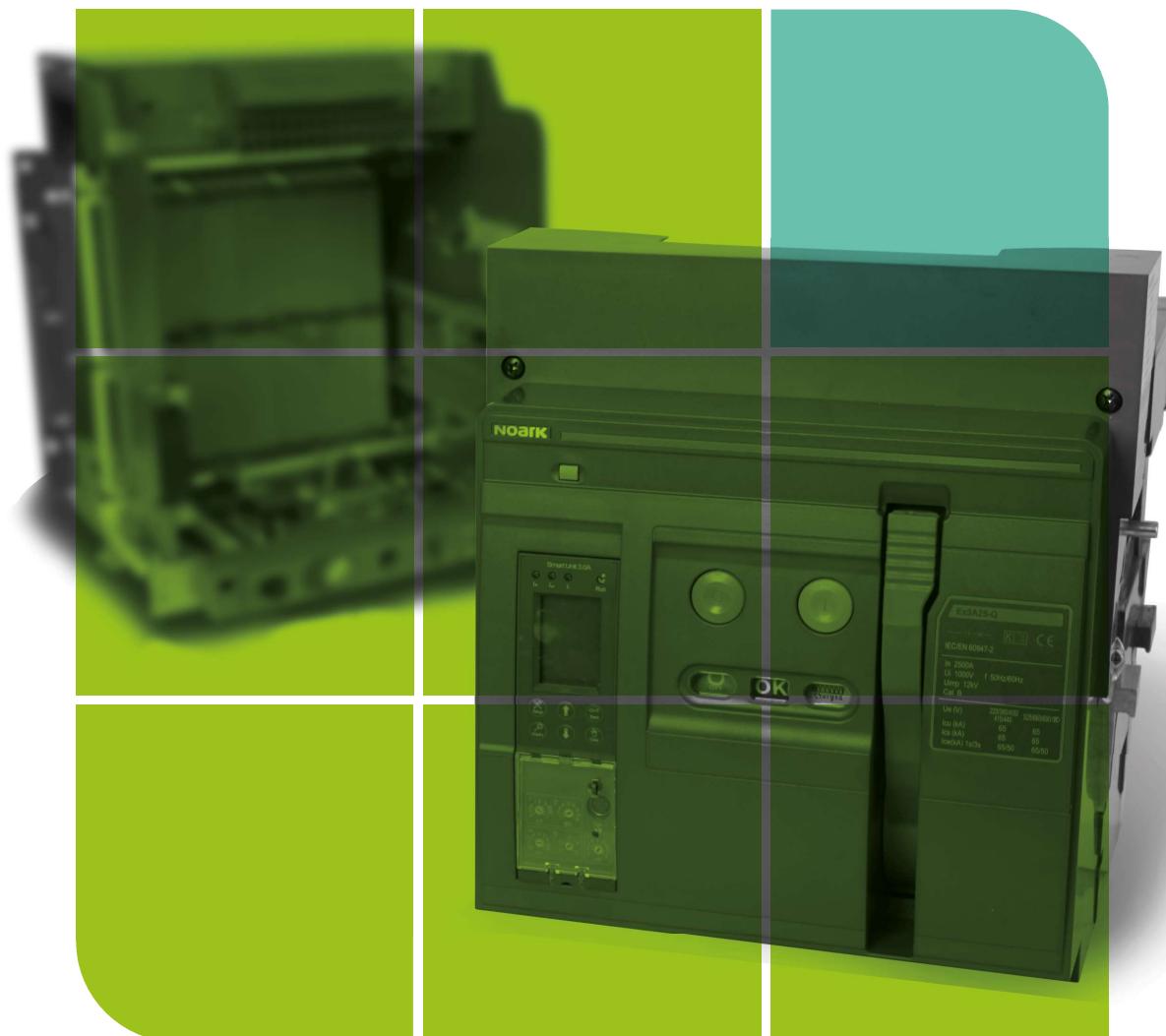


MANUAL

Fast installation guide

Ex9A - Air Circuit Breakers and
Air Switch Disconnectors



www.noark-electric.eu



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FAST INSTALLATION MANUAL

- Connection diagrams
- Smart Unit basic configuration manual
- Tripping characteristics and protection settings
- Mounting manual of the circuit breaker



SMART UNIT MANUAL

- Connection diagrams
- Tripping characteristics and protective settings
- Safety parameters configuration
- Communication parameters
- Advanced smart functions configuration



AIR CIRCUIT BREAKER MANUAL

- Connection diagrams
- Accessories installation manual
- Mounting manual of the circuit breaker
- Troubleshooting

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warrantyclaims@noark-electric.com
europe@noark-electric.com





Warnings.....	4
Before working on the device.....	5
Connection diagram.....	6
Smart Unit configuration:	
Ex9A Smart Unit 3.0 / 4.0 / 5.0.....	10
Configuration interface.....	11
Tripping characteristics.....	12
Example of tripping characteristics.....	14
Long time overload protection.....	15
Short inverse time overload protection.....	17
Short fixed time overload protection.....	18
Instantaneous protection.....	20
Neutral pole protection.....	21
Air Circuit Breaker / Air Switch Disconnector:	
Operating principle.....	24
Storage.....	26
Package identification.....	26
Unpacking.....	27
Handling.....	29
Ex9A16	
Dimensions.....	31
Powerconnections.....	33
Installation.....	36
Ex9A25	
Dimensions.....	37
Powerconnections.....	39
Installation.....	43
Ex9A32	
Dimensions.....	44
Powerconnections.....	46
Installation.....	51
Ex9A40	
Dimensions.....	52
Powerconnections.....	54
Installation.....	59

Warning



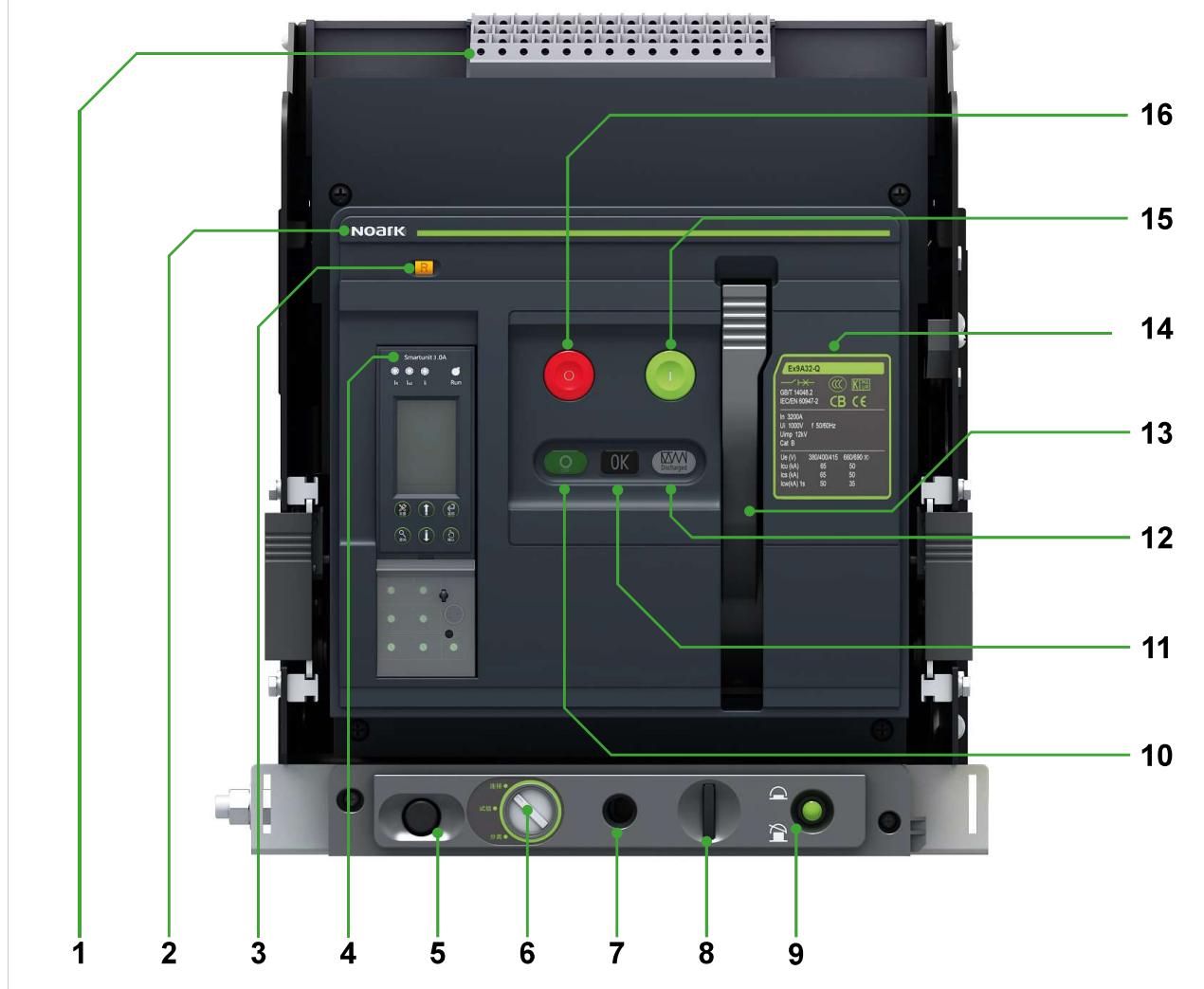
This equipment can only be installed by professionals. The manufacturer/importer is not responsible for any consequences caused by non-compliance with this manual.

- Installation and service of this equipment can only be performed by experienced and professional personnel.
- This product should not be installed in flammable, explosive, humid and condensing environment.
- Do not touch conductive parts during the operation.
- Manipulation during commissioning/installation must be done with disconnected power.
- Safety space and distance around the device must be kept.
- Do not install the product in places where the ambient medium can cause metal corrosion and insulation damage.
- To avoid dangerous accidents, the product must be installed according to the instructions detailed in this document.
- After unpacking the product(s), check for any damage and integrity of the goods before installing.
- Not following the above instructions may lead to damage to the equipment and personal injury.

Environmental protection

In order to protect the environment, this product and its components should be disposed properly as industrial waste upon the end of its functional life or delivered to the recycling plant which will dismantle and recycle the product according to the relevant national regulations.

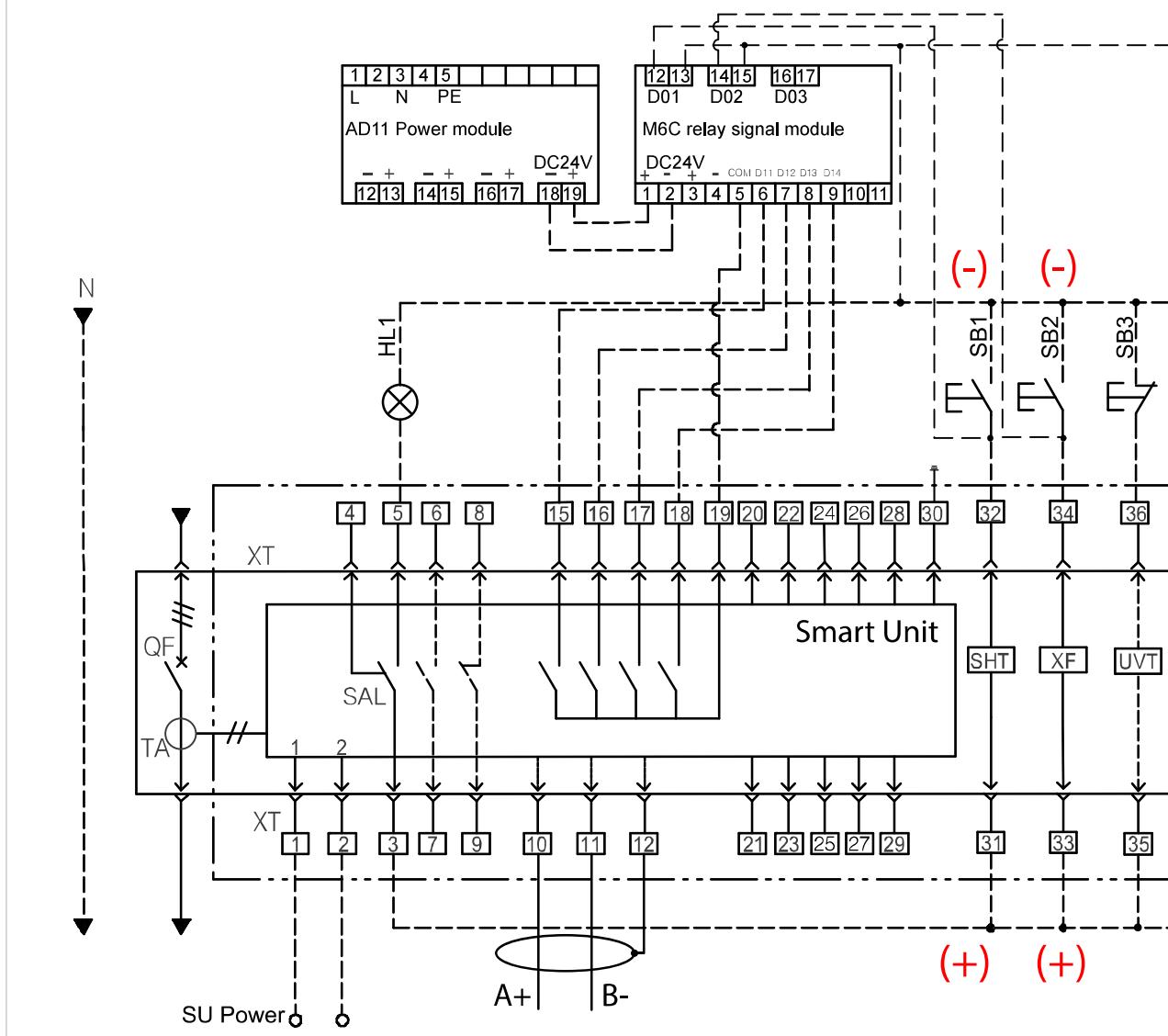
Before working on the device



Description

1. Auxiliary terminals, control circuit wiring
2. Brand name
3. Trip reset button
4. Smart Unit
5. Handle for withdrawable mechanism
6. Indicator of withdrawable mechanism position: Connected, Test, Disconnected
7. Withdrawable mechanism space for the handle
8. Padlock
9. Cassette position lock, alerts of change on the position - Press when ejected to unlock the mechanism
10. Main contact position indicator:
 - OFF**: Open contacts
 - ON**: Closed contacts
11. Main contact mechanism indicator:
 - OK**: Ready to close the contacts
 - OK**: Not ready to close the contacts
12. Spring status:
 - WWW Charged**: Spring charged
 - WWW Discharged**: Spring discharged
13. Manual spring charge handle
14. Nameplate
15. Main terminals closing push-button (I)
16. Main terminals opening push button (O)

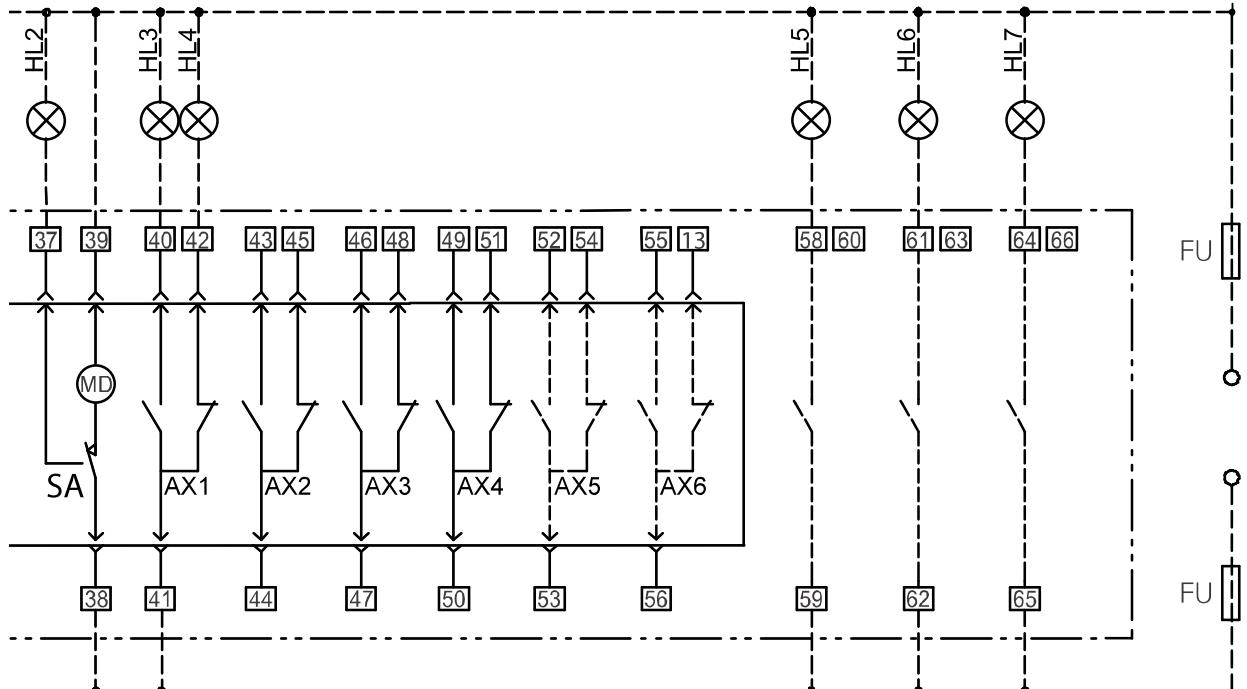
Connection diagram



Connection distribution Smart Unit

1, 2: Smart Unit input power source, must be connected to a stable power source.
3, 4, 5: Signal contact output. Electrical indicator of fault trip. Maximum 2A at 380V AC, 0.3A at 250V DC.
6, 7: Optional synchronous auxiliary contact, NO contact. Maximum 1A at 380V AC, 0.15A at 250V DC.
8, 9: Optional synchronous auxiliary contact, NC contact. Maximum 1A at 380V AC, 0.15A at 250V DC.
10, 11, 12: Optional RS485 communication interface; 10: A+, 11: B-, 12: Shield ground. Optional programmable outputs DO; 15 ~ 18: NO contacts, 15: remote opening signal, 16: remote closing signal. Relay signal module needed. Maximum 5A at 250V AC, 0.5A at 110V DC.
20 ~ 23: Optional programmable inputs DI; 20 - 21: Digital input 1, 22 - 23: Digital input 2. Operative voltage 24V DC.
24: Phase A voltage input for Smart Units P, H, GP and GH types.
25: Phase B voltage input for Smart Units P, H, GP and GH types.
26: Phase C voltage input for Smart Units P, H, GP and GH types.
27: Phase N voltage input for Smart Units P, H, GP and GH types.
28, 29: External current transformer input. Used on 3P+N systems, for current measurement of the external N pole.
30: Smart unit protective ground connection.

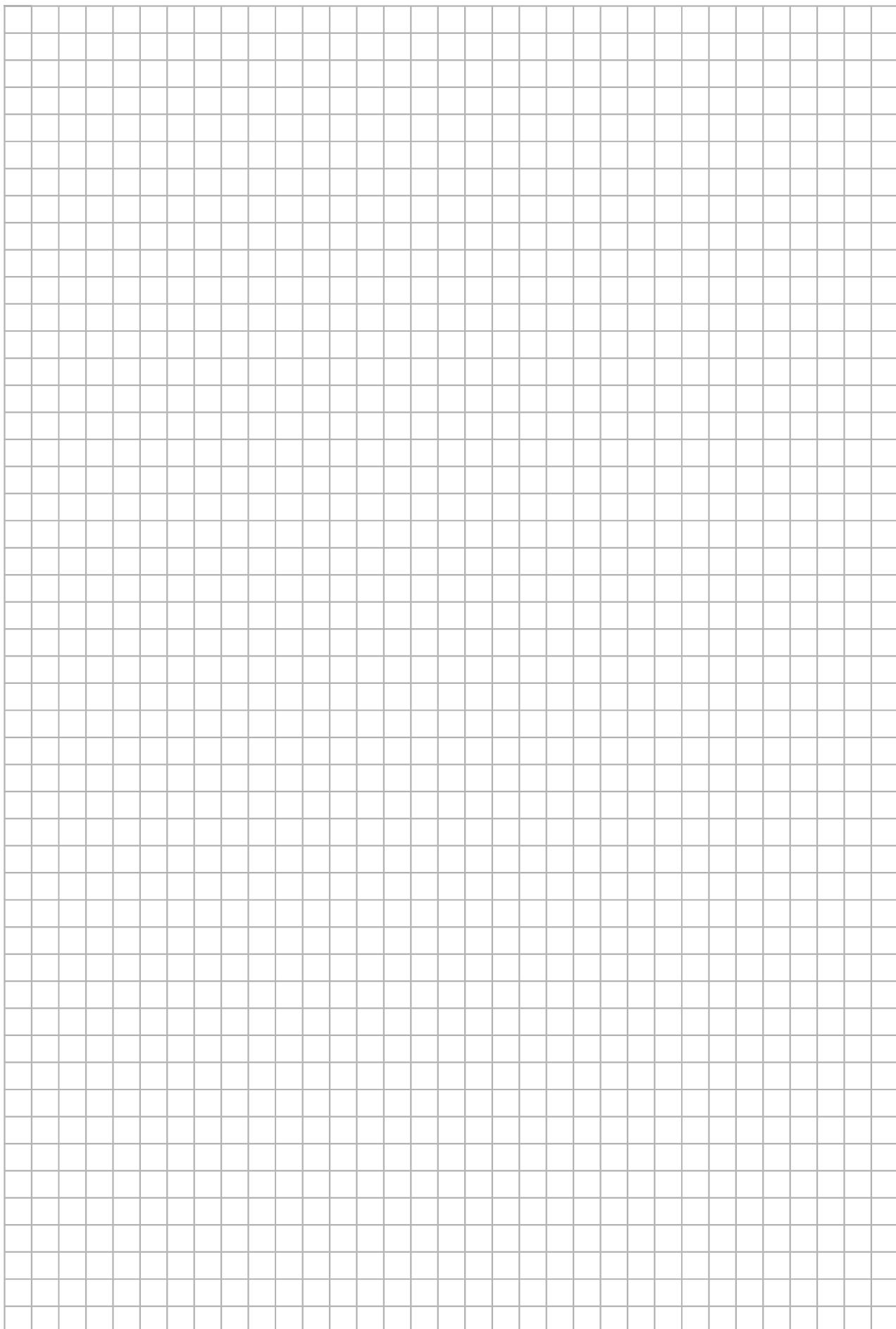
Connection diagram



Connection distribution Circuit Breaker

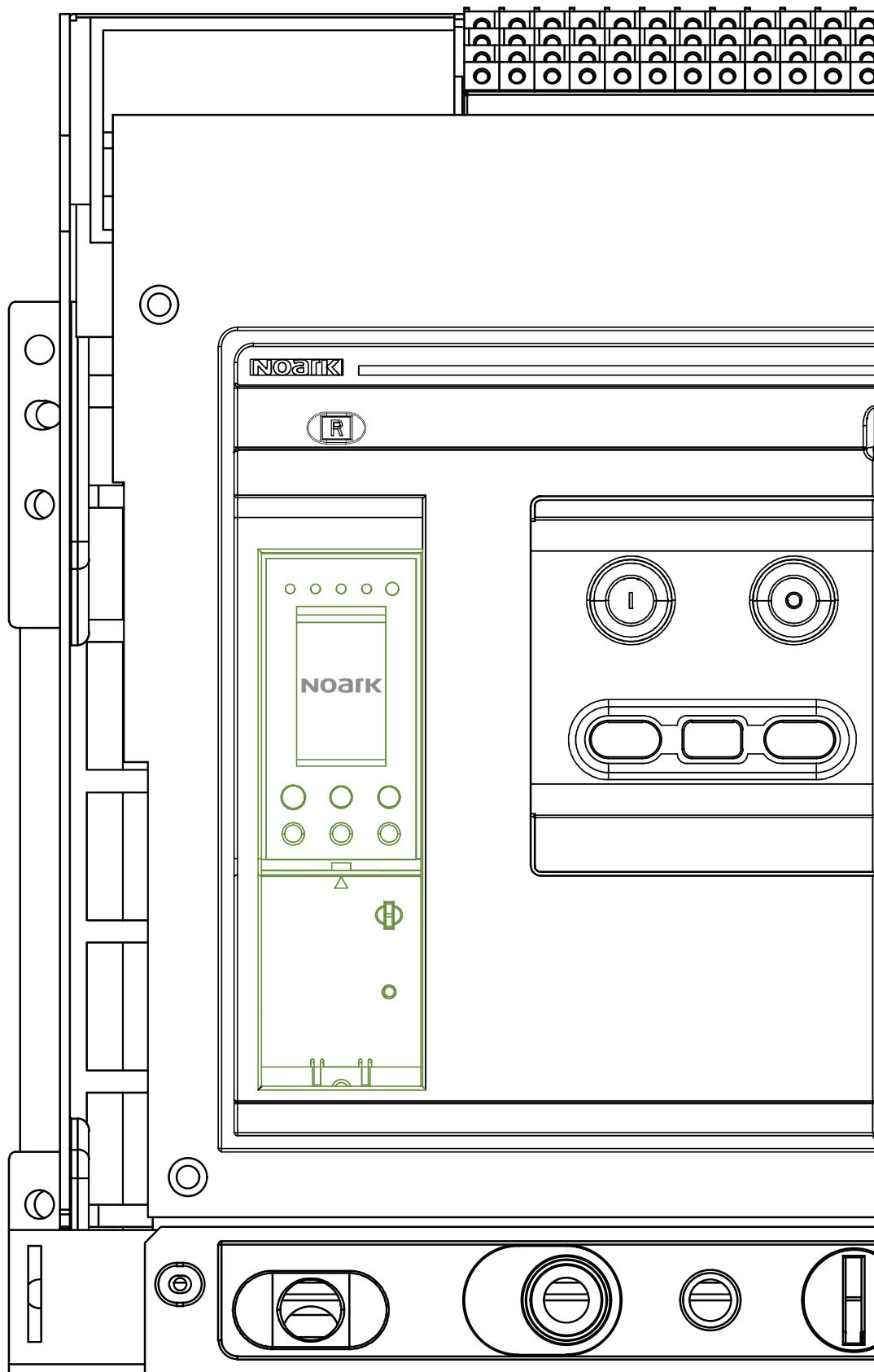
31, 32:	SHT unit (remote OFF) connections, for DC devices; 31: Positive +, 32: Negative -. Polarity must be taken in consideration.
33, 34:	XF unit (remote ON) connections, for DC devices; 31: Positive +, 32: Negative -. Polarity must be taken in consideration.
35, 36:	UVT unit connections.
37, 38, 39:	MD unit (remote charging motor drive) connection; 37: status output of the mechanical energy storage spring.
40, 41, 42:	AX1 connections; 40: NO contact , 41: Common terminal, 42: NC contact.
43, 44, 45:	AX2 connections; 43: NO contact , 44: Common terminal, 45: NC contact.
46, 47, 48:	AX3 connections; 46: NO contact , 47: Common terminal, 48: NC contact.
49, 50, 51:	AX4 connections; 49: NO contact , 50: Common terminal, 51: NC contact.
52, 53, 54:	AX5 connections; 52: NO contact , 53: Common terminal, 54: NC contact.
55, 56, 13:	AX6 connections; 55: NO contact , 56: Common terminal, 13: NC contact.
58, 59:	Withdrawable base position indicator: "Connected" position.
61, 62:	Withdrawable base position indicator: "Test" position.
64, 65:	Withdrawable base position indicator: "Disconnected" position.

Notes



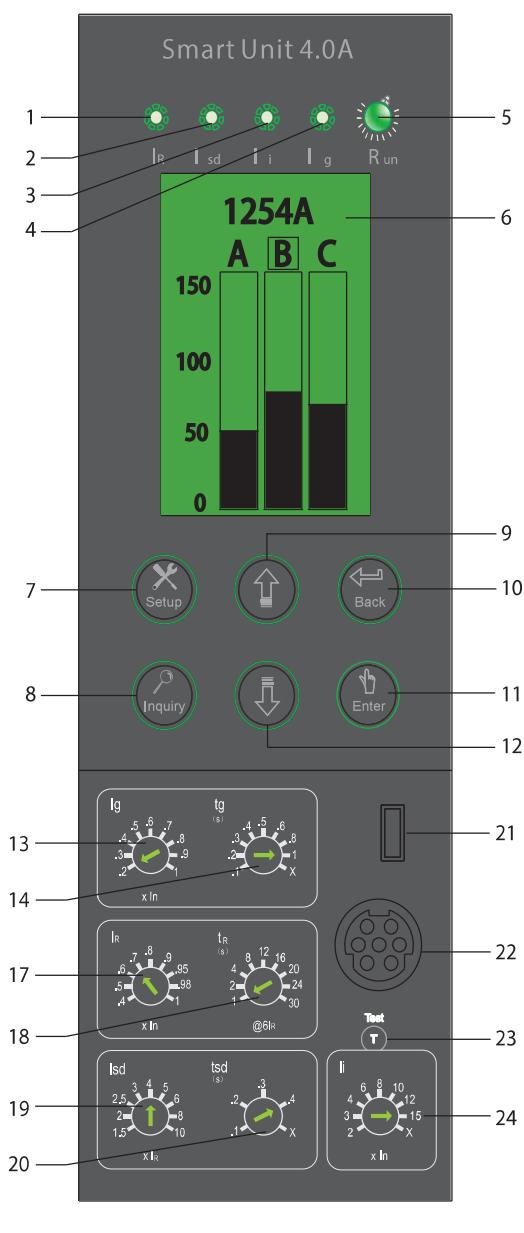
SMART UNIT

Basic configuration manual



Ex9A Smart Unit 3.0 / 4.0 / 5.0

Smart Unit SU4.0



Visual indicator interface

Element	Description
1 LED Ir	Long overload fault indicator
2 LED Isd	Short delay fault indicator
3 LED Ii	Instantaneous trip fault indicator
4 LED Ig	Ground fault current indicator
5 LED Run	Normal operation indicator
6 LCD	Graphic representation of settings, parameters and system status

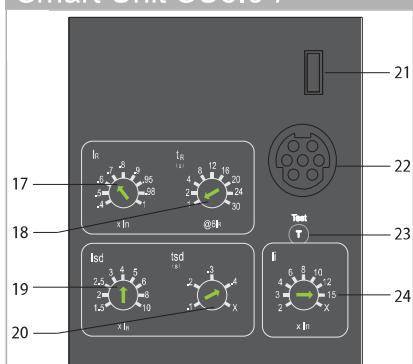
Navigation button panel

Button	Description
7 Settings	Single press: System parameters interface Double press: Protection parameters interface
8 Inspection	Single press: Measurements interface Double press: History and maintenance interface
9 Up scroll	For scrolling up or increasing a specific value
10 Return	Exits the current menu and/or cancels the current parameter setting
11 Confirm	For scrolling down, activating an option or saving modifications
12 Down scroll	For scrolling down or decreasing a specific value

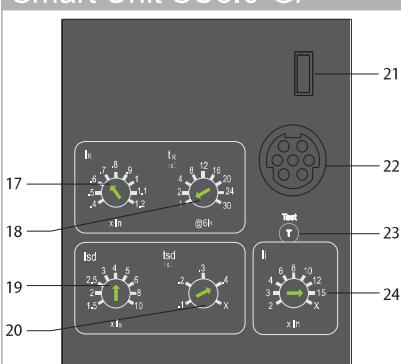
Protective parameter adjusting knobs

Knob function	Description
13 Ground current setting	Ground protection: Current range setting
14 Ground delay setting	Ground protection: Time delay range setting
15 Earth current setting	Earth protection: Current range setting
16 Earth delay setting	Earth protection: Time delay range setting
17 Long time overload: current setting	Long time overload protection: Current range setting
18 Long time overload: delay setting	Long time overload protection: Time delay setting
19 Short time overload: current setting	Short time overload protection: Current range setting
20 Short time overload: delay setting	Short time overload protection: Time delay setting
21 Cover sealing	Sealing space to avoid unauthorized manipulation
22 Service port	Communication port for service purposes
23 Test button	Accessible test button to trip the circuit breaker
24 Instantaneous short circuit: current setting	Instantaneous short circuit protection: Current setting

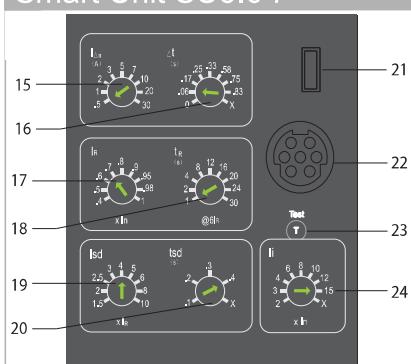
Smart Unit SU3.0-i



Smart Unit SU3.0-Gi

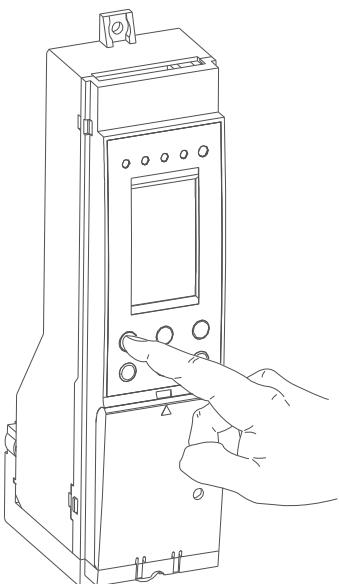


Smart Unit SU5.0-i



Smart unit parameter configuration interface

Setting via navigation button panel

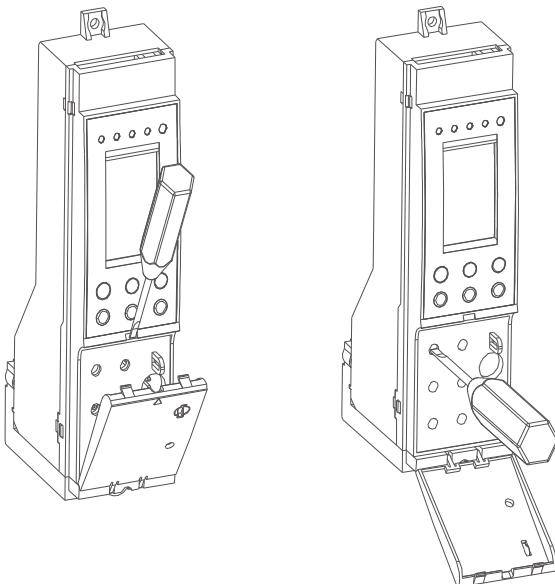


Inside of the software menu can be found all of the parameters adjustable for the air circuit breaker.

The submenus are being separated in the following groups:

- Setup (single press): System parameter settings; time/date settings, system configuration, and others.
- Setup (double press): Protection parameter settings; electrical protective parameters such as voltage/current protections, load monitor, thermal protections, phase frequency/sequence and others.
- Inquiry (single press): Measurement interface which displays real time voltages, currents, frequency, powers, energy and others.
- Inquiry (double press): History records which displays the historic information of the air circuit breakers which includes trip history, alarm history, contact status and others.

Setting via rotary knobs

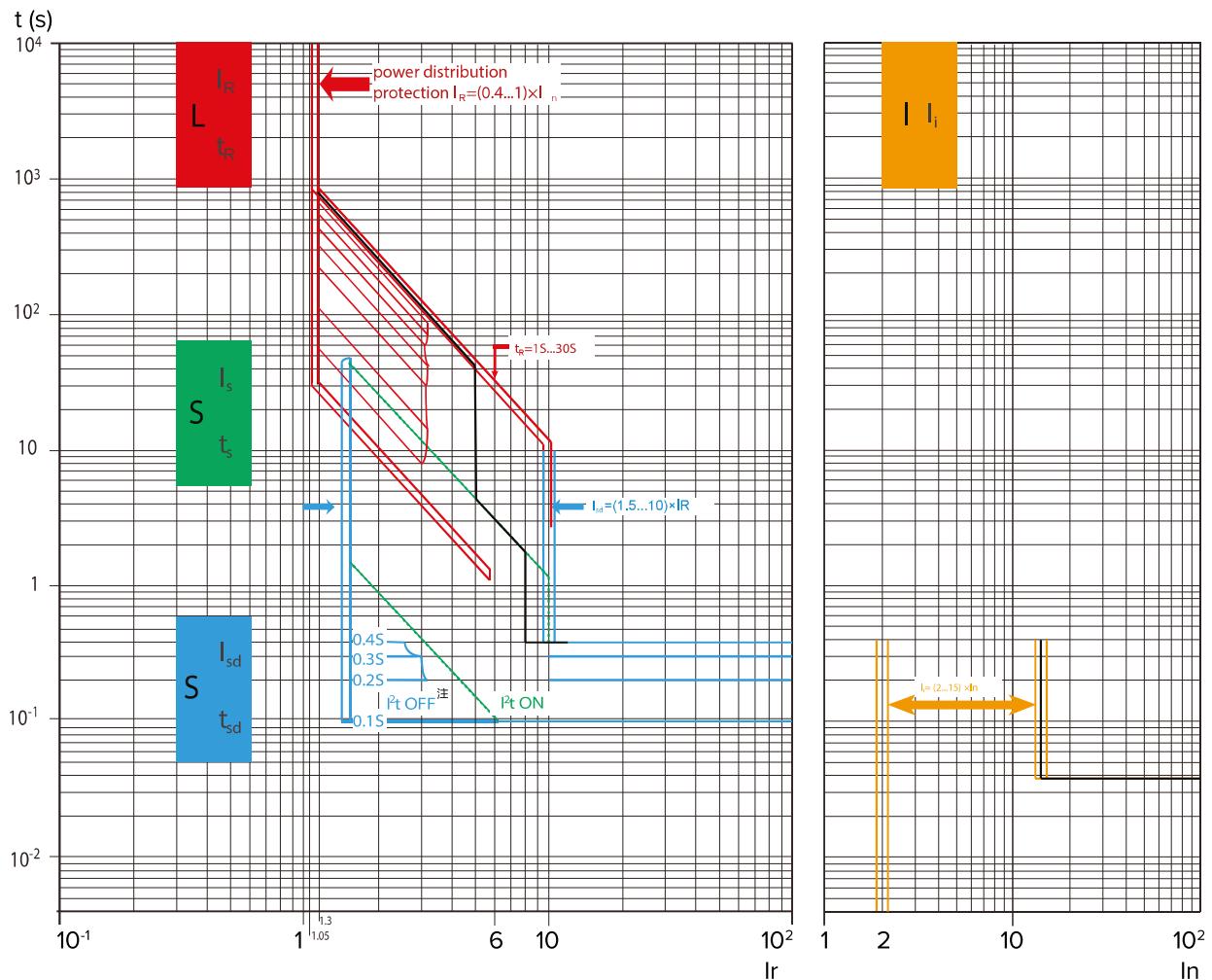


The rotary knobs are intended to configure the protective parameters, they will operate as a shortcut for the main electrical settings.

The parameters are configured in steps, which in some situations can be not accurate enough. In the case that additional accuracy is required, the same parameters can be configured via the navigation button panels with much higher resolution.

The rotary knobs cover may be sealed and the protective parameters on the menu may be protected by password, ensuring that unauthorized modification of the protective settings will not happen.

Tripping characteristics



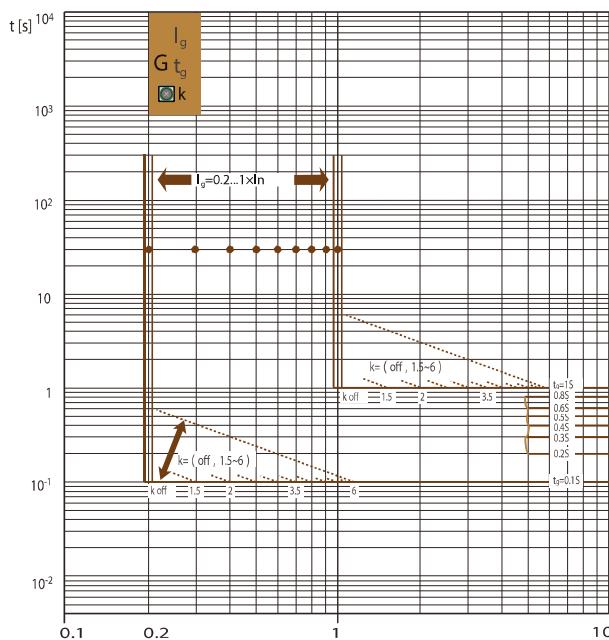
Long / Short / Instantaneous protection

Long / Short / Instantaneous overload protection common to all tripping units variants

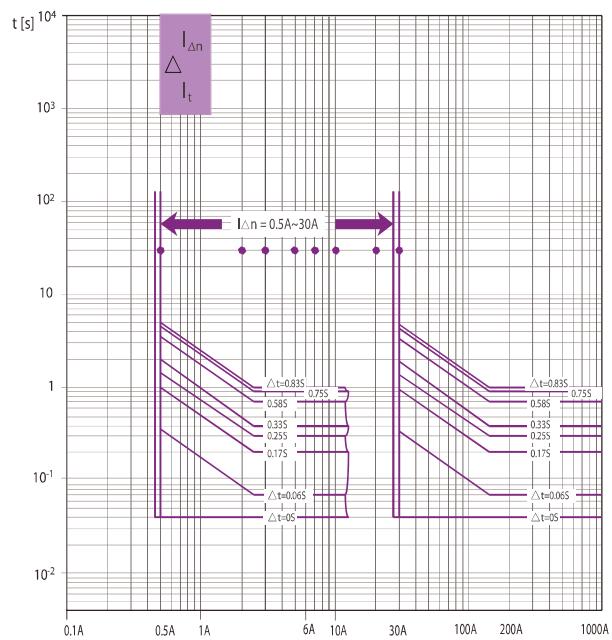
Ir	Long overload	Initial value of the current on which the long overload protection will actuate. Range on power distribution unit: (0.4 — 1.0) × I_n
tr	Long overload	Delay time for the long overload to trip when an overload is detected at $6 \times I_r$. Range on power distribution unit: 1 — 30 s
Is	Short overload	Initial value of the current on which the short overload protection will be applied if "inverse time" option is ON. Range: $1.5 \times I_r$ — $1.0 \times I_{sd}$
ts	Short overload	Delay time to trip when a short overload is detected. This delay depends on the long overload delay setting with a ratio of: $ts = tr / 10$
Isd	Short overload	Initial value of the current on which the short overload protection will be applied. Range: $1.5 \times I_r$ — $1.0 \times I_{sd}$
tsd	Short overload	Constant time delay for the short overload protection to trip. Range: 0.1 — 0.4 s
ii	Instantaneous protection	Initial value of the current on which the instantaneous protection will actuate. Range: (2 — 15) × I_n

Tripping characteristics

Ground protection (SU4.0)



Leakage protection (SU5.0)

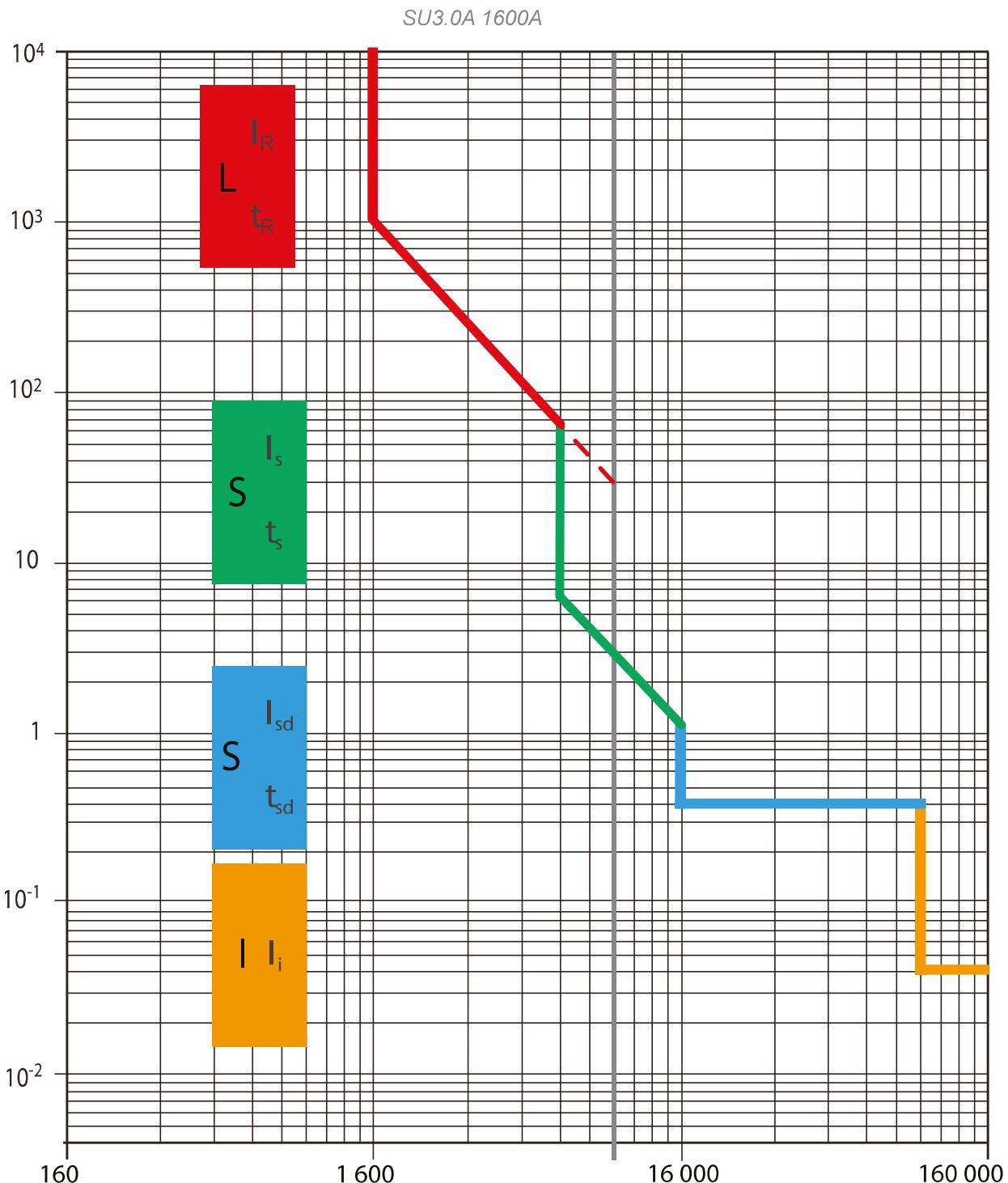


Ground / Earth fault protection

Additional ground / earth protection specific for 4.0 and 5.0 smart unit types respectively

Ig	Ground fault current threshold	Initial value of the current on which the ground fault protection will be applied. Range: (0.2 — 1.0) × I_n
tg	Ground fault time delay setting	Delay time for the ground fault protection to trip when a ground fault is detected. Range: OFF / 0.1 — 1 s
Cr	Ground fault inverse time coefficient	Parameter to control the inverse-time curve area on the ground protection characteristics. Range: OFF / 1.5 — 6;
IAn	Earth leakage protection operating current	Initial value of the current on which the Earth leakage protection will be applied. Range: (0.5 — 30) A
Δt	Earth leakage protection time delay setting	Inverse-time delay for the earth leakage protection to trip when a leakage is detected. Range: 0 — 0.83 s

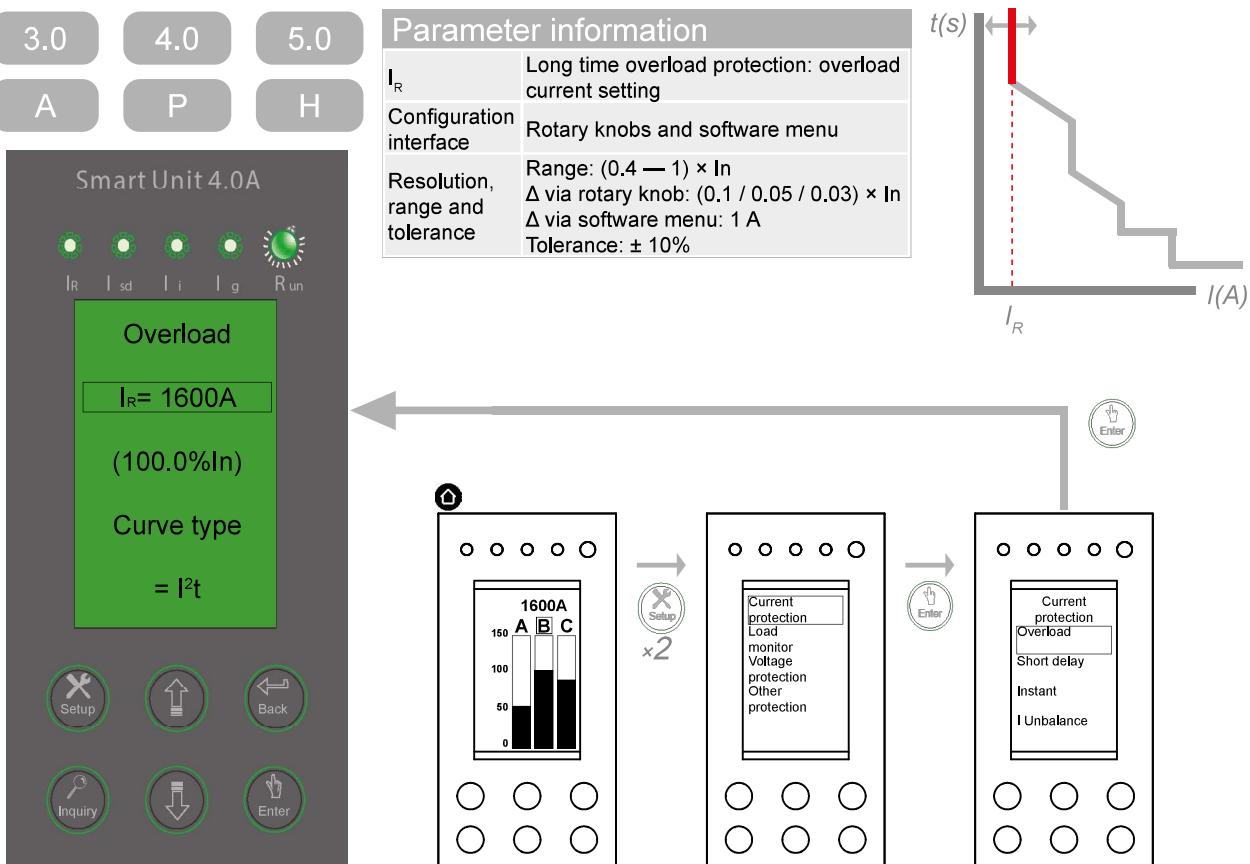
Example of tripping characteristics: SU3.0A



Long / Short / Instantaneous protection example: Ex9A16 1600 A SU3.0A

Long / Short / Instantaneous protection example: Ex9A16 1600 A SU3.0A	
I_R	Long overload Current value: $1.0 \times I_n$; $I_R = 1\,600\text{ A}$. I^2t protection. While the current consumption is below $1\,600\text{ A}$, the circuit breaker will not trip.
t_R	Long overload Delay time value: $t_R = 30\text{ s}$. Delay time at $6 \times I_R$. If an overload situation occurs for a duration shorter than the t_R , the circuit breaker will not trip.
I_s	Short overload Current value: $4.0 \times I_R$. I^2t short time protection to improve the protective functionalities and still keep the flexibility for selectivity.
t_s	Short overload Delay time value: $t_s = t_R / 10$. Fixed value.
I_{sd}	Short overload Current value: $10 \times I_R$. With a consumption bigger than 10 times de overload current, with duration bigger than t_{sd} , the device will trip.
t_{sd}	Short overload Delay time value: $t_{sd} = 0.4\text{ s}$. Constant time delay not dependant on the consumed current.
I_i	Instantaneous protection Current value: $15 \times I_n$. Value on which the circuit breaker will trip without additional delay.

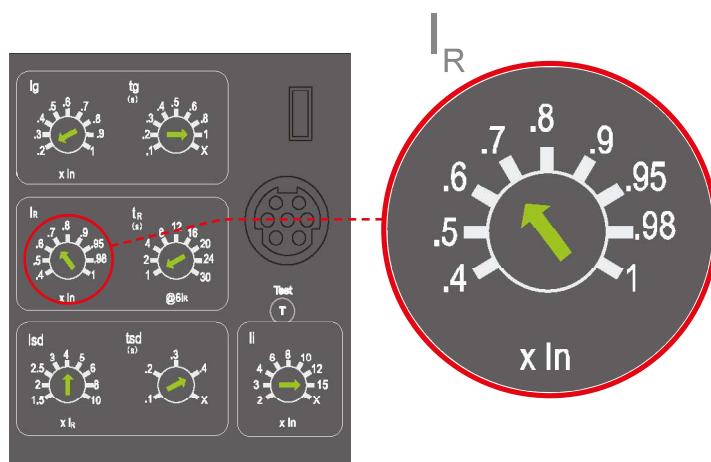
Long time overload protection: I_R



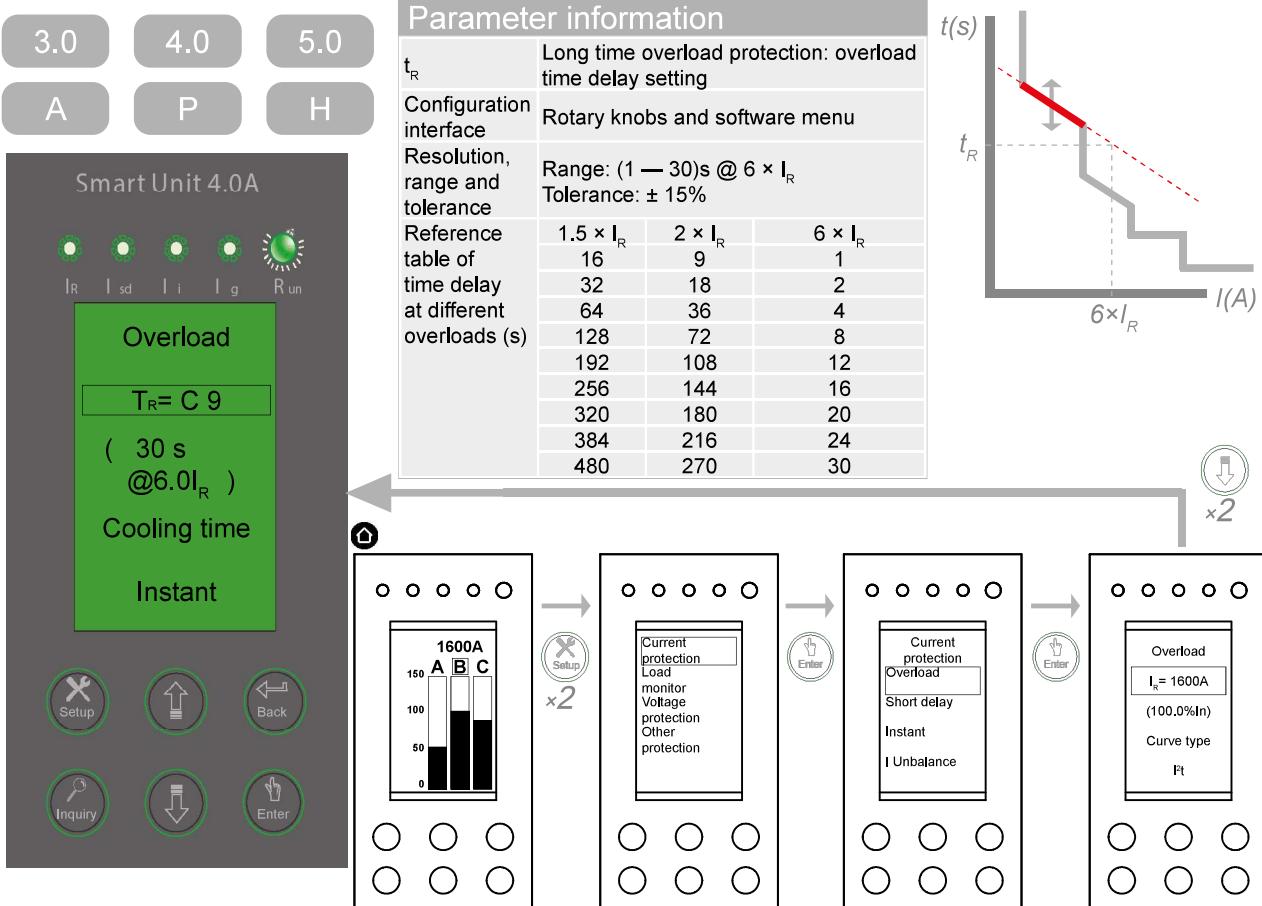
The *long overload protection* is a function that will protect the circuit installation against long time overload. One of the most important usages of this feature is to prevent prevent overheating of conductors that could permanently damage the installation or the electrical circuit because of long time light overloads.

The *long overload current setting* (I_R) parameter corresponds to the amount of current ($I_R \times I_n$) expressed as coefficient of the nominal current, on which the air circuit breaker will start considering the measured current as an overload.

The moment that the measured current exceeds this threshold, the smart unit will monitor the amount of time that this condition is present, and if exceeded the maximum allowed time (t_R) the circuit breaker will trip or trigger an alarm, according to the user's configuration.



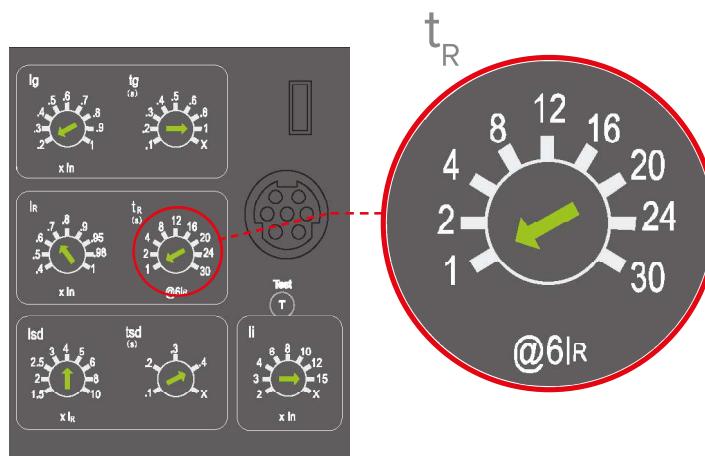
Long time overload protection: t_R



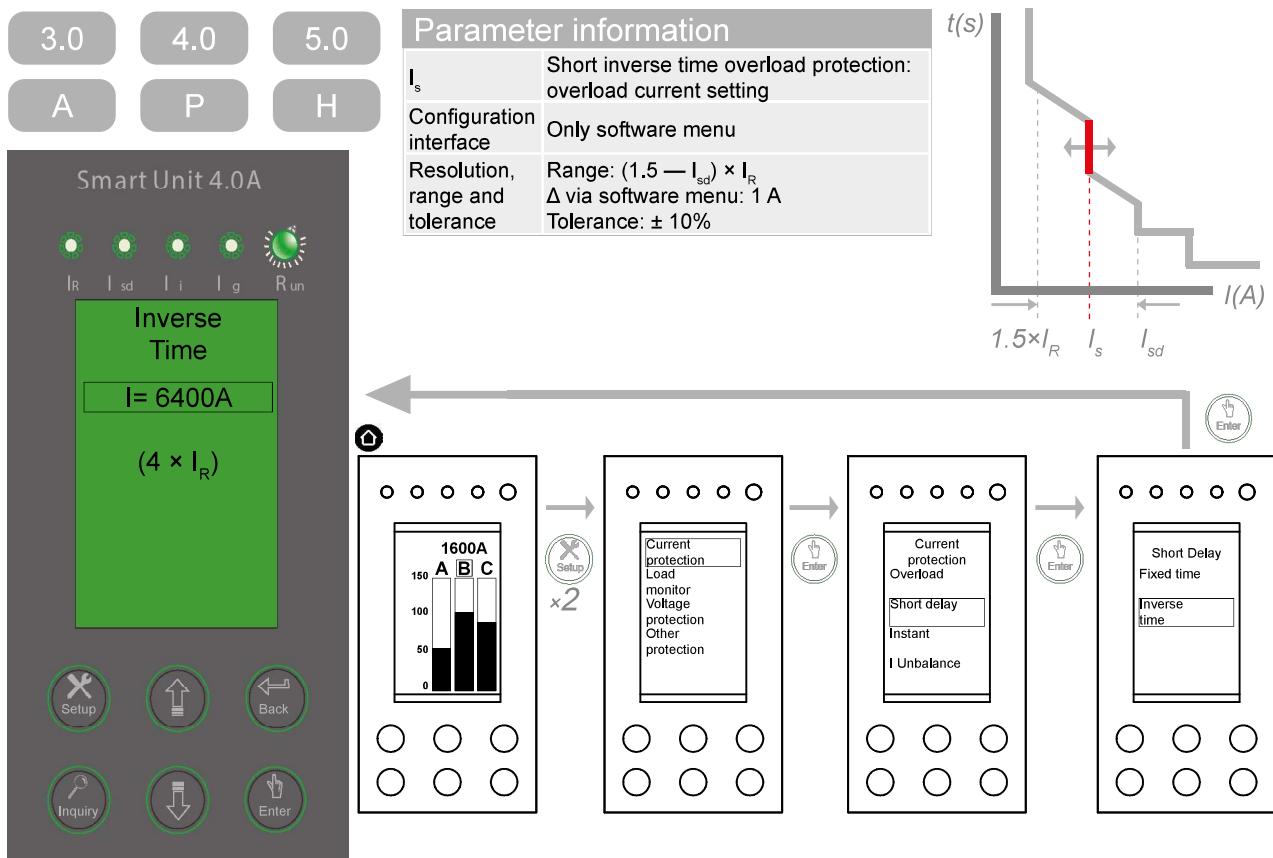
The *long overload protection* is a function that will protect the circuit installation against long time overload. One of the most important usages of this feature is to prevent overheating of conductors that could permanently damage the installation or the electrical circuit because of long time light overloads.

The *long overload time setting* (t_R) parameter corresponds to the amount of time that the overload protection will allow the abnormal condition without disconnecting the circuit breaker, based on the selected tripping curve (I^2t by default). The resultant time delay will depend on the inverse time setting, the magnitude of the overload and the type of curve selected. This parameter is expressed as the corresponding value of the delay when the overload is $6 \times I_R$ with a range from 1s up to 30s.

The threshold I_R can be adjusted in the I_R settings parameter.



Short inverse time overload protection: I_s



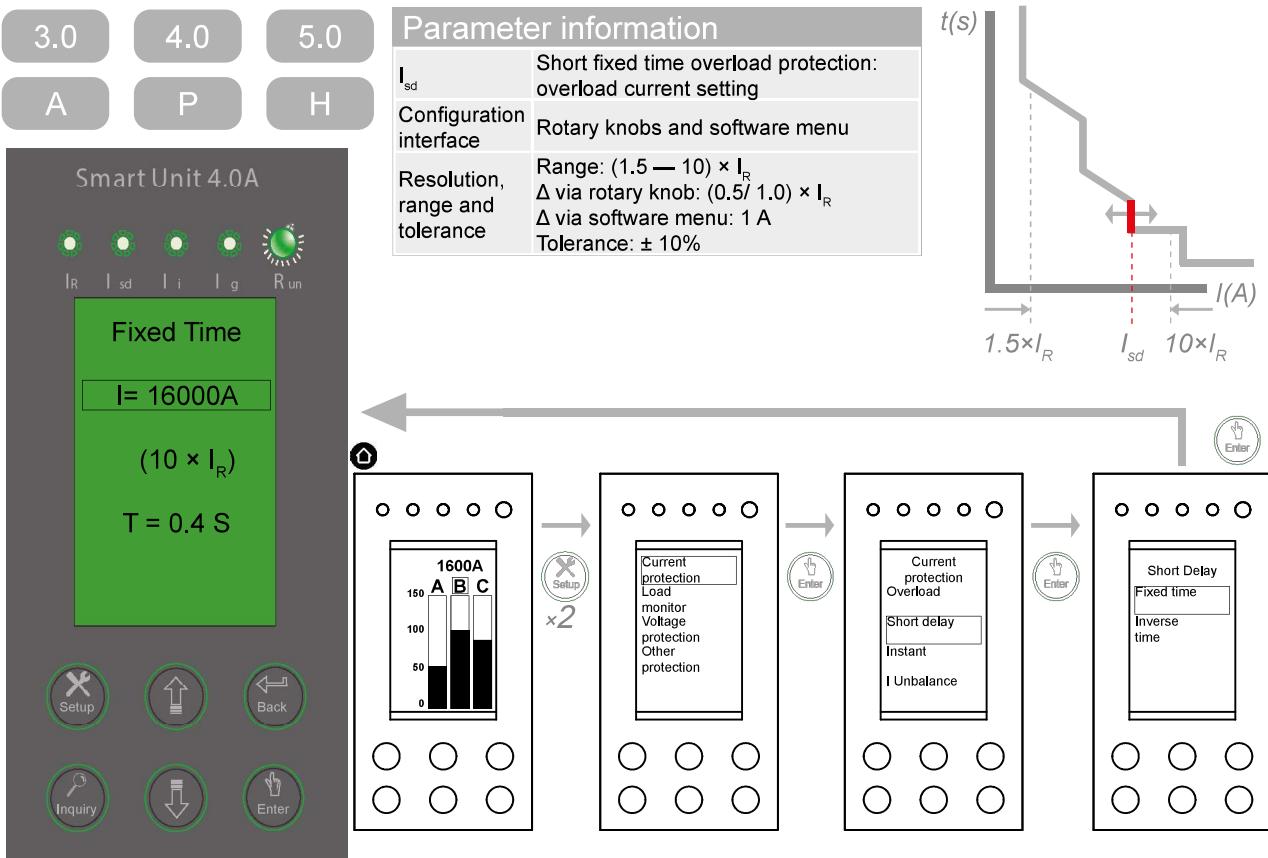
The *short inverse time overload protection* is a function that will protect the circuit installation against high overloads. This parameter allows a more accurate and faster safety disconnection of the breaker on the range of currents on which a long overlaid delay time would mean a too late protection, but the instantaneous protection would suppose a too fast measure.

The *short inverse time overload current setting* (I_s) parameter corresponds to the amount of current ($I_s \times I_R$) expressed as coefficient of the overload current, on which the air circuit breaker will start considering the measured current as a high overload on which is needed to readjust the maximum delay time. This parameter has a range from $1.5 I_R$ to I_{sd} . If $I_s = I_{sd}$, this parameter will be deactivated.

Above the I_s threshold, the air circuit breaker will decrease the amount of time t_R that the controller would allow the overload event.

The new delay time t_s will be proportional to t_R according to the following ratio: $t_s = t_R / 10$

Short fixed time overload protection: I_{sd}

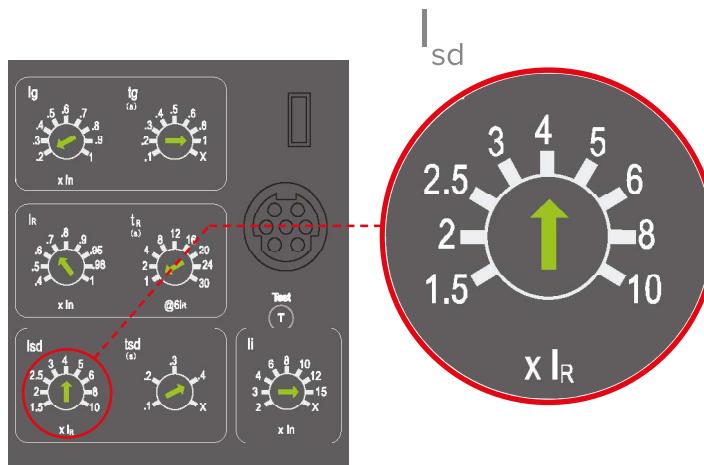


The *short fixed time overload protection* is a function that will protect the circuit installation against high overloads. This parameter allows a more accurate and faster safety disconnection of the breaker on the range of currents on which a long overlad delay time would mean a too late protection, but the instantaneous protection would suppose a too fast measure.

The *short fixed time overload current setting* (I_{sd}) parameter corresponds to the amount of current ($I_{sd} \times I_R$) expressed as coefficient of the overload current, on which the air circuit breaker will start considering the measured current as a high overload on which is needed to readjust the maximum delay time. This parameter has a range from $(1.5 — 10) \times I_R$.

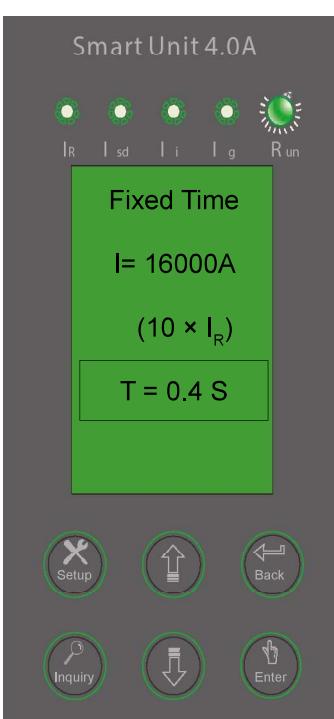
Above the I_{sd} threshold, the air circuit breaker will decrease the amount of time (t_{sd}) that the controller would allow the overload event. This time delay (t_{sd}) can be adjusted and will be a constant value independently of the dimension of the high overload detected.

If a slower actuation time is required, the short inverse time overload current protection (I_s) can be enabled by the software menu.



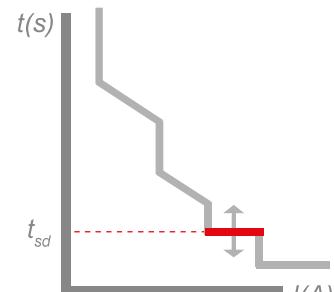
Short fixed time overload protection: t_{sd}

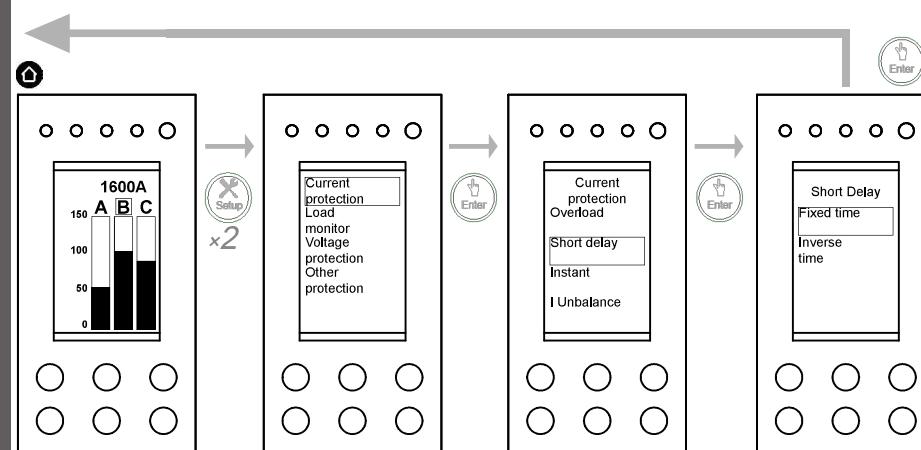
3.0	4.0	5.0
A	P	H



Parameter information

t_{sd}	Short fixed time overload protection: time delay setting
Configuration interface	Rotary knobs and software menu
Resolution, range and tolerance	Range: $(1.5 - 10) \times I_R$ Δ via rotary knob: $(0.5 / 1.0) \times I_R$ Δ via software menu: 1 A Tolerance: $\pm 10\%$

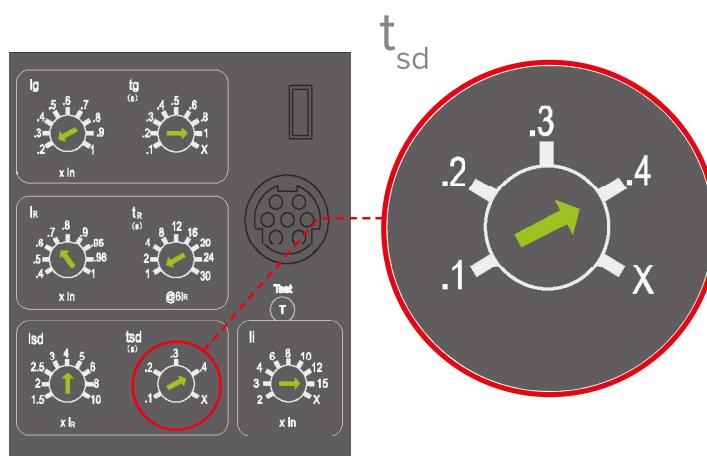




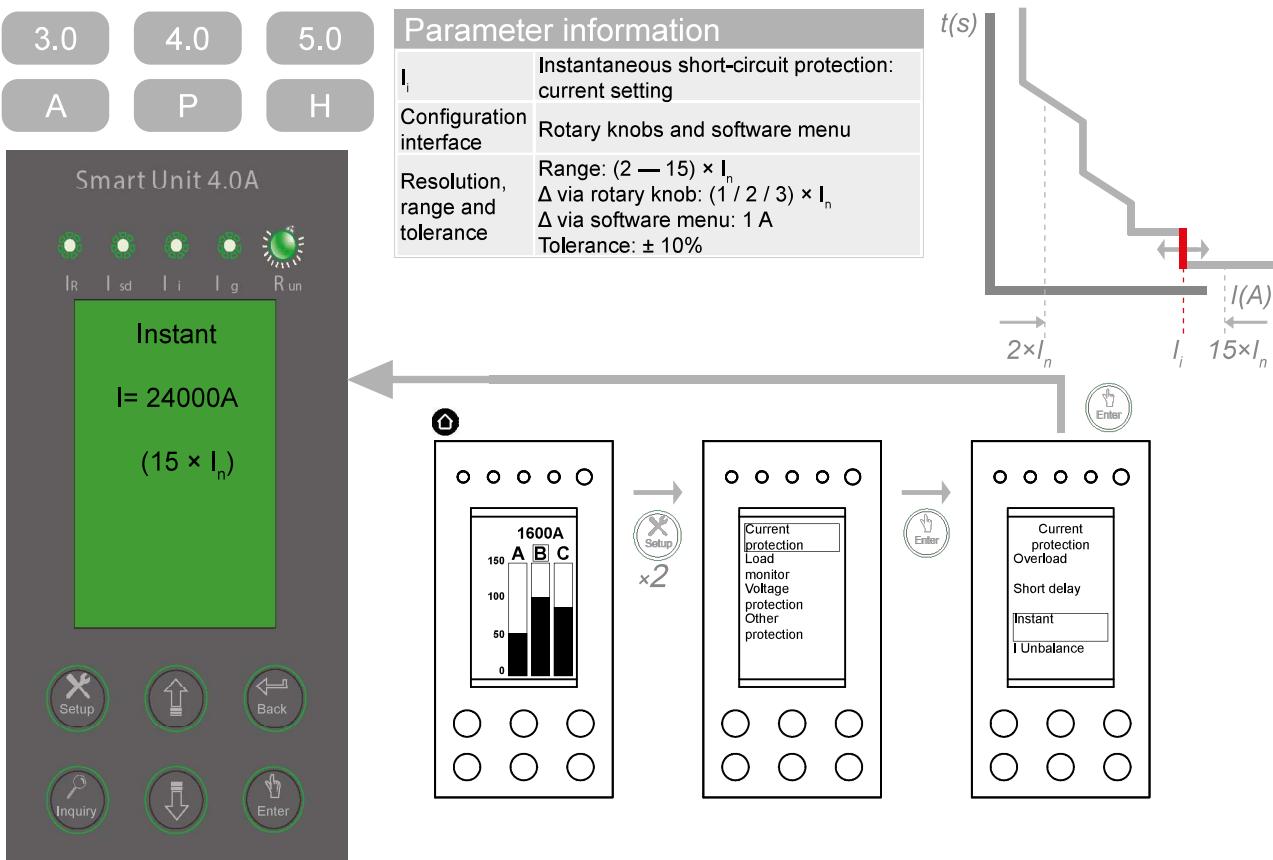
The *short fixed time overload protection* is a function that will protect the circuit installation against high overloads. This parameter allows a more accurate and faster safety disconnection of the breaker on the range of currents on which a long overlad delay time would mean a too late protection, but the instantaneous protection would suppose a too fast measure.

The *short fixed time overload time setting* (t_{sd}) parameter corresponds to the amount of time expressed in seconds, during which the air circuit breaker will allow a high overload event, starting from the moment on which the threshold of *short fixed time overload current setting* (I_{sd}) will be trespassed. This parameter has a range from (OFF / 0.1 — 0.4) s.

If a slower actuation time is required, the short inverse time overload current protection (I_s) can be enabled by the software menu, with a pre-defined time delay proportional to the *long overload time setting* (t_R).



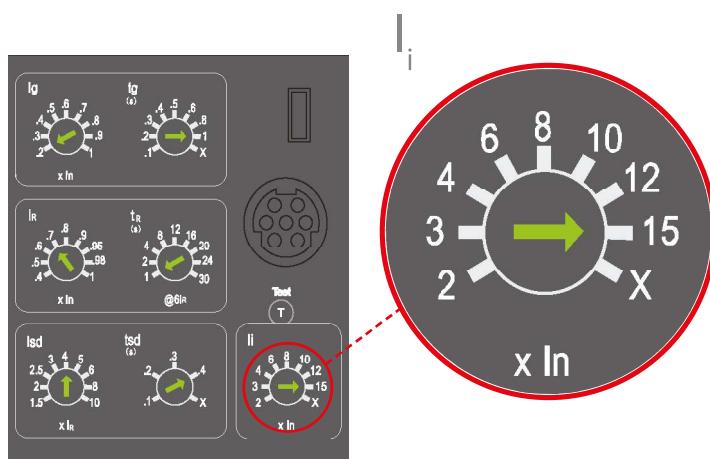
Instantaneous short-circuit protection: I_i



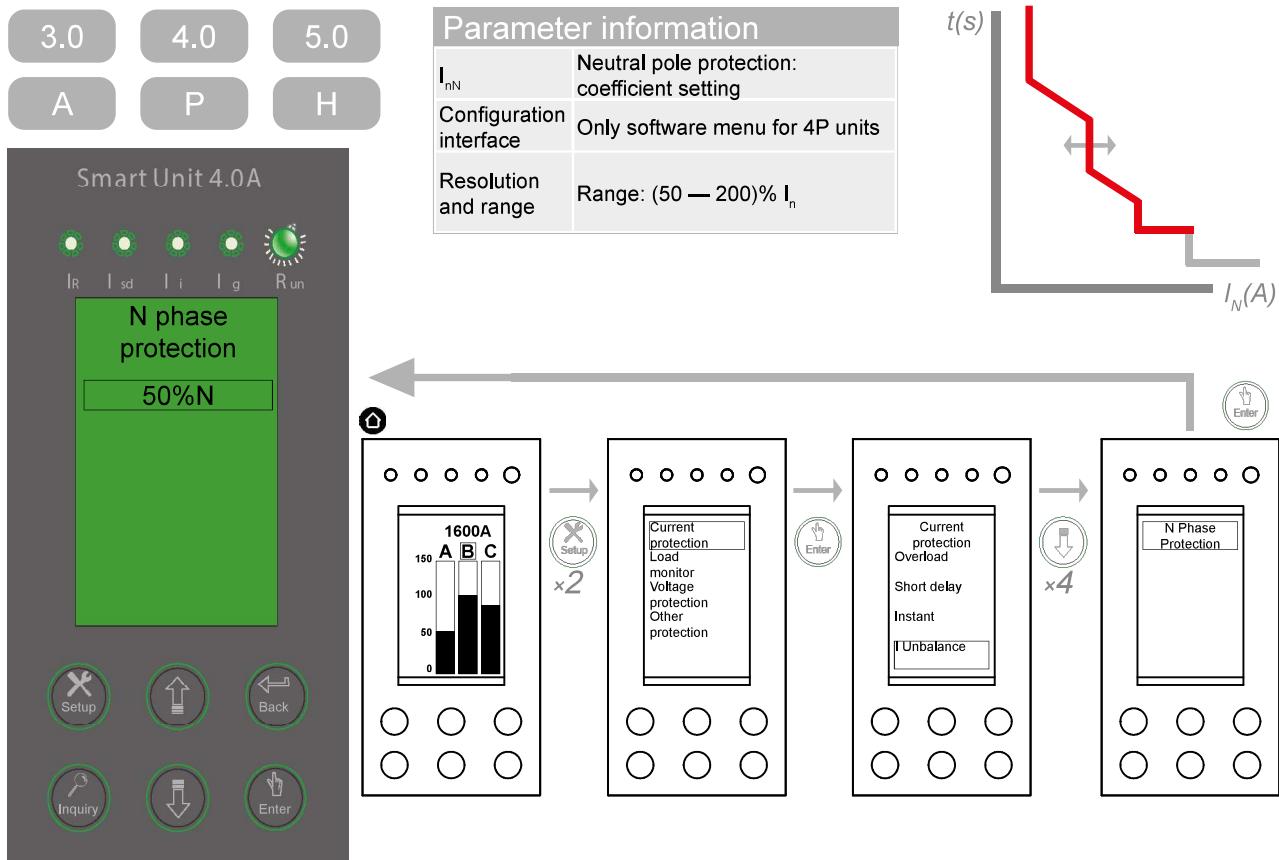
The *instantaneous short-circuit protection* is a function that will protect the circuit installation against high short circuits. These short-circuits are normally caused by phase to phase or phase to neutral faults, for this reason the circuit breaker needs to actuate fast. This protection is based on true RMS values.

The *instantaneous short-circuit current setting* (I_i) parameter corresponds to the current threshold on which the circuit breaker will consider the measured current as a short-circuit condition, on which the breaker should trip as fast as possible. For this reason, the actuation time corresponds to the reaction time of the electromechanic system without any additional adjustable delay. The range of this parameter is $(OFF / 2 - 15) \times I_n$.

If a slower actuation time is required, the *short inverse time overload protection* or the *short fixed time overload protection* can be enabled by the software menu, with a different delay configurations available.



Neutral pole protection: I_{nN}



The *neutral pole protection* is a function that will allow a customized protection for the Neutral pole, since in many applications the wiring dimensions and characteristics of the N pole differs from a regular phase characteristics.

The *neutral pole current (I_{nN})* parameter corresponds to the coefficient used for the customized rating of the protective parameters for the neutral pole. The range of this coefficient is 50% — 200%. It can be deactivated.

The parameters to be re-adjusted with this coefficient are:

Long time overload

$$I_{RN} = I_{nN} \times I_R$$

Example:

$$800A = 50\% \times 1600A$$

Short inverse-time overload

$$I_{sN} = I_s \times I_{RN}$$

Example:

$$3200A = 4 \times 800A$$

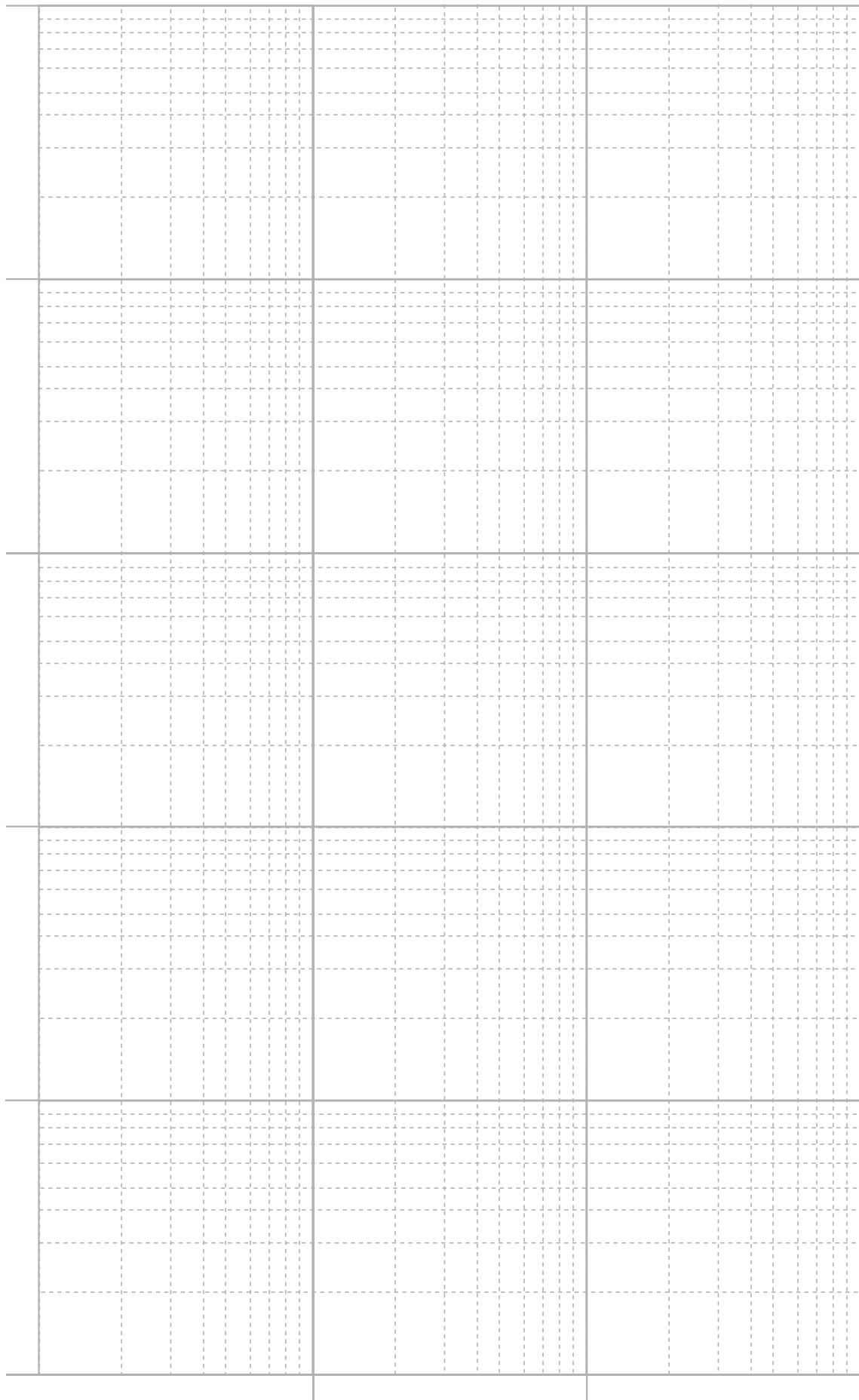
Short fixed-time overload

$$I_{sdN} = I_{sd} \times I_{RN}$$

Example:

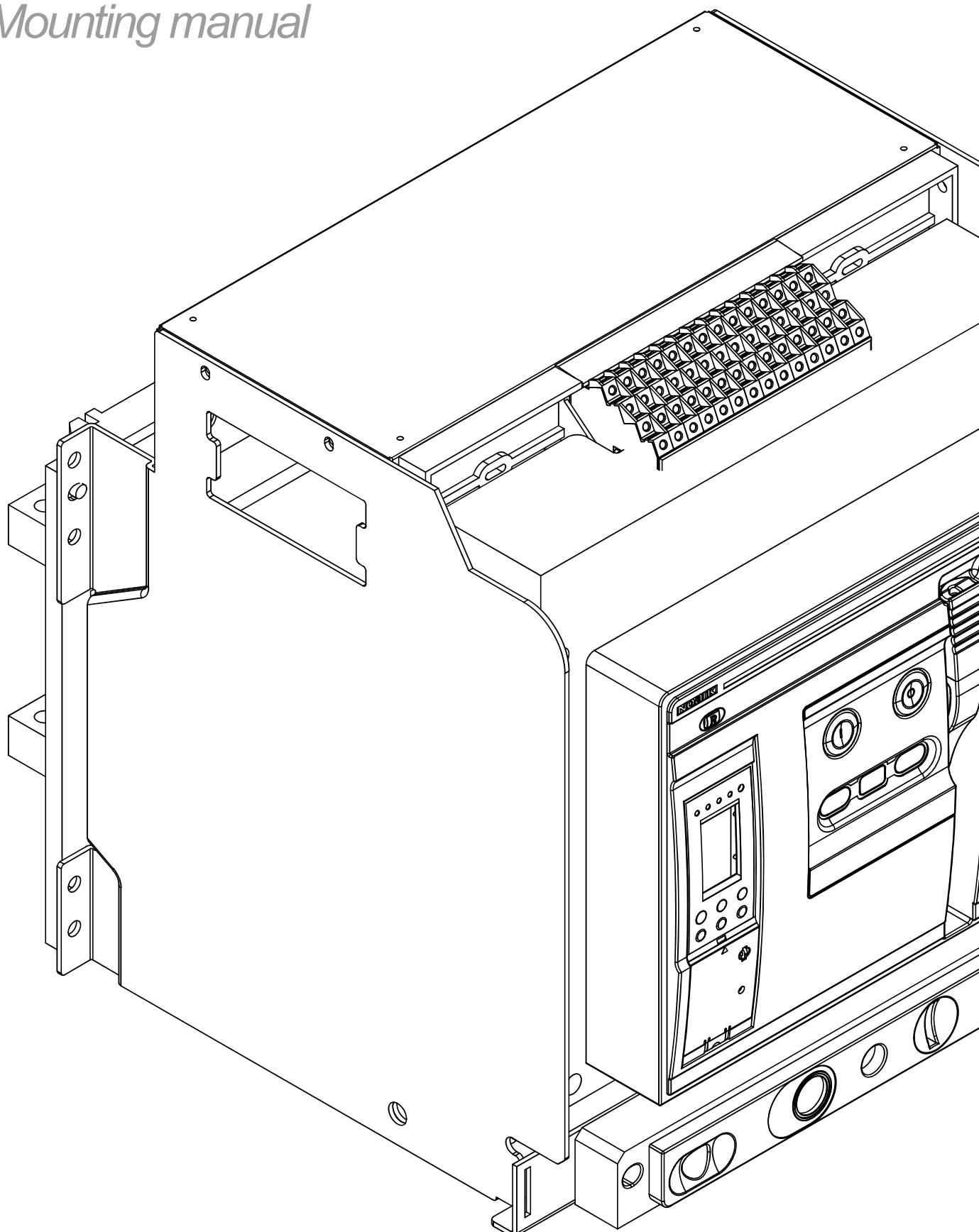
$$8000A = 10 \times 800A$$

Notes



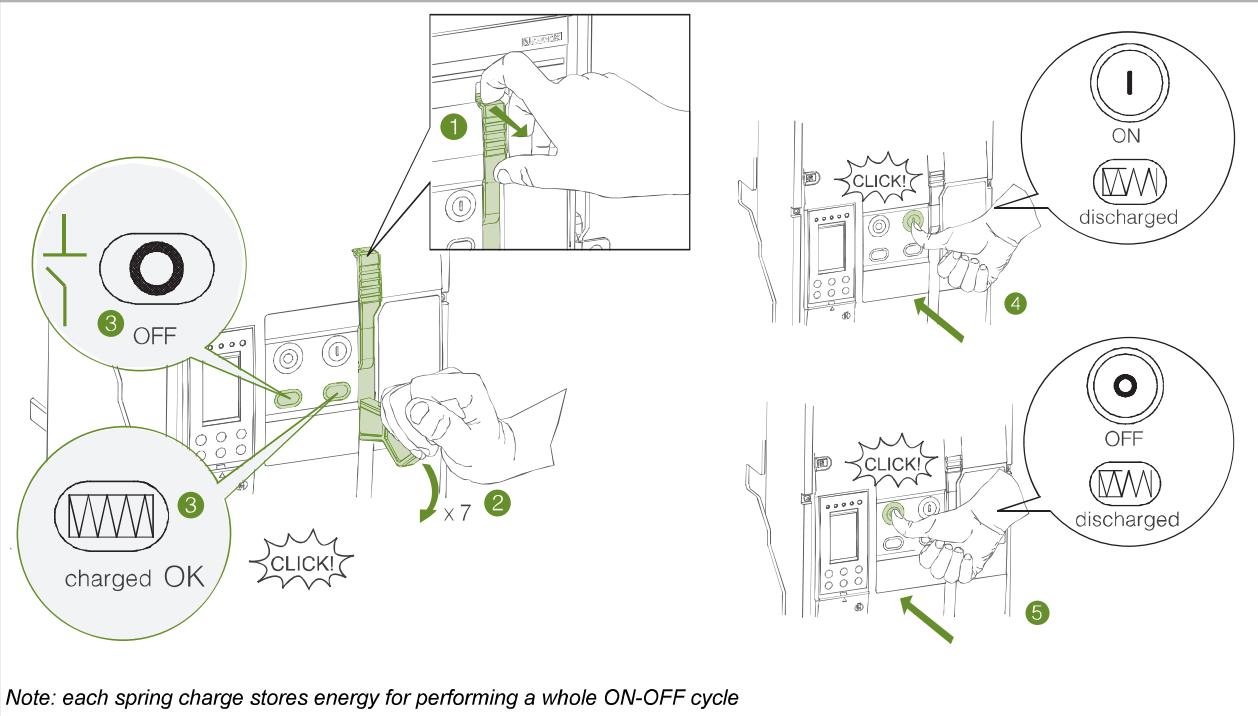
AIR CIRCUIT BREAKER

Mounting manual



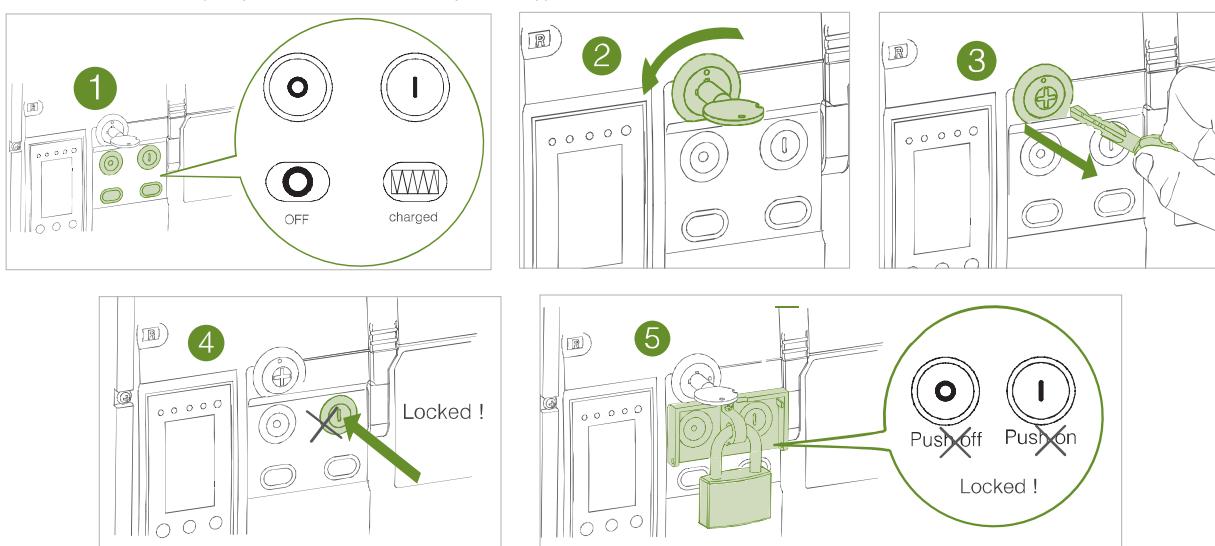
Operating Principle

Ex9A16 / 25 / 32 / 40 Circuit breaker operating principle

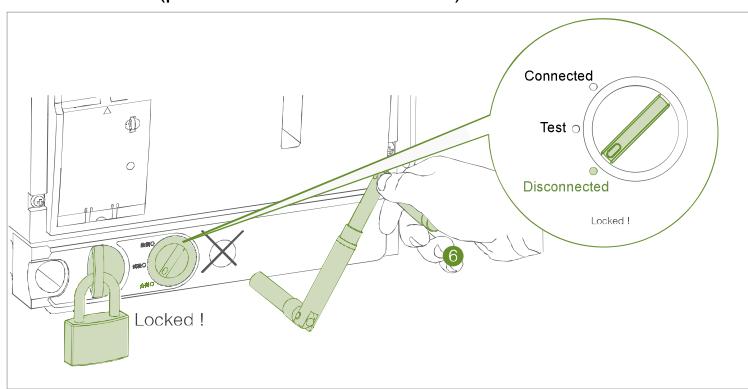


Ex9A16 / 25 / 32 / 40 with locking mechanisms

ON/OFF button lock (not premounted, under request only)

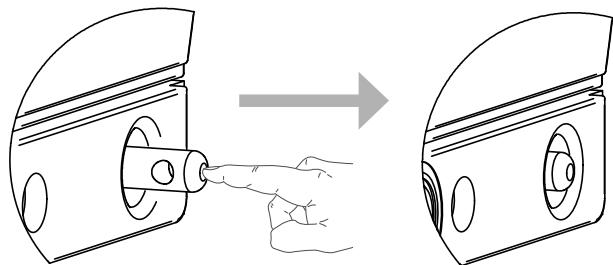
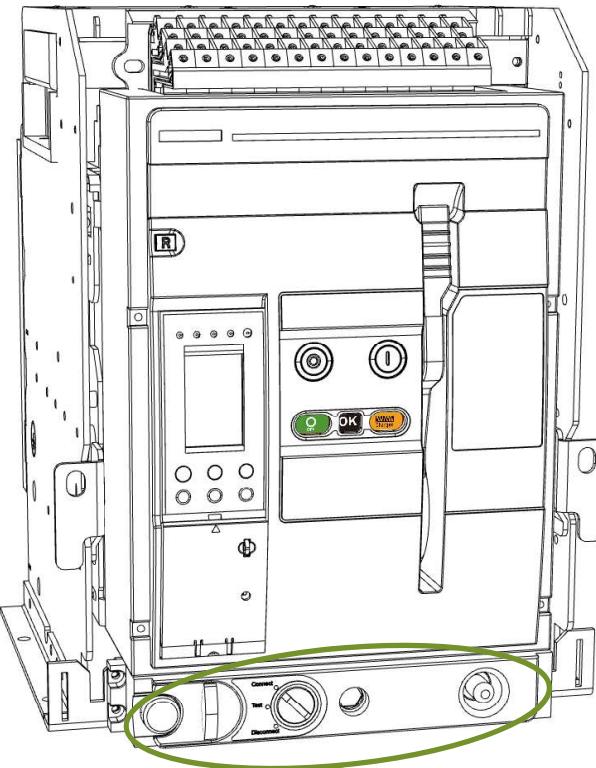


Cassette lock (premounted in the cassette)



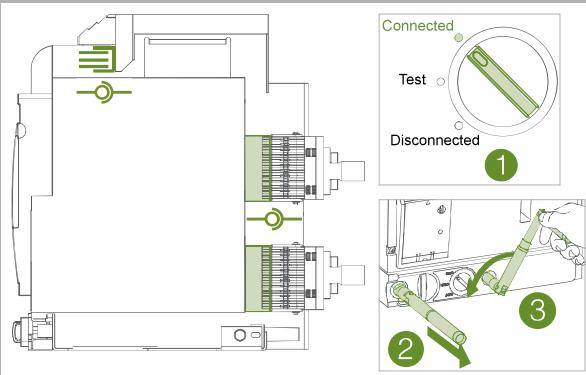
Operating Principle

Ex9A16 / 25 / 32 / 40 draw-out operating principle

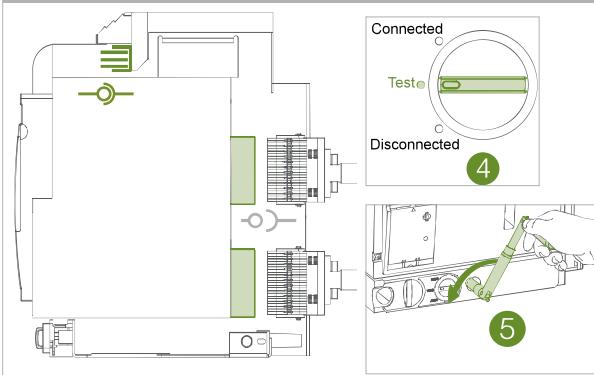


Note: when progressively extracting the cassette, the cassette position lock will trip notifying that the change is complete. The position lock will not allow any change to the cassette till reinserted, is possible to lock to avoid undesired modifications

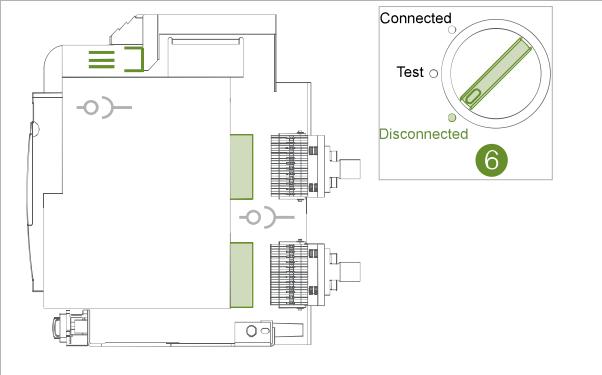
Connected



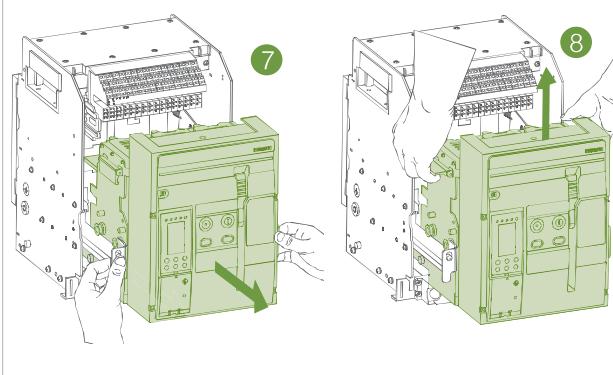
Test



Disconnected

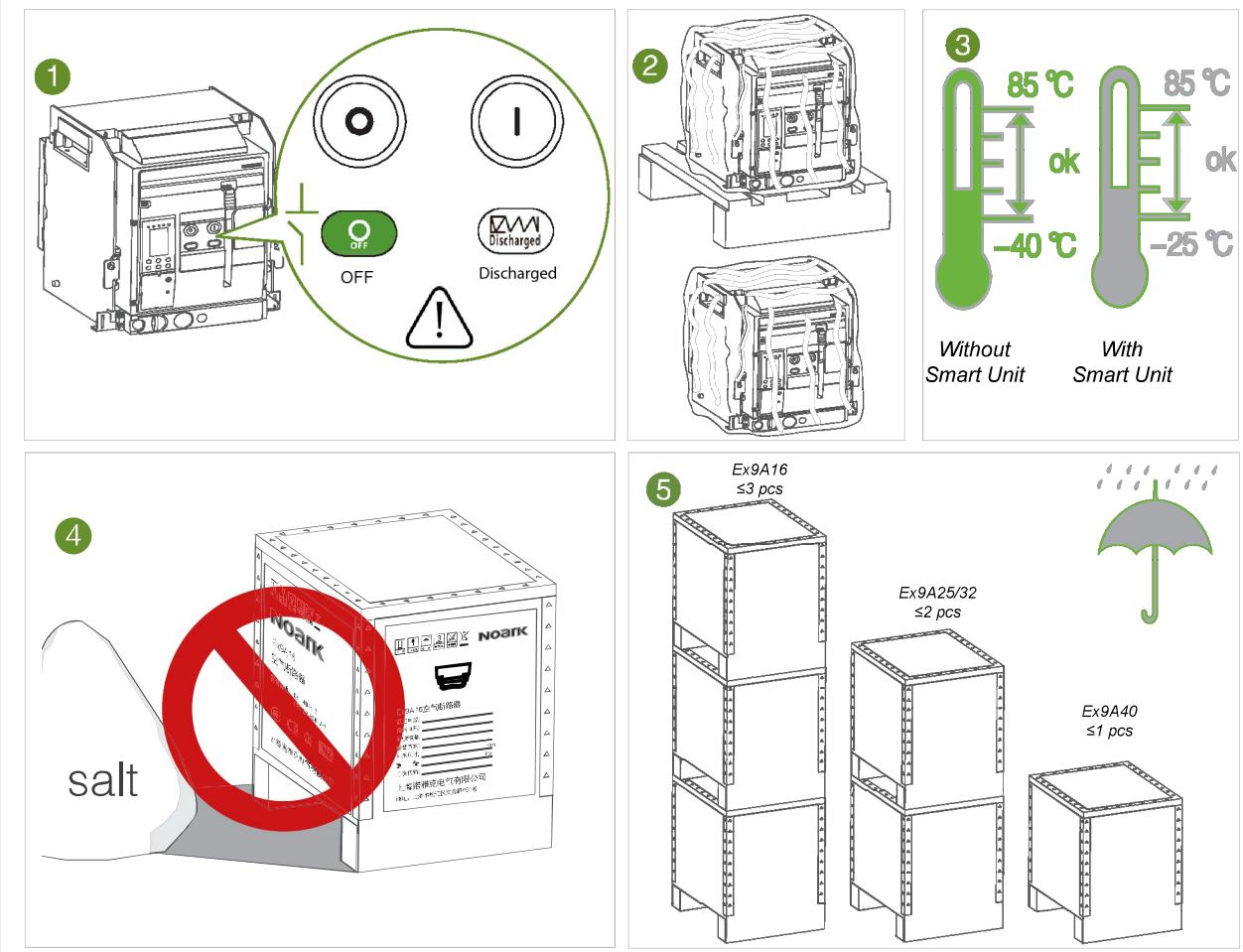


Extraction and removal

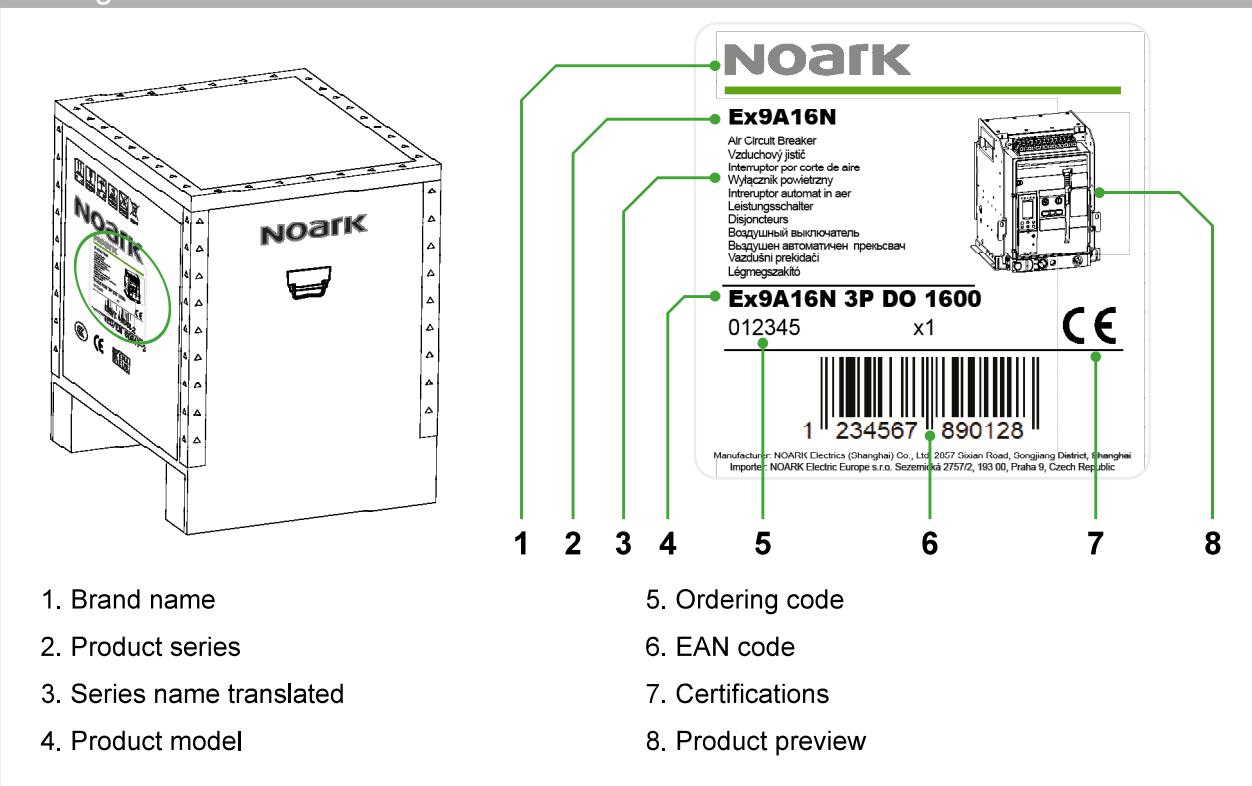


Storage

Storage conditions

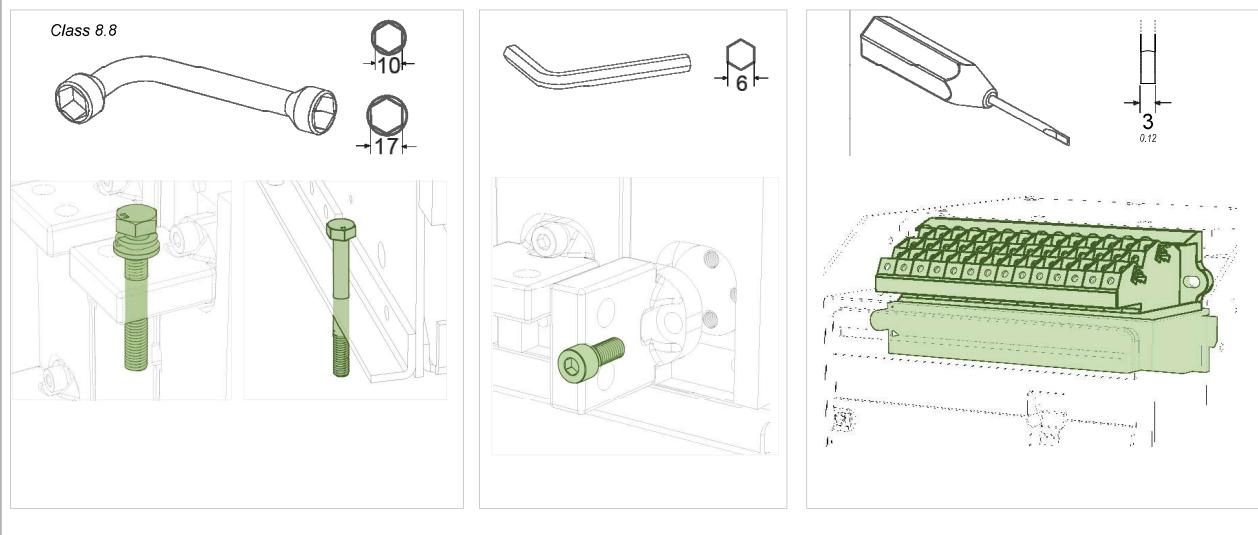


Package identification

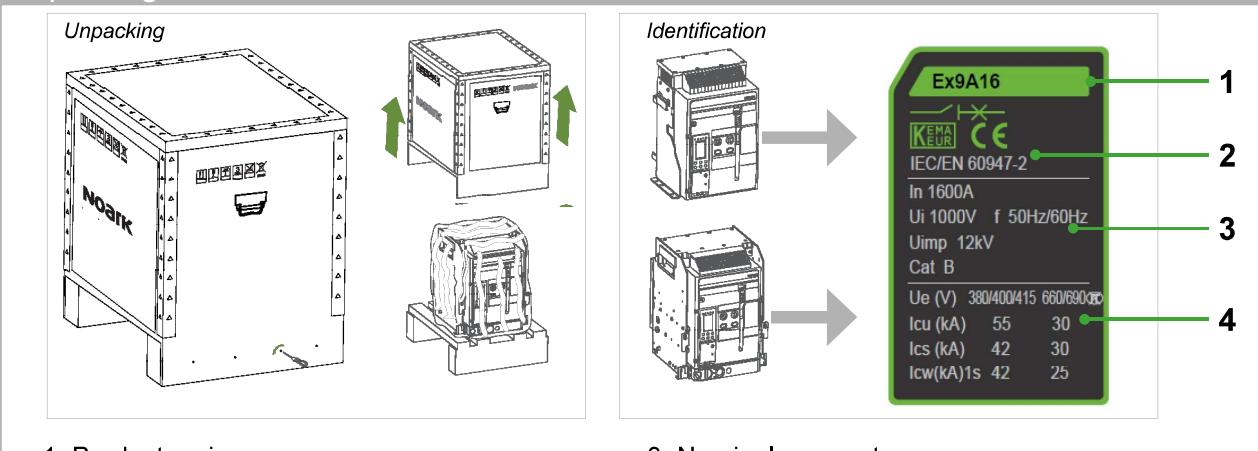


Unpacking

Required tools



Unpacking



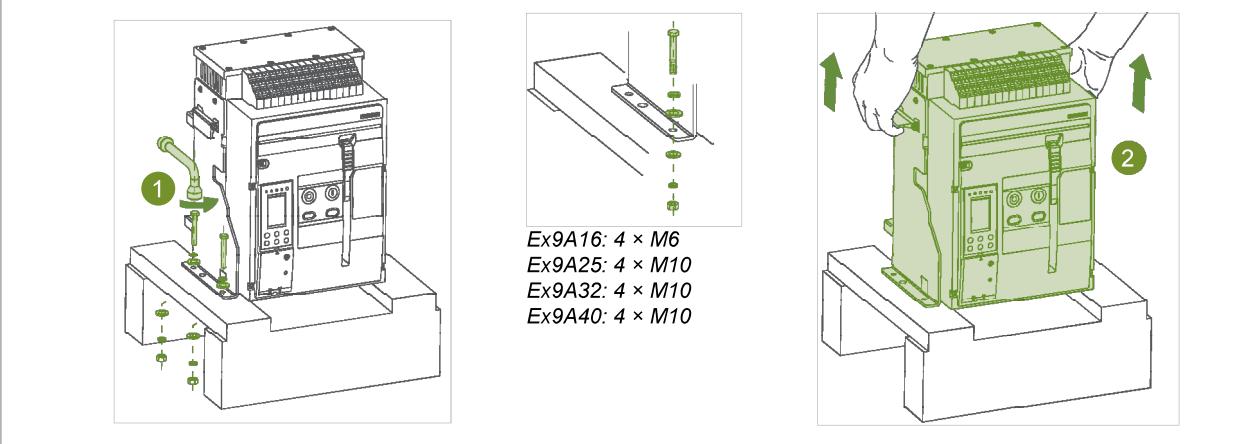
1. Product series

2. Certification information

3. Nominal parameters

4. Breaking capacities

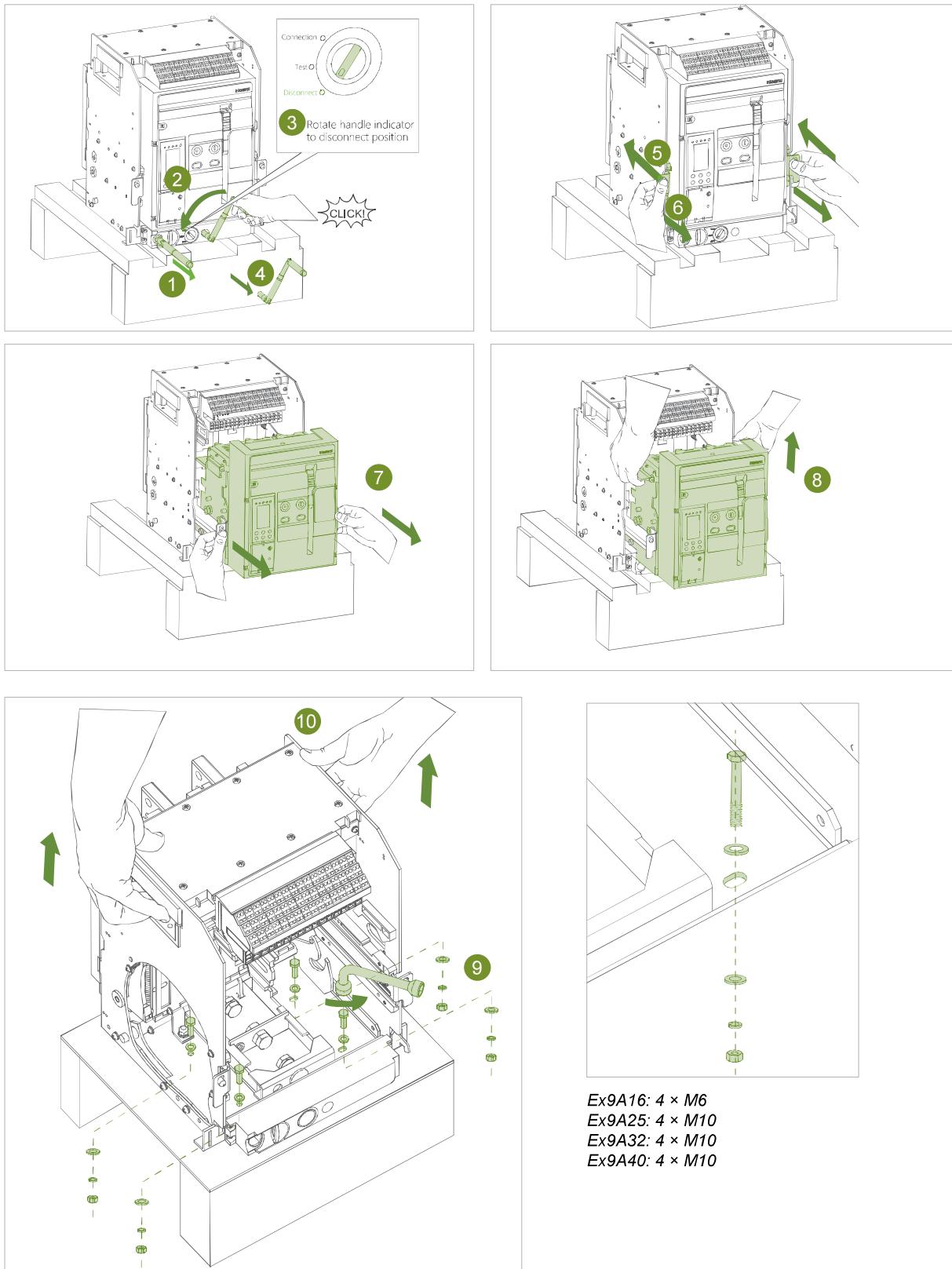
Ex9A16/25/32/40 Fixed



Unpacking

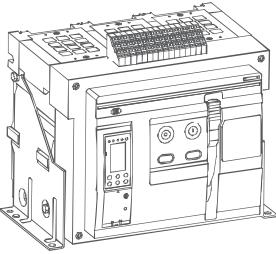
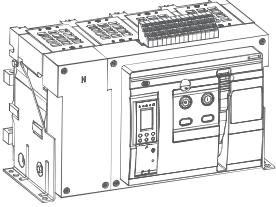
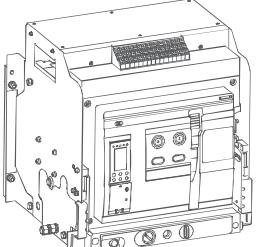
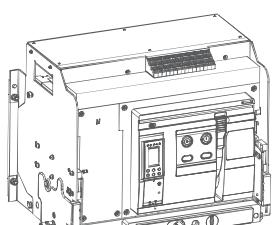
Unpacking

Ex9A16/25/32/40/75 Withdrawable



Handling

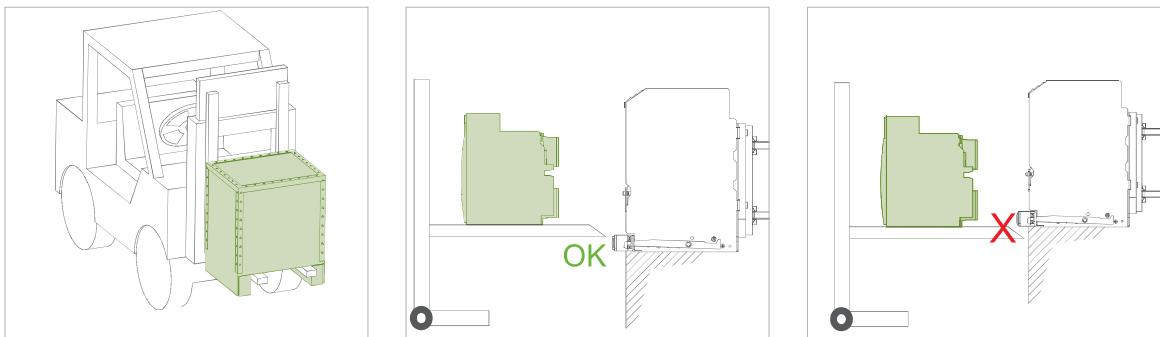
Weight table

	Ex9A16	Ex9A25	Ex9A32	Ex9A40
	400 — 800A 1000 — 1600A	630 — 1600A 2000 — 2500A	1600 — 2500A 3200A	2000 — 3200A 4000A
	25kg	26kg	58kg	63kg
<i>Fixed; 3P</i>			75kg	76.5kg
	30kg	31kg	65kg	70kg
<i>Fixed; 4P</i>			85kg	87.5kg
	41kg	42kg	96kg	106kg
<i>Withdrawable; 3P</i>			120kg	122.5kg
	58kg	59kg	117kg	127kg
<i>Withdrawable; 4P</i>			145kg	147kg
			165kg	169.5kg

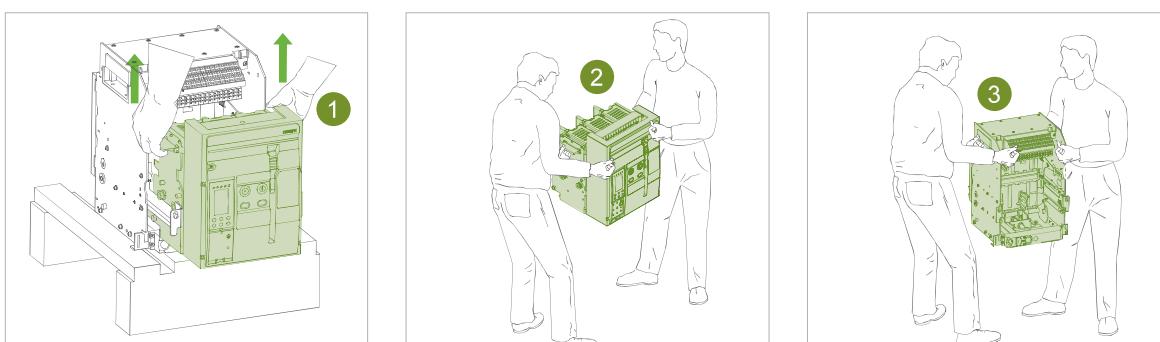
Handling

Transportation

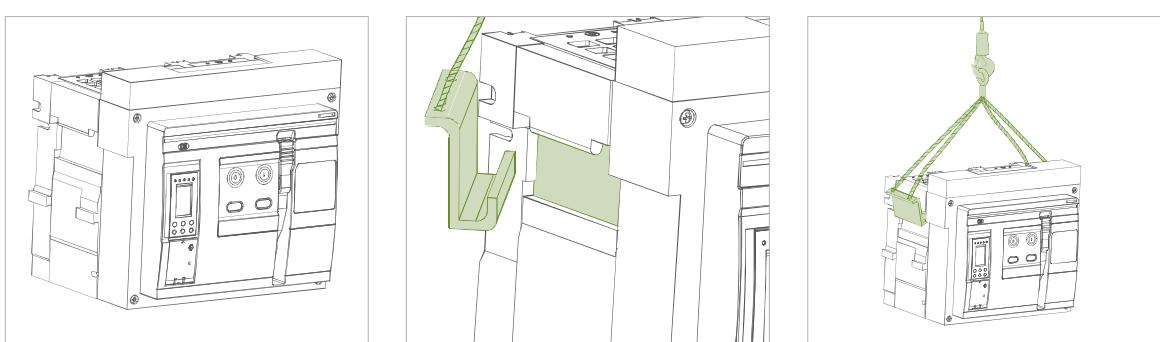
Ex9A16/25/32/40/75



Ex9A16 Withdrawable



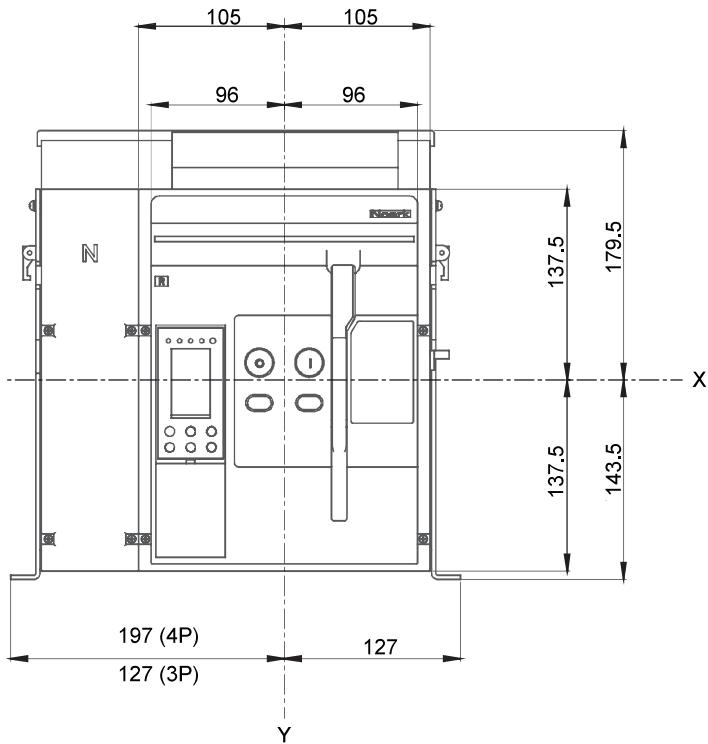
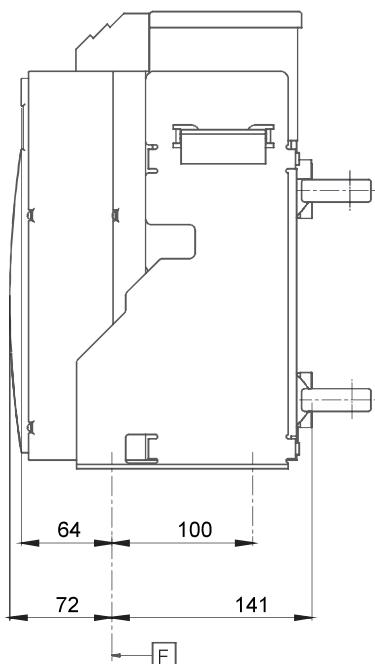
Ex9A25/32/40/75 Withdrawable



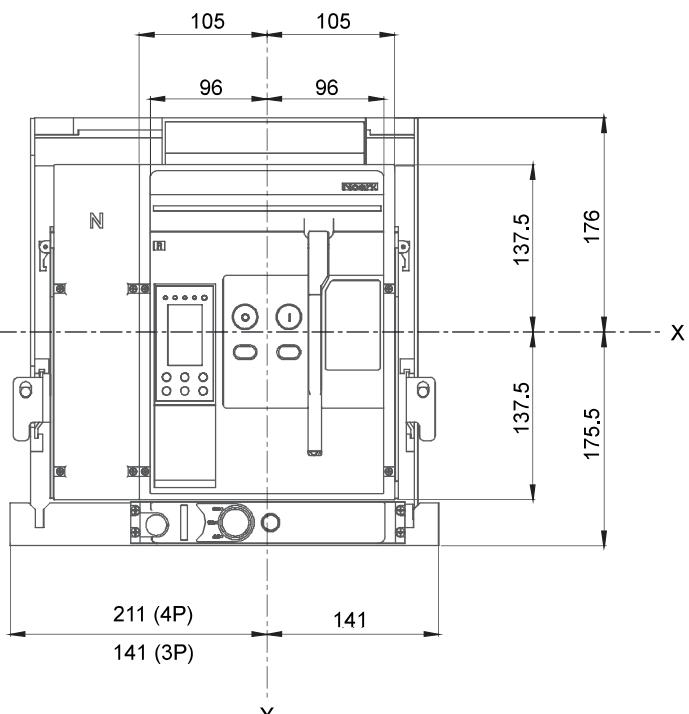
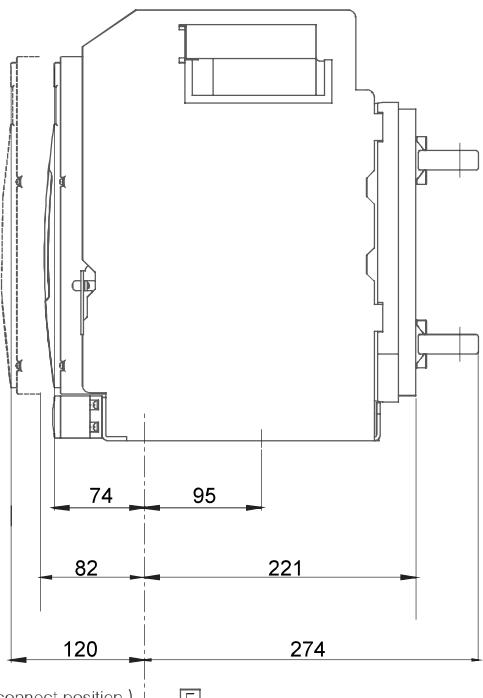
Ex9A16 Dimensions

Outline dimensions

Ex9A16 Fixed



Ex9A16 Withdrawable

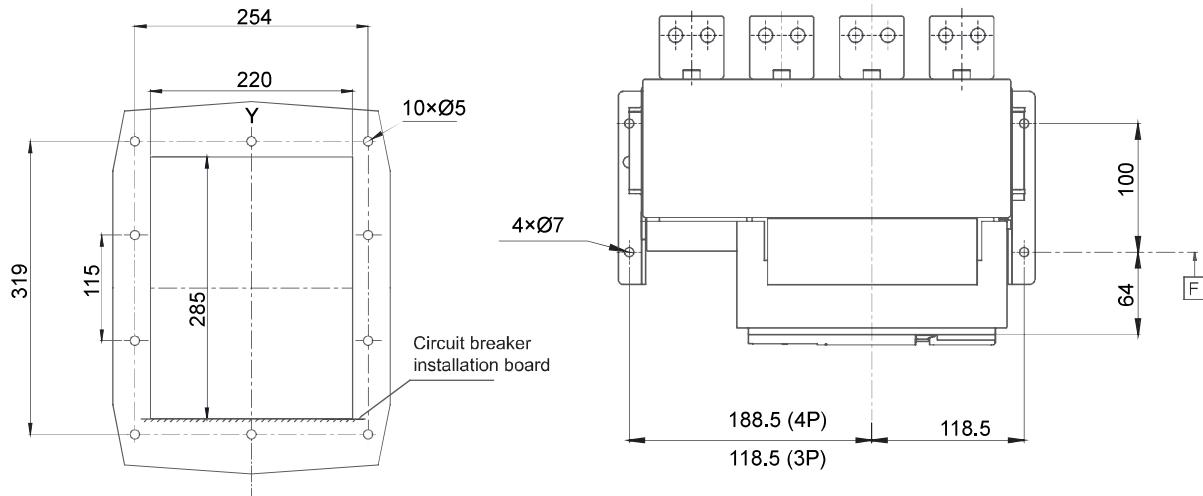


(disconnect position)

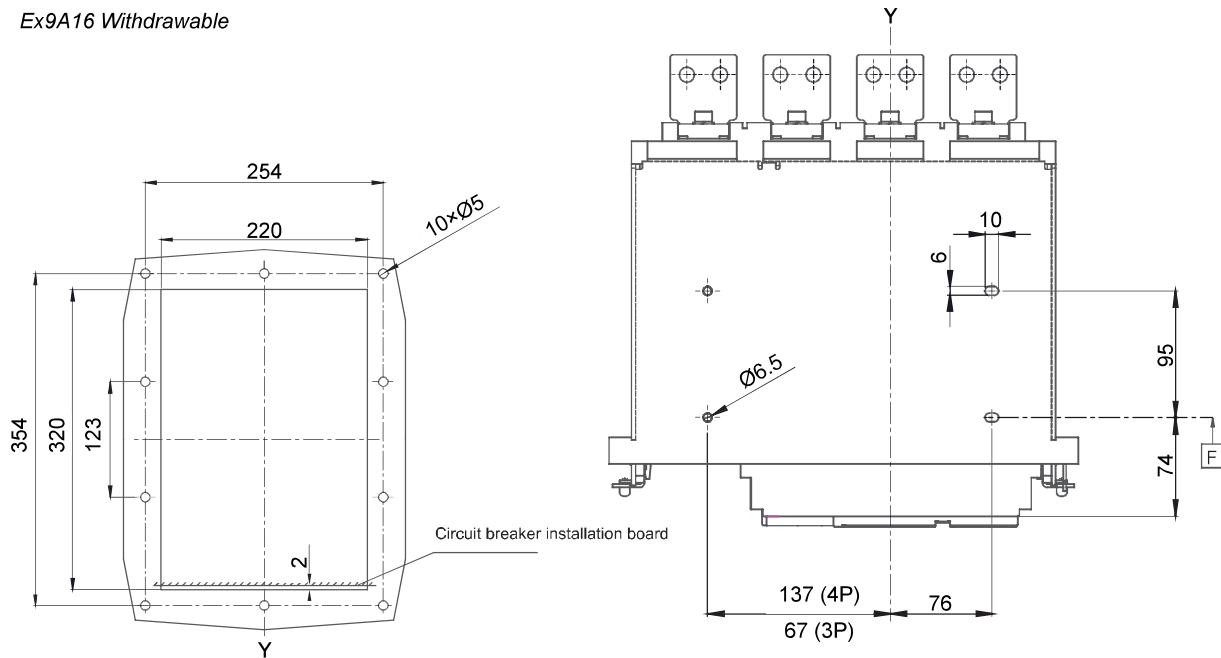
Ex9A16 Dimensions

Installation dimensions

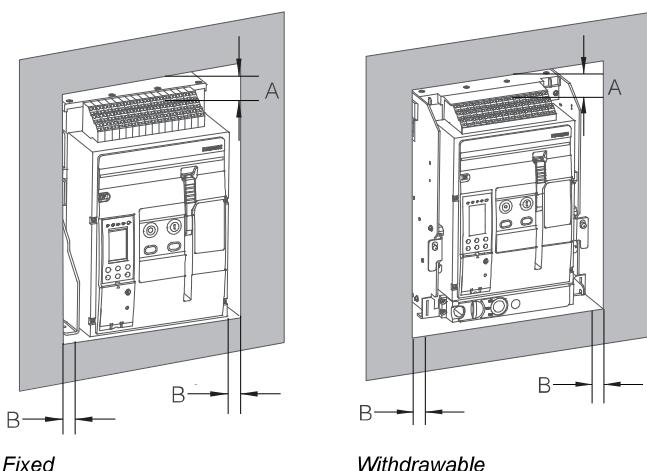
Ex9A16 Fixed



Ex9A16 Withdrawable



Ex9A16 Installation space



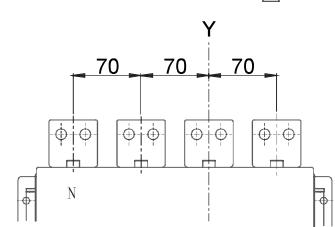
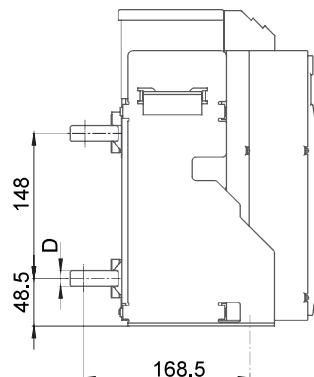
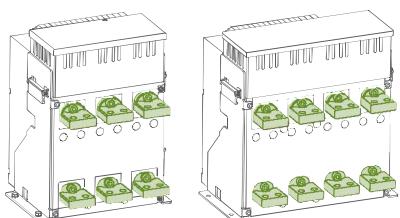
Safety distance

Safety distance (mm)	A	B
Insulated	0	0
Uncharge metal	0	0
Live conductor	100	60

Ex9A16 Power connectors

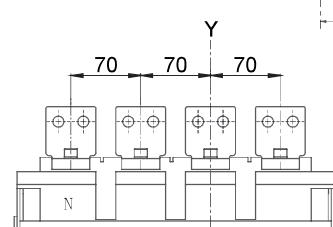
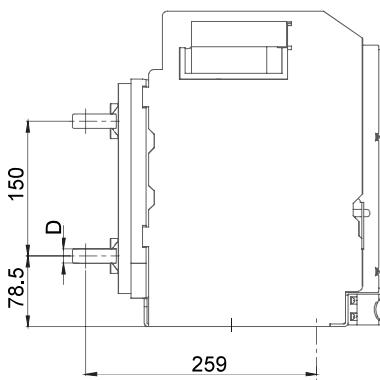
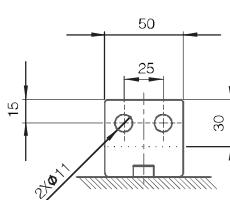
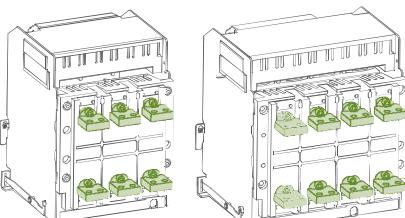
Power connector dimensions

Ex9A16 Fixed horizontal connections

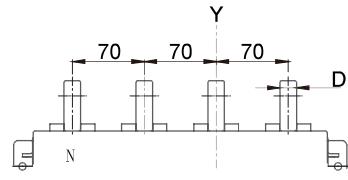
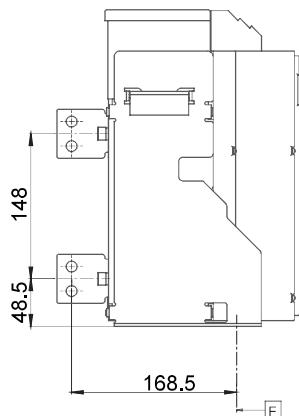
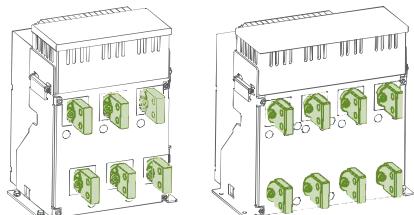


Rated current	D (mm)
400 — 800 A	10
1000 — 1600 A	16

Ex9A16 Withdrawable horizontal connections

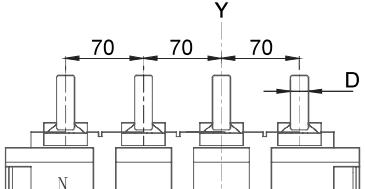
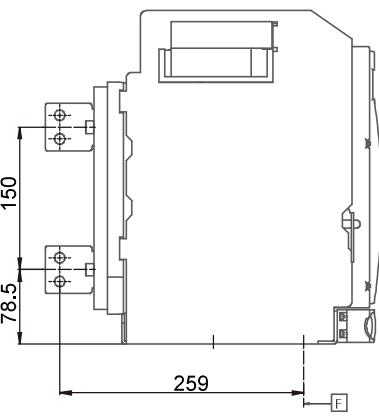
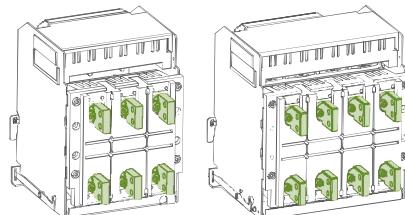


Ex9A16 Fixed vertical connections



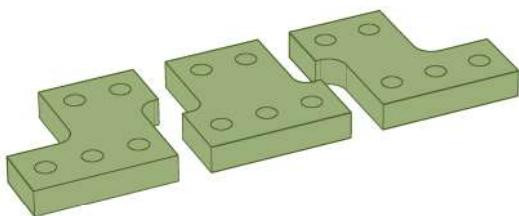
Rated current	D (mm)
400 — 800 A	10
1000 — 1600 A	16

Ex9A16 Withdrawable vertical connections

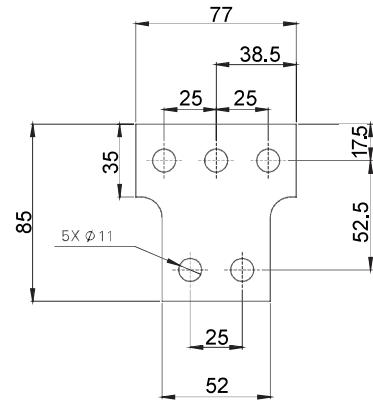
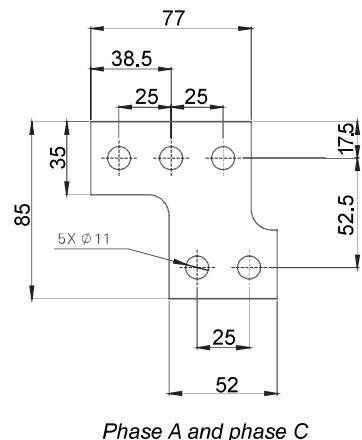
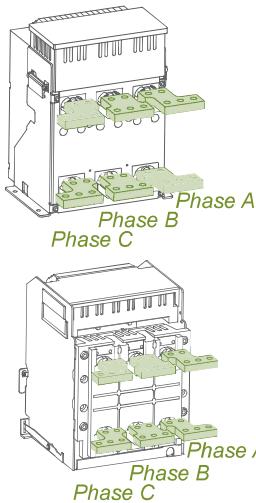
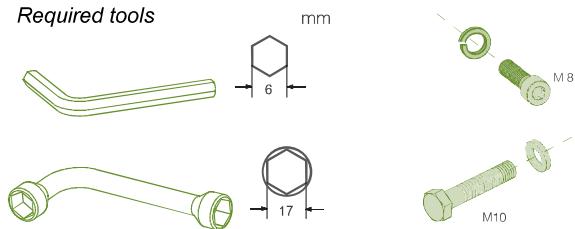


Ex9A16 Power connectors

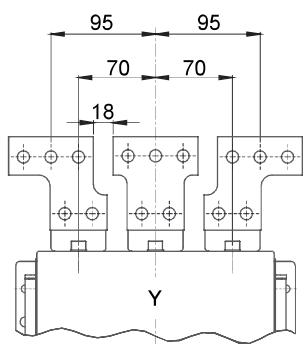
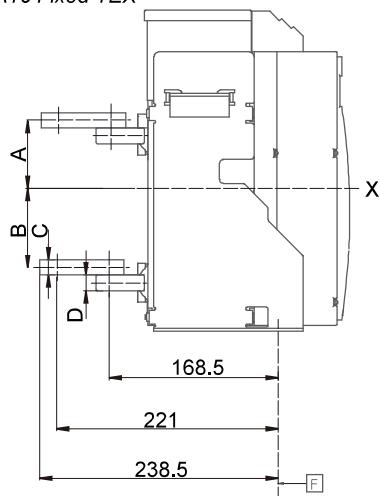
TEX terminals 3P



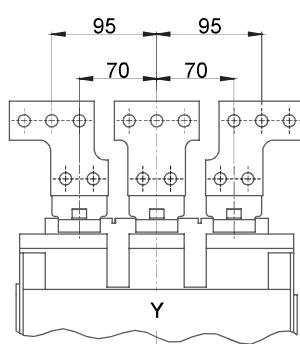
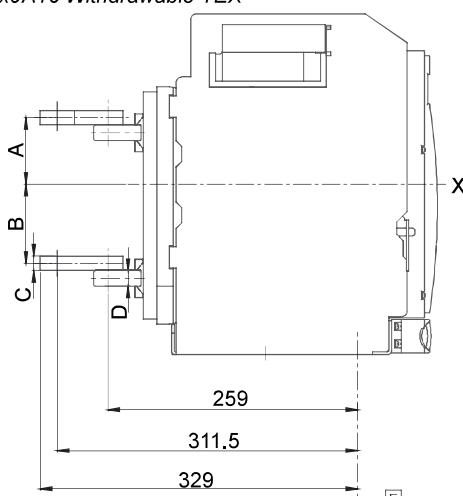
Required tools



Ex9A16 Fixed TEX



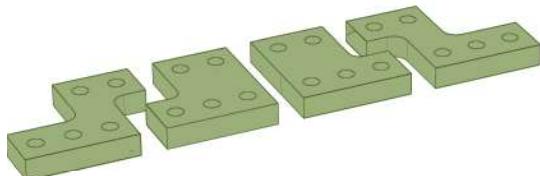
Ex9A16 Withdrawable TEX



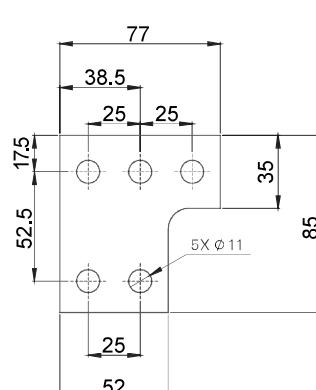
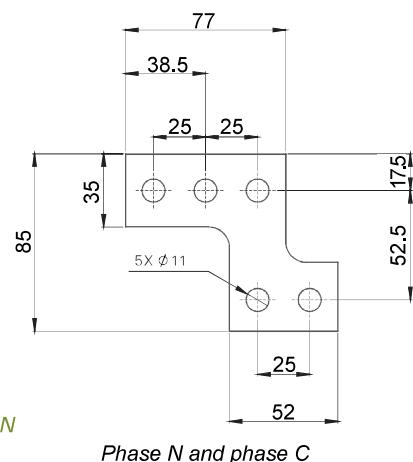
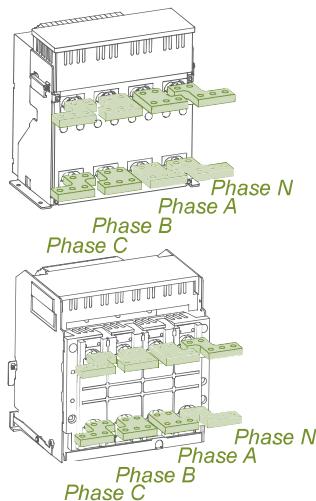
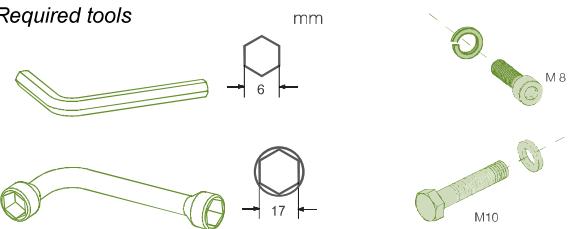
Rated current	A (mm)	B (mm)	C (mm)	D (mm)
400 — 800 A	63	85	10	10
1000 — 1600 A	68.5	79.5	15	16

Ex9A16 Power connectors

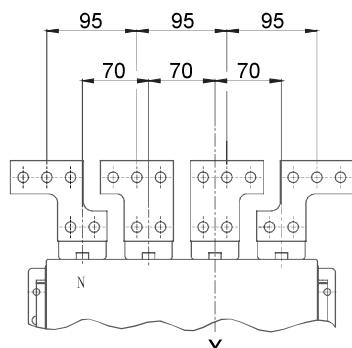
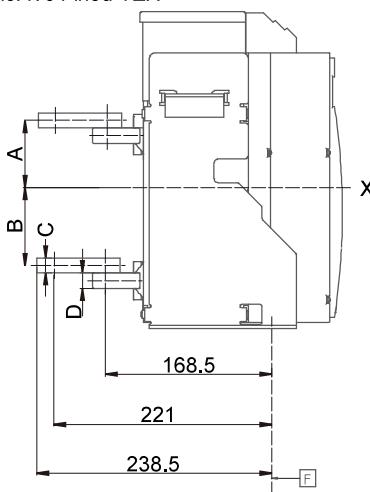
TEX terminals 4P



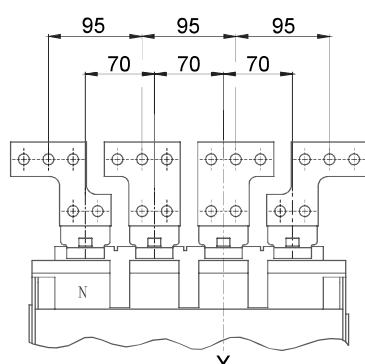
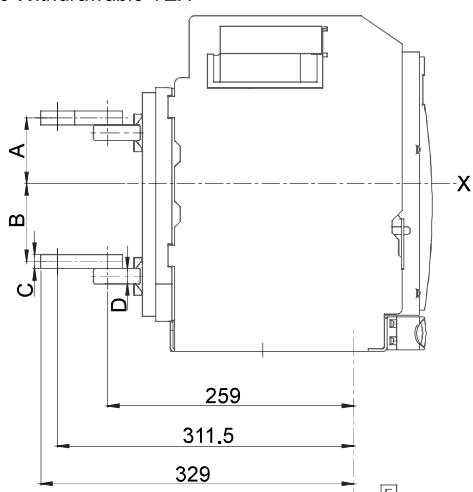
Required tools



Ex9A16 Fixed TEX



Ex9A16 Withdrawable TEX



Rated current	A (mm)	B (mm)	C (mm)	D (mm)
400 — 800 A	63	85	10	10
1000 — 1600 A	68.5	79.5	15	16

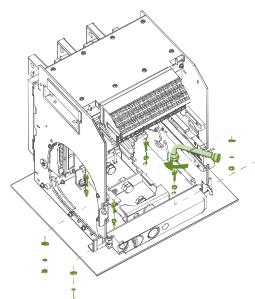
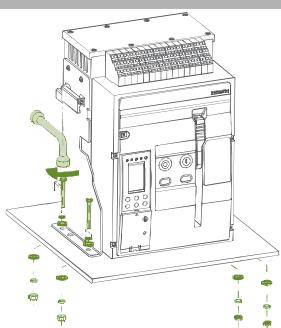
Ex9A16 Installation

Ex9A16 Installation

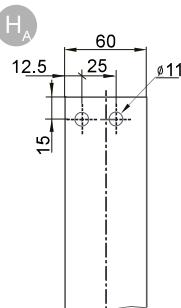
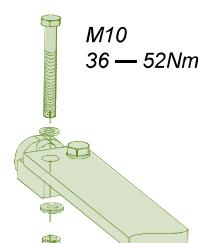
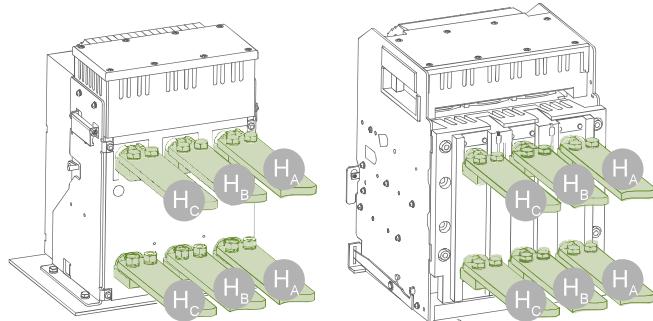
Required tools



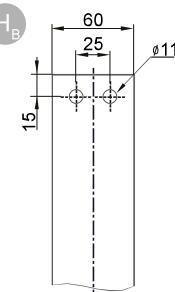
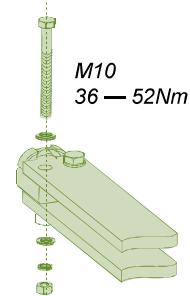
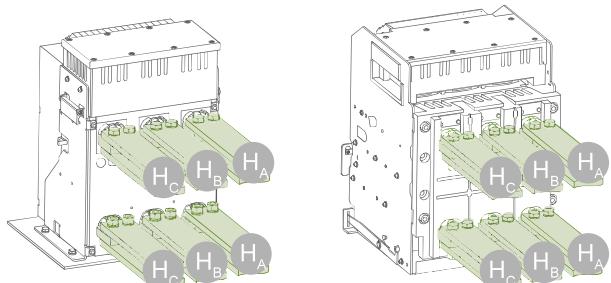
Ex9A16: $4 \times M6$



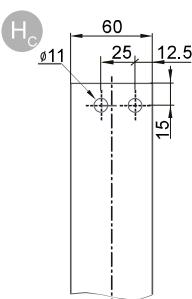
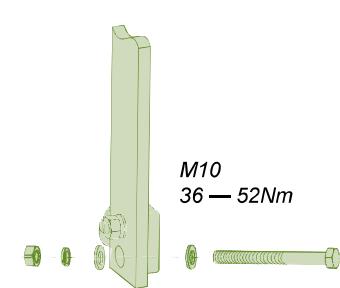
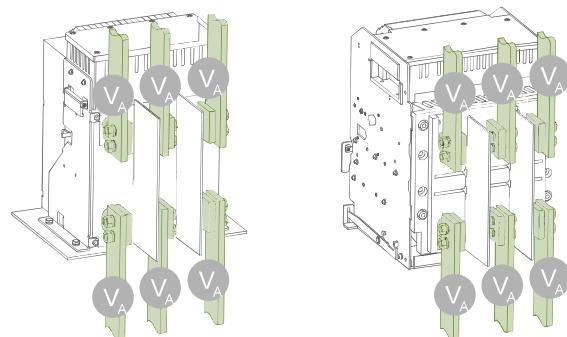
400 — 800A Horizontal busbars



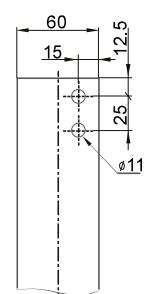
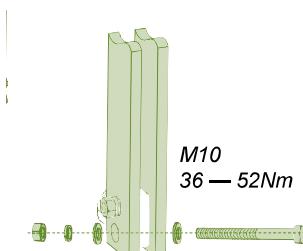
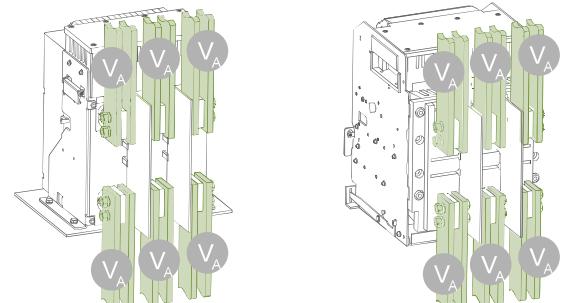
1000 — 1600A Horizontal busbars



400 — 800A Vertical busbars



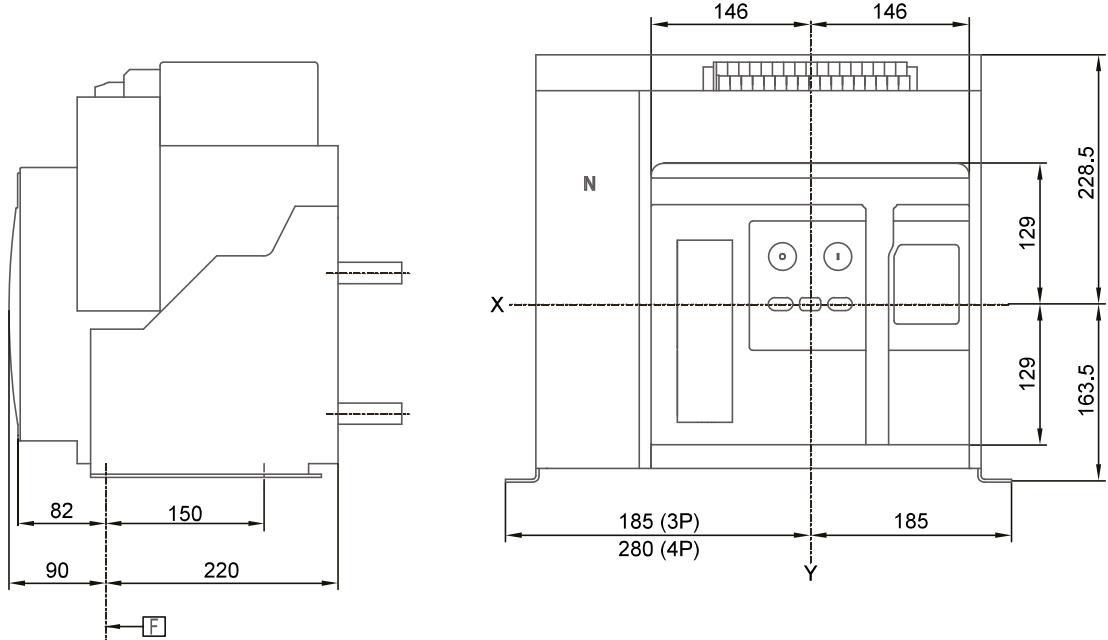
1000 — 1600A Vertical busbars



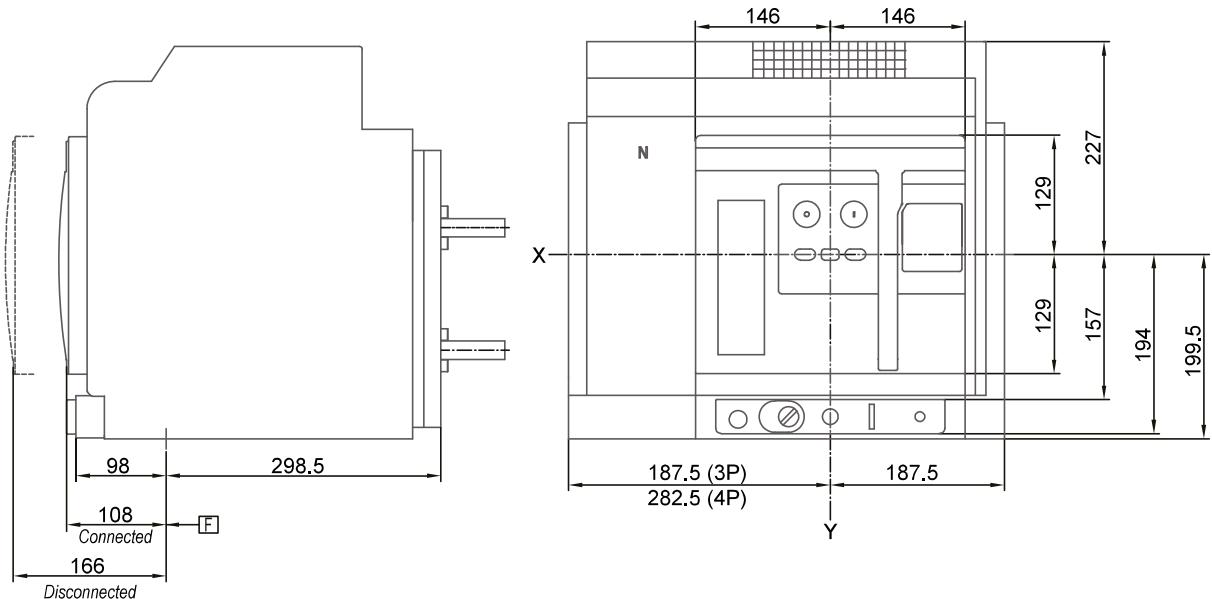
Ex9A25 Dimensions

Outline dimensions

Ex9A25 Fixed



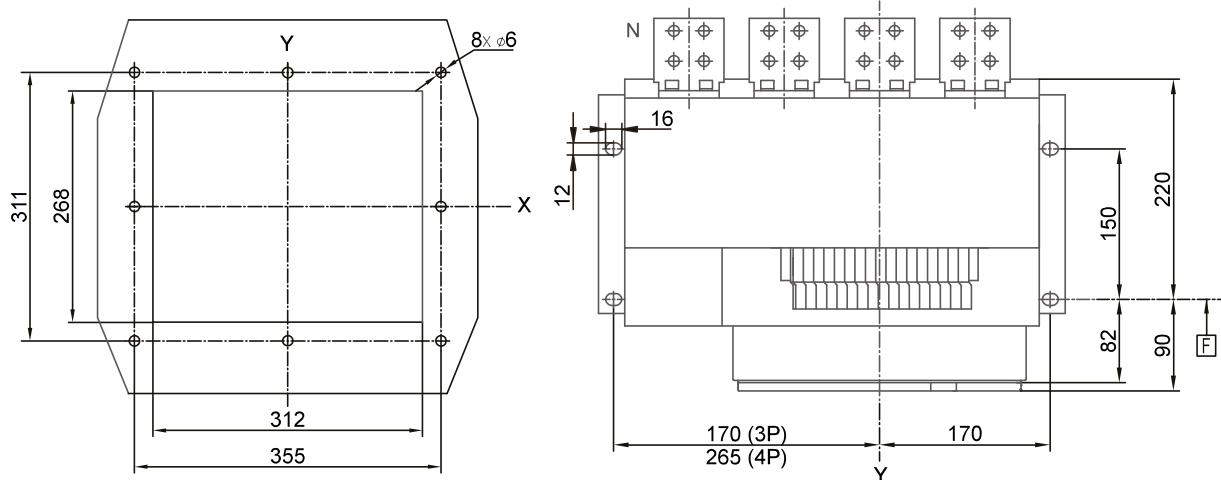
Ex9A25 Withdrawable



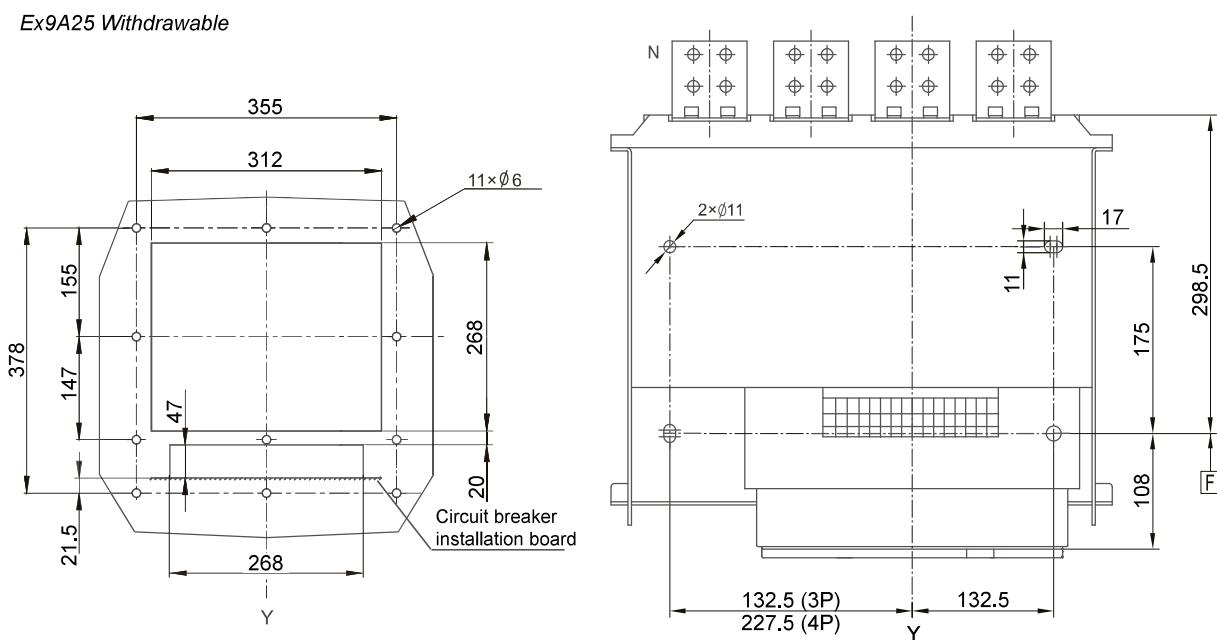
Ex9A25 Dimensions

Installation dimensions

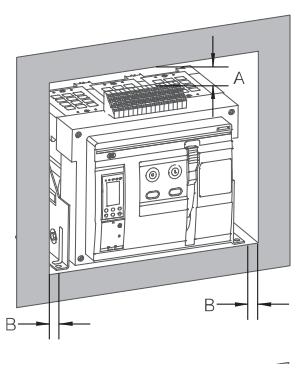
Ex9A25 Fixed



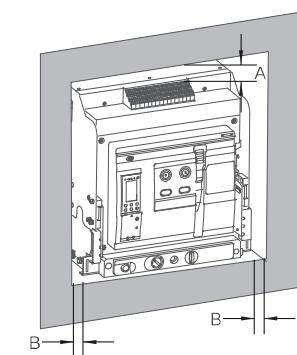
Ex9A25 Withdrawable



Ex9A25 Installation space



Fixed



Withdrawable

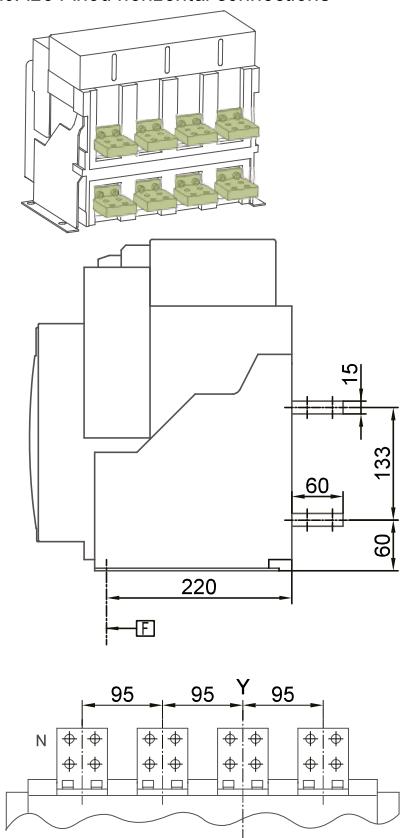
Safety distance

Safety distance (mm)	A	B
Insulated	0	0
Uncharge metal	0	0
Live conductor	100	60

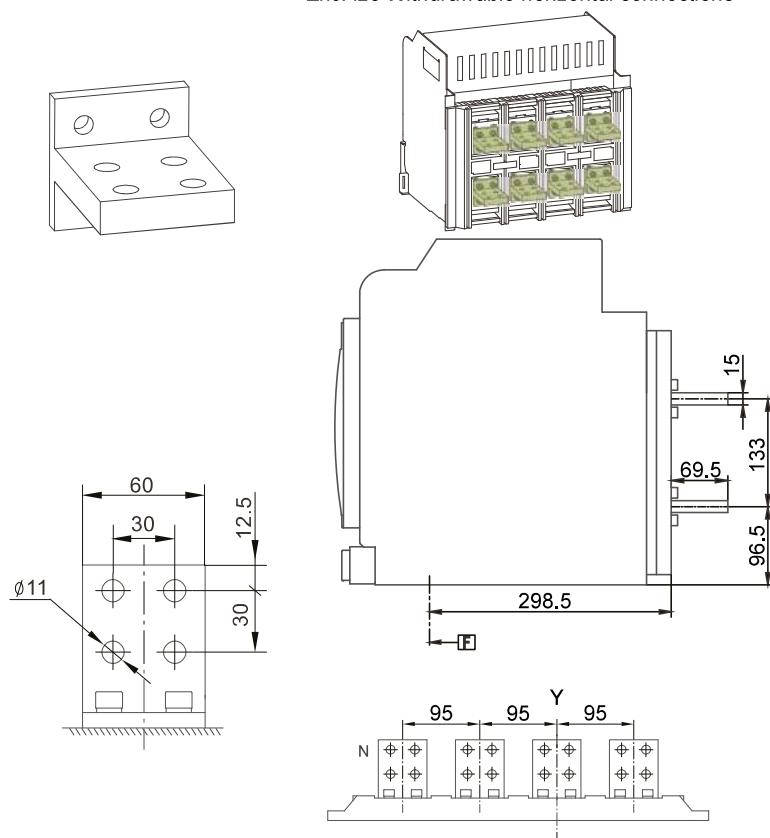
Ex9A25 Power connectors

Power connector dimensions 630 — 1600 A

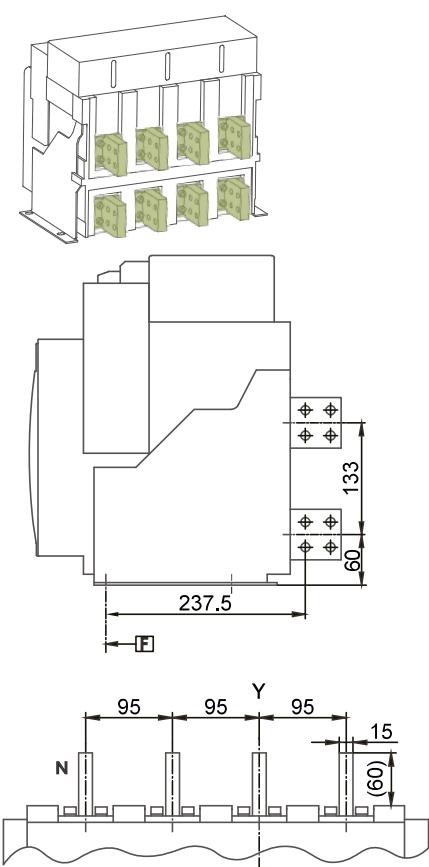
Ex9A25 Fixed horizontal connections



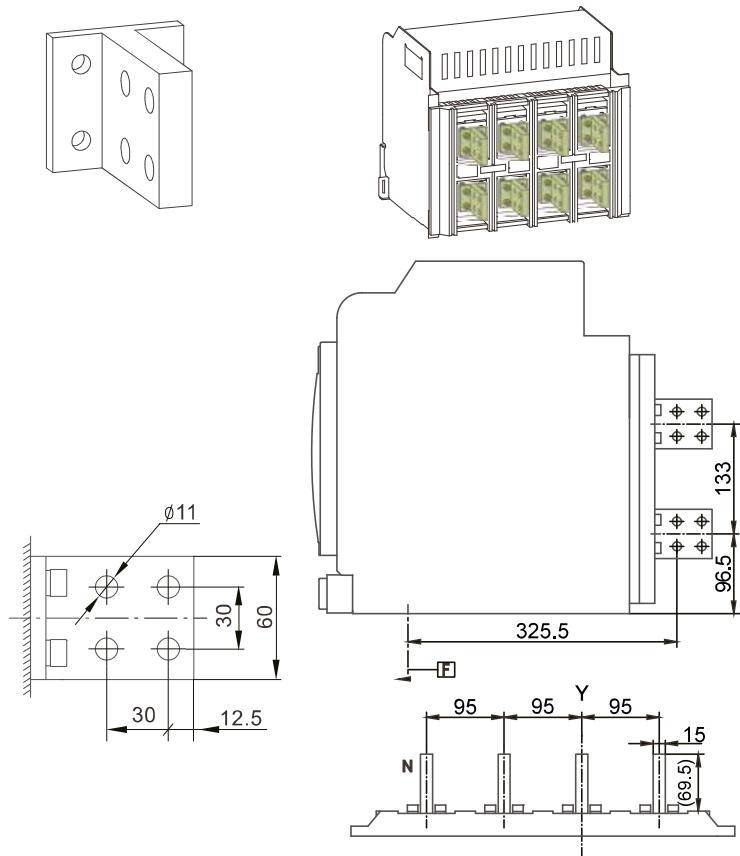
Ex9A25 Withdrawable horizontal connections



Ex9A25 Fixed vertical connections



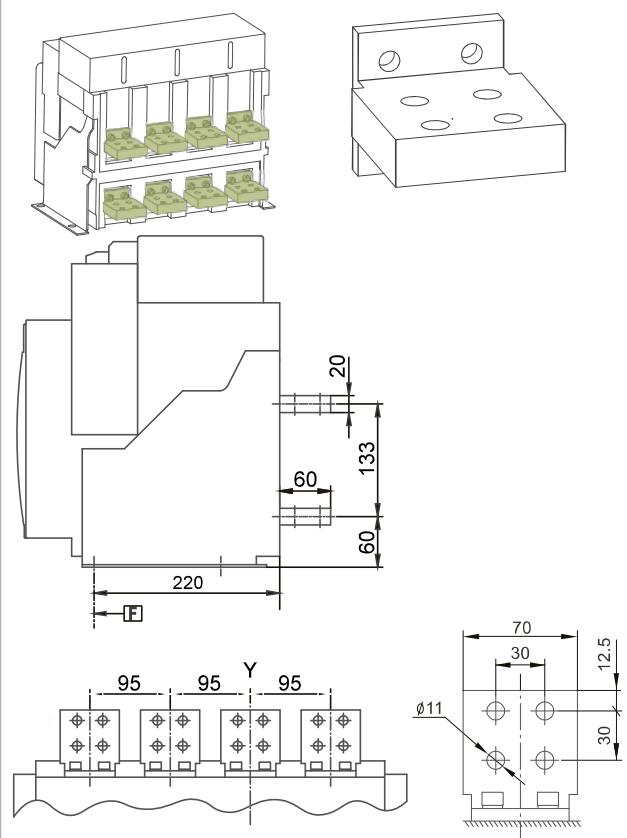
Ex9A25 Withdrawable vertical connections



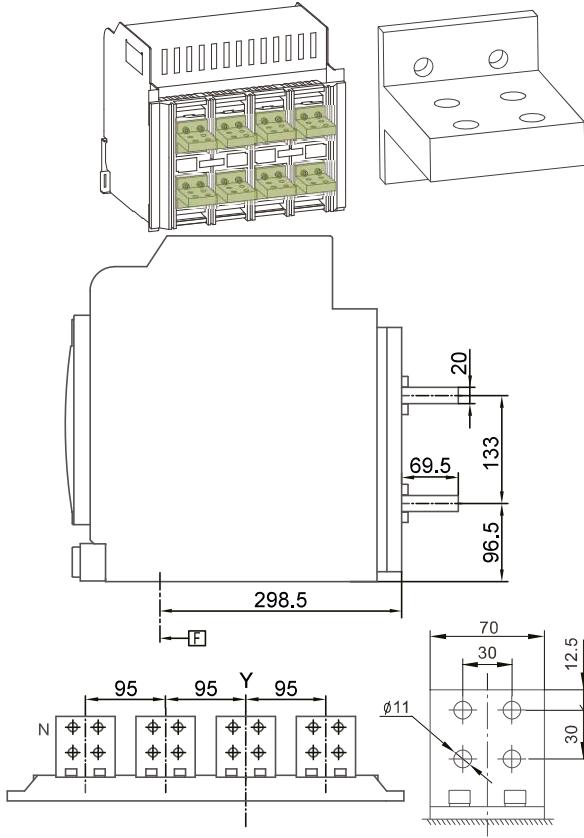
Ex9A25 Power connectors

Power connector dimensions 2000 — 2500 A

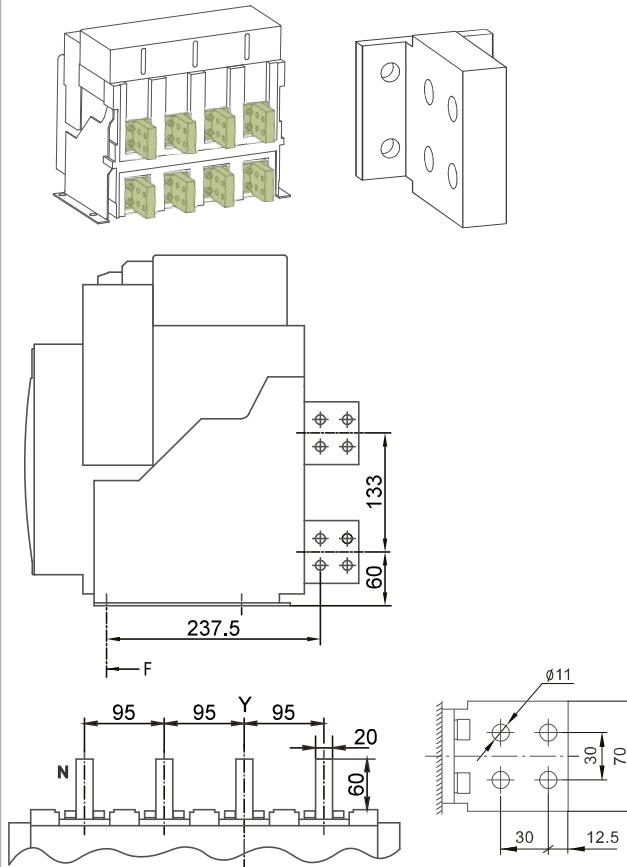
Ex9A25 Fixed horizontal connections



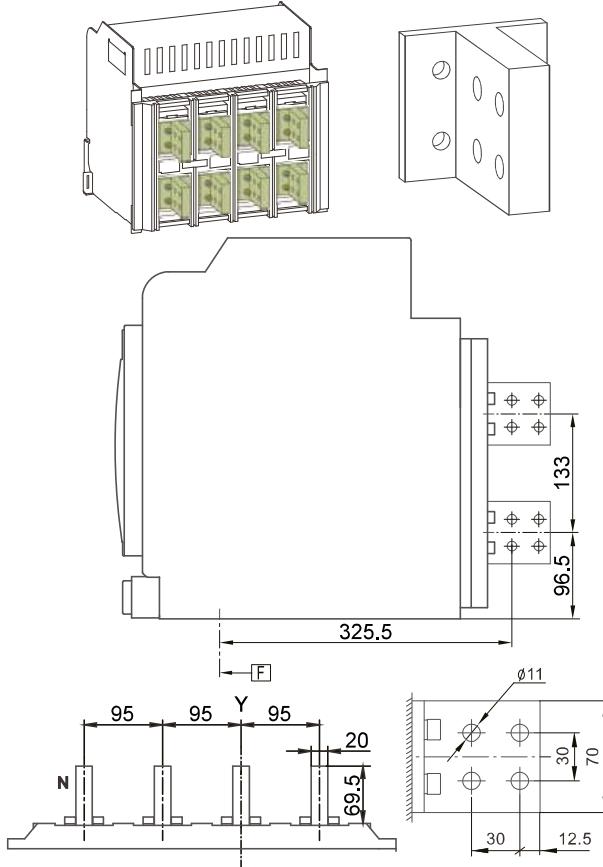
Ex9A25 Withdrawable horizontal connections



Ex9A25 Fixed vertical connections



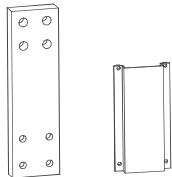
Ex9A25 Withdrawable vertical connections



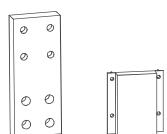
Ex9A25 Power connectors

Ex9A25 Fixed front connection terminals

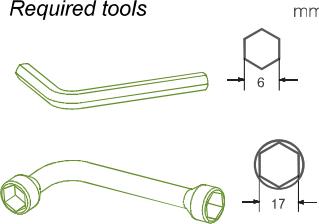
Top plate and cover



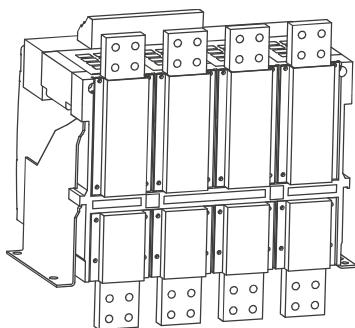
Bottom plate and cover



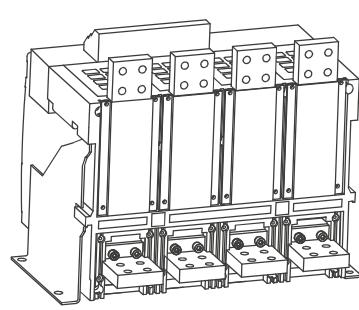
Required tools



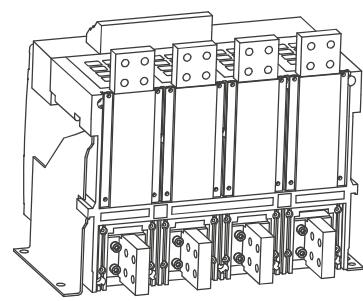
Installation examples



Front connection

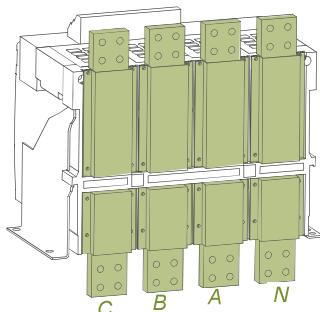


Mixed horizontal connection



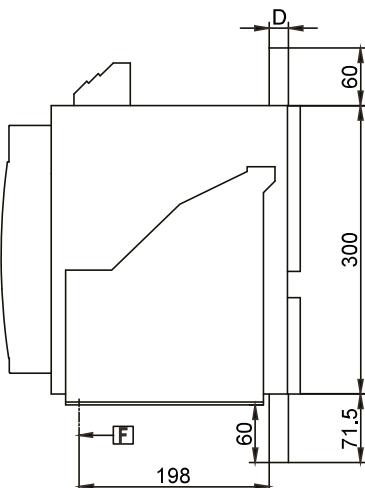
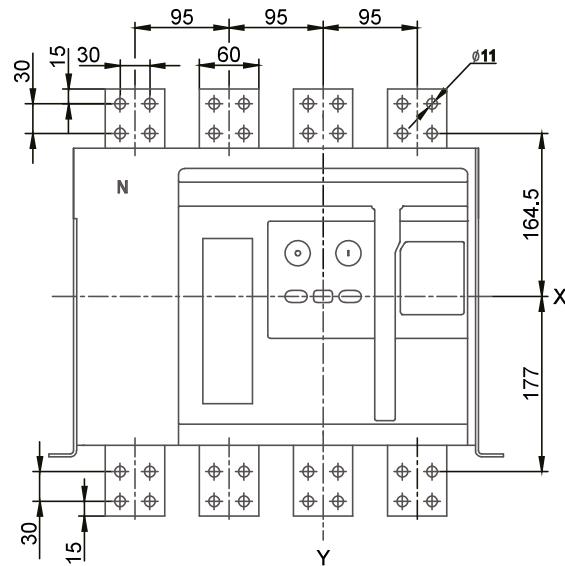
Mixed vertical connection

Ex9A25 Fixed front connection terminals dimensions



Terminal thickness

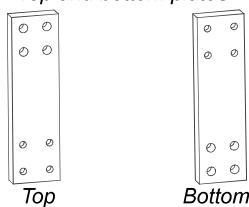
Rated current	D
630 — 1600 A	15 mm
2000 — 2500 A	20 mm



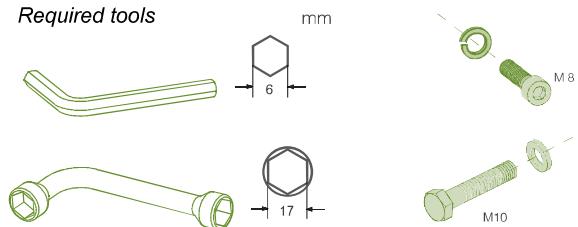
Ex9A25 Power connectors

Ex9A25 Withdrawable front connection terminals

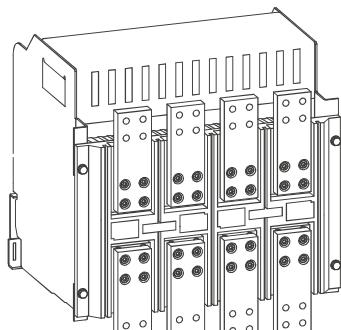
Top and bottom plates



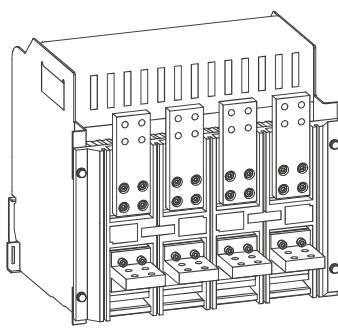
Required tools



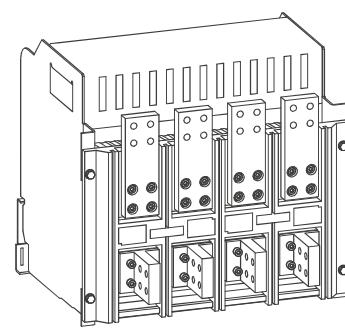
Installation examples



Front connection

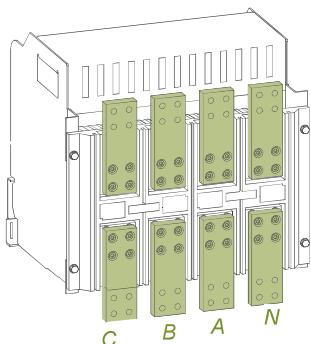


Mixed horizontal connection



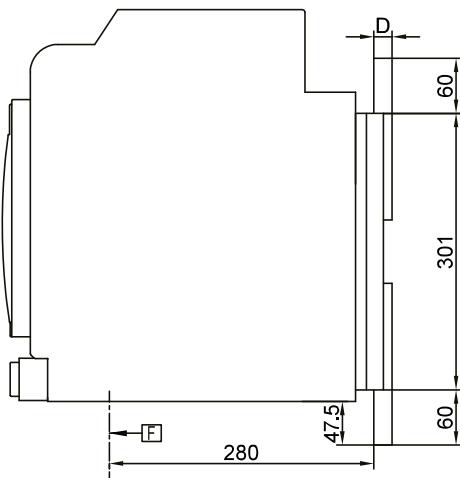
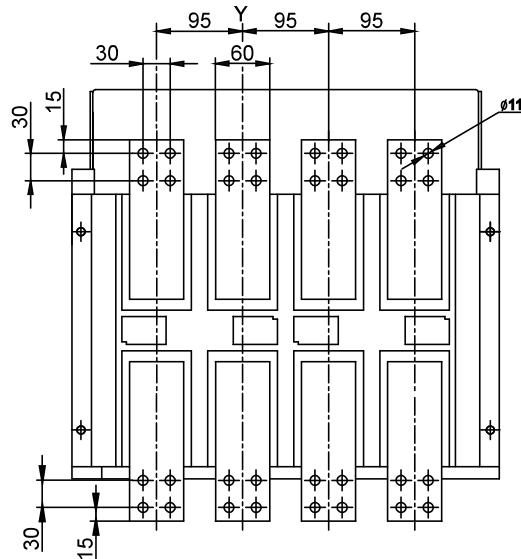
Mixed vertical connection

Ex9A25 Withdrawable front connection terminals dimensions



Terminal thickness

Rated current	D
630 — 1600 A	15 mm
2000 — 2500 A	20 mm



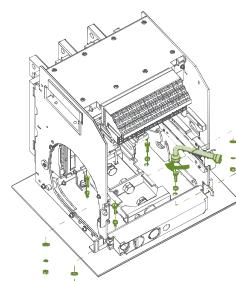
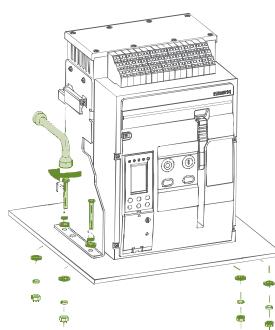
Ex9A25 Installation

Ex9A25 Installation

Required tools

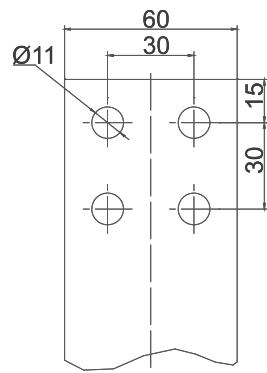
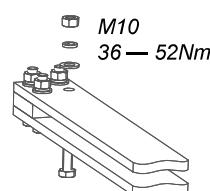
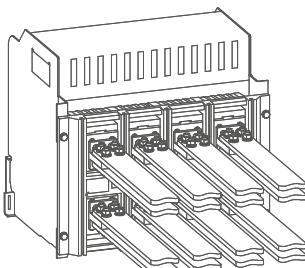
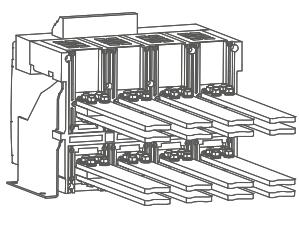


Ex9A25: 4 × M10

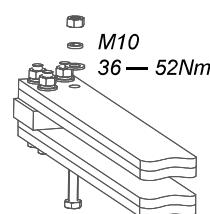
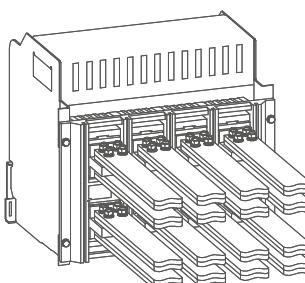
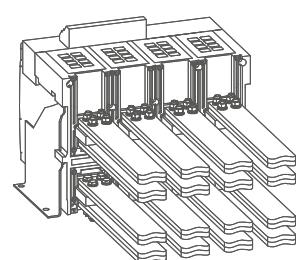


Same method as in
Ex9A16 frame size

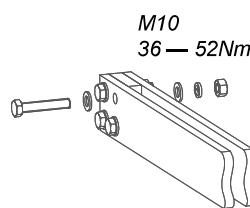
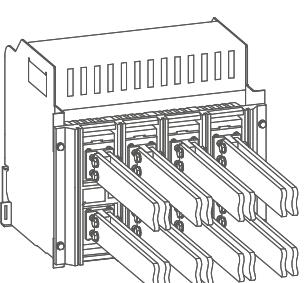
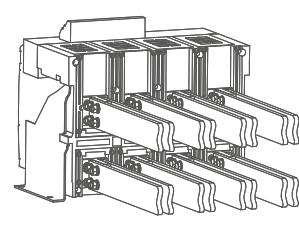
630 — 2000A Horizontal busbars



2000 — 2500A Horizontal busbars

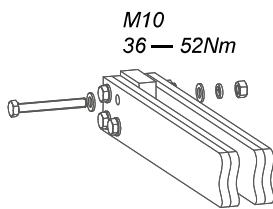
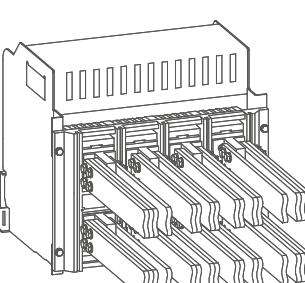
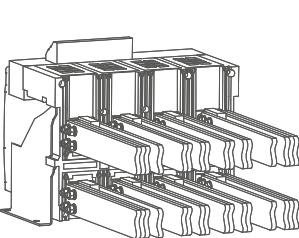


630 — 2000A Vertical busbars



M10
36 — 52Nm

2000 — 2500A Vertical busbars

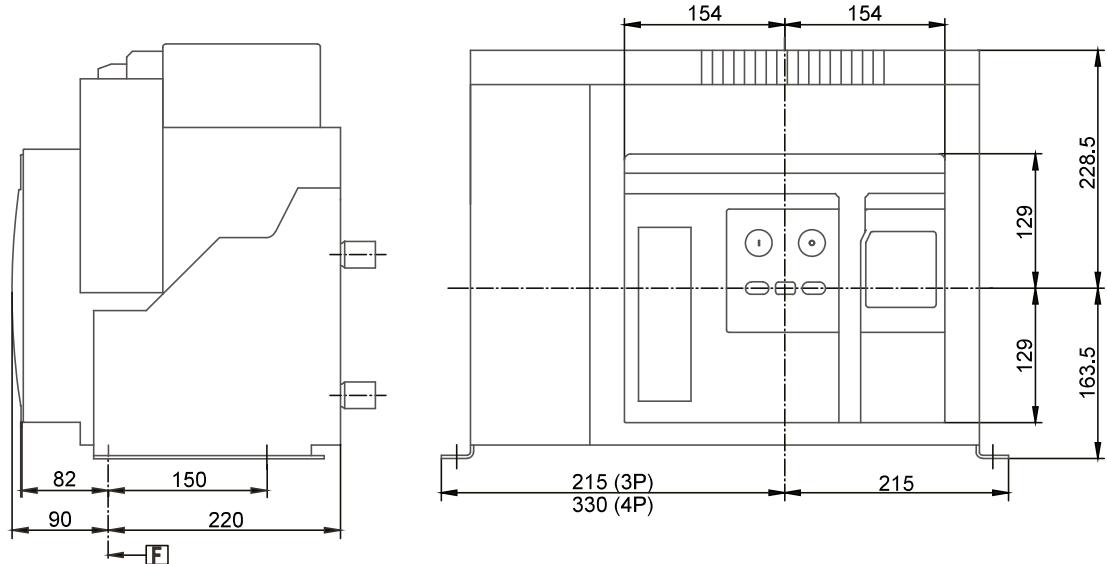


M10
36 — 52Nm

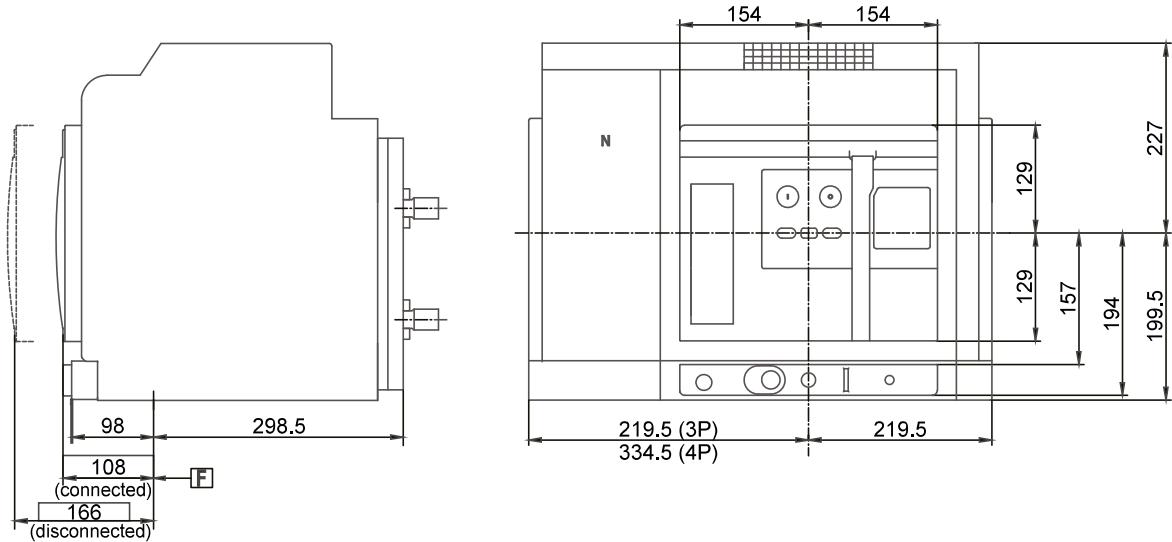
Ex9A32 Dimensions

Outline dimensions

Ex9A32 Fixed



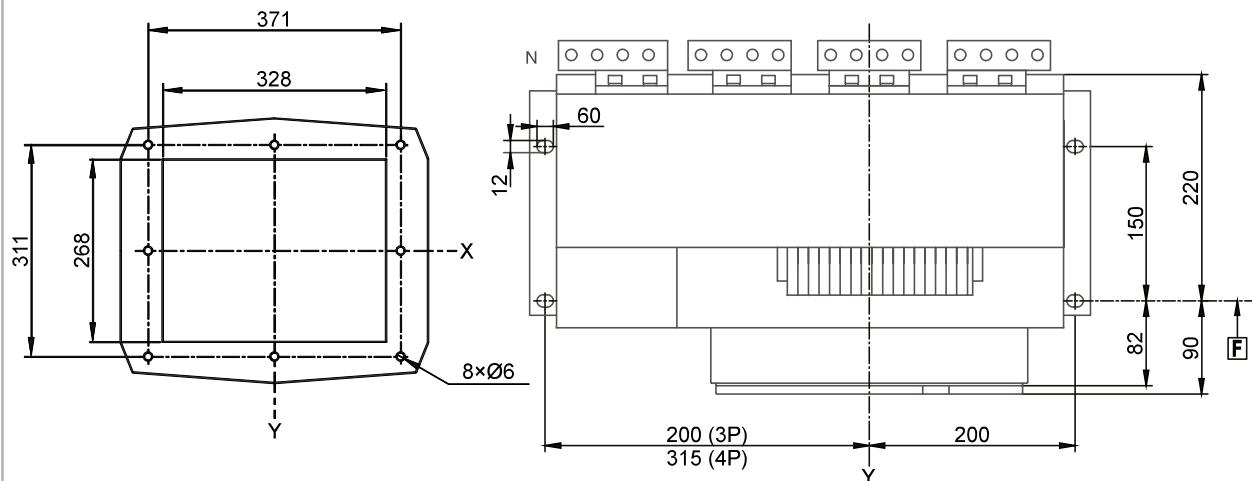
Ex9A32 Withdrawable



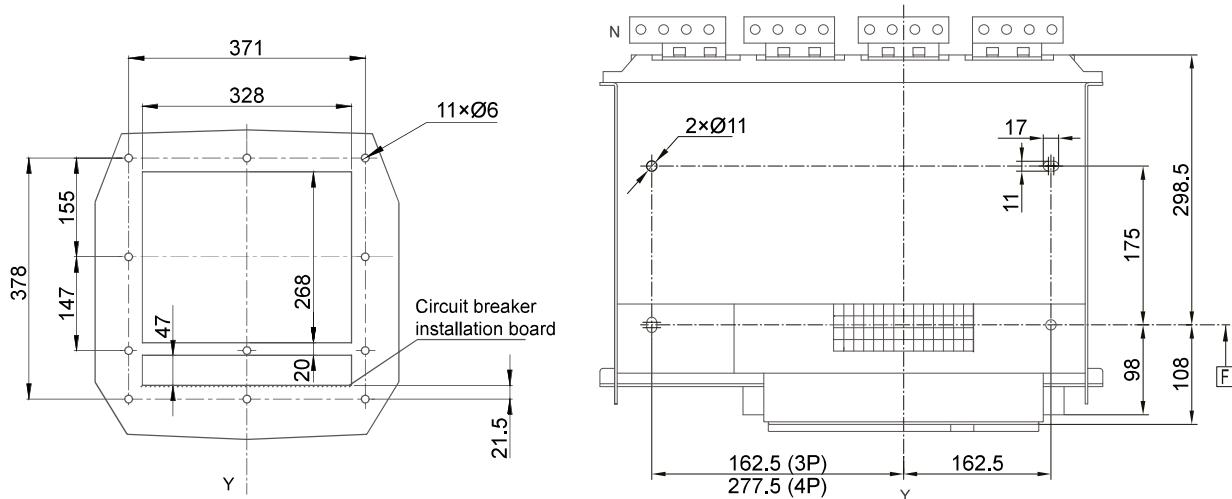
Ex9A32 Dimensions

Installation dimensions

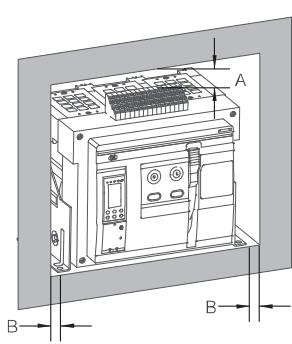
Ex9A32 Fixed



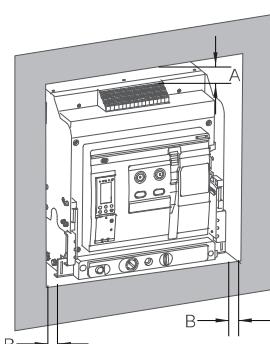
Ex9A32 Withdrawable



Ex9A32 Installation space



Fixed



Withdrawable

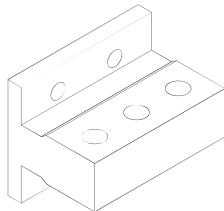
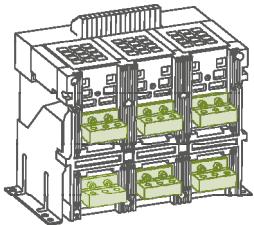
Safety distance

Safety distance (mm)	A	B
Insulated	0	0
Uncharge metal	0	0
Live conductor	100	60

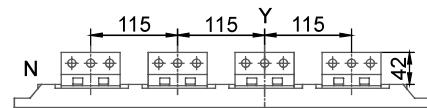
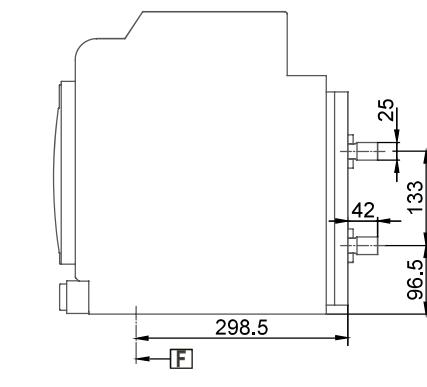
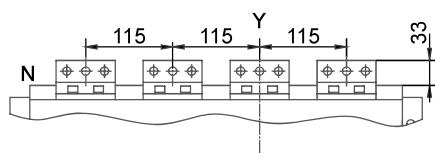
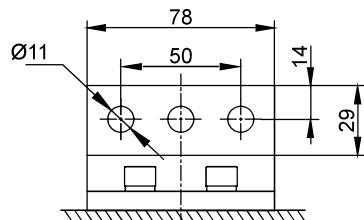
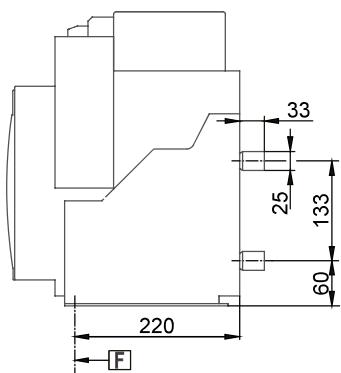
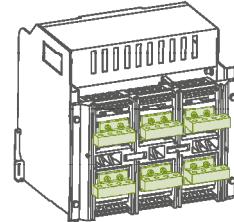
Ex9A32 Power connectors

Power connector dimensions 1600 — 2500 A

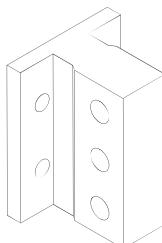
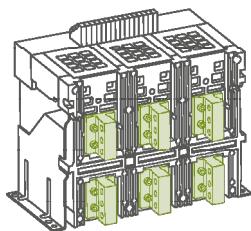
Ex9A32 Fixed horizontal connections



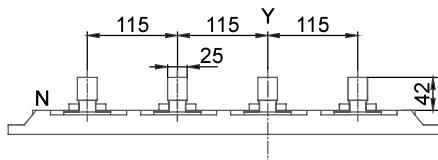
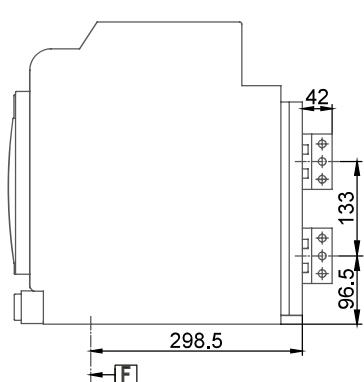
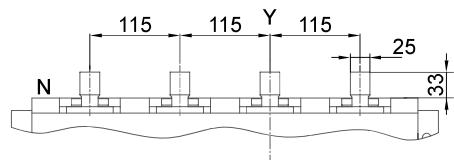
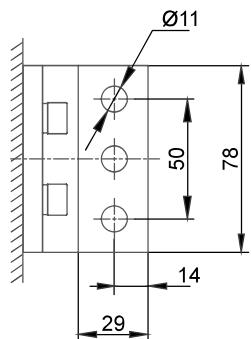
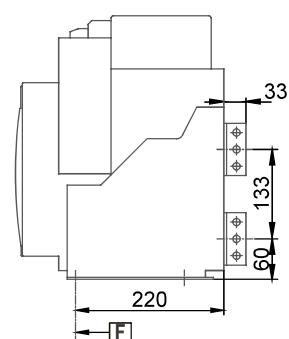
Ex9A32 Withdrawable horizontal connections



Ex9A32 Fixed vertical connections



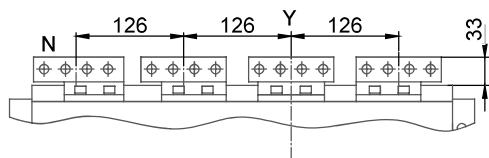
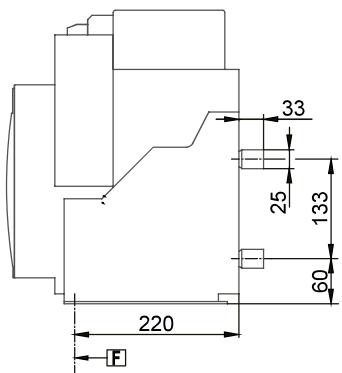
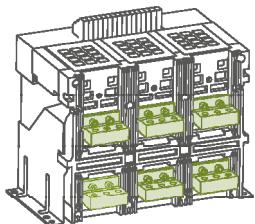
Ex9A32 Withdrawable vertical connections



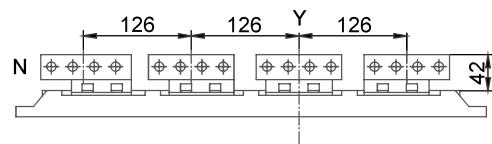
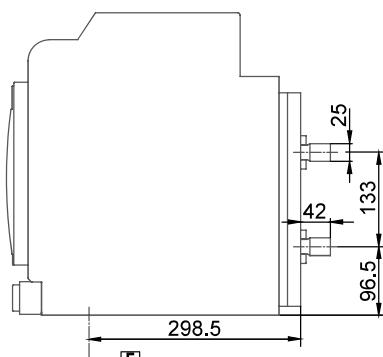
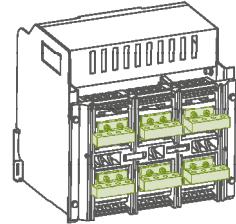
Ex9A32 Power connectors

Power connector dimensions 2500 — 3200 A Horizontal connections

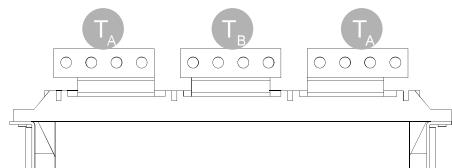
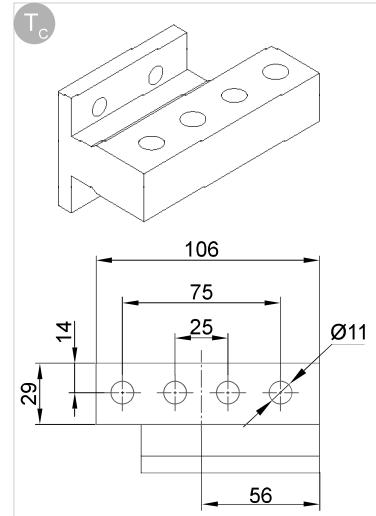
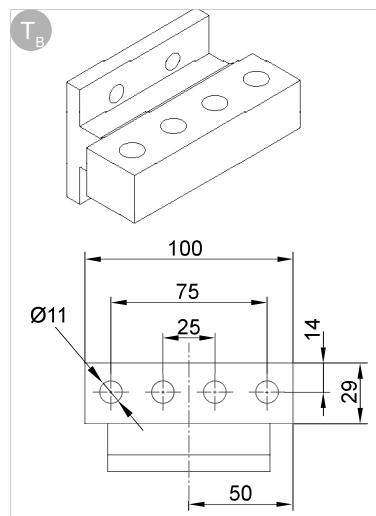
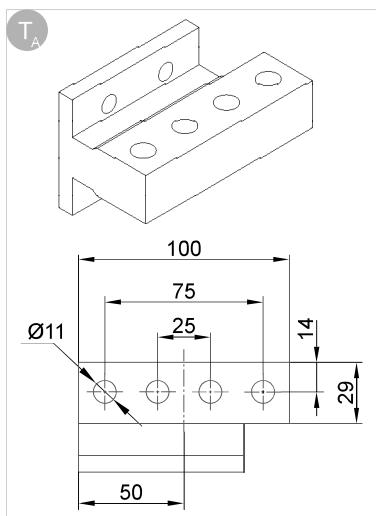
Ex9A32 Fixed horizontal connections



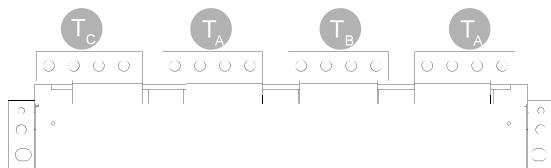
Ex9A32 Withdrawable horizontal connections



Power connectors 2500 — 3200 A details



Fixed / Withdrawable 3P power connector distribution

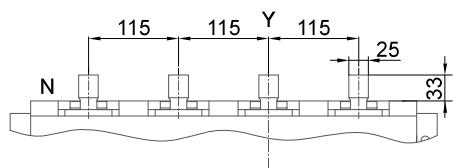
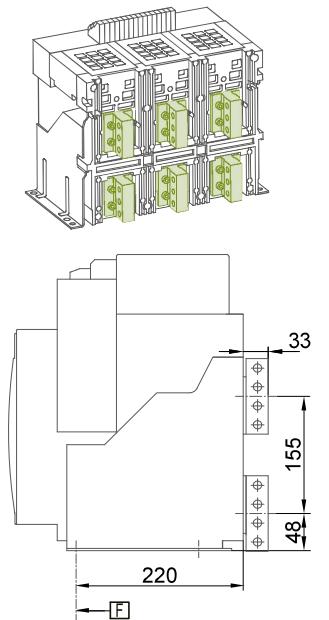


Fixed / Withdrawable 4P power connector distribution

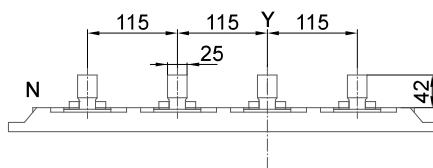
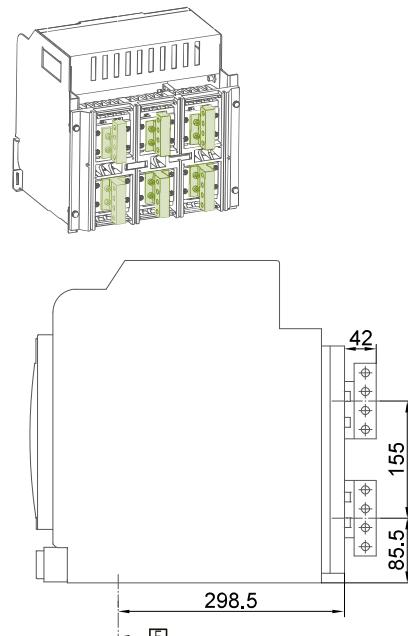
Ex9A32 Power connectors

Power connector dimensions 2500 — 3200 A Vertical connections

Ex9A32 Fixed vertical connections



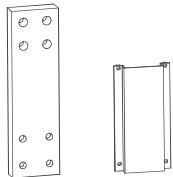
Ex9A32 Withdrawable vertical connections



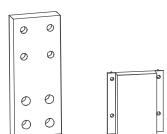
Ex9A32 Power connectors

Ex9A32 Fixed front connection terminals

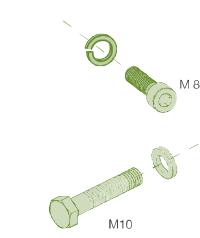
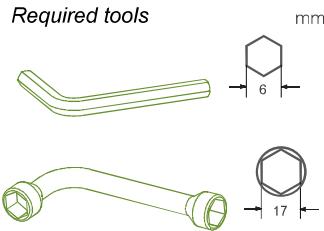
Top plate and cover



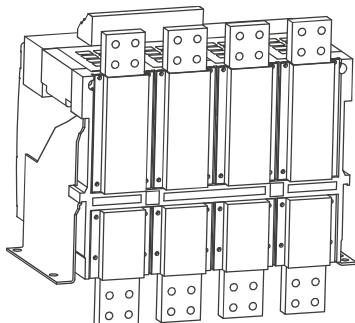
Bottom plate and cover



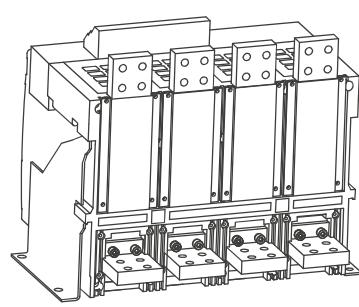
Required tools



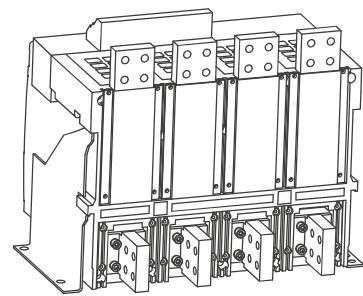
Installation examples



Front connection

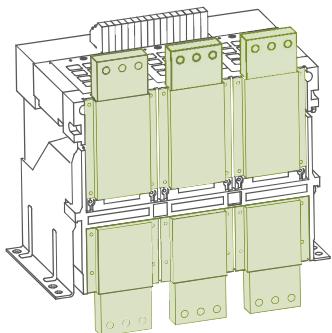


Mixed horizontal connection



Mixed vertical connection

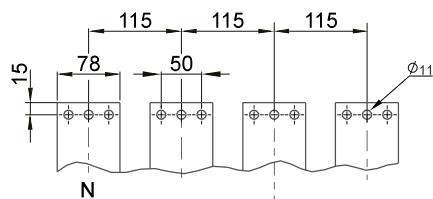
Ex9A32 Fixed front connection terminals dimensions



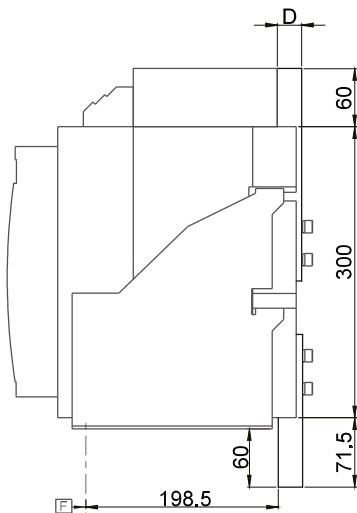
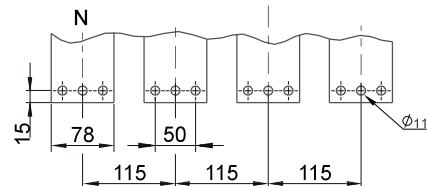
Terminal thickness

Rated current	D
1600 — 2000 A	20
2500 A	25
3200 A	30

Top connections



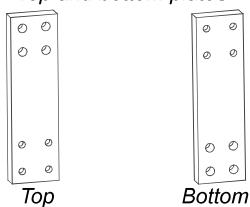
Bottom connections



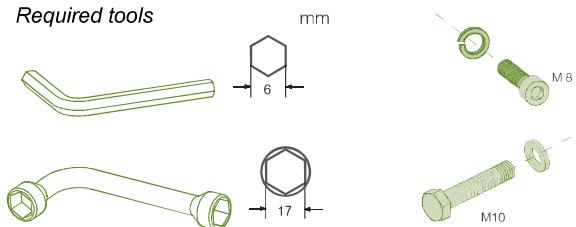
Ex9A32 Power connectors

Ex9A32 Withdrawable front connection terminals

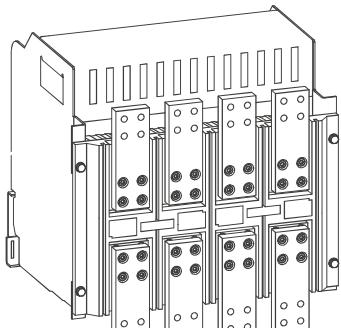
Top and bottom plates



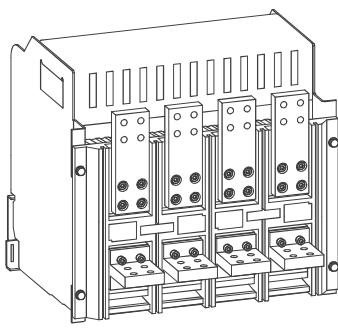
Required tools



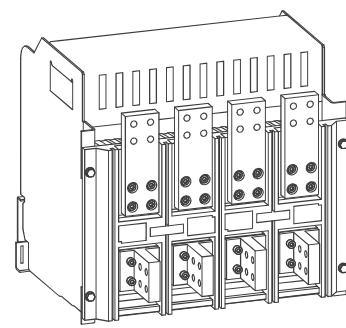
Installation examples



Front connection

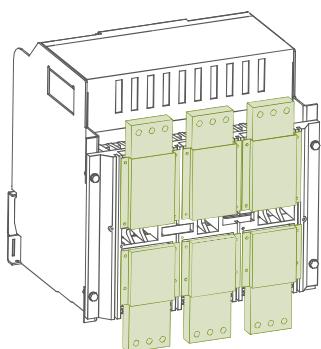


Mixed horizontal connection



Mixed vertical connection

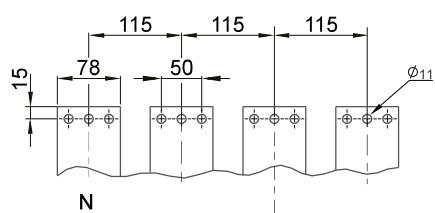
Ex9A32 Withdrawable front connection terminals dimensions



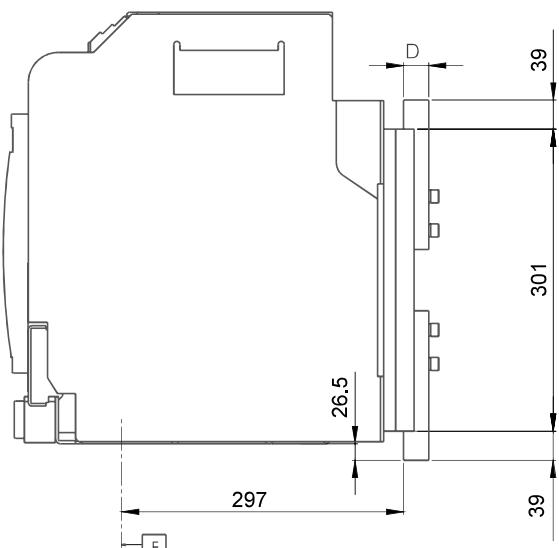
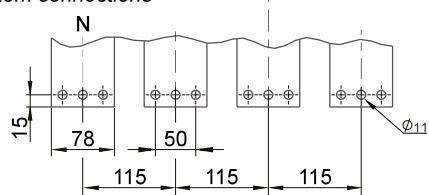
Terminal thickness

<i>Rated current</i>	<i>D</i>
1600 — 2000 A	20
2500 A	25
3200 A	30

Top connections



Bottom connections



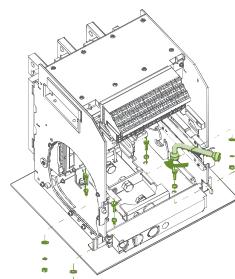
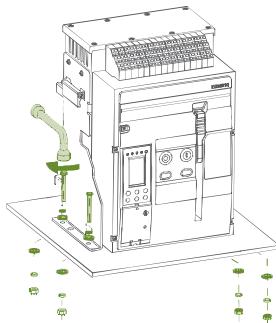
Ex9A32 Installation

Ex9A32 Installation

Required tools

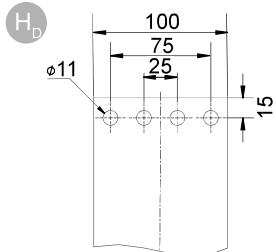
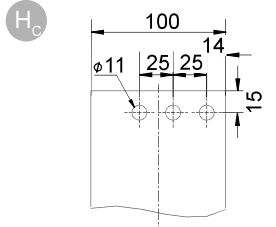
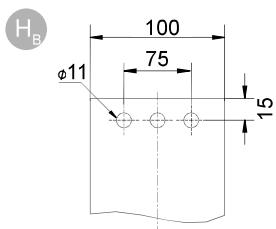
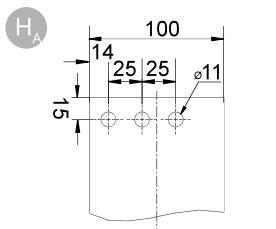
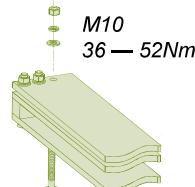
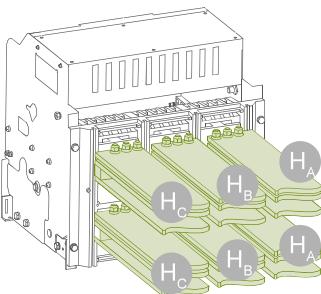
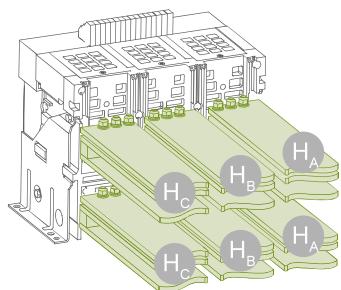


Ex9A32: 4 × M10

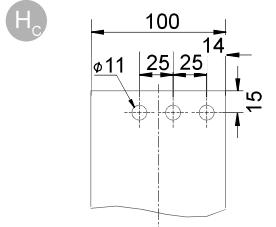
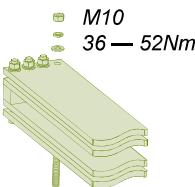
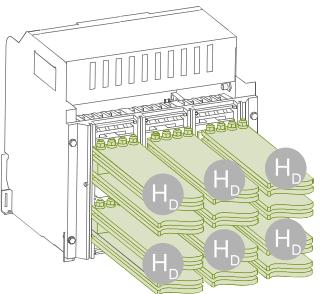
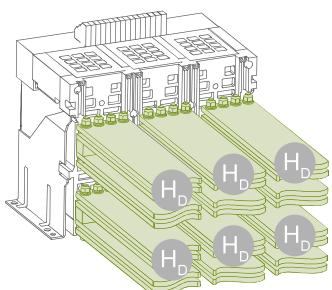


Same method as in
Ex9A16 frame size

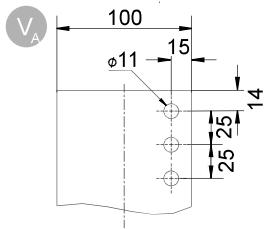
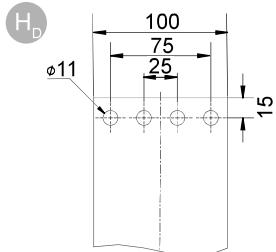
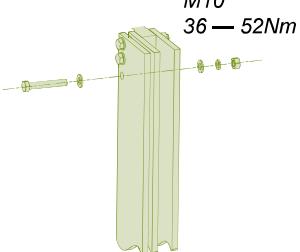
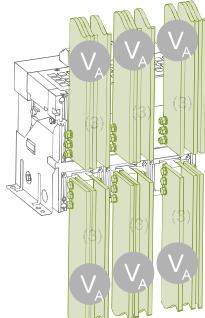
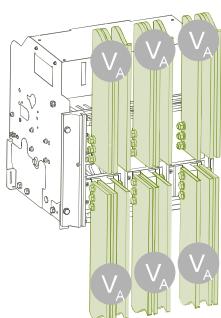
1600 — 2500A Horizontal busbars



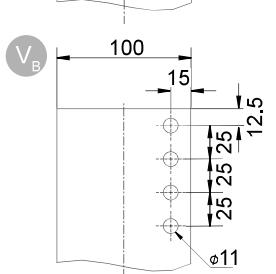
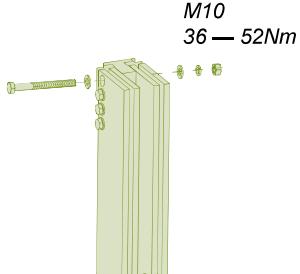
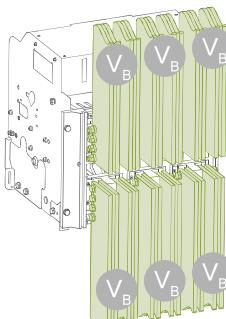
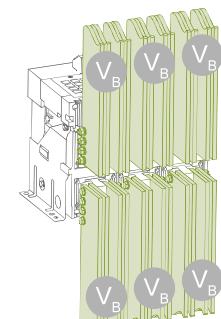
2500 — 3200A Horizontal busbars



1600 — 2500A Vertical busbars



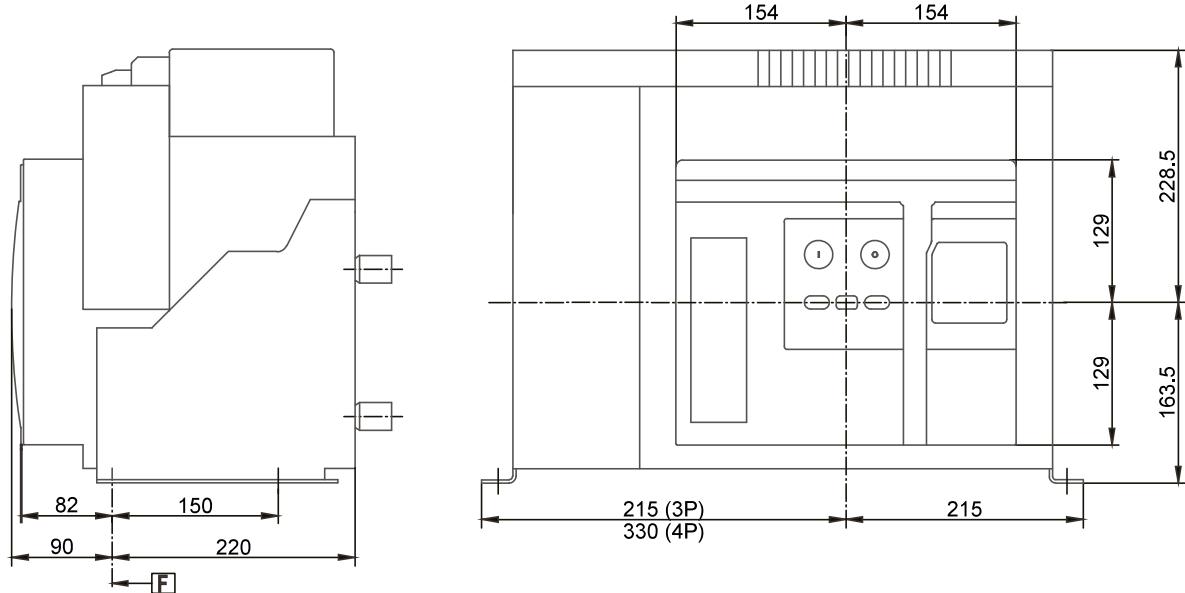
2500 — 3200A Vertical busbars



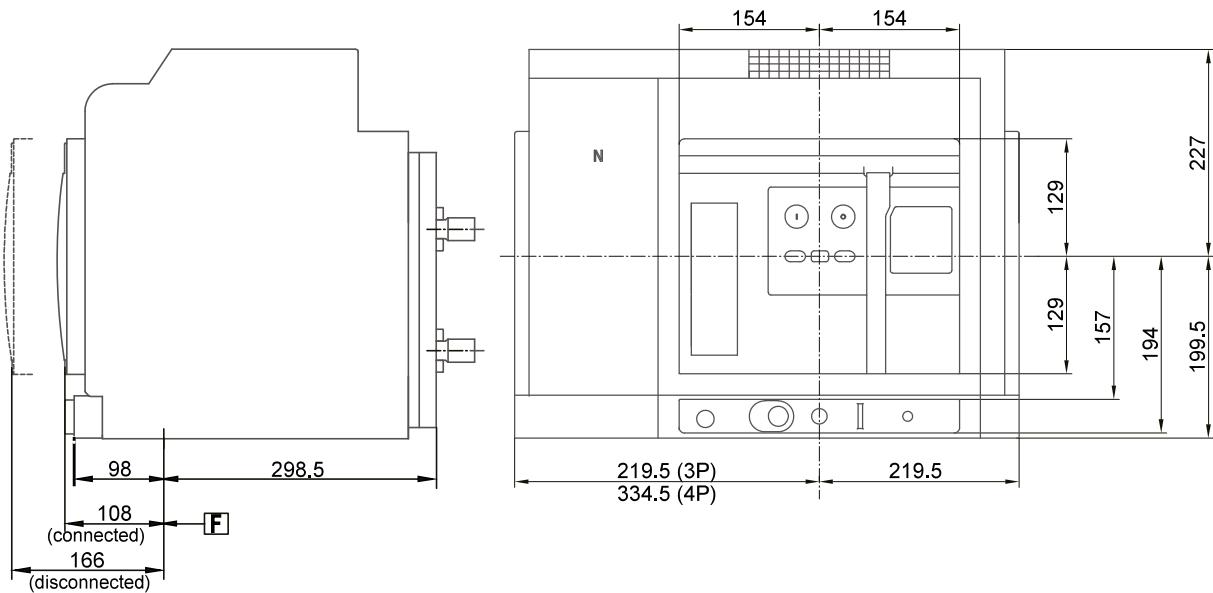
Ex9A40 Dimensions

Outline dimensions

Ex9A40 Fixed



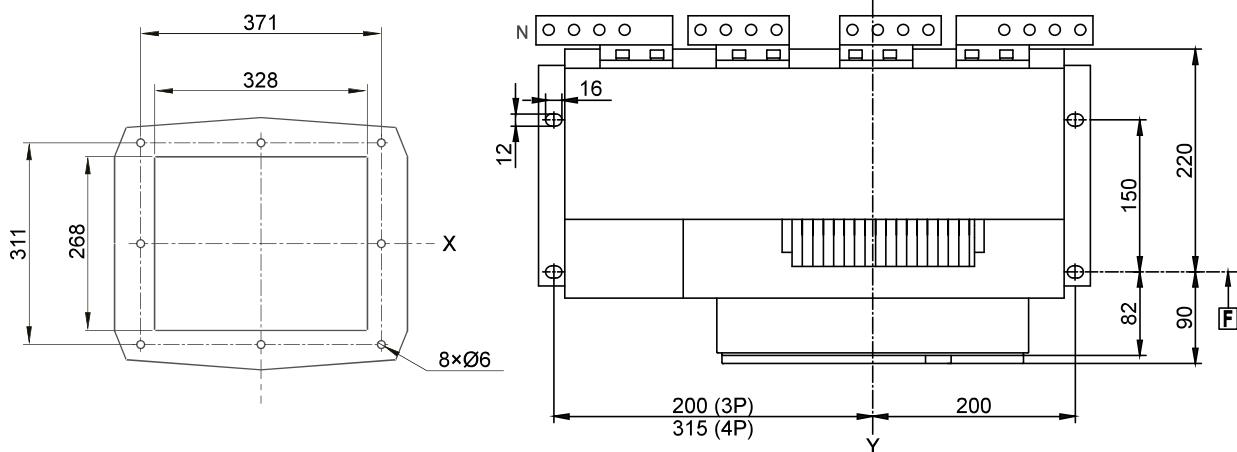
Ex9A40 Withdrawable



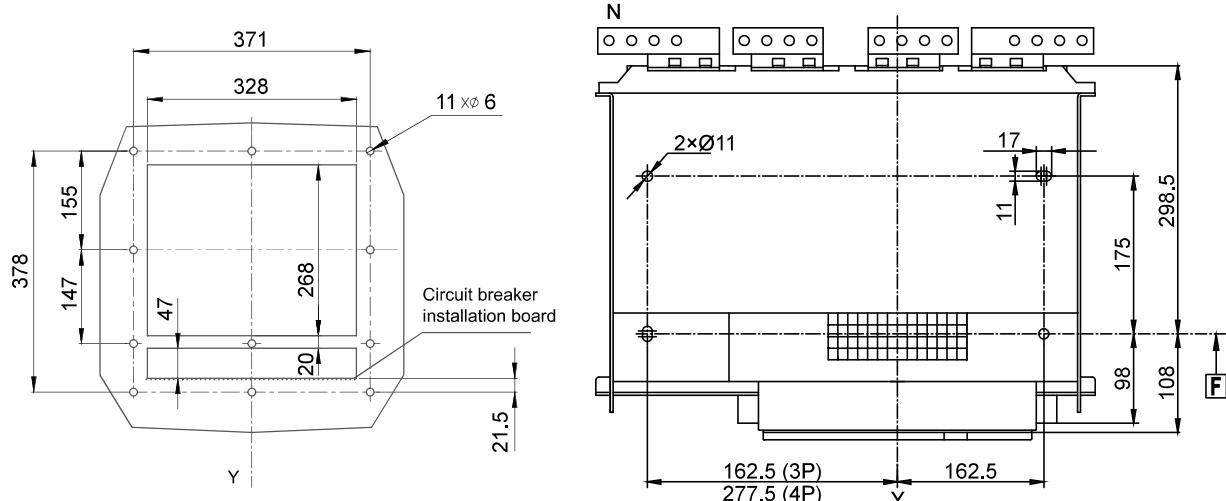
Ex9A40 Dimensions

Installation dimensions

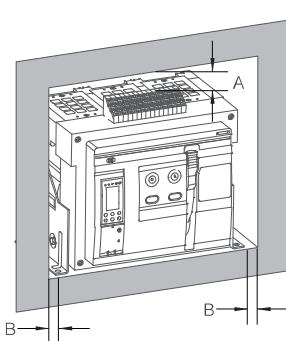
Ex9A40 Fixed



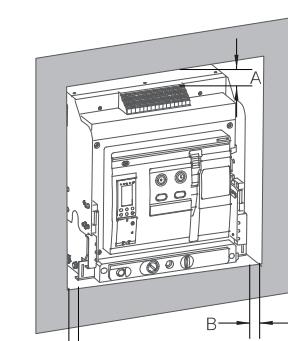
Ex9A40 Withdrawable



Ex9A40 Installation space



Fixed



Withdrawable

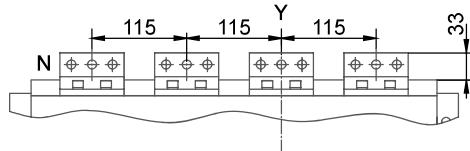
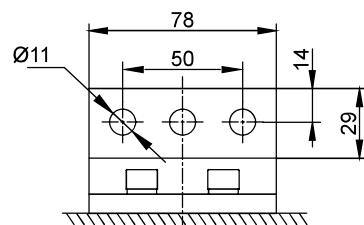
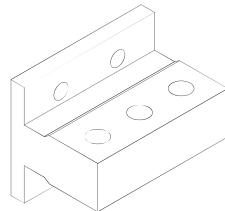
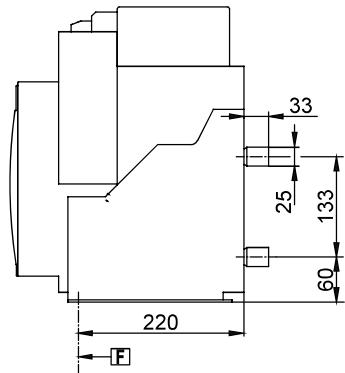
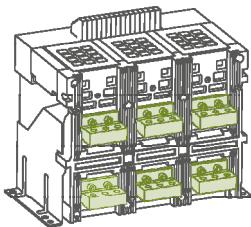
Safety distance

Safety distance (mm)	A	B
Insulated	0	0
Uncharge metal	0	0
Live conductor	100	60

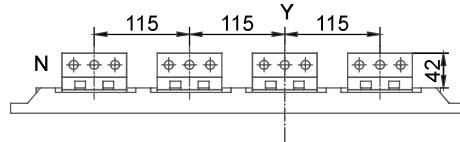
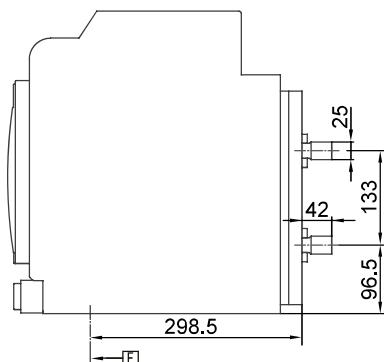
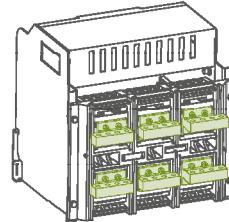
Ex9A40 Power connectors

Power connector dimensions 2000 — 2500 A

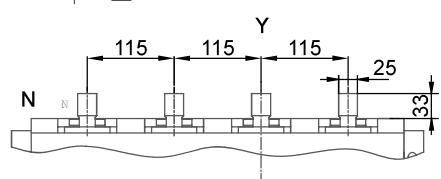
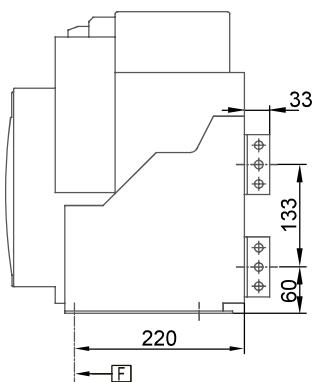
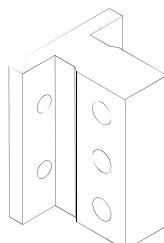
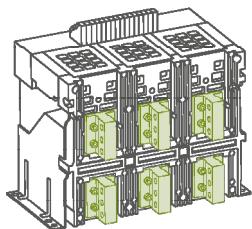
Ex9A40 Fixed horizontal connections



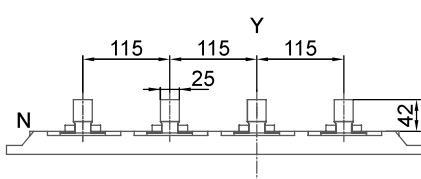
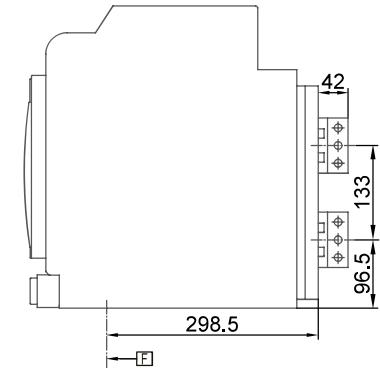
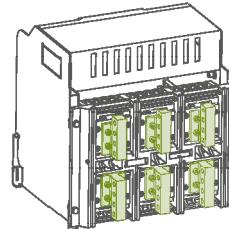
Ex9A40 Withdrawable horizontal connections



Ex9A40 Fixed vertical connections



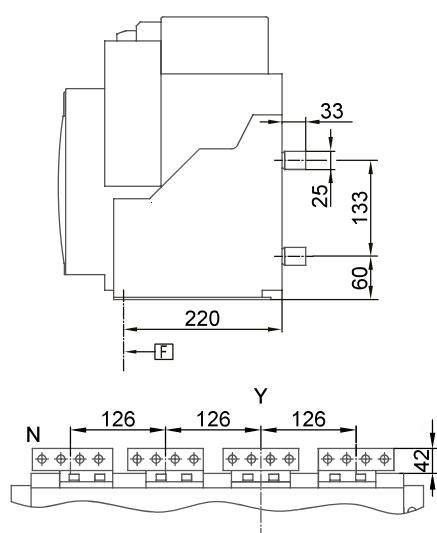
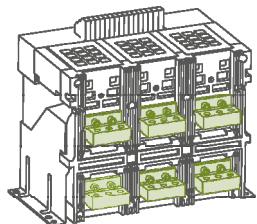
Ex9A40 Withdrawable vertical connections



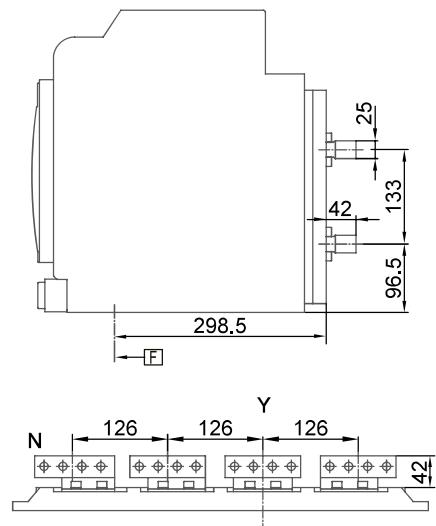
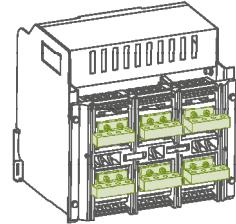
Ex9A40 Power connectors

Power connector dimensions 3200 A Horizontal connections

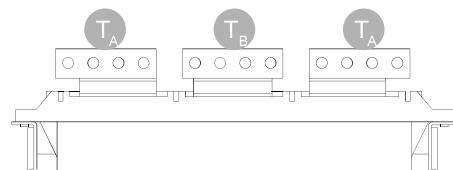
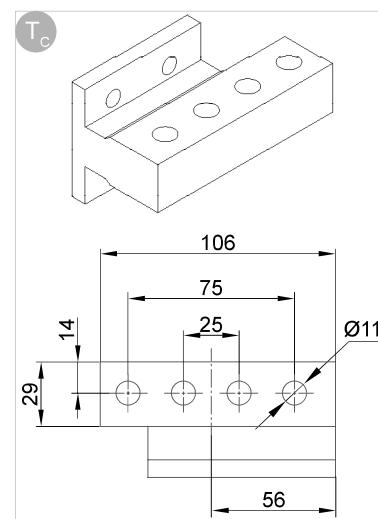
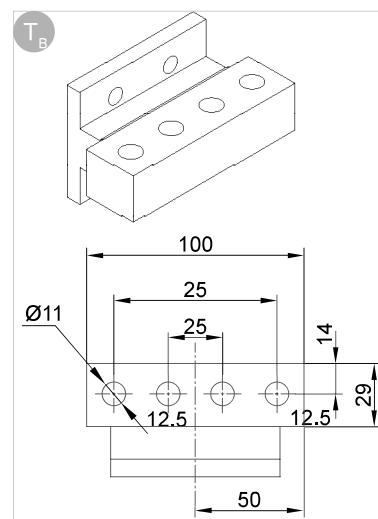
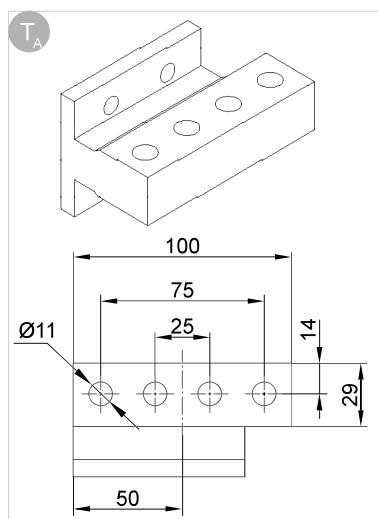
Ex9A40 Fixed horizontal connections



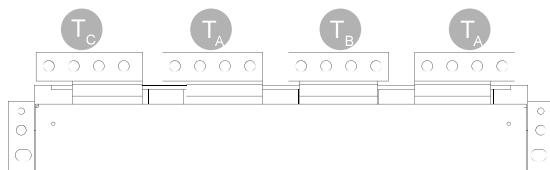
Ex9A40 Withdrawable horizontal connections



Power connectors 3200 A details



Fixed / Withdrawable 3P power connector distribution

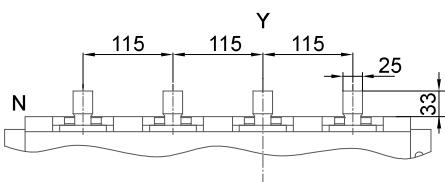
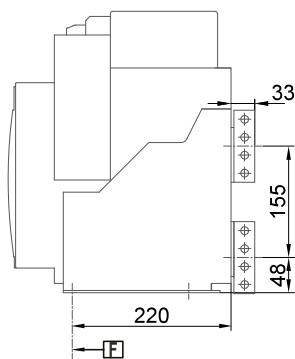
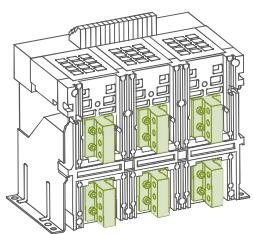


Fixed / Withdrawable 4P power connector distribution

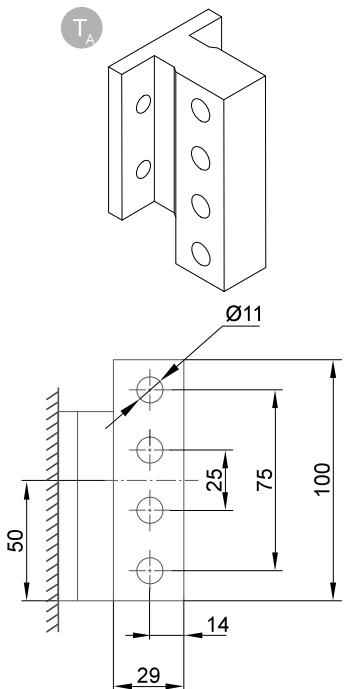
Ex9A40 Power connectors

Power connector dimensions 3200A Vertical connections

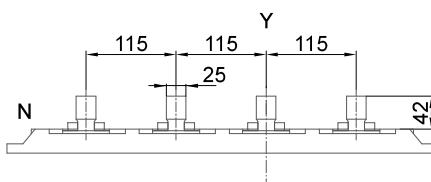
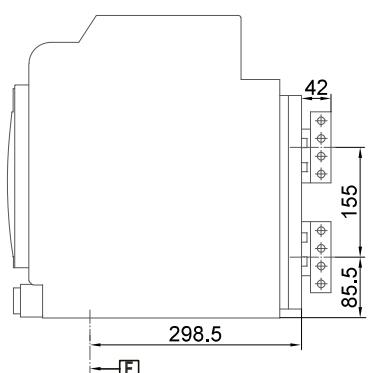
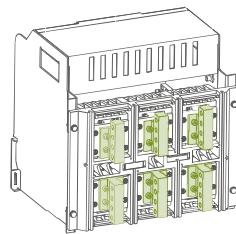
Ex9A40 Fixed vertical connections



T_A



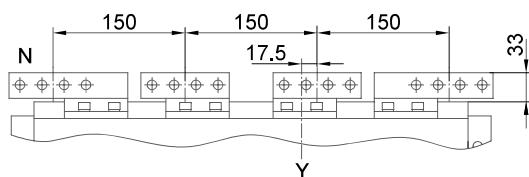
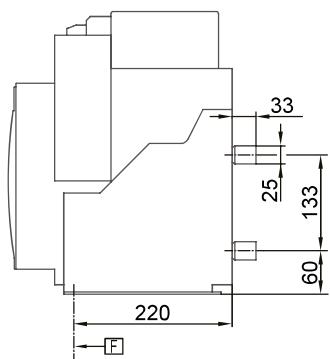
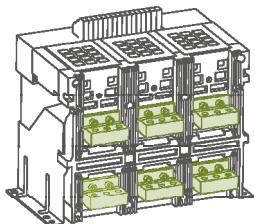
Ex9A40 Withdrawable vertical connections



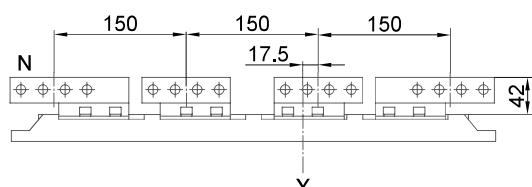
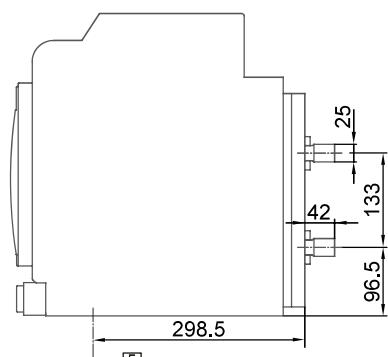
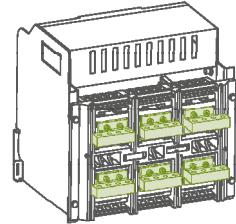
Ex9A40 Power connectors

Power connector dimensions 4000 A Horizontal connections

Ex9A40 Fixed horizontal connections

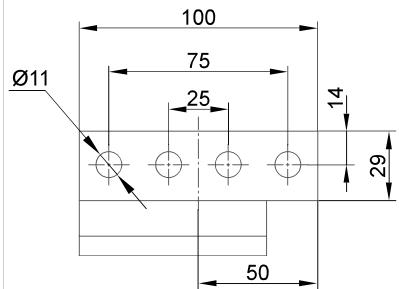
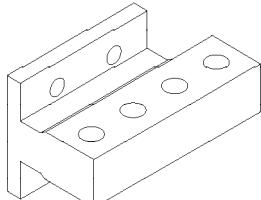


Ex9A40 Withdrawable horizontal connections

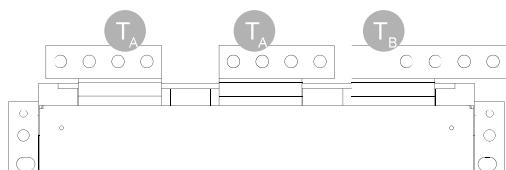
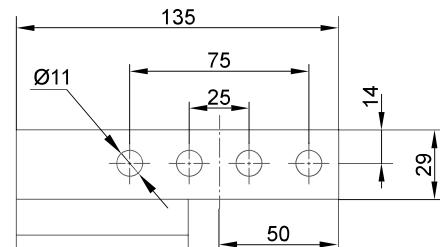
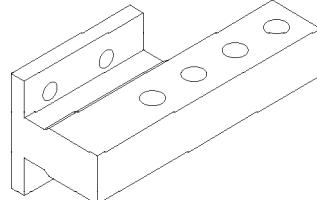


Power connectors 4000 A details

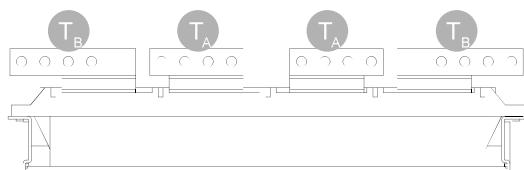
T_A



T_B



Fixed / Withdrawable 3P power connector distribution

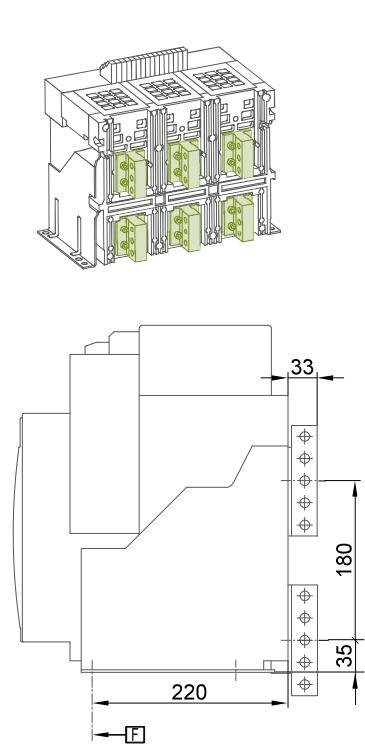


Fixed / Withdrawable 4P power connector distribution

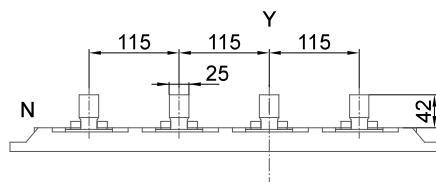
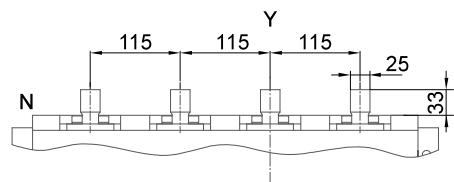
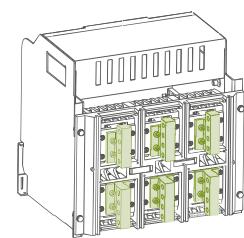
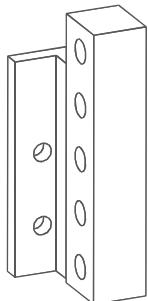
Ex9A40 Power connectors

Power connector dimensions 4000 A Vertical connections

Ex9A40 Fixed vertical connections



Ex9A40 Withdrawable vertical connections



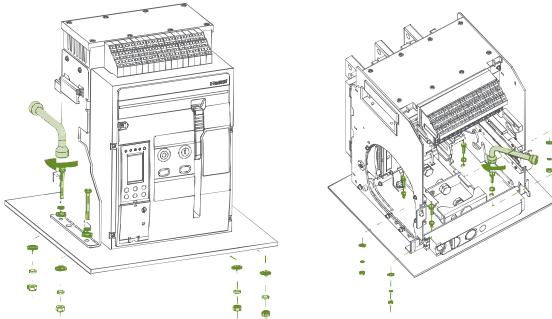
Ex9A40 Installation

Ex9A40 Installation

Required tools

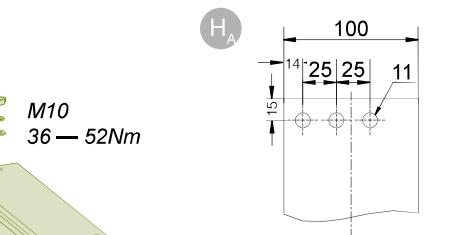
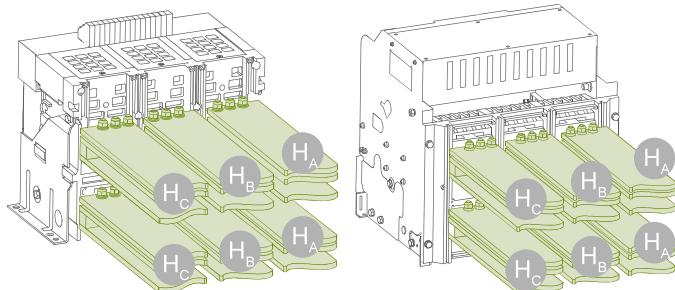


Ex9A40: 4 × M10

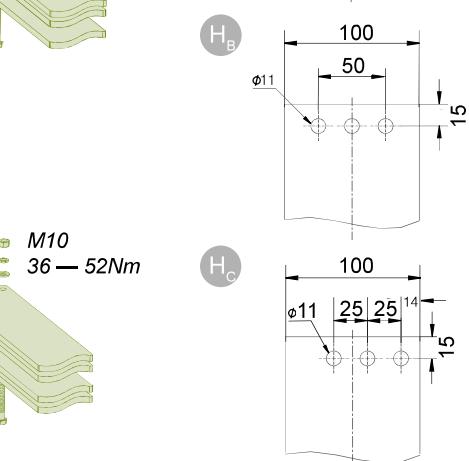
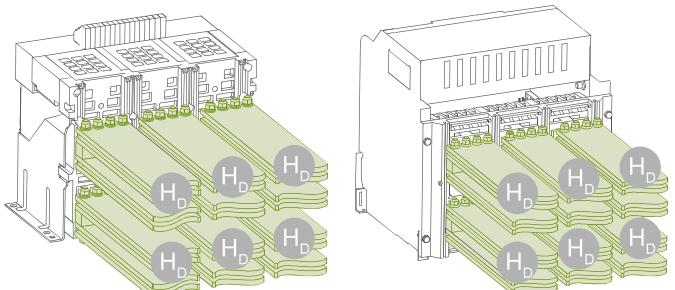


Same method as in
Ex9A16 frame size

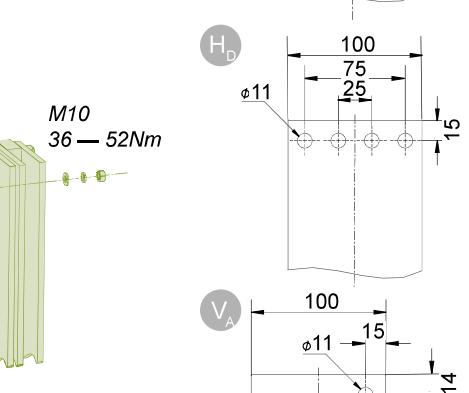
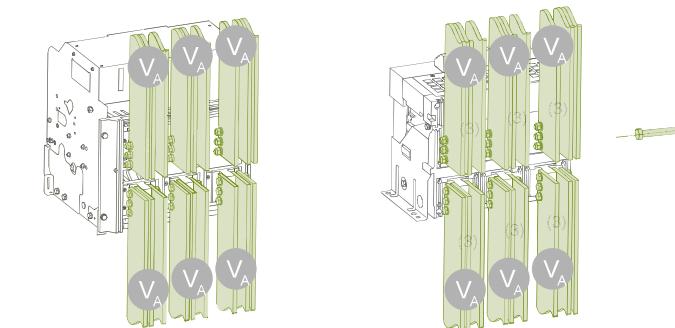
2000 — 2500A Horizontal busbars



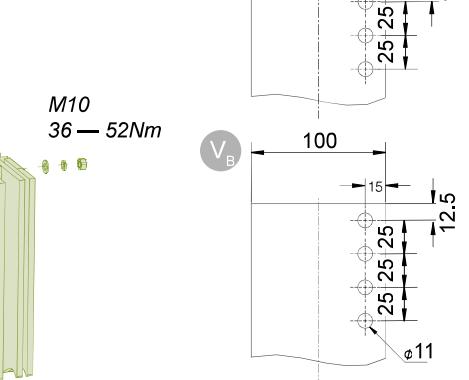
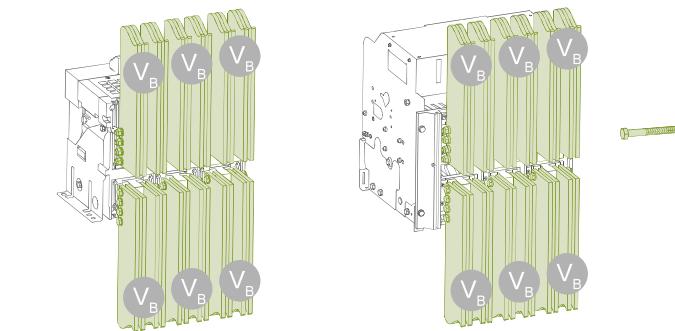
3200A Horizontal busbars



2000 — 2500A Vertical busbars



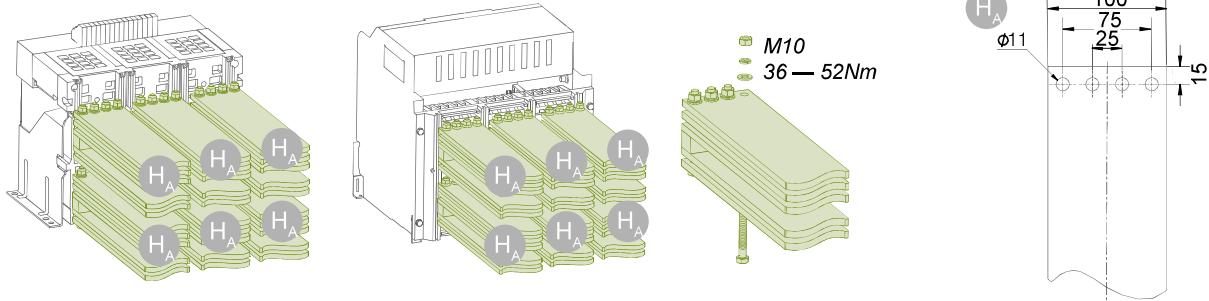
3200A Vertical busbars



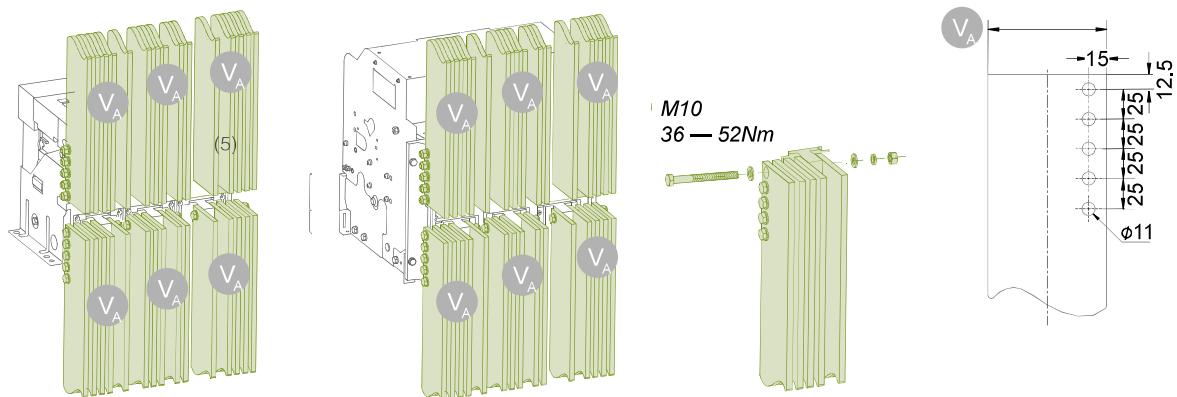
Ex9A40 Installation

Ex9A40 Installation

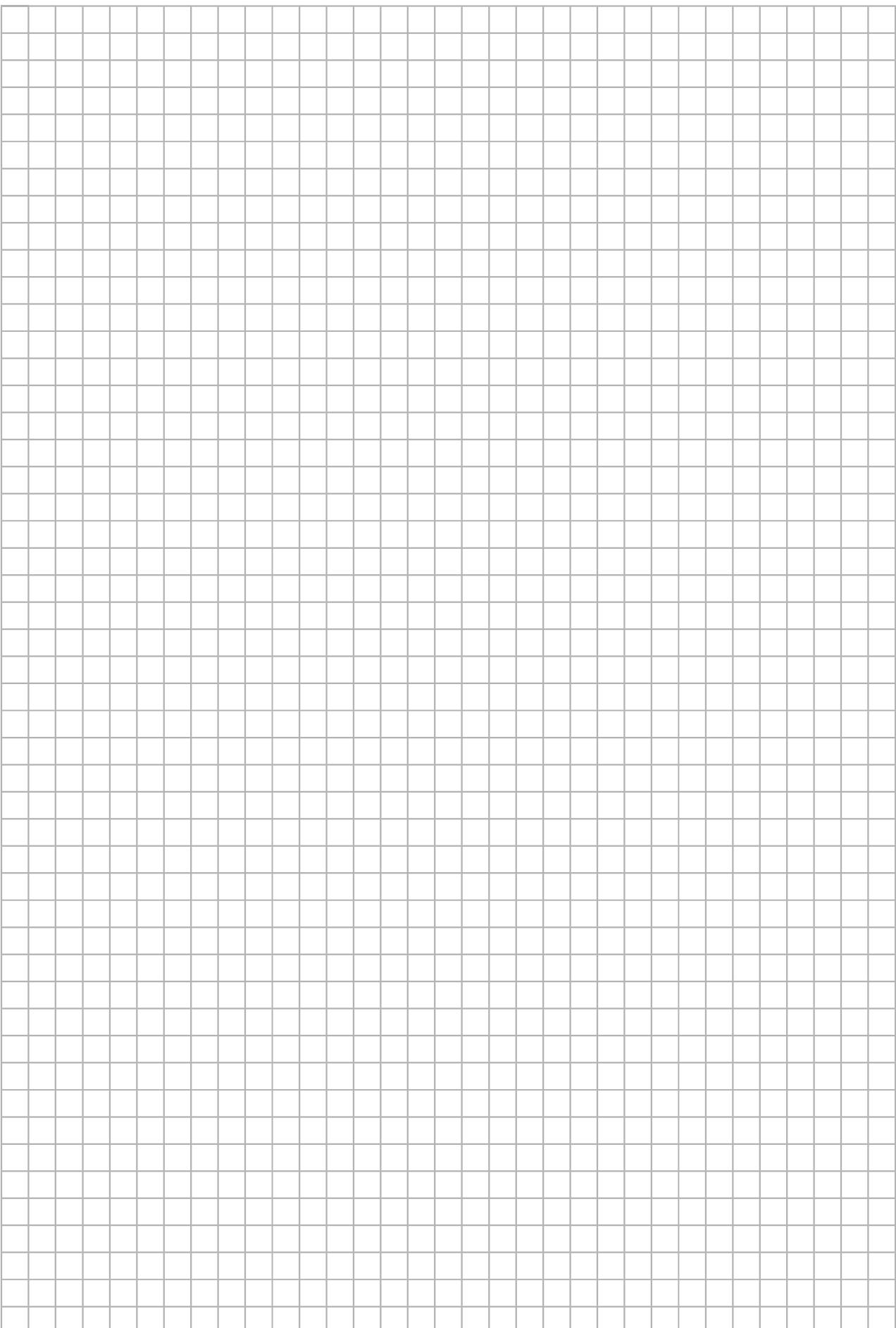
4000A Horizontal busbars



4000A Vertical busbars



Notes





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