

# Design Recommendations For Hard Chrome Plating

## Treatment of Machined Surfaces Prior to Plating

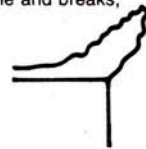
### SURFACE CONDITION

### PROBLEM

### REMEDY

#### Sharp edges

This condition creates a buildup of nodular chromium which is brittle and breaks, or cracks, in grinding.



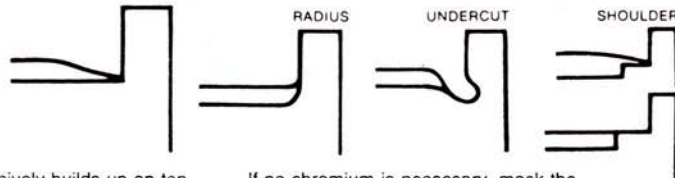
Do not terminate chromium abruptly on sharp edges but radius the edge with a minimum 1/32 inch or more prior to plating.



#### Inside corners

This low-current density condition creates a very thin deposit, or no coverage, of chromium in a corner.

Never machine inside corners square, but rather use the methods of machining shown below before plate.



#### Threads and splines

Chromium progressively builds up on top of the thread and deposits lesser amount in the root. This tapered deposit affects thread or spline configuration.

If no chromium is necessary, mask the areas; otherwise, radius the edges and minimize chromium thickness. Where heavy deposits are required, machine the surface to allow for chromium buildup.



## Chromium's Effect on Surface Finish

Chromium duplicates the machined surface finish up to 0.002 thick, and thereafter a progressive increase in microinch finish is detectable with any increase in thickness. This condition is slightly exaggerated on shot-peened, liquid-honed, or dry-blasted surfaces.

Chromium never "levels off" or "fills in" surface imperfections. Such defects as pits, cracks, or scratches are amplified, and the surface should be polished beforehand; otherwise, it must be ground after plating.

## Specifying Chromium on a Blueprint

Prior to finalizing a specification, consultation with a U.S. CHROME engineering representative is recommended in order to take fullest advantage of the properties of chromium as well as to avoid potential problems.

Consultation involves such design parameters as:

1. Selection of the desired type of chromium coating ... conventional ... crack-free ... oil retentive...etc.

2. Exact location of the chromium deposit.
3. Best method of stopping off the deposit.
4. Specific deposit thickness and tolerance requirements.
5. Before and after plate dimensions ... tolerances used up in machining and plating.
6. Treatment of machine pre-plate surface and machine finish requirement.
7. Specification of U.S. CHROME plating to finish size or overplating and grinding.

## Suggested Thicknesses and Tolerance Held.

Condition	Thickness	Tolerance
Light, corrosive atmosphere	0.0002-0.0005 thick	0.001
Most wear applications	0.0007-0.0015 thick	0.001
Water and chemical attack	0.002-0.005 thick	0.002

These thicknesses and tolerances are related to the surface finish of the machined part, its size, and its configuration. Closer tolerances are attainable but are normally restricted to production applications where setup costs are justified.

## Engineering Services

In addition to the most modern production facilities, U.S. CHROME offers specialized engineering services to assist you. Your inquires and your work will receive the prompt personal attention of our engineering staff.

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