

Self Acting Temperature Regulator MED-MEZ-MEO

REGULATING VALVES Two-way valves – MED-01÷06 – 01÷02 Opening valves – MEO-01÷06 – 01÷02 Closing valves – MEZ-01÷06 – 01÷02

1. Scope of the Operation Manual

The instruction, operating and maintenance manual includes are parameters, description of design and operation, plus instructions concerning the assembling, transport, storage and exploitation of regulating valves: two-way valves type MED-, opening valves type MEO- and closing type MEZ-.

2. Product Marking

Valve type marking:

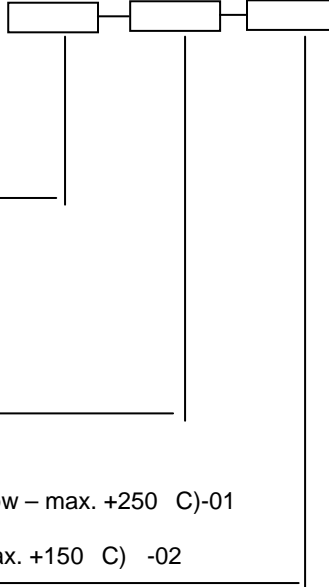
- Two-way mixing valve or distributing valve -MED
- Opening valve -MEO
- Closing valve -MEZ

Marking of valve sizes:

- Dn=15 mm -01
- Dn=20 mm -02
- Dn=25 mm -03
- Dn=32 mm -04
- Dn=40 mm -05
- Dn=50 mm -06

Marking of version:

- regulating valve with hard valve seat (adapting for regulation of steam and hot water flow – max. +250 C)-01
- valve with soft valve seat (adapting for regulation of hot water flow only –max. +150 C) -02



Regulating valve marking example:

MEO – 02 – 02

Contents of marking: type regulating valve-opening, size – Dn=20mm, version – with soft valve seat.

Symbol of the Systematic List of Products: SWW 0919-2,
PKWiU 33.20.70-50.90

3. Technical Data –

Two-way regulating valves

Valve Type	Dn	Valve travel	Max. permissible pressure before the valve MPa	Max. permissible mixing pressure MPa	Distributed pressure difference MPa	Value kv ± 10% m ³ /h		Max. leakage l/min
						-01	-02	
MED-01-01÷02	15	3	1,3	0,6	0,2		3,6	0,30
MED-02-01÷02	20	4	1,3	0,8	0,15		6	0,40
MED-03-01÷02	25	5	1,3	0,8	0,12		10	0,50
MED-04-01÷02	32	6	1,2	0,8	0,08		12	0,63
MED-05-01÷02	40	6	1,2	0,6	0,05		16,5	0,80
MED-06-01÷02	50	9	1,2	0,6	0,05		25	1,0

Rated pressure 1,6 MPa

Leakage measured at pressure difference of 0.2 Mpa

Opening type regulating valves

Valve Type	Dn	Valve travel	Max. permissible pressure before the valve MPa	Max. permissible pressure during difference pressure MPa	Distribu- tion of pressure differen- ce		Max. leakage l/min
					+01 MPa	-02 MPa	
MEO-01-01÷02	15	3	1,3	1,2		3,6	0,06
MEO-02-01÷02	20	4	1,3	1,3		6	0,08
MEO-03-01÷02	25	5	1,3	0,8		10	0,1
MEO-04-01÷02	32	6	1,2	0,9		12	0,13
MEO-05-01÷02	40	6	1,2	0,6		16,5	0,16
MEO-06-01÷02	50	9	1,0	0,5		25	0,2

Rated pressure 1,6 MPa

Leakage measured at pressure difference of 0.2 Mpa

Closing type regulating valves

Valve Type	Dn	Valve travel	Max. pressure before the valve MPa	Value kv ± 10% m ³ /h		pressure difference Mpa		max. leakage l/min
				-01	-02	Water	Steam	
MEZ-01-01÷02	15	3	1,5		3,6	1,2	1,3	0,06
MEZ-02-01÷02	20	4	1,3		6	1,3	1,3	0,08
MEZ-03-01÷02	25	5	1,5		10	0,8	1,3	0,10
MEZ-04-01÷02	32	6	1,2		12	0,9	1,3	0,13
MEZ-05-01÷02	40	6	1,2		16,5	0,6	1,3	0,16
MEZ-06-01÷02	50	9	1,2		25	0,5	1,3	0,20

Rated pressure 1,6 MPa

Leakage measured at pressure difference of 0.2 Mpa

Design and operation

Components of the regulating valves

- 1) Valve body, with seat
- 2) Seat body
- 3) Gland body
- 4) Sealing bellows
- 5) Stem
- 6) Plug
- 7) Unloading bellows
- 8) Return spring
- 9) Manual drive nut
- 10) Cover

Regulating valves are loaded, except the Dn15 size.

Regulating valves are designed for cooperation with Liquid-sealed Temperature Sensors. When the valve is connected with temperature sensor, its action consists in:

- Two-way valve at temperature increase – flow increase through the main passage, with simultaneous decrease through the side way.
- opening valve at temperature increase – flow increase through the seat.
- closing valve at temperature increase – flow decrease through the seat.

DIAGRAM OF DESIGN FOR THE REGULATING
TWO-WAY VALVE TYPE MED-

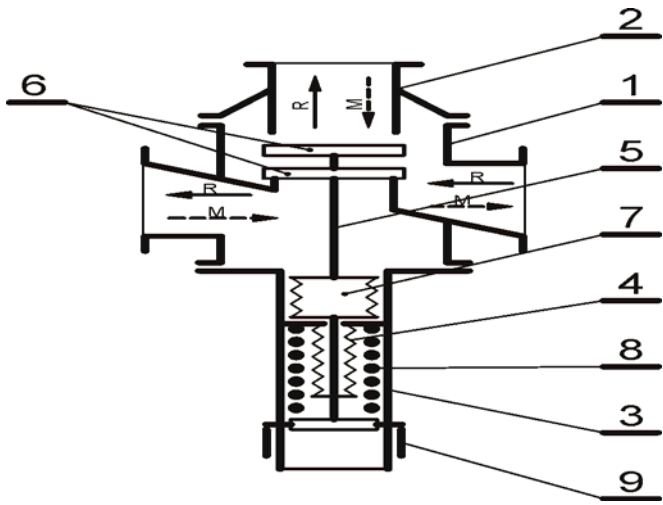


DIAGRAM OF DESIGN FOR THE REGULATING
OPENING VALVE TYPE MEO-

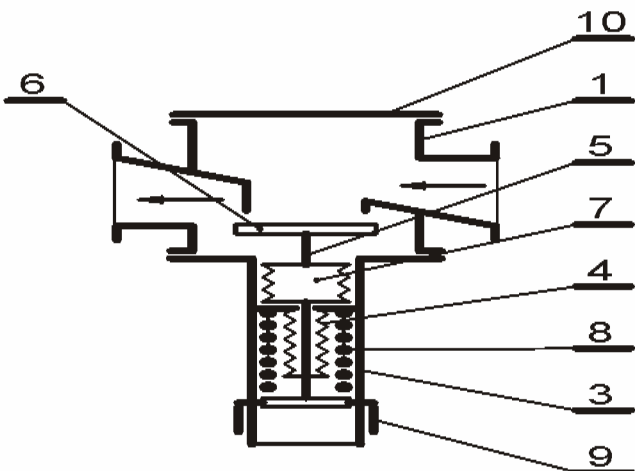
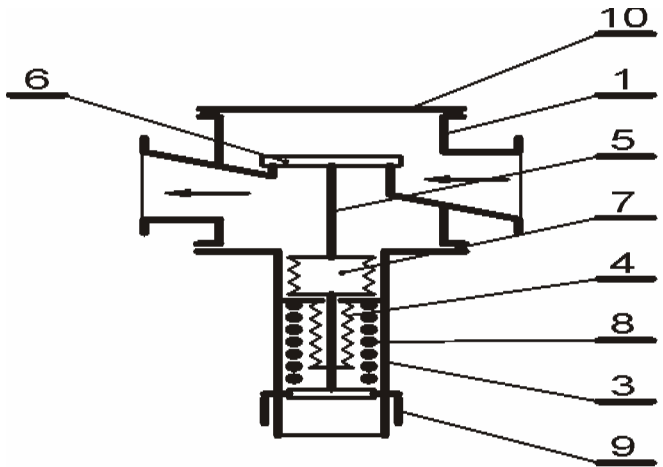
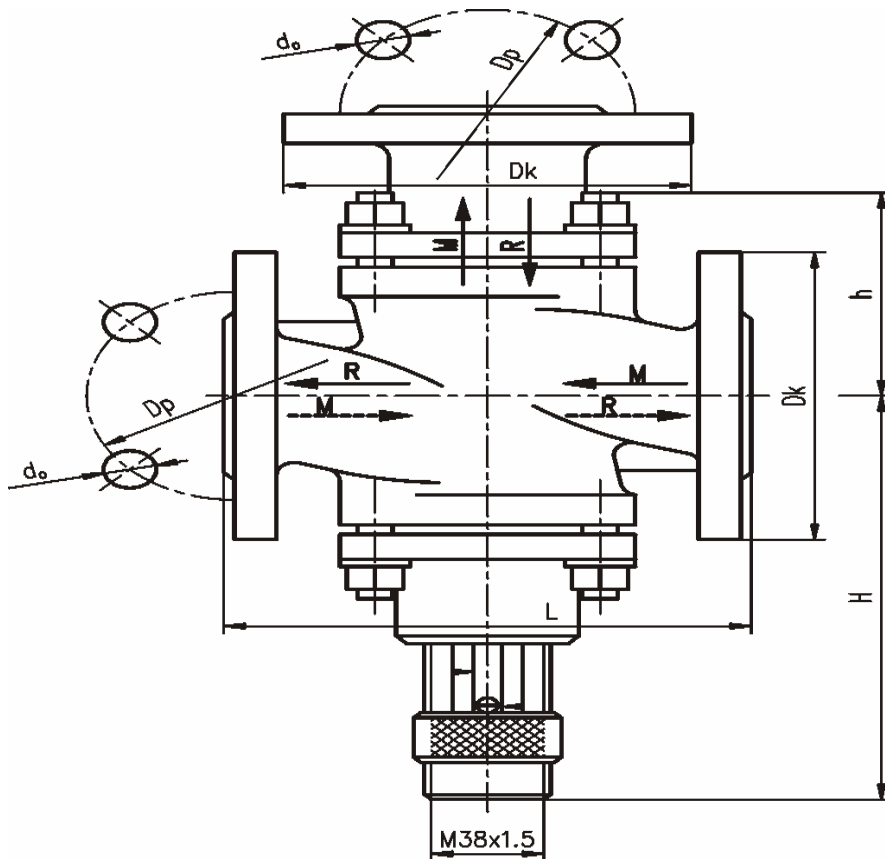


DIAGRAM OF DESIGN FOR THE REGULATING
CLOSING VALVE TYPE MEZ

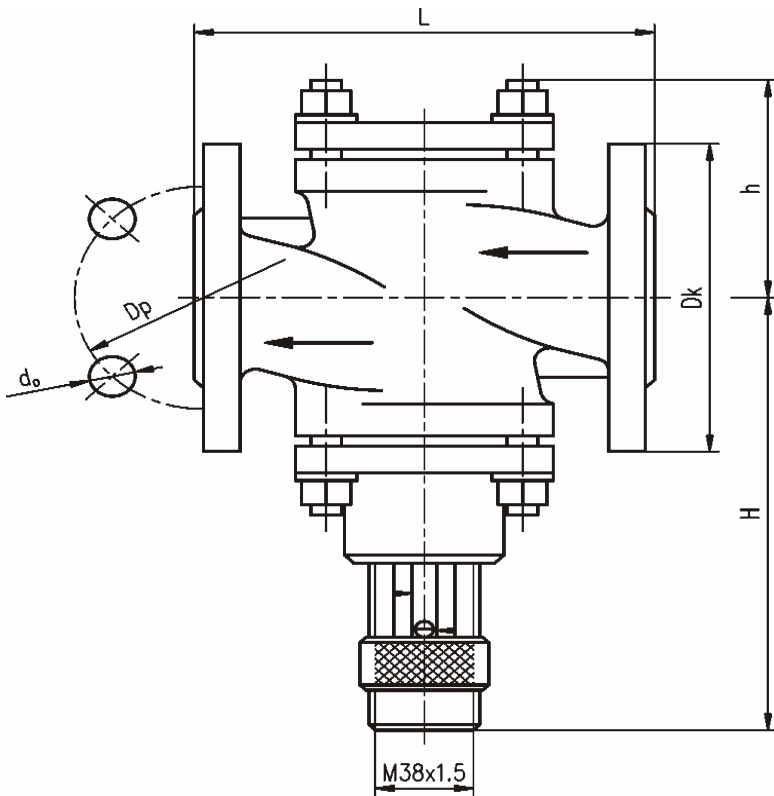
REGULATING VALVE – TWO-WAY TYPE

dimensions Type	Dn mm	Dp mm	Dk mm	do mm	L mm	H mm	h mm
MED-01-01-02	15	65	95	14	130	120	118
MED-02-01-02	20	75	105	14	150	140	129
MED-03-01-02	25	85	115	17	160	145	129
MED-04-01-02	32	100	140	18	180	150	148
MED-05-01-02	40	110	150	18	200	155	148
MED-06-01-02	50	125	165	18	230	205	167



Regulating valves – opening and closing type

dimensions Typ	Dn mm	Dp mm	Dk mm	do mm	L mm	H mm	h mm
MEO-01-01-02	15	65	95	14	130	120	118
MEO-02-01-02	20	75	105	14	150	140	129
MEO-03-01-02	25	85	115	17	160	145	129
MEO-04-01-02	32	100	140	18	180	150	148
MEO-05-01-02	40	110	150	18	200	155	148
MEO-06-01-02	50	125	165	18	230	205	167



5. APPLICATION

The regulating valves of all the types and diameters are mainly designed for cooperation with Liquid-sealed Temperature Sensors HCT-.

The two-way regulating valve type MED- connected with temperature sensor type HCT- forms the temperature regulator of direct continuous action HCT- + MED-. The opening regulating valve type MEO- connected with temperature sensor type HCT- forms the temperature regulator of direct continuous action HCT- + MEO-

The closing regulating valve type MEZ- connected with temperature sensor type HCT- forms the temperature regulator of direct continuous action HCT- +MEZ-

6. Valve Size Selection

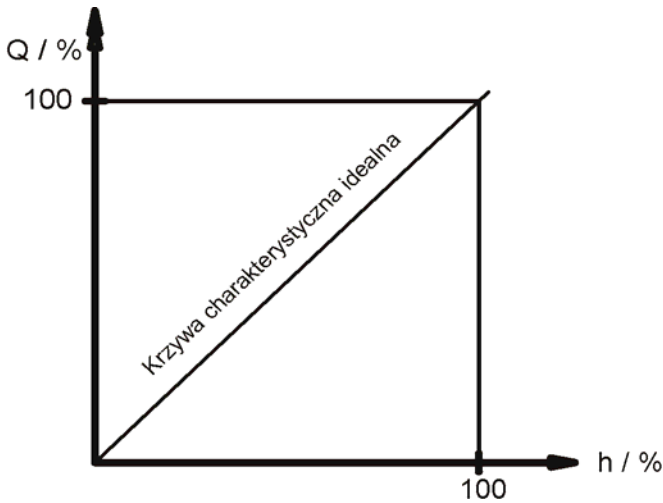
The regulating valves are designed for adjusting forces up to 35 kG. In spite of the pressure load for all the valves of rated diameter over 15, one allows exclusively the only one, according to valve size, different value for pressure at the outlet, and maximum pressure difference with closed valve. Both pressure values determine maximum adjusting force.

The first step during the determining of the valve size must be comparison of the stated pressure values with the permissible values (see the technical data).

When selecting the throttling valve (opening and throttling), it unavoidable to match the valve size to the working conditions of the device. When selecting the valve size one should take into account both the pressure conditions and amount of necessary medium flow.

In order to make a good matching, one needs to obtain a regulating valve, which in the whole setting range has got possibly uniform flow increase (or, flow drop) within the limits 0-100% of valve travel.

PLOT / CURVE



< Characteristic ideal curve

In order to possibly approach the ideal course of characteristic curve, selection of the ratio is of great importance:

$$\frac{\Delta p}{\Delta p_{max}}$$

Δp - pressure loss with open valve

Δp_{max} – pressure loss with closed valve, or maximum pressure difference at the valve.

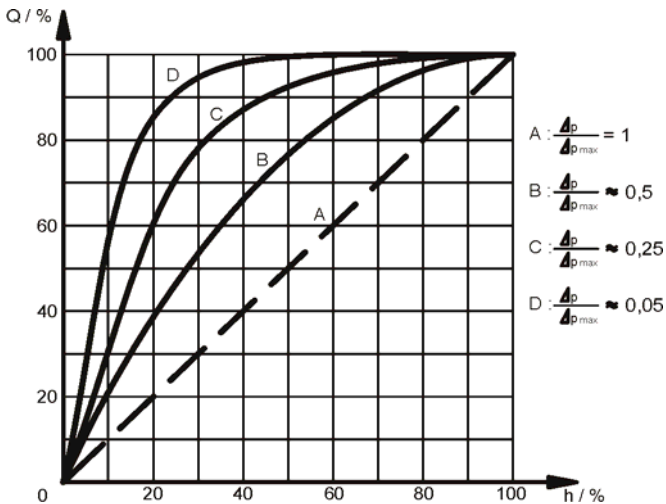
Characteristic curve of the throttling valves has got the course similar to the linear characteristics.

In this way, it is possible to approach the flow characteristic curve to the ideal course only then, if the quotient

$$\frac{\Delta p}{\Delta p_{max}}$$

has got the value ca. 0,5 or greater.

PLOT / CURVE



Because incomplete pressure loss of the circuit may only act on the regulating valve, therefore, the value:

$$\frac{\Delta p}{\Delta p_{max}} = 1 \text{ is practically unavailable}$$

Taking into account the practical aspect, the following guideline is obligatory for the throttling valves:

the throttling valve for operation as the regulating valve is selected well only then, if a part of pressure loss of the fully open valve is at least 30 % out of the possible 50 % of general pressure drop in the circuit of pipe conductors:

$$\Delta p = 0,3 + 0,5 \Delta p_{max}$$

Therefore, applying of the valve without accordance with the above guidelines, but possibly regulating valve suited only to the nominal diameters of the installed pipe conductors is fully out of the purpose and application of this type of regulation.

7. Installation Conditions

The kinds of medium flowing through the valve – liquids or chemical vapours must be non-aggressive in relation to grey cast iron and steel grade 2H13, free from mechanical impurities.

Maximum temperature of medium flowing through the valve + 150 °C.

The pressure and pressure differences of medium flowing through the valve - see the Technical Data.

Working position – arbitrary, vertical is recommended, actuator of the sensor is located under the valve.

Atmospheric requirements – ambient temperature +5 ÷ +50 °C.

Relative humidity (RH): 30 – 80 %.

Necessary protection against direct action of sun radiation, chemical aggressive vapours, water and dust.

Resistance to vibrations – vibrations of frequency 25 Hz and amplitude not greater than 0,1 mm do not have effect on operation.

Valve installation –at the place of valve location one should weld to the pipeline flanges of dimensions, and at distance according to the dimensions given in the dimensioned drawings.

The required additional accessories – one should place in the installation – before and after the regulator valve – two cut-off valves and shunt valve. In addition to that, before the two-way valve one should place the filter with contamination deposit tank.

8. Instruction of Exploitation

Start-up. After installing the valve, in accordance with the above conditions, the valves cutting off the heating medium should be opened, and the shunt valve should be closed. The cutting bellows cell should deaerated.

After start-up and achieving of the required parameters, the valve does not require further service.

Maintenance. Control inspections should be carried out every 14 days. They consist in visual external inspection and checking the operation correctness.

Examples of installation

GOOD

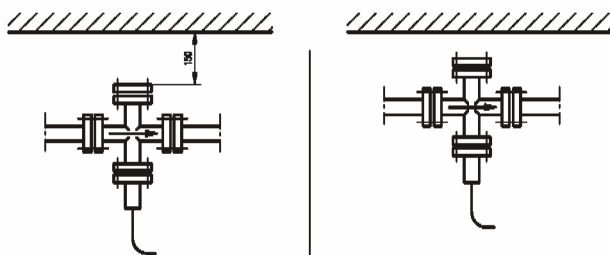
BAD

A possibility of taking the filter out must be provided – for cleaning purposes

Przykłady instalowania

DOBRZE

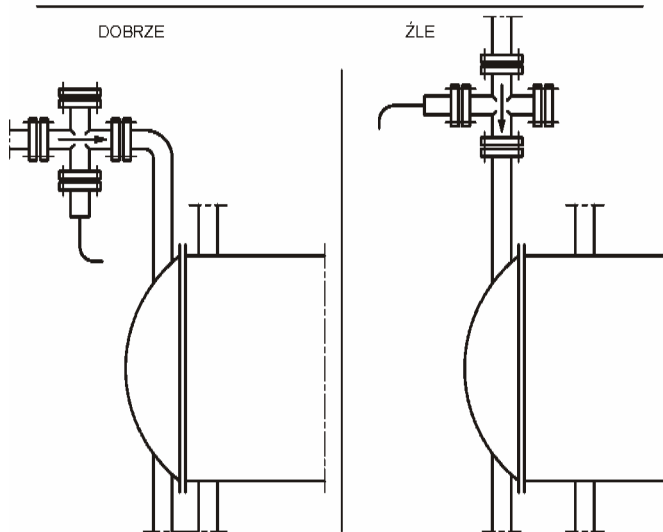
ŹLE



Musi istnieć możliwość wyjęcia filtra w celu oczyszczenia

DOBRZE

ŹLE



Regulatory temperatury muszą być instalowane poziomo w przewód zasilający

Temperature controllers must be installed horizontally into the feed tube.

9. Storage and Transport Conditions

9.1 Storage Conditions

The valves should be stored on shelves, in rooms free from dust, gases and vapours causing corrosion.

Air temperature in the room should vary from +5 ÷ +50 °C.

Air relative humidity should be 30 ÷ 80 %. All the external elements - steel zinc-coated elements – should be covered with thin layer of technical vaseline (petroleum jelly). If the storage period exceeds 1 year, one should repeat the product test.

9.2 Transport Conditions

The valves type MEZ – 01 – 03 and MEO – 01 – 03 should be packed in cardboard box, made acc. to drawing ME3-0390.

The valves type MEZ – 04 – 06 i MEO – 04 –06 should be packed in cardboard box, made acc. to drawing ME3 – 0407.

During the transport the flow holes of valves should be plugged in accordance with the documentation.

The valves which do not have packing (MED), one should specially protect them for transport, paying attention to protection against hitting each other, and against wetting from atmospheric precipitations.

During the transport value of transport vibrations should not exceed 3g at frequency of 80-120 cycles per minute in 2 hours.

GUARANTEE CONDITIONS

Guarantee conditions are determined in the Guarantee Card.

This Guarantee does not cover the improperly exploited, transported, stored, disassembled by unauthorised persons, repaired or redesigned products, as well as those having the seals and trademarks broken.

REMARK:

The right of introducing the design changes, not deteriorating product quality, is reserved.

PRODUCER'S STATEMENT

We declare that the products type MEZ –, MEO, MED- meet the requirements of the Directive „Pressure-type Equipment” no. 97/23/WE.

In accordance with art. 3, section 3 of the above mentioned Directive, these goods are made with acknowledged engineering practice and are not subject to the CE marking.