

# Common Pitfalls for Machined Parts

## ECCENTROID

*transforming  
your  
product  
through  
engineered  
manufacturing*



### Premature Optimization

Manufacturability was considered too late in the design process. The processes specified are not standard among your vendors.



### Geometry

Part geometry is not well-suited for standard machining processes. Examples include

1. Tight internal radii
2. Threaded holes with no room at the bottom for taps/thread mills
3. Excess use of filleted edges; requiring lots of custom end mills / surfacing



### Dimensional Stability of the Process is Not Realistic

Examples include

1. Unaccounted warpage from heat treatment that exceeds tolerances
2. Tolerances that are tighter than thermal expansion at slight variations in room temperature
3. Flatness tolerance on a thin part that is tighter than needed in the final use case because the part easily conforms to the mating part



### CAD not ready for Digital Manufacturing

Each CAD surface is not in the middle of its tolerance zone. Due to natural variability in part dimensions, this will cause lower yield, resulting in higher costs.



### Tolerances

Drawing includes too many heroically tight tolerances. One tight tolerance is not a big deal, but overall yield drops exponentially as tight tolerances are added.



### Part designed with Wrong Process / Cost Expectations

Examples include

1. Bending/forming/welding would save cost
2. 304 stainless was selected for corrosion resistance, but has a low yield strength and galls in sliding applications
3. Your business model dies, upon first quote, because you attempted manufacturing at low quantities in a commoditized market



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Feel free to bounce some ideas off of us:

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