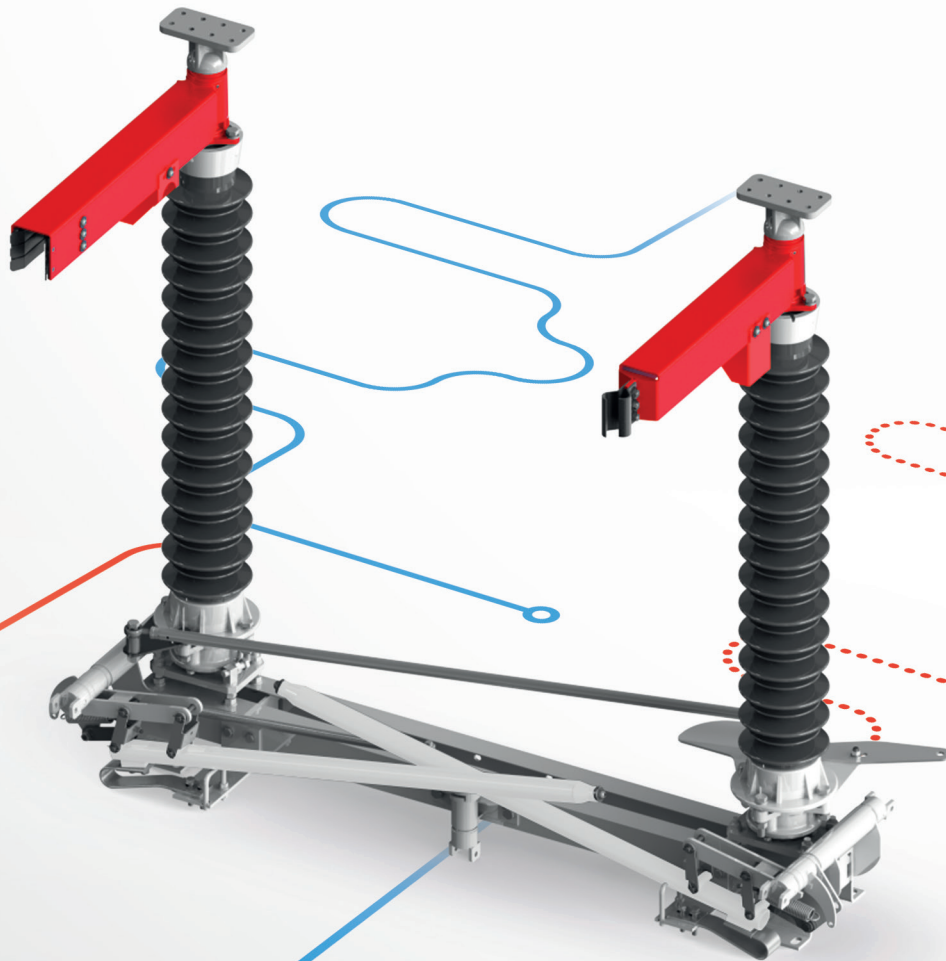
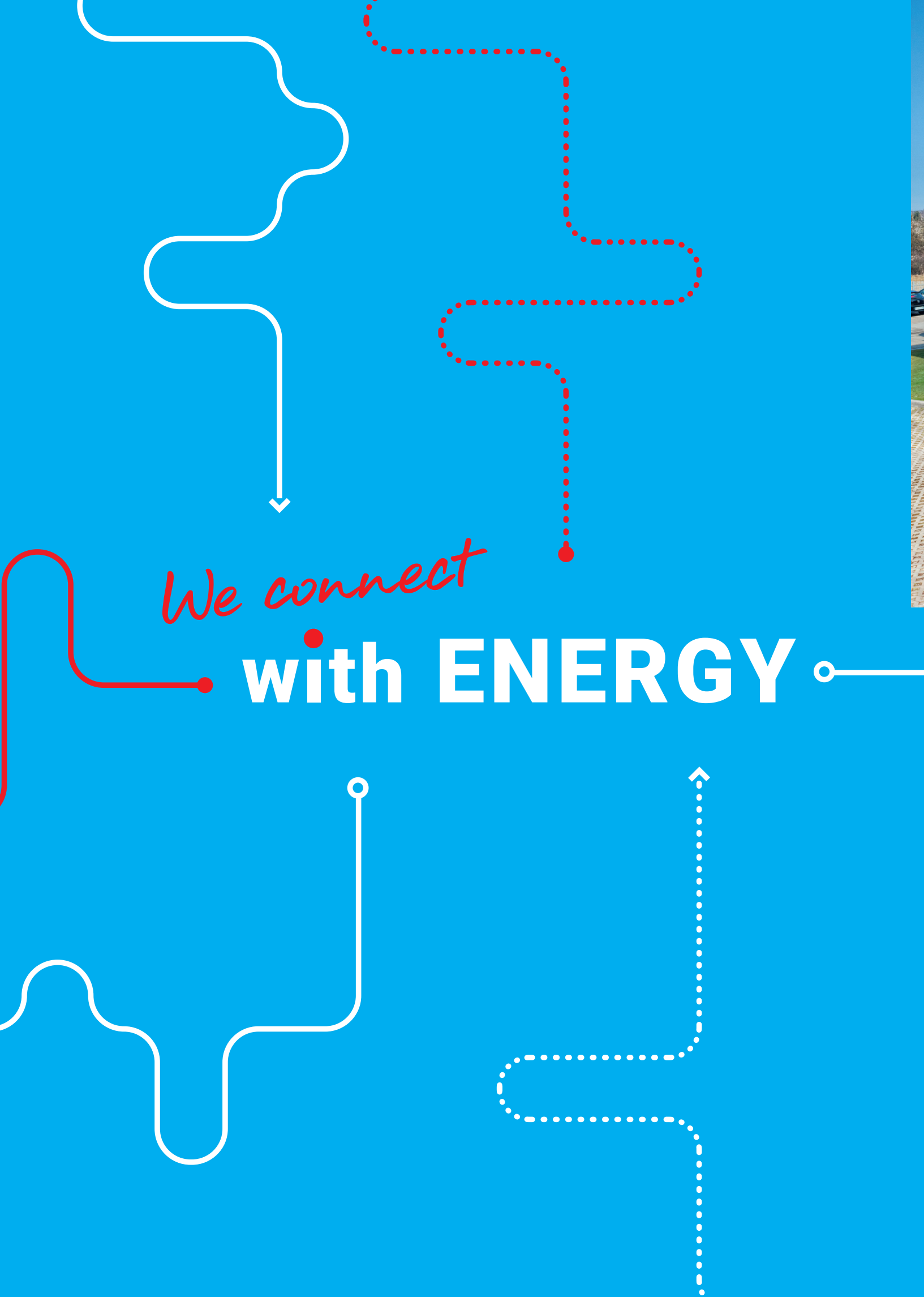


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with ENERGY



**PRODUCT
CATALOGUE**

The background is a solid bright blue. It features several abstract line drawings. A solid white line starts at the top left, curves down, and ends in an arrowhead pointing towards the center. A dotted red line starts at the top center, curves right, then down, then left, and ends in a solid red dot. A solid red line starts on the left edge, curves up, then right, and ends in a solid red dot. A solid white line starts at the bottom left, curves up, then right, and ends in an open circle. A dotted white line starts at the bottom right, curves left, then up, and ends in an arrowhead pointing towards the top. In the top right corner, there is a small, vertical rectangular inset showing a photograph of a dark-colored car parked on a paved surface next to a grassy area.

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Zakład Wytwórczy Aparatów Elektrycznych



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MV Outdoor Switchgear

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01

HV SWITCHGEAR

Outdoor HV disconnectors

MARK40

TFP

ONIII

Outdoor HV earthing switches

UNIII/G60

HV switchgear operating mechanisms

NS080

NR-5

WARNING: As a result of the possibility of changes due to technological development, the diagrams in the catalogue have only a visual character.

MARK40

Vertical disconnecter 123, 145, 245 and 420 kV



CHARACTERISTICS

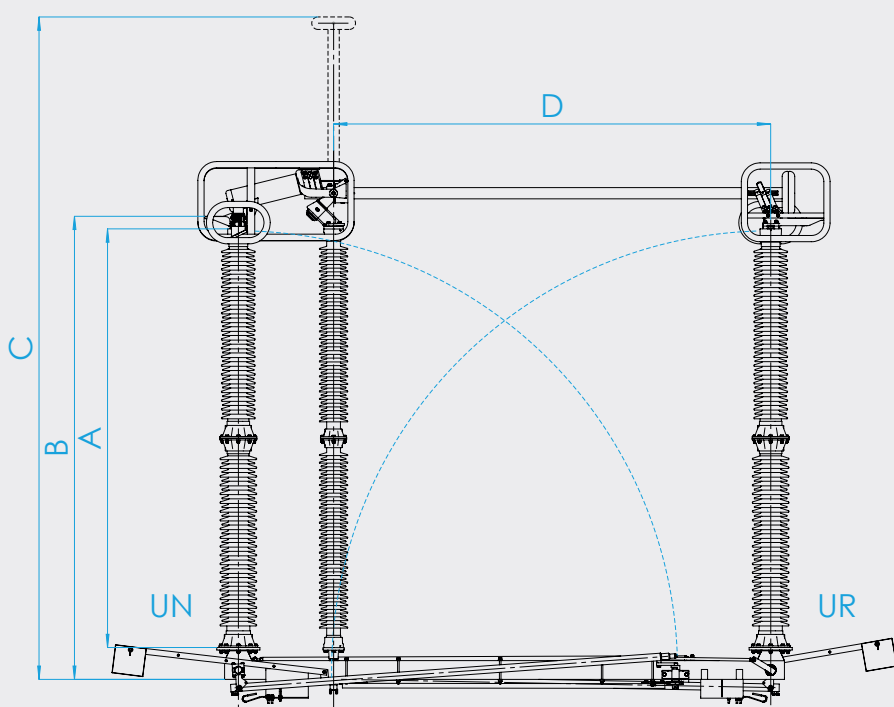
- High peak and short-circuit parameters 160/63kA
- Very good conduction and endurance during whole exploitation period
- Fast icing removing (20 mm) at the end phase of closing disconnecter
- High durability against forces, e.x. seismic, short-circuit without negative influence on operating mechanisms thanks to 'dead point' solution (crank mechanism)
- High short-circuit parameters of G60 earthing switch
- Excellent anti-corrosion protection
- Reliability of working in hard weather conditions
- Simple adjustment

SPECIFICATION

Item	Parameter	Value			
1.	Rated operating voltage	123 [kV]	145 [kV]	245 [kV]	420 [kV]
2.	Rated continuous current	2500 [A] 3150 [A] 4000 [A]	2500 [A] 3150 [A] 4000 [A]	2500 [A] 3150 [A] 4000 [A]	2500 [A] 3150 [A] 4000 [A]
3.	Peak current	125/160 [kA]	125/160 [kA]	125/160 [kA]	125/160 [kA]
4.	Short-circuit current, 1 sec.	50/63 [kA]	50/63 [kA]	50/63 [kA]	50/63 [kA]
5.	Test voltage (50Hz): - earth and pole to pole insulation - contact to contact insulation	230 [kV] 265 [kV]	275 [kV] 315 [kV]	460 [kV] 530 [kV]	520 [kV] 610 [kV]
6.	Surge test voltage: - earth and pole to pole insulation - contact to contact insulation	550 [kV] 630 [kV]	650 [kV] 750 [kV]	1050 [kV] 1200 [kV]	1425 [kV] 1425 (+240)* [kV]
7.	Operational rated surge test voltage: - earth insulation - contact to contact insulation	- -	- -	- -	1050 [kV] 900 (+345)* [kV]
8.	Radio interference voltage	<2500 [uV]	<2500 [uV]	<2500 [uV]	<2500 [uV]
9.	Mechanical strength	2000 cycles	2000 cycles	2000 cycles	2000 cycles
10.	Motor operating mechanism	NSO80	NSO80	NSO80	NSO80

* The values in brackets indicate the peak AC voltage applied to the opposite terminal.

DRAWING



Rated operating voltage [kV]	Dimensions [mm]			
	A	B	C	D
123	1220	1506	3330	1450
145	1500	1786	3860	1700
245	2300	2656	5680	2648
420	3350	3706	7580	3498

TFP

Pantograph disconnector 123, 145, 170, 245 and 420 kV



CHARACTERISTICS

- High peak and short-circuit parameters 160/63kA
- Minimalization of distance between poles in diagonal arrangement
- High durability against forces, e.x. seismic, short-circuit without negative influence on operating mechanisms thanks to 'dead point' solution (crank mechanism)
- Available with arcing contact
- Many variants of engaging with busbars system
- Gear mechanism of the current path closed in aluminum housing box
- Excellent anti-corrosion protection
- Reliability of working in hard weather conditions
- One operating mechanism for three-pole apparatus up to 145kV, above 145kV separate operating mechanism for each pole
- Cooperating with Swiss company PFIFFNER Group

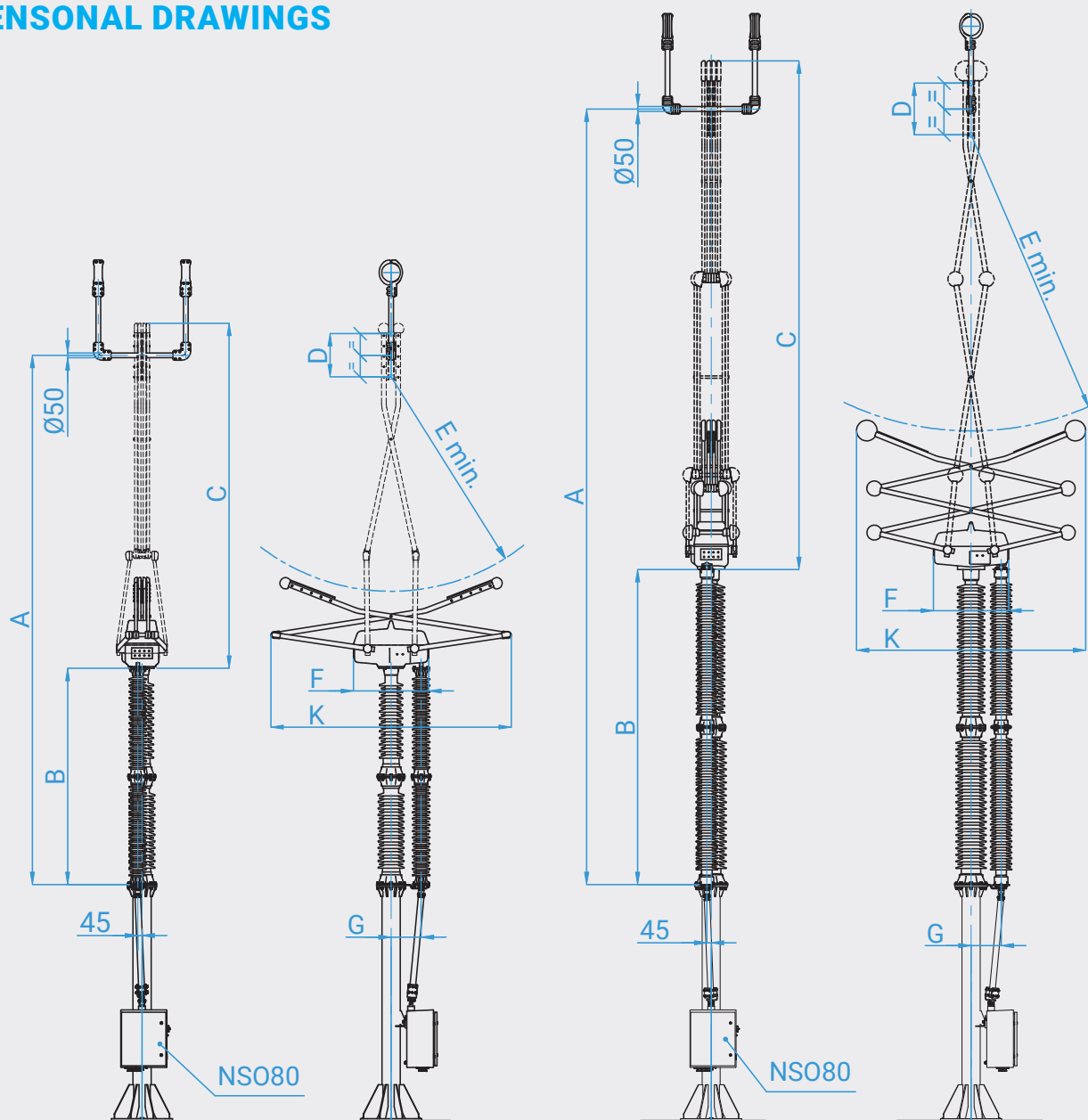


SPECIFICATION

Item	Parameter	Value				
1.	Rated operating value	123 [kV]	145 [kV]	170 [kV]	245 [kV]	420 [kV]
2.	Rated continuous current	2200 [A] 2500 [A] 3150 [A]	2200 [A] 2500 [A] 3150 [A]	2200 [A] 2500 [A] 3150 [A]	2500 [A] 3150 [A] 4000 [A]	3150 [A] 4000 [A]
3.	Peak current	100 [kA]	100 [kA]	100/125 [kA]	125/160 [kA]	125/160 [kA]
4.	Short-circuit current	40 [kA]	40 [kA]	40/50 [kA]	50/63 [kA]	50/63 [kA]
5.	Test voltage(50Hz): - earth and pole to pole insulation - contact to contact insulation	230 [kV] 265 [kV]	275 [kV] 315 [kV]	325 [kV] 375 [kV]	460 [kV] 530 [kV]	520 [kV] 610 [kV]
6.	Surge test voltage: - earth and pole to pole insulation - contact to contact insulation	550 [kV] 630 [kV]	650 [kV] 750 [kV]	750 [kV] 860 [kV]	1050 [kV] 1200 [kV]	1425 [kV] 1425(+240)* [kV]
7.	Rated switching impulse withstand voltage of the insulation: - earth - contact to contact insulation	- -	- -	- -	- -	1050 [kV] 900(+345)* [kV]
8.	Motor operating mechanism	NS080	NS080	NS080	NS080	NS080

* The values in brackets indicate the peak AC voltage applied to the opposite terminal.

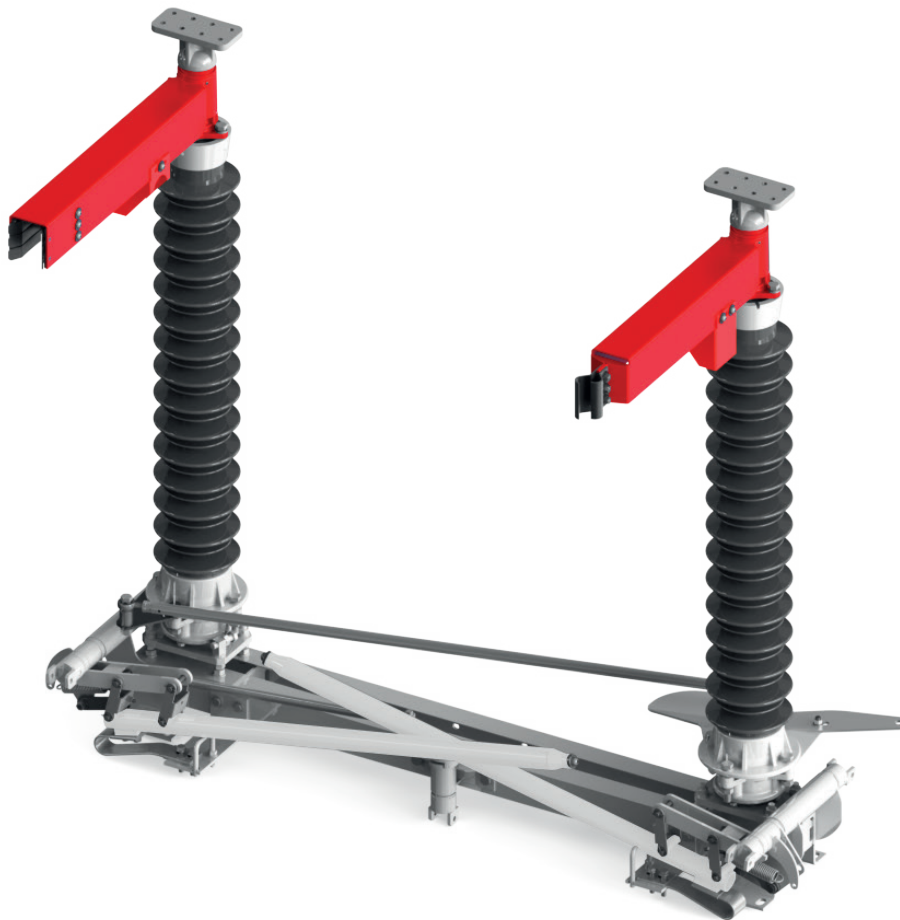
DIMENSIONAL DRAWINGS



Type	Rated Voltage [kV]	Fig.	Dimensions [mm]							
			A	B	C	D	E	F	G	K
TFPK	123	1	2890	1220	1800	300	1150	630	260	1250
TFPK	145	1	3590	1500	2403	300	1465	630	260	1672
TFPK	170	1	3982	1700	2574	300	1570	630	260	1810
TFPA	170	1	4390	1700	2915	300	1630	800	320	2145
TFPA	245	1	5630	2300	3625	460	2280	800	320	2540
TFP	245	2	6265	2300	4410	460	2350	800	320	1740
TFP	420	2	8260	3350	5412	550	3150	800	320	2349

ONIII

Horizontal centre-break disconnectors
72,5, 123, 145, 172, 245 and 363 kV



CHARACTERISTICS

- High peak and short-circuit parameters 125/50kA
- 72,5 kV, 123kV and 145kV versions available with composite insulators inside silicone cover
- High durability against forces, e.x. seismic, short-circuit without negative influence on operating mechanisms thanks to 'dead point' solution (crank mechanism)
- Versions up to 172kV are delivered completely assembled and adjusted
- Indefective working in hard weather conditions
- Possibility of engaging operating mechanisms with any pole
- Available variants in arrangements: parallel, serial, tandem
- Simple assembling and engaging of disconnector/earthing switch with operating mechanism
- Possibility of assembling apparatus on site according to the client's requirement

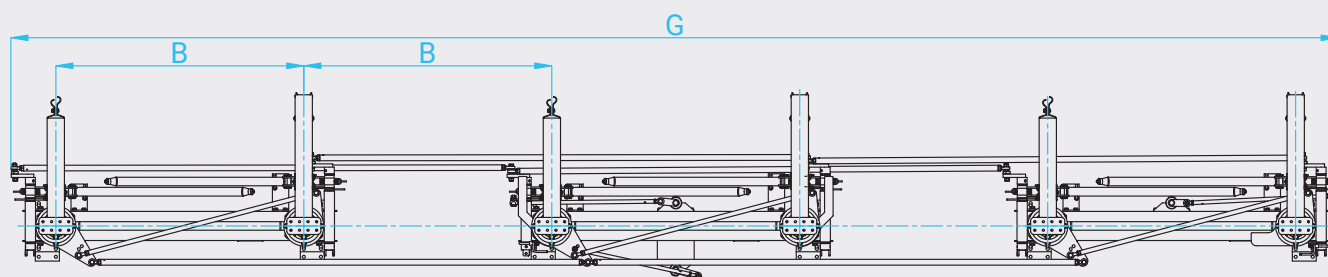
SPECIFICATION

Item	Parameter	Value					
1.	Rated operating value	72,5 [kV]	123 [kV]	145 [kV]	172 [kV]	245 [kV]	363 [kV]
2.	Rated continuous current	1600 [A] 2500 [A] 3150 [A] 4000 [A]	1600 [A] 2500 [A] 3150 [A] 4000 [A]	1600 [A] 2500 [A] 3150 [A] 4000 [A]	1600 [A] 2500 [A] 3150 [A] 4000 [A]	1600 [A] 2500 [A] 3150 [A] 4000 [A]	1600 [A] 2500 [A] 3150 [A] 4000 [A]
3.	Peak current	80 [kA] 100 [kA] 125[kA]	80 [kA] 100 [kA] 125[kA]	125 [kA]	125 [kA]	125 [kA]	125 [kA]
4.	Short-circuit current	1 sec.	40 [kA] 50 [kA]	40 [kA] 50 [kA]	50 [kA]	50 [kA]	50 [kA]
		3 sec.	31,5 [kA] 50 [kA]	31,5 [kA] 50 [kA]	50 [kA]	50 [kA]	50 [kA]
5.	Test voltage(50Hz): - earth and pole to pole insulation - contact to contact insulation	140 [kV] 160 [kV]	230 [kV] 265 [kV]	275 [kV] 315 [kV]	275 [kV] 315 [kV]	460 [kV] 530 [kV]	560 [kV] 750 [kV]
6.	Surge test voltage: - earth and pole to pole insulation - contact to contact insulation	325 [kV] 375 [kV]	550 [kV] 630 [kV]	650 [kV] 750 [kV]	650 [kV] 750 [kV]	1050 [kV] 1200 [kV]	1175 [kV] 1175 (+205)* [kV]
7.	Rated switching impulse withstand voltage of the insulation: - earth - contact to contact insulation	- -	- -	- -	- -	- -	950 kV 900(+345)* [kV]
8.	Radio interference voltage	-	-	-	-	<2500 [uV]	<2500 [uV]
9.	Mechanical strength	2000 C-O	2000 C-O	2000 C-O	2000 C-O	2000 C-O	2000 C-O
10.	Operating mechanisms: - motor - manual	NSO80 NR-5	NSO80 NR-5	NSO80 NR-5	NSO80 NR-5	NSO80 NR-5	NSO80 NR-5

* The values in brackets indicate the peak AC voltage applied to the opposite terminal.

DIMENSIONAL DRAWINGS

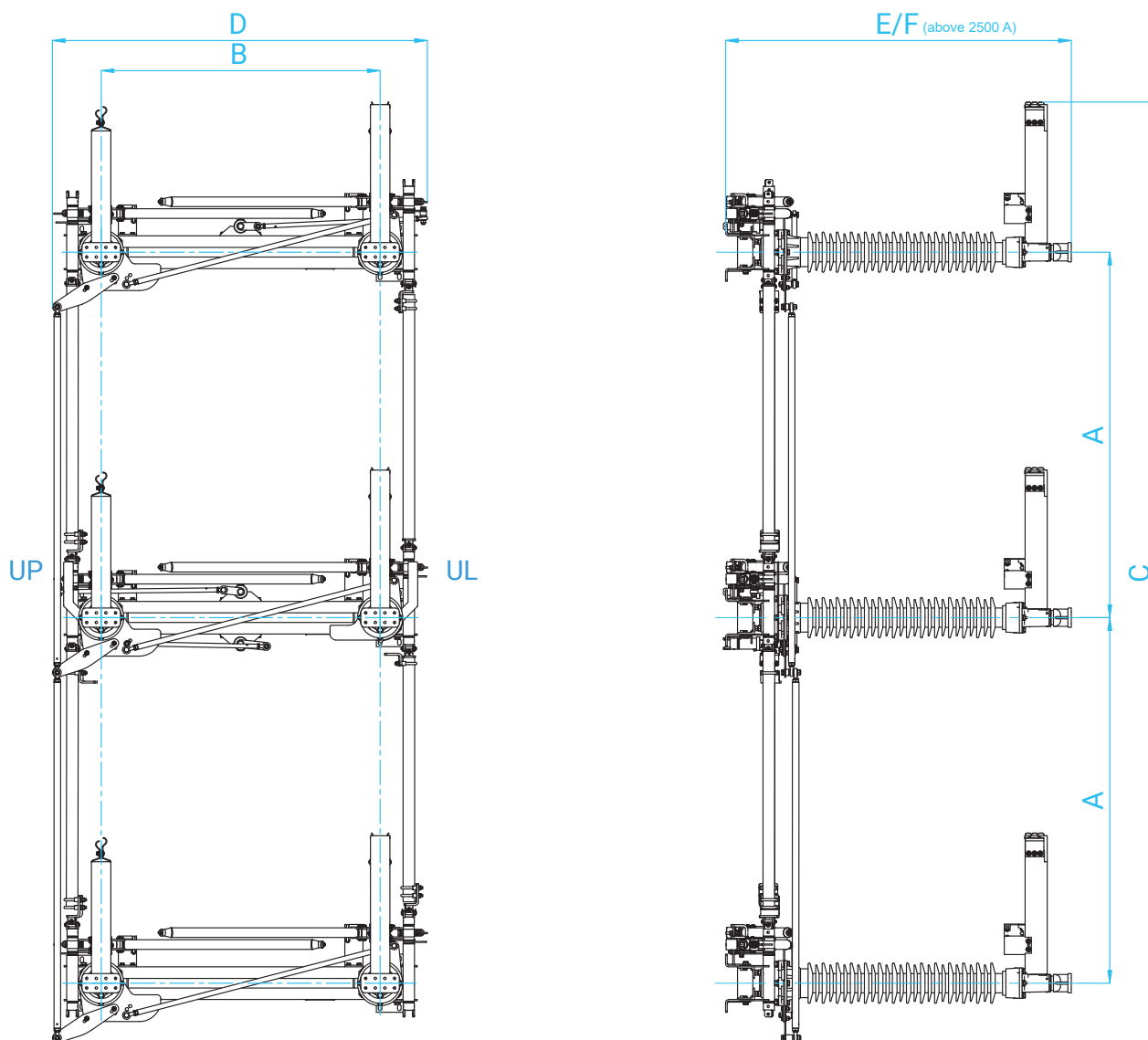
Serial arrangement (U2)



Type	Dimensions [mm]	
	B	G
ONIII-72	900	5010
ONIII-123	1450	7760
ONIII-145	1600	8510
ONIII-172	1600	8510
ONIII-245	2295	12200

DIMENSIONAL DRAWINGS

Parallel arrangement (U2)



Rated operating voltage [kV]	Dimensions [mm]					
	A	B	C	D	E	F
ONIII-72	1300	900	3407	1400	1366	1431
ONIII-123	1900	1450	4890	1950	1797	1862
ONIII-145	2100	1600	5371	2100	2084	2149
ONIII-172	2500	1600	6171	2100	2084	2149
ONIII-245	3500	2295	8620	3000	3019	3083
ONIII-363	5000	3420	12290	4134	3681	3683

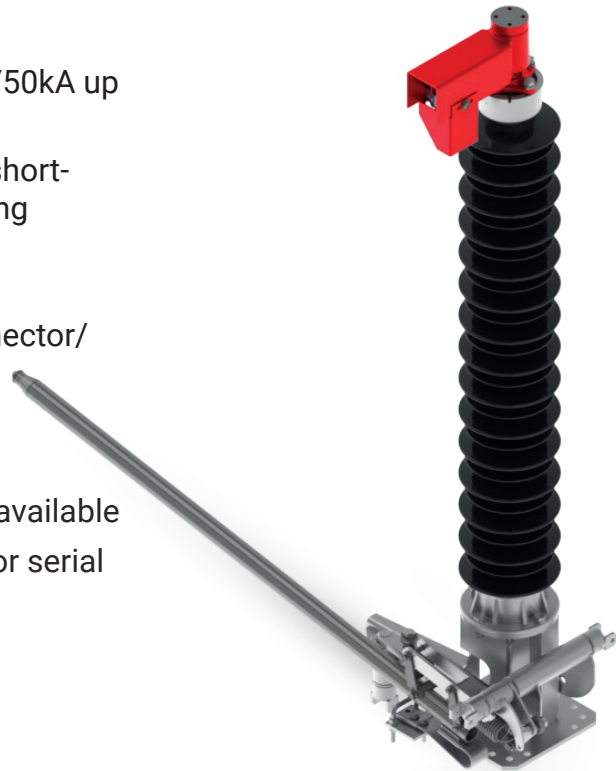


UNIII/G60

Earthing switch
72,5, 123, 145, 172, 245 and 420 kV

CHARACTERISTICS

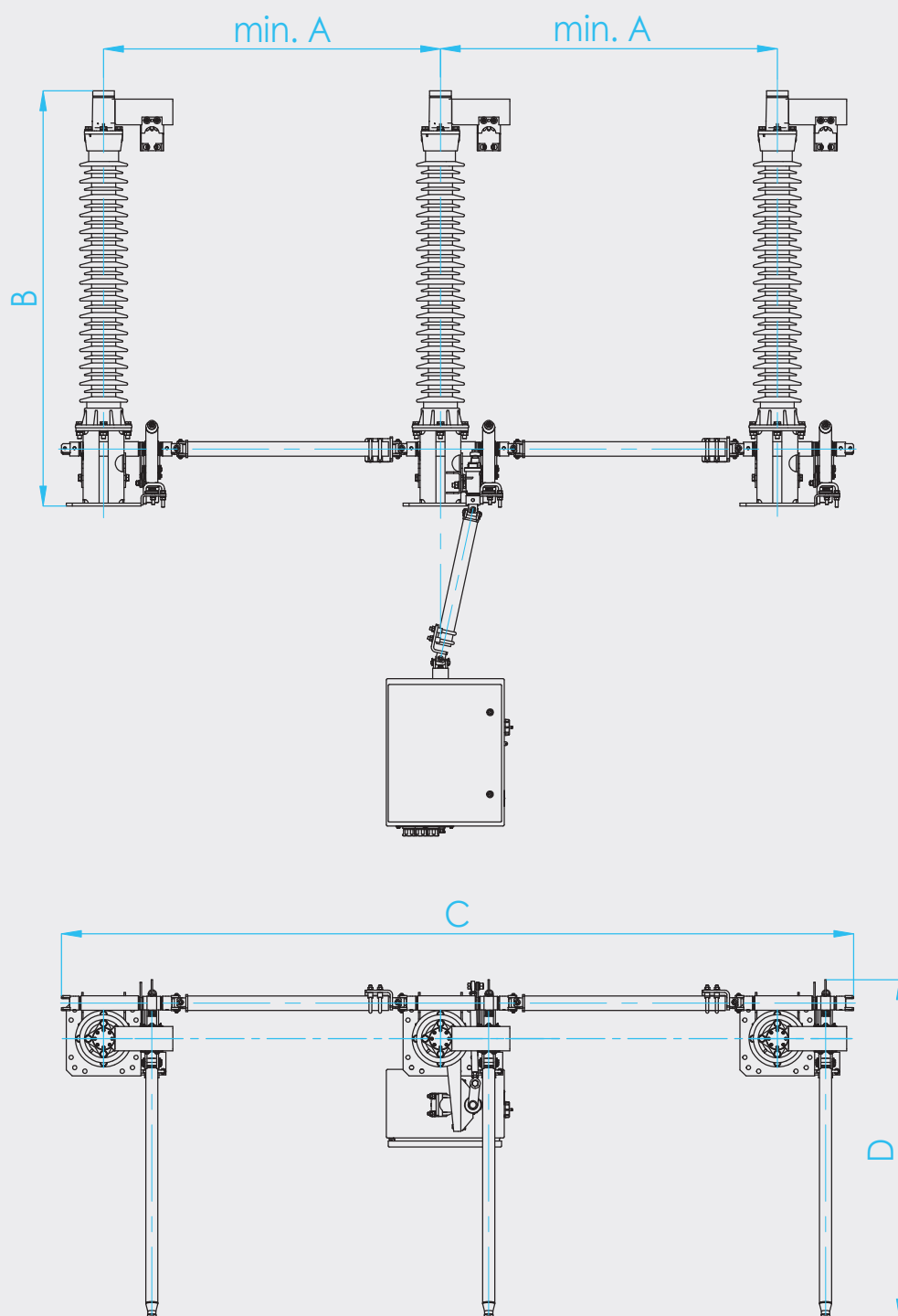
- High peak and short-circuit parameters 125/50kA up to and including 'tulip contact'
- High durability against forces, e.x. seismic, short-circuit without negative influence on operating mechanisms thanks to 'dead point' solution (crank mechanism)
- Simple assembling and engaging of disconnecter/ earthing switch with operating mechanism
- Three-pole version for aggregate busbar system available
- One-pole version for transformer zero-point available
- Available variants in arrangements: parallel or serial
- Possibility of assembling apparatus on site according to the client's requirement



SPECIFICATION

Item	Parameter	Value					
1.	Rated operating voltage	72,5 [kV]	123 [kV]	145 [kV]	172 [kV]	245 [kV]	420 [kV]
2.	Peak current	125[kA]	√125[kA]	125 [kA]	125 [kA]	125 [kA]	125/160 [kA]
3.	Short-circuit current, 1 sec.	50 [kA]	50 [kA]	50 [kA]	50 [kA]	50 [kA]	50/63 [kA]
4.	Test voltage (50 Hz) for insulation	140 [kV]	230 [kV]	275 [kV]	275 [kV]	460 [kV]	520 [kV]
5.	Surge test voltage for insulation	325 [kV]	550 [kV]	650 [kV]	650 [kV]	1050 [kV]	1425 [kV]
6.	Operational rated surge test voltage	-	-	-	-	-	1050 [kV]
7.	Radio interference voltage	-	-	-	-	<2500 [uV]	<2500 [uV]
8.	Mechanical strength	2000 cycles	2000 cycles	2000 cycles	2000 cycles	2000 cycles	2000 cycles
9.	Operating mechanisms: - motor - manual	NS080 NR-5	NS080 NR-5	NS080 NR-5	NS080 NR-5	NS080 NR-5	NS080

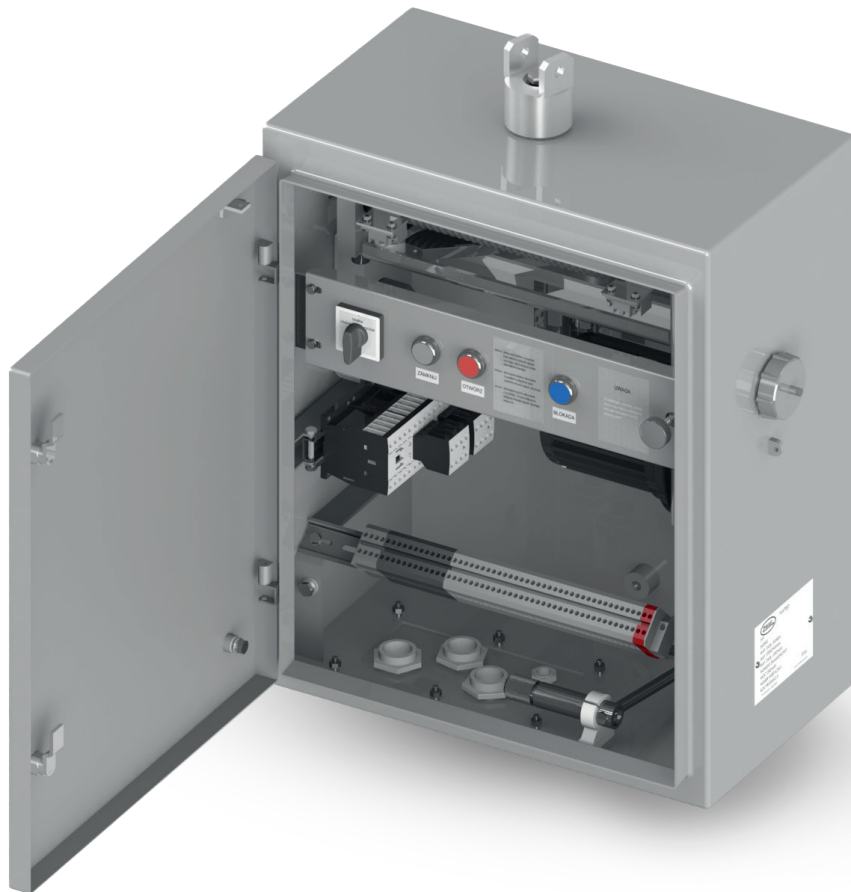
DRAWING



Type	Dimensions [mm]			
	A	B	C	D
UNIII-72	1100	1275	2692	965
UNIII-123	1370	1725	3232	1400
UNIII-145	1530	2005	3552	1660
UNIII-172	1530	2005	3552	1660
UNIII-245	2500	2860	5494	2535
G60-420	4500	4108	9815	4520

NS080

Motor operating mechanism



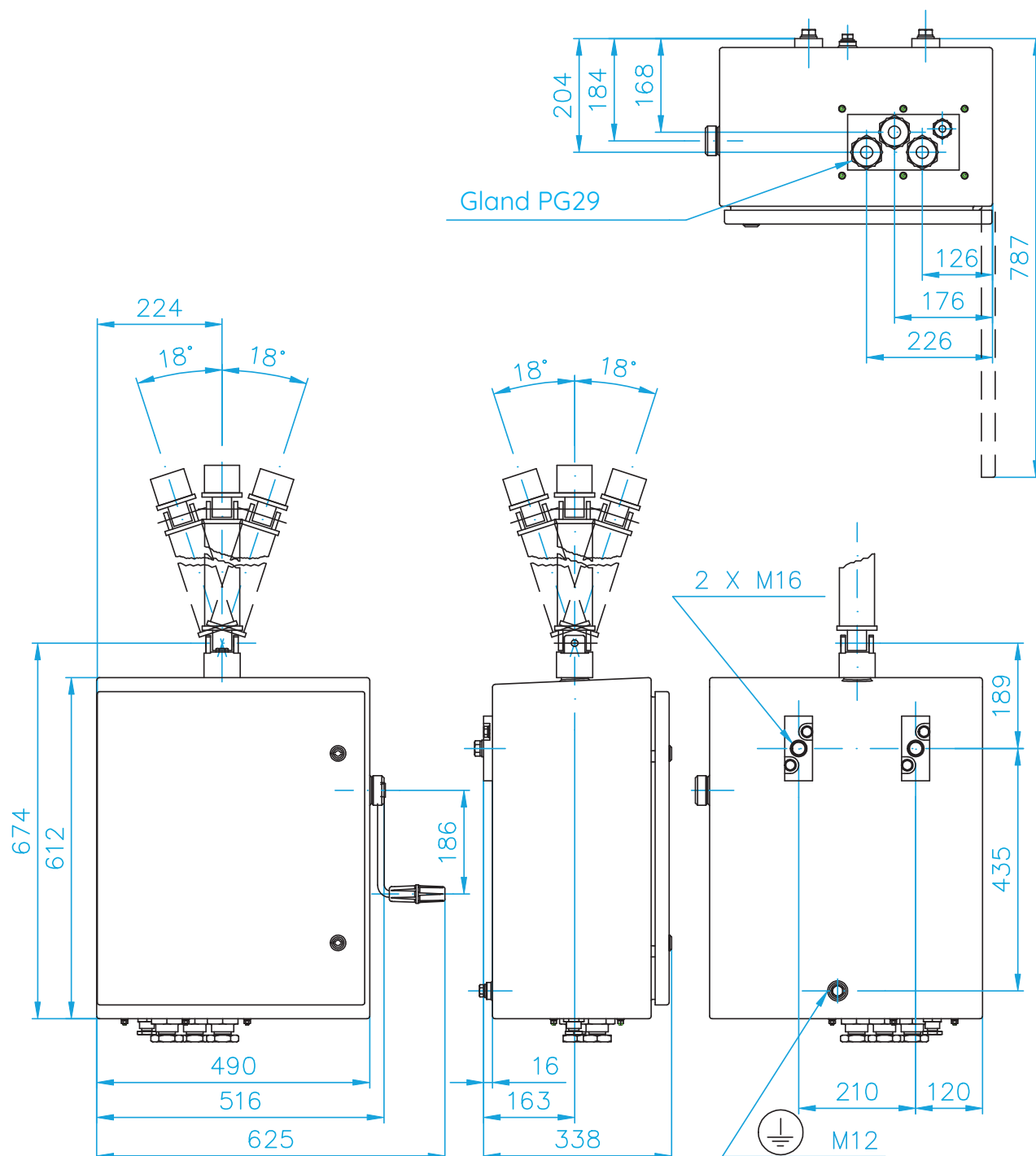
CHARACTERISTICS

- Excellent anti-corrosion protection of the housing box
- Capability of being powered by three-phase AC, single-phase AC, and DC
- Parabolic characteristic of the torque available in the limit positions required during closing/opening of the apparatus
- Capability of interoperation with disconnectors from other manufacturers.

SPECIFICATION

Item	Parameter	Value
1.	Rated voltage/rated current - squirrel cage motor - series motor	3x 400 [VAC] / 4,5 [A] 3x 230/400 [VAC] / 4,5 [A] 220 VDC / 4 [A] 110 VDC / 10 [A]
	- phase control relay - contactor coil of motor supply voltage control (depending on motor rated voltage)	3x400 [VAC] 400 [VAC] 230 [VAC] 220 [VDC] 110 [VDC]
	- contactor coil	230 [VAC] 220 [VDC] 110 [VDC] 110 [VAC]
	- heater	230 [VAC] 220 [VDC] 110 [VDC]
	- electromagnetic lock	230 [VAC] 220 [VDC] 110 [VDC]
2.	Rated power: - squirrel cage motor - series motor - contactor coil - heater - electromagnetic lock coil	750 [W] 500 [W] 7 [W] 25 [W] 7 [W]
3.	Shaft torque: - rated - maximum	300/500/1000 [Nm] 500/800/1600 [Nm]
4.	HV switching time	7/11/16 [s]
5.	Crank handle speed	ok. 100
6.	Main shaft angular displacement	90/125/192 [°]
7.	Rated switching capability of control switch	AC - 15; 230 [V], 2,5 [A] DC - 13; 220 [V], 0,25 [A]
8.	Maximum conductor cross section	4 [mm ²]
9.	Enclosure protection rating	IP 55
10.	Rated mechanical strength	2000 cycles

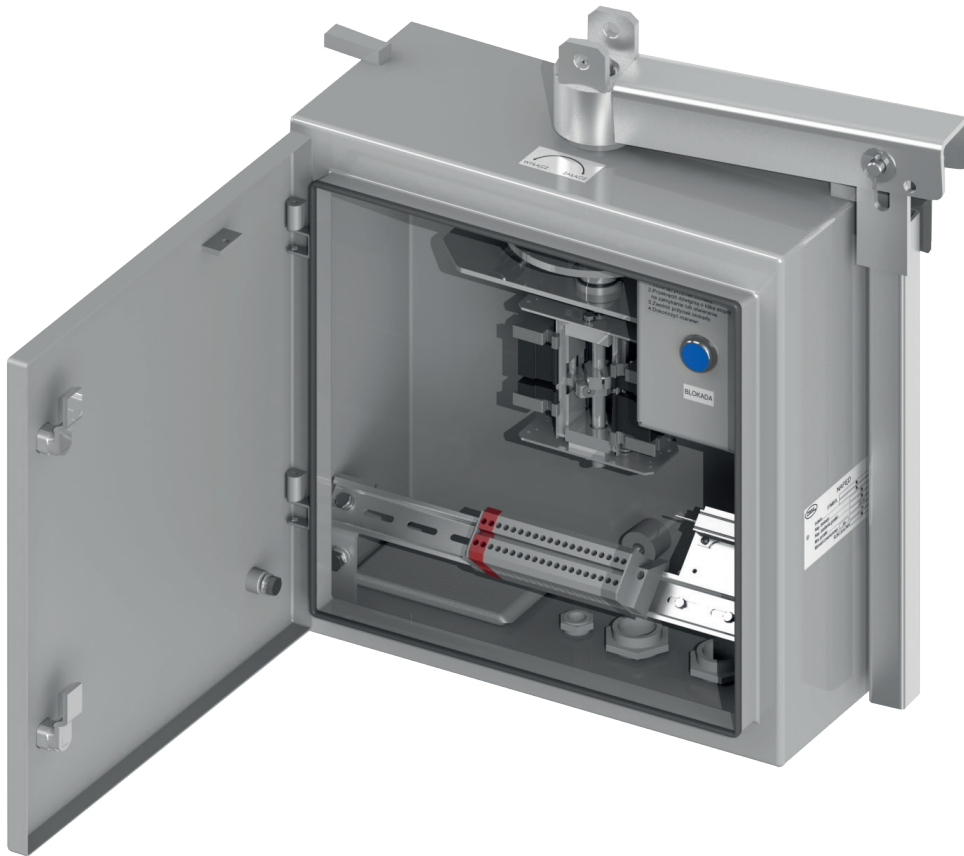
DRAWING





NR-5

Manual operating mechanism



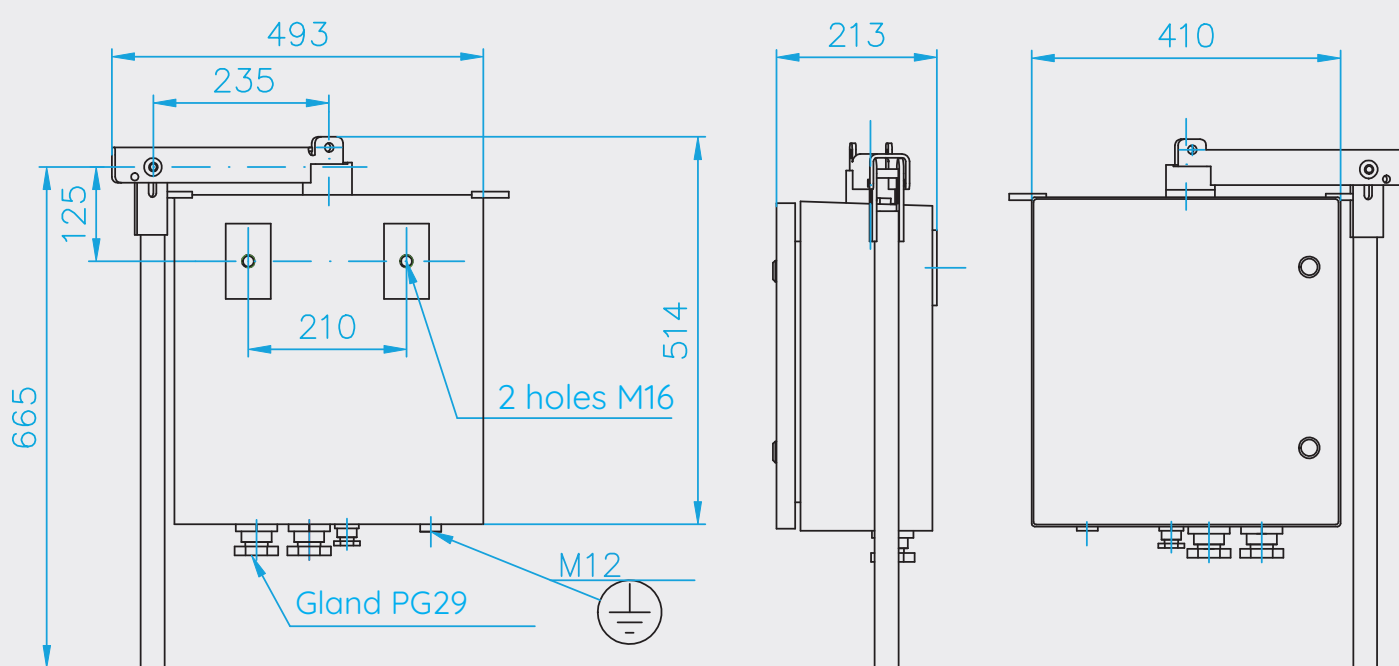
CHARACTERISTICS

- Excellent anti-corrosion protection of the housing box
- Small power to maneuver required
- Short time of maneuvering
- Possibility of using padlock as the mechanical blockade in limit positions
- Capability of interoperation with disconnectors from other manufacturers.
- Simple replacement of the manual operating mechanism with a motor operating mechanism, without any additional changes to the construction.

SPECIFICATION

Item	Parameter	Value
1.	Rated voltage - heater	230 [VAC] 220 [VDC] 110 [VDC]
	- electromagnetic lock	230 [VAC] 220 [VDC] 110 [VDC]
2.	Rated power: - heater - locking coil	25 [W] 300 [W]
3.	Rated torque	300 [Nm]
4.	Main shaft angular displacement	192 [°]
5.	Rated switching capability of control switch	AC - 15; 230 [V], 2,5 [A] DC - 13; 220 [V], 0,25 [A]
6.	Maximum conductor cross section	4 [mm ²]
7.	Enclosure protection rating	IP 55
8.	Rated mechanical strength	2000 cycles

DRAWING





02

MV OUTDOOR SWITCHGEAR

MV outdoor switch disconnectors

RS

MV outdoor disconnectors

ONIIIS

ONIIIO

Motor operating mechanisms

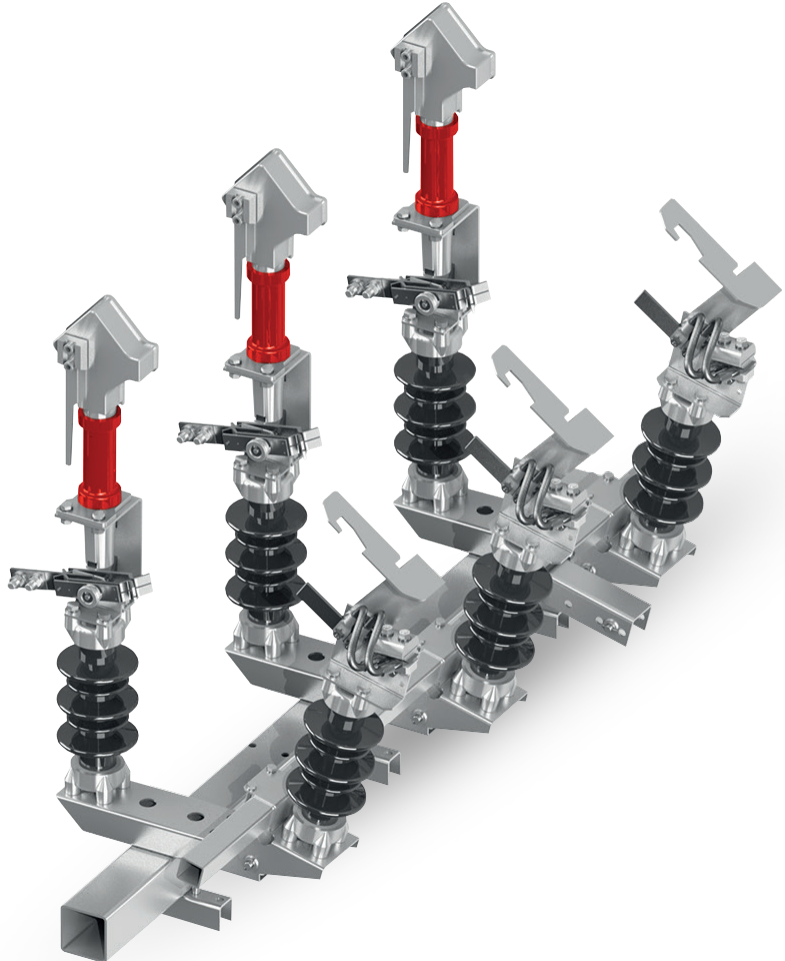
NSL60

NR-5S

WARNING: As a result of the possibility of changes due to technological development, the diagrams in the catalogue have only a visual character.

RS

MV outdoor switch disconnecter Manual operating NNO/NNP



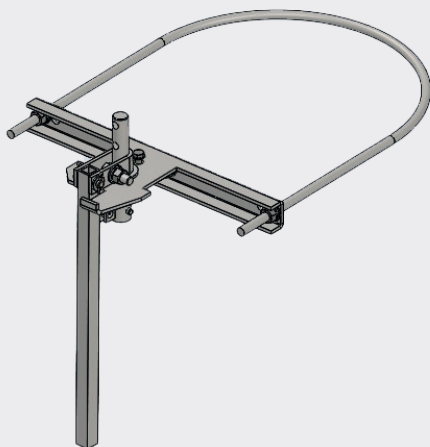
CHARACTERISTICS

- High performance parameters
- Available with breaking chambers or arching contacts
- Excellent anti-corrosion protection
- Module design which allows to assemble apparatus very easily on the top or next to a pole
- Equipped with elastic connector and with ice-proof self-counterblow contact system
- Available with composite and porcelain insulators
- Version with motor operating mechanism NSL60 available with remote control
- Possibility of working realisation in three-position with earthing switch: closed/open/earthed
- Padlock locking system available

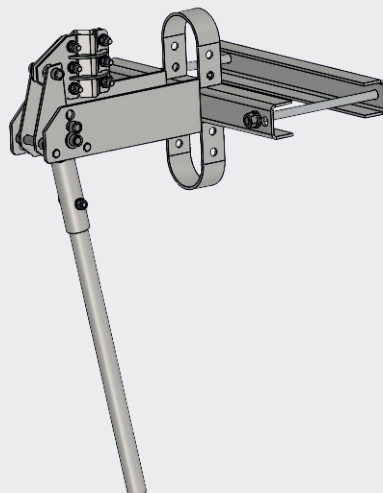
SPECIFICATION

Item	Parameter	Value	
		With arcing contact	With air breaking chamber
1.	Rated voltage	24 [kV]	
2.	Rated frequency	50 [Hz]	
3.	Rated continuous current	630 [A]	
4.	Lightning surge test voltage: -earth and pole to pole insulation -contact to contact insulation	125 [kV] 145 [kV]	
5.	Rated alternating test voltage: -earth and pole to pole insulation -contact to contact insulation	50 [kV] 60 [kV]	
6.	Rated current: - low inductive reactance circuit - in ring network circuits - in cable and overhead lines, idle state	20 [A] 10 [A] 20 [A]	630 [A] 630 [A] 25 [A]
7.	Rated peak current	40 [kA]	
8.	Rated short-circuit current, 1 sec.	16 [kA]	
9.	Mechanical strength	1000 cycles	

DRAWING



NNO - Version for spun concrete pole



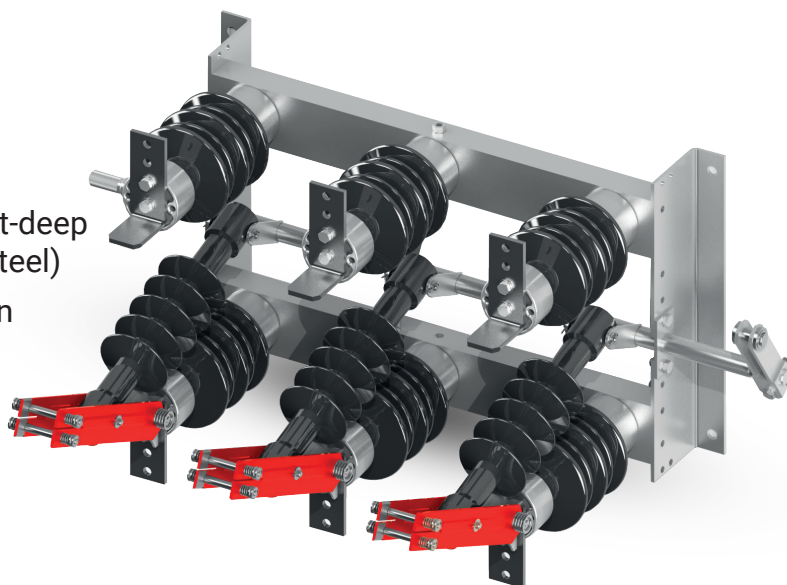
NNP - Version for ŻN/BSW pole

ONIIIS

MV outdoor disconnector

CHARACTERISTICS

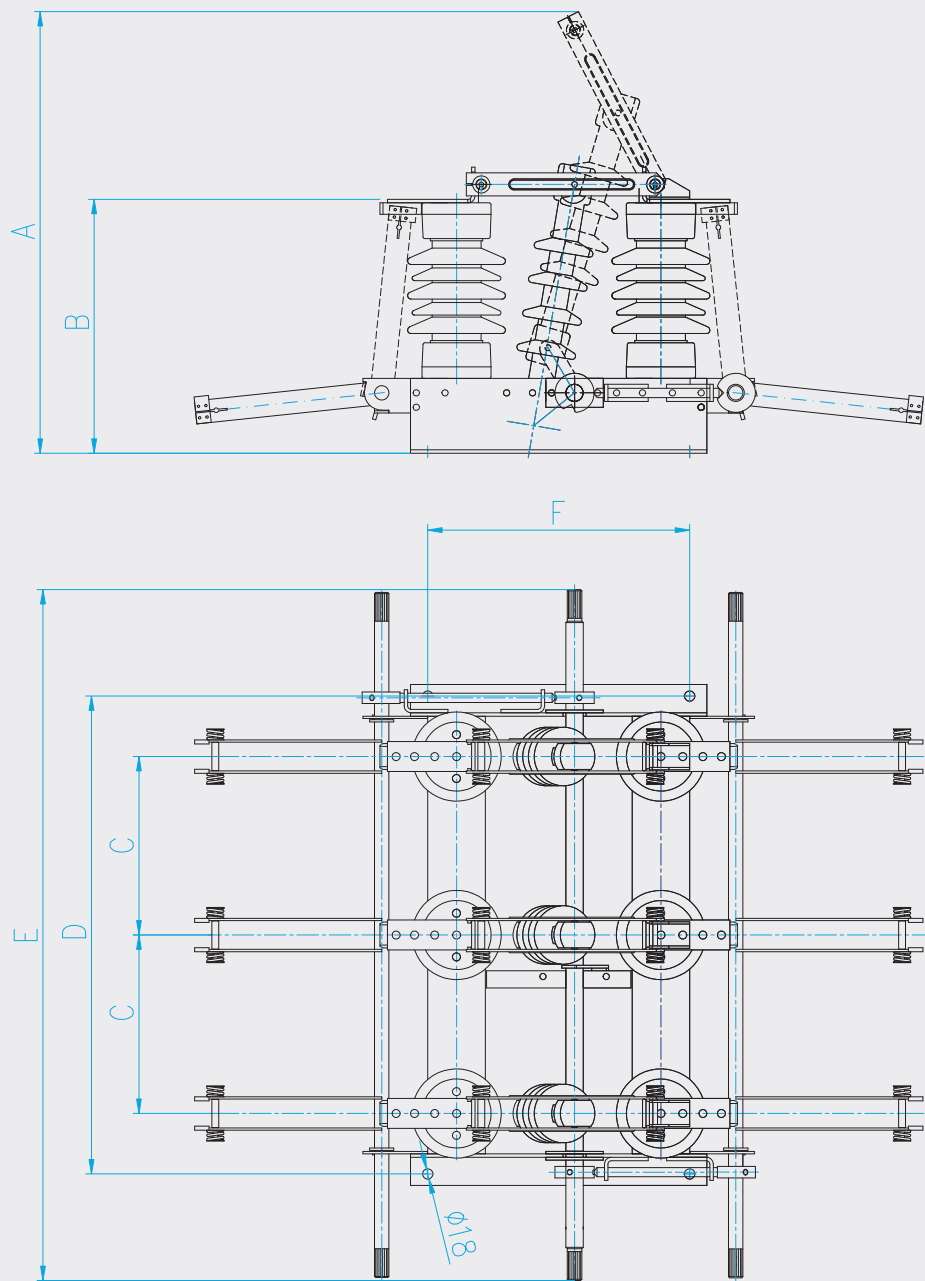
- High performance parameters
- Excellent anti-corrosion protection (hot-deep galvanised parts or made of stainless steel)
- Available with composite and porcelain insulators
- Version with motor operating mechanism NSL60 available with remote control
- Possibility of operating with manual mechanism NNP



SPECIFICATION

Item	Parameter		Value				
1.	Disconnector type		ONIIIS-24			ONIIIS-36	
2.	Rated continuous disconnector current		800 [A] 1600 [A]	2000 [A]		800 [A]	1600 [A]
3.	Rated peak disconnector current		50 [kA]	80 [kA]	100 [kA]	50 [kA]	63 [kA]
4.	Short-circuit disconnector current	1 – sec.	20 [kA]	31,5 [kA]	40 [kA]	20 [kA]	-
		3 – sec.					25 [kA]
5.	Test voltage (50Hz):						
	- earth and pole to pole insulation		55 [kV]	55 [kV]	55 [kV]	70 [kV]	70 [kV]
6.	Surge test voltage:						
	- earth and pole to pole insulation		125 [kV]	125 [kV]	125 [kV]	170 [kV]	170 [kV]
7.	Earth insulation creepage distance:						
	- rated		420 [mm]			630 [mm]	
8.	Earthing switch peak rated current		40 [kA]	80 [kA]	80 [kA]	40 [kA]	63 [kA]
	- increased		460 [mm]			770 [mm]	
9.	Earthing switch short-circuit current						
	1 – sec.		16 [kA]	31,5 [kA]	31,5 [kA]	16 [kA]	
10.	Rated mechanical strength						
	3 – sec.						25 [kA]
11.	Operating mechanism:		2000 cycles			2000 cycles	
	-motor		NSL60			NSL60	
12.	-manual		NNP			NNP	

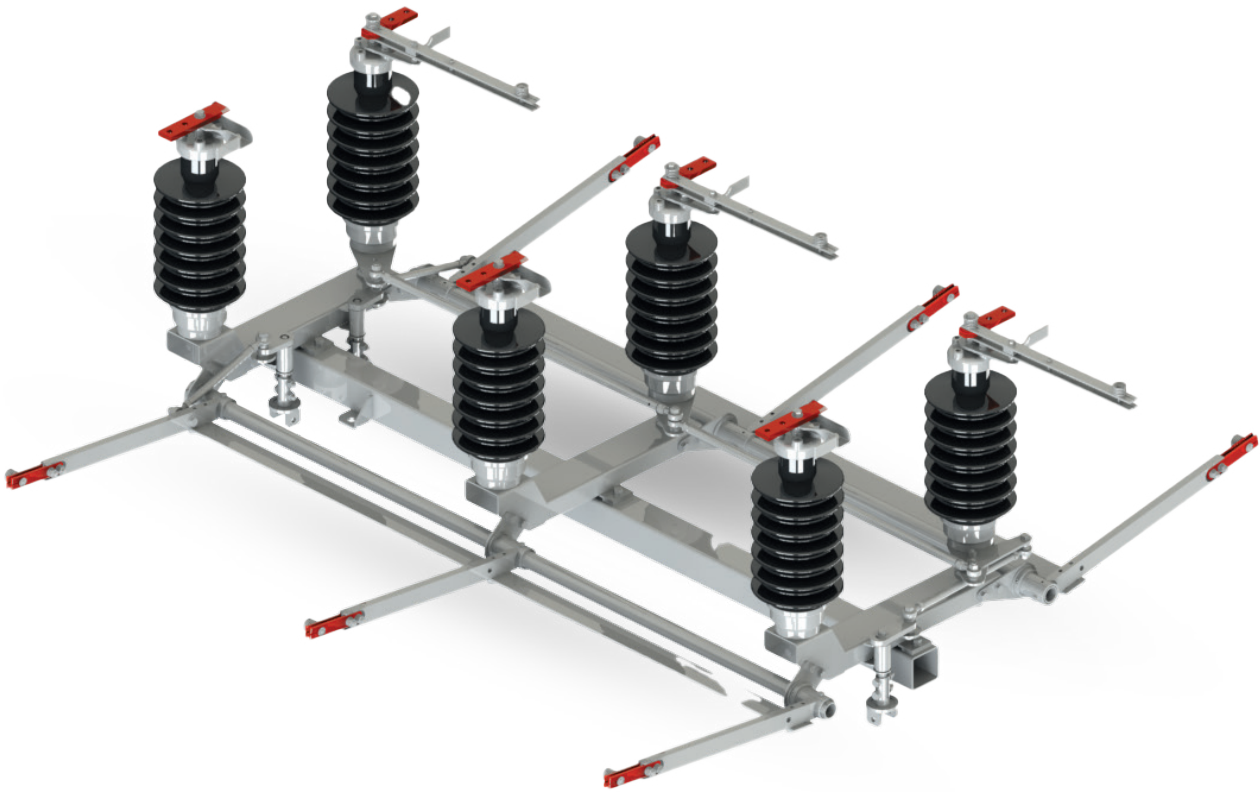
DRAWING



Disconnector type	Dimensions [mm]					
	A	B	C	D	E	F
ONIIIS-24/800/U2	768	441	310	830	1200	455
ONIIIS-36/800/U2	970	527	400	1070	1470	634
ONIIIS-24/1600/U2	780	441	310	830	1200	455
ONIIIS-36/1600/U2	990	529	400	1070	1470	634
ONIIIS-24/2000/U2/31/1	790	445	310	830	1200	455
ONIIIS-24/2000/U2/40/1	805	445	310	830	1200	483

ONIII O

Outdoor disconnecter



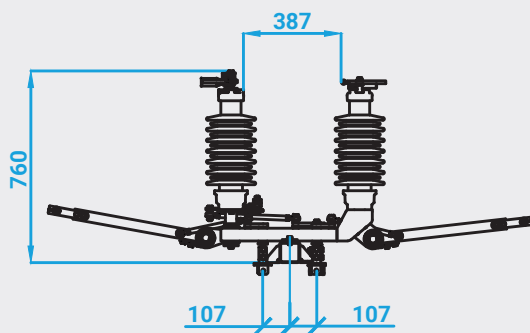
CHARACTERISTICS

- High performance parameters
- Excellent anti-corrosion protection (hot-deep galvanized parts)
- Silver-plated contact parts
- Version with motor operating mechanism NS080 available with remote control
- Quick assembly, easy regulation
- High durability and reliability
- Simple and safe operating
- Great alternative for already existing solutions

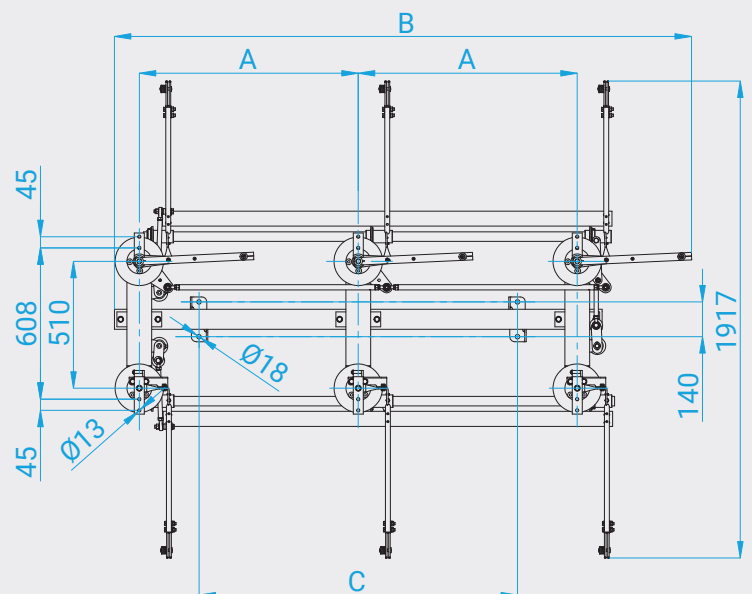
SPECIFICATION

Item	Parameter	Value
1.	Rated voltage	36 [kV] (40,5 kV)
2.	Rated continuous current	1000 [A]
3.	Peak current	50 [kA]
4.	Short-circuit current 3-sec.	20 [kA]
5.	Test voltage (50 Hz): - earth and pole to pole insulation - contact to contact insulation	70 [kV] (95 kV) 80 [kV] (120 kV)
6.	Surge test voltage: - earth and pole to pole insulation - contact to contact insulation	170 [kV] (190 kV) 190 [kV] (220 kV)
7.	Peak current – earthing switch	63 [kA]
8.	Short-circuit current 1-sec. - earthing switch	25 [kA]
9.	Mechanical strength	2000 cycles
10.	Operating mechanisms: - motor - manual	NS080 NR-5

DRAWING

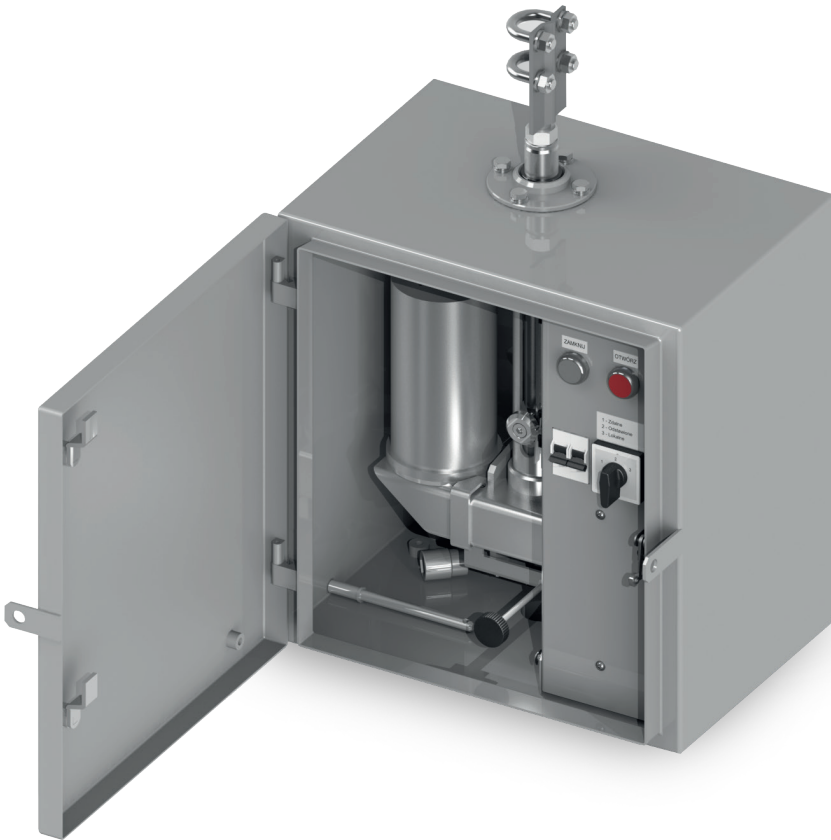


Dimensions [mm]		
A	B	C
880 mm	2320 mm	1280 mm
1000 mm	2560 mm	1520 mm
1200 mm	2960 mm	1920 mm



NSL60

Motor operating mechanism



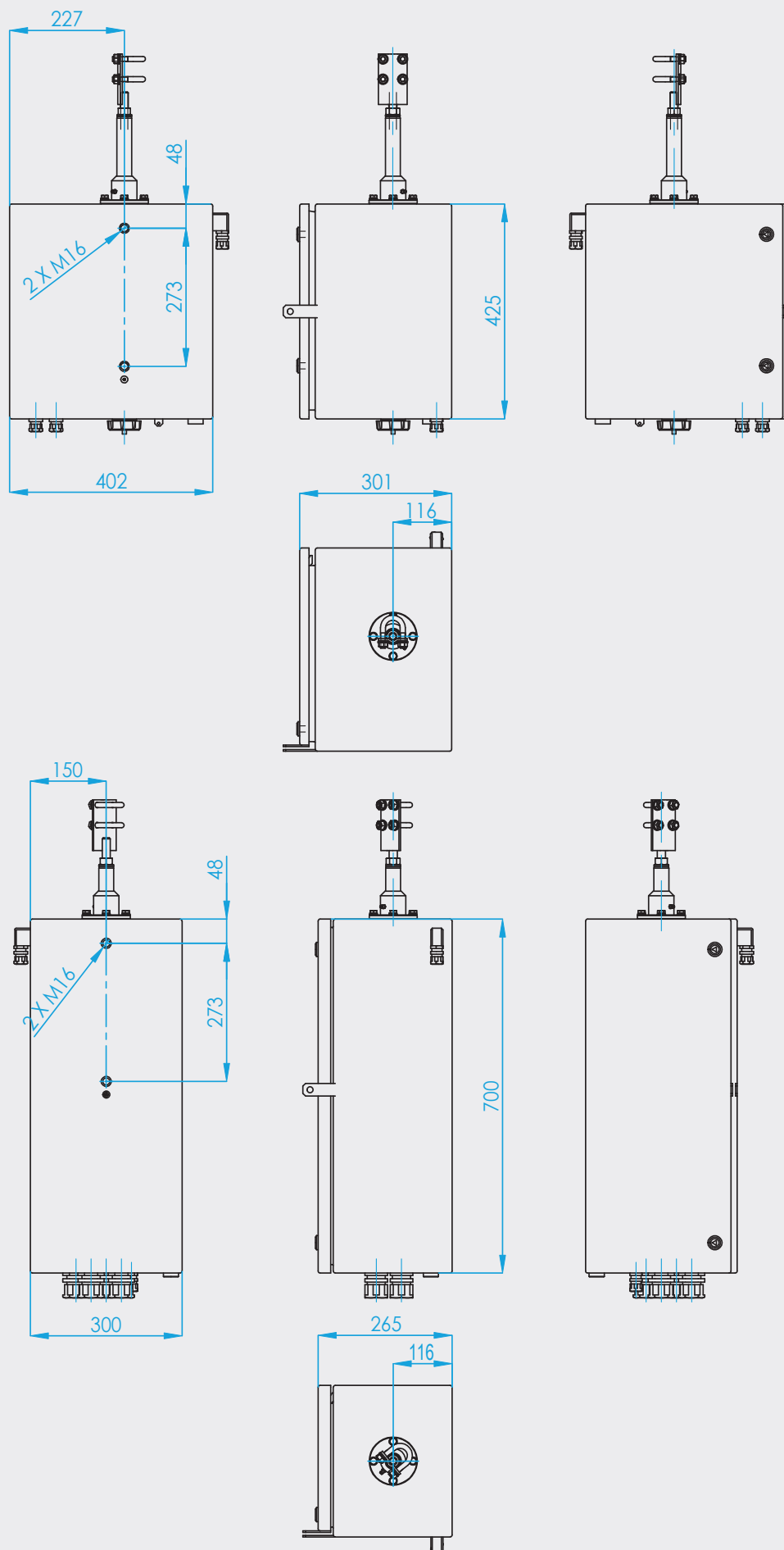
CHARACTERISTICS

- Excellent anti-corrosion protection
- Indefective working in hard weather conditions
- Versions with motors 24, 110, 220 VDC, 230 VAC available
- High axis power - 6,5 kN allows to use mechanism to most demanding apparatus
- High durability – 10.000 cycles
- Easy adjustment of the range or shaft movement, and engagement with the disconnecter/switch disconnectors
- Application of electromagnetic and mechanical service blockade
- Possibility to adapt mechanism for other producers' disconnectors

SPECIFICATION

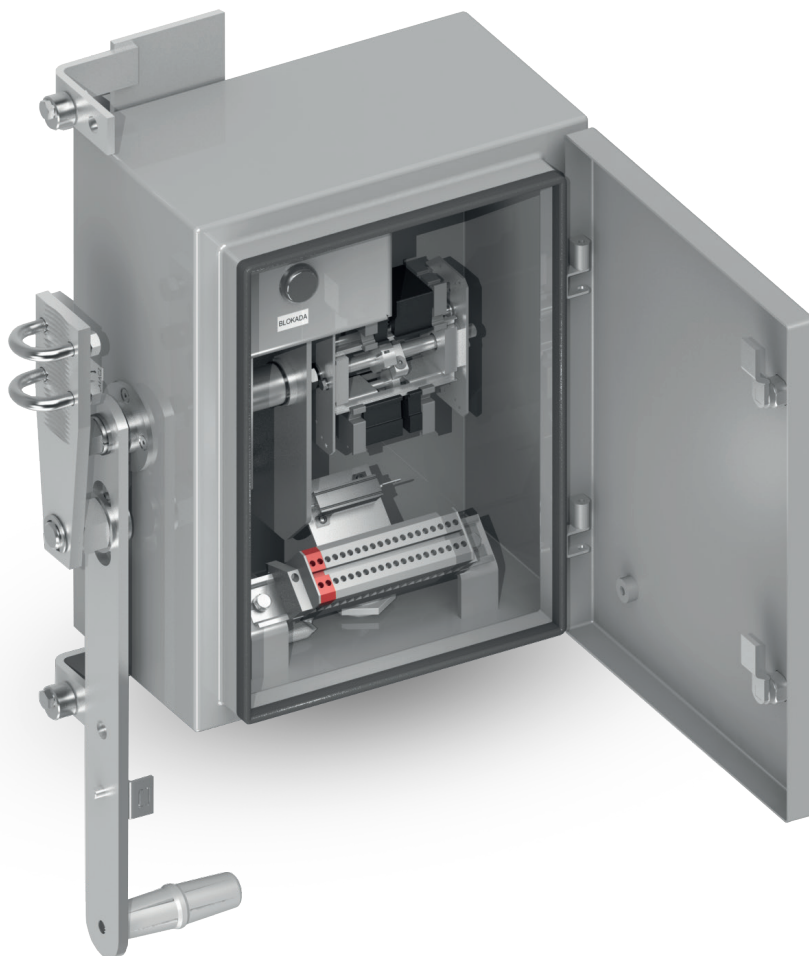
Item	Parameter	Value
1.	Motor rated voltage / Motor current:	230 [VAC] / 4 [A] 220 [VDC] / 4 [A] 110 [VDC] / 5 [A] 24 [VDC] / 19 [A]
2.	Actuating rod stroke	0-180 [mm] or 0-200 [mm]
3.	Maximum axial force	6,5 [kN]
4.	Heater	230 [VAC] 220 [VDC] 110 [VDC]
5.	Rated power	300 [W]
6.	Switching time	ca. 4 [s]
7.	Maximum conductor cross section	4 [mm ²]
8.	Enclosure protection rating	IP 54
9.	Rated mechanical strength	10 000 cycles

DRAWING



NR-5S

Manual operating mechanism



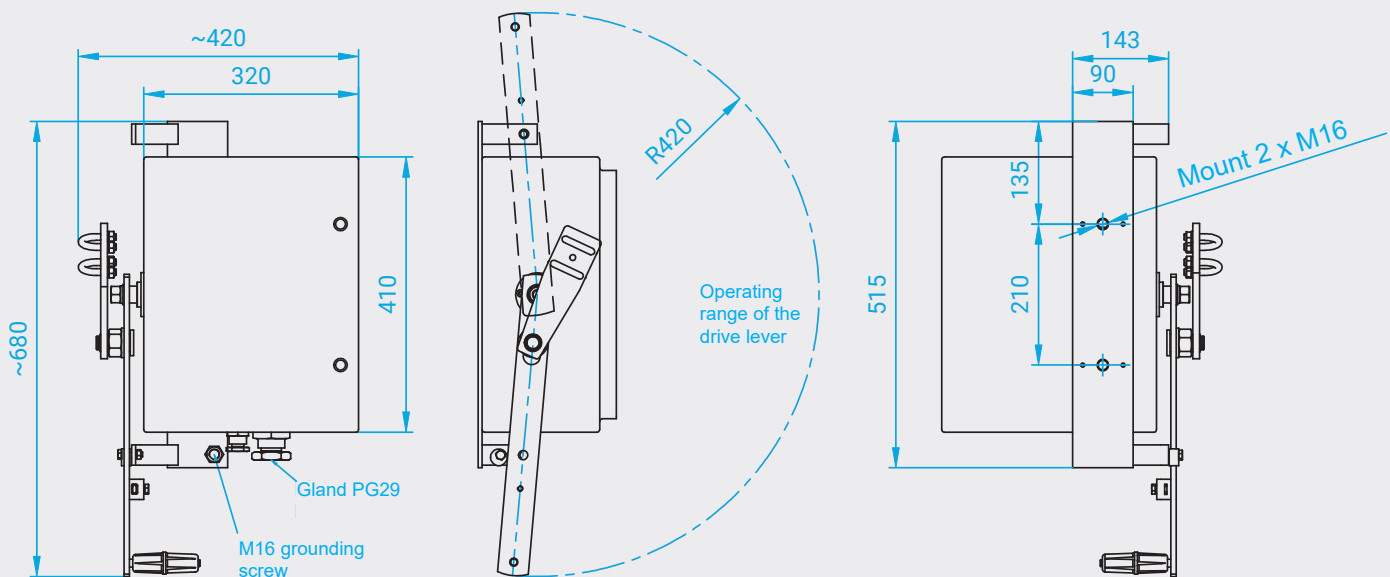
CHARACTERISTICS

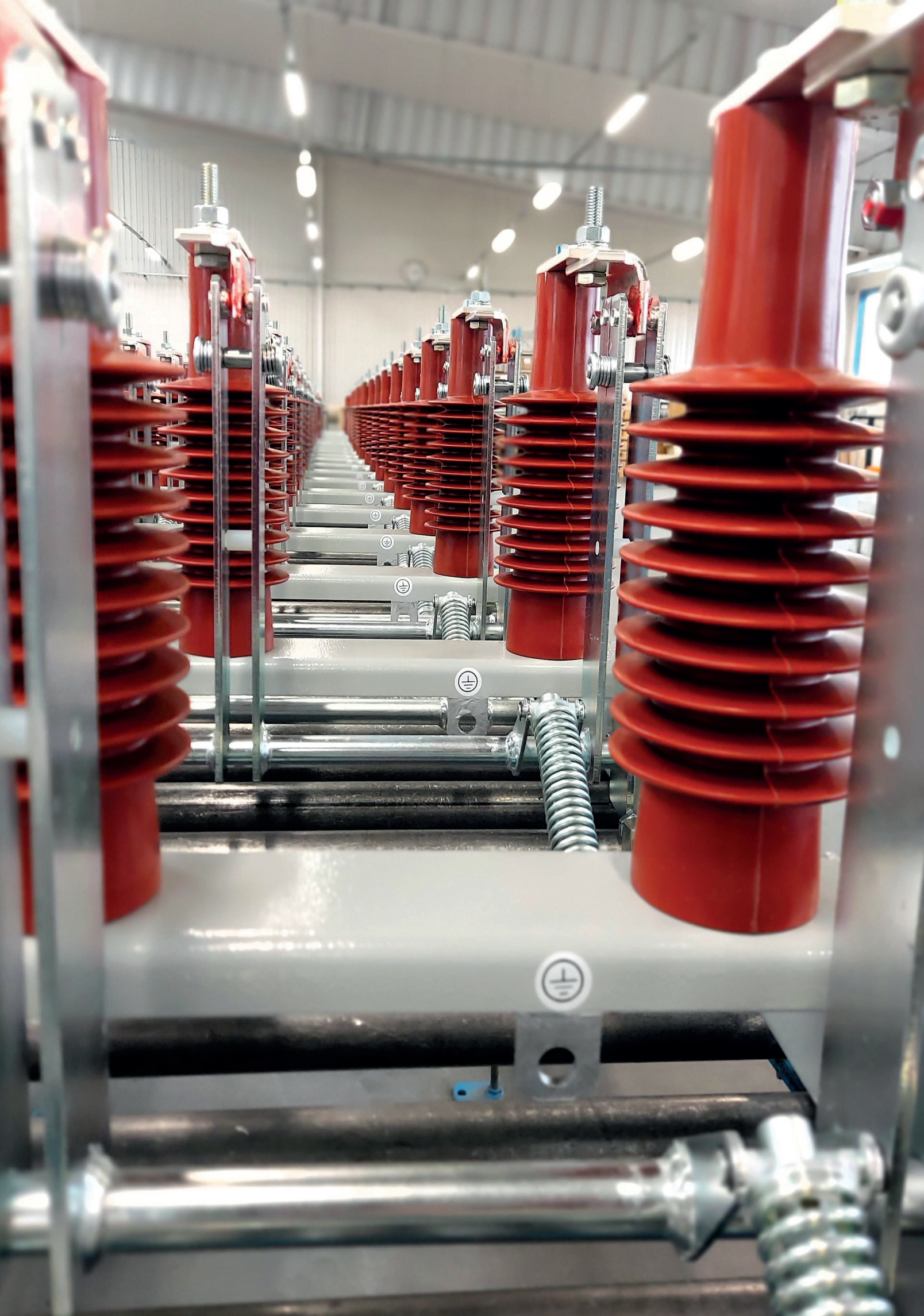
- Excellent anti-corrosion protection
- Simple operating of MV disconnector/switch disconnector
- Extra blocking system with padlock available in limit positions
- Can be equipped with a manual locking
- Capability of interoperation with disconnectors from other manufacturers
- Position indicator (O, C)

SPECIFICATION

Item	Parameter	Value
1.	Rated torque	300 [Nm]
2.	Rated voltage: electromagnetic lock	230 [VAC] 220 [VDC] 110 [VDC]
3.	Rated power: locking coil	300 [W]
4.	Heater	230 [VAC] 220 [VDC] 110 [VDC]
5.	Main shaft angular displacement	192 [°]
6.	Rated switching capability of control switch	AC - 15; 230 [V]; 2,5 [A] DC - 13; 220 [V]; 0,25 [A] DC - 13; 110 [V]; 1 [A]
7.	Maximum conductor cross section	4 [mm ²]
8.	Enclosure protection rating	IP 55
9.	Rating mechanical strength	2000 cycles

DRAWING





03

MV INDOOR SWITCHGEAR

MV Vacuum circuit breakers

3AE5

MV Indoor switch disconnectors

OM/OMB

MV Indoor switches

OW

OW High current indoor disconnector

OWS High current indoor disconnector

OWS-I-25

MV Indoor earthing switches

UW/UDS

UWS

MV Indoor switchgear operating mechanisms

NSW30

NSP20

NR-1

WARNING: As a result of the possibility of changes due to technological development, the diagrams in the catalogue have only a visual character.

3AE5

Vacuum circuit-breaker



SIEMENS

CHARACTERISTICS

- Compatible with 3AH5 circuit breaker
- Arc extinguishing technology in vacuum chambers proven for over 40 years
- Customizable equipment and supporting structure to suit individual client needs
- Well-suited for retrofitting switchgear with oil type circuit breakers or earlier-generation vacuum circuit breakers

SPECIFICATION

Item	U_r	U_p	U_d	PMB*	I_{sc}	I_{ma}	Type	I_r (secondary order code)				
	kV	kV	kV					800A	1250A	1600A	2000A	2500A
1.	12	75	28	210	16	40	3AE5182 - □	← 1	— 2	— 3		
					20	50	3AE5183 - □	← 1	— 2	— 3	— 4	— 6
					25	63	3AE5184 - □	← 1	— 2	— 3	— 4	— 6
					31,5	80	3AE5185 - □	← 1	— 2	— 3	— 4	— 6
2.	17,5	95	38	210	16	40	3AE5282 - □	← 1	— 2	— 3		
					25	63	3AE5284 - □	← 1	— 2	— 3	— 4	— 6
					31,5	80	3AE5285 - □	← 1	— 2	— 3	— 4	— 6
3.	24	125	50	210	16	40	3AE5322 - □	← 1	— 2	— 3	— 4	
					20	50	3AE5323 - □	← 1	— 2	— 3	— 4	— 6
					25	63	3AE5324 - □	← 1	— 2	— 3	— 4	— 6
				275	16	40	3AE5352 - □	← 1	— 2	— 3	— 4	
					20	50	3AE5353 - □	← 1	— 2	— 3	— 4	— 6

* Pole-center distance

I_r Rated continuous current

I_{sc} Rated short-circuit breaking current

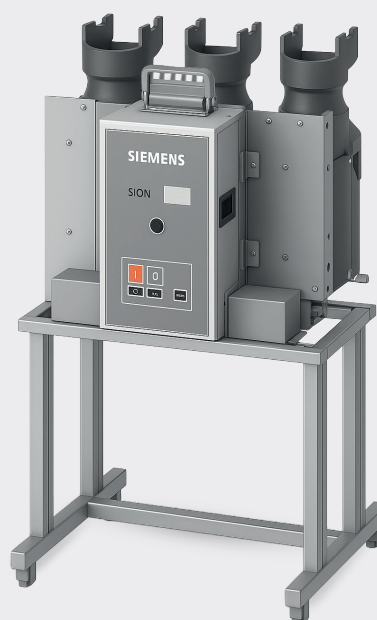
I_{ma} Rated short-circuit making current

U_r Rated voltage

U_d Rated short-duration power-frequency withstand voltage

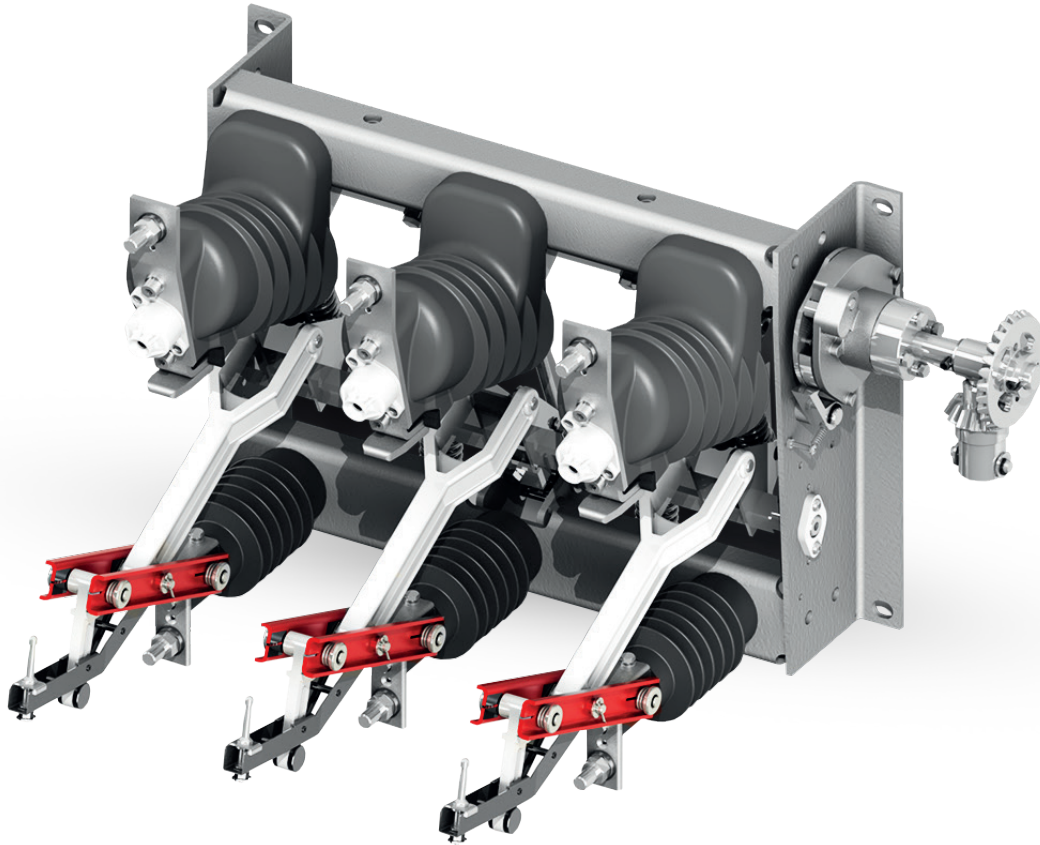
U_p Rated lightning impulse withstand voltage

WITHDRAWABLE INSTALLATION



OM/OMB

Indoor switch-disconnector



CHARACTERISTICS

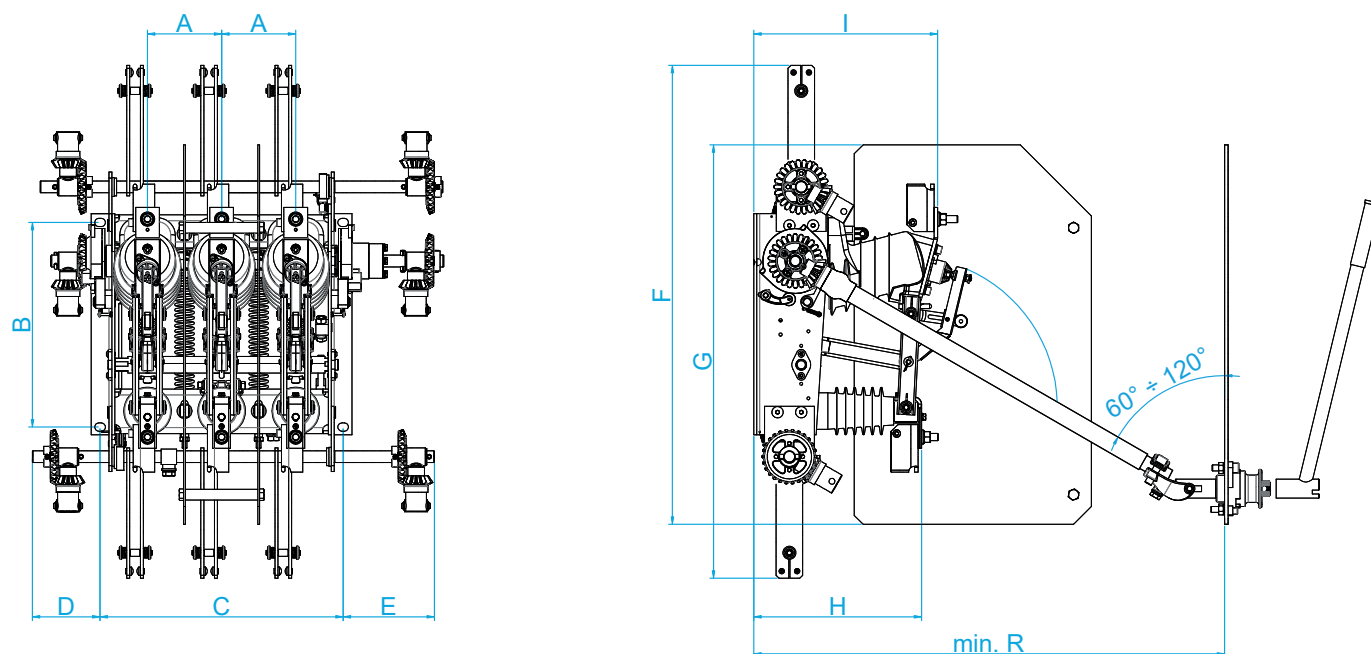
- High switching parameters
- Construction solutions guaranteeing indefective work – extinguishing system, arcing contact
- Module design which allows to adapt apparatus to clients' requirements
- Version with fast moving earthing switch UDS – short-circuit making current ability
- Possibility to use motor operating mechanism with remote control
- Many dimensions of distance between poles available
- A few versions of assembling in switchgears – front, rear
- Possibility to use additional equipment: voltage indicator, electromagnetic shunt trip, auxiliary contact switch, insulators with voltage detector

SPECIFICATION

Item	Parameter	Value	
1.	Rated operating voltage	12 [kV]	24 [kV]
2.	Rated frequency	50 [HZ]	50 [HZ]
3.	Rated continuous current	630 [A]	630 [A]
4.	Rated transitive current	700 [A]	1000 [A]
5.	Work switching capabilities: - low inductance circuit - ring network circuits - cable and overhead line loading	630 [A] 630 [A] 50 [A]	630 [A] 630 [A] 25 [A]
6.	Maximum fuse cartridge size	100 [A] ¹	100 [A] ¹
7.	Rated short-circuit making current	50 [kA]	40 [kA]
8.	Peak withstand current	50 [kA]	50 [kA]
9.	Short-circuit withstand current, 1 sec.	20 [kA]	20 [kA]
10.	Test voltage (50 Hz): - earth and pole to pole insulation - terminal to terminal insulation	28 [kV] 32 [kV]	50 [kV] 60 [kV]
11.	Surge test voltage: - earth and pole to pole insulation - terminal to terminal insulation	75 [kV] 85 [kV]	125 [kV] 145 [kV]
12.	Mechanical strength	2000 cycles	2000 cycles

¹Compatible with HH type 120 A fuse cartridge by SIBA

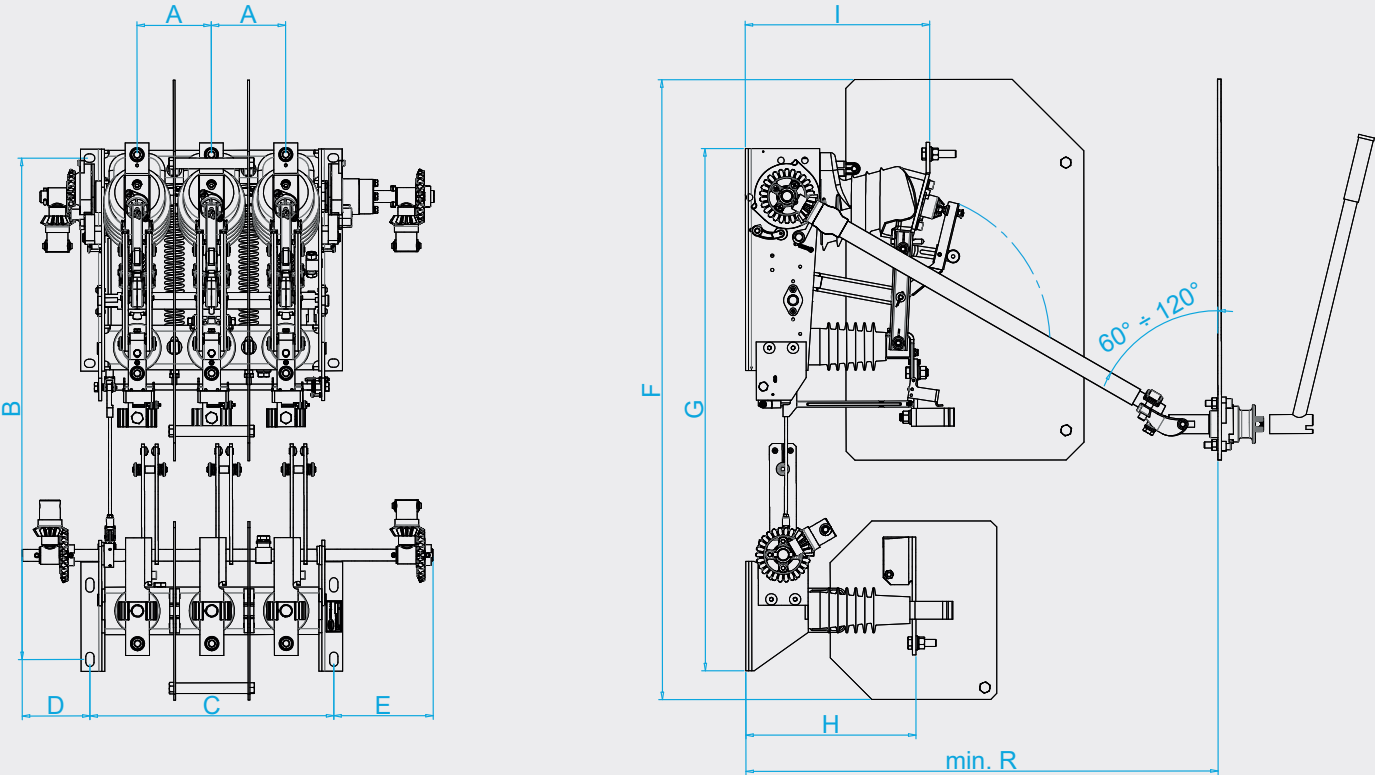
DRAWING



Switch disconnector type	Dimensions [mm]									
	A	B	C	D	E	F	G	H	I	R
OM-12/UD/UG/125/ LO PO	125	345	410	114*	170*	775	732	283	310	800
OM-12/UD/UG/185/ LO PO	185		530			646	626			
OM-24/UD/UG/160/ LO PO	160	395	480	170	170	982	890	365	387	1000
OM-24/UD/UG/275/ LO PO	275		710			790	802			

*Possibility of reducing the dimensions

DRAWING



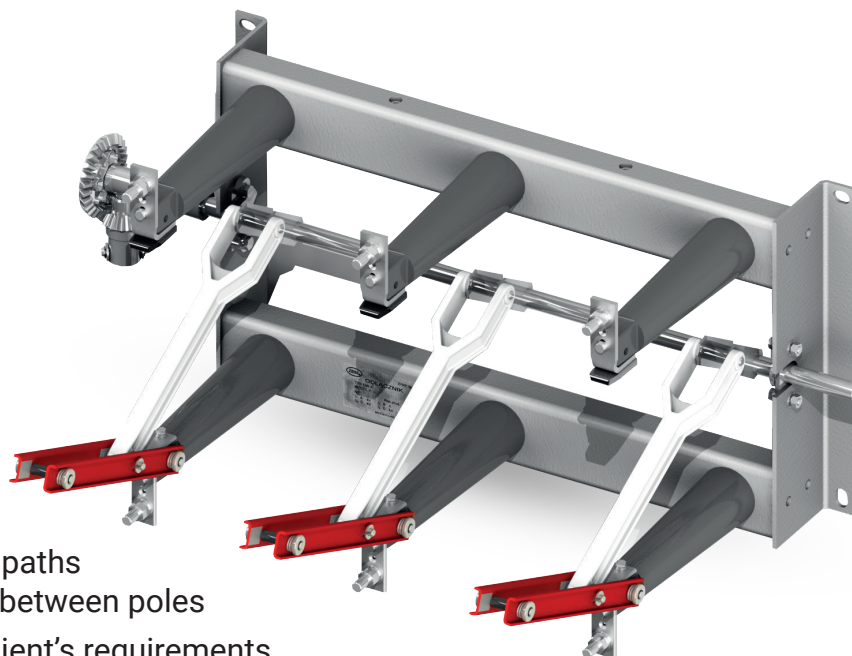
Switch disconnecter type	Dimensions [mm]									
	A	B	C	D	E	F	G	H	I	R
OMB-12/BD/UD/125/ LO PO	125	843	410	114*	170*	1042	877	286	310	800
OMB-12/BD/UD/185/ LO PO	185		530			-				
OMB-24/BD/UD/160/ LO PO	160	1043	480	170	170	1354	1078	371	387	1000
OMB-24/BD/UD/275/ LO PO	275		710			-				

*Possibility of reducing the dimensions

Dimensions for fuse cartridge 12 kV e=292, 24 kV e=442. For different dimensions – drawings according to an inquiry

OW

Indoor disconnecter



CHARACTERISTICS

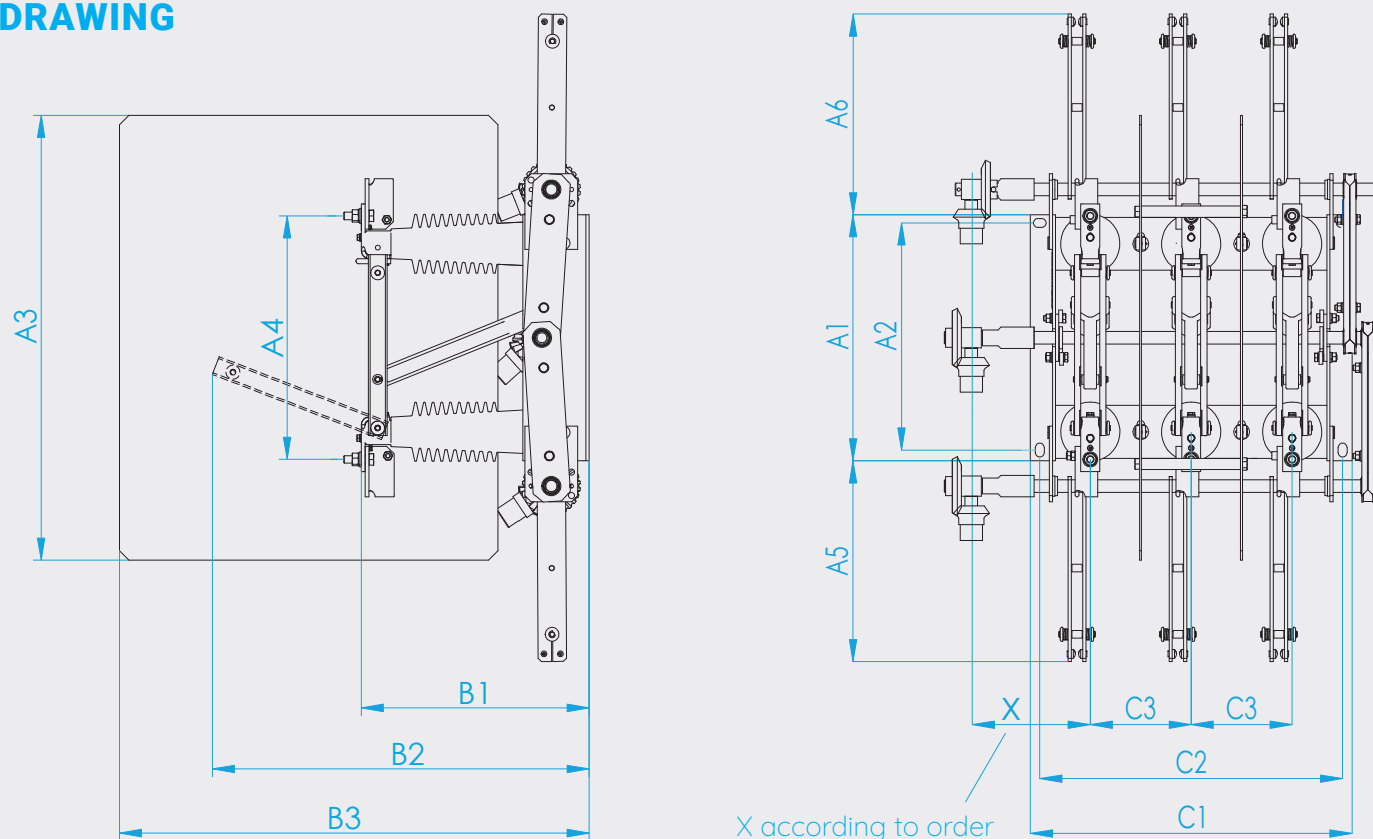
- High performance parameters
- Vertical movement of the currents paths allowing to get minimum distance between poles
- Possibility to adapt apparatus to client's requirements
- Insulators with voltage detector available
- Version with fast moving earthing switch UDS – short-circuit making current ability
- Possibility to use motor operating mechanism with remote control

SPECIFICATION

Item	Parameter	Value								
1.	Rated operating voltage	12 [kV]	12 [kV]	12 [kV]	12 [kV]	17,5 [kV]	17,5 [kV]	24 [kV]	24 [kV]	36 [kV]
2.	Rated continuous current	800 [A]	1600 [A]	1600 [A]	2000 [A]	800 [A]	1600 [A]	800 [A]	1600 [A]	1600 [A]
3.	Peak current		80 [kA]	100 [kA] 80 [kA]	100 [kA]	50 [kA]	63 [kA]	40 [kA]	80 [kA] 63 [kA]	80 [kA]
4.	Short-circuit current	1-sec.		40 [kA]	40 [kA]	20 [kA]	25 [kA]	16 [kA]	31,5 [kA]	31,5 [kA]
		3-sec.	31,5 [kA]	31,5 [kA]	31,5 [kA]	-	-	-	25 [kA]	-
5.	Test voltage (50Hz): - earth and pole to pole insulation - terminal to terminal insulation		28 [kV]	28 [kV]	28 [kV]	28 [kV]	38 [kV]	38 [kV]	50 [kV]	50 [kV]
			32 [kV]	32 [kV]	32 [kV]	32 [kV]	45 [kV]	45 [kV]	60 [kV]	60 [kV]
6.	Surge test voltage: - earth and pole to pole insulation - terminal to terminal insulation		75 [kV]	75 [kV]	75 [kV]	75 [kV]	95 [kV]	95 [kV]	125 [kV]	125 [kV]
			85 [kV]	85 [kV]	85 [kV]	85 [kV]	110 [kV]	110 [kV]	145 [kV]	145 [kV]
7.	Pole pitch: - air insulation - air insulation with additional insulating barrier		200 [mm]	180 [mm]	180 [mm]	210 [mm]	160 [mm]	180 [mm]	275 [mm]	275 [mm]
			125 [mm]	- [mm]	- [mm]	- [mm]	- [mm]	- [mm]	160 [mm]	- [mm]

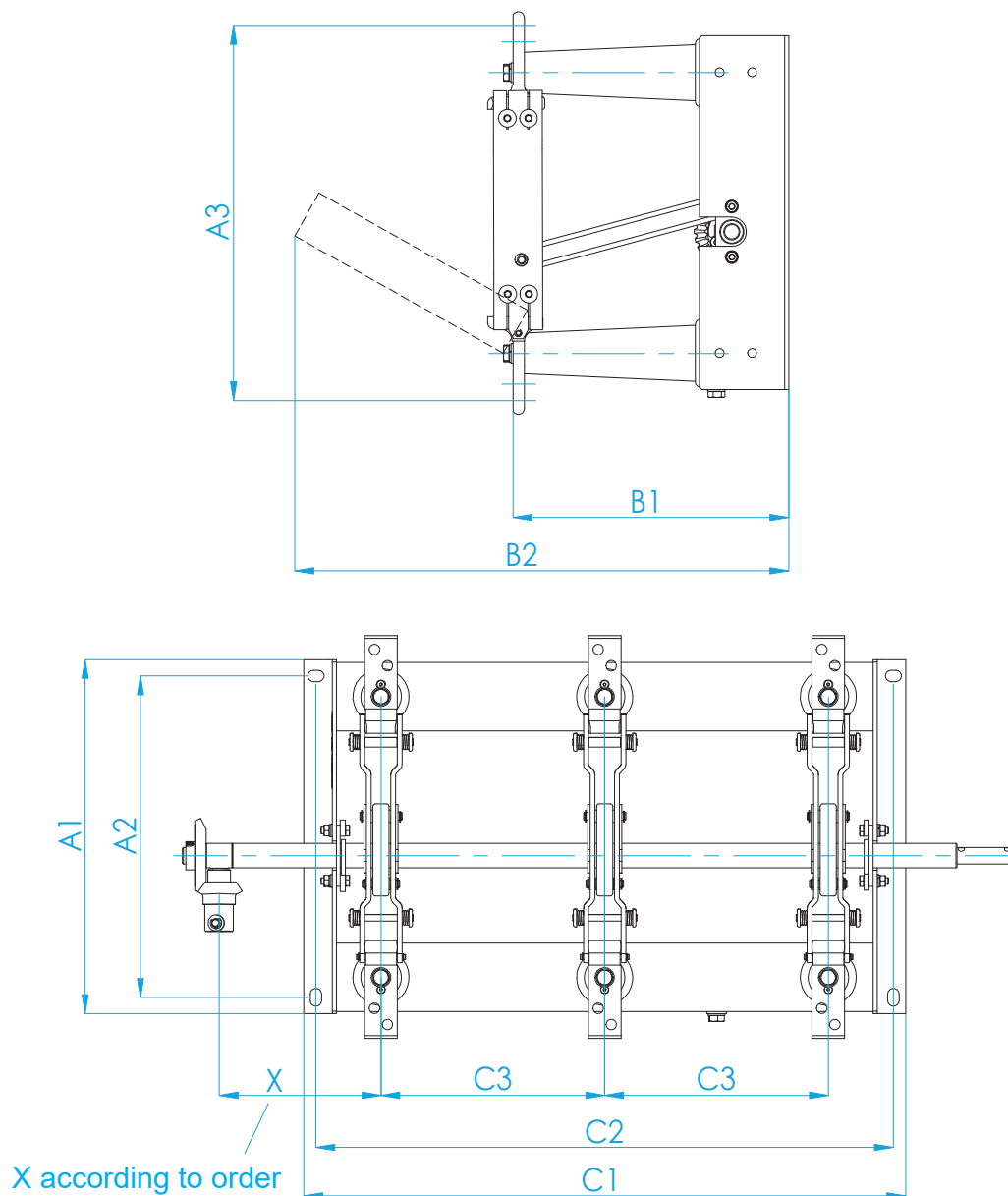
Attention: Built-in earthing switches with short-circuit parameters 40/16 kA; 50/20 kA or 80/31,5 kA (3 s)

DRAWING



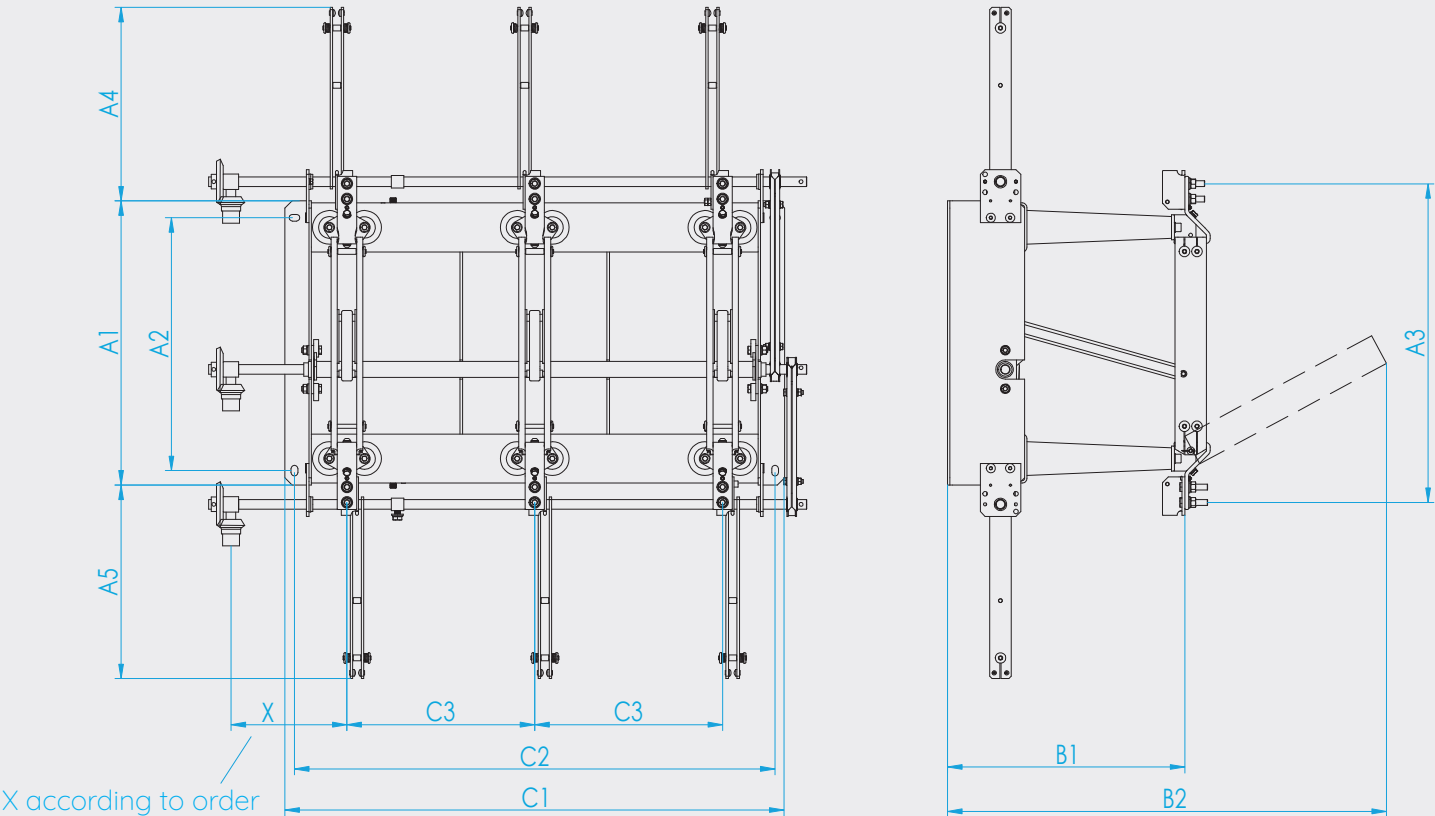
Disconnecter type	Dimensions [mm]											
	A1	A2	A3	A4	A5	A6	B1	B2	B3	C1	C2	C3
OW-12/8/Z/125 (with insulating barriers)	300	260	485	298	-	-	292	438	500	440	410	125
OW-12/8/Z/UG/125 (with insulating barriers)	300	260	486	298	-	230	292	438	500	440	410	125
OW-12/8/Z/UD/125 (with insulating barriers)	300	260	486	298	230	-	292	438	500	440	410	125
OW-12/8/Z/200	300	260	-	298	-	-	292	438	-	590	560	200
OW-12/8/Z/UG/200	300	260	-	298	-	230	292	438	-	590	560	200
OW-12/8/Z/UD/200	300	260	-	298	230	-	292	438	-	590	560	200
OW-17/8/Z/160	322	296	-	348	-	-	286	486	-	464	434	160
OW-24/8/Z/160 (with insulating barriers)	390	360	705	386	-	-	361	595	745	510	480	160
OW-24/8/Z/UG/160 (with insulating barriers)	390	360	705	386	-	318	361	595	745	510	480	160
OW-24/8/Z/UD/160 (with insulating barriers)	390	360	705	386	318	-	361	595	745	510	480	160
OW-24/8/Z/275	390	360	-	386	-	-	361	595	-	740	710	275
OW-24/8/Z/UG/275	390	360	-	386	-	318	361	595	-	740	710	275
OW-24/8/Z/UD/275	390	360	-	386	318	-	361	595	-	740	710	275

DRAWING



Disconnecter type	Dimensions [mm]							
	A1	A2	A3	B1	B2	C1	C2	C3
OW-12/16/Z/180	370	330	396	290	490	550	520	180
OW-17/16/Z/180	405	370	492	290	490	520	490	180
OW-24/16/Z/275	435	395	461	340	590	740	710	275

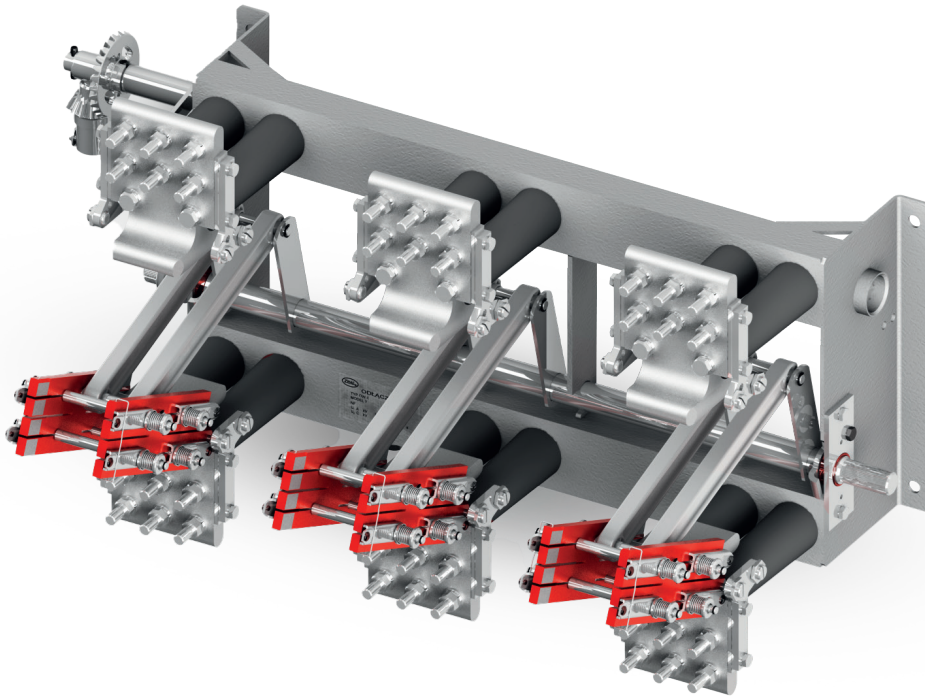
DRAWING



Disconnecter type	Dimensions [mm]									
	A1	A2	A3	A4	A5	B1	B2	C1	C2	C3
OW-36/16/Z/390	590	525	661	-	-	492	913	1038	998	390
OW-36/16/Z/390/UD	590	525	661	-	413	492	913	1038	998	390
OW-36/16/Z/390/UG	590	525	661	413	-	492	913	1038	998	390

OW

High current indoor disconnecter



CHARACTERISTICS

- High performance parameters
- Vertical movement of the current paths allowing to get minimum distance between poles
- Possibility to adapt apparatus to clients' requirements
- Insulators with voltage detector available
- Version with fast moving earthing switch UDS – short-circuit making current ability
- Possibility to use motor operating mechanism with remote control

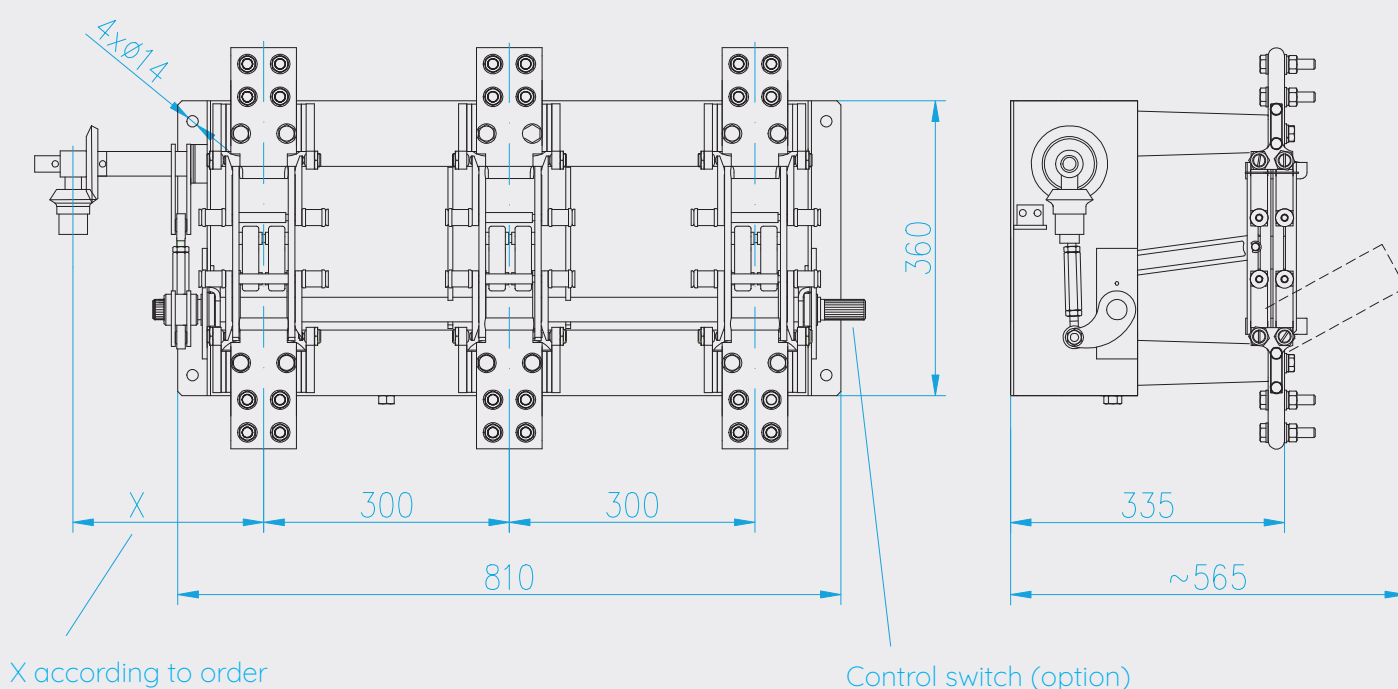
SPECIFICATION

Item	Parameter	Value					
1.	Rated operating voltage	12 [kV]	12 [kV]	24 [kV]	24 [kV]	36 [kV]	36 [kV]
2.	Rated continuous current	2500 [A]	3150 [A]*	2500 [A]	3150 [A]	2500 [A]	3150 [A]
3.	Peak current		160 [kA]	125 [kA]	125 [kA]	125 [kA] 80 [kA]	125[kA]
4.	Short-circuit current	1 sec.	64 [kA]	-	50 [kA]	50 [kA]	50 [kA]
		3 sec.	-	63 [kA]	-	-	31,5 [kA]
5.	Test voltage (50Hz):						
	- earth and pole to pole insulation - terminal to terminal insulation	28 [kV] 32 [kV]	28 [kV] 32 [kV]	50 [kV] 60 [kV]	50 [kV] 60 [kV]	70 [kV] 80 [kV]	70 [kV] 80 [kV]
6.	Surge test voltage:						
	- earth and pole to pole insulation - terminal to terminal insulation	75 [kV] 85 [kV]	75 [kV] 85 [kV]	125 [kV] 145 [kV]	125 [kV] 145 [kV]	170 [kV] 195 [kV]	170 [kV] 195 [kV]
7.	Pole pitch: - air insulation	300 [mm]	300 [mm]	350 [mm]	400 [mm]	360 [mm]	520 [mm]

Note * – The rated continuous current of the disconnector in the open-type switchgear is 4000 A.

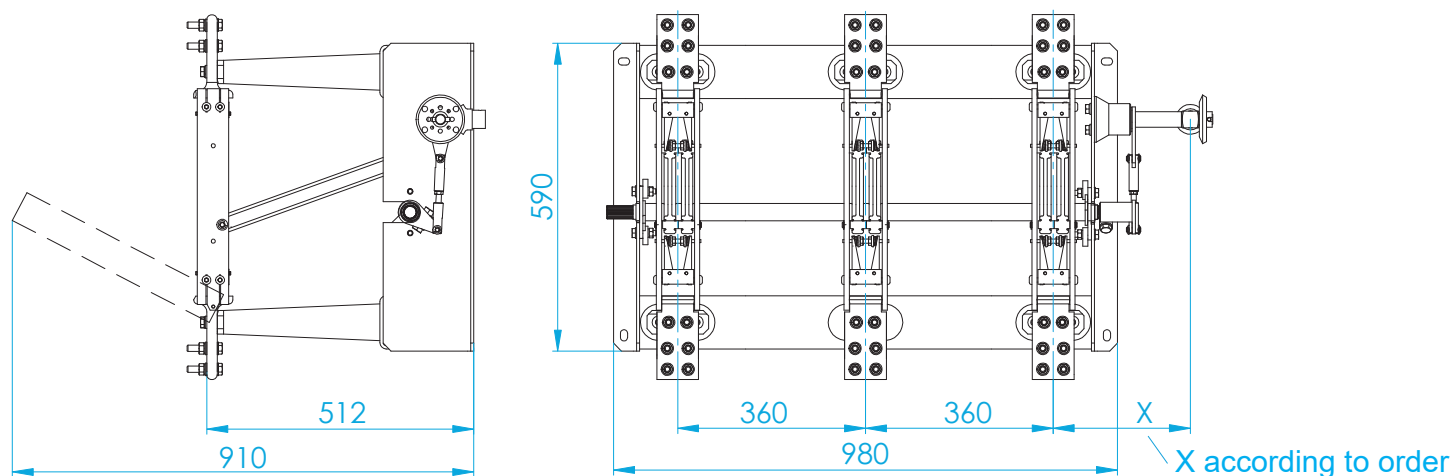
DRAWING

OW type indoor disconnector for 12 kV and 2500 A rated current

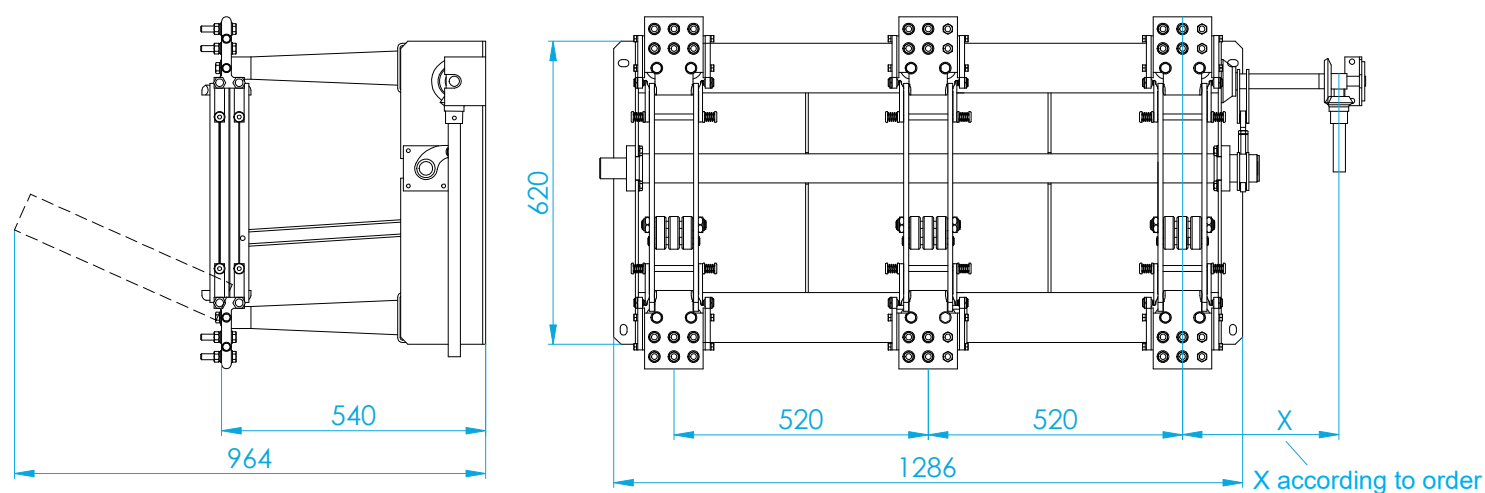


DRAWING

OW -36/25/Z/360 type indoor disconnecter: (36 kV, 2500 A)



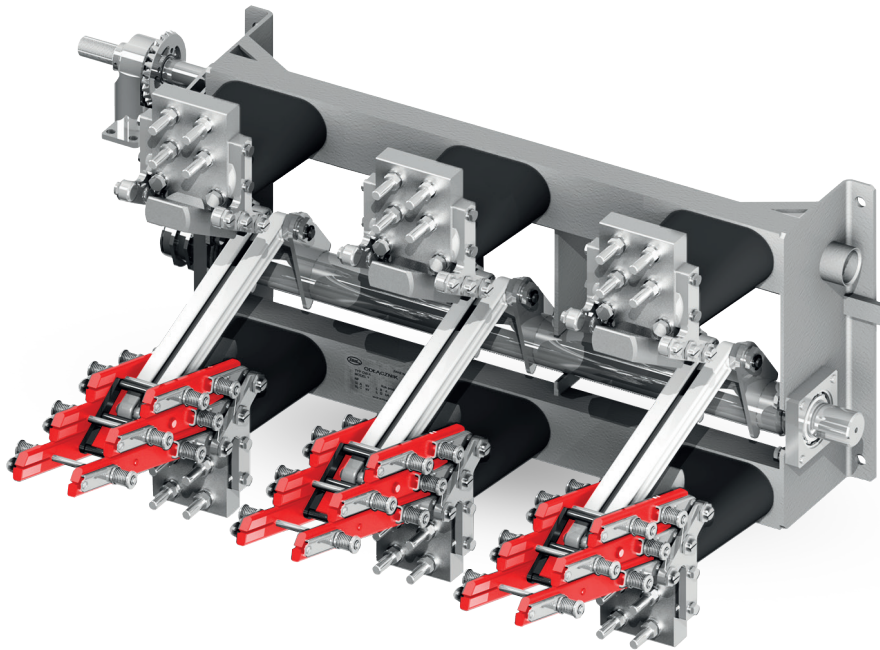
OW-36/31.5/Z/520 (36 kV, 3150 A)





OWS

High current indoor disconnecter



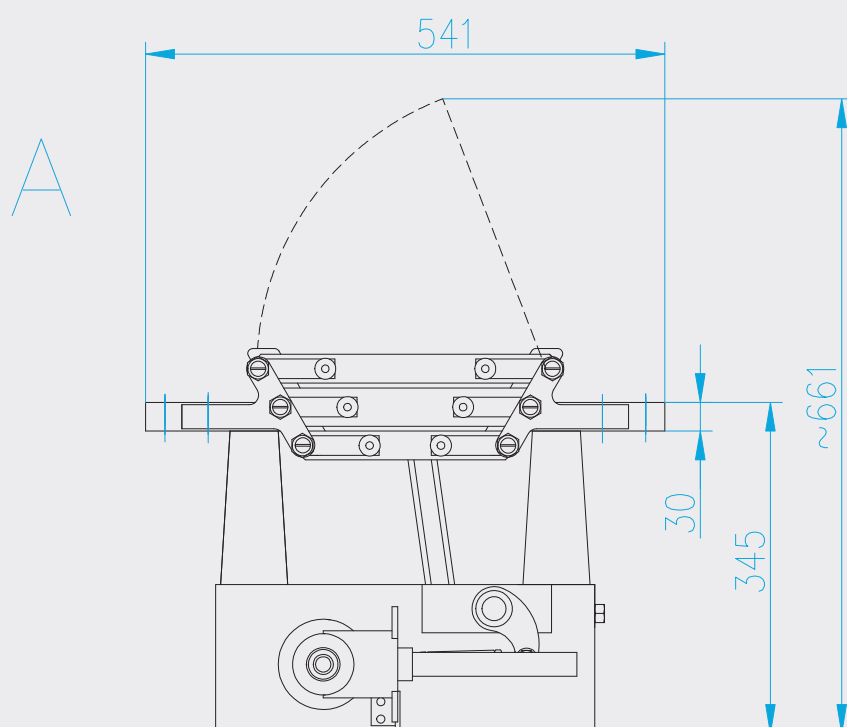
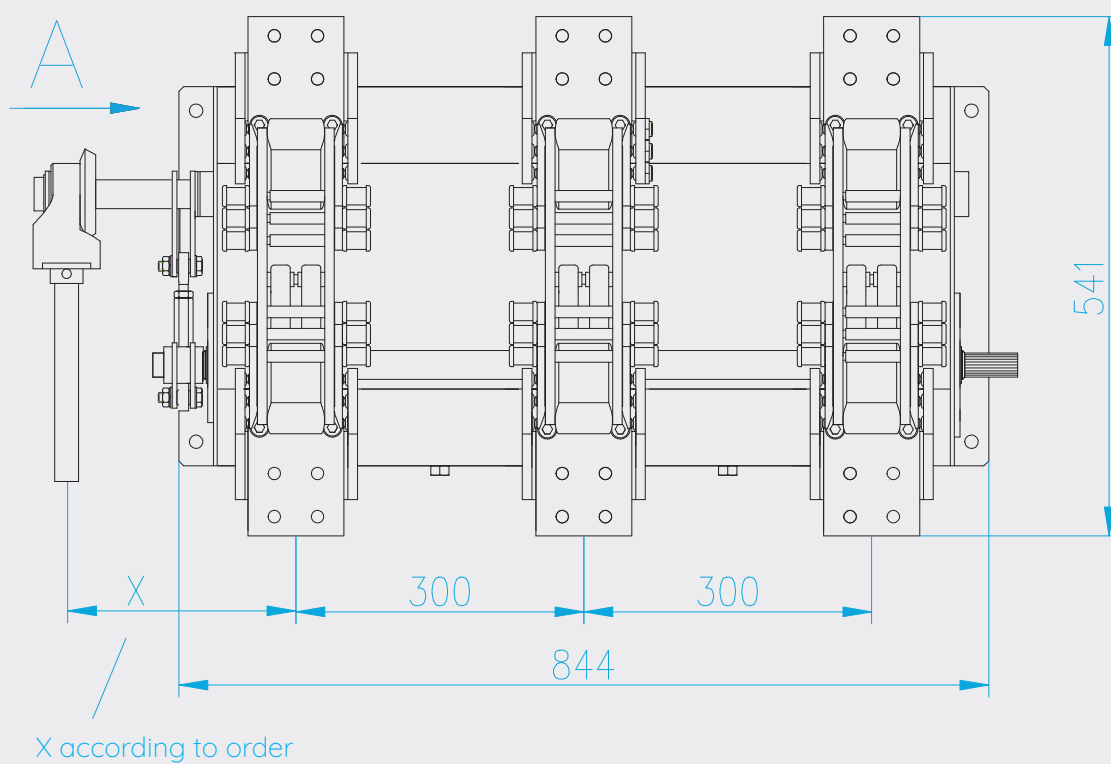
CHARACTERISTICS

- High performance parameters
- Very high short-circuit and peak current – up to 90/225kA
- Vertical movement of the current paths allowing to get minimum distance between poles
- Possibility to adapt apparatus to clients' requirements
- Insulators with voltage detector available
- Version with fast moving earthing switch UDS – short-circuit making current ability
- Possibility to use motor operating mechanism with remote control

SPECIFICATION

Item	Parameter	Value
1.	Rated operating voltage	12 [kV]
2.	Rated continuous current	4000 [A]
3.	Peak current	190 [kA] 225 [kA]
4.	Short-circuit current, 1 sec.	76 [kA] 90 [kA]
5.	Test voltage (50Hz): - earth and pole to pole insulation - terminal to terminal insulation	28 [kV] 32 [kV]
6.	Surge test voltage: - earth and pole to pole insulation - terminal to terminal insulation	75 [kV] 85 [kV]
7.	Pole pitch: - air insulation	300 [mm]

DRAWING

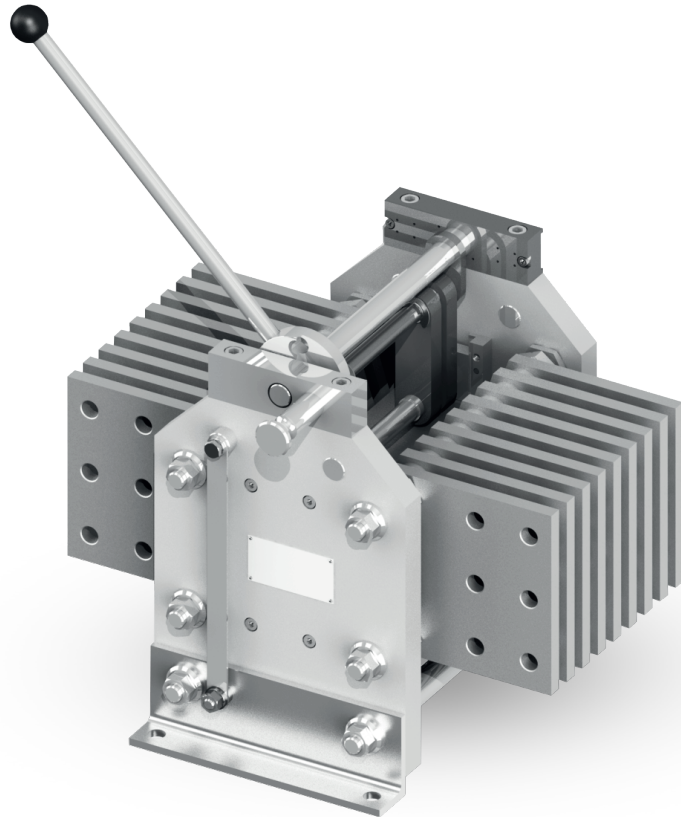


OW-I-25

Indoor disconnecter 660V, 25.000A

CHARACTERISTICS

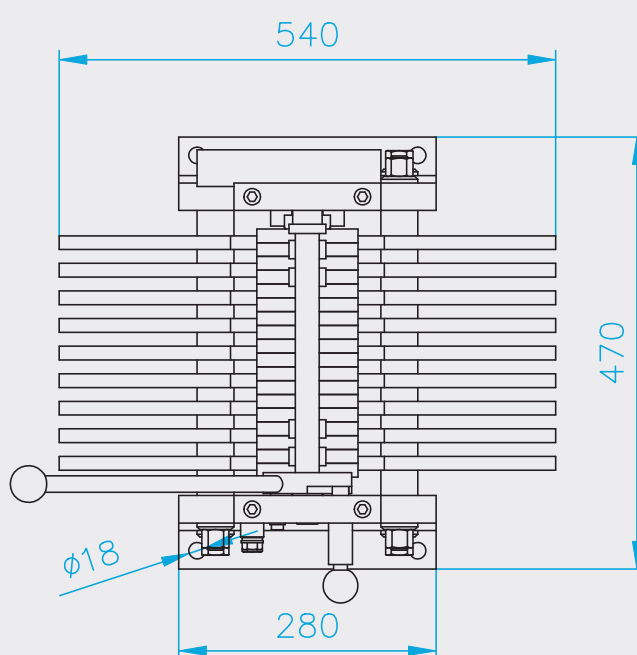
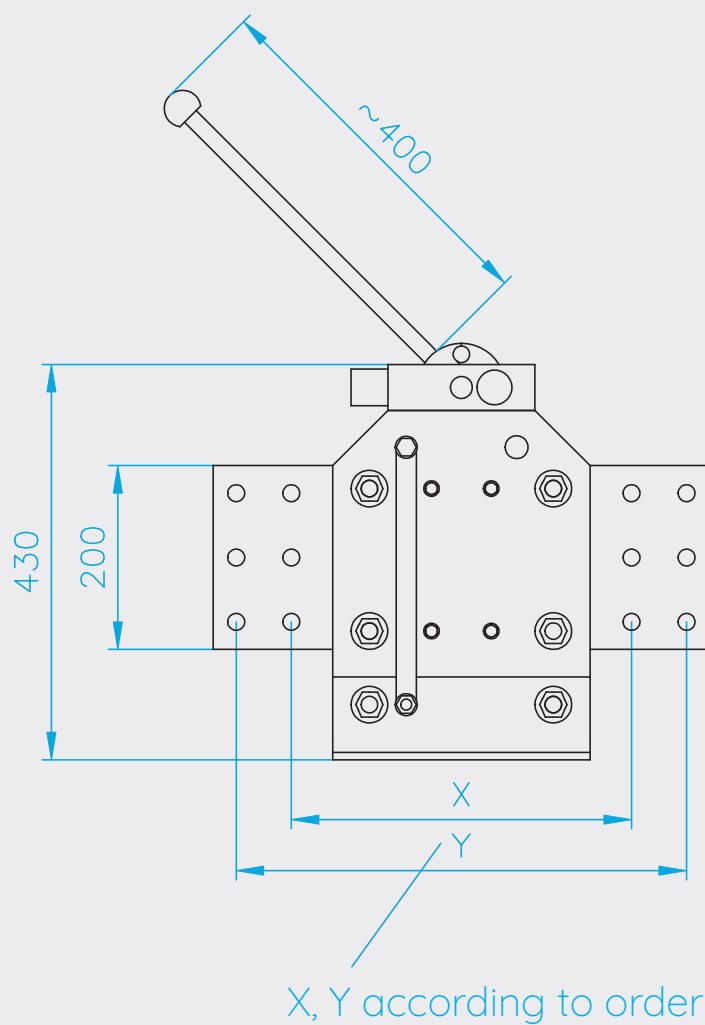
- High performance parameters
- Possibility to adapt apparatus to clients' requirements
- Possibility to use motor operating mechanism with remote control
- Indefective working



SPECIFICATION

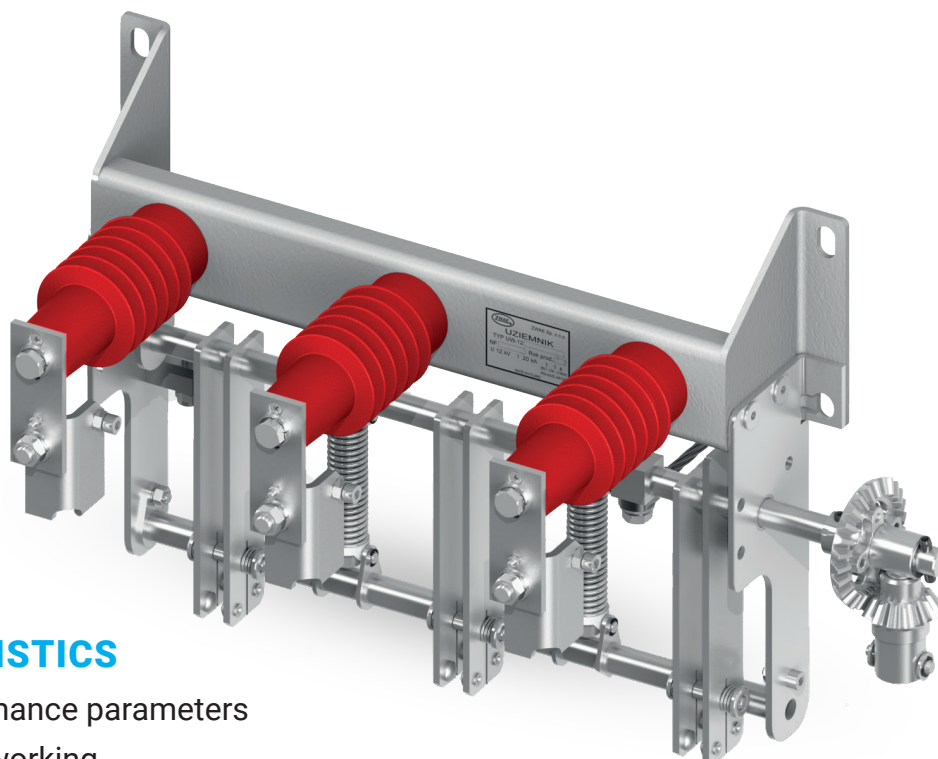
Item	Parameter	Value
1.	Rated operating voltage	660 [V]
2.	Rated continuous current	25000 [A]
3.	Rated short-time withstand current (1 sec.)	80 [kA]
4.	Rated peak withstand current	200 [kA]
5.	Test voltage (50 Hz) for insulation	3500 [V]
6.	Operational category	AC20, DC20
7.	Control switch rated voltage	250 [V]
8.	Control switch rated continuous current	10 [A]

DRAWING



UW/UDS

Indoor earthing switch



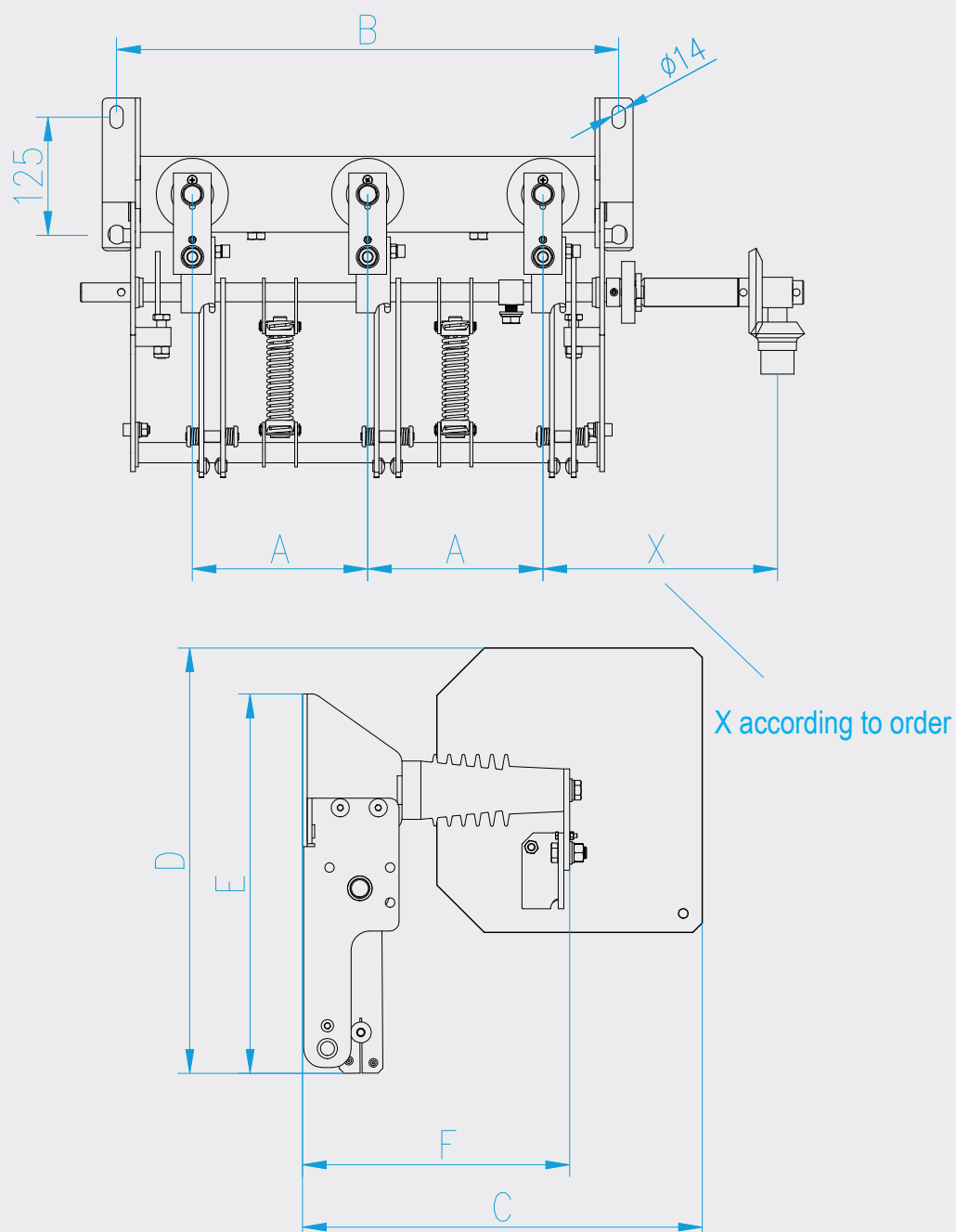
CHARACTERISTICS

- High performance parameters
- Indefective working
- Possibility to adapt apparatus to clients' requirements
- Possibility to manueover with manual or motor operating mechanism
- Simple operation

SPECIFICATION

Item	Parameter	Value			
		UW-12	UW-24	UDS-12	UDS-24
1.	Rated operating voltage	12 [kV]	24[kV]	12 [kV]	24 [kV]
2.	Rated frequency	50 [HZ]	50 [HZ]	50 [HZ]	50 [HZ]
3.	Peak withstand current	50 [kA]	50 [kA]	50 [kA]	50 [kA]
4.	Rated short-time withstand current	20 [kA]	20 [kA]	20 [kA]	20 [kA]
5.	Rated short-circuit making current	-	-	40 [kA]	40 [kA]
6.	Test voltage (50Hz) for earth and pole to pole insulation	28 [kV]	50 [kV]	28 [kV]	50 [kV]
7.	Surge test voltage for earth and pole to pole insulation	75 [kV]	125 [kV]	75 [kV]	125 [kV]

DRAWING



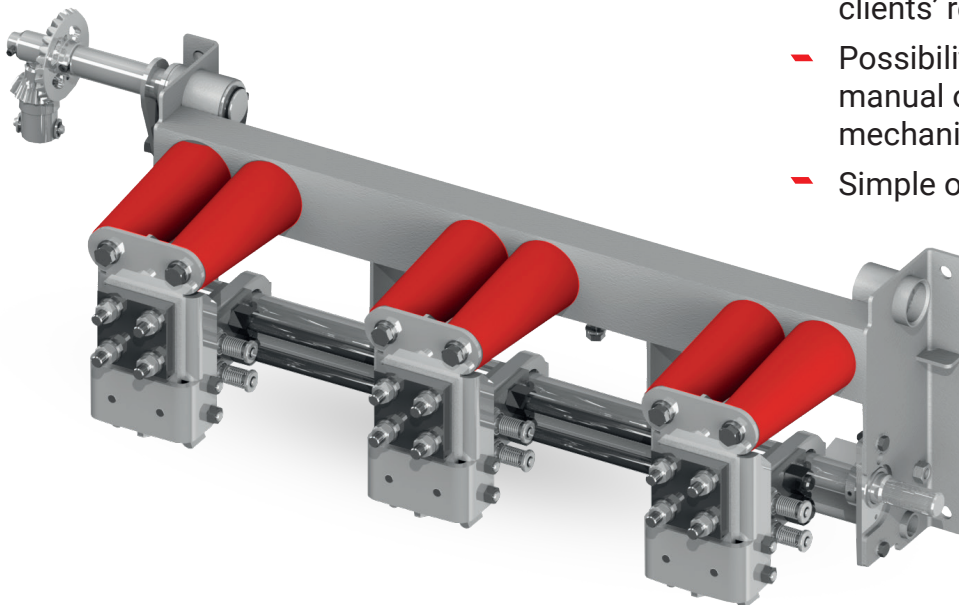
Earthing switch type	Dimensions [mm]					
	A	B	C	D	E	F
UW/UDS 12 kV/185 mm	185	530	-	-	400	282
UW/UDS 12 kV/160 mm	160	480	-	-	400	282
UW 12 kV/125 mm	125	410	422	441	400	282
UW/UDS 24 kV/275 mm	275	710	-	-	483	367
UW/UDS 24 kV/160 mm	160	480	532	552	483	367

UWS

High current earthing switch

CHARACTERISTICS

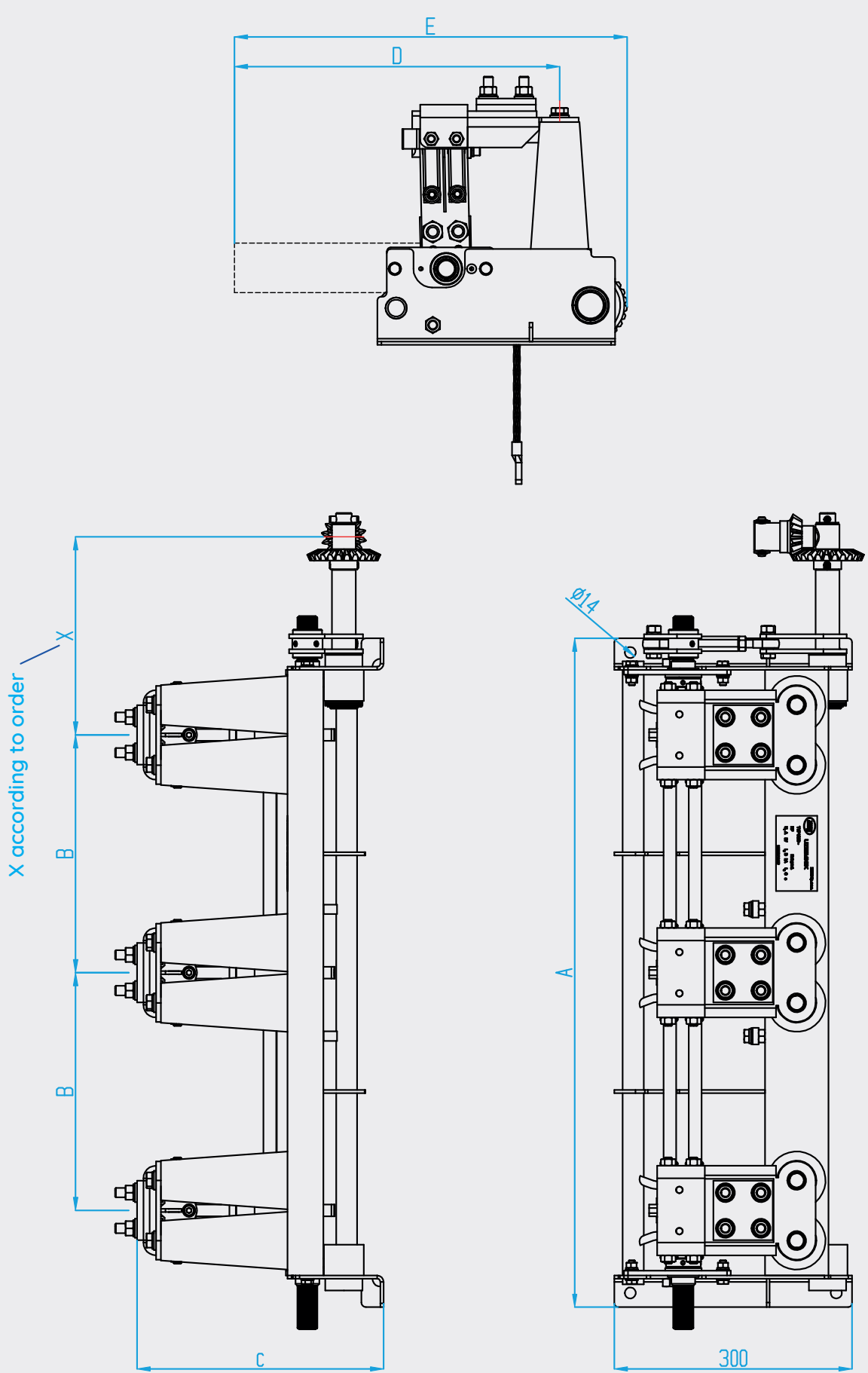
- High performance parameters
- Very high short-circuit and peak current – up to 76/190kA
- Indefective working
- Possibility to adapt apparatus to clients' requirements
- Possibility to manuever with manual or motor operating mechanism
- Simple operation



SPECIFICATION

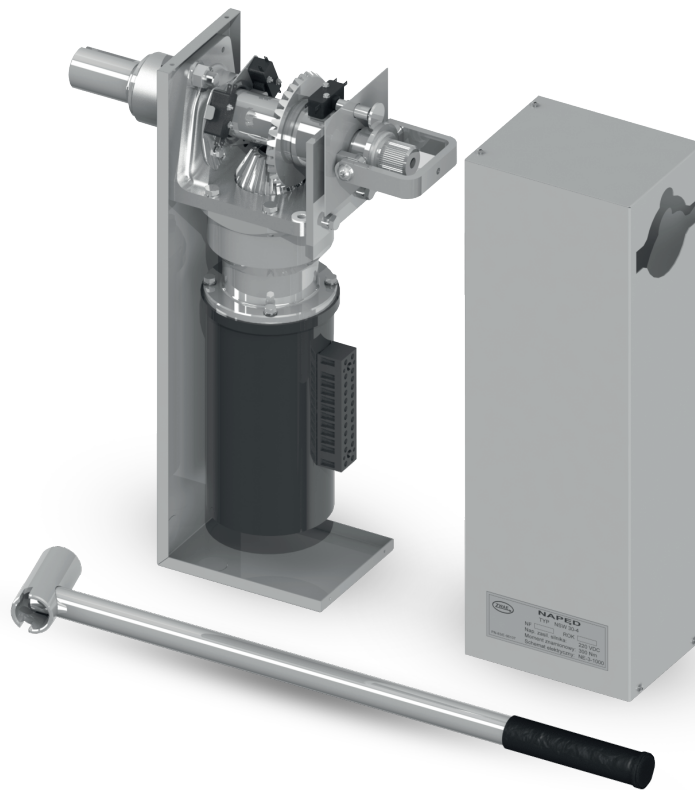
Item	Parameter	Value	
		UWS-12	UWS-24
1.	Rated operating voltage	12 [kV]	24 [kV]
2.	Rated frequency	50 /60 [HZ]	50 /60 [HZ]
3.	Peak withstand current	160/190 [kA]	125 [kA]
4.	Rated short-time withstand current	65/76 [kA]	50 [kA]
5.	Test voltage (50 Hz) for earth and pole to pole insulation	28 /32 [kV]	50/60 [kV]
6.	Surge test voltage for earth and pole to pole insulation	75/85 [kV]	125/145 [kV]

DRAWING



NSW30

Motor operating mechanism



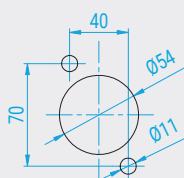
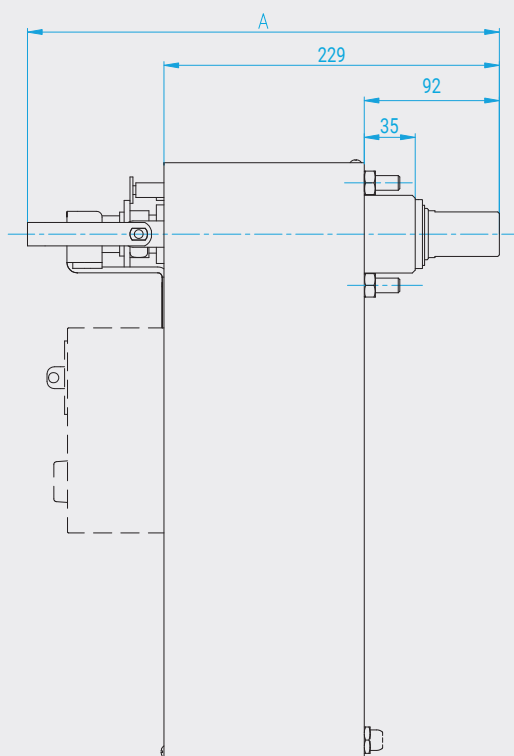
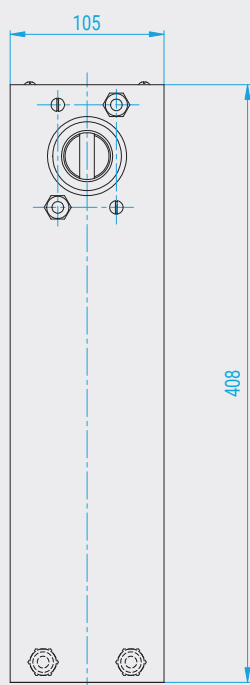
CHARACTERISTICS

- Simple assembling of the mechanism
- Possibility to application with many kinds of apparatus
- Many voltage versions available: 24, 110, 220, 230 VDC/AC
- High torque allowing to application in hard conditions
- High mechanical durability
- Simple regulation of the angle up to 210° with limit switches assembled directly in the mechanism
- Limit switches assembled directly on the apparatus
- Compatibility as a replacement for manual operating mechanism NR-1
- Possibility to equip with electromagnetic interlock
- Many options of engaging with apparatus, e.x. with a gear
- Capability of interoperation with disconnectors from other manufacturers.
- Possibility to adapt control system of the mechanism for clients' requirements

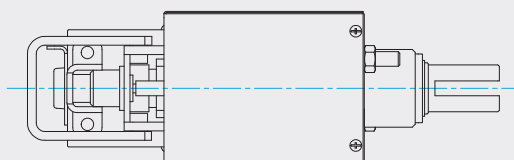
SPECIFICATION

Item	Parameter	Value	
1.	Operating mechanism type	NSW30-3	NSW30-4
2.	Applied motor type	with permanent magnets	series
3.	Motor rated voltage / rated current:	220 VDC / 4 [A] 110 VDC / 10 [A] 24 [VDC]/19 [A]	220 VDC / 4 [A] 110 VDC / 10 [A] 24 [VDC]/19 [A]
4.	Rated power:	300 [W]	300 [W]
5.	Shaft torque: - rated - maximal	150 [Nm] 300 [Nm]	150 [Nm] 300 [Nm]
6.	Switching time	ok.5 [s]	ok.5 [s]
7.	Maximum conductor cross section	4 [mm ²]	4 [mm ²]
8.	Enclosure protection rating	IP 55	IP 55
9.	Rated mechanical strength	2000 cycles	2000 cycles

DRAWING

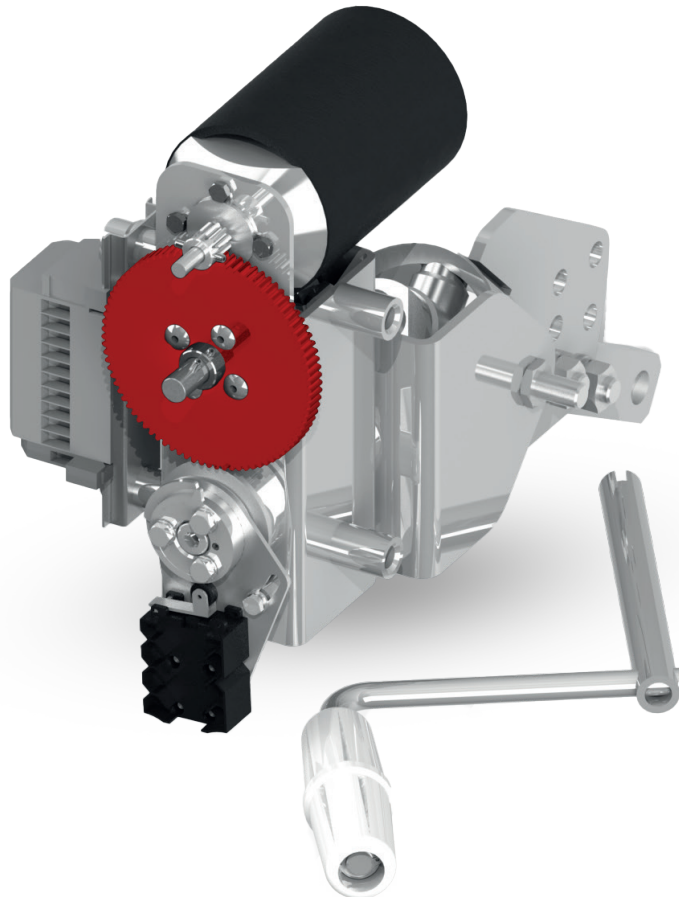


Mounting holes



NSP20

Motor operating mechanism



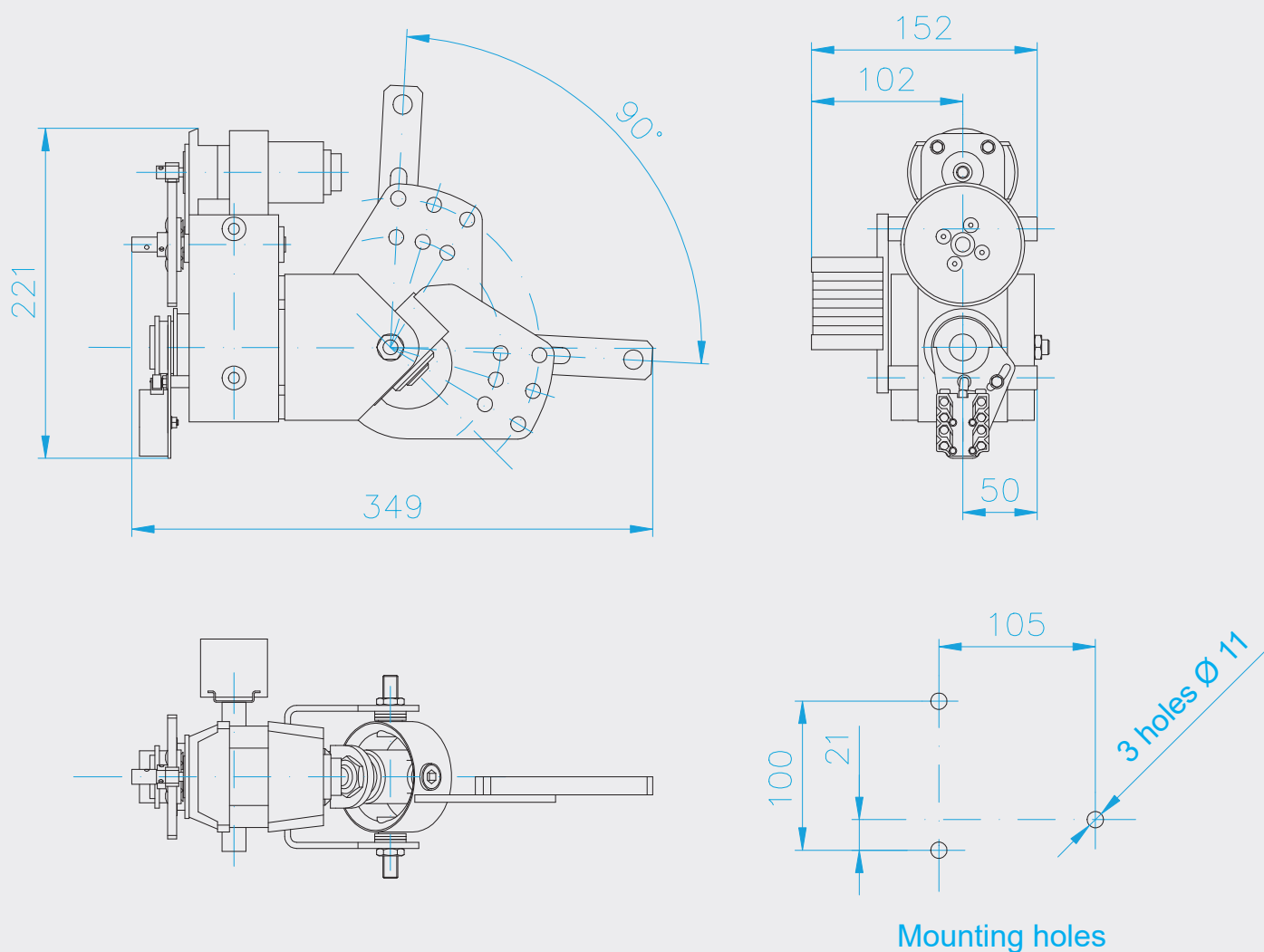
CHARACTERISTICS

- Simple assembling of the mechanism
- Possibility to application with many kinds of apparatus
- Indefective working
- Easy to use as a retrofit for pneumatic type mechanisms
- Fast assembling and simple adjustment

SPECIFICATION

Item	Parameter	Value
1.	Motor rated voltage	220 VDC 110 VDC
2.	Rated power	65 [W]
3.	Motor rated current	0,5 [A] / 220 [VDC] 1 [A] / 110 [VDC]
4.	Shaft torque	200 [Nm]
5.	Switching time	ok.3s
6.	Maximum conductor cross section	4 [mm ²]
7.	Rated mechanical strength	2000 cycles

DRAWING



NR-1

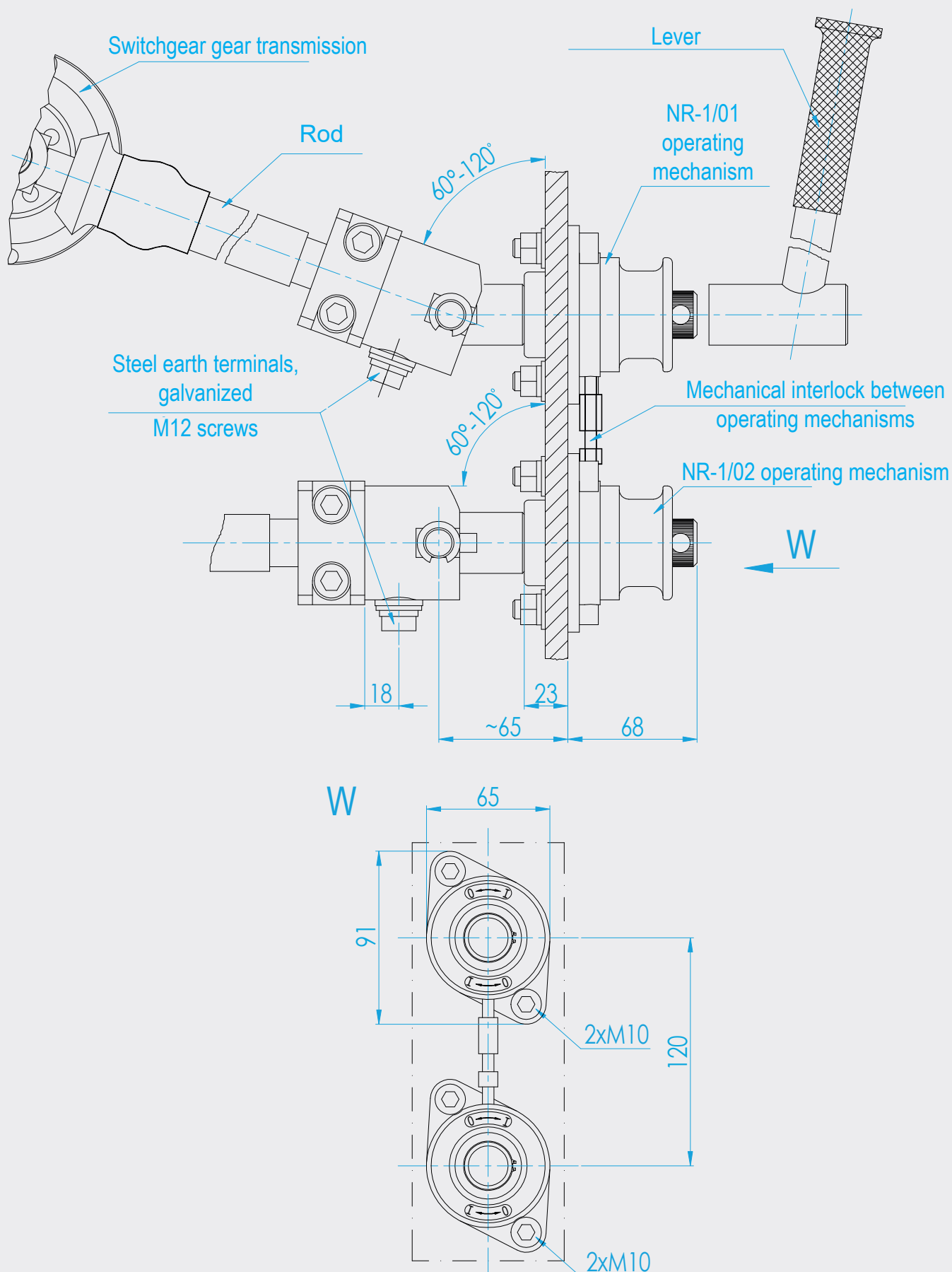
Manual operating mechanism



CHARACTERISTICS

- Compatibility as a replacement for manual operating mechanism NSW30
- Simple operation
- Application of mechanical locking between operating mechanisms of (switch) disconnecter/earthing switch
- Small dimensions
- Possibility to equip with electromagnetic interlock or padlock blocking apparatus in limit positions
- Available in versions for angles: to 40°

DRAWING





04

ACCESSORIES

WN/WNS

LP-1

PB

WARNING: As a result of the possibility of changes due to technological development, the diagrams in the catalogue have only a visual character.

WN/WNS

Voltage indicator
Voltage indicator with electromagnetic interlock



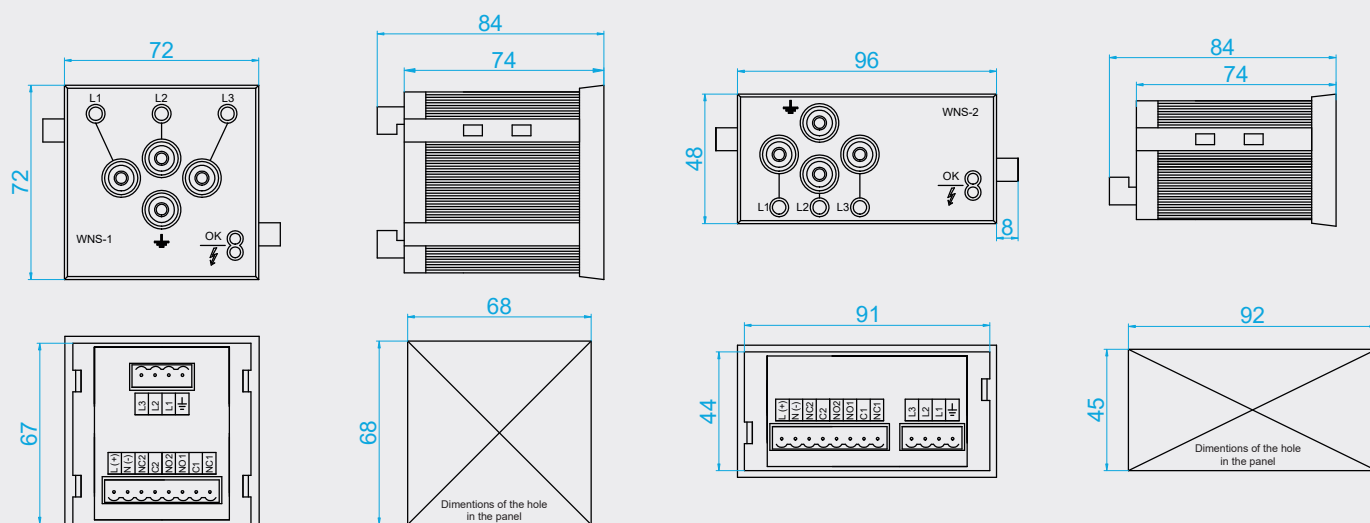
CHARACTERISTICS

- Possibility of application with switch disconnectors and disconnectors
- Allows to control voltage presence in MV circuits
- Gives additional protection
- Low power input from auxiliary power
- Simple operation and assembling

SPECIFICATION

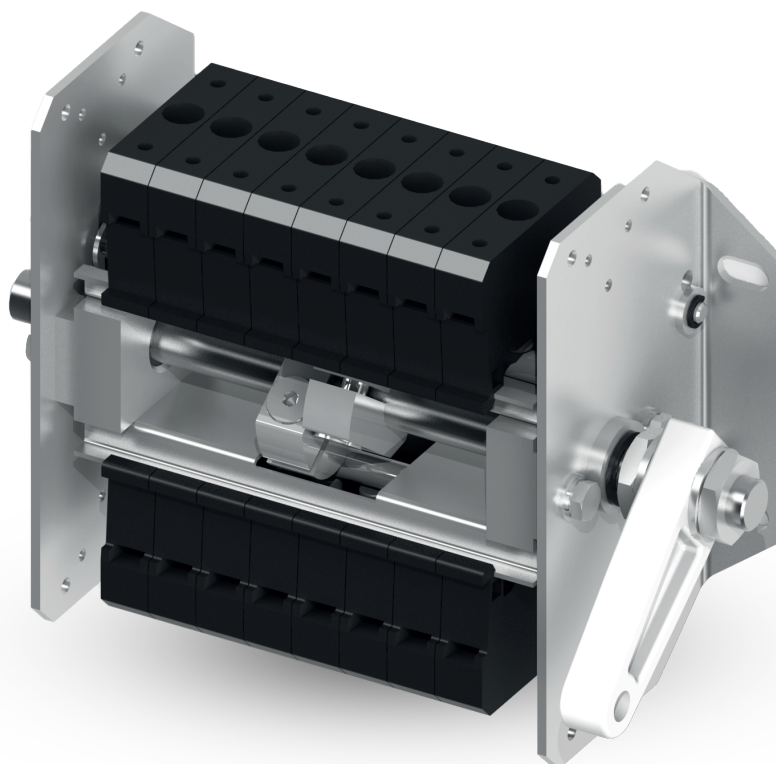
Item	Parameter	Value
1.	Limiting (minimum) detection current	$I = 60 \mu\text{A min}$
2.	Rated detection current	$I = 270 \mu\text{A}$
3.	Substitutive impedance of a single detector phase	$Z = 220 \text{ kohm}$
4.	Auxiliary contacts- two pairs	2P
5.	Auxiliary contact rated load	8A/230 VAC
6.	Auxiliary rated voltage	85-265 VAC/VDC
7.	Input power	<2VA
8.	Max. conductor cross section	2,5mm ²

DRAWING



LP-1

Auxiliary contact switch



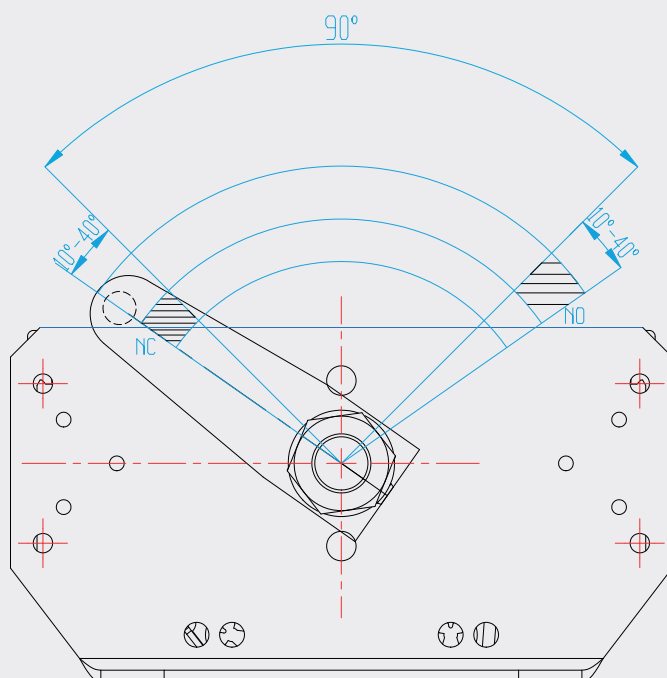
CHARACTERISTICS

- Simple construction
- Standard contacts application
- Small dimensions
- Possibility to adjust the angle working
- Possibility to set various combinations of contacts

SPECIFICATION

Item	Parameter	Value	
1.	Rated continuous current	10 [A]	
2.	Insulation rated voltage $I_u = I_{th}$	500 [V]	
3.	Rated switching currents	AC-15 220[V] - 2,6 [A] 380[V] - 1,6 [A] 500[V] - 1,6[A]	DC-13 24[V] - 4[A] 110[V] - 1[A] 220[V] - 0,25[A]
4.	Switching reliability -at rated voltage and rated operational currents -switching AC electromagnets -switching DC electromagnets	0,2 mln cycles 1 mln cycles do 80[VA] 1mln cycles do 10 [W]	
5.	Operating temperature	-5<>+50 °C	
6.	Connection cable cross-section: - rigid - stranded	2x1<>1,25 [mm2] 2x0,75<>1,5[mm2]	
7.	Operating position	any	

DRAWING

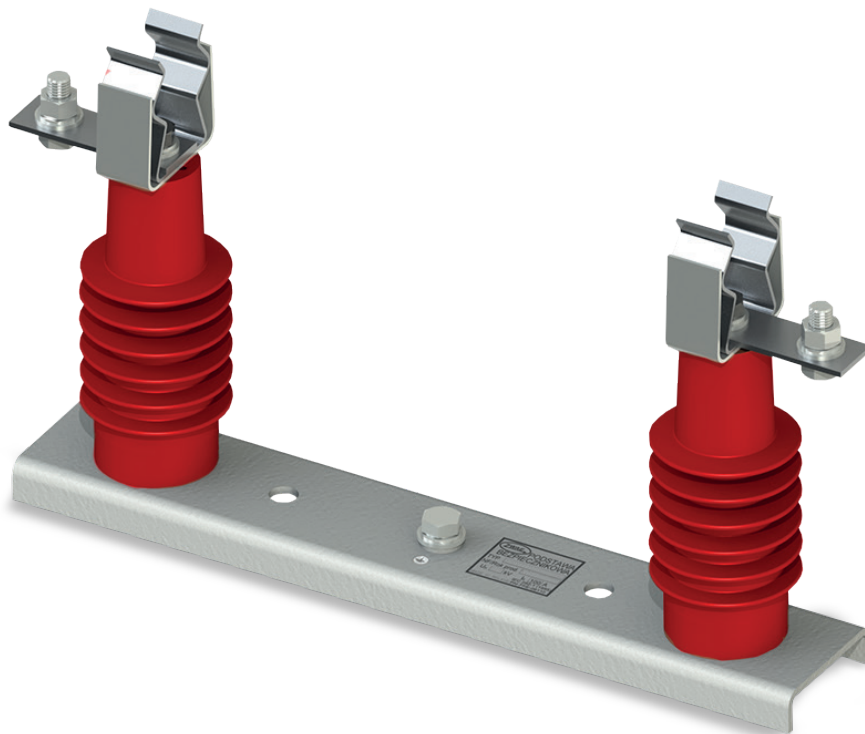


**Contact Configuration
at the left hand lever position**

1	5	9	13	17	21	25	29
2	6	10	14	18	22	26	30
NO	NO	NO	NO	NO	NO	NO	NO
3	7	11	15	19	23	27	31
4	8	12	16	20	24	28	32
NC	NC	NC	NC	NC	NC	NC	NC

PB

Fuse base



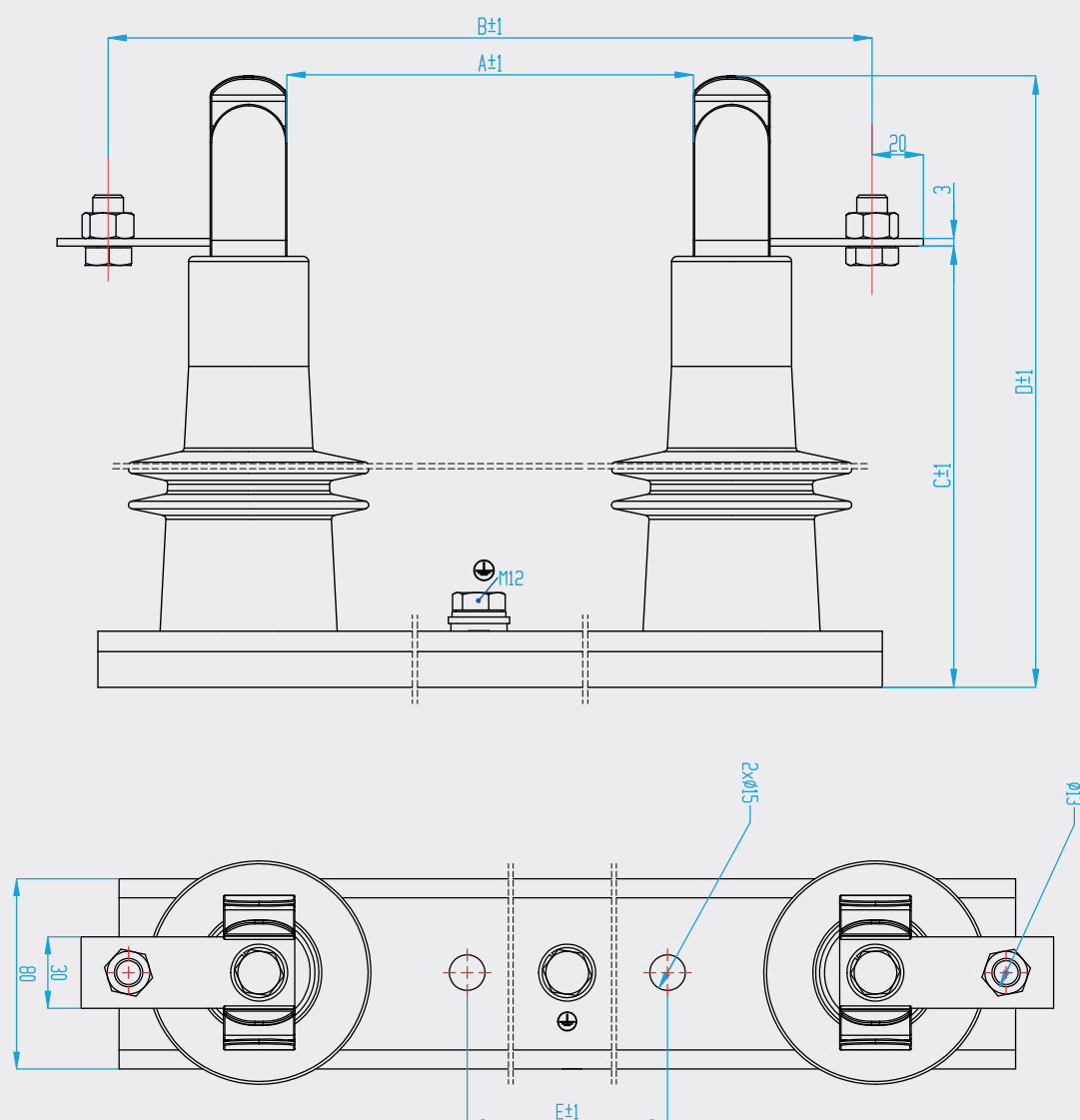
CHARACTERISTICS

- Simple construction
- Easy assembling
- Possibility to applicate common fuse cartdridges
- Auxiliary contact to signalize fuse cartdridge overburnt available

SPECIFICATION

Item	Parameter	Value		
1.	Insulation rated voltage	12kV	24kV	36kV
2.	Test voltage (50 Hz)	28 kV	50kV	70 kV
3.	Surge test voltage	75 kV	125 kV	170 kV

DRAWING



Fuse base type	Dimensions [mm]				
	A	B	C	D	E
12 kV/537 mm	540	680	200	268	380
12 kV/292 mm	295	435	200	268	180
24 kV/537 mm	540	680	282	350	380
24 kV/442 mm	445	585	282	350	300
36 kV/537 mm	540	680	380	448	380

We connect
with ENERGY



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