

# CRAFTSMAN'S CRIBSHEET

 NUMBER  
**22**

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**Technical**

Regulatory



Quality



Management

## THREE CONTRIBUTORS TO PLATING PROBLEMS ON STEEL PARTS

Plating difficulties are invariably related to 3 potential contributors: Inadequate cleaning, insufficient stock removal and features of the part being plated. The location of the plating problems on your parts gives you a key to determining the mechanism of failure.

- If the plating problems are occurring on both original bar surfaces as well as on machined surfaces, inadequate cleaning is likely the cause.
- If the plating difficulties are only on the portion of your parts that are original bar stock surface, insufficient stock removal is the most likely cause of the problem.
- If the plating is fine everywhere else on the part, except near a particular feature, retention of contaminating fluid by a feature of the part is the likely cause.

### Inadequate Cleaning

Despite efforts to clean, some soil or contaminant remains, interfering with the plating. The cleaning method employed could just be insufficient for the task of cleaning, not enough time, agitation and so on.

Or it could be that the incorrect cleaning process is being used. Acidic cleaners do not remove oils or greases. Alkaline cleaners are needed to remove oils and greasy residues from steel parts. Solvents can be used to remove the bulk of oily residues as well. An insufficient pre-clean can allow oils or oily residues to remain and mask or obstruct the deposition of the metallic plate.

If the plating problems are occurring on both original bar surfaces as well as on machined surfaces, this is likely the cause.

### Insufficient Stock Removal

Today, most cold drawers use mechanical descaling (shot blasting) technology to remove surface scale from bars prior to drawing. Shot blasting does not fully remove every bit of scale. The shot stream abrades off most, but not every single bit of scale on a bar's surface. The presence of this scale could interfere with the subsequent plating of parts by the following mechanisms:

- It can retain metalworking fluids or cleaner, causing localized reactions and staining.
- Residual scale will prevent electrical current flow and prevent the deposition and adhesion of the plate.
- It can create an air bubble by geometry as well as perhaps a hydrogen bubble if the bath is acidic. This bubble can form a barrier preventing deposition/adhesion of the plate.

*If the plating difficulties are only on the portion of your parts that are original bar stock surface, this is the most likely cause of the problem.*

### Part Geometry Features and Location

Many times the design of the part can be the cause of the plating difficulties. Features including small-diameter holes, blind holes, recesses and grooves can retain fluids, create bubbles or support a meniscus which can result in localized contamination, staining and create a barrier to deposition.

If the plating is fine everywhere else on the part except near a particular feature, retention of fluid by a feature of the part is the likely cause. Adding a wetting agent to reduce surface tension in cleaner or rinse can eliminate the problem.

*If the machined surface's plate is fine, but not the original bar surface nor the inside of a hole, it isn't the steel. It's one of the above.*