Unity platform

Increased efficiency and functionality for joining with your Henrob self-pierce riveting systems
# Unity

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Unity platform

With Atlas Copco equipment and rivets, the self-pierce riveting (SPR) process combines high joint integrity with rapid assembly time for advanced and lightweight materials.

Unity is the improved Henrob product line that ensures reliable and flexible production, fulfilling high quality demands while reducing cycle times and maintenance.

Compatible with Industry 4.0 and data-driven services, Unity enables an integrated SPR system that can be relied on, both today and for the future.

- **Improved efficiency**
  - Repeatable high productivity and quality while improving rivet cycle time

- **Enhanced user experience**
  - Superior design and accessibility of system components for easy and quick usability & serviceability

- **Reduced total cost of ownership**
  - Error elimination and reduced downtimes combined with energy efficiency improves the bottom line

Your globalized self-pierce riveting solution
Ideal flexibility for global platform commonizing strategies across vehicle lines

Advanced rivet design for joining new materials with increased strength and lighter weight

Factory data collection and analysis to improve productivity, quality and reduce costs

Full adoption of Atlas Copco branding for physical equipment and software interfaces

Magazine with 30% faster cycle time and lower, cost-saving air requirements

New setter reduces life cycle costs by 35%, doubling the life between major cycles

Controller HMI with multiple languages including Asian for global continuity

Scalable data architecture for flexibility in all manufacturing environments
Unity platform system arrangements
Automated tape feed systems

Robot-mounted tape feed

Control panel

Die changer

Tape feed rivet setting system on robot

Robot-mounted tape feed with die changer
Unity platform system arrangements
Automated feed systems

Pedestal-mounted tape feed

Tape feed rivet setting system on pedestal

Poka-yoke rivet feeders

T-tube

Rivet shuttle

Direct blow feed rivet setting system on pedestal

Pedestal-mounted dual direct blow feed
Unity platform system arrangements
Automated magazine feed systems

Single magazine

Rivet feeder with RLC
Rivet fill stand
Single magazine rivet setting system on robot

Poka-yoke rivet feeders
Die check camera
Tool changer
Dual magazine rivet setting system on robot
Die changer

Dual magazine with tool changer and die changer
Rivet setting system modules
Tool layout and modules

**Magazine assembly**
- Dual tracks: 30 rivets per track = 60 rivets per magazine
- Suitable for full range of typical automotive rivets
- Reduced compressed air supply needs of only 4 bar (60 psi)

**Mounting bracket**
- Safe loading
- Adaptors for all major robot manufacturers
- Can be mounted at rear, top, front, or angled
- Standard pedestal pattern

**C-frame**
- Designed to accept the loads of the setter
- No orientation limits
- Standard library tools available as well as custom designed products

**Feeder assembly**
- Stores the rivet just before it is inserted
- Quick change out reduces production line downtime during maintenance
- Probes and sensors detect rivet presence and correct positioning

**Die post**
- Houses the upsetting die
- Modular design for lengths required
- L-shaped and rocket-shaped posts according to system needs

**G1.6 servo setter**
- Doubles the life between major services (4 million cycles)
- Higher productivity energy-based systems mean more rivets per cycle time
- Setting force up to 85kN
Rivet feeding:
Tape feed systems

Reliable, robust, and cost-effective

Tape feed delivery of rivets is a fast, low maintenance, and cost-effective option of rivet supply.

Rivets are supplied in plastic tape on spools that is fed though the nose of the tool using a pneumatically driven sprocket wheel. An internal sensor detects when the rivet is correctly positioned for insertion. Consistent feed is assured with an anti-pull back assembly that prevents movement of the rivets at the riveting position. An end-of-tape sensor gives early warning of an empty spool to allow for quick and immediate spool changes.

A single spool can hold up to 10,000 rivets and the riveting assembly can be mounted on a stationary pedestal or a robot.

Mechanical poka-yoke versions of the spool assembly are available to error-proof loading.
Rivet feeding: Loose feed systems

Robot and pedestal mounted direct blow and magazine feed systems

Rivets are supplied loose in bags or in pok-a-yoke bottles and are fed into the rivet setter down a T-tube from the bulk rivet feeder using compressed air. This avoids having to manage waste tape in high volume automated applications as well as the downtime from replenishing rivets.

Magazine feed systems offer quick continuous operation with up to two different rivet types. Each magazine has two tracks that can hold 30 rivets each, for a total of 60 rivets per load. This flexibility allows for the most efficient use of floor space and cycle times.
Bulk rivet feeder with rivet length checker

The standard rivet feeder includes a rivet length checker (RLC). In the unlikely event that the wrong rivet is loaded, the RLC detects and disposes of the wrong rivet before it reaches the setter.

Capacity of up to 10,000 rivets

Loose feed bulk feeders

Poka-yoke bulk rivet feeder

This configuration includes a bowl, hopper, and a RFID tagged poka-yoke bottle, which provides error-proofing and continuous production.

Capacity of up to 80,000 rivets

Scan here for a brief animation on PY feeder
Loose rivet feed equipment

Rivet fill stands

The rivet fill stand facilitates the transfer of rivets from the bulk feeder to the magazine assembly mounted on the riveting system. It is comprised of the rivet fill support stand, bolted to the floor, and the rivet fill docking station, which allows the rivets to pass through.

Rivets are blown with compressed air from the T-tube, through the rivet fill stand into the magazine assembly. Two different rivets of the same nominal diameter can be blown through the assembly.

Rivet shuttles

Rivet shuttle plates allow two different rivet types of the same diameter to be fed to a pedestal mounted riveting system.

In this 2-to-1 option, two bulk feeders supply rivets when requested. A gate is actuated by a pneumatic cylinder allowing the selected rivet to be fed into the system.
Control panel with Unity Data Point

The control panel is the electronic interface between customer robots or production cell controller. It also communicates with other ancillary devices as well as providing the signal to control the rivet insertion process.

Designed for all standard system layouts and multi-communication protocols, the Unity control panel reduces complexity and offers a solution that fits a complete production line.

The improved HMI with multi-language, including Asian languages, enhances the global usability. Its touch screen allows operators to review diagnostics and data.

Energy retrieving

The panel can be fitted with a capacitive module that recovers electrical energy during the riveting cycle. This offers a reduction of 25% in electrical consumption during the riveting cycle.

Depending on the application, electrical consumption can decrease from 0.85Wh per rivet to .68Wh with this feature.

Input power
- 380-480 VAC
- 50/60Hz
- 13A

Comm
- DeviceNet control signals
- 24VDC supply
- Ethernet IP / Profinet
Ancillaries

Die changer

The automatic die changer has been developed to allow a rivet setting system to change to an alternative to improve the riveting process.

The 1-for-7 system has a rotating carousel with capacity for 7 different dies and up to 5 spare dies per each type. A 1-for-1 version is available to give a low-investment, process change opportunity.

Best-in-class changing time of less than 5 seconds

Die check camera

The Die check camera reliably and automatically detects broken dies to insure your riveting assembly continues producing quality joints. The image sensor takes a snapshot of the upsetting die currently in use and compares its integrity to a previously taught good condition.

Used between cycles, this 0.5 second check gives you assurance the die will be secure the next time you use the setting equipment.

Compatible with the latest Unity platform as well as most previous platforms, it allows flexibility and forward functionality of your current and future SPR systems.
Ancillaries
Pok-a-yoke dies

Prevents an incorrect die being fitted to the rivet setting system

3-digit code on sleeve and die

Sleeve with a unique key configuration is bonded into C-frame / die post. Corresponding keyway machined into the correct die shank

Tool changer

Increases flexibility within the production cell

Varying adaptor plates available to be compatible with market leaders in tool changing

Tool changers can often be retrofitted onto an existing application
Unity platform remote data

Designed with data-driven service packages in mind

Data collection and analysis by Unity remote data software improves uptime and allows for scalable architecture. Unity will continue to develop to fully support DDS packages including:

- Remote Expert
- Data Driven Maintenance
- Data Driven Efficiency Optimization

We can optimize your processes and settings to ensure secure system connections and to interpret or evaluate collected data. Root causes can be identified and improvement actions can be indicated through interfaces that monitor your success.
Data-driven services optimize your processes by tracking each riveted joint and data-logging process and equipment diagnostics. It provides detailed performance data on how the production line is running and where to focus maintenance resources.

System back-up features allow a rapid upload of system data to support emergencies on the production line. Implemented changes can be tracked.
Scalable architecture

Data collection and analysis from the Unity Data Interface is facilitated via:

- ToolsNet 8
- DCT Data Collection Tool
- ACSP Atlas Copco Service Portal
Unity

Your globalized self-pierce riveting solution

- Improved efficiency
- Enhanced user experience
- Reduced total cost of ownership
Industrial Assembly Solutions Customer Centers:

Argentina
Brazil
Central Southwest Europe
China
Eastern Europe
India
Japan
Mexico

Russia
South Korea
Southeast Asia
Spain
Sweden
Turkey
United Kingdom
United States