



Joint Design and Material Compatibility for Spin Welding

General Description

Spin welding is a technique for welding thermoplastic parts that utilizes a circular spinning motion, in conjunction with applied pressure, to weld two parts together. The part-to-part interface must be circular. One part is held stationary in a holding fixture as another part is rotated against it using applied pressure. Heat generated by the friction between the two parts causes the plastic interfaces to melt and fuse together producing a strong hermetic seal.

This bulletin should be used as a guideline to aid the designer during the initial concept stage of designing a product for spin welding. Any dimensions given in the designs should be used as *guidelines only*, since the specifics of your application may require a variation to the basic design.

Key Design Considerations

There are several factors necessary for successful spin welding, including a determination of the speed for part rotation, and appropriate pressure of the driver as the parts are spun together. Also, a good spin welding joint should have a weld area greater than a typical wall section of the part and must also provide sufficient part-to-part alignment.

It is necessary that parts to be spin welded have a circular axis (such as a sphere, cylinder, disc, or ring) and a drive feature to enable spinning of the upper section

(see Figures 1 and 2).

Primary Factors Influencing Joint Design

All of the following questions should be answered prior to the design stage to gain a total understanding of the weld joint requirements:

- What type of material(s) is to be welded?
- What is the overall part size and configuration?
- What are the final requirements of the part?
 - Is a structural bond desired and, if so, what load forces does it need to resist?
 - Is a hermetic seal required? If so, to what pressure?
 - Does the assembly require a visually attractive appearance?
 - Is flash or particulate objectionable inside and/or outside?
 - Any other requirements?

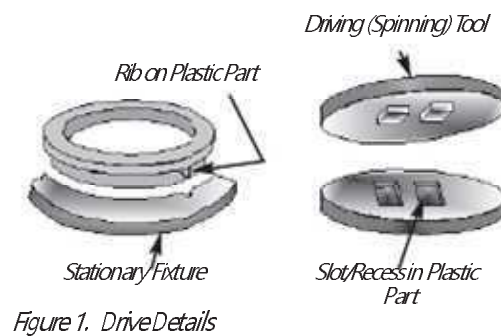


Figure 1. Drive Details

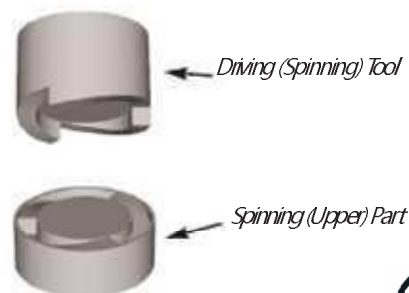


Figure 2. SelfAligning Drive Details for Automation

