

Storage, installation and maintenance for SCP busbar systems

SUPER COMPACT (SCP)

BUSBAR FROM 630 TO 6300 A

The power solutions for industrial and service sector applications



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WARNINGS

These instructions are provided to ensure appropriate storage, correct installation, and efficient use of the system.

Note: carefully read these instructions upon receipt of the material and before installing the system, and putting it into operation.

The installation must be completed by competent and suitably trained personnel, as prescribed by CEI 11-27 and 50110-1:2004-11 (CEI 11-48) standards, corresponding international standards, or specific applicable standards of the individual countries of installation.

In order to guarantee the safety of personnel, the installation activities must only be carried out with the power voltage disconnected, unless otherwise stated.

WARNING

When working with electric systems, pay particular attention to the risk of electric shock. Electric shocks can cause serious injury, or even death.

NOTE: Do not tamper or perform modifications to products manufactured by BTicino S.p.A. without written authorization by manufacturer. BTicino S.p.A. does not authorize any kind of repairs. All tampering, or modifications not authorized in writing by BTicino S.p.A. will void the product warranty.

STORAGE INSTRUCTIONS

HANDLING

When handling the material, comply with the regulations for safety in the workplace pursuant Leg. Decree No. 81 dated 09/04/2008 (Consolidated act on safety in the workplace).

Follow the indications supplied to prevent damage to materials, or risks to personnel.

Below are the instructions to follow for a correct material handling.

- 1** Always pay the utmost attention when opening packages.
- 2** To open wooden cases, in which the materials are dispatched to protect them, use a claw hammer.
- 3** 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.
- 4** Do not lift the busbars from their ends. This could not just damage the busbar, but also cause injury to the personnel carrying out the operation. When using a crane to install the busbar, use nylon slings to balance the weight.
- 5** Do not use belts or other systems to lift them to the junction windows, or the expansion cap. This may damage the busbars.
- 6** When not installing the busbar immediately upon receipt, ensure appropriate storage for the time required before installation, following the storage instructions.
- 7** Do not drag the busbar along the floor. This could cause irreversible damage.
- 8** To correctly move busbars, cranes may be used. These would enable to lift the busbars from the floor very easily.
- 9** Do not move already assembled busbars, as this would cause stress at the point of the electric joint.

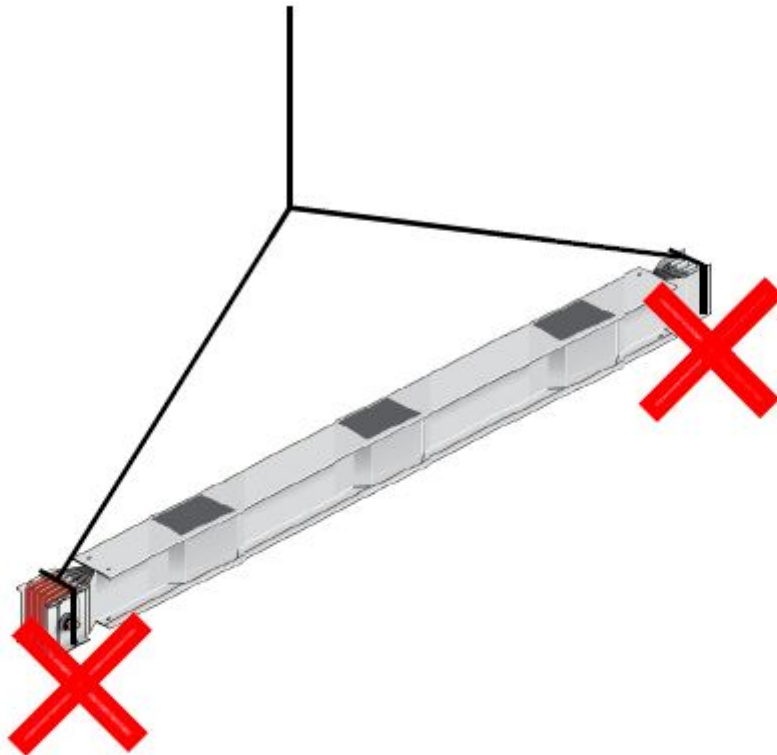


Fig. 1

Do not lift the busbars from their ends.

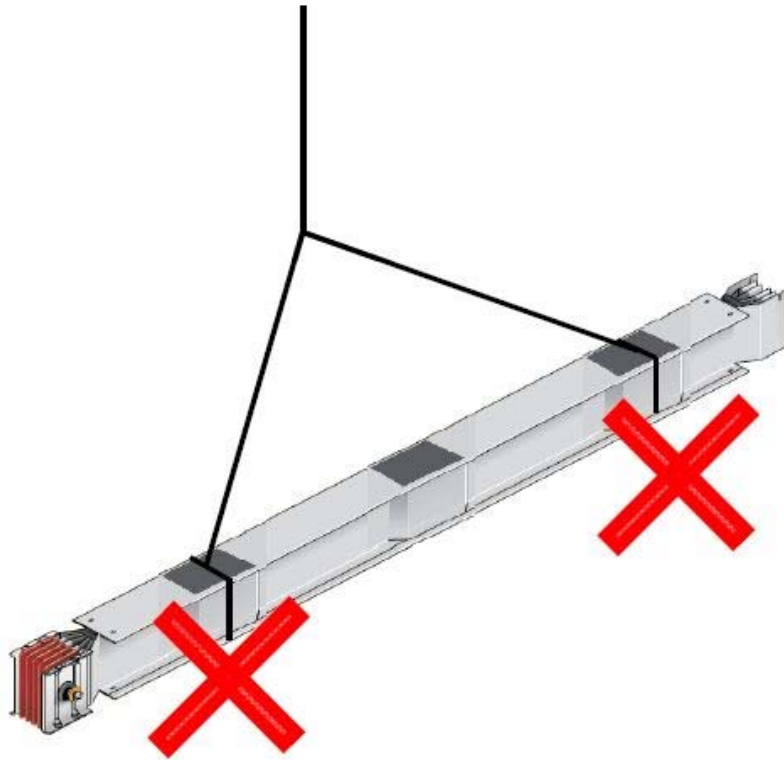


Fig. 2

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

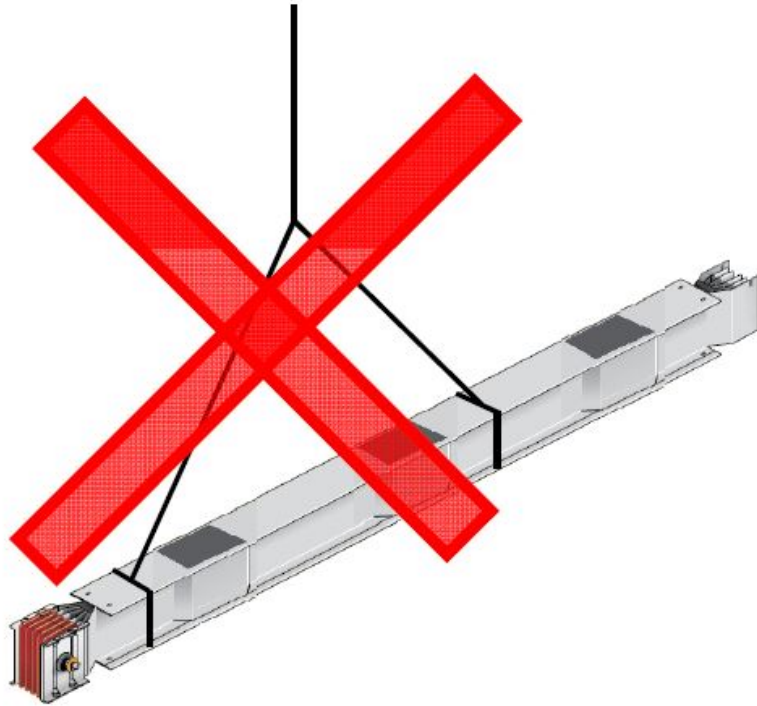


Fig. 3

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

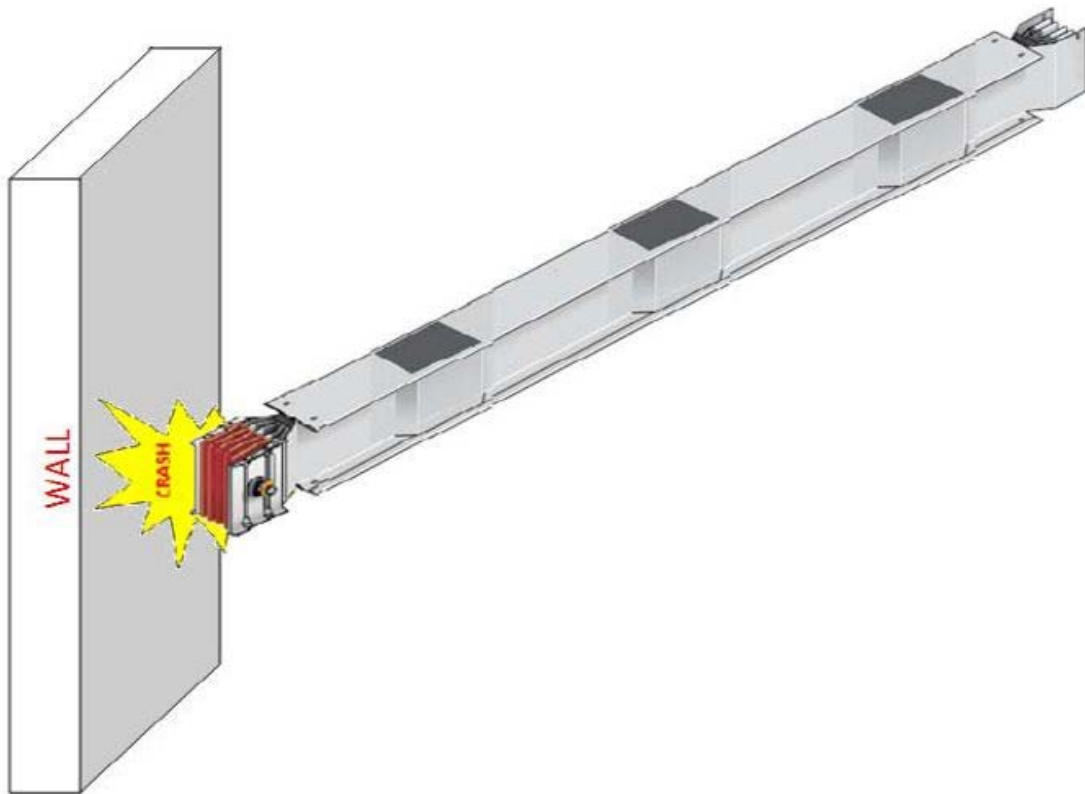


Fig. 4

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.

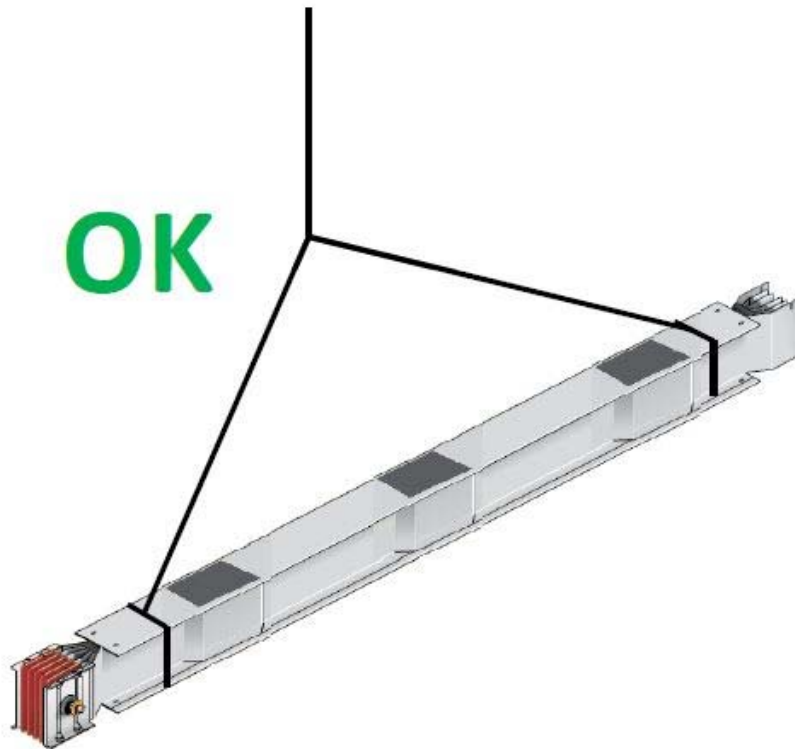


Fig. 5

Correct way of lifting the busbar.

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 the IT-PostVenditaZucchini@bticino.it e-mail address, including the notification form MODZ017.

Ensure that the MODZ017 form is correctly filled in, as this will enable us to answer more promptly to your notification. This means that all fields must be completed, including a detailed description of the disclaim.

Whenever possible, with each notification, attach photos of the items affected.

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).

In case of damaged material, attach photos of the affected part and the packaging (if present).

In case of hidden damage (outer packing undamaged, material inside damaged), or if the transport was the responsibility of BTicino, please contact us immediately so that we may initiate a complaint procedure against the freight forwarder.

We remind you that the maximum limit for a hidden damage complaint is 7 days from the receipt of goods.

We recommend that upon receiving the goods, the integrity of the packaging is checked WITH THE FREIGHT FORWARDER PRESENT. If you find that the packaging has suffered damage and/or collisions of varying degree, please write MATERIAL RECEIVED DAMAGED on the Delivery Note, to enable us to initiate a complaint procedure against the freight forwarder. If the freight forwarder stops you from indicating on the Delivery Note that the goods have been received in damaged condition, or from performing the visual inspection, we suggest that you DO NOT ACCEPT THE DELIVERY. This procedure will enable us to immediately initiate the complaint procedure against the freight forwarder, and to quickly replace any damaged material received.

If the transport is at your charge, we recommend that you immediately issue a complaint against the freight forwarder.

If you require technical support intervention from us, tick the appropriate box in the MODZ017 form. We remind you that this technical support intervention may entail a fee (ANIE tariffs, plus out-of-pocket expenses) in case of installation problems and/or malfunctioning or damage caused by the customer.

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. We recommend not to store the busbars outside.

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°C.

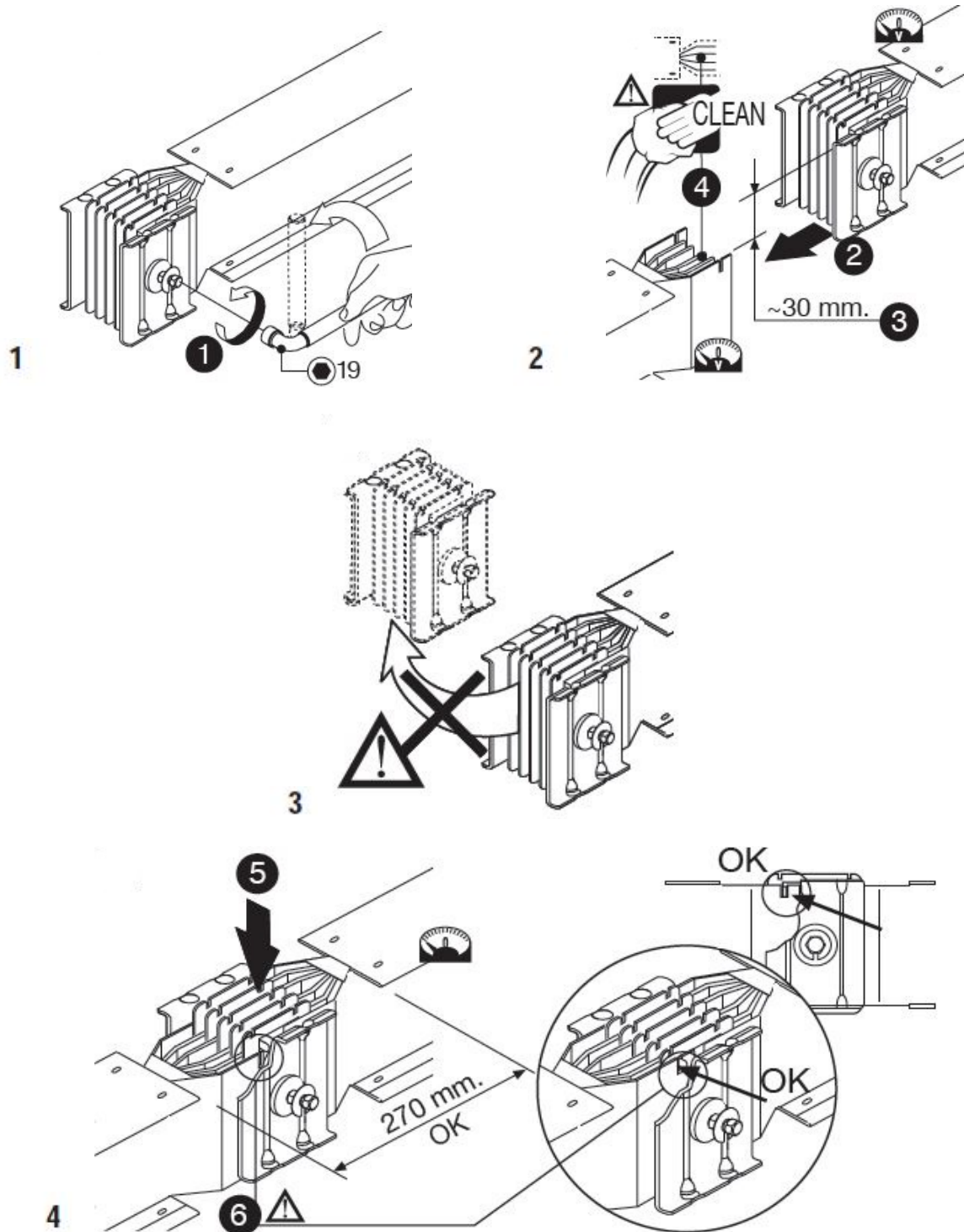
INSTALLATION INSTRUCTIONS

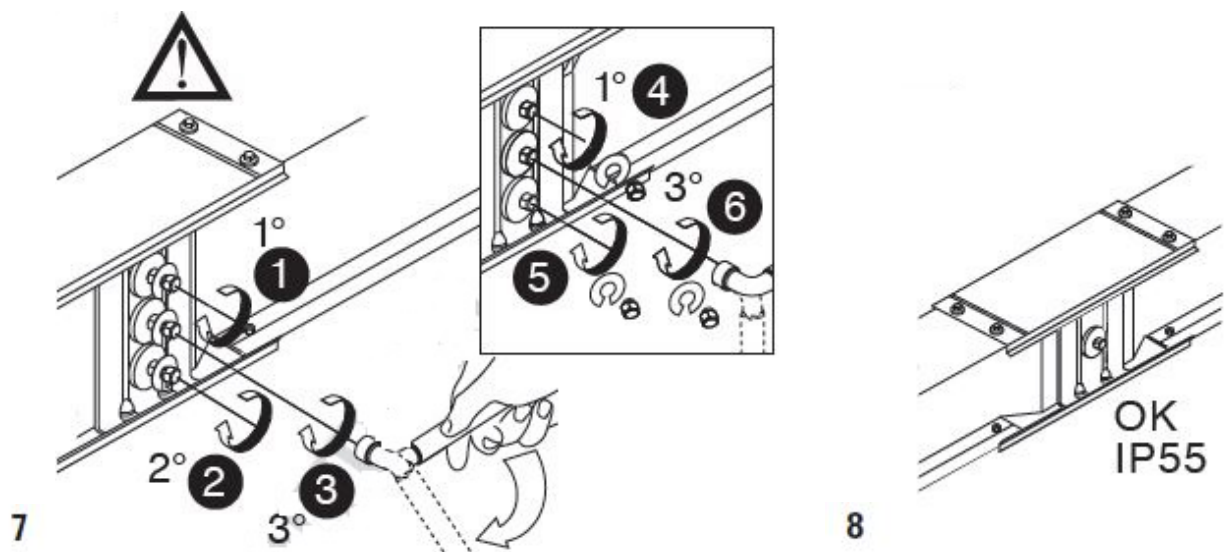
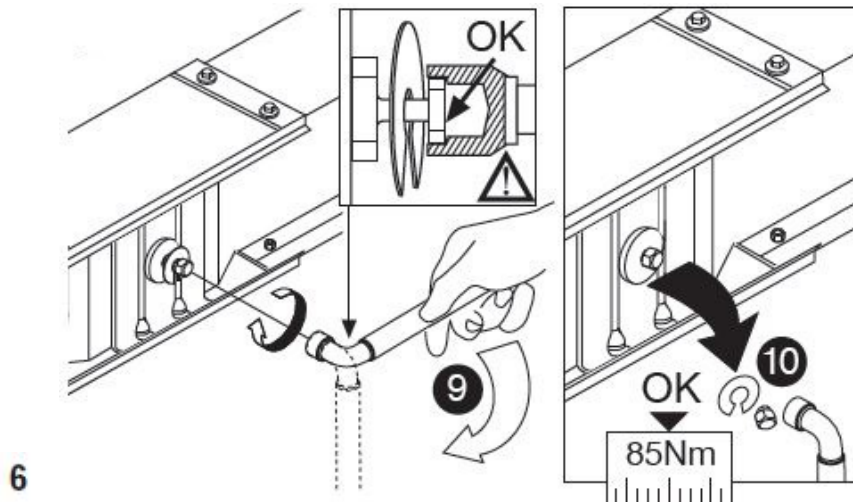
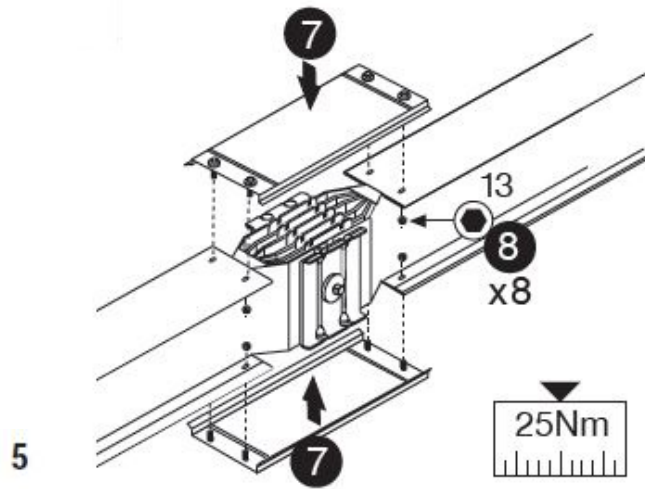
Before the installation, all material should be inspected for damage.

When installing the busbars comply with the following:

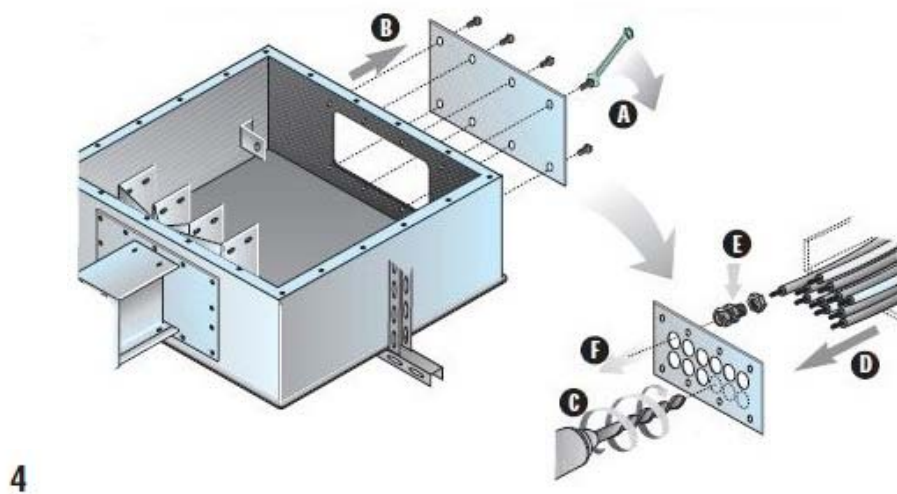
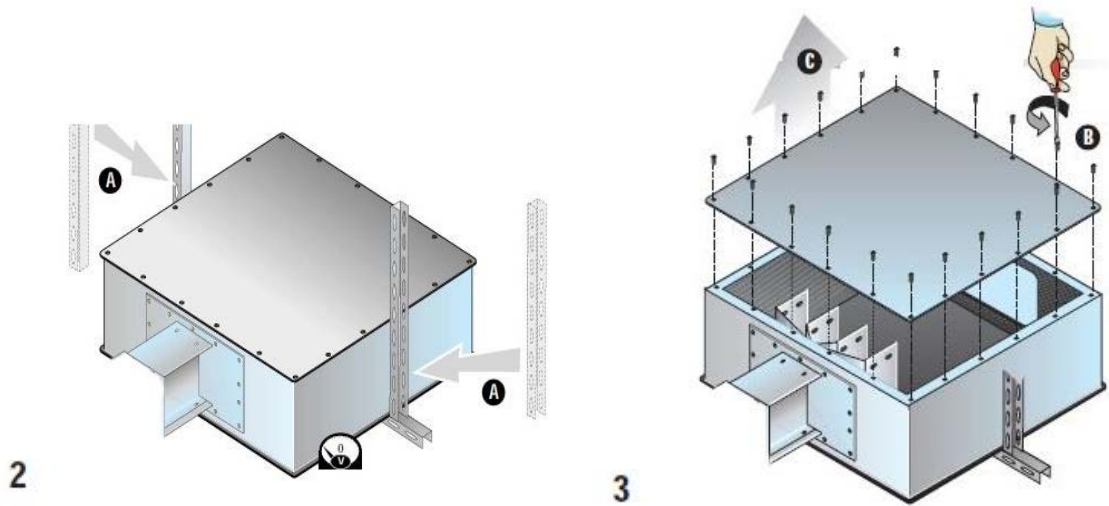
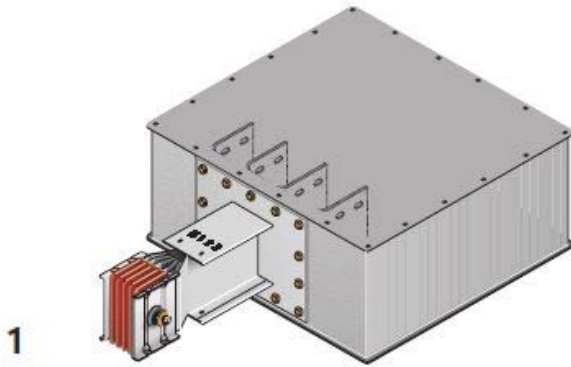
- 1** do not position the busbars near pipes containing liquids.
- 2** for the installation only use bracketing systems supplied by BTicino, and follow the instructions found in the catalogue or enclosed with the item.
- 3** only use accessories supplied by BTicino.
- 4** check that the operating voltage coincides with that indicated on the product plate.
- 5** check that the system operating current does not exceed the product rated current, downgrading 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.

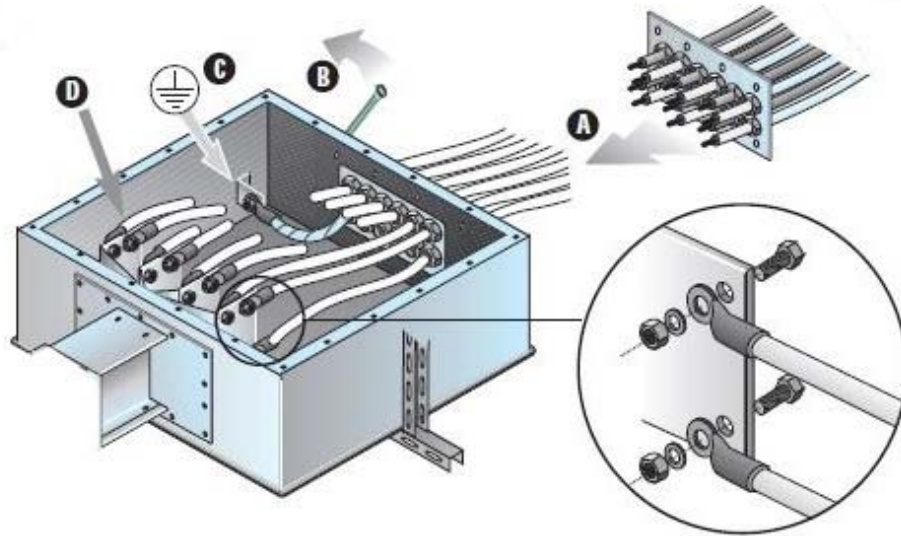
STRAIGHT LENGTHS



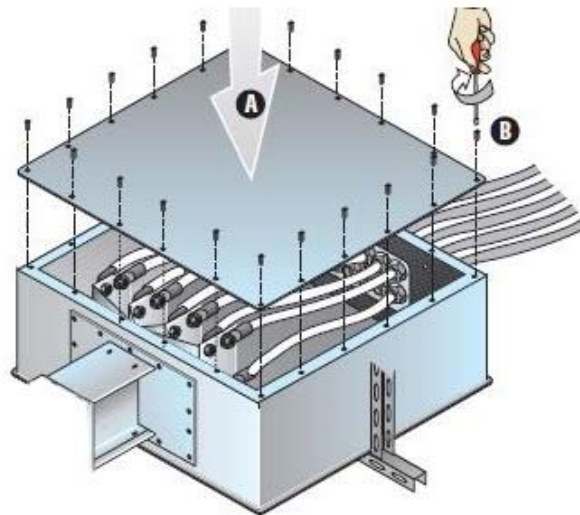


END FEED UNITS

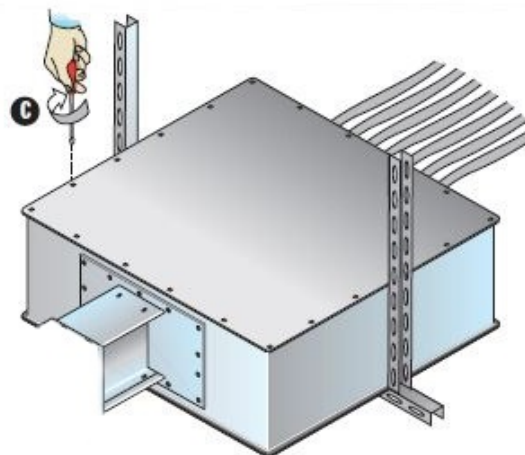




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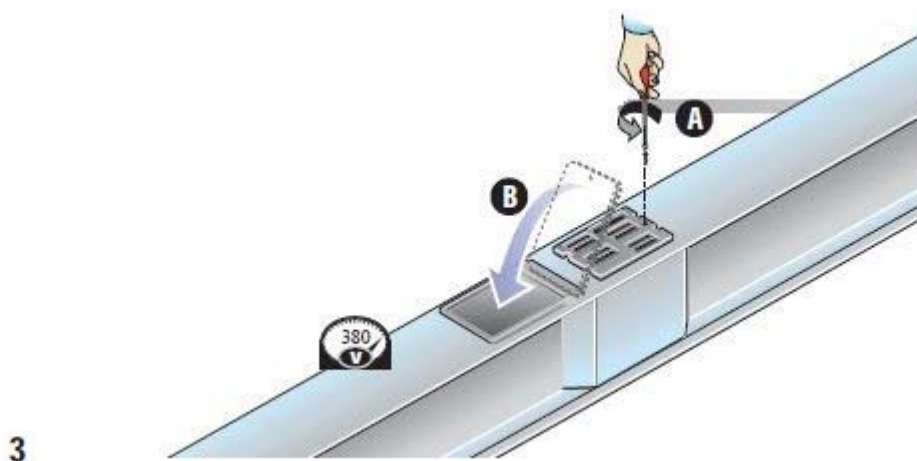
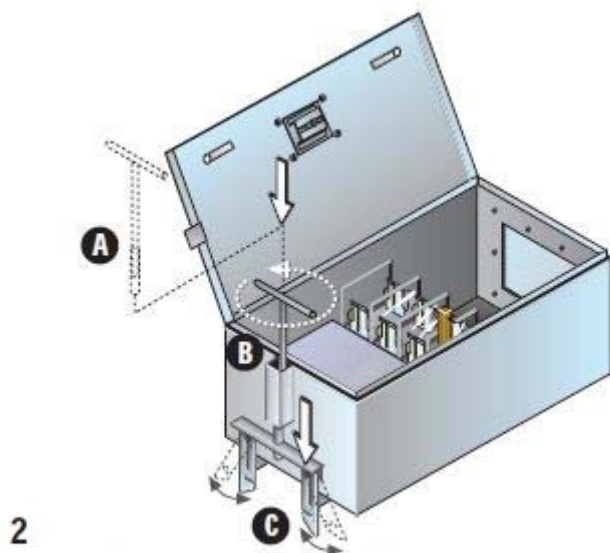
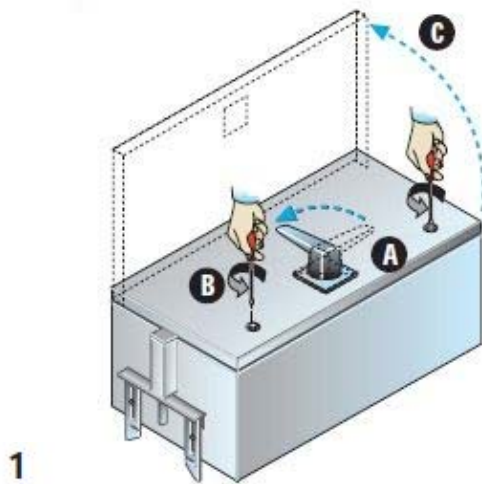
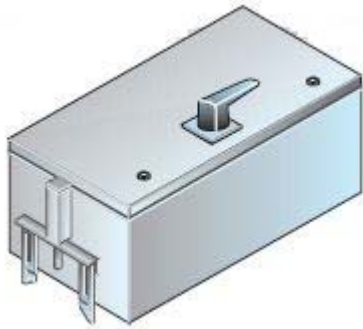


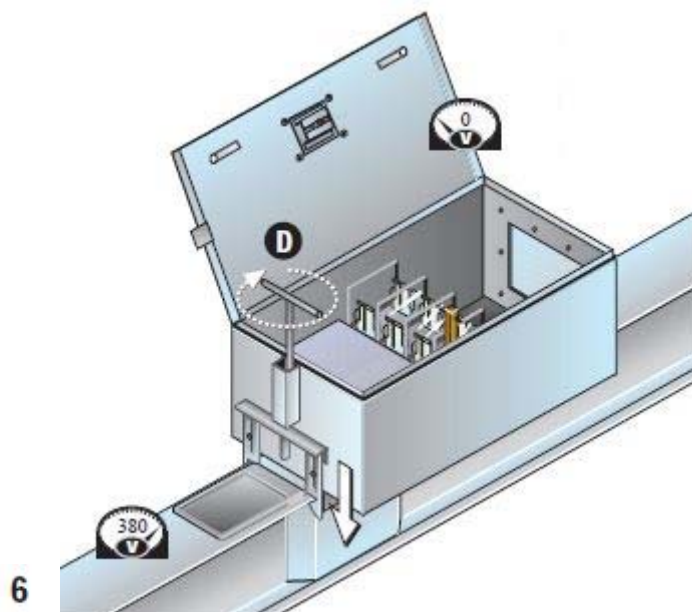
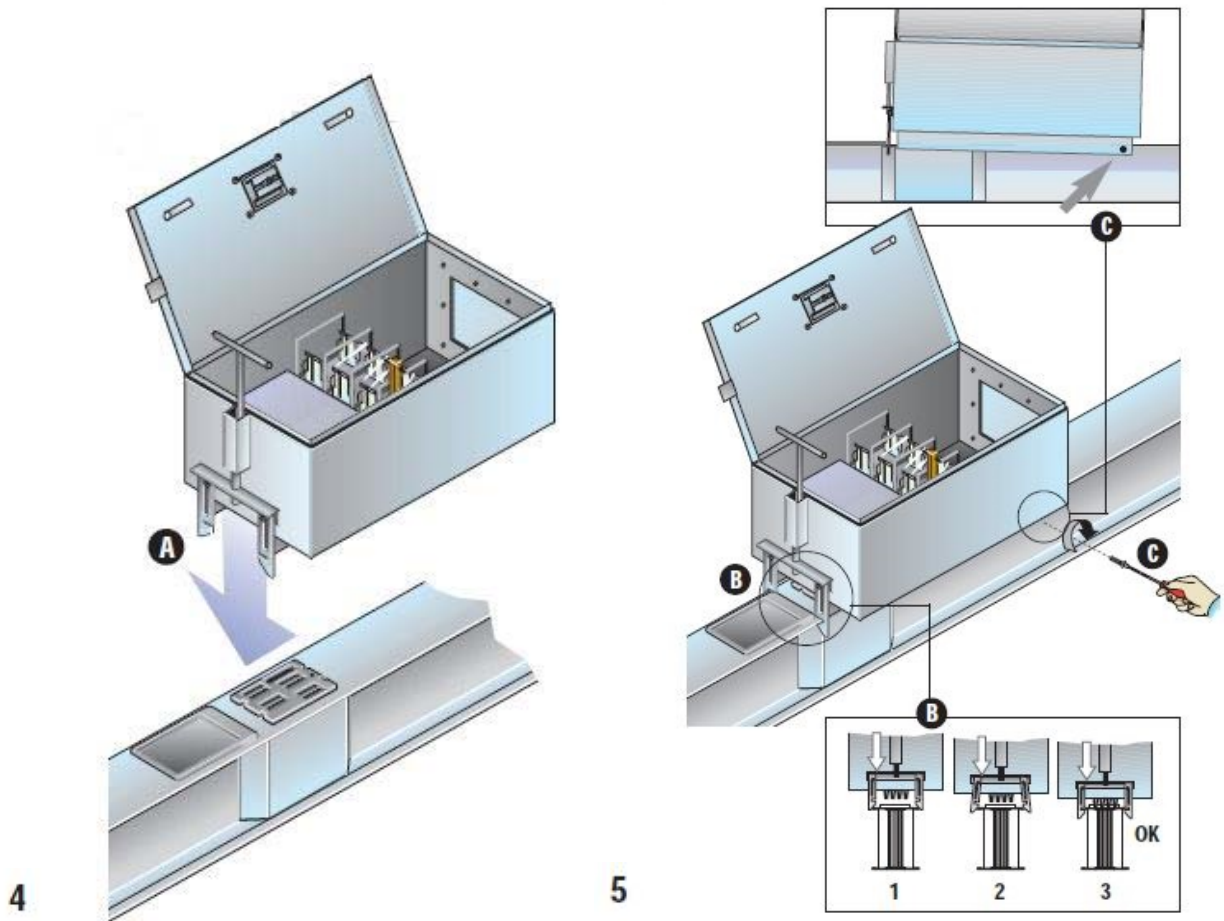
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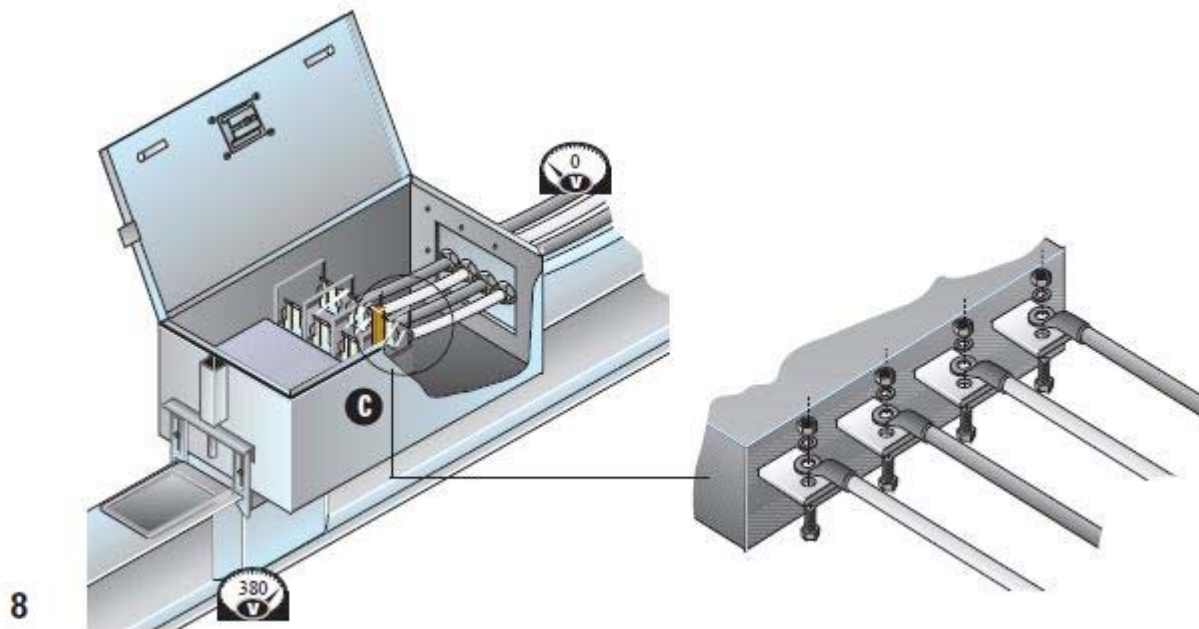
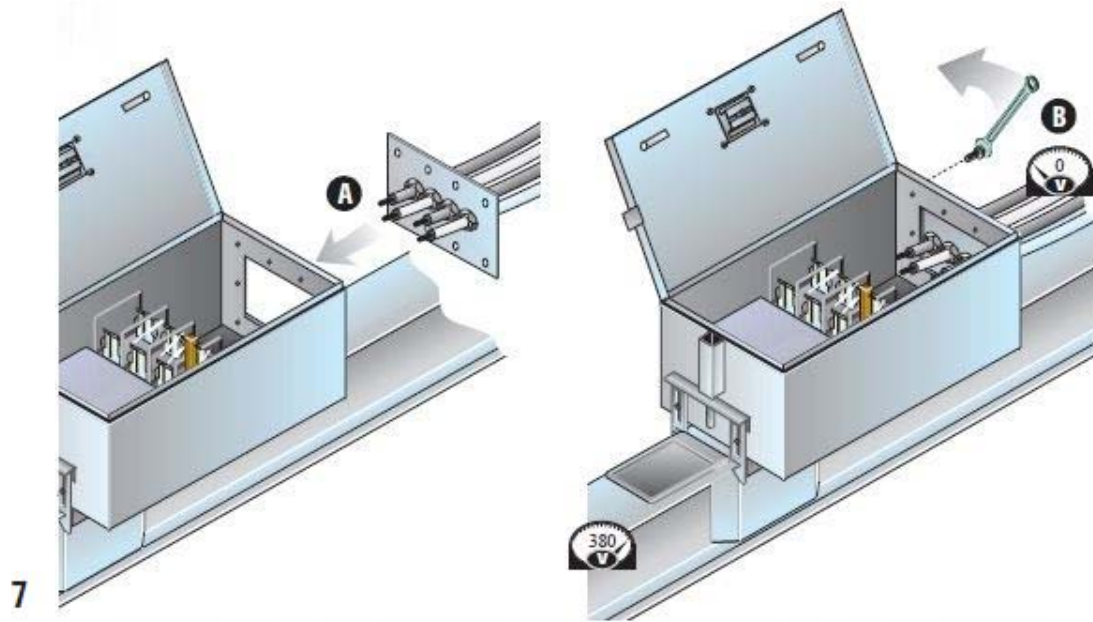


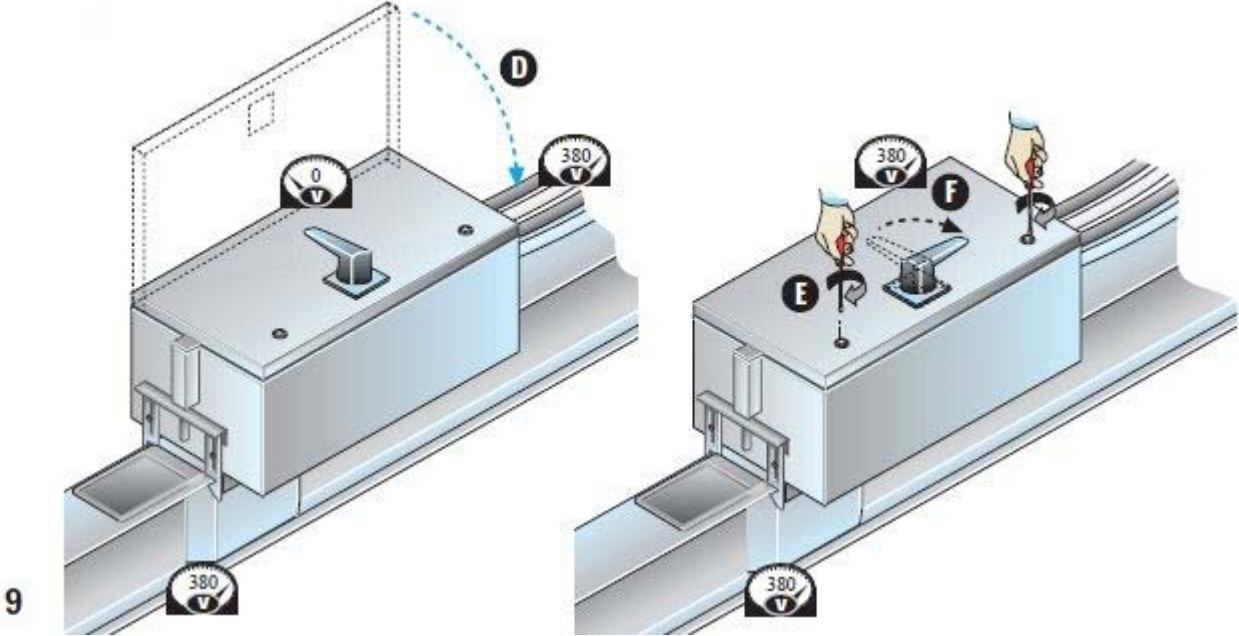
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PLUG IN TAP-OFF BOX

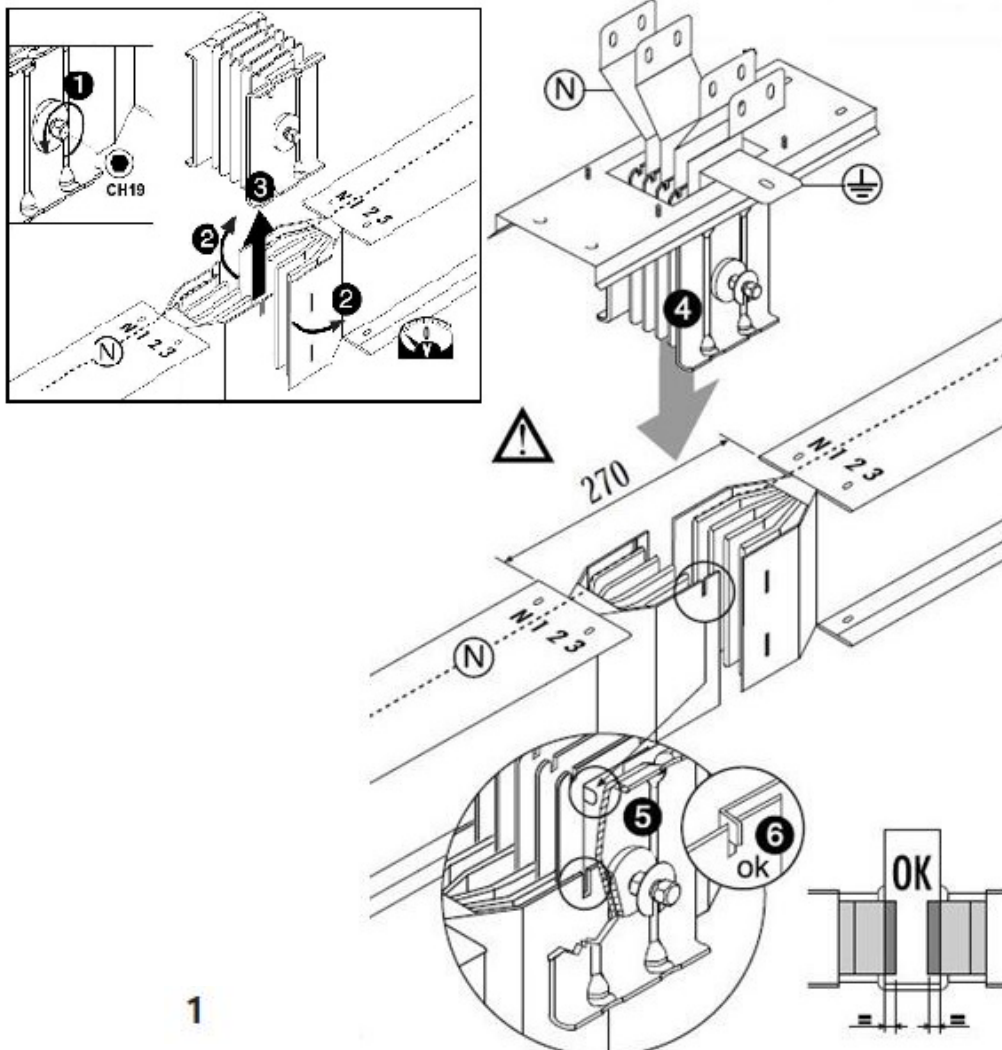
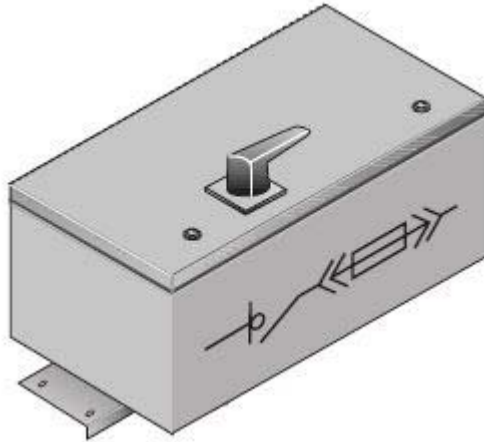


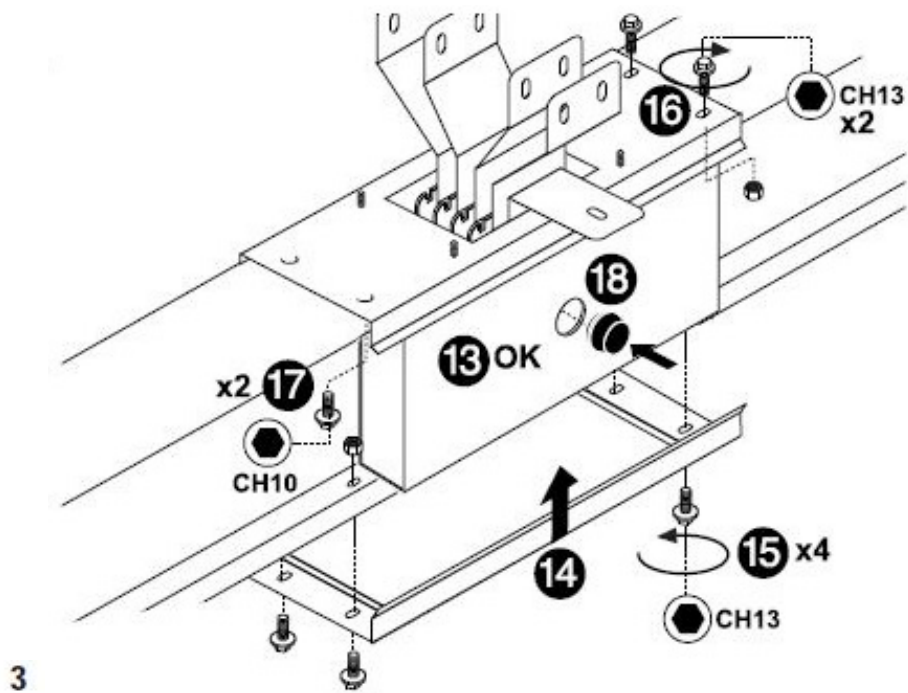
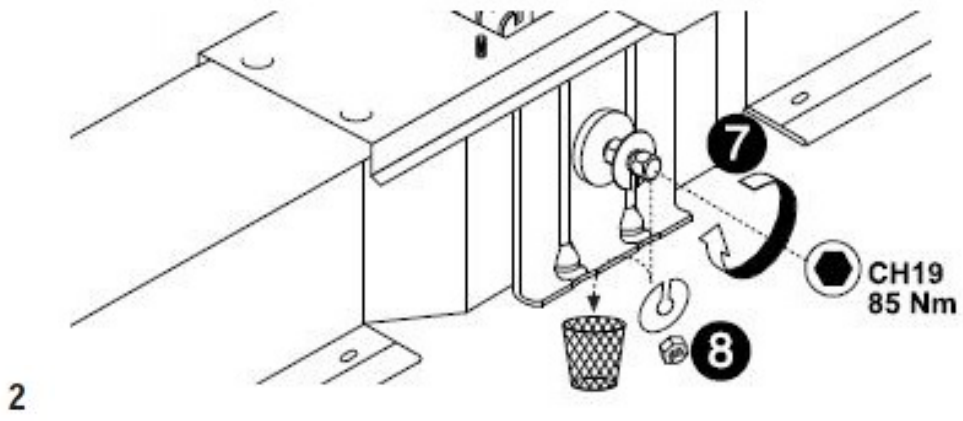


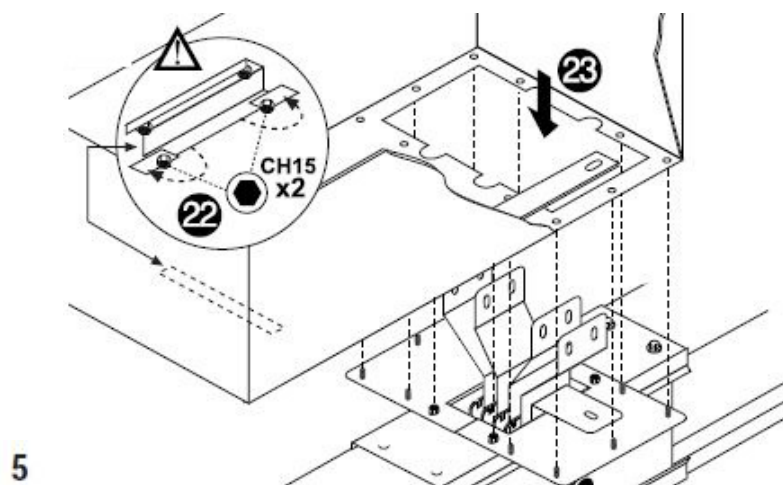
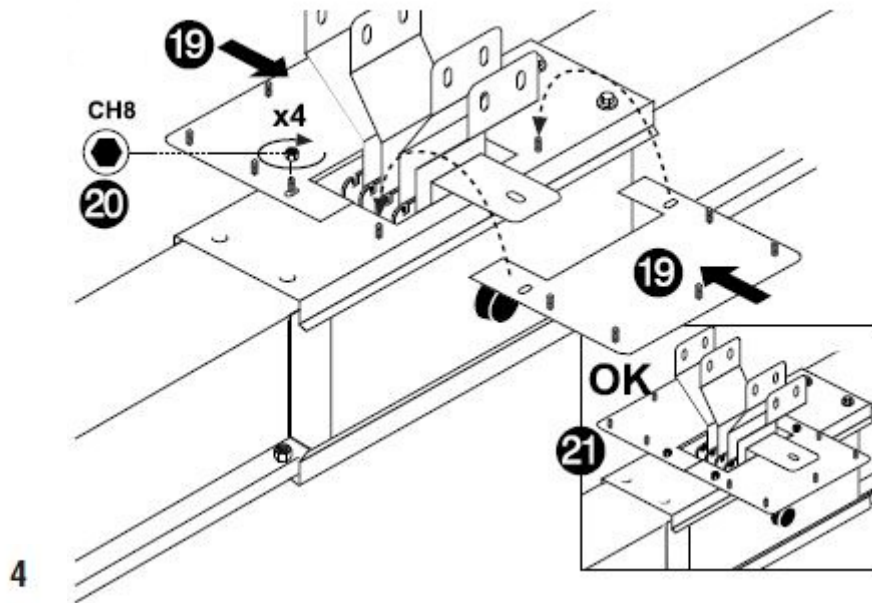


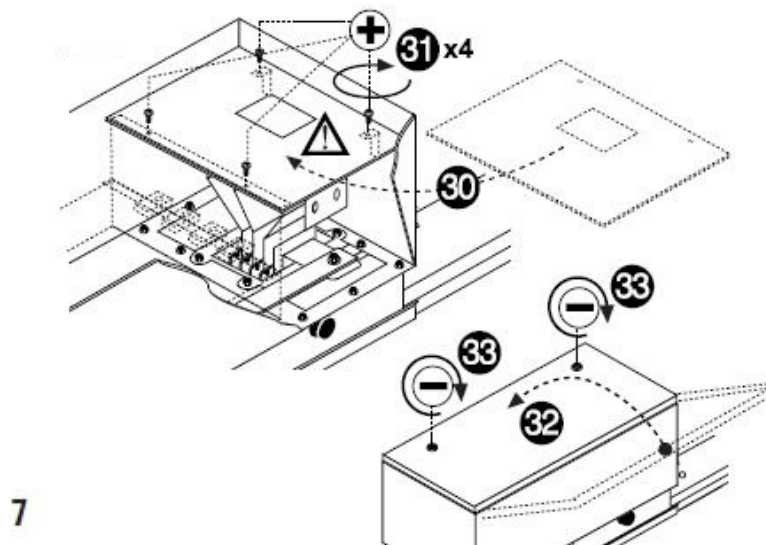
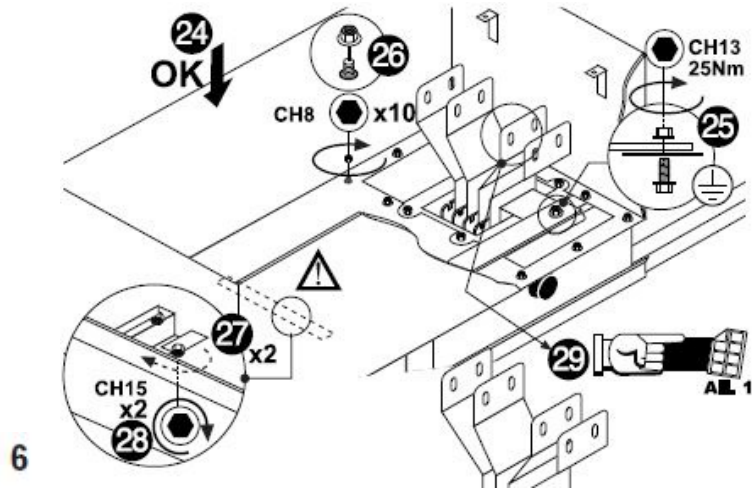


BOLT ON TAP-OFF BOX

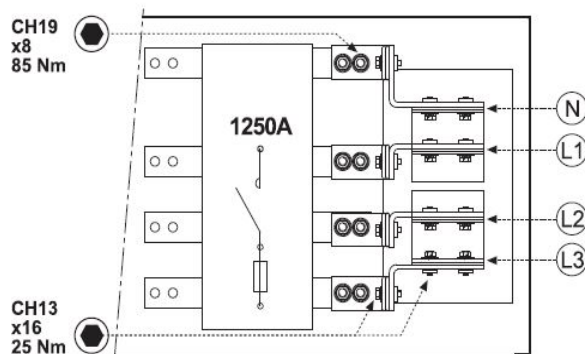
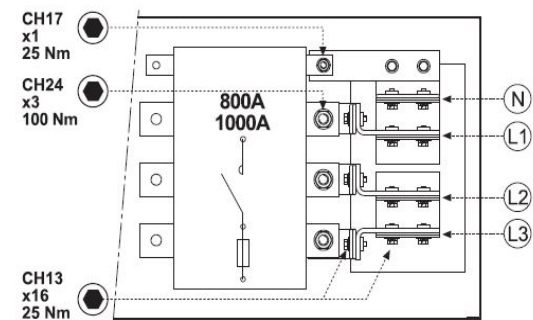
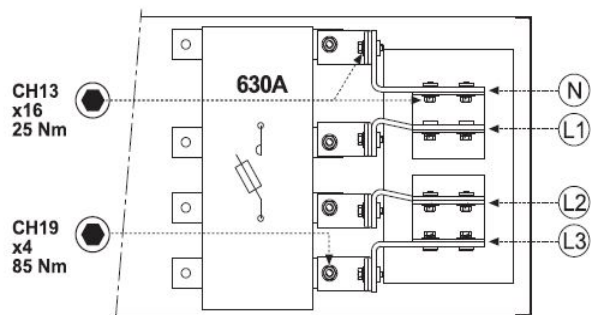
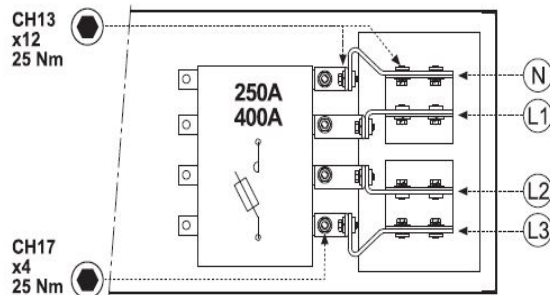
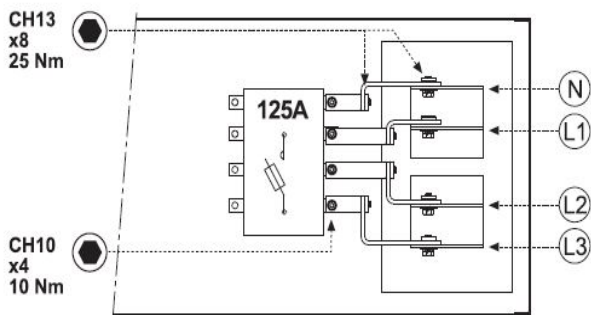






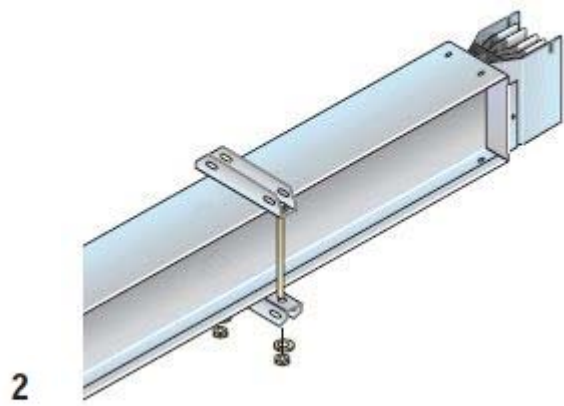
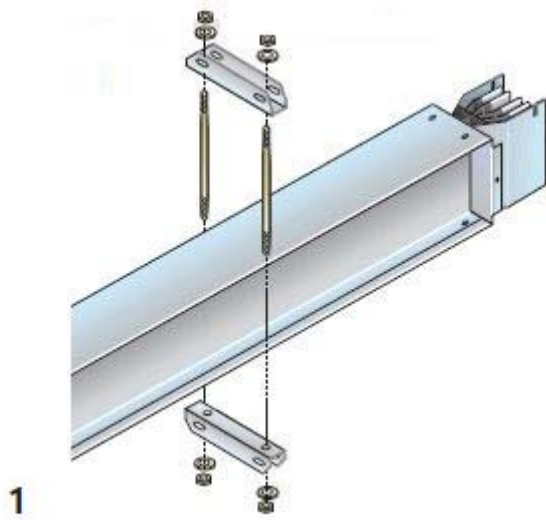
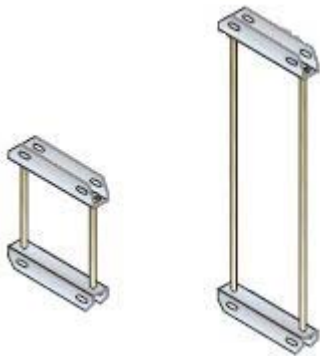


CONNECTION BRIDGES FOR TAP-OFF BOX BOLT-ON TYPE

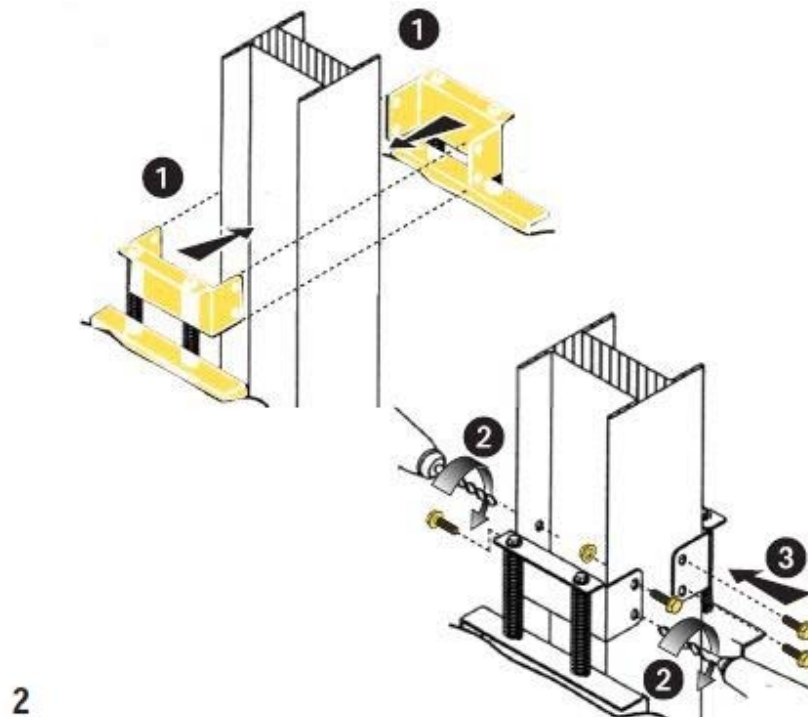
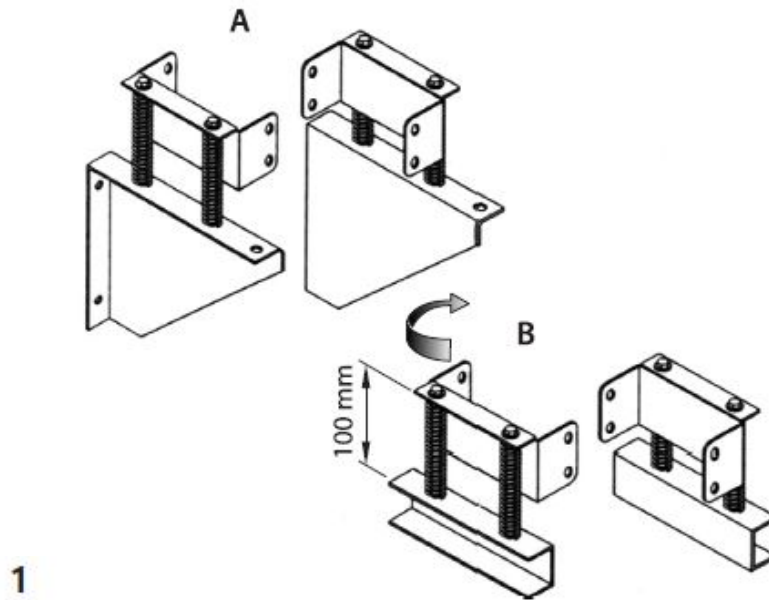


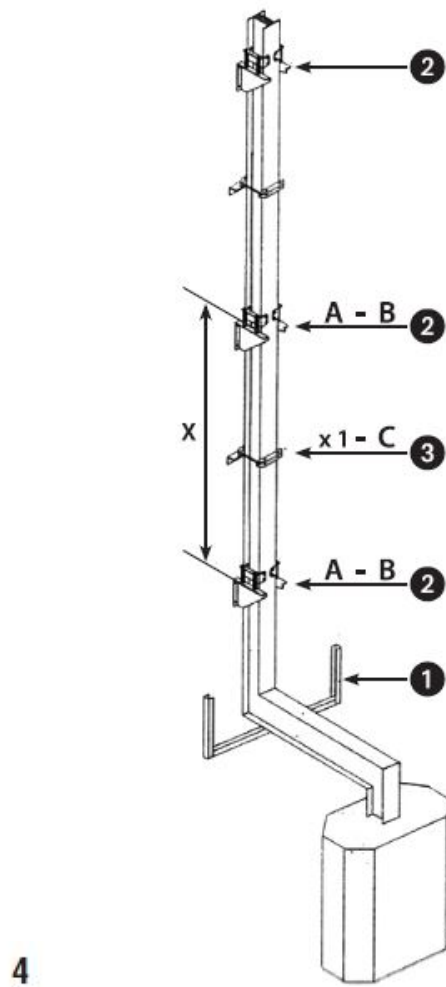
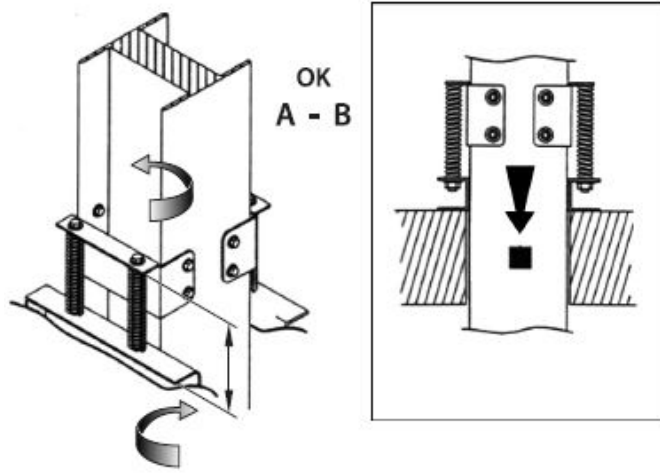
FIXING ACCESSORIES

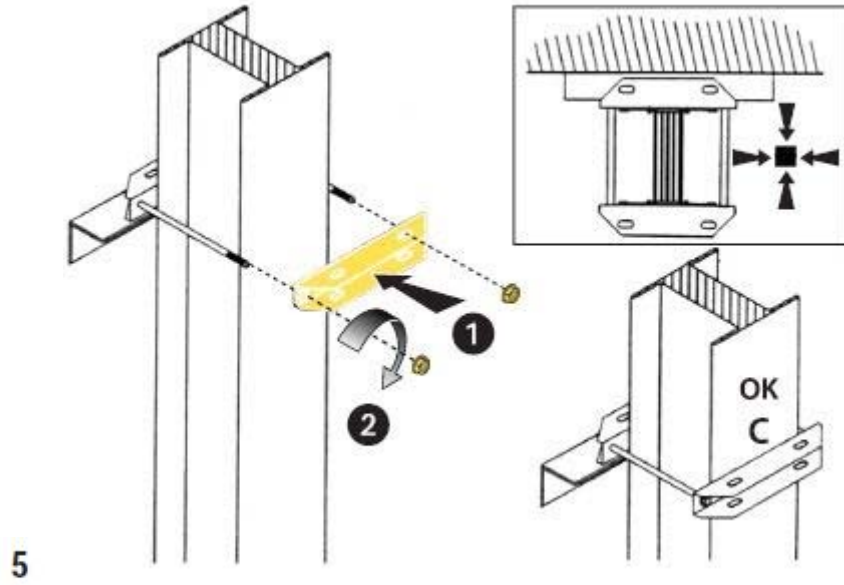
HORIZONTAL



VERTICAL







END COVER UNIT



3



4





5



6

INSPECTION, CONTROL AND MAINTENANCE INSTRUCTIONS FOR PLANTS WITH SCP BUS DUCT

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.

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 torque moment of the self-breaking bolts is correct (80-90 Nm), use a calibrated torque wrench. During the measurement the line has to be at ambient temperature. If the torque moment 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 torque moment 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/responsability in the installation activities.

ELECTRICAL SAFETY TESTS

Carry out all tests described in the applicable technical installation norms, as the insulating test between phases and to earth at 1000 V with a minimum value of 20 M Ω , for every line stretch.

If the insulating value is lower than 20 M Ω , 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 the single

stretch to identify the element with low insulation. Continue the splitting, if the insulation keep being inadequate.

If insulation test is made to every piece the value minimal is 100 MOhm.

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 21-24).

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

BUS DUCT ANNUAL PERIODIC INSPECTIONS TO BE CARRIED OUT ONE YEAR AFTER ENERGIZING AND EVERY OTHER FOLLOWING YEAR

THERMAL TESTS

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 during installation (See page 3). Fill in the attached form with the measured values, together with ambient temperature and working current (form for thermal tests at pages 21-24). 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 Zucchini Brand. This thermal test can be carried out with contact temperature sensors, optical pyrometers or thermal cameras.

JUNCTIONS

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 (e.g. trichlorethene) not corroding or creating abrasion on surface treatment (zinc, tin, silver coating) or on contact surface (copper).

3 blocks correctly adhere on bars (use a 0.05mm thickness gauge), i.e. conducting parts fully make contact.

4 the torque moment of the self-breaking bolts with a torque wrench calibrated at 85 Nm. During the measurement the line has to be at ambient temperature. If the torque moment is lower than the required value (85Nm), re-establish it.

5 insulation test at 1000V, with minum value of 20 MOhm, 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 to every piece the value minimal is 100 MOhm.

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

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 collectors bars. If necessary, retighten the connecting screws.

Plug-in

Verify the contact resistance between the clamp before the protective device and the relative bar in the up-river outlet. If resistance is higher than 100 μ Ohm, the tap-off box could have been mounted not correctly. Take off the tap-off box, verify the plug-block and the outlet of the element. If the outlet is broken and the contacts have entered the bulb, replace the box and mark the outlet as out of service. Insert a new box in another outlet and do not use the broken one again.

N.B. Never use an outlet when problems have occurred during the installation of the tap-off box, or when the tap-off box is replaced because out of service.

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.

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 Zucchini Brand.

Verify if joining screws are correctly tightened.

BUS DUCT RECORD FORM FOR INSPECTIONS AND CONTROLS

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

INSPECTIONS AFTER INSTALLATION

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

Element alignment	YES	NO
-------------------	-----	----

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.

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
 Absence of water, scale and dust in flanges
 Correct centring
 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)

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.

INSPECTIONS AFTER INSTALLATION

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

$Dt = T_{\text{measured}} - T_{\text{ambient}}$

Ib = working current

PERIODIC INSPECTIONS CARRIED OUT ANNUALLY

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

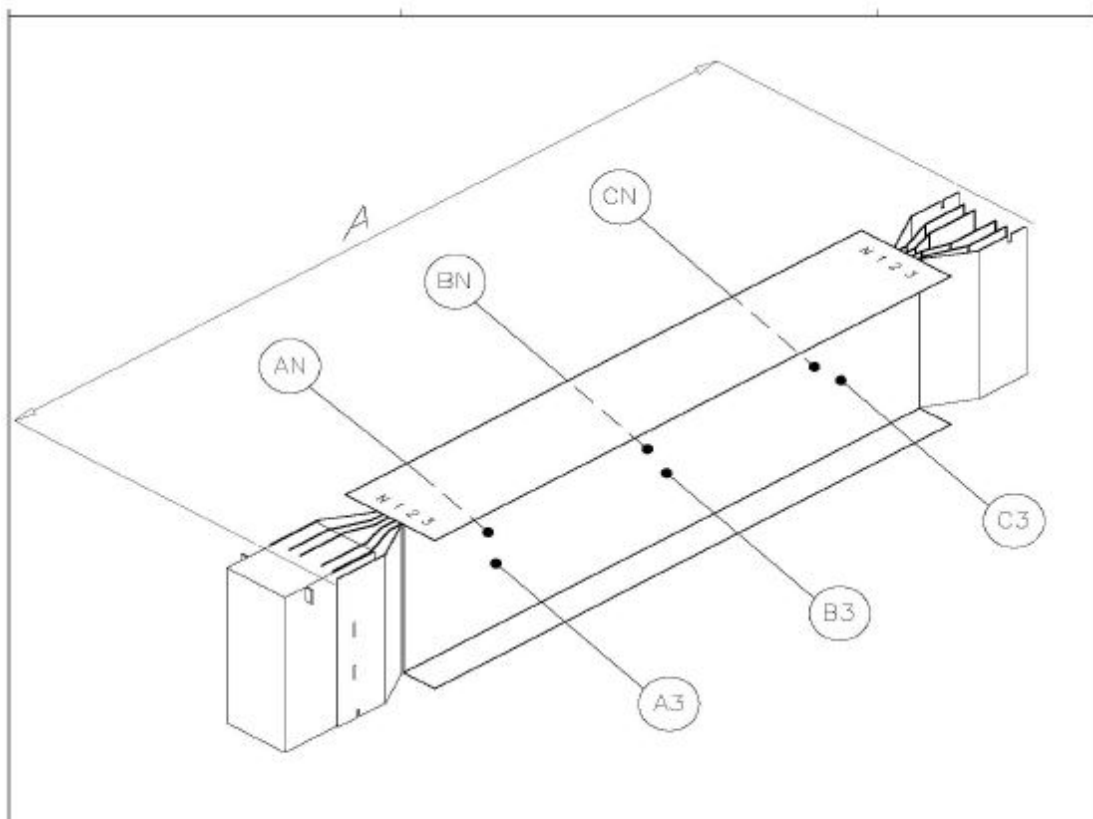
$Dt = T_{\text{measured}} - T_{\text{ambient}}$

Ib = working current

FEEDER 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.

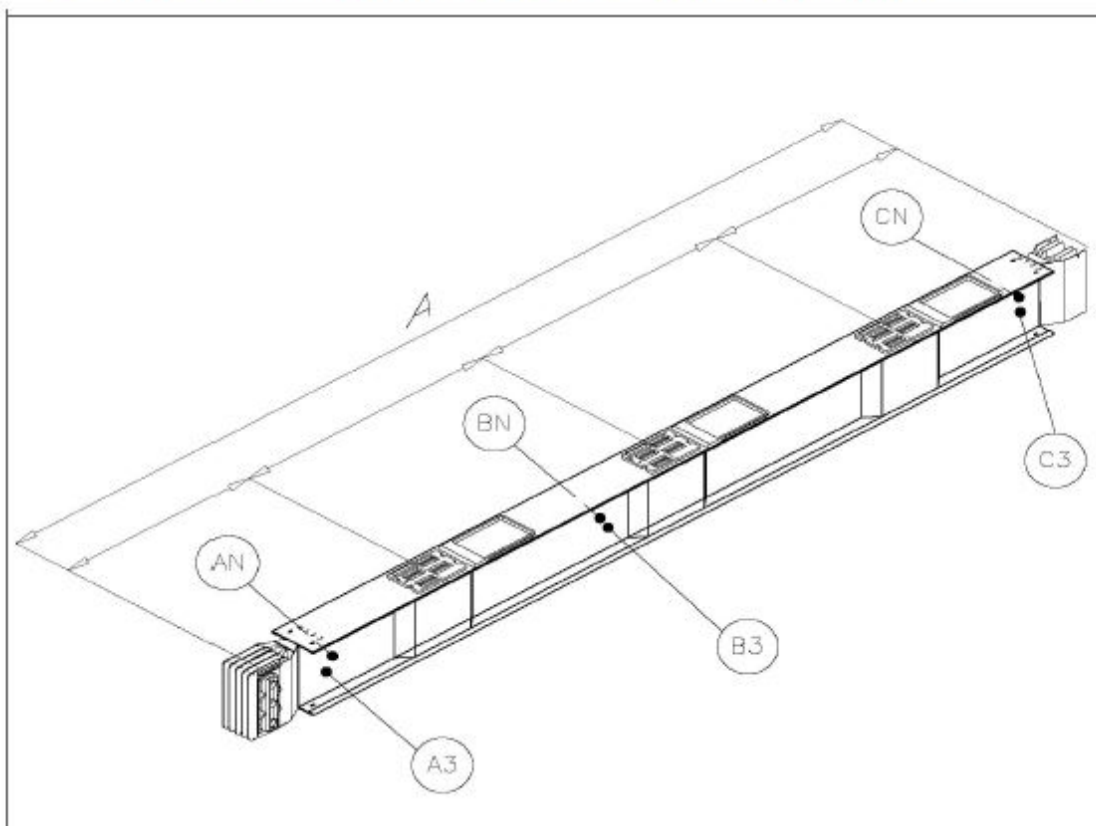


POINT	N	L1	L2	L3	Al	Cu	T.A. "c"	I "Amp"	DIM.A	N° POS
A3										
B3										
C3										
AN										
BN										
CN										

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.

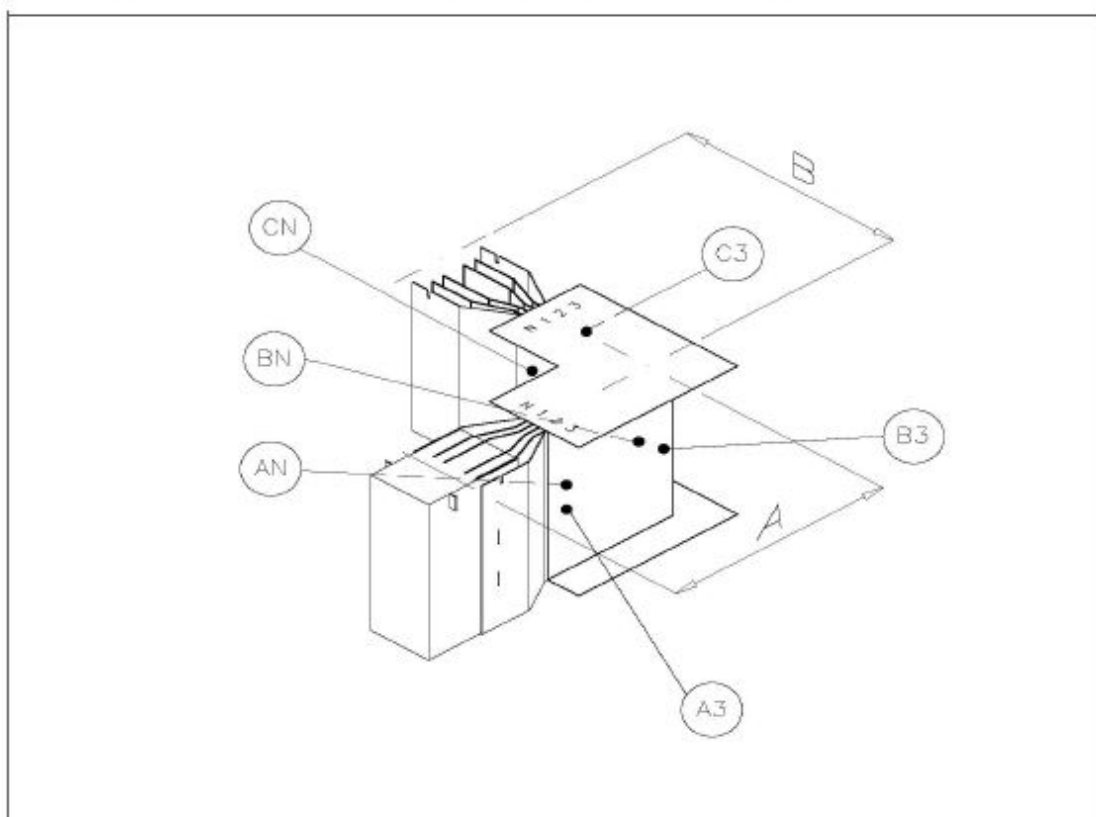


POINT	N	L1	L2	L3	Al	Cu	T.A. "C"	I "Amp"	DIM.A	N° POS
A3										
B3										
C3										
AN										
BN										
CN										

DIHEDRAL 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.



POINT	N	L1	L2	L3	AI	Cu	T.A. "C"	I "Amp"	DIM.A	DIM.B	N° POS
A3											
B3											
C3											
AN											
BN											
CN											

FLAT 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.

POINT	N	L1	L2	L3	Al	Cu	T.A. N° C°	I "Amp"	DIM.A	DIM.B	N° POS
A3											
B3											
C3											
AN											
BN											
CN											

**For further information or explanation please get in contact with Customer Care
Zucchini Brand.**

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