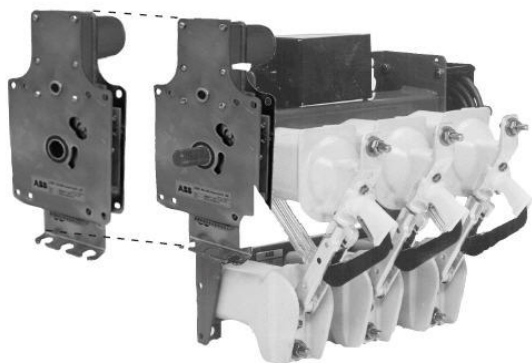


# INSTRUCTION

## Motor operation device NM 24...220 for NAL and NALF switch/switch fuse disconnecter Designed for remote control.



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### 1. General

The motor operating device can be mounted directly on the switch disconnecter or on the wall of the disconnecter cubicle.

The device operates either K or A mechanism.

After each motor operation the device is mechanically disconnected and makes it possible to manually operate the disconnecter.

### 2. Function

The electric motor drives a gearbox that transfers power to the operating gearwheel.

The gearwheel tensions, through the disconnecter shaft, the spring in the mechanism on the disconnecter with a rotating angle of 150°. The gearwheel starts from position S1 and moves to the end position S2 or end position S3 for charging the spring respectively way and then goes back to position S1.

### 3. Technical data

Type		NM 24	NM 48	NM 60	NM 110/125	NM 220
Ordering number		5DLN 527601-A	5DLN 527601-B	5DLN 527601-C	5DLN 527601-E	5DLN 527601-F
Power consumption	W	70	70	70	70	70
Operating voltage, AC	V	17-26	34-52	42-66	77-137	154-242
Operating voltage, DC	V	22-28	43-57	54-72	99-150	198-264
Nominal current during operation	A	3	3	0,8	0,8	0,4
Maximum current during operation	A	6	6	4	4	1,2
Operating time	sec	~4	~4	~8	~8	~4
Signalling time	sec	0,5 - 2,0	0,5 - 2,0	1,0 - 4,0	0,5 - 2,0	0,5 - 2,0

Operating temperature      °C      - 40 to + 55



# Motor operating device NM 24...220 for NAL and NALF switch/switch fuse disconnectors

## Please note!!

Be careful when mounting the device to avoid any injury from sudden movement of the switch disconnector or from the rotating gearwheel of the device.

## 4. Mounting

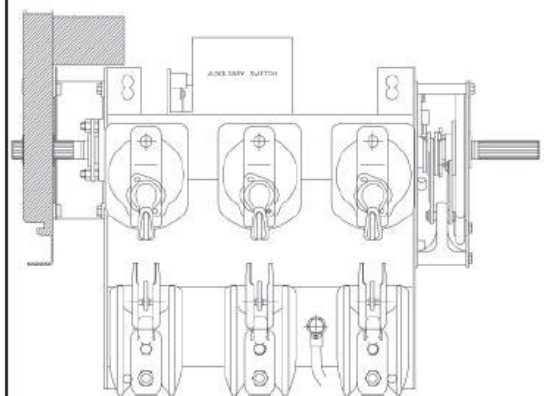
The motor operating device is mounted on the left or right-hand side of the disconnector with a spacer bracket that must be ordered separately.

The device is bolted on with two pieces or four pieces M8 bolts.

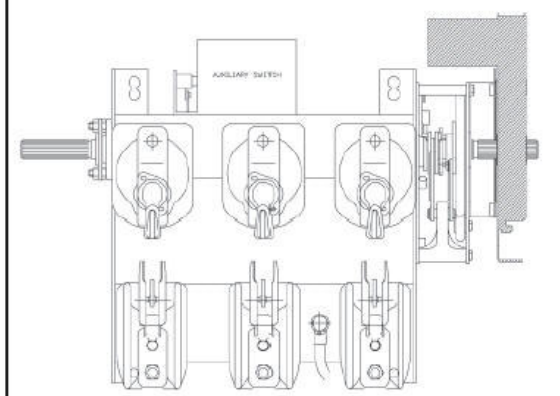
**N.B.** When mounting with mechanical interlocking between NAL and earthing switch, electrical interlocking is also to be carried out.

## Examples of mounting alternatives

Alternative B (page 4–5)



Alternative A (page 4–5)



## 5. Operation

### A. Manual operation

The motor operating device is mechanically disconnected in both open and closed positions. It is manually operated by using an operating handle to rotate the disconnector's shaft or its shaft extension, or else by using some other special type of manual operating device.

If a manual operating device is used, it must be of a type that does not automatically lock the switch in its end position. See, position 6 in part number list, picture 10.

### B. Motor operation

The motor operating device is operated electrically with ON and OFF pushbuttons or by remote control.

The motor operating device is ready for operation in all positions.

## 6. Additional equipment

### Nut washer

Mounting of the device can be made much easier by using the special nut washer. There is then no trouble with loose nuts.



**Ordering number**  
5DLN527601-20

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### Spacer bracket

There are four sizes of bracket, for distances 39 mm, 55 mm, 39 mm, 85mm and 105 mm.



#### K - mechanism

39mm	5DLN527601-21
55mm	5DLN527601-22
85mm	5DLN527601-23
105mm	5DLN527601-34

#### A – mechanism

39mm	5DLN527601-35
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### Operating box

Enclosure of polycarbonate. For mounting of Control unit. Light grey cover (RAL 7035). For flange openings, see dimensions on last page. Control unit fits directly in the operating box.



#### Ordering number

Without lock	5DLN527601-49
With lock	5DLN527601-48

## 7. Setting of shaft and drive coupling

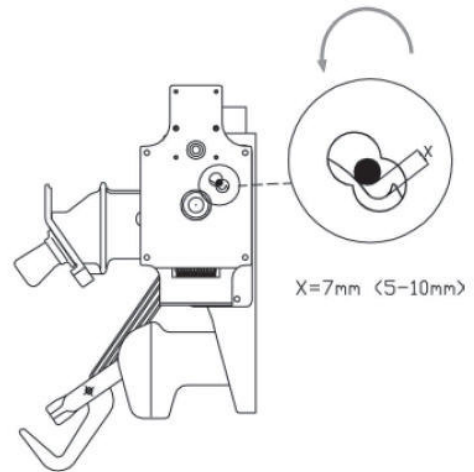
### Alternative A

#### A-mek.

#### Both springs uncharged.

Turn the operating shaft of the disconnecter anti-clockwise to set the tolerance to zero **before mounting** the motor device.

**Distance X** adjusted to ~7 mm (5-10 mm) **before mounting to the shaft.**



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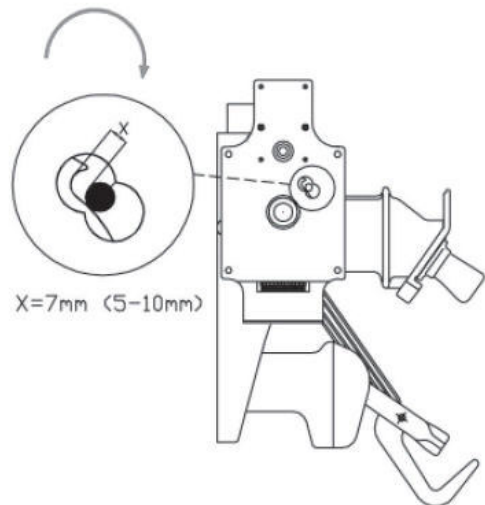
### Alternative B

#### A-mek.

#### Both springs uncharged.

Turn the operating shaft of the disconnecter clockwise to set the tolerance to zero **before mounting** the motor device.

**Distance X** adjusted to ~7 mm (5-10 mm) **before mounting to the shaft.**



## 7. Setting of shaft and drive coupling

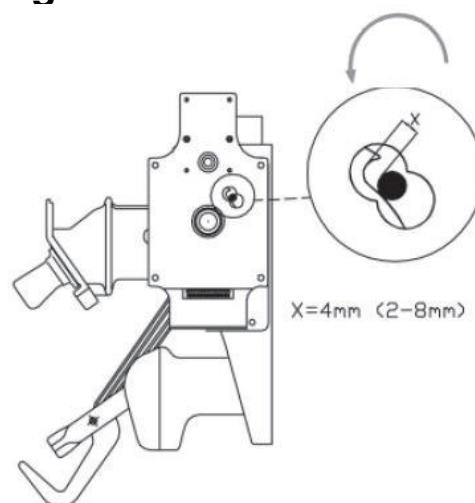
### Alternative A

#### K-mek.

##### The disconnecter in open position

Turn the operating shaft of the disconnecter anti - clockwise to set the tolerance to zero **before mounting** the motor device.

**Distance X** adjusted to ~4 mm (2-8 mm) **before mounting to the shaft.**



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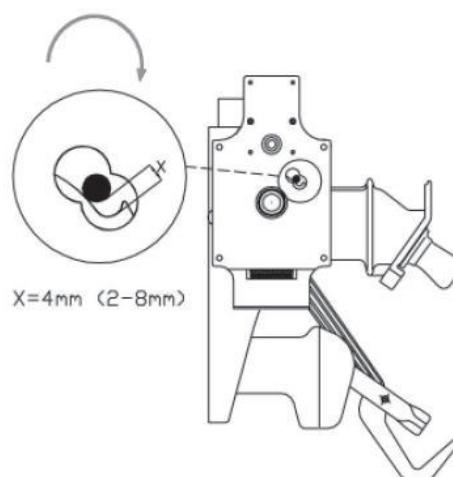
### Alternative B

#### K-mek.

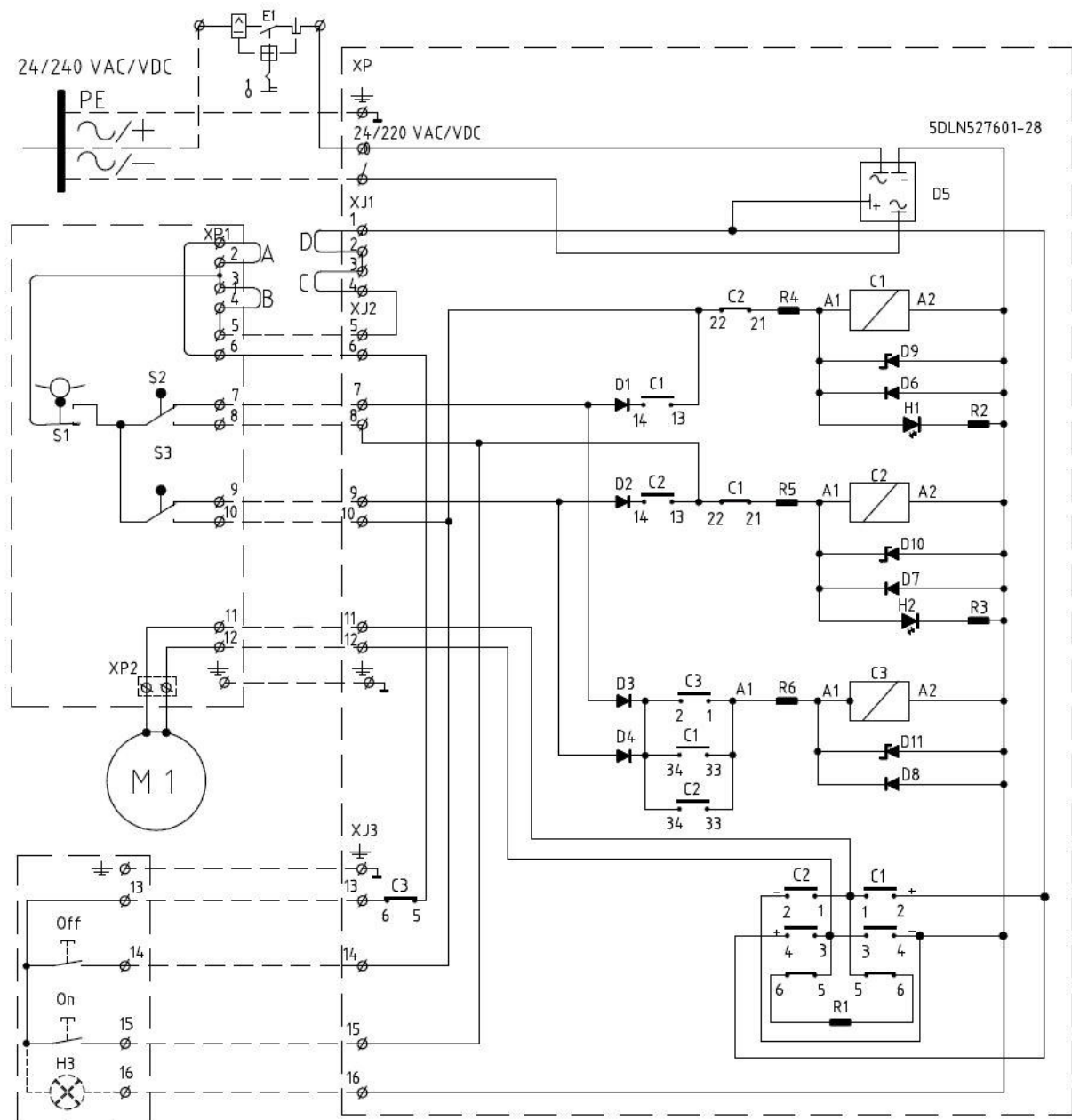
##### The disconnecter in open position

Turn the operating shaft of the disconnecter clockwise to set the tolerance to zero **before mounting** the motor device.

**Distance X** adjusted to ~4 mm (2-8 mm) **before mounting to the shaft.**

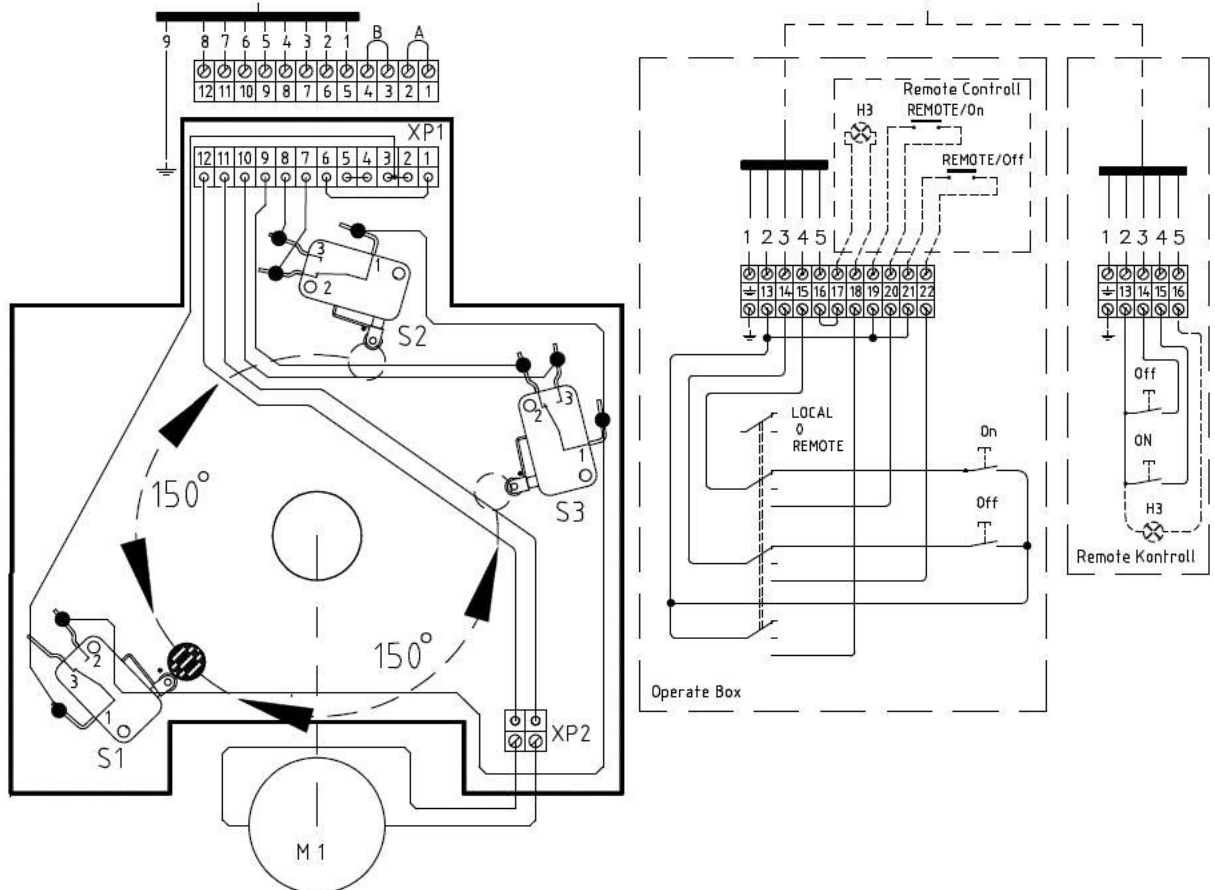
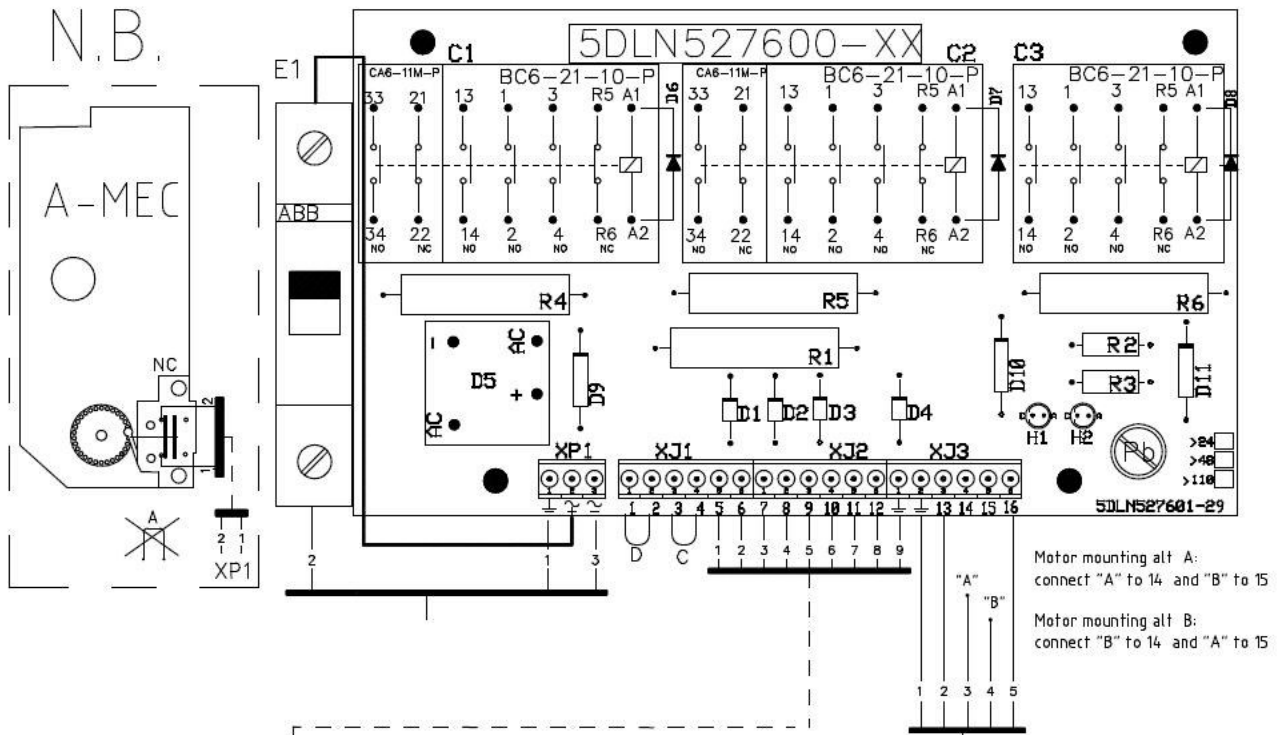


## 8. Circuit and connection diagrams

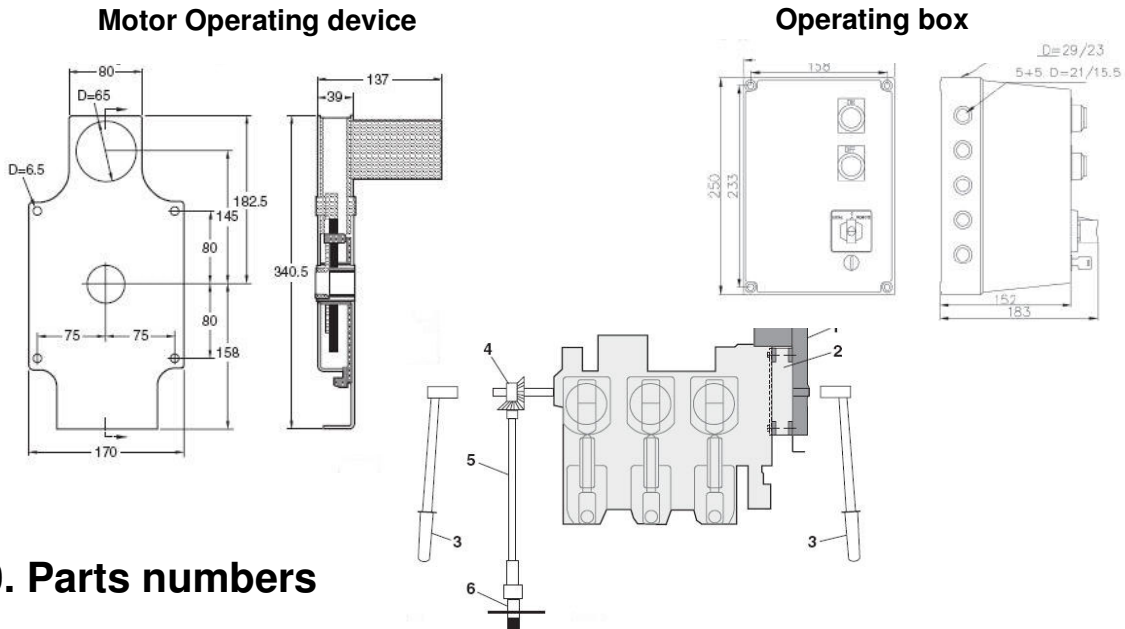


C1-C2 CONTACTOR WITH AUXILIARY CONTACTS  
 C3 CONTACTOR  
 R2-R6 RESISTOR  
 D1-D4 DIODE  
 D5 DIODE BRIDGE (not for 24v)  
 D6-D8 DIODE  
 D9-D11 ZENEDIODE  
 XP1/XP2 TERMINATIONS FOR MOTOR  
 XJ1-XJ3 TERMINATIONS FOR CONTACTOR UNIT  
 M1 MOTOR  
 B,C,D CONNECTIOIN FOR CUSTOMER INTERLOCKING

S1 MICRO SWITCH, START POSITION  
 S2-S3 MICRO SWITCH, END POSITION  
 PB1 PUSHBUTTON ON/OFF  
 PB2 PUSHBUTTON ON/OFF  
 E1 MINI CIRCUIT BREAKER  
 H1/H2 LIGHT DIODS  
 ( H3 CONTROL LAMP "DEVICE OK" )  
 A CONNECTION FOR AUXITIAR SWITCH  
 FOR FUSE INTERRUPTION



**9. Dimensions** Dimensions in mm, the right is reserved to alter design, technical data and dimensions without previous notice.



**10. Parts numbers**

Pos no.	Part no.	Description	Notes
1	5DLN 527601-A	Motor operating device NM24	Complete with contactor unit.
	5DLN 527601-B	Motor operating device NM48	Complete with contactor unit.
	5DLN 527601-C	Motor operating device NM60	Complete with contactor unit.
	5DLN 527601-E	Motor operating device NM110	Complete with contactor unit.
	5DLN 527601-F	Motor operating device NM220	Complete with contactor unit.
2	5DLN 527601-21	Spacer bracket 39 mm	Right hand side, 12,1 7, 5,2 4kV with K-mek
	5DLN 527601-22	Spacer bracket 55 mm	Left hand side, 12 and 17.5kV
	5DLN 527601-23	Spacer bracket 85 mm	Right hand side with K-meck.
	5DLN 527601-34	Spacer bracket 105 mm	Left hand side 24 kV.
	5DLN 527601-35	Spacer bracket 39 mm	Right hand side with A-meck.
	5DLN 527601-34+35	Spacer bracket 105+39 mm	Left hand side, 24 and 36 kV with mechanical Interlocking for earthing switch
3	NHPL 053235R1	Operating handle	Ordered with the NAL/NALF
4	NHPL 053362R1	Bevel gear	Ordered with the NAL/NALF
5	NHPL 053346/47R1	Connection rod	Ordered with the NAL/NALF
6	NHP 042249R4	Front bearing	Ordered with the NAL/NALF
7	5DLN 527601-48	Operating box with lock	
	5DLN 527601-49	Operating box without lock	
8	NHPL 053390R1	Fusetrip indication	Ordered with the NALF



**Gerdins Nordkomponent AB**  
 Övergårdsvägen 4  
 SE- 881 41 Sollefteå, Sweden

Phone. +46 620 25600  
 Fax. +46 620 25675