mm),
- pressure nominal 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  $-20^{\circ}$  to  $65^{\circ}\text{C}$ , 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.

## 4. FUNCTION

Valves with stop disc are designed to shut off the flow of the medium. Stop-return valves function not only as stop valves but also as return valves. Versions with throttling disc enable to control the flow. Stop-return valves differ from stop valves on the outside by having a circular crack on the nut mounting the circle.

## 5. APPLICATION

- industry, shipbuilding industry, chemical industry
- power engineering
- heating
- refrigeration and air conditioning
- petrochemical industry
- cold and hot industrial water installations
- steam
- industrial oils
- compressed air
- neutral factors
- glycol

The kind of working medium makes some materials to be use or to be prohibited for use. 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. EN 1092-1		Temperature [° C]									
Material	PN	-40 < do <-10	-10 do 50	100	150	200	250	300	350	400	450
GP240GH	40	30 bar	40 bar	37,1 bar	35,2 bar	33,3 bar	30,4 bar	27,6 bar	25,7 bar	23,8 bar	13,1 bar

Acc. EN 1092-1		Temperature [° C]								
Material	PN	-60 < do <50	100	150	200	250	300	350	400	
G-X5CrNiMo 19-11-2	40	40 bar	40,0	36,3 bar	33,7 bar	31,8 bar	29,7 bar	28,5 bar	27,4 bar	

	PN		100°C	300°C	400°C	450°C	500°C	510°C	530°C	550°C		
P245GH	320	bar	320	308	216	132	---	---	---	---		
	500		500	400	320	235	---	---	---	---		
13CrMo4-5	320		320	320	320	320	266	223	150	---		
	500		500	500	500	383	324	218	---			
16Mo3	320		320	320	298	288	179	136	66	---		
	500		500	500	453	437	290	231	146	---		
	PN		450°C	500°C	510°C	530°C	550°C	580°C	600°C	620°C	640°C	650°C
11CrMo9-10	320	bar	320	286	250	188	138	88	-----	-----	---	---
	500		500	421	368	281	212	137	-----	-----	---	---
X10CrMoVNb9-1	500		500	500	500	500	453	359	281	212	181	137

		Temperature [° C]																		
Material	PN	-10 < do <50	100	150	200	250	300	350	400	450	460	470	480	490	500	510	520	530	540	550
P245GH	63	63	58,5	55,5	52,5	48,0	43,5	40,5	37,5	20,7	-	-	-	-	-	-	-	-	-	-
GP240 GH	100	100	92,8	88,0	83,3	76,1	69,0	64,2	59,5	32,8	-	-	-	-	-	-	-	-	-	-
	160	160	148,5	140,9	133,3	121,9	110,4	102,8	95,2	52,5	-	-	-	-	-	-	-	-	-	-
13CrMo4-5	63	63	63	63	63	63	63	60,0	56,7	53,1	50,5	47,9	45,4	42,8	41,1	34,8	28,2	23,4	18,3	14,7
G17 CrMo 5-5	100	100	100	100	100	100	100	95,2	90,0	84,2	80,2	76,1	72,0	68,0	65,2	55,2	44,7	37,1	29,0	23,3
	160	160	160	160	160	160	160	152,3	144,0	134,8	128,3	121,8	115,3	108,8	104,3	88,3	71,6	59,4	46,4	37,3

Table cells in gray are for creep operation.

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

The valves have been designed for applications independent of external conditions. If there is a risk of corrosion caused by external conditions (weather, aggressive vapours, gases, etc.), special anti-corrosion protection or special design of the valves is recommended.

## 6. ASSEMBLY

Welding of valves should be performed by suitably qualified persons in accordance with the recognized rules of technology.

The following rules must be observed during assembly:

- before assembly, determine whether the valves are not damaged during shipment or storage,
- make sure that the used valves are suitable for working conditions and media in the given plant,
- remove plugs if there are any,

- for welding the valves must be protected from splashes,
- steam lines must be routed in such a way as to prevent the accumulation of water; to prevent water hammer, use a condensate separator,



The GP240GH carbon cast steel valves must not be installed as the end element of the pipeline if the valve temperature is lower than minus 10°C or higher than 400°C.



The GP240GH carbon cast steel valves operating at temperatures above 400 °C due to material creep, cannot operate in these conditions for longer than 100,000 hours.



Stop valves made of 13CrMo4-5 steel and operating at temperatures above 490°C due to material creep, cannot operate under these conditions for more than 100,000 hours.

The valve design withstands an unlimited number of fatigue cycles.



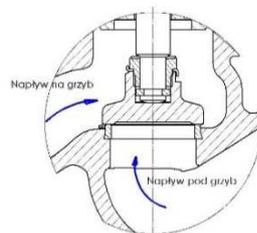
The pipeline to which the valves are mounted should be arranged and installed in such a way that the valve body does not transmit bending moments and is not stretched,

- when painting the pipeline, protect the valve stem,
- valves can be installed in any position, recommended position of the valve with the handwheel up,



Pay attention to the medium flow direction, marked with an arrow on the valve body.

	Stop valve PN6 – PN25	Stop check valve and stop throttle disc PN6 – PN40	Stop valve PN40	Stop valve PN 63-100	Stop valve PN160
<b>under the disc</b>	DN15 – DN150	DN15 – DN300	DN15 – DN125	DN15 - DN65	DN15 - DN50
<b>over the disc</b>	DN200 – DN300	-----	DN150 – DN200	DN80 - DN200	DN65 – DN200

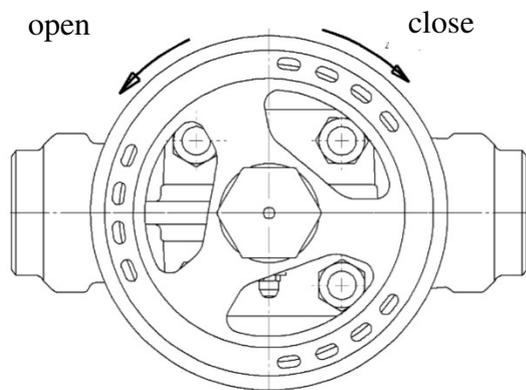


- before starting the system, and in particular after repairs, flush the pipeline system with the valve fully open to remove solids or welding spatter harmful to the sealing surfaces,
- installing a strainer before the valve increases the certainty of its proper functioning.

## 7. OPERATION

During operation, the following rules should be observed:

- commissioning process - commissioning should be conducted in a way that eliminates the occurrence of sudden changes of temperature and pressure,
- the valve is closed by turning clockwise when looking at the handwheel from above (in the direction marked on the handwheel),

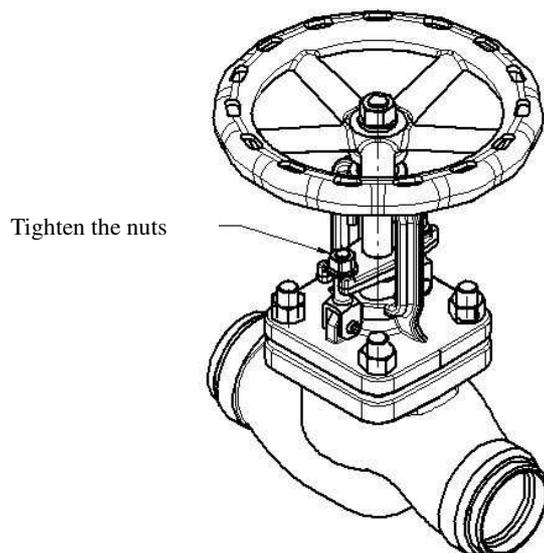


- opening takes place when turning to the left,



**Use of additional leverage when turning the handwheel is prohibited,**

- the operation of installed valves can be checked by repeated opening and closing,
- if there are leaks on the valve stem, tighten two nuts on the bolts pressing the packing through the gland with moderate force until the leak stops,
- if it is necessary to refill the gland packing, this operation should be performed with no pressure in the valve, with the cooled medium, with the valve fully open, because then the internal space of the valve is completely cut off: in stop valves by the profiled end of the disc in cooperation with the bonnet, and in the stop-check valves a flanged cut of the stem cooperates with the lower surface of the bonnet,
- to replenish the gland packing, in the Fig. 217 ( PN40) valves, unscrew the nuts on the T-bolts, move the gland towards the wheel and fill the gland chamber under such raised gland with an open packing disc, and then tighten the packing again. In the Fig. 211 and 219 PN63; 100; 160 stop valves it is recommended to disassemble and regenerate the worn valve in order to possibly refill the gland packing.



- Permissible pressure difference that may occur on both sides of the closing element (with the valve closed) in valves with an inflow under the disc is as in the table below.

- PN	Permissible pressure difference [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

PN	DN15-50	DN65	DN80	DN100
63	63bar			44bar
100	100bar		70bar	44bar
160	160bar	110bar	70bar	44bar

## 8. MAINTENANCE AND REPAIR



To ensure safe operation, each valve, especially one that is rarely used, should be regularly inspected and maintained. The frequency of maintenance activities is determined by the user depending on the operating conditions. The stem thread should be lubricated periodically.

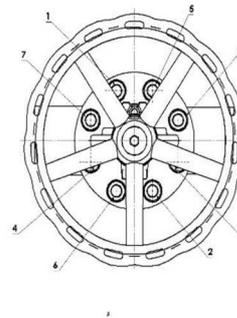
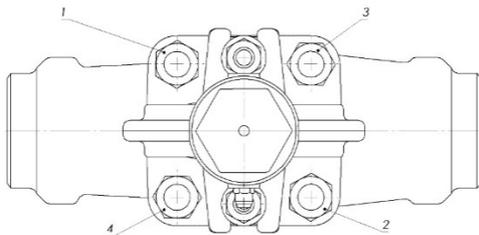
All maintenance and repairs should be performed by authorized personnel and with the use of appropriate tools and original spare parts. Before removing the complete valve from the pipeline or before any maintenance works, the particular section of the pipeline must be taken out of service. For maintenance and repair work:

- reduce the pressure to zero and the valve temperature to the ambient temperature,
- use personal protection equipment appropriate to the existing risk,



**- be careful when touching the gaskets located between the valve body and bonnet. The stainless steel strap inside them may cause cuts,**

- each time after removing the valve bonnet, clean surfaces under gaskets and use new gaskets of the same type as the previously installed ones,
- tightening the bolt connections of the bonnet should be performed with the valve open,
- nuts should be tightened evenly and crosswise with a torque wrench,



- nut tightening torques

Screw	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

<b>Fault</b>	<b>Possible reason</b>	<b>Remedy</b>
No flow	Valve closed	Open the valve
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
	Medium polluted with solid particles	Clean the valve. Fit strainer before the valve.

In case of leakage of medium that is not indifferent to the environment, protective measures should be taken.

## 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 centres.

## 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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