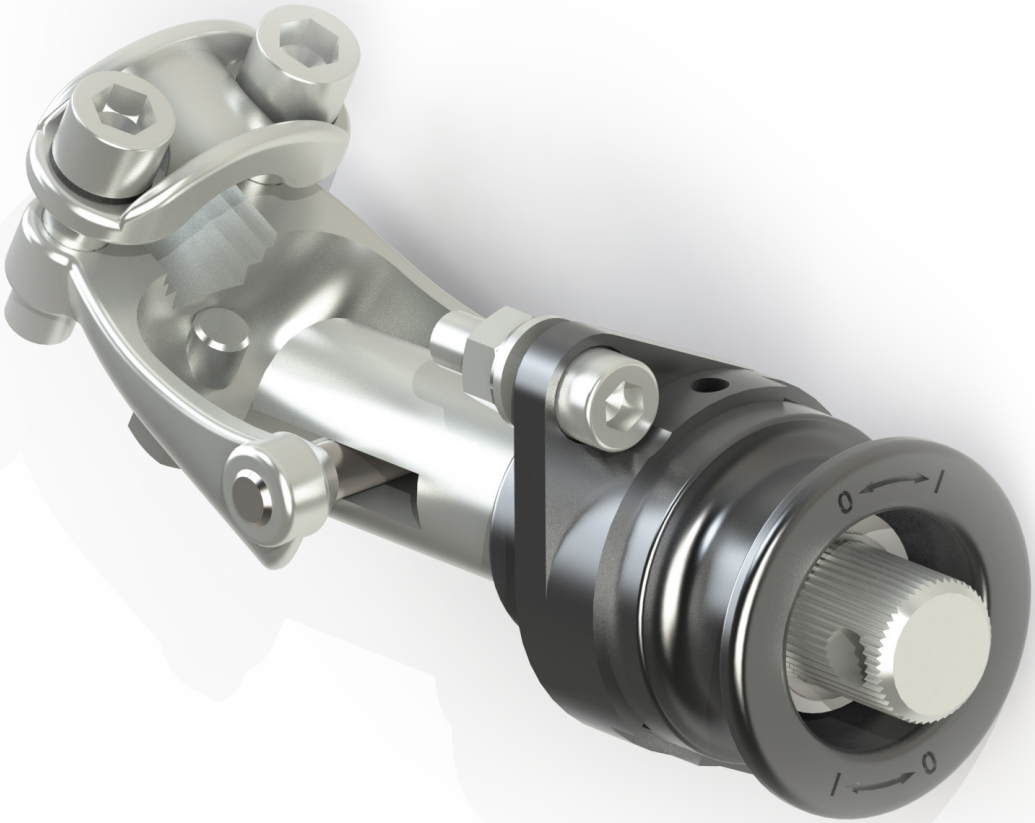
Zakład Wytwórczy Aparatów Elektrycznych Sp. z o.o.

Installation and Service Manual



NR-1

Manual operating mechanism NR-1 with electromagnetic interlock BE-2

Instruction No. DTR.05.01.02.EN

We connect with ENERGY

WARNING!

During the operation of electrical equipment, certain parts of these devices are normally under dangerous voltage, and mechanical parts, also remotely controlled, can move quickly.

Failure to follow the warning instructions can result in serious personal injury or material damage.

Only suitably qualified personnel can work on or near the device. These personnel must know exactly all safety rules and maintenance rules in accordance with these instructions.

The trouble-free and safe operation of this device requires proper transport, proper storage, construction and assembly as well as careful service and maintenance.

Table of Contents

1. TRANSPORT 4
1.1. Unpacking and inspection 4
1.2. Storage and transport 4
2. DESCRIPTION 4
2.1. Construction 4
2.2. Principle of operation 5
2.3. Environmantal conditions 5
2.4. Technical data 6
3. INSTALLATION AND ADJUSTMENT 7
3.1. Installation 7
3.2. Coupling with apparatus 9
3.3. Connecting the coil circuit 10
3.4. Tests before putting into servive 10
4. EXPLOITATION 11
4.1. Maneuvering 11
5. PERIODIC INSPACTIONS AND CONSERVATIONS 11
5.1. Visual inspaction 11
5.2. Spare parts and recommended maintenance materials 11
6. DIMENSION DRAWING 12
7. UTILIZATION 12

1. TRANSPORT

1.1. Unpacking and inspection

Immediately after receiving the drive, check the delivery compliance with the shipping specification. Then check whether the drive has not been mechanically damaged during transport and the data on the nameplate with the order.

The drive is delivered in a cardboard package. Drives are delivered to the recipient completely assembled.

1.2. Storage and transport

For storage and installation, the drives can be transported by any means of transportation provided they are protected from moisture. During transport, the drives should be secured against moving and colliding with each other or parts of the vehicle.

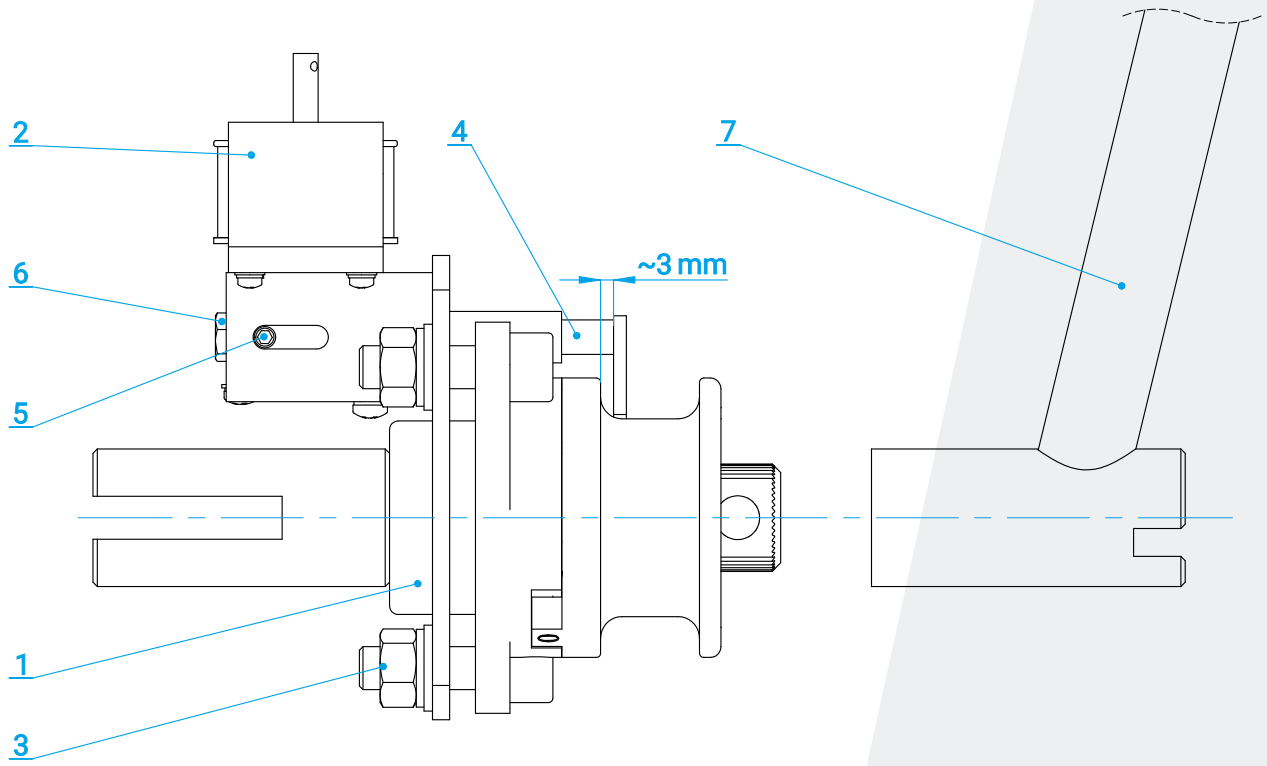
2. DESCRIPTION

Manual rotary drives type NR-1, optionally equipped with a BE-2 electromagnetic lock, are designed to work with disconnectors, disconnectors and earthing switches of medium voltage in indoor conditions. The use of the drive allows local manual control of the switch installed in the switchgear cubicle. It is designed for cooperation with every switch actuated by the rotary motion of the propeller shaft.

2.1. Construction

The manual drive includes:

1. Drive shaft,
2. Electromagnetic locking coil,
3. Screws fixing the M10 drive,
4. Locking bolt,
5. Pressure pin,
6. M6x65 locking screw,
7. Manual lever,



2.2. Principle of operation

Maneuvering the drive is carried out with the lever, which is locked in the end positions. In the whole phase of the drive's operation, the shaft movement is transferred to the medium voltage switch.

2.3. Environmantal conditions

The drives are recommended to be used indoors, in an atmosphere free from aggressive chemical factors, at ambient temperatures of -5 to + 40 ° C and relative humidity not exceeding 70%.

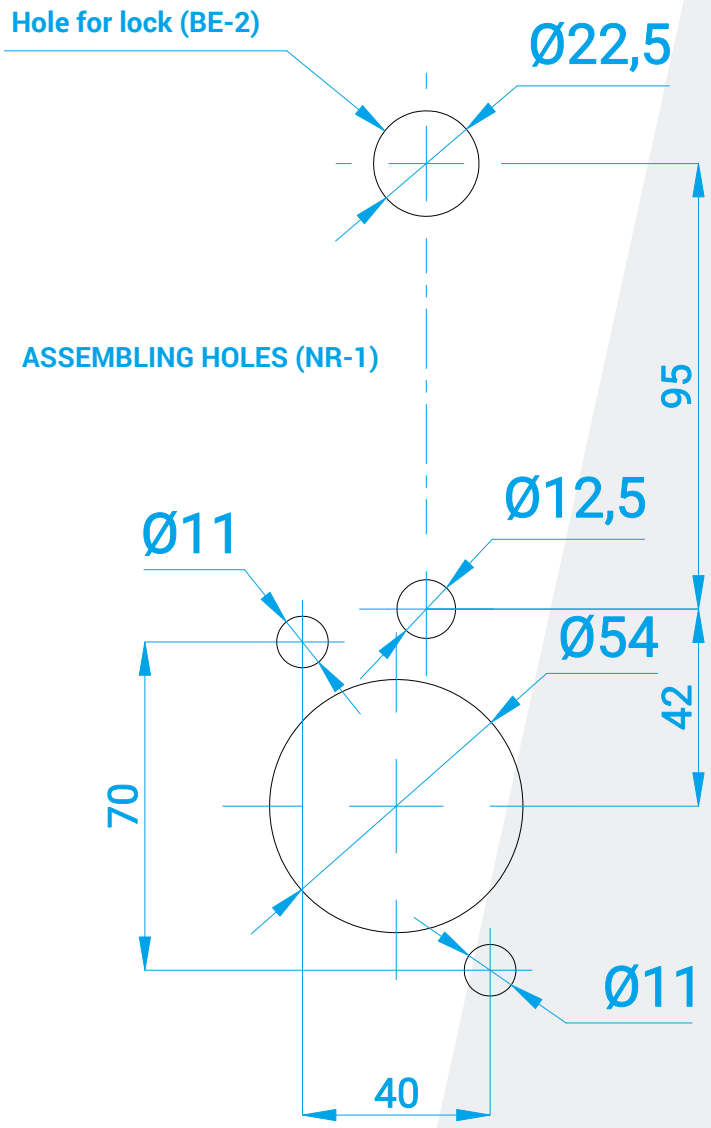
2.4. Technical data

Lp.	Parametr	Wartość
1.	Nominal voltage of the electromagnetic interlock	220 VDC 110 VDC
2.	Nominal power of the coil	7 W
3.	Max. angle of the main shaft	192°
4.	Maximum diameter of wires	4 mm^2
5.	Weigh	ca. 2,5 kg
6.	Mechanical endurance	2000 cycles

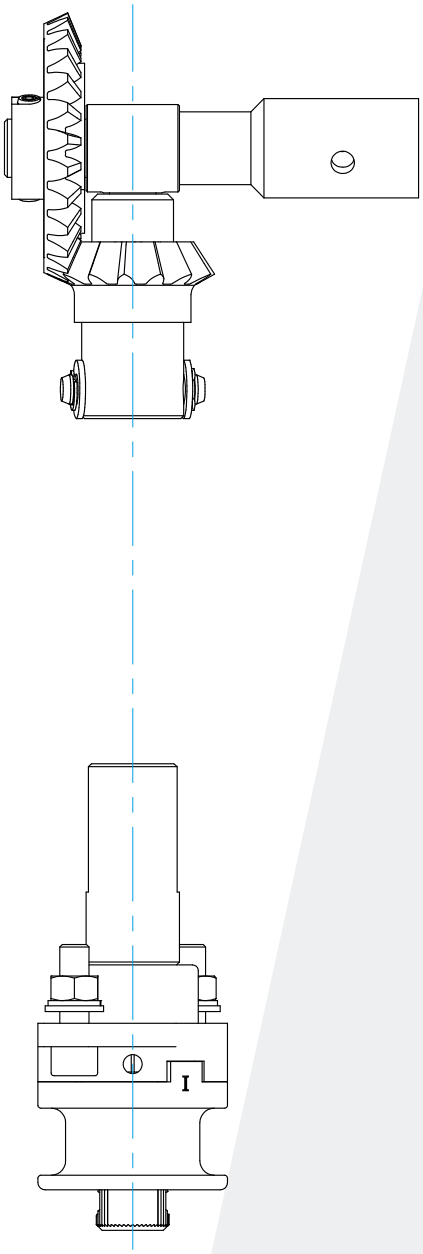
3. INSTALLATION AND ADJUSTMENT

3.1. Installation

The manual drive type NR-1 with electromagnetic lock BE-2 should be mounted on the front wall of the switchgear, on which holes should be made as shown in the below drawing.

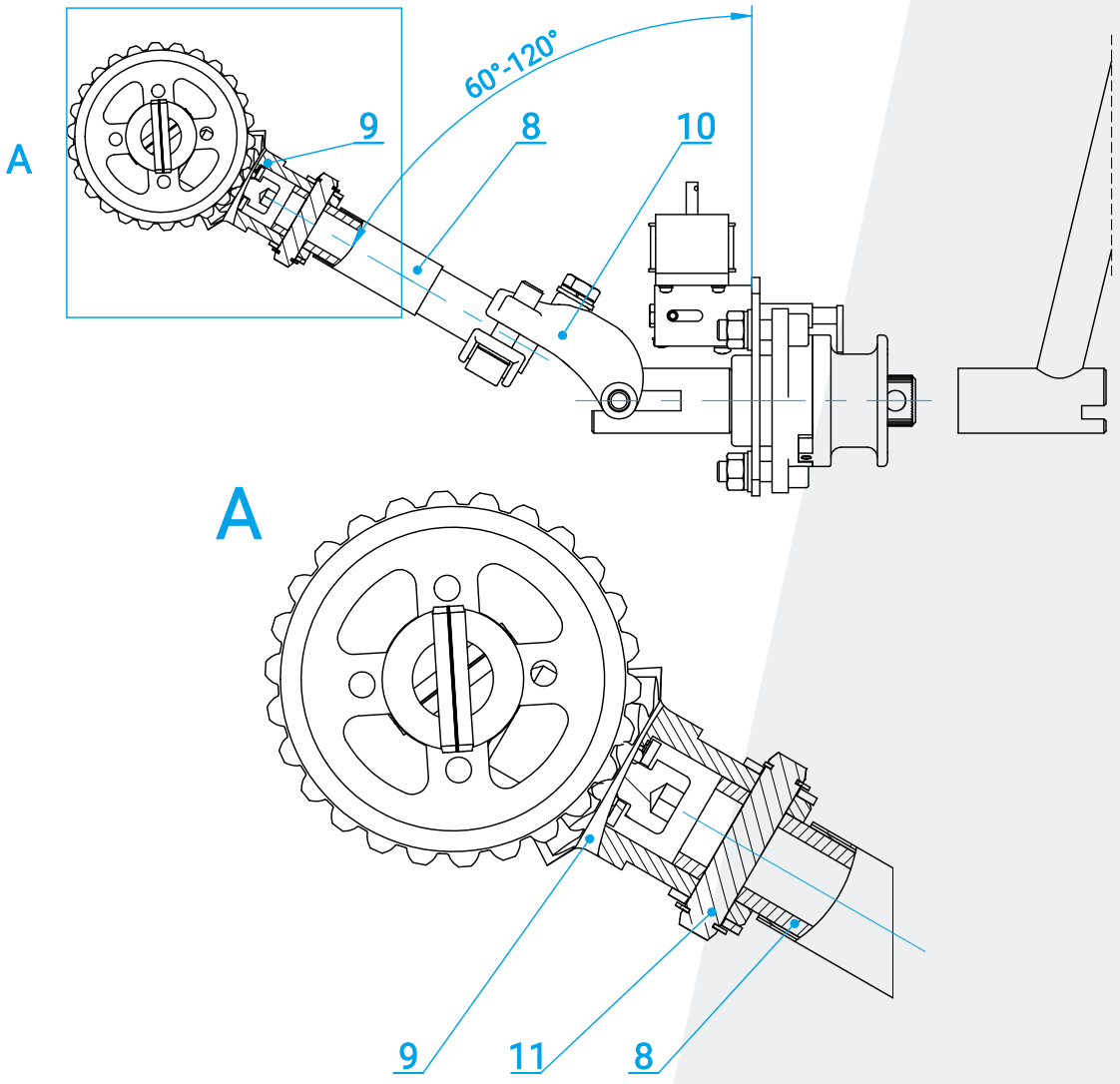


Two M2x35 allen screws are used for mounting the drive. When making the mounting holes for the drive, pay close attention to ensuring that the drive axle is (visually inspected) in the axis plane of the smaller gear wheel.

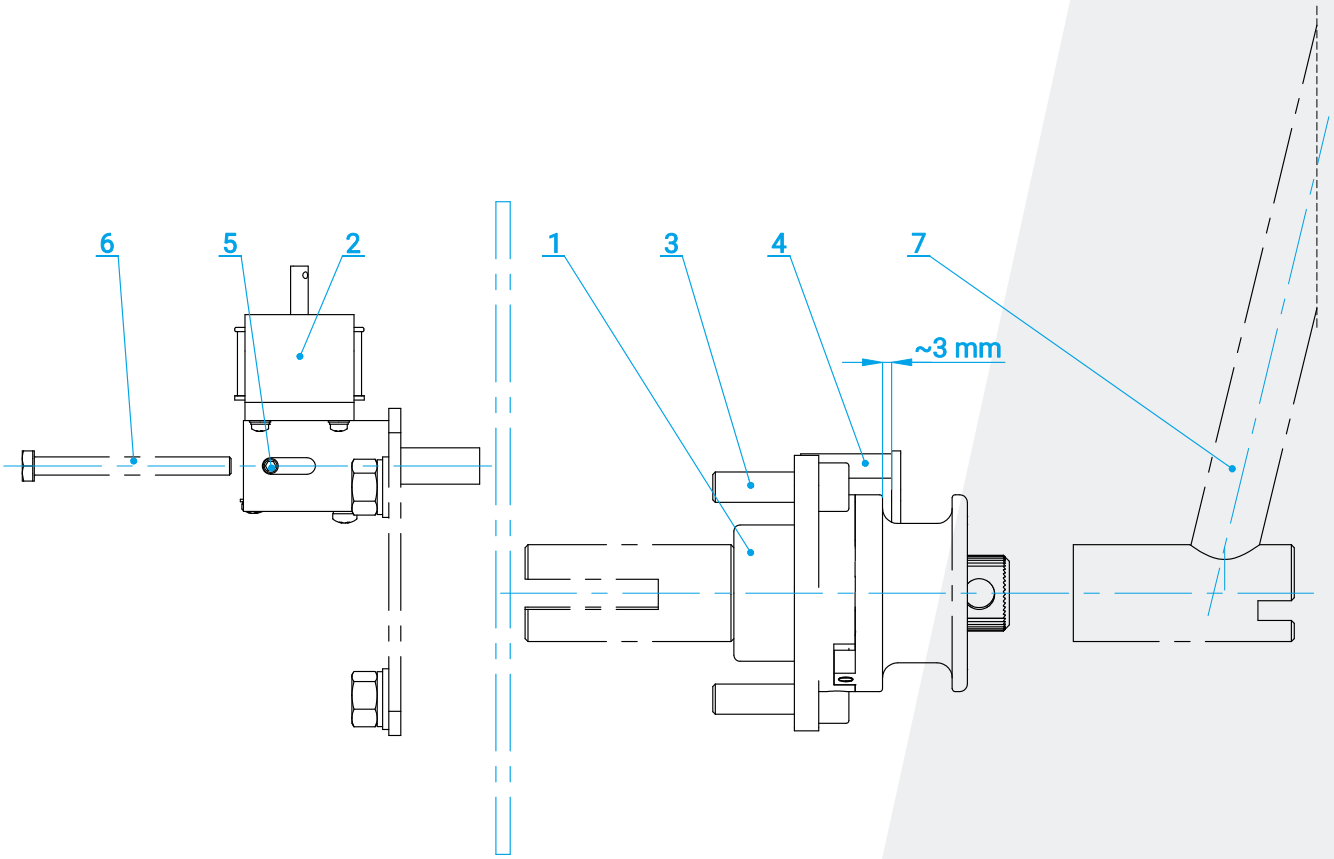


3.2. Coupling with apparatus

Before coupling the drive with the electric apparatus, the length of the shaft [8] should be pre-determined so that on one side the pipe can be placed in the smaller toothed wheel [9] and on the other hand in the clamp [10]. After placing the insulated pipe end in a small toothed wheel [9], it should be secured with the bolt [11] before falling out. It should be noted that the angle between the tubular shaft and the front wall of the switchgear does not exceed the permissible value (range from 60 to 120 degrees).



After screwing to the front panel of the drive switchgear with electromagnetic lock [2], insert the cover [4] and fix it with the M6x65 screw, keeping clearance between the cover and the sleeve wall ~ 3 mm.



After checking the correctness of the operation of the drive interlock, the M6x65 bolt must be locked with two M5x12 Allen screws [5].

3.3. Connecting the coil circuit.

The power cord of the electromagnetic coil should be connected with a terminal list in accordance with the designed control system. The maximum cross-section of wires supplied to the terminal block can be 4.0 mm^2.

3.4. Tests before putting into servive

Before putting the drive into service, check the quality of its assembly and the correct interaction with the device. For this purpose, make 5 - 10 adjustments using a handwheel, carefully observing the interaction of parts. In the case of any irregularities in the operation of the drive or the apparatus cooperating with it, a re-adjust-

ment of the respective units should be carried out and the samples should be repeated.

4. EXPLOITATION

4.1. Maneuvering

In order to operate the drive, at the time of approval (the control lamp is on):

1. Insert the drive lever onto the drive shaft.
2. Apply voltage to the locking coil by pressing the button (maximum 6 seconds), pull the drive sleeve away from the base and turn it slightly.
3. Release the voltage from the blockade and turn the shaft, causing the camera to move: right to the closing, to the left to open (depending on the current position of the camera). The locking electromagnet in a de-energized state prevents the sleeve from being pulled back and the camera moved.
4. If there is no voltage in the switchgear, the release of the sleeve can be done by turning the key in the lock by 90°, which will raise the electromagnetic lock plunger. Turning the key and removing it will cause it to be blocked again.

5. PERIODIC INSPACTIONS AND CONSERVATIONS

5.1. Visual inspaction

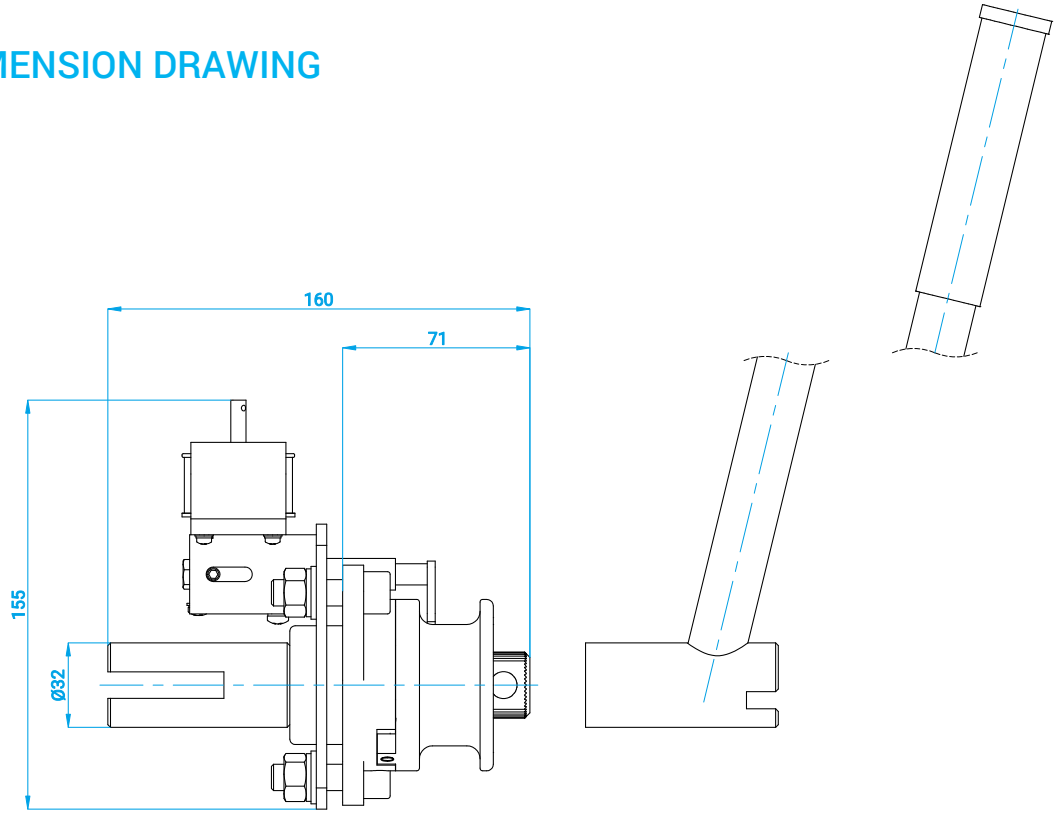
External inspection is recommended to be carried out once a year and after any failure or short circuit in the switchgear. Check especially:

a) condition of coupling mechanisms,
b) connecting the wires to the terminal block of the electromagnetic coil.

5.2. Spare parts and recommended maintenance materials

The use of high quality components and operational experience indicate the long service life of manual drives (about 40 years). In the event of damage to the drive due to improper assembly or operation, it is possible for the manufacturer to pay for repairs.

6. DIMENSION DRAWING



7. UTILIZATION

NR-1 drives are made of materials that are recyclable.
The main materials from which the disconnectors are built are:

- steel (painted, galvanised);
- aluminum;
- plastics (epoxy mix, polyamide).

The drives do not contain any dangerous substances. In accordance with applicable regulations, it is possible to return a worn out, complete disconnector to the manufacturer.

Zakład Wytwórczy Aparatów Elektrycznych Sp. z o.o.
Gdańska 60, 84-300 Lębork
POLAND

zwae@zwae.com.pl
tel.: +48 59 863 36 15

www.zwae.com.pl

Correspondence address
Kębłowo Nowowiejskie, ul. Łąkowa 2
84-351 Nowa Wieś Lęborska
POLAND