

UEMC 41

Motor Operating Device



Your safety first – always!

All legally recognized standards, the connection conditions of the local electrical utility and the applicable safety at work regulations must be respected.



WARNING!

- Pay special attention to the hazard notes in the instruction manual marked with this warning symbol.
- Make sure that under operation condition of the switchgear or switchboard the specified data are not exceeded.
- Keep the instruction manual accessible to all persons concerned with installation, operation and maintenance.
- The user's personnel are to act responsibly in all matters affecting safety at work and the correct handling of the switchgear.
- There are hazards of electrical shocks and burns whenever working in or around electrical equipment. Turn off power before

performing any inspection or maintenance operations. Check line terminals to verify that the equipment is de-energized and grounded.

Check terminals to ensure that no back-feed condition exists.



WARNING!

Always observe the instruction manual and follow

the rules of good engineering practice!

Hazardous voltage can cause electrical shock and burns.

Disconnect power, then earth and short-circuit before proceeding with any work on this equipment.

If you have any further questions on this instruction manual, the members of our field organization will be pleased to provide the required information.

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1. General information

The UEMC 41 - motor operating devices are intended for indoor mounting on medium voltage disconnectors, switches, and earthing switches. The operating device is reliable in changing temperature and humidity conditions (working temperature from -40° to +75°C).

Operation can be performed both electrically and manually by operating lever. Operating time is from 4 to 10 s depending on the type of device and loading conditions.

2. Standards

The motor operating device complies with: IEC 60335-1, IEC 62271-1, IEC 62271-102, IEC 62271-103.

3. Transport and storage

The motor operating device can be transported in any position. Drive should be stored indoors in a dry area.

4. Rated data

Characteristic		Value
Mechanical and electrical locking	-	Yes
Nominal torque	Nm	150
Max. torque	Nm	300
Max external dimensions (without control cabinet)	mm	415x135x140
[mm] HxWxD		
Auto blocking	-	Yes
Rotation angle adjustment	-	Yes
Default rotation angle setting	°	150
Rotation angle	°	from 0 to 300
Max. mechanical endurance	Cycles	5000
Supplying voltages	V	24VDC, 48VDC, 110/125 AC/DC, 220/230 AC/DC
Working temperature	°C	-40 +75
Weight (depends on versions)	kg	8,2-11

Contactors:

Closing power: 3W

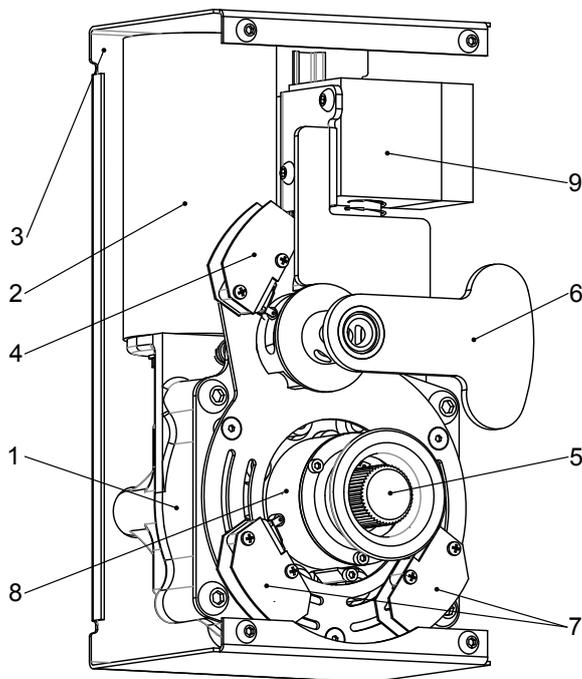
Holding power: 3W

Shortest control pulse: 0,1 s

5. Maintenance

There is no need for greasing and maintenance. Mechanical endurance is 5000 operations tested with NAL 24 A – connection with using bevel gear.

6. Design



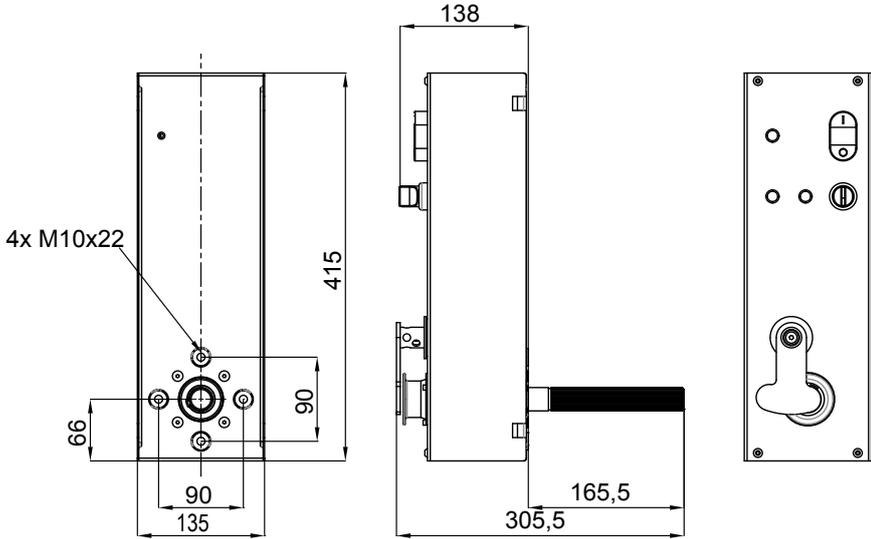
Drawing 1 UEMC 41 drive design

- 1 – Gearbox,
- 2 – Motor,
- 3 – Drive cover,
- 4 – Microswitch (service lock),
- 5 – shaft output for manual operating,
- 6 – Selector (for selecting drive mode),
- 7 – Microswitch (for setting angle of rotation),
- 8 – Coupling bush,
- 9 – Locking coil assembly (optional)

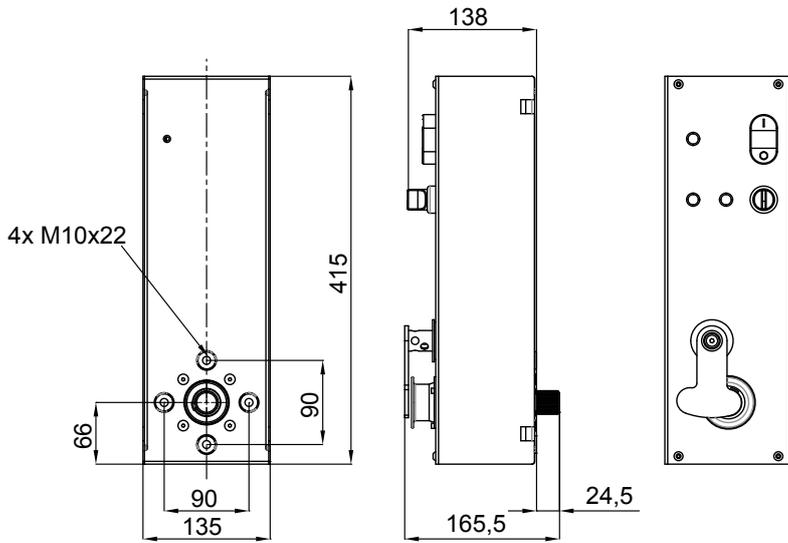
Drives with integrated control unit

7. Available drive types

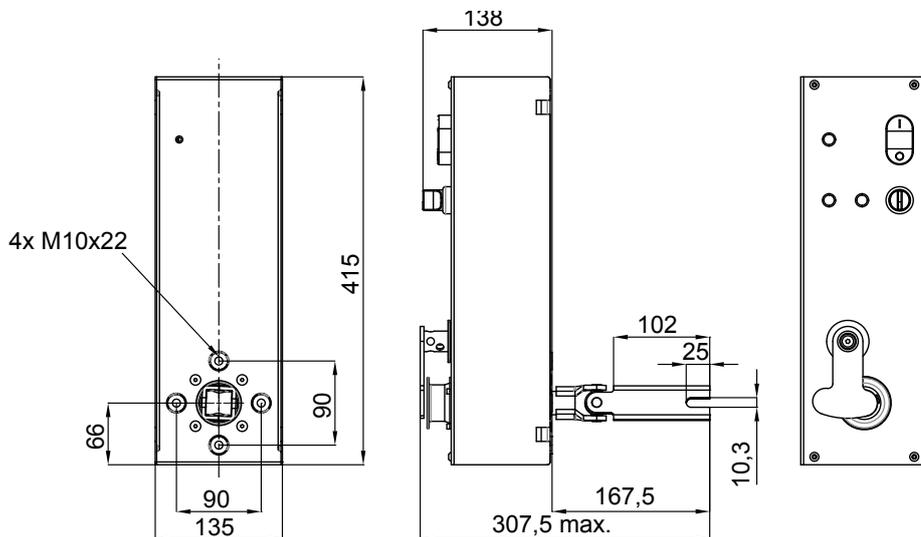
There are two versions available: with integrated control unit or with separate one.



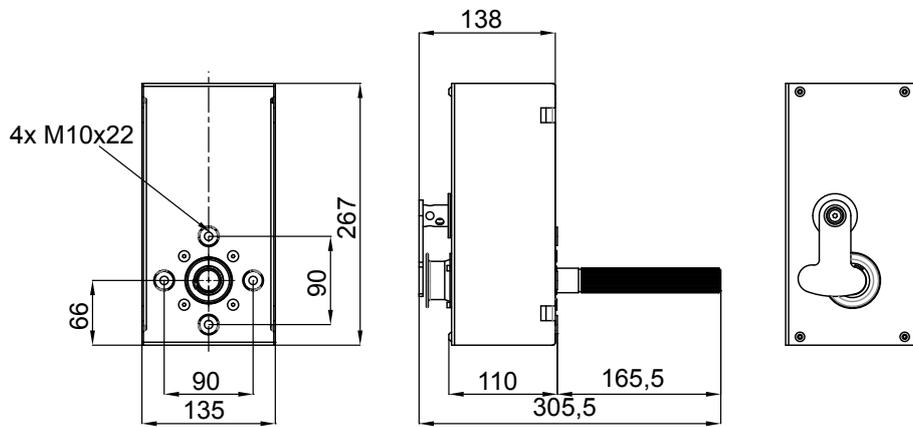
Drawing 2 Drive with long shaft



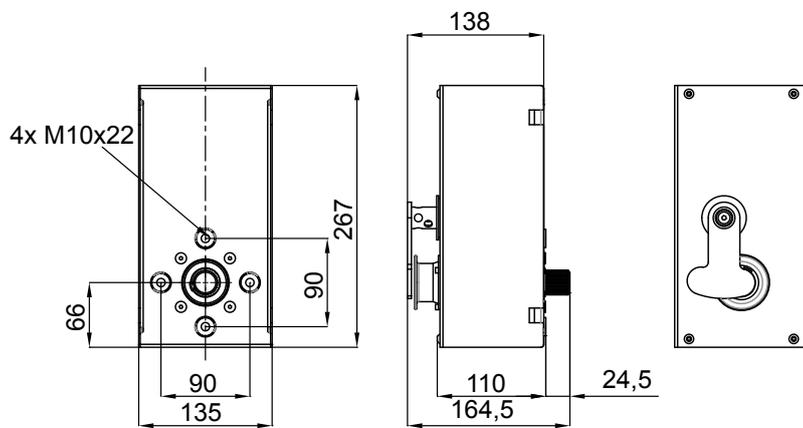
Drawing 3 Drive with short shaft



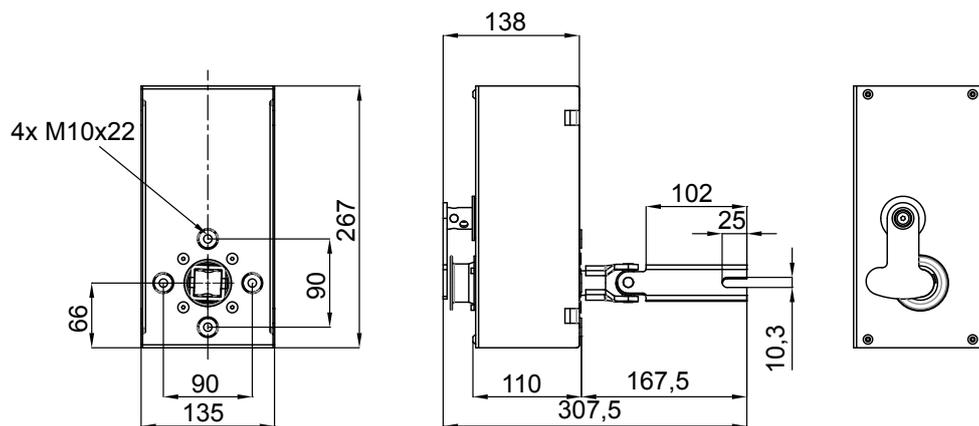
Drawing 4 Drive with cardanic joint



Drawing 5 Drive with long shaft

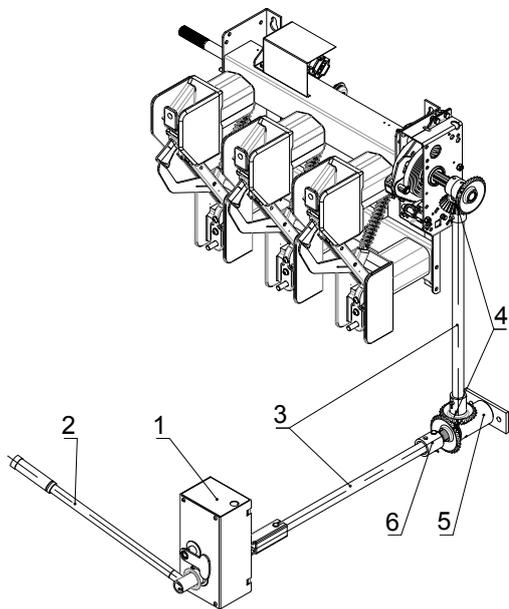


Drawing 6 Drive with short shaft



Drawing 7 Drive with cardanic joint

Example of installation

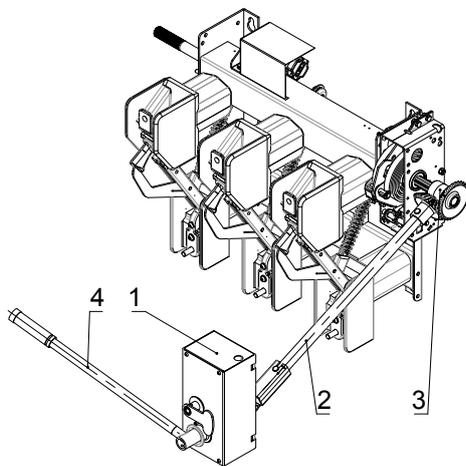


8. Example of installation

Please find below example of possible installation based on NAL switch disconnectors. Other installations could also be arranged based on customer needs. This drive can be used with other switch-disconnectors, disconnectors (OWIII) or earthing switches (E, EB and EK6).

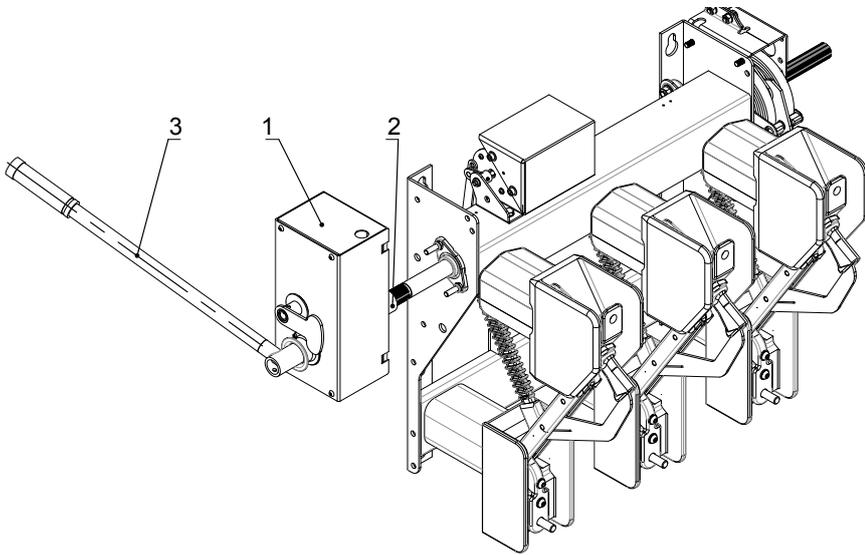
- 1 UEMC 41 drive
- 2 Manual operating handle
- 3 Connecting rod*
- 4 Bevel gear
- 5 Bevel gear base
- 6 Rod connector
- * Length depends on client needs

Drawing 8. NAL mounted on the wall. Drive mounted on the front panel. Connection with bevel gear.



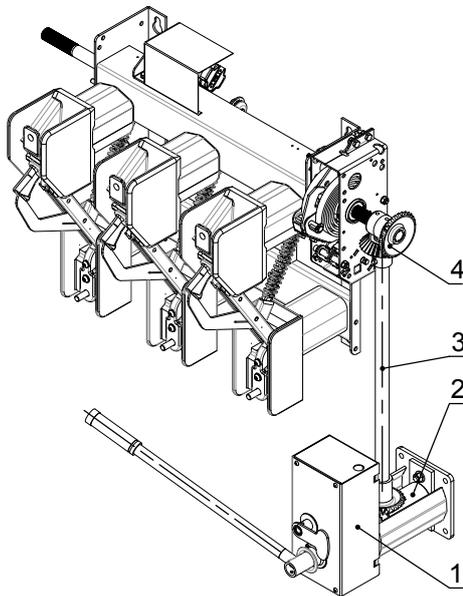
- 1 UEMC 41 drive
- 2 Connecting rod*
- 3 Bevel gear
- 4 Manual operating handle
- * Length depends on client needs

Drawing 9. NAL mounted on the wall. Drive mounted on the front panel. Connection without bevel gear



- 1 UEMC 41 drive
- 2 Knurled bush
- 3 Manual operating handle

Drawing 10. NAL mounted on the wall. Drive mounted on main LBS shaft.



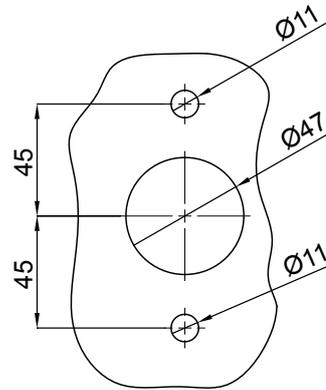
- 1 UEMC 41 drive
 - 2 Support with bevel gear
 - 3 Connecting rod*
 - 4 Bevel gear
 - 5 Manual operating handle
- * Length depends on client needs

Drawing 11. NAL mounted on the wall. Drive mounted below LBS connected with the rod.

Drive installation

9. Drive installation

Install the disconnect, disconnecting switch or earthing switch as per the assembly manual for a given apparatus. Make holes in the drive holder according to Drawing 12.



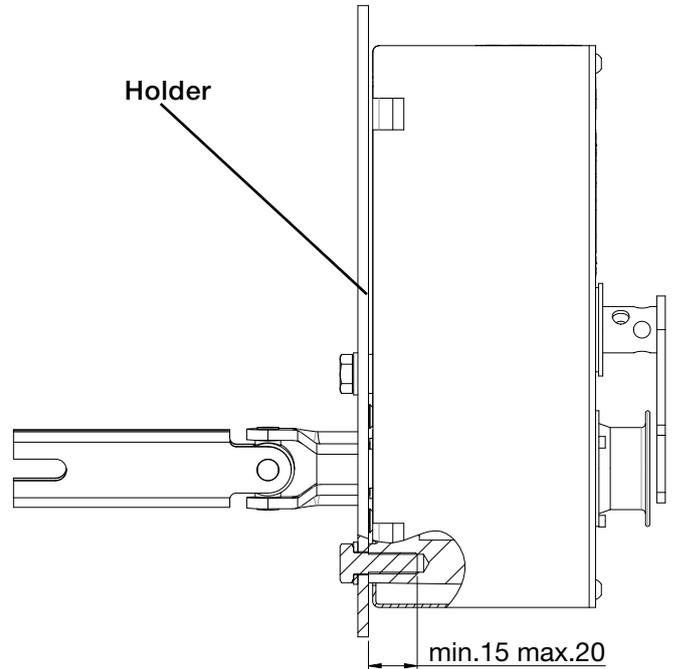
Drawing 12.

Connect the apparatus with the drive using a selected power transmission (Drawing 8, Drawing 9, Drawing 10 or Drawing 11) or other configurations not described in this manual. In order to connect the motor drive unit with the power transmission system, disconnect the coupling by pulling sleeve A away (Picture 1).



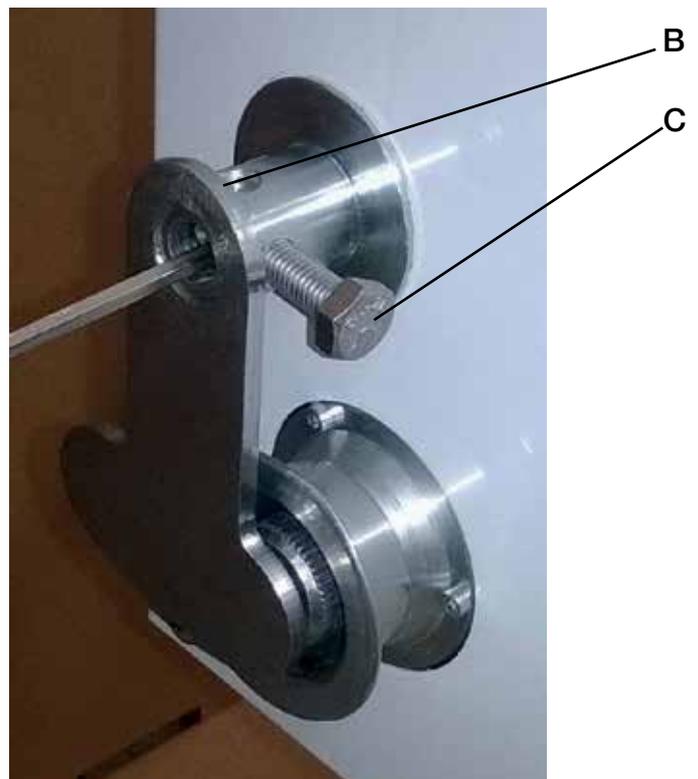
Picture 1.

Next, connect the drive to the holder with two M10 bolts. After tightening, the bolt thread should be placed in the drive holes at depth of 15 to 20 mm (Drawing 13). Tightening torque for bolts: 35 Nm.



Drawing 13.

Then, after blocking the selector lever B with a M8 bolt (C), remove the selector by unscrewing the bolt from it by Allen key (key size 4 mm) (Picture 2).



Picture 2.

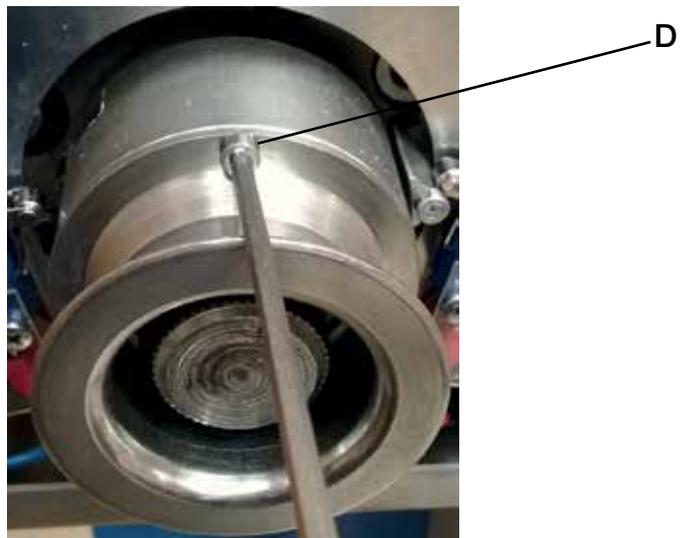
Drive installation

If the drive is equipped with unlocking coil, move it out with a small-diameter screwdriver (up to 3 mm) (as shown in Picture 3). There is a possibility to move change the position of selector by unlocking mechanical lock in case of lack of voltage. To do so, one should enter the screwdriver tip (diameter below 3 mm) into hole in front panel of motor drive. Then tilt the handle of a screwdriver down until you release the selector. Then move the selector to the desired position. After changing the position of the selector will be re-locked.



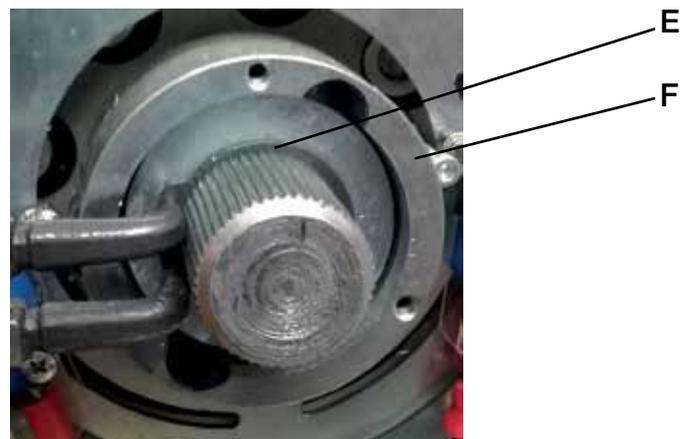
Picture 3.

After removing the selector, unscrew the four bolts that secure the drive housing located in front panel. Next, remove the pull-off sleeve by unscrewing three bolts D with Allen key (size 2,5 mm) (Picture 4).



Picture 4.

The next step involves dismantling the Segor ring E blocking the coupling sleeve F (Picture 5).



Picture 5.

After removing the spring washer and the coupling sleeve, use an operating lever (Picture 6) to change over the apparatus to the open position. In the case of a NAL disconnecter with mechanism A, open the disconnecter and pre-tension the spring (Picture 7).



Picture 6.



Picture 7.

Drive installation



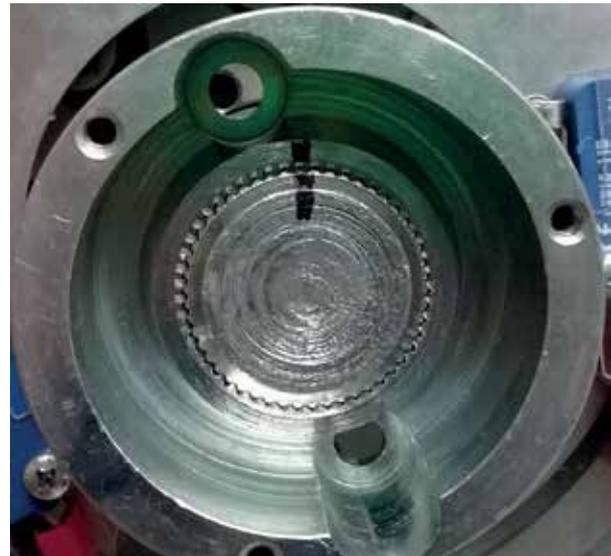
Picture 8a

Ensure that the drive has been delivered in the open position. Next, after turning the drive shaft in the opening direction of the apparatus (in order to clear the slack in the power transmission system), put the clutch sleeve F in the position coupling it with tongue G (Picture 8)



Picture 8b

This operation shall be performed only in the case of cooperation of the drive with a NAL disconnecter. Move the coupling sleeve to the shaft end and mark their relative position. Then, take off the sleeve and move it about 4 teeth relative to the shaft (to the right) in the closing direction of the apparatus (Picture 9 and Picture 10).



Picture 9



Picture 10



Picture 11

Install the spring washer and the Segger ring (Picture 11). By turning the shaft, cause the engagement of the coupling.



Picture 12

Connect the power supply and earthing to the drive. Switch over the drive to the electrically closed position. If the apparatus does not close completely, turn off the power supply and switch the miniature switching device S1 3 mm toward the “close” position. In the case of the NAL disconnectors, after the complete closure is achieved, once again change the switching device S1 (Picture 13) 3 mm towards the “close” position

Perform three “close–open” operations. If everything works correctly, assemble the drive performing the operations in the reversed order.

Note:

If there is no specific rotation angle specify by customer drive will be deliver with default rotation angle which is 150°. It could be later on changed by adjusting miniature switching devices as presented in Picture 13.



Picture 13

Mechanical selector description

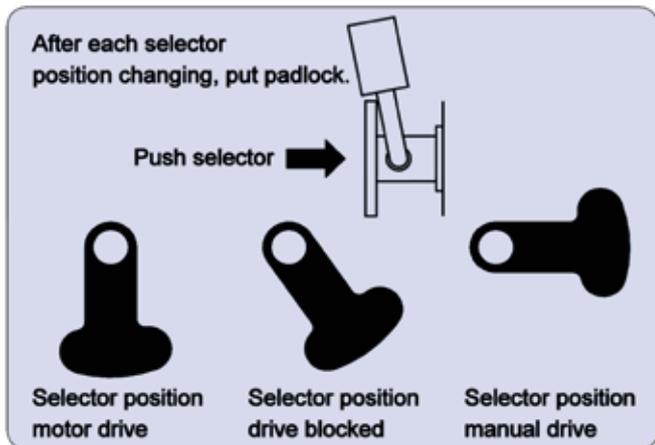
10. Mechanical selector description

There is a selector added to choose correct drive mode. This selector could be locked by padlock. Maximum 8 mm shackle of the padlock.

Note:



It is advice by manufacturer to put padlock after changing position for safety reasons.



Drawing 14 Selector position information

To choose proper drive working mode (motor drive operation, lock drive, manual drive operation) below sequence of operation should be done:

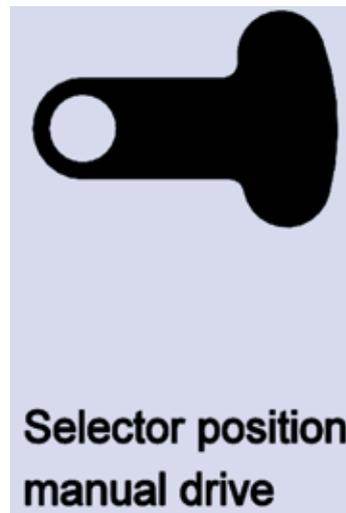
- 1) Remove padlock.
- 2) In order to choose proper selector mode pull selector and chose right position from below presented:



Drawing 15 Operation by motor



Drawing 16 drive is locked (there is no possibility to operate manually or by motor)



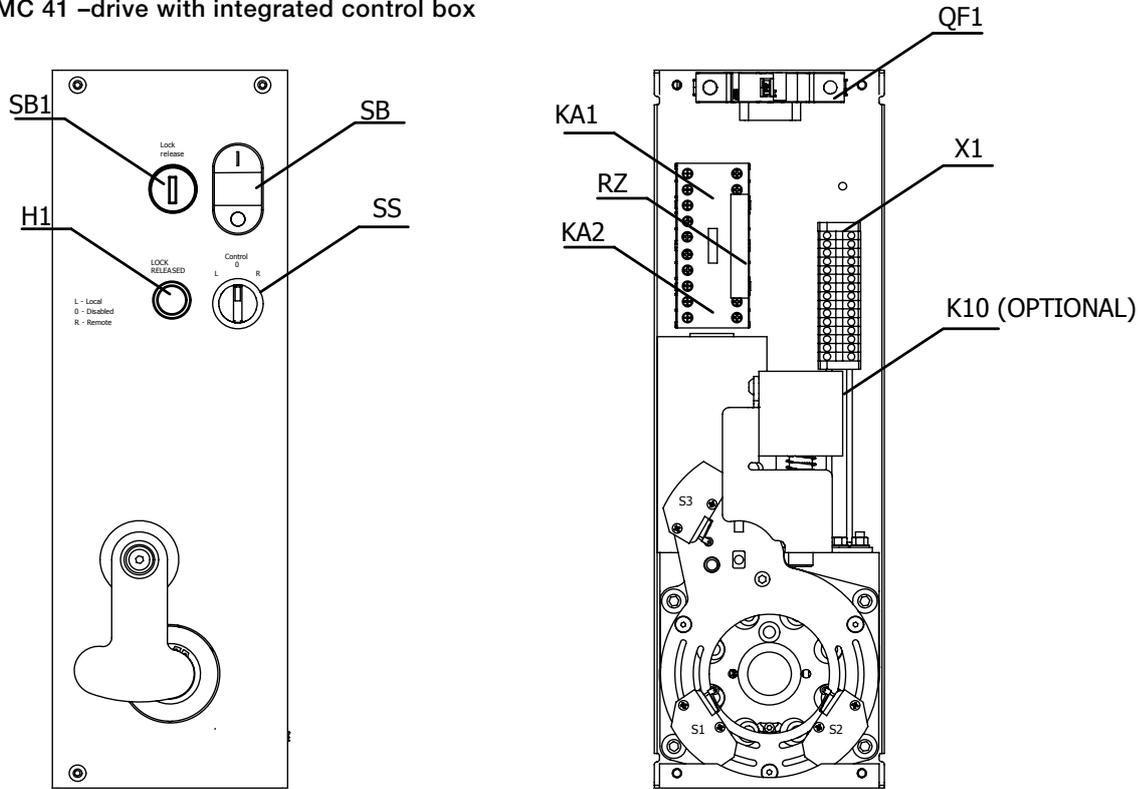
Drawing 17 manual drive

- 3) Press selector and lock selector by putting padlock.

Control box description

11. Control box description

a. UEMC 41 –drive with integrated control box



Drawing 18 UEMC 41 – drive with integrated control box

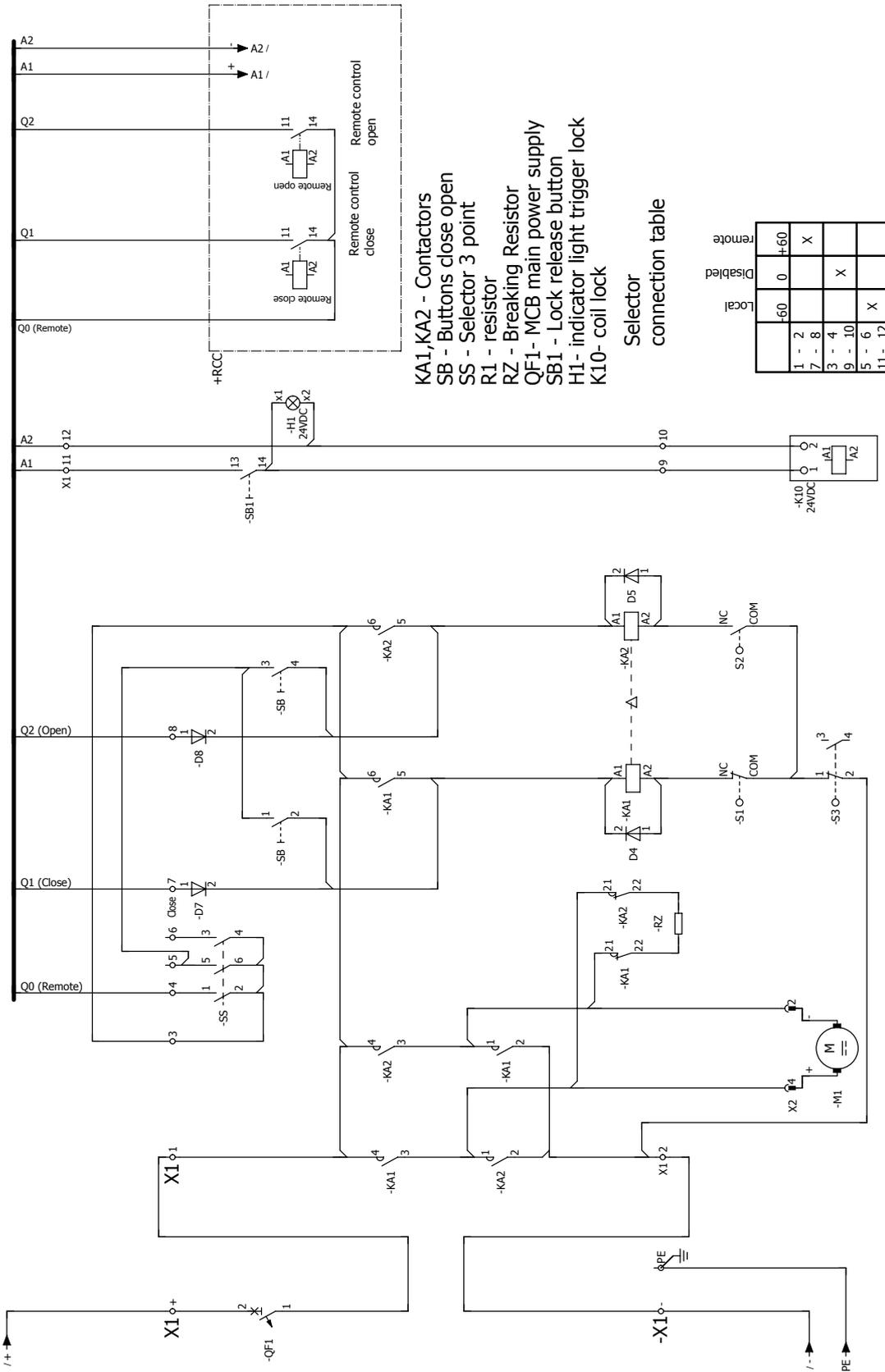
SB1 – Lock release button, H1– Lock release
SB – Pushbuttons (close/open), SS – position selector (Local/
Disable/Remote), KA1,KA2 – Contactors, RZ – Braking
resistor, QF1 – MCB main power supply, X1 – Connection
terminals, K10 – Lock coil,

Description of integrated control box.

INSTALLATION:

Remote control – open/close operation should be done using the relay providing galvanic isolation from the other control voltages. It is forbidden to remote control using an external control voltage. Remote control should be done by shorting Q0 to Q1 to close or shorting Q0 to Q2 to open. Supply of blocking coil (optional) A1, A2. After adjusting the control voltage, the coil must be activated by button. Confirmation of the presence of voltage on the coil of the locking lever is confirmed by lighting the lamp.

Control box description



- KA1, KA2 - Contactors
- SB - Buttons close open
- SS - Selector 3 point
- R1 - resistor
- RZ - Breaking Resistor
- QF1- MCB main power supply
- SB1 - Lock release button
- H1- indicator light trigger lock
- K10- coil lock

Selector connection table

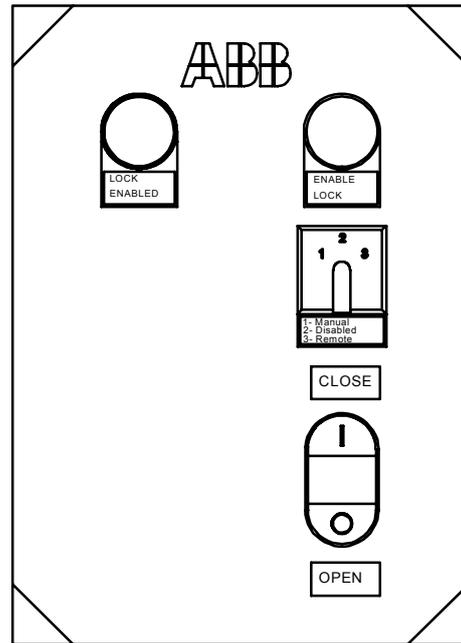
	Local	Disabled	remote
1 - 2			X
7 - 8			
3 - 4		X	
9 - 10			
5 - 6	X		
11 - 12			

Wiring diagram 1 Wiring diagram for internal control box

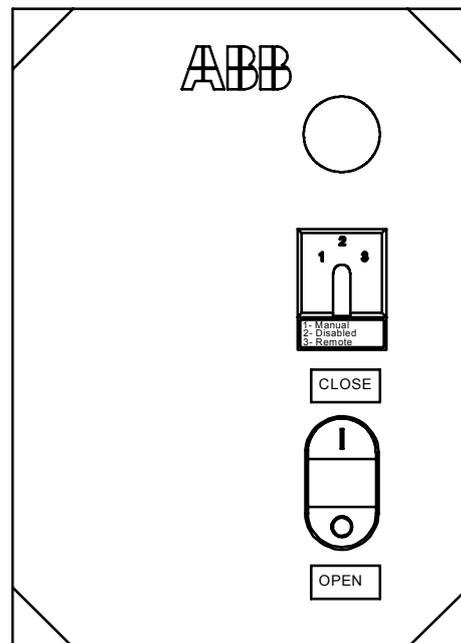
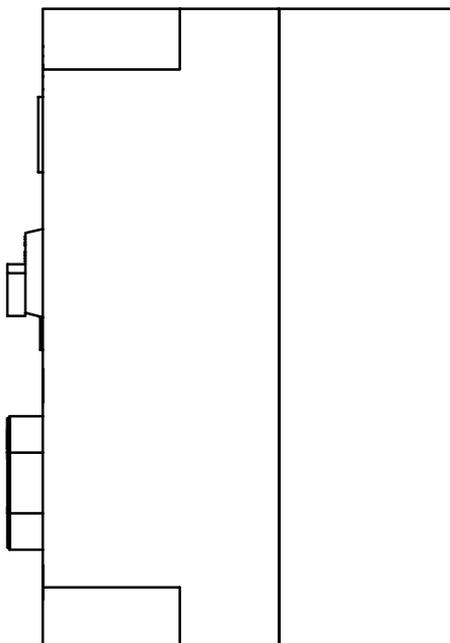
b. UEMC 41 –drive with external control box

In case of drives without integrated control box external one could be applicable. There are two variants available:

- 24VDC with coil locking function
- 24VDC without coil locking function

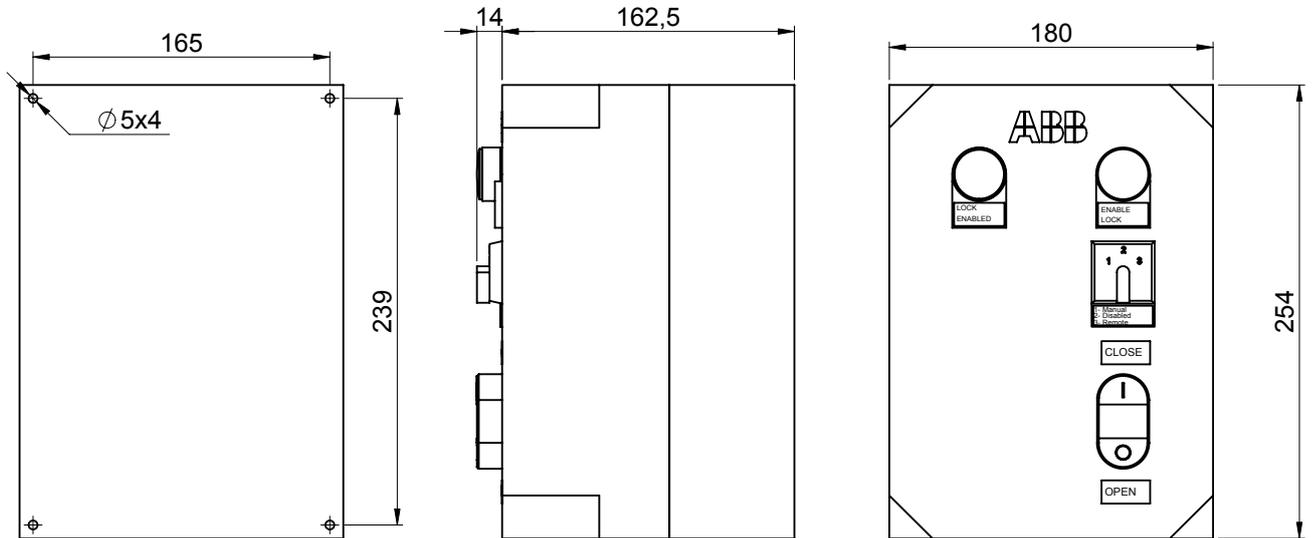


Drawing 21 External control box with coil control button

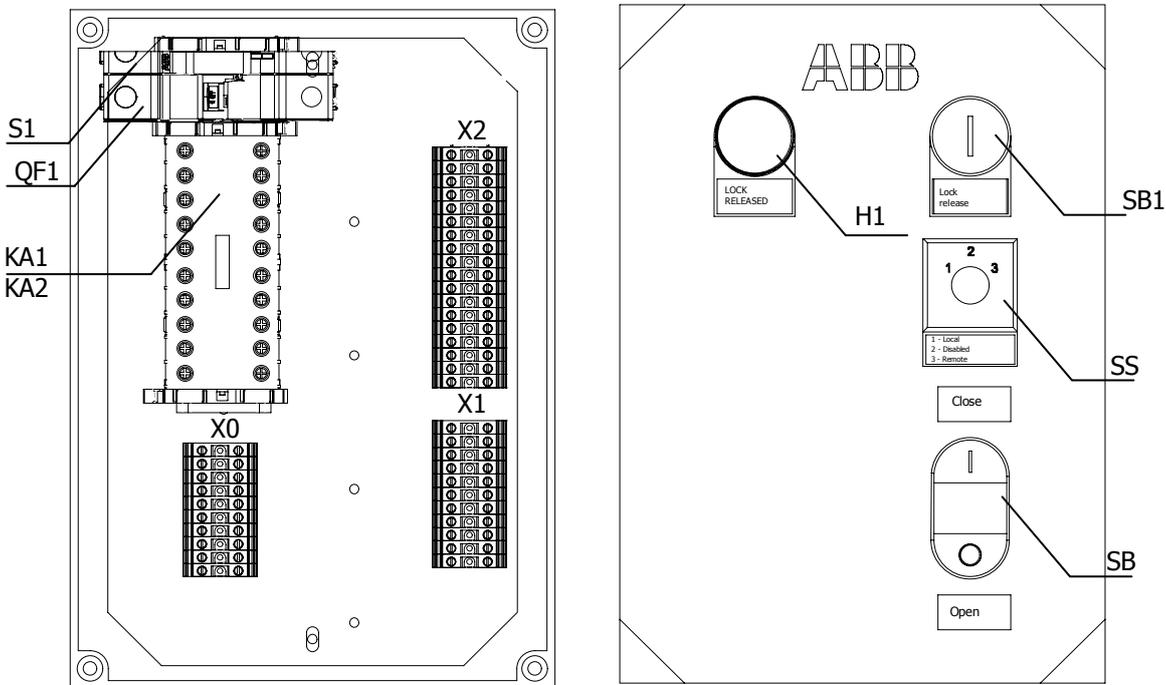


Drawing 22 External control box without coil control button

Control box description



Drawing 23 Control box dimensional drawing



Drawing 24 UEMC 41 – drive with external control box

X0/X1/X2 – Connection terminal, KA1/KA2 – contactors, QF1 – Motor power supply MCB, S1 MCB auxiliary, S1 – auxiliary contacts, SB1 – Lock enable pushbutton, H1 – Lock enabled lamp, SS – selector switch, SB – close/ open pushbuttons.

Remote control – open/close operation should be done using the relay providing galvanic isolation from the other control voltages. It is forbidden to remote control using an external control voltage. Remote control should be done by shorting Q0 to Q1 to close or shorting Q0 to Q2 to open.

Supply of blocking coil is optional A1, A2. After adjusting the control voltage, the coil must be activated by button SB1.

Confirmation of voltage present on the locking coil of the mechanical selector is indicated by lighting the lamp H1.

Selector switch (SS) has 3 control positions:

- Local (only buttons on the Control Box are active),
- Disabled (local control buttons and remote control is disabled),
- Remote (control from Remote Control Cabinet).

Electric control is enabled only in the „motor operation” selector position.

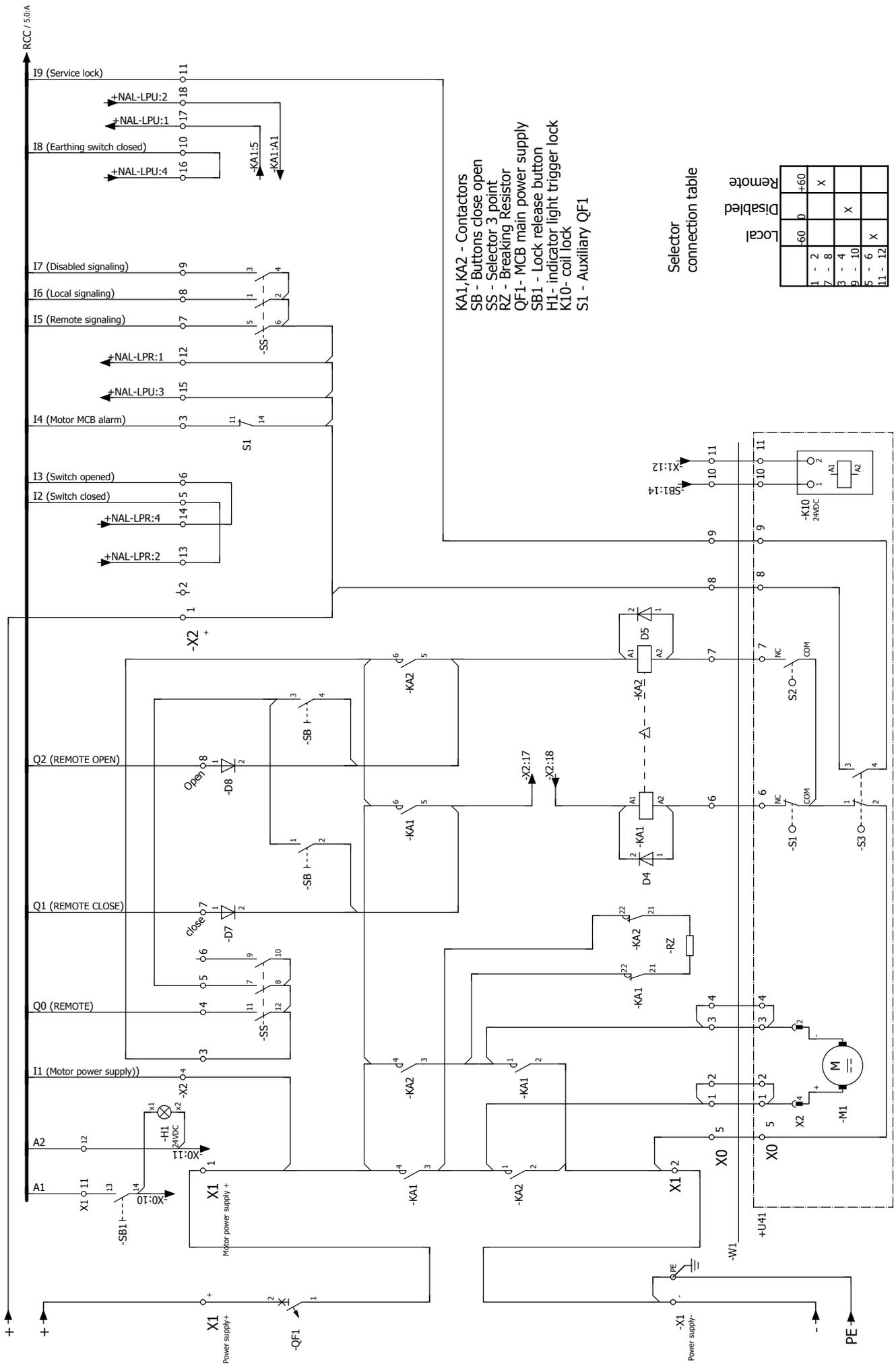
Operation to „close” position of drive is possible, if pins 17-18 are shorted.

17-18 pins should be connected to auxiliary contact of earthing switch (or shorted if no earthing switch is present).

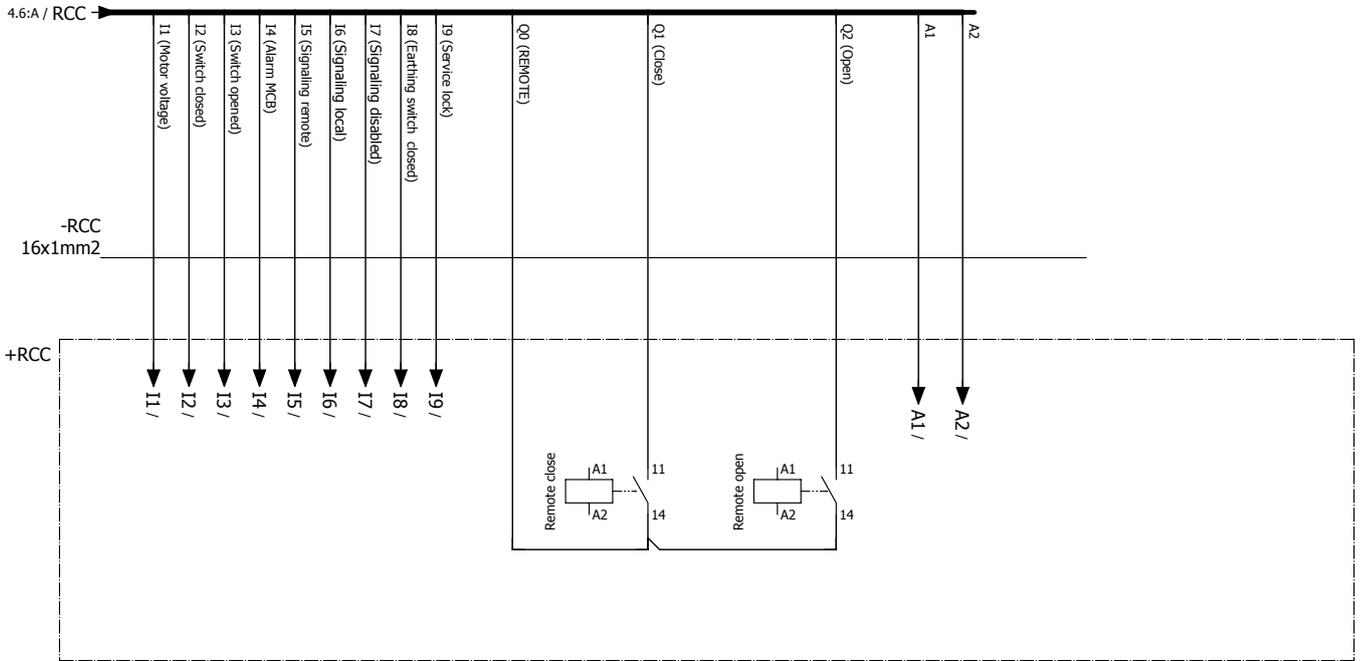
This feature can be used to disable close function of switch, when second side of switch is earthed.

The control box and provides a variety of signals:

- I1 – supplying voltage – allows the detection of voltage directly at the terminals of motor contactor, confirming the drive is ready for operation.
- I2 – switch in open position, signal transferred from auxiliary switch connected to the apparatus shaft,
- I3 – switch in closed position, signal transferred from auxiliary switch connected to the apparatus shaft,
- I4 – MCB alarm allows electrical detection of motor overcurrent circuit breaker tripping. Due to this it is possible to check its position.
- I5 – selector switch mode position (Local),
- I6 – selector switch mode position (Disabled),
- I7 – selector switch mode position (Remote),
- I8 – earthing switch closed signal,
- I9 – service lock indicates the status of the mechanical selector drive position (manual work/drive locked).

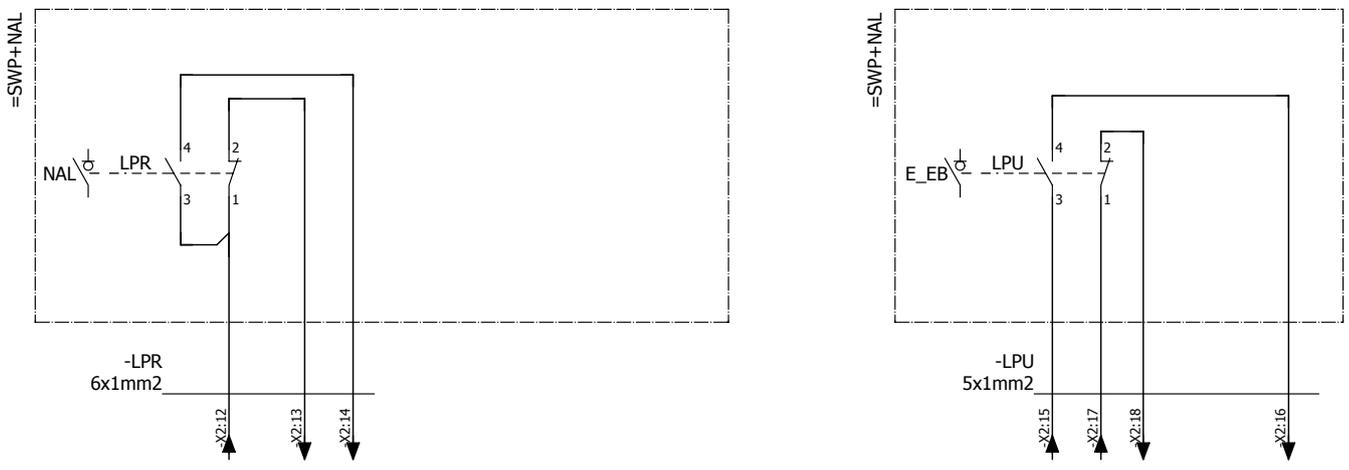


Wiring diagram 2 External control panel wiring diagram to UMEC41 drive.



Remote control close Remote control open

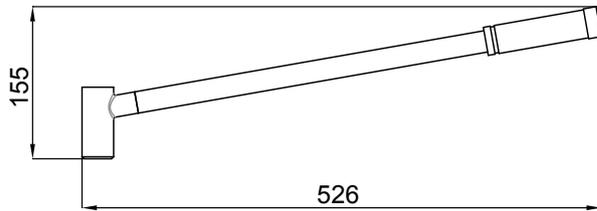
Wiring diagram 3 Remote control cabinet connection



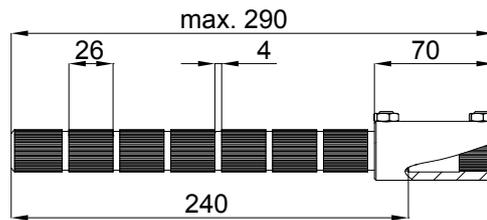
Wiring diagram 4 Auxiliary connection (NAL SWITCH APPLICATION – DEAFULT)

Accessories

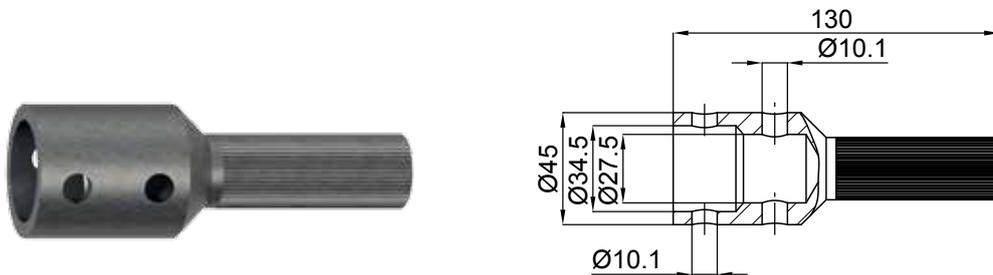
12. Accessories



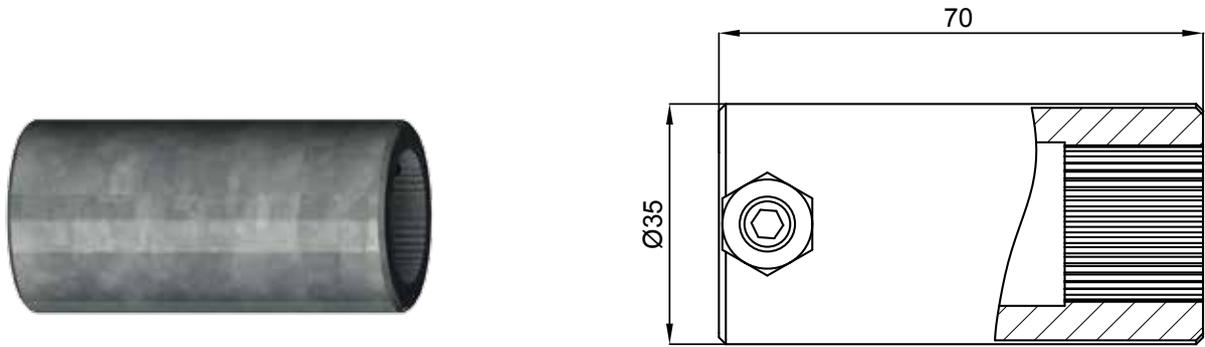
Drawing 25 Manual operating handle



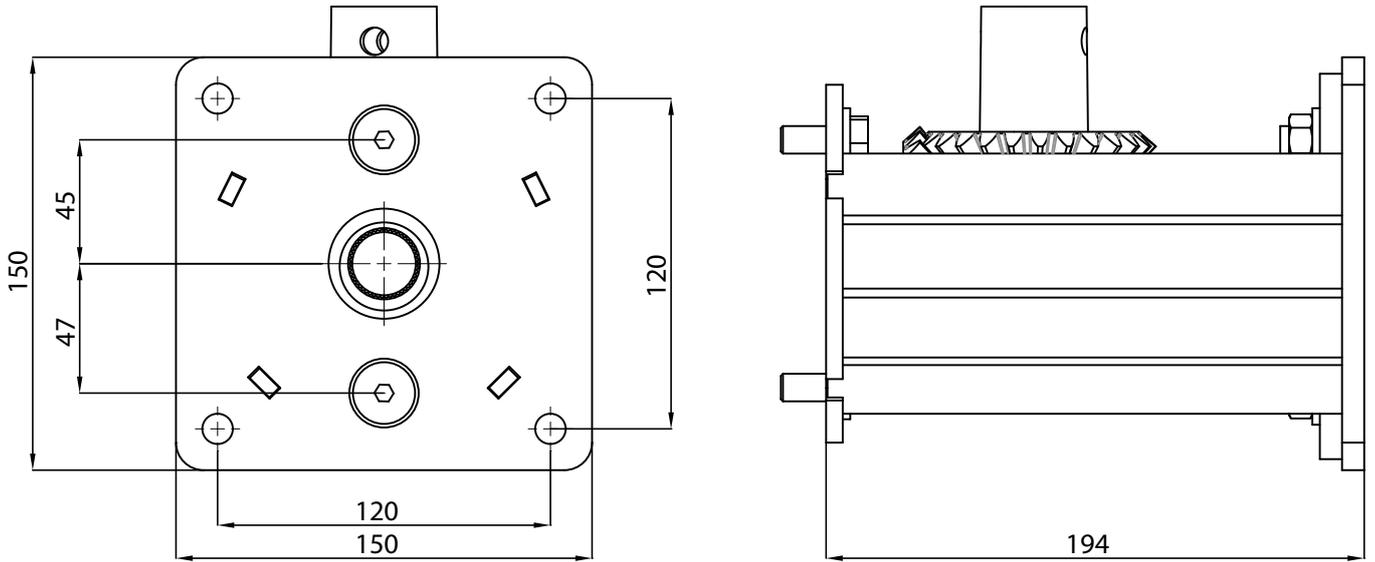
Drawing 26 Shaft extension UEMC -ZL 24



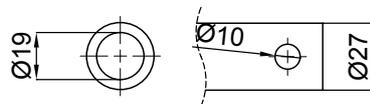
Drawing 27 Rod connector



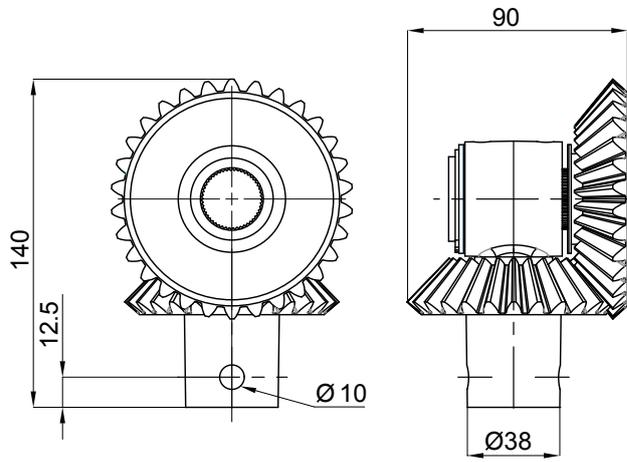
Drawing 28 Jointing sleeve



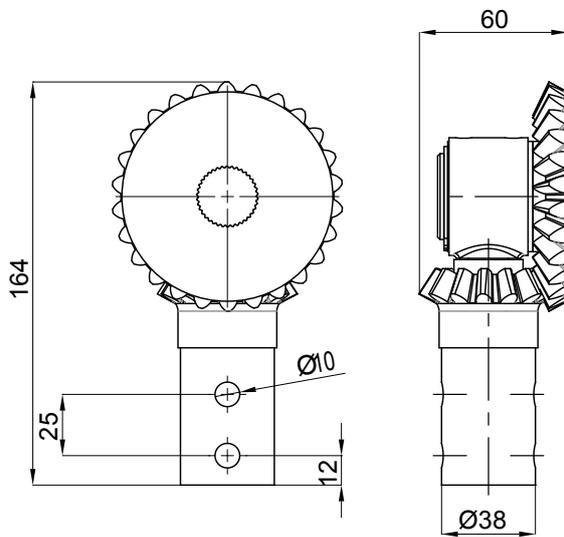
Drawing 29 Support with bevel gear (UEMC41)



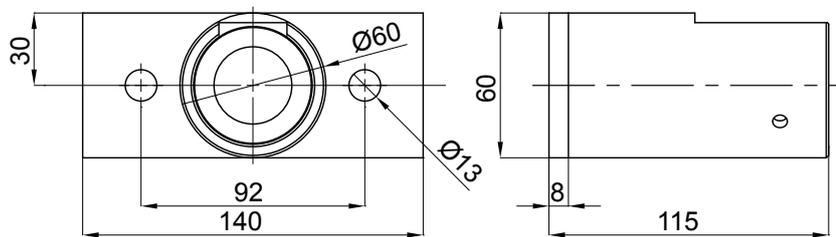
Drawing 30 Connecting rod (length depends on client needs)



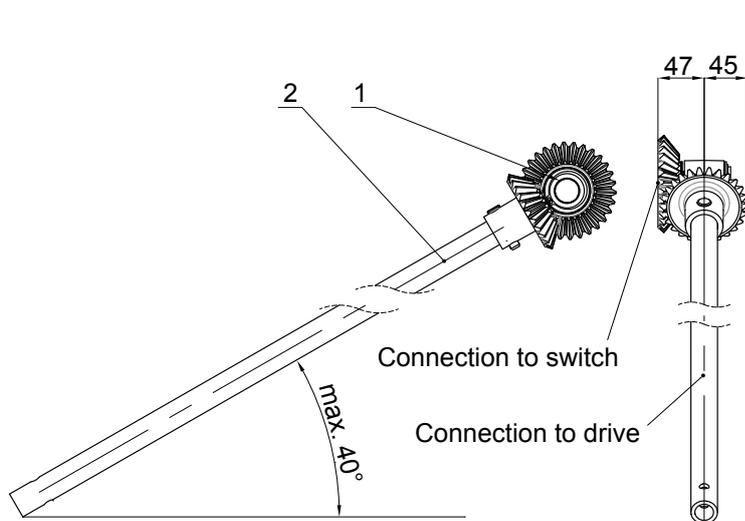
Drawing 31 Bevel gear NAL



Drawing 32 Bevel gear NRK2/1 i NRK2/2

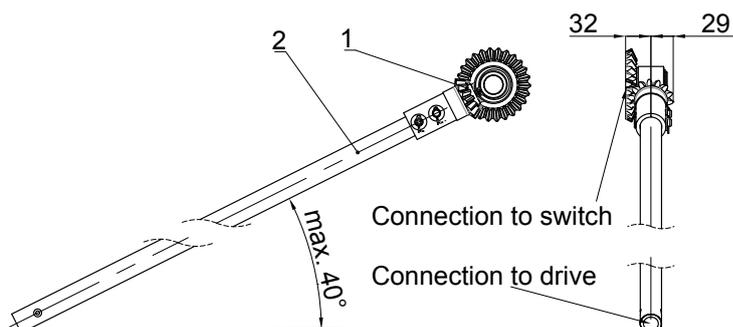


Drawing 33 Bevel gear base 1YMX343036M0001



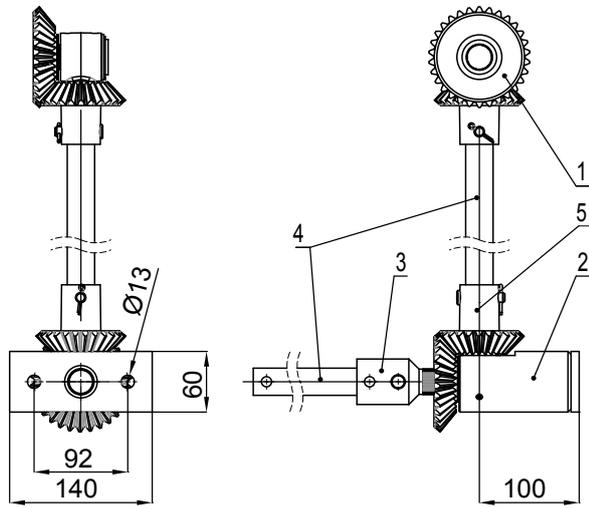
- 1 Bevel gear NRK2*
- 2 Connecting rod**
- * NRK 2/2 when using shaft extension,
NRK 2/1 when using directly on switch
shaft,
- ** Length depends on client needs

Drawing 34 Connecting rod with bevel rear arrangement for NAL (max. angle 40°).



- 1 Bevel gear NRK2*
- 2 Connecting rod**
- * NRK 2/2 when using shaft extension,
NRK 2/1 when using directly on switch
shaft,
- ** Length depends on client needs

Drawing 35 Connecting rod with bevel rear arrangement for OWIII (max. angle 40°).



1. Bevel gear*
 2. Bevel gear base
 3. Rod connector
 4. Connecting rod**
 5. Bevel gear
- * (NAL);NRK2(OW)
 ** Length depends on client needs

Drawing 36 Bevel gear arrangement example

For more information, please contact:

ABB Contact Center

tel.: 22 22 37 777

e-mail: kontakt@pl.abb.com

ABB Sp. z o.o.

Branch Office in Przasnysz

ul. Leszno 59

06-300 Przasnysz

tel.: +48 22 22 38 900

fax: +48 22 22 38 953

www.abb.pl

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