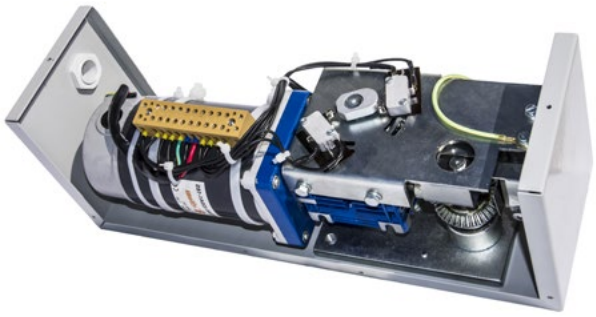
Motor drive with worm gear
NS-EL 30

Application

Motor drive type NS-EL is designed to work with disconnectors, load break switches, and medium voltage earthing switches in indoor conditions. The application of the drive allows for remote or local control of the switch installed in the cell of the switchgear. The NS-EL can easily replace the pneumatic or manual drive type NR1-01, introducing a new standard of control and safety (remote, local or manual control possibility).



Advantages

» simple construction with the use of well-tested mechanisms (2000 switching cycles)

» high torque for easy manoeuvring of a wide range of medium-voltage switchgear (disconnectors, load break switches, earthing switches)

» operating reliability

» smooth adjustment of the angle of rotation of the output shaft in the range of 220°

» easy replacement of the manual drive with the NS-EL, without having to change the existing switchgear

» in the case of a power failure, manual operation is possible

Technical data

	NS – EL 30-03
Motor type	with permanent magnets
Rated voltage of the motor	24 / 110 / 220 VDC
Rated power	90 - 300 W
Motor's rated current	0,5 A
Torque on the drive's shaft	35 - 70 Nm
Rated mechanical durability	2000 cycles
Weight	from 8 kg (depending on chosen motor)

Design and operation

The motor drive unit consists of:

» multi-degrees cylindrical - worm gear driven by DC series motor

» limit switches switching off the motor power supply when the main shaft reaches the assumed rotation angle

» terminal strip for connection of power supply and control circuits

» a microswitch for electrical interlock to disconnect motor power during manual operation

The housing is made of steel sheet, covered by epoxy powered paint. The lid is mounted to the drive's panel with 2 bolts. There is the straight-though joint in the bottom, which allows to lead the conductors to the control system.

The drive mechanism includes:

» the motor with permanent magnets

» intersecting axis worm gear

» intersecting axis rack – type gear for manual opening

The electric motor drives a shaft through a worm gear which is clamped together by means of a fork. The rotation angle of the output shaft is limited by limit switches to 220°. The angle of rotation of the output shaft is adjusted by means of limit switches mounted on the distribution finger plate. By loosening the M3 screw, the angle of the output shaft can be infinitely adjusted up to 220°.

Manual control

To operate the drive:

» pull out the damper (placed upper or on the left side) which blocks the hole in the left side, that causes the blockade of the operating of electric motor

» insert the crank in the hole (which opens when pulling out the damper)

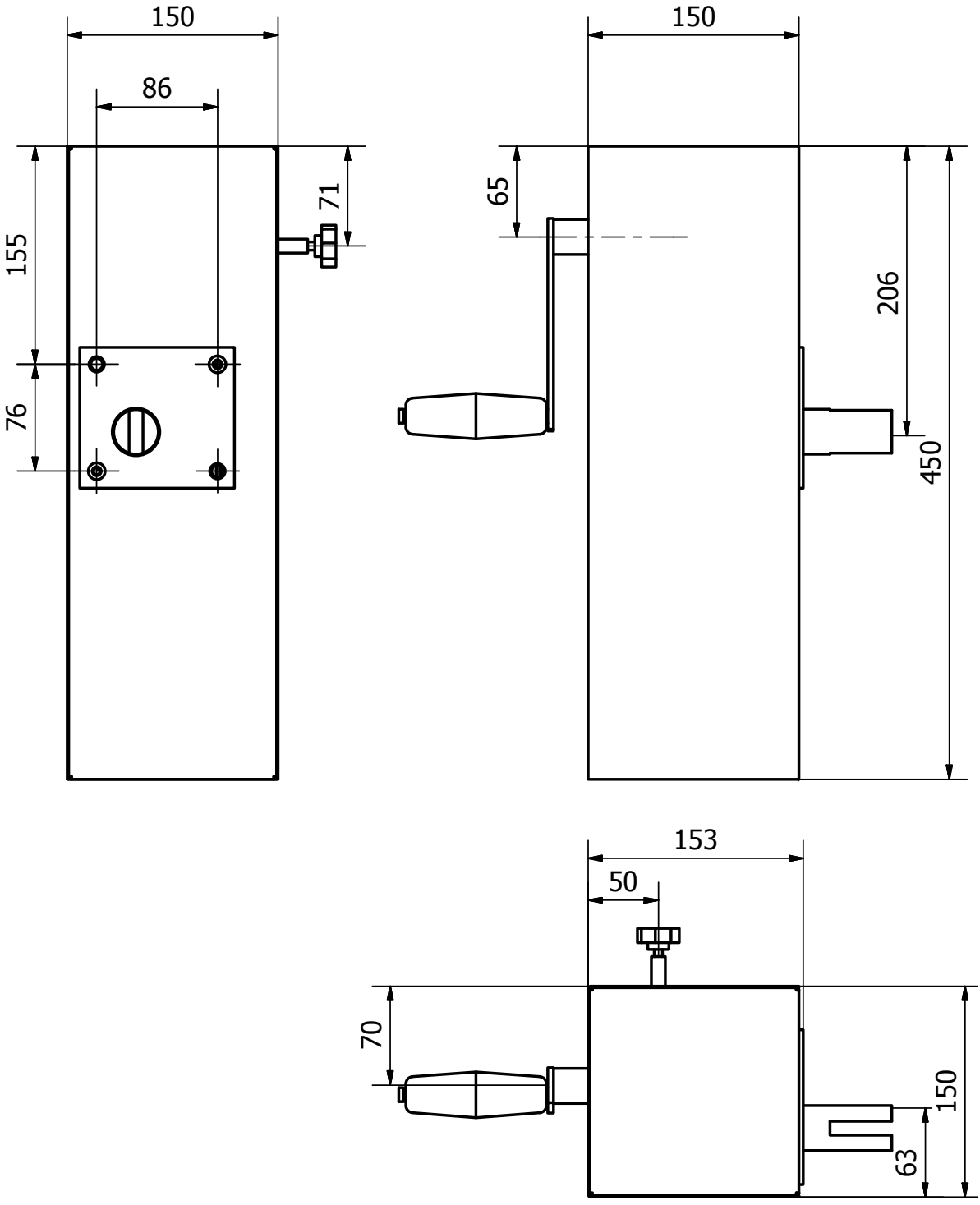
» rotate right (to close) or left (to open)

» after pulling out the operating lever, it is necessary to insert the damper to unlock the motor for electrical operating

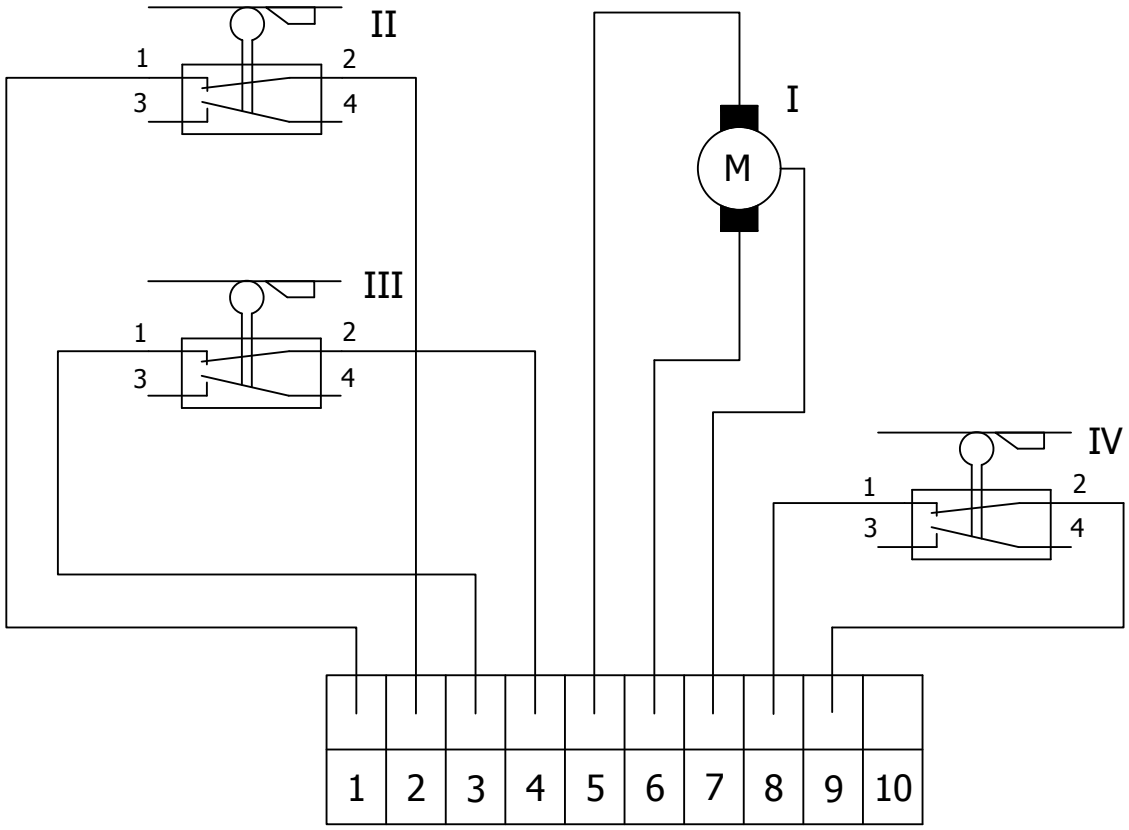
Installation

The drive is fastened to the support structure using two M10 screws. The wall on which the drive is mounted should be sufficiently rigid, ensuring a certain transfer of the electric manoeuvring torque.

ELTOM Tomasz Cisak
ul. Pionierów 17 | 84-300 Lębork
office@cisak.pl | +48 598621 592



Dimensions of NS-EL 30



Wiring diagram of NS-EL 30

I	Motor
II	Closing limit switch
III	Opening limit switch
IV	Microswitch for electrical interlock

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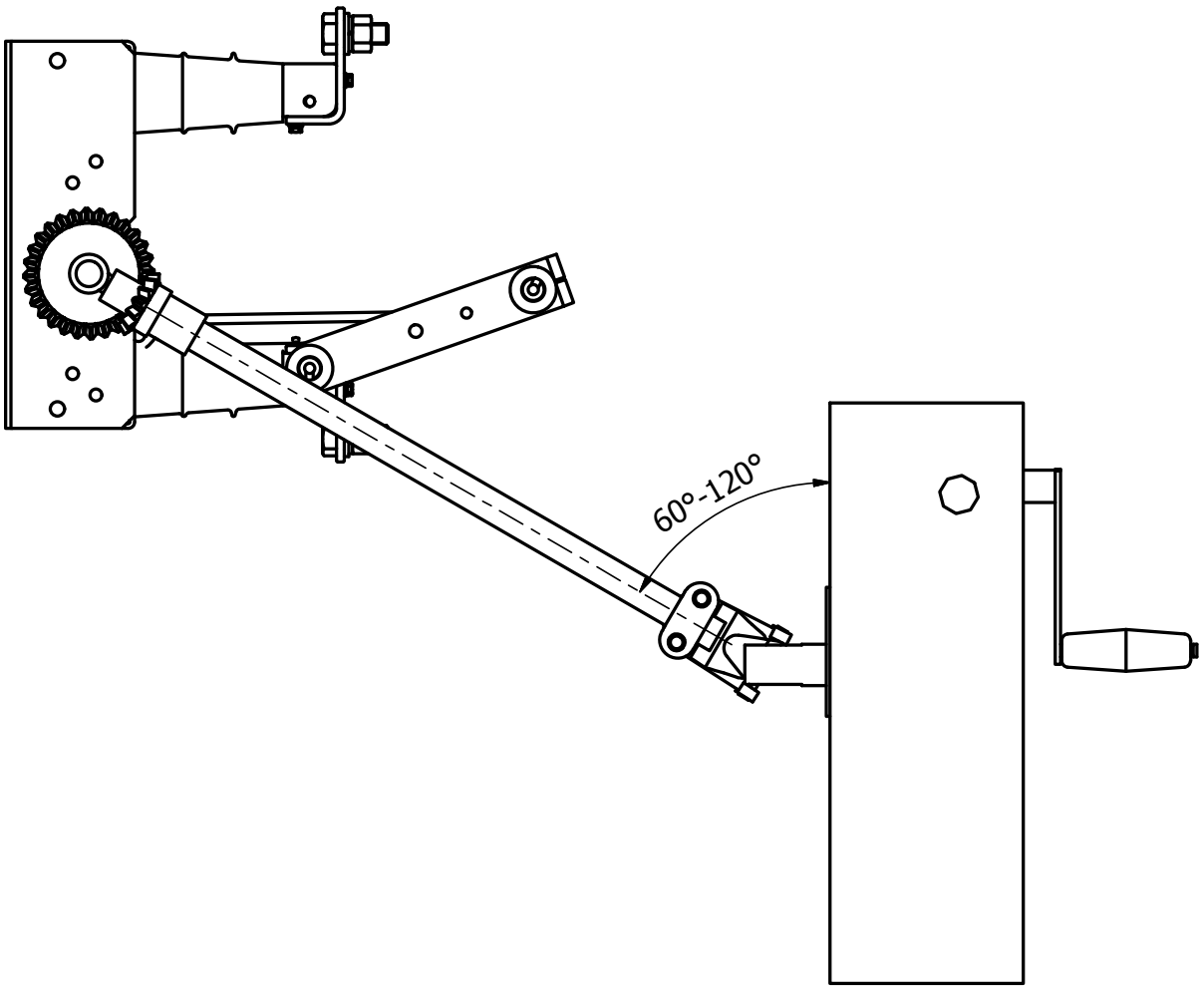
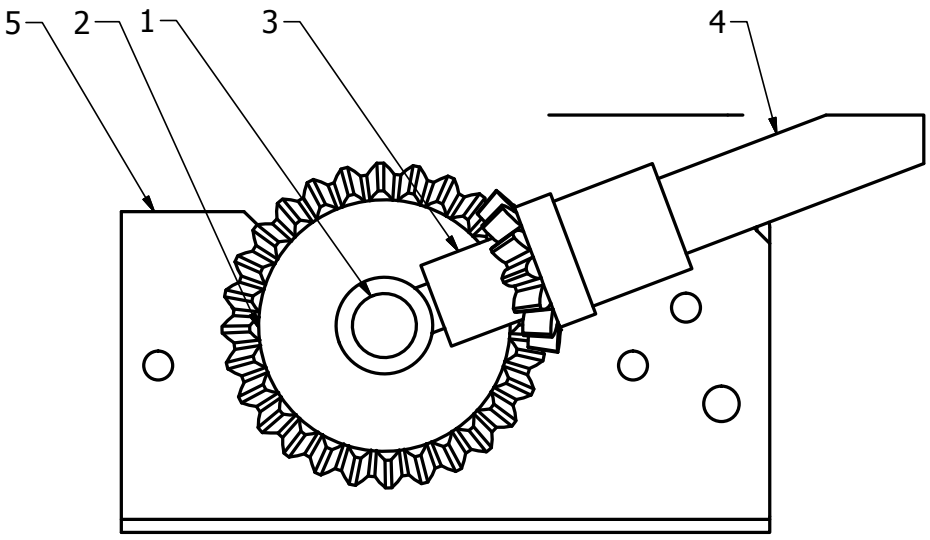


Connecting the drive with the disconnector



Coupling on the side of the MV disconnector or earthing switch

1	Shaft
2	Pinion (large toothed wheel)
3	Rack (small toothed wheel)
4	Tubular shaft
5	Basis

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