valmont® COATINGS

Do's AND Don'ts

For Successful and Safe Galvanizing

What to look out for!

Fabrications containing a combination of castings and other steels, rusted or mill-scaled surfaces, must be abrasive blast cleaned before galvanizing.

"Do" remove weld slags by chipping, grinding, abrasive blast cleaning, flame cleaning or using a pneumatic needle gun.

Dealing with Distortion

"Do" consider distortion. Distortion is one of the most common issues when hot dip galvanizing steel, but you can minimize it, even prevent it, with these five simple rules:

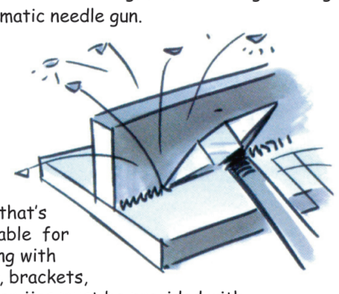
1) Use symmetrical designs

2) Use relatively uniform sections

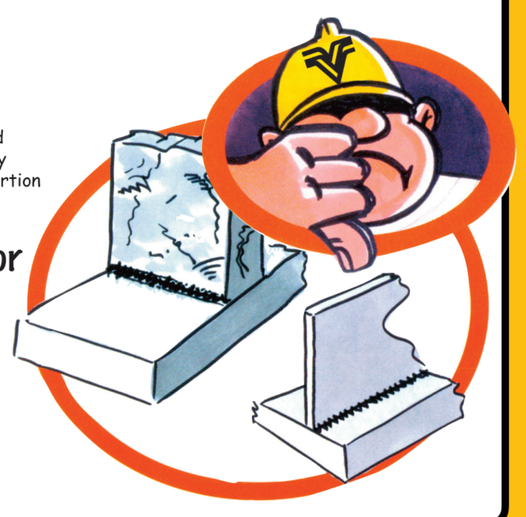
3) Use accurately preformed members to avoid locked-in stresses

4) Use balanced or staggered welding techniques to avoid locked-in stresses

5) Large, open fabrications and tanks may require temporary cross stays to prevent distortion during galvanizing



Work that's unsuitable for handling with chains, brackets, hooks or jigs must be provided with significantly large suspension holes or fittings. If in doubt, contact Valmont Coatings.



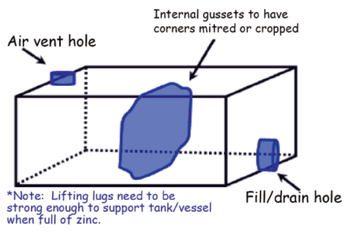
What's suitable for galvanizing?

All ferrous metals are suitable including some grades of stainless steel and wrought iron parts.

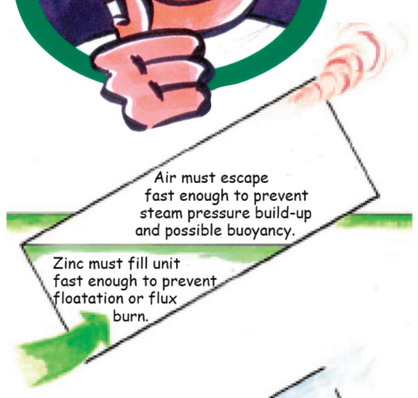
Positions of drain and vent holes for hollow vessels

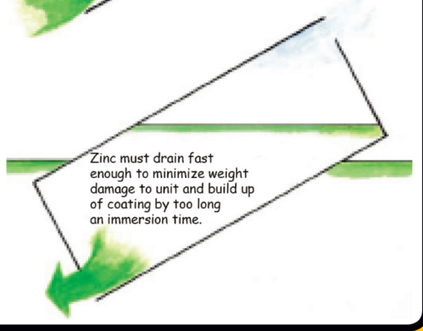
"Do" place drain and vent holes at diagonally opposite locations to facilitate the complete draining and venting of the vessel. Each mitered corner in the internal baffle plates must be equal in area to that of drain holes. Where two drain holes are used, they must be located within a hole diameter of each other. Drain and Vent holes must be flush internally, with no internal lip, and located as close as possible to corner welds.

Air must escape fast enough to prevent steam pressure build-up and possible buoyancy.



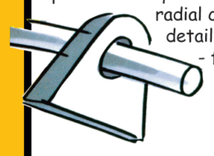
*Note: Lifting lugs need to be strong enough to support tank/vessel when full of zinc.





Clearance guidelines for moving parts

"Do" remember to provide adequate space for moving parts. Drop handles, hinges, shackles, shafts and spindles all require a minimum of radial clearances – as detailed below – to allow - for the thickness of the galvanized coatings.



" Do" oversize tap of internal threads and nuts after galvanizing to accommodate the thickness of the coatings on the stud or bolt.

"Do" allow a radial clearance of not less than 1/16-inch (1.5mm) to ensure full freedom of moving parts.

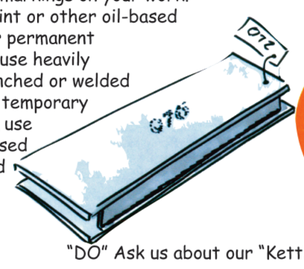
"Do" Remove all Stickers and glue from steel to be galvanized.

"Do" Use Valmont Coatings water soluble markers.

Nominal diameter of internal threads	Allowance min.
7/8"	0.024"
1"	0.024"
1 1/8"	0.024"
1 1/4"	0.024"
1 1/2"	0.024"
1 1/2" – 2 1/2"	0.050"

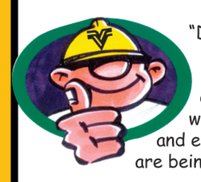
Show some ID

" Do " remember to include identification markings on your work. "Don't" use paint or other oil-based products. For permanent identification use heavily embossed, punched or welded lettering. For temporary identification, use heavily embossed metal tags and wire them to the work.

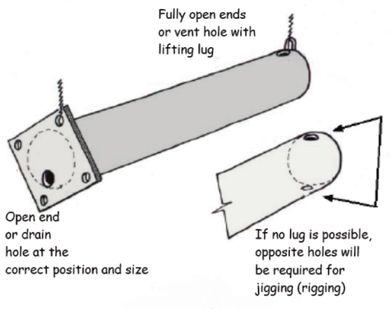


"DO" Ask us about our "Kettle Tags"® PLUS

Galvanizing Internal and External Surfaces

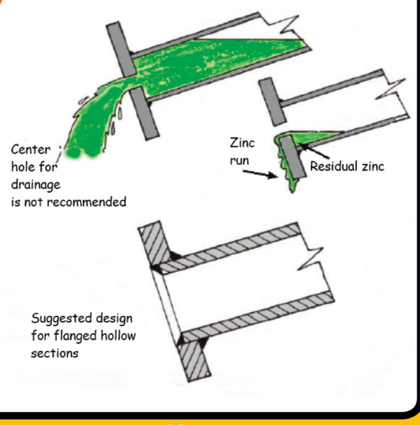


"Do " provide at least one filling and draining hole when internal and external surface are being galvanized.



"Don't" forget to vent!

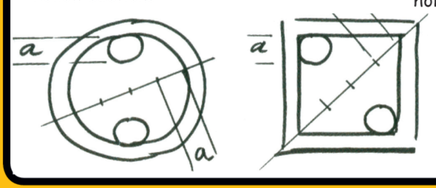
A vent should also be provided diagonally opposite to allow the exit of air during immersion in the zinc bath. Holes should be at least 2" in diameter for each cubic yard. Any internal baffles should be cropped, and any manholes or handholes should be flush with sides to prevent trapping excess zinc.



Venting and Draining – Getting the Hole Size Right!

Basic venting rules

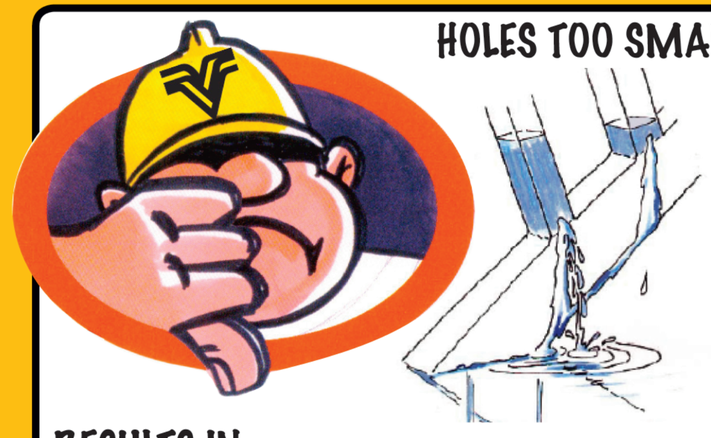
- No vent hole should be smaller than 3/8"
- Preferred minimum size is 1/2"
- Hollow vessels require a 2 square inch (1 1/2" diameter) vent hole area for each cubic yard of enclosed volume
- Closed pipe, rectangular and square hollow sections require minimum vent hole area equivalent of 25% of the hollow sections cross section
- Vent holes should be at the edges of hollow sections



Basic draining rules

- No drain hole should be less than 1/2"
- Preferred minimum drain hole size is 1"
- Large hollow fabrications (tanks, pressure vessels) require a 12 square inch (4" diameter) drain hole for each cubic yard of enclosed volume
- Drain holes must be at the edges of hollow sections
- Closed pipe, rectangular and square hollow sections require minimum drain hole area equivalent to 25% of the hollow sections cross section. Where possible, leave the ends to be drained open.

HOLES TOO SMALL



RESULTS IN:

1. Excessive in-zinc time due to the slow fill rate of tubes, causing thicker and rougher coating in most instances.
2. Drainage time results in coatings described in (1) above, and leaves heavy runs where zinc has 'frozen' before tubes can empty.

* Heavier coatings increase the cost.

Strengthening gussets and webs

"Do" crop or hole punch welded gussets and webs on columns and beams, and in members fabricated from channel sections. This will prevent the entrapment of air in pockets and corners, and allow complete access of pickle acids and molten zinc onto the entire surface of the work. It will also facilitate drainage during withdrawal from acid and rinse tanks, and from the galvanizing bath.

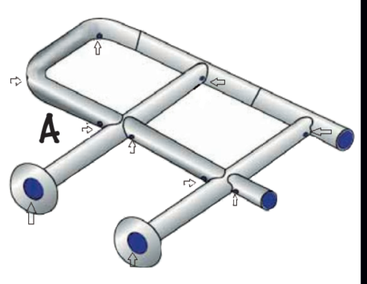
"Do" provide holes at least 5/8" in diameter in end plates on rolled steel shapes. This will allow access of molten zinc in the galvanizing bath and draining during withdrawal.

Welded Pipe Sections

"Don't" incorporate closed sections. Sections should be interconnected and externally vented.

External holes should be positioned as in drawing "A" (as close to the welded joint as possible.) This method is preferred by galvanizers since quick visual inspection shows that the work is safe to be galvanized.

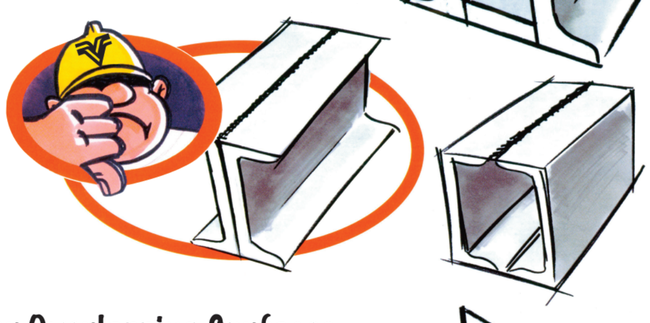
"Do" vent small tubular fabrications, with holes no smaller than 3/8" diameter.



Unwanted vent holes can be closed by using epoxy, or aluminum tapered plugs, after galvanizing and filing off flush with surrounding surfaces.

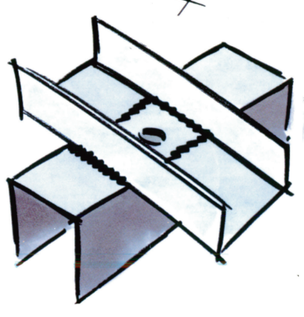
Overlapping Surfaces

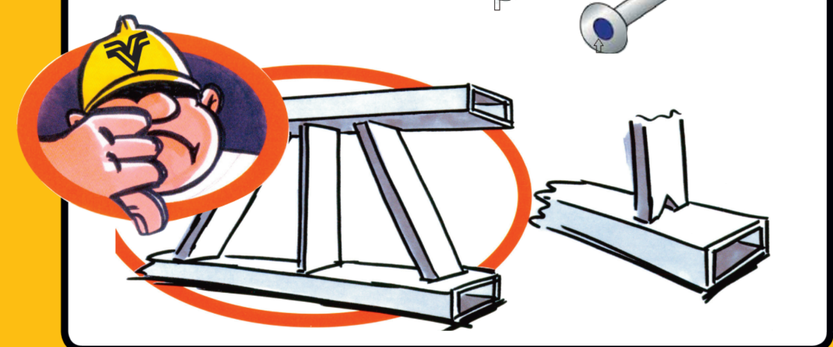
"Do" avoid narrow gaps between plates, overlapping surfaces and back-to-back angles and channels. If small overlaps are unavoidable, seal the edges by welding. If left unsealed, small overlapping areas may trap pretreatment solutions which runs the risk of escaping and either discoloring or damaging the galvanized coating.



Larger Overlapping Surfaces

"Do" place a hole 3/8" diameter for every 4 square inches of overlap area in one of the members if you can't avoid contacting surfaces. The perimeter of the contacting area should be continuously welded. A 3/8 " vent hole in one member will ensure the safety of the galvanizer, and prevent damage.





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