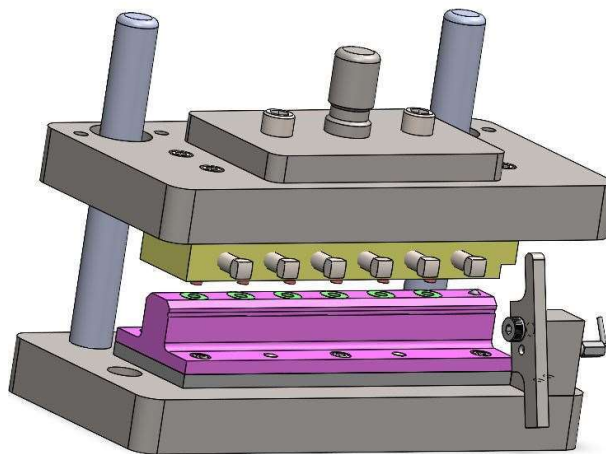
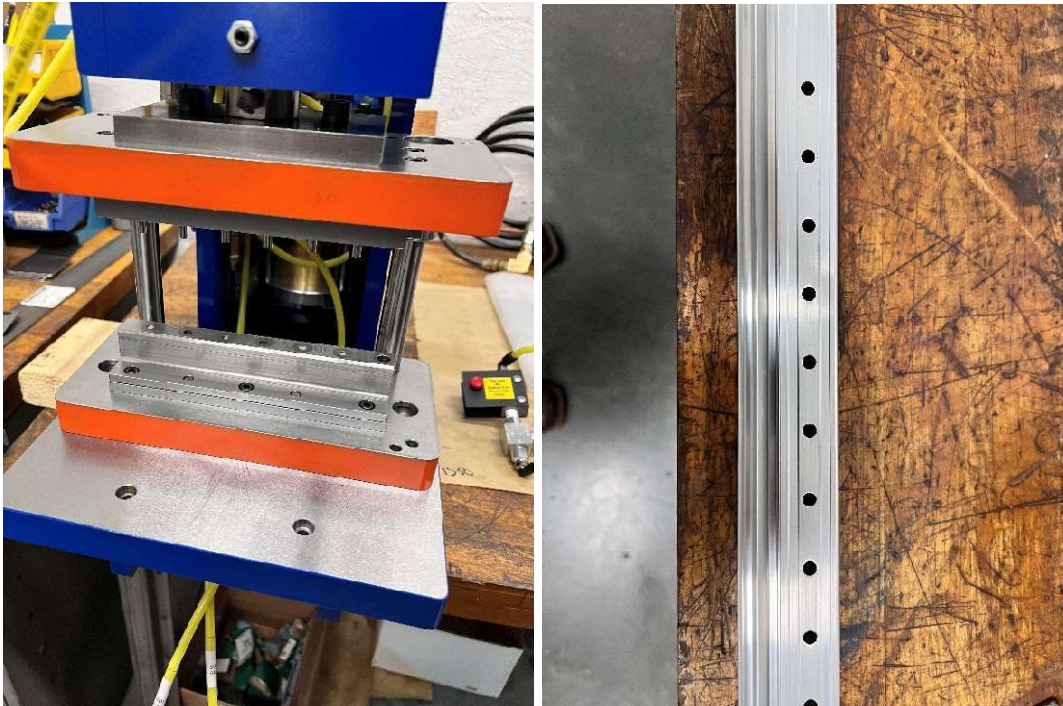


Aluminum Extrusion Hole Punching

Project Number: A-110

Summary

A manufacturer of custom ACM panels approached AIM-Joraco looking to improve their manufacturing process with a hole punching press. The press needed to punch multiple holes at once and accommodate various lengths of aluminum extrusions. Using a Toggle-Aire model 2530, AIM-Joraco developed a solution able to punch six holes at once with a fixture design allowing the operator to easily slide through any length of extrusion.



Tags: Toggle-Aire, 2530, punching, hole punch, ball detent, extrusion, variable length

Customer Requirements

- Press must be capable of punching 5.2mm diameter holes in 1.5mm thick aluminum.
- The press must be able to punch multiple holes at once.
- Press must accommodate extrusion lengths up to 218".
- Holes must be evenly spaced 25.4mm apart along the length of the extrusion.

Design Challenges

- Punching multiple holes at once significantly increases the force required and the stress on the press and tooling.
- The fixture must allow extrusions of any length to slide through but also include a stop so the first set of holes is punched the correct distance for the end of the part.
- The fixture required a way of aligning the extrusion to allow each set of holes to be spaced the correct distance apart.

Process

- The lower tooling was designed as a mandrel holding the dies to allow for the extrusion to easily slide over it while providing the support needed.
- A toggleable stop was added for correctly positioning the extrusion for punching first set of holes.
- A ball detent was added to ensure proper spacing when sliding the extrusion into position for punching additional sets of holes.

Results

- The mandrel allowing extrusions to slide through the press and c-frame press design leaving no obstructions to the sides of the tooling allowed the press to accommodate any part length.
- The stop and ball detent allowed for accurate positioning of the part resulting in even spacing between all holes.
- The press was capable of punching six holes at once.
- A two-post die set was used to ensure evenly distributed force and alignment of the punch and die.