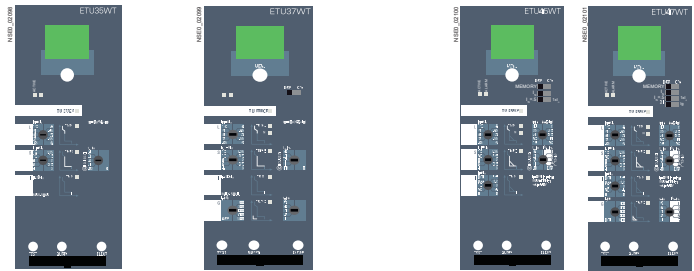


DATA SHEET

SIEMENS

3WT ACB up to 4000 A

General data



Protection functions		ETU35WT	ETU37WT	ETU45WT/ETU47WT	
Parameterization by		D	D & S	D & S	
Functional overview of the electronic trip unit system					
	L	Overload protection Function can be switched on/off Setting range $I_R = I_n \times \dots$	✓ 0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	✓ 0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1	✓ 0.4-0.45-0.5-0.55-0.6-0.65-0.7-0.8-0.9-1
		Setting range for time-lag class t_R at I^2t	10 s fixed	10 s fixed	2-3-5-5.5-8-10-14-17-21-25-30 s
		Thermal image can be switched on/off	--	--	✓
		Phase failure sensitivity	at $t_{sd} = 20$ ms (M)	at $t_{sd} = 20$ ms (M)	at $t_{sd} = 20$ ms (M)
	N	Neutral conductor protection Function can be switched on/off	--	✓	✓
		N conductor setting range $I_N = I_n \times \dots$	--	1	0.5-1
	S	Short-time delayed short-circuit protection Function can be switched on/off	✓	✓	✓
		Setting range $I_{sd} = I_n \times \dots$	1.25-1.5-2-2.5-3-4-6-8-10-12	1.25-1.5-2-2.5-3-4-6-8-10-12	1.25-1.5-2-2.5-3-4-6-8-10-12
		Setting range for delay time t_{sd}	0-M-100-200-300-400 ms	0-M-100-200-300-400 ms	M-100-200-300-400 ms
		Switchable short-time delayed short-circuit protection (I^2t -dependent function)	--	--	✓
	Setting range for delay time t_{sd} at I^2t	--	--	100-200-300-400 ms	
I	Instantaneous short-circuit protection Function can be switched on/off	✓	✓	✓	
	Setting range $I_i = I_n \times \dots$	fixed for $I_i \geq 20 \times I_n$, max. 50 kA	fixed for $I_i \geq 20 \times I_n$, max. 50 kA	1.5-2.2-3-4-6-8-10-12-0.8 $\times I_{CS}$	
	G	Ground-fault protection Tripping function can be switched on/off	--	✓ fixed mounted	✓ (only ETU47WT)
		Detection of the ground-fault current through summation current formation with internal or external neutral conductor transformer	--	✓	✓ (only ETU47WT)
		Detection of ground-fault current through external transformer	--	--	✓ (only ETU47WT)
		Setting range of the operating current I_g for release	--	OFF-100-300-600-900-1200	OFF-100-300-600-900-1200 (only ETU47WT)
		Setting range of the delay time t_g	--	100-200-300-400-500 ms	100-200-300-400-500 ms (only ETU47WT)
	Switchable ground-fault protection characteristic curve (I^2t -dependent function)	--	--	✓ (only ETU47WT)	
	Setting range for delay time t_g at I^2t	--	--	100-200-300-400-500 ms (only ETU47WT)	
LCD	LCD, with backlight	✓	✓	✓	
LED display	Electronic trip unit active	✓	✓	✓	
	Alarm	✓	✓	✓	
	ETU fault	✓	✓	✓	
	L-release	✓	✓	✓	
	S-release	✓	✓	✓	
	I-release	✓	✓	✓	
	N-release	--	✓	✓	
	G-release	--	✓	✓	

Delay time figures given in ms. ✓ Available.
M = Motor protection, corresponds to 20 ms. -- Not available.
D = Rotary coding switch.
D & S = Rotary coding and slide switch.

General data

Technical specifications			I						
Size			3WT80 4	3WT80 6	3WT80 8	3WT81 0	3WT81 2	3WT81 6	
Type			A	A	A	A	A	A	
Rated current I_n at 50 °C, at 50/60 Hz	Main conductor	A	400	630	800	1000	1250	1600	
	Neutral conductor (only on 4-pole version)	A	400	630	800	1000	1250	1600	
Rated operating voltage U_e at 50/60 Hz	AC V		up to 500						
Rated impulse withstand voltage U_{imp}	Main circuits ⁶⁾	kV	8						
	Auxiliary circuits	kV	4						
Utilization category			B						
Rated short-circuit making capacity I_{cm} (peak value)	up to 500 V AC ecoline standard	kA	121					--	
		kA	145						
Rated service short-circuit breaking capacity I_{cs} (rms value)	up to 500 V AC ecoline standard	kA	55					--	
		kA	66						
Rated ultimate short-circuit breaking capacity I_{cu} (rms value)	up to 500 V AC ecoline standard	kA	55					--	
		kA	66						
Permissible ambient temperatures	Operation	°C	-20 ... +70						
	Storage	°C	-40 ... +80						
Rated short-time withstand current I_{cw} at 50/60 Hz	0.5 s	kA	50						
	1 s	kA	35 ¹⁾ /50						
	2 s	kA	25 ¹⁾ /30						
	3 s	kA	20 ¹⁾ /25						
	4 s	kA	17 ¹⁾ /20						
Permissible load for fixed-mounted and withdrawable circuit breakers at cabinet interior temperature ²⁾³⁾	up to 50 °C	A	400	630	800	1000	1250	1600	
	at 60 °C	A	400	630	800	950	1120	1500	
	at 70 °C	A	400	600	700	800	1000	1350	
Rated rotor operating voltage U_{er}	V		2000						
Power loss at I_n with 3-phase symmetr. load (without line-side busbars and metal components ³⁾)	Fixed-mounted circuit breaker	W	25	40	60	90	120	140	
	Withdrawable circuit breaker including guide frame	W	50	80	130	205	255	310	
Service life without maintenance	mechanical	Operating cycles	8000						
	electrical ⁵⁾		5000						
with maintenance ⁴⁾	mechanical	Operating cycles	16000						
	electrical ⁵⁾		10000						
Operating frequency	1/min		1						
Minimum interval between tripping operation by electronic trip unit and next making operation of the circuit breaker (only with automatic mechanical resetting of the lockout device)	ms		80						
Service position									
Degree of protection			Circuit breaker IP20, when fitted in cabinet or frame Operator panel with door sealing frame IP40						
Main conductor minimum cross-sections	Copper bars, bare	Qty, mm ²	1 × 50 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 60 × 10	2 × 60 × 10	
	Copper bars, painted black	Qty, mm ²	1 × 40 × 10	1 × 40 × 10	1 × 50 × 10	1 × 60 × 10	2 × 40 × 10	2 × 50 × 10	
Auxiliary conductors (Cu)	Max. no. of aux. conductors × cross-section	solid and finely stranded with end sleeves	1 × 0.5 ... 2.5 mm ² ; 1 × AWG 14 2 × 1.0 mm ²						
Weights	3-pole circuit-breakers	Fixed-mounted circuit breaker approx. kg	34	34	34	34	34	36	
		Withdrawable circuit breaker approx. kg	36	36	36	36	36	38	
		Guide frame approx. kg	22	22	22	22	22	23	
	4-pole circuit-breakers	Fixed-mounted circuit breaker approx. kg	47	47	47	47	47	49	
		Withdrawable circuit breaker approx. kg	49	49	49	49	49	51	
		Guide frame approx. kg	27	27	27	27	27	28	

1) Ecoline.

2) The temperatures apply to the air surrounding the upper third of the circuit breaker.

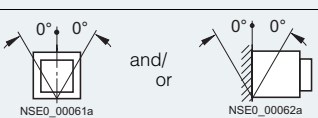
3) These values apply in the case of sinusoidal current (50/60 Hz). The heating/losses increase in the event of harmonics and higher frequencies.

4) Maintenance: replacement of the contact set and arc chute.

5) Per contact set. Disconnect. of the rated current I_n and power factor = 0.8.

6) Rated insulation voltage U_i = 1000 V AC.

General data

Size		II					
Type			3WT82 0	3WT82 5	3WT83 2	3WT84 0	
Rated current I_n at 50 °C, at 50/60 Hz ⁶⁾	Main conductor	A	2000	2500	3200	3800 (withdrawable)	4000 (fixed-mounted)
	Neutral conductor (only on 4-pole version)	A	2000	2500	3200	3800 (withdrawable)	4000 (fixed-mounted)
Rated operating voltage U_e at 50/60 Hz		AC V	up to 500				
Rated impulse withstand voltage U_{imp}	Main circuits ⁵⁾	kV	8				
	Auxiliary circuits	kV	4				
Utilization category			B				
Rated short-circuit making capacity I_{cm} (peak value)	up to 500 V AC ecoline standard	kA	--				
		kA	145				
Rated service short-circuit breaking capacity I_{cs} (rms value)	up to 500 V AC ecoline standard	kA	--				
		kA	66				
Rated ultimate short-circuit breaking capacity I_{cu} (rms value)	up to 500 V AC ecoline standard	kA	--				
		kA	66				
Permissible ambient temperatures	Operation	°C	-20 ... +70				
	Storage	°C	-40 ... +80				
Rated short-time withstand current I_{cw} at 50/60 Hz	0.5 s	kA	66				
	1 s	kA	66				
	2 s	kA	55				
	3 s	kA	45				
	4 s	kA	35				
Permissible load for fixed-mounted and withdrawable circuit breakers at cabinet interior temperature ¹⁾²⁾	up to 50 °C ⁶⁾	A	2000	2500	3200	3800 ⁷⁾	4000 ⁸⁾
	at 60 °C	A	1950	2150	2900		
	at 70 °C	A	1800	1950	2700		
Rated rotor operating voltage U_{er}		V	2000				
Power loss at I_n with 3-phase symmetr. load (without line-side busbars and metal components ²⁾)	Fixed-mounted circuit breaker	W	170	325	420	--	902
	Withdrawable circuit breaker including guide frame	W	310	535	760	1050	--
Service life without maintenance	mechanical	Operating cycles	6000				
	electrical ⁴⁾	Operating cycles	2000				
with maintenance ³⁾	mechanical	Operating cycles	12000				
	electrical ⁴⁾	Operating cycles	4000				
Operating frequency		1/min	1				
Minimum interval between tripping operation by electronic trip unit and next making operation of the circuit breaker (only with automatic mechanical resetting of the lockout device)		ms	80				
Service position							
Degree of protection			Circuit breaker IP20, when fitted in cabinet or frame Operator panel with door sealing frame IP40				
Main conductor minimum cross-sections	Copper bars, bare	Qty, mm ²	2 x 100 x 10	3 x 100 x 10	3 x 100 x 10	4 x 120 x 10	4 x 120 x 10
	Copper bars, painted black	Qty, mm ²	2 x 80 x 10	2 x 100 x 10	3 x 100 x 10	4 x 100 x 10	4 x 100 x 10
Auxiliary conductors (Cu)	Max. no. of aux. conductors x cross-section	solid and finely stranded with end sleeves	1 x 0.5 ... 2.5 mm ² ; 1 x AWG 14 2 x 1.0 mm ²				
Weights	3-pole circuit-breakers	Fixed-mounted circuit breaker approx. kg	57	57	61	--	92 ⁹⁾
		Withdrawable circuit breaker approx. kg	59	59	63	64	--
		Guide frame approx. kg	35	35	37	54 ⁹⁾	--
	4-pole circuit-breakers	Fixed-mounted circuit breaker approx. kg	70	70	74	--	106 ⁹⁾
		Withdrawable circuit breaker approx. kg	72	72	76	77	--
		Guide frame approx. kg	46	46	48	64 ⁹⁾	--

1) The temperatures apply to the air surrounding the upper third of the circuit breaker.
 2) These values apply in the case of sinusoidal current (50/60 Hz). The heating/losses increase in the event of harmonics and higher frequencies.
 3) Maintenance: replacement of the contact set and arc chute.
 4) Per contact set. Disconnect. of the rated current I_n and power factor = 0.8.

5) Rated insulation voltage $U_i = 1000$ V AC.
 6) At 3WT84 0: 40 °C.
 7) Withdrawable circuit breakers.
 8) Fixed-mounted circuit breakers.
 9) Including vertical busbars.

General data

				3WT
Operating mechanisms				
Manual operating mechanism with mechanical closing				
Closing	Max. force required to operate the hand lever		N	210
Charging stored-energy feature	Required number of strokes on the hand lever			5
Manual operating mechanism with mechanical and electrical closing				
Charging stored-energy feature				
Closing solenoid (Y1)	Operating range			see "Manual operating mechanism with mechanical closing" 0.7 ... 1.1 × U_s
	Extended operating range for battery operation ¹⁾	for 24 V DC, 110 V DC, 220 V DC		0.7 ... 1.26 × U_s
	Power input	AC/DC	VA/W	15
	Minimum command duration at U_s for the activation solenoid		ms	60
	Total closing time at U_s after start of closing command for the activation solenoid, suitable for synchronizing tasks		ms	80
	Short-circuit protection			
	Smallest permissible DIAZED fuse (operational class gL)/miniature circuit breaker with C-characteristic			1 A TDz (time-lag)/1 A
Manual/motor operating mechanism with mechanical and electrical closing				
Manual operating mechanism				
see "Manual operating mechanism with mechanical closing"				
Motor	Operating range			0.7 ... 1.1 × U_s
	Extended operating range for battery operation ¹⁾	for 24 V DC, 110 V DC, 220 V DC		0.7 ... 1.26 × U_s
	Power input to motor	AC/DC	VA/W	40
	Time required to charge the stored-energy mechanism 1 × U_s		s	20
Closing solenoid				see "Manual operating mechanism with mechanical and electrical closing"
	Short-circuit protection			
	Motor and activation solenoid for the <u>same</u> rated control supply voltages:			
For motor and closing solenoid	Smallest permissible DIAZED fuse (operational class gL)/miniature circuit breaker with C-characteristic	at $U_s = 24$ V		2 A TDz (time-lag)/2 A
		at $U_s = 110 ... 127$ V		1 A TDz (time-lag)/1 A
		at $U_s = 220 ... 250$ V		1 A TDz (time-lag)/1 A
Auxiliary releases				
Shunt release "f" (F1, F2)	Operating value	pickup		≥ 0.7 × U_s (circuit breaker is tripped)
	Operating range			0.7 ... 1.1 × U_s
	For continuous command (100 % duty ratio), locks out on momentary-contact commands			
	Extended operating range for battery operation ¹⁾	for 24 V DC, 110 V DC, 220 V DC		0.7 ... 1.26 × U_s
	Rated control supply voltage U_s	AC 50/60 Hz	V	110 ... 127, 220 ... 240
		DC	V	24, 110 ... 125, 220 ... 250
	Power input	AC/DC	VA/W	15
	Minimum command duration at U_s		ms	60
	Opening time of circuit breaker at $U_s = 100$ %	AC/DC	ms	≤ 80

¹⁾ The operating range is only permissible for the specified rated voltages and corresponds to the battery charging voltage.

General data

		3WT					
Auxiliary releases							
Undervoltage release "r" (F3) and "rc" (F8)	Operating values	pickup	$\geq 0.85 \times U_s$ (circuit breaker can be closed)				
		dropout	$(0.35 \dots 0.7) \times U_s$ (circuit breaker is tripped)				
	Operating range		$0.85 \dots 1.1 \times U_s$				
	Extended operating range in battery operation ¹⁾	for 24 V DC, 110 V DC, 220 V DC	$0.7 \dots 1.26 \times U_s$				
	Rated control supply voltage U_s	AC 50/60 Hz	V	110 ... 127, 220 ... 240, 380 ... 415			
		DC	V	24, 110 ... 125, 220 ... 250			
	Power input	AC	VA	15			
		DC	W	15			
	<u>Opening time of circuit breaker at $U_s = 0$</u>						
	<u>Version "r" (F3)</u>						
		Instantaneous	ms	≤ 100			
		With 100 ms delay	ms	≤ 300			
	<u>Version "rc" (F8)</u>						
	With delay, $t_d = 0.2 \dots 3.2$ s	s	0.2 ... 3.2				
	Reset via additional NC contact – direct switching-off	ms	≤ 100				
<u>Short-circuit protection</u>							
	Smallest permissible DIAZED fuse (operational class gL) /miniature circuit breaker with C-characteristic		1 A TDz (time-lag)1 A				
Contact position-driven auxiliary switches (S1, S2, S3, S4)							
Rated insulation voltage U_i		AC/DC V	400 V				
Rated operating voltage U_e			400 V				
Switching capacity	AC, 50/60 Hz	Rated operating voltage U_e	V	up to 24	110	220/230	380/400
		Rated operating current $I_e/AC-12$	A	10	10	10	10
		Rated operating current $I_e/AC-15$	A	6	6	6	4
	DC	Rated operating voltage U_e	V	24	110	220	
		Rated operating current $I_e/DC-12$	A	10	3.5	1	
		Rated operating current $I_e/DC-13$	A	10	1.2	0.4	
Short-circuit protection²⁾	Largest permissible DIAZED fuse (operational class gL/gG)		10 A TDz, 16 A Dz				
	Largest permissible miniature circuit breaker with C-characteristic		10 A				
Ready-to-close signaling switch (S7) and "tripped" signaling switch (S11), to DIN VDE 0630							
Switching capacity	AC, 50/60 Hz	Rated operating voltage U_e	V	110	220		
		Rated operating current I_e	A	0.14	0.1		
	DC	Rated operating voltage U_e	V	24	220		
		Rated operating current I_e	A	0.2	0.1		
Short-circuit protection²⁾	Largest permissible DIAZED fuse (operational class gL)		2 A Dz (quick)				
"Tripped" signaling switch (S11)	Signal duration after tripping		continuous, until reset				

¹⁾ The operating range is only permissible for the specified rated voltages and corresponds to the battery charging voltage.

²⁾ Without any welding of the contacts only at $I_k \leq 1$ kA in accordance with DIN VDE 0660 Part 200.

Glossary

Rated operating voltage, (U_e)

EN 60947-1; 4.3.1.1

Voltage fixed by the manufacturer. Several pertinent tests relate to its determination, as may also the utilization category. Along with the rated (operating) current, it determines the device's utilization. The highest value of rated operating voltage may in no case be greater than the value of the rate insulation voltage U_i .

Rated insulation voltage, (U_i)

EN 60947-1; 4.3.1.2

Voltage measure to which are related tests of dielectric strength and creepage distance.

Rated current, (I_n)

EN 60947-2; 4.3.2.3

Current value of particular circuit breaker that can be handled uninterruptedly. The highest current valued tripping the circuit breaker in conformity with a specifically stated tripping characteristic.

Reduced rated current, (I_r)

Specifically established, reduced value of I_n current for a regulated time-dependent (thermal) release and that the circuit breaker can handle continuously. Maximum setting is at value equal to I_n . Changing I_r shifts the release's tripping characteristic along the current axis. ($I_r = k \times I_n$ holds where $k \leq 1$)

Tripping time at a given I_r multiple, (t_r)

Time after which circuit breaker will trip, if a current flows through it that is equal to the given multiple of I_r . Changing t_r shifts the tripping characteristic along the time axis.

Actuating current of (selective) release's time-independent delay, (I_{ds})

Minimum current value causing the release's time-independent delay to actuate.

Delay of time-independent delayed release, (t_v)

If a current flows through the circuit breaker equal to at least I_{sd} but not reaching I_{rm} the circuit breaker will trip with time delay t_v . Total shut-off time is influenced by the tripping of the circuit breaker itself and is about $10 \div 20$ ms longer.

Actuating current of time-independent instantaneous, (I_{im})

Minimum current value causing the time-independent instantaneous release to actuate.

Rated operating current, (I_e)

EN 60947-1; 4.3.2.3

Rated operating current of device (switch-disconnector) is fixed by the manufacturer with consideration for the rated operating voltage, rated frequency, rated operation, utilization category and type of protective cover, if that comes into consideration.

Rated normal current, (I_u)

EN 60947-1; 4.3.2.4

Current value set by the manufacturer and which the device can handle in continuous operation, i.e. during a period longer than 8 hours (weeks, months, or longer).

Rated ultimate short-circuit breaking capacity, (I_{cu})

EN 60947-2; 2.15.1; 4.3.5.2.1

Ultimate short-circuit breaking capacity value expressed as the rms value of the alternating component of the assumed short-circuit current that the circuit breaker must be able to manage in the mode: 1x switching off of the short circuit and a following 1x make-break sequence. After testing, the circuit breaker need not be able to conduct the rated current uninterruptedly. I_{cu} is set for the rated operating voltage at the rated frequency and at the established power factor for alternating current or at the time constant for direct current. Must fulfil the condition: $I_{cu} \geq I_k$

Rated short-circuit service breaking capacity, (I_{cs})

EN 60947-2; 2.15.2; 4.3.5.2.2

Value of the operating short-circuit breaking capacity expressed as the rms value of the alternating component of the assumed short-circuit current that the circuit breaker must be able to manage in the mode: 1x switching off of the short circuit and a following 2x make-break sequence. May also be expressed as a percentage of I_{cu} . After testing, the circuit breaker must be able uninterruptedly to conduct the rated current and to switch off the overcurrent. Temperature increase of the main terminals may be greater. I_{cs} is set for the rated operating voltage at the rated frequency and at the established power factor for alternating current or at the time constant for direct current. Permitted: $I_{cs} \geq I_k$

Rated short-time withstand current, (I_{cw})

EN 60947-1; 4.3.6.1

EN 60947-2; 4.3.5.4

EN 60947-3; 4.3.6.1

Value of short-time withstand current specified by the manufacturer that the device is able to handle without damage during a designated time period (short-time delay). In case of alternating current, it is the rms value of the alternating component of the assumed short-circuit current I_p .

Characteristic curves²⁾

Every electronic trip unit type and every setting has its own characteristic. Only a selection is shown in the following. The characteristic curves each show the largest and smallest setting range of 3WT8 circuit breakers with 1000 A rated current at 500 V rated voltage with various trip units.

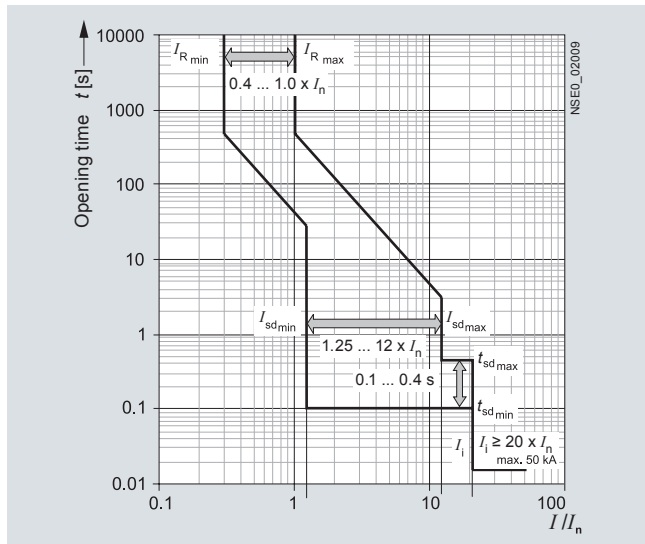
In order to obtain a complete tripping characteristic, the relevant parts of the characteristic have to be combined.

The characteristic curves show the behavior of the electronic trip unit when it is activated by a current that is already flowing before the tripping operation. If the overcurrent tripping occurs im-

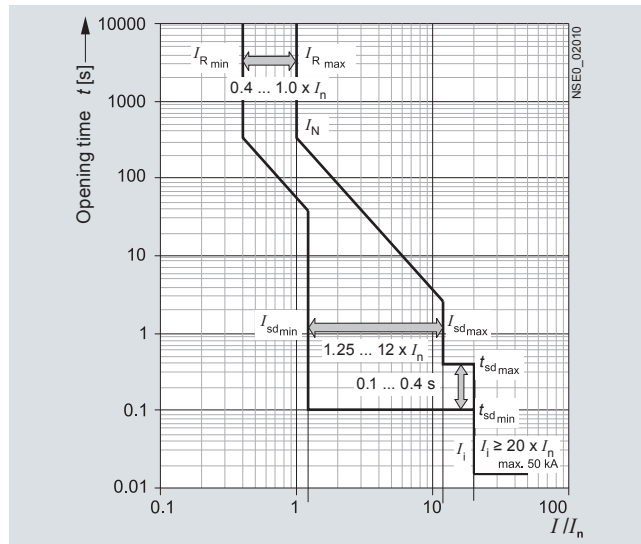
mediately after switch on and the electronic trip unit is therefore not yet enabled, the opening time is extended, depending on the level of the overcurrent by up to 15 ms. In order to determine the break-times of the circuit breakers, approximately 15 ms must be added to the opening times shown for the arcing time.

Refer to the following legend for tolerances.

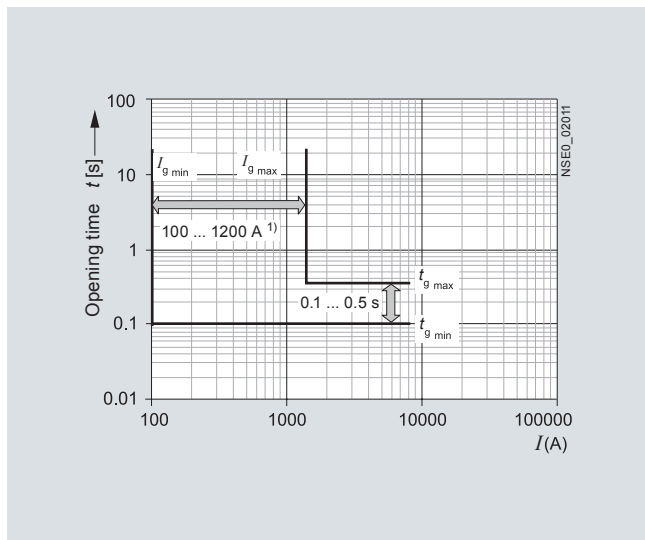
The characteristic curves shown apply to ambient temperatures at the circuit breaker between -5 and +55 °C. The trip unit can be operated at ambient temperatures of -20 to +70 °C. An extended tolerance band can apply at these temperatures.



3WT8 circuit breaker with ETU35WT electronic trip unit, LSI characteristic curve



3WT8 circuit breaker with ETU37WT electronic trip unit, LSIN characteristic curve



3WT8 circuit breaker with ETU37WT electronic trip unit, G characteristic curve³⁾

Tolerances for the set currents

- L: Tripping operations between 1.05 and 1.2 x I_R
- S: -0 %, +20 %
- I: -0 %, +20 %
- G: -0 %, +20 %

Tolerances for the tripping times

- L: -20 %, +0 % for I²t characteristic curve
- S: -0 %, +60 ms or -0 %, 10 % for characteristic curve with fixed delay time
- I: <50 ms
- G: -0 %, +60 ms or -0 %, 10 % for characteristic curve with fixed delay time

- 1) Sizes I and II: 100 ... 1200 A.
- 2) With single-pole loading in the lowest rated current range, the response times of the short-circuit release can be extended by approx. 10 % and the tripping times by approx. 15 % compared to the characteristic curve.
- 3) As a result of the activation level of 150 A (frame size I) and 200 A (frame size II) in case of a single-pole loading the minimum pick-up value of ground fault will be I_G = 300 A.

Project planning aids

Every electronic trip unit type and every setting has its own characteristic. Only a selection is shown in the following. The characteristic curves each show the largest and smallest setting range of 3WT8 circuit breakers with 1000 A rated current at 500 V rated voltage with various trip units.

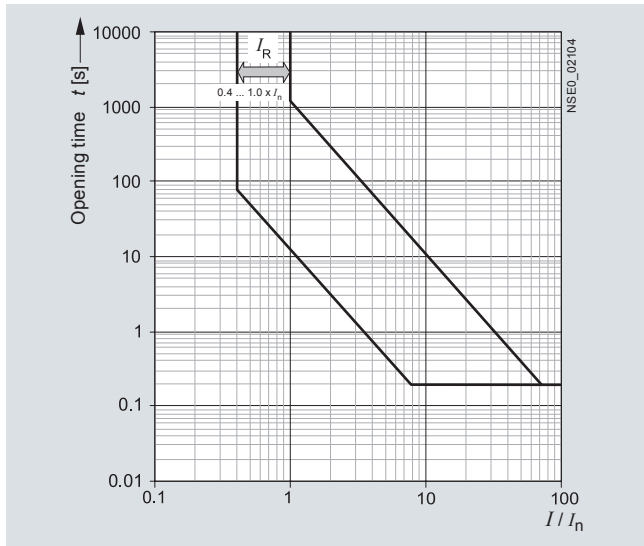
In order to obtain a complete tripping characteristic, the relevant parts of the characteristic have to be combined.

The characteristic curves show the behavior of the electronic trip unit when it is activated by a current that is already flowing before the tripping operation. If the overcurrent tripping occurs im-

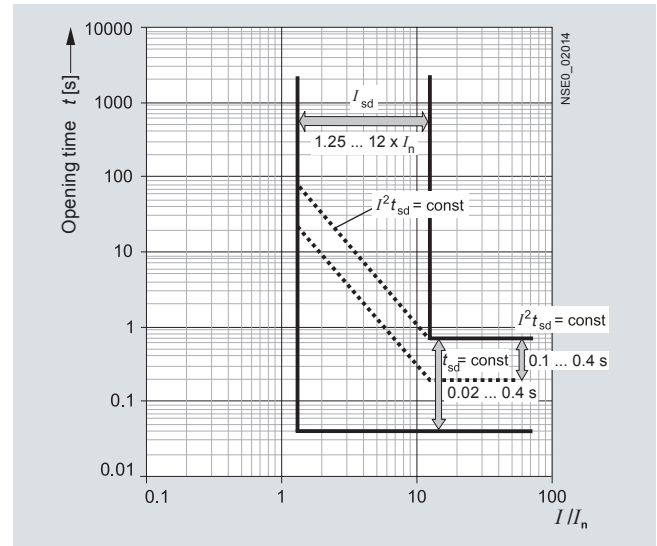
mediately after switch on and the electronic trip unit is therefore not yet enabled, the opening time is extended, depending on the level of the overcurrent by up to 15 ms. In order to determine the break-times of the circuit breakers, approximately 15 ms must be added to the opening times shown for the arcing time.

Refer to the following legend for tolerances.

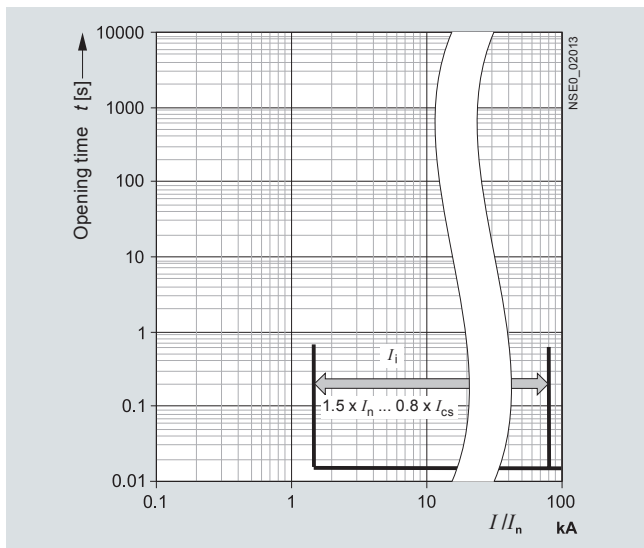
The characteristic curves shown apply to ambient temperatures at the circuit breaker between -5 and +55 °C. The trip unit can be operated at ambient temperatures of -20 to + 70 °C. An extended tolerance band can apply at these temperatures.



3WT8 circuit breaker with ETU45WT and ETU47WT electronic trip unit, L characteristic curve



3WT8 circuit breaker with ETU45WT and ETU47WT electronic trip unit, S characteristic curve



3WT8 circuit breaker with ETU45WT and ETU47WT electronic trip unit, I characteristic curve

Tolerances for the set currents

L: Tripping operations between 1.05 and 1.2 x I_R

S: -0 %, +20 %

I: -0 %, +20 %

G: -0 %, +20 %

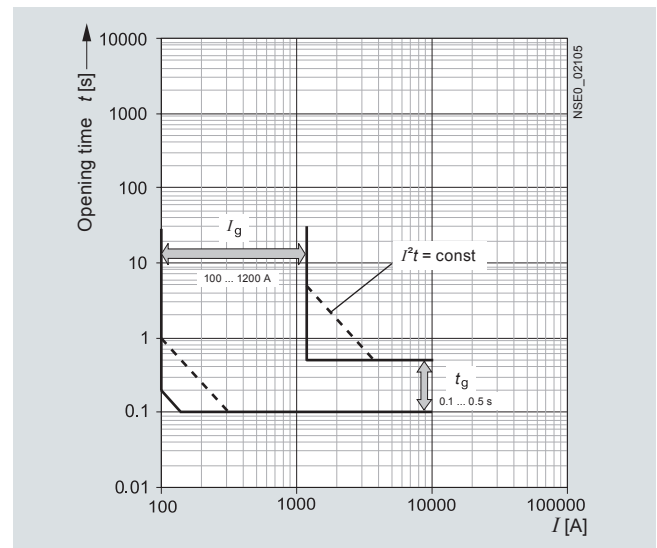
Tolerances for the tripping times

L: -20 %, +0 % for I²t characteristic curve

S: -0 %, +60 ms or -0 %, 10 % for characteristic curve with fixed delay time

I: <50 ms

G: -0 %, +60 ms or -0 %, 10 % for characteristic curve with fixed delay time



3WT8 circuit breaker with ETU47WT electronic trip unit, G characteristic curve²⁾

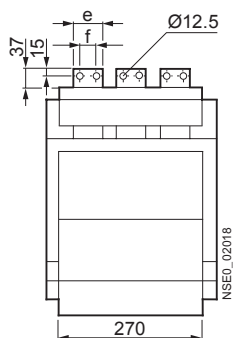
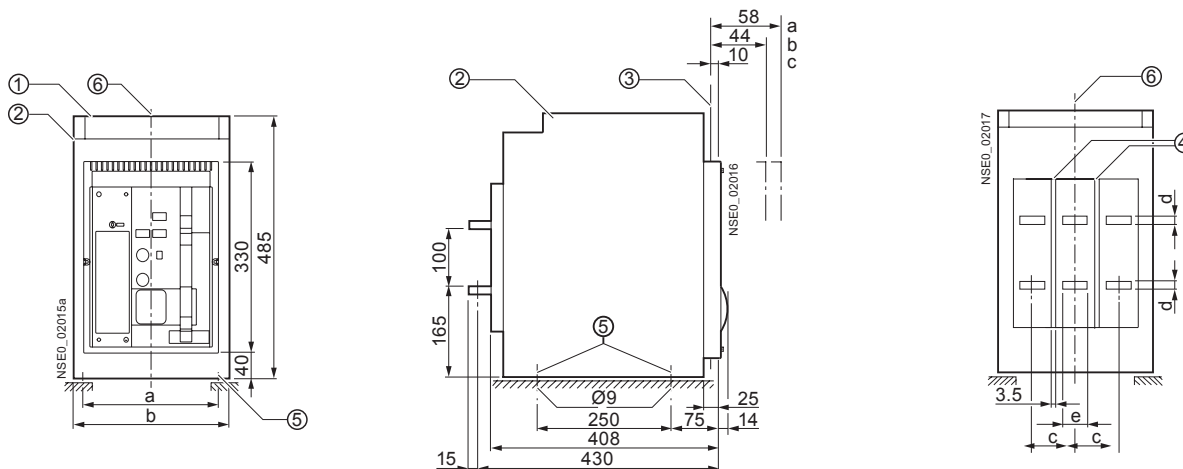
¹⁾ Sizes I and II: 100 ... 1200 A.

²⁾ As a result of the activation level of 150 A (frame size I) and 200 A (frame size II) in case of a single-pole loading the minimum pick-up value of ground fault will be I_G = 300 A.

Dimensional drawings

3WT circuit breakers, withdrawable version, 3-pole

Horizontal connection



- a Disconnected position
- b Test position
- c Connected position
- ① Auxiliary conductor plug-in system
- ② Guide frame
- ③ Switchboard door
- ④ Slots (6 mm deep) for line-side interphase barriers
- ⑤ Holes for attaching the guide frame
- ⑥ Center line of circuit breaker

Safety clearances

No additional safety clearance is required to adjacent grounded parts above the circuit breaker (on fixed-mounted circuit breakers identified with 3).

The clearance between the connection point and the support for the busbars must not exceed 250 mm.

All dimensions in mm.

Rated current A	a	b	c	d	e	f
630 up to 1250	280	320	90	8	60	30
1600	280	320	90	15	60	30
2000 up to 2500	380	420	120	15	80	40
3200	380	420	120	30	100	50

Main conductor connection

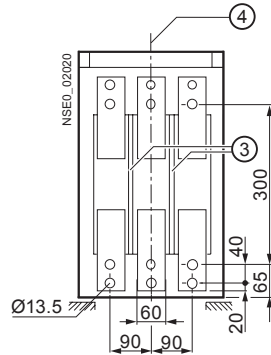
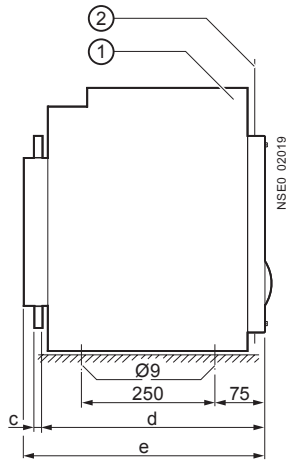
Terminal screws with strain washers (inside diameter = 12 mm to DIN 6769-Fst)	M12
Recommended tightening torque	Nm 70
Required strength of screws	8.8 to DIN 267

Up to a rated operating voltage of AC 500 V the busbars running vertically (such as in the case of front-accessible connection) do not have to be screened if the busbar system is not arranged above the circuit breaker. In contrast, live bare conductors and busbars at voltages above AC 500 V that are arranged above the circuit breaker and when power is supplied from above must be insulated against flashover by interphase barriers or by a busbar cover or by an arc chute cover (use accessory for horizontal or vertical connection only). Optional electrical equipment directly above (if no arc chute cover is used) or to the side of the circuit breaker should be protected by a cover. Also after the attachment of additional barriers or covers it must be ensured that the dissipation of heat from the circuit breaker is not impeded.

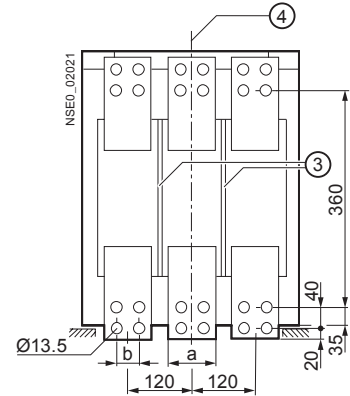
Project planning aids

3WT circuit breakers, withdrawable version, 3-pole

Front connection



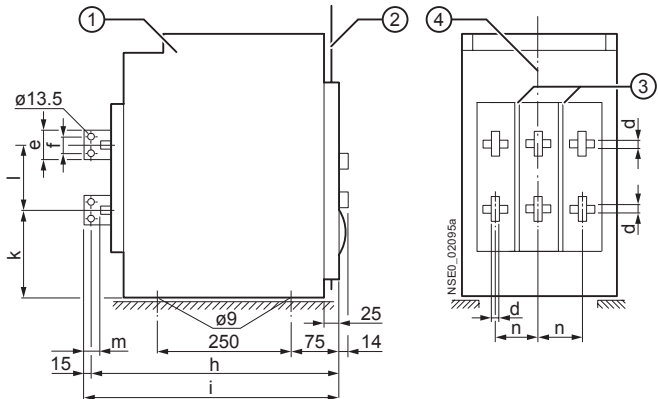
Double hole, 630 to 1600 A
Holes in bars to DIN 43673



Double hole, 2000 to 3200 A
Holes in bars to DIN 43673

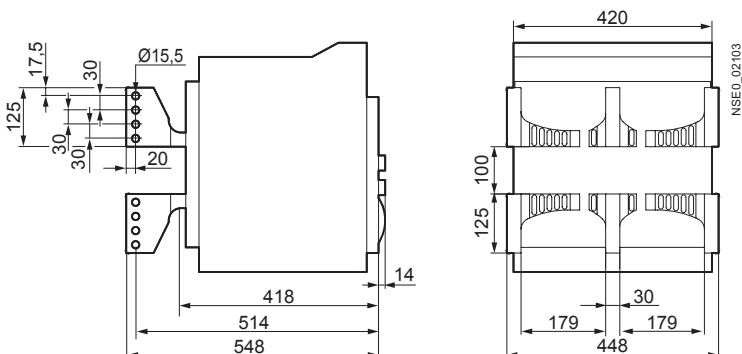
Rated current A	a	b	c	d	e
630 up to 1250	60	--	8	390	408
1600	60	--	15	390	408
2000 up to 2500	80	40	20	420	445
3200	100	50	20	420	445

Vertical connection up to 3200 A



Rated current A	d	e	f	h	i	k	l	m	n
630 to 1000	8	60	30	455	470	157.5	115	37	90
1250 to 1600	15	60	30	455	470	157.5	115	37	90
2000	15	80	40	465	480	157.5	115	37	140
2500 to 3200	30	100	50	465	480	150	130	37	140

Vertical connection 3800 A only



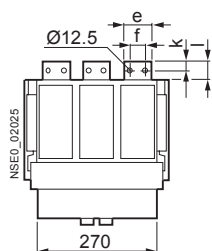
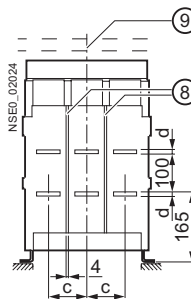
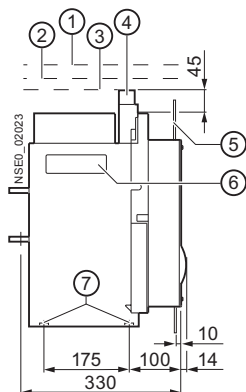
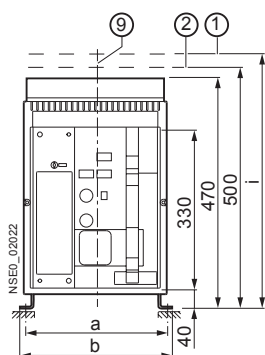
- ① Guide frame
- ② Switchboard door
- ③ Slots (6 mm deep, 3.5 mm wide) for line-side phase barriers
- ④ Center line of circuit breaker

For safety clearances see page 2/35.
All dimensions in mm.

Project planning aids

3WT fixed-mounted circuit breakers, 3-pole

Horizontal connection

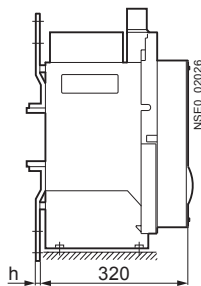


- ① Clearance for lifting out the arc chute
- ② Space for auxiliary supply connectors
- ③ Space above arc chute
- ④ Auxiliary supply connectors
- ⑤ Switchboard door
- ⑥ Recessed grip
- ⑦ M8 nut
- ⑧ Slots (4 mm deep) for line-side phase barriers
- ⑨ Center line of circuit breaker

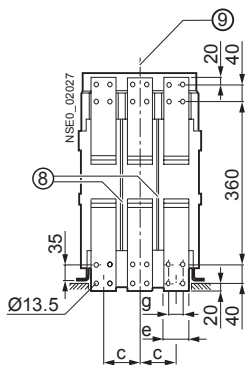
For safety clearances see page 2/35.

All dimensions in mm.

Front connection



Double hole
Holes in bars to DIN 43673

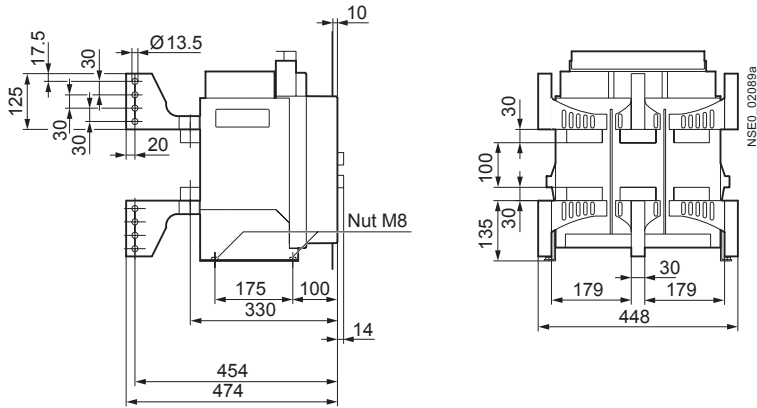


Rated current A	a	b	c	d	e	f	g	h	i	k	l
630 up to 1250	300	320	90	8	60	30	--	8	530	18	40
1600	300	320	90	15	60	30	--	20	530	18	40
2000 up to 2500	400	420	120	15	80	40	40	20	560	22	44
3200	400	420	120	30	80	40	40	20	560	22	44

Project planning aids

3WT fixed-mounted circuit breakers, 3-pole

Vertical connection 4000 A only

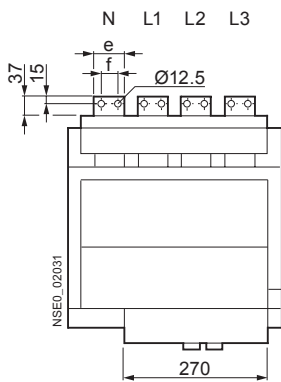
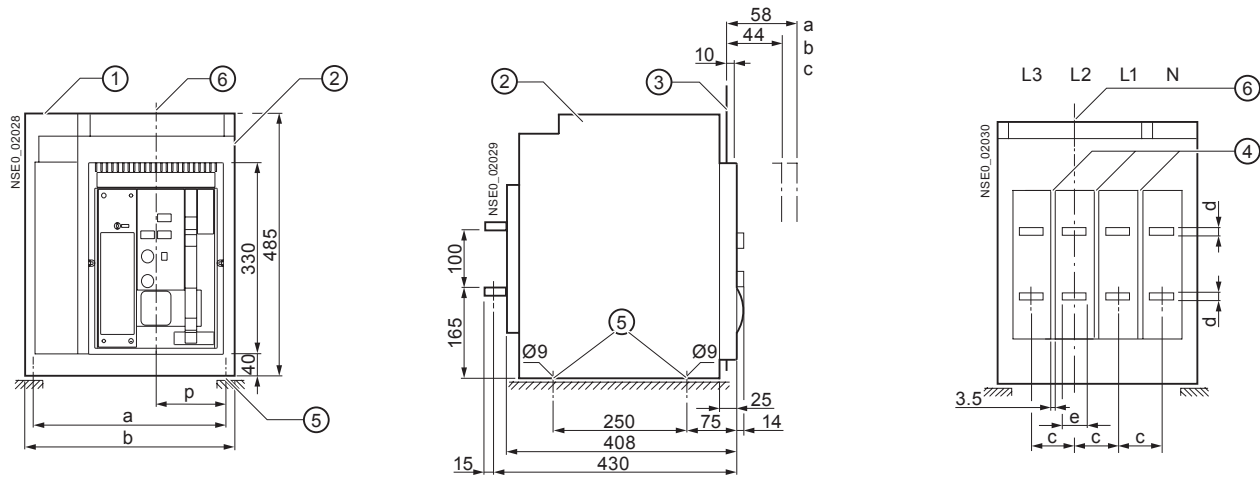


All dimensions in mm.

Project planning aids

3WT circuit breakers, withdrawable version, 4-pole

Horizontal connection



- a Disconnected position
- b Test position
- c Connected position
- ① Auxiliary conductor plug-in system
- ② Guide frame
- ③ Switchboard door
- ④ Slots (6 mm deep) for line-side phase barriers
- ⑤ Holes for attaching the guide frame
- ⑥ Center line of operator panel

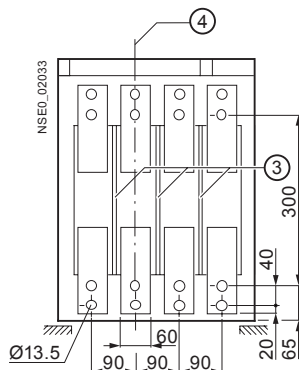
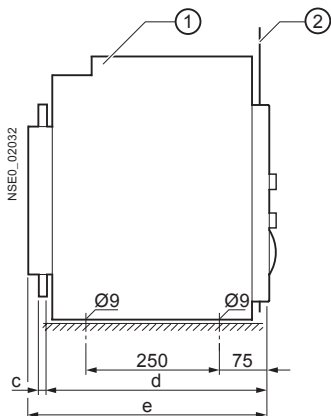
For safety clearances see page 2/35.
All dimensions in mm.

Rated current A	a	b	c	d	e	f	p
630 up to 1250	370	410	90	8	60	30	140
1600	370	410	90	15	60	30	140
2000 up to 2500	500	540	120	15	80	40	190
3200	500	540	120	30	100	50	190

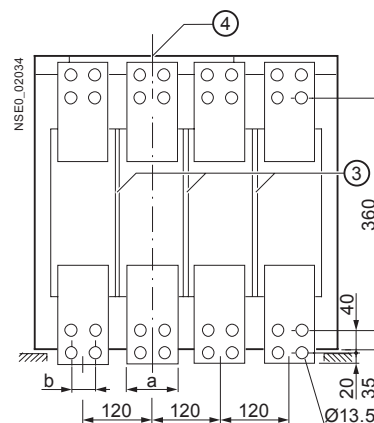
Project planning aids

3WT circuit breakers, withdrawable version, 4-pole

Front connection



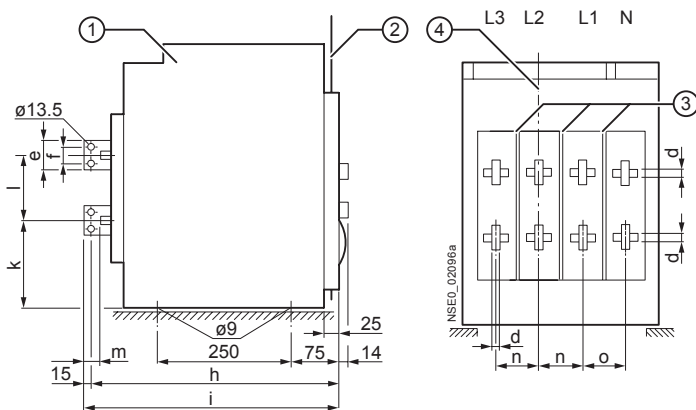
Double hole, 630 to 1600 A
Holes in bars to DIN 43673



Double hole, 2000 to 3200 A
Holes in bars to DIN 43673

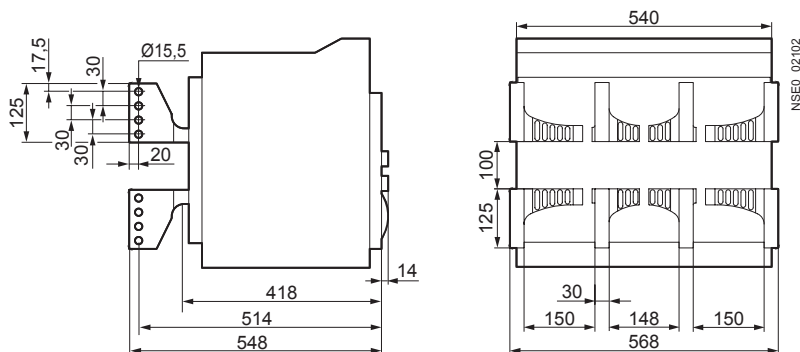
Rated current A	a	b	c	d	e
630 up to 1250	60	--	8	390	408
1600	60	--	15	390	408
2000 up to 2500	80	40	20	420	445
3200	100	50	20	420	445

Vertical connection up to 3200 A



Rated current A	d	e	f	h	i	k	l	m	n	o
630 to 1000	8	60	30	455	470	157.5	115	37	90	90
1250 to 1600	15	60	30	455	470	157.5	115	37	90	90
2000	15	80	40	465	480	157.5	115	37	140	120
2500 to 3200	30	100	50	465	480	150	130	37	140	120

Vertical connection 3800 A only



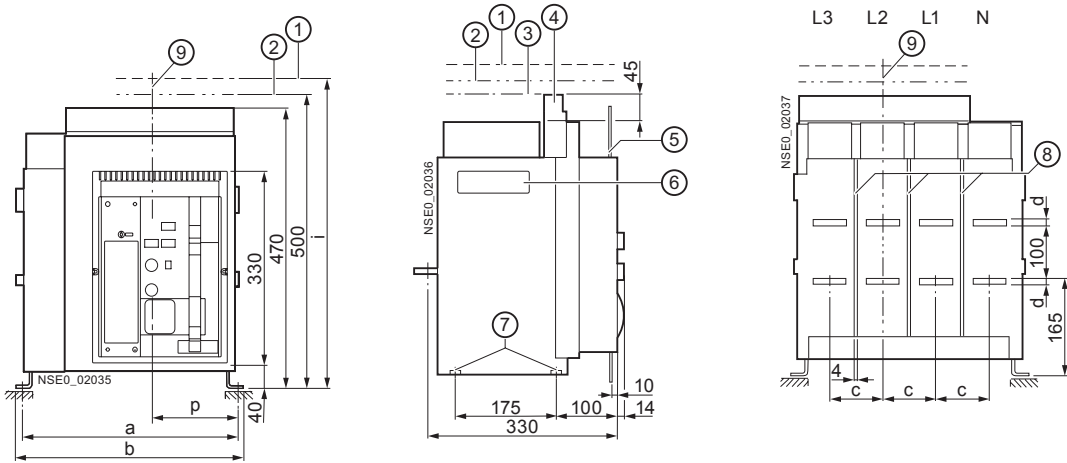
- ① Guide frame
- ② Switchboard door
- ③ Slots (6 mm deep, 3.5 mm wide) for line-side phase barriers
- ④ Center line of operator panel

For safety clearances see page 2/35.
All dimensions in mm.

Project planning aids

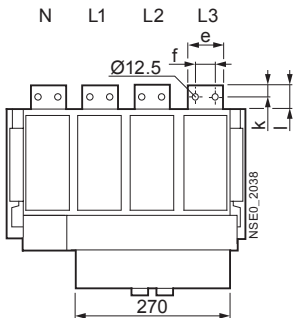
3WT fixed-mounted circuit breakers, 4-pole

Horizontal connection

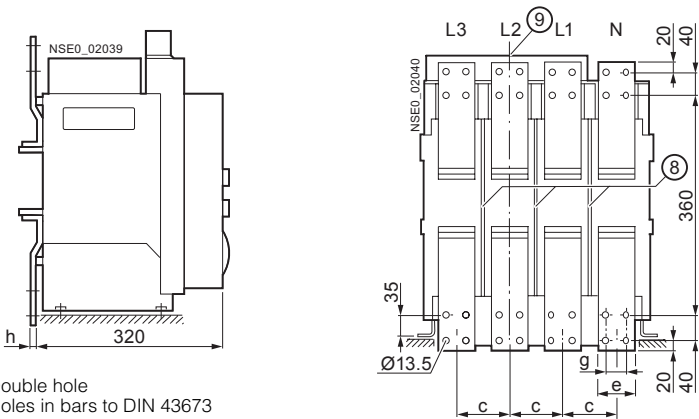


- ① Clearance for lifting out the arc chute
- ② Space for auxiliary supply connectors
- ③ Space above arc chute
- ④ Auxiliary supply connectors
- ⑤ Switchboard door
- ⑥ Recessed grip
- ⑦ Nut M 8
- ⑧ Slots (4 mm deep) for line-side phase barriers
- ⑨ Center line of operator panel

For safety clearances see page 2/35.
All dimensions in mm.



Front connection



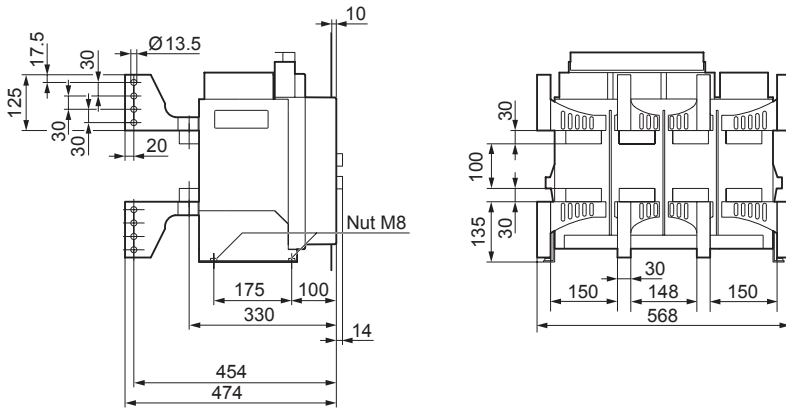
Double hole
Holes in bars to DIN 43673

Rated current A	a	b	c	d	e	f	g	h	i	k	l	p
630 up to 1250	390	410	90	8	60	30	--	8	530	18	40	150
1600	390	410	90	15	60	30	--	15	530	18	40	150
2000 up to 2500	520	540	120	15	80	40	40	20	560	22	44	200
3200	520	540	120	30	80	40	40	20	560	22	44	200

Project planning aids

3WT fixed-mounted circuit breakers, 4-pole

Vertical connection 4000 A only



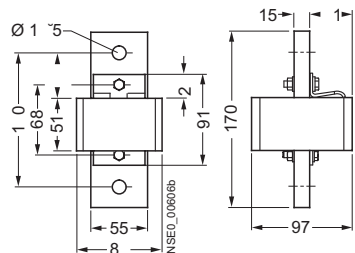
All dimensions in mm.

Project planning aids

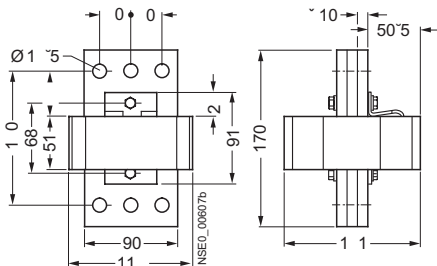
Current transformers for overload protection in the neutral conductor

External transformers for neutral conductor with copper busbars

Size I, 3WL9 111-0AA31-0AA0

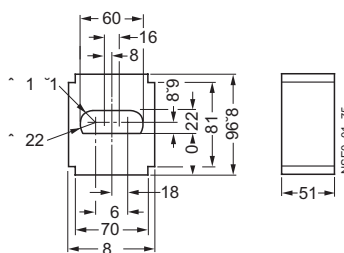


Size II, 3WL9 111-0AA32-0AA0

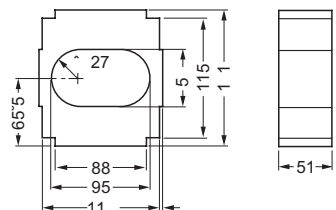


External transformers for neutral conductor without copper busbars

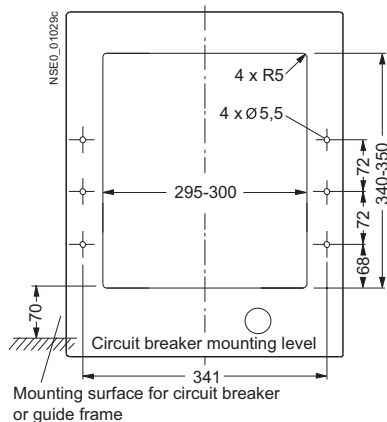
Size I, 3WL9 111-0AA21-0AA0



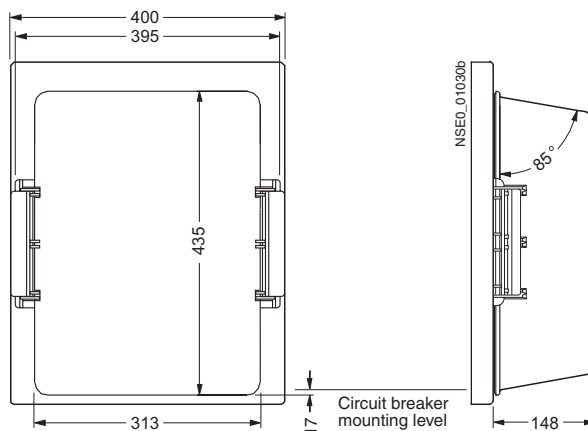
Size II, 3WL9 111-0AA22-0AA0



Door cut-out for operator panel using protective cover IP55



Protective cover, IP55



All dimensions in mm.