Genaroof®

Completely closed tank cover

Genap introduces the Genaroof cover for water silos

In addition to the flat tensioned covers we can also supply raised tensioned covers sealed around the silo. This type of cover prevents the water from becoming contaminated due to algae growth and from dirt such as leaves, sand or twigs from blowing in . It also maintains clean water and limits evaporation.

The fabric available is either permeable or waterproof.
The closed cover uses Genatex 900 with enhanced UV resistance and the permeable option is manufactured using Genatex 700 open woven fabric.

A steel hoop, designed and engineered to add strength is attached to the top of the tank and the cover is tensioned over this using webbing attached to a ratchet strap.

The roof is supported by a central pole which provides additional construction stability.
Damages to the Genaroof and silo caused by wind, storm or snow are not covered by warranty!

The cover is available in various diameters ranging up to 15 meters so 80% of silos sold can be covered.

Genaroof® anti-algae / closed roofsystem

Genap Genaroof® is a roof system for corrugated water silo reservoirs up to silo diameters ranging from Ø7 m. up to max. Ø15 m. with silo heights to max. 4.5 m.

Materials:
All the materials required for the installation are delivered; it is possible to exclude the pole and footplate from delivery and source this locally on base of given requirements. This is on request of the customer.

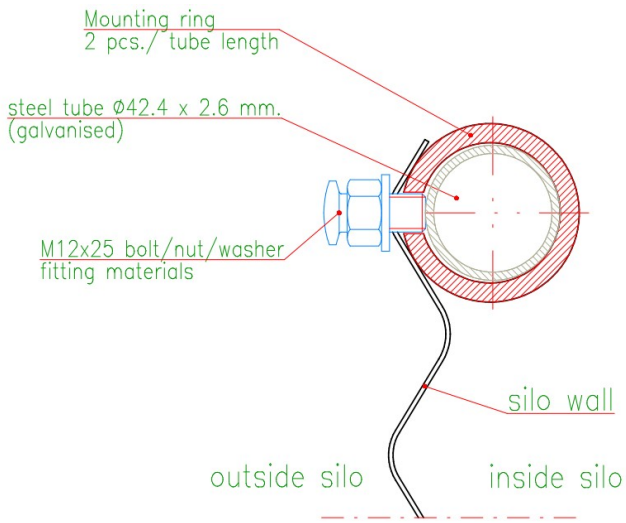
It is advised to apply a reinforcement ring on the top edge of the silo to strengthen the silo. For a Genap silo a steel tube ring can be delivered which can be installed on the inside of the tank at the upper corrugation; all the parts like steel tube parts / mounting rings / tube couplers and fastening gear is completely delivered.

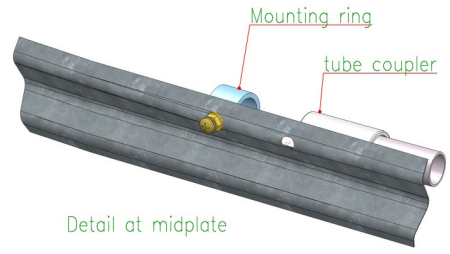
The Genaroof® can be delivered as an anti-algae version: the roof part is made out of a PP woven which is more or less permeable; and as a closed version made out of a reinforced PVC which is not permeable. The construction for both are equal only the material part of the roof differ.

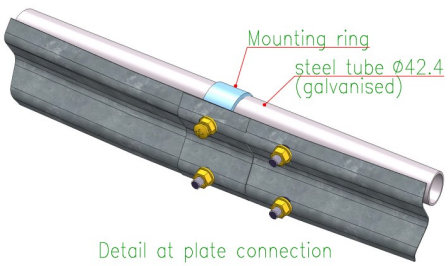
Installation conditions:
- max. wind force 3 Bft.
- Temperature min. + 0° C.

Installation:
The installation is started with the **steel tube ring (Ø42.4)** at the upper corrugation at the inside of the tank.
Remark: for installation of the Genaroof on an existing silo the silo liner and wall protection sheet (non-woven) have to be removed from the top edge temporary; Genaroof can only be installed on empty silos!

Step 1:







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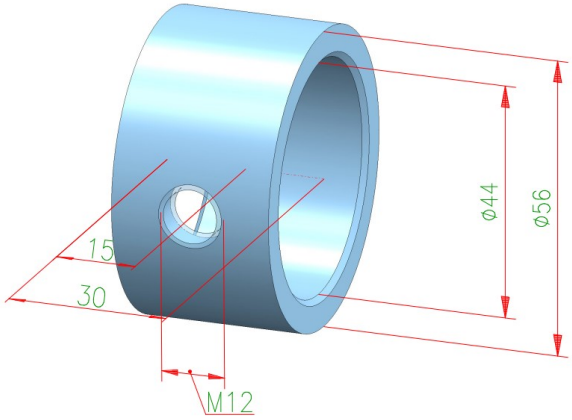
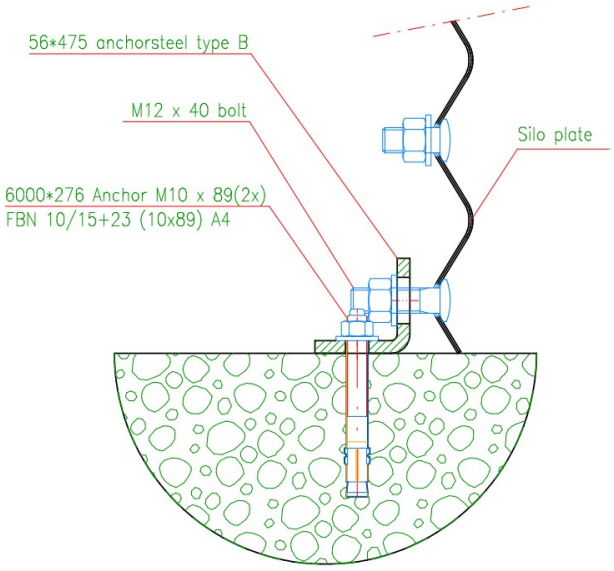


Detail: Mounting ring



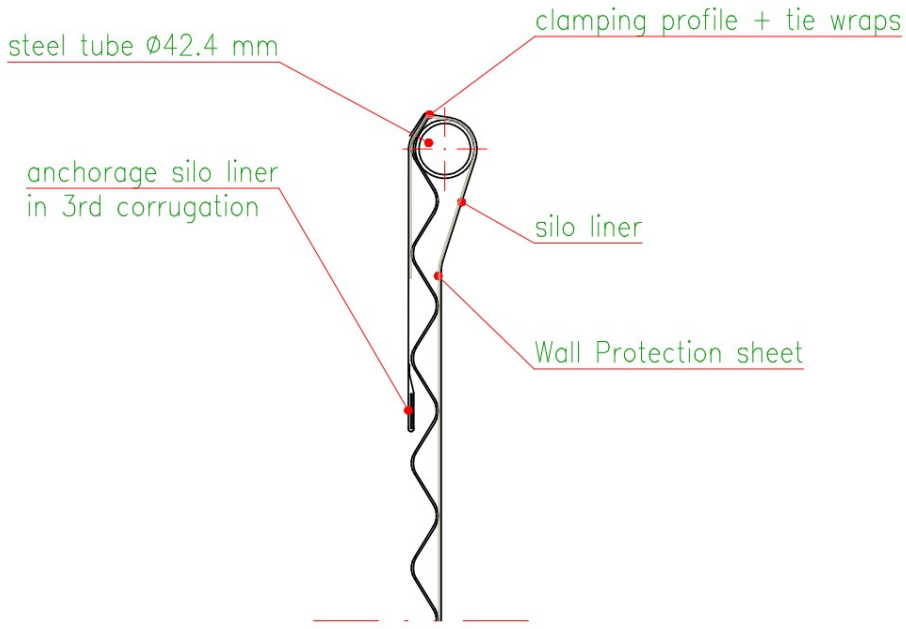
Detail: Anchorage Silo on concrete

Remarks:

- use 2 mounting rings/steel tube
- number of plates/ring = number of steel tubes; when neccesary the last steel tube has to be cut to length
- Always anchor the silo to the bottom/soil. Either by anchors on concrete foundation or by excavation in soil

Step 2:

Re-install the wall protection sheet and silo liner over the top edge of the silo (in case of existing silo)



Detail: Installation liner over top edge silo with reinforcement ring

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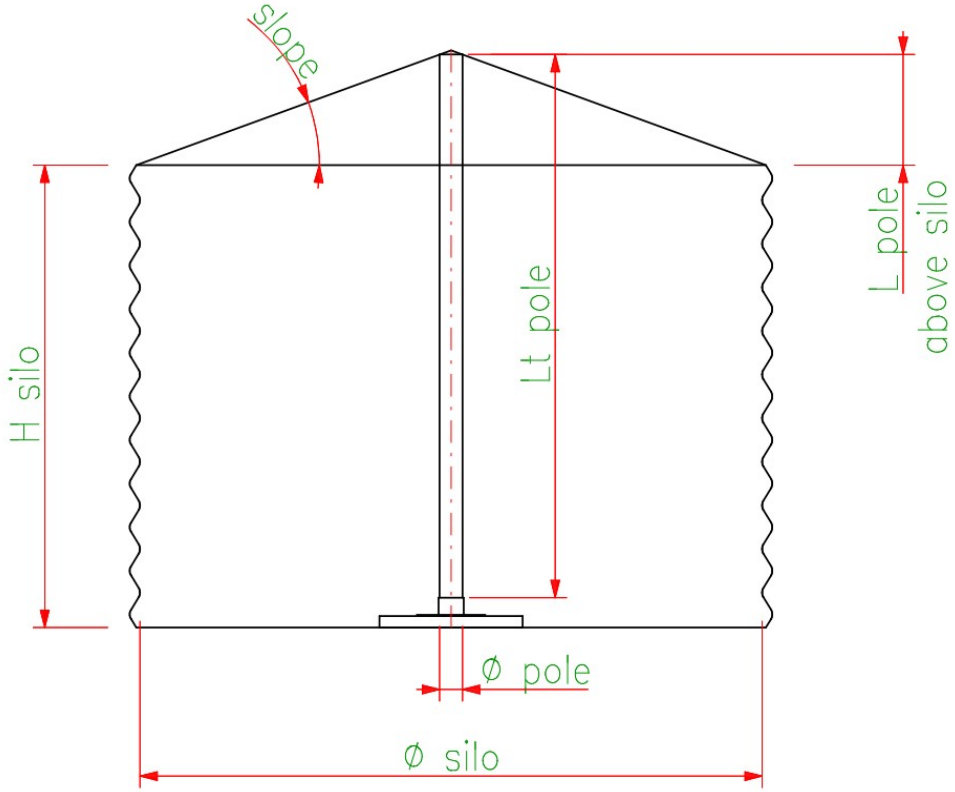
Step 3:

Pole length:

The length of the pole depends on the silo diameter; silo height and roof slope; the roof slope is standard 20° (closed Genaroof) and 10° for a semi-closed (anti algae) Genaroof.

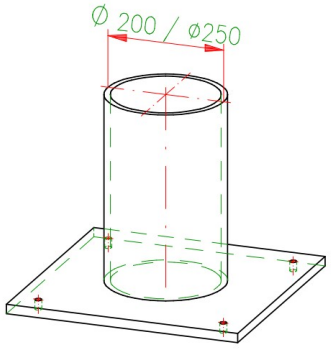


The L *pole above silo* is the leading dimension; when pole delivered the pole length has to be adapted to the total length (Lt pole) as given by the length above the silo (L pole above silo). Lt *pole* can differ due to concrete plate/tile thickness and bottom level silo.

It is advised to apply a PVC pressure tube:

- Ø7 < Øsilo < Ø10 m. : Ø200 mm. ≥PN10 (pressure class 10 bar)
- Ø10 ≤ Øsilo < Ø15 m. : Ø250 mm. ≥PN10 (pressure class 10 bar)

For fixing the pole to the concrete plate a foot plate is used and is available for a Ø200 and Ø250 pole.



Footplate ø200/ø250

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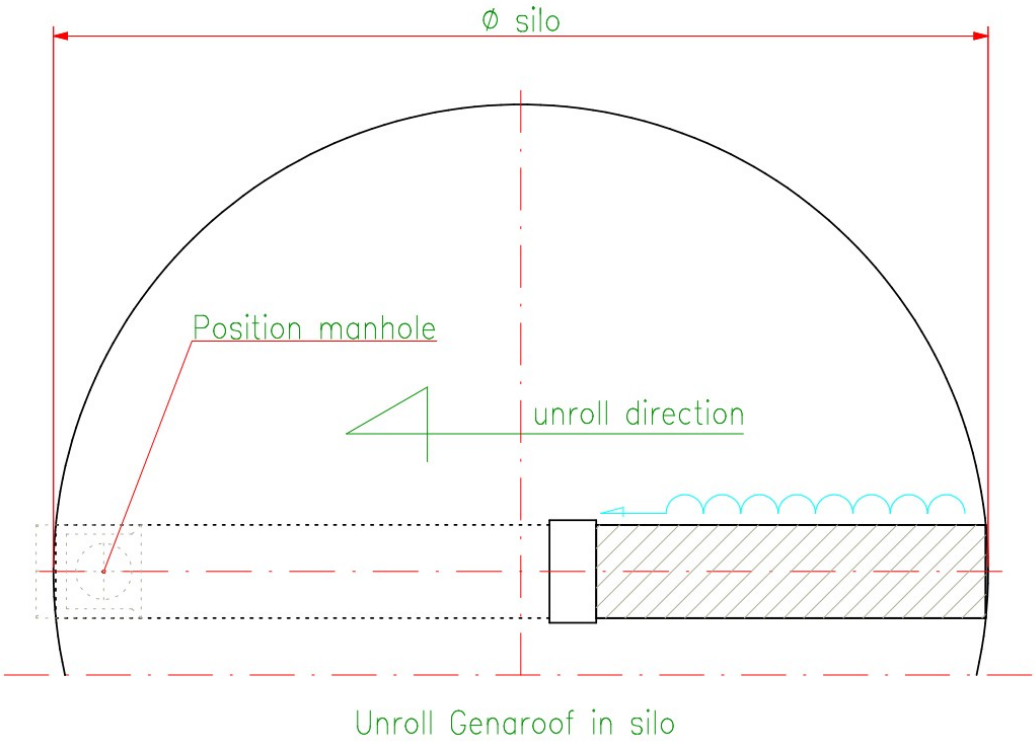
The footplate is connected to the concrete plate with 4 anchors. Concrete plate is not part of the delivery.

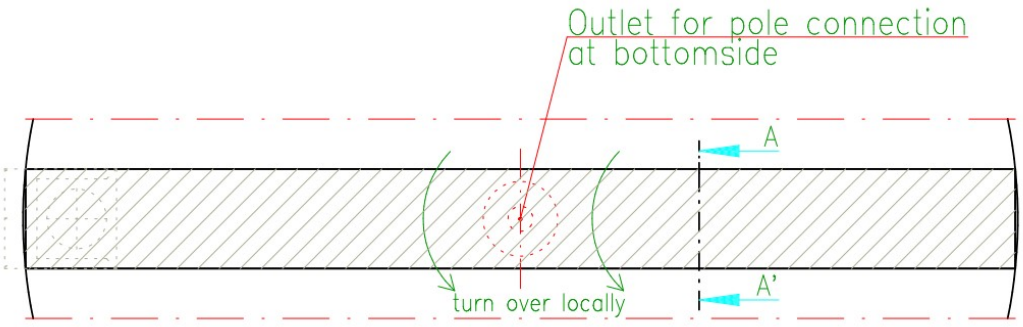
Remarks:
- pole and footplate can be delivered optional
- when pole top side is cut to dimension, please remove sharp edges and burrs

Step 4:
Unroll Genaroof in silo diameter direction. Diamentral to the starting point of unrolling the Genaroof the manhole is located.



Unroll Genaroof in silo

Turn over the unrolled Genaroof locally in the centre to get acces to the outlet/sleeve for connecting the pole.



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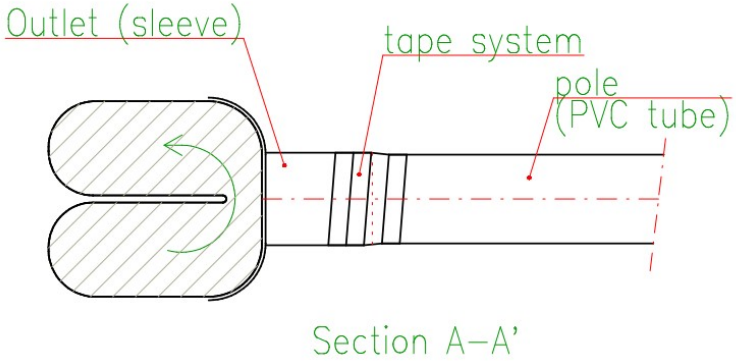
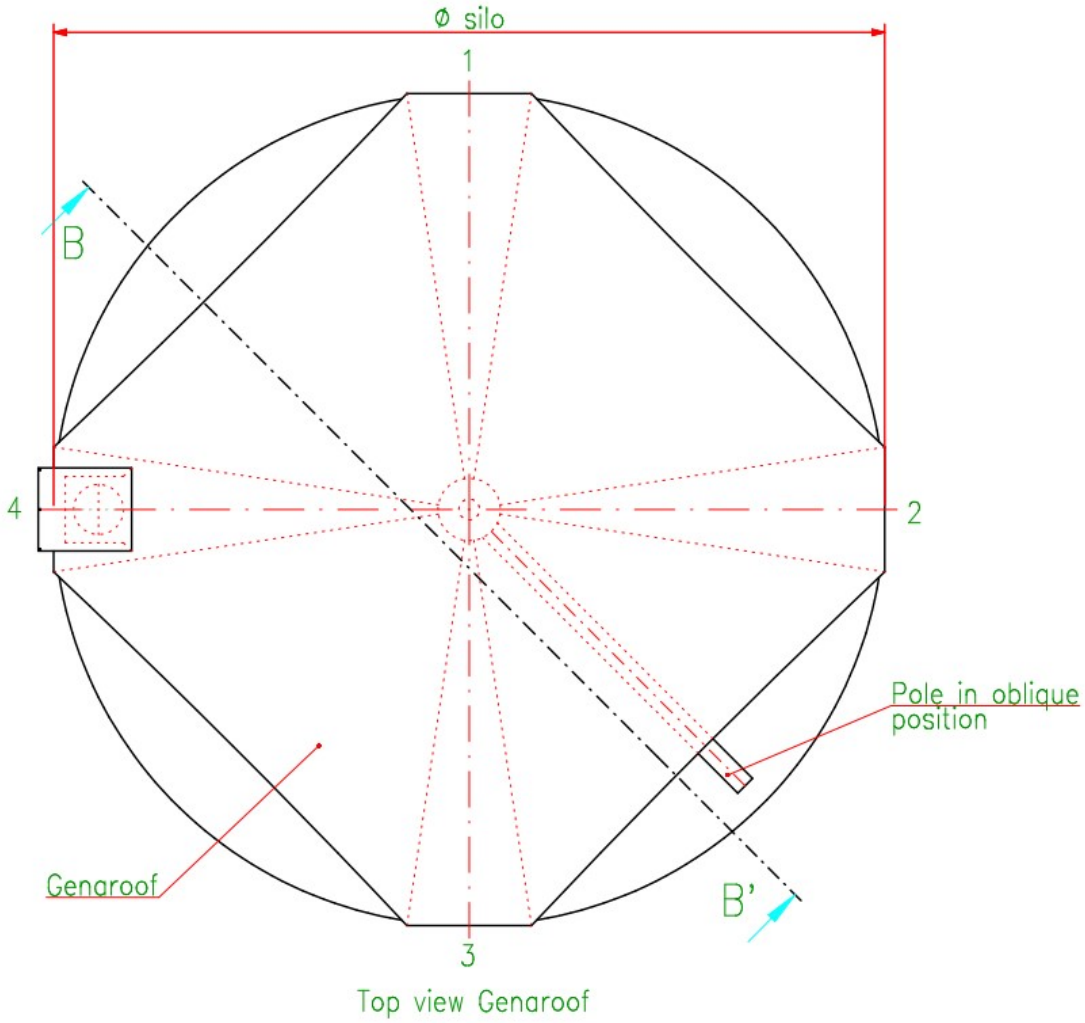


Connect pole to the outlet (pull sleeve over top of pole) and fasten pole to outlet with tape system for conical outlets; which is part of the delivery.

Step 5:

Unfold the Genaroof completely in the silo and fasten the Genaroof on 4 points on the top edge of the silo; f.e. at 4 points (see below).



The pole is in an obligue position under the Genaroof; next the pole is put in an upright position including a footplate at the bottomside of the pole. The pole is positioned upon a concrete plate which is put in the silo in the center of the bottom; between the concrete

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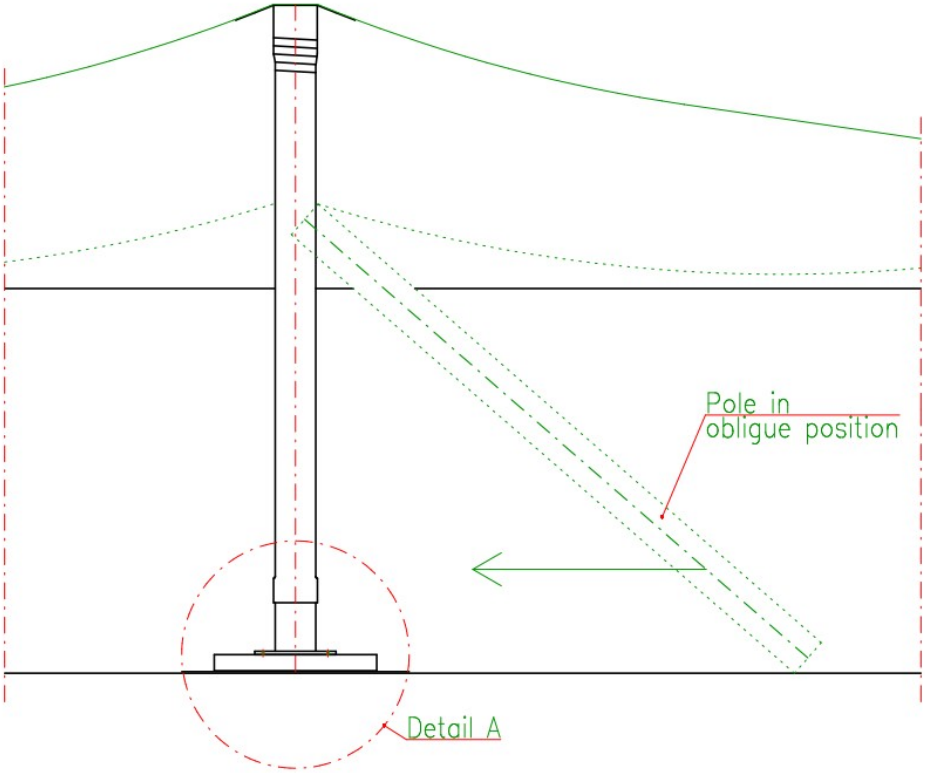
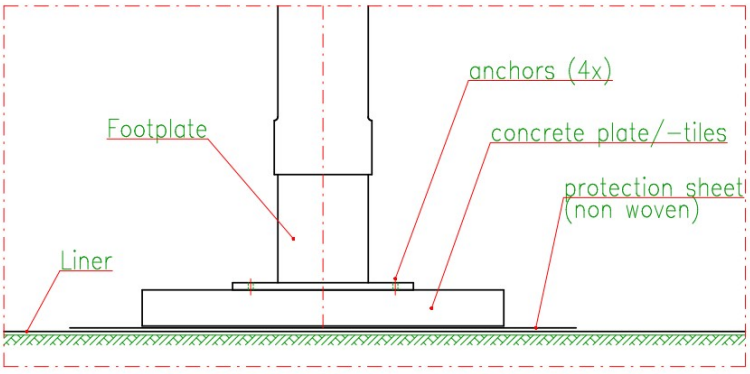
plate and liner a protection sheet (250-500 gr./m^2) MUST be installed in order to prevent damage to the silo liner. The footplate is anchored to the concrete plate with anchors M12 x 75. When pole and footplate are part of the delivery the protection sheet and anchors are included! See below details of the pole installation.



Section B–B'



Detail A

Step 6:

Tensioning and fastening of the Genaroof on the silo.

First the horizontal tensioning strips are installed into the seam all around; the strips are connected with strip connectors in order to keep the tensioning strip in line and to provide uniform tensioning all around the circumference of the Genaroof. The last connection for closing the tensioning strip ring is a slide connector. Use the openings/gaps for the tension brackets for inserting the strips into the seam.

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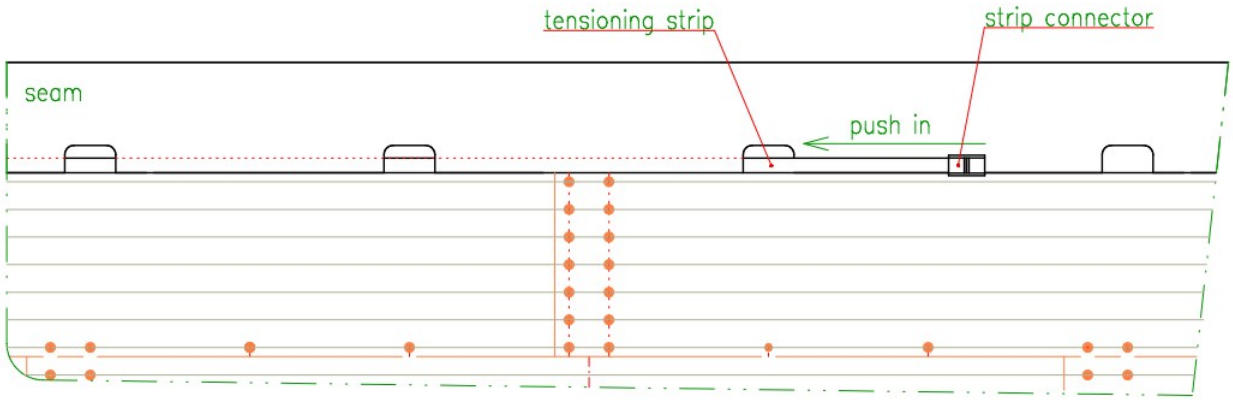
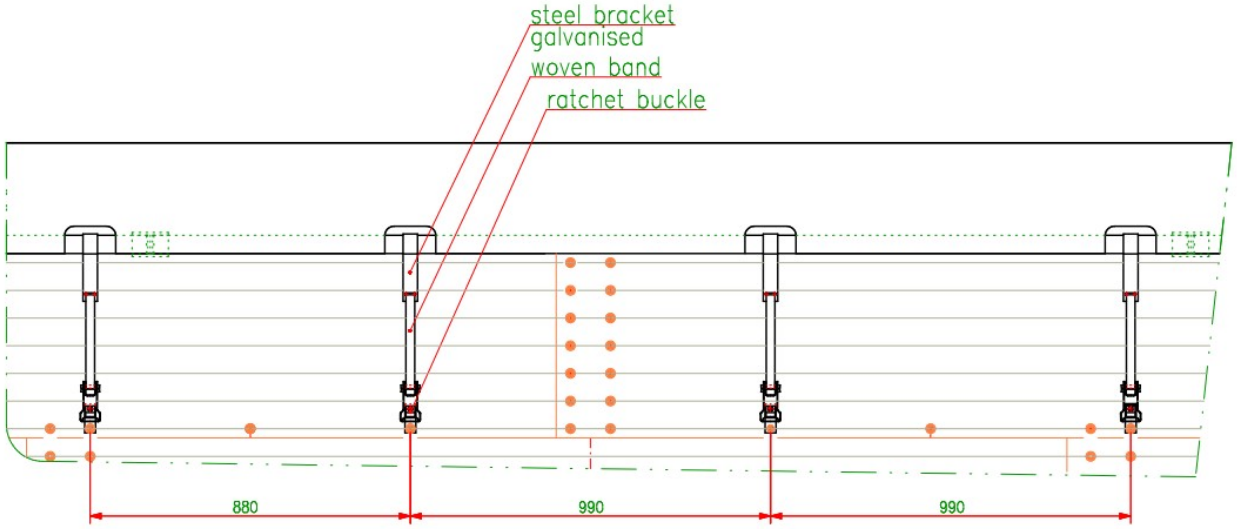
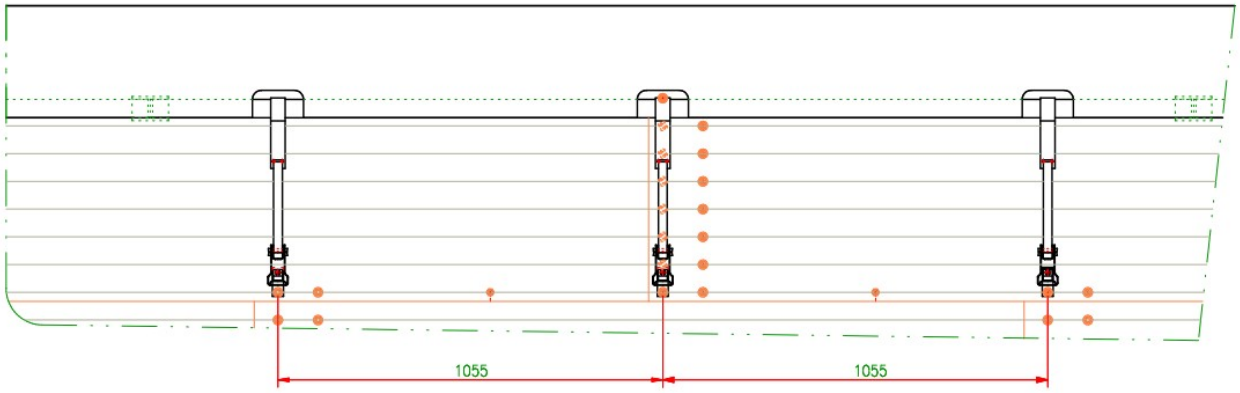


Installing horizontal tensioning strip in seam

For the vertical brackets there's a difference in the positions for a Genap LP (Long panel) and SP (short panel) silo. See below.



Position vertical brackets for Genap Silo LP (Long panel)/ 3 brackets/silo plate



Position vertical brackets for Genap Silo SP (Short panel)/ 2 brackets/silo plate

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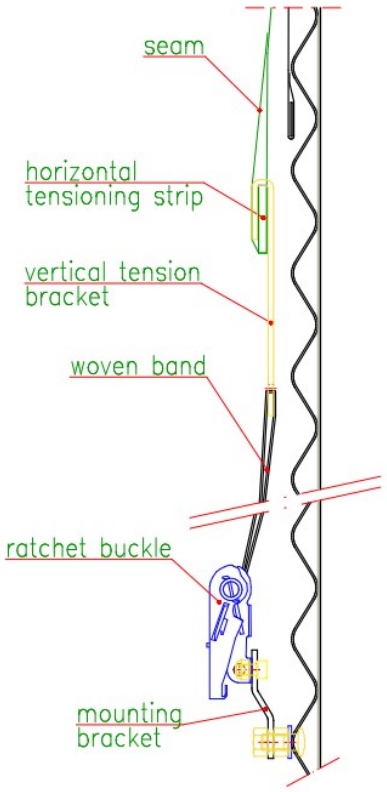
See below a side view of the assembly of the vertical tension brackets



Side view
vertical tension brackets

Remarks:
- woven band is delivered at one length; cut this length to 1 m. length pieces for each tension bracket
- put the woven band double into the ratchet buckle
- tension all the brackets even; the seam has to be more or less level all around the silo.

Step 7:

Fastening hatch manhole to silo:
The hatch can be fastened by means of elastic bands; carabiners and hooks which are fastened with extra nut on the ends of the silo bolts on the lower hand of the top silo ring. Elastic bands / carabiners and silo hooks are part of the delivery

General remarks and maintenance guidelines:

- For a long succesfull use of the anti-algae cover these installation instructions should be followed and respected.
- A regular inspection of the system is advised especially after heavy winds/storms. In case of damages these should be repaired or replaced. Always remove obstacles which are blown upon the cover; like: leaves, branches etc.
- When these guidelinesinstructions are not -or insufficiently- respected; no claims on warranty are accepted. On the cover is no warranty with respect to damage caused by snow loads.

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