PRODUCT DESIGN FOR GALVANIZATION

A few basic rules that should be followed when designing products for subsequent galvanizing

Basics

- Follow designer's instructions with regard to holes drilled in hollow structures.
- Ensure additional clearance of approximately 1.5 mm on each side.
- Avoid, if possible, overlapping surfaces. If that is impossible, follow strictly rules on drillings.
- Remember that galvanizer has to lift and turn your articles. Make sure that you have ensured possibility to lift your article.
- Avoid combining materials of different thickness that can cause deformation due to different cooling time.
- Avoid big size thin metal sheets. Unless stiffened, they might warp.

Designing Holes

When designing hollow steel articles, proper size and dislocation holes should be provided for zinc drainage, as well as venting upon influx of zinc. In case that is not ensured, there is a risk of two things to happen. Firstly, structure may explode upon on immersion in zinc bath when internal moisture turns into vapour. Secondly, steel will not be covered with zinc from inside since it will not get inside. Galvanizer will drill holes instead of you but it is much more difficult to drill in a ready structure without auxiliary devices therefore the price of one such drill can be very high.

There is no need to cover these holes after galvanizing since airflow through hollow section ensures better conditions for life cycle of zinc coating. In case of necessity to close the holes, plastic or aluminium cone plugs should be used.

Recommended Size of Holes (mm)

LENGTH OF THE ARTICLE (mm) / SIZE OF THE PIPE (mm)	0 – 2000	2000-4000	4000-6000	6000-8000	8000-10000
0-25	8	10	12	12-14	14-16
25-50	8-12	10-12	12-16	20-30	25-30
50-100	12-20	12-30	15-30	30-50	30-50
100-200	20-40	30-50	30-50	50-80	50-90
200-300	40-80	50-100	50-100	100-120	100-130
300-400	80-100	100-120	100-120	120-150	100-160
400-500	100-150	120-200	120-200	200-250	200-300
500-600	150-200	200-250	200-300	300-350	300-350

These dimensions refer to all types of hollow beams, UNP and IPE beams, as well as welded hollow structures.

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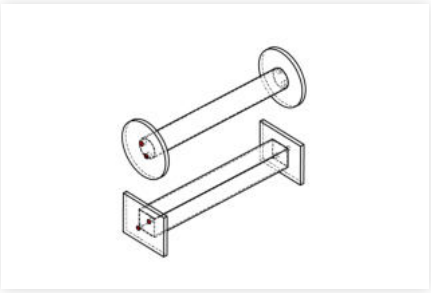
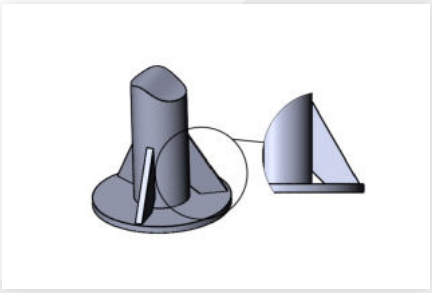
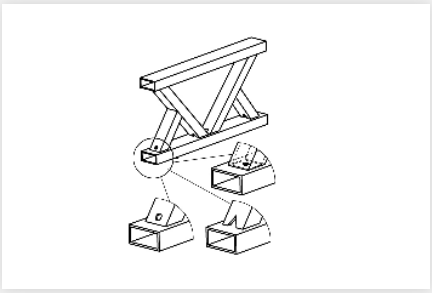
Hole locations



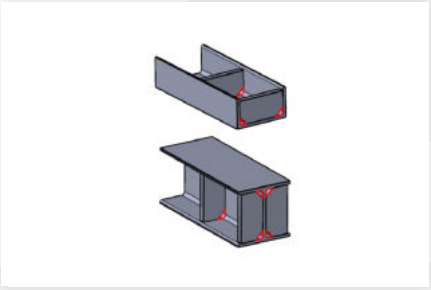
When designing or producing structural hollow structures, remember to provide for each separate element appropriate drainage. The technological holes must be located at the ends of the pipes on opposite sides diagonally.



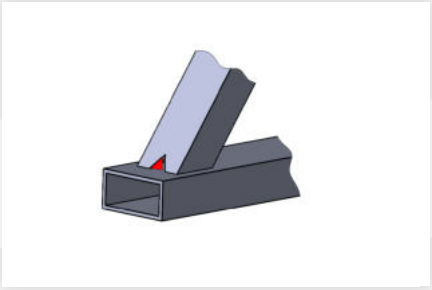
When you use external props, for instance, between a base plate and a vertical element, make sure the prop is cropped to allow zinc to drain freely.



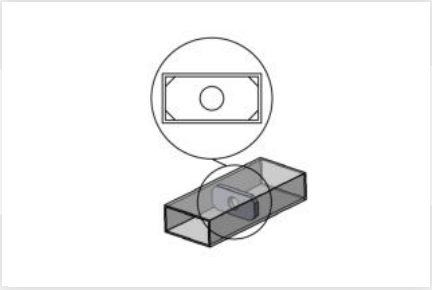
Place the holes as close to corners as possible! As well proper direction of holes should be considered. It heps the galvanizer if the holes all drain in the same direction. This avoids manipulating and turning of the article with risk of damage or trapping zinc in pockets.



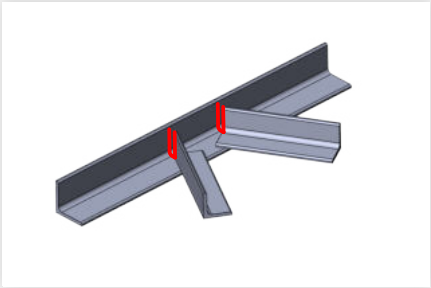
On universal sections or channels, make sure that the corners of stiffeners are cut to allow zinc to drain through.



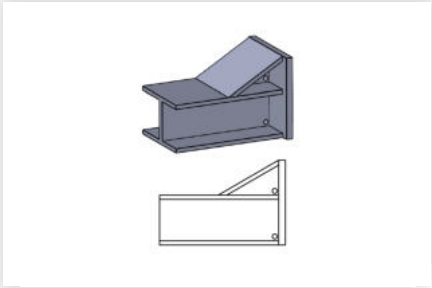
“V”-type notch is a good alternative to drilled holes.



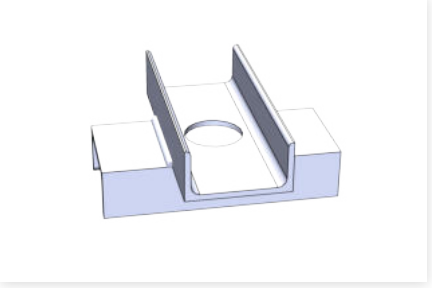
When using internal diaphragm, make sure the corners of it are cut. On larger RHS use a stiffener with a central hole as well as cut corners. NEVER arrange a plate that blocks the entire cross section. It may be dangerous during hot dip galvanizing. (One may happen to be unpleasantly surprised when receiving an invoice if the entire section has filled with zinc which cannot escape!)



Always design stiffeners and gusset plates so that zinc cannot be trapped in corners.



When designing right-angled supports or similar structures, holes should be drilled in places indicated in the drawing.



Avoid overlapping surfaces as much as possible. If this is not possible, strictly follow the drilling instructions.

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