



# General Cost Saving Machining Tips

Machining can be an expensive process, but it doesn't have to be.

You might not realize there are simple ways to reduce manufacturing cost. In fact, some of the smallest adjustments in your design will not only save you money but will get the job done faster.

## MORE IS LESS

Ordering in bulk allows you to amortize setup cost between more parts, significantly reducing the cost per part.

## COMMUNICATE WITH YOUR MACHINIST

Be as thorough as possible in your instructions to the machinist. Include all necessary details about your part such as intended functionality, tolerances, finishes, etc. A better understanding of your particular needs could lead to a more efficient manufacturing process, resulting in lower costs.

## LEVERAGE 2D DESIGNS

2D parts are typically less costly to manufacture than 3D parts. When possible, avoid including three-dimensional features which often require added machining processes.

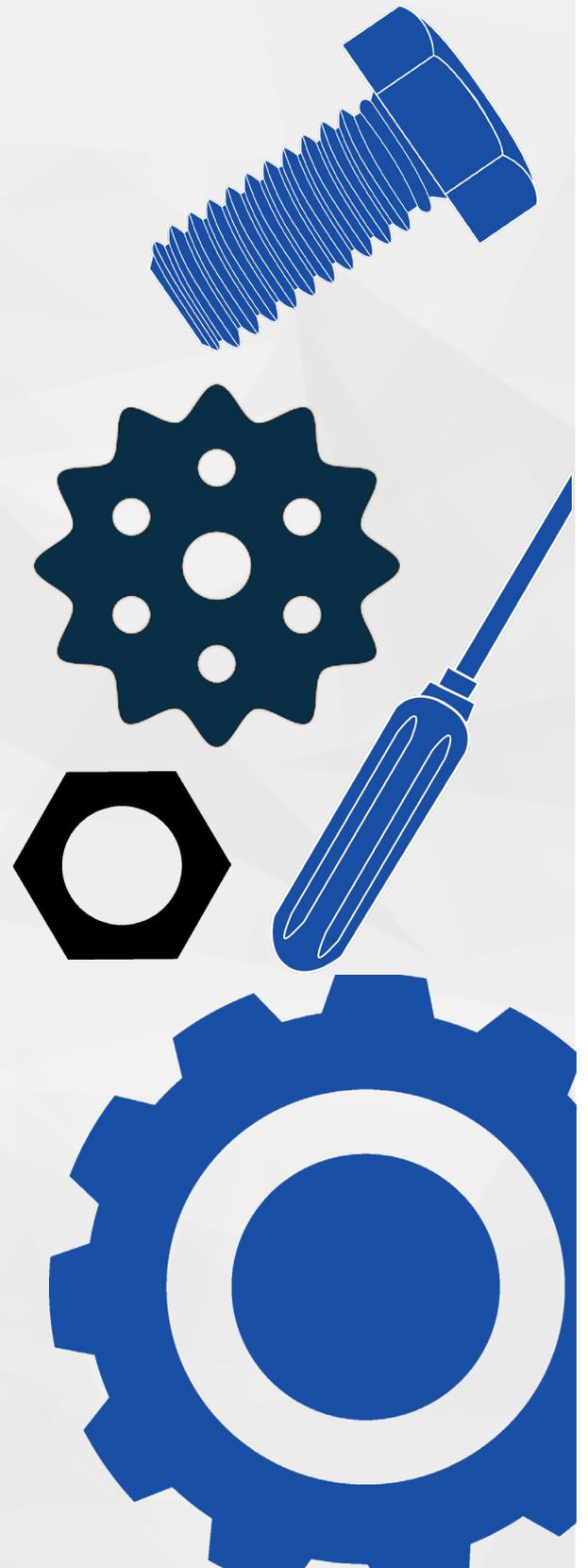
## DEBURR VS CHAMFERING

Deburring parts (often included at no charge) is often a more economical alternative to chamfering which requires more advanced equipment and hence cost.

## PART SIZE

Making parts smaller helps you save in two ways because small parts:

1. Require less material
2. Can often be nested in greater quantity

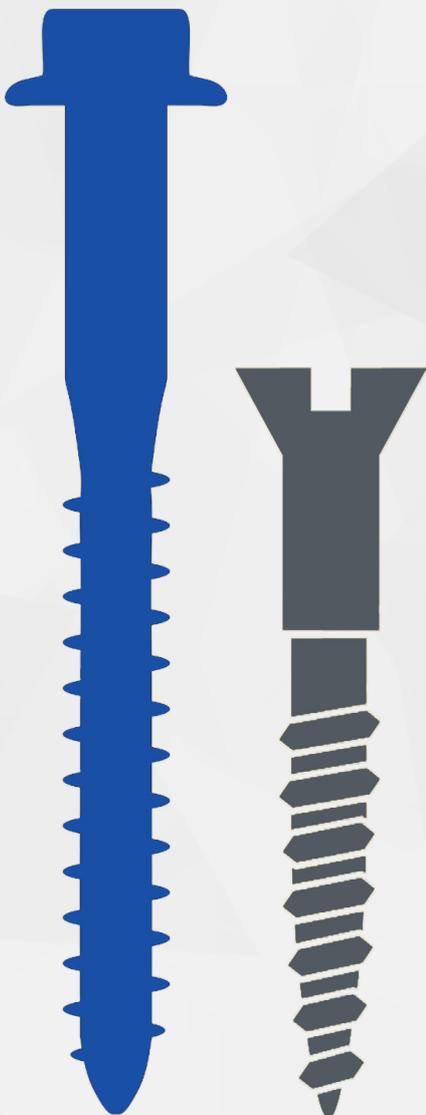


## ELIMINATE UNNECESSARY FEATURES

Unnecessary finishes and irregular shapes that don't affect functionality increase cost without providing additional value.

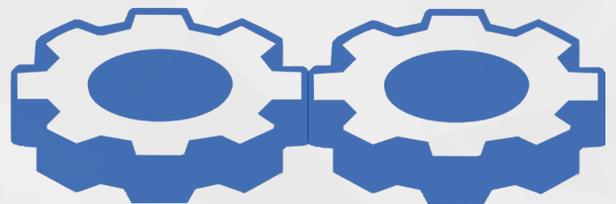
## USE THRU-HOLES

Use thru-holes with machine screws and nuts instead of threaded holes in your designs. This saves the manufacturing step of tapping.



## STICK TO STANDARD SIZES

Use standard thread sizes. Uncommon thread sizes may require your machine shop to purchase a tap they don't have which raises the price. When in doubt, ask your machine shop whether they have the size you need.



## CHOOSE YOUR MATERIALS WISELY

Choose the softest and lowest cost applicable material for your parts. Soft, common metals such as aluminum are easy to machine and don't stress machinery as much as harder materials.



## CONSIDER MACHINABILITY

Keep in mind that some materials are lower cost for the raw material but could also take longer to machine costing you more in the end.

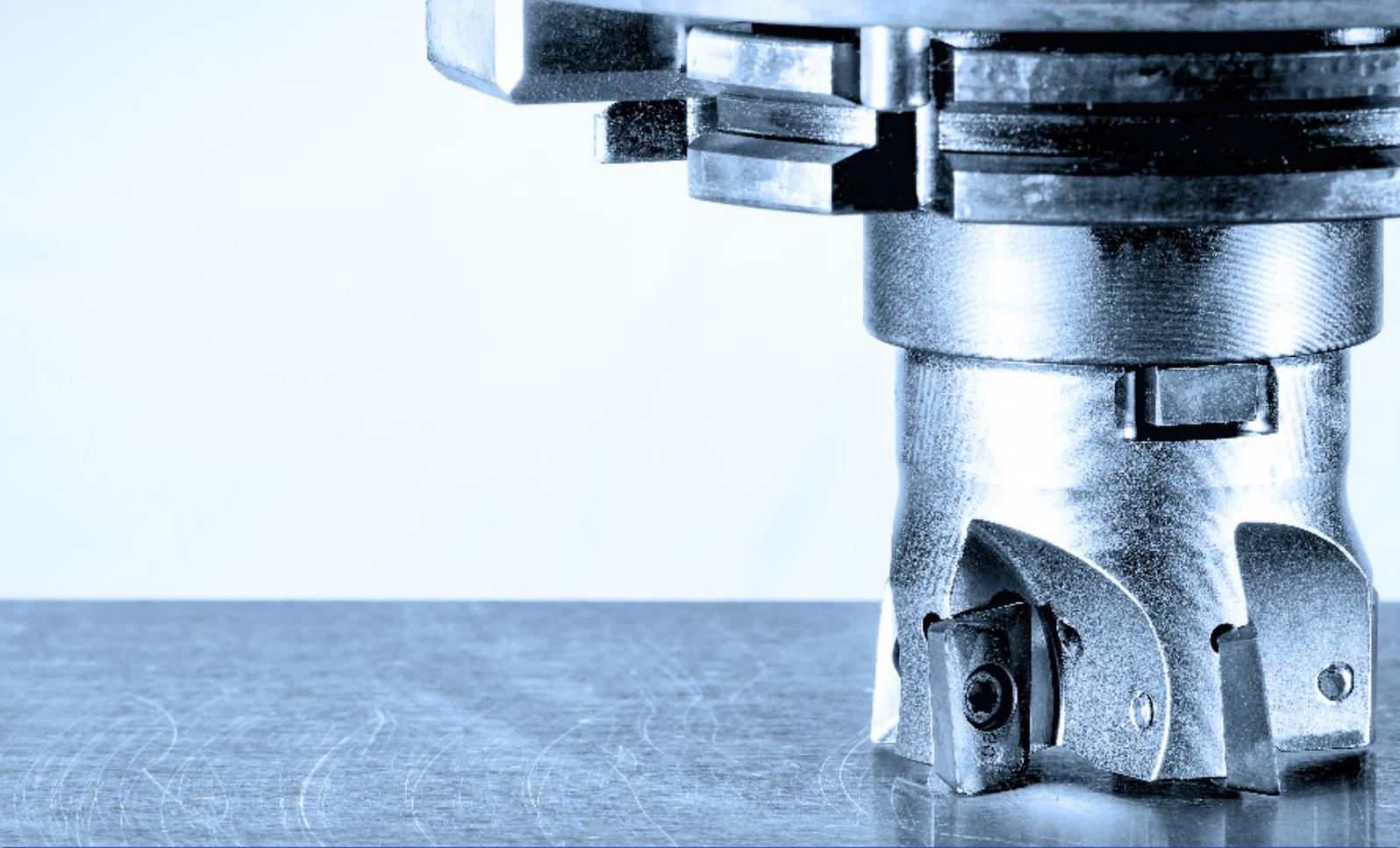
## STAY LOOSE

Minimize use of tight tolerances. Set them as loose as possible. Tight tolerances may call for additional processes and longer machining time.

## FINISHES/SECONDARY PROCESSES

Minimize the number of finishes. For example, instead of bead blasting followed by powder coat, it is usually sufficient to specify only powder coat.





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