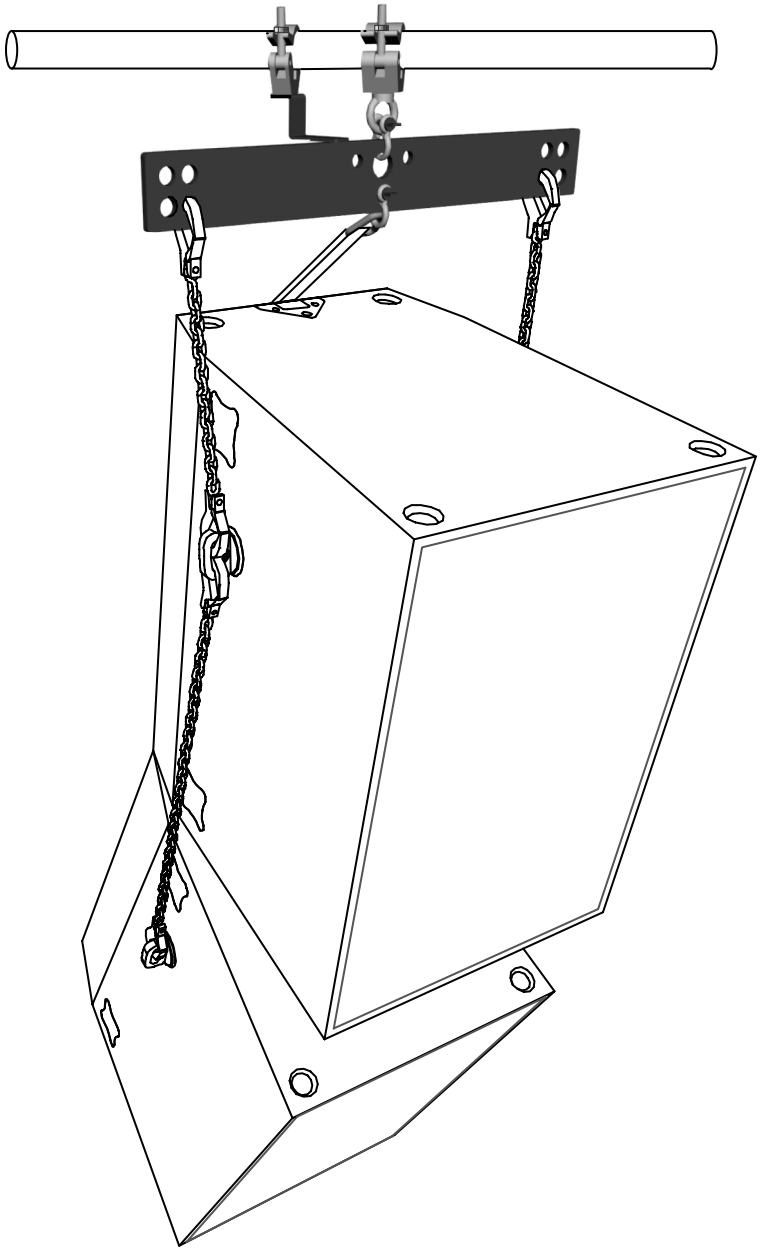
KLING & FREITAG

SINGLE BAR (ALIGN)



User's Manual

Version 1.0
Released: 01.06.2007

Important Information, Pease Read Before Use!

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KLING & FREITAG
SOUND SYSTEMS

Symbols in User's Manual

The following symbols in this manual serve to better orientate the user through the installation and assembly instructions, as well as advice in relation to safety regulations:

This symbol indicates the possibility of life-threatening danger and a health risk for persons. Not following these instructions may result in serious health problems including potentially fatal injuries.

This symbol indicates a possibly dangerous situation. Not following these instructions may cause minor injuries or cause property damage.

This symbol gives instructions for the proper use of the described products. Not following these instructions may cause minor injuries or cause property damage.

Information about this User's Manual

User's Manual SINGLE BAR (ALIGN) Version 1.0, 01.06.2007

All specifications in this manual are based on information available at the time of publishing for the features and safety guidelines of the described products.

Technical specifications, measurements, weights and properties are not guaranteed.

The manufacturer reserves the right to make product alterations within legal provisions as well as changes to improve product quality.

Please keep these instructions for future reference!

We appreciate any input with suggestions and improvements for this manual.

Please send this to us at the following address:

info@kling-freitag.de or to:

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Phone +49 (0) 511 - 96 99 70 Fax +49 (0) 511 - 67 37 94

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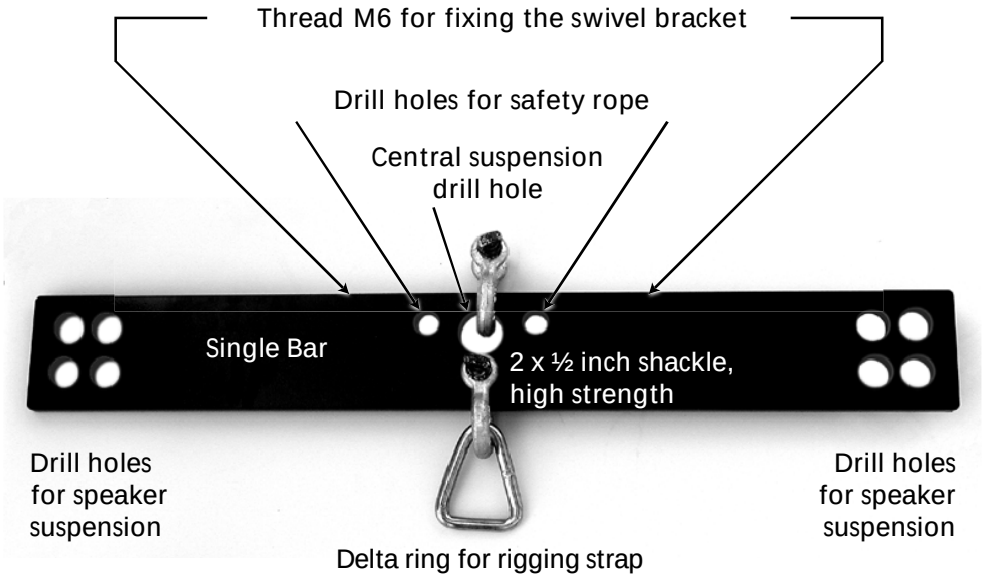
1.1 Single Bar



1.2 'Align' Set

Safety wire rope, both ends with thimble eyes, according to DIN 3088

Shackle, 3/8 inch, high strength

Pipe clamp, wide version, for pipe diameters from 48 to 51 mm

Eye nut M12, screw M 12 x 35

Pipe clamp, narrow version, for pipe diameters from 48 to 51 mm

Swivel bracket, screw M 6 X 20, 2 flat washers M 6, 1 spring lock washer. Connectors for pipe clamp: screw M 12 X 40, washer M 12 self-locking nut M 12

2. Safety Instructions

These operating instructions alone cannot offer the complete information and safety advice necessary for the correct use of the rigging system described here.

Please refer also to the operating and safety instructions for the product on which the Single Bar is to be suspended (e.g. truss). If no information is available regarding safety of use and permissible load, then the rigging system must not be suspended upon it.

Due to variable conditions we are not able to rule out operational errors on the part of the user. The information given here does not exempt the user from his obligation to observe valid safety regulations and legal requirements.

The suspension of the rigging system must be carried out only by trained specialist personnel certified as experienced 'Riggers'.

Those persons entrusted with the task of erecting the rigging system are responsible for ensuring the safe assembly and safe operation of the system.

These instructions and all other necessary information regarding safety of operation must be distributed to all persons using the rigging system. The system may not be assembled and put into operation unless these instructions have been read and understood.

Only those persons directly involved in the assembly and dismantling procedures may be present while work is in progress.

When chain hoists are being used to move loudspeaker arrays all persons must vacate the area below.

A clear signal must be given on each occasion before the system is raised, lowered or released from its rigging. All persons must then remove themselves from the radius of movement.

The safe operation of the rigging system depends upon various factors specific to the area of operation. For example, adverse weather conditions such as wind or rain can impair the safety of the system. These factors must be considered and evaluated in each case.

If there is the slightest doubt with regard to the safety of the rigging system it may not be put into use.

Ensure that all connections are secured against coming loose and that only authorized, statically tested and correctly sized supports, clamps, ropes and chains are used.

Observe the prescribed safety procedures. Follow the safety and assembly instructions supplied as well as the respective national rules, norms and safety regulations.

The Single Bar ('Align') must be used only for the prescribed purpose and in the stated manner laid down in this document. For assembly only original Kling & Freitag parts may be used. The use of other parts – in particular parts by other manufacturers – is not authorized.

Please ensure that the Single Bar's maximum load capacity of 200 kg is not exceeded.

The Single Bar must not be used to suspend other loads or in conjunction with loudspeaker systems other than those described here!

3. Wire Ropes and Chains

The loudspeaker systems are suspended from the Single Bar by means of wire ropes or chains.

The vertical angle of array between speaker systems suspended one above the other is dependent upon the length of the wire ropes or chains between the flying points of the speaker systems.

The safety hooks on the chains are connected to the corresponding drill-holes on the Single Bar or to the studs on the loudspeakers.

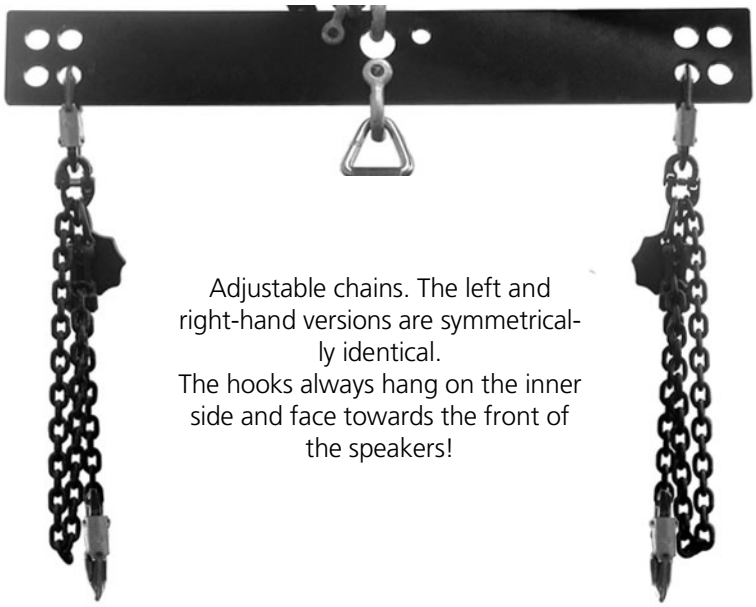
Warning

Always ensure that the chains are not twisted.

The open ends of the chain hooks must always face the front of the loudspeaker.

On no account should the chains or wire ropes be relieved of their load by means of the rigging strap. They should be pulled taut at all times and take up the load.

Kling & Freitag offers adjustable chains which can be shortened, allowing different vertical angles of array between systems suspended one above the other. Please note that there are left and right chains.



Adjustable chains. The left and right-hand versions are symmetrically identical.
The hooks always hang on the inner side and face towards the front of the speakers!

Use only approved steel wire ropes of adequate dimensions (at least 8 mm in diameter) which conform to local security regulations.

Advice on the correct use and choice of wire ropes for Germany can be found in BGV C1 / § 9, which can be downloaded under:
http://download.vplt.org/bgv_c_1-1.pdf

and in 'BG Merkblatt für den Gebrauch von Anschlagdrahtseilen' (instructions for using wire rope fasteners), which can be downloaded under http://www.fsa-verband.de/bgr_151.pdf.

Wire ropes must be secured by means of approved ½" (or larger) shackles with a permissible load capacity of at least 2t.

4. Use with K&F ACCESS Systems

The Single Bar is eminently suitable for the suspension of ACCESS Systems. In comparison with a large cradle suitable for large speaker arrays, the Single Bar offers a very good alternative when using smaller set-ups. The Single Bar facilitates horizontal and vertical alignment of a single ACCESS System or of two ACCESS systems suspended one above the other. It is simple to set up and in comparison with a large cradle it is light and takes up less space.

No more than 2 ACCESS Systems may be suspended one above the other on a Single Bar.

The uppermost chains/ropes, i.e. those on the Single Bar, must have a working length of 510 mm, equivalent to 13 links of an adjustable K&F chain.

Warning

4.1 Setting the vertical angle between ACCESS Systems

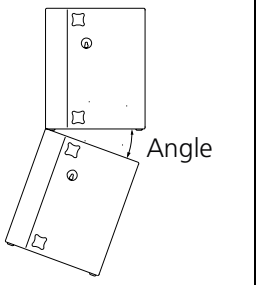
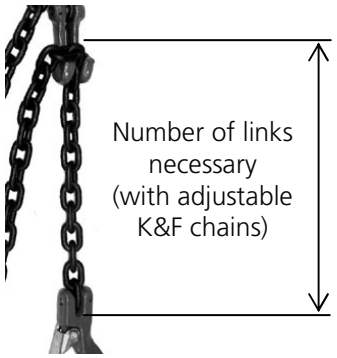
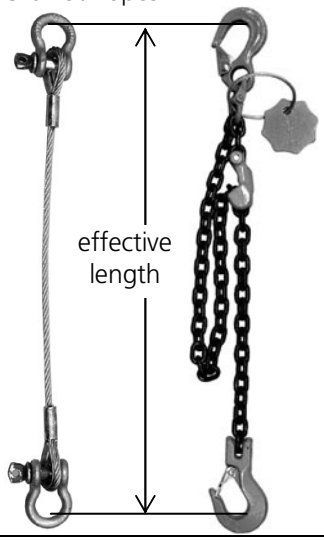
The vertical angle of array between speaker systems suspended one above the other is dependent upon the length of the ropes or chains between the flying points of the systems.

A vertical angle > 20° between two ACCESS Systems is not permissible!

Warning

In order to obtain the desired angle of array, reduce the length of the adjustable chains or use wire ropes or chains of a suitable length as described in the following chart:

Important

 Vertical angle between ACCESS Systems	 Including hooked-in link	
0°	32	855
3°	33	872
8°	34	889
*11°	35	906
15°	36	923
20°	37	940

*recommended angle for applications in which vertically an optimum frequency transition between speakers suspended one above the other is required.

If the angle is reduced the acoustic energy can be increased accordingly, thus enabling greater distances to be reached.

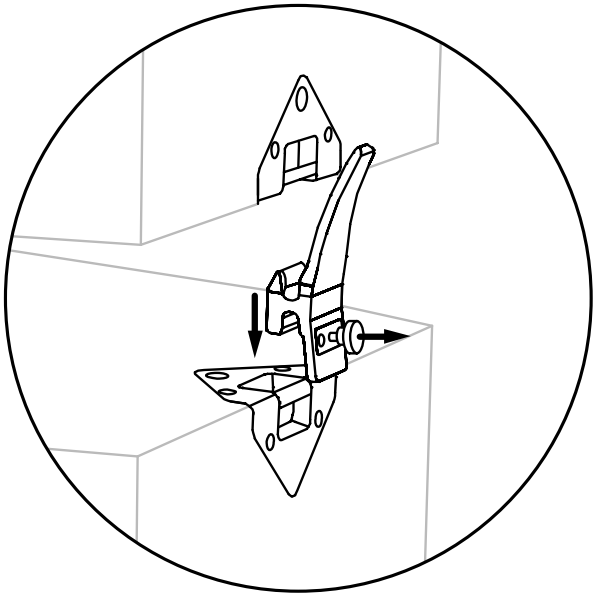
5. K&F Curving Hook

The Curving Hook is not absolutely essential when suspending several ACCESS Systems one above the other. Its use can, however, simplify the assembly procedure, considerably reducing assembly and dismantling times. The Curving Hook prevents systems suspended one below the other from turning towards each other and ensures that the rear edges of the suspended systems align with each other. Differences in delay time between systems suspended one above the other can be avoided, thus optimizing the acoustic performance.

When the rigging strap is pulled taut the Curving Hook automatically engages in the Access System suspended above, stabilizing the two systems.

1.

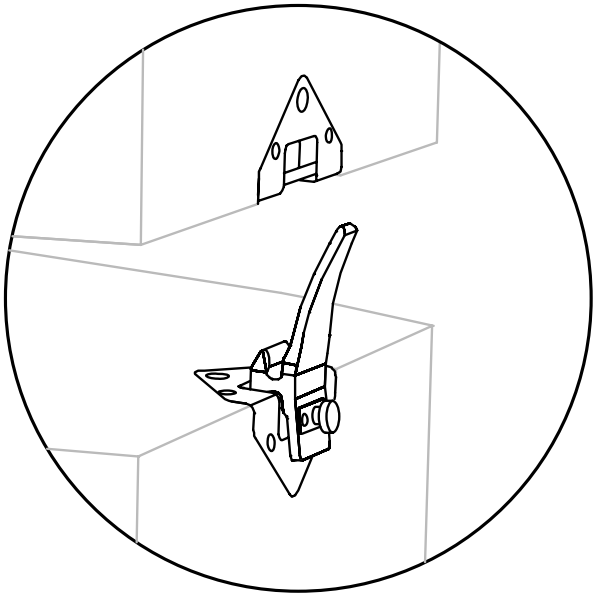
Pull the locking device of the Curving Hook and insert the Curving Hook as illustrated in the strap aperture at the rear of the lower speaker.



2.

Release the locking device and check that the Curving Hook can no longer be pulled out of the strap anchoring.

The Curving Hook hangs quite loosely in the strap anchoring. This ensures that it engages in the strap anchoring of the upper speaker when the straps are pulled taut.



6. Rigging Straps

The rigging strap serves to align the speaker array vertically, while the angle of array between the speaker systems is determined by the length of the chains which join them.

The tension of the strap is set using the ratchet. When securing the straps it must be ensured that the speaker array clears the ground.

The tension exerted results in the rear edges of the speakers being drawn together, so that the vertical angle of array determined by the length of the chains is reached (Fig. 2). If further tension is exerted the complete array is tilted. Thus vertical alignment of the array is achieved (Fig. 3).

It should be noted that the upper speaker may never be tilted at an angle greater than 15°.

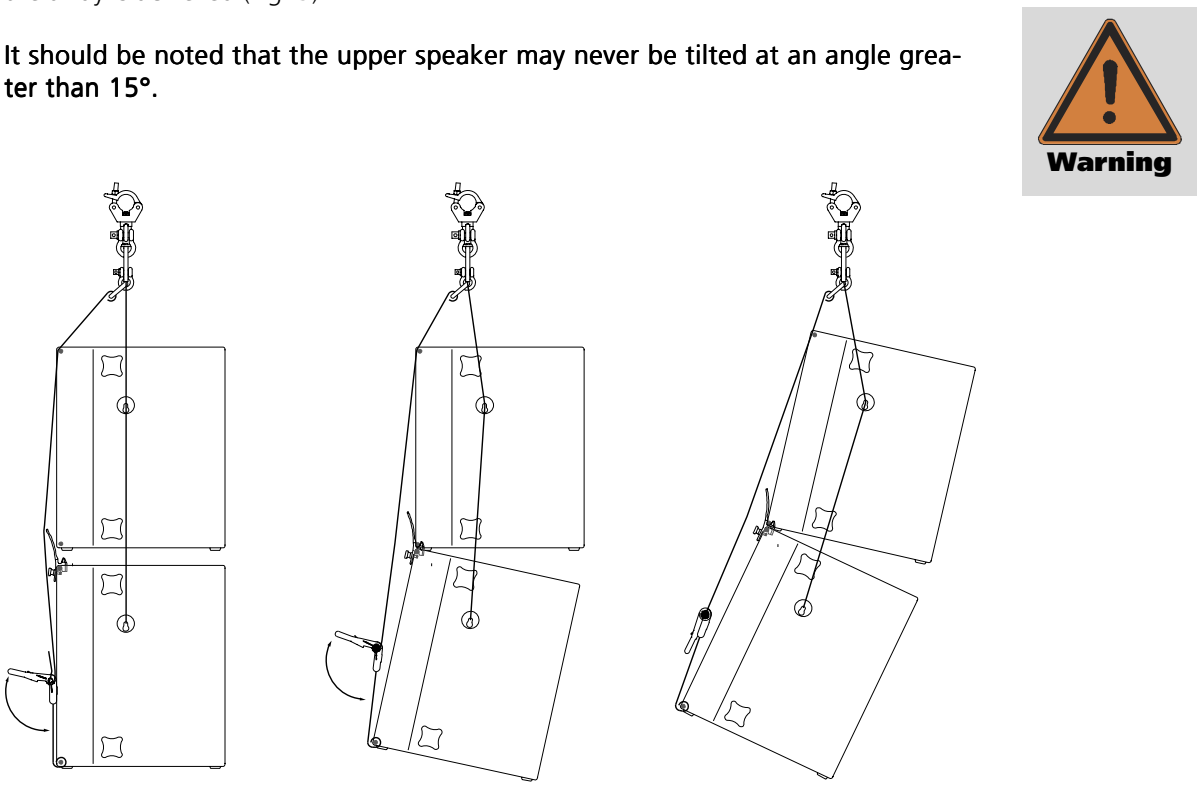


Fig.1 Fig.2 Fig.3

The rigging strap must never bear the total load alone. The steel chains or wire ropes must bear the weight! It must be ensured that all chains take up the strain, especially the uppermost ones. Should this not be the case, then the tension on the rigging strap must be reduced. The maximum load capacity as stated on the rigging strap must not be exceeded.

Threading the rigging strap incorrectly can result in undue strain being placed upon the rigging system. Please follow the examples for threading shown from P. 11 onwards.

Special care should be taken when releasing the ratchets: a sudden reduction in tension can result in the speaker array swinging outwards, endangering persons or objects situated in front of the speakers.

The rigging straps offered by Kling & Freitag have been thoroughly tested and have a load capacity of 5t (one-piece) or 2t (two-piece). We recommend the exclusive use of Kling & Freitag rigging straps.

Important

To avoid overloading the rigging strap reel the strap should be drawn out manually, in other words the strap end should be pulled so far until only so much strap remains as can be taken up by the rigging strap reel.

Draw out the strap manually

Tighten the strap with the ratchet

6.1 One-Piece K&F Rigging Strap

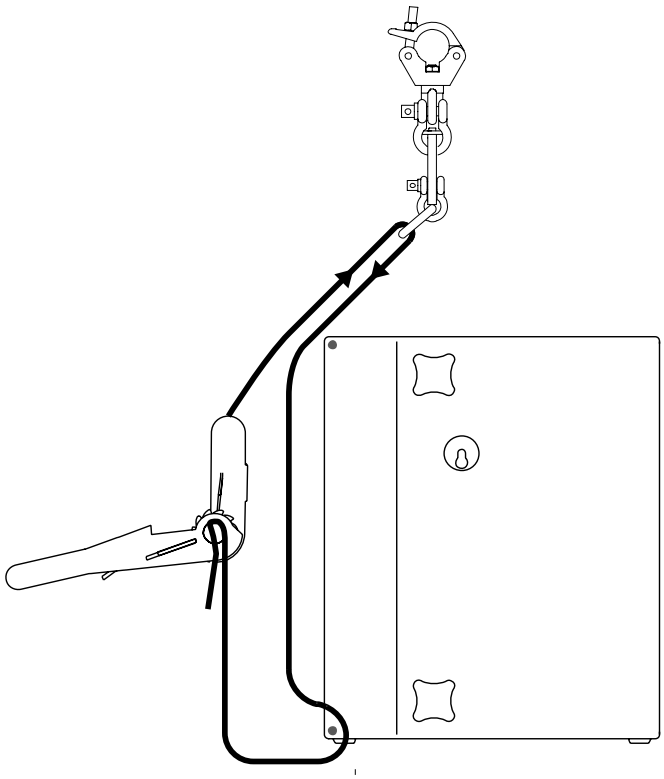
Available versions:

– Standard version
– Multi-purpose strap with release mechanism allowing a gradual release of the strap

6.1.1 Rigging Strap for 1 ACCESS System

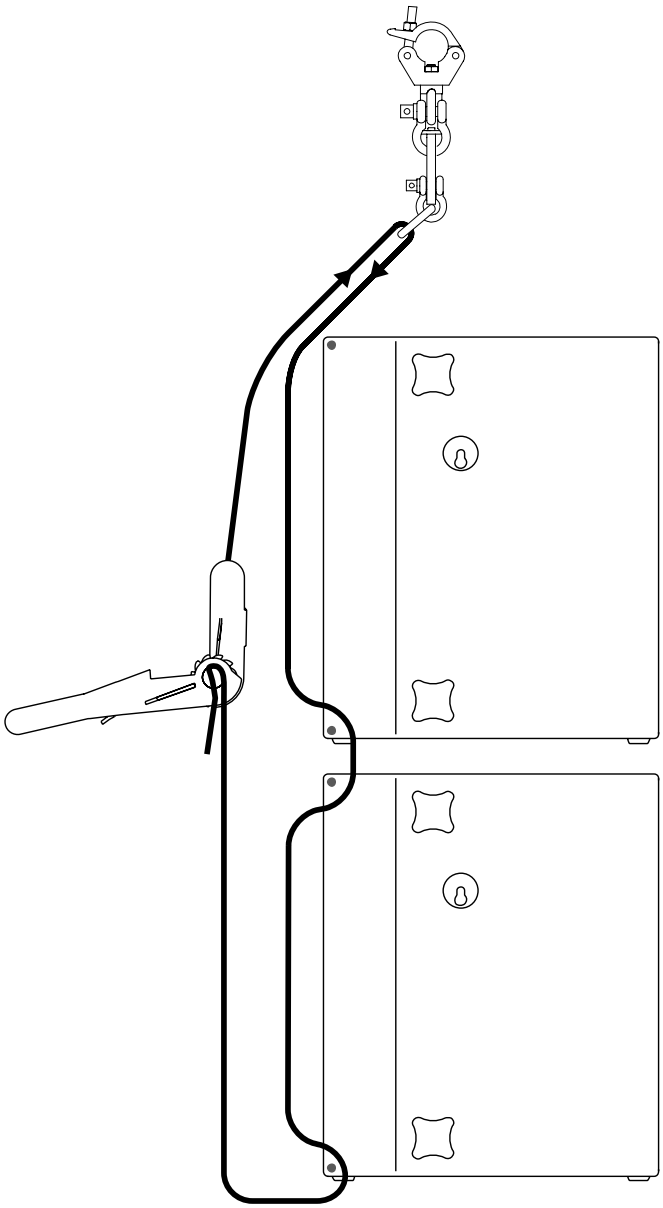
Caution

When suspending an ACCESS System with a one-piece strap, please thread the strap as follows.



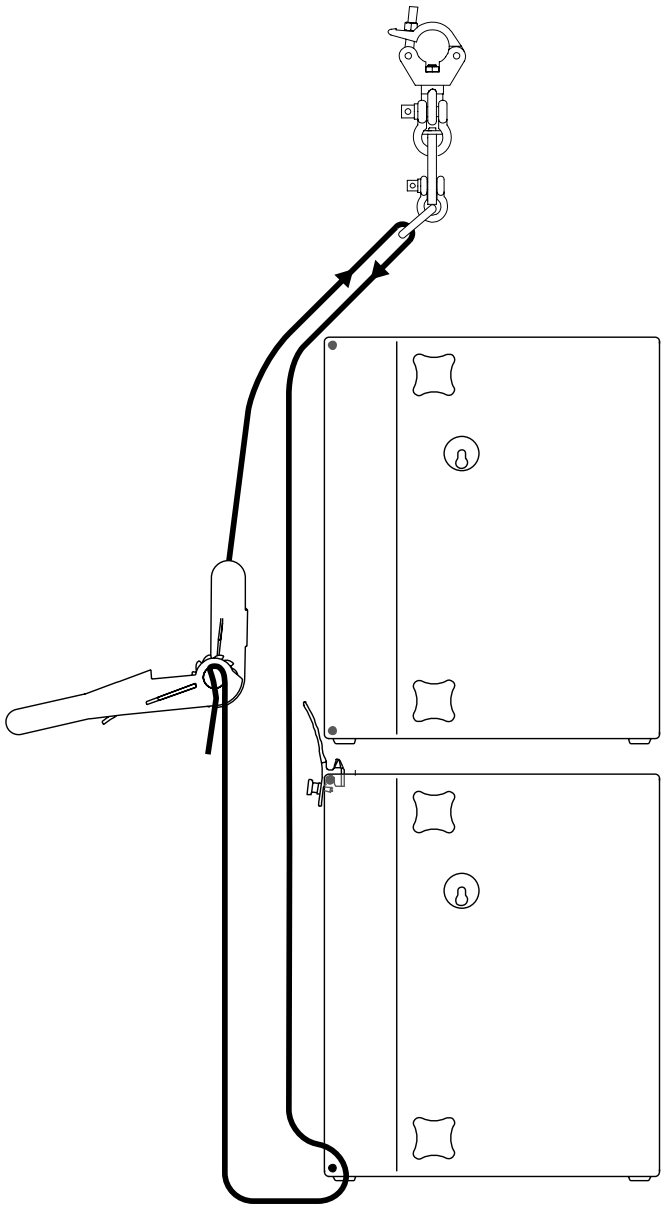
6.1.2 Strap Anchoring for 2 ACCESS Systems without Curving Hook

2 x ACCESS System:



6.1.3 Strap Anchoring for 2 ACCESS Systems with Curving Hook

2 x ACCESS System
+ Curving Hook:



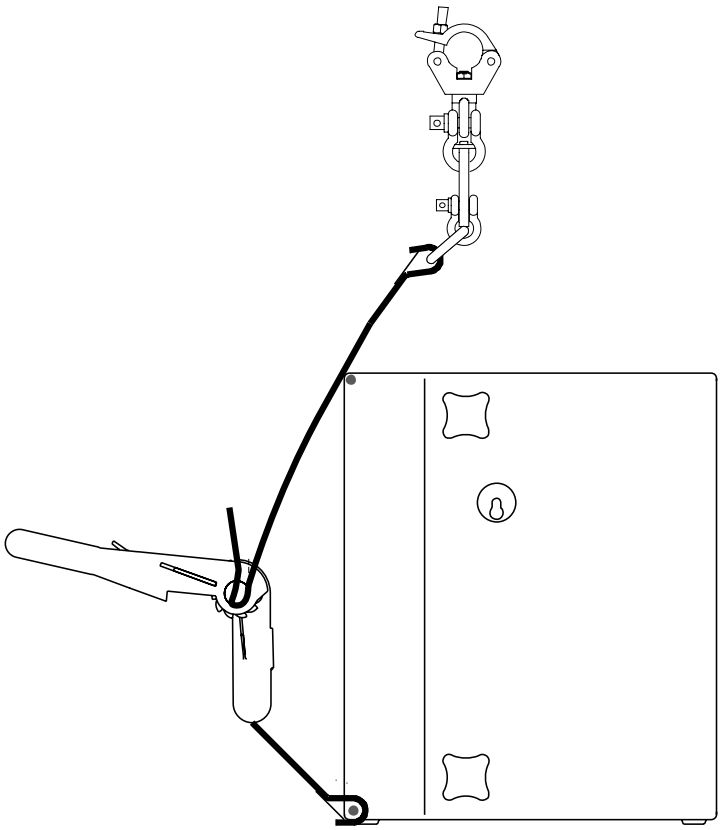
6.2 Two-Piece K&F Rigging Strap

The use of a two-piece strap offers the following advantages:

- The strap is subjected to less friction, reducing wear and extending lifespan.
- Compared with the one-piece strap, the rigging distance when using a two-piece strap is only half as long. The problem of an overloaded rigging strap reel is reduced to a minimum as the need to manually draw out the strap is virtually eliminated.
- Release mechanism which allows a gradual release of the rigging strap

6.2.1 Strap Anchoring for 1 ACCESS System

1 x ACCESS System

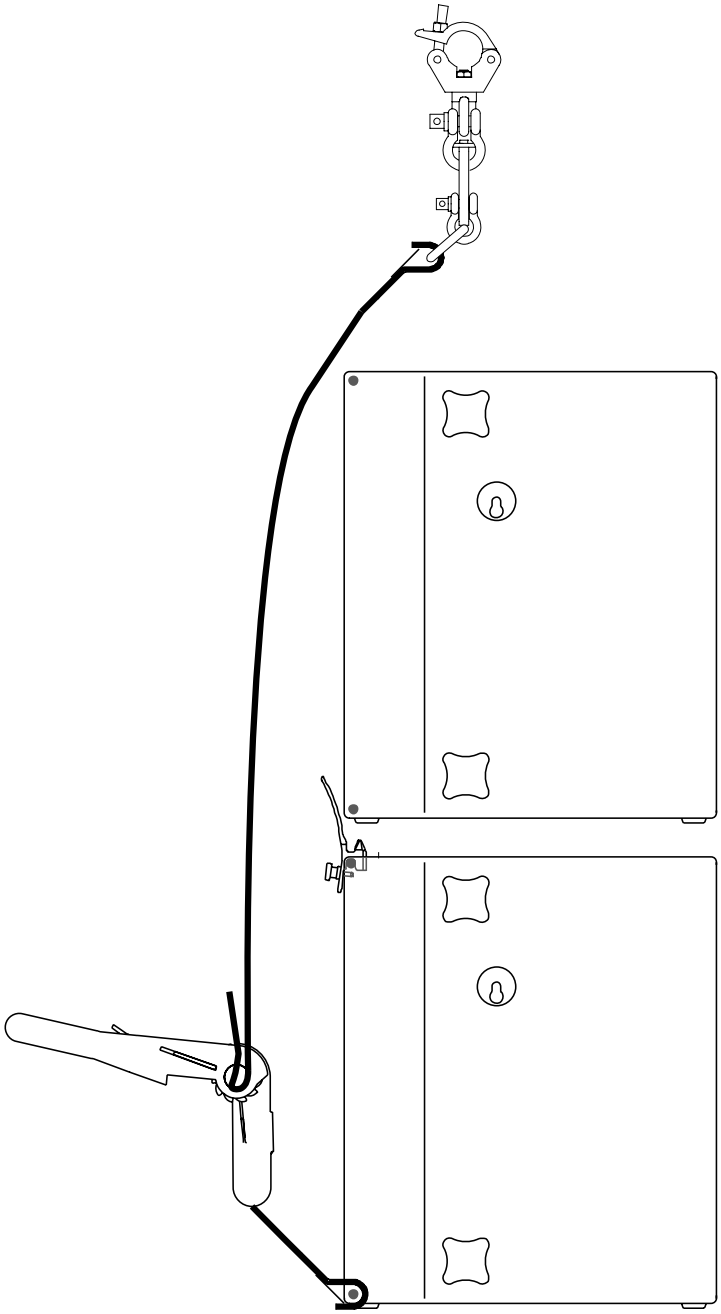


The open ends of the hooks must always face towards the rear of the loud-speakers!

6.2.2 Strap Anchoring for 2 ACCESS Systems

The use of the two-piece strap for the suspension of two ACCESS Systems is possible only when the Curving Hook is used. Without the Curving Hook the two ACCESS Systems would slide against one another.

2 x ACCESS
+ Curving Hook:



The open ends of the hooks must always face towards the rear of the loud-speakers!

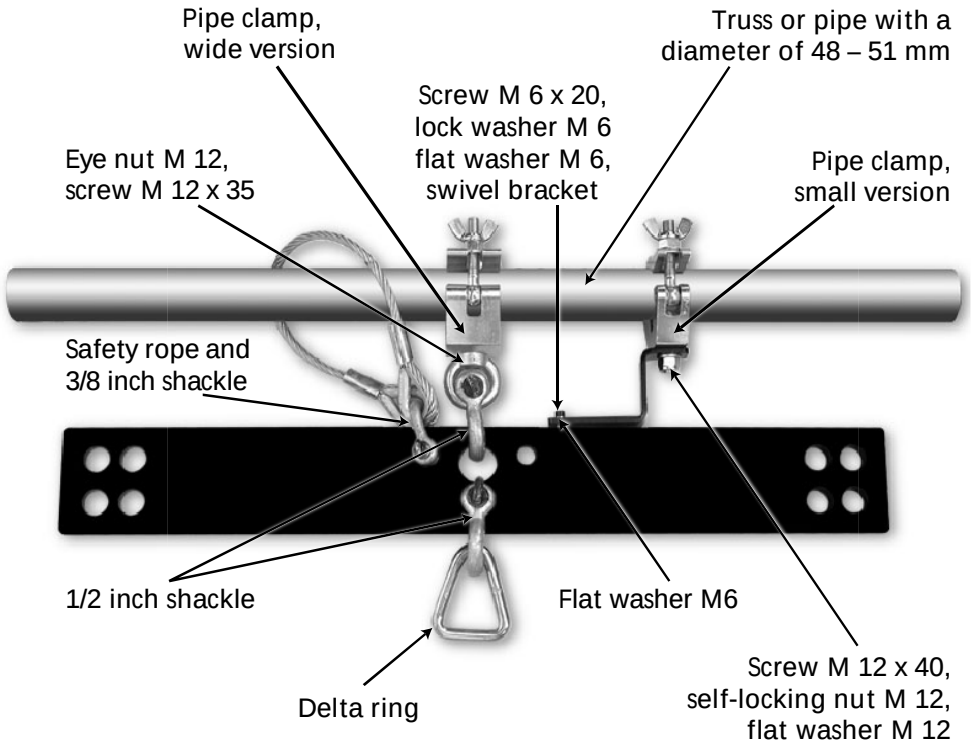
7. Mounting the Single Bar (Align)

The assembly of the Single Bar without the Align Set is virtually identical to the assembly of the Single Bar Align. The description only differs in the instructions for the Align Set.

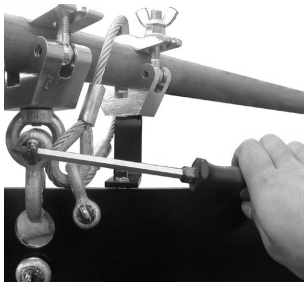
Make sure the girder or truss upon which the Single Bar is to be mounted is of adequate dimensions and is capable of bearing the weight with regard to the relevant safety requirements. An important consideration here is the position in which you intend to suspend the load, and whether the girder is sufficiently capable of withstanding the torsion exerted. Anchor points in the ceiling must be able to support the required load. If there is no information available on the safe use and permissible load capacity of the girder or truss, then the rigging system must not be suspended upon it.

1. Screw the eye nut M 12 on the wide clamp finger-tight. Loosen the nut approx. 1/2 turn. Make sure the eye nut is not further loosened in the course of the following assembly procedure. The thread of the nut must at all times sit firmly on the thread of the corresponding screw.
   The butterfly nut must always be used to lock the nut M 12.

2. Mount the Single Bar 'Align' as shown below on the truss or on a pipe with a diameter of 48-51 mm. It does not matter whether screws on the pipe clamps face towards the front or the rear.

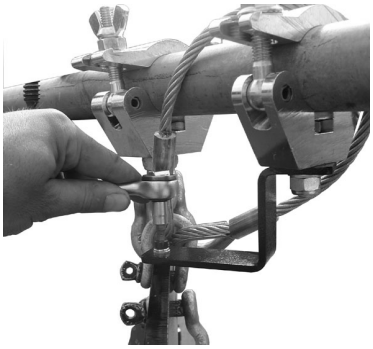


3. All connections should now be screwed tight. Tighten the shackle bolts to a torque of 10 Nm (finger-tight with a 200 mm long lever, e.g. a screwdriver). This will prevent the bolts from coming loose.

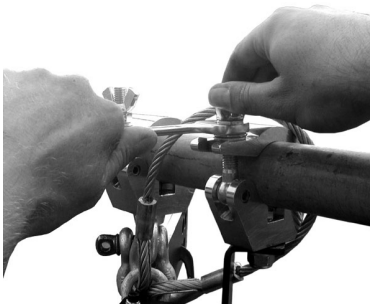


4. Loosen the self-locking nut M 12 which connects the swivel bracket to the small pipe clamp by 1/2 turn.

5. Loosen the screw M 6 x 20 on the swivel bracket by a maximum of 2 turns.



6. Loosen the butterfly nut and hexagonal nut on the small pipe clamp of the swivel bracket by a maximum of 2 turns.



Warning

7. Mount the chains or ropes on the drill-holes intended for securing the loudspeakers on the Single Bar.
The chains / wire ropes on the Single Bar must have a working length of 510 mm. In the case of an adjustable K&F chain this is equivalent to 13 chain links.
Use the inner drill-holes for ACCESS Systems. The open ends of the hooks must always face the front of the loudspeakers. Pull the rigging strap through the delta ring (illustration).

8. Attach the eyebolts to the flying points on the loudspeakers. In the case of Access these are referred to either as:

– Eyebolt 'MAN Stud Plate (HWSP)' or
– Eyebolt 'MAN Installation Stud'.
Only one speaker may be suspended from this stud. The suspension of a further speaker is not permissible.

Eyebolt 'MAN Stud Plate (HWSP)'

Eyebolt 'MAN Installation Stud'

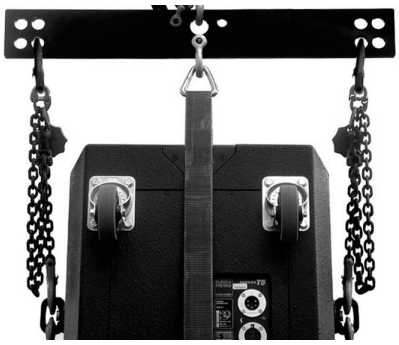
Instructions for mounting rigging studs can be found in the manuals of the various loudspeaker models.

9. Fasten the chains or wire ropes to the rigging studs.

– Take care when using chains with hooks that the open ends of the hooks face forward! This prevents the openings of the hooks getting strained when the speakers are tilted.
– Make sure that the chains are not twisted.
– Wire ropes must be secured using approved ½ '' (min.) shackles with a permissible load capacity of at least 2t.

10. No further speaker may be suspended from the eyebolt 'MAN Installation Stud'.

11. The installation should at this stage resemble the picture opposite.
The open ends of the chain hooks face the front of the loudspeakers.



12. If you do not wish to suspend a further ACCESS System, secure the system as described in chapter 6 from P.10 onwards.

13. Should you wish to suspend two ACCESS Systems one below the other, it is advisable to lower the upper loudspeaker, once it has been suspended, until it rests on the lower one. Now attach the chains.

Since the desired vertical angle between the speakers is determined by the length of the chains, it is necessary to shorten the chains to the appropriate length. See chapter 4.1, page 8.

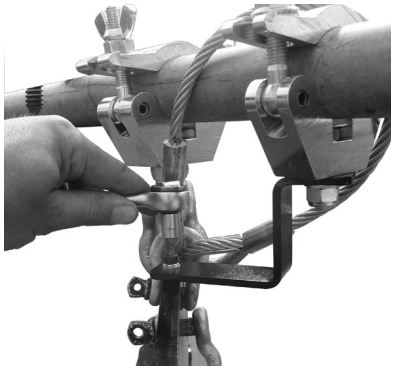
Raise the system so high that you still can reach the ratchet on the rigging strap and secure the system, as described in chapter 6 from page 10 onwards.

14. Having secured the rigging strap, you can align the system horizontally. To this end turn the Single Bar until you reach the desired position. The small tube clamp on the swivel bracket shifts along the tube while it is being turned. It may be necessary to adjust the clamp manually.

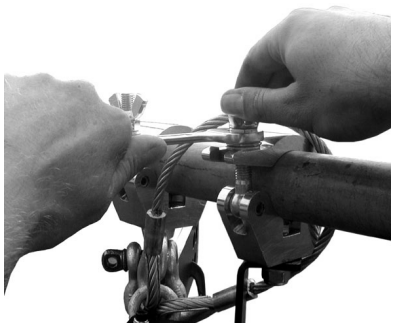
Important

15. Re-tighten the self-locking nut M 12 connecting the swivel bracket to the small tube clamp.

16. Re-tighten the screw M 6 x 20 on the swivel bracket.



17. Re-tighten the butterfly nut and the hexagonal nut on the small tube clamp of the swivel bracket.



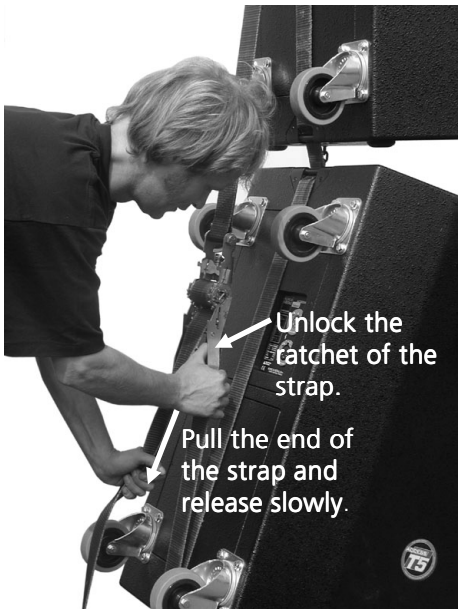
8. Dismantling

Essentially, dismantling is carried out in the same way as assembly but in reverse order. All safety instructions contained in this document are to be followed. Special care should be taken when releasing the rigging straps.

8.1 Releasing the Rigging Straps

Be careful when loosening the rigging strap and avoid sudden, jerky movements when operating the release mechanism. Such sudden movement can result in the speaker array swinging forward. When operating the release mechanism the strain should be taken up at the end of the strap and it should be fed back slowly. On no account should persons or objects be in the area in front of the speakers at this time.

A sudden, uncontrolled release of the rigging strap can be avoided by using K&F's multi-purpose strap and two-piece strap, both of which have release mechanisms allowing a gradual slackening of the rigging strap. For this reason K&F recommends the use of these straps.



9. Use of the Single Bar with other K&F Systems

The Single Bar can also be used for other K&F Systems.

When using the K&F Single Bar in conjunction with other K&F systems pay particular attention to the maximum permissible load capacity of the Single Bar as well as that of the various K&F speaker systems. Observe national safety regulations and adhere to applicable safety and design factors.

Naturally the same degree of care should be taken during use with other K&F systems as is the case when using with ACCESS Systems: the suspension of rigging systems may be carried out only by trained specialist personnel certified as experienced 'riggers'. Furthermore the safety instructions described in chapter 2 also apply here. The risk of suspension must be competently assessed and weighed up.

If there is the slightest doubt with regard to the safety of the array system, then it should not be put into use.

10. Care and Maintenance

Warning

For the owner and user it is of the utmost importance to be aware that a rigging system is an extremely safety-sensitive accessory within a loudspeaker system.

For this reason it is absolutely imperative to carry out careful and well-documented maintenance procedures and checks.

The rigging system can with the passage of time begin to show signs of wear and tear due to mechanical strain, transportation damage, corrosion or improper treatment. As a rule this leads to an increased risk of accident.

As a general rule the rigging system should be inspected each time it is packed or unpacked. If permanently installed the system should be checked for signs of wear at regular intervals.

During the course of these checks particular attention should be paid to evidence of deformation, cracks, damage to threads and corrosion. Securing devices such as shackles, chains and wire ropes should also be carefully checked for signs of wear or deformation.

Any damaged components should be replaced immediately.

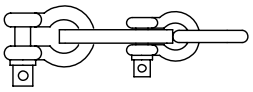
In addition an inspection book for the array system should be kept. This book should document maintenance measures and inspection intervals and contain parts lists.

If as a result of these checks any uncertainty should arise with regard to safety or if specific faults are found, the array system should be taken out of service at once.

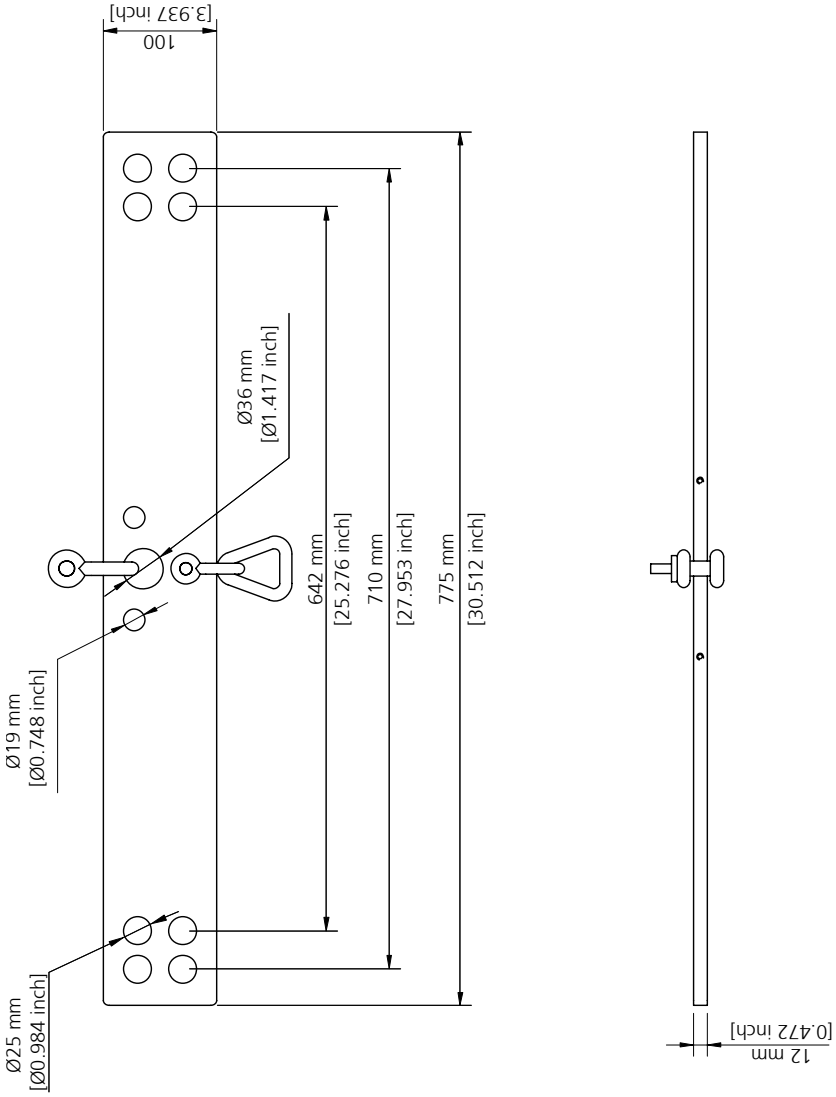
11. Dimensions, Weight and Permissible Load Capacity

11.1 Single Bar

Weight: 8,5 kg
Permissible load capacity: 200 kg



Basic dimensions Single Bar



11.2 Single Bar 'Align'

Weight: 8,5 kg (incl. Single Bar)
Permissible load capacity: 200 kg