

ZPA PEČKY, a.s.



Electric multi-turn actuators

MODACT MONED

Type No. 52 030 - 52 036.xxx0NED

MODACT MOPED

Type No. 52 030 - 52 036.xxx0PED



EN ISO 9001:2000
Certifikát č. 041005161/000-E01



CERTIFICATE

The TÜV CERT Certification Body
for QM systems of RWTÜV Systems GmbH

hereby certifies in accordance with TÜV CERT
procedure that

ZPA Pečky, a.s.
Třída 5. května 166
289 11 Pečky
Czech republic

has established and applies a quality system for

**Development and production of electric actuators,
enclosures and sheet metal production**

An audit was performed, Report No. **624362**

Proof has been furnished that the requirements according to

ISO 9001 : 2000 / EN ISO 9001 : 2000


are fulfilled. The certificate is valid until **11. November 2006**

Certificate Registration No. **041005161/000-E01**

The company has been certified since **1995**



Essen, 14.11.2003



TÜV CERT Certification Body
of RWTÜV Systems GmbH

APPLICATION

MODACT MONED; MOPED actuators have been specially designed for adjustment of fittings and other devices for which they are suitable due to their properties and reversing rotary motion in particular. Other way of application shall be consulted with producer. These actuators can be used in remote control circuits.

When fitted with a current transmitter, they can be used even in automatic control circuits operating in duty S4 - 25 %; 1200h⁻¹.

OPERATING CONDITIONS

The MODACT MONED; MOPED actuators should withstand the effect of operating conditions and external influences, Classes AA7, AB7, AC1, AD5, AE5, AF5, AG2, AH2, AK2, AL2, AM2, AN2, AP3, BA3, BP3 and BC3, according to ČSN Standard 33 2000-3. If the actuator is to be installed in the open-air space it should be provided with light roofing for protection against the effects of atmospheric factors. The roofing should overhang the outline of actuator at least by 10 cm, up on high 20 ÷ 30 cm.

If the actuator is used at a location with an ambient temperature under -10°C and/or relative humidity above 80 %, at a sheltered location, or in the tropical atmosphere, the anti-condensation heater which has been built in all actuators, should be always used. One or both where is necessary.

Installation of the actuator at a location with incombustible and non-conducting dust is possible only if this has no adverse effect on their function. In this case is necessary to thoroughly adhere ČSN Standard 34 3205. It is advisable to remove dust whenever the layer of dust becomes as thick as about 1 mm.

Notes:

A sheltered location is considered a space where atmospheric precipitations are prevented from falling at an angle of up to 60° from the vertical.

The location of the electric motor should be such that cooling air free access to the motor and no heated up blown-out air is drawn in the motor again. For air inlet, the minimum distance from the wall is 40 mm. Therefore, the space in which the motor is located should be sufficiently large, clean and ventilated.

Classes of external influences

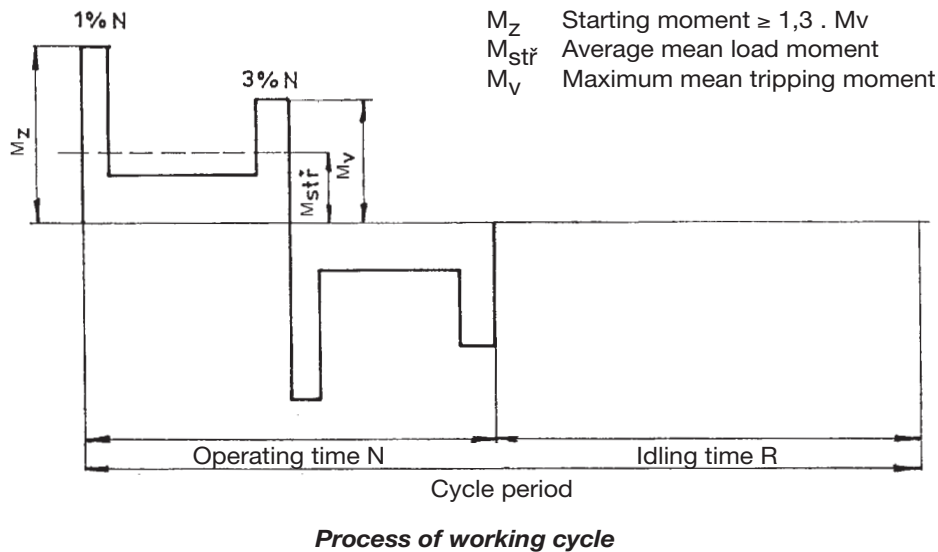
Basic characteristics - as extracted from CSN Standard 33 2000-3 (mod. IEC 364-3:1993).

- 1) AA7 - Simultaneous effect of ambient temperature of - 25 °C to + 55 °C with relative humidity from 10 % upwards
- 2) AB7 - Ambient temperature to Point 1); minimum relative humidity 10%, maximum relative humidity 100% with condensation
- 3) AC1 - Altitude ≤ 2,000 m above sea level
- 4) AD5 - Splashing water in all directions
- 5) AE5 - Small dust content of air; mean layers of dust; daily dust fall more than 35 mg/m², but not exceeding 350 mg/m²
- 6) AF2 - Corroding atmosphere and pollutants; the presence of corroding pollutants is significant.
- 7) AG2 - Average mechanical stress; in current industrial plants
- 8) AH2 - Medium vibrations; in current industrial plants
- 9) AK2 - Serious risk of growth of vegetation and moulds
- 10) AL2 - Serious danger of the occurrence of animals (insects, birds, small animals)
- 11) AM2 - Harmful effect of escaping vagabond currents
- 12) AN2 - Medium solar radiation with intensities > 500 W/m² and ≤ 700 W/m²
- 13) AP3 - Medium seismic effects; acceleration > 300 Gal ≤ 600 Gal
- 14) BA4 - Personal abilities; instructed people
- 15) BC3 - Frequent contact with the earth potential; persons coming frequently into contact with „live“ parts or standing on a conducting base

OPERATION MODE

According to ČSN EN 60 034-1, actuators can be operated in S2 load category. The operation time at +50°C shall be 10 minutes, the mean load moment value shall be below or equal to 60 per cent of the maximum switch off moment (Mv).

According to ČSN EN 60 034-1 (35 0000), the actuators can also be operated in the S4 mode, the maximum number of switching actions in automatic control mode is 1200 actions per hour (the course of load is shown in the picture). The average mean load moment at load factor of 25 per cent and 50°C shall not exceed 40 per cent of the maximum tripping moment (M_v).



TECHNICAL PARAMETERS

Basic technical parameters

The basic technical parameters are given in Tab.1. (page 21.).

Operation parameters

Supply voltage of electric motor	3x230/400V, (+10 %, -15 %) / 50 Hz; (or as shown on the motor rating plate)
Working temperatures	-25°C to +55°C, other consult with producer
Enclosure protection	- IP 55 type MONED - IP 67 type MOPED
Noise:	The maximum acoustic pressure level A is 85 dB (A). The maximum acoustic power level A is 95 dB (A).

Operation position

Operational position of MODACT® actuators is arbitrary, it is limited only by slant of motor axis – max 15° **under** horizontal level. Reason is presentation of reducing of service life of rubber seal of motor spindle by relevant detritus, or impurities in oil filling.

Is necessary, if the electro motor is **above** horizontal level, to fill in oil filling as, that lubrication of motor pinion gear is assured.

Technical parameters of electronics

Power supply

Line voltage:	230 V / 50Hz, 3 W
Fuse:	200 mA
Backup:	BAT1 Lithium battery 3,6 V / 7,2 Ah (minimum period of backup of position is 800 days) BAT2 Lithium battery 3,6 V / 16 Ah (minimum period of backup of position is 1850 days)

Output signal

Analog:	Position signal of actuator 0/4÷20 mA (uplink), or 20-0/4 mA (downlink)
Two-valued:	Seven relay outputs (switch contact 250 V / 8A~)
relay MO, MZ	switch over at reach of adjusted torque
relay PO, PZ	switch over at reach of adjusted position
relay SO, SZ	switch over at reach of adjusted position
relay READY	signaling of failure

Adjustable parameters

- tripping torques MO, MZ
- zone of torque blocking
- max. period of torque blocking
- positions PO, PZ

- positions SO, SZ
- relay function MO, MZ (tripping of torque, or torque + position)
- type of current output
- parameters of single-step mode

All these parameters are adjustable per service computer as well as push-buttons SW1, SW2.

Communications

- Adjusting of parameters:
- per computer with serial port RS232 with bit rate 9600 Bd
 - per push-buttons, with signaling of LED diodes and LCD display

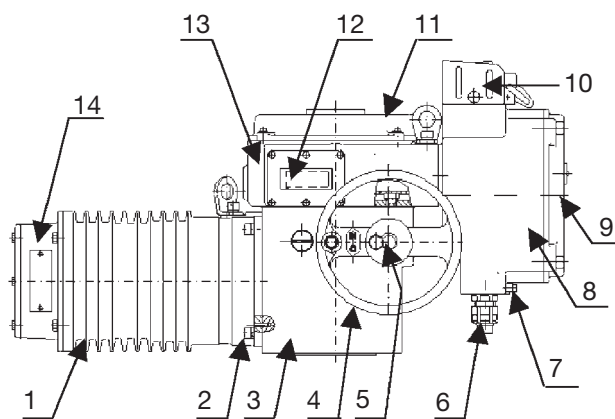
Initialization

Stroke of actuator:	10 revolutions	Tripping of torque relays	
PZ:	0 %	MZ	by torque and position 0 %
PO	100 %	MO	by torque and position 100 %
SZ	1 %		
SO	99 %		
Blocking close	5 %		
Blocking open	95 %		
Time of torque blocking	1 sec		
Blocking window	off		
Single-step mode off			

DESCRIPTION OF ACTUATOR

General arrangement

In respect of their basic connecting dimensions, the actuators have been engineered for direct mounting to the fitting. The connection of the actuator to the fitting is provided by a flange, according to ČSN EN ISO 5210 (13 3090). For transmission of the output shaft motion of the actuator to the fitting, the actuator is provided with a Shape C or D coupling to ČSN 18 6314 (according to DIN 3338) or a Shape E coupling to ČSN 18 6314; B3 according to ČSN EN ISO 5210 (13 3090). When adapters are used (which can be supplied with the equipment), the connecting dimensions, Shape A or B1, to ČSN EN ISO 5210 (13 3090) can be obtained. These adapters are mounted between the actuator and the fitting.



Description:

- 1 – three-phase asynchronous motor
- 2 – countershaft gear box
- 3 – power transmission gear
- 4 – hand wheel
- 5 – lock screw of hand wheel
- 6 – cable bushing (HARTING connector)
- 7 – outside safeguarding clamp
- 8 – terminal box
- 9 – terminal box cover
- 10 – local control unit LCU
- 11 – control box cover
- 12 – display
- 13 – control box
- 14 – terminal box of electric motor

Pic. 1 - Actuator assembly

For MONED brand actuators the electric motors provided with an IP 55 protective enclosure are utilized and for MOPED brand actuators the electric motors provided with an IP67 protective enclosure are utilized. The whole actuator will then have a protective enclosure depending on the type of electric motor used.

DMS Electronic System has replaced the electromechanical control panel. The system monitors the position and the moment, and, depending on the set parameters, it controls an output relay and the remote position indication.

DMS is composed of a control unit with a LCD display, a position sensor and a moment sensor. Optionally, the system may be supplemented by an analogue output module. The control unit with an optional position transmitter form one compact module, which has been situated in actuator's terminal box. Sensors have been installed in the control cubicle.

Servomotor service parameters may be set up by means of push buttons on the control unit, which has been provided with response monitoring on LED control lights, or on the display. In the course of operation, the display will show information about the position, and, in the event of a failure incidence it will show the failure numerical code. To facilitate handling the actuator in setting up the parameters, or in case of a defect on a valve, a set of BMO local control unit change-over switches will be offered as optional accessories.

Electrical Outfit

The electrical outfit consists of electronics power supply circuit and control circuits, which have been connected with relay contacts. The power supply has been connected to the control unit terminal board and it is protected using a 200mA fuse. External control circuits will be connected to the second part of the terminal board (it may be distinguished by terminal connectors type).

A thermal resistance and optional BMO are also connected to the terminal board.

Inlets from external circuits and power supply shall be led to the actuator's terminal board through cable bushings, or they will be connected using Harting connector.

BMO Local Control Unit

A set of two change-over switches, one of which will switch over the control voltage from external circuits to the second change-over switch, which controls directly the motor contactors. See examples of connection in the attachment. BMO represents optional accessories.

DMS Control Electronics

Function Description

DMS Electronic System is destined for multi-turn actuators operation control in the mechanical unit operating mode; it ensures a safe actuator disconnection at the moment of reaching the required position, or a specified torque limit on the shaft. The relay contacts will take over the function of mechanically controlled microswitches for motor tripping and for position signalling.

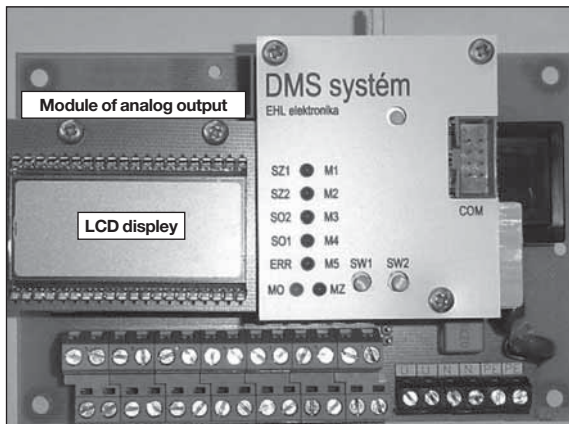
A standby battery forms part of the system. The battery enables to preserve information on the position even in the event of a fall-out loss of power supply.

It is possible to order a battery with a 7.6Ahours or 16Ahours capacity as an option.

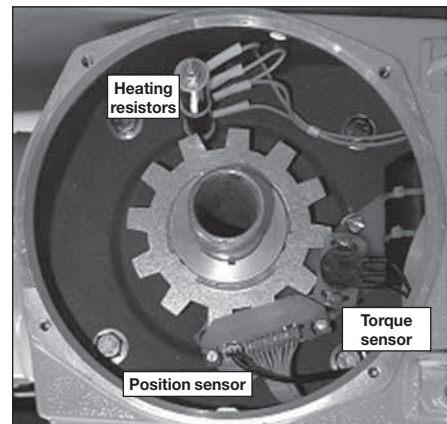
Actuator parameters are programmable.

DMS Composition

DMS System is composed of a control unit with a LCD display, a position sensor and a moment sensor. Optionally, the system may be supplemented by an analogue position transmitter module. The control unit with a display and an eventual position transmitter form together one compact module, which has been installed in actuator's terminal box. The control box has been fitted with position and moment sensors unit.



Pic. 2 - Control module



Pic. 3 - Position and torque sensors

Manual Control

Actuator's output shaft may be adjusted also manually by means of a hand wheel. By rotating the hand wheel clockwise the valve will close (a left-hand thread on the valve has been envisaged.). Prior to the commencement of manual control, it will be necessary to loosen the locking bolt (Fig. 1), so that the hand wheel may rotate freely. Upon adjusting the output shaft to the required position, it will be necessary to retighten the locking bolt again into the interlocking flange opening.

Tab. 1 – Basic parameters of MODACT MONED electric actuators

Type marking	Torque [Nm]		Adjusting speed [1/min]	Electric motor					Weight [kg]	Type No.											
	Tripping	Starting		Type	Power [kW]	RPM [1/min]	I _n (400 V) [A]	I _z / I _n		Basic					Additional						
			1						2	3	4	5	6	7	8	9	10	11	12		
MONED 40/135 – 7	20 - 40	135	7	1LA7 070-8AB	0.09	630	0.36	2.2	28	5 2 0 3 0	x	x	J	O	N	E	D				
MONED 40/220 – 9		220	9	1LA7 070-6AA	0.18	835	0.62	2.3	28		x	x	O	O	N	E	D				
MONED 40/135 – 15		135	15	1LA7 070-6AA	0.18	835	0.62	2.3	28		x	x	1	O	N	E	D				
MONED 40/100 – 25		100	25	1LA7 070-4AB	0.25	1350	0.76	3.0	27		x	x	2	O	N	E	D				
MONED 40/60 – 40		60	40	1LA7 070-4AB	0.25	1350	0.76	3.0	27		x	x	3	O	N	E	D				
MONED 40/95 – 50		95	50	1LA7 070-2AA	0.37	2740	1.00	3.5	27		x	x	4	O	N	E	D				
MONED 40/60 – 80		60	80	1LA7 070-2AA	0.37	2740	1.00	3.5	27		x	x	5	O	N	E	D				
MONED 80/135 – 7	40 – 80	135	7	1LA7 070-8AB	0.09	630	0.36	2.2	28		x	x	K	O	N	E	D				
MONED 80/220 – 9		220	9	1LA7 070-6AA	0.18	835	0.62	2.3	28		x	x	6	O	N	E	D				
MONED 80/135 – 15		135	15	1LA7 070-6AA	0.18	835	0.62	2.3	28		x	x	7	O	N	E	D				
MONED 80/100 – 25		100	25	1LA7 070-4AB	0.25	1350	0.76	3.0	27		x	x	8	O	N	E	D				
MONED 75/95 – 40	40 – 75	95	40	1LA7 073-4AB	0.37	1370	1.03	3.3	28		x	x	9	O	N	E	D				
MONED 70/95 – 50	40 – 70	95	50	1LA7 070-2AA	0.37	2740	1.00	3.5	27		x	x	A	O	N	E	D				
MONED 70/90 – 80		90	80	1LA7 073-2AA	0.55	2800	1.36	4.3	28		x	x	B	O	N	E	D				
MONED 125/200 – 7	80 – 125	200	7	1LA7 073-8AB	0.12	645	0.51	2.2	28		x	x	L	O	N	E	D				
MONED 125/220 – 9		220	9	1LA7 070-6AA	0.18	835	0.62	2.3	28		x	x	C	O	N	E	D				
MONED 125/200 – 15		200	15	1LA7 073-6AA	0.25	850	0.78	2.7	28		x	x	D	O	N	E	D				
MONED 120/155 – 25	80 – 120	155	25	1LA7 073-4AB	0.37	1370	1.03	3.3	27		x	x	E	O	N	E	D				
MONED 115/150 – 50	80 – 115	150	50	1LA7 073-2AA	0.55	2800	1.36	4.3	28		x	x	H	O	N	E	D				
MONED 95/125 – 7	63 – 95	125	7	1LA7 070-8AB	0.09	630	0.36	2.2	49		5 2 0 3 1	x	x	C	O	N	E	D			
MONED 100/210 – 9		210	9	1LA7 070-6AA	0.18	835	0.62	2.3	49			x	x	O	O	N	E	D			
MONED 100/185 – 15	63 – 100	185	15	1LA7 073-6AA	0.25	850	0.78	2.7	49			x	x	1	O	N	E	D			
MONED 100/150 – 25		150	25	1LA7 080-6AA	0.37	920	1.20	3.1	41			x	x	2	O	N	E	D			
MONED 100/170 – 40		170	40	1LA7 080-4AA	0.55	1395	1.45	3.9	41			x	x	3	O	N	E	D			
MONED 100/150 – 63		150	63	1LA7 083-4AA	0.75	1395	1.86	4.0	42			x	x	4	O	N	E	D			
MONED 100/200 – 80		200	80	1LA7 083-2AA	1.1	2845	2.40	6.1	43			x	x	E	O	N	E	D			
MONED 100/130 – 100		130	100	1LA7 090-4AA	1.1	1415	2.55	4.6	50			x	x	5	O	N	E	D			
MONED 100/150 – 145		150	145	1LA7 090-2AA	1.5	2860	3.25	5.5	51			x	x	F	O	N	E	D			
MONED 125/190 – 7	100-125	190	7	1LA7 073-8AB	0.12	645	0.51	2.2	49	x		x	D	O	N	E	D				
MONED 160/210 – 9	100-160	210	9	1LA7 070-6AA	0.18	835	0.62	2.3	49	x		x	6	O	N	E	D				
MONED 160/220 – 16		220	16	1LA7 080-6AA	0.37	920	1.20	3.1	50	x		x	7	O	N	E	D				
MONED 160/250 – 25		250	25	1LA7 083-6AA	0.55	910	1.60	3.4	42	x		x	8	O	N	E	D				
MONED 160/245 – 40		245	40	1LA7 083-4AA	0.75	1395	1.86	4.2	42	x		x	9	O	N	E	D				
MONED 160/300 – 65		300	65	1LA7 096-4AA	1.5	1420	3.4	5.0	54	x		x	A	O	N	E	D				
MONED 160/250 – 80		250	80	1LA7 090-2AA	1.5	2860	3.25	5.5	46	x		x	H	O	N	E	D				
MONED 160/210 – 100		210	100	1LA7 096-4AA	1.5	1420	3.4	5.3	54	x		x	B	O	N	E	D				
MONED 160/250 – 145		250	145	1LA7 096-2AA	2.2	2880	4.55	6.3	54	x		x	J	O	N	E	D				
MONED 245/340 – 7	160-245	340	7	1LA7 083-8AB	0.25	680	1.03	2.6	52	5 2 0 3 2		x	x	6	O	N	E	D			
MONED 250/350 – 9	160-250	350	9	1LA7 080-6AA	0.37	920	1.20	3.1	50			x	x	O	O	N	E	D			
MONED 250/360 – 16		360	16	1LA7 083-6AA	0.55	910	1.60	3.4	52			x	x	1	O	N	E	D			
MONED 250/360 – 25	360	25	1LA7 090-6AA	0.75	915	2.10	3.7	45	x			x	2	O	N	E	D				
MONED 240/310 – 40	160-240	310	40	1LA7 090-4AA	1.1	1410	2.55	4.6	45			x	x	3	O	N	E	D			
MONED 230/300 – 65	160-230	300	65	1LA7 096-4AA	1.5	1420	3.4	5.3	54			x	x	4	O	N	E	D			
MONED 250/425 – 80	160-250	425	80	1LA7 096-2AA	2.2	2880	4.55	6.3	49			x	x	5	O	N	E	D			
MONED 195/250 – 145	160-195	250	145	1LA7 096-2AA	2.2	2880	4.55	6.3	54			x	x	7	O	N	E	D			
MONED 500/720 – 16	250-500	720	16	1LA7 107-8AB	1.1	680	2.90	3.4	97			5 2 0 3 3	x	x	O	O	N	E	D		
MONED 500/650 – 25		650	25	1LA7 096-6AA	1.1	915	2.90	3.8	90				x	x	1	O	N	E	D		
MONED 500/690 – 40		690	40	1LA7 113-6AA	2.2	940	5.20	4.6	93	x	x		2	O	N	E	D				
MONED 500/765 – 63		765	63	1LA7 107-4AA	3.0	1420	6.40	5.6	90	x	x		3	O	N	E	D				
MONED 500/650 – 100		650	100	1LA7 113-4AA	4.0	1440	8.20	6.0	97	x	x		4	O	N	E	D				
MONED 630/900 – 16	320-630	900	16	1LA7 113-8AB	1.5	705	3.90	3.7	99	5 2 0 3 4	x	x	O	O	N	E	D				
MONED 630/835 – 20		835	20	1LA7 106-6AA	1.5	925	3.90	4.2	99		x	x	1	O	N	E	D				
MONED 630/945 – 35		945	35	1LA7 106-4AA	2.2	1420	4.70	5.6	97		x	x	2	O	N	E	D				
MONED 630/1000 – 63		1000	63	1LA7 113-4AA	4.0	1440	8.20	6.0	97		x	x	3	O	N	E	D				
MONED 1250/1640-45	630-1250	1640	45	1LA7 134-6AA	5.5	950	12.8	5.0	211	5 2 0 3 5	x	x	O	O	N	E	D				
MONED 1250/1720-70		1720	70	1LA7 133-4AA	7.5	1455	15.2	6.7	206		x	x	1	O	N	E	D				
MONED 930/1200-100	630-930	1200	100	1LA7 133-4AA	7.5	1455	15.2	6.7	206	x	x	2	O	N	E	D					
MONED 2500/3550-20	1000-2500	3550	20	1LA7 134-6AA	5.5	950	12.8	5.0	309	5 2 0 3 6	x	x	O	O	N	E	D				
MONED 2500/3700-30		3700	30	1LA7 133-4AA	7.5	1455	15.2	6.7	304		x	x	1	O	N	E	D				
MONED 2000/2600-40	1000-2000	2600	40	1LA7 133-4AA	7.5	1455	15.2	6.7	304	x	x	2	O	N	E	D					

Notes:

- Rated torque for S2 operation equals to 60% of max. tripping torque
Rated torque for S4 operation equals to 40% of max. tripping torque
- Weight dates are valid only for designs with C,D,E attachment.
- Actuators with Type No. 52 030 can be done with attachments of actuators with Type No. 52 031, but with ä28, shape C.
- Basic working stroke - Type No. 52 030 - 52 035: 2 - 1350 turns;
Type No. 52 036: 1 - 680 turns.

Tab. 1 – Basic parameters of MODACT MONED electric actuators

Type marking	Torque [Nm]		Adjusting speed [1/min]	Electric motor					Weight [kg]	Type No.											
	Tripping	Starting		Type	Power [kW]	RPM [1/min]	I _n (400 V) [A]	I _z / I _n		Basic					Additional						
										1	2	3	4	5	6	7	8	9	10	11	12
MOPED 40/70 - 7	20 – 40	70	7		0.05	650	0.42	1.6	28	5 2 0 3 0	x	x	J	O	P	E	D				
MOPED 40/65 - 9		65	9	EAMS 71L06L	0.06	830	0.34	2.0	28		x	x	O	O	P	E	D				
MOPED 40/55 - 15		55	15	EAMS 71L06	0.09	870	0.47	2.0	28		x	x	1	O	P	E	D				
MOPED 40/75 - 25		75	25	EAMS 71L04	0.18	1350	0.56	3.0	27		x	x	2	O	P	E	D				
MOPED 40/60 - 40		60	40	EAMS 71N04L	0.25	1350	0.76	3.0	27		x	x	3	O	P	E	D				
MOPED 40/50 - 50		50	50	EAMS 71L02	0.25	2830	0.68	4.0	27		x	x	4	O	P	E	D				
MOPED 40/60 - 80		60	80	EAMS 71N02L	0.37	2740	1.0	3.5	28		x	x	5	O	P	E	D				
MOPED 80/135 - 7	40 - 80	135	7	EAMS 71N08L	0.09	630	0.36	2.2	28		x	x	K	O	P	E	D				
MOPED 80/135 - 15		135	15	EAMS 71N06L	0.18	835	0.62	2.3	28		x	x	7	O	P	E	D				
MOPED 80/100 - 25		100	25	EAMS 71N04L	0.25	1350	0.76	3.0	27		x	x	8	O	P	E	D				
MOPED 75/95-40	40 – 75	95	40	EAMS 71N04	0.37	1370	1.03	3.3	28		x	x	9	O	P	E	D				
MOPED 70/95 - 50	40 - 70	95	50	EAMS 71N02L	0.37	2740	1.00	3.5	27		x	x	A	O	P	E	D				
MOPED 70/90 - 80		90	80	EAMS 71N02	0.55	2800	1.36	4.3	28		x	x	B	O	P	E	D				
MOPED 125/200 - 7		200	7	EAMS 71N08	0.12	645	0.51	2.2	28		x	x	L	O	P	E	D				
MOPED 125/220 - 9	80 - 125	220	9	EAMS 71N06L	0.18	835	0.62	2.3	28		x	x	C	O	P	E	D				
MOPED 125/200 – 15		200	15	EAMS 71N06	0.25	850	0.78	2.7	28		x	x	D	O	P	E	D				
MOPED 115/155-25		80 – 120	155	25	EAMS 71N04	0.37	1370	1.03	3.3		27	x	x	E	O	P	E	D			
MOPED 115/150 - 50	80 – 115	150	50	EAMS 71N02	0.55	2800	1.36	4.3	28		x	x	H	O	P	E	D				
MOPED 95/125 - 7	63 - 95	125	7	EAMS 71N08L	0.09	630	0.36	2.2	49		5 2 0 3 1	x	x	C	O	P	E	D			
MOPED 100/185 - 15	63 - 100	185	15	EAMS 71N06	0.25	850	0.78	2.7	49			x	x	1	O	P	E	D			
MOPED 100/150 - 25		150	25	EAMS 80N06L	0.37	920	1.2	3.1	41			x	x	2	O	P	E	D			
MOPED 100/170-40		170	40	EAMS 80N04L	0.55	1395	1.45	3.9	41			x	x	3	O	P	E	D			
MOPED 100/150 - 63		150	63	EAMS 80N04	0.75	1395	1.86	4.2	42			x	x	4	O	P	E	D			
MOPED 100/200 - 80		200	80	EAMS 80N02	1.1	2845	2.4	6.1	43			x	x	E	O	P	E	D			
MOPED 100/130 - 100		130	100	EAMS 90N04L	1.1	1415	2.55	4.6	50			x	x	5	O	P	E	D			
MOPED 100/150 - 145		150	145	EAMS 90N02L	1.5	2860	3.25	5.5	51			x	x	F	O	P	E	D			
MOPED 125/190 - 7		100 - 125	190	7	EAMS 71N08	0.12	645	0.51	2.2			49	x	x	D	O	P	E	D		
MOPED 160/210 - 9	100 - 160	210	9	EAMS 71N06L	0.18	835	0.62	2.3	49			x	x	6	O	P	E	D			
MOPED 160 220 - 16		220	16	EAMS 80N06L	0.37	920	1.2	3.1	50	x		x	7	O	P	E	D				
MOPED 160/250 - 25		250	25	EAMS 80N06	0.55	910	1.6	3.4	42	x		x	8	O	P	E	D				
MOPED 160/245 - 40		245	40	EAMS 80N04	0.75	1395	1.86	4.2	42	x		x	9	O	P	E	D				
MOPED 160/300 - 65		300	65	EAMS 90N04	1.5	1420	3.40	5.3	54	x		x	A	O	P	E	D				
MOPED 160/250 - 80		250	80	EAMS 90N02L	1.5	2860	3.25	5.5	46	x	x	H	O	P	E	D					
MOPED 160/210 - 100		210	100	EAMS 90N04	1.5	1420	3.40	5.3	54	x	x	B	O	P	E	D					
MOPED 160/250 - 145		250	145	EAMS 90N02	2.2	2880	4.55	6.3	54	x	x	J	O	P	E	D					
MOPED 245/340 - 7	160 - 245	340	7	EAMS 80N08	0.25	680	1.03	2.6	52	5 2 0 3 2	x	x	6	O	P	E	D				
MOPED 250/350 - 9	160 - 250	350	9	EAMS 80N06L	0.37	920	1.2	3.1	50		x	x	O	O	P	E	D				
MOPED 250/360 - 15		360	15	EAMS 80N06	0.55	910	1.6	3.4	52		x	x	1	O	P	E	D				
MOPED 250/360 - 25		360	25	EAMS 90N06L	0.75	915	2.1	3.7	45		x	x	2	O	P	E	D				
MOPED 240/310-40		160 - 240	310	40	EAMS 90N04L	1.1	1415	2.55	4.6		45	x	x	3	O	P	E	D			
MOPED 230/300 - 65	160 - 230	300	65	EAMS 90N04	1.5	1420	3.40	5.3	54		x	x	4	O	P	E	D				
MOPED 250/425 - 80	160 - 250	425	80	EAMS 90N02	2.2	2880	4.55	6.3	49		x	x	5	O	P	E	D				
MOPED 195/250 - 145	160 - 195	250	145	EAMS 90N02	2.2	2880	4.55	6.3	54	x	x	7	O	P	E	D					
MOPED 500/720 - 16	250 - 500	720	16	EAMS 100N08	1.1	680	2.9	3.4	97	5 2 0 3 3	x	x	O	O	P	E	D				
MOPED 500/650 - 25		650	25	EAMS 90N06	1.1	915	2.9	3.8	90		x	x	1	O	P	E	D				
MOPED 500/690 - 40		690	40	EAMS 112N06	2.2	940	5.2	4.6	93		x	x	2	O	P	E	D				
MOPED 500/765 - 63		765	63	EAMS 100N04	3.0	1420	6.4	5.6	90		x	x	3	O	P	E	D				
MOPED 500/650 - 100		650	100	EAMS 112N04	4.0	1440	8.2	6.0	97		x	x	4	O	P	E	D				
MOPED 630/900 - 16	320 - 630	900	16	EAMS 112N08	1.5	705	3.9	3.7	99	5 2 0 3 4	x	x	O	O	P	E	D				
MOPED 630/835 - 20		835	20	EAMS 100N06	1.5	925	3.9	4.2	99		x	x	1	O	P	E	D				
MOPED 630/945 - 35		945	35	EAMS 100N04L	2.2	1420	4.7	5.6	97		x	x	2	O	P	E	D				
MOPED 630/1000 - 63		1000	63	EAMS 112N04	4.0	1440	8.2	6.0	97		x	x	3	O	P	E	D				
MOPED 1250/1640-45	630-1250	1640	45	EAMS 132N06H	5.5	950	12.8	5.0	211	5 2 0 3 5	x	x	O	O	P	E	D				
MOPED 1250/1720-70		1720	70	EAMS 132N04	7.5	1455	15.2	6.7	206		x	x	1	O	P	E	D				
MOPED 930/1200-100	630-930	1200	100	EAMS 132N04	7.5	1455	15.2	6.7	206		x	x	2	O	P	E	D				
MOPED 2500/3550-20	1000-2500	3550	20	EAMS 132N06H	5.5	950	12.8	5.0	309	5 2 0 3 6	x	x	O	O	P	E	D				
MOPED 2500/3700-30		3700	30	EAMS 132N04	7.5	1455	15.2	6.7	304		x	x	1	O	P	E	D				
MOPED 2000/2600-40		1000-2000	2600	40	EAMS 132N04	7.5	1455	15.2	6.7		304	x	x	2	O	P	E	D			

Notes:

1) Rated torque for S2 operation equals to 60% of max. tripping torque
 Rated torque for S4 operation equals to 40% of max. tripping torque

2) Weight dates are valid only for designs with C,D,E attachment.

3) Actuators with Type No. 52 030 can be done with attachments of actuators with Type No. 52 031, but with &d6 28, shape C.

4) Basic working stroke - Type No. 52 030 - 52 035: 2 - 1350 turns;
 Type No. 52 036: 1 - 680 turns.

Tab. 2 - Signification of additional letters and numbers

Chosen numbers or letters replace "x" sign on the 6th and 7th position of type number in Tab. 1 or Tab 1a.

Type No. 5 2 0 3 X . X X X X X E D

6. position

		Attachment	
		Bushings	Connector
Attachment	Shape A-	5	F
	Shape B1-	6	G
	Shape C-	7	H
	Shape D-	8	J
	Shape E-	9	K

7. position

Local controlunit, position indicator		LCU no	LCU yes
Position transmitter NO	BAT 1	2	6
	BAT 2	3	8
Position transmitter YES	BAT 1	C	G
	BAT 2	D	H

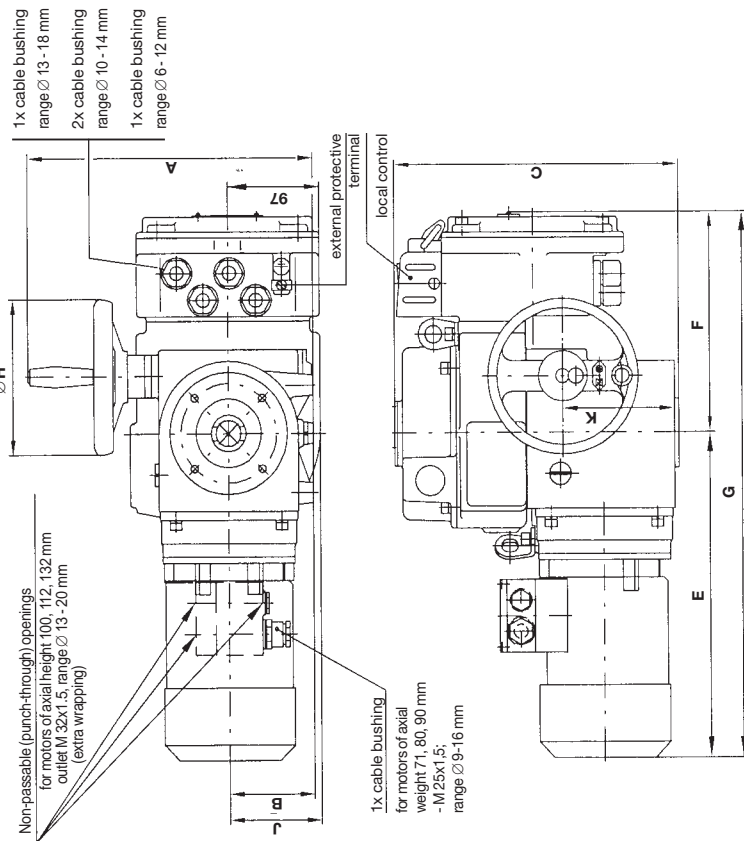
Notes:

- Types of batteries are mentioned in chapter *Technical parameters of electronics*.
- Connector *HARTING* ensures full electric connection of actuator. *ZPA Pečky, Co. Ltd.* also supplies a counterpart for the cable. In order to connect the cable to this counterpart it is necessary to use crimping pliers (supplied by *HARTING Company* on Order No. 0999 000 0021; e-mail: *info@contex.cz*).

Example of marking

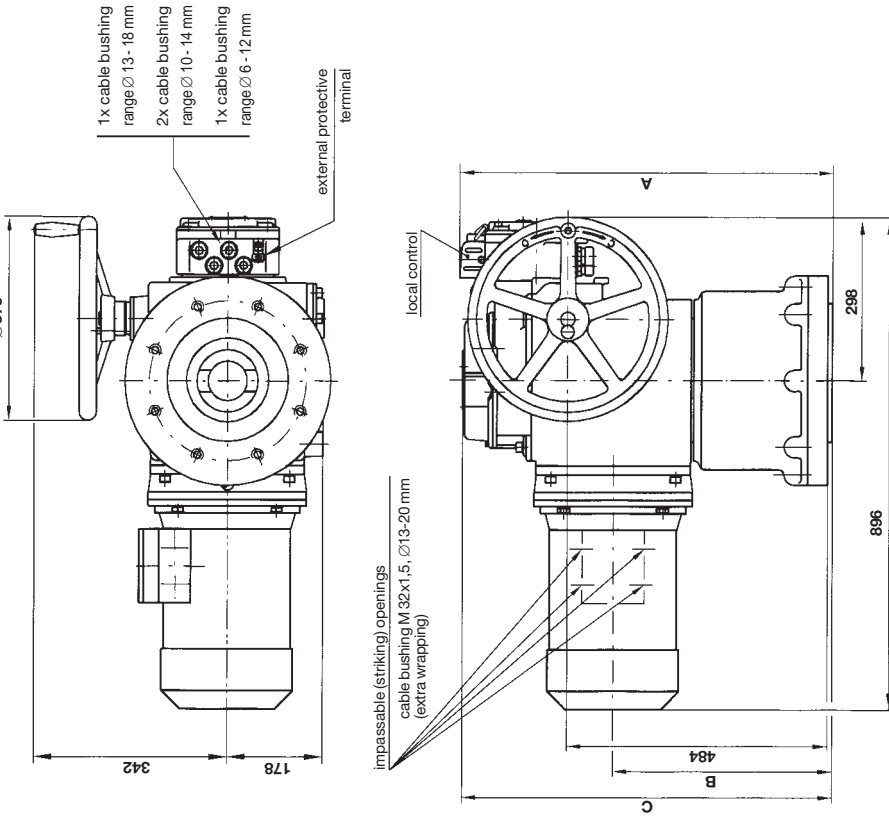
Actuator MONED	xxxxx.xx 0 NED
Tripping torque 20 - 40 Nm,	
Adjusting speed 40 RPM	52030 .xx 30 NED
Attachment "A",	
Design with terminal board	52030. 5 x 30 NED
Current position transmitter,	
LCU and BAT1	52030. 5G 30 NED

Dimensional sketch of **MODACT MONED** electric actuators,
T. No. 52 030.xxxxxNED up to 52 035.xxxxxNED,
design with a terminal board



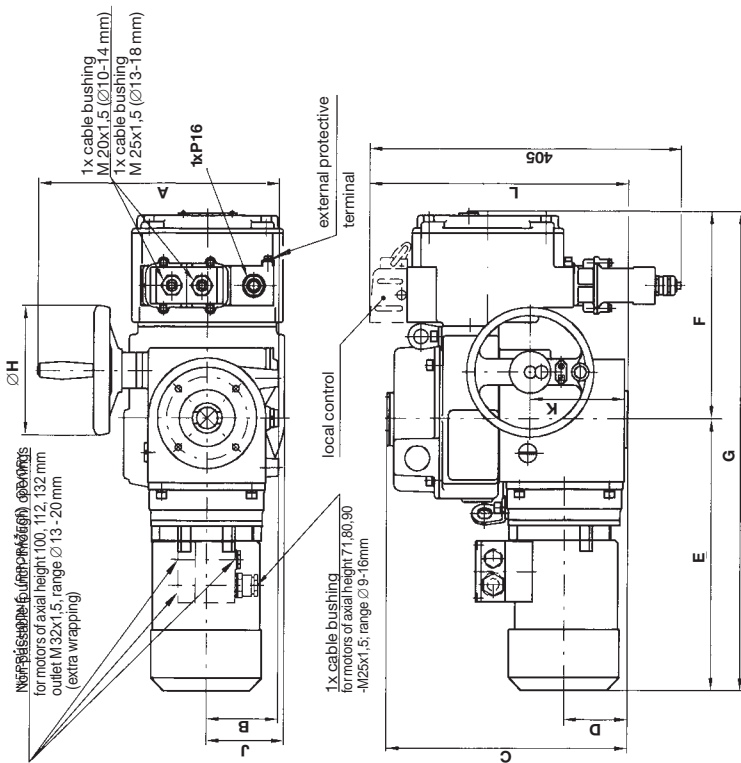
Type marking	A	B	C	D	E	F	G	ØH	J	K	L
52 030.xxxxxNED	305	90	300	78	334	228	562	160	99	120	300
52 031.xxxxxNED 52 032.xxxxxNED	376	120	328	92	436	228	664	200	-	144	328
52 033.xxxxxNED 52 034.xxxxxNED	455	145	382	123	519	258	777	250	-	190	387
52 035.xxxxxNED	540	178	442	153	598	298	896	375	-	234	445

Dimensional sketch of **MODACT MONED** electric actuators,
T. No. 52 036.xxxxxNED,
design with a terminal board



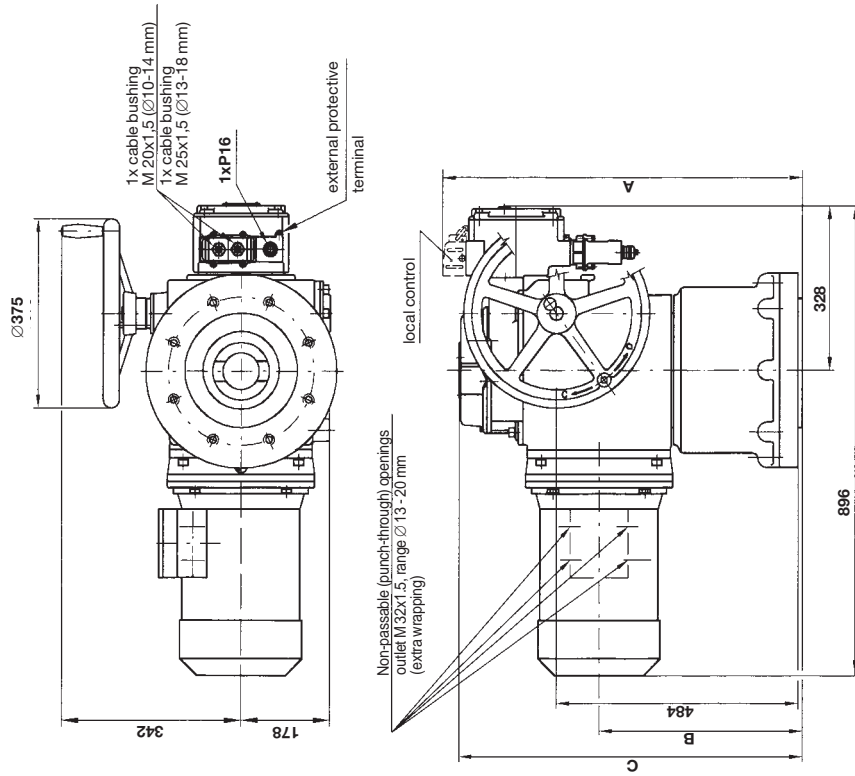
Type marking	A	B	C
52 036.xxxxxNED design A	757	463	750
52 036.xxxxxNED design B, C, D, E	712	418	705

Dimensional sketch of **MODACT MONED** electric actuators,
T. No. 52 030.xxxxxNED up to 52 035.xxxxxNED
(design with a connector)



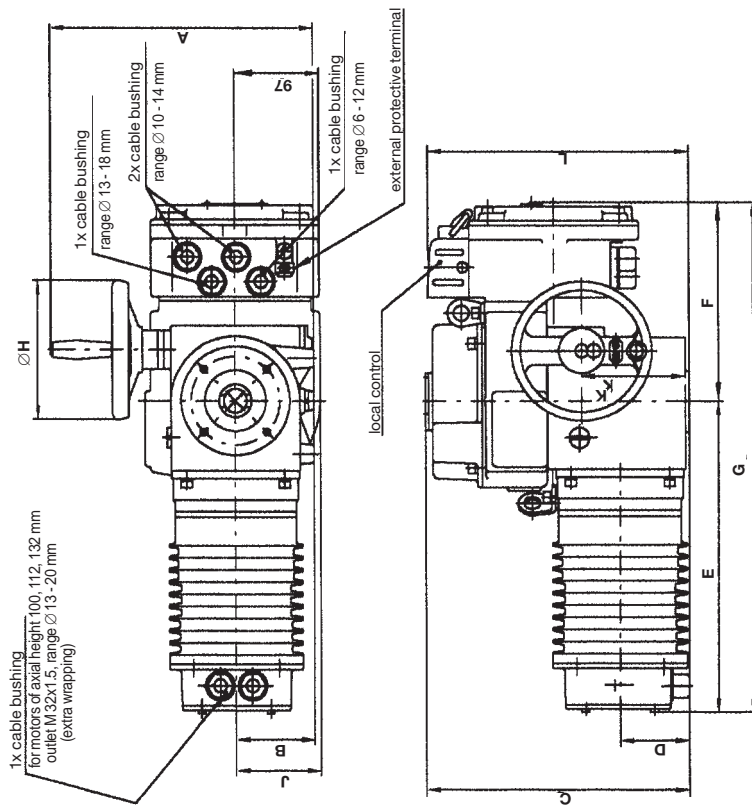
Type marking	A	B	C	D	E	F	G	H	J	K	L
52 030.xxxxxNED	305	90	300	78	334	258	592	160	99	120	325
52 031.xxxxxNED 52 032.xxxxxNED	376	120	328	92	436	258	694	200	-	144	350
52 033.xxxxxNED 52 034.xxxxxNED	455	145	382	123	519	288	807	250	-	190	410
52 035.xxxxxNED	540	178	442	153	598	328	926	375	-	234	470

Dimensional sketch of **MODACT MONED** electric actuator,
T. No. 52 036.xxxxxNED
(design with a connector)



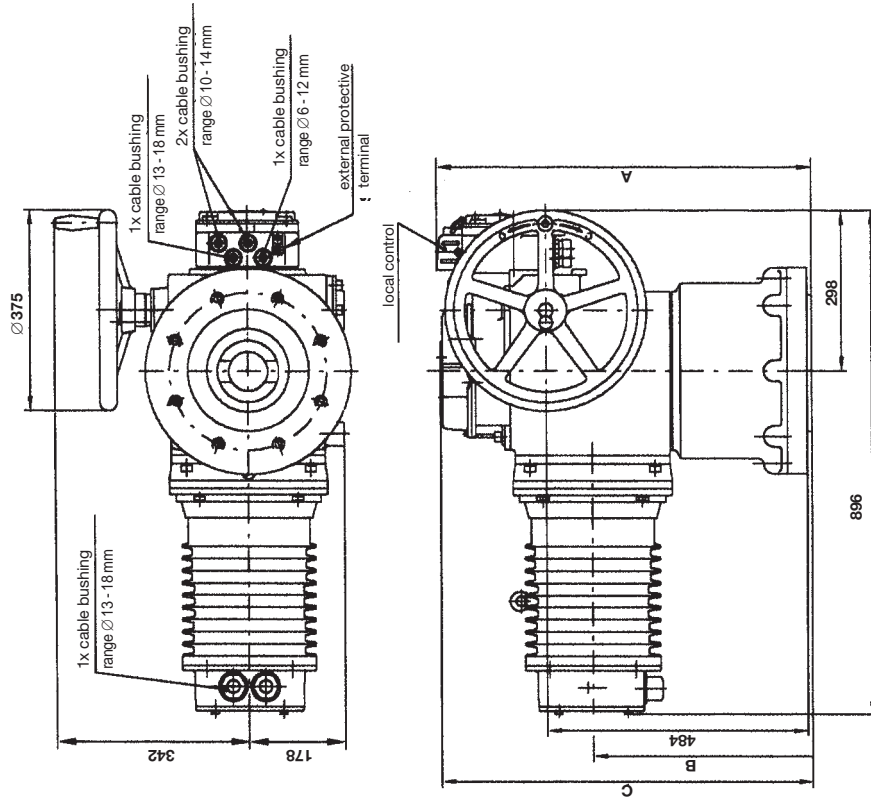
Type marking	A	B	C
52 036.xxxxxNED design A	785	463	750
52 036.xxxxxNED design B, C, D, E	740	418	705

Dimensional sketch of **MODACT MOPED** electric actuators,
T. No. 52 030.xxxxPED up to 52 035.xxxxPED,
design with a terminal board



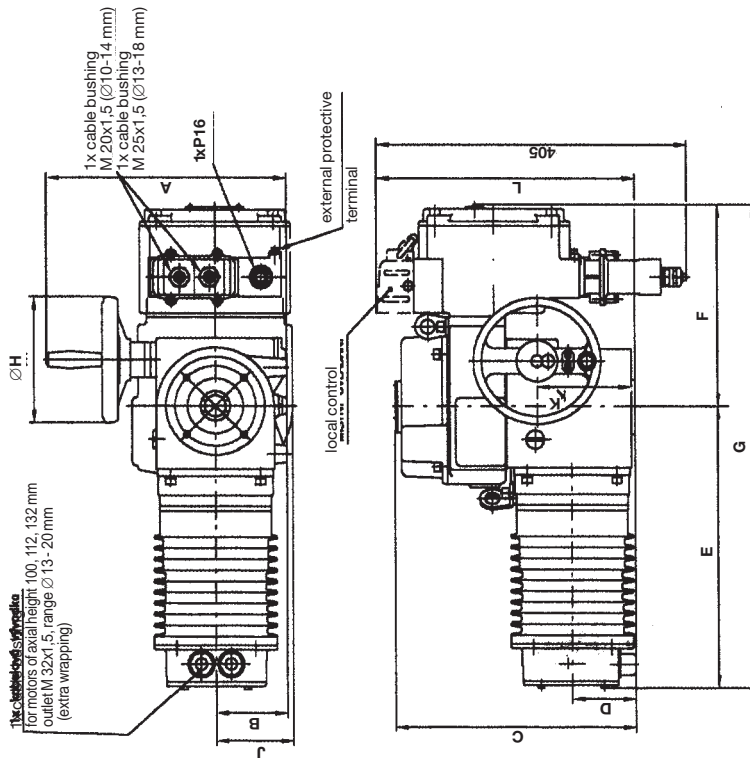
Type marking	A	B	C	D	E	F	G	\varnothing H	J	K	L
52 030.xxxxPED	305	90	300	78	334	228	562	160	99	120	300
52 031.xxxxPED 52 032.xxxxPED	376	120	328	92	436	228	664	200	-	144	328
52 033.xxxxPED 52 034.xxxxPED	455	145	382	123	519	258	777	250	-	190	387
52 035.xxxxPED	540	178	442	153	598	298	896	375	-	234	445

Dimensional sketch of **MODACT MOPED** electric actuators,
T. No. 52 036.xxxxPED,
design with a terminal board



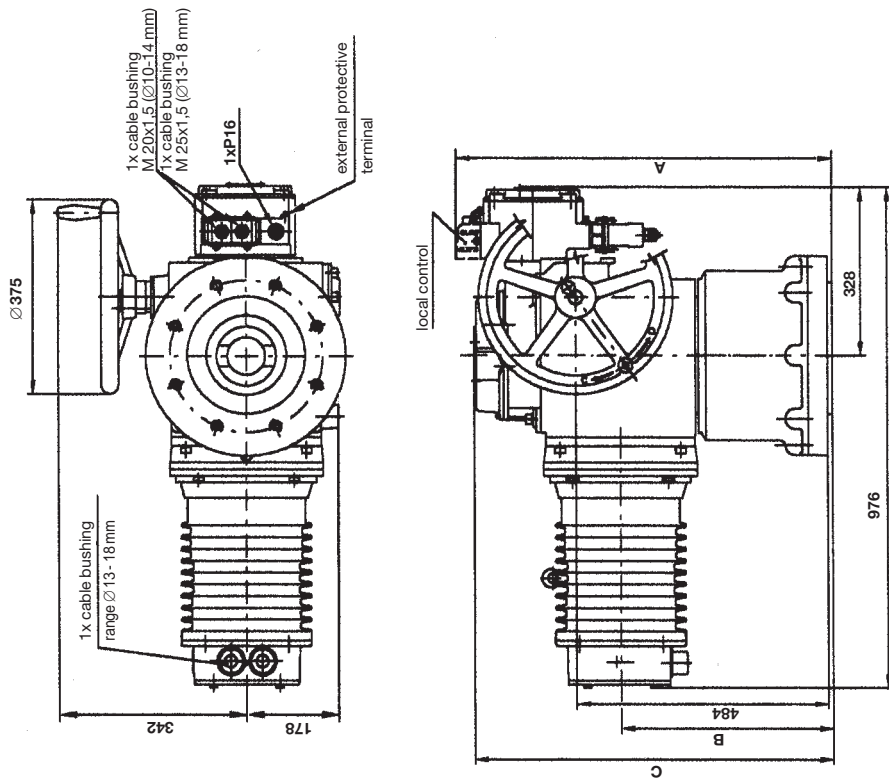
Type marking	A	B	C
52 036.xxxxPED design A	757	463	750
52 036.xxxxPED design B, C, D, E	712	418	705

Dimensional sketch of **MODACT MOPED** electric actuators,
T. No. 52 030.xxxxxPED up to 52 035.xxxxxPED
(design with a connector)



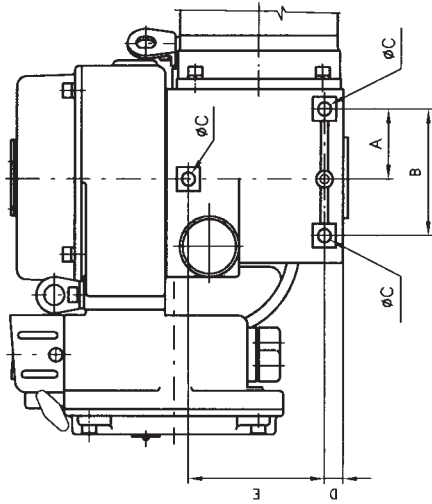
Type marking	A	B	C	D	E	F	G	H	ØH	J	K	L
52 030.xxxxxPED	305	90	300	78	334	258	592	160	99	-	120	325
52 031.xxxxxPED 52 032.xxxxxPED	376	120	328	92	436	258	694	200	-	144	350	
52 033.xxxxxPED 52 034.xxxxxPED	455	145	382	123	519	288	807	250	-	190	410	
52 035.xxxxxPED	540	178	442	153	598	328	926	375	-	234	470	

Dimensional sketch of **MODACT MOPED** electric actuator,
T. No. 52 036.xxxxxPED
(design with a connector)



Type marking	A	B	C
52 036.xxxxxPED design A	785	463	750
52 036.xxxxxPED design B, C, D, E	740	418	705

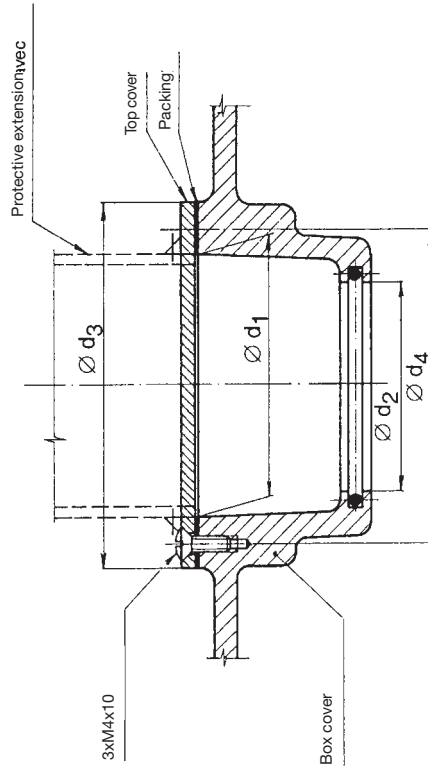
Holes for additional fixing of **MODACT MONED, MOPED** actuators,
Type No. 52 030 - 52 035



Actuator Type No.	Dimension [mm]				
	A	B	ϕC	D	E
52 030	61	110	M10	16	120
52 031 52 032	90	160	M12	21	140
52 033 52 034	110	210	M16	23	200
52 035	120	240	M20	47	220

Note:
Intended only for additional fixing of the MODACT actuators to carry their weight, these holes should not be stressed by another additional force.

Modifications for rising spindle



Dimension [mm]	Type No.			
	52 030	52 031 52 032	52 033 52 034	52 035 52 036
d ₁	45	60	80	90
d ₂	35,5	50,5	75	80,5
d ₃	65	80	110	110
d ₄	55	70	100	100

The protective extension should be made by the customer, including the hole in its cover.

Attachment of **MODACT MONED; MOPED** actuators,
Type No. 52 030 - 52 036 - Basic design (without adapter)

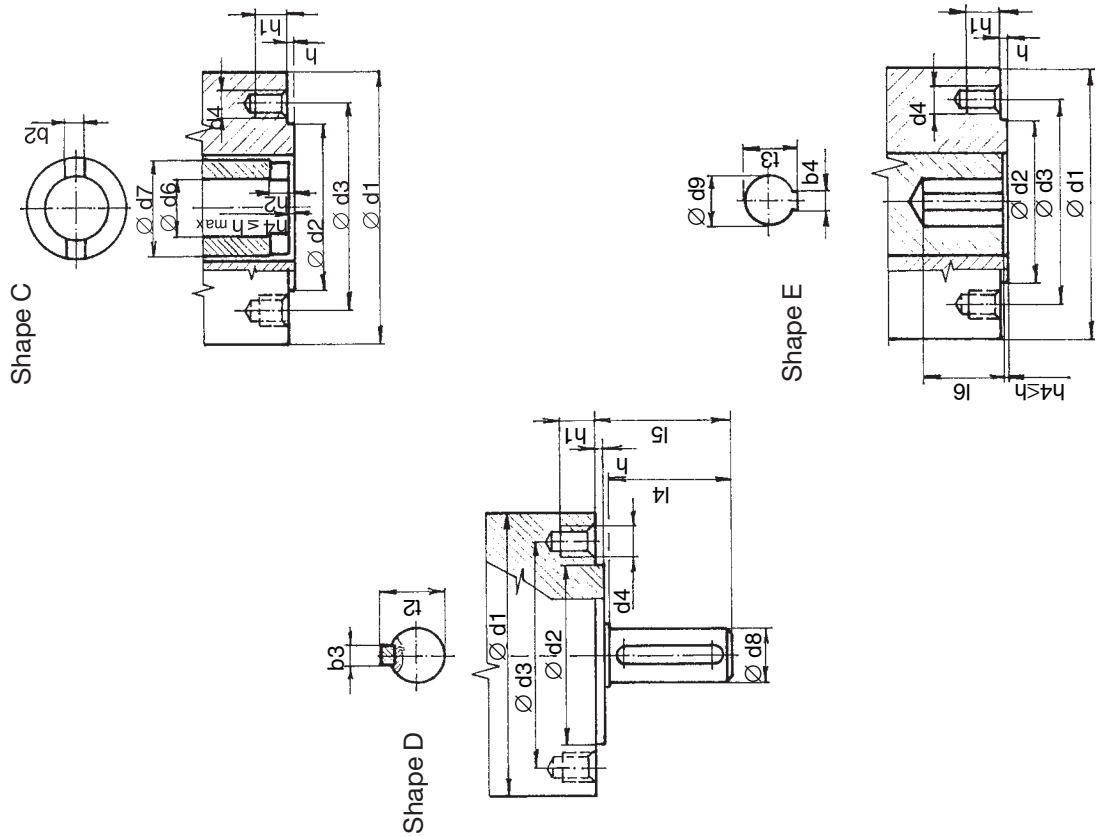
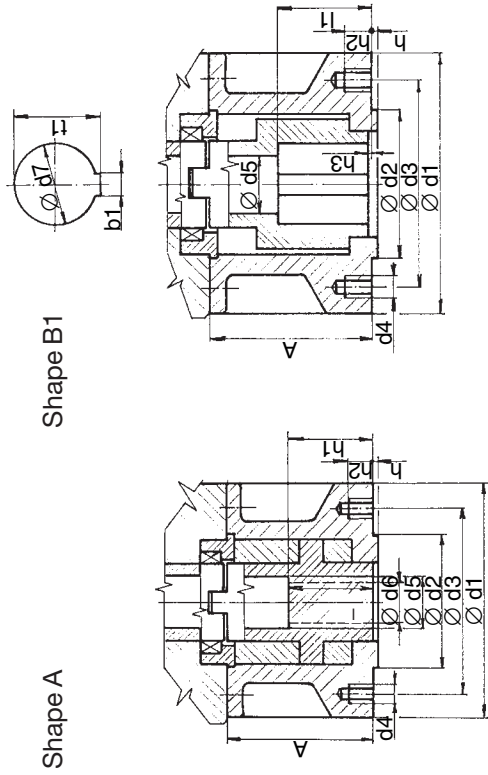


Table of basic attachment of **MODACT MONED; MOPED** actuators
(without adapter)

Shape	Dimension [mm]	Type No. / Flange				
		52 030 F10	52 031 52 032 F14	52 033 52 034 F16	52 035 F25	52 036 F30
C, D, E (identical dimensions)	$\varnothing d1$ informative value	125	175	210	300	390
	$\varnothing d2$ l6	70	100	130	200	230
	$\varnothing d3$	102	140	165	254	298
	d4	M 10	M 16	M 20	M 16	M 20
	Number of tapped holes	4	4	4	8	8
C	hmax	3	4	5	5	5
	h1 min. 1,25d4	12,5	20	25	20	25
	$\varnothing d7$	40	60	80	100	120
	h2	10	12	15	16	18
	b2 H11	14	20	24	30	40
D	$\varnothing d6$	28	41,5	53	72	72
	$\varnothing d8$ g6	20	30	40	50	60
	l	50	70	90	110	120
	l2max	22,5	33	43	53,5	64
	b3 h9	6	8	12	14	18
E	l	55	76	97	117	127
	$\varnothing d9$ H8	20	30	40	50	60
	le min.	55	76	97	117	127
	l3	22,8	33,3	43,3	53,8	64,4
	b4 JS9	6	8	12	14	18

The dimensions \varnothing -d6 and l6 should not be smaller than those tabulated.
Dimensions are given in mm

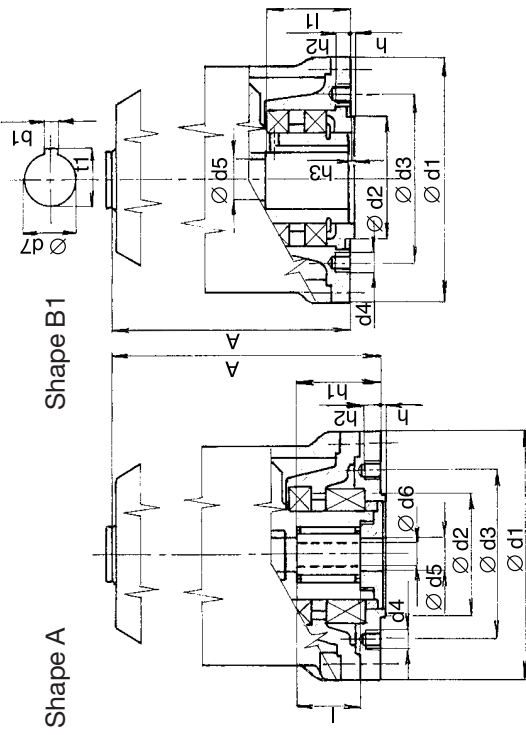
Adapters for **MODACT MONED; MOPED** actuators, Type No. 52 030 - 52 035



Assignment of adapters to actuators

Shape	Dimension [mm]	Type No.			
		52 030	52 031 52 032	52 033 52 034	52 035
A, B1 (identical dimensions)	∅d1	125	175	210	300
	∅d2 f8	70	100	130	200
	∅d3	102	140	165	254
	d4	M10	M16	M20	M16
A	Number of holes ∅d4	4	4	4	8
	h	3	4	5	5
	h2 min.	12,5	20	25	20
	A	63,5	110	179	155
	∅d5	30	38	53	63
	∅d6 max	26	36	44	60
	h1 max	43,5	65	92	110
	l min	45	55	70	90
	A	63,5	110	122	155
	∅d5	30	40	50	65
	l1 min	45	65	80	110
B1	h3 max	3	4	5	5
	b1	12	18	22	28
	∅d7_H9	42	60	80	100
	t1	45,3	64,4	85,4	106,4

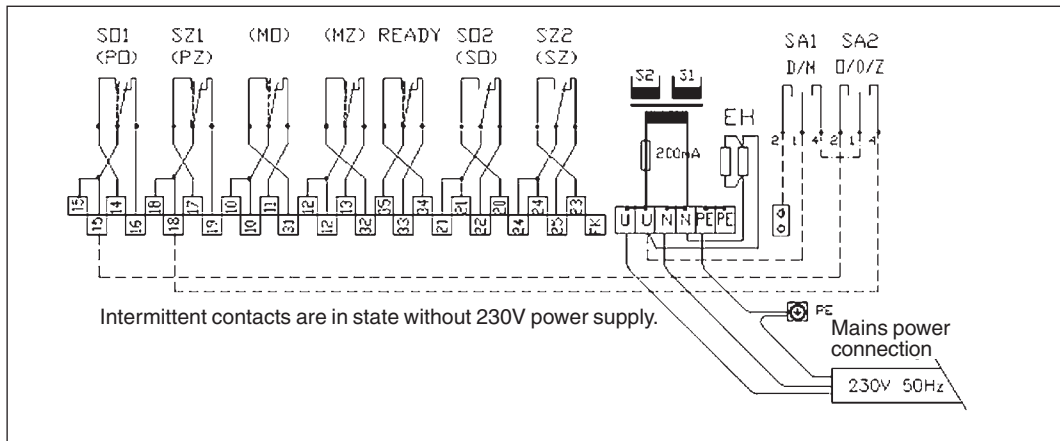
Adapters for **MODACT MONED; MOPED** actuators, Type No. 52 036



Shape	Dimension [mm]	52 036
A, B1 (identical dimensions)	∅d1	390
	∅d2 f8	230
	∅d3	298
	d4	M20
A	Number of holes ∅d4	8
	h	5
	h2 min.	25
	A	740 1+)
	∅d5	72
	∅d6 max	70
	h1 max	165
	l min	110
	A	695 2+)
	∅d5	72
	l1 min	130
B1	h3 max	5
	b1	32
	∅d7_H9	120
	t1	127,4

Notes:
1+) Nut built in actuator
2+) Bush built in actuator

Terminal Board DMS



Functions of contacts of output relays

Tab. a)		Relays MO and MZ switch only at reach of torque				
DMS without power supply	Relay	Torque	Position			Torque
		CLOSE	CLOSE	intermediate	OPEN	OPEN
14-15	SO1	no effect	15-16	15-16	14-15	no effect
17-18	SZ1	no effect	17-18	18-19	18-19	no effect
10-31	MO	11-10	11-10	11-10	11-10	10-31
12-32	MZ	12-32	13-12	13-12	13-12	13-12
35-34	Ready	33-35	33-35	33-35	33-35	33-35
21-22	SO2	no effect	21-22	21-22	20-21	no effect
24-25	SZ2	no effect	23-24	24-25	24-25	no effect

Tab. b)		Relays MO and MZ switch only at reach of torque or position				
DMS without power supply	Relay	Torque	Position			Torque
		CLOSE	CLOSE	intermediate	OPEN	OPEN
14-15	SO1	no effect	15-16	15-16	14-15	no effect
17-18	SZ1	no effect	17-18	18-19	18-19	no effect
10-31	MO	11-10	11-10	11-10	11-10	10-31
12-32	MZ	12-32	13-12	13-12	13-12	13-12
35-34	Ready	33-35	33-35	33-35	33-35	33-35
21-22	SO2	no effect	21-22	21-22	20-21	no effect
24-25	SZ2	no effect	23-24	24-25	24-25	no effect

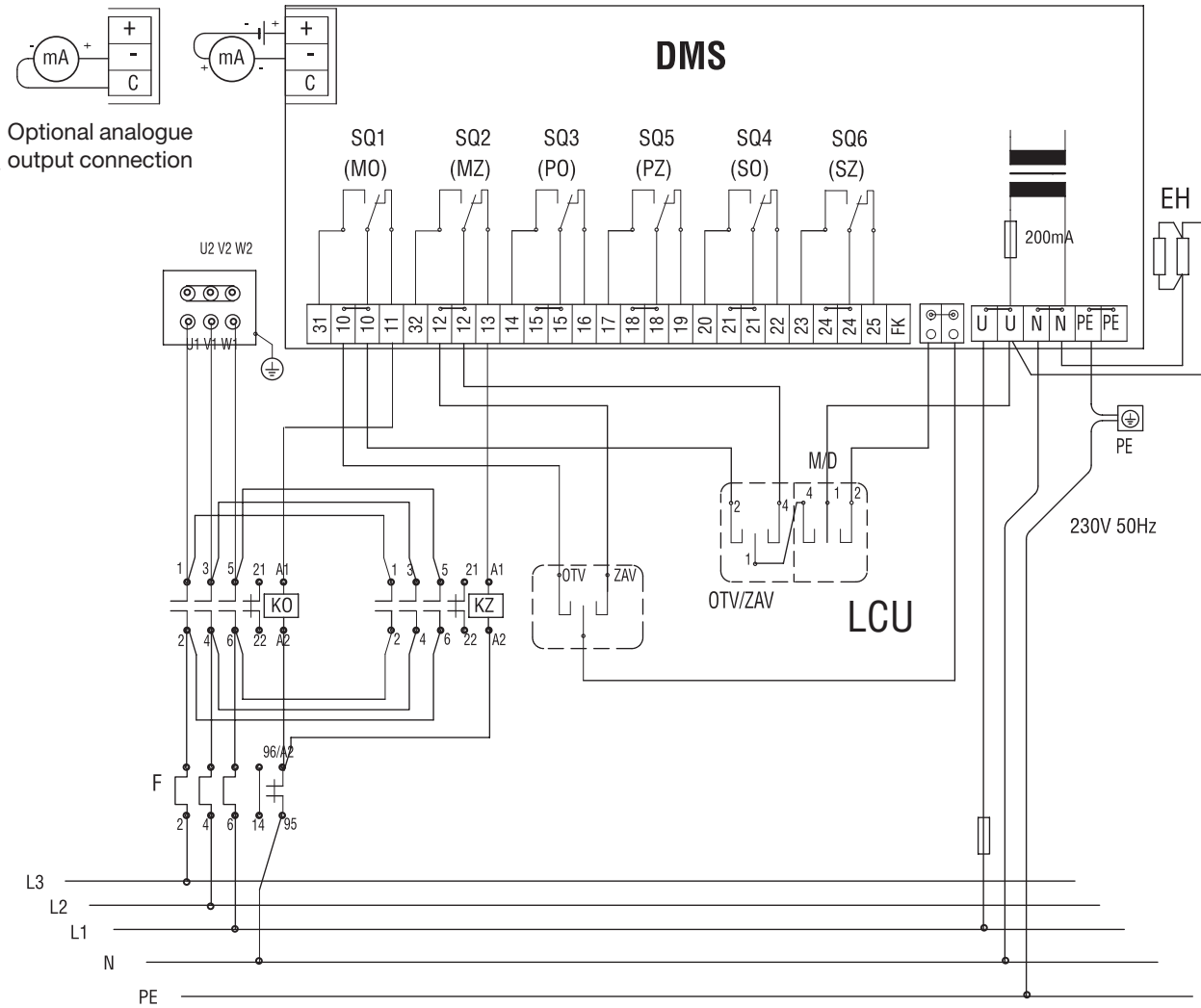
Note:

Relay Ready has affect only of some failure occurs.

MODACT MONED and MOPED Electric Actuators

An Example of External Connection

- change-over switch control, BMO, 230V control voltage (MO, MZ relays, moment and position tripping)



SURVEY OF PRODUCED ACTUATORS

KP Mini

Electric rotary (90°) actuators (up to 30 Nm)

Modact MOK, MOK-P, MOK-P EEx

Electric rotary (90°) actuators for ball valves and flaps

Modact MON, MONED, MOPEd

Electric rotary multi-turn actuators

Modact MO EEx

Explosion proof electric multi-turn actuators

Modact MOA

Electric rotary (90°) actuators for nuclear power stations
application outside containment

Modact MOA OC

Electric multi-turn actuators for nuclear power stations
application inside containment

Modact Variant MPR

Electric rotary (160°) lever actuators with a variable output speed

Modact Konstant MPS

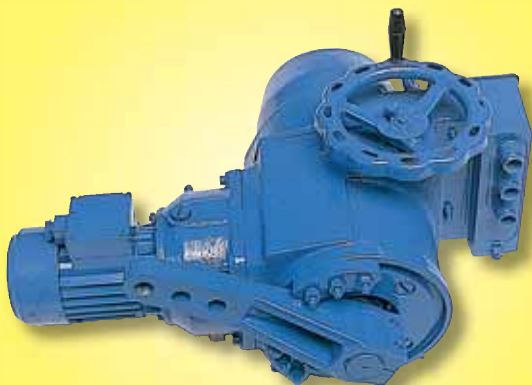
Electric rotary (160°) lever actuators with a constant output speed

Modact MTN

Electric linear thrust actuators with a constant output speed



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