

Portfolio-Quality Exploded View

Difficulty Intermediate	Time 1-2 class periods	Type Skill Builder
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Background

A technical presentation needs one image that clearly explains how the rocket assembly fits together.

Engineering Problem

Create a professional exploded view, BOM, and assembly-order visual suitable for a portfolio or design review.

Learning Objectives

- Create an exploded assembly view
- Use balloons and a BOM consistently
- Communicate assembly sequence
- Improve technical drawing layout

Materials

- Completed rocket assembly CAD
- Fusion 360 drawing workspace
- Drawing checklist
- Engineering notebook

Procedure

1. Inspect the assembly browser and rename unclear components.
2. Create or verify a complete BOM with part numbers and quantities.
3. Plan an explosion direction that keeps parts readable and avoids crossing paths.
4. Create the exploded view with consistent spacing.
5. Add trail lines where they clarify movement.
6. Place the view on a drawing sheet and add balloons linked to the BOM.
7. Add one detail view for a small or hidden connection.
8. Use the checklist to inspect alignment, readability, title block, and consistency.

Engineering Requirements

- Every modeled component appears in the BOM
- Every BOM item is ballooned exactly once in the main view or detail
- Explosion order reflects a logical assembly sequence
- No part paths overlap in a confusing way
- Drawing includes title, scale, revision, and author

Constraints & Safety

- Use the current approved assembly
- Keep the drawing to one sheet

- Do not use decorative backgrounds that reduce readability

Deliverables

- Updated assembly component names
- Exploded view drawing PDF
- BOM
- Ballooned assembly view
- One detail view
- Completed quality checklist

Reflection Questions

1. Which parts were hardest to separate visually?
2. How did you choose the explosion direction?
3. Could a technician infer assembly order?
4. What makes the drawing portfolio-ready?

Engineering Tip

Use larger spacing for large parts and smaller spacing for closely related fasteners, but keep the pattern consistent.

Common Mistake

An exploded view is not random separation. It should preserve relationships and communicate sequence.

Stretch Goal

Create a short animation that follows the same assembly order.

Career Connection

Technical illustrators and mechanical designers create exploded views for assembly, service, sales, and training.