Motor Operating Device UEMC 40 A_, B_, D_

Installation, operating and recycling guide

Contents

1. General 3
2. Standards 3
3. Transport and storage 3
4. Construction 3
5. General installation instructions 5
6. Examples of installation and basic adjustment method 6
7. Operation and locking 10
8. Maintenance 10
9. Spare parts 10
10. Technical details 11
11. Accessories 12
12. Range of models 17
13. Instruction for recycling the product 23
14. Dimension drawing 27
15. Circuit diagram 28

1. General

The UEMC 40 A_, UEMC 40 B_ and UEMC 40 D_ motor operating devices are intended for indoor mounting on medium voltage disconnectors and earthing switches.

The operating device is reliable in changing temperature and humidity conditions.

Operation can be performed both electrically or by means of the manual operating lever. Operating time is about 5...8 s depending on the type of device and loading conditions.

2. Standards

The motor operating device complies with

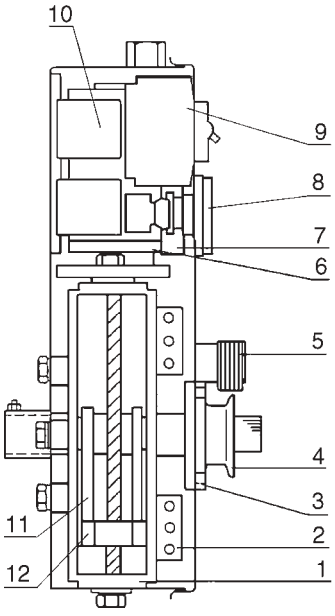
– IEC 265 (1983)

– VDE 0530 motor voltage test

3. Transport and storage

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

4. Construction



CONST

Fig. A

1. Power unit
2. Limit switch
3. Guide pin
4. Coupling ring
5. Locking catch
6. Motor
7. Terminal block
8. Control push button
9. M.c.b.
10. Contactor
11. Lever
12. Nut

a) Power transfer

Power is transfered from the motor through a gear wheel and threaded shaft to the operating axel. The direction of operation for open and close control can be reversed by changing the motor's direction of rotation. The threaded shaft gear is assembled from a round stainless steel shaft and one or two bronze nuts. The shaft is self-locking which means that the operating device cannot be rotated with a force from the operating axel. This also applies if the operating device is in the central position. The nuts transfer the power through the specially formed lever to the operating axel. The lever is formed so that it can be locked in the extream position.

By disengaging the coupling ring, manual operation can be performed by means of the control lever.

Both the gear wheel and the threaded shaft are greased with low temperature grease which ensures correct operation in temperatures as low as –50 °C.

b) Mechanical locking

The unit is fitted with a locking device which also includes a switch to prevent the motor from operating. The locking unit mechanically locks the operating device and is strong enough to withstand the driving force of the motor if the blocking switch S12 fails. The locking unit locks both the motor operating device and the manual operating device.

c) Electrical operation

Motor operating device type UEMC 40 A1_, B1_, and D1_ are fitted with a lower level of electrical components, and require a separate control unit, such as UEZJ 1 or UEZJ 2.
Refer to circuit diagram: 31 UEMC 79.

Motor operating device type UEMC 40 A2_, B2_, and D2-_are equipped with a complete control system including contactors, I- and O-push buttons and m.c.b.
Refer to circuit diagram: 31 UEMC 81.

5. General installation instructions

This is a general description covering the installation of a motor operating device. Refer also to point 6, examples of installation and basic adjustment method.

Note
The motor operating device should not be operated by driving the screw with a compressed air tool as this could damage the motors gearwheel.

a) Install the disconnector, shaft and interlocking between the disconnector and the earthing switch Mount the elbow gear mechanism if the disconnector is to be mounted on the back wall of the cubicle. Refer to installation instructions for the disconnector, and also point 6.

b) Make the electrical connections to the motor operating device and earth the unit.

c) Fit the disconnector as detailed in the basic adjustment instructions, point 6, examples of installation on various disconnectors.

d) Test operate the motor operating device so that the coupling ring A-4 is free and the unit is driven by the motor, or by rotating the screw with a 19 mm socket spanner. If the motor operating device is driven by rotating the screw, ensure to stop when the spring washer bigins to compress. Then operate the disconnector from the shaft using the handle, and make note of the position of the coupling ring when the operating is complete.

   The following criteria should be met both in open and closed position:
   – the shaft can be rotated to the point where the coupling ring latches.
   – a margin in the operating angle should be available before the coupling ring A-4 latches.

e) Change the position of the motor operating mechanism to another spline on the shaft by turning if required, and repeat until the tolerance in the control angle in both the open and closed positions is symetrical.

f) Electrically test operate the disconnector.

g) Tighten all locking bolts and nuts.

h) Check that the operating symbols are correct. Symbols for anti-clockwise closed are included in the delivery of UEMC 40 B_ and D_.

   To change direction of operating for UEMC 40 A1, B1 and D1:
   Refer to circuit diagram: 31 UEMC 157
   31 UEMC 161

   Stick the left hand label to the coupling ring.

   To change direction of operation for UEMC 40 A2, B2 and D2:
   – Swap connections X1:13 and X1:14, red to X1:13 and brown to X1:14.
   – Stick the left hand label to the coupling ring.

   Note
   Models UEMC 40 A1 and UEMC 40 A2 do not usually need to have their direction of rotation changed as the direction of operation of the disconnector can be chosen to suit by turning the larger toothed gearwheel to the left or right side of the smaller toothed gearwheel.

i) Select the right label for sticking on to the motor operating device, according to language and method of mounting. Label no. GB 3637-1 for push buttons mounted above and label no. GB 3637-2 for push buttons mounted below the operating shaft.

Connection of operating device to a disconnector with an A-mechanism

The opening time for the A-mechanism operated with the motor operating device is about 1 second. If a quicker opening time is required, the A-mechanism is to be fitted with a tripping coil.

The tripping coil can be connected in parallel with the opening circuit of the motor operating device which gives:

– quick opening with tripping coil
– the motor operating device will start at the same time as the tripping coil
– the motor operating device will be in the correct position for the following closing operation
– the disconnector will be in the correct position for earthing
– position indication laps will give both the disconnectors and the motor operating devices position.

6. Examples of installation and basic adjustment method

A. NAL-disconnector mounted on the rear wall of the cubicle

Spring device: A-mec, K-mec or KS-mec.

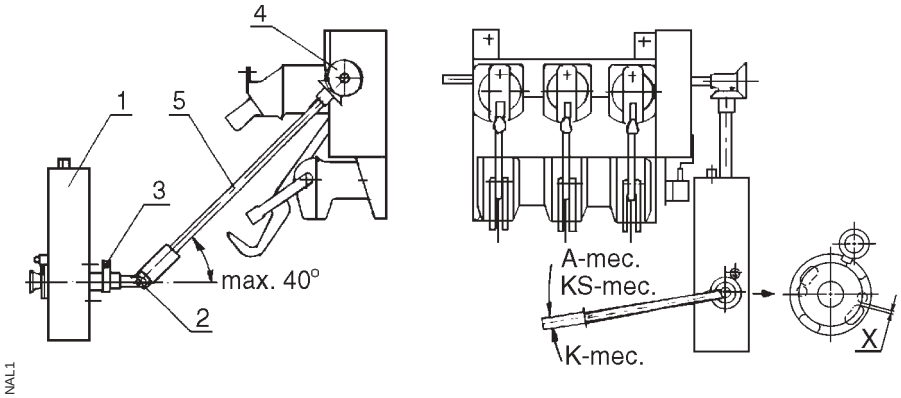


Fig. B

1.	Motor operating device	UEMC 40 A2- or UEMC 40 A1-	
2.	Joint	UEMC-ZL 7	
3.	Adjuster coupling	UEMC-ZL 10	(only for KS-mechanism)
4.	Beveled gearwheel	53362/HE	
5.	Transmission tube	53346	(lenght 1,3 m)
		53347	(lenght 2 m)

A-mec, basic adjustment method

1. Operating device in open position (as delivered).
2. Operate the disconnector in the direction of the open position until the spring is charged, (charging catch latches). Turn lightly using the handle, in the direction of the arrow on the A-mechanism until the free play is taken up.
3. Free the operating device's coupling ring A-4 for manual operation, and turn the coupling ring so that dimension **X = 1 mm**. Refer to fig. B.
4. Install the motor operating device in this position.
5. Refer to point 5, general installation instructions.

K-mec, basic adjustment method

1. Operating device in open position (as delivered).
2. With the disconnector in the open position, lightly turn using the handle, in the direction of the arrow on the K-mechanism until the free play is taken up.
3. Free the operating device's coupling ring A-4 for manual operation, and turn the coupling ring so that dimension **X = 6 mm**. Refer to fig. B.
4. Install the motor operating device in this position.
5. Refer to point 5, general installation instructions.

KS-mec, basic adjustment method

Applicable to both disconnector mounted on the side or rear wall of the cubicle. Refer to fig. B and fig.C.

1. Operating device in open position (as delivered).

2. Disconnector in the closed position. Operate the disconnector with the handle to charge the spring device, and continue in the direction of the arrow on the KS-mechanism until the free play is taken up.

3. Loosen the adjuster coupling screws to max. free play. The adjuster coupling provides facility to adjust the extreme positions exactly and to reduce the control angle.

4. Turn the adjuster coupling in the opposite direction of the arrow KS-mec. until the free play is taken up.

5. Install the motor operating device.

6. Tighten one adjustment screw on the adjuster coupling until a light resistance is felt towards the open position. Do not tighten it so much that the coupling ring cannot be drawn out by hand. The position of the adjuster coupling's splines should be that the adjuster screw is screwed out only a few millimeters, otherwise the free play will not be enough for positioning at the other end.

7. Trip the disconnector to the open position using the tripping mechanism.

8. Free the operating device's coupling ring A-4 and operate the motor operating device to the closed position, ensuring that the disconnector remains in the open position. The operation can be made electrically or by rotating the nut on top.

9. Operate the disconnector with the handle until the closing spring is charged and the end free play is taken up. If the coupling ring should not latch in refer to above point 6.

10. Tight the adjuster couplings other adjustment screw until a light resistance is felt towards the closed position, but do not tighten so much that the coupling ring cannot be drawn out by hand.

11. Trip the disconnector to the closed position using the tripping mechanism.

12. Refer to point 5, general installation instructions.

B. NAL-disconnector mounted on the side wall of the cubicle

Spring device: A-mec, K-mec or KS-mec.

The operating device can be mounted on the right hand or left hand side of the disconnector. When mounted on the right hand side it must be noted that the direction of operation should be changed to anti-clockwise closed. Refer to point 5.h.

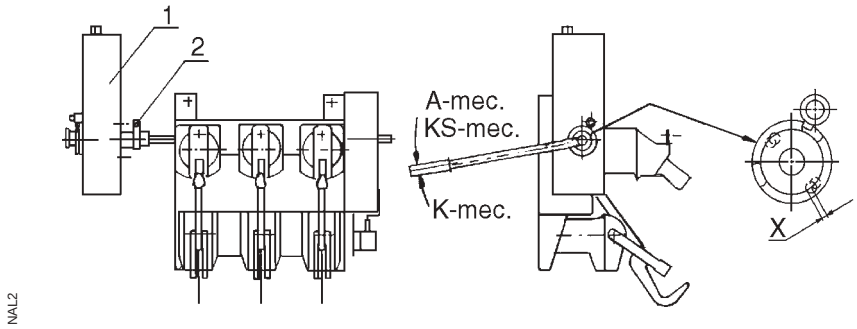


Fig. C

1. Motor operation device UEMC 40 D2- or UEMC 40 D1-
2. Adjuster coupling UEMC-ZL 10 (only for KS-mechamism)

A-mec, basic adjustment method

1. Operating device in open position (as delivered).
2. Operate the disconnector in the direction of the open position until the spring is charged, (charging catch latches). Turn lightly using the handle, in the direction of the arrow on the A-mechanism until the free play is taken up.
3. Free the operating devices coupling ring A-4 for manual operation, and turn the coupling ring so that dimension **X = 5 mm**. See fig. C
4. Install the operating device in this position.
5. Refer to point 5, general installation instructions.

K-mec, basic adjustment method

1. Operating device in open position (as delivered).
2. Disconnector in the open position. Turn lightly using the handle in the direction of the arrow on the K-mec until the free play is taken up.
3. Free the operating device's coupling ring A-4 for manual operation, and turn the coupling ring so that dimension **X = 5 mm**. See fig. C
4. Install the operating device's in this position.
5. Refer to point 5, general installation instructions.

KS-mec, basic adjustment method

The same installation instructions are applicable to disconnectors mounted on either the rear or side wall of the cubicle. Refer to point 6.A.

C. ADNN-, or OJON- disconnectors mounted on the rear wall of the cubicle

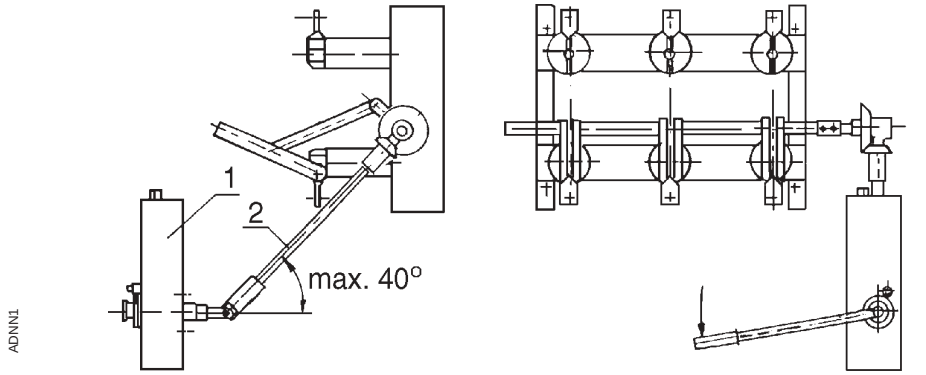


Fig. D

1. Motor operating device UEMC 40 A2- or UEMC 40 A1

2. Elbow gear mechanism UEMC-ZL 23 including:
   - beveled gear wheel
   - transmission tube 33 x 1500 mm
   - joint
   - extension shaft

1. Operating device in the open position (as delivered).

2. Disconnector in the open position. Lightly turn, using the handle, in the direction of the arrow until the free play is taken up.

3. Mount the motor operating device.

4. Free the operating device's coupling ring A-4 and operate the motor operating device to the closed position, ensuring that the disconnector remains in the open position. The operation can be made electrically or by rotating the screw.

5. Operate the disconnector with the handle to the closed position. Take note of when the coupling ring latches in. The coupling ring should latch in when the disconnector is completely closed. Loosen the connector from the operating mechanism and rotate it to a suitable spline as required.

6. Open the disconnector using the handle and repeat the above until the desired position is obtained.

7. Refer to point 5, general installation instructions.

D. ADNN-, or OJON- disconnectors mounted on the side wall of the cubicle

The operating device can be mounted on either the left hand or right hand side of the disconnector. When mounted on the left hand side it must be noted that the direction of operation should be changed to anti-clock-wise closed, refer to point 5.h.

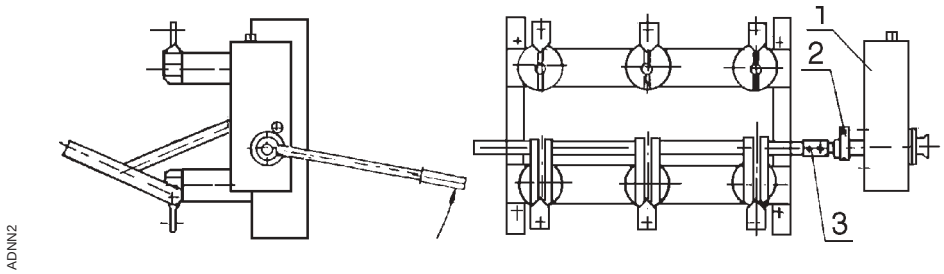


Fig. E

1.	Motor operating device	UEMC 40 B2-, or UEMC 40 B1	
2.	Adjuster coupling	UEMC-ZL 9 f UEMC-ZL 10	or round shaft Ø 25 for splined shaft Ø 25
3.	Extension shaft	UEMC 242	fit to adjuster coupling UEMC-ZL 10

1. Operating device in open position (as delivered).
2. Loosen the adjuster coupling screws to max. free play. The adjuster coupling provides facility to adjust the extreme positions exactly and to reduce the control angle.
3. Disconnector in open position.
4. Turn the coupling adjuster and the disconnector lightly in the direction of the arrow until the free play is taken up.
5. Install the motor operating device.
6. Tighten one adjustment screw on the adjuster coupling until the disconnector turns lightly against the open stopper. The position of the adjuster coupling's splines should be that the adjuster screw is screwed out only a few millimeters, otherwise the free play will not be enough for positioning at the other end. Change the adjuster coupling to another spline if required.
7. Free the operating device's coupling ring A-4 and operate the motor operating device to the closed position, ensuring that the disconnector remains in the open position. The operation can be made electrically or by rotating the nut.
8. Operate the disconnector with the handle to the closed position.
9. Tighten the adjuster coupling's other adjustment screw until the disconnector turns lightly against the close stopper.
10. Test operate and adjust the adjustment screws if necessary.
11. Refer to point 5, general installation instructions.

7. Operation and locking

a) Motorized operation

– Switch the “MOTOR”-switch to the ON position. In this position both the local and remote functions operate.
– Use the control pushbuttons I or O for local control.

b) Manual operation

Switch the “MOTOR”-switch to the OFF-position. Pull the coupling ring out and operate using the control handle. Some disconnectors will need a slight turn in the other direction with the control lever before the coupling ring A-4 can be pulled out. See also accessories UEMZ 469.

c) Motorized operation after manual operation

After manually operating the disconnector once, the power unit is not in synch with the disconnector. The coupling ring A-4 usually drops into place itself when next using the motor operating device. To assist the coupling ring relocating itself, turn the axel slightly backwards after manually operating the disconnector.
If for example the disconnector is opened manually and then it is to be closed using the motor operating device, first drive the motor operating device to the open position so that the coupling ring drops into place and then drive it to the closed position.

d) Mechanical locking

Switch the “MOTOR” -switch to the O-position. The disconnector can be locked when the motor operating device is in the open or closed position, also after manual operation, even if the coupling ring is disengaged. Lock after pushing the locking catch A-5 in using ∅ 6...10 mm padlock. The locking will also open the electrical operating circuit automatically.

8. Maintenance

The operating devices threaded shaft and gearwheel is to be greased at 5 year intervals or after 1000 operations.

Recommended grease type is **Isoflex Topas NCA 52** or similar synthetic low temperature resistant grease. The grease can be ordered from the manufacturer of the operating device.

If the operating device is fitted with an anti-condensation heater check that it works.

9. Spare parts

When ordering spare parts all details on the rating plate are to be mentioned.

Spare parts	Type	Remarks
Motor + gear wheel	UEZM 5/U/3	U = Voltage
Motor gear wheel	J403323	
Diode	SK 1/16	
Rectifier	- REC 36 MB 160 A	
Limit switch. S1, S2	OYAX 13	
Contactor K1, K2	- ABB VBC 6-30-01/U	U = Voltage
Relay K3	- RFI 40.52.9.048	

10. Technical details

– Direction of operation:
clockwise to close easily changeable, see point 5.h.

– Motor:
Rectified DC, permanent magnet type

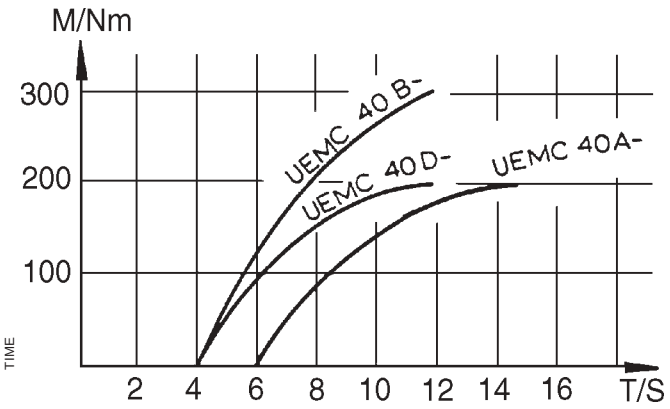
Rated voltage U/V	Normal control current In/A	Max. current Imax/A	Recommended M.c.b.
24 VDC	12	40	- STO S272 K8
48 VDC	6	20	- STO S272 K4
60 VDC	5	17	- STO S272 K4
110 VDC	2	5.5	- STO S272 K2
125 VDC	2	5.5	- STO S272 K2
220 VDC	1	3	- STO S282 UCK 1
230 VAC	1	3	- STO S272 K1

		UEMC 40		UEMC 40		UEMC 40	
		A1	A2	B1	B2	D1	D2
Torque	Nm	200	200	300	300	200	200
Weight	kg	14.5	14.5	12.5	12.5	13	13
Contactors:							
Closing power	W	3	3	3	3	3	3
Holding power	W	3	3	3	3	3	3
Shortest control pulse	s	0.1	0.1	0.1	0.1	0.1	0.1
Operating angle	Degr.	190	190	110	110	150	150
	Degr.	210 1)	210 1)				

– Manual operating device with operating handle UEKO-ZK 1
– Terminal block 6 mm^2
– Anti-condensation heater 5 W
(to be ordered separately)

1) With accessory: Coupling ring UEMZ 452

– Operating time at standard load 5...8 s

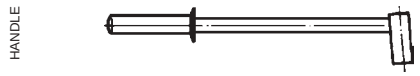


Operating time at different load

11. Accessories

Operating handle — UEKO-ZK 1 or HE 53235

The operating handle is insulated and fitted with an insulated grip.



Extension shaft — UEMC -ZL 24

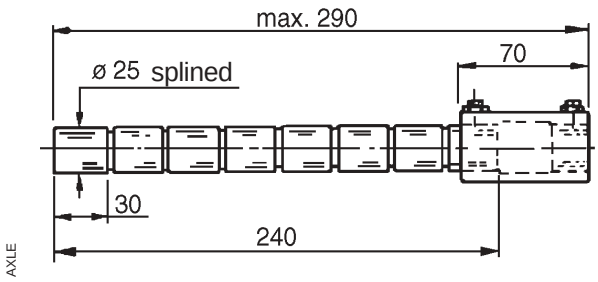
Includes:

– shaft 240 mm (splined)

– extention socket 70 mm (splines to splines)

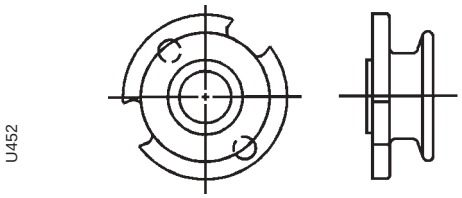
The shaft have cutting grooves at regular intervals.

∅ 25 splined / ∅ 25 splined



Coupling ring — UEMZ 452

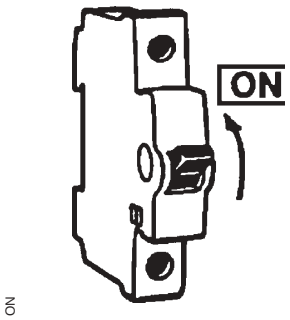
Increases the operating angle to 210º for motor operating devices UEMC 40 A_



Protective m.c.b.

Used to connect the supply circuit and protect the motor against overloading.

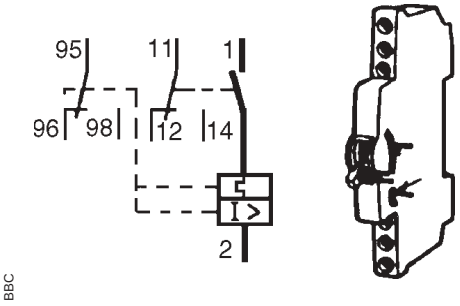
Motor voltage	Miniature circuit breaker type
24 VDC	- STO S272 K8
48 VDC	- STO S272 K4
60 VDC	- STO S272 K4
110 VDC	- STO S272 K2
125 VDC	- STO S272 K2
110 VAC	- STO S272 K2
220 VDC	- STO S282 UCK 1
230 VAC	- STO S272 K1



Auxiliary contact for m.c.b.

- STO S 2-S/H

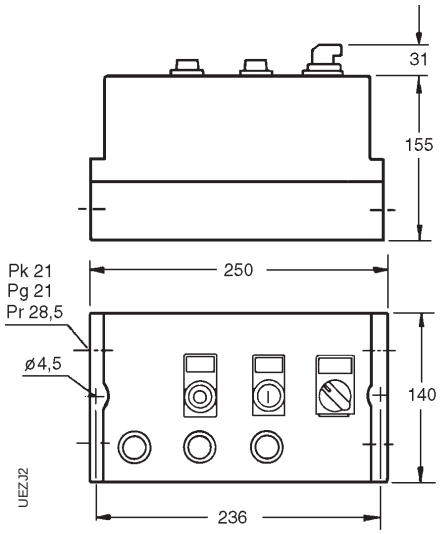
Includes 2 pcs. change-over contacts.



Operating box UEZJ 2-

Type	Circuit diagram
UEZJ 2 - 24 VDC	31 UEMC 148
UEZJ 2 - 48 VDC	"
UEZJ 2 - 60 VDC	"
UEZJ 2 - 110 VDC	"
UEZJ 2 - 125 VDC	"
UEZJ 2 - 220 VDC	"
UEZJ 2 - 110 VAC	"
UEZJ 2 - 230 VAC	"
UEZJ 2 - UU 1)	31 UEMC 149

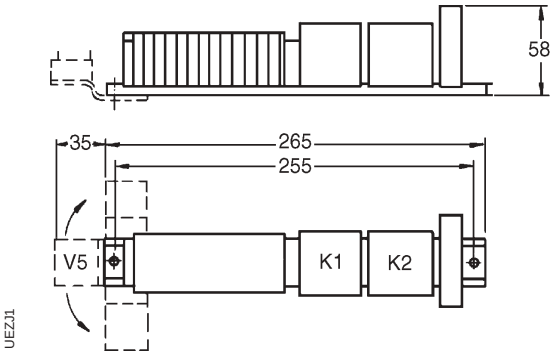
1) Type UEZJ 2-UU is to be ordered when different motor and auxiliary voltages are to be used. Please give details of the voltages when ordering.



Control unit UEZJ 1-

Type	Circuit diagram
UEZJ 1 - 24 VDC	31 UEMC 148
UEZJ 1 - 48 VDC	"
UEZJ 1 - 60 VDC	"
UEZJ 1 - 110 VDC	"
UEZJ 1 - 125 VDC	"
UEZJ 1 - 220 VDC	"
UEZJ 1 - 110 VAC	"
UEZJ 1 - 230 VAC	"
UEZJ 1 - UU 1)	31 UEMC 149

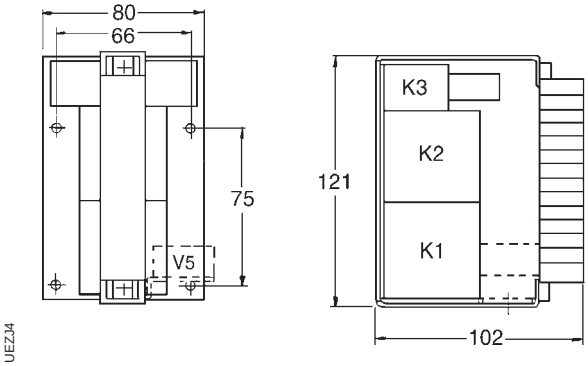
1) Type UEZJ 1-UU is to be ordered when different motor and auxiliary voltages are to be used. Please give details of the voltages when ordering.



Control unit UEZJ 1- /2

Type	Circuit diagram
UEZJ 1 - 24 VDC/2	31 UEMC 141
UEZJ 1 - 48 VDC/2	"
UEZJ 1 - 60 VDC/2	"
UEZJ 1 - 110 VDC/2	"
UEZJ 1 - 125 VDC/2	"
UEZJ 1 - 220 VDC/2	"
UEZJ 1 - 110 VAC/2	"
UEZJ 1 - 230 VAC/2	"
UEZJ 1 - UU/2 1)	31 UEMC 142

1) Type UEZJ 1-UU is to be ordered when different motor and auxiliary voltages are to be used. Please give details of the voltages when ordering.



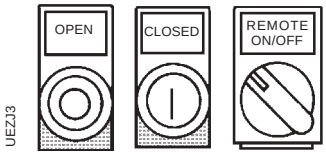
Control push buttons UEZJ 3

Includes:

– I -button, with text: CLOSE

– O -button, with text: OPEN

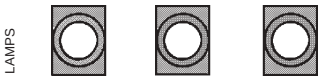
– On/Off selector switch, with text: REMOTE ON/OFF



Set of indicator lamps UEZJ 4

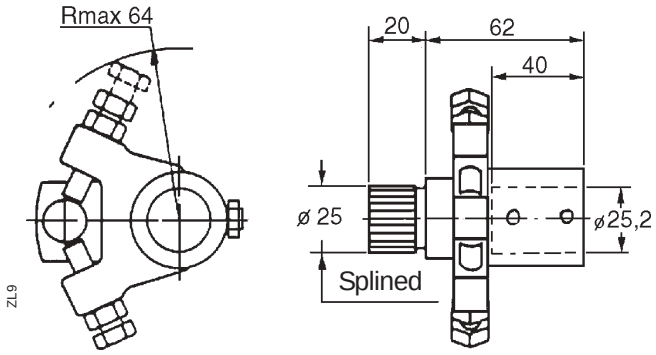
Type: UEZJ 4 - 24 V
- 48 V
- 60 V
- 110 V
- 125 V
- 220 VDC
- 230 VAC

Includes: red, green, and yellow lamps.
The same type for both DC and AC.



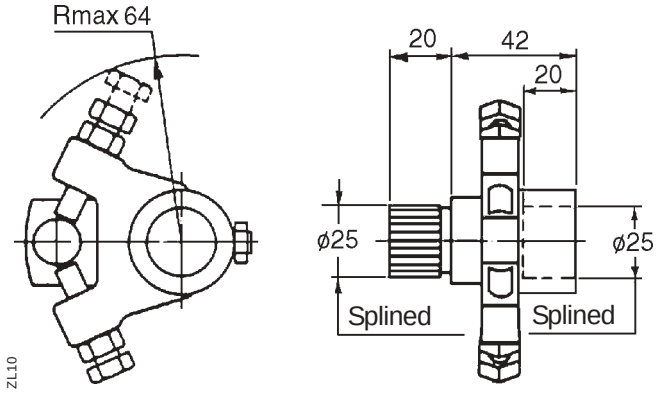
Adjuster coupling UEMC-ZL 9

Provides facility to adjust the extreme positions exactly and to reduce control angle steplessly max 30°.
∅ 25 splined / ∅ 25



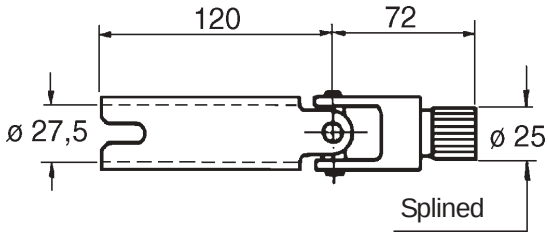
Adjuster coupling UEMC-ZL 10

Provides facility to adjust the extreme positions exactly and to reduce control angle steplessly max 30°.
∅ 25 splined / ∅ 25 splined



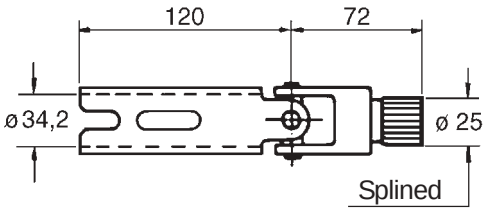
Joint UEMC-ZL 7

For transmitting the operating movement through an angle of max 40°.
For tube diameter: 3/4" (26.9 mm)



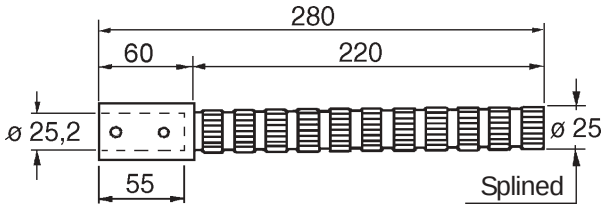
Joint UEMZ 390

For transmitting the operating movement through an angle of max 40°.
For tube diameter: 1" (33.7 mm)



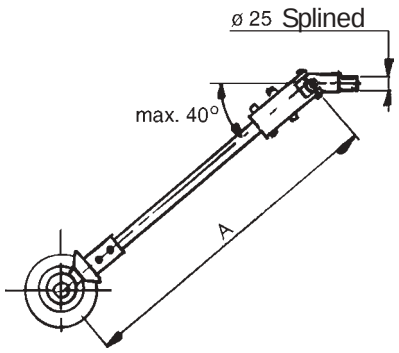
Extension shaft UEMZ 242

∅ 25 splined / ∅ 25

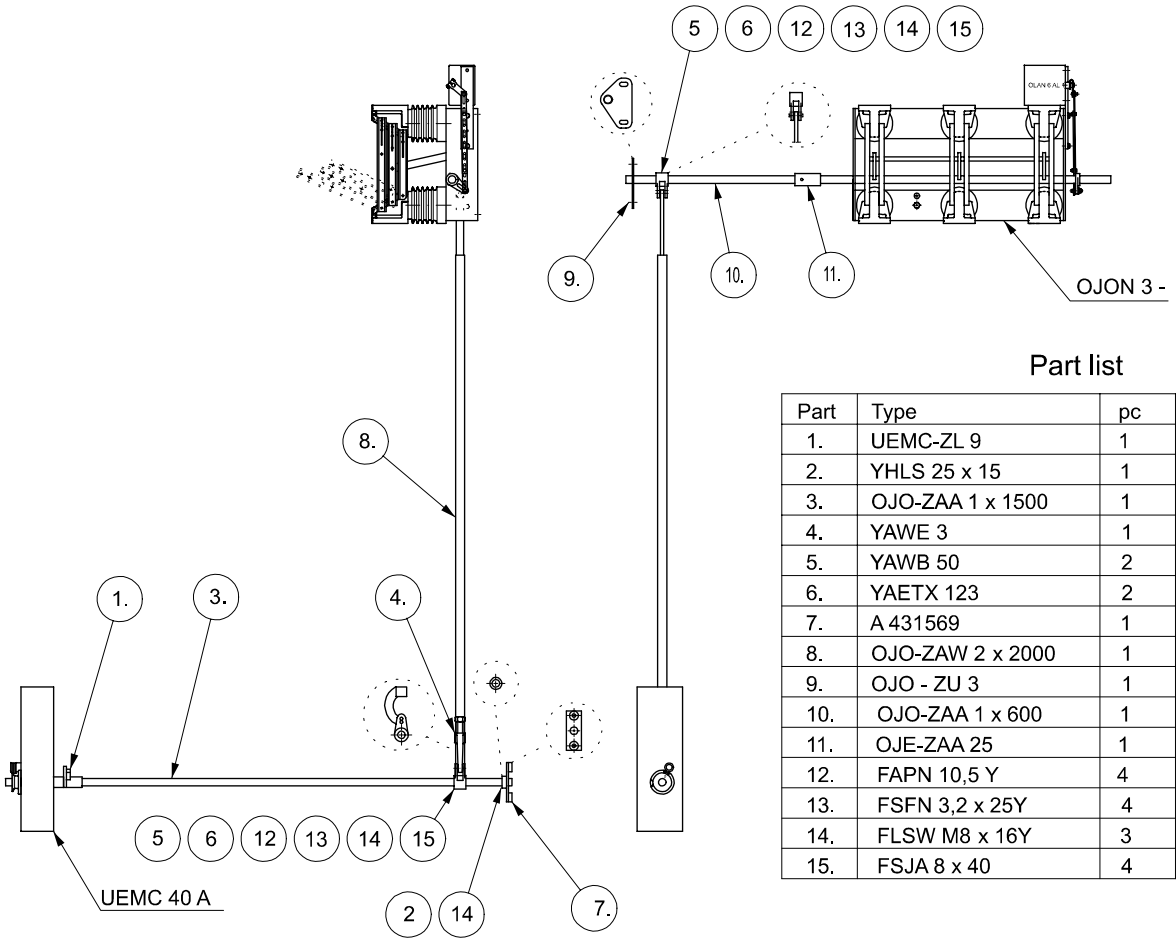


Elbow gear mechanism UEMC-ZL 23

Includes:
UEMZ 404: Beveled gear wheel
UEMZ 390: Joint
UEMZ 242: Extension shaft
UEMZ 403: Transmission tube ∅ 33.7 x 1500 mm
Tube length = A – 150 mm



Mechanism OJO-ZB 1 (alternative to UEMC-ZL 23)



Part list

Part	Type	pc	Attention
1.	UEMC-ZL 9	1	
2.	YHLS 25 x 15	1	
3.	OJO-ZAA 1 x 1500	1	or other specified length
4.	YAWE 3	1	
5.	YAWB 50	2	
6.	YAETX 123	2	
7.	A 431569	1	
8.	OJO-ZAW 2 x 2000	1	or other specified length
9.	OJO - ZU 3	1	
10.	OJO-ZAA 1 x 600	1	or other specified length
11.	OJE-ZAA 25	1	
12.	FAPN 10,5 Y	4	
13.	FSFN 3,2 x 25Y	4	
14.	FLSW M8 x 16Y	3	
15.	FSJA 8 x 40	4	

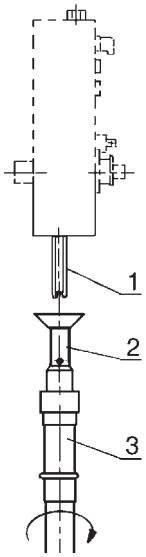
Manual operation by means of an insulated staff

Contents:

1. Screw extensions UEMZ 469
2. Conical adapter – RAG MGA 87
3. Operating rod – RAG MTG 201-K
   Length 6390 mm

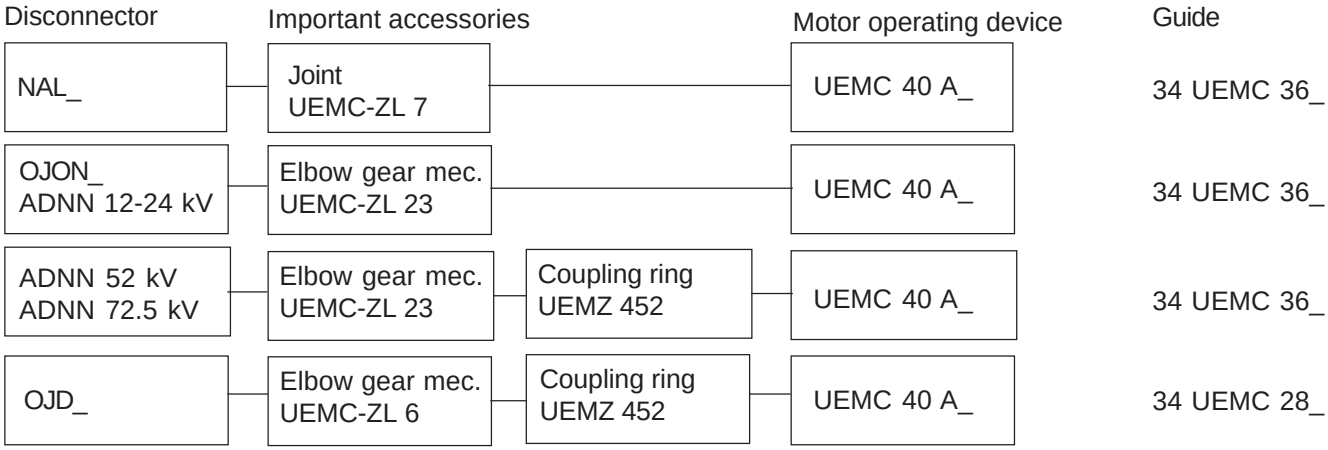
Function:

The conical adapter can be fitted on the end of an insulated staff as used for changing fuses on pole mounted transformers. Manufactured by Melby or Ragnar Stålskog. By turning the staff, the operating mechanism can be controlled.

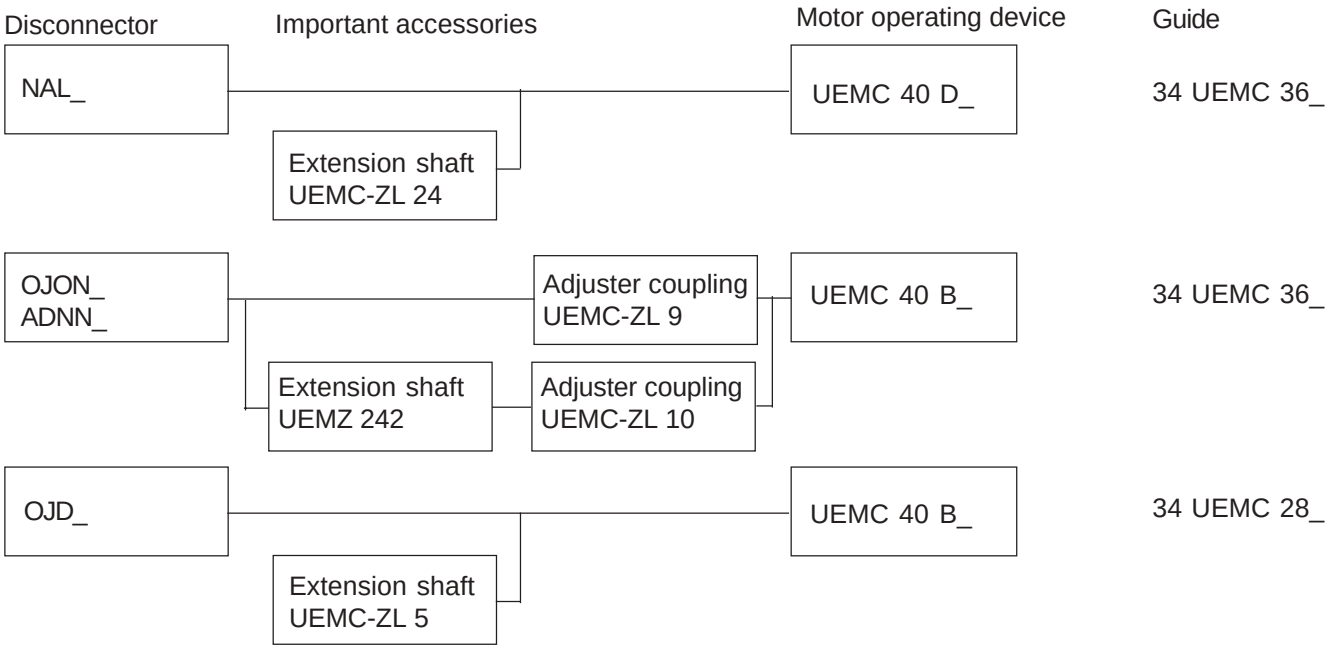


12. Range of models

Disconnector mounted on the rear wall of cubicle

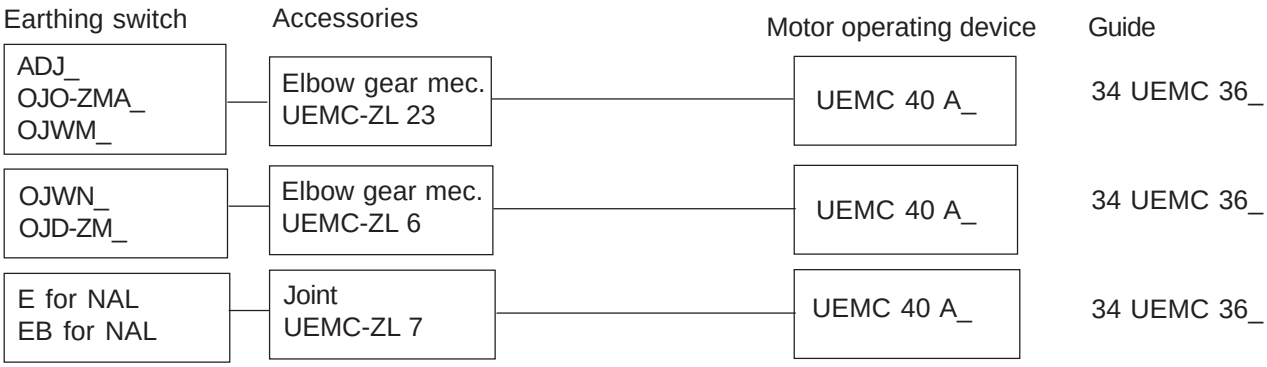


Disconnector mounted on the side wall of cubicle

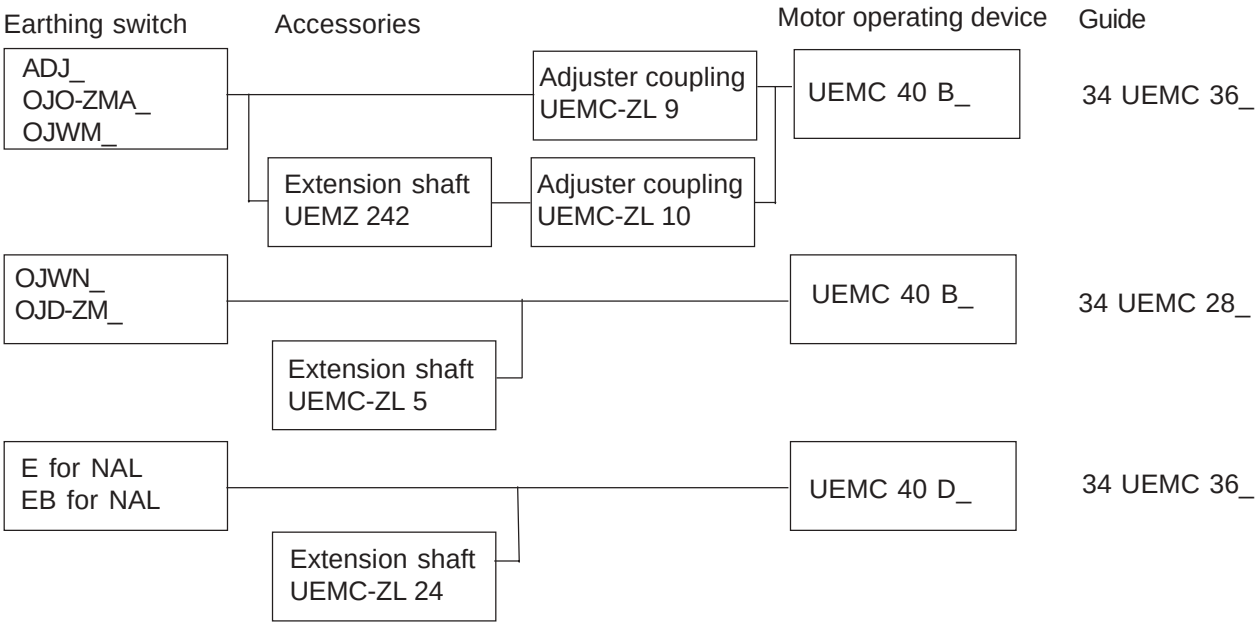


UEMC 40 A_, B_, D_

Earthing switch mounted on the rear wall of cubicle

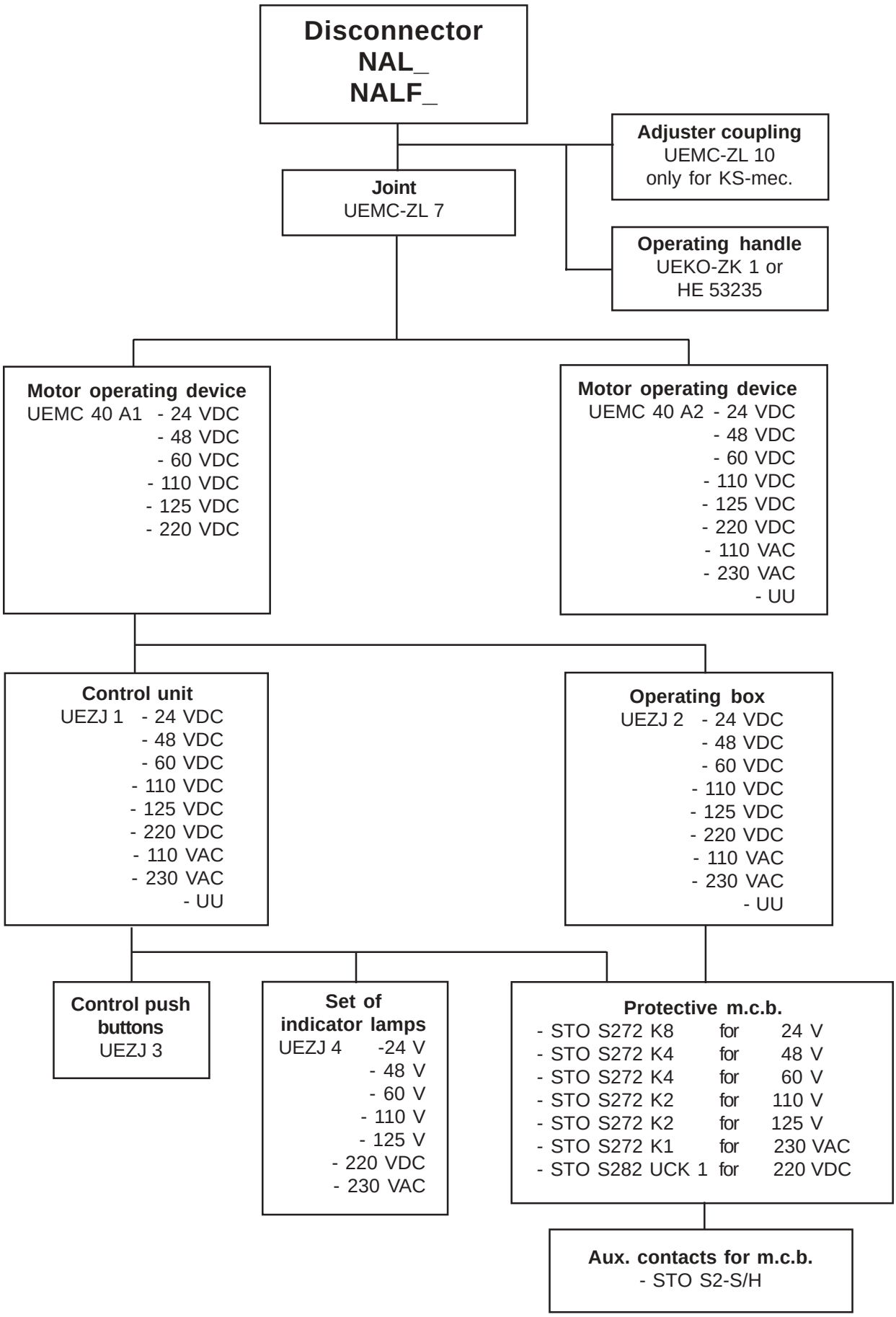


Earthing switch mounted on the side wall of cubicle



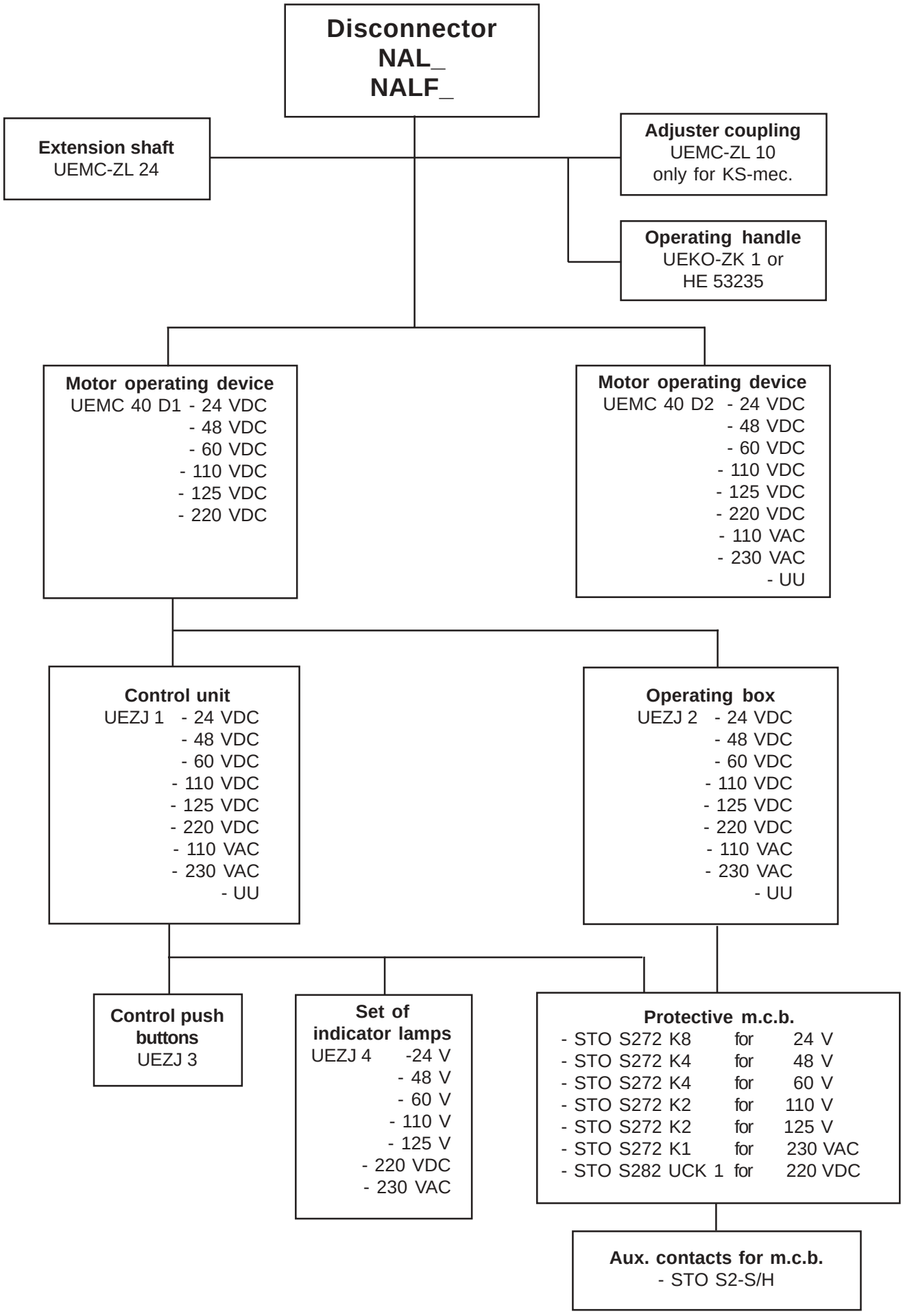
UEMC 40 A_

Disconnector mounted on the rear wall of cubicle



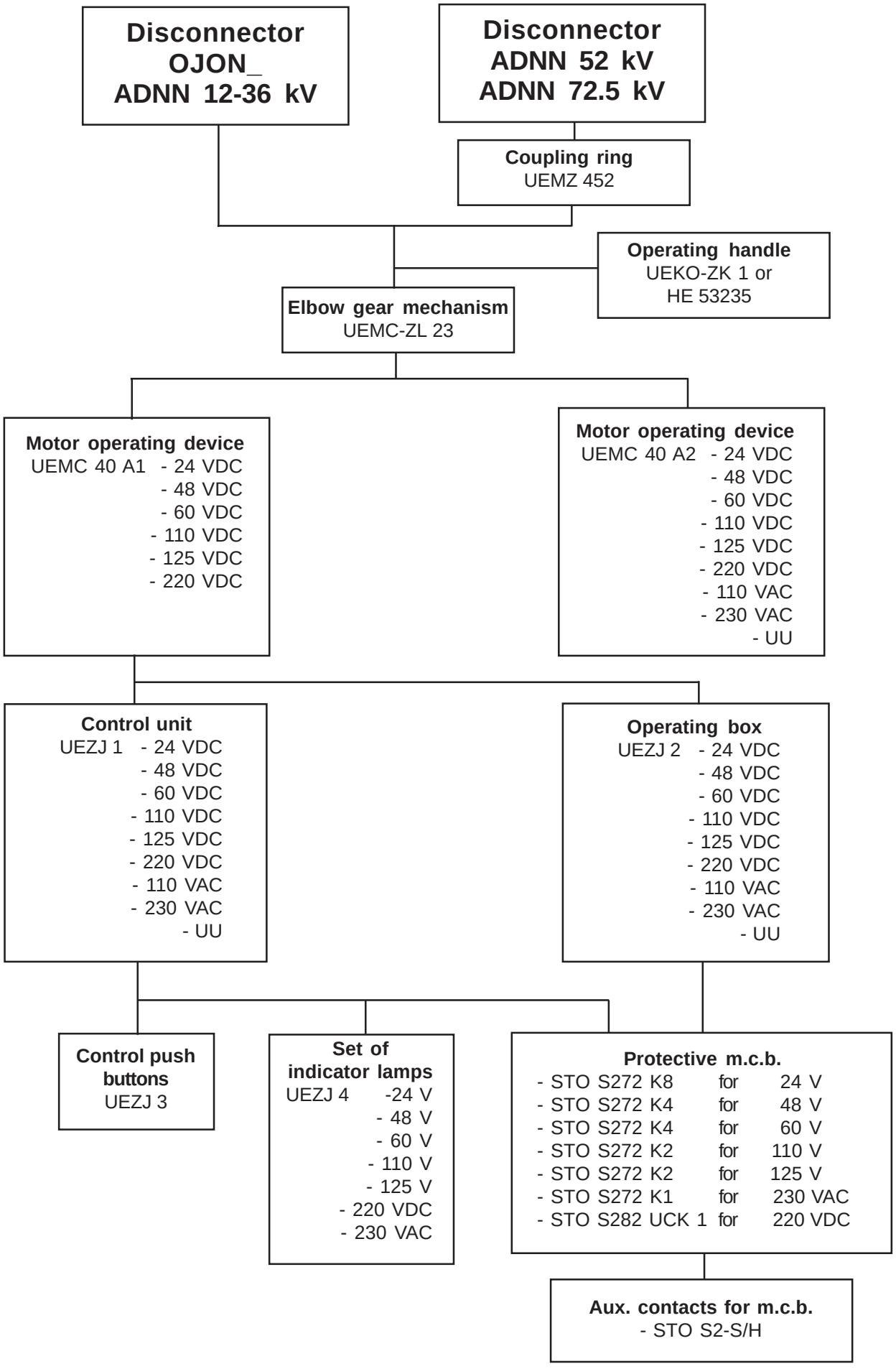
UEMC 40 D_

Disconnector mounted on the side wall of cubicle



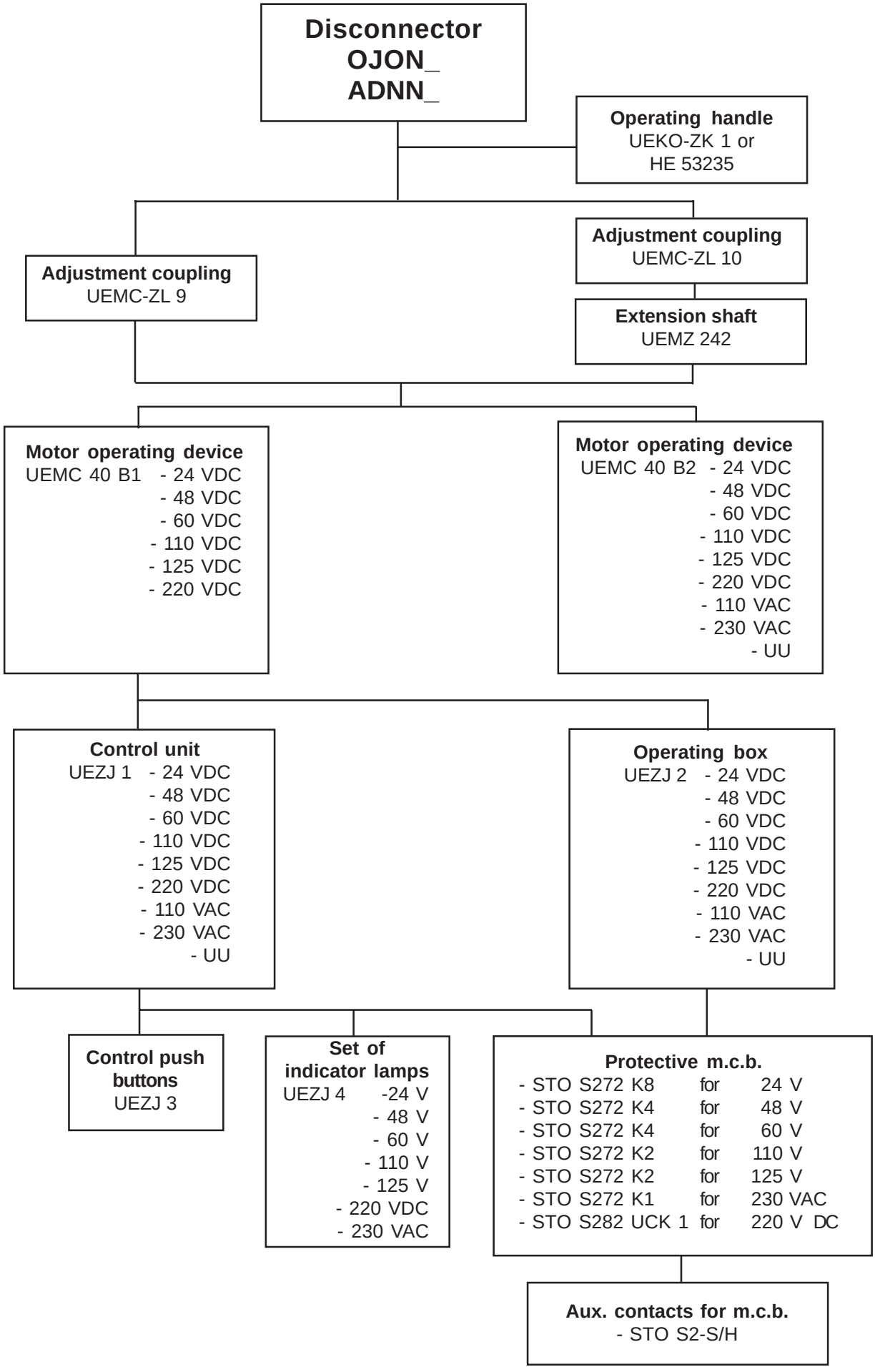
UEMC 40 A_

Disconnector mounted on the rear wall of cubicle



UEMC 40 B_

Disconnector mounted on the side wall of cubicle



13. Instruction for recycling the product

13.1. Introduction 23
13.2. The products casing 23
13.3. Material of the product 23
13.3.1 Material of the main components 24
13.3.2 Material of other components 24
13.4. Recycling the product 24
13.4.1 Manual demolition 24
13.4.2 Mechanical crushing 24
13.4.3 Eventual damaging material and problem waste 24
13.4.3.1 Directory over eventual damaging material and problem waste 25
13.4.4 Possible recycling methods 25

13.1 Introduction

This document includes instructions for recycling the product UEMC 40 A, B, D. The document includes which material that are used in the products and handling instructions when the product is taking out of use.

The environment regulation varies from country to country and develops fast. Due to this it is recommended to contact the local customers and inform them about how to handle when the product is taking out of use.

Together with this document it should be given information to the local customers about returning of the product that is taking out of use.

ABB Oy can give more information.

Information that is in this document is not part of an extract or deal, it supposes to be the most correct and trustful and can be changed without notice. The publisher will not take any responsibility for the consequences.

13.2 The products casing

The product is cased in card, paper and foamplastic. The card and the paper can be recycled normally. The foamplastic can be i.e. used for energy production in a facility build for this purpose.

To avoid pollution when making unnecessary transports the manufacturer will not accept used package. Recycling has to be arranged locally according to local instructions. Recycling is recommended when it saves raw material and reduces the waste.

13.3 Material of the product

Information about the construction and main parts of the operating device can be found in point 4, construction. The steel parts are normally surface treated (hot galvanized or electrical gaivanized). This does not affect the recycling.

13.3.1 Material of the main components

See figure A page 3.

Part	Description	Material	Weight
1.	Power unit	1) Steel 2) Stainless steel	3) 4,5 – 4,7 kg 4) 0,3 – 0,4 kg
2.	Limit switch	Several	
3.	Guide pin	Steel	0,6 kg
4.	Coupling ring	Steel	0,4 kg
5.	Locking catch	Steel	0,3 kg
6.	Motor	Several *)	1,7 kg
7.	Terminal block	Several	
8.	Control push button	Several	
9.	M.c.b.	Several	
10.	Contactor	Several	
11.	Lever	Several	0,7 – 1,0 kg
12.	Nut	Bronze	0,3 kg

*) The motors are mainly made of materials that are easily to recycle, such as iron, copper and sink. Their recycling is also economically.

13.3.2 Material of other components

Part	Description	Material	Weight
1.	Box	Hot galvanized steel	2,6 – 3,2 kg
2.	Operating handle	Steel	0,9 kg
3.	Operating shaft	Steel	2,5 kg/m
4.	Extension shaft	Steel	1,1 kg
5.	Joint	Steel	0,6 – 0,8 kg
6.	Adjuster coupling	Steel	0,6 kg
7.	Coupling ring	Steel	0,4 kg
8.	Elbow gear mechanism	Steel	3,3 kg
9.	Operating box	Several	
10.	Control unit	Several	
11.	Box UEMZ 480	Polycarbonat	
12.	Set of indicator lamps	Several	
13.	Diode	Several	
14.	Relay K3	Several	
15.	Rectifier	Several	

The weight of some parts will fluctuate depending of the type on the operating device (A, B and D). The weight for the really light parts are not printed, the operating device also contains screws, nuts, washers and rivets and also some parts that not are important when recycling.

Over 70 % of the weight of the product are big metal parts, which are easy to recycle (13.3.1 metal parts and box). The motor is over 11 % of the weight and it is also easy to recycle. Also some of the accessores are metal parts that are easy to recycle.

13.4 Recycling the product

To deal with junk requires in most countries permission and you have to get permission for your own company. Information about local junkyards can be obtained from the agency of environment.

A product that is not in use anymore can be taking care of in two alternatively ways. The product can be manually demolished or be crushed mechanically.

Before the process all parts that are containing problem waste have to be removed and send to a facility made for this purpose.

Information about the facilities can be obtained from the local agency of environment.

13.4.1 Manual demolition

The product can be demolished manually and the parts are sorted depending of what material they are containing according this table:

– steel*
– bronze*
– plastic
– cablejunk
– other

* More information, see 13.4.3. directory over eventual damaging material and problem waste.

The metal parts are easy to recycle the others according to locally arrangements. No especially tools are needed for the demolition.

13.4.2 Mechanical crushing

In this process the whole product will be crushed to small metal pieces and will be sorted automatically. Components containing dangerous material must be removed before the crushing (for more information see 13.4.3. directory over eventual damaging material and problem waste).

13.4.3 Eventual damaging material and problem waste

Definition and regulation for damaging material varies from country to country and changes all the time. Materials used in the manufacturing are typical for electrically and electronically products. Some are classed as problem waste, if they can be found in ministry of environments waste- and problem waste catalogue. It is based on the EU regulations. The directory over different parts material content is based on EACEM (European Association of Consumer Electronics Manufacturers) directory and problem waste catalogue. In the note column it is marked if the part is problem waste.

13.4.3.1 Directory over eventual damaging material and problem waste

Part	Damaging material	Note
Plastic	No	
Steel	Grease *)	Problem waste
Bronze	Grease *)	Problem waste
Cables	PVC **)	
Other	No	

*) The screw and the gear wheel are greased with grease (Isoflex NCA 52).

**) Does not inhibit granulating in suitable facility.

More information abou the grease can be ordered from the manufacturer:

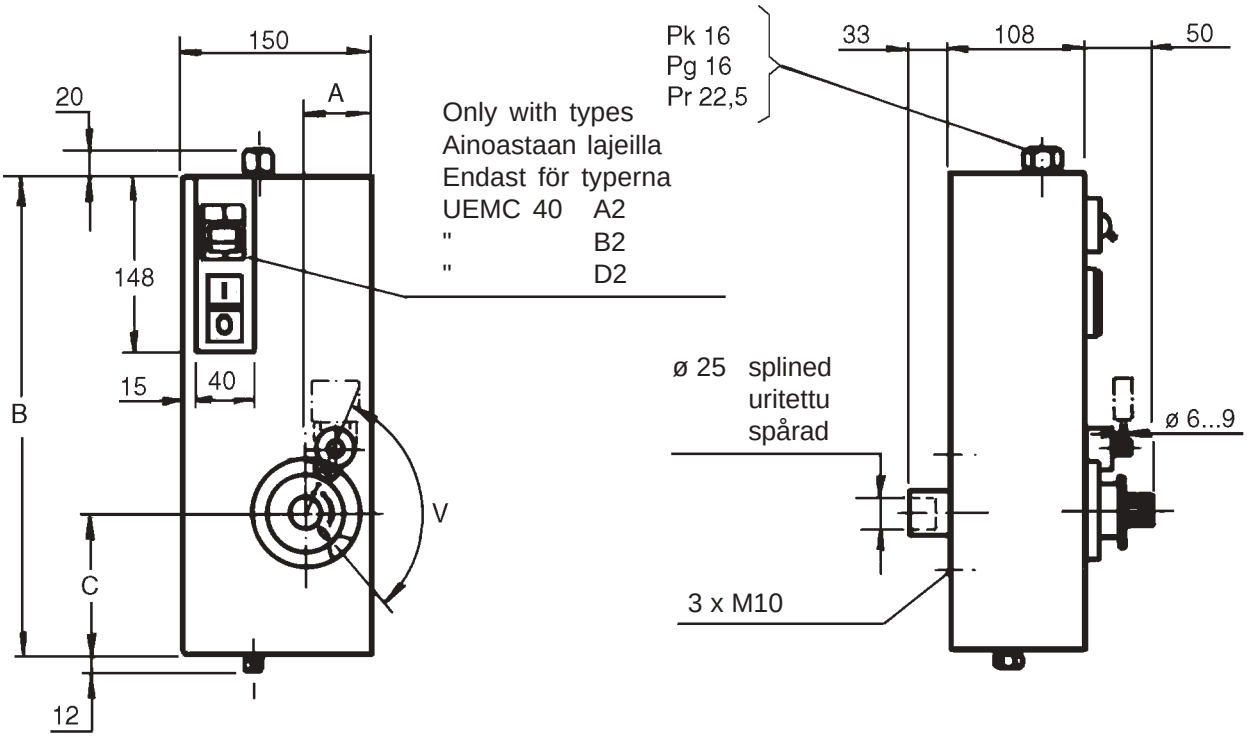
Klüber Lubrication München KG
Geisenhausenerstrasse 7
D-81379 München
Phone: +49 89 7876-0
Fax: +49 89 7876-333
Internet: www.klueber.com

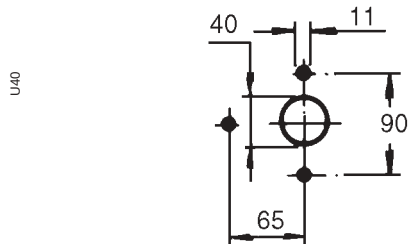
13.4.4 Possible reclycling methods

The mentioned way to recycle is one possible method but there are also many other methods:

– steel recycles as material
– bronze recycles as material
– plastic burns for energy production
– cables to cable granulating facility
– other burns or is transported to a dumping ground

13 UEMC 408 D





Front panel drilling
Etulevyn poraus
Fästplåtens borrning

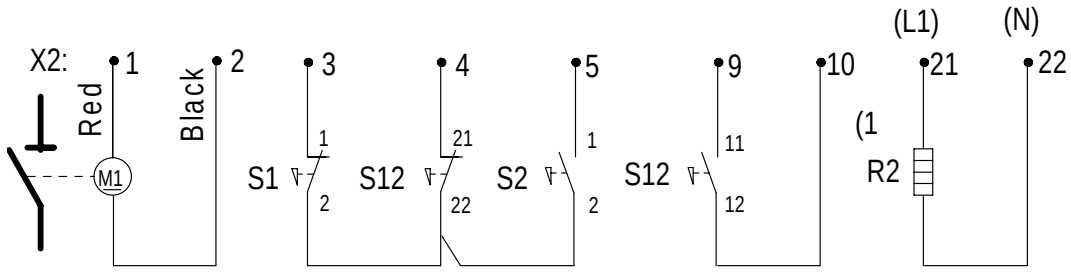
Type UEMC 40	A mm	B mm	C mm	V Degr.	M Nm
A1	67	476	162	190 210 (1)	200
A2	67	476	162	190 210 (1)	200
B1	55	376	112	110	300
B2	55	376	112	110	300
D1	65	376	112	150	200
D2	65	376	112	150	200

UEMC40.TBL

(1) Accessories, to be ordered separately
Lisävar. erikseen tilattava
Tilläggsut. kan beställas separat

15. Circuit diagram — Motor Operating Device UEMC 40 A1, B1, D1
Piirikaavio — Moottoriohjain
Kretsschema — Motormanöverdon

31 UEMC 79 C



U79

For types: UEMC 40 A1 - 24 VDC
Lajeille - 48 VDC
För typerna - 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC

UEMC 40 B1 - 24 VDC
- 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC

UEMC 40 D1 - 24 VDC
- 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC

M1 = Motor
S1, S2 = Limit switches
S12 = Blocking switch for locking

1) R2 = Heater (to be ordered separately)

M1 = Moottori
S1, S2 = Rajakytkimet
S12 = Estokytkin lukitukselle

1) R2 = Lämmitysvastus (tilattava erikseen)

M1 = Motor
S1, S2 = Ändlägeskontakter
S12 = Blockeringskontakt för låsning

1) R2 = Värme (beställes separat)

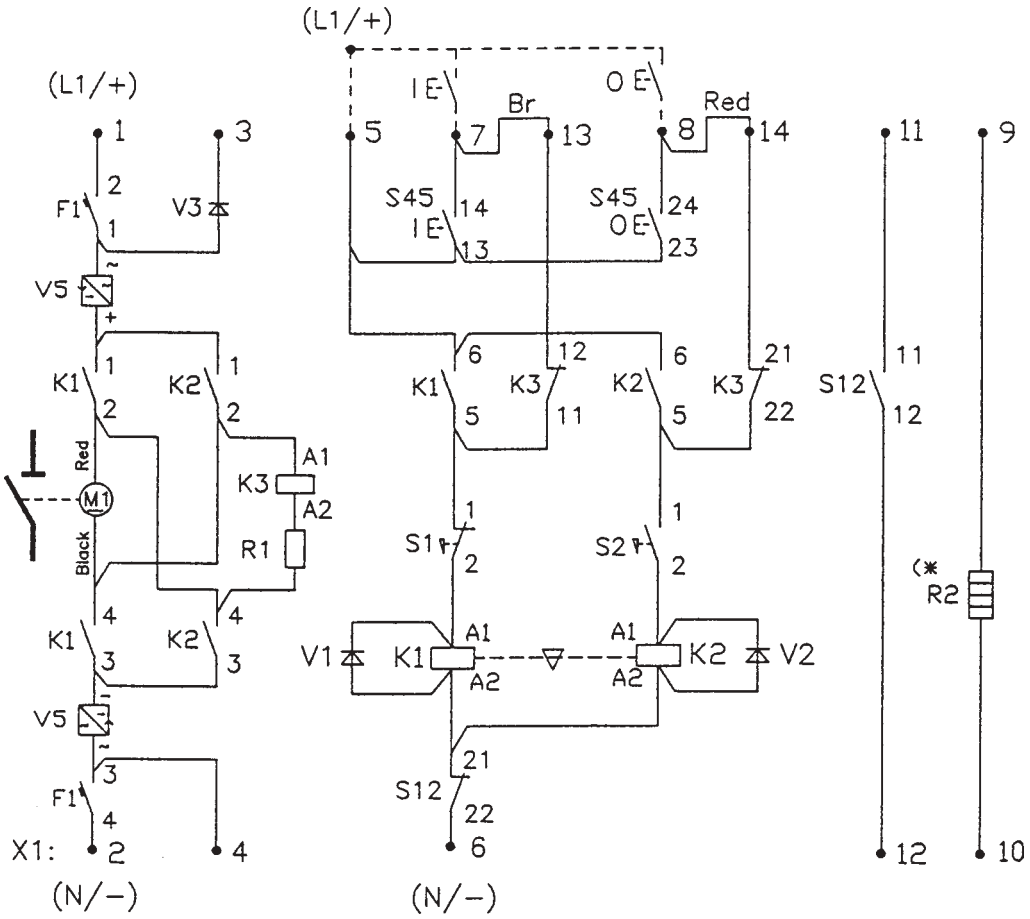
Circuit diagram **Motor Operating Device UEMC 40 A2, B2, D2**
Piirikaavio **Moottoriohjain**
Kretsschema **Motormanöverdon**

31 UEMC 81 L

UEMC 40 A2
- 24 VDC
- 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC
- 110 VAC
- 230 VAC
- UU **)

UEMC 40 B2
- 24 VDC
- 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC
- 110 VAC
- 230 VAC
- UU **)

UEMC 40 D2
- 24 VDC
- 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC
- 110 VAC
- 230 VAC
- UU **)



UEMC81

F1 = M.c.b.
S45 = Push buttons (I and O)
M1 = Motor
K1, K2 = Operating contactors
K3 = Relay for 48-220 V
S1, S2 = Limit switches
S12 = Blocking switch, locking
V5 = Rectifier for AC
V1-V3 = Diodes for DC
R1 = Resistor for 110-230 V

*) R2 = Heater (to be ordered separately)
**) = Detail motor and aux. voltage

F1 = Automaattivaroke
S45 = Painonapit (I ja O)
M1 = Moottori
K1, K2 = Suunnanvaihtokontaktorit
K3 = Rele 48-220 V:lle
S1, S2 = Rajakytkimet
S12 = Estokytkin lukitukselle
V5 = Tasasuuntaaja AC:lle
V1-V3 = Diodit DC:lle
R1 = Vastus 110-230 V:lle

*) R2 = Lämmitys (tilattava erikseen)
**) = Mainitse moottori- ja kontaktorijännite

F1 = Automatsäkring
S45 = Tryckknappar (I och O)
M1 = Motor
K1, K2 = Manöverkontaktorer
K3 = Relä för 48-220 V
S1, S2 = Ändlägeskontakter
S12 = Blockeringskontakt, låsning
V5 = Likriktare för AC
V1-V3 = Dioder för DC
R1 = Motstånd för 110-230 V

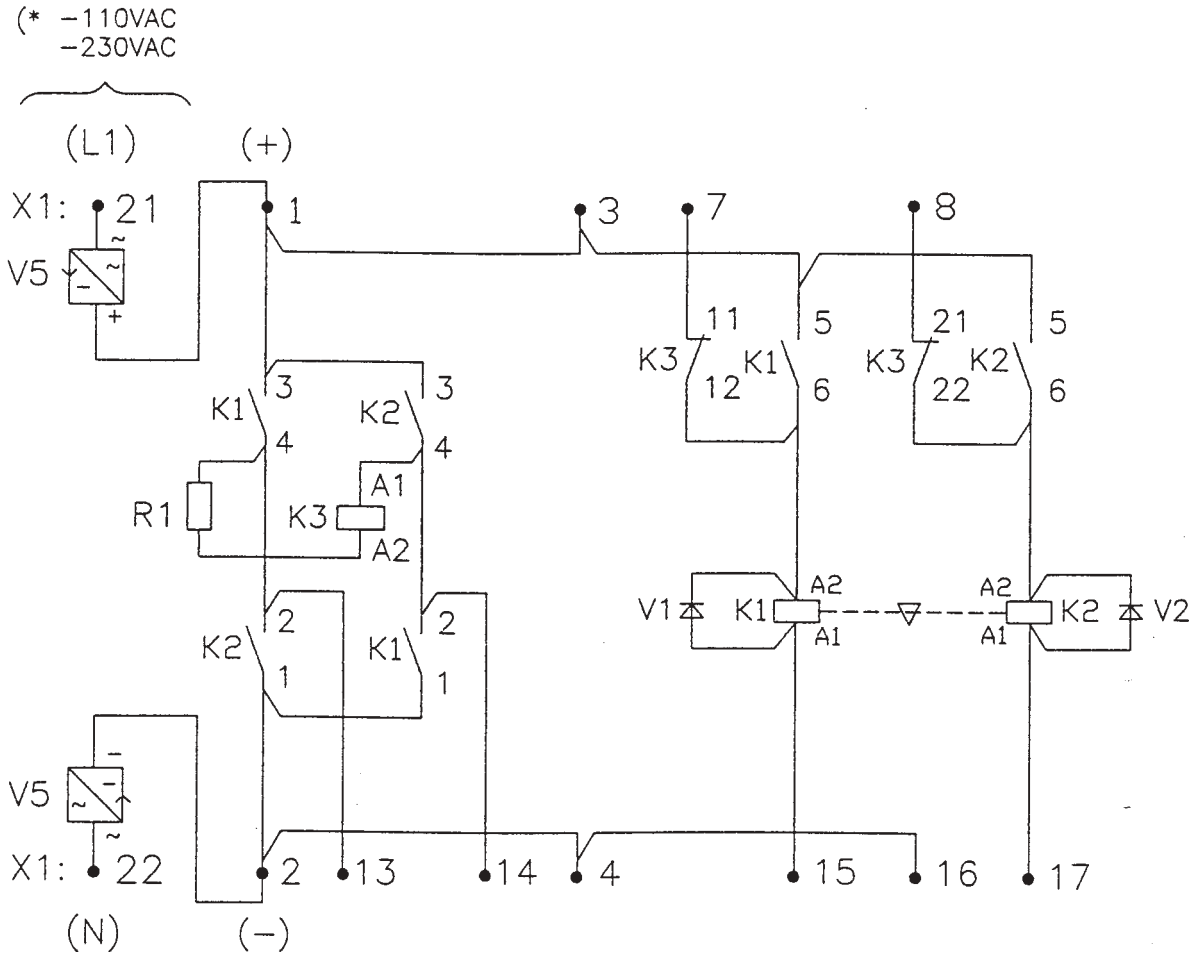
*) R2 = Värme (bör beställas separat)
**) = Uppge motor- och manöverspänningen

Circuit diagram **Control unit** **UEZJ 1_**
Piirikaavio **Kontaktoriyksikkö**
Kretsschema **Reläenhet**

31 UEMC 141 E

For types: UEZJ 1 - 12 VDC
Lajeille: - 24 VDC
För typerna: - 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC
- 110 VAC *)
- 230 VAC *)

UEZJ 1 - 12 VDC/2
- 24 VDC/2
- 48 VDC/2
- 60 VDC/2
- 110 VDC/2
- 125 VDC/2
- 220 VDC/2
- 110 VAC/2 *)
- 230 VAC/2 *)



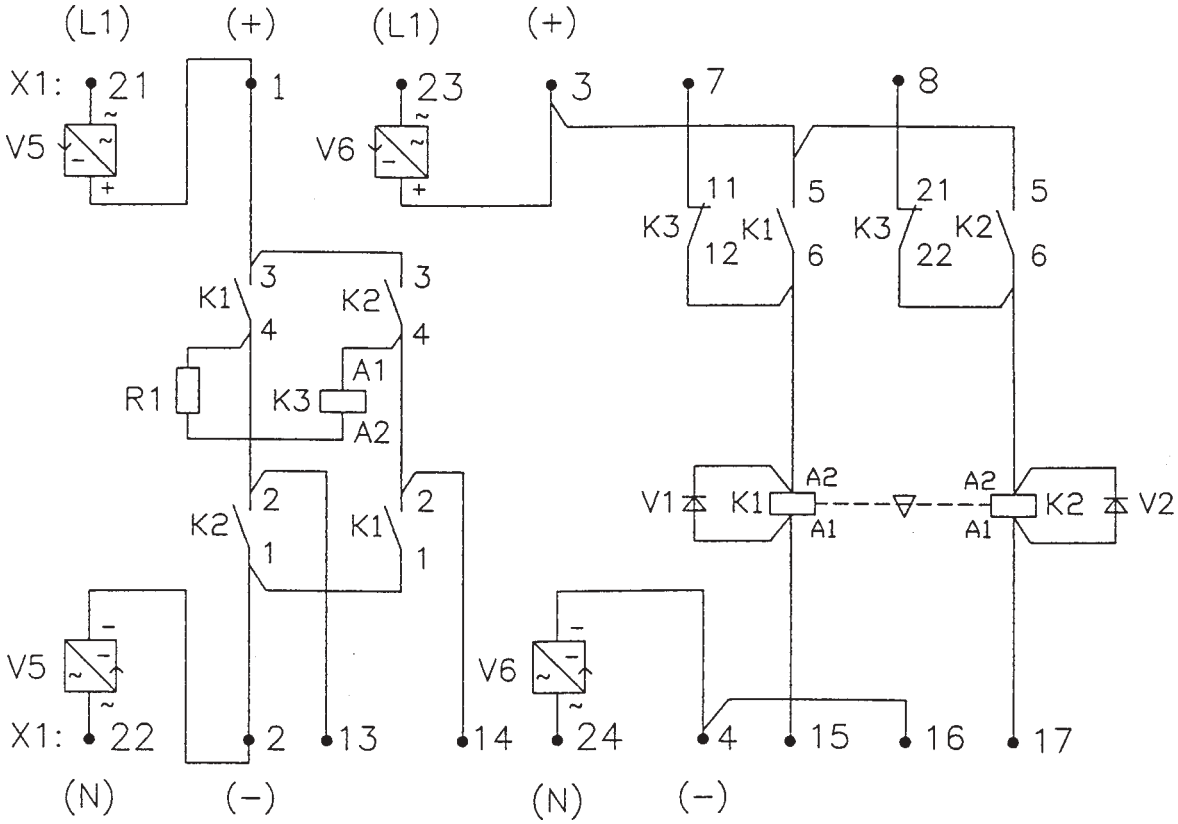
UEMC141

K1, K2	=	Operating contactors	K1, K2	=	Suunnanvaihtokontaktori	K1, K2	=	Manöverkontaktorer
K3	=	Relay for 48-230 V	K3	=	Rele 48-230 V:lle	K3	=	Relä för 48-230 V
V1, V2	=	Diodes	V1, V2	=	Diodit	V1, V2	=	Dioder
V5	=	Rectifier only for AC	V5	=	Likriktare endast för AC	V5	=	Tasasuuntaaja vain AC:lle
R1	=	Resistor for 110-230 V	R1	=	Vastus 110-230 V:lle	R1	=	Motstånd för 110-230 V

31 UEMC 142 D

For types: UEZJ 1_UU
Lajeille: UEZJ 1_UU/2
För typerna:

Note. DC-contactors
Huom.DC-kontaktoreita
Obs. DC-kontaktorer



UEMC142

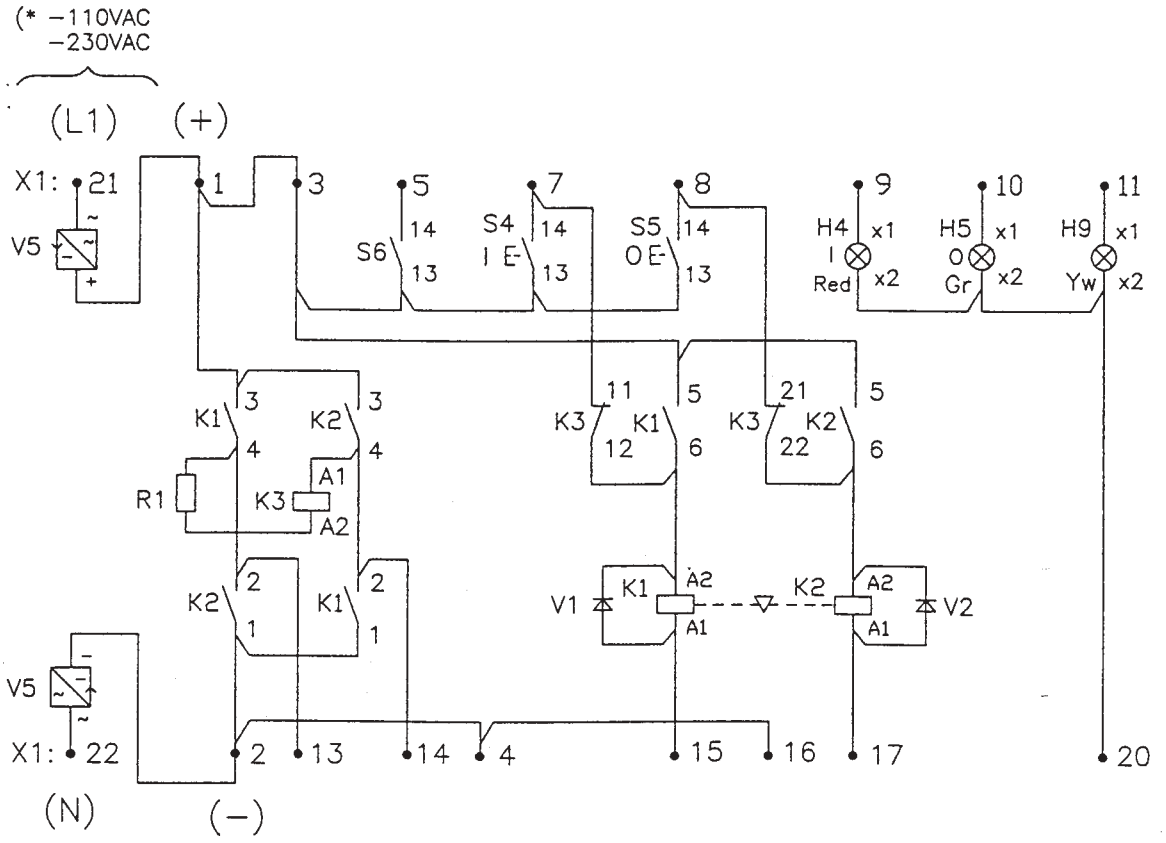
K1, K2 = Operating contactors
K3 = Relay for 48-230 V
V1, V2 = Diodes
V5, V6 = Rectifier only for AC
R1 = Resistor for 110-230 V

K1, K2 = Suunnanvaihtokontaktori
K3 = Rele 48-230 V:lle
V1, V2 = Diodit
V5, V6 = Tasasuuntaaja ainoastaan AC:lle
R1 = Vastus 110-230 V:lle

K1, K2 = Manöverkontaktorer
K3 = Relä för 48-230 V
V1, V2 = Dioder
V5, V6 = Likriktare endast för AC
R1 = Motstånd för 110-230 V

31 UEMC 148 D

For types: UEZJ 2 - 12 VDC
Lajille: - 24 VDC
För typerna: - 48 VDC
- 60 VDC
- 110 VDC
- 125 VDC
- 220 VDC
- 110 VAC *)
- 230 VAC *)



K1, K2 =Operating contactors
S4, S5 =Push buttons
S6 =Remote control selector
K3 =Relay for 48-230 V
R1 =Resistor for 110-230 V
V1, V2 =Diodes
V5 =Rectifier only for AC
H4 =Position indicator, closed, red
H5 =Position indicator, open, green
H9 =Indicator for fuse tripping, yellow

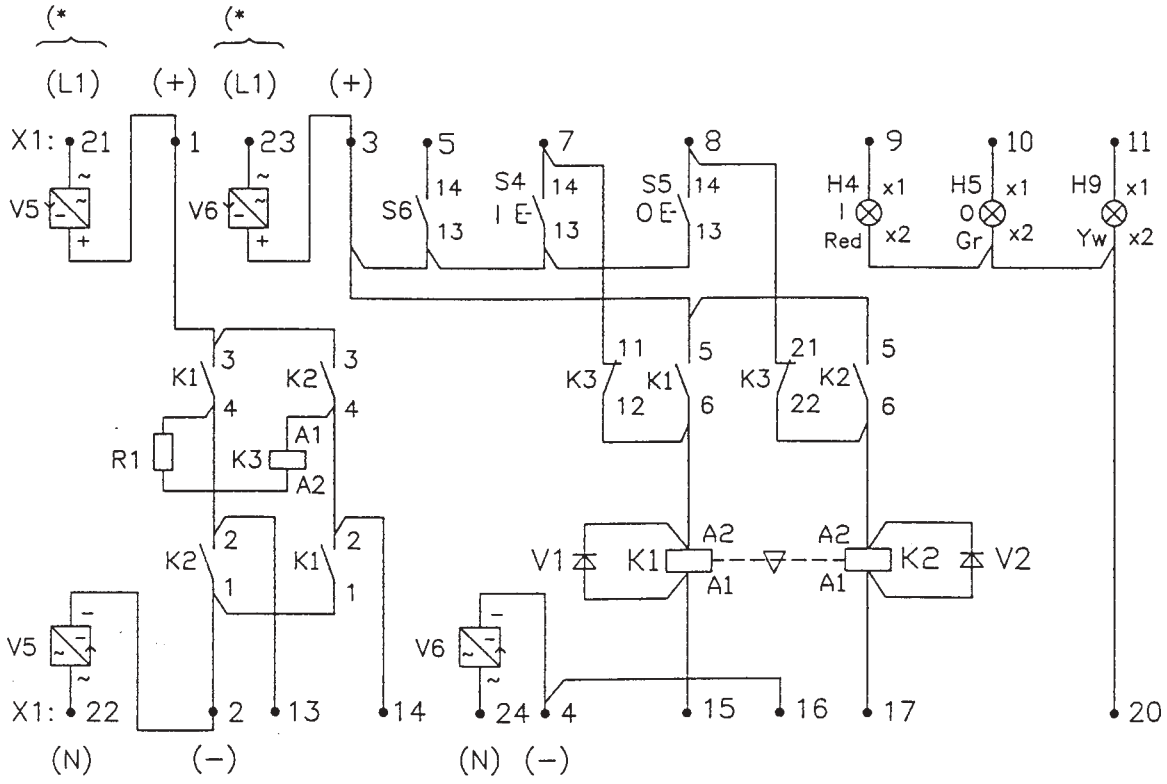
K1, K2 =Suunnanvaihtokontaktorit
S4, S5 =Painonapit
S6 =Kauko-ohjauksen kytkin
K3 =Rele 48-230 V:lle
R1 =Vastus 110-230 V:lle
V1, V2 =Diodit
V5 =Tasasuunt. ainoastaan AC:lle
H4 =Asennonos.valo, kiinni, pun.
H5 =Asennonos.valo, auki, vihreä
H9 =Sulakelauk. merkkivalo, keltainen

K1, K2 =Manöverkontaktorer
S1, S2 =Tryckknappar
S6 =Väljare för avståndsmanöver
K3 =Relä för 48-230 V
R1 =Motstånd för 110-230 V
V1, V2 =Dioder
V5 =Likriktare endast för AC
H4 =Lägesindik.lampa, sluten, röd
H5 =Lägesindik.lampa, öppen, grön
H9 =Säkringsutlösningslampa, gul

31 UEMC 149 E

For types: UEZJ 2_UU
Lajille:
För typerna:

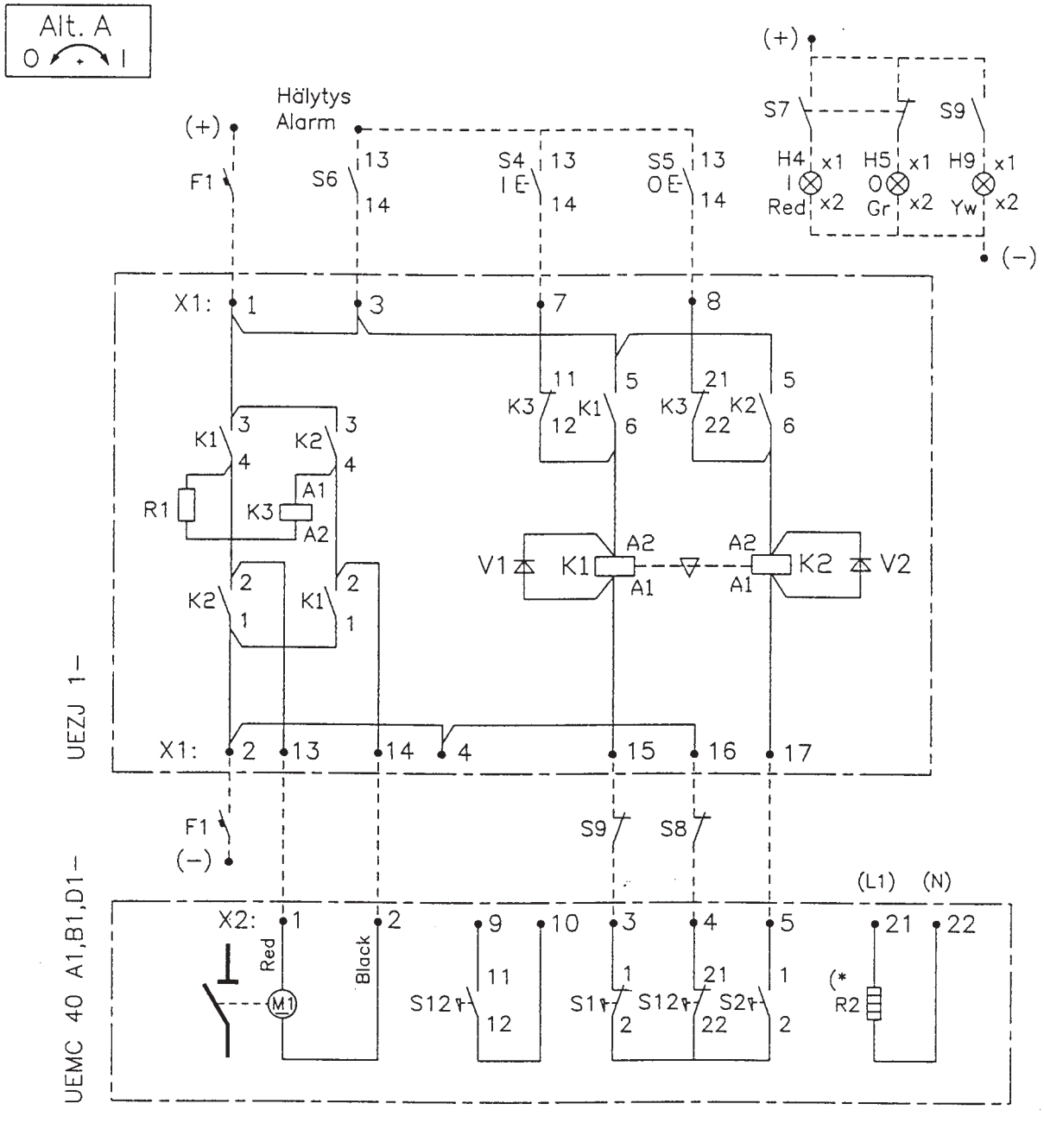
*) Only for AC
Ainoastaan AC:lle
Endast för AC



K1, K2	=Operating contactors	K1, K2	= Suunnanvaihtokontaktorit	K1, K2	= Manöverkontaktorer
S4, S5	=Push buttons	S4, S5	= Painonapit	S1, S2	= Tryckknappar
S6	=Remote control selector	S6	= Kauko-ohjauksen kytkin	S6	= Väljare för avståndsmanöver
K3	=Relay for 48-230 V	K3	= Rele 48-230 V:lle	K3	= Relä för 48-230 V
R1	=Resistor for 110-230 V	R1	= Vastus 110-230 V:lle	R1	= Motstånd för 110-230 V
V1, V2	=Diodes	V1, V2	= Diodit	V1, V2	= Dioder
V5, V6	=Rectifier only for AC	V5, V6	= Tasasuuntaajat vain AC:lle	V5, V6	= Likriktare endast för AC
H4	=Position indicator, closed, red	H4	= Asennonos.valo, kiinni, pun.	H4	= Lägesindik.lampa, sluten, röd
H5	=Position indicator, open, green	H5	= Asennonos.valo, auki, vihreä	H5	= Lägesindik.lampa, öppen, grön
H9	=Indicator for fuse tripping, yellow	H9	= Sulakelauk. merkkival, keltainen	H9	= Säkringsutlösningslampa, gul

Example of connection for UEMC 40_ ... + UEZJ 1
Kytkentäesimerkki
Kopplingsexempel för

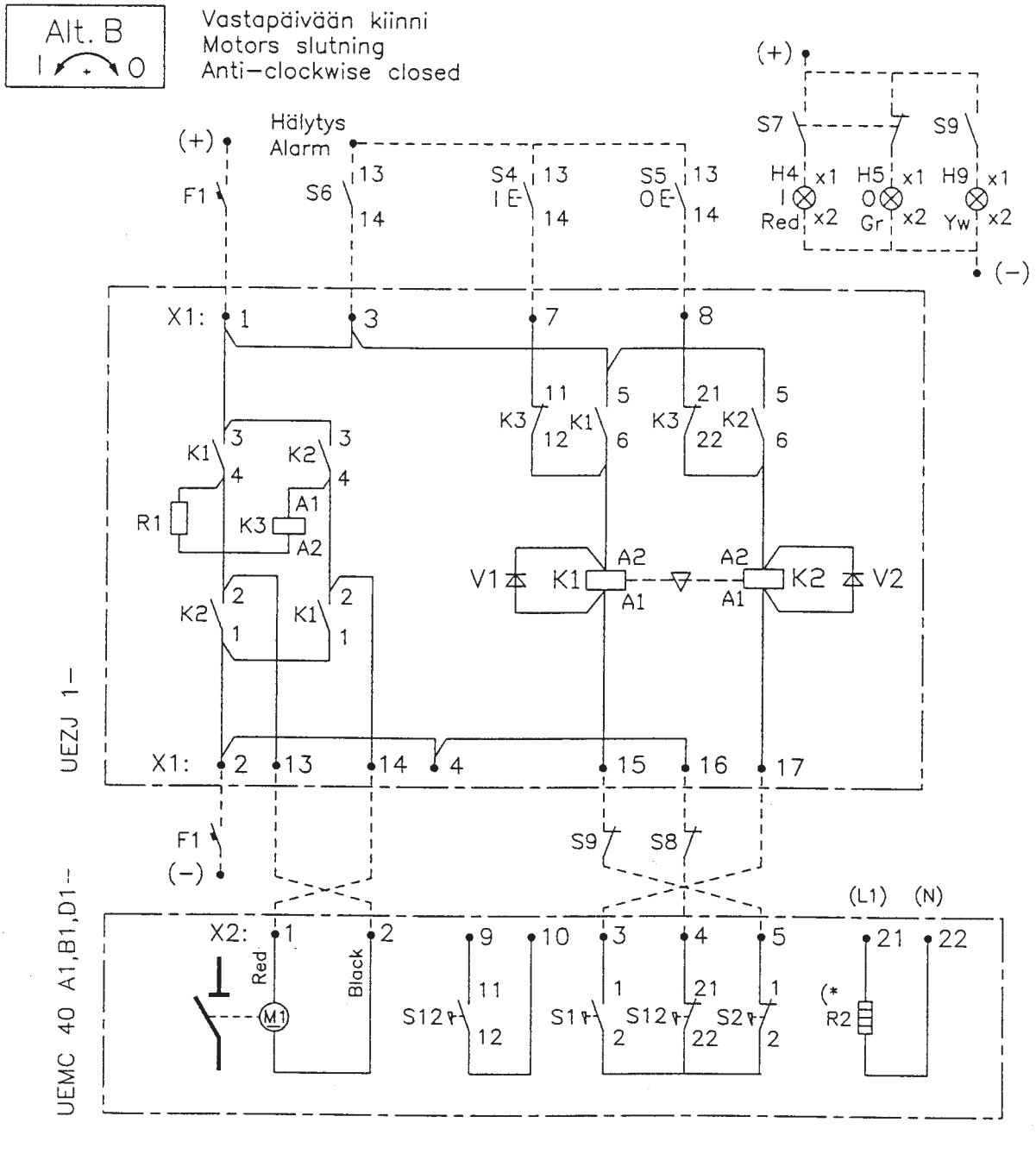
31 UEMC 156 D



F1	= M.c.b.	F1	= Automaattivaroke	F1	= Automatsäkring
S4,S5	= Push buttons	S4,S5	= Painonapit	S4,S5	= Tryckknappar
S6	= Remote control selector	S6	= Kauko-ohjauksen kytkin	S6	= Väljare för avståndsmanöver
S7	= Aux. contact for disconnector	S7	= Erottimen apukosketin	S7	= Frånskiljarens hjälpkontakt
S8	= Aux. contact for earthing switch	S8	= Maadoituserottimen apukosk.	S8	= Jordningskopp. hjälpkontakt
S9	= Aux. contact for fuse tripping	S9	= Sulakelaukaisun apukosketin	S9	= Säkringsutlösn. hjälpkontakt
H4	= Position indicator, closed, red	H4	= Asennonos.valo, kiinni, pun.	H4	= Lägesind. lampa, sluten, röd
H5	= Position indicator, open, green	H5	= Asennonos.valo, auki, vihreä	H5	= Lägesind. lampa, öppen, grön
H9	= Indicator for fuse tripping, yellow	H9	= Sulakelauk.merkkivalo, kelt.	H9	= Säkringsutlösningslampa, gul

Example of connection for UEMC 40_ ... + UEZJ 1_
Kytkentäesimerkki
Kopplingsexempel för

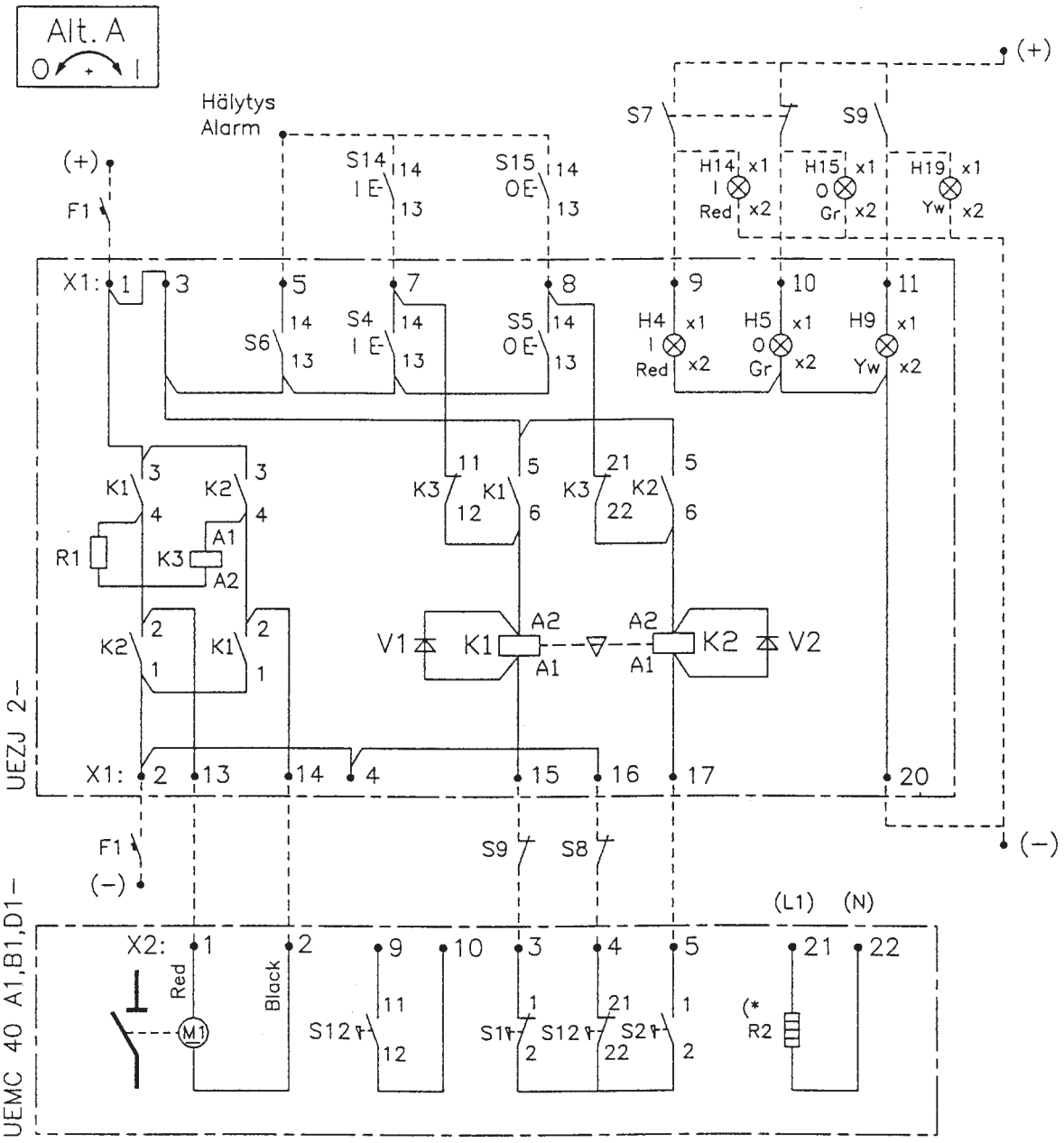
31 UEMC 157 D



F1	= M.c.b.	F1	= Automaattivaroke	F1	= Automatsäkring
S4,S5	= Push buttons	S4,S5	= Painonapit	S4,S5	= Tryckknappar
S6	= Remote control selector	S6	= Kauko-ohjauksen kytkin	S6	= Väljare för avståndsmanöver
S7	= Aux. contact for disconnector	S7	= Erottimen apukosketin	S7	= Frånskiljarens hjälpkontakt
S8	= Aux. contact for earthing switch	S8	= Maadoituser. apukosk.	S8	= Jordningskopplarens hjälpk.
S9	= Aux. contact for fuse tripping	S9	= Sulakelaukaisun apukosketin	S9	= Säkringsutlösningens hjälpko.
H4	= Pos. indicator, closed, red	H4	= Asennonos.valo, kiinni, pun.	H4	= Lägesind.lampa, sluten, röd
H5	= Pos. indicator, open, green	H5	= Asennonos.valo, auki, vihreä	H5	= Lägesind.lampa, öppen, grön
H9	= Indic. for fuse tripping, yellow	H9	= Sulakelauk.merkkivalo, kelt.	H9	= Säkringsutlösn. lampa, gul

Example of connection for UEMC 40_ ... + UEZJ 2
Kytkentäesimerkki
Kopplingsexempel för

31 UEMC 160 C

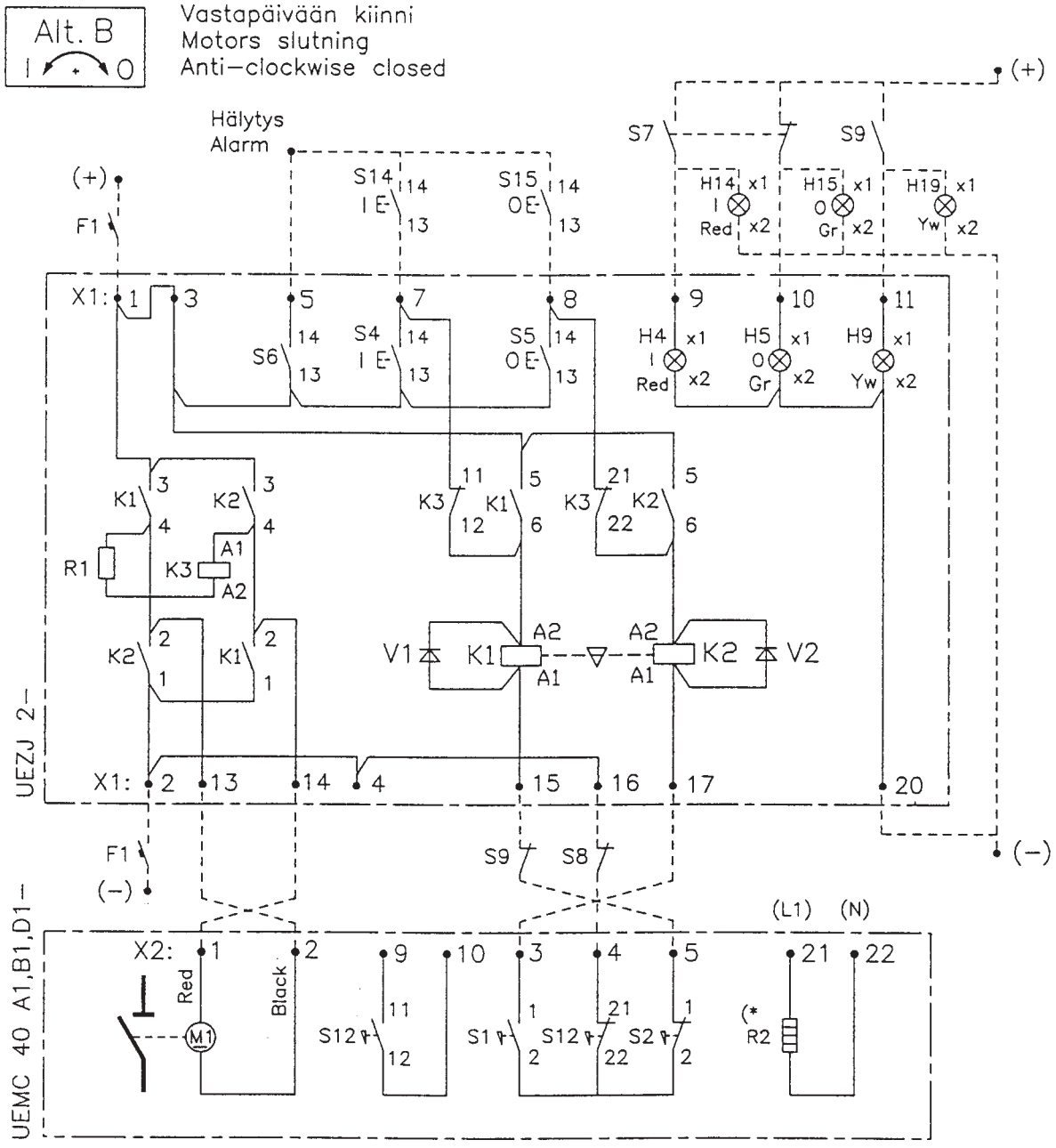


UEMC160

F1	=M.c.b.	F1	=Automaattivaroke	F1	= Automatsäkring
S14,S15	=Push buttons	S14,S15	=Painonapit	S14,S15	= Tryckknappar
S7	=Aux. cont. for disconnector	S7	=Erottimen apukosketin	S7	= Frånskiljarens hjälpkontakt
S8	=Aux. cont. for earthing switch	S8	=Maadoituserott. apukosk.	S8	= Jordningskopp. hjälpkontakt
S9	=Aux. cont. for fuse tripping	S9	=Sulakelauk. apukosketin	S9	= Säkringsutl. hjälpkontakt
H14	=Pos. indicator, closed, red	H14	=Asennonos.valo, kiinni, pun.	H14	= Lägesind.lampa, sluten, röd
H15	=Pos. indicator, open, green	H15	=Asennonos.valo, auki, virh.	H15	= Lägesind.lampa, öppen, grön
H19	=Indic. for fuse tripping, yellow	H19	=Sulakelauk. merkkiv., kelt.	H19	= Säkringsutl.lampa, gul

Example of connection for UEMC 40_ ... + UEZJ 2
Kytkentäesimerkki
Kopplingsexempel för

31 UEMC 161 C



UEMC161

F1	=M.c.b.	F1	=Automaattivaroke	F1	= Automatsäkring
S14,S15	=Push buttons	S14,S15	=Painonapit	S14,S15	= Tryckknappar
S7	=Aux. cont. for disconnector	S7	=Erottimen apukosketin	S7	= Frånskiljarens hjälpkontakt
S8	=Aux. cont. for earthing switch	S8	=Maadoituserott. apukosk.	S8	= Jordningsk. hjälpkontakt
S9	=Aux. cont. for fuse tripping	S9	=Sulakelauk. apukosketin	S9	= Säkringsutl. hjälpkontakt
H14	=Pos. indicator, closed, red	H14	=Asennonos.valo, kiinni, pun.	H14	= Lägesind.lampa, sluten, röd
H15	=Pos. indicator, open, green	H15	=Asennonos.valo, auki, virh.	H15	= Lägesind.lampa, öppen, grön
H19	=Ind. for fuse tripping, yellow	H19	=Sulakelauk.merkkiv., kelt.	H19	= Säkringsutl.lampa, gul

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34 UEMC 36 GB 1 F 03-11

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