

The Inverted Gun Concept “TURNING NUT WELDING UPSIDE DOWN”

Reported by: **Dan Cabanaw**, Senior Account Manager
Automation Components Division

An increasing number of high volume, robotic fed, projection welding applications are being performed using CenterLine’s **Inverted Gun** concept. This approach provides users with a number of process improvements including:

- **Cycle time reductions** – the concept allows for the simultaneous feeding of fasteners during part loading to significantly reduce cycle time.
- **Optimal fastener feed angle** to minimize miss fed fasteners
- **Fastener loading** positioned outside the material handling area to eliminate/minimize interference with part loading activity. Loading the part over the nut reduces the challenge of feeding fasteners onto complex part geometries or restricted access nut locations. The **inverted gun concept is ideal** for nut locations within narrow channels, hat sections, etc. An added benefit is the potential for simplifying robot programming for part loading as a result of no interference from fastener feeding systems.
- CenterLine’s **VeriFast™ LVDT** fastener detection system can be incorporated into the gun/cell design to verify nut presence, orientation and proper nut model prior to initiating the weld in order to minimize scrapped parts.

How it works

The basic concept begins with mounting the gun with the actuator travelling upward.

Step 1: The fastener is loaded, with the projections facing upwards, onto the lower electrode from a feeder system operating between the gun’s mounting plates (to not interfere with part loading). Simultaneously, the part to be welded is cycled by the robot into position on the stationary "upper" electrode.

Step 2: Once the part is in position, the gun is cycled to raise the fastener to the part and transfer it to locating pin on the stationary “upper” electrode resulting in higher nut feed efficiency.

Step 3: The weld is made and the gun opens to allow the part to be ejected.

Step 4: The sequence is repeated for the next weld.

The Inverted Gun concept has been successfully implemented by several CenterLine clients.

Contact CenterLine today to learn how this approach can benefit your application and [visit this link to view a video of this concept in action.](#)

