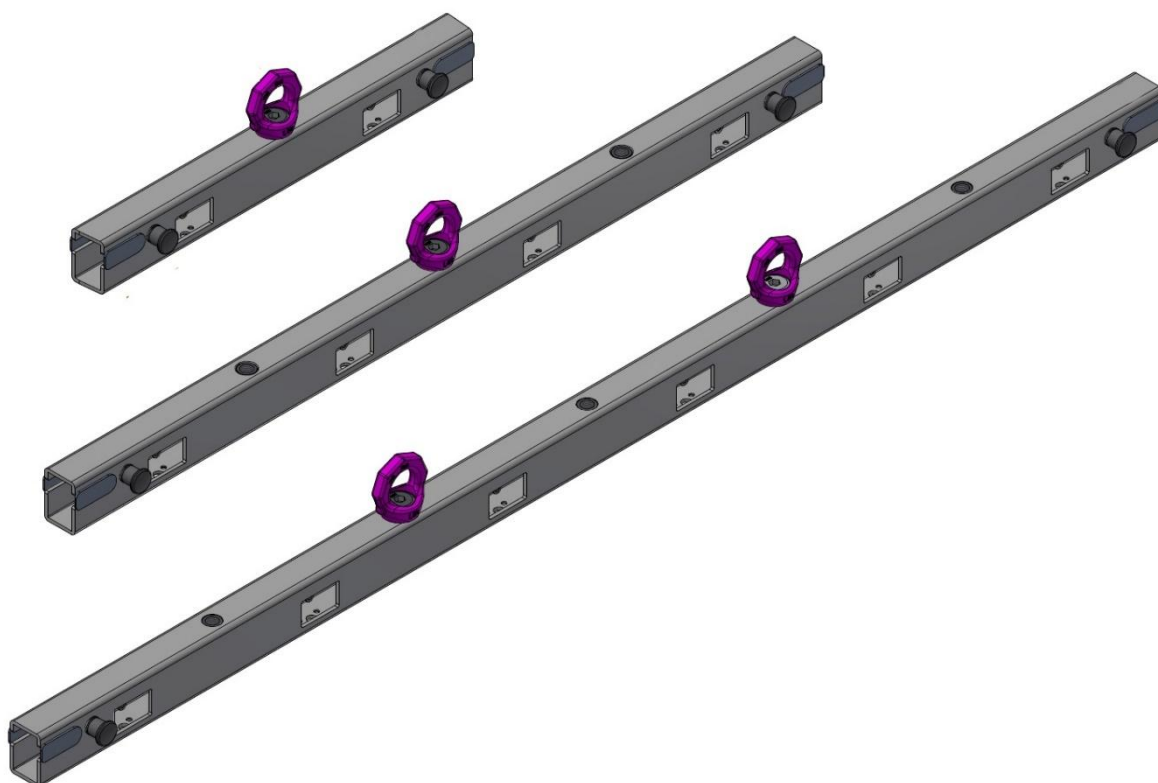


Manual LED Hanging

LED Hanging Brackets

Manual Version 1.0

Date	Revision No.	Author	Checked	Approved	Description
10.11.2025	1.0	TSN	RBR	GHL	1.0



These installation instructions must always be handed out to the persons that carries out the installation.



This manual is subject to change without further notice. The latest manual version can be found online at www.exactsolutions.de or by contacting us directly.

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1. Preamble

The professional LED hanging products have been developed and manufactured with the highest care and attention. However, improper handling can cause a risk for safety and / or damage. Read these instructions carefully before handling and installing the product so that you can safely set-up and use the system. In the following pages, you will find all the information needed for a safe and fast installation.

After the installation is done properly, you can enjoy all the features of your new product.

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1.1 Tools required

There are no special tools required.

2. Safety instructions



These installation instructions must always be handed over to the person who is carrying out the installation.

Read these instructions carefully before installing the system.

2.1 Definition of qualified persons

Qualified Person (Technical Expert)

Qualified person is qualified through relevant technical professional training, through knowledge of the operating methods as well as professional experience and recent professional activity in the field of event technology. The required qualifications include in particular:

- Knowledge of applicable regulations and technical rules
- Required information from the manufacturer of the mechanical event technology equipment, that needs to be tested
- Knowledge of the risk assessments of the mechanical work equipment for event technology, that needs to be tested

A person can be considered as qualified when it has been thoroughly informed and/or trained about the assigned task and the possible dangers that can occur in case of improper behaviour and / or not observing precisely the installation instructions.

2.2 Warnings



The LED Hanging product is intended for use by fully qualified, trained and competent persons to provide safe and secure installation and adjustment of LED walls.



Warning: Handling only by instructed, qualified and authorised person with a minimum age 18 years and of sound mind.



For indoor usage only

For indoor usage only! Use the LED Hanging product only in a closed environment (conference rooms, theatres, convention halls, etc.) where there is no wind, moisture, excessive heat, salty air etc.



Make sure that only the designated LED cabinets are installed with the products of LED Hanging! Do not try to use it with other products because serious accidents can occur!



Do not remove or replace any parts of the LED Hanging product on your own. Contact the manufacturer or service partner in case of damage or loss. Removing or replacing parts by non-certified companies or people might result in serious accidents and death.

Only use the LED Hanging and its components for its intended use.

- If this product is used for something else than its intended use, serious accidents and death may result. See chapter 5.1 Technical introduction and intended use

Installation work should only be carried out by a qualified technician.

- If this product is not installed correctly, serious accidents and death may result.

Do not use the products of the LED Hanging outdoor.

- This product is made only for indoor usage. If the product is mounted outdoor, there are many influences like wind or rain that can have an effect on the stability of the whole system.
- This can cause property damage, serious accidents and death.

Follow the user instructions for the RUD rotating eyebolt.

- The LED Hanging uses RUD VRS-M16 rotating eyebolts. The user instructions from RUD are always provided in printed form and can be found here:
<https://www.rud.com/en/products/sling-lashing-systems/rud-sling-systems/lifting-points/detail/vrs-f-starpoint-metric-thread.html>
- The specific type being used is VRS-M16

- Not following the user instructions can cause death, serious injury, or severe product damage.

Make sure that the positions of the eyebolts on the LED Hanging are in accordance with the specific static calculations. Follow the maximum cabinet amount accordingly. Securely tighten the eyebolts.

- Follow the results of the static calculations, see also chapter 6. Results of static analysis
- Ignoring this is highly dangerous and risk for health and life

A visual inspection must be done prior to every installation, in which the system is involved. The inspection must be performed by a qualified person.

- All parts of The LED Hanging must be inspected in detail prior to any usage
- Only if the product and all its components are in a flawless condition, it is safe to use the system.
- Using a LED Hanging part which has damages, missing parts or the like can cause serious accidents and death.
- For further details, see chapter 8. System maintenance and inspection re-examination

Only use LED cabinets that are specified by the manufacturer to be used with the LED Hanging System. When mounting the LED cabinets to the system, use all screws, locking pins, clamps and cotter pins that are specified by the manufacturer. Make sure to tighten the screws safely

- It is mandatory to use all screws, locking pins, clamps and cotter pins that the manufacturer defines to mount the LED cabinet to the system. Use only the ones that are clearly specified.
- For a safe installation the screws must be tightened with the provided torque
- Using the wrong screws, locking pins, clamps and cotter pins is highly dangerous. Tightening the screw with a too low torque can cause the screw to loosen itself. Tightening the screw with a too high torque might cause structural damage to the screw or the thread inside the LED cabinet.
- Ignoring these instructions can cause the parts or the whole system to fall down and with this can cause death, serious injuries or product damage.

Do not install the system while people are present under the mounting zone during the installation process.

- When installing the system, make sure no one is in the area underneath the installation zone. Otherwise, this will be a risk for all people underneath, that could cause serious injuries and death.

Make sure that the structure from which you hang the product and the corresponding LED Cabinets is capable of carrying the overall weight plus the weight of all additional equipment as well as other potential systems. Do not hang the system from unstable or inappropriate structures.

- If the system is hung on an unstable structure, the entire system can fall down and injuries may occur. Make sure that the construction can support a total weight
- Ignoring this might cause significant damage to the product and serious accidents or death may result

Do not hang more LED Cabinets under each other than allowed by the manufacturer

- Do not exceed the maximum number of hung units as this may cause the whole system or parts of it to fall down
- Ignoring this might cause significant damage to the product and serious accidents or death may result

Make sure not to exceed max. weight loads.

- Do not overload the products of the LED Hanging system or of any accessories and make sure the overall weight is within working specifications of the accessories. Please also refer to chapter 6. Results of static analysis
- Overloading the accessories and other equipment can cause serious accidents and death

It is mandatory to ensure an even distribution of the weight load over all hanging points

- Make sure that the supporting structure (e.g. trussing) on which you want to hang the LED wall is horizontally levelled and sufficiently stable to support the weight of the entire system as well as other potential loads.
- Usually, it is necessary to add length adjustable elements (e.g. turnbuckle) in between the supporting structure and the hanging bracket as. This is crucial to avoid overloading parts.
- Not following this and overloading parts is very dangerous and can cause serious accidents and death

Make sure to follow the results of the static calculations

- Follow the rules given by the static calculations.

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- Ignoring this might cause significant damage to the product and serious accidents or death may result

When using the adjustment features, locking pins, screws etc of the LED Hanging products, never apply significant force.

- When using components such as the adjustment features, locking pins and screws of the products, never apply force. All those features shall work smoothly and do not require significant force.
- If significant force is necessary, the cause may be a faulty part and this should not be ignored.
- Ignoring this, might cause significant damage to the product and serious accidents may result

Service work shall only be done by qualified personnel that is authorized by the manufacturer. Furthermore, only original spare parts shall be used.

- Unauthorized personnel shall never do service work on the products, as service work requires special training and knowledge
- Spare parts must always be original ones, provided by the manufacturer
- Not observing these rules on service work ends with immediate effect the responsibility of the manufacturer and, where applicable, warranty is irrecoverably lost. The product is no longer safe to use. This may cause serious accidents or death and property damage.

The LED Hanging system shall never be used for climbing.

- The system is not made to be used for climbing or as some sort of a ladder
- Ignoring this may lead to serious injuries, death and property damage

2.3 Caution

Minimum two persons are required to install the Professional LED Hanging products.

- With regard to the overall weight of all necessary installation devices, make sure to handle those with at least two people.

Periodic inspections are mandatory

- Depending on local laws and regulations owners / users must do periodic inspections of all components.

Do not place unsecured accessories like tools or electrical devices (converter, video player etc) into the wall build with the LED Hanging

- These devices may fall down and causes serious accidents or even death to people who are situated near the installation.
- The additional weight of every device added to the system must be considered. Contact the manufacturer for any questions.

Use suitable transport boxes / flight cases to protect the products during transport. Handle with care.

- When transporting the LED Hanging products, make sure you are using a flight case that protects and damps impacts during transport.
- Transport shall be carried out gently to avoid damages through falling or similar impacts.
- During transportation, heavy impacts might damage the product. In this case, the stability and safety of the system is at high risk. This can lead to accidents, death and property damage.

Use only gentle cleaning agents to avoid damage

- Cleaning may be done with a soft cloth and a little bit of warm, slightly soapy water
- Do not use any oil, acid etc. on the products or its components. This may damage the system.

Incorrect disposal is a risk to humans and nature

- Disposal must be done in accordance with local laws and regulations. Contact the manufacturer in case of any questions.

The LED Hanging is designed for a static, non-moving, installation.

- The product shall not be mechanically or electro mechanically moved around for example for show purposes.

2.4 Risk Situations

Risk of injury due to the possibility of falling objects during the assembly or disassembly of the LED Hanging.

- Protection objective: Avoid injury from falling parts.
- Wear appropriate safety shoes, gloves and helmet.
- Make sure the area next to the installation is clear and no person is present during installation.

Risk of hitting the head with the system during the set-up process.

- Protection objective: Avoid injury from hitting the head.

- Wear a helmet.

Incorrect installation may lead to certain parts of the LED Hanging or the entire LED Wall to fall down.

- Protection objective: Prevent personal injury and property damage.
- Double check the components and its installation.
- Read the LED Hanging and the LED manufacturers manual carefully.
- Always level the system exactly. Double-check the alignment during and after installation. Make sure the supporting structure is stable and levelled
- Always use all locking bolts, screws etc.
- Always ensure that all LED-Cabinets are locked correctly. Double check the correct locking during and after installation.

Insufficient load capacity of the supporting structure may lead to certain parts of the LED Hanging or the entire system to fall down.

- Protection objective: Prevent personal injury and property damage.
- Provide adequate dimensioning of the supporting structure. The supporting structure must be able to support the combined weight of all the equipment attached to it.
- Ensure correct installation of the supporting structure.

Usage of unsafe ladders/steps/scaffolding may lead to serious personal injuries

- Protection objective: prevent personal injury by using only safe ladders/steps/scaffolding.
- Use only appropriate and safe equipment
- Always follow the documentation of the manufacturer of the provided ladders/steps/scaffolding
- Use personal safety equipment if necessary

Injuries produced by caught limbs during setup and dismantle

- Protection objective: Prevent personal injury by using safety gloves.
- During setup and dismantle always watch your hands and fingers on connection-points and while attaching splints and bolts. Always be focused on the construction and do not act hectic.

3. Scope of delivery



Note: Please check the delivery for completeness and damage immediately after you receive the shipment. Please contact your vendor in case of missing or damaged parts.

As a reference check the drawings of each component of the LED Hanging that you purchased to see if all parts are complete.

4. Overview of model numbers

Article Nr.	Article name
LEH-ARUNA-1	LED Single Hanging Bracket for Aruna
LEH-ARUNA-2	LED Double Hanging Bracket for Aruna
LEH-ARUNA-3	LED Triple Hanging Bracket for Aruna
LEH-AURA-1	LED Single Hanging Bracket for AURA
LEH-AURA-2	LED Double Hanging Bracket for AURA
LEH-AURA-3	LED Triple Hanging Bracket for AURA
LEH-B600-2-ENKI	LED Double Hanging Bracket for ENKI
LEH-B600-3-ENKI	LED Triple Hanging Bracket for ENKI
LEH-B610-1-ABAXPro	LED Single Hanging Bracket for Jupiter/Venus
LEH-B610-2-ABAXPro	LED Double Hanging Bracket for Jupiter/Venus
LEH-B610-3-ABAXPro	LED Triple Hanging Bracket for Jupiter/Venus
LEH-ILDB-1	LED Single Hanging Bracket for INFiLED DB Module
LEH-ILDB-2	LED Double Hanging Bracket for INFiLED DB-Module
LEH-ILDB-3	LED Triple Hanging Bracket for INFiLED DB-Module
LEH-ILs1.8LE-1	LED Single Hanging Bracket for INFiLED s1.8LE
LEH-ILs1.8LE-2	LED Double Hanging Bracket for INFiLED s1.8LE
LEH-ILs1.8LE-3	LED Triple Hanging Bracket for INFiLED s1.8LE
LEH-LUNA-1	LED Single Hanging Bracket for LUNA
LEH-LUNA-2	LED Double Hanging Bracket for LUNA
LEH-LUNA-3	LED Triple Hanging Bracket for LUNA



This is an excerpt of compatible LED cabinets. Please contact us for more information.

5. Description of the product

5.1 Technical introduction and intended use

An LED Wall is set up using multiple LED Cabinets to create large displays. There are several manufacturers that provide different LED Cabinet models.



Figure 1 Exemplary image of backside and frontside of LED Cabinet (Infiled DB series)

The LED Hanging is a mechanical solution for hanging LED Cabinets together in a wall. It is a horizontal hanging bar that is mounted to an onsite structure, for example trussing. On its top side are rotating lifting eye bolts by RUD to attach for example a shackle. The bottom side has positions for LED cabinet specific mounting parts.



We do not offer or mount the LED Cabinet specific mounting parts. Customers need to source them from their LED manufacturer and mount them. EXACT solution is not responsible for anything else then the hanging bar. We will provide instructions on how to mount the LED Cabinet specific mounting parts if necessary.

The LED Hanging bars are available in different sizes, usually single (one cabinet wide), double (two cabinets wide) and triple (three cabinets wide), see also Figure 2.

There are clear rules on how to set up a LED Wall using the LED Hanging. These rules result from static calculations and define parameters such as maximum height, needed components etc. Static calculations are made for each LED Cabinet model separately and differ.



The RUD lifting eye bolts can be mounted at different positions on some of the hanging bars. The static calculation lists possible positions and depending on them the maximum amount of cabinets that can be hung.



The user instructions by RUD for their lifting eye bolts need to be followed. The type of eye bolt being used is Type: VRS-M16. The instructions can be found here and will be provided in printed form:

<https://www.rud.com/en/products/sling-lashing-systems/rud-sling-systems/lifting-points/detail/vrs-f-starpoint-metric-thread.html>

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This manual does not list the results of the static calculation of each LED Cabinet product. They must be sourced separately. Contact EXACT solutions if you have further questions.



If static calculations are not available, they must be made. Do not try to use LED Cabinets that are not specifically defined as compatible with the LED Hanging.



The static analysis and verification of the LED cabinets are not part of the LED Hanging by EXACT solutions and must be done our sourced separately.



The LED Hanging system is made only for indoor usage. Outdoor usage is prohibited and highly dangerous.



Only use LED cabinets that are specified by the manufacturer to be used with the LED Hanging System. When mounting the LED cabinets to the system, use all screws, locking pins, clamps and cotter pins that are specified by the manufacturer. Make sure to tighten all the screws safely

Figure 2 shows the three typical sizes of LED Hanging brackets. Note: the single and double hanging bracket are shipped with one RUD eye bolt. The triple hanging bracket is shipped with two RUD eye bolts.

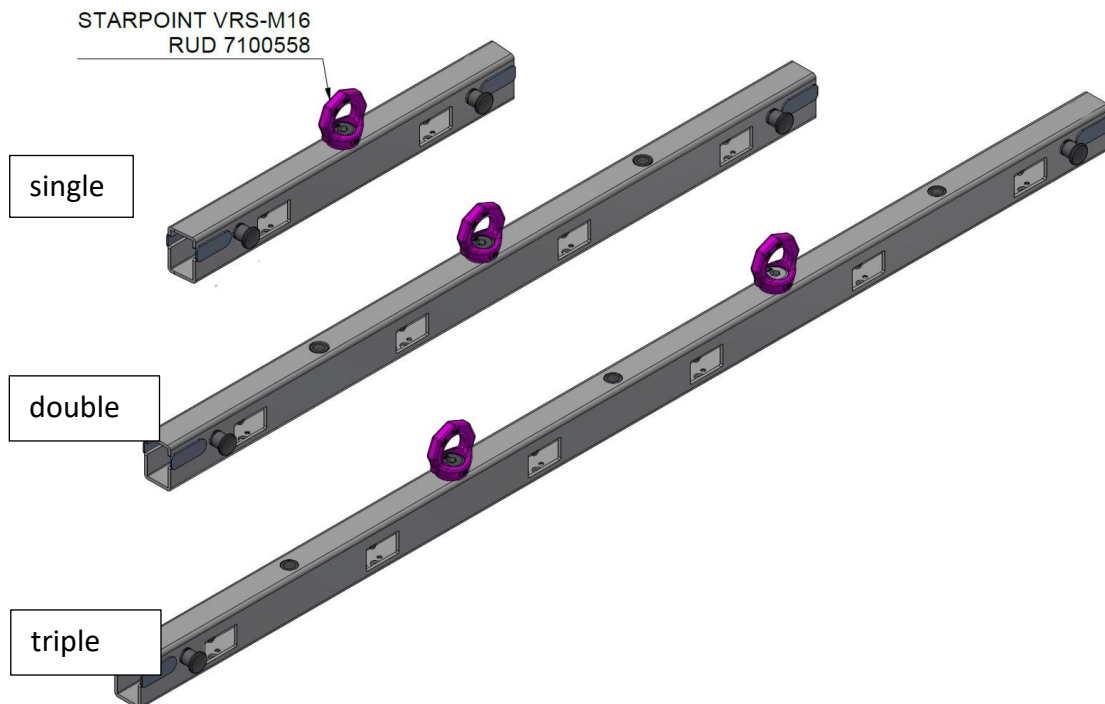


Figure 2 Example of hanging brackets

5.2 Specifications

Parameter	Value
Operating temperature [°C]	0 - 45
Operating rel. humidity [%rH]	10 - 75
Operation area	Indoor in closed rooms

6. Results of static analysis



The static calculations do not consider any additional loads such as wind loads or impact by persons.

Before installing, users need to check the static calculations for their specific LED cabinet. The result of the static calculations will be explained in the following section.

Figure 2 shows the three typical sizes of LED Hanging brackets. The purple coloured RUD eye bolt can be repositioned on the double and the triple base. This makes sense to reduce the amount of hanging points for smaller walls but also to have the opportunity to build larger walls. Each RUD eye bolt comes with an integrated tool to loosen and tighten the screw.

Figure 3 shows possible positions of the eye bolt as it is shown in the static calculations. Depending on the amount and the position of the eye bolts the maximum allowed weight and with this the amount of LED cabinets that can be hung underneath the bracket varies. This will all be defined in the static calculations.

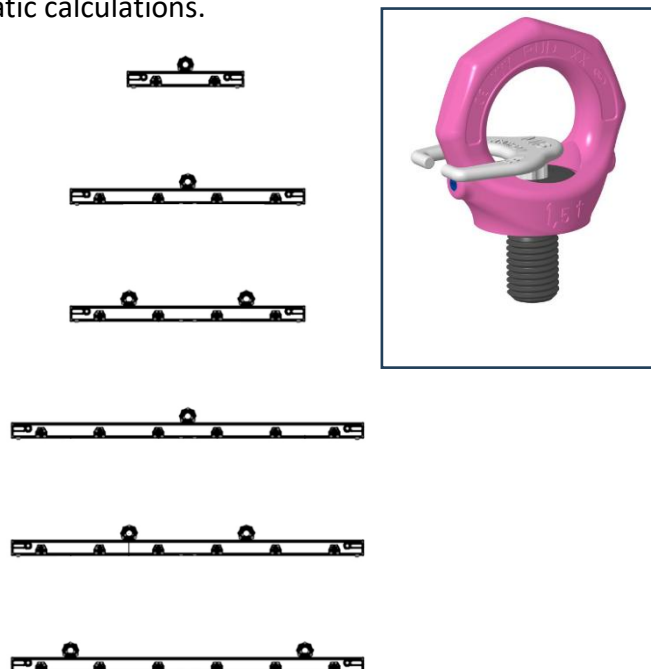


Figure 3 Possible positions for the eye bolt as illustrated in the static calculations

7. Step by Step installation procedure

It is the responsibility of the installer to ensure the stability of the LED wall.

7.1 Prepare the installation

Make sure that the supporting structure (e.g. trussing) on which you want to hang the LED wall is horizontally levelled and sufficiently stable to support the weight of the entire system as well as other potential loads.



It is usually necessary to add length adjustable elements (e.g. turnbuckle) in between the supporting structure and the hanging bracket as it is mandatory to ensure an even distribution of the weight load over all hanging points. This is crucial to avoid overloading parts.



Avoid angled connections between the hanging bracket and the supporting structure (e.g. trussing). Equipment such as steel cable should be mounted straight down. Follow the instructions of such equipment as well as the instructions of the RUD eyebolt.

7.2 Install LED Hanging Brackets and LED Cabinets

Mount the hanging brackets to the supporting structure using suitable materials such as shackles. Connect the hanging bracket to each other by using the connection pieces. Figure 4 shows how to use the connection pieces. Pull out the bolt and insert the connection piece. Once the connection piece is at its correct positions make sure that the bolt sits correctly in the corresponding hole.

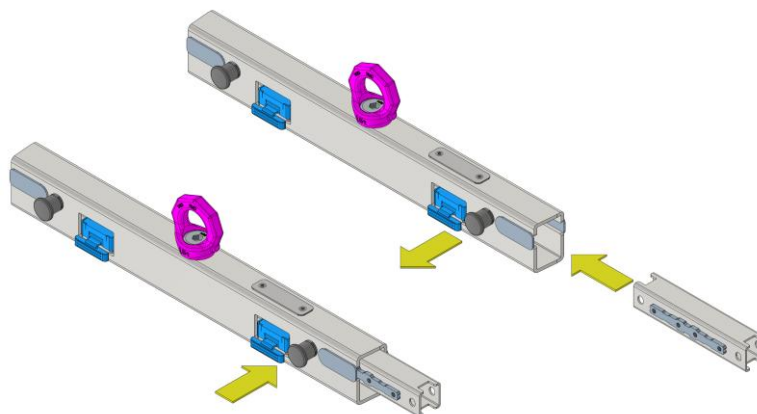


Figure 4 connecting the hanging brackets

Hang the LED cabinets underneath the hanging bracket using the LED manufacturers specific connection parts and follow their instructions.

8. System maintenance and inspection re-examination



For all components of the LED Hanging a visual inspection must be done prior to every installation in which the system is involved. The inspection must be done by a qualified person!



Periodic inspections are mandatory. Depending on local laws and regulations owners / users must do periodic inspections of the products and all components. It is recommended to do this once a year by a qualified and authorised person.



Note: The necessary inspections can also be done by the manufacturer.



Do not exchange broken or malfunctioning parts with ones that are not approved by the manufacturer because serious injuries and property damage can occur!



If any parts are broken or missing stop using the product, please contact the seller so he can provide the spare parts. Do not replace any parts on your own.

Make sure that no part of the LED Hanging System shows any kind of damage such as:

- Bending
- Dents
- Corrosion
- Cracks
- etc.

Check each part of the LED Hanging system to ensure that all needed mounting material is available. This mounting material is for example:

- Locking pins
- Wing screws
- Height adjustable feet
- Bolts
- Splints
- etc.

The basic mechanical design of the LED Hanging Systems tries to avoid mounting material to get lost.

9. Disposal of components

9.1 Metal parts and packaging

All metal parts and packaging can be recycled.

9.2 Disposal of entire devices

You have the possibility to send old devices back to us. Please note that you have to take over the transportation costs for this. Please send the devices to:

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