

# Technical Information

## Skyclimber Variante 3

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Installation Instructions EN 1176-1

Maintenance Instructions EN 1176-1



08.06.16

### 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.

### Dimensions

Equipment space	refer to layout plan
Fall space	1.50 m
Minimum space	refer to layout plan
Height	5.00 m

### Age group

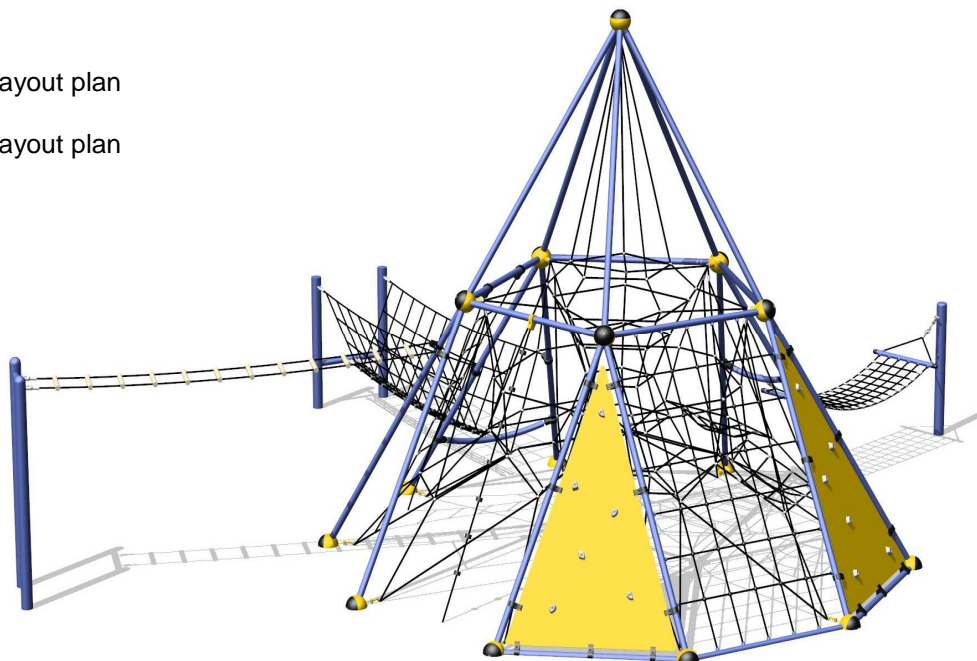
From 6 years of age

### Number of users

Approximately 45 children

### Maximum free fall height

2.60 m



Skyclimber V3

### 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 14 and 15) be accessible at all times. If necessary consult smb.

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## 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
- 1 Bit for safety screws

### Tools additionally required:

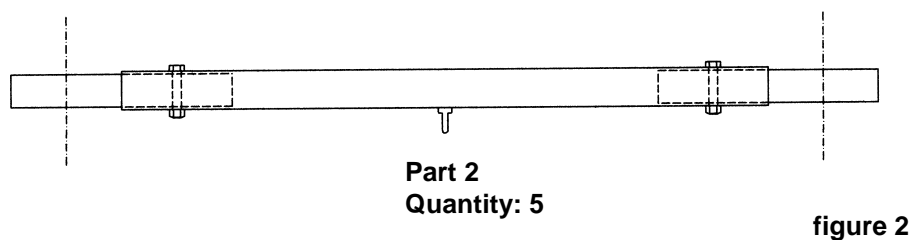
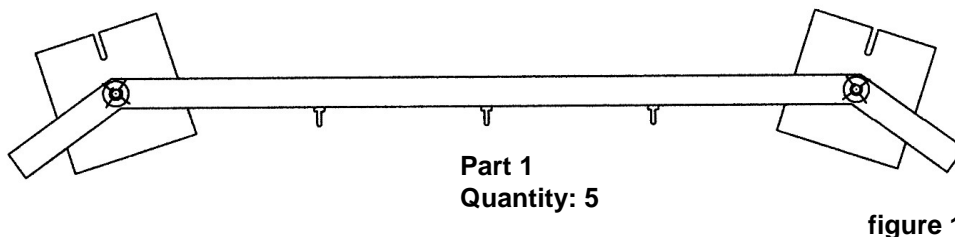
- 2 Spanners Size 24
- 1 Spanner Size 30
- 1 Double ladder approx. 2.5 m long
- 1 Double ladder approx. 4 m long

### Recommendation:

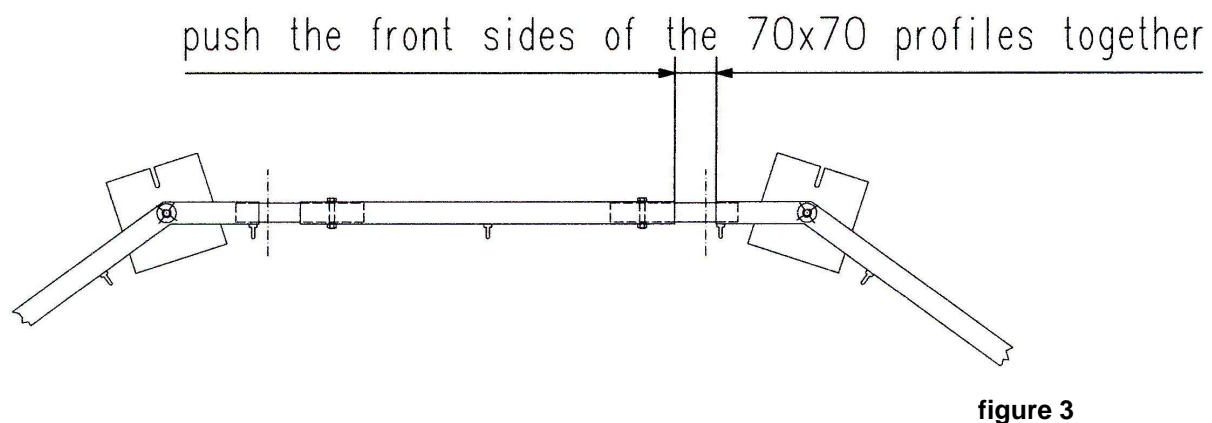
- 1 Ratchet with Attachment 32 (Normal assembly tool)

## 2. Assembly of the anchor frame:

### 2.1 Part description



### 2.2 Assembly of the anchor frame parts



### 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:**  
The foundation plan for the hammock, V-bridge and hanging ladder is given in Draft plan II !!

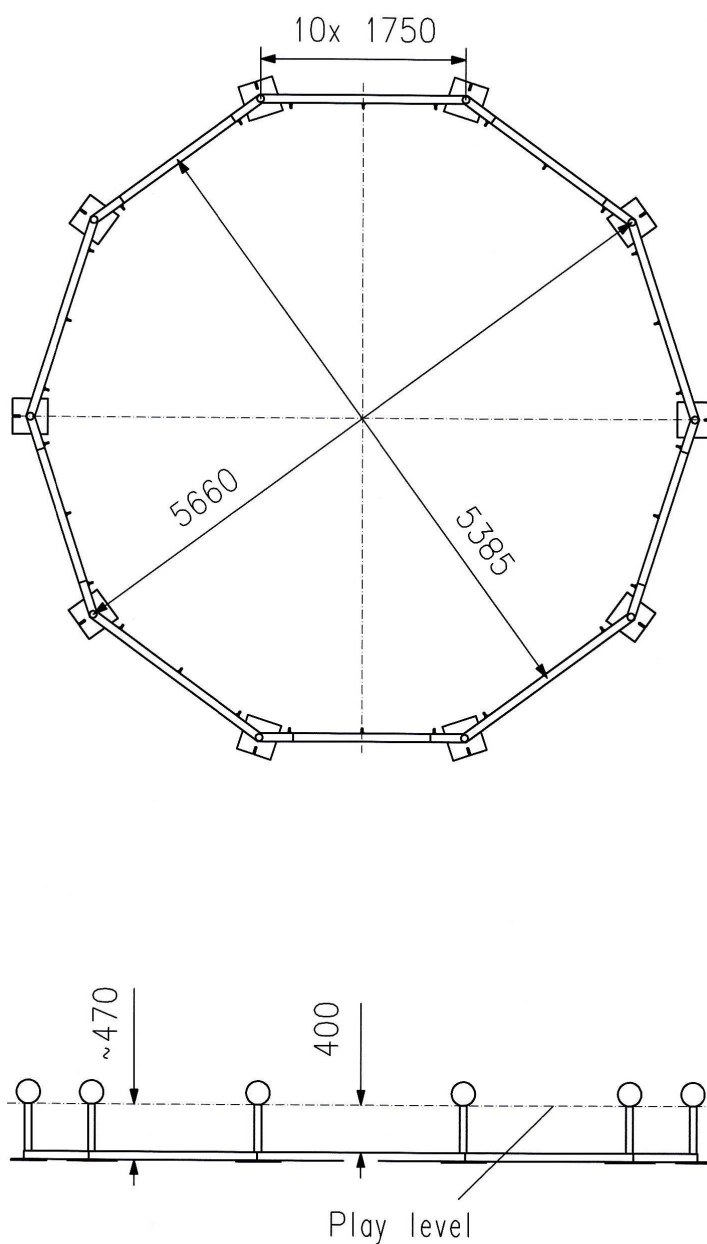


figure 4

## 2.4 Positioning of the ground screw anchor

When using 1 to 3 climbing panels, 4 foot panel positions are to be provided with ground screw anchors as shown in **figure 5**. It is imperative that the pre-specified positions be used.

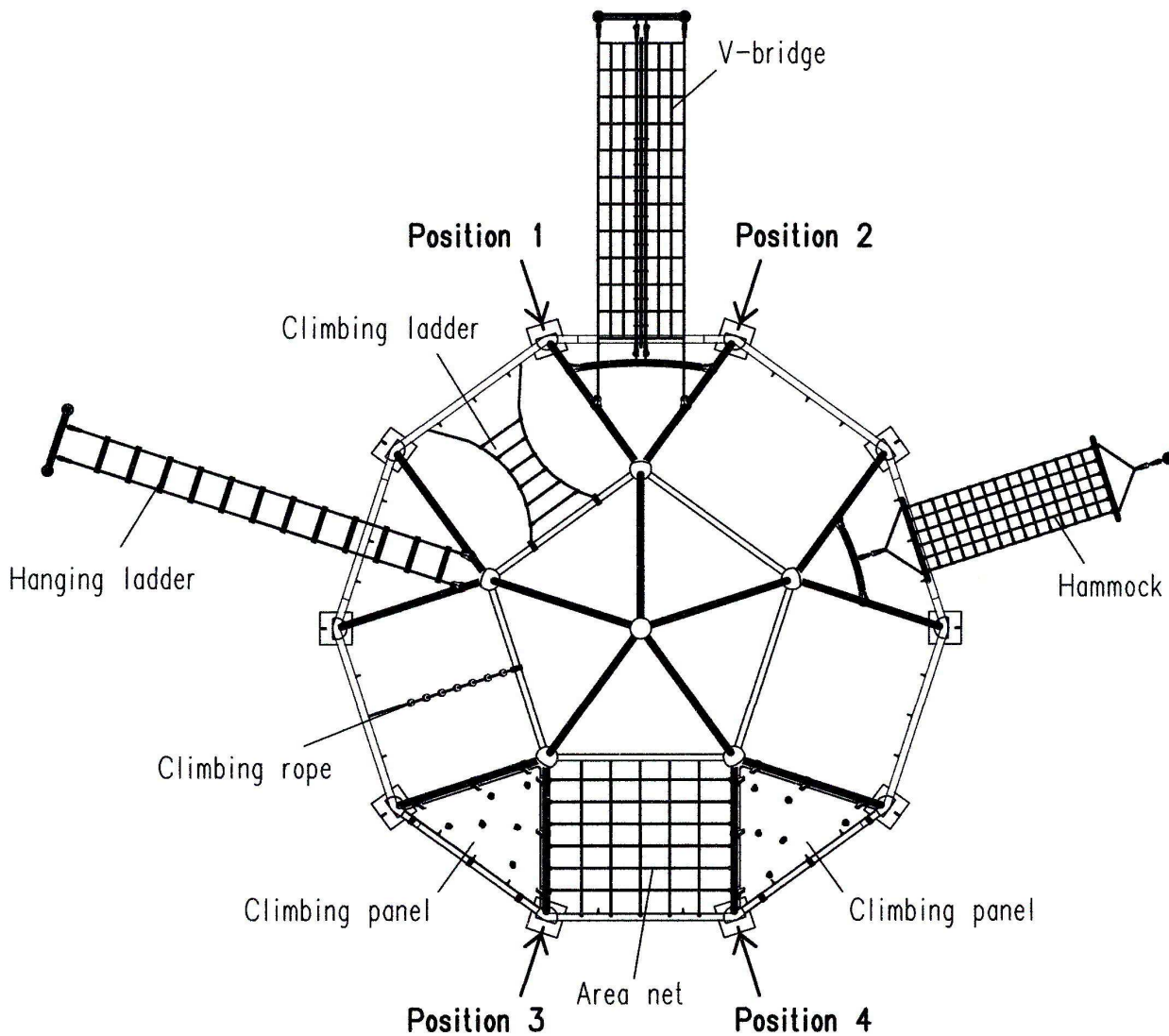
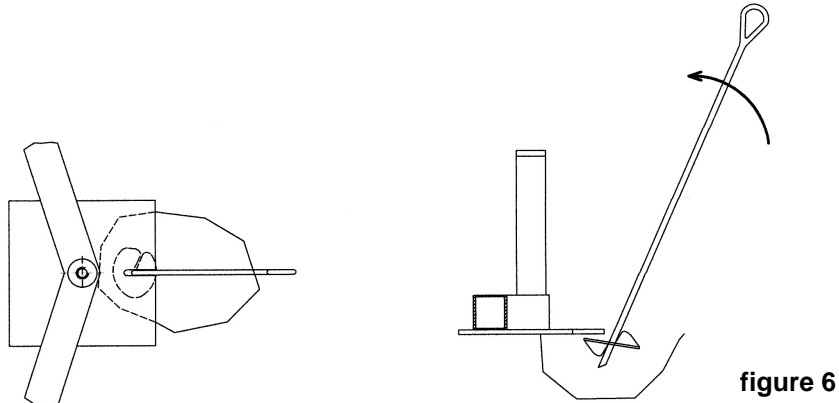


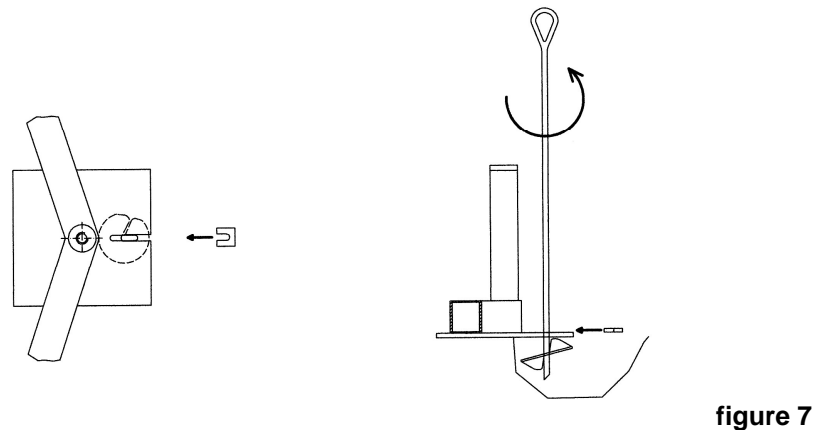
figure 5

## 2.5 Screwing in the ground screw anchor

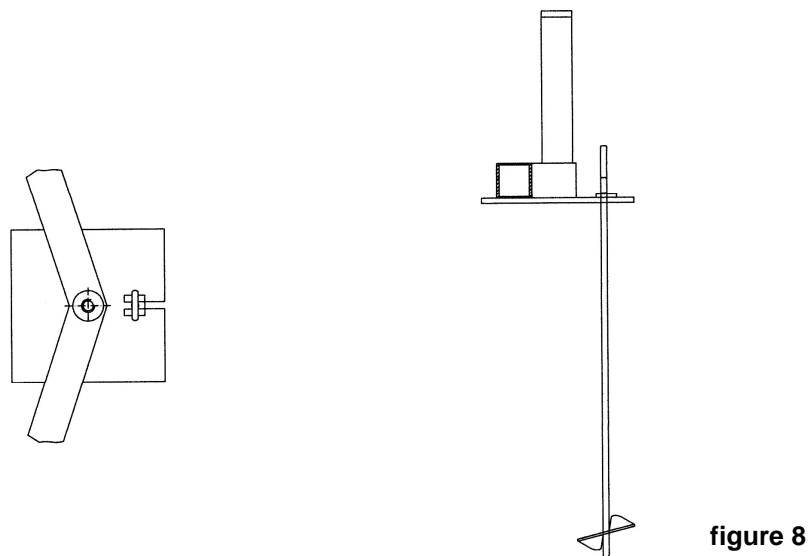
In order to screw the ground screw anchor into the ground, a small hole should be made beforehand at the point where the ground screw anchor is to be inserted (**figure 6**). The ground screw anchors can then be inserted at an angle and then straightened vertically.



Screwing the ground screw anchors into the ground can now start. The counter-plates (40 x 40 x 8) must be positioned onto the ground screw anchors before these are fully screwed in (**figure 7**).

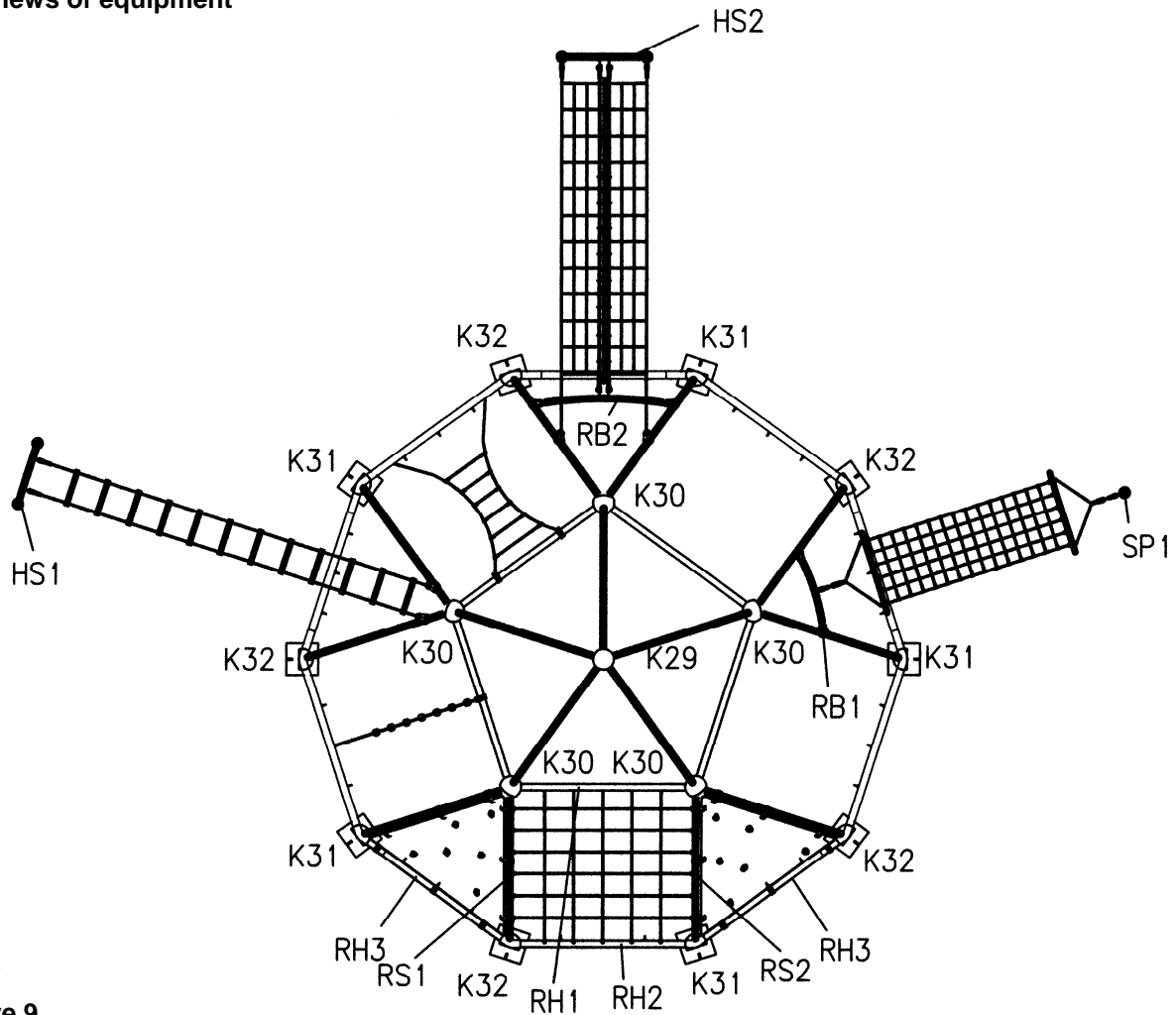


The eyes of the ground screw anchors must be at right angles to the plate grooves when in the final position (**figure 8**).



### 3. Assembling the equipment:

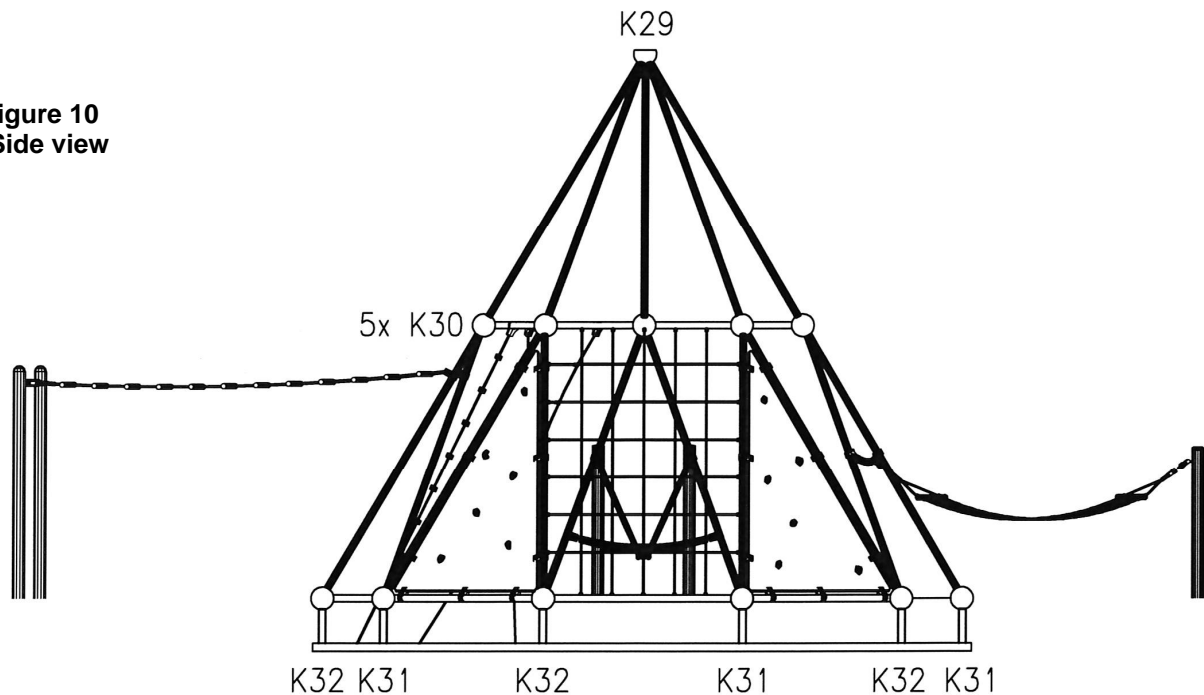
#### 3.1 Views of equipment



**figure 9**  
**View from the top, tubes**

- |  |   |
|--|---|
|  | 1x RH1 tube 1.560 mm long with outside thread |
|  | 1x RH2 tube 1.560 mm long with inside thread  |
|  | 2x RH3 tube 1.560 mm long with inside thread  |
|  | 1x RS1 tube 2.638 mm long with outside thread |
|  | 1x RS2 tube 2.638 mm long with outside thread |
|  | 4x tube 1.560 mm long with outside thread     |
|  | 13x tube 2.638 mm long with outside thread    |
|  | 1x RB1 bent tube with adapter, hammock        |
|  | 1x RB2 bent tube with adapter, V-bridge       |
|  | 1x HS1 H-pillar, hanging ladder               |
|  | 1x HS2 H-pillar, V-bridge                     |
|  | 1x SP1 pillar, hammock                        |

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**).

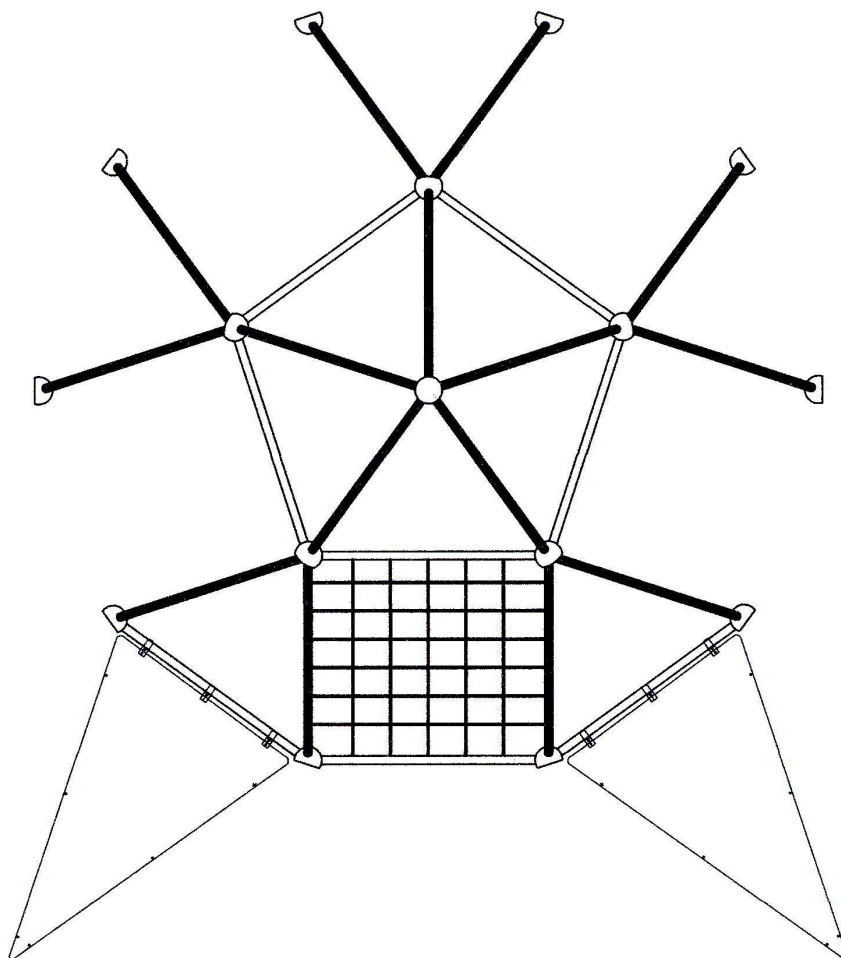
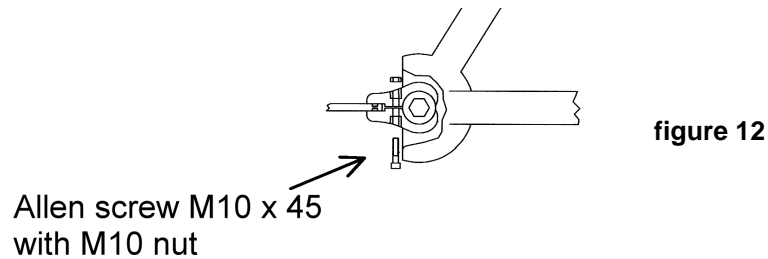


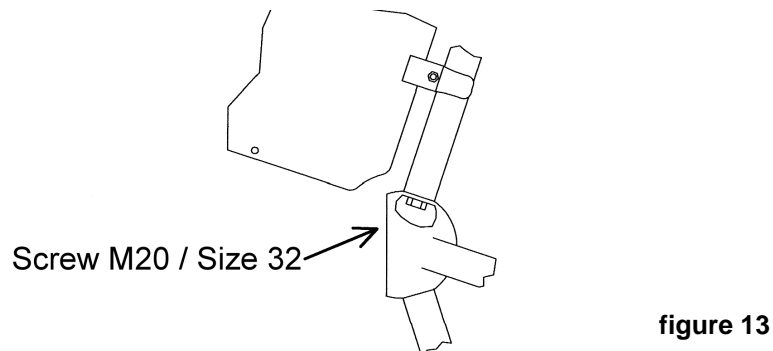
figure 11

#### 4.2 Securing the climbing panels

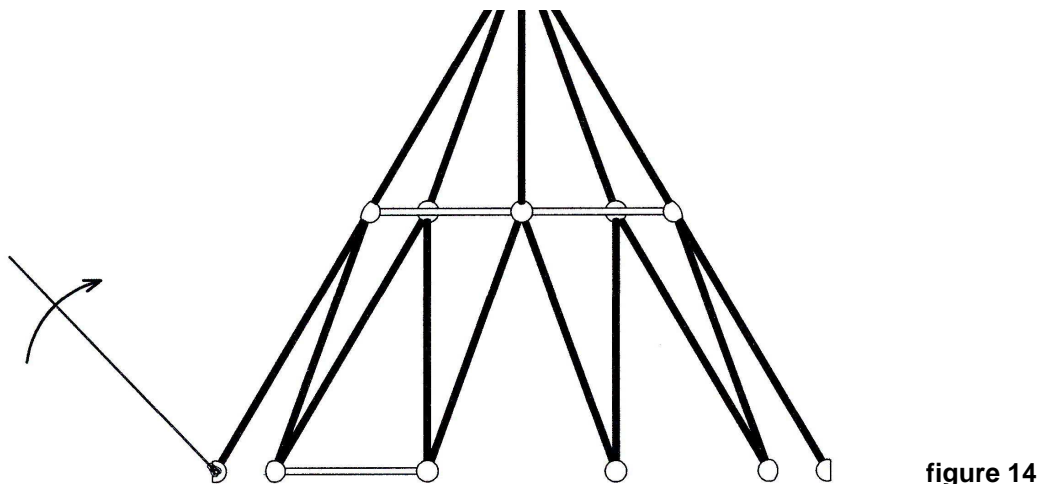
The securing clamps are now attached to the lower edge of the climber panels (**refer to label**). These are to be assembled so that the "nose" grips into the 13 mm hole of the climber panel and the other side surrounds the lower tube (1,560 mm) with inside thread. When the lower clamps have been attached 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.



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.



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.



## 5. Space net:

### 5.1. Unpacking the space net

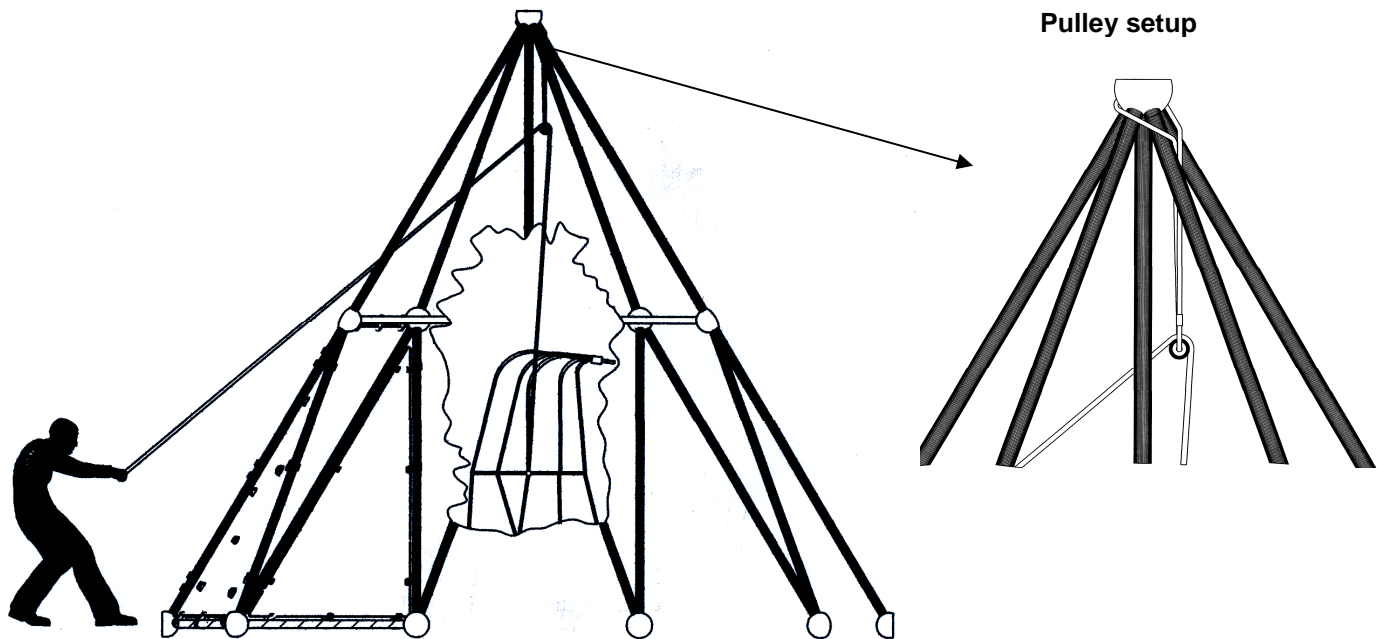


figure 15

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 climber walls. Do not position seating troughs behind the climber panels because these can be hardly 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 9.1; 9.2, 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 9.1; 9.2 and 10) are made which also mount the tension rope via the fork screws (figure 17).

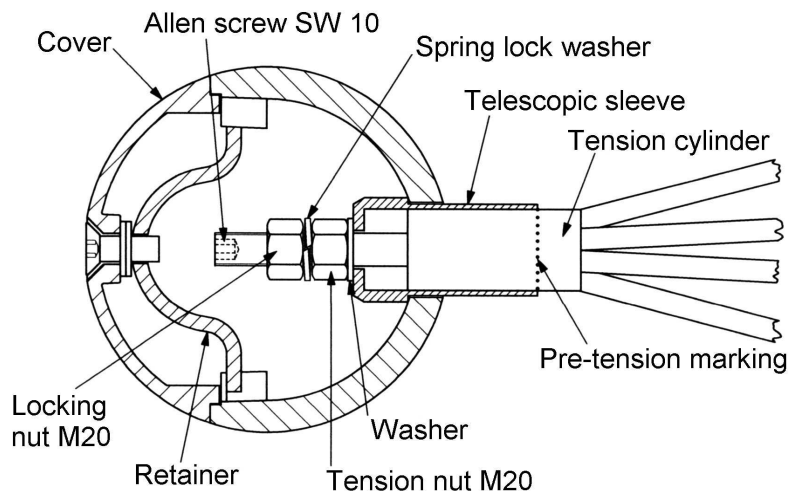


figure 16

### 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**.

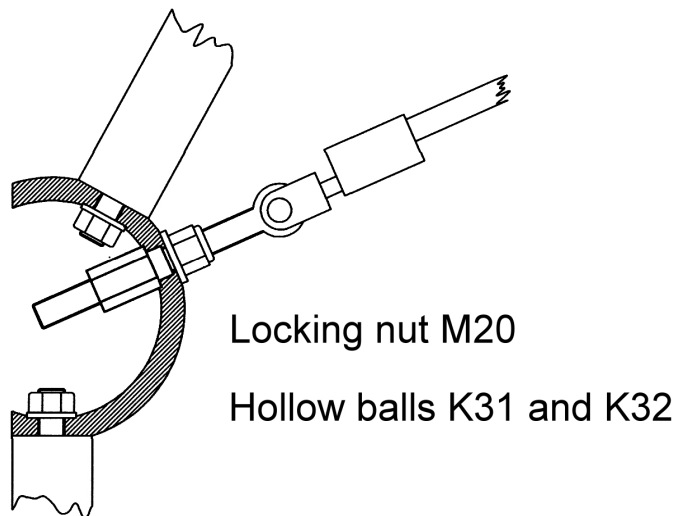


figure 17

#### Remember!

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

## 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

After setting the pillar **SP1** (see draft plan II) and after the concrete is harden are you able to assemble the hammock. For this, the curved stay 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 is turned so that the eye screws are at an angle of approximately 45°. After the tube has been solidly fixed, the hammock is placed between the tube and the posts on the corresponding eye screws. At last all screws of the clamps are to close with the plastic caps.

## 7. Assembly of the hanging ladder

After setting the **H-post HS1** (see draft plan II) and after the concrete is harden are you able to assemble the hand over hand ladder. For that you have to fix the eye bolts (without thread) of the hand over hand ladder with the enclosed tube clamps onto the tubes which run angular to the hollow ball **K30**. It is important to make sure that the space of both ropes remains constant (please note the distance of about 300 mm between both ropes).

**Attention:** Please use the stainless steel antiseize to fix the screws of the tube clamps.

Now the other end of the hand over hand ladder could fix at the **H-post HS1**. For that you have to push the eye bolts (with thread) of the hand over hand ladder through the bore of the H-post and screw it loose. Please note the details in the supplement „**Mounting of smb-bridges**“.

At last all screws of the tube clamps are to close with the plastic caps.

## 8. Assembly of the V-bridge

After setting the H-pillar **HS2** (see draft plan II) and after the concrete is harden are you able to assemble the V-bridge. For that the curved stay tube **RB2** of the V-bridge has to get fixed between the 2 tubes which run angular to the hollow ball **K30**. For that you use the clips which are already fixed onto the tube. It is important to make sure that the tube gets turned so that the eye bolt faces down in a small angle. After the tube got bolted, the V-bridge can get fixed between the tube and the post onto the particular eye bolt. The hand rail ropes from the side of the unit have to get fixed with the enclosed clips. At last all screws of the clamps are to close with the plastic caps.

## 9. Assembly of climbing rope and climbing ladder

The climbing rope and the climbing ladder have to get screwed loose onto the upper cross tubes with the enclosed clips. A centered adjustment is important. The space of both clips from the climbing ladder should be approx. 790 mm (centre - centre). The lower ends of the ropes have to get fixed onto the anchor frame with the ring nuts. After the alignment of the ropes has been done, the ropes become fixed with the clips. At last all screws of the clamps are to close with the plastic caps.

## 10. Assembly of the area net

The area net had to be connected with the tubes **RH1, RH2, RS1** and **RS2**. For that step you will have to import the ends of the net into the **ROWOCON® - sleeves** and then to fastening it with the security screws (**figure 18 and 19**). In case single rope ends are hard to insert into the **ROWOCON®-sleeves**, then you can help yourself through to inject into the sleeves a little bit of spray oil or silicone spray. You are not allowed at all to remove the end caps of the rope! No you can screw the opposite. And then you screw the last two sides of the net.

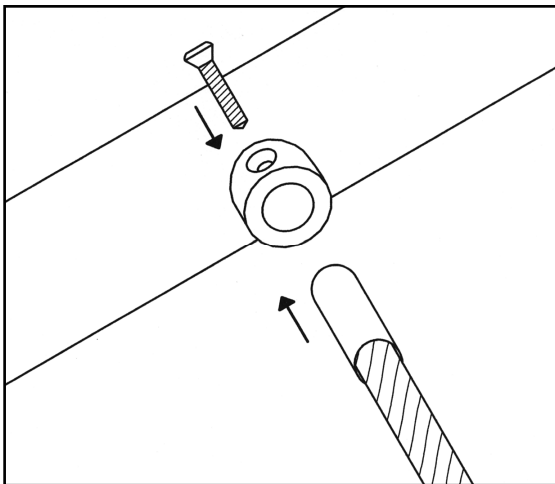


figure 18 Alignment and fastening of the ROWOCON® sleeves

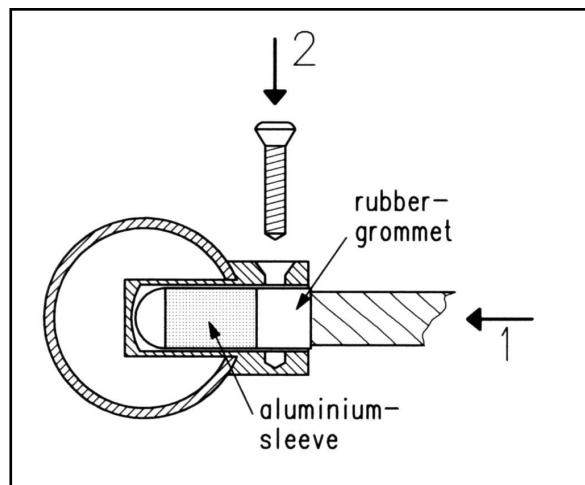


figure 19 Bring in of the rope ends into the ROWOCON® sleeves

### Attention:

At insertion of the rope ends into ROWOCON® - sleeves and the screwing after is it very important that the rope ends are as far as they can are insert into the Rowocon® - sleeves, before the security bolt gets inserted. The security bolt is NOT to get screwed through to the aluminum sleeve of the rope, as the rope would get destroyed (figure 19).

## 11. Maintenance instructions according to EN 1176-1

### 11.1 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, hammock, V-Bridge, area net, hanging ladder, climbing ladder and climbing rope are to be checked for damage, especially breaks in the wire.

The climber panels as well as the climber grips are to be checked for damage (e.g. cracks).

All fixtures of the climber panels and the climber grips are to be checked.

It is important to check the hollow balls and that those are closed.

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

The clamps of the climbing plates and the other additional elements should be tight. In case the screw connection is loose, please tighten it. If some plastic caps of the screws are missing replace it.

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

### 11.2 Operational inspection (half yearly)

- 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 re-tensioning 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 Allen 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.

### 11.3 Main inspection (yearly)

**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 loose 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 slide supports, especially the ramp, for solid anchoring.
- Checking the hammock post **SP1** at the base to the foundation for any signs of corrosion.