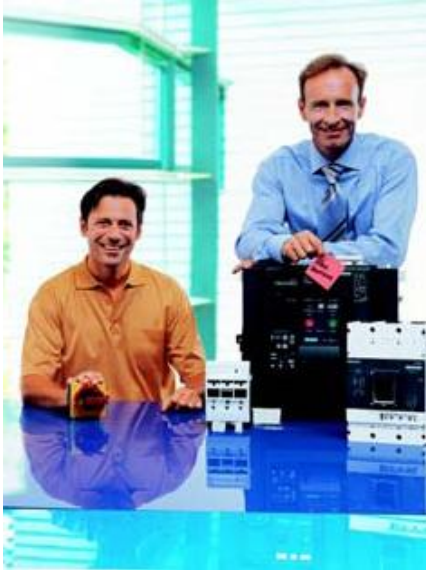


SENTRON Switching and Protection Devices – Switch Disconnectors

17



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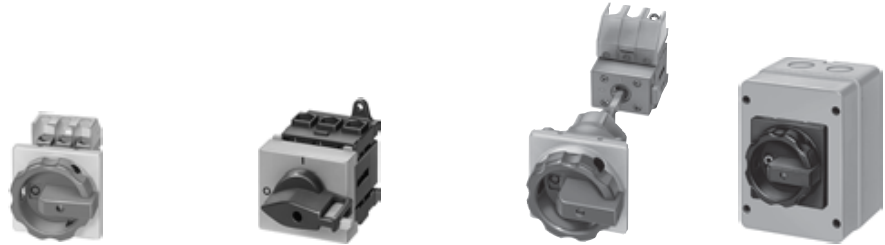
17/50 Accessories



SENTRON Switching and Protection Devices – Switch Disconnectors

Introduction

Overview



Type		3LD20	3LD21	3LD22	3LD25	3LD27	3LD28
3LD main and EMERGENCY-STOP switches from 16 A to 125 A							
Rated uninterrupted current I_U at 35 °C ambient temperature	A	16	25	32	63	100	125
Rated operational voltage U_e	V	690	690	690	690	690	690
AC-3 motor load switches							
Operational switching of individual motors							
At 220 ... 240 V	kW	3.0	4.0	5.5	11.0	18.5	22.0
At 380 ... 440 V	kW	5.5	7.5	9.5	18.5	30.0	37.0
At 660/690 V	kW	5.5	7.5	9.5	15.0	22.0	30.0
AC-23A main control switches, maintenance switches							
Frequent, but not operational switching of single motors							
At 220 ... 240 V	kW	4.0	5.0	6.0	11.0	18.5	22.0
At 380 ... 440 V	kW	7.5	9.5	11.5	22.0	37.0	45.0
At 660/690 V	kW	7.5	9.5	11.5	18.5	30.0	37.0
Switch versions							
Front mounting							
• Central		✓	✓	✓	✓	--	--
• Four-hole		✓	✓	✓	✓	✓	✓
Floor mounting							
• Central		✓	✓	✓	✓	--	--
• Four-hole		✓	✓	✓	✓	✓	✓
Distribution board mounting							
		✓	✓	✓	✓	✓	✓
Molded-plastic enclosures							
• Metric screwed glands		✓	✓	✓	✓	✓	✓
Switch accessories							
4th pole (neutral conductor) (leading switch-on, delayed switch-off)		✓	✓	✓	✓	✓	✓
N terminals		✓	✓	✓	✓	✓	✓
PE/ground terminals		✓	✓	✓	✓	✓	✓
Auxiliary contacts							
1 NO + 1 NC		✓	✓	✓	✓	✓	✓

SENTRON Switching and Protection Devices – Switch Disconnectors



Type		3NP	3K	3NJ4
SENTRON				
Rated uninterrupted current I_U at 35 °C ambient temperature	A	160 to 630	63 to 1000	160 to 1250
Rated operational voltage U_e	V	690	690	690
AC-21				
At 400 V		✓	✓	✓
At 500 V		✓	✓	✓
At 690 V		✓	✓	✓
AC-22				
At 400 V		✓	✓	✓
At 500 V		✓	✓	✓
At 690 V		✓	✓	✓
AC-23				
At 400 V		✓	✓	--
At 500 V		--	✓	--
At 690 V		--	✓	--
Switch versions				
Front mounting		--	✓	--
Floor mounting		✓	✓	--
Busbars				
• 40 mm		✓	--	--
• 60 mm		✓	✓	--
• 185 mm		--	--	✓
Molded-plastic enclosures		✓	✓	--
Switch accessories				
Auxiliary contacts				
1 NO + 1 NC		--	✓	--
1 CO		✓	✓	✓
Fuse monitoring				
• With circuit-breakers		✓	✓	✓
• With electronics		✓	✓	✓

3KA, 3KE, 3LD Switch Disconnectors

3KA, 3KE Switch Disconnectors up to 1000 A

General data

Design

For the 3KA switch disconnectors, complete kits for standard and EMERGENCY-STOP application are available for installation in the side and rear panels of control cabinets.

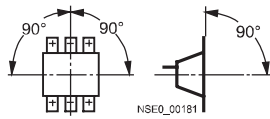
A changeover operating mechanism is available for the use of 2 switch disconnectors in the 3KE series as load changeover switches.

An operating linkage permits simultaneous switching of two 3KE switch disconnectors with identical or different rated operational currents.

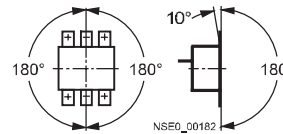
Identical accessories for 3KA switch disconnectors and for 3KL and 3KM switch disconnectors with fuses simplify keeping of stocks.

Technical specifications

Permissible mounting position



3KE



3KA

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107						
Type		3KA50	3KA51	3KA52	3KA53 ¹⁾	3KA55	3KA57 ¹⁾	3KA58
Rated uninterrupted current I_u	A	63	80	125	160	250	400	630 ³⁾
Continuous free-air thermal current $I_{th}^{2)}$	A	63	80	125	160	250	400	630 ³⁾
Rated insulation voltage U_i	V	690	690	1000	1000	1000	1000	1000
Rated impulse voltage U_{imp}	kV	6	6	8	8	8	8	8
Rated operational voltage U_e								
AC 50 Hz/60 Hz	V	690						
DC	V	440 (3 conducting paths series-connected)						
	V	220 (2 conducting paths series-connected)						
	V	110 (1 conducting path)						
Rated short-circuit current I_{cm} with upstream fuses ⁴⁾	kA (peak value)	220	220	220	220	176	176	105
At 50 Hz/60 Hz 690 V AC								
Rated conditional short-circuit current with upstream fuses ⁴⁾	kA (rms value)	100	100	100	100	80	80	50
At 50 Hz/60 Hz 690 V AC								
Max. rated current I_n of the fuses	A	63	80	160	160	400	400	630
Permissible let-through current of the fuses	kA	8	10	17	17	30 ⁵⁾	30 ⁵⁾	40 ⁵⁾
Maximum permissible let-through I^2t value	kA ² s	55	55	223	223	1000	1000	2600
Permissible let-through current of an upstream circuit-breaker	kA (peak value)	7	8	8	15	25	25	32
At 50 Hz/60 Hz 690 V AC								
Rated short-circuit making capacity without fuses	kA (peak value)	7	7	7	9	20	25	35
At 50 Hz/60 Hz 690 V AC								
Switching capacity (feed-in from the top or bottom)								
At 400 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	650	1000	1280	2000	3200	5040
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	80	125	160	250	400	630 ⁶⁾
Motor switching capacity AC-23A	kW	30	40	65	80	132	200	350
At 500 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	640	1000	1280	2000	3200	3200
Rated operational current I_e at AC-21A, AC-22A	A	63	80	125	160	250	400	630
AC-23A	A	63	80	125	160	250	400	400
Motor switching capacity AC-23A	kW	40	50	90	110	185	280	280
At 690 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	500	1000	1280	2000	3200	3200
Rated operational current I_e at AC-21A, AC-22A	A	63	80	125	160	250	400	630
AC-23A	A	63	63	125	160	250	400	400
Motor switching capacity AC-23A	kW	50	50	110	150	220	375	375
At 440 V DC (3 conducting paths series-connected) ⁷⁾								
Breaking current I_c ($L/R = 15$ ms)	A	250	260	500	640	1000 ⁸⁾	1600	1600
Rated operational current I_e at DC-23A	A	63	63	125	160	250 ⁹⁾	400	400
Rated short-time current I_{cw} (1 s current)	kA (rms value)	2.5	2.5	3.2	3.2	8	11	15

3KA, 3KE, 3LD Switch Disconnectors

3KA, 3KE Switch Disconnectors up to 1000 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107							
Type		3KA50	3KA51	3KA52	3KA53 ¹⁾	3KA55	3KA57 ¹⁾	3KA58	
Permissible load									
Depending on the ambient temperature for open-type installation in switchboards (e.g. 8NA1) in switchgear cubicles or switchgear racks at									
35 °C	A	63	80	125	160	250	400	630	
40 °C	A	63	80	125	160	250	400	620	
45 °C	A	63	80	125	160	250	400	600	
50 °C	A	63	80	125	160	250	400	580	
55 °C	A	63	80	125	160	250	400	560	
60 °C	A	63	80	125	160	250	400	550	
Permissible ambient temperature									
	°C	-25 ... +55 for operation ³⁾							
	°C	-50 ... +80 when stored							
Mechanical endurance									
	Operating cycles	15000	15000	15000	15000	12000	12000	12000	
Required operating torque									
	Nm	3	3	7.5	7.5	16	16	16	
Degree of protection		IP00/IP20 (from the operating side, with busbar and terminal covers)							
Power loss of the switch disconnector at I_{th}									
	W	7	12	22	22	33	72	170	
Main conductor connections									
Busbar systems, max. dimensions (w x t)		mm x mm	25 x 9	25 x 9	45 x 10	45 x 10	40 x 12	40 x 12	40 x 15
Cable lug, max. conductor cross-section (stranded)		mm ²	35	35	70	120	150	2 x 150 or 1 x 240	2 x 240
Tightening torque		Nm	6 ... 7.5	6 ... 7.5	7 ... 10	18 ... 22	35 ... 45	35 ... 45	35 ... 45
Terminal screws			M6	M6	M6	M8	M10	M10	M10
PE/ground terminals									
Flat bars		mm x mm	--	--	--	--	20 x 2.5	20 x 2.5	20 x 2.5
Cable lug, max. conductor cross-section (stranded)		mm ²	--	--	--	--	70	120	120
Auxiliary switch 1 NO +1 NC (accessories)									
Max. number to be plugged		1	1	2	2	2	2	2	
Rated operational current I_e at AC 50 Hz/60 Hz									
$I_e/AC-12$		A	10						
$I_e/AC-15$ at $U_e = 220$ V/230 V		A	6						
$I_e/AC-15$ at $U_e = 380$ V/400 V		A	4						
$I_e/AC-15$ at $U_e = 500$ V		A	2.5						
$I_e/AC-15$ at $U_e = 690$ V		A	21.2						
Rated operational current I_e at DC									
$I_e/DC-13$ at $U_e = 24$ V		A	10						
$I_e/DC-13$ at $U_e = 48$ V		A	4						
$I_e/DC-13$ at $U_e = 110$ V		A	1.2						
$I_e/DC-13$ at $U_e = 220$ V		A	0.4						
$I_e/DC-13$ at $U_e = 440$ V		A	0.2						
Connection									
Solid		mm ²	2 x (1 ... 2.5)						
Finely stranded with end sleeve		mm ²	2 x (0.5 ... 1.5)						
Weight									
Complete version		kg	1.450	1.450	2.400	2.400	5.400	5.500	6.100
Basic version		kg	0.950	0.950	1.900	1.900	4.500	4.600	5.200

- 1) Technical specifications for CSA approval on request.
- 2) Configuring note: max. permissible operating temperature at connections 100 °C.
- 3) With 3KA58 for operation -25 °C ... +35 °C, 570 A at 55 °C.
- 4) Only with 3NA38, 3NA32 or 3ND18, 3ND12 fuses (otherwise only 105 kA/50 kA).
- 5) 3ND1 switchgear protection fuse.
- 6) AC-23B.
- 7) Or 220 V DC (L1 and L3 series-connected) or 110 V DC (one conducting path) at DC-23A.
- 8) At 440 V L/R = 4 ms, at 220 V L/R = 15 ms.
- 9) At 440 V DC-22A, at 220 V DC-23A.

3KA, 3KE, 3LD Switch Disconnectors

3KA, 3KE Switch Disconnectors up to 1000 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107			
Type		3KE42	3KE43	3KE44	3KE45
Rated uninterrupted current I_u	A	250	400	630	1000
Rated insulation voltage U_i	V	1000 AC, 1200 DC			
Rated impulse voltage U_{imp}	kV	8	8	8	8
Rated operational voltage U_e					
AC 50 Hz/60 Hz	V	690			
DC	V	440 (3 conducting paths series-connected)			
	V	220 (2 conducting paths series-connected)			
Rated short-circuit making capacity I_{cm}	kA (peak value)	35	35	60	60
At 50 Hz/60 Hz 690 V AC					
Rated short-circuit making capacity with upstream fuses	kA (peak value)	105	105	105	84
At 50 Hz/60 Hz 690 V AC					
Rated conditional short-circuit current with upstream fuses	A (rms value)	50	50	50	40
At 50 Hz/60 Hz 690 V AC					
Maximum permissible let-through I^2t value	kA ² s	2150	2150	5400	19000
Permissible let-through current of an upstream circuit-breaker	kA (peak value)	35	35	60	60
At 50 Hz/60 Hz 690 V AC					
Max. rated current I_n of the fuses	A	400	400	630	1000
Permissible let-through current of the fuses	kA (peak value)	38	38	60	75
Switching capacity (feed-in from the top or bottom)					
At 400 V AC					
Breaking current I_c (p.f. = 0.35)	A (rms value)	1000	1000	2520	2520
Rated operational current I_e at AC-21A	A	250	400	630	1000
AC-22A	A	250	330	630	800
AC-23A	A	125	125	315	315
At 500 V AC					
Breaking current I_c (p.f. = 0.35)	A (rms value)	1000	1000	2520	2520
Rated operational current I_e at AC-21A	A	250	400	630	1000
AC-22A	A	250	330	630	800
AC-23A	A	125	125	315	315
At 690 V AC					
Breaking current I_c (p.f. = 0.35)	A (rms value)	1000	1000	2520	2520
Rated operational current I_e at AC-21A	A	250	400	630	1000
AC-22A	A	250	330	630	800
AC-23A	A	125	125	315	315
At 440 V DC (3 conducting paths series-connected)					
Breaking current I_c (L/R = 5 ms)	A	1000	1000	2520	2520
Rated operational current I_e at DC-21A	A	250	400	630	1000
DC-22A	A	250	250	630	630
Rated short-time current I_{cw} (1 s current)	A (rms value)	12.5	12.5	21	21
Permissible load					
Depending on the ambient temperature for open-type installation in switchboards (e.g. 8NA1) in switchgear cubicles or switchgear racks at					
35 °C	A	250	400	630	1000
40 °C	A	250	400	630	960
45 °C	A	250	400	630	930
50 °C	A	250	400	630	890
60 °C	A	240	380	600	810
For enclosed installation, e.g. in 8HP systems		See Catalog "8HP System", Order No. E20001-8ZX1012-0HP54-5AB1			
Permissible ambient temperature	°C	-25 ... +55 for operation			
	°C	-50 ... +80 when stored			
Mechanical endurance	Operating cycles	10000			
Degree of protection		IP00			
Required operating torque	Nm	15	15	24	24
Required operating torque for changeover operating mechanism					
With interruption	Nm	20	20	30	30
Without interruption	Nm	35	35	55	55

3KA, 3KE, 3LD Switch Disconnectors

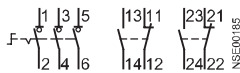
3KA, 3KE Switch Disconnectors up to 1000 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107			
Type		3KE42	3KE43	3KE44	3KE45
Power loss of the switch disconnector at I_{th}	W	15	33	78	180
Main conductor connections					
Busbar systems, max. dimensions (w x t)	mm x mm	25 x 10	25 x 10	2 x 40 x 10	2 x 40 x 10
Cable lug, max. conductor cross-section (stranded)	mm ²	2 x 150	2 x 150, 1 x 240	2 x 240	2 x 240
Auxiliary switch 1 NO +1 NC (accessories)					
Rated insulation voltage U_i	V	500			
Rated operational current I_e (same potential at contacts) at AC 50 Hz/60 Hz					
$I_e/AC-1$ at $U_e = 500$ V	A	10			
$I_e/AC-11$ at $U_e = 230$ V	A	6			
Rated operational current I_e (same potential at contacts) at DC					
$I_e/DC-11$ at $U_e = 24$ V	A	10			
$I_e/DC-11$ at $U_e = 220$ V	A	0.4			
Connection					
Solid	mm ²	2 x 2.5			
Finely stranded with end sleeve	mm ²	2 x 1.5			
Short-circuit protection (tested as per DIN VDE 0660 with 1000 A)					
		6 A TDz, 10 A Dz or 10 A G-type m.c.b.			

Schematics

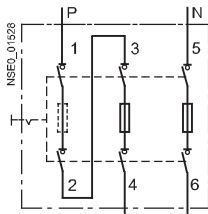
Internal circuit diagram for 3KA



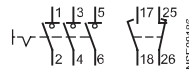
(for 3KA50 and 3KA51, only one auxiliary switch possible; 4th pole is possible as main contact)

Internal circuit diagram for 3KA and 3KE

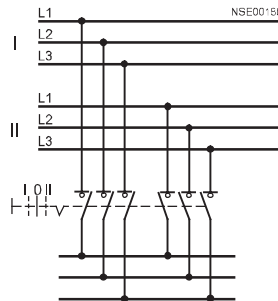
(auxiliary switch not included in scope of supply)
Use for DC voltage at DC-23A 440 V



Internal circuit diagram for 3KE



Circuit diagram for changeover switch with interruption



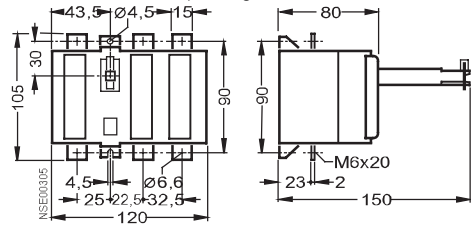
3KA, 3KE, 3LD Switch Disconnectors

3KA, 3KE Switch Disconnectors up to 1000 A

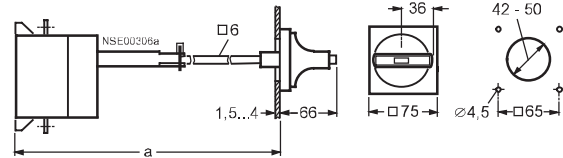
Floor mounting

Dimensional drawings

3KA50, 63 A, 3KA51, 80 A, 3-pole
3KA50 and 3KA51: Dimensional drawing for 4-pole version corresponds to dimension drawing for 3KA52
 without shaft, without operating mechanism



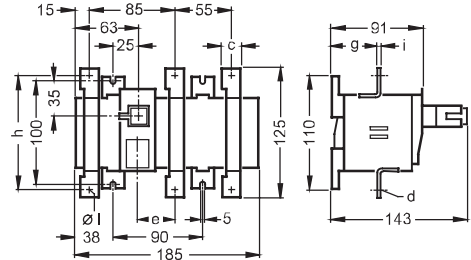
3KA50, 63 A, 3KA51, 80 A, 3-pole
3KA50 and 3KA51: Dimensional drawing for 4-pole version corresponds to dimension drawing for 3KA52
 with shaft and 8UC6 operating mechanism



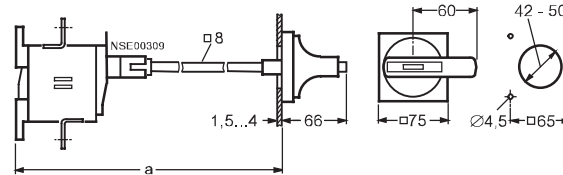
3KA50, 3KA51

Shaft (profile) engaged length:	a	Shaft length
max. 380	max. 380	300; unchanged shaft from 8UC61
min. 70 mm	min. 175	175 ₋₉₀ ; shortened shaft from 8UC61
max. 150 mm	≥ 175 ... ≤ 380	a ₋₉₀

3KA52, 125 A
3KA53, 160 A
3KA50, 3KA51, 4-pole
 without shaft, without operating mechanism



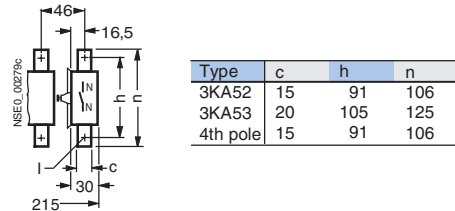
3KA52, 125 A
3KA53, 160 A
3KA50, 3KA51, 4-pole
 with shaft and 8UC6 operating mechanism



3KA52, 3KA53

Shaft (profile) engaged length:	a	Shaft length
max. 350	max. 350	300; unchanged shaft from 8UC62
min. 90 mm	min. 165	165 ₋₅₀ ; shortened shaft from 8UC62
max. 143 mm	≥ 165 ... ≤ 350	a ₅₀

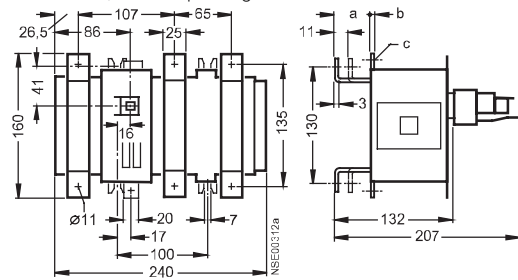
4th pole 3KX3 523-0AA
 for 3KA53, 3KA52



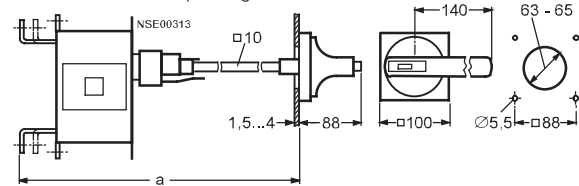
Type	c	h	n
3KA52	15	91	106
3KA53	20	105	125
4th pole	15	91	106

Type	c	d	e	g	h	l	l	n
3KA52	15	M6 x 20	37	42	91	3	Ø 6.6	106
3KA53	20	M8 x 25	39	39.5	105	3.5	Ø 9	125
4th pole	15	M6 x 20	--	48	91	3	Ø 6.6	106

3KA55, 250 A, 3KA57, 400 A
 without shaft, without operating mechanism



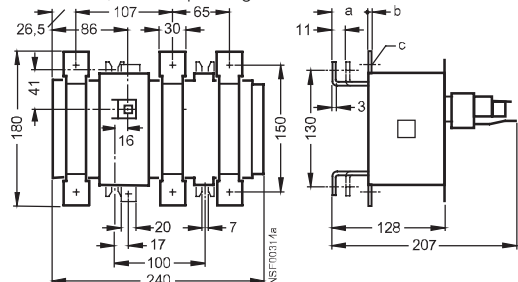
3KA55, 250 A, 3KA57, 400 A, 3KA58, 630 A
 with shaft and 8UC6 operating mechanism



3KA55, 3KA57, 3KA58

Shaft (profile) engaged length:	a	Shaft length
max. 335	max. 335	300; unchanged shaft from 8UC63
min. 230	min. 230	230 ₋₃₅ ; shortened shaft from 8UC63
min. 170 mm	≥ 230 ... ≤ 335	a ₃₅
max. 205 mm		

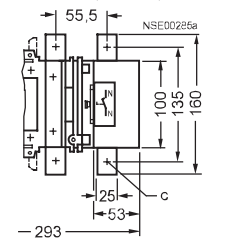
3KA58, 630 A
 without shaft, without operating mechanism



3KA58

4th pole 3KX3 553-0AA
 for 3KA55, 3KA57, 3KA58

Type	a	b	c
3KA55, 3KA57	40	4	M10 x 30
3KA58	38	6	M10 x 35
4th pole	80	4	M10 x 30



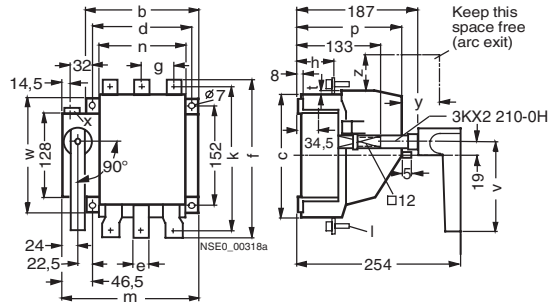
3KA, 3KE, 3LD Switch Disconnectors

3KA, 3KE Switch Disconnectors up to 1000 A

Floor mounting

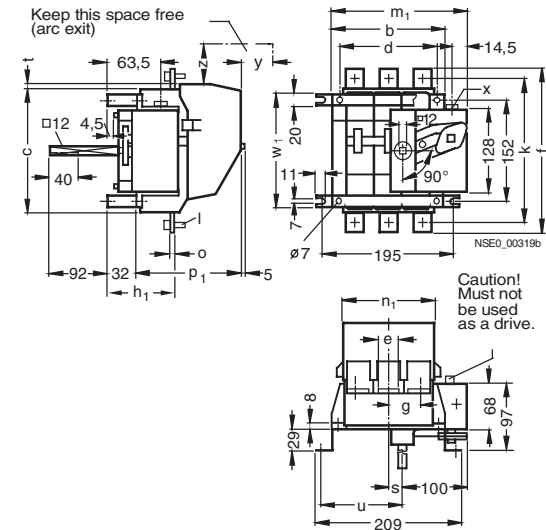
3KE4

Front operating mechanism with handle



3KE4

Rear rotary operating mechanism without handle



3KX2 210-0H

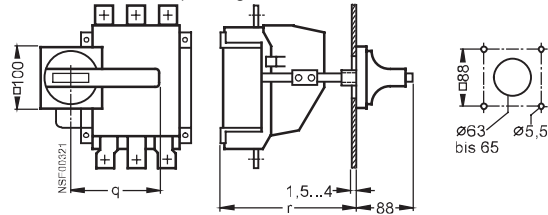
Coupling socket



Type	b	c	d	e	f	g	h	h ₁	k	l	m	m ₁	N	n ₁	o	p	p ₁	s	t	u	v	w	w ₁	x	y	z
3KE42	155	170	140	25	200	40	60	92	175	M10 × 30	194	194	129	121	4	150	182	15	--	105	140	170	172	M10 × 18	50	50
3KE43	155	170	140	25	200	47	60	92	175	M10 × 30	194	194	129	121	4	150	182	15	--	105	140	170	172	M10 × 18	50	50
3KE44	170	192	155	40	278	55	65	97	238	M12 × 35	209	208	144	136	5	161	193	23	3.5	121	200	172	172	M10 × 18	--	--
3KE45	170	192	155	40	290	65	68	100	250	M12 × 50	209	208	144	136	8	161	193	23	3.5	121	200	172	172	M12 × 25	--	--

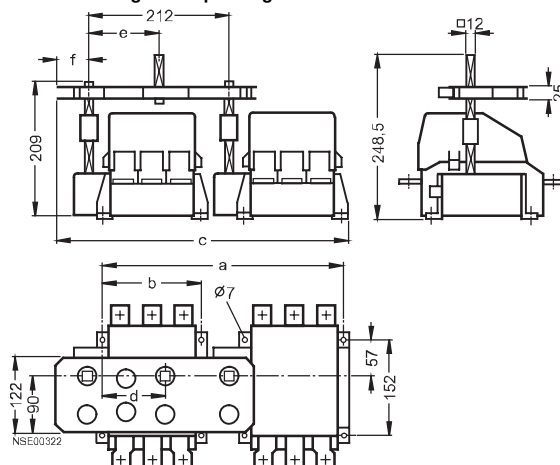
3KE4. 30-0EA

with shaft and 8UC6 operating mechanism

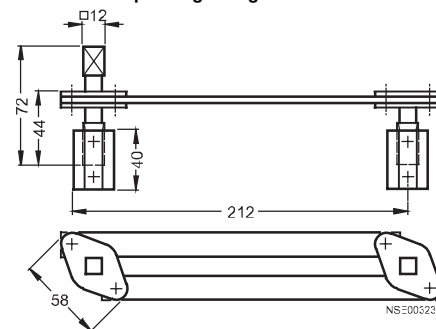


Type	r	Shaft length	q
3KE42, 3KE43	max. 433	300; unchanged shaft from 8UC63	140
	min. 200	67; shortened shaft from 8UC63	140
	≥ 200 ... ≤ 433	r ₋₁₃₃	140
3KE44, 3KE45	max. 433	300; unchanged shaft from 8UC64	200
	min. 210	77; shortened shaft from 8UC64	200
	≥ 210 ... ≤ 433	r ₋₁₃₃	200

3KX2 210 changeover operating mechanism



3KX2 250-1A operating linkage



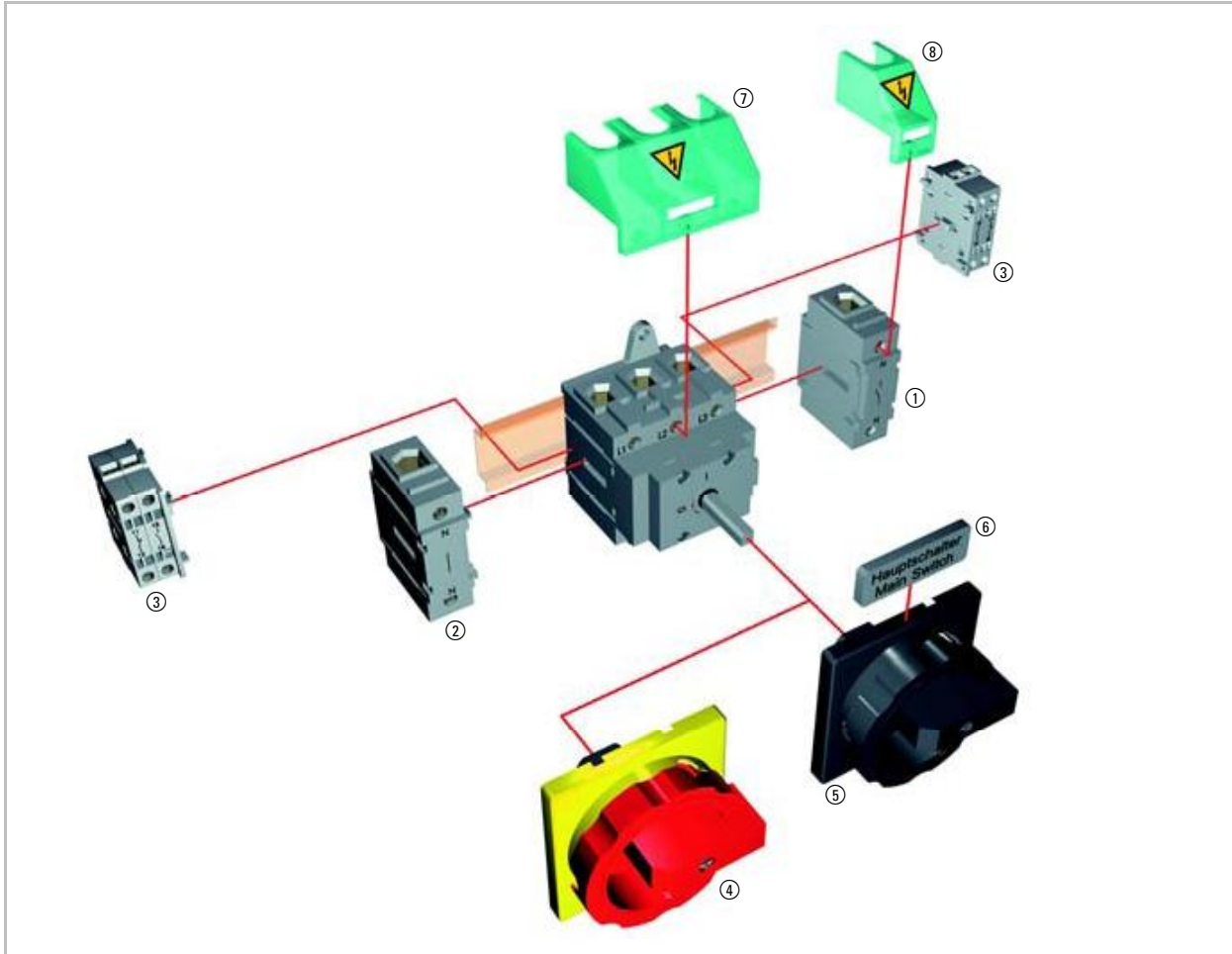
Version	For type	a	b	c	d	e	f
With interruption	3KE42, 3KE43	352	140	427	92.5	115	45
	3KE44	367	155	442	92.5	115	45
	3KE45	367	155	442	92.5	115	55
Without interruption	3KE42, 3KE43	352	140	417	74.5	97	35
	3KE44	367	155	432	74.5	97	35
	3KE45	367	155	432	74.5	97	35

3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

General data

Overview



- ① Fourth contact element (neutral conductor)
- ② N or PE/ground terminal, continuous
- ③ Auxiliary switch, 1 NO and 1 NC
- ④ Rotary operating mechanism, red/yellow
- ⑤ Rotary operating mechanism, black
- ⑥ Front plate, German/English
- ⑦ Terminal cover, three-pole
- ⑧ Terminal cover, one-pole

3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

General data

Design

Construction of the contacts

Each switch has three adjacent contact elements¹⁾. A fourth leading contact element for switching the neutral conductor, a continuous PE/ground terminal, an auxiliary switch (1 NO or 1 NC or 1 changeover contact) can be fitted to each side of the switch. The auxiliary switches operate as leading contacts on opening. On opening, the make contact opens before the main contacts, so that a contactor carries the switching duty in the circuit and the service or safety switch switches at zero current. On closing, the auxiliary switch switches later than or at the same time as the main contacts.

Switch construction

Construction of rotary operating mechanisms

The rotary mechanisms of the switches for front or floor mounting are mounted on control panel doors, front panels or side walls with four-hole or center-hole mounting with a standard diameter of 22.5 mm and operated from the outside. In their Off position, they can be locked with up to three padlocks with a hasp thickness of 8 mm.

Switch position indication

The switch position is clearly marked with direction arrows and an "O" for OFF and a "I" for ON at the front.

Switches for front mounting

The switches for front mounting are connected directly to the rotary operating mechanism through the fixing screws or – in the case of center-hole mounting – a special-purpose coupling.

Switches for floor mounting

The switches for floor mounting are snapped onto 35 mm standard mounting rails according to EN 50022 or screw-mounted on mounting plates.

The actuators are connected to the lower section of the switch through a door coupling, which can be released in its zero position, and a 300 mm long switch shaft. When the control cabinet door is open, the switch can be protected against inadvertent operation by removing the switch shaft from the lower section of the switch.

The mounting depth can be adapted to individual requirements by adjusting the switch shaft length.

Switches for distribution board mounting

The switches for distribution board mounting are suited for operation in switchboards and for switching inside control cabinets or distributors. They have cap and fitting dimensions to DIN 43880 and can be fitted under the same cover together with miniature circuit-breakers. The selector switches can be locked in their OFF position with up to 2 padlocks with a hasp thickness of 6 mm.

Switches in molded-plastic enclosure

For surface mounting of individual main control and EMERGENCY-STOP switches, molded plastic-enclosed switches to degree of protection IP65 are used. The actuators can be locked in their OFF position with three padlocks with a hasp thickness of 8 mm. The molded-plastic enclosures each contain an N and/or a PE/ground terminal.

1) 16 A versions have four contact elements; 3-pole changeover switches and 6-pole main control switches have six contact elements.

3LD2 203-0TK5 switch for front mounting with rotary operating mechanism



3LD2 222-0TK1 switch for front mounting with selector switch mechanism



3LD2 122-7UK01 3-pole changeover switch for front mounting with selector switch



3LD2 103-3VK53 6-pole switch for front mounting with rotary operating mechanism



3LD2 213-0TK5 switch for floor mounting with rotary operating mechanism and door coupling



3LD2 530-0TK11 switch for distribution board mounting with selector switch



3LD2 261-0TB5 switch in molded-plastic enclosure



3LD2 213-0TK5 switch for floor mounting with rotary operating mechanism and defeatable door coupling



3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

General data

Technical specifications

Standards		DIN VDE 0660, IEC 60947						
Switches	Type	3LD2 0	3LD2 1	3LD2 2	3LD2 5	3LD2 7	3LD2 8	
Number of contacts		3/4	3/4	3/4	3/4	3/4	3/4	
Rated insulation voltage U_i	V	690	690	690	690	690	690	
Rated operational voltage U_e	V AC	690	690	690	690	690	690	
Rated frequency	Hz	50 ... 60	50 ... 60	50 ... 60	50 ... 60	50 ... 60	50 ... 60	
Rated impulse withstand voltage U_{imp}	kV	6	6	6	6	6	6	
Rated short-time withstand current (1 s current, r.m.s. value)	A	340	640	640	1260	2000	2000	
Short-circuit protection, max. back-up fuse (gL)	A	20	25	50	63	100	125	
Rated uninterrupted current I_u	A	16	25	32	63	100	125	
AC-21A load-break switch	Rated operational current I_e	A	16	25	32	63	100	125
AC-3 motor load switches	Rated operational power							
In-service switching of individual motors	at 220 V ... 240 V	kW	3.0	4.0	5.5	11.0	18.5	22.0
	at 380 V ... 440 V	kW	5.5	7.5	9.5	18.5	30.0	37.0
	at 660 V/690 V	kW	5.5	7.5	9.5	15.0	22.0	30.0
AC-23A main control switch	Rated operational power							
Maintenance switch frequent, but not in-service switching of individual motors	at 220 V ... 240 V	kW	4.0	5.0	6.0	11.0	18.5	22.0
	at 380 V ... 440 V	kW	7.5	9.5	11.5	22.0	37.0	45.0
	at 660 V/690 V	kW	7.5	9.5	11.5	18.5	30.0	37.0
Power loss per conducting path at I_e	W	0.5	1.1	1.8	4.5	7.5	12	
Touch protection to DIN VDE 0106 Part 100		Yes	Yes	Yes	Yes	Yes	Yes	
Endurance mechanical	Operating cycles	100000	100000	100000	100000	100000	100000	
Operating frequency	1/h	50	50	50	50	50	50	
Permissible ambient temperature	°C	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	-25 ... +55	
Isolating characteristics	Up to ... V	690	690	690	690	690	690	
Main control and EMERGENCY-STOP switch characteristics¹⁾		Yes	Yes	Yes	Yes	Yes	Yes	
Conductor cross-sections for main conductors								
Connection type	Terminals							
Solid or stranded	mm ²	1-6	1.5-16	1.5-16	2.5-35	4-50	4-50	
Flexible with end sleeve (max.)	mm ²	4	10	10	16	35	35	
Auxiliary switch								
Rated insulation voltage U_i	V	500	500	500	500	500	500	
Rated operational voltage U_e	V AC	500	500	500	500	500	500	
Rated uninterrupted current I_u	A	10	10	10	10	10	10	
Rated operational current I_e AC-15	A	6	6	6	6	6	6	
	at 120 V	A	3	3	3	3	3	
	at 220 V ... 240 V	A	1.8	1.8	1.8	1.8	1.8	
	at 380 V ... 415 V	A	1.4	1.4	1.4	1.4	1.4	
	at 500 V	A	1.4	1.4	1.4	1.4	1.4	
Short-circuit protection, auxiliary switch, max. back-up fuse (gL/gG)	A	10	10	10	10	10	10	
Conductor cross-sections for auxiliary conductors								
Connection type	Terminals							
Solid or stranded	mm ²	2 x (0.75 ... 4)	2 x (0.75 ... 4)	2 x (0.75 ... 4)	2 x (0.75 ... 4)	2 x (0.75 ... 4)	2 x (0.75 ... 4)	
Finely stranded with end sleeve	mm ²	2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5)	2 x (0.75 ... 2.5)	
		1 x 4	1 x 4	1 x 4	1 x 4	1 x 4	1 x 4	

Standards		UL/CSA						
Switches	Type	3LD2 0	3LD2 1	3LD2 2	3LD2 5	3LD2 7	3LD2 8	
Rated operational voltage U_e	V AC	600	600	600	600	600	600	
Rated uninterrupted current I_u	A	10	20	30	60	100	125	
	Current rating	A 600	A 600	A 600	-	-	-	
	Pilot duty	P 600	P 600	P 600	63	100	125	
Continuous thermal current I_{th}	A	16	25	32	63	100	125	
Maximum rating (AC-3)	3 ~ 120 V	HP	1	-	-	-	-	
Single-phase AC motors 40 Hz ... 60 Hz (HP = PS)	240 V	HP	3	7.5	10	15	30	
	480 V	HP	7.5	10	20	40	60	
	600 V	HP	10	15	30	50	75	
	1 ~ 120 V	HP	0.5	2	2	-	-	
	240 V	HP	1.5	3	3	10	-	
Conductor cross-sections	Cu cable	AWG	18-10	14-8	14-8	14-6	12-1	12-1
Torque		Nm	1.5-2	2-2.5	2-2.5	2.5-3	2.5-3	2.5-3

With appropriate operating mechanisms according to DIN VDE 0113 (see Selection and Ordering Data).

3KA, 3KE, 3LD Switch Disconnectors

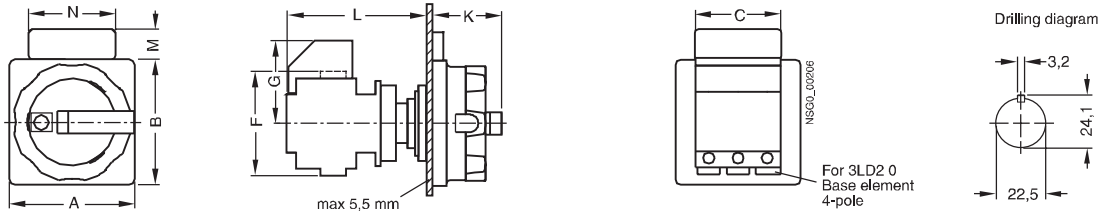
3LD Main and EMERGENCY-STOP Switches up to 125 A

Front mounting

Dimensional drawings

Switches for center-hole mounting with rotary operating mechanism

3LD2 .54,
3LD2 555

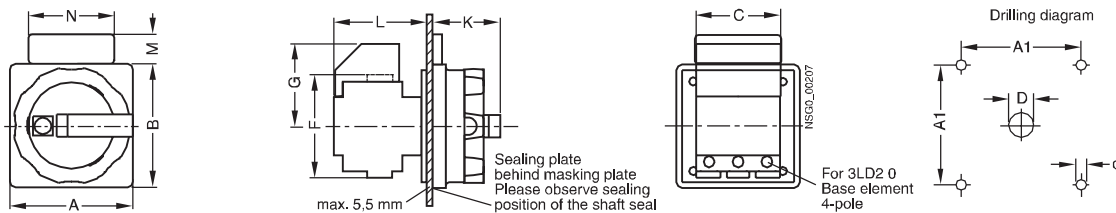


Type	A	B	C	F	G	K	L	M 1)	N 1)
3LD2 054	67	67	48	50	38	37	74	17	47
3LD2 154/3LD2 254	67	67	46	55	44	37	74	17	47
3LD2 555	90	90	60	64	50	46	81	17	47

1) Additional labeling plate, see Accessories.

Switches for four-hole mounting with rotary operating mechanism

3LD2 .03,
3LD2 .04

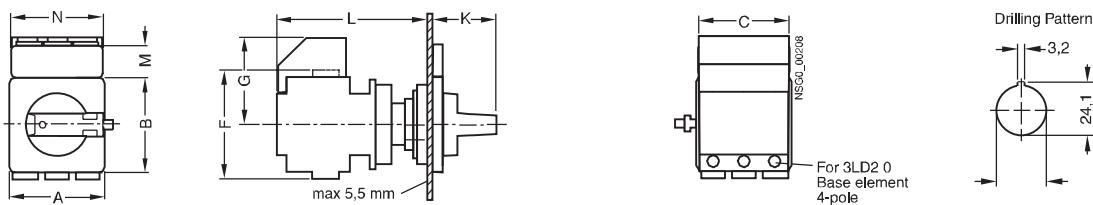


Type	A	B	A1	C	D	d	F	G	K	L	M 1)	N 1)
3LD2 003	67	67	48	48	10	5,0	50	38	37	50	17	47
3LD2 103	67	67	48	46	10	5,0	55	44	37	50	17	47
3LD2 504	90	90	48	60	10	5,0	64	50	46	59	17	47
3LD2 704/3LD2 804	90	90	48	71	10	5,0	83	54	46	61	17	47

1) Additional labeling plate, see Accessories.

Switches for center-hole mounting with selector switch

3LD2 .50



Type	A	B	C	F	G	K	L	M 1)	N 1)
3LD2 050	49	49	48	50	38	34	74	17	47
3LD2 150/3LD2 250	49	49	46	55	44	34	74	17	47

1) Additional labeling plate, see Accessories.

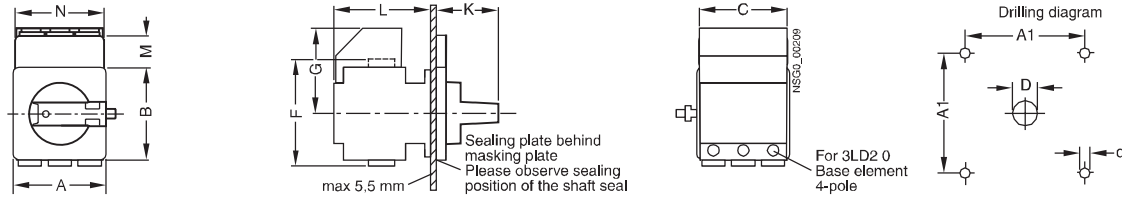
3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

Front mounting

Switches for four-hole mounting with selector switch

3LD2 .22

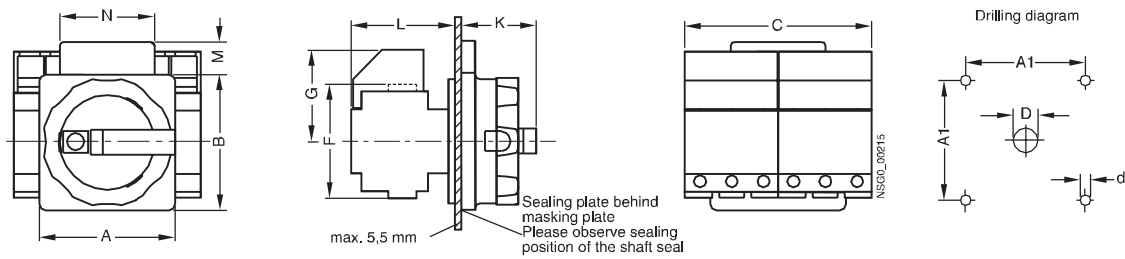


Type	A	B	A1	C	D	d	F	G	K	L	M ¹⁾	N ¹⁾
3LD2 022	49	49	36	48	10	5,0	50	38	34	50	17	47
3LD2 122/3LD2 222	49	49	36	46	10	5,0	55	44	34	50	17	47

1) Additional labeling plate, see Accessories

Switches for four-hole mounting with rotary operating mechanism

3LD2 103-.V..., 3LD2 203-.V..., 3LD2 504-.V...

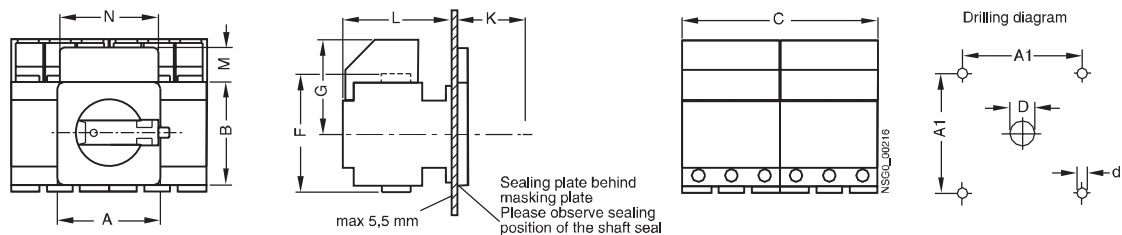


Type	A	B	A1	C	D	d	F	G	K	L	M ¹⁾	N ¹⁾
3LD2 103-.V...	67	67	48	92	10	5,0	55	44	37	50	17	47
3LD2 203-.V...	67	67	48	92	10	5,0	55	44	37	50	17	47
3LD2 504-.V...	90	90	68	121	10	5,0	64	50	46	59	17	47

1) Additional labeling plate, see Accessories

Switches for four-hole mounting with selector switch

3LD2 122-.V...



Type	A	B	A1	C	D	d	F	G	K	L	M ¹⁾	N ¹⁾
3LD2 122-.V...	49	49	36	92	10	5,0	55	44	32	50	17	47

1) Additional labeling plate, see Accessories

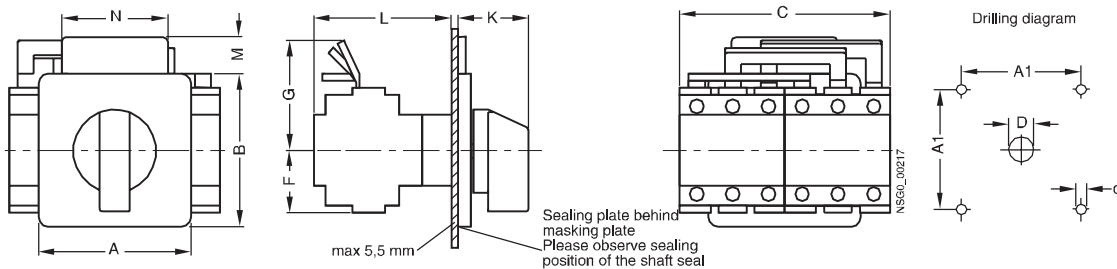
3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

Front mounting

Changeover switches

3LD2 123-7U..., 3LD2 223-7U...,
3LD2 524-7U..., 3LD2 724-7U...



Type	A	B	A1	C	D	d	F	G	K	L	M 1)	N 1)
3LD2 123-7U...	67	67	48	92	10	5,0	28	46	34	63,5	17	47
3LD2 223-7U...	67	67	48	92	10	5,0	28	46	34	63,5	17	47
3LD2 524-7U...	92	92	68	121	10	5,5	32	53	40	73	17	47
3LD2 724-7U...	92	92	68	141	10	5,5	42	68	40	75	17	47

1) Additional labeling plate, see Accessories

3KA, 3KE, 3LD Switch Disconnectors

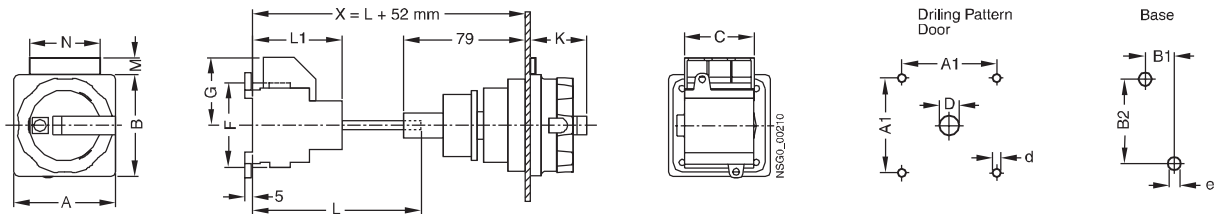
3LD Main and EMERGENCY-STOP Switches up to 125 A

Floor mounting

Dimensional drawings

Switches for floor mounting with detachable rotary operating mechanism (four-hole mounting)

3LD2 .13,
3LD2 14.

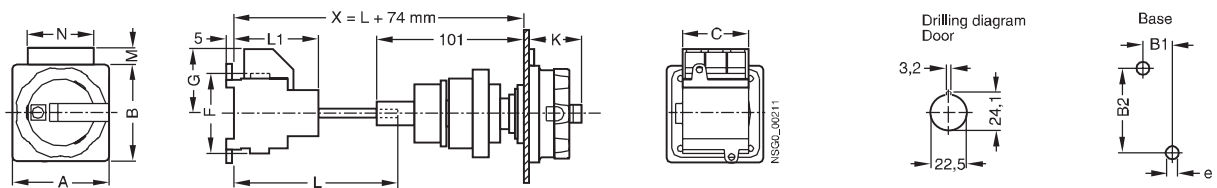


Type	A	B	A1	B1	B2	C	D	d	e	F	G	K	L	L1	M ¹⁾	N ¹⁾	X _{min}
3LD2 013	67	67	48	22	60	48	10	5,0	4,5	50	38	37	330	58	17	47	138
3LD2 113/3LD2 213	67	67	48	22	60	46	10	5,0	4,5	55	44	37	330	58	17	47	138
3LD2 514	90	90	48	25	70	60	10	5,5	5,5	64	50	46	338	68	17	47	148
3LD2 714/3LD2 814	90	90	48	25	90	71	10	5,5	5,5	83	54	46	340	70	17	47	150

1) Additional labeling plate, see Accessories

Switches for floor mounting with detachable rotary operating mechanism (center-hole mounting)

3LD2 .44,
3LD2 .45

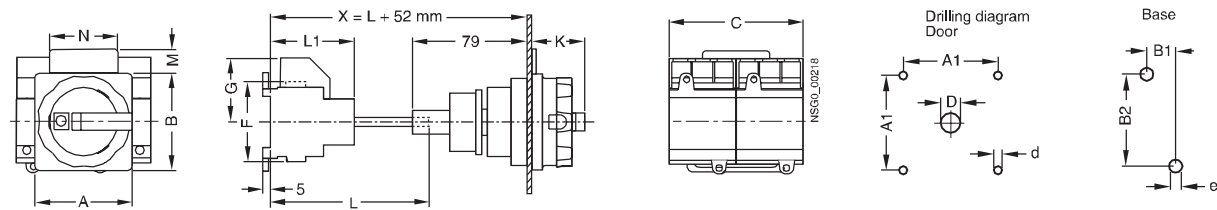


Type	A	B	B1	B2	C	e	F	G	K	L	L1	M ¹⁾	N ¹⁾	X _{min}
3LD2 044	67	67	22	60	48	4,5	50	38	37	330	58	17	47	160
3LD2 144/3LD2 244	67	67	22	60	46	4,5	55	44	37	330	58	17	47	160
3LD2 545	90	90	25	70	60	5,5	64	50	46	338	68	17	47	170

1) Additional labeling plate, see Accessories

Switches for floor mounting with detachable rotary operating mechanism (four-hole mounting)

3LD2 113-.V...



Type	A	B	A1	B1	B2	C	D	d	e	F	G	K	L	L1	M ¹⁾	N ¹⁾	X _{min}
3LD2 113-.V...	67	67	48	22	60	92	10	5,0	4,5	55	44	37	330	58	17	47	138

1) Additional labeling plate, see Accessories

3KA, 3KE, 3LD Switch Disconnectors

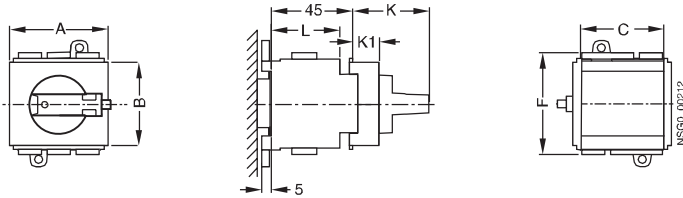
3LD Main and EMERGENCY-STOP Switches up to 125 A

Distribution board mounting

Dimensional drawings

Switches for distribution board mounting with selector switch

3LD2 .30



Type	A	B	C	F	K	K1	L
3LD2 030	53	45	48	50	41	14	37
3LD2 130	53	45	46	55	41	14	37
3LD2 230	53	45	46	55	41	14	37
3LD2 530	64	45	60	64	43	16	44
3LD2 730	71	45	71	83	47	19	44
3LD2 830	71	45	71	83	47	19	44

3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

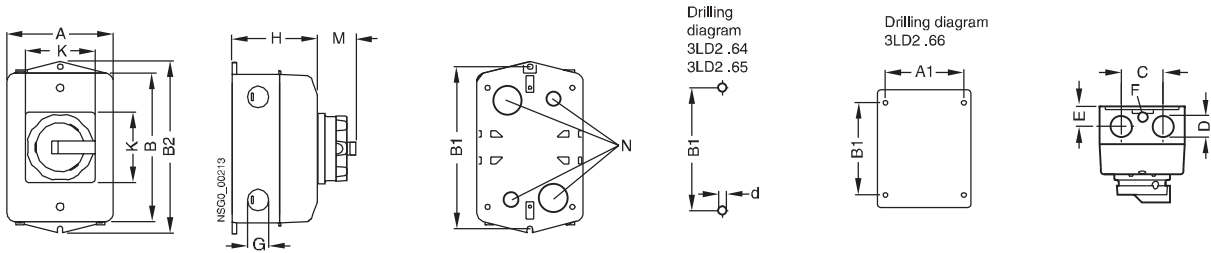
Molded-plastic enclosures

Dimensional drawings

Switches with molded-plastic enclosure with rotary operating mechanism

Metric screwed glands

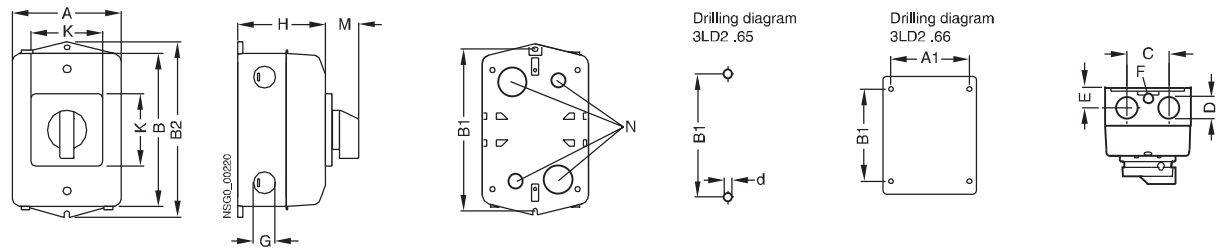
3LD2 .64,
3LD2 .65,
3LD2 .66



Type	A	B	A1	B1	B2	C	d	D	E	F	G	H	K	M	N
3LD2 .64-...5.	100	140	-	152	164	46	4,5	4 x M25	24	-	4 x M20	81	67	36	2 x M20, 2 x M40
3LD2 .65-...5.	146	176	-	188	199	66	4,5	4 x M32/40	37	-	4 x M20	104	90	45	2 x M20, 2 x M40
3LD2 .66-...5.	212	302	189	238	302	84	6,5	4 x M50/63	57	2 x M20	4 x M20	136	90	45	2 x M20, 2 x M50
3LD2 566-V...	212	302	189	238	302	84	6,5	4 x M32/40	57	2 x M20	4 x M20	136	90	45	2 x M20, 2 x M50

Switches in molded-plastic enclosure with selector switch

3LD2 .6.-7U...



Type	A	B	A1	B1	B2	C	d	D	E	F	G	H	K	M	N
3LD2 165-7U...	146	176	-	188	199	66	4,5	4 x M32/40	37	-	4 x M20	104	67	32	2 x M20, 2 x M40
3LD2 265-7U...	146	176	-	188	199	66	4,5	4 x M32/40	37	-	4 x M20	104	67	32	2 x M20, 2 x M40
3LD2 566-7U...	212	302	189	238	302	84	6,5	4 x M32/40	57	2 x M20	4 x M20	136	90	45	2 x M20, 2 x M50
3LD2 766-7U...	212	302	189	238	302	84	6,5	4 x M50/63	57	2 x M20	4 x M20	136	90	45	2 x M20, 2 x M50

3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

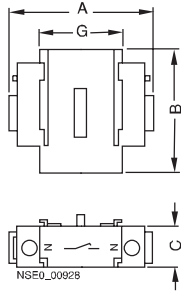
Accessories

Dimensional drawings

Front mounting

3LD9 2.0-0B

4th contact element (neutral conductor) for front mounting, leading switch-on, delayed switch-off

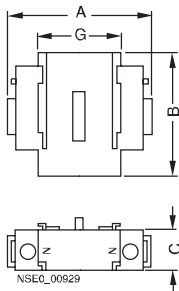


Type	A	B	C	G
3LD9 220-0B	54,5	40,5	15,5	31,5
3LD9 250-0B	64,5	47,0	20,0	37,0
3LD9 280-0B	83,5	44,0	23,0	20,0

3LD9 2.0-2B

N or PE/ground terminal

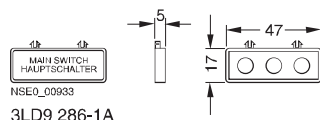
for front mounting, leading switch-on, delayed switch-off



Type	A	B	C	G
3LD9 200-2B	50,0	40,0	13,0	31,0
3LD9 220-2B	54,5	40,5	15,5	31,5
3LD9 250-2B	64,5	47,0	20,0	37,0
3LD9 280-2B	83,5	44,0	23,0	20,0

3LD9 286-1A

labeling plate
German/English

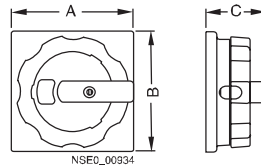


3LD9 286-1A

Front and floor mounting

3LD9 2.4-1B, 3LD9 2.4-3B

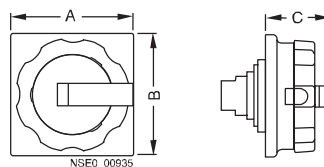
rotary operating mechanisms for four-hole mounting
black, red/yellow



Type	A	B	C
3LD9 224-1B	67,0	67,0	37,0
3LD9 224-3B	67,0	67,0	37,0
3LD9 284-1B	90,0	90,0	46,0
3LD9 284-3B	90,0	90,0	46,0

3LD9 2.4-1D, 3LD9 2.4-3D

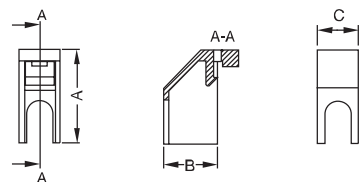
rotary operating mechanisms for center-hole mounting
black, red/yellow



Type	A	B	C
3LD9 224-1D	67,0	67,0	37,0
3LD9 224-3D	67,0	67,0	37,0
3LD9 284-1D	90,0	90,0	46,0
3LD9 284-3D	90,0	90,0	46,0

3LD9 2.1-2A

terminal cover as additional touch protection
for snapping on at top or bottom, 1-pole



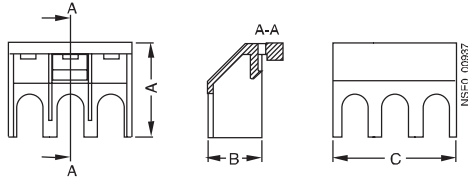
Type	A	B	C
3LD9 201-2A	34,5	15,0	10,0
3LD9 221-2A	34,5	20,0	15,0
3LD9 251-2A	40,5	21,5	20,0
3LD9 281-2A	45,0	17,5	23,0

3KA, 3KE, 3LD Switch Disconnectors

3LD Main and EMERGENCY-STOP Switches up to 125 A

Accessories

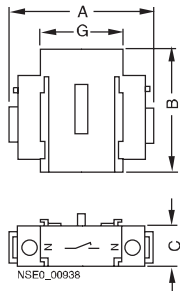
3LD9 2.1-A
terminal cover as additional touch protection
 for snapping on at top or bottom, 1-pole



Type	A	B	C
3LD9 201-1A	34,5	15,0	46,0
3LD9 221-0A	34,5	20,0	46,0
3LD9 251-0A	40,5	21,5	60,0

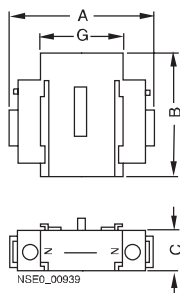
Floor and distribution board mounting

3LD9 2.0-0C
4th contact element (neutral conductor)
 for front mounting, leading switch-on, delayed switch-off



Type	A	B	C	G
3LD9 220-0C	54,5	40,5	15,5	31,5
3LD9 250-0C	64,5	47,0	20,0	37,0
3LD9 280-0C	83,5	44,0	23,0	20,0

3LD9 2.0-2C
N or PE terminal
 continuous



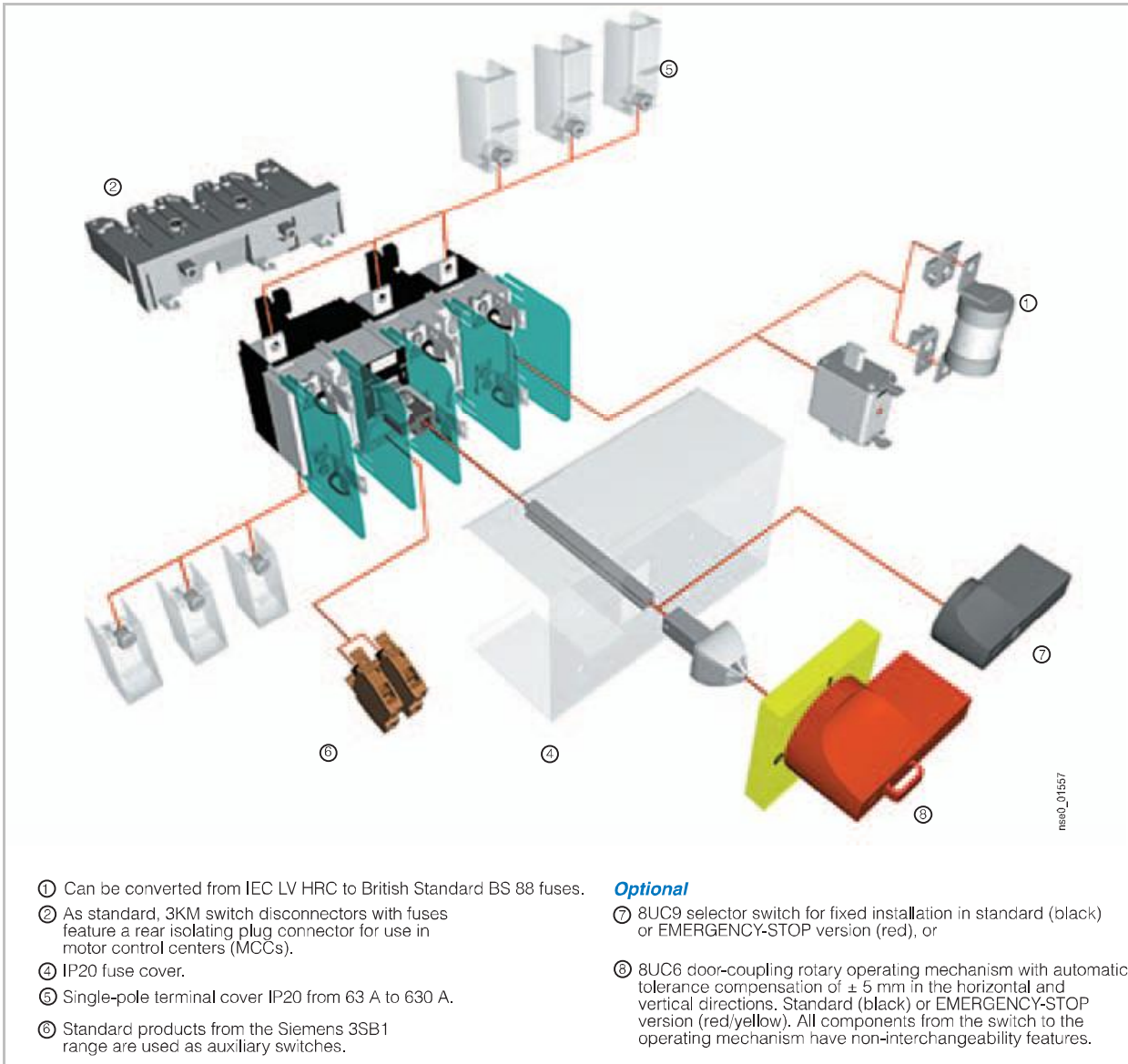
Type	A	B	C	G
3LD9 200-2C	50,0	40,0	13,0	31,0
3LD9 220-2C	54,5	40,5	15,5	31,5
3LD9 250-2C	64,5	47,0	20,0	37,0
3LD9 280-2C	83,5	44,0	23,0	20,0

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KL Switch Disconnectors with Fuses up to 800 A

General data

Overview



Design

All switch disconnectors feature double contact interruption and an isolating distance. As a result, the fuses of the switch disconnectors are de-energized in the disconnected position.

The 3KM switch disconnectors with fuses also feature an isolating plug connector. This facilitates installation and contact establishment in motor control centers (MCCs) in conjunction with vertical busbars.

Generally, all 3K. 5 switch disconnectors can be secured on the shaft with a padlock to prevent unauthorized reclosing.

Identical accessories for 3KA switch disconnectors and for 3KL and 3KM switch disconnectors with fuses simplify keeping of stocks.

Please inquire about a special variant with reduced values that is particularly resistant to atmospheres high in sulfur, e.g. in the paper and cellulose processing industries.

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KL Switch Disconnectors with Fuses up to 800 A

General data

Technical specifications

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107						
Type		3KL50	3KL52	3KL53	3KL55 ¹⁾	3KL57 ¹⁾	3KL61 ¹⁾	3KL62 ¹⁾
Rated uninterrupted current I_u For fuse links according to DIN 43620, (when SITOR semiconductor fuses are used, a reduction of rated current is necessary, see Catalog SITOR Configuration, Order No. E20001-A700-P302)	A Size	63 00 and 000	125 00 and 000	160 00 and 000	250 1 and 2	400 1 and 2	630 3 and 2	800 3 and 2
Continuous free-air thermal current $I_{th}^{2)}$	A	63	125	160	250	400	630	800
Rated insulation voltage U_i	V	690	1000	1000	1000	1000	1000	1000
Rated impulse voltage U_{imp}	kV	6	8	8	8	8	8	8
Rated operational voltage U_e AC 50 Hz/60 Hz DC	V V	690 440 (3 conducting paths series-connected) 220 (2 conducting paths series-connected) ³⁾						
Rated short-circuit making capacity with fuses⁴⁾ At 50 Hz/60 Hz 690 V AC	kA (peak value)	220	220	220	176	176	105	105
Rated conditional short-circuit current with fuses⁴⁾ At 50 Hz/60 Hz 690 V AC	kA (rms value)	100	100	100	80	80	50	50
Max. rated current I_n of the fuses	A	80	160	160	400	400	630	800
Max. permissible power loss of the installed fuse LV HRC	W	6	9	11.5	32	45	48	62
BS	W	8 (A2/A3)	11.5 (A4)	11.5	32	45	48	60.5
Permissible let-through current of the fuses	kA	8	17	17	30 ⁵⁾	30 ⁵⁾	50	50
Maximum permissible let-through I^2t value	kA ² s	55	223	223	1000	1000	5400	10500
Switching capacity (feed-in from top or bottom)								
At 400 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200	5100	6400
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400	630 ⁶⁾	800 ⁶⁾
Motor switching capacity AC-23A	kW	30	65	80	132	200	335	400
At 500 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200	5100	6400
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400	630 ⁶⁾	800 ⁶⁾
Motor switching capacity AC-23A	kW	40	90	110	185	280	425	500
At 690 V AC								
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200	5100	6400
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400	630 ⁶⁾	800 ⁶⁾
Motor switching capacity AC-23A	kW	50	110	150	220	375	560	700
At 440 V DC (3 conducting paths series-connected) ⁷⁾								
Breaking current I_c (L/R = 15 ms)	A	250	500	640	1000 ⁸⁾	1600	2520 ⁹⁾	2520 ⁹⁾
Rated operational current I_e at DC-23A	A	63	125	160	250 ¹⁰⁾	400	630 ¹⁰⁾	630 ¹⁰⁾
Rated short-time current (1 s current)	kA (rms value)	2.5	3.2	3.2	8	11	32	32
Permissible load Depending on the ambient temperature for open-type installation in switchboards (e.g. 8NA1) in switchgear cubicles or switchgear racks at								
35 °C	A	63	125	160	250	400	630	800
40 °C	A	63	125	155	250	390	630	780
45 °C	A	63	125	150	250	380	610	760
50 °C	A	63	125	145	250	370	590	740
55 °C	A	63	125	140	240	360	570	720
Permissible ambient temperature	°C °C	-25 ... +55 for operation ⁴⁾ , -50 ... +80 when stored						
Mechanical endurance	Operat- ing cycles	15000	15000	15000	12000	12000	3000	3000
Required operating torque	Nm	3	7.5	7.5	16	16	30	30
Degree of protection		IP00/IP20 (from the operator side, with fuse and terminal covers)						
Power loss of the switch disconnector at I_{th} (plus power loss of the fuses)	W	8.5	22	36	33	86	140	225
Main conductor connections								
Busbar systems, max. dimensions (w x t)	mm x mm	25 x 9	45 x 10	45 x 10	40 x 12	40 x 15	40 x 17	40 x 17
Cable lug, max. conductor cross-section (stranded)	mm ²	35	70	120	150	2 x 150 or 1 x 240	2 x 240	2 x 240
Tightening torque Terminal screws	Nm	6 ... 7.5 M6	7 ... 10 M6	18 ... 22 M8	35 ... 45 M10	35 ... 45 M10	56 M12	56 M12

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

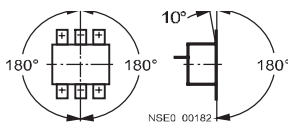
3KL Switch Disconnectors with Fuses up to 800 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107						
		3KL50	3KL52	3KL53	3KL55 ¹⁾	3KL57 ¹⁾	3KL61 ¹⁾	3KL62 ¹⁾
Type								
PE/ground terminals								
Flat bars	mm x mm	--	--	--	20 x 2.5	20 x 2.5	--	--
Cable lug, max. conductor cross-section (stranded)	mm ²	--	--	--	70	120	--	--
Auxiliary switch 1 NO +1 NC (accessories)								
Max. number to be plugged		1	2	2	2	2	3	3
Rated operational current I_e at AC 50 Hz/60 Hz								
I_e /AC-12	A	10						
I_e /AC-15 at $U_e = 220$ V/230 V	A	6						
I_e /AC-15 at $U_e = 380$ V/400 V	A	4						
I_e /AC-15 at $U_e = 500$ V	A	2.5						
I_e /AC-15 at $U_e = 690$ V	A	1.2						
Rated operational current I_e at DC								
I_e /DC-13 at $U_e = 24$ V	A	10						
I_e /DC-13 at $U_e = 48$ V	A	4						
I_e /DC-13 at $U_e = 110$ V	A	1.2						
I_e /DC-13 at $U_e = 220$ V	A	0.4						
I_e /DC-13 at $U_e = 440$ V	A	0.2						
Connection								
Solid	mm ²	2 x (0.5 ... 1.5)						
Finely stranded with end sleeve	mm ²	2 x (1 ... 2.5)						
Weight								
Complete version	kg	1.450	2.560	2.560	5.400	5.700	--	--
Basic version	kg	0.950	2.200	2.200	4.500	4.800	14.000	14.000

- 1) Technical specifications for CSA approval on request.
- 2) Configuring note: max. permissible operating temperature for fuse blades 135 °C, for connections 100 °C.
- 3) 110 V (one conducting path).
- 4) With 3KL61 for operation -25 °C ... +35 °C, at +55 °C: $I_{th} = 570$ A.
- 5) 3ND1 switchgear protection fuse.
- 6) AC-23B.
- 7) 220 V DC (L1 and L3 series-connected) or 110 V DC (one conducting path) at DC-23A.
- 8) At 440 V L/R = 4 ms, at 220 V L/R = 15 ms.
- 9) L/R = 2.5 ms.
- 10) At 440 V DC-22A, at 220 V DC-23A.

Permissible mounting position



3KL

Note:

For the 3KL switch disconnectors, complete kits for standard and EMERGENCY-STOP application are available for installation in the side and rear panels of control cabinets.

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

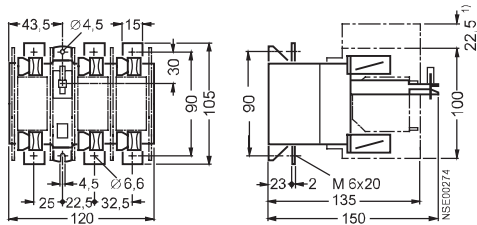
3KL Switch Disconnectors with Fuses up to 800 A

Surface mounting and installation

Dimensional drawings

3KL50, 63 A, 3-pole, dimensional drawing for 4-pole version corresponds to dimensional drawing for 3KL52;

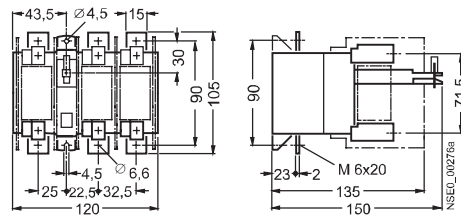
without operating mechanism, with lyre-shaped contacts



1) To be kept free of conductive parts. Not necessary when using lyre-shaped contacts or covers (accessories).

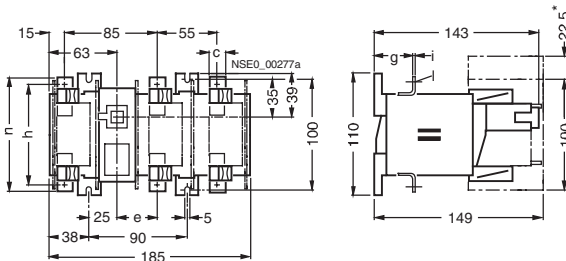
3KL50, 30, 63 A, 3-pole, dimensional drawing for 4-pole version corresponds to dimensional drawing for 3KL52;

without operating mechanism, for BS fuses



3KL52, 125 A, 3KL53, 160 A, 3KL50, 63 A, 4-pole

without operating mechanism, with lyre-shaped contacts

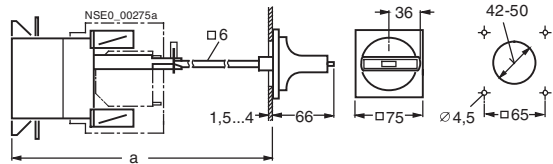


* To be kept free of conductive parts. Not necessary when using lyre-shaped contacts or covers (accessories).

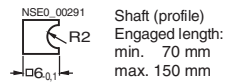
Type	c	e	g	h	n
3KL52 NH	15	37	42	91	106
3KL53 NH	20	39	39,5	105	125
3KL52 A2/A3	15	37	42	91	106
3KL53 A4	20	39	39,5	105	125
4th pole	15	-	48	91	106

3KL50, 63 A

with shaft and 8UC6 operating mechanism

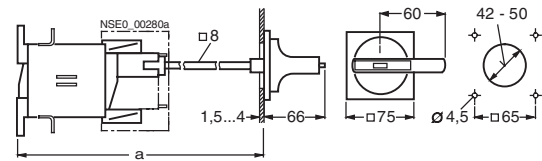


a	Shaft length
max. 380	300; 8UC61 shaft not changed
min. 175	175 ₋₈₀ ; 8UC61 shaft shortened
≥ 175 ... ≤ 380	a ₋₈₀

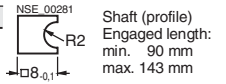


3KL52, 125 A, 3KL53, 160 A

with shaft and 8UC6 operating mechanism

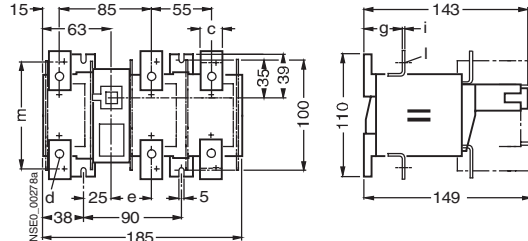


a	Shaft length
max. 350	300; unchanged shaft from 8UC62
min. 165	165 ₋₅₀ ; shortened shaft from 8UC62
≥ 165 ... ≤ 350	a ₋₅₀



3KL52, 125 A, 3KL53, 160 A, 3KL50, 63 A, 4-pole

without operating mechanism, for BS fuses



Type	c	d	e	g	i	l	m
3KL52 NH	15	M 6 x 20	37	42	3	∅ 6,6	-
3KL53 NH	20	M 8 x 25	39	39,5	3,5	∅ 9	-
3KL52 A2/A3	15	M 6 x 20	37	42	3	∅ 6,6	71,5
3KL53 A4	20	M 8 x 25	39	39,5	3,5	∅ 9	96
4th pole	15	M 6 x 20	-	48	3	∅ 6,6	-

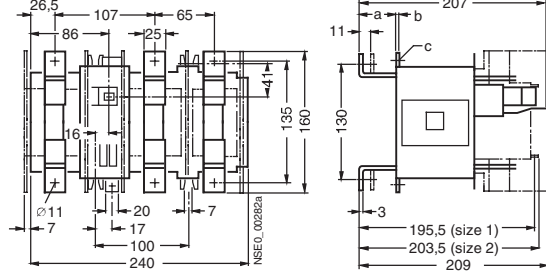
3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KL Switch Disconnectors with Fuses up to 800 A

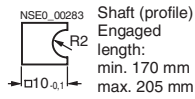
Surface mounting and installation

3KL55, 250 A, 3KL57, 400 A

without operating mechanism, with lyre-shaped contacts

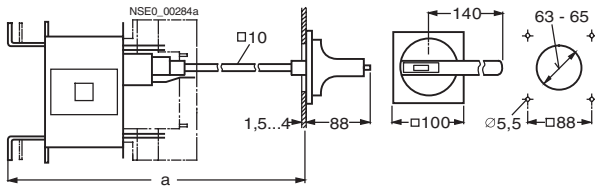


Type	a	b	c
3KL55	40	4	M10x30
3KL57	38	6	M10x36
4th pole	80	4	M10x30



3KL55, 250 A, 3KL57, 400 A

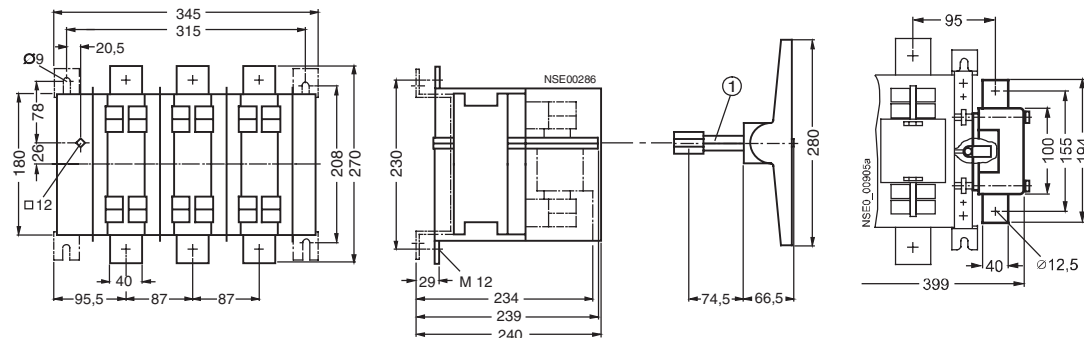
with shaft and 8UC6 operating mechanism



a	Shaft length
max. 335	300; unchanged shaft from 8UC63
min. 230	230 ₋₃₅ ; shortened shaft from 8UC63
≥ 230 ... ≤ 335	a ₋₃₅

3KL61, 630 A, 3KL62, 800 A

without operating mechanism, with lyre-shaped contacts, with partitions

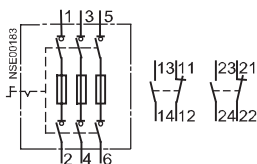


Total installation depth with handle:
239 + 74,5 + 66,5 = 370

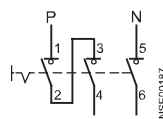
- ① Profile 12 x 12.
Shaft length 110.
Shaft can be turned by 45°

Schematics

Internal circuit diagram for 3KL



(for 3KL50 and 3KL51, only one auxiliary switch possible, not included in scope of supply; 4th pole is possible as main contact)



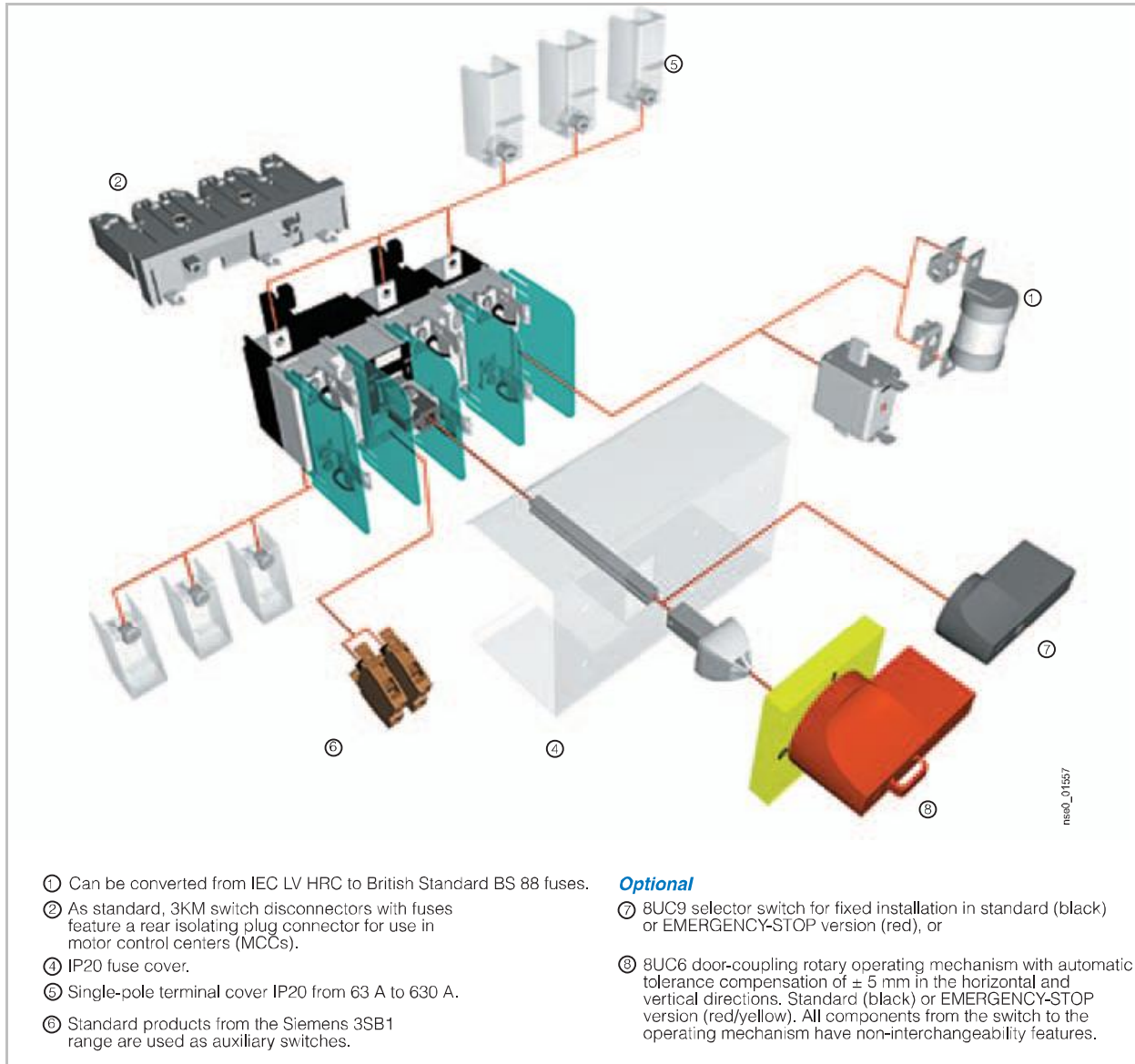
(auxiliary switch not included in scope of supply)
Use for DC voltage at DC-23A 440 V

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

General data

Overview



Design

All switch disconnectors feature double contact interruption and an isolating distance. As a result, the fuses are de-energized when the switch disconnectors are in the disconnected position.

The 3KM switch disconnectors with fuses also feature an isolating plug connector. This facilitates installation and contact establishment in motor control centers (MCCs) in conjunction with vertical busbars.

Generally, all 3K. 5 switch disconnectors can be secured on the shaft with a padlock to prevent unauthorized reclosing.

Identical accessories for 3KA switch disconnectors and for 3KL and 3KM switch disconnectors with fuses simplify keeping of stocks.

Please inquire about a special variant with reduced values that is particularly resistant to atmospheres high in sulfur, e.g. in the paper and cellulose processing industries.

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

General data

Technical specifications

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107				
Type		3KM50	3KM52	3KM53	3KM55 ¹⁾	3KM57 ¹⁾
Rated uninterrupted current I_u For fuse links according to DIN 43620, (when SITOR semiconductor fuse links are used, a reduction of rated current is necessary, see Catalog SITOR Configuration, Order No. E20001-A700-P302)	A Size	63 00 and 000	125 00 and 000	160 00 and 000	250 1 and 2	400 1 and 2
Continuous free-air thermal current $I_{th}^{2)}$	A	63	125	160	250	400
Rated insulation voltage U_i	V	690	1000	1000	1000	1000
Rated impulse voltage U_{imp}	kV	6	8	8	8	8
Rated operational voltage U_e AC 50 Hz/60 Hz DC	V V V	690 440 (3 conducting paths series-connected) 220 (2 conducting paths series-connected) ³⁾				
Rated short-circuit making capacity with fuses⁴⁾ At 50 Hz/60 Hz 690 V AC	kA (peak value)	220	220	220	176	176
Rated conditional short-circuit current with fuses⁴⁾ At 50 Hz/60 Hz 690 V AC	kA (rms value)	100	100	100	80	80
Max. rated current I_n of the fuses	A	80	160	160	400	400
Max. permissible power loss of the installed fuse LV HRC	W	6	9	11.5	32	45
BS	W	8 (A2/A3)	11.5 (A4)	11.5	32	45
Permissible let-through current of the fuses	kA	8	17	17	30 ⁵⁾	30 ⁵⁾
Maximum permissible let-through I^2t value	kA ² s	55	223	223	1000	1000
Switching capacity (feed-in from top or bottom)						
At 400 V AC						
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400
Motor switching capacity AC-23A	kW	30	65	80	132	200
At 500 V AC						
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400
Motor switching capacity AC-23A	kW	40	90	110	185	280
At 690 V AC						
Breaking current I_c (p.f. = 0.35)	A (rms value)	500	1000	1280	2000	3200
Rated operational current I_e at AC-21A, AC-22A, AC-23A	A	63	125	160	250	400
Motor switching capacity AC-23A	kW	50	110	150	220	375
At 440 V DC (3 conducting paths series-connected) ⁶⁾						
Breaking current I_c (L/R = 15 ms)	A	250	500	640	1000 ⁷⁾	1600
Rated operational current I_e at DC-23A	A	63	125	160	250 ⁸⁾	400
Rated short-time current (1 s current)	kA (rms value)	2.5	3.2	3.2	8	11
Permissible load Depending on the ambient temperature for open-type installation in switchboards (e.g. 8NA1) in switchgear cubicles or switchgear racks at						
35 °C	A	63	125	160	250	400
40 °C	A	63	125	155	250	390
45 °C	A	63	125	150	250	380
50 °C	A	63	125	145	250	370
55 °C	A	63	125	140	240	360
Permissible ambient temperature						
°C		-25 ... +55 for operation ⁵⁾				
°C		-50 ... +80 when stored				
Mechanical endurance						
Operat- ing cycles		15000	15000	15000	12000	12000
Required operating torque						
Nm		3	7.5	7.5	16	16
Degree of protection						
IP00/IP20 (from the operator side, with fuse and terminal covers)						
Power loss of the switch disconnector at I_{th} (plus power loss of the fuses)						
W		8.5	22	36	33	86

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3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

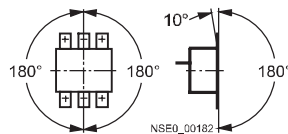
3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107				
		3KM50	3KM52	3KM53	3KM55 ¹⁾	3KM57 ¹⁾
Type						
Main conductor connections						
Busbars, max. dimensions (W x T)	mm x mm	25 x 9	45 x 10	45 x 10	40 x 12	40 x 15
Cable lug, max. conductor cross-section (stranded)	mm ²	35	70	120	150	2 x 150 or 1 x 240
Tightening torque	Nm	6 ... 7.5	7 ... 10	18 ... 22	35 ... 45	35 ... 45
Terminal screws		M6	M6	M8	M10	M10
PE/ground terminals						
Flat bars	mm x mm	--	--	--	20 x 2.5	20 x 2.5
Cable lug, max. conductor cross-section (stranded)	mm ²	--	--	--	70	120
Auxiliary switch 1 NO + 1 NC (accessories)						
Max. number to be plugged		1	2	2	2	2
Rated operational current I_e at AC 50 Hz/60 Hz						
I_e /AC-12	A	10				
I_e /AC-15 at $U_e = 220$ V/230 V	A	6				
I_e /AC-15 at $U_e = 380$ V/400 V	A	4				
I_e /AC-15 at $U_e = 500$ V	A	2.5				
I_e /AC-15 at $U_e = 690$ V	A	1.2				
Rated operational current I_e at DC						
I_e /DC-13 at $U_e = 24$ V	A	10				
I_e /DC-13 at $U_e = 48$ V	A	4				
I_e /DC-13 at $U_e = 110$ V	A	1.2				
I_e /DC-13 at $U_e = 220$ V	A	0.4				
I_e /DC-13 at $U_e = 440$ V	A	0.2				
Connection						
Solid	mm ²	2 x (0.5 ... 1.5)				
Finely stranded with end sleeve	mm ²	2 x (1 ... 2.5)				
Weight						
Complete version	kg	1.936	2.960	2.960	7.160	7.450
Basic version	kg	1.820	2.600	2.600	6.147	6.443

- 1) Technical specifications for CSA approval on request.
- 2) Configuring note: max. permissible operating temperature for fuse blades 135 °C, for connections 100 °C.
- 3) 110 V (one conducting path).
- 4) With 3KL61 for operation -25 °C ... +35 °C, at +55 °C: $I_{th} = 570$ A.
- 5) 3ND1 switchgear protection fuse.
- 6) 220 V DC (L1 and L3 series-connected) or 110 V DC (one conducting path) at DC-23A.
- 7) At 440 V L/R = 4 ms, at 220 V L/R = 15 ms.
- 8) At 440 V DC-22A, at 220 V DC-23A.

Permissible mounting position



3KM

3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

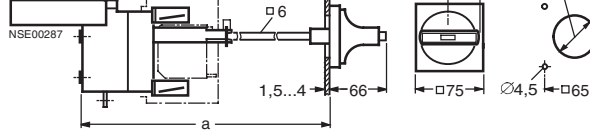
3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

For snapping onto busbars

Dimensional drawings

3KM50, 63 A

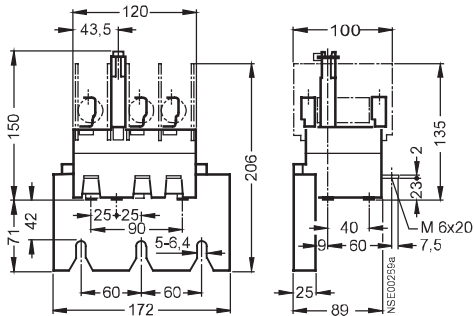
with shaft and 8UC6 operating mechanism



a	Shaft length
max. 380	300; unchanged shaft from 8UC61
min. 175	175; ^{±0} shortened shaft from 8UC61
≥ 175 ... ≤ 380	a ₋₈₀

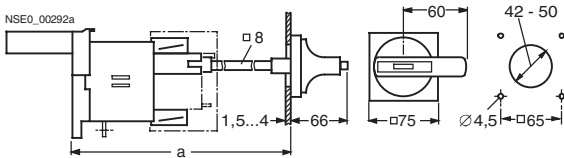
3KM50, 63 A

without operating mechanism, for BS fuses



3KM52, 125 A 3KM53, 160 A

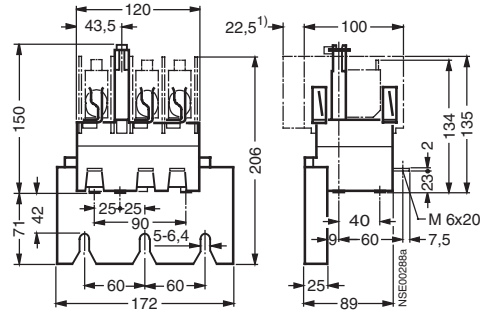
with shaft and 8UC6 operating mechanism



a	Shaft length
max. 350	300; unchanged shaft from 8UC62
min. 165	165 ⁻⁵⁰ ; shortened shaft from 8UC62
≥ 165 ... ≤ 350	a ₋₅₀

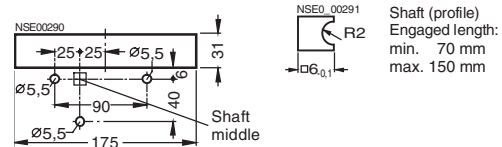
3KM50, 63 A

without operating mechanism, with lyre-shaped contacts



- 1) To be kept free of conductive parts.
Not necessary when using lyre-shaped contacts or covers (accessories).

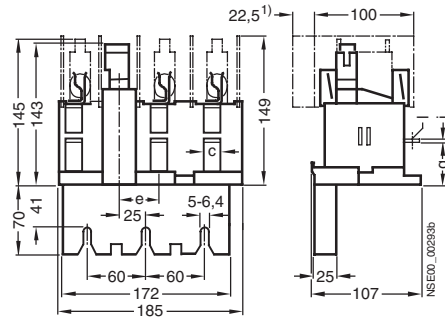
Drilling pattern and connector cutout



- 1) Keep this space free of conductive parts. Not necessary when using lyre-shaped contacts (included in the scope of supply) or covers (accessory).

3KM52, 125 A 3KM53, 160 A

without operating mechanism, with lyre-shaped contacts
(further dimensions as for 3KL52 and 3KL53)



Type	c	e	g	i	l
3KM52	15	37	42	3	∅ 6,6
3KM53	20	39	39,5	3,5	∅ 9

- 1) To be kept free of conductive parts.
Not necessary when using lyre-shaped contacts or covers (accessories).

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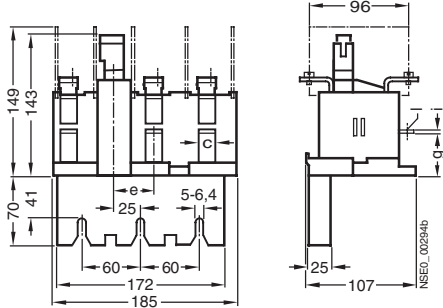
3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

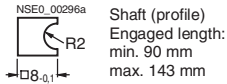
For snapping onto busbars

3KM52, 125 A 3KM53, 160 A

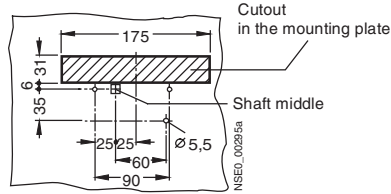
without operating mechanism, for BS fuses



Type	c	e	g	i	l
3KM52	15	37	42	3	∅ 6,6
3KM53	20	39	39,5	3,5	∅ 9

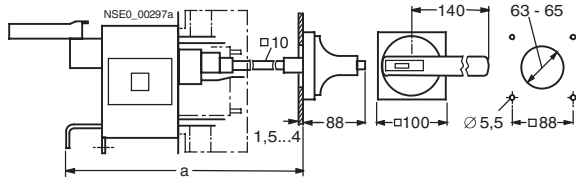


Drilling pattern and cutout in the mounting plate for mounting 3KM52



3KM55, 250 A 3KM57, 400 A

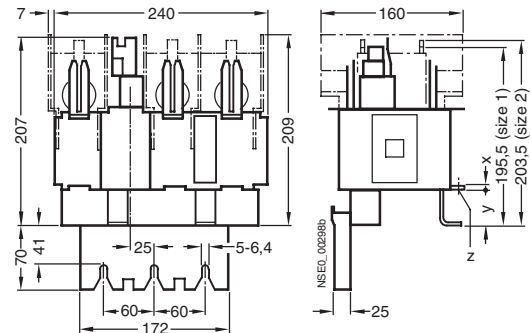
with shaft and 8UC6 operating mechanism



a	Shaft length
max. 335	300; unchanged shaft from 8UC63
min. 230	230 ₃₅ ; shortened shaft from 8UC63
≥ 230 ... ≤ 335	a ₃₅

3KM55, 250 A 3KM57, 400 A

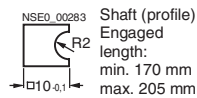
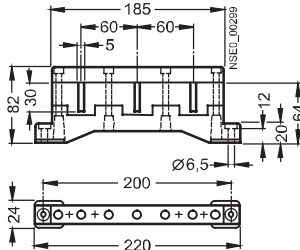
without shaft, without operating mechanism, with lyre-shaped contacts (further dimensions as for 3KL55)



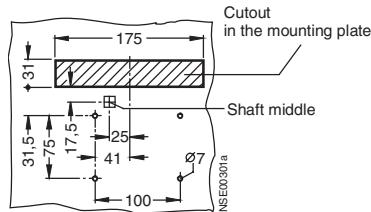
Type	x	y	z
3KM55	4	40	M 10 x 30
3KM57	6	38	M 10 x 36

3KX3 508-0AA busbar holder

for 30 mm x 5 mm busbars



Drilling pattern and cut-out in the mounting plate for mounting 3KM55 and 3KM57

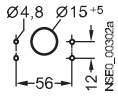


3KL, 3KM, 3NJ6 Switch Disconnectors with Fuses

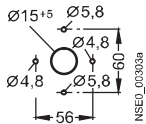
3KM Switch Disconnectors with Fuses and Isolating Plug Connector up to 400 A

For snapping onto busbars

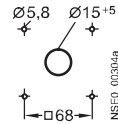
Mounting holes for **3K . 50, 3KA51**
with 3KX3 516-... rear manual operating mechanism



Mounting holes for **3K . 52, 3K . 53**
with 3KX3 526-.../3KX3 536-... rear manual operating mechanism

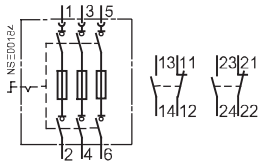


Mounting holes for **3K . 55, 3K . 57, 3K . 58**
with 3KX3 556-... rear manual operating mechanism



Schematics

Internal circuit diagram for 3KM



(for 3KM50 and 3KM51, only one auxiliary switch possible)

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Design

The SENTRON 3NP4 and 3NP5 fuse switch disconnectors comprise a base and a removable fuse carrier with view and measuring window.

The base contains integral lyre-shaped contacts, arcing chambers and terminal fittings. The fuse links/isolating links are contained in the fuse carrier.

The fuse links can be replaced without tools.

The three conducting paths in the base and the fuse links in the fuse carrier are separated by partitions that overlap when opening and closing the device.

This type of failsafe protection is called "complete compartmentalization" and effectively prevents phase arcing.

SENTRON 3NP5 fuse switch disconnectors are also equipped with locating springs, which are fitted to the side of the base. These enable the "high speed closing" of devices, regardless of the actuation speed of the operator.

LV HRC fuse links of sizes LV HRC 000 to LV HRC 3 according to IEC 60269-2-1 and DIN VDE 43620 are used in the SENTRON 3NP4 and 3NP5 fuse switch disconnectors. SITOR semiconductor fuses can continue to be used for a wide range of applications.

For more detailed information, please refer to the instruction manual for the SENTRON 3NP4 and 3NP5 fuse switch disconnectors.

Auxiliary switches

The SENTRON 3NP4 and 3NP5 fuse switch disconnectors can also be retrofitted with auxiliary switches for indicating the switching position of the fuse carrier.

One switch block (1 CO) can be mounted on size LV HRC 000 of the SENTRON 3NP4 fuse switch disconnector and two switch blocks (1 CO) can be mounted on sizes LV HRC 00 to LV HRC 3.

SENTRON 3NP5 fuse switch disconnectors can also be delivered with a 2-pole auxiliary switch (1 NO + 1 NC) if required. The version with fuse monitoring is fitted with this auxiliary switch as standard.

Function

Fuse monitoring by SIRIUS circuit-breaker

For fuse monitoring, a SIRIUS circuit-breaker is factory-fitted and hard-wired to the fuse carrier of the SENTRON 3NP4 and 3NP5 fuse switch disconnectors.

If the fuse carrier is closed, the three conducting paths of the SIRIUS circuit-breaker are switched in parallel to the fuse links to be monitored. If the fuse carrier is open, all main conducting paths of the circuit-breaker are off circuit.

The internal resistance of the circuit-breaker is great enough not to impair the protective function of the monitored fuse links.

Failure of a fuse will trigger the circuit-breaker. The auxiliary switch of the circuit-breaker can be used for indication purposes or to disconnect the main circuit, e.g. through a contactor.

The signal lead for the SENTRON 3NP4 fuse switch disconnector size LV HRC 00 needs to be ordered separately. For sizes LV HRC 1 to LV HRC 3 the connection is via flat connectors.

Delivery of the SENTRON 3NP5 fuse switch disconnectors includes the signal lead, complete with connector.

SIRIUS circuit-breakers cannot be used for fuse monitoring in branch circuits by circuit-breakers where a fault may result in > 220 V DC feedback.

In the case of parallel cables and meshed systems, only a voltage difference of > 24 V at the switch will trigger the circuit-breaker.

Electronic fuse monitors

For electronic fuse monitoring, the EF monitor is factory-fitted and hard-wired to the fuse carrier of SENTRON 3NP5 fuse switch disconnectors.

The EF monitor works independently of any loads. Failure of a fuse can be relayed to a control room through integrated auxiliary switches (2 NO + 1 NC) by means of a centralized fault indication or used to isolate the load through e.g. a contactor.

Actuation of the auxiliary switch depends on the EF monitor version. Version "A" stands for "open-circuit principle", version "R" for closed-circuit principle" (see block diagram).

If a fuse is tripped, a green LED signal flashes (general fault) and the location of the failed fuse is indicated by a red LED. Using more than one device facilitates identification of the affected branch circuit.

The EF monitor is automatically reset to the standby position once the faulty fuses are replaced. This state is indicated visually by the status display (green LED).

The EF monitor is also suitable for operation in industrial systems badly afflicted by harmonics.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Technical specifications

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107				
		3NP40 1	3NP40 7	3NP42 7	3NP43 7	3NP44 7
Type						
Rated uninterrupted current I_u for fuse links according to DIN 43620	A	160 ¹⁾	160	250	400	630
	Size	00C/000	00	1 and 0	2 and 1	3 and 2
Continuous thermal current I_{th}	A	160 ¹⁾	160	250	400	630
Rated operational voltage U_e AC 50 Hz/60 Hz	V	690		690		
DC	V	220		440		
		(3 conducting paths series-connected)		(2 conducting paths series-connected)		
Rated insulation voltage U_i	V	690	690	800 ³⁾	800 ³⁾	800 ³⁾
Rated impulse voltage U_{imp}	kV	6	6	6	6	6
Rated conditional short-circuit current with fuses (for fast switch-on)						
With fuse links						
Rated current	Size/A	000/100 (35)	00/160	1/250	2/400	3/630
At 400 V AC (690 V)	kA (rms value)	50 (50)	50	50	50	50
Maximum permissible let-through I^2t value	kA ² s	56 (7.8)	158	551	1515	4340
Permissible let-through current of the fuse	kA (peak value)	11 (5)	15	25	35	55
Short-circuit strength with fuses (with closed switch)						
With fuse links						
Rated current	Size/A	000/100	00/160	1/250	2/400	3/630
At 690 V	kA (rms value)	100	50	50	50	50
Permissible let-through current of the fuse	kA (peak value)	15	15	25	35	55
Rated making and breaking capacity (incoming supply from top or bottom)						
At 400 V AC, with fuse links or isolating links						
Rated breaking current I_c (p.f. = 0.35)	Size	000	00	1	2	3
	A (rms value)	800	800	2000	3200	5040
		(p.f. = 0.45)				
Rated operational current I_e for AC-21B, AC-22B, AC-23B						
	A	160	160	250	400	630
	A	100	100	250	400	630
At 500 V AC, with fuse links or isolating links						
Rated breaking current I_c (p.f. = 0.35)	Size	000	00	1	2	3
	A (rms value)	320	320	750	1200	1890
		(p.f. = 0.45)				
Rated operational current I_e for AC-21B, AC-22B, AC-23B						
	A	160	160	250	400	630
	A	100	100	250	400	630
	A	40	40	--	--	--
At 690 V AC, with fuse links or isolating links						
Rated breaking current I_c (p.f. = 0.35)	Size	000	00	1	2	3
	A (rms value)	200/240	200/240	375	600	945
		(p.f. = 0.45/0.95)				
Rated operational current I_e for AC-21B, AC-22B, AC-23B						
	A	160	160	250	400	630
	A	50	50	--	--	--
	A	25	25	--	--	--
At 220 V/240 V DC, with fuse links ²⁾⁴⁾⁵⁾ or isolating links						
Rated operational current I_e at 220 V DC-23B/DC-21B	Size	000	00	1	2	3
440 V DC-21B	A	80/160	80/160	--	--	--
	A	--	--	250	400	630

- 1) 125/160 A only with 3NY1 236 supply terminals and with 3NY1 822 (125 A) and 3NY1 824 (160 A) 21 mm wide fuse links; see accessories.
- 2) When switching without load (AC-20 B, DC-20 B), direct voltages up to 690 V DC can be applied.
- 3) For safety monitoring max. 690 V.
- 4) For pollution severity 2, the switch disconnectors can be used up to 1000 V AC-20 B, DC-20 B (no-load switching).
- 5) Conducting paths in series: 3 for 3NP40; 2 for 3NP42, 3NP43 and 3NP44.

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3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107					
		3NP40 1	3NP40 7	3NP42 7	3NP43 7	3NP44 7	
Type							
Capacitor switching capacity							
At 400 V AC							
Capacitor rating	kvar	50	50	--	--	--	
Rated current I_n	A	72	72	--	--	--	
At 525 V AC							
Capacitor rating	kvar	50	50	--	--	--	
Rated current I_n	A	55	55	--	--	--	
Permissible ambient temperature		°C -25 ... +55 ¹⁾ for operation, -50 ... +80 when stored					
Mechanical endurance		Operating cycles					
		2000	2000	1600	1000	1000	
Degree of protection (operator side)							
Without insulating cover/cable lug cover		IP00 (3NP40 with box terminal and properly connected conductors: IP20)					
With insulating cover/cable lug cover		IP30 (switch closed), IP20 (switch open)					
Power loss of switches at I_{th} (plus power dissipation of the fuse links)							
Without busbar adapter		W	4.5 (at 100 A)	10	15	30	47
With busbar adapter		W	8.5 (at 100 A)	20	47	83	127
Main conductor connections							
Flat connector for cable lug, max. conductor cross-section (stranded)		mm ²	--	Up to 2 × 70 (M8)	Up to 150 (M10)	Up to 240 (M10)	Up to 2 × 240 (M12)
Box terminal/terminal (finely stranded with end sleeve)		mm ²	1.5 ... 50 (35)	2.5 ... 70 (50)	70 ... 150	120 ... 240	150 ... 300
Busbar (width × thickness)		mm	--	22 × 5	22 ... 30 × 5 ... 10	22 ... 30 × 5 ... 10	25 ... 40 × 5 ... 10
Louvered Cu strips, unperforated in terminals (width × thickness)		mm	8 × 8	Up to 9 × 8	Up to 16 × 8	Up to 20 × 10	Up to 24 × 10
Tightening torques for terminal screws							
For flat connector		Nm	--	10 ... 12	25	25	30
With SIGUT box terminal/terminal		Nm	3 ... 3.5	8 ... 10	6	8	8
Auxiliary switch 1 CO (accessories)							
3NY3 035 50 Hz/60 Hz up to 230 V AC							
Rated operational current I_e at AC-14	A	0.25 ($I_{th} = 5$ A), at 24 V DC: $I_e = 0.45$ A; flat terminations according to DIN 46244: A 2.8 × 0.5					
3NY3 030 50 Hz/60 Hz up to 230 V AC							
Rated operational current I_e at AC-13	A	0.1 ($I_{th} = 0.1$ A); quick-connect terminal according to DIN 46245: A 2.8 ... 1					
Permissible mounting position		Vertical or horizontal installation (no reduction of specified switching capacity)					

1) Only with isolating links; otherwise, please observe specifications of fuse manufacturer.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107							
		3NP50		3NP52		3NP53		3NP54	
Type									
Rated uninterrupted current I_u For fuse links according to DIN 43620 (The use of semiconductor protection fuse links requires a reduction of rated current – see page 13/54 and Catalog DA 94.1)	A Size	160 00	250 1 and 0	400 2 and 1	630 3 and 2				
Conventional free air thermal current I_{th}	A	160	250	400	630				
Rated operational voltage U_e AC 50 Hz/60 Hz DC	V V	690	440 (3 conducting paths series-connected), 220 (2 conducting paths series-connected and with fuse monitoring through 3RV)						
Rated insulation voltage U_i	V	690 ¹⁾	690 ¹⁾	690 ¹⁾	690 ¹⁾				
Rated impulse voltage U_{imp}	kV	6	6	6	6				
Rated conditional short-circuit current with fuses (for fast switch-on) With fuse links Rated current At 500 V AC	Size/A kA (rms value)	00/160 50	1/250 50	2/400 50	3/630 50				
Permissible let-through current of the fuses	kA (peak value)	15	25	40	50				
Short-circuit strength with fuses (with closed switch) With fuse links Rated current At 500 V AC	Size/A kA (rms value)	00/160 100	1/250 100	2/400 50	3/630 50				
Maximum permissible let-through I^2t value	kA ² s	223	780	2150	5400				
Permissible let-through current of the fuses	kA (peak value)	23	32	40	60				
Rated short-circuit making capacity with isolating links²⁾ At 500 V AC	Size kA (peak value)	00 6	1 17	2 17	3 17				
Rated making and breaking capacity²⁾ (incoming supply from top or bottom) ³⁾ At 400 V AC, with fuse links Breaking current I_c (p.f. = 0.35)	Size A (rms value)	00 1600	1 2500	0 1600	2 4000	1 2500	3 5040	2 4000	
Rated operational current I_e At AC-21B, AC-22B, AC-23B	A	160	250	160	400	250	630	400	
At 500 V AC, with fuse links Breaking current I_c (p.f. = 0.35)	A (rms value)	1300	2500	1600	4000	2500	5040	4000	
Rated operational current I_e At AC-21B, AC-22B, AC-23B	A	160	250	160	400	250	630	400	
At 690 V AC, with fuse links Breaking current I_c (p.f. = 0.35)	A (rms value)	800	1280	1000	2520	1600	3200	2520	
Rated operational current I_e for AC-21B, AC-22B, AC-23B	A A	160 100	250 160	160 125	400 315	250 200	630 400	400 315	
At 220 (440) V DC, with 2 (3) conducting paths series-connected and fuse links Breaking current I_c ($L/R = 15$ ms)	A	640	1000	640	1600	1600	2520	1600	
Rated operational current I_e at DC-23B	A	160	250	160	250	250	630	400	

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107			
		3NP50	3NP52	3NP53	3NP54
Type					
Switching capacity with isolating links⁴⁾ (feed-in from top or bottom ⁴⁾)					
At 400 V AC, with isolating links Breaking current I_c (p.f. = 0.35)	Size A (rms value)	00 1600	1 2500	2 2500	3 4000
Rated operational current I_e for AC-21B, AC-22B, AC-23B	A	160	250	400	630
	A	160	250	315	500
At 500 V AC, with isolating links Breaking current I_c (p.f. = 0.35)	A (rms value)	1300	2500	2500	4000
Rated operational current I_e for AC-21B, AC-22B, AC-23B	A	160	250	400	630
	A	160	250	315	500
At 690 V AC, with isolating links Breaking current I_c (p.f. = 0.35)	A (rms value)	800	1280	1600	2520
Rated operational current I_e for AC-21B, AC-22B, AC-23B	A	160	250	400	630
	A	100	160	200	315
At 220 V DC, with isolating links Breaking current I_c ($L/R = 15$ ms) Rated operational current I_e at DC-23B	A	640 160	1000 200	1600 400	1600 400
Switching capacity for horizontal installation Up to 690 V AC-22B		No reduction in specified switching capacity (values for AC-23B up to 690 V on request)			

- 1) When observing pollution degree 2 (instead of 3) operation is also possible up to $U_i = 1000$ V.
- 2) Rated making and breaking current according to IEC 60947-3
Rated making current $I = 10 \times I_e$ (AC-23); $3 \times I_e$ (AC-22);
 $1.5 \times I_e$ (AC-21)
Rated breaking current $I_e = 8 \times I_e$ (AC-23); $3 \times I_e$ (AC-22);
 $1.5 \times I_e$ (AC-21)
- 3) When using electronic fuse monitoring, feed-in must be from the top.
- 4) Insert silver-plated isolating links.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

General data

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107			
		3NP50	3NP52	3NP53	3NP54
Type					
Capacitor switching capacity					
At 400 V AC					
Capacitor rating	kvar	80	90	150	250
Rated current I_n	A	116	130	216	361
At 525 V AC					
Capacitor rating	kvar	100	125	200	300
Rated current I_n	A	110	137	220	330
Permissible ambient temperature		°C -25 ... + 55 for operation ¹⁾ , -50 ... + 80 for storage			
Mechanical endurance		Operating cycles 1600			
Degree of protection					
Without molded-plastic cover		IP00 ²⁾			
With insulating cover and closed fuse carrier on the operator side		IP30			
With open handle unit		IP10			
Power loss of the switch disconnector at I_{th} (plus power loss of the fuse links)					
Without busbar adapter	W	7.8 (16.3) ³⁾	7.5	15	39
Main conductor connections					
Cable lug, max. conductor cross-section (stranded)	mm ²	2.5 ... 120	6 ... 150	6 ... 240	6 ... 2 × 240
Busbar	mm	16 ... 22	22 ... 30	22 ... 30	22 ... 30
Clamp connections	mm ²	2.5 ... 50	35 ... 120	--	--
Tightening torque					
With cable lug	Nm	18 ... 22	25 ... 30	25 ... 30	25 ... 30
With busbar	Nm	18 ... 22	25 ... 30	25 ... 30	25 ... 30
With clamp connection	Nm	9 ... 11	5 ... 6	--	--
Terminal screws					
With cable lug		M8	M10	M10	M10
With busbar		M8	M10	M10	M10
With clamp connection		M8	2 × M6	--	--
PE/ground terminals					
Lug according to DIN 46234	mm ²	--	2.5 ... 70	6 ... 2 × 70	6 ... 2 × 120
Busbar	mm	--	25	25	30
Terminal screws		--	M8	M10	M10
Auxiliary switch 1 NO + 1 NC (accessories) (the same voltage potential must be applied to both NO and NC contact)					
At 50 Hz/60 Hz up to 400 V AC, rated operational current I_e at AC-12/AC-15 A	A	16/6			
Flat termination (DIN 46244)		A 6.3 ... 0.8			
Permissible mounting position		Vertical or horizontal (partially reduced switching capacity with horizontal mounting)			
Fuse monitoring with 3RV circuit-breakers		See circuit-breaker			
Electronic fuse monitoring					
Rated voltage 50 Hz/60 Hz AC	V	400 - 15 % ... 500 V + 10 %, self-powered (infeed from top)			
Max. making current	A	20			
Uninterrupted current	A	5			
Breaking current	A	5			
Switching capacity	VA	1000			
Short-circuit strength (1 ms)	A	100			
Response time	s	< 1			
Temperature range (operation)	°C	-10 ... +75			
Plug-in connectors/connections		6-pole			
Minimum required potential difference between upper and lower switch connections (e.g. for use in meshed networks)	V	> 10			
Signaling contact for electronic fuse monitoring		2 NO + 1 NC			
Rated operational current I_e					
At 250 V, DC-13	A	0.27			
At 240 V, AC-15	A	1.5			
Thermal free-air rated current I_{th}	A	5			

1) When using isolating links. If using fuse links, please observe specifications of fuse manufacturer.

2) For 3NP52 with clamp connection, degree of protection IP10.

3) With busbar adapter.

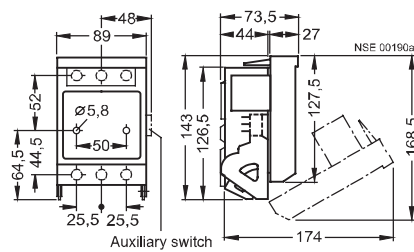
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

For power distribution

Dimensional drawings

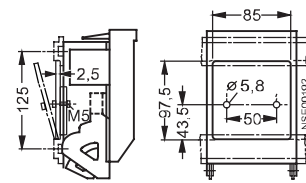
3NP40 10



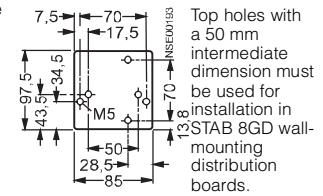
Cut-out for 3NP35 and 3NP40 10

3NP40 10

with 3NY1 995 quick retaining plate mounting rail center-to-center clearance 125 mm

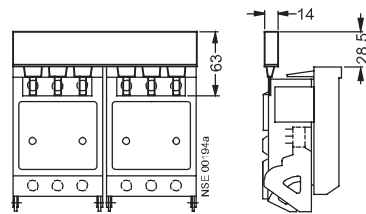


3NY1 995 quick retaining plate for 3NP40 10 and 3NP40 70



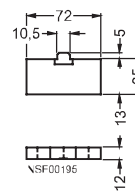
3NP40 10

with 3NY1 237 3-phase busbar for 2 fuse switch disconnectors



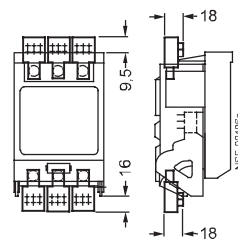
3NY1 265 covering cap

for 3NY1 238 3-phase busbar



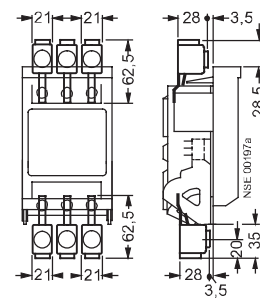
3NP40 10

with 3NY1 235 triple terminal



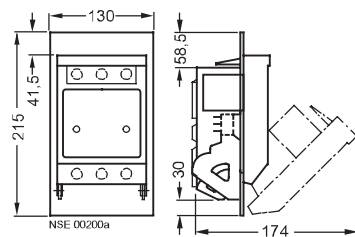
3NP40 10

with 3NY1 236 supply terminal



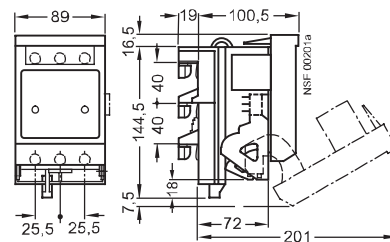
3NP40 10

with 3NY1 251 molded-plastic cover



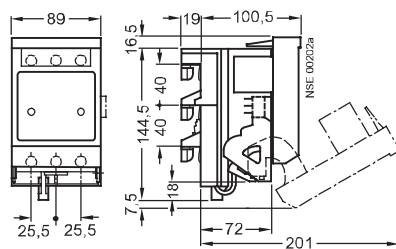
3NP40 15-1CJ01

with busbar adapter, flat, rails of width 12 mm or 15 mm and thickness 5 mm or 10 mm, bottom connection



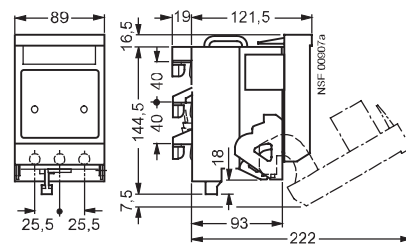
3NP40 15-1CK01

with busbar adapter, flat, rails of width 12 mm or 15 mm and thickness 5 mm or 10 mm, bottom connection



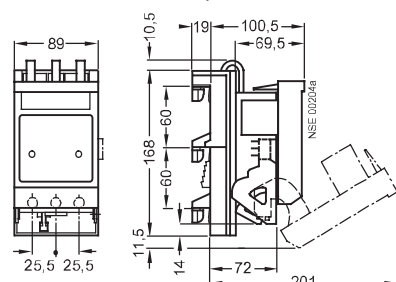
3NP40 15-0CJ01

with busbar adapter, deep, rails of width 12 mm or 15 mm and thickness 5 mm or 10 mm, bottom connection



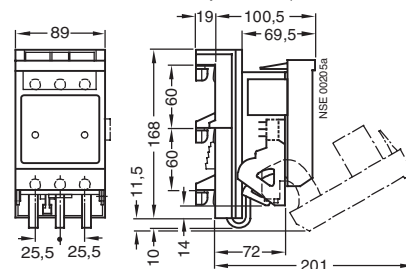
3NP40 16-1CJ01

with busbar adapter, rails of width 12, 15, 20 mm or 30 mm and thickness 5 mm or 10 mm, flat, T, I profiles and other renowned busbar systems, bottom connection



3NP40 16-1CK01

with busbar adapter, rails of width 12, 15, 20, 25 mm or 30 mm and thickness 5 mm or 10 mm, flat, T, I profiles and other renowned busbar systems, top connection

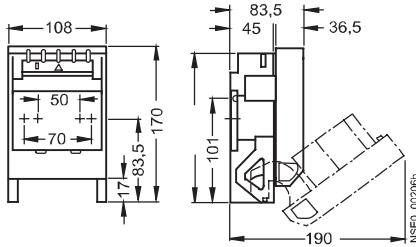


3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

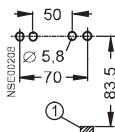
3NP Fuse Switch Disconnectors up to 630 A

For power distribution

3NP40 70
for mounting

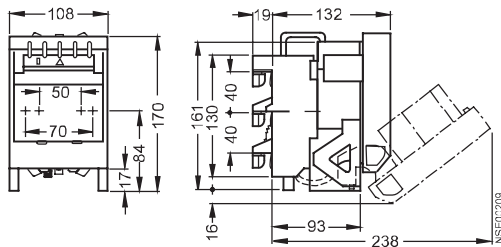


Drilling pattern for 3NP40 70



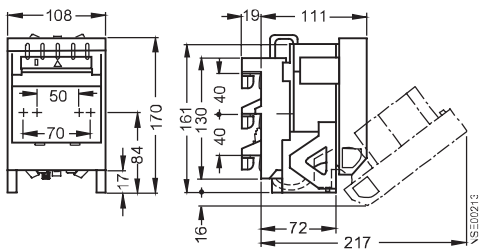
3NP40 75-0

with busbar adapter, deep,
rails of width 12 mm or 15 mm
and thickness 5 mm or 10 mm



3NP40 75-1

with busbar adapter, flat,
rails of width 12 mm or 15 mm
and thickness 5 mm or 10 mm



For metal frames

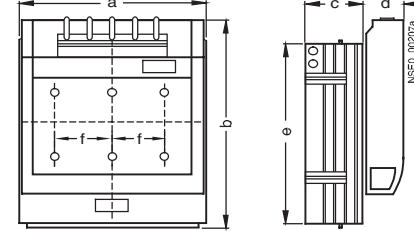
Cut-outs for 3NP4

Type	Cover between assembly kit		Panel cut-out min.		
	B	H	B	H	h ¹⁾
3NP40 1	130	215	100	180	100
3NP40 7	130	215	118	195	110
3NP42 7	220	375	210	275	157
3NP43 7	245	375	235	315	174
3NP44 7	290	375	280	325	178

Type	Molded-plastic cover behind panel		Panel cut-out min.		
	B	H	B	H	h ¹⁾
3NP40 1	130	215	100	155	87
3NP40 7	130	215	118	195	110
3NP42 7	220	375	198	275	157
3NP43 7	245	375	224	315	174
3NP44 7	290	375	270	325	178

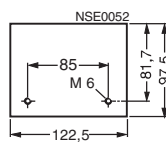
1) h = distance from top edge of panel cut-out to center of disconnector mounting.

3NP42 70, 3NP43 70, 3NP44 70
for mounting

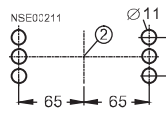


Type	a	b	c	d	e
3NP42 70	184	243	66	45.5	215
3NP43 70	210	288	80	48	255
3NP44 70	256	300	94.5	48	267

3NY73 22 quick retaining plate

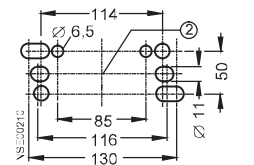


Drilling pattern for 3NP43 70

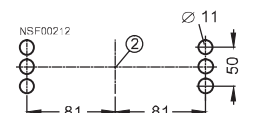


① Bottom edge disconnector-base
② Center disconnector-base

Drilling pattern for 3NP42 70

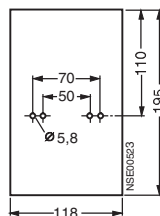


Drilling pattern for 3NP44

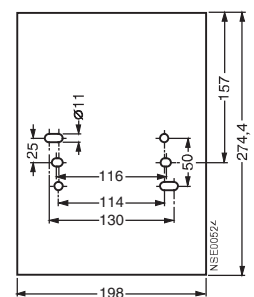


For plastic frames

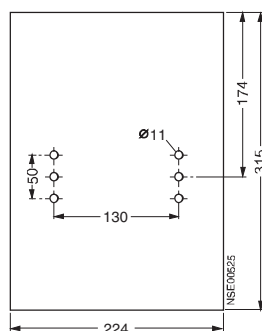
Cut-outs²⁾
for 3NP40 70



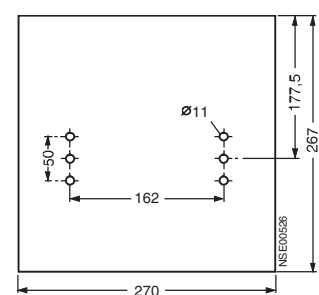
Cut-outs²⁾
for 3NP42



Cut-outs²⁾
for 3NP43



Cut-outs²⁾
for 3NP44



2) Cover is placed open on the switchgear cabinet panel, for cover behind control cabinet panel: cut-out dimensions on request.

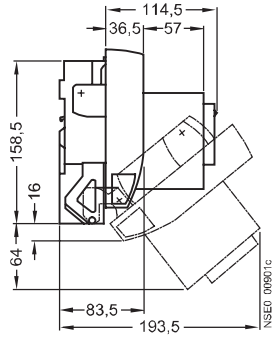
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

For power distribution

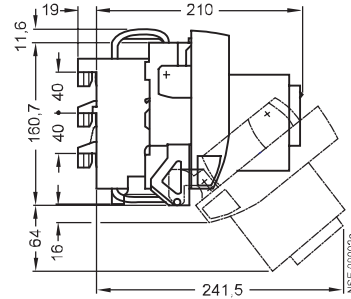
3NP40 70-0F

for mounting and installation



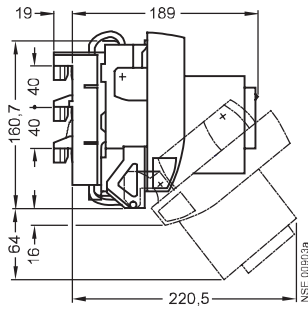
3NP40 75-0F

with busbar adapter, deep, 40 mm, rails of width 12 mm or 15 mm and thickness 5 mm or 10 mm



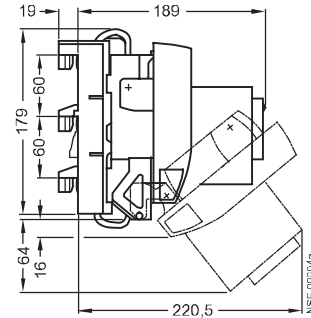
3NP40 75-1F

with busbar adapter, flat, 40 mm, rails of width 12 mm or 15 mm and thickness 5 mm or 10 mm



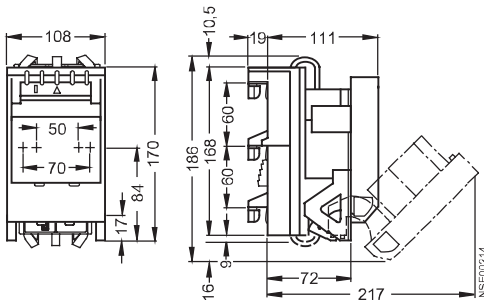
3NP40 76-0F

with busbar adapter, flat, 60 mm, rails of width 12 mm or 30 mm and thickness 5 mm or 10 mm



3NP40 76-1

with busbar adapter, busbars with a width of 12 mm to 30 mm and a thickness of 5 mm or 10 mm, flat, T and I profiles



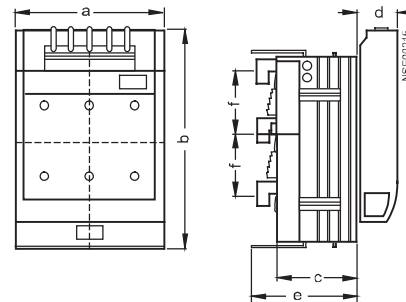
3NP42 75-1

3NP42 76-1

3NP43 76-1

3NP44 76-1

with busbar adapter, busbars with a width of 12 mm to 30 mm and a thickness of 5 mm or 10 mm, flat, T and I profiles



Type	a	b ¹⁾	c	d	e	f
3NP42 75-1	184	243	83 ²⁾	45,5	111	40
3NP42 76-1	184	243	83 ²⁾	45,5	111	60
3NP43 76-1	210	288	97	48	125	60
3NP44 76-1	256	300	112	48	139	60

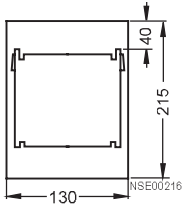
- 1) For VBG4 plus dimension c of the cable lug covers (see page 41).
- 2) The 3NY7 820 molded-plastic cover is used for depth compensation (below) when installed together with size 000 or size 00 in STAB/SIKUS distribution boards.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

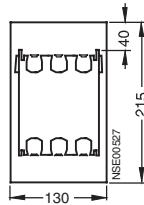
3NP Fuse Switch Disconnectors up to 630 A

For power distribution

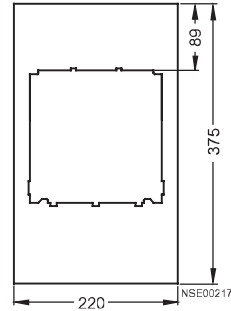
3NY7 200 molded-plastic cover
for 3NP40 7
for installation in any distribution board



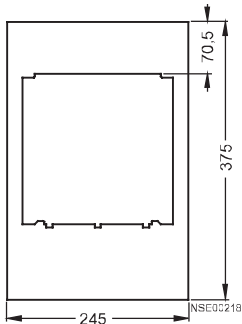
3NY7 201 molded-plastic cover
for 3NP40 7.-
for 3NP40 7.-CA01



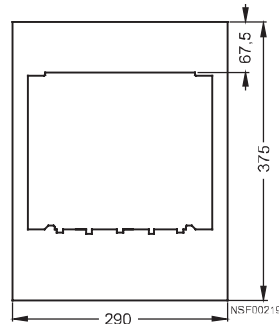
3NY7 220 molded-plastic cover
for 3NP42
for installation in any distribution board



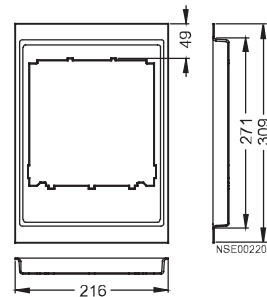
3NY7 230 molded-plastic cover
for 3NP43
for installation in any distribution board



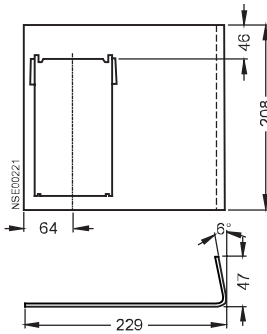
3NY7 240 molded-plastic cover
for 3NP44
for installation in any distribution board



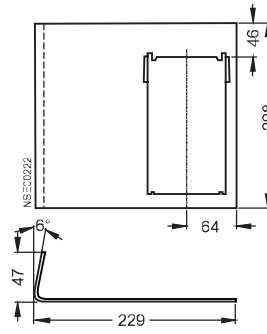
3NY7 820 molded-plastic cover
for one 3NP42 70 switch disconnector
for installation in STAB/SIKUS distribution boards



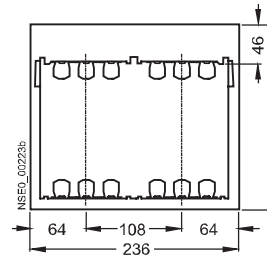
3NY7 500 molded-plastic cover
for one 3NP40 switch disconnector, left,
for installation in SIKUS 3200, STAB 160 and
400 and SIKUS 630 distribution boards



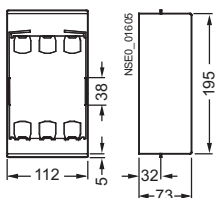
3NY7 501 molded-plastic cover
for one 3NP40 switch disconnector, right,
for installation in SIKUS 3200, STAB 160 and
400 and SIKUS 630 distribution boards



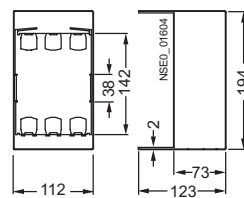
3NY7 502 molded-plastic cover
for two 3NP40 switch disconnectors
for installation in SIKUS 3200, STAB 160 and
400 and SIKUS 630 distribution boards



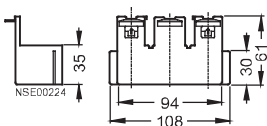
3NY7 600 touch protection cover
for installation in ALPHA distribution boards
for 3NP40 76 switch disconnectors



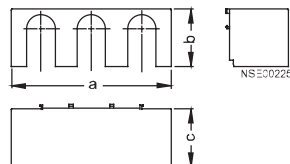
3NY7 601 touch protection cover
for 3NP40 75, 3NP40 76
switch disconnectors



**Cable lug cover for 3NP40 7
with flat connector, 3NY7 101**



**Cable lug cover for 3NP42 to 3NP44,
3NY7 121, 3NY7 131, 3NY7 141**



Type	a	b	c
3NY7 121	181	65	67
3NY7 131	207	79	50
3NY7 141	253	94	47

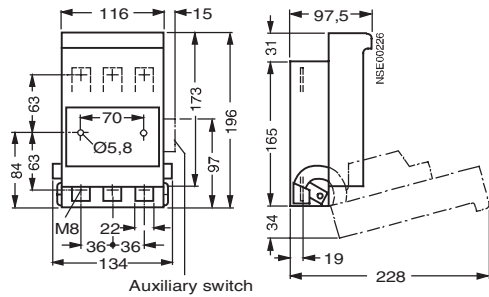
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

For extended technical requirements

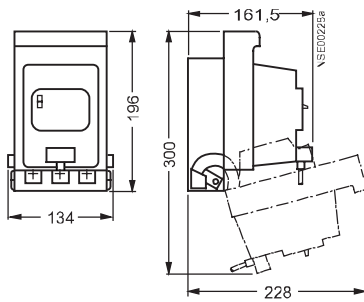
Dimensional drawings

3NP50 60, 160 A
for mounting

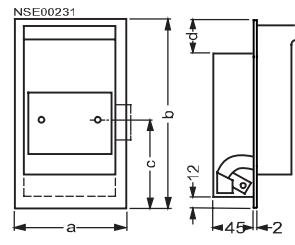


3NP50 60, 160 A

with fuse monitoring by 3RV1 circuit-breaker,
with plug-in connector

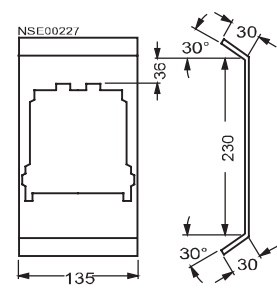


3NP50 60, 160 A
with molded-plastic cover
for any type of installation



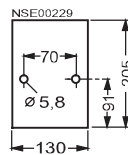
Type	a	b	c	d
3NY1 105	135	215	95.5	38
3NY1 115	135	215	95.5	38
3NY1 106	135	290	144.5	64
3NY1 108	135	290	144.5	64
3NY1 208	149	250	115	53.5

3NY1 107 molded-plastic cover

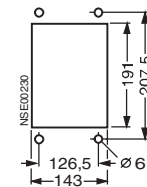


For plastic frames

Cut-out
for 3NP50 60, with and
without auxiliary switch

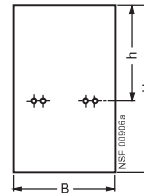


Cut-out
for 3NY1 208 installation kit



For metal frames

Cut-outs for 3NP5



Type	Cover between Panel cut-out min.					
	assembly kit		Molded-plastic cover behind panel			
Type	B	H	B	H	h ¹⁾	
3NP50 6	3NY1 105 ²⁾	135	215	130	206	115
3NP50 6	3NY1 125					
3NP52 6	3NY1 210	222	300	210	293	146
3NP53 6	3NY1 211	245	300	235	293	146
3NP54 6	3NY1 212	290	300	280	293	146
Molded-plastic cover in front of panel						
Type	B	H	B	H	h ¹⁾	
3NP50 6	3NY1 105	135	215	130	205	115
3NP50 6	3NY1 208	149	250	143	191	--
3NP52 6	3NY1 210	220	300	210	262	132
3NP53 6	3NY1 211	245	300	234	262	132
3NP54 6	3NY1 212	290	300	279	262	132

1) h = distance from upper edge of panel cut-out to center of disconnector mounting.

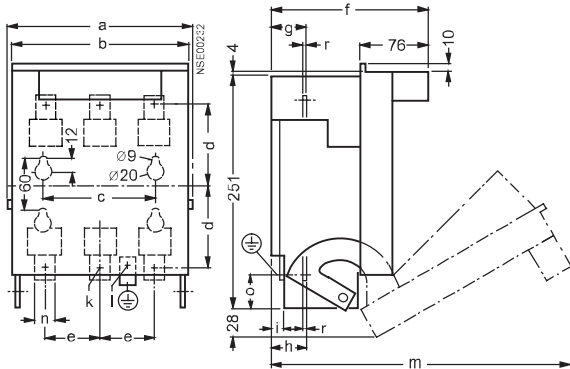
2) With standard molded-plastic cover behind the control panel and corresponding control panel cut-out, the specified switching capacity is reduced to the following AC 23B values: at 400 V I_g 160 A, at 500 V from I_g 160 A to 125 A and at 690 V from I_g 100 A to 50 A.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

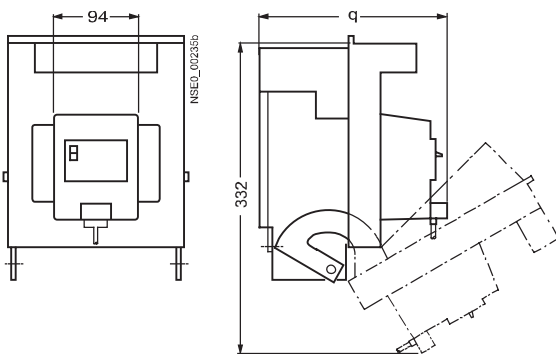
3NP Fuse Switch Disconnectors up to 630 A

For extended technical requirements

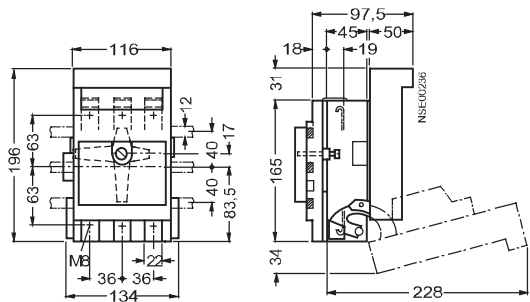
3NP5. 60, 250 to 630 A
for mounting



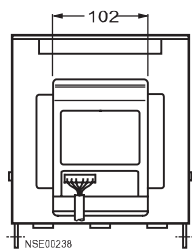
3NP5. 60, 250 to 630 A
with fuse monitoring by 3RV circuit-breaker, with plug-in connection



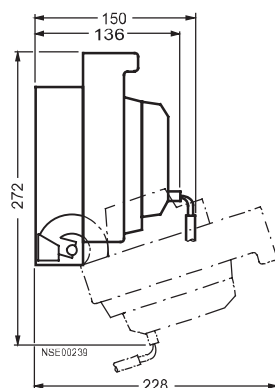
3NP50 65, 160 A
with busbar adapter, rails of width 12 mm and thickness 5 mm or 10 mm



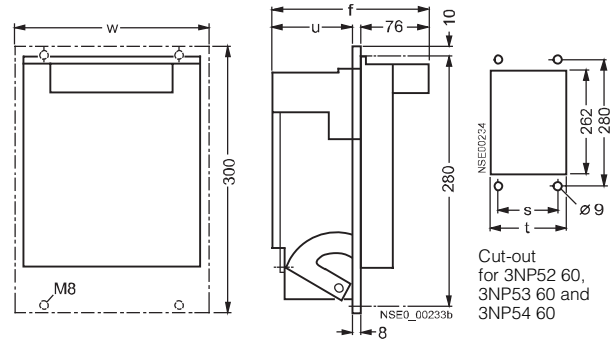
3NP5. 60, 160 to 630 A
with electronic fuse monitoring,
with plug-in connection and control
cable



3NP50 60, 160 A
with electronic fuse monitoring,
with plug-in connection and control
cable



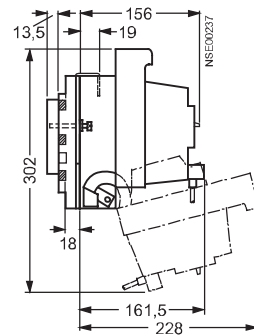
3NP5. 60, 250 to 630 A
with molded-plastic cover, for installation



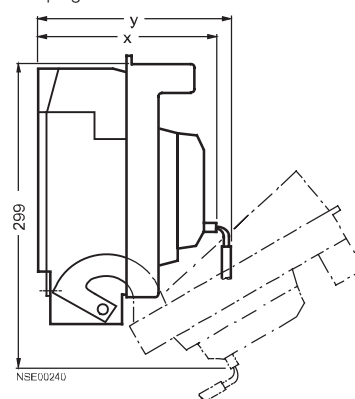
Type	a	b	c	d	e	f	g	h	l
3NP52 60	207	202	130	93	62	176	38	41	11.5
3NP53 60	231	226	130	106	70	192	39	39	11.5
3NP54 60	276	271	200	111	85	207	40.5	40.5	11.5
	k ¹⁾	l ¹⁾	m	N	o	q	r	s	t
3NP52 60	M10	M8	336	25	32	212	3.6	156	210
3NP53 60	M10	M10	352	25	25	228	4.4	180	234
3NP54 60	M10	M10	367	30	25	243	6	225	279
	u	W	x	y					
3NP52 60	89.5	220	186.5	200.5					
3NP53 60	105.5	245	202.5	216.5					
3NP54 60	120.5	290	217.5	231.5					

1) Through-hole for screw

3NP50 65, 160 A
with busbar adapter,
with fuse monitoring by 3RV circuit-breaker,
with plug-in connector



3NP5. 60, 250 to 630 A
with electronic fuse monitoring,
with plug-in connection and control
cable



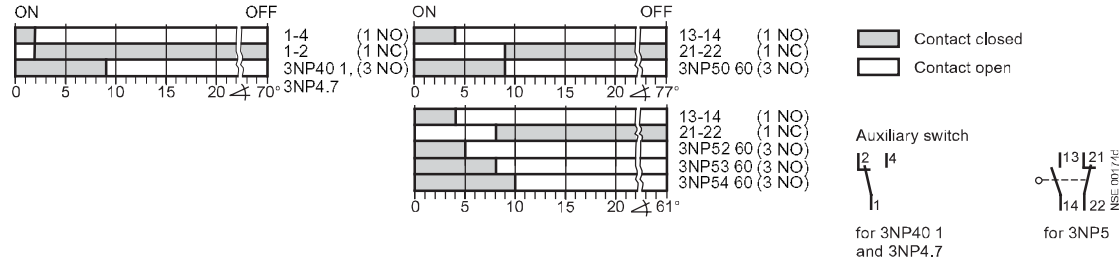
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NP Fuse Switch Disconnectors up to 630 A

For extended technical requirements

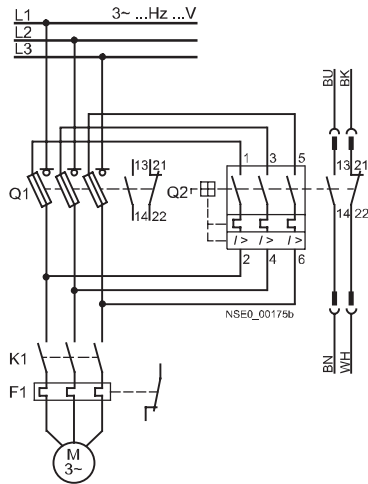
Schematics

Function for auxiliary contacts – main contacts with SENTRON 3NP4 and 3NP5

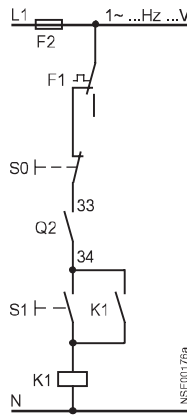


SENTRON 3NP fuse switch disconnector with fuse monitoring (with 3RV1 circuit-breaker, with auxiliary switch 1 NO + 1 NC)

Circuit diagram of main circuit



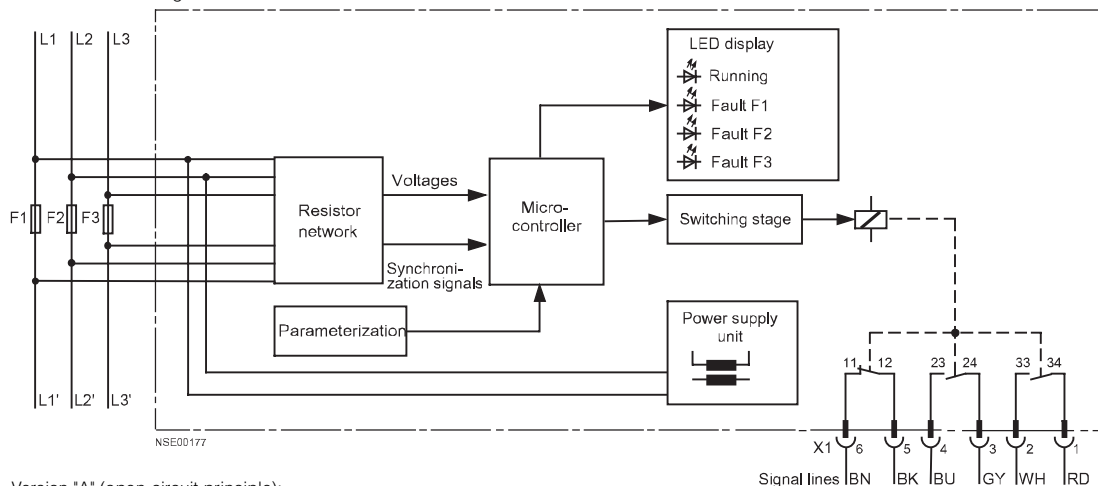
Circuit diagram of auxiliary circuit



- Q1 = Fuse switch disconnector
- Q2 = circuit-breaker
- K1 = Contactor
- S1 = ON pushbutton
- S0 = OFF pushbutton
- F1 = Overload relay
- F2 = Control-circuit fuse

SENTRON 3NP5 fuse switch disconnector with electronic fuse monitoring

Schematic circuit diagram



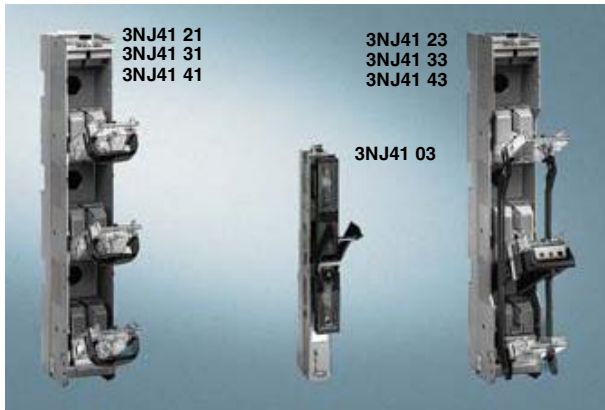
Version "A" (open-circuit principle):
auxiliary switches only pick up if fuse faulty and voltage is applied.
Version "R" (closed-circuit principle):
auxiliary contacts pick up as soon as voltage is applied and as long as fuses are intact.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

General data

Design



3NJ41 in-line fuse switch disconnectors

SENTRON 3NJ in-line fuse switch disconnectors for mounting on 185 mm busbar systems. They are available in the following sizes and versions:

Size 1 for 250 A, 1- or 3-pole switchable
 Size 2 for 400 A, 1- or 3-pole switchable
 Size 3 for 630 A, 1- or 3-pole switchable
 Size 4a for 1250 A, 1-pole switchable.

The size 00 for 160 A, 3-pole switchable in-line fuse disconnectors are available for 100 mm busbar center-to-center distance and only as a special version for 185 mm busbar center-to-center distance.

Instead of one size 1 to 3 disconnector, two size 00 disconnectors with an adapter and masking frame can be used (see Accessories) on a 185-mm busbar system.

The swiveling mechanism with 3-pole switchable disconnectors of sizes 1 to 3 is lockable and ensures simultaneous switching of all three phases.

For size 4 the following versions are available in addition to the standard version:

a slim version ($W \times H = 248 \times 775$ mm)
 a special version ($W \times H = 147 \times 1115$ mm)
 (delivery possibilities on request).

All SENTRON 3NJ in-line fuse switch disconnectors are fed by way of the busbars. The outgoing current is transported by cable (see "Terminal positions").

With SENTRON 3NJ41 in-line fuse disconnectors it is possible to choose between having the cable connection on top or on bottom (standard version) by turning the contact carrier. The upper part can be removed completely. This ensures easy mounting.

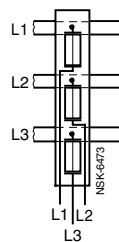
Inspection holes

For voltage testing, all SENTRON 3NJ in-line fuse switch disconnectors are fitted with voltage test apertures.

Mounting position

The SENTRON 3NJ in-line fuse switch disconnectors can be mounted vertically or horizontally. When mounted horizontally, however, system-specific reduction factors and the coincidence factor (DIN VDE 0660 Part 500 4.7) according to the applicable system regulations must be observed.

Connections



Terminal position

Special blocks

The 3NJ4 and 3NJ5 in-line devices are also available on request for the following applications:

- Incoming block for 1600 A: Two parallel-connected size 3 in-line devices with isolating links fitted instead of the LV HRC fuse links (only 1-pole switchable)
- In-line busbar isolating devices with side feeders for isolating or connecting two busbar systems (sizes 1 to 3)
- Parallel-connected in-line devices for 800 A or 1250 A (only 1-pole switchable)

Integration

Assembly kits as well as TTA modules and partly equipped side-by-side cabinets are available for installation in the SIKUS 3200 (8GG) modular distribution board system; see Components for Distribution Systems.

Installation in SIKUS Universal (8GF) is also possible. Please inquire.

3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

General data

Technical specifications

Standards		IEC 60947-1, IEC 60947-3, VDE 0660 Part 107							
		3NJ41 0 3NJ5 0	3NJ41 2	3NJ41 3	3NJ41 4	3NJ41 8	3NJ41 5	3NJ56	
Conventional thermal current									
Free air $I_{th}^{(1)}$	A	160	250	400	630	910	1000	1250	
Enclosed $I_{the}^{(2)}$	A	160	225	360	567	--	--	--	
Rated insulation voltage U_i		V	750	1000	1000	1000	500	1000	
Rated operational voltage U_e		40 Hz ... 60 Hz V AC	690	690	690	690	400	690	
Rated conditional short-circuit current with fuses									
At 40 Hz to 60 Hz 690 V AC	kA (rms value)	50	50	50	50	50	--	50	
Max. rated current I_n of the fuses	A	160	250	400	630	910	--	1250	
Permissible let-through current of the fuses	kA (peak value)	15	28	39	52	53	--	80	
For fuse links according to IEC 60269-2-1 or isolating links	Size/A	00/160	1/250	1 and 2/250 and 400	2 and 3/400 and 630	3/910	--	4a/1250	
Rated operational current I_e									
At 400 V AC	AC-22B	A	160	250	400	630	910	1000	
500 V AC	AC-22B	A	160	250	400	630	--	1000	
690 V AC	AC-21B	A	160	250	400	630	--	1000	
690 V AC	AC-22B	A	100	200	315	500	--	600	
220 V DC	DC-21B	A	160	250	400	630	--	--	
Rated switching capacity									
At 500 V AC	p.f. = 0.65	A	480	750	1200	1890	--	2400	
690 V AC	p.f. = 0.65	A	380	600	945	1500	--	--	
220 V DC	$L/R = 1$ ms	A	240	375	600	945	--	--	
Capacitive switching capacity		kvar	50 ... 60	105 ... 115	155 ... 185	250 ... 300	--	--	
Rated short-time current (1 s current)		kA (rms value)	15	20	22	22	22	34	
Permissible ambient temperature		°C	-25 ... +55						
Mechanical endurance		Operat- ing cycles	1400	1400	800	800	800	800	
Electrical endurance		Operat- ing cycles	200	200	200	200	100	100	
Degree of protection									
With closed fuse carrier With terminal cover and peripheral cover			IP30	IP30	IP30	IP30	IP30	IP30	
With open fuse carrier			IP10	IP10	IP10	IP10	IP10	IP10	
Power loss of the main conducting paths at I_{th}		W	18	23	49	110	260	300	
Main conductor connections									
Terminal screws			M8	M10	M12	M12	2 × M12	2 × M12	
Flat bars		mm	24	42	42	42	80	80	
Cable lug, max. conductor cross-section (stranded)		mm ²	95	240	240	240 ³⁾	2 × 240	2 × 240	
Tightening torque		Nm	10 ... 15	30 ... 35	30 ... 35	30 ... 35	30 ... 35	30 ... 35	
Terminal clamp/V terminals		mm ²	1.5 ... 70	25 ... 300	25 ... 300	25 ... 300	--	--	
Fixing screws			M8	M12	M12	M12	M12	M12	
Required tightening torque for mounting on busbars		Nm	16 ... 18	35 ... 40	35 ... 40	35 ... 40	35 ... 40	35 ... 40	

- 1) When several devices are used next to each other, the load factor according to EN 60439 Part 1/DIN VDE 0660 Part 500, Table 1 must be observed.
- 2) Required enclosure volume is at least 0.185 m³.
- 3) A special kit is required for connection of 2 × 240 mm²; delivery on request.

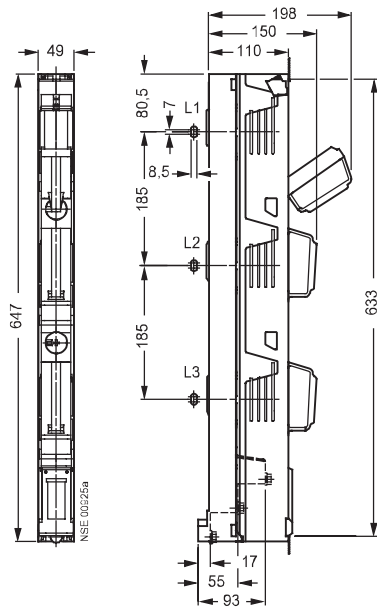
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

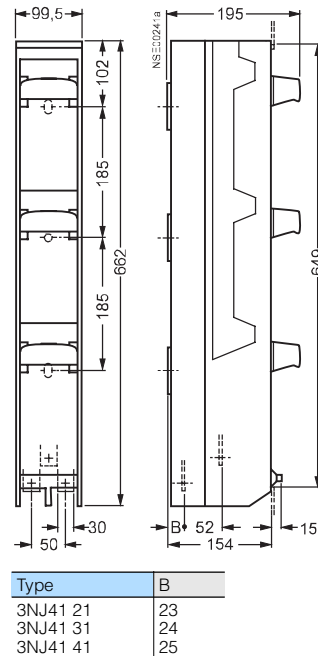
1-pole switchable

Dimensional drawings

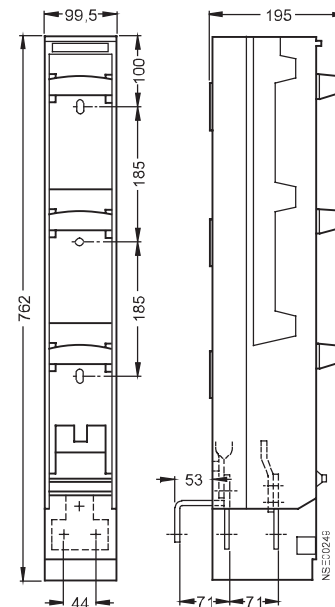
3NJ50 13, 160 A
1-pole switchable



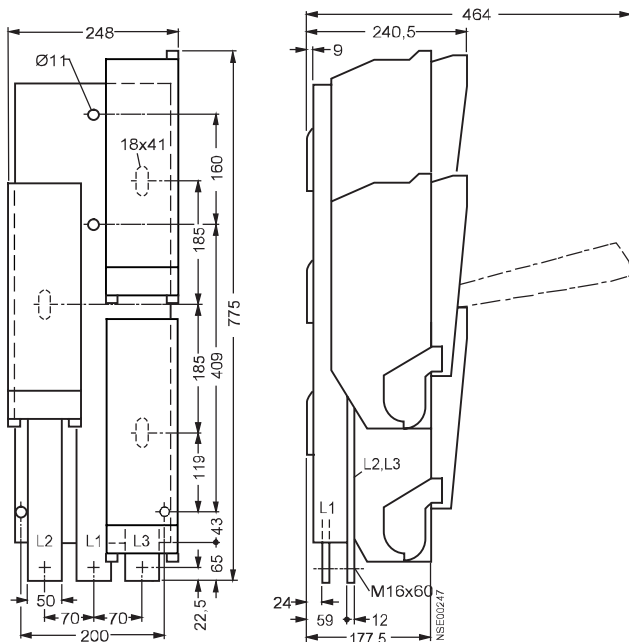
3NJ41 1-3, 250 to 630 A
1-pole switchable



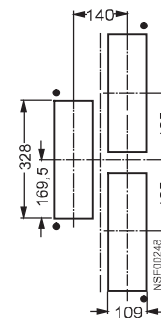
3NJ41 51-5DB00
incoming block, 1000 A
1-pole switchable



3NJ56 43, 1250 A
1-pole switchable
for 185 mm center-to-center distance



Switchboard cut-out
with flush mounting for 3NJ56 43



17

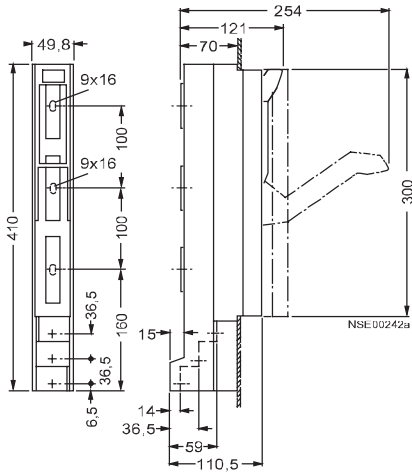
3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

3-pole switchable

Dimensional drawings

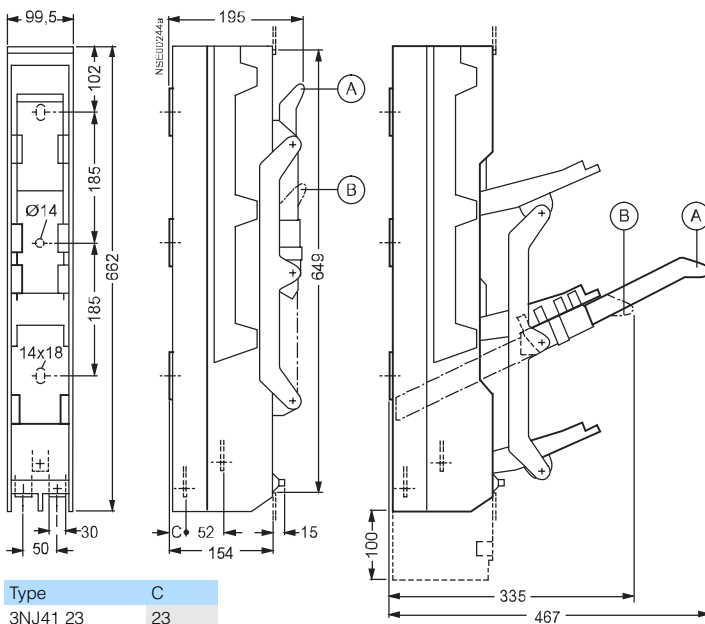
3NJ41 03, 160 A
3-pole switchable
 for 100 mm center-to-center distance



3NJ41 .3-3,
250 to 630 A
3-pole switchable

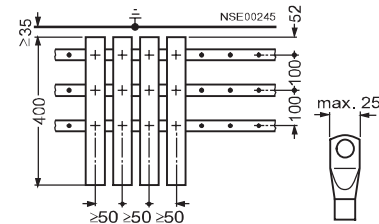
"ON" position

"OFF" position
 (A) unlocked
 (B) locked

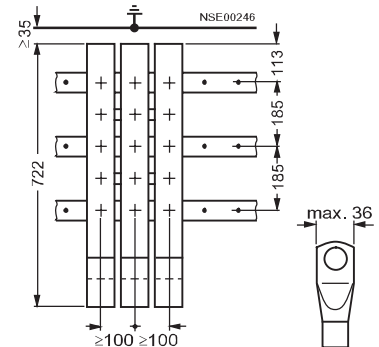


Type	C
3NJ41 23	23
3NJ41 33	24
3NJ41 43	25

Mounting of the in-line fuse switch disconnectors on busbars for 100 mm center-to-center distance



Mounting of the in-line fuse switch disconnectors on busbars for 185 mm center-to-center distance
 Minimum distance between the conductive parts of all bars: 100 mm

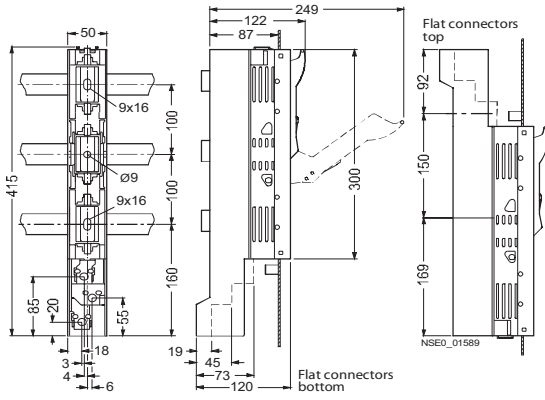


3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

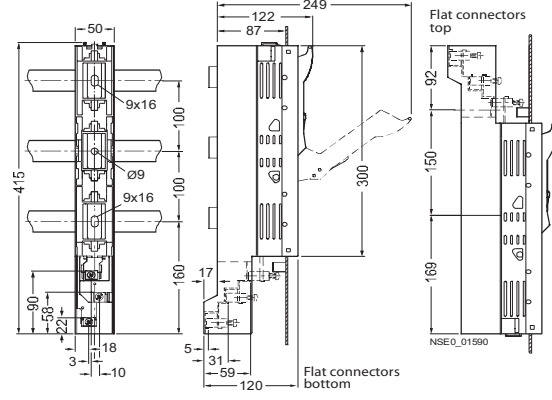
3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

3-pole switchable

3NJ41 03-3BF02
3-pole switchable



3NJ41 03-3BR02
3-pole switchable

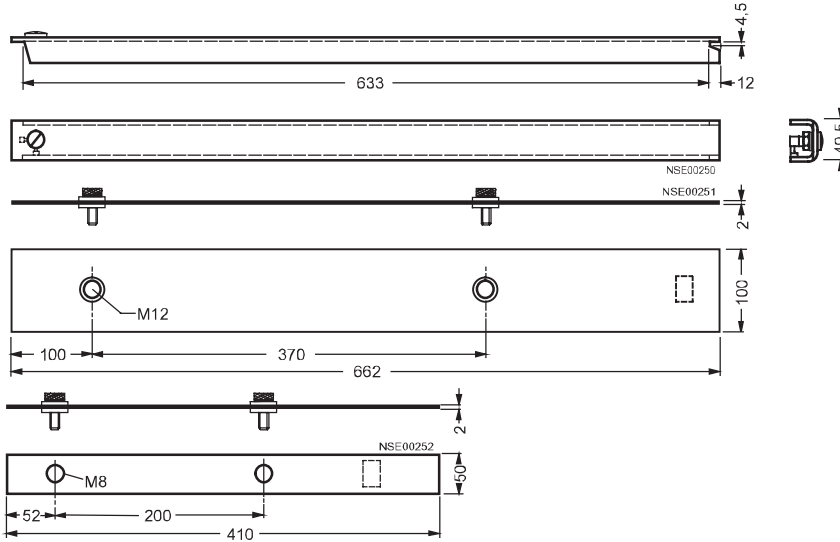


3NP, 3NJ4, 3NJ5 Fuse Switch Disconnectors

3NJ4, 3NJ5 In-Line Fuse Switch Disconnectors, up to 1250 A

Accessories

Dimensional drawings



Blanking cover
for panel cut-out

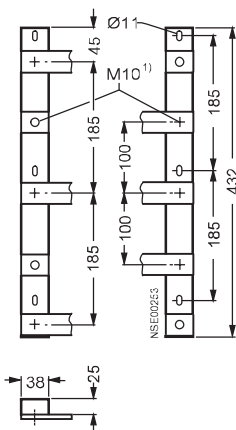
3NJ49 12-2AA00
50 mm wide

Unequipped section covers
for busbars

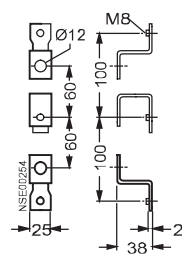
3NJ49 12-3BA00
100 mm wide
for 185 mm busbars

3NJ49 12-3CA00
50 mm wide
for 100 mm busbars

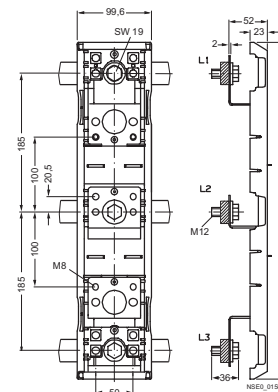
3NJ59 74-0AB
busbar supports



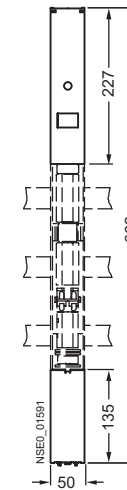
3NJ49 18-0EA00
adapters
for 60 mm busbar
center-to-center distance



3NJ49 18-0DA02
adapters
for 185 mm busbar
center-to-center distance



3NJ49 12-1DA02
covers (long)
for 185 mm busbar
center-to-center distance



Width of busbars as required, but minimum clearance of 20 mm to the next busbar or conductive parts

1) Maximum screw-in length: 14 mm, tightening torque 30 Nm.

3NJ49 11-3AA00
busbar terminals

