	<b>INSTRUCTION FOR INSTALLATION AND SERVICE</b>	<b>ZV 2x6 ZV 2x7</b>
	<b>CHECK VALVES CHECK CLOSING VALVES</b>	PM - 090/15/05/GB

The instructions for installation, operation and service of check valves ZV 2x6 and ZV 2x7 are binding for users to ensure proper function of valves. The user must keep the rules, written here, while installation, operation and servicing the valve.

## 1. TECHNICAL DESCRIPTION AND VALVE FUNCTION

### 1.1 Description

Check valves ZV 2x6 a ZV 2x7 are self-acting shut-off valves for application at long-lasting and maintenance-free operation.

Valves meet the ČSN EN 14341 (02/2007)

Valves in execution **ZV 2x6 P a ZV 2x7 P** are closed by back pressure and by a spring with the assistance of the plug weight. Opening overpressure is 0,05 - 0,1 bar.

Valves in execution **ZV 2x6 T a ZV 2x7 T** are closed by back pressure only with the assistance of the plug weight.

Valves in execution **ZV 2x6 E a ZV 2x7 E** are check closing valves with bellows which ensures a hermetic tightness to environment and in addition it is added with a safety packing made of graphite. The hand wheel is non-rising which enables an application in unaccessible places. Valves are closed by back pressure and by a spring with the assistance of the plug weight. Opening overpressure is 0,05 - 0,1 bar.

Valves in execution **ZV 2x6 F a ZV 2x7 F** are check closing valves with bellows which ensures a hermetic tightness to environment and in addition it is added with a safety packing made of graphite. The hand wheel is non-rising which enables an application in unaccessible places. Valves are closed by back pressure only with the assistance of the plug weight.

### 1.2 Application

The valves are designed as self-acting check shut-off valves. Leakage of the valve is guaranteed in rate „A” for closing function and in rate „C” for backward function acc. to ČSN-EN 12266-1.

Check valves are especially designed for applications in warm-water and steam circuits in power plants, heating plants, heat exchange stations, heat transferring stations and common heating applications.

### 1.3 Process media

The valves ZV 2x6 are suitable to use for water, steam and other liquids and gases which are compatible with used material of the valve body and inner parts. The valves ZV 2x7 are suitable to use for petrochemical industry

### 1.4 Technical data

Series	ZV 226, ZV 227	ZV 236, ZV 237
Type	Check valve	
Nominal diameter	DN 15 to 200	
Nominal pressure	PN 16, 25 and 40	
Body/Bonnet material	Cast steel 1.0619 (GP240GH)	Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)
Seat material ZV 2x6	1.0619+CrNiMoTi	1.4581+CrNiMoTi
Seat material ZV 2x7	1.0619+CrNiMoTi / 1.0619+Stellite 6	1.4581+CrNiMoTi / 1.4581+Stellite 6
Plug material ZV 2x6	1.4028	1.4571
Plug material ZV 2x7	1.4028 / 1.4028+Stellite 6 / 1.4571	1.4571 / 1.4571+Stellite 6
Stem material	1.4305	1.4305
Pin material	1.4021	1.4305
Spring material	Stainless steel 1.4310	
Operating temperature	-20 to +400°C *	
Connection	Type B1(raised-faced); Type F(female); Type D(groove); Type E(male); Type C(tongue) acc.to ČSN-EN 1092-1+A1 (7/2014) Face to face dimensions acc. to ČSN-EN 558+A1 (5/2012)	
Type of plug	Disc	
Kvs values	4,3 to 570 m <sup>3</sup> /hod	
Leakage	For closing function - rate A (only execution E and F) acc. to ČSN-EN 12266-1 (10/2012) For backward function - rate C (all execution) acc. to ČSN-EN 12266-1 (10/2012)	
Packing	Bellows with safety graphite packing (execution E and F)	

\* designs for other temperature is possible, after consultation with the producer

## 2. DIRECTIONS FOR INSTALLATION

### 2.1 Preparation before installation

The valves are delivered completely assembled from the company and tested. Prior to the piping of the valve, it is necessary to compare the data on the valve tag with data from accompanying documents. The protective blinds must be removed from the valve. The valves shall be inspected against mechanical damage or being stained, especially in the inner area and on sealing flanges. Also the piping system shall be cleared from all impurities that could cause damage or loss of function of the valve.

### 2.2 Installation and Service

Valve has to be installed and put into operation by qualified person! Qualified person is a person acquainted with installation, putting into operation and manipulation herewith product, and which is qualified in enclosure. As well he must be for-educated about health protection and safety at work.

**The valves are designed for mounting in a horizontal pipeline by the bonnet or handwheel upwards.**

**The valve must be installed with proper space for manipulation with handwheel (type E and F).**

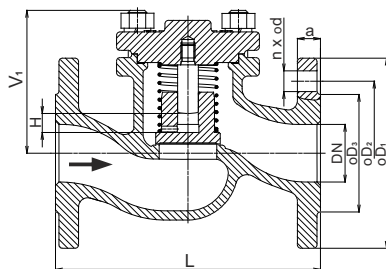
**The flow direction is always to under the plug and is determined by the arrow on the body.**

Valves do not require any revision or preventive servicing.

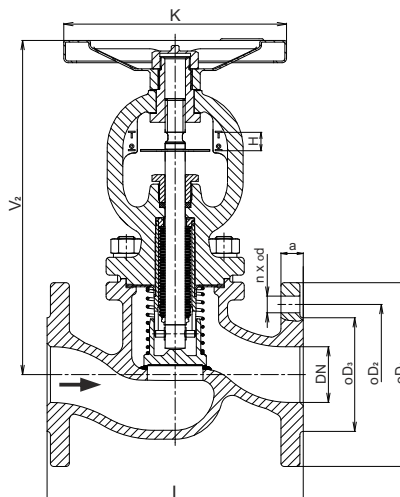
### 2.3 Dimensions and weights valves ZV 2x6, ZV 2x7

DN	PN 16					PN 25					PN 40					ZV 2x6 P,T					ZV 2x6 E,F									
	oD <sub>1</sub>	oD <sub>2</sub>	oD <sub>3</sub>	od	n	a	oD <sub>1</sub>	oD <sub>2</sub>	oD <sub>3</sub>	od	n	a	oD <sub>1</sub>	oD <sub>2</sub>	oD <sub>3</sub>	od	n	a	H	L	V <sub>1</sub>	V <sub>2</sub>	K	m <sub>1</sub>	m <sub>2</sub>					
	mm	mm	mm	mm		mm	mm	mm	mm		mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg	kg					
15	95	65	45	14	4	16	As PN 40						95	65	45	14	4	16	130	6	75	195	125	3	4,5					
20	105	75	58			18							105	75	58			18	150					4	5					
25	115	85	68			18							115	85	68			18	160					4,5	6					
32	140	100	78			18							140	100	78			18	180					7,5	9					
40	150	110	88	18	8	150							110	88	18	10	200	91	225	150	8	10								
50	165	125	102			20							165	125							102	18	20	13,5	17,5					
65	185	145	122	18	4	22							As PN 40						185	145	122	18	16,5	22	290	125	305	200	17	21
80	200	160	138			24													200	160	138			24	310				28	35
100	220	180	158	8	24	235													190	162	22	24	350	176	385	300	40	50		
125	250	210	188			26													270	220							188	26	400	71
150	285	240	212	22	28	300	250	218	26	28	480	260							530	400	95	115								
200	340	295	268			12	24	360													310	278	26	12	30	375	320	285	30	12

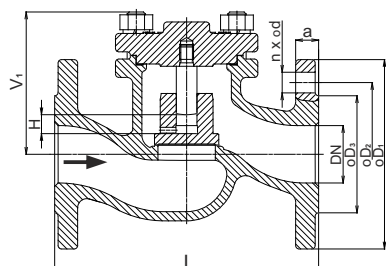
ZV 2x6/7 P



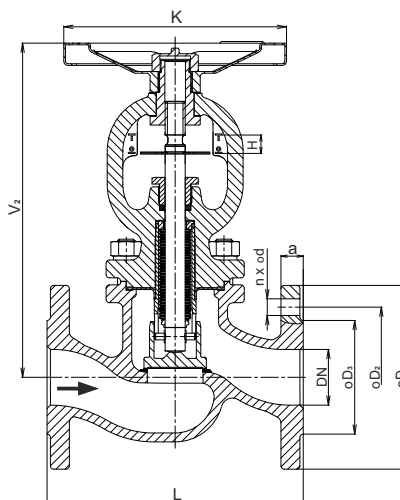
ZV 2x6/7 E



ZV 2x6/7 T



ZV 2x6/7 F



## 2.4 Guarantee conditions

The producer provides a 24-month warranty for this product starting with the date of dispatch from the factory. When the failure is detected, the activities according point a), b) or c) should be done.

a) Send the strainer to the address of LDM servis, spol. s r. o., where the valve will be inspected and changed or repaired.

b) Report the malfunction to a local service company which can lend you a spare strainer. Send the the strainer over to our service company where it will be repaired or replaced with new one.

c) Require service work directly at site.

In case the claim is found relevant, the producer shall pay the cost of repair and transportation cost for sending the strainer back to the customer. If the customer requires the service work directly at site, he shall be bound to pay the travel cost of the service personnel. If the claim is not found relevant, he is bound to pay all the cost arised.

The producer does not guarantee the proper function of the product under other conditions than those stipulated in this instructions for installation and maintenance of the product. Any other service conditions shall be consulted with the producer.

## 2.5 Waste disposal

Packaging material and the valves shall be disposed of in the common way such as by handing over to a specialized enterprise for disposal of (body and metal parts - metal waste, other non-metal parts - communal waste).

### Maximum permissible working overpressure acc. to EN 12 516-1 [MPa]

Material	PN	Temperature [°C]								
		RT <sup>1)</sup>	100	150	200	250	300	350	375	400
Cast steel 1.0619 (GP240GH)	16	1,56	1,36	1,27	1,13	1,04	0,94	0,88	0,86	0,84
	25	2,44	2,13	1,98	1,78	1,62	1,47	1,37	1,35	1,32
	40	3,9	3,31	3,17	2,84	2,6	2,35	2,19	2,16	2,11
Stainless steel 1.4581 (GX5CrNiMoNb19-11-2)	16	1,59	1,44	1,33	1,25	1,17	1,10	1,06	1,05	1,02
	25	2,49	2,25	2,08	1,95	1,84	1,72	1,66	1,63	1,60
	40	3,98	3,60	3,33	3,13	2,94	2,75	2,65	2,61	2,56

<sup>1)</sup> -10°C to 50°C

### Valve complete specification No. for ordering ZV 2x6

		XX	XXX	XXX	XX	/	XXX	-	XXX
1. Valve	Check valve, direct	ZV							
2. Type	Check valve made of cast steel 1.0619		226						
	Check valve of stainless steel 1.4581		236						
3. Function	Check valve with spring			P					
	Check valve without spring			T					
	Check closing valve with spring			E					
	Check closing valve without spring			F					
4. Connection	Raised-faised flange			1					
	Female flange			2					
	Groove flange			3					
	Male flange			7					
	Tongue flange			8					
5. Body / bonnet materia	Cast steel 1.0619 / Cast steel 1.0619			1					
	Stainless steel 1.4581 / Stainless steel 1.4581			8					
6. Nominal pressure PN	PN 16				16				
	PN 25				25				
	PN 40				40				
7. Max. temperature °C	400 °C						400		
8. Nominal size DN	DN 15 to 200								XXX

Ordering example: **ZV 226 P11 40/400-050**

## Valve complete specification No. for ordering ZV 2x7

		XX	XXX	XXXX	XX	/	XXX	-	XXX
1. Valve	Check valve, direct	ZV							
2. Type	Check valve made of cast steel 1.0619		227						
	Check valve of stainless steel 1.4581		237						
3. Function	Check valve with spring			P					
	Check valve without spring			T					
	Check closing valve with spring			E					
	Check closing valve without spring			F					
4. Connection	Raised-faised flange			1					
	Female flange			2					
	Groove flange			3					
	Male flange			7					
	Tongue flange			8					
5. Body / bonnet materia	Cast steel 1.0619 / Cast steel 1.0619			1					
	Stainless steel 1.4581 / Stainless steel 1.4581			8					
6. Seat material Plug / Body	CrNiMoTi / CrNiMoTi			0					
	CrNiMoTi / Stellite 6			2					
	Stellite 6 / Stellite 6			5					
	13Cr / Stellite 6			8					
7. Nominal pressure PN	PN 16				16				
	PN 25				25				
	PN 40				40				
8. Max. temperature °C	400 °C						400		
9. Nominal size DN	DN 15 to 200								XXX

Ordering example : **ZV 227 P112 40/400-050**



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