

Hole Layout Using a Single Datum (Plates + Center Punching)

Accurate hole placement in FRC depends on using a **consistent datum** and properly marking drill locations before cutting.

Using a Datum for Hole Layout

A datum is a fixed reference edge used to measure all features from.

For plates, the best datum is usually:

- A straight factory edge of the material

All hole locations should be measured from this same edge:

- Measure X distance from the datum
- Measure Y distance from the datum
- Do not switch reference edges between holes

Using one datum ensures:

- Holes stay aligned in a grid
 - Parts match CAD layouts
 - Errors do not accumulate across measurements
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Marking Hole Locations

Once measurements are made:

- Mark each hole location clearly with a pencil or scribe
 - Use a combination square or speed square to ensure straight layout lines when needed
 - Double-check critical dimensions before punching or drilling
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Center Punching

A **center punch** is used to lock in the exact drill location before drilling.

Why it is used:

- Prevents the drill bit from “walking” (sliding off the mark)
- Improves accuracy on metal surfaces
- Creates a small indentation that guides the drill bit

How to use it:

- Place the punch directly on the marked point
- Hold it steady and perpendicular to the surface
- Strike firmly with a hammer to create a visible dent

Best Practice Workflow

1. Choose a single datum edge
2. Measure all hole positions from that datum
3. Mark each point clearly
4. Use a center punch on every hole location
5. Drill carefully, keeping the bit centered in the punch mark

Key Idea

Good hole accuracy comes from consistent measurement from the same datum and center punching every mark before drilling.

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