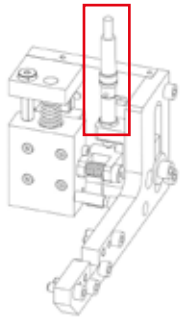
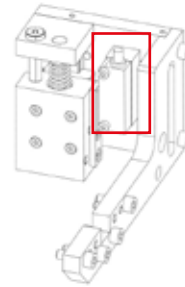


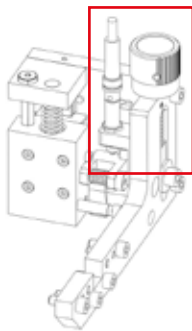
NHE – RIVET BASE DETECTION DEVICE



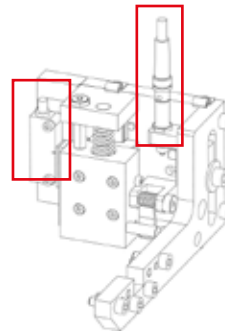
NHE-U
with Mycom switch



NHE-H
with measuring system



NHE-E
with Mycom switch and adjustment knob



NHE-C
with Mycom switch and measuring system

Mycom: Mechanical/electrical high-precision switch.
Version U with HPP-25.
Version E with RC-30 or also with PLC / 3rd party control.

Measuring system: Magnetic linear measuring system, integrated within NHE (Version H & C).
Only with HPP-25.

Function

The NHE recognizes the rivet protrusion (U), serves as a down holder, helps to compensate dimensional deviations and detects missing components prior to the forming operation. Because of the NHE in combination with HPP-25 (required for most operation modes), it is possible to produce a constant head height, independent from the workpiece height.

Controlling criteria (blue dimension) can be defined as for example final head height (H),

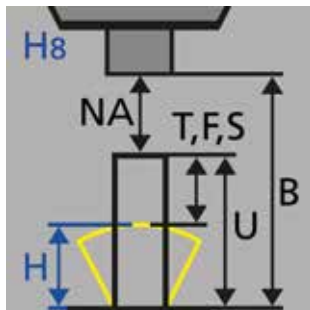
forming time (T) or formed rivet length (S), even by considerable variance of workpiece height. Additionally, with the NHE, the process can **monitor & inspect 100% of workpieces** via many different customer defined tolerances (black dimensions).

This 100% inspection eliminates the need for dimensional pre- or post inspection of workpieces, or additional inspection stations, which results in additional cost savings.

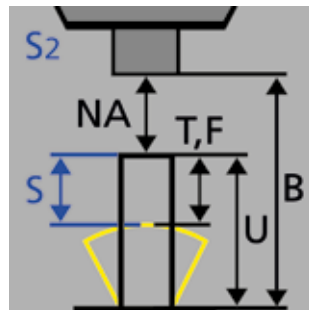
NHE-U

The NHE references on the workpiece. The HPP-25 determines via NHE the rivet protrusion prior to forming. In case the value is outside the tolerance, the forming cycle will be aborted. Additionally, various monitoring criteria can be defined, per the examples below. Typical application: Varying workpiece height. Monitored criteria are calculated based on the machine's measuring system.

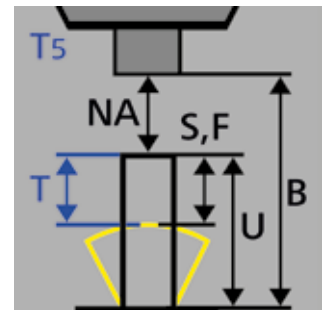
- Monitoring rivet protrusion U
- Controlling criteria: H, S, T or N
- Measuring system (only compatible with BalTec HPP-25 Process Control)
- Possible Modes: H8, S2, T5, N1, 2, 3, 4
- Limitation: Accuracy. Flexing of machine cannot be compensated for.



H8 – H controlled after detection of NA.
NA, B, U, T, F & S monitored.
NHE-U necessary for rivet protrusion measurement.



S2 – S controlled after detection of NA.
NA, B, U, T & F monitored.

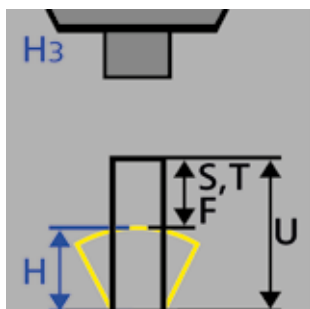


T5 – T controlled after detection of NA.
NA, B, U, T & F monitored.

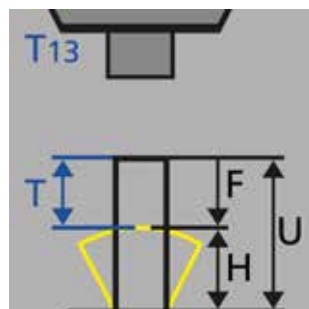
NHE-H

The NHE measuring system references on the workpiece. The rivet protrusion is calculated. Definable control and monitoring criteria are listed below. Typical application: Precision final head height, independent from flexing of machine.

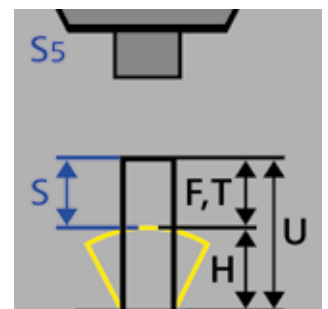
- Measuring system (only compatible with BalTec HPP-25 Process Control)
- Control criteria: H (final head height)
- Possible modes: H2, 3, 5, 7, S5, T13



H3 – H controlled.
U, S, T & F monitored.



T13 – controlled after detection of NA with NHE.
U, H & F monitored.

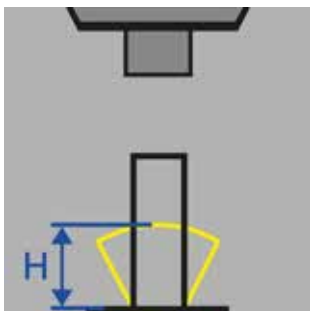


S5 – S controlled after detection of NA.
U, F, T & H monitored.

NHE-E

The NHE references on the workpiece. The desired final rivet head height is adjusted for via adjustment knob. As a result, the NHE allows forming of a constant rivet head height, regardless of workpiece height. Typical application: In combination with RC-30 or 3rd party control.

- Modes with control criteria E (total rivet spindle stroke)
Mycom, with adjustable knob to adjust the trigger point
- Control criteria: N, T
– Possible Modes: N1, 2, 3, 4, T14



Controlled from TDC or until contact with NHE.
No additional criteria monitored.

NHE-C

Universal NHE. Combination device – includes Mycom and Measuring System. Reference description above; NHE-U and NHE-H.

Technical data

| | |
|--|-------------------------------|
| NHE-X standard, force in arm: | up to approx. 40 N |
| NHE stroke: | 16 mm |
| NHE-X big – large version, force in arm: | up to approx. 300 N |
| NHE big stroke: | 35 mm |
| Linear measuring system, resolution: | 0.005 mm (NHE standard & big) |
| Stroke measurement-connection to HPP-25: | X13 |
| Mycom connection to HPP-25: | X14 |