

Quick Start and Safety Manual

KNV



KNV
CUBE



KNV
ARC

Software Version 14



GLP® KNV Cube and Arc Quick Start and Safety Manual – Revision A

This manual covers fixture software version 14

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1. Safety

Key to symbols

The following symbols are used in this Guide:



Warning! Safety hazard.
Risk of severe injury or death.



Warning! Hazardous voltage.
Risk of lethal or severe electric shock.



Warning! See user manual for important safety information.



Warning! Fire hazard.



Warning! Risk of eye injury.



General safety information

Read this Quick Start and Safety Manual carefully before installing, using or servicing the product.

If you have any doubts or questions about how to use the product safely, contact your GLP® supplier for assistance. Your GLP supplier will be happy to help.

The user documentation for GLP® KNV lighting fixtures consists of:

- The KNV Quick Start and Safety Manual, supplied with KNV fixtures and available for download from www.glp.de. The Quick Start and Safety Manual contains important safety information and installation instructions that the installer and user must read.
- The KNV User Manual, available for download from www.glp.de. The User Manual explains features and control of KNV fixtures.
- The KNV DMX Channel Index, available for download from www.glp.de. The Channel Index is a separate guide to the DMX control channel layout and DMX commands available.

All documents are available for download from www.glp.de.

The KNV is intended for use by experienced professionals with the knowledge and skills to set up, operate, and maintain high-powered, remotely controlled lighting equipment safely and efficiently. These operations require expertise that may not be provided in this Manual and the User Manual.

- Respect all warnings and directions given in the product's user documentation and on the product. Read the user documentation and familiarize yourself with the

safety precautions it contains before installing or using the product. GLP and affiliated companies will take no responsibility for damage or injury resulting from disregard for the information in the user documentation.

- Check the GLP website at www.glp.de and make sure that you have the latest version of this Quick Start and Safety Manual. Check the fixture software version indicated on page 2 of this manual and then use the fixture's control panel to check the version installed in the fixture. If the versions are not the same, this manual may still cover the fixture, because software updates do not always affect the way you use the fixture. However, it is possible that this manual does not match the fixture perfectly. Software release notes can help clarify this question. You can consult software release notes and download the correct version of this manual on the GLP website if necessary.
- Make all user documentation – this Quick Start and Safety Manual as well as the User Manual – available to all installers and operators. Save both documents for future reference.
- If you have any questions about the safe operation of the product, please contact an authorized GLP distributor (see list of distributors at www.glp.de).
- Use the product only as directed in this manual. Observe all markings in this manual and on the product.
- Refer all repairs and any service operation not described in this manual to a technician authorized by GLP.
- The light source in this product must not be changed by the end user.
- Read and follow the user documentation for all additional equipment.



Electrical safety

- Do not allow the product to become immersed. Do not expose the product to high-pressure water projections.
- Keep any unused connectors on the product sealed with their protective caps at all times, both when the product is in use and when not in use.
- Use only a source of AC mains power that complies with local building and electrical codes and has both overload and ground fault (earth fault) protection.
- Ensure that the product is electrically connected to ground (earth).
- Disconnect the product from AC mains power before carrying out any installation or maintenance work and when the product is not in use.
- Disconnect the product from power immediately if any seal, cover, cable, connector or other component is damaged, defective, deformed or showing signs of overheating. Do not reapply power until the product has been repaired and made safe by a technician authorized by GLP.

- Check that all power distribution equipment, cables and connectors are in perfect condition, rated for the electrical requirements of all connected devices, suitable for their application and suitable for the installation environment.
 - Use only Neutrik PowerCON TRUE1 cable connectors for AC mains power input at the product's Mains IN connector and for relaying AC mains power from one fixture's Mains OUT (Thru) connector to another fixture's Mains IN connector.
 - Use minimum 14 AWG or 1.5 mm² power input and relay cables that are minimum 16 A-rated and temperature-rated to suit the application. In the USA and Canada the cables must be UL-listed, type SJT or equivalent. In the EU the cables must be type H05VV-F or equivalent.
 - Do not connect devices to power in a chain if the total maximum current draw of all the devices in the chain when added together will exceed the current rating of any cable or connector used at any point in the chain. The supplied power input cable is rated as follows:
 - US power cable: 16 A, 14 AWG, UL listed, E304117, SJT, 4.9 ft.
 - EU power cable: 16 A, 1.5 mm², H05VV-F, 1.5 m.
- Do not connect more than two (2) KNV fixtures to power in a chain at 100-120 V, 60 Hz.
- Do not connect more than four (4) KNV fixtures to power in a chain at 200-240 V, 50 Hz.
- The voltage and frequency at the Mains OUT socket are the same as the voltage and frequency applied to the Mains IN socket. Only connect devices to the Mains Out socket that accept this voltage and frequency.
 - KNV fixtures do not have a user-replaceable fuse. If you suspect that a fuse has blown, disconnect the fixture from power and send it to a technician authorized by GLP for repair.



Fire safety and protection from burns

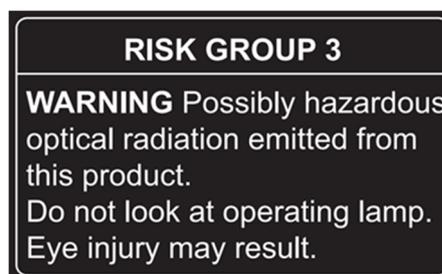
- Do not operate the product if the ambient temperature (Ta) exceeds 45° C (115° F).
- The surface of the product's casing can reach up to 65° C (149° F) and the front screen can reach 80° C (176° F) during operation. Avoid contact by persons and materials. Do not install the product in a location where there is a risk of accidental contact. Allow the product to cool for at least 20 minutes before handling
- Keep the product well away from flammable materials.
- Keep all combustible materials (e.g. fabric, wood, paper) at least 0.2 m (8 in.) away from the product.
- Ensure that there is free and unobstructed airflow around the product. Provide a minimum clearance of 100 mm (4 in.) around fans and air vents.

- Do not illuminate surfaces within 1 m (3.3 ft.) of the product. The light output from the product is powerful enough to cause burns or fire in illuminated objects at close range.
- Do not place any optical components other than KNV accessories onto the front of the fixture.
- Do not stick filters, masks or other materials onto the fixture. Do not block the light output in any way. The front surface becomes hot during operation and can melt or ignite objects that are in contact with the surface. Ensure that the front surface is clean and unobstructed at all times in order to prevent a fire hazard and damage to the fixture.
- The product's optical components can focus the sun's rays, creating a risk of fire and damage. Do not expose the front of the product to sunlight or any other intense light source, even from an angle.



Eye safety

- The KNV is classified as a Risk Group 3 lighting fixture according to EN 62471. Possibly hazardous radiation emitted. Do not stare into the light output from the product. May be harmful to the eyes.
- Do not look at the product's light output with optical instruments or any device that may concentrate the light output.
- Make sure that persons near to or working on the product are not looking directly into the light output when the product lights up suddenly. This can happen when power is applied, when the product receives a DMX signal, or when certain control menu items are selected.
- The warning below is printed on the product. If the warning becomes impossible to read, replace it with a label reproduced from this illustration:



- Provide well-lit conditions to reduce the pupil diameter of anyone working on or near the product.



Strobe safety

- Flashing light, particularly at 5 - 30 Hz, may cause seizures in persons with photosensitive epilepsy. Do not use strobe effects for extended periods.
- Comply with local regulations on the use of strobe lighting and notify the public in advance with highly visible warning signs when strobe effects are used.
- If a seizure occurs, stop using strobe effects. Seek professional medical help. Note the time that the seizure starts and finishes. Call emergency medical help urgently if the seizure lasts more than five minutes, if it is the person's first seizure, or if the person is injured. While waiting for help to arrive, protect the affected person from injuring themselves on hard or sharp objects. If necessary, move the person to a safe place. Lay them on their side with their head supported to prevent it from hitting the floor. Loosen any tight clothing around their neck. Do not use force to hold the person or restrict their movements. Do not put anything in their mouth, including your fingers.



Installation safety and protection from personal injury

- Installation must be performed by qualified personnel only and carried out in accordance with applicable regulations such as DIN VDE 0711-217.
- The product is not portable when installed.
- Ensure that the supporting structure and installation hardware used can hold at least ten times the weight of the load that they support.
- Fasten the product to a structure or surface only as directed in this manual and only with hardware that is specifically designed and rated for its purpose. Do not use a safety cable as the primary means of support. Check that installation hardware is in perfect condition. Fasteners must be steel grade 8.8 strength or better. Rigging clamps must be half-coupler type that completely encircle the rigging truss chord.
- If the product is installed in a location where it may cause injury or damage if it falls, install as directed in this manual a safety cable or similar secondary attachment that will hold the product if a primary attachment fails. The secondary attachment must be approved by an official body such as TÜV as a safety attachment for the weight that it secures, it must comply with EN 60598-2-17 Section 17.6.6, and it must be able to support a static suspended load that is ten times the weight that it secures.
- If the product is installed in a location where it may be exposed to forces such as wind pressure, vibration or movement, make sure that the installation can withstand these forces. Monitor weather forecasts constantly. Take down the installation immediately if there is any risk of weather conditions that could destabilize the installation.

- Check that all covers and items of rigging hardware are secure before using the product. Do not operate the product with missing or damaged covers, shields or any optical component.
- Restrict access below the work area and work from a stable platform whenever installing, servicing or moving the product.
- If the product becomes damaged, stop using it immediately and disconnect it from power. Do not attempt to use a product that is obviously damaged.
- Do not modify the product in any way not described in its user documentation.
- Install genuine GLP parts only.

2. Avoiding damage to the fixture

Important! Follow the directions in this section carefully, or the fixture may suffer damage that is not covered by the product warranty.

General precautions

Do not drop the fixture or expose it to mechanical stress.

Protect the LCD display and control panel from shocks, or they may suffer damage that is not covered by the product warranty.

Do not expose the fixture to heat (from other lighting fixtures for example).

Clean optical components only as directed. Oils, solvents, and other chemicals commonly used for cleaning can damage the lens coatings and surfaces.

Use only original spare parts. Do not make any structural modifications to the fixture or you will void the product warranty.

Avoiding damage from light sources

Do not point the front of the fixture towards the sun or other strong light sources. Strong light can cause internal damage to the fixture, melting components or starting an internal fire within seconds.

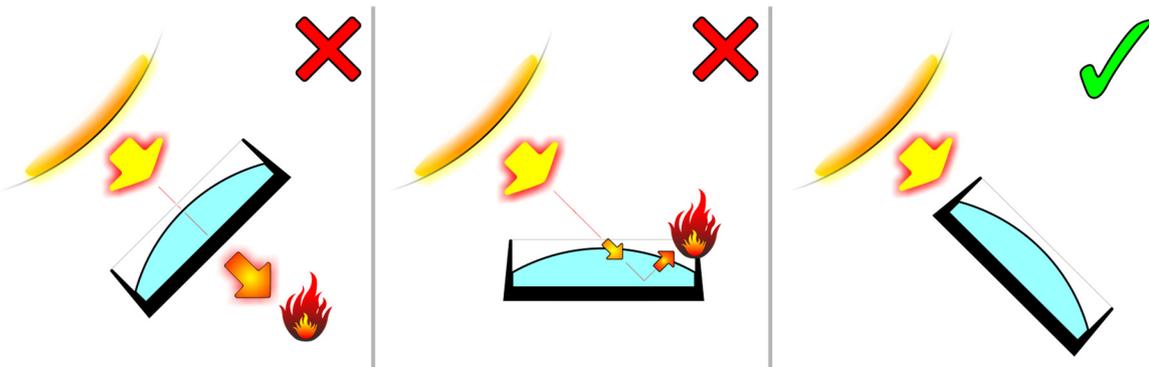


Figure 1. Avoiding damage from light sources

Damage can occur whether the fixture is powered on or off. See Figure 1. Damage can also occur if the light hits the front of the fixture at an angle: the fixture does not need to be pointing *directly* at the sun or other light source.

To avoid problems from strong light sources:

- Do not expose the front of the fixture to sunlight or any other strong light source.
- In outdoor applications during daylight, make sure that the front face of the fixture is shielded or points away from the sun, even when not in use.
- Do not aim other high-powered beam lights directly at the fixture.

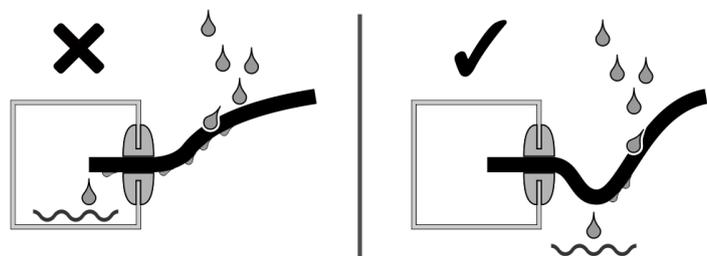
IP rating

KNV fixtures are IP54-rated:

- **IP** stands for Ingress (entry into the fixture) Protection.
- The figure **5** in the rating means that fixtures are protected against the entry of solid bodies larger than 1 mm (fingers, tools, etc.) and have limited protection against the entry of dust and airborne particles.
- The figure **4** in the rating means that fixtures are protected against the entry of rain and water spray (splashing) that arrives from vertically above or at an angle of up to 60° from vertically above the fixture. Fixtures are not protected against immersion in water and they are not protected against low or high-pressure water jets.

Avoiding damage from water and humidity

- Do not install KNV fixtures in a location where water can pool around the fixture or allow KNV fixtures to become submerged in any other way. Do not aim low- or high-pressure water jets at fixtures.
- Keep all unused connectors on the fixture sealed with their protective caps, both when the fixture is being used and when it is not in use.
- In outdoor and high-humidity environments, use IP65-rated power and data connectors and cable (an IP65 rating means that the item is protected against the entry of water from rain, projections and low-pressure jets as well as the entry of dust). When assembling connectors and installing them on cable, follow the manufacturer's instructions (see www.neutrik.com) and ensure that an IP65 rating is maintained for the complete assembly. Use only the following connectors:
 - Neutrik NE8MX6 for data IN and OUT (THRU)
 - Neutrik NAC3FX-W for Power IN
 - Neutrik NAC3MX-W for Power OUT (THRU).
- Apply a dielectric grease (available from most electrical suppliers) to connector terminals and caps to prevent corrosion and/or electrical short circuits.
- Make sure that cables open into dry areas or sealed junction boxes. Moisture can be drawn along cables by capillary action or pressure variations resulting from thermal expansion.
- See drawing on right. Arrange cables so that they arrive at connectors from below. Make sure that it is impossible for water to flow down cables and accumulate at connectors. If necessary, provide extra cable slack and create 'drip loops' before connectors.
- Create loose cable bends only. Do not subject connections to bending forces or allow connections to bear the weight of long lengths of cable.



Avoiding damage from dust and airborne particles

- Carry out regular visual inspections of every fixture to make sure that there is no accumulation of dirt, especially on the front of the fixture and on air vents.
- If cleaning is necessary, follow the instructions in 'Cleaning and maintenance' on page 35.

Transportation and storage

- Transport the fixture either in a flightcase or in its original packaging to protect it from damage caused by shocks during transportation.
- Store the fixture in a dry location when not in use.

3. KNV Cube overview

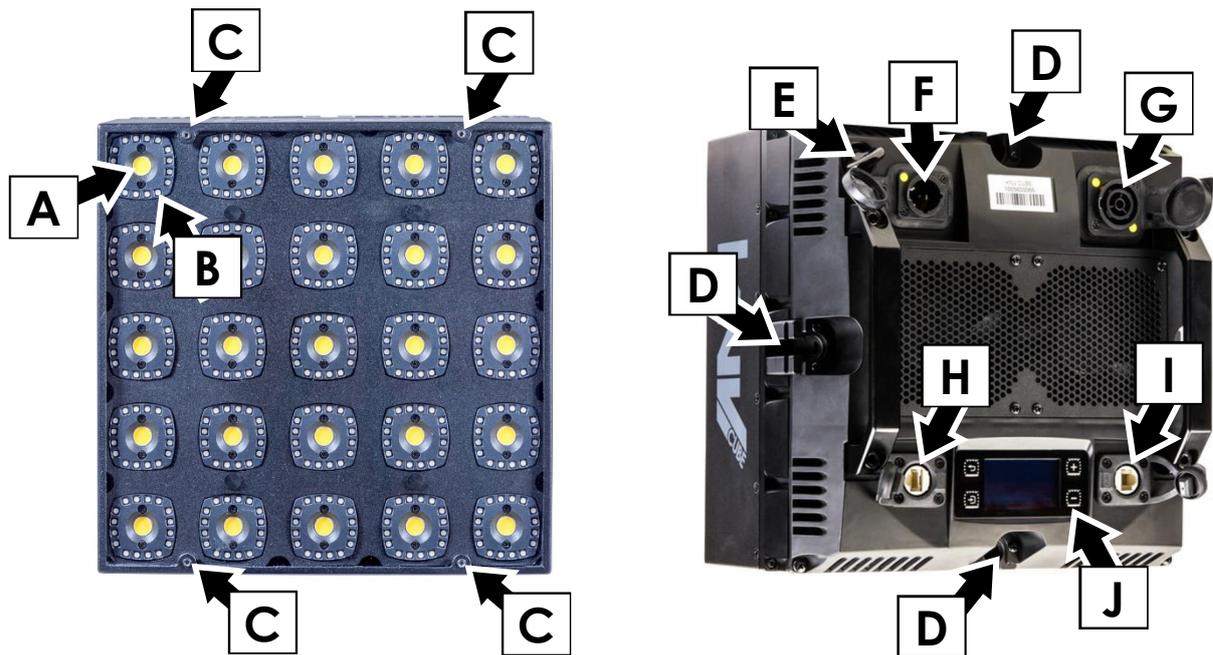


Figure 2. Cube overview

- A – White LED
- B – RGB LEDs
- C – Mounting points for optical accessories
- D – Mechanical connector attachment points
- E – Safety cable attachment point
- F – AC mains power IN (Neutrik powerCON TRUE1)
- G – AC mains power OUT / THRU (Neutrik powerCON TRUE1)
- H – Neutrik EtherCON port for control data (DMX/Art-Net/sACN in/out)
- I – Neutrik EtherCON port for control data (DMX/Art-Net/sACN in/out)
- J – Control panel with backlit LCD display

4. KNV Arc overview

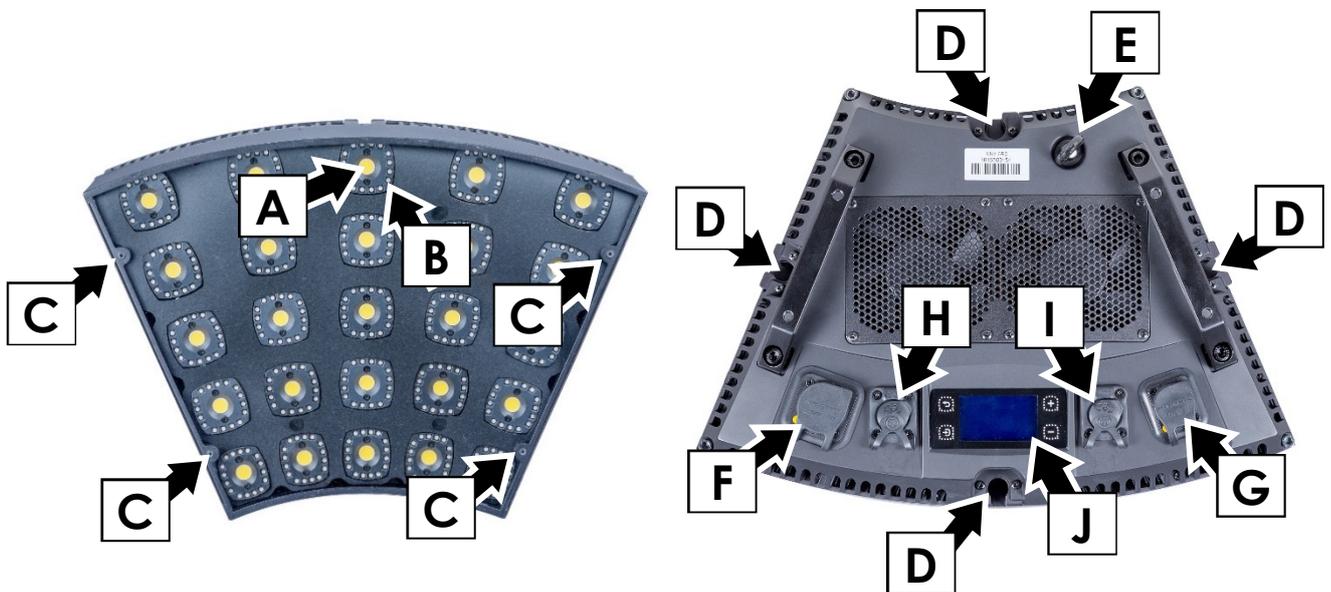


Figure 3. Arc overview

- A – White LED
- B – RGB LEDs
- C – Mounting points for optical accessories
- D – Mechanical connector attachment points
- E – Safety cable attachment point
- F – AC mains power IN (Neutrik powerCON TRUE1)
- G – AC mains power OUT / THRU (Neutrik powerCON TRUE1)
- H – Neutrik EtherCON port for control data (DMX/Art-Net/sACN in/out)
- I – Neutrik EtherCON port for control data (DMX/Art-Net/sACN in/out)
- J – Control panel with backlit LCD display

5. Features

The KNV can be used indoors in permanent and temporary installations. Its rugged construction and IP54 rating mean that it can also be used outdoors in temporary installations if precautions are taken to prevent immersion in water and damage from direct sunlight. Fixtures can be placed upright on a level surface or suspended from a suitable structure as directed in this manual.

Power and data can be daisy-chained and products interlocked for ease of installation.

The range of installation hardware items available from GLP allows KNV fixtures to be installed in an endless number of creative configurations.



Figure 4. Example combinations of KNV Cube and Arc fixtures

The KNV is not suitable for household use, for use in any location where unattended children have access to it, or for use in permanent outdoor installations.

Fixture control

This Quick Start and Installation Manual gives a very basic overview of control options and functions. See the KNV User Manual available for download from www.glp.de for full details of control, pixel layout, etc.

6. Installation



Warning! Read 'Safety' starting on page 5 for important safety information that you must understand before you install or operate the fixture. Install KNV fixtures only as described in this chapter, or you may create an installation that is unsafe.

KNV Cube and Arc fixtures can be installed in endless creative configurations, and the flexibility of the products places extra demands on the installer. The installer must both respect the instructions and warnings given in this chapter and use their professional experience and knowledge to ensure that the installation is safe.

When installing, keep the fixture at least 0.2 m (8 in.) away from flammable materials including curtains and stage scenery and 1 m (3.3 ft.) away from any surface that will be illuminated.

It is the installer's responsibility to provide a stable, secure supporting structure that is suitable for the environment and application. The structure must be capable of safely supporting at least ten times the weight of all the devices and hardware that will be installed on it.

Permitted mounting options

A KNV Cube fixture may be installed in one of the following ways only:

1. Standing in a KNV Floorstand-Bracket on a level, stable surface.
2. Suspended from a rigging truss or similar structure with one single fixture hanging vertically in a KNV Floorstand-Bracket or a KNV Installation Bracket.
3. Suspended from a rigging truss or similar structure with one single fixture – or up to a maximum of four (4) fixtures interconnected using KNV Module Connectors – hanging vertically from a KNV Rigging Connector and half-coupler rigging clamp.

A KNV Cube or KNV Arc fixture may be installed in one of the following ways only:

4. Supported by a KNV Installation Bracket that is fastened to a rigging truss or similar structure at any angle using a half-coupler rigging clamp.
5. Supported on both sides by two KNV fixtures that are fastened to it using KNV Module Connectors. Each of these two fixtures must be fastened to a rigging truss or other structure at any angle using a half-coupler rigging clamp.

Installation hardware

The following items of installation hardware are available from GLP for the KNV. Use them only as directed in this chapter. Respecting all warnings on the hardware and in this manual.



KNV Cube Floorstand-Bracket

Adjustable.

May be used to stand one KNV Cube fixture on a level, stable surface.

May be used to support one KNV Cube fixture only hanging vertically downwards from a rigging truss, bar or similar support.



KNV Installation Bracket

Non-adjustable.

May be used to fasten a KNV Cube or Arc to a supporting structure.

May be used in combination with rigging clamps to provide the required points of support in larger and creative arrays of KNV Cube and/or Arc fixtures.

Both latches must be pushed inwards to lock.



KNV Module Connector

May be used to lock two KNV fixtures to each other vertically and side-by-side.

Handle must be twisted 90° to lock.



KNV Rigging Connector

May be fastened to a KNV and used as a rigging clamp attachment bracket.

May be used to support up to a maximum of four KNV fixtures that are locked together and suspended vertically.

If you want to suspend more than four fixtures in an array, you will need to provide additional supports and KNV Installation Brackets as described in this manual.

Handle must be twisted 90° to lock.

Mechanical connectors

See Figure 5. Channels (arrowed) are provided on the top, bottom, left and right sides of KNV fixtures. These channels accept the mechanical connectors on the KNV Brackets, Fixture Connectors and Rigging Connectors. The system lets you lock brackets to fixtures and lock fixtures to each other quickly and securely. Each channel incorporates a safety mechanism that allows a mechanical connector to be locked into the channel.



Figure 5. Mechanical connector channel

Fastening fixtures to each other



Warning! Do not use a KNV Module Connector to support the weight of a fixture held horizontally or at any other angle from vertical.

Do not use a KNV Module Connector to support the weight of more than four fixtures.

You can use KNV Module Connectors to fasten a maximum of four (4) fixtures in total together in a column that is suspended vertically. You can use these connectors to fasten an unlimited number of fixtures side-by-side, provided that fixtures are safely supported as described in this manual.

To fasten two KNV Cube and Arc fixtures to each other:

1. See Figure 6. Carefully place the fixtures front-down on a clean, flat surface so that their connector channels are next to each other.
2. Push a KNV Module Connector **A** fully into the connector channels **B** on both fixtures.
3. Push the locking handle **C** down, twist it 90° clockwise so that the locking plate **D** engages in both fixtures, then release the handle.
4. Check that the KNV Module Connector cannot slide out of a channel in either fixture and that both fixtures are locked securely together.

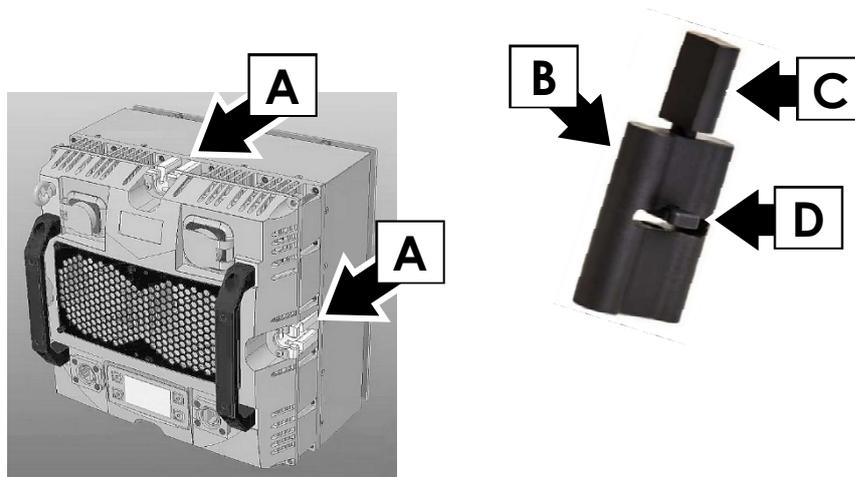


Figure 6. Using a KNV Fixture Connector

Using KNV connector plates



Warning! The connector plates available for KNV fixtures may be used for alignment and as secondary attachment only. Do not use a KNV connector plate with or without a rigging clamp to support weight as a primary attachment.

KNV connector plates have a central hole for an M12 bolt. This hole may be used to fasten a rigging clamp to the connector plate, but the rigging clamp may be used for lateral support only. Do not use it to for weight-bearing.

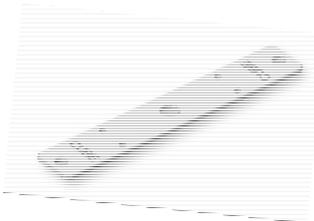
Connector plates may be fastened to the handles on the back of KNV Cube and Arc fixtures using the supplied Allen bolts to align fixtures, but fixtures must be locked together with KNV Module Connectors before connector plates are installed.

See Figure 7. KNV connector plates screw into the handles on the back of fixtures using the four Allen bolts supplied with each connector plate.



Figure 7. KNV Multi Connector Plate

The following connector plates are available for KNV fixtures:



KNV Connector Plate CC

CC Connector plates (see **A** in Figure 8) are designed for Cube-to-Cube alignment. Use them to:

- align the edges of Cube fixtures that are suspended in a column, or
- align the outer edges of an array of Cube fixtures.



KNV Connector Plate CA

CA Connector Plates (see **B** in Figure 8) are designed for Cube-to-Arc alignment. Use them to align Cube and Arc fixtures side-by-side.



KNV Multi Connector Plate

Multi Connector Plates (see **C** in Figure 8) are designed for three purposes. Use them to:

- align Cube-to-Cube fixtures horizontally,
- align Arc-to-Arc fixtures side by side, and
- align more than two Cube-to-Cube fixtures when creating a multiple fixture matrix.

Figure 8 shows KNV Connector Plates in use. Note that the fixtures in Figure 8 are locked together using KNV Module Connectors and that the KNV Connector Plates are added for alignment purposes only. Do not use KNV Connector Plates to support weight.

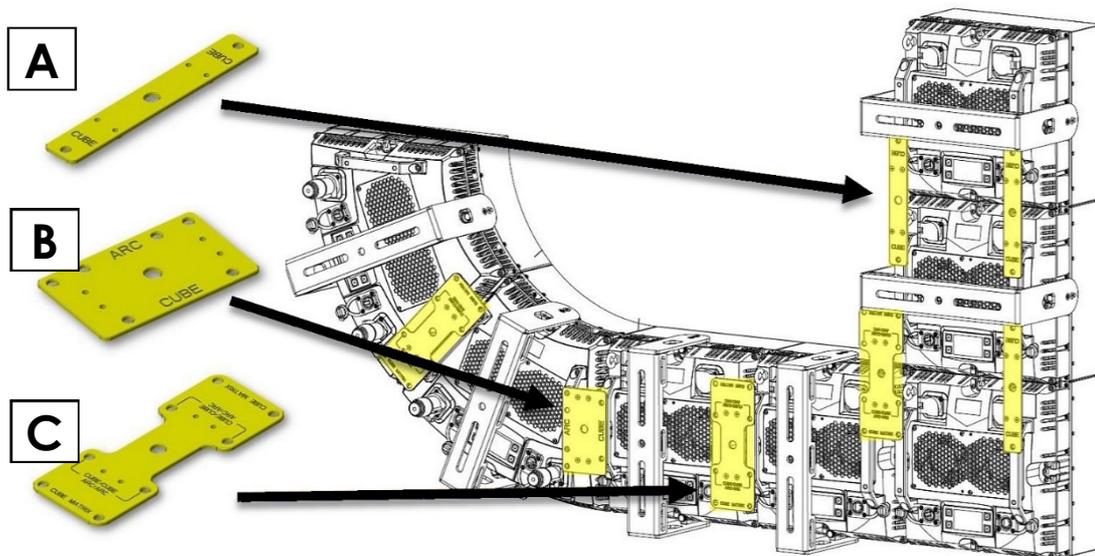


Figure 8. KNV Connector Plates in use

Standing a Cube upright on a level surface

KNV Cube fixtures may be placed standing upright on a surface using the supplied KNV Cube Floorstand-Bracket.

To use the Floorstand-Bracket as a floorstand for a KNV Cube fixture:

1. Move the legs of the bracket to the fully open position at about 90° apart as shown in Figure 9.
2. Open the safety latches on both sides of the bracket by moving the slider to the outside position.
3. Slide the connector profiles on the arms of the bracket into the KNV Cube connector channels (see Figure 5 on page 19).



Figure 9. KNV Cube placed on a surface using the Floorstand-Bracket

4. Close the safety latches on both sides of the bracket by moving their sliders to the inside position. Each slider is held in place by a spring-loaded retaining mechanism.
5. Check that the fixture is held securely in the bracket.
6. If necessary, loosen the handscrews (arrowed in Figure 9) on both sides of the bracket and adjust tilt.
7. Check that the handscrews on both sides of the bracket are tight so that the fixture cannot rotate in the bracket.
8. Place the fixture and floorstand on a level, stable surface where the fixture and cables will not present a danger. Make sure that persons cannot accidentally touch the fixture when it is installed.

Securing fixtures with a safety cable

If a fixture can cause injury or damage if it falls, secure it as soon as you have fastened it into position with a secondary attachment such as a safety cable that is approved for the weight that it secures.

Each fixture must have its own safety cable except for installations where four fixtures are fastened together with KNV mechanical connectors plus KNV connector plates on both sides of the fixtures and suspended in a vertical column from a KNV Rigging Connector. In this configuration, it is acceptable to secure the top fixture with a safety cable that is approved for the weight of the four fixtures plus rigging hardware. The three fixtures hanging below the top fixture are secured against the failure of the mechanical connectors (primary attachments) by two connector plates (secondary attachments) per fixture.

To secure a KNV Cube or Arc fixture with a safety cable:

1. Loop the safety cable around a secure anchoring point such as a truss chord or bar so that it will catch the fixture if a rigging clamp fails. Take up as much slack as possible in the safety cable (by looping it more than once around the truss chord, for example).
2. See Figure 10. Fasten the safety cable to the attachment eyelet (arrowed) in the back of the fixture and check that the fixture is now secured.

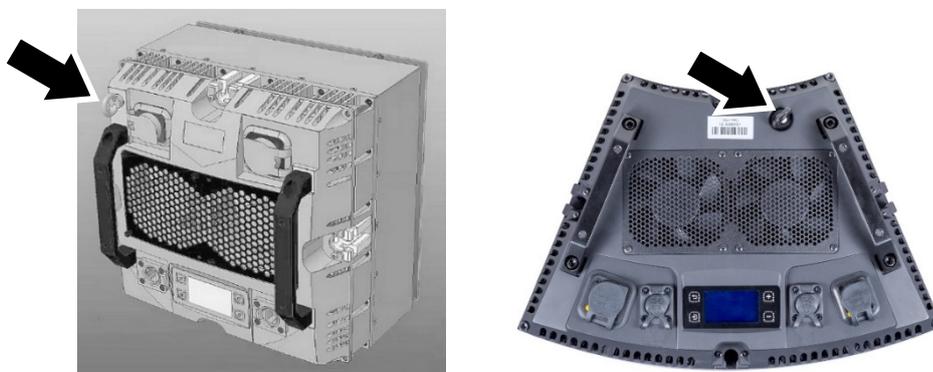


Figure 10. Safety cable attachment points

Using KNV Installation Brackets

The KNV Installation Bracket fastens into the channels arrowed in Figure 11: four channels on KNV Cube and two channels on KNV Arc fixtures.

The elongated holes in the bracket let you fasten a half-coupler rigging clamp to the bracket and then fasten a Cube or Arc fixture to a straight bar or truss chord at any angle. The elongated holes also let you fasten Arc fixtures to an F31 circular truss or truss piece to create a circular or curved array with an external diameter of 1000 mm (39.4 in.).

To fasten a KNV Installation Bracket to a Cube or Arc fixture:

1. Slide the rounded profiles in the open ends of the installation bracket fully into two of the connection channels (arrowed in Figure 11) on the fixture.

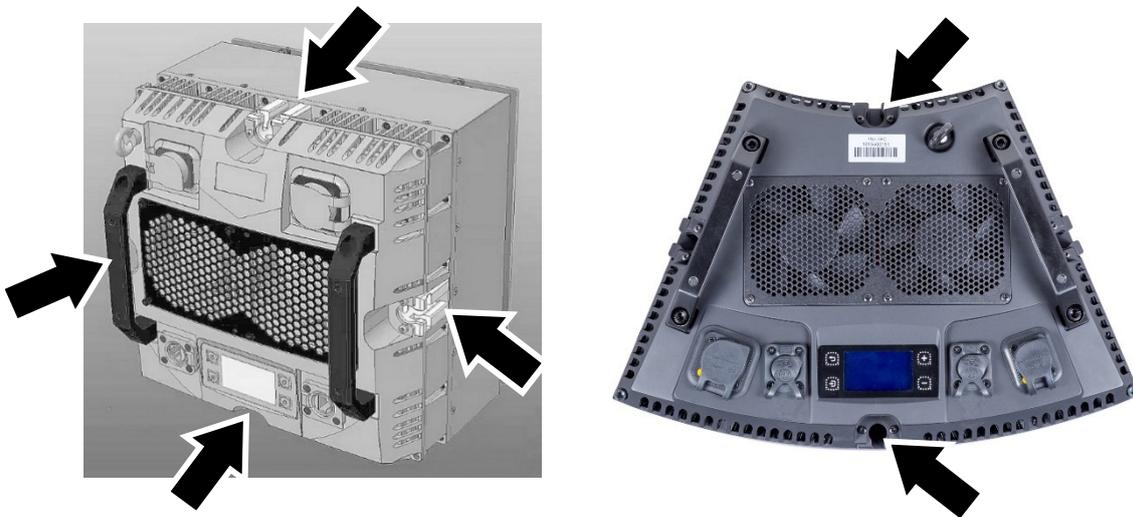


Figure 11. Connection channels for Installation Bracket

2. See Figure 12. Slide the safety latches on both sides of the installation bracket inwards towards the fixture to lock the rounded profiles on the bracket into the connection channels. The latches snap into place under spring pressure.

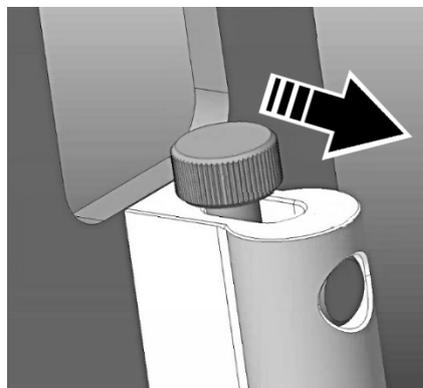


Figure 12. Safety latch on Installation Bracket

3. Check that the bracket is locked to the fixture securely on both sides.
4. If you are going to fasten the fixture to a rigging truss or similar structure, bolt an approved half-coupler rigging clamp as close as possible to the center of the Installation Bracket using an M12 bolt, grade 8.8 steel or better, and self-locking nut.

Suspending a single fixture



Warning! See Figure 14 on page 26. You may use the KNV Floorstand-Bracket to suspend one KNV Cube hanging vertically downwards only. Do not use the Floorstand-Bracket to support the weight of more than one fixture. Do not use the Floorstand-Bracket to support a fixture at any other angle than hanging vertically downwards.

Using the supplied KNV Floorstand-Bracket, you can suspend one single KNV Cube hanging vertically downwards from a rigging truss or similar structure.

To suspend a KNV Cube fixture from the Floorstand-Bracket:

1. Turn the legs of the bracket to the fully closed position so that the legs are parallel as shown in Figure 13.
2. Open the safety latches on both sides of the bracket by moving the slider to the outside position.
3. Slide the connector profiles on the arms of the bracket into the KNV Cube connector channels (see Figure 5 on page 25).
4. Lock the safety latches on both sides of the bracket by moving their sliders to the inside position. Each slider is held in place by a spring-loaded retaining mechanism.
5. Check that the fixture is held securely in the bracket.

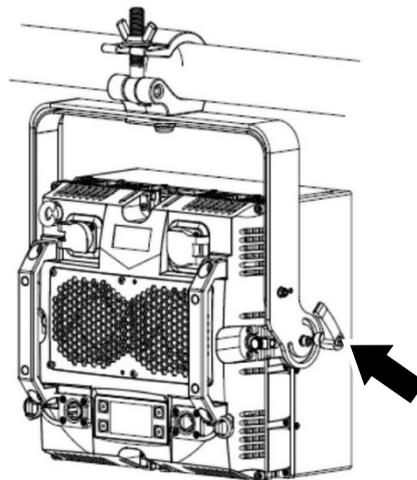


Figure 13. Single KNV Cube suspended in Floorstand-Bracket

Take a rigging clamp that is approved for the weight of the fixture and bracket and fasten the clamp to the center of the bracket yoke as shown in Figure 13 using an

M12 bolt, grade 8.8 steel minimum, and self-locking nut. The bolt must pass through both legs of the bracket.

6. Fasten the rigging clamp securely to a truss chord or similar rigging structure.
7. If the fixture may cause injury or damage if it falls, secure it immediately with a safety cable as described earlier in this chapter (see 'Securing fixtures with a safety cable' on page 23).
8. If necessary, loosen the handscrews (arrowed in Figure 13) on both sides of the bracket and adjust tilt. Retighten the handscrews and check that the fixture is held securely.

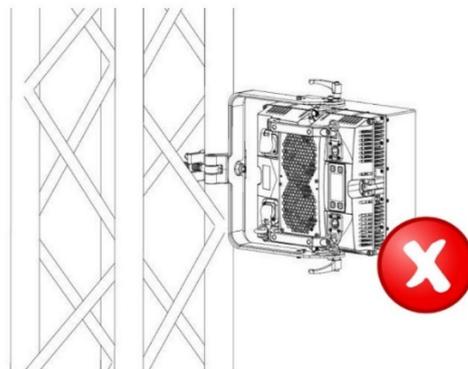


Figure 14. Floorstand-Bracket – do not use at any other angle than vertical

Installing an array of multiple fixtures



Warning! See Figure 15. Do not use the Floorstand-Bracket to support more than one fixture. Use a KNV Rigging Connector and half-coupler rigging clamp to suspend a maximum of four fixtures total in a vertical column.

To create an array of multiple fixtures, you can use one of two options:

- Suspend a column of maximum four KNV Cube fixtures vertically from a rigging truss or similar structure using a KNV Rigging Connector and half-coupler clamp to support the top fixture and KNV Module Connectors to support up to three fixtures hanging from the top fixture. Then suspend the next vertical column beside the first, aligning the columns side by side using KNV Multi Connector Plates, and so on. Suspend other columns of maximum four Cube fixtures from separate support points above and below the first columns, if required.
- Arrange a suitable supporting structure and fasten each individual KNV Cube or Arc fixture to it using one KNV Installation Bracket and one half-coupler clamp per fixture. There is one exception to the requirement for each fixture to have its own independent bracket and clamp: use of a KNV Installation Bracket and half-coupler clamp is not required on any fixture that is connected on two sides to fixtures that are correctly supported.

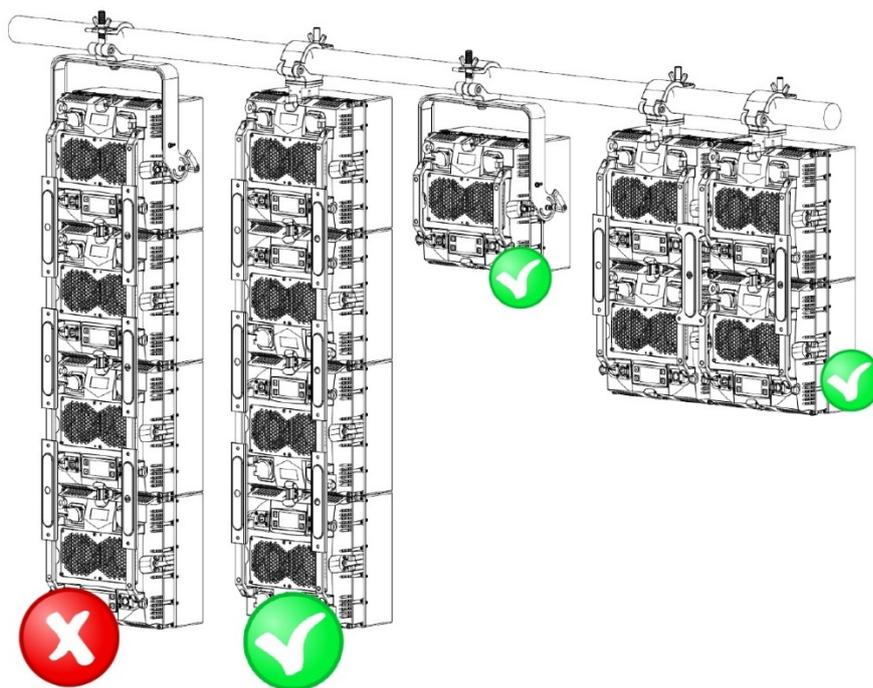


Figure 15. Installation hardware for suspending multiple fixtures

Installing a curved or circular array

You can fasten KNV Arc fixtures to each other to create curves or full circles.

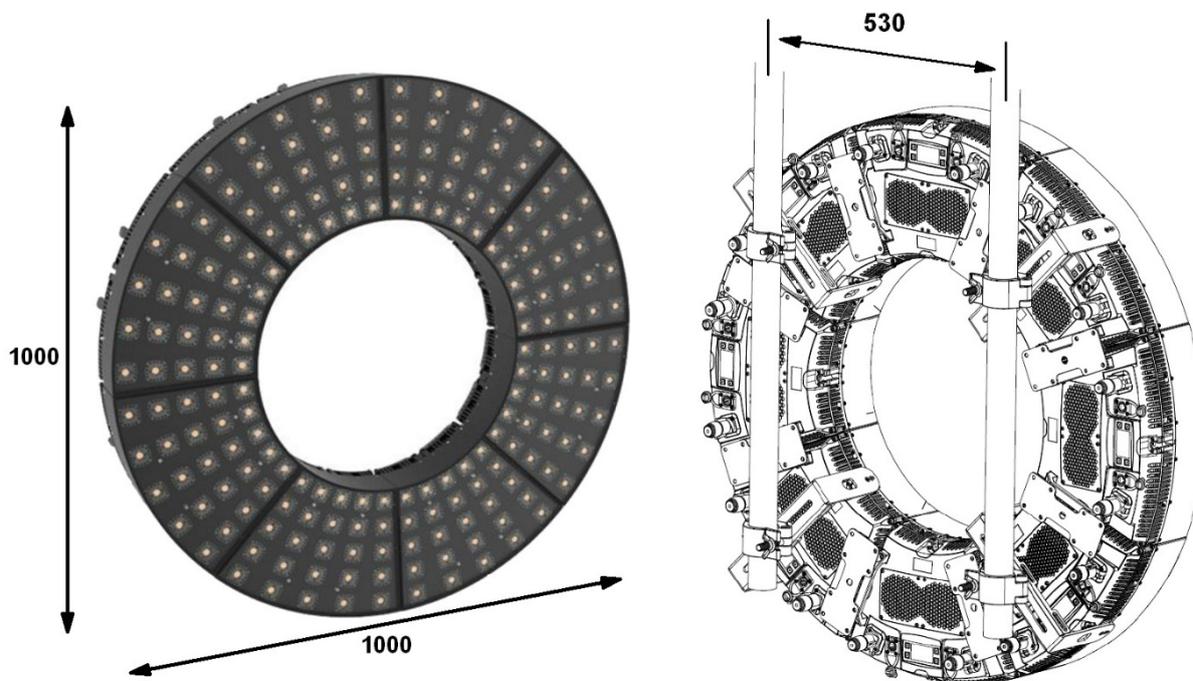


Figure 16. KNV Arc circular array dimensions

See Figure 16. A full circle of KNV Arc fixtures has an external diameter of 1000 mm (39.4 ins.). The minimum amount of hardware required for supporting a full circle is: two mounting bars or truss chords 530 mm (20.9 in.) apart, four KNV Installation Brackets, four half-coupler rigging clamps and eight KNV Multi Connector Plates as shown in Figure 16.

To create a curved or circular array of KNV Arc fixtures, you must provide a safe, stable supporting structure that will provide the necessary mounting points and that is capable of safely supporting ten times the weight that will be installed on it.

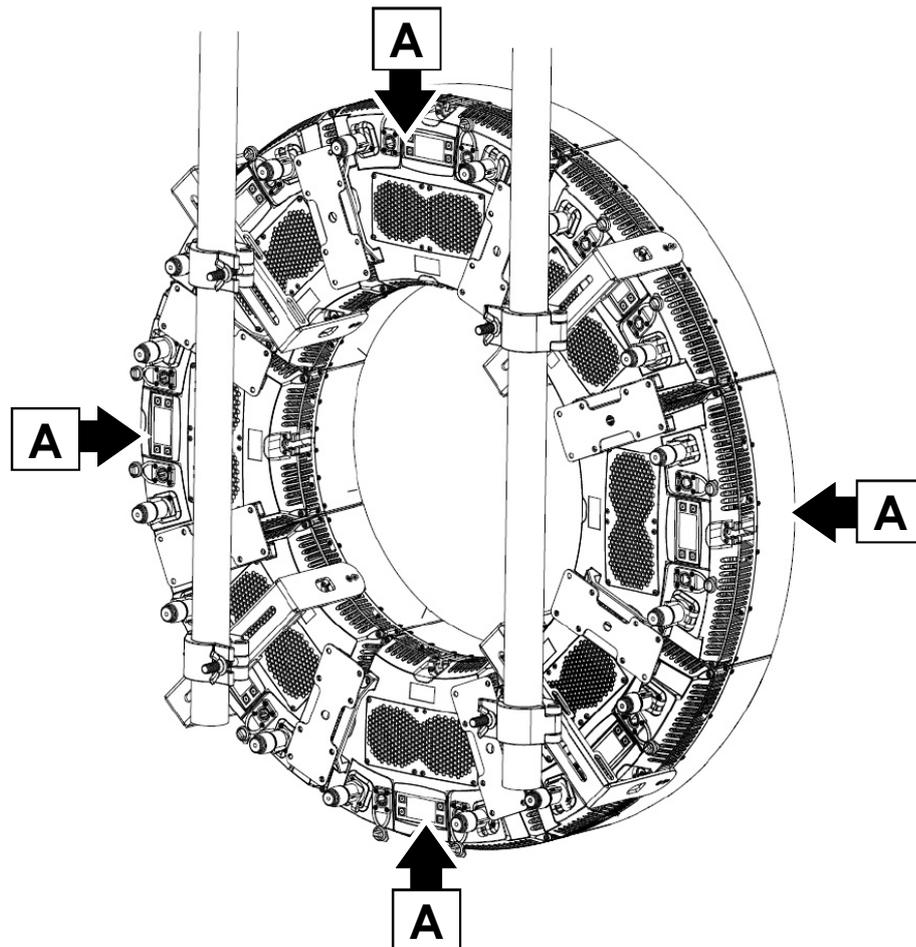


Figure 17. Supporting KNV Arc fixtures in a circular array

Each KNV fixture must be fastened to the supporting structure using one KNV Installation Bracket and half-coupler clamp per fixture. There is one exception to this: if a fixture is fastened with KNV Module Connectors and KNV Connector Plates to two fixtures (one fixture on either side) that are supported by KNV Installation Brackets and half-coupler clamps, it does not need to be supported by its own KNV Installation Bracket. In other words, a fixture that is 'sandwiched' between two correctly supported fixtures (like the fixtures marked **A** in Figure 17) does not need an Installation Bracket. Likewise, a fixture that is 'sandwiched' in this way does not need to be secured with its own safety cable. All other fixtures in a curved or circular array must be

secured with a safety cable as described in 'Securing fixtures with a safety cable' on page 23.

To install a curved or circular array of KNV Arc fixtures:

1. Fasten a KNV Installation Bracket and half-coupler rigging clamp to every fixture or every second fixture.
2. See Figure 17. Fasten the first fixture to the supporting structure by means of its Installation Bracket and rigging clamp.
3. Add fixtures, fastening them to each other using KNV Module Connectors, aligning them by fastening KNV Multi Connector Plates to their handles, and fastening them to the supporting structure using the installation brackets and half-coupler clamps.
4. Each time you install a fixture on the supporting structure, secure it immediately with a safety cable as described earlier in this chapter (see 'Securing fixtures with a safety cable' on page 23) if it may cause injury or damage if it falls.

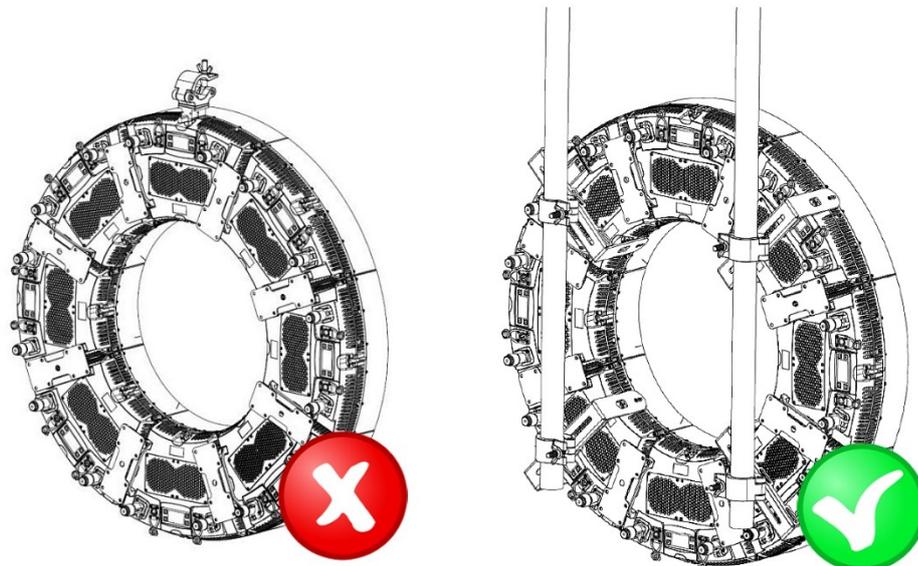


Figure 18. Supporting a circular array of KNV Arcs

Installing a creative array

To install a creative array consisting of a mixture of KNV Cube and Arc fixtures, see Figure 19.

1. Fasten a KNV Installation Bracket and half-coupler rigging clamp to every fixture or every second fixture.
2. Fasten the first fixture to the supporting structure by means of its installation bracket and rigging clamp.
3. Add fixtures, fastening them to the supporting structure using their installation brackets and rigging clamps, fastening them to each other using KNV Module Connectors, and aligning them with the existing fixtures using KNV Connector Plates fastened to their handles with the supplied Allen screws. You must use one bracket and rigging clamp per fixture unless a fixture (like fixture **A** in Figure 19) is fastened on at least two sides to fixtures that are supported using installation brackets and rigging clamps.
4. Each time you install a fixture on the supporting structure, secure it immediately with a safety cable as described earlier in this chapter (see 'Securing fixtures with a safety cable' on page 23) if it may cause injury or damage if it falls.

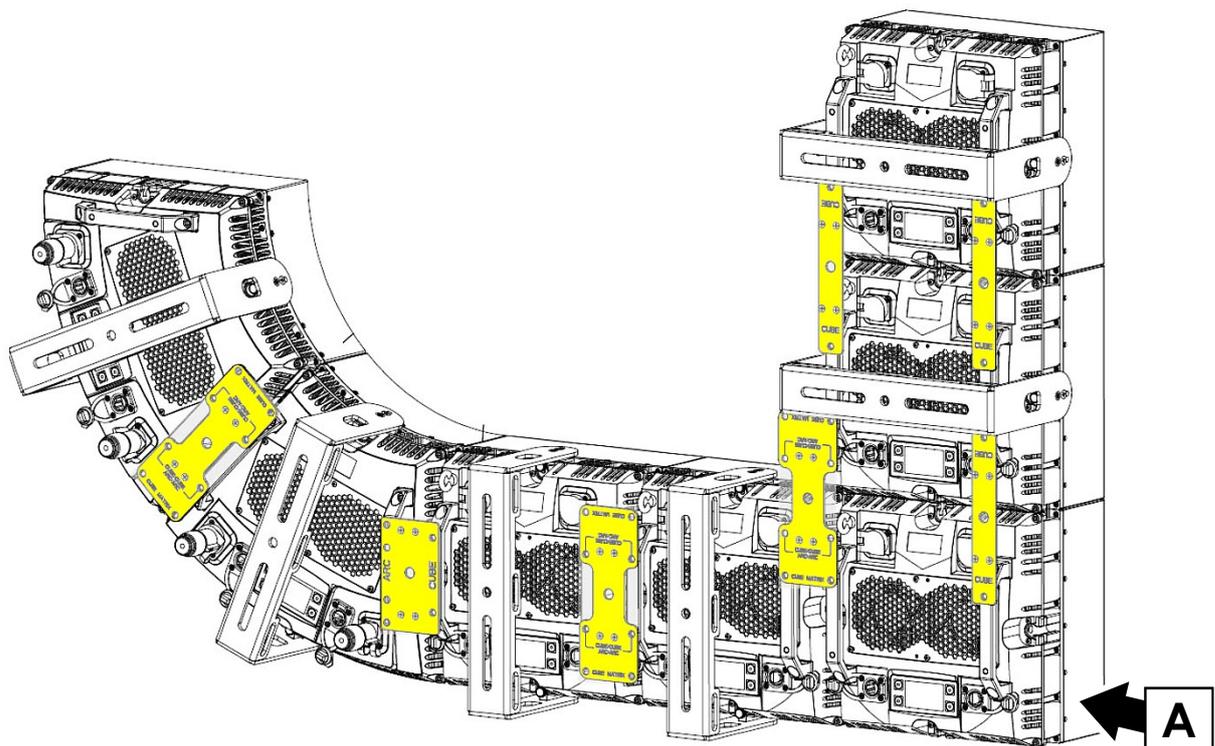


Figure 19. Creative array: example

7. AC mains power



Warning! Read 'Safety' starting on page 5 for important safety information that you must understand before you install or operate the fixture.

Check that all cables and connectors are suitable for the installation environment and application (see recommendations in 'Avoiding damage to the fixture' on page 11).

Keep connectors sealed with their rubber caps at all times when not in use.

Included items

The KNV is supplied with a power cord with Neutrik powerCON TRUE1 connector.

Connecting to power

The AC mains power supply must include a connection to ground / protective earth. It must be protected against ground / earth leakage and overload. The fixture's internal auto-sensing power supply accepts AC power at 100-240 V, 50/60 Hz. Do not connect the fixture to power at any other voltage or to an external dimmer.

The KNV does not have a power ON/OFF switch. Power is applied to the fixture as soon as the power cable becomes live.

The KNV has a 3-conductor Neutrik powerCON TRUE1 Mains IN power input socket that accepts AC power from a TRUE1 female cable connector. Although TRUE1 connectors support hot-plugging, it is still good practice to shut down power to power cables before connecting them to fixtures.

To connect the fixture to power:

1. If possible, shut down power to the power input cable.
2. Note the position of the keys and keyways on the TRUE1 power cable connector and Mains IN socket and align them with each other. Insert the cable connector into the socket and twist clockwise to lock.
3. Before applying power by energizing the power cable, check that nobody is looking directly into the front of the fixture.

To disconnect the fixture from power, pull the latch on the cable connector outwards to release it, then twist the connector counterclockwise and pull to remove it from the socket.

Installing power connectors

It is possible to install a cord cap / mains power plug that is suitable for your local convenience receptacles / mains power sockets on the supplied power input cable. If you do this, check that the cord cap / plug is rated minimum 250 V, 16 A, that it has a connection to ground / earth and that it has an integral cable grip. Follow the cord cap / plug manufacturer's assembly instructions.

If you need to install a Neutrik powerCON TRUE1 connector on a power cable, follow the instructions given in the Support area of the Neutrik website at www.neutrik.com.

Respect the color coding used in the supplied power cable and in your local mains power wiring system. US and EU systems use the color coding shown below:

	Live or L	Neutral or N	Ground / Earth or 
US system	Black	White	Green
EU system	Brown	Blue	Yellow/green

Connecting multiple fixtures to power in a chain

You can connect fixtures to power in a daisy-chain to simplify your power circuit layout.



Warning! Do not connect more than two (2) KNV fixtures in total to power in one chain at 100-120 V, 60 Hz. Do not connect more than four (4) KNV fixtures in total to power in one chain at 200-240 V, 50 Hz.

The power input cable supplied with the fixture is rated 16 A maximum. Add together the maximum current draw ratings of all the devices that you intend to connect to power in a daisy chain and do not create a chain with a total maximum current draw of more than 16 A, or you will create a risk of fire and electric shock.

To connect fixtures to power in a chain:

1. Obtain power relay cables that have male and female Neutrik powerCON TRUE1 connectors. Cables must be minimum 14 AWG or 1.5mm², rated minimum 16 A and suitable for the environment and application.
2. Connect the power input cable to the Mains IN socket of the first fixture.
3. Connect a relay cable to the Mains OUT / THRU socket of the first fixture and to the Mains IN socket of the second fixture.
4. If you are using 100-120 V, 60 Hz AC mains power, do not connect any devices to the Mains OUT / THRU socket of the second fixture. If you are using 200-240 V, 50 Hz AC mains power, you may connect a maximum of two more fixtures Mains OUT to Mains IN so that the chain contains a maximum of four fixtures in total.

8. Connecting to control data

Check that all cables and connectors are suitable for the installation environment and application (see recommendations in 'Avoiding damage to the fixture' on page 11).

Keep connectors sealed with their rubber caps at all times when not in use.

Use CAT6 or better Ethernet cables for the data link.

The KNV has two EtherCON sockets for in and thru connections to a DMX data link. It makes no difference which socket you use for data in and which for data thru. KNV fixtures support USITT DMX 512A, Art-Net and sACN signal protocols. They also support RDM (Remote Device Management).

If you would like advice with planning and installing a DMX link, your GLP supplier will be happy to provide assistance.

9. Starting and stopping operation



Warning! Before you apply power to the fixture or operate it after a blackout, make sure that nobody is looking directly into the front of the fixture.

The KNV's TRUE1 AC mains power input connector supports hot-plugging, and it can be quickest to disconnect a live power cable if you need to shut down power urgently, but it is still good practice to shut down power to the AC mains power circuit before connecting and disconnecting power cables.

To start operation, check that nobody is looking into the front of the fixture, then apply power to the AC mains power circuit.

To stop operation, shut down power to the AC mains power circuit.

Transportation and storage

We strongly recommend that you transport the KNV either in a flightcase or in its original packaging to protect it from damage during transportation. The product warranty does not cover damage caused by abnormal shocks during transportation and handling.

When the fixture is not installed, disconnect it from power and store it in a dry location.

10. Cleaning and maintenance



Warning! There are no user-serviceable parts inside the fixture. Opening the fixture can compromise its IP54 rating and cause damage that is not covered by the product warranty. Any service operation that requires removal of a cover must be performed by a professional service technician with the tools, skills, and personal protective equipment to maintain high-powered lighting equipment safely and efficiently.

Cleaning

KNV fixtures require occasional cleaning to prevent the buildup of dust, dirt, and residue from atmospheric effects. Pay special attention to the air vents and the front of the fixture. Failure to keep the fixture clean will significantly reduce light output and may cause damage that is not covered by the product warranty. Regular cleaning will ensure maximum performance and reliable operation.

You can clean the front of the fixture using a soft cloth slightly dampened with a household or automotive glass cleaning product.

You can clean the air vents on the back of the fixture with a soft brush and vacuum cleaner. Never apply strong compressed air or a strong vacuum to a cooling fan. You may spin the fan too fast and cause damage.

The cleaning schedule depends on the operating environment. The intervals below are suggestions from our experience with typical installations. Adjust as necessary.

Maintenance task	Interval	Materials
Clean front of fixture	Weekly	Soft cloth dampened with glass-cleaning fluid
Clean fans and air channels	Monthly	Vacuum cleaner, compressed air, etc.

GLP Service and Support

Contact information for the nearest GLP Service and Support is available online at www.glp.de/en/service, by email at info@glp.de, or by telephone at the following numbers:

- GLP Germany: +49 (7248) 927 19-55
- GLP N. America: +1 818 767-8899
- GLP UK: +44 1392 690140
- GLP Asia: +852 (3151) 7730
- GLP Nordic: +46 737 57 11 40

11. Technical specifications

Light source

White LEDs

LED power: 30 W
Number of LEDs: 25
Color temperature: 5000 K
CRI: >80
Lifetime: 50 000 hrs. to > 70% luminous output

RGB LEDs

LED power: 0.25 W
Number of LEDs: 400
Lifetime: 50 000 hrs. to > 70% luminous output

Optics

Total output: 55 030 Lumens

White LEDs

Beam angle: 120°

RGB LEDs

Beam angle: 120 °

Effects

Color mixing: RGB, RGBW, continuously variable, 8 and 16-bit
Shutter/strobe: White and RGB strobes with pulse, flare and continuous output effects
Strobe control: Adjustable flash intensity, rate (max. 16.67 Hz) and duration,
Dimmer: 0-100% continuous, two dimming curve options
Multilayer FX engine with multiple fixture synchronization options
Color temperature correction: 2500 K – 10 000 K, electronic, adjustable via RGBW

Control

Control system: USITT DMX512
Control protocols: DMX, ArtNet, sACN
RDM compliance: ANSI/ESTA E1.20
DMX channel footprint: 10 / 23 / 40 / 86 / 35/ 102 / 202 depending on mode
Pixel mapping options: 25 x white pixels, 25 x RGB pixels, 25 x RGBW pixels
Onboard interface: Battery-powered control panel with backlit LCD graphic display
Transceiver: RS-485
Receiver: Opto-isolated RS-485
Setting and addressing: Onboard control panel / via Ethernet data link / RDM
Fixture software updates: Via EtherCON socket

Construction

Color: Black
Housing main shell: Steel
Ingress protection rating: IP54

Installation

Operating position: Any
Minimum distance to combustible materials: 0.2 m (8 in.)
Minimum distance to illuminated surfaces: 1.0 m (39.4 in.)
Installation environment: Temporary or permanent Indoor installation, temporary outdoor installation (IP54)
Secondary attachment point: Eyelet for safety cable on fixture

Mounting options

Cube: Free-standing on horizontal surface, suspended vertically or fastened to surface or structure
Arc: Suspended vertically or fastened to surface or structure

Installation hardware

Mechanical Interconnection Bracket (supplied with fixture)
Adjustable Floorstand-Bracket (supplied with fixture): Can support one KNV Cube suspended vertically, can be used as floorstand for KNV Cube
Installation Bracket: Can support up to four KNV Cube fixtures suspended vertically from rigging clamp or support creative combinations of Cube and/or Arc fixtures.
Mechanical connection plates for fixture alignment in multiple Cube and Arc arrays

Connections

AC mains power in and thru (out): Neutrik powerCON TRUE1 with sealing cap
Control data in and thru (out): EtherCON with sealing cap
Fixture software update: Over data link

Construction

Ingress protection rating: IP54
Effective projected area, KNV Cube: 0.0625 m²
Effective projected area, KNV Arc: 0.0736 m²
Fixture housing: Steel
Color: Black

Electrical

AC mains power: 100-240 V nominal, 50/60 Hz
Power supply unit: Auto-ranging electronic switch mode
Equivalent leakage current: 1.11 mA
Specific power factor (SPF): 0.9543
Minimum power consumption, zero output: <45 W
Maximum power consumption, all LEDs at 100% output: 800 W

Maximum permitted number of fixtures daisy-chained to power

2 x KNV total @ 100-120 V, 60 Hz

4 x KNV total @ 200-240 V, 50 Hz

Included items

US power cable: 16 A, 14 AWG, UL-listed, E304117, SJT, 4.9 ft.

EU power cable: 16 A, 1.5 mm², H05VV-F, 1.5 m

Thermal

Cooling: Combined convection and forced air (temperature-regulated)

Maximum surface temperature, housing: 65° C (149° F)

maximum surface temperature, front screen: 80° C (176° F)

Minimum ambient temperature: 0° C (32° F)

Maximum ambient temperature: 45° C (113° F)

Max. total heat dissipation (calculated): 2700 BTU/hr.

Dimensions and weight

Cube, not including bracket

Height: 250 mm (9.8 in.)

Width: 250 mm (9.8 in.)

Depth: 183 mm (7.2 in.)

Weight: 9.3 kg (20.5 lbs.)

Cube, including KNV Floorstand-Bracket

Height: 293 mm (11.6 in.)

Max. height with fixture rotated: 318 mm (12.6 in.)

Width: 344 mm (13.6 in.)

Depth: 243 mm (9.6 in.)

Weight: 10.6 kg (23.4 lbs.)

Cube, including KNV Installation Bracket

Height: 268 mm (10.6 in.)

Width: 250 mm (9.8 in.)

Depth: 228 mm (9.0 in.)

Weight: 10.8 kg (23.9 lbs.)

Arc, not including bracket

Height: 250 mm (9.8 in.)

Width: 250 mm (9.8 in.)

Depth: 180 mm (7.1 in.)

Weight: 9.7 kg (21.4 lbs.)

Arc, including KNV Installation Bracket

Height: 268 mm (10.6 in.)

Width: 250 mm (9.8 in.)

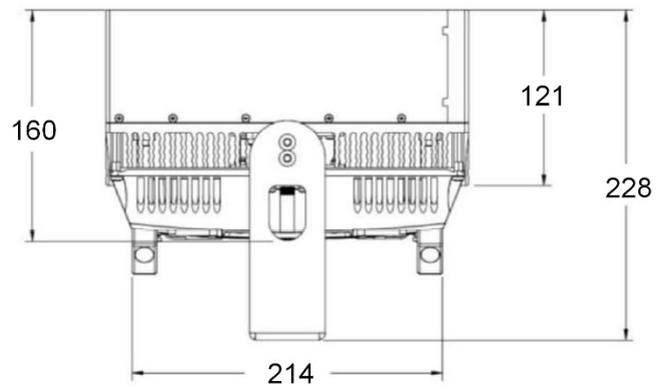
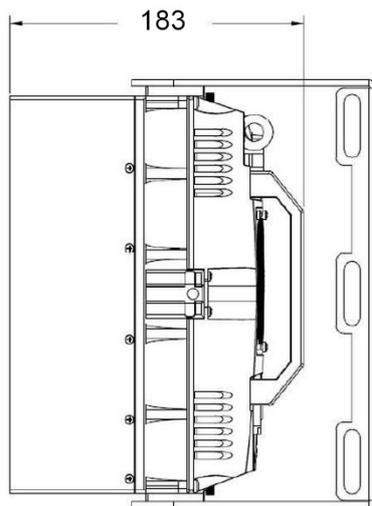
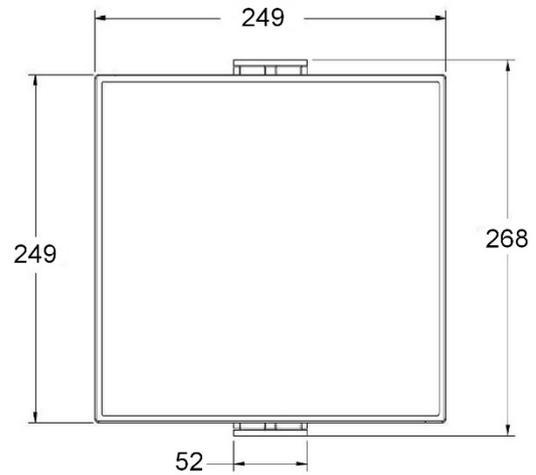
Depth: 228 mm (9.0 in.)

Weight: 11.6 kg (25.6 lbs.)

12. Dimensions

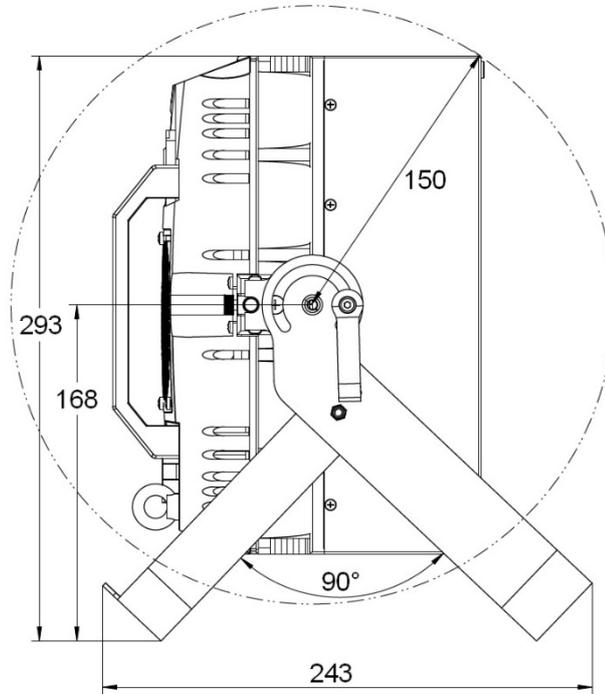
KNV Cube with KNV Installation Bracket

All dimensions are in millimeters



KNV Cube with KNV Floorstand-Bracket

All dimensions are in millimeters



KNV Arc

All dimensions are in millimeters

Fixture shown with KNV Installation Bracket installed

