Title (en)

Self-piercing riveting unit

Title (de)

Stanznieteinheit

Title (fr)

Unité de rivetage auto-poinçonnante

Publication

EP 1875976 B1 20090107 (DE)

Application

EP 07011429 A 20070612

Priority

DE 102006031465 A 20060707

Abstract (en)

[origin: EP1875976A1] The punching rivet unit for riveting of a steel piece of a body in white, comprises a rivet stamp (11) stroke-movably propelled in a rivet channel (10), a supply mechanism joined in the rivet channel for cyclic supply of a half hollow punching rivet (3), and a sensor arrangement (17, 18) for measuring the thrust force on the punching rivet and the stroke distance of the rivet stamp. Before riveting, the punching rivet is locked in the rivet channel in displaceably fixed manner. The punching rivet is plastically shaped in a part area with increased stroke distance of the rivet stamp. The punching rivet unit for riveting of a steel piece of a body in white, comprises a rivet stamp (11) stroke-movably propelled in a rivet channel (10), a supply mechanism joined in the rivet channel for cyclic supply of a half hollow punching rivet (3), and a sensor arrangement (17, 18) for measuring the thrust force on the punching rivet and the stroke distance of the rivet stamp. Before riveting, the punching rivet is locked in the rivet channel in displaceably fixed manner. The punching rivet is plastically shaped in a part area with increased stroke distance of the rivet stamp. The power/stroke-distance ratio is detected in the locked position of the punching rivet synchronously for the plastic deformation of the sensor arrangement. The sensor arrangement is downstream to a control mechanism (19, 20) releasing the punching rivet outside to a range of tolerance of the determined power/stroke-distance ratio as junk removals and within the range of tolerance for the bonding procedure. The rivet punch is tapered in the cross section at its front surface cooperating with the punching rivet, and has projections (15) pressed with the plastic deformation into the locked position of the punching rivet increasingly into the rivet material. The projection is formed as ball segment-, pyramid- or conical form.

IPC 8 full level

B21J 15/28 (2006.01); **B21J 15/02** (2006.01); **G01N 3/40** (2006.01)

CPC (source: EP)

B21J 15/025 (2013.01); **B21J 15/28** (2013.01); **B21J 15/285** (2013.01)

Cited by

CN103157749A; CN103196369A; CN106925713A; EP2749365A1; CN101907605A; CN104703722A; JP2015524356A; EP2606993A1; JP2013128964A; CN104502191A; CN105562578A; CN109047622A; CN117282909A; WO2014025608A1

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