

The responsible contractor has overall responsibility for making sure all structures are correctly installed and that the building is properly braced and anchored in accordance with relevant regulations. These instructions are only intended as a guide for installation!



General

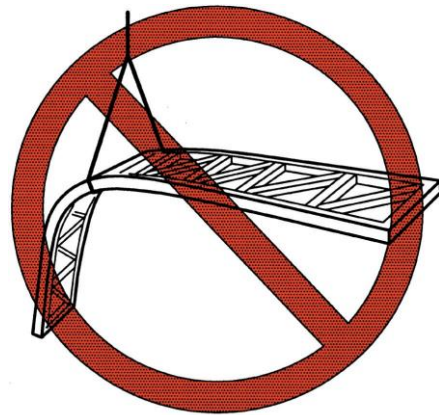
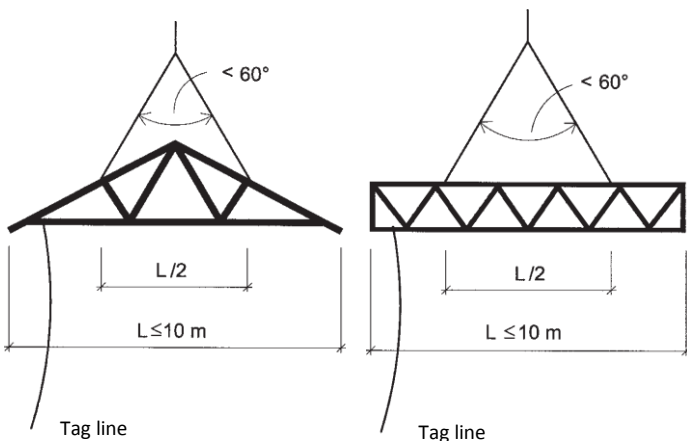
INSTALLATION INSTRUCTIONS

FOR ROOF TRUSSES IN SMALLER BUILDINGS

ACCEPTANCE INSPECTION AND LIFTING

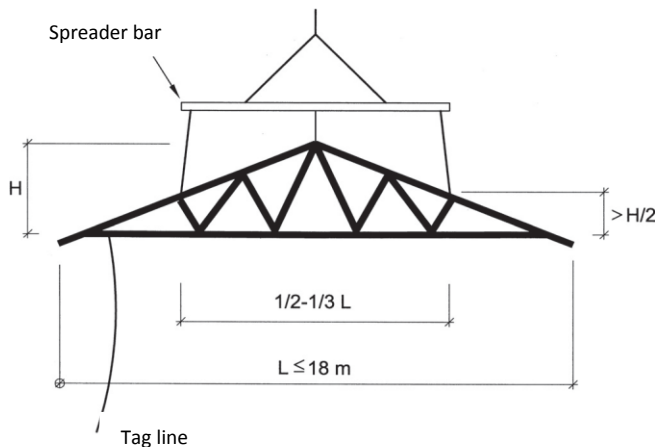
- The shipment must be inspected to ensure it corresponds to the manufacturing documentation.
- Roof trusses must be manufactured and CE certified in accordance with NS EN 14250.
- Verify that the information on the CE label matches this building!
- Check that there is no damage to timber or metal plate fasteners!
- All marked ends must be on the same side of the building!

- The correct roof truss must be installed in the correct place, with the correct orientation!
- Roof trusses must be anchored and braced in accordance with specifications!
Note: Do not forget to use diagonal braces!
- The roof surface must be braced!
Note: Diagonal braces or boards!
- Compression members require bracing in accordance with specifications!
Note: Do not forget to use diagonal braces!



Never lift like this!

Never lift the structure in a way that allows it to bend sideways!

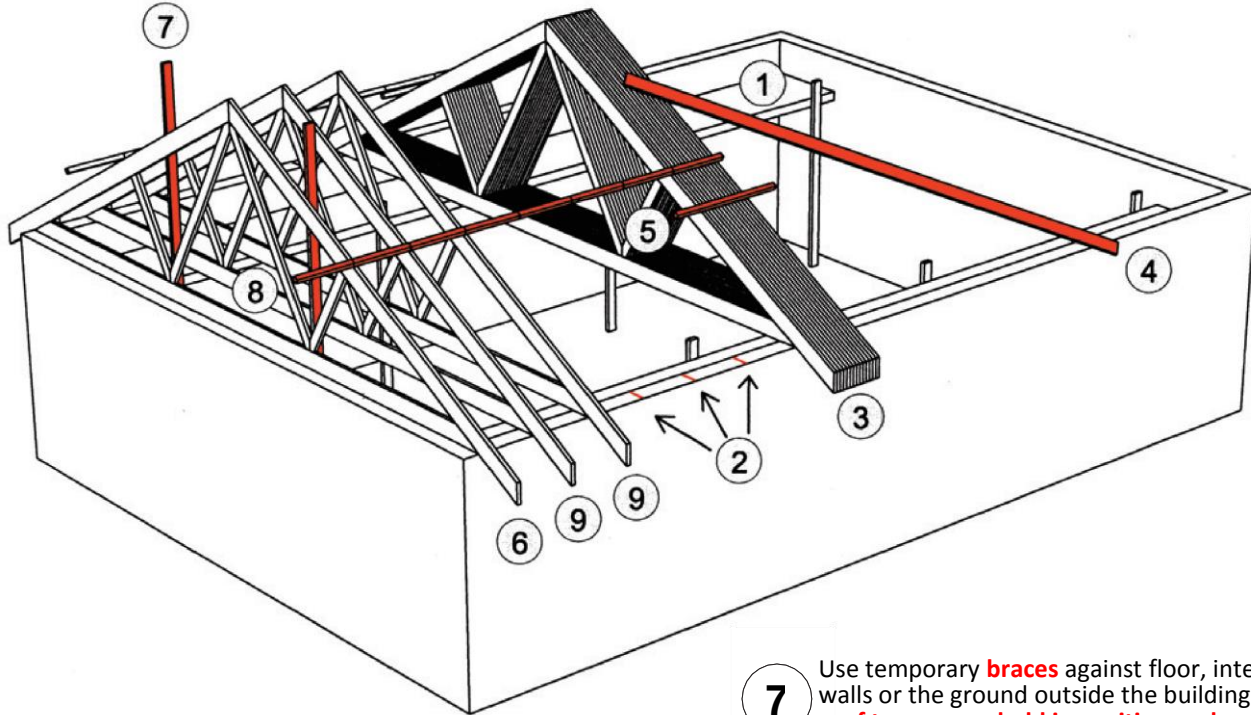


To prevent overstrain and damage, lift as above!

STORAGE ON SITE

- Store on a level, stable surface and with good clearance off the ground!
- Structures should preferably be stored **vertically and in dry conditions** (covered)!
- **Secure** the structures to **prevent tipping** (risk of falling onto persons!)

INSTALLATION



THE CORRECT TRUSS IN THE CORRECT PLACE, WITH THE CORRECT ORIENTATION!

All supporting walls, beams and columns must be in place and properly braced before the erection process begins!

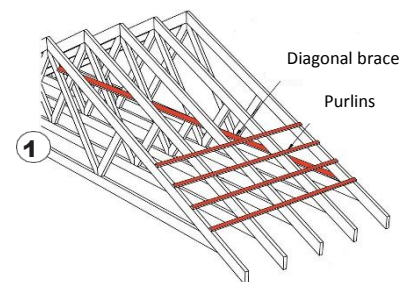
- 1 Erect **scaffolding** just underneath the top beam, inside or outside. If the span exceeds 10 m, erect scaffolding in the centre of the building also.
- 2 **Mark placement of roof trusses** on all supporting walls and beams. On timber frame walls, this is immediately above each studs—there must therefore always be **at least one stud under each roof truss**.
- 3 **Lift and position the roof truss packages** onto the wall plate so that the roof trusses later **can be distributed** laterally. All marked ends must be on the same side of the structure.
- 4 Packages must **be properly braced** to prevent tipping. Use minimum 36 x 98 mm boards as supports.
- 5 **Before removing the metal strapping**, attach a short **batten** across the package on both sides of the structure, with one **nail** going through the batten **to each top chord**.
- 6 Install **gable trusses first**—this also applies if you are lifting trusses one at a time. Make sure they are exactly **vertical** and have the **correct overhang**. **Anchor connectors** must always be used on gable roof trusses.

7 Use temporary **braces** against floor, internal supporting walls or the ground outside the building. This ensures the **roof trusses are held in position and vertical** during erection.

8 Attach an **installation lateral binder** on each side of the roof, between the gable roof truss and the roof truss package. The binder should have markings to show the correct position of each roof truss. Take care to attach the binder high enough, so that the first row of roof sheeting can be installed without coming into conflict with the binder.

9 Then continue the installation from the gable roof truss toward the roof truss package. Use a line along one side to make sure **the overhangs line up correctly**.

10 Once 6–7 trusses have been installed, attach a **diagonal brace** from the corner of the building and up to the roof ridge at an approx. 45-degree angle. Do this on both sides of the building. Use minimum 23 x 98 mm boards and attach them to the underside of the top chords, to make sure they do not come into conflict with the roof sheeting.



To ensure stability, the roof plane requires bracing both in ridge line direction (purlins) and diagonally (diagonal brace)!

Note! Scissor trusses are particularly vulnerable to tipping during installation.

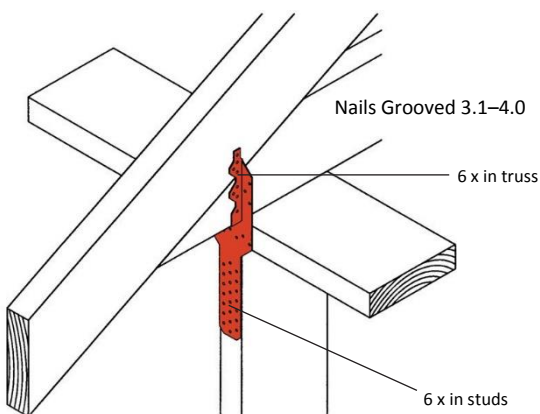
IMPORTANT!

- Do not cut into any part of the structure without specific instructions from the manufacturer!
- Transitions, dormers and roof lifts must only be installed in accordance with instructions!
- Splicing of structures only in accordance with the manufacturer's instructions!

ANCHORING

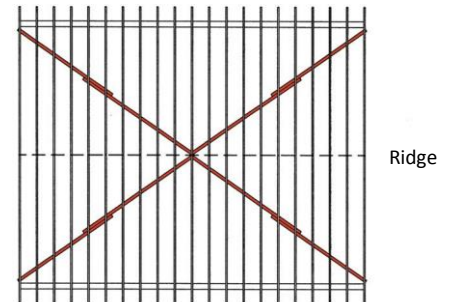
- In areas with wind speeds exceeding 26 m/s and reference heights exceeding 10 m, specific calculations for anchoring and bracing to withstand wind stress are necessary! This also applies to buildings with large gates, such as industrial buildings, warehouses and agricultural buildings. In other cases, the instructions below can be applied if more specific calculations have not been performed.
- Anchoring against wind suction to the underlying structure is achieved by using **perforated straps, ties or screws**. The term 'underlying structure' refers to studs, beams or wall plates, which are **assumed to be anchored to underlying structures of the building**.
- There must **always** be **anchor connectors installed on the two outermost** structures at each gable + on every other structure further along the roof, i.e. on trusses no. **1, 2, 4, 6, etc.!** In buildings with **large gates**, such as industrial buildings, warehouses and agricultural buildings, **every roof truss must be anchored!**
- All connectors are **nailed or screwed in accordance with directions** from the building's responsible designer.

Example of anchor!

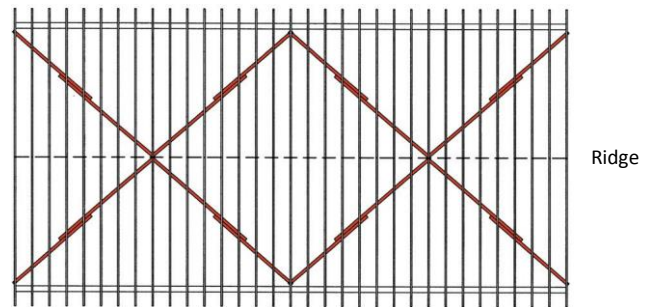


PERMANENT BRACING OF THE ROOF SURFACE

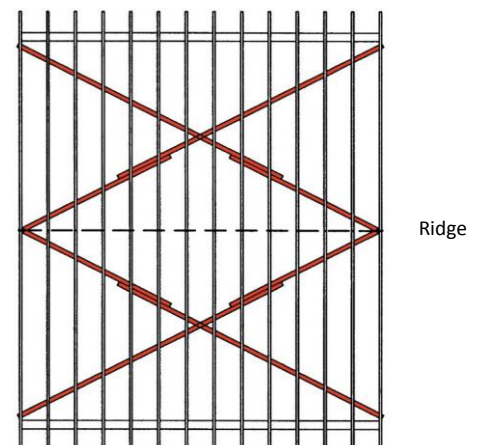
- Special diagonal bracing is not necessary for **residential buildings** if the roof sheeting consists of: Wood cladding, 3 mm hard wallboard, particleboards, OSB or plywood that are **securely nailed** to the top chords. The same applies to attic roof trusses where the interior attic room is covered with board or panels.
- Wherever **membran or cardboard roof sheeting** is used, the roof surface must be **braced** diagonally with either timber boards or steel straps.
- In **small houses with a truss spacing of 600 mm**, permanent cross bracing can be achieved by **installing good quality boards, minimum 23 x 98 mm**. Assemble the boards **on the underside of the top chord**. Start down at the bottom of the rafter on the outermost structure and install boards at an approx. 45° angle up toward the ridge. **Nail the boards with 3 x nails (2.8-75) to each top chord**. See figures below.



Install bracing from the gable wall (near bottom of rafter) up toward the ridge!



Repeat the bracing pattern on long buildings!



Cross brace each roof plane if the building is wide and short!

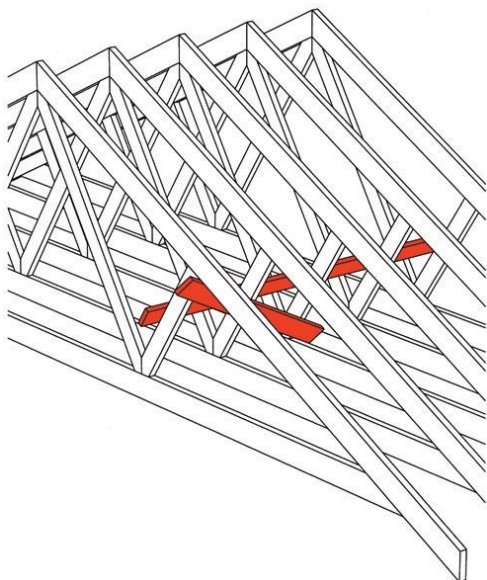
COMPRESSION MEMBER BRACING

- Some **compression members** within the structure are designed to require **lateral bracing** on site. If this is the case, bracing points are specified on **the installation document included in the delivery**.
- For bracing, good quality 23 x 98 mm boards can be used. **Positioned as indicated in the installation document**. Nail the board to the compression member with 3 x 2.8–75 nails.

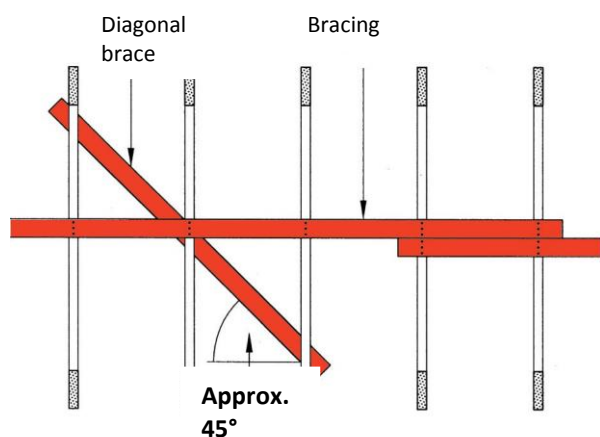
To prevent all of the compression members buckling the same way, **bracing** must also be **restraint**. This is achieved by attaching a **diagonal brace** at either end. Assemble the diagonal board to the roof plane or ceiling. See figures 1, 2 and 3 below.

Note: The number of bracing points required is specified in the design.

1.



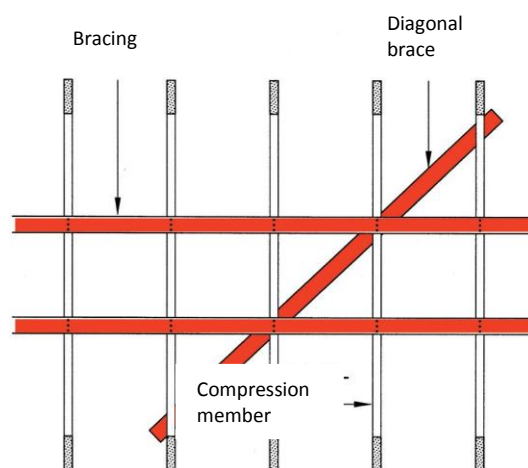
2.



Diagonal braces can be installed to the opposite side of the compression member. For compression members absorbing significant loads, such as cantilever web to bearing, diagonal brace must be repeated every 3 metres. For other compression members, the diagonal bracing is repeated every 6 metres.

The same system is also used when more bracing points are necessary:

3.



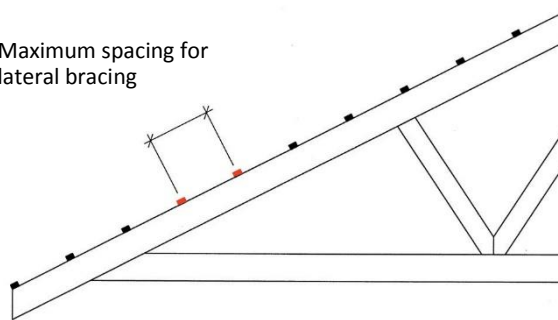
Two bracing points!

CHORD BRACING

Normally, top chords are braced by the sheeting and/or purlins. If bracing is by purlins only, it is important to make sure the purlin spacing is not too large. The maximal distance for lateral bracings is specified in the design.

In some types of hip roof trusses, flat trusses with risers to create a pitched roof plane and large structures with a split height and "cap" truss on top, some horizontal chords are not in contact with the pitched roof plane. Bracing for these types of chords must be as specified by the manufacturer!

Maximum spacing for lateral bracing



REFERENCE TO FURTHER DETAILED INFORMATION

- Please see NTF's website: www.takstol.com for additional information.
- SINTEF Building and Infrastructure/building details: 520.241 – 520.243 – 525.831

July 2019

