

PK Welding Solution

Mechanical assembly technologies (e.g., threaded structures, machining) can be applied to PK product design; while in the production of unfilled PK, ultrasonic welding, hot plate welding, vibration welding, and spin welding techniques are typically employed.

1、Ultrasonic Welding

- PK has high energy dissipation, so near-field welding is generally recommended. Far-field welding can sometimes be used, but the joint strength is often lower.
- To concentrate energy, it is recommended to design bosses at the shear joint.

Typical Ultrasonic Welding Process Conditions:

Amplitude-to-horn ratio: 1 : 2

Welding pressure: 0.1 – 1.15 MPa

Welding time: 0.8 – 1 sec



2、Hot Plate Welding

- Conventional hot plate welding techniques are also suitable for PK;
- It is ideal to combine welding and injection molding at the joint;
- For offline welding, the product moisture content must be reduced below 0.1% through drying to avoid residual moisture affecting weld quality. Contamination of the hot plate can adversely impact weld strength, so thorough cleaning of the hot plate is essential before welding;
- Precise control of hot plate temperature is critical for optimal welding results.

Typical Hot Plate Welding Process Conditions:

Amplitude-to-horn ratio: 100–150 s

Welding pressure: 240–260 °C

Welding time: 0.03 MPa



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3、Vibration and Spin Welding

- PK can also be processed using vibration or spin welding techniques, but the welding results are generally inferior to those achieved with ultrasonic welding and hot plate welding.

Typical Vibration Welding Process Conditions:

Frequency: 200Hz

Welding time: 4 – 8s

Pressure: 2- 3.5 MPa

Amplitude: 1.7mm



4、IR Welding (Infrared Welding)

- Optimal welding results can be achieved through infrared welding of PK components.

Typical Laser Welding Process Conditions:

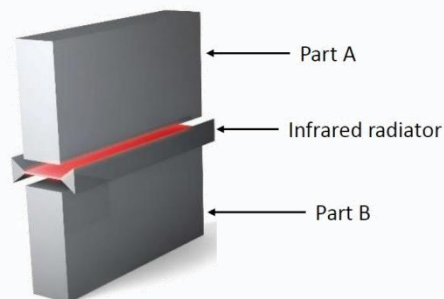
Cooling time: 40 s

Preheating distance: 18.5 mm

Preheating time: 20-30 s

Welding power: 700 W – short-wave

Pressure: 2-5 N/mm²



5、Laser Welding

- Optimal welding results can be achieved through laser welding of PK components.

Typical Laser Welding Process Conditions: :

Laser power: 150 W

Welding speed: 15,20 mm/s

Pressure: 7.5 bar

