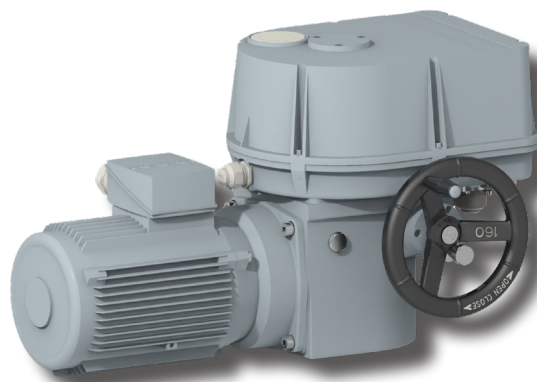


STANDARD

MO 3

STANDARD EQUIPMENT:

- Voltage 3x400 V AC
- Terminal board connection
- 2 torque switches
- 2 position switches
- 2 additional position switches
- Space heater with thermal switch
- Motor's thermal protection PTO ¹⁾
- Mechanical connection - flange
- Mechanical position indicator
- Torque switches blocking in limit position
- Manual control
- Protection code IP 66



Specification table MO 3

Order code

093. X - X X X X X / X X

Climate resistance	Ambient temperature	Corrosivity category ¹⁰⁾	Enclosure	
Standard	-25°C ... +60°C	C3	IP 55	0
			IP 67	1
Tropics and Wet	-25°C ... +60°C	C4	IP 67	2
Cold	-50°C ... +40°C	C3	IP 55	4
			IP 67	3
Tropical dry and Dry	-25°C ... +60°C	C3	IP 55	5
			IP 67	6
Sea	-50°C ... +40°C	C4	IP 67	7
Arctic	-60°C ... +40°C	C3	IP 55	9
			IP 67	8

Electric connection	Electric motor supply voltage and frequency ²⁵⁾		Wiring diagram	
To terminal board	Y/Δ380 V AC	50 Hz	Z279c	0
	Y/Δ400 V AC	50 Hz	Z279c	1
	Y/Δ380 V AC - with reversing unit	50 Hz	Z297b	2
	Y/Δ380 V AC - with reversing unit	50 Hz	Z297b	3
	230 V AC	50 Hz	na požiadavku	9
	220 V AC	50 Hz	na požiadavku	L
To connector ²¹⁾	Y/Δ380 V AC	50 Hz	ZK279c	5
	Y/Δ400 V AC	50 Hz	ZK279c	6
	Y/Δ380 V AC - with reversing unit	50 Hz	ZK297b	4
	Y/Δ380 V AC - with reversing unit	50 Hz	ZK297b	7
	230 V AC	50 Hz	on request	8
	220 V AC	50 Hz	on request	P

Next page

Order code

093. X - X X X X X / X X

Switching-off torque ³¹⁾	Max. load torque		Operating time	Electric motor 3x400 V, 50Hz ³⁴⁾			
	ON - OFF duty ³²⁾	Modulating duty ³³⁾		Power	Speed	Current	
25-45 Nm	27 Nm	18 Nm	10 min ⁻¹	180 W	800 min ⁻¹	0.84 A	A
			16 min ⁻¹	250 W	1 365 min ⁻¹	0.80 A	D
			25 min ⁻¹	250 W	1 365 min ⁻¹	0.80 A	J
			40 min ⁻¹	250 W	1 350 min ⁻¹	0.80 A	Q
			63 min ^{-1 36)}	370 W	1 350 min ⁻¹	1.08 A	R
			90 min ^{-1 36)}	1 100 W	2 840 min ⁻¹	2.45 A	T
45-90 Nm	54 Nm	36 Nm	10 min ⁻¹	180 W	800 min ⁻¹	0.84 A	B
			16 min ⁻¹	250 W	1 365 min ⁻¹	0.80 A	E
			25 min ⁻¹	370 W	1 350 min ⁻¹	1.08 A	L
			40 min ⁻¹	370 W	1 350 min ⁻¹	1.08 A	P
			60 min ^{-1 36)}	750 W	1 385 min ⁻¹	1.85 A	U
			95 min ^{-1 36)}	750 W	1 385 min ⁻¹	1.85 A	K
90-150 Nm	90 Nm	60 Nm	10 min ⁻¹	180 W	800 min ⁻¹	0.84 A	H
			16 min ⁻¹	370 W	1 350 min ⁻¹	1.08 A	G
			25 min ⁻¹	370 W	1 350 min ⁻¹	1.08 A	N
			40 min ⁻¹	550 W	900 min ⁻¹	1.68 A	M
			60 min ^{-1 36)}	750 W	1 385 min ⁻¹	1.85 A	2
			95 min ^{-1 36)}	1 500 W	2 830 min ⁻¹	3.15 A	Y
130-250 Nm ³⁵⁾	150 Nm	100 Nm	10 min ⁻¹	180 W	915 min ⁻¹	1.23 A	3
			16 min ⁻¹	750 W	1 385 min ⁻¹	1.85 A	4
			25 min ⁻¹	750 W	1 385 min ⁻¹	1.85 A	5
			50 min ⁻¹	1 100 W	1 440 min ⁻¹	2.50 A	6

Control board version	Switches	Revolutions ⁴⁴⁾		Wiring diagram	
		Without transmitter	With potentiometer		
Electromechanical control board with step counter unit without local controls	S1/S2, S3/S4, S5/S6	1 - 3	1.75; <u>3</u>	Z403a+Z41a	1
		2.5 - 685	5.7; 10.5; 19; <u>34</u> ; 63; 113;206;375;685	ZK403a+ZK41a	2
	S1/S2, S3/S4, with tandem switches S13/S14	1 - 3	1.75; <u>3</u>	Z461f+Z41a	K
		2.5 - 685	5.7; 10.5; 19; <u>34</u> ; 63; 113;206;375;685	ZK461f+ZK41a	L
Electromechanical control board with step counter unit with local controls	S1/S2, S3/S4, S5/S6	1 - 3	1.75; <u>3</u>	Z635g+Z41a	5
		2.5 - 685	5.7; 10.5; 19; <u>34</u> ; 63; 113;206;375;685	ZK635g+ZK41a	6
	S1/S2, S3/S4, with tandem switches S13/S14	1 - 3	1.75; <u>3</u>	Z636d+Z41a	U
		2.5 - 685	5.7; 10.5; 19; <u>34</u> ; 63; 113;206;375;685	ZK636d+ZK41a	V

Next page

Notes:

- 1) Cut-off temperature 150°
 10) Climate resistance according to ISO 9223 / EN ISO 12944-2.
 21) The version with connector in -40° C only.
 25) Iné napätia po dohode s výrobcem (3x500 V; 3x480 V; 3x415V).
 31) Required switch-off torque must be stated in the order. If not specified it is adjusted to the maximum torque.
 The starting torque is at least 1.3 times the maximum closing torque of the selected range.
 32) Duty cycle S2-15min, or S4-25%, 6-90 cycles per hour.
 33) Duty cycle S4-25%, 90-1200 cycles per hour.
 34) For 60 Hz, the operating speed increases 1.2 times and the max. torque decreases 0.8 time.

- 35) Do not use for connection A with flange F10.
 36) Do not use for operation mode S4-25%, 90-1200 cycles/hour. It can only be used with an additional gearbox.
 44) Position switches S3, S4 are being set to specified number of revolutions. If it is not stated in the order, they will be set to 16 operating revolutions. When required settings are out of values listed in table, ohmic value of potentiometer will be reduced accordingly. If less than 75% of revolutions is required, value of output signals from electronic transmitter will be reduced accordingly as well..
 51) Not valid for temperatures of -60°C.
 52) CPT - capacitive transmitter, DCPT 3M - contactless transmitter.
 61) Up to switch-off torque of 80 Nm.
 62) Up to switch-off torque of 100 Nm.

Order code

093. X - X X X X X / X X

Transmitter		Connection	Output	Wiring diagram	
Without transmitter		-	-	-	A
Potentiometer	Single	-	1 x 100 Ω	Z5c/ZK5c	B
			1 x 2 000 Ω		F
	Double	-	2 x 100 Ω	Z6c/ZK6c	K
			2 x 2 000 Ω		P
Electronic position transmitter ⁵¹⁾	Passive	2-wire	4 - 20 mA	Z10g/ZK10g	S
		3-wire	0 - 20 mA	Z257b/ZK257b	T
			4 - 20 mA		V
			0 - 5 mA		Y
	Active	2-wire	4 - 20 mA	Z269r/ZK269r	Q
		3-wire	0 - 20 mA	Z260h/ZK260h	U
			4 - 20 mA		W
			0 - 5 mA		Z
Electronic position transmitter ⁵¹⁾	Passive	3-wire	0-10 V	Z257m/ZK257m	D
	Active		0-10 V	Z260k/ZK260k	R
Current ^{51) 52)} CPT	Passive	2-wire	4 - 20 mA	Z10g/ZK10g	I
		3-wire	0 - 5 mA	Z257n/ZK257n	5
	Active	2-wire	4 - 20 mA	Z269r/ZK269r	J
		3-wire	0 - 5 mA	Z260m/ZK260m	6
Current ^{51) 52)} DCPT 3M	Passive	2-wire	4 - 20 mA	Z10g/ZK10g	2
	Active		4 - 20 mA	Z269r/ZK269r	3

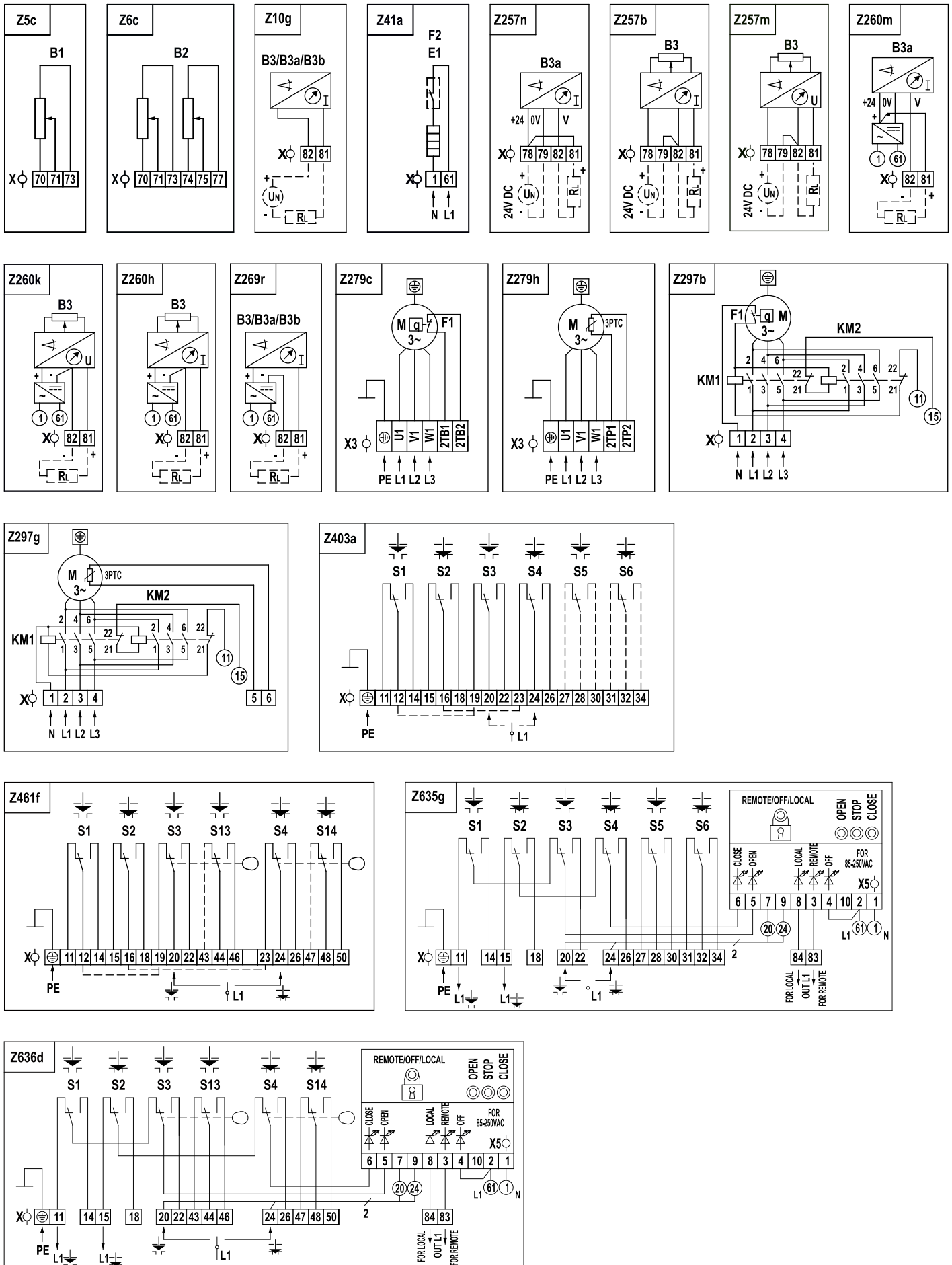
Mechanical connection		Flange	Coupling shape		Dimensional drawing		
Without connect adapter	non-standard	Ø80 ⁶¹⁾	4-tooth	Z30°+M60° - Ø28/Ø40	P-1012d	P-1102/01	A
		Ø102 ⁶¹⁾	4-tooth	Z30°+M60° - Ø28/Ø40		P-1102/02	B
		Ø102	4-tooth	Z45°+M45° - Ø28/Ø40		P-1102/03	0
		Ø102	4-tooth	Z45°+M45° - Ø35/Ø52		P-1102/04	J
	ISO 5210	F10	B3	Ø20		P-1103/03	C
	non-standard	F10	C	14/Ø28/Ø40		P-1103/01	D
			C	14/Ø35/Ø52		P-1103/04	H
	ISO 5210	F10 ⁶¹⁾	D	Ø20		P-1103/02	E
	non-standard	F14	4-tooth	Z45°+M45° - Ø35/Ø52		P-2029	N
	ISO 5210		B3	Ø30		P-2067	P
	non-standard		C	20/Ø35/Ø52		P-2023	R
	ISO 5210		D	Ø30		P-2024	S
With connect adapter	ISO 5210	F10 ⁶²⁾	A	Max. TR26	P-1012d	P-1848	F
			A	Max. TR32		P-2027/B	M
		F10	B1	Ø42/Ø28/50		P-1849/A	G
			B1	Ø42/Ø35/50		P-1849/B	Q
		F14	A	Max. TR32		P-2027/A	T
			B1	Ø60/Ø35		P-2028/B	V
			B2	Ø45/Ø35		P-2028/A	U
		non-standard	F14	C		20/Ø28/Ø60	P-1853
	ГОСТ P 55510-2013	Ø104/4xØ15/Ø70 ⁶²⁾	A4(АČ)	□19x19		P-1376b1	4
			AK(AK)	Ø28/Ø46		P-1376b2	5
				Ø32/Ø46		P-1376b2	7
			Ø135/4xØ13/Ø108	Б (B)		Ø35/Ø59	P-2066/A

Next page

Additional equipment		Wiring diagrams		
	No additional equipment. Adjusted to max. switching-off torque of chosen range and 3 or 34 operating revolutions	-		
B	Switching-off torque adjustment to the required value	-	0	1
C	Adjustment of revolutions to the required value	-	0	3
F	Electric motor with thermal protection 3PTC, 150 °C.	Z279h / ZK279h Z297g / ZK297g	1	5
H	Gold coated contacts of microswitches, details after consulting with producer	-	4	0
Allowed combinations and code of version: B+C=06, B+F=07, B+H=41, B+C+H=44, C+H=42, C+F=08, B+C+F=09				

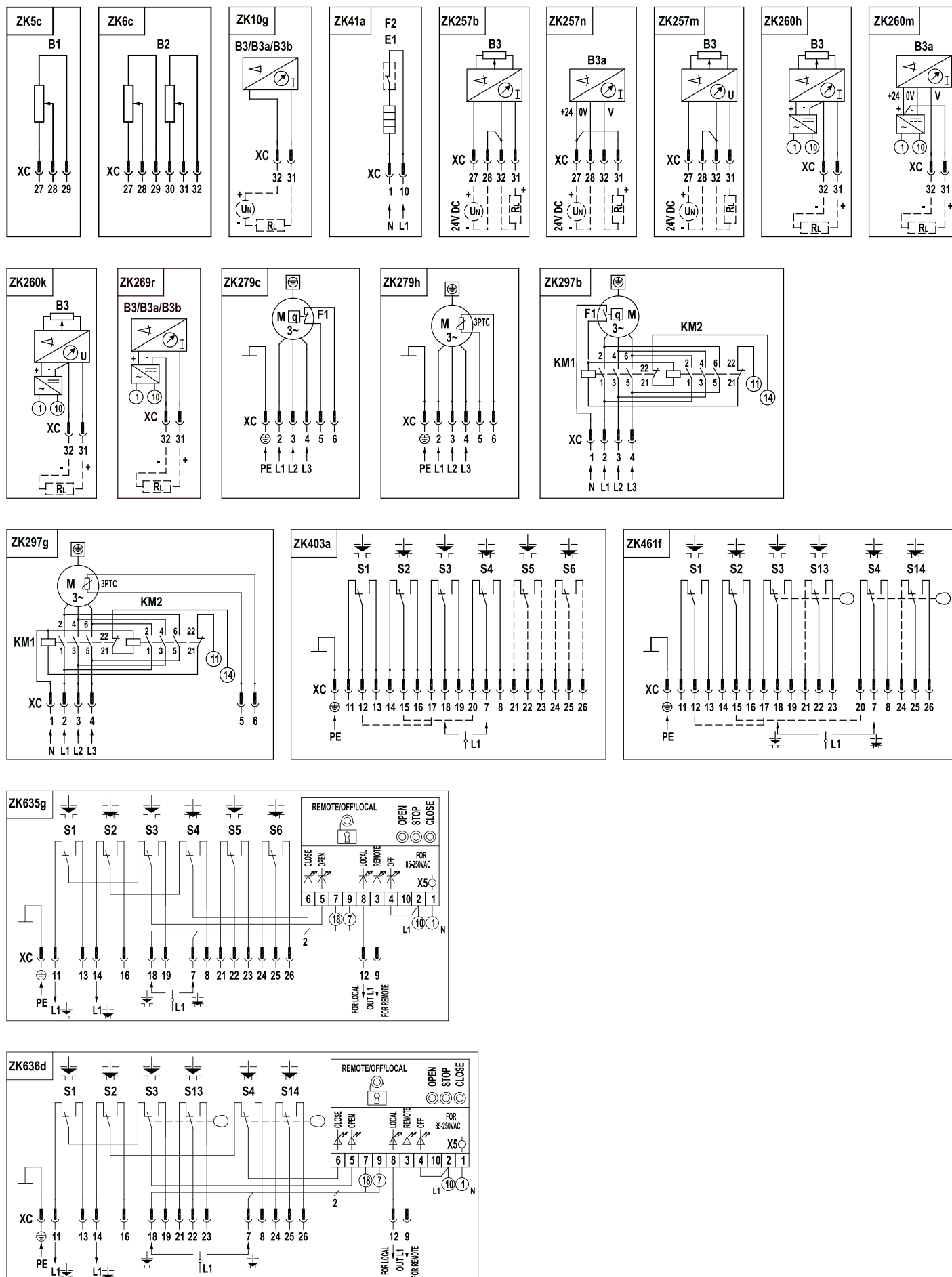
Wiring diagrams

Terminal board connection



Wiring diagrams

Connector connection



Electric connection of actuator to terminal board:

- max. 32 terminals
- max. wire cross-section 2,5 mm²
- 2 cable glands M25x1.5 out of control board for cable diameter 12.5 to 19 mm
- 1 cable gland M25x1,5 out of electromotor for cable diameter 12.5 to 19 mm

Electric connection of actuator to connector:

The control section and electromotor are connected to common connector (XC) via:

- max. 32 terminals
- max. wire cross-section 0,5 mm²
- 1 cable gland M20x1.5 out of connector for cable diameter 8 to 14.5 mm
- 1 cable gland M20x1,5 out of connector for cable diameter 12.5 to 19 mm

Legend:

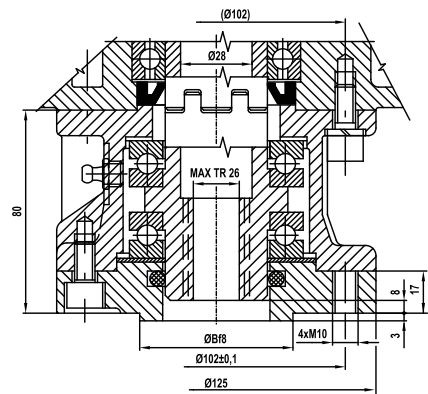
Z5c/ZK5c.....connection of single potentiometer
 Z6c/ZK6c.....connection of double potentiometer
 Z10g/ZK10g.....connection of CPT or electronic position transmitter-2-wire, passive
 Z41a/ZK41a.....space heater and space heater's thermal switch
 Z257b/ZK257b.....current electronic position transmitter, 3-wire, passive
 Z257m/ZK257m.....electronic position transmitter 0 - 10 V, 3-wire, passive
 Z257n/ZK257n.....position transmitter CPT, 3-wire, passive
 Z260h/ZK260h.....current electronic position transmitter, 3-wire, active
 Z260k/ZK260k.....electronic position transmitter 0 - 10 V, 3-wire, active
 Z260m/ZK260m.....position transmitter CPT, 3-wire, active
 Z269r/ZK269r.....CPT, DCPT 3M or electronic transmitter, 2-wire, active
 Z279c/ZK279c.....3-phase electric motor with thermal protection PTO
 Z279h/ZK279h.....3-phase electric motor with thermal protection PTC
 Z297b/ZK297b.....3-phase electric motor with reverse contactors and thermal protection PTO
 Z297g/ZK297g.....3-phase electric motor with reverse contactors and thermal protection PTC
 Z403a/ZK403a.....connection of torque and position switches
 Z461f/ZK461f.....connection of torque and tandem position switches
 Z635g/ZK635g.....connection of torque switches, position switches, additional position switches and local control unit
 Z636d/ZK636d.....connection of torque switches, position switches, tandem position switches and local control unit

Legend:

B1.....single potentiometer
 B2.....double potentiometer
 B3.....CPT or electronic position transmitter
 B3a.....capacitive current transmitter (CPT)
 B3b.....DCPT current transmitter
 S1.....torque switch „open“
 S2.....torque switch „closed“
 S3.....position switch „open“
 S4.....position switch „closed“
 S5.....additional position switch „open“
 S6.....additional position switch „closed“
 S13.....tandem position switch „open“
 S14.....tandem position switch „closed“
 E1.....space heater
 F1.....motor's thermal protection
 F2.....space heater's thermal switch
 I / U.....current / voltage output signal
 KM1, KM2.....reversing contactors
 M.....electric motor
 PTC/PTO.....thermal protection of electric motor
 R_L.....loading resistor
 X.....terminal board
 X3.....electric motor's terminal board
 XC.....connector
 OPEN/STOP/CLOSE.....local control buttons
 REMOTE/OFF/LOCAL.....local control selection button

Dimensional drawing MO 3

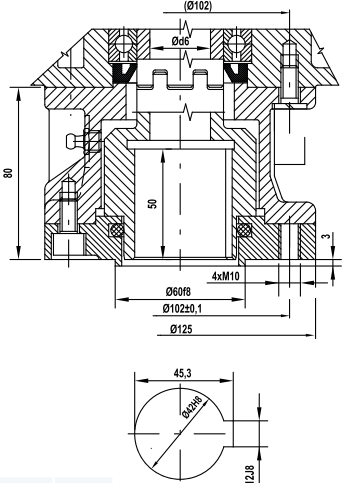
Shape A, Max. TR26, F10



G0	60
F10	70
Version	B

P-1848

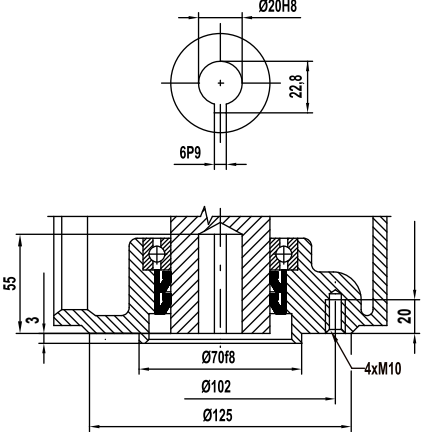
Shape B1, F10



P-1849/B	35
P-1849/A	28
Version	Ød6

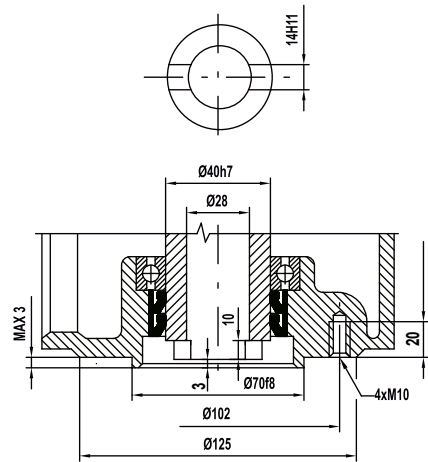
P-1849/A/B

Shape B3, F10



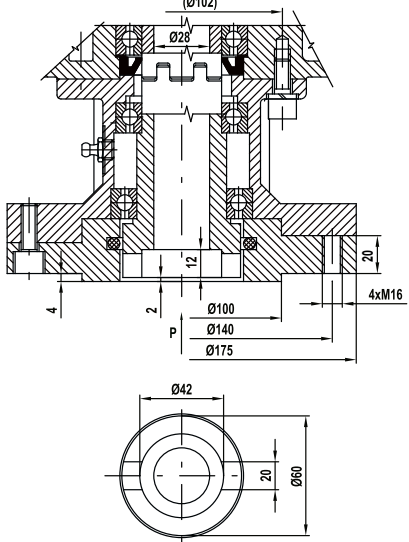
P-1103/03

Shape C, F10



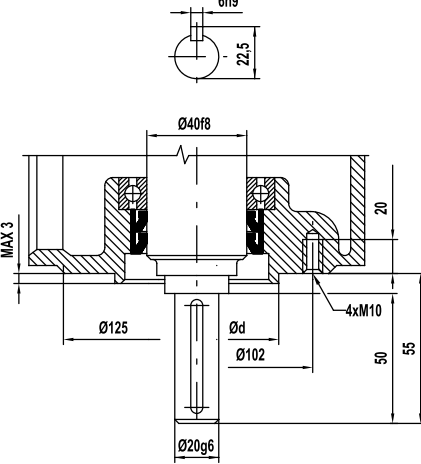
P-1103/01

Shape C, F14



P-1853

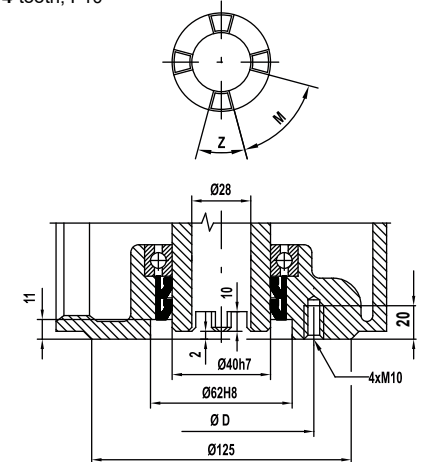
Shape D, F10



P-1103/02	70
P-1103/02	60
Version	Ød

P-1103/02

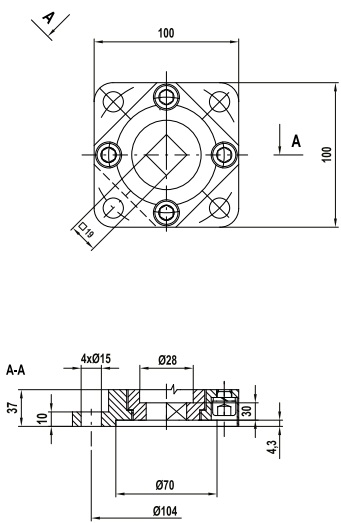
4-tooth, F10



P-1102/04	Ø102	45°	45°
P-1102/03	Ø102	45°	45°
P-1102/02	Ø102	30°	60°
P-1102/01	Ø80	30°	60°
Version	D	Z	M

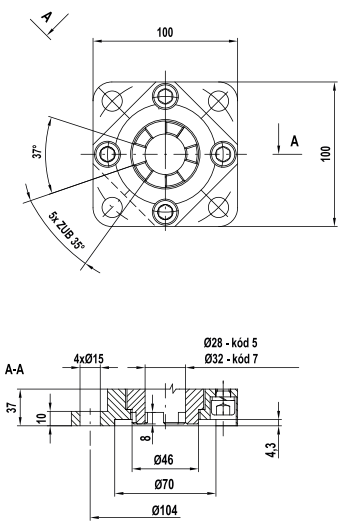
P-1102

Shape A4, GOCT P 55510



P-1376b1

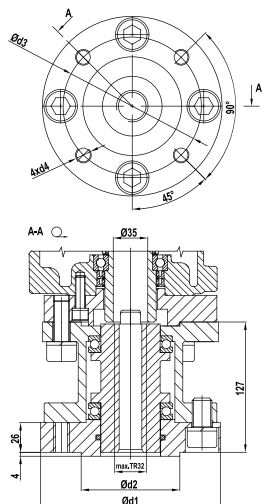
Shape AK, GOCT P 55510



P-1376b2

Dimensional drawing MO 3

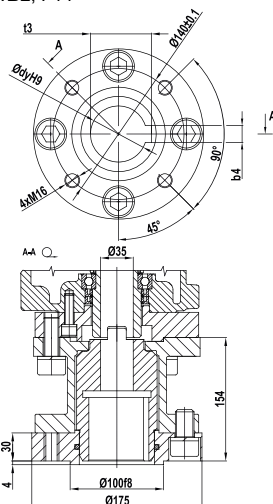
Shape A, Max. TR32, F10, F14



P-2027/B	125	70	102	M10
P-2027/A	175	100	140	M16
Version	d1	d2	d3	d4

P-2027

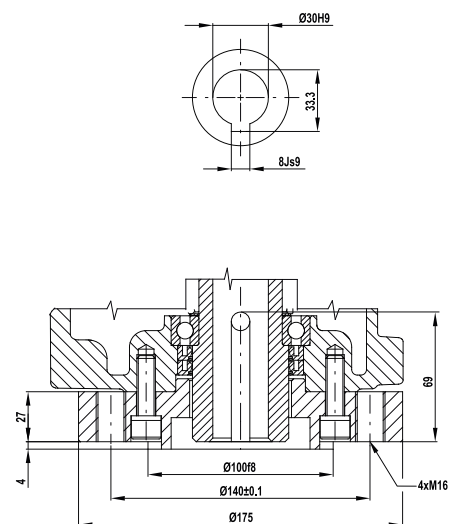
Shape B1/B2, F14



P-2028/B	60	18	64.4
P-2028/A	45	14	48.5
Version	dyH9	d4	t3

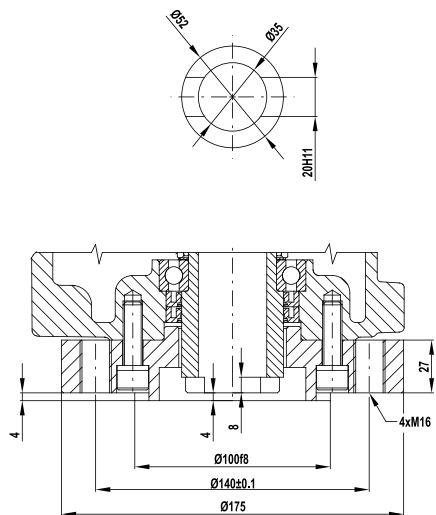
P-2028

Shape B3, F14



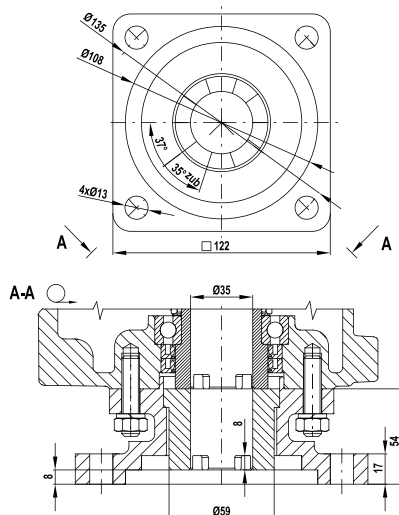
P-2067

Shape C, F14



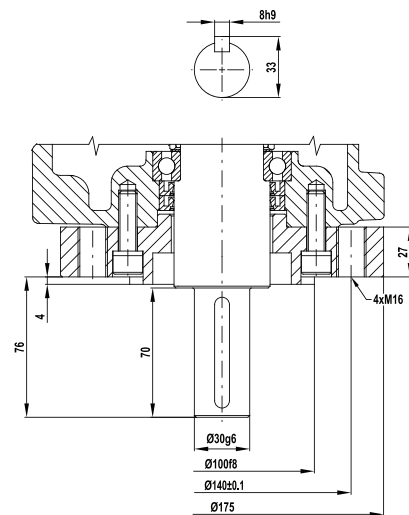
P-2023

Shape Б (B), GOST P 55510



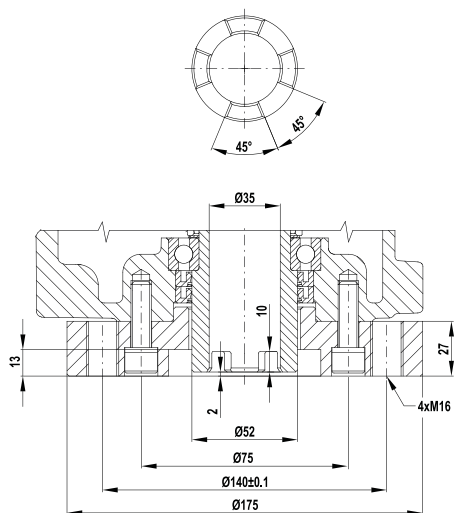
P-2066/A

Shape D, F14



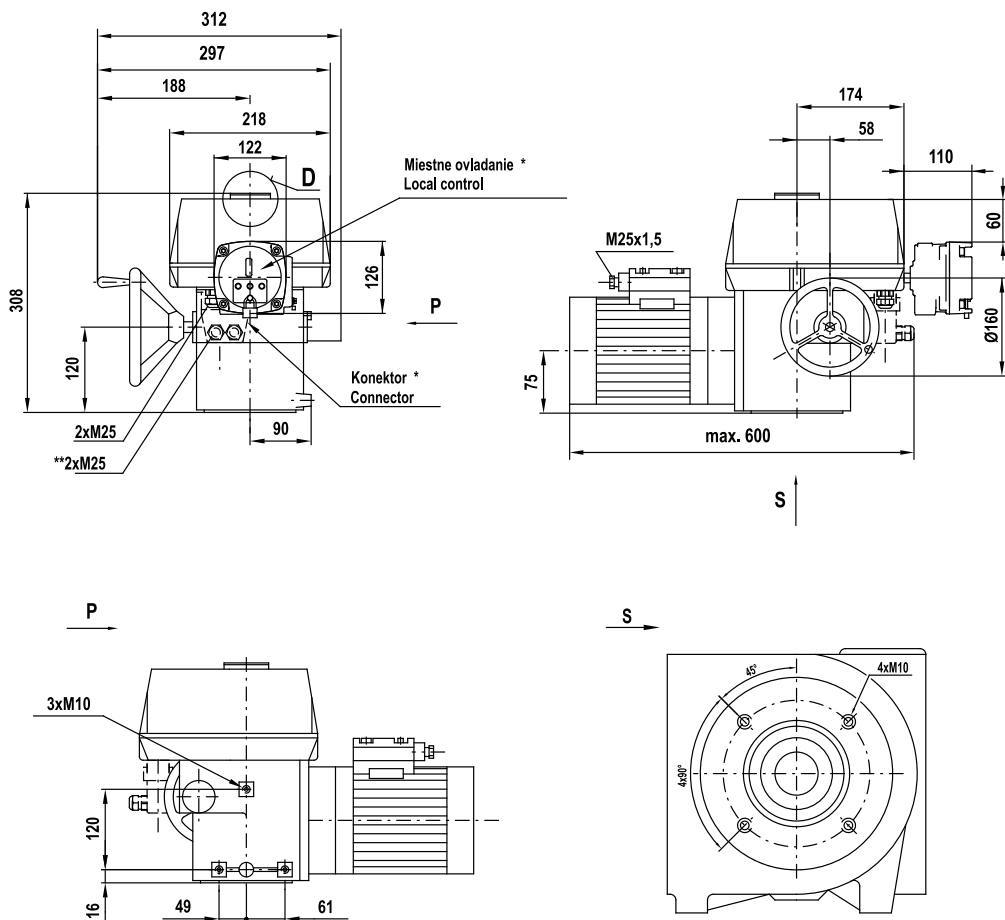
P-2024

4-tooth, F14

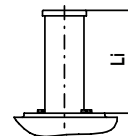


P-2029

Dimensional drawing MO 3

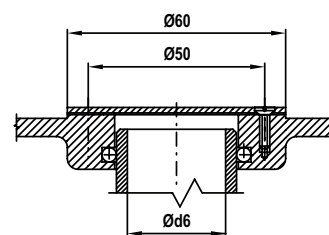


Ochranná trubka stupajúceho vretena (dĺžka Li podľa požiadavky)
Protection tube for rising stem (length Li according to request)

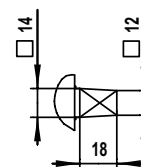


D

Vyhodenie s nestupajúcim vretenom
Version for non-rising stem



Hriadel rucneho kola
Handwheel shaft



* Nie je súčasťou štandardného vybavenia / Not included as standard

** Platí len pre vyhotovenie s konektorom / Valid for connector version only

P-1012d