

# MANUAL

## **VS 300, VS 500, VS 501**

### Three and Five Valve Manifolds



- Operating pressure up to 42 MPa.
- Operating temperature up to 500 °C.
- Direct installation on a pressure sensor or between impulse piping.
- Sealing component selection from different material: Graphite, PTFE, PEEK, Viton, EPDM.
- Gland packing adjuster.
- Seat diameter 4 mm.
- Drain piping on the side of the manifold enables arbitrary position of the manifold.
- EU Type Examination Certificate according to Directive PED 2014/68/EU.

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# 1. General instructions and information

## 1.1 Symbols used



Symbol of warning; for safe use it is necessary to proceed according to the instructions



Symbol CE certifies compliance of the product with EU directives and the respective government directives



The product does not belong to public waste and it is subjected to separate collection

## 1.2 Scope of delivery

With the product is delivered:

- Manual for installation, operation and maintenance

Upon request can be provided:

- Protocol on executed tests
- Copy of the Inspection certificate 3.1 acc. to EN 10204 for material of the main body
- Copy of the EU Type Examination Certificate acc. to Directive PED 2014/68/EU

## 1.3 Description of the delivery and packing

The product is packaged in a protective cover and provided with an identification label with a mark of the output control.

The product must not be exposed to direct rain, vibrations and shocks during transport.

## 1.4 Storage

The products shall be stored at temperatures from -20 to +50 °C and maximum relative humidity 80 % in the rooms with elimination of condensation of water vapours on the products. The stored products shall not be exposed to any shocks, vibrations and effects of harmful vapours and gases.

## 1.5 Installation and commissioning

During installation, commissioning, operation and maintenance follow the instructions in chapter 4.

## 1.6 Spare parts

Any of the compact parts of the product can be also ordered as a spare part if there is not required special procedures or technological operations for the exchange.

## 1.7 Repairs

Products are repaired by the manufacturer. The products for repair should be sent in a packing that guarantees damping of shocks and vibrations and protects against damage during transport.

## 1.8 Warranty

Products are covered by a warranty for a period of 24 months from the delivery date on the delivery note. The manufacturer guarantees technical and operational parameters of the products within scope of the applicable documentation. Warranty period is specified with individual items and begins from the day of takeover of the goods by the purchaser or delivery to the carrier. Any claims concerning to defects of the goods together can be filed in writing with the manufacturer within the warranty period and the claimed product shall be presented. The claiming party shall give identification of the product, number of the delivery note and description of the fault or defect.

The manufacturer is not responsible for any defects caused by improper storage, incorrect connection, damages caused by external effects, in particular by effects of factors with excessive values, unqualified installation, improper operation or common wearing.

# 2. End of service and disposal

## 2.1 End of service

In case that the manifold with a pressure or pressure difference sensor is under pressure, the sensor and manifold shall not be dismantled. During the end of operation or manifold replacement, before manifolds dismantling is necessary to switch over the possible regulation loop to manual operation or accept another suitable measure to prevent any possible damages connected with end of service of the pressure sensor. Then the supply of pressure medium is closed, pressure medium from the sensor and manifold is discharged and the manifold is dismantled.

## 2.2 Disposal



The products do not contain any environmentally hazardous parts. When disposing packages, destroyed or irreparably damaged products, proceed according to local regulations.

## 3. Product description



### VS 300, VS 500, VS 501 Three and five valve manifolds

- Operating pressure up to 42 MPa.
- Operating temperature up to 500 °C.
- Direct installation on a pressure sensor or between impulse piping.
- Sealing component selection from different material: Graphite, PTFE, PEEK, Viton, EPDM.
- Gland packing adjuster.
- Seat diameter 4 mm.
- Drain piping on the side of the manifold body enables arbitrary position of the manifold.
- EU Type Examination Certificate according to Directive PED 2014/68/EU.

### 3.1 Application

The three valve manifold VS 300 and five valve manifolds VS 500 and VS 501 are used to shut off supply of a pressure medium for disconnection of the pressure or pressure difference sensor and interconnection of both input chambers of the pressure difference sensor when resetting zero on operational pressure. In addition, the five valve manifold allows deaeration and mud discharge from the impulse piping.

### 3.2 Description

The manifold is designed for direct installation on a pressure difference sensor with spacing of inputs 54 mm or for installation between impulse piping. The whole manifold is made of stainless steel 1.4541 except the sealing ball and spindle gland.

As a sealing element of the valve is used a ball, embedded into the valve spindle face and closing the through seat with diameter 4 mm. Material of the sealing ball is optional; it could be made of quenched stainless steel 1.4125, ceramics Si3N4 or plastic PTFE 325.

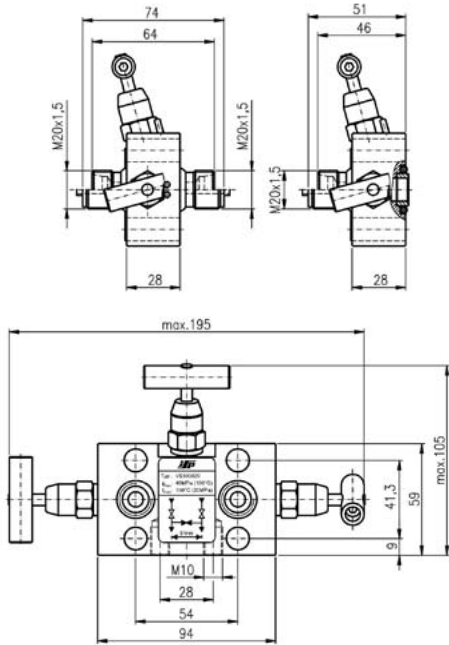
The valve spindle of the standard version is sealed using a Viton (FPM) or EPDM O-ring; in both cases with two Teflon supporting rings. In case of valves with gland packing adjuster it is possible to choose the sealing material PTFE, Graphite or PEEK.

The wide range of dimensions of the input and output screwing allows connection of the impulse piping using a welding on nipple, welding on plow or single cutting ring for piping diameters 8, 10, or double cutting ring for piping diameters 12 or 14 mm.

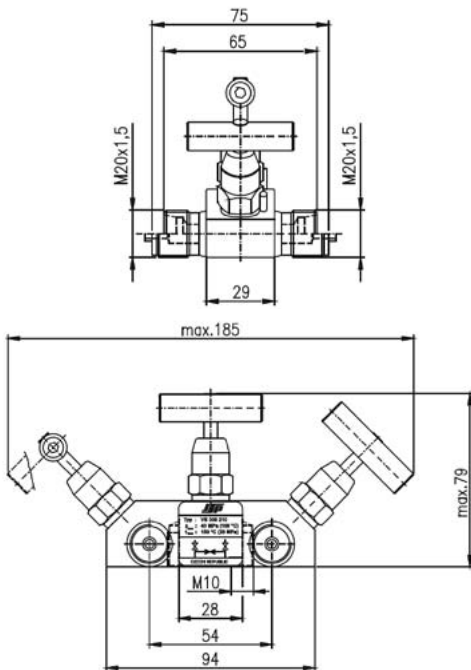
### 3.3 Dimensional drawings

#### Three-way manifold VS 300

mounting on differential pressure transmitter

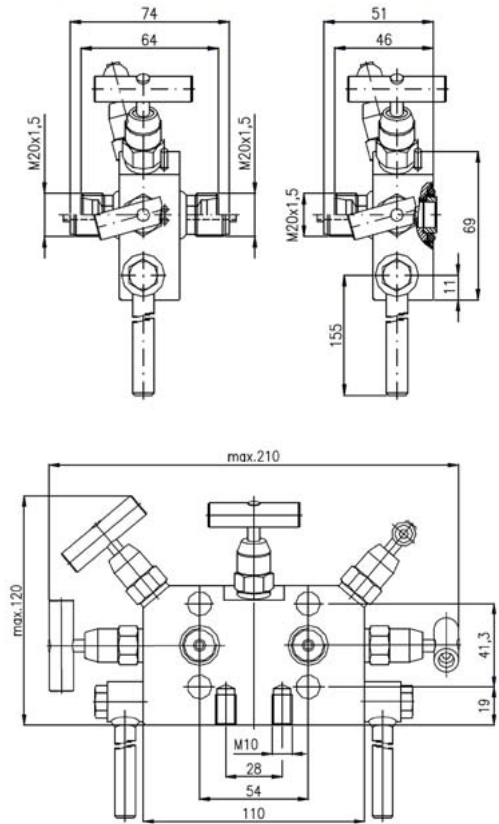


mounting between impulse piping

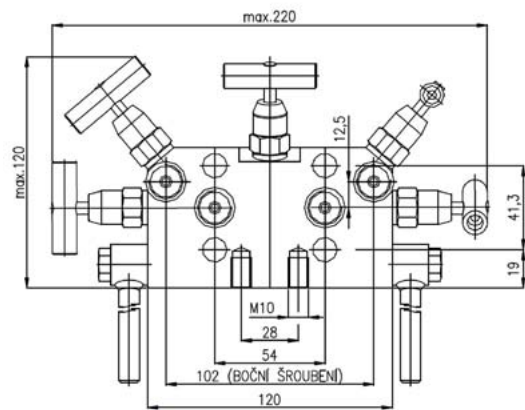


#### Five-way manifold VS 500, VS 501

left: mounting between impulse piping  
right: mounting on differential pressure transmitter



#### Five-way manifold VS 500..B



## 4. Installation, operation and maintenance

### 4.1 Installation and commissioning

#### 4.1.1 General

The manifold is designed for mounting on a wall or a pipe using a bracket and two screws M10. A washer shall be inserted between the three valve manifold and bracket. In case of five valve manifold, the mud discharge pipes are fixed to sides of the body using special screws M8. The mud discharge pipes are sealed on the screw using an O-ring 6.4x1.9 mm and on the manifold body using an O-ring 14x2 mm. The screws of the mud discharge pipes shall be tightened only slightly to 15 Nm max.

The impulse piping with diameter 12 or 14 mm is welded on the plow or nipple. To ensure correct position of the plow or nipple, it is welded together with the manifold in assembled condition.

Before installation, the impulse piping shall be cleaned from all dirt. After welding it shall be disconnected from the manifold and purged to remove any possible dirt from welding.

Piping with outer diameter 8, 10, 12 or 14 mm can be also connected by using a cutting ring. The minimum length of the impulse piping to the first bend shall be 33 mm from the pipe face. The pipe face shall be cut off perpendicularly and the inner and outer edges shall be deburred. To prevent penetration of any possible dirt between the contact surfaces, all part shall be properly cleaned before installation.

Before connection of a pressure difference sensor, it is recommended to test correctness of connection (welding) of the manifold by pressurization of the impulse piping and perform basic deaeration of the impulse piping with the three valve manifold.

The pressure difference sensor is connected to the manifold using four screws 7/16" 20UNF that are tightened to 10 Nm. Sealing O-rings 18.64x3.53 mm are inserted between the manifold and sensor.



When both connections of threaded parts are made of stainless steel, there is danger of galling (formation of cold weld). This can also occur during ordinary screwing by hand without using tightening key. If the cold weld is made, the thread is then damaged and parts are unusable. Before first screwing, it is therefore necessary to check whether threads are free of impurities (and clean if needed) and then treat the threads against galling (formation of cold weld) by appropriate lubricant. For example use paste G-Rapid plus or Lukosan M11 (in case of connection for oxygen). For tapered threads is usually used Teflon tape. Threads with silver covered surface do not have to be lubricated against galling.

#### 4.1.2 Commissioning



After connection or welding of the impulse piping the manifold is ready for operation. After installation of a

manifold into piping it is necessary to carry out deaeration of the piping by condensate, or it is possible to flood the entire system including the sensor is by clean service water. No static pressure may be present in the piping. Flooding of the system by condensate is carried out when the thermal circuit is shut down, the valves and manifold is closed.

Deaeration of the piping by condensate is carried so that first the interconnection valve (Equalize) is opened. The closing valves are closed and mud discharge valves (Drain) slowly opened. At the moment when water appears in the mud discharge holes, the mud discharge valve is closed. The closing valves (Isolate) are opened. Finally the interconnection valve is closed.

This deaeration drains all dirt from the impulse piping.

In case that it is necessary to carry out deaeration at a non-zero flow and this may cause a partial loss of condensate, such deaeration can be carried out when the interconnection valve is closed. However, this causes loading of the sensor with full static pressure.

Resetting of the difference pressure sensor can be carried out with periodic checks, open interconnection valve and one open closing valve.

In case of a leakage of the spindle gland with valve having gland packing adjuster, the leakage can be eliminated by tightening the adjuster and the lock nut.

#### 4.1.3 Resetting of the pressure difference sensor



Resetting of the pressure difference sensor is carried out due to minimization of errors of beginning of the sensor range caused by static pressure. When resetting the sensor, it is necessary to achieve equal pressure in both chambers of the sensor. This can be achieved so that the connecting valve on the positive or negative branch is closed and the interconnection valve is opened. Then it is possible to check and reset, if necessary, the beginning of the sensor range. After resetting, the interconnection valve is closed and the connecting valve of the closed branch is opened.



In case that both branches of the system for measurement of pressure differences are connected before one of them is closed, this causes a drop of level of condensate in the positive branch due to different pressures in the branches or flow of steam through the manifold at high pressure difference and short impulse piping. Flow of steam with high temperature may damage the manifold or pressure difference sensor. Drop of condensate level in the positive branch has no influence on resetting the sensor at static pressure; however, in case of repeated putting into operation there must be taken into account an error caused by different levels of condensate in the branches. This error is eliminated by refilling of condensate in the branches.

#### 4.1.4 Discharge of mud from the impulse piping

The following procedure can be applied only to the manifolds with mud discharge piping. Before mud discharge first close the connecting valves to prevent penetration of dirt and/or hot steam into the pressure difference sensor. Then open the mud discharge valve on one branch. When clean fluid appears at the outlet of the mud discharge pipe, close the valve. Use the

same procedure for discharge of mud from the other branch of the impulse piping. After discharge of mud from the impulse piping also discharge mud from the pressure difference sensor using mud discharge valves.

**!** In case of measurement of steam through condensate, wait for sufficient amount of condensate in the impulse piping or condensate vessels before discharge of mud from the pressure difference sensor. Insufficient volume of condensate may cause penetration of hot steam into the sensor and its destroying when discharging mud from it.

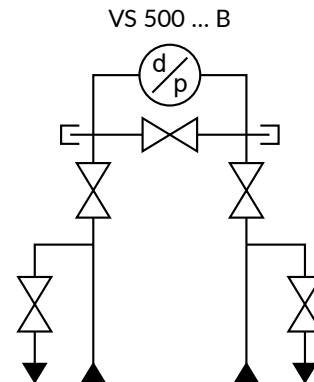
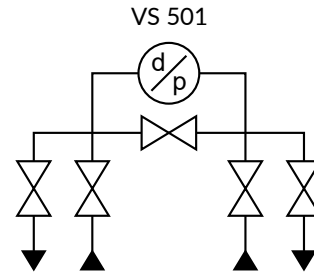
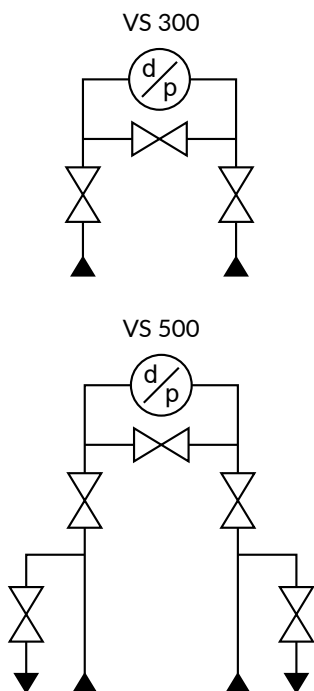
**4.1.5 Cleaning the manifold**

**!** Clogged manifold may be cleaned only if pressure medium in the impulse piping is completely disconnected. Before cleaning of a clogged fitting, screw out the small valve(s) from the basic body. First remove the valve lock pin, then screw out the valve and clean the interconnection channels and valve seat. When cleaning the fitting, pay attention to the seating (sealing) edge of the valve to prevent its damage.

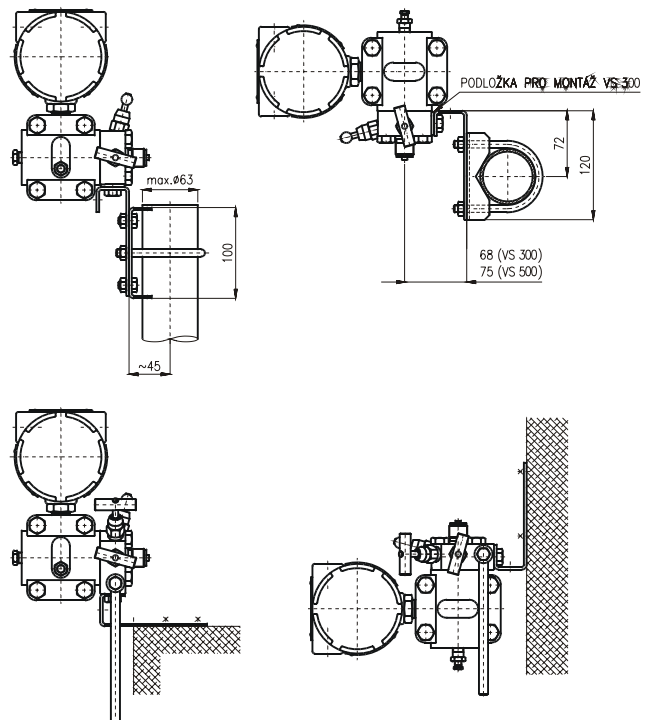
Before installation of the valve into the fitting body it is necessary to screw in the valve spindle up to the stop into the valve body. To improve tightening and sealing of the valve in the fitting it is recommended to apply a Teflon tape or a liquid Teflon compound on the seating surface after the valve threads. Tighten the valve to 55 Nm and then press in the locking pin.

**!** In case of cleaning of a manifold designed for use with oxygen, avoid staining of individual parts of the manifold with grease. The threads and sealing joints may be lubricated only by a paste approved for use with oxygen.

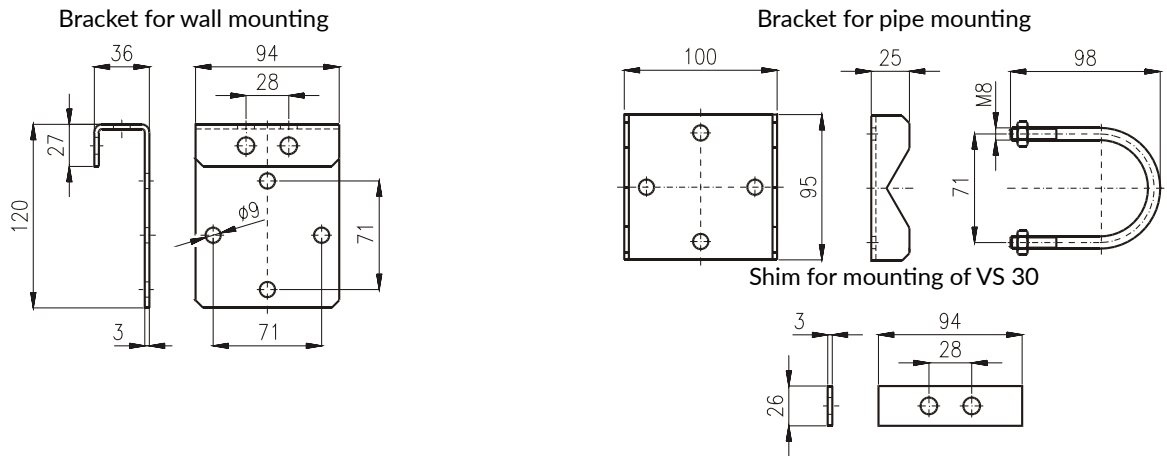
**4.2 Interconnection diagram**



**4.3 Examples of mounting with brackets**



### 4.4 Examples of mounting of the manifolds in operation



### 4.5 Connection of impulse piping by means of cutting rings

<p>1</p>	<p>2</p>	<p>3</p> <p>Max. deviation 0.5°</p>	<p>4</p> <p>Deburr edges of the pipe</p>
<p>5</p> <p>Clean threads and contact surfaces</p>			<p>6</p> <p>Install a nut and ring on the pipe.</p>
<p>7</p> <p>Correct</p> <p>Wrong</p>	<p>8</p> <p>Slide in the pipe down to the bottom and tighten it by hand</p>	<p>9</p> <p>Mark position of the nut.</p>	<p>10</p> <p>Tighten the nut using a wrench*</p>

\* Tighten by 1 1/2 turn for single cutting ring (codes 04, 13) and by 1 1/4 turn for double cutting ring (codes 22, 24).

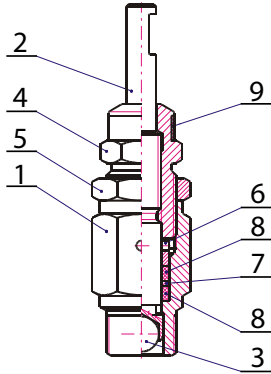


## 4.6 Operation and maintenance

The device is attendance- and maintenance-free.

Only in case of a leakage of the spindle gland (version with gland packing adjuster), the leakage can be eliminated by tightening the adjuster screw (position 4). Before tightening the screw loosen the lock nut (position 5). Tightening torque of gland packing adjuster is 15 Nm. After tightening the adjuster retighten the lock nut.

- 1 - Valve body | 2 - Spindle | 3 - Seat packing
- 4 - Vent screw | 5 - Nut | 6 - Pressure ring
- 7 - Carrier ring | 8 - Gland packing | 9 - Tag



## 5. Product specifications

### 5.1 Technical specifications

Operation pressure:	up to 42 MPa
Operation temperature:	up to 500 °C
Spacing of inputs:	54 mm

### 5.2 Supplementary parameters

<b>Materials:</b>	
manifold body	stainless steel 1.4541
sealing ball of valve	st. steel 1.4125 (X105CrMo17)
	ceramics Si3N4, plastic PTFE 325
O-ring	EPDM, Viton
carrier rings	teflon
dust cap	silicone rubber
gland packing adjuster	PTFE, Graphite, PEEK
welding nipple	carbon steel 1.0570
	steel 1.7715
	stainless steel 1.4541
welding cone	carbon steel 1.0570
	steel 1.7715
	stainless steel 1.4541
cutting ring	stainless steel 1.4571

### Weight without accessories:

VS 300	1.5 kg
VS 500	2.2 kg
VS 501	2.2 kg
holder for wall	0.5 kg
holder for pipe	0.9 kg

**Table 1**  
Chemical resistance of sealing materials

◊ - Perfect resistance | ○ - Good resistance  
x - No resistance

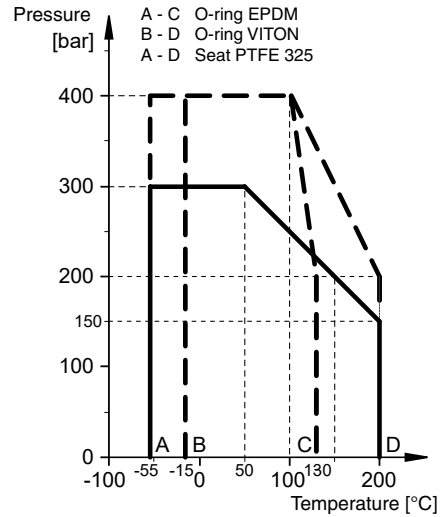
Medium vs. sealing		Viton	EPDM	PTFE	Graphite	PEEK
Acetone		x	x	◊	◊	◊
Acetylene		◊	◊	◊	◊	◊
Gas		◊	x	◊	◊	◊
Ammoniac	Water solution	x	◊	◊	◊	◊
	Liquid	x	◊	◊	◊	◊
	Fluid	○	x	◊	◊	◊
Ethylene		◊	◊	◊	◊	◊
Hydraulic liquids	Fireproof	○	x	◊	◊	◊
Hydroxides		○	◊	◊	◊	◊
Boracic acid		◊	◊	◊		◊
Lemon acid		◊	◊	◊		◊
Nitric acid		x	x	◊	◊	◊
Fluoric acid	< 65 %	○	○	◊	◊	x
	> 65 %	○	○	◊	x	
Phosphoric acid	10 %	◊	◊	◊	◊	◊
	Concentrate	◊	◊	◊		◊
	Boiling concentrate	◊	◊	◊		○
Hydrochloric acid	10 %, 80 °C	○	◊	◊		◊
	36 %, 20 °C	○	◊	◊		◊
Chromic acid		◊	○	◊		
Malic acid		◊	◊	◊		
Carbolic acid		x	x	◊		
Hydrocyanic acid		◊	○	◊		
Butyric acid		○		◊		
Lactic acid		◊	◊	◊		◊
Formic acid	10 %	x	○	◊	◊	◊
Acetous acid	10 %	x	○	◊	◊	◊
	Concentrate	x	x	◊		
Salicylic acid		◊	◊	◊		
Sulphuric acid	25 %	○	◊	◊	◊	◊
	80 %	x	○	◊	◊	x
Oxalic acid	10 %	◊	◊	◊		◊
Carbonic acid		◊	◊	◊		◊
Tartaric acid		◊	◊	◊	◊	◊
Oxygen		◊	◊	◊	◊	◊
Methane		◊	x	◊	◊	◊
Oils		◊	x	◊	◊	◊

**Medium vs. sealing**

		Viton	EPDM	PTFE	Graphite	PEEK
Steam	< 200 °C	o	o	◇	◇	◇
	> 200 °C	x	x	x	◇	x
Perchloretylen		◇	o	◇	◇	◇
Burning oil		◇	o	◇	◇	◇
Gas fuels		◇	o	◇	◇	◇
Propane + butane		◇	o	◇	◇	◇
Radioactive radiation		o	o	x	o	◇
Compressed air		◇	◇	◇	◇	
Toluene		o	x		◇	◇
Heating gases		◇	x	◇	◇	◇
Hydrocarbons		◇	x	◇		
Water	< 80 °C	◇	◇	◇	◇	◇
	> 80 °C	◇	◇	◇	◇	◇
Hydrogen	Cold	◇	◇	◇	◇	◇
	Warm	◇	◇	◇	◇	◇
Air	< 200 °C	◇	◇	◇	◇	◇
Natural gas		◇	◇	◇	◇	◇

rosive chemicals and a soft ball of PTFE 325 is used for gases. Chemical resistances of gland sealing materials see Table 1.

**Figure 1**  
The scope of application of the valve set depending on temperature and pressure

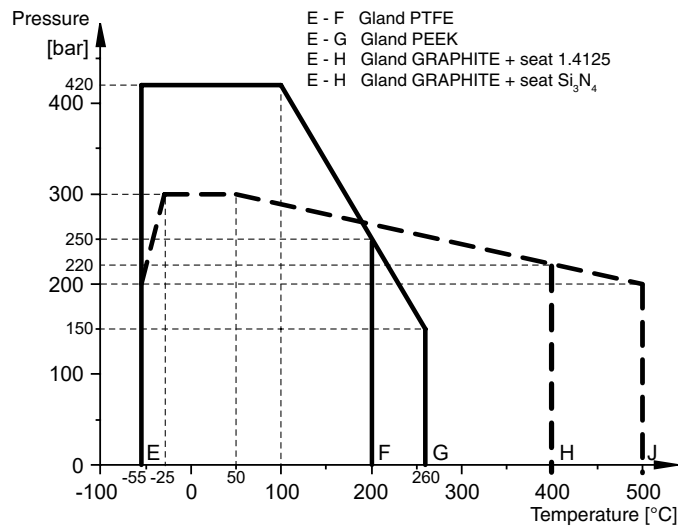


**5.3 Operation conditions**

The manifolds are designed and manufactured for operation in environment defined by conditions IE36 according to the standard EN 60721-3-3 and technical regulation PT 500026.

**Pressure and temperature characteristics**

The operating characteristics of a manifold are given by pressure and temperature, see Fig. 1. These characteristics determine conditions for use of the manifold. The operating variables pressure and temperature are in particular given by the material used for the basic body, by valve and by material of sealing elements of the valve seat and spindle. When selecting material of sealing elements, it is needed to take into account also condition of the operating fluid and its corrosiveness with regard to the sealing materials and material of the manifold. For steam is mostly used sealing of seat by a steel ball (1.4125) with a graphite gland. A ceramic ball of Si<sub>3</sub>N<sub>4</sub> is used for cor-



**Table 2: Maximal values of temperature and pressure depending on material of the sealing seat (ball) and material of the valve spindle gland**

Material of the sealing seat (ball)	EPDM	Viton (FPM)	PTFE	PEEK	Grafit
Ocel 1.4125 (X105CrMo17)	40 MPa	40 MPa	42 MPa	42 MPa	30 MPa
	100 °C	100 °C	100 °C	100 °C	100 °C
Ceramics Si <sub>3</sub> N <sub>4</sub>	20 MPa	20 MPa	25 MPa	15 MPa	22 MPa
	130 °C	200 °C	200 °C	260 °C	400 °C
Ceramics Si <sub>3</sub> N <sub>4</sub>	40 MPa	40 MPa	42 MPa	42 MPa	30 MPa
	100 °C	100 °C	100 °C	100 °C	100 °C
Fluoroplastic PTFE 325	20 MPa	20 MPa	25 MPa	15 MPa	20 MPa
	130 °C	200 °C	200 °C	260 °C	500 °C
Fluoroplastic PTFE 325	30 MPa	30 MPa	30 MPa	30 MPa	-
	50 °C	50 °C	50 °C	50 °C	-
Fluoroplastic PTFE 325	20 MPa	15 MPa	15 MPa	15 MPa	-
	130 °C	200 °C	200 °C	200 °C	-

## 6. Tests, certificates and standards

### 6.1 Tests and certificates


Manifolds VS have the following certificates and approvals according to PED 2014/68/EU:

EU Type Examination Certificate No. 10.598.661, TÜV CZ s.r.o., Novodvorská 994, 142 21 Praha 4, Czech Republic, VAT: CZ63987121, dated 18. 5. 2018

### 6.2 Marking and type tag information

#### Coding on the manifold body:

Example:

Type: VS 300 0101 10	type number (version number)
Pmax: 40 MPa (100 °C)	maximal operation pressure up to temperature
tmax: 200 °C (20 MPa)	maximal operation temperature up to pressure
54 mm	spacing of pressure inputs (not in version between impulse piping)
CE 1017	marking of conformity and number of notified body, that makes approval
99091234	serial number
2018	year of manufacture
Czech Republic	country of origin
	logo JSP, s.r.o.
www.jsp.cz	website address

The direction of the flow is marked by arrow on the valve body.

#### Coding on the valve:

Code on the hexagon of the valve:

- V O-ring Viton or version for oxygen
- V- KY
- E O-ring EPDM or version for oxygen
- E-KY
- T sealing PTFE or version for oxygen
- T-KY
- P sealing PEEK
- G sealing Graphite

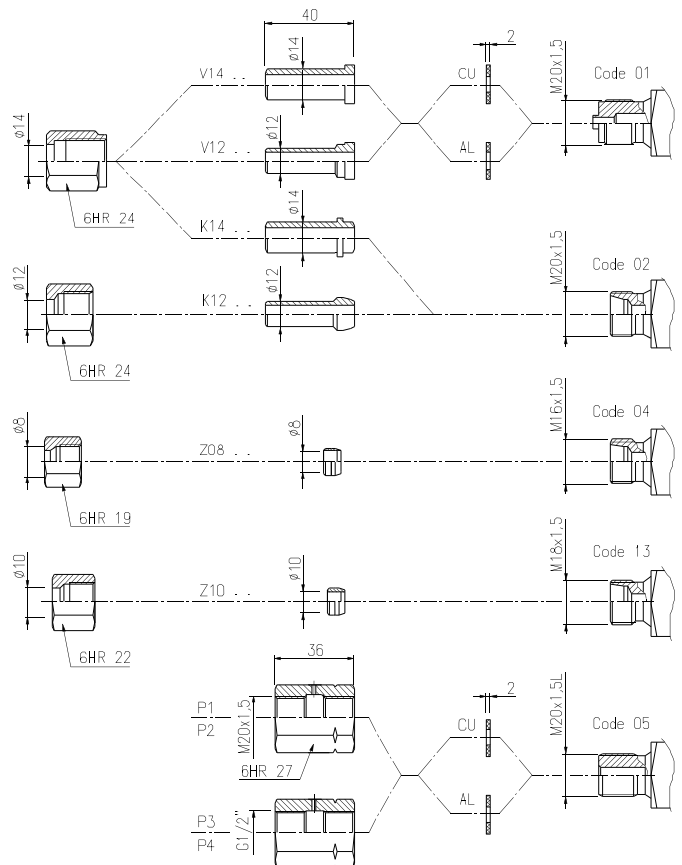
Aluminium tag on the manifold:

- ISOLATING VALVE  
UZAVÍRACÍ VENTIL  
marking of isolating valve
- EQUALISING VALVE  
PROPOJOVACÍ VENTIL  
marking of equalising valve
- DRAIN VALVE  
ODKALOVACÍ VENTIL  
marking of drain valve

Tag on valve with gland packing adjuster (PTFE, Graphite and PEEK glands) is made of stainless steel.

## 7. Optional accessories

### 7.1 Optional accessories to connection of impulse piping



## 8. Ordering

### 8.1 Ordering table

Type		VS 1 2 3 4 5 6
1. Code	Description	
300	Three valve manifold with 54 mm process connection pitch	
500	Five valve manifold with 54 mm process connection pitch	
501	Five valve manifold with 54 mm process connection pitch	

For internal channel connections see diagram.

Version of inlet thread		VS 1 2 3 4 5 6
2. Code	Description	
01	male thread M20x1.5 manometric	
02	male thread M20x1.5 with tapered seat	
04	male thread M16x1.5 with tapered seat	only for cutting ring with diameter 8 mm
05	male thread M20x1.5L (left)	
06	male thread G1/2" manometric	
07	male thread 1/2"-14 NPT	
08	male thread 1/4"-18 NPT	
11	female thread 1/4"-18 NPT	
12	female thread 1/2"-14 NPT	
13	male thread M18x1.5 with tapered seat	only for cutting ring with diameter pr. 10 mm
22	double cutting ring for piping Ø 12 mm, cap nut with silver-plated thread, material AISI 316	
24	double cutting ring for piping Ø 14 mm, cap nut with silver-plated thread, material AISI 316	
29	double cutting ring for piping Ø 9,52 mm (3/8"), cap nut with silver-plated thread, material AISI 316	
99	other	

Version of outlet thread		VS 1 2 3 4 5 6
3. Code	Description	
00	direct mounting on differential pressure transmitter with 54 mm process connection pitch	
01	male thread M20x1.5 manometric	
02	male thread M20x1.5 with tapered seat	
04	male thread M16x1.5 with tapered seat	only for cutting ring with diameter 8 mm
05	male thread M20x1.5L (left)	
06	male thread G1/2" manometric	
07	male thread 1/2"-14 NPT	
08	male thread 1/4"-18 NPT	
11	female thread 1/4"-18 NPT	
12	female thread 1/2"-14 NPT	
13	male thread M18x1.5 with tapered seat	only for cutting ring with diameter pr. 10 mm
22	double cutting ring for piping Ø 12 mm, cap nut with silver-plated thread, material AISI 316	
24	double cutting ring for piping Ø 14 mm, cap nut with silver-plated thread, material AISI 316	
29	double cutting ring for piping Ø 9,52 mm (3/8"), cap nut with silver-plated thread, material AISI 316	
99	other	

**Sealing of valve spindle / material** VS ① ② ③ ④ ⑤ ⑥

4. Code	Description	Application
0	O-ring / EPDM	pmax 40 MPa, for ammoniac, air up to 95 °C (not suitable for DEMI water!)
1	O-ring / Viton	pmax 40 MPa, for water and DEMI water up to 100 °C, for air up to 200 °C
5	gland / PTFE	pmax 42 MPa, Tmax=200 °C
6	gland / Graphite	pmax 30 MPa, Tmax=500 °C
7	gland / PEEK	pmax 42 MPa, Tmax=260 °C
9	other	

**Sealing element (ball) material** VS ① ② ③ ④ ⑤ ⑥

5. Code	Description	Application
0	steel 1.4125	up to 400 °C
3	ceramics Si3N4	up to 500 °C
5	plastic PTFE 325	up to 200 °C/15 MPa, up to 50 °C/30 MPa not for sealing valve spindle Graphite and PEEK
9	other	

**Version of side thread (VS500 only)** VS ① ② ③ ④ ⑤ ⑥

6. Code	Description	
B01	male thread M20x1.5 manometric	
B02	male thread M20x1.5 with tapered seat	
B04	male thread M16x1.5 with tapered seat	only for cutting ring with diameter 8 mm
B05	male thread M20x1.5L (left)	
B06	male thread G1/2" manometric	
B07	male thread 1/2"-14 NPT	
B08	male thread 1/4"-18 NPT	
B10	male thread M20x1.5 cylindrical (without neck for centring seal)	
B11	female thread 1/4"-18 NPT	
B12	female thread 1/2"-14 NPT	
B13	male thread M18x1.5 with tapered seat	only for cutting ring with diameter 10 mm
B22	double cutting ring for piping Ø 12 mm, cap nut with silver-plated thread, material AISI 316	
B24	double cutting ring for piping Ø 14 mm, cap nut with silver-plated thread, material AISI 316	
B99	other	

**Optional accessories** VS ① ② ③ ④ ⑤ ⑥

Code	Reducing connection	Materiál	Only for thread codes
P1	M20x1,5L / M20x1,5	1.0715	(B) 01; 05; 10
P2	M20x1,5L / M20x1,5	1.4301	(B) 01; 05; 10
P3	M20x1,5L / G1/2"	1.0715	(B) 05; 06
P5	M20x1,5L / G1/2"	1.4301	(B) 05; 06
P9	other		
Code	Blinding nuts and plugs		
M01	nut M20x1.5		
M05	nut M20x1.5L		
M06	nut G1/2"		
M11	plug 1/4"-18 NPT		
M99	other		

Code ①②③	Nipples, cones and cutting rings	Only for thread codes
V12	nipple for welding Ø12 (Ø14)/Ø8 mm with cap nut M20x1.5	01
V14	nipple for welding Ø14/Ø8 mm with cap nut M20x1.5	01
K12	cone for welding Ø12/Ø8 mm with cap nut M20x1.5	02
K14	cone for welding Ø14/Ø8 mm with cap nut M20x1.5	02
Z08	cutting ring for piping Ø8 mm (±0.06 mm) with cap nut M16x1.5	04
Z10	cutting ring for piping Ø10 mm (±0.07 mm) with cap nut M18x1.5	13
Code ①②③	Nipple or cone material	Cutting ring material
1	carbon steel 1.0570	-
2	structural alloy steel 1.7715	-
4	stainless steel 1.4541	-
5	-	stainless steel 1.4571
9	other	
Code ①②③	Material of nut for nipples or cones	Material of nut for cutting ring
0	galvanized carbon steel 1.0715	1.0715 galvanized
3	stainless steel 1.4301	1.4301
5	-	1.4571 silver-plated thread not for Z10
9	other	
Code	Sealing (not for cones and cutting rings)	
CU	flat sealing, Ø17/6.5 - 2 mm, material copper	
AL	flat sealing, Ø17/6.5 - 2 mm, material aluminium	
OC	comb sealing, Ø17/6.5 - 3.5 mm, material stainless steel 1.4541	
Code	Fastening bolts for mounting on differential pressure transmitter	
SR1	4 pcs of bolts 7/16"-20 UNF x 7/4" (45 mm), galvanized	
SR2	4 pcs of bolts 7/16"-20 UNF x 6/4" (38 mm), galvanized	for model 2051, 3051 with traditional flange
SR3	4 pcs of bolts 7/16"-20 UNF x 2 3/4" (70 mm), galvanized	for model 2051, 3051 with coplanar flange
SR5	4 pcs of bolts M10x45, galvanized	
SR6	4 pcs of bolts M10x45, stainless steel	
Code	Mounting brackets	
DS31	bracket for wall mounting of VS 500, VS 501	
DS51	držák na stěnu pro VS 500, VS 501	
DT31	bracket for pipe mounting (max. Ø 63 mm) with clip for VS 300	
DT51	bracket for pipe mounting (max. Ø 63 mm) with clip for VS 500. VS 501	
Code	Accessories	
GR	G-Rapid plus paste (50 g) against thread seizure and for easy installation	not for oxygen
LU	Lukosan M11 paste (50 g) for lubricating of O-rings, threads and for oxygen application	
TT	liquid teflon paste for high temperatures and for valves reassembling	
KL	control valve handle for high temperatures	
Q1	material certificate of manifold body according to EN 10204, 3.1	
TZ	pressure test	
Code	Special version	
PL	adjustment of valve handle for sealing	
KY	degrease version for oxygen	

Example of order:  
**VS ① ②③ ④⑤ ⑥ ○**  
**VS 300 0101 10 V1210(2x) CU(2x)**  
**VS 500 0200 13 Z1250**





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