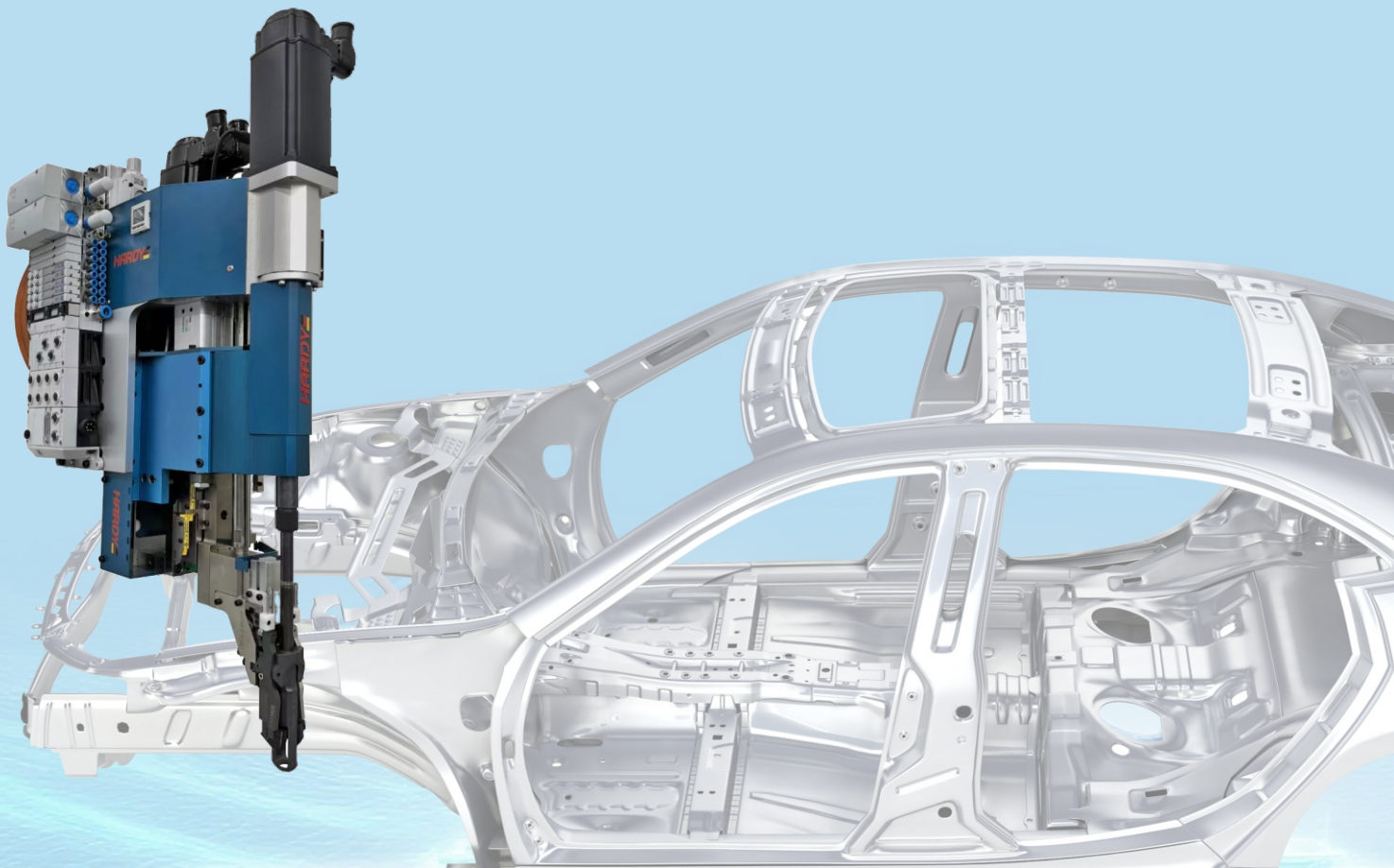




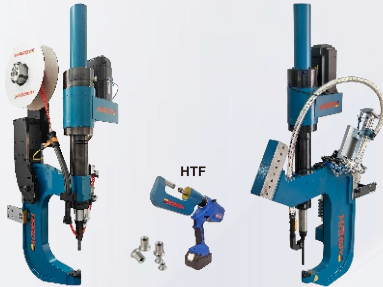
HARDY 

HDFDS
HARDY Flow Drill Screw System



Complete Riveting Systems Portfolio

HDSPR



HARDY Self-Pierce Riveting System

HDFDS



HARDY Flow Drill Screw System

HDClinch



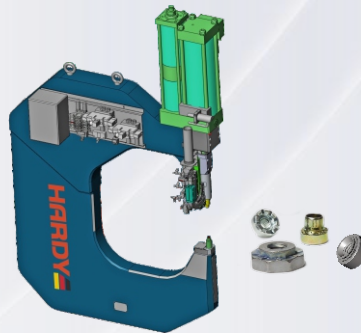
HARDY Clinching System

HDRNS



HARDY Rivet Nut System

HDFRS



HARDY Press-in riveting System

HDAFF



HARDY Auto Fastener Feeding System

HDRMS

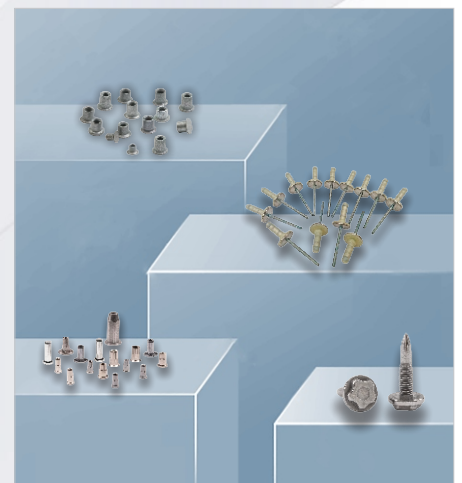


Handheld Rivet setting monitor/control system with automatic fastener feeding

HDRCS



Handheld Rivet nut setting control system





HDFDS – Flow Drill Screw Equipment and Rivet Series

Flow Drill Screw systems enhance the efficiency and quality of the Flow Drill Screw process through automation. Below is some key information about HDFDS systems:

Technical Cooperation and R&D

Originated from German technology, Made in China - A Smart Riveting Joint Laboratory was established for R&D and production.

- Developed and manufactured: HDFDS Technology; Dual-Servo High-Precision
- High-Cycle Control Equipment Systems; Automated Total Solutions, as well as Patented HDFDS-Rivet Series

Smart Features

- The HDFDS Flow Drill Screw system enables automation of the riveting process, including automatic fastener feeding via feeding mechanism, CNC dual electric drive force, and riveting process quality monitoring.
- The closed-loop control system features 100% non-destructive inspection and traceability management of riveting quality data, enhancing the monitoring and traceability capabilities of riveting quality.

Process Advantages

- With the HDFDS Flow Drill Screw technology, material is pierced, tapped and tightened, and a joint was formed under the combined action of high-speed rotational torque and axial pressure. It is suitable for single-sided riveting and enclosed cavities - steel-aluminum joinings.
- This technology is applicable for riveting high-strength materials and mixed materials, and meets the single-sided joining requirements of structures with large wall thicknesses and enclosed cavities.



Equipment Parameters

- The main power system features CNC servo drive with automatic fastenerfeeding mechanism.
- Flexible installation options support benchtop or robotic mounting.
- Applicable HDFDS range: M4-M6. Maximum operating cycle time: ≤ 2 seconds.

Application Fields

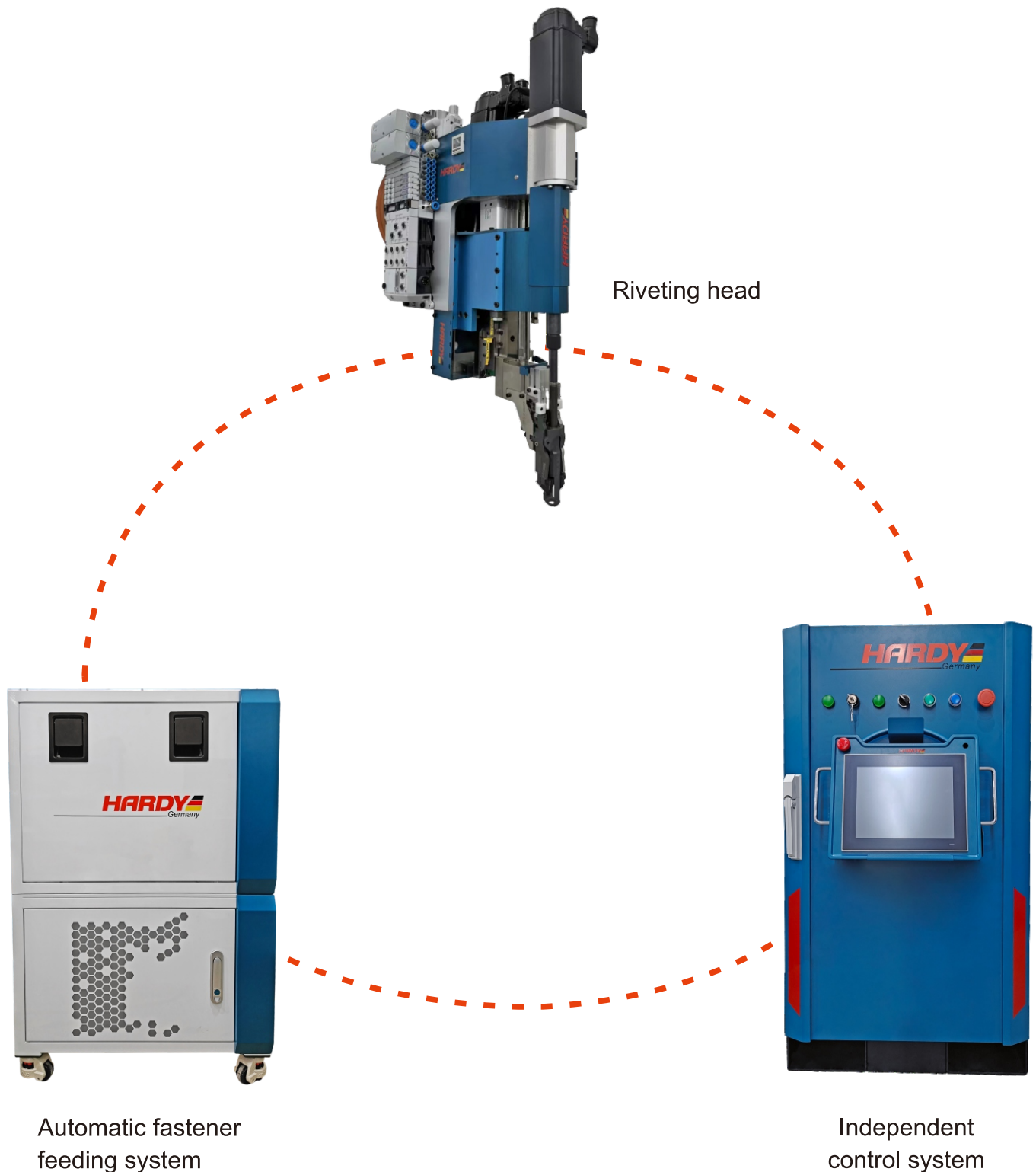
- HDFDS Flow Drill Screw systems are widely used in: Automotive body lightweighting, New energy battery manufacturing, Plastic processing, Electronic equipment manufacturing, etc.

Intelligent System Functions

- HDFDS Flow Drill Screw - Quality Monitoring and Traceability Management 4.0
- System provides: Quality result monitoring, Quality defect prevention, Operational data recording, Quality data generation, Quality traceability analysis, Remote fault diagnosis, MES system interfacing, etc.



HDFDS Flow Drill Screw System





Riveting Head



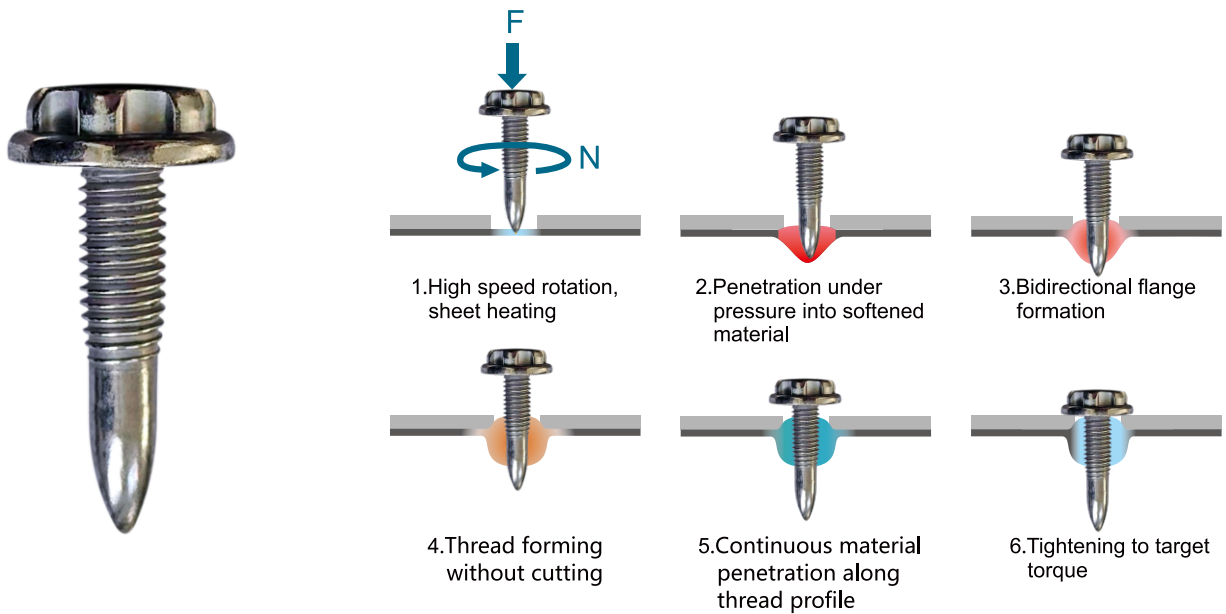
HDFDS-S1-V2 (Dual Servo Riveting Head)

Features:

- Single-sided joining process
- Suitable for joining multiple layers of different materials and strengths
- High unfasten torque, excellent airtightness, and strong vibration resistance
- Screw positioning feature to prevent tilting during tightening
- High-strength materials for durability and robustness
- Compact design for confined spaces
- Modular design for easy maintenance



Technical Parameters



	HDFDS-S1-V2 (Dual Servo)
RPM	≤ 8000 r/min
Torque	≤ 15 Nm
Feed pressure	When compressed air at 6 bar ≤ 3600 N
Nozzle pre-pressure	When compressed air at 6 bar ≤ 1400 N
Setting time	1.8 s
Drive system	Dual Servo motor
Power supply	380 V / 50 Hz
Communication protocols	EtherNet/IP, PROFINET, DeviceNet, CC-Link



Independent Control System

Features:

- Standardize "embedded PC" control
- Standard HMI Features for parameter configuration, data curve display, error alarm notification
- Simple and intuitive interface, password protected access levels
- The riveting process is automatically monitored to ensure the quality of riveting
- Critical data acquisition uploads to plant MES for product quality assurance.
- Multiple communication protocols such as EtherNet/ IP, PROFINET, DeviceNet, CC-Link etc.





Automatic Fastener Feeding System

Features:

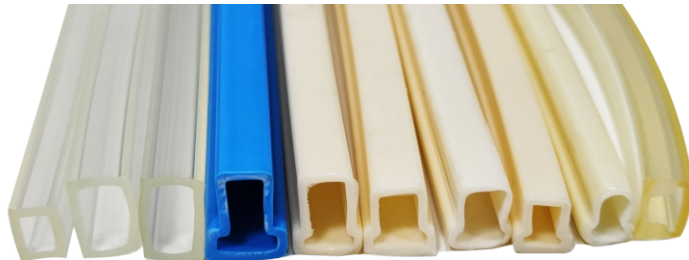
- Simplified design, significantly enhances the stability of feeding
- Feeding cycle time <1 second, meeting CT requirements of all assembly industries
- Custom-engineered feed tracks ensuring full fastener adaptability
- Modular components for easy maintenance.



Feed hose

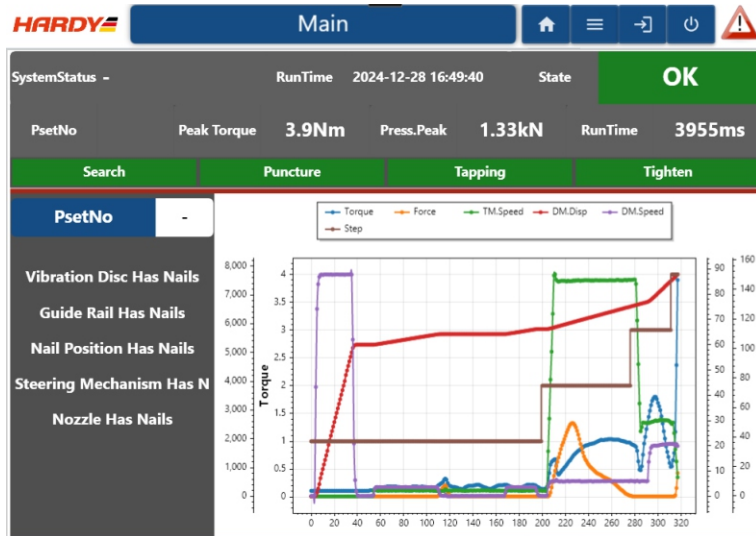
Features:

- Multiple specifications
- Remote Transmission





Software



Main interface :

- Functional, concise and straightforward
- Alert of the status of each posture during device operation
- Real-time feedback on the operation of the device
- It can be operated by touch or keyboard and mouse



Data Acquisition and Analysis :

- Process data acquisition and graphical analysis

Maintenance			
Name	Current Val	Limits Value	Rest
Socket	120	100000	Reset
Connecting Rod	120	2000000	Reset
Guide	120	100000	Reset
Connection Plate	120	1000000	Reset

Maintenance :

- Preset maintenance prompts and record usage data

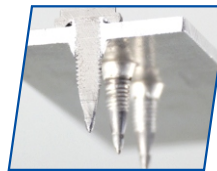


Application Reference

Integrated Solution for Automated Non-standard fastening, Riveting, with auto fastener-feeding System



Flow Drill Screw Self-tapping system



Features:

- Single sided joining process (making it possible to join profiles and small holes)
- For assembling different materials of different thicknesses
- Dual servo drive, complete process monitoring
- High loosening torque, good air tightness, strong anti vibration performance,
- Flexible spindle design, and quick replacement of bits

Main applications:

- Auto body, joining of multi-layer steel and aluminum sheets

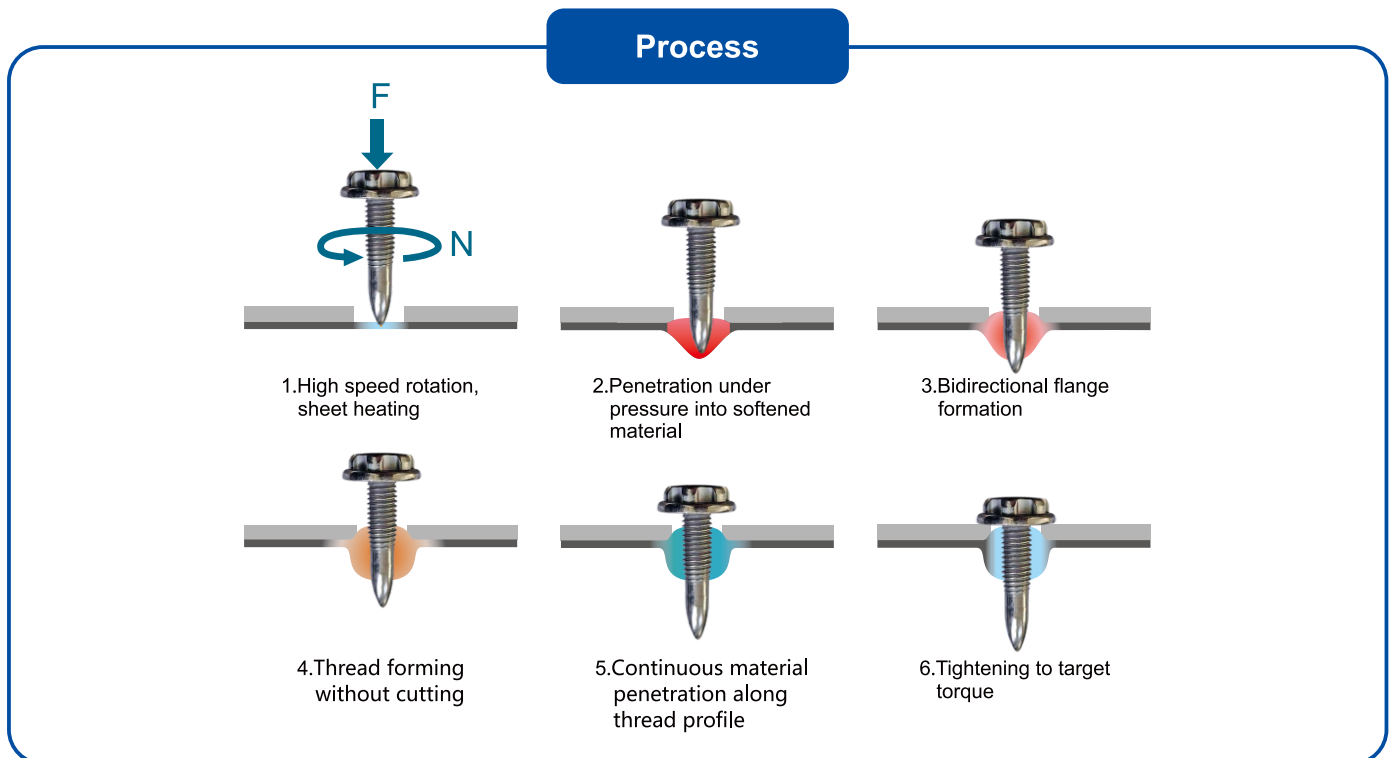


Flow Drill Screw--HDFDS

In the rapidly developing automotive industry, the components used must withstand high mechanical performance, so the requirements for fastening technology are very high. For example, in the body structure, the design of composite materials is increasing, and different materials must be firmly and persistently fastened. In addition to single-sided contact, the detachable nature of fasteners is also very important, especially regarding recyclability. Under these complex conditions, the HDFDS (Flow Drill Screw) is to be used to secure metal sheets made of steel and aluminum in a riveted combination; No need for pre drilling, and the joining quality is excellent. So it saves the work steps of drilling or pre drilling holes. The flange formed by HDFDS drilling into both sides increases thread engagement and a high strength thread connection, without generating unnecessary metal chips. The flanges formed by HDFDS drilling on both sides enhance thread.

No-pre drilling for setting

By utilizing HDFDS screws and optimizing the layout of fasteners, it is possible to fully achieve the connection of the body-in-white within the spatial frame structure without the need for predrilling. To this end, the fastening parameters have been adjusted, and the geometry beneath the screw head has been optimized. During the drilling of HDFDS, a small amount of material flows along the direction of the fastening screw drilling. Another portion moves in the opposite direction of the screw drilling, which is absorbed and covered by the increased groove space beneath the screw head.

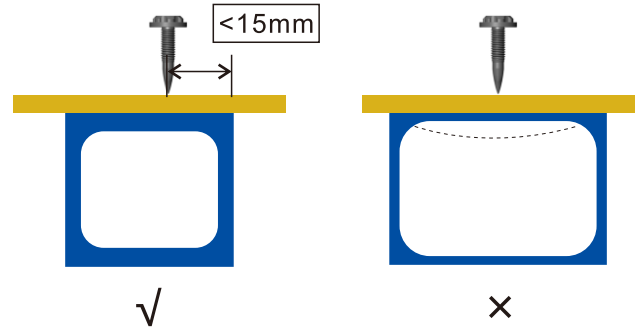




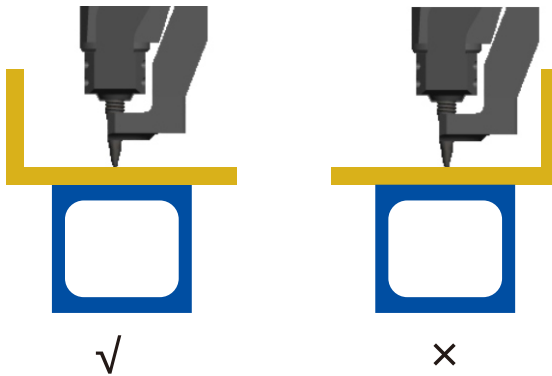
Structural design requirements on HDFDS

1

High-speed rotation and downward force of HDFDS should be considered, so there are rigid supports around the joining Points, to ensure the strength and reliability of the joints points after setting.



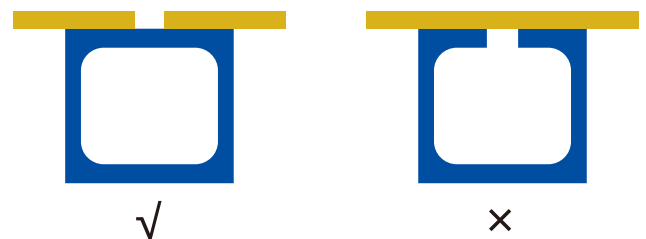
2



Sufficient clearance must be reserved in the frontal connection direction to allow HDFDS setting tool preclamping and tool movement, ensuring accessibility for both the setting tool and rivet.

3

If the material combination is too thick or the strength of the upper layer sheet material is too high, it is necessary to consider drilling a guide hole in the upper layer sheet (and middle layer sheet), but the bottom layer sheet shall not be drilled.



4

- It is necessary to consider the principle of connection direction for different material combinations.
- For the combination of aluminum magnesium alloy and low strength steel materials, rivet penetration connection is used.
- For high strength steel materials, pre drilling is required and placed on the upper layer.
- Thin-walled materials and non metallic materials shouldn't be the bottom layer.



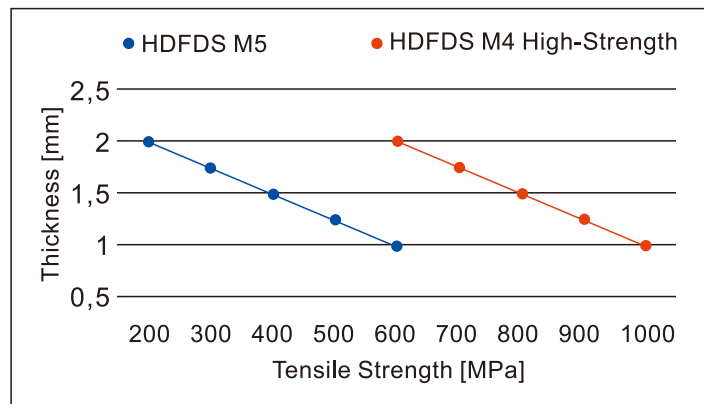
HDFDS Specification series

M5 standard & M4 High strength



M5 Standard

M4 High Strength



Sheet strength Mpa

Description	M5 Standard	M4 High Strength
Weight	<5g	<3g
Surface Hardness	520-600	500-550
Mandrel Hardness	320-360	500-530
Heat treatment	Carburization	Austempering
Spec.	M5X22	M4X22
	M5X17	M4X17
Sheet material	Ordinary aluminum alloy	>600MPa high-strength steel



Competitive Performance





Independently deliver complete and reliable overall solutions

Solution - maker

- Project feasibility analysis
- 3D simulation analysis of products
- CT analysis
- Make a project feasibility report

Manufacturing commissioning

- Mechanical engineering
- Mechanical assembly
- Electrical assembly
- Commissioning for equipment functions
- PLC Program debugging
- Whole project to be pre-integrated and commissioned

After-sales service

- Remote technical support
- Short-term on-site support
- Long-term on-site support



Project information

- Analyze project information
- Analyze the 3D digital model of the product
- Interpret project requirements

Refine the scheme

- Solution introduction
- Review of pain points and difficult problems
- Detailed summary of the program
- Finalize the plan
- Provide a project budget

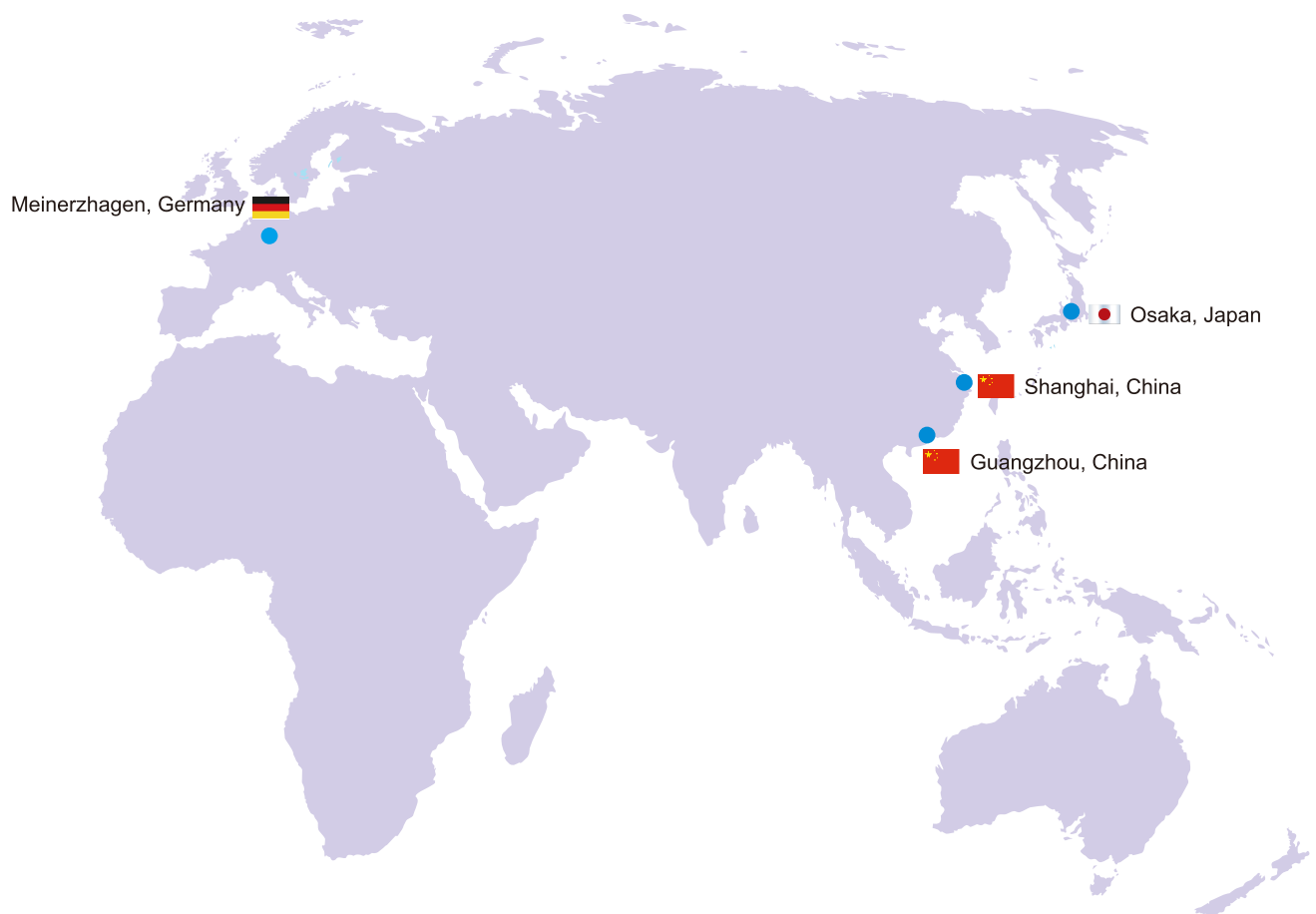
On-site service

- Entrance of equipment On-site.
- Joint commissioning of the project as a whole.
- Verification on the production line.

HARDY

HARDY

R&D, Manufacturing locations



HARDY 

