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New Standoff for Countersunk Hole and Stacking Process

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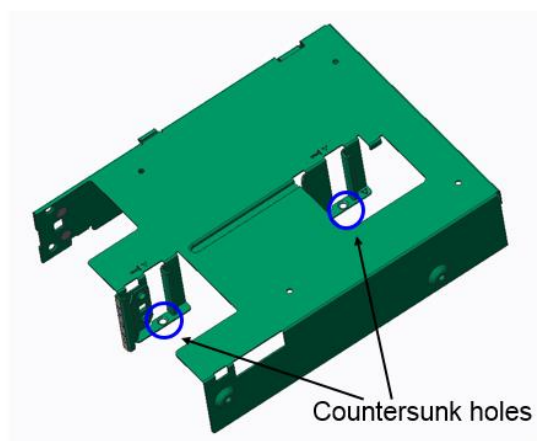
New Standoff for Countersunk Hole and Stacking Process

Abstract

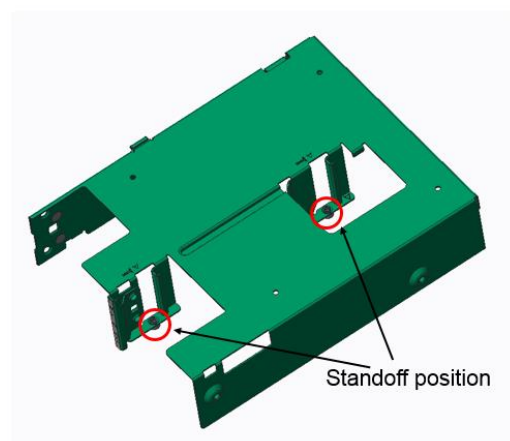
- Background
- Known technology
- Innovation
- Experiment

Background

Sometimes we are requested to leverage an existing cage from current project but need to add standoff in the location of countersunk hole. Traditional standoff couldn't stack well on the countersunk hole. The torque out force will be low and not complying with our requirement. This is why we disclose this technology.



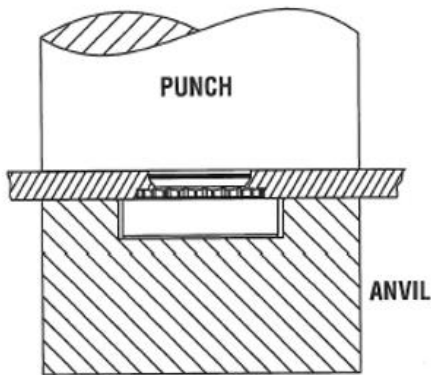
Pic.1



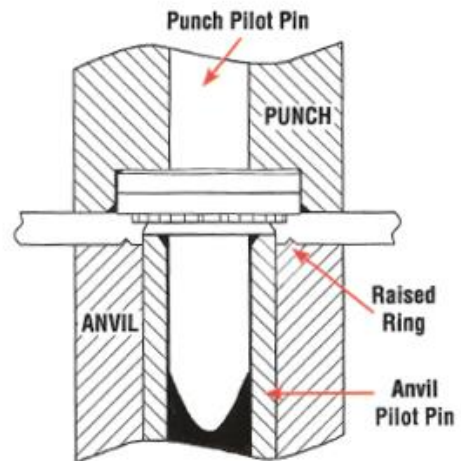
Pic.2

Known technology

There was a through hole on the sheet metal for the standoff pressing in. Two types of stacking process in traditional way. The first one is the standoff in the anvil and the punch from the top side to press the sheet metal. The second is sheet metal on the anvil. The standoff is Pre-locating on the pinch pilot pin. During the punch start to operation, the standoff is pressed into the sheet metal and there is another pilot pin from the anvil side for supporting the standoff during the process. The root of the standoff is lower than the sheet metal before the stacking process.



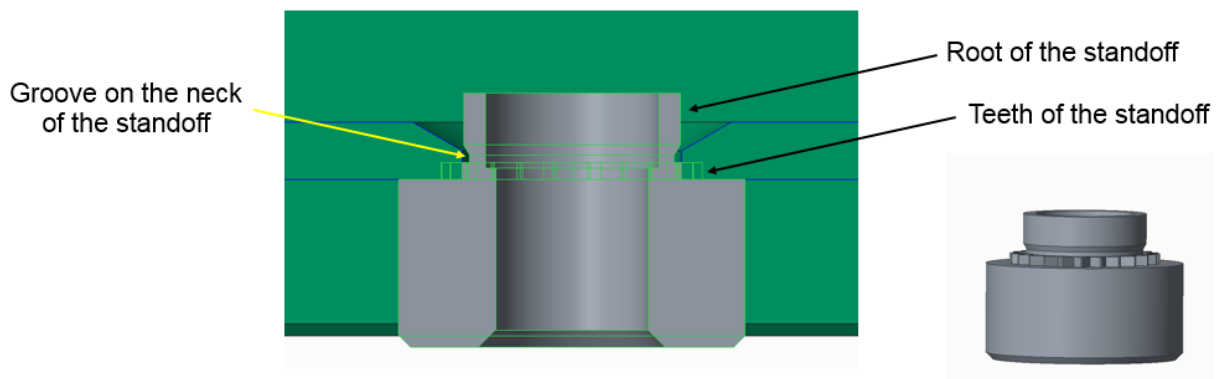
Type1



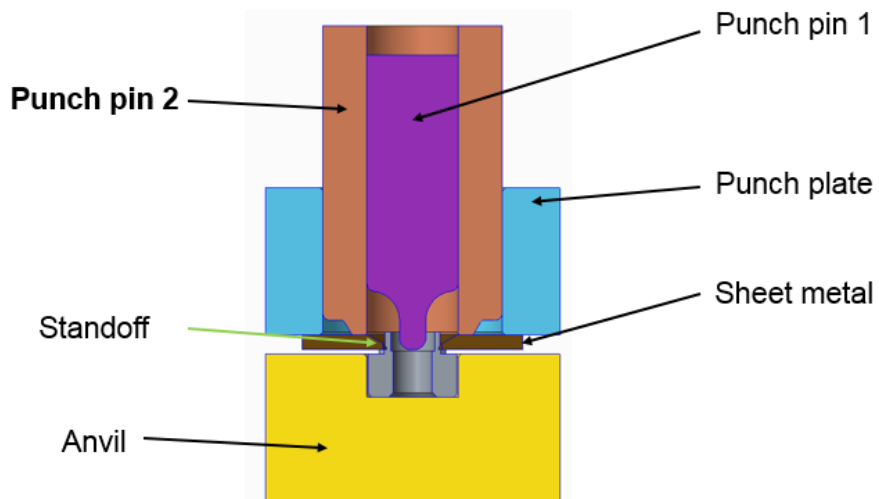
Type2

Innovation

1. The root of standoff is higher than the sheet metal
 - Provide more material could fill up the countersunk hole. This innovation could provide the good torque out force and prevent the standoff falling from the sheet metal.
2. Teeth on the standoff for the other side of the countersunk hole.
 - The teeth provide more combination area with the sheet metal. The torque out force is obviously higher than without the teeth in this side.
3. The groove on the neck of the standoff
 - The groove could fill up some sheet metal for better torque out force.



4. Punch pin 1
 - Press the root of the standoff to fill up the countersunk hole by its material.
5. Punch pin 2
 - Press the sheet metal material into the groove of the standoff.
6. Punch plate
 - Press the sheet metal into the teeth of the standoff.
7. Anvil
 - Provide the supporting force during the stacking procedure.



Disclosed by Justin Chen and Phoebus Lin, Hewlett Packard Enterprise