

3WN1 Circuit-Breakers for AC

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Selection and ordering data

Circuit-breakers

3-pole, fixed-mounted version up to 4000 A

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3-pole, withdrawable version up to 6300 A

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4-pole, fixed-mounted version up to 3200 A

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4-pole, withdrawable version up to 5000 A

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3-pole, withdrawable version up to 6300 A

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3WN1 Circuit-Breakers for AC

3-pole Fixed-Mounted Version up to 4000 A

Selection and ordering data																	
Version			Order No. supplement		Order No.										Basic price		
					3 W N 1 □ □ 1 - □ □ □ □ □ - □ □ □ □												
Size/rated current I_n	Size I/1 80 kA ¹⁾	630 A	126– 315 A		0	A										×	
			160– 400 A		0	B									×		
			200– 500 A		0	C									×		
			252– 630 A		0	D									×		
		800 A 1000 A 1250 A	320– 800 A		1	E									×		
			400–1000 A		2	F									×		
	500–1250 A		2	G									×				
	Size I/2	1250 A	200– 500 A		3	C										×	
			252– 630 A		3	D									×		
			320– 800 A		3	E									×		
			400–1000 A		3	F									×		
			500–1250 A		3	G										×	
1600 A			4	H										×			
640–1600 A			5	G										×			
800–2000 A			5	H										×			
Size II	2000 A	500–1250 A		5	J											×	
		640–1600 A		6	K										×		
		800–2000 A		7	H										×		
		1000–2500 A		7	J										×		
Size III/1	3200 A	640–1600 A		7	K											×	
		800–2000 A		7	M										×		
		1000–2500 A		8	P										×		
		1260–3200 A															
Size III/2	4000 A	1600–4000 A														×	
Main connections	Connecting bars: top and bottom vertical, 1-hole		Size I/1		3												Additional price
			Size I/2													×	
			Size II													×	
			Size III/1													×	
			Size III/2													×	
	Connecting bars: top vertical, bottom horizontal		Size I/1		4												×
			Size I/2													×	
			Size II													×	
			Size III/1													×	
			Size III/2													–	
	Connecting bars: bottom vertical, top horizontal		Size I/1		5												×
			Size I/2														×
			Size II														×
			Size III/1														×
			Size III/2														–
	Rated voltage U_e	AC 690 V		Size I/1		2											
AC 1000 V		Size I/2		5												×	
		Size II														×	
		Size III														×	
																×	
																×	
																×	
																×	
																×	
																×	
Overcurrent release	Version 2 (an + signalling)		Version 4 (azn + signalling)		P												×
	Version 5 (azn + signalling + LCD)		Version 6 (azng + signalling) ²⁾		M												×
	Version 7 (azn + signalling)		Version 8 (azng + signalling + LCD) ²⁾		R												×
					S												×
					U												×
					V												×
Summary of functions see page 7/34.																	

1) For further data see Technical data, page 7/23. 2) Not available with line filter (Z=F09).

3WN1 Circuit-Breakers for AC

3-pole Withdrawable Version up to 6300 A

Selection and ordering data																				
Version			Order No. supplement		Order No.										Basic price					
					3 W N 1 □ 7 1 - □ □ □ □ □ - □ □ □ □															
Size/rated current I_n I_n	Size I/1 80 kA ¹⁾	630 A	126– 315 A		0	A										×				
			160– 400 A		0	B									×					
			200– 500 A		0	C									×					
			252– 630 A		0	D									×					
		800 A 1000 A 1250 A	320– 800 A		1	E										×				
			400–1000 A		2	F									×					
			500–1250 A		2	G									×					
					3	C									×					
	Size I/2	1250 A	200– 500 A		3	D										×				
			252– 630 A		3	E									×					
			320– 800 A		3	F									×					
			400–1000 A		3	G									×					
		1600 A	500–1250 A		3	G										×				
			640–1600 A		4	H									×					
	Size II	2000 A	500–1250 A		5	G										×				
			640–1600 A		5	H									×					
Size III/1	3200 A	800–2000 A		5	J										×					
		1000–2500 A		6	K									×						
		1260–3200 A		7	H									×						
				7	J									×						
Size III/2	4000 A	1600–4000 A		7	K									×						
				7	M									×						
Size IV	5000 A	1600–4000 A		8	P										×					
		2000–5000 A		9	P									×						
		2520–6300 A		9	Q									×						
				9	S									×						
Rated voltage U_e		AC 690 V		2											Additional price none					
		AC 1000 V		5											×					
		Size I/1													×					
		Size I/2													×					
		Size II													×					
		Size III													×					
Overcurrent release		Version 2 (an + signalling)		P											×					
For signalling, a signalling unit is required; see page 7/14.		Version 4 (azn + signalling)		M											×					
		Version 5 (azn + signalling + LCD)		R											×					
		Version 6 (azng + signalling) ²⁾		S											×					
		Version 7 (azn + signalling)		U											×					
Summary of functions see page 7/34.		Version 8 (azng + signalling + LCD) ²⁾		V											×					
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
					3 W N 1 □ 7 1 - □ □ □ □ □ - □ □ □ □															
					For the 11th to 16th position of the Order No., see pages 7/10 and 7/11.															
					× = available															

Select guide frame according to page 7/16.

1) For further data see Technical data, page 7/23.

2) Not available with line filter (Z=F09).

3WN1 Circuit-Breakers for AC

4-pole Fixed-Mounted Version up to 3200 A

Selection and ordering data																	
Version				Order No. supplement		Order No.						Basic price					
				3 W N 1 □ □ 3 – □ □ □ □ □ – □ □ □ □													
Size/rated current I_n	I	800 A	126– 315 A														
			160– 400 A														
			200– 500 A														
			252– 630 A														
			320– 800 A														
	1000 A 1250 A 1600 A	400–1000 A															
		500–1250 A															
		640–1600 A															
	II/1	2000 A	800–2000 A														
		2500 A	1000–2500 A														
II/2	3200 A	1260–3200 A															
Main connections				3		4						Additional price					
	Connecting bars: top and bottom vertical, 1-hole																
	Size I, to 1000 A																
	Size I, 1250–1600 A																
	Size II/1																
	Size II/2																
	Connecting bars: top vertical, bottom horizontal																
	Size I, to 1000 A																
	Size I, 1250–1600 A																
	Size II/1																
	Size II/2																
	Connecting bars: top vertical, bottom horizontal																
	Size I, to 1000 A																
	Size I, 1250–1600 A																
	Size II/1																
	Size II/2																
	Connecting bars: bottom vertical, top horizontal																
	Size I, to 1000 A																
	Size I, 1250–1600 A																
	Size II/1																
	Size II/2																
	Connecting bars: top and bottom horizontal																
	Size I, to 1000 A																
	Size I, 1250–1600 A																
	Size II/1																
	Size II/2																
	None																
	None																
	None																
	None																
	None																
Rated voltage U_e				2 5		5						none x					
Overcurrent release				P M R T U W		P M R T U W						x x x x x x					
For signalling, a signalling unit is required; see page 7/14.				Version 2 (an + signalling) Version 4 (azn + signalling) Version 5 (azn + signalling + LCD) Version 6 (azng + signalling) ¹⁾ Version 7 (azn + signalling) Version 8 (azng + signalling + LCD) ¹⁾		Version 2 (an + signalling) Version 4 (azn + signalling) Version 5 (azn + signalling + LCD) Version 6 (azng + signalling) ¹⁾ Version 7 (azn + signalling) Version 8 (azng + signalling + LCD) ¹⁾						x x x x x x					
Summary of functions see page 7/34.																	
						1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16											
						3 W N 1 □ □ 3 – □ □ □ □ □ – □ □ □ □											
						For the 11th to 16th position of the Order No., see pages 7/10 and 7/11.						x = available					

3WN1 Circuit-Breakers for AC 4-pole Withdrawable Version up to 5000 A

Selection and ordering data																
Version				Order No. supplement		Order No.								Basic price		
						3 W N 1 □ 7 3 –□□□□□–□□□□										
Size/rated current I_n I_n	I	800 A	126– 315 A	1	A											×
			160– 400 A	1	B											×
			200– 500 A	1	C											×
			252– 630 A	1	D											×
			320– 800 A	1	E											×
		1000 A 1250 A 1600 A	400–1000 A	2	F											×
			500–1250 A	3	G											×
			640–1600 A	4	H											×
	II/1	2000 A 2500 A	800–2000 A 1000–2500 A	5	J										×	
				6	K										×	
II/2	3200 A	1260–3200 A	7	M											×	
III/1	4000 A	1600–4000 A	8	P											×	
III/2	5000 A	2000–5000 A	9	Q												×
Rated voltage U_e														Additional price		
AC 690 V				2										none		
AC 1000 V, size I				5										×		
Overcurrent release For signalling, a signalling unit is required; see page 7/14. Summary of functions, see page 7/34.																
Version 2 (an + signalling)				P										×		
Version 4 (azn + signalling)				M										×		
Version 5 (azn + signalling + LCD)				R										×		
Version 6 (azng + signalling) ¹⁾				T										×		
Version 7 (azn + signalling)				U										×		
Version 8 (azng + signalling + LCD) ¹⁾				W										×		

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Select guide frame according to page 7/17.

1) Not available with line filter (Z=F09).

3WN1 Non-Automatic Circuit-Breakers for AC
3-pole Fixed-Mounted Version up to 4000 A

Selection and ordering data															
Version				Order No. supplement		Order No.						Basic price			
without solid-state overcurrent release system				3 W N 1 □ □ 1 - □ W A □ □ - □ □ □ □											
Size/rated current I_n	Size	Rated current I_n	I_n	0											
				1											
	I/1 80 kA ¹⁾	630 A		2											
		800 A		3											
	I/2	1250 A		4											
		1600 A		5											
	II	2000 A		6											
		2500 A		7											
III/1	3200 A		8												
III/2	4000 A		9												
Main connections	Connecting bars: top and bottom vertical, 1-hole			3											
	Size I/1														
	Size I/2														
	Size II														
	Size III/1														
	Size III/2														
	Connecting bars: top vertical, bottom horizontal			4											
	Size I/1														
	Size I/2														
	Size II														
	Size III/1														
	Size III/2														
	Connecting bars: bottom vertical, top horizontal			5											
	Size I/1														
	Size I/2														
	Size II														
	Size III/1														
	Size III/2														
	Connecting bars: top and bottom horizontal			6											
	Size I/1														
	Size I/2														
	Size II														
	Size III/1														
	Size III/2														
Rated voltage U_e	AC 690 V			2											
	AC 1000 V			5											
	Size I/1														
	Size I/2														
	Size II														
Size III															

1) For further data see
Technical data, page 7/23.

3WN1 Non-Automatic Circuit-Breakers for AC

3-pole Withdrawable Version up to 6300 A

Selection and ordering data																	
Version				Order No. supplement										Order No.		Basic price	
without solid-state overcurrent release system				3 W N 1 □ 7 1 - □ □ A □ □ - □ □ □ □													
Size/rated current I_n	Size	Rated current I_n															
	I/1 80 kA ¹⁾	630 A	0	W													x
		800 A	1	W													x
		1000 A	2	W													x
	I/2	1250 A	3	W													x
		1600 A	4	W													x
	II	2000 A	5	W													x
		2500 A	6	W													x
	III/1	3200 A	7	W													x
	III/2	4000 A	8	W													x
IV	5000 A	9	W														x
	6300 A	9	T														x
Rated voltage U_e																	Additional price
AC 690 V			2														none
AC 1000 V			5														
Size I/1																	x
Size I/2																	x
Size II																	x
Size III																	x
<div>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16</div> <div>3 W N 1 □ 7 1 - □ □ A □ □ - □ □ □ □</div> <div>For the 11th to 16th position of the Order No., see pages 7/10 and 7/11.</div>																x = available	

Select guide frame according to page 7/16.

1) For further data see Technical data, page 7/23.

3WN1 Non-Automatic Circuit-Breakers for AC

4-pole Fixed-Mounted Version up to 3200 A

Selection and ordering data																				
Version				Order No. supplement		Order No.						Basic price								
without solid-state overcurrent release system				3 W N 1 □ □ 3 - □ W A □ □ - □ □ □ □																
Size/rated current I_n	Size	Rated current I_n																		
	I	800 A	1																	
		1000 A	2																	
		1250 A	3																	
		1600 A	4																	
	II/1	2000 A	5																	
		2500 A	6																	
II/2	3200 A	7																		
Main connections	Connecting bars: top and bottom vertical, 1-hole		3																	
	Size I, up to 1000 A																			
	Size I, 1250–1600 A																			
	Size II/1																			
	Size II/2																			
	Connecting bars: top vertical, bottom horizontal		4																	
	Size I, up to 1000 A																			
	Size I, 1250–1600 A																			
	Size II/1																			
	Size II/2																			
	Connecting bars: bottom vertical, top horizontal		5																	
	Size I, up to 1000 A																			
Size I, 1250–1600 A																				
Size II/1																				
Size II/2																				
Connecting bars: top and bottom horizontal		6																		
Size I, up to 1000 A																				
Size I, 1250–1600 A																				
Size II/1																				
Size II/2																				
Rated voltage U_e	AC 690 V		2																	
	AC 1000 V, size I		5																	
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				3 W N 1 □ □ 3 - □ W A □ □ - □ □ □ □																
				For the 11th to 16th position of the Order No., see pages 7/10 and 7/11.																
				× = available																

7

Select guide frame according to page 7/17.




3WN1 (Non-Automatic) Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Selection and ordering data																			
Version				Order No. supplement		Order No.								Additional price					
3 W N 1 □□□-□□□□□-□□□□																			
Operating mechanisms		Rated control supply voltage U_s																	
Drive motor		Closing solenoid																	
AC		DC		AC		DC													
50/60 Hz		50/60 Hz		50/60 Hz		50/60 Hz													
V		V		V		V													
Manual operating mechanism with closing by snap action				00												none			
Manual operating mechanism with stored-energy feature with mechanical closing				05												×			
Manual operating mechanism with stored-energy feature with mechanical and electrical closing				13												×			
				16												×			
				17												×			
				18												×			
				21												×			
				24												×			
				25												×			
				26												×			
				28												×			
Manual/motorized ¹⁾ operating mechanism with stored-energy feature with mechanical and electrical closing				53												×			
				56												×			
				57												×			
				58												×			
				61												×			
				64												×			
				65												×			
				66												×			
				68												×			
Motor and closing solenoid with different control supply voltages				71												×			
				74												×			
				75												×			
				76												×			
				77												×			
				81												×			
				84												×			
				85												×			
				86												×			
				88												×			
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16																			
3 W N 1 □□□-□□□□□-□□□□																			
For the 5th to 10th position of the Order No., see pages 7/2 to 7/9.																			
For the 13th to 16th position of the Order No., see page 7/11.																			
× = available																			



1) When DC voltage is used with non-earthed minus pole and high humidity, the further version "2-pole motorized opening" with "Z" and order code "E31" (on request) must be ordered.

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Selection and ordering data																				
Version				Order No. supplement		Order No.										Additional price				
						3 W N 1 □□□-□□□□□-□□□□														
				Rated control supply voltage U_s																
				AC DC																
				50/60 Hz V V																
1st auxiliary release or electrical closing lockout   		Without				0A												none		
		Shunt release "f", F1		— 24– 27		1B												×		
				42 —		1D												×		
				110 48– 55		1G												×		
		Version with Order No. supplement "J" and "L" (DC only) also applicable for "Shunt release with stored-energy feature" with additional 3WX31 56–1J.01 storage device		120–127 60– 68		1H												×		
				220–240 110–125		1J												×		
				380–415 220–250		1L												×		
		Undervoltage release "r", F3		— 24– 27		3B												×		
				42 —		3D												×		
				48– 55		3E												×		
		Also applicable for "Undervoltage release with delay" with additional 3WX31 56–3J..0 delay device		— 60– 68		3F												×		
				110 —		3G												×		
				120–127 110–125		3H												×		
				220–230 —		3J		□ □										×		
				240 220–250		3K												×		
				— 250–286		3L												×		
				380–400 —		3M												×		
				415 —		3N												×		
		Electrical closing lockout "fd", F4		— 24– 27		2B												×		
				42 —		2D												×		
		48– 55		2E												×				
		60– 68		2F												×				
		110 —		2G												×				
		120–127 110–125		2H												×				
		220–230 —		2J												×				
		240 220–250		2K												×				
		— 250–286		2L												×				
2nd auxiliary release		Without				A												none		
		Shunt release "f", F2		— 24– 27		B												×		
				42 —		D												×		
				110 48– 55		G		□										×		
		Also applicable for "shunt release with stored-energy feature" with additional 3WX31 56–1J.01 storage device. Version with DC control voltage only. (Order No. supplement "J" or "L")!		120–127 60– 68		H												×		
		220–240 110–125		J												×				
		380–415 220–250		L												×				
Auxiliary switches, contact-position driven		1st auxiliary contact block 2 NO + 2 NC				5												none		
		1st and 2nd auxiliary contact block 4 NO + 4 NC				6		□										×		
				1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16																
				3 W N 1 □□□-□□□□□-□□□□																
				For the 5th to 12th position of the Order No. see pages 7/2 to 7/10.																×
																				×

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Further versions for 3WN1 and 3WS1						
For ordering the following circuit-breaker versions, add “–Z” to the complete Order No. and indicate the appropriate order code(s).						
			Order code	Order No. with “–Z” 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WN1 – Z and additional order code(s) □ □ □ + +	Add. price	Add weight approx. kg
Identification code for Further versions “– Z”						
For fixed-mounted circuit-breakers only						
With extended connecting bars ¹⁾	Holes in the bar ends for the connection of conductor bars acc. to DIN 43 673 (see page 7/48)	for size I/1 and I/2, 3-pole for size I, 4-pole for size II, 3-pole for size II/1, 4-pole for size II/2, 4-pole for size III/1, 3-pole	B01	□ □ □		1.1 1.6 1.7 2.1
For fixed-mounted and withdrawable circuit-breakers						
Communication module 	For overcurrent release versions 5 and 8. In combination with DP/3WN1, 3WS1 interface (see page 7/14). For withdrawable circuit-breakers an additional bus connecting lead must be ordered, see “Further versions of guide frames”, page 7/18		F01	□ □ □		
With 5-digit operating cycle counter			C01	□ □ □		0.1
With locking device against unauthorized closing or EMERGENCY STOP pushbutton For special locks, see accessories on page 7/15. 	with 3SB1 safety lock instead of OFF pushbutton	CES type standard closure No. SSG 10	S01	□ □ □		0.12
		BKS type standard closure No. S 1	S02			0.12
		IKON type standard closure No. 360012 K1	S03			0.13
	With locking facility for up to 4 padlocks (4 to 8 mm shackle diameter)	For retrofitting see page 7/15.				
	with EMERGENCY STOP pushbutton (self-latching) instead of OFF pushbutton		S12			0.1
	with 3SB1 safety lock instead of mechanically acting ON pushbutton with sealing cap	CES type standard closure No. SSG 10	S05			0.12
	BKS type standard closure No. S 1	S06	□ □ □	0.12		
	IKON type standard closure No. 360012 K1	S07		0.13		
With sealing cap over OFF pushbutton against unauthorized opening	Not suitable in combination with safety lock		S21	□ □ □		0.01
With sealing cap via electrical ON pushbutton against unauthorized closing			S22	□ □ □		0.01
With ready-to-close signalling contact (A3)	Only for circuit-breakers with: Manual operating mechanism with stored-energy feature with mechanical and electrical closing and manual/motorized operating mechanism with stored-energy feature.		M10	□ □ □		0.1
Motor switch (q7) on control panel	Only for circuit-breakers with manual/motorized operating mechanism with stored-energy feature		S13	□ □ □		0.01

¹⁾ Not possible with 3WS1 vacuum circuit-breakers.

3WN1 Circuit-Breakers for AC




3- and 4-pole up to 6300 A

Further versions for 3WN1 and 3WS1				
For ordering the following circuit-breaker versions, add “–Z” to the complete Order No. and indicate the appropriate order code(s).				
	Order code	Order No. with “–Z” 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WN 1 – –Z and additional order code(s) □ □ □ + +	Add. price	Add. weight approx. kg
		Identification code “for Further versions” – Z		
For fixed-mounted and withdrawable circuit-breakers				
The circuit-breaker can be equipped:	on overcurrent release version			
with tripped-signalling contact S24 (1 NO) effective: – after overload tripping (“a”) – after short-circuit tripping (“n” or “z/n”) – after earth-fault tripping (“g”) – after tripping by microprocessor fault (“μP”) An arresting circuit based on a secure power supply is absolutely necessary.	1 to 8 1 to 8 6 and 8 1 to 4, 6, 7	M01		0.1
with tripped-signalling contact S25 (1 NO) effective: – after overload-tripping (“a”) – after short-circuit tripping (“n” or “z/n”) – after earth-fault tripping (“g”) – after tripping by microprocessor fault (“μP”)	1 to 8 1 to 8 6 and 8 1 to 4, 6, 7	M02	□ □	0.1
with mechanical reclosing lockout and tripped-signalling contact S25 (1 NO) effective: – after overload tripping (“a”) – after short-circuit tripping (“n” or “z/n”) – after earth-fault tripping (“g”) – after tripping by microprocessor fault (“μP”)	1 to 8 1 to 8 6 and 8 1 to 4, 6, 7	K02		0.1
with mechanical reclosing lockout and tripped-signalling contact S27 (1 NO) effective: – after short-circuit tripping (“n” or “z/n”)	1 to 8	K05		0.1

7

3WN1 Circuit-Breakers


3- and 4-pole up to 6300 A

Supplementary devices for 3WN1 and 3WS1								
Item		Rated control supply voltage/ Rated operational voltage		For circuit- breaker size	Quantity required per circuit- breaker	Per 1 set or 1 item		
		AC 50/60 Hz	DC			Order No.	Price	Wgt. appr. kg
DP/3WN1, 3WS1 interface 	for 3WN1 and 3WS1 circuit-breakers. Including connector lead to circuit-breaker (3 m long), 3.5" diskette with GSD file, type files for COM-PROFIBUS and STEP 7 for bus configuration.		–	I, II, III, IV	1 item	3RK1 002-0BB00-0AA0		
PROFIBUS connector 	for connecting the interface to PROFIBUS-DP		–	I, II, III, IV	1 item	6ES7 972-0BB20-0XA0		
System manual 	Communication connection of 3VF, 3WN6, 3WN1/3WS1 circuit- breakers to PROFIBUS-DP		–	I, II, III, IV	1 item	E20001-P285-A644-V1		
Delay device	for <u>undervoltage releases with delay</u> Rated control supply voltage must be identical to that of the undervoltage release "r"	delay 1, 2 or 3 s; fixed 110–127 V 220–240 V 380–415 V	110 V 220–250 V	I, II, III, IV	1 item	3WX31 56-3JG00 3WX31 56-3JJ00 3WX31 56-3JM00		0.5 0.5 0.5
		delay 0.3 to 3.5 s; stepless 110–115 V 220–230 V	110–115 V 220–230 V			3WX31 56-3JG10 3WX31 56-3JJ10		0.5 0.5
Storage device	for shunt releases Rated control supply voltage must be identical to that of the shunt release (15th position of the breaker Order No. "J" or "L")	120–127 V 220–240 V	110–125 V 220–250 V	I, II, III, IV	1 item	3WX31 56-1JG01 3WX31 56-1JJ01		0.5 0.5
Signalling unit for overcurrent release	for overcurrent release versions 2, 4 and 7 5 and 8 6	110–127/220–240 V 110–127/220–240 V 110–127/220–240 V	24 V 24 V 24 V	I, II, III, IV	1 item	3WX31 47-0JA00 3WX31 47-1JA00 3WX31 47-2JA00		1.2 1.2 1.2
Function tester for overcurrent release	for release versions 1 to 8 Also suitable for overcurrent release of 3WN6 circuit-breakers.	110–127/220–240 V	–	I, II, III, IV	1 item	3WX36 47-5JA01		1.35

Accessories for fixed-mounted and withdrawable 3WN1 and 3WS1 circuit-breakers					
For retrofitting					
Item		For circuit-breaker size	Quantity required per circuit-breaker	For 1 set or 1 item Order No.	Price Wgt. appr. kg
Sealing cap over OFF button against unauthorized opening		I, II, III, IV	1 item	3WX31 63–1JK01	0.01
Sealing cap over electrical ON button against unauthorized closing		I, II, III, IV	1 item	3WX31 63–3JK00	0.01

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Accessories for fixed-mounted and withdrawable 3WN1 and 3WS1 circuit-breakers											
For retrofitting											
Item				For circuit-breaker size	Quantity required per circuit-breaker	For 1 set or 1 item	Price	Wgt. appr. kg			
				Order No.							
	either	Safety lock (3SB1) instead of OFF pushbutton ¹⁾	CES type Standard closure No. SSG 10	I, II, III, IV	1 item	3WX31 63–1JA01 ⁴⁾		0.12			
			BKS type Standard closure No. S1			3WX31 63–1JB01 ⁴⁾	0.12				
			IKON type Standard closure No. 360012 K1			3WX31 63–1JC01 ⁴⁾	0.13				
	or	Locking facility for up to 4 padlocks (4 to 8 mm shackle diameter) ²⁾		I, II, III, IV	1 item	3WX36 63–1JG00		0.2			
			Safety lock (3SB1) instead of mechanical ON pushbutton ¹⁾			CES type Standard closure No. SSG 10	I, II, III, IV	1 item	3WX31 63–2JA01 ⁴⁾		0.12
			BKS type Standard closure No. S1			3WX31 63–2JB01 ⁴⁾			0.12		
			IKON type Standard closure No. 360012 K1			3WX31 63–2JC01 ⁴⁾			0.13		
			Assembly kit ³⁾ for CASTELL lock or FORTRESS lock Locks to be obtained from the manufacturer: CASTELL lock (FS 1) or FORTRESS lock (H31RH/AC 90°/Standard)	I, II, III, IV	1 set	3WX31 63–6JE00		0.1			

Item	Rated control supply voltage of the closing solenoid (Y1) integrated in the circuit-breaker		For 12th position of the breaker Order No., see Order No. plate on the breaker control panel	For 1 item		Add. weight
	AC 50/60 Hz V	DC V	3WN. ...-1... -....	Order No.	Price	appr. kg
Ready-to-close signalling contact (A3) For breaker mechanisms with stored-energy-features: – Manual mechanism with stored-energy feature with electrical and mechanical closing – Motorized/manual mechanism with stored-energy feature, as of Jan. 89 (Ident.-No. 09010100) If the module is retrofitted to the breaker, the Order No. on the rating plate at the breaker control panel has to be supplemented following the installation instructions.	42	–	3	3WX31 36-1JD00		0.1
	110	–	6	3WX31 36-1JG00		
	120–127	–	7	3WX31 36-1JG00		
	220–240	–	8	3WX31 36-1JJ00		
	–	24	1	3WX31 36-1JB00		0.1
	–	48	4	3WX31 36-1JD00		
	–	60	5	3WX31 36-1JF00		
	–	110–125	6	3WX31 36-1JG00		
	–	220–250	8	3WX31 36-1JJ00		
	N-conductor current transformer (only for 3-pole) for earth-fault protection (individual mounting) only for overcurrent release versions 6 and 8 (The size and rated current of the N-conductor current transformer must correspond to the current transformer in the respective circuit-breaker)	Rated primary current		For circuit-breaker size		
315 A ⁵⁾ 400 A ⁵⁾ 500 A ⁵⁾ 630 A 800 A 1000 A 1250 A 1600 A		I		3WX31 43-1CA00 3WX31 43-1CB00 3WX31 43-1CC00 3WX31 43-1CD00 3WX31 43-1CE00 3WX31 43-1CF00 3WX31 43-1CG00 3WX31 43-1CH00		
1200 A ⁵⁾ 1600 A ⁵⁾ 2000 A 2500 A		II		3WX31 43-1DG00 3WX31 43-1DH00 3WX31 43-1DJ00 3WX31 43-1DK00	2.87	
1600 A ⁵⁾ 2000 A ⁵⁾ 2500 A ⁵⁾ 3200 A ⁵⁾ 4000 A ⁵⁾		III		3WX31 43-1EH00 3WX31 43-1EJ00 3WX31 43-1EK00 3WX31 43-1EM00 3WX31 43-1EP00	3.9	
4000 A ⁵⁾ 5000 A ⁵⁾ 6300 A ⁵⁾		IV		3WX31 43-1RP00 3WX31 43-1RQ00 3WX31 43-1RS00	5.1	

Accessories for fixed-mounted 3WN1 and 3WS1 circuit-breakers					
Item		For circuit-breaker size	Quantity required per circuit-breaker	For 1 set or 1 item Order No. Price	Wgt. appr. kg
Support brackets including breaker fixing bolts		I, II, III	1 set	3WX31 81-0JA00	4.8
Door sealing frame		I, II, III	1 item	3WX31 86-0JA01	1
Auxiliary supply connector for spare part or retrofitting		I, II, III	For required number see page 7/18.	3WX36 25-1JC00	
Locking device⁶⁾ against opening the cubicle door with the circuit-breaker closed		I, II, III (3-pole)	1 item	3WX31 67-2JA01	0.7

1) Safety locks with special closure should be ordered by the customer according to "Controls and Distribution", Part 9.

2) The locking facility for padlocks cannot be used together with a safety lock instead of the OFF button.

3) Can be retrofitted to circuit-breakers delivered since Nov. 91 (from Ident. No. 91 11 01).

4) Can be retrofitted to circuit-breakers delivered since July 90 (from Ident. No. 90 07 01).

5) Not possible with 3WS1 vacuum circuit-breakers.

6) Can only be retrofitted for circuit-breakers manufactured as of Nov. 88 (with Ident.-No. 08110100).

3-pole

1) Not for Model III/2.	4) For Size IV, rear horizontal connections only.
2) The T-connecting pieces and the required fitting screws are supplied loose with the guide frame.	5) For Sizes III and IV, the hinged rails are included in the scope of supply.
3) The shutter is necessary for withdrawable circuit-breakers with AC 1000 V and feed-in from above.	× = available – = not available

3WN1 Circuit-Breakers for AC

4-pole

Accessories for withdrawable 3WN1 circuit-breakers – guide frames										
Version		Order No. supplement		Order No.		Basic or additional price for size				
						I	II/1	II/2	III/1	III/2
Guide frames, incl. crank handle						3 W X 3 1 8 3 – 8 □ B □ □ – □ □ □ 3				
Size	I for 3WN1 0 to 3WN1 4					×	–	–	–	–
	II/1 for 3WN1 5 and 3WN1 6					–	×	×	–	–
	II/2 for 3WN1 7					–	–	×	×	–
	III/1 for 3WN1 8					–	–	–	×	×
	III/2 for 3WN1 9					–	–	–	–	×
Connecting pieces for main connections (T-shaped)	without T-connecting pieces (direct connection to the terminal flanges)					stand- ard	stand- ard	stand- ard	– ³⁾	– ³⁾
	with 4 T-connecting pieces (for top or bottom connection) ¹⁾					×	×	×	–	–
	with 8 T-connection pieces (for top and bottom connection) ¹⁾					×	×	×	–	–
Preassembled connecting bars (Holes for connection acc. to DIN 43 673)	for rated current up to 1000 A with size I					×	–	–	–	–
	up to 2500 A with size II/1					–	×	–	–	–
	for size II/2					–	–	–	–	–
	for rated current up to 1600 A with size I					×	–	–	–	–
	for size II/1	–	–	–	–	–	–	–	–	
	up to 3150 A with size II/2					–	×	–	–	–
Remote signalling of the circuit-breaker position	without signalling					none	none	none	none	none
	with signalling contact (operated by draw-out mechanism)									
	Connected position 3NO+3NC 1NO+1NC					×	×	×	–	–
	Test position 2NO+2NC 1NO+1NC					×	×	×	–	–
	Disconn. position 1NO+1NC									
	with signalling contact (operated by withdrawable circuit-breaker) suitable in interlocking circuits									
Connected position 3NO+3NC 1NO+1NC	×	×	×	×	×					
	Test position 2NO+2NC 1NO+1NC	×	×	×	×					
	Disconn. position 1NO+1NC	×	×	×	×					
Hinged rails for maintenance position and shutter for shock-hazard protection	Hinged rails non-withdrawably attached									
	Withdrawable hinged rails: order guide frame without hinged rails, and order hinged rails separately (see accessories).									
	w/o hinged rails, w/o shutters ²⁾					none	– ⁴⁾	– ⁴⁾	– ⁴⁾	– ⁴⁾
	with hinged rails, w/o shutters ²⁾					×	×	×	×	×
	with hinged rails, with shutters ²⁾	×	×	×	×					
	w/o hinged rails, with shutters ²⁾	×	×	×	×					
Auxiliary connectors For quantity required, see page 7/18.	with 1 auxiliary connector					×	×	×	×	×
	with 2 auxiliary connectors					×	×	×	×	×
	with 3 auxiliary connectors					×	×	×	×	×
	with 4 auxiliary connectors					×	×	×	×	×
With or without locking device	① Locking device to prevent the cubicle door from being opened in the connected and test position (can be defeated)									
	② Locking device to prevent the circuit-breaker from moving when the cubicle door is open (can be defeated)									
	without locking device									
	with locking device ①					×	×	×	×	×
	with locking device ②	×	×	×	×					
	with locking device ① and ②	×	×	×	×					
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16						3 W X 3 1 8 3 – 8 □ B □ □ – □ □ □ 3				

1) The T-connecting pieces and the required fitting screws are supplied loose with the guide frame.

2) The shutter is necessary for withdrawable circuit-breakers with AC 1000 V and feed-in from above.

3) For Size III, rear horizontal connections only.

4) For Sizes II and III, the hinged rails are included in the scope of supply.

× = available

– = not available

3WN1 Circuit-Breakers for AC

3- and 4-pole

Further versions of guide frames for 3WN1 and 3WS1			
For ordering the following guide frame versions, add "–Z" to the complete Order No. and indicate the appropriate order code(s):			
	Order code	Order No. with "–Z" 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WX 3 1 8 3 – 3 – Z and additional order code(s) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> +	Add. price
		Order No. with "–Z" 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WX 6 1 1 8 – 8 3 – Z and additional order code(s) <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> +	
Identification code for "Further versions" – Z			
Communication – Bus connecting lead between guide frame and connecting lead to DP/3WN1, 3WS1 interface	R39	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	

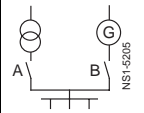
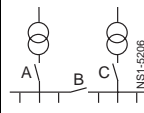
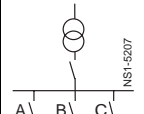
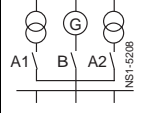
Accessories for guide frames for 3WN1 and 3WS1				
Item		Order No.	Price	Weight appr. kg
Auxiliary supply connector	for spare part or retrofitting	3WX36 27–1JA00		0.160
Door sealing frame	Quantity required 1 item	3WX31 86–0JA01		1
Coding device	to prevent mistaking withdrawable circuit-breakers with same size in a switchboard ¹⁾	3WX31 62–1JE00		0.2
Hinged rails for maintenance pos.	Quantity required 1 set (1 set = 2 items)	3WX31 84–4JA01		1.4

The required number of auxiliary connectors depends on:		<ul style="list-style-type: none"> • Type of operating mechanism • Overcurrent releases with/without tripped signalling • Type and number of auxiliary releases • Number of auxiliary contact blocks • With/without tripped-signalling contact
a	1st auxiliary connector, for standard signals, always required	1
b	Operating mechanism	
b1	manual operating mechanism with closing by snap action	+0
b2	manual operating mechanism with stored-energy feature with mechanical closing	+0
b3	manual operating mechanism with stored-energy feature with mechanical and electrical closing	+1
b4	manual/motorized operating mechanism with stored-energy feature with mechanical and electrical closing	+1
c	Overcurrent releases	
c1	versions 1, 3 or without overcurrent release (non-automatic circuit-breakers)	+0
c2	versions 2, 4 or 6 (4-pole circuit-breakers only)	+1
c3	versions 5, 6 (3-pole circuit-breakers only), 7 or 8	+2
d	Auxiliary releases	
d1	with/without 1st auxiliary release (shunt release "f", F1)	+0
d2	1st auxiliary release (undervoltage release "r", F3 or electrical closing lockout "fd", F4; needed if b3 or b4 is not selected)	+0
d3	2nd auxiliary release (shunt release "f", F2; needed if b3 or b4 is not selected)	+1
e	Auxiliary contacts	
e1	1st auxiliary contact block 2 NO + 2 NC	+0
e2	1st and 2nd auxiliary contact blocks 4 NO + 4 NC; needed if c2 or c3 is not selected	+1
f	Tripped-signalling contact	
f1	without	+0
f2	signalling contacts S24, S25 or S27 (corresponds to order codes M02, M05, K02 or K05; needed if e2 is not selected)	+1
g	Total number of auxiliary connectors	(maximum 4)

1) Can be retrofitted to withdrawable circuit-breakers and guide frames delivered as of Jan. 89 (from Ident. No. ☐09010100).

3WN1 Circuit-Breakers for AC



3- and 4-pole

Accessories for fixed-mounted and withdrawable 3WN1 and 3WS1 circuit-breakers					
Size I, II and III (3-pole only) size I and II (4-pole only) Mutual mechanical interlocking consisting of receiver module and transmitter module as well as the required number of Bowden wires (2 m in length)					
Version/ Circuit diagram	For fixed-mounted circuit-breakers	Additional price	For withdrawable circuit breakers/ guide frames	Additional price	Additional weight
	Order No.	Order code	Order No./ Order No. supplement	per circuit- breaker/ guide frame	approx. kg
	Circuit-breakers Order No. with "-Z" 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WN 1 -Z and additional order code <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		Circuit-breakers Order No. with "-Z" 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 3WN 1 -Z and additional order code S52 <u>Guide frame</u> Change the 15th position of the Order No. acc. to the table below 3WX31 83- 8 <input type="checkbox"/> 3		0.3
1 One circuit-breaker can only be closed if the other is switched off. 	A, B	S50	A, B A with locking device ① B with locking device ①	G K	0.5 0.8
2 Any two circuit-breakers can be closed, while the third is locked. 	A, B, C	S54¹⁾	A, B, C A with locking device ① B with locking device ① C with locking device ①	H L	0.7 1.0
3 If one circuit-breaker is closed, the other two circuit-breakers cannot be closed. 	A, B, C	S55¹⁾	A, B, C A with locking device ① B with locking device ① C with locking device ①	J M	0.7 1.0
4 Two circuit-breakers (A1, A2) can be closed and opened independently. The third one (B) is ready to be closed, if the other two circuit-breakers remain in the OFF position. If the third circuit-breaker (B) is closed, the other two are locked. 	A1, A2 B	S50 S55¹⁾	A1, A2 B A1 with locking device ① A2 with locking device ① B with locking device ①	G J K M	0.5 0.7 0.8 1.0
Locking device ①: Locking device against opening of the cubicle door in the connected and test positions					

1) Bowden wire 6 m in length.

3WN1 Circuit-Breakers for AC

3- and 4-pole

Spare parts for fixed-mounted and withdrawable 3WN1 circuit-breakers							
Item	For circuit-breaker				Quantity required per circuit-breaker	For 1 set or 1 item	
	Size, number of poles	Rated operational voltage	Type	Rated current		Order No.	Price Weight appr. kg
Contacts	Main contacts are also arcing contacts						
	I/1, 3-pole	up to AC 1000 V	3WN1 031 to 3WN1 231 3WN1 071 to 3WN1 271	up to 1250 A	3 sets	for circuit-breakers produced until 09/96: 3WY31 12-2AA00 for circuit-breakers produced since 10/96: 3WY31 12-1MA00	0.45
	Arcing contacts only						
	I/2, 3-pole	up to AC 1000 V	3WN1 331 to 3WN1 431 3WN1 371 to 3WN1 471	1250 and 1600 A	3 sets	3WY31 12-1MA00	0.35
	I, 4-pole	up to AC 1000 V	3WN1 133 to 3WN1 433 3WN1 173 to 3WN1 473	up to 1600 A	4 sets	3WY31 12-1MA00	0.45
	II, 3-pole	up to AC 1000 V	3WN1 531 and 3WN1 631 3WN1 571 and 3WN1 671	2000 and 2500 A	3 sets	3WY31 12-1MA00	0.35
	II/1, 4-pole	up to AC 690 V	3WN1 533 and 3WN1 633 3WN1 573 and 3WN1 673	2000 and 2500 A	4 sets	3WY31 12-1MA00	0.35
	II/2, 4-pole	up to AC 690 V	3WN1 733 3WN1 773	3200 A	3 sets + 1 set	3WY31 12-1EA00 3WY31 12-1MA00	0.6 0.35
	III/1, 3-pole	up to AC 1000 V	3WN1 731 3WN1 771	3200 A	3 sets	3WY31 12-1EA00	0.6
	III/2, 3-pole	up to AC 1000 V	3WN1 831 3WN1 871	4000 A	6 sets	3WY31 12-1MA00	0.35
Arc chute¹⁾ without arc chute extension up to AC 690 V 	I and II, 3-pole		3WN1 031-1 to 3WN1 631-1 3WN1 071-1 to 3WN1 671-1	up to 2500 A	3 items	3WY31 11-0NA00	2.7
	I, 4-pole		3WN1 133-1 to 3WN1 433-1 3WN1 173-1 to 3WN1 473-1	up to 1600 A	4 items	3WY31 11-0NA00	2.7
	II/1, 4-pole		3WN1 533-1 and 3WN1 633-1 3WN1 573-1 and 3WN1 673-1	2000 and 2500 A	4 items	3WY31 11-0NA00	2.7
	II/2, 4-pole		3WN1 733 -1 3WN1 773 -1	3200 A	3 items + 1 items	3WY31 11-0PA00 3WY31 11-0NA00	5.0 2.7
	III, 3-pole		3WN1 731-1 and 3WN1 831-1 3WN1 771-1 and 3WN1 871-1	3200 and 4000 A	3 items	3WY31 11-0GA00	5.8
Arc chute with arc chute extension fitted up to AC 690 V 	I and II, 3-pole		3WN1 031 to 3WN1 631 3WN1 071 to 3WN1 671	up to 2500 A	3 items	3WY31 11-1NA00	3.2
	I, 4-pole		3WN1 133 to 3WN1 433 3WN1 173 to 3WN1 473	up to 1600 A	4 items	3WY31 11-1NA00	3.2
	II/1, 4-pole		3WN1 533 and 3WN1 633 3WN1 573 and 3WN1 673	2000 and 2500 A	4 items	3WY31 11-1NA00	3.2
	II/2, 4-pole		3WN1 733 3WN1 773	3200 A	3 items + 1 items	3WY31 11-1PA00 3WY31 11-1NA00	5.8 3.2
	III, 3-pole		3WN1 731 and 3WN1 831 3WN1 771 and 3WN1 871	3200 and 4000 A	3 items	3WY31 11-1GA00	6.8
	III, 4-pole		3WN1 873 and 3WN1 973	4000 and 5000 A	3 items + 1 item	3WY31 11-1TA00 3WY31 11-1NA00	6.8 3.2
	IV, 3-pole		3WN1 971	5000 and 6300 A	3 items	3WY31 11-1RA00	10.4
Arc chute with arc chute extension fitted (special design) up to AC 1000 V	I and II, 3-pole		3WN1 031-5 to 3WN1 631-5 3WN1 071-5 to 3WN1 671-5	up to 2500 A	3 items	3WY31 11-2NA10	3.5
	I, 4-pole		3WN1 133-5 to 3WN1 433-5 3WN1 173-5 to 3WN1 473-5	up to 1600 A	4 items	3WY31 11-2NA10	3.5
	III, 3-pole		3WN1 731-5 3WN1 771-5 and 3WN1 871-5	3200 A 3200 and 4000 A	3 items	3WY31 11-2GA10	7.4

1) Please check if arc chute extensions are required. Arc chute extensions have to be used for circuit-breakers sizes IV (3-pole) and III (4-pole).

3WN1 Circuit-Breakers for AC

3- and 4-pole

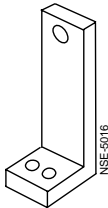
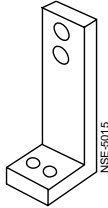
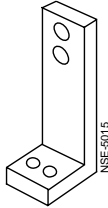
Spare parts for fixed-mounted and withdrawable 3WN1 and 3WS1 circuit-breakers						
Item	For circuit-breaker Size		Quantity required per circuit- breaker	For 1 set or 1 item Order No.	Price	Weight appr. kg
Communication-capable overcurrent releases , see summary of functions on page 7/34.		Version 5	1 item	3WX31 41-5JC12		
		Version 8		3WX31 41-6JE12		
Communication – Bus connecting lead		for fixed-mounted circuit-breakers or guide frames between circuit-breaker and connecting lead to DP/3WN1, 3WS1 interface	1 item	3WX31 44-1JA00		
Auxiliary releases and electrical closing lockout¹⁾		Rated control supply voltage				
		AC 50/60 Hz V				
Shunt release "f" for 1st and 2nd auxiliary release (F1 and F2) and closing solenoid	I to IV	–	1 item	3WX31 51-1JB00 3WX31 51-1JD00 3WX31 51-1JG00 3WX31 51-1JH00 3WX31 51-1JJ00 3WX31 51-1JL00		0.12
		42				
Undervoltage release "r" (F3)	I to IV	110	1 item	3WX31 53-1JB00 3WX31 53-1JD00 3WX31 53-1JE00 3WX31 53-1JF00 3WX31 53-1JG00 3WX31 53-1JH00 3WX31 53-1JJ00 3WX31 53-1JK00 3WX31 53-1JL00 3WX31 53-1JM00 3WX31 53-1JN00 3WX31 53-1JP00 3WX31 53-1JR00		0.5
		120–127				
Electrical closing lockout "fd" (F4)	I to IV	220–240	1 item	3WX31 52-1JB00 3WX31 52-1JD00 3WX31 52-1JE00 3WX31 52-1JF00 3WX31 52-1JG00 3WX31 52-1JH00 3WX31 52-1JJ00 3WX31 52-1JK00 3WX31 52-1JL00		0.5
		380–415				
Hinged rails for maintenance position	I to III, 3-pole I and II, 4-pole	24– 27	1 set (1 set = 2 items)	3WX31 84-4JA00 3WX31 84-4JA01		1.5 1.4
		48– 55				
Bowden wire for mutual mechanical interlocking	I to III, 3-pole I and II, 4-pole	60– 68	1 item	3WX31 84-8JA00		0.25
		110–125				
		220–250				
		240–250				

1) Solenoid only, without wiring material.
If a replacement auxiliary release or electrical closing lockout of different rated voltage or current type than the original is fitted, the Order No. plate

on the control panel of the circuit-breaker has to be altered accordingly. Components for retrofitting or conversion on request.

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Accessories for 3WN1 and 3WS1					
	For size		Quantity required	Order No.	Price
	3-pole	4-pole	per circuit-breaker		
For fixed-mounted and withdrawable 3WN1 and 3WS1 circuit-breakers					
Auxiliary switch with wiring without connecting element 1. Auxiliary switch block S4/S5 2 NO + 2 NC Connection to connecting element X1 2. Auxiliary switch block S1/S4 2 NO + 2 NC Connection to connecting element X4	I/1, I/2	–	1 item	3WX31 16–1CB00	
	II	I		3WX31 16–1DB00	
	III	II		3WX31 16–1GB00	
	IV	III		3WX31 16–1RB00	
	I/1, I/2	–		3WX31 16–1CC00	
	II	I		3WX31 16–1DC00	
	III	II		3WX31 16–1GC00	
	IV	III		3WX31 16–1RC00	
For fixed-mounted 3WN1 circuit-breakers					
Connecting bars for front connection vertical 1-hole bar 6 th position of the circuit-breaker Order No: "3", "4" or "5" 	I/1, I/2	–	1 set = 1 item ¹⁾	3WX31 21–1BB00	
	II	–	1 set = 1 item ¹⁾	3WX31 21–1DB00	
	III/1	–	1 set = 1 item ¹⁾	3WX31 21–1EB00	
	III/2	–	1 set = 6 items	3WX31 21–1FC00	
	–	II/1	1 set = 3 + 1 item	3WX31 21–1KF00	
	–	II/2	1 set = 3 + 1 item	3WX31 21–1PF00	
vertical 2-hole bar 6 th position of the circuit-breaker Order No: "3", + "–Z" + order code "B01" 	I/1, I/2	–	1 set = 1 item ¹⁾	3WX31 21–1BB20	
	II	–	1 set = 1 item ¹⁾	3WX31 21–1DB20	
	III/1	–	1 set = 1 item ¹⁾	3WX31 21–1EB20	
	–	II/1	1 set = 3 + 1 item	3WX31 21–1KF20	
	–	II/2	1 set = 3 + 1 item	3WX31 21–1PF20	
horizontal bar 6 th position of the circuit-breaker Order No: "6" 	I/1, I/2	–	1 set = 1 item ¹⁾	3WX31 21–2BB00	
	II	–	1 set = 1 item ¹⁾	3WX31 21–2DB00	
	–	II/1	1 set = 3 + 1 item	3WX31 21–2KF00	
	–	II/2	1 set = 3 + 1 item	3WX31 21–2PF00	
	III/1	–	1 set = 1 item ¹⁾	3WX31 21–2EB00	
For guide frames for 3WN1 and 3WS1					
T-connecting pieces (direct connection to the terminal flanges)	I	–	1 set = 3 items	3WX31 23–1CA00	
	–	I	1 set = 4 items	3WX31 23–1CD00	
	II	–	1 set = 3 items	3WX31 23–1DA00	
	–	II/1	1 set = 3 + 1 item	3WX31 23–1KF00	
	–	II/2	1 set = 3 + 1 item	3WX31 23–1PF00	
	III/1	–	1 set = 3 items	3WX31 23–1GA00	
Position signalling contact for remote signalling of the circuit-breaker position Operated by draw-out mechanism Connected position 12th pos. of circuit-breaker Order No. 3NO + 3NC 2NO + 2NC 1NO + 1NC 1 1NO + 1NC 1NO + 1NC 1NO + 1NC 3 Operated by withdrawable circuit-breaker Connected position 12th pos. of circuit-breaker Order No. 3NO + 3NC 2NO + 2NC 1NO + 1NC 6 1NO + 1NC 1NO + 1NC 1NO + 1NC 5	I, II, III	I, II	1 set	3WX31 84–1JA01	
	I, II, III	I, II		3WX31 84–1JA21	
	I, II, III	I, II		3WX31 84–1JB01	
	I, II, III	I, II		3WX31 84–1JB21	
Locking device to prevent the cubicle door from being opened in the connected and test position to prevent the circuit-breaker from moving when the cubicle door is open	I, II, III		1 item	3WX31 67–2JB01	
	IV			3WX31 67–2RB01	
	I, II, III			3WX31 67–3JA00	
	IV			3WX31 67–3RA00	
Crank handle	I, II, III, IV	I, II, III	1 item	3WX31 84–0JA00	
Shutter Protection against shock-hazard from live withdrawable contacts	I/1, I/2	–	1 item	3WX31 84–3CA00	
	–	I		3WX31 84–3CB00	
	II	–		3WX31 84–3DA00	
	–	II/1, II/2		3WX31 84–3DB00	
	III/1, III/2	–		3WX31 84–3GA00	
	–	III		3WX31 84–3GB00	
	IV	–		3WX31 84–3RA00	

1) Please determine the number of connecting bars needed on your own.

3WN1 Circuit-Breakers for AC

3-pole up to 6300 A

Technical data															
Size			I/1				I/2		II		III/1	III/2	IV		
Type			3WN10		3WN11	3WN12		3WN13	3WN14	3WN15	3WN16	3WN17	3WN18	3WN19	
Rated current $I_n^{(1)}$ at 40 °C, at 50/60 Hz			A	630	800	1000	1250	1250	1600	2000	2500	3200	4000	5000	6300
Rated operational voltage U_e at 50/60 Hz			AC V	up to 690/1000, acc. to the version										up to 690	
Rated impulse withstand voltage U_{imp}	Main conducting paths ⁹⁾	kV	8												
	Auxiliary circuits	kV	4												
Utilization category			B												
Rated short-circuit making capacity I_{cm} (peak value)	up to AC 500 V (440 V ²⁾)	kA	143 ¹⁰⁾ / 176					176		176		220		220	
	up to AC 690 V	kA	132					132		132		176		176	
	up to AC 1000 V	kA	55					55		55		55		–	
Rated service short-circuit breaking capacity I_{cs} (rms value)	up to AC 500 V (440 V ²⁾)	kA	65 ¹⁰⁾ / 80					80		80		100		100	
	up to AC 690 V	kA	60					60		60		80		80	
	up to AC 1000 V	kA	25					25		25		25		–	
Rated ultimate short-circuit breaking capacity I_{cu} (rms value)	up to AC 500 V	kA	65 ¹⁰⁾ / 80					80		80		100		100	
	up to AC 690 V	kA	60					60		60		80		80	
	up to AC 1000 V	kA	25					25		25		25		–	
Permissible ambient temperature	Operation		–20 to +70 °C, above +40 °C with reduced current rating												
	Storage		–40 to +70 °C												
Rated short-time withstand current I_{cw} at 50/60 Hz	Circuit-breakers for rated operational voltages	0.5 s	kA	65 ¹⁰⁾ / 75					80		80		100	100	100
		1 s	kA	50					80		100		100		
		2 s	kA	35					60		70		90		
		3 s	kA	25					50		60		80		
	Circuit-breakers for rated operational voltages up to AC 1000 V	0.5 to 3 s	kA	25					25		25		25	25	–
Permissible continuous loading of fixed-mounted and withdraw. circuit-breakers with internal cubicle temperature ³⁾ 4)	at 40 °C	A	630	800	1000	1250	1250	1600	2000	2500	3200	4000	5000 ⁸⁾	6300	
	at 50 °C	A	630	800	1000	1250	1250	1500	2000	2350	3000	3800	5000 ⁸⁾	5900	
	at 60 °C	A	630	800	1000	1250	1250	1400	2000	2200	2750	3550	5000 ⁸⁾	5400	
	at 70 °C	A	630	800	1000	1200	1150	1250	2000	2050	2500	3300	4600 ⁸⁾	4740	
Rated rotor operational voltage U_{er}			V	2000											
Power loss at I_n with 3-phase balanced load (without conductor bars and metal components ⁴⁾)	Fixed mounted circuit-breaker	W	50	80	130	200	200	350	360	600	760	870	–	–	
	Withdraw. circuit-breaker incl. guide frame	W	70	120	190	300	300	520	530	870	1110	1530	1850	2600	
Durability	Mechanical	Operating cycles	20000					20000		10000		10000		5000	
	Electrical ⁵⁾ at I_n and $\cos \varphi = 0.8$	Operating cycles	6000					6000		1000		1000		500	
Switching frequency 1/min			1												
Minimum interval between circuit-breaker opening and the next closing command			ms	120											
Mounting position															
Degree of protection			Circuit-breaker IP 00, control panel with door sealing frame IP 54												
Min. cross-sections of main conductors	Copper bars bare	Qty. mm ²	1 × 50×10	1 × 60×10	2 × 40×10	2 × 50×10	2 × 50×10	2 × 60×10	2 × 100×10	3 × 100×10	3 × 120×10	–	–	–	
	Copper bars painted black	Qty. mm ²	1 × 40×10	1 × 50×10	1 × 60×10	2 × 40×10	2 × 40×10	2 × 50×10	2 × 80×10	2 × 100×10	3 × 100×10	4 × 120×10 ⁶⁾	6 × 120×10 ⁸⁾	8 × 120×10	
Protective conductor	Screw-type terminals		M 12												
	Stranded copper conductors with cable lugs	mm ²	185					185		300		2 × 240			
	Copper bars	mm ²	30 × 5					30 × 5		30 × 10		40 × 10			
Main conductor connections	Screw-type terminals		M 12 with clamping washers ⁷⁾												
	Tightening torque	Nm	70												
	Strength of screws		8.8 acc. to DIN 267												
Auxiliary connecting leads (Copper)	Max. number of aux. conductors × cross-section	solid finely stranded with end sleeves	1 × 4 mm ² 2 × (0.5 to 1.5 mm ²); 1 × 2.5 mm ² ; 1 × AWG 14												
Weights	Fixed-mounted circuit-breaker	approx. kg	62					67		83		119	123	–	–
	Withdrawable circuit-breaker	approx. kg	61					68		81		116	118	202	204
	Guide frame	approx. kg	30					35		49		69.5	69.5	118	118

1) If the rated primary current I_N of the current transformer is less than the rated current of the circuit-breaker, then $I_n = I_N$.

2) According to the marine classification societies BV, GL, LRS and DNV.

3) The temperatures refer to the air space around the upper one third of the circuit-breaker.

4) Values according to sinusoidal current at 50/60 Hz. Heating and losses will rise due to harmonics and higher frequencies.

5) Per set of contacts. Disconnecting rated current I_n .

6) For fixed-mounted versions: 3 × 120 × 10 mm.

7) Screws and clamping spacers are not supplied. Required spacers have an inside diameter of 12 mm acc. to DIN 6769-Fst.

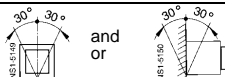
8) With connector cross-section of 5 × 120 × 10 mm²: 5000 A at 50 °C, 4600 A at 60 °C, 4100 A at 70 °C.

9) Rated insulation voltage U_i = AC 1000 V.

10) Values apply to a 3WN1 NC circuit-breaker with the highest I_r setting of 315 A and 400 A.

3WN1 Circuit-Breakers for AC

4-pole up to 5000 A

Technical data														
Size					I (for sizes II/1, II/2, III/1 and III/2 see pages 7/25 and 7/26)									
Type					3WN1 1					3WN1 2	3WN1 3	3WN1 4		
Rated current $I_n^{(1)}$ at 40 °C, at 50/60 Hz		Main conductors N conductor		A A	800 800					1000 1000	1250 1250	1600 1600		
Current transformer rated primary current I_N					A	315	400	500	630	800	1000	1250	1600	
Rated operational voltage U_e at 50/60 Hz					AC V	up to 690/1000, acc. to the version								
Rated impulse withstand voltage U_{imp}		Main conducting paths ²⁾ Auxiliary circuits		kV kV	8 4									
Utilization category					B									
Rated short-circuit making capacity I_{cm} (peak value)		Main conductors/ N conductor		up to AC 500 V (440 V ²⁾) up to AC 690 V up to AC 1000 V	kA kA kA	143/143 132/132 55/ 55		176/176 132/132 55/ 55						
Rated service short-circuit breaking capacity I_{cs} (ms value)		Main conductors/ N conductor		up to AC 500 V (440 V ²⁾) up to AC 690 V up to AC 1000 V	kA kA kA	65/ 65 60/ 60 25/ 25		80/ 80 60/ 60 25/ 25						
Rated ultimate short-circuit breaking capacity I_{cu} (ms value)		Main conductors/ N conductor		up to AC 500 V up to AC 690 V up to AC 1000 V	kA kA kA	65/ 65 60/ 60 25/ 25		80/ 80 60/ 60 25/ 25						
Permissible ambient temperature		Operation Storage		-20 to +70 °C, above +40 °C with reduced current rating -40 to +70 °C										
Rated short-time withstand current I_{cw} at 50/60 Hz		Main conductors/N conductor Circuit-breakers for rated operational voltages up to AC 690 V		0.5 s 1 s 2 s 3 s	kA kA kA kA	65/ 65 65/ 65 60/ 60 50/ 50		80/ 80 80/ 80 60/ 60 50/ 50						
		up to AC 1000 V		0.5 to 3 s	kA	25								
Permissible continuous loading of fixed-mounted and withdrawable circuit-breakers with internal cubicle temperature ³⁾⁴⁾		Main conductors		at 40 °C at 50 °C at 60 °C at 70 °C	A A A A	315 315 315 315	400 400 400 400	500 500 500 500	630 630 630 630	800 800 800 800	1000 1000 1000 1000	1250 1250 1250 1150	1600 1500 1400 1250	
		N conductor		at 40 °C at 50 °C at 60 °C at 70 °C	A A A A	315 315 315 315	400 400 400 400	500 500 500 500	630 630 630 630	800 800 800 800	1000 1000 1000 1000	1250 1250 1250 1150	1600 1500 1400 1250	
Rated rotor operational voltage U_{er}					V	2000								
Power loss at I_n with 3-phase balanced load (without conductor bars and metal components) ⁴⁾		Fixed-mounted circuit-breaker			W	12	20	30	50	80	130	200	350	
		Withdrawable circuit-breaker incl. guide frame			W	17	30	45	70	120	190	300	520	
Durability		Mechanical Electrical ⁵⁾ at I_n and $\cos \varphi = 0.8$		Operating cycles	8000 6000									
Switching frequency					1/min	1								
Minimum interval between circuit-breaker opening and the next closing command					ms	120								
Mounting position														
Degree of protection					Circuit-breaker IP 00, control panel with sealing door frame IP 54									
Min. cross-sections of main conductors for phase currents L1, L2, L3		Copper bars blank		Qty. mm ²	1 × 60 × 5	1 × 60 × 5	1 × 50 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	2 × 60 × 10		
		Copper bars painted black		Qty. mm ²	1 × 50 × 5	1 × 50 × 5	1 × 40 × 10	1 × 40 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10		
Min. cross-sections of N conductor with N conductor current = phase current (max. imbalance)		Copper bars blank		Qty. mm ²	1 × 60 × 5	1 × 60 × 5	1 × 50 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 40 × 10	2 × 60 × 10		
		Copper bars painted black		Qty. mm ²	1 × 50 × 5	1 × 50 × 5	1 × 40 × 10	1 × 40 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10		
Protective conductor					Screw-type terminals		M 12							
					Stranded copper conductors with cable lugs		mm ²	185						
					Copper bars		mm ²	30 × 5						
Main conductor connections					Screw-type terminals		M 12 with clamping spacers ⁶⁾							
					Tightening torque		Nm	70						
					Strength of screws		8.8 acc. to DIN 267							
Auxiliary connecting leads (Copper)		Max. number of Auxiliary connecting leads × cross-section		solid finely stranded with end sleeves	1 × 4 mm ² 2 × (0.5 to 1.5 mm ²); 1 × 2.5 mm ² ; 1 × AWG 14									
Weights		Fixed-mounted circuit-breaker Withdrawable circuit-breaker Guide frame		appr. kg appr. kg appr. kg	77 76 39									

For footnotes, see page 7/25.

3WN1 Circuit-Breakers for AC

4-pole up to 5000 A

Technical data						
Size	II/1		II/2	III/1	II/2	
Type	3WN1 5		3WN1 6	3WN1 7	3WN1 8	3WN1 9
Rated current $I_n^{1)}$ at 40 °C, at 50/60 Hz	Main conductors N conductor	A A	2000 1600	2500 1600	3200 1600	4000 2500 5000 2500
Current transformer rated primary current I_N	A	2000	2500	3200	4000	5000
Rated operational voltage U_e at 50/60 Hz	AC V	up to 690				
Rated impulse withstand voltage U_{imp}	Main conducting paths ⁷⁾ Auxiliary circuits	kV kV	8 4			
Utilization category	B					
Rated short-circuit making capacity I_{cm} (peak value)	Main conductors/N conductor up to AC 500 V (440 V ²⁾) up to AC 690 V up to AC 1000 V	kA kA kA	176/176 132/132 –	176/176 132/132 –	220/176 176/132 –	220/176 176/132 –
Rated service short-circuit breaking capacity I_{cs} (ms value)	Main conductors/N conductor up to AC 500 V (440 V ²⁾) up to AC 690 V up to AC 1000 V	kA kA kA	80/ 80 60/ 60 –	80/ 80 60/ 60 –	100/ 80 80/ 60 –	100/ 80 80/ 60 –
Rated ultimate short-circuit breaking capacity I_{cu} (ms value)	Main conductors/N conductor up to AC 500 V up to AC 690 V up to AC 1000 V	kA kA kA	80/ 80 60/ 60 –	80/ 80 60/ 60 –	100/ 80 80/ 60 –	100/ 80 80/ 60 –
Permissible ambient temperature	Operation Storage	–20 to +70 °C, above +40 °C with reduced current rating –40 to +70 °C				
Rated short-time withstand current I_{cw} at 50/60 Hz	Main conductors/N conductor Circuit-breakers for rated operational voltages up to AC 690 V	0.5 s kA 1 s kA 2 s kA 3 s kA	80/ 80 80/ 80 70/ 70 60/ 60	80/ 80 80/ 80 80/ 80 80/ 80	100/ 80 100/ 80 80/ 70 80/ 60	100/ 80 100/ 80 90/ 70 80/ 60
Permissible continuous loading of fixed-mounted and withdrawable circuit-breakers with internal cubicle temperature ³⁾⁴⁾	Main conductors at 40 °C	A	2000	2500	3200	4000
	at 50 °C	A	2000	2450	3000	4000
	at 60 °C	A	2000	2250	2750	3650
	at 70 °C	A	1950	2000	2470	3220
	N conductor at 40 °C	A	1600		1600	2500
	at 50 °C	A	1500		1500	2450
	at 60 °C	A	1400		1400	2250
	at 70 °C	A	1250		1250	2000
Rated rotor operational voltage U_{er}	V	2000				
Power loss at I_n with 3-phase balanced load (without conductor bars and metal components ⁴⁾)	Fixed-mounted circuit-breaker	W	370	620	790	–
	Withdrawable circuit-breaker incl. guide frame	W	550	900	1150	1450
						1800

Footnotes to pages 7/24 and 7/25:

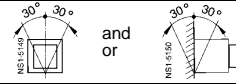
- 1) If the rated primary current I_N of the current transformer is less than the rated current of the circuit-breaker, then $I_n = I_N$.
- 2) According to the marine classification societies BV, GL, LRS and DNV.

- 3) The temperatures refer to the air space around the upper one third of the circuit-breaker.
- 4) Values according to sinusoidal current at 50/60 Hz. Heating and losses will rise due to harmonics and higher frequencies.

- 5) Per set of contacts. Disconnecting the rated current I_n .
- 6) The screws and clamping spacers are not supplied. Suitable spacers have an inside diameter of 12 mm acc. to DIN 6769-Fst.
- 7) Rated insulation voltage U_i = AC 1000 V.

3WN1 Circuit-Breakers for AC

4-pole up to 5000 A

Technical data								
Size			II/1		II/2	III/1	III/2	
Type			3WN1 5	3WN1 6	3WN1 7	3WN1 8	3WN1 9	
Current transformer rated primary current I_N			A	2000	2500	3200	4000	5000
Durability		Mechanical Electrical ¹⁾ at I_n and $\cos \varphi = 0.8$	Operating cycles	5000 1000			5000 1000	5000 500
Switching frequency			1/min	1				
Minimum interval between circuit-breaker opening and the next closing command			ms	120				
Mounting position								
Degree of protection			Circuit-breaker IP 00, control panel with door sealing frame IP 54					
Min. cross-sections of main conductors for phase currents L1, L2, L3	Copper bars blank	Qty, mm ²	2 × 100 × 10	3 × 100 × 10	3 × 120 × 10	–	–	
	Copper bars painted black	Qty, mm ²	2 × 80 × 10	2 × 100 × 10	3 × 100 × 10	4 × 120 × 10	5 × 120 × 10	
N conductor- of main conductors for N conductor current	Copper bars blank	Qty, mm ²	2 × 60 × 10	2 × 60 × 10	2 × 60 × 10	–	–	
	Copper bars painted black	Qty, mm ²	2 × 50 × 10	2 × 50 × 10	2 × 50 × 10	2 × 120 × 10	2 × 120 × 10	
Protective conductor	Screw-type terminals		M 12					
	Stranded copper conductors with cable lugs	mm ²	2 × 240					
	Copper bars	mm ²	40 × 10					
Main conductor connections	Screw-type terminals		M 12 with clamping washers ²⁾					
	Tightening torque	Nm	70					
	Strength of screws		8.8 acc. to DIN 267					
Auxiliary connecting leads (Copper)	Max. number of Auxiliary connecting leads × cross-section	solid finely stranded with end sleeves	1 × 4 mm ² 2 × (0.5 to 1.5 mm ²); 1 × 2.5 mm ² ; 1 × AWG 14					
Weights	Fixed-mounted circuit-breaker	appr. kg	108			148	–	–
	Withdrawable circuit-breaker	appr. kg	106			146	196	198
	Guide frame	appr. kg	62			91	97	102

1) Per set of contacts. Disconnecting the rated current I_n .

2) The screws and clamping spacers are not supplied. Suitable spacers have an inside diameter of 12 mm acc. to DIN 6769-Fst.

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Technical data									
Operating mechanisms									
				Size	I 3-pole	I 4-pole	II	III	IV
Manual operating mechanism with stored-energy feature with mechanical closing									
Closing/Charging	Max. operating force required on handle Number of handle strokes required for charging			N	200 approx. 16	200 approx. 6			
Manual operating mechanism with stored-energy feature with mechanical and electrical closing									
Charging storage spring					see "Manual operating mechanism with stored-energy feature with mechanical closing"				
Closing solenoid	Coil voltage tolerance				0.85 to $1.1 \times U_s$				
	Extended coil voltage tolerance for battery operation ¹⁾			at DC 24 V, DC 48 V, DC 60 V, DC 110 V, DC 220 V	0.7 to $1.26 \times U_s$				
	Power consumption including control				AC 600 VA; DC 200 to 260 W				
	Min. command duration at U_s for closing solenoid			ms	40				
	Total closing time at U_s after command signal for closing solenoid			ms	≤ 50				
	Minimum interval between circuit-breakers opening and the next closing command (e.g. by means of a time relay)			ms	130				
Short-circuit protection Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic				at $U_s \leq 60$ V at $U_s > 60$ V	6 A TDz(time lag)/ 6 A 2 A TDz(time lag)/ 4 A				
Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic					10 A TDz(time lag)/10 A				
Motorized/manual with stored-energy feature with mechanical and electrical closing									
Manual operating mechanism					see "Manual operating mechanism with stored-energy feature with mechanical closing"				
Motor	Coil voltage tolerance				0.85 to $1.1 \times U_s$				
	Power consumption of motor			AC DC	VA W	400 400	900 900		
	Time for charging the storage spring at $1 \times U_s$			s	≤ 15		≤ 10		
Closing solenoid					see "Manual operating mechanism with stored-energy feature with mechanical and electrical closing"				
For motor and closing solenoid	Short-circuit protection Motor and closing solenoid for <u>same</u> rated control supply voltages:								
	Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic			at $U_s = 24$ V at $U_s = 42-60$ V at $U_s = 110-127$ V at $U_s = 220-250$ V	10 A TDz (time lag)/ 6 A 6 A TDz (time lag)/ 6 A 4 A TDz (time lag)/ 4 A 2 A TDz (time lag)/ 2 A		16 A TDz(time lag)/10 A 10 A TDz(time lag)/ 6 A 6 A TDz(time lag)/ 4 A 4 A TDz(time lag)/ 4 A		
	Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic			at $U_s = 24$ V at $U_s > 24$ V	10 A TDz (time lag)/10 A 10 A TDz (time lag)/10 A		16 A TDz(time lag)/10 A 10 A TDz(time lag)/10 A		
	For motor				see "Motor- and closing solenoid for same rated control supply voltages"				
	For closing solenoid				see "Manual operating mechanism with stored-energy feature with mechanical and electrical closing"				
Auxiliary release and electrical closing lockout									
				Size	I to IV				
Shunt release "f"	Connection directly to auxiliary power supply for momentary tripping command only	Response value		pickup	$\geq 0.7 \times U_s$ (circuit-breaker trips)				
		Coil voltage tolerance			0.7 to $1.1 \times U_s$				
		Extended coil voltage tolerance for battery operation ¹⁾		at DC 24 V, DC 48 V, DC 60 V, DC 110 V, DC 220 V	0.7 to $1.26 \times U_s$				
		Rated control supply voltage U_s			AC 50/60 Hz 42, 110, 120-127, 220-240, 380-415 V DC 24, 48, 60, 110-125, 220-250 V				
		Power consumption			AC 600 VA, DC 200-260 W				
		Minimum command duration at U_s			25 ms				
		Opening time of the circuit-breaker at $U_s = 100$ %		at AC/DC	≤ 30 ms				
		Short-circuit protection							
		Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic		at $U_s \leq 60$ V at $U_s > 60$ V	6 A TDz(time-lag)/ 6 A 2 A TDz(time-lag)/ 4 A				
		Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic			10 A TDz(time-lag)/10 A				

1) The coil voltage tolerance is only admissible for given rated voltages and corresponds to the battery voltage.

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

Technical data			
Auxiliary release and electrical closing lockout			
		Size	I to IV
Shunt release "f" With energy storage device comprising "f" release and 3WX31 56-1J... capacitor storage device		Rated control supply voltage U_s	AC 50/60 Hz 42, 110–127, 220–240 V DC 110–125, 220–250 V
		Coil voltage tolerance	0.8 to $1.1 \times U_s$
		Power consumption	AC 1 VA, DC 1 W
		Charging time ¹⁾ at U_s /Recharging time ²⁾ at U_s	max. 5 min/min. 5 s
		Opening time of the circuit-breaker, Short circuit protection	see "Connection directly to auxiliary power supply"
Undervoltage release "r"	Without delay for continuous excitation	Response values pickup dropout	$\geq 0.85 \times U_s$ (circuit-breaker can be closed) (0.35 to 0.7) $\times U_s$ (breaker trips)
		Coil voltage tolerance	0.85 to $1.1 \times U_s$
		Rated control supply voltage U_s	AC 50/60 Hz 42, 110, 120–127, 220–230, 240, 380–400, 415 V DC 24, 48, 60, 110–125, 220–250, 250 V
		Power consumption pickup continuous	AC 110 VA, DC 110 W AC 5 VA, DC 5 W
		Opening time of circuit-breaker at $U_s = 0$ with AC/DC	≤ 60 ms
		Short-circuit protection	
		Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	2 A TDz(time lag)/ 2 A
		Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	10 A TDz(time lag)/10 A
	With delay comprising "r" release and 3WX31 56-3J.00 delay device Delay time: 1, 2 or 3 s; fixed	Response values pickup dropout	$\geq 0.85 \times U_s$ (breaker can be closed) (0.35 to 0.7) $\times U_s$ (breaker trips)
		Coil voltage tolerance	0.85 to $1.1 \times U_s$
		Rated control supply voltage U_s of the delay device	AC 50/60 Hz 110–127, 220–240, 380–415 V DC 110–125, 220–250 V
		Power consumption	pickup: 8 W; continuous: 6 W
		Short-circuit protection	
		Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	2 A TDz(time lag)/ 1 A
		Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	10 A TDz(time lag)/10 A
	With delay comprising "r" release and 3WX31 56-3J.10 delay device Delay time: 0.3 to 3.5 s; adjustable	Response values pickup dropout	$\geq 0.85 \times U_s$ (circuit-breaker can be closed) (0.4 to 0.7) $\times U_s$ (time delay is activated)
		Coil voltage tolerance	0.85 to $1.1 \times U_s$
		Rated control supply voltage U_s of the delay device	AC 50/60 Hz 110–115, 220–230 V DC 110–115, 220–230 V
		Power consumption	pickup: 8 W; continuous: 6 W
		Short-circuit protection	
		Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	2 A TDz(time lag)/ 1 A
		Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	10 A TDz(time lag)/10 A
Electrical closing lockout "fd"	For continuous energizing	Response values pickup	$\geq 0.85 \times U_s$ (breaker can be closed)
		Coil voltage tolerance	0.85 to $1.1 \times U_s$
		Rated control supply voltage U_s	AC 50/60 Hz 42, 110, 120–127, 220–230, 240 V DC 24, 48, 60, 110–125, 220–250, 250 V
		Power consumption	pickup: 8 W; continuous: 8 W
		Time from beginning to activation of lockout	≤ 100 ms
		Short-circuit protection	
		Smallest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	2 A TDz(time lag)/ 1 A
		Largest permitted DIAZED fuse (utilization category gL)/ m.c.b. with C characteristic	10 A TDz(time lag)/10 A

1) Storage time = maximum time, after failure of the auxiliary power supply, for which safe tripping by the shunt release is still assured, assuming that the storage device was fully charged.

2) Recharging time = minimum time for recharging of the storage device after tripping by the shunt release.

3WN1 Circuit-Breakers for AC

3- and 4-pole up to 6300 A

7

Technical data									
Contact-position-driven auxiliary switches, signalling contacts for stored-energy status									
				Size	I to IV				
Rated insulation voltage U_i				AC 400 V (415 V)					
Rated operational voltage U_e				AC 400 V (415 V)					
Switching capacity	AC, 50/60 Hz	Rated operational voltage U_e	V	up to 24	110	220/230	380/400		
		Rated operational current I_e /AC-12 I_e /AC-15	A	10 6 (4)	10 6 (4)	10 6 (4)	10 4 (3)		
	DC	Rated operational voltage U_e	V	24	48	110	220		
		Rated operational current I_e /DC-12 I_e /DC-13	A	10 (10) 10 (10)	8 (8) 4 (4)	3.5 (3.5) 1.2 (1.2)	1 (1) 0.4 (0.4)		
Short-circuit protection ¹⁾		Largest permitted DIAZED fuse (utilization category gL) Largest permitted m.c.b. with C characteristic		10 A TDz A, 16 A Dz 10 A					
Readiness-to-close signalling contact (acc. to DIN VDE 0630)									
Switching capacity	AC, 50/60 Hz	Rated operational voltage U_e	V	up to 250					
		Rated operational current I_e	A	2					
	DC	Rated operational voltage U_e	V	24	250				
		Rated operational current I_e	A	2	0.2				
Short-circuit protection ¹⁾		Largest permitted DIAZED fuse (utilization category gL)		2 A Dz (quick-response)					
Position signalling switches on the guide frame									
Contacts		Signalling: "Circuit-breaker in connected position" "Circuit-breaker in test position" "Circuit-breaker in disconnected position"		3 NO + 3 NC 2 NO + 2 NC 1 NO + 1 NC		1 NO + 1 NC or 1 NO + 1 NC 1 NO + 1 NC			
Rated insulation voltage U_i				AC 400 V (415 V), DC 400 V					
Rated operational voltage U_e				AC 240 V, DC 220 V					
Switching capacity	AC, 50/60 Hz	Rated operational voltage U_e	V	up to 240					
		Rated operational current I_e /AC-1 I_e /AC-15	A	8 1					
	DC	Rated operational voltage U_e	V	24	48	110	220		
		Rated operational current I_e /DC-1 I_e /DC-13 ($L/R = 50$ ms)	A	8 6	8 5	8 1.2	1 0.15		
Short-circuit protection ¹⁾		Largest permitted DIAZED fuse (utilization category gL) Largest permitted m.c.b. with C characteristic		8 A TDz (time lag) 8 A					
Signalling unit for overcurrent releases									
Rated operational voltage U_e				AC 50/60 Hz 110–127, 220–240 V } reconnectable DC 24 V with external series resistor also for higher DC voltages					
				DC	Required series resistor	Power loss	Recommended rating of the series resistor		
				48 V	330 Ω	2 W	4 W		
				60 V	510 Ω	3 W	8 W		
				110 V	1200 Ω	8 W	25 W		
				220 V	2700 Ω	17 W	100 W		
Coil voltage tolerance				0.85 to $1.1 \times U_e$					
Power consumption				6 VA with AC, 2 W with DC (without series resistor)					
Short-circuit protection for main connection		DIAZED fuse/m.c.b. with C characteristic		4 A Dz (quick-response)/4 A					
Permitted ambient temperature at signalling device				–20 to +70 °C					
Output relay contacts	Rated operational voltage U_e			AC 250 V, DC 250 V					
	Switching capacity	AC, 50/60 Hz	Rated operational voltage U_e	V	42	110–127	220–240		
			Rated operational current I_e /AC-1, I_e /AC-11	A	4	4	4		
	DC	Rated operational voltage U_e	V	24	48	60	110	220	
Rated operational current I_e /DC-1, I_e /DC-11		A	2	1	0.8	0.4	0.2		
Short-circuit protection ¹⁾		Largest permitted DIAZED fuse (utilization category gL) Largest permitted m.c.b. with C characteristic		4 A Dz (quick-response) 4 A					
S24, S25, S27 mechanically tripped signalling contacts (acc. to DIN VDE 0630)									
Switching capacity	AC, 50/60 Hz	Rated operational voltage U_e	V	110		220			
		Rated operational current I_e	A	0.14		0.1			
	DC	Rated operational voltage U_e	V	24		220			
		Rated operational current I_e	A	0.2		0.1			
Short-circuit protection ¹⁾		Largest permitted DIAZED fuse (utilization category gL)		2 A Dz (quick-response)					
Signal duration after tripping				S24: 15 ms S25 and S27: continuous until reset					

¹⁾ Absolutely weld-free contacts only at $I_k \leq 1$ kA according to DIN VDE 0660 Part 200.

3WN1 Circuit-Breakers for AC

Description

Application

3WN1 circuit-breakers can be used

- as incoming and outgoing circuit-breakers in three-phase AC distribution systems
- for controlling and protecting motors, generators, transformers and capacitors
- as main switches for all kinds of machines; the user must comply with the appropriate regulations governing enclosure, installation and operating mechanism (DIN VDE 0113)
- as EMERGENCY STOP devices complying with DIN VDE 0113, when the circuit-breakers are fitted with an under-voltage release and are used in conjunction with an EMERGENCY STOP control device
- for switchgear installations with selective short-circuit protection by time grading or "short-time grading control ZSS". For this, the circuit-breakers must be fitted with short-time-delay overcurrent releases ("azn" or "azng" releases)
- as meshed-system switches in low-voltage networks having several high-voltage feeders, in conjunction with meshed system relays for monitoring the direction of power flow
- for installations requiring earth-fault monitoring.

Standards

DIN VDE 0660, IEC 60 947¹⁾.

For marine classification approvals, see Appendix.

The SCR31 delay device, type 7VH1313 should be used for the undervoltage release when the circuit breaker is used for generator protection.

Operating conditions

3WN1 circuit-breakers are climate-proof. They are intended for use in enclosed areas, where excessive operating conditions do not occur.

For use in dusty or damp rooms appropriate enclosures must be provided. If the ambient air contains noxious gases (for ex. hydrogen sulphide), you should take care of sufficient supply with fresh air.

The max. admissible ambient temperatures and the admissible rated current as for various ambient temperatures are given in the Technical data (pages 7/23 to 7/29).

Designs

Breaking capacity: 80/100 kA
Rated oper. current: 630 to 6300 A
Rated oper. voltage: AC 690/1000 V

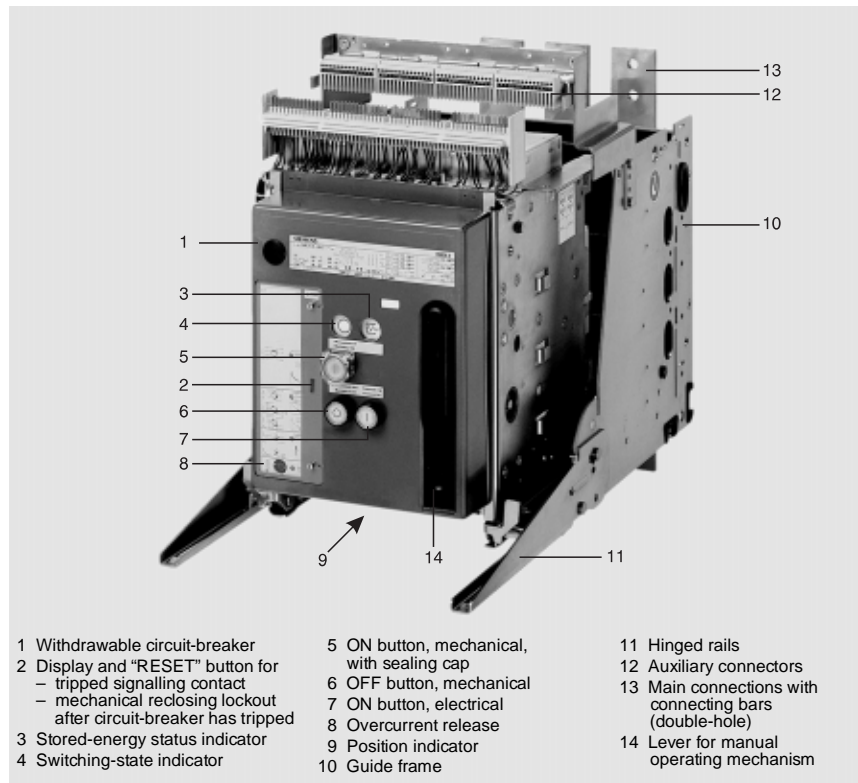


Fig. 7/1 3WN1 withdrawable circuit-breaker, size I, 3-pole

3WN1 circuit-breakers are supplied fully equipped with overcurrent releases, operating mechanism and auxiliary contacts and, if required, with auxiliary releases.

Non-automatic circuit-breakers are always supplied without overcurrent release system.

Mounting

Fixed-mounted or withdrawable version

Operating mechanisms

The circuit-breakers can be supplied with different operating mechanisms:

- Manual operating mechanism with snap-action closing
- Manual operating mechanism with stored-energy and mechanical closing
- Manual operating mech. with stored-energy, mechanical and electrical closing
- Manual/motorized operating mechanism with mechanical and electrical closing.

The operating mechanisms with electrical closing are also suitable for synchronization.

Overcurrent releases

The solid-state, microprocessor-controlled overcurrent release system does not depend on a separate power supply and permits the various protection requirements of distribution systems, motors, transformers and generators to be taken into account.

Contact position indicator and stored-energy status indicator

The contact position is indicated visually on circuit-breakers with stored-energy mechanism:

- white display field  : stored-energy not charged,
black display field  : stored-energy charged.

Control panel

The control panel is supplied as standard in anthracite color.

For engineering details with a further description of design, operation, mounting and retrofitting, please refer to the manual "3WN1 Circuit-Breakers and 3WS1 Vacuum Circuit-Breakers", Order No. E20001-P285-A534-X-7600.

¹⁾ Not suitable for networks over 500 V where double earth-faults can occur (Load and Line).

Description

Safety and reliability

- High degree of protection with door sealing frame for full on site operation of the circuit-breaker
- Additional arcing spaces substantially reduce safety clearance above the circuit-breaker

- Easy to maintain; eroded contacts can be easily changed
- Feed-in to either top or bottom
- Standard locking of withdrawable circuit-breaker to prevent it from being moved
- Standard locking of guide frame when the circuit-breaker is removed

- Clear position indicator with auxiliary switch for signalling
- Signalling switch for overload and short-circuit trip with mechanical reclosing lockout

Opening, closing and interlocking devices

ON and OFF switches

"Mechanical ON" button

In its standard form, the mechanically operated ON switch is a pushbutton switch. When it is operated with electrical closing, the "mechanical ON" switch is fitted with a sealing cap. A safety lock (CES, BKS, IKON) is also available instead of the pushbutton switch. If the key is removed in the "0" position, the circuit-breaker can no longer close mechanically.

No-load switching

If the "Mechanical ON" button is actuated although the conditions for closing have not been met. The stored energy mechanism will discharge, but the main and auxiliary contacts of the circuit-breaker remain open; they will not move or touch each other.

To prevent no-load switching, the conditions for readiness to close must prevail (see page 7/36).

"Electrical ON" button

The electrically operating ON switch is a pushbutton switch intended for closing under field conditions. External electrical locking devices can be mounted simply using the "electrical ON" button. A sealing cap is also available for this pushbutton.

"Mechanical OFF" button

In its standard form, the mechanically operating OFF switch is a pushbutton switch. An additional sealing cap protects the switch from unauthorized use.

The following can be supplied instead of this OFF switch:

Safety lock (CES, BKS, IKON)

If the key is removed in the OFF position, the circuit-breaker can no longer close. This key can then be used to unlock another circuit-breaker.

EMERGENCY STOP pushbutton to DIN VDE 0113

This mushroom-shaped pushbutton latches in the OFF position when it is operated, and the circuit-breaker cannot be closed again until the pushbutton has been unlatched by rotating the mushroom head.

Locking facility

A protrusion in the flap of the locking facility covers the "electrical ON" button and retains the "mechanical OFF" button in the OFF position. The locking facility can be secured with up to 4 padlocks.

CASTELL or FORTRESS lock

These locking devices can be prepared with an assembly kit. The lock must be obtained from the manufacturer. When the lock is actuated, the circuit-breaker is blocked and cannot close.

Auxiliary releases and electrical closing lockout

Up to two auxiliary releases can be installed in the circuit-breaker. The following are available:

	1 shunt release
or	1 undervoltage release
or	1 electrical closing lockout
or	2 shunt releases
or	1 shunt release
+	1 undervoltage release
or	1 shunt release
+	1 electrical closing lockout

Shunt release "f"

The shunt releases "f" are used for the remote tripping of the circuit-breakers.

The coil of the shunt release is only rated for short-time duty and is not suitable for interlocking against closing.

An external storage device for shunt releases allows opening of the circuit-breaker after disconnection of the control supply.

Electrical closing lockout "fd"

The closing lockout can block closing of the circuit-breaker with a sustained signal. The closing lockout is unsuitable for remote tripping; for this the circuit-breaker must be fitted with a shunt release.

Instantaneous undervoltage release "r"

The undervoltage release is used for remote tripping, for voltage monitoring and for interlocking of the circuit-breaker.

The circuit-breaker can only be closed when the undervoltage release is energized.

If the undervoltage release is used in conjunction with a separately installed EMERGENCY STOP control device (e.g. a mushroom-head pushbutton), this circuit-breaker can be used as an EMERGENCY STOP unit.

Delayed undervoltage release

A delayed undervoltage release together with a delay device can be used in order to prevent the circuit-breaker from being tripped by the undervoltage release in response to brief voltage drops lower than 70% of the rated control supply voltage U_s .

The delay device must be mounted separately from the circuit-breaker.

Delay device versions:

- Delay time fixed at 1, 2, or 3 s
- Delay time adjustable steplessly from 0.3 to 3.5 s by means of a twistable knob.

If the power is not restored within the preset time lag following a failure, the circuit-breaker will be tripped.

Trip-free mechanism

3WN1 circuit-breakers have a trip-free mechanism which prevents the operating mechanism from interfering with the tripping or opening action.

3WN1 Circuit-Breakers for AC

Mutual mechanical interlocking

The mutual mechanical interlocking for two or three circuit-breakers is available for the following circuit-breaker sizes:

3-pole: Sizes I, II, III

4-pole: Sizes I, II

The fixed-mounted and withdrawable circuit-breakers are fully compatible and can be used in the same system. The circuit-breakers can be mounted side by side or above each other; the distance between them is only determined by the length of the Bowden wire.

The Bowden wires are supplied in 2 m standard lengths and can be shortened if required. Interlocking signals are transferred via the wires. With withdrawable circuit-breakers, the interlocking is only effective in the connected position.

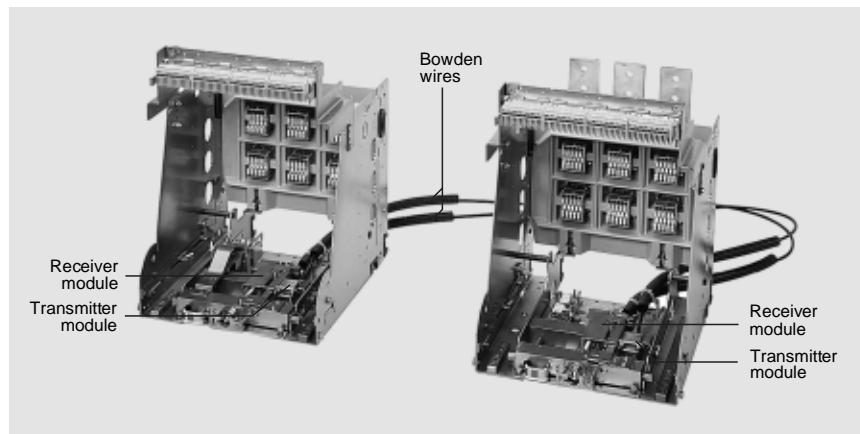


Fig. 7/2 Guide frames with mutual mechanical interlocking

Overcurrent release system

Depending on the design, the overcurrent release system consists of:

- 3 or 4 current transformers:
The 4th current transformer (N-conductor) of the 4-pole circuit-breakers with integrated 4th current transformer is effective only for the earth fault protection ("g") but not for the overcurrent protection of the N-conductor.

The current transformers perform 2 functions:

Measured-value acquisition and power supply to the overcurrent release system. No auxiliary power supply is needed for the overcurrent release system.

- Overcurrent release
- Tripping solenoid
- Mechanical reclosing lockout and/or "tripped" signalling contact

Overload protection

The inverse-time delayed overload release "a" is used to protect against overloading (1, 2 or 3-phase) of loads and lines.

"Thermal" memory

The overcurrent release versions 5, 7 and 8 have a switchable "thermal" memory which simulates cooling of a bimetal release without an external auxiliary power supply after the circuit-breaker has tripped. With immediate reclosing (overload is still present), an overload trip occurs with current-dependent decreased response time.

Phase-failure sensitivity

This function is available with overcurrent release versions 7 and 8. If the operating current of the lowest loaded phase is 50% less than the load current of the highest loaded phase, the set current I_r is reduced to 80% automatically.

Short-circuit protection

Depending on the version of overcurrent release, short-circuit protection can be short-time-delayed or released instantaneously.

Instantaneous short-circuit release "n"

1) Overcurrent-release-Version 2

- Inrush insensitivity
The release has a fixed delay time of 10 ms so that it is not activated by temporary events such as the inrush when starting a motor.

2) Overcurrent-release-Version 4 and 8

The instantaneous release can be deactivated by setting the switch to the position marked ∞ . Then, short-circuit protection is only provided by the definite-time delay release "z".

The instantaneous release must be set so that its operating value I_i is greater than the normal operating current of the connected load.

Short-time delay short-circuit release "z"

Only on overcurrent release versions 4 to 8.

The lowest delay step of 10 ms (or 10–30–50 ms for versions 7 and 8) can be used for single motor feeders: These steps prevent the inrush starting current of a motor from activating the release.

• Short-time-delay short-circuit release with definite-time delay

Only on overcurrent release versions 4 to 8.

The time grading of time-graded short-circuit protection is obtained by using delayed releases which are independent of the magnitude of the short-circuit current.

• Short-time-delay short-circuit release with I^2 -dependent delay

($I^2 t = \text{constant}$)

Only on overcurrent release versions 5 and 8.

The selector switch enables the short-time delay release to be changed over from definite-time delay to I^2 -dependent delay.

The I^2 -dependent delay provides better discrimination to downstream fuses.

Overcurrent release system

• Short-circuit protection with short-time grading control ("ZSS")

Only on overcurrent release versions 5, 7 and 8 (5 and 8 switchable, 7 with fixed output signal)

Short-time grading control (ZSS) offers full discrimination with the very short delay $t_{ZSS} = 50$ ms, regardless of the number of grading levels and regardless of where the short-circuit occurs in the distribution system.

This reduction in the break time by "ZSS" considerably reduces the stresses in the switchgear and subsequent damage when a short-circuit occurs.

Earth-fault protection

Earth-fault release "g"

The earth-fault release "g" detects fault currents which flow through earth and could cause fires in the system. Several circuit-breakers connected in series can be given time-graded discrimination by means of the adjustable delay operating time.

Vectorial summation with current transformer in the N conductor

The earth-fault current is calculated by means of vectorial addition of the three phase currents and the N-conductor current.

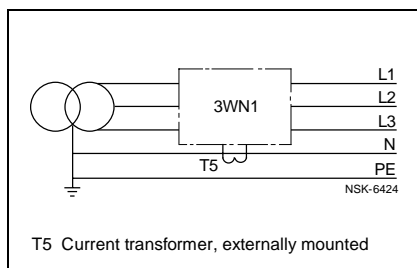


Fig. 7/3 3-pole circuit-breakers

In the case of 4-pole circuit-breakers, the 4th current transformer in the N conductor is installed internally.

The earth-fault releases can be used in different modes:

a) Earth-fault protection with definite-time delay

The delayed earth-fault release, which is independent of the magnitude of the earth-fault current, is used for the time grading of time discriminating earth-fault protection.

Also, the delay prevents the circuit-breaker from being tripped by transient earth faults.

For applications where the regulations specify a limit on the maximum setting of operating current, the release can be supplied with a restricted setting range with the higher settings blocked. (Please state when ordering)

The earth-fault release can be disabled by setting the switch to another position marked ∞ .

b) Earth-fault protection with I^2 -dependent delay ($I^2 t = \text{constant}$)

Version 8 only.

The earth-fault release can be changed over from definite-time delay to I^2 -dependent delay by means of the selector switch.

c) Earth-fault protection with "short-time grading control" (ZSS)

Version 8 only.

This supplementary function is linked to the "ZSS" function of the short-time-delay release "z". The "ZSS" function operates similar to the earth-fault protection for short-circuit protection.

Switching on the function selector switch reduces the delay time t_g of the earth fault tripping to 100 ms, regardless of whether a higher value is set on the scale.

Short-time grading control works only when the function "I_g-dependent delay" is not simultaneously switched on.

Tripping of microprocessor fault

Overcurrent release versions 1 to 4, 6 and 7 trip without delay in the event of a microprocessor fault.

For the overcurrent release versions 5 and 8, the operation of the overcurrent release in the event of a microprocessor fault is described on page 7/36 under "Solid-state tripped and fault display and signalling".

7

Communication (Z = F01)

Overcurrent release versions 5 and 8 include the communication capability function. (Order No. suffix "Z", order code "F01")

Data are transferred to an external DP/3WN1, 3WS1 interface (see page 7/14) via a connector lead (3 m length). The interface converts the data for PROFIBUS-DP.

Depending on the overcurrent release version, the following data are available:

- Analog measured-values:
Phase currents I_{L1} , I_{L2} , I_{L3} , I_{Lmax} ,
- Event signalling:
Type of last tripping (a, n/z, g),
 μP fault, temperature alarm
Phase unbalance, overload

By installing a supplementary ET 200 unit (minimum configuration 3E/2A) the following functions become available via bus:

- Reading off operational status:
Contacts switched on/off
Ready-to-close signalling
Storage spring charged

- Remote control:
Switch circuit-breaker on/off, if it is equipped with electrical closing and shunt release.

For further information on ET 200 unit, please refer to the Catalog "SIMATIC, Components for fully integrated automation", ST 70, Order No. E86060-K4670-A101-A6.

For further information on communication capable circuit-breakers 3WN1 refer to part 3.

3WN1 Circuit-Breakers for AC

Overcurrent release system

Function overview

	Function		Releases					
			“an”	“azn”		“azng”	“azn”	“azng”
			Releases					
			2	4	5	6	7	8
		10th position of the Order No. 3WN. ...-... □...-....	P	M	R	S/T	U	V/W
Overload protection	Inverse-time overload release “a”	Current setting I_r grading 0.05 ($I_r = 0.4 - 0.45 - 0.5 - \dots - 0.95 - 1 \times I_N$) grading 0.01 ($I_r = 0.4 - 0.41 - 0.42 - \dots - 0.99 - 1 \times I_N$)	●	●	●	●		●
		Time-lag class T_c = opening time at $6 \times I_r$ fixed set to $T_c = 10 \text{ s}^1$ adjustable $T_c = 2 - 3.5 - 6 - 10 - 17 - 30 \text{ s}$	●	●	●	●	●	●
		“Thermal” memory (switchable)			●		●	●
		“Phase failure sensitivity” (switchable)						●
Short-circuit protection	Short-time-delay short-circuit release “z”	Setting of operating current I_d ($I_d = 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10 - 12 \times I_r$)		●	●	●	●	●
		Setting of delay time t_d ($t_d = 80 - 150 - 220 - 300 - 400 - 500 \text{ ms}$) and $t_d = 10 \text{ ms}$ for inrush insensitivity and $t_d = 10 - 30 - 50 \text{ ms}$ for inrush insensitivity		●	●	●		●
		With I^2 -dependent delay ($I^2 t = \text{constant}$; switchable)			●			●
		With short-time grading control ZSS (switchable) (fixed output signal)			●		●	●
	Instantaneous short-circuit release “n”	Setting of operating current I_i $I_i = 2 - 3 - 4 - 5 - 6 - 7 - 8 - 10 - 12 \times I_r$ $I_i = 2 - 4 - 6 - 8 - 12 - 16 - 20 \times I_N$ and ∞	●	●	●	●	●	●
		Inrush insensitivity	●					
Earth-fault protection	Earth-fault release “g”	Setting of operating current I_g ($I_g = 0.2 - 0.3 - 0.4 - 0.5 - 0.6 - 0.7 \times I_N$ and \diamond) With circuit-breakers having transformer rated primary currents $I_N = 315 \text{ A}$ and $I_N = 400 \text{ A}$ only the following setting values are permissible: $I_N = 315 \text{ A}$: $I_g = 0.5 - 0.6 - 0.7 \times I_N$ and ∞ $I_N = 400 \text{ A}$: $I_g = 0.4 - 0.5 - 0.6 - 0.7 \times I_N$ and ∞				●		●
		Setting of delay time t_g ($t_g = 100 - 250 - 400 \text{ ms}$)				●		●
		With I^2 -dependent delay ($I^2 t = \text{constant}$; switchable)						●
		With short-time grading control ZSS (switchable)						●
Signalling	Tripped signalling	“a” release, LED	●	●	●	●	●	●
		“z/n” release, LED	●	●	●	●	●	●
		“g” release, LED				●		●
		For storing the tripped signals, power supply of the LED displays in the overcurrent release remote signalling: Signalling unit: 3WX31 47-0JA00 3WX31 47-1JA00 3WX31 47-2JA00	●	●	●	●	●	●
	Alarm signalling Remote signalling with 3WX31 47-1JA00 signalling unit	Overtemperature > 90 °C, LED			●			●
		Phase imbalance > 50%, LED			●			●
Microprocessor fault, LED				●			●	
Display	Operational current display (LCD)				●			●
Testing	Overcurrent test socket		●	●	●	●	●	●
	Earth-fault test socket					●		●
	Mechanical reclosing lockout and/or tripped signalling contact 1 NO²⁾		●	●	●	●	●	●
	Remote tripping				●			●
Communi- cation	Communication (with DP/3WN1, 3WS1 interface)³⁾				●			●

I_N = Rated primary current of the current transformer.

● = Standard function

1) During hard starting of motors or when solid-state motor controls are used (e.g. SIKOSTART), the time setting $T_c = 10$ s can be insufficient. In such cases an overcurrent release, version 4, 5, 7 or 8 should be used.

2) Accessory, to be indicated when ordering the circuit-breaker (see "Further versions" on page 7/13).

3) Only with order supplement Z=F01.

3WN1 Circuit-Breakers for AC

Overcurrent release system

Setting and display panel for overcurrent releases

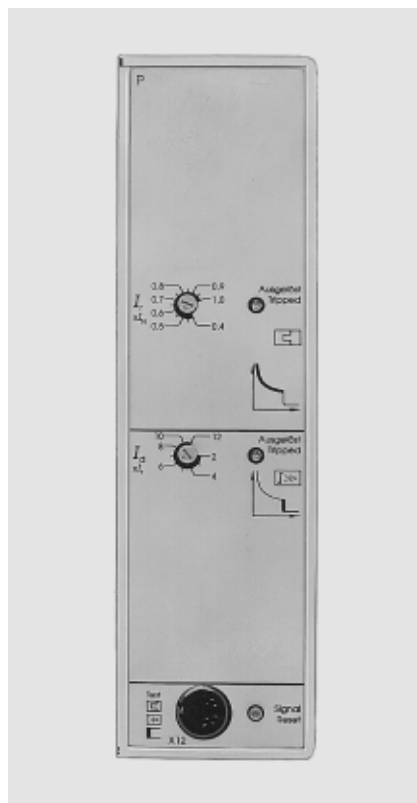


Fig. 7/4 Release "an"
Version 2

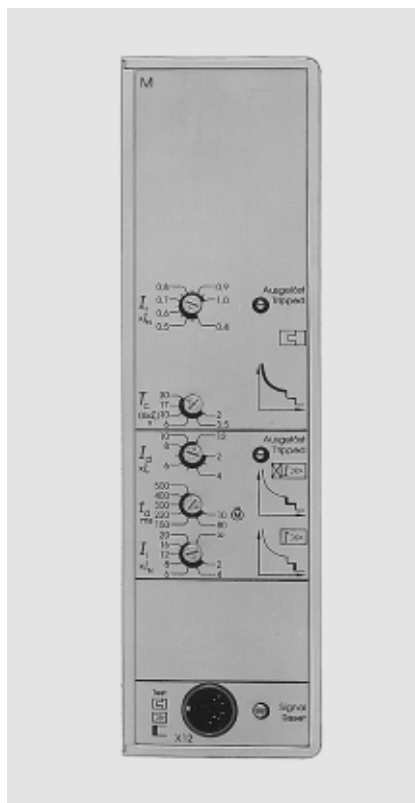


Fig. 7/5 Release "azn"
Version 4

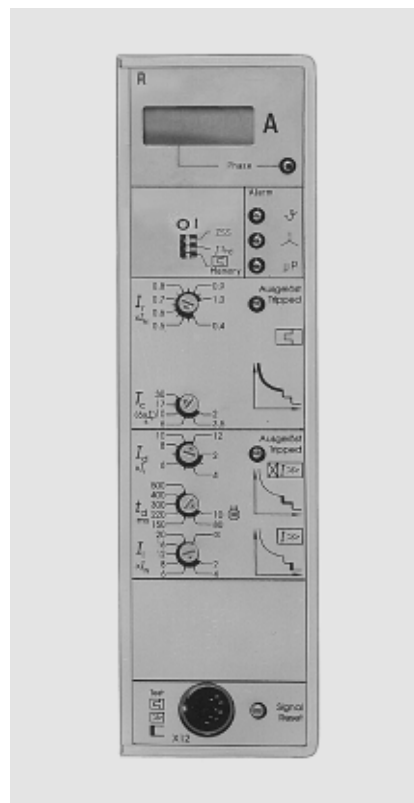


Fig. 7/6 Release "azn"
Version 5

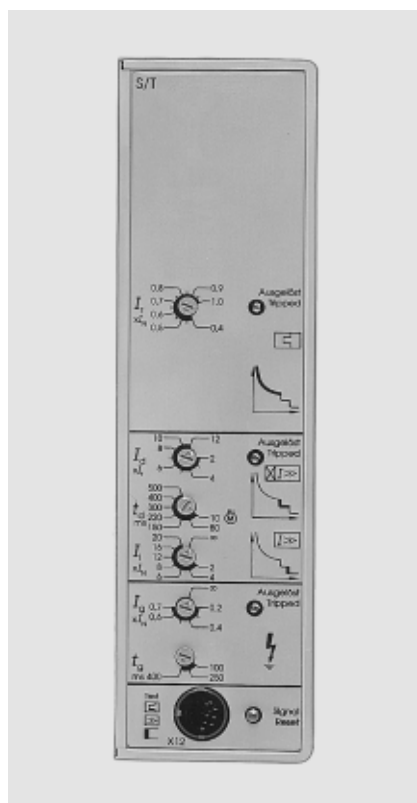


Fig. 7/7 Release "azng"
Version 6

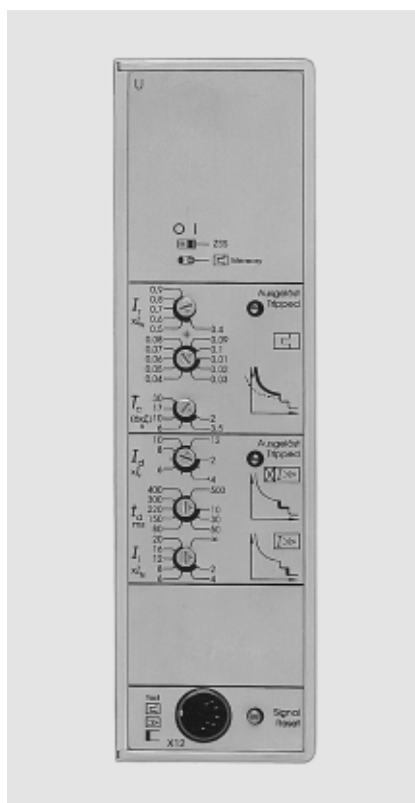


Fig. 7/8 Release "azn"
Version 7

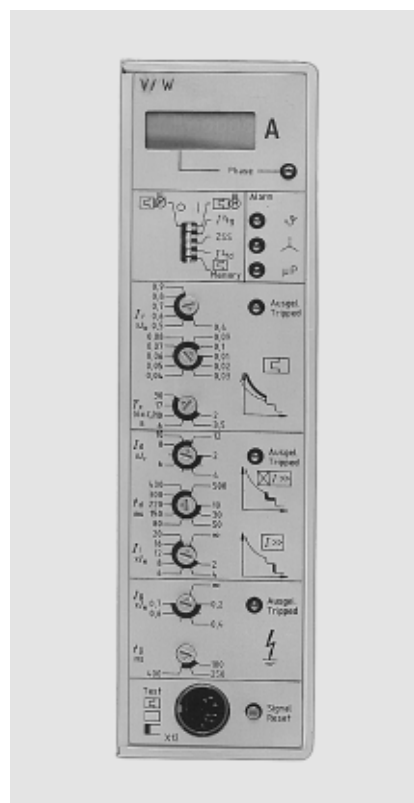


Fig. 7/9 Release "azng"
Version 8

7

3WN1 Circuit-Breakers for AC

Display and signalling

Solid-state tripped and fault display and signalling

The following possibilities are available for indication and signalling of tripping or a fault warning:

1. Individual signalling (signal-capable overcurrent release + signalling unit)

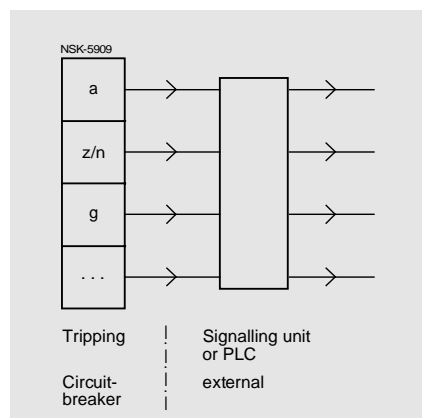


Fig. 7/10 Individual signalling

An overcurrent release with signal capability (Versions 2 and 4 to 8) combined with a signalling unit or a programmable logic controller (SIMATIC¹⁾) converts the signals in the event of a fault (e.g. overload or short-circuit trip) into individual messages.

Overcurrent release versions 2 and 4 to 8 incorporate light-emitting diodes (LEDs) to indicate the cause of an overcurrent trip, depending on the version:

- Overload ("a" release)
- Short-circuit ("z/n" release)
- Earth-fault ("g" release)

In addition, versions 5 and 8 have fault indicators in the event of:

– Overtemperature in the overcurrent release

If the temperature in the overcurrent release exceeds the limit of 90 °C, over-temperature is signalled.

– Phase imbalance

If the operational current of the lowest loaded phase is 50% lower than the operational current of the highest loaded phase, phase imbalance is signalled.

– Microprocessor fault

If on overcurrent release versions 5 and 8 there is a microprocessor fault, a warning is signalled. In the event of a short-circuit current greater than $20 \times I_N$, a short-time-delayed short-circuit tripping of the circuit-breaker occurs with the aid of a bypass circuit.

The trips and faults can also be signalled remotely.

Overcurrent releases, Versions 2 and 4 to 8, incorporate optocouplers for tripped and fault signals.

Signalling units

The signalling units consist of a power supply unit with storage capability, relays for signal input and contact multiplication (1 NO + 1 NC) and an output for the tripped and microprocessor fault indicators (LEDs) on the overcurrent release. Tripped signals remain stored in the signalling unit until they are cancelled by pressing the "Signal RESET" button on the solid-state overcurrent release.

2. Group signalling

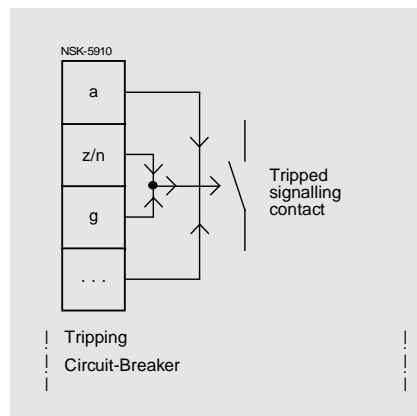


Fig. 7/11 Group signalling

A tripped signalling contact can be used for common signalling of all trips.

After tripping, the tripped signalling contact S24 sends out a brief signal; the tripped signalling contacts S25 and S27 give a maintained signal.

If the circuit-breaker has tripped, this can be seen at the protruding "RESET" button. Thus, the tripped signal can also be seen at the circuit-breaker. The tripped signal remains indicated until the RESET button is pressed.

LCD operational current display

Versions 5 and 8 have a digital LCD display with phase selector switch. The power is supplied from the current transformers. The measured current values can be transmitted via a serial bus.

Readiness to close

A state of readiness to close exists when a circuit-breaker fulfils the following conditions:

- Circuit-breaker in OFF position
- Stored-energy mechanism charged
- Undervoltage release active
- Electrical closing lockout must not be activated.

- OFF button must not be locked in the OFF position
- Mechanical reclosing lockout must be released
- Mutual mechanical interlocking must not be active
- The draw-out circuit-breaker must be in one of the three positions (connected, test, or disconnected).

If all these conditions have been met, the circuit-breaker can be closed.

For ready-to-close signalling contact A3 (1 NO, Order No. suffix "-Z", order code M10) can be used for remote tripping.

1) For further information, see Manual (page 7/30).

Auxiliary and signalling switches, operating cycle counter, PLC control

Auxiliary switches

The 3WN1 circuit-breakers can be ordered with 1 or 2 contact-position-driven auxiliary switches with 2 NO and 2 NC (S1/2 and S4/5).

Signalling switches

Circuit-breakers with:

- manual operating mechanism with stored-energy feature with electrical and mechanical closing
- motorized/manual operating mechanism with stored-energy feature

are supplied with a stored-energy status indicator S9 (1 NO + 1 NC). A ready-to-close signalling contact A3 (1 NO) can be fitted.

Operating cycle counter

A 5-digit operating cycle counter is available for the circuit-breakers. The display is incremented by "1" as soon as the storage is fully charged.

PLC control

Coupling elements or auxiliary contactors (relays) must be used for control.

Mechanical reclosing lockout, function testers

Mechanical reclosing lockout (W02 and W05)

3WN1 circuit-breakers can be supplied with mechanical reclosing lockouts W02 or W05.

These lockouts can be combined with a tripped signalling contact (version K02 or K05).

After tripping, the circuit breaker cannot be reclosed until the RESET pushbutton has been pressed.

Functional testing units

To test the functions of the overcurrent release there is the 3WX36 47–5JA01 function tester. It produces a test current which simulates three times the secondary cur-

rent of the current transformers. The operational capability of the overcurrent release is tested by way of the circuit-breaker being tripped by the test current. The current transformers are continuity-tested in the same way.

7

Fixed-mounted and withdrawable circuit-breakers, space above the arc chute

Fixed-mounted and withdrawable circuit-breakers

Protection against switching gases

When there are other items of switchgear above or behind the circuit-breaker, which remain live after it has been tripped (e.g. recovery voltage on the supply side of the circuit-breaker or at other non-tripped parts of the installation), covers for the space above the arc chute shown in the dimension drawings (page 7/54) should be provided.

The design of the required arcing spaces depends on the rated operational voltage U_e of the circuit-breakers.

- Rated operational voltage U_e up to 690 V AC

For circuit-breakers with a rated operational voltage up to 660/690 V AC, the necessary arcing space is stated with or without arc chute extension. The height of the arcing space may be lower if the circuit-breakers are fitted with the arc chute extension.

The circuit-breakers of size IV (3-pole) and III (4-pole) are always supplied with arc chute extensions.

- Rated operational voltage U_e up to 1000 V AC

The circuit-breakers with a rated operational voltage up to 1000 V AC are always supplied with fitted arc chute extensions for 1000 V AC.

If there are control systems or similar items mounted above the circuit-breaker, the cover should be used for protection against switching gases penetrating into the control devices, even when no recovery or interference voltage occurs.

To prevent the ingress of switching gases between the main plug contacts of the guide frame and the withdrawable circuit-breaker, a shutter should be fitted (see page 7/40).

Guide frames of withdrawable circuit-breakers with a rated voltage up to 1000 V AC and power supply from the top must be equipped with shutter always.

Even if a cover is not necessary, the spaces above the arc chutes specified on page 7/54 must be free of any equipment.

It must also be ensured that there is adequate heat dissipation from the circuit-breaker despite the covers. But the ventilation apertures must not be directly in line with the gas discharge (see "L" on page 7/54). Constructional elements which can remain live after short-circuit tripping must not be located above the ventilation apertures.

Control panel

The control panel is designed in such a way that it can project through a cutout in the cubicle door so that all the control devices and indicators remain accessible when the door is closed.

Door sealing frame

The door sealing frame must be used to prevent breaker gases from escaping through the gap between the control panel and the door cutout when a short-circuit is being cleared. The sealing frame has an additional rubber flap for covering the crank hole of withdrawable circuit-breakers. On fixed-mounted circuit-breakers, this flap has to be cut off. With this frame, degree of protection IP 54 is obtained for the door cutout.



Fig. 7/12 Door sealing frame

3WN1 Circuit-Breakers for AC

Fixed-mounted circuit-breakers

Assembly

Fixed-mounted circuit-breakers are mounted horizontally or vertically using support brackets.

Auxiliary connections

Single connecting leads can be used.

Main connections

On fixed mounted circuit-breakers up to 3200 A, the main connections are arranged horizontally at the rear as a standard. This enables the unit to be connected to bus-bars on the system side.

Other connection types:

- busbars above or below, vertical
- busbars above and below, vertical, for connection accessible from the front, single-hole
- busbars above and below, vertical, for connection accessible from the front, double-hole (holes to DIN 43 673)



Fig. 7/13 Fixed-mounted circuit-breaker, size I installation on supporting brackets

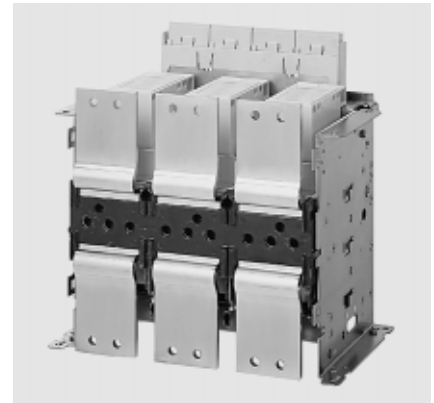


Fig. 7/14 Fixed-mounted circuit-breakers, main connections vertical, for connection accessible from the front, single hole

Blocking devices

In order to protect the operating personnel and switchgear, the fixed-mounted circuit-breakers can be equipped with a blocking device which prevents the cubicle door from being opened when the circuit-breaker is closed.

Withdrawable circuit-breakers

The withdrawable version comprises a withdrawable circuit-breaker and a guide frame. The main conductors are connected to the guide frame. Other complements such as position signalling switches, shutters, hinged rails, blocking and interlocking devices are available.

Auxiliary connections

The auxiliary plug connector system automatically contacts (in the connected or test position) or opens (in the disconnected position) when the circuit-breaker is moved.

Main connections

For sizes I to III there are 3 methods of connecting the conductor bars:

- Directly to the flanges of the guide frame
- By means of T-pieces (except size III/2 (3-pole), IV (3-pole) and III (4-pole)).
- Extended conductor bars (terminal screws accessible from the front; bar end holes are designed for connecting the busbars in accordance with DIN 43 673).

The method of connection can be chosen to suit requirements, i.e. the arrangement of conductor bars can be adapted to the switchgear design.

For sizes IV (3-pole) and III (4-pole), the guide frame is supplied with horizontal rear connections.

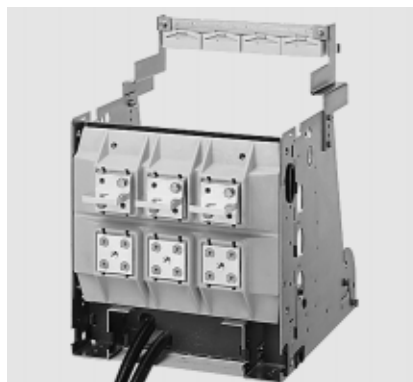


Fig. 7/15 Guide frame
Main connections above with T-pieces for horizontal connection. Bottom connection to vertical busbars

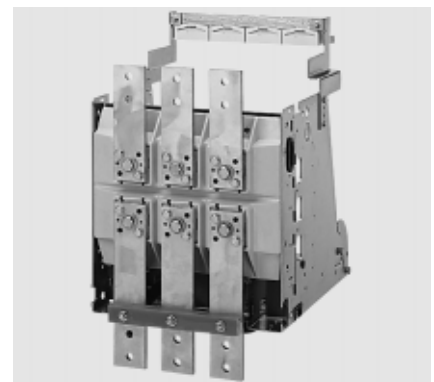


Fig. 7/16 Guide frame
Main connections with extended busbars, for connection accessible from the front

Circuit-breaker positions in the guide frame

There are 3 positions behind the closed cubicle door for withdrawable circuit-breakers in the cubicle:

- Connected position
- Test position
- Disconnected position

The circuit-breaker is moved from one position to another using a crank handle and a spindle drive.

In the disconnected position, the main and auxiliary circuits of the withdrawable circuit-breaker comply with the "Conditions for an isolator".

The disconnected (or connected) position is reached when the circuit-breaker is moved as far as the end stop.

Mechanical interlocking ensures that the circuit-breaker is in the OFF position before it is moved. There is a similar interlocking to prevent the circuit-breaker from being closed at any intermediate point between the 3 positions (see also Readiness to close, page 7/36).

Maintenance position

Hinged extension rails allow the circuit-breaker to be drawn out into a maintenance position.

Withdrawable circuit-breakers

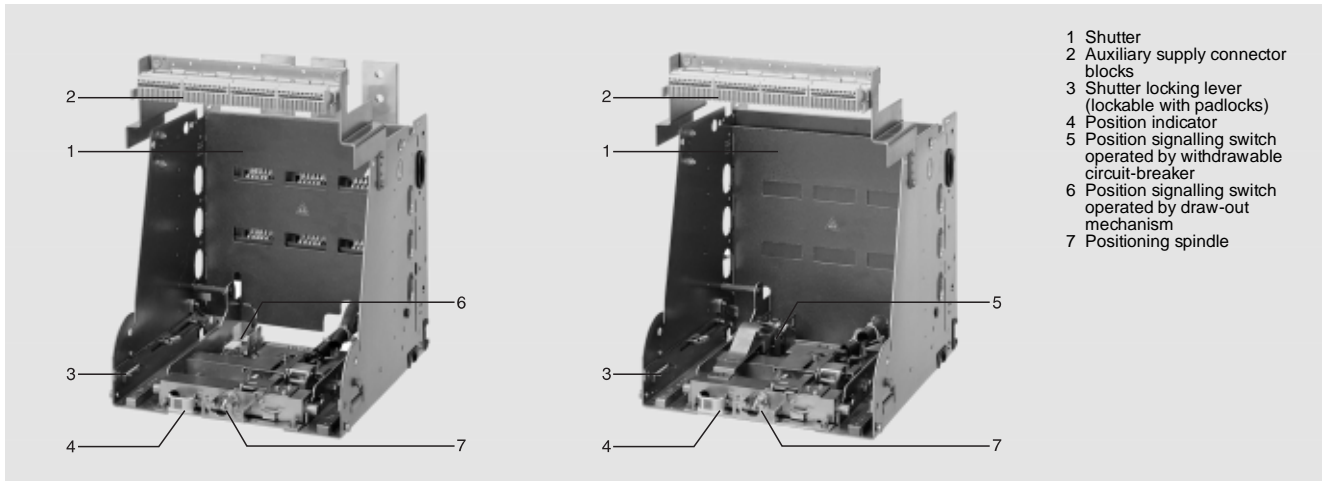


Fig. 7/17 Guide frame, size I (with hinged rails)
Left: Position signalling switch operated by draw-out mechanism
Right: Position signalling switch operated by withdrawable circuit-breaker

Indication of the circuit-breaker positions inside the guide frame

The connected, test and disconnected positions of the circuit-breaker are shown by a strip indicator (Fig. 7/17).

- With the cubicle door closed, the circuit-breaker position can be seen through an inspection window.
- With the cubicle door open, the circuit-breaker position can be seen directly on the strip indicator.

Position signalling switches

The position signalling switches are available in 2 basic versions, with different in the operating mechanisms:

- Actuation by draw-out mechanism (not for sizes IV (3-pole) and III (4-pole)): With this version, the position of the withdrawable circuit-breaker is signalled only when the breaker is in one of the positions. This version is not suitable for interlock circuits with other protective devices.
- Actuation by withdrawable circuit-breaker: This version is suitable for interlock circuits with other protective devices. The position signalling switches are actuated by the withdrawable circuit-breaker via an additional mechanism. Not only the position, but also the presence of the circuit-breaker in the guide frame is indicated.

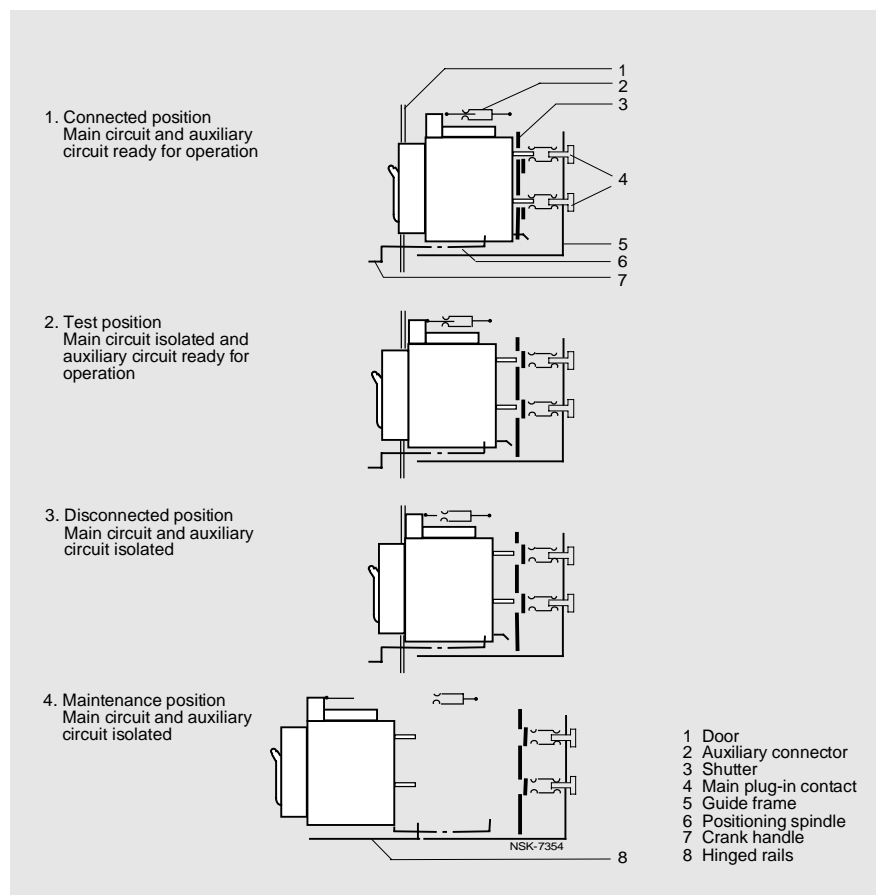


Fig. 7/18 Schematic sketch of 3WN1 withdrawable circuit-breaker

Coding system

In order to avoid confusion of several same-size circuit-breakers on a switch-board when they are inserted into the guide frame, the withdrawable circuit-breakers and guide frames can be equipped with a

coding system. This coding system is available as a set consisting of 8 coding pins, screws and nuts. 36 codes are possible.

3WN1 Circuit-Breakers for AC

Withdrawable circuit-breakers

Shock protection against touching live contacts of the guide frame: Shutter

The unintentional touching of current-carrying contacts or busbars is prevented by a shutter which is mounted to the rear part of the guide frame (see page 7/39, Fig. 7/17).

The shutter is made of insulating material and has cutouts for the isolating blades of the circuit-breaker. The apertures are automatically covered by a slide, also made of insulating material, as soon as the circuit-breaker is moved to the disconnected position. The shutter closes automatically. It is automatically opened when the circuit-breaker is inserted.

To prevent unauthorized opening of the closed shutter, when if the breaker is removed, the shutter can be fitted with up to 2 padlocks.

Interlocking

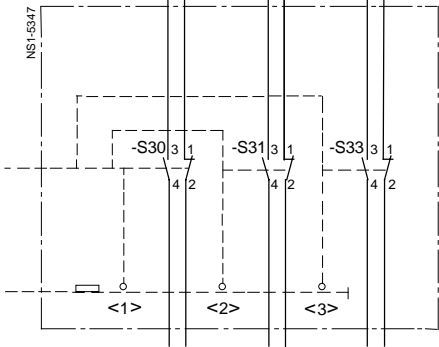
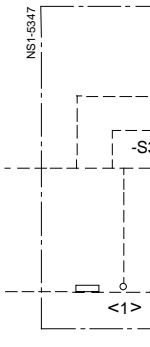
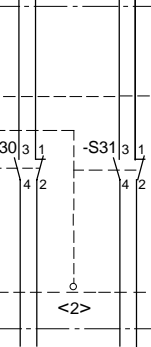
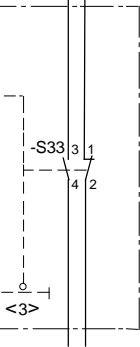
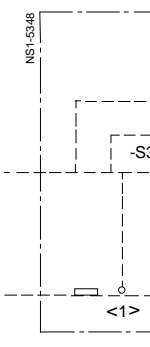
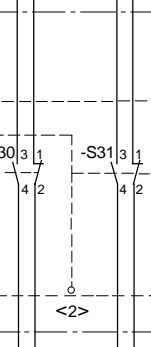
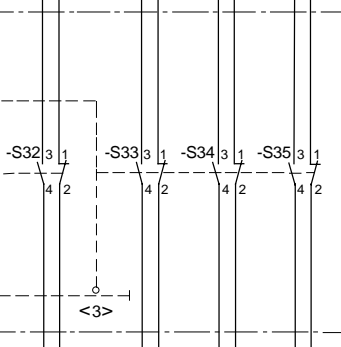


For the protection of the operating personnel and the switchgear installation, the withdrawable circuit-breakers can be equipped with the following interlocks:

- Interlock to prevent opening of the cubicle door when the circuit-breaker is in the connected or test position.
- Interlock to prevent the circuit-breaker from being moved (Connected position ↔ Test position ↔ Disconnected position) when the cubicle door is open.

- Interlock to prevent the withdrawable circuit-breaker from being racked in with the shutter down: see Shock protection against touching live contacts of the guide frame: Shutter.
- Interlock to prevent the withdrawable circuit-breaker from being moved e.g. from the test position into the connected position.
Fitting of the crank and moving the circuit-breaker can be prevented by a padlock (not on sizes IV (3-pole) and III (4-pole)).

Signalling switches for circuit-breaker positions in the guide frame

	(Order No. Accessories)	(12th position of guide frame Order No.)	(Order No. Accessories)	(12th position of guide frame Order No.)
Actuation by draw-out mechanism:	3WX31 84-1JA21	3	3WX31 84-1JA01	1
Actuation by withdrawable circuit-breaker:	3WX31 84-1JB21	5	3WX31 84-1JB01	6

	Disconn. position	Test position	Connected position	Disconn. position	Test position	Connected position
						
Legend:	<div> Contact closed</div> <div> Contact open</div>					
NS1-5347	<div>Circuit-breaker in Disconnected position: [Closed] [Open] [Open]</div> <div>Circuit-breaker in Test position: [Open] [Closed] [Open]</div> <div>Circuit-breaker in Connected position: [Open] [Open] [Closed]</div>			<div>Circuit-breaker in Disconnected position: [Closed] [Open] [Open]</div> <div>Circuit-breaker in Test position: [Open] [Closed] [Open]</div> <div>Circuit-breaker in Connected position: [Open] [Open] [Closed]</div>		
NS1-5348	<div>Circuit-breaker in Disconnected position: [Closed] [Open] [Open]</div> <div>Circuit-breaker in Test position: [Open] [Closed] [Open]</div> <div>Circuit-breaker in Connected position: [Open] [Open] [Closed]</div>			<div>Circuit-breaker in Disconnected position: [Closed] [Open] [Open]</div> <div>Circuit-breaker in Test position: [Open] [Closed] [Open]</div> <div>Circuit-breaker in Connected position: [Open] [Open] [Closed]</div>		

3WN1 Circuit-Breakers for AC

Tripping characteristics

These characteristic curves show the reaction of the overcurrent release when it is activated by a current that is already flowing before the circuit-breaker trips. If overcurrent tripping occurs immediately af-

ter closing the circuit-breaker, when the overcurrent release has not yet been activated, the opening time will be longer (by 3 to 10 ms, depending on the overcurrent). In order to ascertain the break-times of the cir-

cuit-breaker, about 15 ms (for earth-fault tripping about 20 ms) should be added to the opening times shown to allow for arc duration.

Tolerances according to IEC 60 947

Tripping characteristics "an"

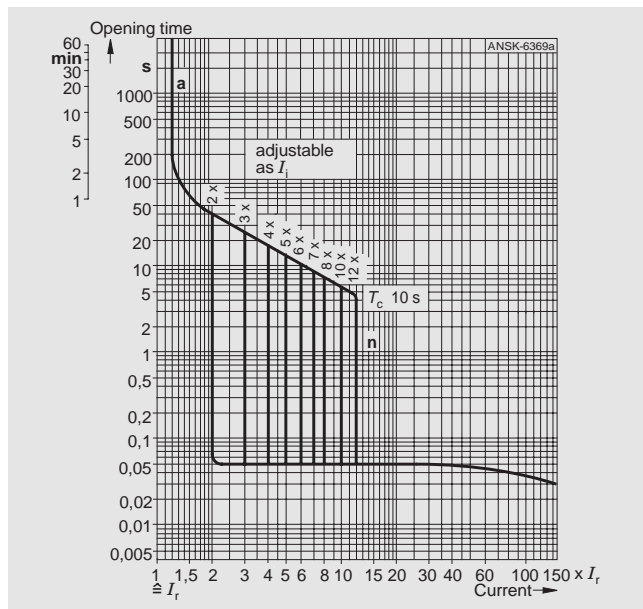


Fig. 7/19 Tripping characteristics of overcurrent release version 2

Inverse-time-delay overload release "a"

I_r Current setting

Instantaneous short-circuit release "n"

I_i Operating current (settable)

Tripping characteristics "a" and "z": "z" = is definite-time delayed

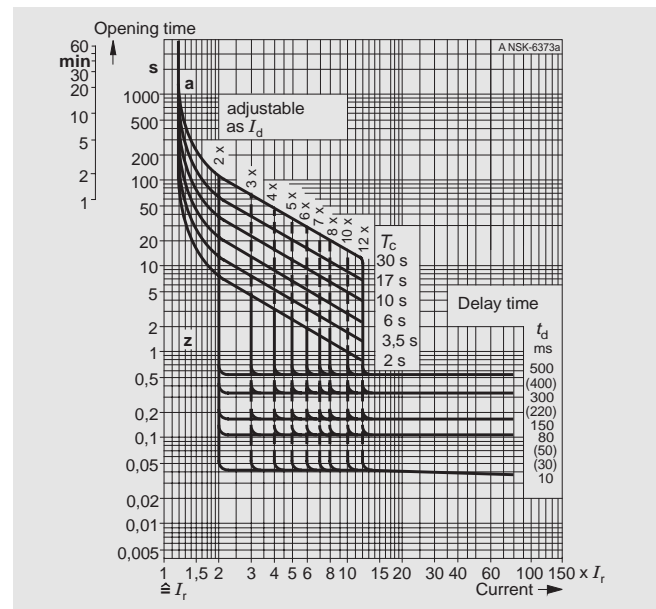


Fig. 7/20 Tripping characteristics of overcurrent release versions 4 to 8

Inverse-time-delay overload release "a"

I_r Current setting

T_c Time-lag class (settable, fixed at 10 s on version 6)

Short-time-delay short-circuit release "z"

I_d Operating current (settable)

t_d Delay time (settable)

Tripping characteristics "g": definite-time delayed

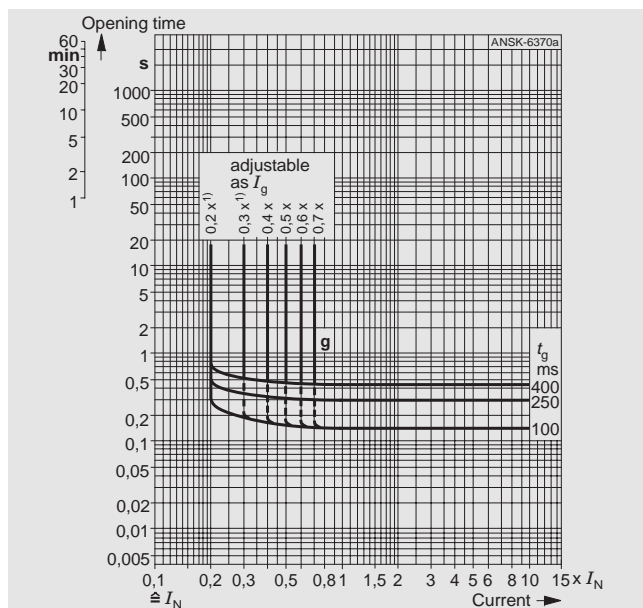


Fig. 7/21 Tripping characteristics of overcurrent release versions 6 and 8

I_N Current transformer rated primary current

Earth-fault release "g"

I_g Operating current (settable)

t_g Delay time (settable)

1) With current transformer rated primary currents $I_N = 315$ A and $I_N = 400$ A, see page 7/34 for response current settings.

Tripping characteristics "n"

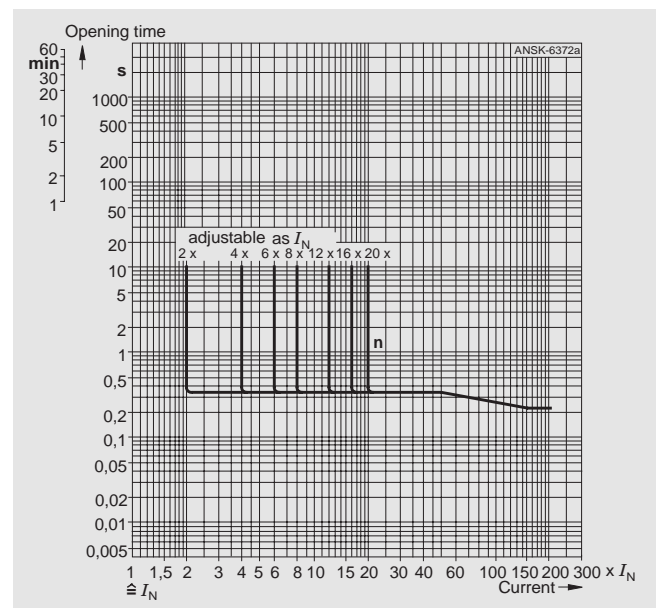


Fig. 7/22 Tripping characteristics of overcurrent release versions 4 to 8

I_N Current transformer rated primary current

Instantaneous short-circuit release "n"

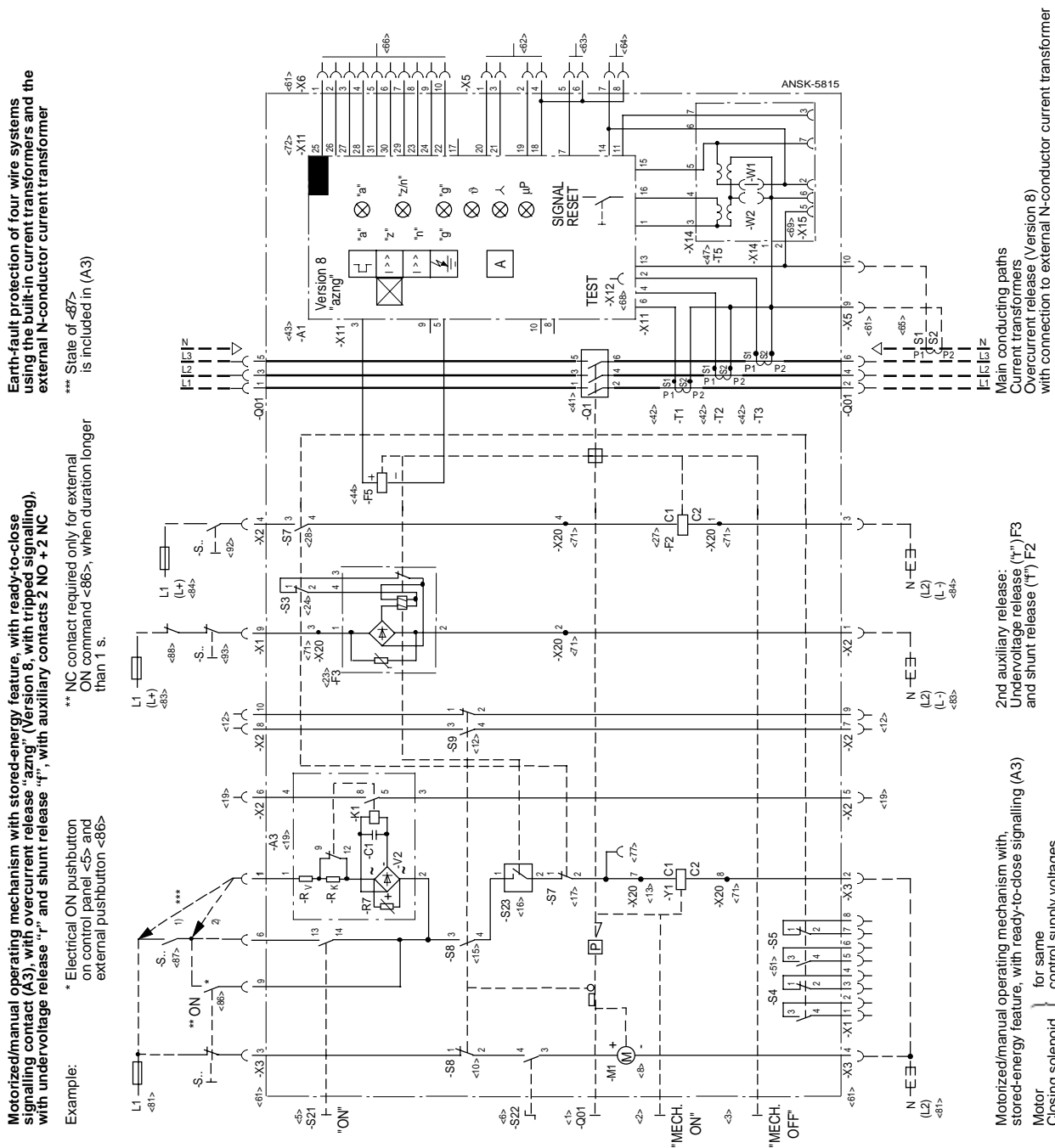
I_i Operating current (settable)

3WN1 Circuit-Breakers for AC

3-pole

Example of a full circuit diagram

Q01	Operating handle for charging stored-energy mechanism
S21	Mechanical ON pushbutton
S22	Electrical ON pushbutton
M1	Motor switch
S8	Motor for charging stored-energy mechanism $U_N \dots V$
S9	Motor stop switch
Y1	Stored-energy status indicator
	Closing solenoid $U_N \dots V$
	Ready-to-close contact <13> via storage state
	<15> via switch mechanism state
	<16> via switch position ON/OFF
	<17> Ready-to-close signalling
	<19> Undervoltage release
	<23> $U_N \dots V$
	<24> Auxiliary contact for <23>
	<27> Shunt release
	<28> $U_N \dots V$
	<41> Auxiliary contact for <27>
	<42> Main contacts
	<43> Current transformers
	<44> Solid-state overcurrent release
	<45> Tripping solenoid for <43>
	<47> Summation current transformer, internal, link in W1
	<51> 1st auxiliary contact block
	<61> Connecting terminals
	<62> Shielded connecting lead for ZSS
	<63> Shielded connecting lead for remote tripping
	<64> Shielded connecting lead for external summation current transformer
	<65> Shielded connecting lead for external N-conductor current transformer
	<66> Shielded connecting lead for signalling unit or SIMATIC system
	<68> Test socket for <43>
	<69> Test socket for <47>
	<71> Intermediate terminals
	<72> Terminal strip to <43>
	<77> Test point
	<81> Input, control supply for <8> and <13>
	<83> Supply to <23>
	<84> Supply to <27>
	<86> External electrical ON (pushbutton) and <8>
	<87> External interlocking for <86>
	<88> External electrical interlocking against closing for <23>
	<92> External electrical OFF by <27>, pushbutton only
	<93> External electrical OFF by <23>



3WN1 Circuit-Breakers for AC

3- and 4-pole

Terminal diagrams for circuit-breaker signalling unit for overcurrent release versions 2 and 4

Circuit-breaker

- <4> Signalling and reset button for <45> (not shown)
- <41> Main contacts
- <42> Current transformers
- <43> Solid-state overcurrent release
- <44> Tripping solenoid for <43>
- <45> Mechanical reclosing lockout, actuated by solenoid system F6, only active on short-circuit tripping via <43>
- <61> Activated until reset by <4>
- <68> Connecting terminal
- <72> Test socket for <43>

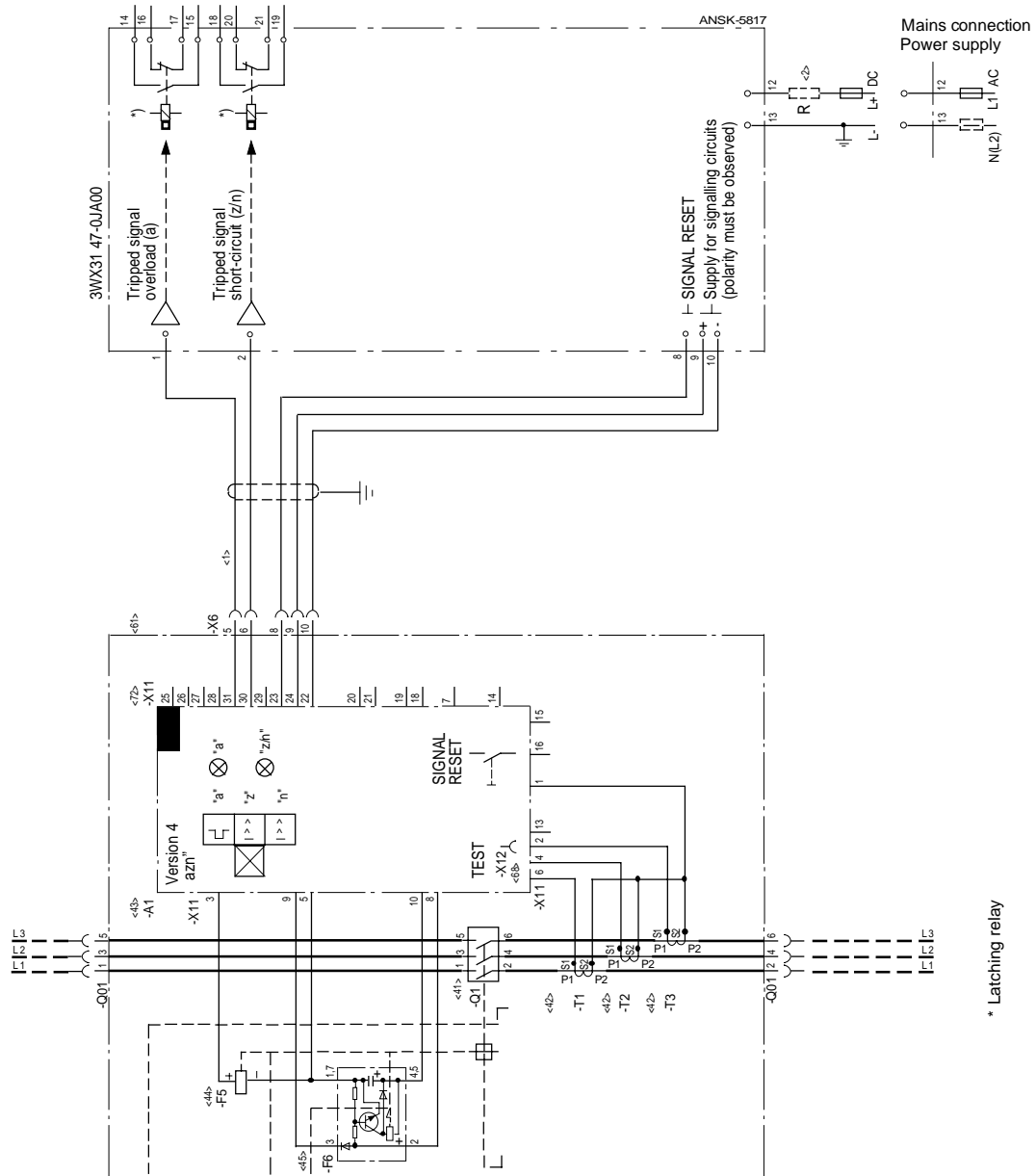
3WX31 47-QJA00 signalling unit

- <1> Auxiliary contact on circuit-breaker
- <2> External series resistor for DC voltages higher than 24 V DC:

DC voltage	Necessary series resistor	Power-loss resistor	Recommended rating of series resistor
V	Ω	W	W
48	330	2	4
60	510	3	8
110	1200	8	25
220	2700	17	100

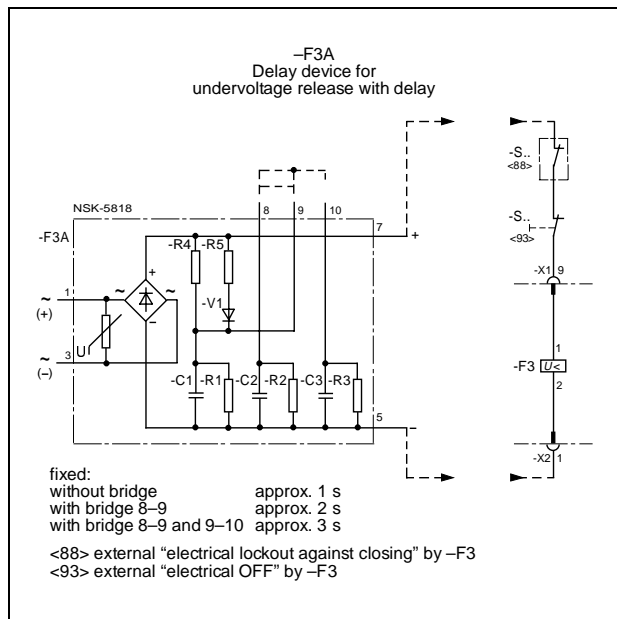
Example:

Overcurrent release version 4 with 3WX31 47-QJA00 signalling unit
(With overcurrent release version 2 the signalling unit is connected in same way.)

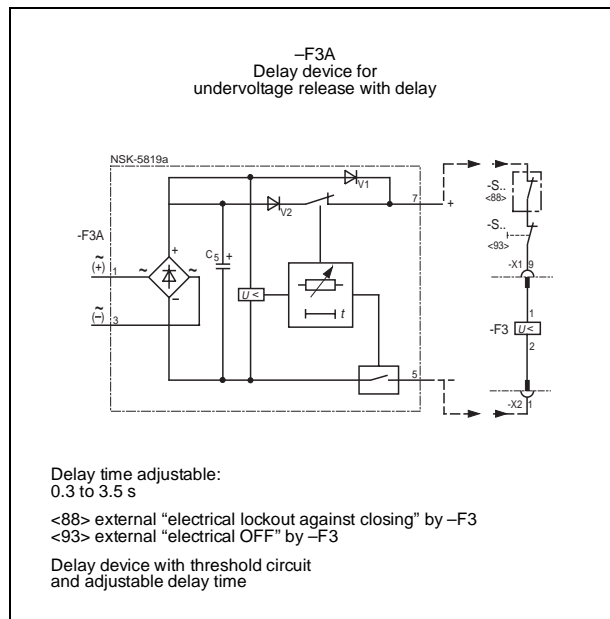


3WN1 Circuit-Breakers for AC 3- and 4-pole

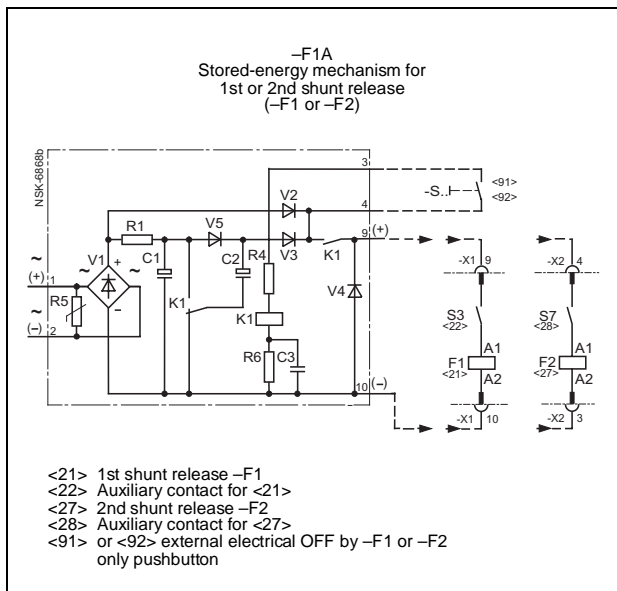
Circuit diagrams for supplementary devices



**Delay device 3WX31 56-3J00
for undervoltage release with delay**



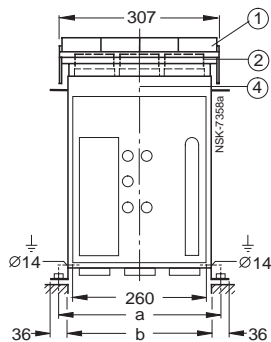
**3WX31 56-3JG10 and 3WX31 56-3JJ10 delay devices
for undervoltage release with delay**



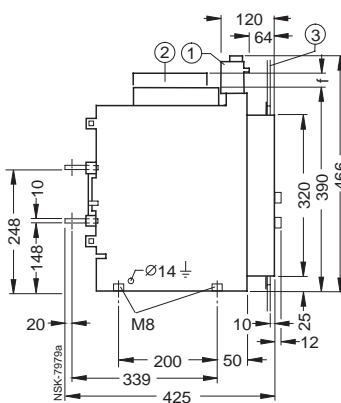
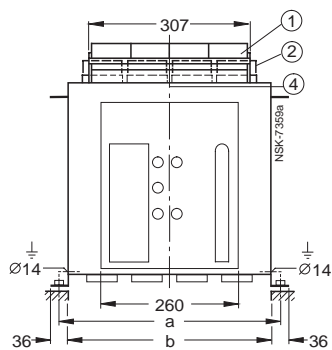
**3WX31 56-1JG01 and 3WX31 56-1JJ01 storage devices
for shunt releases with stored-energy feature**

3WN1 Circuit-Breakers for AC

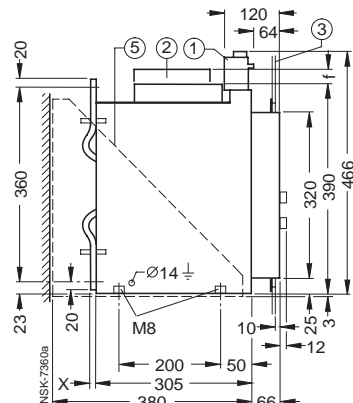
Fixed-mounted 3WN1 circuit-breakers, 3- and 4-pole



Size	a	b
3-pole		
I	300	276
II	420	396
III	600	576
4-pole		
I	420	396
II	600	576



Horizontal connecting bars



Vertical connecting bars

Size III/2 only with vertical connecting bars above and below

- ① Connecting piece for auxiliary contacts
- ② Arc chute extension

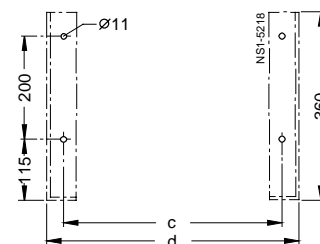
U_e	e	f	Arc chute extension
690 V AC	466	32	is supplied
1000 V AC	500	66	is supplied

- ③ Cubicle door
- ④ Central line of circuit-breaker
- ⑤ Supporting bracket (option)

Thickness of connecting bars "X"

Size	X
3-pole	
I, II, III/1	10
III/2	20
4-pole	
I, II	10

Fixing holes for supporting bracket



Size	c	d
3-pole		
I	300	360
II	420	480
III	600	660
4-pole		
I	420	480
II	600	660

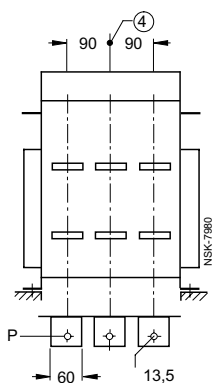
Door cutout for control panel, see page 7/53.
Covers for the space above the arc chute, see page 7/54.

3WN1 Circuit-Breakers for AC

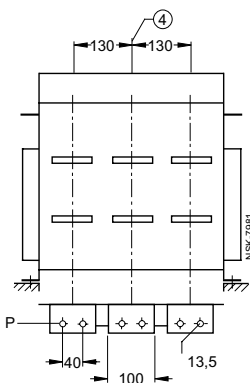
Fixed-mounted 3WN1 circuit-breakers, 3- and 4-pole

3-pole (horizontal connecting bars)

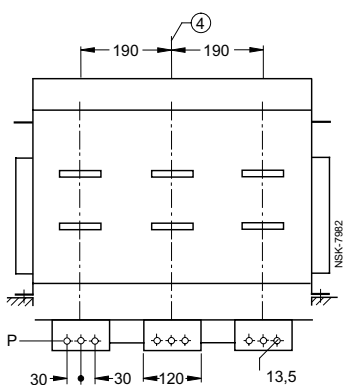
Sizes I/1 and I/2



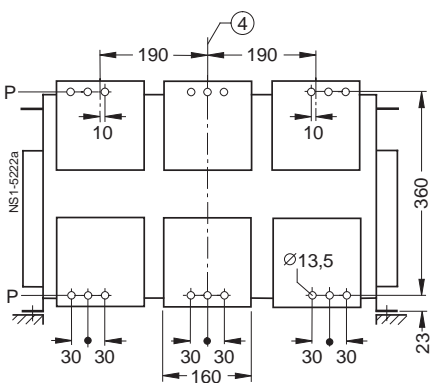
Size II



Size III/1



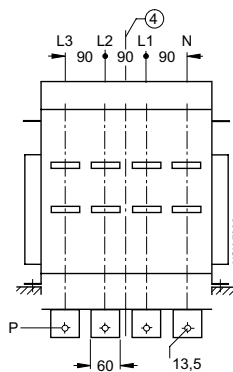
Size III/2



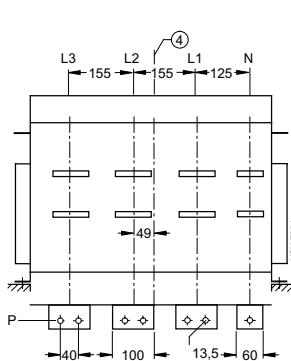
Size III/2 only with vertical connecting pieces.

4-pole (horizontal connecting bars)

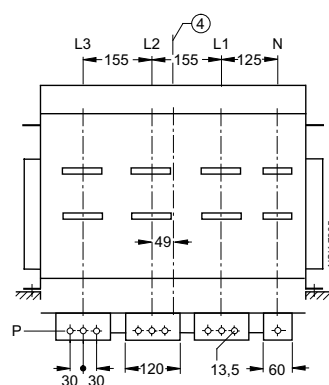
Size I



Size II/1



Size II/2



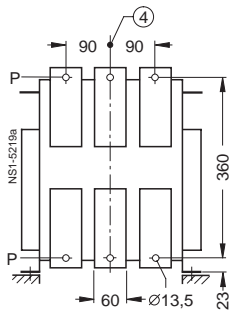
The distance between connecting point P and support of busbars can be max. 250 mm.

④ Central line of circuit-breaker

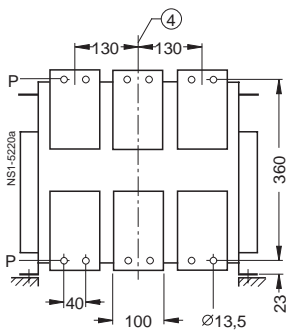
Fixed-mounted 3WN1 circuit-breakers, 3- and 4-pole

3-pole (vertical connecting bars)

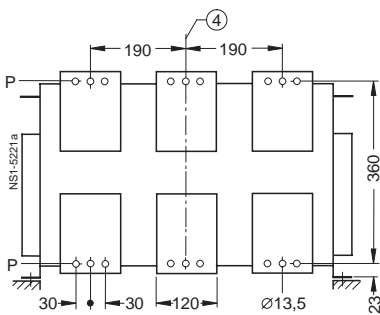
Size I/1 and I/2



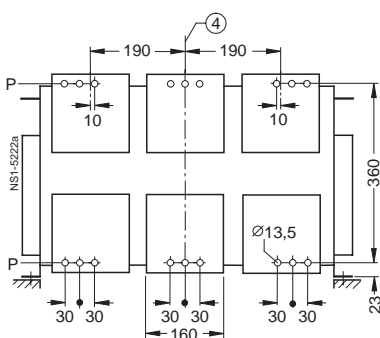
Size II



Size III/1

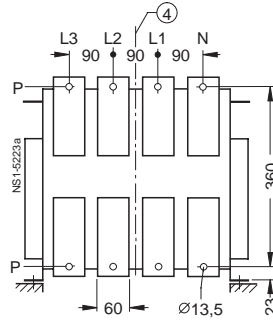


Size III/2

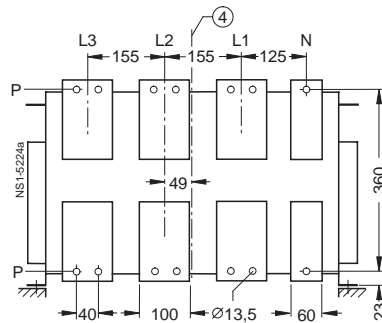


4-pole (vertical connecting bars)

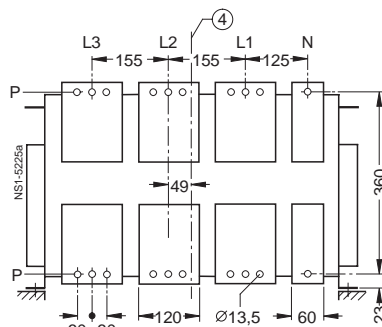
Size I



Size II/1



Size II/2



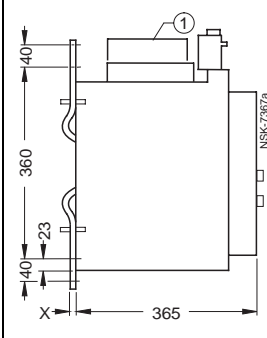
The distance between connecting point P and support of busbars can be max. 250 mm.

④ Central line of circuit-breaker

3WN1 Circuit-Breakers for AC

Fixed-mounted 3WN1 circuit-breakers, 3- and 4-pole

With extended connecting bars (terminal holes of bars for connection of busbars in accordance with DIN 43 673)



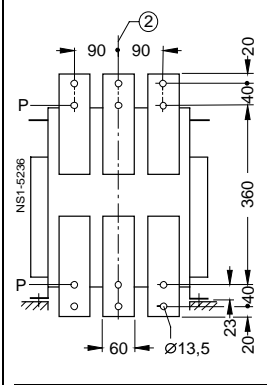
Thickness of connecting bars "x"

Size	x
3-pole	
I/1	5 until delivery date 30/04/98
I/2, II, III/1	10 from delivery date 01/05/98
4-pole	
I, II	10

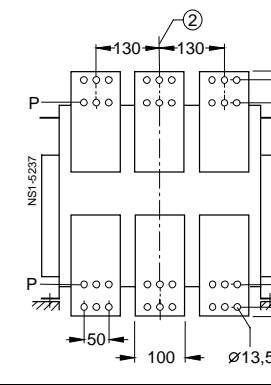
① Arc chute extension
② Central line of circuit-breaker

The distance between connecting point P and support of busbars can be max. 250 mm.

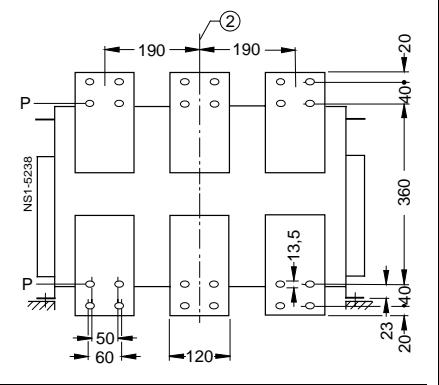
3-pole
Size I/1 and I/2



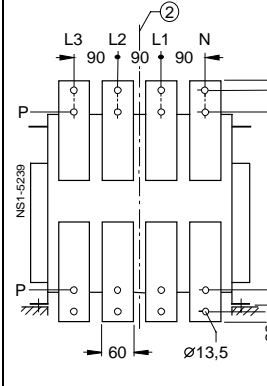
Size II



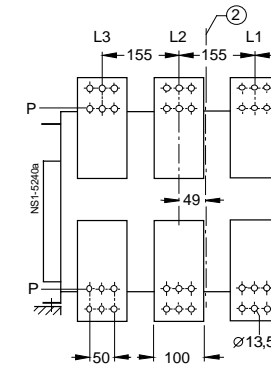
Size III/1



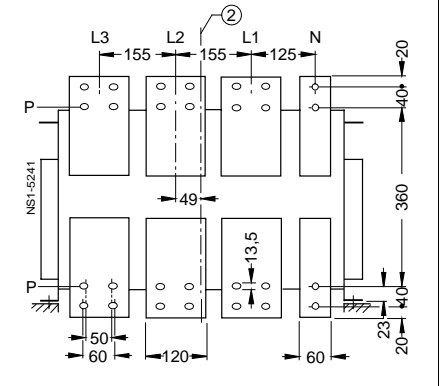
4-pole
Size I



Size IV/1



Size II/2



3WN1 Circuit-Breakers for AC

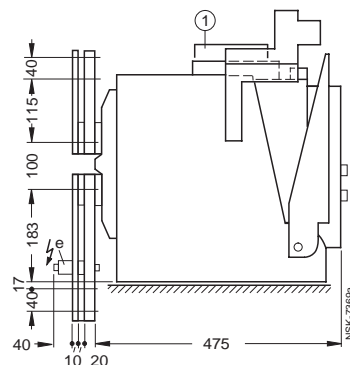
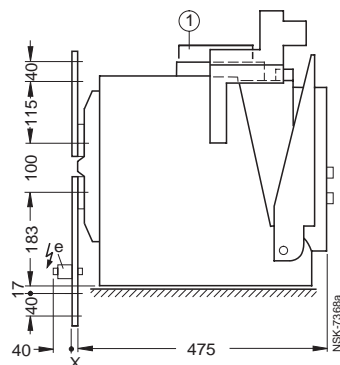
Withdrawable 3WN1 circuit-breaker, 3- and 4-pole

With extended connecting bars for connection accessible from the front
(terminal holes of bars for connection of busbars in accordance with DIN 43 673)

Sizes I, II/1, II/2 and III/1

Sizes II/2 (3-pole) and II/2 (4-pole)

Thickness of connecting bars "x"



Size	x
3-pole	
I/1, $I_n \leq 1000$ A	10
I/2, $I_n \leq 1600$ A	20
II, $I_n \leq 1600$ A	10
II, $I_n \leq 2500$ A	20
II/1, $I_n \leq 2500$ A	20
4-pole	
I, $I_n \leq 1000$ A	10
I, $I_n \leq 1600$ A	20
II/1, $I_n \leq 2500$ A	20

① Arc chute extension

② Central line of circuit-breaker

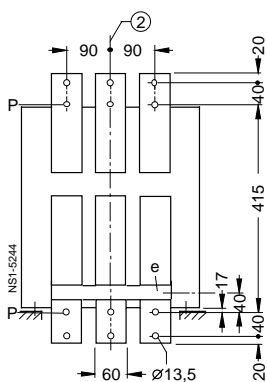
The distance between connecting point P and support of busbars may be max. 210 mm.

e The mutual support for extended connecting bars is supplied.

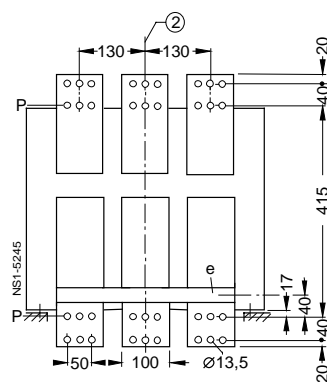
⚡ Voltage carrying part, Keep away

3-pole

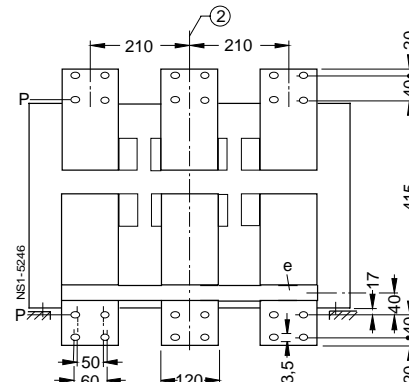
Sizes I/1 and I/2



Size II

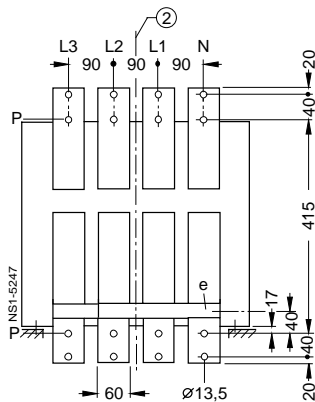


Sizes III/1 and III/2

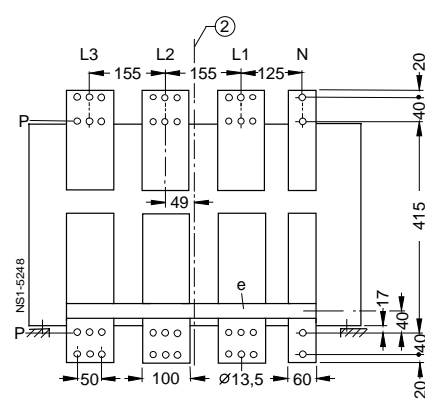


4-pole

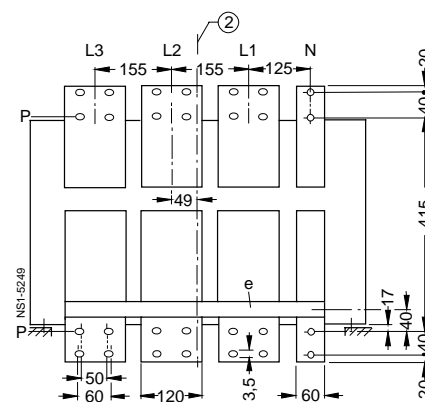
Size I



Size II/1

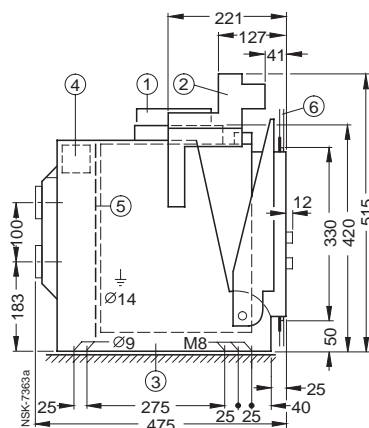
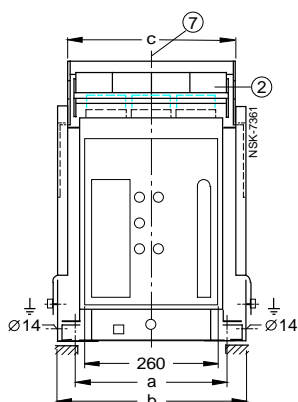


Size II/2



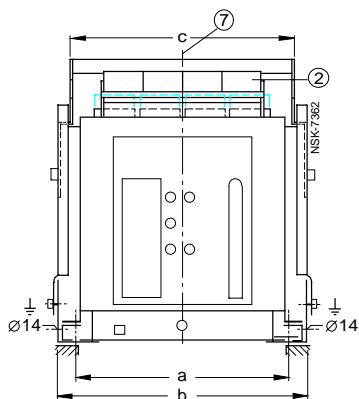
3WN1 Circuit-Breakers for AC

Withdrawable 3WN1 circuit-breakers, 3- and 4-pole



Size	a	b	c
3-pole			
I	300	360	320
II	420	480	440
III	600	660	620
4-pole			
I	420	480	440
II	600	660	620

- a Disconnected position
- b Test position
- c Connected position



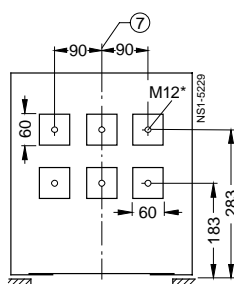
- ① Arc chute extension

U_e	e	f	Arc chute extension
690 V AC	515	32	is supplied
1000 V AC	545	66	is supplied

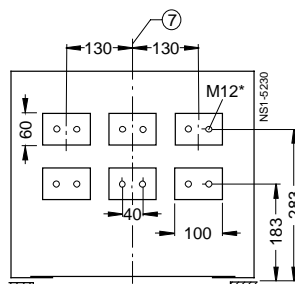
- ② Connecting piece for auxiliary contacts
- ③ Guide frame
- ④ Bushing for signalling and control leads
- ⑤ Shutter (option)
- ⑥ Cubicle door
- ⑦ Central line of circuit-breaker

3-pole

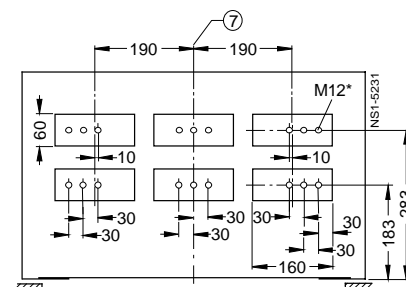
Sizes I/1 and I/2



Size II

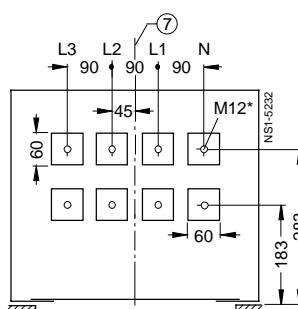


Sizes III/1 and III/2

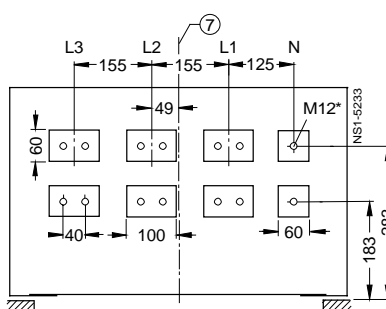


4-pole

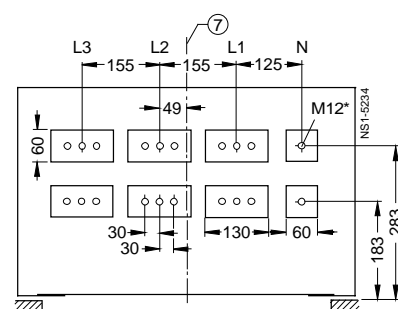
Size I



Size IV/1



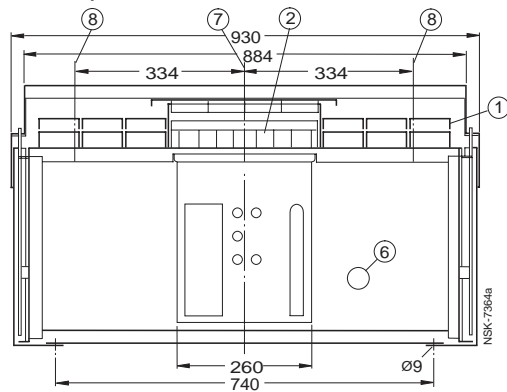
Size 11/2



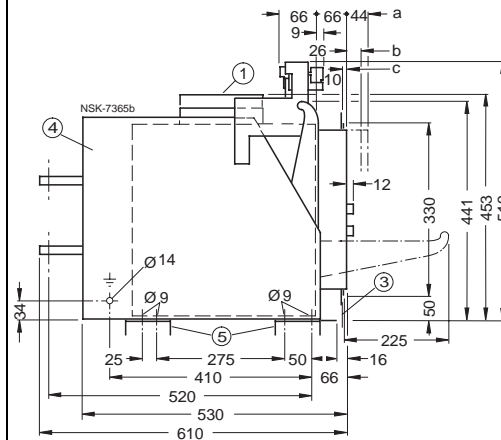
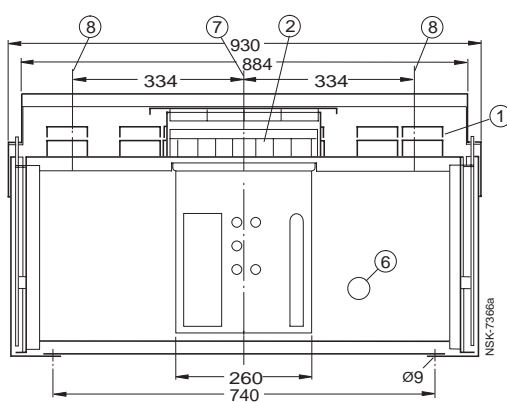
* Thread M 12: Screw hole depth 18 ... 24 mm
Torque 70 ± 2 Nm

Withdrawable 3WN1 circuit-breakers, 3- and 4-pole

Size IV, 3-pole



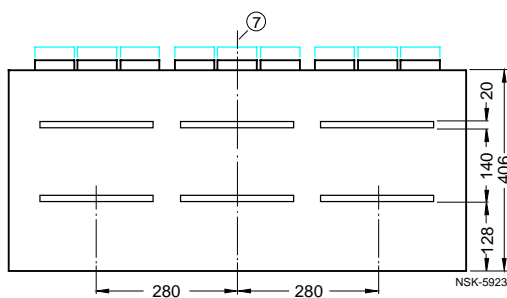
Size III/1 and III/2, 4-pole



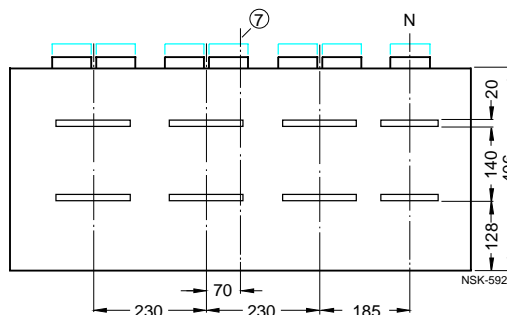
- a Disconnected position
b Test position
c Connected position

- ① Arc chute extension
② Connecting piece for auxiliary contacts
③ Cubicle door
④ Guide frame
⑤ Supports over field width are necessary and must be provided by customer
⑥ Hole for crank handle
⑦ Central line of circuit-breaker
⑧ Assembly of supporting bracket (see page 7/53)

Size IV, 3-pole

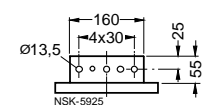


Sizes III/1 and III/2, 4-pole

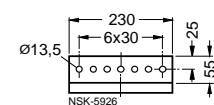


Connection of bars

(The connecting pieces are fixed-mounted on the guide frame)



Connection with 5000 A

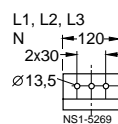


Connection with 6300 A

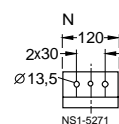
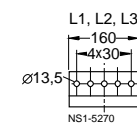
Connection of bars

(The connecting pieces are fixed-mounted on the guide frame)

Size III/1



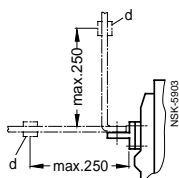
Size III/2



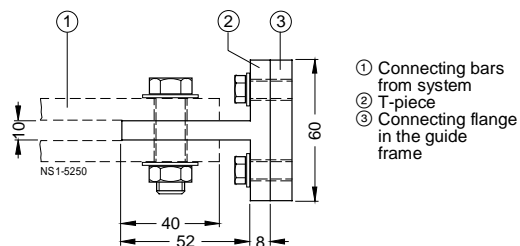
3WN1 Circuit-Breakers for AC

Withdrawable 3WN1 circuit-breakers, 3- and 4-pole

Connection with T-connecting pieces

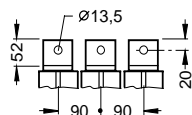


With both horizontal and vertical installation of connecting bars the support d has to be used

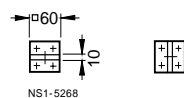


Main contacts (3-pole)

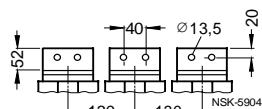
Sizes I/1 and I/2



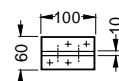
Installation option horizontal or vertical



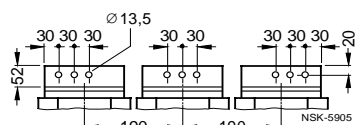
Size II



Horizontal installation only



Size III/1



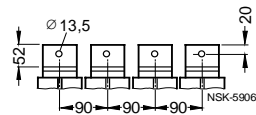
Horizontal installation only



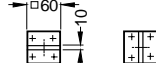
No T-connecting pieces can be used with size III/2.

Main contacts (4-pole)

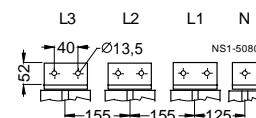
Size I



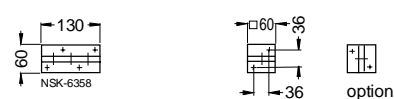
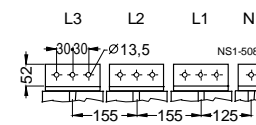
Installation optional horizontal or vertical



Size II/1



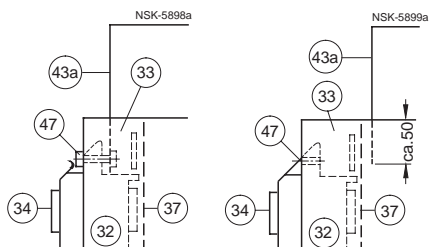
Size II/2



3WN1 circuit-breakers, 3- and 4-pole

Possible methods for mounting the cover for the space above the arc chute with withdrawable circuit-breakers (see the side views of withdrawable 3WN1 circuit-breakers, pages 7/50 and 7/51)

for size I, 3-pole

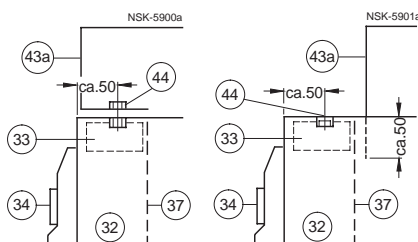


Cover with ④.
Cover must be made of insulating material.

Support on cable bushing*

- ③ Guide frame
- ③ Bushing for signalling and control leads
- ③ Connecting flange
- ③ Shutter (option)
- ③ Cover for the space above the arc chute (not supplied)
- ③ for circuit-breakers with arc chute extensions

for sizes II and III, 3-pole and sizes I and II, 4-pole

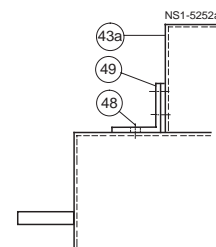


Mounting with ④.
Cover must be made of insulating material.

Support on cable bushing*

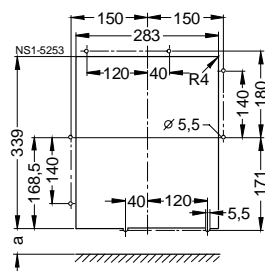
- ④ M 6 fixing screw for the cover for the space above the arc chute, screwing depth max. 12 mm
- ④ Hole for fixing screw M 6 × 20, with self-locking M 6 nut, for fixing the cover for the space above the arc chute.
- ④ Hole for M 6 fixing screw.

for size IV, 3-pole and size III, 4-pole

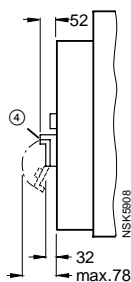
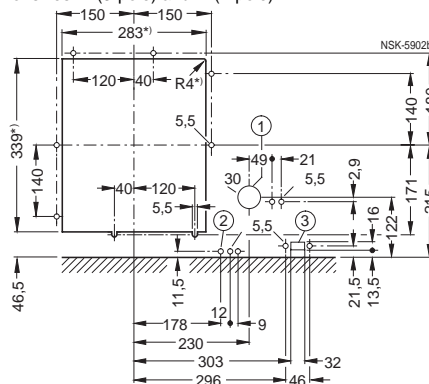


- ④ Support bracket for the cover, mounted on the guide frame (dimensions, see page 7/51), not supplied.
- * After mounting the cover (43a) shutter function must be checked.

Door cutout for 3WX31 86-0JA01 door sealing frame for sizes I to III (sizes III only 3-pole)

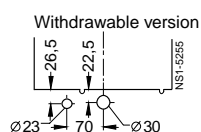


for sizes IV (3-pole) and III (4-pole)

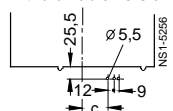


Locking device for "electrical ON"- and "mechanical OFF" buttons ④

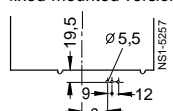
Door cutout with edge protection Cutout after mounting the edge protection for sizes I to III (size III only 3-pole)



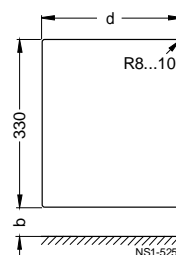
Blocking device withdrawable version



Blocking device fixed-mounted version



- ① Opening for crank handle for spindle drive
- ② Holes for blocking device
- ③ Holes and cutout for position indicator
- *) Door cutout for edge protection: 330 instead of 339 mm, 274 instead of 283 mm, R8 instead of R4.

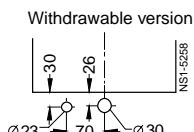


Mounting level	a	b
Fixed-mounted version	16.5	20
Withdrawable version	46.5	50

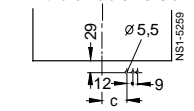
Size	c	d
Fixed-mounted version, 3-pole		
I	91	265
II	146	265
III	231	265

Fixed-mounted version, 4-pole		
I	146	265
II	231	265

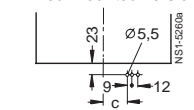
Withdrawable version		
I to III (III only 3-pole)	49	274



Blocking device withdrawable version



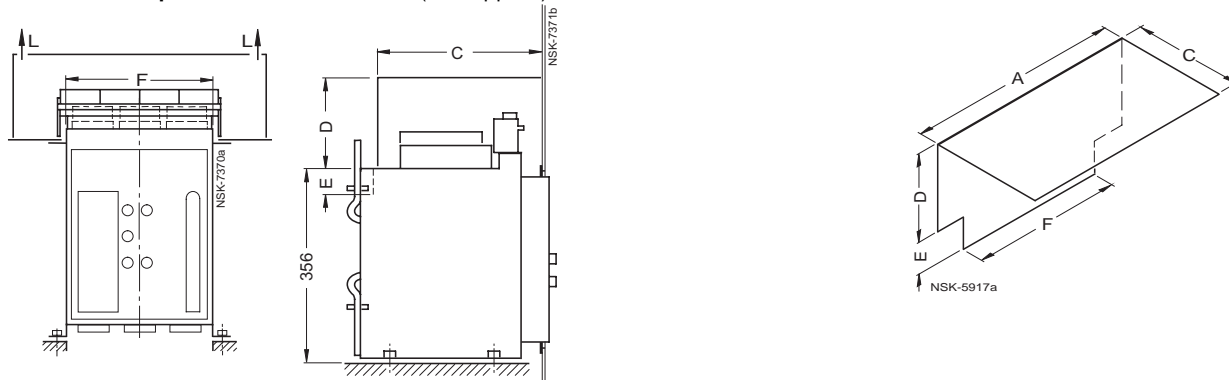
Blocking device fixed-mounted version



3WN1 Circuit-Breakers for AC

Fixed-mounted 3WN1 circuit-breakers, 3- and 4-pole

Cover for the space above the arc chute (not supplied)



Size	Number of poles	A ≙ Cubicle with	C	Safety distance D with arc chute extensions	E	F
690 V AC						
I/1	3	490	320	185	93	270
I/2	3	550	320	185	93	270
II	3	550	320	245	93	390
III/1, III/2	3	800	320	285	93	570
I	4	550	320	185	93	390
II/1, II/2	4	800	320	285	93	570

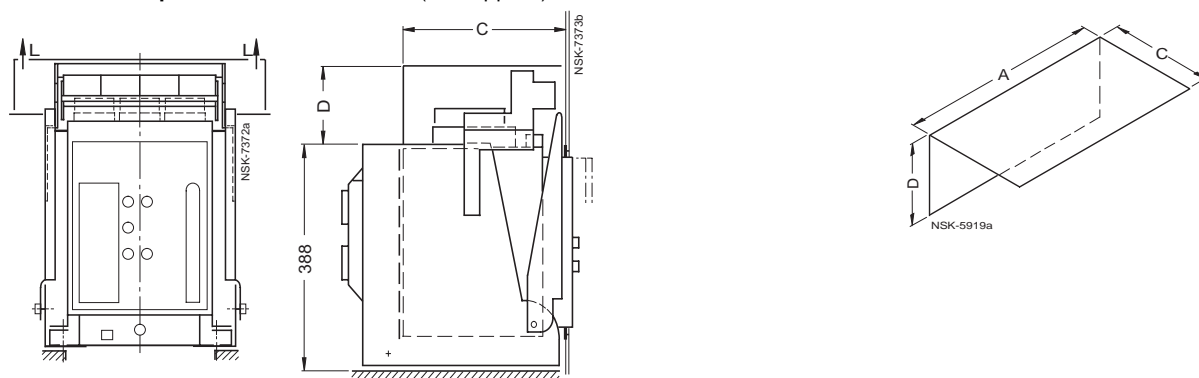
Minimum dimensions are indicated.

Ventilation openings (L) are necessary for heat dissipation. They must not be in line with direct blow out direction.

Up to 440 V AC a smaller space above the arc chute is tolerable with sizes I and III: D = 200 mm.

Withdrawable 3WN1 circuit-breakers, 3- and 4-pole

Cover for the space above the arc chute (not supplied)



Size	Number of poles	A ≙ Cubicle width	C	Safety distance D with arc chute extensions
AC 690 V				
I/1	3	490	360	132
I/2	3	550	360	132
II	3	550	360	252
III/1, III/2	3	800	360	252
IV	3	1000	410	252
I	4	550	360	132
II/1, II/2	4	800	360	252
III/1, III/2	4	1000	410	252

Minimum dimensions are indicated.

Ventilation openings (L) are necessary for heat dissipation. They must not be in line with direct blow out direction.

Up to 440 V AC a smaller space above the arc chute is tolerable with sizes II and III: D = 167 mm.