
MODELING

Best Modeling Practices

1. Do not save a model with suppressed features.
2. Simple sketches.
3. Put Rounds as late in the design as possible. Good rule of thumb: when possible, Rounds should not appear in the first half of the model tree.
4. Use Relations to build interdependencies among features. (In assemblies, use Layouts to build interdependencies between features in different parts. Assembly level relations are best for controlling offsets in assembly constraints.)
5. Rename features and dimensions to make them more intuitive. Use Local Groups to group related features.
6. To reduce parent-child relationships in sketched features, only use a reference plane that you intend to use as a sketch reference later on.
7. Avoid using edges as references; use a surface if possible. Default datum planes make the best parents.
8. Let manufacturing guide whether you choose to create a Hole or a Cut with a circular sketch.
9. Delete features instead of filling them in with a protrusion. I see this a lot with patterned holes, using with designers used to Boolean operator CAD systems. If necessary, redefine a pattern from dimension pattern to pattern table.
10. (2001) Use Make Datums rather than external datum planes if no other features will ever use that datum.
11. Transform surface features instead of Copy-Mirror or Copy-Move. Transformed features regenerate faster and decrease file size.

Use start files

Standard datums, views, layers, and parameters are automatically created.
Units and accuracy are set to standard values.

Complete parameters

Before check-in, enter values for Part Number, Part Name, Date Drawn, and Drawn By.
Remaining parameters are optional, but recommended as Best Practice.

Create references with a purpose

Consciously create references and understand the impact of your choices. Reference primary datums and reference geometry first, then surfaces, and edges only if necessary.

Model symmetry

Model $\frac{1}{2}$ or $\frac{1}{4}$ of part with all symmetrical features before a SINGLE mirror.
Place asymmetrical features after mirror.

Use Master Model techniques

Use Master Model technique if multiple parts share common geometry or interfaces (e.g. multi-shot or multi-component assemblies)

Run model check

Run prior to checking into PDM system.
Run prior to working on an existing file that you did not create.

Ask questions

If you don't know how to do something, seek out the answer. Ask for help if needed.

BEFORE HANDOFF

Specify the material density

Except for surface models or models with zero mass.
Specify in correct units and verify using Model Mass Analysis.

Hide layers

Hide all layers except for part/assembly geometry. Save layer status.
Place notes and GTOLs on hidden layers. Divorce drawing layers to show datums.

Remove suppressed items

Delete all suppressed features except for analysis related features at the end of the model tree.

Fully-Constrain

Fully-constrain all sketches and features in parts, and components in assemblies (No grayed-out dimensions or constraints).

Remove external references

Delete or deactivate all external references except for those created with master model techniques.

Decipher model tree

Rename critical part features to describe function or intent.
Reorder feature tree to place related features together.

Flex the model

Vary dimensions on critical sketches and features and check for proper regeneration.

BEST PRACTICES

Use "Replace" and "Reroute"

Use "Replace" command instead of deleting sketch entities to avoid lost references.

Use "Reroute" to replace new or missing references in features.

Simplify sketches

Break up sketches and minimize number of sketch entities.

Use constraints and construction geometry to publish design intent.

Do not sketch rounds.

Use relations

Use relations to relate dimensions across multiple features. Add comments to identify design intent.

Create reference geometry

Create reference geometry (datums/axes/points/curves) at beginning of model to control basic geometry.

Use as preferred selection for references.

Watch feature order

Build model with features first, followed by drafts, then chamfers, and rounds last.

Limit master model features

Include: Geometry spans multiple parts, Parting Lines, Common datums, Publish Geom

Exclude: Features specific to a single part, Mirror features