Riveting process monitoring
- The central and unique function of the HPP-25 process controller is exact rivet recognition. This function recognizes the start of the rivet without the need for pressure or speed reduction during the riveting process – pure savings in real economy.

- The process controller employs 6 different control parameters (6 riveting modes) depending on requirements.

The 6 available control parameters
- riveting ends when the following conditions are achieved:
  - Distance and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
  - Distance and time are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
  - Time and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.

Special riveting mode functions
- Manual force trigger for rivet start recognition
- Exact rivet recognition via external signal (e.g. laser)
- Shape factor for correcting head shape or machine frame warping
- Auto-compensation

Operator-friendly HMI – the complete view of the riveting process – nothing escapes the attention of the operator
The operating functions
- Operated via 5.7” color touchscreen
- 63 riveting programs can be addressed
- Displays target and actual values
- 40 MSB event counters
- 2 preset batch counters
- Categorized data logger for recording process data
- Riveting data can be visualized as curves
- Integrated diagnostic assistance for sensors and input/output
- Backup options for logger data, riveting curves and alarm history
- Upload/download of parameters and riveting programs
- Touchscreen operation
- Windows diagnostics software
Riveting process monitoring

- The central and unique function of the HPP-25 process controller is exact rivet recognition. This function recognizes the start of the rivet without the need for pressure or speed reduction during the riveting process – prior sensing is not necessary.
- The process controller employs 6 different control parameters (39 riveting modes) depending on requirements.

The 6 available control parameters

- Riveting process monitoring
- 6 different control parameters
- Touchscreen operation
- Windows diagnostics software

Special riveting mode functions
- Manual force trigger for rivet start recognition
- Rivet start recognition via external signal (e.g. laser)
- Shape factor for correcting head shape or machine frame warping
- Auto-compensation

The operating functions

- Operated via 5.7” color touchscreen
- Displays target and actual values
- On-Off switch controls
- 2 pointer/catch counters
- Integrated data logger for recording process data
- Riveting data can be evaluated as curves
- Integrated diagnostic assistance for sensors and input/output
- Backup options for logger data, riveting curves and alarm history
- Upload/download of parameters and riveting programs

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Riveting process monitoring
- The central and unique function of the HPP-25 process controller is exact rivet recognition. This function recognizes the start of the rivet without the need for pressure or speed reduction during the riveting process – great savings in refill necessary.
- The process controller employs 6 different control parameters (39 riveting modes) depending on requirements.

The 6 available control parameters
Riveting ends when the following conditions are achieved:

- Time and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
- Distance and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
- Distance and time are recorded as quality control parameters for every riveting process and compared to the specified tolerance.

Special riveting mode functions
- Manual force trigger for rivet start recognition
- Manual start recognition via external signal (e.g. sensor)
- Shape factor for correcting head shape or machine frame warping
- Auto-compensation

The operating functions
- Operating via 5.7” color touchscreen
- 63 riveting programs can be addressed
- Displays target and actual values
- 5.7” color touchscreen
- 2 preset batch counters
- Integrated data logger for recording process data
- Riveting data can be evaluated as curves
- Integrated diagnostic assistance for sensors and input/output
- Backup options for logger data, riveting curves and alarm history
- Upload/download of parameters and riveting programs

Operator-friendly HMI – the complete view of the riveting process – nothing escapes the attention of the operator

The 6 available control parameters
Riveting ends when the following conditions are achieved:

- Time and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
- Distance and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
- Distance and time are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
Riveting Projection Measurement – NHE

With the NHE, depending on the equipment, the presence and position of the parts as well as the riveting projection can be verified. This prevents assemblies with tolerance errors or missing components from being processed. The HPP-25 hence takes charge of the testing before or after the riveting allowing for cost savings by not requiring additional measuring stations.

Versions of NHE:

NHE-U:
- with My-Com switch – for riveting mode with projection measurement U, control parameter S or T

NHE-H:
- with magnetic field, for riveting mode with control parameter H (closing head height)

NHE-E:
- with My-Com switch and spindle, for example for riveting mode with control parameter N (riveting spindle path from OT till riveting end)

Machine in home position

Touch probe on work piece – measuring sensor NHE retracted

End of riveting (rivet formed)

Additional functions of the NHE which can be realized with the HPP-25:

▪▪ Auto-compensation of rivets with large length tolerances
▪▪ Riveting of rivet head height when different work piece-heights exist
▪▪ Controlling of rapid speed/working speed depending on base of rivet
▪▪ Rivet up without fixed stop

S2 mode

NHE-Combi:
- combination of NHE-U and NHE-H

NHE-Big:
- For larger riveting applications, where higher forces of the pressure pads are necessary (possible for RN/RNE 331 and 481).

Technical specifications

Design: sheet metal design with die cast front and rear panels
Degree of protection: IP53
Cable entry: all connections with plugs
Power supply: three-phase 50/60 Hz
L1, L2, L3 and PE plugs, all poles can be switched off with lockable main switch
Possible supply voltages: 1x 100 – 120 VAC, 1x 160 – 190 VAC, 3x 160 – 190 VAC, 1x 200 – 240 VAC, 3x 200 – 240 VAC, 3x 320 – 380 VAC, 3x 380 – 500 VAC, 3x 500 – 600 VAC
Internal supply voltage: 24 VDC ± 2%, 4 A, can be utilized for customer-side loads
Control outputs: 24 VDC, npn, (+switching), max. each 0.3 A
Valve outputs: 24 VDC, npn, (+switching), max. each 0.3 A
Control inputs, initiators: 24 VDC, npn, (+switched), 6 mA
Control inputs, general: 24 VDC, npn, (+switched), 10 mA
Floating inputs: 24 VDC, min. 10 mA, max. 1 A (immediate stop, release, safety circuit)
Interfaces: USB and Ethernet (UDP protocol)
Processor: ARM 9
Operating system: Windows CE
Display: 5.7” color touchscreen, LED backlight
Operating temperature: 0 °C to + 50 °C
Bearing temperature: –10 °C to + 70 °C
Weight: 12 kg / 26.4 LBS
Subject to technical changes (dimensions in mm)
Riveting Projection Measurement – NHE

With the NHE, depending on the equipment, the presence and position of the parts as well as the riveting projection can be verified. This prevents assemblies with tolerance errors or missing components from being processed. The HPP-25 hence takes charge of the testing before or after the riveting allowing for cost savings by not requiring additional measuring stations.

**Versions of NHE:**
- **NHE-U:** with My-Com switch – for riveting mode with projection measurement U, control parameter S or T
- **NHE-H:** with magnetic field, for riveting mode with control parameter H (closing head height)
- **NHE-E:** with My-Com switch and spindle, for example for riveting mode with control parameter N (riveting spindle path from OT till riveting end)

**Additional functions of the NHE which can be realized with the HPP-25:**
- Auto-compensation of rivets with large length tolerances
- Riveting of rivet head height when different work piece-heights exist
- Controlling of rapid speed/working speed depending on base of rivet
- Rivet up without fixed stop

**NHE-Combi:** combination of NHE-U and NHE-H

**NHE-Big:**
For larger riveting applications, where higher forces of the pressure pads are necessary (possible for RN/RNE 331 and 481).

**Process-Controller HPP-25**

**Interfaces**
- **Front panel**
  - USB interface for:
    - Saving parameters, riveting programs, logger data, riveting curves, alarm history
    - Loading parameters, riveting programs
- **Rear panel**
  - Sockets for power supply, motors, valves, sensors/actuators
  - Sockets for digital inputs/outputs to PLC
- **Connecting to HPP-25 PC tool**
- **Connecting to operating data logger via UDP protocol**

**HPP-25 PC Tool**
PC software with backup, diagnostics and logger functions. Connection via Ethernet interface or importing saved HPP-25 data.

**Functions**
- Online diagnosis of sensors, inputs/outputs
- Control via touch panel or PLC
- Display HPP-25 parameter and alarm history files
- Online analysis for functions in readable and graphical form
- Online riveting curve visualization with saving option

**Technical specifications**
- **Design:** sheet metal design with die cast front and rear panels
- **Degree of protection:** IP53
- **Cable entry:** all connections with plugs
- **Power supply:**
  - Three-phase 50/60 Hz
  - Possible supply voltages:
    - 1x 100 – 120 VAC
    - 1x 160 – 190 VAC
    - 3x 160 – 190 VAC
    - 1x 200 – 240 VAC
    - 3x 200 – 240 VAC
    - 3x 320 – 380 VAC
    - 3x 380 – 500 VAC
    - 3x 500 – 600 VAC
- **Internal supply voltage:** 24 VDC ± 2%, 4 A, can be utilized for customer-side loads
- **Control outputs:** 24 VDC, pnp, (+switching), max. each 0.3 A
- **Valve outputs:** 24 VDC, pnp, (+switching), max. each 0.3 A
- **Control inputs, initiators:** 24 VDC, pnp, (+switched), 6 mA
- **Control inputs, general:** 24 VDC, pnp, (+switched), 10 mA
- **Floating inputs:** 24 VDC, min. 10 mA, max. 1 A (immediate stop, release, safety circuit)
- **Interfaces:** USB and Ethernet (UDP protocol)
- **Processor:** ARM 9
- **Operating system:** Windows CE
- **Display:** 5.7” color touchscreen, LED backlight
- **Operating temperature:** 0 °C to + 50 °C
- **Bearing temperature:** –10 °C to + 70 °C
- **Weight:** 12 kg / 26.4 LBS
- **Dimension drawing**
Riveting Projection Measurement – NHE,
Riveting Stroke Limit Switch Unit

With the help of the HPP-25, the presence and position of the parts as well as the riveting projection can be verified. This prevents assemblies with tolerance errors or missing components from being processed. The HPP-25 thus takes charge of the testing before or after the riveting allowing for cost savings by not requiring additional measuring stations.

Versions of NHE:

- **NHE-U**: with My-Com switch – for riveting mode with projection measurement U, control parameter S or T
- **NHE-H**: with magnetic field, for riveting mode with control parameter H (closing head height)
- **NHE-E**: with My-Com switch and spindle, for example for riveting mode with control parameter N (riveting spindle path from OT till riveting end)

Additional functions of the NHE which can be realized with the HPP-25:

- Auto-compensation of rivets with large length tolerances
- Riveting of rivet head height when different work piece-heights exist
- Controlling of rapid speed/working speed depending on base of rivet
- Rivet up without fixed stop

**NHE-Combi**: combination of NHE-U and NHE-H

**NHE-Big**: for larger riveting applications, where higher forces of the pressure pads are necessary (possible for RN/RNE 331 and 481).

**Interfaces**

**Front panel**
- USB interface for:
  - Saving parameters, riveting programs, logger data, operating curves, alarm history
  - Loading parameters, riveting programs

**Rear panel**
- Sockets for power supply, motors, valves, sensors/actuators
- Sockets for digital inputs/outputs to PLC
- Connecting to HPP-25 PC tool
- Connecting to operating data logger via UDP protocol

**HPP-25 PC Tool**
- PC software with backup, diagnostics and logger functions.
- Connection via Ethernet interface or importing saved HPP-25 data.

**Functions**
- Online diagnosis of sensors, inputs/outputs
- Sockets for output parameters and operating programs
- Display HPP-25 parameter and alarm history files
- Ethernet interface for functions including readable and graphical
- Online riveting curve visualization with saving option

Riveting machine

S-mode setup S-mode correction S-mode cycle Diagnostics Info Setup

**Logger Riveting curves**

**Technical specifications**

- **Design**: sheet metal design with die cast front and rear panels
- **Degree of protection**: IP53
- **Cable entry**: all connections with plugs
- **Power supply**: three-phase 50/60 Hz
  - L1, L2, L3 and PE plugs, all poles can be switched off with lockable main switch
  - Possible supply voltages: 1x 100 – 120 VAC
    - 1x 160 – 190 VAC
    - 3x 160 – 190 VAC
    - 1x 200 – 240 VAC
    - 3x 200 – 240 VAC
    - 3x 320 – 380 VAC
    - 3x 380 – 500 VAC
    - 3x 500 – 600 VAC
  - Internal supply voltage: 24 VDC ± 2%, 4 A, can be utilized for customer-side loads
- **Control outputs**: 24 VDC, pnp, (+switching), max. each 0.3 A
- **Valve outputs**: 24 VDC, pnp, (+switching), max. each 0.3 A
- **Control inputs, initiators**: 24 VDC, pnp, (+switched), 6 mA
- **Control inputs, general**: 24 VDC, pnp, (+switched), 10 mA
- **Floating inputs**: 24 VDC, min. 10 mA, max. 1 A (immediate stop, release, safety circuit)
- **Interfaces**: USB and Ethernet (UDP protocol)
- **Processor**: ARM 9
- **Operating system**: Windows CE
- **Display**: 5.7” color touchscreen, LED backlight
- **Operating temperature**: 0 °C to +50 °C
- **Bearing temperature**: –10 °C to +70 °C
- **Weight**: 12 kg / 26.4 LBS
- **Dimension drawing**

Subject to technical changes (dimensions in mm)
Riveting Projection Measurement – NHE

With the NHE, depending on the equipment, the presence and position of the parts as well as the riveting projection can be verified. This prevents assemblies with tolerance errors or missing components from being processed. The HPP-25 hence takes charge of the testing before or after the riveting allowing for cost savings by not requiring additional measuring stations.

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- **NHE-E:** with My-Com switch and spindle, for example for riveting mode with control parameter N (riveting spindle path from OT till riveting end)

Additional functions of the NHE which can be realized with the HPP-25:

- ▪ Auto-compensation of rivets with large length tolerances
- ▪ Riveting of rivet head height when different workpiece heights exist
- ▪ Controlling of rapid speed/working speed depending on base of rivet
- ▪ Rivet up without fixed stop

**S2 mode**

**NHE-Combi:** combination of NHE-U and NHE-H

**NHE-Big:** For larger riveting applications, where higher forces of the pressure pads are necessary (possible for RN/RNE 331 and 481).

Technical specifications

- **Design:** sheet metal design with die cast front and rear panels
- **Degree of protection:** IP53
- **Cable entry:** all connections with plugs
- **Power supply:**
  - Single-phase 230 VAC: 100 – 120 VAC, 160 – 190 VAC, 200 – 240 VAC, 3x 200 – 240 VAC, 3x 320 – 380 VAC, 3x 380 – 500 VAC, 3x 500 – 600 VAC
  - Internal supply voltage: 24 VDC ± 2%, 4 A
  - Control outputs: 24 VDC, pnp, max. 1 A per output
  - Valve outputs: 24 VDC, pnp, max. 1 A per output
  - Control inputs, initiators: 24 VDC, pnp, max. 2 A per input
  - Control inputs, general: 24 VDC, pnp, max. 2 A per input
  - Floating inputs: 24 VDC, min. 10 mA, max. 1 A

- **Interfaces:**
  - Front panel: Violight for: saving parameters, riveting programs, alarm messages.
  - Rear panel: Sockets for power supply, motors, valves, sensors/actuators
  - Front panel: Sockets for digital inputs/outputs to PLC

- **Process-Controller HPP-25**

  - **Front panel:**
    - USB interface for:
      - Saving parameters, riveting programs, logger data, riveting curves, alarm history
      - Loading parameters, riveting programs

  - **Rear panel:**
    - Sockets for power supply, motors, valves, sensors/actuators
    - Sockets for digital inputs/outputs to PLC

  - **HPP-25 PC Tool**

    - PC software with backup, diagnostics and logger functions.
    - Connection via Ethernet interface or importing saved HPP-25 data.

    - Functions:
      - ▪ Online diagnosis of sensors, inputs/outputs
      - ▪ Up/download of parameters and riveting programs
      - ▪ Displays HPP-25 parameter and alarm history files

  - **Riveting machine**

    - **S-mode setup**
    - **S-mode correction**
    - **S-mode cycle**
    - **Diagnostics**
    - **Info Setup**
    - **Logger**
    - **Riveting curves**
Riveting process monitoring
- The central and unique function of the HPP-25 process controller is exact rivet recognition. This function recognises the start of the rivet without the need for pressure or speed reduction during the riveting process – prior sensing is not necessary.

- The process controller employs 6 different control parameters (39 riveting modes) depending on requirements.

The 6 available control parameters:
- Riveting ends when the following conditions are achieved:

  - Time and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
  - Distance and force are recorded as quality control parameters for every riveting process and compared to the specified tolerance.
  - Distance and time are recorded as quality control parameters for every riveting process and compared to the specified tolerance.

Special riveting mode functions
- Manual force trigger for rivet start recognition
- Rivet start recognition via external signal (e.g. laser)
- Shape factor for correcting head shape or machine frame warping
- Auto-compensation

Operator-friendly HMI – the complete view of the riveting process – nothing escapes the attention of the operator

The operating functions:
- Displayed via 5.7" color touchscreen
- 63 riveting programs can be addressed
- Displays target and actual values
- 5 adjustable counters
- Integrated data logger for recording process data
- Riveting data can be visualised as curves
- Integrated diagnostic assistance for sensors and input/output
- Backup options for logger data, riveting curves and alarm history
- Upload/download of parameters and riveting programs

Touchscreen operation
- Window diagnostics software

Process-Controller HPP-25

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