

CERDIP Wire-Bonding Fixture Design

Custom Interface Fixture for Client Processing on Our F&S Wire Bonder

Client Technical Design Overview | Rev C | August 2026

Estimated Fixture Price: \$475

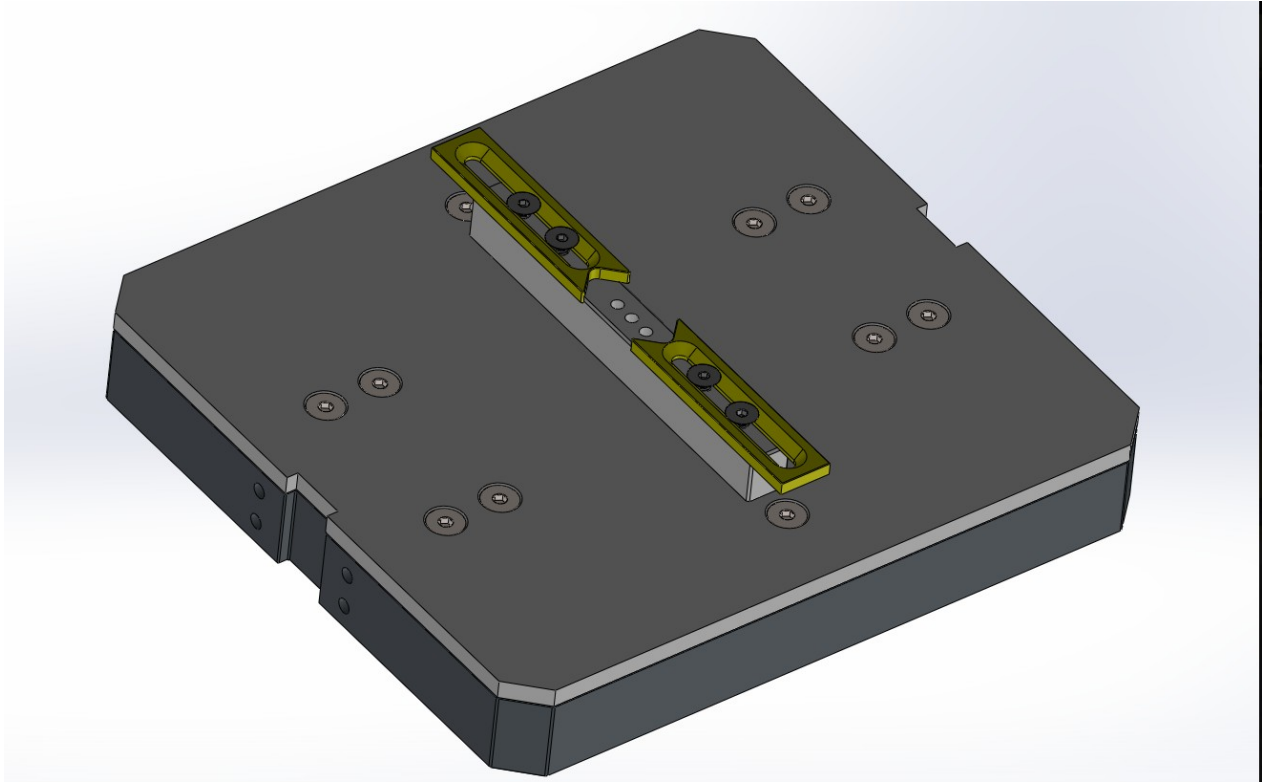


Figure 1. Proposed CERDIP fixture plate installed on the F&S thermal vacuum work stage of our wire bonder. The F&S stage is shown in dark gray/black; the adjustable clamps are shown in brass color.

Design intent

The fixture was developed in response to a client request for a repeatable CERDIP workholding solution for use with our F&S wire bonder. It uses the existing F&S stage for both heating and vacuum while adding a thermally coupled 6061 aluminum plate, a silicone vacuum seal, three configurable vacuum ports, and two self-centering C360 brass clamps for the client's process.

1. Design Architecture

The fixture was designed for the client's Cerdip wire-bonding process and is built around a machined 6061 aluminum adapter plate that mounts directly to the F&S thermal vacuum work stage on our wire bonder. A central aluminum support rail provides the seating surface for the Cerdip body. Two opposed C360 brass clamps translate along this rail to provide setup flexibility for the intended Cerdip package sizes while maintaining a controlled package centerline.

Key Functional Features

- Direct mechanical interface to the F&S thermal vacuum work stage on our wire bonder.
- Conductive heating from the F&S stage, with intended operation up to 150 °C.
- Silicone gasket between the fixture plate and F&S stage to seal the vacuum interface.
- Three central M2.5 x 0.45 threaded vacuum ports for package hold-down and selective blanking.
- Two longitudinally adjustable C360 brass clamps for the intended Cerdip package configurations.
- Self-centering clamp geometry using flat-head screw engagement with continuous chamfered clamp slots.
- A 90-degree included-angle package interface that centers the Cerdip body on the aluminum support rail as the movable clamp is brought into engagement.

2. Materials and Hardware

Item	Specification	Function
Fixture plate	6061 aluminum	Structural adapter, thermal mass, and package support rail
Adjustable clamps	C360 brass	Package location and mechanical retention
Stage mounting hardware	10 x M3 x 0.5 mm, 6 mm long, flat-head, internal hex, 18-8 stainless steel	Secures plate to our F&S stage and maintains consistent seating
Clamp fasteners	M2.5 flat-head, internal hex	Retain and self-center each adjustable clamp within its continuous longitudinal slot
Vacuum ports	3 x M2.5 x 0.45 threaded holes	Pass F&S stage vacuum to the package; unused ports may be blanked
Stage-to-fixture seal	Silicone gasket	Seals the vacuum interface between the F&S stage and adapter plate

3. Thermal and Vacuum Interface

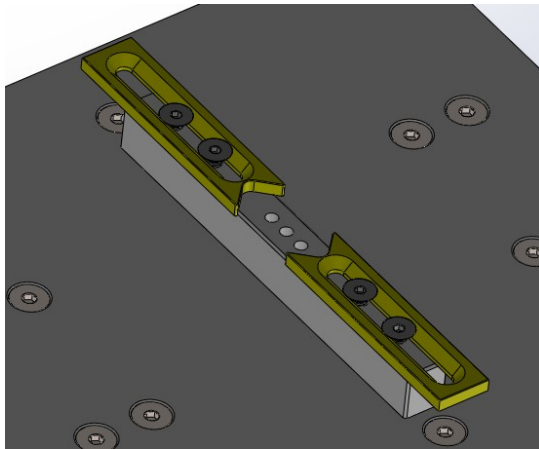
The fixture is intended to thermalize with our F&S work stage so that the existing stage heater can be used for the client's heated wire-bonding process. The installed plate, clamps, and Cerdip package therefore rise toward the stage setpoint without a separate fixture heater. The intended maximum stage temperature for this design is 150 °C.

The silicone gasket seals the stage-to-fixture vacuum interface. Vacuum is routed through the fixture to the three small holes along the center of the package rail. Each hole is also threaded M2.5 x 0.45 so unused locations can be blanked for a given package size, minimizing leakage through exposed ports.

F&S stage vacuum	Silicone-sealed interface	Fixture vacuum passage	Active center port(s) / Cerdip
------------------	---------------------------	------------------------	--------------------------------

4. Self-Centering Clamp Mechanism

A central feature of the design is that clamp alignment is established during tightening rather than relying on the operator to manually square each clamp. Each brass clamp contains a continuous longitudinal slot with chamfered side surfaces that mate with the conical underside of the M2.5 flat-head screws.



Close-up of the opposed brass clamps and continuous chamfered adjustment slots.

Clamp self-centering action

- The flat-head screw remains located by the threaded feature in the aluminum rail.
- The clamp remains free to translate while the screws are loosened because the chamfer is continuous along the elongated slot; there are no discrete screw-head pockets.
- As the screws are tightened, the conical underside of each flat-head screw seats against the matching chamfered slot surfaces.
- This seating action draws the clamp into its centered position relative to the rail and screw centerline.

Package Centering

The package-facing end of each clamp uses a 90-degree included-angle interface. When the movable clamp is advanced into contact with the Cerdip body, this angled geometry guides the package toward the center of the aluminum support rail. Tightening the clamp then centers the clamp itself through the flat-head screw/chamfer interface, producing a repeatable combined alignment of clamp and package.

1	2	3	4
Flat-head screw retained in rail	Clamp slides freely while loose	90-degree nose engages Cerdip	Tightening centers clamp and package

Design Benefit

The combined geometry reduces setup dependence on operator alignment. The fixed clamp establishes one end of the package position, the movable clamp closes onto the opposite end, and the tightening action completes the alignment. This supports rapid loading while preserving a repeatable package centerline for wire-bonding setup.

5. Intended Loading Method

For repeated loading during the client's process, the fixture is intended to be used with one clamp left in a fixed, tightened position and the opposing clamp used as the loading clamp. This minimizes adjustments between parts and provides a simple repeatable loading sequence.

1. Set the fixed clamp to the desired reference position for the CERDIP package family and tighten it.
2. Loosen the opposing clamp only enough to allow it to slide along the aluminum rail.
3. Place the CERDIP body on the central aluminum support rail and over the appropriate vacuum port or ports.
4. Slide the loose clamp toward the package until its 90-degree interface engages the CERDIP body.
5. Tighten the movable clamp. The flat-head screw heads seat into the continuous chamfered slot, automatically centering the clamp as it locks.
6. The opposing angled clamp faces center the CERDIP body on the aluminum rail. Apply the F&S stage vacuum to hold the package firmly against the heated support surface.
7. For repeated parts of the same package size, leave the fixed clamp untouched and repeat only the movable-clamp loading operation.

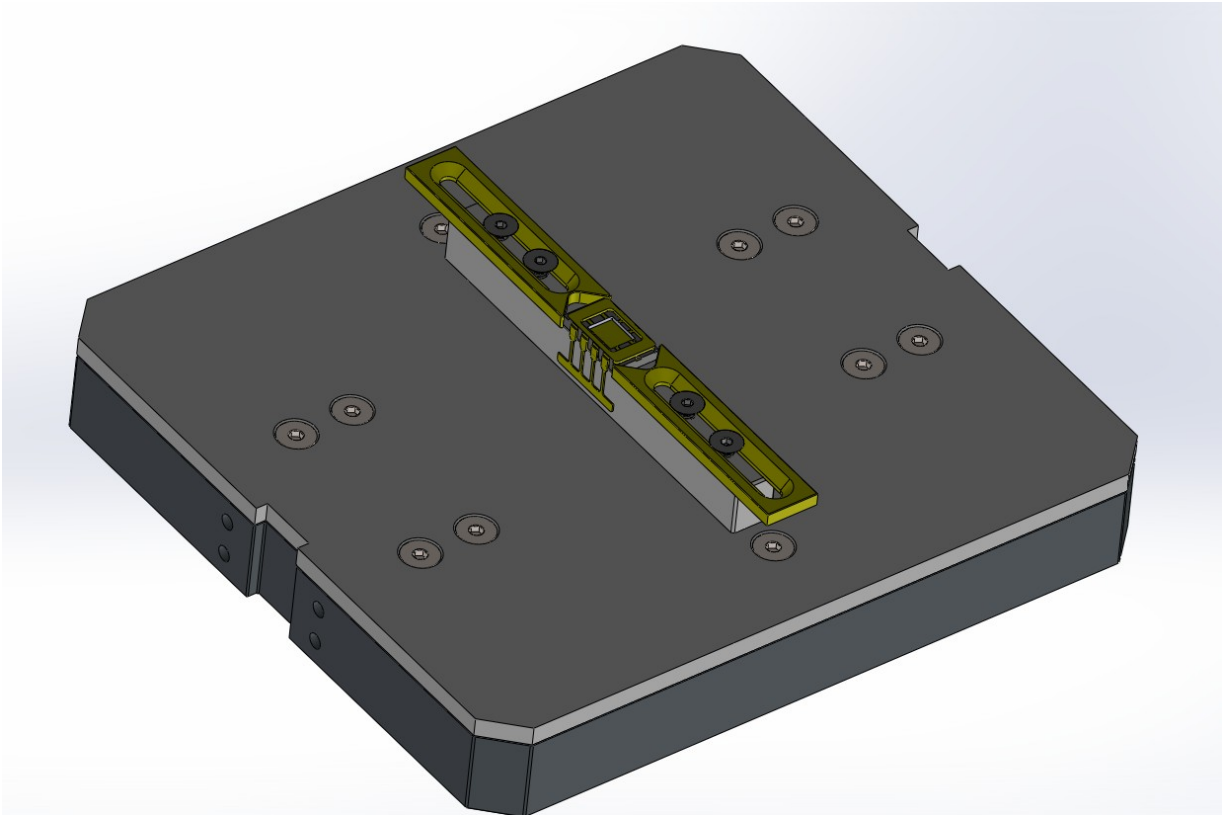


Figure 2. Example installation with an 8-lead CERDIP package. One clamp can remain fixed while the opposite clamp is loosened, translated into engagement, and retightened for each loading cycle.

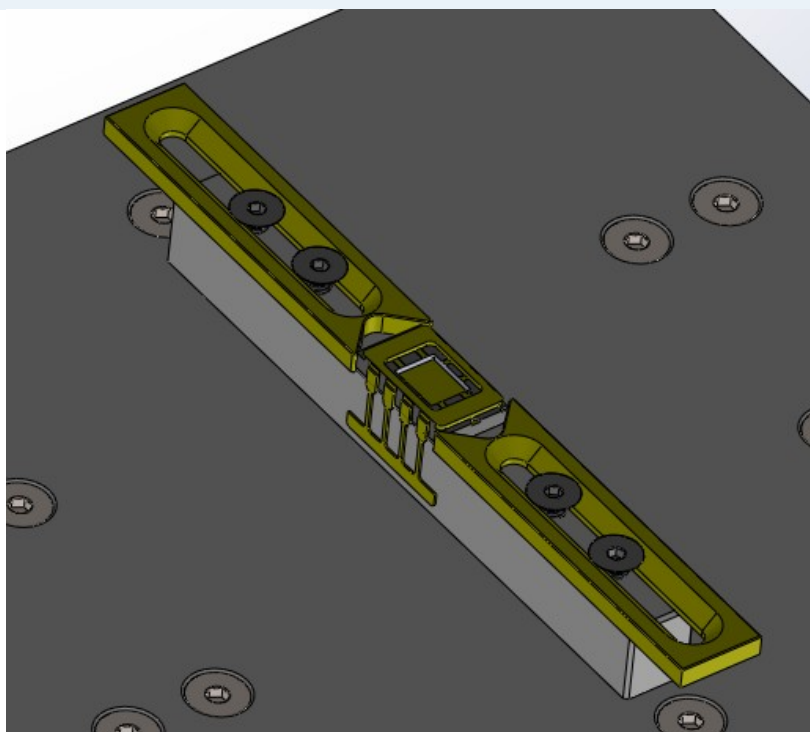
6. Configuration Notes

- Only vacuum ports covered by the package should normally be left open; exposed ports can be blanked using the M2.5 x 0.45 threads.
- The clamp screws are intended to be loosened sufficiently for translation, not removed during normal package loading.
- The continuous chamfered slot geometry preserves clamp travel while still providing the self-centering action when the screws are tightened.
- The fixture should be allowed to reach thermal equilibrium with the F&S stage before temperature-sensitive wire-bonding operations.
- Final clamp position and vacuum-port configuration can be selected to suit the client's package dimensions, process requirements, and bonding access needs.

7. Design Summary

Primary application	Client Cerdip wire-bonding process using our F&S wire bonder
Host equipment	F&S thermal vacuum work stage on our wire bonder
Fixture plate	6061 aluminum
Clamps	C360 brass, longitudinally adjustable
Centering method	Flat-head screw/chamfer self-centering plus 90-degree package interface
Normal loading concept	One clamp fixed; opposite clamp loosened, slid into contact, then tightened
Heating	Thermalized from F&S stage, up to 150 °C
Vacuum seal	Silicone gasket between fixture and F&S stage
Vacuum ports	Three M2.5 x 0.45 threaded center ports, individually blankable
Fixture attachment	10 x M3 x 0.5 mm x 6 mm flat-head internal-hex 18-8 stainless screws

Client review note: This document describes the proposed fixture design and intended operating concept for the client's Cerdip process using our F&S wire bonder. Final manufacturing dimensions, tolerances, and package-specific settings are controlled by the released mechanical drawing/CAD model.



Detail view of the 8-lead Cerdip example, showing package engagement between the opposed 90-degree clamp interfaces.