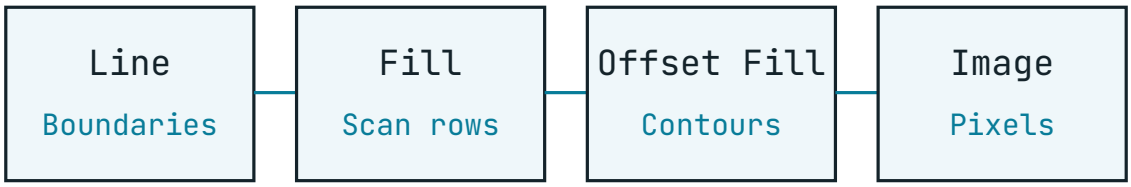
LESSON GUIDE

Line, Fill, Image and Offset Fill

Compare vector and bitmap operation modes by inspecting the actual software plan.

Disconnected software practice

Leave **No Machine** selected and stay disconnected. The projects have no machine profile. Output is enabled where needed for software Preview; the example values are not material settings. Keep each lesson pack in its own folder.



Conceptual mode comparison. These boxes are labels, not screenshots or generated toolpaths.

1. Open **modes-start.lzrproj**. The badge is 40 x 30 mm with an 8 mm opening. Keep No Machine selected.

2. In Layers, turn on **operation Output above Mode**. Main Output beside Show is already on. Both controls must include the operation.

3. With **Line**, open Preview and hide **Show Travel**. Inspect the outside and circle boundaries, then close Preview.

4. Choose **Fill**, set **Line Interval to 1 mm**, and Preview again. Use 4x playback, Go to start, Play and Go to end. Check the clear opening.

5. Compare **Offset Fill** in Preview. Then close it and **Import gray-bars.png**. With the bitmap selected, set **X to 72 mm** and apply.

6. The new bitmap layer uses **Image**. Its Mode is separate from the processing Mode below **RASTER**. Keep processing unchanged, set its comparison interval to 1 mm, and inspect both operations.

Save a separate copy and compare with **modes-finished.lzrproj**. The 1 mm interval is deliberately coarse for viewing.

INDEPENDENT PRACTICE

Independent practice

Open **modes-practice.lzrproj**, a 45 x 35 mm badge. Enable its operation Output for disconnected Preview. Compare Line, Fill and Offset Fill, using a 1 mm comparison interval.

☐ Import gray-bars.png and set its X to **74 mm**, leaving it beside the wider badge.

☐ Keep the image-processing Mode unchanged; use a 1 mm comparison interval for Image.

☐ Finish with Offset Fill for the badge and Image for the bitmap. Save your own copy before opening modes-practice-answer.lzrproj.

Which Preview uses parallel rows, and which uses nested contours?

Does the filled appearance on the canvas identify the actual path pattern?

Which Mode changes the operation, and which controls bitmap processing?

EXPLAINED ANSWER

Explained answer

Vector modes
Line follows boundaries. Fill scans the closed region. Offset Fill uses nested contour paths. The badge opening should stay clear.

Image mode
The imported 96 x 72 pixel bitmap has an Image operation. The RASTER processing Mode is a separate control.

Preview display
Show Travel displays laser-off moves. Pink overscan markings outside raster rows are a display of overscan, not extra engraving. Recheck display toggles when reopening Preview.

modes-start.lzrproj
40 x 30 mm demonstration starter; operation Output initially off.

modes-finished.lzrproj
Demonstration answer with the bitmap embedded at X 72 mm.

modes-practice.lzrproj
45 x 35 mm independent starter; operation Output initially off.

modes-practice-answer.lzrproj
Practice answer with the bitmap embedded at X 74 mm.

gray-bars.png
Unchanged grayscale comparison bitmap for Import.

Answers keep effective Output on so disconnected Preview includes both operations. The image is embedded; reopening an answer does not require locating the original PNG.

Matches the demonstrated Beam Bench 0.2.37 interface. Panel layout may differ in later versions.