BalTec
Auto compensation riveting parameter

Usable with: RN/RNE 151 | 181/R, 231/R 281/R | 331

Gültig ab: XY

- Auto compensation riveting parameters (S = path, T = time) in relation to rivet projection
- This function brings about a proportional heightening / diminution of the guide sizes S or T by a definable percentage deviation of the rivet projection
- This function makes rivet assemblies significantly less susceptible to matching errors. For the user, this means permitting greater dimensional tolerances and therefore more cost-effective riveting

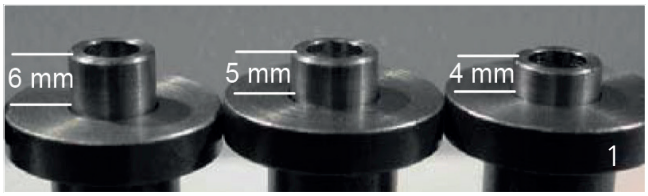
Example 1

Hollow rivet, 8 mm diameter with a nominal projection [U] of 5 mm is to be optimally riveted. The deformation path or rivet drift [S] is 3 mm.

The permissible rivet projection tolerance resulting from assembly component error is plus/minus 1 mm. The projection can thus lie within a spread of minimum 4 mm up to a maximum of 6 mm.

When riveting is done with a constant machine setting, the result with a nominal projection [U] of 5 mm and a constant deformation path [S] of 3 mm will be satisfactory.

The rivet with the slightest projection [U] of only 4 mm is destroyed under the same conditions.



Starting position

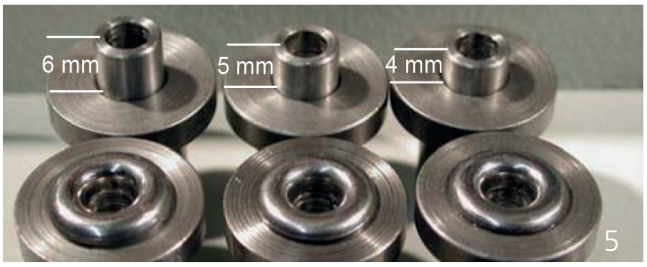
Rivet with nominal size – result: good

The same deformation path S has been riveted as in picture 2

By contrast, the rivet with the greatest projection [U] of 6 mm is not fully formed. The closing head is not properly seated, the fastening will not fulfill its function.

The same deformation path S has been riveted as in picture 2

Activated "auto compensation" function
If the deformation path [S] is adjusted in each case to 50% of the projection deviation, the result with rivets of a lesser or greater projection is significantly improved.

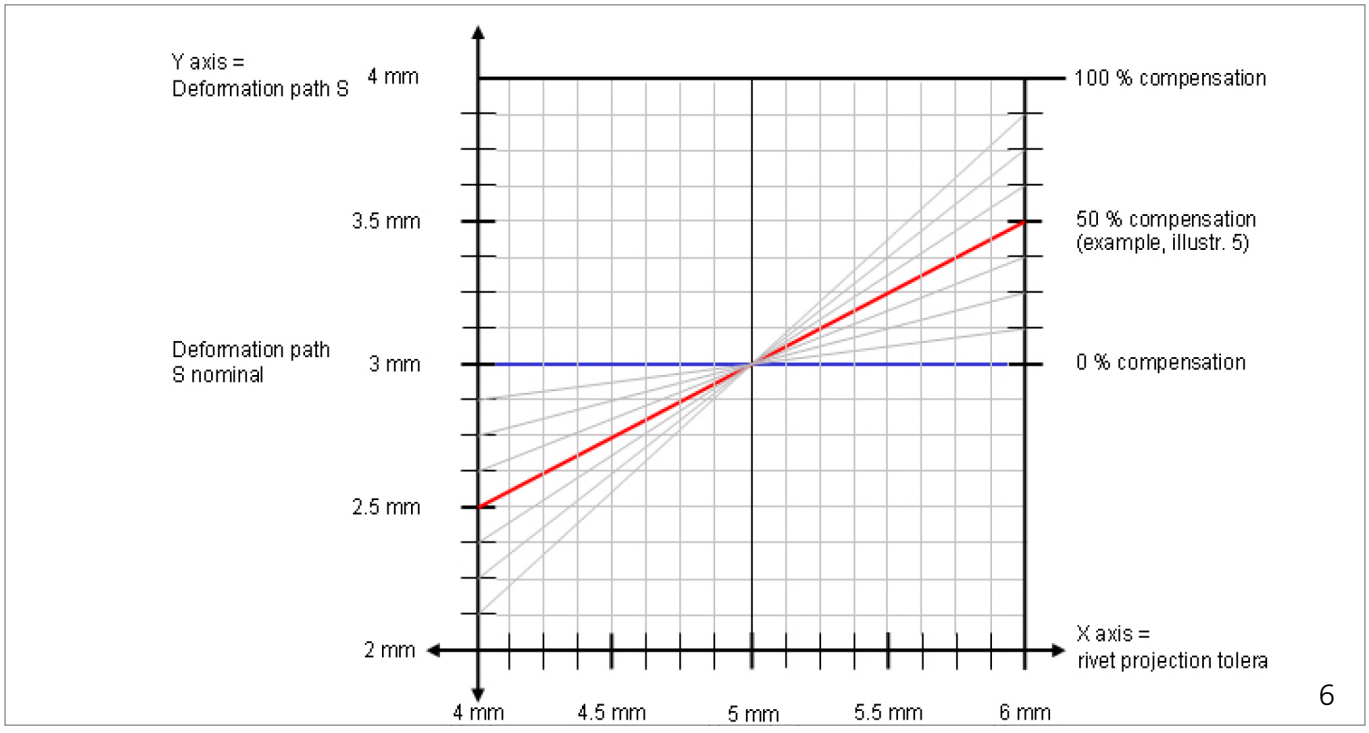


All three closing heads fulfill the highest demands for strength and optical finish

Derivation of the calculation
The rivet projection deviates by 1 mm from the nominal dimension. 50% compensation for this deviation is 0.5 mm. This dimension is added to (for a plus deviation) or subtracted from (for a negative deviation) the deformation path.

Compensation of 50% results for [U] in a further deformation path [S] of 2.5 mm. By contrast, for [U] max., the deformation path [S] is increased by 0.5 to 3.5 mm.

[U] nominal = 5 mm (mean tolerance in the example)
[U] min. = 4 mm
[U] max. = 6 mm
[S] nominal = 3 mm



Schematic

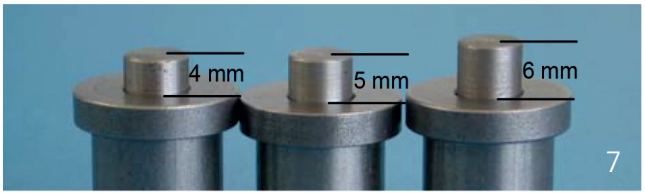
Example 2

Starting position: A rivet with a nominal protrusion of 5 mm is to be riveted to have a rivet closing head height of 2 mm. The limit values for the projection are set to 4 mm and 6 mm.

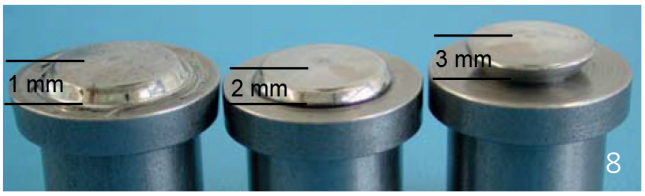
Without compensation: constant rivet path S results in a closing head height between 1 and 3 mm.

With **100% compensation**, a constant closing head is the result. The deformation path [S] thereby varies by the value of the projection deviation. Riveting machine and result behave as when riveting against a stroke limiting stop.

With **65% compensation**, the riveting closing head height improves between 1.65 and 2.35 mm. The closing head diameter, optical finish and strength characteristics remain virtually identical. With generally non-uniform closing heads, the dimensions remain within the tolerances.



Starting position: min., nominal and max. protrusion



Without compensation: The riveting in the center is nominal size and is OK. The riveting on the right is oversize – with constant deformation path, the riveting is not finished. The riveting on the left has too little protrusion – with constant deformation path, the edge of the peen works itself into the work piece and destroys it.

100% compensation: The riveting in the center is nominal size and is OK. The riveting on the right: closing head height is correct, but too much material. This is squeezed out from under the edge of the punch, creating unacceptable pressures on the workpiece. Left rivet: closing head height correct, but too little material for given head height. The rivet does not reach its functional strength.

65% compensation: the appearance from above gives a flawless impression for all three rivets. This is thus the best compromise.

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