Alcoa Fastening Systems

ALCOA

The Huck SureSet™ Process Control System

A computer-based Powerig® and tool system to ensure that all of your fastener installations are correct.

HUCK®

What the SureSet system does

Many structures rely on safety critical applications.
In these applications incorrect fastener installation is not an option.

Huck has developed the new SureSet system to check the integrity of every fastener installed during the installation process. Sensors built into a high quality Huck Powerig measure the load and piston movement (converted from hydraulic fluid pressure and flow respectively) during the installation. The data processing unit (DPU) uses this information to detect whether the fastener has been installed correctly.

A graphical display of every fastener installation is shown on a built-in screen which indicates any malfunctions during the installation process. This is used to ensure that no incorrect installations leave your production unnoticed, giving you peace of mind and contributing to the quality of your product.

Benefits

- **Precise, reliable measurement and visual confirmation of every installation.**
- **System can be configured to enable use of audible alarm and system lockout features, should incorrect installations be indicated.**
- All measuring components are integrated in the SureSet Powerig so you can use any standard Huck hydraulic tools without modifications.
- There is no need for time-consuming calibrations each time a tool is changed.
- The system can be programmed to be used with up to 32 different Huck fasteners at any one time. These programmes are quick and easy to select.
- Each programme can be user defined to ensure maximum control over the installation process.

How the SureSet system works

The SureSet Powerig incorporates a pressure transducer (deviation less than 0.25%), to measure the hydraulic pull pressure and a flow meter (repeatability near 0% error) in the hydraulic return line.

Data from the sensors is converted and displayed on the graph as piston movement in centimetres on the "X" axis and kN on the "Y" axis.

Up to ten adjustable windows on the graph can be used to detect correct or incorrect relationships between load and movement during the fastener installation process.

The user can easily define the values allowing for adaptability to different applications - the SureSet system can therefore be adapted to meet a variety of process control applications.

The system is designed to detect errors including the following:

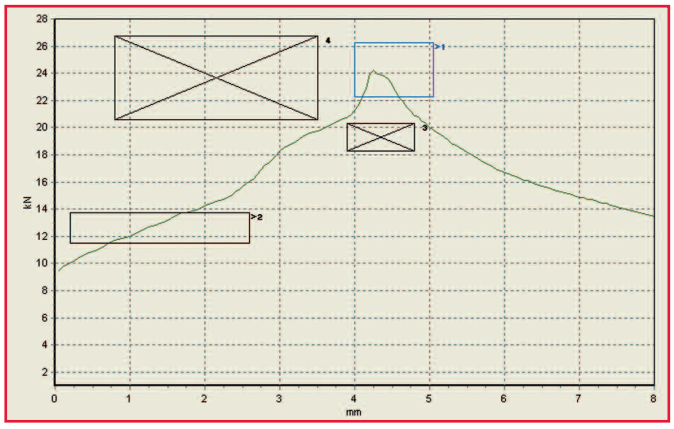
- Collar wrong way round
- No collar
- Out of grip
- Two collars on pin
- Pinbreak out of specification
- Wrong collar (soft)
- Wrong product type
- Wear / failure on critical tooling and nose assembly components
- Material missing

- System can be used to install both blind and two piece fasteners with diameter 4.8mm to 35mm.
- Automatic tool reset after each installation to reduce total process time.
- A graphical and statistical error analysis is possible to assess the performance of each installation and the overall process.
- 32 programmes with up to 10 evaluation windows. Quick changing between programmes keeps set-up time to a minimum.
- Data from the DPU can be used to trigger external actions, programmable by the user.
- Multilingual software enables use in many countries.
- Data transfer possible through Profi Bus, enables communications with other process control systems.
- Security of programmes by use of PIN codes prevents unauthorised access.
- High hydraulic flow allows installations in less than one second.
- Robust and durable hydraulic unit, sensors and electronic components reduce service costs.

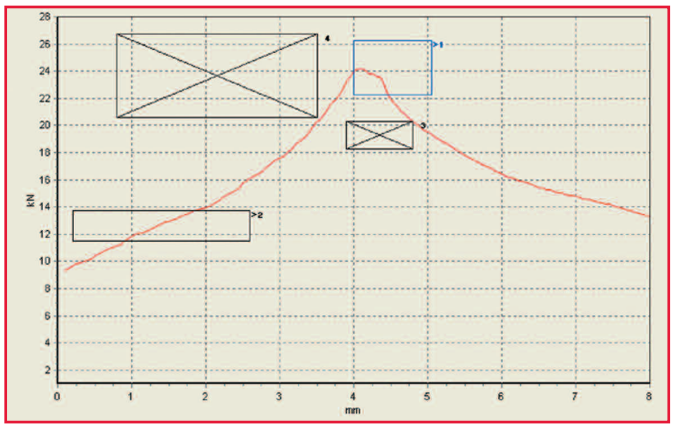
The windows shown on the graphs below are based on data input by the user. The user can specify the entry and exit point for each window. If the curve enters and leaves each window through the specified points then the installation has been successful and the line is drawn in green (graph A).

If the lines do not pass through the window as specified then the fastener installation is incorrect and the line will be drawn in red (graph B).

A) Correctly installed fastener: curve is correct



B) Incorrectly installed fastener: curve is incorrect



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