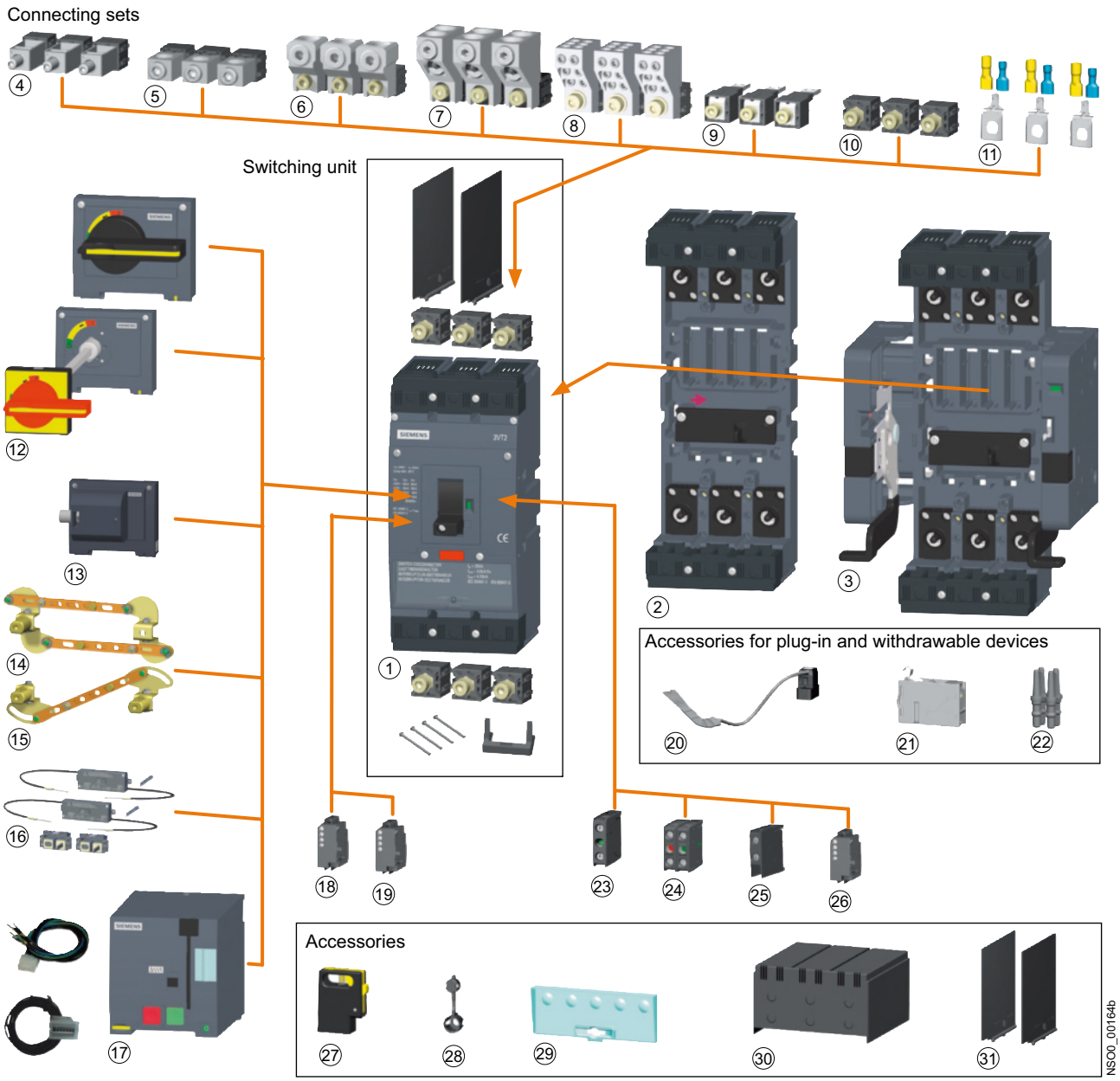
3VT2 Molded Case Circuit Breakers up to 250 A

Overview



① Molded case circuit breaker
② Plug-in device
③ Withdrawable device
④ Box terminals
⑤ Circular conductor terminal
⑥ Circular conductor terminal
⑦ Multiple feed-in terminal
⑧ Multiple feed-in terminal
⑨ Rear connection
⑩ Front connection
⑪ Auxiliary conductor terminal
⑫ Rotary operating mechanism
⑬ Lateral rotary operating mechanism
⑭ Mechanical parallel switching
⑮ Mechanical interlocking
⑯ Mechanical interlocking by Bowden wire
⑰ Motor operating mechanism
⑱ Shunt trip unit
⑲ Undervoltage trip unit
⑳ Connecting cable
㉑ Position signalling
㉒ Coding set
㉓ Auxiliary switch NC/NO
㉔ Auxiliary switch NC/NO
㉕ Auxiliary switch, change-over contact
㉖ Auxiliary switch, early, leading contact
㉗ Lockingtype lever
㉘ Sealing inset
㉙ Additional cover for overcurrent releases
㉚ Terminal cover
㉛ Insulating barriers

Overview

Switching unit

The switching unit includes:
- Two connecting sets (front connection terminals), 3VT9200-4TA30 – for connecting busbars or cable lugs
- Insulating barriers
- A set of 4 installation bolts (M4 x 35)

The switching unit must be fitted with a trip unit (circuit breaker) or a switch disconnector unit (switch disconnector).

For maximum circuit breaker/switch disconnector loads in accordance with the ambient temperature, see page 2/11.

For recommended cross-sections of cables, busbars and flexibars for fixed-mounted, plug-in and withdrawable versions, see page 2/11.

Circuit breaker

The circuit breakers consist of a 3- or 4-pole switching unit and a trip unit which is available with a choice of different characteristics.

Switch disconnector

The switch disconnector consists of a switching unit and a switch disconnector unit.

Selection and ordering data

	Rated current I_n	Breaking capacity I_{cu} (AC 415 V)	DT	Article No.	PS*/ P. unit	Weight per PU approx.
	A	kA				kg
Switching units						
	***3-pole version***					
	250	36		**3VT2725-2AA36-0AA0**	1 unit	3.314
	250	65		**3VT2725-3AA36-0AA0**	1 unit	3.330
	4-pole version, unprotected N					
	250	36		**3VT2725-2AA46-0AA0**	1 unit	4.100
	250	65		**3VT2725-3AA46-0AA0**	1 unit	4.100
	4-pole version, protected N					
	250	36		**3VT2725-2AA56-0AA0**	1 unit	4.100
	250	65		**3VT2725-3AA56-0AA0**	1 unit	4.100

* You can order this quantity or a multiple thereof.

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Selection and ordering data for accessories

	Rated current I_n	Current setting of the inverse- time delayed overcur- rent releases"*L*" I_R	S function short- circuit protec- tion (short-time delayed) "S" I_{sd}	Operating cur- rent of the ins- tantaneous short-circuit releases"*i*" I_i DT	Article No.	PS*/ P. unit	Weight per PU approx.
	A	A					kg
Electronic trip units (ETU)							
	***Line protection, ETU LP, LI function***[1]						
	with fixed overload trip unit, fixed short-circuit trip unit						
	160	160		640 A	**3VT9216-6AB00**	1 unit	0.267
	200	200		800 A	**3VT9220-6AB00**	1 unit	0.283
	250	250		1000 A	**3VT9225-6AB00**	1 unit	0.283
	***Distribution protection, ETU DP, LI function***[1]						
	with adjustable thermal overload trip unit, adjustable short-circuit trip unit						
	100	40 ... 100		4 X I_R / 8 X I_R	**3VT9210-6AC00**	1 unit	0.283
	160	63 ... 160		4 X I_R / 8 X I_R	**3VT9216-6AC00**	1 unit	0.284
	250	100 ... 250		4 X I_R / 8 X I_R	**3VT9225-6AC00**	1 unit	0.235
	***Distribution protection with N-pole protection, ETU DPN, LIN function***[2]						
	with adjustable thermal overload trip unit, adjustable short-circuit trip unit						
	100	40 ... 100		2 ... 9 x I_R	**3VT9210-6BC00**	1 unit	0.327
	160	63 ... 160		2 ... 9 x I_R	**3VT9216-6BC00**	1 unit	0.327
	250	100 ... 250		2 ... 9 x I_R	**3VT9225-6BC00**	1 unit	0.327
	***Motor/generator protection, ETU MP, LI function***[1]						
	with adjustable thermal overload trip unit, adjustable short-circuit trip unit						
	100	40 ... 100		125 ... 1500 A	**3VT9210-6AP00**	1 unit	0.285
	160	63 ... 160		200 ... 2400 A	**3VT9216-6AP00**	1 unit	0.284
	250	100 ... 250		350 ... 2500 A	**3VT9225-6AP00**	1 unit	0.273
	***Motor/generator protection, ETU MPS, LSI function***[1]						
	with adjustable thermal overload trip unit, fixed short-circuit trip unit						
	100	40 ... 100	3 ... 9 x I_R	2500 A	**3VT9210-6AS00**	1 unit	0.230
	160	63 ... 160	3 ... 9 x I_R	2500 A	**3VT9216-6AS00**	1 unit	0.230
	250	100 ... 250	3 ... 9 x I_R	2500 A	**3VT9225-6AS00**	1 unit	0.230
Switch disconnector unit							
	250				**3VT9225-6DT00**	1 unit	0.219
	Switch disconnector unit[1]						

For a description of trip units, see page 2/16.

1) Only for switching units 3VT2725-.AA36-0AA0 or 3VT2725-.AA46-0AA0

2) Only for switching unit 3VT2725-.AA56-0AA0

* You can order this quantity or a multiple thereof.

Overview

The circuit breakers can be equipped with

- auxiliary switches,
- shunt trip units,
- undervoltage trip units.

Shunt trip units can trip the circuit breaker from a remote location. A control supply voltage is required.

An undervoltage trip unit trips the circuit breaker automatically when the circuit voltage drops below 70 % U_e. The undervoltage trip unit protects motors and other equipment in case of undervoltage. A control supply voltage is required.

Selection and ordering data

	Rated control supply voltage U_s	DT	Article No.	PS*/ P. unit	Weight per PU approx.
	AC 50/60 Hz/DC				kg
Auxiliary switches					
	**with single NO contacts**				
	AC/DC 60 ... 500 V		**3VT9300-2AC10**	1 unit	0.035
	AC/DC 5 ... 60 V		**3VT9300-2AC20**	1 unit	0.036
	**with single NC contacts**				
	AC/DC 60 ... 500 V		**3VT9300-2AD10**	1 unit	0.013
	AC/DC 5 ... 60 V		**3VT9300-2AD20**	1 unit	0.013
	**with double contacts (2 x NC)**				
	AC/DC 60 ... 500 V		**3VT9300-2AE10**	1 unit	0.038
	AC/DC 5 ... 60 V		**3VT9300-2AE20**	1 unit	0.038
	with double contacts (NO and NC)				
	AC/DC 60 ... 500 V		**3VT9300-2AF10**	1 unit	0.038
	AC/DC 5 ... 60 V		**3VT9300-2AF20**	1 unit	0.038
	with double contacts (2 x NO)				
	AC/DC 60 ... 500 V		**3VT9300-2AG10**	1 unit	0.038
	AC/DC 5 ... 60 V		**3VT9300-2AG20**	1 unit	0.038
	**with change-over contacts**				
	AC/DC 60 ... 250 V		**3VT9300-2AH10**	1 unit	0.013
	AC/DC 5 ... 60 V		**3VT9300-2AH20**	1 unit	0.013
	**with leading contacts (early)**				
	AC 250 V		**3VT9300-2AJ00**	1 unit	0.040
Shunt trip units					
	DC 12 V NEW		**3VT9300-1SB00**	1 unit	0.149
	AC/DC 24, 40, 48 V		**3VT9300-1SC00**	1 unit	0.140
	AC/DC 110 V		**3VT9300-1SD00**	1 unit	0.140
	AC 230, 400, 500 V/DC 220 V		**3VT9300-1SE00**	1 unit	0.154
Undervoltage trip units					
	AC/DC 24, 40, 48 V		**3VT9300-1UC00**	1 unit	0.151
	AC/DC 110 V		**3VT9300-1UD00**	1 unit	0.110
	AC 230, 400, 500 V/DC 220 V		**3VT9300-1UE00**	1 unit	0.110
	with leading contact (early)[1)]				
	AC/DC 24, 40, 48 V		**3VT9300-1UC10**	1 unit	0.120
	AC/DC 110 V		**3VT9300-1UD10**	1 unit	0.140
	AC 230, 400, 500 V/DC 220 V		**3VT9300-1UE10**	1 unit	0.120

1) Not to be used with 3VT9200-3M..0 motorized operating mechanism.

Manual/motorized operating mechanisms

Overview

Rotary operating mechanisms

The rotary operating mechanism must be combined from the following components:

- For rotary operation of the circuit breaker:
  - 3VT9200-3HA.0 or 3VT9200-3HB.0 for frontside operation
  - 3VT9300-3HE10 or 3VT9300-3HE20 black knob or
  - 3VT9300-3HF20 red knob
- For operation through the switchgear cabinet door:
  - 3VT9200-3HA.0 or 3VT9200-3HB.0 for frontside operation
  - 3VT9300-3HJ..extension shaft
  - 3VT9300-3HG/HH.. coupling driver for door-coupling operating mechanism
  - 3VT9300-3HE/HF.. knob
- For operation through side wall of cabinet:
  - 3VT9200-3HC10 for left side operation OR
  - 3VT9200-3HD10 for right side operation
  - 3VT9300-3HJ..extension shaft
  - 3VT9300-3HG/HH.. coupling driver for door-coupling operating mechanism
  - 3VT9300-3HE/HF.. knob

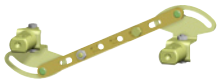
Mechanical interlocking and parallel switching

- Mechanical interlocking for fixed-mounted version must be combined from the following parts:
  - 2 x 3VT9200-3HA/HB.. rotary operating mechanism
  - 2 x 3VT9200-3HE/HF.. knob or
  - 1 x 3VT9200-3HE/HF.. knob for parallel switching
- Mechanical interlocking by Bowden wire is intended for fixed-mounted, plug-in and withdrawable versions

Selection and ordering data

	Version	Color	DT	Article No.	PS*/ P. unit	Weight per PU approx. kg
Rotary operating mechanisms						
	• not lockable	gray		**3VT9200-3HA10**	1 unit	0.223
	• lockable with padlock	gray		**3VT9200-3HA20**	1 unit	0.223
	• lockable with padlock	yellow label		**3VT9200-3HB20**	1 unit	0.223
	• for lateral operation, • mounted on the left side, • not lockable	gray		**3VT9200-3HC10**	1 unit	0.700
	• for lateral operation, • mounted on the right side, • not lockable	gray		**3VT9200-3HD10**	1 unit	0.700
	Knobs for rotary operating mechanism					
	• not lockable	black		**3VT9300-3HE10**	1 unit	0.075
	• lockable with padlock	black		**3VT9300-3HE20**	1 unit	0.075
	• lockable with padlock	red		**3VT9300-3HF20**	1 unit	0.075
	Coupling driver for door-coupling operating mechanism					
	To be used with the 3VT9300-3HE10 or 3VT9300-3HE20 black knob					
	• degree of protection IP40	black		**3VT9300-3HG10**	1 unit	0.146
	• degree of protection IP40 (switchboard door opening with the circuit breaker switched on)	black NEW		**3VT9300-3HG30**	1 unit	0.211
	• degree of protection IP66	black		**3VT9300-3HG20**	1 unit	0.146
	Additionally requires 3VT9300-3HF20 red knob					
	• degree of protection IP40	yellow		**3VT9300-3HH10**	1 unit	0.140
	• degree of protection IP40 (switchboard door opening with the circuit breaker switched on)	yellow NEW		**3VT9300-3HH30**	1 unit	0.209
	• degree of protection IP66	yellow		**3VT9300-3HH20**	1 unit	0.200
	**Extension shaft,** length 365 mm, may be shortened			**3VT9300-3HJ10**	1 unit	0.205
	**Extension shaft, telescopic,** length 245 ... 410 mm			**3VT9300-3HJ20**	1 unit	0.255

* You can order this quantity or a multiple thereof.

	Version	DT	Article No.	PS*/ P. unit	Weight per PU approx. kg
	Mechanical interlocking				
	**Mechanical interlocking** for fixed-mounted version only The mechanical interlocking additionally requires the following parts: • 2 x 3VT9200-3HA../HB.. rotary operating mechanisms, • 2 x 3VT9300-3HE../HF.. knobs		**3VT9300-8LA00**	1 unit	0.136
	**Mechanical interlocking for parallel switching** for fixed-mounted version only The mechanical interlocking additionally requires the following parts: • 2 x 3VT9200-3HA../HB.. rotary operating mechanisms, • 1 x 3VT9300-3HE../HF.. knobs		**3VT9300-8LB00**	1 unit	0.162
	**Mechanical interlocking** by Bowden wires				
	• for two 3VT2 circuit breakers		**3VT9200-8LC10**	1 unit	0.393
	• for one 3VT2 and one 3VT3 circuit breaker		**3VT9300-8LC20**	1 unit	0.393
	Motorized operating mechanism with storage spring				
	**Degree of protection IP00, with locking device for 3 padlocks**				
	AC/DC 24 V		**3VT9200-3MJ00**	1 unit	1.529
	AC/DC 48 V		**3VT9200-3ML00**	1 unit	1.529
	AC/DC 110 V		**3VT9200-3MN00**	1 unit	1.529
	AC 230 V/DC 220 V		**3VT9200-3MQ00**	1 unit	1.564
	Motorized operating mechanism with operations counter				
	AC/DC 24 V		**3VT9200-3MJ10**	1 unit	1.546
	AC/DC 48 V		**3VT9200-3ML10**	1 unit	1.546
	AC/DC 110 V		**3VT9200-3MN10**	1 unit	1.546
	AC 230 V/DC 220 V		**3VT9200-3MQ10**	1 unit	1.546
	Accessories for motorized operating mechanism				
	**Operations counter with cable,** length 110 cm		**3VT9300-3MF10**	1 unit	0.003
	**Extension cable** for motorized operating mechanism, 12 wires, length 60 cm		**3VT9300-3MF00**	1 unit	0.060

* You can order this quantity or a multiple thereof.

Mounting accessories

Overview

Plug-in version base

- The plug-in base includes:
  - Complete accessories for assembling circuit breakers/ switch disconnectors in plug-in version.
  - A set of four installation bolts (M4 x 40) for fixing the switching unit to the plug-in base.

3VT9200-4TA30 connecting sets are intended for connecting the plug-in base with busbars or cable lugs. These connecting sets are included in the scope of supply of the 3-pole 3VT2725-.AA36-0AA0 or 4-pole 3VT2725-.AA46-0AA0 switching units.

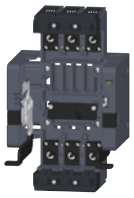
Other connecting sets are also available.

Withdrawable version base

In the withdrawable version base the circuit breaker is fixed by side racks, therefore screws are not necessary. Changing of circuit breaker is faster as compared to plug-in version.

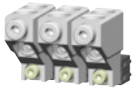
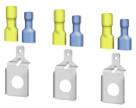
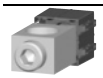
- The withdrawable version base includes complete accessories for assembling circuit breakers/switch disconnectors in withdrawable version.
- The circuit breaker located inside the withdrawable version base can be moved between an operating position (ON-OFF) and a checking position (withdrawn).

Selection and ordering data

	Version	DT	Article No.	PS*/ P. unit	Weight per PU approx. kg
Plug-in base					
	**3-pole version**		**3VT9200-4PA30**	1 unit	1.766
	4-pole version		**3VT9200-4PA40**	1 unit	2.100
Withdrawable version base					
	same as plug-in base, but with additional side panels and racks				
	**3-pole version**		**3VT9200-4WA30**	1 unit	3.497
	4-pole version		**3VT9200-4WA40**	1 unit	3.200

* You can order this quantity or a multiple thereof.

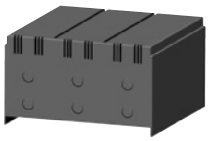
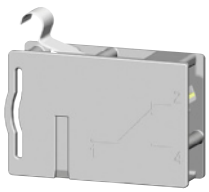
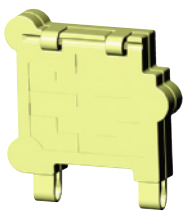
Selection and ordering data

	Version	Conductor cross-section *S*	Type of connection	DT	Article No.	PS*/ P. unit	Weight per PU approx.
		mm²					kg
Terminals for fixed-mounted circuit breakers							
	Connecting sets for 3-pole version						
	**Box terminals** 1 set = 3 units	16 ... 150	Cu cables, flexibars		**3VT9200-4TC30**	1 unit	0.240
	**Terminals for circular conductors** 1 set = 3 units	25 ... 150	Cu/Al cables		**3VT9215-4TD30**	1 unit	0.200
		150 ... 240	Cu/Al cables		**3VT9224-4TD30**	1 unit	0.339
	**Terminals for circular conductors** for enhancing termination point protection to IP20 use the 3VT9200-8CB30 terminal cover						
	1 set = 3 units	2 x 25 ... 150	Cu/Al cables		**3VT9215-4TF30**	1 unit	0.520
		2 x 150 ... 240	Cu/Al cables		**3VT9224-4TF30**	1 unit	0.630
	**Terminals for circular conductors,** for 6 cables 1 set = 3 units	6 x 6 ... 35	Cu/Al cables		**3VT9203-4TF30**	1 unit	0.300
	**Terminals for rear connection** 1 set = 3 units		Cu/Al busbars cable lugs		**3VT9200-4RC30**	1 unit	0.250
	**Terminals for front connection** 1 set = 3 units Included in every supply of switching units		Cu/Al busbars, cable lugs, flexibars		**3VT9200-4TA30**	1 unit	0.120
	**Auxiliary conductor terminals**	1.5 ... 2.5; 4 ... 6	Cu flexible conductors		**3VT9200-4TN30**	1 unit	0.017
	**Front connection bars** increases pole spacing 1 set = 3 units	--	Cu/Al busbars cable lugs, flexibars		**3VT9200-4ED30**	1 unit	0.303
	increases pole spacing 1 set = 3 units	--	Cu/Al busbars cable lugs, flexibars		**3VT9200-4EE30**	1 unit	0.447
	Single terminals for 3- or 4-pole versions						
	**Box terminal** 1 set = 1 unit	16 ... 150	Cu cables, flexibars		**3VT9200-4TC00**	1 unit	0.320
	**Terminal for circular conductors** 1 set = 1 unit	25 ... 150	Cu/Al cables		**3VT9215-4TD00**	1 unit	0.280
	1 set = 1 unit	150 ... 240	Cu/Al cables		**3VT9224-4TD00**	1 unit	0.430
	1 set = 1 unit	2 x 25 ... 150	Cu/Al cables		**3VT9215-4TF00**	1 unit	0.680
	1 set = 1 unit	2 x 150 ... 240	Cu/Al cables		**3VT9224-4TF00**	1 unit	0.830
	**Terminals for circular conductors, for 6 cables** 1 set = 1 unit	6 x 6 ... 35	Cu/Al cables		**3VT9203-4TF00**	1 unit	0.100
	**Terminal for rear connection** 1 set = 1 unit		Cu/Al busbars cable lugs		**3VT9200-4RC00**	1 unit	0.320

* You can order this quantity or a multiple thereof.

Further accessories

Selection and ordering data

	Version	DT	Article No.	PS*/ P. unit	Weight per PU approx. kg
	**Insulating barriers** Included in the scope of supply of the switching unit; in case the circuit breaker/switch disconnector is fed-in from below (power supply connected to terminals 2, 4, 6), it is necessary in most cases to install these barriers also on the bottom side				
	• set of two pieces, for 3-pole version		**3VT9300-8CE30**	1 unit	0.090
	• one piece, additionally needed for 4-pole version		**3VT9300-8CE00**	1 unit	0.040
	**Terminal cover, degree of protection IP20** Increases degree of protection of the connection point to IP20 when using 3VT9224-4TD30, 3VT9215-4TF30, 3VT9224-4TF30 or 3VT9203-4TF30 block type terminals, intended for fixed-mounted, plug-in and withdrawable versions.				
	• 3-pole version		**3VT9200-8CB30**	1 unit	0.140
	• 4-pole version		**3VT9200-8CB40**	1 unit	0.081
	**Locking device for knob** Enables locking the circuit breaker in "switched off manually" position. For locking the device, you can use up to three padlocks with a shank diameter of max. 6 mm		**3VT9200-3HL00**	1 unit	0.013
	**Bolt sealing inset** Provides sealing for: • trip unit • accessory compartment cover • terminal cover • rotary operating mechanism • motorized operating mechanism		**3VT9200-8BN00**	1 unit	0.001
	**Additional cover for trip units** Provides protection for trip units		**3VT9200-8BL00**	1 unit	0.080
	**Connecting cable** For connecting the circuit breaker/switch disconnector accessories in withdrawable version (can also be used for plug-in and fixed-mounted version)		**3VT9300-4PL00**	1 unit	0.167
	**Position signalling switch** For indicating the position of the circuit breaker located in the plug-in base or withdrawable version base		**3VT9300-4WL00**	1 unit	0.020
	**Coding set** Prevents insertion of wrong switching unit into the plug-in base or withdrawable version base		**3VT9200-4WN00**	1 unit	0.002
	**Pushbutton cover** For motorized operating mechanism		**3VT9300-3MF20**	1 unit	0.054

* You can order this quantity or a multiple thereof.

Design

Installation and connection

Main circuit

- The main circuit is connected with Cu or Al busbars, or with cables and cable lugs.
- Connecting sets are available for additional connecting options (see page 2/9).
- Generally, conductors from the power supply are connected to input terminals 1, 3. 5 and conductors from the load to terminals 2, 4, 6. But it is possible to exchange this connection (exchanging input and output terminals without limiting rated short-circuit ultimate breaking capacity I_{cu}).
- In case of feed-in from below, the circuit breakers/switch disconnectors must be fitted with 3VT9300-8CE30 insulating barriers also next to and between terminals 2, 4, 6.
- We recommend painting the connecting busbars with different colors.
- Input and output connectors/busbars must be mechanically reinforced in order to avoid transferring electrodynamic forces to the circuit breaker during short circuiting.
- The power circuit must be connected in such a way that the deionizing space of the circuit breaker/switch disconnector is not obstructed (see page 2/44).

Auxiliary circuits

- Switches, shunt trip units or undervoltage trip units are connected using flexible 0.5 ... 1 mm^2 Cu conductors.
- Motorized operating mechanism and auxiliary circuits of the plug-in base or withdrawable version base are connected with a connector.

Recommended cross-sections of cables, busbars and flexibars for fixed-mounted, plug-in and withdrawable versions

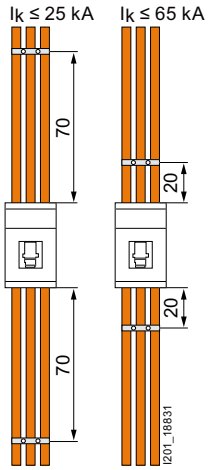
Rated current I_n	Permissible cross-section S		Busbars W x H	
	Cu	Al	Cu	Al
A	mm^2	mm^2	mm	mm
40	10	16		
50	10	16		
63	16	25		
80	25	35		
100	35	50	20 x 2	25 x 2
125	50	70	25 x 2	25 x 3
160	70	95	25 x 3	25 x 4
200	95	120	25 x 4	25 x 5
250	120	150	25 x 5	25 x 6

Maximum circuit breaker/switch disconnector loads in accordance with the ambient temperature

3VT2 circuit breaker/switch disconnector connection to pole by 1 x 120 mm^2 Cu cable

-15 °C...50 °C	55 °C	60 °C	65 °C	70 °C
250 A	250 A	250 A	250 A	250 A

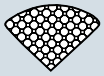
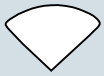
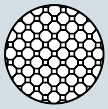
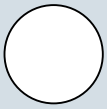
Mechanical reinforcement of conductors for 3VT2



Circuit breakers · Switch disconnectors

2

Conductor cross-sections of main terminals

Article No.	Maximum permitted current I_{max}	Maximum permissible conductor cross-section Cable type Sector-shaped conductor, stranded	Sector-shaped conductor, solid	Round conductor, stranded	Round conductor, solid	Busbars and cable lugs	Technical information
						W x H	
	A	mm²	**mm²**	**mm²**	**mm²**	mm	See page
3VT9200-4TA30	250					25 x ...	
3VT9200-4RC30	250					25 x ...	2/48, 2/59
3VT9200-4TF00							
3VT9200-4TC30	250	16 ... 150 Cu	10 ...150 Cu	16 ... 150	10 ...150 Cu		
3VT9200-4TC00							
3VT9215-4TD30	250	25 ... 150 Cu/Al	16 ...150 Cu/Al	25 ... 150 Cu/Al	16 ... 150 Cu/Al		
3VT9215-4TD00							
3VT9224-4TD30	250	150 ... 240 Cu/Al	120 ... 240 Cu/Al	150 ... 240 Cu/Al	120 ... 240 Cu/Al		2/46, 2/59
3VT9224-4TD00							
3VT9215-4TF30	250	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al	2 x (25 ... 150) Cu/Al	2 x (16 ... 150) Cu/Al		2/47, 2/59
3VT9215-4TF00							
3VT9224-4TF30	250	2 x (150 ... 240) Cu/Al	2 x (120 ... 240) Cu/Al	2 x (150 ... 240) Cu/Al	2 x (120 ... 240) Cu/Al		2/46, 2/60
3VT9224-4TF00							
3VT9203-4TF30	250	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al	6 x (6 ... 35) Cu/Al		2/47, 2/60
3VT9203-4TF00							
3VT9200-4ED30	250						2/48
3VT9200-4EE30	250						2/49
3VT9200-4TN30	10/16	1,5 ... 2,5/4 ... 6 Cu flexible conductor					

Technical specifications

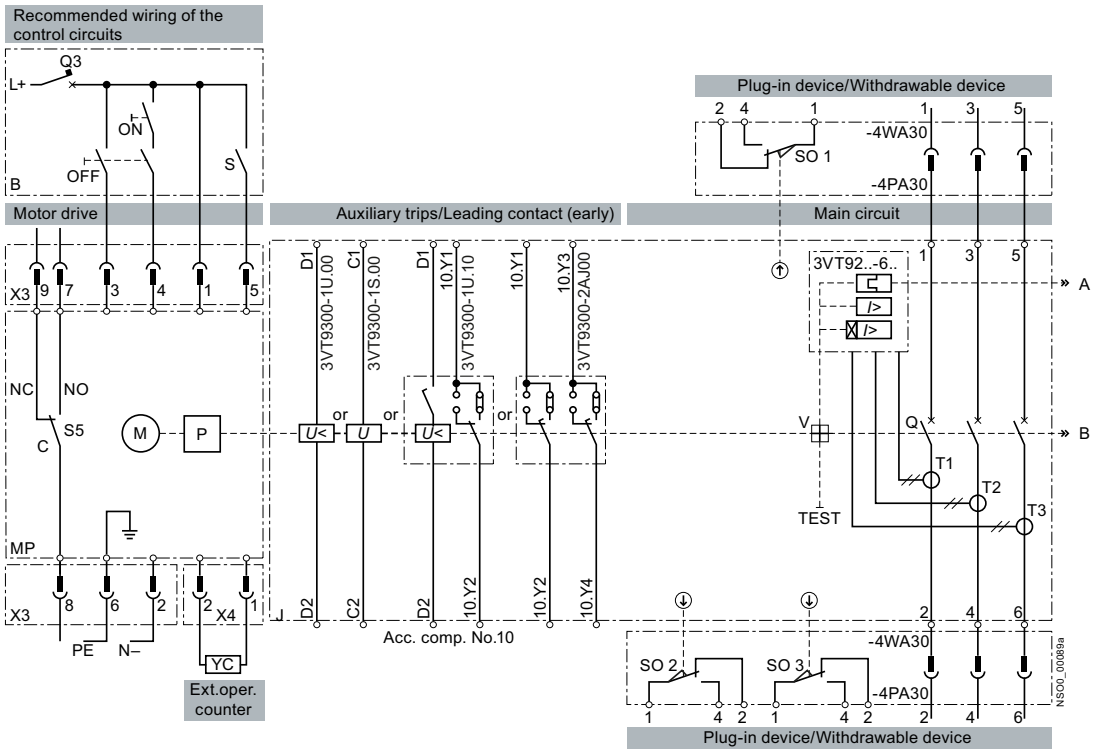
Description Article Numbers		Circuit breakers 3VT2725-2AA36/46/56-0AA0, 3VT2725-3AA36/46/56-0AA0			Switch disconnector Unit 3VT9225-6DT00
Standards		EN 60947-2, IEC 60947-2			EN 60947-3, IEC 60947-3
Approval marks		CE			
Number of poles		3, 4			
Rated current I_n	A	100, 160, 200, 250			--
Rated uninterrupted current I_u	A	250			
Rated operational current I_e	A	--			250
Rated operational voltage U_e	V	AC max. 690			AC max. 690, DC max. 440
Rated frequency f_n	Hz	50/60			
Rated impulse withstand voltage U_{imp}	kV	8			
Rated insulation voltage U_i	V	690			
Utilization category (selectivity) AC 690 V		A			--
Utilization category (switching mode) • AC 609 V • DC 440 V		 -- --			 AC-23 B DC-23 B
Rated short-time withstand current U_e = AC 690 V I_{cw}/t		2,5 kA/1 s			3 kA/5 s
Series U_e		3VT2 N	3VT2 H	U_e	--
Rated ultimate short-circuit breaking capacity (rms value) I_{cu}		60 kA 36 kA 25 kA 16 kA 10 kA	100 kA 65 kA 25 kA 25 kA 13 kA	AC 230 V AC 415 V AC 440 V AC 500 V AC 690 V	--
Rated short-circuit service breaking capacity (rms value) I_{cs}/U_e		30 kA 18 kA 13 kA 8 kA 5 kA	50 kA 36 kA 13 kA 13 kA 8 kA	AC 230 V AC 415 V AC 440 V AC 500 V AC 690 V	--
Rated short-circuit making capacity (peak value) I_{cm}/U_e		75 kA	140 kA	AC 415 V	4 kA/AC 415 V, 4 kA/DC 440 V
Off-time at I_{cu}	ms	10			--
Losses per pole at I_n = 250 A	W	18			
Mechanical endurance	cycles	30 000			
Electrical endurance (U_e = AC 415 V)	cycles	3 000			
Switching frequency	cycles/hr	120			
Operating force	N	80			
Front-side device protection		IP40			
Terminal protection		IP20			
Operating conditions					
Reference ambient temperature	°C	40			
Ambient temperature range	°C	-40 ... +55			
Working environment		dry and tropical climate			
Pollution degree		3			
Max. elevation	m	2000			
Seismic resistance	m/s^2	3 *g* at 8 ... 50 Hz			
Design modifications					
Front/rear connection		✓/✓			
Plug-in design		✓/✓			
Withdrawable design		✓/✓			
Accessories					
Switches – auxiliary/relative/signal/leading (early)		✓/✓/✓/✓			
Shunt trip unit/with alarm switch		✓			
Undervoltage trip unit/with leading switch/with alarm switch		✓/✓			
Front rotary operating mechanism/lateral operating mechanism at the right/left hand side		✓/✓			
Mechanical interlocking of rotary operating mechanisms, by Bowden wire		✓/✓			
Motorized operating mechanism/with operations counter		✓/✓			
Locking-type knob		✓			
Bolt sealing inset/additional cover for trip unit		✓/✓			

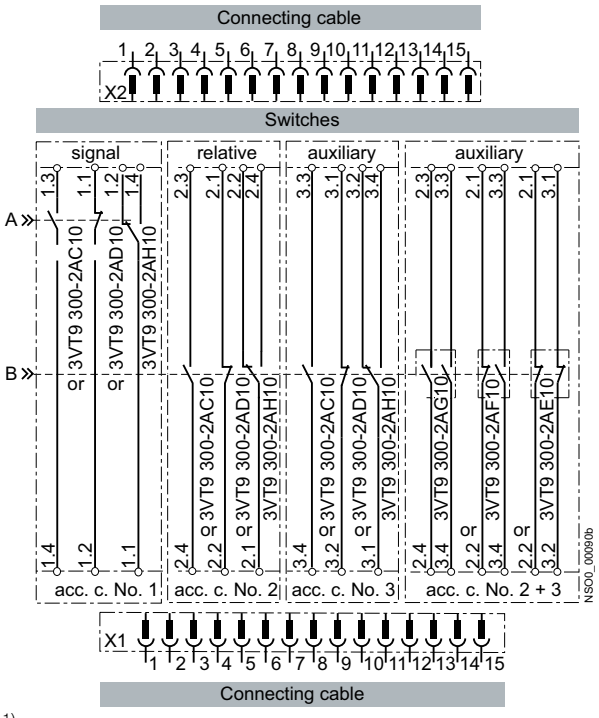
✓ available -- unavailable

Schematics

Circuit breakers with accessories

3-pole version

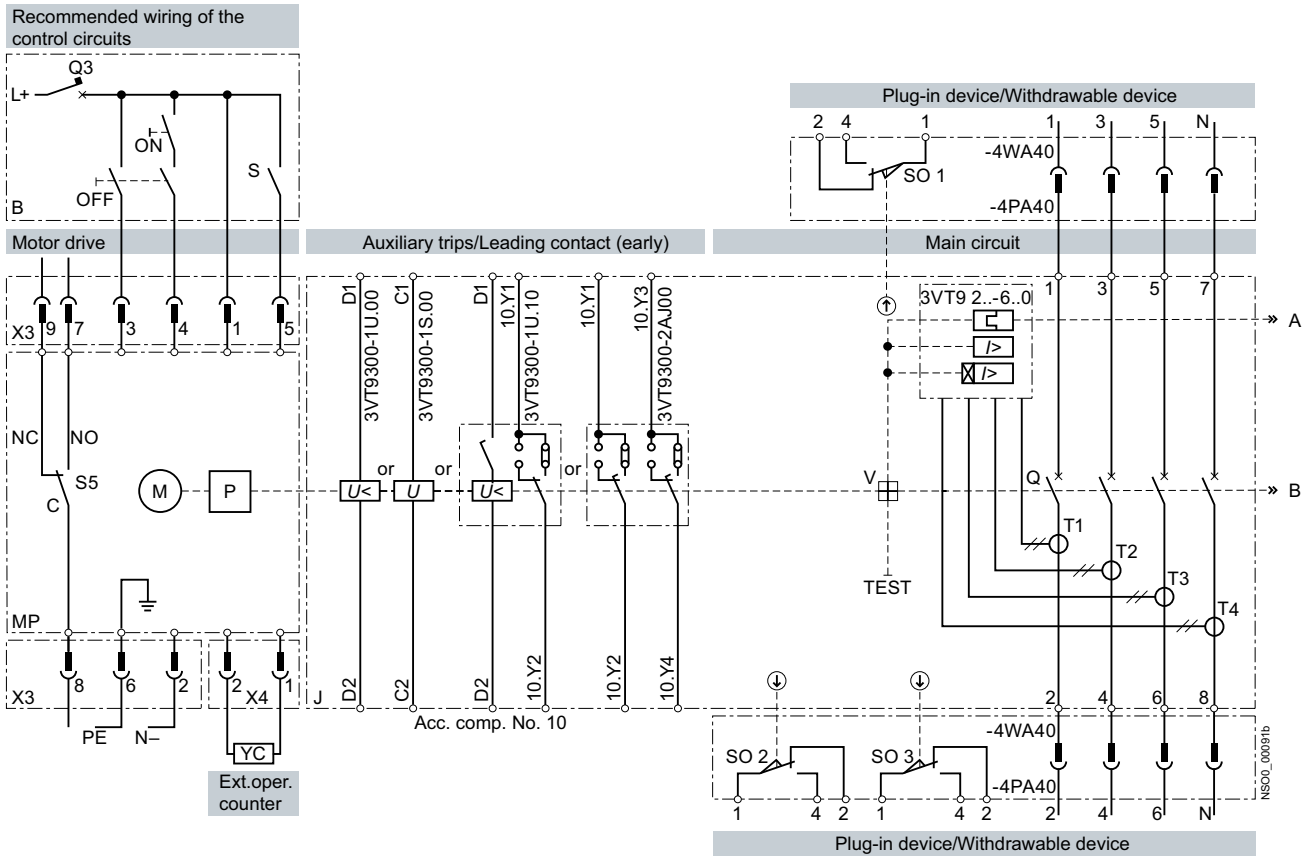


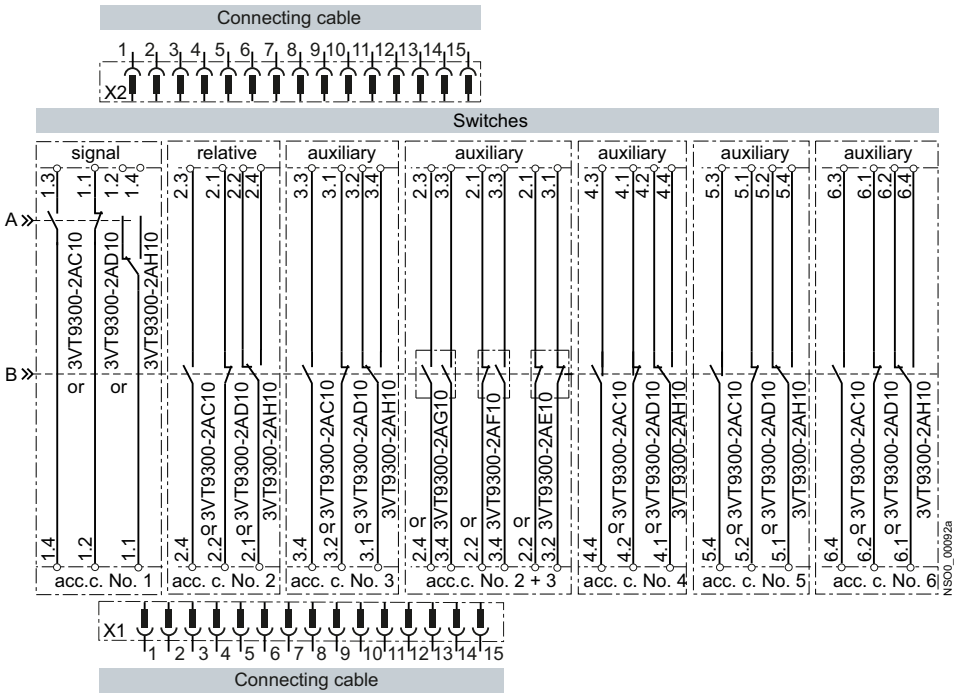


[1] Only for 4-pole version of 3VT2725-.AA46-0AA0 switching unit.

MP	3VT3200-3M..0 motorized operating mechanism
M	Motor
P	Energy storage device
X3	Connector to connect control circuits
X4	Connector for external operations counter
S5	Switch to signal AUTO (NO-C) / MANUAL (NC-C) modes
YC	3VT9300-3MF10 external operations counter
B	Recommended wiring of the control circuits (not included in the scope of supply of the operating mechanism)
ON, OFF	Pushbutton
S	Switch for energy storage (switched on = automatic storage, switch may be continuously switched on)
Q3	Motorized operating mechanism circuit breaker
J	3VT2725-.AA36-0AA0 switching unit
Q	Main contacts
T1, T2, T3, T4[1]	Current transformers
V	Trip-free mechanism
TEST	Pushbutton to test trip unit
3VT9200-4PA30/ -4PA40	3-pole plug-in base/ 4-pole plug-in base
3VT9200-4WA30/ -4WA40	3-pole withdrawable version base/ 4-pole withdrawable version base
X1, X2	3VT9300-4PL00 connecting cable
SO1, SO2, SO3	Contacts signalling position of circuit breaker/switch disconnector in plug-in base or withdrawable version base (Position signalling switch 3VT9300-4WL00)
3VT9300-1U.00	Undervoltage trip unit
3VT9300-1S.00	Shunt trip unit
3VT9300-1U.10	Undervoltage trip unit with leading contact
3VT9300-2AJ00	Leading contact (early)
acc. c. No.	Accessory compartment number

4-pole version





Trip units

Overview

The electronic trip unit is a separate and interchangeable unit, which has to be ordered in addition to the 3VT2 switching unit. By exchanging the trip unit, the range of the rated current of the circuit breaker can be easily changed.

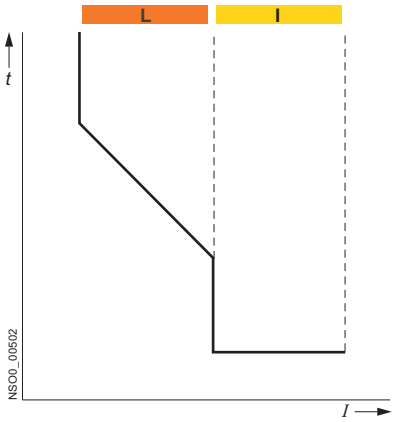
Trip units for 3VT2 switching units are available for current values of I_n = **100, 160 and 250 A**. The ETU LP feature rated currents of 160, 200 and 250 A. The trip units (including regulation of -60%) cover a current range **from 40 to 250 A**.

Tripping characteristics

Several different trip units are available. Some have adjustable characteristics (in order to match the protected device and to achieve the required selectivity).

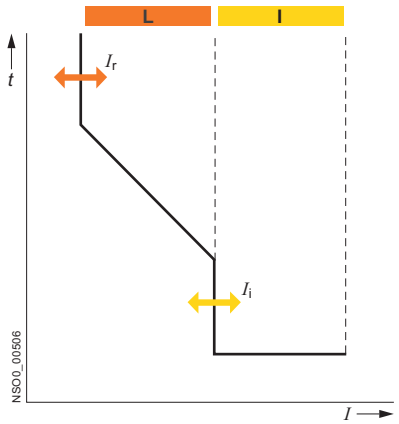
ETU LP, DP, MP and MPS trip units are intended for 3-pole 3VT2725-.AA36-0AA0 switching units and 4-pole 3VT2725-.AA46-0AA0 switching units with disconnecting of the N pole.

ETU LP trip units



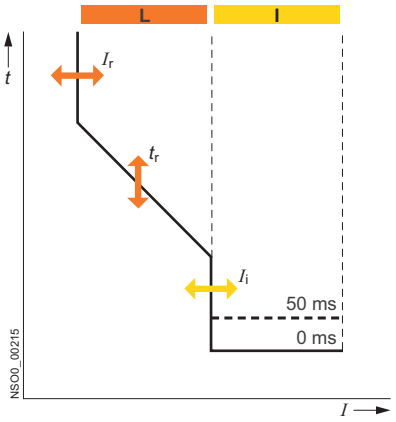
ETU LP trip units have one type of characteristic and fixed-set I_r and I_i settings.

ETU DP trip units



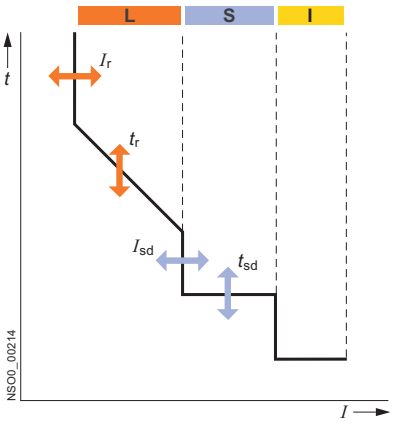
ETU DP trip units have one type of characteristic with adjustable I_r and I_i.

ETU MP trip units



ETU MP trip units have more characteristics with adjustable I_r, t_r and I_i.

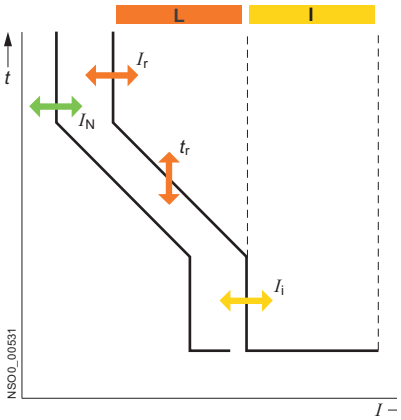
ETU MPS trip units



ETU MPS trip units have more characteristics with adjustable I_r, t_r, I_i and t_v.

ETU DPN trip units

ETU DPN trip units are intended for 4-pole 3VT2725-AA56-0AA0 switching units with protected N pole. They have more characteristics with adjustable I_r , t_r , I_i and I_N.



Function

Trip units ETU LP, DP, MP and MPS - description of function

Proper functioning of trip units does not depend on the current waveform in the main circuit. The function of the trip unit is supported by a microprocessor, which processes a sampled signal of the power circuit and recalculates it to obtain an rms value. Therefore, the trip units are suitable for protecting circuits where the sinusoidal current is distorted by high harmonics (e.g. circuits with controlled rectifiers, power factor compensators, pulse loading, and the like).

All the trip units protect a circuit against short-circuiting and overloading. The tripping characteristics are independent of the ambient temperature. The trip unit is fixed to the switching unit by two bolts. The transparent cover over the adjustment controls can be sealed (with sealing wire).

Setting the tripping characteristic

The tripping characteristic of the trip units is defined by standard EN 60947-2. For trip units ETU DP, MP, MPS and DPN, the characteristic is adjusted with latched switches located on the trip unit.

A visual demonstration on setting the tripping characteristic is available in the SIMARIS design software (Tool for Dimensioning Electrical Power Distribution).

L is a zone of low overcurrents and includes the area of thermal protection.

S is a zone of medium overcurrents and includes long-distance short-circuit protection for lines. Intentional delay in tripping of these low short-circuit currents can be used to achieve selectivity of protective devices. For MPS trip units, the delay can be set at 0, 100, 200 or 300 ms.

I is a zone of high overcurrents and includes protection against ultimate short-circuit currents. For MP trip units, the time delay can be set at 0 or 50 ms.

1. Time-dependent trip unit (thermal) L

- The time-dependent trip unit **ETU DP** is adjusted with the I_r switch. The I_r switch adjusts the rated current of the circuit breaker, with the characteristic shifting on the current axis. The trip unit is set to one type of characteristic.
- The time-dependent trip units **ETU MP, MPS and DPN** are adjusted with two switches, I_r and t_r. The first (I_r) switch adjusts the circuit breaker's rated current. The characteristic moves along the current axis.
  By turning the other switch (t_r), the time is adjusted after which the circuit breaker will trip while passing through 7.2 I_r. The tripping characteristic thus moves on the time axis. Using the t_r switch, it is possible to set a total of 8 characteristics.
  ETU MP and MPS trip units have 4 characteristics for motor protection and 4 characteristics for protecting lines.
  Breaking times correspond to trip unit classes 10, 20, 30. By changing t_r, it is possible to select the trip unit characteristic according to the required motor starting characteristic (light, medium, heavy or very heavy starting).
  ETU DPN trip units have 8 characteristics for protecting lines or transformers.
  It is not possible to turn the circuit breaker back on immediately after the time-dependent trip unit has been actuated and the circuit breaker has tripped. The trip unit must be allowed to cool off (it has a thermal memory). The thermal memory can be disabled by turning the switch from the normal "T_t" position to the "T_0" position. In the "T_0" position the time-dependent trip unit remains active, and only its thermal memory is deactivated. Switching off the thermal memory should be used only in well-justified cases, and with the knowledge that there could be rising temperature in the protected device, causing repeated tripping.

2. Delayed time-independent trip unit S

This trip unit characteristic is available only in **ETU MPS** trip units. It is used to set up a selective cascade of circuit breakers. It is set up using parameters I_{sd} and t_{sd}. I_{sd} is an n-multiple of current I_r (I_{sd}= n × I_r). I_{sd} is a short-circuit current that, within the span of I_i to I_i, will trip the circuit breaker with delay t_{sd}, where t_{sd} is a delay set up for switching off the trip unit. The delayed time-independent trip unit actuates the circuit breaker if the current in the circuit reaches at least the preset n-multiple and lasts at least the preset delay time t_{sd}.

3. Time-independent instantaneous trip unit (short-circuit trip unit) I

- For trip units **ETU DP, MP and DPN**, the time-independent instantaneous trip unit is adjusted with the I_i switch. The I_i switch is used for setting up the short-circuit current that, when reached or exceeded, causes instantaneous tripping of the circuit breaker.

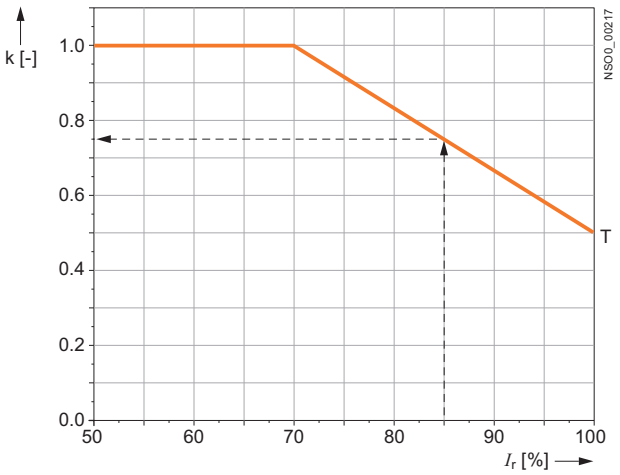
Trip units

Tripping characteristics of ETU LP, DP, MP, MPS and DPN trip units with load

The tripping characteristic from the cold state indicates the tripping times during which it is assumed that, up to the moment when an overcurrent develops, no current is flowing through the circuit breaker.

The tripping characteristic tripped from warm state indicates the tripping times during which it is assumed that, before the moment when an overcurrent develops, current is flowing through the circuit breaker.

Characteristics of electronic trip units are independent of the ambient temperature and are plotted in a cold state. Digital trip units enable simulation of a trip unit in warm state. The tripping times become shorter in a steady state, as shown in the following diagram. The steady state is a period during which the characteristic does not change. If the circuit breaker is loaded with a reduced current for at least 30 minutes, the tripping times will be cut by a half. If the load is less than 70% of I_r , the tripping time does not become shorter.



Decrease of tripping time with load

T - When tripping from the "warm" state, the tripping time of the characteristic is cut short during the standstill time t_u by coefficient **k**.

Thermal standstill time of the characteristics

For all trip units, the thermal standstill time is $t_u \geq 30$ min. During this time, the tripping time t_{sd} is cut short from the cold-state characteristic by the coefficient **k**.

The real tripping time is $t_s = k \times t_{sd}$

Example

The shortening constant can be read from the graph. With steady current 85% of I_r the real tripping time will be shortened to:

t_s **= 0.74 x** t_{sd}

k [–] time shortening coefficient

I_r [A] adjusted rated current of the trip unit

t_{sd} [s] tripping time of the trip unit derived from the characteristic

t_s [s] real tripping time of the trip unit tripped from warm state

t_u [s] standstill period for particular characteristics

Trip units are preset by the manufacturer

I_r = min

Restart = $T_{(t)}$

I_i = min, 0 ms

t_r = TV, $t_{(t)}$, min

I_{sd} = 0 ms, min

I_N = 0.5 I_r

Trip units ETU LP - Lines protection

- Provides protection for lines with low starting currents

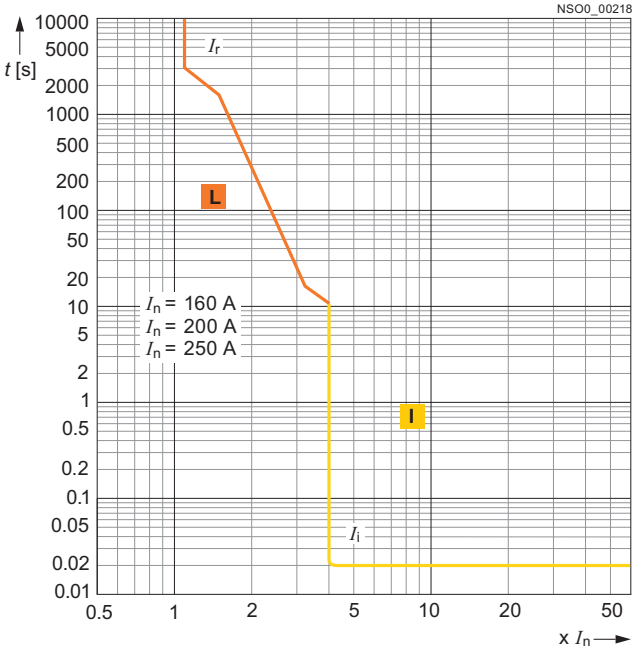
The 3VT92..-6AB00 trip unit is intended only for 3VT2725 -.AA36-0AA0 or 3VT2725 -.AA46-0AA0 switching unit. The LP trip unit has a thermal memory that cannot be disabled. The rated currents of the trip units are given by their article numbers and correspond to a standardized series of currents (see specifications table). The short-circuit trip unit is fixed-set at $4 \times I_n$.

One of the advantages of the LP trip unit is its simplicity, because it does not require any adjustment. Therefore, it is intended for less complicated applications.

Specifications

Article No.	Rated current I_n	Instantaneous short circuit protection I_i
	A	A
3VT9216-6AB00	160	640
3VT9200-6AB00	200	800
3VT9250-6AB00	250	1000

Tripping characteristics



Trip units ETU DP - Distribution protection

- Provides protection for lines and transformers

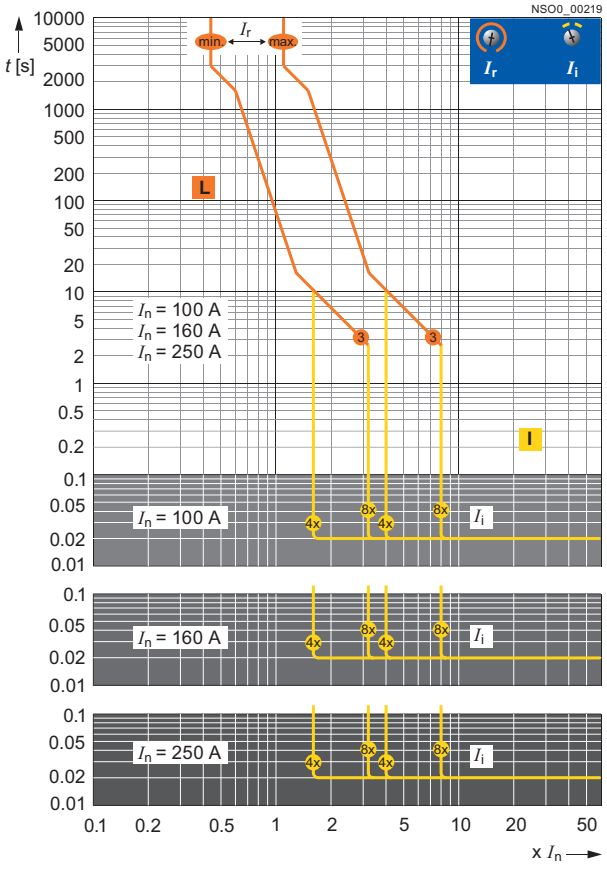
The 3VT92..-6AC00 trip unit is intended only for 3VT2725-.AA36-0AA0 or 3VT2725-.AA46-0AA0 switching units. Operation of the trip unit is controlled by a microprocessor. The trip unit is equipped with a thermal memory that can be disabled by turning a switch on the front panel from position $T_{(t)}$ to position $T_{(0)}$. After disabling the thermal memory, the thermal trip unit remains active. The operational state 70% of I_r is signalled by an LED indicator that flashes green in a 1.5 s interval. As the load grows, the blinking frequency of the diode increases. In case of a load larger than 110% of I_r, this LED will turn red and will begin to blink red just before tripping.

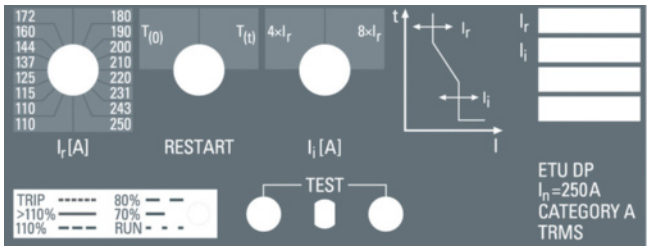
Located on the lower part of the DP trip unit cover are two photocells for communicating with the prospective signalling unit.

DP trip units have tripping characteristics especially designed for practical purposes that provide for optimal exploitation of transformers up to 1.5 I_r.

DP trip units offer simple adjustment of the tripping characteristics. Set-up includes only the rated current and the short-circuit tripping level at 4 I_r or 8 I_r.

Tripping characteristics





Adjustable specifications

Article No.	Rated current I_n A	Overload protection I_r A	Restart	Instantaneous short circuit protection I_i
3VT9210-6AC00	100	40 43 46 48 50 55 58 61 63 69 72 76 80 87 91 100	$T_{(0)}$ $T_{(t)}$	4 x I_r 8 x I_r
3VT9216-6AC00	160	63 69 72 80 87 91 100 110 115 120 125 130 137 144 150 160	$T_{(0)}$ $T_{(t)}$	4 x I_r 8 x I_r
3VT9225-6AC00	250	100 110 115 125 137 144 160 172 180 190 200 210 220 231 243 250	$T_{(0)}$ $T_{(t)}$	4 x I_r 8 x I_r

Trip units

Trip units ETU MP - Motor protection

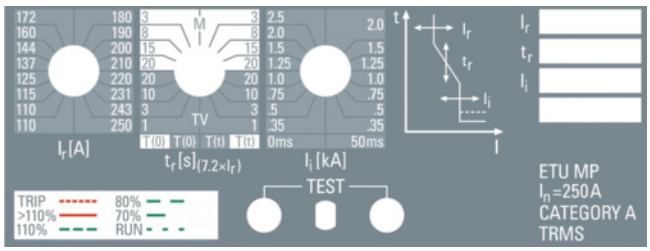
- Provides protection for motors and generators
- Can protect lines and transformers

The 3VT92..-6AP00 trip unit is intended only for 3VT2725-.AA36-0AA0 and 3VT2725-.AA46-0AA0 switching units. The operation of the MP trip unit is controlled by a microprocessor. The MP trip unit is equipped with a thermal memory that can be disabled by turning a switch on the front panel from position $T_{(t)}$ to position $T_{(0)}$. After disabling of the thermal memory, the thermal trip unit remains active.

When one or two phases fail (due to current greater than I_r in the remaining phases), in the M-characteristic mode, the switch will open with a 4 s delay (so called undercurrent tripping).

Another parameter for adjusting the MP trip unit consists of the rated current and short-circuit tripping level. The time delay of the short-circuit trip unit can be set to 0 or 50 ms. The operational state 70% of I_r is signalled by an LED indicator that flashes green in a 1.5 s interval. As the load grows, the blinking frequency of the diode increases. In case of a load larger than 110% of I_r, this LED will turn red and will begin to blink red just before tripping. Located on the lower part of the MP trip unit cover are two photocells for communicating with the prospective signalling unit.

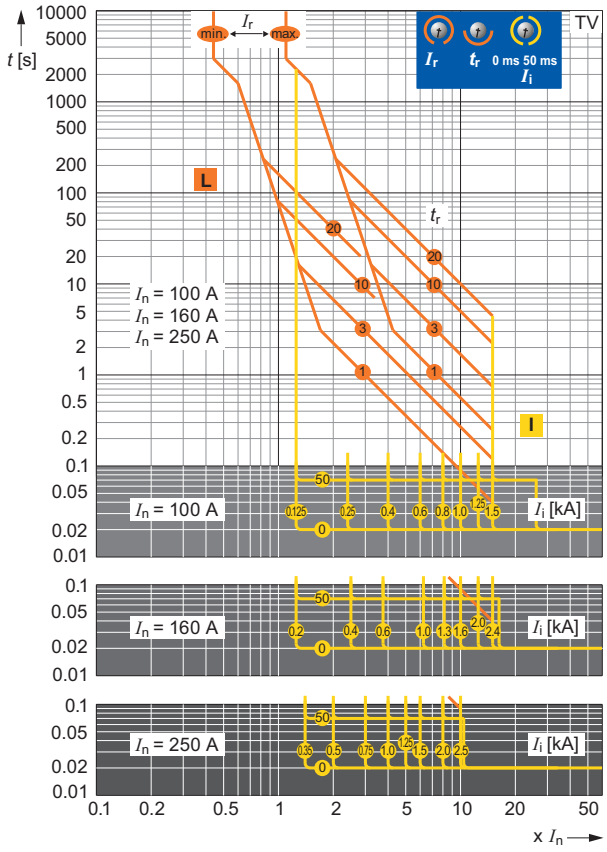
MP trip units have tripping characteristics especially designed for practical purposes that provide for optimal exploitation of transformers up to 1.5 I_r. A total of 8 characteristics can be set on the trip unit. Mode "M" provides 4 characteristics suitable for protecting motors and mode "TV" provides 4 characteristics for protecting transformers and lines. The shape of each characteristic can be changed with a selector switch.

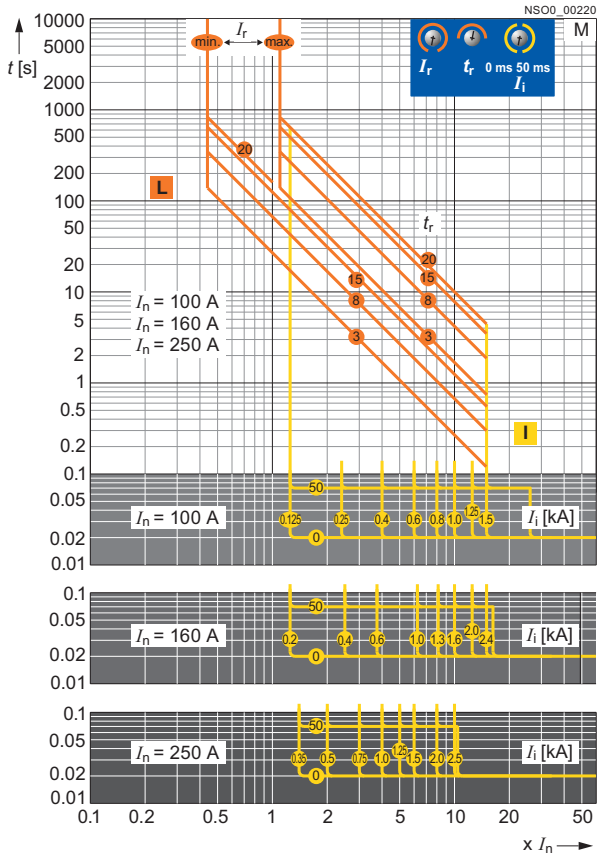


Adjustable specifications

Article No.	Rated current I_n	Overload protection I_r	t_r (7,2 x I_r)	Restart	Instantaneous short circuit protection I_i	
	A	A	s		kA	ms
		40	1 (TV 1)	$T_{(0)}$	0,125	
		43	3 (TV 3)	$T_{(0)}$	0,25	
		46	10 (TV 10)	$T_{(0)}$	0,4	
		48	20 (TV 20)	$T_{(0)}$	0,6	0
		50	20 (M 20)	$T_{(0)}$	0,8	
		55	15 (M 15)	$T_{(0)}$	1,0	
		58	8 (M 8)	$T_{(0)}$	1,25	
3VT9210-6AP00	100	61	3 (M 3)	$T_{(0)}$	1,5	
		63	3 (M 3)	$T_{(t)}$	1,5	
		69	8 (M 8)	$T_{(t)}$	1,25	
		72	15 (M 15)	$T_{(t)}$	1,0	
		76	20 (M 20)	$T_{(t)}$	0,8	50
		80	20 (TV 20)	$T_{(t)}$	0,6	
		87	10 (TV 10)	$T_{(t)}$	0,4	
		91	3 (TV 3)	$T_{(t)}$	0,25	
		100	1 (TV 1)	$T_{(t)}$	0,125	
		63	1 (TV 1)	$T_{(0)}$	0,2	
		69	3 (TV 3)	$T_{(0)}$	0,4	
		72	10 (TV 10)	$T_{(0)}$	0,6	
		80	20 (TV 20)	$T_{(0)}$	1,0	
		87	20 (M 20)	$T_{(0)}$	1,3	0
		91	15 (M 15)	$T_{(0)}$	1,6	
		100	8 (M 8)	$T_{(0)}$	2,0	
3VT9216-6AP00	160	110	3 (M 3)	$T_{(0)}$	2,4	
		115	3 (M 3)	$T_{(t)}$		
		120	8 (M 8)	$T_{(t)}$	2,0	
		125	15 (M 15)	$T_{(t)}$	1,6	
		130	20 (M 20)	$T_{(t)}$	1,3	
		137	20 (TV 20)	$T_{(t)}$	1,0	50
		144	10 (TV 10)	$T_{(t)}$	0,6	
		150	3 (TV 3)	$T_{(t)}$	0,4	
		160	1 (TV 1)	$T_{(t)}$	0,2	
		100	1 (TV 1)	$T_{(0)}$	0,35	
		110	3 (TV 3)	$T_{(0)}$	0,5	
		115	10 (TV 10)	$T_{(0)}$	0,75	
		125	20 (TV 20)	$T_{(0)}$	1,0	0
		137	20 (M 20)	$T_{(0)}$	1,25	
		144	15 (M 15)	$T_{(0)}$	1,5	
		160	8 (M 8)	$T_{(0)}$	2,0	
3VT9225-6AP00	250	172	3 (M 3)	$T_{(0)}$	2,5	
		180	3 (M 3)	$T_{(t)}$		
		190	8 (M 8)	$T_{(t)}$	2,0	
		200	15 (M 15)	$T_{(t)}$	1,5	
		210	20 (M 20)	$T_{(t)}$	1,25	
		220	20 (TV 20)	$T_{(t)}$	1,0	50
		231	10 (TV 10)	$T_{(t)}$	0,75	
		243	3 (TV 3)	$T_{(t)}$	0,5	
		250	1 (TV 1)	$T_{(t)}$	0,35	

Tripping characteristics





Trip units

Trip units ETU MPS - Motor protection with timing selectivity

- Provides protection for motors and generators
- Can protect lines and transformers
- Enables adjusting time delay of time-independent trip unit

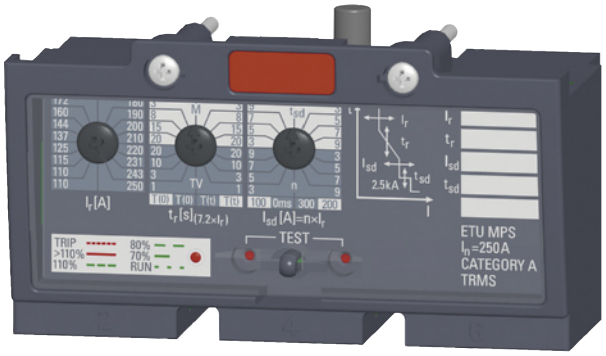
The 3VT92..-6AS00 trip unit is intended for 3VT2725-.AA36-0AA0 or 3VT2725-.AA46-0AA0 switching units. The operation of the trip unit is controlled by a microprocessor. The trip unit is equipped with a thermal memory that can be disabled by turning a switch on the front panel from position $T_{(t)}$ to position $T_{(0)}$. After disabling of the thermal memory, the thermal trip unit remains active.

When one or two phases fail (due to current greater than I_r in the remaining phases), in the M-characteristic mode, the switch will open with a 4 s delay (so called undercurrent trip unit).

Another parameter for adjusting the MPS trip unit is the rated current and tripping level of the delayed short-circuit trip unit. The time delay (t_{sd}) can be set on the delayed short-circuit trip unit at 0, 100, 200 or 300 ms. The operational state 70% of I_r is signalled by an LED indicator that flashes green in a 1.5 s interval. As the load grows, the blinking frequency of the diode increases. In case of a load larger than 110% of I_r, this LED will turn red and will begin to blink red just before tripping.

Located on the lower part of the MPS trip unit cover are two photocells for communicating with the prospective signalling unit.

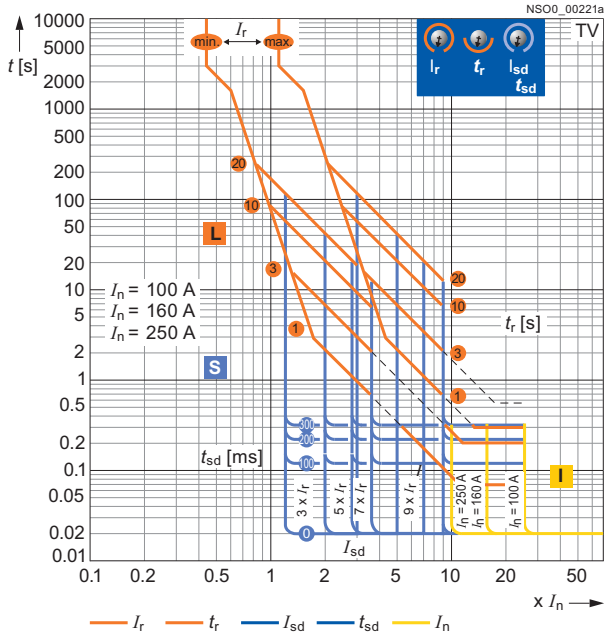
MPS trip units have tripping characteristics especially designed for practical purposes that provide for optimal exploitation of transformers up to 1.5 I_r. A total of 8 characteristics can be set on the trip unit. Mode "M" provides 4 characteristics suitable for protecting motors, and mode "TV" provides 4 characteristics for protecting transformers and lines. The shape of each characteristic can be changed with a selector switch.

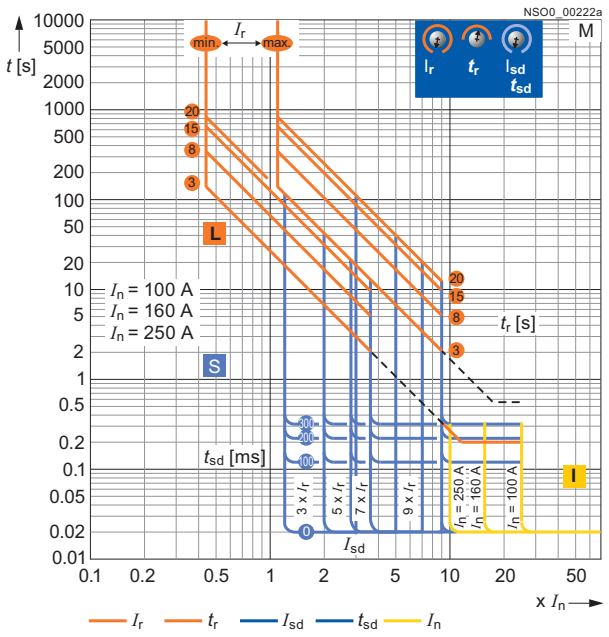


Adjustable specifications

Article No.	Rated current I_n	Overload protection I_r	t_{sd} (7.2 x I_r)	Restart	Short circuit protection (short time delayed) I_i	
	A	A	S		x I_r	ms
3VT9210-6AS00	100	40	1 (TV 1)	$T_{(0)}$	3	
		43	3 (TV 3)	$T_{(0)}$	5	0
		46	10 (TV 10)	$T_{(0)}$	7	
		48	20 (TV 20)	$T_{(0)}$	9	
		50	20 (M 20)	$T_{(0)}$	3	
		55	15 (M 15)	$T_{(0)}$	5	100
		58	8 (M 8)	$T_{(0)}$	7	
		61	3 (M 3)	$T_{(0)}$	9	
		63	3 (M 3)	$T_{(t)}$	3	
		69	8 (M 8)	$T_{(t)}$	5	200
		72	15 (M 15)	$T_{(t)}$	7	
		76	20 (M 20)	$T_{(t)}$	9	
		80	20 (TV 20)	$T_{(t)}$	3	
		87	10 (TV 10)	$T_{(t)}$	5	300
		91	3 (TV 3)	$T_{(t)}$	7	
		100	1 (TV 1)	$T_{(t)}$	9	
3VT9216-6AS00	160	63	1 (TV 1)	$T_{(0)}$	3	
		69	3 (TV 3)	$T_{(0)}$	5	0
		72	10 (TV 10)	$T_{(0)}$	7	
		80	20 (TV 20)	$T_{(0)}$	9	
		87	20 (M 20)	$T_{(0)}$	3	
		91	15 (M 15)	$T_{(0)}$	5	100
		100	8 (M 8)	$T_{(0)}$	7	
		110	3 (M 3)	$T_{(0)}$	9	
		115	3 (M 3)	$T_{(t)}$	3	
		120	8 (M 8)	$T_{(t)}$	5	200
		125	15 (M 15)	$T_{(t)}$	7	
		130	20 (M 20)	$T_{(t)}$	9	
		137	20 (TV 20)	$T_{(t)}$	3	
		144	10 (TV 10)	$T_{(t)}$	5	300
		150	3 (TV 3)	$T_{(t)}$	7	
		160	1 (TV 1)	$T_{(t)}$	9	
3VT9225-6AS00	250	100	1 (TV 1)	$T_{(0)}$	3	
		110	3 (TV 3)	$T_{(0)}$	5	0
		115	10 (TV 10)	$T_{(0)}$	7	
		125	20 (TV 20)	$T_{(0)}$	9	
		137	20 (M 20)	$T_{(0)}$	3	
		144	15 (M 15)	$T_{(0)}$	5	100
		160	8 (M 8)	$T_{(0)}$	7	
		172	3 (M 3)	$T_{(0)}$	9	
		180	3 (M 3)	$T_{(t)}$	3	
		190	8 (M 8)	$T_{(t)}$	5	200
		200	15 (M 15)	$T_{(t)}$	7	
		210	20 (M 20)	$T_{(t)}$	9	
		220	20 (TV 20)	$T_{(t)}$	3	
		231	10 (TV 10)	$T_{(t)}$	5	300
		243	3 (TV 3)	$T_{(t)}$	7	
		250	1 (TV 1)	$T_{(t)}$	9	

Tripping characteristics





Trip units

Trip units ETU DPN - Distribution protection with protected N pole

- Provides protection for lines and transformers in TN-C-S and TN-S networks

The 3VT92..-6BC00 trip unit is intended only for the 3VT2725-.AA56-0AA0 switching unit. The operation of the DPN trip unit is controlled by a microprocessor. The DPN trip unit is equipped with a thermal memory that can be disabled by turning a switch located on the front panel from position $T_{(t)}$ to position $T_{(0)}$. After disabling of the thermal memory, the thermal trip unit remains active.

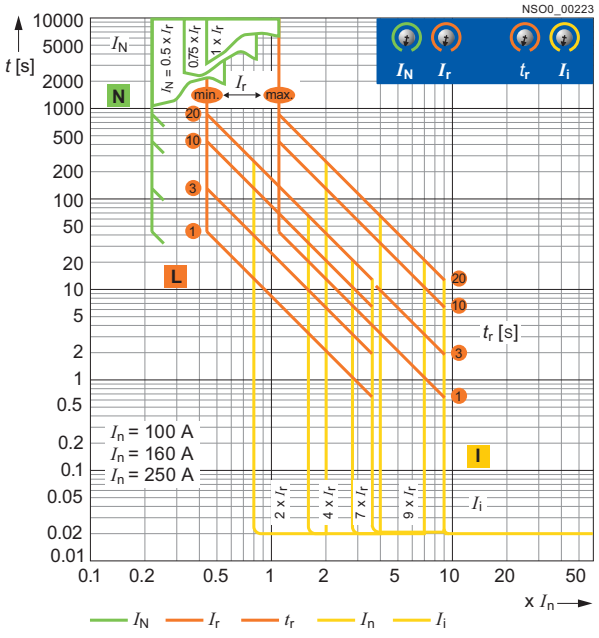
The rated current I_r, delay for switching off the trip unit at 7.2 I_r, and the tripping level of the short-circuit tripping can be adjusted.

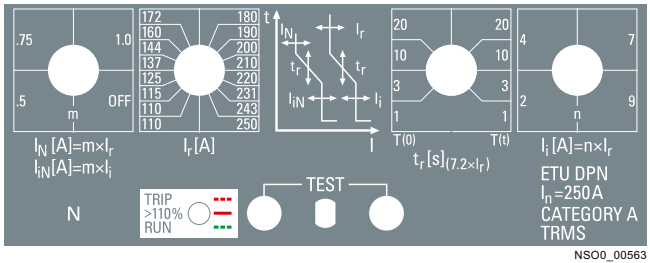
The operational state is signalled by an LED indicator that flashes green in a 1.5 s interval. As the load grows, the blinking frequency of the diode increases. In case of a load larger than 110% of I_r, this LED will turn red and will begin to blink red just before tripping.

Located on the lower part of the DPN trip unit cover are two photocells for communicating with the prospective signalling unit.

The current of the fourth pole (N pole) is adjusted using the IN switch as a multiple of the I_r current. Measuring of current on the fourth pole can be disabled by turning the button to the "OFF" position.

Tripping characteristics

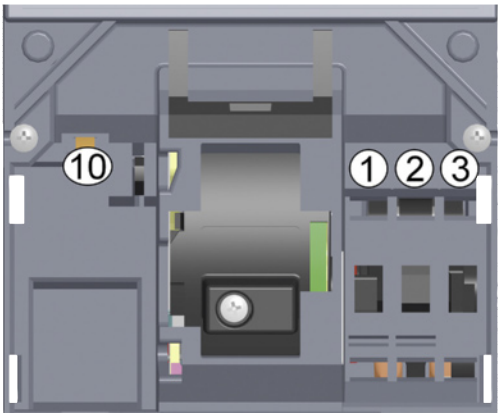




Adjustable specifications

Article No.	Rated current I_n	Overload protection I_r	t_R (7,2 x I_r)	Restart	Instantaneous short circuit protection I_i	
	A	A	S		x I_r	ms
		40	1	$T_{(0)}$	2	
		43		$T_{(0)}$	4	0
		46	3	$T_{(0)}$	7	
		48		$T_{(0)}$	9	
		50	10	$T_{(0)}$	2	
		55		$T_{(0)}$	4	100
		58	20	$T_{(0)}$	7	
3VT9210-6BC00	100	61		$T_{(0)}$	9	
		63	20	$T_{(t)}$	2	
		69		$T_{(t)}$	4	200
		72	10	$T_{(t)}$	7	
		76		$T_{(t)}$	9	
		80	3	$T_{(t)}$	2	
		87		$T_{(t)}$	4	300
		91	1	$T_{(t)}$	7	
		100		$T_{(t)}$	9	
		63	1	$T_{(0)}$	2	
		69		$T_{(0)}$	4	0
		72	3	$T_{(0)}$	7	
		80		$T_{(0)}$	9	
		87	10	$T_{(0)}$	2	
		91		$T_{(0)}$	4	100
		100	20	$T_{(0)}$	7	
3VT9216-6BC00	160	110		$T_{(0)}$	9	
		115	20	$T_{(t)}$	2	
		120		$T_{(t)}$	4	200
		125	10	$T_{(t)}$	7	
		130		$T_{(t)}$	9	
		137	3	$T_{(t)}$	2	
		144		$T_{(t)}$	4	300
		150	1	$T_{(t)}$	7	
		160		$T_{(t)}$	9	
		100	1	$T_{(0)}$	2	
		110		$T_{(0)}$	4	0
		115	3	$T_{(0)}$	7	
		125		$T_{(0)}$	9	
		137	10	$T_{(0)}$	2	
		144		$T_{(0)}$	4	100
		160	20	$T_{(0)}$	7	
3VT9225-6BC00	250	172		$T_{(0)}$	9	
		180	20	$T_{(t)}$	2	
		190		$T_{(t)}$	4	200
		200	10	$T_{(t)}$	7	
		210		$T_{(t)}$	9	
		220	3	$T_{(t)}$	2	
		231		$T_{(t)}$	4	300
		243	1	$T_{(t)}$	7	
		250		$T_{(t)}$	9	

Overview



Location of accessory compartments in 3VT2 circuit breakers

Article number according to contact arrangement

Arrangement of contacts	Article No.	Number of contacts	Contact types
01	3VT9300-2AC10 (20)	1	NO
20	3VT9300-2AE10 (20)	2	NO
01	3VT9300-2AD10 (20)	1	NC
02	3VT9300-2AG10 (20)	2	NC
11	3VT9300-2AF10 (20)	1 + 1	NC + NO
001	3VT9300-2AH10 (20)	1	NC + NO

Functions and names of switches according to their location in accessory compartments

Accessory compartment	Switch name	Switch function
1	Signalling	Signalling switch to indicate the state of the circuit breaker by the trip unit
2	Relative	Relative switch to indicate tripping of the circuit breaker by trip units, TEST push-button or by OFF pushbutton on the motorized operating mechanism
3, (4, 5, 6)[1)]	Auxiliary	Auxiliary switch to indicate the position of the main contacts
10	Leading (early)	Leading switch to make/break in advance of the main contacts

[1)] Accessory compartments 4, 5, 6 for 4-pole version only.

Function

States of auxiliary switches located in the switching unit accessory compartments

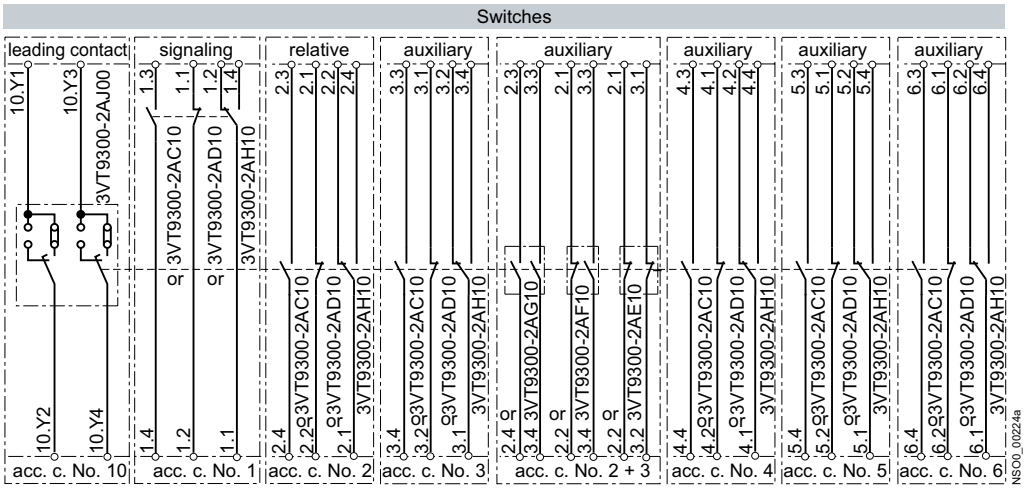
Circuit breaker state	Toggle position of circuit breaker	State of the main contacts	Accessory compartment																			
			1		2		3 (4 ... 6)[1)]		10		2 and 3		2 and 3		2 and 3		1		2		3	
			3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AJ00	3VT9300-1U.10	3VT9300-2AG10		3VT9300-2AF10		3VT9300-2AE10		3VT9300-2AH10		3VT9300-2AH10		3VT9300-2AH10	
Switched on		**1**	1	0	0	1	1	0	1	0	1	1	0	1	0	0	1	0	0	1	1	0
Switched off manually or electrically by operating mechanism		**0**	1	0	0	1	0	1	0	1	0	0	1	0	1	1	1	0	0	1	0	1
Switched off by trip unit		**0**	0	1	1	0	0	1	0	1	0	0	1	0	1	1	0	1	1	0	0	1
Switched off by auxiliary trip unit or by TEST button or the trip pushbutton on the motorized operating mechanism		**0**	1	0	1	0	0	1	0	1	0	0	1	0	1	1	1	0	1	0	0	1

0 = contact open, 1 = contact closed

[1)] Accessory compartments 4, 5, 6 for 4-pole version only.

Auxiliary switches

State of switches located in the switching unit accessory compartments

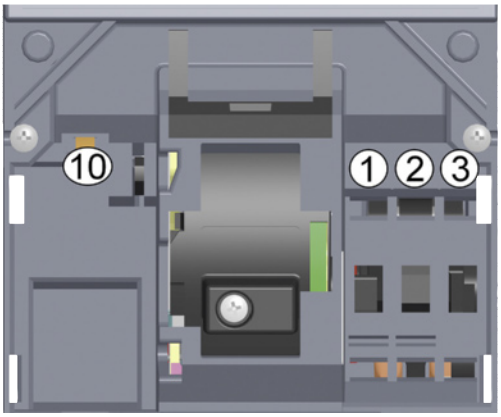


Technical specifications

Article No.		3VT9300-2A.00	3VT9300-2A.10[1)]	3VT9300-2AJ00	3VT9300-2AH10	3VT9300-2AH20[1)]
Rated operational voltage U_e	V	AC 60 ... 500 DC 60 ... 500	AC 5 ... 60 DC 5 ... 60	AC 250	AC 24 ...250 DC 24 ...250	AC 5 ..60 DC 5 ...60
Rated isolation voltage U_i	V	500		250		
Rated frequency f_n	Hz	50/60				
Rated operational current I_e/U_e						
• AC-12		--	0.004 ... 0.5A/5 V	--	--	--
• AC-15		6 A/240 V, 4 A/400 V, 2A/500 V	0.004 ... 0.5A/5 V	1 A/AC 250 V	1.5 A/AC 250 V	--
• DC-12		--	--	--	--	0.01 A/DC 60 V
• DC-13		0.4 A/240 V, 0.3 A/400 V, 0.2 A/500 V	0.004 ... 0.01/60 V	--	0.2 A/DC 250 V	--
Thermal current I_{th}	A	10	0,5	--	6	0.5
Arrangement of contacts		01, 10, 02, 11, 20		02, 11, 20	001	001
Connector cross-section S	mm^2	0.5 ... 1				
Terminal protection (connected switch)		IP20				

[1)] 3VT9300-2A.10 is not suitable for controlling electromagnetic loads

Overview



Location of accessory compartments 10 in 3VT2 circuit breakers

The particular rated operating voltage of the shunt trip unit is set up by jumpers located on the right hand side in the trip unit. Default setting is always the maximum value.

Article number of shunt trip units
according to the rated operating voltage

Article No.	U_e
3VT9300-1SC00	AC/DC 24, 40, 48 V
3VT9300-1SD00	AC/DC 110 V
3VT9300-1SE00	AC 230, 400, 500 V/DC 220 V
3VT9300-1SB00	DC 12 V

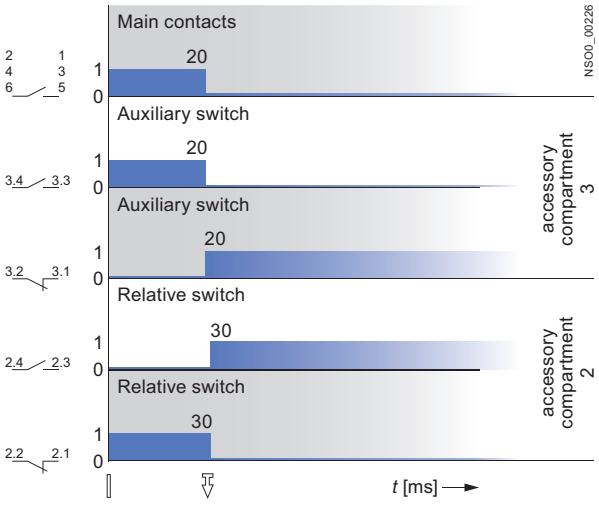
Article number of undervoltage trip units
according to the rated operating voltage

Article No.	Rated operating voltage U_e
3VT9300-1UC00	AC/DC 24, 40, 48 V
3VT9300-1UD00	AC/DC 110 V
3VT9300-1UE00	AC 230, 400, 500/DC 220 V

Function

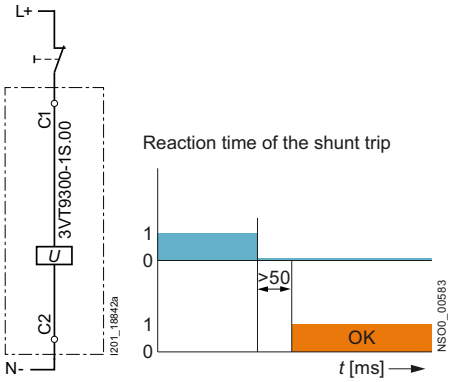
Shunt trip units

Circuit breaker switched off by the shunt trip unit



Circuit breaker states and toggle positions of the circuit breaker

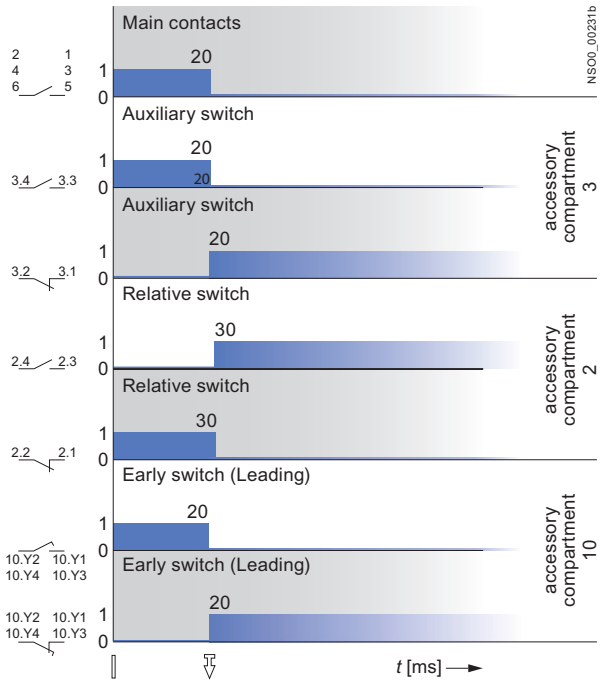
Circuit breaker state	Toggle positions of circuit breaker
Switched on	
Switched off by trip units, or by TEST button or by the trip pushbutton on the motorized operating mechanism	
Switched off manually or electrically by the operating mechanism	



Auxiliary trip units

Undervoltage trip units

Circuit breaker switched off by the undervoltage trip unit

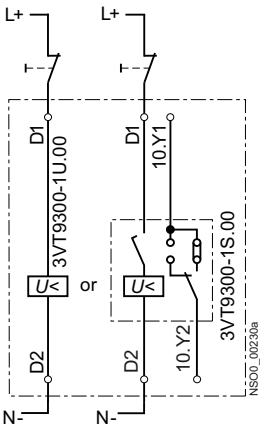


Circuit breaker states and toggle positions of the circuit breaker

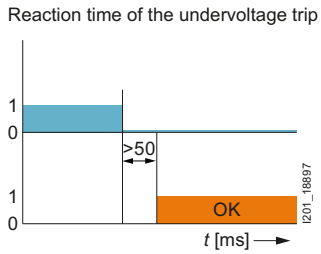
Circuit breaker state	Toggle positions of circuit breakers
Switched on	
Switched off by trip units, by TEST button or by the trip pushbutton on the motorized operating mechanism	
Switched off manually or electrically by operating mechanism	

Arrangement, number and type of contacts

Arrangement of contacts	Number of contacts	Contact types
02	2	NC
11	1 + 1	NC + NO
20	2	NO



Reaction time of the undervoltage trip unit



Technical specifications

Shunt trip units

Article No.		3VT9300-1S.00
Rated operating voltage U_e	V	AC 24, 40, 48, 110, 230, 400, 500 DC 12, 24, 40, 48, 110, 220
Rated frequency f_n	Hz	50/60
Input power at 1.1 U_e		AC < 3 VA DC < 3 W
Functional description		U ≥ 0,7U_e the circuit breaker must trip
Time to switch-off	ms	20
Continuous load		Yes
Connection cross-section S	mm^2	0.5 ... 1
Terminal protection (connected trip unit)		IP20
Location in accessory compartment No.		10

Undervoltage trip units

Article No.		3VT9300-1U.00	3VT9300-1U.10[1]
Rated operating voltage U_e	V	AC 24, 40, 48, 110, 230, 400, 500 DC 24, 40, 48, 110, 220	
Rated frequency f_n	Hz	50/60	
Input power at 1.1 U_e	VA W	AC <3 DC <3	
Functional description[1]		U ≥ 0.85 U_e (circuit breaker can switch on) U ≤ 0.35 U_e (the circuit breaker must trip)	
Time to switch off	ms	20	
Continuous load		Yes	
Connector cross-section S	mm^2	0.5 ... 1	
Terminal protection (connected trip unit)		IP20	
Location in accessory compartment No.		10	
Leading switch			
Rated operating voltage U_e	V	--	AC 250
Rated frequency f_n	Hz	--	50/60
Rated operating current I_e/U_e	V	--	AC 1 A/259
Arrangement of contacts		--	02, 11, 20
Connector cross-section S	mm^2	--	0.5 ... 1
Terminal protection (connected trip unit)		--	IP20

[1] Cannot be used in combination with 3VT9200-3M..0 motorized operating mechanism.

Overview

Rotary operating mechanism

The following components of the rotary operating mechanisms are required:

- To switch the switching unit:
  - 3VT9300-3HE10 or 3VT9300-3HE20 black knob
  - 3VT9300-3HF20 red knob
- To switch the switching unit through the switchgear cabinet door:
  - 3VT9300-3HJ..extension shaft
  - 3VT9300-3HG/HH.. coupling driver for door-coupling operating mechanism
  - 3VT9300-3HE/HF.. knob

Mechanical interlocking and mechanical interlocking for parallel switching

- Mechanical interlocking for fixed-mounted versions require the following components:
  - 2 x 3VT9200-3HA/HB.. rotary operating mechanism
  - 2 x 3VT9200-3HE/HF.. knob
- Mechanical interlocking with Bowden wire is suitable for fixed-mounted, plug-in and withdrawable versions
- Mechanical interlocking with Bowden wire requires the following components:
  - 2 x 3VT9200-3HA/HB.. rotary operating mechanism
  - 1 x 3VT9200-3HE/HF.. knob

Design

Fig. 1: Rotary operating mechanism with knob

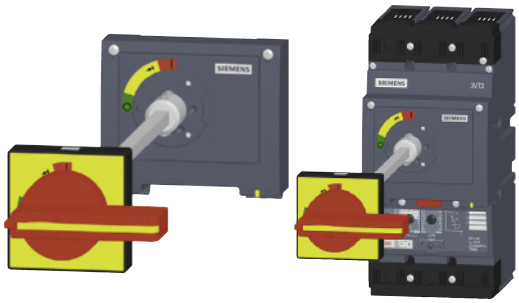


Fig. 2: Rotary operating mechanism with extension shaft, coupling driver and knob

The rotary operating mechanism makes it possible to actuate the circuit breaker by turning a knob, e.g. in order to switch machines on and off. The modular concept of the operating mechanisms allows simple mounting on the switching unit after the accessory compartment cover is removed. The operating mechanism and its accessories must be ordered separately, (see page 2/6).

- The rotary operating mechanism is attached to the switching unit of the circuit breaker
- The coupling driver is attached to the switchgear door. It provides degree of protection IP40 or IP66
- The knob is placed on the rotary operating mechanism or on the coupling driver
- The extension shaft is available in two versions, standard (length 365 mm - can be shortened) and telescopic (adjustable length 245 ... 410 mm).

The rotary operating mechanism makes it possible to actuate the circuit breaker:

Operation from the front panel of the circuit breaker (Fig. 1)

3VT9200-3HA/HB.. rotary operating mechanism
+ 3VT9300-3HE/HF.. knob

Operation through the switchgear cabinet door (Fig. 2)

3VT9200-3HA/HB.. rotary operating mechanism
+ 3VT9300-3HJ.. extension shaft
+ 3VT9300-3HE/HF.. knob
+ 3VT9300-3HG/HH.. coupling driver

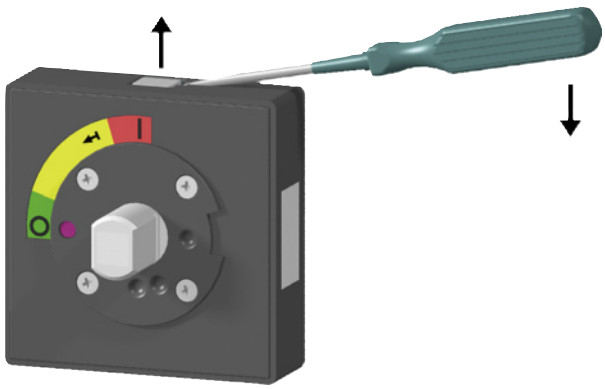
Operation through side wall of switchgear cabinet

3VT9200-3HC/HD10.. rotary operating mechanism
+ 3VT9300-3HJ.. extension shaft
+ 3VT9300-3HE/HF.. knob
+ 3VT9300-3HG/HH.. coupling driver

Enhanced safety for operator:

- The rotary operating mechanism and knob allow operators to lock the circuit breaker in position "switched off manually". The unit and knob of the rotary operating mechanism can be locked by three padlocks with a shank diameter up to 6 mm
- Each coupling driver prevents the cabinet door from being opened when the circuit breaker is in on-state or after tripping. Types 3VT9300-3HG10 and 3VT9300-3HG20 prevent the cabinet door from being opened when the circuit breaker is in the state "switched off manually" and when the rotary operating mechanism knob is locked out.
- Two circuit breakers with rotary operating mechanisms can be provided with mechanical interlocking or with parallel mechanical switching (see page 2/31).

By a screwdriver it is possible to unlock the mechanism blocking the switchboard door opening with the circuit breaker switched on (3VT9300-3HG30 or 3VT9300-3HH30).



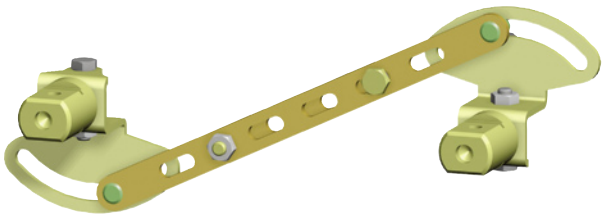
Rotary operating mechanisms

Features

Article No.	Description	Color	Permits operator to lock the circuit breaker in OFF mode	Degree of protection	Switchgear cabinet door is locked when circuit breaker is		Length mm
					switched on	switched off manually and locked	
3VT9200-3HA10	Rotary operating mechanism	gray	no	--	--	--	--
3VT9200-3HA20	Rotary operating mechanism	gray	yes	--	--	--	--
3VT9200-3HB20	Rotary operating mechanism	yellow	yes	--	--	--	--
3VT9200-3HC10	Rotary operating mechanism	gray	no	--	--	--	--
3VT9200-3HD10	Rotary operating mechanism	gray	no	--	--	--	--
3VT9300-3HE10	Knob	black	no	--	--	--	--
3VT9300-3HE20	Knob, lockable with padlock	black	yes	--	--	--	--
3VT9300-3HF20	Knob, lockable with padlock	red	yes	--	--	--	--
3VT9300-3HG10	Coupling driver	black	--	IP40	yes	yes	--
3VT9300-3HG30	Coupling driver	black	--	IP40	yes	yes	--
3VT9300-3HG20	Coupling driver	black	--	IP66	yes	no	--
3VT9300-3HH10	Coupling driver	yellow	--	IP40	yes	yes	--
3VT9300-3HH30	Coupling driver	yellow	--	IP40	yes	yes	--
3VT9300-3HH20	Coupling driver	yellow	--	IP66	yes	no	--
3VT9300-3HJ10	Extension shaft, can be shortened	--	--	--	--	--	365
3VT9300-3HJ20	Extension shaft, telescopic	--	--	--	--	--	245 ... 410

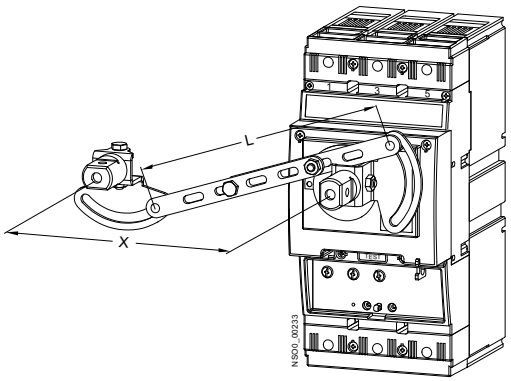
Function

3VT9300-8LA00 Mechanical interlocking

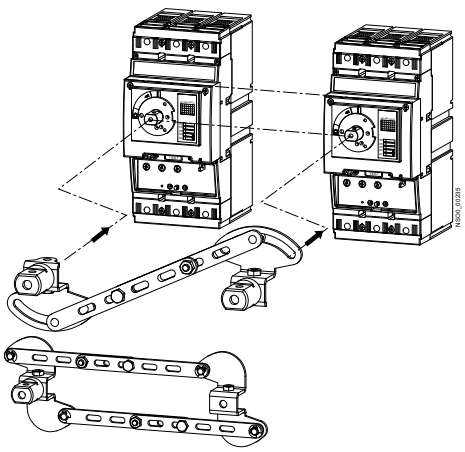


Mechanical interlocking make sure that two circuit breakers cannot trip simultaneously, but always just individually. Both circuit breakers may be switched off simultaneously. Interlocking can be used between two 3VT2 circuit breakers or between one 3VT2 and one 3VT3 circuit breaker. Both circuit breakers must be furnished with rotary operating mechanisms (at least one of them with a rotary operating mechanism and knob).

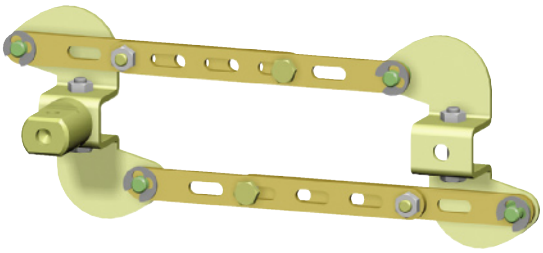
When using a mechanical interlocking it is required to comply with the dimensions shown in the figure and in the table.



Left switching unit	Right switching unit							
	3VT2 3-pole		3VT2 4-pole		3VT3 3-pole		3VT3 4-pole	
	X	L	X	L	X	L	X	L
	mm	mm	mm	mm	mm	mm	mm	mm
3VT2 3P	105	112	140	145.5	122.5	128.5	181	185.5
3VT2 4P	105	112	140	145.5	122.5	128.5	181	185.5
3VT3 3P	122.5	128.5	157.5	145.5	140	145.5	185	189
3VT3 4P	122.5	128.5	157.5	145.5	140	145.5	185	189

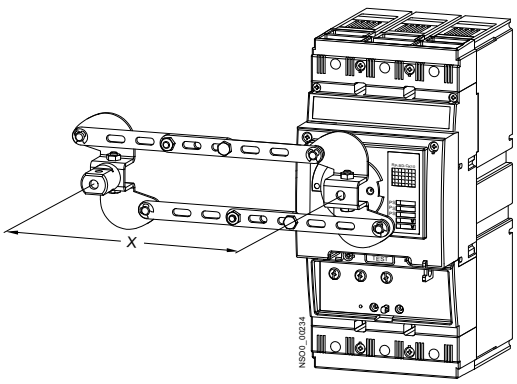


3VT9300-8LB00 Mechanical parallel switching



Mechanical interlocking for parallel switching are for simultaneous switching of two circuit breakers. Parallel switching can be used between two 3VT2 circuit breakers or between 3VT2 and 3VT3 circuit breakers. Each circuit breaker must be furnished with a rotary operating mechanism and at least one of them with a knob.

When using a mechanical interlocking for parallel switching it is required to comply with the dimensions shown in the figure and in the table.

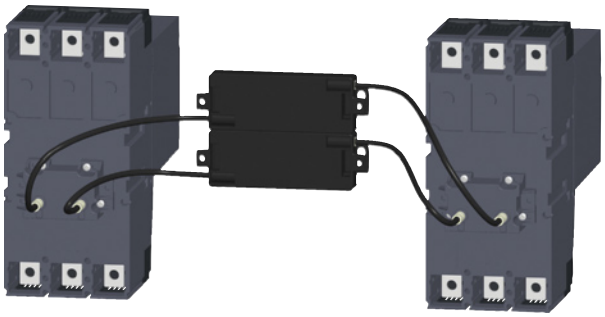


Left switching unit	Right switching unit							
	3VT2 3-pole		3VT2 4-pole		3VT3 3-pole		3VT3 4-pole[1]	
	X	L	X	L	X	L	X	L
	mm	mm	mm	mm	mm	mm	mm	mm
3VT2 3P	105^{+7}	112^{+7}	140^{+7}	145.5^{+7}	122.5^{+7}	128.5^{+7}	x	x
3VT2 4P	105^{+7}	112^{+7}	140^{+7}	145.5^{+7}	122.5^{+7}	128.5^{+7}	x	x
3VT3 3P	122.5^{+7}	128.5^{+7}	157.5^{+7}	145.5^{+7}	140^{+7}	145.5^{+7}	x	x
3VT3 4P	122.5^{+7}	128.5^{+7}	157.5^{+7}	145.5^{+7}	140^{+7}	145.5^{+7}	x	x

[1] Switching unit 3VT3 4P (4-pole version) must be located on the right side.

Mechanical interlocking and parallel switching

3VT9.00-8LC.0 Mechanical interlocking

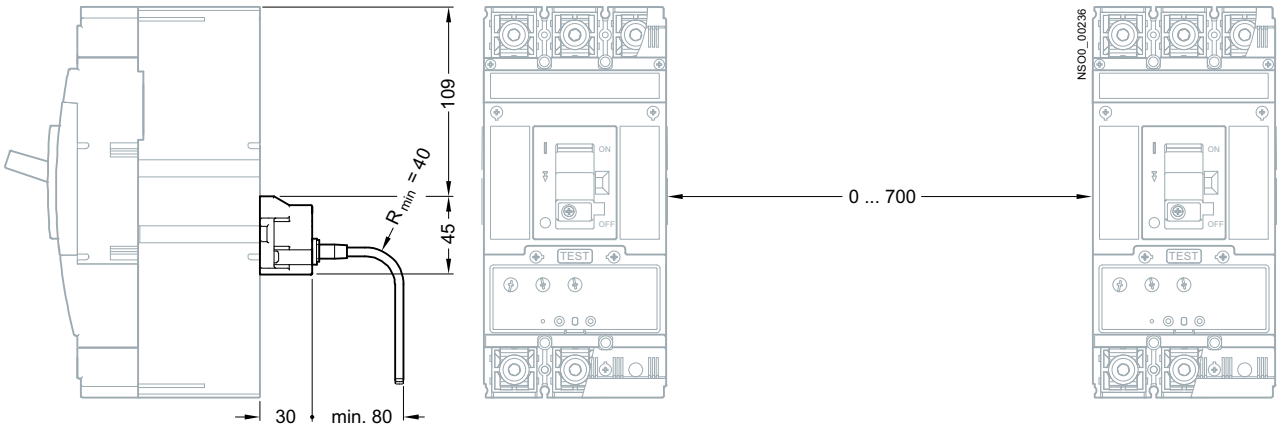


- Provides mechanical interlocking of two circuit breakers/ switch disconnectors, so that they cannot both trip simultaneously, but only one of them at a time. Both circuit breakers may be turned off simultaneously.
- The 3VT9200-8LC10 mechanical interlocking is intended for two 3VT2 circuit breakers. 3VT9300-8LC20 interlocking is intended for one 3VT2 circuit breaker and one 3VT3.
- Circuit breakers can be delivered in fixed-mounted, plug-in and withdrawable versions.

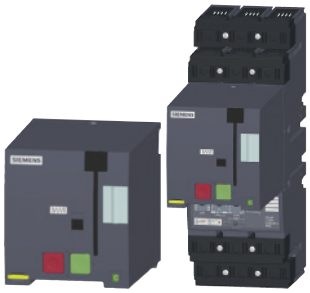
Article No. of mechanical interlocking	3VT9200-8LC10	3VT9300-8LC20
Circuit breaker types	3VT2	3VT3
	3VT2	3VT2

Circuit breaker installation in switchgear and controlgear assemblies

Detailed information is included in the "Instructions for use", which is available on our website:
www.siemens.com/lowvoltage/product-support



Design



- It is used for remote control of the circuit breaker (switch off/on).
- Simple mounting on the circuit breaker after the circuit breaker cover of cavities is removed.
- Usage in industrial applications e.g. switching of stand by units etc. or wherever the automatic operation of electric devices is needed.
- In order to speed up the circuit breaker's switch off (e.g. safety STOP button) the undervoltage release or shunt trip can be used.
- On the motor drive front panel there is a change-over switch to select the drive modes AUTO/MANUAL:
  - AUTO mode - remote control. The circuit breaker is controlled by buttons for remote switch off/on, furthermore in this position mechanical control can be used on the front panel of the motor drive.
  - MANUAL mode - manual control. Control voltage is not needed. The circuit breaker can be switched on using the green switch on button and switched off using the red switch off button on the front part of the drive cover. Electric switch on is blocked. Electric switch off is functional. The accumulation of energy can be done by means of hinged lever.
- Possibility to indicate remotely the state of the AUTO/MANUAL switch.
- In MANUAL mode it is possible to switch on and off with the green and red pushbuttons located on the front panel of the motorized operating mechanism cover. The function of the remote control ON button in MANUAL mode is locked out, whereas the function of the remote control OFF button remains active for safety reasons.
- The motorized operating mechanism, as opposed to the circuit breaker, recognizes only two fixed positions. In the first position the circuit breaker is ON. When the circuit breaker is tripped in AUTO mode by the trip unit or shunt/undervoltage trip units, then because of mechanical link between the circuit breaker and the motor mechanism, a pulse will be generated to automatically wind up the spring of the storage unit. The motor mechanism can be wound up automatically by permanent closing switch S. In the second fixed position the circuit breaker is switched off and the loaded drive is ready to switch the breaker on after it has received the setting pulse.
- The motorized operating mechanism makes it possible to control the circuit breaker after the loss of control voltage. In MANUAL and AUTO modes, it is possible to wind up the storage unit by repeated rotation of the foldable handle. After charging the spring mechanism with spring energy, it is possible to switch the circuit breaker on and off with the control buttons located on the front panel of the motor mechanism.
- The front panel incorporates a storage unit status indicator to indicate what state the 3VT motor mechanism unit storage is in and whether it is possible to switch the circuit breaker on. The 3VT motor mechanism is also able to remotely indicate the storage status. A corresponding signal is issued to the terminal strip. 3VT2 motor mechanism have optional designs, alternatively with MANUAL/AUTO indication.
- The mechanism can be furnished with an electromechanical operations counter that may be installed in the drive cover or outside of the circuit breaker (e.g. in the switchgear door). A metal holder included in the scope of supply of the external operations counter. Connecting is facilitated with connectors.
- The motorized operating mechanism can be locked in off position using as many as three padlocks with shank diameter max. 4.3 mm.
- A 3VT9300-3MF20 cover can be attached to the ON-OFF switch of the motorized operating mechanism, and then sealed with sealing wire. The cover prevents turning on the circuit breaker from the drive panel.
- Extension cable 3VT9300-3MF00 has a connector on one side that connects to the connector located on the motor mechanism and conductors on the other side that connect, for example, to a terminal block.
- Front panel state indicating device of the stored energy signals the state of motor drive storage devices. The state can be signalled from a distance.
- Motor drive can be sealed means of bolt sealing 3VT9200-8BN00

Article No.		3VT9200-3M..0
Operational voltage U_e	V	AC 24, 48, 110, 230, 400, 500 DC 24, 48, 110, 220
Rated frequency f_n	Hz	50/60
Control pulse length for storing	ms	400 ... ∞[1)]
Control pulse length	ms	20 ... 700[1)], 400 ... ∞[1)]
Time before switching on	ms	< 50
Time before switching off	ms	800
Frequency of cycles ON/OFF		3 contact making/min
Frequency of cycles - instant successive ON/OFF cycles		10 contact making
Mechanical endurance		30000 contact making
Input power	AC VA DC W	100 100
Protection		
• AC 24, 48, 110 V; AC 230 V		5SX4104-7; 5SX4102-7
• DC 24, 48, 110 V; DC 220 V		5SX5104-7; 5SX5102-7
Rated operating current AUTO/MANUAL switches I_e/U_e	V	AC 5 A/250 DC 0.5A/250

Article No.		3VT9300-3MF00
Number of conductors		12
Conductor cross sections S	mm^2	0.35
Conductor lengths	cm	60

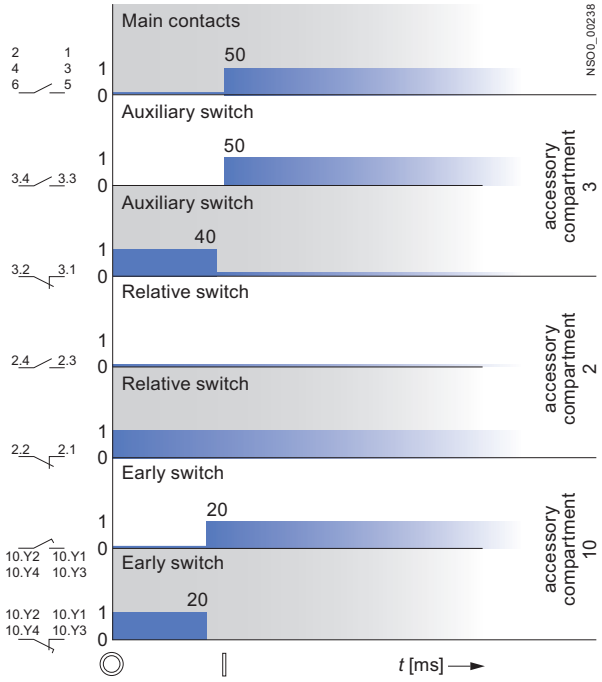
[1)] For sequence of control pulses, see 2/34.

Motorized operating mechanism

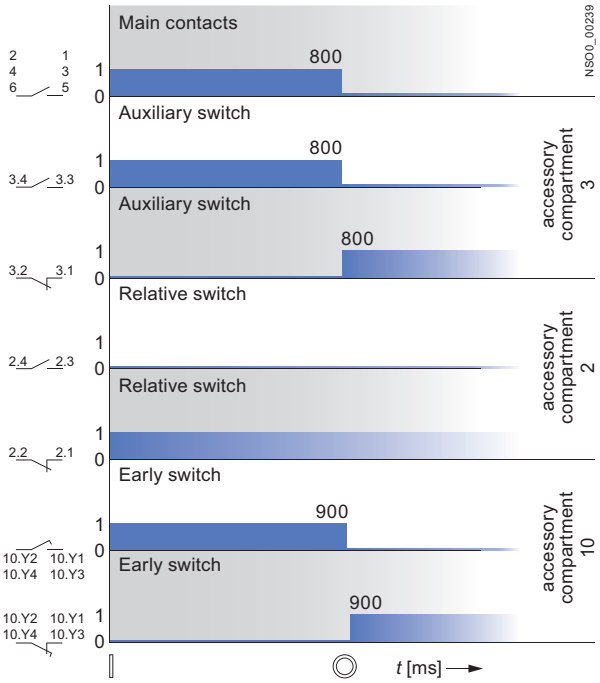
Function

Circuit breaker switched on/off by the motorized operating mechanism

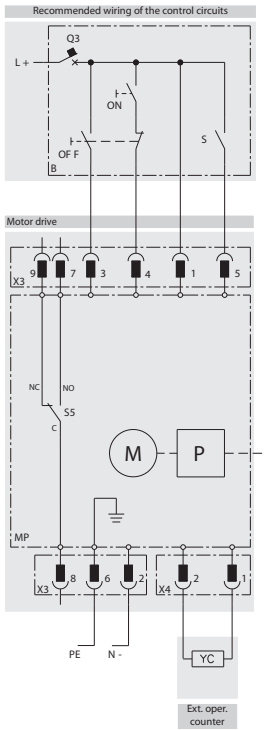
Circuit breaker switched on by the motorized operating mechanism – electrically by pushbutton ON



Circuit breaker switched off by the motorized operating mechanism – electrically by pushbutton OFF



Wiring diagram



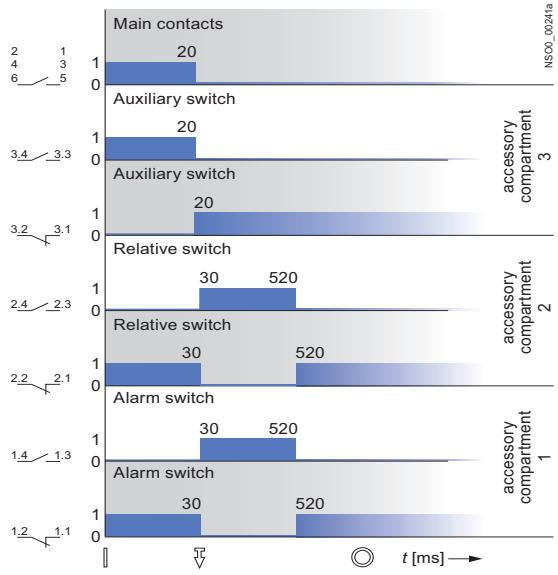
Circuit breaker states and toggle positions of the circuit breaker

Circuit breaker state	Toggle positions of circuit breaker
Switched on	
Switched off by trip units, or by TEST button or by the trip pushbutton on the motorized operating mechanism	
Switched off manually or electrically by the operating mechanism	

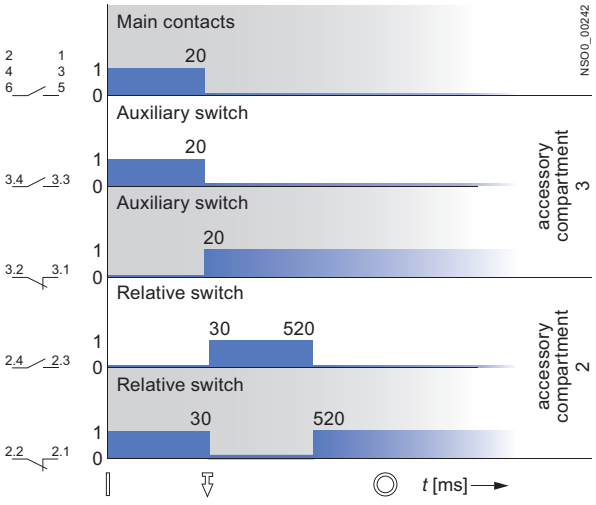
Wiring diagram description

Symbol	Description
MP	3VT9200-3M..0 motorized operating mechanism
M	Motor
P	storage mechanism
X3	Connector to connect control circuits
X4	Connector for external operations counter
S5	Switch indicating AUTO/MANUAL modes
YC	external 3VT9300-3MF10 operations counter
B	recommended wiring of the control circuits (not included in operating mechanism order)
ON	make pushbutton
OFF	break pushbutton
S	Switch for energy storage (switched on = automatic storage, may be continuously switched on)
Q3	Motorized operating mechanism circuit breaker

Tripping off the circuit breaker with motorized operating mechanism by the trip unit (switch S – automatic spring charging)

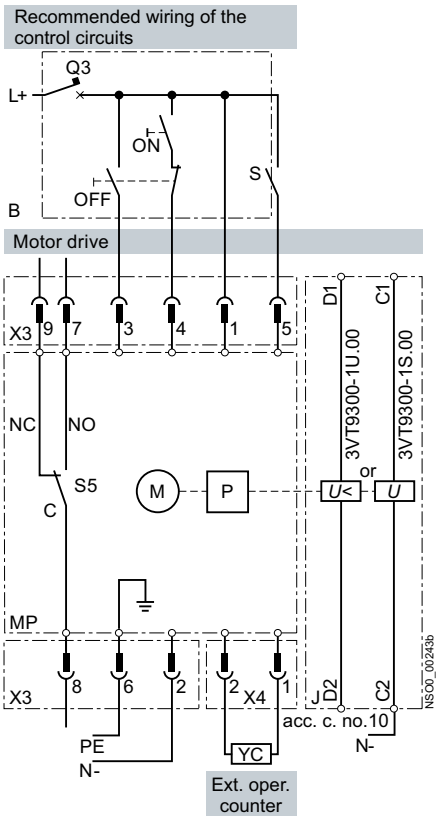


Tripping off the circuit breaker with motorized operating mechanism by a shunt trip unit or undervoltage trip unit (switch S – automatic spring charging)

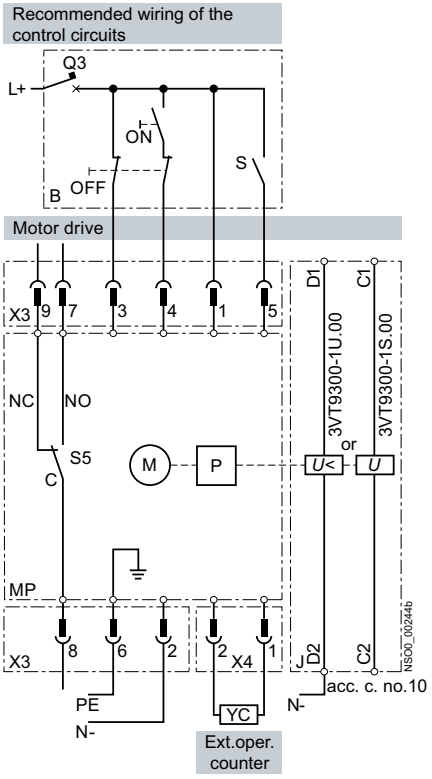


Wiring diagram

Circuit breaker switched on by the motorized operating mechanism (electrical ON signal) and switched off by the shunt trip unit



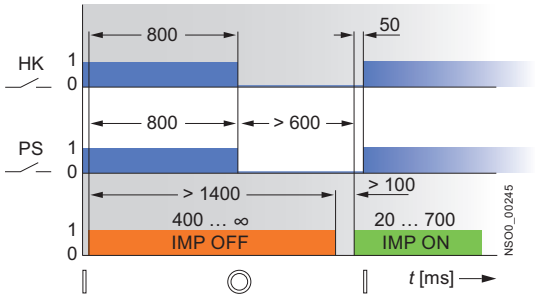
Circuit breaker switched on by motorized operating mechanism (electrical ON signal) and switched off by the undervoltage trip unit



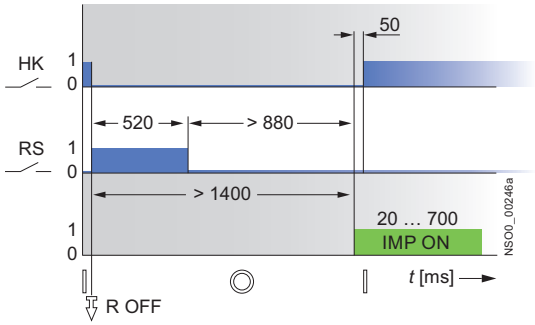
Motorized operating mechanism

Recommended actuating pulses

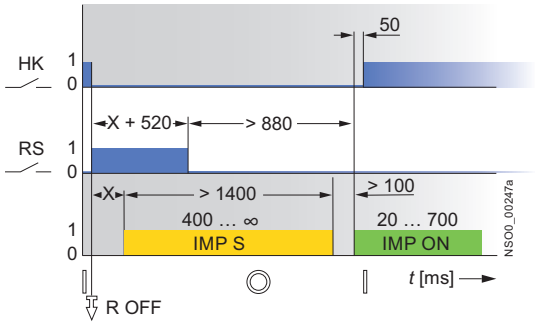
Circuit breaker switched on/off by motorized operating mechanism – switch S permanently closed (automatic spring charging) or open



Circuit breaker switched off by trip unit or shunt/undervoltage trip units and switched on by the motorized operating mechanism – switch S permanently closed (automatic spring charging)



Circuit breaker switched off by the rip unit or shunt/undervoltage trip units and switched on by the motorized operating mechanism – S switch closed only for storing



Description of charts

Symbol	Description
HK	main contacts
PS	auxiliary switch
RS	relative switch
R OFF	circuit breaker closes instantly, by trip unit
IMP S	pulse to charge spring mechanism
IMP ON	make pulse for motorized operating mechanism
IMP OFF	break pulse for motorized operating mechanism
X	random segment of time

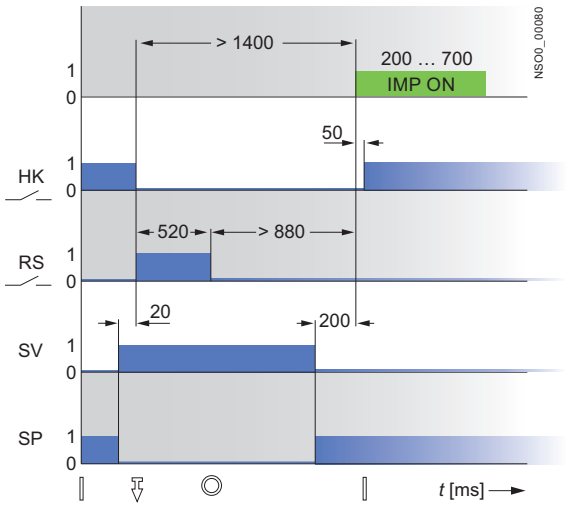
Circuit breaker states and toggle positions of the circuit breakers

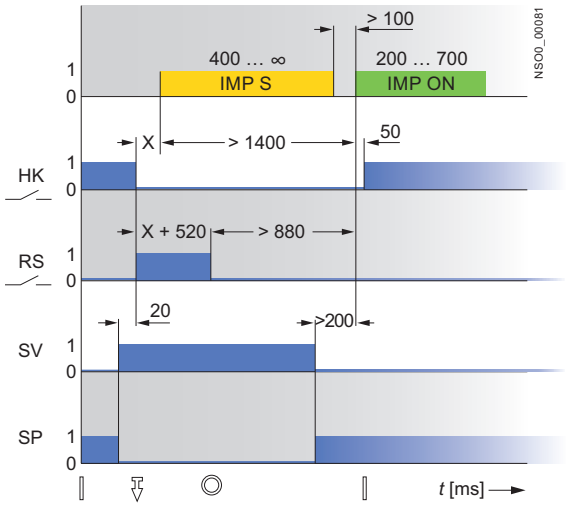
Circuit breaker state	Toggle positions of circuit breakers
Switched on	
Switched off by trip units, or by TEST button or by the trip pushbutton on the motorized operating mechanism	
Switched off manually or electrically by the operating mechanism	

In a standby system, if a Bowden cable is used for mechanical interlocking, then an auxiliary trip unit should be used to switch the circuit breaker off. Otherwise, the first attempt of switching a standby circuit breaker may fail.

Motorized operating mechanism

Recommended control pulses for switching of the 3VT2 circuit breakers by the motorized operating mechanism after their switching off by a shunt trip unit or undervoltage trip unit in the automatic standby system





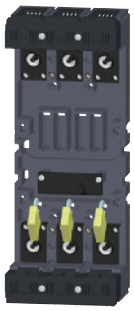
Symbol	Description
HK	Main contacts
RS	Relative switch
SV	Pulse for shunt trip unit
SP	Pulse for undervoltage trip unit
IMP ON	Motorized operating mechanism make pulse
IMP OFF	Motorized operating mechanism storage pulse (generated by S switch)
	Switched on
	Switched off by trip units, TEST or REVISION pushbutton
	Switched off manually or by motorized operating mechanism electrically (wound up state)

Mounting accessories for plug-in version

Overview

Plug-in bases

3VT9200-4PA30
base



Locking plug-in base against inserting the circuit breaker/disconnector

The plug-in version of the circuit breaker/switch disconnector is intended for demanding industrial applications where rapid exchange of the circuit breaker is needed.

- The plug-in base includes complete accessories for assembling a circuit breaker/switch disconnector in plug-in design from the original fixed-mounted version
- The components of the plug-in base are:
  - supporting part of the plug-in base
  - 2 connection sets (total of 6 terminals) for fitting on to the switching unit
  - interlocking connecting rod (ensures automatic switching off of the circuit breaker for handling – inserting and removal)
  - set of mounting bolts for securing circuit breaker into plug-in base (to secure plug-in base into switchboard, a set of mounting bolts is used that is included in the scope of supply of the 3VT2725-.AA36-0AA0 switching unit.

Main circuit

- The 3VT9200-4TA30 connecting set is used for connecting with busbars or cable lugs and is included in the scope of supply of the 3VT9275-.AA36-0AA0 switching unit
- For connecting in another way, it is necessary to use connecting sets (see page 2/9)
- The type of connections must comply with our recommendations (see page 2/11).

Auxiliary circuits

These are connected using a 3VT9300-4PL00 15-wire cable.

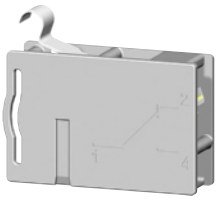
Coding

3VT9200-4WN00 coding set

The plug-in base and the circuit breaker can be provided with a coding set, which prevents inserting any other circuit breaker into the plug-in base.

Position signalling

3VT9300-4WL00 position signalling switch



The plug-in base may be provided with a maximum of four switches (for 4-pole version, max. 6 switches) for signalling the connected/removed position.

States of 3VT9300-4WL00 switches in the plug-in base according to the circuit breaker position

Accessory compartment	11 ... 14 (19, 20)[1]	
Circuit breaker position		
Connected	0	1
Removed	1	0

0 = contact open, 1 = contact closed

[1] Accessory compartments 19 and 20 are for 4-pole version only.

Technical specifications

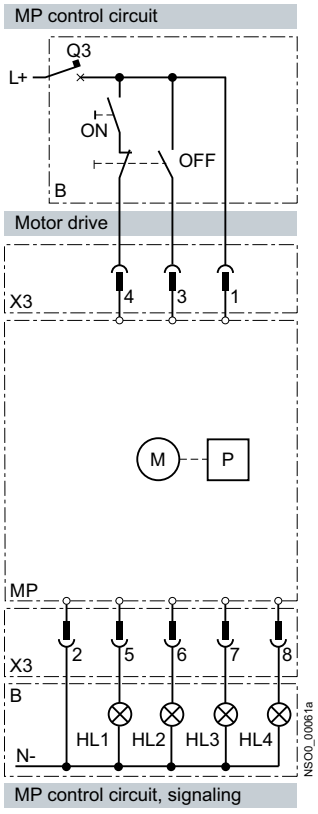
Article No.		3VT9300-4WL00
Rated operational voltage U_e	V	AC 400 DC 250
Rated isolation voltage U_i	V	AC 500
Rated frequency f_n	Hz	50/60
Rated operational current I_e/U_e		
AC-13		3 A/400 V
DC-15		0.15 A/250 V, 3 A/125 V, 4 A/30 V
Thermal current I_{th}	A	6
Arrangement of contacts		001
Connector cross-section S	mm^2	0.5 ... 1
Terminal protection (connected switch)		IP20

A wiring diagram showing the circuit breaker situated in a plug-in mounting base and outfitted with accessories, is shown on page 2/14.

Plug-in base with motorized operating mechanism

Circuit breaker, plug-in version, with motorized operating mechanism

Recommended wiring of the circuit breaker in plug-in design with motorized operating mechanism



Recommended process of manipulation

After every manipulation with circuit breaker in plug-in design it is necessary to accomplish the operations in following sequence, after repeated insertation into the plug-in device:

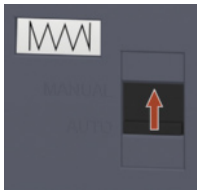
1) press the switch off button (red) on the motor operating mechanism

2) press the switch on button (green) on the motor operating mechanism

Symbol	Description
MP	3VT9300-3M..0 motorized operating mechanism
M	Motor
P	energy storage device
X3	terminal strip to connect control circuits
X4	terminal strip for external operations counter
S5	Switch indicating AUTO (NO-C)/MANUAL (NC-C) modes
YC	3VT9300-3MF10 external operations counter
B	recommended wiring of the control circuits (control circuits not included in motorized operating mechanism delivery)
ON	make pushbutton
OFF	break pushbutton
S	Switch to store energy
Q3	Motorized operating mechanism circuit breaker for AC 24 V 5SX4104-7 AC 48 V 5SX4104-7 AC 110 V 5SX4104-7 AC 230 V 5SX4102-7 DC 24 V 5SX5104-7 DC 48 V 5SX5104-7 DC 110 V 5SX5104-7 DC 230 V 5SX5104-7

Unplugging the circuit breaker with motorized operating mechanism

- Each time before removing the circuit breaker, we recommend first to turn the AUTO/MANUAL switch on the motorized operating mechanism to the MANUAL position
- More operating information is available in the operating instructions
- Not adhering to this procedure or failing to follow the recommended wiring, could mean that the circuit breaker will not successfully switch on at the first attempt.



Mounting accessories for plug-in version

2

Changes in states of switches when inserting and withdrawing the circuit breaker

			State of switches before removing inserted position →						State of switches after removing withdrawn position					
			Accessory compartment						Accessory compartment					
			1		2		3 (4,5,6)[1]		1		2		3 (4,5,6)[1]	
	Knob position of circuit breaker	State of the main contacts	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10
														
Switched on		1	1	0	0	1	1	0	0	1	0	0	0	1
Manually switched off or switched off by motorized operating mechanism		0	1	0	0	1	0	1	1	1	0	0	0	1
Switched off by trip units		0	0	1	1	0	0	1	1	0	1	0	0	1
Switched off from switched-on state: by means of auxiliary trip unit, TEST pushbutton or by OFF pushbutton located on the motorized operating mechanism		0	1	0	1	0	0	1	1	1	0	0	0	1

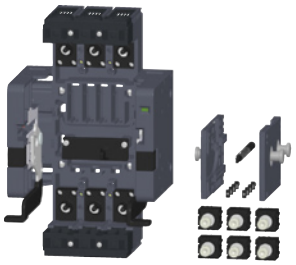
0 = contact open, 1 = contact closed

[1] Accessory compartments 4, 5, 6 are for 4-pole version only.

Design

Withdrawable version mounting base

Circuit breaker installed in withdrawable version base



3VT9200-4WA30 withdrawable version base

The withdrawable version of the circuit breaker/switch-disconnector is intended for demanding industrial applications where rapid exchange of the circuit breaker and frequent checking of the circuit are needed.

- The withdrawable version base includes all parts needed to convert a circuit breaker or switch disconnector from fixed-mounted version to withdrawable version.
- The components of the withdrawable version are:
  - supporting part of the withdrawable version
  - 2 movable side plates
  - 2 connection sets (total of 6 terminals) for fitting onto the switching unit
  - interlocking connecting rod (ensures automatic switching off of the circuit breaker for handling, inserting and withdrawing)
  - a set of mounting bolts is used to fasten the withdrawable version mounting base into the switchboard

Main circuit

- The 3VT9200-4TA30 connecting set is used for connecting with busbars or cable lugs and is included in the scope of supply of the 3VT2725-.AA36-0AA0 switching unit
- For connecting in another way, it is necessary to use connecting sets (see page 2/9)
- The type of connections must comply with our recommendations (see page 2/11).

Auxiliary circuits

These are connected using the 3VT9300-4PL00 15-wire cable.

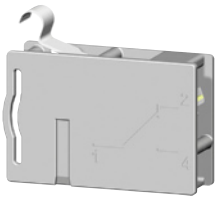
Coding

3VT9200-4WN00 coding set

The withdrawable version mounting base and the circuit breaker can be provided with a coding set, which prevents inserting another circuit breaker into the withdrawable version mounting base.

Position signalling

3VT9300-4WL00 position signalling switch



The withdrawable version can be provided with switches for signalling the position of the circuit breaker, see table.

Technical specifications

Article No.		3VT9300-4WL00
Rated operational voltage U_e	V	AC 400, AC 250
Rated isolation voltage U_i	V	AC 500
Rated frequency f_n	Hz	50/60
Rated operational current I_e/U_e		
AC-13		3 A/400 V
DC-15		0.15 A/250 V, 3 A/125 V, 4 A/30 V
Thermal current I_{th}	A	6
Arrangement of contacts		001
Connector cross-section S	mm^2	0.5 ... 1
Terminal protection (connected switch)		IP20

For wiring diagram of the circuit breaker in plug-in base with accessories, see page 2/14.

States of 3VT9300-4WL00 switches in withdrawable device according to circuit breaker and lockout positions

Circuit breaker and lockout position	Accessory compartment 11,12,13,14 (19, 20)[1]		15,17 (19, 20)[1]		16,18	
Connected and unlocked	0	1	1	0	0	1
	1	1	1	0	1	0
Withdrawn and unlocked	1	0	0	1	0	1
	1	0	0	1	1	0
Removed and unlocked	1	0	1	0	0	1
	1	0	1	0	1	0

0 = contact open; 1 = contact closed

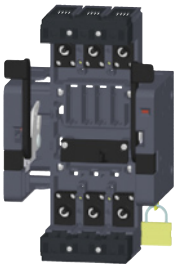
[1] Accessory compartments 19 and 20 are for 4-pole version only.

- Operating state is always in locked-out position
- In locked-out position, it is possible to lock the withdrawable device, so that the circuit breaker cannot be switched on (for more detailed information, see "Advantages and enhanced safety for operator")

Mounting accessories for withdrawable version

Locking

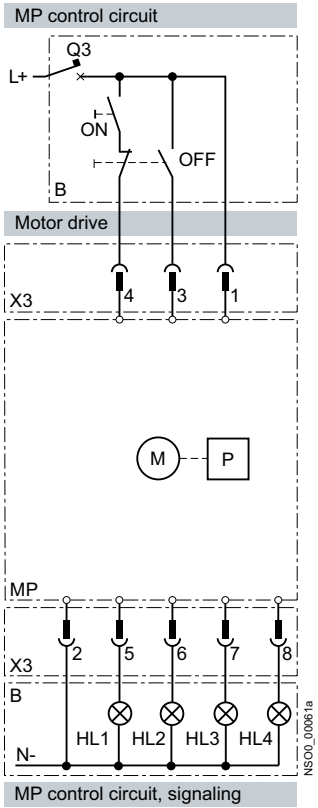
Locking the circuit breaker in withdrawable version base against tampering



Locking the withdrawable version base against inserting the circuit breaker

Withdrawable version with motorized operating mechanism

Recommended wiring of the circuit breaker in withdrawable version with motorized operating mechanism

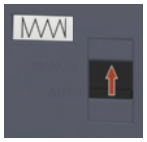


Description

Symbol	Description
MP	3VT9300-3M..0 motorized operating mechanism
M	Motor
P	energy storage device
X3	terminal strip to connect control circuits
X4	terminal strip for external operations counter
S5	Switch indicating AUTO (NO-C)/MANUAL (NC-C) modes
YC	3VT9300-3MF10 external operations counter
B	recommended wiring of the control circuits (control circuits not included in motorized operating mechanism delivery)
ON	make pushbutton
OFF	break pushbutton
S	Switch to charge spring mechanism
Q3	Motorized operating mechanism circuit breaker for AC 24 V 5SX4104-7 AC 48 V 5SX4104-7 AC 110 V 5SX4104-7 AC 230 V 5SX4102-7 DC 24 V 5SX5104-7 DC 48 V 5SX5104-7 DC 110 V 5SX5104-7 DC 230 V 5SX5104-7

Inserting and withdrawing the circuit breaker with motorized operating mechanism

- Each time before inserting or withdrawing the circuit breaker, we recommend placing the AUTO/MANUAL switch on the motorized operating mechanism to MANUAL position
- More operating information is available in the operating instructions
- Not adhering to this procedure or failing to follow the recommended wiring, could mean that the circuit breaker will not successfully switch on at the first attempt.



Switches in the accessory compartments of the switching unit

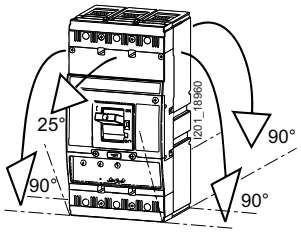
Changes in states of the switches when inserting and withdrawing the circuit breaker

			State before inserted/withdrawn position						State after inserted/withdrawn position					
Circuit breaker before insertion			State of switches before insertion - withdrawn position →						State of switches after insertion - connected position					
Circuit breaker before withdrawal			State of switches before withdrawal - connected position →						State of switches after withdrawal - withdrawn position					
Accessory compartment			1		2		3 (4,5,6)[1]		1		2		3 (4,5,6)[1]	
	Knob position of circuit breaker	State of the main contacts	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10	3VT9300-2AC10	3VT9300-2AD10
Switched on		1	1	0	0	1	1	0	1	0	1	0	0	1
Manually switched off or by motorized operating mechanism		0	1	0	0	1	0	1	1	0	1	0	0	1
Switched off by trip units		0	0	1	1	0	0	1	0	1	1	0	0	1
Switched off from switched-on state: by means of auxiliary trip unit, TEST pushbutton or by OFF push-button on the motorized operating mechanism		0	1	0	1	0	0	1	1	0	1	0	0	1

0 = contact open, 1 = contact closed

[1] Accessory compartments 4, 5, 6 are for 4-pole version only.

Installation positions: fixed, plug-in and withdrawable design



Installation positions

Insulating barriers and terminal covers

Overview

Use of insulating barriers and terminal covers with circuit breakers and switch disconnectors

Fixed-mounted version

Front connection

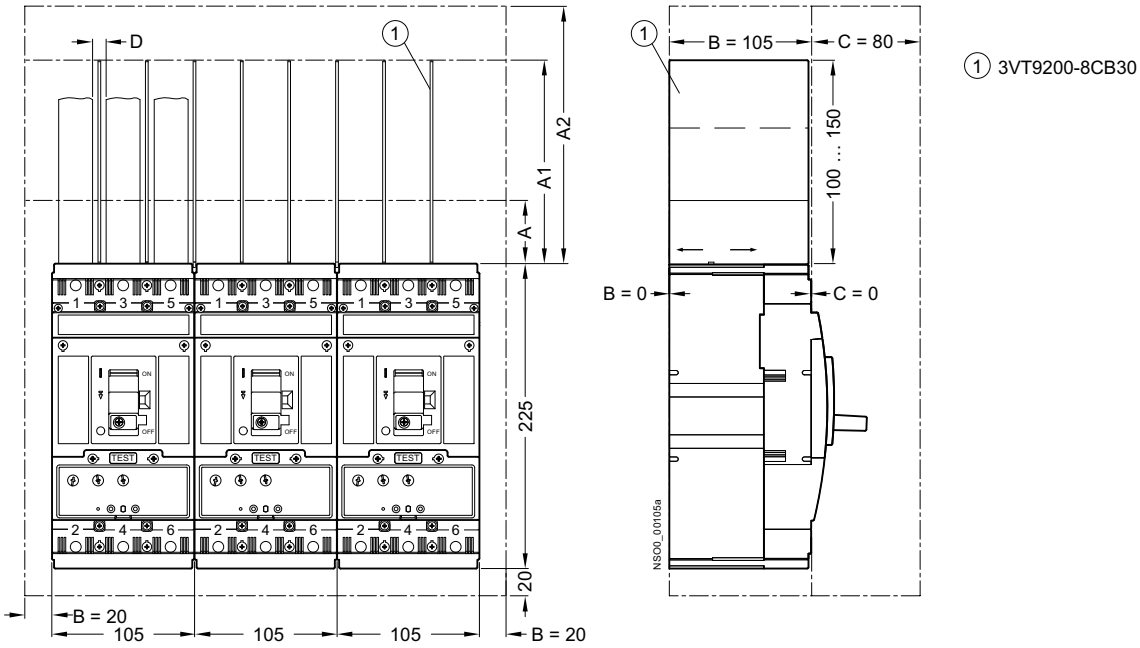
- Terminals 1, 3, 5
  - If U_e = AC 415 V, it is necessary to use 3VT9300-8CE30 insulating barriers or 3VT9200-8CB30 terminal covers.
  - If insulated conductors are not used for connecting the main circuit to terminals 1, 3, 5, flexibars or rear connection, it is necessary to use 3VT9300-8CE30 insulating barriers or a 3VT9200-8CB30 terminal cover.
- Terminals 2, 4, 6
  - If the circuit breaker/switch disconnector is connected to the source with terminals 2, 4, 6 and if U_e = AC 415 V, it is necessary to use 3VT9300-8CE30 insulating barriers or a 3VT9200-8CB30 terminal cover.
  - If insulated conductors are not used for connecting the main circuit to terminals 2, 4, 6, and flexibars or rear connections are not used, then it is necessary to use 3VT9300-8CE30 insulating barriers or 3VT9200-8CB30 terminal covers.

Rear connection

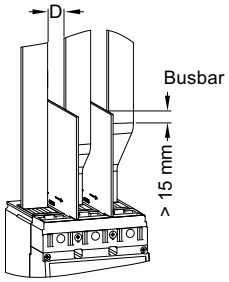
- Neither insulating barriers nor terminal covers have to be used.

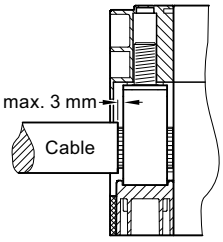
Plug-in and withdrawable versions

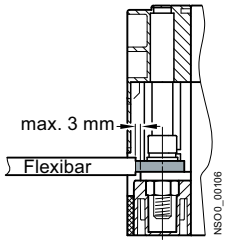
Neither insulating barriers nor terminal covers have to be used.



A	Minimum distance between the circuit breaker/switch-disconnector and uninsulated earthed wall (applicable for connections using insulated conductors, cables, flexibars or with rear connection)
A1	Minimum insulation length of bare conductors (using 3VT9300-8CE30 insulating barriers from 50 mm to max. 100 mm, or by adding additional insulation for the conductors with barriers to obtain at least A1 value)
A2	Minimum distance: • between circuit breaker/switch disconnector and uninsulated earthed wall (applicable for uninsulated conductors and busbars) • between circuit breaker/switch disconnector and busbar • between two circuit breaker/switch disconnectors situated vertically above one another • between uninsulated connections of two circuit breakers/switch disconnectors above one another
B, C	Minimum distance between circuit breaker/switch disconnector and uninsulated earthed wall
D	Minimum distance between uninsulated conductors







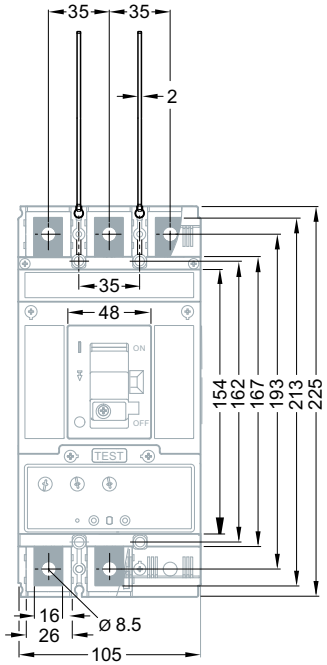
AC U_e			230 V	415 V		500 V	690 V
3VT2 H wired with I_k [1]			≤ 100 kA	> 36 ... 65 kA	≤ 36 kA	≤ 25 kA	≤ 13 kA
3VT2 N wired with I_k			≤ 60 kA		≤ 36 kA	≤ 16 kA	≤ 10 kA
C < 80 mm		A (mm)	50	50	50	50	50
	D ≥ 10 mm	A1 (mm)	100	150	100	150	150
		A2 (mm)	200	250	200	250	250
		A (mm)	50	50	50	50	50
	D ≥ 30 mm	A1 (mm)	100	150	100	150	150
		A2 (mm)	150	200	150	200	200
C ≥ 80 mm		A (mm)	50	50	50	50	50
	D ≥ 10 mm	A1 (mm)	100	150	100	150	150
		A2 (mm)	150	200	150	200	200

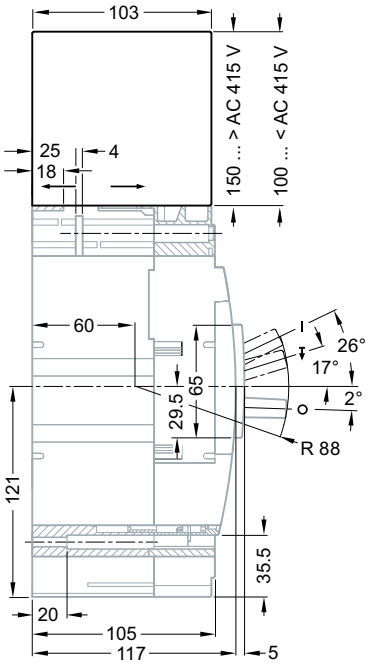
[1] I_k = max. short-circuit current in the protected circuit (rms).

Dimensional drawings

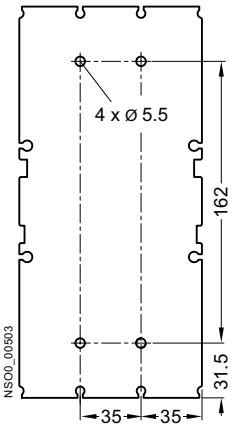
Dimensional drawings - 3-pole, fixed-mounted version

Fixed-mounted version, front connection

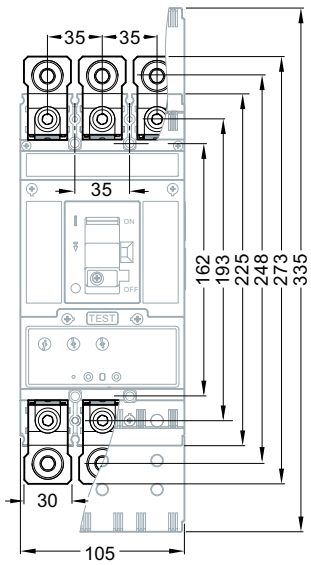


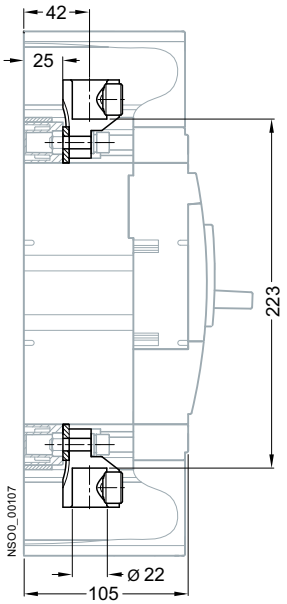


Drilling pattern

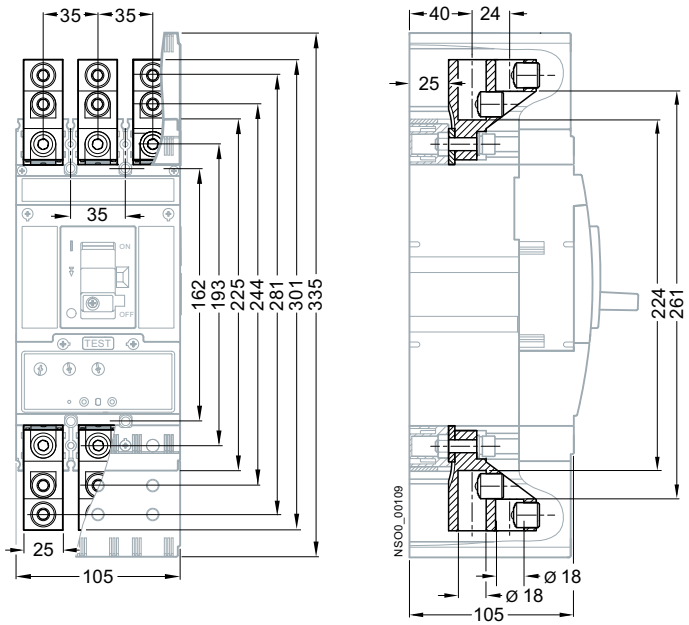


Fixed-mounted version, front connection (3VT9224-4TD30 connecting set)

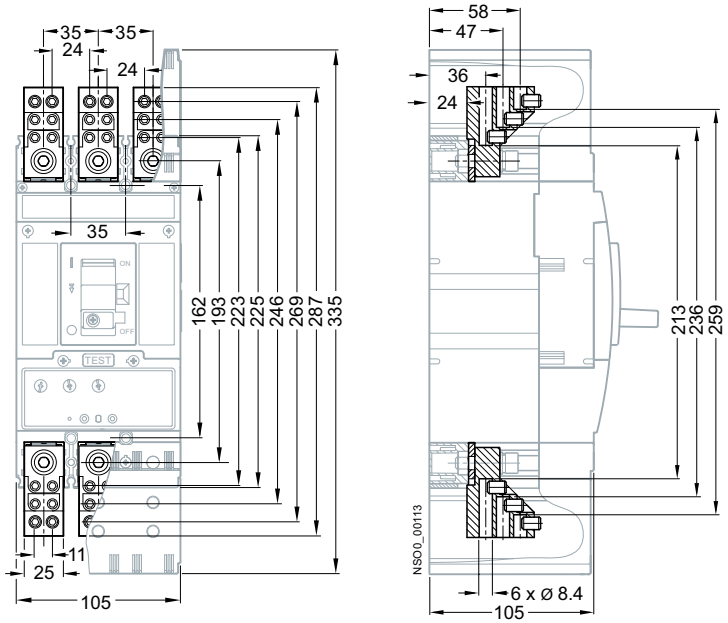




Fixed-mounted version, front connection (3VT9215-4TF30 connecting set)

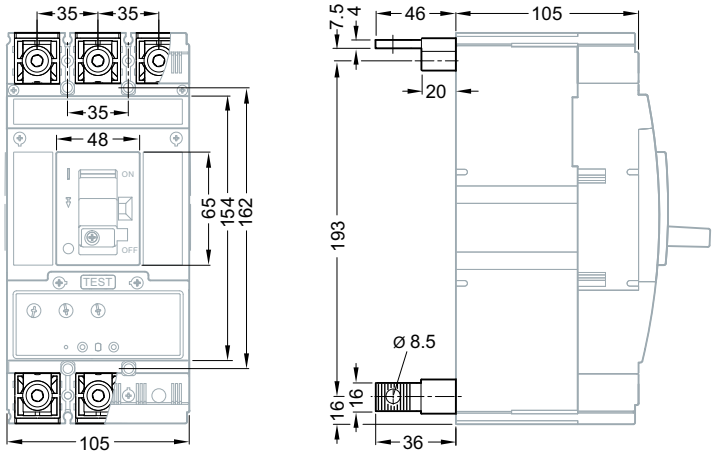


Fixed-mounted version, front connection (3VT9203-4TF30 connecting set)

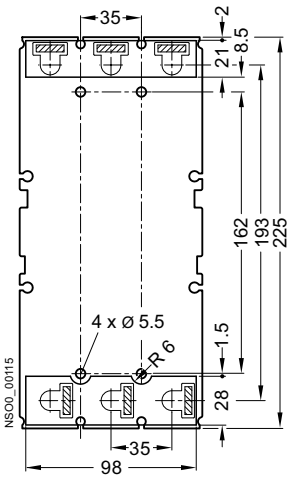


Dimensional drawings

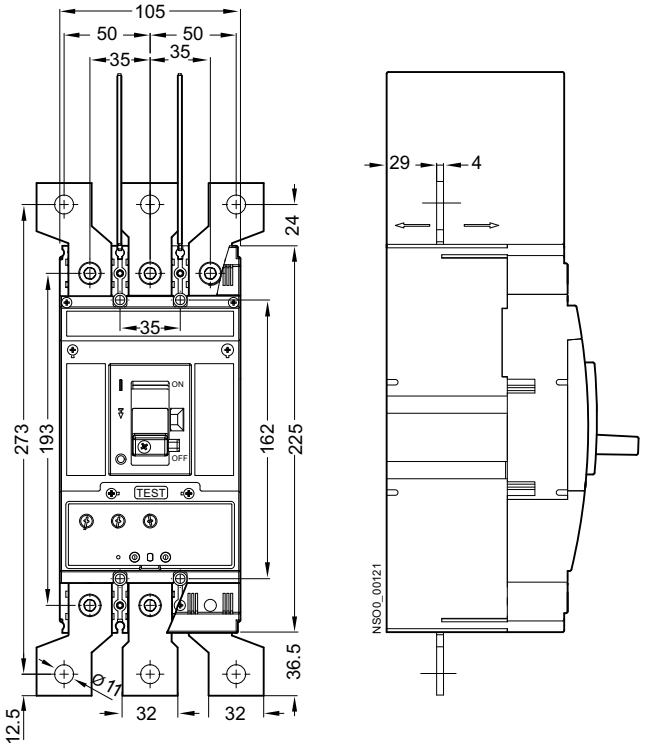
Fixed-mounted version, rear connection (3VT9200-4RC30 connecting set)



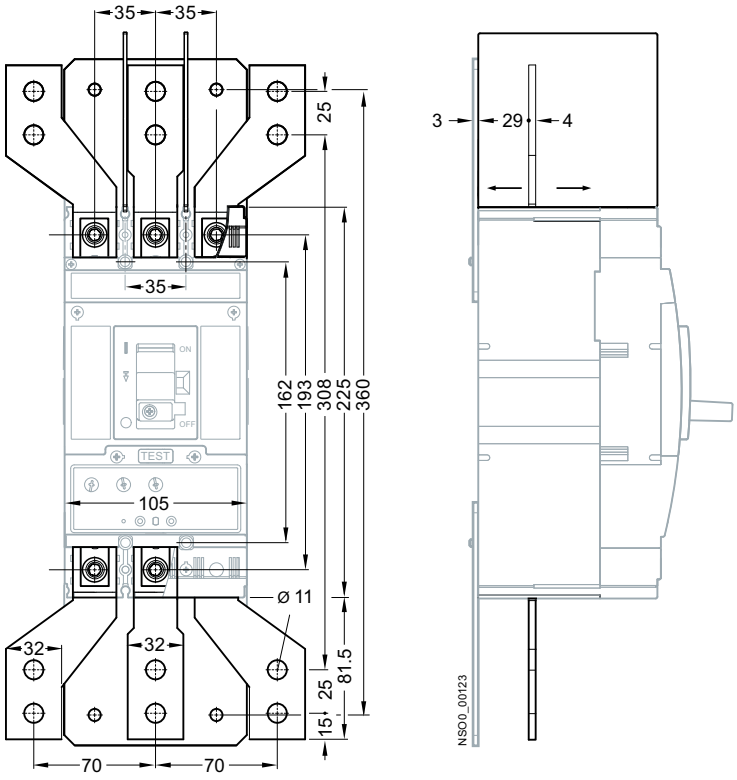
Drilling pattern



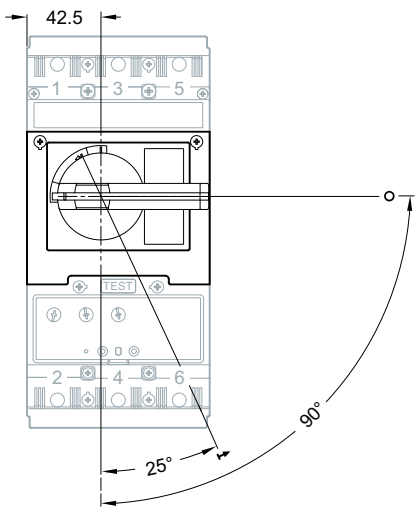
Fixed-mounted version, front connection (3VT9200-4ED30 connecting set)

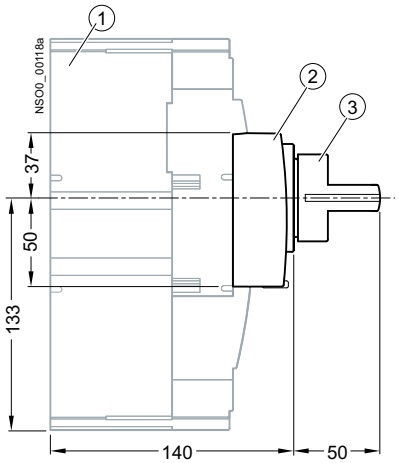


Fixed-mounted version, front connection (3VT9200-4EE30 connecting set)



Fixed-mounted version, with rotary operating mechanism

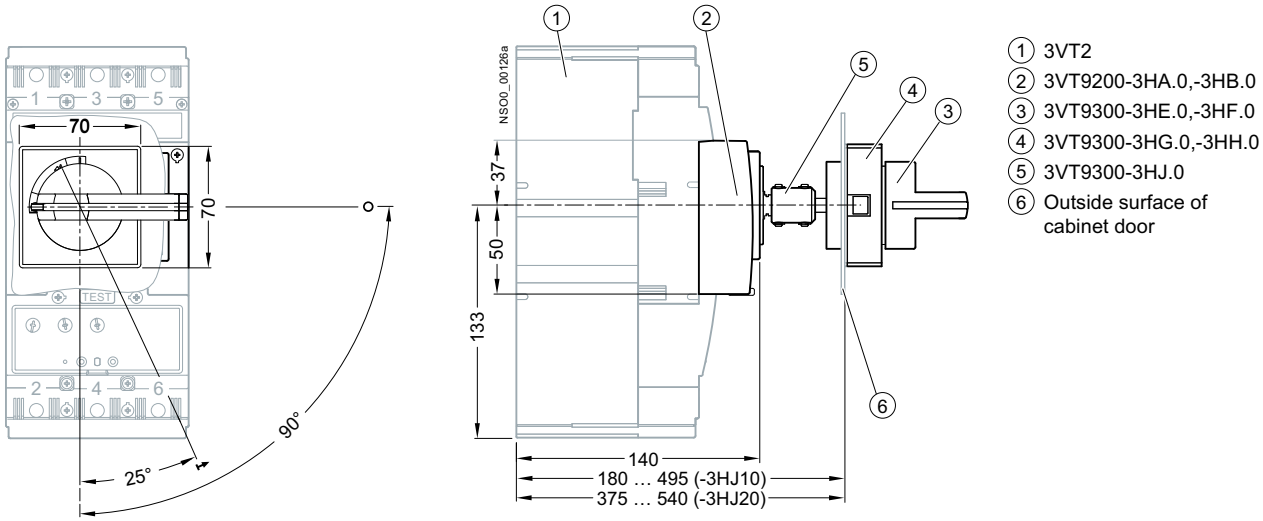




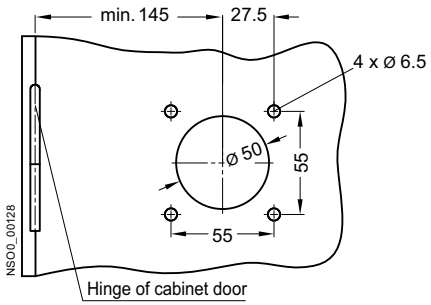
1 3VT2
2 3VT9200-3HA.0,-3HB.0
3 3VT9300-3HE.0,-3HF.0

Dimensional drawings

Fixed-mounted version, rotary operating mechanism with adjustable knob

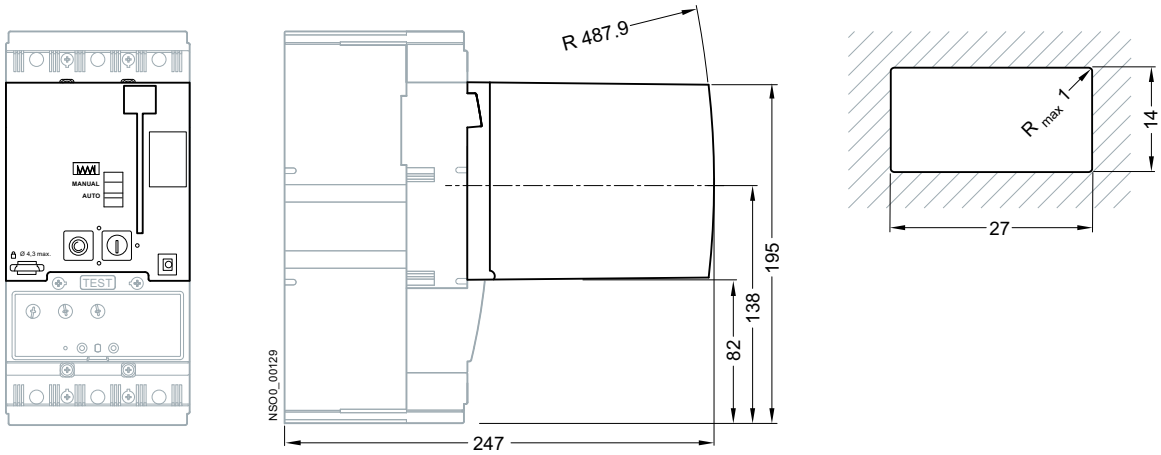


Cabinet door cut-out



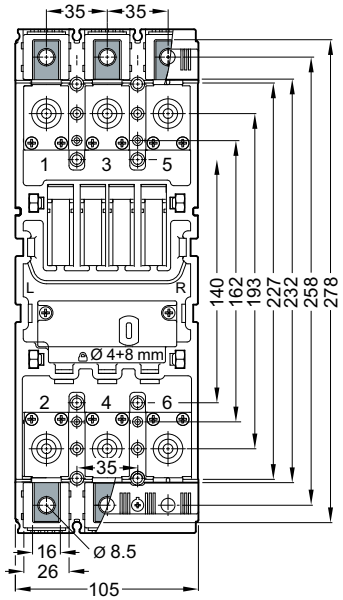
Fixed-mounted version, 3VT9200-3M..0 motorized operating mechanism

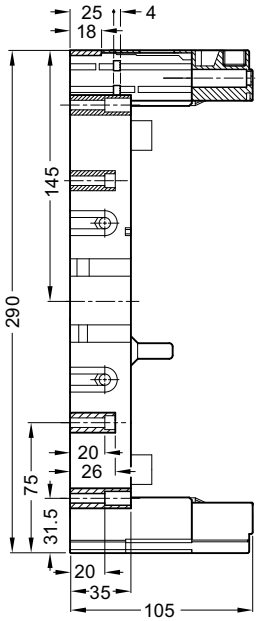
Opening dimensions in switchgear door for external operation cycle



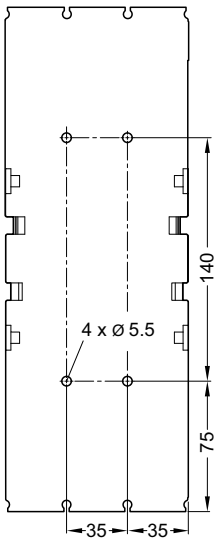
Dimensional drawings - 3-pole, plug-in version

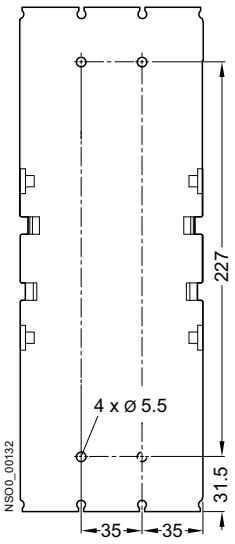
Plug-in base 3VT9200-4PA30





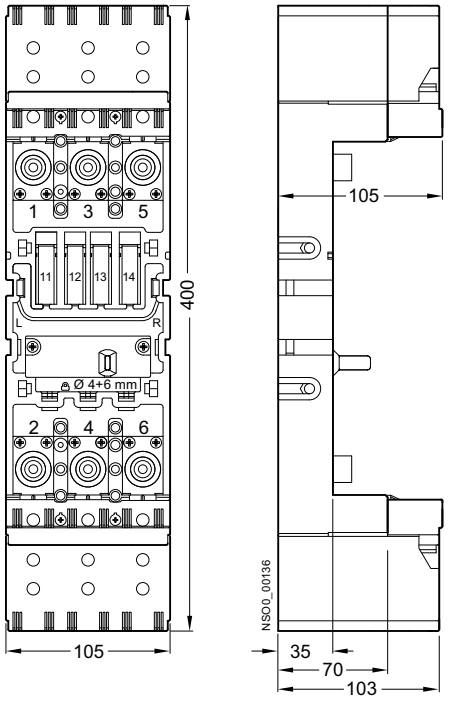
Drilling patterns



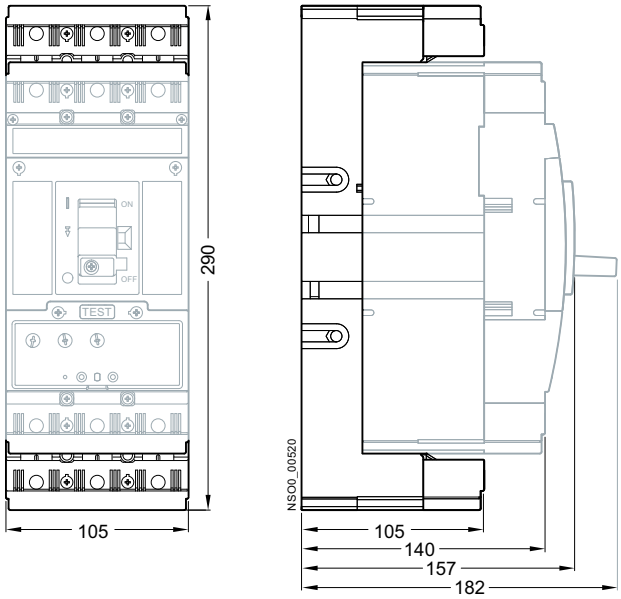


Dimensional drawings

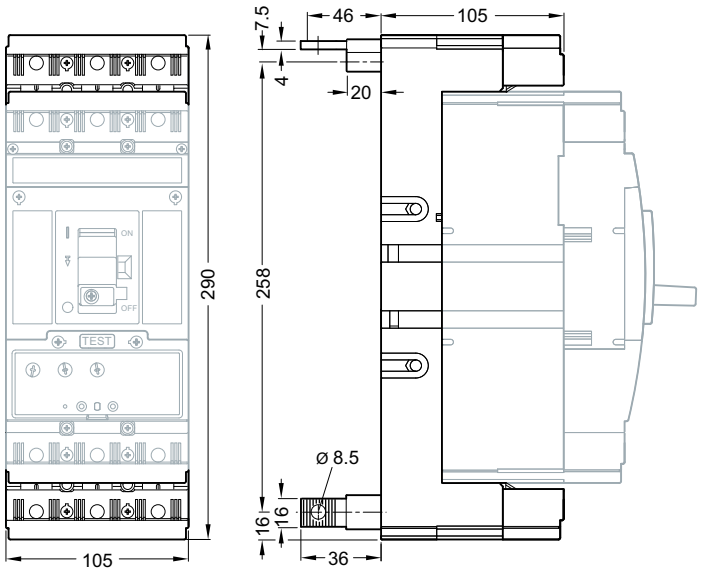
Plug-in base, 3VT9200-8CB30 terminal cover



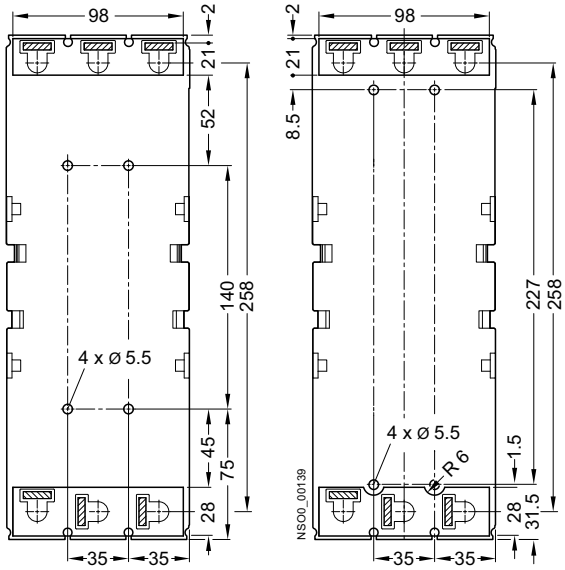
Plug-in version



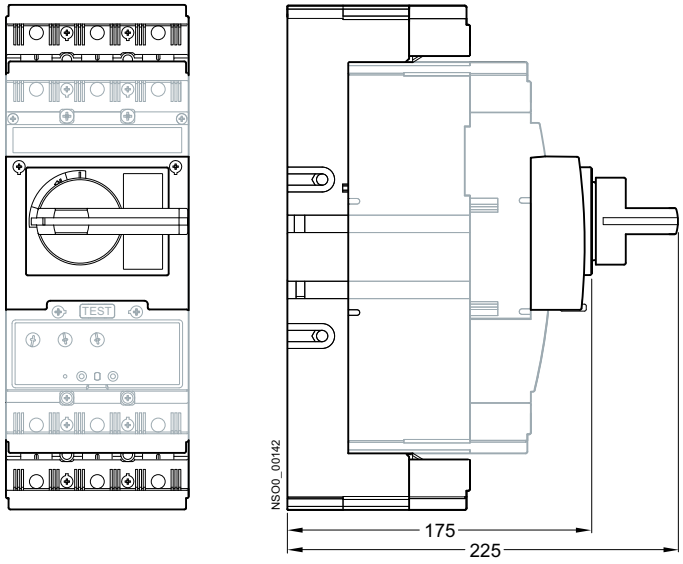
Plug-in version



Drilling patterns

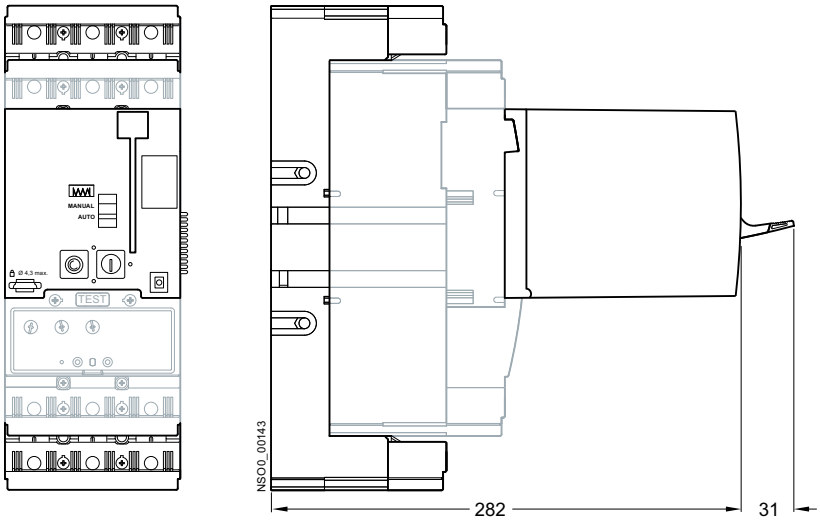


Plug-in version, rotary operating mechanism



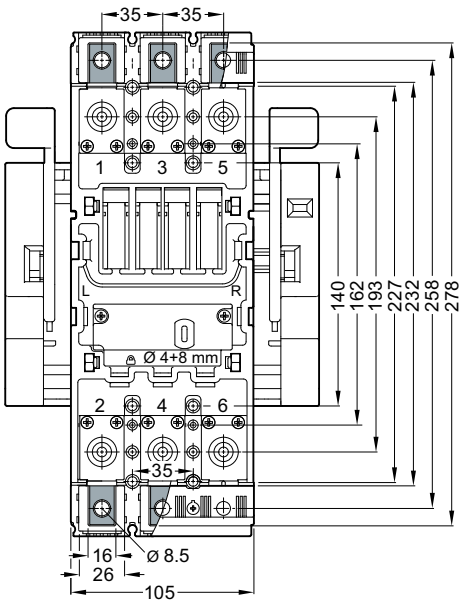
Dimensional drawings

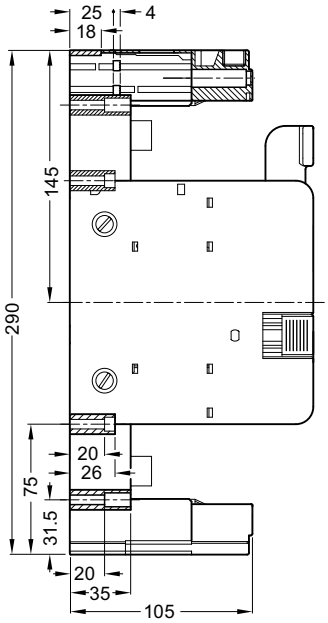
Plug-in version, 3VT9200-3M..0 motorized operating mechanism



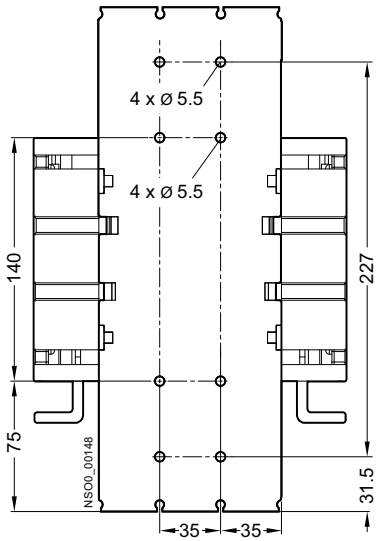
Dimensional drawings - 3-pole, withdrawable version

Withdrawable version 3VT9200-4WA30

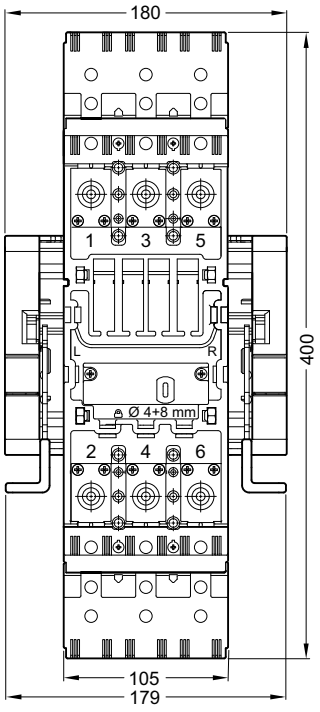


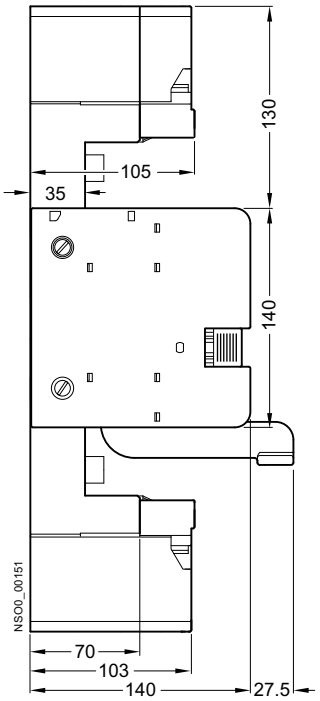


Drilling patterns



Withdrawable version, 3VT9200-8CB30 terminal cover

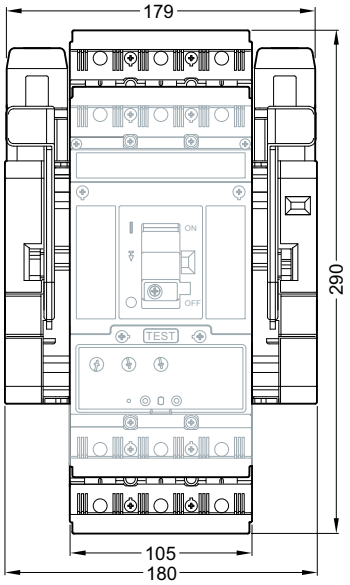




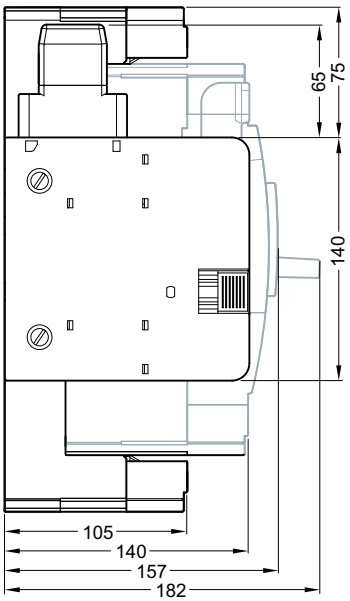
Dimensional drawings

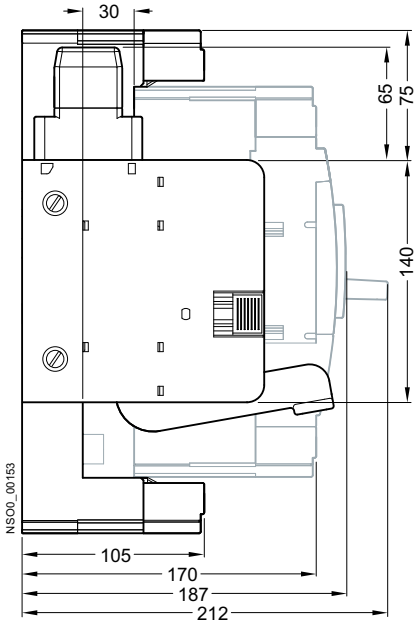
Withdrawable version

Operating position



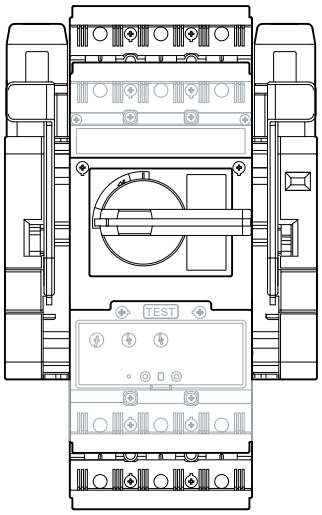
Maintenance position



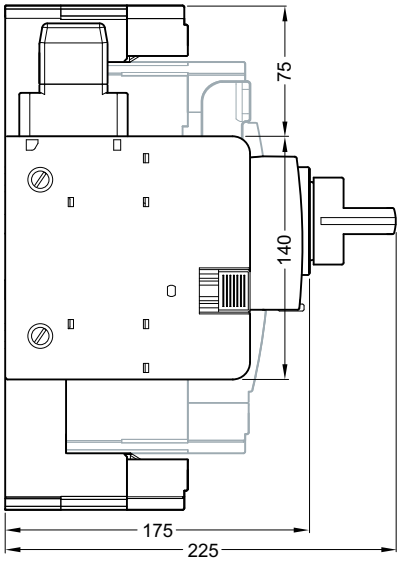


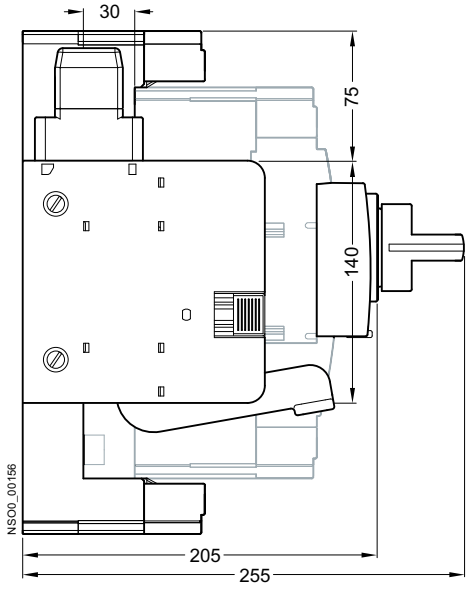
Withdrawable version, rotary operating mechanism

Operating position

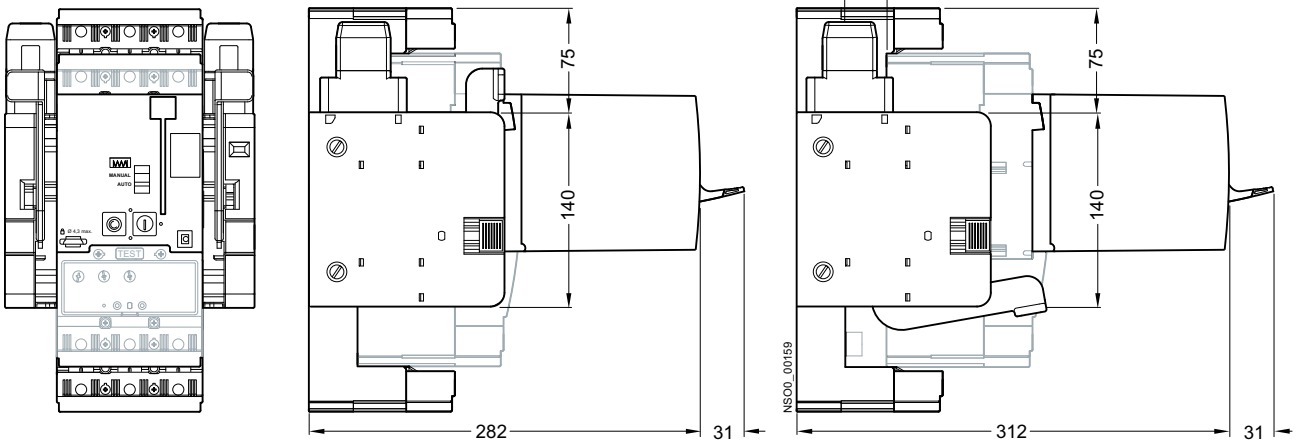


Maintenance position

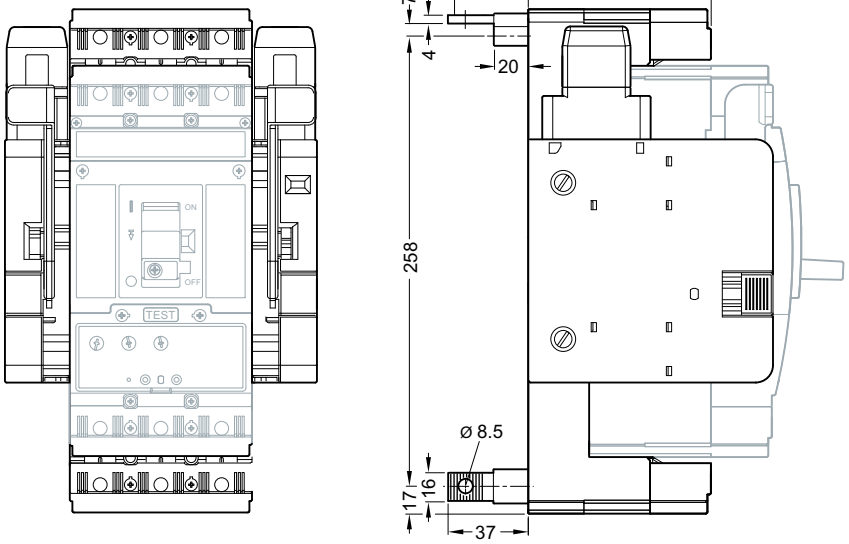




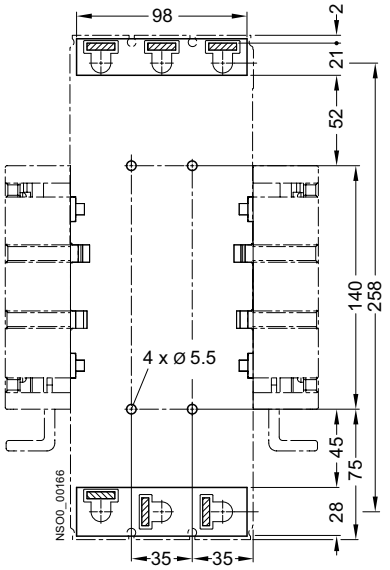
Withdrawable version, 3VT9200-3M..0 motorized operating mechanism



Withdrawable device, rear connection (3VT9200-4RC00 connecting sets)

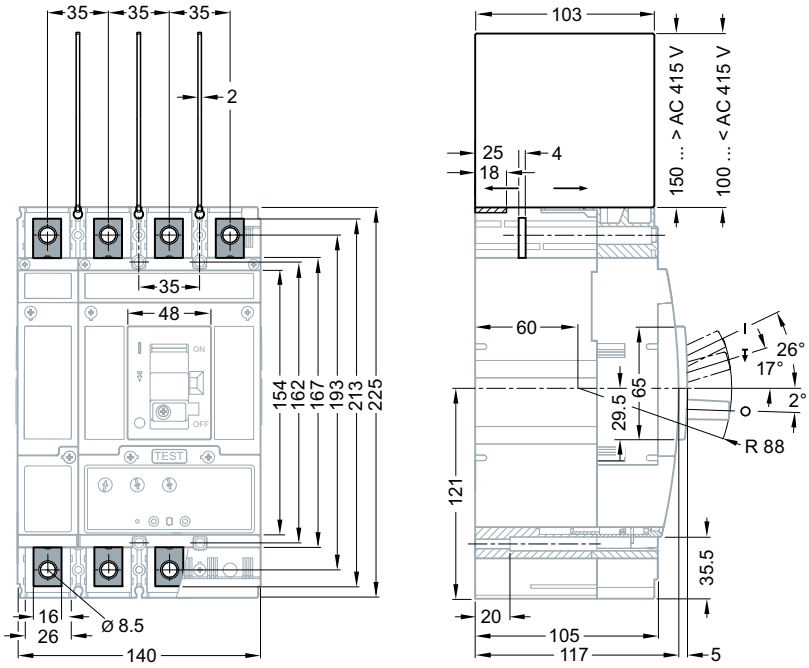


Drilling pattern

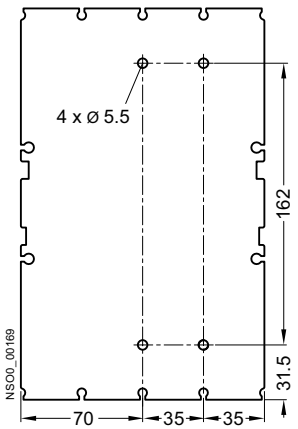


Dimensional drawings

Withdrawable device, rear connection (3VT9200-4RC00 connecting sets)

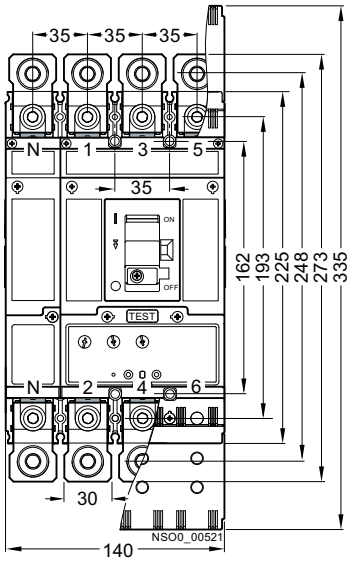


Drilling pattern

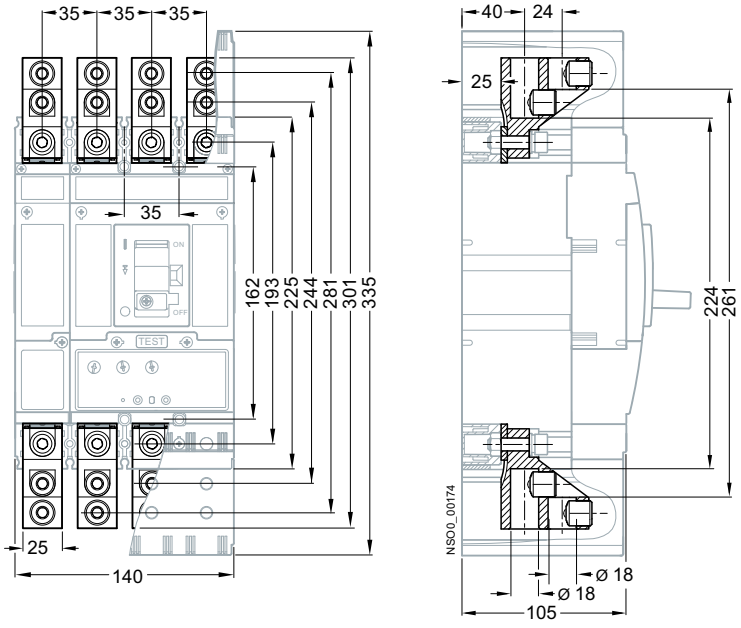


Dimensional drawings - 4-pole, fixed-mounted version

Fixed-mounted version, front connection (connecting set 3VT9224-4TD30 + 3VT9224-4TD00)

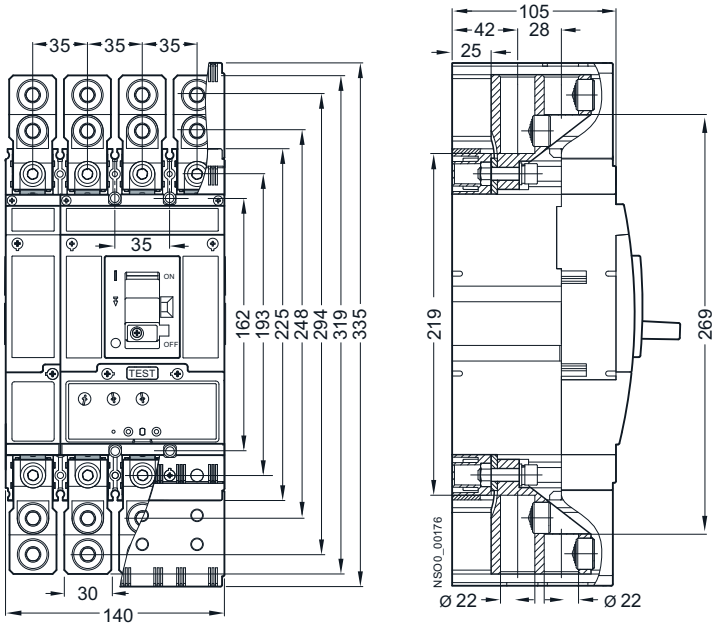


Fixed-mounted version, front connection (connecting set 3VT9215-4TF30 + 3VT9215-4TF00)

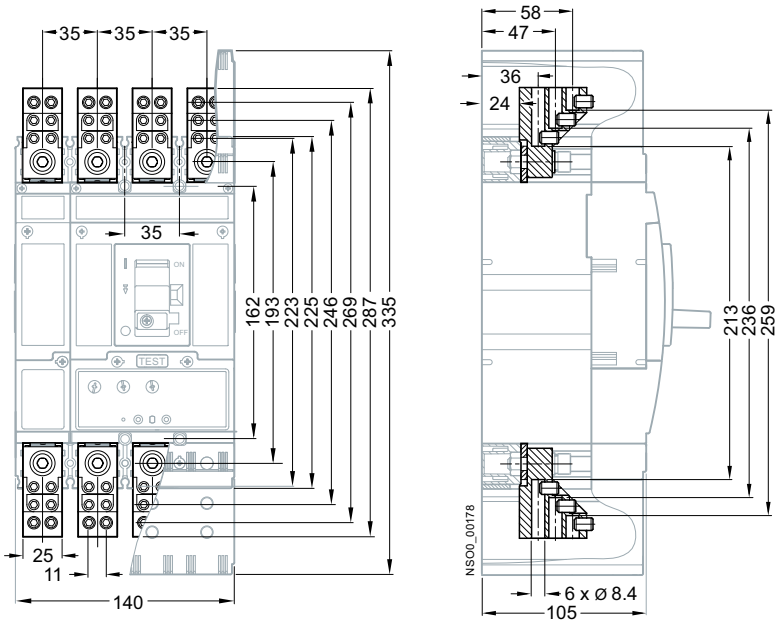


Dimensional drawings

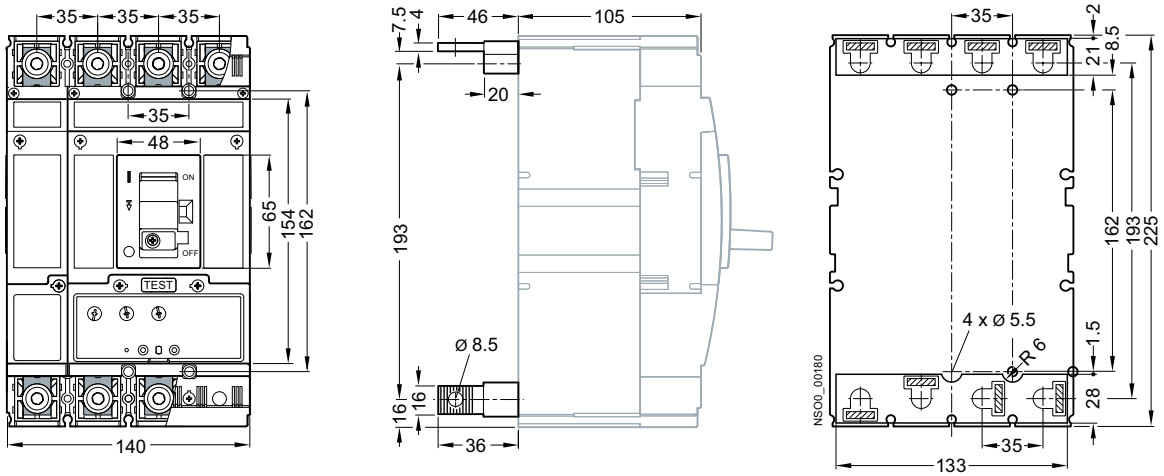
Fixed-mounted version, front connection (connecting set 3VT9224-4TF30 + 3VT9224-4TF00)



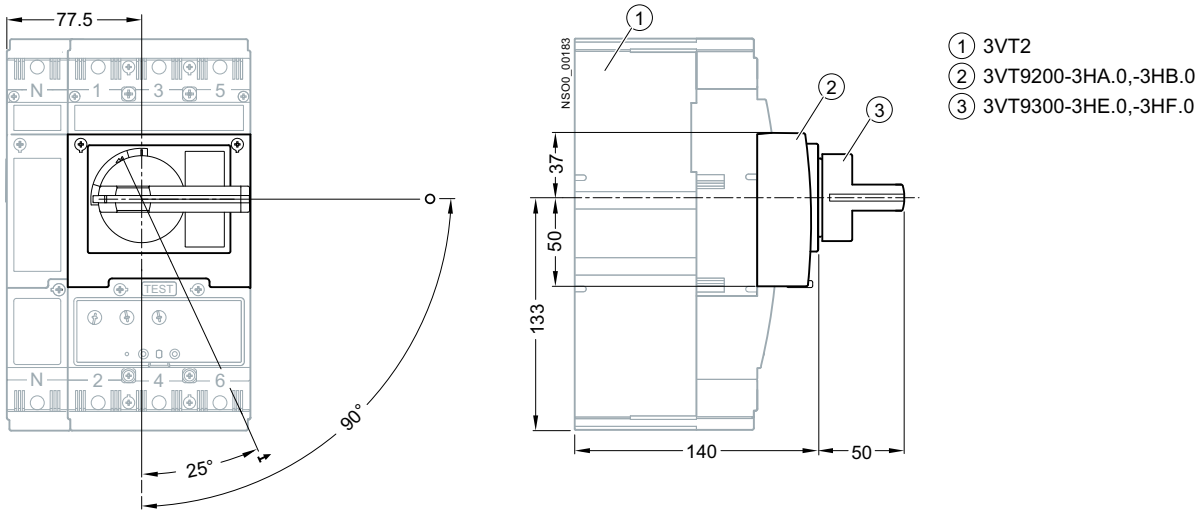
Fixed-mounted version, front connection (connecting set 3VT9203-4TF30 + 3VT9203-4TF00)



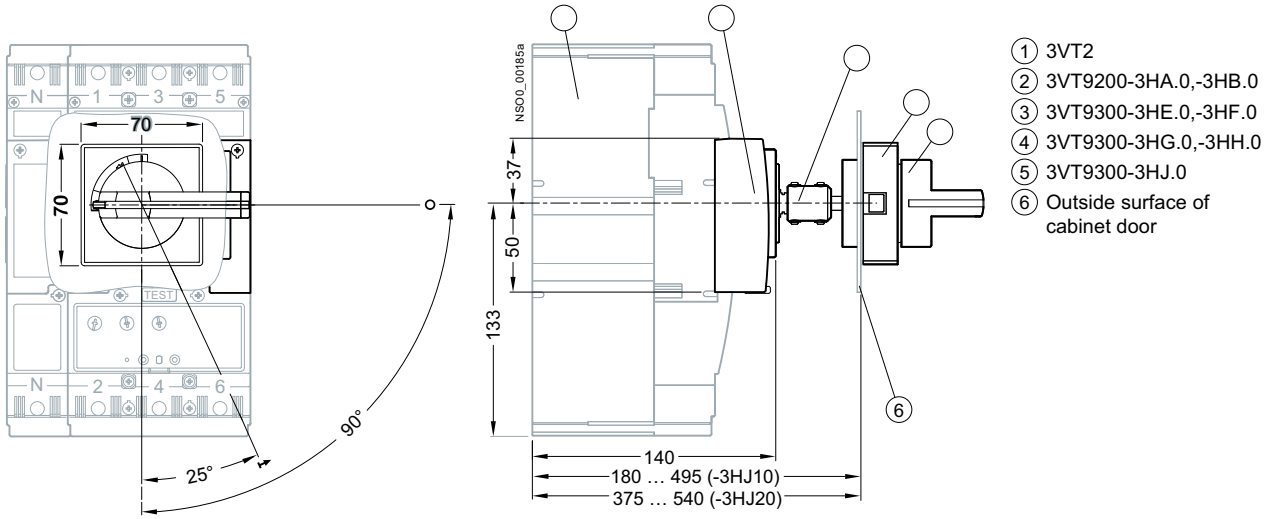
Fixed-mounted version, front connection (connecting set 3VT9215-4TF30 + 3VT9215-4TF00)



Fixed-mounted version, with rotary operating mechanism

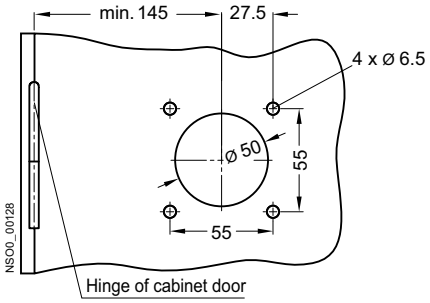


Fixed-mounted version, rotary operating mechanism with adjustable knob



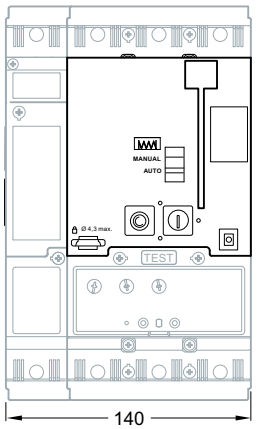
Dimensional drawings

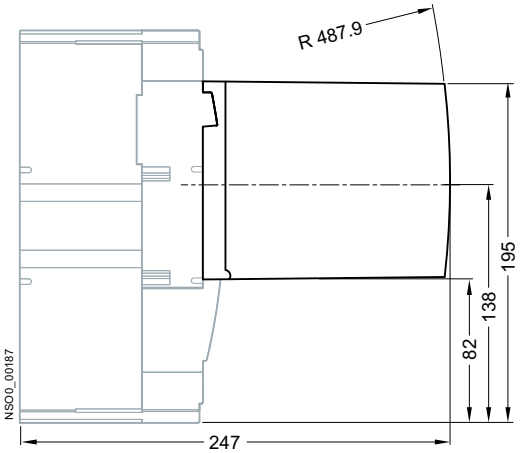
Cabinet door cut-out

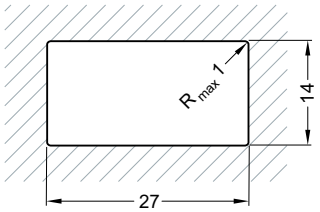


Fixed-mounted version, 3VT9200-3M..0 motorized operating mechanism

Opening dimensions in switchgear door for external operation cycle

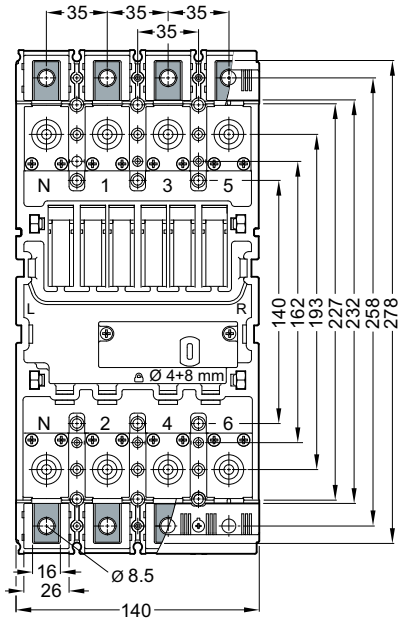


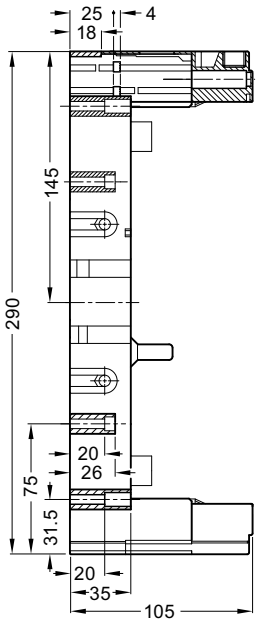




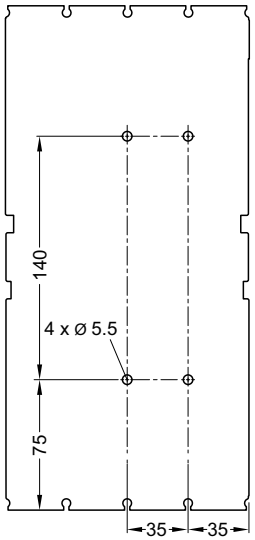
Dimensional drawings - 4-pole, plug-in version

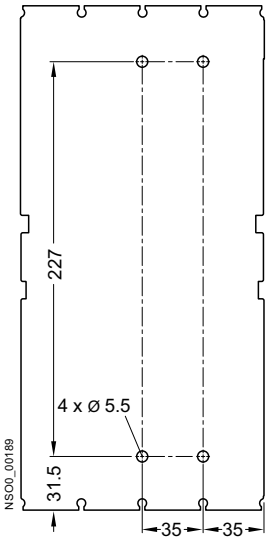
Plug-in base 3VT9200-4PA40



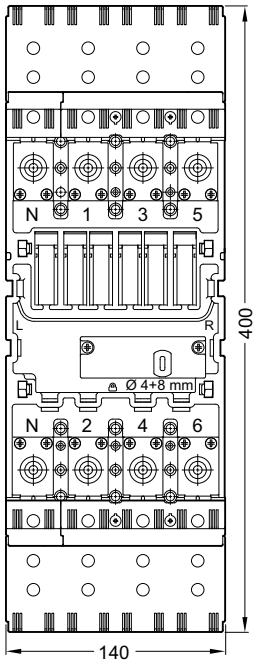


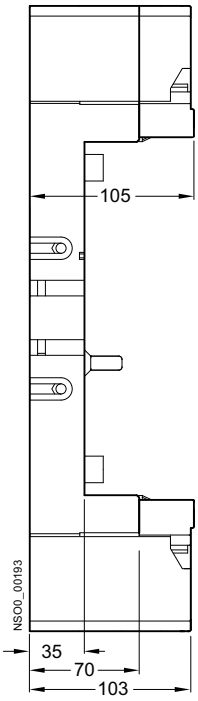
Drilling patterns





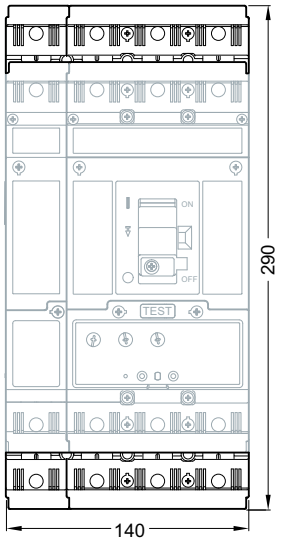
Plug-in base, 3VT9200-8CB40 terminal cover

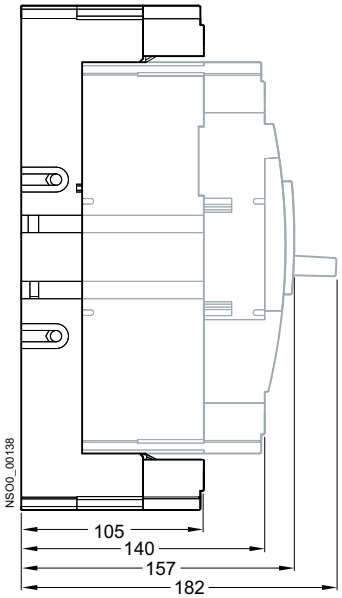




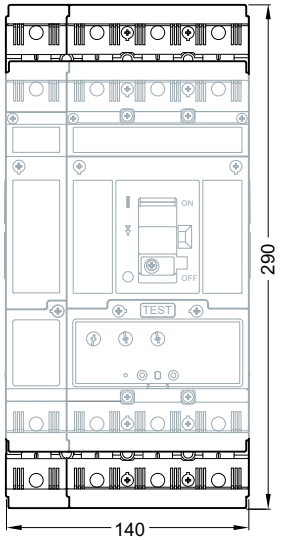
Dimensional drawings

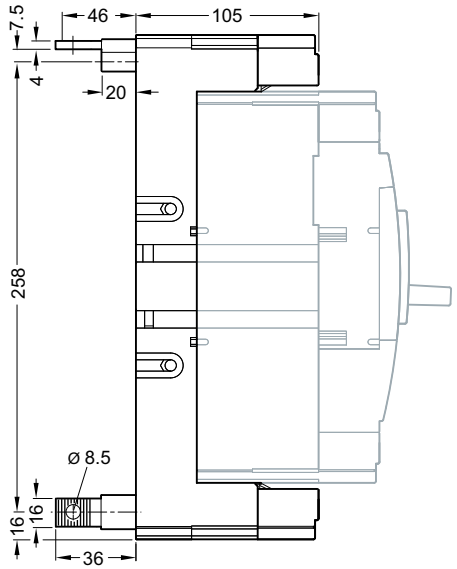
Plug-in version



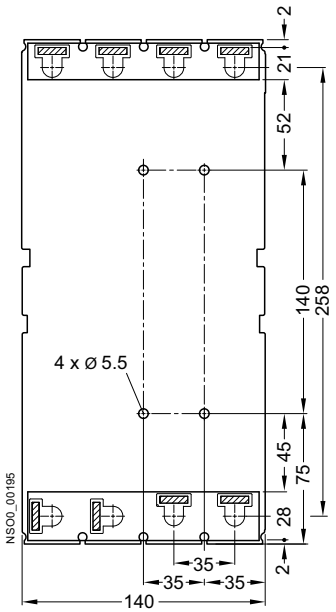


Plug-in version, rear connection
(connecting set 3VT9200-4RC30 + 3VT9200-4RC00)

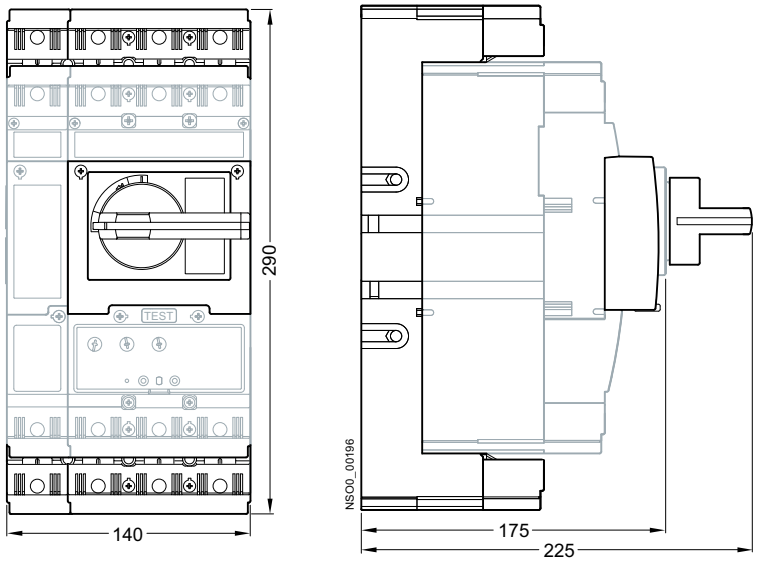




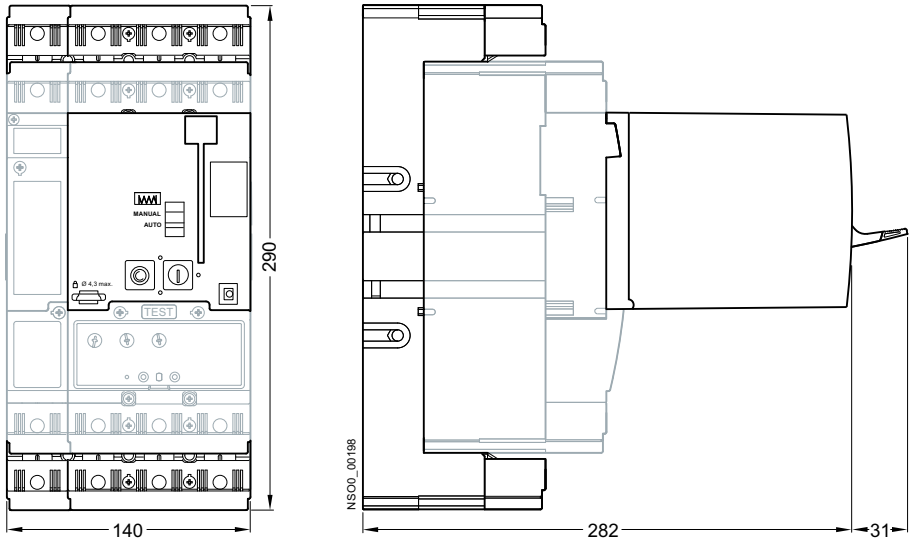
Drilling pattern



Plug-in version, rotary operating mechanism



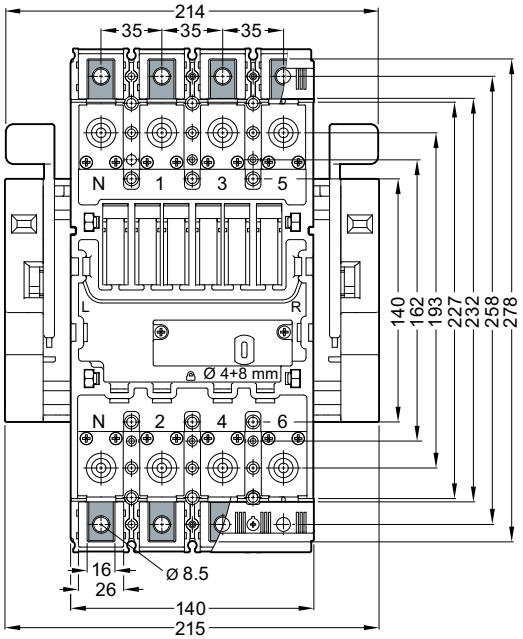
Plug-in version, 3VT9200-3M..0 motorized operating mechanism

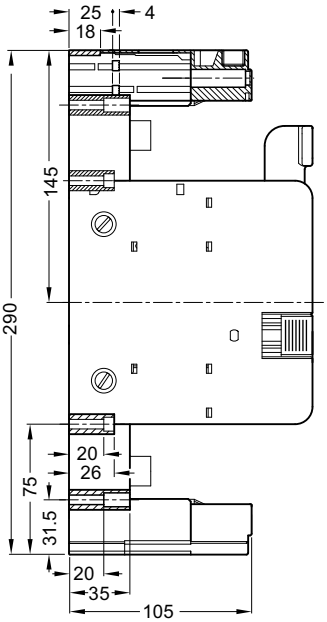


Dimensional drawings

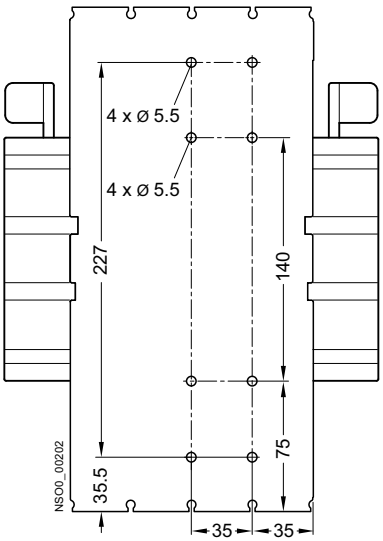
Dimensional drawings - 4-pole, withdrawable version

Withdrawable version, 3VT9200-4WA40

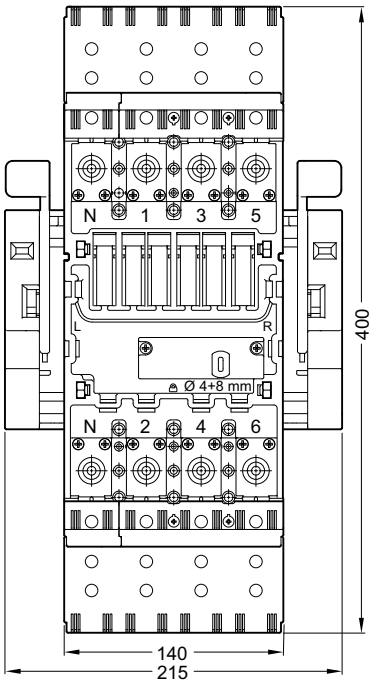


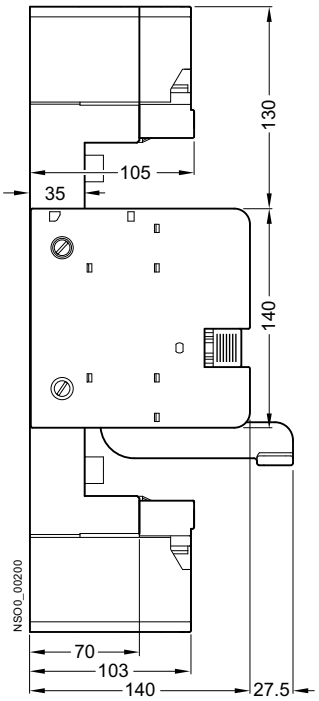


Drilling pattern



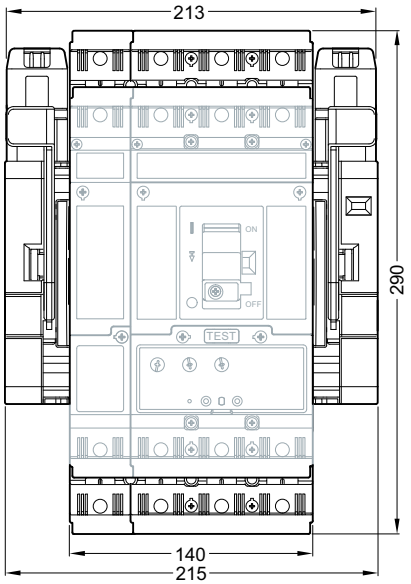
Withdrawable version, 3VT9200-8CB40 terminal cover



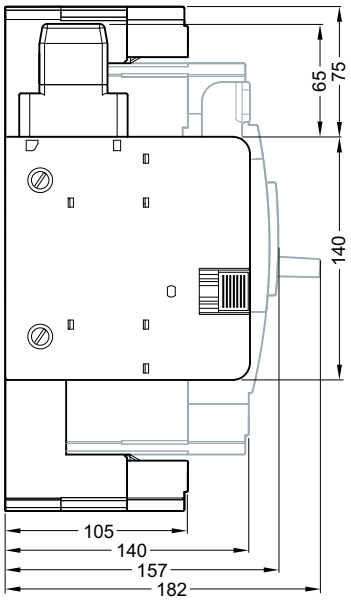


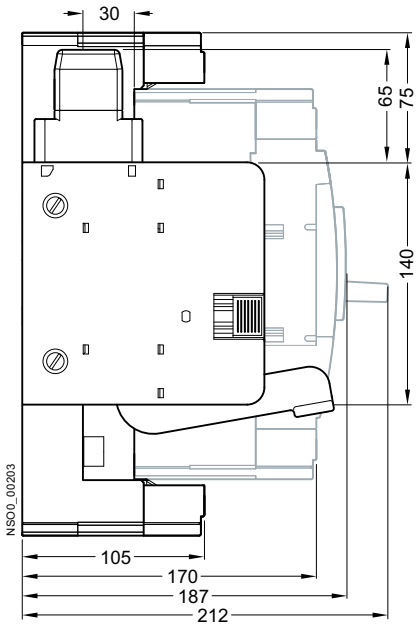
Withdrawable version

Operating position

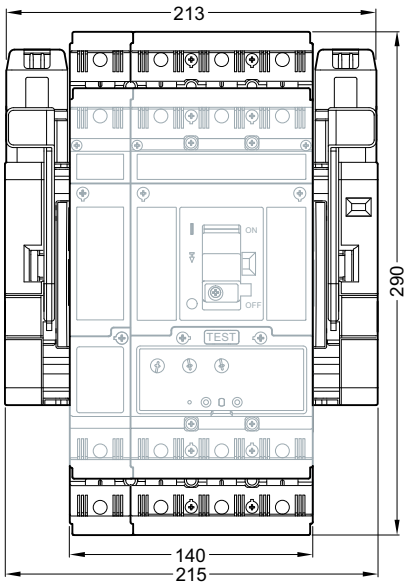


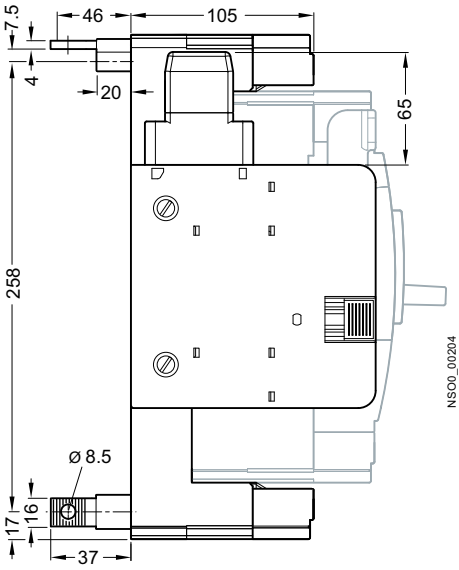
Maintenance position

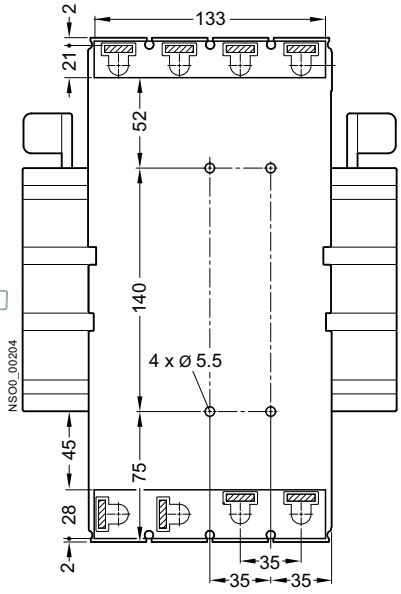




Withdrawable version, rear connection (connecting set 3VT9200-4RC30 + 3VT9200-4RC00)



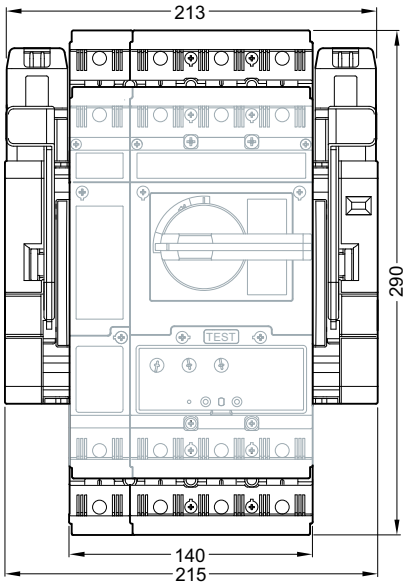




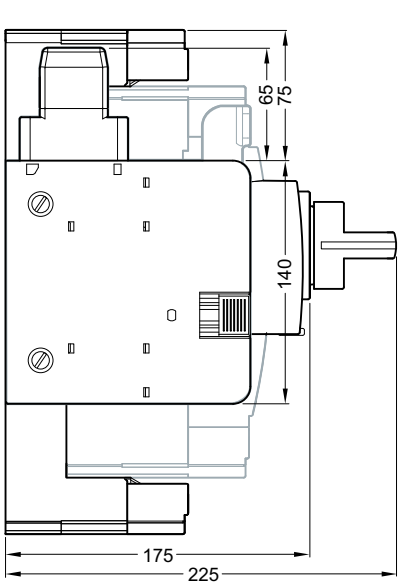
Dimensional drawings

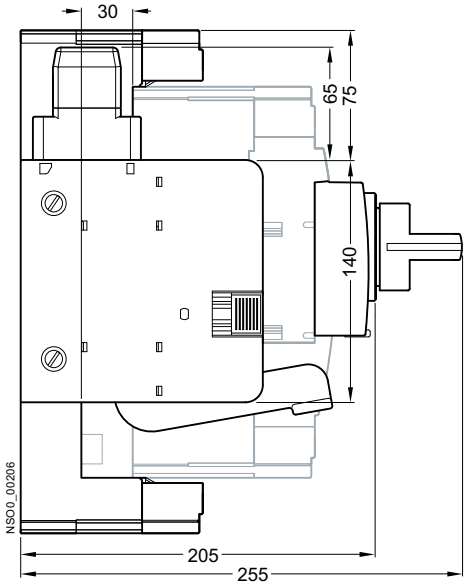
Withdrawable version, rotary operating mechanism

Operating position



Maintenance position





Withdrawable version, 3VT9200-3M..0 motorized operating mechanism