



# E-LINEKX

MANUAL



# E-LINEKX



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These instructions should be read carefully and acted upon before taking delivery of equipment on site.

### Dear Customer,

EAE Elektrik A.S. Products are designed to provide the maximum benefit in efficiency and service. Our products are manufactured in accordance with Management Systems standards and EAE quality principles in our modern production plants in Istanbul.

The components that you have purchased are manufactured by a completely environment conscious with the relevant Environmental management Standards and accordance with the principles of information Security Management systems, in accordance with the rules of occupational safety and health.

Handling, installation and operation of product should be carried out only by skilled, trained and authorized personnel using all associated equipment such as rubber gloves, helmet, safety glasses or face shields and flash resistant clothing in accordance with established safety practices.



1- Installation according to the project of the busbar system, planning and coordination with other distribution systems (mechanical, heat, steam, air installation etc.) is crucial.

2- Operational Success of the Busbar systems is ensured by adhering to the right transport, proper installation and design. Improper application may cause malfunction of the system, personal injury and damage to operating systems.

3- The installation, operation and maintenance of the busbar system should only be carried out by qualified personnel who know the dangers associated with installation a, construction and operation of electrical equipment for the purposes of this manual. Additionally, this personnel ;

- \* Knows the requirement of applicable electrical laws, other laws and standards.

- \* Be trained and authorized to test, energize, clean, ground, label and lock the system and equipment suitable for occupational safety applications.

- \* Be trained in the use and maintenance of personal protective equipment such as rubber gloves, helmets, protective goggles or face shields and gauze-resistant clothing in accordance with relevant work safety practices and potential hazard levels.

- \* Must be trained in first aid.

### **WARNING:**

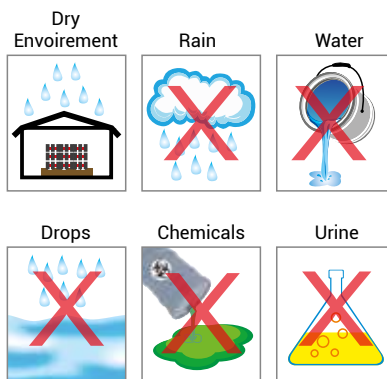
Dangerous voltage levels in the electrical components may result in the hazardous injury and death.

Installation, monitoring and maintenance must be carried out on de-energized busbar electrical equipment. In this way, unintentional contact to the equipment under the energy is prevented. must be followed all warnings and related instructions.

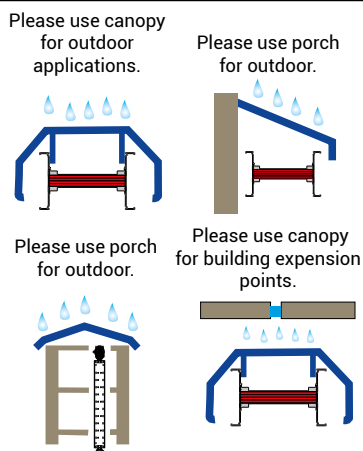
### **WARNING :**

Operation of the busbar damaged by water or moisture can caused damage property, serious personal injury or death. To ensure proper installation resistance and to ensure that the moisture source is removed, observe the notes in section on page 16 item 13 you receive.

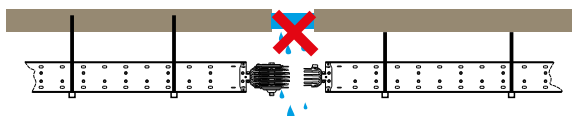
**BUSBARS SHOULD  
 NOT BE IN TOUCH WITH  
 ANY LIQUID MATERIAL**



**CLOSE  
 INDIRECT or DIRECT  
 WATERWAYS.**



**BUSBARS THAT ARE NOT  
 ASSEMBLED COMPLETELY  
 HAVE NO PROTECTION  
 AGAINST TO WATER.**



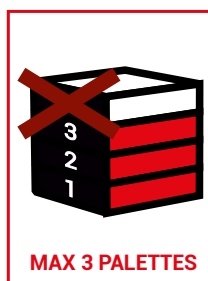
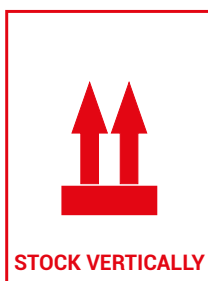
1- General guidelines are given to protect the busbar straight lengths and modules and reduce the risk of personal injury and equipment damage during handling on site.

2- As soon as the container or truck arrives on site, a suitable forklift is required for easy and convenient unloading from vehicle directly to the ground level.

3- All pallets should be checked by unpacking them sufficiently to inspect them for possible transit damage and to determine that the shipment is complete and correct as per Packing List provided.

\* If any of the items is missing from the Packing List or any piece is damaged during transportation, Insurance Company must be informed immediately for proper reporting with all required documents for further action.

4- All busbar straight lengths and modules should be handled with care to avoid damage to internal components and the twisting of housing or its finish.



5- When the lengths and modules are required to be taken from the pallets to the erection area, those should be hoisted using metal rods or bars passed through the 2 sets of holes at each end of the housing body by ensuring the load is stable and safely secured. Then adequate sling and slinging method can be used for shifting from one place to another.

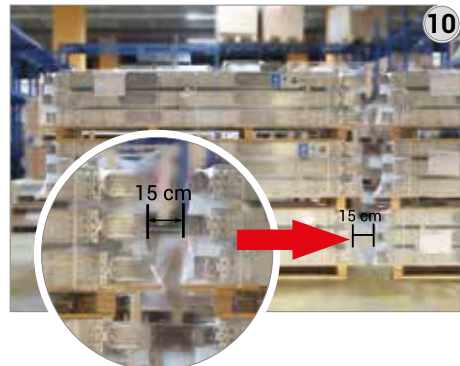
6- The removal of the products from one floor to the other floor must be done by means of a suitable electric and mechanical crane or elevator.

7- Repack the Busbar if you need to store or hold before installation (Refer to chapter5.) as long as conditions permit, do not disassemble the busbar until it reaches the lastest installation point.

8- Storage area should be a clean, dry space with a uniform temperature to prevent condensation and having adequate air circulation and protected from dirt, fumes, water. Storage area should be free of vehicle traffic to prevent physical damage to the products.

9- When busbar straight lengths and modules are to be stored for certain time before installation, restore the packing for protection during that period and cover them with waterproof sheet in very well protected area from dust and any kind of liquid on sufficient quantities of wooden bearers.

10- The busbar designed for the outdoor environment are not weatherproof until the insallation is complete and in accordance with the instructions and above recommended storage conditions must be applied for other busbars.



#### IMPORTANT!

1- Please read this instruction manual before commencing the busbar installation. Incorrect or incomplete mounting may cause damage to the equipment or system.

2- Installation of the busbar system should commence after reading through busbar application drawings. Locate the positions of individual pieces such as transformer-panel connections, expansion units, feeder units, end feeder units etc. and check that they are in accordance with the project drawings.

3- Seismic support systems should be used in earthquake risk areas. Please contact our company for details of seismic support products and project planning.

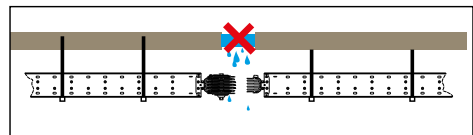
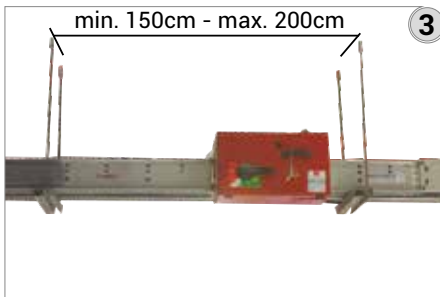
The recommended distance between supports is 1.5m, the maximum distance is 2m. Make sure that support positions do not block either joint covers or tap off points.

4- DDT modules should be used at min. 20cm distance to the each floor concrete.

5- If the busbar lines are used in the transition of building dilatations, appropriate dilatation module should be chosen. Please contact our company for support.

6- Busbar system should be handled with care either by forklift, crane or any other means which will not damage the product while transporting or lifting. When transporting busbar, position its weight evenly. Generally vertical installation is provided in vertical lines. Please read additional installation instructions.

7- When install horizontal and vertical, it must be aligned correctly to prevent collapses and bends.



Please cover  
top of the shaft.

8- Protect the busbar against water and moisture from unfinished roofs and walls during installation.

9- Tools required for the installation,

Micrometer type adjustable/calibrated torque spanner

½ inch square drive size 10mm, 13mm and

19mm socket

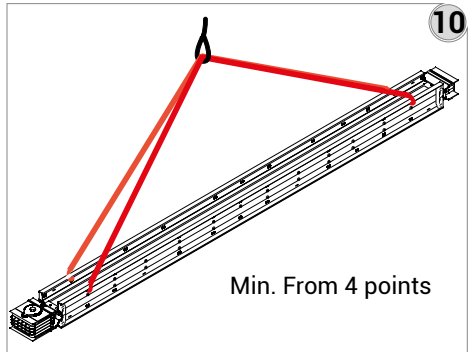
Drilling Machine

Size 10mm Spanner/Socket

Screwdriver

Hoist with cloth sling

10- The busbar to be installed needs to be hanged min 4 points, as shown in below picture.



9- a



9- d



9- b



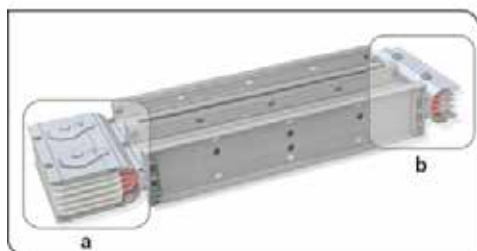
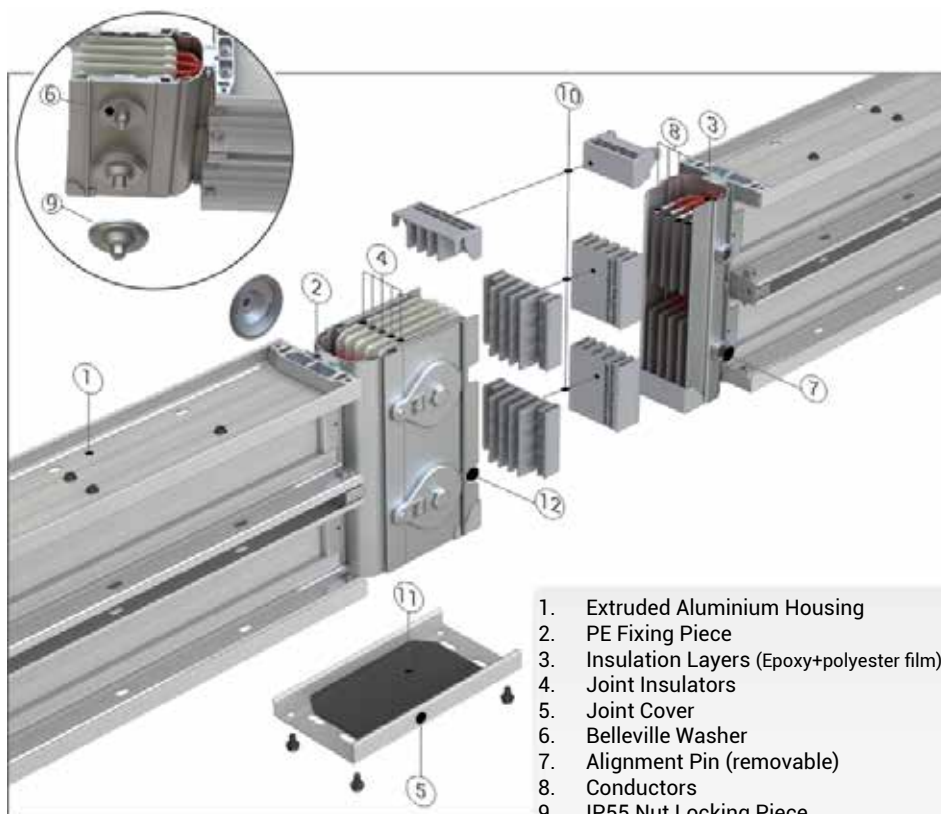
9- e



9- c



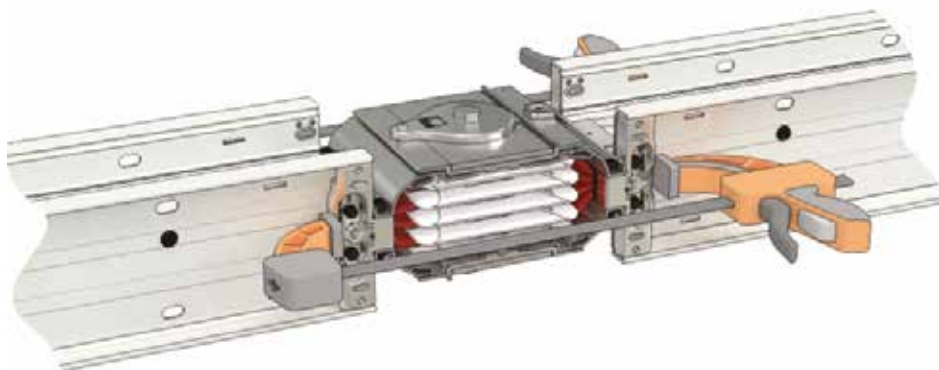
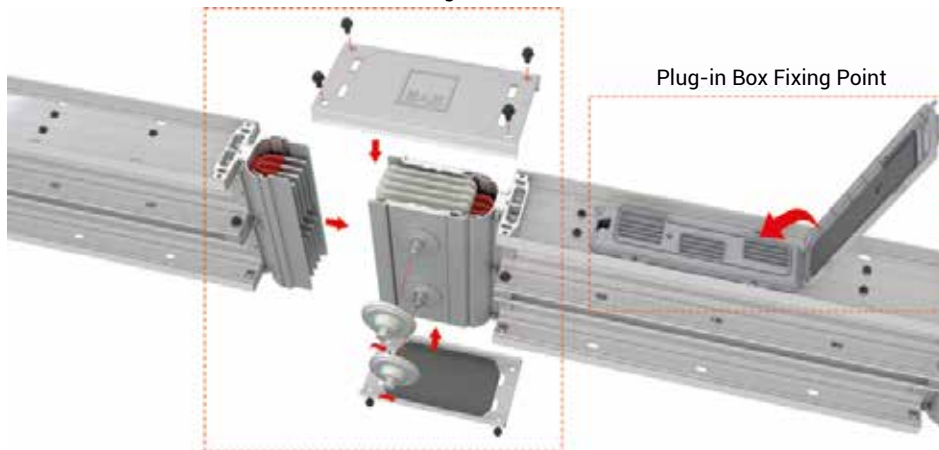
9- f



KX busbars are manufactured in 3m lengths as standard, with special lengths as detailed on the project drawings. All modules have a block joint end and the other end of the module has not block joint.

Bolt-on Box Fixing Point

Plug-in Box Fixing Point



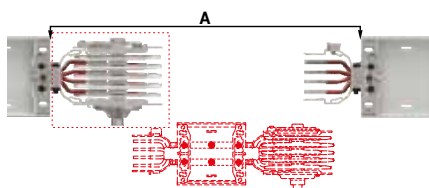
Use special hand clamps if it is difficult to move.



1- Special length (particular or custom size) busbars are used in places where standard sizes do not fit when the busbar is mounted and in other similar places. The minimum length for these special element is 35cm. Please measure the lengths of these modules as shown below.

2- Length A is measured between housing of 2 busbars in cm. "A". The special length is calculated by deducting 25cm from this measured length.

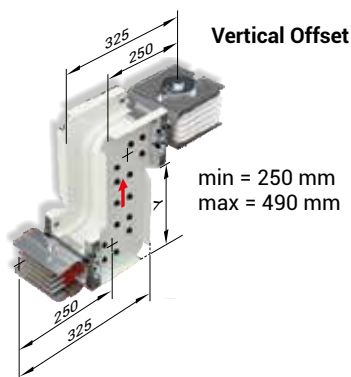
$X = A - 25$  (cm) X=Length of Special Busbar (The busbar module will be manufactured as per X value.)



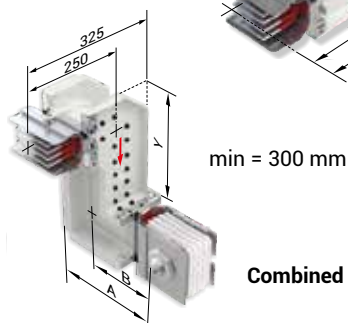
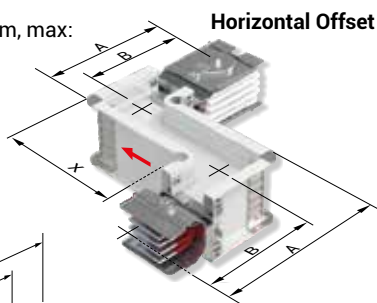
Aluminium		Copper		A	B	X
Rated Current	Busbar Code	Rated Current	Busbar Code	(mm)	(mm)	(mm)
400	04	550	05	252	214	427
500	05	650	06	257	217	432
630	06	800	08	267	222	442
800	08	1000	10	282	229	457
-	-	1250	12	297	236	472
1000	10	1350	14	307	241	482
-	-	1600	17	322	249	497
1250	12	-	-	337	256	512
1350	14	2000	23	352	264	527
1600	17	-	-	387	281	562
2000	20	2500	25	427	301	602
2500	27	-	-	477	326	652
-	-	2000	22	377	276	552
-	-	2500	27	407	291	582
2500	25	3300	32	487	331	662
-	-	3600	36	517	346	692
3150	32	4000	40	547	361	722
3200	33	-	-	587	381	762
4000	40	5000	50	667	421	842
5000	51	-	-	767	471	942
-	-	6300	63	907	541	1082
6300	63	-	-	1057	617	1232

3- In the case in where custom-made intermediate-size busbars are required, both ends of the intermediate-size busbars can be produced with or without block joints. In such cases, please contact our company for technical support and technical information.

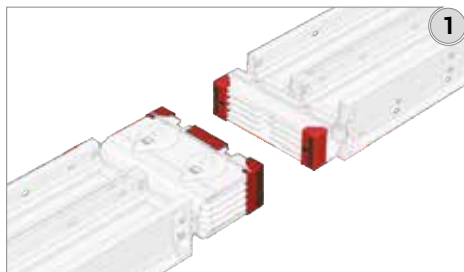
**Note:** Please send a drawing for combined offsets when ordering. Indicate bolted and non-bolted ends on the drawing.



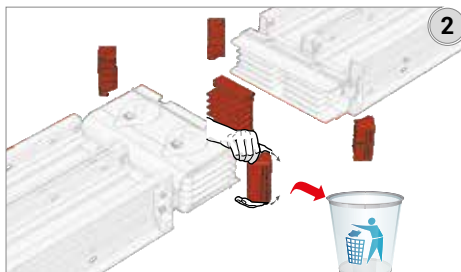
X=min:280mm, max: Use table.



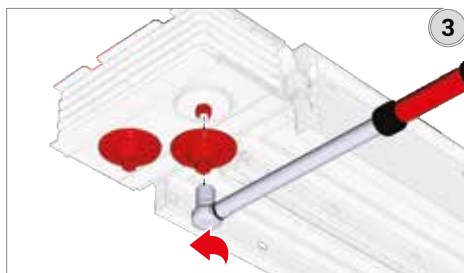
**Combined Offset**



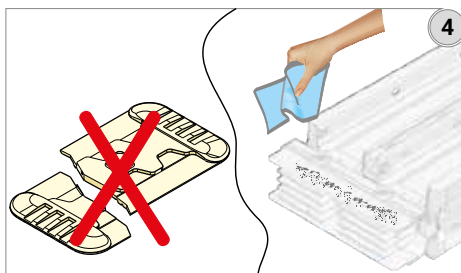
1- Align the two busbars so that the parts with and without block joints are opposed.



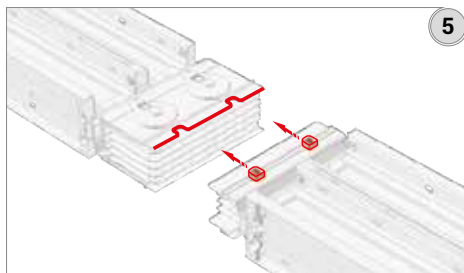
2- Remove the protective covers on the side with no block joints.



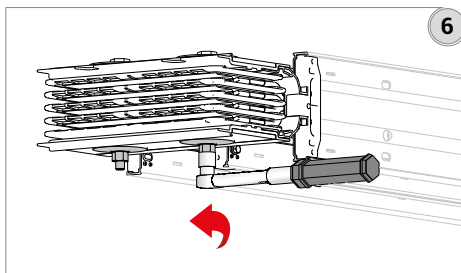
3- Remove the nut locking piece on the busbar joint and loosen the joint. Remove the protective covers after loosening the joint.



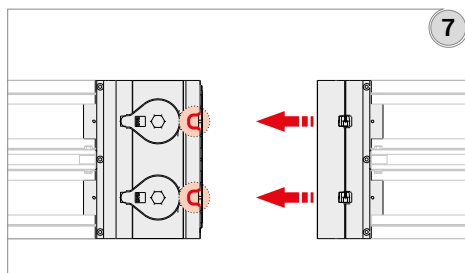
4- Ensure that the insulation plates of the joint, are not cracked, broken or damaged in anyway. Wipe the conductor surfaces with a cloth to clean dust, which can cause serious damage.



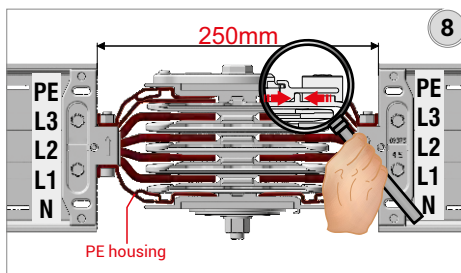
5- Align the block joint to the other busbar's end.



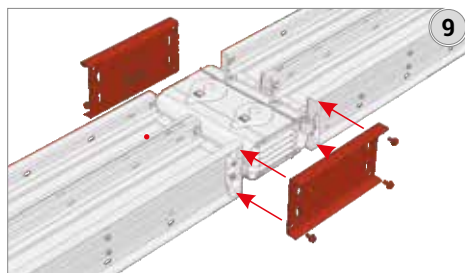
6- Loosen the nut at the joining point completely.



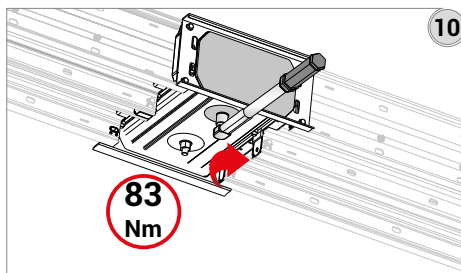
7- Adjust the channel in order to pivot the alignment piece to the housing.



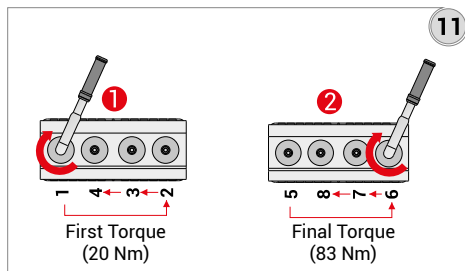
8- Push the two busbars until they rest on each other.



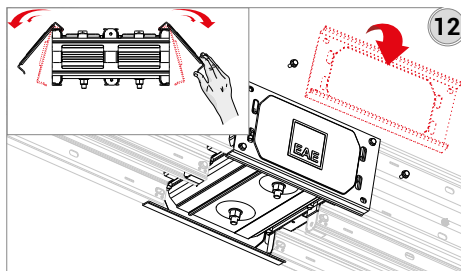
9- Assemble both the joint covers with the gaskets facing out.



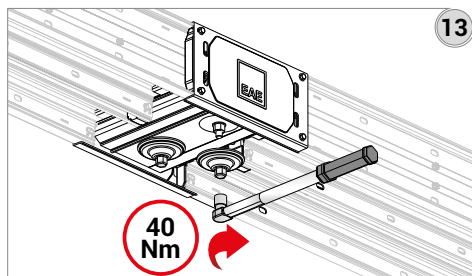
10- Adjust the torque wrench to 83 Nm (60 lbf) and tighten the joint nut.



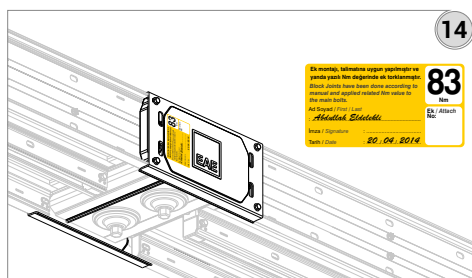
11- If there is more than one bolt per phase, the bolts should be tightened by hand to approximately 20-30 Nm as per the sequence shown above. Then finally torque to 83Nm using the same sequence.



12- Remove the joint covers and reverse mount them with the gaskets facing in.



**13-** Finally tighten the locking piece to 40 Nm to complete the installation.



**14-** Please fill in the necessary places to verify that you are performing torque according to the specified norm. Attach to the joint cover.

1- When the installation has been completed, please check the position of the neutral conductor along the busbar run. (Taking special care at locations where the run makes turns and offsets)

2- Carry out insulation test (minimum 1000V AC). Make sure that no protective device (switch, disconnector, etc.) is connected to the system and that the earth - neutral line is separate. All tap of boxes on the line must be set to «0». Keep in mind that the results can vary according to the busbar length, width or number of bars. The results may also vary according to the moisture content. Values should not be less than 1 MegaOhm / 30 meters. It is recommended that no energy is supplied to the line even if the insulation test is completed successfully.

**3 ELECTRICAL CHECKS (EXTENDED FUNCTIONALITY)**

**MISCELLANEOUS TEST (MISCELLANEOUS TEST)**

Rated Insulation Voltage (Refer Instruction Booklet)

Rated Test Voltage (Voltage Magnitude Test)

\*Test Voltage must be 100% for breakers rated insulation voltage up to 100kV, test voltage must be 80% for rated insulation voltage up to 100kV

\*Where customer requires 100% or higher than standard test voltage 100% may be used as standard test voltage

\*Measured resistance must be suitable for IEC 61250-1119 standard.

(Optional resistance detector IEC 61250-1119 vppr standard)

L-I-L	Q=1 ~ 1.5 MΩ	I-PE	Q=1 ~ 1.5 MΩ
L-I-L	Q=1 ~ 1.5 MΩ	I-PE	Q=1 ~ 1.5 MΩ
L-I-L	Q=1 ~ 1.5 MΩ	L-PE	Q=1 ~ 1.5 MΩ
L-N	Q=1 ~ 1.5 MΩ	L-PE	Q=1 ~ 1.5 MΩ
L-N	Q=1 ~ 1.5 MΩ	N-PE	Q=1 ~ 1.5 MΩ

**2.1-** When the busbar system is energized for the first time, qualified electrical personnel must be present. If short circuits and earth faults are detected due to any damage or faulty installation practices, serious damage can occur if the power is turned on.

**2.2-** When the power is supplied, there must be no electrical load in the busbar.

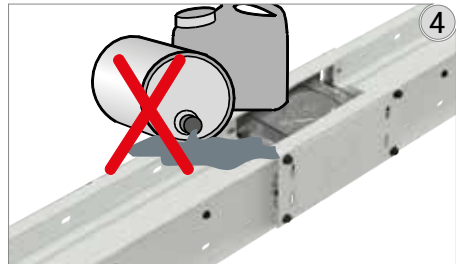
**2.3-** After the busbar system is energized, loads must be switched in sequence (main and sub feed).

**2.4-** When the busbar is used properly, it will have a moderate hum. Excessive noise may be an indication of hardware that has not been extruded or incorrectly mounted metal parts.

**2.5-** Spark formation at any point along the busbar is not normal. The busbar must be de-energized and de-energized until the spark condition is corrected.

**3-** Do not try to install five conductor units to four conductor units or vice versa.

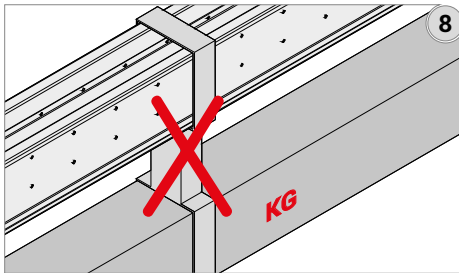
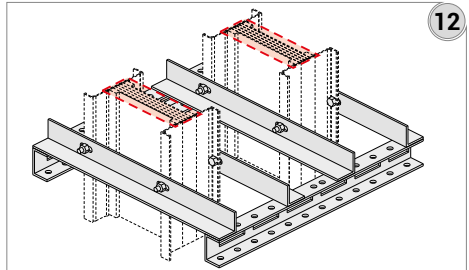
**4-** Do not apply any kind of oil or chemical at the joints or to the contacts of tap off boxes.



5- Do not use any other means than original tap off boxes to supply energy from the busbar.

6- Current rating of the busbar run should be equal to the rating of the breaker. Do not exceed busbar nominal current during operation.

7- Make sure that any additional loads to the system following do not exceed the nominal current capacity of the busbar.



8- Do not use busbar system as a supporting structure for other systems.

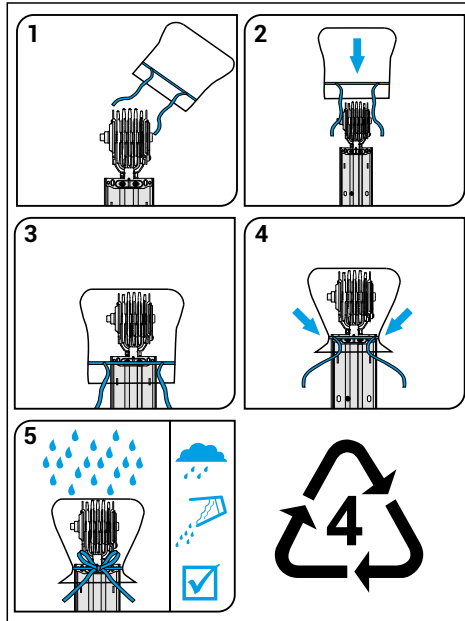
9- Do not use busbar system as a walk way.

10- Do not light a fire or use welding equipment near the busbar.

11- Take care when handling the system components. Do not drop the units.

12- Do not cut or drill the busbar units. Please consider below picture when installing the busbar for vertical applications. Please do not drill the busbar at any place where is marked with red on the picture.

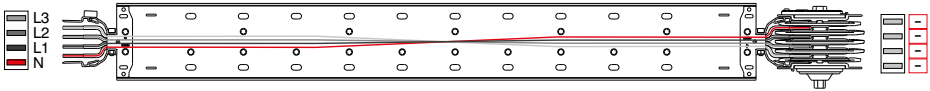
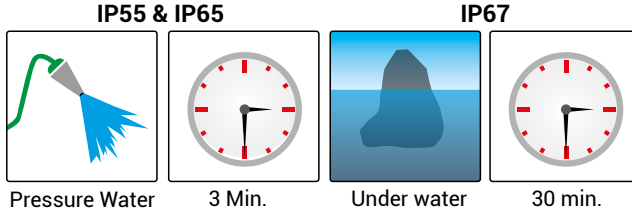
13- Take precautions against adverse environmental conditions such as rain and snow. In addition, the busbar dripping cement, etc. inside the building. Protect from water, malfunctioning piping and all fluids that may come from water jets. Cover if necessary. Cap the ends to the busbar joint points that have not been installed at the end of the work.



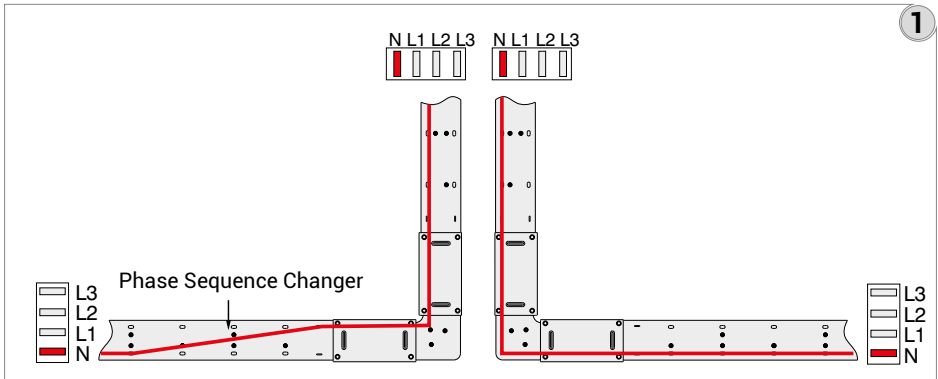
14- Ensure the selected degree of protection (IP rating) of the system is suitable for the working environment.

15- You can remove paint defects on product's surface which could happen during transporting and installation operation by retouching with spray paint. ( Also you can have information about the paint color that you have ordered from the manufacturer) We recommend you to clean up surfaces with a dry cloth in advance where painting process will be.

### WITHSTAND PERIODS AGAINST TO WATER AS PER STANDARD



When installation of the Tap-Off Boxes needed after the phase changer box , an approval must be taken from the customer representative in advance.



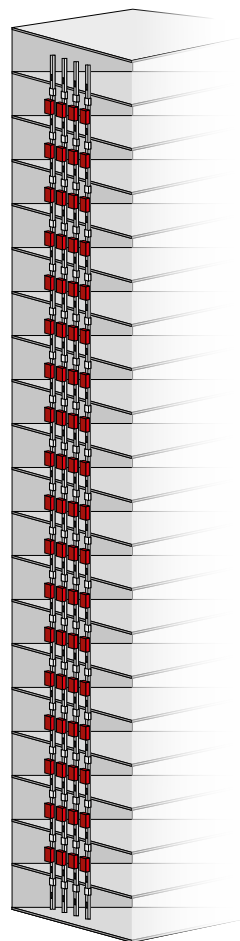
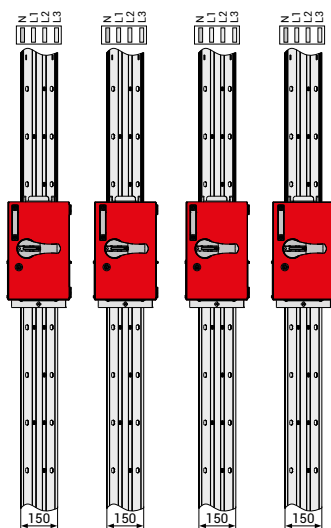
### Vertical Shaft Application

1- The neutral bar of KX busbar shall be at the bottom for horizontal busbar lines and on the left for vertical busbar lines. (Figure 1)

2- In order to maintain the neutral bar at the bottom and in the vertical busbar on the left, it is required to use the phase changing module. (Figure 1)

As each building's structure is different than the other for vertical applications of E-Line KX special projects has to be designed.

The details on this page briefly explain the necessary information for drawing a vertical application project.



In multipath busbars in high-rise vertical shaft applications; Due to floor heights, floor thickness and product tolerances, the window or additional point alignments on the upper floors may not be the same. In order for the Tap off boxes to be aligned and the joint point not to coincide with the floor transitions, the assembly should be continued by making measurements on each floor.

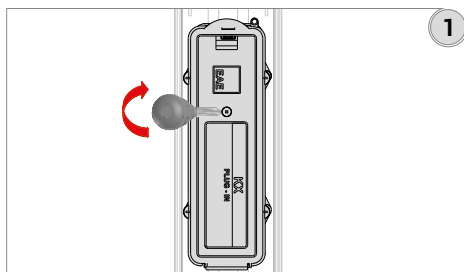
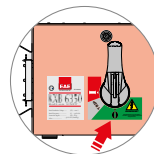
■ EAE is not responsible for the potential risks that may occur in cases where the products in our catalogue are used outside of the standard phase sequences as shown in the catalogue.



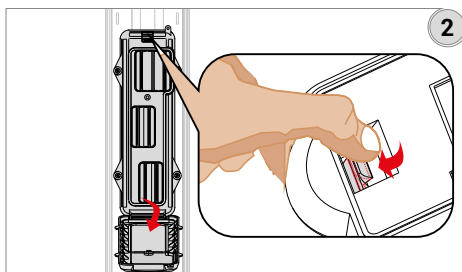
#### Vertical Application

##### Warning!

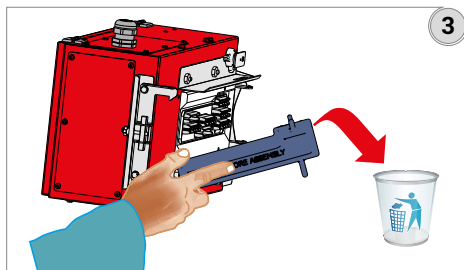
- \* Do not try to install plug-in tap off boxes to bolt-on busbar or vice versa.
- \* Do not try to install 4 wire tap off boxes to 5 wire busbar or vice versa.



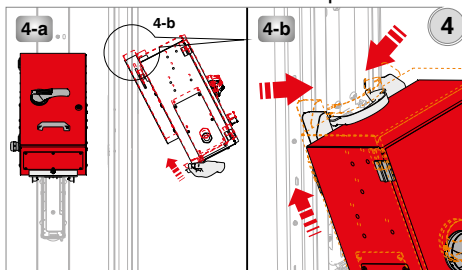
1-Remove the fixing screw of "plug-in" tap off point cover using cross-recessed screw driver.



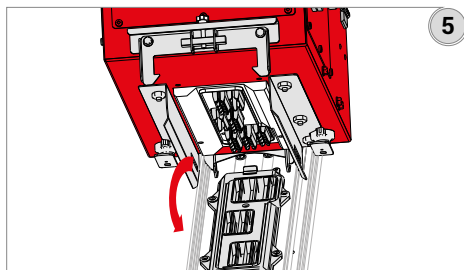
2-Open and push the cover back, the "plug-in" tap off point cover should be opened to a position which will not block the way for installation of the box. Do not remove the cover plate.



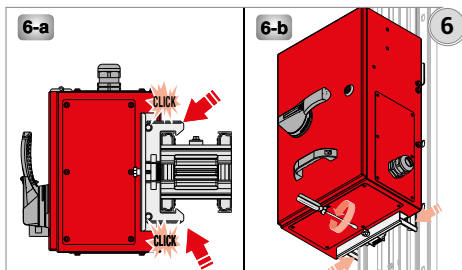
3-Throw the contact protection cover to the recycling waste bin.



4-Place the KXP Plug-in tap off box to the holes on the busbar with an angle. Push the tap off box upwards as shown in figure 4-b.

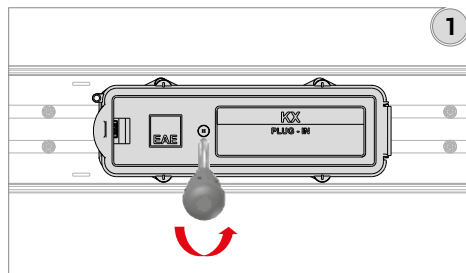


5-Check the alingment of the contacts. Push the box towards the busbar.

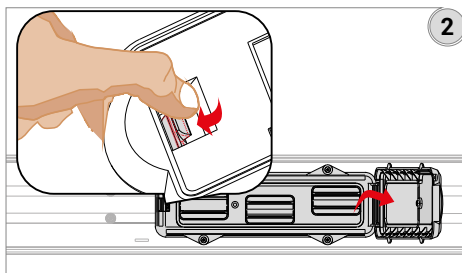


6-Push the box to the busbar housing "click" sound will be heard from the locking parts on the box ensure the interlock between the box and the housing then tighten the screw.

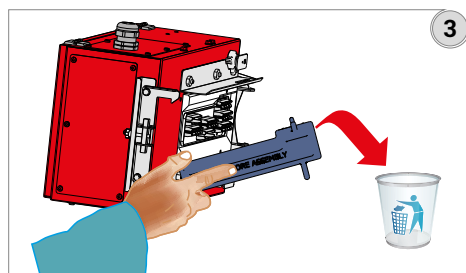
## Horizontal Application



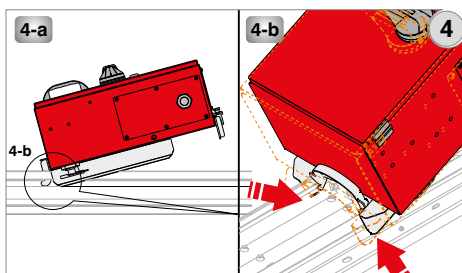
1-Remove the fixing screw of "plug-in" tap off point cover using cross-recessed screw driver.



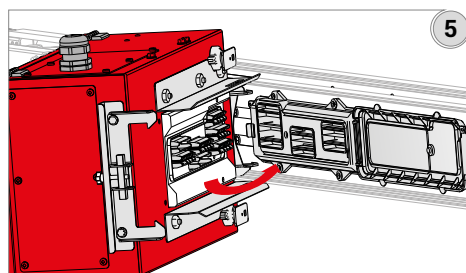
2-Open and push the cover back, the "plug-in" tap off point cover should be opened to a position which will not block the way for installation of the box. Do not remove the cover plate.



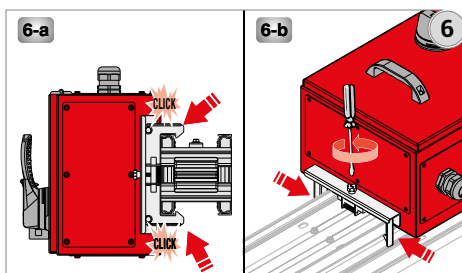
3-Throw the contact protection cover to the recycling waste bin.



4-Place the KXP Plug-in tap off box to the holes on the busbar with an angle. Push the tap off box upwards as shown in figure 4-b.



5-Check the alignment of the contacts. Push the box towards the busbar.

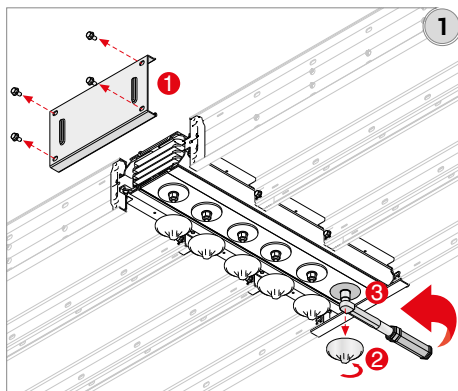


6-Push the box to the busbar housing "click" sound will be heard from the locking parts on the box ensure the interlock between the box and the housing then tighten the screw.

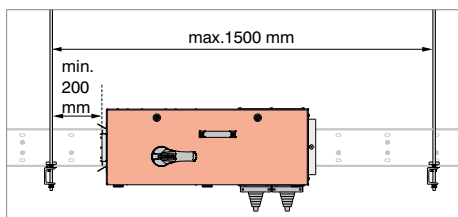


#### Important!

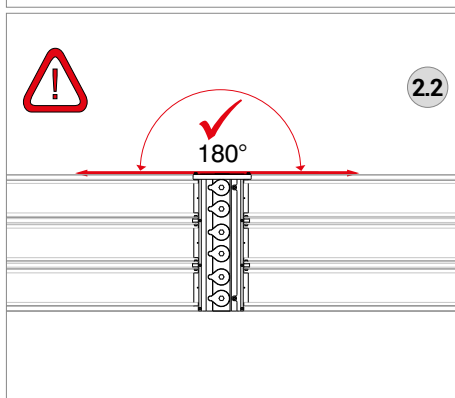
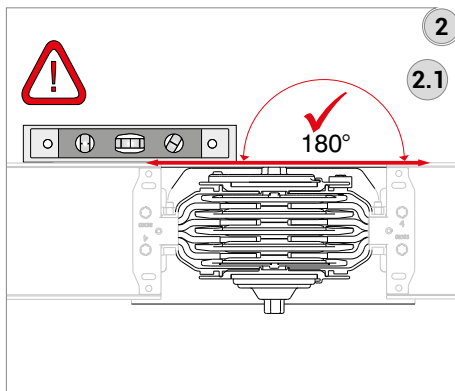
Busbar system must be de-energised before mounting or removing a "bolt-on" tap off box. Always use a properly rated voltage sensing device to confirm power is off.



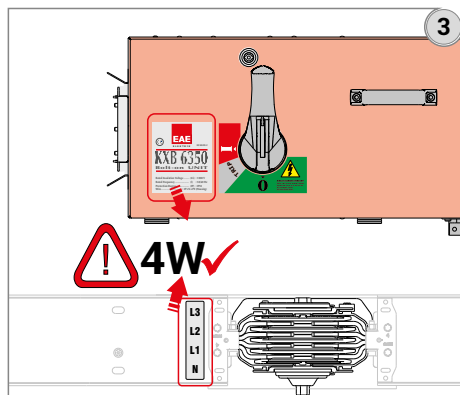
1-Remove the locking pieces. Remove the joint side cover plate and keep the plate and the screws for future use



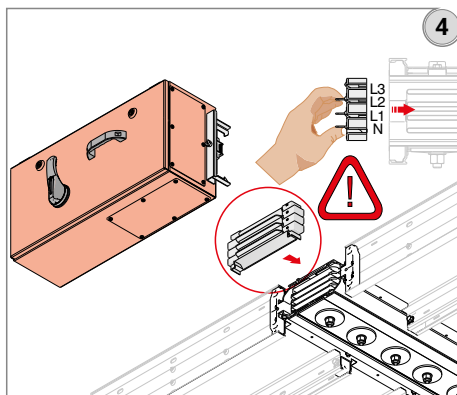
- Do not try to install bolt-on tap-off boxes to plug-in points of the busbar or vice versa.
- Do not try to install 4 wire tap-off boxes to 5 wire busbar or vice versa.



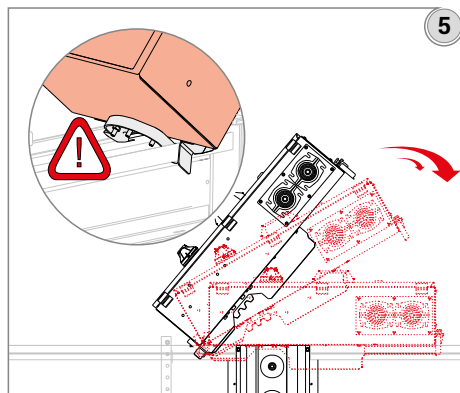
2-Remove the joint cover (1). Remove locking piece for nut of joint where tap-off box is fixed (2). Loosen the main bolt from nut side by torque wrench (3).



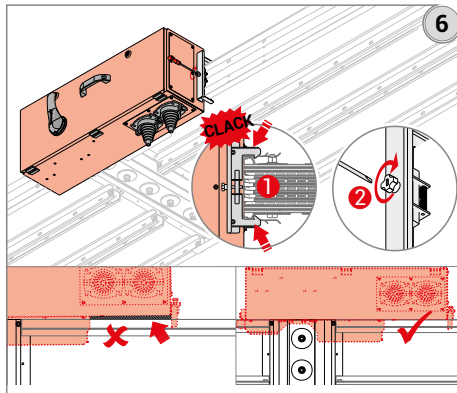
3- Check the phase sequence of the busbar and tap-off box.



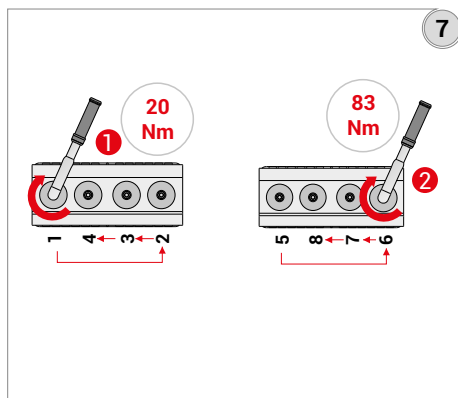
5- Fix the KXB Bolt-on tap-off box to the holes on busbar with a correct direction.  
(Be sure that breaker's handle is off position.)



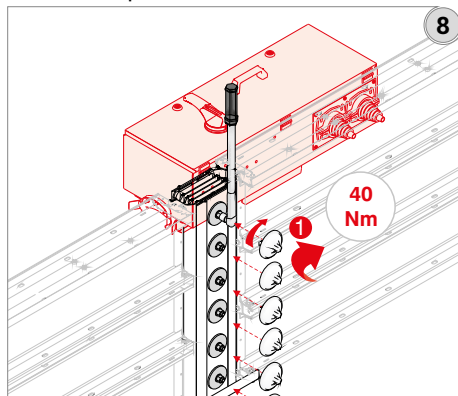
4- Use the alignment plastic piece to fix the joint set. Make sure the direction of the neutral.



6- Be sure for proper clamping of KXB tap-off box's claws (1). Complete fixation by tightening the plastic headed screw (2). Be sure that there is not any gap between busbar and tap-off box.

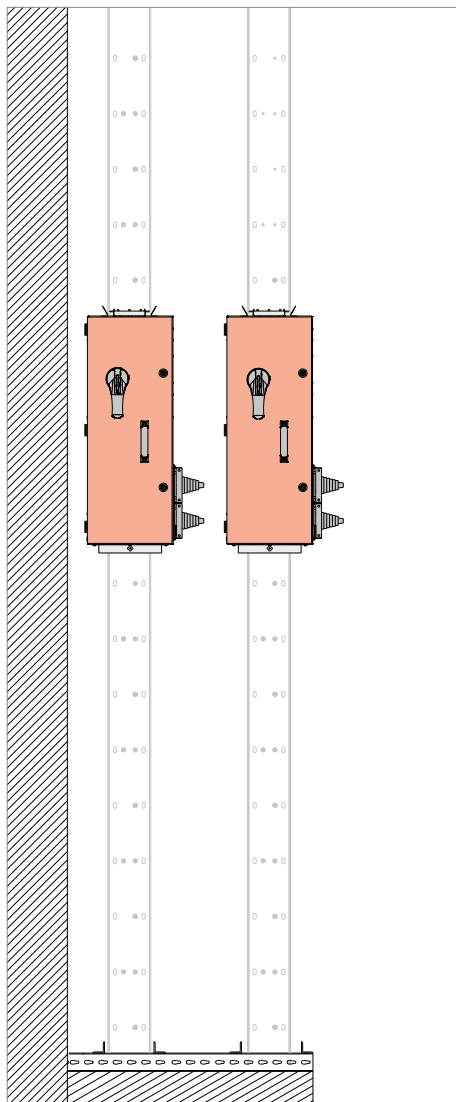


7- If there are more than one bolt for the same phase, bolts shall be tightened by hand approximately 20-30Nm as per above sequence, then 83Nm shall be applied at final torque with the same sequence.

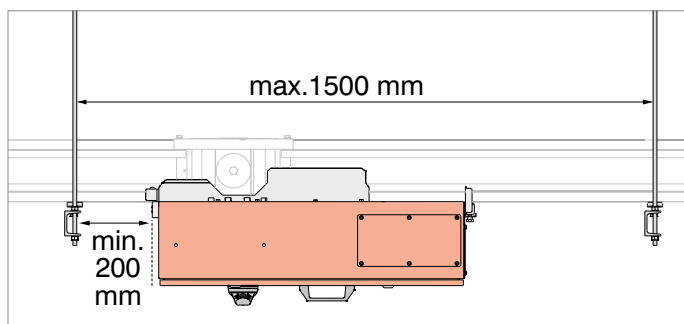
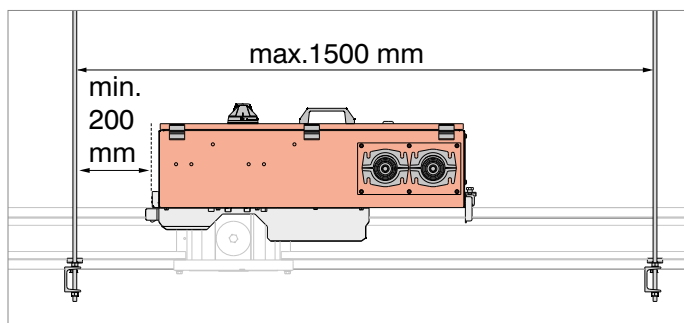
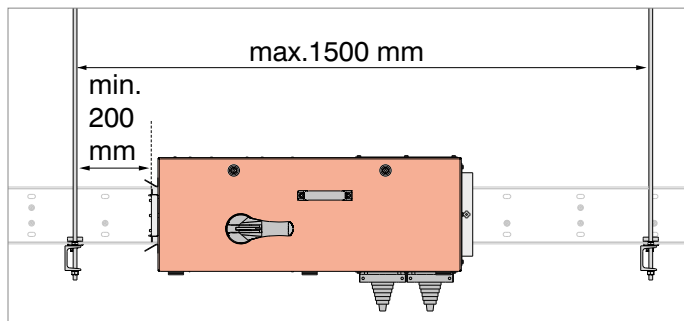


8- Then tighten the locking piece by 40Nm to complete installation(1).

## VERTICAL APPLICATION



## HORIZONTAL APPLICATIONS



1- When installing the feeder boxes B10, B11 make sure that the phase sequence of the feed box matches the phase sequence of the busbar. (Care is to be exercised ensuring the neutral is correctly connected).

2- For multiway busbars check the position of the paralleling conductor link, make sure that they are available and fitted correctly. Do not remove these conductor links.

3- Cable glands should be selected according to the size and number of feeder cables. Please consult to factory for requirements other the standard supplied ones.

4- Make sure that the incoming feeder cables to the box are all the same length for each phase.

5- Do not cut or drill the feeder units.

## »» Energizing

### »» Before Energizing

**WARNING: HIGH VOLTAGE VALUES CAN CAUSE DEATH OR SERIOUS INJURIES. MAINTENANCE, INSTALLATION AND OBSERVATIONS IN THE CONSEQUENTIAL CONDITIONS; THE ENERGY AND THE CONNECTION MAY BE DONE ON THE BUSBARSCUTOFFANDELECTRICALLY ISOLATED. THEREFORE, ACCIDENTAL RESPONSE TO BE CONTACTED BY PARTS UNDER ELECTRICALLY. FOLLOW ALL MANUFACTURER'S WARNINGS AND INSTRUCTIONS**

1- Make sure that all joint zone connections are correct. Follow the manufacturer's recommended torque.

2- Make sure that all bolt-on and plug-in boxes are in the "off" position. Boxes without power interrupts must be removed from the busbar if they cannot be isolated with auxiliary power breakers.

3- Make sure that the connections between the busbar and the panel, transformer and other connections are interrupted.

4- Resistance testing is to be carried out with a resistance tester of 1000 volts per part of the busbar to ensure that the system does not contain short circuit and ground faults. (Phase earth, phase-neutral, phase-to-phase). Record the results of the test and deliver it to the project or the responsible company. Note that the results may vary depending on the busbar length, width, or number of bars. The results may also vary according to the humidity. If the values are less than 1 MegaOhm / 30 meters, please contact the manufacturer.

5.1- Before connecting the busbar to the transformer, panel and other connections, make sure that the phase of the system and the phase of the busbar overlap.

5.2- Make sure that the ventilation and drainage holes are open. Make sure that the screws and plugs in the drain holes for the outdoor busbars are removed according the manufacturer's instructions.

**6.1-** It is recommended that no energy is applied to the line even if the insulation resistance test described in section 7.4 is successfully completed.

**6.2-** When the equipment is energized for the first time, qualified electrical personnel must be present. If short circuits and earth faults due to damage or poor installation practices are not detected in the exit procedure, serious damage may occur when the power is turned on.

**6.3-** When the power is supplied, the busbar must not have an electrical load. Since the busbar typically runs through several rooms and ground level, care must be taken to see that all devices supplied by the busbar path are in the "OFF" position.

**6.4-** The equipment must be energized in sequence starting from the welding end of the system and working towards the load side. In other words, it energizes the main devices, then the feeder devices and then the branch-circuit devices. Turn the devices to the "ON" position with a solid positive motion.

**6.5-** Once all overcurrent devices have been switched on, loads such as lighting circuits, contactors, heaters and motors can be turned ON.

**6.6-** When properly used, the busbar will have a moderate hum. Excessive noise may be an indication of hardware that has not been extruded or incorrectly mounted metal parts.

**7-** All busbar ratings, routings and supporting systems should be checked as per final isometric drawings.

**8-** All busbar system should be checked visually to be certain that they are clean and secure. Loose and/or contaminated connections increase electrical resistance which can cause overheating.

**9-** Any type of blower or compressed air should not be used to avoid blowing dust into busbar joints, tap off boxes or circuit breakers. If there is accumulation of dust and dirt, clean it off by using a soft brush, vacuum cleaner, or clean lint free rags.

**10-** All joints should be correctly tightened according to the torque value given and should be marked. Then install the locking plates correctly.

**11-** All Tap Off boxes fed from the busbar should be on "OFF" position.

**12-** The busbar runs should be isolated by disconnecting all connections to transformers, switchboards, meters, etc.

**13-** Insulation resistance test with an insulation resistance test equipment rated 1000V AC should be conducted to verify the integrity of the system. This test should be performed between phases, neutral and earth. Permanent records should be kept of resistance readings. If the insulation reading appears to be lower than 1 megaohm, then the cause should be investigated.

**14-** The system phase sequence should be checked in order to match the busbar phases sequence before reconnecting all connections to transformers, switchboards, meters, etc.



## Energizing The Equipment

1- The equipment should be only energized by authorised personnel.

2- There should be no electrical load on the busbar system when it is energized.

3- Hazardous voltages in electrical equipment can cause severe personal injury or death. Energizing a busbar run for the first time is potentially dangerous. Therefore system operational voltage should be checked

4- The connected equipment should be energized in sequence by starting at the source to end of the system

5- After all overcurrent devices have been turned on, loads such as lighting circuits, contactors, heaters and motors may be turned "ON".

6- EAE busbar system is particularly quiet when operating normally. In some installations however there may be a moderate hum. Excessive noise may be an indication of hardware that has not been tightened or of metal parts that have been improperly assembled and this should be checked after de-energizing the system and isolating it safety.

#### **Important!**

Hazardous voltages in electrical equipment can cause severe personal injury or death unless otherwise specified. Installation, inspection and preventive maintenance should only be performed on busbar system to which power been turned off, disconnected and electrically isolated so that no accidental contact can be made with energized parts.

Operation of busbar trunking which has been water or moisture damaged can cause property damage, severe personal injury, or death. Observe the precautions to assure adequate insulation resistance and that sources of moisture are eliminated. Latest IEC 61439-6 and locally applicable safety related work practices should be followed at all times.

#### **Important!**

Hydrocarbon spray propellants and, hydrocarbon based sprays or compounds will cause degradation of certain plastics. Contact EAE before using these products to clean, dry, or lubricate components during installation or maintenance.

1- An external inspection of the system should be carried out once a year.

2- Any dripping or other source of moisture onto the busbar modules should be eliminated from installed area.

## Tap Off Boxes With Protective Devices

1- EAE tap off boxes are not equipped with any protective device unless they are required by customer. Any type of devices can be fixed in tap off boxes providing specific informations about device prior to manufacture in order to adjust interlock mechanism.

2- Tap off boxes operating mechanisms of all electrical & mechanical interlocks should be exersized to determine that they operate freely to their full on and off positions.

3- The total continuous load current should be measured by proper instrument that does not exceed the current rating on the busbar name plate or the designated design current.

4- After performing all of the above inspections and necessary repairs, it may be desirable to perform an infra-red temperature test on all electrical connections after busbar system is re-energized and reaches a stabilized operating temperature.

## PRODUCT TYPES



## BUSBAR ENERGY DISTRIBUTION SYSTEMS



## CABLE TRAYS



## TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS



## INDOOR SOLUTIONS



## SUPPORT SYSTEMS

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EAE Elektrik A.S.  
Head Office  
Akcaburgaz Mahallesi,  
3114. Sokak, No:10 34522  
Esenyurt - Istanbul - TURKEY  
Tel: +90 (212) 866 20 00  
Fax: +90 (212) 886 24 20

EAE DL 3 Factory  
Busbar  
Makine ihtisas Organize Sanayi  
Bolgesi Mahallesi, 6. Cadde,  
8. Sokak, No:6 41455  
Dilovasi - Kocaeli - TURKEY  
Tel: +90 (262) 999 05 55  
Fax: +90 (262) 502 05 69



IEC 61439-6



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