

The Highland

Pocket Book for Fabricators

colourgalv^x

galvanize^x

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Minimum Hole Sizes

Steel is only slightly more dense than zinc, so it doesn't take much air trapped inside or underneath a fabrication to make it float. If it floats, it **CANNOT** be galvanized. There must be adequate holes to let both air to escape and zinc to flood in. Of course this means that it's galvanized both inside and out to the same quality. So internal rust is prevented.

Section Diameter	Hole Size
Up to 50mm	12mm dia each end
51-100mm	2x16mm
101-150mm	2 x 20mm
150-250mm	2 x 25mm
250mm and over	2x 30mm
Irregular shape/size	Please ask

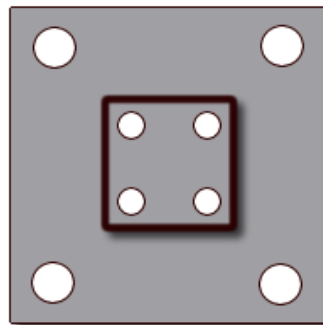
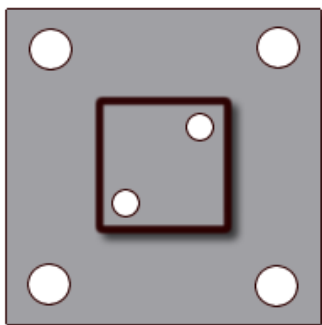
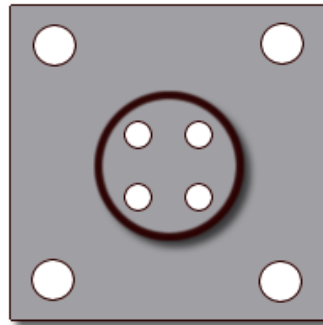
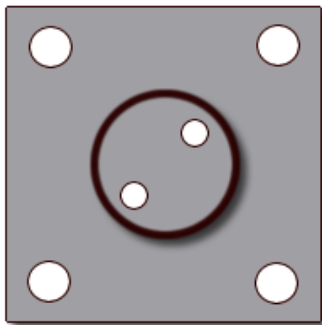
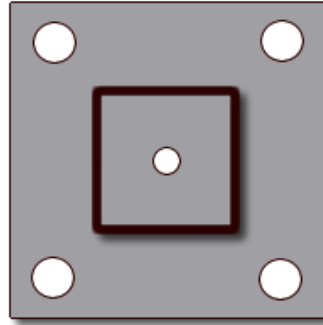
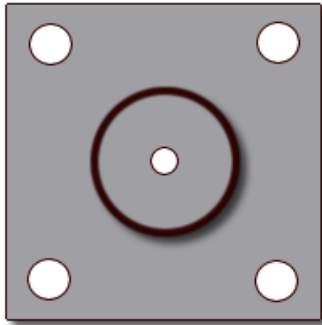
Warning: Inadequately vented hollow sections can explode in molten zinc, destroying the work and causing potential injury to our people.

Hint

Don't forget that we must suspend the steel somehow. Sometimes a hole is required only to hang the item. For example a 100 x 4 flat @1000 long, needs a suspension hole.

Quality of the galvanizing is largely dependent on the design and fabrication. Getting this right will ensure a great job. Failing to design and fabricate suitably for galvanizing can end up greatly reducing the quality of the job.

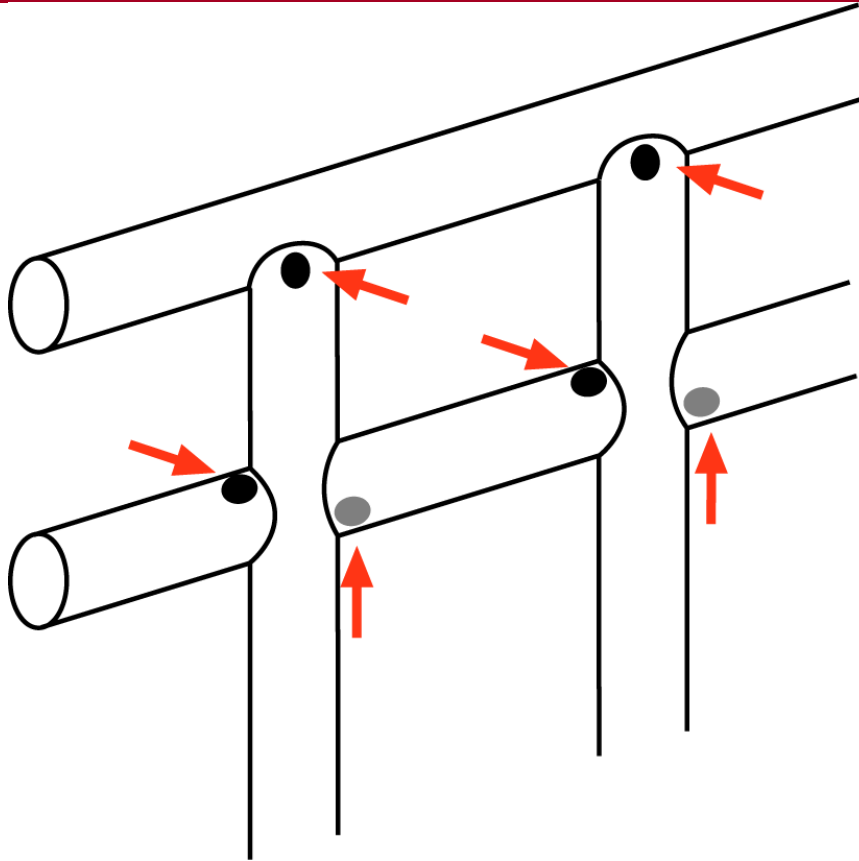
Base / Cap Plates



Hint

Galvanizing is normally charged by the weight. If you don't allow the zinc to drain, leaving a lump inside, you'll pay extra, unnecessarily. A central hole through a base plate is just costing you money, for the price of a few more punches on the punch and shear machine.

Tubular Venting

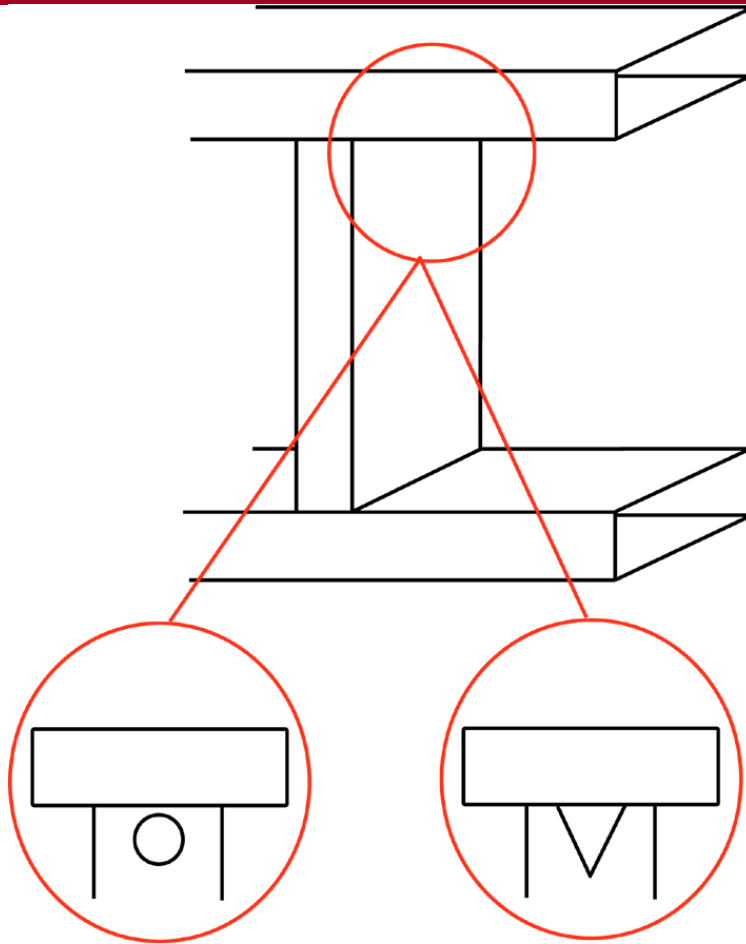


Every sealed section of a hollow fabrication must be vented for both safety and quality. Each hole should be no more than 10mm from the adjacent weld. The vent and drain holes must be at opposite ends and opposite sides.

Hints

- Using the “correct” anti-spatter spray can save money and improve coating quality.
- Using the wrong metal markers can just add cost in removal of the markings before galvanizing. We can show you a marker that doesn’t cause this problem.
- “Masking” in galvanizing doesn’t work. If you want a part not galvanized it needs to be separated.

Holes or Notches?

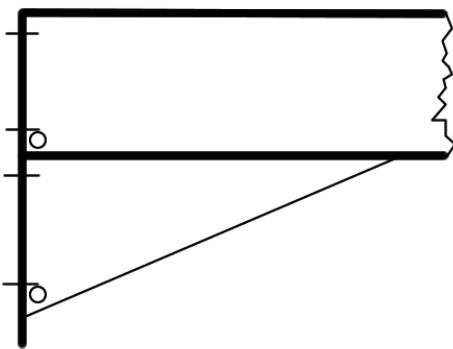
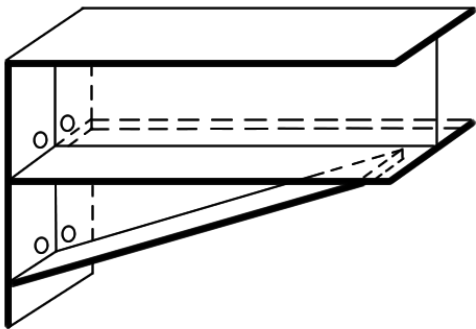
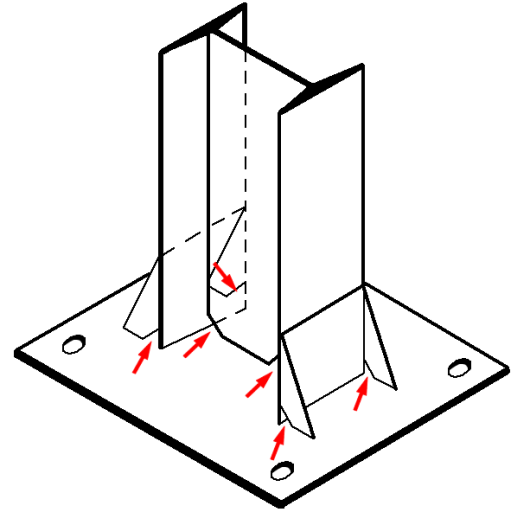
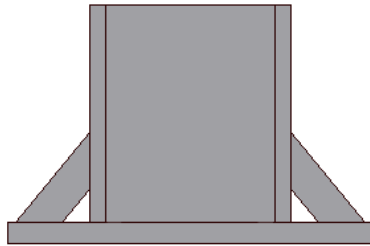
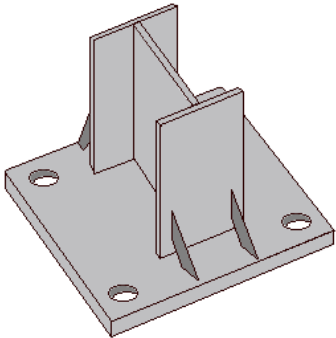


Box sections equally need vent & drain holes. Sometimes its easier to notch the section before welding. Just make sure not to weld up the notch!

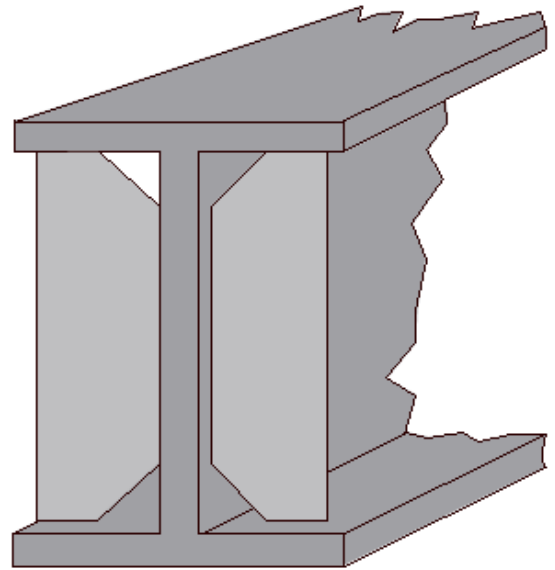
Hint

Our quality is as important to us as it is to you. But we can't control every aspect of this service. Your fabrication can be designed to facilitate quality, or in some cases designed and made in such a way as to make quality coating almost impossible. That's why we're keen to discuss, before you weld.

Structural Steel



External stiffeners and gussets should be cropped to eliminate dead pockets.

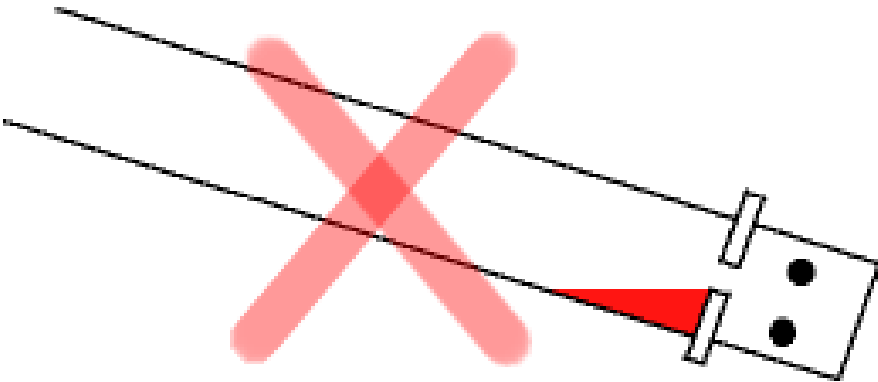


Hint

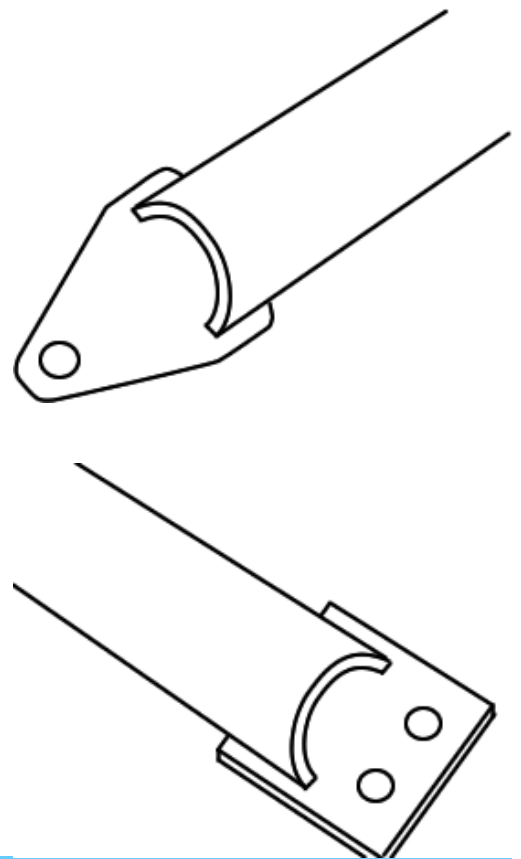
Specifying galvanizing is easy, but many just don't bother. ISO 1461 is the standard for this process, and you should insist on getting it, and even ask for proof that you did. We offer a certificate of conformity to this standard.

Structural Steel

Bracers



Drain holes in the centre of a bracer's end plate leaves costly zinc undrained. There are alternatives, including the 2 suggestions here. The coating quality on open ended tubulars is far better too.



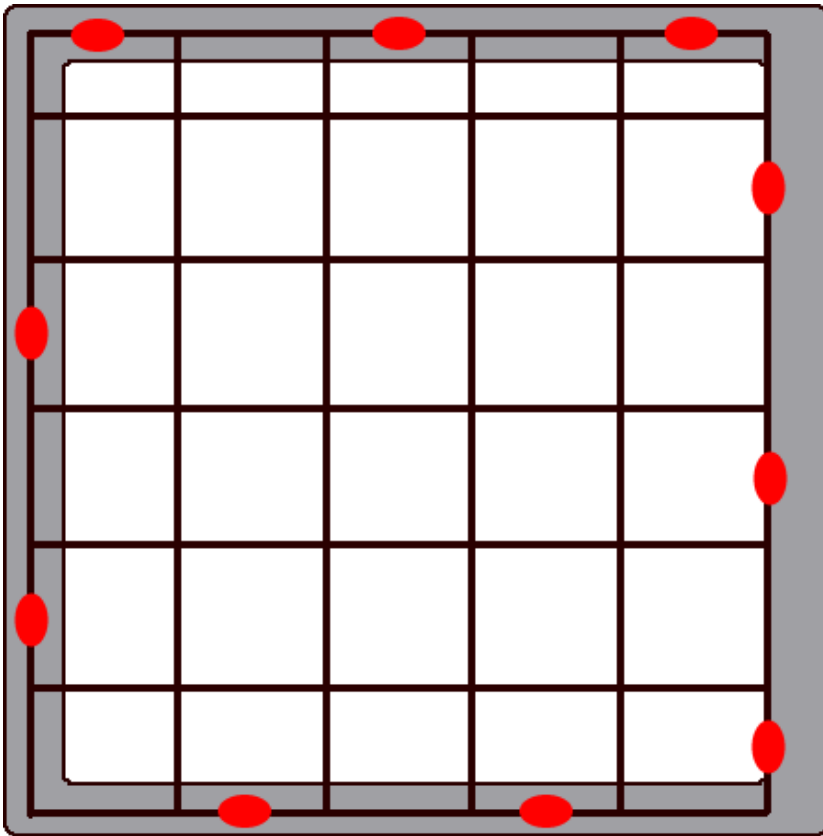
Hint:

Stuck for time? Try our Xpressgalv. Guaranteed 24 hour turnaround.

You pay extra, but you jump the queue, and if we don't deliver the service you **don't pay** extra. There's a limit to how much Xpress we will take on, so be quick to arrange by phone. We'll confirm by fax with a delivery time and price.

Mesh

The last thing you need is broken wires in a mesh frame, but it often happens. On cooling from 450°C, the galvanizing temperature, the wire contracts, and pulls against the frame. As the frame is stronger, the wire breaks.



the galvanizing temperature, the wire contracts, and pulls against the frame. As the frame is stronger, the wire breaks.

The answer is to arrange that no wire has both ends welded to the frame. Either stagger the welds, or weld the edges as in the sketch. Just use spot

welds, leaving the cross wires free to contract.

Hint

We have lots of handy tips and hints to enable you to design and fabricate suitably for galvanizing. We're only a phone call away. Please see our website for far more information than it's possible to contain in a booklet like this.

Surface Contaminants

Paint, Oil and Grease

Paint or oil on your steelwork will prevent it being galvanized. All traces must be removed and our chemical pretreatment only goes so far in this. Paint normally must be shotblasted off, and this costs as much as the galvanizing itself!

This results in delays, and extra costs that you didn't want or allow for. Try to avoid using painted steel, and try not to get the job covered with grease and oil. It costs you money and time to remove!

Distortion

Distortion cannot be ruled out, and mostly cannot be predicted. It results mostly from partial stress relief in our process. But we don't know what stresses were built in during welding. The use of cramps to "pull" steel into place is a strong indicator of stress. Stresses are also experienced when thin and thick sections are welded together over any length. Like the mesh wires over the page, the thinner section cooling faster than the thick causes huge stress, sometimes buckling the steel. It can be designed out.

Hint

If you get stuck with pre-painted steel, don't panic. We can shotblast at both sites. Our environmentally designed shotblasting units can remove the paint, allowing the process to proceed.

Max Sizes

Elgin

Galvanizing Bath

10.4m long

1.1m wide

2.5m deepest

Dipping dimensions

10.4m single dip

15m double dip

3.4m highest dip

Cumbernauld

Galvanizing Bath

7m longest single dip

1.1m widest

3m deepest

Dipping dimensions

7m single dip

10m double dip

3.5m highest dip

Colourgalv

Max 7m x 3m x 1.1m

Max 750kg per item

Hint

If you have an unusual shape, or are unsure about the item fitting our process. Give us a call, we'll be pleased to help. It's a lot cheaper to phone first than to find that something cannot be processed because its made too big. There are lots of ways to avoid dimension issues.

Colourgalv

colourgalv^x



Colourgalv is Highland's trademarked process for galvanizing with colour. Galvanizing on its own will last for decades. Its corrosion protection is legendary. But it can look a bit industrial.

Where aesthetics are more important, you can deliver colour for your customer. Simply specify Colourgalv when arranging your coating, telling us which colour, texture etc. Knowing the application can also help us to advise on which polymer to best suit the end use. We can do nylon, polyester, polyurethane, plastic, epoxy and some others. Our phone advice is free, and we'll quote your job quickly to help you know how to proceed. We have brochures and case studies to help you speak to your customer.

Only Highland can deliver Colourgalv, a factory controlled process that cannot be matched in quality.

Hint

1. Did you know we can do handrails in "warm to the touch" coating? Especially useful for hospitals, care homes and similar applications.
2. "Flat pack" handrails are far cheaper to galvanize and the quality is better. Avoiding welded returns means better quality and lower price.
3. We have a range of anti-bacterial coatings for use where appropriate.

Contact Us

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Blog:

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Remember:

Our advice is free, and our quality guaranteed. We want you to get the best finished job possible. We're not perfect, but we don't let you down. If we promise it, you can be assured we will deliver.

Did you know?

Highland is a privately owned Scottish registered company. Headquartered in Elgin, with another facility in Cumbernauld, we serve an area from Shetland to Northern England. We have dedicated transport covering some areas regularly and other areas on demand. We're big enough to tackle your job, but not so big that you'll get lost in our sights. We value having many customers of all sizes all over the northern UK. We value having you as one of them.