Medium Voltage products

Indoor disconnectors OWD and OWIII

Power and productivity
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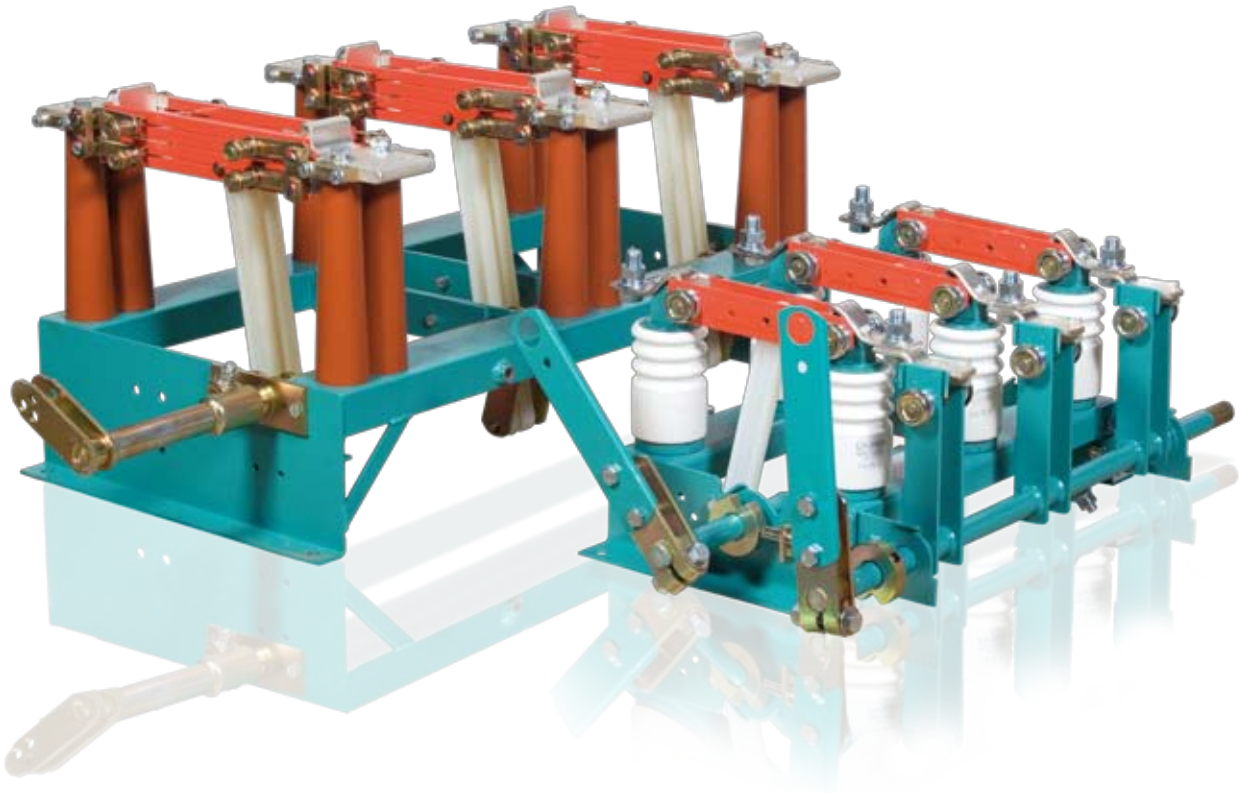
Contents

Introduction

ABB indoor disconnectors, type OWD and OWIII are meant for closing and opening electrical circuits in currentless state. In open position, they make a visible and safe isolating gap in the circuit which cuts off the circuit from the side of the power supply. These disconnectors may work in horizontal and vertical position, in one–, two– and three–pole versions depend of apparatus type. ABB offers wide range indoor disconnectors:
Rated voltages: 1,2–36 kV
Rated normal currents: 630–4000 A
Rated short-time withstand current 1s up to 80 kA



Indoor disconnectors type OWD

1. Operating conditions

The disconnectors type OWD are to be installed indoors under the following conditions:

a) the ambient temperature range
- for standard model N3: 268 – 313K (–5 , +40°C)
- for tropical model T3: 268 – 328K (–5 , +55°C)

b) the relative humidity
- for standard model N3: 70% at 303K (+30°C)
- for tropical model T3: 85% at 303K (+30°C)

c) maximum altitude for installation (above sea level): 1000 m.

2. Designations and switch types

The structure of product marking is presented below:

OWD	3	10	w. 01	/	1
Type	Number of poles	Rated voltage	Rated current		Type of operating mechanism or pole distance (specified only for non-standard distances)
	1 – one 2 – two 3 – three	01 – 1,2 kV 03 – 3,6 kV 10 – 12 kV 20 – 24 kV	w. 01 – 4000 A (N3) 3150 A (T3) w. 02 – 2500 A (N3) 2000 A (T3) w. 03 – 2000 A (N3) w. 04 – 1600 A (N3, T3)		1 – with lever for coupling with manual operating mechanism NRWO4–3 or an isolating rod for 1,2 kV disconnectors, 2 – pneumatic operating mechanism type NP8 on the right hand side, 3 – pneumatic operating mechanism type NP8 on the left hand side, 4 – two pneumatic operating mechanisms type NP8, 500 – pole distance 500 mm

3. Design and operation

One–, two– and three–pole disconnectors type OWD are the vertical break disconnectors. The base is a steel frame to which the operating mechanism is fixed. Bracketing insulators are fastened to the frame and are the mounting for the current circuit which consists of two fixed contacts and one moving contact on each pole. The moving contacts are connected to the shaft by means of insulating pull-rods.

Pressing the moving contact to the fixed contact is solved in such a way that, at shorting currents, due to the effect of magnetic action upon the cover plate, the pressure increases. This allowed to obtain high rated values of peak current and shorting heat current. Two contact rails may be fixed to each terminal clamp located on the permanent contacts with 2 or 6 screws (depending on the rated current).

Disconnectors type OWD are adapted to operate in horizontal or vertical position.

Disconnectors for rated voltages 3,6 kV and higher may be operated manually by means of the manual operating mechanisms (HE, NRWO4-3) or by means of motor operating devices type UEMC40A_ (mounted on the front panel of the cubicle), UEMC40K6 (mounted on the disconnector's base), pneumatic operating mechanism type NP8. Disconnectors for rated current 1,2 kV – by means of the manual operating mechanism, motor drive type UEMC40A_ or an insulating stick. When driven by an insulating stick and UEMC40K6 they should be situated vertical only.

4. Equipment

Indoor disconnectors type OWD may be equipped with manual, motor, or pneumatic operating mechanism and an auxiliary switch. Manual and motor driven operating mechanisms do not form an integral part of the disconnector and are supplied to separate orders. The type of operating mechanism applied depends on the type of disconnector, in accordance with table 1 (the table does not account for pneumatic operating mechanisms).

Table 1

Type of disconnector	Type of operating mechanism
OWD101w.02, OWD301w.02	HE, NRWO4-3, UEMC40 A_ or isolating rod
OWD103w.01, OWD103w.02 OWD110w.01, OWD110w.02 OWD120w.02 OWD303w.01, OWD303w.02 OWD203w.01, OWD203w.02 OWD310w.01, OWD310w.02 OWD210w.01, OWD210w.02 OWD320w.02, OWD220w.02	HE, NRWO4-3 UEMC40 A_ UEMC40 K6_

A mechanism type NP8 is used as pneumatic operating mechanism, with rated pressure 0,6–1,2 MPa, one or two drives are used, depending on the rated pressure and model of the disconnector in accordance with the table 2.

If a disconnector is ordered with pneumatic operating mechanism or motor UEMC40K6, it is coupled with the mechanism by the manufacturer and is an inseparable part of the complete supply.

Table 2

Type of disconnector	Type of operating mechanism	Number of drives	
		0,6 MPa	0,8 ÷ 2 MPa
OWD303w.01, OWD203w.01		2	1
OWD303w.02, OWD203w.02		2	1
OWD103w.01, OWD103w.02	NP8	1	1
OWD310w.01, OWD310w.02		2	1
OWD210w.01, OWD210w.02		2	1
OWD320w.02, OWD220w.02		2	1
OWD110w.01, OWD110w.02		1	1

An auxiliary switch type PS-3 or PS–O can also be supplied (to a separate order). It is meant to be mounted in the chamber and connected by a rod with the lever on the disconnector shaft. The standard length of the connecting rod is 1030 mm.

5. Technical data

Technical data of the disconnectors are tabulated in table 3 on page 4.

6. Standards

Disconnectors type OWD comply with the standards: IEC 62271-1:2007, IEC 62271-102:2001.

7. Spare parts

The apparatus, for the duration of its technical lifetime, i.e. 1000 operations, does not require spare parts. On the user's request, spare parts may be supplied for those damaged during random events, however, their replacement should be consulted with the manufacturer each time, and made by ABB service or by employees of other companies who have been trained by the manufacturer.

8. Information to be given with orders

The following information should be given with order: product full name, rated voltage, rated current and type of the apparatus. Operating mechanisms for the disconnectors should be ordered separately. When ordering a disconnector with pneumatic operating mechanism, please specify on which side of the disconnector it is to be mounted.

9. Examples of orders

1. Two–pole indoor disconnector for rated voltage 3,6 kV, rated current 4000 A, with pneumatic operating mechanism on the left hand side, equipped with auxiliary switch type PS-3:
   "Two–pole indoor disconnector, type OWD 203w.01/3, 3,6 kV, 4000 A, with operating mechanism NP8 on the left, with auxiliary switch type PS-3."

2. Three–pole indoor disconnector for rated voltage 12 kV, rated current 2500 A, with two pneumatic operating mechanisms (for pressure 0,6 MPa), with auxiliary switch PS-3:
   "Three–pole indoor disconnector, type OWD 310w.02/4, with auxiliary switch type PS-3, 12 kV, 2500 A, with two operating mechanisms NP8."

10. Attachments

Dimension drawings:
OW4/07.02
OW4/08.02
OW4/09.02
OW4/10.01
OW4/11.02

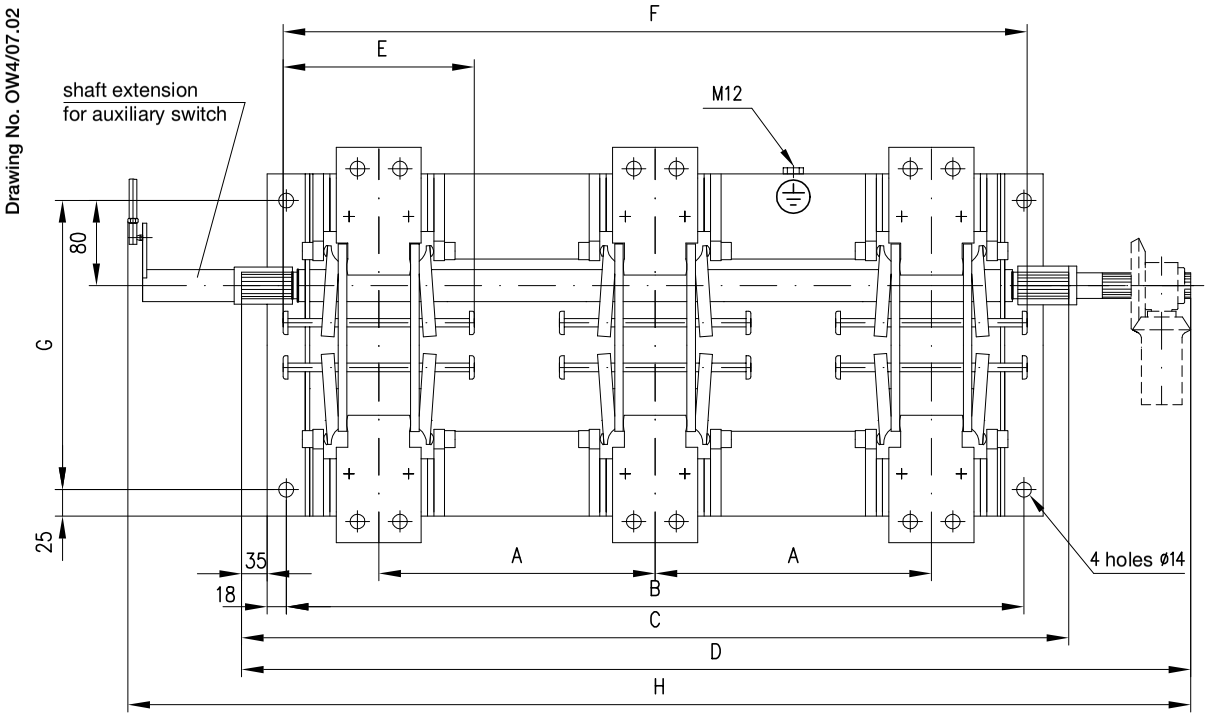
Table 3. Technical data of disconnectors type OWD

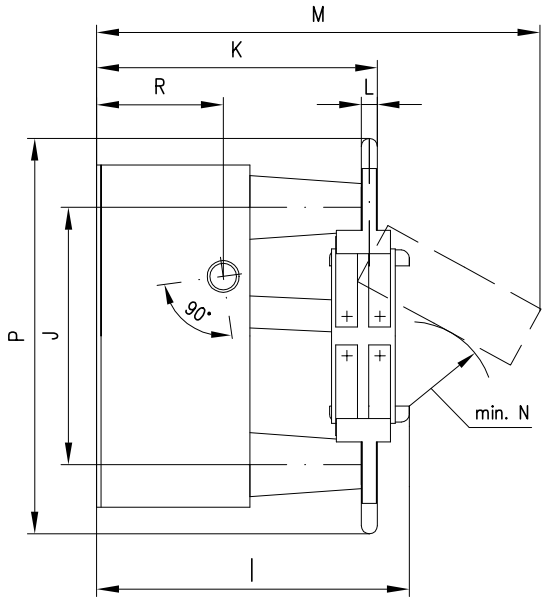
Specification		Unit	Item										
			OWD 301w.02	OWD 303w.01	OWD 303w.02	OWD 310w.01	OWD 310w.01/500	OWD 310w.02	OWD 310w.03	OWD 310w.04	OWD 320w.02	OWD 320w.03	OWD 320w.04
Rated voltage		[kV]	1,2	3,6		12					24		
Righted power frequency withstand voltage	to earth and between poles	[kV]	3,5	10		35					50		
	between contacts		3,5	12		45					60		
Lightning impulse withstand voltage	to earth and between poles	[kV]	-	40		75					125		
	between contacts		-	46		85					145		
Rated continuous current	standard model N3	[A]	2000	4000	2500	4000		2500	2000	1600	2500	2000	1600
	tropical model T3		1600	3150	2000	3150		2000	-	1600	2000	-	1600
Rated short-time withstand current	1-s	[kA]	60	80	80	-	80	80	60	50	60	50	40
	3-s		-	-	-	60	-	-	-	-	-	-	
Rated peak withstand current			150	200	200	150	200	200	150	125	150	125	100
Frequency		[Hz]	50 ÷ 60										
Rated pressure of pneumatic operating mechanism		[MPa]	0,6 ÷ 1,2										
Disconnector mass	– for manual and motor drive operating mechanism	[kg]	38	76	58	79	90	64			72		
	– with one pneumatic operating mechanism		-	82	64	85	92	70			78		
	– with two pneumatic operating mechanisms		-	88	70	92	95	76			85		
Minimum isolating gap between contacts		[mm]	45	75		130					250		
Maximum distance of first bracket at rated peak current		[mm]	335	300	260	400	400	300			350		

Dimensional drawings

Indoor disconnectors type OWD 3,6–24 kV for motor drive UEMC40A_ and manual drive HE

Drawing No. OW4/07.02

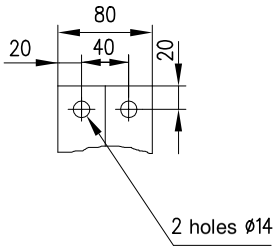




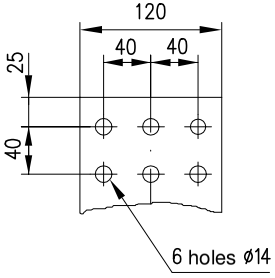
Type	U_n [kV]	I_n [A]	dimension															
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R
OWD 310w.01	12	4000	300	775	880	990	185	785	310	1110	375	280	335	20	560	130	490	130
OWD 310w.02, 03, 04	12	2500, 2000, 1600	300	775	880	990	160	760	310	1110	360	280	330	15	535	130	410	130
OWD 303w.01	3,6	4000	260	695	880	910	185	705	290	985	320	260	280	20	485	75	470	130
OWD 303w.02	3,6	2500	260	695	880	910	160	680	272	985	305	242	275	15	445	75	372	130
OWD 210w.01	12	4000	300	475	580	690	185	485	310	810	375	280	335	20	560	130	490	130
OWD 210w.02, 03, 04	12	2500, 2000, 1600	300	475	580	690	160	460	310	810	360	280	330	15	535	130	410	130
OWD 203w.01	3,6	4000	260	435	540	650	185	445	290	725	320	260	280	20	485	75	470	130
OWD 203w.02	3,6	2500	260	435	540	650	160	420	272	725	305	242	275	15	445	75	372	130
OWD 110w.01	12	4000		175	280	390	185	185	310	510	375	280	335	20	560	130	490	130
OWD 110w.02, 03, 04	12	2500, 2000, 1600		175	280	390	160	160	310	510	360	280	330	15	535	130	410	130
OWD 103w.01	3,6	4000		175	280	390	185	185	290	465	320	260	280	20	485	75	470	130
OWD 103w.02	3,6	2500		175	280	390	160	160	272	465	305	242	275	15	445	75	372	130
OWD 103w.02, 03, 04	24	2500, 2000, 1600	350	875	980	1155	160	860	410	1340	425	380	395	15	710	250	510	145
OWD 310w.01/500	12	4000	500	1175	1280	1390	185	1375	310	1510	375	280	335	20	560	130	490	130

Dimensions of the disconnector for a operating mechanism at the left side are determined on the principle of mirror image.

terminals:
material: copper
coating: silver



2500 A (N3)
2000 A (T3)
2000 A (N3)
1600 A (N3)

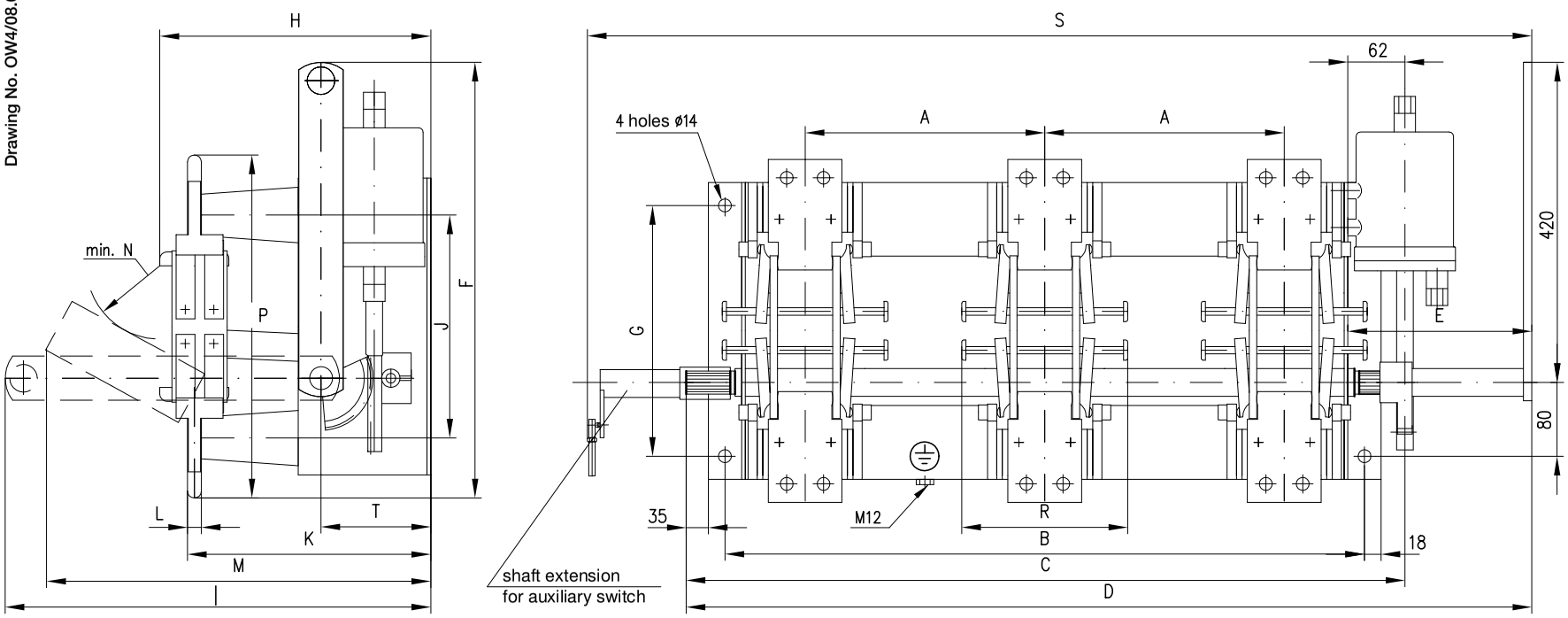


4000 A (N3)
3150 A (T3)

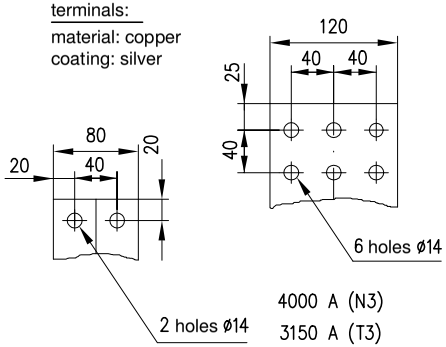
Earthing clamp
material: steel
coating: tin

Dimensional drawings
Indoor disconnectors type OWD 3,6–24 kV for pneumatic operating mechanism

Drawing No. OW4/08.02

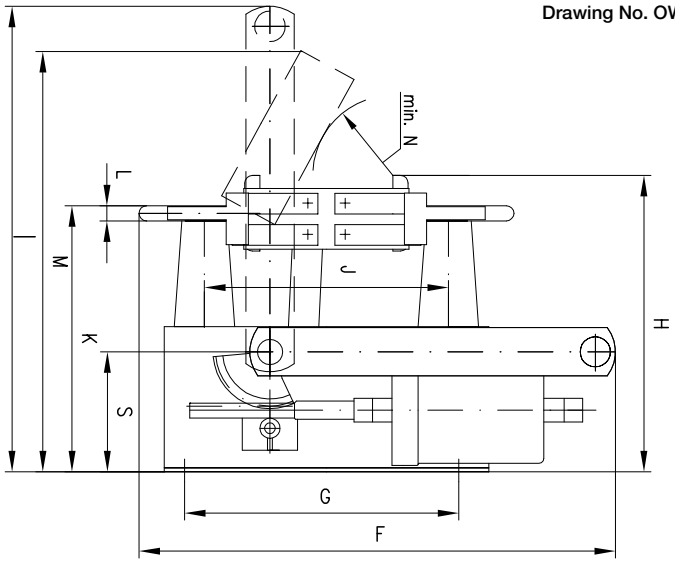


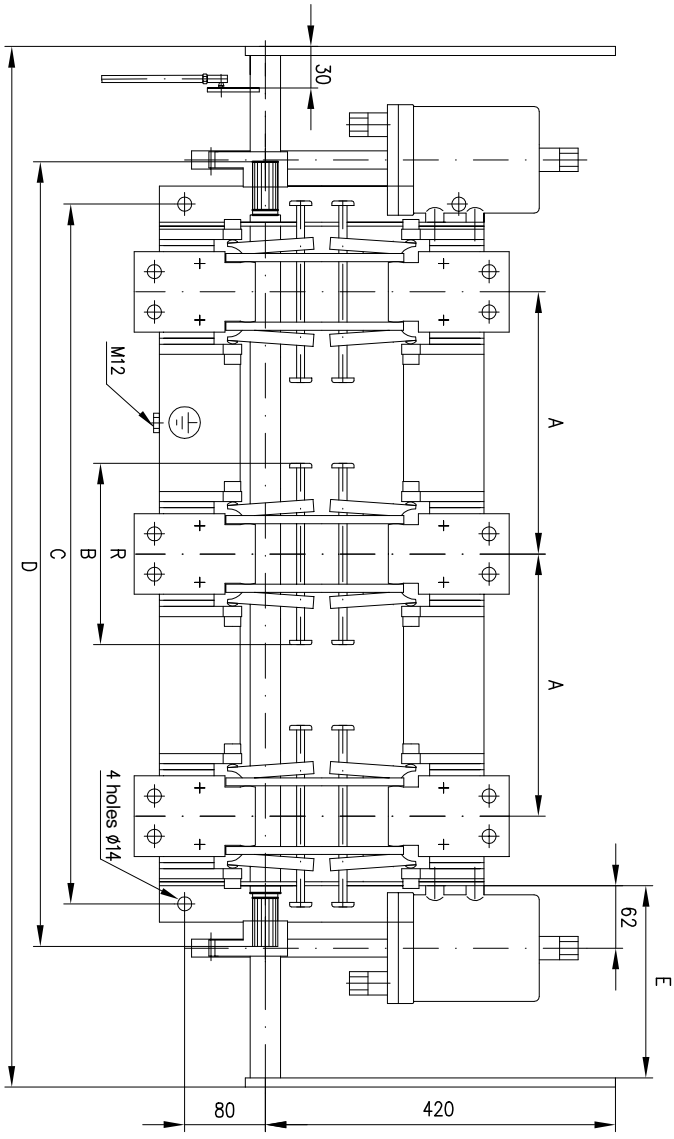
Type	U_n [kV]	I_n [A]	dimension																	
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S	T
OWD 310w.01	12	4000	300	775	880	1002	193	590	310	375	550	280	335	20	560	130	490	185	1122	130
OWD 310w.02, 03, 04	12	2500, 2000, 1600	300	775	880	1002	193	550	310	360	550	280	330	15	535	130	410	160	1122	130
OWD 303w.01	3,6	4000	260	695	800	922	193	590	290	320	550	260	280	20	485	75	470	185	997	130
OWD 303w.02	3,6	2500	260	695	800	922	193	550	272	305	550	242	275	15	445	75	372	160	977	130
OWD 210w.01	12	4000	300	475	580	702	193	590	310	375	550	280	335	20	560	130	490	185	822	130
OWD 210w.02, 03, 04	12	2500, 2000, 1600	300	475	580	702	193	550	310	360	550	280	330	15	535	130	410	160	822	130
OWD 203w.01	3,6	4000	260	435	540	662	193	590	290	320	550	260	280	20	485	75	470	185	737	130
OWD 203w.02	3,6	2500	260	435	540	662	193	550	272	305	550	242	275	15	445	75	372	160	737	130
OWD 110w.01	12	4000		175	280	402	193	590	310	375	550	280	335	20	560	130	490	185	522	130
OWD 110w.02, 03, 04	12	2500, 2000, 1600		175	280	402	193	550	310	360	550	280	330	15	535	130	410	160	522	130
OWD 103w.01	3,6	4000		175	280	402	193	590	290	320	550	260	280	20	485	75	470	185	477	130
OWD 103w.02	3,6	2500		175	280	402	193	550	272	305	550	242	275	15	445	75	372	160	477	130
OWD 320w.02, 03, 04	24	2500, 2000, 1600	350	875	980	1167	258	550	410	425	565	380	395	15	710	250	510	160	1352	145



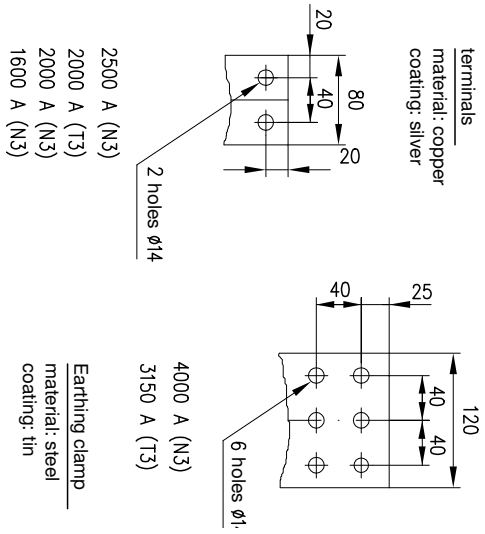
Dimensional drawings
Indoor disconnectors type OWD 3,6–24 kV with two pneumatic operating mechanisms

Drawing No. OW4/09.02





Type	U_n [kV]	I_n [A]	dimension															
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R	S
OWD 203w.01/4	3.6	4000	260	435	540	737	193	590	290	320	550	260	280	20	485	75	470	185	130
OWD 303w.01/4	3.6	4000	260	695	800	997	193	590	290	320	550	260	280	20	485	75	470	185	130
OWD 210w.01/4	12	4000	300	475	580	822	193	590	310	375	550	280	335	20	560	130	490	185	130
OWD 310w.01/4	12	4000	300	775	880	1122	193	590	310	375	550	280	335	20	560	130	490	185	130
OWD 310w.02, 03, 04/4	12	2500, 2000, 1600	300	775	880	1122	193	550	310	360	550	280	330	15	535	130	410	160	130
OWD 320w.02, 03, 04/4	24	2500, 2000, 1600	350	875	980	1352	258	550	410	425	565	380	395	15	710	250	510	160	145
OWD 310w.01 /500/4	12	4000	500	1175	1280	1522	193	590	310	375	550	280	335	20	560	130	490	185	130



terminals
material: copper
coating: silver

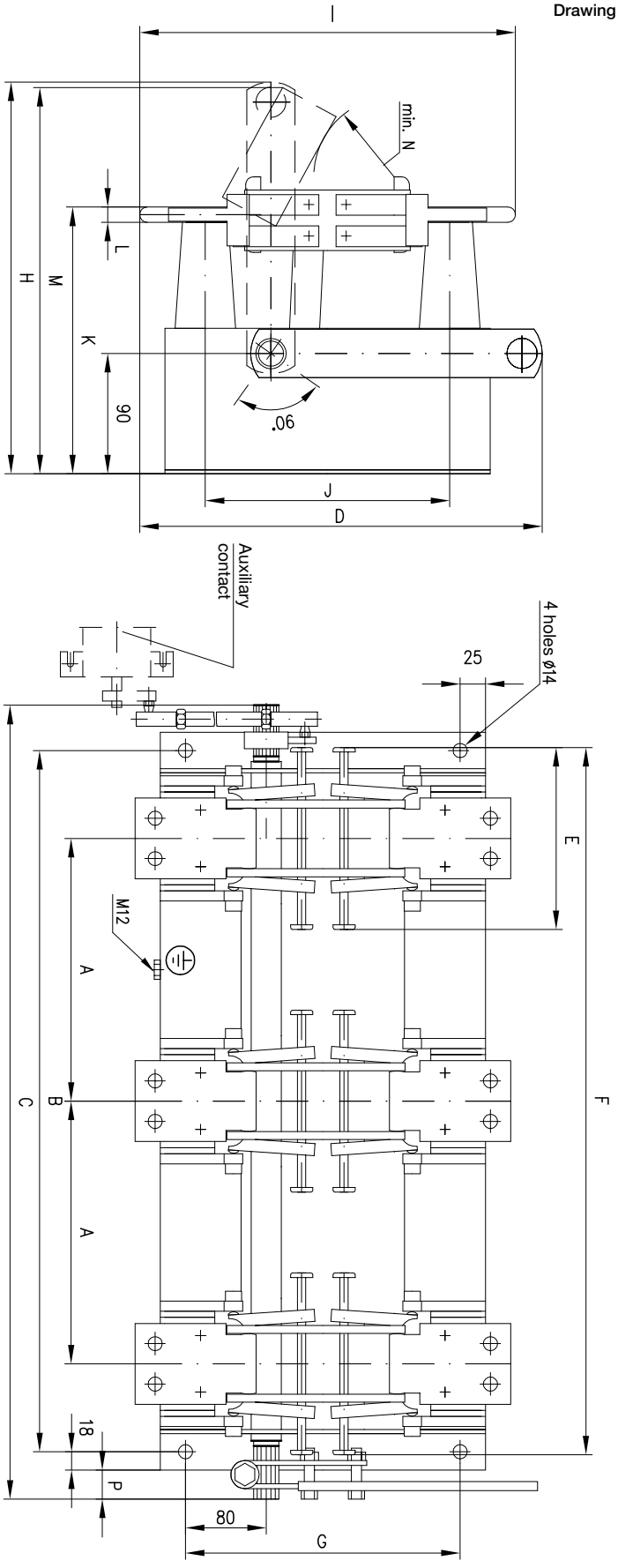
2500 A (N3)
2000 A (T3)
2000 A (N3)
1600 A (N3)

4000 A (N3)
3150 A (T3)

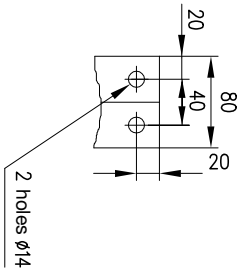
Earthing clamp
material: steel
coating: tin

Dimensional drawings
Indoor disconnectors type OWD 1,2 kV

Drawing No. OW4/10.01



Type	U_n [kV]	I_n [A]	dimension												
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	P
OWD 301w.02/1	1,2	2000	160	480	580	400	160	480	272	335	372	242	145	15	270	45	32
OWD 101w.02/1	1,2	2500	160	480	580	400	160	480	272	335	372	242	145	15	270	45	42

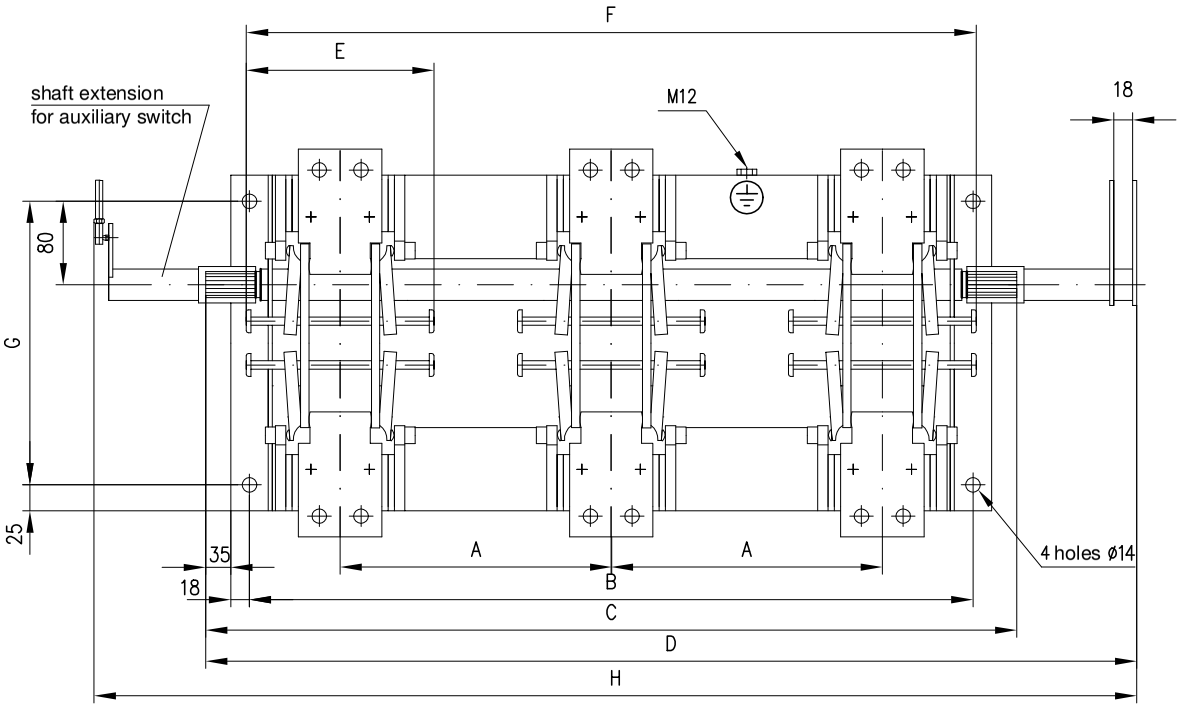


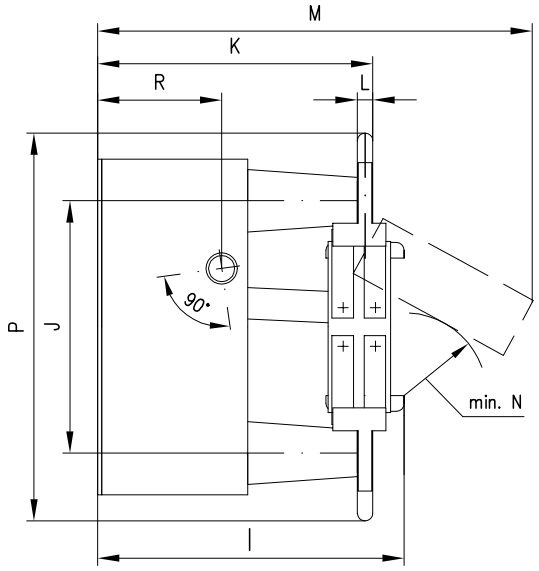
terminals:
material: copper
coating: silver

Earthing clamp
material: steel
coating: tin

Dimensional drawings
Indoor disconnectors type OWD 3,6–24 kV
for manual operating mechanism type NRWO4-3

Drawing No. OW4/11.02

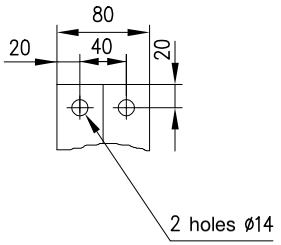




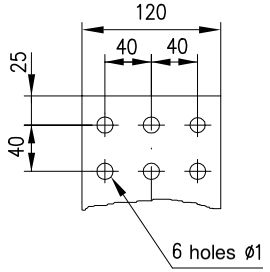
Type	U_n [kV]	I_n [A]	dimension															
			A	B	C	D	E	F	G	H	I	J	K	L	M	N	P	R
OWD 310w.01/1	12	4000	300	775	880	990	185	785	310	1110	375	280	335	20	560	130	490	130
OWD 310w.02, 03, 04/1	12	2500, 2000, 1600	300	775	880	990	160	760	310	1110	360	280	330	15	535	130	410	130
OWD 303w.01/1	3,6	4000	260	695	880	910	185	705	290	985	320	260	280	20	485	75	470	130
OWD 303w.02/1	3,6	2500	260	695	880	910	160	680	272	985	305	242	275	15	445	75	372	130
OWD 210w.01/1	12	4000	300	475	580	690	185	485	310	810	375	280	335	20	560	130	490	130
OWD 210w.02, 03, 04/1	12	2500, 2000, 1600	300	475	580	690	160	460	310	810	360	280	330	15	535	130	410	130
OWD 203w.01/1	3,6	4000	260	435	540	650	185	445	290	725	320	260	280	20	485	75	470	130
OWD 203w.02/1	3,6	2500	260	435	540	650	160	420	272	725	305	242	275	15	445	75	372	130
OWD 110w.01/1	12	4000	–	175	280	390	185	185	310	510	375	280	335	20	560	130	490	130
OWD 110w.02, 03, 04/1	12	2500, 2000, 1600	–	175	280	390	160	160	310	510	360	280	330	15	535	130	410	130
OWD 103w.01/1	3,6	4000	–	175	280	390	185	185	290	465	320	260	280	20	485	75	470	130
OWD 103w.02/1	3,6	2500	–	175	280	390	160	160	272	465	305	242	275	15	445	75	372	130
OWD 103w.02, 03, 04/1	24	2500, 2000, 1600	350	875	980	1155	160	860	410	1340	425	380	395	15	710	250	510	145

Dimensions of the disconnector for a operating mechanism at the left side are determined on the principle of mirror image.

terminals:
material: copper
coating: silver



2500 A (N3)
2000 A (T3)
2000 A (N3)
1600 A (N3)



4000 A (N3)
3150 A (T3)

Earthing clamp
material: steel
coating: tin

Three-pole indoor disconnectors type OWIII

1. Operating conditions

The disconnectors are meant for operation indoors, in temperate climate conditions, at surrounding temperatures ranging from –5°C to +40°C. When installing the switches in other conditions, it is necessary to consult the manufacturer.

2. Designations and switch types

OWIII	20	/6	UD	- 2	/160
Type of disconnector	**Rated voltage**	**Rated current**	**Type of earthing switch**	**Type of insulator**	**Pole distance**
	7,2 – 7,2 kV 10 – 12 kV 17,5 – 17,5 kV 20 – 24 kV 30 – 36 kV	6 – 630 A 8 – 800 A 10 – 1000 A 12 – 1250 A 16 – 1600 A	UD – lower earthing switch UG – upper earthing switch	1 – ceramic 2 – resin	Specified only for pole distances other than typical: 12 kV – 200 mm 24 kV – 275 mm 36 kV – 360 mm

3. Design and operation

Disconnectors type OWII are the vertical break disconnectors. The disconnectors base is made as a welded steel frame. The frame together with the disconnector shaft and the limiters of the angle of rotation forms a non-dismountable unit. The base carries the insulators which support the main circuit consisting of two fixed contats and one moving contact in each pole. The moving contacts are connected with the disconnector shaft by means of insulating pull rods which transfer the rotation of the shaft to the moving contacts bringing them in sweep motion in the plane perpendicular to the disconnector base.

The intrepole isolation is an air gap. In models with a smaller interpole scale, the air gap is further assisted by isolating plates.

The disconnectors may be opened and closed by the following operating mechanisms:

– manual: type NRWO4/...–3 or HE,
– pneumatic, type NP9,
– motor, type UEMC40A_,
– insulating stick.

The disconnectors, equipped with manual, motor or pneumatic operating mechanism, may operate in horizontal or vertical position (driven by insulating stick – only in vertical position).

The construction of disconnectors allows for the addition of earthing switches. Earthing switches may be located on pivot side (lower earthing switches) or on opening (upper earthing switches). At the base of the disconnector there is an earth terminal with M12x40 screw. Between the disconnector shaft and the earthing switch shaft, there is a mechanical interlocking ensuring the proper order of switching.

4. Equipment

Disconnectors type OWIII are equipped with an operating lever set on the shaft, which can be moved every 10° within the limits of a full turn. This lever is for coupling with operating mechanism type NRWO4/...–3 and with a lever arm which is an extension of the operating lever, meant for driving the disconnector by means of an insulating stick. In the case of disconnectors with motor operating mechanism UEMC40A_ there is no lever. Instead, there is an assembly of bevel gear linking with the operating mechanism.

The disconnectors may be equipped with an auxiliary switch (type PS-3 or PS-O) coupled with the apparatus, located on the end of the shaft opposite to the operating mechanism. Standard number of auxiliary switch contacts is 12 (6NO+6NC).

5. Technical data

The technical data of disconnectors are tabulated in the table 4 on pages 14-15.

6. Standards

Disconnectors type OWII comply with the standards:
IEC 62271-1:2007, IEC 62271-102:2001.

7. Spare parts

The apparatus, for the duration of its technical lifetime, i.e. 1000 operations, does not require spare parts. On the user's request, spare parts may be supplied for those damaged during random events, however, their replacement should be consulted with the manufacturer each time, and made by ABB service or by employees of other companies who have been trained by the manufacturer.

8. Information to be given with orders

The following information should be given with order: product full name, rated voltage, rated current and type of the apparatus. Operating mechanisms for the disconnectors should be ordered separately.

9. Examples of orders

1. A disconnector for rated voltage 24 kV, rated current 630 A, equipped with lower earthing, with ceramic insulators: "Three pole indoor disconnector, 24 kV, 630A with lower earthing switch, type OWIII 20/6UD–1".
2. A disconnector for rated voltage 24 kV, rated current 630 A, equipped with upper earthing switch, with resin insulators, with pneumatic operating mechanism type NP9 assembled on the left hand side: "Three pole indoor disconnector, 24 kV, 630 A with upper earthing switch, type OWIII 20/6UG–2 + NP9 on the left".

10. Dimensional drawings

– OW3/10.01,
– OW3/11.01,
– OW3/12.01,
– OW3/13.01,
– OW3/14.01.

Table 4. Technical data of disconnectors type OWIII

Disconnectors for voltage 7,2 and 12 kV

Type		OWIII7,2/6-1 OWIII7,2/6UD-1 OWIII7,2/6UG-1	OWIII10/6-1 OWIII10/6UD-1 OWIII10/6UG-1	OWIII10/6-2 OWIII10/6UD-2 OWIII10/6UG-2	OWIII10/6-2/125 OWIII10/6UD-2/125 OWIII10/6UG-2/125	OWIII10/8-1 OWIII10/8UD-1 OWIII10/8UG-1	OWIII10/10-1 OWIII10/10UD-1 OWIII10/10UG-1	OWIII10/8-2 OWIII10/8UD-2 OWIII10/8UG-2	OWIII10/10-2 OWIII10/10UD-2 OWIII10/10UG-2	OWIII10/12-1 OWIII10/12UD-1 OWIII10/12UG-1
Rated voltage [kV]		7,2	12							
Frequency [Hz]		50								
Righted power frequency withstand voltage [kV]	to earth and between poles	20	28							
	between contacts	23	32							
Lightning impulse withstand voltage [kV]	to earth and between poles	60	75							
	between contacts	70	85							
Rated continuous current [A]		630	630			800	1000	800	1000	1250
Rated peak withstand current [kA]		40	80	63	40	80	80	63	63	80
Rated short-time withstand current [kA]	1 s	16	31,5	25	16	31,5	31,5	25	25	31,5
Disconnector mass / mass disconnector with earthing switch [kg]		24/32	31/39	25/35	23/31	31/39	31/39	25/35	25/35	50/59
Maximum distance of first bracket at rated peak current [mm]		400	600		400	600				

Disconnectors for voltage 17,5 and 24 kV

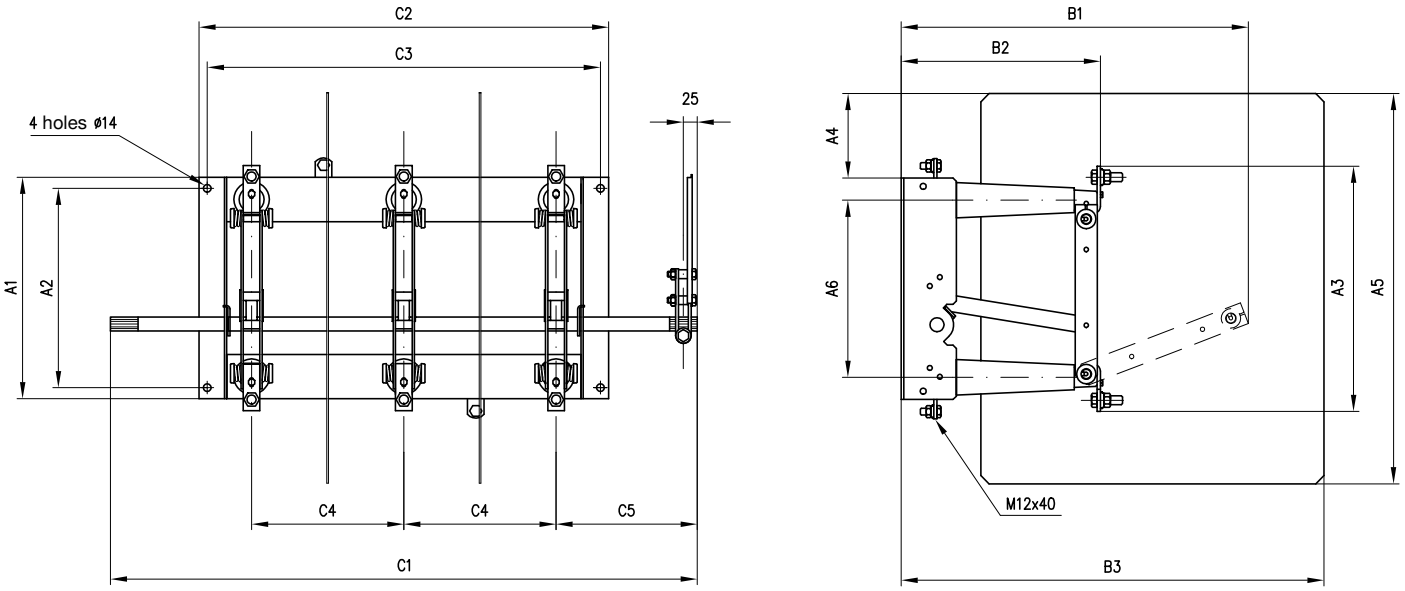
Type		OWIII17,5/6-1 OWIII17,5/6UD-1 OWIII17,5/6UG-1	OWIII17,5/12-1 OWIII17,5/12UD-1 OWIII17,5/12UG-1	OWIII20/6-1 OWIII20/6UD-1 OWIII20/6UG-1	OWIII20/6-2 OWIII20/6UD-2 OWIII20/6UG-2	OWIII20/6-2/160 OWIII20/6UD-2/160 OWIII20/6UG-2/160	OWIII20/8-1 OWIII20/8UD-1 OWIII20/8UG-1	OWIII20/10-1 OWIII20/10UD-1 OWIII20/10UG-1	OWIII20/8-2 OWIII20/8UD-2 OWIII20/8UG-2	OWIII 20/10-2 OWIII20/10UD-2 OWIII20/10UG-2	OWIII20/12-1 OWIII20/12UD-1 OWIII20/12UG-1
Rated voltage [kV]		17,5		24							
Frequency [Hz]		50									
Righted power frequency withstand voltage [kV]	to earth and between poles	38		50							
	between contacts	45		60							
Lightning impulse withstand voltage [kV]	to earth and between poles	95		125							
	between contacts	110		145							
Rated continuous current [A]		630	1250	630			800	1000	800	1000	1250
Rated peak withstand current [kA]		40	40	50	63	40	50	50	63	63	80
Rated short-time withstand current [kA]	1 s	16	16	-	25	16	-	-	25	25	31,5
	3 s	-	-	20	-	-	20	20	-	-	-
Disconnector mass / mass disconnector with earthing switch [kg]		46/56	68/78	48/58	39/49	38/47	48/58	48/58	39/49	25	70/81
Maximum distance of first bracket at rated peak current [mm]		400		700		500	700				

Disconnectors for voltage 36 kV

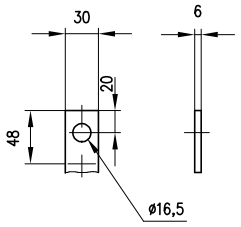
Type		OWIII30/6-2 OWIII30/6UD-2 OWIII30/6UG-2	OWIII30/12-2 OWIII30/12UD-2 OWIII30/12UG-2	OWIII30/16-2 OWIII30/16UD-2 OWIII30/16UG-2
Rated voltage [kV]		36		
Frequency [Hz]		50		
Righted power frequency withstand voltage [kV]	to earth and between poles	70		
	between contacts	80		
Lightning impulse withstand voltage [kV]	to earth and between poles	170		
	between contacts	195		
Rated continuous current [A]		630	1250	1600
Rated peak withstand current [kA]		50	80	80
Rated short-time withstand current [kA]	1 s	-	31,5	31,5
	3 s	20	-	-
Disconnector mass / mass disconnector with earthing switch [kg]		78/90	90/104	90/104
Maximum distance of first bracket at rated peak current [mm]		1000		

Dimensional drawings
Indoor disconnectors type OWIII

Drawing No. OW3/10.01

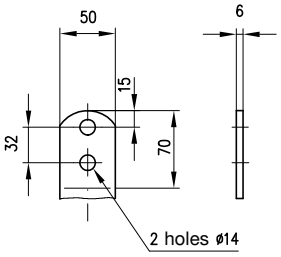


Terminals:
material: copper
coating: silver



630, 800, 1000 A

Earthing clamp
material: steel
coating: tin

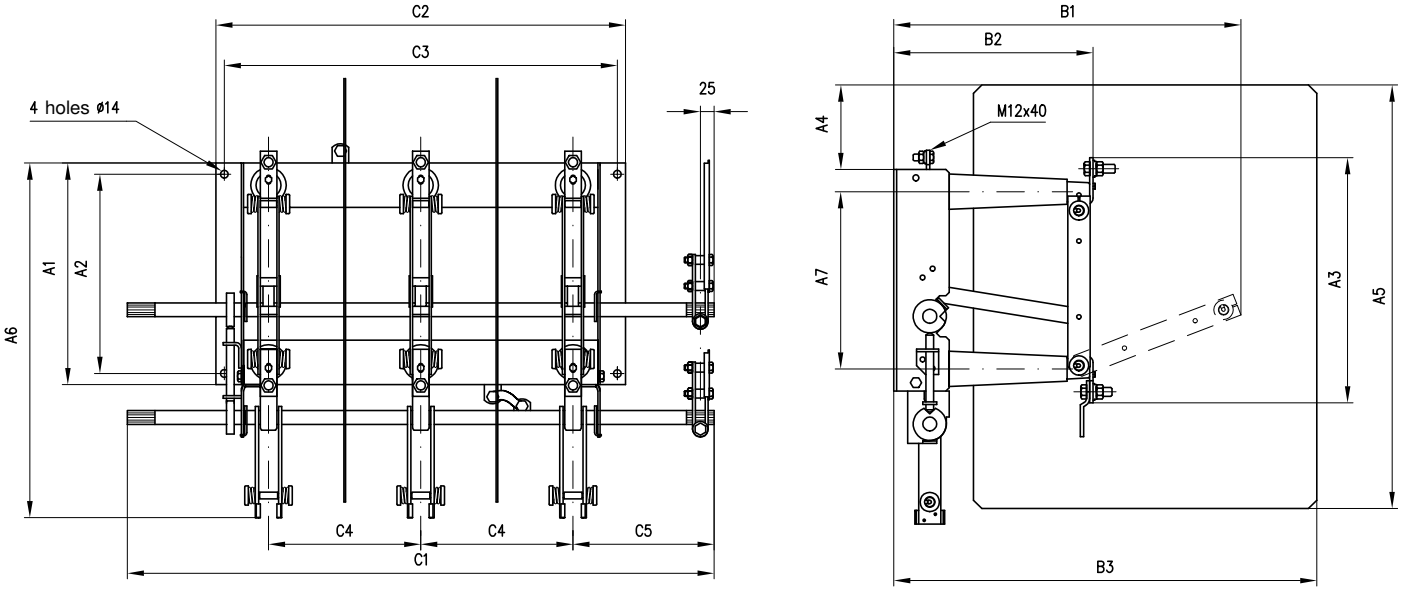


1250, 1600A

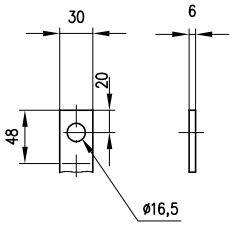
Type	Dimension													
	A1	A2	A3	A4	A5	A6	B1	B2	B3	C1	C2	C3	C4	C5
OWIII 7,2/6-1	300	260	354	–	–	220	455	248	–	700	510	480	160	190
OWIII10/6,8,10-1	300	260	354	–	–	220	455	248	–	780	590	560	200	190
OWIII 10/6,8,10-2	300	260	355	–	–	220	455	263	–	780	590	560	200	190
OWIII 10/6-2/125	300	260	355	93	485	220	455	263	494	630	440	410	125	190
OWIII 10/12-1	335	295	463	–	–	255	472	250	–	780	590	560	200	190
OWIII 17,5/6-1	400	360	454	–	–	320	654	353	–	930	610	580	210	255
OWIII 17,5/12-1	435	395	563	–	–	355	677	355	–	990	670	640	240	255
OWIII 20/6,8,10-1	400	360	454	–	–	320	654	353	–	1060	740	710	275	255
OWIII 20/6,8,10-2	400	360	455	–	–	320	654	360	–	1060	740	710	275	255
OWIII 20/6-2/160	400	360	455	153	705	320	654	360	764	830	510	480	160	255
OWIII 20/12-1	435	395	563	–	–	355	677	355	–	1060	740	710	275	255
OWIII 30/6-2	550	510	594	–	–	460	875	456	–	1460	950	920	360	370
OWIII 30/12-2	565	525	716	–	–	460	925	460	–	1460	1020	990	390	370
OWIII 30/16-2	565	525	716	–	–	460	925	460	–	1460	1020	990	390	370

Dimensional drawings
Indoor disconnectors type OWIII with lower earthing switch

Drawing No. OW3/11.01

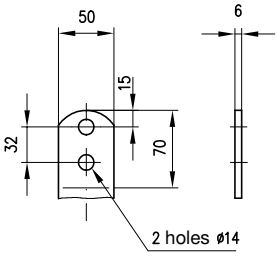


Terminals:
material: copper
coating: silver



630, 800, 1000 A

Earthing clamp
material: steel
coating: tin

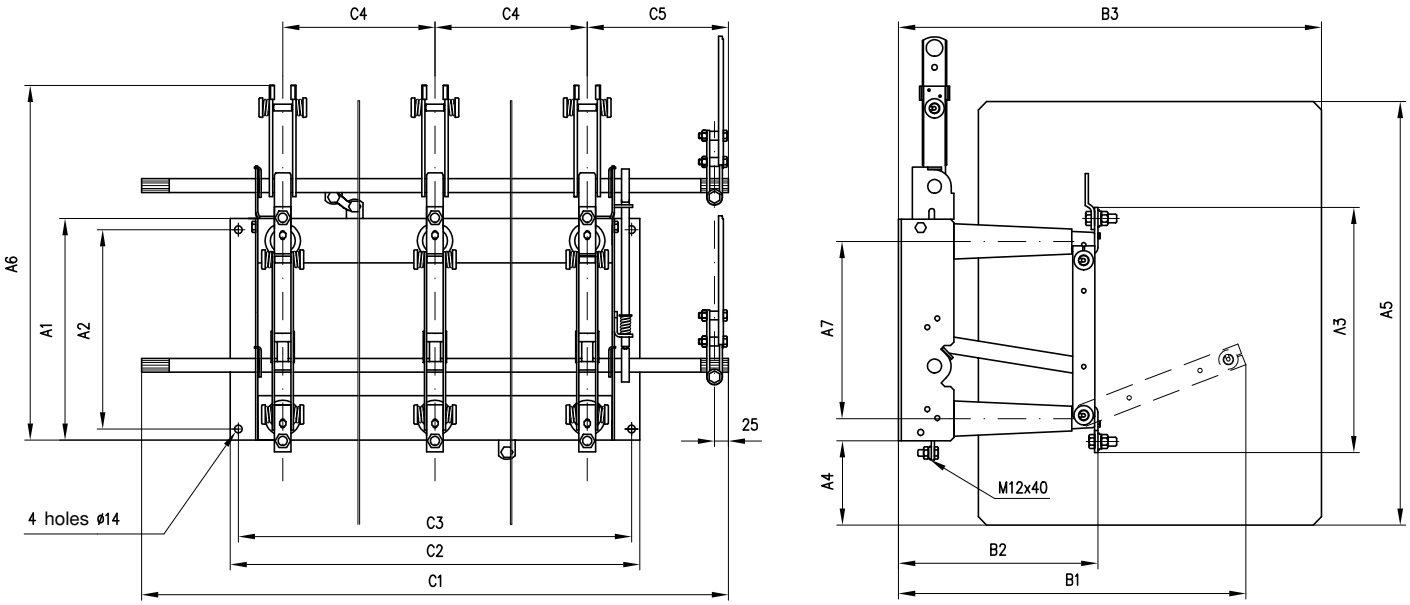


1250, 1600A

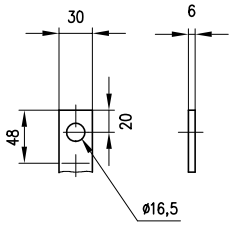
Type	Dimension														
	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	C1	C2	C3	C4	C5
OWIII 7,2/6UD-1	300	260	354	–	–	541	220	455	248	–	700	510	480	160	190
OWIII10/6,8,10UD-1	300	260	354	–	–	541	220	455	248	–	780	590	560	200	190
OWIII 10/6,8,10UD-2	300	260	355	–	–	541	220	455	263	–	780	590	560	200	190
OWIII 10/6UD-2/125	300	260	355	93	485	541	220	455	263	494	630	440	410	125	190
OWIII 10/12UD-1	335	295	463	–	–	541	255	472	250	–	780	590	560	200	190
OWIII 17,5/6UD-1	400	360	454	–	–	736	320	654	353	–	930	610	580	210	255
OWIII 17,5/12UD-1	435	395	563	–	–	736	355	677	355	–	990	670	640	240	255
OWIII 20/6,8,10UD-1	400	360	454	–	–	736	320	654	353	–	1060	740	710	275	255
OWIII 20/6,8,10UD-2	400	360	455	–	–	736	320	654	360	–	1060	740	710	275	255
OWIII 20/6UD-2/160	400	360	455	153	705	736	320	654	360	764	830	510	480	160	255
OWIII 20/12UD-1	435	395	563	–	–	771	355	677	355	–	1060	740	710	275	255
OWIII 30/6UD-2	550	510	594	–	–	967	460	875	456	–	1460	950	920	360	370
OWIII 30/12UD-2	565	525	716	–	–	982	460	925	460	–	1460	1020	990	390	370
OWIII 30/16UD-2	565	525	716	–	–	982	460	925	460	–	1460	1020	990	390	370

Dimensional drawings
Indoor disconnectors type OWIII with upper earthing switch

Drawing No. OW3/12.01

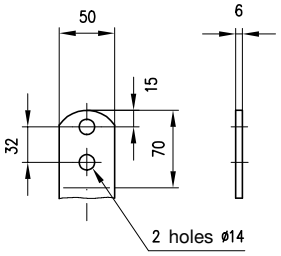


Terminals:
material: copper
coating: silver



630, 800, 1000 A

Earthing clamp
material: steel
coating: tin

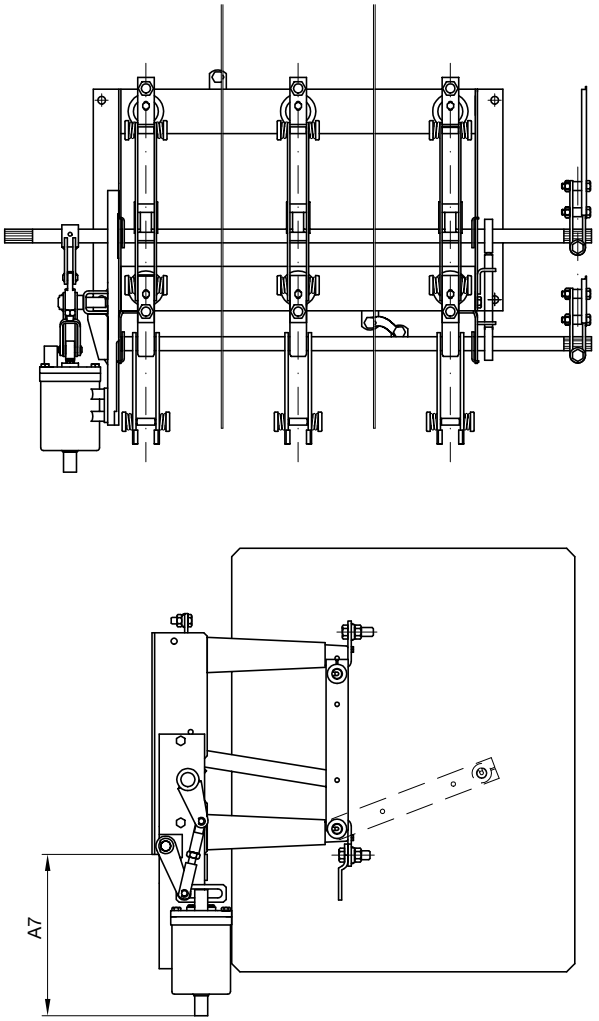


1250, 1600A

Type	Dimension														
	A1	A2	A3	A4	A5	A6	A7	B1	B2	B3	C1	C2	C3	C4	C5
OWIII 7,2/6UG-1	300	260	354	–	–	541	220	455	248	–	700	510	480	160	190
OWIII 10/6,8,10UG-1	300	260	354	–	–	541	220	455	248	–	780	590	560	200	190
OWIII 10/6,8,10UG-2	300	260	355	–	–	541	220	455	263	–	780	590	560	200	190
OWIII 10/12UG-1	335	295	463	–	–	541	255	472	250	–	780	590	560	200	190
OWIII 17,5/6UG-1	400	360	454	–	–	736	320	654	353	–	930	610	580	210	255
OWIII 17,5/12UG-1	435	395	563	–	–	736	355	677	355	–	990	670	640	240	255
OWIII 20/6,8,10UG-1	400	360	454	–	–	736	320	654	353	–	1060	740	710	275	255
OWIII 20/6,8,10UG-2	400	360	455	–	–	736	320	654	360	–	1060	740	710	275	255
OWIII 20/6UG-2/160	400	360	455	519	705	736	320	654	360	764	830	510	480	160	255
OWIII 20/12UG-1	435	395	563	–	–	771	355	677	355	–	1060	740	710	275	255
OWIII 30/6UG-2	550	510	594	–	–	967	460	875	456	–	1460	950	920	360	370
OWIII 30/12UG-2	565	525	716	–	–	982	460	925	460	–	1460	1020	990	390	370
OWIII 30/16UG-2	565	525	716	–	–	982	460	925	460	–	1460	1020	990	390	370

Dimensional drawings
Indoor disconnector type OWIII with pneumatic operating mechanism

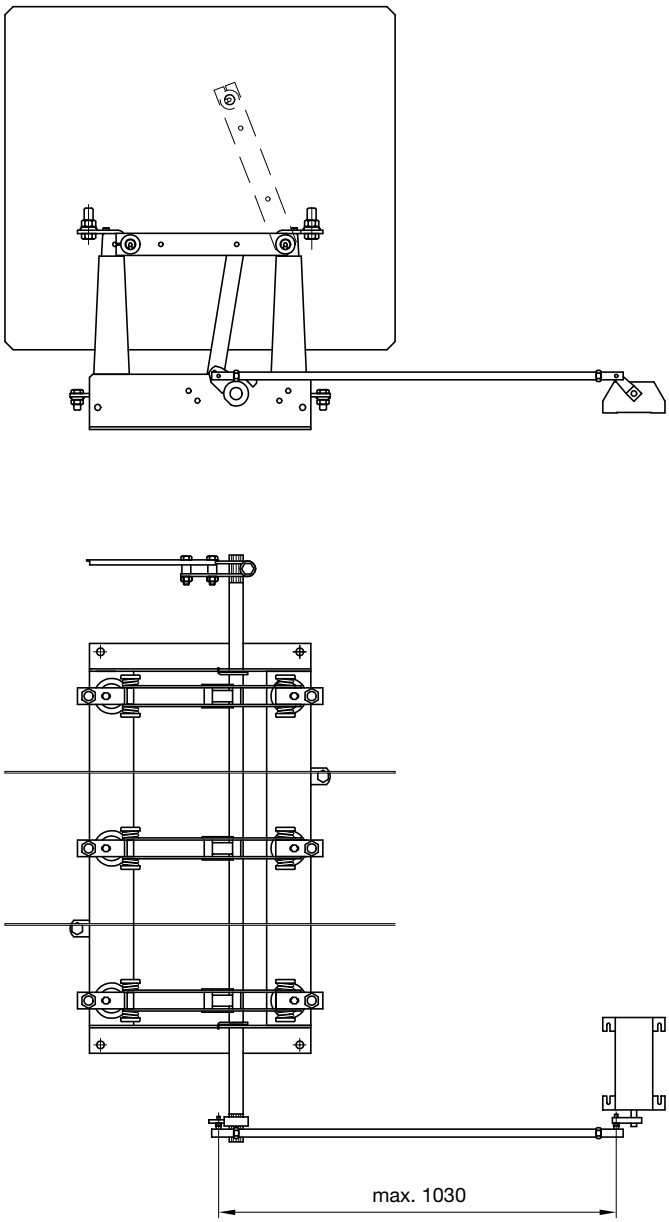
Drawing No. OW3/13.01



Type			Dimension
			A7
OWIII 10/6-1	OWIII 10/6UD-1	OWIII 10/6UG-1	306
OWIII 10/6-2	OWIII 10/6UD-2	OWIII 10/6UG-2	306
OWIII 10/6-2/125	–	–	306
OWIII 10/16-1	OWIII 10/16UD-1	OWIII 10/16UG-1	286
OWIII 20/6-1	OWIII 20/6UD-1	OWIII 20/6UG-1	291
OWIII 20/6-2	OWIII 20/6UD-2	OWIII 20/6UG-2	291
OWIII 20/6-2/160	OWIII 20/6UD-2/160	OWIII 20/6UG-2/160	291
OWIII 20/12-1	OWIII 20/12UD-1	OWIII 20/12UG-1	276
OWIII 30/6-2	OWIII 30/6UD-2	OWIII 30/6UG-2	261
OWIII 30/12-2	OWIII 30/12UD-2	OWIII 30/12UG-2	261
OWIII 30/16-2	OWIII 30/16UD-2	OWIII 30/16UG-2	261

Dimensional drawings
Indoor disconnector type OWIII with auxiliary switch

Drawing No. OW3/14.01



Manual Operating Mechanism – Indoor type NRWO4-3

1. Application

NRWO4-3 operating mechanisms are used for closing and opening disconnectors and earthing switches (attached to indoor disconnectors) for voltages up to 36 kV.

2. Operating conditions

NRWO4... operating mechanisms may be installed in indoor distribution devices.

3. Description of types

NRWO4... operating mechanisms may be installed in indoor distribution devices.

NRWO4-3	L	/NO5 (220)	/PS-3 (12)
Marking of the NRWO4-3 group operating mechanisms	L – connection rod on the left side of the operating mechanism P – connection rod on the right side of the operating mechanism	NO5 – NO5 electromagnetic locking device (voltage current) BM – mechanical locking device.	PS-3 – PS-3 auxiliary switch – additional information on number of contacts is given in parentheses (12; 10; 8; 6) PSO – PSO auxiliary switch – additional information on number of contacts (12; 10; 8; 6)

4. Construction and operating principle

The NRW04... manual operating mechanism is a four-bar linkage with cranks and rocking levers. It contains a hand lever, arched pull rod, a double lever welded to the shaft terminated on one side with multi-notches and two side plates, between which the entire kinematic configuration is located. Operation is possible by appropriate use of the four-bar linkage properties, which – by setting the crank – causes the rocking lever and the attached connecting lever to rotate. Rotation of this lever is transferred, by means of the pull rod, to the lever on the disconnector shaft. The hand lever has a knob at the top. The two side plates contain a sleeve for assembling the locking device. Fenders are also welded in order to limit deviation of the hand lever. The auxiliary switch is located on the bracket fixed to the upper edges of the side plates and is connected to the drive shaft by means of a special mechanism, which shifts the moving contacts in the final stages of shaft movement.

5. Equipment

– a pull rod for linking the operating mechanism with the disconnector 2000 mm long (standard equipment)
– mechanical locking device (optional)
– NO5 electromagnetic locking device (optional) – rated voltage 24/110/220 V DC
– PS-3 or PS-O auxiliary switch (optional), number of contacts: 12, 10, 8, 6

6. Technical data

a) Angle of shaft rotation	115°
b) Length of operating mechanism hand lever	350 mm
c) Angle of hand lever rotation	170°
d) Weight	ca 8 kg

7. Standards

NRWO4... operating mechanisms comply with the standard IEC 129 (1984).

8. Remarks on spare parts

The operating mechanism does not contain any sub-assemblies, parts or items, which are subject to replacement as a result of use. At the user's request, accessories damaged in the event of unforeseen circumstances may be supplied. However, their replacements must be agreed with the manufacturer each time.

9. Information to be given with orders

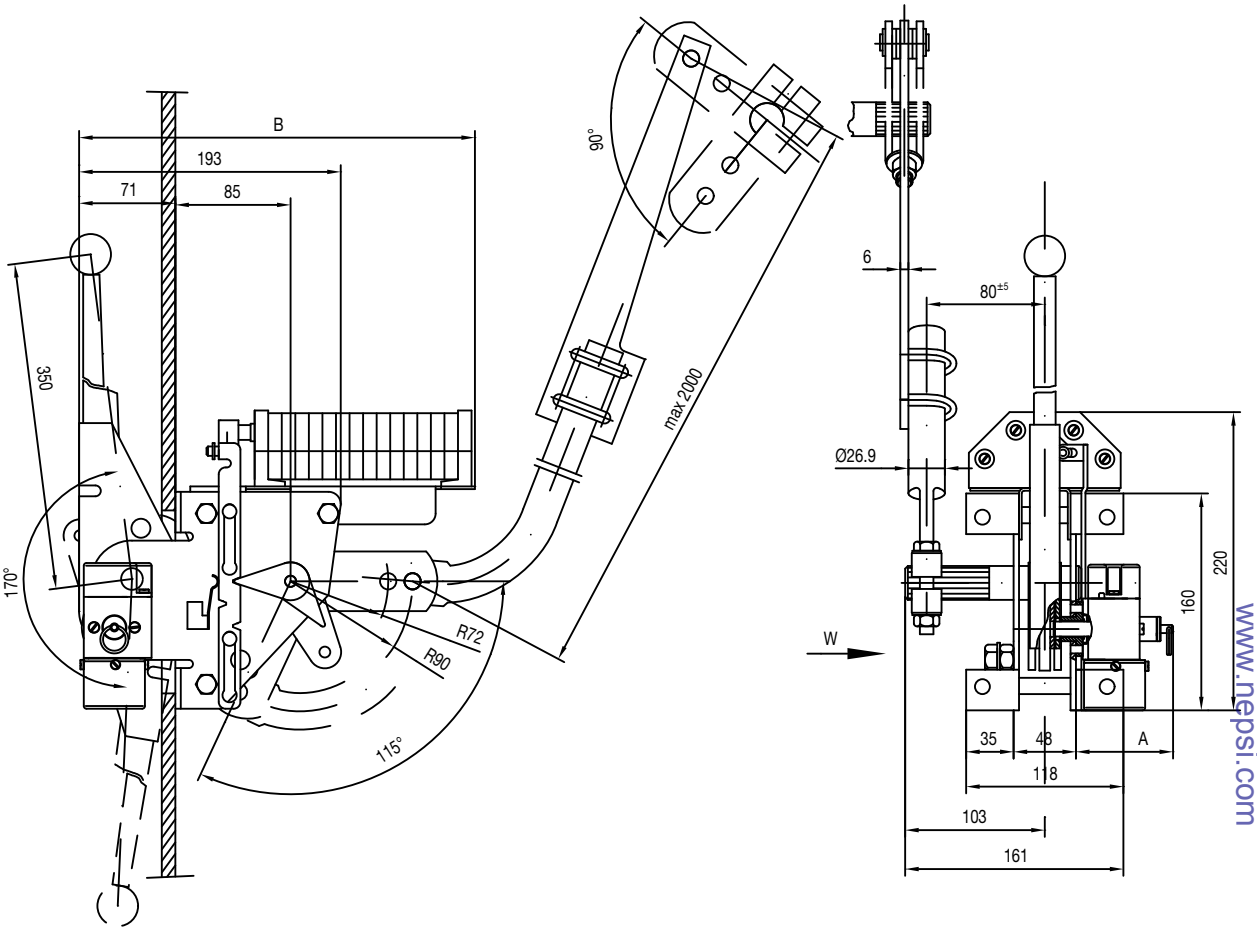
The following information should be given with order: product full name, type of operating mechanism, type of equipment as in p.5.

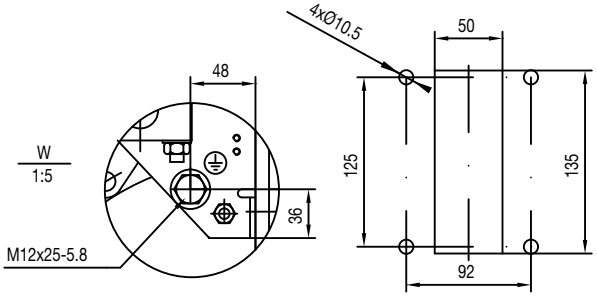
10. Example of an order

manual operating mechanism – NRWO4-3 –L/NO5 (220)/PSO (10).
The above is an example of an order for a manual operating mechanism – indoor – NRWO4-3 with connection rod on the left side, equipped with an electromagnetic NO5 locking device for voltage 220 V DC and PSO auxiliary contact with 10 contacts.

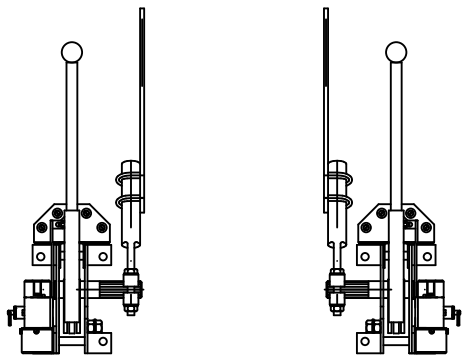
Dimensional drawing
Manual operating mechanisms type NRWO4-3

Type	NRW04-3.../.../PSO(12)	NRW04-3.../.../PSO(10)	NRW04-3.../.../PSO(8)	NRW04-3.../.../PSO(6)	NRW04-3.../.../NO2	NRW04-.../BM/...	NRW04-.../BE/...	NRW04-.../NO5/...
A	-	-	-	-	-	50	~200	67
B	309	284	259	137	292	-	-	-





Location of assembly holes



NRW04-3-P...

NRW04-3-L...

Locking device may be installed on the reverse side of the operating mechanism.

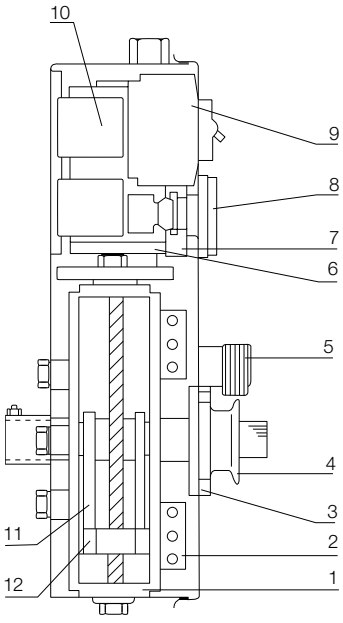
Motor operating device type UEMC40_

1. General

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



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

Rys. 1

3. Construction

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 selflocking 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..

4. 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.

5. Electrical operation

Motor operating device type UEMC 40 A1_, B1_ 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_ 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.

6. Technical details

– Operating time at standard load: 5 to 8 s
– Direction of operation: clockwise to close easily changeable
– Motor: Rectified DC, permanent magnet type
– Terminal block 6 mm^2

Rated voltage	Normal control current*)	Max. current**)	Recommended M.c.b.
24 V DC	12 A	40 A	STO S272 K8
48 V DC	6 A	20 A	STO S272K4
60 V DC	5 A	17 A	STO S272 K4
110 V DC	2 A	5,5 A	STO S272 k2
125 V DC	2 A	5,5 A	STO S272 K2
220 V DC	1 A	3 A	STO S282 UCK 1
230 V AC	1 A	3 A	STO S272 K1

* Rated current is the current under normal working conditions.
** Max. current is the current for a stalled load from the motor operating device.

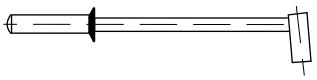
Secification	Unit	UEMC 40		UEMC 40	
		A1	A2	B1	B2
Torque:	[Nm]	200	200	300	300
Weight:	[kg]	14,5	14,5	12,5	12,5
Contactors:					
Closing power:	[W]	3	3	3	3
Holding power:	[W]	3	3	3	3
Shortest control pulse	[s]	0,1	0,1	0,1	0,1
Operating angle:	degr.	190	190	110	110
	degr.	210[1)]	210[1)]	-	-

[1)] With accessory: Coupling ring UEMZ 452

7. Equpment

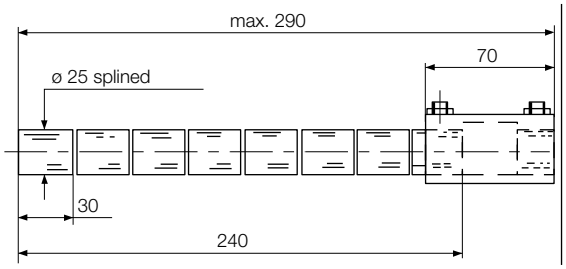
Operating handle 1YMX053235M0001

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



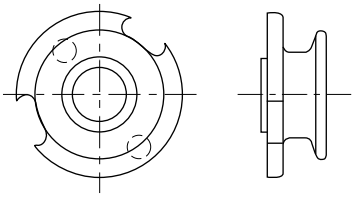
Extension shaft UEMC ZL24

Includes:
– shaft 240 mm (splined)
– extention socket 70 mm (splines to splines)
The shaft have cutting grooves at regular intervals.
ø 25 splined / ø 25 splined



Coupling ring UEMZ 452

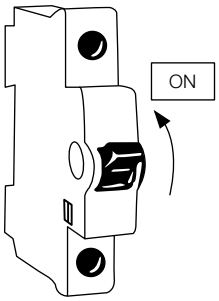
Increases the operating angle to 210° for motor operating devices UEMC 40 A_



Protective m.c.b.

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

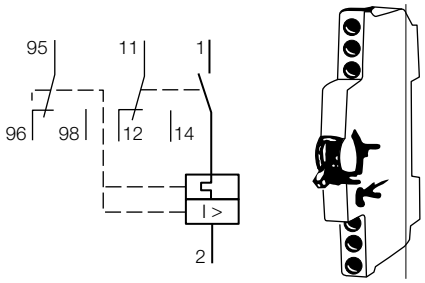
Motor voltage	Miniature circuit breaker type
24 V DC	- STO S272 K8
48 V DC	- STO S272 K4
60 V DC	- STO S272 K4
110 V DC	- STO S272 K2
125 V DC	- STO S272 K2
110 V AC	- STO S272 K2
220 V DC	- STO S282 UCK 1
230 V AC	- STO S272 K1



Auxiliary contact for m.c.b.

- STO S 2-S/H

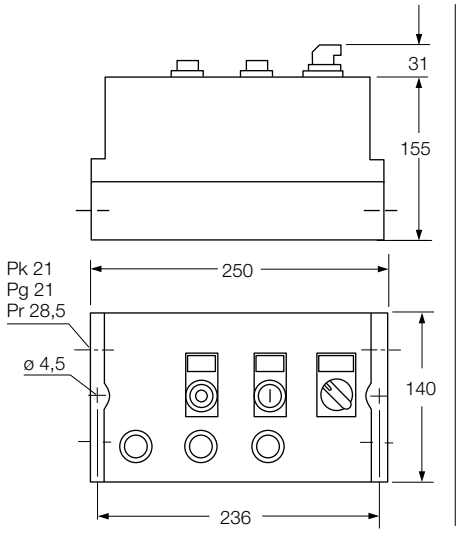
Includes 2 pcs. change-over contacts.



Operating box UEZJ 2-

Type	Circuit diagram
UEZJ 2 - 24 V DC	31 UEMC 148
UEZJ 2 - 48 V DC	31 UEMC 148
UEZJ 2 - 60 V DC	31 UEMC 148
UEZJ 2 - 110 V DC	31 UEMC 148
UEZJ 2 - 125 V DC	31 UEMC 148
UEZJ 2 - 220 V DC	31 UEMC 148
UEZJ 2 - 110 V AC	31 UEMC 148
UEZJ 2 - 230 V AC	31 UEMC 148
UEZJ 2 - UU[1)]	31 UEMC 149

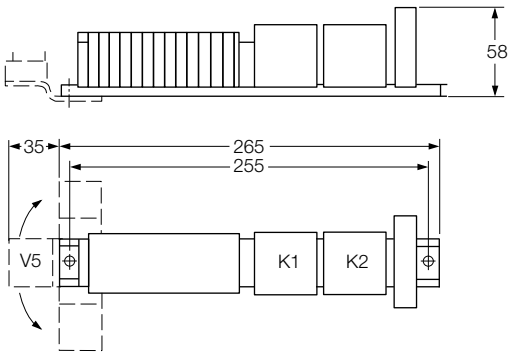
[1)] Type UEZJ 2-UU is to be ordered when different motor and auxiliary voltages are to be used. Please give details of the voltages when ordering.



Control unit UEZJ 1-

Typ	Circuit diagram
UEZJ 1 - 24 V DC	31 UEMC 141
UEZJ 1 - 48 V DC	31 UEMC 141
UEZJ 1 - 60 V DC	31 UEMC 141
UEZJ 1 - 110 V DC	31 UEMC 141
UEZJ 1 - 125 V DC	31 UEMC 141
UEZJ 1 - 220 V DC	31 UEMC 141
UEZJ 1 - 110 V AC	31 UEMC 141
UEZJ 1 - 230 V AC	31 UEMC 141
UEZJ 1 - UU[1)]	31 UEMC 142

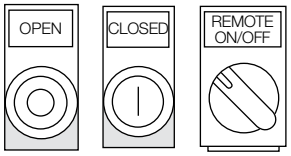
[1)] Set type UEZJ 1UU is to be ordered when different motor and auxiliary voltages are to be used. Please give details of the voltages when ordering.



Control push buttons UEZJ 3

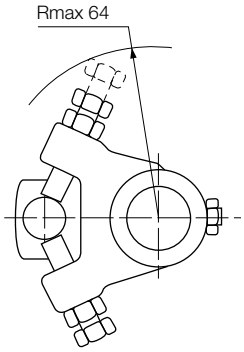
Includes:

– I -button, with text: (CLOSE)
– O -button, with text: OPEN
– On/Off selector switch, with text: REMOTE ON/OFF

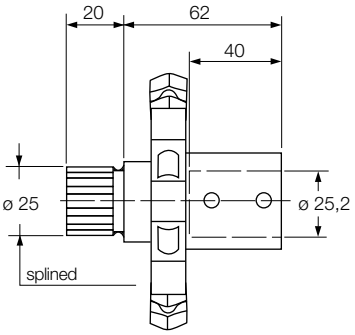


Adjuster coupling UEMC ZL9

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



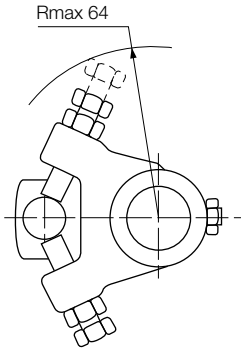
ø25 splined



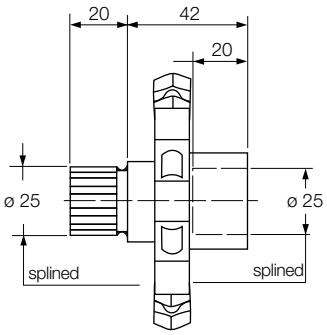
ø25 splined

Adjuster coupling UEMC ZL10

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



ø25 splined

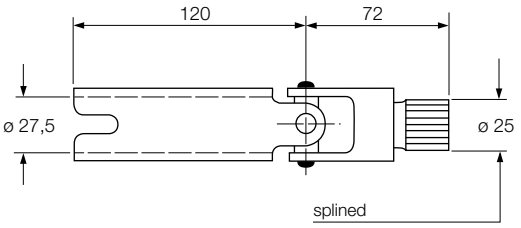


ø25 splined

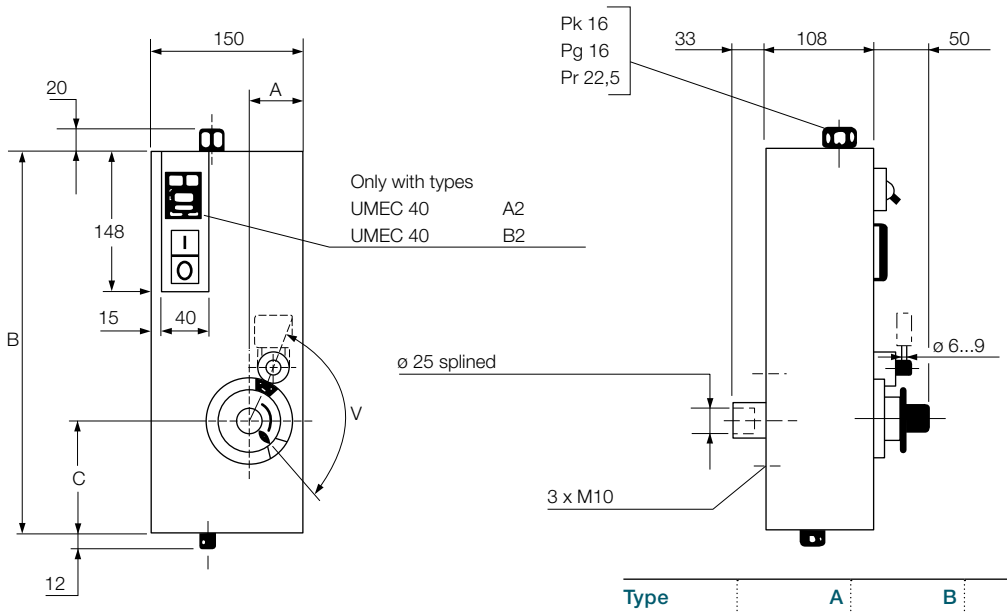
Joint UEMC ZL7

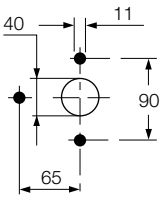
For transmitting the operating movement through an angle of max 40°.

For tube diameter: 3/4” (26.9 mm)



8. Dimension drawing
13 UEMC 408 D





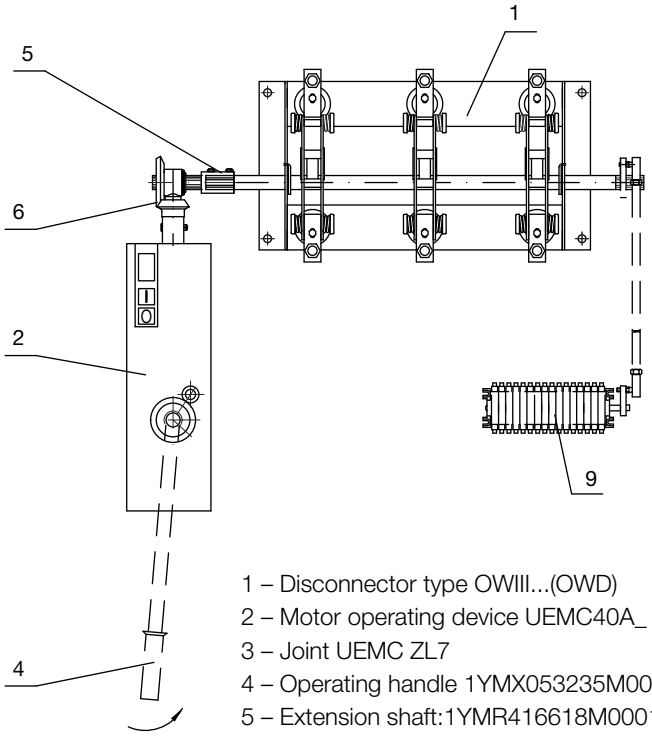
Front panel drilling

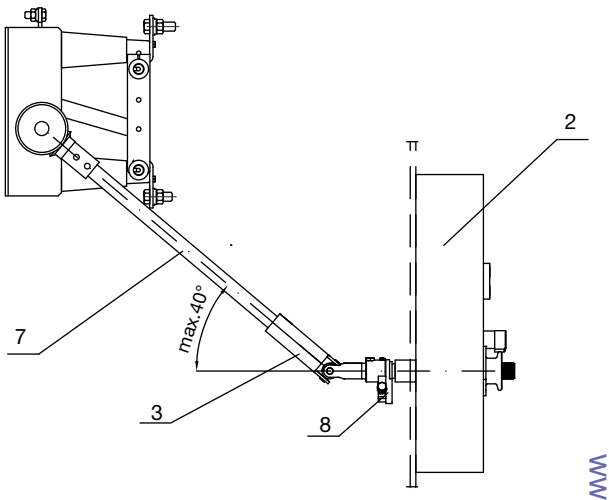
Type UEMC 40	A mm	B mm	C mm	V Degr.	M Nm
A1	67	476	162	190 210[1)]	200
A2	67	476	162	190 210[1)]	200
B1	55	376	112	110	300
B2	55	376	112	110	300

[1)] Accessories, to be ordered separately.

9. Exampes of applications for disconnectors

UEMC40A_ with disconnector OWIII/ OWD – connection through an angle of max. 40º



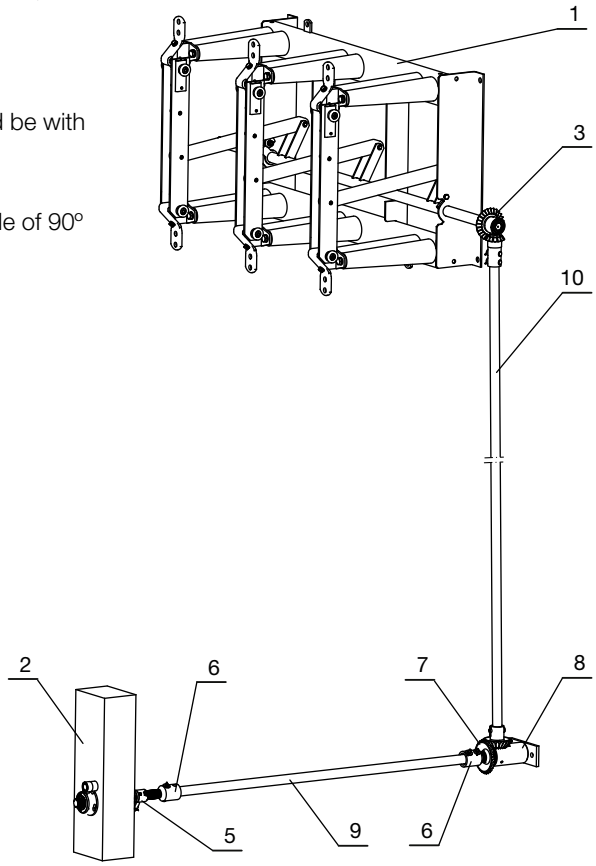


1 – Disconnector type OWIII...(OWD)
2 – Motor operating device UEMC40A_
3 – Joint UEMC ZL7
4 – Operating handle 1YMX053235M0004
5 – Extension shaft:1YMR416618M0001(optionally for OWIII) or 1YMR417625M0001 for OWD 12 kV, 1YMR417625M0002 for OWD 24 kV
6 – Bevel gear NRK2*
7 – Connection rod (L=1,3 m) 1YMX000004M0003
8 – Adjuster coupling UEMC ZL10
9 – Auxiliary switch complete OW3 4 E01... (option)

* NRK2/2 in case use of extension shaft (pos.5); NRK 2/1 if directly on the OWIII shaft.

If there is no possibility connection through an angle of max. 40º it should be with angle 90º as below:

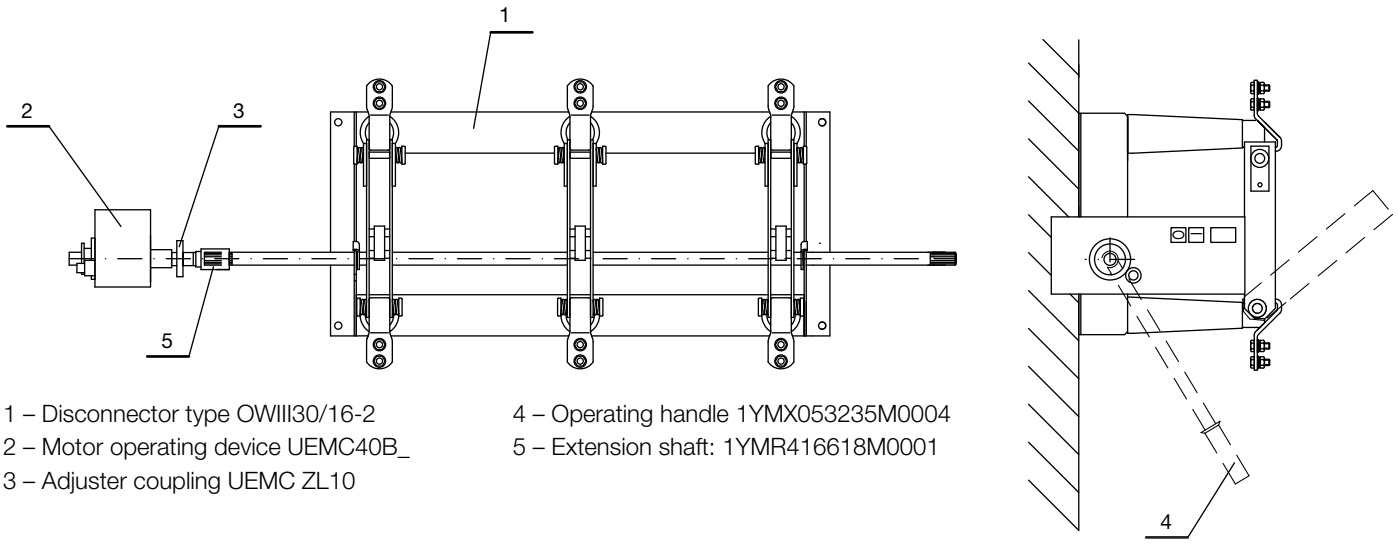
UEMC40A_ with disconnector OWIII/ OWD – connection through an angle of 90º



1 – Disconnector type OWIII... (OWD)
2 – Motor operating device UEMC40A_
3 – Bevel gear NRK2*
4 – Operating handle 1YMX053235M0004
5 – Adjuster coupling UEMC ZL10
6 – Rod joint compl. 1YMX000053M0001
7 – Bevel gear 1YMX053362M0001
8 – Bevel gear support 1YMR417707M0001 (for OWIII) or 1YMX343036M0001 (for OWD)
9 – Connection rod (L=1,3 m) 1YMX000004M0003
10 – Connection rod (L=2 m) 1YMX000004M0004

* NRK2/2 in case use of extension shaft (pos.5); NRK 2/1 if directly on the OWIII shaft.

Example of connection UEMC40B2 with disconnector OWIII30/16-2



1 – Disconnector type OWIII30/16-2
2 – Motor operating device UEMC40B_
3 – Adjuster coupling UEMC ZL10
4 – Operating handle 1YMX053235M0004
5 – Extension shaft: 1YMR416618M0001

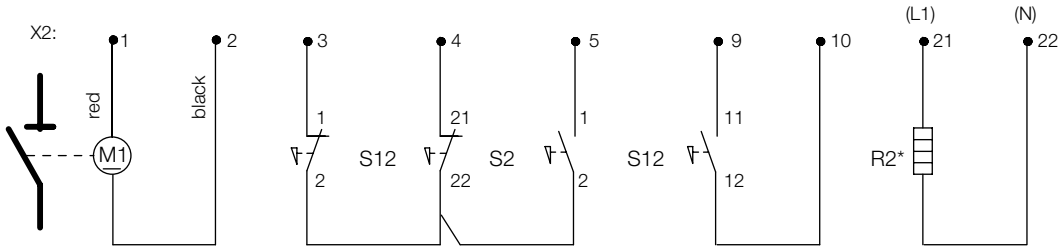
10. Spare parts

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

Spare part	Type	Remarks
Motor + gear wheel	UEZM 5/U*/3	U = Voltage
Motor gear wheel	J403323	
Diode	SK1/16	
Rectifier	RECBR3510	
Limit switch: S1, S2	OYAX13	
Contactor: K1, K2	ABBBC6-30-01/U	U = Voltage
Relay: K3	RFI 40.52.9.048	

11. Circuit diagrams

31 UEMC 79 C UEMC40A1, B1

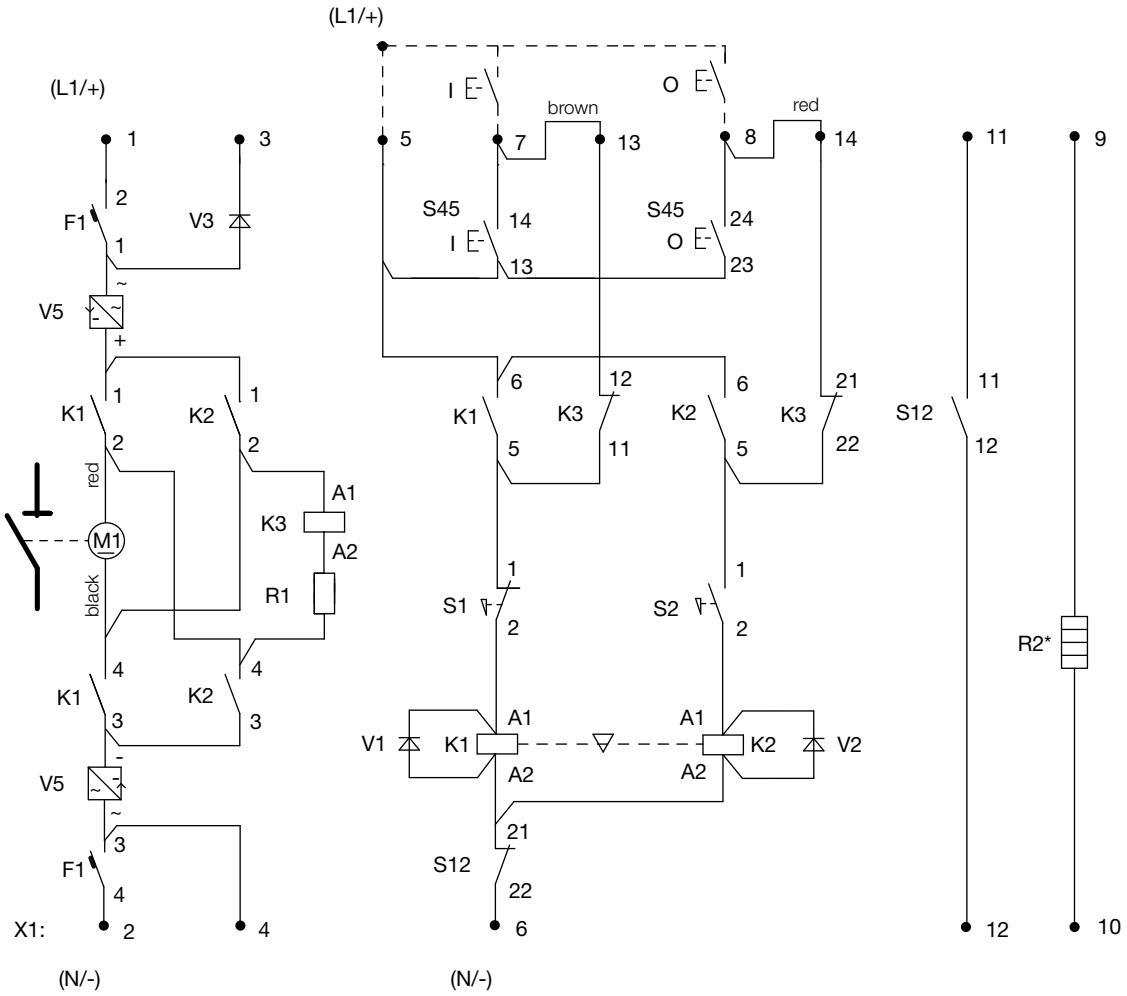


For types : UEMC 40 A1 - 24, 48, 60, 110, 125, 220 V DC
UEMC 40 B1 - 24, 48, 60, 110, 125, 220 V DC

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

* R2 – Heater (to be ordered separately)

1 UEMC 81 L UEMC40A2, B2



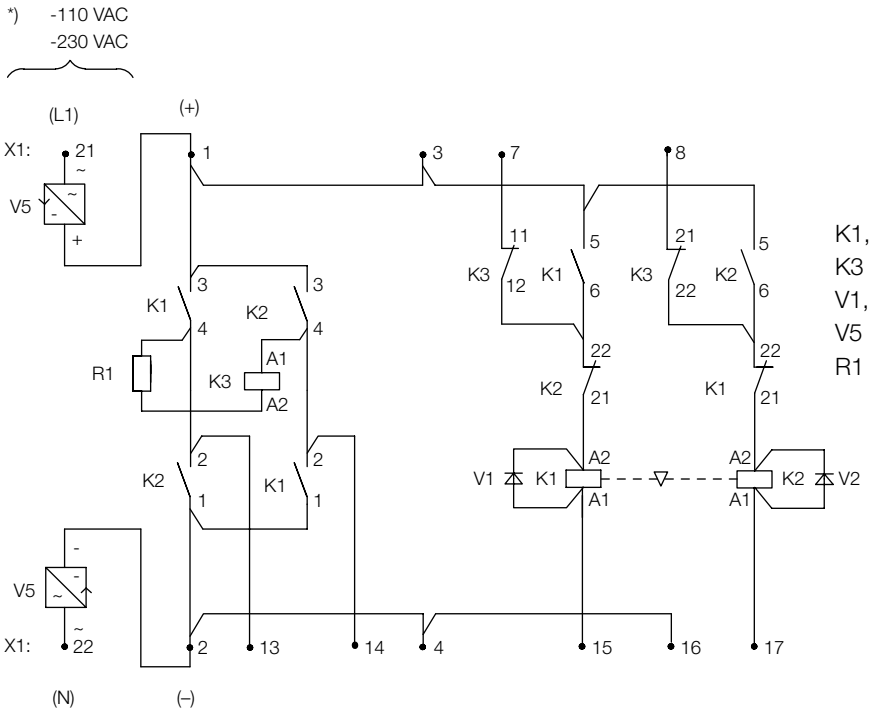
For types : UEMC 40 A2 - 24, 48, 60, 110, 125, 220 V DC; 110, 230 V AC; UU**)
UEMC 40 B2 - 24, 48, 60, 110, 125, 220 V DC; 110, 230 V AC; UU**)

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

Control unit UEZJ 1_
31 UEMC 141 E

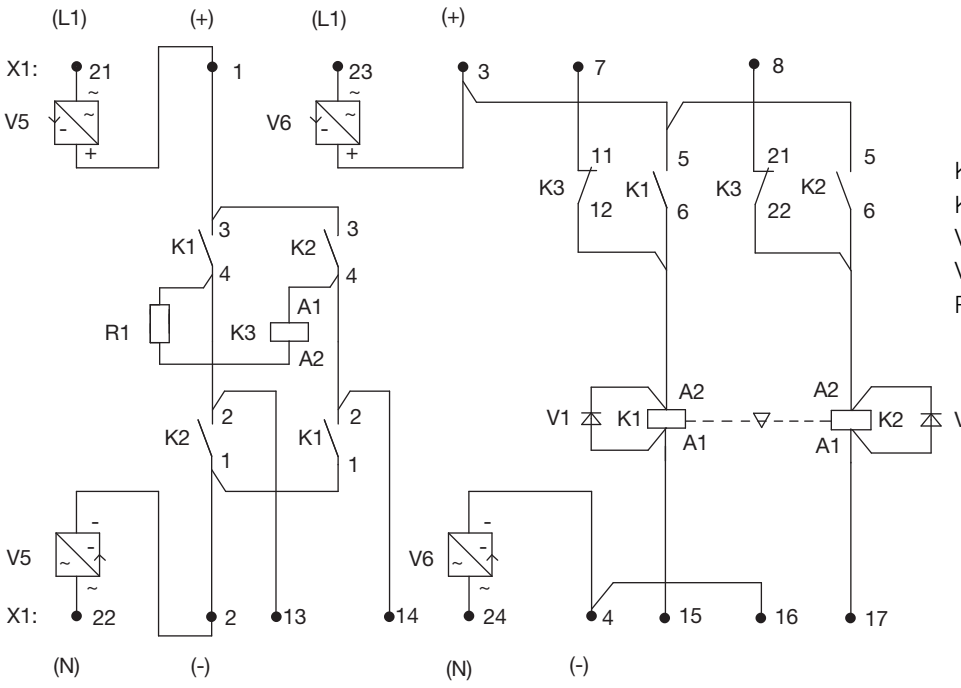
For types: UEZJ 1 - 24, 48, 60, 110, 125, 220 V DC; 110, 230 V AC;



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

31 UEMC 142 D

For types: UEZJ 1_UU Note: DC contactors



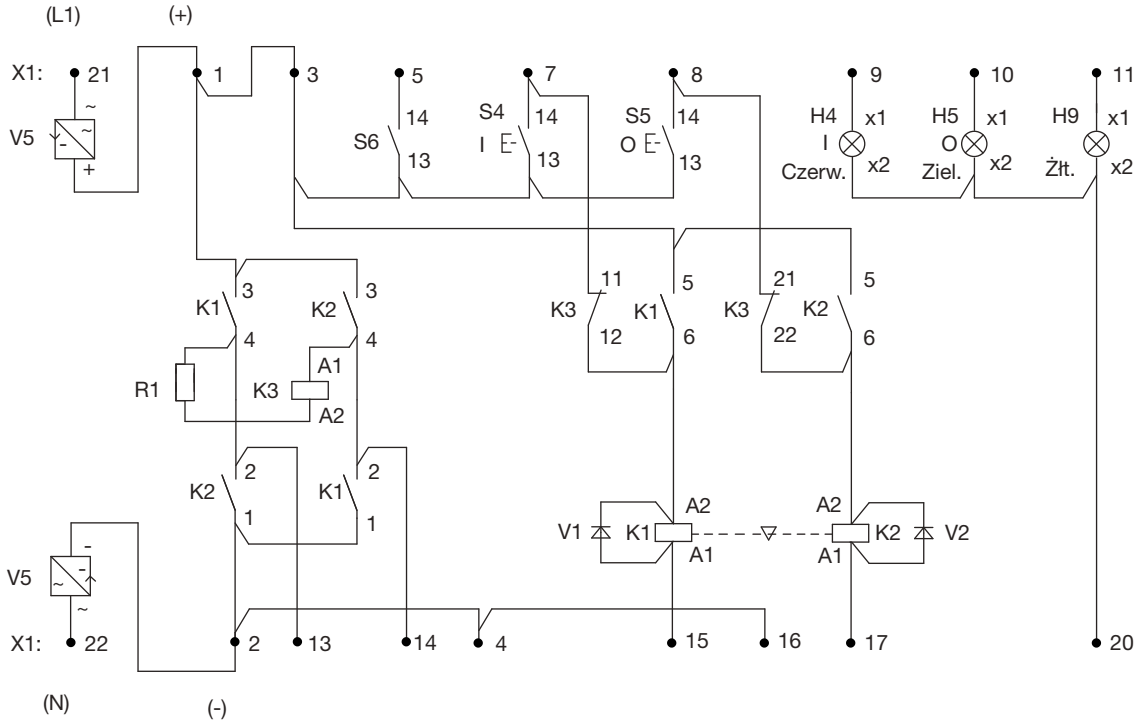
K1, K2 – Operating contactors
K3 – Relay for 48-230 V
V1, V2 – Diodes
V5, V6 – Rectifier only for AC
R1 – Resistor for 110-230 V

Operating box UEZJ 2_

31 UEMC 148 D

*) -110 VAC
-230 VAC

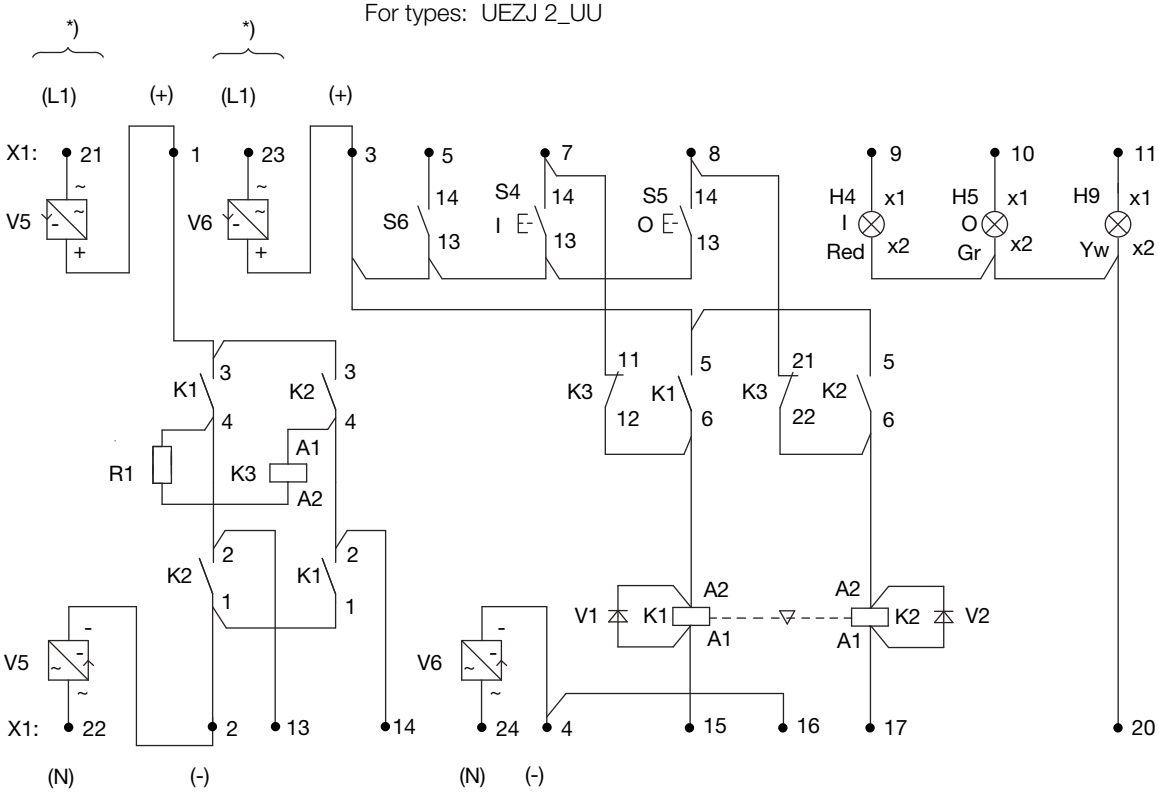
For types: UEZJ 2 - 24, 48, 60, 110, 125, 220 V DC; 110, 230 V AC;



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

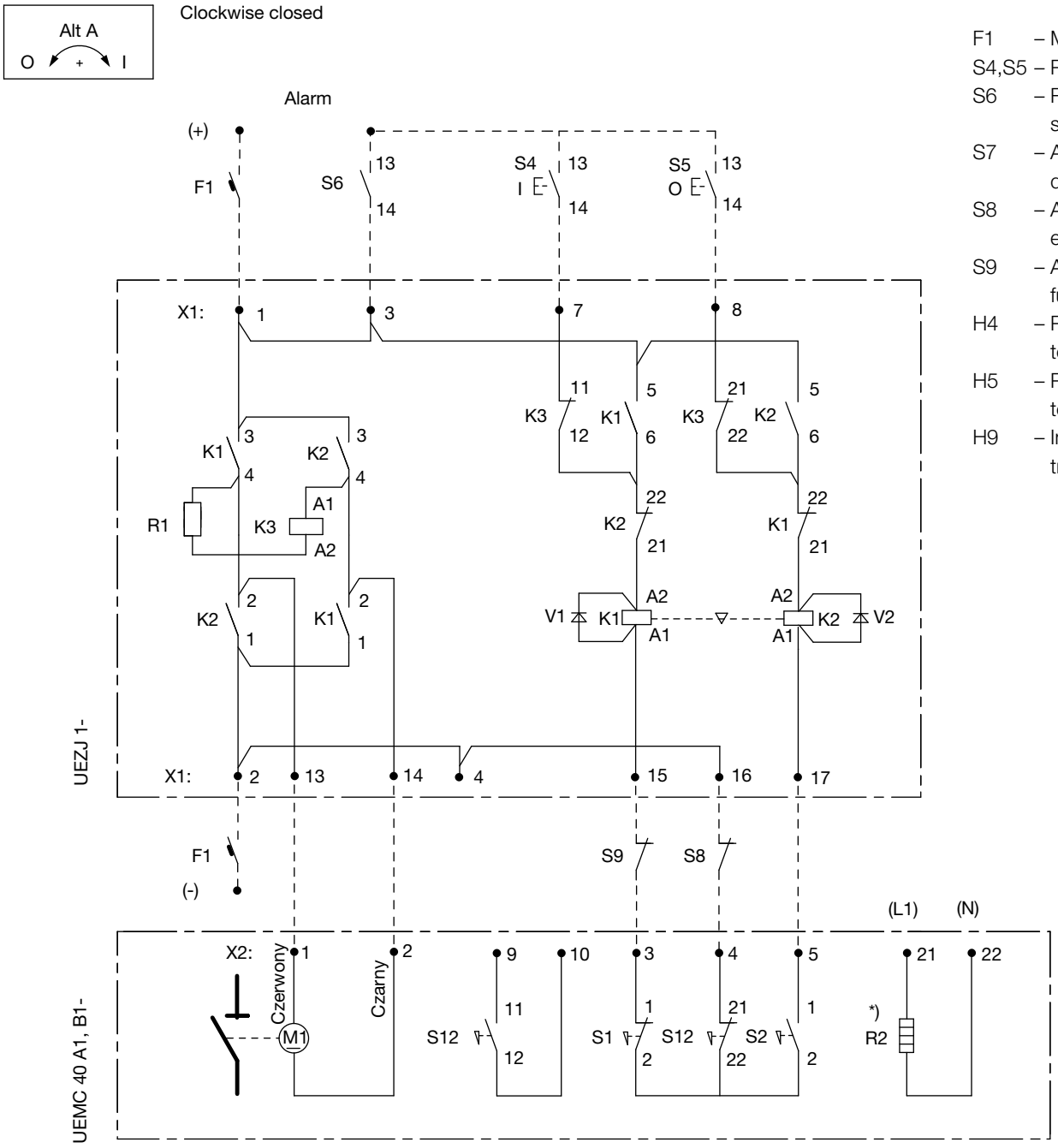
31 UEMC 149 E

For types: UEZJ 2_UU



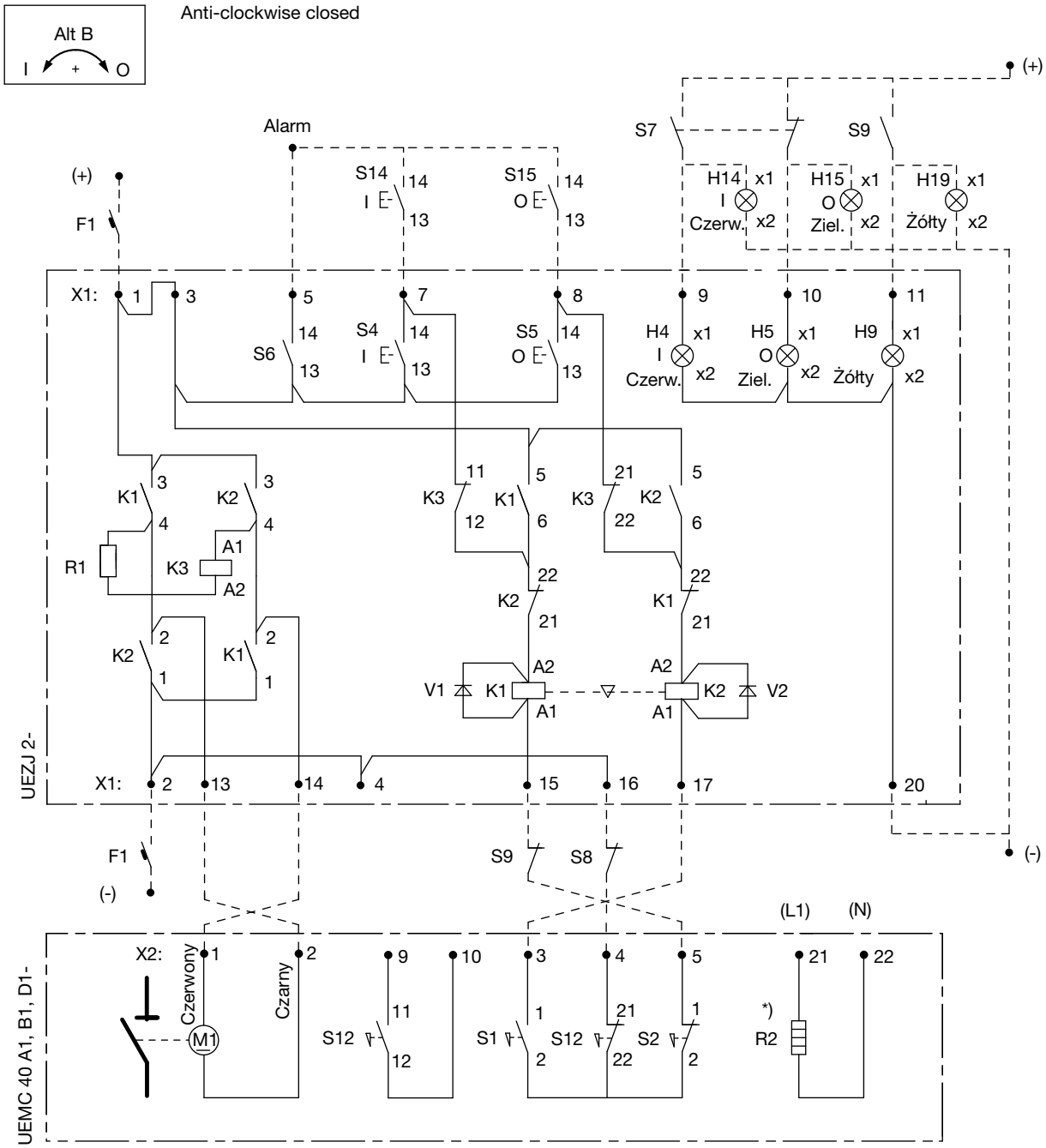
K1, K2 – Operating contactors
S4, S5 – Push buttons
S6 – Remote control selector
K3 – Relay for 48-230 V
R1 – Resistor for 110-230 V
V1, V2 – Diodes
V5, V6 – Rectifier only for AC
H4 – Position indicator, closed, red
H5 – Position indicator, open, green
H9 – Indicator for fuse tripping, yellow

Example of connection for UEMC 40_ ... + UEZJ 1
31 UEMC 156 D



F1 – M.c.b.
S4,S5 – Push buttons
S6 – Remote control selector
S7 – Aux. contact for disconnector
S8 – Aux. contact for earthing switch
S9 – Aux. contact for fuse tripping
H4 – Position indicator, closed, red
H5 – Position indicator, open, green
H9 – Indicator for fuse tripping,yellow

Example of connection for UEMC 40_ ... + UEZJ 2
31 UEMC 161 C



F1	– M.c.b.	S9	– Aux. cont. for fuse tripping
S14,S15	– Push buttons	H14	– Pos. indicator, closed, red
S7	– Aux. cont. for disconnector	H15	– Pos. indicator, open, green
S8	– Aux. cont. for earthing switch	H19	– Ind. for fuse tripping, yellow

NO5 type electromagnetic interlock

1. Features

– effective interlocking a disconnector control devices in off-voltage state,
– easy operation,
– easymounting on disconnector control unit,
– reliable, metal structure,
– metal parts protected by electroplating or made of stainless steel.

2. Applications

The NO5 type electromagnetic interlock for indoor use is designed to interlock NRWO4 disconnector control devices in open or closed state, enabling a correct operating of such control devices in control and interlocking system of indoor switchgears.
The NO5 type interlock, without voltage supply is always locked and its design makes it impossible to take lock back from control lever in a mechanical way without energizing the electromagnet coil.

3. Versions

N05	–	220
Interlock type		**Rated voltage**
		220 V DC
		127 V DC
		125 V DC
		110 V DC
		60 V DC
		48 V DC
		24 V DC

4. Design and operation

The NO5 type electromagnetic interlock consists of two main components.The mechanical part is made of a body closedwith cover.
The spring-operated lock is placed in the body.The lock hole ends with nut, whereas the pull rod ends with ring handle. Pusher controlling a micro-switch, which switches in turn voltage from-terminals to the coil, is located in the upper part of the body.The micro-switch with terminals is placed under protective cover. The electromagnetic part consists of a plunger tightenedwith spring. Electromagnet coil is located in a housing fastened to the base. The base with bearing is mounted in the lower part of the interlock body.
In case of the NRWO4 type apparatus interlock is fixed by means of two M5x50 screws. As a result of the interlock's mounting on the disconnector control, the lock is plunged in the hole of control lever, thus disabling its rotation, which in turn makes it impossible to operate the disconnector control device. As a result of pulling the ring handle with hand the pull rod moves along the lock axis, pushing the pusher upwards.
The action in question switches the micro-switch and supplies at the same time the electromagnet coil. The coil magnetic field draws the plunger out from the lock. Further pulling of ring handle causes that the pull rod pulls
the lock with it, which -in turn- drawing out from the disconnector control lever holemakes it possible to operate the disconnector control (pushing the lever in the limit positions, i.e. to closed and open positions).
Leaving the control lever in intermediate position and releasing the interlock ring holder makes the electromagnet operate continuously till the control lever is pushed to limit position. After pushing control lever in position "open" or "closed" and after releasing

the interlock ring holder all springs of interlock mechanism make interlock return automatically to the original state.
The interlock design disables to operate disconnector control devices in the absence of interlock supply voltage coming from control and interlocking system of a switchgear, thus when the operation of disconnector control device is forbidden.

5. Technical data

See table 1.

6. Standards

The NO5 type electromagnetic interlock meets the requirements of the following standards:
IEC 129 (1984).

7. Placing orders

The order must comprise:
– product full name
– type designation
– rated voltage
– quantity ordered
All additional requirements not taken into account in this document must be agreed with manufacturer in form of an inquiry made in writing with the information about the of the requirements (regulations, standards, etc.).

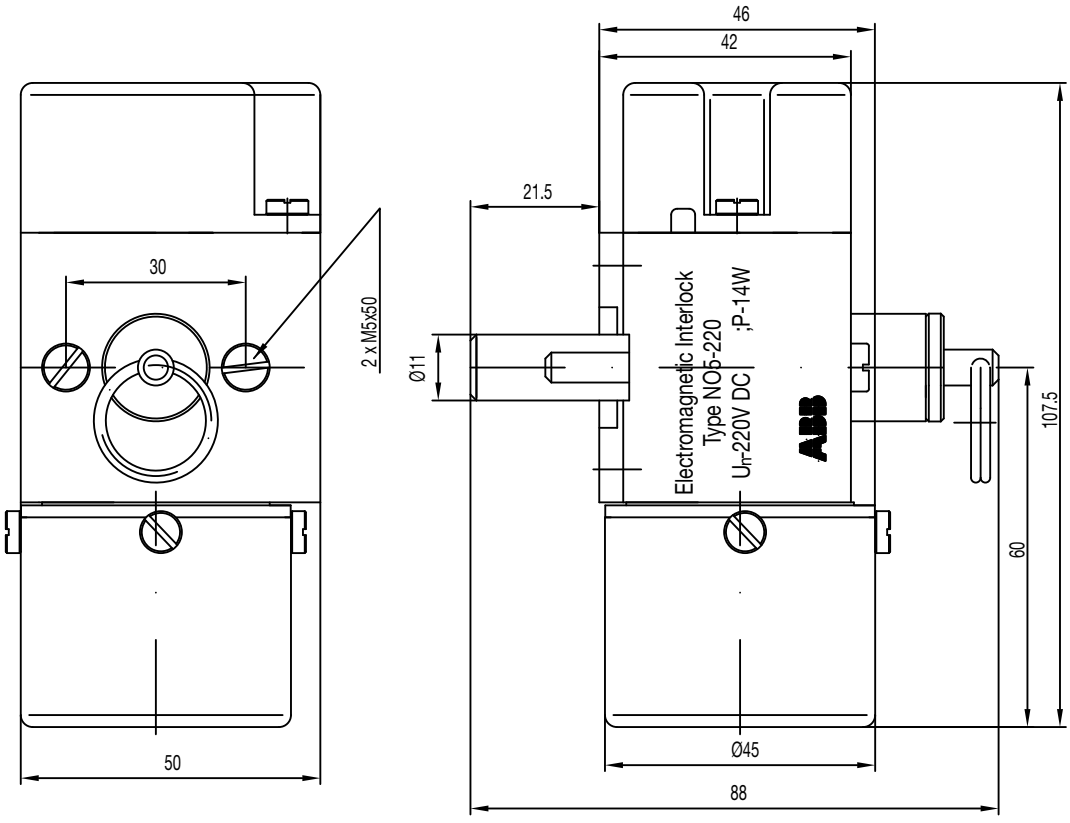
8. Example order

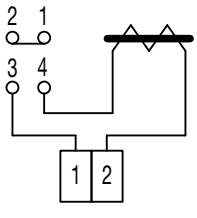
NO5-220 type electromagnetic interlock, rated voltage 220 V DC 10 pcs.

TABLE 1. Technical data of electromagnetic interlocks.

Parameter	Units	Type						
		NO5-220	NO5-127	NO5-125	NO5-110	NO5-60	NO5-48	NO5-24
Coil rated voltage	[V DC]	220	127	125	110	60	48	24
Power consumption	[W]	14	16	16	14	16	16	15
Coil test voltage AC	[kV]	2						
Micro-switch test voltage AC	[kV]	2						
Lock operating travel Ø 11 mm	[mm]	11						
Pull rod travel to coupling with lock	[mm]	4						
Weight	[kg]	1						

Overall dimensions





Circuit diagram

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