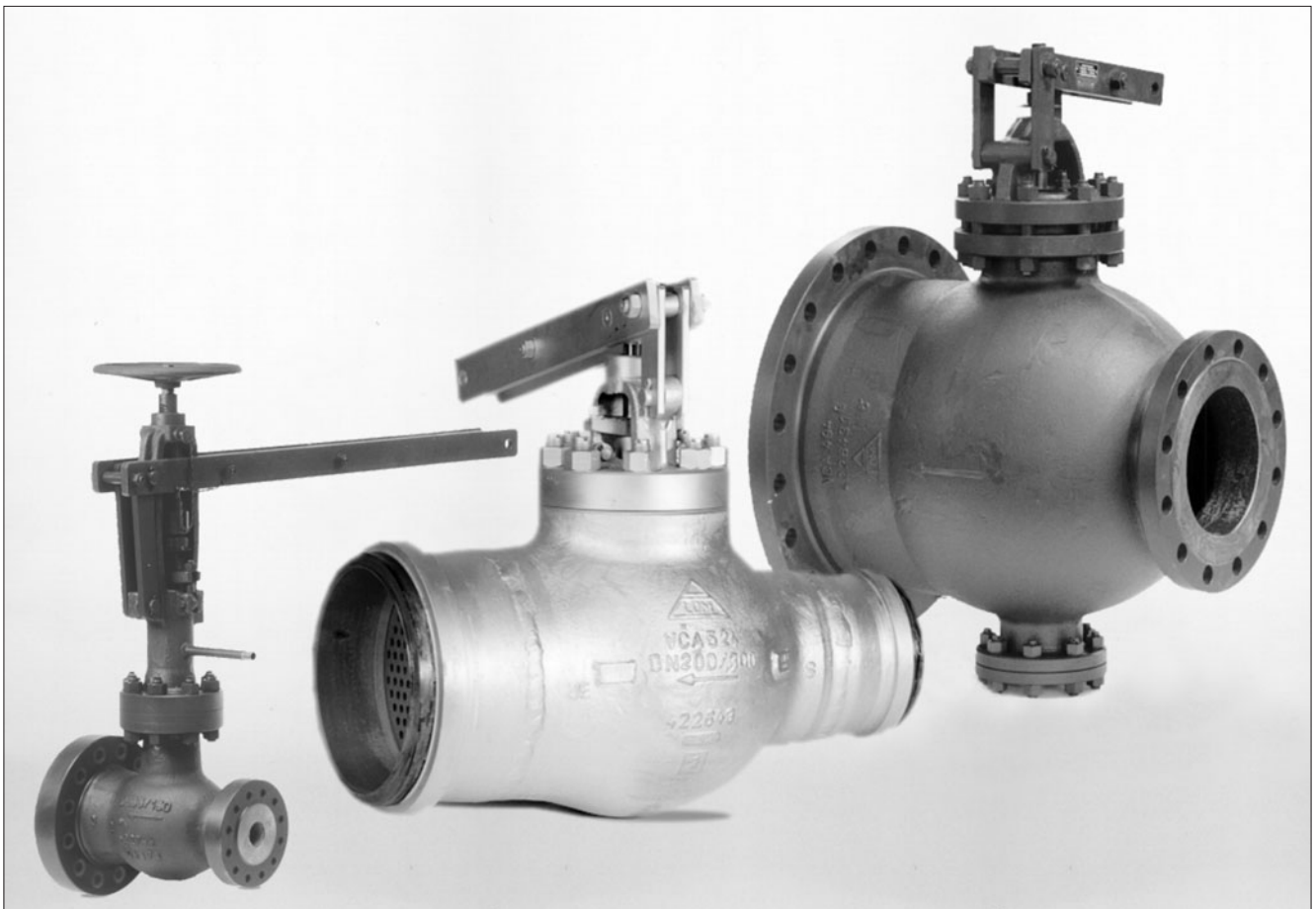


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**Control valves
G 41 ... and G 46 ...**



Kv coefficient calculation

Calculation itself is carried out with respect to conditions of regulating circuit and operating medium according to equations mentioned below. Control valve must be designed to be able to regulate maximal flow quantity at given operating conditions. At the same time it is necessary to check whether minimal flow quantity can be even regulated or not.

Because of eventual minus tolerance 10% of Kv_{100} against Kvs and requirement for possible regulation within range of maximal flow (decrement and increase of flow), producer recommends to select Kvs value higher than maximal operating Kv value:

$$Kvs = 1.2 \div 1.3 Kv$$

It is necessary to take into account to which extent Q_{max} involve "precautionary additions" that could result in valve oversizing.

Relations of Kv calculation

		Pressure drop $p_2 > p_1/2$ $\Delta p < p_1/2$	Pressure drop $\Delta p \geq p_1/2$ $p_2 \leq p_1/2$
Kv =	Liquid	$\frac{Q}{100} \sqrt{\frac{\rho_1}{\Delta p}}$	
	Gas	$\frac{Q_n}{5141} \sqrt{\frac{\rho_n \cdot T_1}{\Delta p \cdot p_2}}$	$\frac{2 \cdot Q_n}{5141 \cdot p_1} \sqrt{\rho_n \cdot T_1}$
	Superh. steam	$\frac{Q_m}{100} \sqrt{\frac{v_2}{\Delta p}}$	$\frac{Q_m}{100} \sqrt{\frac{2v}{p_1}}$
	Sat. steam	$\frac{Q_m}{100} \sqrt{\frac{v_2 \cdot x}{\Delta p}}$	$\frac{Q_m}{100} \sqrt{\frac{2v \cdot x}{p_1}}$

Above critical flow of vapours and gases

When pressure ratio is above critical ($p_2/p_1 < 0.54$), speed of flow reaches acoustic velocity at the narrowest section. This event can cause higher level of noisiness and then it is convenient to use a throttling system ensuring low noisiness (multi-step pressure reduction, damping orifice plate at outlet).

Dimensions and units

Marking	Unit	Name of dimension
Kv	m ³ /hour	Flow coefficient under conditions of units of flow
Kv_{100}	m ³ /hour	Flow coefficient at nominal stroke
Kvs	m ³ /hour	Valve nominal flow coefficient
Q	m ³ /hour	Flow rate in operating conditions (T_1, p_1)
Q_n	Nm ³ /hour	Flow rate in normal conditions (0 °C, 0.101 MPa)
Q_m	kg/hour	Flow rate in operating conditions (T_1, p_1)
p_1	MPa	Upstream absolute pressure
p_2	MPa	Downstream absolute pressure
p_s	MPa	Absolute pressure of saturated steam at given temperature (T_1)
Δp	MPa	Valve differential pressure ($\Delta p = p_1 - p_2$)
ρ_1	kg/m ³	Process medium density in operating conditions (T_1, p_1)
ρ_n	kg/Nm ³	Gas density in normal conditions (0 °C, 0.101 MPa)
v_2	m ³ /kg	Specific volume of steam when temperature T_1 and pressure p_2
v	m ³ /kg	Specific volume of steam when temperature T_1 and pressure $p_1/2$
T_1	K	Absolute temperature at valve inlet ($T_1 = 273 + t_1$)
x	1	Proportionate weight volume of saturated steam in wet steam

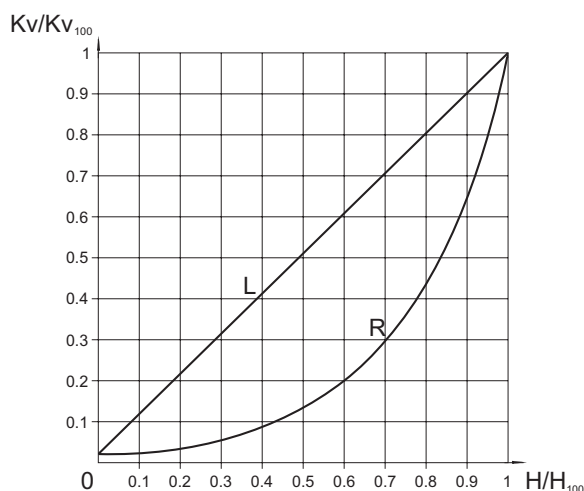
Cavitation

Cavitation is a phenomenon when there are steam bubbles creating and vanishing in shocks - generally at the narrowest section of flowing due to local pressure drop. This event expressively cuts down service life of inner parts and can result in creation of unpleasant vibrations and noisiness. In control valves it can happen on condition that

$$(p_1 - p_2) \geq 0.6 (p_1 - p_s)$$

Valve differential pressure should be set the way so that neither any undesired pressure drop causing cavitation can occur, nor liquid-steam(wet steam) mixture can create. Otherwise it must be taken into account when calculating Kv value. If the creation of cavitation still threatens, it is necessary to use a multi-step pressure reduction.

Valve flow characteristics



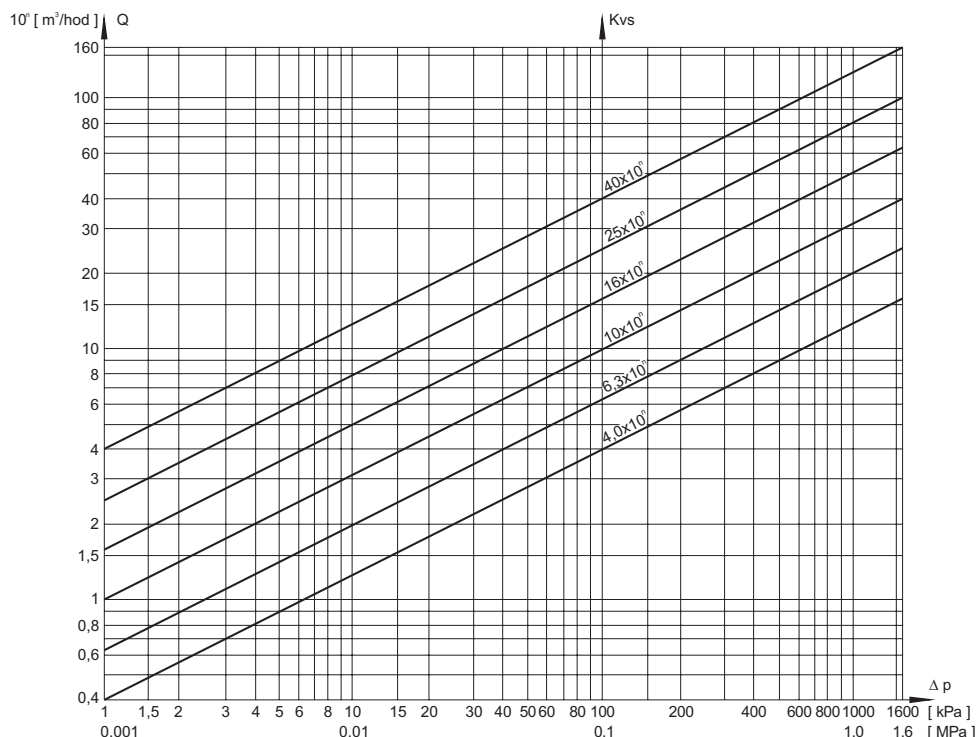
L - linear characteristic

$$Kv/Kv_{100} = 0.0183 + 0.9817 \cdot (H/H_{100})$$

R - equal-percentage characteristic (4-percentage)

$$Kv/Kv_{100} = 0.0183 \cdot E^{(4 \cdot H/H_{100})}$$

Diagram for the valve Kvs value specification according to the required flow rate of water Q and the valve differential pressure Δp



The diagram serves to specify the valve Kvs value regarding to the required flow rate of water at a given differential pressure. It can be also used for finding out the differential pressure value of the existing valve in behaviour with the flow rate. The diagram applies to water with the density of 1000 kg/m³.

For the value $Q = q \cdot 10^4$, it is necessary to calculate with $Kvs = k \cdot 10^4$. Example: water flow rate of $16 \cdot 10^4 = 1,6 \text{ m}^3/\text{hour}$ corresponds to $Kv = 2,5 = 25 \cdot 10$ when differential pressure 40kPa.

Valve complete specification No. for ordering G 41 and G 46

		X XX	X X X	- X XXX	/ XXX	- XXX
1. Valve	Control valve	G				
2. Series	Control valve, lever-actuated, single-seated with extended outlet	41				
	Control valve, lever-actuated, double-seated with extended outlet	46				
3. Flow direction	Straight-through		1			
4. Connection	Flanged		1			
	Weld ends		2			
5. Actuating	Adjusted for remote control		5			
6. Material	Alloy steel 1.7357			2		
	Carbon steel 1.0619			5		
7. Nominal pressure PN	Acc. to the valve execution			XXX		
8. Max. operating temp. °C	Acc. to the valve execution				XXX	
9. Nominal size DN	Acc. to the valve execution					XXX

G 41 115 ...



Lever control valves DN 40/100 and 65/150, PN 250/160

Description

The valve is single-seated, lever-actuated, designed to be actuated with an electric actuator or a hydraulic cylinder. In case of manual operation, it is possible to lock the levers with an arresting pin and to actuate the valve with its hand wheel. The valve is equipped with a position indicator.

The control valves for temperatures exceeding 400 °C are equipped with a labyrinth packing with the drain off. The valve control plug is always designed for the parameters specified in the order and according to the requested type of flow characteristic.

The valve can be delivered with actuators of the following producers: ZPA Pečky - Modact MPS, Modact Control MPS and Modact Variant MPR. The connection stem between the valve's lever and the actuator's is not a subject of the delivery unless it is ordered.

Application

The valve serves as a control, reducing or by-pass element with indirect actuating. The max. permissible operating pressures acc. to EN 12 516-1 see page 19 of this catalogue. The intention to use the valve for higher temperatures must be agreed upon with the producer. The control valve's proper function depends on the sizing and execution of the control station, therefore the valve design and its specification is recommended to be carried out together with the producer.

Process media

The valves are designed to regulate the flow and pressure of liquids, possibly vapours and gases such as water, steam and other media compatible with the material of the valve's inner parts. The valve max. differential pressure is 4,0 MPa with respect to pressure nominal value and to concrete service conditions (ratio p_1 / p_2 , creation of cavitation, above-critical flow etc.)

Installation

The valve can be piped only in a horizontal pipeline with vertically positioned stem and the valve's lever above the valve body. The medium flow direction shall coincide with the arrows indicated on the valve body. The lever is mounted on the right side from the medium flow direction unless it is required otherwise. For control valves with an extended outlet, it is necessary to secure the outlet pipeline with a safety valve sized to the valve's full output.

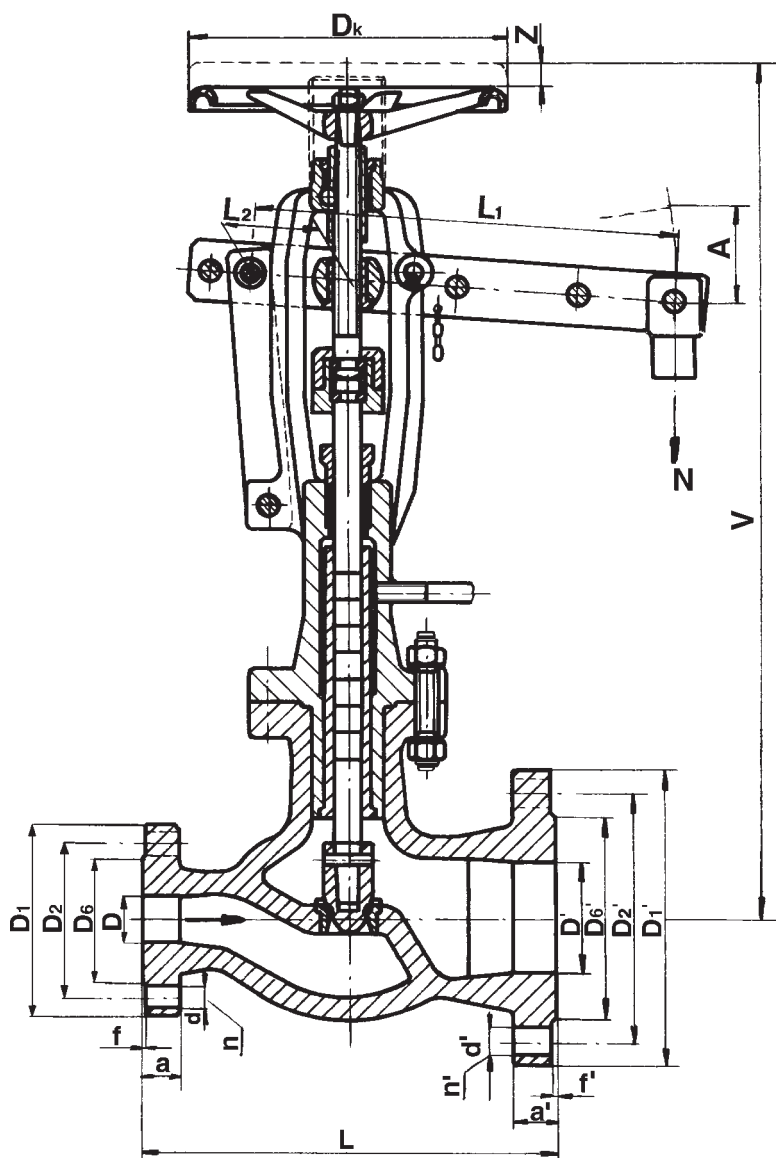
Technical data

Series	G 41 115 2250
Type of valve	Control valves, single-seated, flanged, straight-through, with extended outlet
Nominal size	40/100 and 65/150
Nominal pressure	250/160
Body material	Alloy steel 1.7357
Process media temp. range	-20 to 550 °C
Connection *	Inlet acc. to ČSN 13 1217 Outlet acc. to ČSN 13 1216
Type of trim	Seat - parabolic plug
Flow characteristic	Linear, equal-percentage acc. to ČSN 13 4509-1
Flow area range F_s [cm ²]	1,3 - 25
Kvs value range	5,85 - 112,5
Leakage rate	Class II. acc. to ČSN EN 1349 (5/2001)

*) mentioned ČSN standards are from 1963. After the agreement with the producer, it is possible to make the connection acc. to the valid ČSN EN 1092-1 (4/2002)

Dimensions and weights of the type G 41 115 2250

Type	G 41 115 2250		
DN	[mm]	40/100	65/150
D	[mm]	31,5	52
L	[mm]	350	470
L ₁	[mm]	770	770
L ₂	[mm]	110	110
~V	[mm]	890	990
D ₁	[mm]	185	230
D ₂	[mm]	135	180
D ₆	[mm]	90	130
D'	[mm]	88	131
D' ₁	[mm]	265	350
D' ₂	[mm]	210	290
D' ₆	[mm]	160	220
D _k	[mm]	250	360
A	[mm]	160	175
f	[mm]	3	3
a	[mm]	40	48
d	[mm]	27	27
n	[mm]	4	8
f'	[mm]	3	3
a'	[mm]	50	62
d'	[mm]	30	33
n'	[mm]	8	12
Stroke	[mm]	20	25
F _s	[cm ²]	1,3-4,9	3,6-25
K _{vs}	[m ³ /h]	5,85-22,05	16,2-112,5
m	[kg]	120	210





Lever control valves DN 200/400 to 300/600, PN 16/10 to 40/25

Description

The valve is single-seated, lever-actuated, designed to be actuated with an electric actuator, possibly with an electric or a hydraulic cylinder. In case of emergency, it is possible for the valve equipped with hand wheel to lock the levers with an arresting pin and actuate the valve with its hand wheel. For sizes above DN 150, it is possible to use linear or rotative actuator. Its control plug is always designed according to the parameters specified in the order and according to the required type of flow characteristic.

The valves are supplied with the following actuators of the following producers: ZPA Pečky - Modact Konstant MPS, Modact Control MPS and Modact Variant MPR possibly with linear actuators ZPA Pečky, Regada Prešov and rotative actuators Auma or Schiebel. The connection stem between the valve lever and the actuator is not a subject of the delivery unless it is ordered.

Application

The valve serves as a control, reduction or by-pass element with indirect or direct actuating. The max. permissible pressures are according to EN 12 516-1 see page 19 of this catalogue. The intention to use the valve for higher temperatures must be agreed upon with the producer. The control valves proper function depends on the sizing and execution of the control station, therefore the valve design and its specification is recommended to be carried out together with the producer.

Process media

The valves are designed to regulate the flow and pressure of liquids, possibly vapours and gases e.g. water, steam and other media compatible with material of the valve inner parts. The valve max. differential pressure is 4,0 MPa with respect to the pressure nominal and concrete conditions of operation (ratio p_1 / p_2 , creation of cavitation, above critical flow etc.).

Installation

The valve can be piped only in a horizontal pipeline with vertically positioned stem and the valve lever positioned above the valve body. The medium flow direction shall coincide with the arrows indicated on the valve body. The lever is mounted on the right side from the medium flow direction unless it is required otherwise. For control valves with an extended outlet, it is necessary to secure the outlet pipeline with a safety valve sized to the control valve full output.

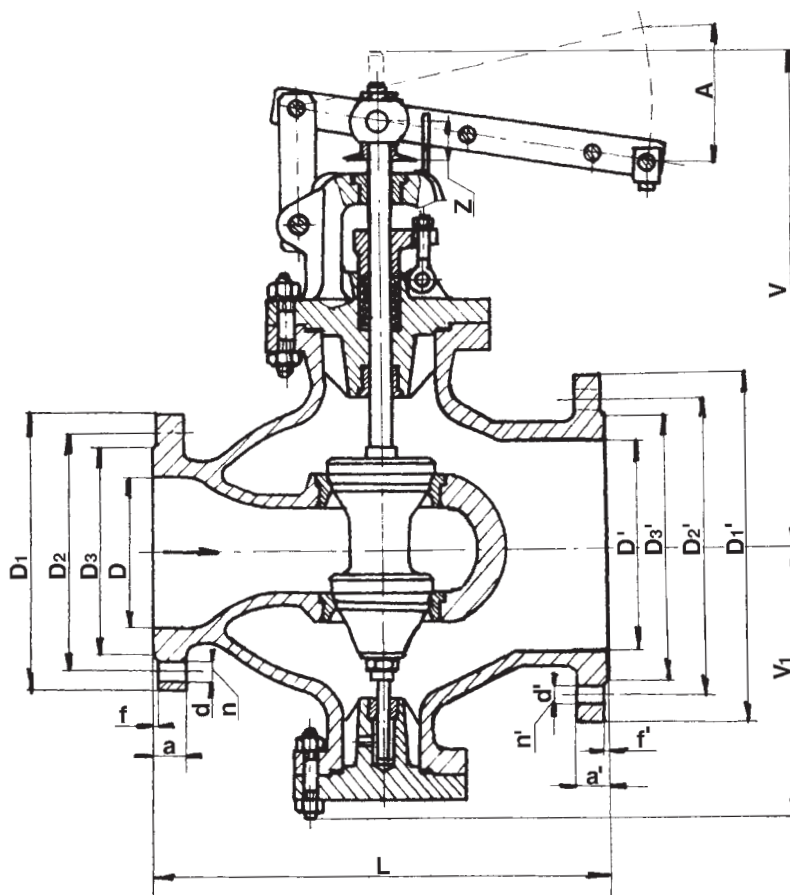
Technical data

Series	G 46 115 216	G 46 115 240	G 46 115 516	G 46 115 540
Type of valve	Control valves, double-seated, flanged, straight-through, with extended outlet			
Nominal size	300/600	200/400	300/600	200/400, 250/500
Nominal pressure	16/10	40/25	16/10	40/25
Body material	Alloy steel 1.7357		Carbon steel 1.0619	
Operating temp. range	-20 to 550°C		-20 to 400°C	
Connection *	Inlet acc. to ČSN 13 1211	Inlet acc. to ČSN 13 1213	Inlet acc. to ČSN 13 1211	Inlet acc. to ČSN 13 1213
	Outlet acc. to ČSN 13 1210	Outlet acc. to ČSN 13 1212	Outlet acc. to ČSN 13 1210	Outlet acc. to ČSN 13 1212
Type of trim	Seat - contoured plug			
Flow characteristic	Linear, equal-percentage acc. to ČSN EN 60 534-1 (4/1997)			
Flow area range F_s [cm ²]	30 - 250	35 - 90	30 - 250	22 - 200
Kvs value range	135 - 1125	157,5 - 405	135 - 1125	99 - 900
Leakage rate	Class II acc. to ČSN EN 1349 (5/2001)			

*) mentioned ČSN standards from 1963. After the agreement with the producer, it is possible to make the connection acc. to the ČSN 13 1060 (7/1995) or ČSN EN 1092-1 (4/2002).

Dimensions and weights for G 46 115, PN 10 to 40

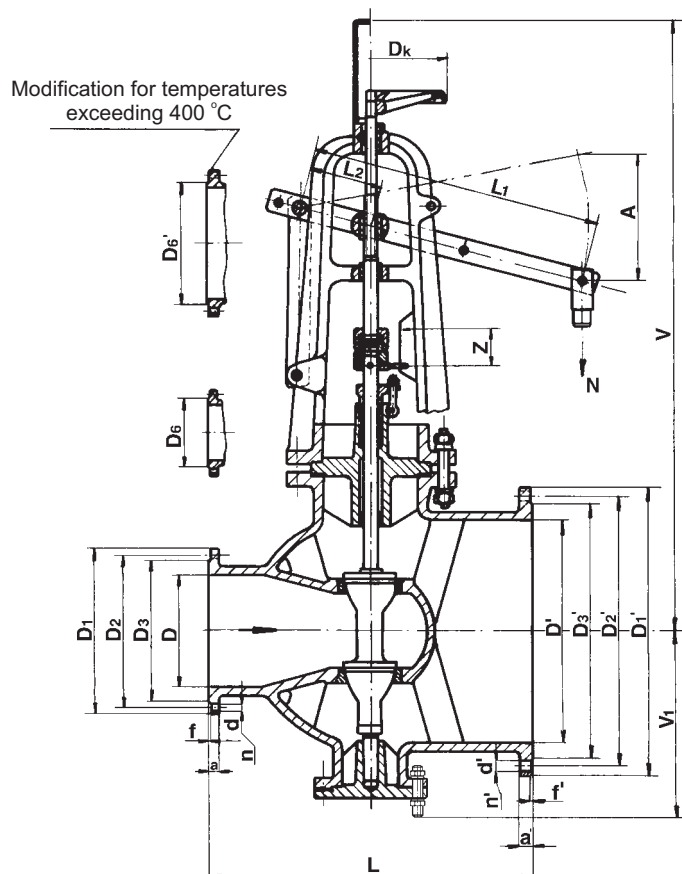
Type		G 46 115 216 G 46 115 516	G 46 115 540
DN	[mm]	300/600	250/500
D	[mm]	300	250
L	[mm]	850	730
~V	[mm]	930	700
~V ₁	[mm]	500	425
D ₁	[mm]	460	445
D ₂	[mm]	410	385
D ₃	[mm]	378	345
D'	[mm]	600	500
D' ₁	[mm]	780	730
D' ₂	[mm]	725	660
D' ₃	[mm]	685	615
A	[mm]	270	300
f	[mm]	4	3
a	[mm]	28	38
d	[mm]	27	33
n	[mm]	12	12
f'	[mm]	5	4
a'	[mm]	34	44
d'	[mm]	30	36
n'	[mm]	20	20
Stroke	[mm]	60	60
Fs	[cm ²]	30-250	50-200
Kvs	[m ³ /h]	135-1125	225-900
m	[kg]	510	433



Dimensions and weights for G 46 115, PN 25 to 40

Type		G 46 115 240 G 46 115 540
DN	[mm]	200/400
D	[mm]	200
L	[mm]	600
L ₁	[mm]	600
L ₂	[mm]	120
~V	[mm]	1155
~V ₁	[mm]	355
D ₁	[mm]	375
D ₂	[mm]	320
D ₃	[mm]	280
D ₆	[mm]	260
D'	[mm]	400
D' ₁	[mm]	610
D' ₂	[mm]	550
D' ₃	[mm]	505
D' ₆	[mm]	475
D _k	[mm]	250
A	[mm]	250
f	[mm]	3
a	[mm]	34

Type		G 46 115 240 G 46 115 540
d	[mm]	30
n	[mm]	12
f'	[mm]	4
a'	[mm]	40
d'	[mm]	33
n'	[mm]	16
Stroke	[mm]	50
Fs (540)	[cm ²]	22-135
Fs (240)	[cm ²]	35-90
Kvs	[m ³ /h]	157,5-405
m	[kg]	520





Control valves DN 100/200 and 200/300, PN 100/64

Description

The valve is double-seated, lever-actuated, designed to be actuated with an electric actuator, possibly with a hydraulic or pneumatic cylinder. Its control plug is always designed according to the parameters specified in the order and according to the requested type of flow characteristic.

The valves are delivered with the following actuators of the following producer: ZPA Pečky - Modact MPS, Modact Control MPS, Modact Variant MPR. The connection stem between the valve lever and the actuator is not a subject of delivery unless it is ordered.

Application

The valve serves as a control, reduction or by-pass element with direct or indirect actuating. The max. permissible operating pressures correspond to EN 12 516-1 see page No. 19 of this catalogue. The intention to use the valve for higher temperatures must be agreed upon with the producer. The valve proper function depends on the sizing and execution of the control station, therefore the valve design and its specification is recommended to be carried out together with the producer.

Process media

The valves are designed to regulate the flow and pressure of liquids, possibly vapours and gases e.g. water, steam and other media compatible with material of the valve inner parts. The valve max. differential pressure is 4,0 MPa with respect to the pressure nominal and concrete conditions of operation (ratio p_1 / p_2 , creation of cavitation, above critical flow etc.).

Installation

The valve can be piped only in a horizontal pipeline with vertically positioned stem and the valve lever positioned above the valve body. The medium flow direction shall correspond to the arrows indicated on the valve body. The lever is mounted on the right side from the medium flow direction unless it is required otherwise. For control valves with an extended outlet, it is necessary to secure the outlet pipeline with a safety valve sized to the control valve full output.

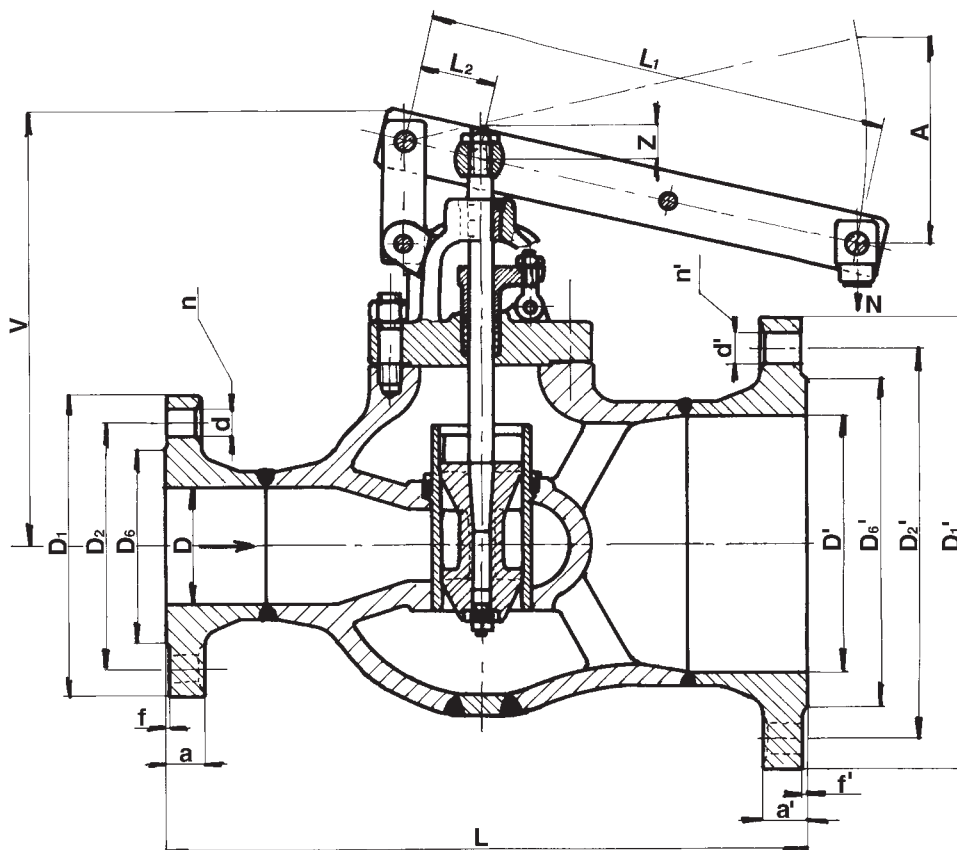
Technical data

Series	G 46 115 2100	G 46 115 5100
Type of valve	Control valves, double-seated, flanged, straight-through, with extended outlet	
Nominal size	100/200, 200/300	200/300
Nominal pressure	100/64	100/64
Body material	Alloy steel 1.7357	Carbon steel 1.0619
Operation temperature range	-20 to 550°C	-20 to 400°C
Connection *	Inlet acc. to ČSN 13 1215	
	Outlet acc. to ČSN 13 1214	
Type of trim	Seat cage - contoured plug	
Flow characteristic	Linear, equal-percentage acc. to ČSN EN 60 534-1 (4/1997)	
Flow area range F_s [cm ²]	3,8 - 88	11 - 88
Kvs value range	17,1 - 396	49,5 - 396
Leakage rate	Class II acc. to ČSN EN 1349 (5/2001)	

*) mentioned ČSN standards from 1963. After the agreement with the producer, it is possible to make the connection acc. to the ČSN 13 1060 (7/1995) or ČSN EN 1092-1 (4/2002).

Dimensions and weights for G 46 115 PN 100

Type		G 46 115 2100	G 46 115 2100 G 46 115 5100
DN	[mm]	100/200	200/300
D	[mm]	95	191
L	[mm]	600	750
L ₁	[mm]	600	540
L ₂	[mm]	75	90
~V	[mm]	475	595
D ₁	[mm]	265	430
D ₂	[mm]	210	360
D ₆	[mm]	160	275
D'	[mm]	201	300
D' ₁	[mm]	405	530
D' ₂	[mm]	345	460
D' ₆	[mm]	275	375
A	[mm]	240	240
f	[mm]	3	3
a	[mm]	36	52
d	[mm]	30	36
n	[mm]	8	12
f'	[mm]	3	4
a'	[mm]	42	52
d'	[mm]	33	36
n'	[mm]	12	16
Stroke	[mm]	30	40
Fs	[cm ²]	3,8-40	11-88
Kvs	[m ³ /h]	17,1-180	49,5-396
m	[kg]	302	678





**Control valves
DN 65/125 to 150/300,
PN 160/100 to 250/160**

Description

The valve is double-seated, lever-actuated, designed to be actuated with an electric actuator or a hydraulic or pneumatic cylinder. In case of emergency, it is possible for the valves equipped with hand wheel to lock the levers with an arresting pin and operate the valve with its hand wheel. The control valve plug is always designed according to the parameters specified in the order and according to the requested type of flow characteristic.

The valves are delivered with the following actuators of the following producer: ZPA Pečky - Modact MPS, Modact Control MPS, Modact Variant MPR. The connection stem between the valve lever and the actuator is not a subject of delivery unless it is ordered.

Application

The valve serves as a control, reduction or by-pass element with direct or indirect actuating. The max. permissible operating pressures correspond to EN 12 516-1 see page No. 19 of this catalogue. The intention to use the valve for higher temperatures must be agreed upon with the producer. The control valve proper function depends on the sizing and execution of the control station, therefore the valve design and its specification is recommended to be carried out together with the producer.

Process media

The valves are designed to regulate the flow and pressure of liquids, possibly vapours and gases e.g. water, steam and other media compatible with material of the valve inner parts. The valve max. differential pressure is 4,0 MPa with respect to the pressure nominal and concrete conditions of operation (ratio p_1/p_2 , creation of cavitation, above critical flow etc.).

Installation

The valve can be piped only in a horizontal pipeline with vertically positioned stem and the valve lever positioned above the valve body. The medium flow direction shall correspond to the arrows indicated on the valve body. The lever is mounted on the right side from the medium flow direction unless it is required otherwise. For control valves with an extended outlet, it is necessary to secure the outlet pipeline with a safety valve sized to the control valve full output.

Technical data

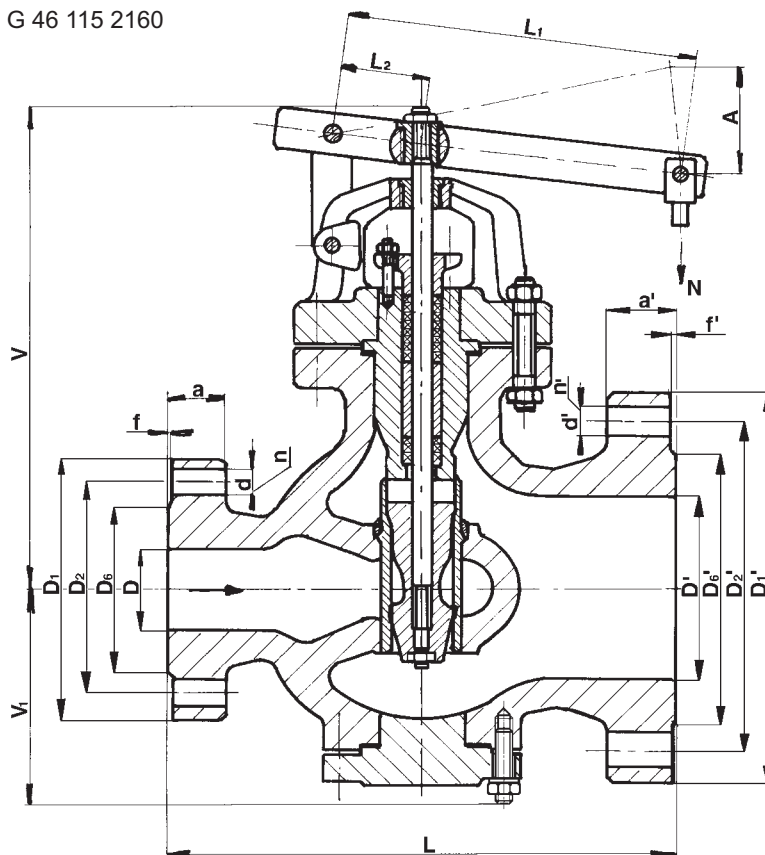
Series	G 46 115 2160	G 46 115 2250
Type of valve	Control valves, double-seated, flanged, straight-through, with extended outlet	
Nominal size	65/125, 100/200, 150/300	150/300
Nominal pressure	160/100	250/160
Body material	Alloy steel 1.7357	
Operating temperature range	-20 to 575°C	
Connection *	Inlet acc. to ČSN 13 1216	Inlet acc. to ČSN 13 1217
	Outlet acc. to ČSN 13 1215	Outlet acc. to ČSN 13 1216
Type of trim	seat / seat cage - contoured plug	
Flow characteristic	Linear, equal-percentage acc. to ČSN EN 60 534-1 (4/1997)	
Flow characteristic range F_s [cm ²]	3 - 88	13 - 80
Kvs value range	13,5 - 396	58,5 - 360
Leakage rate	Class II acc. to ČSN EN 1349 (5/2001)	

*) mentioned ČSN standards from 1963. After the agreement with the producer, it is possible to make the connection acc. to the ČSN 13 1060 (7/1995) or ČSN EN 1092-1 (4/2002).

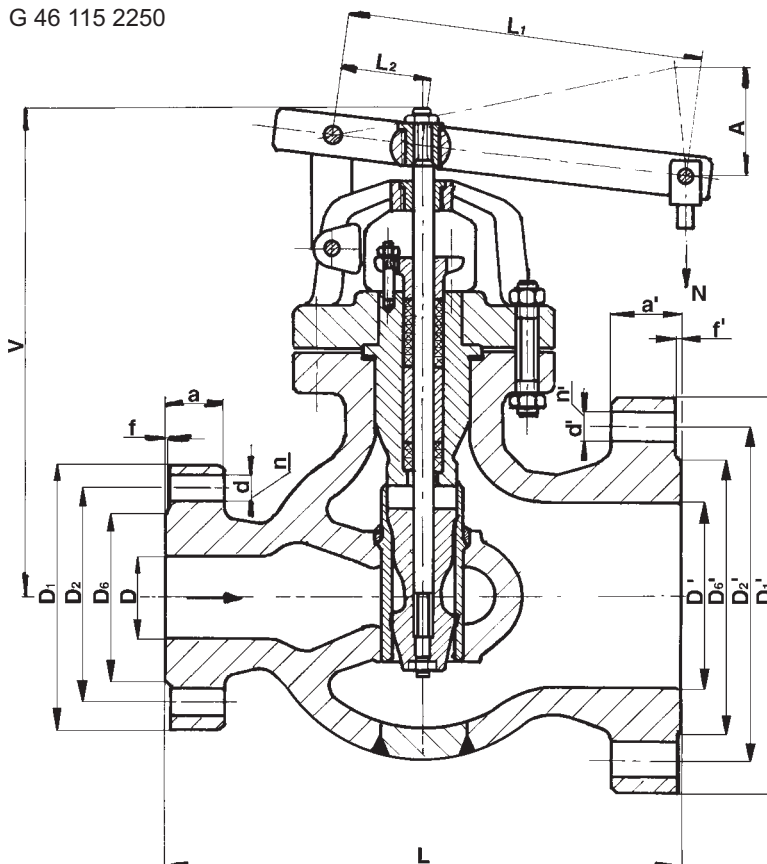
Dimensions and weights for G 46 115 PN 100 to 250

Type		G 46 115 2160	G 46 115 2250
DN	[mm]	150/300	150/300
D	[mm]	131	115
L	[mm]	700	730
L ₁	[mm]	720	720
L ₂	[mm]	120	120
~V	[mm]	700	730
~V ₁	[mm]	310	---
D ₁	[mm]	350	390
D ₂	[mm]	290	320
D ₆	[mm]	220	240
D'	[mm]	284	268
D' ₁	[mm]	585	585
D' ₂	[mm]	500	500
D' ₆	[mm]	375	405
A	[mm]	240	240
f	[mm]	3	3
a	[mm]	62	70
d	[mm]	33	36
n	[mm]	12	12
f'	[mm]	4	4
a'	[mm]	68	100
d'	[mm]	42	42
n'	[mm]	16	16
Fs	[cm ²]	16-88	13-80
Kvs	[m ³ /h]	---	---
m	[kg]	560	630

G 46 115 2160



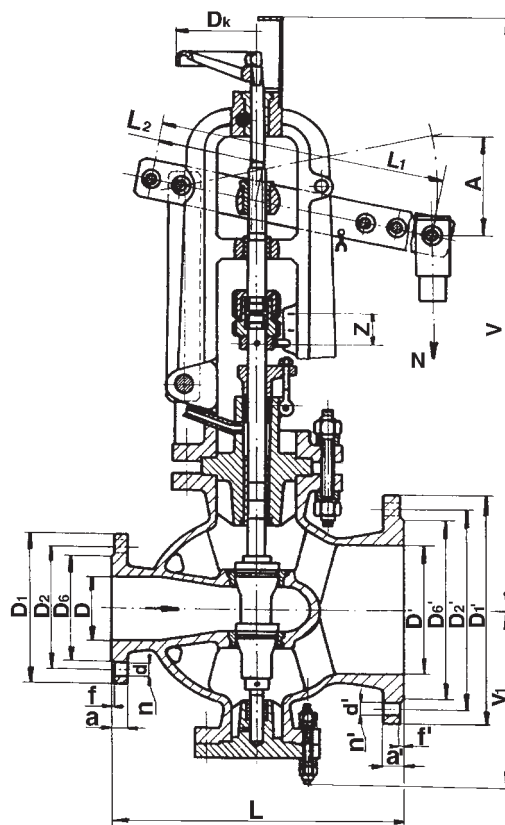
G 46 115 2250



Dimensions and weights for G 46 115 PN 100 to 160 with lower guide

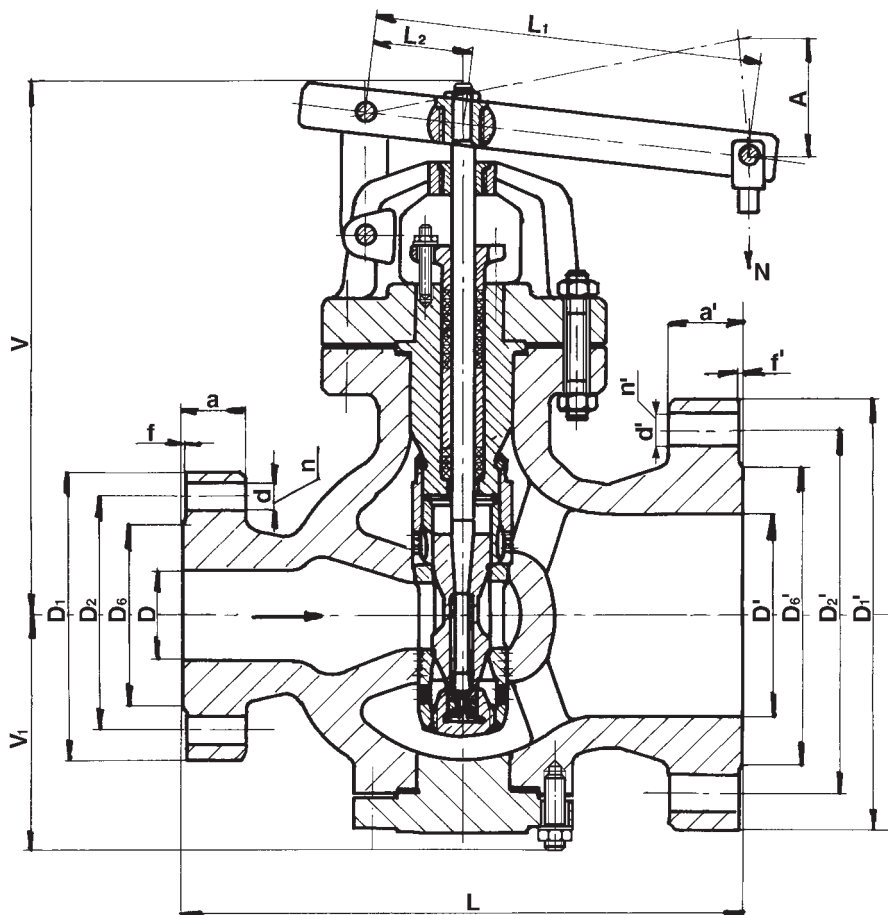
Type	G 46 115 2160	
DN	[mm]	65/125
D	[mm]	62
L	[mm]	450
L ₁	[mm]	855
L ₂	[mm]	95
~V	[mm]	805
~V ₁	[mm]	255
D ₁	[mm]	220
D ₂	[mm]	170
D ₆	[mm]	120
D'	[mm]	109
D' ₁	[mm]	310
D' ₂	[mm]	250
D' ₆	[mm]	190
D _k	[mm]	250
A	[mm]	180
f	[mm]	3
a	[mm]	42
d	[mm]	27
n	[mm]	8
f'	[mm]	3
a'	[mm]	40

Type	G 46 115 2160	
d'	[mm]	33
n'	[mm]	8
Stroke	[mm]	20
F _s	[cm ²]	3,0-14
K _{vs}	[m ³ /h]	13,5-63
m	[kg]	380



Dimensions and weights for G 46 115 PN 100 to 250 with built-in orifice plate

Type	G 46 115 2160		G 46 115 2250
DN	[mm]	100/200	150/300
D	[mm]	88	131
L	[mm]	560	700
L ₁	[mm]	700	720
L ₂	[mm]	100	120
~V	[mm]	600	700
~V ₁	[mm]	310	345
D ₁	[mm]	265	350
D ₂	[mm]	210	290
D ₆	[mm]	160	220
D'	[mm]	191	284
D' ₁	[mm]	430	585
D' ₂	[mm]	360	500
D' ₆	[mm]	275	375
A	[mm]	175	240
f	[mm]	3	3
a	[mm]	50	62
d	[mm]	30	33
n	[mm]	8	12
f'	[mm]	3	4
a'	[mm]	52	68
d'	[mm]	36	42
n'	[mm]	12	16
F _s	[cm ²]	8,0-30	16-50
K _{vs}	[m ³ /h]	36-135	72-225
m	[kg]	422	555



G 46 125 ...



**Control valves
DN 65/150 to 300/400,
PN 100/25 to 100/100**

Description

The valve is double-seated, lever-actuated, designed to be actuated with an electric actuator, possibly with a hydraulic or pneumatic cylinder. For sizes above DN 150, it is possible to use linear or rotative actuator. Its control plug is always designed according to the parameters specified in the order and according to the requested type of flow characteristic.

The valves are delivered with the following actuators of the following producer: ZPA Pečky - Modact MPS, Modact Control MPS, Modact Variant MPR possibly with linear actuators ZPA Pečky, Regada Prešov and rotative actuators Auma or Schiebel. The connection stem between the valve lever and the actuator is not a subject of delivery unless it is ordered.

Application

The valve serves as a control, reduction or by-pass element with direct or indirect actuating. The max. operating permissible pressures correspond to ČSN 13 0010 see page No. 19 of this catalogue. The intention to use the valve for higher temperatures must be agreed upon with the producer. The control valve proper function depends on the sizing and execution of the control station, therefore the valve design and its specification is recommended to be carried out together with the producer.

Process media

The valves are designed to regulate the flow and pressure of liquids, possibly vapours and gases e.g. water, steam and other media compatible with material of the valve inner parts. The valve max. differential pressure is 4,0 MPa with respect to the pressure nominal and concrete conditions of operation (ratio p_1/p_2 , creation of cavitation, above critical flow etc.).

Installation

The valve can be piped only in a horizontal pipeline with vertically positioned stem and the valve lever positioned above the valve body. The medium flow direction shall correspond to the arrows indicated on the valve body. The lever is mounted on the right side from the medium flow direction unless it is required otherwise. For control valves with an extended outlet, it is necessary to secure the outlet pipeline with a safety valve sized to the control valve full output.

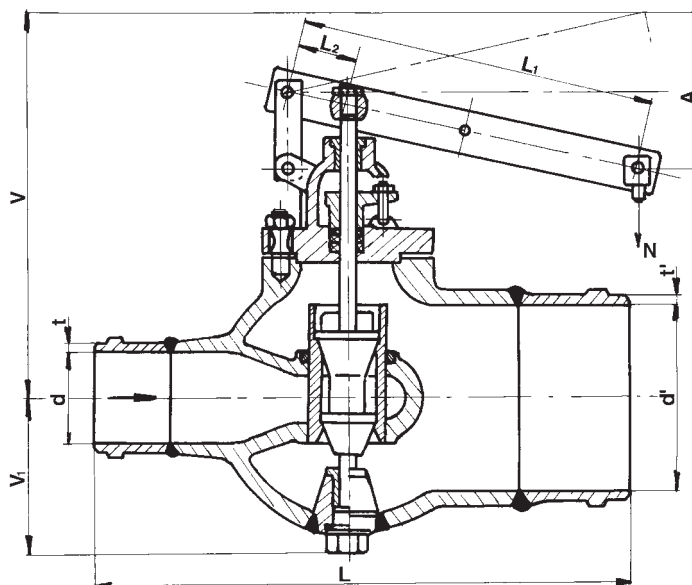
Technical data

Series	G 46 125 264	G 46 125 2100	G 46 125 5100
Type of valve	Control valves, double-seated, weld-ends, straight-through, with extended outlet		
Nominal size	200/300	200/300, 300/400	200/300, 300/400
Nominal pressure	64/64	100/100, 100/64, 100/40, 100/25	100/100, 100/64, 100/40, 100/25
Body material	Alloy steel 1.7357		Cast steel 1.0619
Operating temp. range	-20 to 550°C		-20 to 400°C
Connection *	Acc. to ČSN 13 1070		
Type of trim	Seat - contoured plug		
Flow characteristic	Linear, equal-percentage acc. to ČSN EN 60 534-1 (4/1997)		
Flow area range F_s [cm ²]	11 - 80	11 - 180	11 - 180
Kvs value range	49,5 - 360	49,5 - 810	49,5 - 810
Leakage rate	Class II acc. to ČSN EN 1349 (5/2001)		

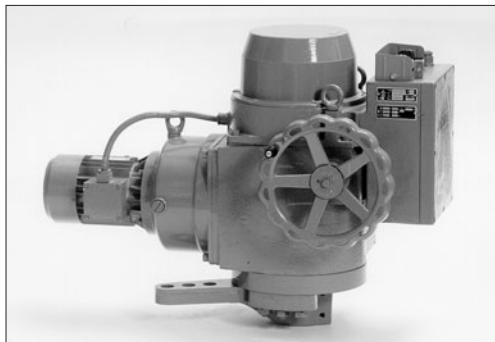
*) mentioned ČSN standards from 1963. After the agreement with the producer, it is possible to make the connection acc. to the ČSN 13 1075 (3/1991) or ČSN EN 12627 (8/2000).

Dimensions and weights for G 46 125

Type		G 46 125 2100	G 46 125 2100 G 46 125 5100	G 46 125 2100 G 46 125 5100	G 46 125 2100 G 46 125 5100	G 46 125 2100 G 46 125 5100	G 46 125 264
PN		100/40	100/64	100/100	100/25	100/40	64/64
DN	[mm]	200/300	200/300	200/300	300/400	300/400	200/300
L	[mm]	800	800	800	1200	1200	800
~V	[mm]	595	595	595	860	860	595
~V ₁	[mm]	250	204	204	334	334	204
d	[mm]	194	194	194	288	288	201
t	[mm]	12,5	12,5	12,5	18	18	9
d'	[mm]	308	299	288	412	406	299
t'	[mm]	8	12,5	18	7	10	12,5
L ₁	[mm]	540	540	540	480	480	540
L ₂	[mm]	90	90	90	120	120	90
A	[mm]	240	240	240	280	280	240
Fs	[cm ²]	11-180	11-80	11-80	30-180	30-180	11-80
Kvs	[m ³ /h]	49,5-360	49,5-360	49,5-360	135-810	135-810	49,5-360
m	[kg]	442	442	442	676	676	442



52 262
52 263
52 264



Electric actuators Modact MPS and Modact MPS Control ZPA Pečky

Technical data

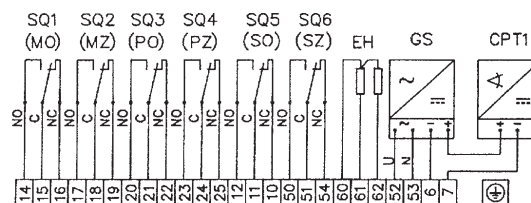
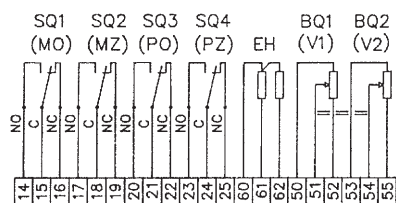
Type	Modact MPS	Modact MPS Control
Voltage	3 x 230 V / 400 V ± 6%	
Frequency	50 Hz	
Motor power	See specification table	
Control	2 - position or 3 - position control	
Torque range	160 to 1250 Nm	
Travel range	60° to 160°	
Enclosure	IP 55	
Process media max. temperature	Acc. to used valve	
Ambient temperature range	-25 to 55°C	
Ambient humidity range	10 - 100 % with condensation	
Weight	max. 120 kg	

Wiring diagram of actuator Modact MPS

Execution - terminal board

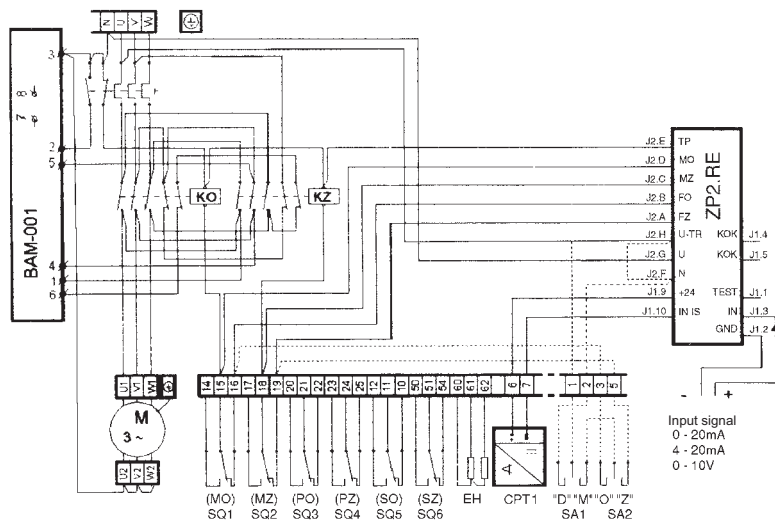
Position transmitter : resistance 2x100 Ω

Position transmitter : capacity CPT 1 1/A 4 - 20 mA



Wiring diagram of actuator Modact MPS Control

With current transmitter, built-in contactor combination, heat relay, positioner ZP2.RE and dynamic brake BAM-001.



- SQ1 (MO) torque switch in "opening" direction
- SQ2 (MZ) torque switch in "closing" direction
- SQ3 (PO) limit switch in "opening" direction
- SQ5 (PZ) limit switch in "closing" direction
- SQ4 (SO) signalisation switch in "opening" direction
- SQ6 (SZ) signalisation switch in "closing" direction
- EH heaters 2 x TR 551 10k/A
- CPT1 capacity position transmitter CPT1/A 4 - 20 mA
- BAM-001 dynamic brake
- KO contactor in "opening" direction
- KZ contactor in "closing" direction
- F heat relay
- SA1 control switch "local-remote"
- SA2 switch "open - close"
- BQ1, BQ2 position transmitter 2 x 100 Ω
- ZP2.RE micro-computer positioner
- GS power supply source for current transmitter 230V/24V
- M1~ one-phase motor
- M3~ inductive, three-phase motor
- C motor capacitor
- T mains transformer
- S terminal board
- Z plug "KBNS"

Specification for actuators Modact MPS and Modact MPS Control

Basic equipment : 1 electromotor 2 heaters
 2 torque switches MO, MZ 2 signalisation switches SO, SZ - for actuators with CPT 1/A
 2 limit switches PO, PZ and actuators without any transmitter

Basic technical data :

Type	Tripping torque setting range [Nm]	Running time [s/90°]	Electromotor			Oil filling [l]	Weight [kg]	Specification No..	
			Motor power [W]	Current to motor In [A]	Current to motor Iz [A]			Basic	Additional
MPS 32/16	160 - 320	16	180	0,57	1,82	3,4	70	52 262	XX1X
MPS 32/32		32							XX2X
MPS 32/63		63							XX3X
MPS 32/120		120							XX4X
MPS 63/16	320 - 630	16	370	1,05	3,25	10	120	52 263	XX1X
MPS 63/32		32							XX2X
MPS 63/63		63							XX3X
MPS 63/120		120							XX4X
MPS 125/16	630 - 1250	16	370	1,05	3,25	10	120	52 264	XX1X
MPS 125/32		32							XX2X
MPS 125/63		63							XX3X
MPS 125/120		120							XX4X

Execution, electric connection :

Via terminal board 6XXX
 With conector KBSN (for Modact MPS only) 7XXX

Operating travel -mechanically connected with controlled element	with lever and flange with stops	60°	X1XX
		90°	X2XX
		120°	X3XX
		160°	X4XX

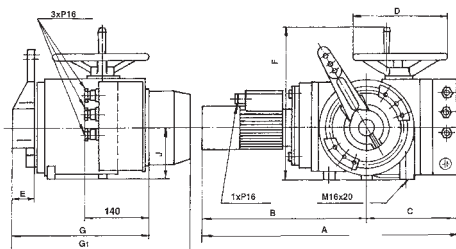
Additional equipment for actuators Modact MPS	Resistance position transmitter 2 x 100 Ω	XXX1
	Execution without any position transmitter	XXX0
	Current pos. transmitter CPT 1/A 4-20 mA with built-in power supply generator	XXX7
	Current pos. transmitter CPT 1/A 4-20 mA wo. built-in power supply generator	XXX9

Additional equipment for actuators Modact MPS Control	Completely equipped with positioner and brake BAM		Without positioner, with brake BAM and reversible contactors		Without positioner and brake BAM, with reversible contactors	
	with BMO	without BMO	with BMO	without BMO	with BMO	without BMO
Without position transmitter	---	---	XXXC	XXXL	XXXG	XXXR
Resistance position transmitter 2 x 100 Ω	---	---	XXXD	XXXM	XXXH	XXXS
CPT 1/A 4-20 mA with built-in power supply generator	---	---	XXXE	XXXN	XXXJ	XXXT
CPT 1/A 4-20 mA without built-in power supply generator	XXXA	XXXB	XXXF	XXXP	XXXK	XXXU

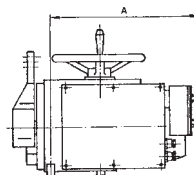
Dimensions of actuator Modact MPS and Modact MPS Control

	52 262	52 263	52 264
A	620	712	731
B	386	460	479
C	234	252	
D	200	250	
E	62	82	
E ₁	60	80	
F	346	420	
G	340	445	
G ₁	456	562	
J	120	145	
K	70	100	
L	90	110	
M	140	200	
N	41	60	
O	14	18	
S	56	70	
T	4	7	
U	25	30	
X	65	80	
Y	41	55	
Z	273	278	
d	40 h 8	50 h 8	
d ₁	40 H 7	50 H 7	
d ₂	3x 20H8	3x 25H8	
b	12 P9	16 P9	
h	8	10	
e	35	43,8	

Modact MPS

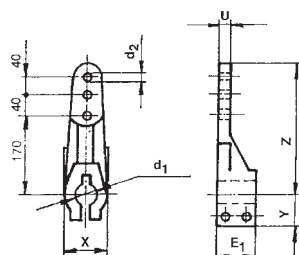


Modact MPS Control

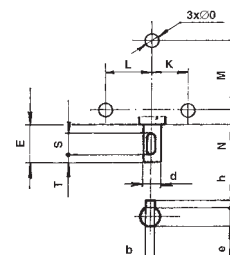


	52 262	52 263	52 264
A	370	440	
B	250	275	

Lever



Base board - holes



52 222
52 223



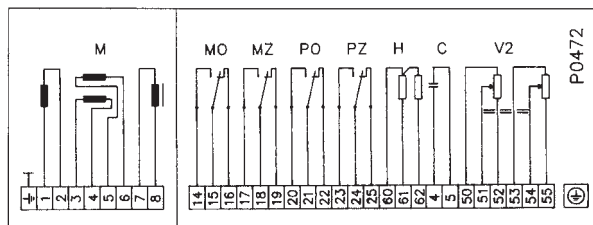
Electric actuators
Modact Variant MPR
ZPA Pečky

Technical data

Type	Modact Variant MPR
Voltage	230 V ± 6%
Frequency	50 Hz
Motor power	50 W
Control	Continuous
Torgue range	250 to 4000 Nm
Travel range	60° to 160°
Enclosure	IP 55
Process media max. temperature	Acc. to used valve
Ambient temperature range	-25 to 55 °C
Ambient humidity range	10 - 100 % with condensation
Weight	max. 282 kg

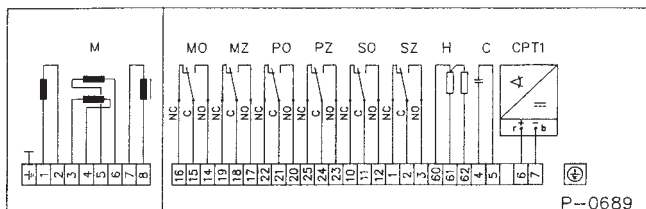
Wiring diagram of actuator

Execution - terminal board
With resistance transmitter 2x100 Ω

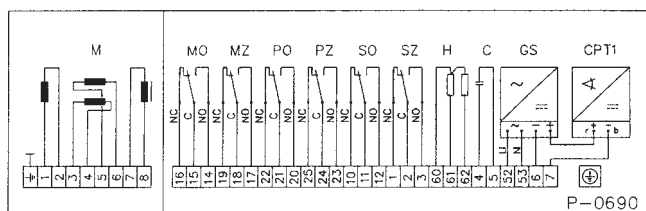


- MO torque switch in "opening" direction
- MZ torque switch for "closing" direction
- PO limit switch in "opening" direction
- PZ limit switch in "closing" direction
- SO signalisation switch in "opening" direction
- SZ signalisation switch in "closing" direction
- H heaters
- CPT1 capacity position transmitter
CPT1/A 4 - 20 mA
- V2 resistance position transmitter 2 x 100 Ω
- GS power supply source for current transmitter 230V/24V
- M induction, two-phase motor
- C capacitor
- S terminal board
- Z plug "KBNS"

With current transmitter CPT1/A, without built-in power supply source



With current transmitter CPT1/A with built-in power supply source



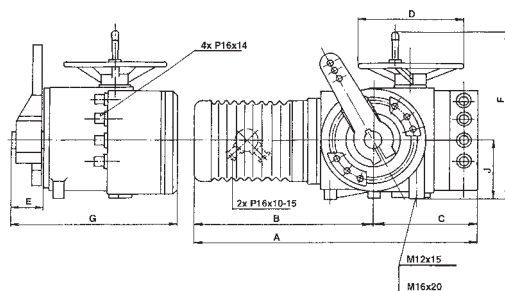
Specification of actuator Modact Variant MPR

Type	Nominal torque [Nm]	Max. torque [N/m]	Running time range [sec/90°]	Electromotor			Oil filling [kg]	Weight [kg]	Specification No.		
				[W]	[μF]	BF/RF [A]			Basic	Additional	
MPR 25-40	250-400	1400	10-19	50	8	0,6/0,6	4,4	104	52 222	XX0X	
MPR 40-63	400-630	1750	14-30							XX1X	
MPR 63-100	630-1000	2650	30-55							XX2X	
MPR 100-200	1000-2000	4550	50-80	50	8	0,6/0,6	4,4	282	52 223	XX0X	
MPR 160-300	1600-3000	5950	73-138							XX1X	
MPR 250-400	2500-4000	8940	130-195							XX2X	
Execution, electrical connection :											
Via terminal board										6XXX	
With conector KBSN										7XXX	
Operating travel							60° for 52 222		67,5° for 52 223		X1XX
							90° for 52 222		90° for 52 223		X2XX
							120° for 52 222		112,5° for 52 223		X3XX
							160° for 52 222		157° for 52 223		X4XX
							90° for 52 222; direct connection.				X5XX
Additional electric equipment		Execution without position transmitter								XXX1	
		V2 Position resistance transmitter 2 x 100 Ω								XXX0	
		CPT1+GS Position current transmitter CPT 1/A 4-20 mA with built-in power supply source								XXX7	
		CPT1 Position current transmitter CPT 1/A 4-20 mA wo. built-in power supply source								XXX9	
Stem		with single stem For export only								XXXX/3	
		with double stem For export only								XXXX/4	

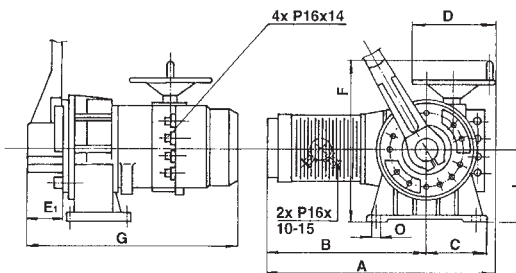
Dimensions of actuator Modact Variant MPR

	52 222	52 223
A	782	793
B	517	548
C	265	220
D	□250	□300
E	85	123
E ₁	80	120
F	420	560
G	555	750
J	145	260
K	100	185
L	110	---
M	200	200
N	57	33
O	□18	□22
P	40	55
R	170	400
S	70	180
T	7	11
U	30	36
X	80	130
Y	55	80
Z	278	490
d	□50 h 8	□90 h 8
d ₁	□40 h 7	□90 h 7
d ₂	3x 25H8	3x 40h8
b	16 P9	25 P9
h	10	14
e	43,8	81,3

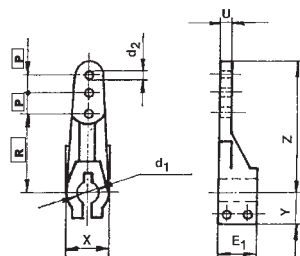
Modact Variant MPR 52 222



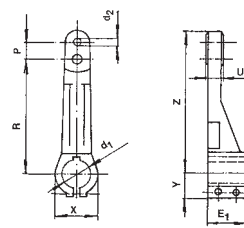
Modact Variant MPR 52 223



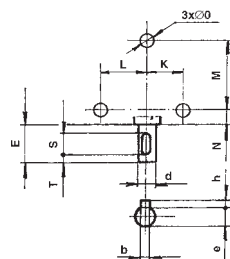
Lever



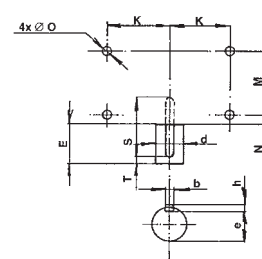
Lever



Base board - holes



Base board - holes



Maximal permissible pressures acc. to EN 12 516-1 [MPa]

Material	PN	Temperature [°C]							
		200	250	300	350	400	450	500	550
Cast steel 1.0619	10	0.71	0.65	0.59	0.55	0.53	---	---	---
	16	1.14	1.04	0.94	0.88	0.84	---	---	---
	25	1.78	1.62	1.47	1.37	1.32	---	---	---
	40	2.84	2.60	2.35	2.19	2.11	---	---	---
	63	4.48	4.09	3.71	3.45	3.33	---	---	---
	100	7.11	6.50	5.89	5.48	5.28	---	---	---
	160	11.4	10.4	9.4	8.8	8.4	---	---	---
	250	17.8	16.2	14.7	13,7	13,2	---	---	---
Alloy steel 1.7357	10	0.93	0.89	0.83	0.77	0.72	0.67	0.56	0.22
	16	1.49	1.43	1.33	1.23	1.15	1.07	0.89	0.35
	25	2.33	2.23	2.08	1.93	1.80	1.67	1.39	0.55
	40	3.47	3.57	3.33	3.09	2.89	2.67	2.23	0.88
	64	5.88	5.63	5.24	4.86	4.55	4.20	3.51	1.39
	100	9.34	8.93	8.32	7.71	7.22	6.67	5.57	2.21
	160	14.9	14.3	13.3	12.3	11.5	10.7	8.69	3.50
	250	23.3	22.3	20.8	19.3	18	16.7	13.9	5.50

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