



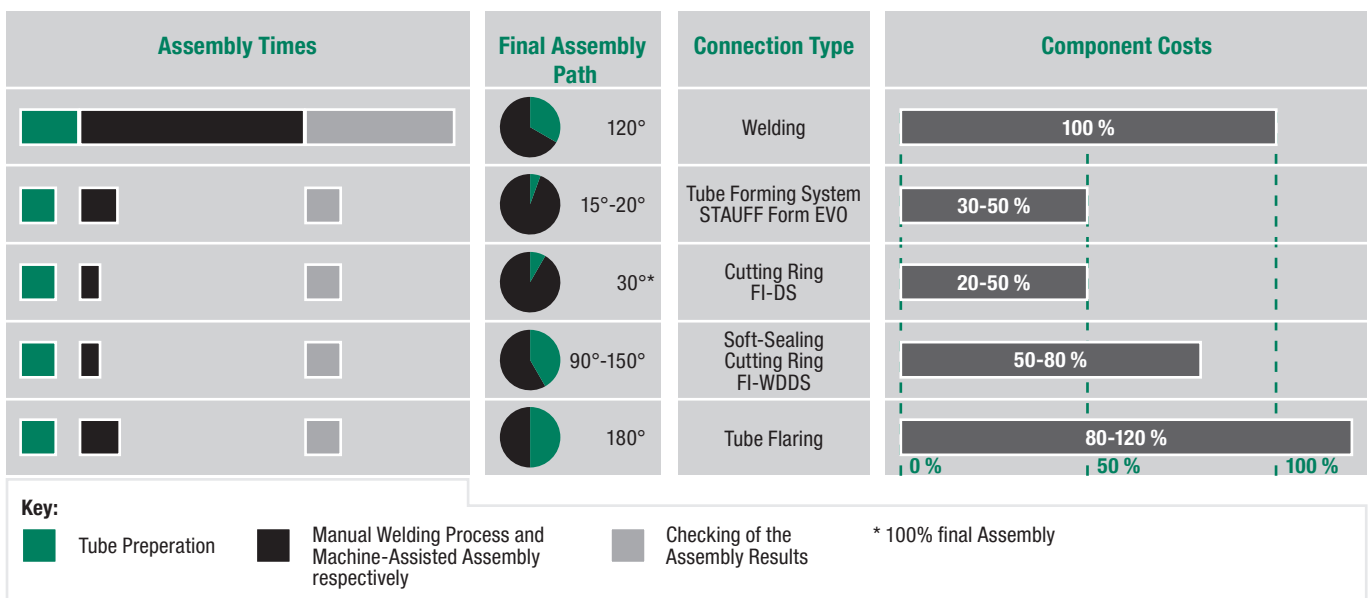
**Tube Fitting Systems,
Assembly Tools and Devices**

Connecting Parts for Tube Fitting Systems (Light and Heavy Series) ▪ Overview

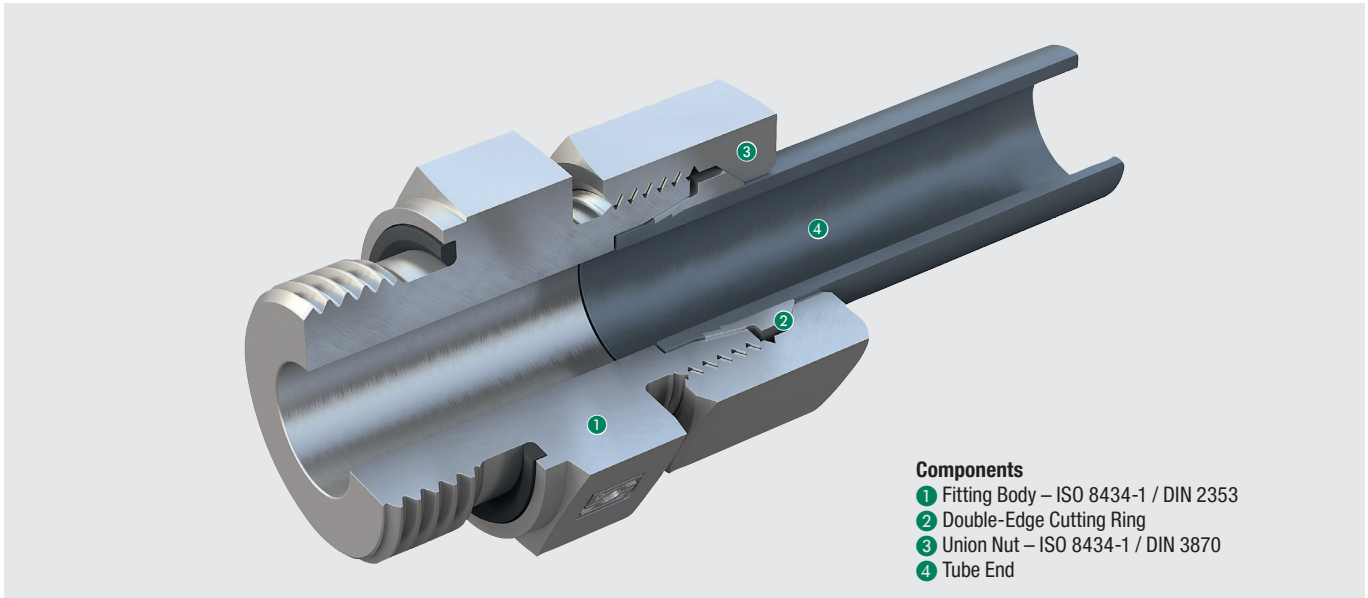
	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Accordance	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN EN ISO 8434-1	DIN 3949
Type of Sealing	metallic	metallic + soft sealing	metallic + soft sealing	metallic + soft sealing
Materials	Steel / Stainless Steel	Steel / Stainless Steel	Steel / Stainless Steel	Steel / Stainless Steel
Series	L/S	L/S	L/S	L/S
Outer Tube Diameter in mm	6-42	6-42	6-42	6-42
Dynamic and Vibration Load Capacity	● ● ● ○	● ● ● ○	● ● ● ●	● ● ○ ○
Temperature Resistance	● ● ● ●	● ● ● ○	● ● ● ○	● ● ● ○
Media Resistance	● ● ● ●	● ● ● ○	● ● ● ○	● ● ● ○
Corrosion Resistance	● ● ● ●	● ● ● ●	● ● ● ●	● ● ● ●
Ease of Installation / Assembly Effort	● ● ● ○	● ● ● ○	● ● ● ●	● ● ○ ○
Manual Pre-Assembly	●	●	-	-
Machine-Assisted Pre-Assembly	●	●	●	●
Block Assembly	-	●	●	●
Over-Assembly Protection	●	●	●	-
System Safety (Tear-Out, Tube Bursting)	● ● ● ○	● ● ● ○	● ● ● ●	● ● ● ○
Standard Union Nut According to ISO 8434-1 / DIN 3870	●	●	●	-

● Yes | - No | ● ● ● ○ 3/4 (Rating / Recommendation)

Time and Cost Savings of STAUFF Tube Fitting Systems



24° Tube Fittings with Double Edge Cutting Ring



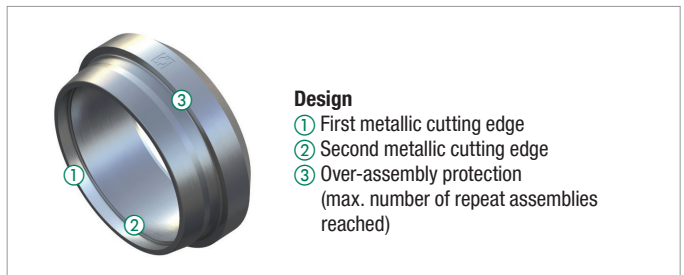
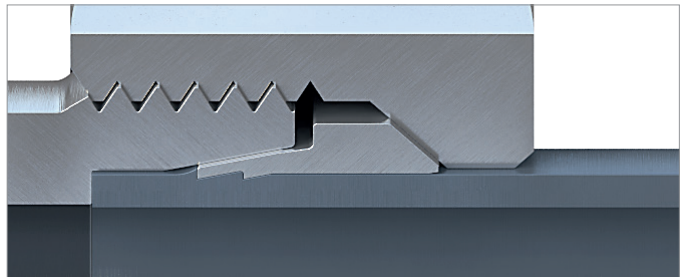
Components

- ① Fitting Body – ISO 8434-1 / DIN 2353
- ② Double-Edge Cutting Ring
- ③ Union Nut – ISO 8434-1 / DIN 3870
- ④ Tube End

The operating principle of STAUFF Connect 24° Tube Fittings ① with Cutting Ring is based on a double-edge cutting ring ②, which cuts into the tube twice, thus ensuring the necessary force and form closure in the cutting area.

Thanks to the optimised geometry of this ring, the two edges do not cut simultaneously, but rather one after the other. In addition to increasing the incising effect, this method maximises the tear strength of the fitting. Over-assembly leading to impermissibly large pipe constrictions is reliably prevented by the over-assembly protection.

Due to the design of the double-edge cutting ring in the central region as well as in the shoulder area, a larger tube support surface with a high surface pressure is achieved without jamming the cutting ring. This ensures uniform distribution of force. The outer support surfaces of the cutting ring are smoothed, thus minimising friction losses during assembly and guaranteeing the maximum degree of safety during use.



Design

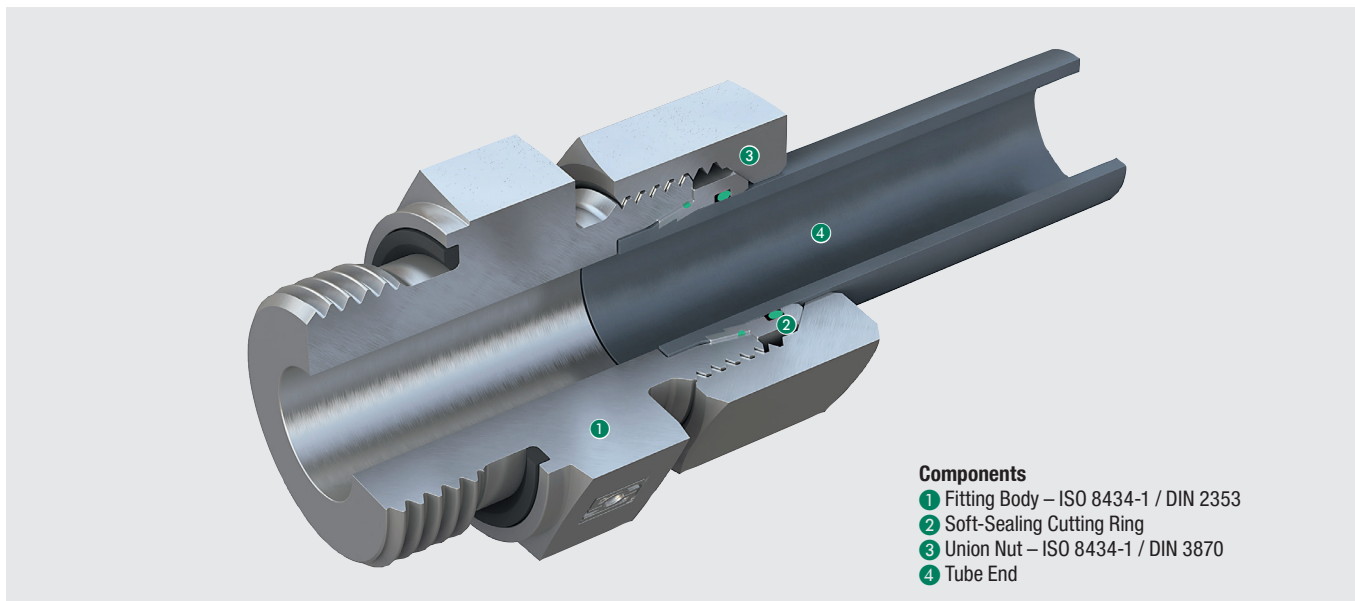
- ① First metallic cutting edge
- ② Second metallic cutting edge
- ③ Over-assembly protection (max. number of repeat assemblies reached)

Features

- 100% final Assembly
- Only 30° final tightening after the noticeable increase in force (repeatability significantly)
 - Increase in process reliability due to lower error potential during final tightening compared to DIN 3859-2
- Over-assembly protection (indication of the last possible assembly)
- Proven 2 cutting edge technology (Metallic sealing)
- Up to 500 bar in the light series and Up to 800 bar in the heavy series – with a four-fold safety factor and maximum tear-out strength
- Available in steel with high-quality STAUFF Zinc/Nickel Coating and in stainless steel



24° Tube Fittings with Soft-Sealing Cutting Ring



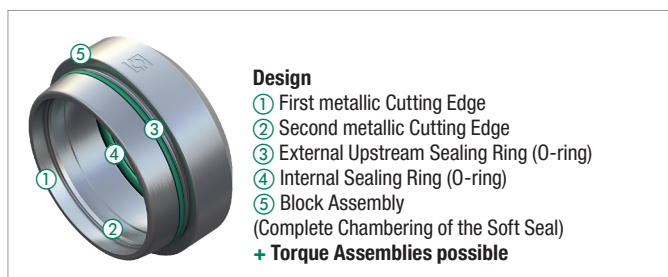
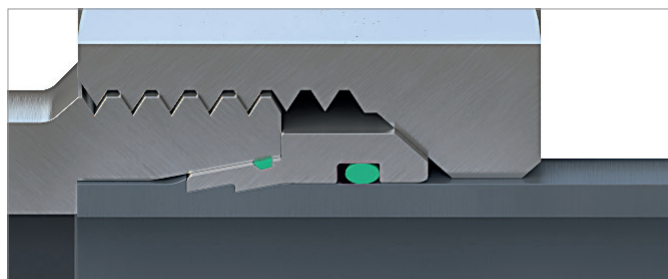
Soft-Sealing Cutting Rings ② provide an additional safety and protection against potential leakage risks, e.g. caused by the settling of purely metallic sealed connections, temperature fluctuations or considerable pressure and vibration loads in the system. "Sweating effects" on the connection points can be permanently avoided.

The type FI-WDDS Soft-Sealing Cutting Ring ② is characterised by the elastomer sealing ③, which is located in a specially designed groove close to the rear end of the 24° taper and protected to prevent loss. An additional o-ring ④ is used to secure the second potential leakage path between the cutting ring and the tube – even in the event of unfavourable tolerances.

The O-ring ④ is securely chambered by mounting it on block ⑤ and ensures the correct fit of the cutting ring. Repeat assemblies can also be carried out reliably.

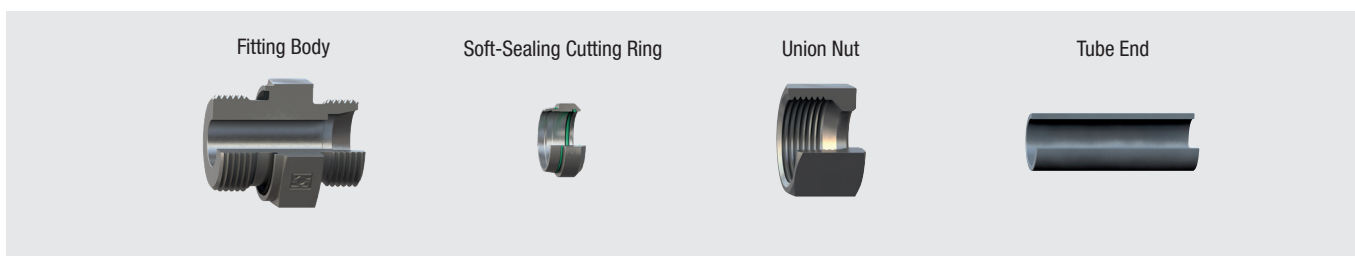
FKM (Viton®) is used as the standard sealing material and enables problem-free use of the system for challenging applications involving high temperatures or aggressive media. Thanks to the combined metal-elastomer seal, low-temperature ranges down to -35° C are possible without restriction.

Both elastomer sealings are located in the secondary sealing zone of the connection. Static and dynamic loads in the system are primarily compensated by the tried and tested metallic sealed area. When assembled, the soft-sealing elements are almost completely chambered (as gap-free and cavity-free as technically possible). This prevents extrusion of the sealings and contributes to the excellent longterm stability of the system.

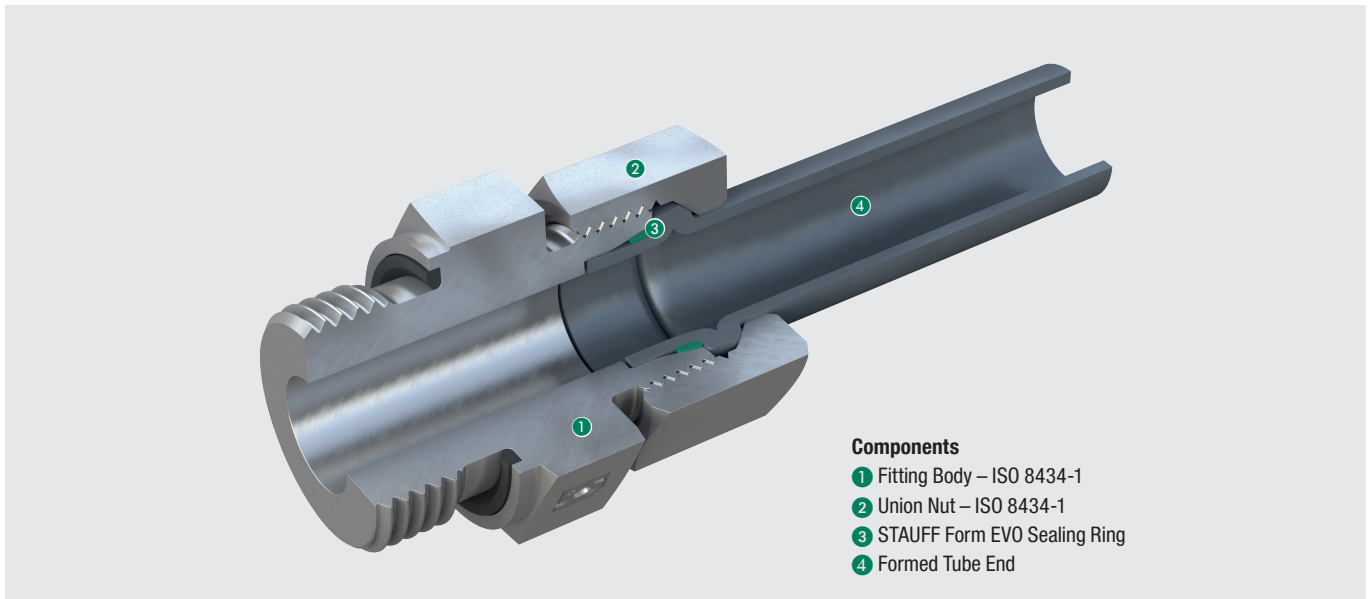


Features

- 100% final Assembly
- Upstream and fully chambered soft seals in the secondary area (no pressure peaks directly at the seals, long-lasting)
- Increase in process reliability due to lower error potential in the final suit compared to DIN 3859-2
 - Torque mounting possible (block mounting)
 - Final tightening to the tightening limit (block). Approx. 90°-150°
- Proven 2 cutting edge technology
 - Primary metallic sealing, secondary soft sealing
 - Minimises possible error potential
 - Serves as feedback of the assembly finish
- Up to 500 bar in the lighter series and Up to 800 bar in the heavy series
- Available in steel with high quality STAUFF Zinc/Nickel Coating and in stainless steel



24° Tube Fittings using the STAUFF Form EVO Tube Forming System



Components

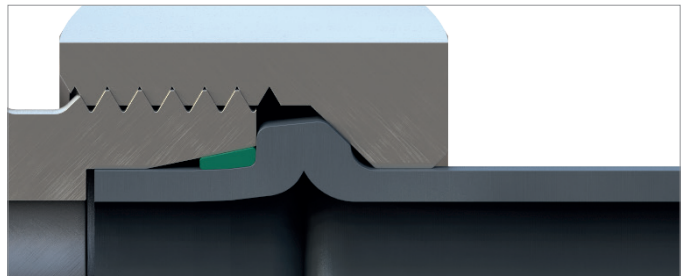
- ① Fitting Body – ISO 8434-1
- ② Union Nut – ISO 8434-1
- ③ STAUFF Form EVO Sealing Ring
- ④ Formed Tube End

STAUFF Form EVO has been designed as standard for seamless cold-drawn precision steel tubes as well as stainless steel tubes with dimensions between 6 x 1.5 mm and 42 x 4 mm in the Light Series and between 6 x 1.5 mm and 38 x 6 mm in the Heavy Series.

The system is based on standard parts and consists of only four key components. The STAUFF Form EVO Sealing Ring ③ is slid onto the tube end, which has previously been mechanically contoured. This creates a positive-locking connection that provides a reliable, permanent and maintenance-free seal when used with a conventional fitting body ① with 24° conical bore and a union nut ②, both according to ISO 8434-1 / DIN 3870.

The sealing of the only possible leakage path primarily via the STAUFF Form EVO Sealing Ring ③ as well as the secondary, face sealing and preservation of the flow behaviour through the optimised shape of the formed tube end ④.

FKM (Viton®) is used as the standard sealing material and enables problem-free use of the STAUFF Form EVO tube forming system for challenging applications involving high temperatures or aggressive media. Thanks to the combined metal-elastomer sealing, the usage of the system in low-temperature ranges down to -35° C is possible without restriction



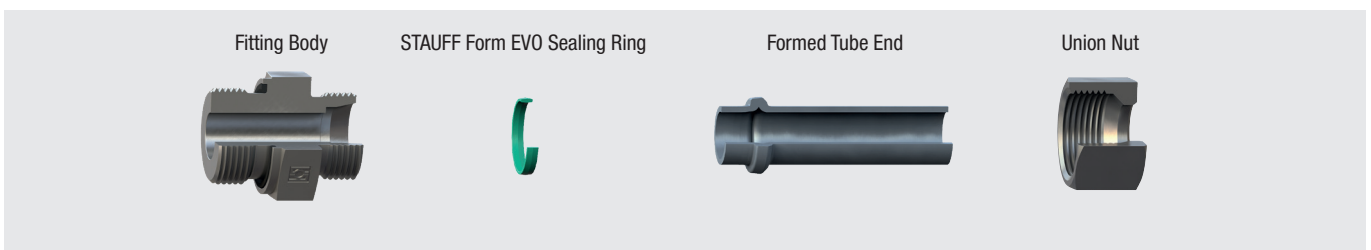
Design

- ① STAUFF Form EVO Sealing Ring made of FKM (Viton®)

Possible errors during assembly on the formed tube end are consistently avoided by the laterally equal profile of the sealing ring.

Features

- Considerably lower torques and short assembly paths approx. imately 15° to 20° (once the fixed point has been reached)
- Significant increase in torque to clearly indicate the end of the assembly
- Connections can be untightened as often as required and reassembled without wear, as any damaging expansion of the 24° conical bore of the fitting body is technically avoided
- Preservation of the flow behaviour through the optimised shape of the formed tube end
- Formed tube end can checked with control diameter
- Based on standard components including the standard union nut of the STAUFF Connect product range according to ISO 8434-1 – No duplicate storage of similar stocking of similar components with a correspondingly high risk of confusion
- Suitable for nominal pressures up to 800 bar in the Heavy Series – designed with four-fold safety and maximum tear-out strength



Assembly Tools and Devices - Overview

	SPR-PRC-MP	SPR-PRC-H-M-E	SPR-PRC-MA-D-A	SPR-PRC-POC-A-A-IOT	SFO-F-A-A-IOT
Single Assembly	●	●	●	●	●
Series Assembly	○ ○ ○ ○	● ○ ○ ○	● ● ● ○	● ● ● ●	● ● ● ●
Assembly Speed	○ ○ ○ ○	● ○ ○ ○	● ● ● ○	● ● ● ●	● ● ● ○
Automatic Tool Detection	-	-	○	●	-
Touch Screen	-	-	-	●	●
IOT Cloud-Connection	-	-	-	●	●
Production Data Acquisition (PDA)	-	-	-	●	●
Parameter Customisation	●	●	●	○	○
Machine Instruction	○	○	○	●	●
Error Detection	-	-	-	●	-
Process Reliability	-	-	-	●	●
Piece Counter	-	-	●	●	●
External Foot Control Switch	-	-	○	○	○
Outside Tube Diameter in mm	6 - 42	6 - 42	6 - 42	6 - 42	6 - 42
Pre-Assembly (DIN 3859-2)	●	●	●	○	-
100% final Assembly	-	-	-	●	●
Cutting Ring Assembly Stud FI-MFK	●	-	●	●	-
Cutting Ring Assembly Stud FI-MVK-PRC-H-M	-	●	-	-	-
Support Plate FI-GP	-	-	-	●	-
Support Plate FI-GP-PRC	●	-	●	-	-
ISO 8434-1 / DIN 2553 (24°)	●	●	●	●	●
Cutting Ring System FI-DS 	●	●	●	●	-
Soft-Sealing Cutting Ring System FI-WDDS 	●	●	●	●	-
Tube Forming System STAUFF Form EVO 	-	-	-	-	●
ISO 8434-2 / DIN 3949 / SAE J514 (37°)	-	-	●	-	-
STAUFF 37°- Flare System (DIN 3949) 	-	-	●	-	-

● Yes | ○ Optionally | - No | ● ● ● ○ 3/4 (Rating / Recommendation)

Final Assembly Stud for the Manual Cutting Ring Assembly FI-FK



The Assembly Stud for manual final assembly is the perfect solution for easy on-site assemblies of cutting rings in a vice.

The Studs are hardened, which reliably prevents wear on the Fitting Body. The inspection is carried out every 50 assemblies in accordance with DIN 3859-2.

Features

- hardened, wear-resistant Assembly Stud
- flexible on-site assemblies
- No power source required

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	●	●	-	-
Stainless Steel	●	●	-	-
● Yes - No				

Manual Cutting Ring Pre-Assembly Device SPR-PRC-MP



The portable, manual cutting ring pre-assembly device with manual pressure setting according to the pressure value table is the ideal solution for on-site assemblies without a power connection.

This makes it possible to carry out assemblies quickly, flexibly and easily. The pressure gauge reliably indicates the required pressure.

As a set including a steel case with storage space for optional accessories the device offers full convenience.

Features

- Pressure value table on the device
- The target pressure value can be read off the pressure gauge
- incl. sturdy steel case with storage space for accessories
- flexible on-site assemblies
- No power source required
- Manual pre-assembly for 90° end tightening in accordance with DIN 3859-2

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	●	●	-	-
Stainless Steel	●	●	-	-
● Yes - No				

Portable Cutting Ring Assembly Machine with Manual Pressure Setting (Set) SPR-PRC-H-E-SET

The battery-operated assembly machine is the perfect portable, ergonomically designed and robust alternative for assemblies.

It can be used for up to 200 assemblies per charge.

The correct setting can be easily selected using the pressure value table, insert the Assembly Stud and the assembly can start. Thanks to the integrated design, no backing plates are required.

Hand-held operation, with tripod or table mount. The delivery standard includes the device with accessories in a robust transport case.



Heavy-duty trolley transport case



Tripod Stand
SPR-PRC-H-M-TP



Table Stand
SPR-PRC-H-M-TS



Mounting Bracket
SPR-PRC-H-M-MH

Features

- Mobile, flexible on-site solution for process-reliable pre-assemblies according to DIN
- Mechanical pre-assembly for 90° end tightening according to DIN 3859-2
- Practical battery operation incl. second battery for up to 200 installations
- Universal Clamping Jaw for all sizes (no support plate required)
- Only Stud required (1 Stud for Steel and Stainless Steel)
- Safe storage in mobile transport case
- Easy handling with digital control panel
- Optimised mounting accessories such as tripod or table mount for ergonomic mounting
- Easy operation for pressure setting

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	•	•	-	-
Stainless Steel	•	•	-	-

• Yes | - No

Combined Cutting Ring Assembly and 37° Tube Flaring Machine with Automatic or Manual Pressure Setting and Control

SPR-PRC-MA-D-A

Whether cutting ring assemblies with manual pressure adjustment or automatic pressure adjustment using a Support Plate - everything is possible by simply exchanging the tool heads.

A solution that is not only suitable for cutting ring pre-assembly in accordance with DIN 3859-2, but also enables 37° flaring in accordance with DIN 3949 or SAE J 514.

With functions such as counter, return stroke shortening in 10 stages and the option of connecting a foot control switch, customised assembly processes can be carried out and productivity in series production can be increased.

Weighing just 66 kg, this all-rounder can even be moved around easily.



Tooling Head based on pre-defined settings
SPR-PRC-TH-C-MA



Tooling Head based on manual settings
SPR-PRC-TH-C-M



Tooling Head for 37° Tube Flaring based on manual settings
SPR-PRC-TH-F-M



External Foot Control Switch
SPR-PRC-FS

Features

- Mechanical pre-assembly for 90° end tightening according to DIN 3859-2
- Exchangeable tool heads
- Short times for tool and head changes, setup and assembly
- Adjustable return stroke of the cylinder to optimise overall cycle times
- Internal memory for up to 8 assembly programs (on pre-defined settings)
- Counters for lot/batch sizes and total quantities
- Operator-friendly and easy to maintain and service
- Low weight of 66 kg

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	•	•	-	•
Stainless Steel	•	•	-	•

• Yes | - No

Cutting Ring Final Assembly Machine with Cloud Connection SPR-PRC-POC-A-A-IOT

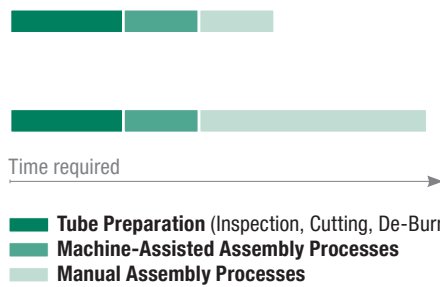
This device is unbeatable in series production. Our products set new standards - whether in tool detection via RFID, IoT (Internet of Things) cloud connection via SIM card or production data acquisition. Fast cycle times, reliable fault diagnosis and 100 per cent reproducibility are the be-all and end-all here.

Tolerances in the tube material or cutting rings usually affect the required pressure of the machine. The machine automatically measures the distance to be cut and adjusts the pressure so that each individual assembly is identical. The assembly triggers automatically as soon as the tube is pressed on. This allows the tube to be held securely in the base of the Fitting Body with both hands.

Worn tools affect the position and are recognised as a matter of course. In combination with the FI-DS Cutting Ring, it is even possible to produce 100% final assemblies in a reliable process, saving 66% of the assembly distance compared to pre-assemblies in accordance with DIN 3859-2. A foot control switch can also be connected as an option.



Time comparison of Machine-Assisted Final Assembly (100%) with a Machine-Assisted pre-assembly



Machine-Assisted Final Assembly (100%)
and finish the assembly by manually tightening the union nut by 30° (equivalent to 1/12 a turn)

Machine-Assisted Pre-Assembly
and finish the assembly by manually tightening the union nut by 90° (equivalent to 1/4 a turn)

Support Plate FI-GP



Assembly Stud FI-MFK



External Foot Control Switch SFO/PRC-POC-FS

Comparison of the total times required for the assembly and installation of cutting ring connections (medium size)

Features

- Final Assembly (100 %)
- Short times for tool changes, setup and assembly
- Tool size detection via RFID transponders in the support plates
- Automatic assembly start through integrated tool contact switch or with optional external Foot Control Switch
- Tool wear detection through combined pressure/position-control
- Internal memory for up to 9 assembly programs
- Counters for lot/batch sizes and total quantities (separated by tool size)
- Documented process control through programmable logic control (PLC)
- Manual pressure adjustment possible
- Optional tool holder for tubes with small bending radii
- Machine briefings and trainings
- No need for time-consuming and expensive training
- IOT
 - Individual parameter customisation
 - Production Data Acquisition
 - Software updates
 - Fault diagnosis
- Maintenance Contracts
 - Rental machines mirrored with the status of your own machine

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	•	•	-	-
Stainless Steel	•	•	-	-

• Yes | - No

STAUFF Form EVO Tube Forming Machine with Cloud Connection SFO-F-A-A-IOT



The STAUFF Form EVO Tube Forming Machine enables the economical and reliable production of tube ends made of steel, stainless steel and other materials with the contour characteristic of the STAUFF Form EVO system.

The machine, designed as a robust table-top unit for long-term use in the workshop, is used in conjunction with Tube Shapers and Clamping Jaws. For selected tube dimensions, Tube Shapers with Internal Tube Supports are used to prevent the tube from constricting in the forming area.

Tube Shapers, Clamping Jaws and Internal Tube Supports have been specially designed for the mechanical forming process and can be replaced quickly and easily without any tools if necessary. The resulting short tool change and set-up times, in addition to the low cycle times, contribute to the high efficiency of the system.

The assembly process starts quickly and reliably using a touch screen or via optional external foot control switch. The IoT cloud connection via SIM card ensures access from anywhere in the world, allowing orders to be set up and operating data to be analysed.



STAUFF Form EVO Internal Tube Supports **FI-ID** for Tube Shapers



STAUFF Form EVO Tube Shapers **FI-FST**



STAUFF Form EVO Clamping Jaws **FI-FB**



External Foot Control Switch **SFO/PRC-POC-FS**

Features

- Constant high process safety, reliability and reproducibility by the position-control of the machine, which performs the shaping process following a manual start and monitors it by means of stored parameters
- Machine-friendly forming process
- Maximum efficiency thanks to short cycle times – ideal for series production
- Quick and simple replacement of tube shapers (with bayonet lock) and clamping jaws when changing the tube dimensions – with no tools required
- Optimum tool concept with exchangeable internal tube supports, so that only a small number of tools is required to cover all tube diameters
- Potential risk of confusion and assembly errors caused by incorrect assignment can virtually be ruled out by the clear labelling of all assembly tools
- Low insertion depths for complex tube geometries and smaller bending radii
- Surface-friendly clamping of the tube during the forming process
- Machine briefings and trainings
- No need for time-consuming and expensive training
- IOT
 - Individual parameter customisation
 - Production Data Acquisition
 - Software updates
 - Fault diagnosis
- Maintenance Contracts
 - Rental machines mirrored with the status of your own machine

Compatible with Connecting Part	FI-DS	FI-WDDS	STAUFF Form EVO	37° Flared Cone Adaptor
Steel with STAUFF Zinc/Nickel Coating	-	-	•	-
Stainless Steel	-	-	•	-

• Yes | - No

STAUFF Connect



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