

STANDARD

ST 1

STANDARD EQUIPMENT

- Voltage 230 V AC
- Terminal board connection
- 2 thrust switches
- 2 position switches
- Mechanical connection - flange
- Manual control
- Mechanical position indicator
- Protection code IP 65



Specification table ST 1

Order code

491. X - X X X X X / X X

Climate resistance	Ambient temperature	Corrosivity category ¹⁰⁾	Enclosure	
Standard	-25°C...+55°C	C3	IP 67	1
	-25°C...+55°C	C3	IP 68 ¹¹⁾	5
Tropics and Wet	-25°C...+55°C	C4	IP 67	2
Cold	-50°C...+40°C	C3	IP 67	3
Tropical dry and Dry	-25°C...+55°C	C3	IP 67	6
Sea	-50°C...+40°C	C4	IP 67	7
Arctic	-60°C...+40°C	C3	IP 67	8

Electric Connection	Voltage and frequency		Wiring Diagram	
To terminal board	230 V AC	50 Hz	Z1a + Z11a	0
	220 V AC	50 Hz		L
	3x400 V AC	50 Hz	Z78y + Z12a ²²⁾	9
	3x400 V AC ²⁸⁾	50 Hz	Z303p + Z12a ²²⁾	2
	3x380 V AC	50 Hz	Z78y + Z12a ²²⁾	M
	3x380 V AC ²⁸⁾	50 Hz	Z303p + Z12a ²²⁾	N
	24 V AC	50 Hz	Z626f	A
	24 V DC	-		
	24 V AC	60 Hz		
	120 V AC	60 Hz	Z1a + Z11a	T
	110 V AC	60 Hz	Z1a + Z11a	B
	240 V AC	60 Hz	Z1a + Z11a	V
To connector ²¹⁾	230 V AC	50 Hz	ZK1a + ZK11a	5
	220 V AC	50 Hz		P
	3x400 V AC	50 Hz	ZK78y + ZK12a	7
	3x400 V AC ²⁸⁾	50 Hz	ZK303p + ZK12a	6
	3x380 V AC	50 Hz	ZK78y + ZK12a	R
	3x380 V AC ²⁸⁾	50 Hz	ZK303p + ZK12a	S
	24 V AC	50 Hz	ZK626f	C
	24 V DC	-		
	24 V AC	60 Hz		
	120 V AC	60 Hz	ZK1a + ZK11a	Z
	110 V AC	60 Hz	ZK1a + ZK11a	D
	240 V AC	60 Hz	ZK1a + ZK11a	W

Next page

Order code

491. X - X X X X X / X X

Switching-off thrust ^{31) 35)}	Max. load thrust ³²⁾		Max. load thrust ^{33) 35)}		Operating speed ^{32) 35)}	Electric motor	
8 000 - 10 000 N	ON - OFF duty	8 700 N	Modulating duty	7 000 N	8 mm/min	15 W 230 V AC, 3x400(3x380) V AC 32 W - 24 V DC	0
					10 mm/min		5
					16 mm/min		1
6 900 - 8 600 N		7 500 N		6 000 N	20 mm/min		6
6 000 - 7 500 N		6 300 N		5 000 N	32 mm/min		2
4 600 - 5 800 N		5 000 N		4 000 N	40 mm/min		7
3 000 - 3 700 N		3 200 N		2 560 N	63 mm/min		3
2 300 - 2 900 N		2 500 N		2 000 N	80 mm/min		8

Operating stroke			
without transmitter ⁴¹⁾		with transmitter	
20 mm		8 mm	A
		10 mm	B
		12.5 mm	C
		16 mm	D
		20 mm	E
40 mm		25 mm	F
		32 mm	G
		40 mm	H
80 mm		50 mm	I
		64 mm	J
		80 mm	K

Transmitter		Connection	Output	Wiring diagram	
Without transmitter		-	-	-	A
Potentiometer	Single	-	1 x 100 Ω	Z5c / ZK5c	B
			1 x 1000 Ω		E
			1 x 2 000 Ω		F
	Double	-	2 x 100 Ω	Z6c / ZK6c	K
			2 x 1000 Ω		N
			2 x 2 000 Ω		P
Electronic position transmitter ⁵¹⁾	Passive	2-wire	4 - 20 mA	Z10g / ZK10g	S
		3-wire	0 - 20 mA	Z257j / ZK257j	T
			4 - 20 mA		V
			0 - 5 mA		Y
	Active ⁵⁹⁾	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 voltage ⁵¹⁾	Passive	3-wire	0 - 10 V	Z257k / ZK257k	D
	Active ⁵⁹⁾		0 - 10 V	Z260k / ZK260k	R
Current ^{51) 52)} CPT	Passive	2-wire	4 - 20 mA	Z10g / ZK10g	I
	Active ⁵⁹⁾	2-wire	4 - 20 mA	Z269r / ZK269r	J
Current ^{51) 52)} DCPT 3M	Passive	2-wire	4 - 20 mA	Z10g / ZK10g	2
	Active ⁵⁹⁾		4 - 20 mA	Z269r / ZK269r	3

Next page

Order code

491. X - X X X X / X X

Mechanical connection	Flange shape	Operating stroke	Connecting height	Thread of stem ⁶²⁾	Dimensional drawing	
Direct / flange ISO 5210	F05	20 mm	45 mm	M12x1.25-20	P-1169, P-2148/B	A
		50 mm				B
Flange	A	50 mm	112 mm	M10x1-28 M12-28 M12x1.5-20 M16x1.5-28 UN 7/8"-9	P-1170 P-2148/B	C
		80 mm	52 mm			E
	B	50 mm	127 mm			G
	C	50 mm	27 mm			I
			57 mm			J
	D	50 mm	110 mm			K
	E	50 mm	92 mm			M
			102 mm			N
	F	80 mm	125 mm			3
	H	50 mm	70 mm			7

Additional equipment		Wiring diagrams					
		230 V AC	3x400 V AC	24 V AC	24 V DC		
A	2 additional position switches ²²⁾	Z11a/ZK11a Z633/ZK633	Z12a/ZK12a Z632c/ZK632c	Z626f/ZK626f Z634h/ZK634h		0	0
E	Space heater with thermal switch	Z1a/ZK1a Z633/ZK633	Z78y/ZK78y Z632c/ZK632c	Z626f/ZK626f Z634h/ZK634h		0	2
C	Electric local controls ⁶⁶⁾	Z633/ZK633	Z632c/Z632c	Z634h/ZK634h		0	7
D	Space heater	Z1a/ZK1a Z633/ZK633	Z78y/ZK78y Z632c/ZK632c	Z626f/ZK626f Z634h/ZK634h		1	5
H	Gold coated contacts of microswitches, details after consultation with producer					4	0
Allowed combination and code: A+E=04, A+C=08, E+C=10, A+E+C=12, A+D=16, C+D=17, A+C+D=18							

Notes:

10) Climate resistance according to ISO 9223/ EN ISO 12944-2.

11) IP 68 -10 m / 48 hours. Dimensional drawings on request.

21) The version with connector in -40° C only.

22) Version 3x400 V (380 V) with additional position switches and double transmitter in agreement with the producer.

28) Version with reverse contactors.

31) Required switch-off thrust must be stated in the order. If not specified it is adjusted to the maximum thrust of the chosen range.

32) With this torque, it is possible to load the actuator under duty cycle S2-10 min, or S4-25%, 6-90 cycles per hour.

33) By this torque is possible to load the actuator under duty cycle S4-25%, 90- 1200 cycles per hour.

34) Deviation of operating speed for the DC electric motor is from -50% up to +30% depending on load. For other voltages the deviation is ± 10%

35) For frequency 60 Hz, the operating speed increases 1.2 times and the max. torque decreases 0.8 time.

41) The version without any transmitter can have its stroke adjusted from 0 up to maximum stroke (20 mm, 40 mm, 80 mm).

51) Not valid for temperatures of -60°C.

52) CPT - capacitive transmitter, DCPT 3M - electronic contactless transmitter.

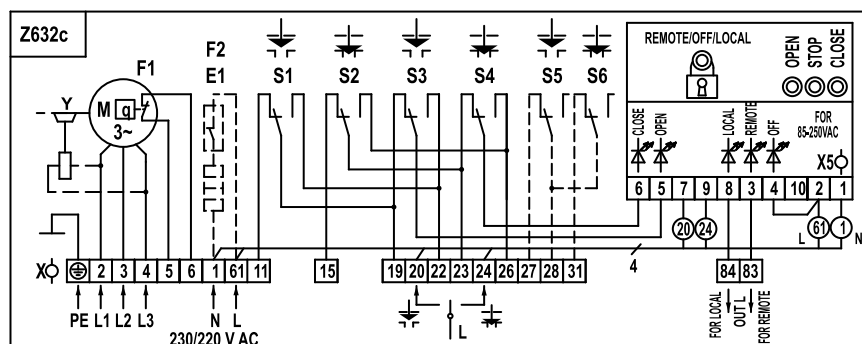
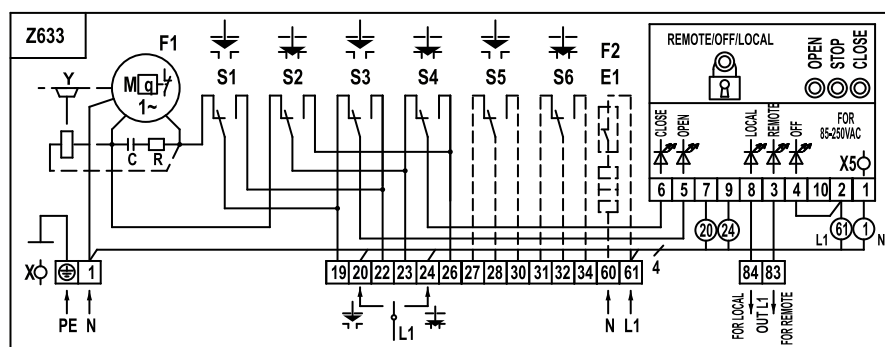
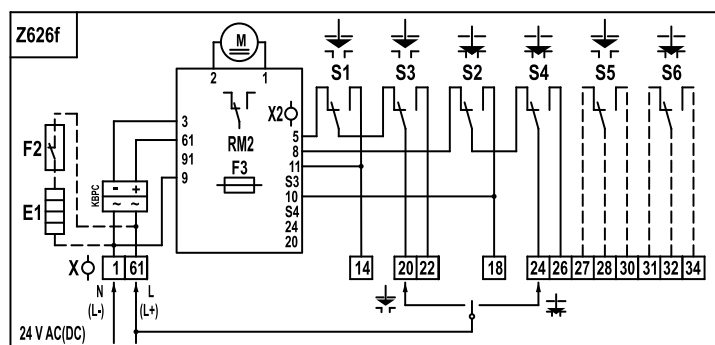
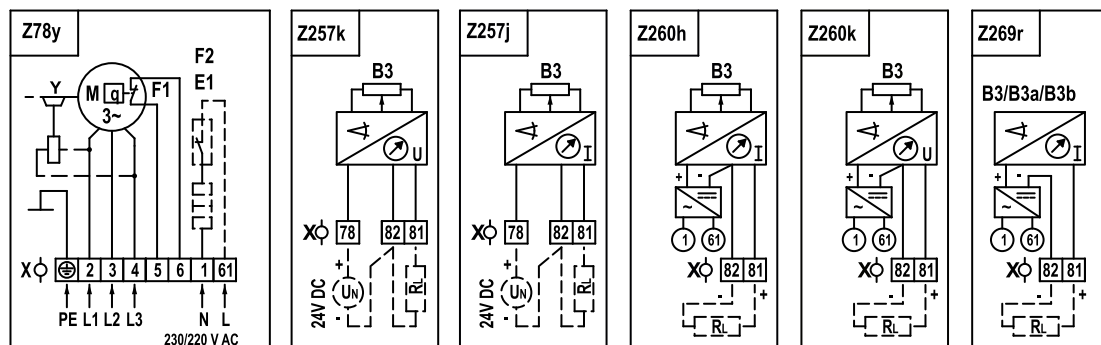
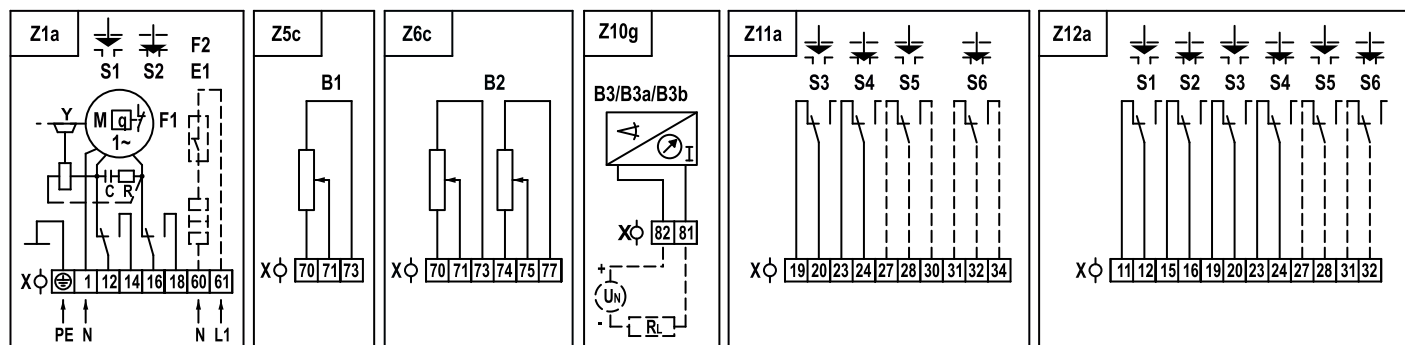
59) Active position transmitter for the 24 V AC/DC version only after agreement with the producer.

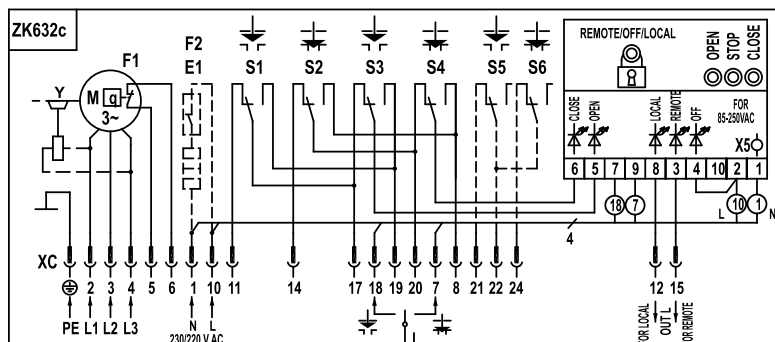
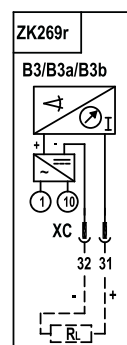
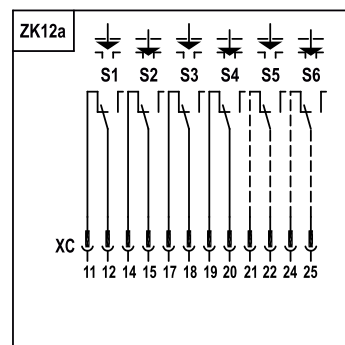
62) Thread in the coupling must be specified in the order bywords.

66) Local control diagram for -60°C on request from the manufacturer.

Wiring diagrams

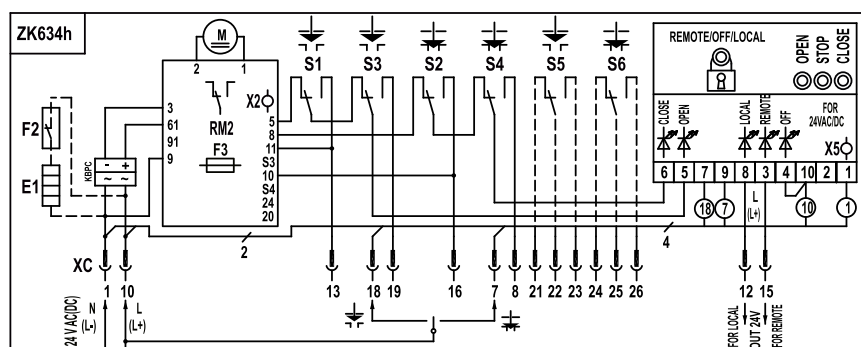
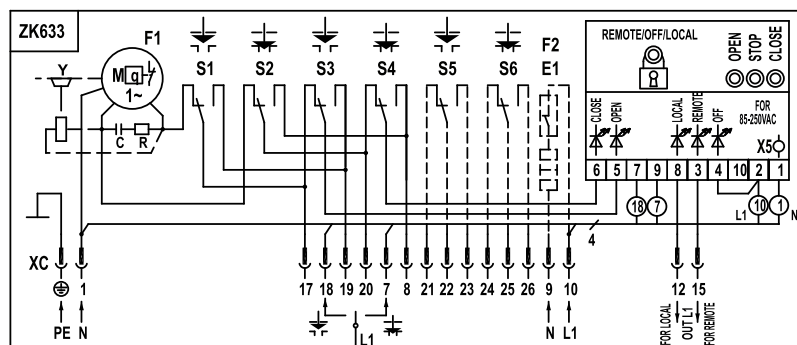
Terminal board connection





Wiring diagrams

Terminal board connection



Electric connection:

- to terminal board with 24 clamps, wire cross section 1.5 mm²
- cez 3 káblové vývody: - M20x1,5 for cable diameter 8 až 14,5 mm (1 pes) *
- M16x1,5 for cable diameter 6 až 10,5 mm (2 pes)*
- connector max. 32 terminals
- cross-section of the connecting wire 0.5 mm²

* cable diameters may vary depending on the heat resistance of the gland

Notes:

1. Wiring connection is limited by max. number of 24 terminals.
2. Electric motors are normally equipped with thermal protection.
3. Other servo drive connections than those listed in the catalog are possible upon agreement with the manufacturer.

Legend:

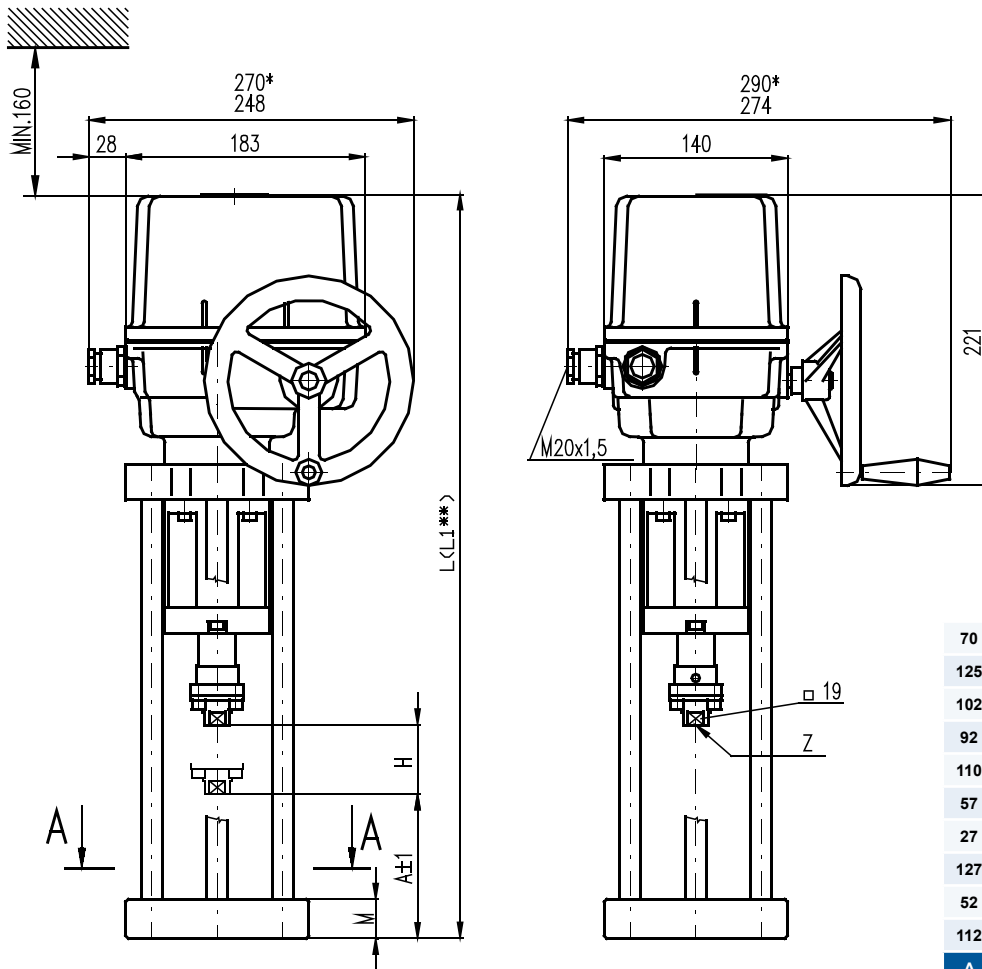
- Z1a/ZK1a.....connection of 1-phase electric motor
 Z5c/ZK5c.....connection of single potentiometer
 Z6c/ZK6c.....connection of double potentiometer
 Z10g/ZK10g.....connection of CPT or electronic position transmitter - 2 - wire, passive
 Z11a/ZK11a.....connection of position switches for 1-phase electric motor
 Z12a/ZK12a.....connection of thrust switches, position switches, additional position switches for 3-phase electromotor
 Z78y/ZK78y.....connection of 3-phase electric motor
 Z257j/ZK257j.....connection of electronic position transmitter - 3 - wire, passive
 Z257k/ZK257k.....elektronický vysielač napáťový, 3-vodič, bez zdroja
 Z260k/ZK260k.....connection of electronic position transmitter - 3 - wire, active
 Z260h/ZK260h.....connection of electronic position transmitter - 3 - wire, active
 Z269r/ZK269r.....connection of CPT or electronic position transmitter - 2 wire - active
 Z626f/ZK626f.....connection of electromotor 24 V AC/DC, reverse board 24 V, thrust switches, position switches and additional position switches
 Z632c/ZK632c.....connection of 3-phase electromotor, thrust switches, position switches, additional position switches and local control unit

Legend:

- Z633/ZK633.....connection of electromotor, thrust switches, position switches, additional position switches and local control unit
 Z634h/ZK634h.....connection of electromotor 24 V AC/DC, reverse board 24 V, thrust switches, position switches, additional position switches and local control unit

- 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“
 M.....electric motor
 C.....capacitor
 E1.....space heater
 F1.....motor's thermal protection
 F2.....space heater's thermal switch
 F3.....reversing board fuse
 X.....terminal board
 X2.....reversing board terminal block
 X5.....local control terminal block
 R.....reducing resistor
 R_L.....loading resistor
 I.....output current signal
 RM2.....reversing board 24 V
 U_N.....supply voltage of the transmitter source
 Y.....motor's brake (not valid for this type of ES)
 OPEN/STOP/CLOSE.....local control buttons
 REMOTE/OFF/LOCAL.....local control selection button

Dimensional drawing ST 1

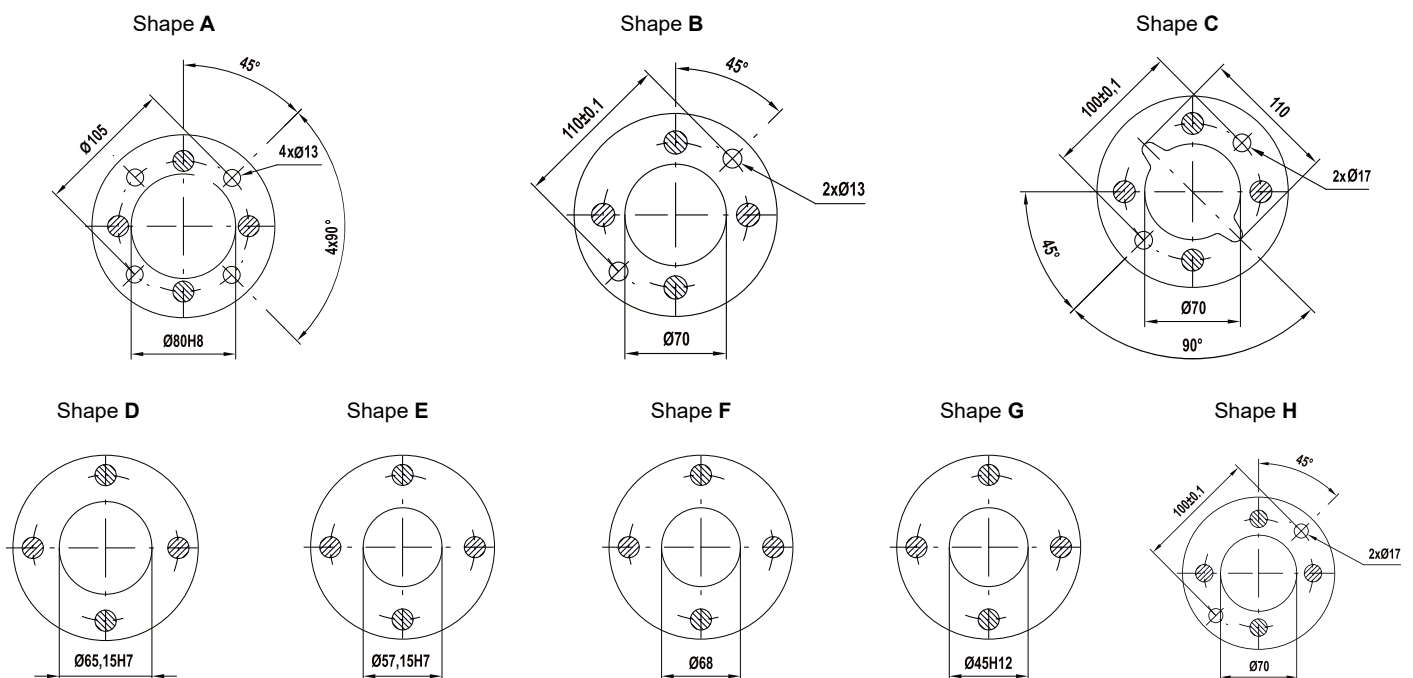


7/8"- 9 UN
M16x1.5-28
M14 - 28
M12x1.5-6H
M12x1.25
M12-28
M10x1.5-28
M10x1-28
Z

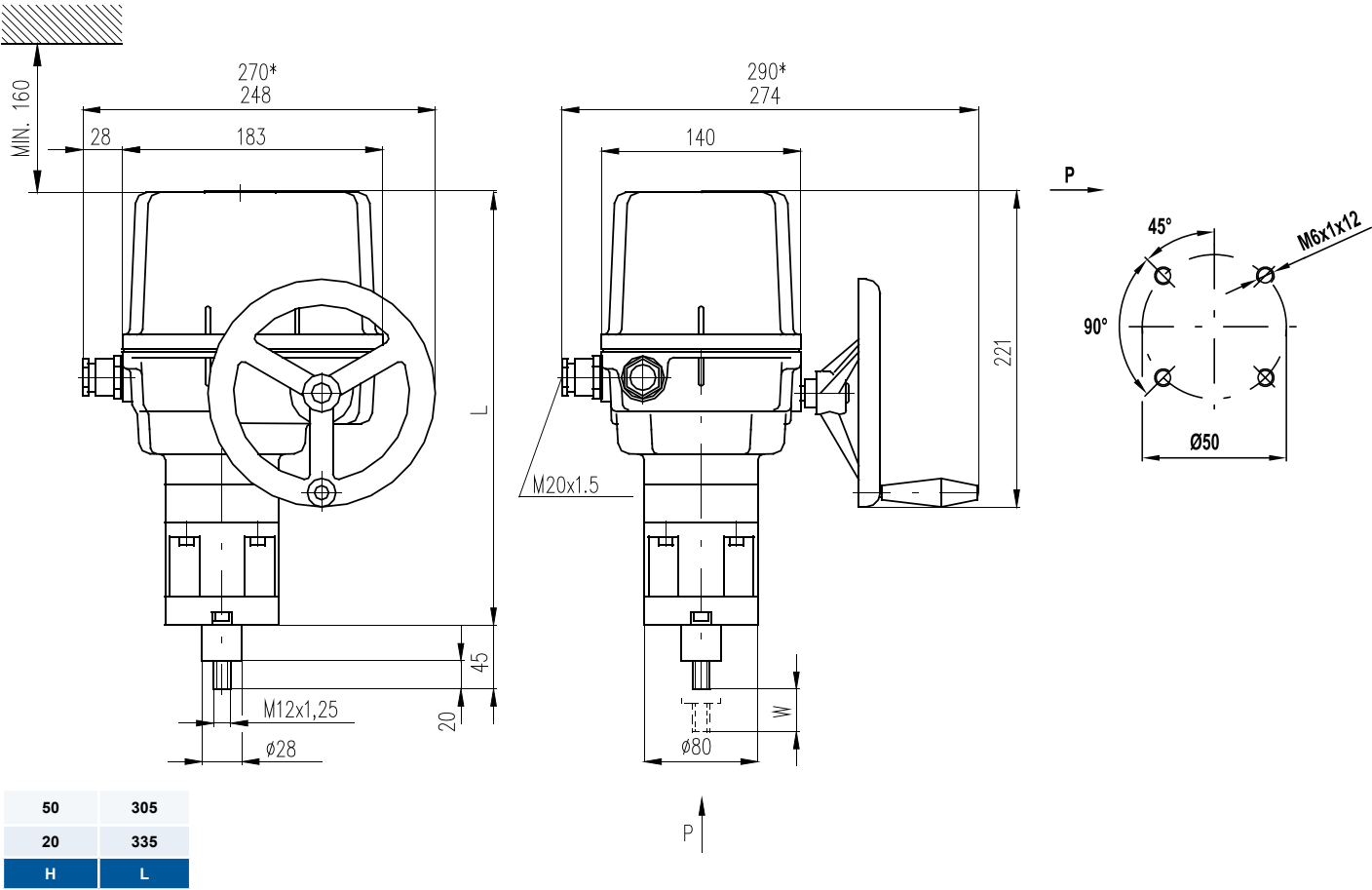
70	50	527	534	30	H
125	80	669	676	32	F
102	50	561	568	30	E
92	50	551	558	30	E
110	50	569	576	30	D
57	50	514	521	30	C
27	50	484	491	30	C
127	50	584	591	30	B
52	80	569	576	30	A
112	50	569	576	30	A
A	H	L	L1	M	Flange shape

Dimensions of version with local control with control board DMS3 according to P-2148/B

Flange shapes in section A-A



Dimensional drawing ST 1

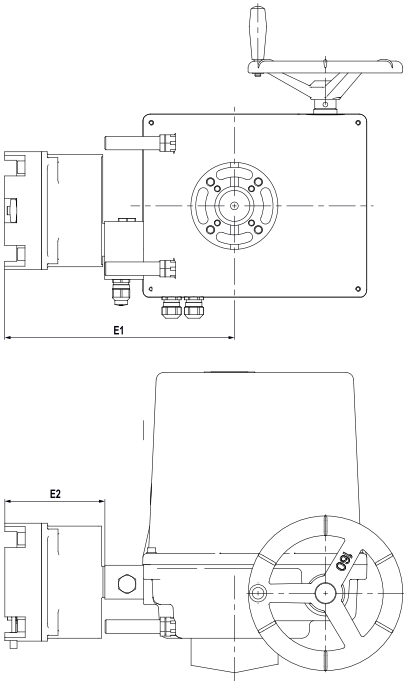


* Valid for actuator with enclosure IP 67

Dimensions of version with local control according to P-2148/C/D

P-1169

Version of ST 1 actuators with electric local control



ST 1	173	103.5.5	P-2148/B
Type	E1	E2	Version

Other dimensions according to basic dimensional drawings

P-2148/B