

FreeCAD STL-to-STEP conversion and limitations

CAD-011 / REV A / 2026.09.01

Converting an STL to STEP can create a usable exchange file, but it does not recreate a clean parametric model. The public workflow emphasizes mesh cleanup, scale checks, reference geometry, and remodeling critical features.

STATUS	Needs Retest
CLASSIFICATION	CAD
MATERIAL	CAD / AUTOMATION
DISPOSITION	PUBLIC / NEEDS RETEST
CATEGORY	CAD / Scanning / Automation
RECORD TYPE	how-to

TECHNICAL NOTES

FreeCAD mesh-to-solid workflow with an explicit warning about lost design intent.

GOAL

Recover usable geometry without mistaking a converted mesh for a native design.

EQUIPMENT

- FreeCAD
- Representative test model
- Measurement or inspection method

METHOD / STEPS

1. Inspect and repair the mesh.
2. Confirm scale with a known dimension.
3. Convert only when the downstream tool requires it.
4. Remodel critical features with clean sketches and constraints.
5. Export and inspect the result.

RESULT / WHERE THIS STANDS

Reference workflow with known limitations.

TROUBLESHOOTING

- A visually correct model can still have bad units, references, or manufacturing intent.
 - Keep source files and exported files distinct.
 - When automation is involved, test a copy before changing a production directory.
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SPECIFICATION

TOOL PATH	FreeCAD
DELIVERABLE	HOW-TO
VALIDATION	Representative model / known dimension
STATUS	Needs Retest

DEVELOPMENT HISTORY

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Imported as an independent manifest record; public copy keeps uncertainty visible.

RELEASED MATERIAL / SOURCE LINKS

cad-011-public-summary.txt

PUBLIC SUMMARY / RECOVERED NOTES

<https://u225x.com/downloads/manifest-records/cad-011-public-summary.txt>

RETURN TO THE LIVING RECORD

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This PDF preserves the public notes at this revision. Visit the record for updates and attached images.

<https://u225x.com/record/CAD-011>
