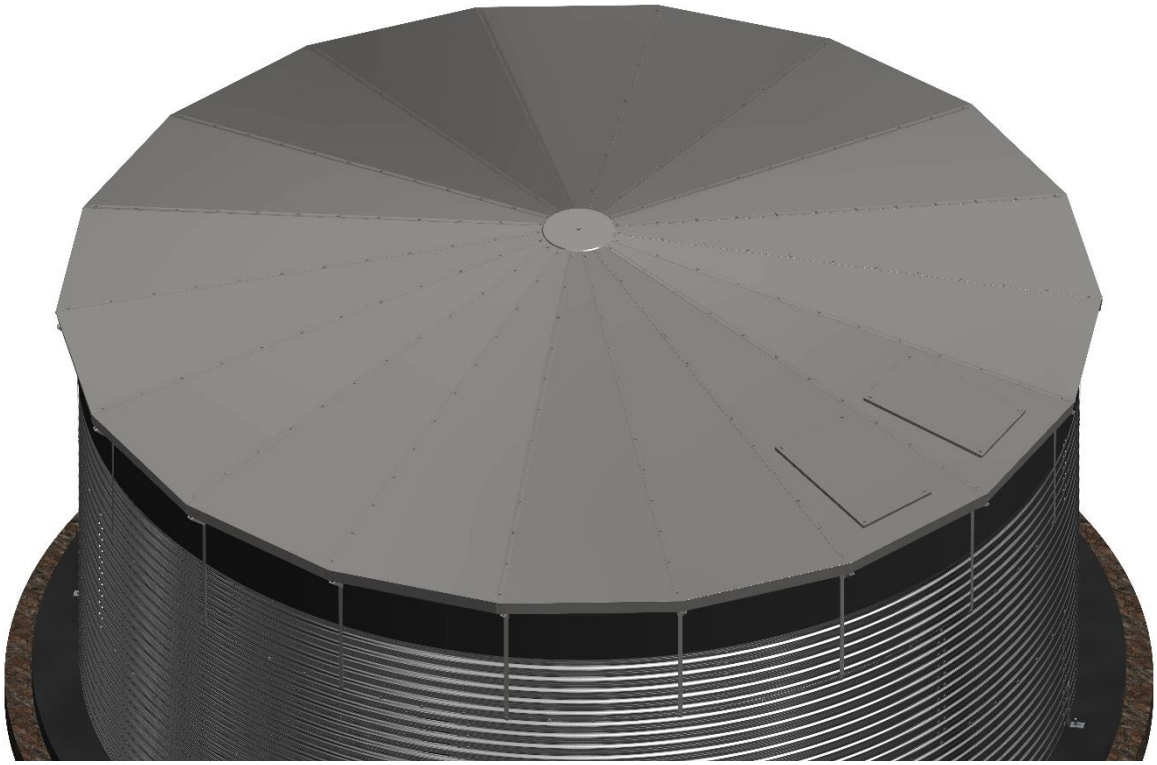
OCTOBER 2020

Evenproducts

WATER FOR LIFE

Galvanised Steel Cover Installation Guide

For 9ft (2.74m) - 48ft (14.63m) Diameter tanks



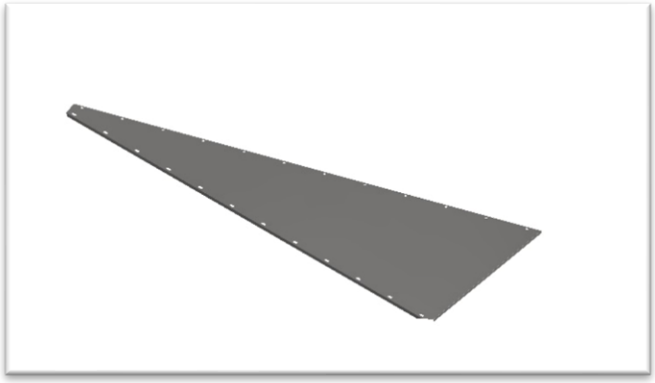
Please read entire manual before starting installation

Component List

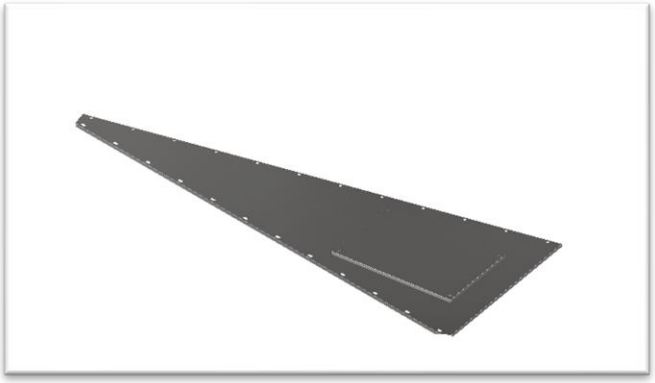
	Description
A	Roof Segment
B	Roof Segment c/w Hatch
C	Adjusting Pole
D	Purlin
E	Hub
F	Ball Valve Support
G	Base Plate with Butyl
H	Tie Strip Assembly
I	Centre pole
J	Apex/Conical Cover
K	Box Edging c/w Water Inlet
L	Box Edging c/w Overflow
M	Box Edging
N	Centre pole extension (if provided)
O	Purlin Spacing Guide
P	Drinking Water Sock (if provided)

Size	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	**M**	**N**	**O**	**P**
9' (2.74m)	7	2	1	9	1	1	1	9	1	1	1	2	6	1 (if required)	1 (if required)	1 (if required)
12' (3.65m)	10	2	1	12	1	1	1	12	1	1	1	2	9	1 (if required)	1 (if required)	1 (if required)
15' (4.57m)	13	2	1	15	1	1	1	15	1	1	1	2	12	1 (if required)	1 (if required)	1 (if required)
18' (5.48m)	16	2	1	18	1	1	1	18	1	1	1	2	15	1 (if required)	1 (if required)	1 (if required)
21' (6.40m)	19	2	1	21	1	1	1	21	1	1	1	2	18	1 (if required)	1 (if required)	1 (if required)
24' (7.32m)	22	2	1	24	1	1	1	24	1	1	1	2	21	1 (if required)	1 (if required)	1 (if required)
27' (8.23m)	25	2	1	27	1	1	1	27	1	1	1	2	24	1 (if required)	1 (if required)	1 (if required)
30' (9.14m)	28	2	1	60	1	1	1	30	1	1	1	2	27	1 (if required)	1 (if required)	1 (if required)
33' (10.06m)	31	2	1	66	1	1	1	33	1	1	1	2	30	1 (if required)	1 (if required)	1 (if required)
36' (10.97m)	34	2	1	72	1	1	1	36	1	1	1	2	33	1 (if required)	1 (if required)	1 (if required)
39' (11.89m)	37	2	1	78	1	1	1	39	1	1	1	2	36	1 (if required)	1 (if required)	1 (if required)
42' (12.80m)	40	2	1	84	1	1	1	42	1	1	1	2	39	1 (if required)	1 (if required)	1 (if required)
48' (14.63m)	46	2	1	72	1	1	1	48	1	1	1	2	45	1 (if required)	1 (if required)	1 (if required)

Roof Segment (A)

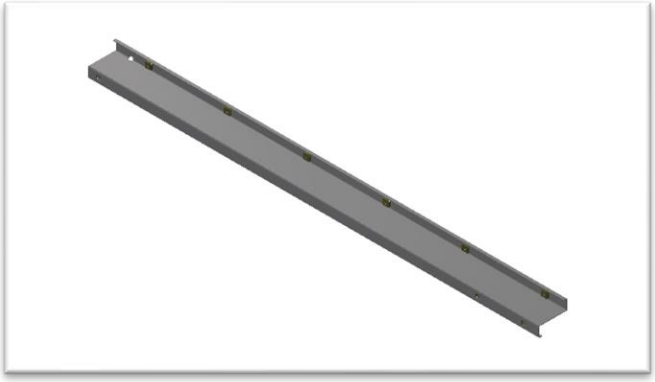


Roof Segment c/w Hatch (B)



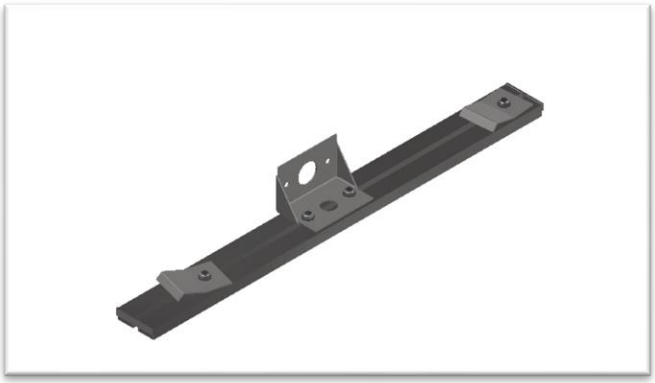
Adjusting Pole (C)

Purlin (D)

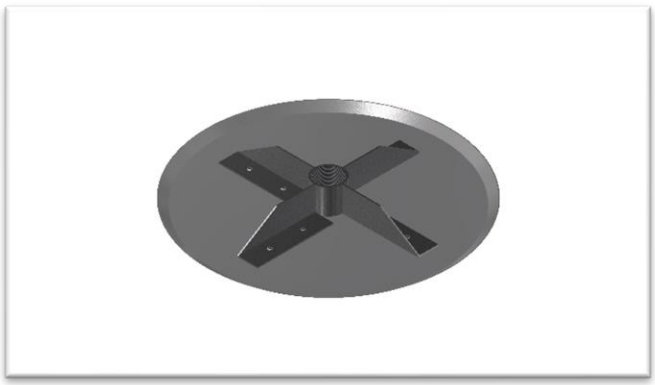


Hub (E)

Ball Valve Support (F)



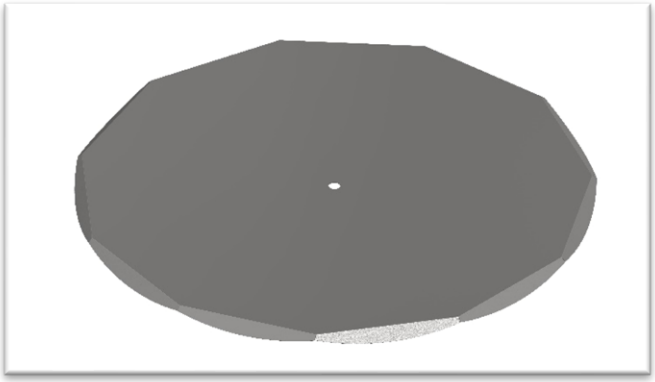
Base Plate with Butyl (G)



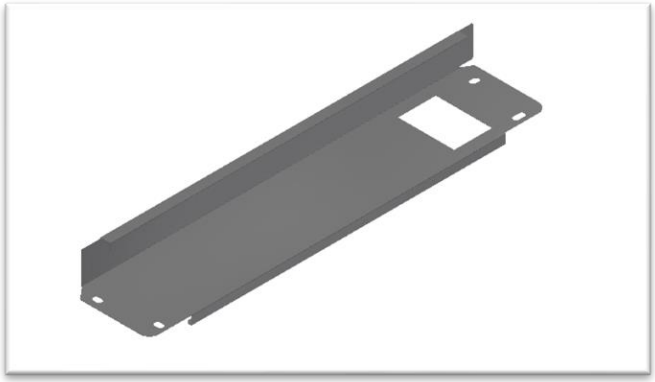
Tie Strip Assembly (H)

Centre Pole (I)

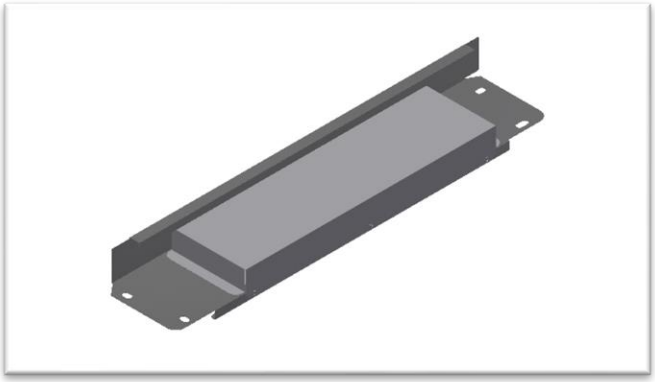
Apex/Conical Cover (J)



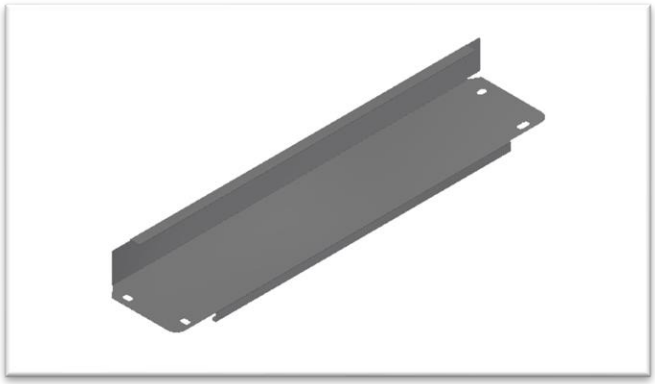
Box Edging c/w Water Inlet (K)



Box Edging c/w Overflow (L)

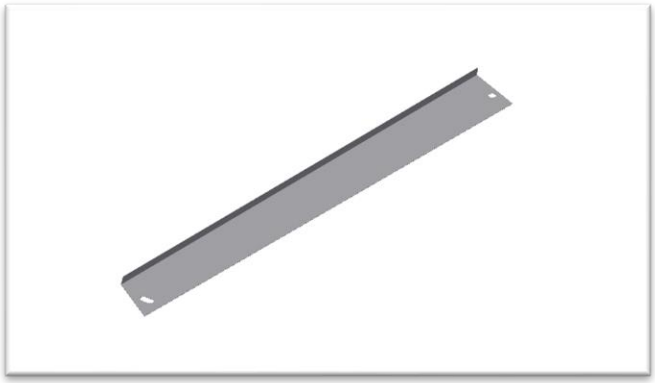


Box Edging (M)



Centre Pole Extension (N)

Purlin Spacing Guide (O)



Drinking Water Sock (P)

Tooling Requirements & Safety Advice

- Extreme care should always be taken when working on the surface of a tank liner. Step Ladders or Short Ladders with protected feet and tops, are recommended to ensure no damage to the tank liner is caused.
- Protective Gloves are also recommended when handling the sharp-edged roof segments and purlins etc.
- A Re-Chargeable Torque Driver (Speed Bit) is recommended if available. 13mm, 17mm and 19mm Sockets and Spanners are required.
- A Safety Harness is recommended for working at height.
- Ensure the appropriate footwear is worn and that the ladder feet etc, are cushioned, so as to avoid damaging the liner.
- Ensure the Centre Pole and Hub, are held securely in place before and when attaching the Purlins.
- Avoid the Roof Segment Sheets or tooling etc, falling from the structure on to the liner or persons working below.
- Ensure that someone is always available to help on the outside of the tank whilst others are working within the structure and that escape ladders are in place at all times.
- Always ensure that weather conditions are such to ensure safe installation and working at height.
- When fitting a Drinking Water Quality Sock to the Centre Pole, ensure fitting is sufficient so that sock remains in place when the tank is filled, but not so tight as to cause damage to the sock.

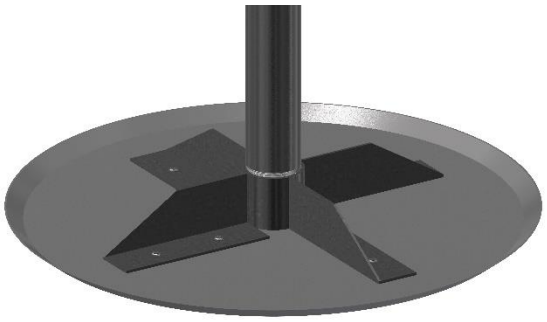
Note: The advice above is for guidance only. Installers should always refer to any Health and Safety Executive published recommendations or local health & safety guidelines and laws.

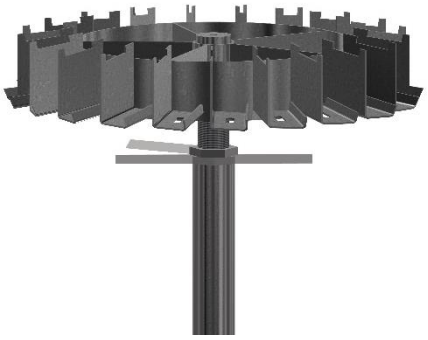
Construction of the Superstructure

- Assemble your Centre Pole by connecting the Centre Pole sections via the union sockets provided. On smaller tanks your Centre Pole may be in one section.

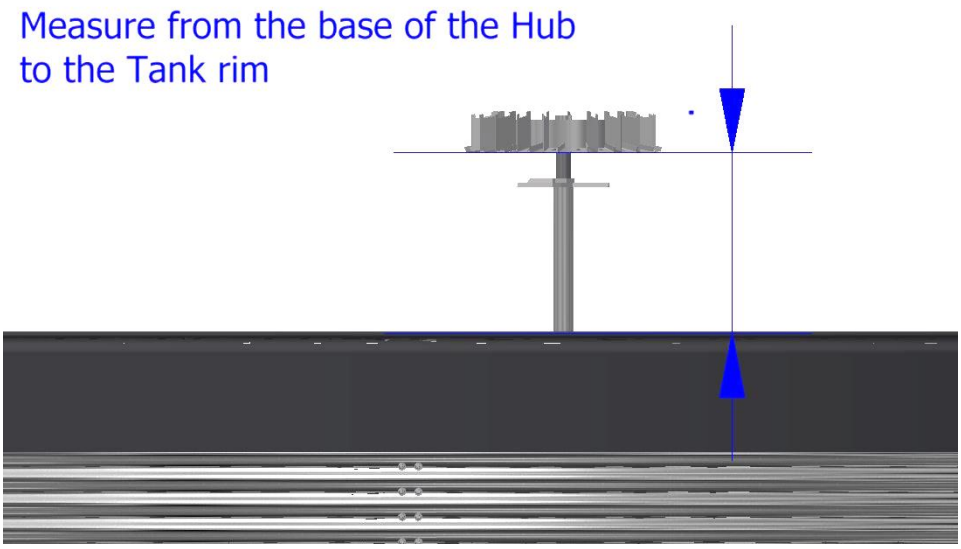
Example of centre pole sections

- Once the Centre Pole has been joined, move it close to the inside wall of the tank and proceed to screw the Centre Pole into the Base Plate. Proceed to then insert the Adjusting pole into the top section of the Centre Pole, and then attach the Hub onto the threaded Adjusting Pole section.





Installation of Centre Pole Structure



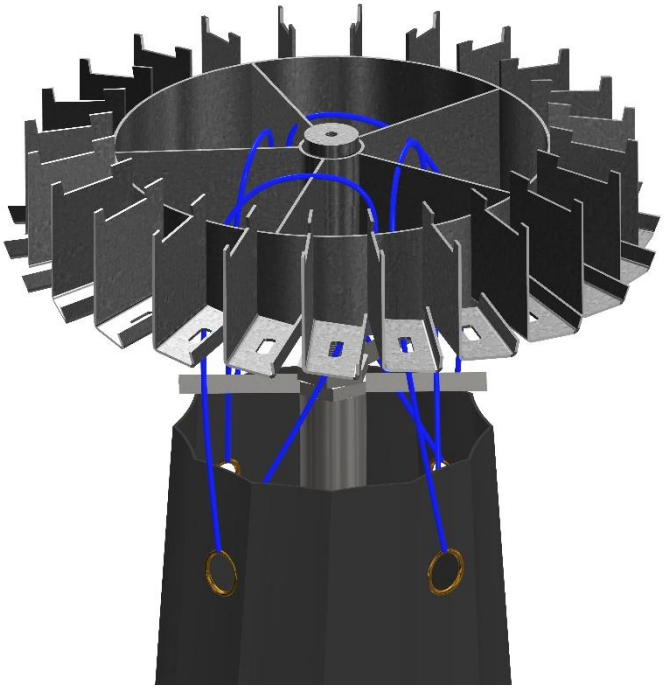
Tank Dia (ft/mtr)	Hub above rim (cm)
9 (2.74)	24
12 (3.66)	32
15 (4.57)	40
18 (5.49)	48
21 (6.40)	56
24 (7.32)	64
27 (8.23)	72
30 (9.14)	80
33 (10.06)	88
36 (10.97)	96
39 (11.89)	104
42 (12.80)	112
48 (14.63)	128

- Assemble the centre support structure close to the inside wall of the tank and adjust to the advised height above the tank rim using the Adjusting Pole Nuts.
- Measure to the centre of the tank and carefully place the assembled structure onto the Butyl mat in the centre of the tank.
- Ensure the structure is vertical and secure in position using 4 ropes if required.

Centre Pole Drinking Water Sock
(If Required)

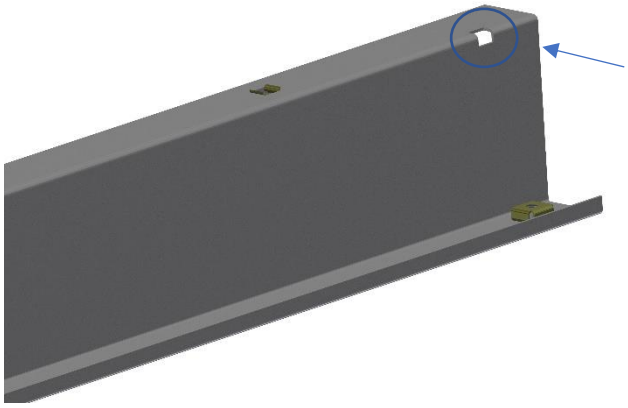
Once the correct height has been achieved, position the Centre Pole complete with Base Plate inside of the pre-positioned sock, so that the sock can be freely pulled up and over the Base Plate and Centre Pole, acting as a barrier from the water that will later fill the tank.

Proceed to install the Drinking Water Sock, making sure that the sock is securely tied via the rope provided through the eyelets once the Purlins and Roof Segments are in place and the advised height has been achieved, but not too tight as to cause the Base Plate to pierce the sock during filling.

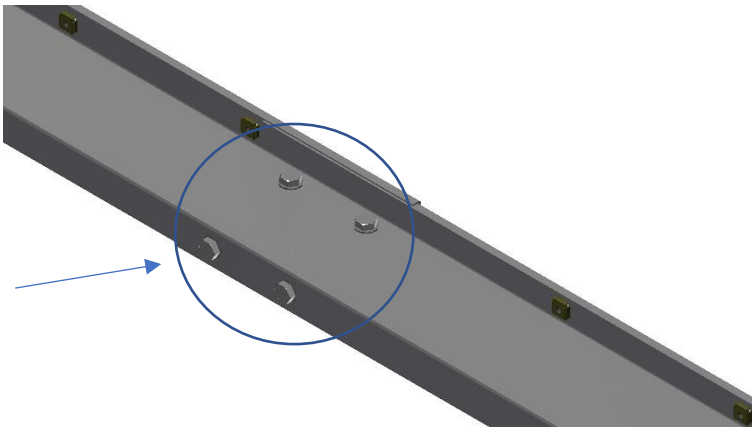


When fitting the Drinking Water Quality sock to the centre pole, ensure fitting is sufficiently secure to remain in place once tank is filled, inspecting the sock regularly during the fill process through the access hatch.

Purlin Assembly



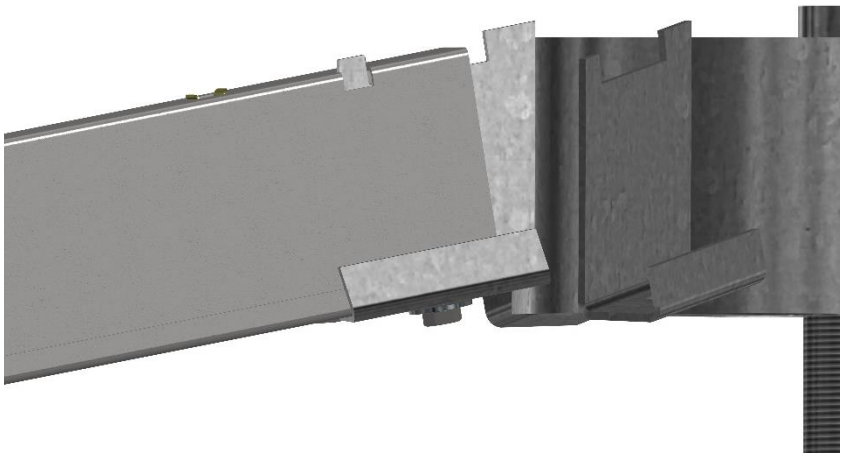
Each Purlin will have a location hole which has a bend running through it on one end, this will be used to attach to the Hub.

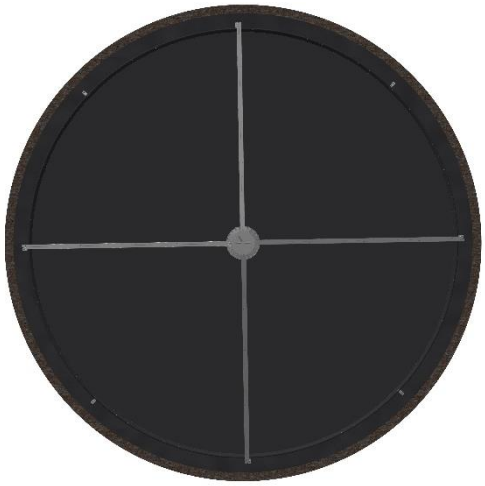


9ft to 27ft Purlins come in one length, 30ft+ will be supplied in 2 lengths which are connected together by 4 oval holes on either end of the Purlins. These are fastened together with M12x20mm Bolts, Nuts and Washers.

Locate 4 Purlins and loosely attach a Tie Strip Assembly to the end of the Purlin which hangs over the tank using an M8 Bolt and Washer. This will ensure that the Purlin doesn't fall into the tank and damage the Liner.

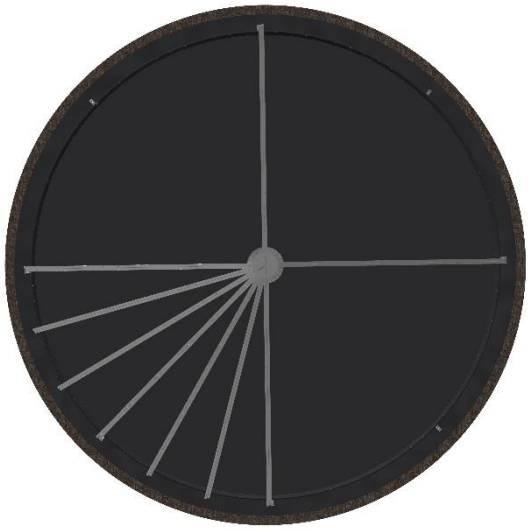
When attaching the Purlins to the Hub, position the 4 Purlins at 12,3,6 and 9 on a clock face (or to the nearest you can), using the location hole to hook onto the Hub and loosely secure in to place with an M8 Bolt and Washer from the underside of the Hub into the Captive Nut on the Purlin.



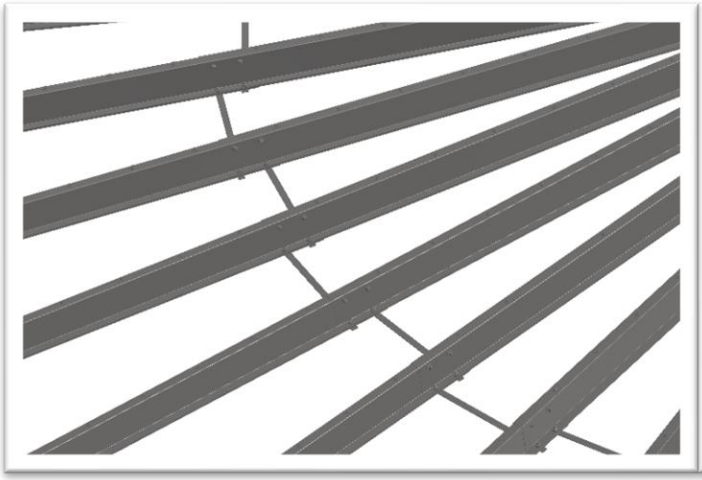


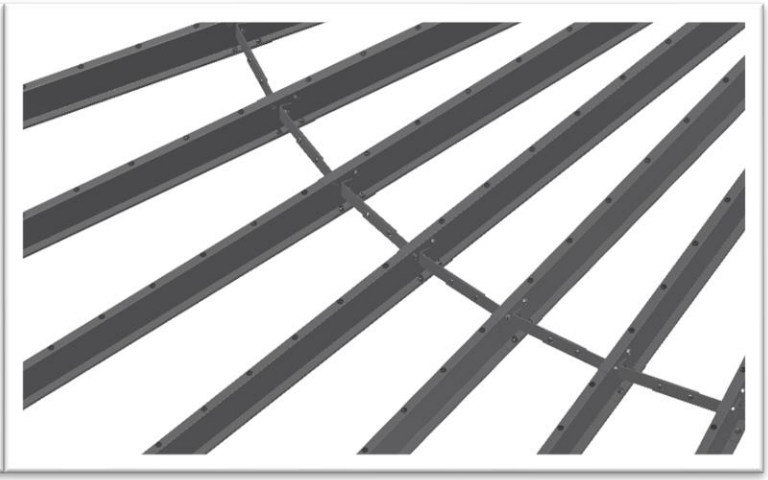
Please note that all purlins should always be installed in a clockwise manner. Proceed to adjust the position of the centre pole until each of the 4 Purlins are overlapping the perimeter of the tank at an equal distance and that each Purlin is sitting perpendicular to a bolt on the uppermost tank panel ring, this will ensure that the Tie Strips can later be installed simply and correctly.

Once installed, secure the Purlins to the outside of the tank via the Tie Strip Assemblies provided, this will ensure that Purlins do not slip into the tank and potentially damage the liner.

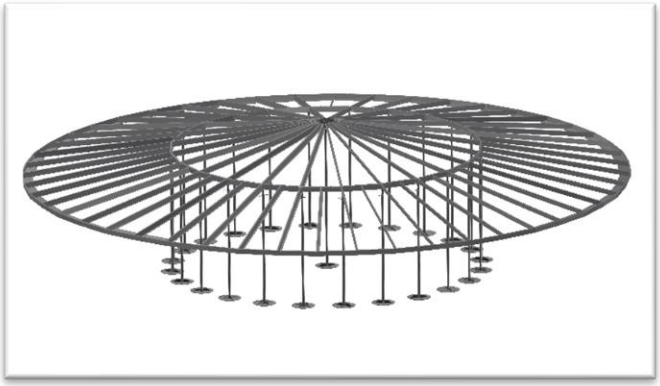


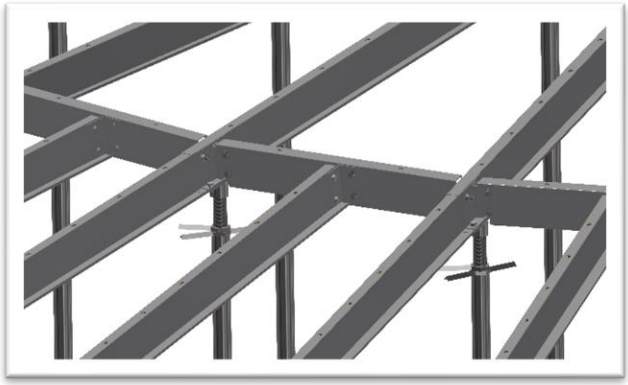
Next, connect the remaining Purlins in the same manner, using the Purlin Spacing Guide on the top holes to evenly positioning the Purlins around the tank perimeter (do not install the tie strips at this stage). Ensure that each Purlin is sitting perpendicular to a bolt on the uppermost tank panel ring.

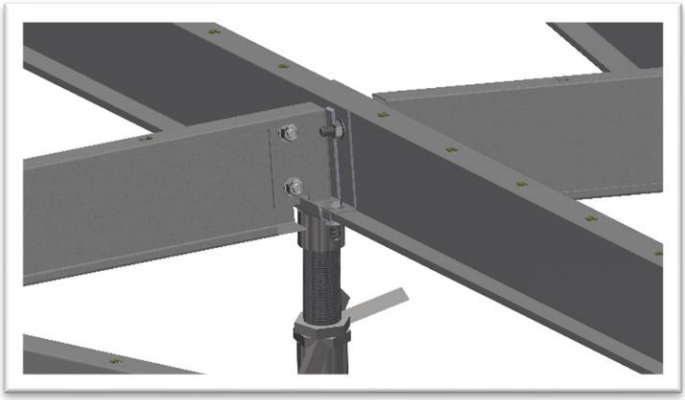


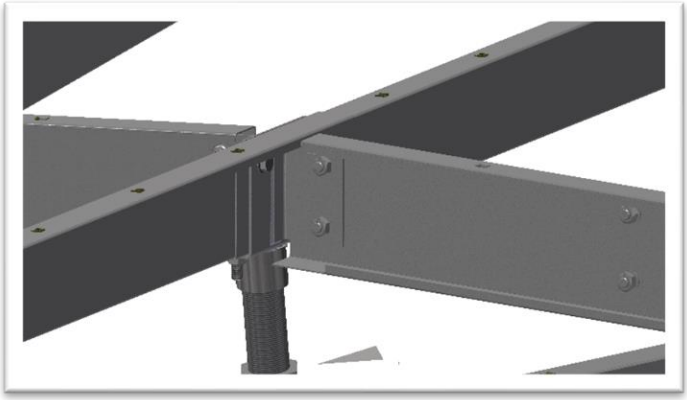


39ft (11.89m) and 42ft (12.80m) Covers
These roofs have Purlin Support Braces. The supplied braces fit on either the bottom of or between adjacent Purlins, bolted into the provided holes.
Please see extra fitting sheet for instructions.



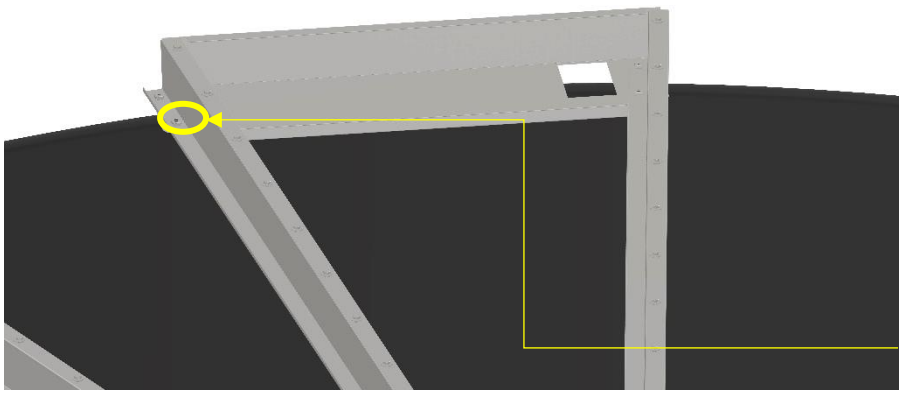






48ft (14.63m) Cover
This roof has Intermediate Support Structures between adjacent Purlins.
Brackets bolted to the provided holes in the purlins, support the provided Spanning Bracket in which a 3rd Purlin is fixed. An additional 24 Poles, Adjusting poles and Base Plates are situated in the same location and provide the roof with extra support. An additional Butyl sheet protects the liner from the Base Plate.
Please see extra fitting sheets for instruction.

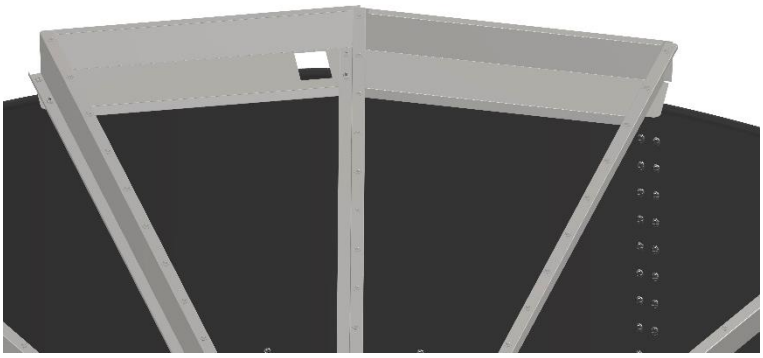
Fitting of Box Sections



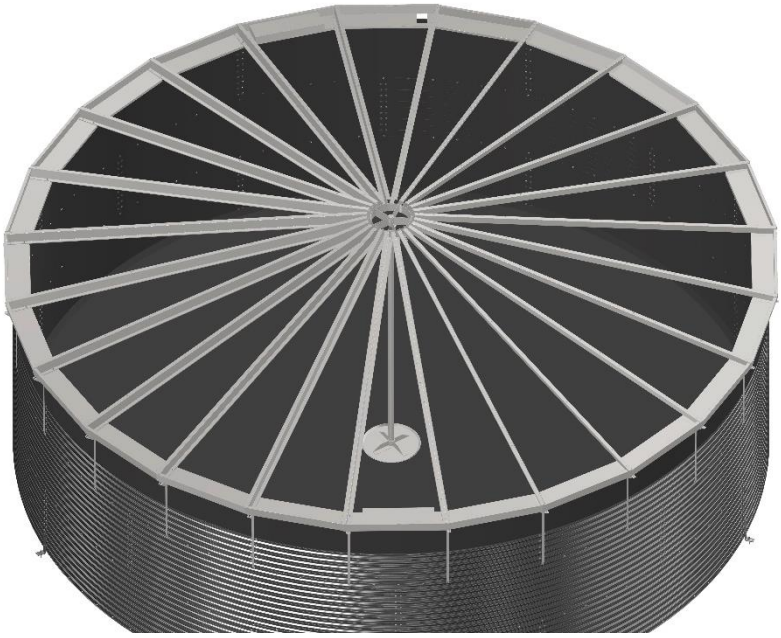
Begin by attaching the Box Edging c/w Water Inlet (K) above the location of the rising main, using the M8 Bolts & Washer provided. These bolts are bolted directly into the captive nut of the Purlin structure from underneath. Only tighten the left inner bolt at this stage.

We recommend fitting one Box Edging c/w Overflow (L) next to the Box Edging c/w Water Inlet (K) and one to be adjacent as an overflow.

Going clockwise, add the next Box Edging and loosely fix using the M8 Bolts & Washer provided in the inner left-hand side again. Make sure that the leading edge of the new box section goes under the preceding one.



Now loosely add the Tie Strip Assembly to the outer hole using an M8 Bolt and washer into the captive nut. **Do not tighten.**

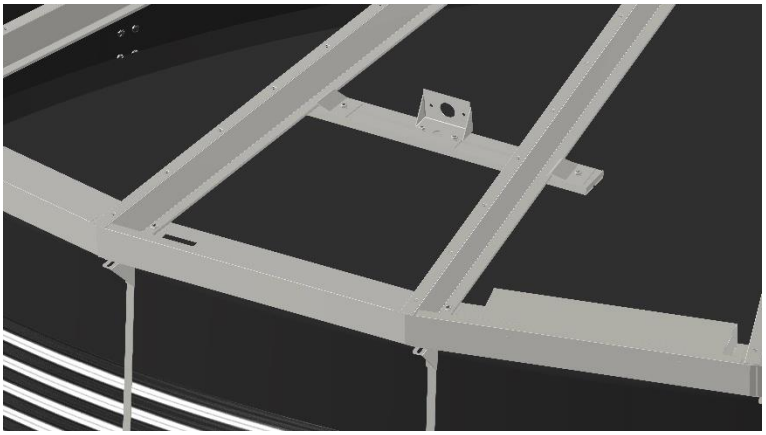


Continue to add the remaining Box Edging and Tie Strip Assemblies in the same way until all but one of the Box Edging is loosely fitted, then reuse the Purlin Spacing Guide to ensure correct positioning.

If the remaining Box Edging gap is insufficient to fit the final Box Edging, re-adjust the height with the Adjusting Nuts on the Adjusting Pole (C) to accommodate it.

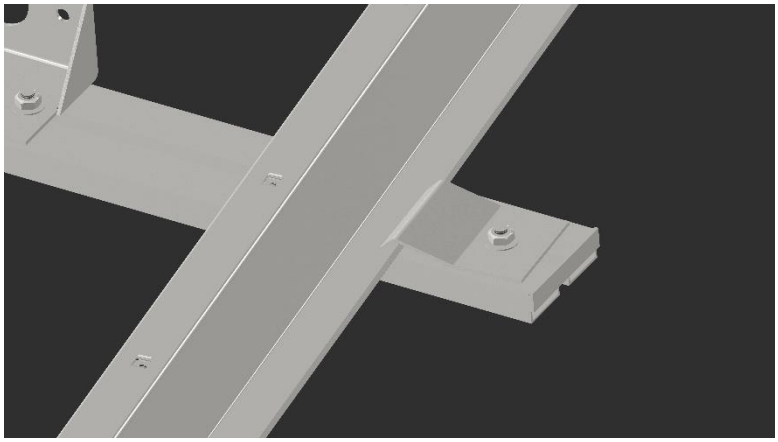
Once in place, tighten all the Box Edging and fit and tighten all the remaining Tie Strip Assemblies.

Ball Valve Support



Fit the Ball Valve Support (F) to the Purlins associated with your Box Edging c/w Water Inlet (K).

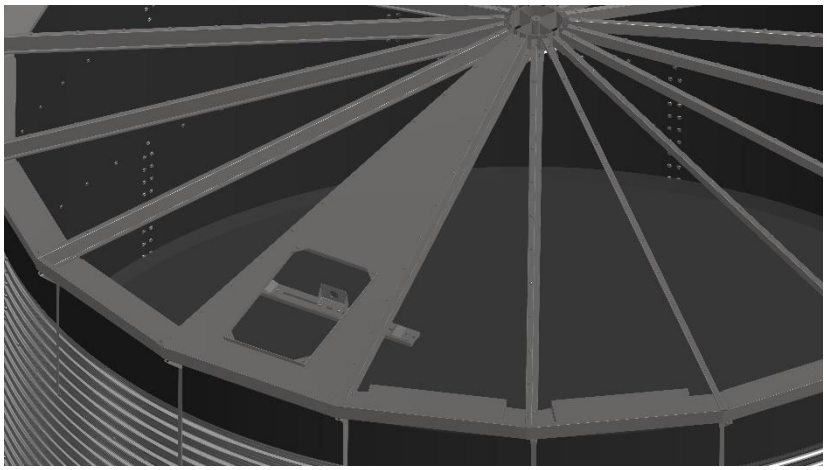
Adjust the bracket height up the purlins so as the fitted Ball Valve is to the required height to comply with the required air gap. (Note: the angled box can be fitted on top or below the support bar)



Cladding of Roof

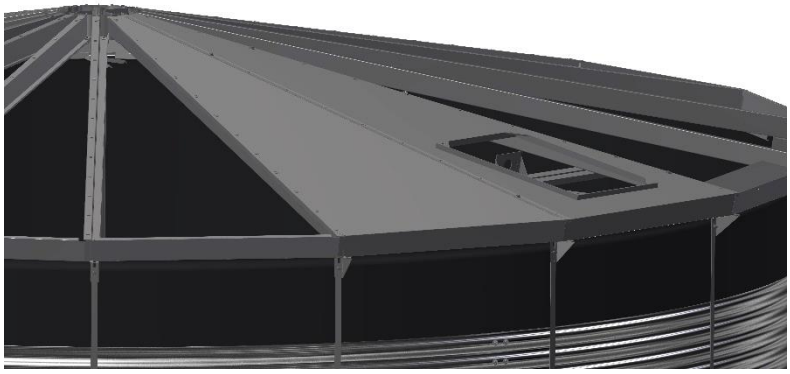
Before starting to clad the roof - Please note that larger roofs have cladding segments made up of several individual sheets. Please see pages 14 & 15.

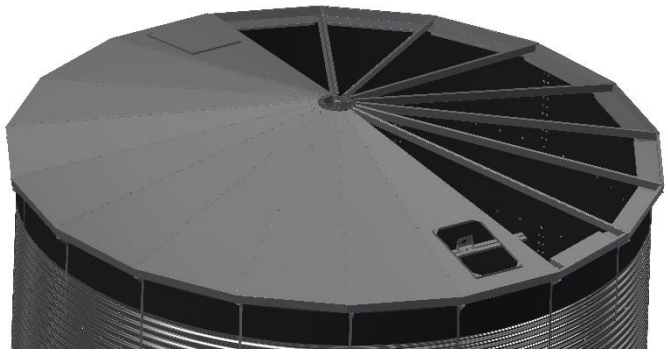
Roof Segments c/w Hatch should be situated where access is easiest and don't necessarily have to be next to each other.

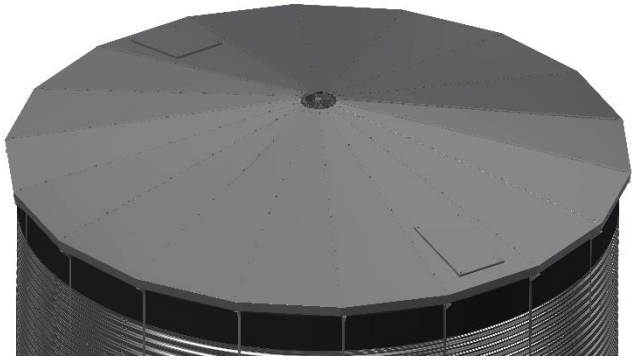


Remove the Hatch Cover from the Roof Segment c/w Hatch (B) and place one over the segment designated for water inlet. You will notice that the segment sheets are folded along the left-hand edge and that the holes on that side are slotted. Position the sheet and place two M8 bolts in the right-hand circular holes to keep it in position.

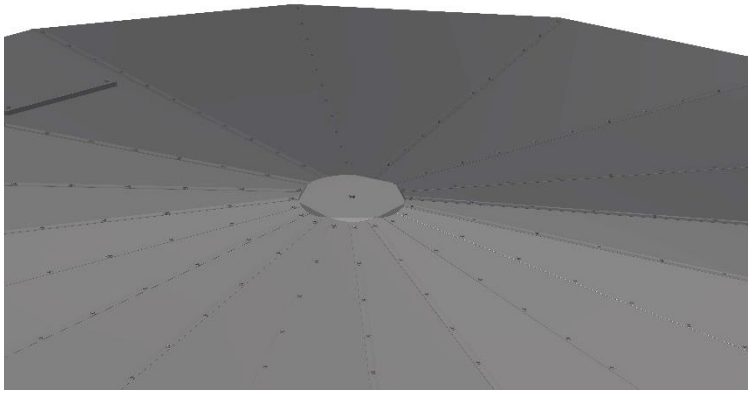
Working in a clockwise direction, add another Roof Segment and add M8 bolts and washers to the right-hand sheet holes. The right-hand holes always overlap the slotted left-hand holes of the previous sheet. Continue adding Roof Segments until you return to the first, then remove the two bolts and lift the first sheet to overlap with the last sheet, so that the slotted holes are underneath the round holes.







With larger roofs 21ft-48ft, there will be upper and lower segment sheets present, these should be added as a full segment before proceeding clockwise.

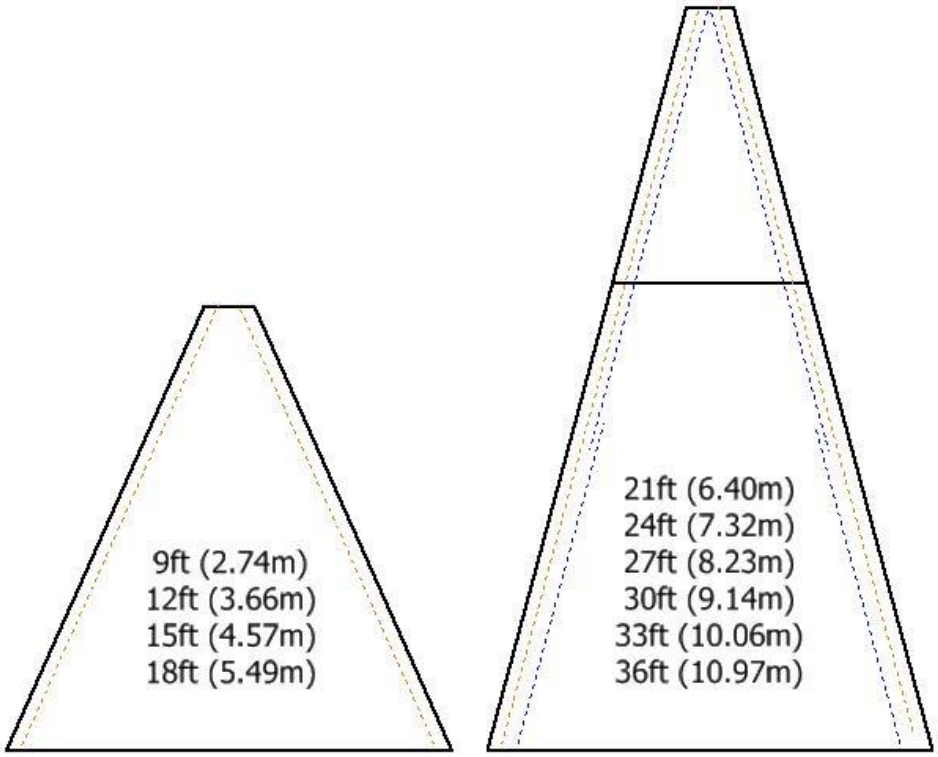


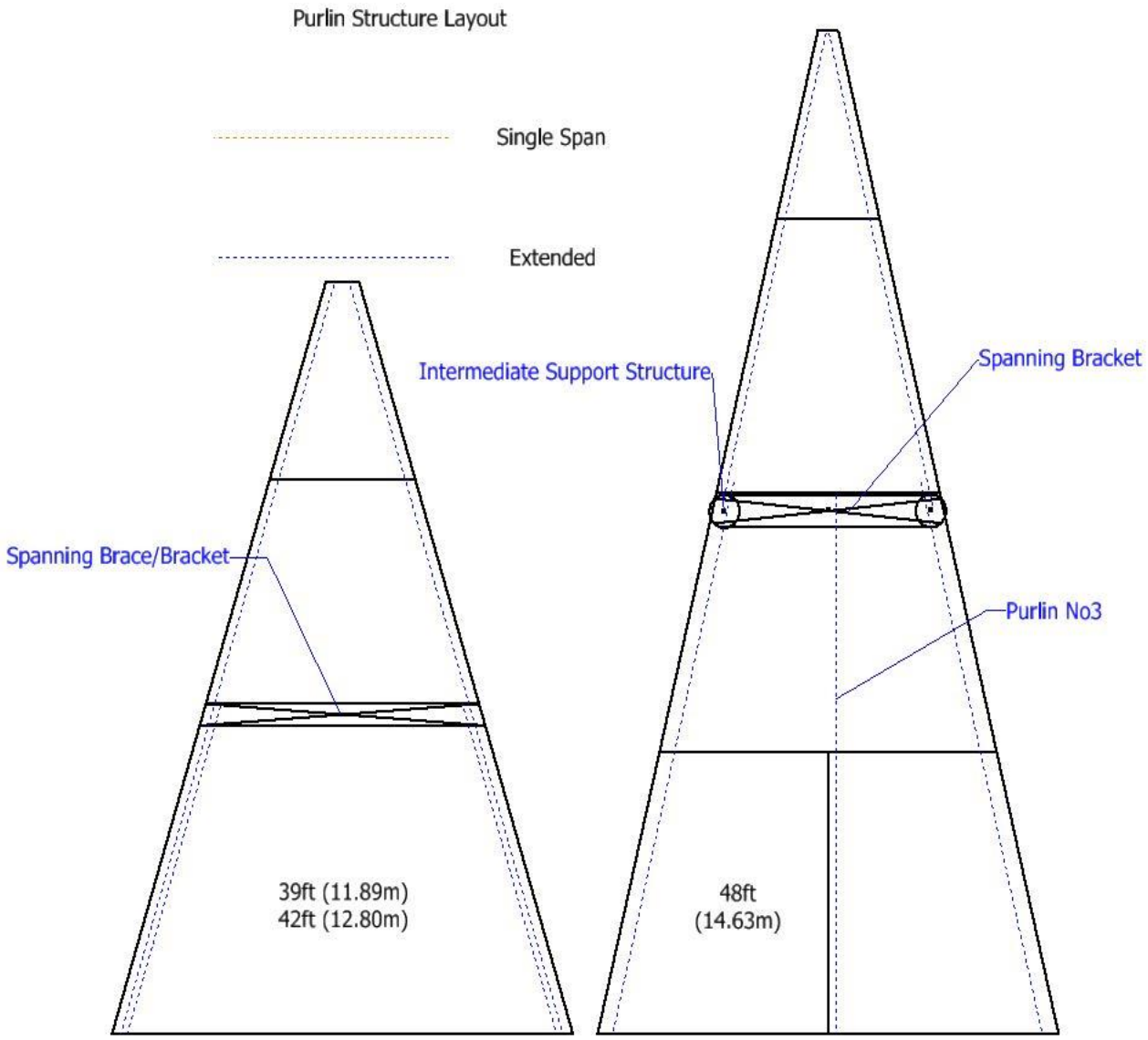
The structure is completed by the addition of the Apex/Conical Cover (J) to the Hub, securing it into place with an M12 Bolt and Washer provided.

Ensure all bolts on Roof Segments, Box Edging and Tie Strip Assemblies are well tightened.

Segment Layout

Purlin Structure Layout





Storage Tank Maintenance

Tank Base and Surrounds

- Make regular inspections to ensure that the concrete base has not been damaged or is suffering from concrete degradation, also maintain clean and clear access all around the tank, to allow for any future maintenance of the structure.

Tank Steel Structure

- Avoid damage to the galvanised steel structure and any attached pipe work, by ensuring that vehicles or mechanical lifting equipment cannot come in direct contact with the tank (fork lift trucks and pallets etc).

- Regularly check the outlets and isolating valves, to ensure they remain in good working order.

Tank Cover and Internal Fill Valves etc, (If Supplied)

- Make regular checks to ensure tie strips remain secure and fixings are fully tightened.
- Remove the appropriate access hatch cover and make regular checks of any installed water feed valves, to ensure that the vale is opening and closing correctly at the right water fill levels.
- **Any debris or pooled water should be removed from the tank cover as soon as possible, failure to do so could put substantial pressure on the cover support structure and cause damage to the top ring of the tank**.
- Check the centre support pole on a regular basis to ensure this has not moved. Please ensure this has been done after any periods of high wind activity.

Working Within the Storage Tank

- For safety reasons, if it is necessary to enter the tank, always ensure that a responsible person supervises from outside the tank until such times as the tank has been vacated. Note: the tank will constitute a Confined Space and appropriate precautions should be taken.
- **Warning! Do not enter the tank until the water has been emptied.**
- The covered tank, if filled with mains water or filtered re-cycled water, should not accumulate debris or silt on the liner base. Should the tank be filled from other sources (bore-hole, well, stream etc), it is possible that silt etc, may eventually settle and build up on the liner.
- Important! Do NOT attempt to remove any accumulated silt or debris the bottom of the tank with manual tools (rakes, shovels etc), as this will almost certainly pierce the liner, resulting in an expensive re-fit and possible damage to the surrounding areas from water spillage.
- Remove silt etc, by suction or with a submersible pump.

Winterisation

- Generally, water within a covered storage tank with an automated fill arrangement, and which is in regular use, will not freeze sufficiently to cause damage to the structure.
- For tanks with no winter usage, the tank can be drained to a low level.
- For tanks with no winter usage, likely to experience temperatures below -10 Celsius, the tank can be completely drained and the liner weighted with sandbags every 1.5m2.
- Important! An empty tank structure is considerably less stable, especially if exposed to strong winds.

- For special tanks which have to remain full for emergency use it is advised that internal immersion heating is installed in the location of the fill valve. This is to ensure icing does not occur under the fill inlet.

- Where temperatures may fall below -10 Celsius, electronic or mechanical accessories (e.g. depth gauge, emersion heater) should be removed and stored.

- Feed pipe work, external valves and delivery hoses to pump rooms etc, should be lagged to protect from possible freezing wherever possible.

As a minimum, an annual inspection of all tank components should be undertaken to validate the warranty.

Additional Advisory Information

Air Gaps

- An air gap is created by ensuring that the ball valve position is twice the inlet pipe's bore above the top of the water tank. In order for the required height to be achieved a ball valve bracket with 150mm lift is used. The water would then flow over freely.

- The Evenproducts galvanised roof complies with other UK air gap requirements. In this case the ball valve bracket is adjustable, running up adjacent roof purlins to gain the necessary height above the tank. If the bracket is set 1 metre from the edge of the tank, with a 10° pitch to the roof, the bracket would be 176mm above the top of the tank.

- The roof does not seal the top of the tank, but in order to create a sufficient air gap the addition of an overflow weir is required. This weir comes in the form of an opening within the box edging.

- Each roof is supplied with two box edging c/w overflow as standard.

- With larger inlets it may be deemed necessary to create a larger overflow. This is easily achieved with the use of additional Box Edging c/w Overflow, which are available on request.