

Application example

Sewing machine threader head

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SCREENING



Task

The threader head of a sewing machine consists of individual parts that are manufactured from various materials. The thread catches, manufactured from a precise stamped/bent part made of stainless steel, must be reliably fixed to the injection-moulded plastic basic element without play. For solidity reasons, the rivet heads must be fully formed, and burr formation from excessive plastic must be avoided as much as possible.

Solution

The ultrasonic welding process is used for the double head rivet joint. Both traditional rivet heads are simultaneously formed with a centre point using a double-contour sonotrode at a frequency of 35 kHz and high amplitude. A combined electro-mechanical holding-down device and differential scanning and rivet path limitation system is used for defined switching off of the ultrasonics.

Configuration advantages

Using ultrasonics, rivet joints can be created precisely and without play. After melting of the plastic, the ultrasonics are switched off in a defined way and the rivet heads solidify under continuing pressure from the sonotrode, which guarantees a firm and play-free connection. For even rivet head formation and precise quality, it is important that the vibrating sonotrode does not touch the metal part. This is ensured through a differential holding-down device, scanning and path-limitation system, which compensates for the thickness tolerances of the parts. In this way there is scarcely any metal contact and burr formation is minimised.



The application was created on a USP750 35kHz ultrasonic welding system with differential part scanning and rivet path limitation system.

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