EAE
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E-LINE CCR

MANUAL

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E-LINE CCR

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E-LINE CCR

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 IEC standards and EAE is quality assured to ISO 9001 standards in their modern production plants in Istanbul .

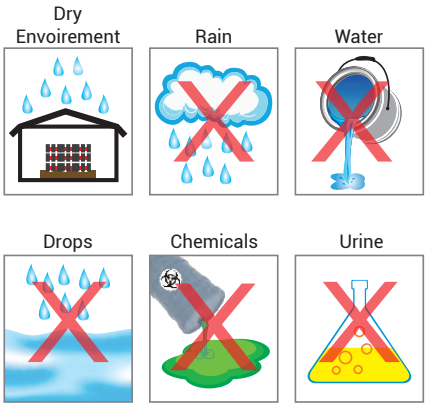
The components that you have purchased are manufactured by a completely environment conscious, that is ISO 14001 certified.

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

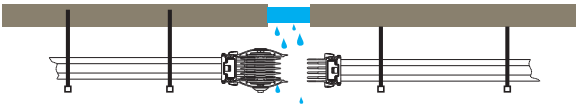
Handling, installation and operation of busbar systems should be carried out only by skilled, trained and authorized personnel using all associated equipment such as rubber gloves, helmet, safety glasses or face shields and flash resistant clothing in accordance with established safety practices.

The busbar system's successful operation depends on correct handling, installation, operation and maintenance. Improper installation may cause personal injury and the failure of the busbar system and damage to other property.

BUSBARS SHOULD NOT BE IN TOUCH WITH ANY LIQUID MATERIAL



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



E-LINE CCR MANUAL

▶▶Unloading, Handling and Storage of Products

Unloading:

- Forklift is the most reliable and easiest method for the unloading of the products from the container or the truck arriving at the worksite.
- Utmost care is required to be exercised to ensure avoidance of any harm that can be sustained by the products during the unloading process.

Storage:

- From the packing list check the number of pallets received, the number, dimensions and the condition of the busbar lengths. Advise any discrepancies immediately to the local EAE representative.
- All products should be stored in a dry environment. The casting materials for the joint must be stored at a temperature between 5 °C and 25 °C and not exposed to direct sunlight

Handling:

- Do not handle the materials using steel ropes or hooks. As shown in the castresin busbar should be lifted using lifting straps placed at each end of the busbar length.
- Short modules may be lifted using a single strap providing that the piece is balanced.
- A wooden spacer should be used every 1.5m when storing the lengths placed on top of each other.
- Do not stack more than 5 modules on each other horizontally.

► Joint Area General Information

Pre-Cast Controlling of Juncture Area:

- The final check form supplied should be completed for each busbar joint installed.
- Perform a megger test after each joint, and ensure that there is no problem on the joint area.
- In order to prevent damage to the terminals and transformers during this test, remove their connections or protect them.
- After every electrical test, the system must be discharged to earth.
- After completing all electrical tests, make the terminal, MCCB and fuse connections again.
- The form filled in after each test should be submitted to the EAE representative. The product quality approval form (186) should be completed and submitted to us to validate the warranty.

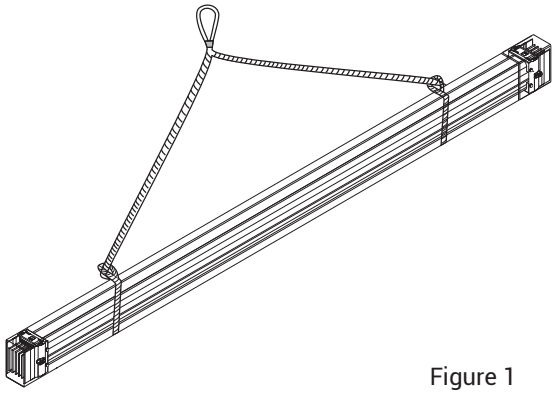


Figure 1

E-LINE CCR MANUAL

▶▶Handling & Storage

Introduction:

This installation manual includes the details of safe and quick handling and installation of cast resin busbar product. It shall be read carefully before starting the procedures on the product and relevant steps shall be followed.

Things To Do:

1. Read the info note on the pallet; lift and handle the the product as shown in "Figure 1" taking the pallet weight into consideration.
2. Product shall be hanged and lifted as shown in "Figure 2" while it is handled. (Figure 2)
3. Resin and hardener shall be stored as shown in Figure 3.
4. Busbar route shall be marked before starting the installation.
5. Installation shall start from a single point (preferably panel) and shall be completed with the last module.
6. Do not perform casting before performing megger test on the joint and observing infinite resistance as the result of the test.
7. Do not apply expired joint casting agent.

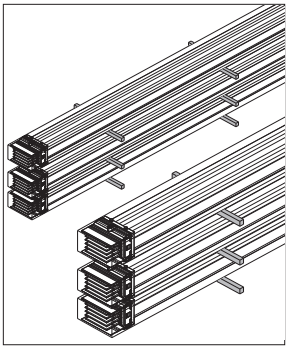


Figure 1

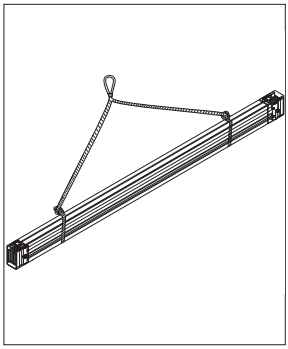


Figure 2

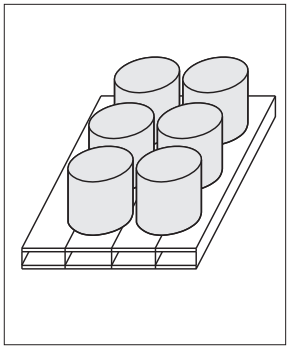


Figure 3

E-LINE CCR MANUAL

▶▶Handling & Storage

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 convinient 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.

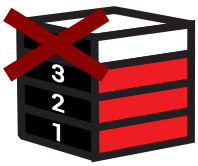
4- All busbar straight lengths and modules should be handled with care to avoid damage to internal components and the twisting of housing or its finish.

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.


KEEP DRY


HANDLE WITH CARE


STOCK VERTICALLY



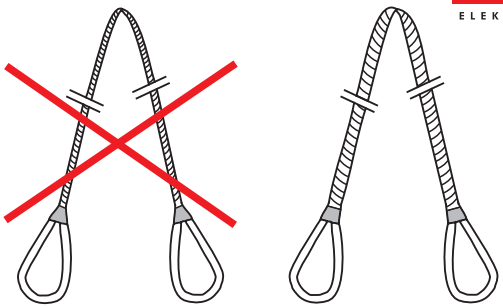
MAX 3 PALETTES

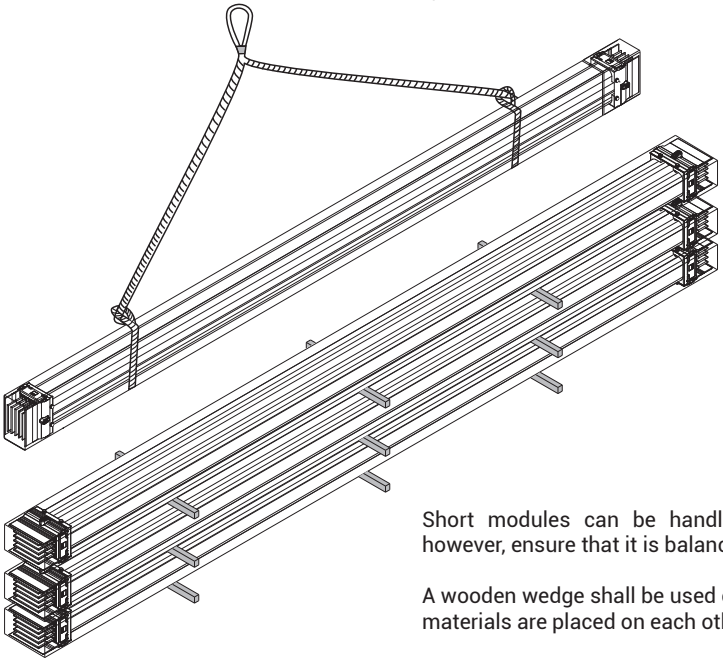

DON'T PULL WITH A ROPE ETC.

E-LINE CCR MANUAL

▶▶Handling and Lifting

Strapping type ropes should only be used instead of round ropes to prevent the materials slipping during handling.

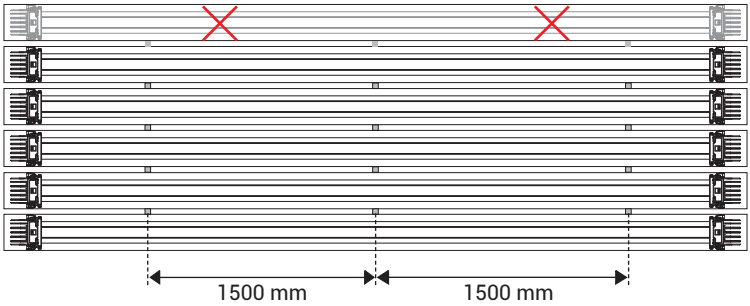


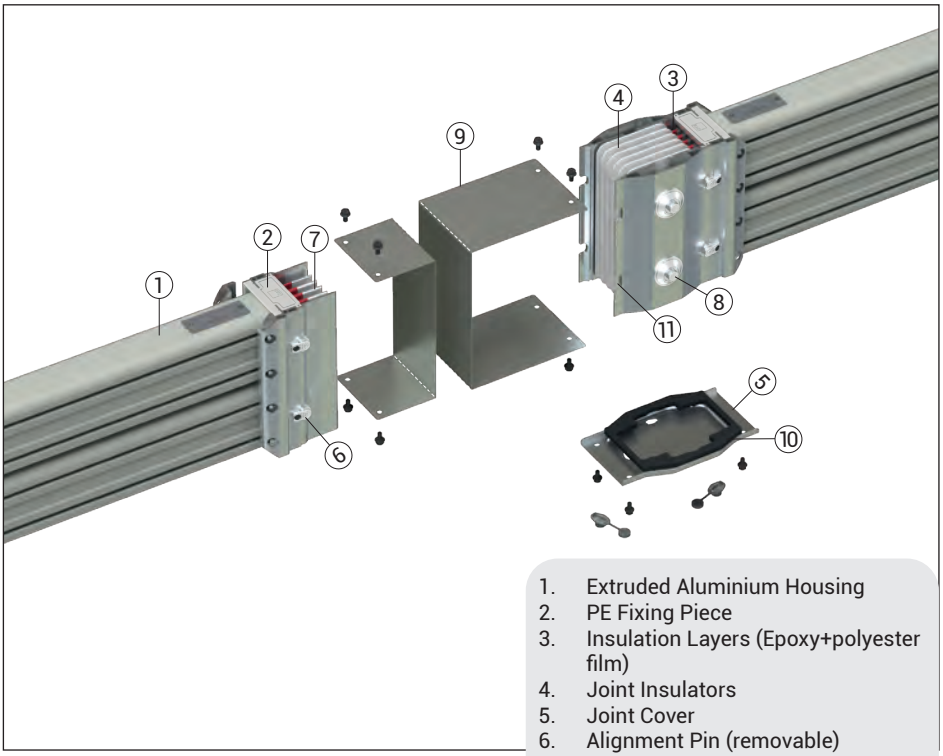


Short modules can be handled by a single rope, however, ensure that it is balanced.

A wooden wedge shall be used every 1.5 m when the materials are placed on each other while storing them.

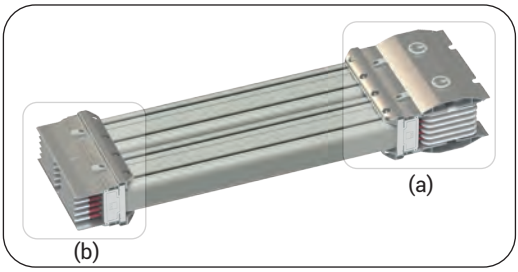
Do not put more than 5 modules on each other horizontally.





1. Extruded Aluminium Housing
2. PE Fixing Piece
3. Insulation Layers (Epoxy+polyester film)
4. Joint Insulators
5. Joint Cover
6. Alignment Pin (removable)
7. Conductors
8. IP55 Nut Locking Piece
9. Cover plates
10. IP55 Joint Cover Gasket
11. Alignment Pin Slot NB

Protectivecovers 10 are discarded



CCR Busbars are manufactured in 3m standard lengths, however special lengths can be manufactured according to the project diagrams. All modules have a block joint end and no block joint on the opposite end.

▶▶Energizing

▸ Before Energizing

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

2-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.

3-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.

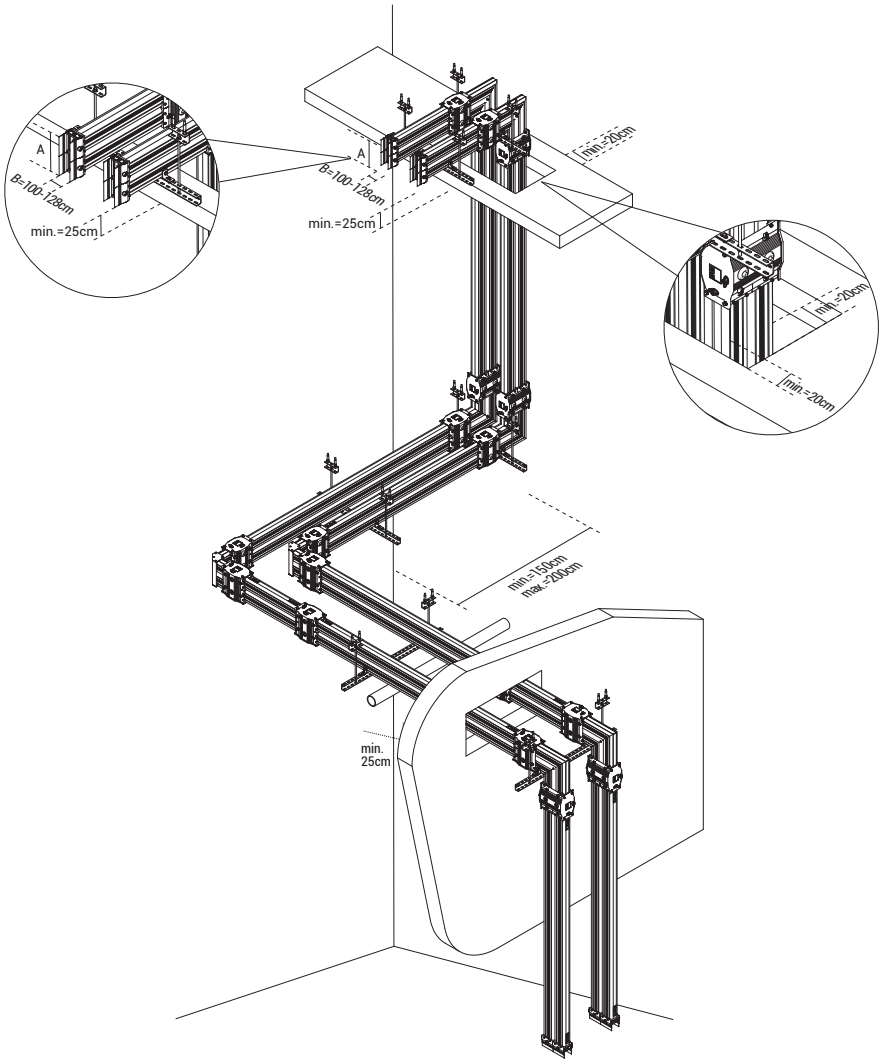
4-All joints should be correctly tightened according to the torque value given and should be marked. Then install the locking platescorrectly.

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

6-The busbar runs should be isolated by disconnecting all connection

7-Insulation resistance test with an insulation resistance test equipment rated 1000V DC 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.

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



⚠ 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.

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▶▶Horizontal & Vertical CCR Busbar Applications

Figure 1 - Edgewise Application

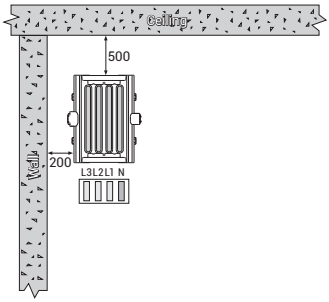
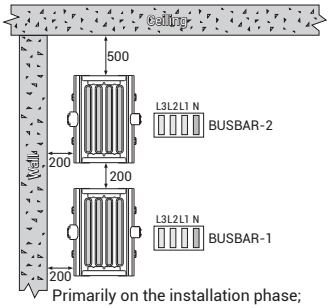
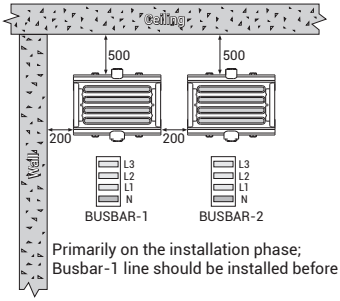


Figure 2 - Edgewise Application



Primarily on the installation phase;
Busbar-1 line should be installed before Busbar-2 line.

Figure 3 - Flatwise Application



Primarily on the installation phase;
Busbar-1 line should be installed before Busbar-2 line.

Figure 4 - Crossing Under A Beam On Edgewise Application

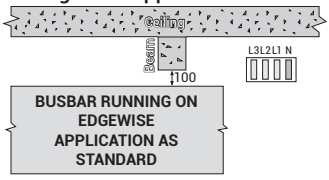


Figure 5 - Crossing Under A Beam On Flatwise Application

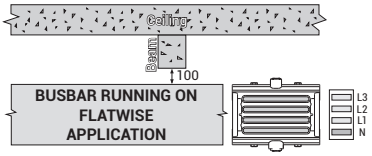


Figure 6 - Sample Wall Crossing With Fire Barrier

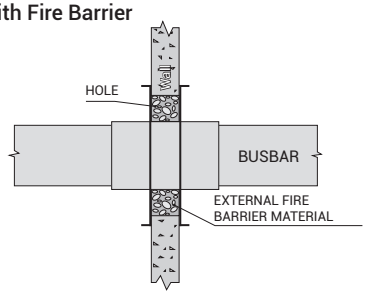
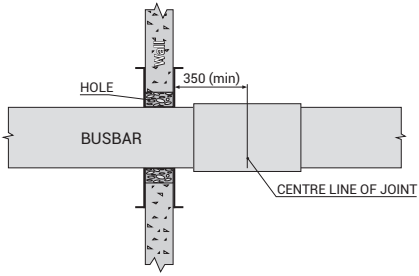


Figure 7 - Standard Wall Crossing

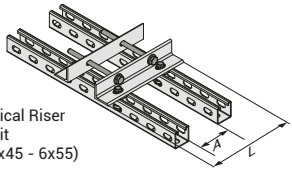


Attention!

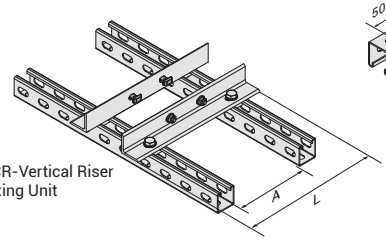
- For correct installation, the dimension from the busbar to the ceiling should not be less than 500mm
- The joint should be not come across to Beams.
- The dimensions given above are minimum values.
- All dimensions are given in mm.

► Vertical Shaft Type Carriers

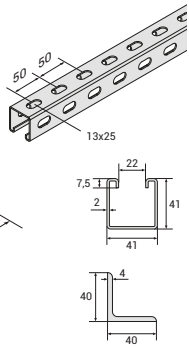
CCR Vertical Riser Fixing Unit

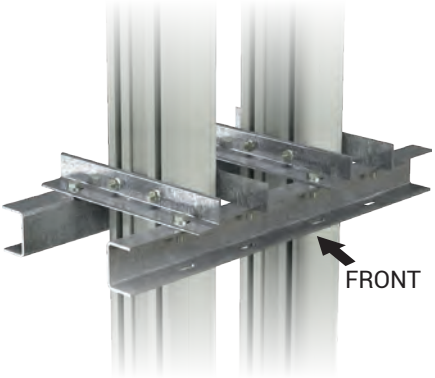


CCR-Vertical Riser
Fixing Unit
(6x40 - 6x45 - 6x55)



CCR-Vertical Riser
Fixing Unit





Vertical Riser Application Sample Order Hanging
(Special to project)

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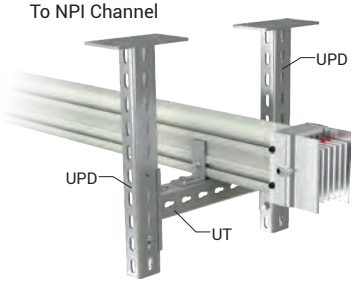
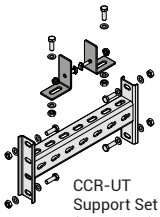
▶▶Fixing Elements

► Ceiling Type Supports

CCR-UT Two-Way For Edgewise Application
To NPI Channel

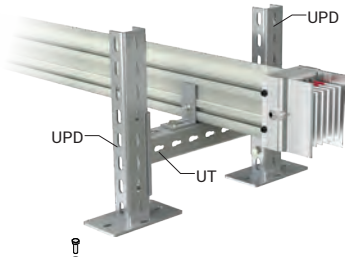


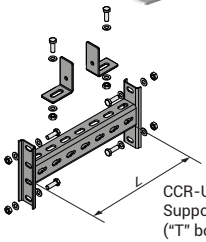


CCR-UT
Support Set
("T" bolted)

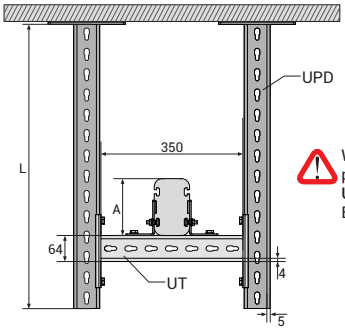
► Floor Type Supports

CCR-UT Two-Way For Edgewise Application
To NPI Channel

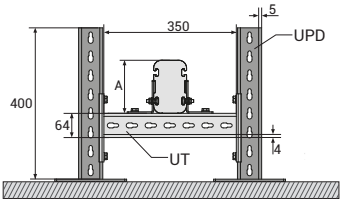


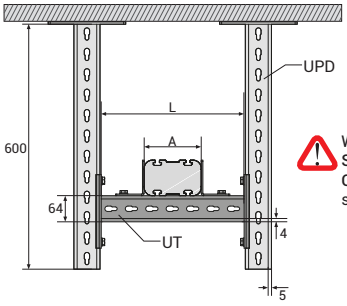


CCR-UT
Support Set
("T" boltless)

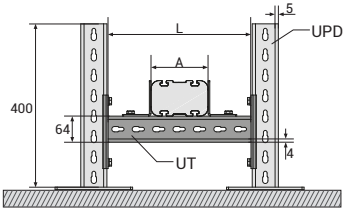


When selecting an **UPD** product, please keep in mind to select the **UPD** product suitable to the Busbar **A** dimension.





When choosing **CCR-UT Suspension Set**, appropriate **CCR-UT Suspension Set** should be selected according to Busbar size.

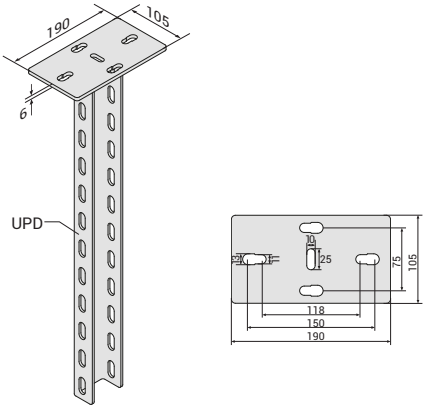


■ *Flatwise Application is supplied for only on special conditions.

■ Please call us for non-standard dimensions.

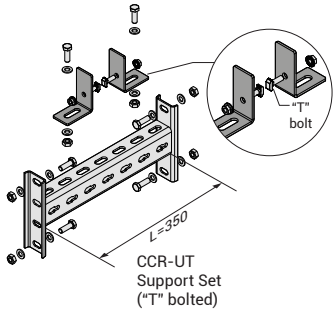
► Heavy Duty Supports (U)

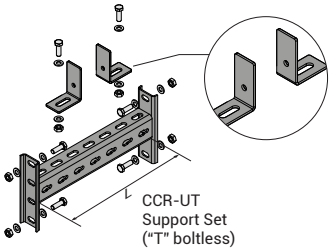
Hot Dip Galvanized After Fabrication (TS EN ISO 1461)



When selecting an **UPD** product, please keep in mind to select the **UPD** product suitable to the Busbar **A** dimension.

► CCR-UT Suspension Assembly





When choosing **CCR-UT Suspension Set**, appropriate **CCR-UT Suspension Set** should be selected according to Busbar size.

■ Please check our Suspension Systems (A-A) Catalogue to see our alternative solutions for suspension types.

■ The dimensions given above are minimum values. ■ Please call us for non-standard components. ■ All measures are given in mm.

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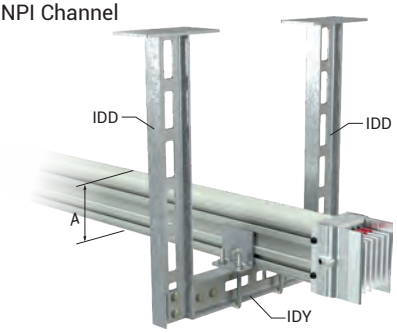
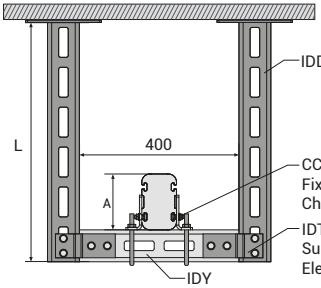
▶▶Fixing Elements

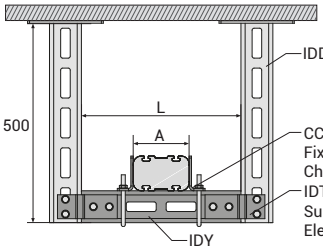
► Ceiling Type Supports

CCR-IDY Two-Way For Edgewise Application To NPI Channel





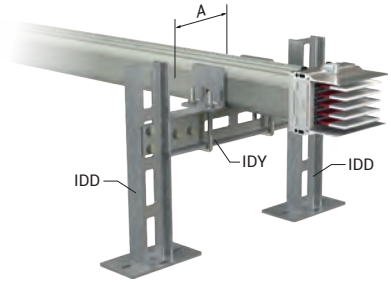
When selecting **IDD** products, the appropriate **IDD** product should be selected based on Busbar **A** measurement.

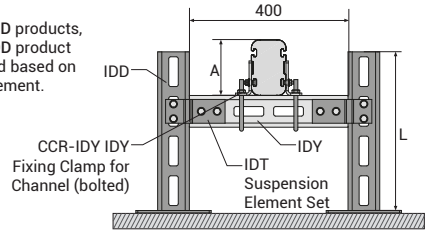


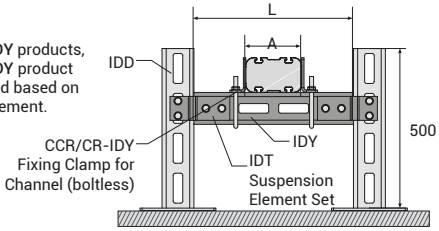
When selecting **IDY** products, the appropriate **IDY** product should be selected based on Busbar **A** measurement.

► Floor Type Supports

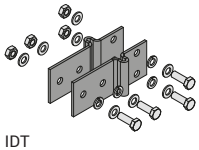
CCR-IDY Two-Way For Edgewise Application To NPI Channel



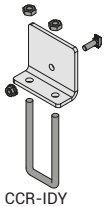




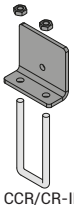
► Supports



IDT
Suspension Element Set



CCR-IDY
Fixing Clamp for
Channel (bolted)

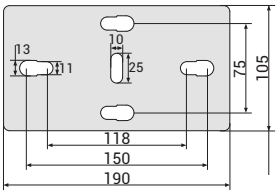


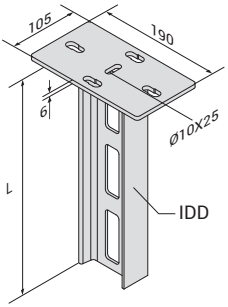
CCR/CR-IDY
Fixing Clamp for
Channel (boltless)

■ Please check our Suspension Systems (A-A) Catalogue to see our alternative solutions for suspension types.

■ The dimensions given above are minimum values. ■ Please call us for non-standard components. ■ All measures are given in mm.

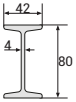
► IDD Type Supports

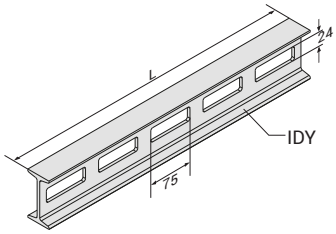




When selecting **IDD** products, the appropriate **IDD** product should be selected based on Busbar **A** measurement.

► IDY Type Supports





When selecting **IDY** products, the appropriate **IDY** product should be selected based on Busbar **A** measurement.

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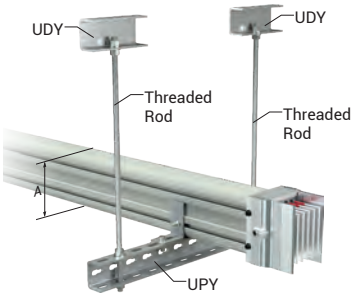
E-LINE CCR MANUAL

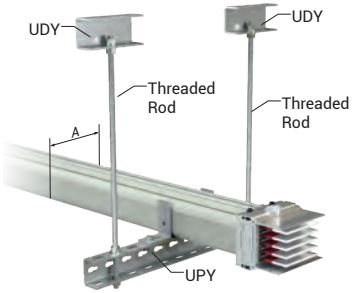
▶▶Fixing Elements

► Ceiling Type Supports

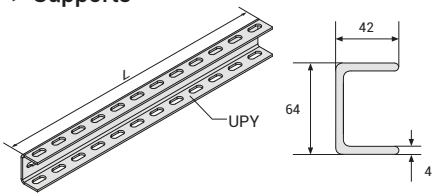
CCR-Threaded Rod Two-Way For Edgewise Application To NPI Channel



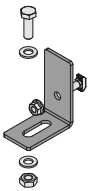
CCR-Threaded Rod Two-Way For Flatwise Application To NPI Channel



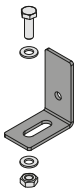
► Supports



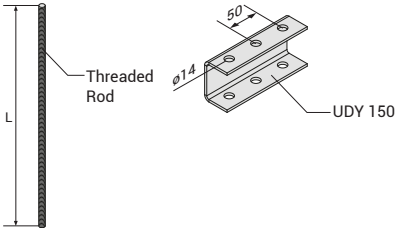
CCR-L Suspension Set

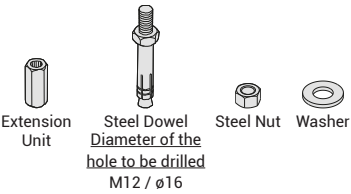


CR-L Suspension Connection Set



Fixing Elements





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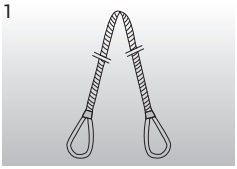
E-LINE CCR MANUAL

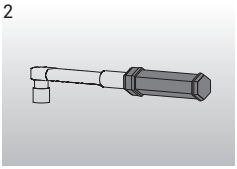
▶▶Equipment Used

1



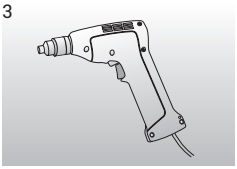
Fabric Crane Ropes

2



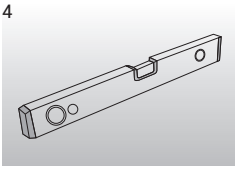
Torque Wrench

3



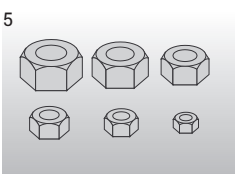
Hot Air Blower

4



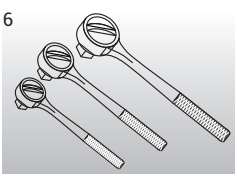
Spirit Level

5



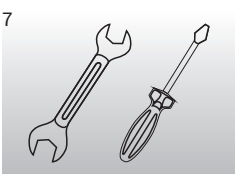
Nut Set

6



Socket Set

7

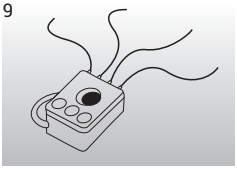


Wrench, Screwdriver

8

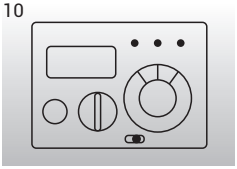
Lifting Device
(forklift truck, crane, hoist etc.)

9



Megger Device

10



Dielectric Test Device
5 kV DC

11

Scaffold

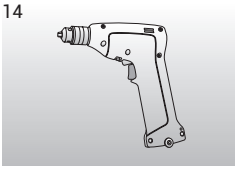
12

Mixer

13

Protective
Clothes,
Gloves, Goggles

14



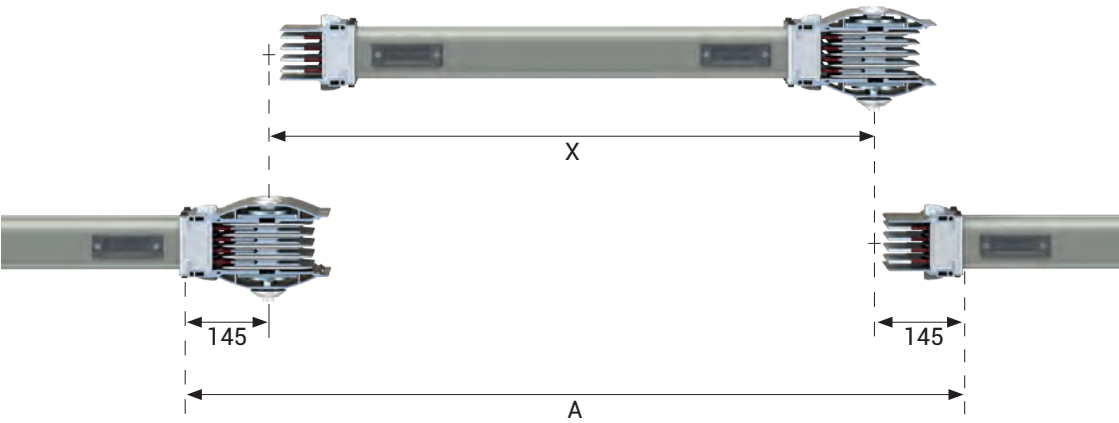
Drill

After installation of standard busbar 3m lengths, you will be in need of special lengths which are smaller than 3m.The minimum length for these special elements can be 450mm. Please measure the lengths of these modules as shown below.

Length A is measured between housing of 2 busbars in mm. A. The special length is calculated by deducting 290mm from this measured length.

X = A - 290mm

X = Length of Special Busbar

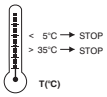


E-LINE CCR MANUAL

▶▶Preparation of CCR Joint Resin 4

▶ Preparation of Joint Resin 4

The meger test must be carried out before casting. If Resin 4 (A) and Resin 4 (B) are stored in a cold environment, they should be kept in a warm environment one day before casting (> 20 °C).
Ambient temperature during casting should be 5 °C < T casting < 35 °C.



Preparation of Resin 4

Resin 4 (A)

Resin 4 (B)

Resin 4 (A) (1,75kg)

Resin 4 (B) (1,75kg)

Add Resin 4 (B) product into Resin 4 (A). One set is 3.5 kg. The required kg values for filling the joints according to their cross-section are indicated in the table next to it. The number of sets to be prepared should be calculated based on the number of joints in the assembly time.

Mix the mixture with a beater at low speed for at least 30sec - 1 minutes until it is homogeneous.

CCR Resin 4 Mixer

Amount of Resin to be Used

CCRA - Al Conductor		CCRC - Cu Conductor					
Rated Current	Busbar Code	Rated Current	Busbar Code	Conductor	3 Conductor (kg)	4 Conductor (kg)	4½ - 5 Conductor (kg)
600	06	650	06	6x40	1,1	1,3	1,4
-	-	850	08	6x45	1,2	1,4	1,7
-	-	1000	10	6x55	1,2	1,5	1,5
800	09	1250	12	6x80	1,4	1,6	1,8
1000	10	-	-	6x95	1,5	1,8	2,0
1250	12	1600	16	6x110	1,6	1,9	2,1
-	-	2000	20	6x150	1,9	2,3	2,6
1600	16	-	-	6x160	2,0	2,4	2,7
2000	21	-	-	6x230	2,5	2,9	3,3
-	-	2500	25	2(6x80)	2,3	2,7	3,0
-	-	3200	32	2(6x110)	2,8	3,3	3,5
-	-	3400	34	2(6x125)	3,1	3,6	4,0
2500	25	-	-	2(6x130)	3,2	3,8	4,1
-	-	4000	40	2(6x140)	3,3	3,9	4,2
3000	31	-	-	2(6x160)	3,7	4,3	4,9
3300	33	4500	45	2(6x180)	4,2	4,7	5,3
3600	37	-	-	2(6x200)	4,4	5,1	5,7
4000	41	-	-	2(6x230)	4,7	5,4	5,9
4500	44	-	-	2(6x250)	4,8	5,5	6,0
-	-	5000	50	3(6x125)	4,5	5,2	5,7
-	-	5750	57	3(6x160)	5,4	6,2	6,9
5000	50	6300	63	3(6x180)	6,1	7,0	7,6
5400	54	-	-	3(6x200)	6,7	7,6	7,8

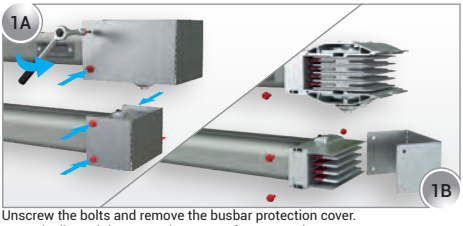
Description	Order Code
CCR Resin 4 Mixer	5002396

Casting Materials

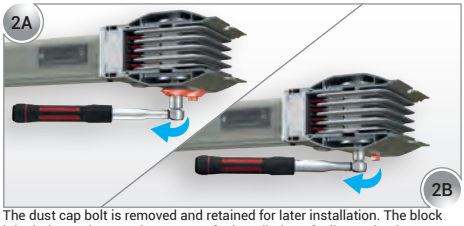
No	Description	Order Code
1	CCR Level Check Pipei	3271279
2	CCR Injection Pomp	3254100
3	Resin 4 Casting Apparatus	5003447
4	Resin 4 Transparent Hose Set	5003607
5	CR Plastic Hammer	5000310
6	Disposable Protective Overall	5003622

E-LINE CCR MANUAL

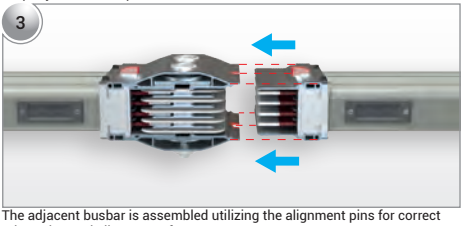
▶▶Installation / Flatwise



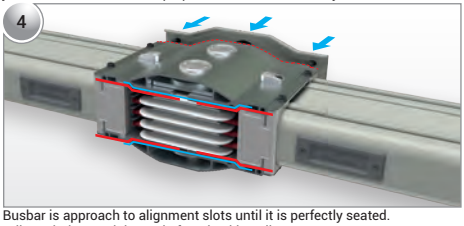
Unscrew the bolts and remove the busbar protection cover.
Properly discard the protective cover after removal.



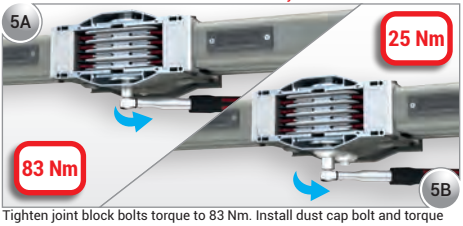
The dust cap bolt is removed and retained for later installation. The block joint bolts are loosened to prepare for installation of adjacent busbar.



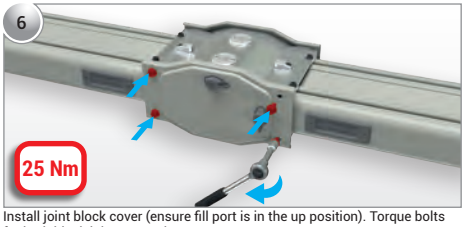
The adjacent busbar is assembled utilizing the alignment pins for correct orientation and alignment of parts.
Attention! Make sure that the conductors are dry and clean!



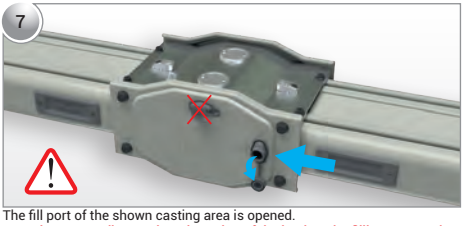
Busbar is approach to alignment slots until it is perfectly seated.
Adjunct bolts are tightened after checking alignments.



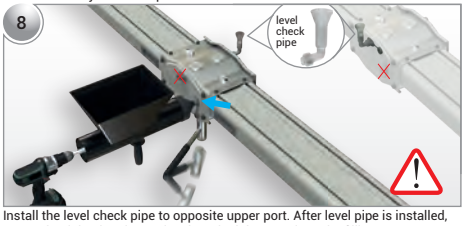
Tighten joint block bolts torque to 83 Nm. Install dust cap bolt and torque to 25 Nm.



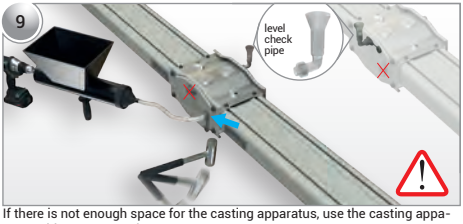
Install joint block cover (ensure fill port is in the up position). Torque bolts for both block joint cover plates to 25 Nm.



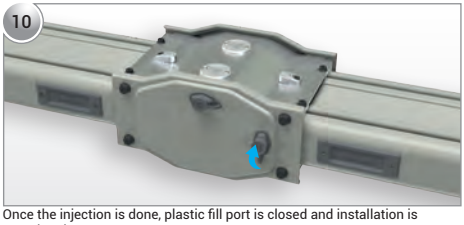
The fill port of the shown casting area is opened.
Attention: Depending on the orientation of the busbar, the filling process is carried out through the shown side plastic cover.



Install the level check pipe to opposite upper port. After level pipe is installed, proceed to injecting the Resin 4 into the joint. Continue the filling process until you see Resin 4 present inside the level pipe. If Resin 4 is present in the transparent pipe and no settlement is observed, that is an indication the joint is full and caps can be closed at this time.
Attention: Apply vibration with plastic hammer to the joint area to eliminate any air pockets from the pour. Allow for settlement of Resin 4 in the joint.



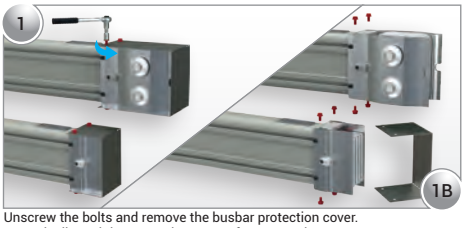
If there is not enough space for the casting apparatus, use the casting apparatus with transparent hose.
Attention: Apply vibration with plastic hammer to the joint area to eliminate any air pockets from the pour. Allow for settlement of Resin 4 in the joint.



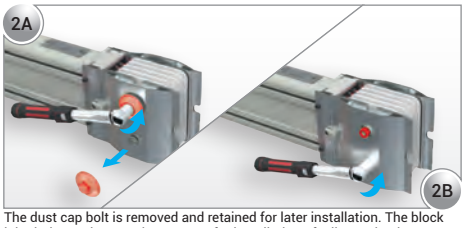
Once the injection is done, plastic fill port is closed and installation is completed.

E-LINE CCR MANUAL

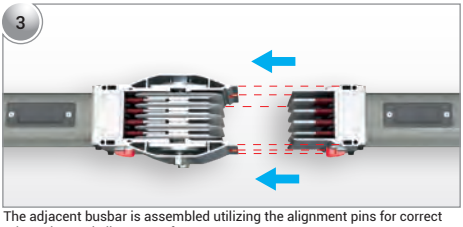
▶▶Installation / Edgewise



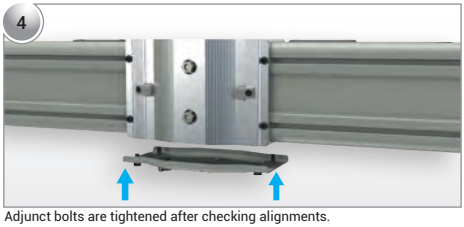
Unscrew the bolts and remove the busbar protection cover.
Properly discard the protective cover after removal.



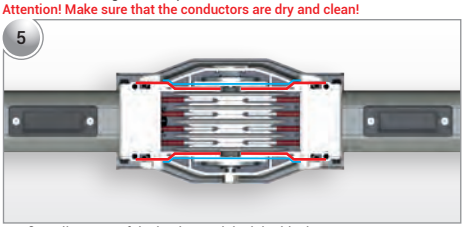
The dust cap bolt is removed and retained for later installation. The block joint bolts are loosened to prepare for installation of adjacent busbar.



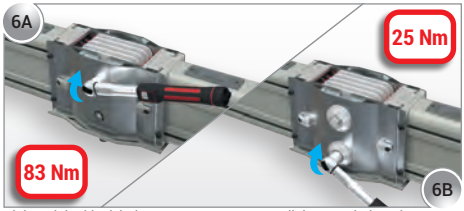
The adjacent busbar is assembled utilizing the alignment pins for correct orientation and alignment of parts.
Attention! Make sure that the conductors are dry and clean!



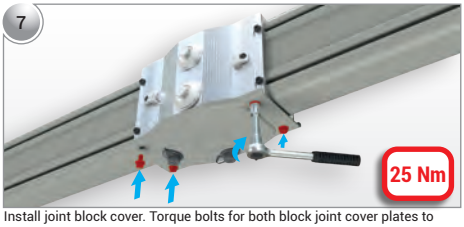
Adjunct bolts are tightened after checking alignments.



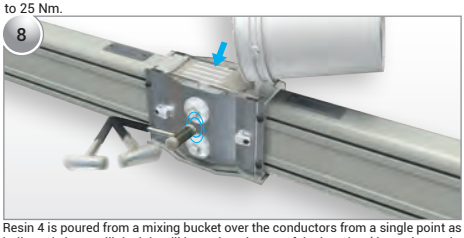
Confirm alignment of the busbar and the joint block.



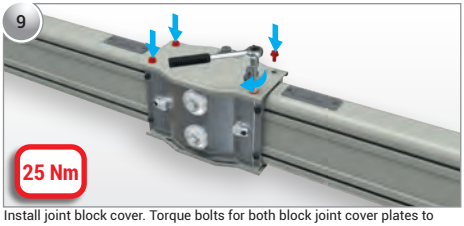
Tighten joint block bolts torque to 83 Nm. Install dust cap bolt and torque to 25 Nm.



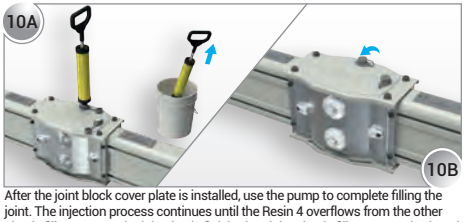
Install joint block cover. Torque bolts for both block joint cover plates to 25 Nm.



Resin 4 is poured from a mixing bucket over the conductors from a single point as indicated above. Fill the joint till it reaches the top of the housing (do not let Resin 4 overflow over the sides). Prior to closing the joint, apply vibration with plastic hammer to the joint area to eliminate any air pockets from the pour. If Resin 4 settles after the air pockets have been removed, pour more Resin 4 till it reaches the top of the housing. Continue this process till no settlement is observed.



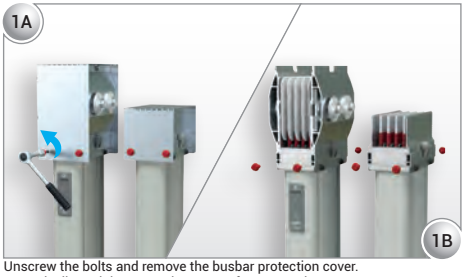
Install joint block cover. Torque bolts for both block joint cover plates to 25 Nm.



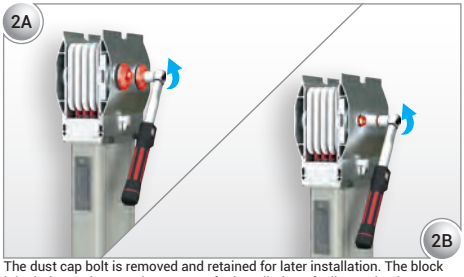
After the joint block cover plate is installed, use the pump to complete filling the joint. The injection process continues until the Resin 4 overflows from the other plastic fill port. Once the injection is finished and the plastic fill port cover is closed, the installation is complete.

E-LINE CCR MANUAL

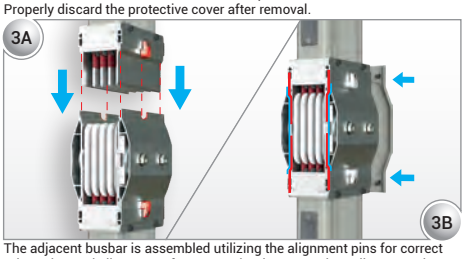
▶▶Installation / Vertical



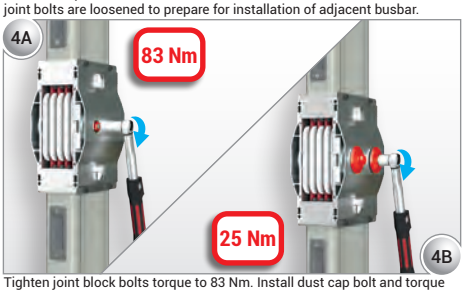
Unscrew the bolts and remove the busbar protection cover.
Properly discard the protective cover after removal.



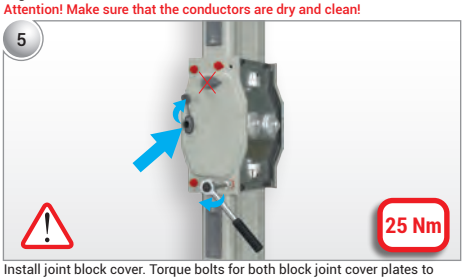
The dust cap bolt is removed and retained for later installation. The block joint bolts are loosened to prepare for installation of adjacent busbar.



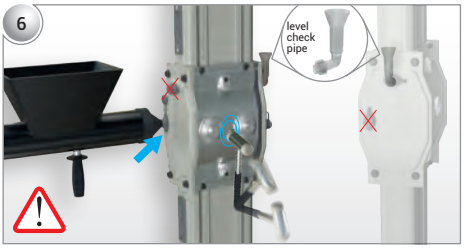
The adjacent busbar is assembled utilizing the alignment pins for correct orientation and alignment of parts. Busbar is approach to alignment slots until it is perfectly seated. Adjunct bolts are tightened after checking alignments.
Attention! Make sure that the conductors are dry and clean!



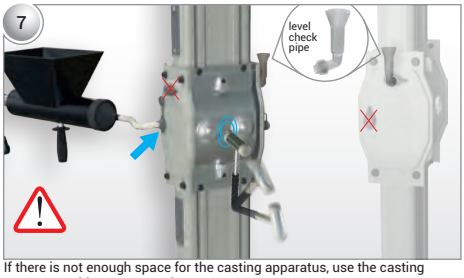
Tighten joint block bolts torque to 83 Nm. Install dust cap bolt and torque to 25 Nm.



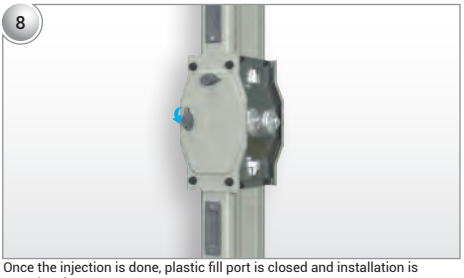
Install joint block cover. Torque bolts for both block joint cover plates to 25 Nm.
The fill port of the shown casting area is opened.
Attention: Depending on the orientation of the busbar, the filling process is carried out through the shown side plastic cover.



Install the level check pipe to opposite upper port. After level pipe is installed, proceed to injecting the Resin 4 into the joint. Continue the filling process until you see Resin 4 present inside the level pipe. If Resin 4 is present in the transparent pipe and no settlement is observed, that is an indication the joint is full and caps can be closed at this time.
Attention: Apply vibration with plastic hammer to the joint area to eliminate any air pockets from the pour. Allow for settlement of Resin 4 in the joint.

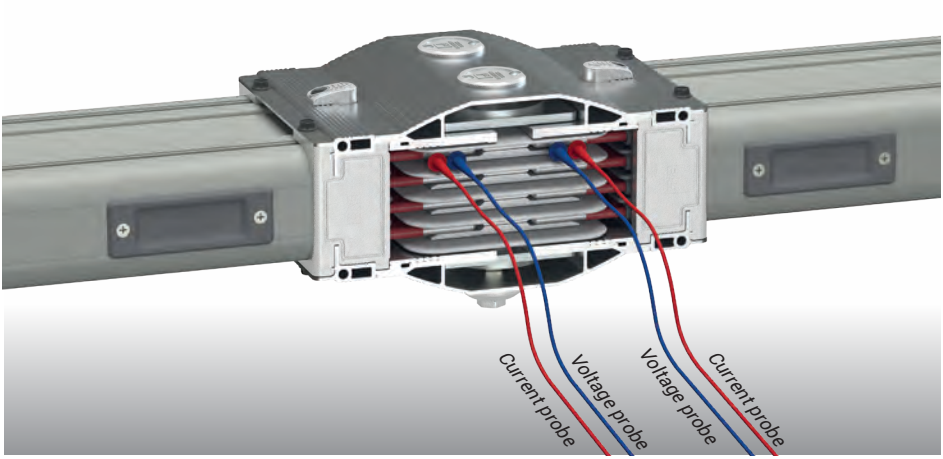


If there is not enough space for the casting apparatus, use the casting apparatus with transparent hose.
Attention: Apply vibration with plastic hammer to the joint area to eliminate any air pockets from the pour. Allow for settlement of Resin 4 in the joint.



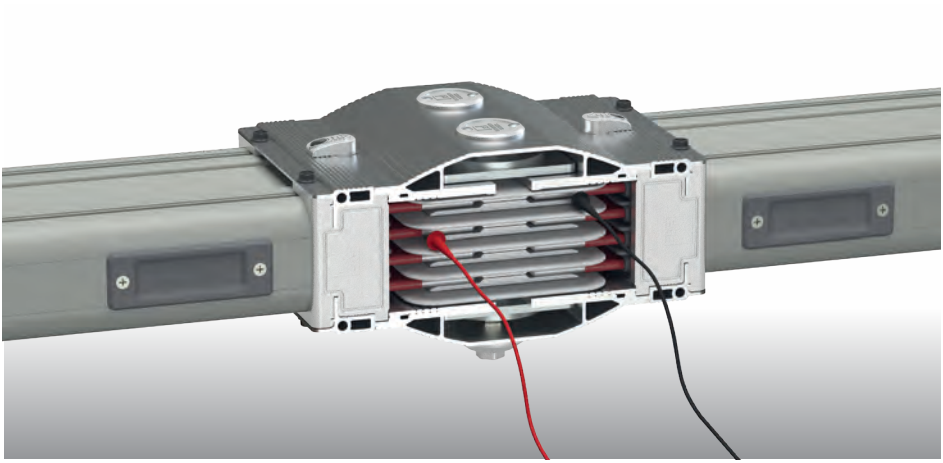
Once the injection is done, plastic fill port is closed and installation is completed.

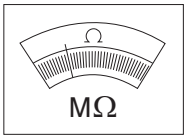
▸ EJunction Resistance Test



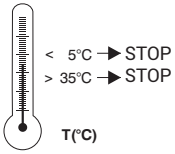
$R_{max} \leq 15\ \mu\Omega$

▸ Line Insulation Resistance Test





≥ 1MΩ OK
< 1MΩ NOT OK



▸ Junction Resistance Test Report

Customer:				**Date:**	...../ ...../ .....
Project:				**Order No:**	.....
Address:				**U_n :** V	**I_n :** A
Busbar Code:		**Material:**	AL ☐ CU ☐	**Conductor Section:**	..... x ..... mm^2
Line:				**Required Torque:**	**M12** **83Nm**
Note: The tests have to perform only with calibrated devices.				**Calibration Date:**	...../ ...../ .....

Results									
Junction :		**Junction :**		**Junction :**		**Junction :**		**Junction :**	
Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)
N - N		N - N		N - N		N - N		N - N	
L1 - L1		L1 - L1		L1 - L1		L1 - L1		L1 - L1	
L2 - L2		L2 - L2		L2 - L2		L2 - L2		L2 - L2	
L3 - L3		L3 - L3		L3 - L3		L3 - L3		L3 - L3	
PE - PE		PE - PE		PE - PE		PE - PE		PE - PE	
Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm
Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ
Junction :		**Junction :**		**Junction :**		**Junction :**		**Junction :**	
Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)	Phase	R (μΩ)
N - N		N - N		N - N		N - N		N - N	
L1 - L1		L1 - L1		L1 - L1		L1 - L1		L1 - L1	
L2 - L2		L2 - L2		L2 - L2		L2 - L2		L2 - L2	
L3 - L3		L3 - L3		L3 - L3		L3 - L3		L3 - L3	
PE - PE		PE - PE		PE - PE		PE - PE		PE - PE	
Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm	Torque:	..... Nm
Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ	Max Value:	..... μΩ

The maximum values per type and explanation to execute this test can be found in Annex A Electircal Site Tests of CR Manuel

Remarks

Witnesses			
Name	**Company**	**Date**	**Signature**

E-LINE CCR MANUAL

▶▶EAE Electrical Site Test Report

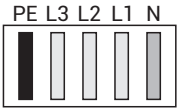
▸ Line Insulation Resistance Test Report

Customer:				**Date:**	...../ ...../ .....
Project:				**Order No:**	.....
Address:				**U_s :** V	**I_s :** A
Busbar Code:		**Material:**	AL ☐ CU ☐	**Conductor Section:**	..... x ..... mm^2
Line:				**Result by:**	..... V (DC)
Note: The tests have to perform only with calibrated devices.				**Calibration Date:**	...../ ...../ .....

Recommended Test Voltage 1000 V DC

Results

		Before Casting		After Casting	
N - L1	=	.....	/	.....	MΩ
N - L2	=	.....	/	.....	MΩ
N - L3	=	.....	/	.....	MΩ
N - PE	=	.....	/	.....	MΩ
L1 - L2	=	.....	/	.....	MΩ
L1 - L3	=	.....	/	.....	MΩ
L1 - PE	=	.....	/	.....	MΩ
L2 - L3	=	.....	/	.....	MΩ
L2 - PE	=	.....	/	.....	MΩ
L3 - PE	=	.....	/	.....	MΩ



Standard Conductor Configuration

Remarks

Witnesses

Name	Company	Date	Signature

CE DECLARATION OF CONFORMITY

Product Group E-Line CCR Busbar Energy Distribution System

Manufacturer EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
Akcaburgaz Mahallesi, 3114. Sokak,
No:10, 34522 Esenyurt - Istanbul

The objects of the declaration described below is in conformity with the relevant Union harmonisation legislation. This declaration of conformity is issued under the sole responsibility of the manufacturer.

Standard:

TS EN 61439-6

Low-voltage switchgear and controlgear assemblies - Part 6: Busbar trunking systems (busways)

CE - Directive:
2014/35/EU "The Low Voltage Directive"

2014/30/EU "Electromagnetic Compatibility (EMC) Directive"

Technical Document Preparation Official ;

EAE Elektrik Asansor End. Insaat San. ve Tic. A.S.
Akcaburgaz Mahallesi, 3114. Sokak, No:10 34522 Esenyurt-Istanbul

Emre GÜRLEYEN

Date

03.03.2024

Document Authorized Signatory

Elif Gamze KAYA OK
Deputy General Manager

For the product: Low-voltage busbar trunking system

Requirements: IEC 61439-6: 2012; Clauses: 10.2.3, 10.2.6, 10.2.7, 10.2.101, 10.3, 10.4, 10.5, 10.9, 10.10, 10.11 and Annex BB, CC, and DD

DEKRA Certification B.V.

F.S. Strikwerda
Certification Manager

is certificate and adjoining reports is allowed

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T +31 88 96 83000 F +31 88 96 83100 www.dekra-certification.com Company registration 09085396

600A...6300A COMPACT BUSBAR
PRODUCT OVERVIEW (E-LINE CCR)

1- Standards & Certification:

-Busbar trunking system shall be designed, type tested and, manufactured in accordance with the International standard IEC 61439-6. Type test shall be documented by independent and internationally accredited testing and certification bodies. Short circuit type tests shall be conducted by independent and accredited testing and certification bodies. Short circuit type tests and the following 3 main type tests shall be conducted for each current rating of the busbar system and conformity to the standards certificates obtained.

2- General Structure Of The System

-The busbar system should be low impedance in accordance with the following characteristics. The tin coated conductors are arranged as a sandwich construction inside the resin body without any air gaps.

2.1- Electirical Characteristics

-Busbar systems nominal insulation voltage shall be 1000V

-As per ampere rates, minimum short circuit values shall be as given below;

For Aluminium Conductors;

600A	: 1 sec/rms	25kA, peak	52,5kA
800-1250A	: 1 sec/rms	35kA, peak	73,5kA
1600A	: 1 sec/rms	60kA, peak	132kA
2000A	: 1 sec/rms	80kA, peak	176kA
2500A and above	: 1 sec/rms	100kA, peak	220kA

For Copper Conductors;

650-850A	: 1 sec/rms	35kA, peak	73,5kA
1000A	: 1 sec/rms	50kA, peak	105kA
1250-1600-2000A	: 1 sec/rms	80kA, peak	176kA
2500-3200A	: 1 sec/rms	100kA, peak	220kA
3400A and above	: 1 sec/rms	120kA, peak	264kA

2.2- Housing

-The housing of the busbar system shall be manufactured with specially developed cast material.

-The structure of the busbar lengths shall have conductors tin plated along their complete length within the housing.

-Multi-path busbars should be combined in a single body so that they are not separated from each other.

-Up and down, right-left turn elements, "T" and offset elements, panel, transformer and cable connectors, termination, horizontal and vertical expansion elements should be standard in the Busbar trunking system. Special modules and different lengths busbar ducts that may be required during the application of the project must be manufactured in a short time in accordance with standard specifications and technology.

-If busbar runs pass through the building expansion joint a horizontal expansion element shall be used in the run. In addition horizontal expansion elements should be used every 40 m along a horizontal run.

2.3- Conductors and Phase Configuration

-Compact busbar system shall have aluminium conductors between 600A – 5400A.
-Compact busbar system shall have copper conductors between 650A – 6300A.
-Busbar system shall have the following number of conductors and wire configuration.

a) 3 Conductors
b) 4 Conductors
c) 4 ½ Conductors
d) 5 Conductors

-Neutral conductor shall have the same cross section as the phase conductor cross section.
-Aluminium conductors shall be of EC grade aluminium. Minimum conductivity shall be 34m/mm².Ω. All surfaces of aluminium conductors shall be tin plated.
-Copper conductors shall be minimum 99,95% electrolytic copper. Minimum conductivity shall be 56m/mm2.Ω. all surfaces of electrolytic copper conductors shall be tin plated.

2.4- Insulation

-Busbars shall be insulated using a mixture of specially selected silica and calcite mixed with an electrical grade epoxy resin to make a superior composite material. This insulation material must have a high impact resistance against external impacts.

2.5- Modular Joint Construction

-The busbar lengths must be joined together with the joint's point drawer type modular block joint system by placing the conductors in the conductive socket in the block insert. Joint block insulators should be high strength CTP insulators. The joint block's centre bolt should be tightened with a torque wrench set to 83 Nm (60 lb ft) after installation.

2.6- Protection

-Protection degree of the housing and joints shall be IP68.

3- Installation and Commisioning

-The installation of the busbar system should be done in accordance with the type and current values shown in these plans in accordance with the electrical project, electrical single line schemes, layout plans and detailed busbar application projects, the manufacturer's installation instructions must be observed carefully during the assembly process. The central joint's bolts must be tightened with the appropriate torque wrench and the nut side of the bolt must be secured with the nut locking cap.
-After installation of the busbar system the installation should be checked for compliance with the manufacturer's instructions and the requirements of the project, an insulation test should be done. Insulation resistance between all conductors and body has to be bigger than 1 megaohm.

▶▶Notes:

▶▶Notes:

PRODUCT TYPES

BUSBAR ENERGY DISTRIBUTION SYSTEMS

CABLE TRAYS

TROLLEY BUSBAR ENERGY DISTRIBUTION SYSTEMS

INDOOR SOLUTIONS

SUPPORT SYSTEMS

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G.M.