

# Technical Information

Skyclimber Version 1

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Installation instructions EN 1176-1

Maintenance instructions EN 1176-1



16.11.16

## General

The described work is to be carried out by qualified specialists (a minimum of 3 persons).

Anchoring of the lattice equipment is made on a hot-galvanized square tube frame. Concrete work is only necessary for the foundation of the hammock swing (**see plan draft II**).

## Dimensions

Equipment space	see draft plan
Fall space	1,5 m
Minimum space	see draft plan
Height	5,00 m

## Age group

From 5 years of age

## Number of users

Approximately 50 children

## Maximum free fall height

2.50 m



## Ground conditions

We refer to EN 1176-1 with respect to the ground conditions in the playing area. Sand, wood chippings, gravel and synthetic fall protector with HIC test are accordingly permitted. We recommend a 400 mm thick bed of gravel (grit size 2 – 8 mm) or a sand filling (grain size 0.2 – 2 mm). When applying a synthetic fall protector it must be guaranteed that all positions relevant for maintenance (refer to the maintenance instructions on Pages 13 and 14) be accessible at all times. If necessary consult smb.



**1. Assembly tools:**

**Supplied tools:**

- 1 Special box spanner Size 32 with angled extension
- 1 Box spanner Size 32 with extension
- 1 Box spanner Size 30
- 1 Allen key Size 10 with extension
- 1 Rope pulley

**tools additionally required:**

- 2 Spanners Size 24
- 1 Spanner Size 30
- 1 Double ladder approx. 2.5 m long
- 1 Double ladder approx. 4 m long

**recommendation:**

- 1 Ratchet with Attachment 32 (normal assembly tool)

**2. Assembly of the anchor frame:**

**2.1 description of the parts**

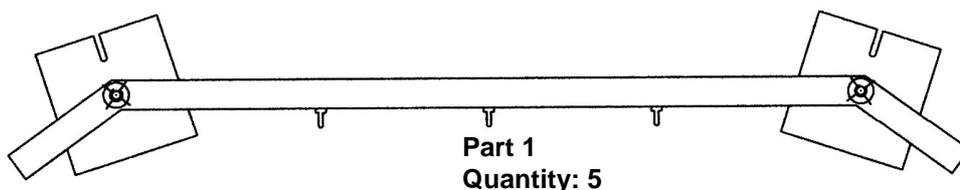


figure 1

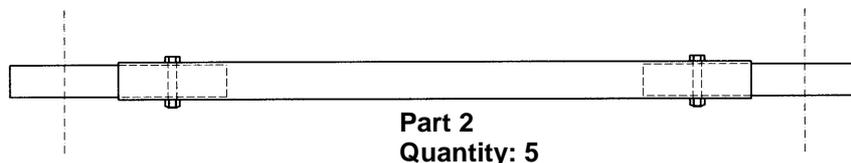


figure 2

**2.2 Assembly of the anchor frame parts**

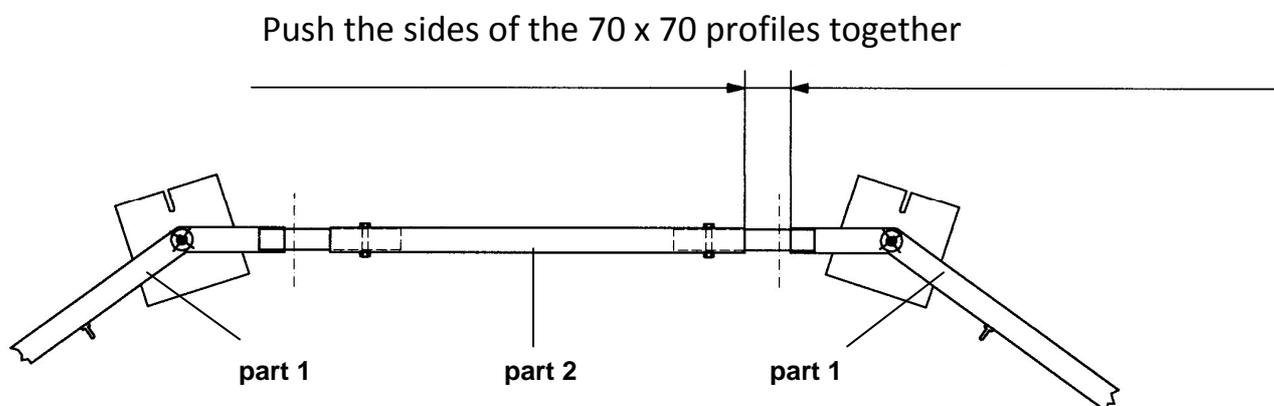


figure 3

### 2.3 Alignment of the anchor frame

If all 10 ground anchors are fixed into each other as shown in **Figure 3**, then these are screwed together with the 10 supplied screws (M16x85) and nuts. This frame must be positioned in the ground at a depth of 470 mm under the playing level (**Figure 4**) and, at the same time, be aligned horizontally and aligned in diameter. With this frame perfect screwing of the frame tubes and the hollow balls is guaranteed. **Note:** It is imperative that you observe the positioning of the hammock when assembling and aligning the anchor frame (refer to Layout Plan II).

**Attention:**  
The foundation plan for the hammock is shown on draft plan III!!

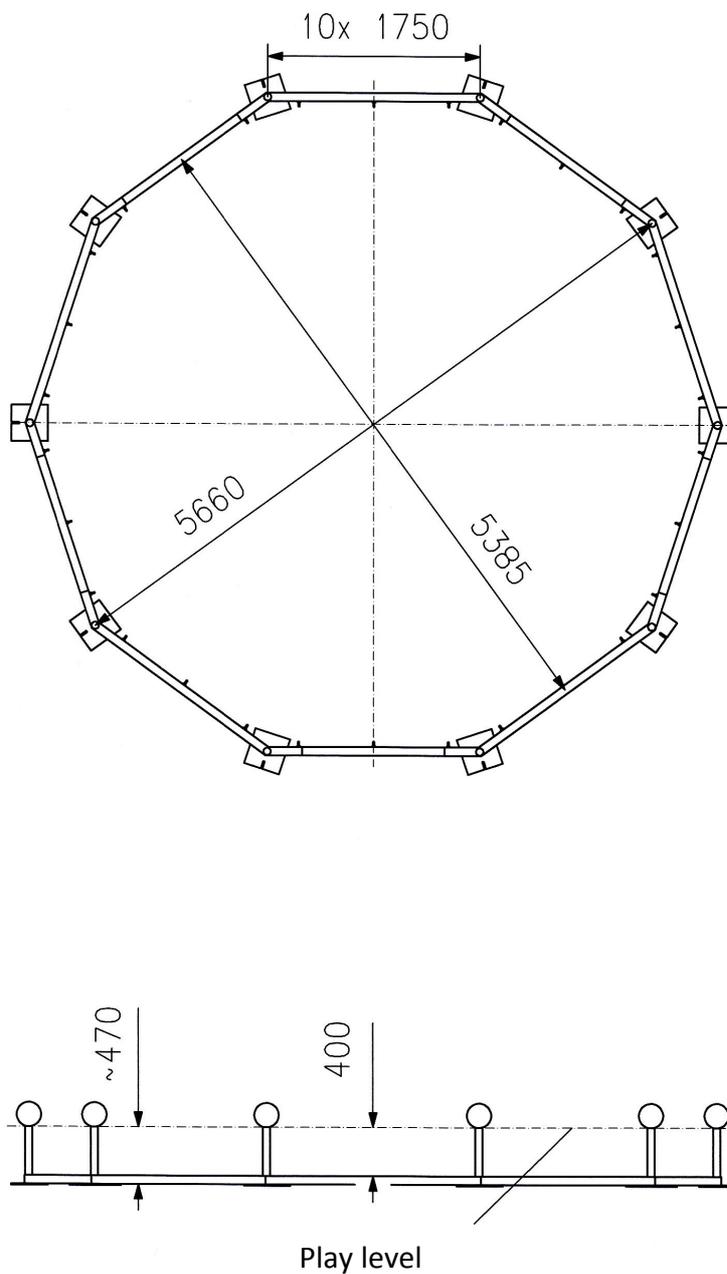
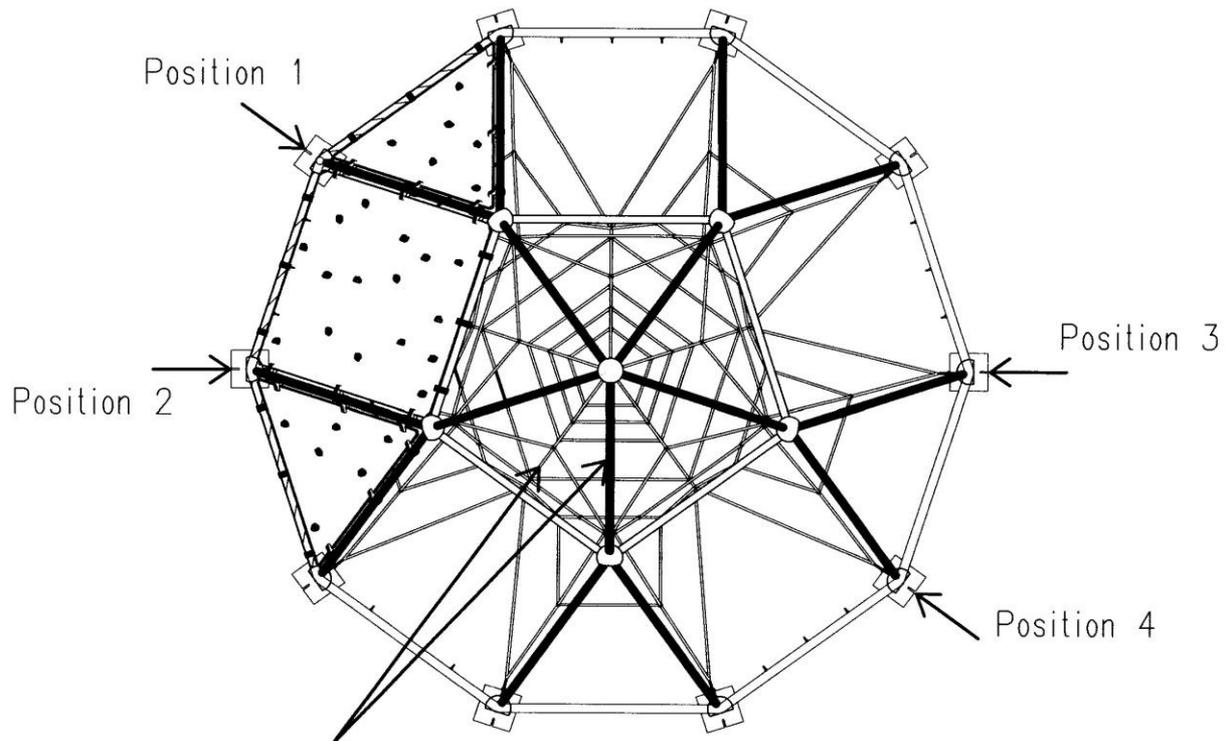


Figure 4

## 2.4 Positioning of the screw-in ground anchors

When using 1 to 3 climbing plates, 4 base plate points (**see figure 5**) are to be fixed by using screw-in ground anchors. **The given positions are to be complied with!**

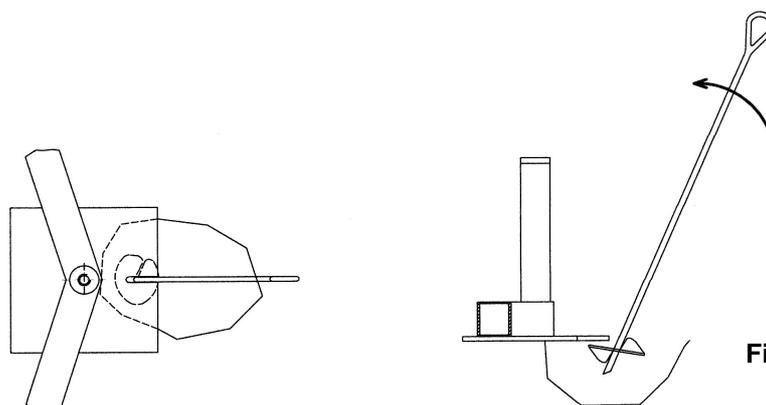


Align the upper 5 ropes to the centre  
between the upper 5 tubes (2638 mm).

**Figure 5**  
Example view with 3 climbing plates

## 2.5 inserting the screw-in ground anchors

In order to screw in the ground anchors, it is recommended to dig a little hole at the position where the anchors will be screwed in (**see figure 6**). The screw-in ground anchors can now be inserted inclined and then raised vertically.



**Figure 6**

Now you can start screwing in the ground anchors. Before the ground anchor is screwed in completely, put the counter plates (40 x 40 x 8) onto the anchors (**See figure 7**).

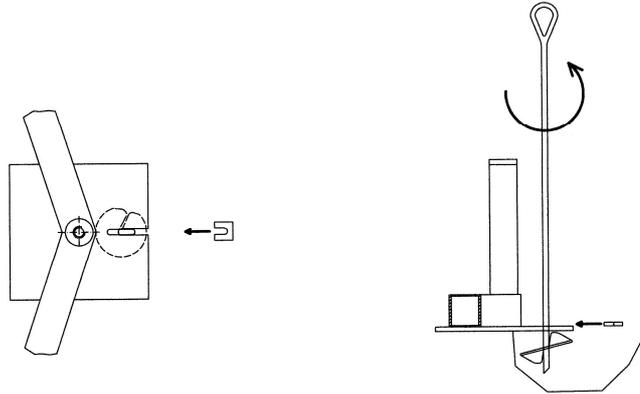


Figure 7

The final position of the screw-in ground anchors has to be in a way so that the loops of the ground anchors are in a right angle to the plate grooves (**see Figure 8**).

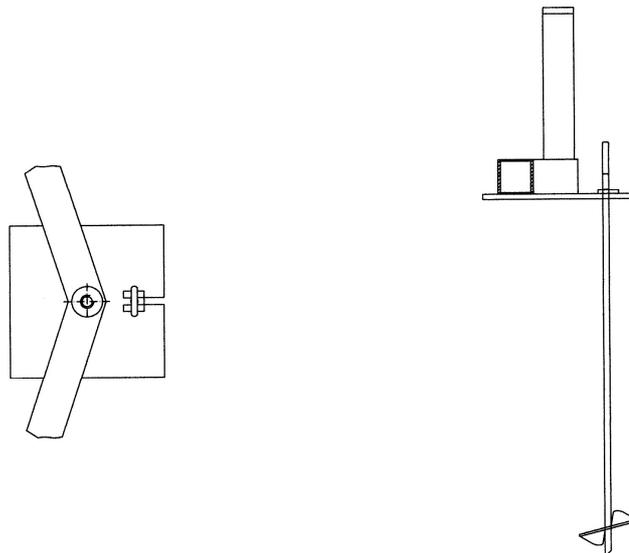


Figure 8

3. Assembly of the equipment:

3.1 views of the frame

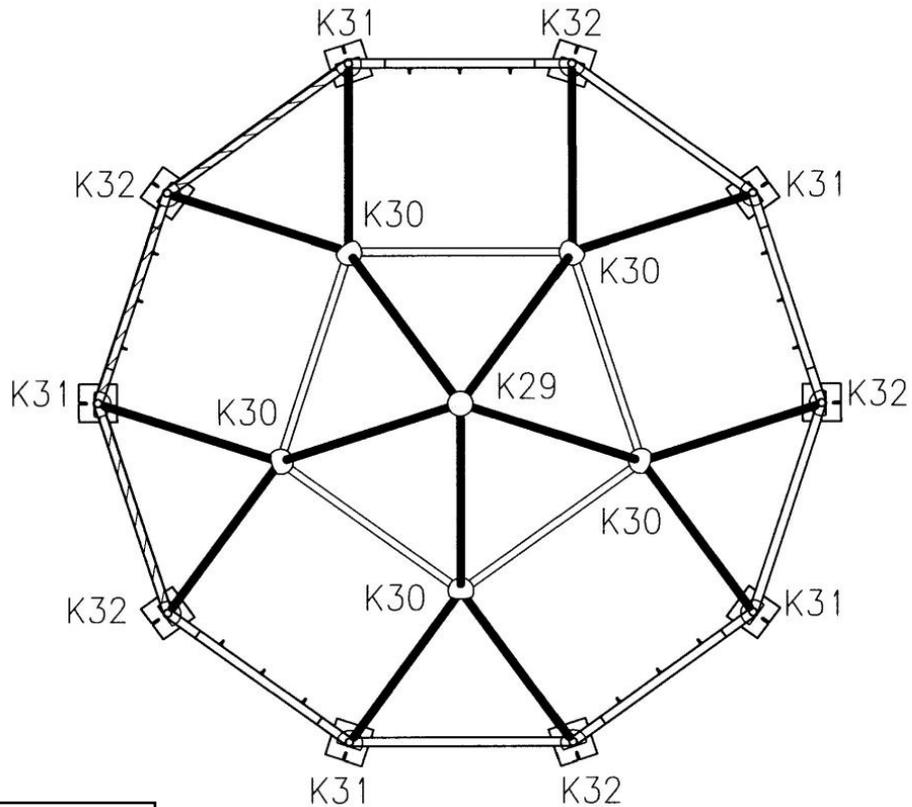


Figure 9  
 Top view

**Attention:**  
 With one climbing plate,  
 there will be only one  
 tube with the length of  
 1560 mm and not 3

- 3 tubes 1.560 mm long with inside thread
- 5 tubes 1.560 mm long with outside thread
- 15 tubes 2.638 mm long with outside thread

**Attention:**  
 The position of the special  
 tube for the hammock  
 attachment is shown in draft  
 plan II.

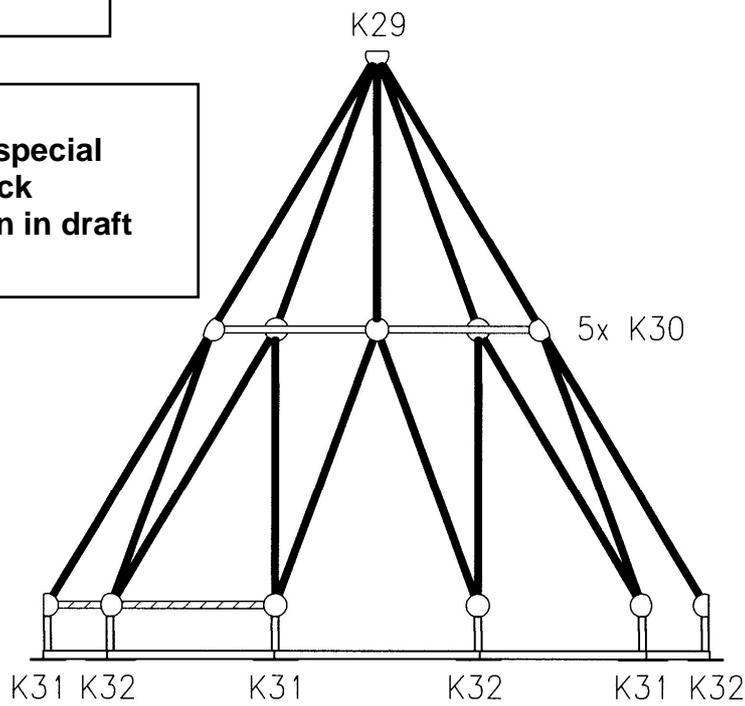


Figure 10  
 Side view

### 3.2 Screwing the lattice equipment together

Two double ladders (2.5 m and 4 m long) are required for easy assembly. The structural arrangement of the lattice-work tubes and hollow balls can be seen in **Figures 9 and 10**. The identification number (**K29 to K32**) on the hollow ball must always point to the top of the equipment when being positioned.

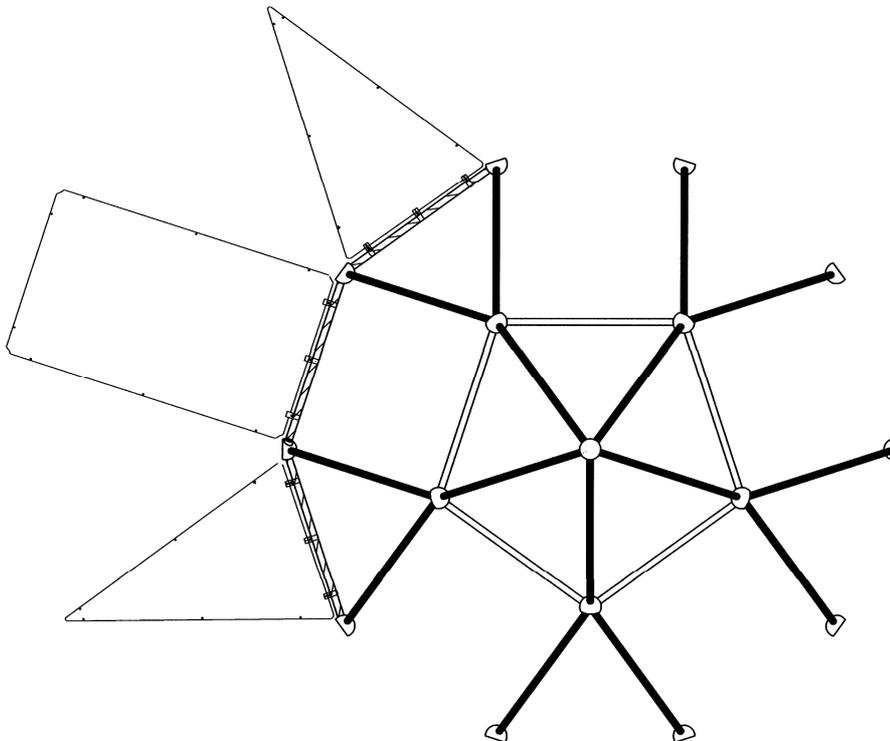
The screw joints (nut, screw M20, SIZE 32 and the retaining ring) are to be tightened to the normal tightness. In order to assemble the three tubes, 1,560 mm with inside threads, the plastic plugs must be pressed out of the corresponding connection holes on Balls 31 and 32 (only with equipment having climber panels).

When the lattice is completely assembled then all the nuts are to be **tightened as far as possible using the extended box spanner**.

## 4. Assembly of the climbing panels:

### 4.1 Arrangement of the climbing panels

The climbing panels are placed with the front side (panel side with climbing grips) facing downwards on the ground and positioned with the lower edge on the lower tube (1,560 mm) with inside threads (**Fig. 11**).



**Abbildung 11**  
Beispielansicht mit 3 Kletterplatten

#### 4.2 Securing the climber panels

The securing clamps are now attached to the lower edge of the climber panels (**refer to label**). These are to be assembled so that the "nose" grips into the 13 mm hole of the climber panel and the other side surrounds the lower tube (1,560 mm) with inside thread. When the lower clamps have been attached then these are secured with the Allen screw and nut (**Figure 12**). **Note:** before screwing home all Allen screws for the area clamp/climber panel the supplied lubrication gel is to be applied to the thread.

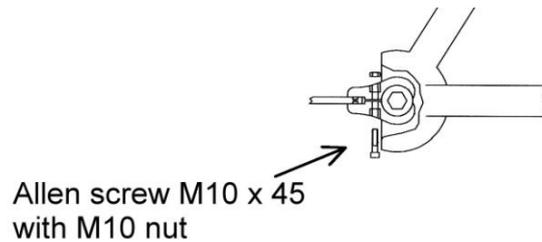


Figure 12

The M20 screws in the hollow balls of **K31** and **K32**, which secure the lower transverse tubes for the climber panels (**Figure 13**), are loosened by approximately 3 thread turns and re-tightened again after the following step is completed.

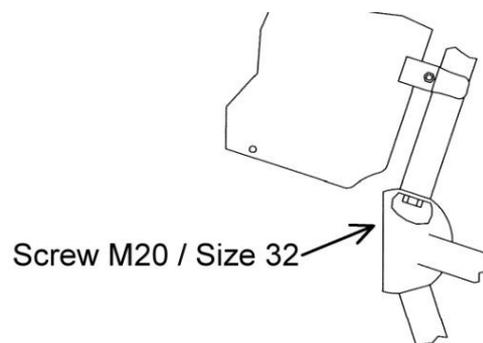


Figure 13

The climber panels can now be brought to their final position by tilting up (**Figure 14**) and the remaining clamps on the lattice secured. For this, all the 13 mm edge holes are provided with a clamp. **Note:** do not forget the lubrication gel! At last all screws of the securing clamps are to close with the plastic caps.

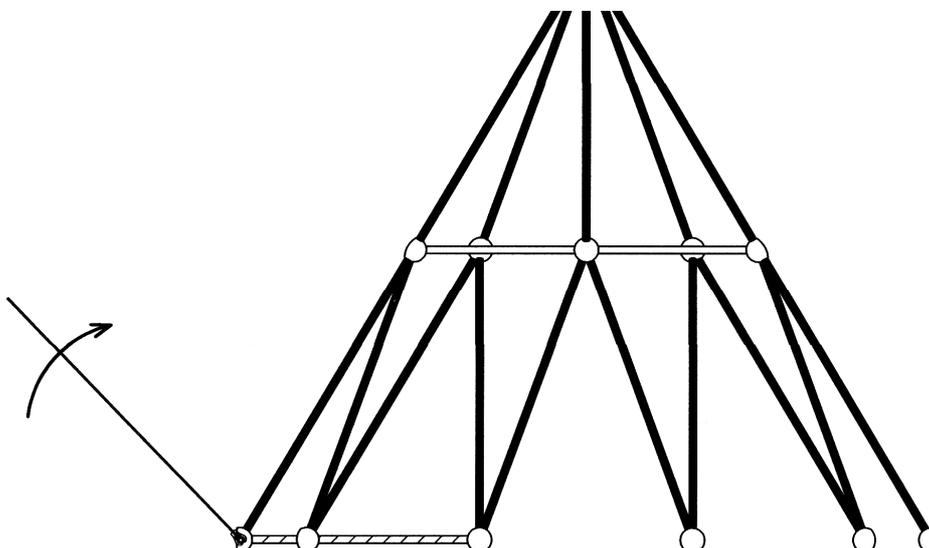


Figure 14

## 5. Space Net:

### 5.1 Unpacking the space net

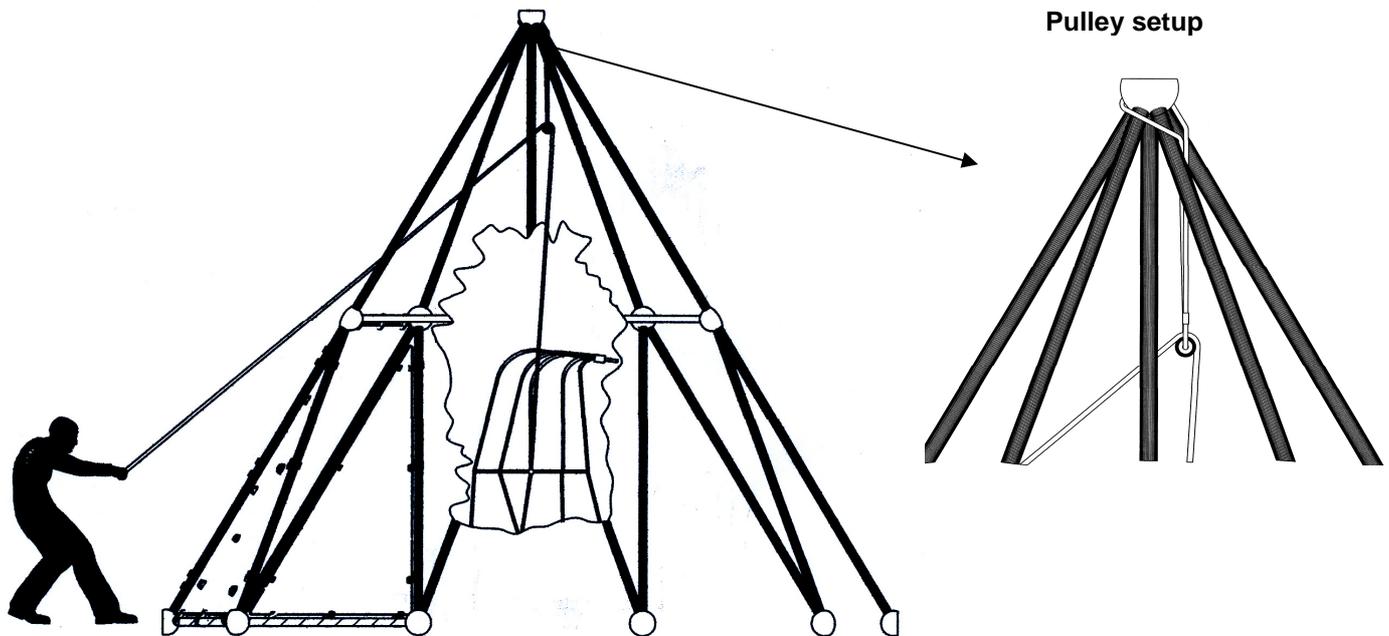


Figure 15

As shown in Figure 15, the space net is to be taken until it is vertically under the equipment top. The supplied pulley is to be secured on the K29 hollow ball as shown in the **pulley setup in Figure 15**. The space net can be hoisted out of the crate using the attached rope and assembled to the hollow ball connection **K29** with the preassembled nut M20 / SIZE 30 (which must firstly be completely loosened). Insertion of the tensioning cylinder and fork screws into hollow balls of **K30, K31 and K32** can be simplified by tension support from the supplied rope. When securing the tension nut, care must be taken to ensure the correct alignment of the ropes and that they correspond to their run progression in the space net (**Figure 5**).

**Special attention should be given to space net alignment with Skyclimbers having additional elements such as net troughs and climbing walls. Do not position seating troughs behind the climbing walls because these can hardly be used!**

### 5.2 Preassembly of the space net

Preassembly of the space net begins by screwing the tension systems into the hollow balls of **K30** (Figures 9, 10 and 16). In doing this, the tensioning cylinder is inserted into the telescopic sleeve with the M20 bolt and mounted from the inside with the tension nut M20 (Size 32) with approximately 5 turns of the thread. After this, the tension screws for hollow balls **K31** and **K32** (Figures 9 and 10) are made which also mount the tension rope via the fork screws (Figure 17).

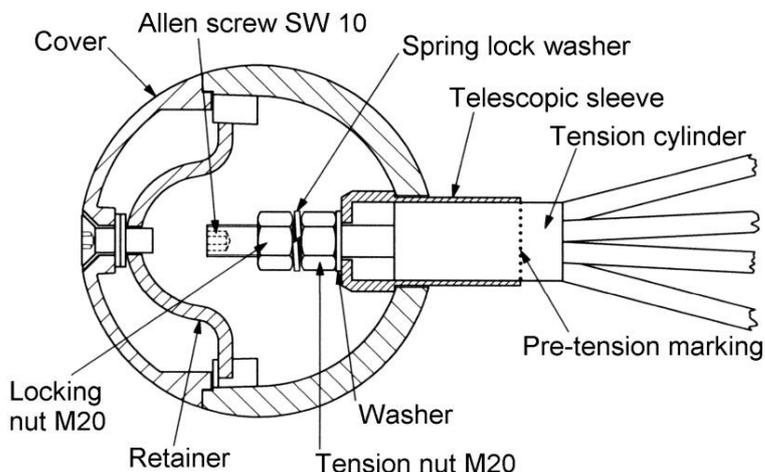


Figure 16

### 5.3 Tensioning the space net

Firstly the aligned connection on the hollow ball **K29** is to be solidly secured. Tensioning of the space net begins on the hollow balls of **K31** and **K32** which are screwed to the locking nut (Figure 17) using the special spanner supplied. After doing this tensioning is made on **K30** hollow balls up to the marking (Figure 16). Finally, the space net must be under a tension having an even strength throughout.

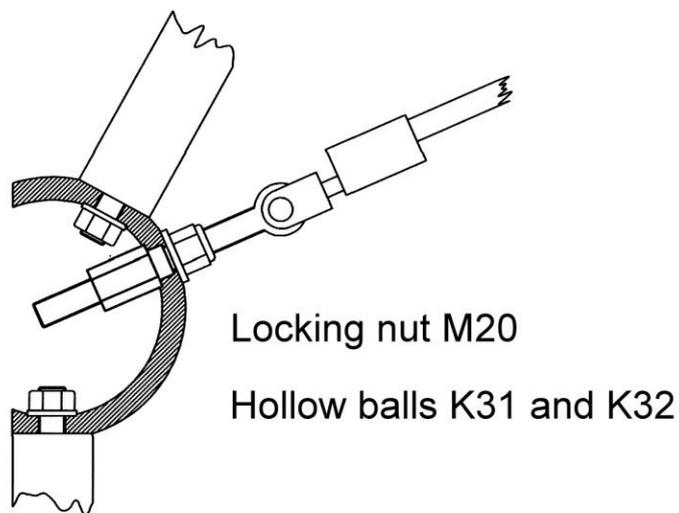


Figure 17

#### Remember!

It is imperative that at all tension points, the ropes under tension do not turn. If necessary counter this with a suitable tool. **Remember!**

#### **5.4 Securing the space net**

After tensioning, the tension nuts are to be locked on all **K30 knot points** using the locked nuts and spring lock washer provided (M20 Size 32). **In order to tighten the locking nut, the Allen key Size 10 must be inserted into the M20 screw and held (Figure 16).** The locking nuts Size 30 (**Figure 17**) are to be inspected once again to ensure that they are solidly secure at the **K31 and K32 knot points**. Finally all knot points from **K29 to K32** are to be closed by screwing the knots with the prepared covers via a clamping screw (**Figure 16**). In doing this please ensure that the cover is positioned evenly so that our company logo is readable. Thank you.

#### **Remember to re-tension!**

**The first re-tension of the space net is to be made already after one to two weeks of use (refer to the operative inspection for the procedure).**

#### **6. Assembly of the hammock**

The hammock can be assembled after positioning the hammock post **SP1 (see draft plan II / ensure that the alignment of the bearing support is towards the lattice-work)** and when the concrete has fully hardened. For this, the curved holder tube **RB1** of the hammock is fixed to the required point between the two tubes running at an angle to the ball K30.

This is made via the clamps already existing in the tube. In doing this it should be ensured that the tube **RB1** is turned so that the bearing support is at an angle of approximately 45°. After the tube has been solidly fixed, the hammock is placed between the bearing support of the tube and the post **SP1** on the corresponding bearing support, including using the each with two supplied Allen-head screws M10x25 DIN 6912 A2 and spring lock washer. At last all screws of the clamps are to close with the plastic caps.

#### **7. Maintenance instructions EN 1176-1:**

##### **7.1 visual routine inspection**

The frequency of inspections should be oriented on local conditions (high or low amount of use, vandalism, air contamination, weather effects etc.).

The space net and the hammock are to be checked for damage, especially breaks in the wire.

The climbing walls as well as the climbing handles are to be checked for damage (e.g. cracks).

All fixtures of the climbing walls and the climbing handles are to be checked.

It is to be ensured that all hollow balls are closed.

The clamps of the climbing plates should be tight. In case the screw connection is loose, please tighten it.

Check the climbing handles for tightness or damage. If the screw connection is loose, please tighten it. Replace the climbing handles in case of any damage.

## 7.2 operational inspection (every 6 months)

The first re-tensioning must be carried out after one to two weeks. Re-tensioning is made via the tension nuts (M 20) in the hollow balls. Firstly the **balls K31 and K32** are re-tensioned. After removing the cover using an Allen key Size 10 and loosening the locking nut M20 Size 30 (Figure 17) on the outside of the ball, the inside tension nut Size 30 is re-tensioned with the box spanner. It is imperative that the **locking nuts** be solidly tightened **after re-tensioning**. After this, further retensioning is made at the **K30 knots** and should be carried out evenly. In doing this the inside locking nut M20 Size 32 is loosened after removing the cover and re-tensioned at the tension nut M20 Size 32 **beyond the pre-tension marking** using the special box spanner supplied. After re-tensioning, the tension nuts on the K30 knots must be **locked again** with the locking nuts. **Please note to the spring lock washer between the nuts. In order to loosen and secure the tension nut and locking nut M20 Size 32, the bolt M20 can be held with an Allan key Size 10 (Figure 16).** Finally the open hollow ball is once again closed with the cover. Please ensure that the cover is placed evenly so that our company logo is readable. Thank you.

### Remember!

It is imperative that at **all tension points the ropes under tension do not turn**. If necessary counter this with a suitable tool.

Further re-tensioning will be required once or twice more until rope expansion is fully spent.

## 7.3 Main inspection (annual)

**In addition to the tests concerning visual and operative inspection:**

- Checking the anchor frame for excessive corrosion (every two years). The anchor frame is to be laid bear at the corner points down to the construction depth and to be checked for corrosion.
- Checking the tube screw joints to ensure solid and gap-free seating on the hollow balls. If a screw has become lose then this is to be re-tightened in the inside of the ball.
- Check the locking nuts (**Figure 17**) to ensure solid seating at the **K31 and K32** hollow balls.
- Checking the tension system for damage.
- Checking the hammock post at the base to the foundation for any signs of corrosion.