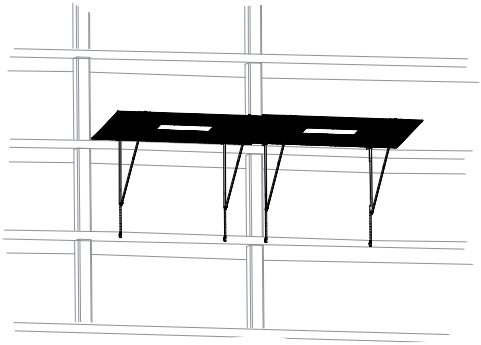
COMBISAFE®

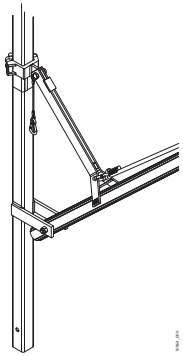
Safety Net Fan, Fall-Arrest Fan

(Prod. No. 10991-10996)

Wind Lock for Safety Net Fan

(Prod. No.10864)





USER INSTRUCTIONS

Contents

This manual contains information on Fall-Arrest Fan and Wind Lock.

The Wind Lock complements the Fall-Arrest Fan and is used in order to stabilize the fan during windy conditions.

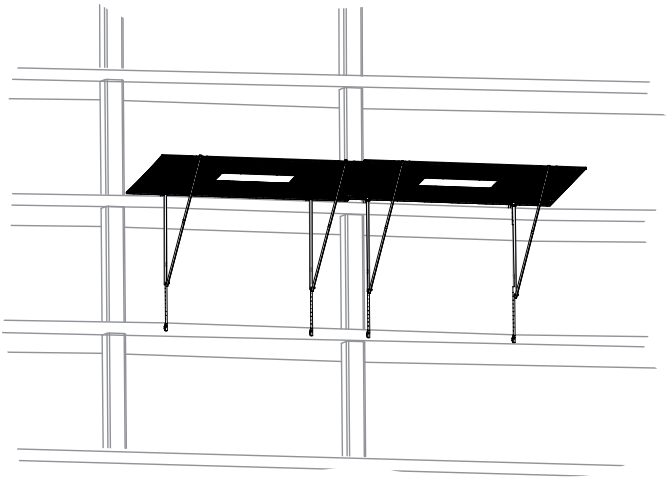
SAFETY NET FAN, FALL-ARREST FAN

WIND LOCK FOR SAFETY NET FAN

Subject to changes.

Safety Net Fan, Fall-Arrest Fan

(Prod.No. 10991-10996)



General info

The Safety Net Fan is available in one category: Fall-Arrest. This type of fan is approved both for man catching and material catching.

The Fall-Arrest Fan conforms to the requirements set out in “EN 1263-1 Safety nets -Part 1: Safety requirements, test methods” (See the declaration of conformity) and must be installed in accordance with “EN 1263-2 Safety nets -Part 2: Safety requirements for the positioning limits”, see image 40.

The following example can be used for knowing what kind of protection that is required. A material catching fan is generally used on high-rise buildings to protect the workforce and pedestrians on the ground, or the facade of the building while work is being carried out overhead. The Fall-Arrest Fan is generally used when work on formwork or steel/prefab erection is carried out close to the edge and where there is a risk of falling. The Fall-Arrest Fan combines both applications.

All Safety Net Fans prod.no 10991-10996 extend 3,3 metres out from the facade and can be installed using the range of accessories available.

The Safety Net Fan is designed to be folded up against the facade to allow for easy crane access below, or as a safety precaution in high winds or heavy snowfall.

The design is such that the impact from a fall is partly absorbed by the mesh and partly by the frame. The Fall-Arrest Fan is designed to catch a person falling from a height of up to 6 metres, however, the recommendation is to install the Safety Net Fan as close to the working level as possible in order to minimise the risk of injury in the event of a fall.

The Fall-Arrest Fan has a mesh size of 60 x 60 mm. All Combisafe Safety Net Fans are equipped with a fine mesh (20 x 20 mm) overlay net as standard to catch small objects.

In some cases the Safety Net Fans can be supplemented with scaffold/debris sheets if denser coverage is required. Wind loads, which are often a problem, must be taken into consideration.

The Fall-Arrest Fans are manufactured of steel and aluminium to create the optimal combination of strength and weight.

Assembly, rigging and repairs should always be carried out by competent personnel. It is therefore strongly recommended that all involved with the selection and installation of Safety Net Fans complete a Combisafe product training course.

Technical data

Dimensions and weights

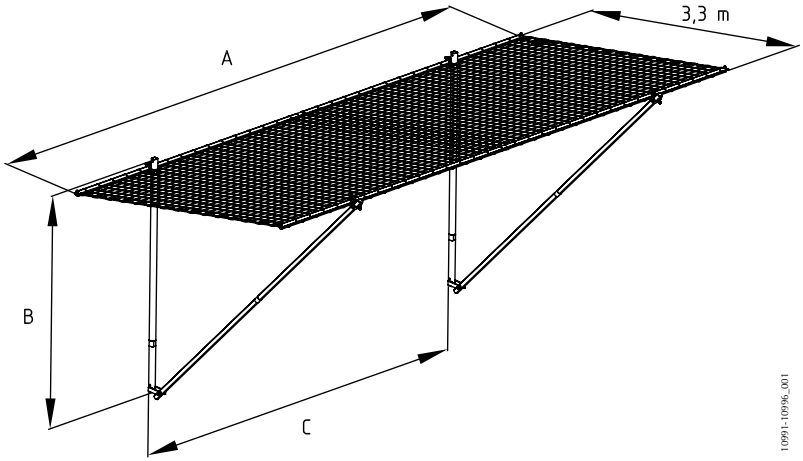


Image 1. Dimensions

Prod. No.	A	B	C	Weight
10991	4,2 m	2,5 m	2 ± 0.5 m	68 kg
10992	4,2 m	3,0 m	2 ± 0.5 m	72 kg
10993	4,2 m	3,5 m	2 ± 0.5 m	76 kg
10994	6,0m	2,5 m	4 ± 0.5 m	76 kg
10995	6,0 m	3,0 m	4 ± 0.5 m	80 kg
10996	6,0 m	3,5 m	4 ± 0.5 m	84 kg

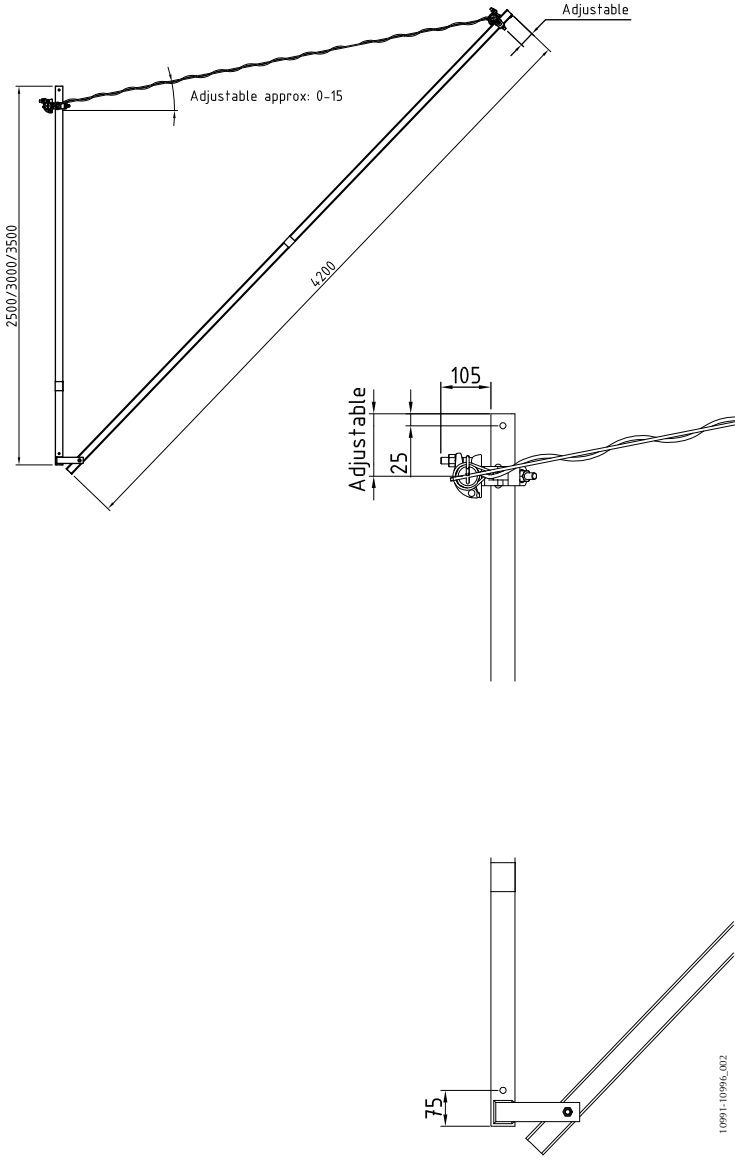


Image 2. Dimensions

Fall-Arrest Fan, parts

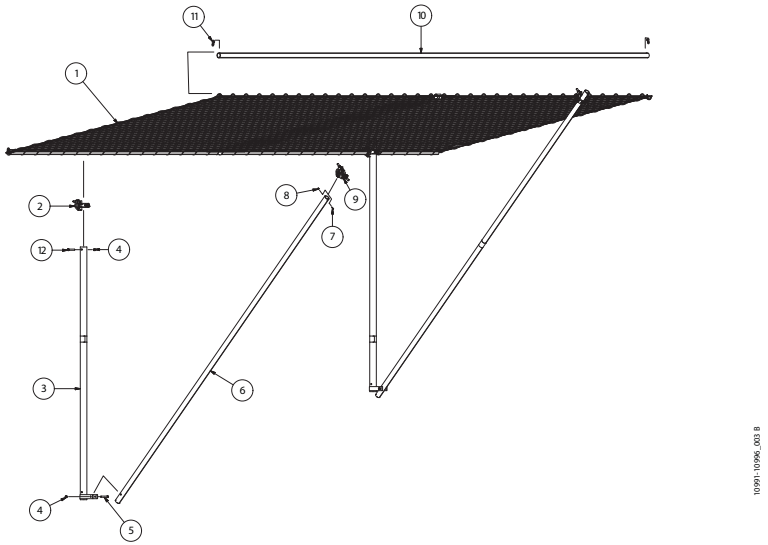


Image 3. Parts

Pos.	Quantity	Art. no.	Description	Weight
Standard parts for all Safety Net Fans				
1	1	*	Safety Net Fan, Net	*
2	2	10432	Square-Round Coupler	1.60 kg
3	2	*	Safety Net Fan Frame	*
4	4	100025	Lock Nut M12	0.01 kg
5	2	100200	Bolt M12x90	0.10 kg
6	2	10766	Diagonal Tube 4.2 m	7.2 kg
7	2	100338	Bolt M6x16	0.02 kg
8	2	100061	Lock Nut M6	0.01 kg
9	2	200361	Double Coupler	1.40 kg
10	2	*	Horizontal Tube	*
11	4	100029	Spring Hook	0.03 kg
12	2	100153	Bolt M12x80	0.10 kg

* Parts that can vary- See table on the next page

Pos.	Quantity	Art. no.	Description	Weight
10991/10992/10993 Safety Net Fan Fall-Arrest 4.2 m				
1	1	10793	Safety Net Fan Net 5.2x3.3 m*	8,7 kg
3	2		Frame	
		10763	2.5m	11.7 kg
		10762	3.0m	13.8 kg
		10973	3.5m	15.9 kg
10	2	10769	Aluminium Tube 4.2 m (with holes)	7.1 kg
10994/10995/10996 Safety Net Fan Fall-Arrest 6 m				
1	1	10796	Safety Net Fan Net 7.0x3.3 m*	11.2 kg
3	2		Frame	
		10763	2.5m	11.7 kg
		10762	3.0	13.8 kg
		10973	3.5m	15.9 kg
10	2	10771	Aluminium Tube 6 m (with holes)	10.2 kg

*Supplemented with 20 x 20 mm fine mesh overlay net.

Storage and transport design of Frame and Tube

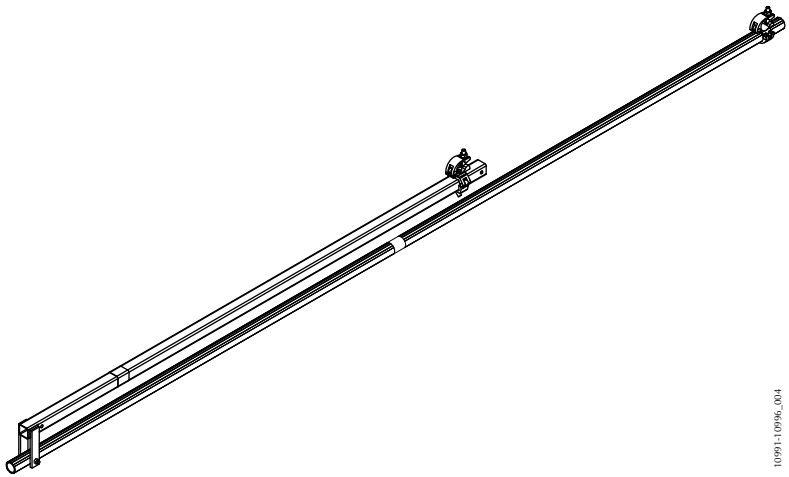


Image 4. Assembly level at delivery

The entire metal Frame is delivered as one unit with Art.No. 10773/10775/10987 (2.5/3.0/3.5m Frame).

Storage and transport assembly level of Net unit

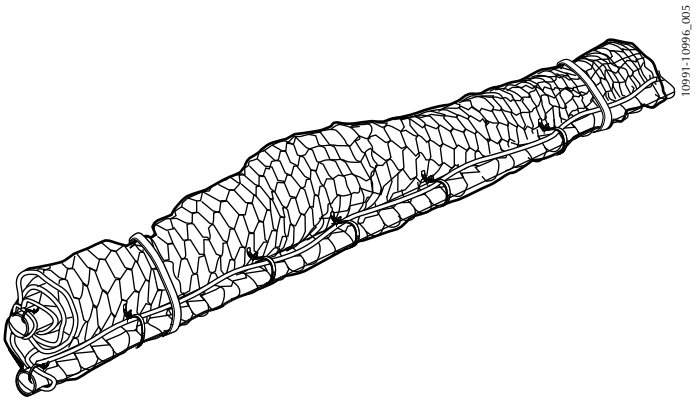


Image 5. Assembly level of Net unit

The Net is delivered as an assembly including complete Net with aluminium Tubes inserted. Art.No. 10790/10791 (4.2/6.0m Fan).

Accessories

10044 Slab Attachment

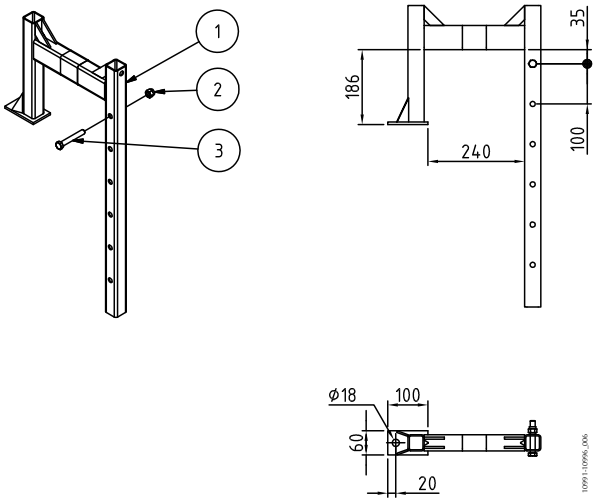


Image 6. Slab Attachment

Pos.	Quantity	Art. no.	Designation	Weight
1	1	10044	Slab Attachment	5,1 kg
2	1	100025	Lock Nut M12	0,01 kg
3	1	100153	Bolt M12x80	0,09 kg

The Slab Attachment is used to install the Safety Net Fan on to a flat surface. The most common use is when installing the Net on the edge of a slab, often together with a Knee Brace (Art. No. 10878). The Slab Attachment can be used separately if the Net is supported against the building facade, or together with the Extension (Art. No. 10882) which provides reaction support from the structure below.

NOTE

When using the Slab Attachment it is recommended to use Adjustable Couplers Art.No. 10933 shown in image 7 instead of Square-Round Couplers shown in image 3 due to greater flexibility regarding assembly positions.

10933 Adjustable Coupler

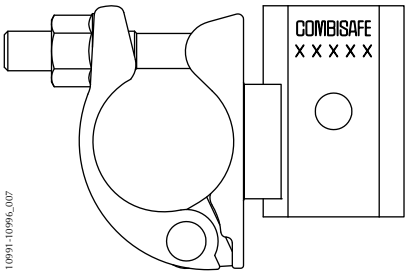


Image 7. Adjustable Coupler

The Adjustable Coupler is used in combination with the Slab Attachment. In the normal case the Adjustable Coupler is not fixed to the Slab Attachment but allowed to slide freely. This gives possibility to always get the Net in the correct height compared to the slab edge, independent of how the Slab Attachment is adjusted. The Adjustable Coupler is allowed to rest at the edge of the slab according to image 9 and this also effectively eliminates all openings between slab and Safety Net Fan. However if needed for special cases, it is possible to fix the position of the Adjustable Coupler on the Slab Attachment with a bolt and nut.

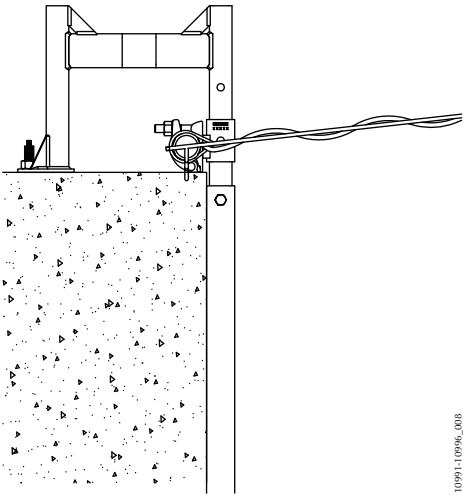


Image 8. Normal assembly position of Adjustable Coupler on straight slab

10882 Extension

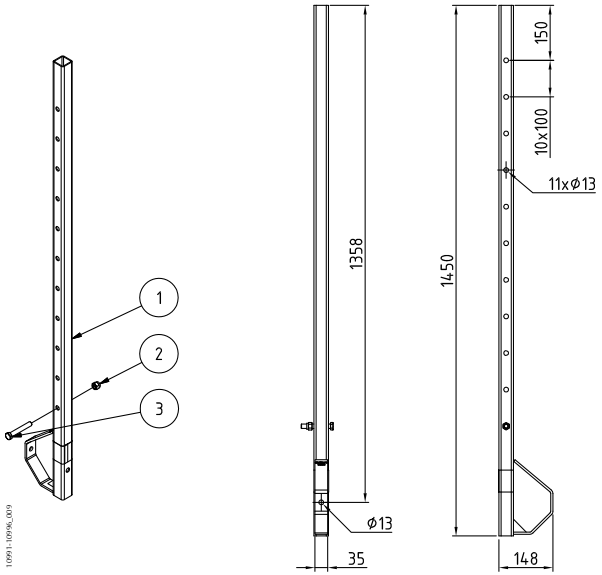


Image 9. Extension

Pos.	Quantity	Art. no.	Designation	Weight
1	1	10435	Extension	5.2 kg
2	1	100025	Lock Nut M12	0.01 kg
3	1	100153	Bolt M12x80	0.09 kg

The Extension extends the lower support of the Safety Net Fan downwards and can be used together with most attachments. The support plate holes permit anchorage if necessary. The Extensions are frequently used to reach down to the floor below and support against the edge of the slab. When the Safety Net Fan is installed using the Facade Attachment, the Extension can be used to avoid the lower corner of the Safety Net Fan being pressed against the facade, the Frame of the Safety Net Fan then remains in the vertical plane. The Extension can also be used together with the Knee Brace in case of downstand slab, described in the Knee Brace section.

The adjustment range of the Extension is 1m. In the following examples in image 11 and 12 the possible usage between different slab distances/fixing points can be found for different lengths of the Frame and for adjustable/fixed attachments.

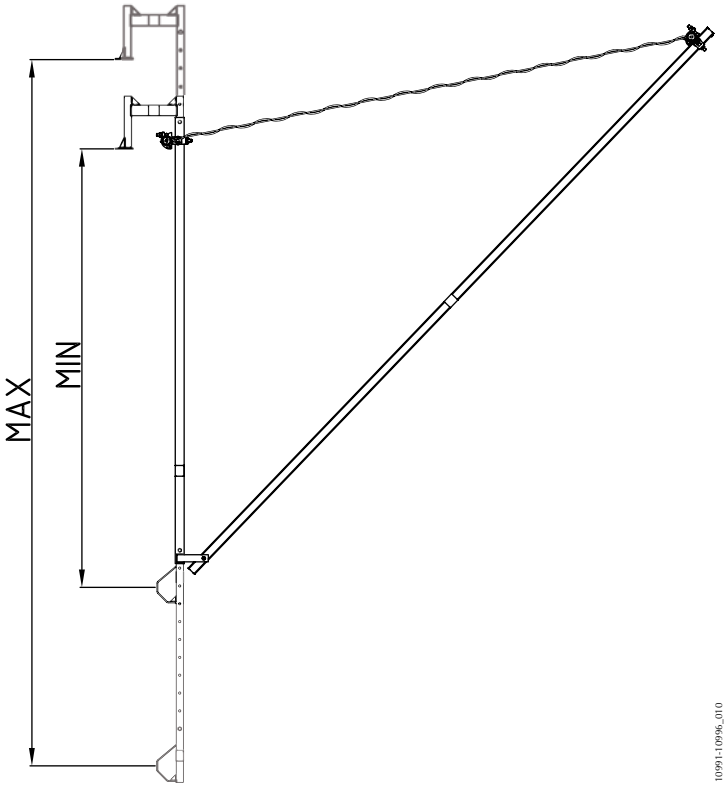


Image 10. Adjustment range with adjustable upper attachment

Distance [mm]	**2,5m body (10991,10994)**	**3,0m body (10992,10995)**	**3,5m body (10993,10996)**
MIN	2460	2960	3460
MAX	3960	4460	4960

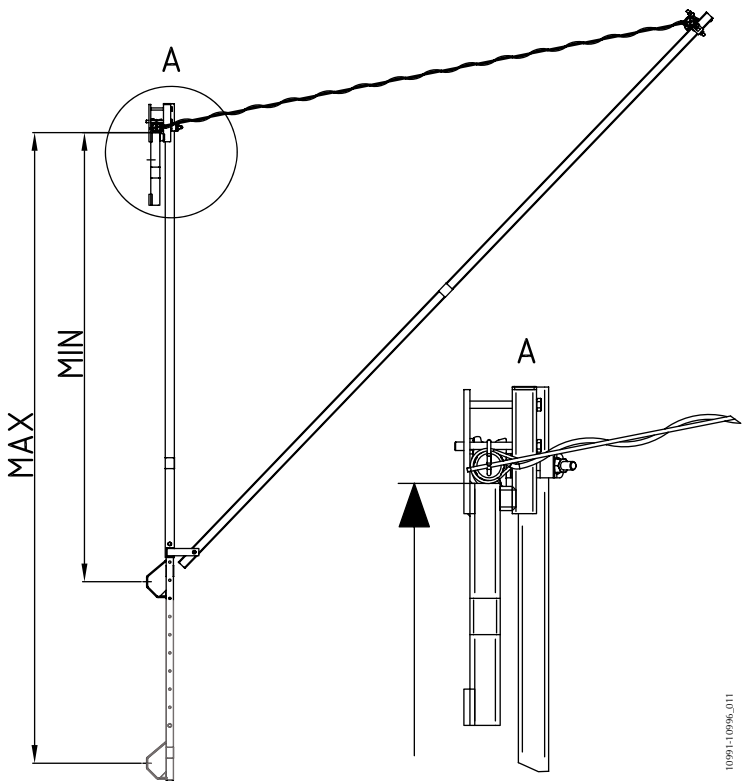


Image 11. Adjustment range with fixed upper attachment

Distance [mm]	**2,5m body (10991,10994)**	**3,0m body (10992,10995)**	**3,5m body (10993,10996)**
MIN	2475	2975	3475
MAX	3475	3975	4475

10878 Knee Brace

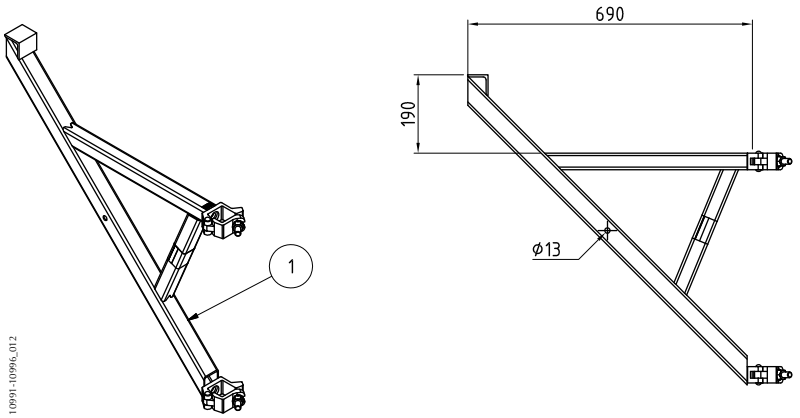


Image 12. Knee Brace

Pos.	Quantity	Art. no.	Designation	Weight
1	1	10878	Knee Brace	8.9 kg

The Knee Brace is used to support the Safety Net Fan below a slab. The Knee Brace is usually used together with the Slab Attachment when the Safety Net Fan is installed around an open slab edge. In case of downstand slabs it is possible to use the Knee Brace in combination with an Extension according to image 13.

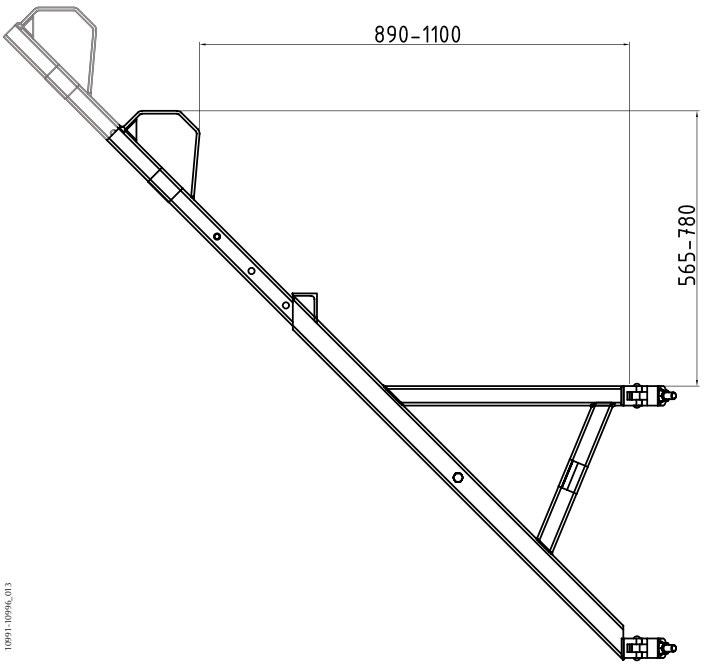


Image 13. Knee Brace in combination with Extension

10439 Facade Attachment

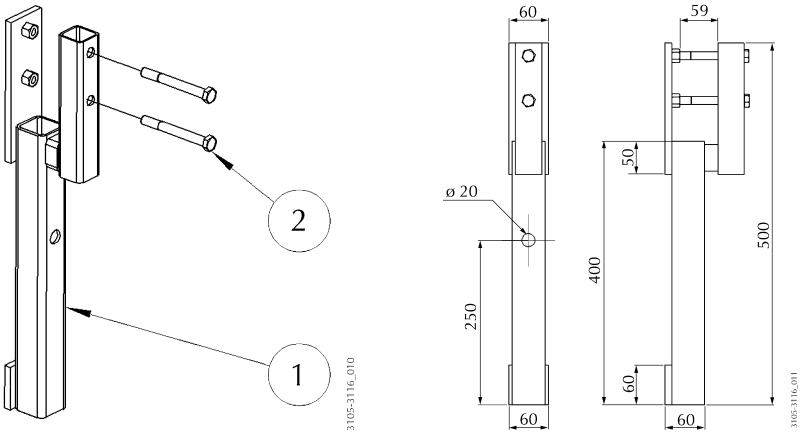


Image 14. Facade Attachment

Pos.	Quantity	Art. no.	Designation	Weight
1	1	10439	Facade Attachment	4.2 kg
2	2	100162	Bolt M12x120	0.1 kg

The Facade Attachment is fitted to the facade using a fixing/anchor//form tie. The Safety Net Fan is installed directly on the facade using two Facade Attachments. The Safety Net Fan can be equipped with padding to protect the facade. The Extension can also be used to extend the lower support to an appropriate position.

10440 Scaffold Attachment

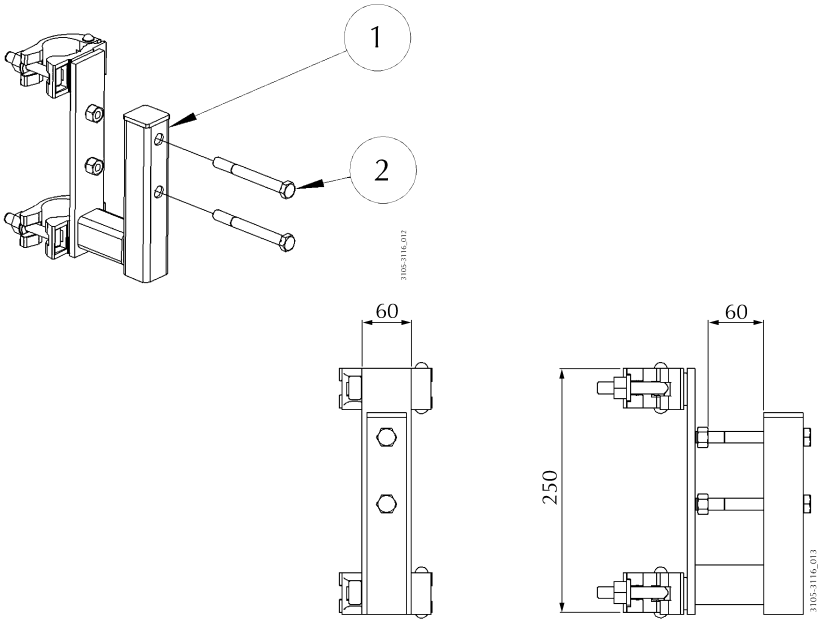


Image 15. Scaffold Attachment

Pos.	Quantity	Art. no.	Designation	Weight
1	1	10440	Scaffold Attachment	4.0 kg
2	2	100162	Bolt M12x120	0.1 kg

The Scaffold Attachment is equipped with two couplers for connection on vertical scaffold Tubes. The Safety Net Fan is usually supported by vertical scaffold standards, but in some cases a vertical Tube is fitted to the Safety Net Fan. In all cases the scaffold to which the fan is attached, must be assessed by a competent person as capable of accepting the loads imposed by the fan.

10964 Loose Slab Attachment

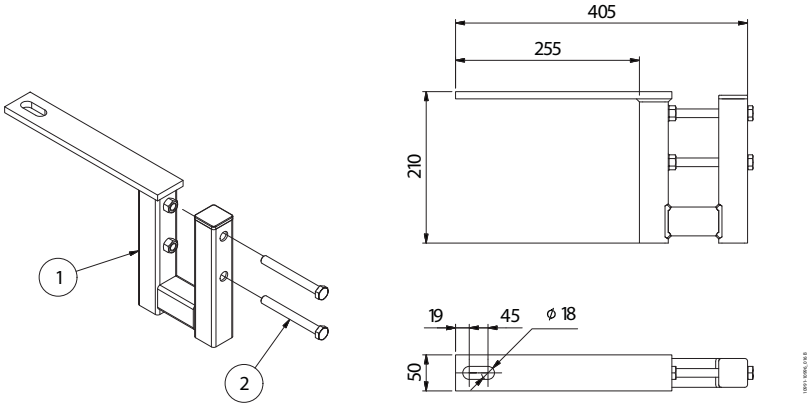


Image 16. Loose Slab Attachment

Pos.	Quantity	Art. no.	Description	Weight
1	1	10964	Loose Slab Attachment	3.0 kg
2	2	100159	Bolt M12x110	0.1 kg

The Loose Slab Attachment is placed around a slab edge and is particularly useful if space is limited on top of the slab edge. It is even possible to use the Loose Slab Attachment through a brick wall or similar. Due to its sleek design only 10mm of vertical clearance is necessary. It is important that the Loose Slab Attachment get support from the vertical part of the slab, according to image 17.

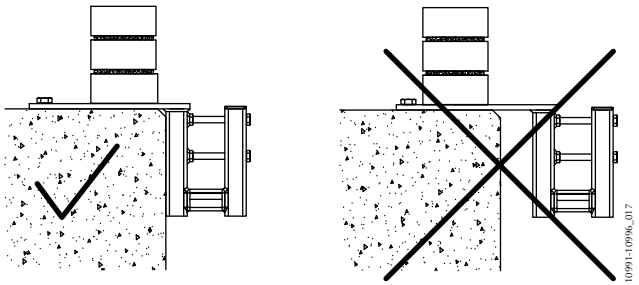


Image 17. Assembly of Loose Slab Attachment

10965/10966 Offset Beam 750/900mm

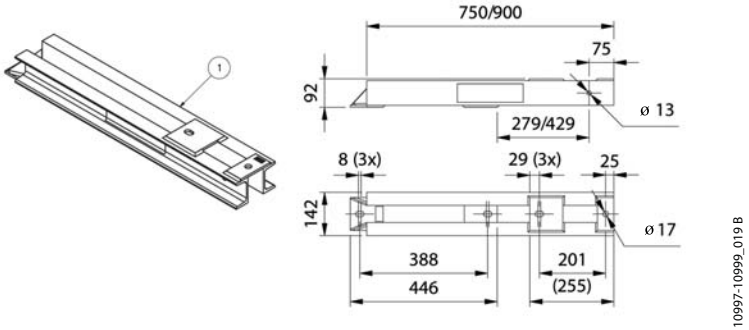


Image 18. Offset Beam

Pos.	Quantity	Art. no.	Description	Weight
1	1	10965 10966	Offset Beam 750mm Offset Beam 900mm	12.4 kg 14.6 kg

The Offset Beam is used for cases when the Safety Net Fan needs to be moved outwards from the slab edge. The Offset Beams are available in two different lengths, 750 and 900mm. It can be combined with several attachments and ways of assembling the fan, some examples follow in image 19. Always use two anchors to fixate the Offset Beam to the structure. Make sure that the anchor has enough distance to the slab edge.

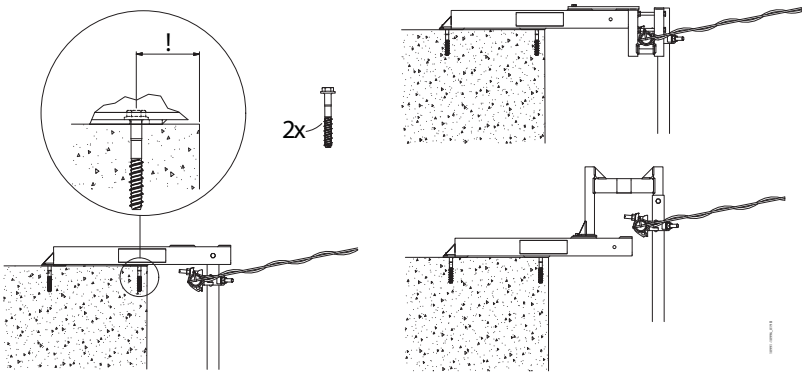


Image 19. Examples of assembly-Offset Beam

10047 Lifting Sling

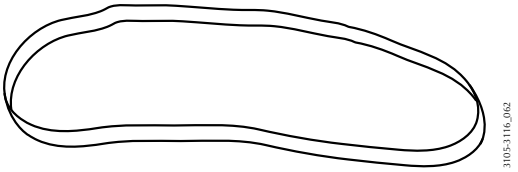


Image 20. Lifting Sling

The Lifting Sling is used to lift an assembled Safety Net Fan in to position.

Design and function

The Safety Net Fan is assembled on the ground and lifted into position using a crane. Assembly is performed using different accessories to adapt the Safety Net Fan to the building.

The use of accessories is described under “Installation”.

The lift method is described under “Lifting”.

Once the Safety Net Fans have been lifted into position, they can be connected together. The most common is the overlap method.

When the Safety Net Fans have been installed they can be folded up to allow the crane to access to the area below. The Safety Net Fans can also be folded up for protection against high winds or heavy snow.

There are also solutions for Safety Net Fans to fit around corners.

Overlap

To ensure that there is no gap between the Safety Net Fans, the fans must either be laced together or overlapped. Different procedures are used for Protection Safety Net Fans and Fall-Arrest Safety Net Fans.

The most common method is alternate upper and lower fans, and to first position two lower fans followed by fitting an upper fan between them which overlaps both of the lower fans. This method permits easy folding up and in doing so makes the area below accessible for a crane. Careful planning is needed to ensure that the upper Safety Net Fans are positioned where material will be loaded.

The overlap is created in different ways depending on whether the Safety Net Fans are installed using Slab Attachments or Facade/Scaffold Attachments. When the Slab Attachment is used the height difference for the overlap is created by adjusting the Square-Round Coupler to different levels. When the Facade Attachment or Scaffold Attachment is used the height difference is created using the different support levels within the bracket.

Image 21. Common overlap

An alternative overlap method is to create an upper and a lower side on the Safety Net Fan. This is done by setting both couplers at different heights when using the Slab Attachment. When using the Facade and Scaffold Bracket, an upper and a lower position for each safety Net is used. This method is quicker when rigging, but it limits flexibility to fold individual fans up for effective crane access.

Image 22. Alternative overlap

Effective length
The effective length of the fan depends on the extent of the overlap.

- For a 6 metre fan with an overlap of 1 metre the effective length is 5 metres other than for the first fan.
- For a 4 metre fan with an overlap of 1 metre the effective length is 3 metres other than for the first fan.

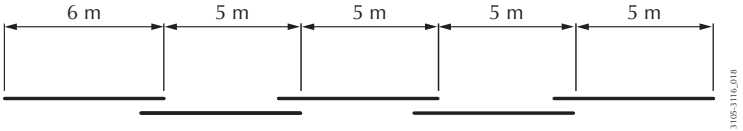


Image 23. Effective length

Length of the overlap
The required length of the overlap differs between Protection and Fall-Arrest Safety Net Fans.

The overlap for a Protection Safety Net Fan only needs to prevent material from falling between the fans, and the extent of overlap may depend on the requirements appropriate for the site in question.

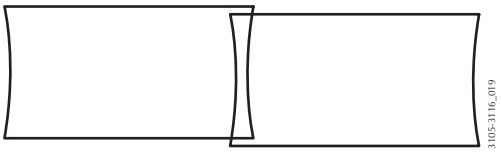


Image 24. Protection Safety Net Fan overlap

The overlap for a Fall-Arrest Safety Net Fan must be at least 0.75 metres. Note that Safety Net Fans "waist in" and are frequently smaller in the middle. The overlap here must be 0.75 metres. If a 1 metre overlap is made at the outer edges generally the minimum overlap of 0.75 metres is maintained.

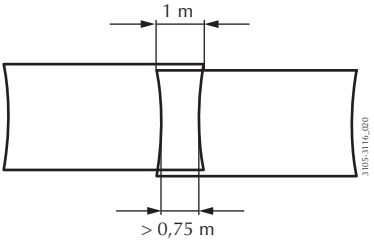


Image 25. Fall-Arrest Safety Net Fan overlap

The Safety Net Fans can also be joined by lacing them together. This is done using a Coupling Rope to EN1263-1. The rope is used to lace every other mesh in the Nets together, after which the ends are secured. Ensure that there are no openings larger than 100 mm (as required in EN1263-2). Only Protection Safety Net Fans can be laced.

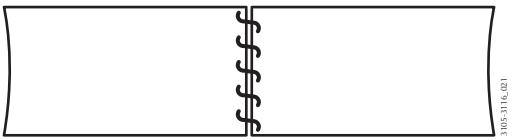


Image 26. Joining Nets by lacing

Rigging

Delivery

The Safety Net Fan is delivered in pieces and must be assembled before use. The Safety Net Fan may be partly assembled before delivery.

Rigging, tools and equipment

The following tools are required to assemble the Safety Net Fan:

- Spanners, or preferably ratchet handle and sockets.
- Gloves.
- Pen to mark Tubes.
- Measuring tape.
- Knife.
- Assembly Aid, Art.No. 10671, (weight 2.5 kg).

Place two Assembly Aids at the intended c/c spacing from the Frames. Position the Frames within the Assembly Aids as shown.

Position the Frames at the correct spacing to simplify fan assembly.

If the Safety Net Fan Frames are delivered assembled, place two Assembly Aids at the intended c/c spacing from the Frames. Position the Frames within the Assembly Aids as shown.

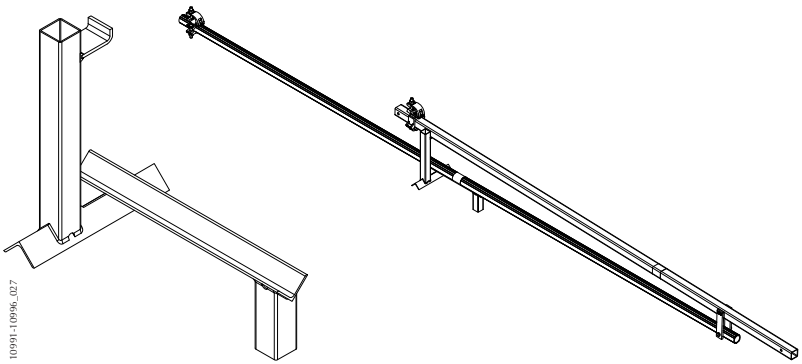


Image 27. Positioning the Frames on the Assembly Aid

Assembly of Frame and Tube

If the Safety Net Fan is not delivered partly assembled, follow assembly sequence below.

1. Assemble the Frame and Tube using M12 x 90 bolts and lock nuts. Do not tighten completely. Screw on the nuts so that they permit the Tube to move without clamping.The parts can be placed on the Assembly Aid for easier assembly.

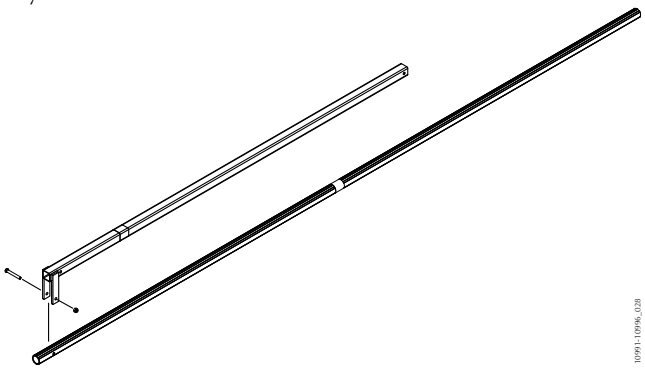


Image 28. Assembly of Frame and diagonal Tube

2. Assemble the Double Couplers on the round Tube. Tighten the couplers to secure it. These couplers may need to be adjusted later.
   Assemble the Square-Round Coupler on the square body. Tighten the coupler.

NOTE

Ensure that the couplers are assembled in the correct direction (see image 29).

NOTE

The position of the Double Coupler determines the angle of the fan. Approximately 100 mm from the end of the Tube to the middle of the coupler is usually about right (see image 29). The Safety Net Fans include a measurement decal which facilitates positioning.

NOTE

When the Safety Net Fan is assembled with the Slab Attachment and Knee Brace, the position of the coupler is determined by the overlap. See the section "Overlap" Place the couplers at the required distance from the end of the Frame. Position for the upper fan: approximately 130 mm. Position for the lower fan: approximately 200 mm.

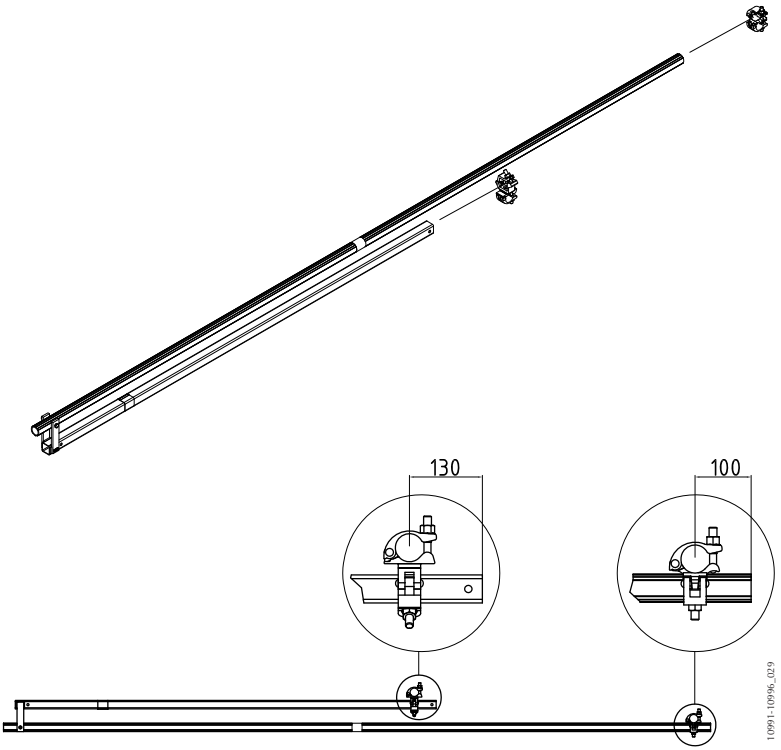


Image 29. Positioning of couplers

3. Make sure the M6 screw and nut are mounted in the end of the round tube (See Item 7 and 8 under "Fall-Arrest Fan, parts"). This secures the coupler from sliding off the Tube when lifting the Safety Net Fan in case of forgetting tightening the coupler.

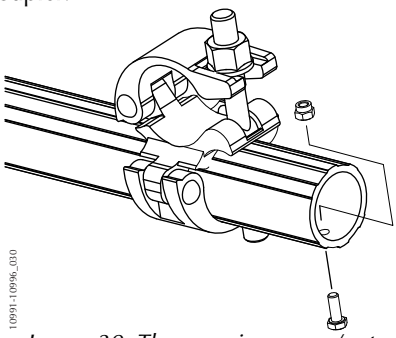


Image 30. The securing screw/nut

4. Make sure that the Frames are positioned at the correct spacing to simplify fan assembly. If preferred it is possible to put a Scaffold Tube horizontally under the Assembly Aids to get them levelled according to image 31.

NOTE

The spacing of the Frames depends on the size of fan, type of fan, and the planned location on the specific building. See "Technical data".

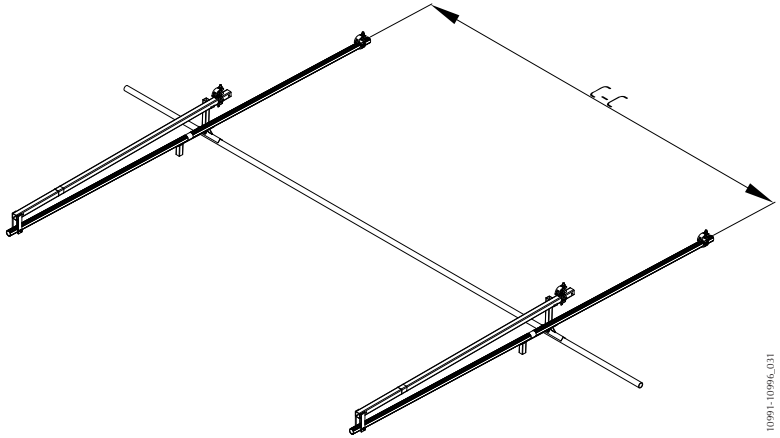


Image 31. Place the Frames with correct c-c spacing

Fitting Tubes to the Safety Fan Net

Before the Tubes are threaded into the Net, it is helpful to mark the planned position of the couplers on the Tubes, i.e. the distance between the Frames, should be marked out. The distance between the Frames can be found in image 1.

1. Insert Tubes through the two hemmed edges in the Net. This is easier if the 20mm mesh Net is positioned at the bottom.

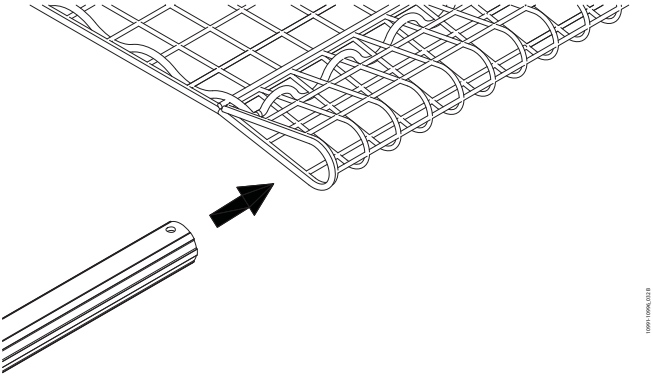


Image 32. Inserting the outer Tubes into the Safety Fan Net

2. Secure the corner of the Net through the hole in the end on the Tube with the metal snaphooks. Ensure that the border rope is enclosed inside the snap hooks.

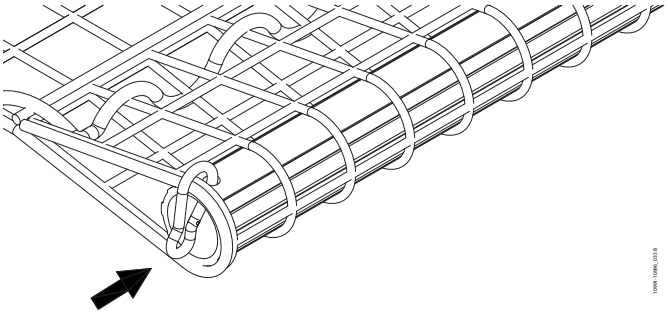


Image 33. Secure the Net with snap hooks

3. Make sure that the net is secured to all four tube edges according to the circles in image 34.

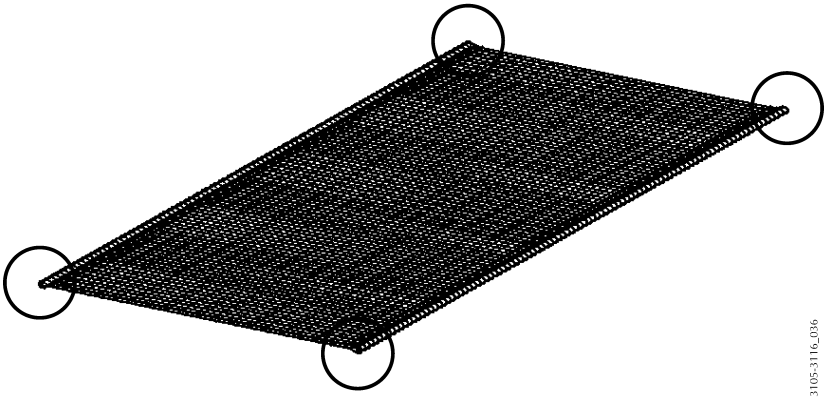


Image 34. Secure the ends of both Tubes

Attaching the Net to the Frames and Tubes

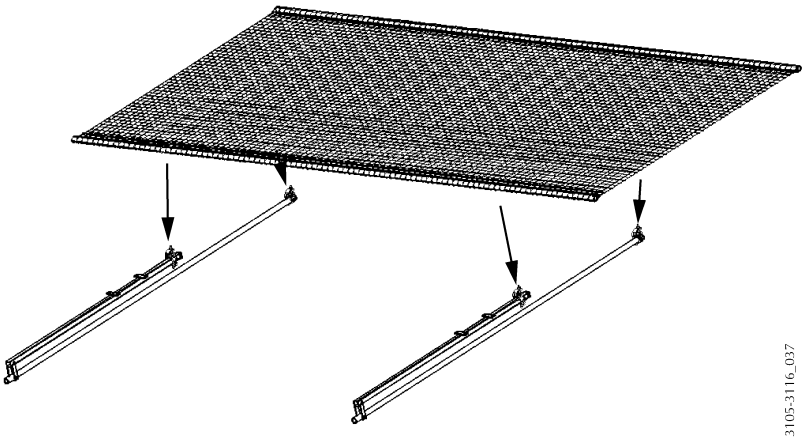


Image 35. Secure Net to Frames and raking Tubes

NOTE

It is important that the Net is positioned correctly. The finer 20x20mm mesh Net must always be on top. There are blue and yellow marking tags on the net edges, showing the position of the couplers. The blue tags should be placed on the Frame side and the yellow at the round Tube.

1. Place the Net with the aluminium Tubes on top of the Frames.
2. Fit the inner Tube in the couplers on the Frame and ensure that the Frames pass through the Net outside the Tube.

   The edge of the Net has colour markings, the blue side must be against the Frame-and the Square-Round Coupler, and the yellow side must be out towards the round Tube. Insert the square frame through the cutout in the net. Place the horizontal Tube in the coupler and ensure that no more than one mesh cord Net yarn gets caught in the coupler.

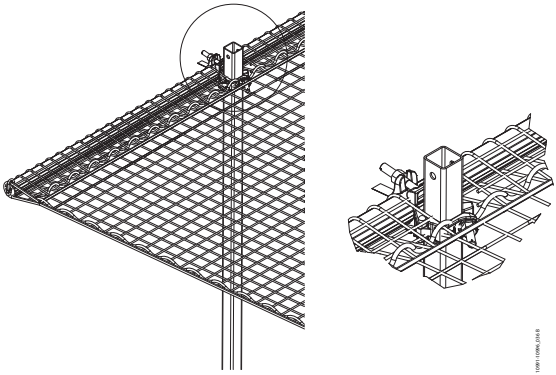


Image 36. Tube mounted in Frame coupler

NOTE

If the Safety Net Fan is not used together with the Slab Attachment 10044, make sure the M12 bolt and locking nut (See Item 4 and 12 under "Fall-Arrest Fan, parts") are mounted through the Frame. This secures the Square-Round Coupler from sliding off the Frame in case it has not been properly tightened.

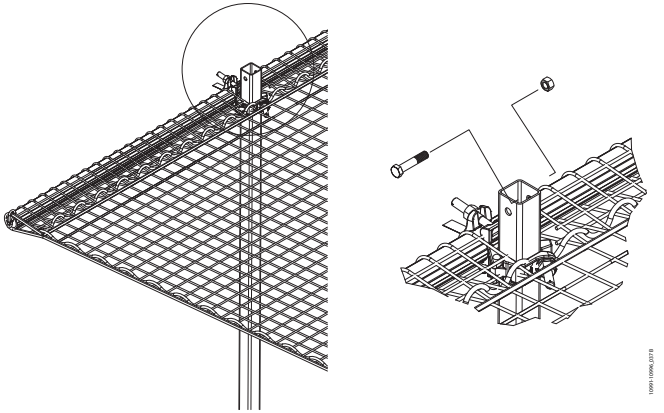


Image 37. The securing bolt/nut

3. Make sure that the Net goes around the Frame. This is important when the Slab Attachment is used so that it can be threaded through the Net and into the Frame. Tighten the couplers.
4. Place the outer aluminium Tube in the couplers on the raking Tubes. Make sure that no mesh cords are caught in the coupler. If it is difficult to close the coupler due to the Net being in the way, it is allowed to cut one mesh but no more. Adjust lower couplers until the net is taut. Remember to tighten the coupler.

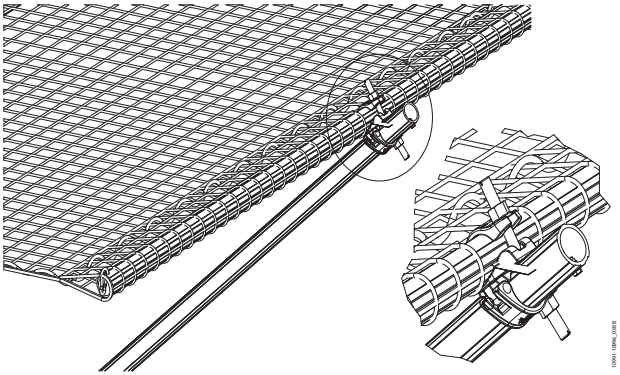


Image 38. Assemble the outer Tube on the raking Tube

5. Tie the Pull Rope, Art. No. 10861 between the inner and middle horizontal Tubes in the centre of the Safety Net Fan. This rope will be used to fold up the Safety Net Fan.

NOTE

If Wind Locks are used, Pull Ropes are provided in that kit. See further down in this user instruction for details about Combisafe Wind Lock.

6. The Safety Net Fan is now assembled and ready for use. After fitting attachments the Safety Net Fan can be lifted into place. See section "Installation".

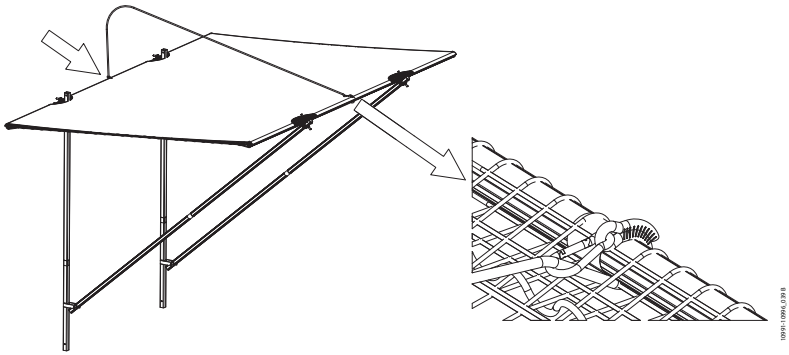


Image 39. Assembled Safety Net Fan

Positioning limits according to EN1263-2

Positioning limits are set out in EN1263-2 and only apply to the Fall-Arrest Safety Net Fan.

According to "EN1263-2 Safety nets: Part 2: Safety requirements for the positioning limits", a Fall-Arrest Fan designed to catch persons must be positioned in accordance with the following:

- For a working surface sloping less than 20° the maximum fall height is 6 metres.
- For a working surface sloping more than 20° the maximum fall height is 3 metres.
- The minimum free height below the Safety Net Fan (f) must be at least the height of the Safety Net Fan. Nothing must obstruct the area below the net, within the length of the frames.

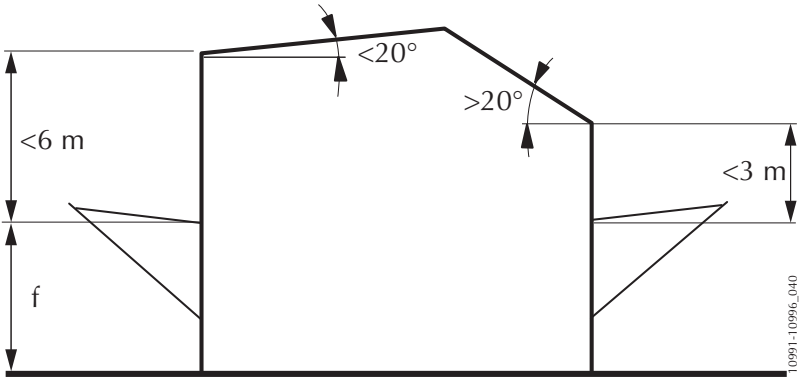


Image 40. Maximum fall hights

While the Fall-Arrest Safety Net Fan has been tested and approved for fall heights of 6 metres, Combisafe recommends that the Safety Net Fan is positioned as close to the working area as possible. Falling into a net is never completely risk free and the lower the fall, the less the risk of injury.

Installation

Lifting

The Safety Net Fan can be lifted in a number of different ways, however the best and most common solution is to lift using two slings on the outer Tube, just outside the Double Couplers.

Make sure that all the couplers are tightened before lifting. Attach a two legged lifting device that cannot slide.

Be aware of any wind when lifting the Safety Net Fan (the Safety Net Fan catches a lot of wind). Exercise care when lifting the Safety Net Fan off the ground. There is a risk of the fan opening and swinging sideways.

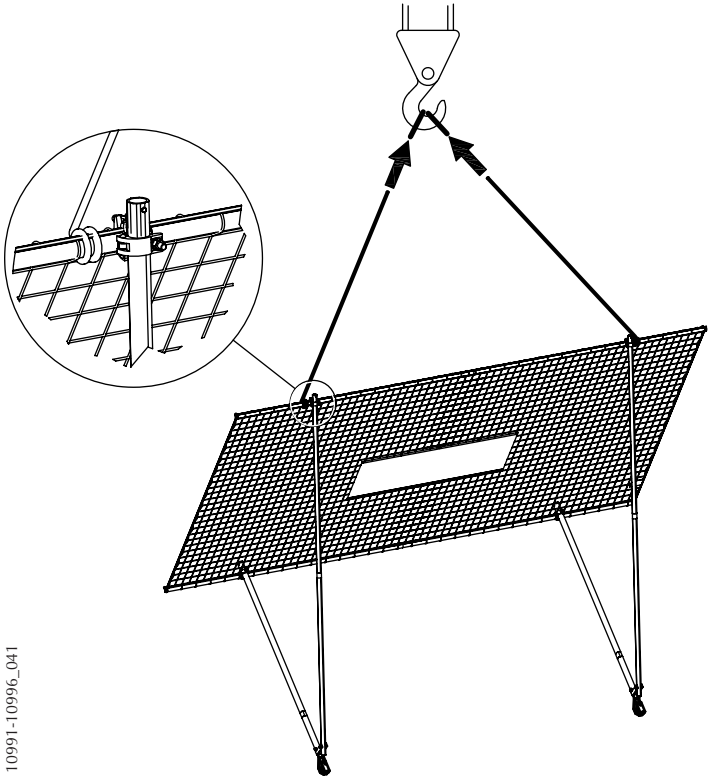


Image 41. Lifting

Anchorage loads

Attachments must always be anchored to the building, i.e. it is not enough to hang the Safety Net Fan around a slab or on an attachment without fastening it.

These loads apply to the man catching Safety Net Fan.

- The maximum pull-out load on the anchor when the Safety Net Fan is secured to a facade, independent of attachment, is 16 kN.
- The maximum shear load on the anchor when the Safety Net Fan is secured on a slab, independent of attachment, is 10 kN.
- These loads are dynamic impact loads.
- Loads can usually be lowered if fan is used only for material catching, contact Combisafe Engineering Service for advice in each individual case.

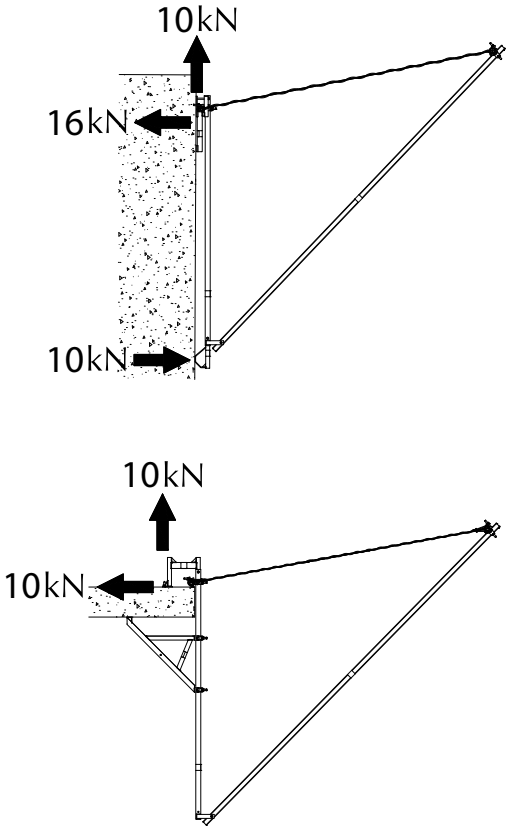


Image 42. Reaction forces, general, for wall/slab mounting

In addition to the general load cases in image 42, there are further more attachments that do not comply to the general description. These are showed in image 43-45.

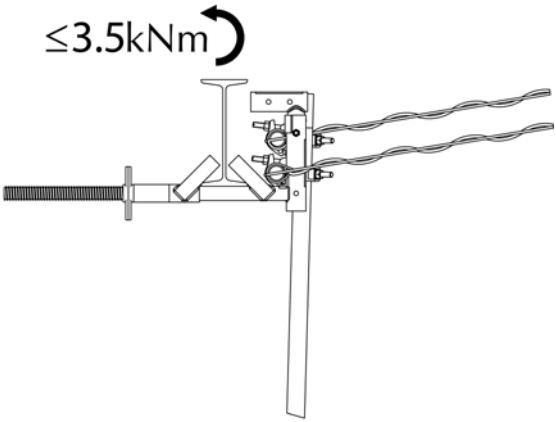


Image 43. Moment transferred to beam using Steel Jaw Clamp

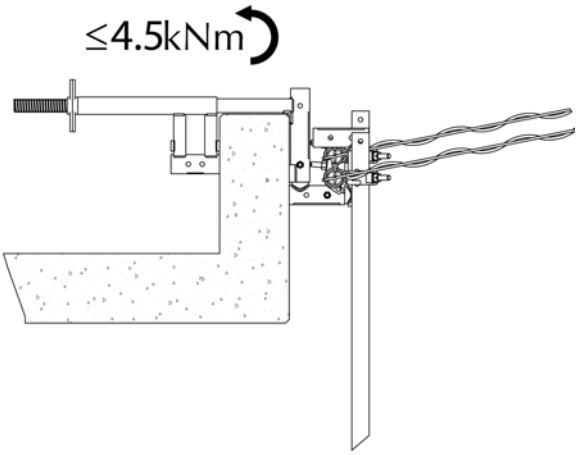


Image 44. Moment transferred to upstand using Multi Clamp

The pull-out load of the inner fastener on Offset Beam Art.No. 10965 and 10966 depending on attachment method is showed in image 45.

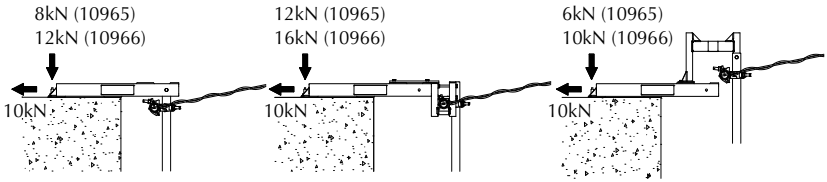


Image 45. Reaction forces, Offset Beams

Wind, material and snow loads

Wind loads

The Safety Net Fan is a large product and therefore create large wind drag which is very much depending on the wind direction and the net configuration, for example if a scaffold sheet is added. Note that the pressure caused by the wind is exponentially increased with increasing wind speeds.

Please start to pay attention to the behaviour of the fan at high wind speeds exceeding 15m/s and be prepared to either fold the fan in or tie it down with a rope to the building (see image 46) if the wind loads become a problem. To prevent the wind from folding the fan a Wind Lock (Art.No.10864) can be used. However, for very high wind speeds above actions apply also if Wind Locks are used. That is done to prevent damage to the fan and the building.

Contact Combisafe Engineering Service if any uncertainties.

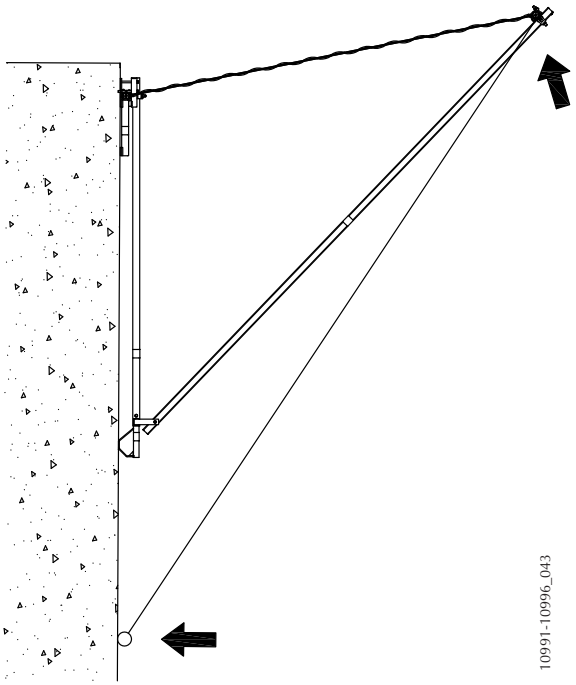


Image 46. Safety Net Fan tied to building with a rope

Material and snow loads
The Safety Net Fan is not designed for high loads other than those within EN1263-1. Keep the fans clear of materials, debris and snow.

Assembling the Slab Attachment and Knee Brace

1. Assemble the Knee Brace on the Frame by opening its two couplers and place it somewhere along the Frame. Do not tighten the couplers yet.

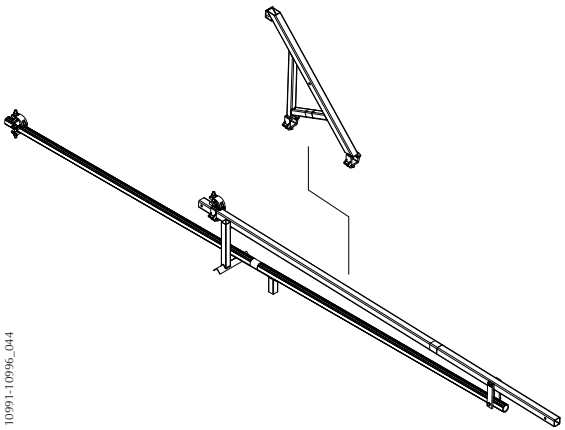


Image 47. Assemble the Knee Brace

2. Assemble the Slab Attachment on the Frames using an M12x80 bolt and nut. Adjust the Knee Brace and/or Slab Attachment according to the thickness of the slab.

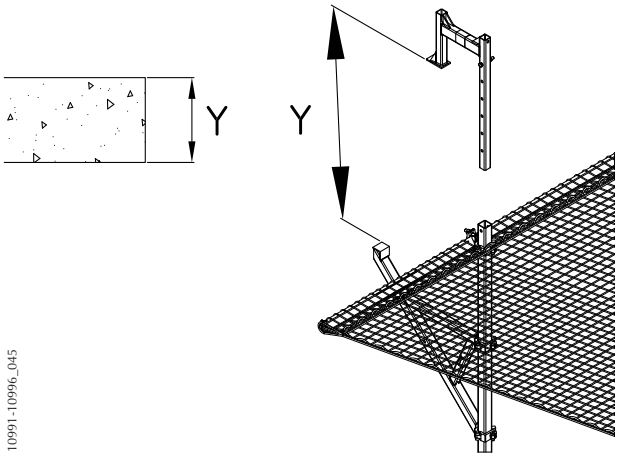


Image 48. Assemble the Slab Attachment

3. The Safety Net Fans are now ready to be lifted into position. See the section “Overlap” and “Lifting”.

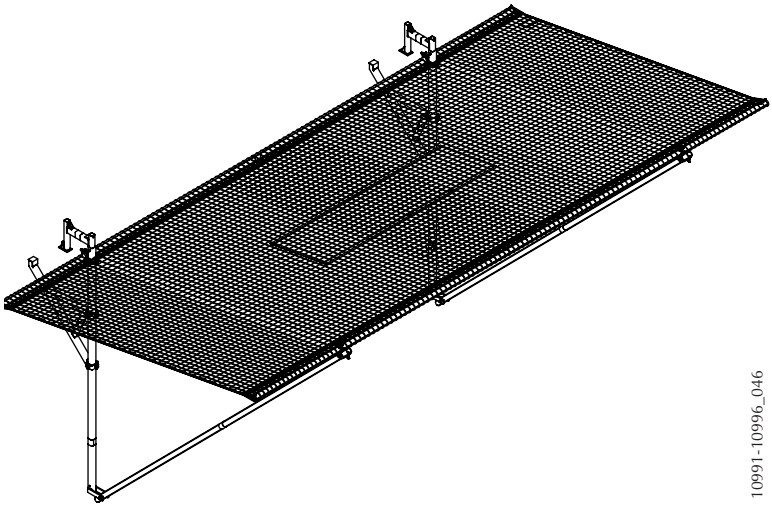


Image 49. Safety Net Fan ready for installation on the slab

4. Lift the Safety Net Fan into position and anchor it to the slab, see the section “Anchorage loads”.

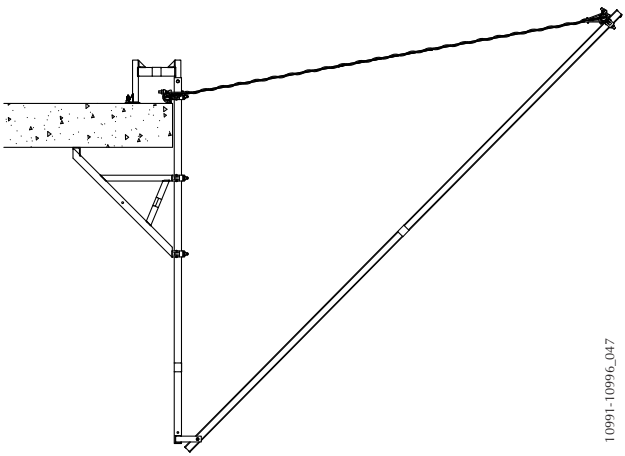


Image 50. Safety Net Fan lifted into position

Installing within the Facade Attachment

1. Facade Attachments can all be fitted at the same level. The overlap is created using the two levels within the Facade Attachment. This also means that the Square-Round Coupler on the Frame can be placed at the same level on all the fans. Check that the anchorage or form tie and the structure is capable of accepting loads stated in “Anchorage loads”.

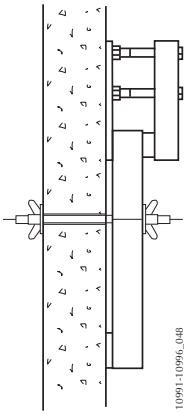


Image 51. Facade Attachment installed through a wall

2. The spacing between the Facade Attachments can be adjusted to suit the site conditions, however, the attachments must be placed at a maximum of 0.5 metres from the Frames. The attachments can be positioned on either sides of the Frame.

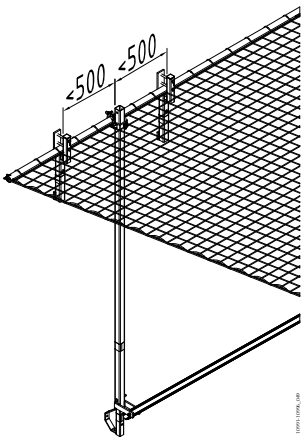


Image 52. Positioning of the Facade Attachment

3. Use the level positions within the Facade Attachments to create the overlap. See the section “Overlap”.

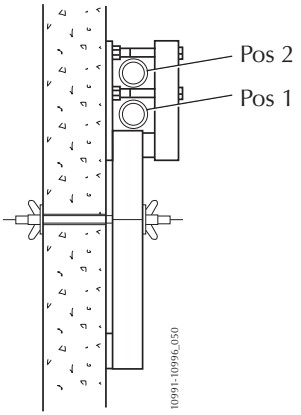


Image 53. Levels within the Facade Attachment

Pos.	Description
1	Lower fans
2	Upper fans

4. Lift the Safety Net Fan into position on to the Facade Attachments. Secure the Safety Net Fan with M12 x 120 bolts. See the section “Lifting”.

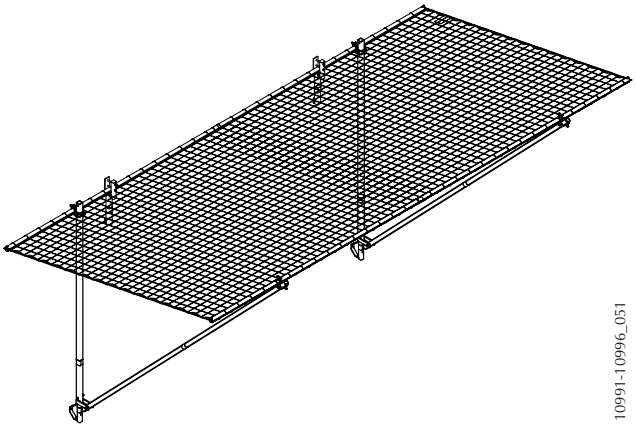


Image 54. The Safety Net Fan installed within the Facade Attachment

Installing within the Scaffold Attachment

1. Fit the Scaffold Attachments on to the scaffold standards at the same level. The overlap is created using the two levels within the Scaffold Attachments. This also means that the Square-Round Coupler on the Frame can be placed at the same level on all the fans. Check that the scaffold is capable of accepting the loads stated in the section “Anchorage loads”.

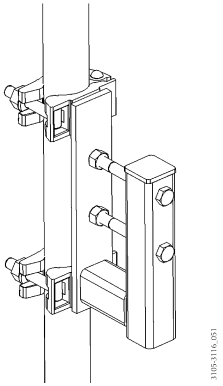


Image 55. Scaffold Attachment installed on Tube

2. The spacing between the Scaffold Attachments can be adjusted to suit the scaffold in question, however, the attachments must be placed at a maximum of 0.5 metres from the Frames in the Safety Net Fans. The attachments can be positioned on either sides of the frame. A common solution is to use a 4,2 metre Safety Net Fan for each 3 metre section of scaffold, which gives an overlap that meets the required 1 metre.

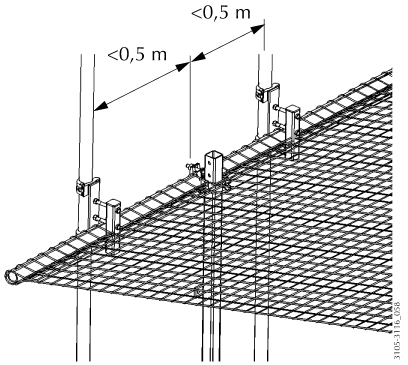


Image 56. Positioning the Scaffold Attachment

3. Use the level positions within the Scaffold Attachment to create the overlap: See the section “Overlap”.

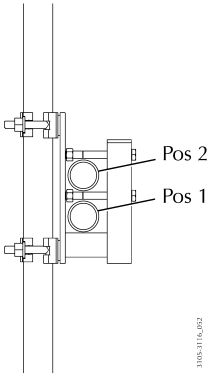


Image 57. Levels within the Scaffold Attachment

Pos.	Description
1	Lower fans
2	Upper fans

4. Lift the Safety Net Fan into position on to the Scaffold Attachments. Secure the Safety Net Fan with M12 x 120 bolts. If lower part of the Frame is not automatically supported by one of the horizontal members in the scaffold, an extra horizontal Tube is fitted to the Safety Net Fan using two Square-Round Couplers. See the section “Lifting”.

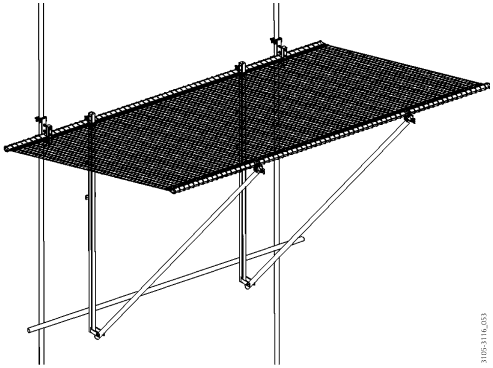


Image 58. Safety Net Fan installed on a scaffold

Installing within the Loose Slab Attachment

1. Loose Slab Attachments can all be fitted at the same level. The overlap is created using the two levels within the Loose Slab Attachment. This also means that the Square-Round Coupler on the Frame can be placed at the same level on all the fans. Check that the anchorage and the structure is capable of accepting loads stated in “Anchorage loads”.

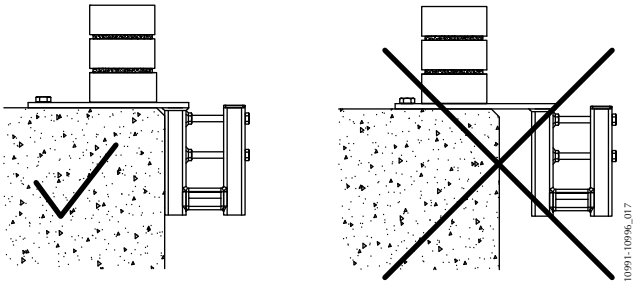


Image 59. Loose Slab Attachment installed through brick wall

2. The spacing between the Loose Slab Attachments can be adjusted to suit the site conditions, however, the attachments must be placed at a maximum of 0.5 metres from the Frames. The attachments can be positioned on either sides of the frame.

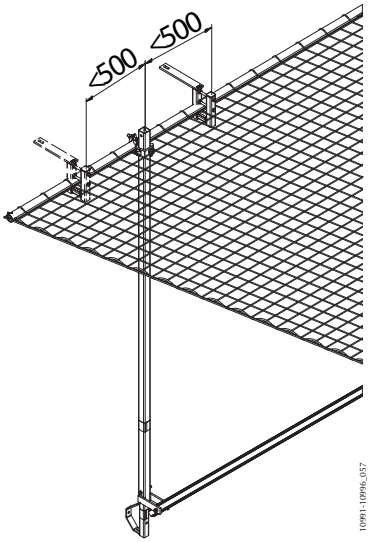


Image 60. Positioning the Loose Slab Attachment

3. Use the level positions within the Loose Slab Attachments to create the overlap. See the section “Overlap”.

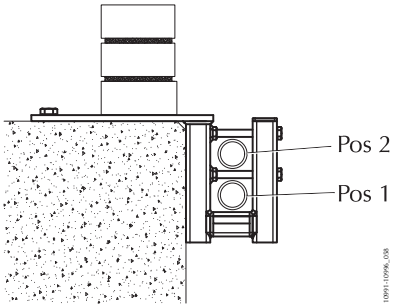


Image 61. Levels within the Loose Slab Attachments

Pos.	Description
1	Lower fans
2	Upper fans

4. Lift the Safety Net Fan into position on to the Loose Slab Attachments. Secure the Safety Net Fan with M12 x 120 bolts. See the section “Lifting”.

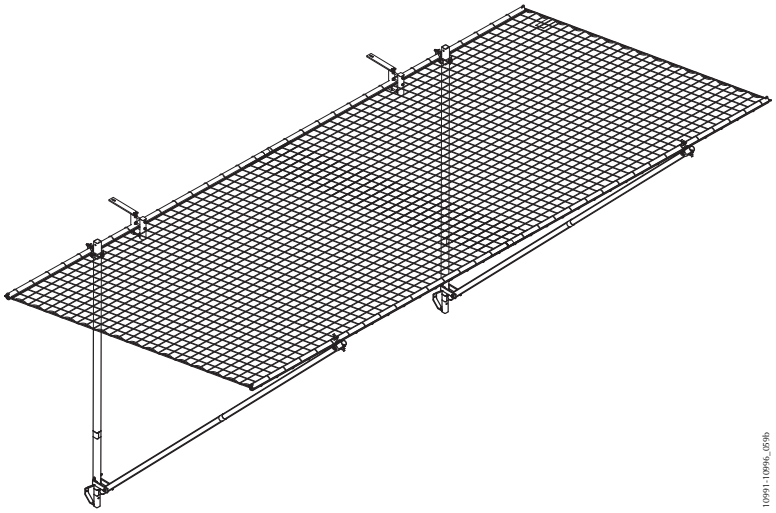


Image 62. The Safety Net Fan installed within the Loose Slab Attachment

Installing using the Multi-Clamp

1. Fit two elbows on the Multi-Clamp as shown and assemble the Multi-Clamp over the edge of the wall/upstand. Check that the structure is capable of accepting the loads stated under “Anchorage loads”.

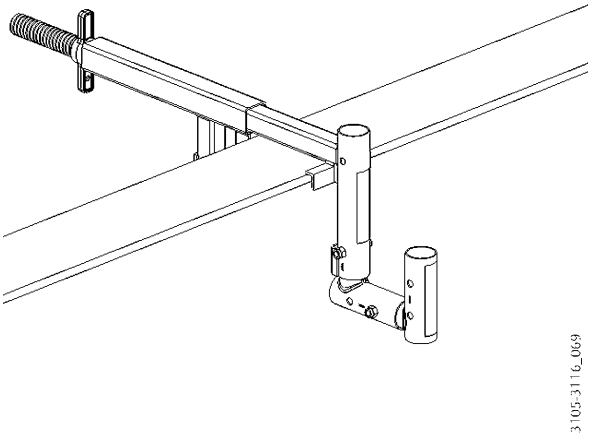


Image 63. Multi-Clamp

2. If possible, use a fastener to secure the Multi-Clamp according to image 64.

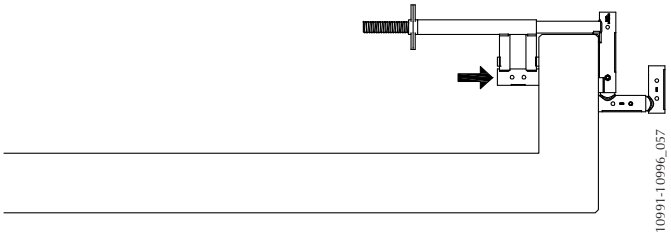


Image 64. Attach a fastener in concrete upstand to secure Multi-Clamp

3. The Multi-Clamps must be placed at a maximum of 0.5 metres from the Frames in the Safety Net Fans. The Multi-Clamp can be positioned on either side of the frames.

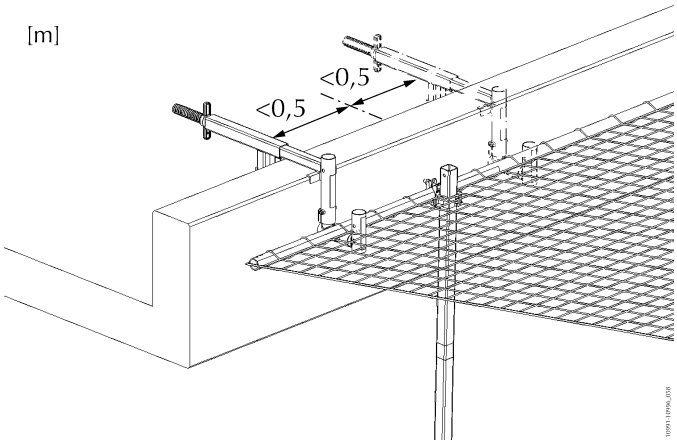


Image 65. Positioning the Multi-Clamps

4. Create an overlap by placing the Safety Net Fans on top of each other whitin the elbows.

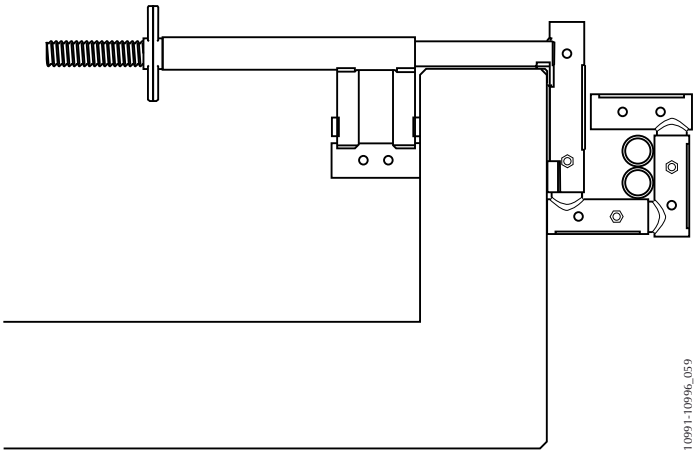


Image 66. Overlaps within Multi-Clamp with elbows

5. Lift the Safety Net Fan into position on to the Multi-Clamps. Secure the Safety Net Fan using another elbow as shown in image 67.

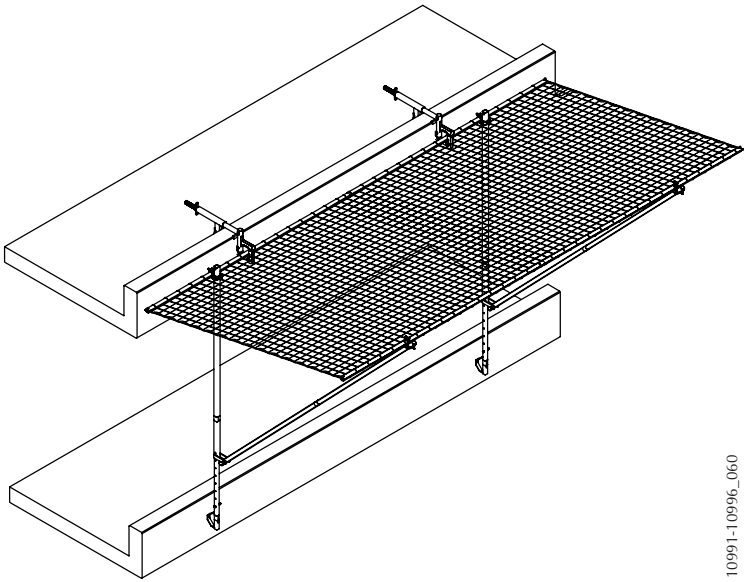


Image 67. Safety Net Fan installed with Multi-Clamps

Installing using with Steel Jaw Clamp

1. Install two Steel Jaw Clamps on the beam. Check that the beam is capable of accepting the loads stated under “Anchorage loads”.

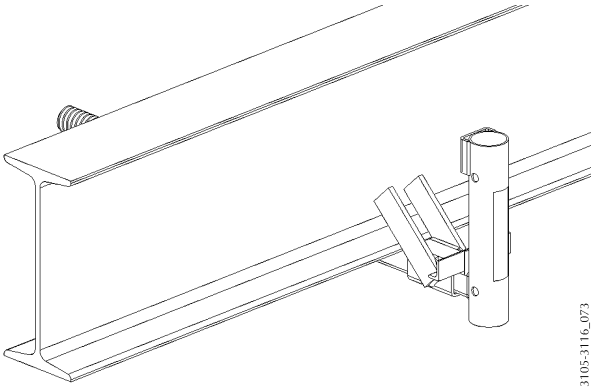


Image 68. Steel Jaw Clamp on a beam

2. The Steel Jaw Clamps must be positioned a maximum of 0.5 metres from the Frames in the Safety Net Fan. The Steel Jaw Clamps can be positioned on either side of the Frames.

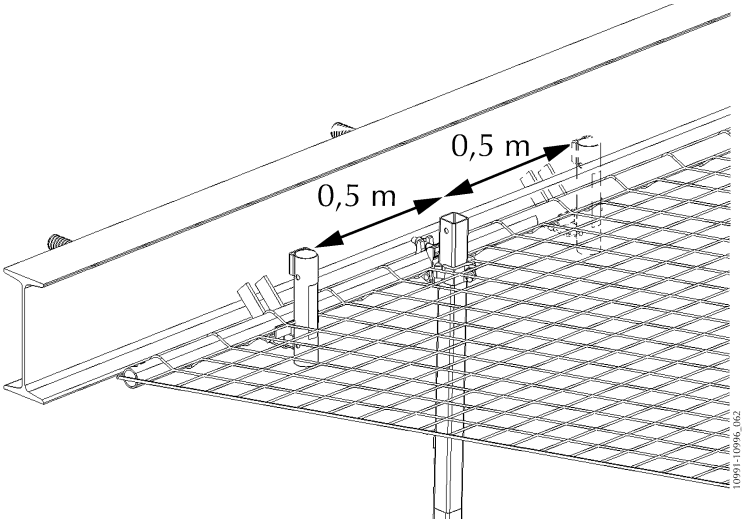


Image 69. Positioning the Steel Jaw Clamps

3. Create an overlap by placing the Safety Net Fans on top of each other within the Steel Jaw Clamps.

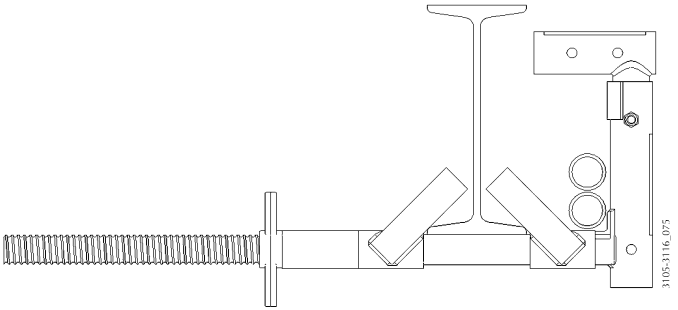


Image 70. Overlap within the Steel Jaw Clamp with elbows

4. Lift the Safety Net Fan into position on the Steel Jaw Clamps. Secure the Safety Net Fan using the elbow as showed in image 71.

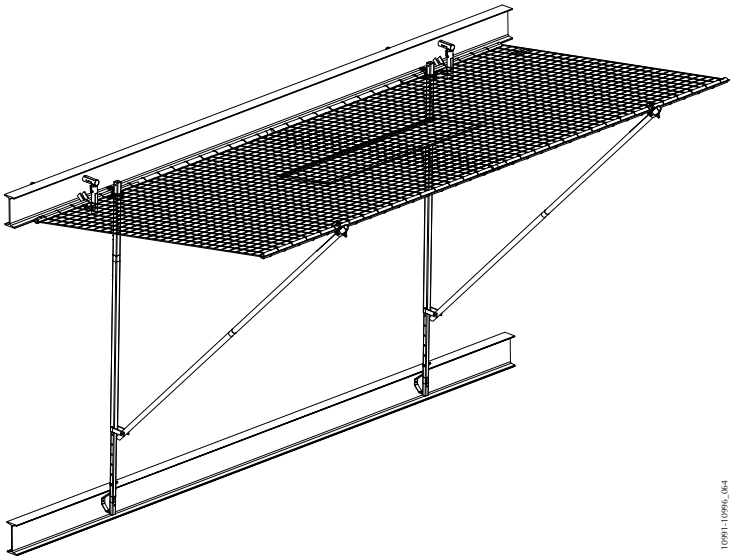


Image 71. Safety Net Fan installed with Steel Jaw Clamps

Using the Extension

1. Assemble the Extension using M12 x 80 bolt and nut at the bottom of the Frame. Adjust to length. See image 10 and 11.

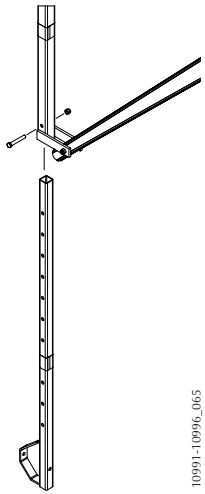


Image 72. The Extension assembled in the Frame

2. The Safety Net Fan is now ready to be lifted into position.

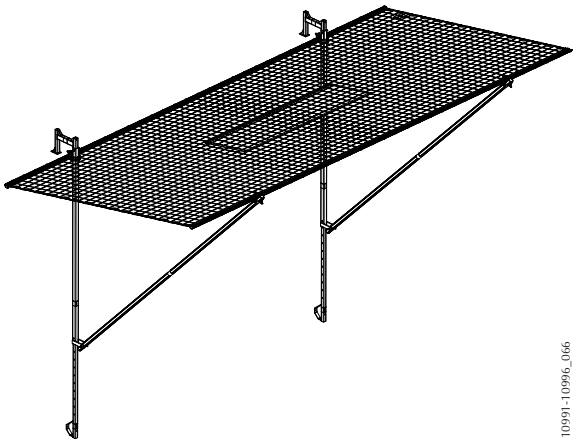


Image 73. Safety Net Fan with Extensions

3. If there is a risk that the Extension can slide off of the supporting surface it can be fixed in position using an anchor. It can be done through the whole part or just through the support part.

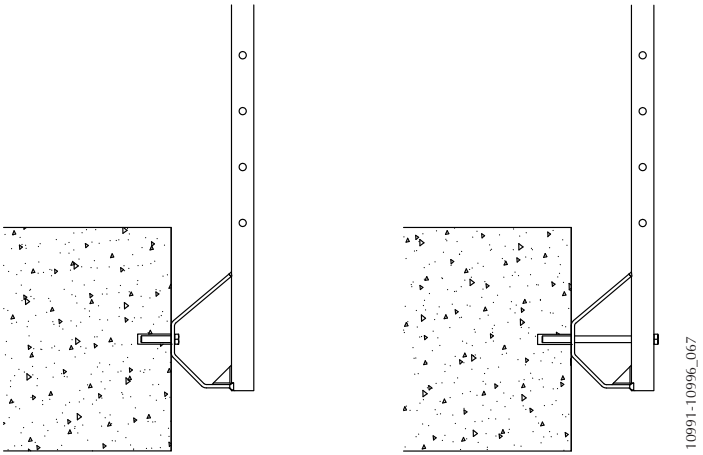


Image 74. Variants of Extension anchored to slab

4. If the Extension is supported on a steel beam which prevents it from sliding, further fixings are not required.

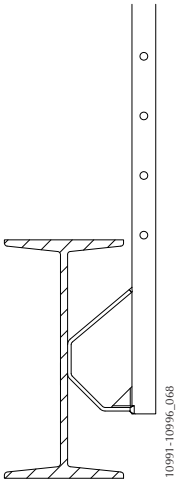


Image 75. Extension supported on steel beam

Rescue from the net

A rescue plan should be drawn up before starting to use the Safety Net Fan as a Fall-Arrest Fan.

In most cases involving a fall into a Safety Net Fan, the fall height is low and the fallers can climb/roll out of the net themselves.

In the event of a fall where the person cannot climb out of the net by themselves a visual assessment must be made by a competent person to decide the choice of rescue method. The following rescue methods can be used:

- A competent rescuer can descend to the injured person by abseiling equipment and: -Assist the faller out of the safety net. -Lift the faller out of the safety net using rescue equipment.
- Connect to the faller and abseil down to the ground by cutting a hole in the safety net if necessary.
- If the equipment is available, a cherry-picker or similar access equipment can be used so that for example, the fire brigade can come up under the safety net with a stretcher secured to the cage, fasten the person to the stretcher and then cut a hole in the safety net.

Safety instructions

The Safety Net Fans must be installed by competent personnel, training is strongly recommended.

A Safety Net Fan that has arrested the fall of a person or heavy object (causing permanent deformation of the Net) should be withdrawn from service and the Net destroyed.

The Safety Net Fan must be inspected before each occasion of use and on a regular basis when installed on site (not less often that every seven days).

Always use suitable personal safety equipment when assembling and installing the Safety Net Fan.

Check that the couplers have been tightened properly and sit firmly before lifting and installing the Safety Net Fan.

Maintenance

To ensure their continued fitness for use, handle Safety Net Fans with care. Damaged Safety Net Fans must be fully reconditioned before use.

Reconditioning must be carried out by competent personnel.

Never adjust or straighten aluminium components. A bent aluminium part must be replaced, never re-used.

The Net within the Safety Net Fan must be examined annually. See the section “Inspection”.

Inspection

Fully inspect the Safety Net Fan before putting it into service, checking for damage and Net deformation.

Frame

Aluminium components must not be bent. Never straighten bent aluminium components.

Check steel and aluminium parts for:

- Cracks in welds
- Deformation
- Rust
- Damage
- Wear
- Visible Combisafe labelling and ID number
- No sharp edges

Safety net
Check the safety Net for:

- No damage to mesh cords
- No damage to border ropes
- Visible Combisafe labelling and ID number
- Existing Test Cords
- Evidence of approval to the EN standard

Tested and approved safety Nets must have an addition label confirming the status of the Net. **If in doubt, consult Combisafe!**

Inspection of the assembled Safety Net Fan

- Are the couplers tightened correctly so that they cannot slide?
- When a Slab Attachment is not used, is the stop screw fitted above the Square-Round-Coupler so that it cannot slide off the Frame?
- Is the bolt between the Frame and the Tube fitted correctly?
- Are the Lift Slings fitted correctly, so that they can be attached to the crane?
- Have the Nets been inspected and do they conform to EN1263-1?
- Are the anchor points strong enough?
- Is the overlap at least 0.75 metres (Fall-Arrest Safety Net Fan)?
- Should the Safety Net Fan have been tied up taken down due to wind loads?
- Is there debris in the Safety Net Fan?
- Have the Safety Net Fans been correctly laced?
- Do the Safety Net Fans have adequate support, does the facade need to be protected?

Annual inspection
It is recommended that the Safety Net Fan be examined annually unless otherwise stated in national regulations.

NOTE

The Safety Net Test Cord must be tested annually. The Test Cord can be sent to Combisafe or another accredited testing institute.

Labels on the Safety Net Fan indicate when the next Test Cord must be sent for testing.

Circumstances in which the product must be withdrawn from service
Do not use products that do not pass the checks set out above.

Safety Net Fans that do not pass the Test Cord test must be taken out of service. If however, the last Test Cord passes the test, the Safety Net Fan can be used for one more year and then be taken out of service.

When a Test Cord passes a test a label is issued confirming this and indicating the next date for testing. The label must be attached to the Safety Net Fan.

Storage

Safety Net Fans must be stored in a dry and well-ventilated place, protected from the weather and all forms of corrosive substances.

Discarding

The Frames and attachments for Fall-Arrest Safety Net Fans that no longer meet the inspection criteria are to be recycled as steel and aluminium.

A safety Net that no longer meets the inspection criteria is to be scrapped as polypropylene and its border rope as nylon.

Declaration of conformity

For Fall-Arrest and Protection Safety Net Fans with accessories.

AIDICO
INSTITUTO TECNOLÓGICO DE LA CONSTRUCCIÓN

STATEMENT OF CONFORMITY ASSESSMENT

Applicant: Combisafe International AB

Product: Safety Net FAN (SFN)

Assessment entity: AIDICO (Institute of Construction Technology)
Safety Elements Laboratory

AIDICO's Safety Elements Laboratory, like an **accreditated Laboratory**, for do test about the safety nets in accordance with the standard **EN 1263-1**, declares that:

The next models of safety nets fan (safety net system T):

General description (By applicant Combisafe)	General identification of the Attachment (By applicant Combisafe)		Identification sample tested (By Accreditated Laboratory)	Test Report (By Accreditated Laboratory)
	Description	Article N°		
Safety net fan HD fall-arrest 4m with facade attachment	Facade attachment	10439	51994	IE100006
Safety net fan HD fall-arrest 6m with facade attachment	Facade attachment (Mix Fan)	10439	51995	IE100007
	Facade attachment (Maxi Fan)	10439	51996	IE100008
Safety net fan HD fall-arrest 4m with slab attachement	Slab attachement	10044	51999	IE100011
Safety net fan HD fall-arrest 4m with multi clamp attachment	Multi clamp	4537	52754	IE100012
Safety net fan HD fall-arrest 4m with Loose Slab attachment	Loose Slab attachment	10964	52755	IE100013
Safety net fan HD fall-arrest 4m with Offset Beam (750/900)	Offset Beam (750/900)	10965/10966	52756	IE100014
Safety net fan HD fall-arrest 4m with steel Jaw clamp	Steel Jaw clamp	4542	52758	IE100015
Safety net fan HD fall-arrest 4m with Scaffold attachment	Scaffold attachment	10440	52759	IE100016

Has been passed satisfactorily "the dynamic strength test of safety net system T", complying with section 7.10 of standard EN 1263-1.

In Paterna (Valencia-Spain), 13/05/2011

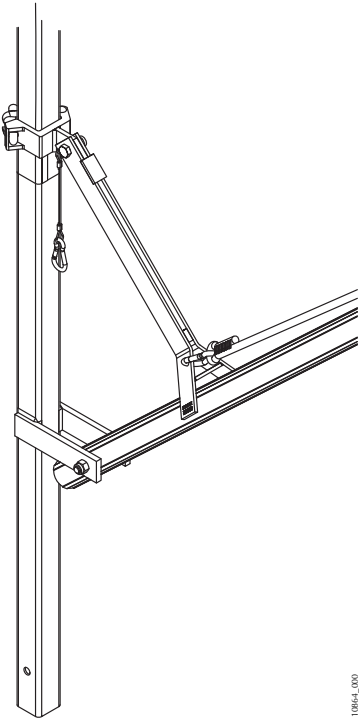
Carlos Lozano Martínez,

AIDICO's Safety Elements Laboratory Manager

Image 76. Declaration of conformity

Wind Lock for Safety Net Fan

(Prod.No. 10864)



General info

The Wind Lock is available in a single design and fits all Safety Net Fans.

Compared with securing the Safety Net Fan with ropes, the Wind Lock offers a secure, easily maneuvered solution in terms of both locking the Safety Net Fan against wind loads and being able to easily undo the lock when you need to fold the Net up.

Therefore, with the Wind Lock fitted, the Safety Net Fan can still be folded up against the facade in order to provide access for cranes beneath, or as a safety measure against very high wind loads.

Please note that once the Wind Lock has been fitted, the lower section of the Safety Net Fan needs to be secured to prevent it being rotated by wind loads it is exposed to. This is described in greater detail in the section entitled “Fitting”.

Assembly, fitting and repairs must always be performed by personnel with the relevant competence. We therefore recommend that individuals in companies that use the Safety Net Fan should undergo the relevant training.

Technical data

Wind lock 10864

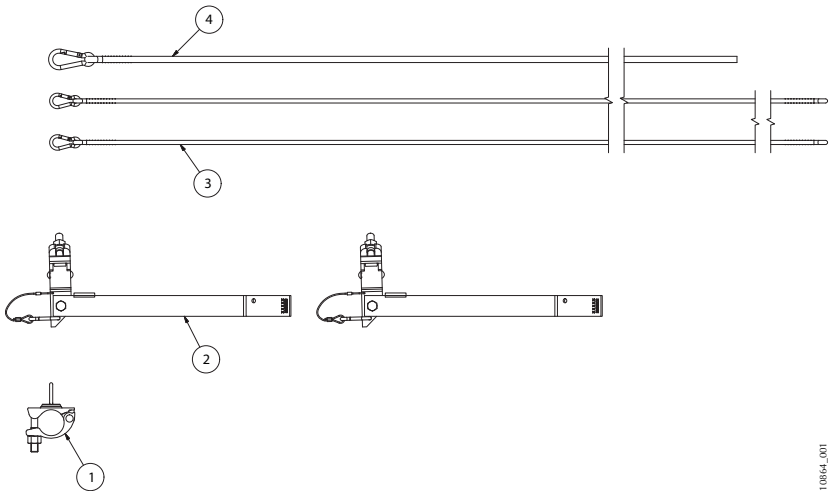


Image 1. Content, SNF Wind Lock Mk II, 10864

Pos.	Quantity	Prod. No.	Description
1	1	10863	Eye Coupler
2	2	10857	Wind Lock Mk II
3	2	10859*	Maneuvering Rope-Wind Lock
4	1	10861*	Maneuvering Rope-Safety Net Fan

*The Maneuvering Ropes come delivered in a kit with Art.No. 10974.

Dimensions and weights

Wind Lock, 10857

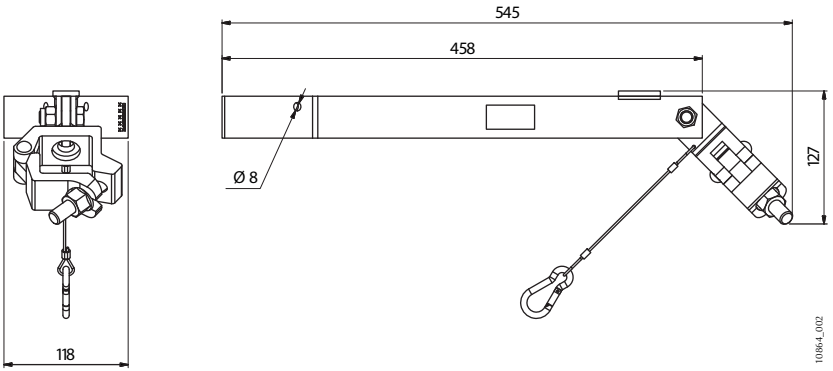


Image 2. Dimensions, Wind Lock

Prod. No.	Description	Weight
10857	Wind Lock Mk II	2.80 kg

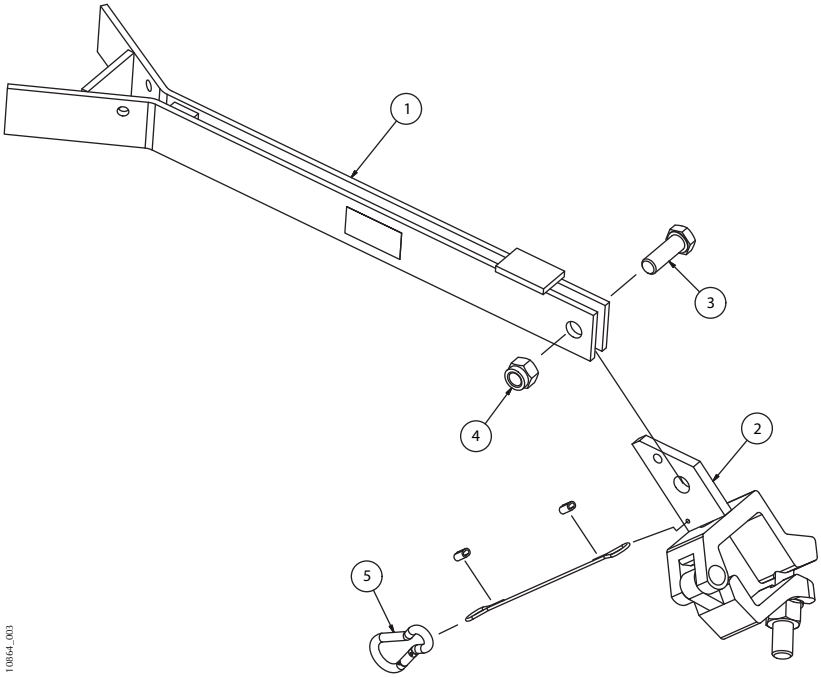


Image 3. Parts, wind Lock

Pos.	Quantity	Art. no.	Description	Weight
1	1	10854	Lock Arm	1.60 kg
2	1	10856	Lock Attachment	1.10 kg
3	1	100175	Hexagon Head Screw M12x30	0.04 kg
4	1	100025	Hexagon Nut with torque part M12	0.02 kg
5	1	100029	Spring Hook ø6x60	0.04 kg

Eye Coupler, 10863
[mm]

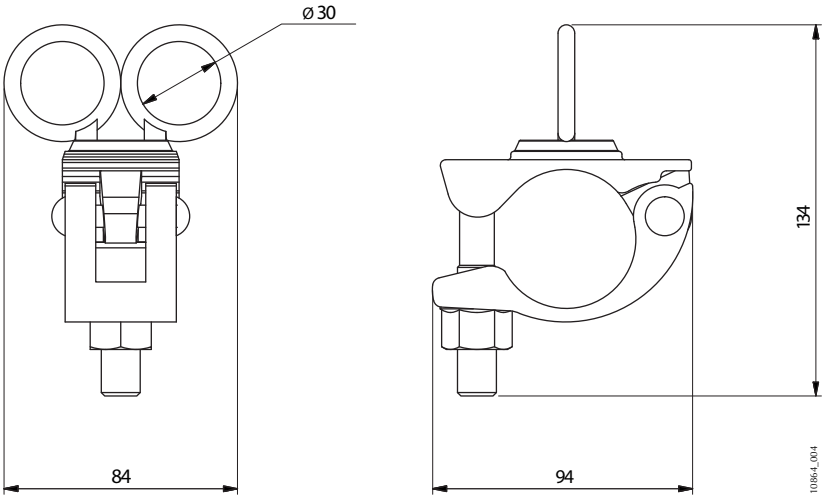


Image 4. Dimensions, Eye Coupler

Prod. No.	Description	Weight
10863	Eye Coupler	0.80 kg

Maneuvering Rope-Wind Lock, 10859
[mm]

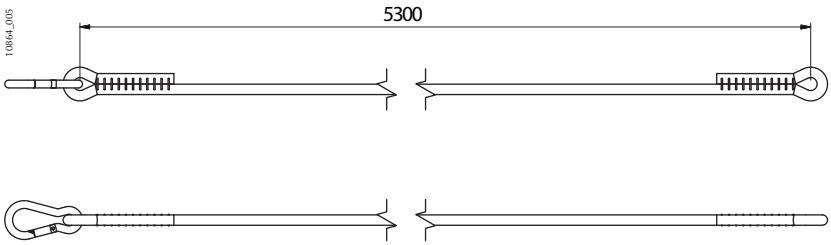


Image 5. Dimensions, Maneuvering Rope- Wind Lock

Prod. No.	Description	Weight
10859	Maneuvering Rope-Wind Lock	0.30 kg

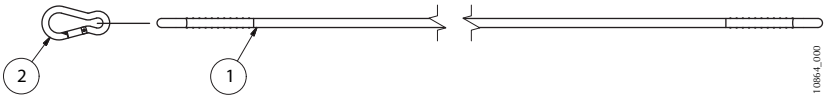


Image 6. Parts, Maneuvering Rope-Wind Lock

Pos.	Quantity	Art. no.	Description	Weight
1	1	10858	Rope ø8-5300	0.25 kg
2	1	100029	Spring Hook ø6x60	0.05 kg

Maneuvering Rope-Safety Net Fan, 10861

[mm]

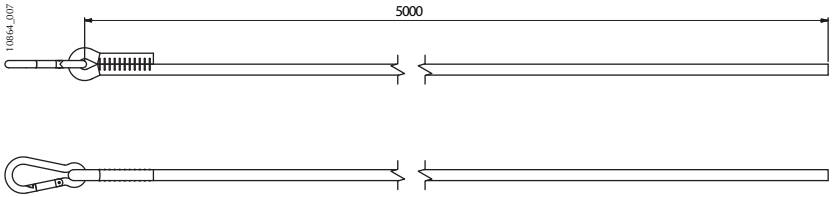


Image 7. Dimensions, Maneuvering Rope-Safety Net Fan

Prod. No.	Description	Weight
10861	Maneuvering Rope-Safety Net Fan	0.50 kg

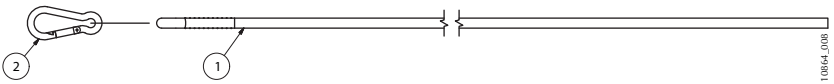


Image 8. Parts, Maneuvering Rope-Safety Net Fan

Pos.	Quantity	Art. no.	Description	Weight
1	1	10860	Rope ø12-5000	0.40 kg
2	1	100018	Spring Hook ø8x80	0.10 kg

Design and function

It is easiest to fit the Wind Lock when the Safety Net Fan is still on the ground, even though design with coupler attachment also allows for mounting Wind Locks on raised fans.

NOTE

Two Wind Locks should be fitted to each Safety Net Fan.

The Wind Lock is maneuvered by means of a line that is secured to each Wind Lock, lead through an Eye Coupler and connected to a single Pull rope for folding/unfolding the fan. The line is secured at the ends using Spring Hooks.

The Wind Lock is designed so that when the Safety Net Fan is folded the Wind Lock is activated automatically next time the fan is unfolded. This means there is no risk of forgetting to activate the Wind Lock when folding or unfolding the Safety Net Fan.

When force is applied to the Pull Rope, initially the Wind Locks will disengage and when they have reached their boundaries of movement the entire fan will start to fold.

The Wind Lock uses a coupler to attach it to the square body of the fan. This provides great adjustability by sliding the Wind Lock along the longitudinal direction of the Tube, as well as always keeping the Wind Lock straight. It also makes it easy to, if necessary, complete an already erected fan with Wind Locks.

Wind loads

If the Safety Net Fan is covered with, for instance, a scaffold sheet, the fan becomes even more sensitive to wind loads.

In strong winds, the Safety Net Fan must be folded up to avoid damage to the Safety Net Fan and the building.

For further information about wind loads, see user instruction for the Safety Net Fan.

Fitting

Delivery

The Wind Lock is supplied ready-assembled, with the exception of the Maneuvering Ropes and Eye Coupler, which must be connected to the Wind Lock and the Safety Net Fan.

Fitting positions

The Wind Lock must be fitted to both the right and left side of the Safety Net Fan.

Fitting, tools and equipment

To fit the Wind Lock, the following tools are required:

- Adjustable spanners, or ratchet spanner and sockets. Jaw width 18 mm.
- Measuring tape or carpenter's rule.
- Gloves.

Fitting the wind lock to the Safety Net Fan

1. Open the coupler on the Wind Lock by untightening the nut if necessary. Place the Wind Lock (2) on the square body Tube (1) of the Safety Net Fan according to image 9. Do this on both sides of the fan.

2. The Safety Net Fan has a label on the side of the square body Tube (1), also shown in image 9 (approximately 500mm from the top of the flat bar connection to the diagonal Tube (3)). Slide the Wind Lock so that the entire coupler is positioned over the top edge of the label.

NOTE

If fitting the Wind Lock on an older fan not equipped with such marking label, adjust the play between Wind Lock Arm (2) and diagonal Tube (3) to be between 5-15 mm for optimum function of the Wind Lock. The Wind Lock must be able to pivot freely the whole range of movement.

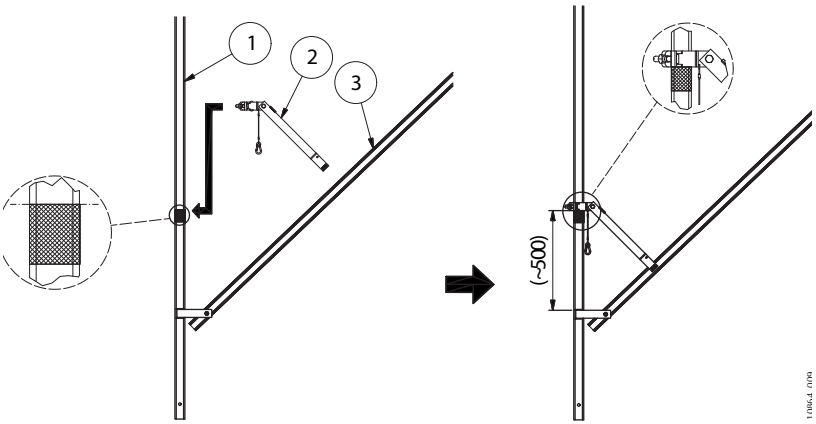


Image 9. Fitting the Wind Lock to the body

Pos.	Description
1	Body
2	Wind lock
3	Diagonal Tube

3. If assembled on an already erected fan, check that the Wind Lock can move freely between end positions according to image 10.

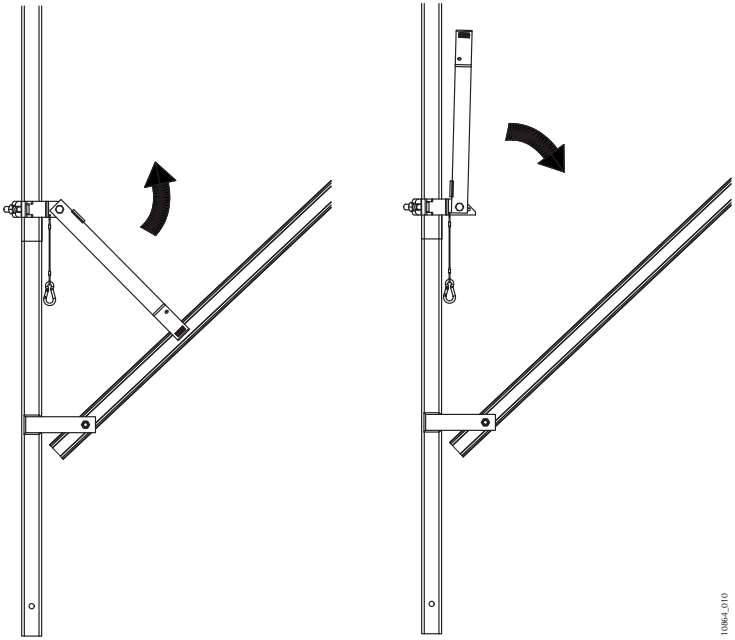


Image 10. Activated and inactivated position

4. Mount the Eye Coupler, art. No. 10863, on the outer horizontal Tube of the Safety Net Fan (Art.No. 10991-10996, 11000-11002) and on the middle horizontal tube for Maxi Safety Net Fans (Art.No. 10997-10999), see image 11. Make sure it is mounted in the middle of the fan with the rings pointing upwards. If, during assembly of the eye coupler, it is preferred to block the wind locks in disengaged position-this is shown in image 15.

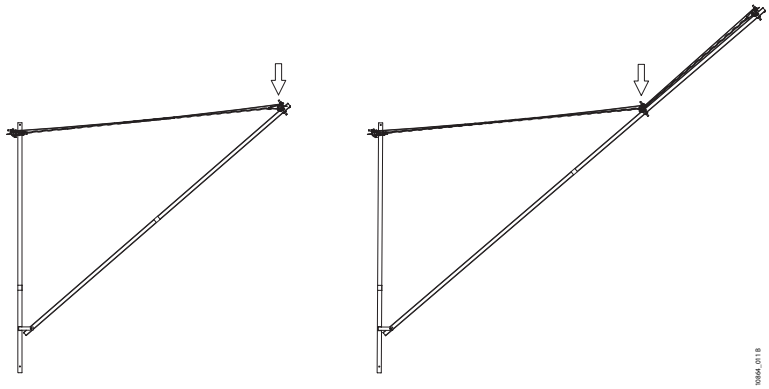


Image 11. Position of Eye Coupler

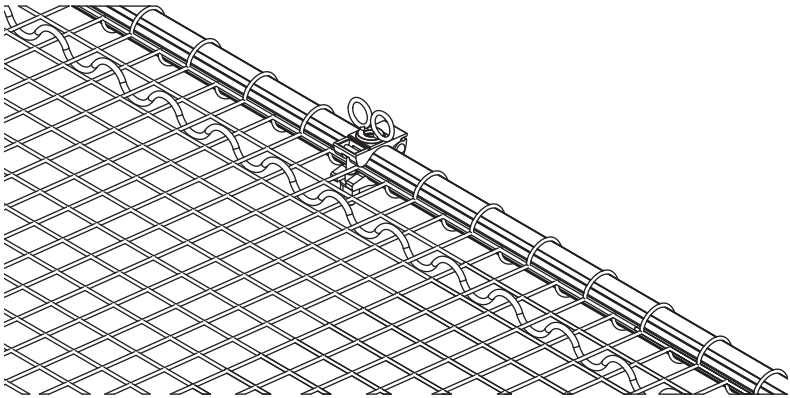


Image 12. Mounted Eye Coupler
(Shown on a standard sized Safety Net Fan)

5. Attach the Maneuvering Rope 10859 to each Wind Lock according to image 13. Use the inner holes.

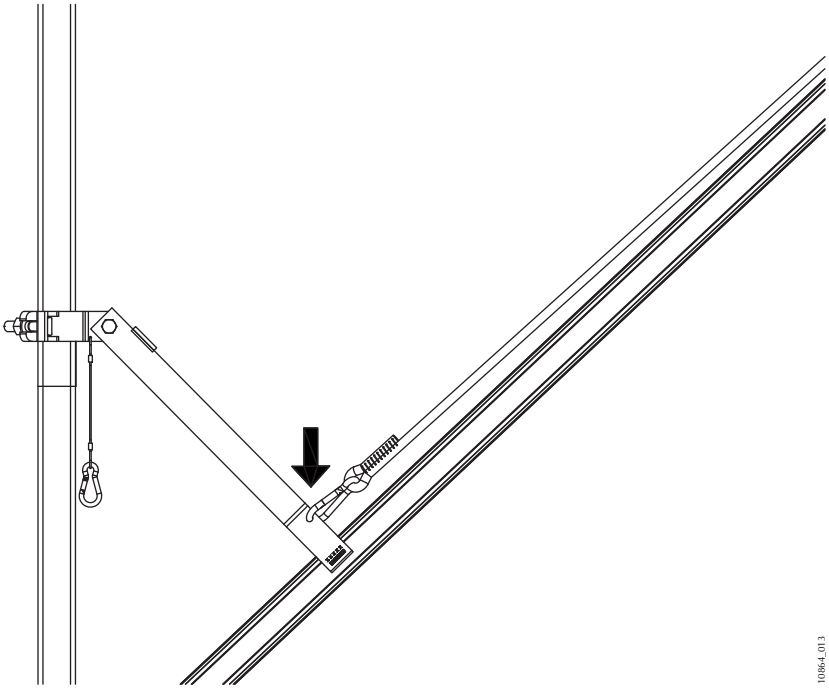


Image 13. Attached Maneuvering Rope on Wind Locks

6. Pull the ropes from both Wind Locks through the rings in the Eye Coupler.
7. Use the Spring Hook on Pull Rope art. No.10861 to connect both Maneuvering Ropes art. No. 10859.

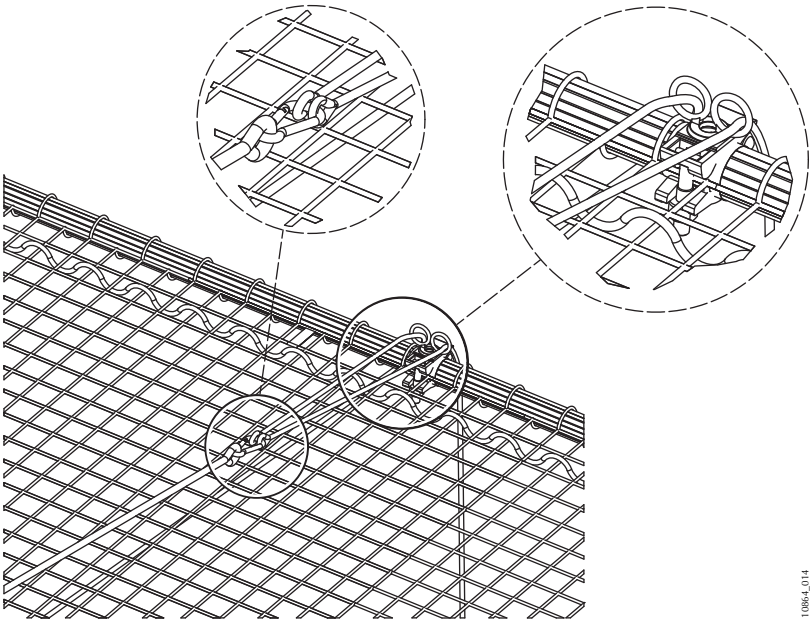


Image 14. Fitting the Maneuvering Rope
(Shown on a standard sized Safety Net Fan)

8. If the fan is already raised, attach the Pull Rope art. No. 10861 to the building or fan itself to make sure it is possible to reach from the slab edge when the fan is lifted into place.

   If the fan is on the ground, attach the Pull Rope to the fan, close to a place that will be reachable from slab edge. Usually the horizontal aluminium Tube closest to the slab can be used. To make it easier to pull the fan with said rope, a knot can be made in the end of the rope to provide better grip.

   If the fan is not yet lifted into place, while hanging in the crane close to the ground, check that the Wind Locks can move freely according to point 3.

NOTE

If Wind Locks are fitted to a non-erected fan, in some cases it might be preferable to block the Wind Lock in a disengaged position during lifting the Safety Net Fan into position. Position the attached Spring Hook in the hole according to image 15. This is also possible to do for any other reasons the Wind Locks are wished to be disengaged. It is still possible to fold and unfold the Safety Net Fan with the Wind Locks in the blocked position.

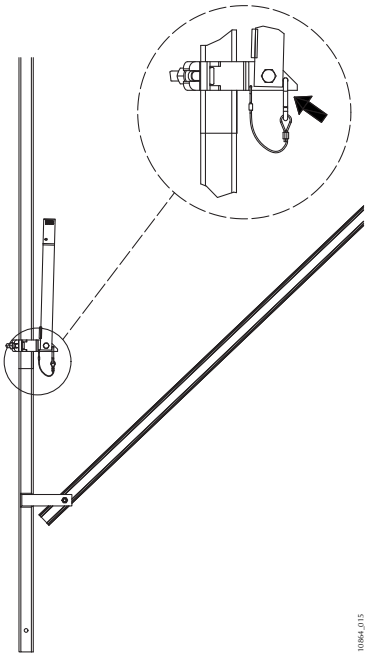


Image 15. Disengaging Wind Lock with Spring Hook

9. Once the Safety Net Fan has been installed on the building, the lower section of the Safety Net Fan needs to be secured to prevent it being rotated by wind loads it is exposed to. This can be done in several ways. Here are some examples:

   A Secure the brace to the roof with, for example, Expanders.

   B Connect a Tube to the Safety Net Fan using a Round-Square Coupler and secure the other end of the tube to the building.

   C If an Extender is used, it can be anchored to its supporting surface.

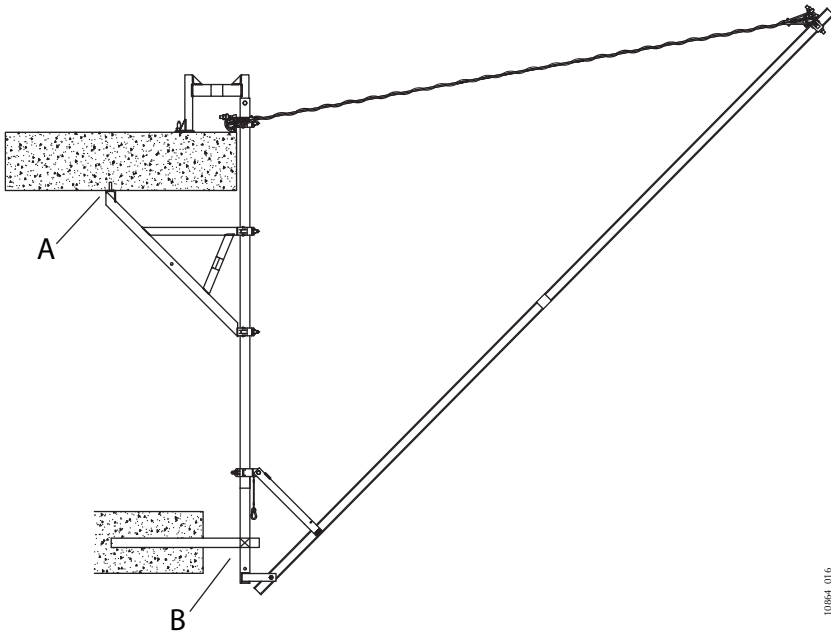


Image 16. Slab fitting option, anchor in A or B

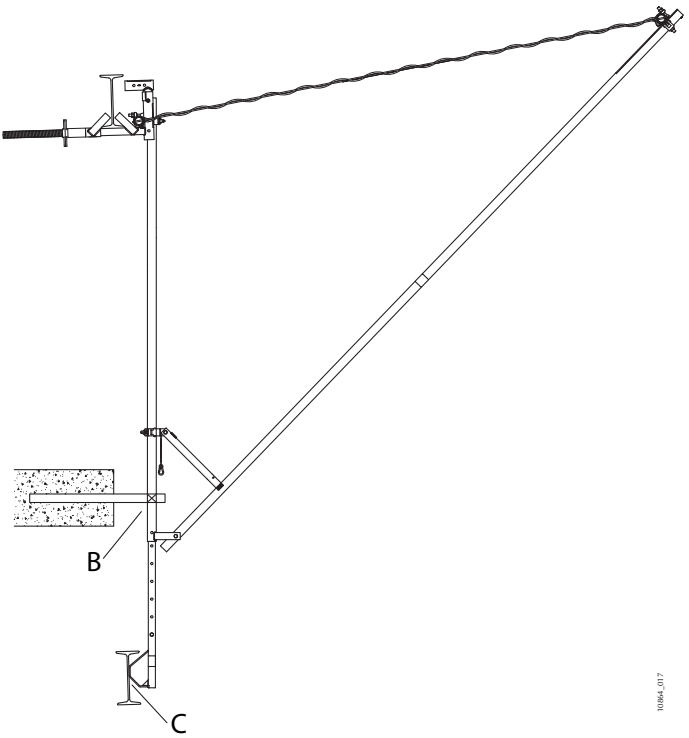


Image 17. Steel girder fitting option, anchor in B or C

Even when fitting to scaffolding, for example, the lower section of the Safety Net Fan can be secured by connecting it to the scaffolding Tube.

NOTE

Just one of the securing options A, B or C is sufficient.

Safety instructions

See user instructions for Safety Net Fan (UI 10991-10996/10997-10999/11000-11002).

Maintenance

See user instructions for Safety Net Fan (UI 10991-10996/10997-10999/11000-11002).

Inspection

See user instructions for Safety Net Fan (UI 10991-10996/10997-10999/11000-11002).

Checking fitted Wind Lock

- Are the bolts tightened properly?
- Can the Wind Lock move freely between its end positions?
- No damage to the control line or its Spring Hooks.
- Check that the Wind Lock can be maneuvered using the line in the fitted system.
- Check that the Net fan is secured in place and prevented from twisting up. (See “Fitting the Wind Lock to the Safety Net Fan” point 9, image 16 and 17.)

Disposal

Wind Locks that no longer pass inspection can be recycled as steel. Control line that no longer passes inspection should be scrapped as nylon.

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