

Assembly Documentation Guide

A student reference for documenting how multiple parts fit together and how another person should build the design.

Use this guide when...

- your design includes more than one part.
- another student or team needs to understand how the parts fit together.
- you are documenting fasteners, quantities, orientation, or assembly sequence.

What belongs in an assembly package?

Component	Purpose	Accuracy check
Exploded view	Shows part order, spacing, and orientation.	Can the reader tell how the parts stack or fit together?
Item balloons	Connect visible parts in the view to the BOM.	Does every balloon match exactly one BOM row?
Bill of materials	Lists item number, part name, quantity, material, and notes.	Are quantities and part names consistent with the model?
Assembly notes	Explain sequence, orientation, joining method, or special warnings.	Could someone assemble the design without verbal help?
Revision block	Tracks changes after testing, redesign, or manufacturing updates.	Is the current version clearly identified?

Exploded view and item balloons

The exploded view should separate parts enough to show order, but not so much that relationships are lost.

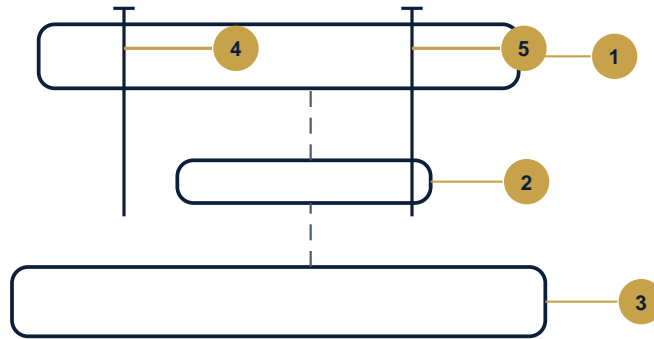
Exploded assembly with item balloons

Balloons identify parts; the BOM gives part names, quantities, and notes.

1. Top plate

2. Spacer

3. Base plate



Balloon and BOM rules

- Use item numbers, not long part names, inside balloons.
- Each item balloon should point clearly to one part or one repeated group of identical parts.
- The item number in the balloon must match the item number in the BOM.
- If two screws are identical, they can share one BOM row with quantity 2.
- Do not balloon hardware, adhesives, or spacers inconsistently across different views.

Example bill of materials

This sample BOM matches the exploded view from the previous page.

Item	Part name	Qty	Material / source	Assembly note
1	Top plate	1	Laser-cut plywood or acrylic	Align with spacers before tightening screws.
2	Spacer	2	3D printed PLA	Keeps clearance between plates.
3	Base plate	1	Laser-cut plywood or acrylic	Bottom reference part.
4	Socket head screw	2	Purchased hardware	Tighten evenly; do not over-torque plastic parts.

Assembly sequence notes

Step	Instruction	Quality check
1	Place the base plate on a flat surface.	Part 3 is oriented correctly.
2	Position both spacers on the marked holes.	Spacers sit flush and match the hole pattern.
3	Place the top plate over the spacers.	All holes align without forcing the parts.
4	Insert and tighten the screws gradually.	Assembly is secure but plastic or wood is not crushed.

Common mistakes to avoid

Mistake	Better choice
Exploded parts are too close together.	Add enough spacing to show the assembly order.
Exploded parts are scattered randomly.	Keep parts aligned along the same assembly axis when possible.
Balloons do not match the BOM.	Check every balloon number against the BOM before submission.
BOM quantity does not match the assembly.	Count repeated hardware and duplicate printed/laser-cut parts carefully.
Assembly notes only repeat part names.	Use notes to explain orientation, alignment, fastener type, adhesive, or warnings.
No revision information is included.	Record changes after testing or redesign so the current version is clear.

Quality checklist

- Every visible part or repeated part group has a clear item balloon.
- Every item balloon has a matching BOM row.
- The BOM includes item number, part name, quantity, material/source, and assembly notes where useful.
- The exploded view shows orientation and order without confusing spacing.
- Assembly notes explain sequence, alignment, joining method, and warnings.
- The file name, drawing title, and revision/version match the current design.