

ZUCCHINI

XCM Busbar Trunking Systems

Installation and user manual

LE13878AA-01GF-23W20



XCM Busbar Trunking Systems

EN

ENGLISH

3



General information

The information in this installation manual offers general descriptions and takes into account the general technical features of the products discussed, with the object of guiding the user through the installation of the XCM busbar. Therefore, product reliability for specific user applications cannot rely on this manual to ensure suitability or reliability of the busbar.

Each user must assess the specific risks and test the product based on their own specific application. Neither Legrand, nor any of its subsidiaries or controlled companies shall be held responsible for the improper use of the information contained in this document.

For any suggestions of any kind regarding this manual, please contact Legrand directly.

The user hereby agrees not to reproduce this manual in full or in part for commercial use, or for any other use that is not strictly personal.

The reproduction of this manual is also prohibited, on any supports whatsoever, including multimedia or internet publication, without the explicit written consent of Legrand.

The publication of any types of hyperlinks to this manual or part thereof is also strictly prohibited.

The user of this manual agrees to use it exactly as it is written, and always at their own risk.

Only the manufacturer has the authority of intervening on individual components for replacement and repair purposes, in order to ensure the compliance of those described in this document.

The instructions of this manual must always be followed, to ensure correct installation of the components within the system.

Failure to comply with such instructions can cause injury or damage to system components and equipment.



Safety instructions

This product should be installed in compliance with installation rules, preferably by a qualified electrician. Incorrect installation and/or incorrect use can lead to risk of electric shock or fire.

Before carrying out the installation, read the instructions and take account of the product's specific mounting location.

Do not open up, dismantle, alter or modify the device except where specifically required to do so by the instructions.

All Legrand products must be opened and repaired exclusively by personnel trained and approved by Legrand. Any unauthorised opening or repair completely cancels all liabilities and the rights to replacement and guarantees.

Use only Legrand brand accessories.

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1. Introduction

1.1 Safety Information

1.1.1 Important Information

Here above general information concerning with signalling to take into account for all operative phases of the installation. This symbology and these messages are used all through the manual in order to highlight any potential dangerous situations or to arouse attention to procedures.



The addition of symbol to a "Danger" or "Warning" safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.



This is safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.



DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.



WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.



CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and verified only by qualified personnel.

No responsibility is assumed by Legrand for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

1.2 Safety tips



WARNING

HAZARD OF CRUSHING AND FRACTURES

- Wear personal protective equipment when handling and installing the products (long sleeved jacket, trousers, gloves, safety shoes, helmet, and safety glasses).
- Only personnel who have been trained in safety regulations may work on construction sites to install busbar trunking systems.
- Work with extreme caution and follow the instructions provided in the manual.

Failure to follow these instructions can result in death, serious injury, or equipment damage.



1.3 Purpose of the document

The present manual contains all the information necessary for the installation of Legrand XCM busbar trunking system (Medium Rating).

It contains the rules and procedures to be taken into account during the different phases involved in the whole process related to the realization of the plant and its final power up.

In particular all preliminary requirements, specific installation procedures and overall recommendations are explained along the present manual.

Topics exposed can be divided into different sections:

- check of the equipment and of all the tools necessary for plant assembly
- check of all the material availability and its correct identification (both as an individual component and inside the whole system)
- pre-installation checks on connections among different components
- detailed operative installation procedures

Also checks to be carried out after installation and before to power up ("putting into service") are exposed in this manual

A final part related to the periodic checking of the plant during its life is also illustrated (with the definition of the types and frequency of the checks to be performed)

This manual is addressed to trained technical personnel

1. Introduction

1.4 Product overview

1.4.1 Straight elements

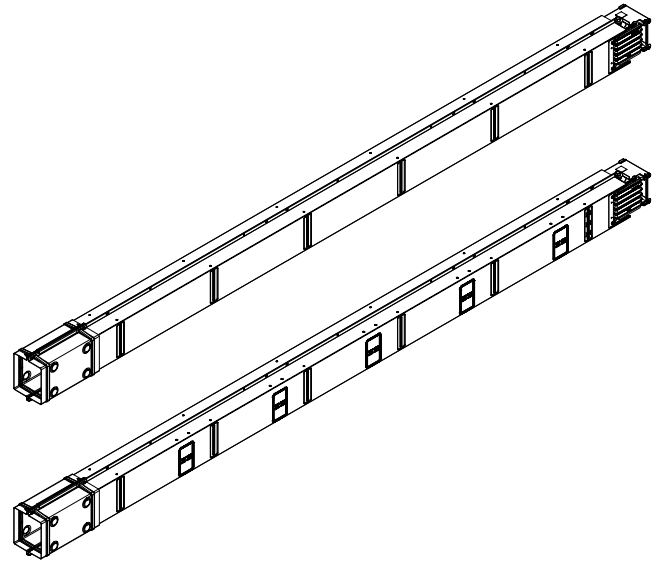
Supplied with its pre-installed monobloc.

Feeder elements:

- standard length: 3 m
- special length: from 0,6m to 3m

Distribution elements with tap-off outlets:

- standard length: 3 m
- standard tap-off outlets:
 - spaced at 1000mm intervals on both sides for Standard straight elements (IP55)
 - spaced at 500mm intervals on one side for vertical installation (IP55)
 - spaced at 600mm or 800mm on both sides for Data Center straight elements (IP40)



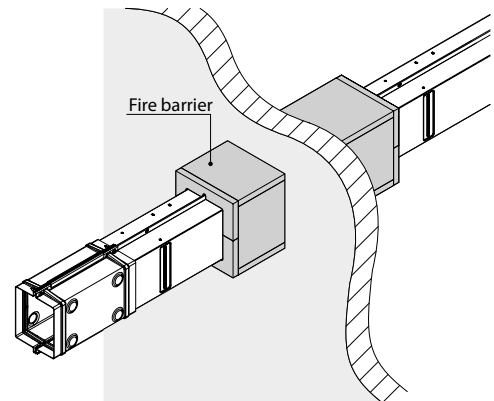
1.4.2 Additional elements

Supplied with its pre-installed monobloc.

Elements able to meet any installation requirement.

Elements with fire barrier

Elements with phase balancing (only on request)



1.4.3 Routing components

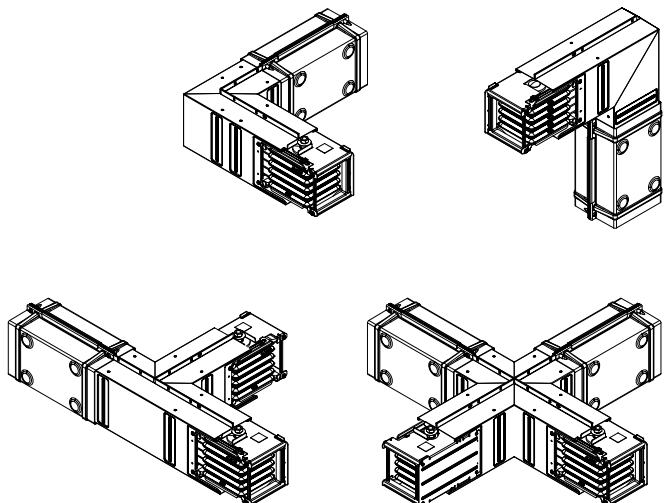
Supplied with its pre-installed monobloc.

Elements able to meet any change of direction with standard or special solutions.

Elbows

Double elbows

T, X elements



1.4.4 Tap-off boxes

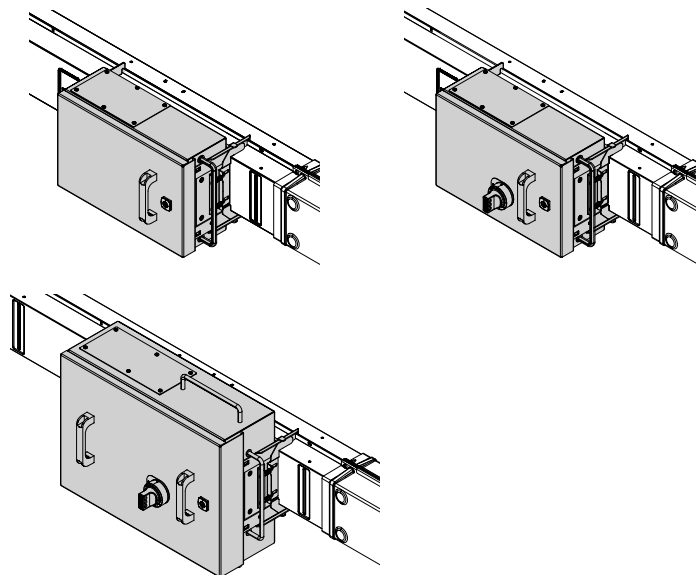
Elements used for connecting and energizing electric loads.

Plug-in tap-off boxes from 32A up to 630A: (can be installed with busbar energized)

- empty
- with 3P fuse holders
- with switch disconnecter and fuse holder
- for MCCB circuit breakers

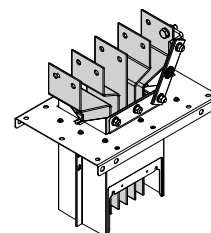
Bolted tap-off boxes from 630A to 1000A:

- with switch disconnecter and fuse holder



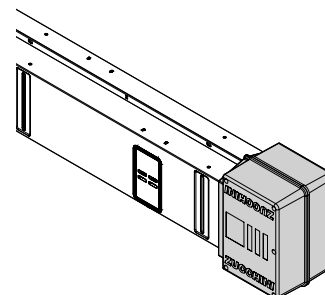
1.4.5 Connection interfaces

Elements used for connecting the busbar to the electric board or transformer.



1.4.6 End Cover

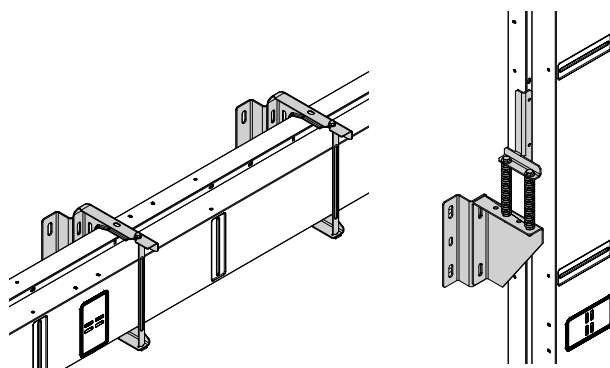
Component that ensures protection at the end of the line



1.4.7 Fixing supports

Elements used for fixing the busbar to the structure of the building.

- Options for horizontal installations
- Options for vertical installations

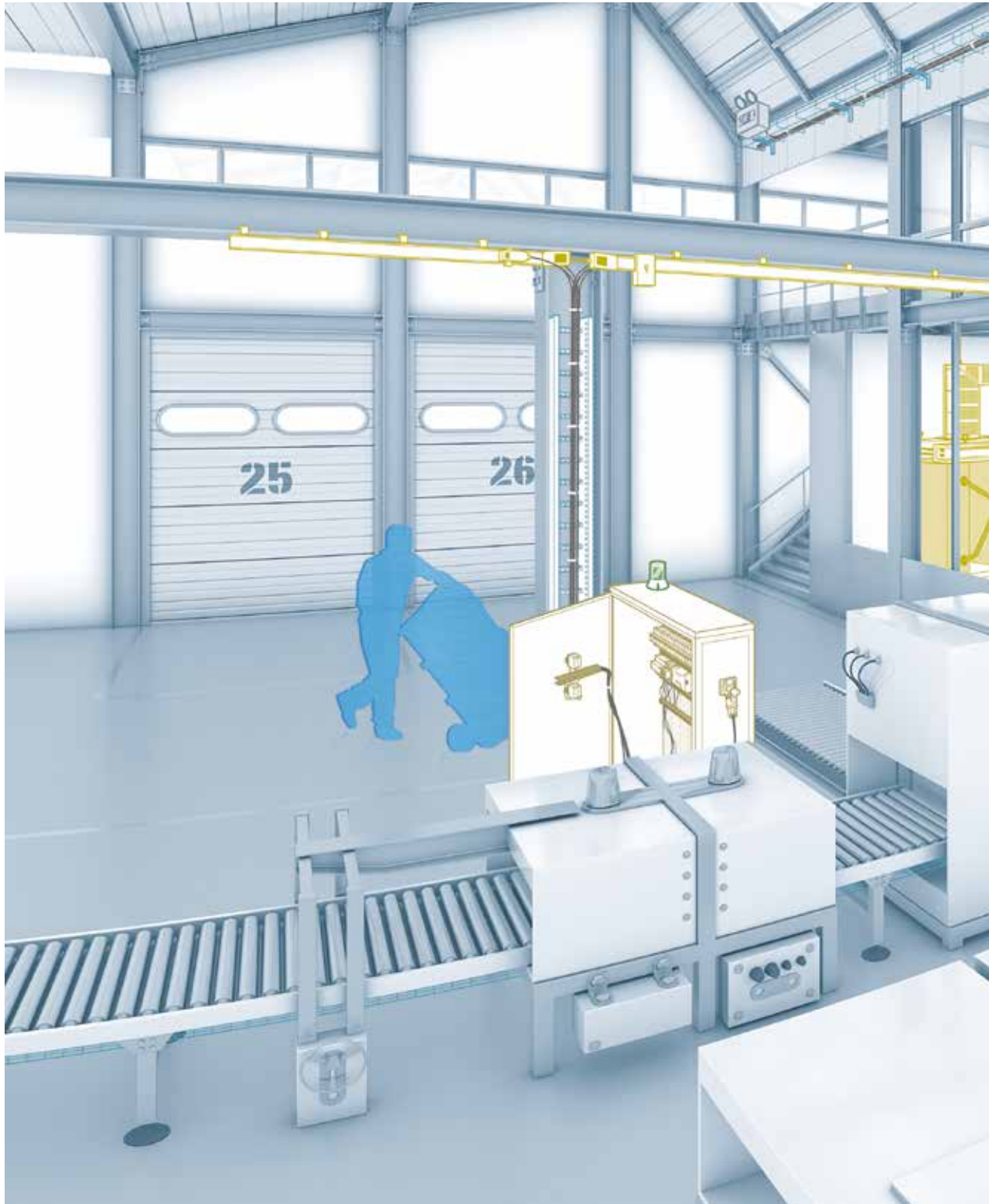


ZUCCHINI

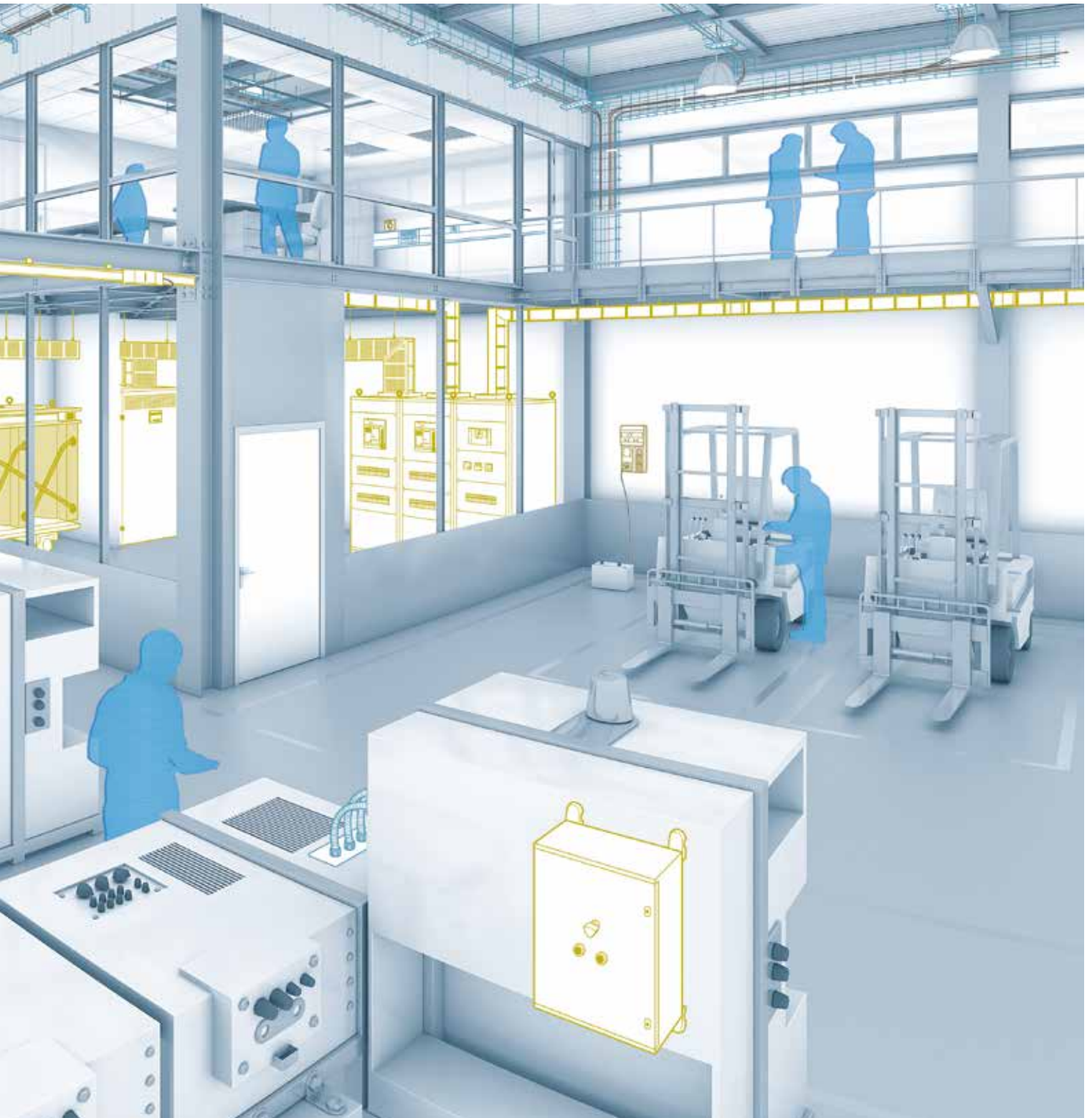
1. Introduction

1.5 System concept

Group synergy allows for immediate integration between busbar trunking systems, cast resin transformers and Legrand XL³ cabinets. Cast resin transformers can be ordered with a pre-installed interface connection for the busbar trunking systems.



The cabinets XL³ can be fitted by the panelbuilder with a XCM standard board connection. Thanks to a reinforcement kit it is possible to quickly and easily install any kind of board connection to the roof or bottom of the cabinet. The safety and the performance of the Legrand system are guaranteed by the system approval certification, obtained following stringent tests carried out in the most important international labs.



1. Introduction

1.6 Certifications

1.6.1 Company approval certifications

THE QUALITY MANAGEMENT SYSTEM

Legrand has always considered Quality, one of the strategic points of its policy, and therefore implements a strict Quality Management System.

The efficacy of the procedures devised and the level of organisation required for their implementation, have enabled the company to obtain the approval certification of its Quality Management System in accordance with the latest edition of the UNI EN ISO 9001 standard.

All company processes, from Marketing to Product Development, Manufacturing, Sale and Technical Support, contribute to meeting the requirements for obtaining and keeping such Approval Certification.

The certifying body used is Bureau Veritas. With its presence in over 140 countries, and over 100 years of experience in approval certification, Bureau Veritas is highly recognised by over 30 accreditation bodies, and is today among the world leaders in the field.



ACCREDITATION OF TEST LABORATORY

The test labs have a fundamental role in ensuring the Company Quality, both in terms of development, and as a complement to the design stage, as well as in ensuring that the product complies with the standards (type tests).

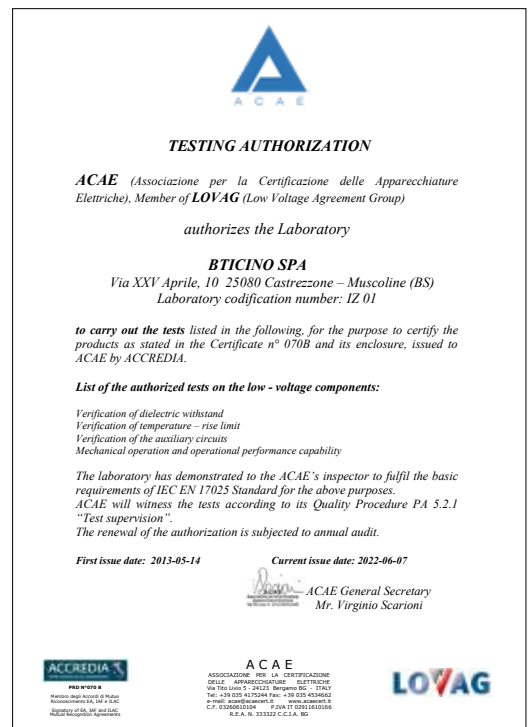
The suitability and reliability of the BTicino/Legrand Test Room is guaranteed by the approvals obtained with ACAE (Associazione per la Certificazione delle Apparecchiature Elettriche ed Elettroniche - Association for the Certification of Electric and Electronic Equipment) in accordance with LOVAG procedures, on the basis of EN ISO/IEC 17025.

The test laboratory is where some of the main type tests required for obtaining product approval certification are carried out.

With the support of the BTicino* test laboratory, and of prestigious international labs, Legrand products undergo:

- overtemperature limits tests;
- dielectric properties tests;
- protection circuit efficiency tests;
- aerial and surface insulation distance tests;
- mechanical operation tests;
- busbar trunking system electric characteristics tests;
- construction strength tests;
- thermal cycling test;
- crushing resistance tests.

Moreover, in order to ensure maximum product quality, and in addition to the requirements of the product approval certification, BTicino* test laboratory also carries out electromagnetic compatibility measurements on all lines.



CERTIFICATION AND QUALIFICATION MARKS

Once compliance with IEC 61439-6 product standard has been confirmed, the various product lines may be further marked and approved for special applications.

The compliance of a product to the specific standards can be certified by the manufacturer declaration and the application of the "CE" symbol, or through the concession of a mark by an appointed third-party body that ascertains its compliance. In the case of manufacturer declaration, the responsibility for compliance with the standards lies with the manufacturer itself;

If a quality mark is granted by a third-party body, this body will only do so subject to the approval of the manufacturer and the prototype, through type tests, and subsequently following tests on the products sold on the market, which must comply with the requirements of the tests carried out on the prototypes themselves.

The same range of products can therefore be granted several quality or conformity marks.

LOVAG CERTIFICATES

LOVAG is the Low Voltage Agreement Group, which is a Mutual Agreement Group of Certification Bodies founded in 1991, which has achieved a high level of competence in testing and certification of low voltage equipment.

LOVAG's main purpose as an Agreement Group shall be for the mutual recognition of test reports and/or certificates of conformity by its signatories.

Membership LOVAG presently has five signatories (Certification Bodies) to the Agreement: ACAE (Italy), Applus+ Laboratories (Spain), ASEFA (France), IMQ (Italy), and SGS Belgium NV - Division SGS CEBEC (Belgium) and employs more than 30 Testing Laboratories.

Certificates LOVAG Certificates are issued by the LOVAG Certification Bodies using verification reports and certificates in a common and recognisable format in the market. They are recognised and accepted in the European Economic Area and elsewhere in the world.

LOVAG Instructions LOVAG uses common Instructions for verification by Testing, Comparison or Assessment of the International and Standards covered by the Agreement and signatories to the Agreement abide by these when verifying for LOVAG Certification.

Qualifications All signatory bodies to the Agreement are accredited to ISO IEC 17065 by accreditors being members of IAF, the International Accreditation Forum. They are located in a member country of the EU and their laboratories are accredited and/or assessed to EN ISO/IEC 17025.

For further information contact your local certification body or the Secretariat of LOVAG by e-mail or by fax from the list below.

LOVAG Certification Bodies and LOVAG Secretariat:

<p>ACAE Via Tito Livio 5 I-24123 Bergamo ITALY Fax: + 39 035 453 4662 e-mail: acaec@acaecert.it Web : www.acaecert.it</p> 	<p>ASEFA 33 Av du General Leclerc F-92260 Fontenay-aux-roses FRANCE e-mail: contact@asefa-cert.com Web: www.asefa-cert.com</p> 
<p>Applus+ Laboratories Campus UAB E-08193 Bellaterra (Barcelona) SPAIN Fax: + 34 93 567 20 01 e-mail: info.appluslaboratories@applus.com Web: www.applus.corp.com</p> 	<p>SGS Belgium N.V. Division SGS CEBEC Business Riverside Park Av Internationalelaan, 55 B-1070-Brussels BELGIUM Fax: + 32 2 556 00 36 e-mail: silvio.piras@sgs.com Web: www.cebec.sgs.com</p> 
<p>IMQ S.p.A. Via Quintiliano 43 20138 Milano ITALY Fax: +39 0250991510 e-mail : lovag@imq.it Web: www.imq.it</p> 	<p>LOVAG Secretariat at ETICS aisbl Rue des Deux Églises, 29 B-1000-Brussels - BELGIUM e-mail: secretariat@etics.org Web: www.lovag.net</p> 

1. Introduction

1.6.2 The certificates

The XCM line has been given Type- Approval Certifications by the most prestigious Electro-technical agencies:

- Certificate of Compliance with Standard: IEC 61439-6
- GOST Type-Approval (Russia) In order to obtain these recognitions, the XCM range has undergone the following type tests, as confirmation of their quality:
- Fire Barrier Test
- IEC 60331-1 / CEI EN 50362 - Fire Resisting Test
- XCM product has been subjected to seismic tests in accordance with IEEE Std 693-2018 and consequently certified.

LOVAG
Certificate of Conformity
LOVAG-Certificate No.: IT 20.116
Page 1 of 3

ACAE

This Certificate applies only to the apparatus verified. The responsibility for conformity of any apparatus having the same designation with that verified rests with the manufacturer.

This certificate has been prepared according to LOVAG (Low Voltage Agreement Group) Objectives and Operating Principles of mutual recognition. The responsible certification body as a member of LOVAG issues a Certificate of Conformity with the above mentioned Standard(s) following the exclusive use of LOVAG Verification Instruction whenever applicable.

Only integral reproduction of this Certificate or reproductions of this page accompanied by any page(s) on which are stated the verifications performed and the assigned rated characteristics of the apparatus verified, are permitted without written permission from the LOVAG Signatory responsible for this Certificate.

Apparatus: Low-voltage busbar trunking system
1000V (U_n) – 1000V (U_i) – 12kV (U_{imp}) – 50/60Hz (f_n) – 16DA (I_{pn}) – 15kA O, 1s (I_{sc}) – IPSS – IK10

Designation Type: XCM 180A AI (4; 4R; 6; 3 versions)

Manufacturer: BTICINO SPA –LEGRAND GROUP
Via XXV Aprile n°10, 25080 Castrezone-Muscoline (BS), Italy.

Applicant: BTICINO SPA –LEGRAND GROUP
Viale Botti n°231, 21100 Varese (VA), Italy.

Verified by: ACAE Laboratory:
IB01 Varese (Italy)
IB01/LAM Varese (Italy)
IZ01 Castrezone di Muscoline BS (Italy)
CS1 Bollate MI (Italy)

The apparatus, constructed in accordance with the description mentioned in the Reports listed in this Certificate has been subjected to the series of proving verifications in accordance with IEC 61439-6 (2012-05) and EN 61439-6 (2012-08).

The results are shown in the Reports in accordance to LOVAG. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the characteristics assigned by the manufacturer as stated at pages no. 2 and no. 3.

ACCREZIA
PRD N°0708
Signatory of the IEC and IEC Mutual Recognition Agreements

Responsible Certification Body: ACAE
Via Tito Livio, 5 – 24123 – BERGAMO (Italy)

Authorized Signature: *Virginio Carlini*
Date: 2022.01.19

MCD007 pag. 1 Revision 03

LOVAG
Certificate of Conformity
LOVAG-Certificate No.: IT 20.119
Page 1 of 3

ACAE

This Certificate applies only to the apparatus verified. The responsibility for conformity of any apparatus having the same designation with that verified rests with the manufacturer.

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Only integral reproduction of this Certificate or reproductions of this page accompanied by any page(s) on which are stated the verifications performed and the assigned rated characteristics of the apparatus verified, are permitted without written permission from the LOVAG Signatory responsible for this Certificate.

Apparatus: Low-voltage busbar trunking system
1000V (U_n) – 1000V (U_i) – 12kV (U_{imp}) – 50/60Hz (f_n) – 40DA (I_{pn}) – 25kA O, 1s (I_{sc}) – IPSS – IK10

Designation Type: XCM 400A AI (4; 4R; 6; 3 versions)

Manufacturer: BTICINO SPA –LEGRAND GROUP
Via XXV Aprile n°10, 25080 Castrezone-Muscoline (BS), Italy.

Applicant: BTICINO SPA –LEGRAND GROUP
Viale Botti n°231, 21100 Varese (VA), Italy.

Verified by: ACAE Laboratory:
IB01 Varese (Italy)
IB01/LAM Varese (Italy)
IZ01 Castrezone di Muscoline BS (Italy)
CS1 Bollate MI (Italy)

The apparatus, constructed in accordance with the description mentioned in the Reports listed in this Certificate has been subjected to the series of proving verifications in accordance with IEC 61439-6 (2012-05) and EN 61439-6 (2012-08).

The results are shown in the Reports in accordance to LOVAG. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the characteristics assigned by the manufacturer as stated at pages no. 2 and no. 3.

ACCREZIA
PRD N°0708
Signatory of the IEC and IEC Mutual Recognition Agreements

Responsible Certification Body: ACAE
Via Tito Livio, 5 – 24123 – BERGAMO (Italy)

Authorized Signature: *Virginio Carlini*
Date: 2022.01.19

MCD007 pag. 1 Revision 03

LOVAG
Certificate of Conformity
LOVAG-Certificate No.: IT 20.123
Page 1 of 3

ACAE

This Certificate applies only to the apparatus verified. The responsibility for conformity of any apparatus having the same designation with that verified rests with the manufacturer.

This certificate has been prepared according to LOVAG (Low Voltage Agreement Group) Objectives and Operating Principles of mutual recognition. The responsible certification body as a member of LOVAG issues a Certificate of Conformity with the above mentioned Standard(s) following the exclusive use of LOVAG Verification Instruction whenever applicable.

Only integral reproduction of this Certificate or reproductions of this page accompanied by any page(s) on which are stated the verifications performed and the assigned rated characteristics of the apparatus verified, are permitted without written permission from the LOVAG Signatory responsible for this Certificate.

Apparatus: Low-voltage busbar trunking system
1000V (U_n) – 1000V (U_i) – 12kV (U_{imp}) – 50/60Hz (f_n) – 100DA (I_{pn}) – 35kA O, 1s (I_{sc}) – IPSS – IK10

Designation Type: XCM 1000A AI (4; 4R; 6; 3 versions)

Manufacturer: BTICINO SPA –LEGRAND GROUP
Via XXV Aprile n°10, 25080 Castrezone-Muscoline (BS), Italy.

Applicant: BTICINO SPA –LEGRAND GROUP
Viale Botti n°231, 21100 Varese (VA), Italy.

Verified by: ACAE Laboratory:
IB01 Varese (Italy)
IB01/LAM Varese (Italy)
IZ01 Castrezone di Muscoline BS (Italy)
CS1 Bollate MI (Italy)

The apparatus, constructed in accordance with the description mentioned in the Reports listed in this Certificate has been subjected to the series of proving verifications in accordance with IEC 61439-6 (2012-05) and EN 61439-6 (2012-08).

The results are shown in the Reports in accordance to LOVAG. The values obtained and the general performance are considered to comply with the above Standard(s) and to justify the characteristics assigned by the manufacturer as stated at pages no. 2 and no. 3.

ACCREZIA
PRD N°0708
Signatory of the IEC and IEC Mutual Recognition Agreements

Responsible Certification Body: ACAE
Via Tito Livio, 5 – 24123 – BERGAMO (Italy)

Authorized Signature: *Virginio Carlini*
Date: 2022.01.21

MCD007 pag. 1 Revision 03

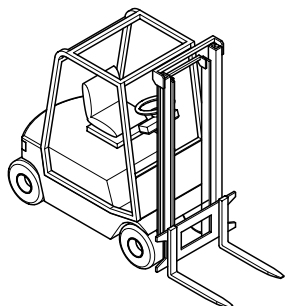
2. Material preparation and arrangement

2.1 Equipment and Tools

2.1.1 Introduction

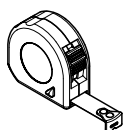
Here below the tools, equipment and materials you need to have before starting the installation of Zucchini XCM Busbar Trunking System.

2.1.2 Lifting and handling equipment

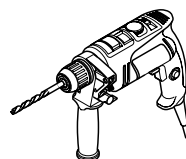


Crane or forklift truck capable of lifting 1.5 tons (minimum). In function of the plant and the typology of components.

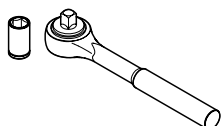
2.1.3 Supports for positioning and installing



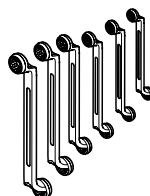
Measuring tape (metric).



Drilling machine capable of drilling through concrete.



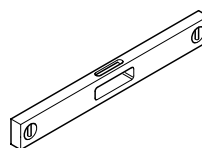
Socket wrench with sockets (8...24 mm).



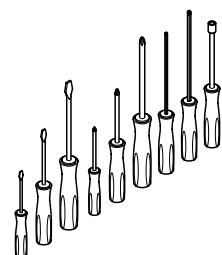
Set of flat or ring spanners (8...24 mm).



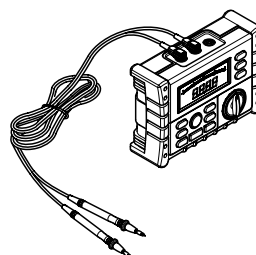
Two slings for handling the components.



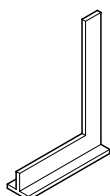
Levelling instrument (spirit level).



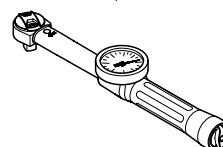
Set of screwdrivers.



Insulation tester (Megohmmeter 1000 Vdc)



Carpenters square.



Torque wrench only for periodic check inspection or when an element is placed for the second time.

2. Material preparation and arrangement

2.2 Storage

Below are the instructions to follow for a correct storage of the materials.

Failure to comply with the indications supplied may cause damage to the materials, and make the product warranties void. Store the material in a dry place, protected from weather conditions such as rain and humidity, to prevent the formation of condensation inside the busbars.

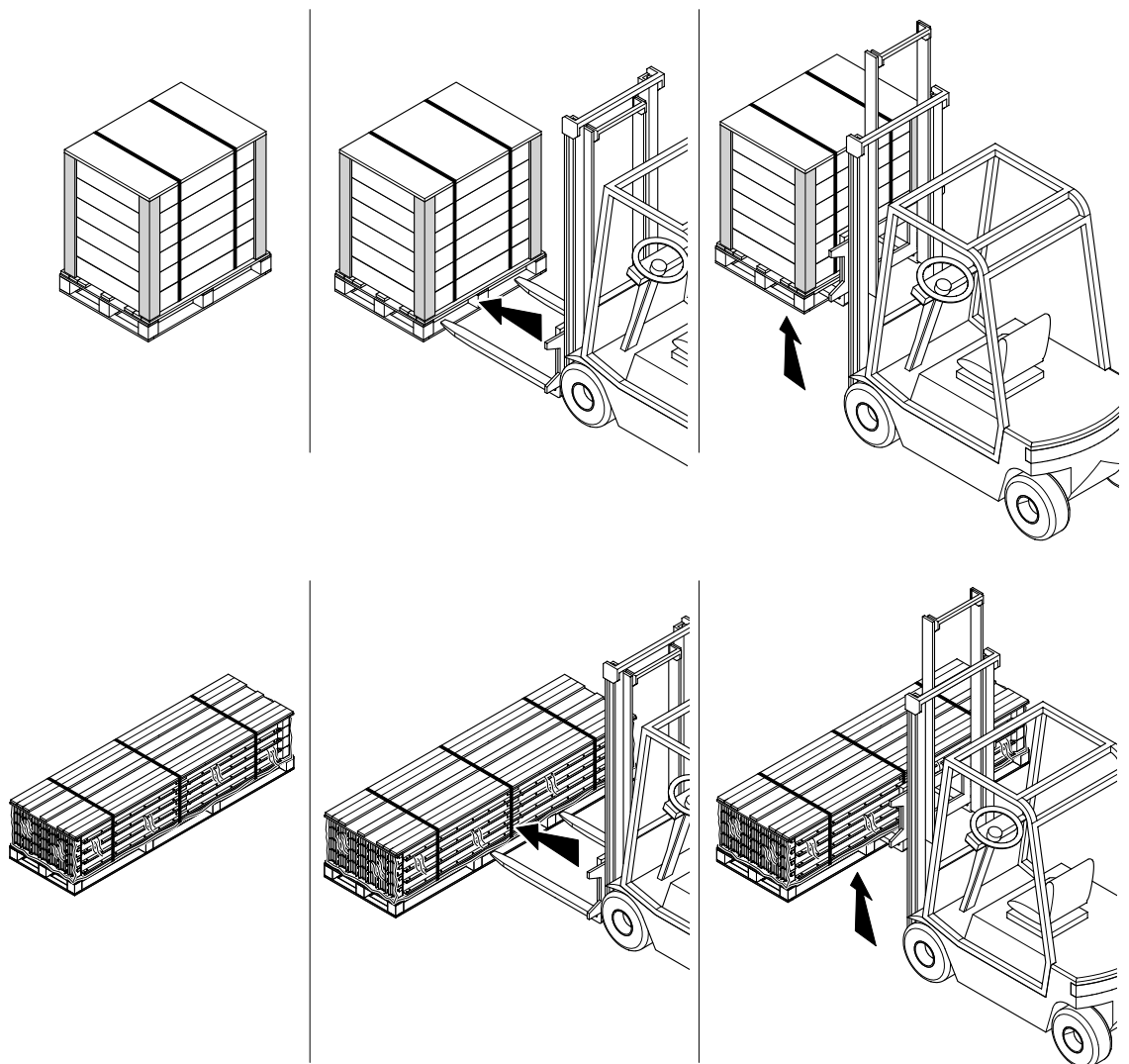
Also ensure that the busbars are protected from smoke, water, soil, mud, dust, or dirt in general. Position the material in a way that prevents a physical damage to it.

It is recommended that the material is stored indoor, in a dry location. In case of storing the busbars outside for short-medium periods, ensure that it is appropriately protected, to avoid accidental infiltration of water, which will result in them being damaged.

The material can be transported and stored at a temperature between -25°C and $+55^{\circ}\text{C}$.

Handling operations must be carried out implementing all the necessary precautions to ensure the integrity of the materials. The manufacturer shall not be held responsible for any material damage caused by failure to ensure appropriate protection.

Material handling



2.3 Weight table

XCM AL (4 conductors)	
In [A]	[kg/m]
160	7,1
250	7,6
315	8,3
400	11
500	12,7
630	14
800	15
1000	17

XCM AL (5 conductors)	
In [A]	[kg/m]
160	7,3
250	7,8
315	8,7
400	11,8
500	13,9
630	15,5
800	16,8
1000	19,2

XCM CU (4 conductors)	
In [A]	[kg/m]
250	9,5
315	10,4
400	14,3
630	19,8
800	25,4
1000	29,5

XCM CU (5 conductors)	
In [A]	[kg/m]
250	10,2
315	11,3
400	15,9
630	22,5
800	29,5
1000	34,6

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2. Material preparation and arrangement

2.4 Handling and lifting



WARNING

All lifting operations refer to a single component.

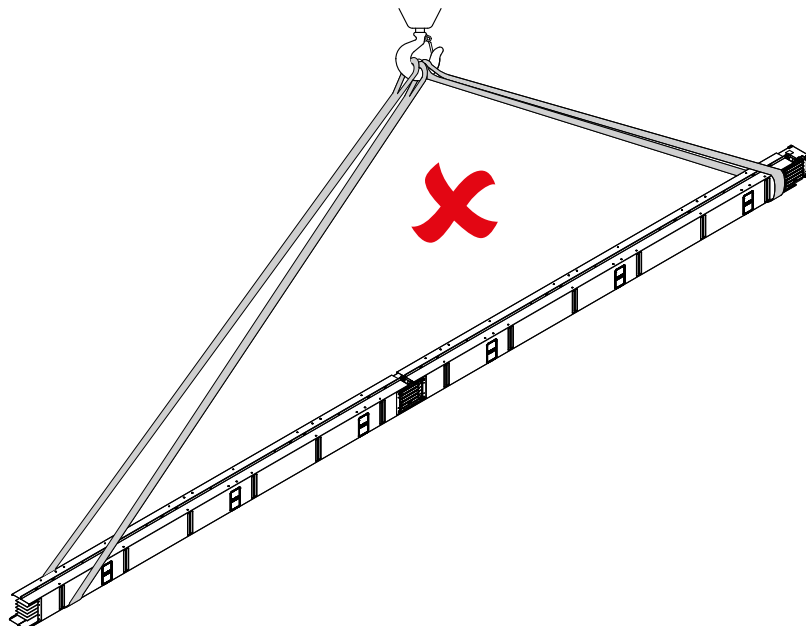
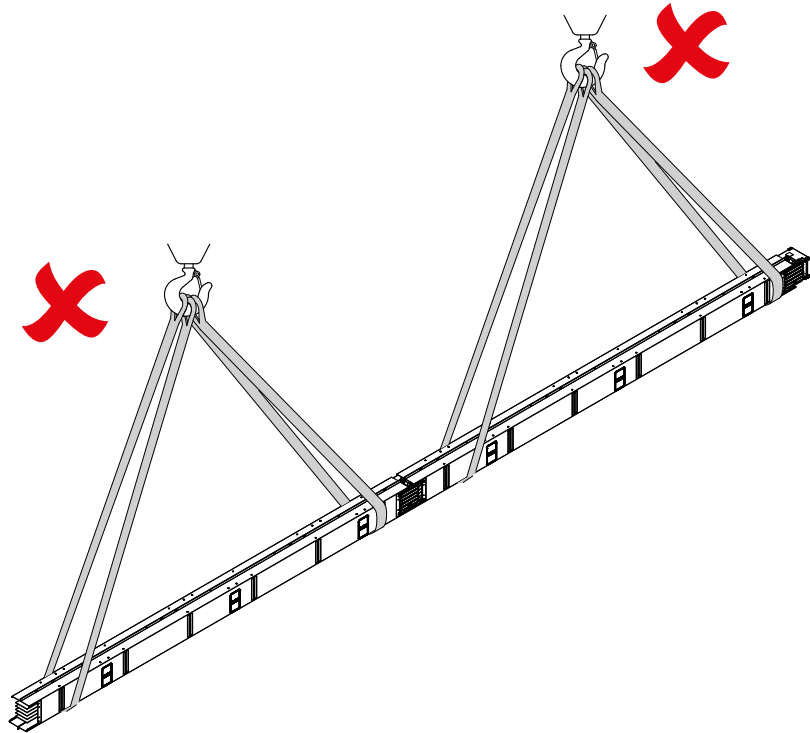


Fig. 1
Do not lift
the busbars from
their ends.

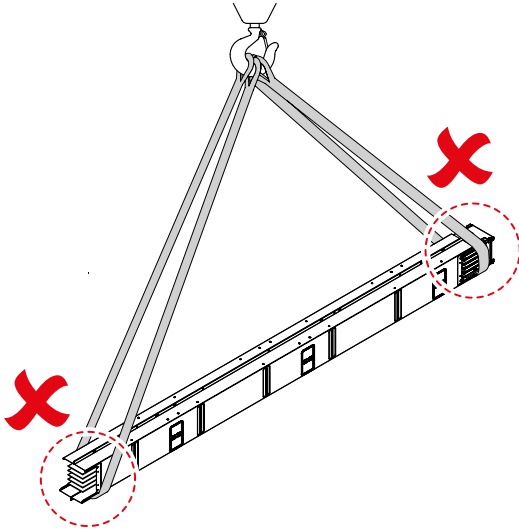


Fig. 1

Fig. 2
Do not use
belts or other
systems to lift them
to the junction
windows.

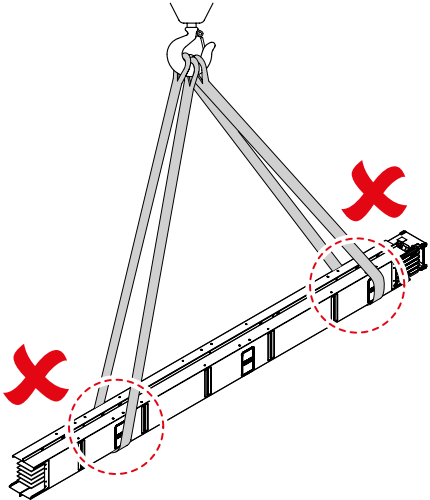


Fig. 2

Fig. 3
Do not use
belts or other
systems to lift
the busbars in
unbalanced
positions.

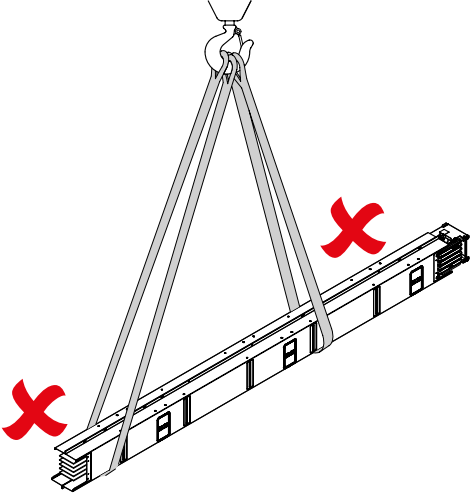


Fig. 3

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2. Material preparation and arrangement

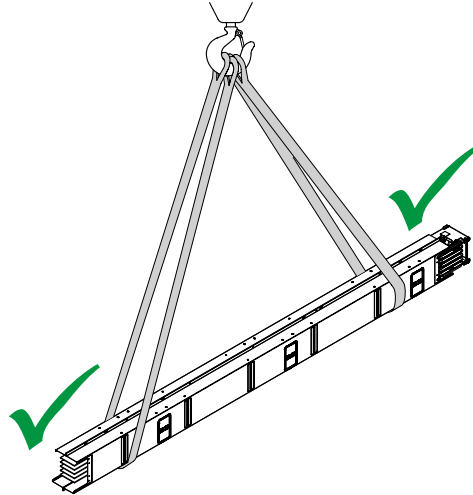


Fig. 4
Correct way of
lifting the busbars.

Fig. 4

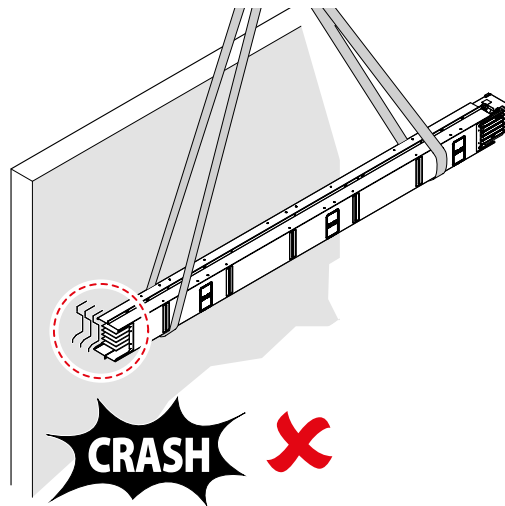


Fig. 5
Handle the busbars
with due care and
attention. Do not
subject busbars
to torsions, dents,
violent impact, or
sharp movements
that may damage
their internal
components.

Fig. 5

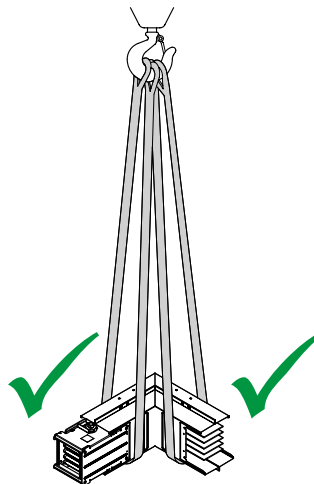


Fig. 6
When lifting not
linear shape path
components, pay
particular attention
to their own centre
of gravity. Use
equipment that
will not damage
surfaces.

Fig. 6

2.5 Missing or damaged components

GOOD RECEPTION

Upon receipt of the goods check the following:

- 1) integrity of the packaging, and the goods, if delivered in a see-through package.
- 2) consistency of the material with the delivery note and the packing list, if supplied.
- 3) consistency of the material with the order acknowledgement details.

In case of any disclaims, please inform us in writing following the instructions found in the notifications section.

NOTIFICATIONS

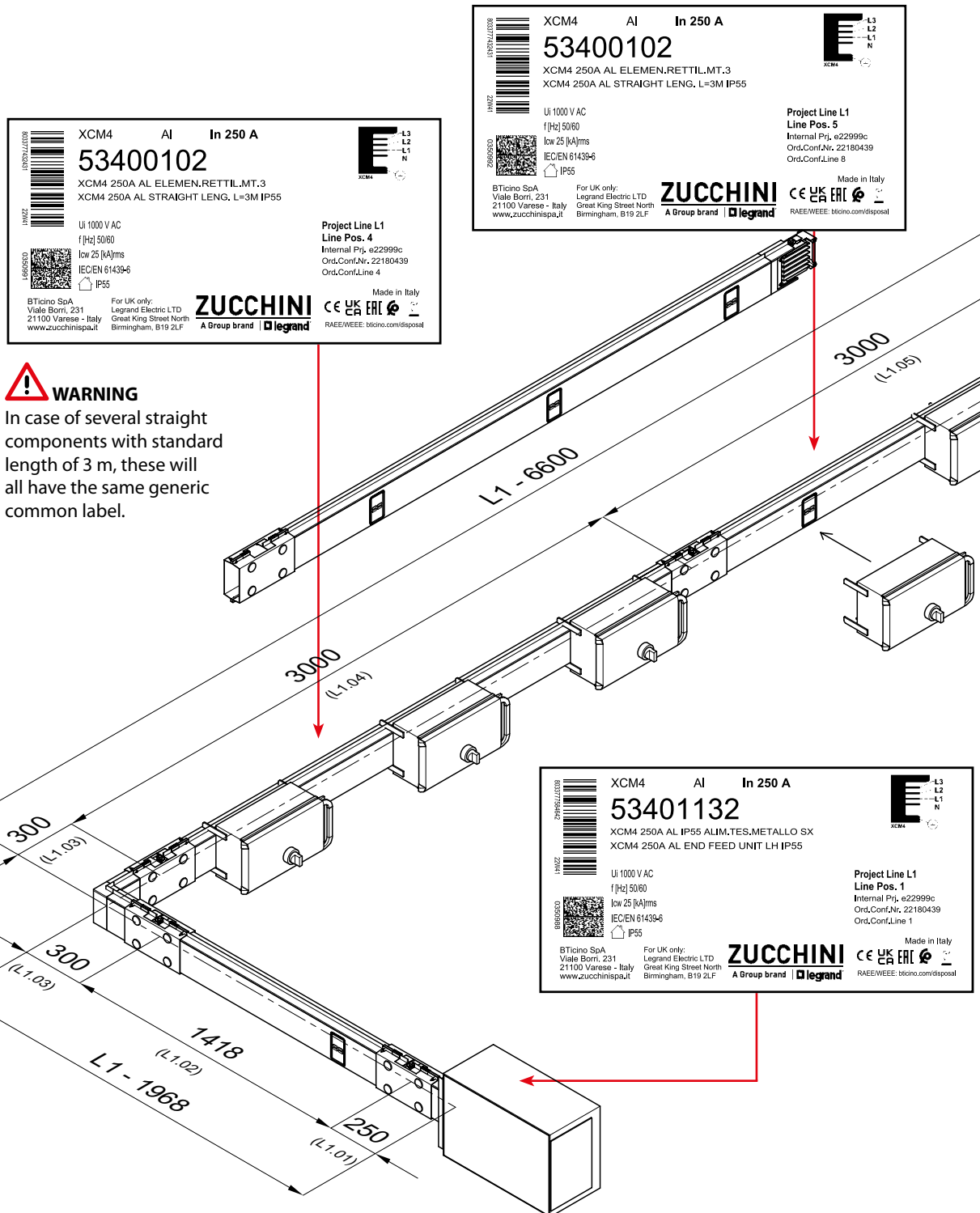
In case of any disclaim, please forward your official complaint to a Legrand referent.

When notifying that a wrong item has been received, please indicate the item code no. found on the packaging, and the item code no. found on the part (if possible include a photo of the labels).

2. Material preparation and arrangement

2.6 Product type identification

Before beginning installation, you must compare the plan which you received from the design office project al layout of the building. For custom-made products based on specific projects, check the system drawing to ensure that the components match.



XCM4 AI In 250 A

53400312

XCM4 250A AL ANGOLO ORIZZONT. SX
XCM4 250A AL HORIZONTAL ELBOW LH

Ui 1000 V AC
f [Hz] 50/60
Icw 25 [kA]rms
IEC/EN 61439-6
IP55

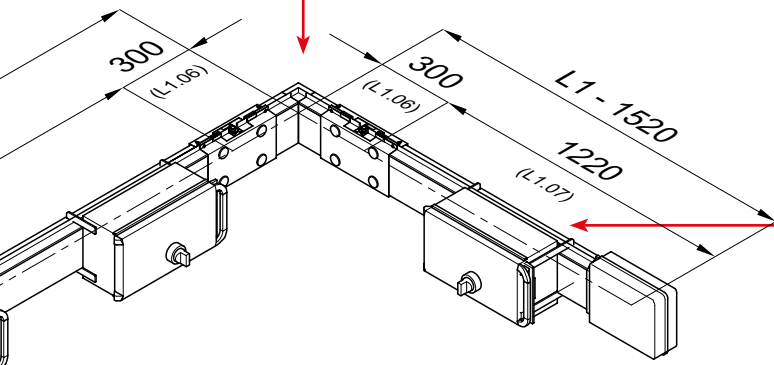
Project Line L1
Line Pos. 6
Internal Prj. e22999c
Ord.Conf.Nr. 22180439
Ord.Conf.Line 12

BTicino SpA
Viale Borri, 231
21100 Varese - Italy
www.zucchiniipa.it

For UK only:
Legrand Electric LTD
Great King Street North
Birmingham, B19 2LF

ZUCCHINI Made in Italy
A Group brand | RAE/WEEE: bticino.com/disposal

Code	Description
ZU-53401122	XCM4 250A AL END FEED UNIT RH IP55
ZU-53400142	XCM4 250A AL STR.LEN. L<=1,5M 1+1 OUT
ZU-53400302	XCM4 250A AL HORIZONTAL ELBOW RH
ZU-53400102	XCM4 250A AL STRAIGHT LENG. L=3M IP55
ZU-50485202	XCM PLUGIN BOXPLAST 63A FUSE HOLDER 3xCH2
ZU-50403101	XCM END COVER IP55
ZU-50632001	XCM FIXING KIT HANGER SIZE A
ZU-53401132	XCM4 250A AL END FEED UNIT LH IP55
ZU-53400312	XCM4 250A AL HORIZONTAL ELBOW LH



XCM4 AI In 250 A

53400142

XCM4 250A AL IP55 EL.RE. <=1,5M.2 FIN
XCM4 250A AL STR.LEN. L<=1,5M 1+1 OUT

Ui 1000 V AC
f [Hz] 50/60
Icw 25 [kA]rms
IEC/EN 61439-6
IP55

Dim.A: 1220 mm

Project Line L1
Line Pos. 7
Internal Prj. e22999c
Ord.Conf.Nr. 22180439
Ord.Conf.Line 13

BTicino SpA
Viale Borri, 231
21100 Varese - Italy
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For UK only:
Legrand Electric LTD
Great King Street North
Birmingham, B19 2LF

ZUCCHINI Made in Italy
A Group brand | RAE/WEEE: bticino.com/disposal

Details of the adhesive label found on each component.

	Type of busduct	Conductors material	Rated Current	Item Code	Item Description	
Bar code EAN12	XCM4	Al	In 250 A	53400312	XCM4 250A AL ANGOLO ORIZZONT. SX XCM4 250A AL HORIZONTAL ELBOW LH	Configuration
Year and week of production						Reference line (*)
Insulation voltage						Item position (*)
Frequency						Internal project Name (*)
Short circuit current						Order confirmation number (*)
Standard reference						Position in the order confirmation (*)
Data matrix with Serial number of piece						
Degree of protection						
	Address	Brand	Marking			

Ui 1000 V AC
f [Hz] 50/60
Icw 25 [kA]rms
IEC/EN 61439-6
IP55

Project Line L1
Line Pos. 6
Internal Prj. e22999c
Ord.Conf.Nr. 22180439
Ord.Conf.Line 12

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Birmingham, B19 2LF

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(*) Optional field

3. Installation



WARNING

Where not differently specified, dimensions indicated in the manual are to be intended in millimeters (mm).

3.1 Checks before installation

3.1.1 Visual / electric checks

Before the installation, all material should be inspected for damage.

When installing the busbars comply with the following:

- 1 Do not position the busbars near pipes containing liquids.
- 2 For the installation only use bracketing systems supplied by Legrand, and follow the instructions found in the catalogue or enclosed with the item.
- 3 Only use accessories supplied by Legrand.
- 4 Check that the operating voltage coincides with that indicated on the product plate.
- 5 Check that the system operating current does not exceed the product rated current, downgrade it if required.
- 6 Check if the busbar capacity must be downgraded (for example due to high ambient temperature, presence of harmonics, etc.).
- 7 Do not install the standard product in particular environments (high concentration of chlorine, explosive atmosphere, etc.).
- 8 For outdoor installations, protect the busbar with a protection canopy. The IP55 protection degree can be affected by unsuitably protected outdoor installation.

3.1.2 General rules for installing supports

Hazard of improper installation

Before installation: be sure to have understood well the layout plan

During installation: be sure to consider correct separation distances between the supports. These have to be levelled, so to guarantee final levelling also for path components.

Be sure that all supports are able to sustain the weights of the path components.

Failure to follow these instructions can result in injury or equipment damage.

Introduction

Correct installation of supports is fundamental to realize a proper installation of path components.

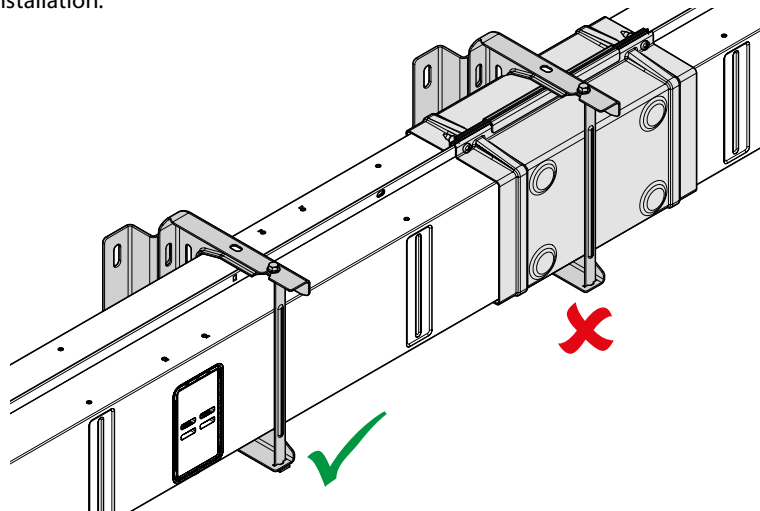
Here below, a list of rules to take into account during installation of supports and path components.

General Installation rules for supports

Follow these general rules for installing supports:

- All path components have to be correctly sustained
- To get advantage in installation, be sure to use more than one support for each path component
- The load capacity of the support must be at least the weight of the path component plus 90 kg, in accordance with IEC 61439-6.

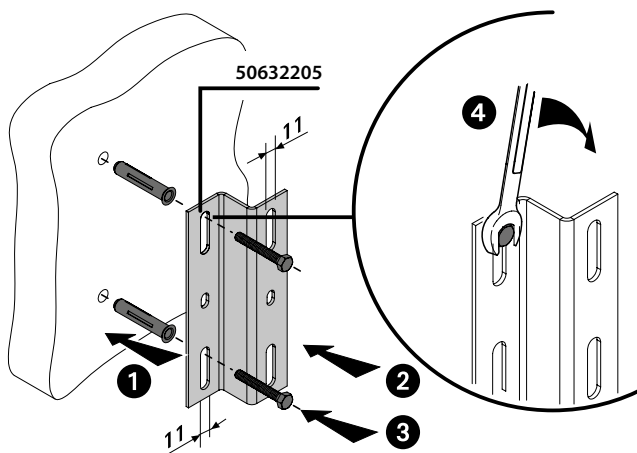
Flatwise horizontal installation:



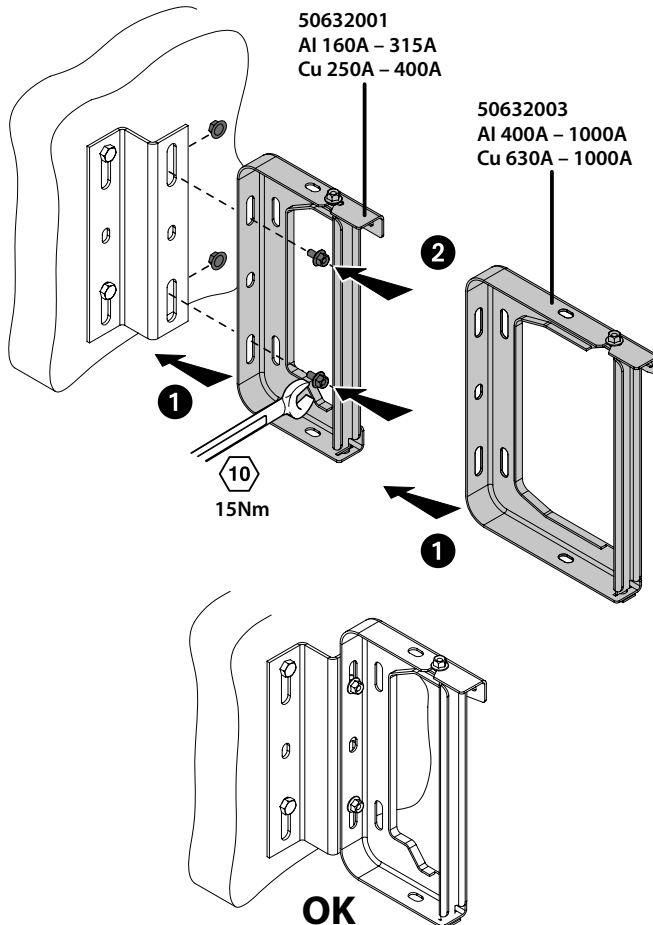
- Use different support for components at the terminal ends of the path.
- Be sure to not sustain weight of end components by transformers or switchboards.
- Sustain vertical branches near to the elbow angle.
- Even if supports have be to installed near joint blocks, they shall not to be put exactly over a joint block.

3.1.3 Fixing accessories

A



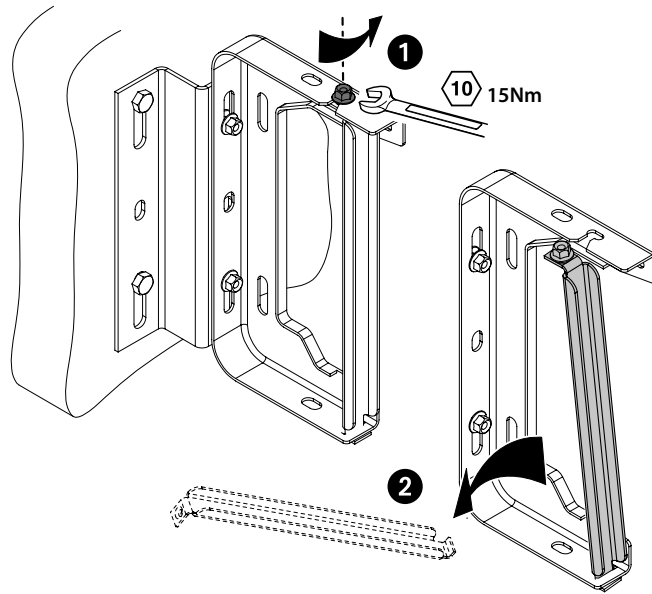
B



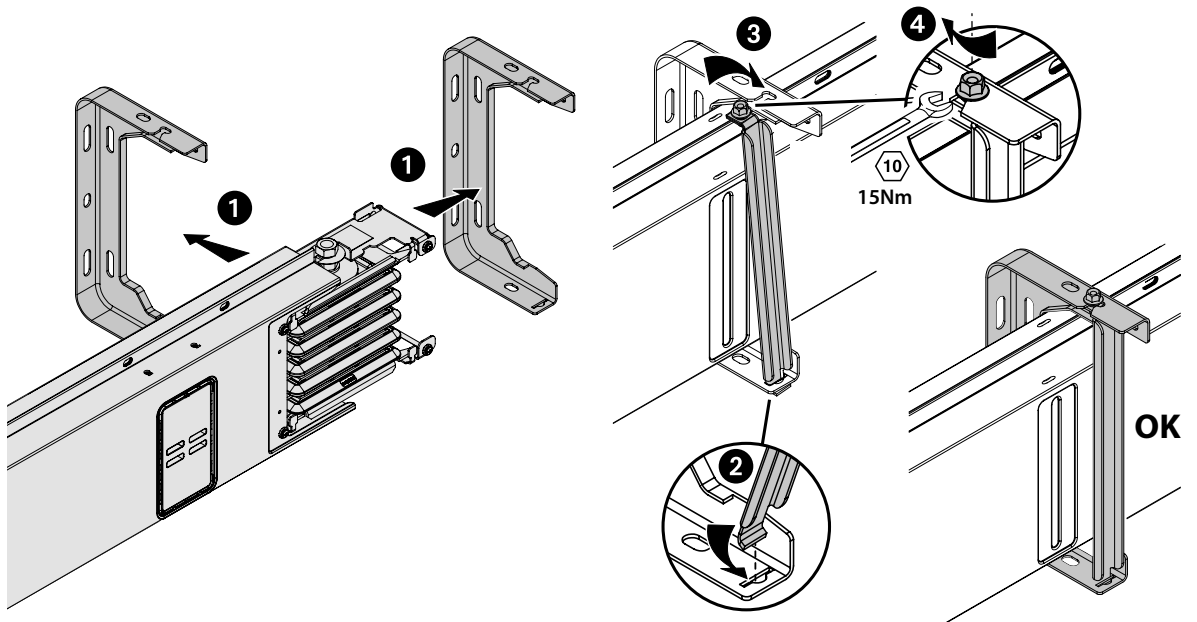
ZUCCHINI

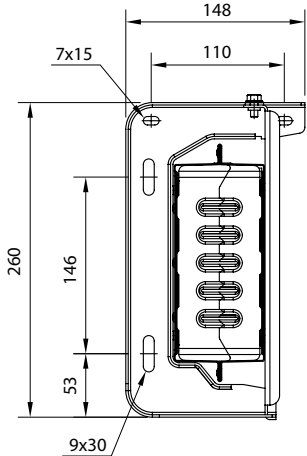
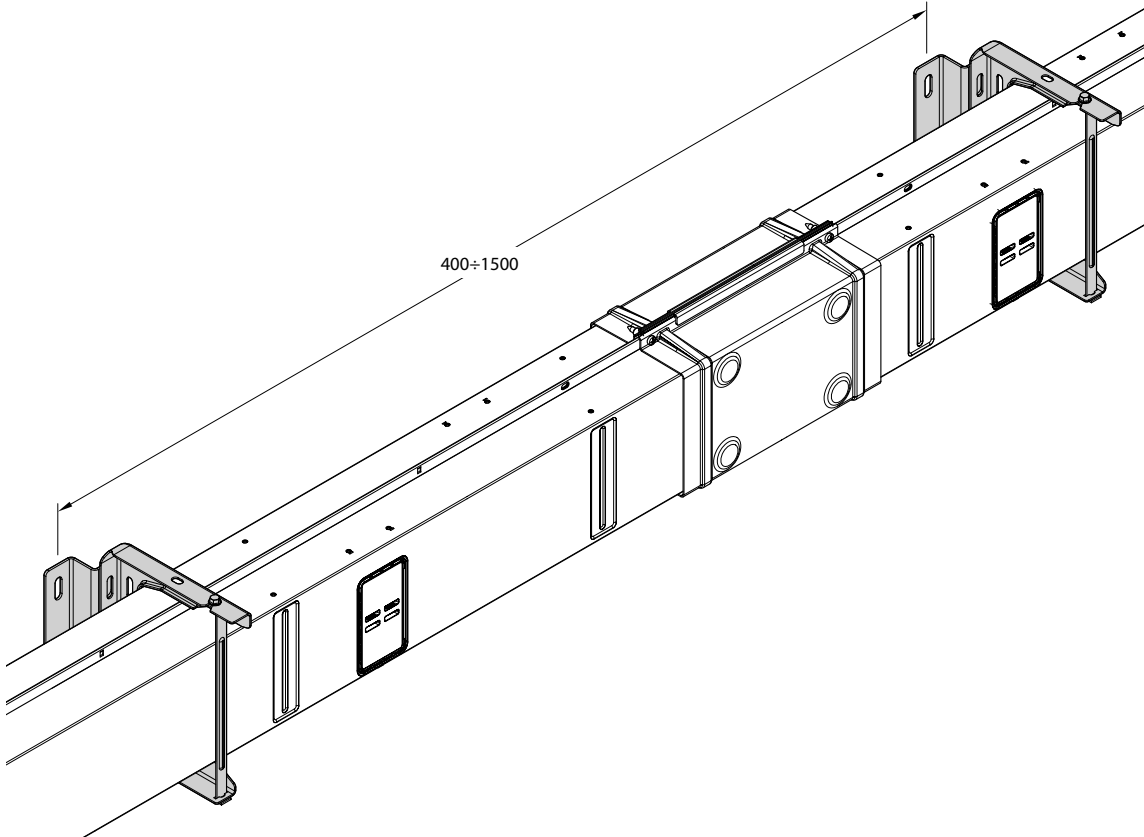
3. Installation

C

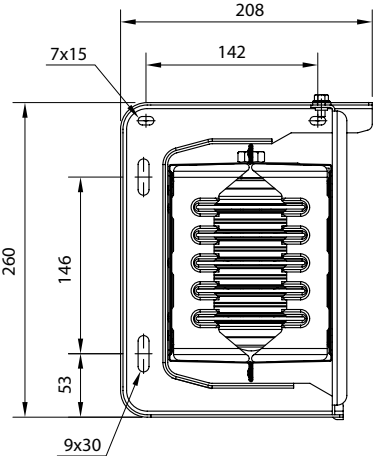


D

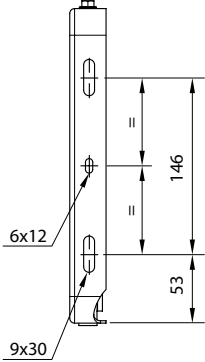




160A÷315A Al
250A÷400A Cu



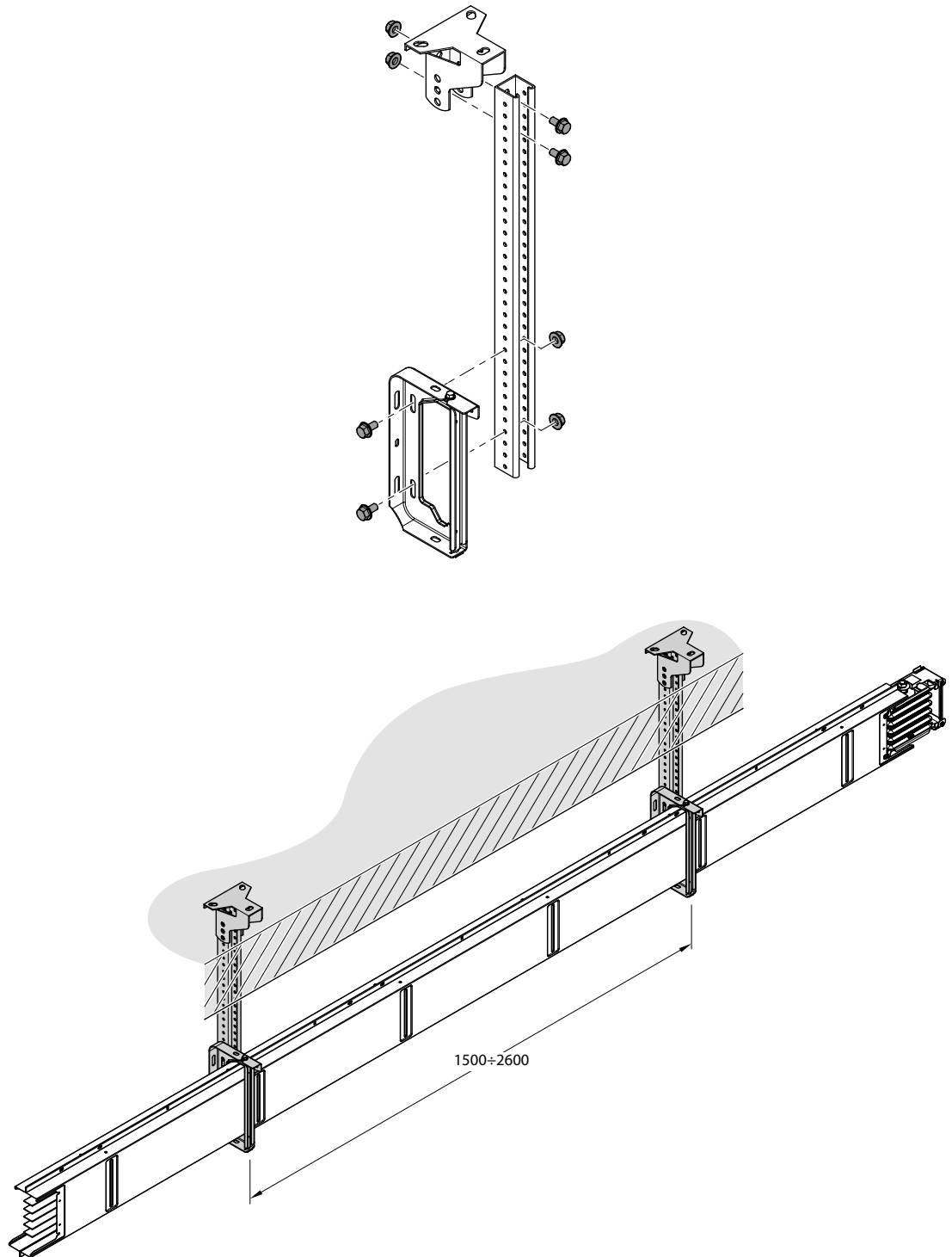
400A÷1000A Al
630A÷1000A Cu



3. Installation

Supports Flatwise Installation

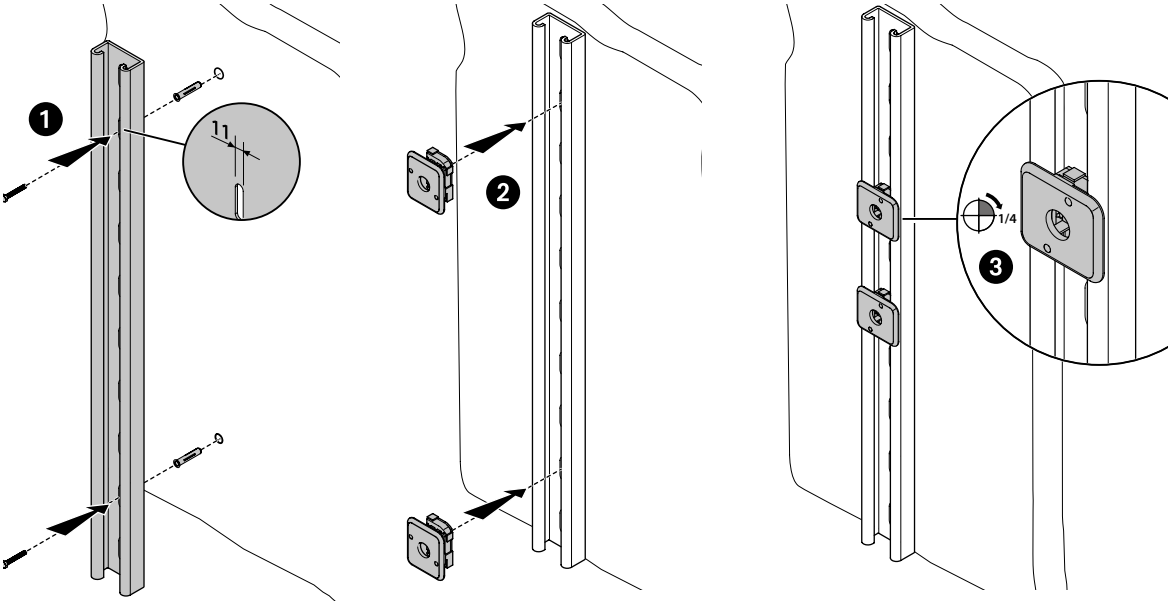
For flatwise installations, the maximum recommended distance between supports is 2600 mm. In addition, a support must be placed at a maximum distance of 750 mm from the joint block axis.



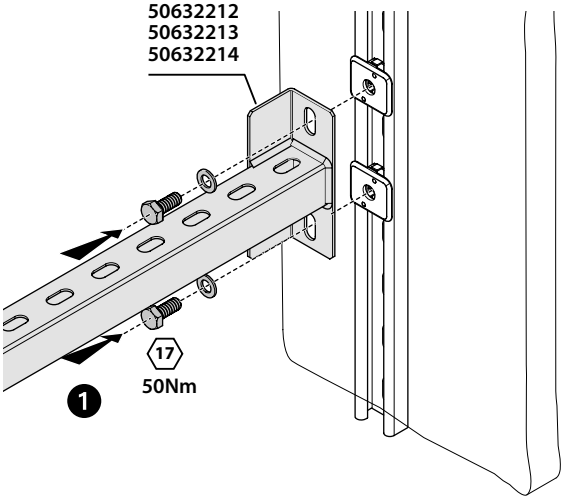
Attached to the wall.

- Provide support for flatwise path components from the bottom.
- Supports are NOT provided within the busbar.
- Fix the bar on the wall support.

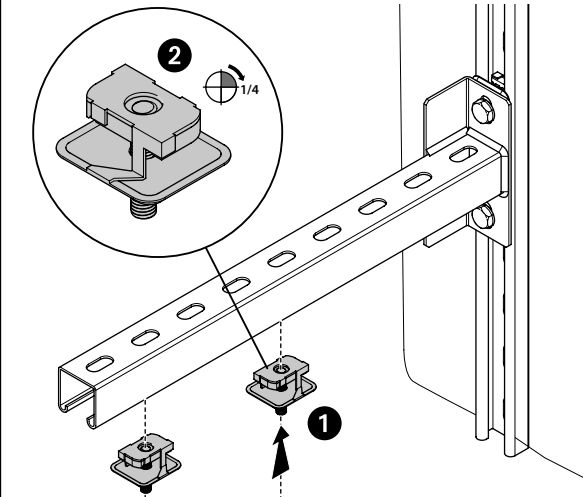
A



B

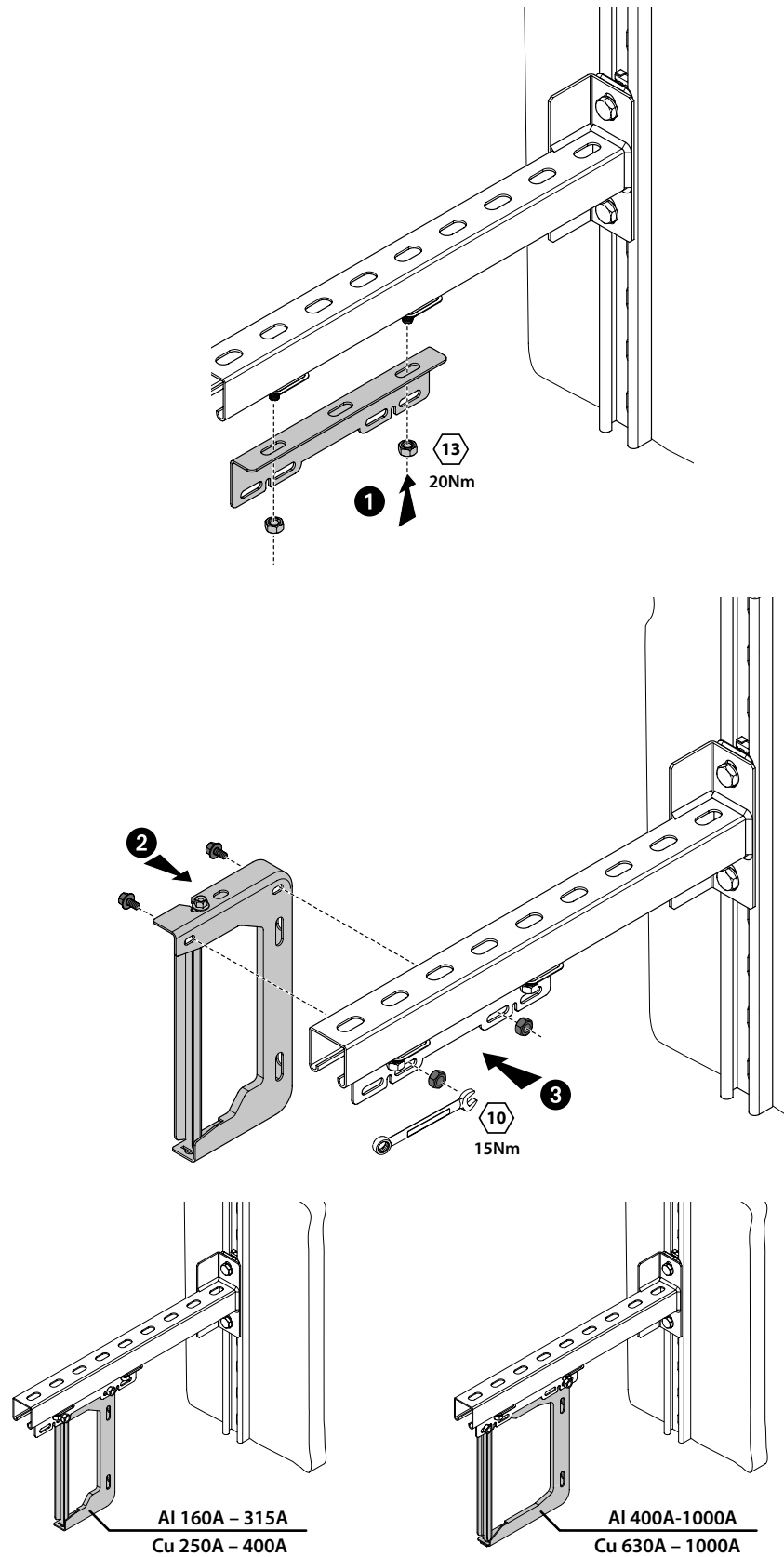


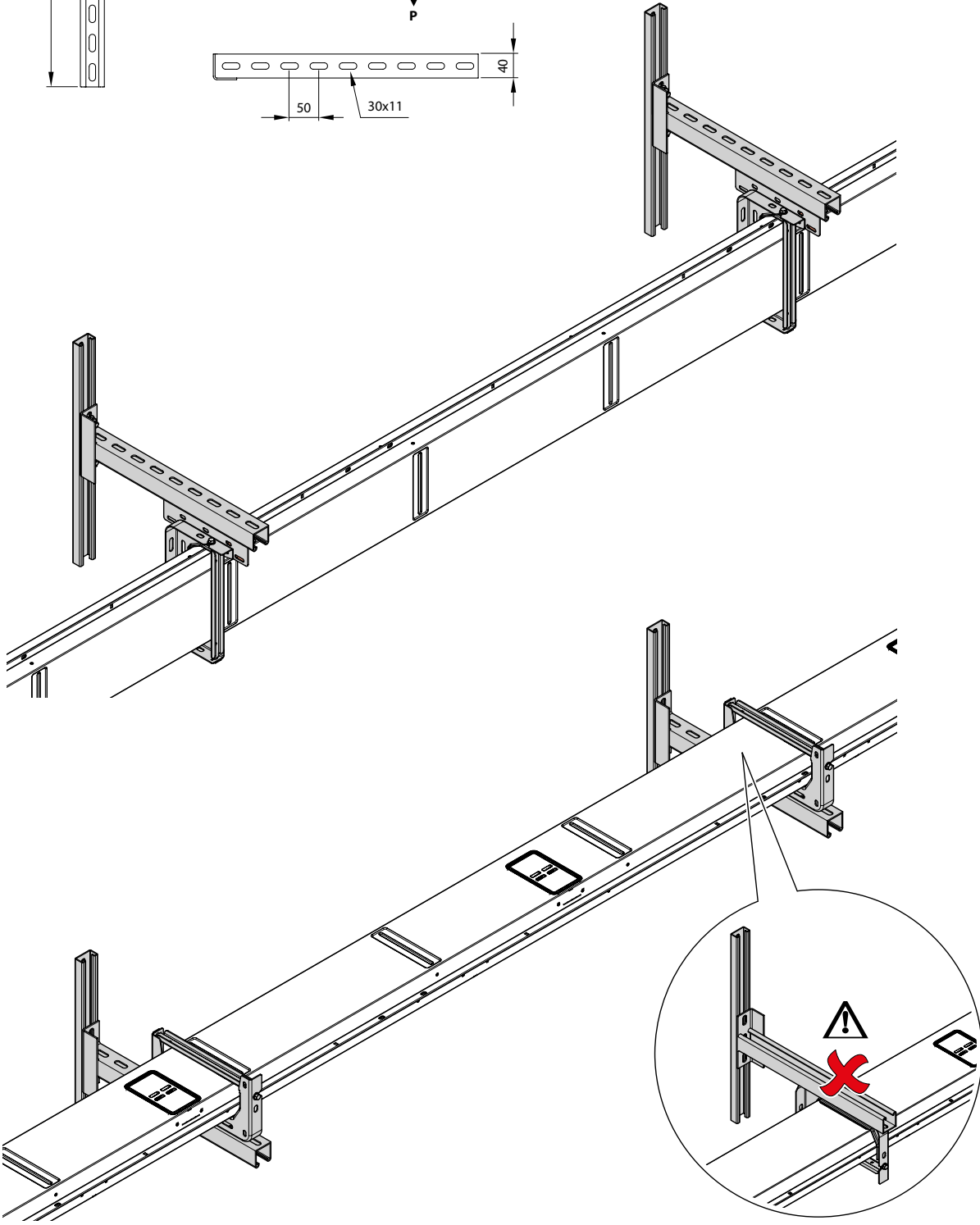
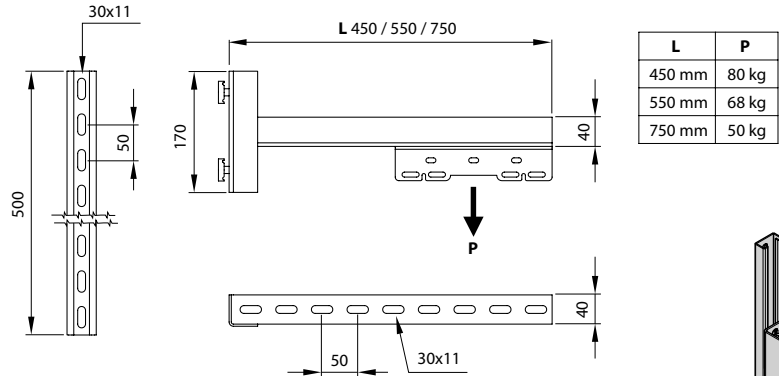
C



3. Installation

D





Note
For flat line mounting, use the suspension brackets facing up.

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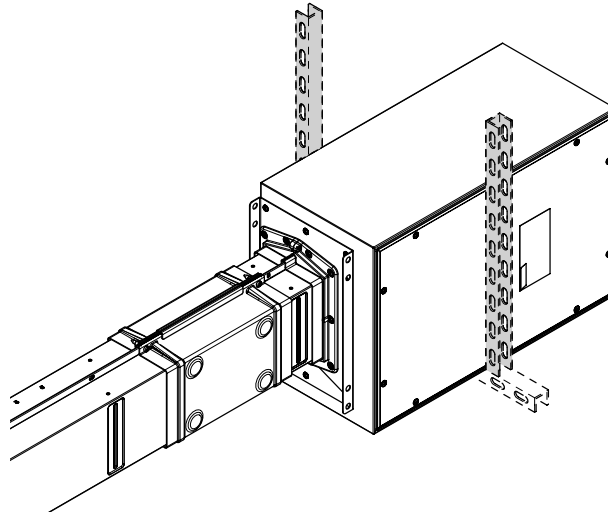
3. Installation



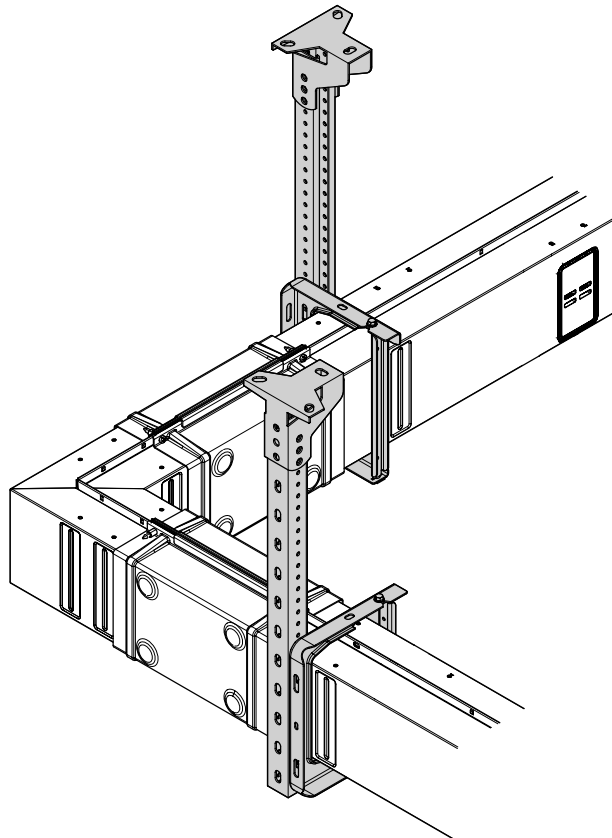
WARNING

All the dihedral angle components must be supported at the point of the change of direction.

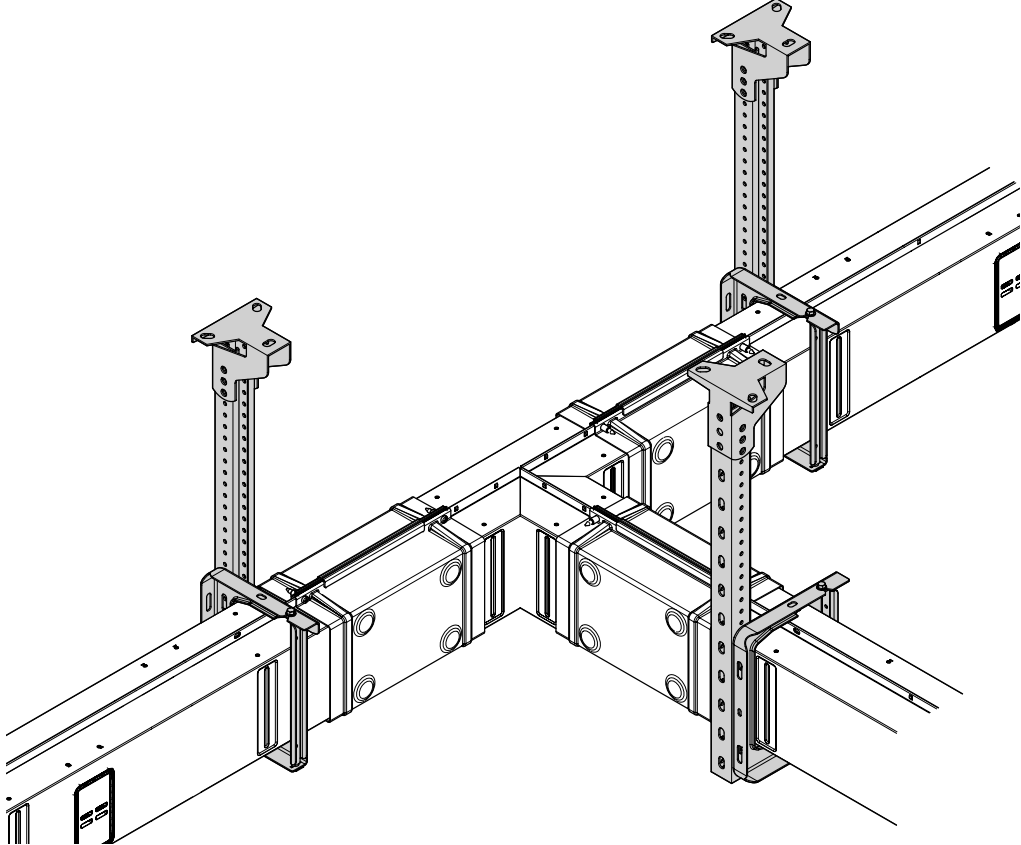
Use dedicated supports for components at the terminal ends of the path.
Be aware to have enough space to connect cables by customer.



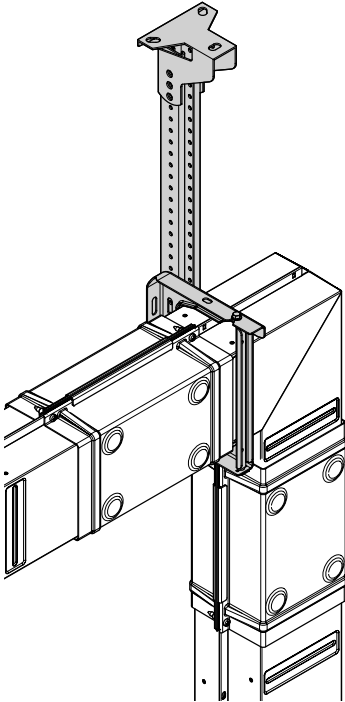
Supports for flatwise elbows components



Supports for T components



Supports for edgewise elbow components with a vertical branch
Follow these rules to support edgewise elbows with a vertical branch.



3. Installation

3.2 Installation of wall supports

3.2.1 Installation sizes, distances and positioning logics

Below are some precautions that may be useful to avoid problems during the assembly, which we recommend should be taken into account during the design.

Minimum distances from the structure

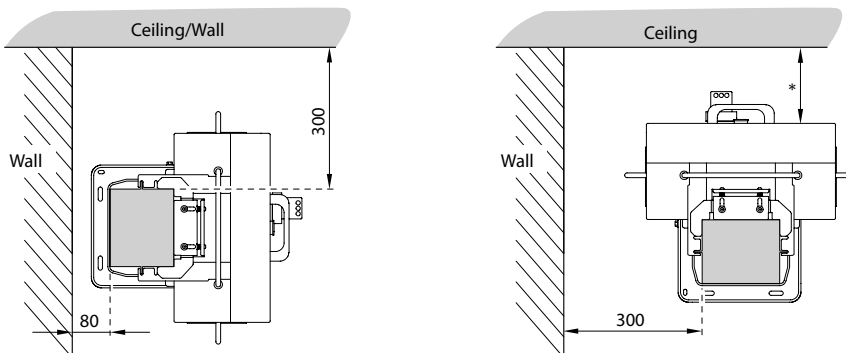
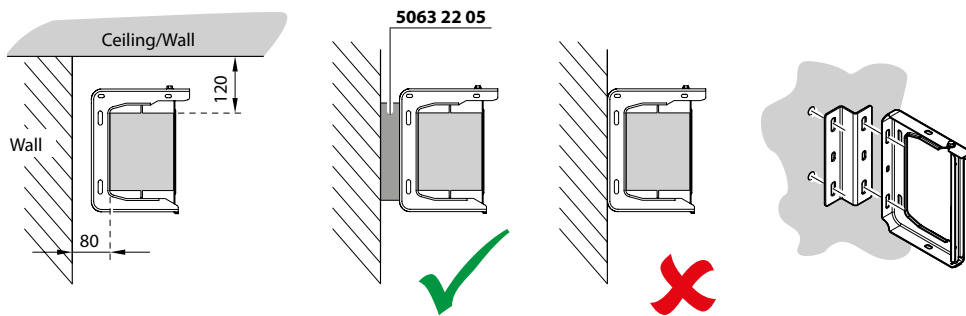
The minimum distance from the walls, to avoid problems during edgewise installation of the busbar, is 80 mm.

The variables that must be taken into account for correct assembly are:

- position of the bolt for tightening the Monobloc; the minimum required distance is 120 mm;
- sizes of the distribution element (box) selected for the collection of power (at least 300 mm);
- any brackets and their assembly;
- accessibility to the screws for the installation of the brackets and the closing of the junctions;
- any material required for the actual installation in order to compensate for wall imperfections.

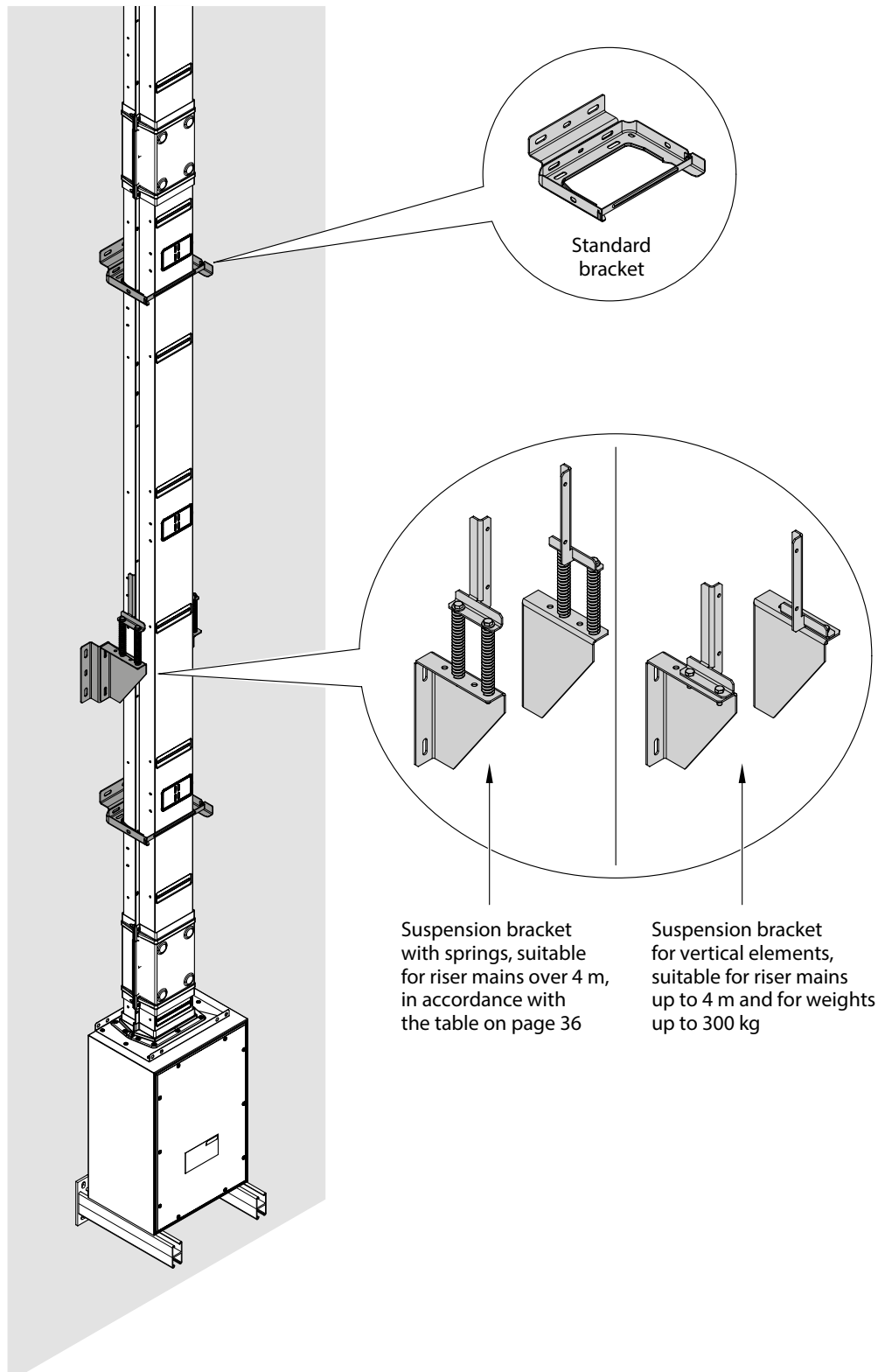
In case of rising mains installation, if the system does not require fire barriers, the bracket supporting can be directly secured to the wall. Otherwise, allow for a spacing support between the bracket and the wall, to ensure that the back of the busbar remains at a distance of 100 mm from the wall, therefore ensuring enough space for the positioning of the fire barriers.

Minimum distance of the wall / ceiling elements



* When there is a tap-off box installed above the busbar, check the overall dimension of the open cover of the tap-off unit used in the specific section.

3.3 Detailed instructions for vertical installation



Suspension bracket with springs, suitable for riser mains over 4 m, in accordance with the table on page 36

Suspension bracket for vertical elements, suitable for riser mains up to 4 m and for weights up to 300 kg

When installing a vertical busbar, strictly follow the instructions below:

- 3.3.1 Definition of the maximum distance (D_{max}) between two subsequent brackets with springs
- 3.3.2 Wall and busbar drilling. Fixing the brackets to the wall
- 3.3.3 Busbar mounting in line

ZUCCHINI

3. Installation

3.3.1 Definition of the maximum distance (Dmax) between two subsequent suspension bracket with springs

Depending on the capacity of the busbar, the quantity and the type of brackets being installed, checked that the selected distance (D) is the same or less than the maximum distance (Dmax) between two subsequent bracket with springs.

XCM AL (4 Conductors)	
In [A]	D max [m]
160	19
250	19
315	18
400	15
500	14
630	13
800	13
1000	12

XCM AL (5 Conductors)	
In [A]	D max [m]
160	19
250	18
315	17
400	15
500	13
630	12
800	12
1000	11

XCM CU (4 Conductors)	
In [A]	D max [m]
250	17
315	16
400	13
630	10
800	9
1000	8

XCM CU (5 Conductors)	
In [A]	D max [m]
250	16
315	15
400	12
630	9
800	8
1000	7

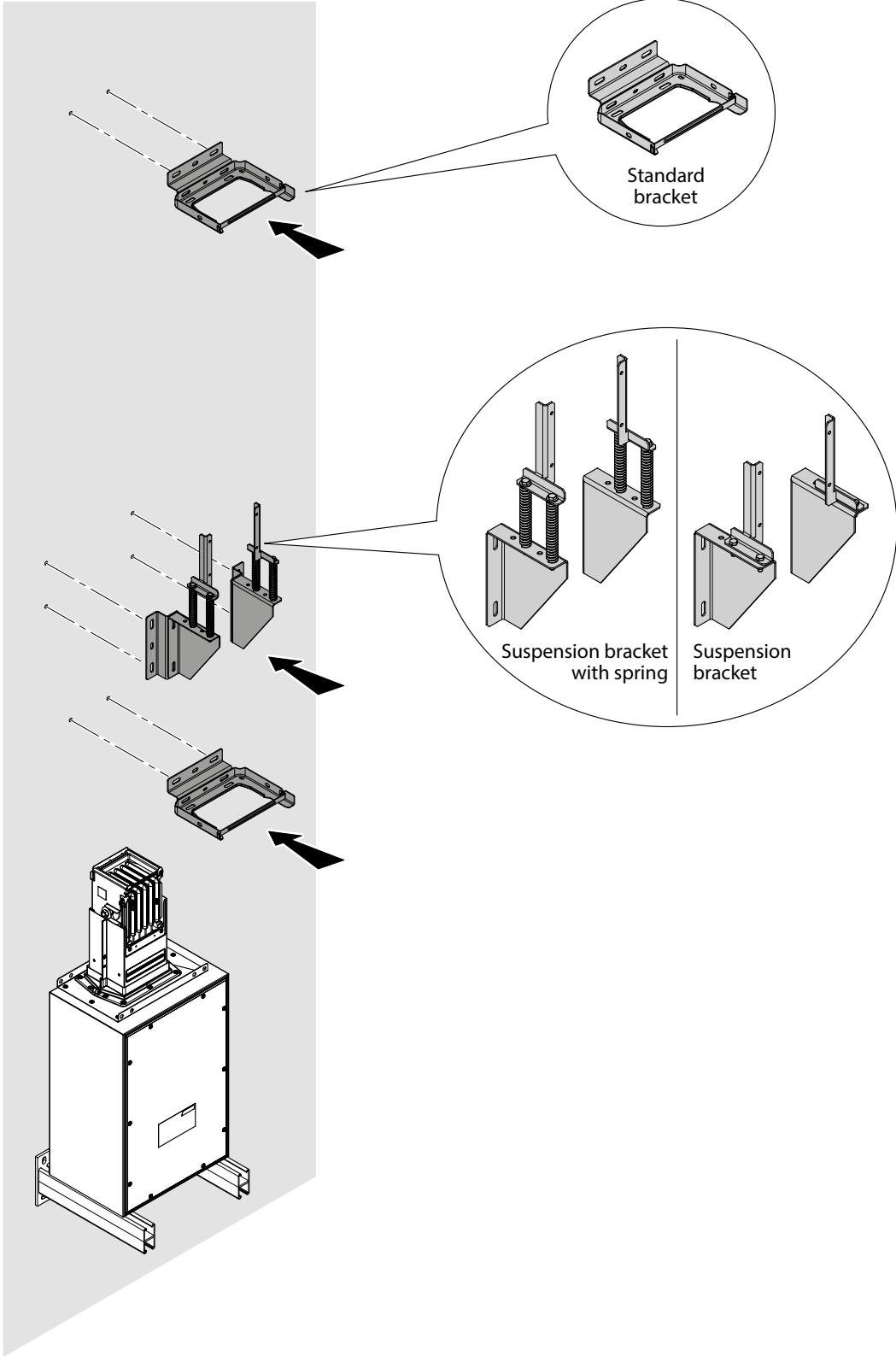
Note

N.B. The max load applicable to the brackets is 300Kg.

The values in the table have been calculated taking into consideration, in addition to the weight of the busbar, also the estimated weight of the accessories (25Kg for each element).

3.3.2 Wall and busbar drilling. Fixing the brackets to the wall

Drill the required floor and wall holes for fixing all the brackets



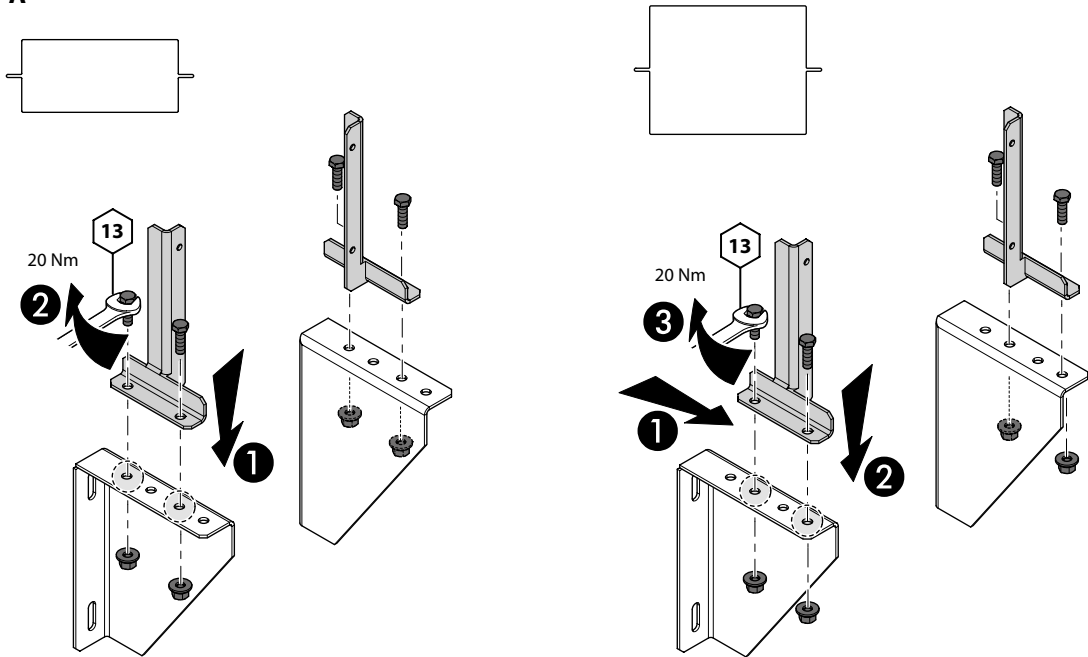
Below are the procedures for drilling the holes for each type of bracket.

3. Installation

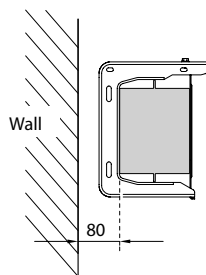
3.3.2.1 Pre-assembly of the wall brackets

Suspension bracket 50403711

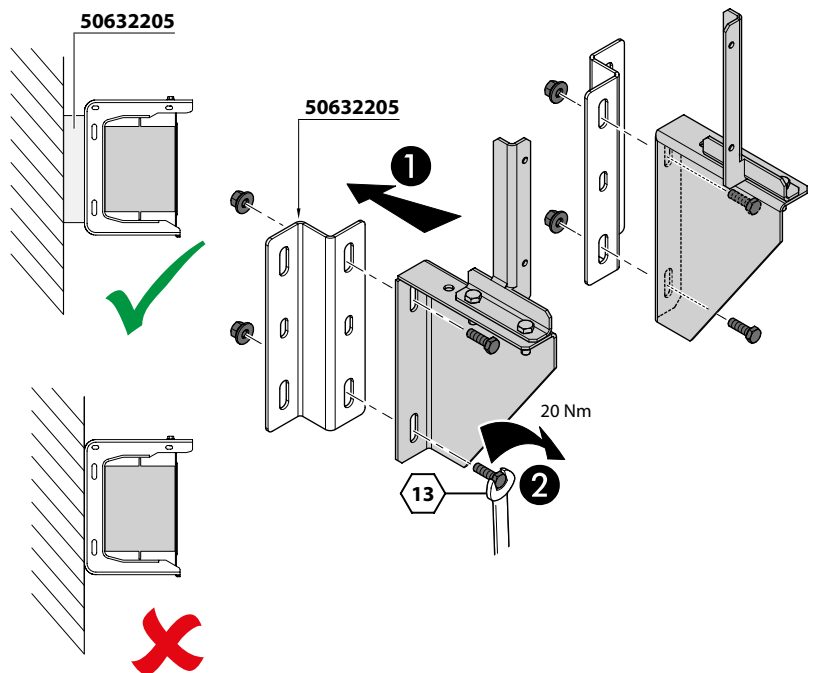
A



B

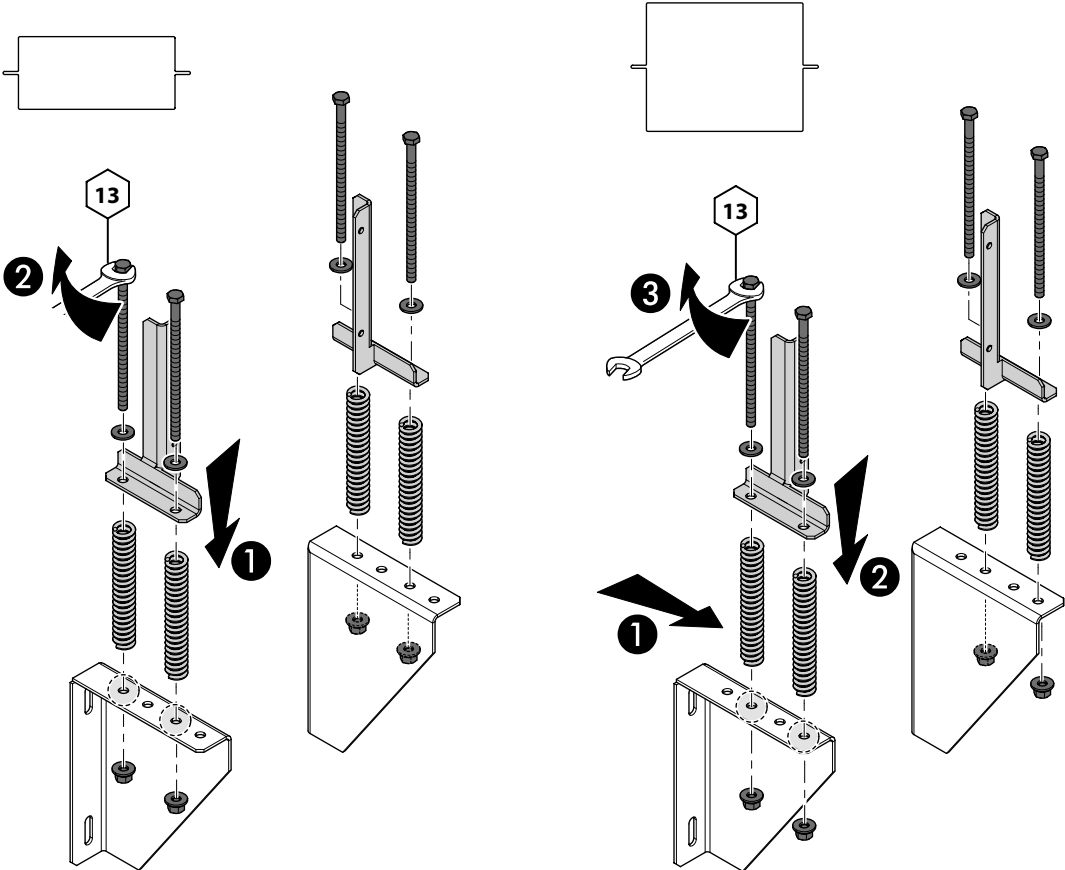


C

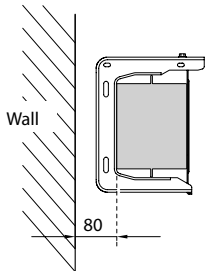


Suspension bracket with springs 50403712

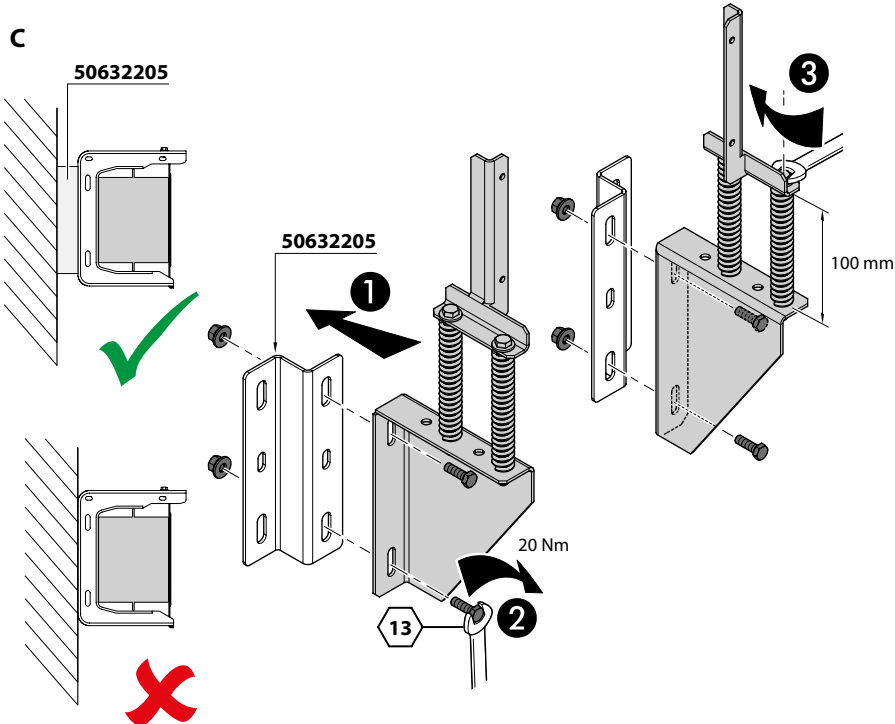
A



B



C

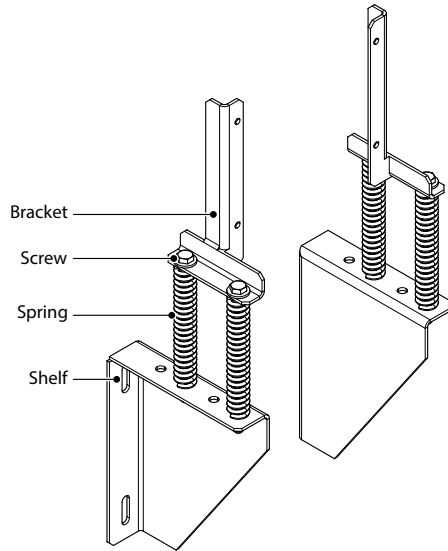


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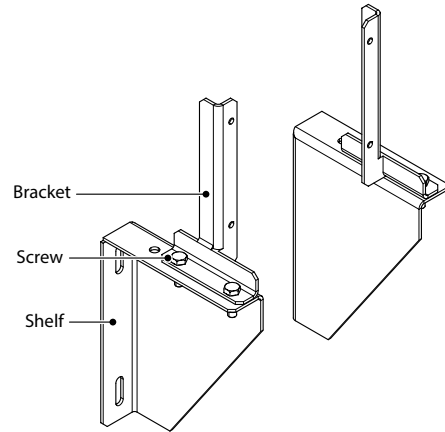
3. Installation

3.3.2.2 Wall brackets

Suspension bracket with spring



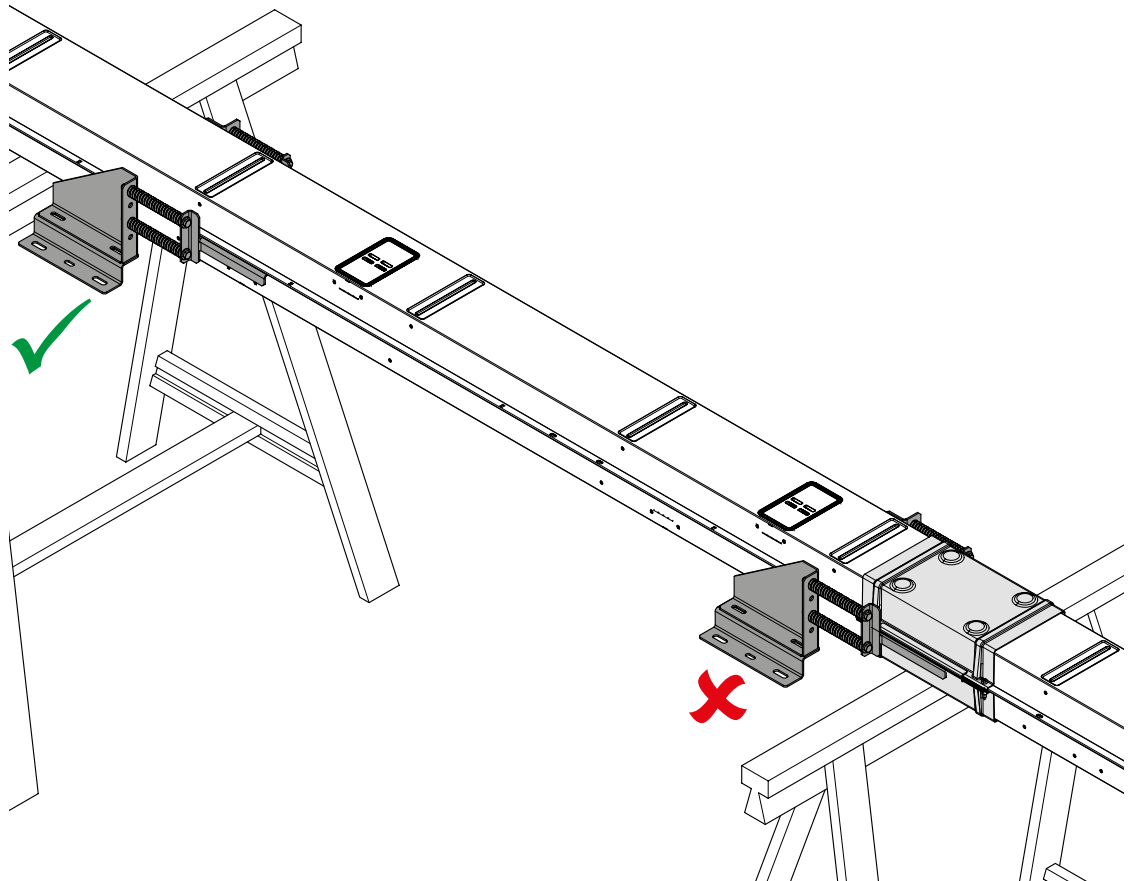
Suspension bracket



WARNING

Refer to the diagram on page 83.

1) Set the bracket position on the busbar.



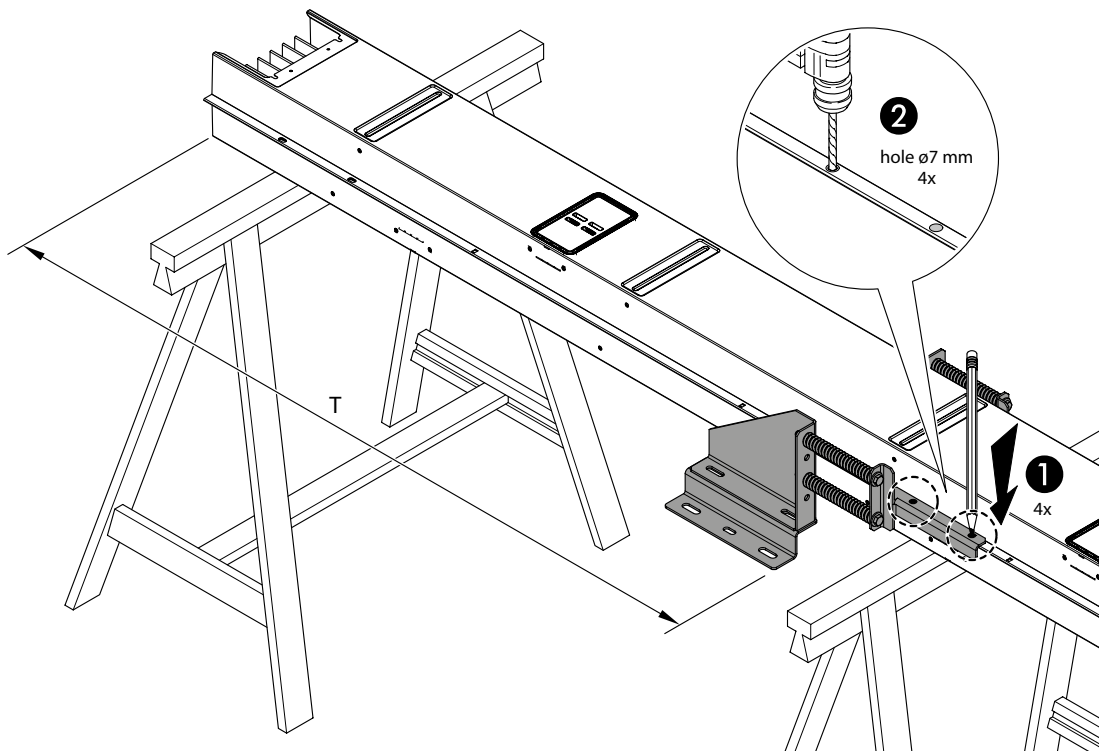
2) Place the bracket on the busbar in the fixing position and mark the element in the 4 points where to drill.

Suspension bracket with springs

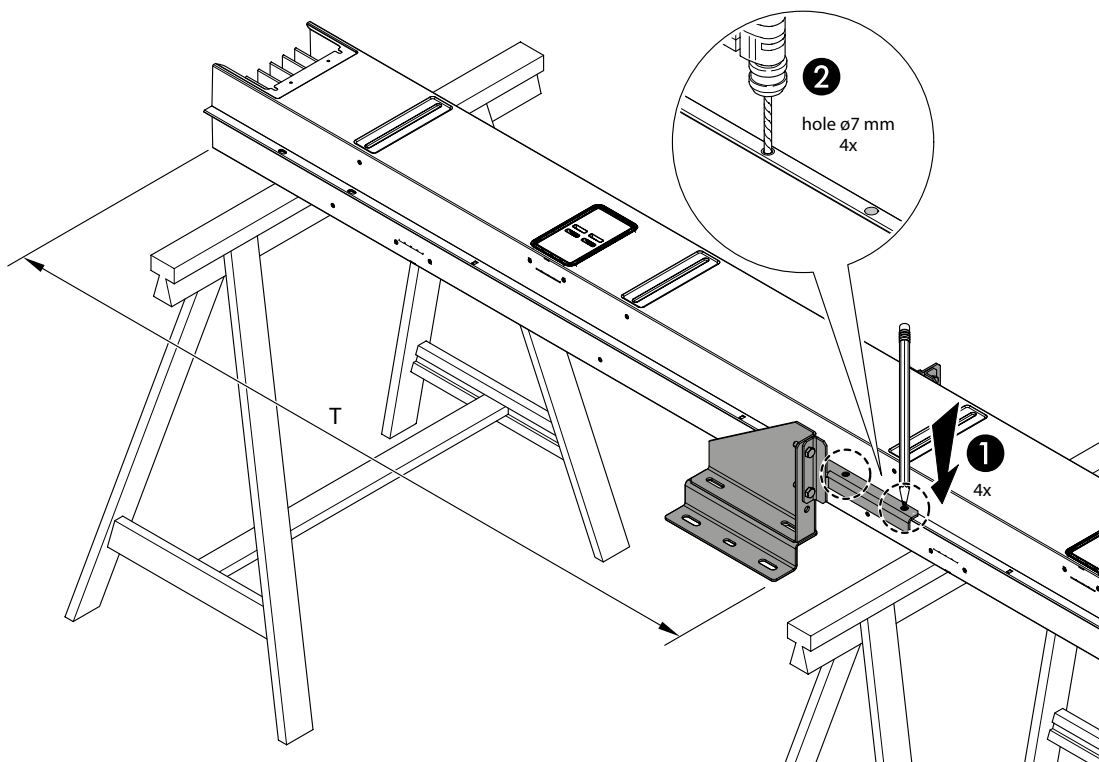
3) Measure the distance T from the upper side of the shelf to the lower end of the busduct.

⚠ WARNING
The measurement must be taken from the longer side plate and not from the bars

4) Drill the busbar at the four marks just made



Suspension bracket

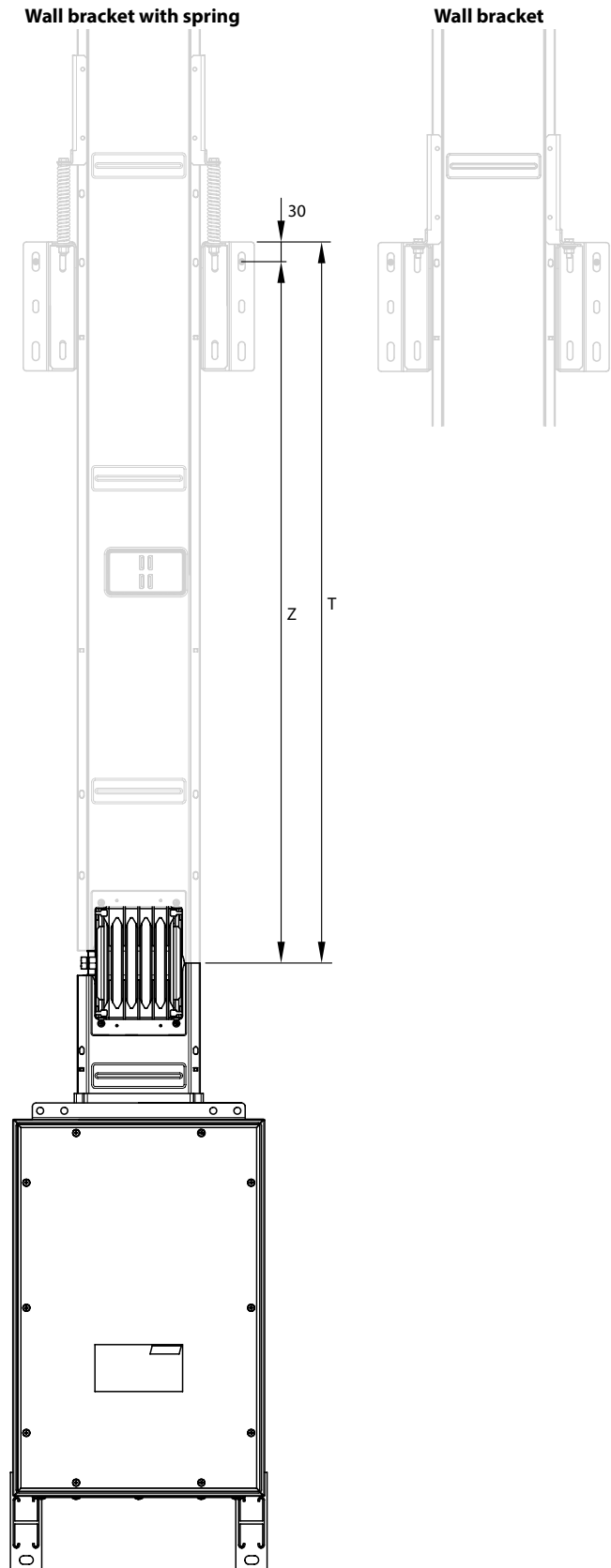
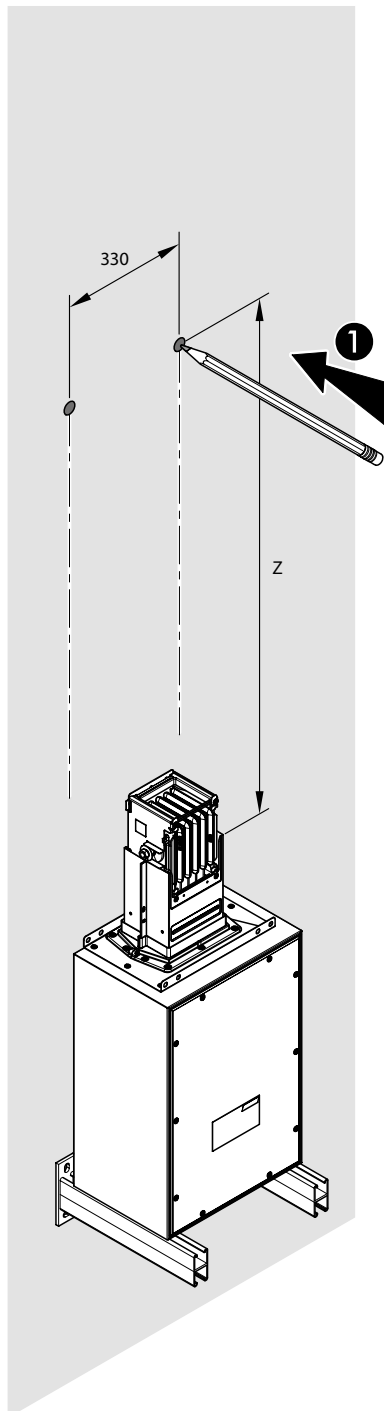


3. Installation

5) On the wall, mark the position Z of the two upper holes of the shelves (indicated in the magnified view), calculated as follows:
 $Z = T - 30$
(measurements in millimeters).

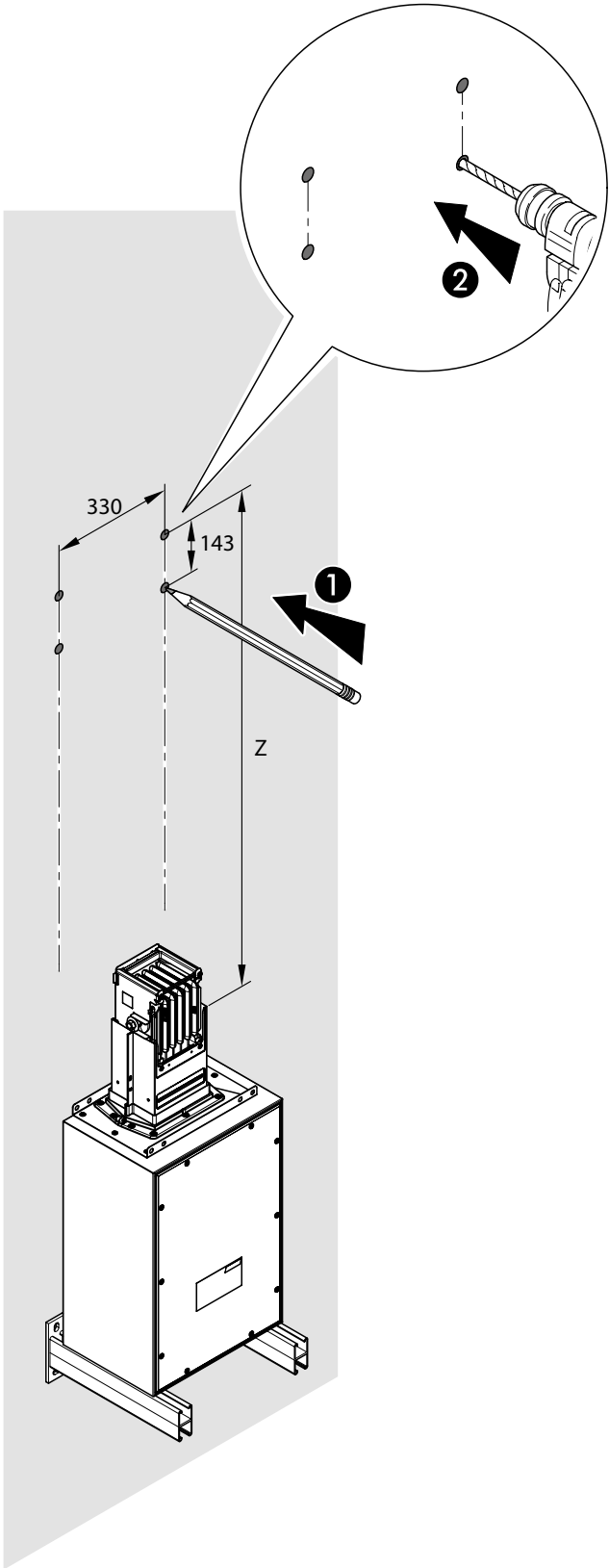
⚠ WARNING
Check that the hole marks are aligned with the busbar

⚠ WARNING
The Z dimension must be measured from the long side plate of the already installed adjoining busbar.

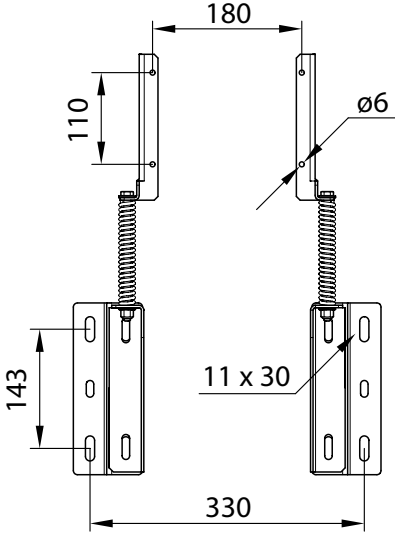


6) On the wall, mark the position of the bottom holes of the shelves, in accordance with the values below

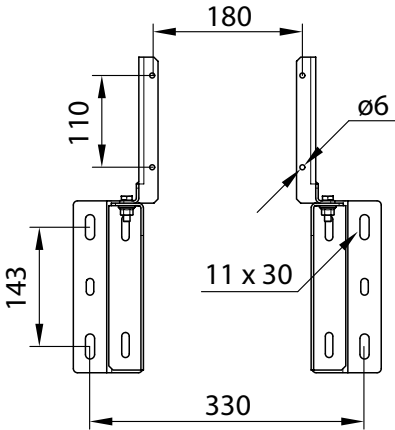
7) Drill the holes at the marked positions. Check that the hole marks are aligned with the busbar



Wall bracket with spring



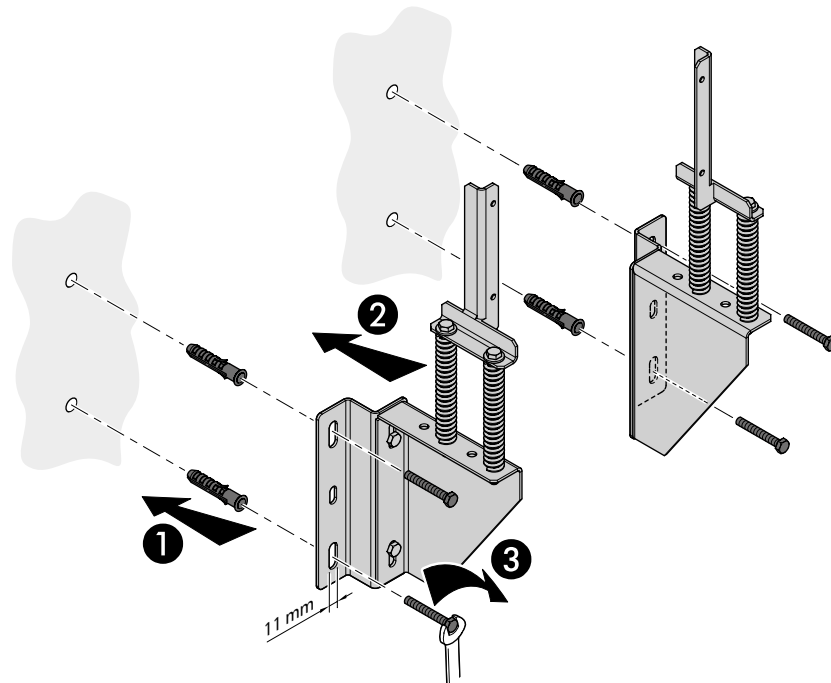
Wall bracket



ZUCCHINI

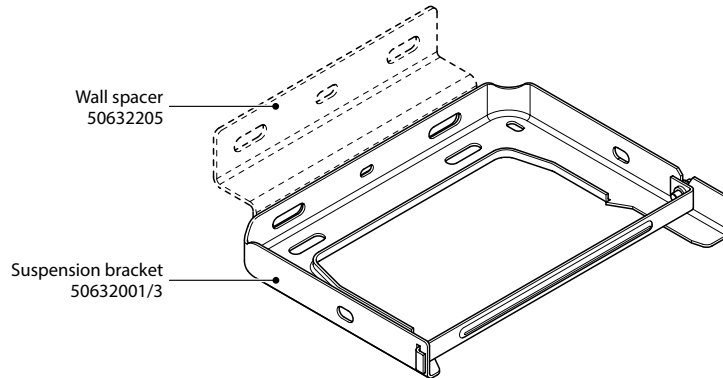
3. Installation

8) Match the brackets with the holes previously drilled on the wall and fix them with the screws



3.3.2.3 Standard bracket

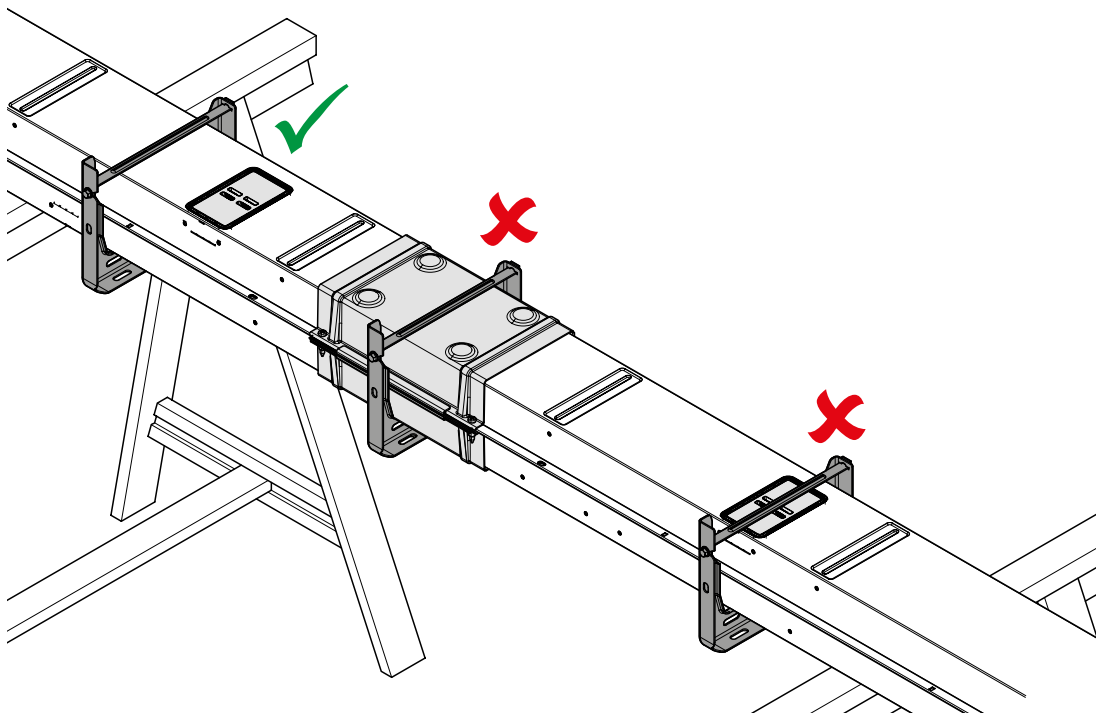
The wall spacer (50632205), required when the bracket needs to be fixed directly to the wall (40mm), is not supplied but must be requested when ordering.



- 1) Set the bracket position on the busbar.



WARNING
Refer to the diagram on page 83.

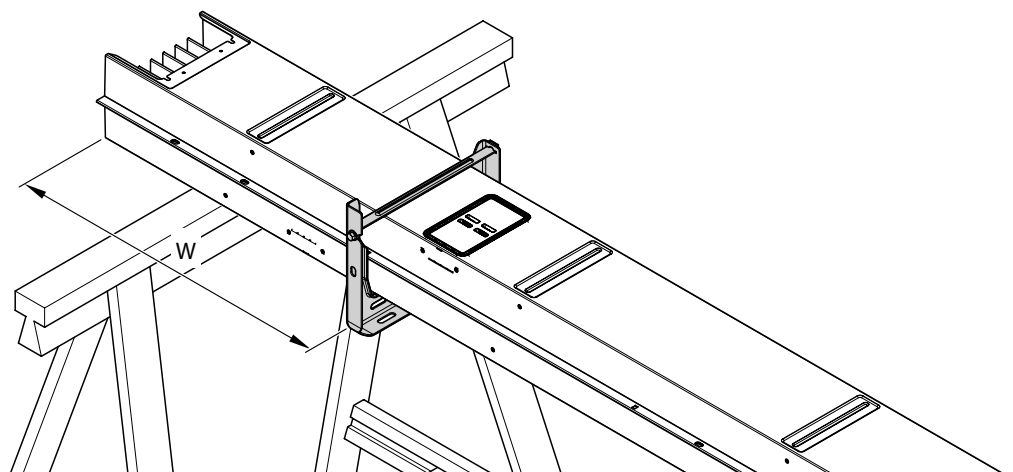


- 2) Place the bracket on the busbar and mark its upper side.

- 3) Measure the distance W from the mark just made to the bottom cap of the busbar.



WARNING
The measurement must be from the busbar cap and not the bars.



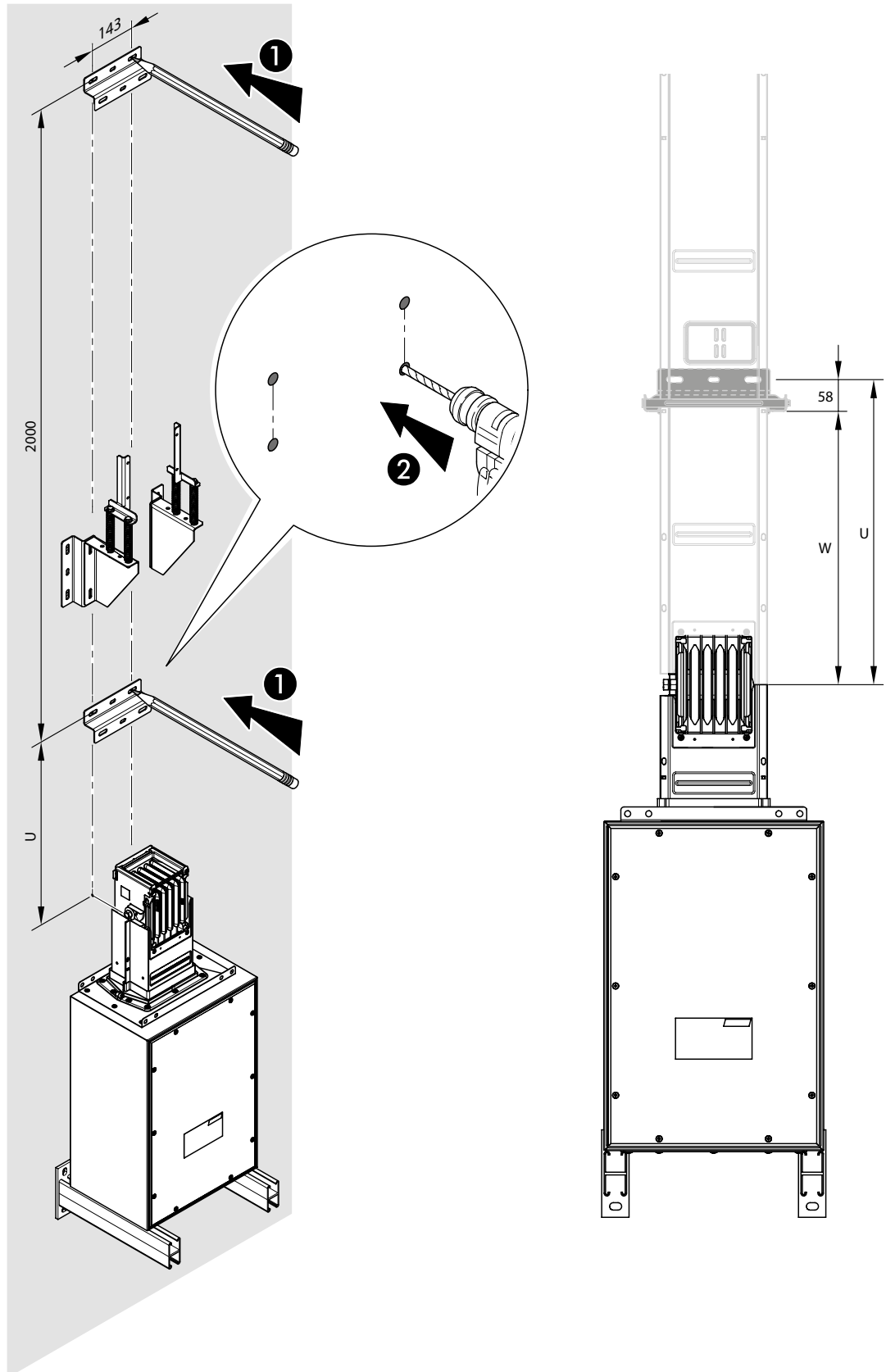
ZUCCHINI

3. Installation

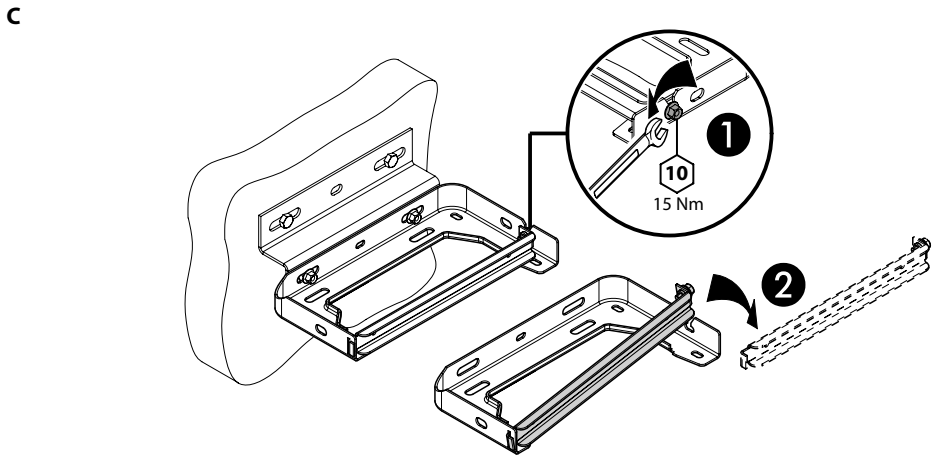
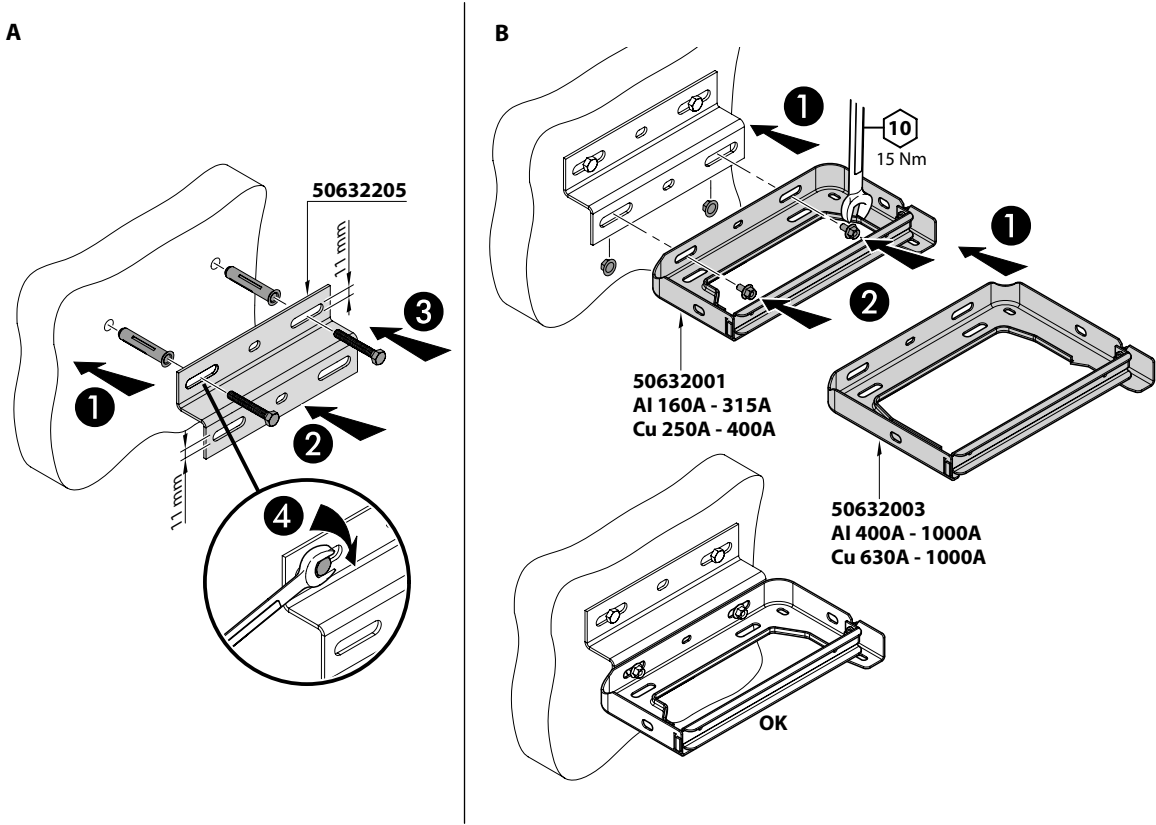
4) On the wall, mark the position U for fixing the wall spacer, calculated as follows:
 $U = W + 58$
(measurements in millimeters).

⚠ WARNING
The U value must be measured from the upper cap of the already installed adjoining busbar.

5) Drill the holes at the marked positions.



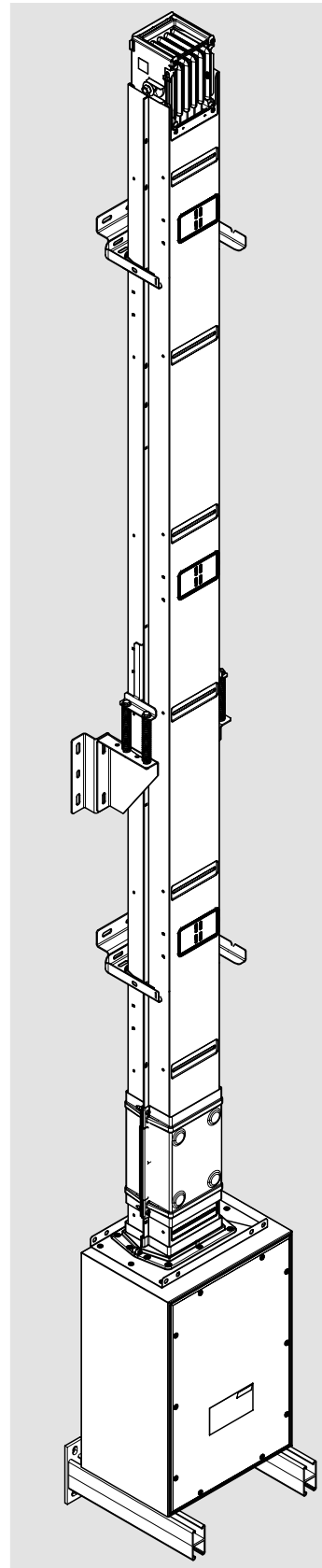
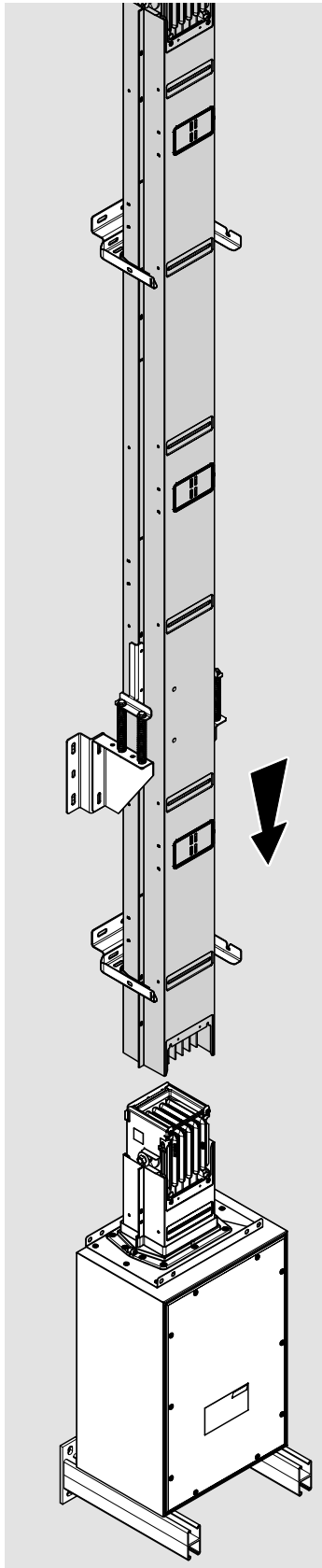
6) Fix the wall spacer to the wall and attach the bracket to it



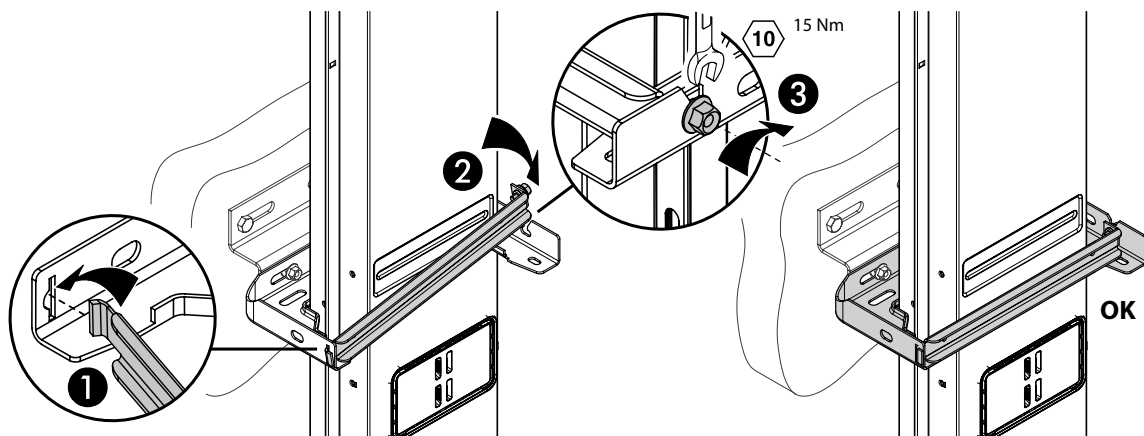
3. Installation

3.3.3 Busbar mounting in line

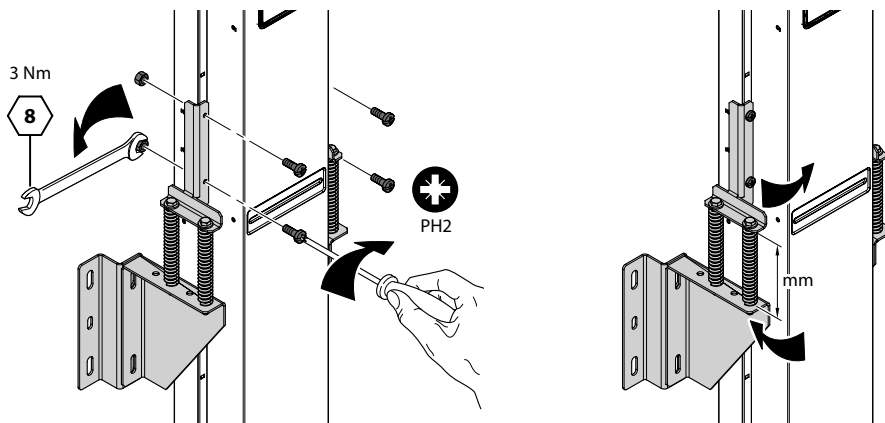
1) Position the element on the wall and make the connection between the two elements, observing the assembly sequences shown in the reference instruction



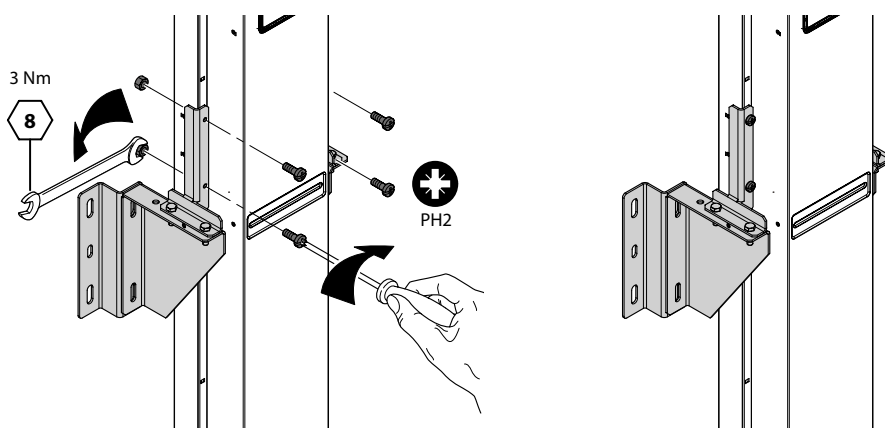
2) Close the suspension brackets, previously fixed to the wall, by inserting the special plate and locking it with the supplied screw, as shown below:



3) Hook the suspension brackets to the holes previously made on the element, using the appropriate screws provided in the kit (tightening couple 3 Nm)



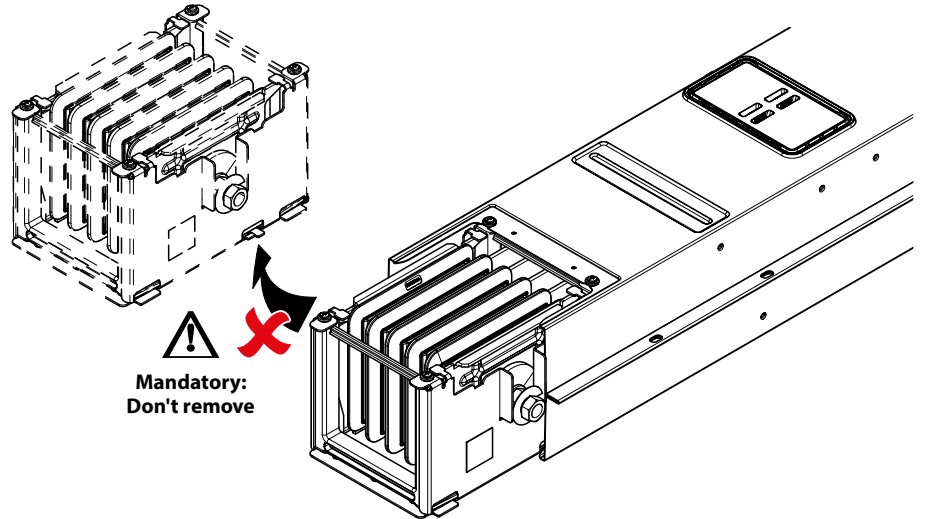
4) For brackets with springs, unscrew the spring nuts



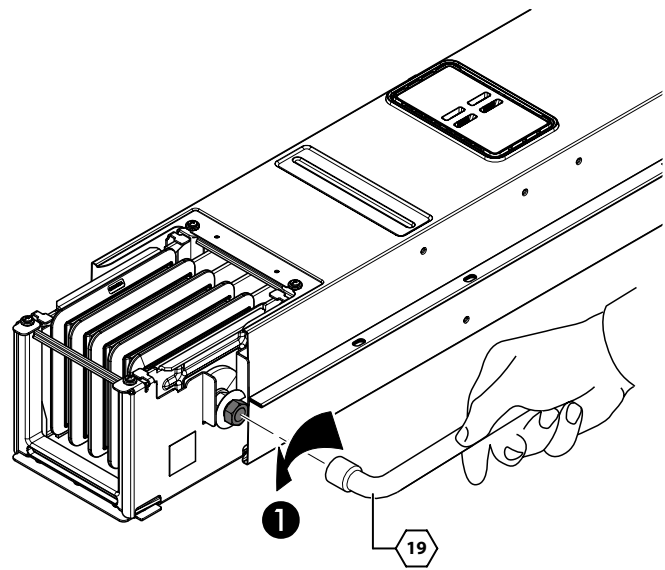
⚠ WARNING
The nut must be fully unscrewed, therefore releasing the springs

3. Installation

3.4 Joint installation

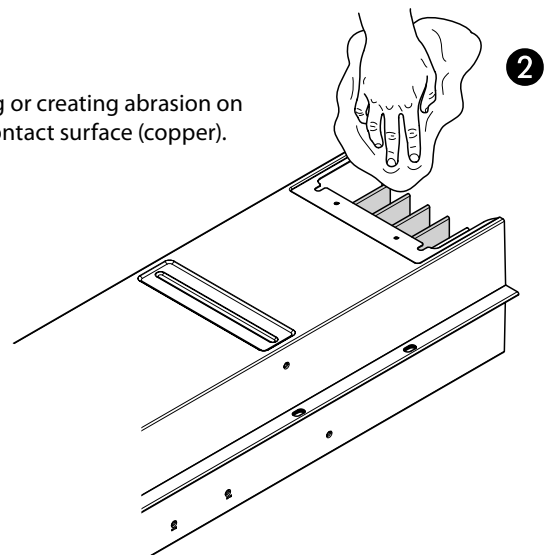


Mandatory:
Don't remove

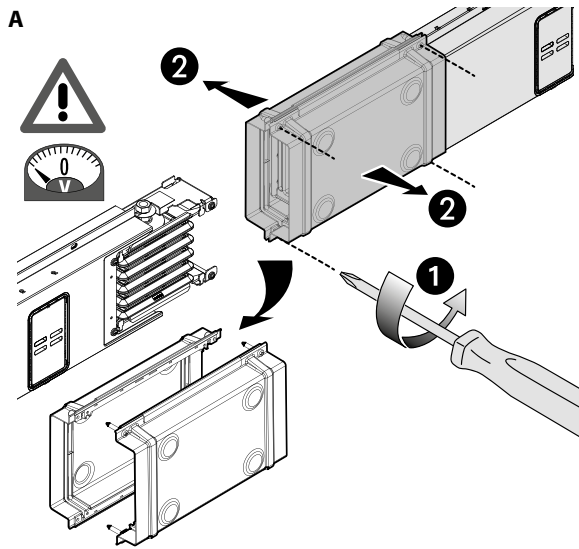
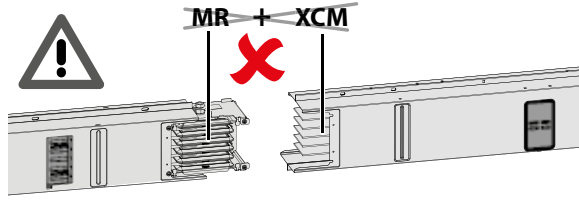


! WARNING

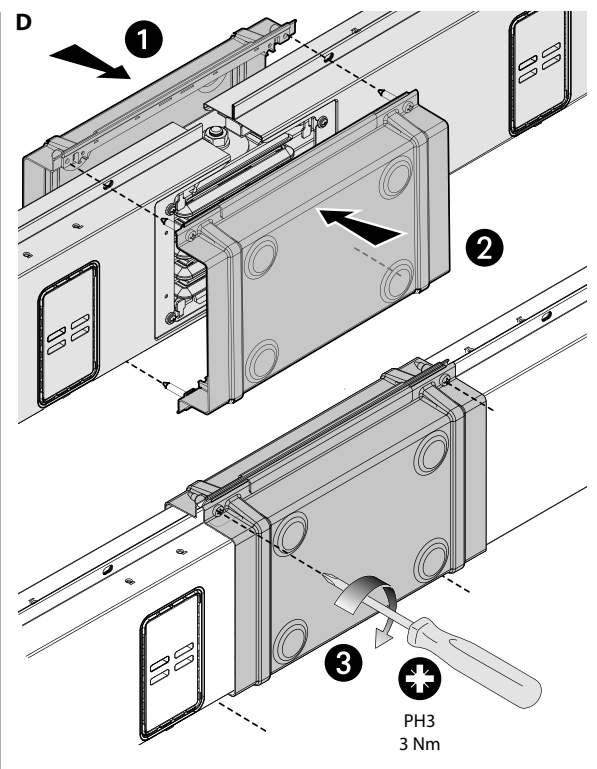
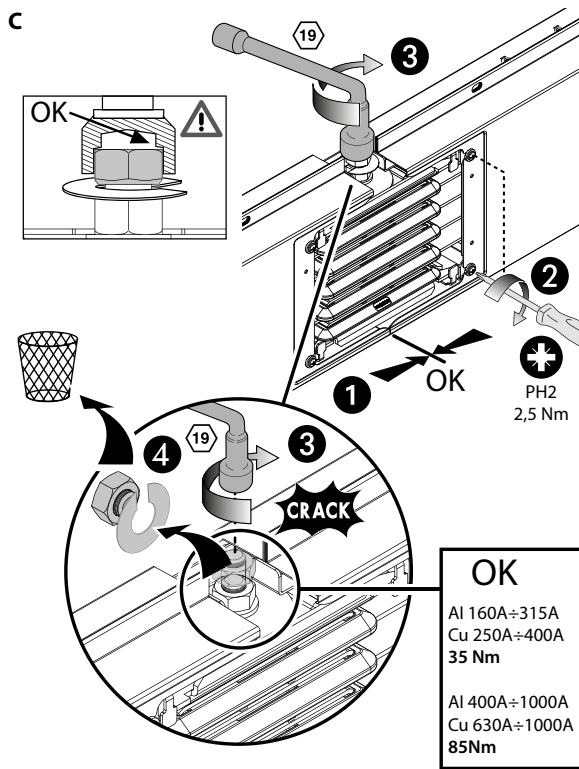
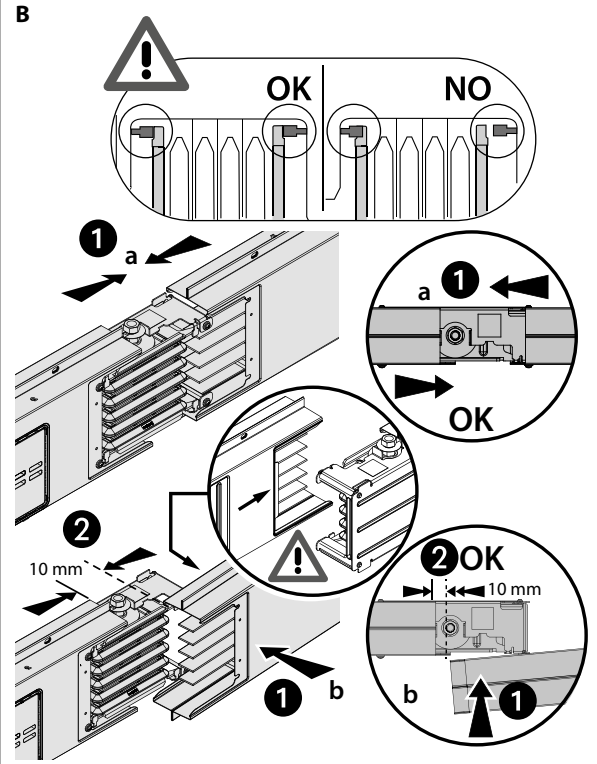
Remove residues with mild reagents not corroding or creating abrasion on surface treatment (zinc, tin, silver coating) or on contact surface (copper).



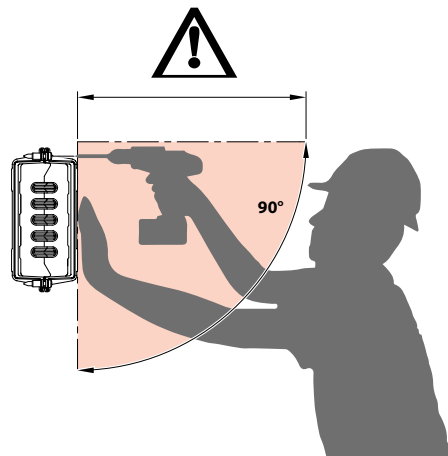
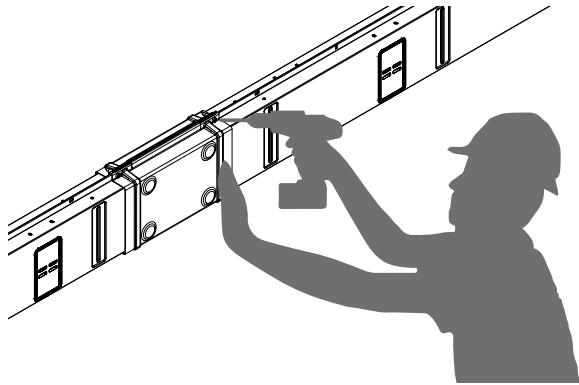
 **DANGER**



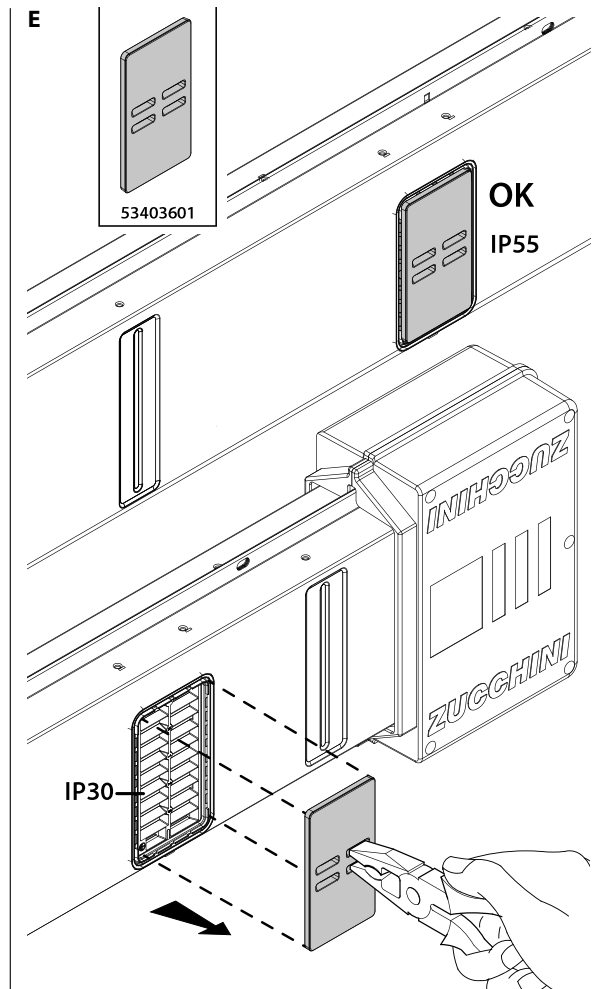
Note for b.
Only for straight elements with special length.



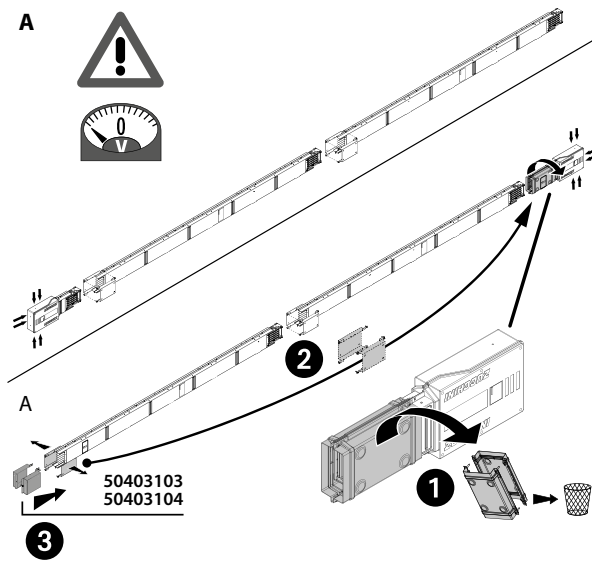
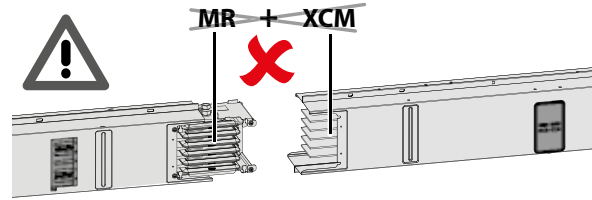
3. Installation



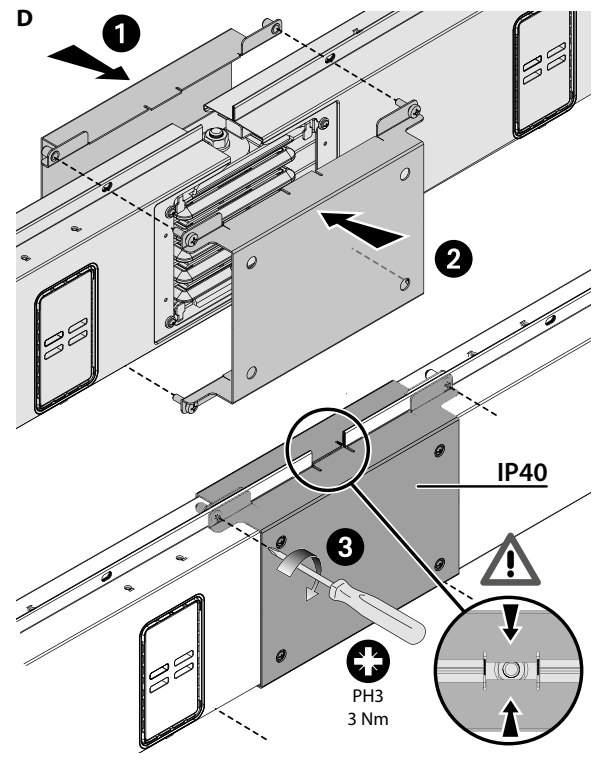
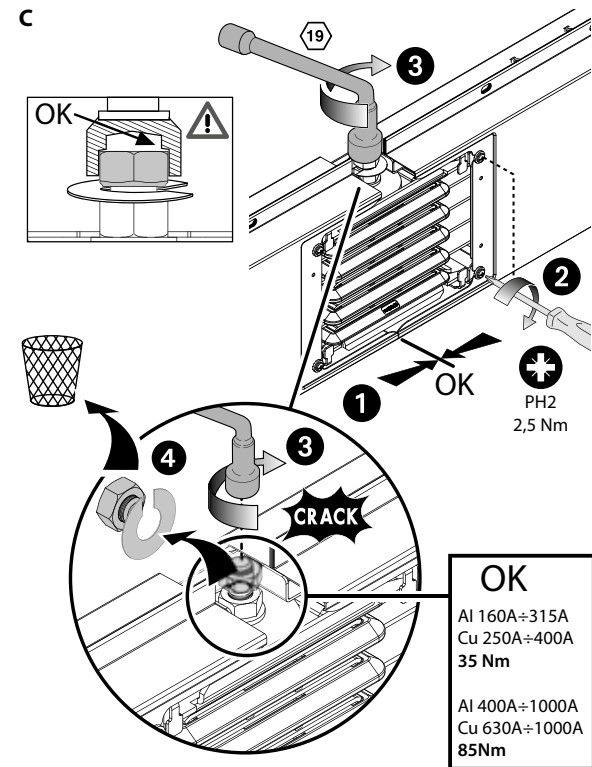
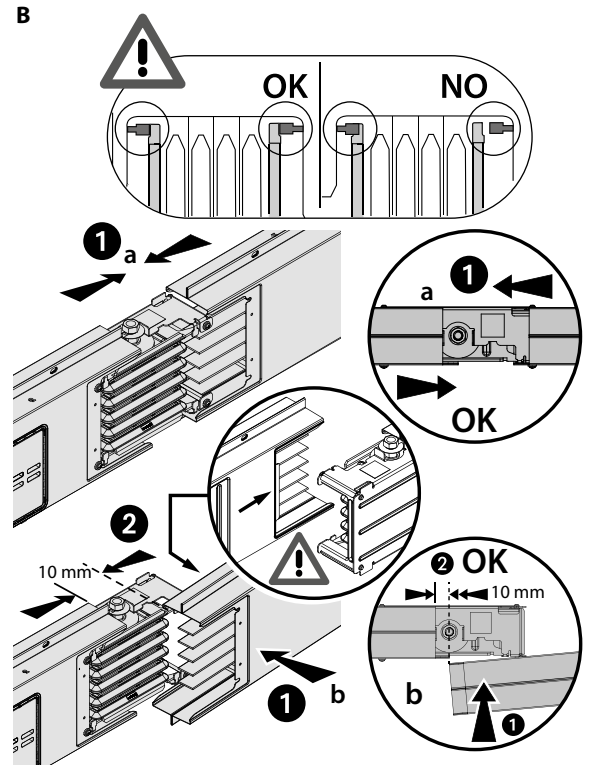
Leave enough free space in front of the flanges to hold the screwdriver correctly when installing the screws.



3.5 Data center Straight element (IP40)



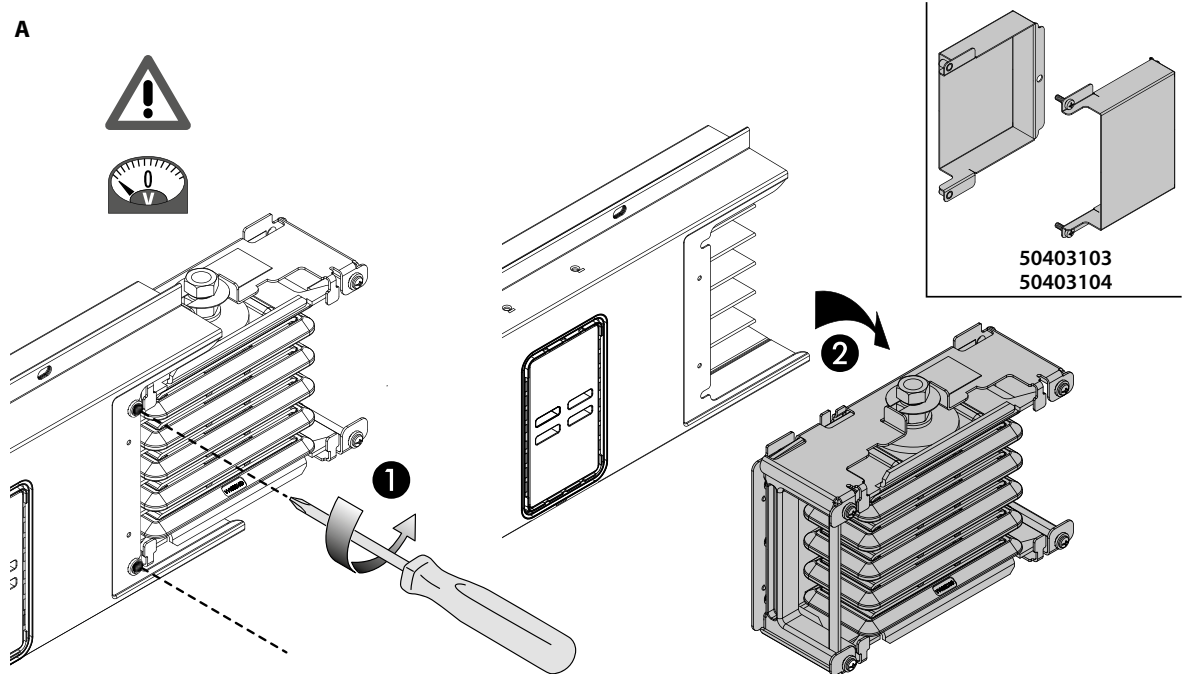
Note for b.
Only for straight elements with special length.



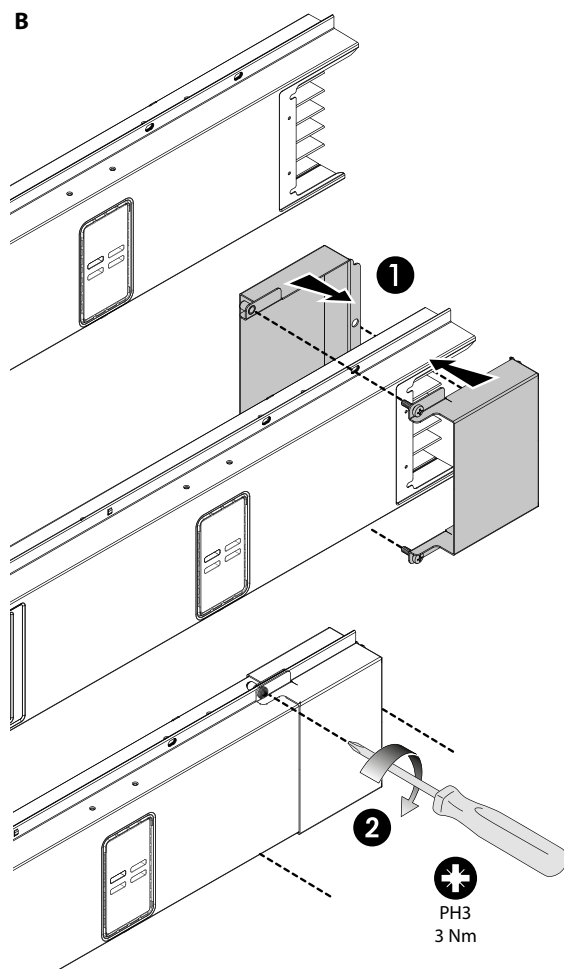
3. Installation

Data Center Straight Element (IP40).

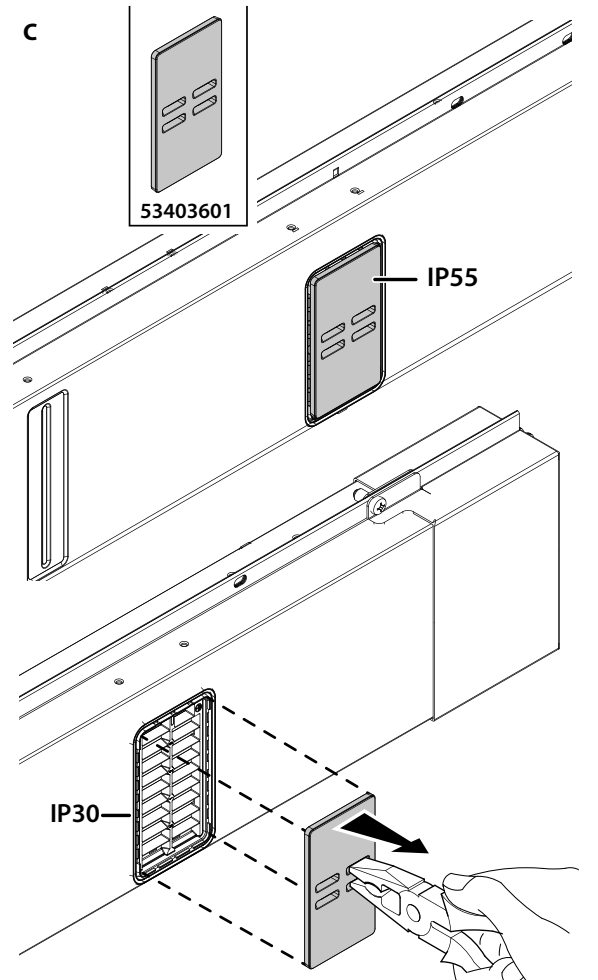
A



B



C





DANGER

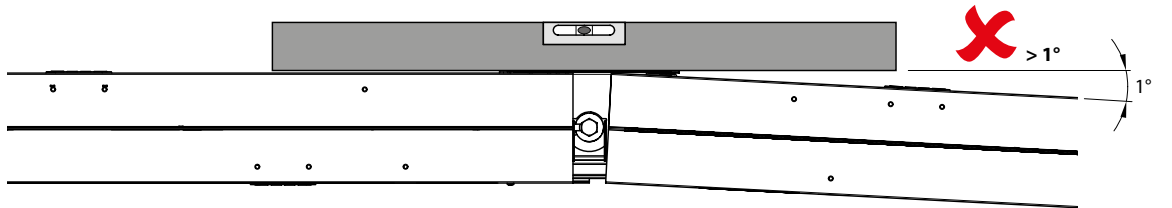
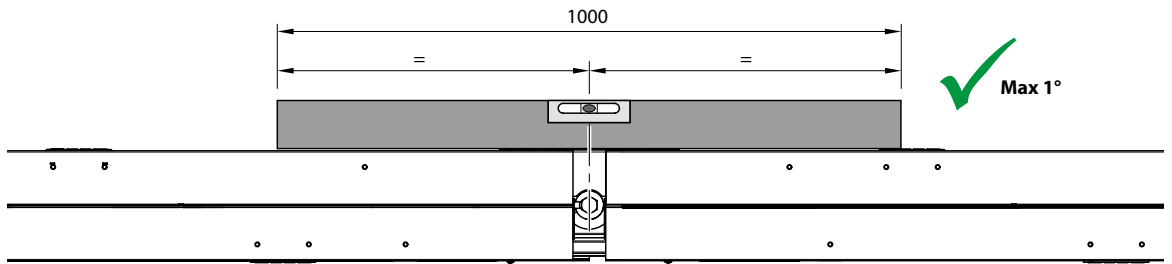
LOSS OF IP55 PROTECTION RATING

The path components must be correctly aligned.

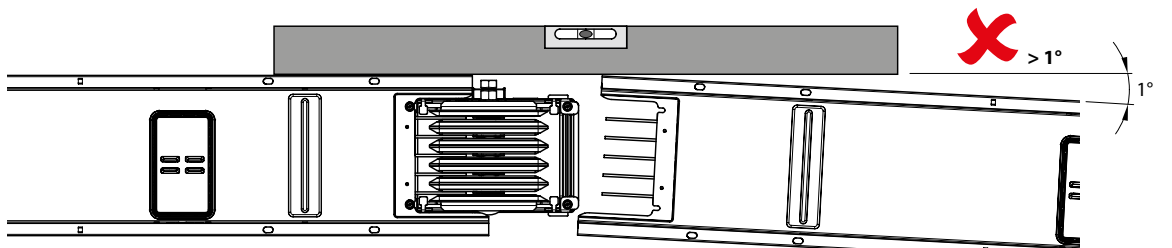
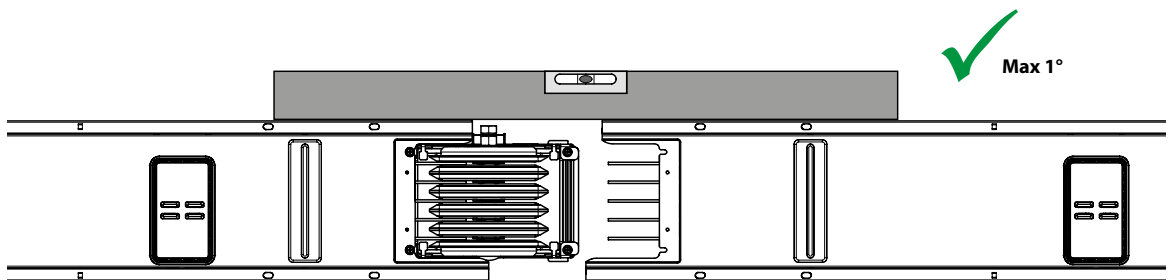
Failure to follow these instructions can result in equipment damage.

The alignment must be checked on both sides of the path components:

Check the alignment on the loop of the run components:



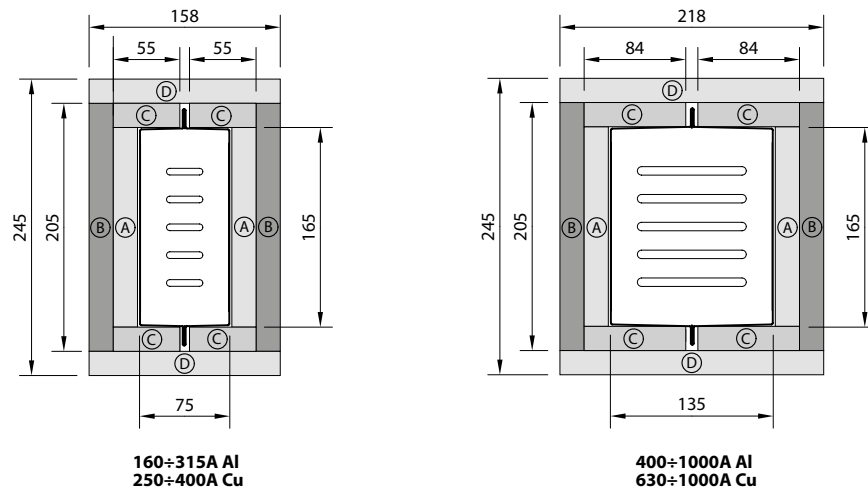
Check alignment on the side of the run components:



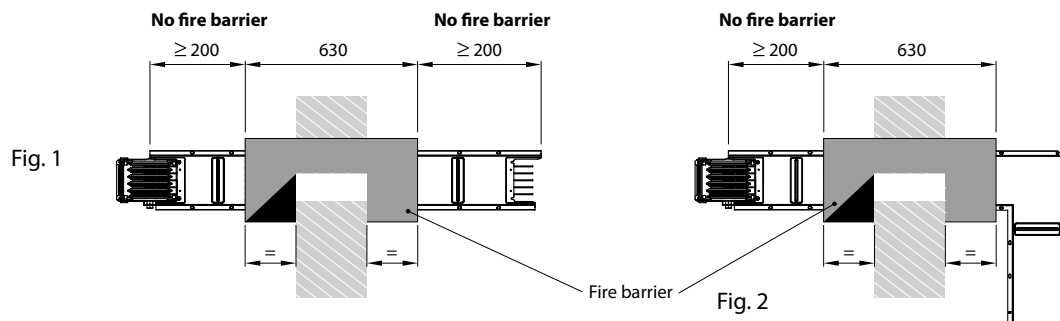
3. Installation

3.6 Fire barrier installation

Fire barrier elements EI (EN 1366-3)



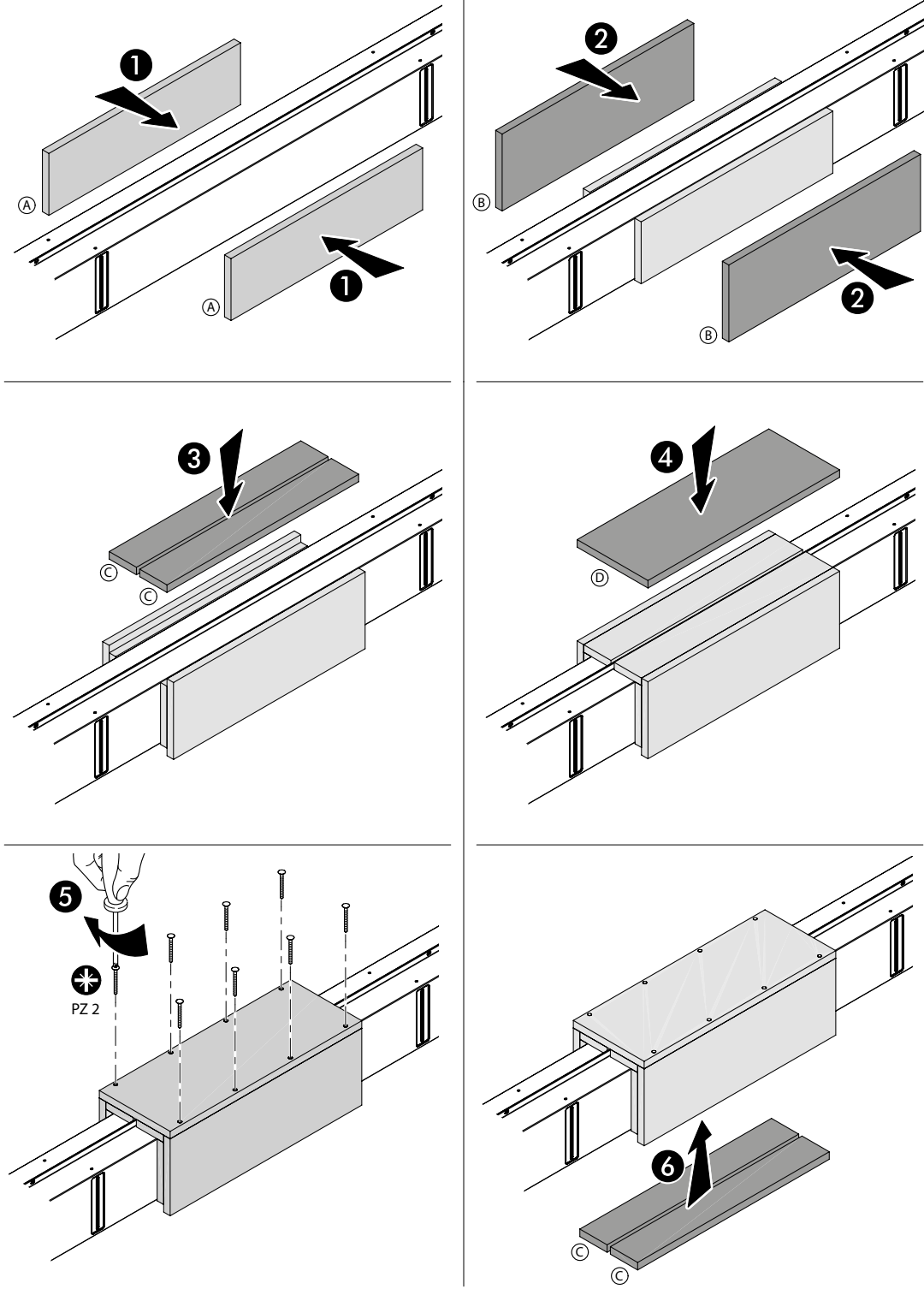
In order to ensure the maximum resistance class it is necessary to fit at the factory an internal fire barrier. It is therefore necessary to indicate at the order stage what elements will cross fire resistant walls or ceilings.



The external fire barrier can be used on any trunking component in compliance with the operating instructions specified in figures 1 and 2.

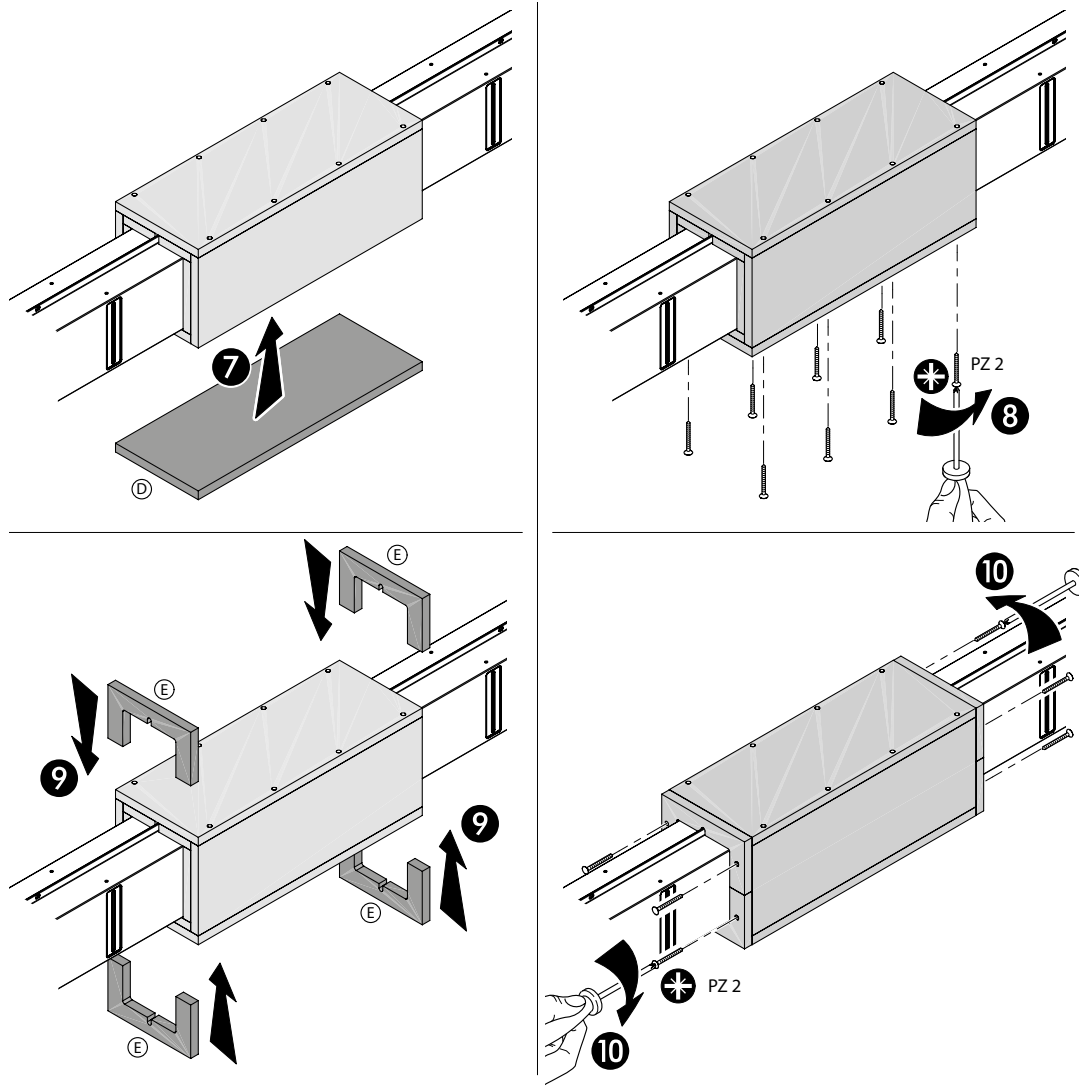
Refer to
Best Practice
Paragraph 4.2.

Horizontal assembly



ZUCCHINI

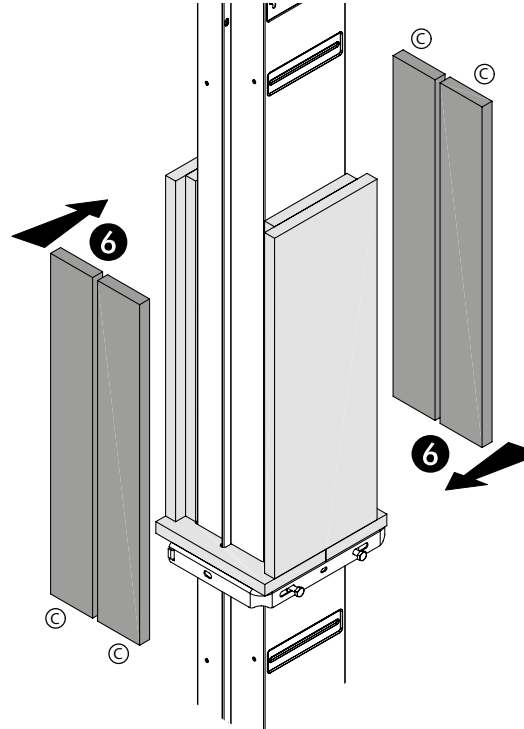
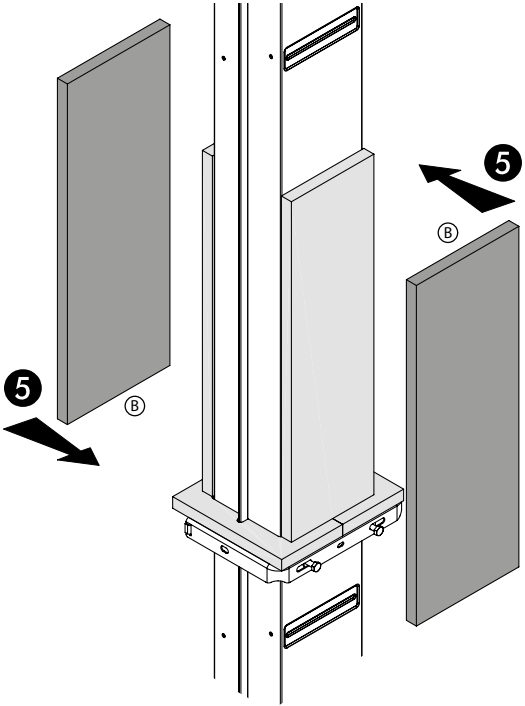
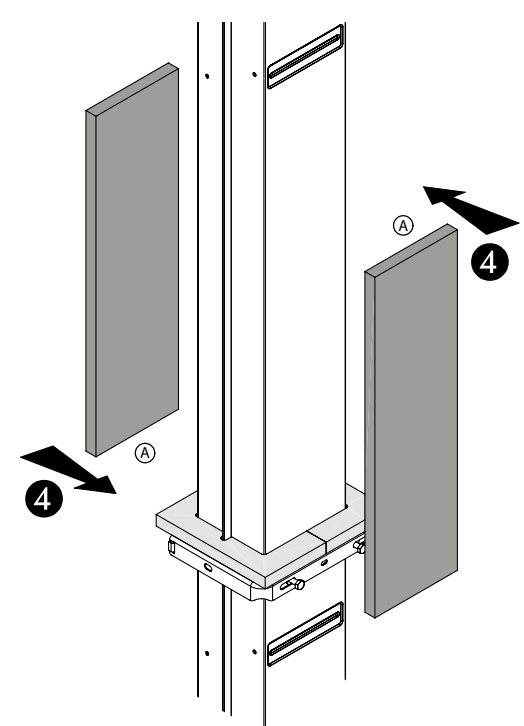
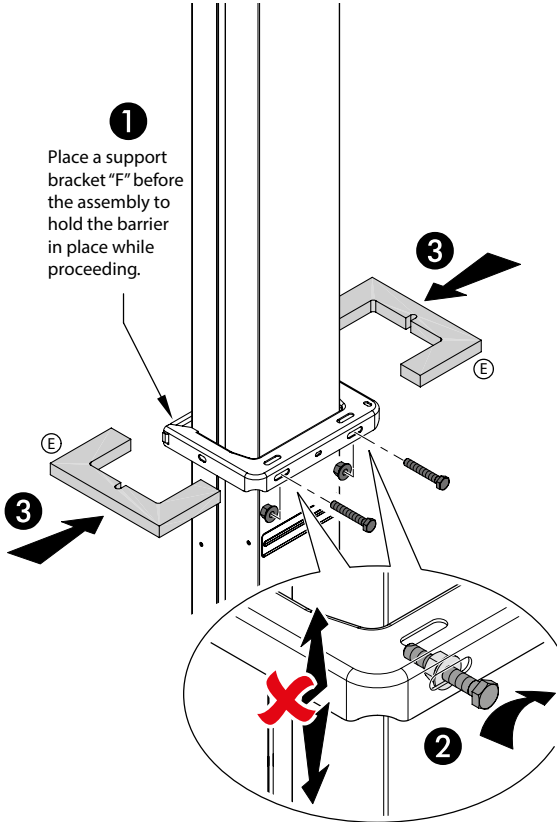
3. Installation



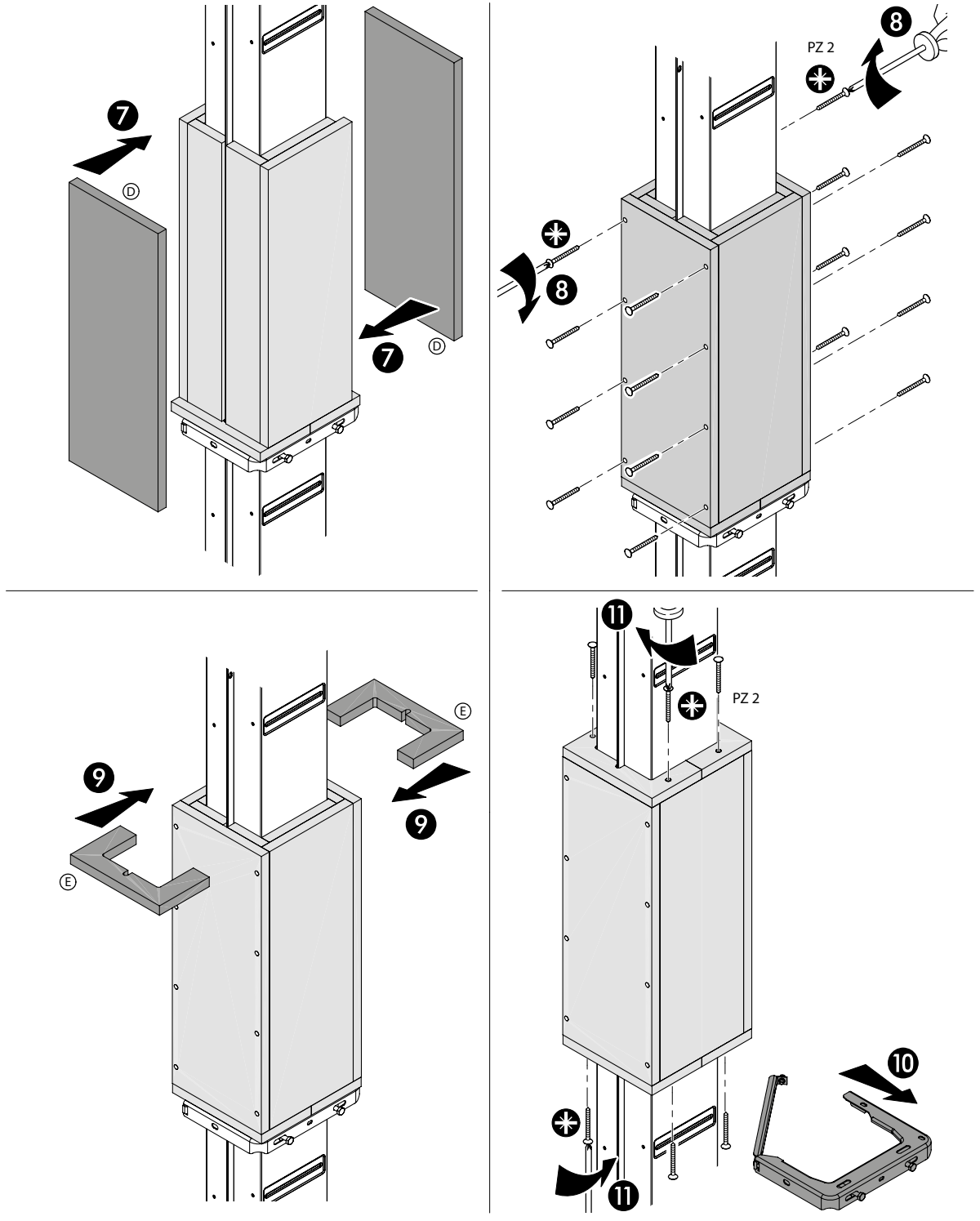
WARNING

Once the barrier is assembled, fill all the joints between panels with the Promaseal paste and then work it with putty knife to obtain a smooth and homogeneous aspect.
To simplify assembly, keep the panels in position with bench vise.

Vertical assembly



3. Installation



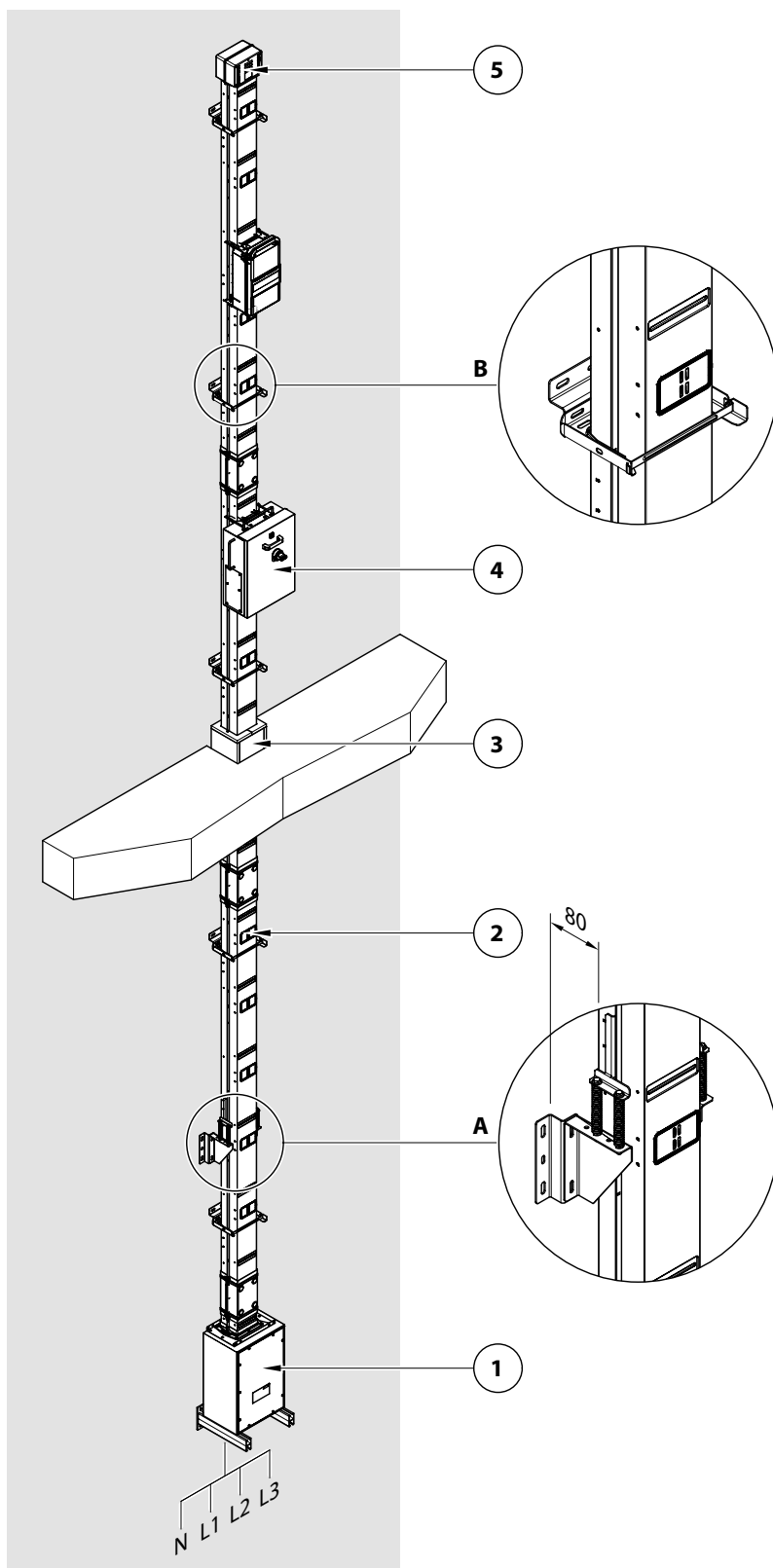
WARNING

Once the barrier is assembled, fill all the joints between panels with the Promaseal paste and then work it with putty knife to obtain a smooth and homogeneous aspect.
To simplify assembly, keep the panels in position with bench vise.

3.7 Product installation

3.7.1 Operating instructions on how to design riser mains

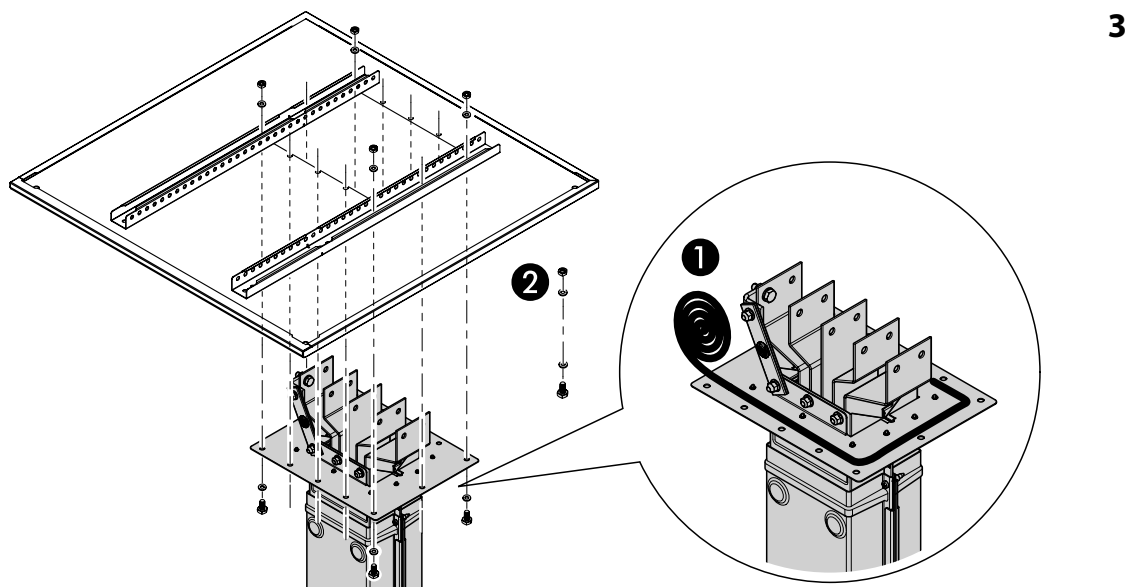
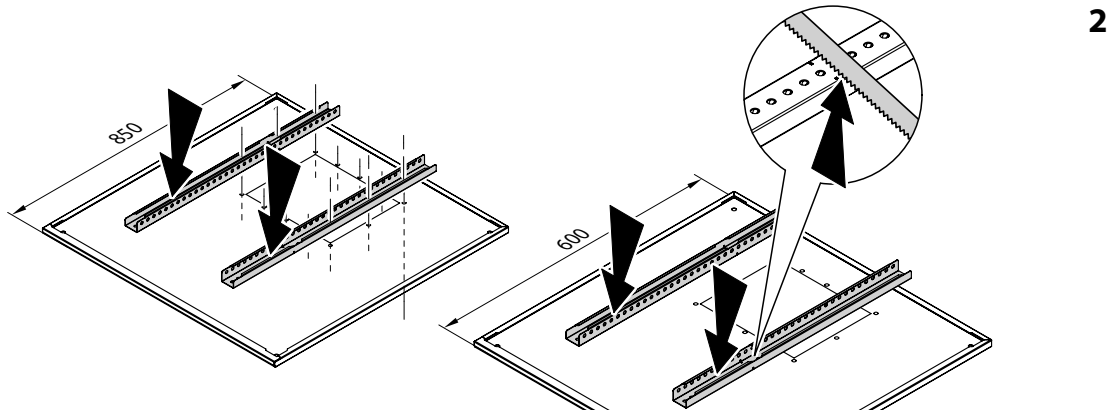
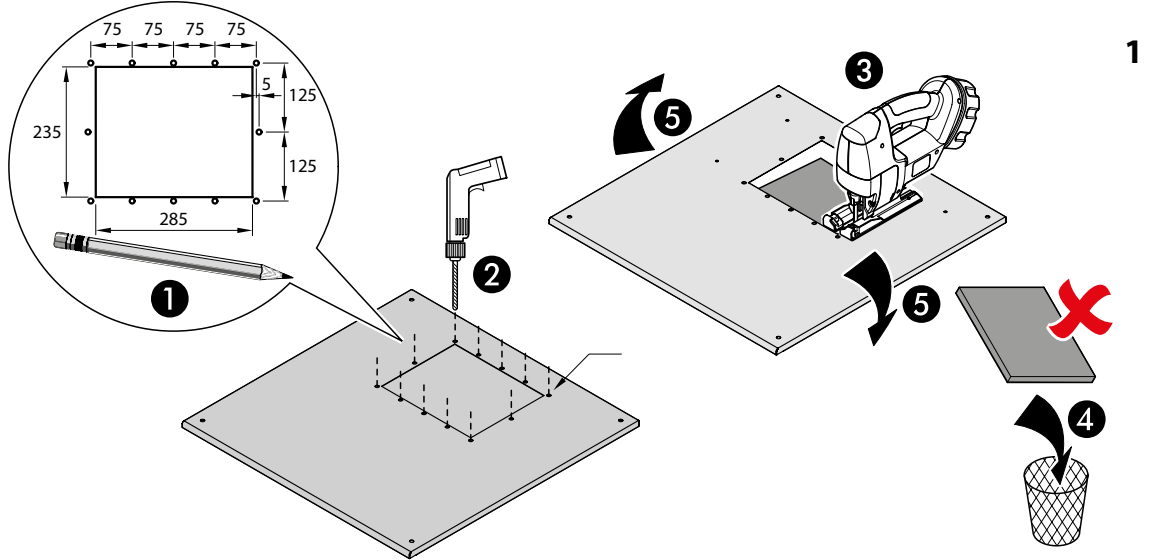
- 1) Use a LH end feed unit.
This allows the Neutral bar to be positioned on the left side of the busbar, hence the cable exit of the tap-off boxes is located downwards
- 2) Use straight elements with 5 outlets on one side
- 3) Use a straight element with fire barrier for each compartment floor. It is necessary to specify the position of the internal fire barrier before placing an order
- 4) The tap-off boxes can be installed in the tap-off outlets and near the connection between the elements
- 5) At the end of the riser mains, position the IP55 end cover. Before installing the end cover remove the monobloc located on the last element
- A) Use one or more suspension brackets for the vertical elements, according to the weight of the whole rising mains. For risers that are shorter than 4 meters, fix to the base with code 50403711; when longer, use a suspension bracket code 50403712 every 300 kg of rising main
- B) Use a standard suspension bracket with a 40mm spacer every 2 meters of rising mains



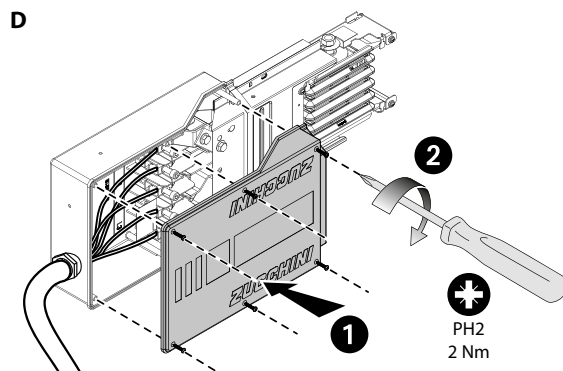
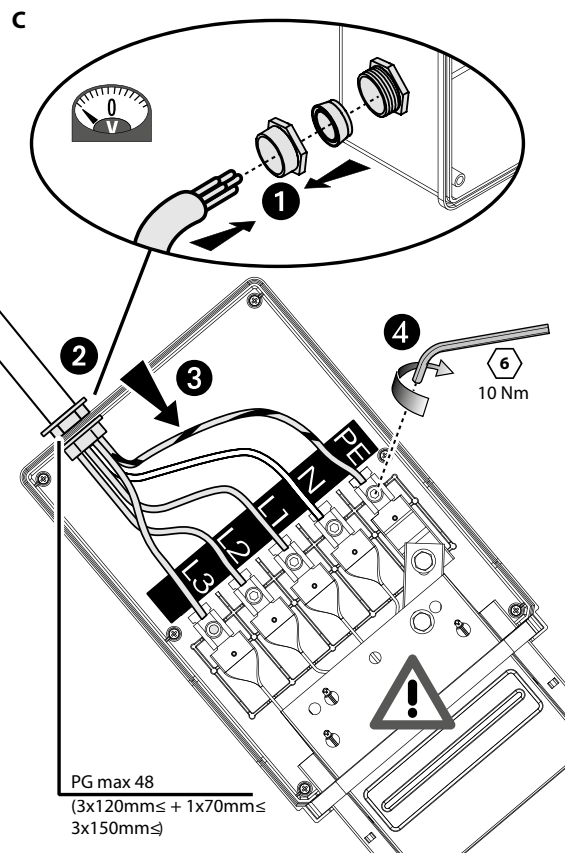
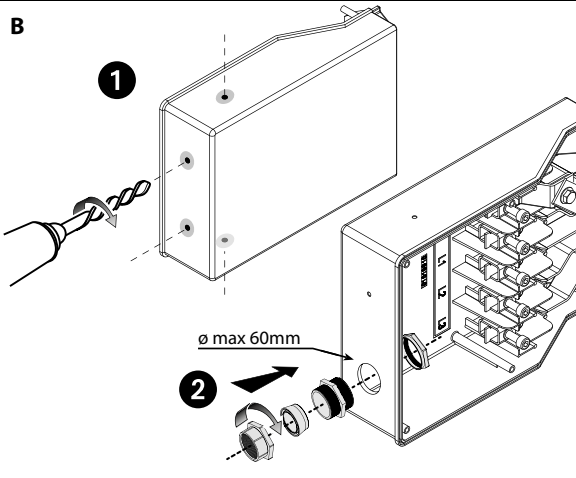
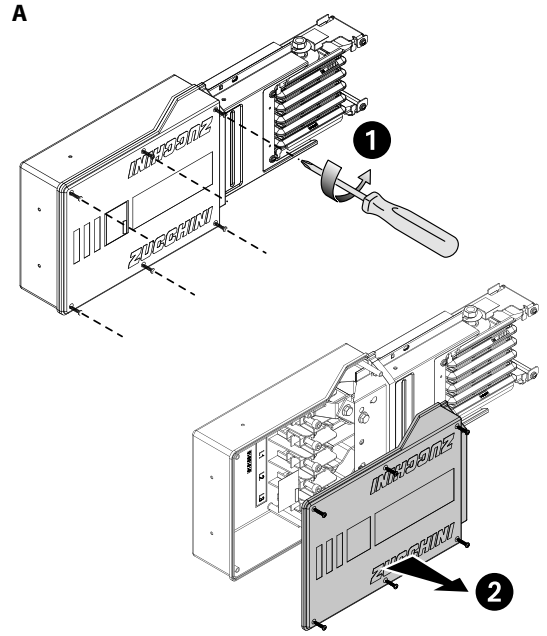
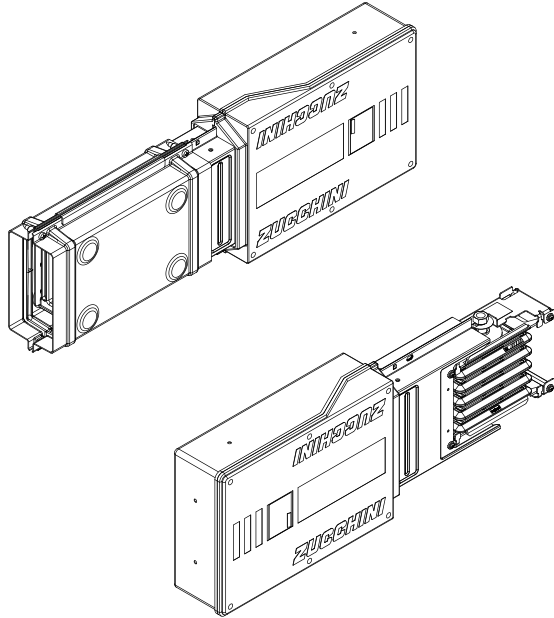
ZUCCHINI

3. Installation

3.7.2 Panel end cap installation

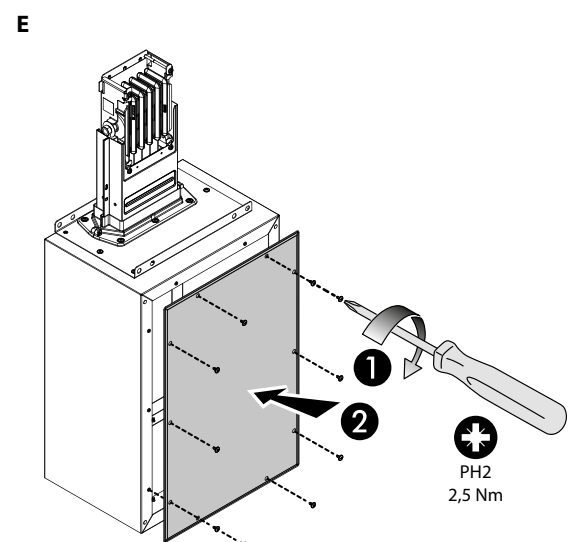
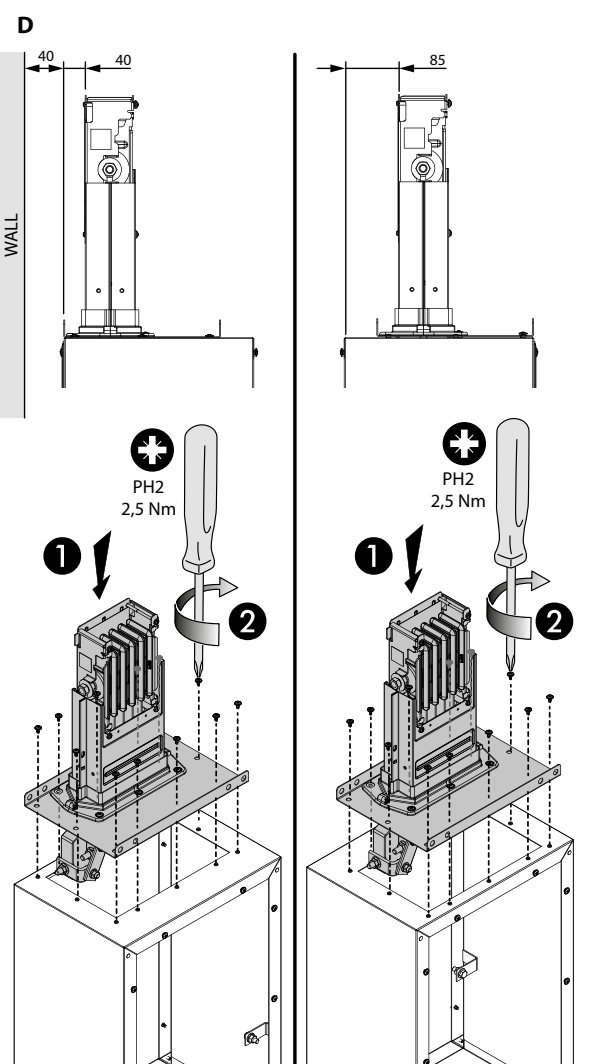
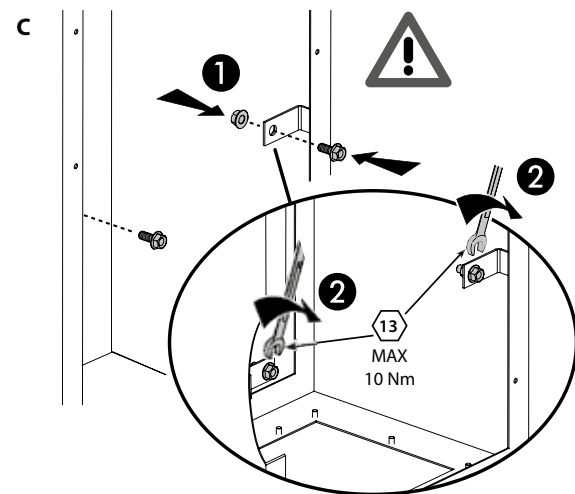
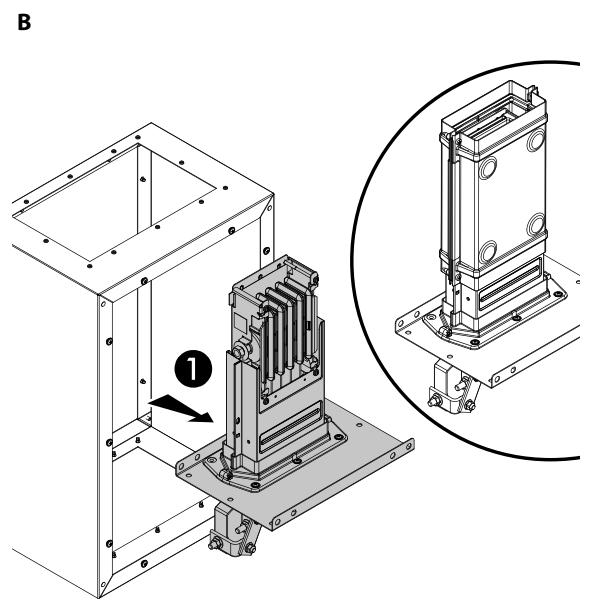
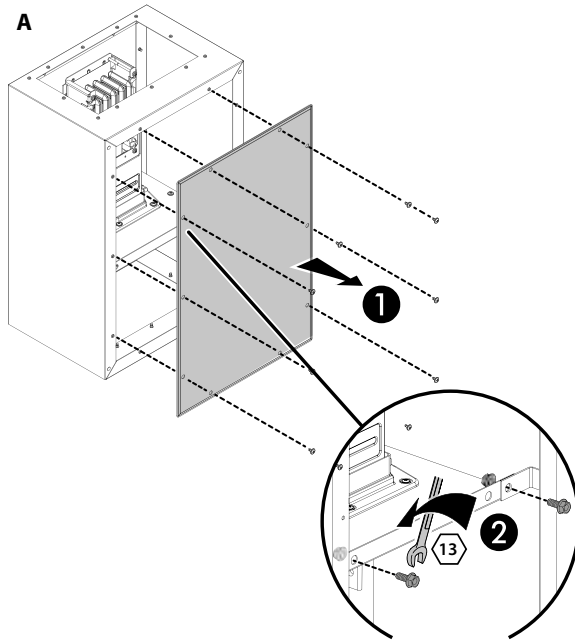


3.7.3 Feed Unit

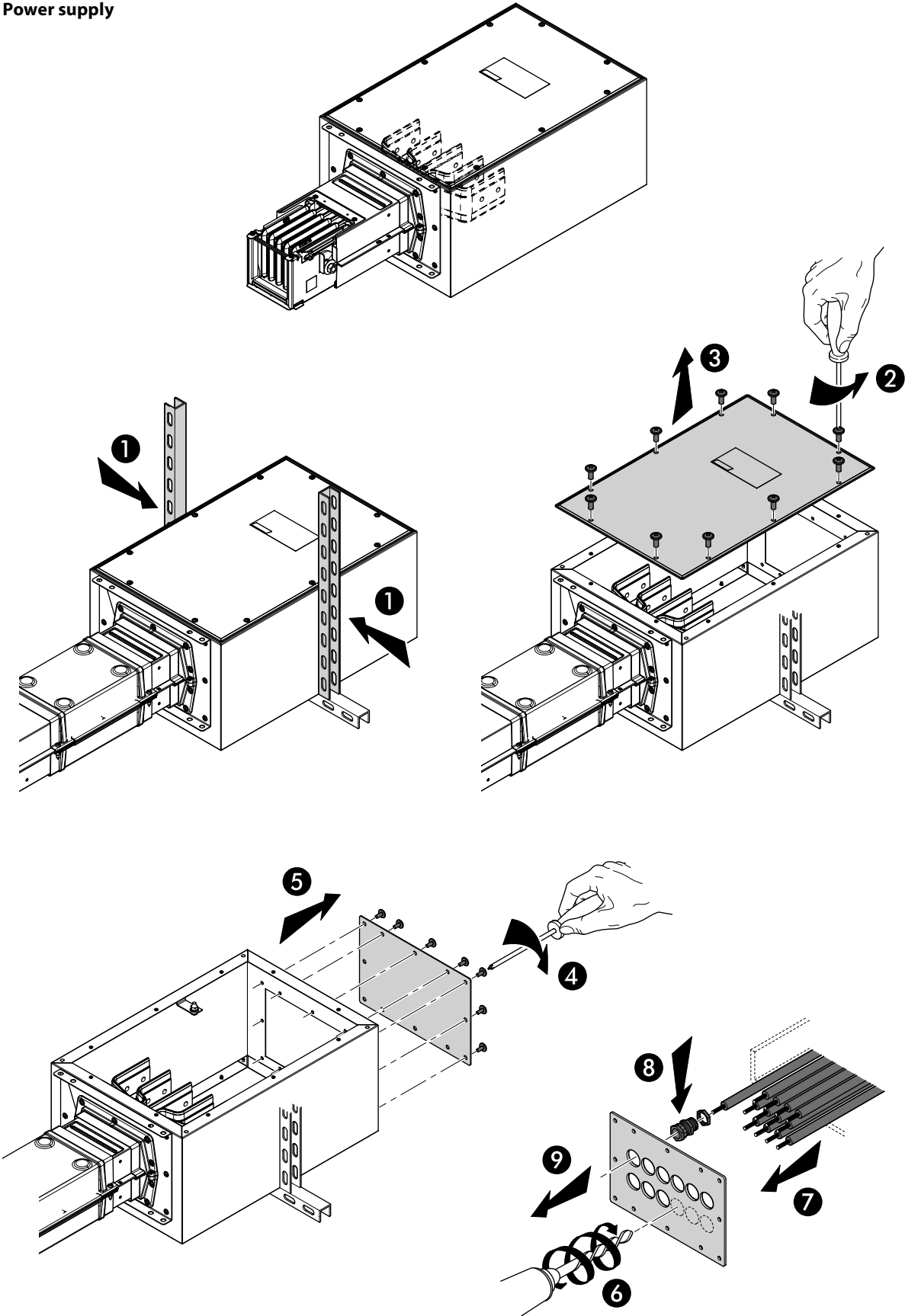


ZUCCHINI

3. Installation

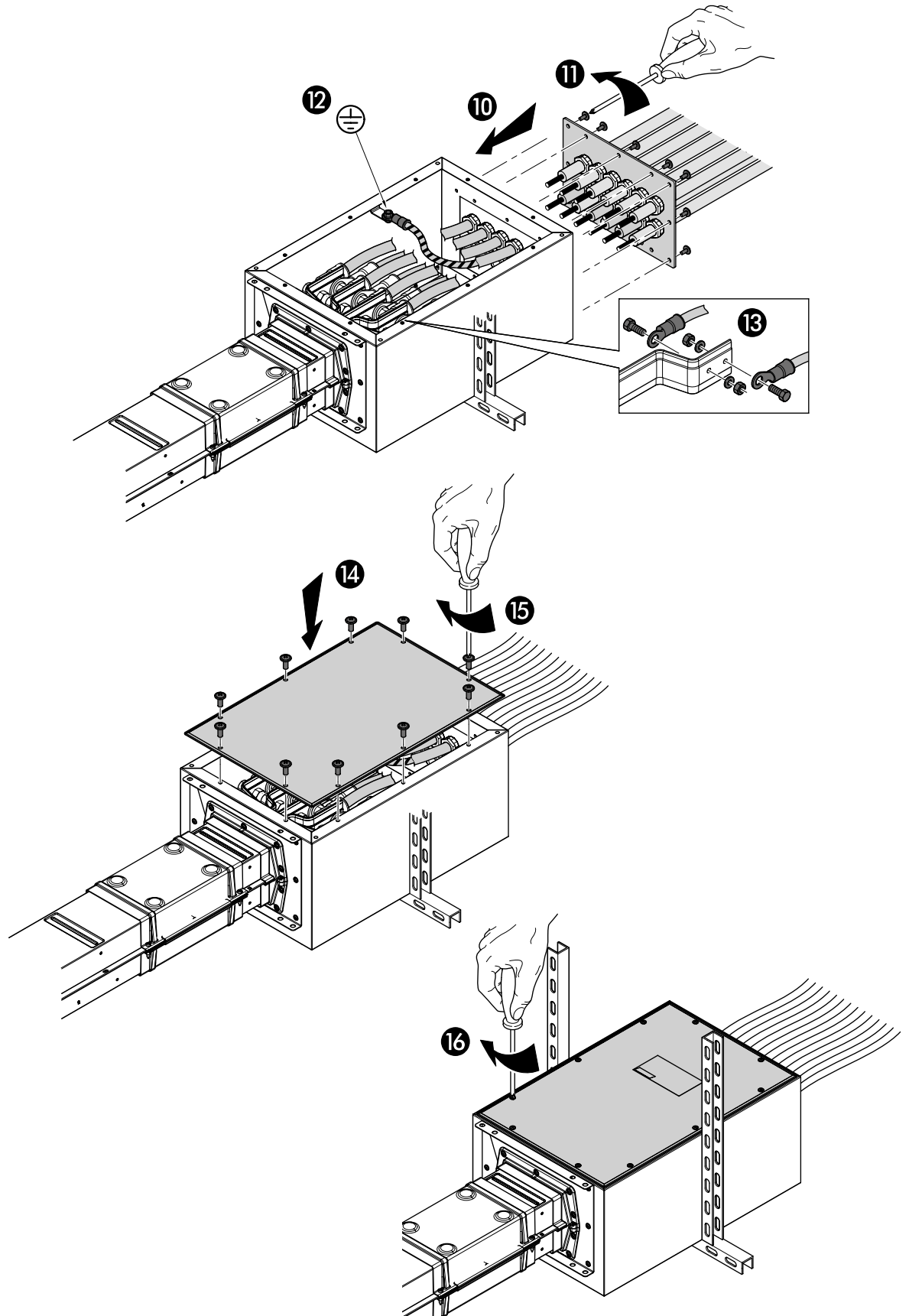


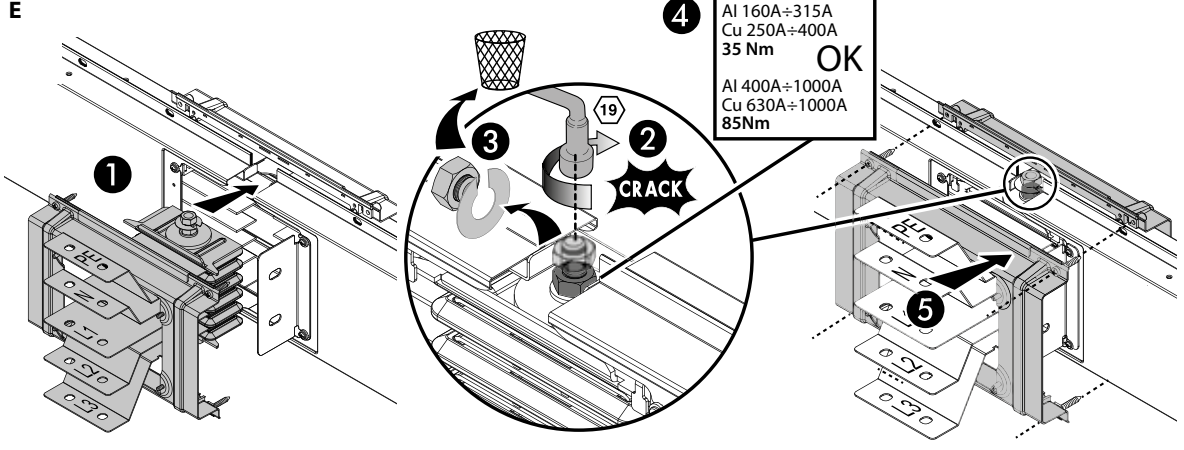
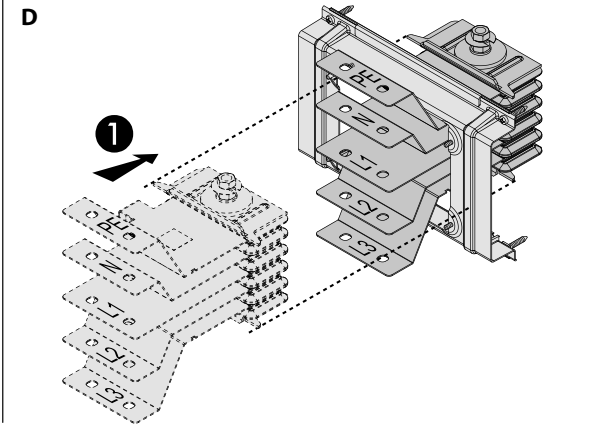
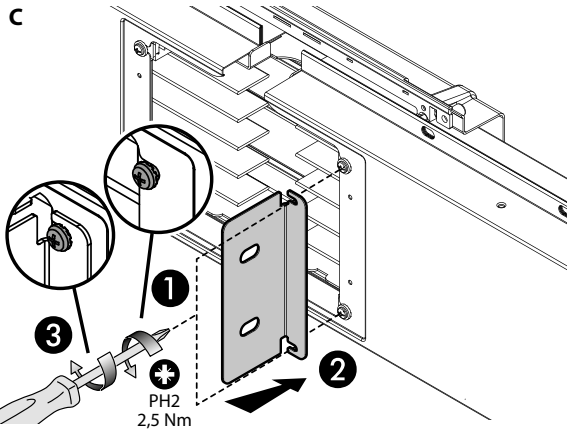
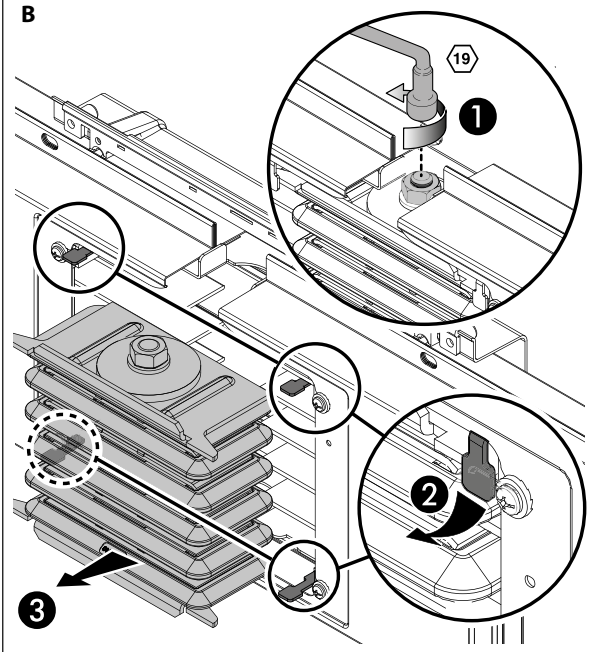
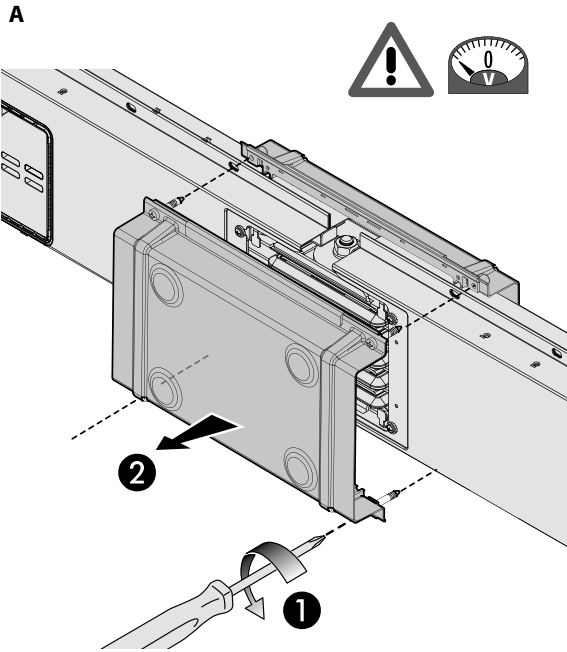
Power supply



ZUCCHINI

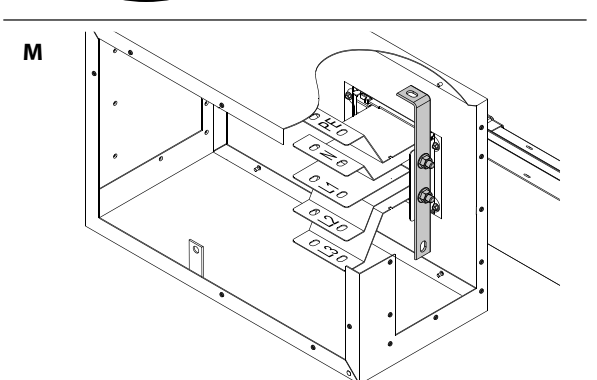
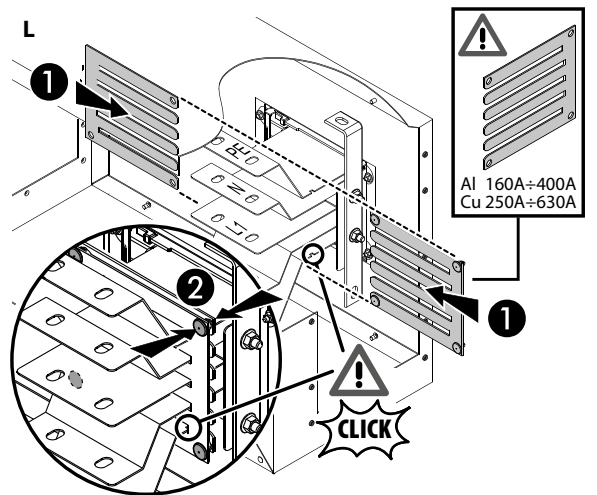
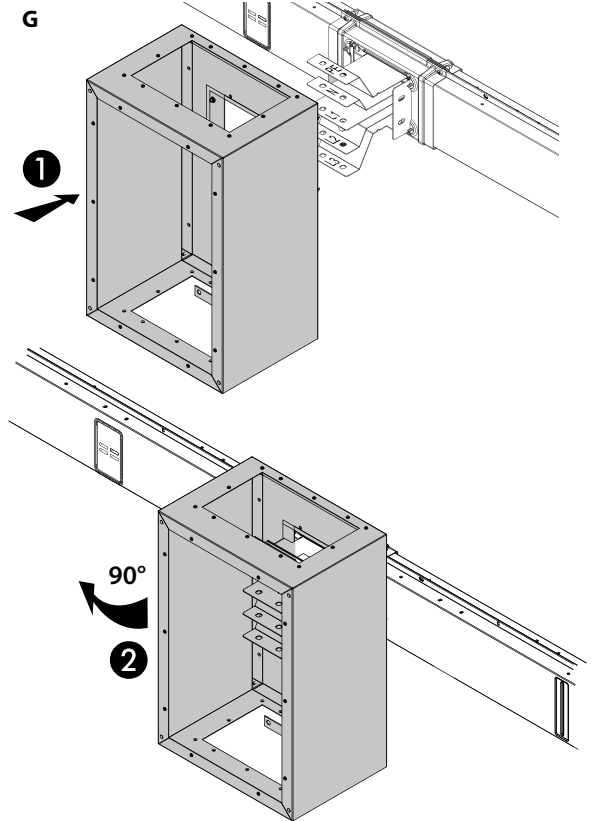
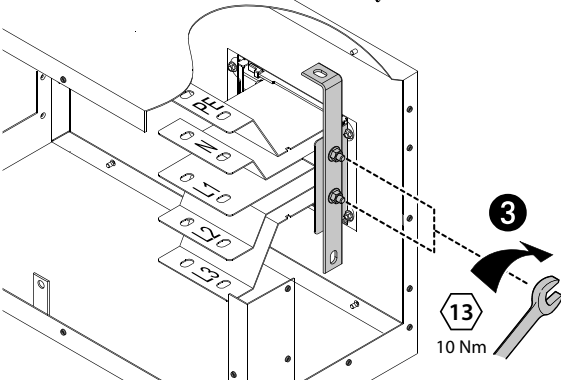
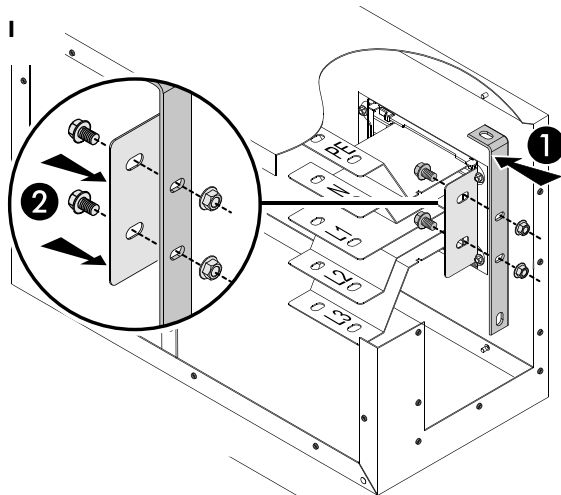
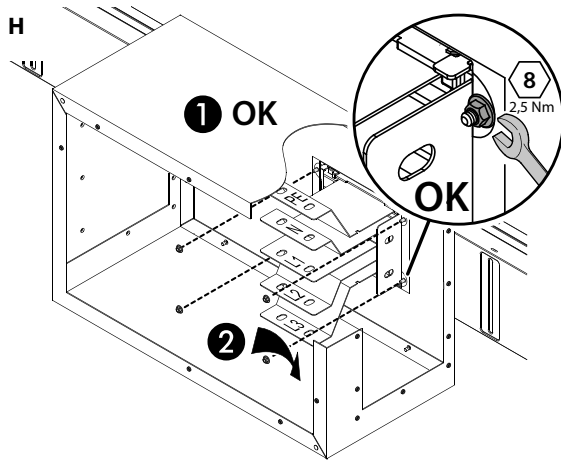
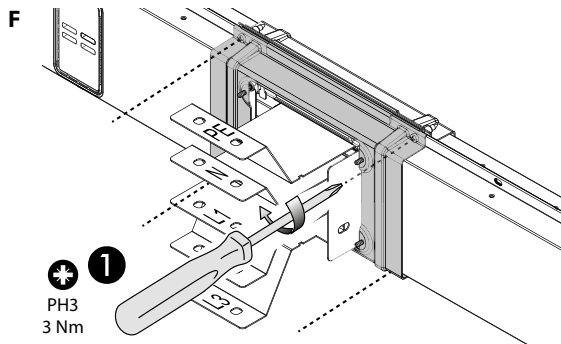
3. Installation





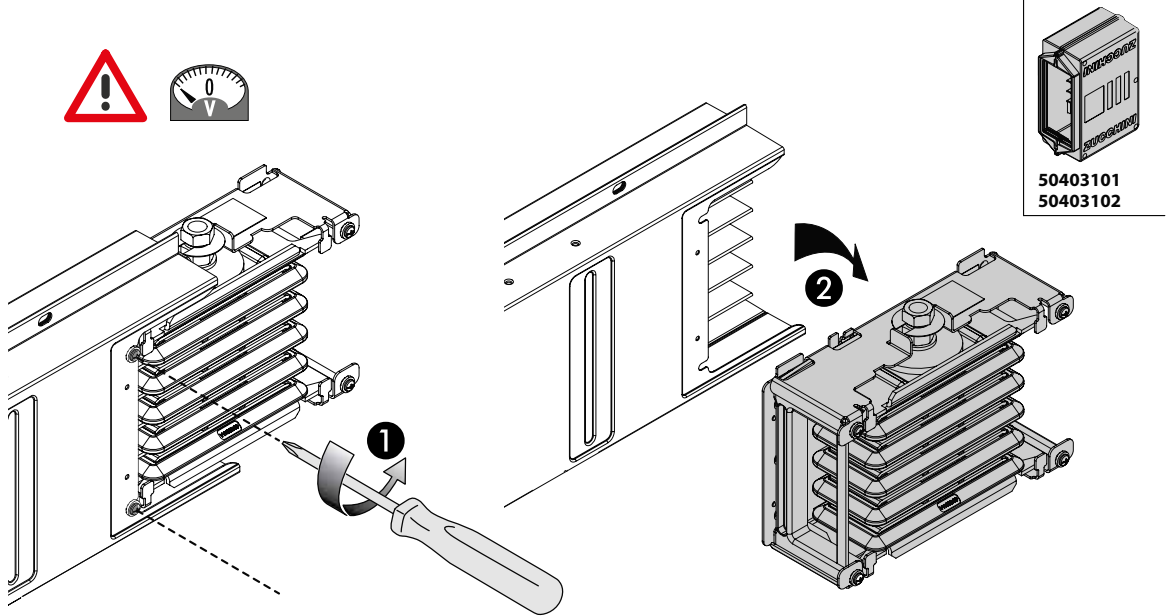
ZUCCHINI

3. Installation

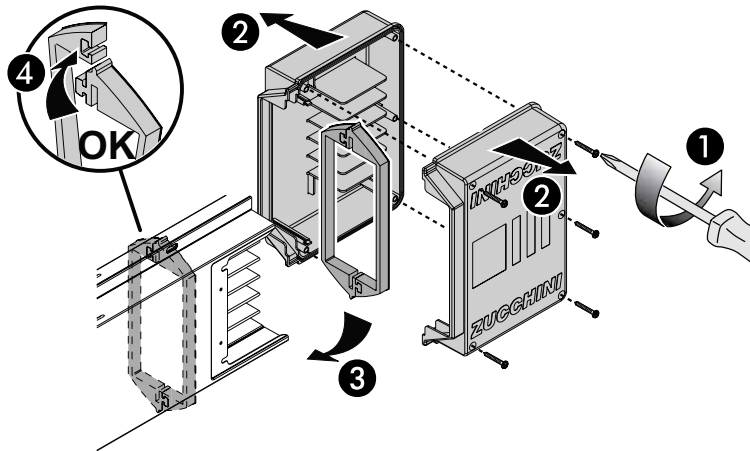


3.7.4 End cover

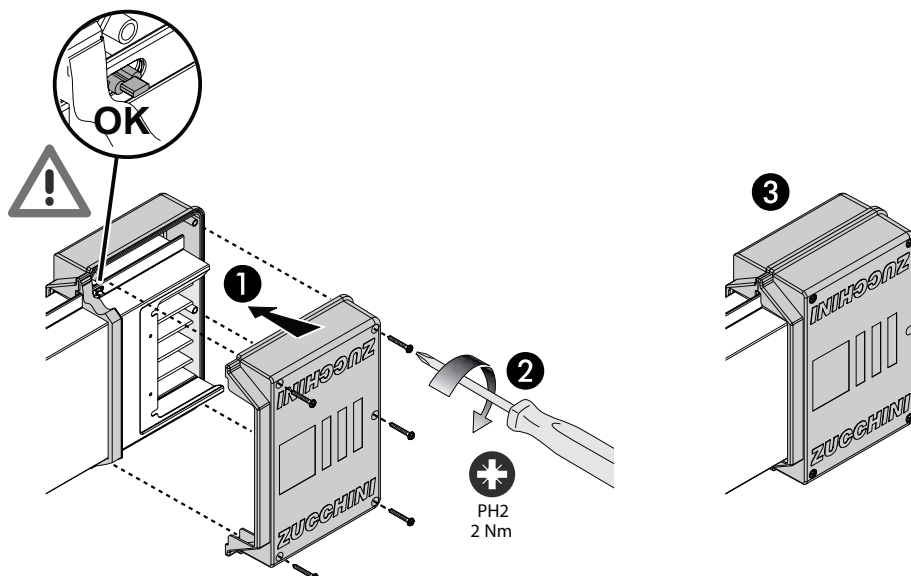
A



B



C

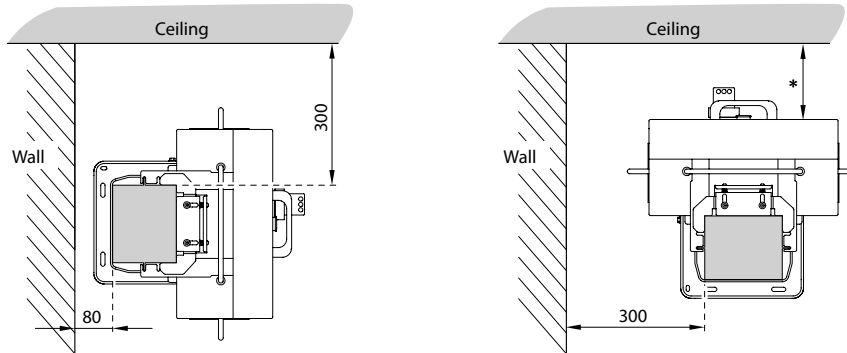


3. Installation

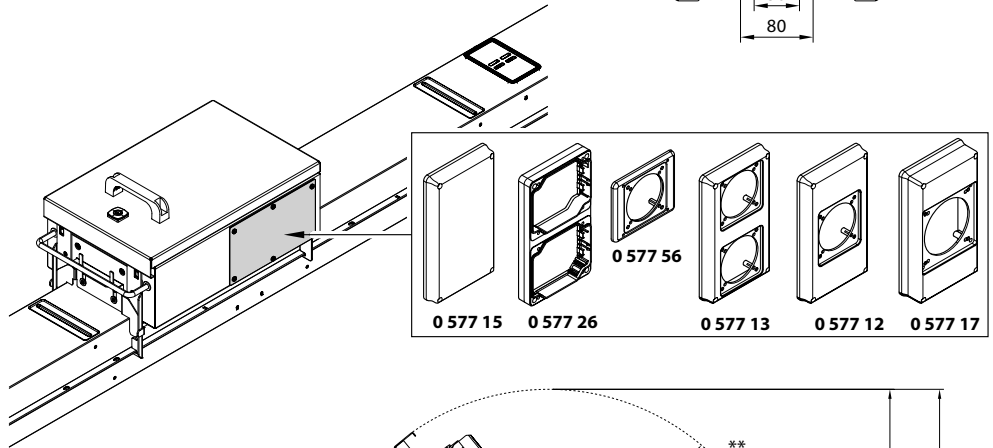
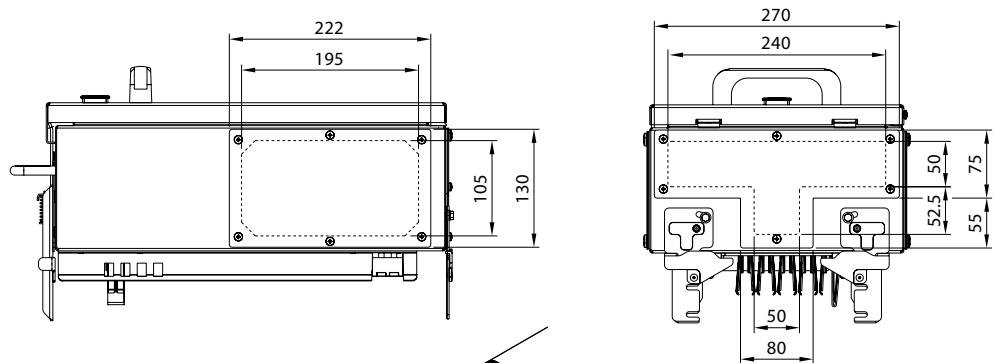
3.7.5 Tap-off boxes overall dimensions

* When there is a tap-off box installed above the busbar, check the overall dimension of the open cover of the tap-off unit used in the specific section.

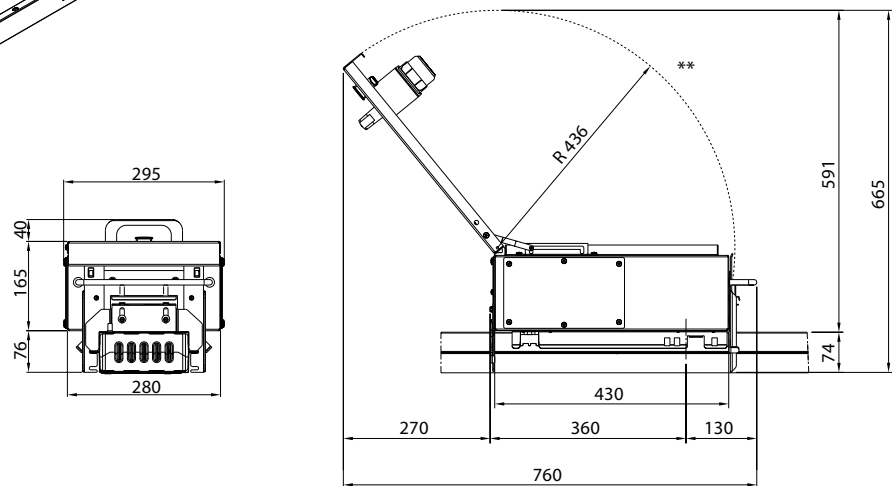
When there are tap-off units along the busbars, the minimum distances depend on the dimensions of the tap-offs selected.



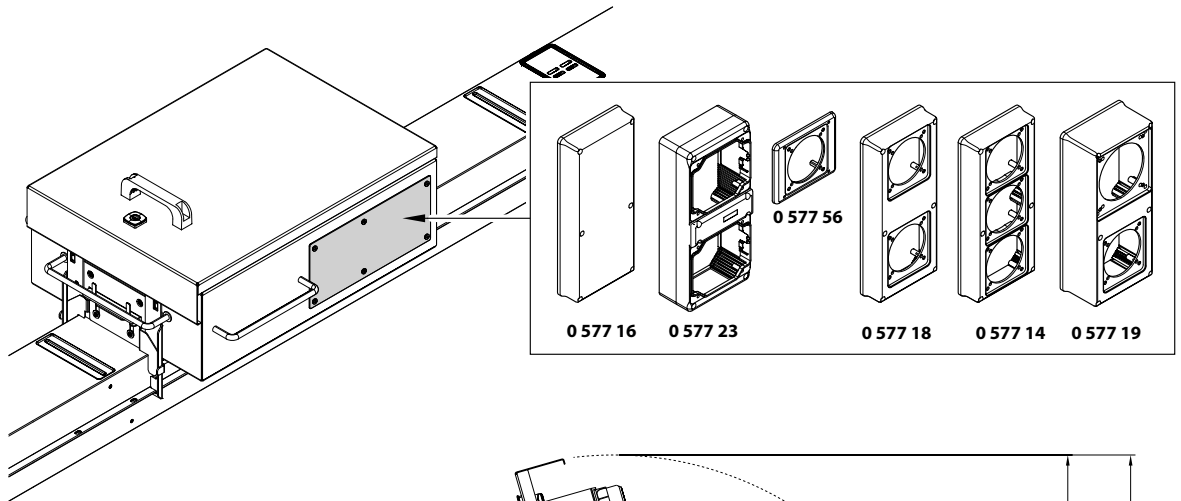
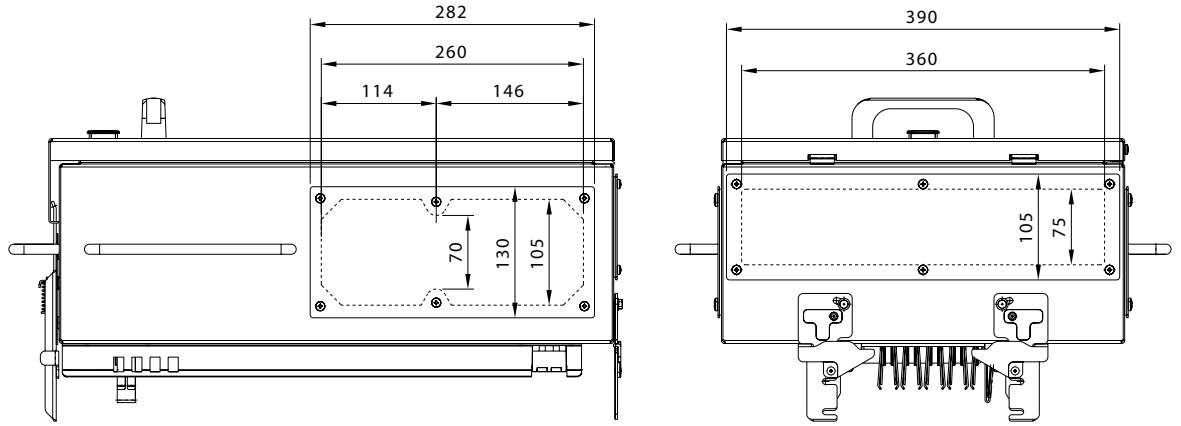
Metal T1 Empty / fuse holders version overall dimensions



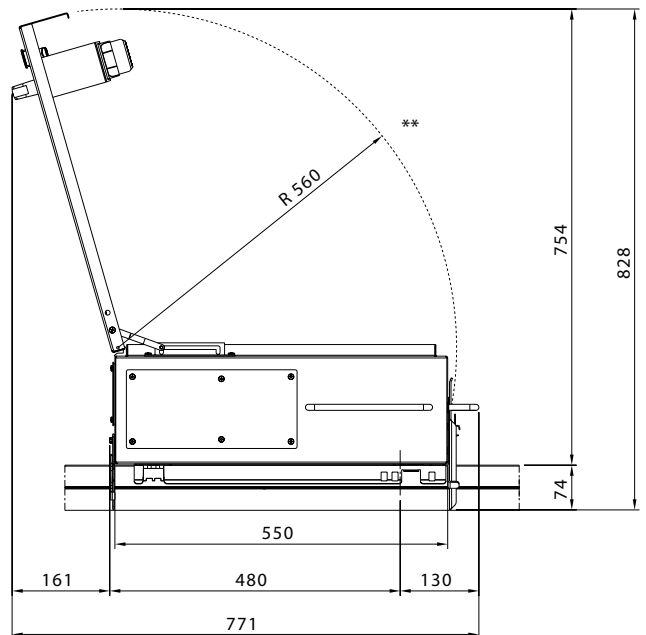
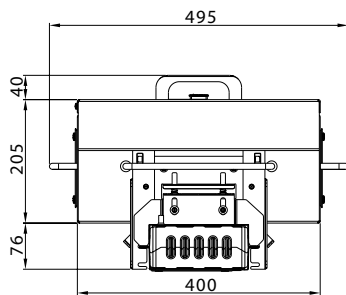
** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).



Metal T2 Empty / fuse holders version overall dimensions

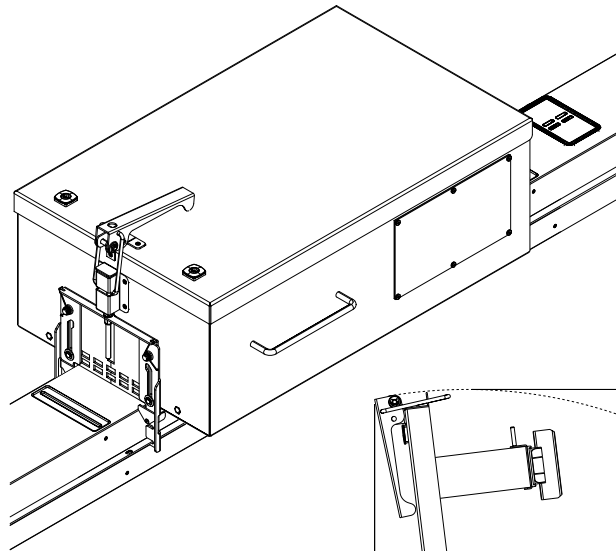
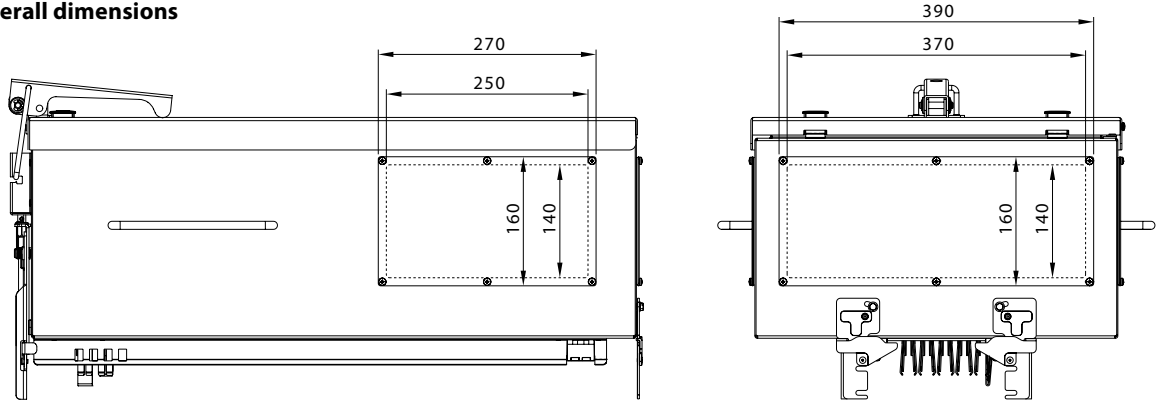


**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**

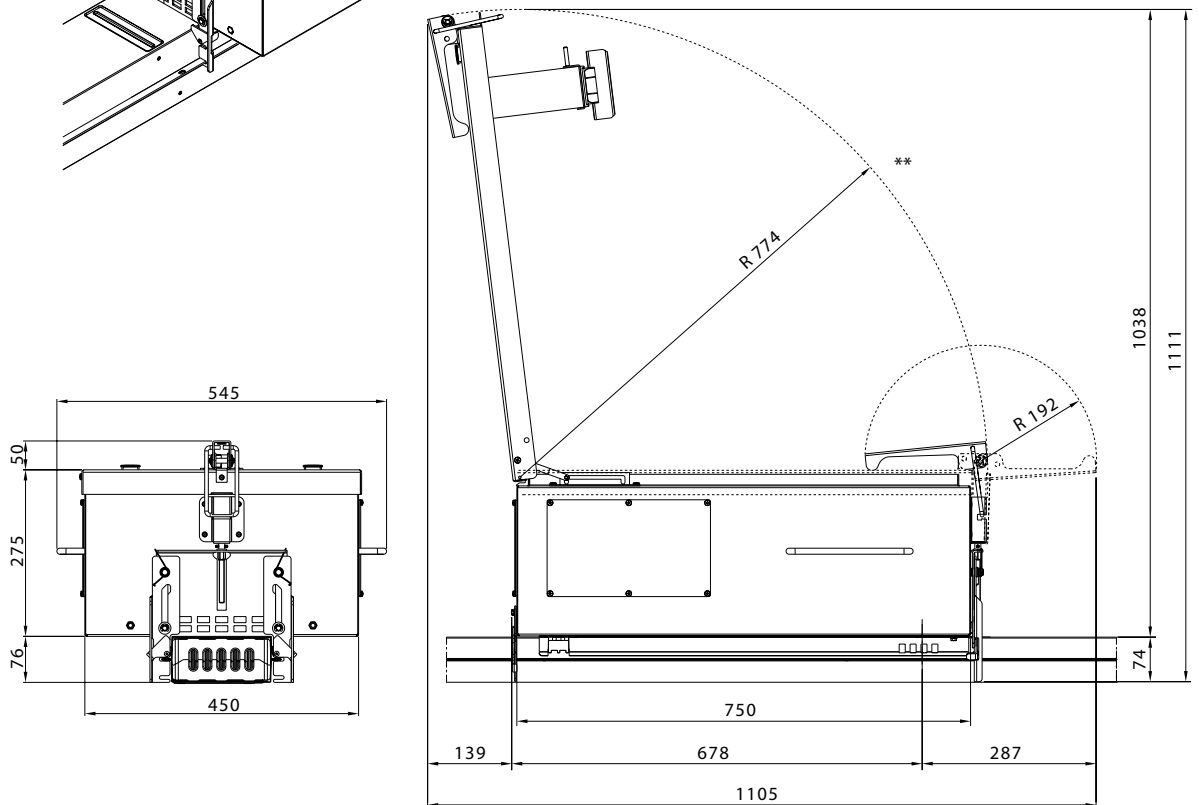


3. Installation

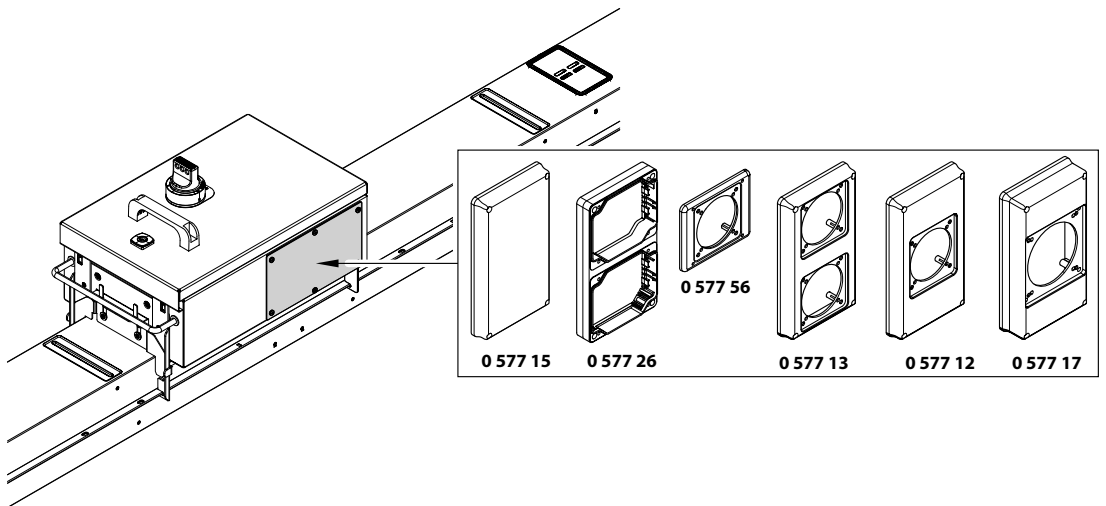
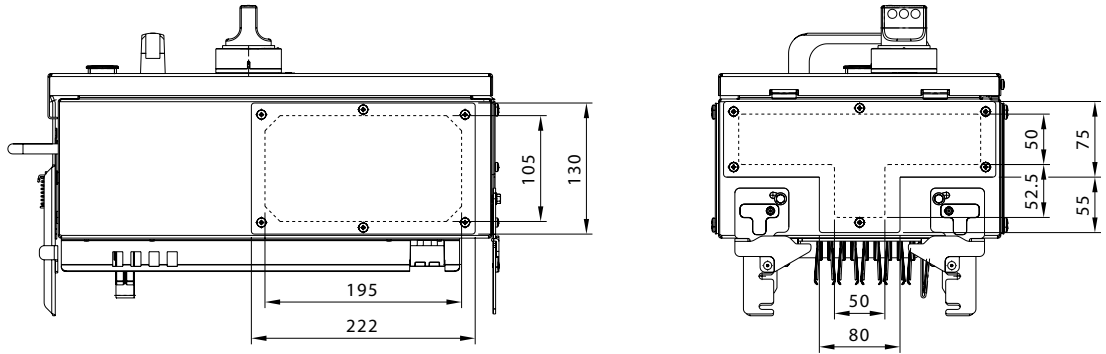
Metal T3 Empty / fuse holders version overall dimensions



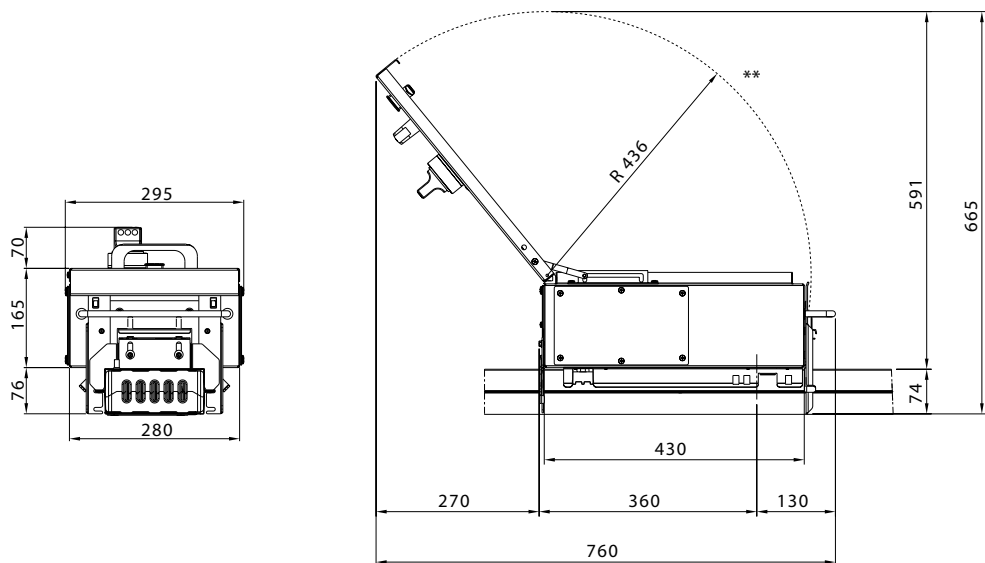
** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).



Metal T1 MCCB ready overall dimensions



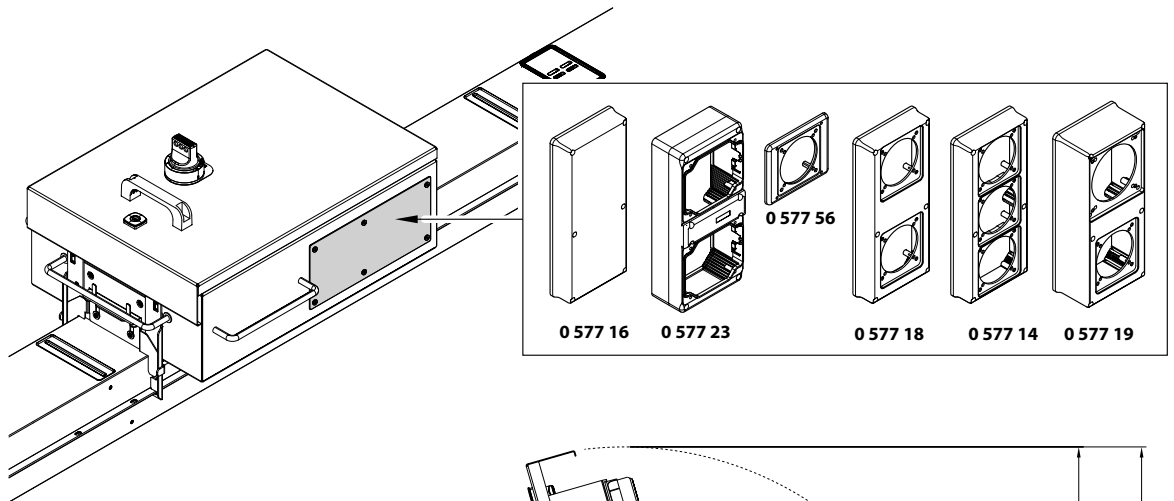
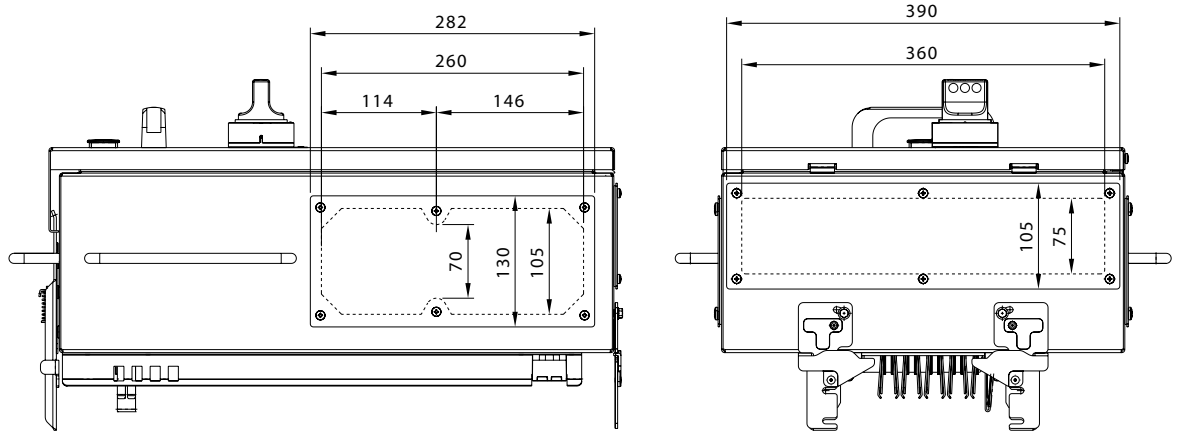
**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**



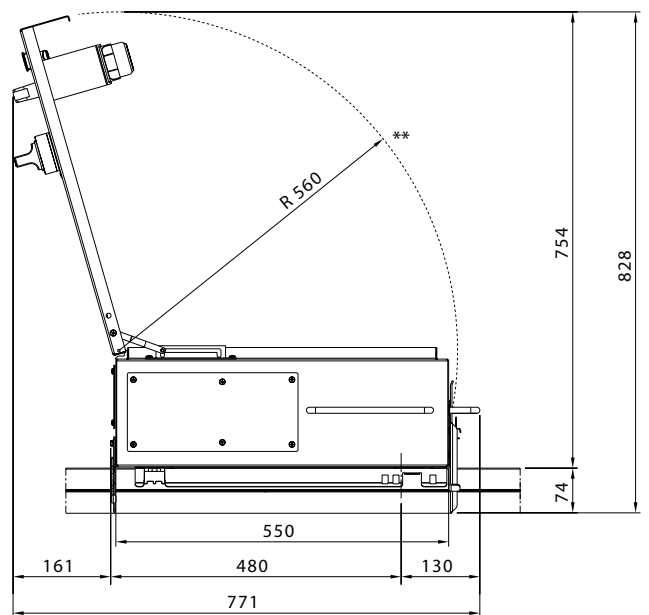
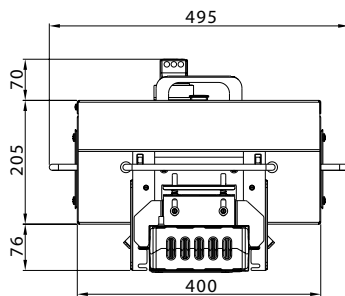
ZUCCHINI

3. Installation

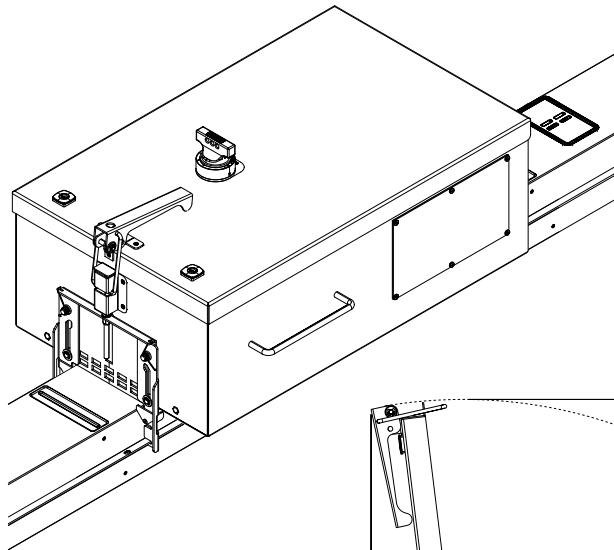
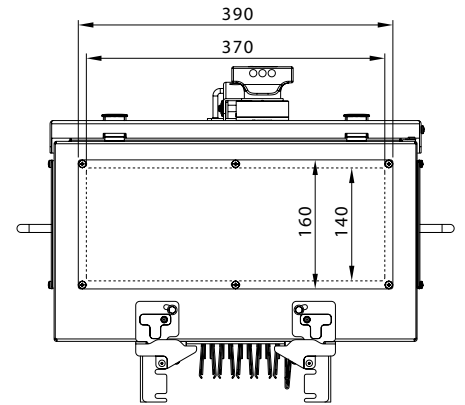
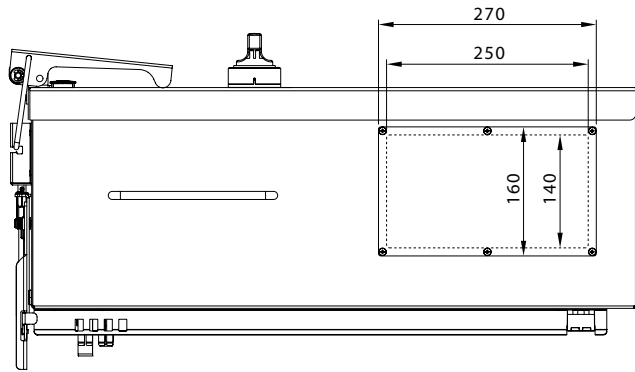
Metal T2 MCCB ready
overall dimensions



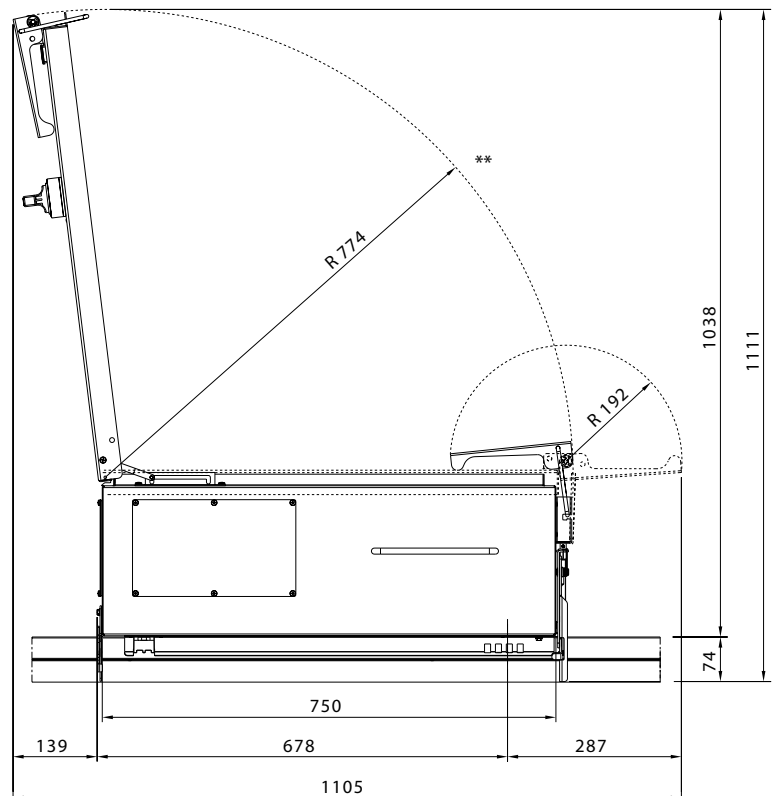
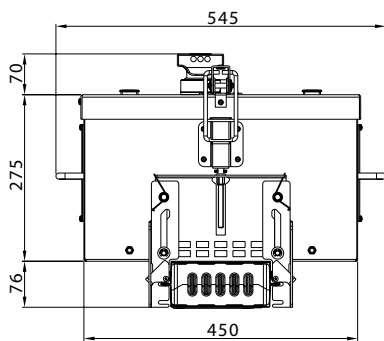
** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).



Metal T3 MCCB ready overall dimensions



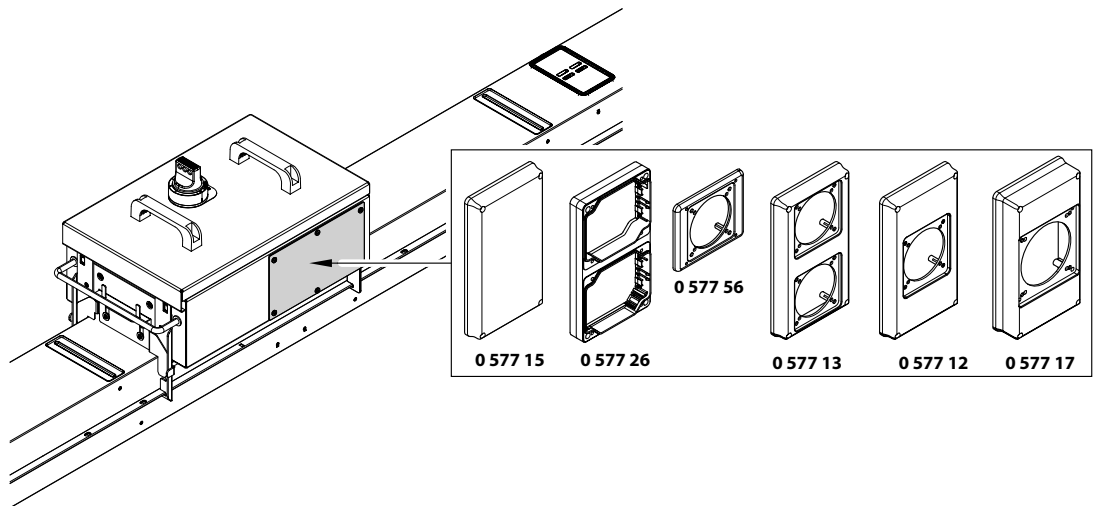
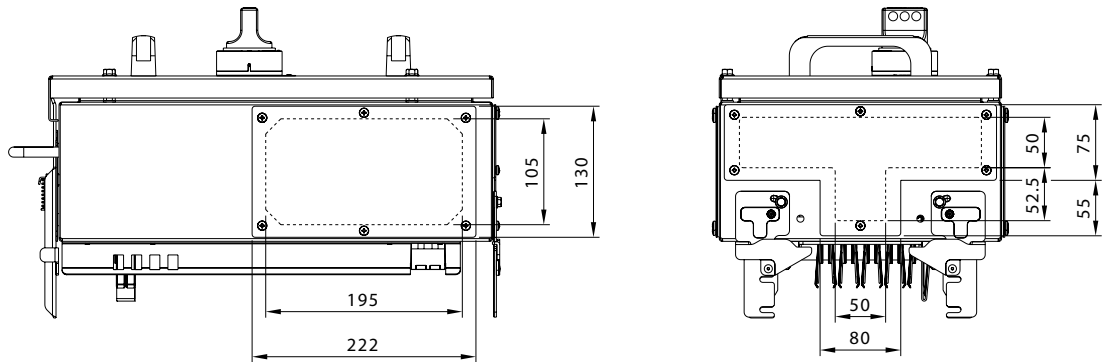
**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**



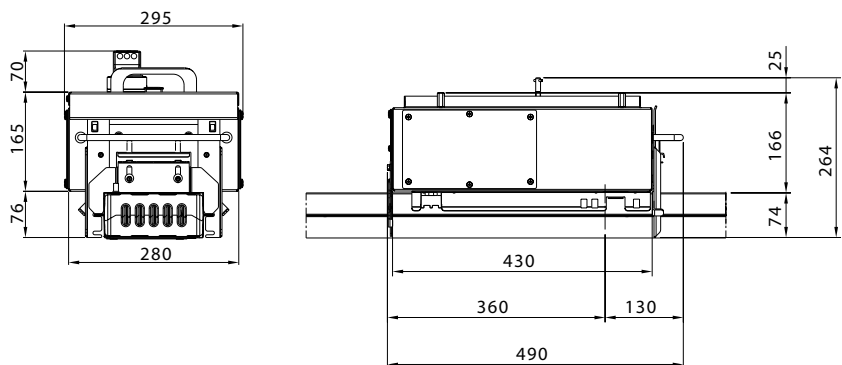
ZUCCHINI

3. Installation

Metal T1 MCCB ready removable cover overall dimensions

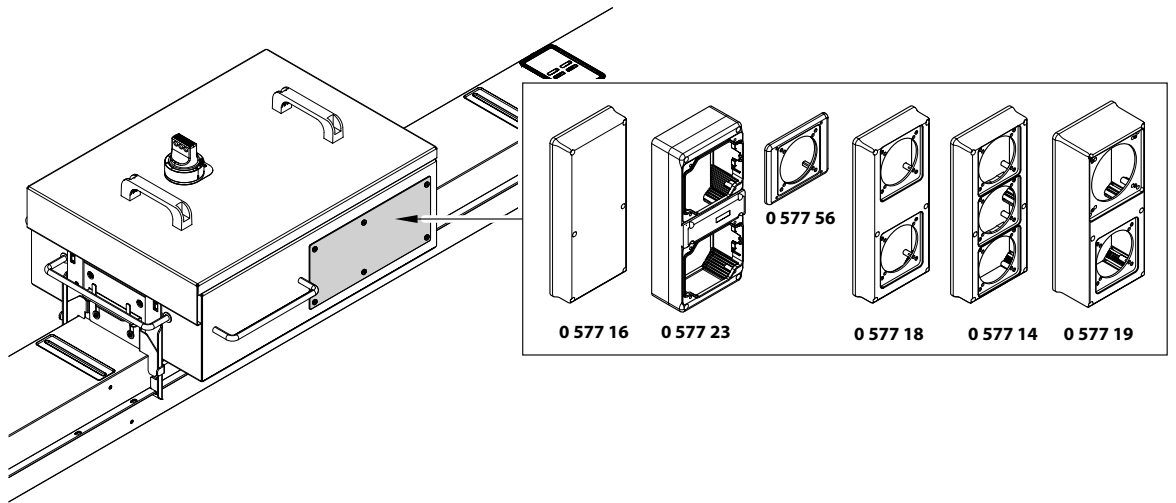
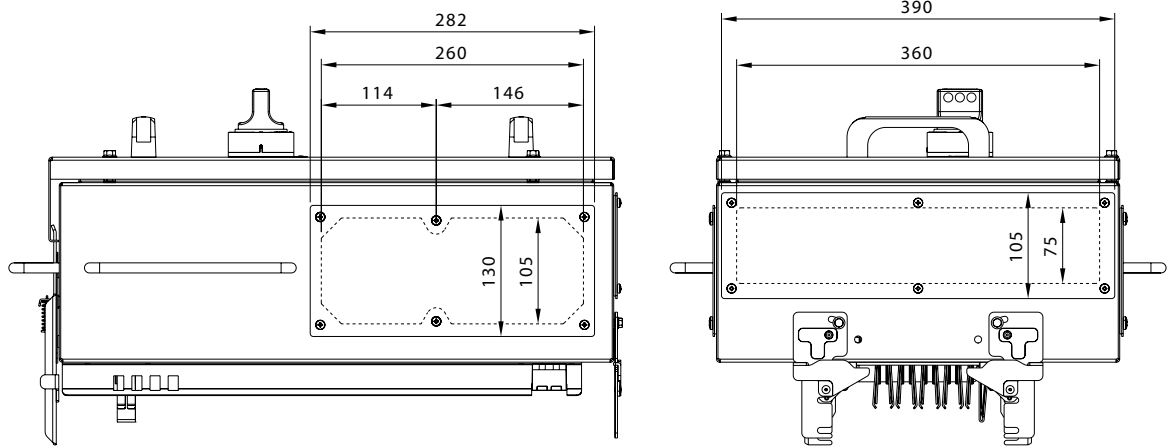


**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**

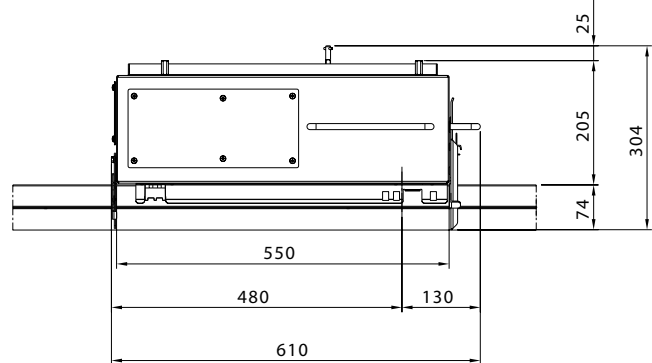
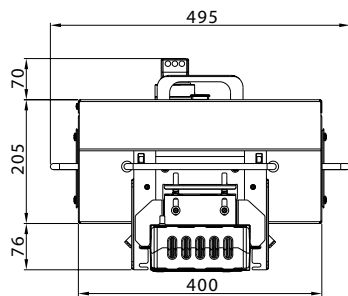


**

Metal T2 MCCB ready removable cover overall dimensions



**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**

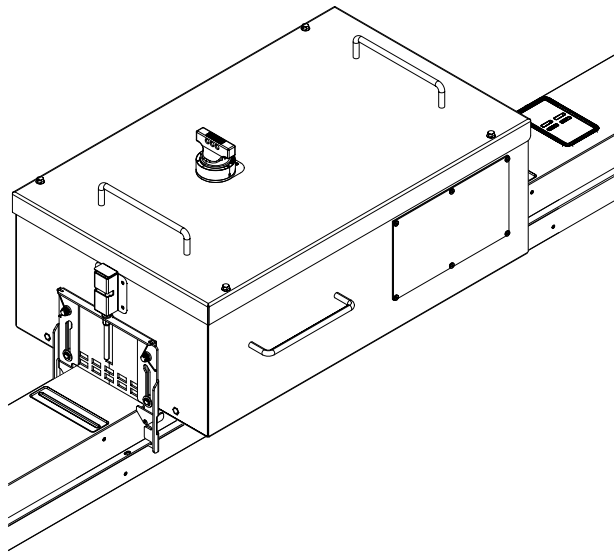
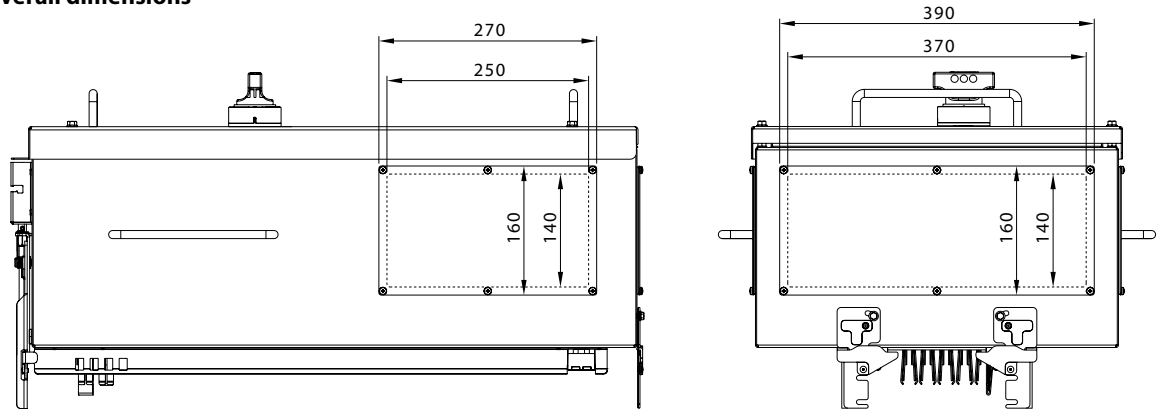


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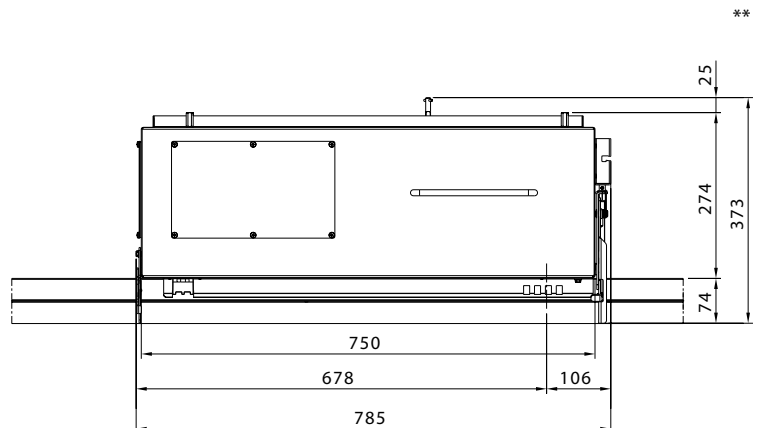
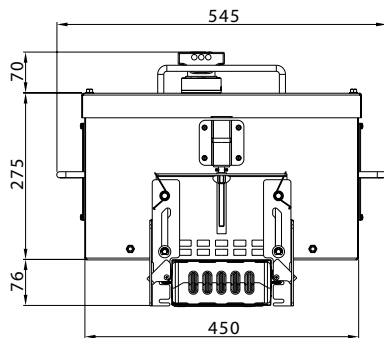
ZUCCHINI

3. Installation

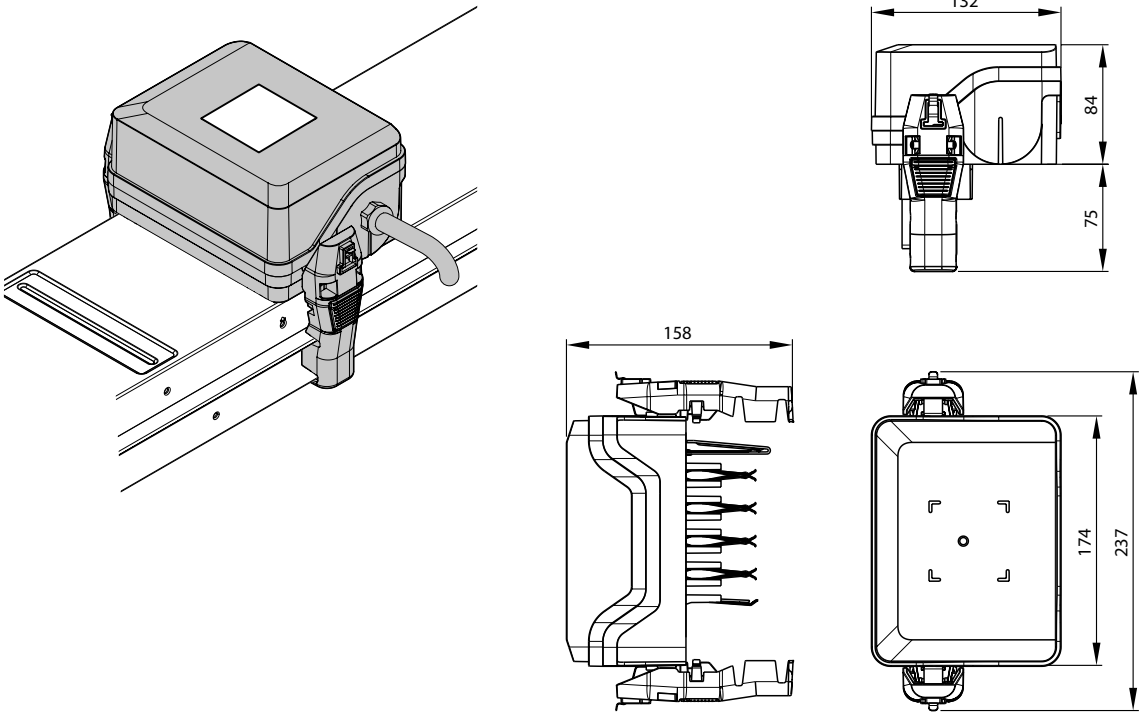
Metal T3 MCCB ready removable cover
overall dimensions



**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**

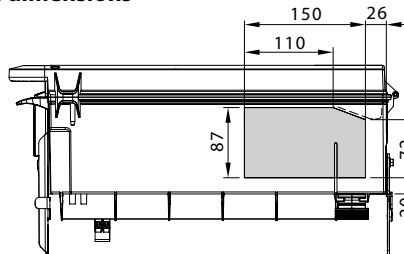


Fiberglass plastic T1
overall dimensions

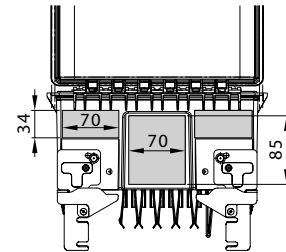


3. Installation

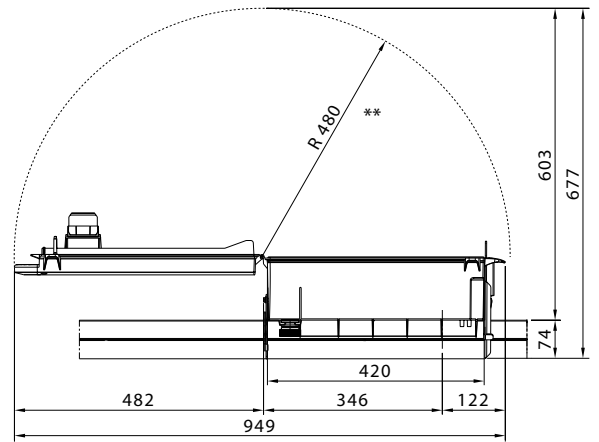
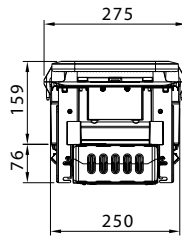
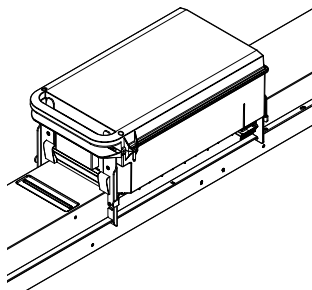
Fiberglass plastic T2 Empty / fuse holders version overall dimensions



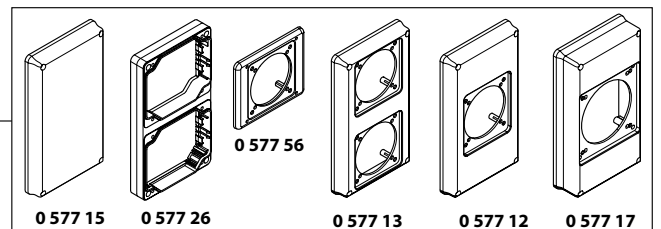
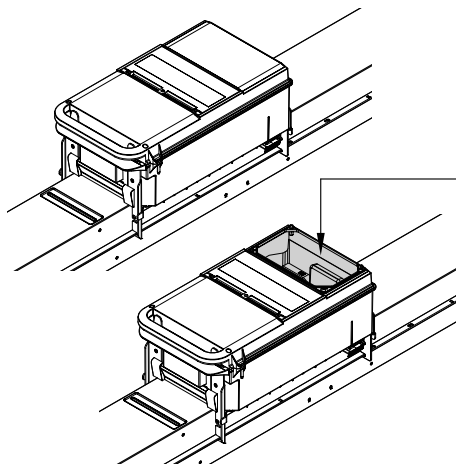
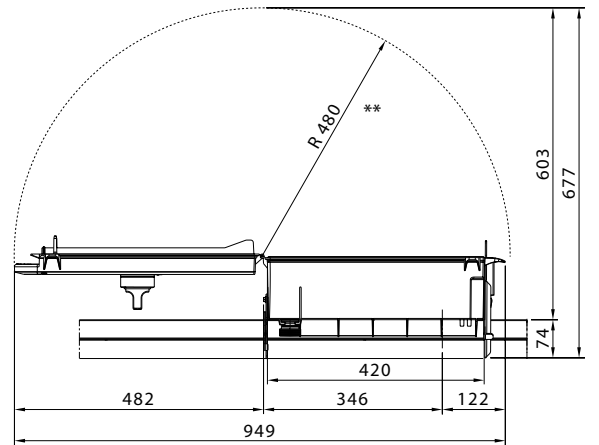
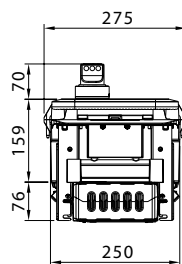
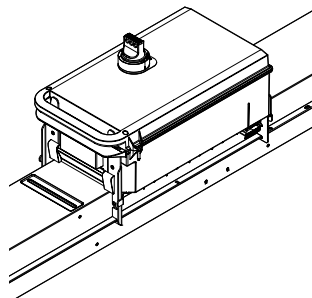
fairleads
 ISO 16:14
 ISO 21:10
 ISO 25:6
 ISO 40:3
 ISO 50:2



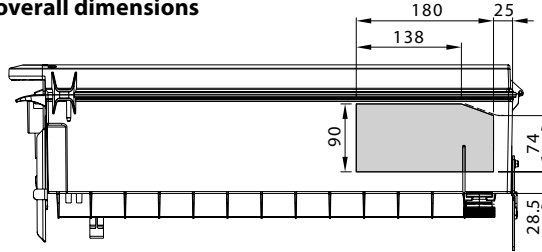
fairleads
 ISO 16:14
 ISO 21:9
 ISO 25:6
 ISO 40:2
 ISO 50:1



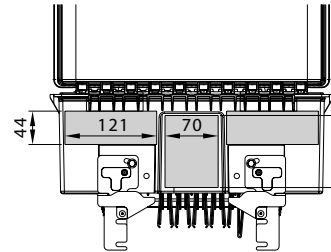
*** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).*



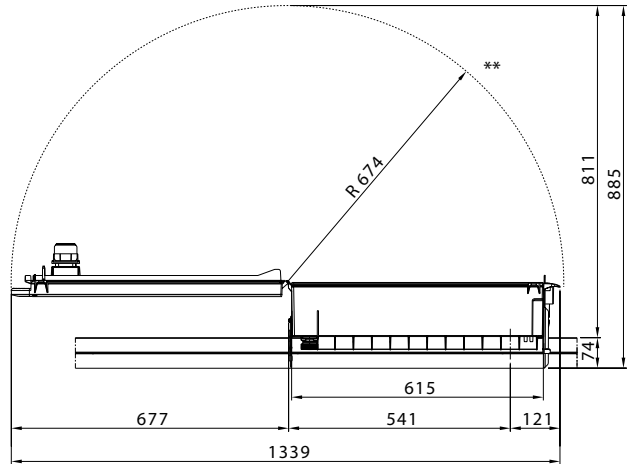
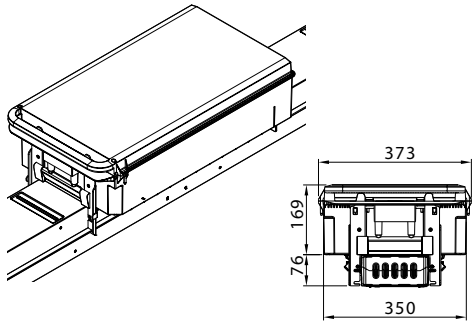
Fiberglass plastic T3 Empty / fuse holders version overall dimensions



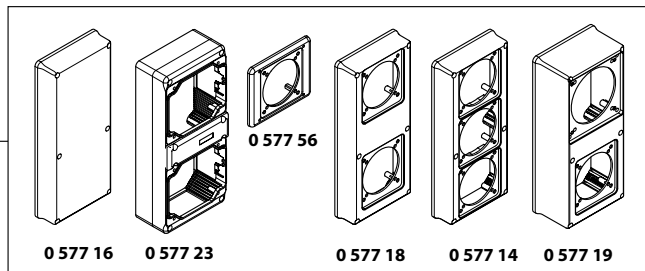
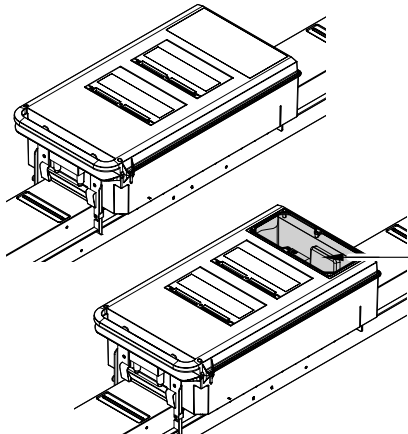
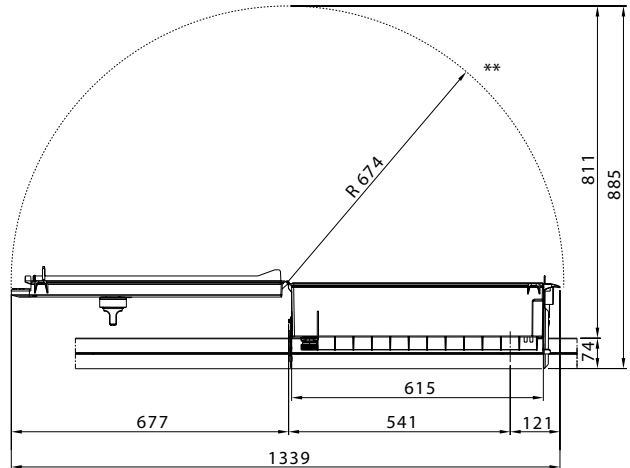
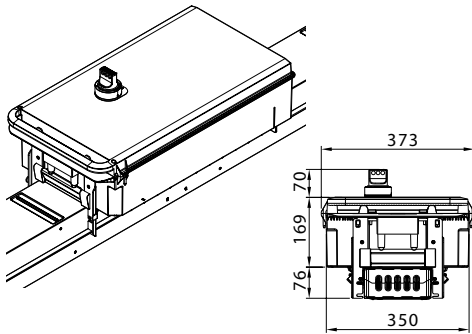
FAIRLEADS
 ISO 16:17
 ISO 21:13
 ISO 25:7
 ISO 40:3
 ISO 50:2



FAIRLEADS
 ISO 16:20
 ISO 21:12
 ISO 25:9
 ISO 40:2
 ISO 50:1



**** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).**

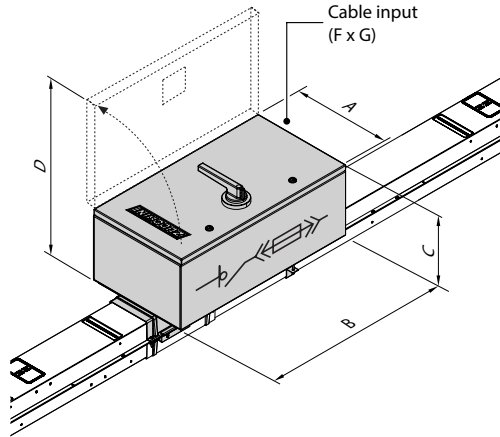


ZUCCHINI

3. Installation

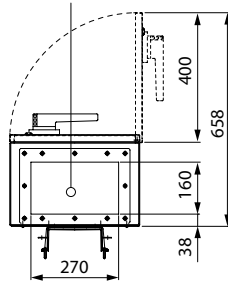
Tap-off boxes bolt-on type
from 630A to 1000A
overall dimensions

From 630A to 1000A

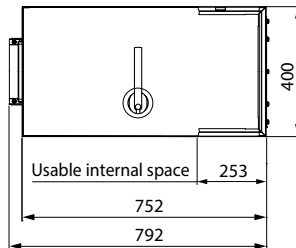
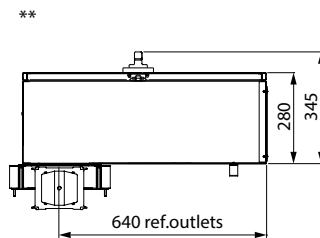


630A

(cables input)
160 x 270



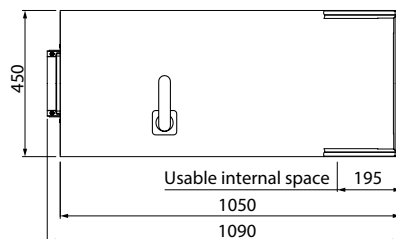
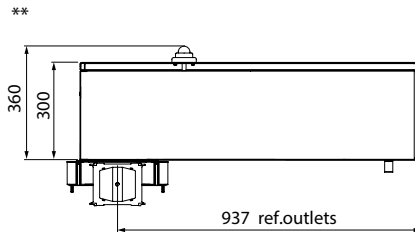
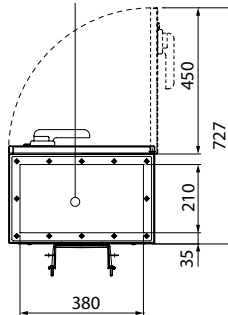
** Be sure to have enough space beneath and around the TOB to easily access and handle it (see also best practice section).



TERMINALS		
Phase	Neutral	Earth
19	19	20
40	40	30
M10	M10	M8

800A - 1000A

(cables input)
210 x 380

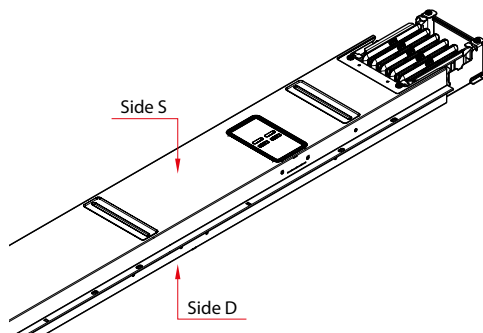


TERMINALS		
Phase	Neutral	Earth
25	20	20
45	30	30
M16	M10	M8

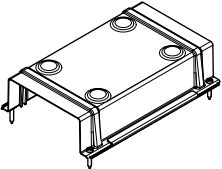
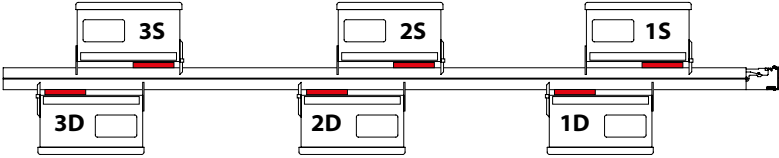
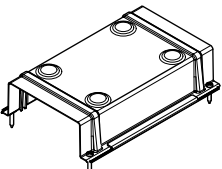
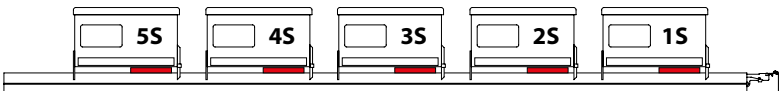
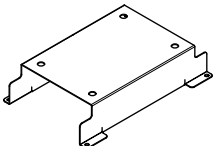
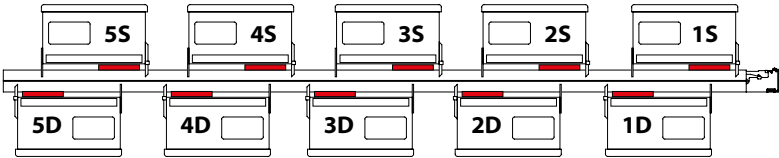
3.7.6 Plug-In box installation rules

Not all boxes can be installed in any position.

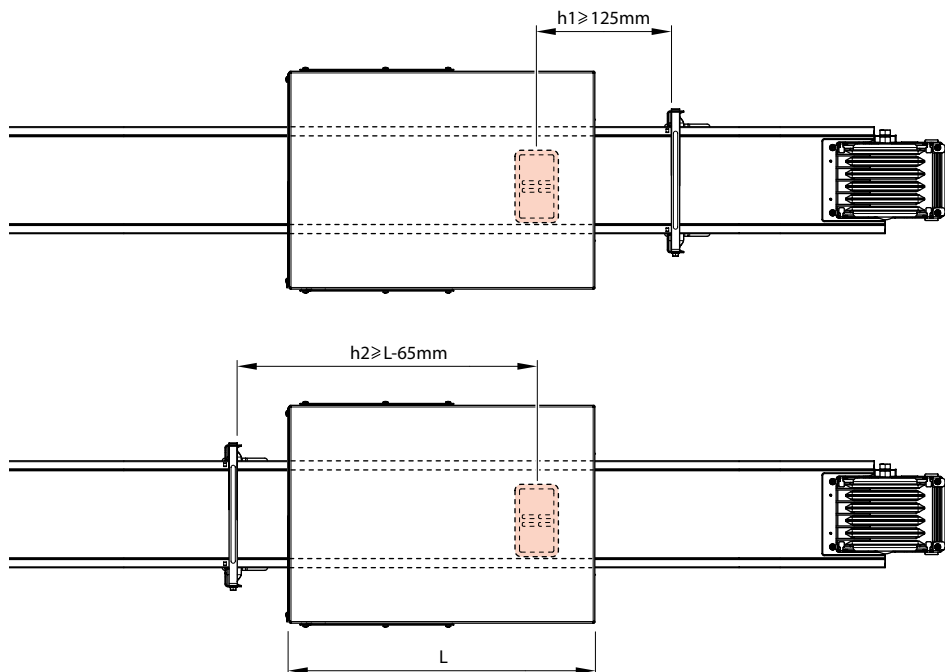
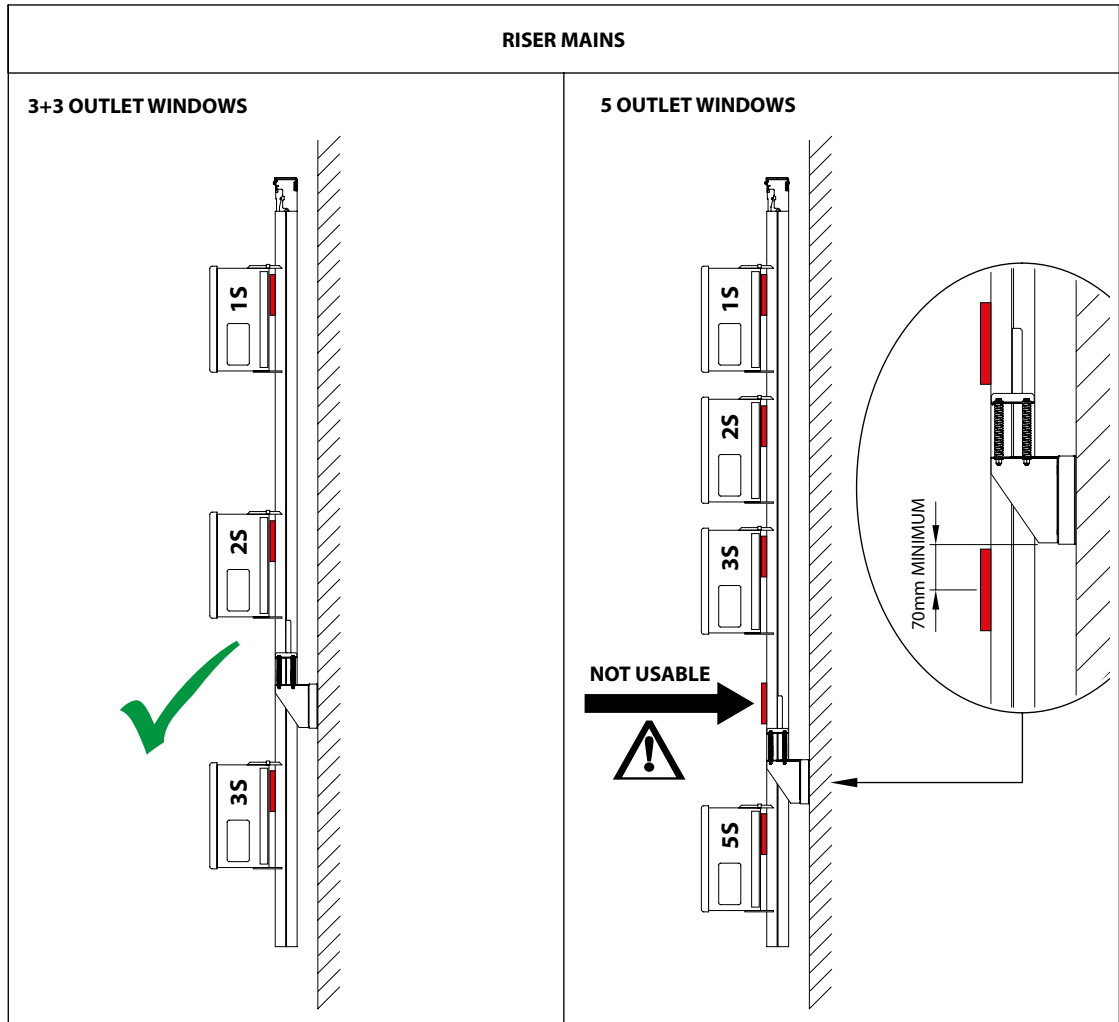
The following figures show where the various Plug-in boxes may be installed on elements with standard setup.

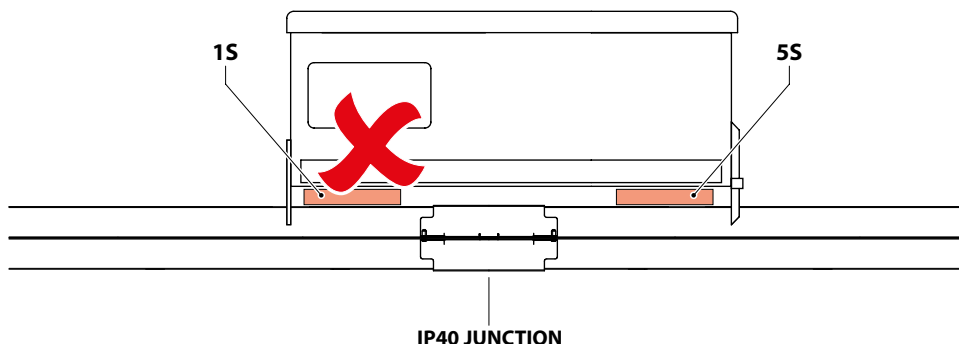


Different combination of boxes in straight elements of XCM:

<p>3+3 OUTLET WINDOWS IP55 JUNCTION COVER</p> 	 <p>Diagram showing three plug-in boxes (3S, 2S, 1S) installed on the top surface (Side S) and three corresponding boxes (3D, 2D, 1D) installed on the bottom surface (Side D) of a busbar element.</p>
<p>5 OUTLET WINDOWS IP55 JUNCTION COVER</p> 	 <p>Diagram showing five plug-in boxes (5S, 4S, 3S, 2S, 1S) installed on the top surface (Side S) of a busbar element.</p>
<p>5+5 OUTLET WINDOWS IP40 JUNCTION COVER</p> 	 <p>Diagram showing five plug-in boxes (5S, 4S, 3S, 2S, 1S) installed on the top surface (Side S) and five corresponding boxes (5D, 4D, 3D, 2D, 1D) installed on the bottom surface (Side D) of a busbar element.</p>

3. Installation



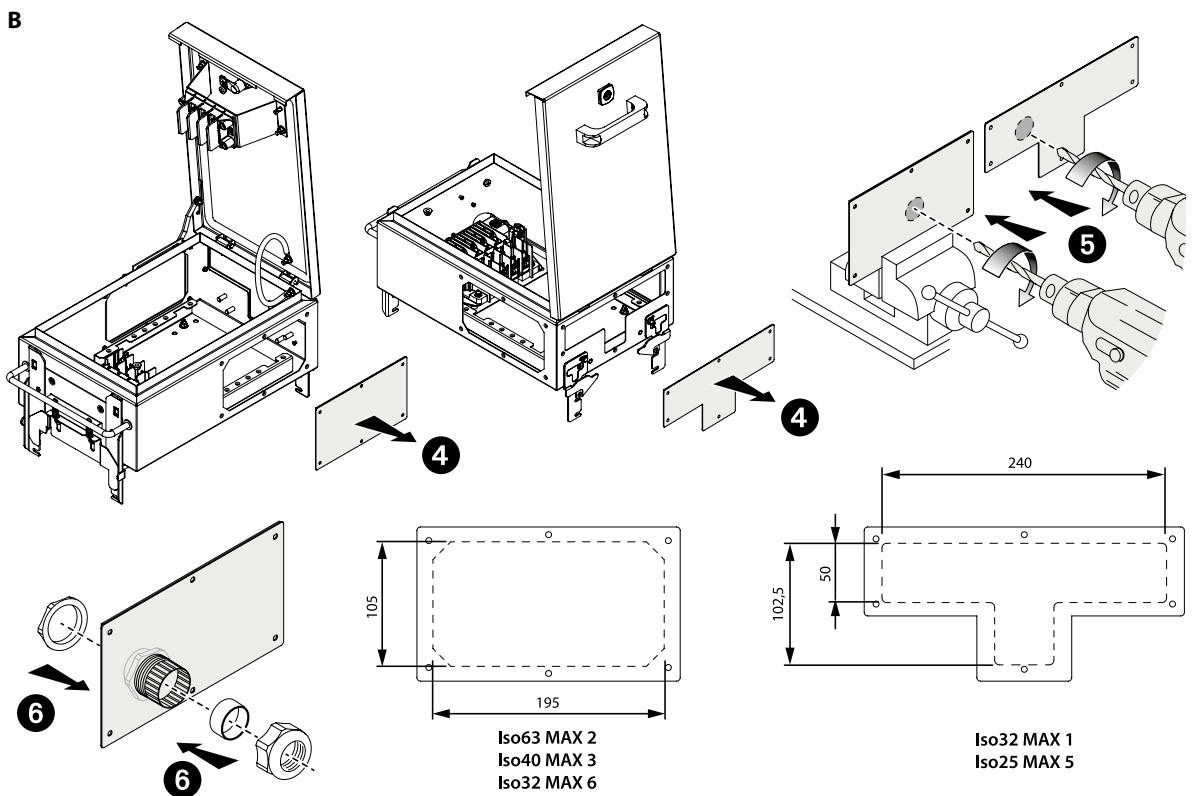
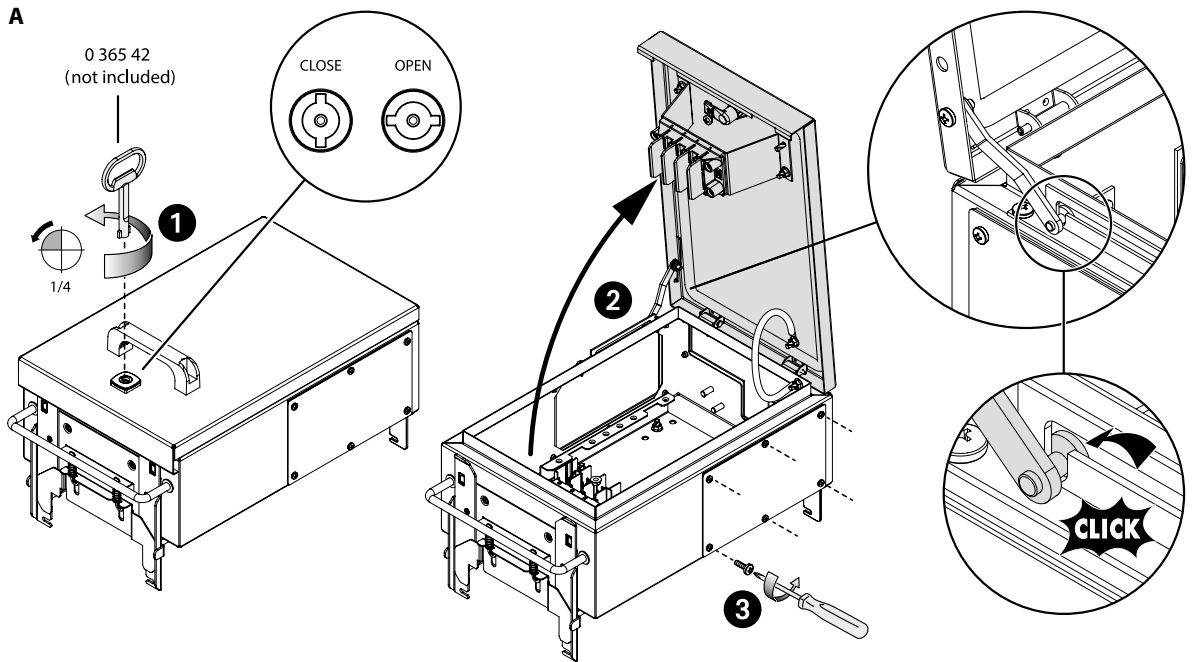


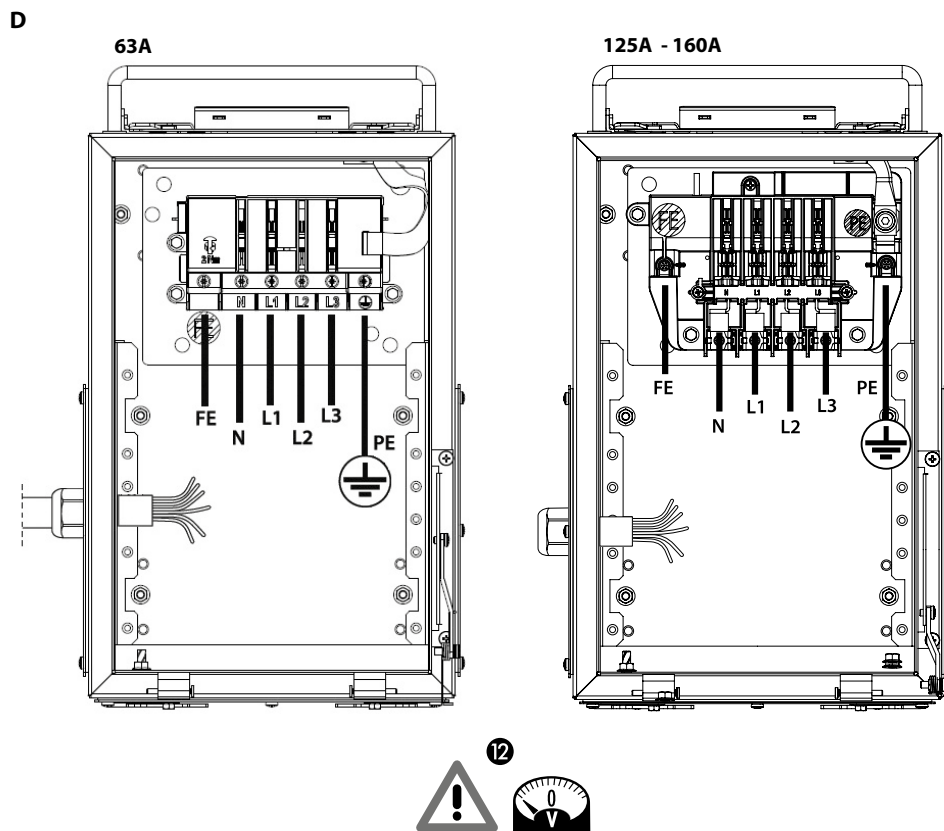
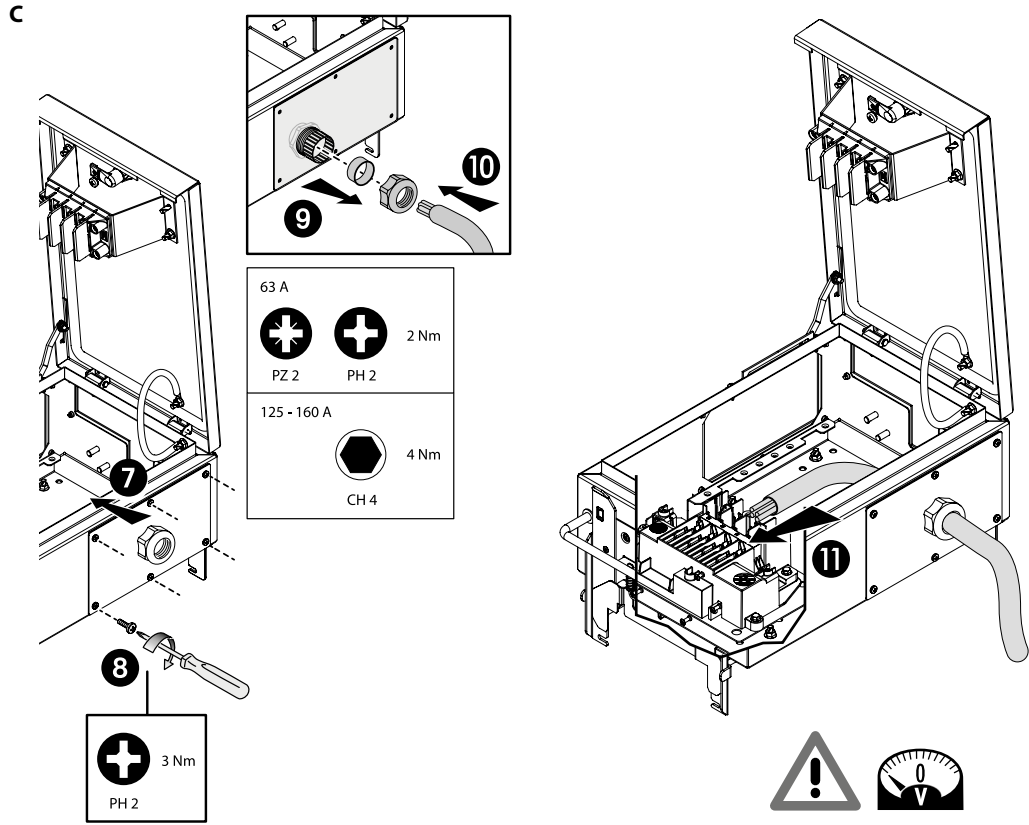
ELEMENT TYPE	POSITION	TAP OFF BOX	
		METAL	PLASTIC
3+3 OUTLET WINDOWS	1S	size 1, size 2, size 3	size 1, size 2, size 3
	2S	size 1, size 2, size 3	size 1, size 2, size 3
	3S	size 1, size 2	size 1, size 2
	1D	size 1, size 2	size 1, size 2
	2D	size 1, size 2, size 3	size 1, size 2, size 3
	3D	size 1, size 2, size 3	size 1, size 2, size 3
5 OUTLET WINDOWS	1S	size 1, size 2, size 3	size 1, size 2, size 3
	2S	size 1	size 1, size 2
	3S	size 1, size 2, size 3	size 1, size 2, size 3
	4S	size 1	size 1, size 2
	5S	size 1	size 1, size 2
5+5 OUTLET WINDOWS	1S	size 1, size 2, size 3	size 1, size 2, size 3
	2S	size 1	size 1, size 2
	3S	size 1, size 2, size 3	size 1, size 2, size 3
	4S	size 1	size 1, size 2
	5S	size 1*, size 2*, size 3*	size 1*, size 2*, size 3*
	1D	size 1*, size 2*, size 3*	size 1*, size 2*, size 3*
	2D	size 1	size 1, size 2
	3D	size 1, size 2, size 3	size 1, size 2, size 3
	4D	size 1	size 1, size 2
	5D	size 1, size 2, size 3	size 1, size 2, size 3

* when mounted in this position the outlet window on next element will be unused.

3. Installation

3.7.7 Assembly instruction Plug-In box 63A-125/160A empty

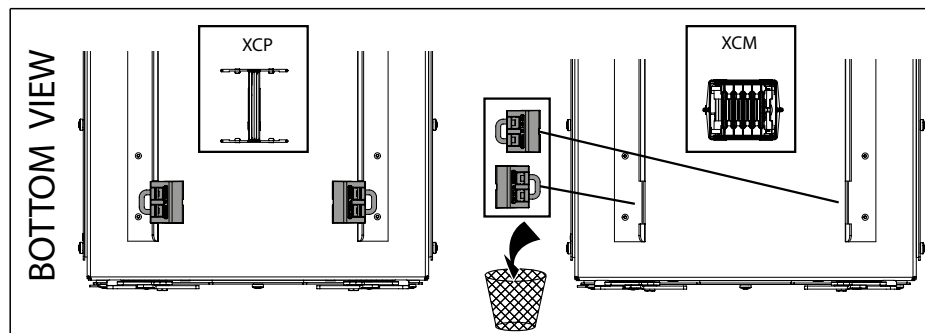
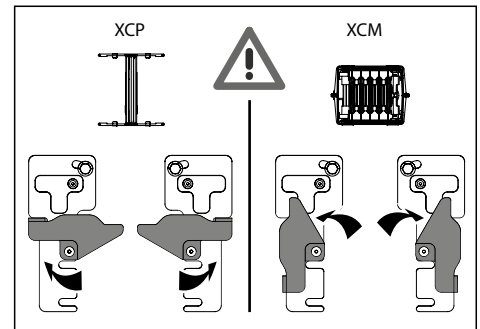
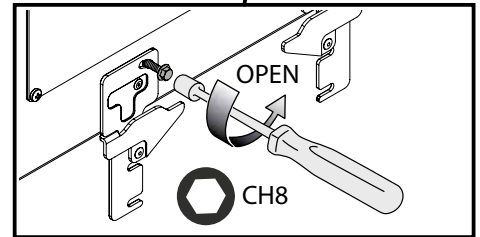
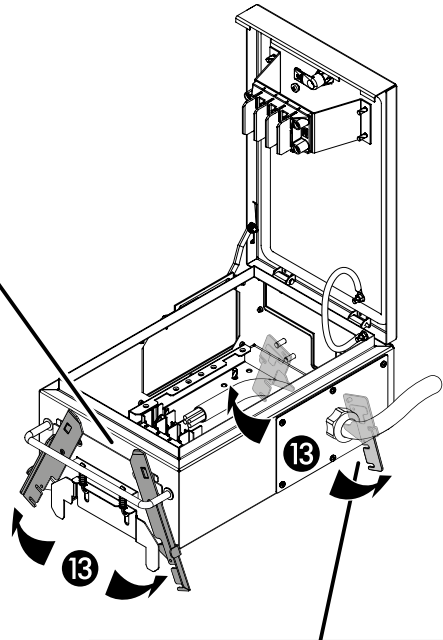
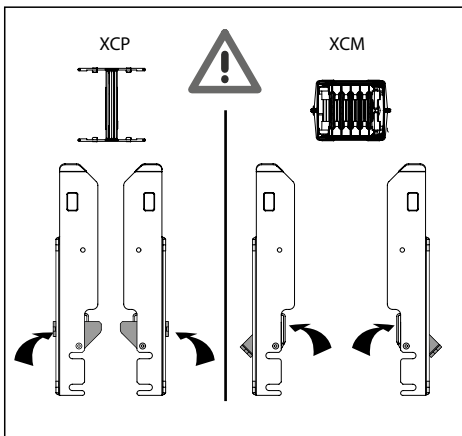
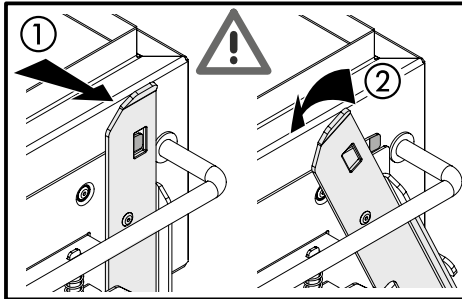




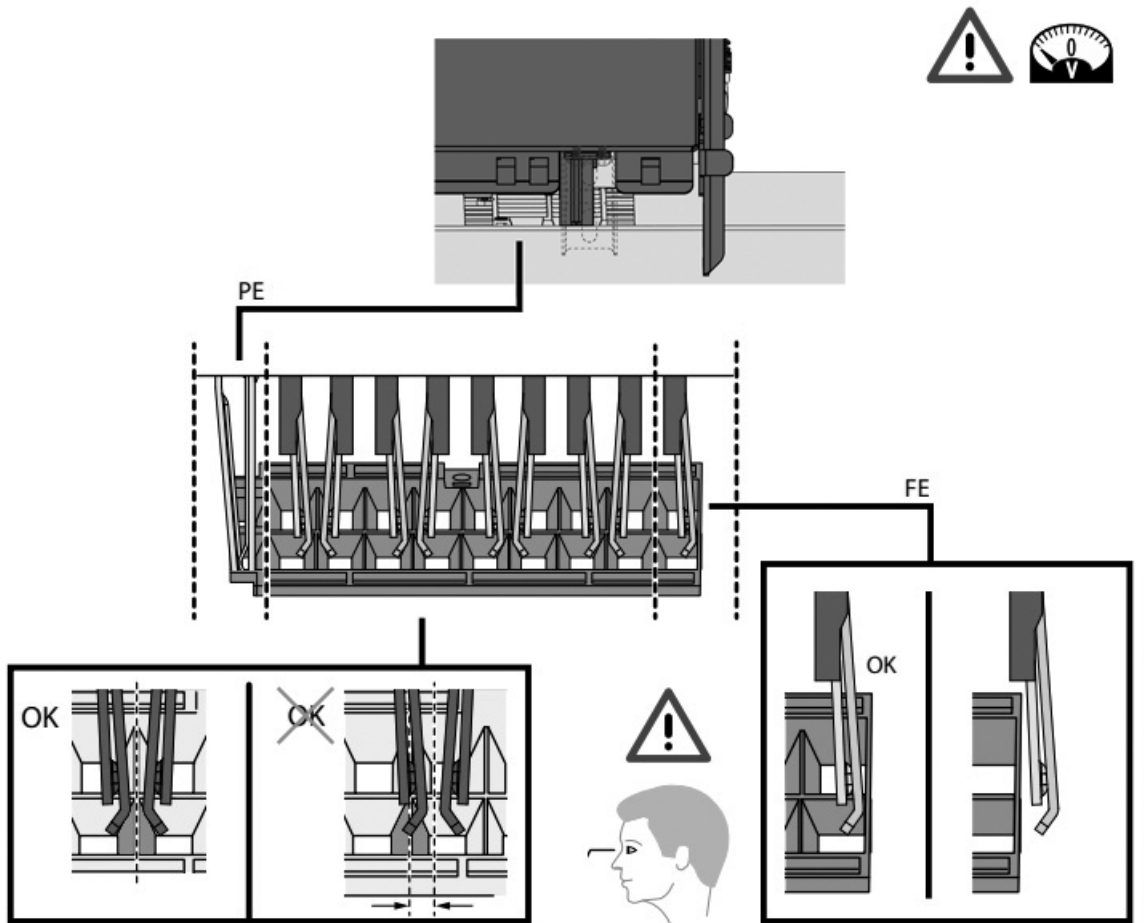
ZUCCHINI

3. Installation

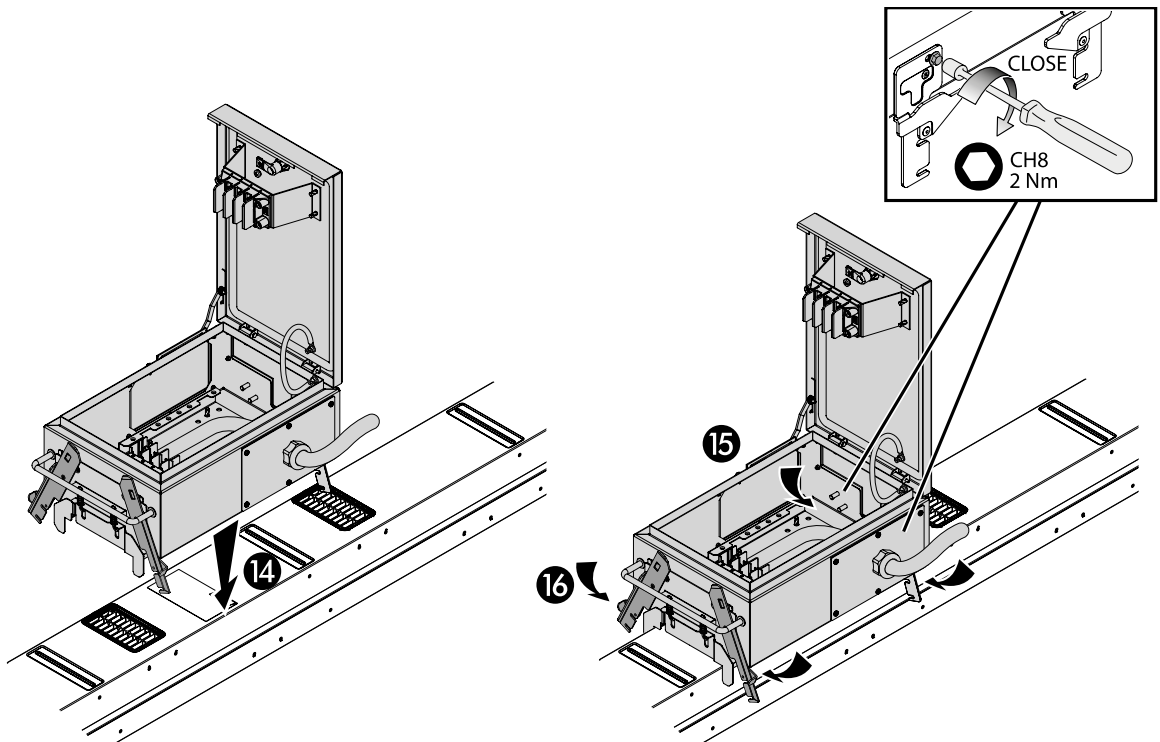
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F



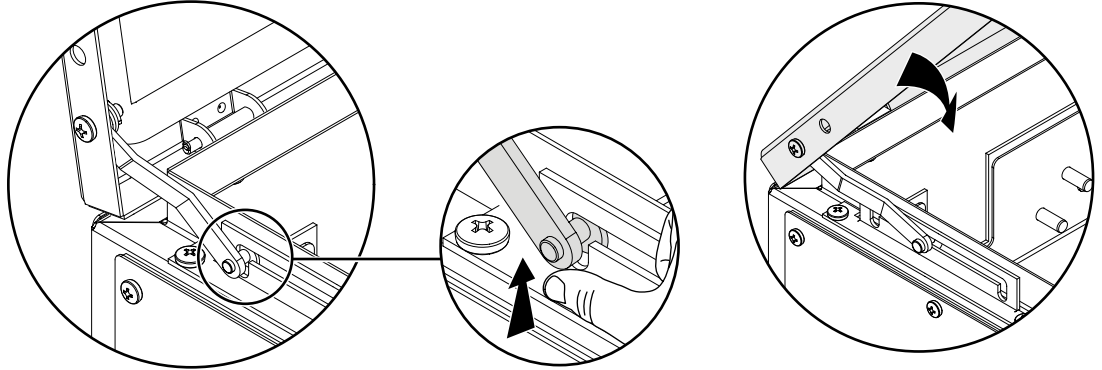
Refer to Best Practice Paragraph 4.1



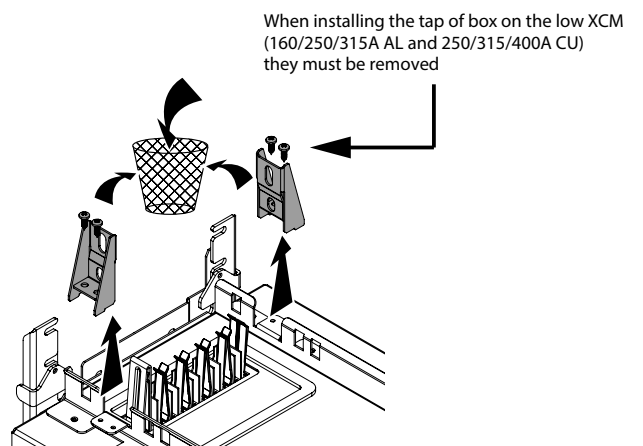
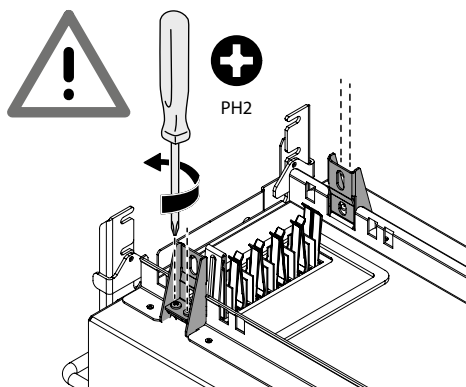
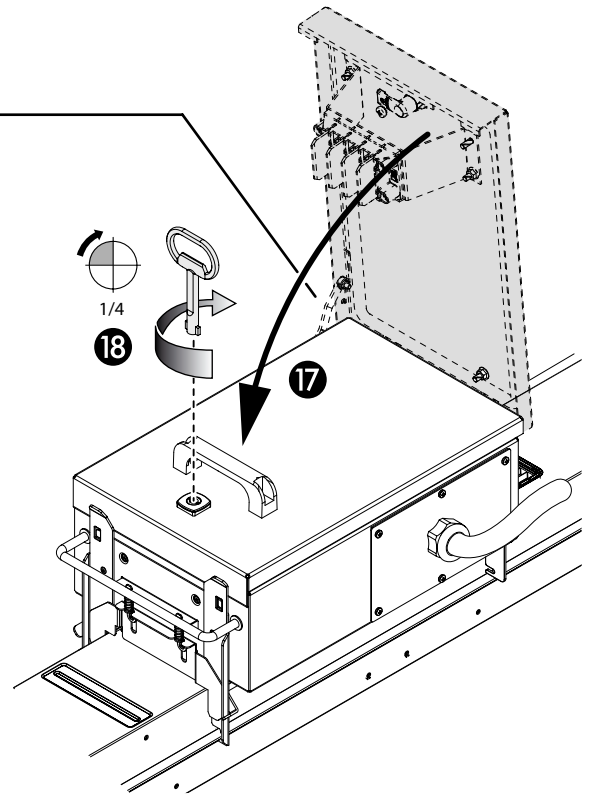
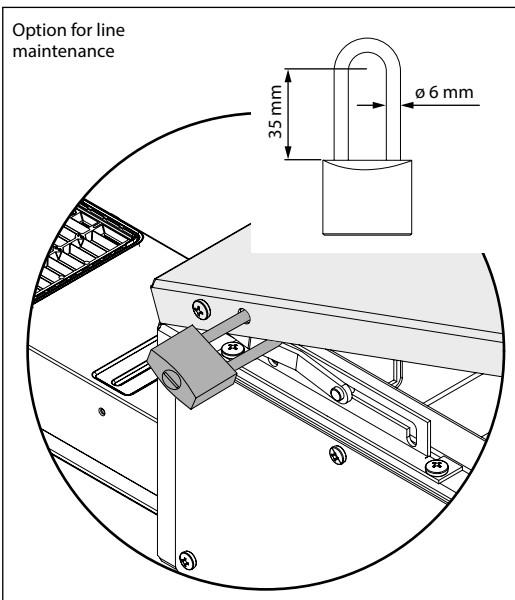
ZUCCHINI

3. Installation

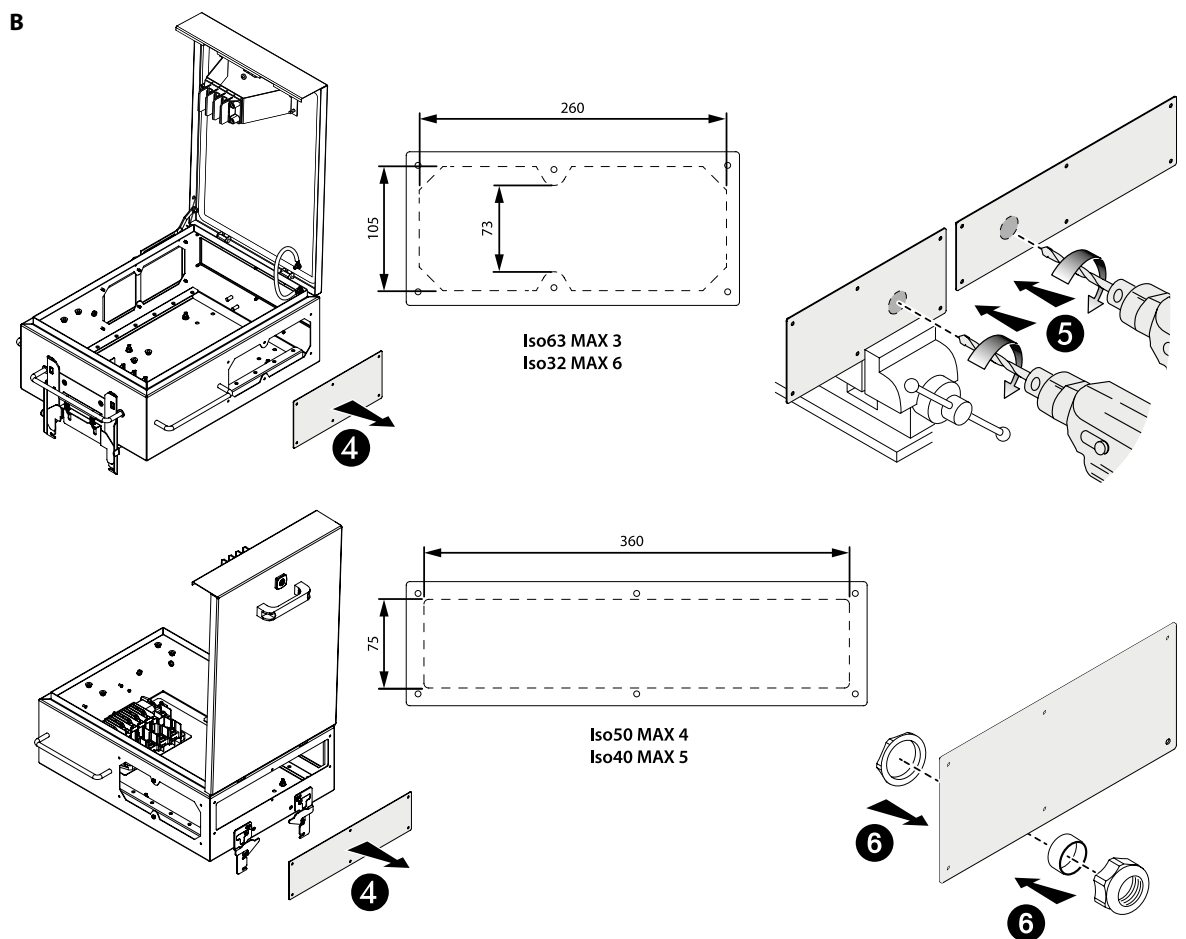
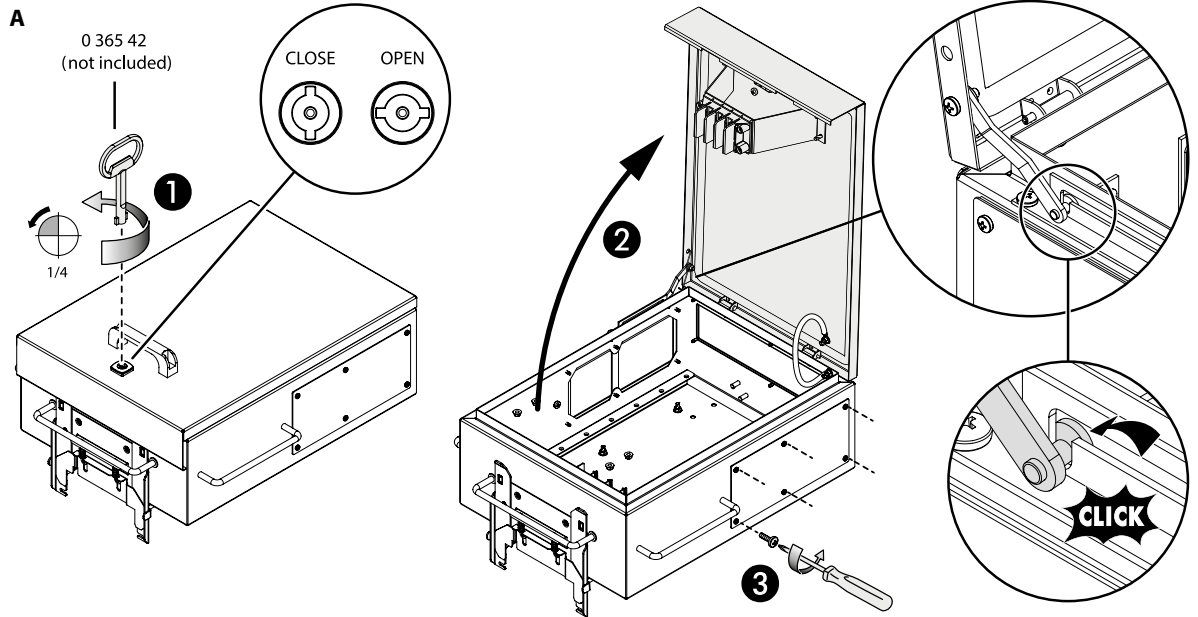
G



H

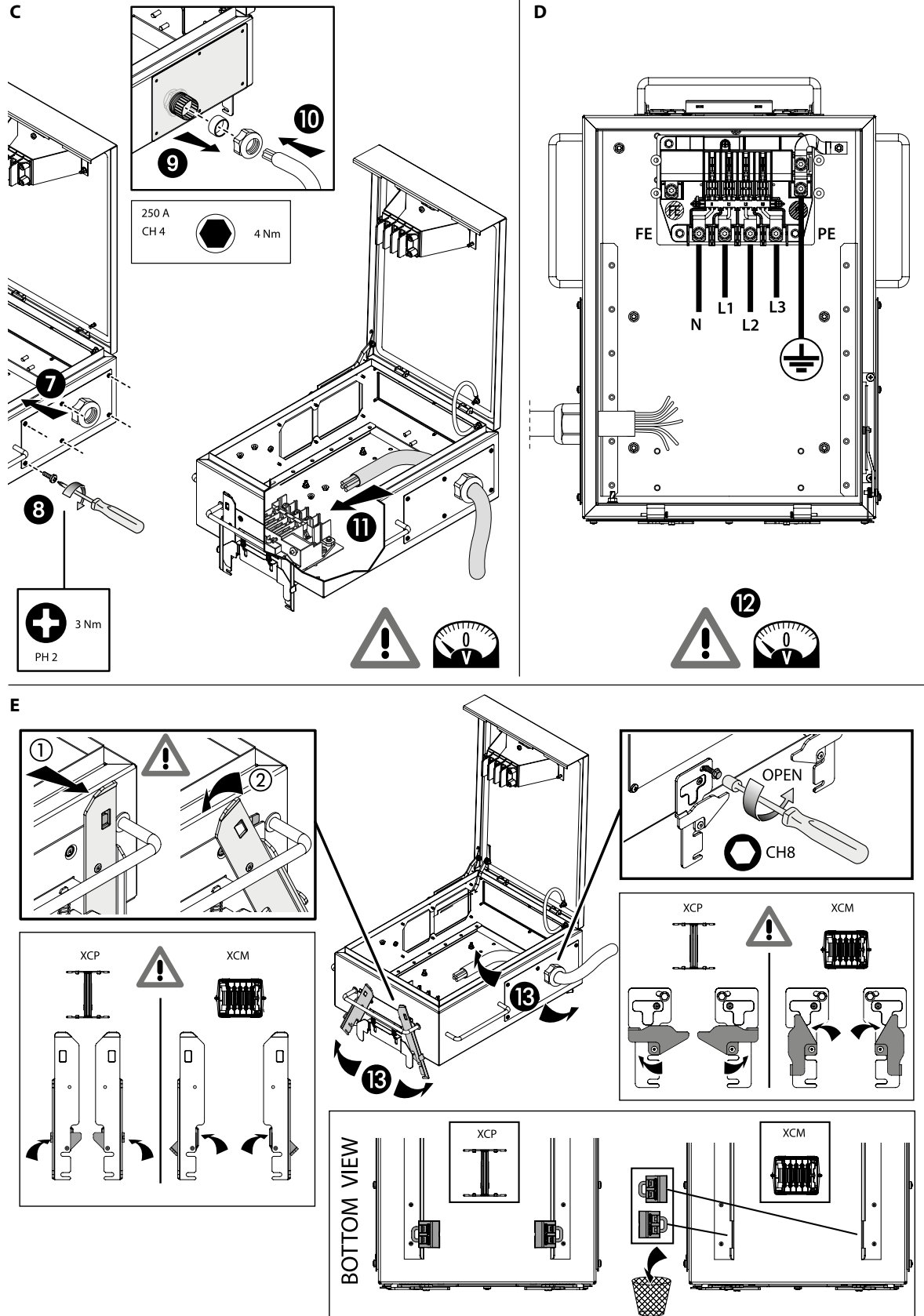


3.7.8 Assembly instruction Plug-In box 250A empty

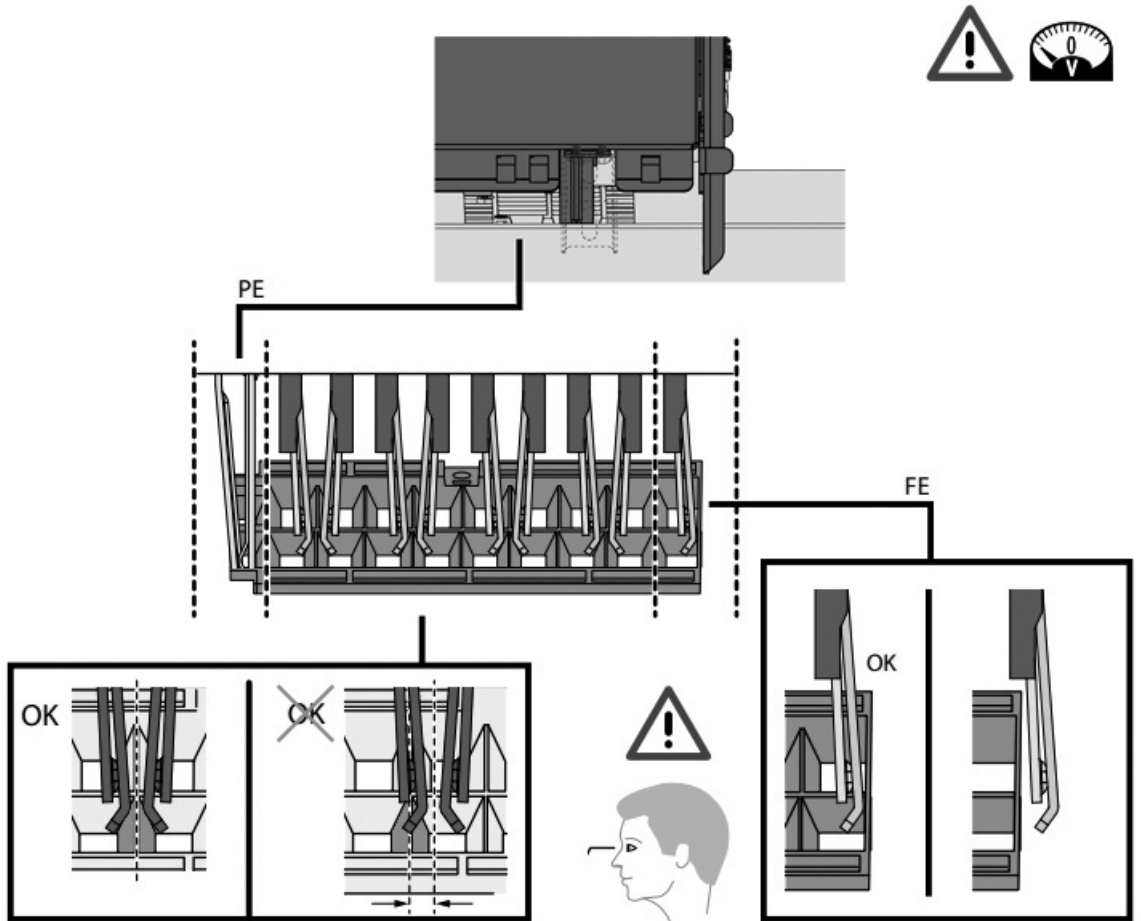


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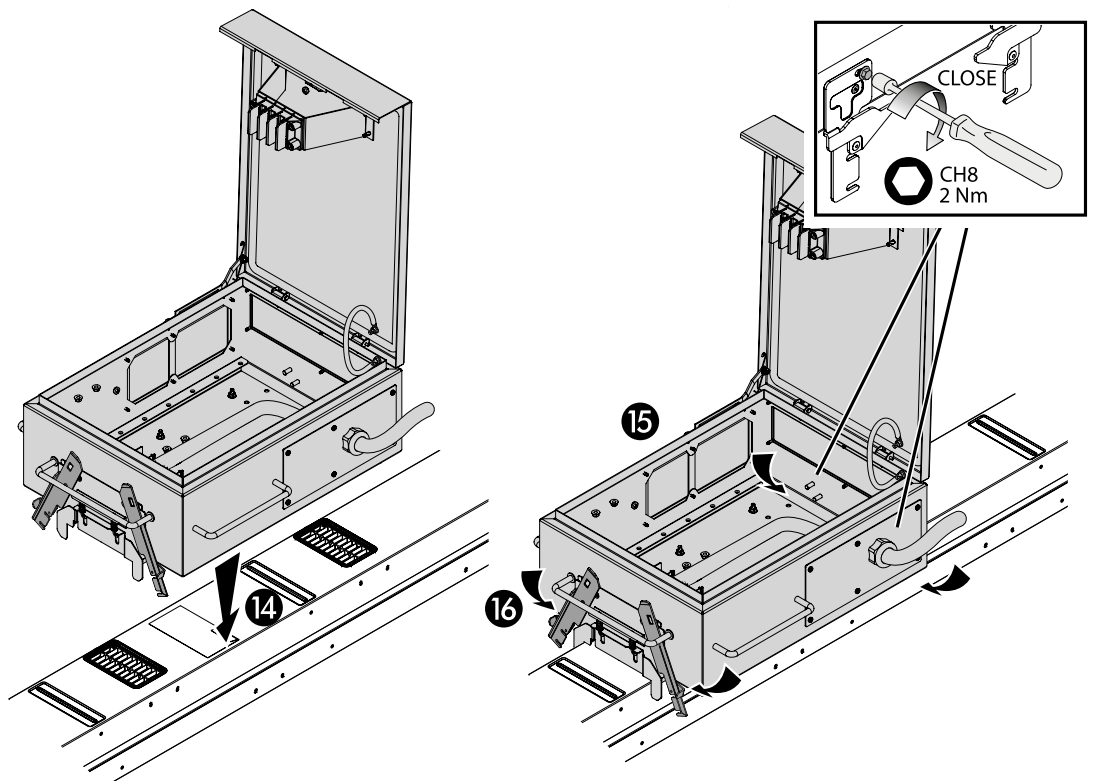
3. Installation



F



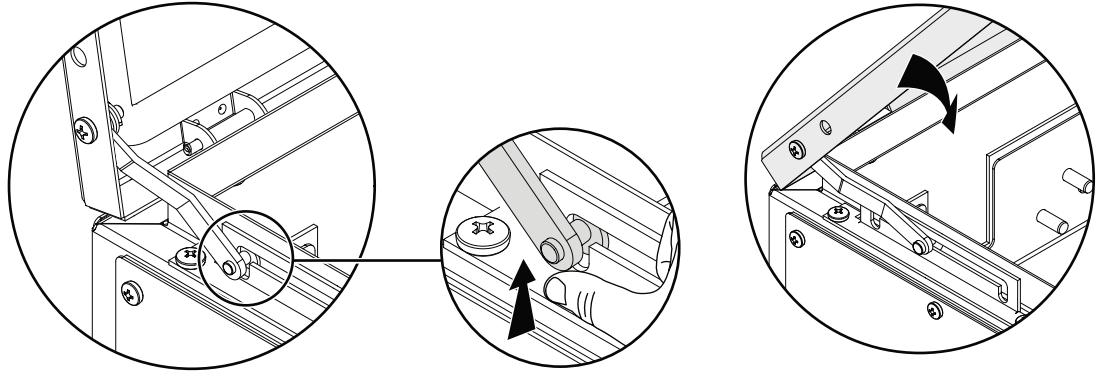
Refer to Best Practice Paragraph 4.1



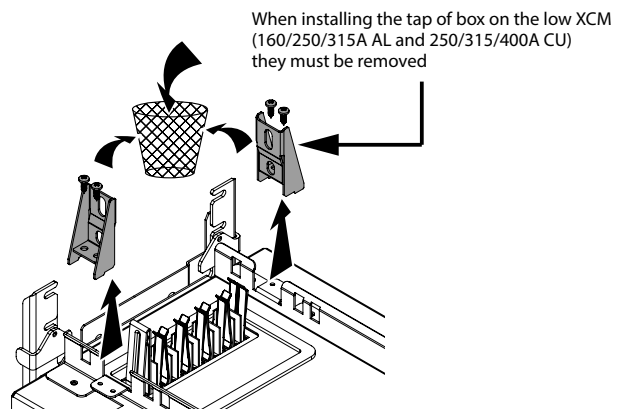
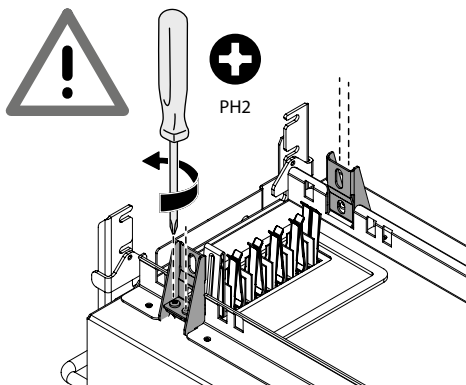
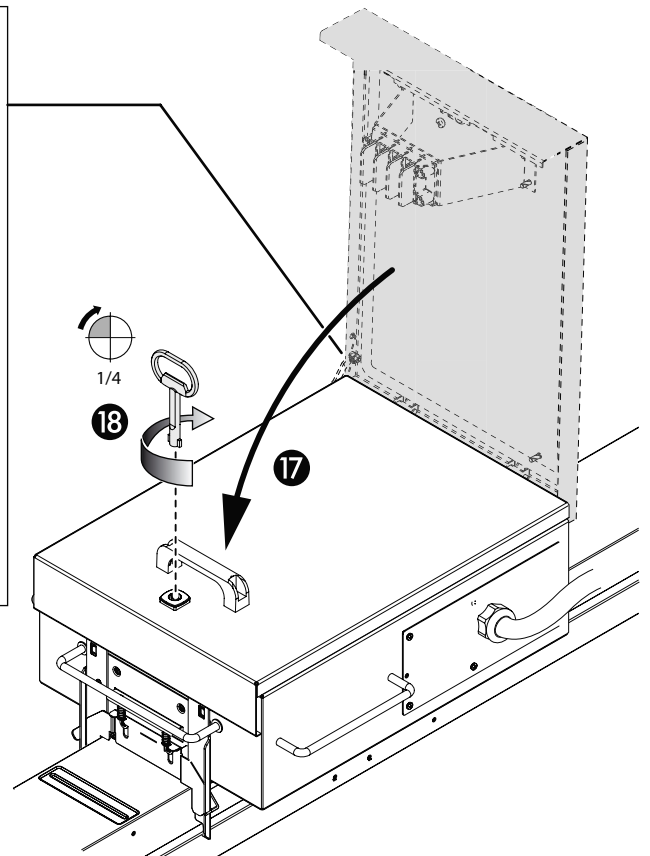
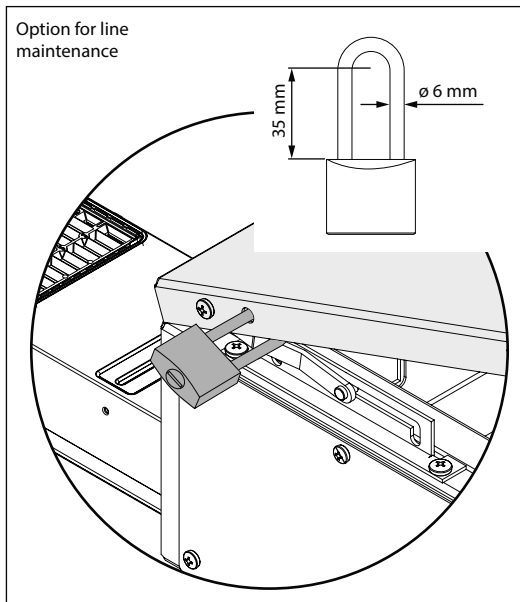
ZUCCHINI

3. Installation

G



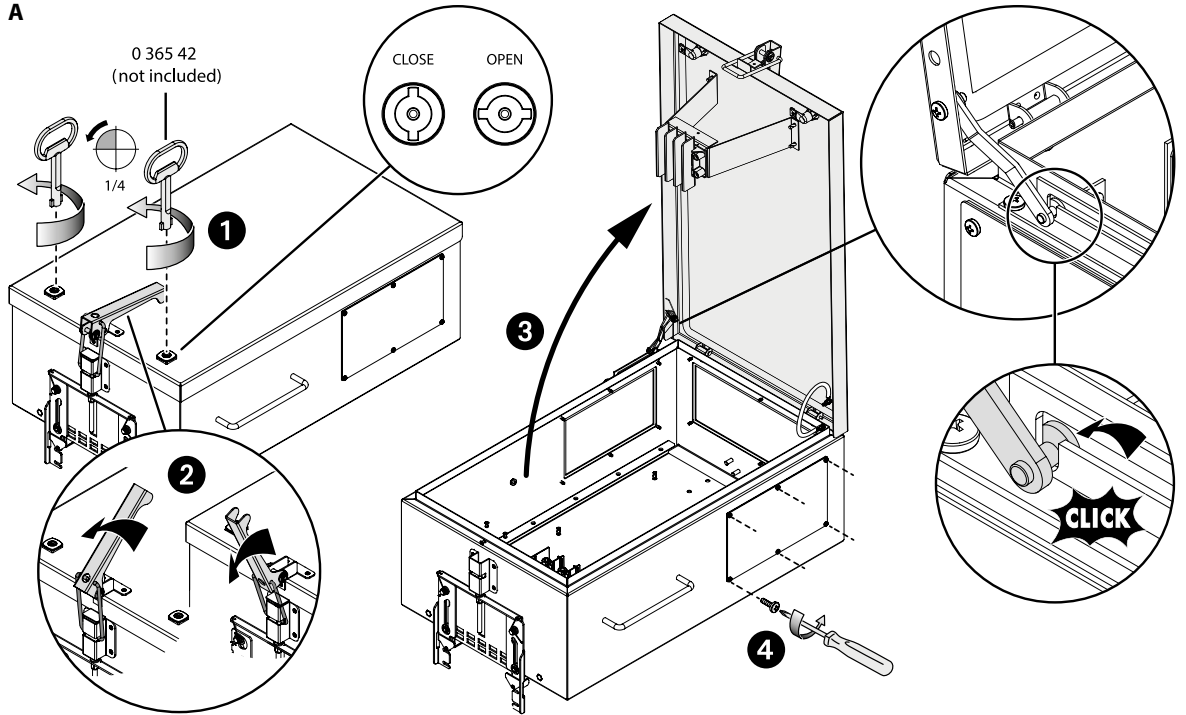
H



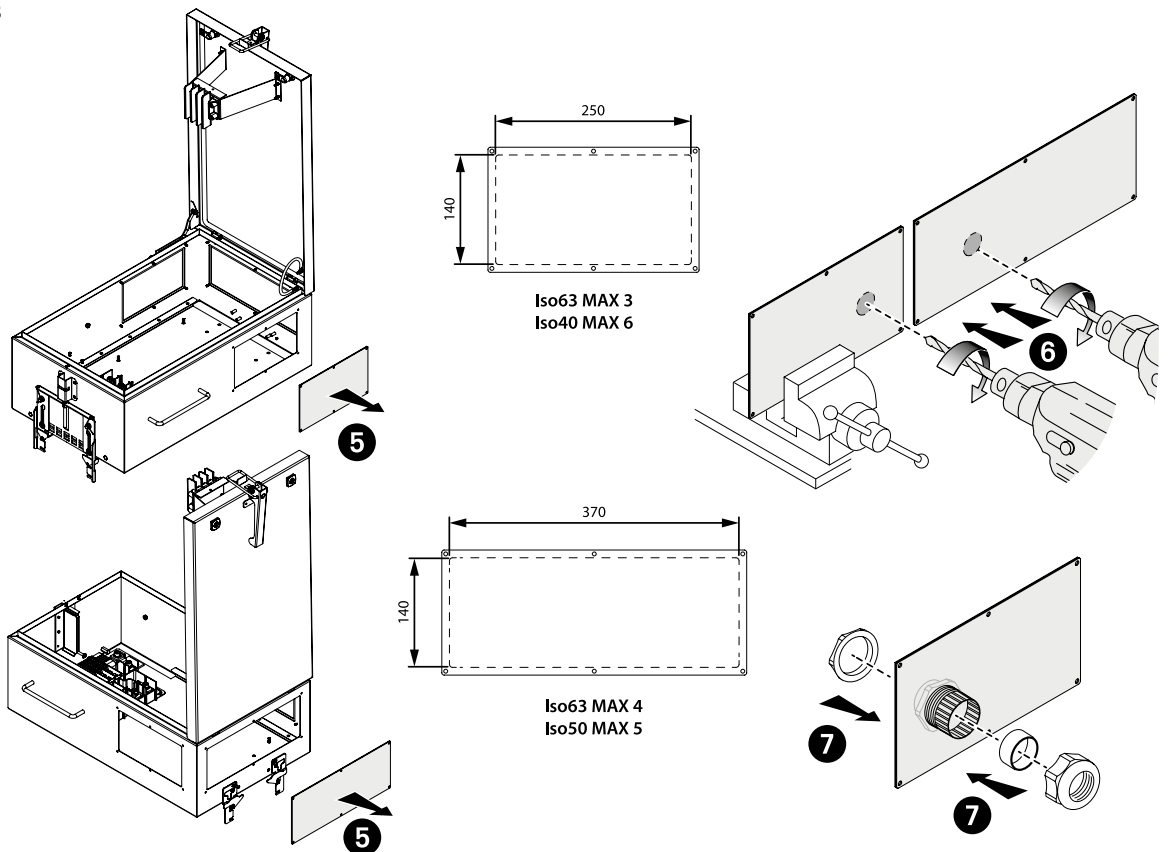
3.7.9 Assembly instruction Plug-In box 630A empty



A

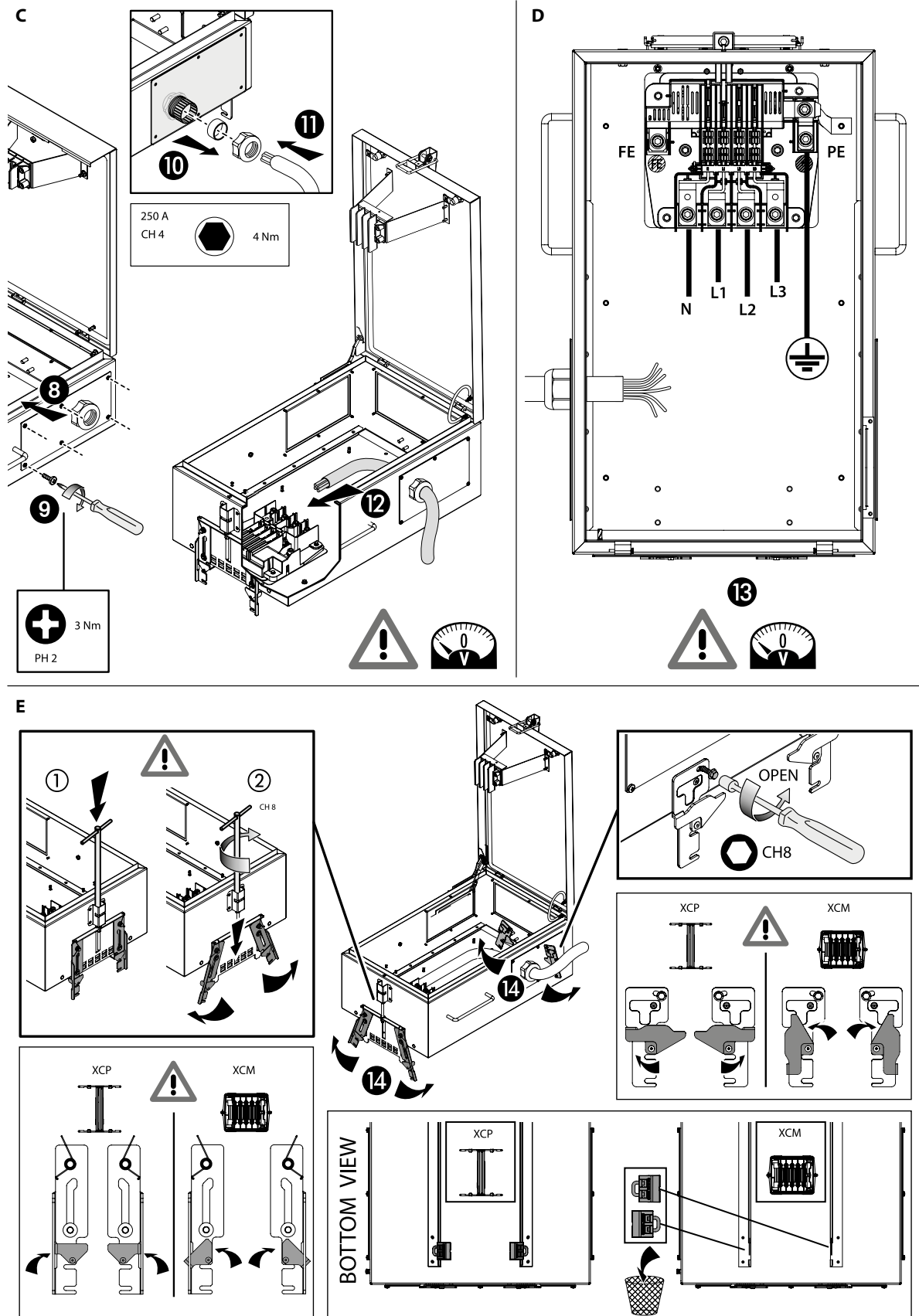


B

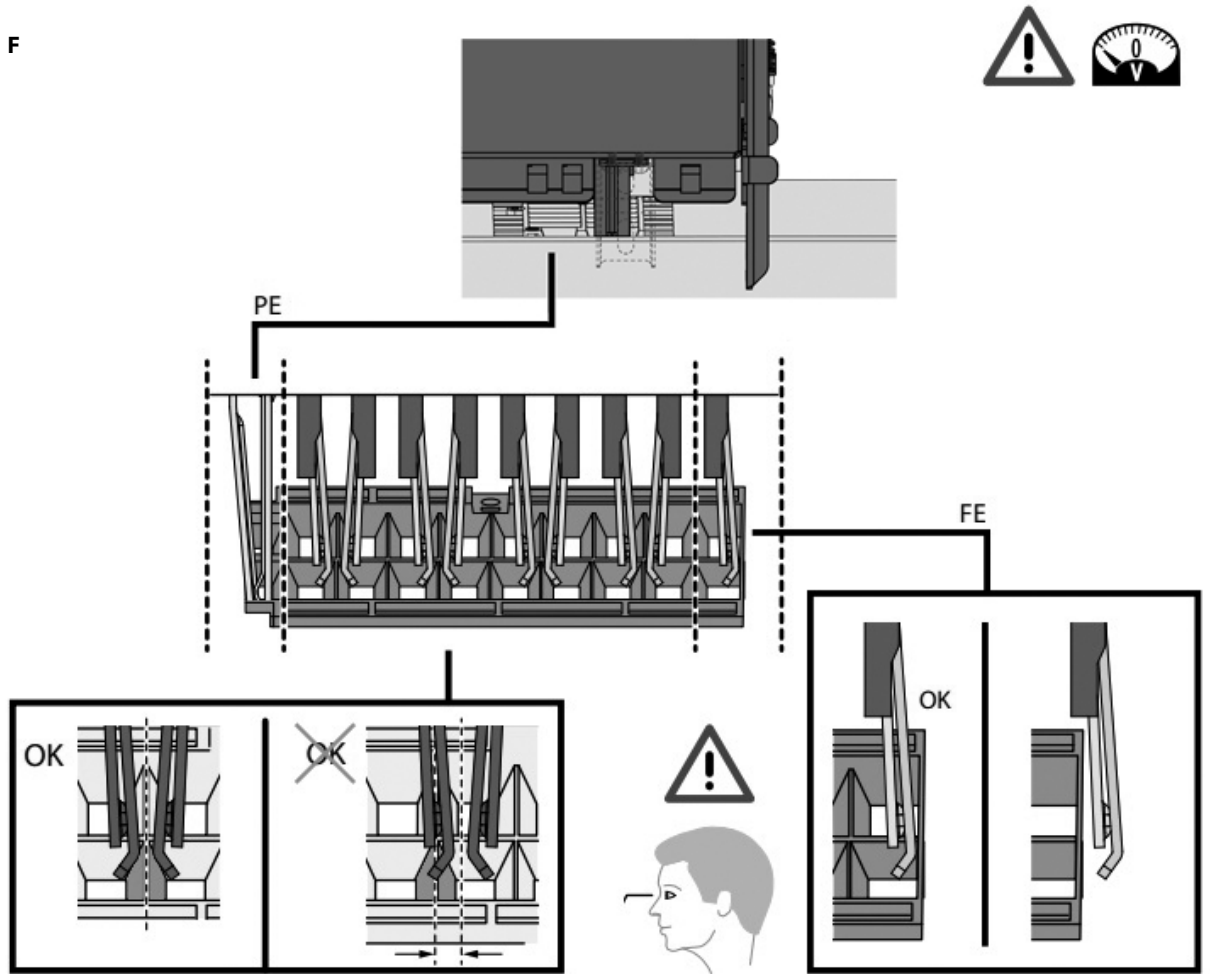


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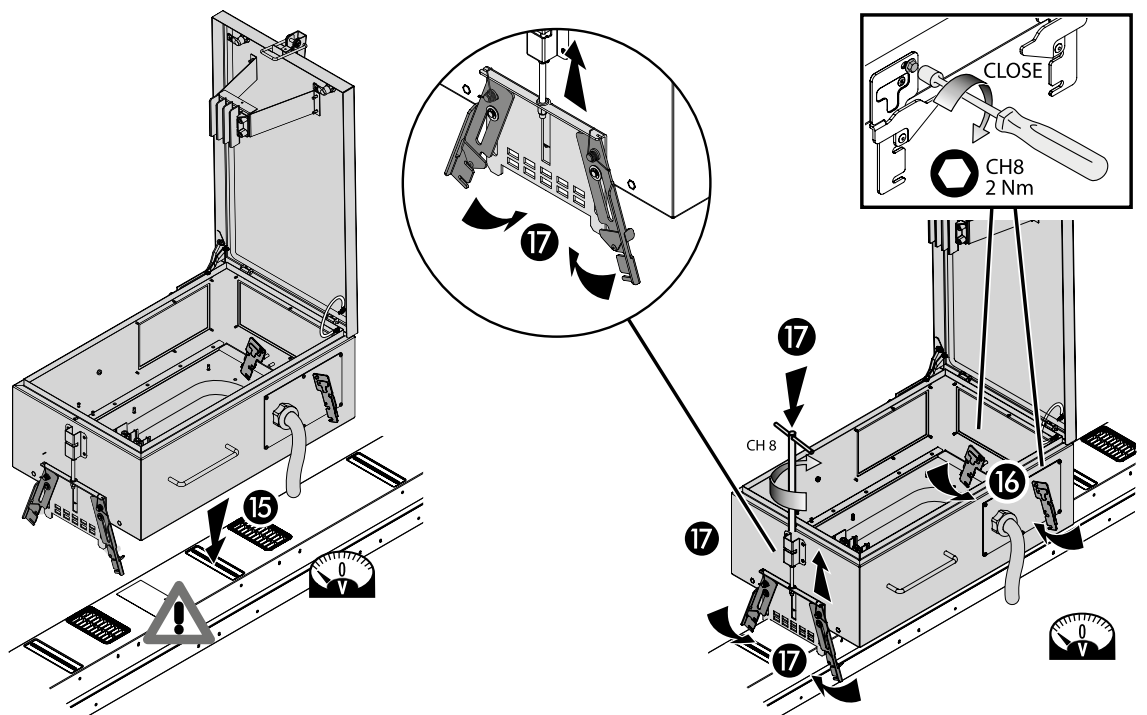
3. Installation



F



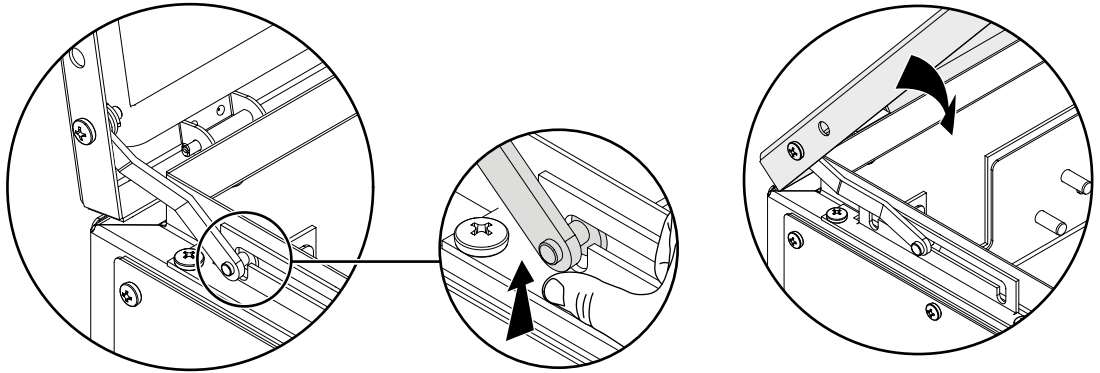
Refer to Best Practice Paragraph 4.1



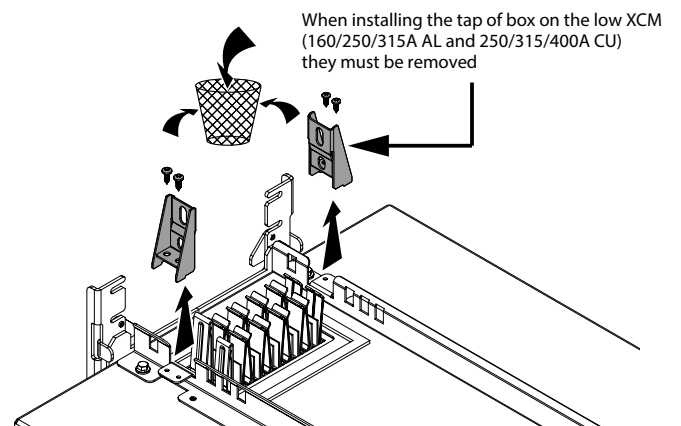
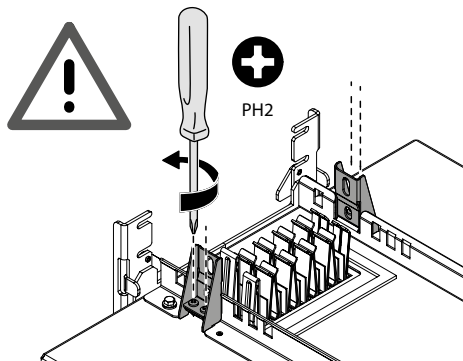
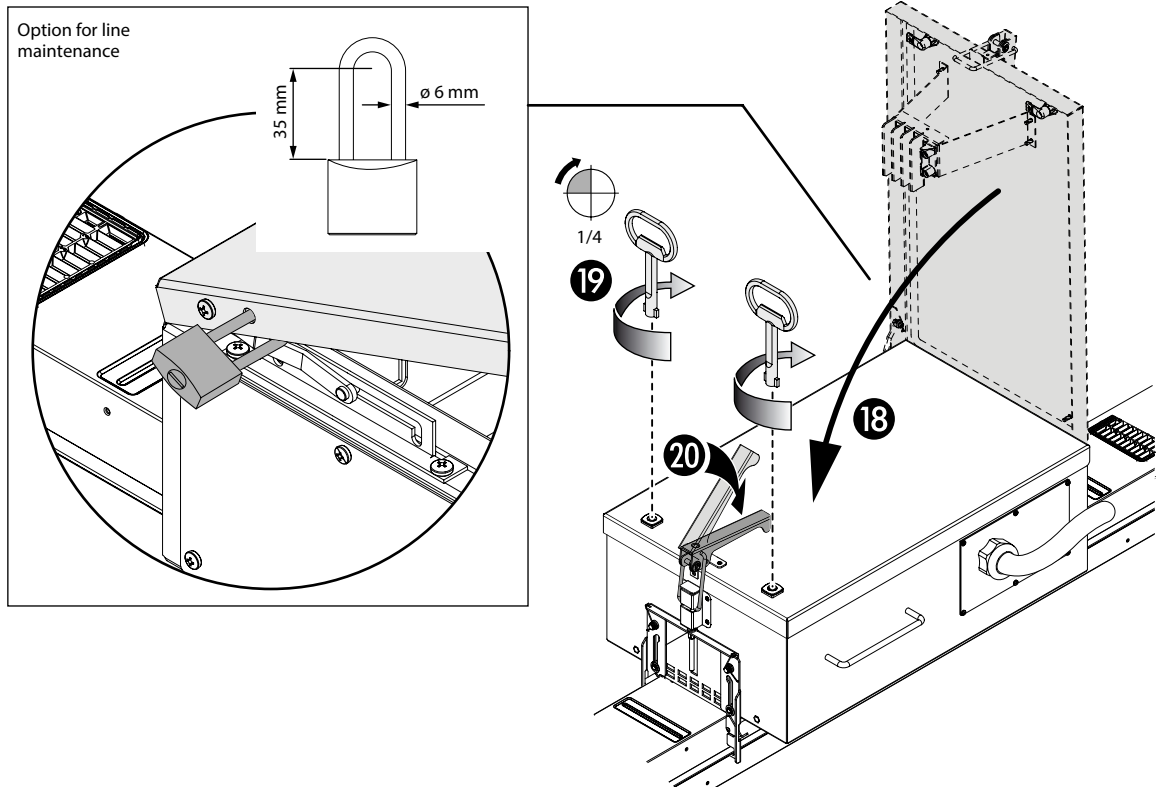
ZUCCHINI

3. Installation

G



H

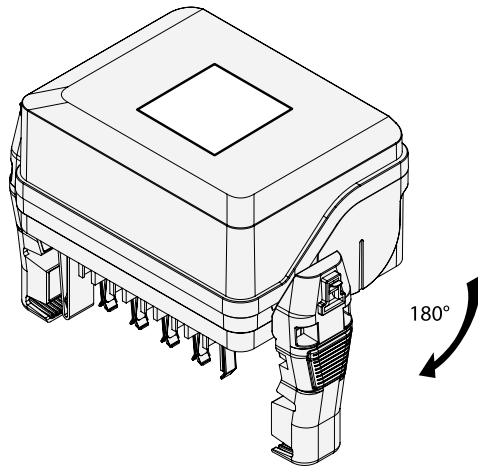


When installing the tap of box on the low XCM (160/250/315A AL and 250/315/400A CU) they must be removed

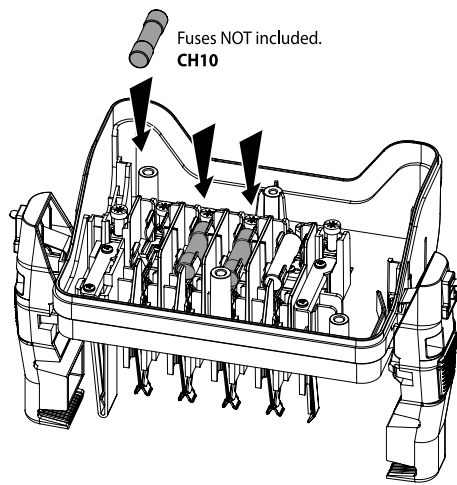
For more information on how to wire the Tap-off boxes DPX³ ready and the Tap-off boxes with fuse carriers, refer to the relative assembly instructions.

3.7.10 Assembly instruction fiberglass plastic T1

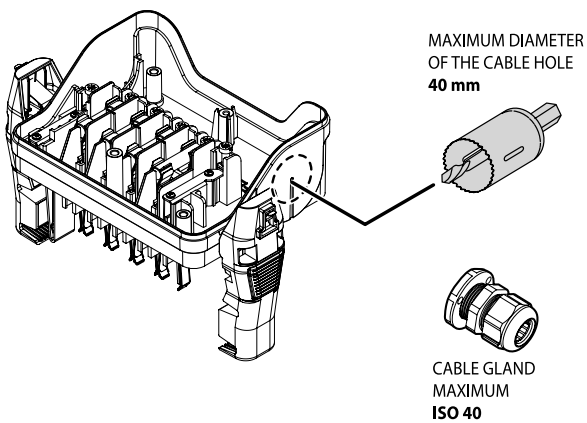
A



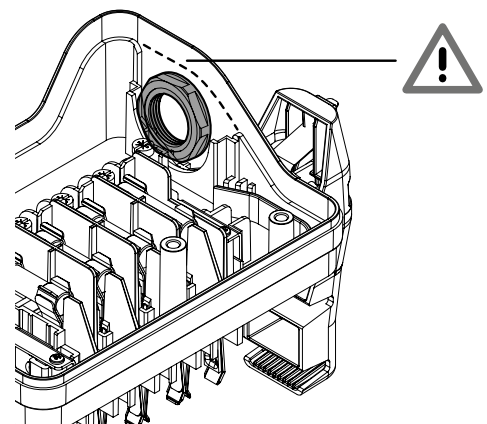
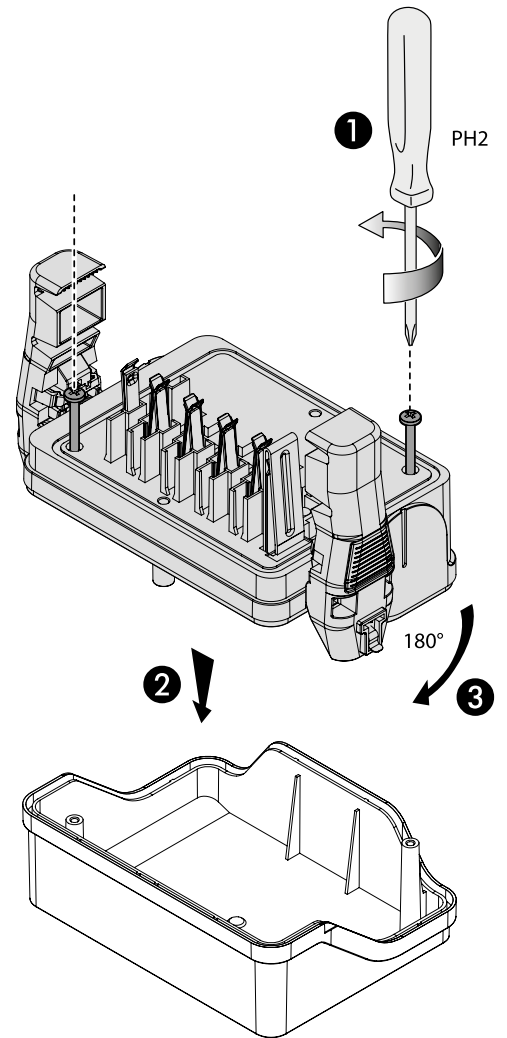
C



D

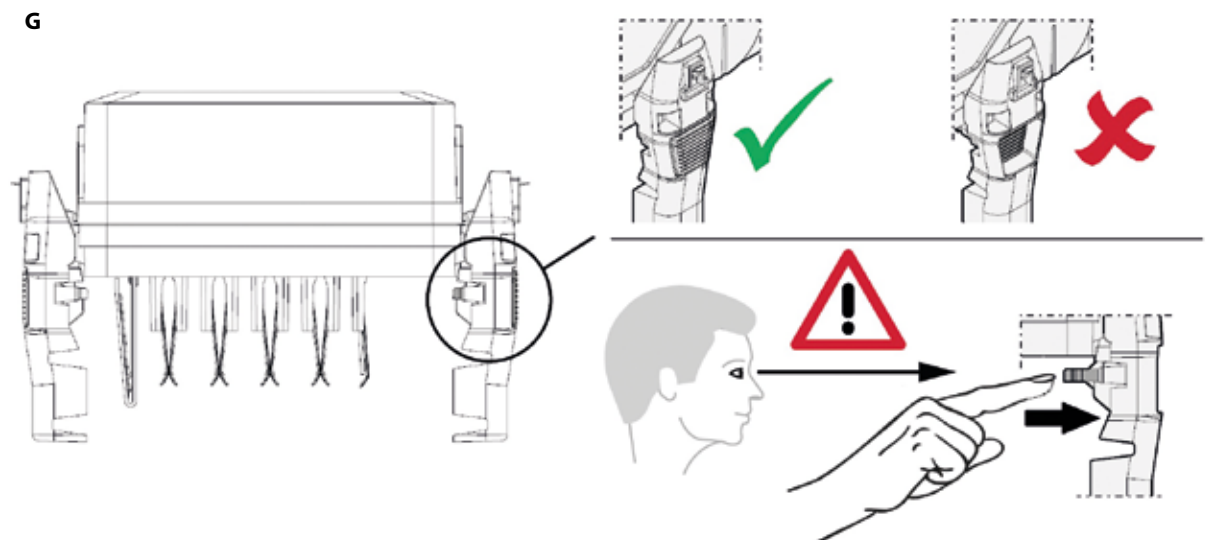
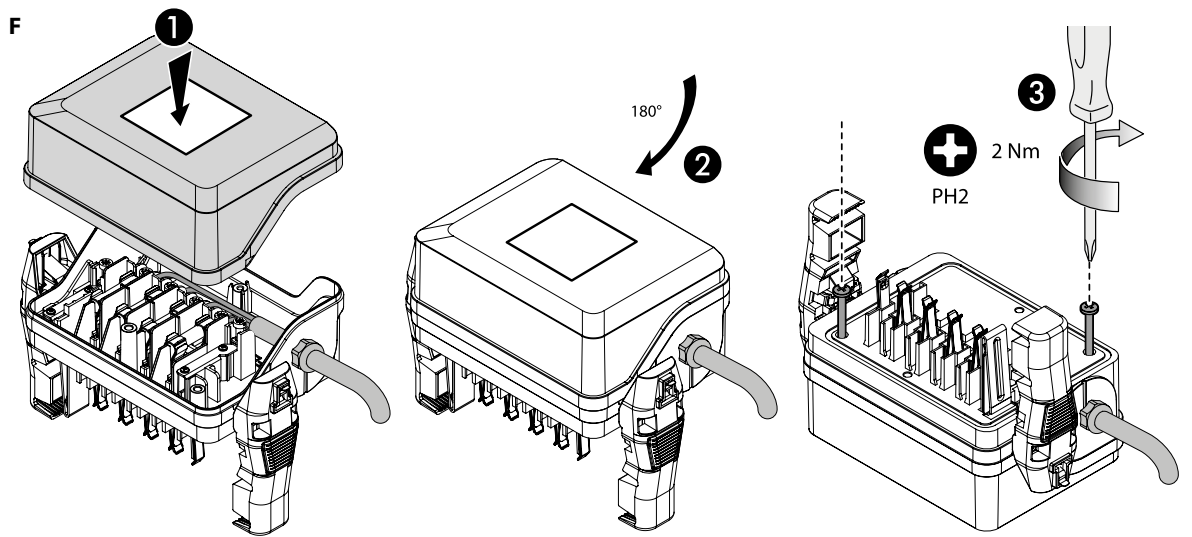
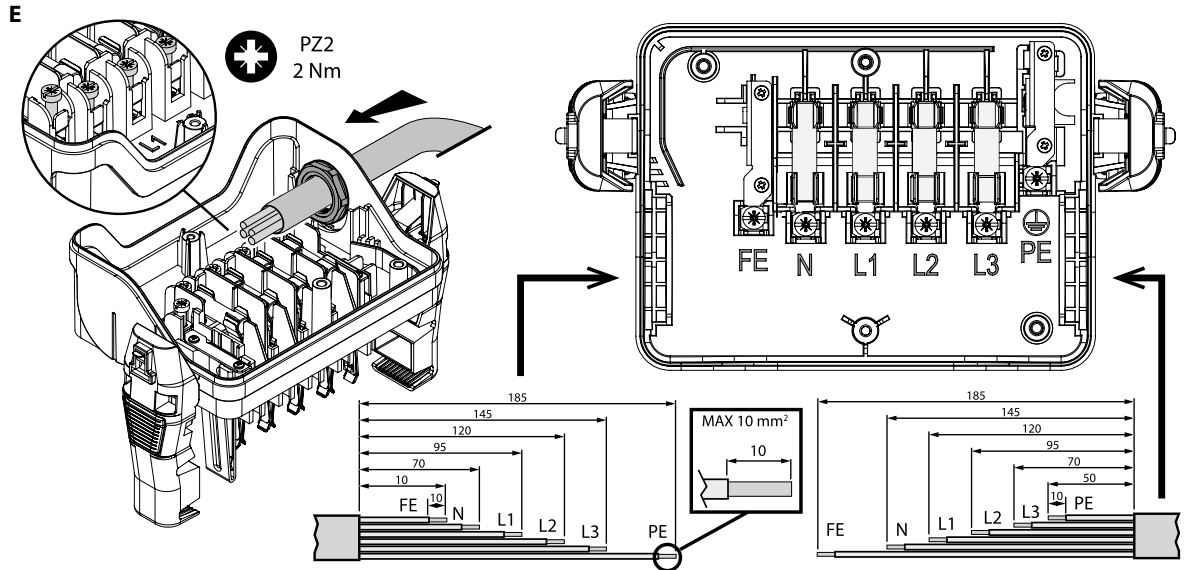


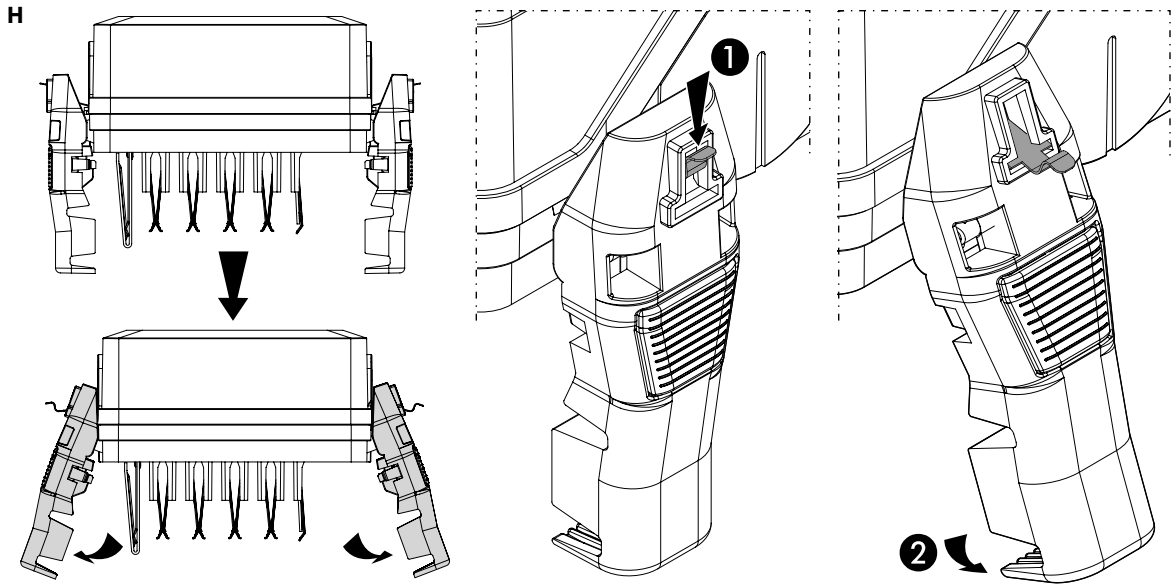
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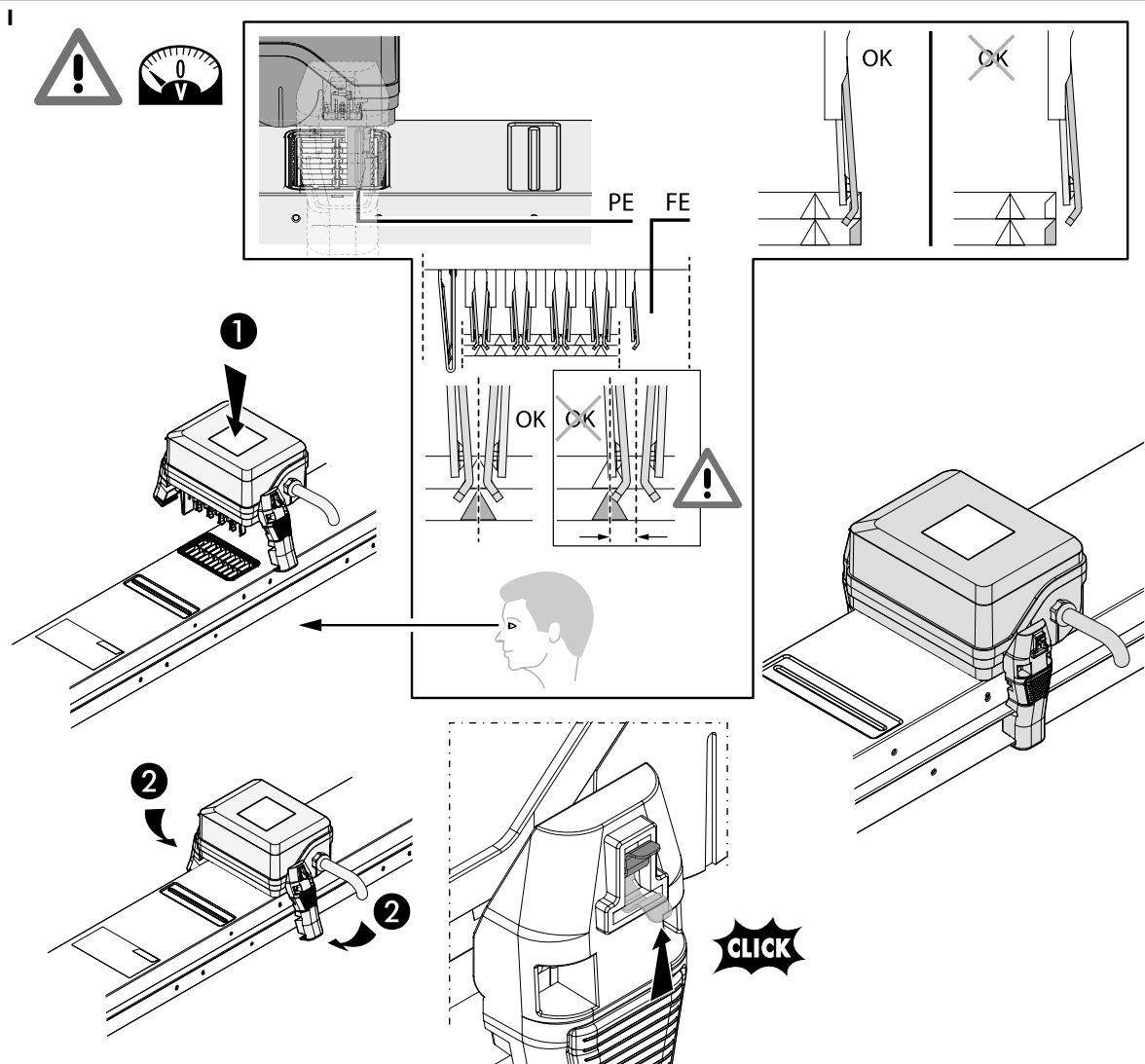
ZUCCHINI

3. Installation





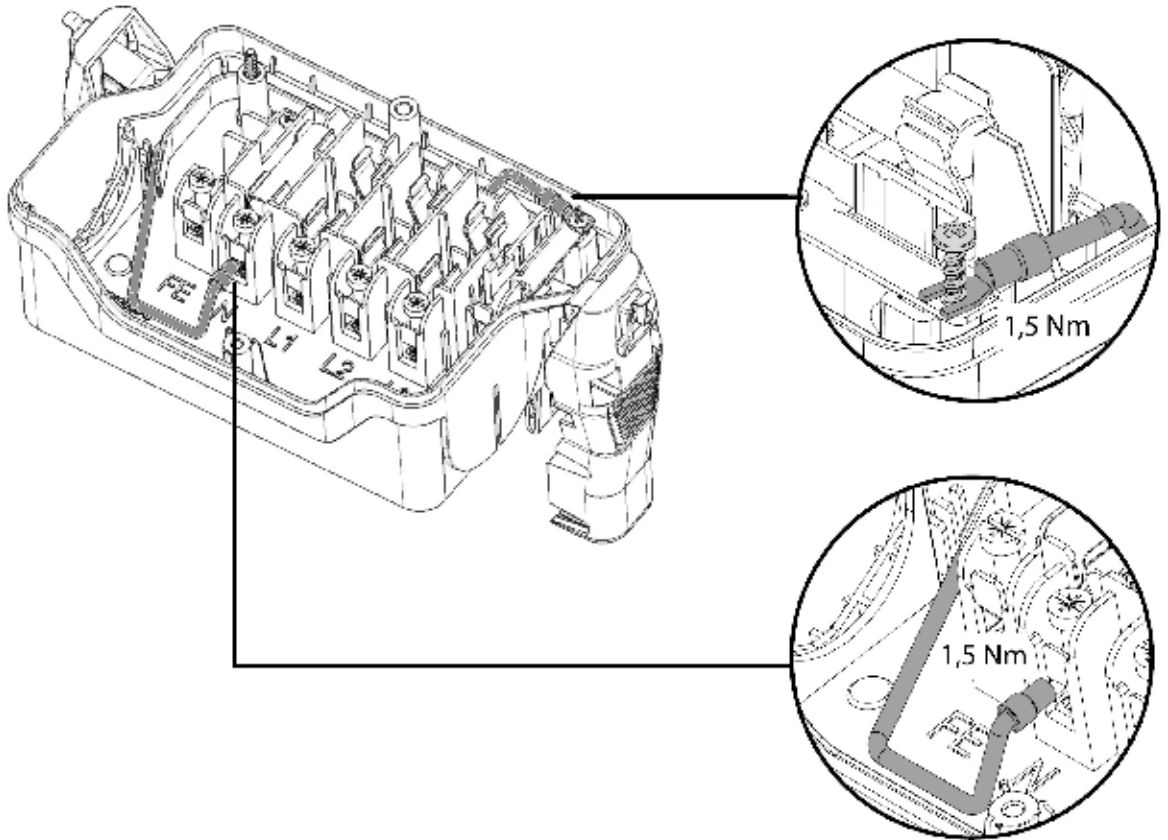
Refer to Best Practice Paragraph 4.1



ZUCCHINI

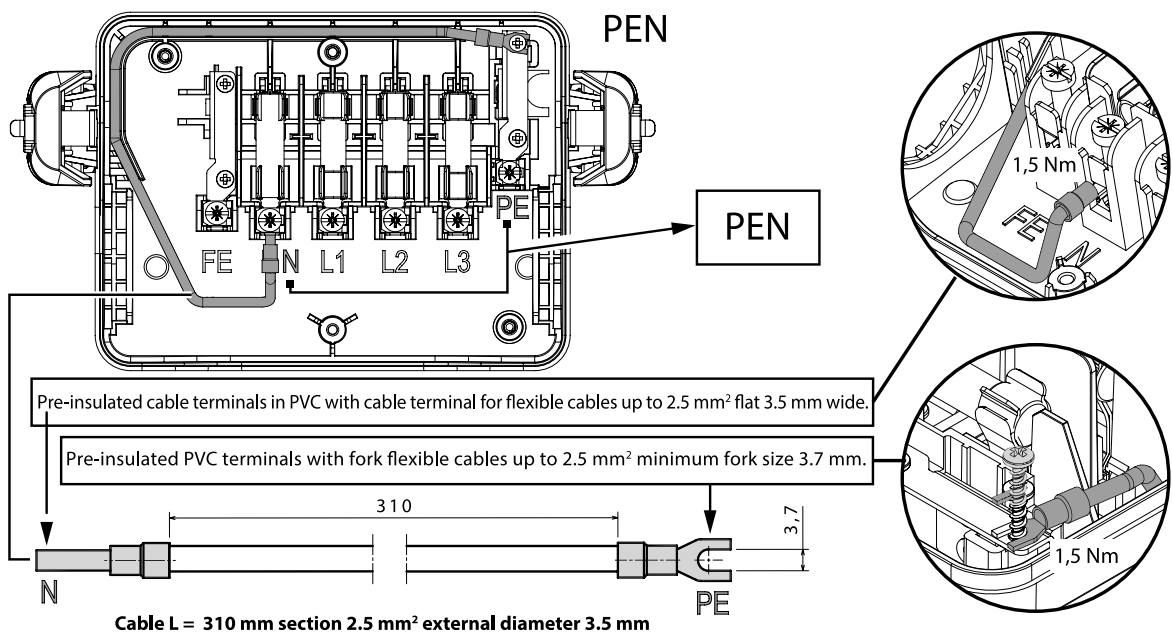
3. Installation

L



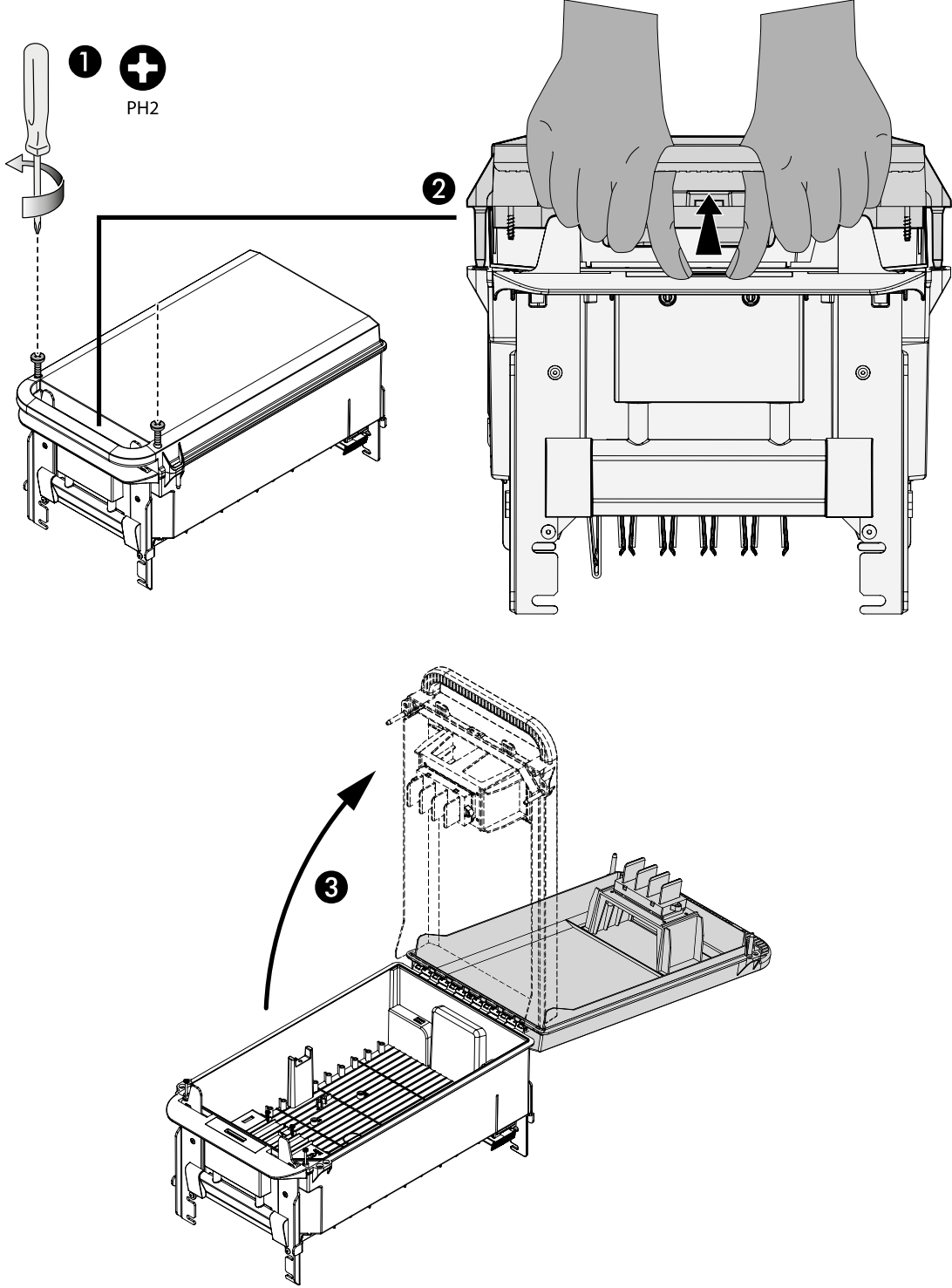
ATTENTION
Cable not
supplied by
Legrand.

M



3.7.11 Assembly instruction fiberglass plastic T2/T3 - empty

A

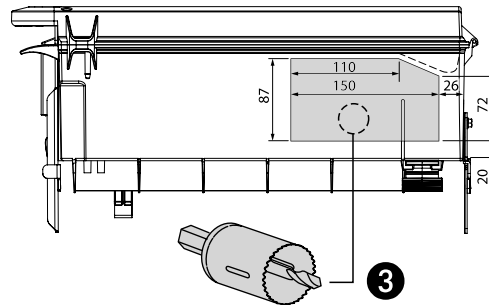


3. Installation

B

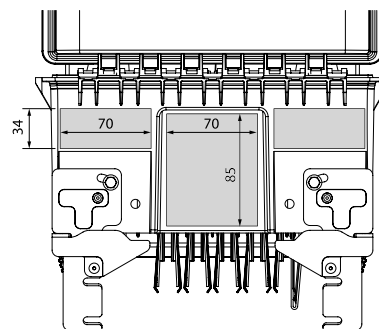
63-160 A

SIDE VIEW



CABLE GLAND
 ISO 16 max: 14
 ISO 21 max: 10
 ISO 25 max: 6
 ISO 40 max: 3
 ISO 50 max: 2

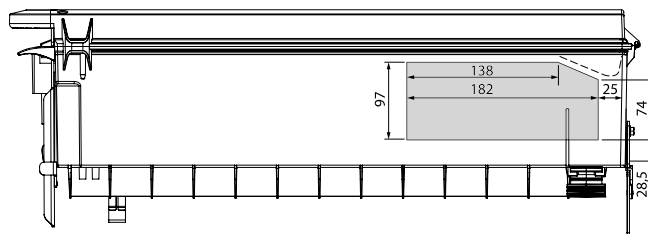
BACK VIEW



CABLE GLAND
 ISO 16 max: 14
 ISO 21 max: 9
 ISO 25 max: 6
 ISO 40 max: 2
 ISO 50 max: 1

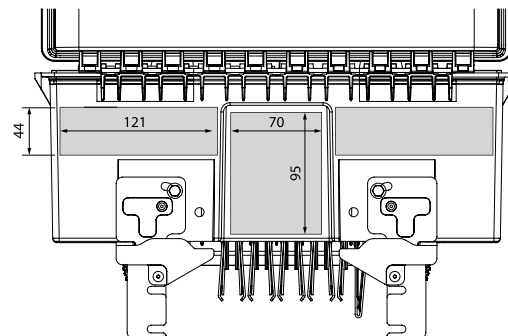
250 A

SIDE VIEW

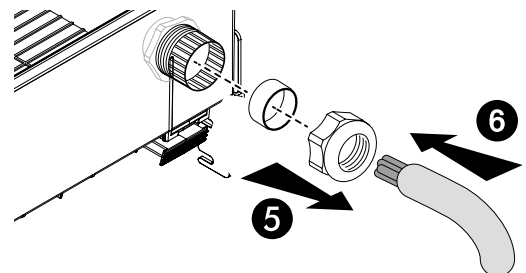
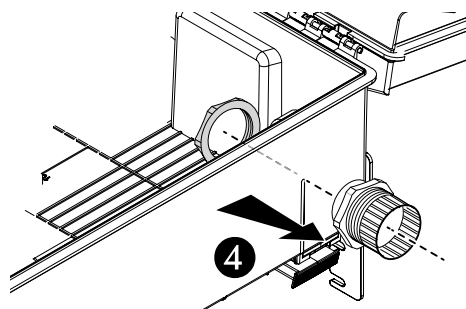


CABLE GLAND
 ISO 16 max: 17
 ISO 21 max: 13
 ISO 25 max: 7
 ISO 40 max: 3
 ISO 50 max: 2

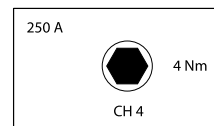
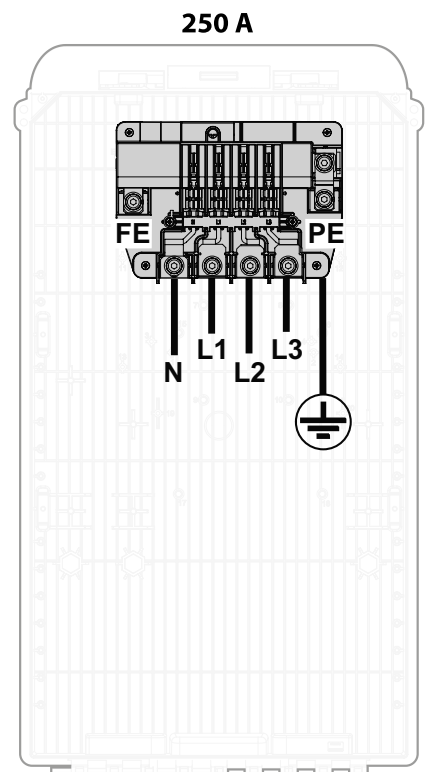
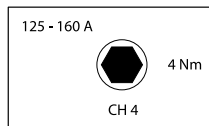
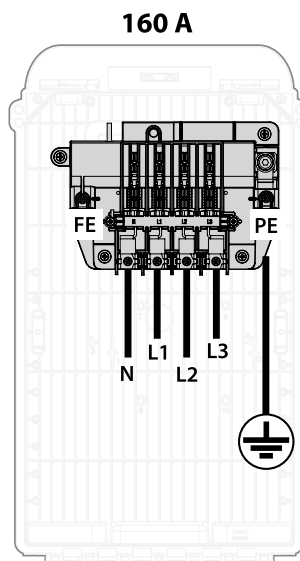
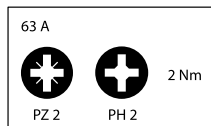
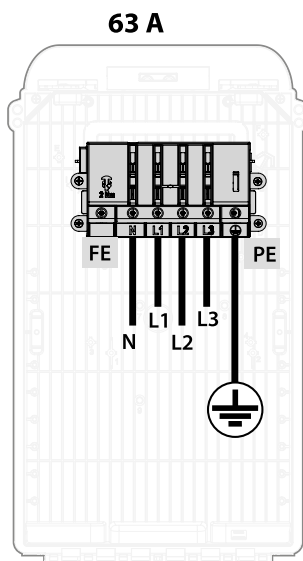
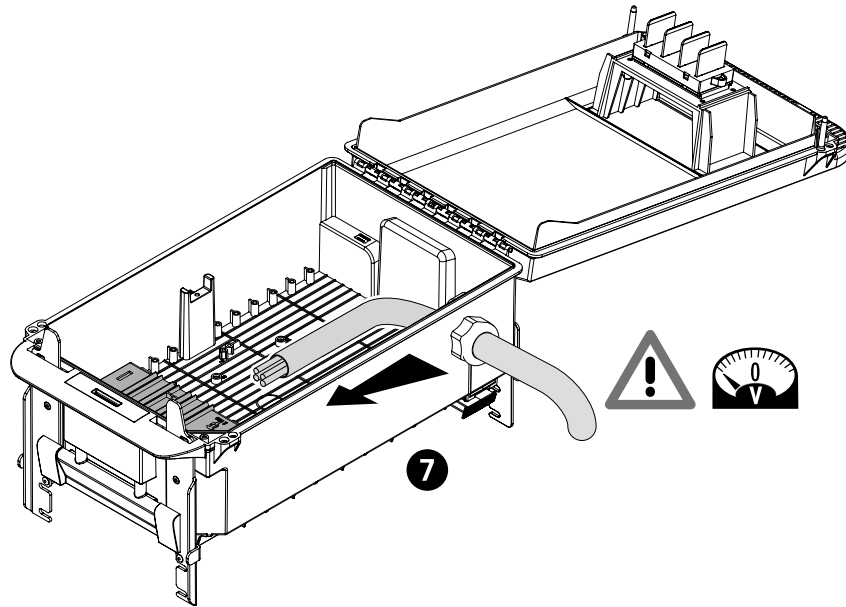
BACK VIEW



CABLE GLAND
 ISO 16 max: 20
 ISO 21 max: 12
 ISO 25 max: 9
 ISO 40 max: 2
 ISO 50 max: 1

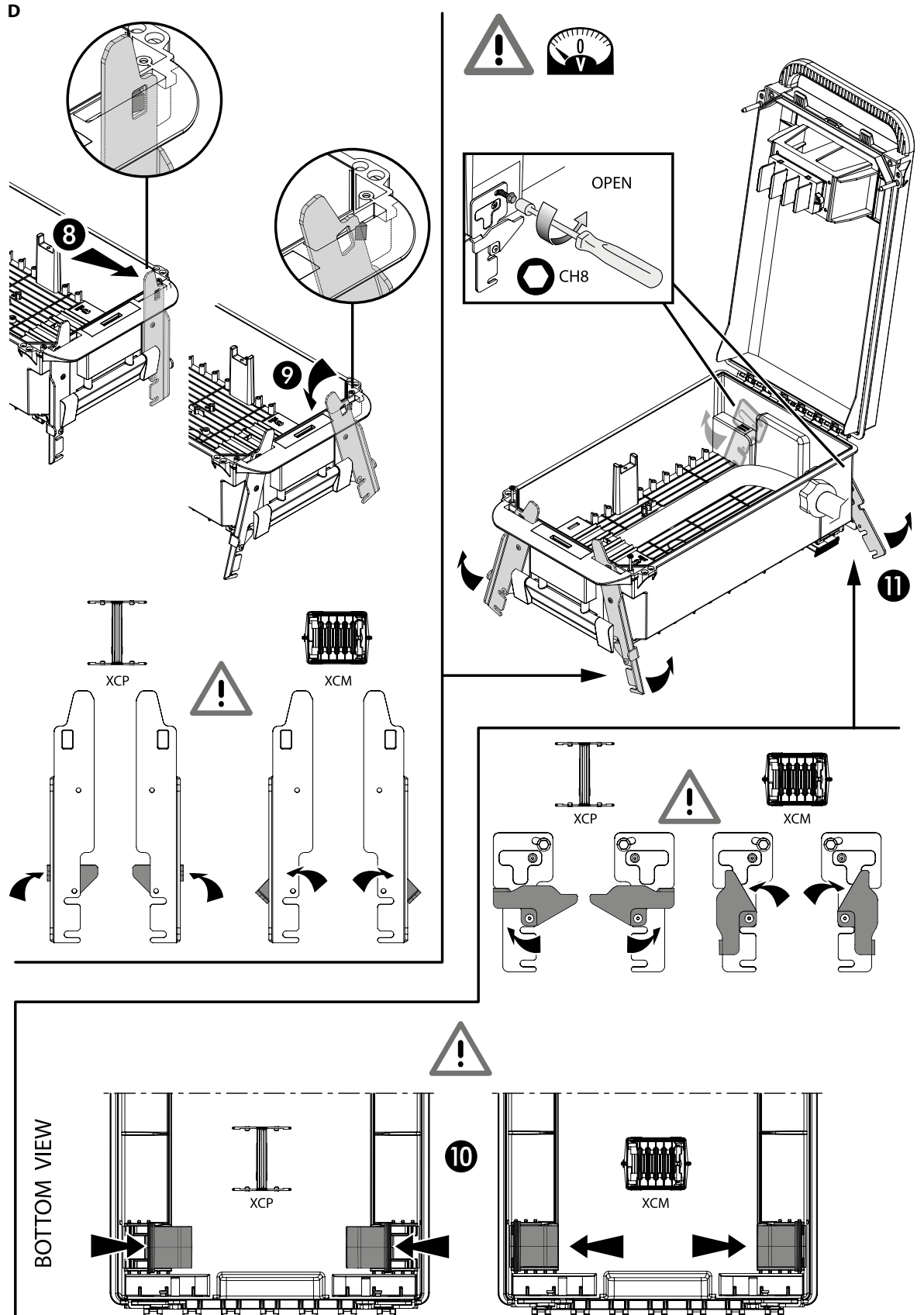


C

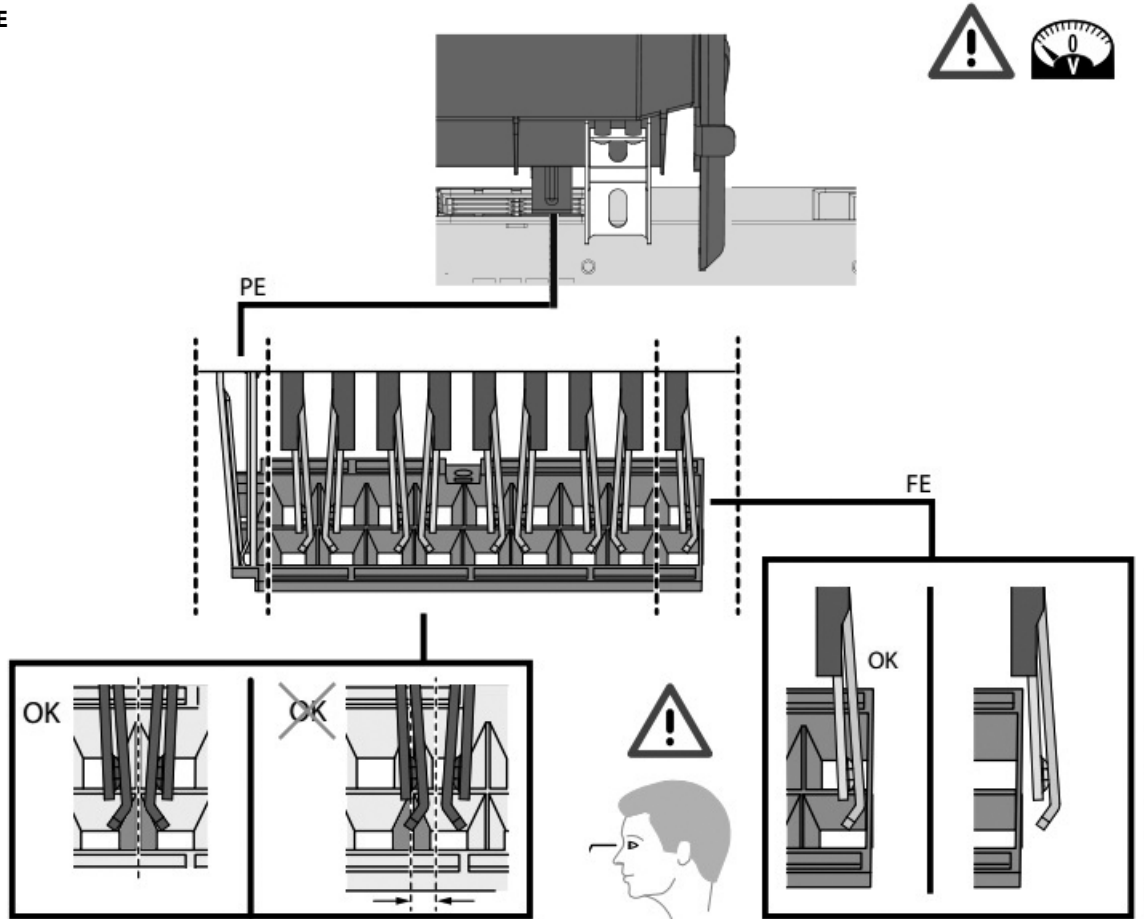


ZUCCHINI

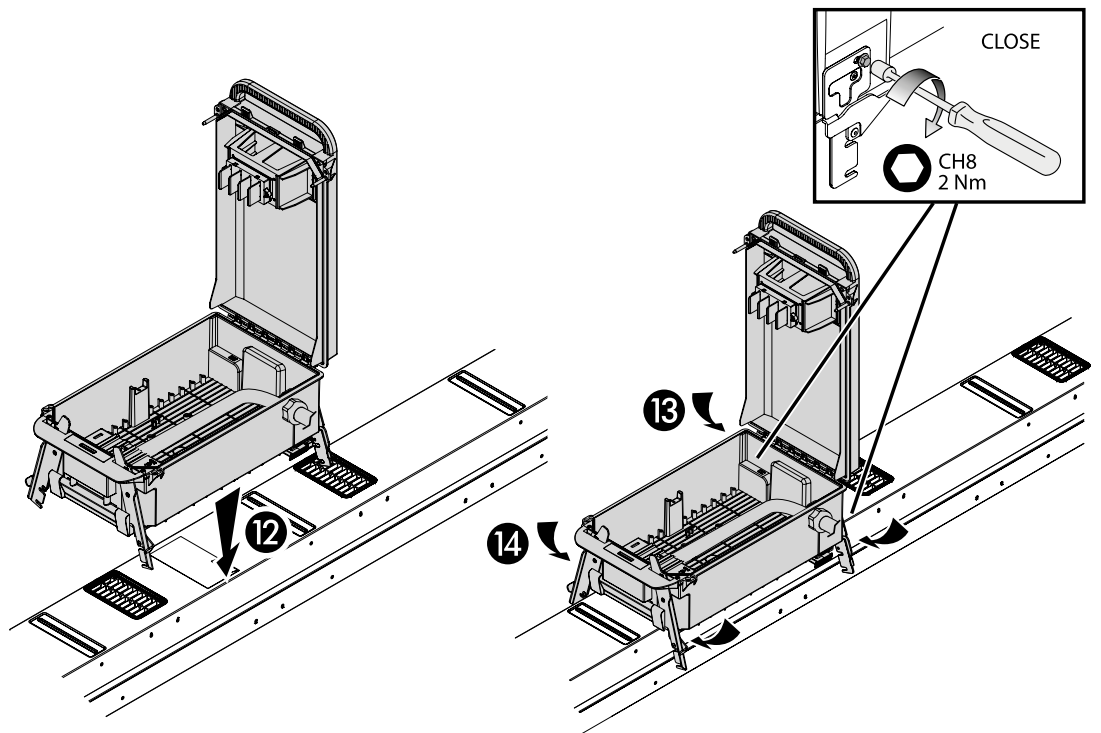
3. Installation



E



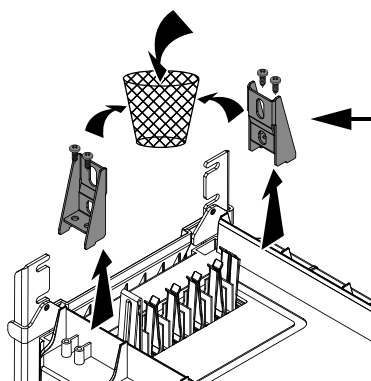
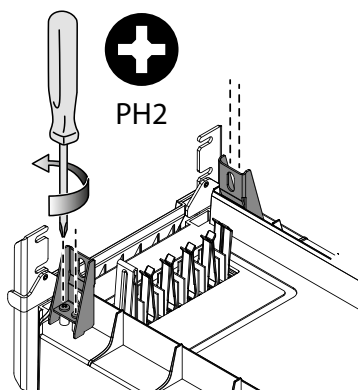
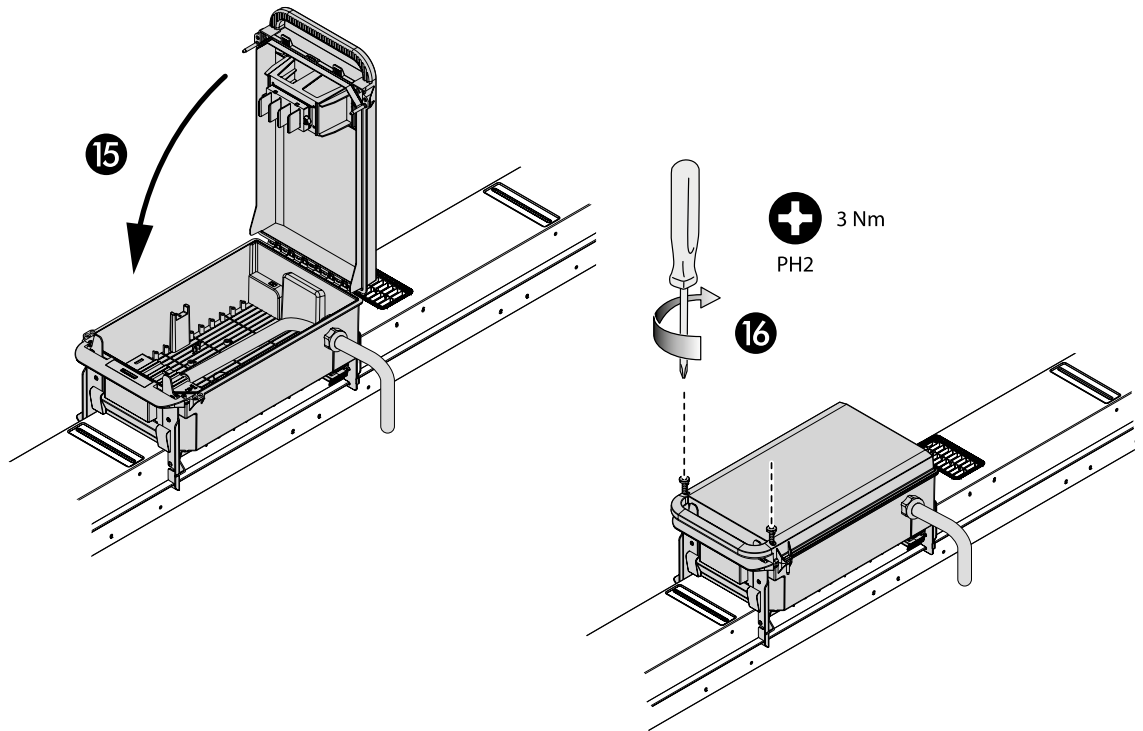
Refer to Best Practice
Paragraph 4.1



ZUCCHINI

3. Installation

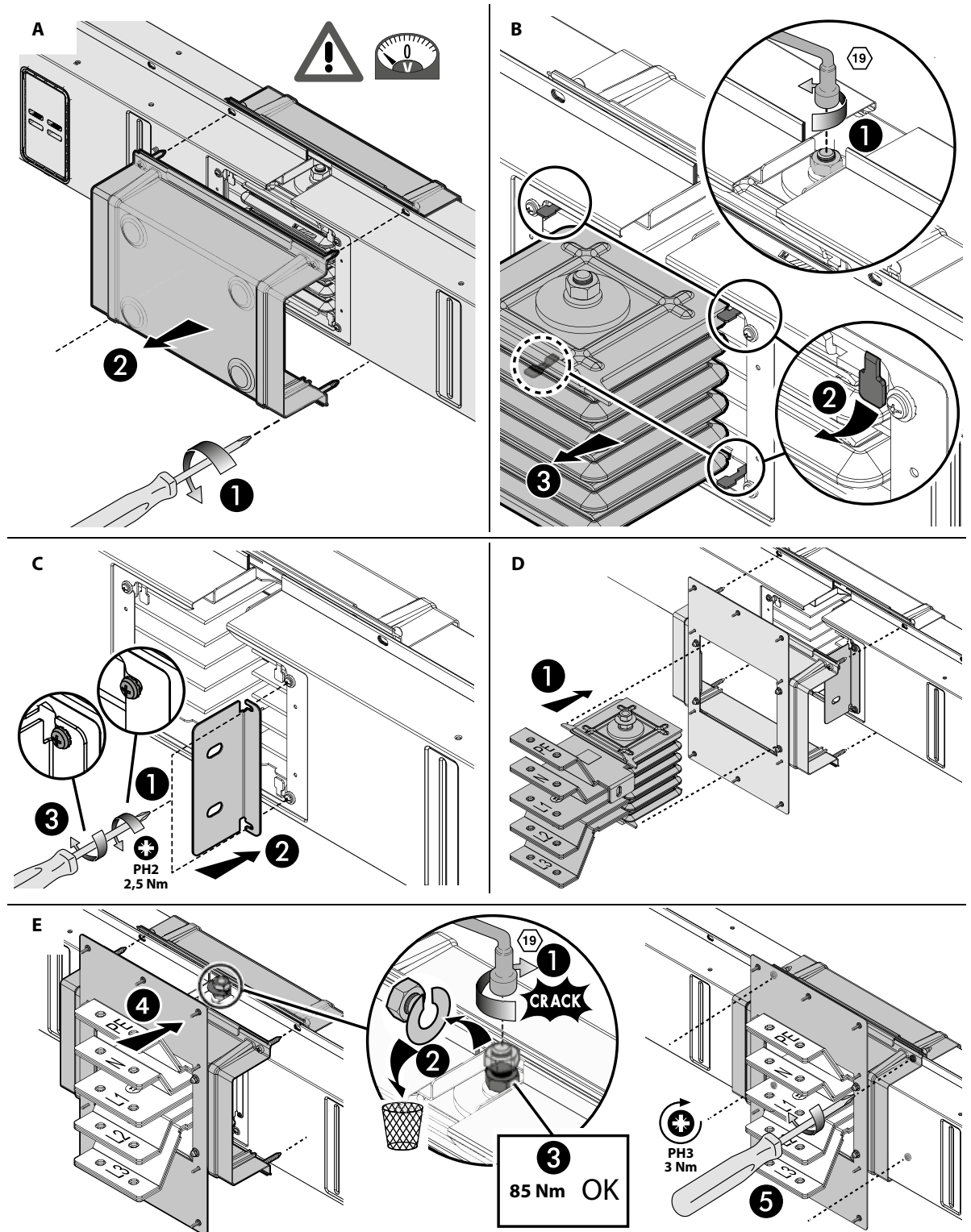
F



When installing the tap of box on the low XCM (160/250/315A AL and 250/315/400A CU) they must be removed

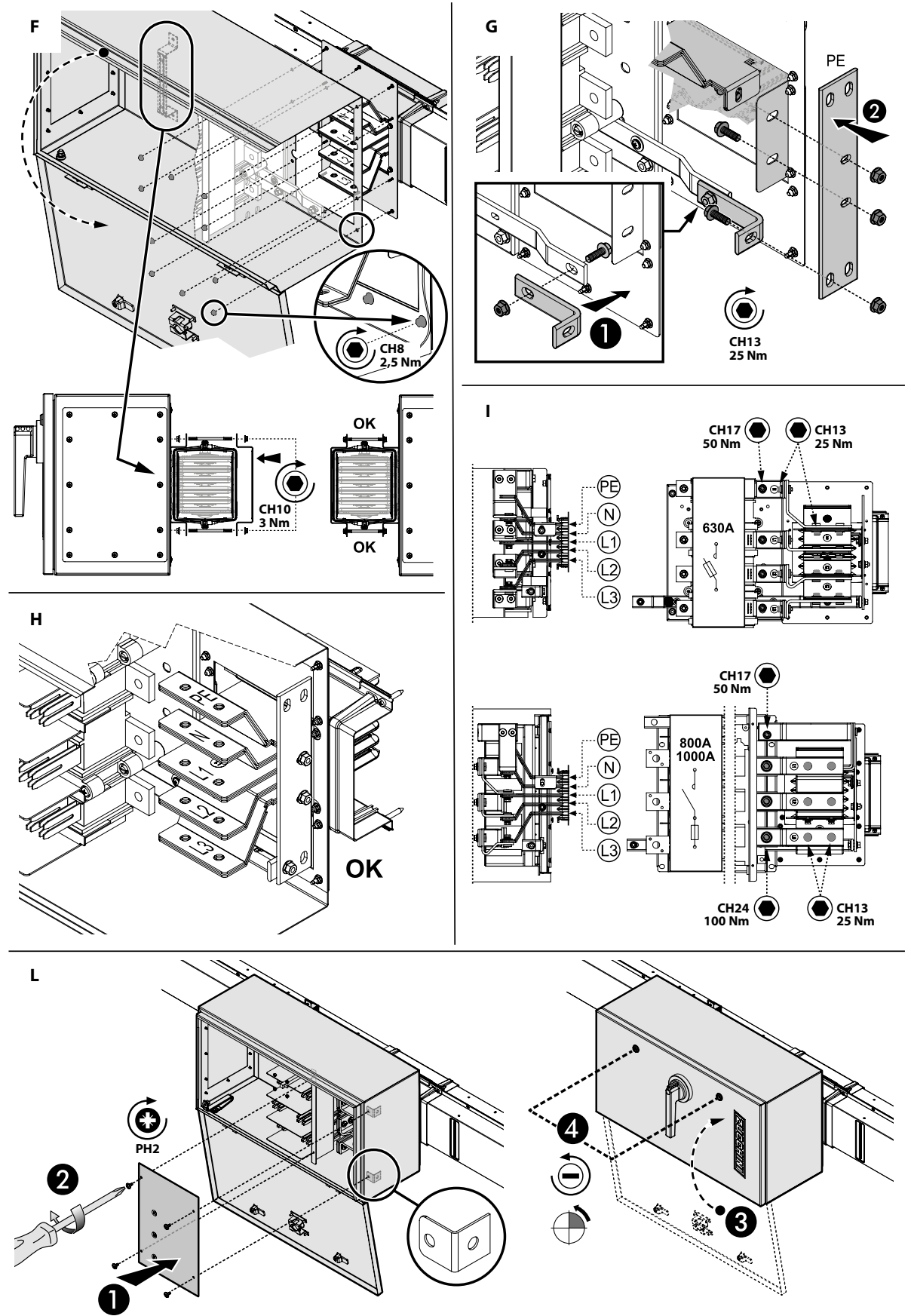
3.7.12 Assembly instruction Bolt-on type

Bolt on tap-off box



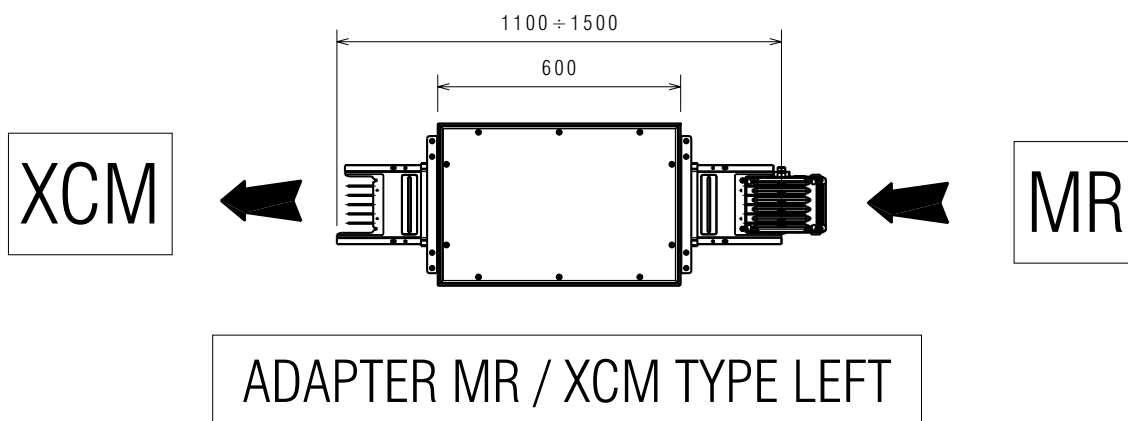
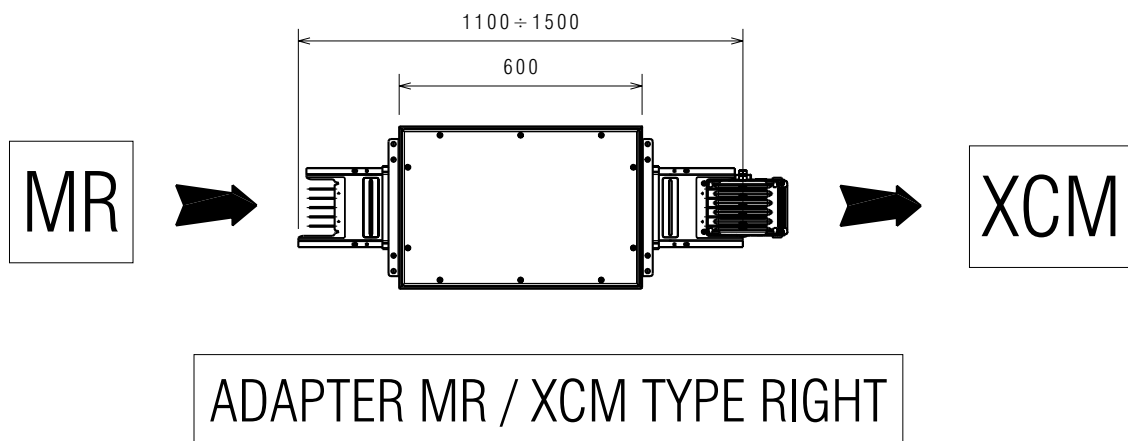
ZUCCHINI

3. Installation



3.7.13 Adapter MR / XCM

The MR is an obsolete product. In order to allow customers to add elements to line MR, special adapters have been made.



Note

In case of replacement of an element inside an MR line, contact LGR.

3. Installation

3.7.14 Busbar post-installation checks

Bus duct inspections after installation

After installation, following inspections have to be carried out before running the plant:

Bus duct installation

Check if elements are correctly aligned. If not, align them correctly.
Refer to the diagram on page. 55 "Alignment junction".

JUNCTIONS

Open a random sample (10%) of mechanical junctions and verify that:

- 1 the block has been installed in the correct direction and that the mechanical guides (pins and slots) correctly correspond. If not, remove the block and mount it again correctly, after checking it is sound. Otherwise wholly replace it.
- 2 plastics are sound, in particular that there are neither slits nor chips, and that there is neither dust nor grime. If the insulating parts are damaged, wholly replace the monobloc. If there are dust or grime, clean them off.
- 3 the block is correctly centred with the bars of the element. If not, centre it after having checked it is undamaged.
- 4 the tightening torque of the self-breaking bolts is correct (30÷40 Nm and 80÷90 Nm), use a calibrated torque wrench. During the measurement the line has to be at ambient temperature. If the tightening torque is lower than the specified value, re-establish it.

SWITCHBOARD CONNECTION

On switchboard connections verify that:

- 1 the air distances between bars with different potentials are over 40 mm wide. If it is not the case, contact Eng. Dept. Zucchini Brand to evaluate the employment of correct insulating material.
- 2 the tightening torque of connecting screws is correct (required values: 85 Nm for M12, 100 Nm for M14, 120 Nm for M16, 170 Nm for M18, 25 Nm for M8 and 50 Nm for M10).

The above-mentioned inspections have to be carried out by personnel with a proper technical background and with controlling function/responsibility in the installation activities.

Tap-off boxes inspections after installation

These inspections always have to be carried out with a non-energized plant and after having earthed the phases after the tap-off box, in order to unload possible static discharges in the downstream circuit (with an insulated device).

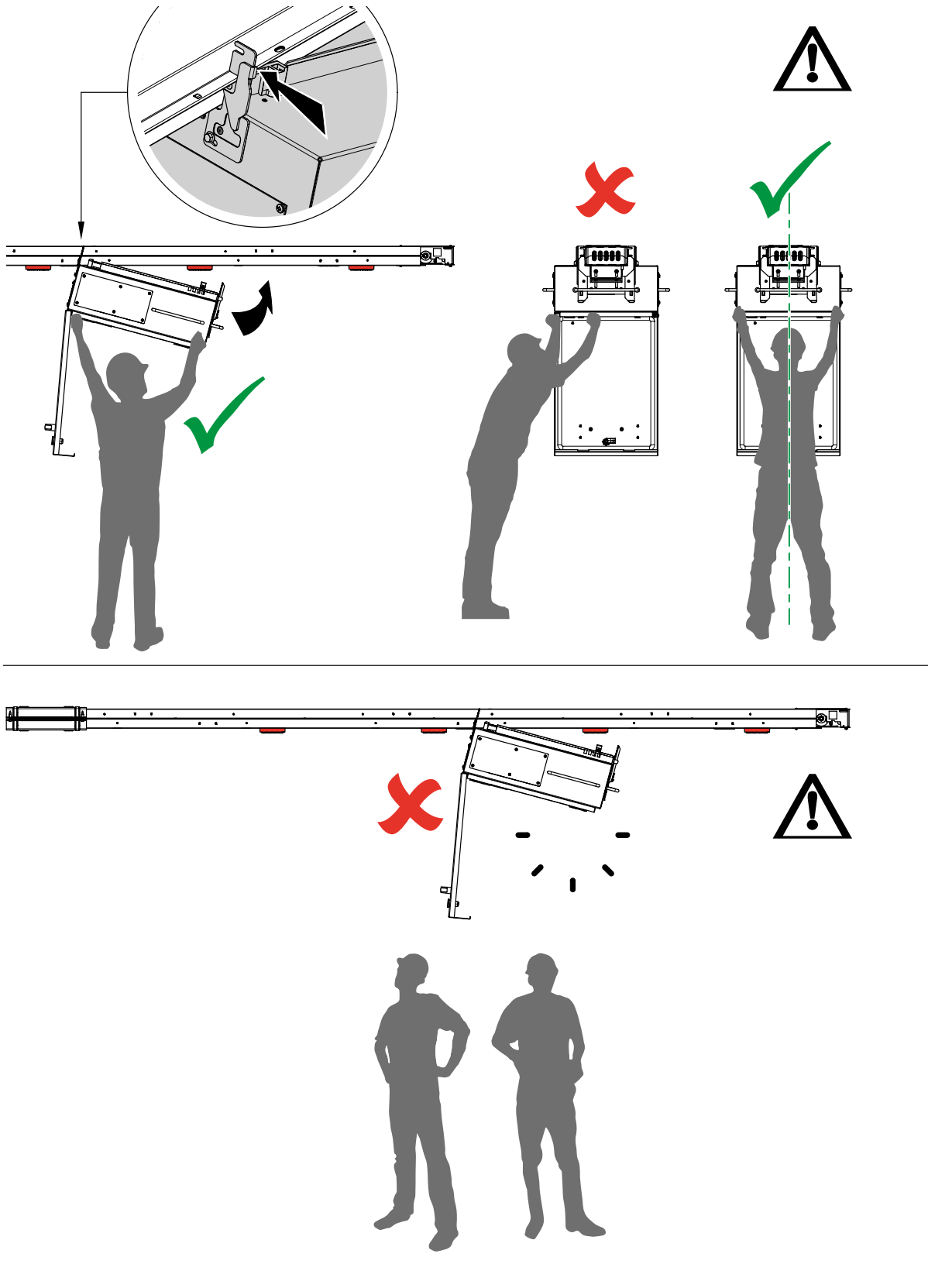
BOLT-ON

Carry out the same inspections planned for junctions. Verify the correct torque moment of the screws joining the mechanical junction and the collector bars. If necessary, retighten the connecting screws.

4. Best Practice

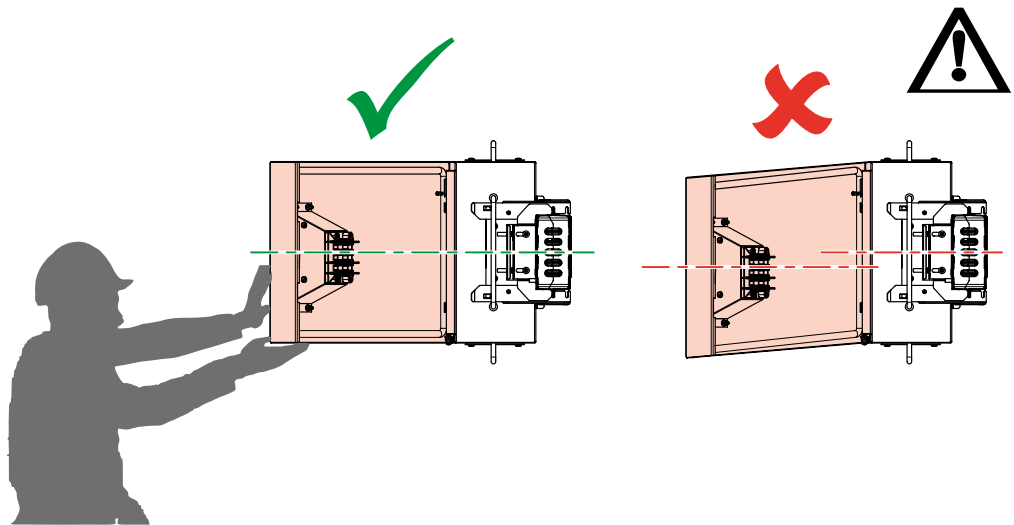
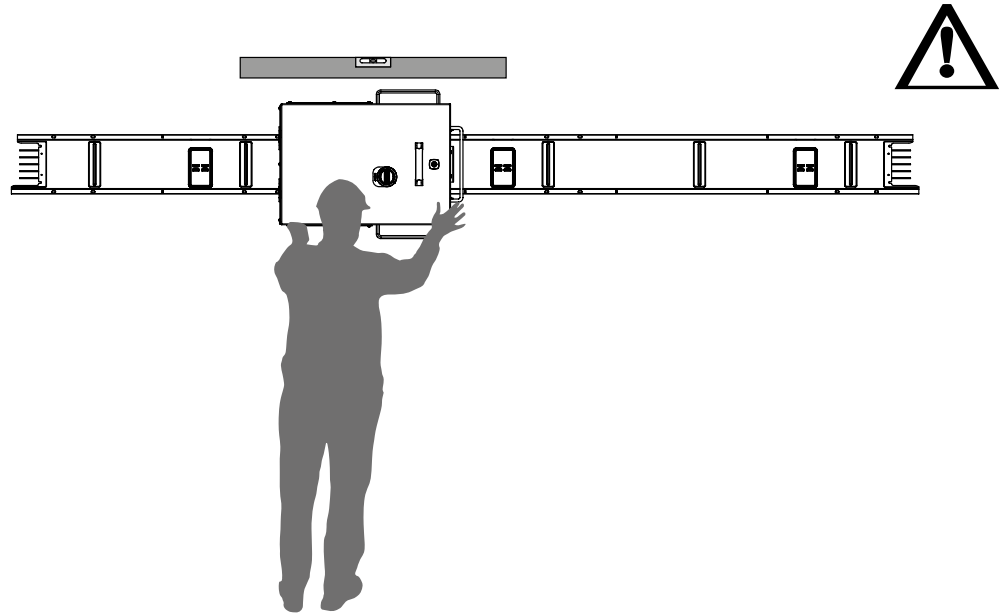
4.1 General

4.1.1 TOB

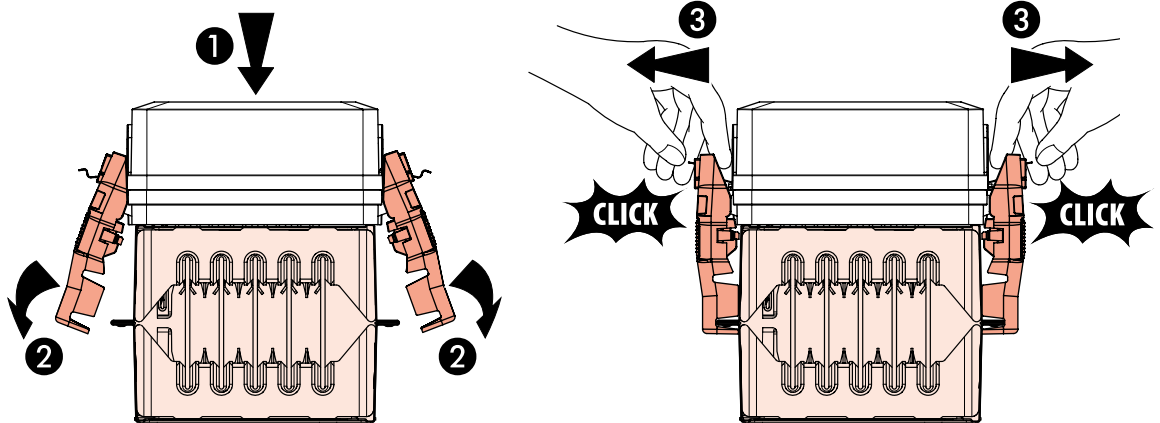


ZUCCHINI

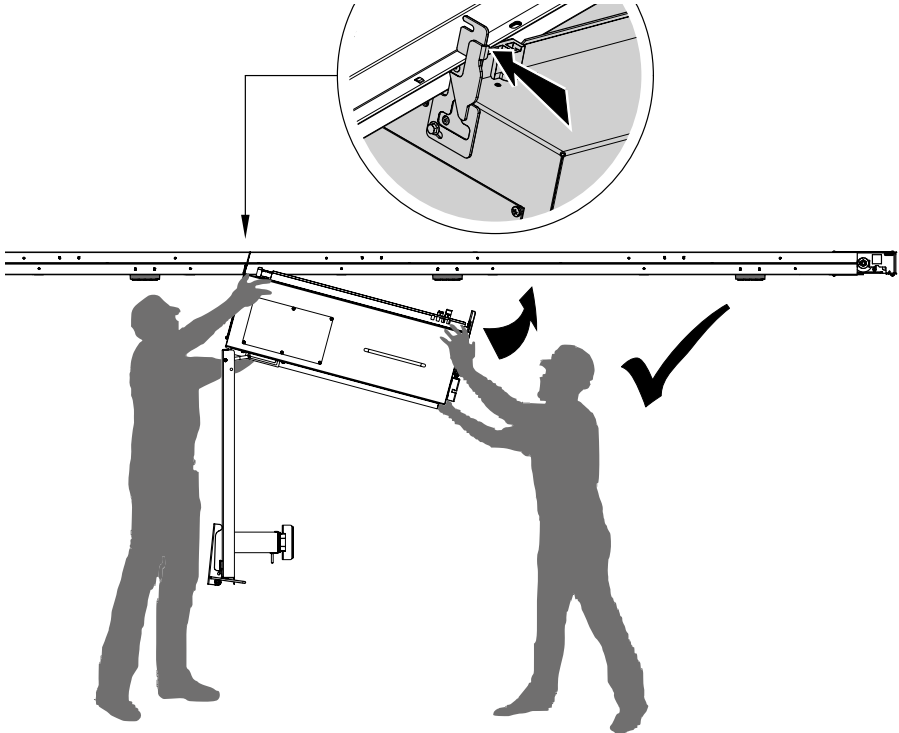
4. Best Practice



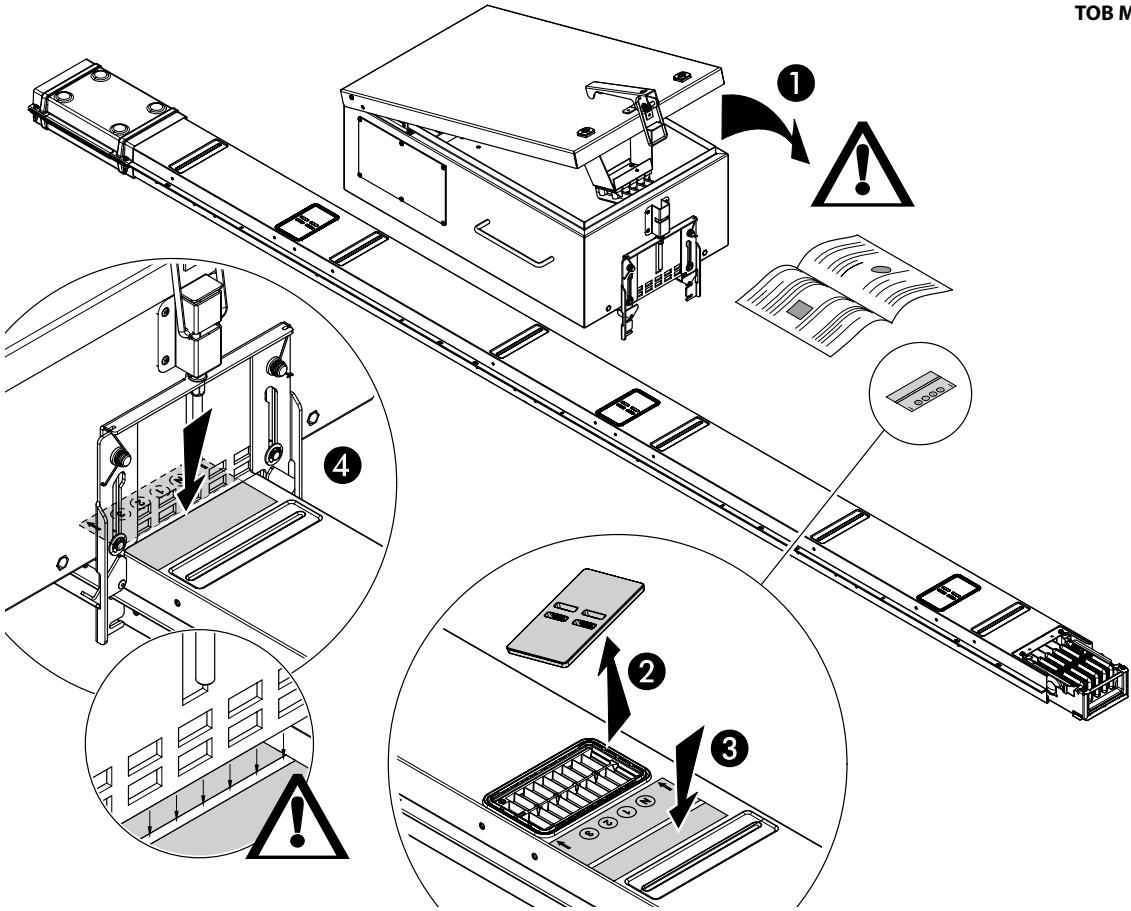
TOB Plastic T1



4.1.2 TOB. Heavy / Large Boxes

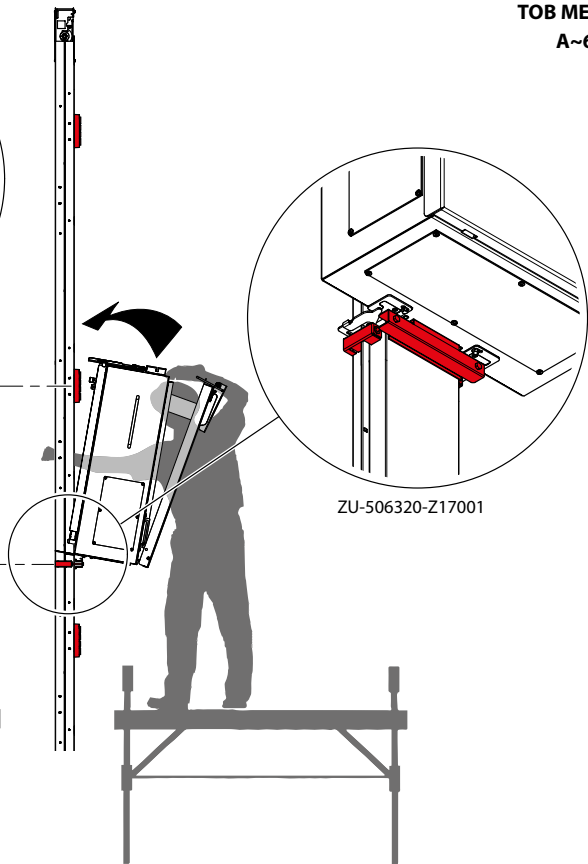
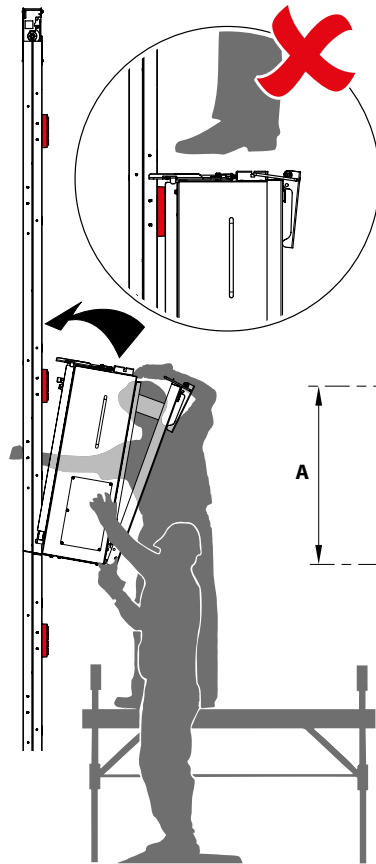


TOB METAL T3

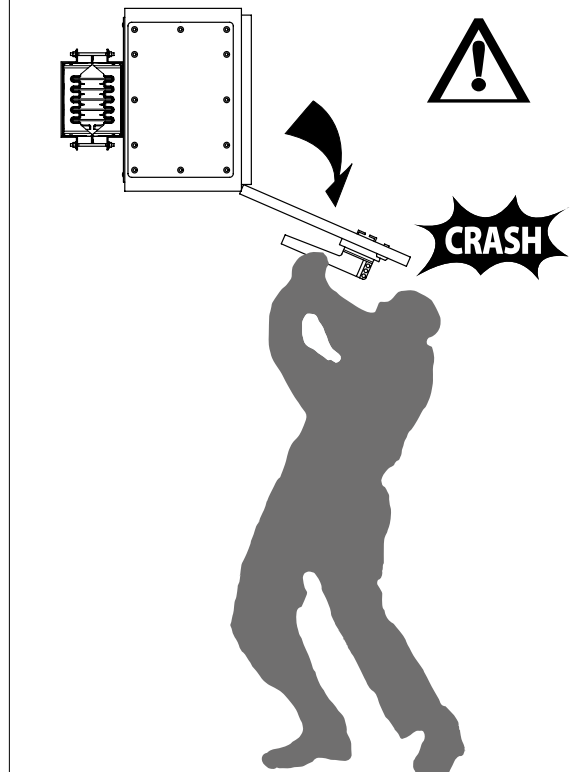
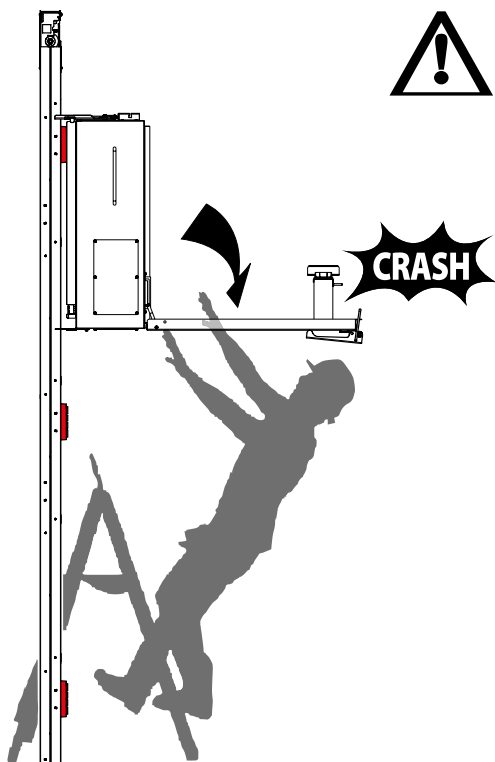


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4. Best Practice

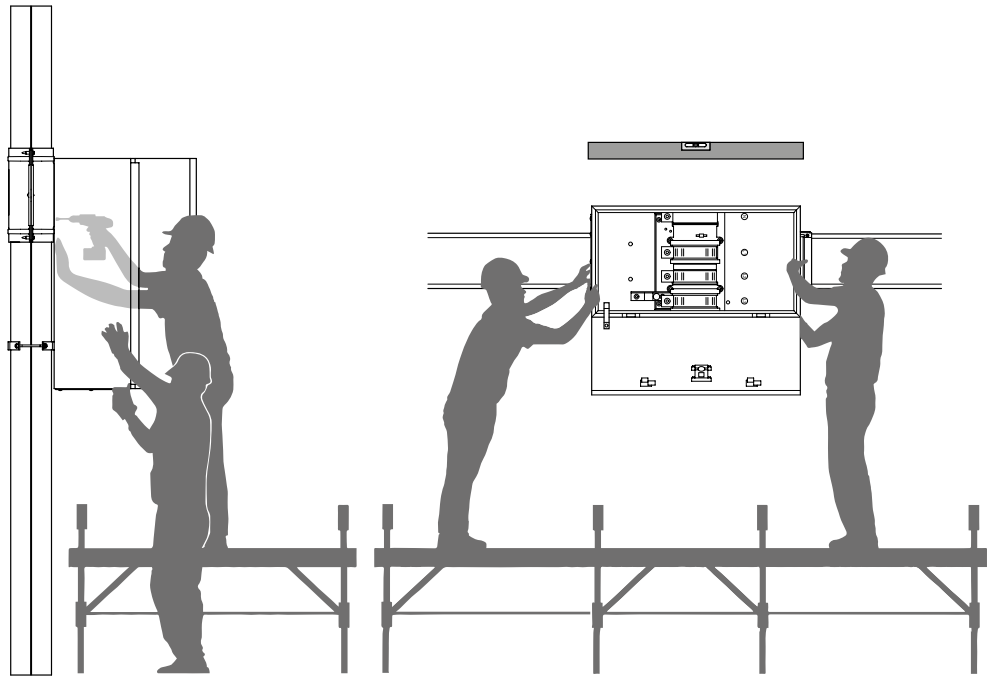


TOB METAL T3
A~694mm

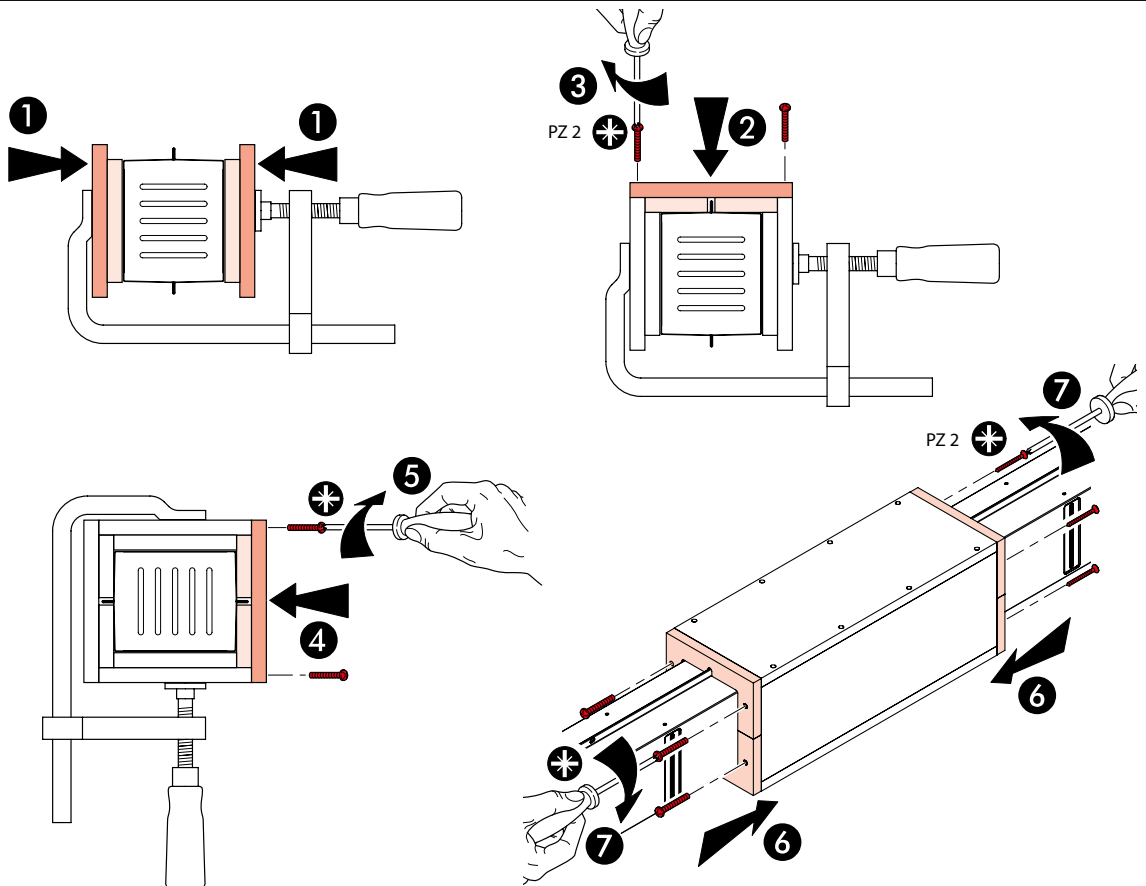




BOLT ON TO B



4.2 External Fire Barriers



5. Starting-up

5.1 Busbar pre-energising checks

5.1.1 Electrical safety tests

Carry out all tests described in the applicable technical installation norms, verify that insulating test between phases neutral and to earth at 1000 V has a minimum value of $1\text{M}\Omega$, for every line stretch.

If the insulating value is lower than $1\text{M}\Omega$, it is necessary to verify the plant completely, starting from the insulating parts of each monobloc. If the insulation is still inadequate, divide the plant in two parts and verify each one separately to identify the element with low insulation. Continue the splitting, if the insulation keeps being inadequate. If insulation test is made to every piece the value minimal is $100\text{M}\Omega$.

5.2 Electric checks

5.2.1 Conductors

Thermal tests

After having run the plant at the maximal working current, and having let it work for at least 6 hours, carry out a thermal test. Stick labels on the hottest parts and mark them with progressive numbers to identify the element. Carry out the thermal test again on the labels. Fill the attached form with the measured values, together with ambient temperature and working current (forms for thermal tests at pages 126-129).

Thermal tests can be carried out with contact temperature sensors, with optical pyrometers or thermal cameras.

5.2.2 Tap-off boxes

Thermal tests

Carry out a thermal test on the cover near the lock, using contact temperature sensors, optical pyrometers or thermal cameras. The test has to be carried out with tap-off boxes running at working current for at least 6 hours. Fill in the attached form together with ambient temperature and working current.

5.3 Filling the check form

5.3.1 Busduct record form for inspections and controls

PLANT	
CLIENT	
CONFIRMATION OF ORDER N.	
MANUFACTURING YEAR	
INSTALLATION YEAR	
INSTALLING COMPANY	

5.3.2 Inspections after installation

PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

Element alignment	YES	NO
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Junctions

Checked junctions (quantity)		
Total junctions (quantity)		
Correct installation	YES	NO
Soundness of insulating parts	YES	NO
Correct centring	YES	NO
Correct coupling clamp (85 Nm) - write value		

Connection to switchboard

Correct air distance between bars	
Correct coupling clamp	

Tests on electrical safety

Insulating resistance between L1 and neutral (L1-N)	
Insulating resistance between L2 and neutral (L2-N)	
Insulating resistance between L3 and neutral (L3-N)	
Insulating resistance between L1 and L2 (L1-L2)	
Insulating resistance between L2 and L3 (L2-L3)	
Insulating resistance between L3 and L1 (L3-L1)	
Insulating resistance between L1 and earth (L1-PE)	
Insulating resistance between L2 and earth (L2-PE)	
Insulating resistance between L3 and earth (L3-PE)	
Insulating resistance between neutral and earth (N-PE)	
Test voltage	

Note

N.B. Write the measured value of the insulating resistance

Thermal tests

Fill in the attached table, with reference to the inspected element.

As per the measurement point and the plate present on the measurement side, fill in the relative box with the measured temperature value.

6. Verification

6.1 Definition of the check sequence

6.1.1 Busduct periodic inspections are to be carried out yearly

THERMAL TESTS

In order to perform inspections over installations, it is recommended to de-energise the busbar. After having run? the plant at the maximal working current for at least 6 hours, carry out a thermal test, taking in particular consideration the points where labels had been stucked on during installation. Fill in the attached form with the measured values, together with ambient temperature and working current (form for thermal tests at pages 126-129). If the measured temperature (DT) is higher than 55 K or is 15 K higher than the temperature measured during installation, get in contact with Customer Care. This thermal test should be carried out with contact temperature sensors, optical pyrometers or thermal cameras.

JUNCTIONS

It is recommended to open a random sample (10%) of the mechanical junctions, and for every junction verify that:

- 1 plastics are sound, in particular there are no slits, and plastic colour has not changed. If it is not the case, wholly replace the monobloc.
- 2 there are no water, scale-marks or foreign materials (dust, grime, etc.) on the protective flanges of the mechanical junctions. In case they are found, also verify the bars near the block. Dry possible wet parts with hot air at a temperature not higher than 80 °C and remove residues with mild reagents not corroding or creating abrasion on surface treatment (zinc, tin, silver coating) or on contact surface (copper).
- 3 blocks correctly adhere on bars at least of 50% of the conductor's surface.
- 4 the tightening torque of the self-breaking bolts with a torque wrench calibrated at 35 / 85 Nm. During the measurement the line has to be at ambient temperature. If the torque is lower than the required value (35 / 85 Nm), re-establish it.
- 5 insulation test at 1000V, with minimum value of 1M Ω , for every separated line stretch. The insulation test has to be carried out between phases, between phases and neutral, and between every single phase and the casing. If results are unsuccessful, identify the stretch and in case replace it or carry out further tests.

If insulation test is made on a single piece the minimal value is 100M Ω .

In case the inspections carried out have negative results, extend the inspections on all junctions and get in contact with Customer Care.

6.1.2 Tap-off boxes annual periodic inspections

Carry out a thermal test on the cover near the lock, using contact temperature sensors, optical pyrometers or thermal cameras. The test has to be carried out with tap-off boxes running at working current for at least 6 hours.

Fill in the attached form together with ambient temperature and working current. If the measured relative temperature (DT) is higher than 55 K or is 15 K higher than the temperature measured during installation, get in contact with Customer Care.

Verify if joining screws are correctly tightened.

6.1.3 Annual periodic inspections carried out one year after energizing and every other following year

PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

Junctions

Checked junctions (quantity)		
Total junctions (quantity)		
Soundness of insulating parts	YES	NO
Absence of water, scale and dust in flanges	YES	NO
Correct centring	YES	NO
Correct coupling clamp (35 / 85 Nm) - write value		

Connection to switchboard

Correct air distance between bars	
Correct coupling clamp	
Tests on electrical safety	
Insulating resistance between L1 and neutral (L1-N)	
Insulating resistance between L2 and neutral (L2-N)	
Insulating resistance between L3 and neutral (L3-N)	
Insulating resistance between L1 and L2 (L1-L2)	
Insulating resistance between L2 and L3 (L2-L3)	
Insulating resistance between L3 and L1 (L3-L1)	
Insulating resistance between L1 and earth (L1-PE)	
Insulating resistance between L2 and earth (L2-PE)	
Insulating resistance between L3 and earth (L3-PE)	
Insulating resistance between neutral and earth (N-PE)	

Note

N.B. Write the measured value of the insulating resistance

Thermal tests

Fill in the attached table, with reference to the inspected element.

As per the measurement point and the plate present on the measurement side, fill in the relative box with the measured temperature value.

6. Verification

6.1.4 Inspections after installation and yearly

PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

Correct coupling clamp of connecting screws

Thermal tests

Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib
Tap-off box n.	Measured T	Ambient T	Dt	Ib

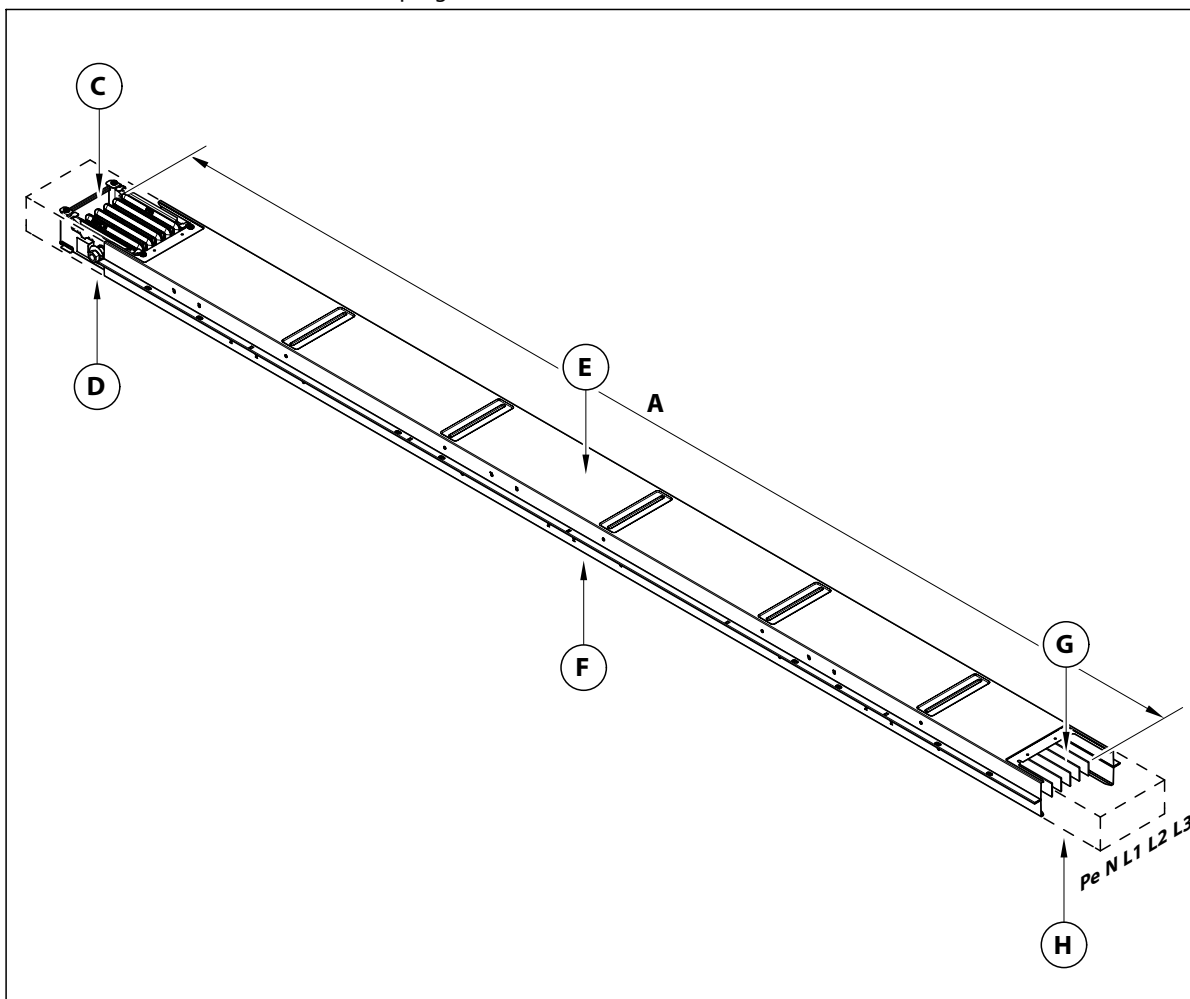
Dt = Measured T - Ambient T

Ib = working current

6.1.5 Straight element

ELEMENT IDENTIFICATION	
PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

N.B. Stick on the element a label with a progressive number for identification.



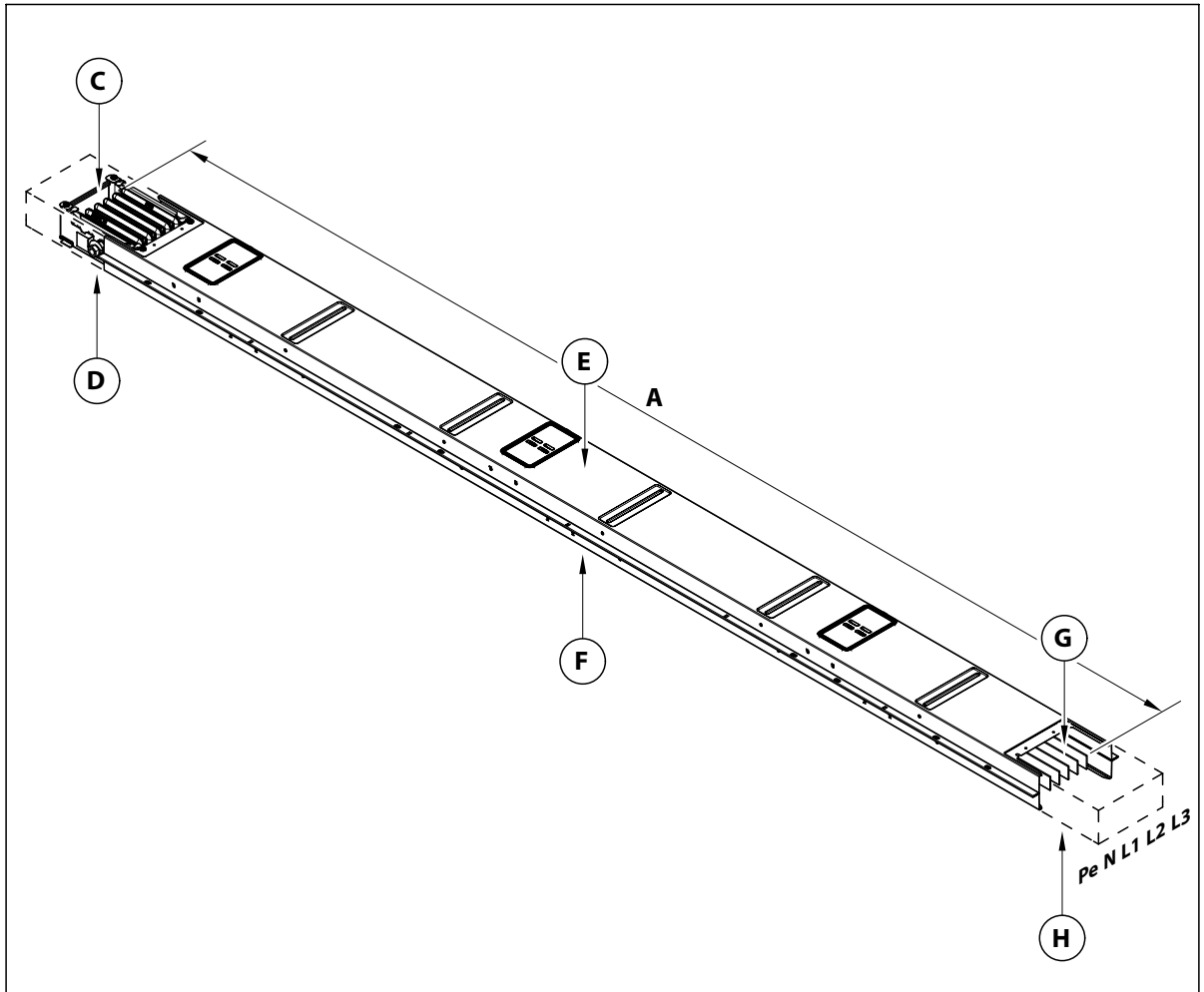
	Measured T. (°C)	Al I. (A)	Cu I. (A)	Ambient T. (°C)	Working I. (A)	DIM. A	N° POS
C							
D							
E							
F							
G							
H							

6. Verification

6.1.6 Straight element with outlets

ELEMENT IDENTIFICATION	
PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

N.B. Stick on the element a label with a progressive number for identification.

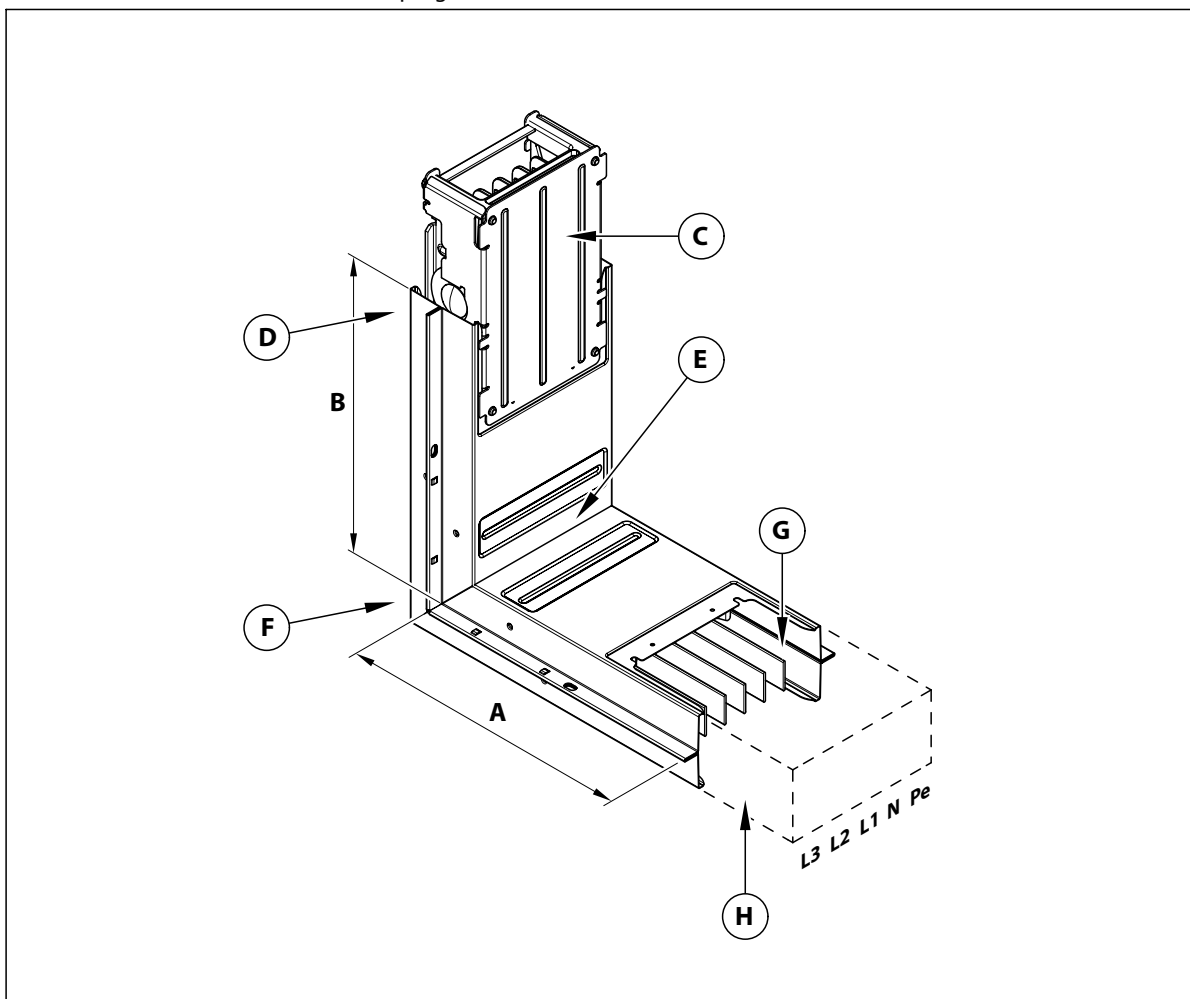


	Measured T. (°C)	Al I. (A)	Cu I. (A)	Ambient T. (°C)	Working I. (A)	DIM. A	N° POS
C							
D							
E							
F							
G							
H							

6.1.7 Horizontal elbow

ELEMENT IDENTIFICATION	
PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

N.B. Stick on the element a label with a progressive number for identification.



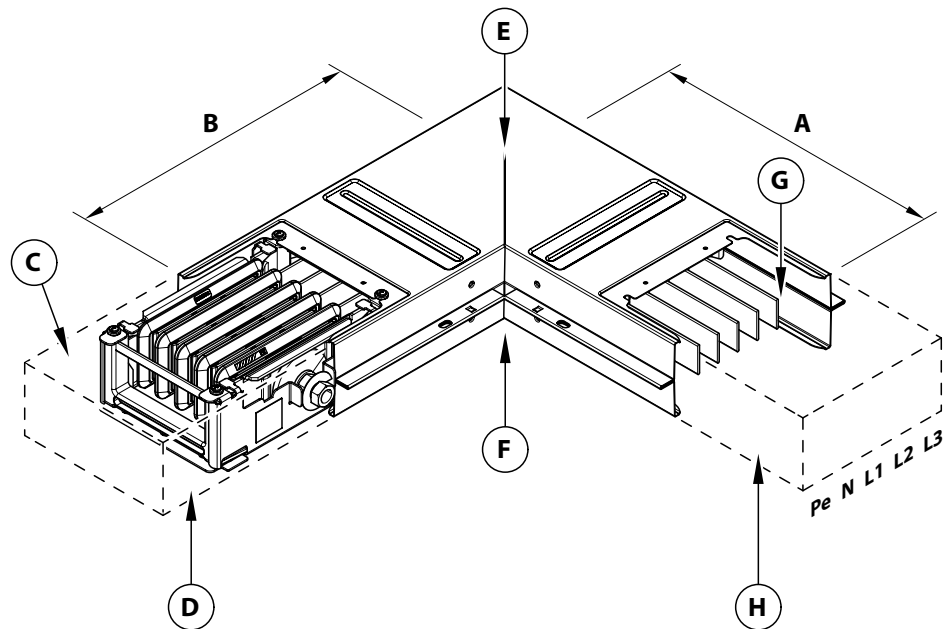
	Measured T. (°C)	Al I. (A)	Cu I. (A)	Ambient T. (°C)	Working I. (A)	DIM. A	DIM. B	N° POS
C								
D								
E								
F								
G								
H								

6. Verification

6.1.8 Vertical elbow

ELEMENT IDENTIFICATION	
PERSON IN CHARGE OF INSPECTIONS	
COMPANY (if different from installing company)	
INSPECTION DATE	
SIGNATURE	

N.B. Stick on the element a label with a progressive number for identification.



	Measured T. (°C)	Al I. (A)	Cu I. (A)	Ambient T. (°C)	Working I. (A)	DIM. A	DIM. B	N° POS
C								
D								
E								
F								
G								
H								

6.1.9 Troubleshooting table

Problem's signals	Where?	Causes:	Solutions:	
			Materials are damaged:	Materials are ok:
Abnormal heat on:	Monoblock or along busbar plant or elbow	Couple loosening Nut not broken	Request spare parts	Strengthen the torque
		Wrong mounting Monoblock tooth wrong		Change way to mounting

Burnished point on:	casing or insulating	broken insulating overload on the line	request spare parts
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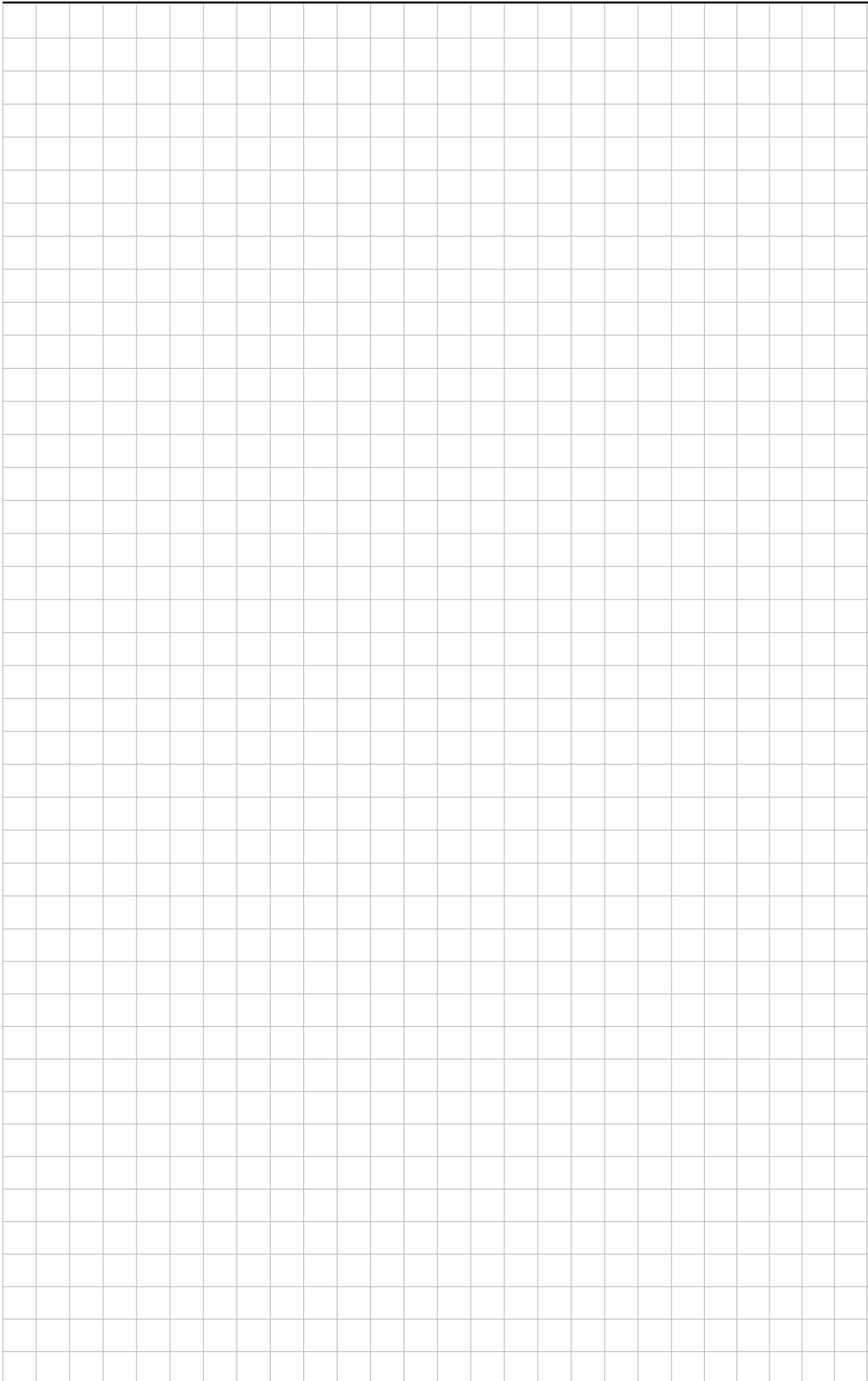
Low insulating measure	apply "half plant" technique, to find out:	mechanical damage water inside broken insulating	request spare parts
------------------------	--------------------------------------------	--------------------------------------------------------	---------------------

Mccb break on panel board, on feed unit, on TOB:	apply "half plant" technique, to find out:	<ul style="list-style-type: none"> - electrical overload - bad electrical contact - short circuit on load - short circuit inside TOB - broken MCCB - wrong mounting MCCB - too much hot environment - water inside 	request spare parts
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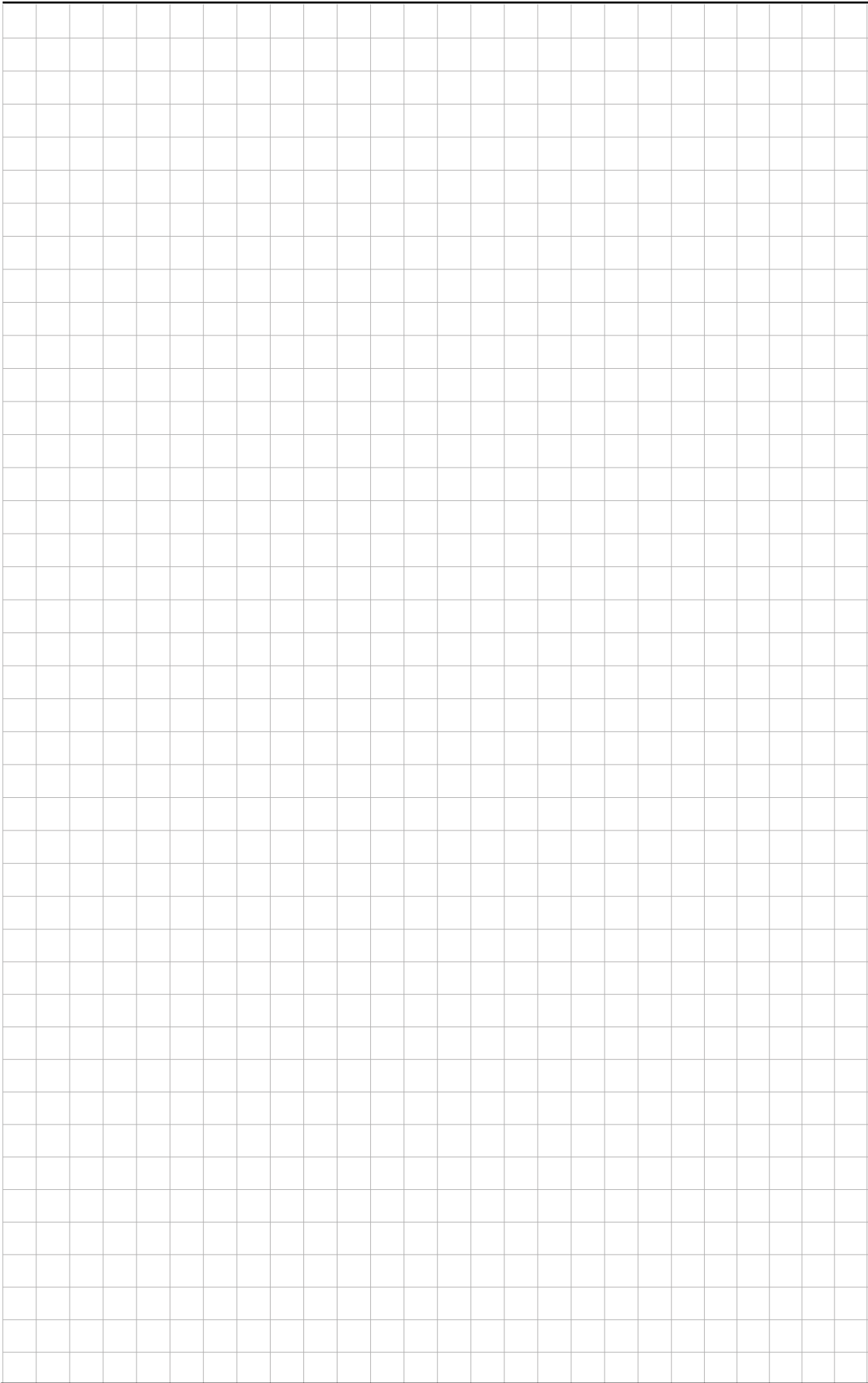
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7. Disposal

For the identification of the materials and the disposal instructions visit www.bticino.com/disposal.



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