FreeCAD Checklist: Importing a STEP File, Moving It to the Origin, and Creating an Enclosure

Part 1 – Import the STEP File

☐ Open **FreeCAD**.
☐ Select the **Part Design** workbench.
☐ Click **New** to create a new file.
☐ Go to **File → Import** and select your **.step** file (the PCB).
☐ Turn on the axis cross: **View → Toggle axis cross**.
☐ Zoom out to make sure the PCB and axis are visible.

Part 2 – Create a Reference Sketch for Alignment

☐ Switch to the **Sketcher** workbench.
☐ Click **Create Sketch**.
☐ Choose the **XY-plane** (make sure no object is selected) and click **OK**.
☐ Draw a rectangle with the same dimensions as the PCB (e.g. 60 × 50 mm).
☐ Center the rectangle around the origin using **Constrain Symmetry**.
☐ Click **Close** to finish the sketch.

Part 3 – Align the PCB to the Sketch

☐ In the **Model Tree**, first select the Sketch (the rectangle).
☐ Hold **Ctrl** and select the imported **STEP file**.
☐ Go to **Edit → Align** (the PCB should appear on the left side of the screen).
☐ Click three matching corner points on both the rectangle and the PCB to define alignment.
☐ Right-click and select **Align**.
☐ The PCB will now be aligned to the origin.
☐ Delete the temporary Sketch from the Model Tree when done.

Part 4 – Create a Body and Shape Binder

☐ Switch back to the **Part Design** workbench.
☐ In the **Tasks** tab, click **Create Body**.
☐ In the **Model Tree**, click on the imported **STEP file**.
☐ From the **Part Design** dropdown menu, select **Create a sub-object(s) shape binder**.
☐ Hide the original STEP file in the Model Tree (press **Spacebar**).

Part 5 – Create the Enclosure Base

☐ Select the **Body**, then open the **Tasks** tab.
☐ Click **Create Sketch**, choose the **XY-plane**, and click **OK**.
☐ Draw a rectangle around the PCB (for example, 64 × 54 mm to allow for tolerances).
☐ Ensure it is centered around the PCB using **Constrain Symmetry**.
☐ Use **Create External Geometry** to pick up the mounting holes from the Shape Binder.
☐ Draw circles at those locations for mounting holes (Ø3mm).
☐ Click **Close** when done.
☐ Select **Pad**, enter a height (e.g. 15 mm), and click **OK**.
☐ Click on the **top face** of the pad and choose **Thickness**.
☐ Click **OK** to apply the wall thickness.

Part 6 – Create Shortened Pillars for Mounting Holes

☐ Select the **top face of the rim** and click **Create a Datum Plane**.
☐ Click **OK** to accept the default position.
☐ Select the **Datum Plane** and click **Create Sketch**.
☐ Use **Create External Geometry** to pick up the outer circle dimensions.
☐ Draw circles in those positions (or slightly larger) to extrude (pocket) the mounting pillars.
☐ Click **Close** to finish the sketch.
☐ Select **Pocket**, enter the cut depth (e.g. 10 mm), and confirm or close the dialog.
☐ Hide the **Datum Plane** in the Model Tree (press **Spacebar**).

Part 7 – Align the PCB to the Enclosure

☐ In the **Model Tree**, hide the **Shape Binder** and unhide the **actual STEP file**.
☐ Select first the **fixed object (Body)**, then Ctrl and click on the **PCB (the STEP file)**.
☐ Go to **Edit → Align** (the PCB will appear on the left side of the screen).
☐ Rotate the view so you can see the mounting holes of the PCB from below.
☐ Rotate the enclosure view so you can see the inside mounting holes from above.
☐ Select the three corresponding mounting hole circles on both objects (same location).
☐ Right-click and choose **Align**.
☐ The PCB should now be aligned with the mounting holes inside the enclosure.

Part 8 – Final Steps

☐ Verify that the PCB fits correctly inside the enclosure.
☐ Check all holes and wall thicknesses.
☐ Save the file as a **.FCStd** project.
☐ (Optional) Export as **STEP** or **STL** for manufacturing or 3D printing.