

02 - 05.1

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**Control valves
G 45 ...**



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

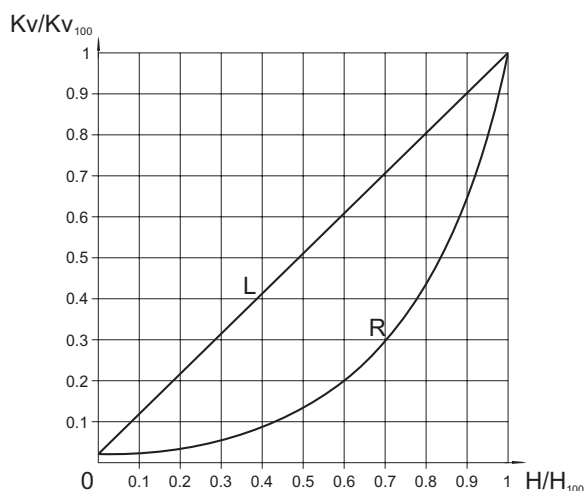
Cavitation

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



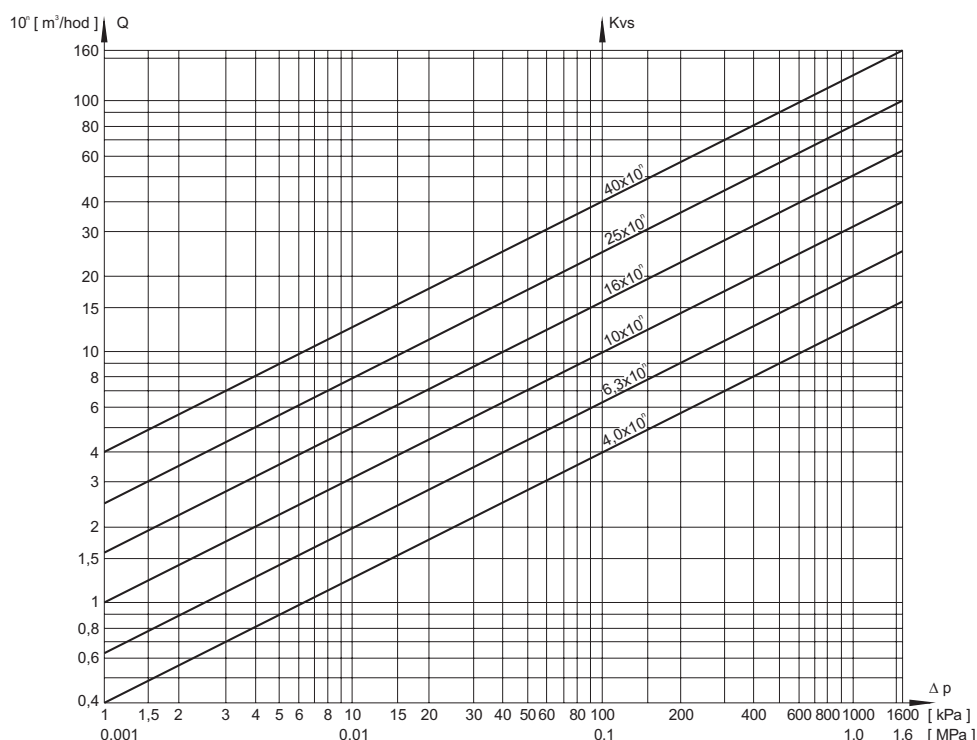
L - linear characteristic

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

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

Valve complete specification No. for ordering G 45

		X XX	X X X	- X XXX	/ XXX	- XXX
1. Valve	Control valve	G				
2. Series	Lever control valve, double-seated	45				
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 45 115 ...

Lever control valves DN 150 to 400, PN 16 to 100

Description

The valve is double-seated, lever-actuated designed to be actuated with an electric or a pneumatic actuator possibly with an electric or a hydraulic cylinder. It is also 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 can be delivered with lever actuators of the following producer: ZPA Pečky - Modact 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, reducing or by-pass element with indirect, possibly with direct actuating. The max. permissible operating pressures acc. to EN 12 516-1 see page 14 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 of vapours and gases e.g. water, steam and other media compatible with material of material of the valve inner parts. The valve max. differential pressure value 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 up 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.

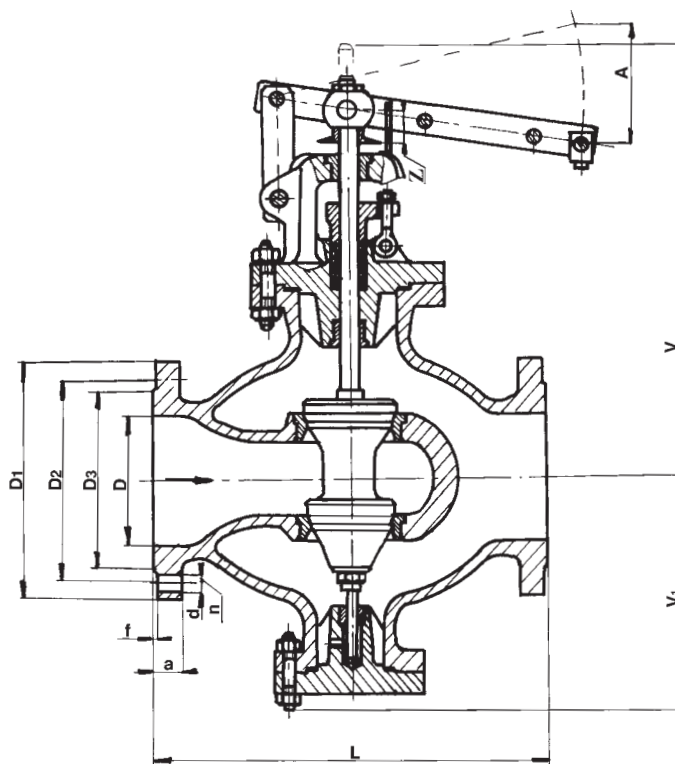
Technical data

Series	G 45 115 240	G 45 115 2100	G 45 115 516	G 45 115 525	G 45 115 540	G 45 115 564	G 45 115 5100
Type of valve	Lever control valve, flanged, straight-through, double-seated						
Nominal size range	200	150	200, 300, 400	200, 400	200, 400	150	150
Nominal pressure	40	100	16	25	40	64	100
Body material	Alloy steel 1.7357			Carbon steel 1.0619			
Operating temp. range	-20 to 550°C			-20 to 400°C			
Connection*	ČSN 13 1213	ČSN 13 1215	ČSN 13 1211	ČSN 13 1212	ČSN 13 1213	ČSN 13 1214	ČSN 13 1215
Type of trim	seat / 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]	17 - 200	10 - 110	17 - 408	17 - 408	17 - 408	10 - 110	10 - 110
Kvs values range	76,5 - 900	45 - 495	76,5 - 1836	76,5 - 1836	76,5 - 1836	45 - 495	45 - 495
Leakage rate	Class III acc. to ČSN EN 1349 (5/2001)						

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

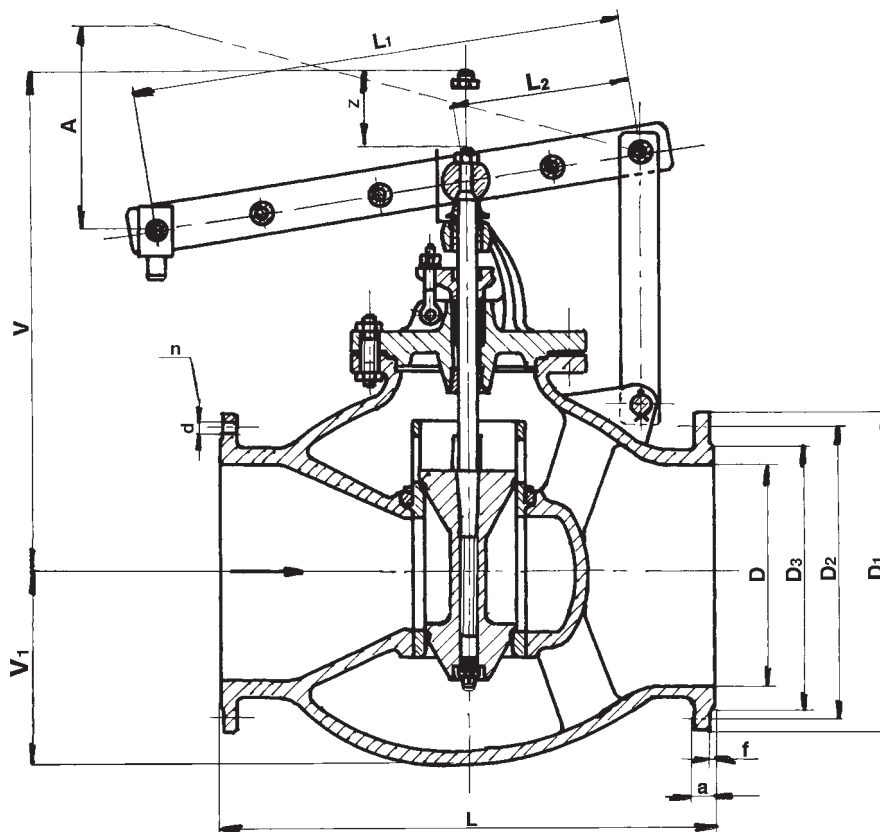
Dimensions and weights for the type G 45 115 DN 150 to 300

Type	G 45 115 516		G 45 115 525	G 45 115 240 G 45 115 540		G 45 115 564	G 45 115 2100 G 45 115 5100	
	DN	[mm]	200	300	200	200	150	150
D	[mm]	200	300	200	200	150	150	
L	[mm]	600	850	600	600	600	600	
~V	[mm]	680	930	680	680	660	660	
~V ₁	[mm]	360	500	360	360	360	360	
D ₁	[mm]	335	460	360	375	340	350	
D ₂	[mm]	295	410	310	320	280	290	
D ₃	[mm]	268	378	278	280	240	250	
A	[mm]	270	270	270	270	280	280	
f	[mm]	3	4	3	3	3	3	
a	[mm]	24	28	30	34	36	44	
d	[mm]	23	27	27	30	33	33	
n	[mm]	12	12	12	12	8	12	
Fs	[cm ²]	17-200	40-250	17-200	17-200	10-110	10-110	
Kvs	[m ³ /h]	76,5-900	180-1125	76,5-900	76,5-900	45-495	45-495	
m	[kg]	380	600	380	380	400	420	



Dimensions and weights for the type G 45 115 DN 400

Type	G 45 115 516		G 45 115 525	G 45 115 540
	DN	[mm]	400	400
D	[mm]	400	400	400
L	[mm]	900	900	900
L ₁	[mm]	856	856	856
L ₂	[mm]	306	306	306
~V	[mm]	910	910	910
~V ₁	[mm]	360	360	360
D ₁	[mm]	580	610	655
D ₂	[mm]	525	550	585
D ₃	[mm]	490	505	535
A	[mm]	280	280	280
f	[mm]	4	4	4
a	[mm]	50	50	50
d	[mm]	30	33	40
n	[mm]	16	16	16
Fs	[cm ²]	80-408	80-408	80-408
Kvs	[m ³ /h]	360-1100	360-1100	360-1100
m	[kg]	1023	1023	1023





G 45 125 ...

**Control valves
DN 300, PN 40**

Description

The valve is double-seat, lever-actuated, designed to be actuated with an electric actuator, possibly with an electric or a hydraulic cylinder. It is also 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 can be delivered with lever actuators of the following producer: ZPA Pečky - Modact 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's lever and the actuator is not a subject of the delivery unless it is ordered.

Application

The valve serves as a control, reduction or a by-pass valve with indirect or direct actuating. The max. permissible operating pressures acc. to EN 12 516-1 see page 14 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 of vapours and gases e.g. water, steam and other media compatible with material of the valve inner parts. The valve max. differential pressure value 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 up 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.

Technical data

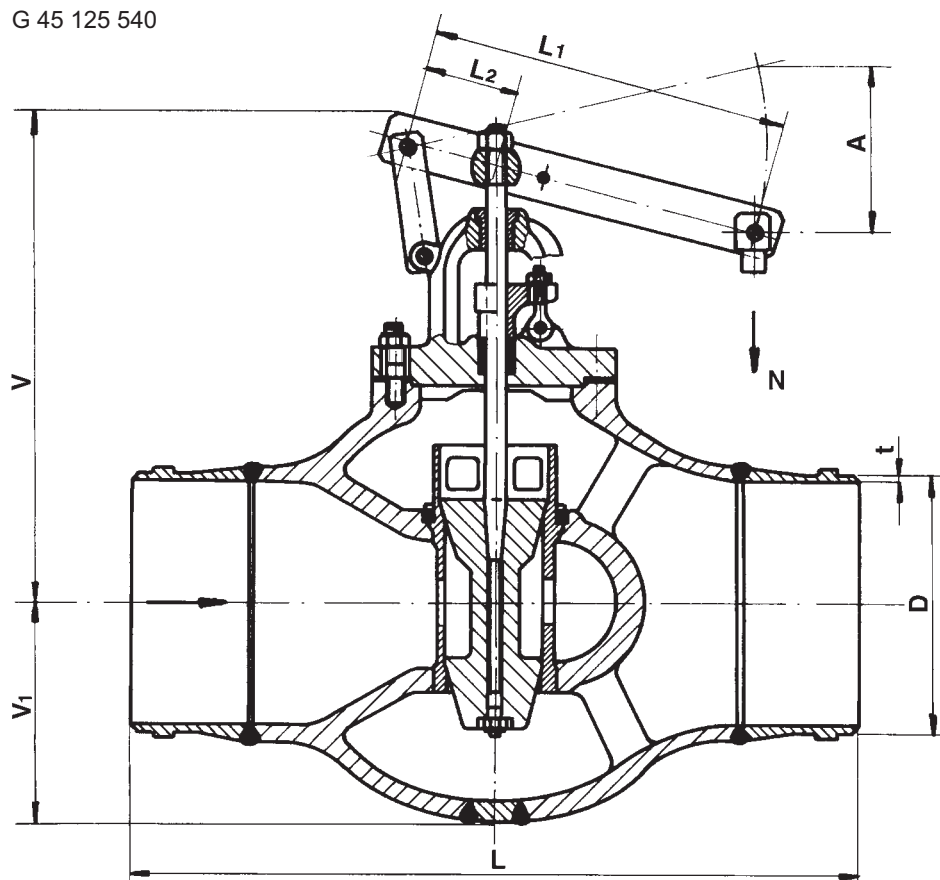
Series	G 45 125 240	G 45 125 540
Type of valve	Control valve, flanged, straight-through, double-seated	
Nominal size	300	
Nominal pressure	40	
Body material	Alloy steel 1.7357	Carbon steel 1.0619
Operating temperature range	-20 to 450°C	-20 to 400°C
Connection *	ČSN 13 1070 (1984)	
Type of trim	Seat - contoured plug	
Flow characteristic	Linear, equal-percentage acc. to ČSN EN 60 534-1 (4/1997)	
Flow area range F_s [cm ²]	40 - 175	
Kvs values range	180 - 787,5	
Leakage rate	Class III acc. to ČSN EN 1349 (5/2001)	

*) After the agreement with the producer, it is possible to make the connection acc. to the valid ČSN 13 1075 (3/1991) or ČSN EN 12 627 (8/2000)

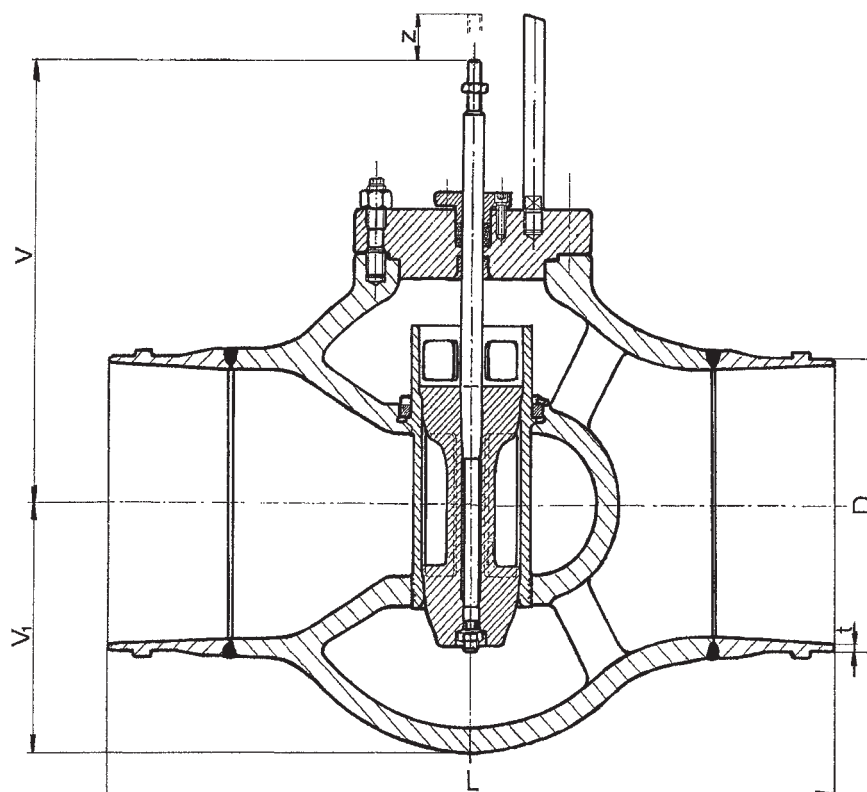
Dimensions and weights for G 45 125 DN 300

Type		G 45 125 540	G 45 125 240
DN	[mm]	300	300
D	[mm]	324	324
L	[mm]	900	900
~V	[mm]	660	494
~V ₁	[mm]	265	265
t	[mm]	8	8
L ₁	[mm]	440	---
L ₂	[mm]	110	---
A	[mm]	240	---
z	[mm]	---	60
F _s	[cm ²]	40-175	40-175
K _{vs}	[m ³ /h]	180-787,5	180-787,5
m	[kg]	375	300

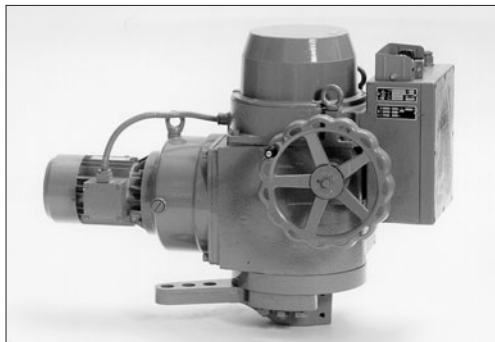
G 45 125 540



G 45 125 240



52 262
52 263
52 264



Electric actuators Modact MPS and Modact MPS Control ZPA Pečky

Technical data

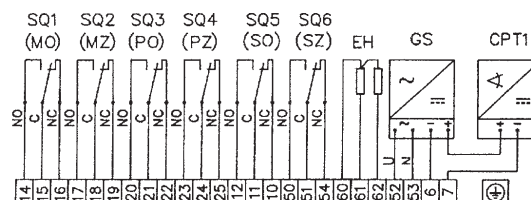
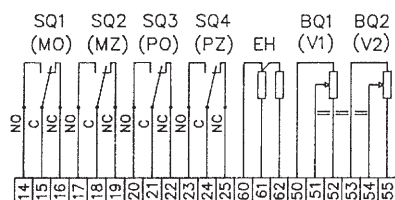
Type	Modact MPS	Modact MPS Control
Voltage	3 x 230 V / 400 V ± 6%	
Frequency	50 Hz	
Motor power	See specification table	
Control	2 - position or 3 - position control	
Torque range	160 to 1250 Nm	
Travel range	60° to 160°	
Enclosure	IP 55	
Process media max. temperature	Acc. to used valve	
Ambient temperature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

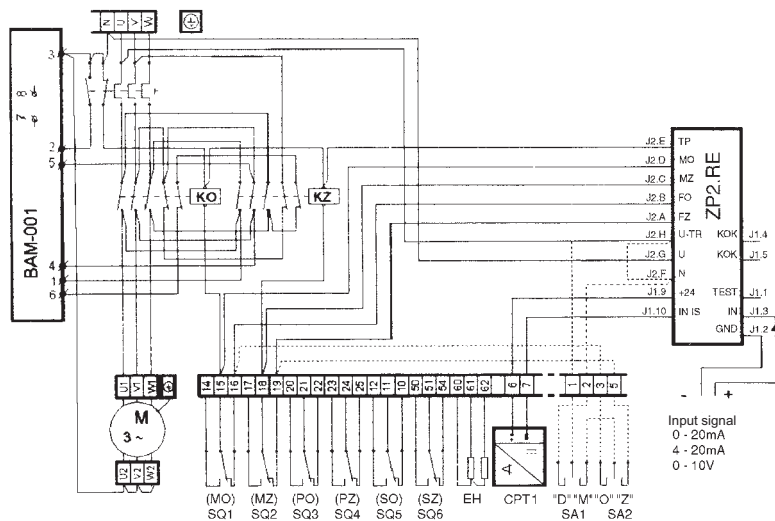
Position transmitter : resistance 2x100 Ω

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 connector 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

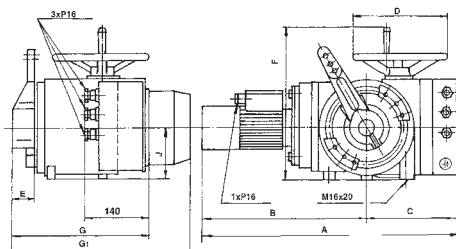
Additional equipment for actuators Modact MPS	Resistance position transmitter 2 x 100 Ω	XXX1
	Execution without any position transmitter	XXX0
	Current pos. transmitter CPT 1/A 4-20 mA with built-in power supply generator	XXX7
	Current pos. transmitter CPT 1/A 4-20 mA wo. built-in power supply generator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

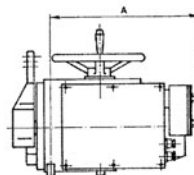
Dimensions of actuator Modact MPS and Modact MPS Control

	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

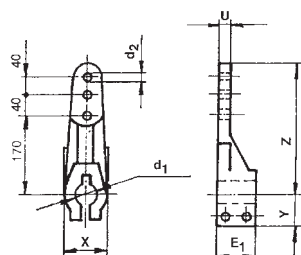


Modact MPS Control

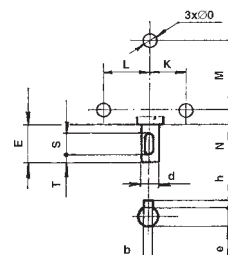


	52 262	52 263	52 264
A	370	440	
B	250	275	

Lever



Base board - holes



52 222
52 223



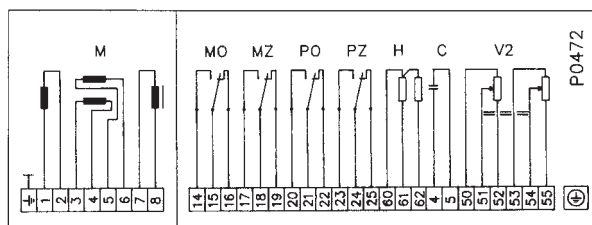
Electric actuators
Modact Variant MPR
ZPA Pečky

Technical data

Type	Modact Variant MPR
Voltage	230 V ± 6%
Frequency	50 Hz
Motor power	50 W
Control	Continuous
Torque 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

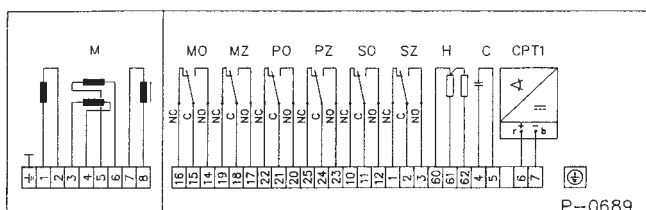
Wiring diagram of actuator

Execution - terminal board
With resistance transmitter 2x100 Ω

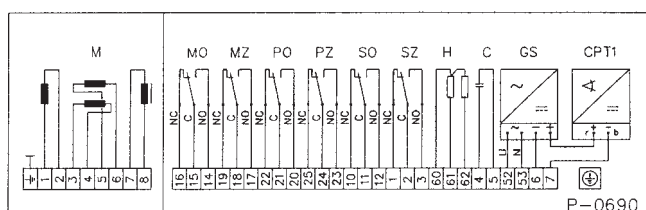


- MO torque switch in "opening" direction
- MZ torque switch for "closing" direction
- PO limit switch in "opening" direction
- PZ limit switch in "closing" direction
- SO signalisation switch in "opening" direction
- SZ signalisation switch in "closing" direction
- H heaters
- CPT1 capacity position 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



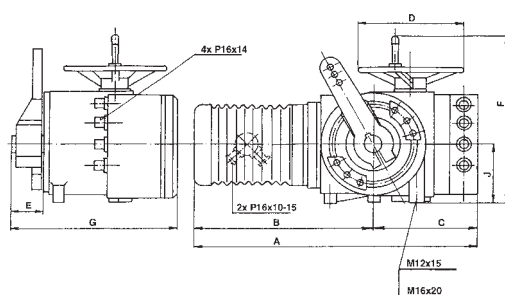
Specification of actuator Modact Variant MPR

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 generator						XXX7
		CPT1		Position current transmitter CPT 1/A 4-20 mA wo. built-in power supply generator						XXX9
Stem		with single stem				For export only				XXXX/3
		with double stem				For export only				XXXX/4

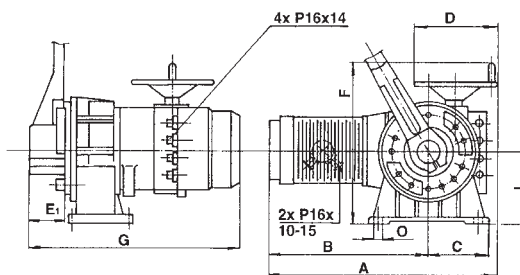
Dimensions of actuator Modact Variant MPR

	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

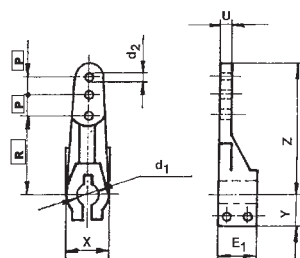
Modact Variant MPR 52 222



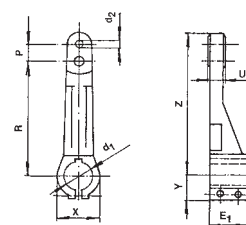
Modact Variant MPR 52 223



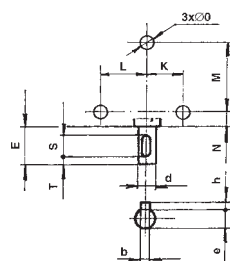
Lever



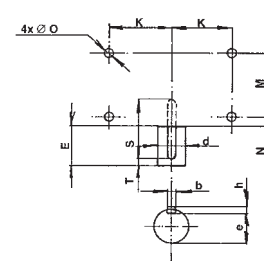
Lever



Base board - holes



Base board - holes





Electric actuators Modact MTR ZPA Křižík Prešov

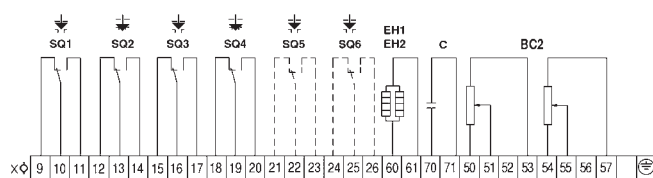
Technical data

Type	Modact MTR
Voltage	230 V
Frequency	50 / 60 Hz
Motor power	16 or 25 W
Control	3 - pos. c. (in connection with NOTREP positioner - continuous)
Nominal force	6.3, 10, 16, 25 kN
Travel	12,5 to 100 mm
Enclosure	IP 54 (IP 65 on request)
Process medium max. temperature	Acc. to used valve
Ambient temperature range	-25 to 55°C
Ambient humidity limit	90 % (tropical version: 100 % with condensation)
Weight	27 to 31 kg

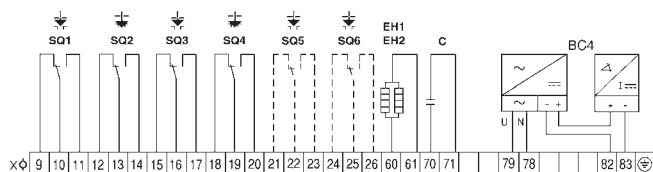
Wiring diagram of actuator

Execution - terminal board

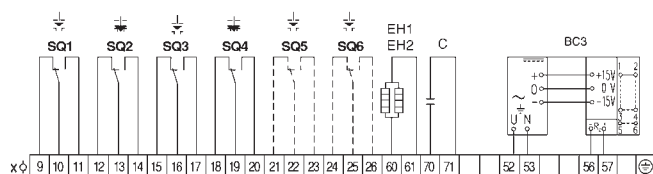
Wiring diagram with resistance transmitter 2x100 Ω



Wiring diagram with capacity transmitter 4 - 20 mA (with its source)



Wiring diagram with inductive transmitter (0) 4 - 20 mA; 0 - 5 mA



- SQ1 (MO) power switch in "opening" direction
- SQ2 (MZ) power switch in "closing" direction
- SQ3 (PO) limit switch in "opening" direction
- SQ4 (PZ) limit switch in "closing" direction
- SQ5 (SO) signalisation switch in "opening" direction
- SQ6 (SZ) signalisation switch in "closing" direction
- EH1, EH2 heaters 2 x TR 551 10k/A
- BC2 resistance position transmitter 2 x 100 Ω
- BC3 inductive position transmitter (0) 4 - 20 mA; 0 - 5 mA
- BC4 capacity position transmitter 4 - 20 mA
- C capacitor
- X terminal board

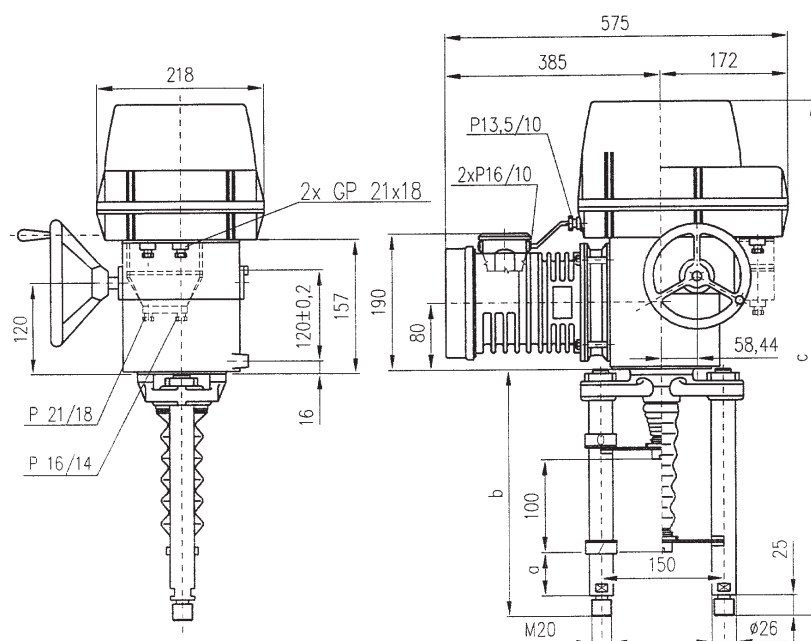
Specification of Modact MTR

Electric actuator MTR, linear										52 420.	X	X	X	X	/	X	X
Execution CX - as standard (-25°C to 55°C), connection via terminal board										0							
Execution T2 - tropical (-25°C to 55°C, 100% condensation), connection via terminal board										6							
Travel [mm]										16							
										25							
										32							
										40							
										63							
Linear unit with acme thread Tr 26x5																	
Nominal linear force ¹⁾	6300	Operating linear force	4000 - 6300	Nominal speed	32	Operating speed	38 - 32	Maximal linear force ²⁾	19000		0						
	4000		2500 - 4000		50		60 - 50		13000		1						
	10000		6300 - 10000		32		38 - 32		30000		2						
	6300		4000 - 6300		50		60 - 50		20000		3						
Linear unit with ball bolt K 25x5																	
Nominal linear force ¹⁾	16000	Operating linear force	10000 - 16000	Nominal speed	32	Operating speed	38 - 32	Maximal linear force ²⁾	39000		4						
	10000		6300 - 10000		50		60 - 50		30000		5						
	25000		10000 - 25000		32		38 - 32		55000		6						
	16000		10000 - 16000		50		60 - 50		40000		7						
	10000		6300 - 10000		63		75 - 63		39000		8						
	6300		4000 - 6300		100		120 - 100		29000		9						
Transmitter										Without transmitter							0
										Resistance		2 x 100 Ω					1
												1 x 2000 Ω					2
												2 x 2000 Ω					3
												1 x 2000 Ω + 1x100 Ω					4
										Inductive [mA]		(0) 4 - 20					5
												0 - 5					6
										Capacity [mA]		4 - 20 (with its generator)					7
4 - 20 (without its generator)					8												
Special mechanical connection										Columns UNL							7
										Columns Č. Třebová							8
										2 signalisation switches SQ5, SQ6							

1) Switching-off linear force is set to nominal value with tolerance of + 30 %.

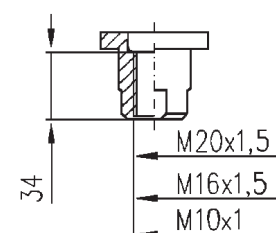
2) Measured linear force with motor running into short-circuit state with voltage of 230 V on position controller.

Dimensions of Modact MTR



	With acme thread			With ball bolt		
Columns ČT	130	378	707	130	400	729
Columns UNL	74	320	649	74	344	673

Detail of coupling



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

Material	PN	Temperature [°C]							
		200	250	300	350	400	450	500	550
Cast steel 1.0619	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	---	---	---
Alloy steel 1.7357	40	3.74	3.57	3.33	3.09	2.89	2.67	5.57	2.21
	100	9.34	8.93	8.32	7.71	7.22	6.67	8.90	3.50

Notes:

Notes: