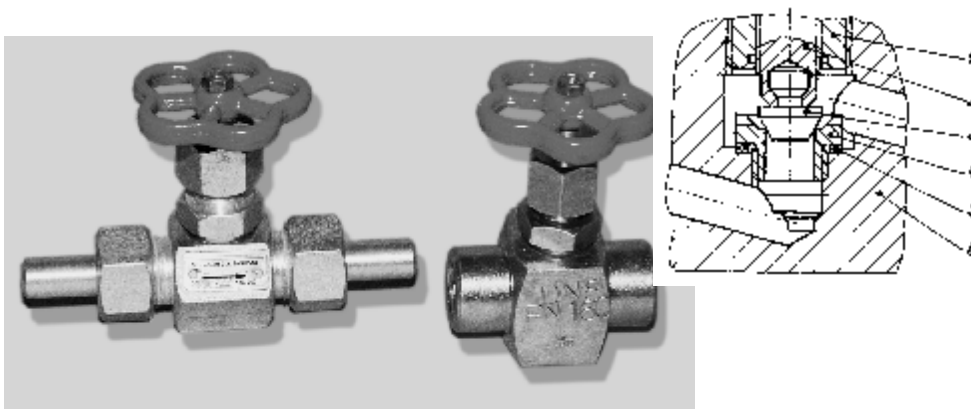


CLOSING COCKS



General Information

The closing cocks with valve (screw-down valve) are industrial fittings mounted into the installation pipes through threading, welding to the connection hoses or through the flat flanges according to correspondent nominal pressure and diameter of the valve.

The taps are used to partially or completely obturate the flow area (when certain fluid discharge is desired to be regulated).

According to the aggressiveness of the fluid used, the taps will be fabricated from OLC 25 steel or W 1.4541 stainless steel. The devices that ensure the seal the closure as well as the ones which are moving during action are fabricated from stainless steel, thus a better reliability is achieved.

Also in order to increase the reliability of the screw down valve, the rotating closing cone (3) into the valve stem (2) is used to avoid the rubbing between the closing areas (fig. 2)

To avoid the corrosive depreciation of the closing areas, an exchangeable stainless steel seat (4) is used, notched for screw-driver, rayon tight packed (5) into the valve body (6) mechanically treated with OLC 25 (fig. 1).

The taps will be manipulated through the operation wheel. Their storage, until assembling into the installation, will be done in dry rooms with no chemical corrosive agents.

On beneficiary's request, our company is willing to design experiment and execute other types of valves different from the ones introduced in this technical sheet.

TAPS CODING

a. Valve type, material in contact with the fluid and the number of ways

e. Nominal pressure

b. Valve nominal diameter

f. Execution and climatic protection type

c. Connection type at the valve input point

g. Maximum working temperature

d. Connection type at the valve output point

a. Valve type, material in contact with the fluid, number of paths

Valve type, material in contact with the fluid and the number of ways	Code
Screw-down valve, OLC 25 body; OLC 35; 2-way OL 50 body	00
Screw-down valve, 2-way W 1.4541 body	01
Screw-down valve, 3-way OLC 25 body	02
Screw-down valve, 3-way W 1.4541 body	03
Screw-down valve, 2-way OLC 25 body and purging device	04
Screw-down valve, 2-way W 1.4541 body and purging device	05

b. Valve nominal diameter

Dn	4	7	8	10	15	20
Code	00	01	02	03	04	05

c. Connection type at the valve input point

Connection type at the valve input point	Code
Interior thread Br 1/4"	0
Interior thread Br 1/2"	1
Interior thread Br 1"	2
Interior thread KG 1/4"	3
Interior thread KG 1/2"	4
Interior thread KG 1"	5
Connection hose for welding at the top of the pipe according to levels b and c of the CODING	6
Flat flange with plain seal according to levels b and c of the CODING	7
ERMETO connecting hose for welding at the top of the pipe according to levels b and c of the CODING	8
Special order according to beneficiary's requests	9

d. Connection type at the valve output point

Connection type at the valve output point	Code
Interior thread Br 1/4"	0
Interior thread Br 1/2"	1
Interior thread Br 1"	2
Interior thread KG 1/4"	3
Interior thread KG 1/2"	4
Interior thread KG 1"	5
Connection hose for welding at the top of the pipe according to levels b and c of the CODING	6
Flat flange with plain seal according to levels b and c of the CODING	7
ERMETO connecting hose for welding at the top of the pipe according to levels b and c of the CODING	8
Special order according to beneficiary's requests	9

e. Nominal pressure

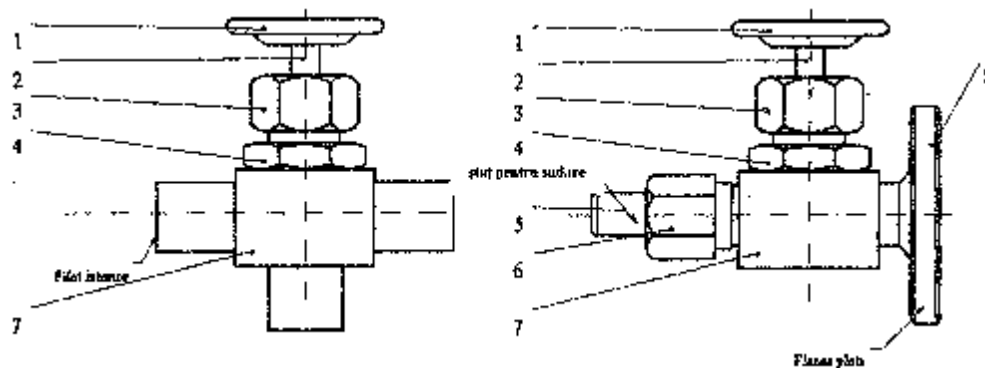
Pn	16	25	40	64	100	160	250
Code	0	1	2	3	4	5	6

f. Execution and climatic protection type

Execution type	Climatic protection STAS 6692-83	Code
Standard	Temperate (N)	1
Standard	Marine (M)	2
Standard	Tropical – humid and dry (T)	3
Standard	Marine tropical (MT)	4
Special Order		0

g. Maximum working temperature

Maximum working temperature	40	100	150	200
Code	0	1	2	3



1. Maneuver rosette
2. Rod
3. Packing Gland
4. Holder- Rod

5. Welding Connection Hose
6. Cap Nut
7. Tap Body
8. Flange

CODING EXAMPLE

The product that corresponds to this CODING (see fig. 3) is:

RB- 01.03.6.7.5.1.1

- a screw-down valve (RB)
- 2-way stainless steel W 1.4541 body, in contact with the fluid (01)
- Nominal diameter 10 (03)
- Connection hose at the input point, at the top of the pipe (6)
- Flat flange with plain sealing at the output point (7)
- Valve Nominal pressure PN 160 (5)
- Normal execution temperate protection (N) (1)

-Valve Maximum working temperature 100⁰C (1)

CLOSING COCKS

SCREW- DOWN VALVE FOR HIGH TEMPERATURE AND PRESSURE

The screw-down valves for high temperature and pressure values are industrial fittings used to totally or partially interrupt the fluids flow. Our company produces these devices with the following characteristics: nominal diameter is 10; 15; 20 and 25 mm and the nominal pressure PN- 400. The overall dimensions follows the STAS 1357-91 specifications for PN- 400, except for the maneuver wheel for DN- 25 (Hi and Hd , see fig. 1 and table 2).

These specific valves have ascending rod and external thread.

Their mounting is done by welding the input and the output parts at the end of the pipes. Those component parts, which have direct contact with the fluid and must assure the sealing and the obturation at closure, are executed from stainless steel, for a better reliability.

By design, these taps can be refitted directly into the installation with the closed valve.

According the beneficiary request, the tap body can be made out of the following fabrics:

- OLC 25 Steel STAS 880-80
- 12 MoCr22 Alloy Steel (10CrMo10) STAS 8184-87
- 16 Mo3 Alloy Steel STAS 8184-87
- 14 MoCr10 Alloy Steel (14 CrMo4) STAS 8184-87

The solicitant can request, by special order, different materials than the ones previously presented.

According the STAS 2250-73, the maximum pressure tolerable for utilization of these valves depends on their operation temperature, as illustrated in table 1.

For values of the operation temperature different than the ones introduced in the table, the operation pressure values shall be determined using the linear interpolation method.

Table1

Body material	Operation Temperature ($^{\circ}\text{C}$)															
	0...120	120	200	250	300	350	400	425	450	475	500	510	520	530	540	550
	Maximum Tolerable Pressure (bar)															
OLC 25	400	400	320	280	240	225	200	-	-	-	-	-	-	-	-	-
12MoCr22	400	400	400	400	400	380	364	356	348	330	295	250	198	174	151	130
16 Mo 3	400	400	400	400	348	312	296	286	200	-	-	-	-	-	-	-
14MoCr 10	400	400	400	400	400	380	364	356	348	330	295	250	198	155	116	87

On delivery, the valves are tested on a special stall at 1.5PN-600 bar values, in order to check the closure of the valve-chair system and also their sealing properties with the external environment. The testing is performed at environmental temperature on every valve, using dimethyl carbinol as a manometric liquid.

CODING of SCREW- DOWN VALVE FOR HIGH TEMPERATURE AND PRESSURE

RV DN = a; T_{\max} = b; P_a = c

and

a = Nominal Diameter in mm (10; 15; 20 and 25)

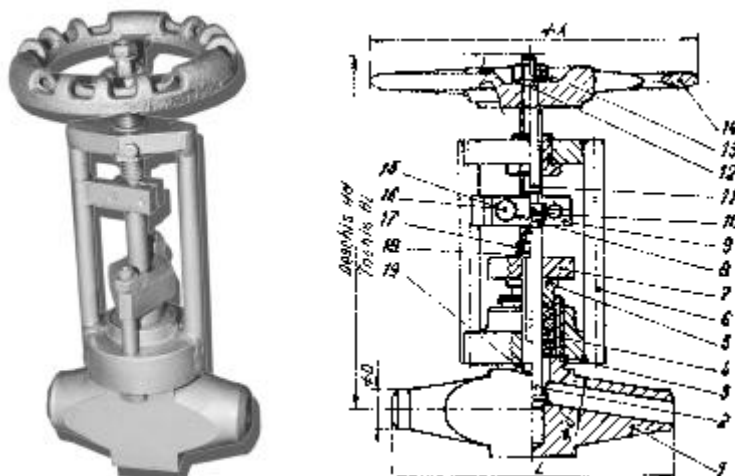
b = Maximum Tolerable Temperature in $^{\circ}\text{C}$

c = Maximum Tolerable Pressure in bar

It is advisable to specify in the order the cross sizes and the material of the pipe; thus some dimensional differences and incompatibilities at welding can be avoided. In fig. 1 is introduced a drawing of a screw-down valve for high temperatures, table 2 contains its overall dimensions and table 3 contains its subassemblies and the materials used in execution.

Table 2: Overall dimensions

Dn (mm)	Hi (mm)	Hd (mm)	L (mm)	D (mm)	d (mm)	A (mm)	Mass (kg)
10	235	249	150	26	10	178	5.7
15	225	245	150	30	15	178	5.95
20	274	297	160	38	20	220	8.5
25	296	323	160	48	25	220	9.55


Fig. 1 Screw -down Valve for High Temperature
Table 3. Subassemblies and Materials

Position	Name of the component piece	Material
1	Tap body	OLC 25; 12 MoCr22; 16 Mo3; 14 MoCr10
2	Valve Rod	W 1.4021
3; 4; 5	Sealing system	W 1.4541 / Strand plumbaginuous asbestos rope
6	Holding-Rod Subassembly	12 MoCr 22/ OL 37 (welded structure)
7; 17; 18; 19	Packing Gland Part	OI 37/ 21 V MoCr 14 AS-K/ 40 VMoCr 11 AS-K
8; 9; 10; 15;16	Joint Part	OL 37/ OLC 45/ RUL 1
11	Threaded Rod	W 1.4541
12; 13; 14	Maneuver System	OLC 45/ OL 37/ cast iron

The products are individually packed in waxed paper in order to maintain their wholeness during transportation and storage. The transportation is done in boxes.

SCREW-DOWN VALVE WITH CONNECTING FLANGE

The screw-down valve with connecting flange is designed to interrupt totally or partially in the industrial installations the working fluid with temperatures between $-20...400^{\circ}\text{C}$.

These taps are executed in OLC 25 welded structure (flat flanges welded on tap body and holder-rod subassembly). They have ascending rod and external thread.

The mounting of the taps into the installation is made by their clamping between the flanges of the pipes. There are some specifications according to certain standards which are followed in the construction of the component parts, such as: the flange size follows the 6064...6066-84 and 8031-98033-84 specifications; the sealing surfaces according to STAS 1730-82 (flat sealing surfaces); the connection dimensions of the flanges according to STAS 1735; 1737; 1738-73.

The component parts which contact the fluid and ensure the sealing and the obturation at closure are made of stainless steel for a good reliability. A rotating cone has been adopted in order to avoid excessive wear of the valve seat.

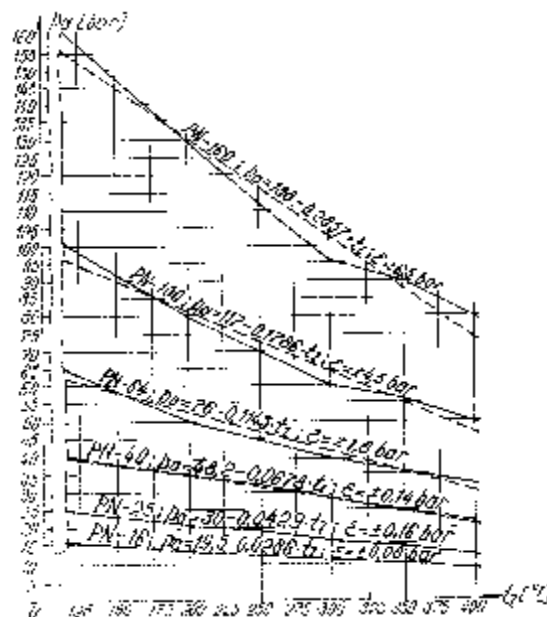
The sealing system for the exterior environment is made out of a stranded plumbaginous asbestos rope winding, pressed between two conic surfaces. The tap is designed accordingly to allow its refitting with the closed valve directly into the installation.

- For working temperatures less than 120°C , the maximum working pressure of the tap is equal to its nominal pressure.
- For working temperatures more than 120°C , according to basic fabrication materials of these taps (OLC 25) and according to the nominal pressures of 16, 25, 40, 64, 100 and 160 bar and following the STAS 2250-73 standards, we have drawn the diagrams from fig. 1 in order to establish the dependence of the maximum tolerable pressure p_a (bar) to the maximum tolerable temperature t_i ($^{\circ}\text{C}$).

The application of the calculation formula for the maximum tolerable pressure p_a (bar) indicated for a nominal pressure, in dependence on the maximum tolerable temperature t_i ($^{\circ}\text{C}$) of the fluid, admits the maximum error value ϵ .

Mounting: the valves are tested on a special stall at 1.5PN-600 bar values, in order to check the closure of the valve-chair system and also their sealing properties with the external environment. The testing is performed on every valve, using dimethyl carbinol as a manometer liquid.

The products are individually packed in waxed paper in order to maintain their wholeness during transportation and storage. The transportation is done in boxes.



CODING of SCREW –DOWN VALVE WITH CONNECTING FLANGE

- RF-DN a; PN b and:
- a- Nominal Diameter (in mm) (10; 15; 20; 25)
- b- Nominal Pressure (in bar) (16; 25; 40; 64; 100;160)

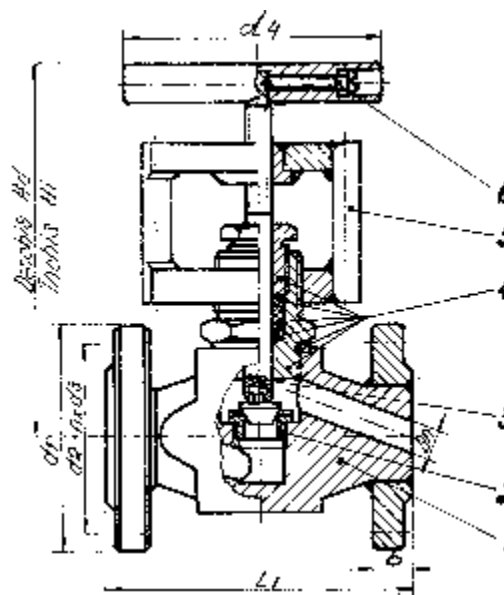


Table 1 Overall Dimension

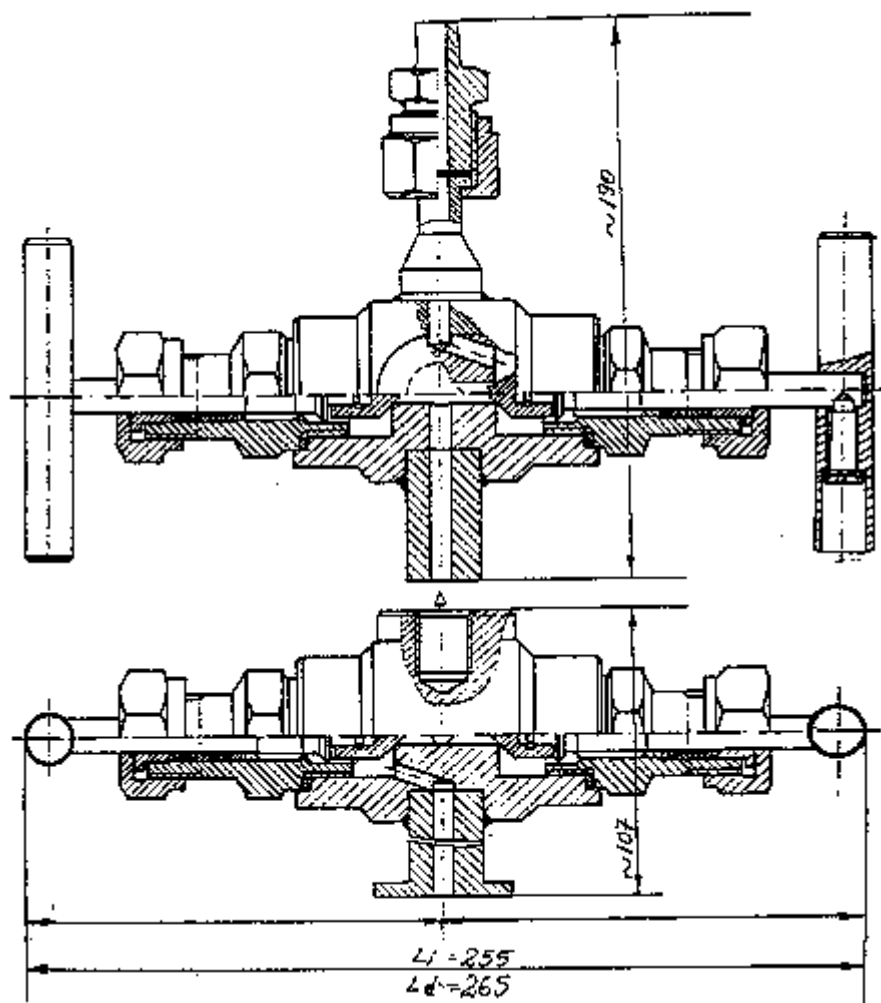
PN (bar)	DN (mm)	Hi (mm)	Hd (mm)	L (mm)	d (mm)	d ₁ (mm)	d ₂ (mm)	n x d ₃ (mm)	b (mm)
16 25 40	10	160	166	120	16	90	60	4 x 14	100
	15	178	187	130	16	95	65	4 x 14	120
	20	186	198	150	18	105	75	4 x 14	140
	25	208	226	160	18	115	85	4 x 14	140
64 100 160	10	161	174	210	20	100	70	4 x 14	100
	15	179	185	210	20	105	75	4 x 14	120
	20	188	210	230	22	130	90	4 x 18	140
	25	211	250	230	24	140	100	4 x 18	140

Table 2. Subassemblies and Materials

Position	Name of the component piece	Material
1	Tap body	OLC 25
2	Seat subassembly	W 1.4541/ plumbaginous asbestos rope
3	Rod subassembly	W 1.4541 / W 1.4021
4	Sealing System	W 1.4541/ plumbaginous asbestos rope/ OLC 25
5	Holder- Rod Subassembly	Cu Zn 39 Pb/ OL 37
6	Handling device	OLC 45/ OL 37

3- WAY DOUBLE VALVE

It is a special fitting with 3 paths (one input and two outputs) used as two straightway valves or as one straightway cock and one insulation valve for a measuring device.



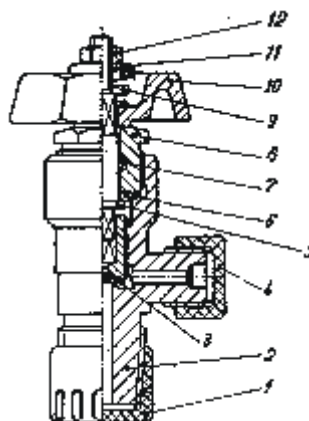
TECHNICAL DATA

- Dn 6mm
- Pn 400 bar
- Working Fluid Temperature + 200 °C
- Material in contact with fluid 14CrMo4, 20Cr130; 10TiNiCr180

SCREW-DOWN VALVE FOR OXYGEN PORTABLE RECIPIENTS

These valves are used to provide the portable oxygen recipients up to 200 bar pressure values. The model and the size of this valve are designed according to STAS 2499-82 type a and fig. 1. This valve type is also used for nitrogen, hydrogen, inactive gases and carbon dioxide recipients. Their mounting on the recipient is done using a taper thread and the sealing on the thread is done by a raylon tape. The outlet connection is G 3/4 " and corresponds with the inlet connection to reduction unit.

Table1. Subassemblies	
Number	Name of the subassembly
1;4	Inlet/ outlet caps
2	Tap body
3	Valve subassembly
5	Rod
6	Raylon packing
7	O- ring packing
8	Sealing gland
9	Spring
10	Maneuver wheel
11	Disk
12	Nut



TECHNICAL DATA

- Pmax = 200 bar
- Working Agent Oxygen
- Inlet connection taper thread accord STAS 2499-82
- Outlet Connection G 3/4

CODING example for a screw-down valve for oxygen recipients:

Screw-down valve for oxygen portable recipients G 3/4 " STAS 2499-82.

VALVE BATTERIES

GENERALITIES

These cock systems are used to isolate the transducers from the process, to equalize the pressure in the two ports of the transducer and, if necessarily, to purge the manometric fluid along the battery- transducer path of the two ports. Therefore, the valve batteries have two isolation valves, one equalizing valve and, if requested by code, the battery can also have two blow-off valves.

Regardless of the aggressiveness of the used fluid, the valve batteries body is made of 10 TiNiCr180 (W1.4541) stainless steel body. The parts that ensure the sealing at closure as well as the ones that execute the shifting for the closure-disclosure maneuvers are also from stainless steel in order to provide a good reliability. Also, the batteries have rotating needle cones in the maneuver rod in order to avoid the abrasion between the closure surfaces.

Their operation is realized by rotation of the maneuver rod according to the label instructions.

The storage until mounting in the installation is done in dry air rooms with no corrosive agents.

On handling, hits, throwing and rolling should be avoided.

Before mounting the battery into the installation, we recommend all-ways cleaning of the opened valves with an air jet.

On every valve, a label is stuck which contains their name (*isolation, equalization, purging*), the sense of rotation of the rod for *closure-disclosure* operations, and on the battery body the name of every port is punched (*I- input, E- output, P- purging*). On delivery, the batteries are individually checked at 600 bar pressure level (PN 400) in order to check the resistance of sealing system to the external environment and to also check the resistance to obturation of every valve.

On beneficiary request, our company is ready to design, experiment and execute other types of valve batteries than the ones introduced in this catalogue.

CODING OF VALVE BATTERIES

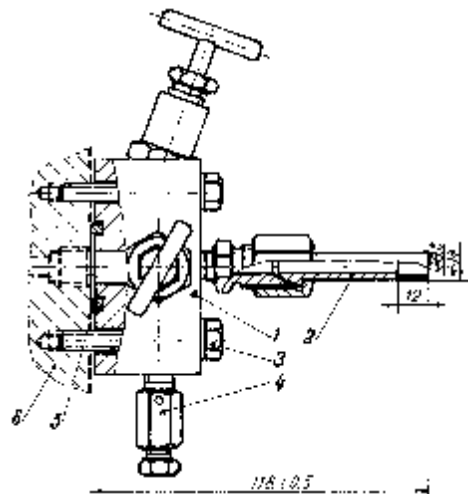
BR- A. B. C.

- c. Working conditions for battery
- b. Battery- transducer connector type
- a. Type and destination of the battery

a. Type and destination of the battery

0- battery suggested by the beneficiary

1- **3 –valve battery** (2 - *isolation* + 1- *equalization*) designed to be directly coupled to the transducer (no. 6), with the shafts of the coupling ports parallel and 54 mm spacing between them, with M10 threaded mounting holes with 41,3 mm vertically spacing, no purging devices (no. 4)and no fixture into the installation (see fig.1);



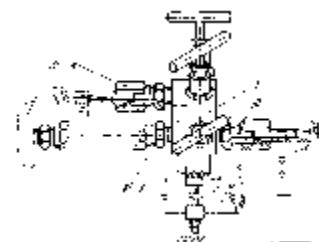
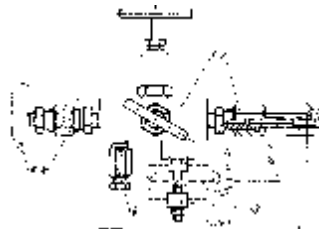
2- 3 –valve battery (2 - isolation + 1- equalization) designed to be directly coupled to the transducer (no. 6), with the shafts of the coupling ports parallel and 54 mm spacing between them, with M10 threaded mounting holes with 41,3 mm vertically spacing, with purging devices (no. 4) and no fixture into the installation (see fig.1);

3- 3 –valve battery (2 - isolation + 1- equalization) designed to be indirectly coupled to the transducer (no. 6), with the shafts of the in and out battery ports parallel and 54 mm spacing between them, no purging devices (no. 4) and with fixture into the installation (no.3) (see fig.2);

4- 3 –valve battery (2 - isolation + 1- equalization) designed to be indirectly coupled to the transducer (no. 6), with the shafts of the in and out battery ports parallel and 54 mm spacing between them, with purging devices (no. 4) and fixture into the installation (no.3) (see fig.2);

5- 5 –valve battery (2 - isolation + 1- equalization + 2 purging) designed to be indirectly coupled to the transducer (no. 6), with the shafts of the in and out battery ports parallel and 54 mm spacing between them, no purging devices and with fixture into the installation (no.3) (see fig.3);

6- 3 –valve battery (2 - isolation + 1- equalization) designed to be indirectly coupled to the transducer (no. 6), with the shafts of the coupling ports parallel and 54 mm spacing between them, with the shafts of the in and out battery ports parallel and 38 mm spacing between them, no purging devices (no. 4) and with fixture into the installation (no.3) (see fig.2);



b. Battery- transducer connector type

0- connector suggested by the beneficiary

1- connection hose welded at the connector pipe of the transducer (compatible with types 3...6 from the a CODING level) see fig. 4

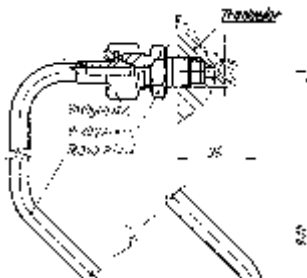
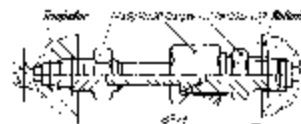
2- screwed nipple connector BR 1/4" for transducer (compatible with types 3...6 from the a CODING level) see fig. 5

3- screwed nipple connector BR 1/2 " for transducer (compatible with types 3...6 from the a CODING level) see fig. 5

4- screwed nipple connector BR 1/4" for transducer (compatible with types 3...6 from the a CODING level) and used for mounting the battery on the same pipe as the transducer see fig. 6

5- screwed nipple connector BR 1/2 " for transducer (compatible with types 3...6 from the a CODING level) and used for mounting the battery on the same pipe as the transducer see fig. 6

6- direct coupling on the transducer (compatible with types 1 and 2 from the a CODING level) see fig. 1



c. Working conditions for battery

0- working conditions specified by the beneficiary, others the ones for types 1 and 2

1- chemically non-aggressive manometric fluid (OLC 25 nipples and cap nuts, OLC 25 connecting hose, OLT 45K pipe), maximum working temperature of the battery is 400 °C.

According to STAS 2250-73 specifications for the materials of the component parts of the battery, at a nominal pressure value of 400 bar and at maximum working temperature, the maximum working pressure values are introduced in table 1.

Table 1

Working Temperature (° C)	-20...120	200	250	300	350	400
Maximum Working Pressure (bar)	400	320	280	240	225	200

2- 1- chemically aggressive manometric fluid (10 TiNiCr 180 stainless steel nipples, cap nuts, connecting hoses and pipe), maximum working temperature of the battery is 550 °C.

According to STAS 2250-73 specifications for the materials of the component parts of the battery , at a nominal pressure value of 400 bar and at maximum working temperature , the maximum working pressure values are introduced in table 2.

Table 2

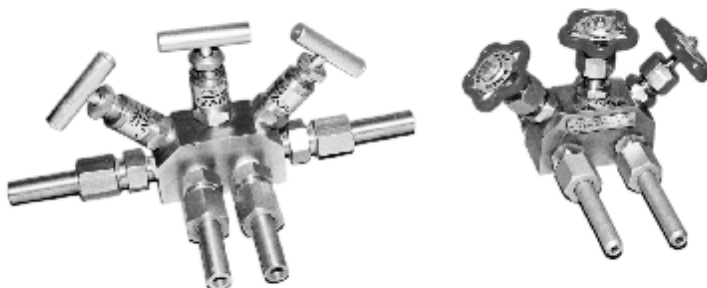
Working Temperature (° C)	-50...300	350	400	425	450	475
Maximum Working Pressure (bar)						

CODING EXAMPLE
BR 3.1.2.

Meaning:

- a- 3-valve battery for indirect coupling to the transducer, no purging device and with fixture into the installation;
- b- connection hose welded at the connector pipe of the transducer
- c- battery for chemically aggressive manometric fluids, in direct contact with the fluid, 10 TiNiCr 180 stainless steel, maximum working temperature 550 °C.

On beneficiary's request, the components of the battery can be executed from different materials than the ones specified in table 1.



PACKING GLAND FOR CABLE PASS

The packing gland is a device which allows an isolated conductor or cable to pass through a thin wall or through the box of an electrical or electronic device in order to be connected to that equipment's terminal.

The shape and size are according to STAS 8498-88 and fig. 1.

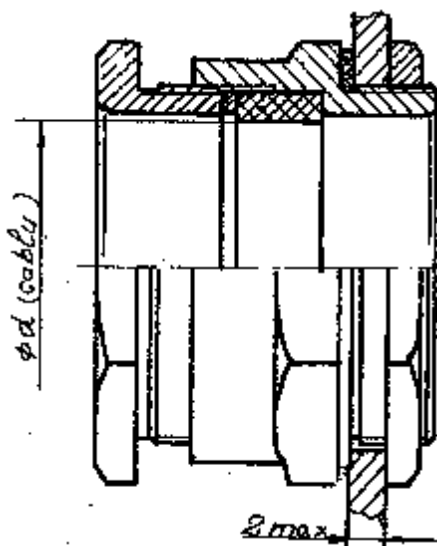


Figure 1

CODING

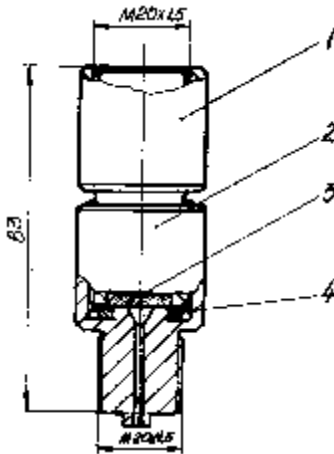
Nr. Crt.	Cable diameter	Packing Gland code
1	9	PS . 00 . m*
2	11	PS . 01 . m*
3	13,5	PS . 02 . m*
4	16	PS . 03 . m*
5	21	PS . 04 . m*
6	29	PS . 05 . m*
7	36	PS . 06 . m*
8	42	PS . 07 . m*
9	48	PS . 08 . m*
10	56	PS . 09 . m*
11	65	PS . 10 . m*

Example: PS.04.OL. STAS 8498-88: Stainless steel packing gland for 21mm diameter cable

* The metal must be specified: OL, Al, CuZn

HYDRAULIC PULSATION DAMPENER

GENERALITIES



The hydraulic pulsation dampener is a device used in industrial installations to protect the pressure reading instruments.

It is designed to diminish the manometers pulsations and shocks to pressure.

The mounting into the installation is done by threading, using Copper packing as sealing system.

The dampener is not used in acetylene installations.

A hydraulic pulsation dampener with M20 x 1,5 in-out connection it is enclosed in the figure.

- 1- Body I
- 2- Body II
- 3- Filter for pulsations damping
- 4- Copper packing

CHARACTERISTICS

- The dampener is recommended to be measure pressures between 0.06...600 bar
- Maximum temperature 17 °C
- Minimum size comparing to the measuring devices
- Interchangeable device
- Good resistance to corrosive agents

SPECIFICATIONS

The dampener is tested in order to check the sealing between the body I and the body II.

The test is executed with the pump for manometers and is using as dymethil carbinol working agent at 200, 400 and 600 bar pressure values.

The tests are certified through analyses certificates issued by our chief- metrologist.

CODING

The dampeners are symbolized through a letter- part APH, followed by 3-figures group on three levels

APH

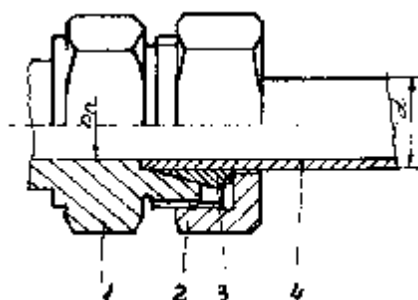
- | | |
|----------------------------|------------------------------------|
| a- In/ Out Connection type | a- 1) air |
| | - 2) water |
| | - 3) oil |
| b- Nominal Pressure | b- 1) 0.06...400 bar |
| | - 2) 400...600 bar |
| c- Working agent | c- 1) M20 x 1,5 In/ Out Connection |
| | 2) G ½ " In/ Out Connection |

CODING EXAMPLE

APH- 2.2.1.- hydraulic pulsation dampener with water for 400...600 bar nominal pressure, M20 x 1,5 In/ Out connection

COUPLING FITTINGS WITH CUTTING RING

These devices are used to make connection in the hydraulic and pneumatic installations.



1. Coupling
2. Cap nut
3. Cutting ring
4. Connection pipe

CODING

ER- XX. X. X. X.

1. Material according to table 3
2. PN (Nominal Pressure) according to table 2 (bar)
3. Pipe External Diameter (mm) according to table 2
4. Coupling type according to table 1

Table 1

Nr. Crt.	Coupling Type	Level 1	Nr. Crt.	Coupling Type	Level 1
1	Threaded Nipple	01	8	Routing elbow	08
2	Mixed threaded nipple	02	9	Threaded elbow	09
3	Terminal nipple	03	10	Routing tee	10
4	Welded nipple	04	11	Pass nipple	11
5	Path nipple	05	12	Straight branch pipe	12
6	reducing nipple	06	13	Intermediary cross	13
7	Interior screwed nipple in inch	07			

Table 2

DN	4	6	8															
D																		
PN																		

Table 3

Coupling Material						Special orders
Ring Material						Special orders
Level 4						

EXAMPLE: ER- 04.12.250.3. - Welded nipple, pipe diameter $\varnothing 12$ mm, PN = 250 bar, coupling material W 1.4541 and rig material 12 Cr130.