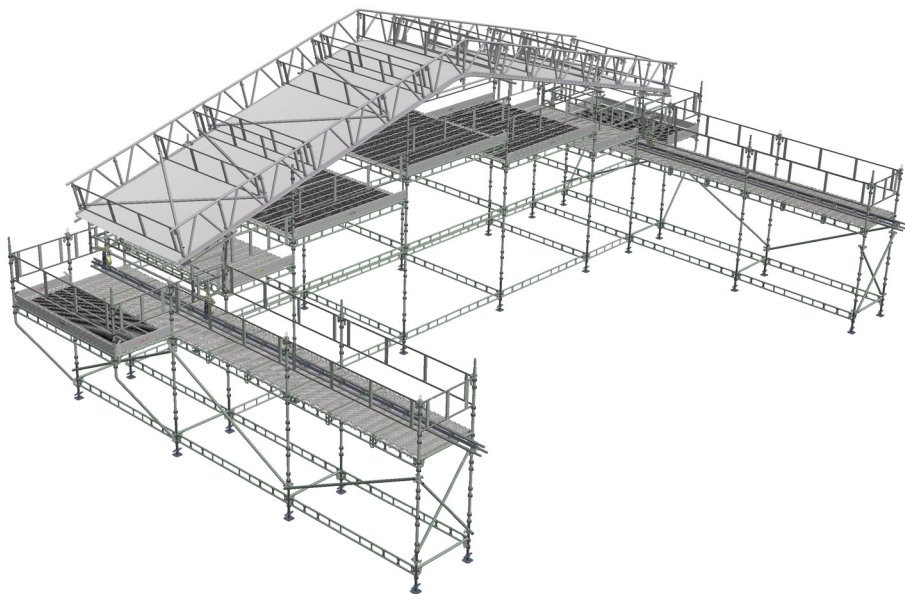


USER'S MANUAL

HAKI TKS 750



Important information

HAKI's product liability and user's manuals apply only to scaffolds that are entirely composed of components that have been made and supplied by HAKI.

HAKI's scaffold systems must not be erected using components of makes other than HAKI or be connected to scaffolds of makes other than HAKI. In such cases, a special study of load-bearing capacity must be carried out. However, HAKI has no objection to the customary addition of scaffold tubes and approved couplers to the scaffold.

Adding components from different suppliers may invalidate the insurance cover.

HAKI reserves the right to make technical modifications on a continual basis.

The latest versions of HAKI user's manuals can be downloaded from our website, www.HAKI.com.

For scaffold structures that are not covered by this user's manual, please contact HAKI's technical department.

HAKI colour code

Horizontals and diagonals are marked with their nominal sizes (bay sizes) and a colour code. The marking is a useful means of identification when erecting and handling the scaffold material.

564 	1050 	1964 	3050 
700 	1250 	2050 	
770 	1550 	2500 	
1010 	1655 	2550 	

Forces and dimensions

1000 N = 1 kN ~ 100 kg

10 N ~ 1 kg

All measurements in mm

HAKI TKS 750

General description

HAKI TKS 750 consists of aluminium frames with a height of 750 mm with integrated double Keder tracks. The frames are assembled together to the desired length using 12x80 clevis pins that are locked with R-clips.

Each roof frame is connected with guardrail frames and diagonal braces.

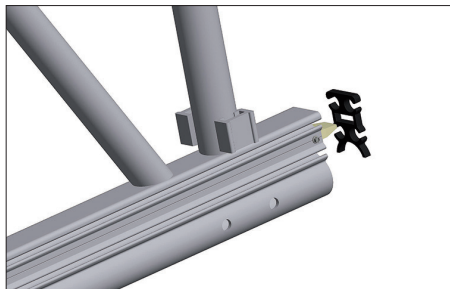
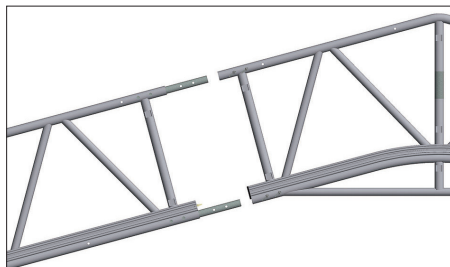
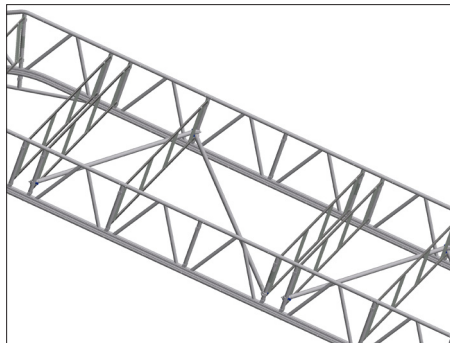
The construction rests on the aluminium frame Adapter. These have 3 fixing points, all of which must be locked.

The beam adapters are fitted when the cover has the desired span. The beam adapters are fitted with all 3 fittings.

It is recommended not to fit a TKS 1.25 m frame in the area where the beam adapters are fitted, usually in the outermost position, as this will conflict with assembling the frames.

NOTE! The TKS frame must be fitted with the connector tube pointing upwards towards the ridge, so there is no connector tube in the ridge beam.

For faster assembly, fit the connector tubes into the TKS frames before assembly begins.



Marking

All components, with the exception of locking catches, pins etc. come permanently marked with the HAKI logo or HAKI text, the first letter of the country of manufacture and the last two figures of the year of manufacture (S26).

All load bearing components are marked for full traceability. For more information, refer to HAKI's safety guide.

Safe installation

This method involves erecting a HAKI TKS roof in a way that prevents potential accidents.

In order to erect the covering in this way, a gable scaffold must be used with horizontal platforms and levels which, in full roof width, match the shape and length of the aluminium frames and which have a working width of 3 m. All platforms should have guardrail frames on all sides, and external stairwells (not illustrated).

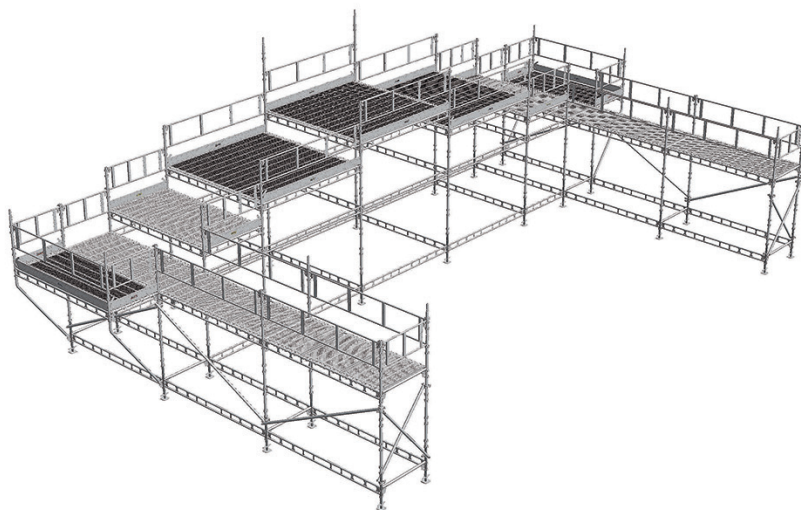
The roof is built from the gable scaffold and is progressively rolled out, bay-by-bay.

The gable scaffold should be built with external sheeting bays on each side.

The roof and the load-bearing structure should be designed by a competent engineer and the design drawings must ensure that all possible aspects of the roof's erection are taken into account.

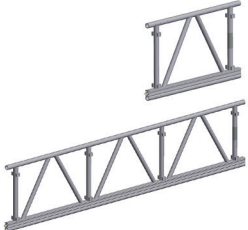
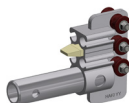
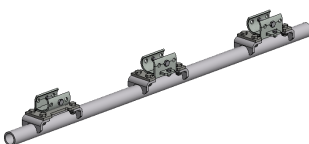
All materials must be available at the worksite before assembly begins.

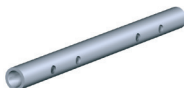
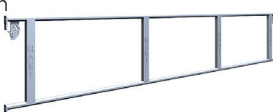
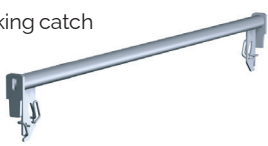
A sufficient number of workers must be present. All required personal protective equipment (PPE) and necessary tools must be available and used.

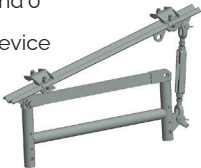
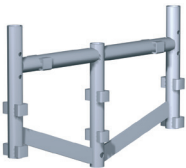
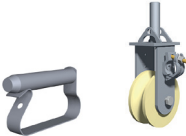


IMPORTANT!

ALL OPERATIONS MUST BE CARRIED OUT FROM SAFE AREAS ON THE SCAFFOLDING.

Name	Code/Data	Item No.	Weight
TKS 750 AL Frame 	1250	7570125	12.2
	2250	7570225	21.2
	3250	7570325	31.2
TKS 750 AL Angle Frame 15° and 22,5°	15	7570015	23.2
	22,5°	7570025	19.6
			
TKS 750 Guide Trak sheet		7541027	0.8
			
TKS 750 Beam Adapter		7570009	8.9
			
TKS 750 Beam Bracket For Beam Adapter 7570009 Note: 2 pcs. Clamping device		7570007	4.7
TKS 750 Clamping device		5231679	1.3
			
TKS 750 Trak Seal		7570001	0.1
			

Name	Code/Data	Item No.	Weight
750 Straight Connector		7203001	2,0
			
Clevis pin 12x80		6130049	0,08
			
R-Clip		6130441	0,05
			
Bolt M12x60		6130587	0,01
			
Nut M12		6130588	0,01
			
Guardrail Frame GFL	1250	7052124	5,7
With spring locking catch	1655	7052164	7,4
Octagon 28 mm	2500	7052254	9,2
	3050	7052304	10,3
Guardrail SKR	1250	7056121	3,3
With spring locking catch	1655	7056161	4,2
Ø 34 mm	2500	7056246	6,0
	3050	7056301	7,1
			
750 Plan brace AL	1250x1000	4122119	1,0
	1250x2000	4122123	4,0
	1655x1000	4122159	3,0
	1655x2000	4122163	3,3
	1964x1000	4122191	3,5
	1964x2000	4122193	4,3
	2500x1000	4122248	1,6
	2500x2000	4122254	4,9
	3050x1000	4122298	1,8
	3050x2000	4122303	5,5

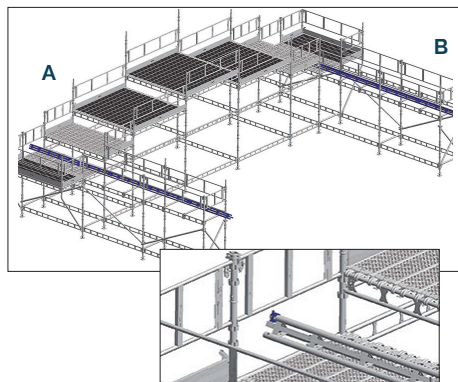
Name	Code/Data	Item No.	Weight
750 Beam adapter		7203325	16.8
Adjustable 12-22.5° and 0°	Clamping device	5231679	1.3
Excl. 2 st Clamping device			
			
750 Y frame		7203320	10.4
			
Rolling roof wheel		7142003	9.9
Spring pin	16	2116000	0.2
			
Anti-lift bracket		7175049	3.1
Excl. bolt 6130323 and nut 6130208			
			
Triangular rail	2000	7203332	31.7
	3000	7203333	44.0
			
Anti-lift channel	3000	7175050	16.0
Excl. 7 st. bolt 6130282 and nut 6130267	2000	7175051	10.6
			

Name	Code/Data	Item No.	Weight
750 Band & plate coupler 	Upper part	2044100	1.3
	Lower part	2044101	0.6
TKS 750 Eye 		7570003	1.0
Cambuckle Strap Length - 2 m WLL - 400 kg		7500050	0.1
TKS Sheeting	8000x3050	2800300	9.3
Color by cloth HAKI standard	10000x3050	2800301	11.6
L=8000 Grey	12000x3050	2800302	13.9
L=10000 White	14000x3050	2800303	16.2
L=12000 Red			
L=14000 Blue			

Information on safety when erecting and dismantling

1. Before erecting or dismantling a scaffold, the working area should be fenced off where possible.
2. The location for the scaffold must be checked in order to prevent risks when erecting, dismantling and moving the scaffold and to ensure that work can be carried out safely with regard to level and slope, obstacles and wind conditions.
3. Make sure that all lifting equipment to be used, e.g chain hoists, lifting ropes, pulley blocks, etc., has been thoroughly tested and approved by an authorised person in accordance with local regulations.
4. Check that tools and protective equipment are available at the worksite.
5. Wear appropriate personal safety equipment at all times, e.g safety harnesses, proper independent lifelines with suitable fixings, etc.
6. When erecting and dismantling a scaffold, robust temporary decking must be used as temporary platforms for the scaffolders.
7. Always make sure that the safety locking devices that prevent a platform lifting off have been activated once a platform has been installed.
8. Study all relevant instructions or safety directions from the manufacturers of the various scaffolds that are to be used.
9. Never climb up a scaffold from the outside. Always use the stairs, ladders or climbing frames that are designed to provide access to the upper decks from the inside of the scaffold.
10. If the scaffold is to be used outdoors, erection or dismantling work must be discontinued if the weather conditions are severe. Make sure that all loose components are properly fixed before leaving the scaffold.
11. Scaffolding work must be done by "competent operatives" under the supervision of a "competent person".
12. Raising and lowering of parts, material and tools using ropes or slings must be carried out in a protected lifting area.
13. Lifting equipment must not be fitted to scaffolding unless ties or equivalent devices are secure.
14. Beware of any overhead power lines nearby.
15. Always observe and comply with the regulations issued by the local authorities concerned.

Fitting the roller track



Side A

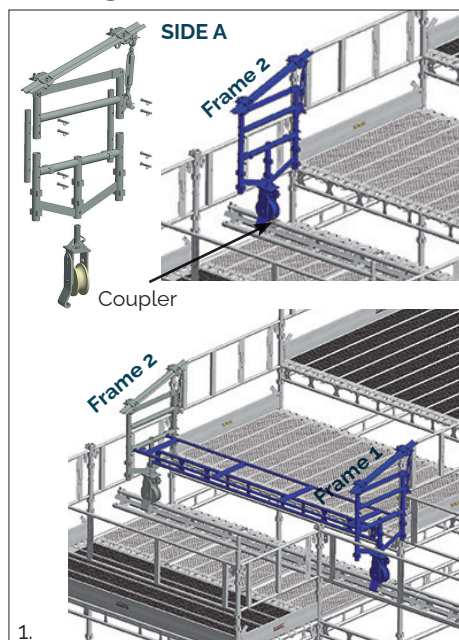
Fit the triangular rail, the roller track, onto the scaffolding with the U-section of the anti-lift device on the outside facing downwards with bolts at the locations indicated in the design guide.

The triangular rail is joined in its two lower tubes using two 16mm locking pins.

Check that the track is parallel to the building structure before attaching it to the scaffolding with track coupler.

Fit a braking coupler at the end of the rolling track so that the roof structure cannot run off.

Fitting the framework



Side B

Fit a parallel roller track on the other side, but do not fully fix at this stage, as it may need to be aligned as the work progresses.

Fit a locking coupler to the end of the track.

1. At frame 2, on the rear side of the gable scaffolding, place a rolling roof wheel for a triangular frame with anti-lift device on the track.

Fit a locking coupler immediately in front of the wheel. Secure frame 2 with a tube and coupler.

Fit a Y-frame on the wheel spigot and lock with a 16 mm locking pin.

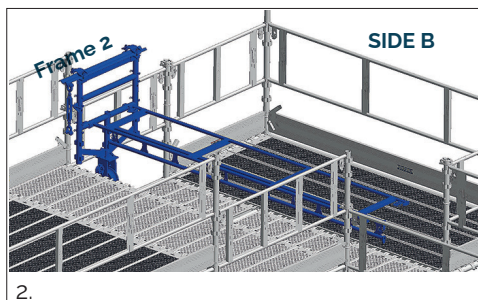
Fit a beam adapter on the Y-frame using two connector tubes and 8 pcs clevis pins 12x80 with R-clips.

If a beam adapter is to be used on the sides of the roof, fit two connector tubes and 8 pcs clevis pins 12x80 with R-clips.

Adjust and temporarily fix the assembled parts to the rear of the gable scaffold.

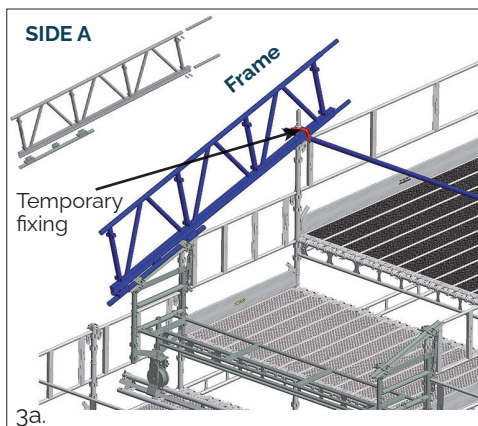
Adjust the beam adapter's slope on the adjustment unit to achieve the best possible contact between the beam adapter and the TKS frame adapter.

Repeat the above for frame 1 and join the Y-frames together with a ledger beam and guardrail frame.



2. Repeat the above on side B.

On the frame adapter on side B, loosen the lower locking pin so that the top plate is lying horizontal.

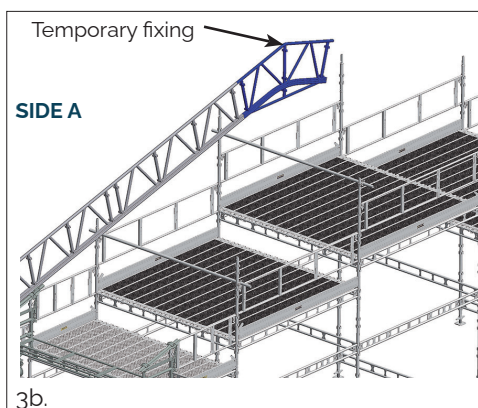


3a. Attach the TKS frame adapter to the frame and fit the connector tubes.

Then fit the first frame on the beam adapter with clamping devices and temporarily fix the frame to the rear of the gable scaffold.

Fit the next frame using 4 pcs clevis pins 12x80 with R-clips.

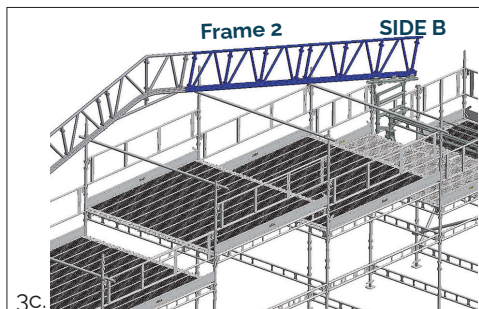
Before assembling the frames, insert the TKS seal (on the nylon spigot).



3b. Fit the angle frame using two connector tubes and 8 pcs clevis pins 12x80 with R-clips.

Temporarily fix to the rear of the gable scaffolding and adjust as required.

Support the ridge beam with a vertical tube so that the collar beam remains horizontal.

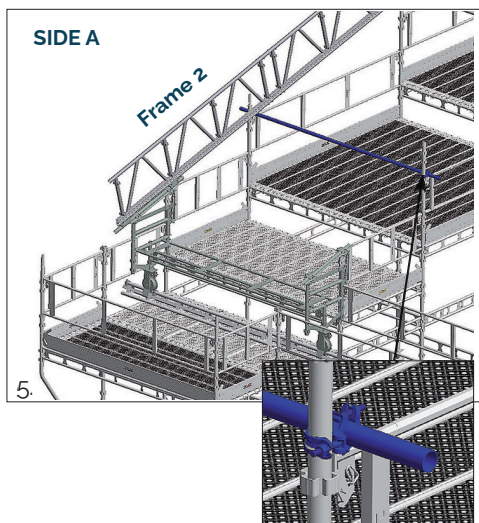


3c. Continue mounting the aluminium frames from roof ridge to eaves.

Remove all temporary fixings, except the ridge beam.

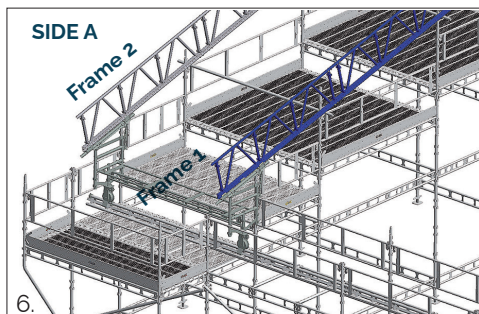
On the beam adapter on side B, place the lower bolt back and adjust the screw so that the top plate follows the contour of the frame so that maximum contact is achieved.

Fit the clamping brackets to the beam adapter (sides A and B) without tightening completely.

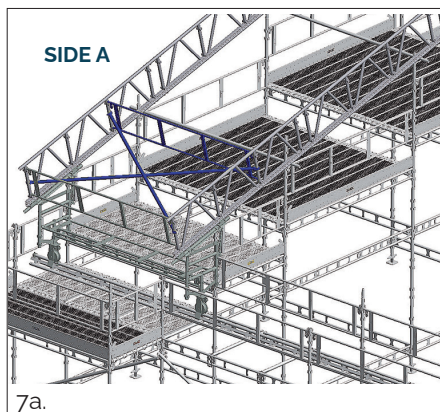
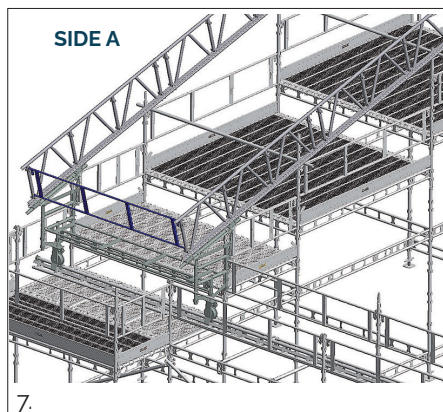


4. Loosen the temporary attachment in the roof ridge without removing it, and allow the entire frame to settle and thereby slide into the beam adapter.

5. To temporarily support the next frame until it is fixed, attach and align horizontal tubes to the gable scaffold columns.



6. On the front side of the gable scaffold, repeat step 3a as the frame temporarily rests on the tube as described above.

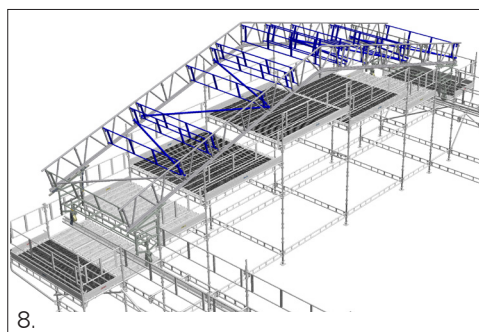


7. Fit a guardrail frame vertically in the outermost group of pockets in the eaves in order to obtain the correct distance between the frames.

Fit the next guardrail frame 2 m from the first one and fit diagonal braces across this bay.

This will ensure that the bay is square.

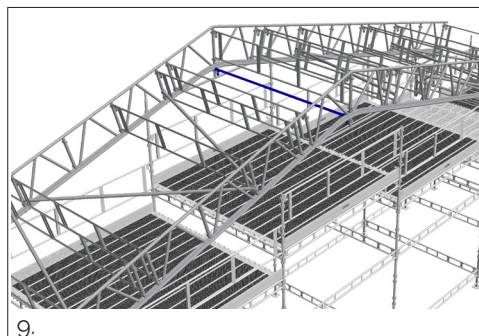
One of these diagonal braces can be removed later.



8. Work from one side to the other and fit the remaining frames, guardrail frame and diagonal braces until the construction's first bay is complete.

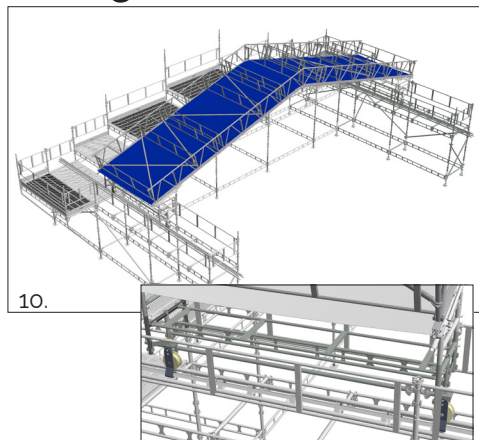
The guardrail frames must be installed at centre-to-centre intervals of 1-2 metres. At all joints, double guardrails must be installed to ensure sufficient stability and safety.

Refer to the complete diagonal arrangement on page 16.



9. Fit the Guardrail SKR Ø34 in the ridge beam as shown in the illustration. The Guardrail SKR is used to guide the draw lines when fitting the sheeting.

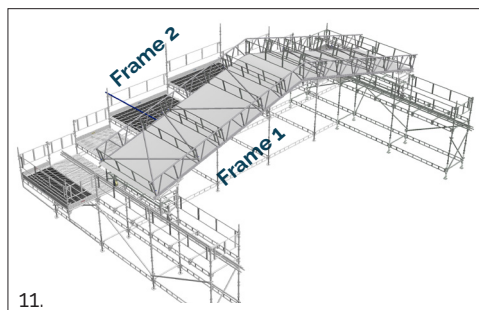
Rolling out



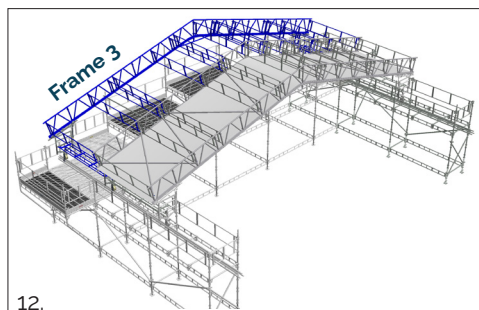
10. Release the temporary fixings in aluminium frames and wheels. Move the couplers forward along the track.

Roll the entire roof structure until frame 2 reaches the front edge of the gable scaffold.

Fit the couplers onto the rolling track so that the construction cannot move.



11. Fix horizontal tubes on the gable scaffold's columns on the underside of frame 2. These will act as supporting blocks for subsequent frames.



12. Repeat steps 6 – 8 for the rest of the roof construction.

Fit additional diagonal braces only according to the construction instructions.

Fit diagonal braces according to construction instructions.

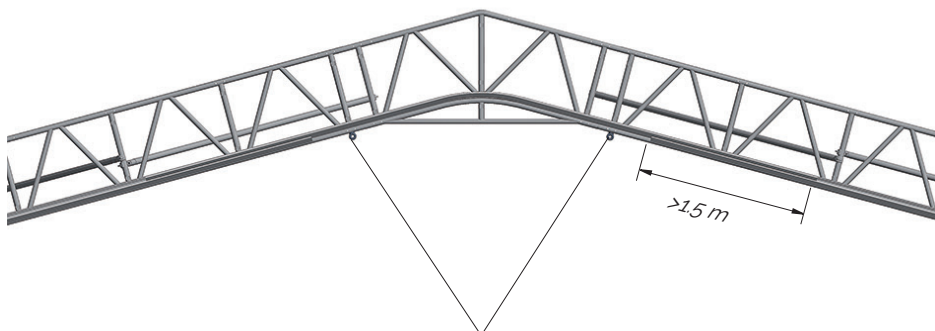
Tighten the clamping brackets on the beam adapter on the aluminium frame 2 tightly before rolling out.



If the construction instructions specifies additional anchoring measures, these must be carried out before further assembly begins.
This also applies if the uncompleted structure must be left overnight etc.

Fitting of sheeting

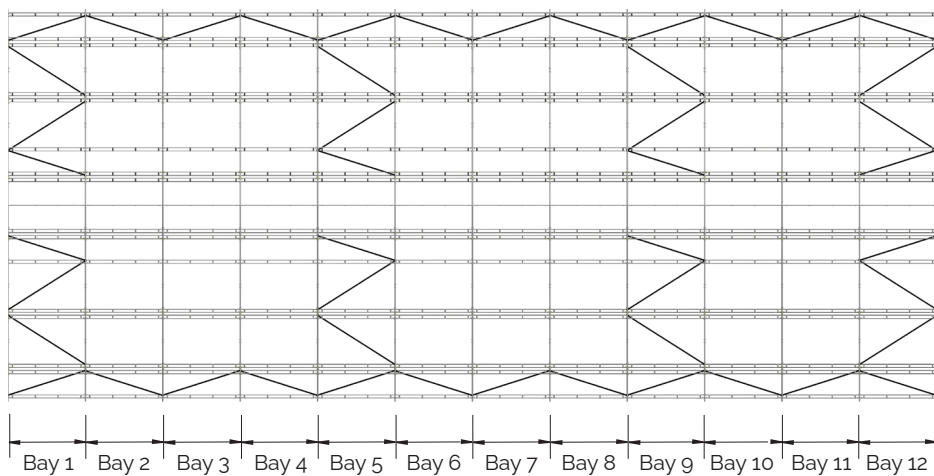
1. The Keder sheet must be placed correctly for the field in which it is to be fitted. The sheet must be fitted so that the pockets are on the underside.
2. A pulling device is used in order to avoid the risk of tearing the sheet when it is pulled in the track.
3. The sheet is threaded 10-15 cm in the track by hand and anchored in the eyes of the sheet. The sheet must then be pulled by 2 people in a smooth and simultaneous pull.
4. To ensure an easy and straight draw, pass the lines over the SKR Ø34 tube in the ridge beam.
5. It is recommended to use draw lines of good quality and suitable thickness. Snap hooks can also be used for convenient attachment.
6. The sheets should be fitted with a minimum overlap of 1.5 metres in order to avoid any rainfall or drifting snow.
7. If a sheet needs to be prepared for opening, it can be fixed with lines attached to the ends of the cassette. The lines must be long enough for the sheet to be retracted again.
8. One, two or three sheets can be used, depending on the type and span of the cover.
9. NB: remember to consider the placing of the TKS eyes.



Diagonal guidance in the TKS system:

Install diagonal bracing in all outer bays to form a continuous frame around the perimeter. Diagonal bracing shall also be installed in every fifth bay.

Refer also to the illustration below.



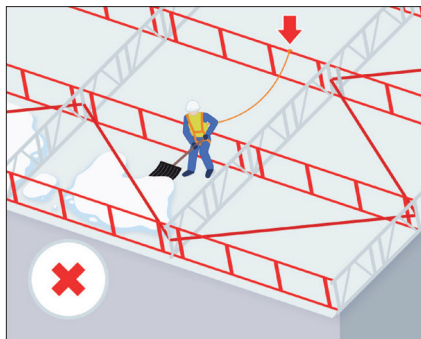
Information on safety when dismantling

1. Start dismantling by releasing the roof and rolling the outermost section back over the gable scaffold.
2. First remove the sheeting.
3. Then fit temporary supports on the gable scaffold.
4. Then dismantle frames and diagonal braces.
5. Disassemble Keder rails, clamps and fall protection devices on the outer sloping beam.
6. Then disassemble the sloping beam. Start with aluminium frames from one side.
7. Then remove the longitudinal beam, guardrail frame, beam adapter, Y-frame and wheels on both sides.
8. Remove temporary support and roll the next section over the gable scaffold.
9. Repeat 2 – 8 to dismantle the next section and continue the process until the covering is disassembled.
10. Dismantle triangular frames on both sides.
11. Finally, dismantle the scaffold.
12. Do not throw the materials to the ground. This may damage the material.

Access routes to temporary roofs

Access scaffolding should be placed so that it will not be further burdened by fallen snow. Access to a roof may be achieved via the erection scaffolding, specially built stairways or access brackets.

NOTE! Fall protection with double attachment line must be used, which means that when a person is on the roof, they are constantly attached with the shortest possible line.



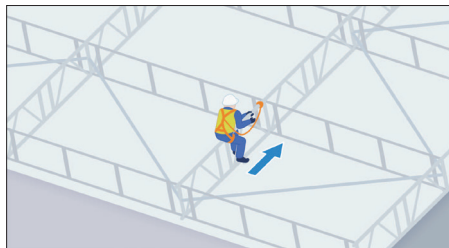
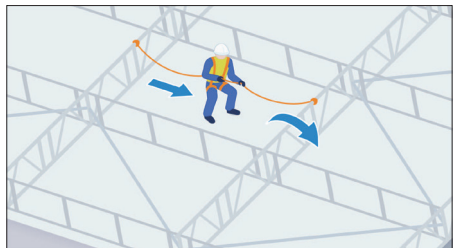
Safe snow removal and other work on the temporary roof

- The work of clearing snow from the roof must be performed by a qualified group, with at least two persons on the roof and a guard on the ground. It is also very important that the work is managed by a person with extensive experience.
- If the snow-load is considered to exceed the permissible load, snow removal must take place without further loading of the roof, for example from a lift or a crane with a basket or similar arrangement.
- NOTE! The sheeting can easily be damaged by sharp tools and careless handling. Make sure to use snow shovels or other tools that are suitable for the purpose. It is better to leave a few centimetres of snow or ice than to risk damaging the roof.
- In order to protect people and property, it is important to cordon off the area on the ground below the roof. The area must be monitored by a person who is constantly in contact with the persons on the roof.
- Inspect the roof regularly to avoid large snow masses accumulating so the roof is not exposed to large loads.
- Prepare a snow removal plan in consultation with the person responsible.
- Refer also to HAKI's special product sheet for further information.

Personal fall protection equipment

All work on the temporary roof involves a risk of falling. Therefore, everyone on the roof must use personal fall protection equipment in the form of a full-body harness, lifeline, shock-absorbing fall arrest lanyard and rope adjuster or retractable block.

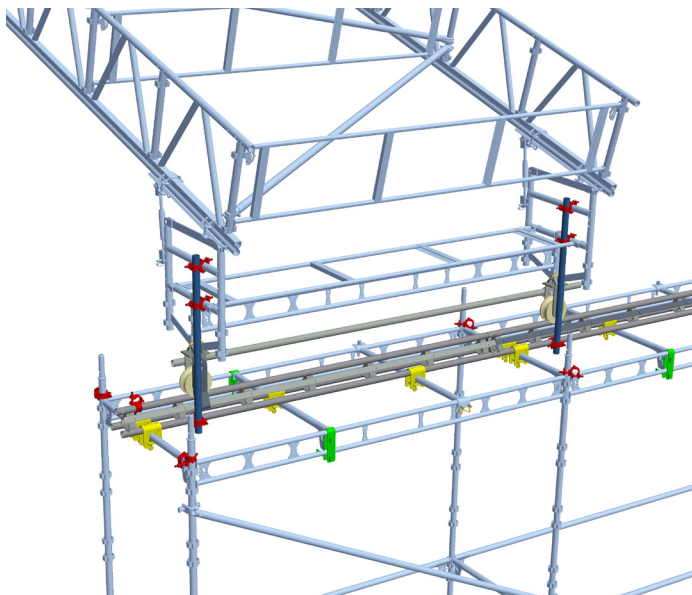
NOTE! Do not use a safety belt when working on a roof, only with a full-body harness.



PLEASE NOTE: It is important to attend a training course in the use of personal fall protection equipment before using it in practice.

Maintenance & storage

1. After use, all components must be thoroughly cleaned and inspected prior to storage.
2. All damaged parts or components must be replaced.
3. Repair of roof material is only permitted after consultation with the manufacturer or supplier.
4. Components must be properly sorted and stacked. Be careful not to stack too many components on top of each other, which could overload the bottom of the stack and thus cause damage. If the materials are to be stacked high, suitable racks and shelves should be used.
5. Sheeting must be inspected when dismantling. To avoid mould and rot, the sheeting should be dry before it is folded and stored. Rot and mould can damage the sheeting.



The roller track/Triangular rail must be supported along the roller track with a distance of max cc 1.25 m. At each support, the rail must be attached to ensure the stability of the roller track. HAKI recommends band & plate coupler 2044100+2044101 for this attachment between ERB/ITL and roller track. Double band & plate couplers are used when the support is a single ledger beam fitted between a pair of standards. When using supports other than a single ledger beam, the band & plate couplers are fitted alternately.

At the top lift where the roller track is installed, a coupler must be fitted in each standard as an additional locking to relieve the spring locks. HAKI recommends that this be done with an approved scaffold coupler. The coupler is fitted close to the upper edge of the beams.

When the sheeting is parked, it must be locked. HAKI recommends that this locking is carried out with scaffolding tubes and couplers. The scaffold tube is installed vertically from the beam adapter down to the lower part of the rail. Two fixed couplers between the beam adapter and the scaffold tube and one fixed coupler between the scaffold tube and the rails.

In case of greater sheeting or if the structure is erected in areas where higher wind loads prevail, this locking may have to be reinforced. Follow the dimensioning documents for the specific project.

The standards on the scaffolding must be secured in the standard joints with a 16 mm spring pin when a sheeting is installed.

When a storm warning is issued, HAKI recommends that extra reinforcements be applied for increased safety. After severe weather, an extra check must also be carried out of the entire weather protection system.

Rolling and opening of roof

1. Before moving or opening a roof, an assessment must be made of future weather conditions. This is done to ensure that the wind conditions do not exceed manageable levels.
2. The standard for this stipulates a working wind of max. 0.2 kN/m^2 . In case of larger areas, even winds of 0.2 kN/m^2 can pose a risk.
3. Before moving or opening a roof, it is important to carry out a visual check of the structure, not least the attachment and anti-lift function of the roller track.
4. As described earlier, it is very important that the sheeting is secured against unintentional movement. This is achieved with couplers on the roller track.

NOTE! After moving, the roof must be immediately secured with braking couplers and all anti-lift fittings must be reassembled.

Check-list for sheeting

During regular use of the weather protection roof, HAKI recommends that the weather protection be inspected at least once a week, and always before and after severe weather.

Before starting work at the working area or if the temporary roof is to be opened, the sheeting must always be cleared of snow to avoid overloading the roof and scaffolding structure.

All sheeting erected during the snow period must be monitored by a snow guard to ensure that the construction does not risk being overloaded.

HAKI recommends that construction should be inspected at least once a week, and always before and after severe weather.

This should be done according to the check-list below.

Check-list

Check that:

1. The sheets are not damaged and they are tensioned and fastened.
2. The frames are intact and all assembly points are locked.
3. Frames and diagonals are properly positioned and properly locked.
4. The wheel construction's attachment and function are intact.
5. Bracing and anchoring on both scaffolding and sheeting are intact.
6. Ballast and anchoring of this is intact.
7. Locking pins and other locks in the construction are fitted correctly.

CHECKLIST - Check before erection

1. Are the design documents on site?
2. Has the supporting scaffold been erected in accordance with the design documents and is it ready to receive the roof structure?
3. Is the correct equipment on site?
4. Is the equipment in good working order?
5. Are the right tools on site?
6. Is the appropriate safety equipment on site?
 - Safety harness with fixed length double lanyard
 - Rescue procedure
7. Has the following been taken account in the planning?
 - the number of scaffold erectors
 - designated tasks
 - starting position for erection
 - distribution of equipment

