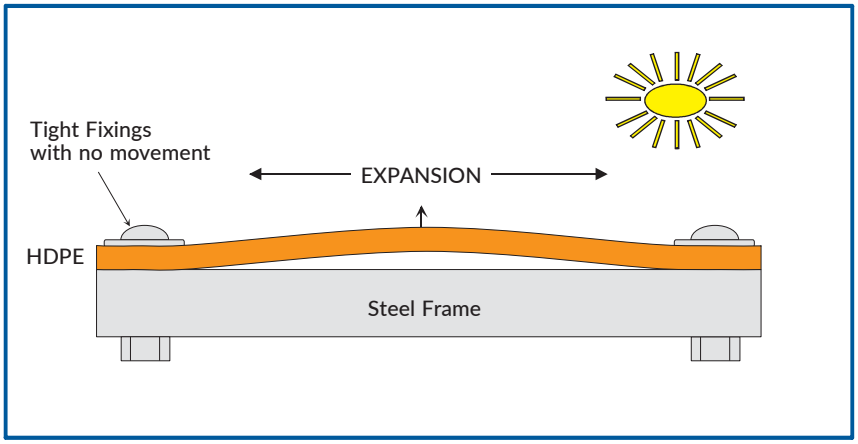
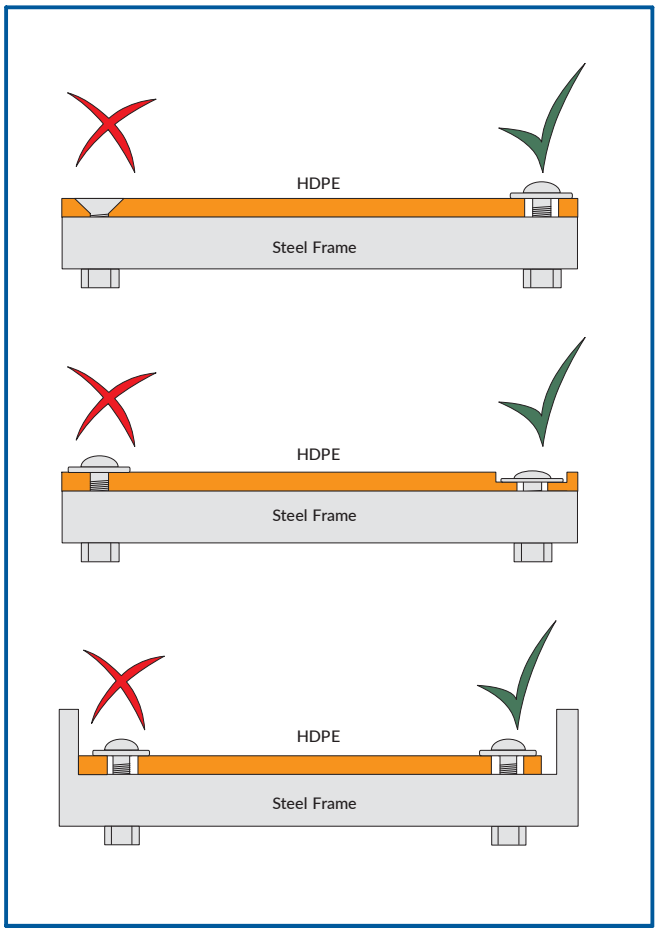
HDPE Expansion and Fixing Suggestions

ALL materials expand and contract with temperature change. Some materials expand and contract more that other. Plastics, including HDPE (high density polyethylene) expand more than timber and metal, therefore it is important that when designing and building your products that you make allowances for this fact.
For example Densetec HDPE expands approximately 1.5mm per linear metre for every 10 degrees C, that means a 2.4m strip of this material can expand and contract 10.8mm between a temperature range of 0 and 30 degress C.

In this example (right), the HDPE expands more than the steel frame and because the fixings are tight with no allowance for expansion, there is only one thing the plastic can do - and that is buckle.
Please Note: It is possible for plastic sheet materials to still bend a small amount due to uneven temperatures on the back and the front surfaces of the sheet even when expansion has been allowed for





ALLOW THE MATERIAL TO MOVE!

Countersunk bolts or fixings will not allow the plastic to expand unless the bolt is in a slotted hole where the actual bolt can move with the sheet as well (unlikely).
Bolts with washers are good for allowing some movement, but not if too tight.
Do not drill holes for fixing that are the same diameter as the fixing itself. Always drill oversized holes to allow for expansion.
If a flush fixing is required, a counterbore can be machined in to the HDPE allowing the bolt head and the washer to sit below the outer surface of the panel.
If there are physical constraints around the sides of panels always allow for an expansion gap around the edge or at that point.

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