

Tube Connectors



Assembly Tools and Devices



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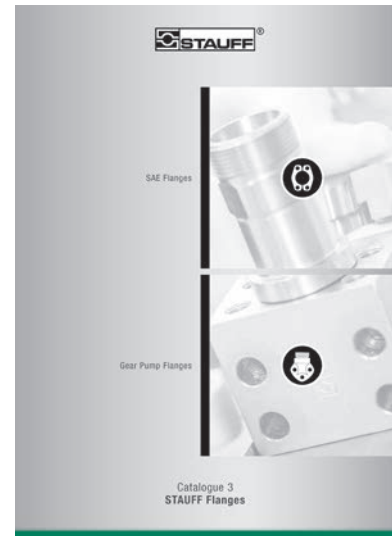
Catalogue 1 STAUFF Clamps

- Block Clamps
- Special Clamps
- Light Series Clamps
- Saddle Clamps
- U-Bolt Clamps
- Metal Clamps
- Construction Series



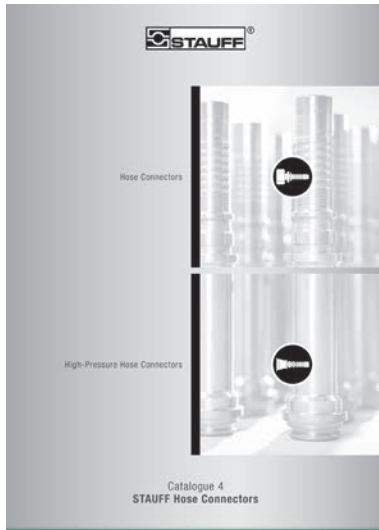
Catalogue 2 STAUFF Connect

- Tube Connectors
- Assembly Tools and Devices



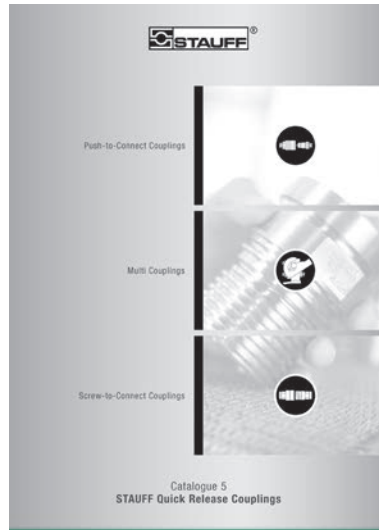
Catalogue 3 STAUFF Flanges

- SAE Flanges
- Gear Pump Flanges



Catalogue 4 STAUFF Hose Connectors

- Hose Connectors
- High-Pressure Hose Connectors



Catalogue 5 STAUFF Quick Release Couplings

- Push-to-Connect Couplings
- Multi Couplings
- Screw-to-Connect Couplings



Catalogue 6 STAUFF Valves

- Two-Way Ball Valves
- Multi-Way Ball Valves
- Flow Control and Check Valves
- Gauge Isolator Valves





Catalogue 7 STAUFF Test

- Test Couplings
- Test Adaptors
- Test Hoses and Connectors



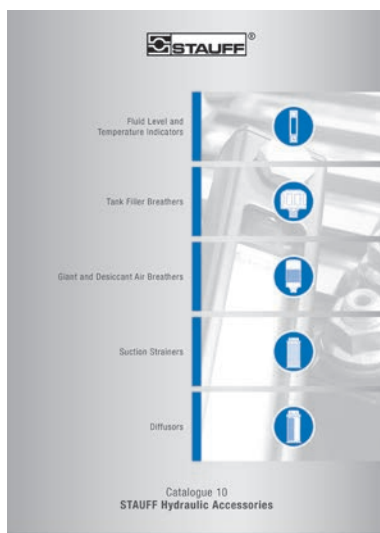
Catalogue 8 STAUFF Diagtronics

- Pressure Gauges
- Hydraulic Testers
- Oil Analysis Equipment



Catalogue 9 STAUFF Filtration Technology

- Replacement Filter Elements
- Pressure Filters
- Return-Line Filters
- In-Line Filters
- Spin-On Filters
- Offline and Bypass Filters
- Filtration Systems



Catalogue 10 STAUFF Hydraulic Accessories

- Fluid Level and Temperature Indicators
- Tank Filler Breathers
- Giant and Desiccant Air Breathers
- Suction Strainers
- Diffusers



For more than 50 years, the companies of STAUFF Group have been developing, manufacturing and distributing pipework equipment and hydraulic components for mechanical and plant engineering and for service and industrial maintenance.

In addition to mobile and industrial hydraulic machinery, typical applications also include commercial and special purpose vehicles, rail transportation and energy technology. Likewise, STAUFF products are used in marine, oil and gas applications and in the process, food and chemical industries.

The overall range currently includes about 50000 standard products as well as numerous special and system solutions according to customer's specifications or based on our in-house development.

All STAUFF products undergo relevant testing in accordance with international regulations and are governed by the high standards of the in-house quality management system. Furthermore, many items have received certifications and approvals from various international institutes, organisations and authorities who have independently confirmed the quality and performance of the products.

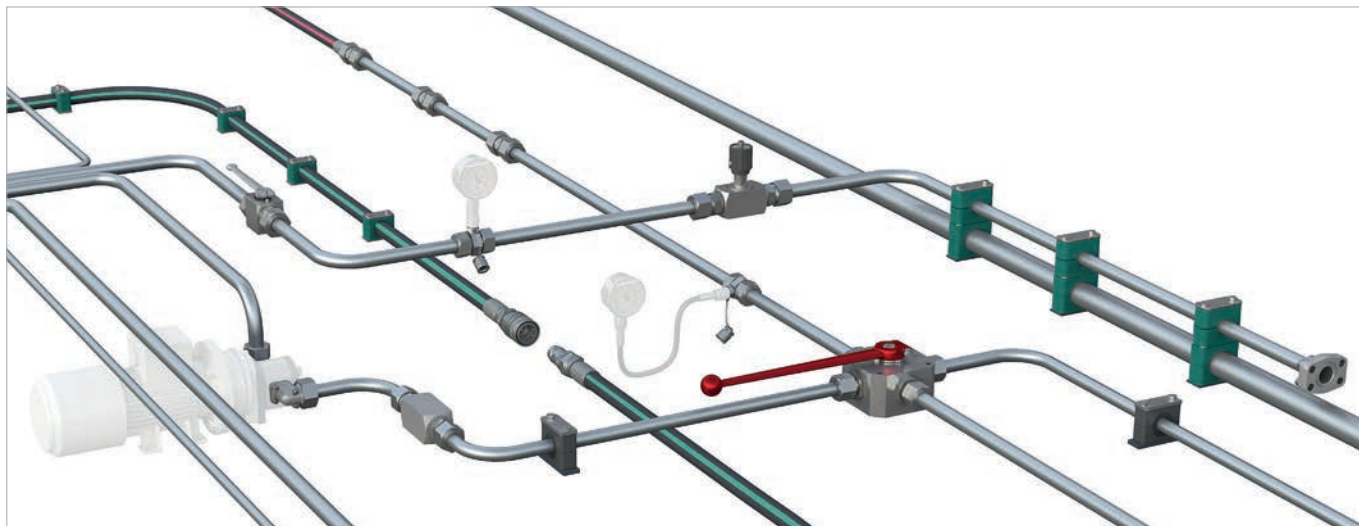
Wholly-owned manufacturing, sales and service facilities in 18 countries and a tight global network of authorised distribution partners ensure high presence and service paired with a maximum of availability.



Lloyd's Register
LRQA

Quality Management – ISO 9001:2015
Environmental Management – ISO 14001:2015
Safety Management – ISO 45001:2018
Energy Management – ISO 50001:2018

STAUFF LINE Components



With the seven dedicated **STAUFF Line** product groups

- **STAUFF Clamps**
- **STAUFF Connect**
- **STAUFF Flanges**
- **STAUFF Hose Connectors**
- **STAUFF Quick Release Couplings**
- **STAUFF Valves**
- **STAUFF Test**

from own, in-house development and manufacturing, the companies of the STAUFF Group provide a comprehensive range of components for fastening and connecting pipes, tubes and hoses for mobile and industrial hydraulic applications and many other industries.

The portfolio is completed by components for shutting-off, regulating, throttling and measuring fluid media.

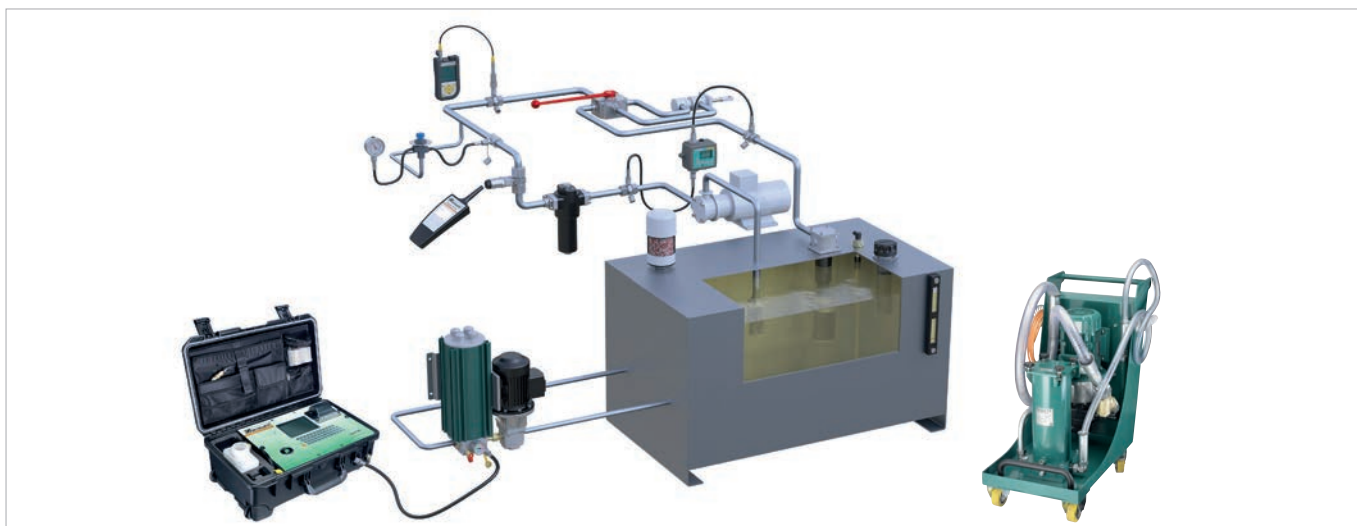
In order to perfectly match each other, STAUFF Line products are designed and offered on a high, uniform level of quality. A large proportion of the range made from steel comes as standard with the premium STAUFF Zinc/Nickel surface coating, which is also optionally available for many of the other components.

This coating offers the most reliable surface protection far beyond the previous market standards – even after transport, handling and assembly of the components – and meets all current legal requirements.

If desired, Original Equipment Manufacturers can be supported with value-added services, from **technical consultation to pre-assembly, assembly and kitting** as well as **logistics services**:

- Support with the **selection of suitable standard components** and ordering options; provision of **customised solutions** according to customer's specifications or based on our in-house development – from prototyping to large scale production
- **Analysis and optimization** of existing and design and developments of new systems aimed at increasing the efficiency and performance of machines and equipment and creating value for customers by reducing the total cost
- **Pre-assembly, assembly and kitting** of individual components to customer-specific system modules
- Individually coordinated **procurement solutions** (e.g. web shop and electronic data interchange) and **supply models** (e.g. from warehousing of customised components to Kanban logistics and just-in-time delivery of pre-fabricated system modules to the assembly lines of the customers) aimed at optimising material flows





Aligned with the needs of the market, the product groups

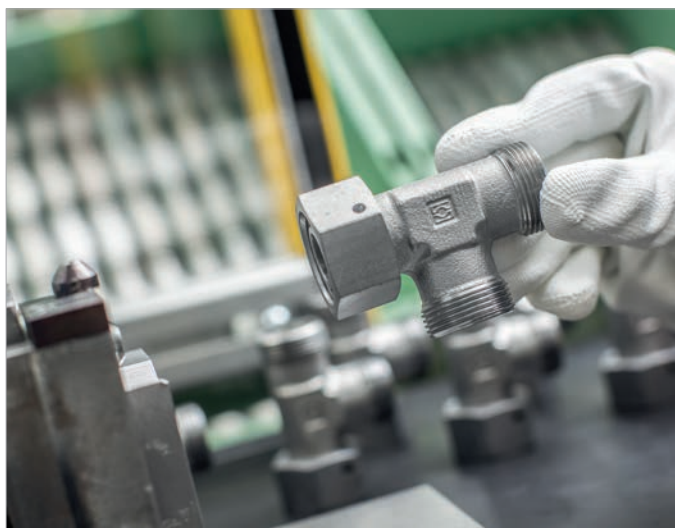
- STAUFF Test
- STAUFF Diagtronics
- STAUFF Filtration Technology
- STAUFF Hydraulic Accessories

include a comprehensive range of analogue and digital measuring equipment and devices, filtration systems and replacement filter elements as well as accessories for the construction of tanks, reservoirs, power packs and gear boxes in mobile and industrial hydraulics.

The offer is completed by relevant value-added services:

- Support with the **selection of suitable components** and ordering options; provision of **customised solutions** according to customer's specifications or based on our in-house development – from prototyping to large scale production
- Analysis of existing hydraulic circuits aimed at filtration systems, tank components and monitoring devices that perfectly match to the specific requirements, and developing integrated concepts to increase the efficiency and performance of machines and equipment
- Individually coordinated **procurement solutions** and **supply models**





STAUFF Connect

The STAUFF Connect product group is closely aligned with the market requirements and contains an extensive range of tube connectors made of carbon steel for metric tubes with outer diameters ranging from 4 to 42 mm in accordance with ISO 8434-1 / DIN 2353:

- 24° cutting ring fittings
- 24° taper fittings with O-ring
- 24° weld cones with O-ring
- 37° flared tube fittings

The product range is completed by check and alternating valves for inline installation, thread reducers as well as blanking plugs and screws.

Special product types and sizes as well as alternative materials, material combinations and surface coatings deviating from the standards can be supplied on request.

Automated assembly machinery and hardened, wear-resistant tools enable the reliable assembly of tube connectors – both for series production in the workshop and on-site.

Because of its versatility and flexibility, the patented STAUFF Form Tube Forming System is undoubtedly the best solution for series production, in particular for applications with highest requirements with regards to safety, reliability and repeatability as well as process stability.

For the finishing of the tube connector range in carbon steel, STAUFF relies on the STAUFF Zinc/Nickel surface coating which has proven successful for many years. It provides reliable surface protection – even after transport, handling and assembly – and meets all current legal requirements.

For selected types and series, independent certificates and approvals can be provided:

- Bureau Veritas
- DNV GL
- DVGW
- Lloyd's Register





STAUFF Zinc/Nickel Coating



Layers

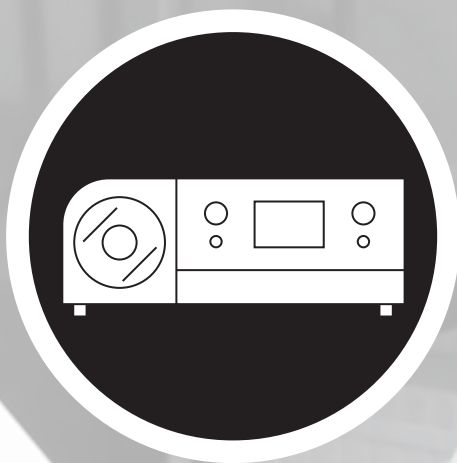
- Sealing
- Passivation
- Zinc/Nickel
- Steel



















With at least 1200 hours resistance against red rust, the STAUFF Zinc/Nickel surface coating offers excellent surface protection – even after transport, handling and assembly. This was confirmed by testing in the salt-spray chamber according to DIN EN ISO 9227.

Users across all industries and applications benefit from sophisticated technology, which has been developed for and used by the very demanding automotive industry for many years now and that is already the proven standard for a large proportion of STAUFF components since 2007.

- At least 1200 hours resistance to red rust / base metal corrosion under practical conditions in the salt-spray chamber according to DIN EN ISO 9227
- White rust occurs only by way of a slight grey haze
- Surpassing the requirements of the corrosion protection class K5 as defined by the VDMA, the German Engineering Association (360 hours resistance to white rust / 720 hours resistance to red rust)
- Free of hexavalent chrome Cr(VI)
- ELV compliant according to 2000/53/EC (End of Life Vehicles Directive)
- REACH compliant according to 1907/2006/EC (Registration, Evaluation, Authorisation and Restriction of Chemicals)
- RoHS compliant according to 2002/95/EC (Restrictions of the Use of Hazardous Substances)
- Appealing colour scheme with a bright semi-gloss surface finish – comparable to Stainless Steel
- Significantly reduced tendency to corrosion by contact with other metals (such as Aluminium and Stainless Steel)
- Improved abrasion resistance due to the ductility / plastic deformability of the coating
- Little to no risk of triggering allergies – nickel release is down to only a fraction of the statutory limits relating to objects which come into direct and prolonged contact with the skin (independent results of the reference test method according DIN EN 1811 are available on request)
- Good paint adhesion properties
- Resistance against all commonly used hydraulic media

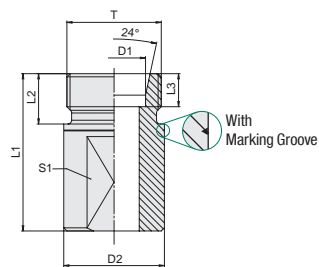




	Final Assembly Stud for the Manual Cutting Ring Assembly FI-FK	250		STAUFF Form EVO Tube Forming Machine SF0-F	268
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	Portable Cutting Ring Assembly Machine with Manual Pressure Setting (Set) SPR-PRC-H-SET	264			
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Final Assembly Stud for the Manual Cutting Ring Assembly Type FI-FK • Series LL / L / S



Series	Tube OD (mm/in)	Dimensions (mm/in)						Weight (kg/lbs) ca. per 100	Ordering Codes
	D1	Thread T	D2	L1	L2	L3	S1		
LL	4	M 8 x 1	14	40	8	4	11	3,74	FI-FK-04LL-HR
	.16		.55	1.57	.31	.16	.43	8.23	
	6	M 10 x 1	14	40	8	5,5	11	3,81	FI-FK-06LL-HR
	.24		.55	1.57	.31	.22	.43	8.39	
	8	M 12 x 1	14	41	9	5,5	11	4,00	FI-FK-08LL-HR
	.31		.55	1.61	.35	.22	.43	8.81	
L	6	M 12 x 1,5	14	43	10	7	11	4,21	FI-FK-06L-HR
	.24		.55	1.69	.39	.28	.43	9.26	
	8	M 14 x 1,5	15	43	10	7	12	4,96	FI-FK-08L-HR
	.31		.59	1.69	.39	.28	.47	10.90	
	10	M 16 x 1,5	17	44	11	7	14	6,57	FI-FK-10L-HR
	.39		.67	1.73	.43	.28	.55	14.46	
	12	M 18 x 1,5	20	44	11	7	17	9,06	FI-FK-12L-HR
	.47		.79	1.73	.43	.28	.67	19.92	
	15	M 22 x 1,5	23	45	12	7	19	12,34	FI-FK-15L-HR
	.59		.91	1.77	.47	.28	.75	27.14	
	18	M 26 x 1,5	29	46	12	7,5	24	19,62	FI-FK-18L-HR
	.71		1.14	1.81	.47	.30	.94	43.16	
	22	M 30 x 2	32	48	14	7,5	27	25,11	FI-FK-22L-HR
	.87		1.26	1.89	.55	.30	1.06	55.23	
	28	M 36 x 2	38	48	14	7,5	32	35,07	FI-FK-28L-HR
	1.10		1.50	1.89	.55	.30	1.26	77.15	
S	35	M 45 x 2	48	60	16	10,5	41	69,87	FI-FK-35L-HR
	1.38		1.89	2.36	.63	.41	1.61	153.71	
	42	M 52 x 2	54	60	16	11	46	87,41	FI-FK-42L-HR
	1.65		2.13	2.36	.63	.43	1.81	192.31	
	6	M 14 x 1,5	15	45	12	7	12	5,34	FI-FK-06S-HR
	.24		.59	1.77	.47	.28	.47	11.75	
	8	M 16 x 1,5	17	45	12	7	14	6,92	FI-FK-08S-HR
	.31		.67	1.77	.47	.28	.55	15.23	
	10	M 18 x 1,5	20	45	12	7,5	17	9,44	FI-FK-10S-HR
	.39		.79	1.77	.47	.30	.67	20.78	
	12	M 20 x 1,5	22	45	12	7,5	17	10,87	FI-FK-12S-HR
	.47		.87	1.77	.47	.30	.67	23.92	
	14	M 22 x 1,5	24	47	14	8	19	13,59	FI-FK-14S-HR
	.55		.94	1.85	.55	.31	.75	29.90	
	16	M 24 x 1,5	27	48	14	8,5	22	17,49	FI-FK-16S-HR
	.63		1.06	1.89	.55	.33	.87	38.48	
	20	M 30 x 2	32	50	16	10,5	27	25,83	FI-FK-20S-HR
	.79		1.26	1.97	.63	.41	1.06	56.82	
	25	M 36 x 2	38	62	18	12	32	46,15	FI-FK-25S-HR
	.98		1.50	2.44	.71	.47	1.26	101.54	
	30	M 42 x 2	44	64	20	13,5	36	62,34	FI-FK-30S-HR
	1.18		1.73	2.52	.79	.53	1.42	137.15	
	38	M 52 x 2	54	66	22	16	46	95,92	FI-FK-38S-HR
	1.50		2.13	2.60	.87	.63	1.81	211.03	

Materials / surface finishings: **HR** Steel, uncoated, hardened

Accessories

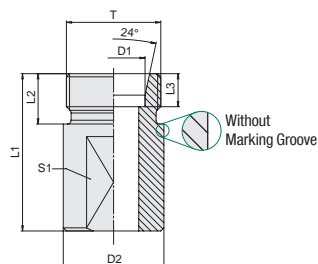


Cone Gauges

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Pre-Assembly Stud for the Manual Cutting Ring Assembly Type FI-VK ■ Series LL / L / S



Series	Tube OD (mm/in)	Dimensions (mm/in)						Weight (kg/lbs) ca. per 100	Ordering Codes
	D1	Thread T	D2	L1	L2	L3	S1		
LL	4	M 8 x 1	14	25	8	4,3	11	2,11	FI-VK-04LL-HR
	.16		.55	.98	.31	.17	.43	4.64	
	6	M 10 x 1	14	25	8	5,8	11	2,18	FI-VK-06LL-HR
	.24		.55	.98	.31	.23	.43	4.79	
	8	M 12 x 1	14	26	9	5,8	11	2,36	FI-VK-08LL-HR
	.31		.55	1.02	.35	.23	.43	5.20	
L	6	M 12 x 1,5	14	28	10	7,3	11	2,57	FI-VK-06L-HR
	.24		.55	1.10	.39	.29	.43	5.66	
	8	M 14 x 1,5	15	28	10	7,3	12	3,05	FI-VK-08L-HR
	.31		.59	1.10	.39	.29	.47	6.71	
	10	M 16 x 1,5	17	29	11	7,3	14	4,07	FI-VK-10L-HR
	.39		.67	1.14	.43	.29	.55	8.96	
	12	M 18 x 1,5	20	29	11	7,3	17	5,53	FI-VK-12L-HR
	.47		.79	1.14	.43	.29	.67	12.16	
	15	M 22 x 1,5	23	30	12	7,3	19	7,75	FI-VK-15L-HR
	.59		.91	1.18	.47	.29	.75	17.04	
	18	M 26 x 1,5	29	31	12	7,8	24	12,31	FI-VK-18L-HR
	.71		1.14	1.22	.47	.31	.94	27.08	
	22	M 30 x 2	32	33	14	7,8	27	16,08	FI-VK-22L-HR
	.87		1.26	1.30	.55	.31	1.06	35.38	
	28	M 36 x 2	38	33	14	7,8	32	22,34	FI-VK-28L-HR
	1.10		1.50	1.30	.55	.31	1.26	49.15	
S	35	M 45 x 2	48	45	16	10,8	41	49,40	FI-VK-35L-HR
	1.38		1.89	1.77	.63	.43	1.61	108.67	
	42	M 52 x 2	54	45	16	11,3	46	61,50	FI-VK-42L-HR
	1.65		2.13	1.77	.63	.44	1.81	135.31	
	6	M 14 x 1,5	15	30	12	7,3	12	3,43	FI-VK-06S-HR
	.24		.59	1.18	.47	.29	.47	7.55	
	8	M 16 x 1,5	17	30	12	7,3	14	4,43	FI-VK-08S-HR
	.31		.67	1.18	.47	.29	.55	9.75	
	10	M 18 x 1,5	20	30	12	7,8	17	5,92	FI-VK-10S-HR
	.39		.79	1.18	.47	.31	.67	13.03	
	12	M 20 x 1,5	22	30	12	7,8	17	6,87	FI-VK-12S-HR
	.47		.87	1.18	.47	.31	.67	15.11	
	14	M 22 x 1,5	24	32	14	8,3	19	8,74	FI-VK-14S-HR
	.55		.94	1.26	.55	.33	.75	19.23	
	16	M 24 x 1,5	27	33	14	8,8	22	11,23	FI-VK-16S-HR
	.63		1.06	1.30	.55	.35	.87	24.70	
	20	M 30 x 2	32	35	16	10,8	27	16,83	FI-VK-20S-HR
	.79		1.26	1.38	.63	.43	1.06	37.02	
	25	M 36 x 2	38	47	18	12,3	32	33,47	FI-VK-25S-HR
	.98		1.50	1.85	.71	.48	1.26	73.63	
	30	M 42 x 2	44	49	20	13,8	36	45,62	FI-VK-30S-HR
	1.18		1.73	1.93	.79	.54	1.42	100.37	
	38	M 52 x 2	54	51	22	16,3	46	70,08	FI-VK-38S-HR
	1.50		2.13	2.01	.87	.64	1.81	154.17	

Materials / surface finishings: **HR** Steel, uncoated, hardened



STAUFF Press Cutting Ring Final Assembly Machine Type SPR-PRC-POC-A-A



Product Description

The STAUFF Press Assembly Machine SPR-PRC-POC-A-A allows the pressure/position-controlled final assembly of cutting rings from the Extra-Light Series (LL), the Light Series (L) and the Heavy Series (S) according to ISO 8434-1 / DIN 2353 on tube ends with outer diameters between 4 mm and 42 mm.

The machine is designed as a robust table-top device for continuous operation in the workshop. It is used in connection with hardened and wear-resistant assembly studs FI-FMK and support plates FI-GP which are specially designed for the machine-assisted assembly.

The combined pressure/position-control of the device allows wear on the assembly tools to be detected in time before it can have a negative influence on the assembly result. Maximum service life of the tools is achieved through careful handling of the components and practical operation of the assembly machine. Other factors are proper storage (protected against contamination and corrosion), regular cleaning and lubrication (with suitable lubricants) and thorough preparation of the tube ends before assembly (cutting, deburring and cleaning).

Short times for tool changes, setup and assembly make it possible to carry out series assembly of cutting rings as well as assembly of small and medium quantities with a high level of economic efficiency, reproducibility and process reliability. Among other things, this is achieved with the RFID transponders – which are integrated into the support plates for automatic tool size identification as a standard – and with the tool contact switch: this allows assembly processes to be automatically started and completed by simply pushing the tube end into the assembly stud without having to press any buttons. The assembly area is secured against interference by a light grid to comply with current accident prevention regulations.

With machine-assisted **final assembly**, the cutting ring has already cut 100% into the tube and the fitter only has to tighten the union nut by 30° (corresponds to 1/12 turns) from the fix point. Please pay attention to the corresponding assembly instruction.

Final assembly (100%) minimises the risk for errors (insufficient or excessive manual tightening) and the resulting leak potentials which can often lead to time consuming and expensive machine downtimes and environmental impact. Due to the time benefits during final tightening, final assembly by machine also generates clear saving potentials compared to manual direct assembly as well as to machine-assisted pre-assembly.

In case of incorrect or incomplete assembly where pressure and position parameters significantly deviate from the values stored in the machine, it automatically stops the assembly process and displays a corresponding warning message on the operating panel.



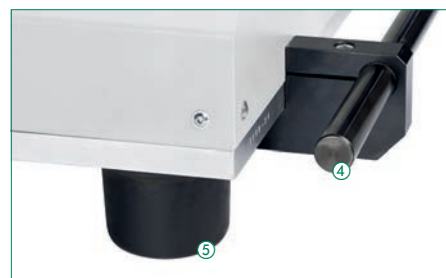
Operating elements of the assembly machine



Noise-reducing tool tray with durable rubber mat



Electrical connection plug and Ethernet port (RJ45)



Lateral handle bars and rubber machine feet with suitable clearance height

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 (50%)
and finish the assembly by manually tightening the union nut by 180° (equivalent to 1/2 a turn)



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



STAUFF Press Cutting Ring Final Assembly Machine Type SPR-PRC-POC-A-A

Characteristics

Performance

- 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
- Tool wear detection through combined pressure/position-control
- Internal memory for up to 9 assembly programs which can be selected on the operating panel: predefined are tube materials steel E235 and E355 as well as stainless steel 316; parameters for other materials (copper, CuNiFe, Tungum, polyamide etc.) can be added by the manufacturer if required
- Counters for lot/batch sizes and total quantities (separated by tool size)
- Documented process control through programmable logic control (PLC)
- Predefined menu languages: English, German, French and Italian
- Manual pressure adjustment possible

Design

- ① Robust and ergonomically designed machine housing
- ② Optimised assembly area, which allows processing of tubes with low bending radii (to at least 31 mm / 1.22 in distance from the tube axis to the interfering edge of the machine housing) or complex geometries
- ③ Noise-reducing tool tray with durable rubber mat
- ④ Lateral handle bars as attachment points for transport (e.g. with lifting belts)
- ⑤ Secure positioning thanks to flexible rubber machine feet
- ⑥ Type plate, with technical data, serial number, year of manufacture, etc.

Technical Data

Area of Application

- Function: final assembly (100%) of cutting rings on metric tube ends
- Operating principle: Assembly with combined pressure/position-control
- Series and diameters: Extra-Light Series (LL): 4, 6, 8, 10, 12 mm
Light Series (L): 6, 8, 10, 12, 15, 18, 22, 28, 35, 42 mm
Heavy Series (S): 6, 8, 10, 12, 14, 16, 20, 25, 30, 38 mm

Dimensions / Weight

- Dimensions (W x D x H): 780 mm x 650 mm x 305 mm
30.70 in x 25.29 in x 12.00 in
with lateral handle bars (detachable)
- Distance from the tube axis to the interfering edge of the machine housing: 80 mm / 3.15 in
- Clearance height: 65 mm / 2.56 in (height of the machine feet)
enables simple and safe transport
using a forklift or pallet jack
- Weight: 95 kg / 210 lbs (incl. operating fluid, excl. assembly tools)

Materials

- Machine frame: Aluminium
- Machine housing: Steel, painted
- Tool tray: NBR (Perbunan®)
- Machine feet: Natural rubber
- Assembly studs: Steel, PVD coated
- Support plates: Steel, browned

Operating Elements

- ⑦ Operating panel for display and selection of all relevant settings and assembly parameters
- ⑧ Button for definite confirmation of entries made on the operating panel
- ⑨ Status light to indicate readiness for operation and running assembly processes

Safety Devices

- ⑩ Main power switch
(can be secured against unauthorised actuation when required)
- ⑪ Separate emergency stop button to immediately stop all machine movements
- ⑫ Light grid to protect users when reaching into the assembly area

Connections (at the back of the machine)

- ⑬ Electrical connection according to IEC 60309 CEE 16A
(cable length: 4 m / 13.12 ft) and Ethernet connection (RJ45)
for maintenance and data input by the manufacturer

Assembly Tools

- ⑭ Wear-resistant assembly stud FI-MFK
- ⑮ Support plate FI-GP with RFID transponder

Motor Configuration

- Power supply: 400 V AC @ 50 Hz - 3 phases
460 V AC @ 60 Hz - 3 phases
- Current consumption: 2,7 A
- Connected load: 0,9 kW
- Electrical connection: Phase reversing plug according to IEC 60309 CEE 16A
- Cable length: 4 m / 13.12 ft

Alternative motor configurations and plug types are available on request.
Please contact STAUFF for details.

Hydraulic System

- Operating fluid: Hydraulic oil Shell Tellus S2 MA 46 or equivalent
(filled and ready for operation when delivered)
- Fluid volume: 4 litres / 1.06 US Gallon
- Max working pressure: 450 bar / 6527 PSI

Operating Conditions

- Storage temperature: -10°C ... +70°C / +14°F ... +158°F
- Ambient temperature: +15°C ... +35°C / +59°F ... +95°F
- Ambient conditions: Dry, no condensing humidity,
operation in horizontal position only
- Noise emission: less than 66 dB(A) as per EN ISO 11202
at full-load operation with maximum tube dimensions



STAUFF Maintenance Contracts

Please contact STAUFF for a maintenance contract, that provides optimum service for your STAUFF assembly machine.



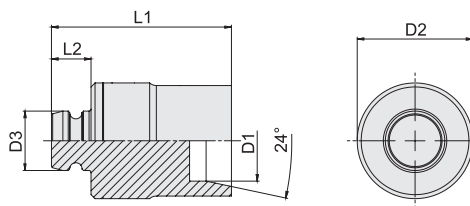
STAUFF Machine Rental

Please contact STAUFF for a rental machine and further details of what this service can offer.



Cutting Ring Assembly Stud for Machine-Assisted Assembly

Type FI-MFK ▪ Series LL / L / S



Series	Tube OD (mm/in)	Dimensions (mm/in)				Weight (kg/lbs) ca. per 100	Ordering Codes
	D1	D2	D3	L1	L2		
LL	4	30	14,8	50	10	12,98	FI-MFK-04LL-W100
	.16	1.18	.58	1.97	.39	28.55	
	6	30	14,8	50	10	13,28	FI-MFK-06LL-W100
	.24	1.18	.58	1.97	.39	29.22	
	8	30	14,8	50	10	13,68	FI-MFK-08LL-W100
L	.31	1.18	.58	1.97	.39	30.10	
	6	30	14,8	50	10	13,57	FI-MFK-06L-W100
	.24	1.18	.58	1.97	.39	29.85	
	8	30	14,8	50	10	14,01	FI-MFK-08L-W100
	.31	1.18	.58	1.97	.39	30.82	
	10	30	14,8	50	10	14,63	FI-MFK-10L-W100
	.39	1.18	.58	1.97	.39	32.18	
	12	30	14,8	50	10	16,09	FI-MFK-12L-W100
	.47	1.18	.58	1.97	.39	35.39	
	15	30	14,8	50	10	16,63	FI-MFK-15L-W100
	.59	1.18	.58	1.97	.39	36.58	
	18	30	14,8	50	10	18,23	FI-MFK-18L-W100
	.71	1.18	.58	1.97	.39	40.10	
	22	30	14,8	49	10	19,13	FI-MFK-22L-W100
	.87	1.18	.58	1.93	.39	42.08	
	28	33,8	14,8	48	10	24,43	FI-MFK-28L-W100
	1.10	1.33	.58	1.89	.39	53.74	
	35	42,8	14,8	45	10	32,72	FI-MFK-35L-W100
	1.38	1.69	.58	1.77	.39	71.99	
	42	49,8	14,8	44	10	41,17	FI-MFK-42L-W100
	1.65	1.96	.58	1.73	.39	90.58	
S	6	30	14,8	50	10	14,14	FI-MFK-06S-W100
	.24	1.18	.58	1.97	.39	31.11	
	8	30	14,8	50	10	14,68	FI-MFK-08S-W100
	.31	1.18	.58	1.97	.39	32.29	
	10	30	14,8	50	10	15,23	FI-MFK-10S-W100
	.39	1.18	.58	1.97	.39	33.51	
	12	30	14,8	50	10	15,89	FI-MFK-12S-W100
	.47	1.18	.58	1.97	.39	34.95	
	14	30	14,8	49	10	15,98	FI-MFK-14S-W100
	.55	1.18	.58	1.93	.39	35.15	
	16	30	14,8	49	10	16,65	FI-MFK-16S-W100
	.63	1.18	.58	1.93	.39	36.64	
	20	30	14,8	45	10	16,43	FI-MFK-20S-W100
	.79	1.18	.58	1.77	.39	36.15	
	25	33,8	14,8	42	10	19,02	FI-MFK-25S-W100
	.98	1.33	.58	1.65	.39	41.84	
	30	39,8	14,8	40	10	22,88	FI-MFK-30S-W100
	1.18	1.57	.58	1.57	.39	50.34	
	38	49,8	14,8	36	10	26,41	FI-MFK-38S-W100
	1.50	1.96	.58	1.42	.39	58.10	

Materials / surface finishings: **W100** Steel, PVD coated

Accessories

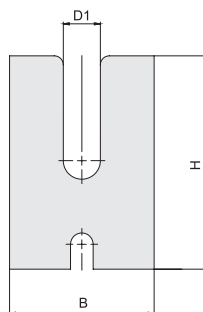
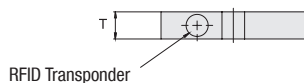


Cone Gauges

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Support Plate for Machine-Assisted Assembly Type FI-GP ▪ Series LL / L / S



Series	Tube OD (mm/in)	Dimensions (mm/in)			Weight (kg/lbs) ca. per 100	Ordering Codes
	D1	B	H	T		
LL	4	80	118	15	104,43	FI-GP-04LL-W101
	.16	3.15	4.65	.59	229.75	
	6	80	118	15	102,97	FI-GP-06LL-W101
	.24	3.15	4.65	.59	226.53	
	8	80	118	15	101,46	FI-GP-08LL-W101
L	.31	3.15	4.65	.59	223.22	
	6	80	118	15	102,97	FI-GP-06L-W101
	.24	3.15	4.65	.59	226.53	
	8	80	118	15	101,46	FI-GP-08L-W101
	.31	3.15	4.65	.59	223.22	
	10	80	118	15	99,93	FI-GP-10L-W101
	.39	3.15	4.65	.59	219.84	
	12	80	118	15	98,35	FI-GP-12L-W101
	.47	3.15	4.65	.59	216.37	
	15	80	118	15	95,91	FI-GP-15L-W101
	.59	3.15	4.65	.59	211.01	
	18	80	118	15	93,40	FI-GP-18L-W101
	.71	3.15	4.65	.59	205.47	
	22	80	118	15	89,91	FI-GP-22L-W101
	.87	3.15	4.65	.59	197.80	
	28	80	118	15	84,41	FI-GP-28L-W101
	1.10	3.15	4.65	.59	185.69	
	35	80	118	15	77,56	FI-GP-35L-W101
	1.38	3.15	4.65	.59	170.64	
	42	80	118	15	70,27	FI-GP-42L-W101
S	1.65	3.15	4.65	.59	154.59	
	6	80	118	15	102,97	FI-GP-06S-W101
	.24	3.15	4.65	.59	226.53	
	8	80	118	15	101,46	FI-GP-08S-W101
	.31	3.15	4.65	.59	223.22	
	10	80	118	15	99,93	FI-GP-10S-W101
	.39	3.15	4.65	.59	219.84	
	12	80	118	15	98,35	FI-GP-12S-W101
	.47	3.15	4.65	.59	216.37	
	14	80	118	15	96,73	FI-GP-14S-W101
	.55	3.15	4.65	.59	212.81	
	16	80	118	15	95,08	FI-GP-16S-W101
	.63	3.15	4.65	.59	209.18	
	20	80	118	15	91,67	FI-GP-20S-W101
	.79	3.15	4.65	.59	201.68	
	25	80	118	15	87,20	FI-GP-25S-W101
	.98	3.15	4.65	.59	191.84	
	30	80	118	15	82,50	FI-GP-30S-W101
	1.18	3.15	4.65	.59	181.49	
	38	80	118	15	74,49	FI-GP-38S-W101
	1.50	3.15	4.65	.59	163.88	

Materials / surface finishings: **W101** Steel, browned



STAUFF Press

Optional tool holder for tubes with small bending radii

Type SPR-PRC-POC-RTH



The assembly head differs from the standard model by the holder for the cutting ring assembly socket being moved upwards, shortening the distance from the tube axis in the assembly socket to the upper edge of the machine from the standard 77 mm to 31 mm.

This means that cutting rings can be fitted with ease to tubes with small axis distances.

If tubes with complex geometries are to be handled (e.g. with short tube end and 90°tail), the safety light barrier, which secures the assembly area, can be disabled if required.

The optional assembly head enables tubes with a diameter of 6 to 18 mm in the Light Series and 6 mm to 16 mm in the Heavy Series to be handled.

Existing assembly tools can also continue to be used. The user simply needs to import new parameter sets into the machine.

STAUFF Press

Optional Cloud connection allows preventive maintenance via remote access and facilitates the documentation of assembly processes

Type SPR-PRC-POC-A-A-IOT



Cutting ring assembly machines type SPR-PRC-POC can be equipped at the factory with a built-in module for direct connection to a cloud operated by STAUFF. This solution is realised with an integrated SIM card which can be used in all industrial regions of the world.

This enables software updates, for example, without having to connect the machine to a local network on site. Parameter sets, which have been determined by STAUFF for non-standard tube materials can also be transferred quickly and directly to the machine in this way.

Customers are given access to the cloud via a protected online portal, where they can get detailed information on the assembly processes performed, among other things.

The required data security is guaranteed by encryption in both directions.

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Assembly Tool Magazine

Type SPR-TM



- Provides safe and convenient storage for up to 10 assembly studs (type FI-MFK) as well as up to 10 support plates (types FI-GP and FI-GP-PRC) for the machine-assisted cutting ring assembly
- Assembly studs and support plates are not included in the scope of delivery for this item and have to be ordered separately

External Foot Control Switch

Type SF0/PRC-POC-FS



- Enables the operator to trigger assembly processes from a larger distance to the machine (cable length: 5 m / 16.40 ft)



STAUFF Press

Combined Cutting Ring Assembly and 37° Tube Flaring Machine

with Automatic or Manual Pressure Setting and Control ▪ Type SPR-PRC-MA-D-A

Product Description

The electro-hydraulically operated STAUFF Press Assembly Machine SPR-PRC-MA-D-A allows the assembly of cutting rings in the Light Series (L) as well as in the Heavy Series (S) according to ISO 8434-1 / DIN 2353 on metric tube ends with outer diameters from 4 mm to 42 mm.

Exchangeable heads allows the device to be adapted for 37° flaring of metric and imperial tube ends with outer diameters from 4 mm to 42 mm and from 1/4 in to 1 1/2 in respectively according to DIN 3949 or SAE J514 / ISO 8434-2.

Short times for tool changes, setup and assembly (even when changing the assembly type from cutting ring assembly to 37° tube flaring) make it possible to carry out series production as well as the assembly of small and medium quantities with a high level of economic efficiency, reproducibility and process reliability with considerable reduction of times and cost of assembly of fittings.

The adjustable return stroke of the cylinder helps the operator to further optimise the total cycle times.

The machine is designed as a robust table-top device for continuous operation in the workshop. It is used in connection with hardened and wear-resistant assembly tools which are specially designed for the machine-assisted assembly.



Tooling head for cutting ring assembly based on pre-defined settings / automatic tool size detection



Tooling head for cutting ring assembly based on settings manually defined by the operator



Tooling head for 37° tube flaring based on settings manually defined by the operator



Smart programmable control panel with push/turn button and back-lit parameter display



Noise-reducing tool tray with durable rubber mat



Robust rubber feet providing secure positioning and dampening during operation



USB connection for maintenance and data input by the manufacturer



Electrical connection with a phase reversing plug according to IEC 60309 CEE 16A



Connections for the tool head as well as for the external foot control switch



STAUFF Press

Combined Cutting Ring Assembly and 37° Tube Flaring Machine with Automatic or Manual Pressure Setting and Control ▪ Type SPR-PRC-MA-D-A

Characteristics

Performance

- Pressure-controlled assembly of cutting rings on metric tube ends as well as 37° tube flaring of metric/imperial tube ends due to exchangeable tool heads
- Cutting ring assembly with Tooling Head SPR-PRC-TH-C-MA based on pre-defined pressure settings (with automatic tool size detection) or with Tooling Head SPR-PRC-TH-C-M based on pressure settings as manually defined by the operator
- Short times for tool and head changes, setup and assembly (even when changing the assembly type from cutting ring assembly to 37° tube flaring)
- Adjustable return stroke of the cylinder in order to further optimise the total cycle times
- Internal memory for up to 8 assembly programs which can be selected on the operating panel: predefined are tube materials steel E235 and E355 as well as stainless steel 316; parameters for other materials (copper, CuNiFe, Tungum, polyamide etc.) can be added by the manufacturer if required
- Counters for lot/batch sizes and total quantities
- Operator-friendly and easy to maintain and service

Design

- ① Robust and compact table-top device allowing for maximum mobility and flexibility
- ② Optimised assembly area with approx. 65 mm / 2.56 in distance from the tube axis to the interfering edge of the machine housing, which allows processing of tubes with low bending radii or complex geometries
- ③ Noise-reducing tool tray with durable rubber mat
- ④ Lateral handle bars as attachment points for transport (e.g. with lifting belts)
- ⑤ Robust rubber feet providing secure positioning and dampening during operation
- ⑥ Type plate, with technical data, serial number, year of manufacture, etc.

Technical Data

Area of Application

- Function: Pressure-controlled assembly of cutting rings
Light (L): 6, 8, 10, 12, 15, 18, 22, 28, 35, 42 mm
Heavy (S): 6, 8, 10, 12, 14, 16, 20, 25, 30, 38 mm
- Pressure-controlled 37° flaring of metric tube ends (according to DIN 3949 bzw. SAE J 514 / ISO 8434-2):
Light (L): from 6 x 1 mm to 42 x 4 mm
Heavy (S): from 6 x 1 mm to 38 x 5 mm
- Pressure-controlled 37° flaring of imperial tube ends (according to SAE J 514 / ISO 8434-2):
1/4, 5/16, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 1-1/4, 1-1/2 inch

Dimensions / Weight

- Dimensions (W x D x H): 660 mm x 515 mm x 265 mm
25.98 in x 20.28 in x 10.43 in
with lateral handle bars (detachable)
- Distance from the tube axis to the interfering edge of the machine housing: 65 mm / 2.56 in
- Clearance height: 30 mm / 1.18 in (height of the machine feet)
- Weight (basic machine): 66 kg / 145 lbs
(incl. operating fluid, excl. assembly tools)
- Weight (tooling heads): SPR-PRC-TH-C-A: 6,0 kg / 13 lbs
SPR-PRC-TH-C-M: 5,5 kg / 12 lbs
SPR-PRC-TH-F-M: 19,5 kg / 43 lbs

Materials

- Machine frame: Steel
- Machine cover: Plastic
- Tool tray: NBR (Perbunan®)
- Machine feet: Natural rubber
- Assembly tools: Steel, uncoated, hardened

Operating Elements

- ⑦ Push/turn control button to select all relevant settings and assembly parameters
- ⑧ Smart programmable control panel with back-lit parameter display
- ⑨ Button for definite confirmation of entries made on the operating panel
- ⑩ Illuminated pushbutton to reset the cylinder and to indicate incorrect assemblies

Safety Devices

- ⑪ Selector switch to choose the operation mode (can be locked with a key and secured against unauthorised actuation, if required)
- ⑫ Main power switch
- ⑬ Separate emergency stop button to immediately stop all machine movements

Connections

- ⑭ Electrical connection according to IEC 60309 CEE 16A (cable length: 4 m / 13.12 ft)
- ⑮ USB connection for maintenance and data input by the manufacturer
- ⑯ Connections for tool heads for cutting ring assembly based on pre-defined pressure settings as well as for the external foot control switch SPR-PRC-FS (available on request)

Assembly Tools

- Tooling head SPR-PRC-TH-C-MA for cutting ring assembly based on automatic pressure setting (50% pre-assembly is pre-defined) and with tool size detection via the support plates
- Tooling head SPR-PRC-TH-C-M for cutting ring assembly based on manual settings
- Tooling head SPR-PRC-TH-F-M for 37° tube flaring based on manual settings
- Wear-resistant cutting ring assembly stud FI-MFK
- Support plate FI-GP-...-PRC
- Clamping jaws FI-KB-...-PRC for 37° tube flaring

Motor Configuration

- Power supply: 400 V AC @ 50 Hz - 3 phases
- Current consumption: 2,8 A
- Connected load: 1,2 kW
- Electrical connection: Phase reversing plug according to IEC 60309 CEE 16A
- Cable length: 4 m / 13.12 ft

Alternative motor configurations and plug types are available on request. Please contact STAUFF for details.

Hydraulic System

- Operating fluid: Hydraulic oil Shell Nuto H 32 or equivalent (filled and ready for operation when delivered)
- Fluid volume: 4 litres / .78 US Gallon
- Max working pressure: 200 bar / 2901 PSI

Operating Conditions

- Storage temperature: -10°C ... +70°C / +14°F ... +158°F
- Ambient temperature: +10°C ... +50°C / +50°F ... +122°F
- Ambient conditions: Dry, no condensing humidity, operation in horizontal position only
- Noise emission: less than 60 dB(A) as per EN ISO 11202



STAUFF Maintenance Contracts

Please contact STAUFF for a maintenance contract, that provides optimum service for your STAUFF assembly machine.



STAUFF Machine Rental

Please contact STAUFF for a rental machine and further details of what this service can offer.



Tooling Head for Cutting Ring Assembly (based on pre-defined settings)

Type SPR-PRC-TH-C-MA



- Tooling head SPR-PRC-TH-C-MA for cutting ring pre-assembly based on pre-defined settings and with automatic tool size detection via the support plates
- Requires cutting ring assembly studs FI-MFK and support plates FI-GP-PRC

Tooling Head for Cutting Ring Assembly (based on manual settings)

Type SPR-PRC-TH-C-M



- Tooling head SPR-PRC-TH-C-M for cutting ring pre-assembly based on manual settings
- Requires cutting ring assembly studs FI-MFK and support plates FI-GP-PRC

Tooling Head for 37° Tube Flaring (based on manual settings)

Type SPR-PRC-TH-F-M



- Tooling head SPR-PRC-TH-F-M for 37° tube flaring based on manual settings
- Requires clamping jaws FI-KB-PRC

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Assembly Tool Magazine

Type SPR-TM



- Provides safe and convenient storage for up to 10 assembly studs (type FI-MFK) as well as up to 10 support plates (types FI-GP and FI-GP-PRC) for the machine-assisted cutting ring assembly
- Assembly studs and support plates are not included in the scope of delivery for this item and have to be ordered separately

External Foot Control Switch

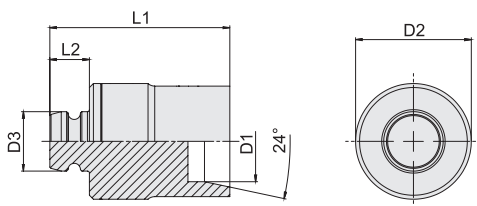
Type SPR-PRC-FS



- Enables the operator to trigger assembly processes from a larger distance to the machine (cable length: 5 m / 16.40 ft)



Cutting Ring Assembly Stud for Machine-Assisted Assembly Type FI-MFK • Series LL / L / S



Series	Tube OD (mm/in)	Dimensions (mm/in)				Weight (kg/lbs) ca. per 100	Ordering Codes
	D1	D2	D3	L1	L2		
LL	4	30	14,8	50	10	12,98	FI-MFK-04LL-W100
	.16	1.18	.58	1.97	.39	28.55	
	6	30	14,8	50	10	13,28	FI-MFK-06LL-W100
	.24	1.18	.58	1.97	.39	29.22	
	8	30	14,8	50	10	13,68	FI-MFK-08LL-W100
L	.31	1.18	.58	1.97	.39	30.10	
	6	30	14,8	50	10	13,57	FI-MFK-06L-W100
	.24	1.18	.58	1.97	.39	29.85	
	8	30	14,8	50	10	14,01	FI-MFK-08L-W100
	.31	1.18	.58	1.97	.39	30.82	
	10	30	14,8	50	10	14,63	FI-MFK-10L-W100
	.39	1.18	.58	1.97	.39	32.18	
	12	30	14,8	50	10	16,09	FI-MFK-12L-W100
	.47	1.18	.58	1.97	.39	35.39	
	15	30	14,8	50	10	16,63	FI-MFK-15L-W100
	.59	1.18	.58	1.97	.39	36.58	
	18	30	14,8	50	10	18,23	FI-MFK-18L-W100
	.71	1.18	.58	1.97	.39	40.10	
	22	30	14,8	49	10	19,13	FI-MFK-22L-W100
	.87	1.18	.58	1.93	.39	42.08	
	28	33,8	14,8	48	10	24,43	FI-MFK-28L-W100
	1.10	1.33	.58	1.89	.39	53.74	
	35	42,8	14,8	45	10	32,72	FI-MFK-35L-W100
	1.38	1.69	.58	1.77	.39	71.99	
	42	49,8	14,8	44	10	41,17	FI-MFK-42L-W100
	1.65	1.96	.58	1.73	.39	90.58	
S	6	30	14,8	50	10	14,14	FI-MFK-06S-W100
	.24	1.18	.58	1.97	.39	31.11	
	8	30	14,8	50	10	14,68	FI-MFK-08S-W100
	.31	1.18	.58	1.97	.39	32.29	
	10	30	14,8	50	10	15,23	FI-MFK-10S-W100
	.39	1.18	.58	1.97	.39	33.51	
	12	30	14,8	50	10	15,89	FI-MFK-12S-W100
	.47	1.18	.58	1.97	.39	34.95	
	14	30	14,8	49	10	15,98	FI-MFK-14S-W100
	.55	1.18	.58	1.93	.39	35.15	
	16	30	14,8	49	10	16,65	FI-MFK-16S-W100
	.63	1.18	.58	1.93	.39	36.64	
	20	30	14,8	45	10	16,43	FI-MFK-20S-W100
	.79	1.18	.58	1.77	.39	36.15	
	25	33,8	14,8	42	10	19,02	FI-MFK-25S-W100
	.98	1.33	.58	1.65	.39	41.84	
	30	39,8	14,8	40	10	22,88	FI-MFK-30S-W100
	1.18	1.57	.58	1.57	.39	50.34	
	38	49,8	14,8	36	10	26,41	FI-MFK-38S-W100
	1.50	1.96	.58	1.42	.39	58.10	

Materials / surface finishings: **W100** Steel, PVD coated

Accessories



Cone Gauges

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Support Plate for Machine-Assisted Cutting Ring Assembly

Type FI-GP-PRC ▪ Series L / S



Series	Tube OD (^{mm} / _{in})	Ordering Codes
L	6	FI-GP-06L/S-PRC-MA-W1
	.24	
	8	FI-GP-08L/S-PRC-MA-W1
	.31	
	10	FI-GP-10L/S-PRC-MA-W1
	.39	
	12	FI-GP-12L/S-PRC-MA-W1
	.47	
	15	FI-GP-15L-PRC-MA-W1
	.59	
	18	FI-GP-18L-PRC-MA-W1
	.71	
	22	FI-GP-22L-PRC-MA-W1
	.87	
	28	FI-GP-28L-PRC-MA-W1
	1.10	
	35	FI-GP-35L-PRC-MA-W1
	1.38	
S	42	FI-GP-42L-PRC-MA-W1
	1.65	
	6	FI-GP-06L/S-PRC-MA-W1
	.24	
	8	FI-GP-08L/S-PRC-MA-W1
	.31	
	10	FI-GP-10L/S-PRC-MA-W1
	.39	
	12	FI-GP-12L/S-PRC-MA-W1
	.47	
	14	FI-GP-14S-PRC-MA-W1
	.55	
	16	FI-GP-16S-PRC-MA-W1
	.63	
	20	FI-GP-20S-PRC-MA-W1
	.79	
	25	FI-GP-25S-PRC-MA-W1
	.98	
	30	FI-GP-30S-PRC-MA-W1
	1.18	
	38	FI-GP-38S-PRC-MA-W1
	1.50	

Materials / surface finishings: **W1** Steel, uncoated, hardened



Clamping Jaws for 37° Tube Flaring Type FI-KB • Series L / S



37° Flaring of Metric Tube Ends

Series	Tube OD (mm/in)	Ordering Codes	
		DIN 3949	SAE J514 / ISO 8434-2
L	6	FI-KB-06L/S-PRC-MF-W1	FI-KB-06-PRC-F-W1
	.24		
	8	FI-KB-08L/S-PRC-MF-W1	FI-KB-08/5/16-PRC-F-W1
	.31		
	10	FI-KB-10L/S-PRC-MF-W1	FI-KB-10-PRC-F-W1
	.39		
	12	FI-KB-12L/S-PRC-MF-W1	FI-KB-12-PRC-F-W1
	.47		
	15	FI-KB-15L-PRC-MF/F-W1	
	.59		
	18	FI-KB-18L-PRC-MF/F-W1	
	.71		
	22	FI-KB-22L-PRC-MF/F-W1	
	.87		
	28	FI-KB-28L-PRC-MF-W1	FI-KB-28-PRC-F-W1
	1.10		
	35	FI-KB-35L-PRC-MF-W1	FI-KB-35-PRC-F-W1
	1.38		
	42	FI-KB-42L-PRC-MF-W1	FI-KB-42-PRC-F-W1
	1.65		
S	6	FI-KB-06L/S-PRC-MF-W1	FI-KB-06-PRC-F-W1
	.24		
	8	FI-KB-08L/S-PRC-MF-W1	FI-KB-08/5/16-PRC-F-W1
	.31		
	10	FI-KB-10L/S-PRC-MF-W1	FI-KB-10-PRC-F-W1
	.39		
	12	FI-KB-12L/S-PRC-MF-W1	FI-KB-12-PRC-F-W1
	.47		
	14	FI-KB-14S-PRC-MF/F-W1	
	.55		
	16	FI-KB-16S-PRC-MF-W1	FI-KB-16-PRC-F-W1
	.63		
	20	FI-KB-20S-PRC-MF-W1	FI-KB-20-PRC-F-W1
	.79		
	25	FI-KB-25S-PRC-MF-W1	FI-KB-25-PRC-F-W1
	.98		
	30	FI-KB-30S-PRC-MF/F-W1	
	1.18		
	30 x 5	FI-KB-30SX5-PRC-MF-W1	FI-KB-38-1-1/2-PRC-F-W1
	1.18 x .20		
	38	FI-KB-38S-PRC-MF-W1	
	1.50		
	38 x 5	FI-KB-38SX5-PRC-MF-W1	
	1.50 x .20		

37° Flaring of Imperial Tube Ends

Tube OD (mm/in)	Ordering Codes
	SAE J514 / ISO 8434-2
1/4	FI-KB-1/4-PRC-F-W1
5/16	FI-KB-08/5/16-PRC-F-W1
3/8	FI-KB-3/8-PRC-F-W1
1/2	FI-KB-1/2-PRC-F-W1
5/8	FI-KB-5/8-PRC-F-W1
3/4	FI-KB-3/4-PRC-F-W1
7/8	FI-KB-7/8-PRC-F-W1
1	FI-KB-1-PRC-F-W1
1-1/4	FI-KB-1-1/4-PRC-F-W1
1-1/2	FI-KB-38-1-1/2-PRC-F-W1

Materials / surface finishings: **W1** Steel, uncoated, hardened



STAUFF Press

Portable Cutting Ring Assembly Machine with Manual Pressure Setting (Set)

Type SPR-PRC-H-SET

Product Description

With the battery-operated STAUFF Press Assembly Machine SPR-PRC-H-M, STAUFF provides an ergonomically designed, light-weight and at the same time robust device for the assembly of cutting rings in the Light Series (L) as well as in the Heavy Series (S) according to ISO 8434-1 / DIN 2353 on metric tube ends with outer diameters from 6 mm to 42 mm.

The machine has been designed for hand-held, tripod- or table-mounted operation and offers the best technical compromise between maximum flexibility, economic efficiency and a high level of process reliability with considerable reduction of time and cost for the assembly of cutting ring fittings.

Short tool change and setup times (with only a few seconds required to manually adjust the assembly pressure) make it possible to carry out the assembly of medium and even small quantities of cutting ring fittings, e.g. during maintenance, servicing, conversion and repair works on hydraulic pipe and tube systems. With the rechargeable battery being able to typically cover more than 200 assembly cycles per charge (depending on pressure settings and other influencing factors), the machine is also suitable for mass processing and production.

The assembly machine is by default supplied in a heavy-duty trolley transport case that is equipped with a range of accessories and also provides suitable space for the assembly studs.



Mode dial to manually adjust the pressure (settings indicated on the machine housing)



Status lights on the back of the machine housing



Assembly machine attached to a tripod stand using a mounting bracket



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

Technical Data

Area of Application

- Function: Pressure-controlled assembly of cutting rings acc. to ISO 8434-1 / DIN 2353 on metric tube ends
Light (L): 6, 8, 10, 12, 15, 18, 22, 28, 35 and 42 mm
Heavy (S): 6, 8, 10, 12, 14, 16, 20, 25, 30 and 38 mm

Dimensions / Weight

- Dimensions (L x H x W): 440 mm x 330 mm x 80 mm
17.32 in x 12.99 in x 3.15 in
(including rechargeable battery)
- Weight (basic machine): 6,8 kg / 15 lbs
(including rechargeable battery)
- Weight (case): 16,5 kg / 36 lbs
(including assembly machine and accessories)
- Case: IP67 certified, equipped with o-ring seal and automatic pressure valve

Materials

- Machine cover: Plastic
- Tool head: Steel, uncoated, hardened
- Assembly studs: Stainless steel, hardened

List of Components

Set supplied in a heavy-duty trolley transport case:

- Light-weight and ergonomically designed cutting ring assembly machine for the hand-held, tripod-mounted or table-mounted operation
- Rechargeable battery
- Additional replacement battery
- Battery quick charging unit
- Clips (to keep the assembly stud in position)

Not displayed: Shoulder strap

Equipment to be ordered separately:

- Assembly oil with brush (to lubricate the taper of the assembly stud)
- Cutting Ring Assembly Studs **FI-MVK-PRC-H-M-HR**

Spare Parts

- Assembly oil with brush **SPR-PRC-H-M-OS**
(required to lubricate the taper of the assembly stud)
- Rechargeable Battery **SPR-PRC-H-M-BP**
- Battery Quick Charging Unit **SPR-PRC-H-M-BC**

Rechargeable Battery

- Typically covers more than 200 assembly cycles per charge (depending on pressure settings and other influencing factors)
- Battery type: Lithium-ion (18V / 3.0 Ah)

Charging Unit

- Charging time for empty batteries is approximately 75 minutes
- Power supply: 230 V AC @ 50 Hz - single-phase
- Electrical connection: 2-pin grounded safety plug (CEE 7/4, type F / Schuko)
- Cable length: 1,10 m / 3.61 ft

Accessories



- Tripod Stand **SPR-PRC-H-M-TP**



- Table Stand **SPR-PRC-H-M-TS**



- Mounting Bracket **SPR-PRC-H-M-MH**
(required as a machine holder for both the tripod stand and the table stand)



Cutting Ring Assembly Stud for Machine-Assisted Assembly

Type FI-MVK-PRC-H-M ▪ Series L / S



Series	Tube OD (^{mm} / _{in})	Ordering Codes
L	6	FI-MVK-06L-PRC-H-M-HR
	.24	
	8	FI-MVK-08L-PRC-H-M-HR
	.31	
	10	FI-MVK-10L-PRC-H-M-HR
	.39	
	12	FI-MVK-12L-PRC-H-M-HR
	.47	
	15	FI-MVK-15L-PRC-H-M-HR
	.59	
	18	FI-MVK-18L-PRC-H-M-HR
	.71	
	22	FI-MVK-22L-PRC-H-M-HR
	.87	
	28	FI-MVK-28L-PRC-H-M-HR
	1.10	
	35	FI-MVK-35L-PRC-H-M-HR
	1.38	
	42	FI-MVK-42L-PRC-H-M-HR
	1.65	
S	6	FI-MVK-06S-PRC-H-M-HR
	.24	
	8	FI-MVK-08S-PRC-H-M-HR
	.31	
	10	FI-MVK-10S-PRC-H-M-HR
	.39	
	12	FI-MVK-12S-PRC-H-M-HR
	.47	
	14	FI-MVK-14S-PRC-H-M-HR
	.55	
	16	FI-MVK-16S-PRC-H-M-HR
	.63	
	20	FI-MVK-20S-PRC-H-M-HR
	.79	
	25	FI-MVK-25S-PRC-H-M-HR
	.98	
	30	FI-MVK-30S-PRC-H-M-HR
	1.18	
	38	FI-MVK-38S-PRC-H-M-HR
	1.50	

Materials / surface finishing: **HR** Stainless steel, hardened



STAUFF Form EVO Tube Forming Machine Type SF0-F-A-A



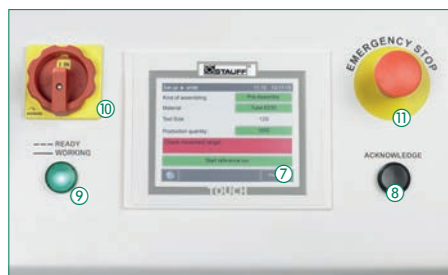
Product Description

The type SF0-F-A-A tube forming machine facilitates the economical and most reliable production of tube ends made of steel, stainless steel and other materials with a contour typical for the STAUFF Form EVO tube forming system.

The machine is designed as a robust table-top device for continuous operation in the workshop. It is used in connection with FI-FST tube shapers and FI-FB clamping jaws. Tube shapers with FI-ID internal tube supports are used with selected tube dimensions, which prevent the tube from being constricted in the shaping area.

Tube shapers, clamping jaws and internal tube supports have been specifically designed for the mechanical forming process and can be quickly and simply replaced without the need for any tools, if required. The resulting short tool change and set-up times contribute to the high efficiency of the system as well as ensuring low cycle times.

All the tools needed for the forming process are clearly labelled with the tube dimensions so that assembly errors caused by incorrect assignment can be largely ruled out.



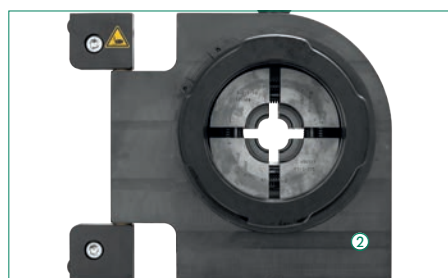
Operating elements of the tube forming machine



Noise-reducing tool tray with durable rubber mat



Lateral handle bars and rubber machine feet with suitable clearance height



Open clamping head with clamping jaws inserted



Inserting the tube shaper into the tool holder – with no tools required



Electrical connections

Optional Cloud connection allows preventive maintenance via remote access and facilitates the documentation of assembly processes Type SF0-F-IOT



Tube forming machines type SF0-F-A-A can be equipped at the factory with a built-in module for direct connection to a cloud operated by STAUFF. This solution is realised with an integrated SIM card which can be used in all industrial regions of the world.

This enables software updates, for example, without having to connect the machine to a local network on site. Parameter sets, which have been determined by STAUFF for non-standard tube materials can also be transferred quickly and directly to the machine in this way.

Customers are given access to the cloud via a protected online portal, where they can get detailed information on the assembly processes performed, among other things.

The required data security is guaranteed by encryption in both directions.



STAUFF Form EVO Tube Forming Machine Type SFO-F-A-A

Characteristics

Performance

- 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
- 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
- Potential risk of confusion and assembly errors caused by incorrect assignment can virtually be ruled out by the clear labelling of all assembly tools
- Surface-friendly clamping of the tube during the forming process
- Counters for lot/batch sizes and total quantities (separated by tool size)
- Predefined menu languages: English, German, French and Italian
- High degree of user comfort with clear information displayed on the operating panel

Design

- ① Robust and ergonomically designed machine housing
- ② Easily accessible clamping head for simple positioning of the clamping jaws and optimised assembly area with approx. 110 mm / 4.33 in distance from the tube axis to the interfering edge of the machine housing, which allows processing of tubes with low bending radii or complex geometries
- ③ Noise-reducing tool tray with durable rubber mat
- ④ Lateral handle bars as attachment points for transport (e.g. with lifting belts)
- ⑤ Secure positioning thanks to flexible rubber machine feet
- ⑥ Type plate, with technical data, serial number, year of manufacture etc.

Technical Data

Area of Application

- Function: Cold forming of seamless cold drawn precision steel tubes acc. to EN 10305-1 (materials E235, E355) and stainless steel tubes (material 1.4571 / AISI 316 Ti)

Parameters for alternative materials can be added by the manufacturer, if required. Please contact STAUFF for details.

- Operating principle: Tube forming with combined pressure/position-control
- Series and dimensions: Light Series (L): 6 x 1,5 mm to 42 x 4 mm
Heavy Series (S): 6 x 1,5 mm to 38 x 6 mm

Dimensions / Weight

- Dimensions (W x D x H): 850 mm x 890 mm x 330 mm
33.46 in x 35.04 in x 12.99 in
with lateral handle bars (detachable)
- Distance from the tube axis to the interfering edge of the machine housing: 110 mm / 4.33 in
- Clearance height: 65 mm / 2.56 in (height of the machine feet)
enables simple and safe transport
using a forklift or pallet jack
- Weight: 210 kg / 463 lbs
(including operating fluid, excluding forming tools)

Materials

- Machine frame: Aluminium
- Machine housing: Steel, painted
- Tool tray: NBR (Perbunan®)
- Machine feet: Natural rubber
- Form rings: Steel, zinc/nickel-plated
- Form rings (seal): FKM (Viton®)

Operating Elements

- ⑦ Operating panel for display and selection of all relevant settings and forming parameters
- ⑧ Button for definite confirmation of entries made on the operating panel
- ⑨ Status light to indicate readiness for operation and running assembly processes

Safety Devices

- ⑩ Main power switch
(can be secured against unauthorised actuation when required)
- ⑪ Separate emergency stop button to immediately stop all machine movements

Connections (at the back of the machine)

- ⑫ Electrical connection according to IEC 60309 CEE 16A
(cable length: 4 m / 13.12 ft)
- ⑬ Connection for External Foot Control Switch Type SFO/PRC-POC-FS
- ⑭ Ethernet connection (RJ45)
for maintenance and data input by the manufacturer
- ⑮ Aerial IoT Gateway for preventive maintenance via remote access and facilitates the documentation of assembly processes

Tube Forming Tools

- ⑯ Clamping Jaws FI-FB with clear identification of the tube dimension
- ⑰ Version of a Tube Shaper FI-FST with Internal Tube Support FI-ID
- ⑱ Tube Shaper FI-FST with clear identification of the tube dimensions

Motor Configuration

- Power supply: 400 V AC @ 50 Hz - 3 phases
460 V AC @ 60 Hz - 3 phases
- Current consumption: 2,55 A
- Connected load: 1,0 kW
- Electrical connection: Phase reversing plug
according to IEC 60309 CEE 16A
- Cable length: 4 m / 13.12 ft

Alternative motor configurations and plug types are available on request. Please contact STAUFF for details.

Hydraulic System

- Operating fluid: Hydraulic oil Shell Tellus S2 MA 46 or equivalent
(filled and ready for operation when delivered)
- Fluid volume: 6,1 litres / 1.61 US Gallon
- Max working pressure: 700 bar / 10153 PSI

Operating Conditions

- Storage temperature: -10°C ... +70°C / +14°F ... +158°F
- Ambient temperature: +15°C ... +35°C / +59°F ... +95°F
- Ambient conditions: Dry, no condensing humidity,
operation in horizontal position only
less than 69 dB(A) as per EN ISO 11202
at full-load operation with maximum tube dimensions
- Noise emission:



STAUFF Maintenance Contracts

Please contact STAUFF for a maintenance contract, that provides optimum service for your STAUFF Tube Forming Machine.



STAUFF Machine Rental

Please contact STAUFF for a rental machine and further details of what this service can offer.



STAUFF Form EVO Tube Shapers ▪ Type FI-FST

STAUFF Form EVO Internal Tube Supports ▪ Type FI-ID



Tube OD		Tube Wall Thickness		Weight per piece		Ordering Codes	
(mm)	(in)	(mm)	(in)	(kg) ca.	(lbs) ca.	Tube Shapers	Internal Tube Supports
6	.24	1,5	.06	1,95	4.29	FI-FST-06L/S-F2-S-A	
8	.31	1,5	.06	1,97	4.33	FI-FST-08L/S-F2-S-A	
10	.39	1,5	.06	1,98	4.36	FI-FST-10L/S-F2-S-A	
		2,0	.08				
		2,5	.10				
		3,0	.12				
12	.47	1,5	.06	1,99	4.38	FI-FST-12L/S-1.5-F2-S-A	FI-ID-12x1.5-HR/2
		2,0	.08			FI-FST-12L/S-2/2.5/3-F2-S-A	
		2,5	.10				
		3,0	.12				
15	.59	1,5	.06	2,0	4.40	FI-FST-15L-F2-S-A	FI-ID-15x1.5-HR/2
		2,0	.08				FI-ID-15x2.0-HR/2
		2,5	.10				FI-ID-15x2.5-HR/2
16	.63	2,0	.08	2,04	4.49	FI-FST-16S-2/2.5-F2-S-A	FI-ID-16x2.0-HR/2
		2,5	.10			FI-FST-16S-3/4-F2-S-A	FI-ID-16x2.5-HR/2
		3,0	.12				
		4,0	.16				
18	.71	1,5	.06	1,97	4.33	FI-FST-18L-2/2.5-F2-S-A	FI-ID-18x1.5-HR/2
		2,0	.08				FI-ID-18x2.0-HR/2
		2,5	.10				FI-ID-18x2.5-HR/2
		3,0	.12			FI-FST-18L-3-F2-S-A	
20	.79	2,0	.08	1,98	4.36	FI-FST-20S-2/2.5-F2-S-A	FI-ID-20x2.0-HR/2
		2,5	.10			FI-FST-20S-3/3.5/4-F2-S-A	FI-ID-20x2.5-HR/2
		3,0	.12				
		4,0	.16				
22	.87	2,0	.08	1,95	4.29	FI-FST-22L-2/2.5-F2-S-A	FI-ID-22x2.0-HR/2
		2,5	.10			FI-FST-22L-3/3.5-F2-S-A	FI-ID-22x2.5-HR/2
		3,0	.12				
		3,5	.14				
25	.98	2,0	.08	1,96	4.31	FI-FST-25S-2/2.5-F2-S-A	FI-ID-25x2.0-HR/2
		2,5	.10			FI-FST-25S-3/3.5/4/5-F2-S-A	FI-ID-25x2.5-HR/2
		3,0	.12				
		3,5	.14				
		4,0	.16				
28	1.10	2,0	.08	1,96	4.31	FI-FST-28L-2/2.5/3-F2-S-A	FI-ID-28x2.0-HR/2
		2,5	.10				FI-ID-28x2.5-HR/2
		3,0	.12				FI-ID-28x3.0-HR/2
		3,5	.14			FI-FST-28L-3.5/4-F2-S-A	
		4,0	.16				
30	1.18	2,5	.10	1,95	4.29	FI-FST-30S-2.5/3-F2-S-A	FI-ID-30x2.5-HR/2
		3,0	.12			FI-FST-30S-4/5/6-F2-S-A	FI-ID-30x3.0-HR/2
		4,0	.16				
		5,0	.20				
		6,0	.24				
35	1.38	2,5	.10	2,0	4.40	FI-FST-35L-2.5/3-F2-S-A	FI-ID-35x2.5-HR/2
		3,0	.12			FI-FST-35L-4/5-F2-S-A	FI-ID-35x3.0-HR/2
		4,0	.16				
		5,0	.20				
38	1.50	3,0	.12	1,82	4.00	FI-FST-38S-3/4-F2-S-A	FI-ID-38x3.0-HR/2
		4,0	.16			FI-FST-38S-5/6-F2-S-A	FI-ID-38x4.0-HR/2
		5,0	.20				
		6,0	.24				
42	1.65	3,0	.12	1,94	4.27	FI-FST-42L-F2-S-A	FI-ID-42x3.0-HR/2
		3,5	.14				FI-ID-42x3.5-HR/2
		4,0	.16				FI-ID-42x4.0-HR/2

Materials / surface finishings: HR Steel, uncoated, hardened

Please note:

The selection chart is only applicable in conjunction with seamless cold drawn precision steel tubes according to EN 10305-1 (materials E235, E355) and stainless steel tubes (material 1.4571 / AISI 316 Ti).

Please consult STAUFF for information regarding the processing of tubes made from stainless steel and other materials.



STAUFF Form EVO Clamping Jaws ▪ Type FI-FB



Tube OD (mm/in)	Series	Weight per piece (kg/lbs) ca.	Ordering Codes
6	L / S	2,37	FI-FB-06L/S-F2-S-A
.24		5.21	
8	L / S	2,36	FI-FB-08L/S-F2-S-A
.31		5.19	
10	L / S	2,32	FI-FB-10L/S-F2-S-A
.39		5.10	
12	L / S	2,30	FI-FB-12L/S-F2-S-A
.47		5.06	
15	L	2,37	FI-FB-15L-F2-S-A
.59		5.21	
16	S	2,31	FI-FB-16S-F2-S-A
.63		5.08	
18	L	2,28	FI-FB-18L-F2-S-A
.71		5.02	
20	S	2,24	FI-FB-20S-F2-S-A
.79		4.93	
22	L	2,32	FI-FB-22L-F2-S-A
.87		5.10	
25	S	2,17	FI-FB-25S-F2-S-A
.98		4.77	
28	L	2,32	FI-FB-28L-F2-S-A
1.10		5.10	
30	S	2,05	FI-FB-30S-F2-S-A
1.18		4.51	
35	L	1,92	FI-FB-35L-F2-S-A
1.38		4.22	
38	S	1,92	FI-FB-38S-F2-S-A
1.50		4.22	
42	L	1,77	FI-FB-42L-F2-S-A
1.65		3.89	

Overview tube dimensions Parameter and Tools STAUFF Form EVO

Carbon Steel

Size	Wallthickness								
	1	1,5	2	2,5	3	3,5	4	5	6
	E235/ E355	E235/ E355	E235/ E355	E235/ E355	E235/ E355	E235/ E355	E235/ E355	E235/ E355	E235/ E355
6	-		-	-	-	-	-	-	-
8	-				-	-	-	-	-
10	-					-	-	-	-
12	-	▪				-	-	-	-
15	-	▪	▪	▪	-	-	-	-	-
16	-	-	▪	▪		-		-	-
18	-	▪	▪	▪		-	-	-	-
20	-	-	▪	▪				-	-
22	-	-	▪	▪			-	-	-
25	-	-	▪	▪				-	-
28	-	-	-	▪	▪			-	-
30	-	-	-	▪	▪	-			-
35	-	-	-	▪	▪	-			-
38	-	-	-	-	▪	-	▪		-
42	-	-	-	-	▪	▪	▪	-	-

Parameter set and tools available. To use without tube supports.

Stainless Steel

Wallthickness	1	1,5	2	2,5	3	3,5	4	5	6
	316ti	316ti	316ti	316ti	316ti	316ti	316ti	316ti	316ti
-				-	-	-	-	-	-
-				-	-	-	-	-	-
-				-	-	-	-	-	-
-				-	-	-	-	-	-
-	▪	▪	-	-	-	-	-	-	-
-	-	▪	▪	▪		-	-	-	-
-	-	-	▪	▪		-	-	-	-
-	-	-	▪	▪		-	-	-	-
-	-	-	▪	▪		-	-	-	-
-	-	-	▪	▪		-	-	-	-
-	-	-	-	▪	▪	-	-	-	-
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-	-	-	-	-	▪	-	-	-	-

Parameter set and tools available. To use with internal tube supports.



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



- Enables the operator to trigger assembly processes from a larger distance to the machine (cable length: 7 m / 22.97 ft)

STAUFF Form EVO Oil Type Oel-Stauff-Form-1L



- Enables faultless, mechanical tube forming with STAUFF Form EVO machines when using stainless steel tubes

STAUFF Oil with brush Type SPR-PRC-H-M-OS



- Enables faultless, mechanical tube forming with STAUFF Form EVO machines when using stainless steel tubes







Thread Identification Board

FI-TIB

276



Cone Gauges

FI-KOL

277



Thread Identification Board Type FI-TIB

Product Description

The STAUFF Thread Identification Board is intended to be used as a universal tool for workshops, warehouses or sales counters allowing quick and easy determination of common thread types and sizes, e.g. for male stud tube connectors and test couplings.

The board is available in two different versions:

FI-TIB-M/G

■ 13 Metric Parallel Threaded Ports

M8 x 1 / M10 x 1 / M12 x 1,5 / M14 x 1,5 /
M16 x 1,5 / M18 x 1,5 / M20 x 1,5 / M22 x 1,5 /
M26 x 1,5 / M27 x 2 / M33 x 2 / M42 x 2 / M48 x 2

■ 8 Whitworth Parallel Pipe Threaded Ports

G1/8 / G1/4 / G3/8 / G1/2 / G3/4 / G1 / G1 1/4 / G1 1/2

FI-TIB-N/U

■ 8 National Pipe Threaded Ports

1/8–27 NPT / 1/4–18 NPT / 3/8–18 NPT /
1/2–14 NPT / 3/4–14 NPT / 1–11.5 NPT /
1 1/4–11.5 NPT / 1 1/2–11.5 NPT

■ 9 UNF/UN Threaded Ports

7/16–20 UNF / 1/2–20 UNF / 9/16–18 UNF /
3/4–16 UNF / 7/8–14 UNF / 1 1/16–12 UN /
1 5/16–12 UN / 1 5/8–12 UN / 1 7/8–12 UN



Product Features

- Covering all relevant thread type and sizes of male stud tube connectors and test couplings
- Boards made of hardened quality steel
- Finished with an extremely resistant cathodic electrodeposition coating
- Laser markings indicating the thread types and sizes next to the threaded ports
- Non-slip rubber feet providing good stability

Technical Data

- Dimensions (W x D x H): 275 mm x 190 mm x 31 mm
10.82 in x 7.48 in x 1.22 in
- Clearance height: 13 mm / .51 in
(height of the rubber feet)
- Weight: 6,0 kg / 13.2 lbs

Note

Thread identification boards are intended to be tools for the basic determination of thread types and sizes. They do not replace high-precision thread gauges and measurement devices (should these become necessary at any point).

Q



Cone Gauges Type FI-KOL

Product Description

These cone gauges are designed for wear checks on the 24° cone for all STAUFF final assembly studs 6 - 42 mm. To ensure accuracy during cutting ring assembly, the assembly stud has to be checked for wear and damage after max. 50 assembly processes (DIN 3859-2).

This set is suitable for all final assembly studs of type FI-MFK as well as for manual assembly cones of type FI-FK.

The cone gauges are available individually or as a complete set for all sizes in a convenient case.

Product Features

- Ensure accurate cutting ring assembly because the target cone in the stud can be verified with precision
- Prevents premature replacement of the studs
- Easy handling

Technical Data

- Dimensions Case (W x D x H):
357 mm x 305 mm x 80 mm
14.06 in x 12.01 in x 3.15 in
- Dimensions Cone Gauges (H)
95 mm / 3.74 in



Ordering Code

- Cone Gauge Kit in Box (Size 6 to 42)

FI-Box-Cone-Gauge-Kit-6-42

Single Cone Gauges

Size	Ordering Codes
06L/S	FI-KOL-06L/S-W1
08L/S	FI-KOL-08L/S-W1
10L/S	FI-KOL-10L/S-W1
12L/S	FI-KOL-12L/S-W1
14S	FI-KOL-14S-W1
15L	FI-KOL-15L-W1
16S	FI-KOL-16S-W1
18L	FI-KOL-18L-W1
20S	FI-KOL-20S-W1
22L	FI-KOL-22L-W1
25S	FI-KOL-25S-W1
28L	FI-KOL-28L-W1
30S	FI-KOL-30S-W1
35L	FI-KOL-35L-W1
38S	FI-KOL-38S-W1
42L	FI-KOL-42L-W1



Q







STAUFF Clean
Pipe, Tube and Hose Cleaning System
SC

280



Manual Tube Bender

TUB-MA

282



Tube Bending and Saw Device

TUBSD-MA

283



Tube Saw Device

TUSD-MA

284



Tube Reamer

TUD-MA

285



STAUFF Clean Pipe, Tube and Hose Cleaning System

Product Description

The STAUFF Clean System comprises of a pneumatic launcher and a range of specially designed nozzles and projectiles.

The launcher uses standard industrial compressed air pressure between 6 and 8 bar / 87 and 116 PSI to propel a foam projectile through the nozzle and into the pipe, tube or hose bore to have their inside surface cleaned from any unwanted contamination.

This provides a safe and environmentally friendly tool that requires little formal expertise to operate and apply.

The **launcher** is the part of the system that controls the air supply to propel the projectile from start to finish of the cleaning job.

The **nozzles** are specially designed to affect an airtight seal on any pipe, tube or hose with or without end fittings. Its main purpose is to compress the foam projectile allowing it to enter the internal diameter of the pipe, tube or hose to be cleaned.

The **projectile** is the part of the system that does the cleaning: The foam projectile is sized to be approximately 15 % larger than the internal diameter of the pipe, tube or hose to be cleaned. The compression of the projectile against the internal wall cleans the internal surface and expels any loose contaminants from the end of the pipe, tube or hose.

The STAUFF Clean System is available as separate components or in a variety of kit forms comprising various nozzle types, adaptor and launcher, all contained in a heavy duty carrying case.



R

STAUFF Clean Launchers / Launcher Kits



Characteristics

- Pneumatic pistol-grip launcher
- Light-weight and ergonomic design
- Easy to operate and apply
- Connection to air supply with quick release coupling
- Suitable for any type of nozzle
- Delivered separately or in a variety of kit forms including carrying case, adaptor ring and nozzles (if required)

Technical Data

- Air compressor requirement:
6 ... 8 bar / 87 ... 116 PSI
- Effective air volume:
250 ... 400 l/min / 66 ... 106 US GPM

Ordering Codes

- | | |
|--|------------------|
| ▪ Launcher only | SC-LG |
| ▪ Launcher kit (launcher, kit and adaptor) | SC-LK |
| ▪ Kit (as above)
with set of 10 Universal nozzles | SC-10UV-K |
| ▪ Kit (as above)
with set of 18 Metric Tube nozzles | SC-18MT-K |
| ▪ Kit (as above)
with set of 10 JIC nozzles | SC-10J-K |
| ▪ Kit (as above)
with set of 7 BSP nozzles | SC-7B-K |
| ▪ Kit (as above)
with set of 7 NPT nozzles | SC-7N-K |

Contact STAUFF for alternative connection adaptors and couplings.



STAUFF Clean Nozzles / Nozzle Sets

Universal Nozzle Set (SC-U-SET)

The Universal Nozzle is designed with a tapered seat that will allow it to suit for 90% of applications, including Hose, Tube and Pipe, with or without fittings, in hydraulic and pneumatic pipe systems, condenser tubes, boiler tubes and food lines.

The Universal Nozzle kit fits all and will accommodate applications with JIC, SAE and BSP end fittings.

The set of 10 nozzles consists of the following sizes: 6 mm, 8 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm and 32 mm.

JIC Nozzle Set (SC-J-SET)

The JIC Nozzle is designed specifically for use with JIC and SAE type fittings. The nozzles are machined to accommodate both male and female configuration, ensuring a perfect airtight seal every time.

The set of 10 nozzles consist of the following sizes: 6 mm, 8 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm, 32 mm, 38 mm and 50 mm.

Metric Tube Nozzle Set (SC-M-SET)

The Metric Tube Nozzle is intended for use specifically with Metric sized tube and is designed to fit over the outside of the tube or pipe being cleaned.

The inside diameter of the nozzle is reduced to match the inside diameter of the tube. The nozzles are machined from solid bar stock and designed for superior strength.

The set of 18 nozzles consist of the following sizes: 6 mm, 8 mm, 10 mm, 12 mm, 14 mm, 15 mm, 16 mm, 18 mm, 20 mm, 22 mm, 25 mm, 28 mm, 30 mm, 35 mm, 38 mm, 42 mm, 50 mm and 60 mm.

BSP Nozzle Set (SC-B-SET)

The BSP Nozzle is designed specifically for BSP configuration fittings. The nozzles are machined to accommodate both male and female configurations, ensuring a perfect airtight seal every time.

The set of 7 nozzles consist of the following sizes: 6 mm, 10 mm, 13 mm, 16 mm, 19 mm, 25 mm and 32 mm.



Adaptor Ring for Nozzels (SCN-AR)
Required for sizes 6-32 mm / 1/4-1 1/4 in

If required, nozzles can be supplied separately. Contact STAUFF for details.

NPT Nozzle Set (SC-N-SET)

The NPT Nozzle is designed specifically for NPT configuration fittings. The nozzles are machined to accommodate both male and female configurations, ensuring a perfect airtight seal every time.

The set of 7 nozzles consist of the following sizes: 1/4 in, 3/8 in, 1/2 in, 5/8 in, 3/4 in, 1 in and 1 1/4 in.

STAUFF Clean Projectiles

Coupling Series (SCP-C)

Intended for the cleaning of hose assemblies (hose with end fittings, adjustments, etc.) or the removal of loose contamination from pipe, tube or hose.



Abrasive Series (SCP-A)

Intended for the internal cleaning of metal pipe and tube to remove light contaminants (rust and scale). They are recognised by the shorter abrasive pad fixed to one end of the projectile.



Grinding Series (SCP-G)

Intended for the internal cleaning of metal pipe and tube to remove medium and heavy contamination (rust and scale) from the internal surface. They are recognised by the longer abrasive pad fixed to one end of the projectile that is coated in Silicon Carbide.



Size	Pipe / Tube / Hose ID		Ordering Codes		
	(mm)	(in)	Coupling Series (SCP-C)	Abrasive Series (SCP-A)	Grinding Series (SCP-G)
07	4,8	3/16	SCP-C-07	SCP-A-07	SCP-G-07
09	6,4	1/4	SCP-C-09	SCP-A-09	SCP-G-09
10	6,4	1/4	SCP-C-10	SCP-A-10	SCP-G-10
12	7,9	5/16	SCP-C-12	SCP-A-12	SCP-G-12
14	9,5	3/8	SCP-C-14	SCP-A-14	SCP-G-14
16	11,1	7/16	SCP-C-16	SCP-A-16	SCP-G-16
18	12,7	1/2	SCP-C-18	SCP-A-18	SCP-G-18
20	14,3	9/16	SCP-C-20	SCP-A-20	SCP-G-20
22	15,9	5/8	SCP-C-22	SCP-A-22	SCP-G-22
26	19,1	3/4	SCP-C-26	SCP-A-26	SCP-G-26
28	20,6	13/16	SCP-C-28	SCP-A-28	SCP-G-28
30	22,2	7/8	SCP-C-30	SCP-A-30	SCP-G-30
33	25,4	1	SCP-C-33	SCP-A-33	SCP-G-33
36	26 / 27	1 1/16	SCP-C-36	SCP-A-36	SCP-G-36
38	28,6	1 1/8	-	SCP-A-38	SCP-G-38
40	31,8	1 1/4	SCP-C-40	SCP-A-40	SCP-G-40
45	34,9	1 3/8	SCP-C-45	SCP-A-45	SCP-G-45
50	38,1	1 1/2	SCP-C-50	SCP-A-50	SCP-G-50
55	44,5	1 3/4	SCP-C-55	SCP-A-55	SCP-G-55
60	50,8	2	SCP-C-60	SCP-A-60	SCP-G-60

Please note: For optimum cleaning, it is recommended that projectiles are used once and then discarded and disposed of in an appropriate way.

Safety note: A mesh collection bag should be secured to the pipe, tube or hose exit to avoid possible injury to personnel by the projectile exiting at high velocity.

Always wear protective safety glasses, ear protection and a dust mask when operating this system.



Manual Tube Bender Typ TUB-MA

Product Description

When used with a commercially available vice, STAUFF manual tube benders, type TUB-MA, enable common hydraulic tubes to be bent manually.

They are suitable for steel and stainless steel tubes with diameters of 6, 8, 10, 12, 14, 15, 16, 18 and 22 mm with a defined minimum wall thickness.

In addition to the metric version, a model for handling inch-gauge tubes with diameters of between 1/4 and 7/8 inches is also available.

The eight bending rollers – six in the imperial version – ensure maximum wear.

A scale lasered onto the bending rollers enhances the accuracy of the required bending angle with superior precision.

The manual tube bender is supplied with all the necessary components and multilingual instructions for use as a complete kit in a high-quality steel case.

Product Features

- Small bending radii allow for compact assemblies
- Optimised bending contour, which enables tube bends free of flattening and constriction
- hard wearing steel bending rolls
- ideal for versatile site use, possibly for installation work on site

Technical Data

- Dimensions (W x D x H):
640 mm x 165 mm x 70 mm
25.20 in x 6.50 in x 2.76 in
- Weight (incl. Case):
Metric Version 13,8 kg / 30.4 lbs
Imperial Version 12,1 kg / 26.7 lbs



Ordering Codes

- Manual Tube Bender Set in Steelcase (metric Version) **TUB-MA-M622-LV-KIT**
- Manual Tube Bender Set in Steelcase (imperial Version) **TUB-MA-I4140D-LV-KIT**

Spare Parts / Accessories

Description	Ordering Codes
Bending Lever	TUB-MA-S-Bending-Lever
Baseplate	TUB-MA-S-Baseplate
Guide Roller	TUB-MA-S-Guide-Roller-W32
Hold Roll	TUB-MA-S-Hold-Roll-W101
Guide Roller Mount	TUB-MA-S-Guide-Roller-Mount
Bolt	TUB-MA-S-Bolt-M12x32
Pivot Pin	TUB-MA-S-Pivot-Pin
Bending Lever Support	TUB-MA-S-Bending-Lever-Support-W32
Bending Roller 6/8 mm	TUB-T-BE-M6/8-MIOD-W32
Bending Roller 10 mm	TUB-T-BE-M10-MIOD-W32
Bending Roller 12 mm	TUB-T-BE-M12-M622-W32
Bending Roller 14/15 mm	TUB-T-BE-M14/15-M622-W32
Bending Roller 16 mm	TUB-T-BE-M16-MIOD-W32
Bending Roller 18 mm	TUB-T-BE-M18-M622-W101
Bending Roller 20 mm	TUB-T-BE-M20-M622-W101
Bending Roller 22 mm	TUB-T-BE-M22-MIOD-W101
Bending Roller 1/2"	TUB-T-BE-080D-I4140D-W32
Bending Roller 3/4"	TUB-T-BE-120D-I4140D-W101

Parts assignment: www.stauff.com/en/category/025000/025025/025021B



Outer Diameter	Metric	Inch	Radius	Minimum Wall Thickness
6/8 mm (1/4" / 5/16")	•	•	33 mm / 1.30 in	1,5 mm / .06 in
10 mm (3/8")	•			
12 mm	•			1,5 mm / .06 in
1/2"		•	40 mm / 1.57 in	2,0 mm / .08 in
14 mm	•			1,5 mm / .06 in
15 mm	•			
16 mm (5/8")	•	•	48 mm / 1.89 in	1,5 mm / .06 in
18 mm	•			2,0 mm / .08 in
3/4"		•		
20 mm	•			
22 mm (7/8")	•	•		



Tube Bending and Saw Device Type TUBSD-MA



Product Description

This sturdy steel case is designed for short-term use on the go, providing all components required for bending and sawing off hydraulic tubes made of steel or stainless steel. The case contains a combined manual tube bending and sawing device which can be attached with a standard vice or directly to a work-bench top with a thickness of up to 35 mm. The contour of the holding fixture ensures that cuts are made at a 90° angle.

Three low-wear bending rollers made of steel allow processing of steel or stainless steel tubes with an outer diameter of 6, 8, 10 or 12 mm. The optimised bending contour of the rollers prevents deformation of the tube even for smaller bending radii. A bending lever is also included in the set.

A standard hacksaw is used for sawing off the tube.

The case also has space for the STAUFF universal internal and external tube reamer for tube diameters from 6 to 35 mm. The reamer is not included in the set, but can be purchased separately, as can all components of this convenient repair set in a robust steel case.

Ordering Code

- Tube Bending and Saw Device in Steelcase

TUBSD-MA-M612-LV-KIT

Spare Parts / Accessories

Description	Ordering Codes
Bending roll 6/8mm (Radius 19/20mm)	TUBSD-T-BE-M6/8-W101
Bending roll 10mm (Radius 25mm)	TUBSD-T-BE-M10-W101
Bending roll 12mm (Radius 26mm)	TUBSD-T-BE-M12-W101
Bending-Lever-compl	TUBSD-S-Bending-Lever-compl-W101
Baseplate-compl	TUBSD-S-Baseplate-compl-W101
Hold-Roll	TUBSD-S-Hold-Roll-W101
Bending-Roll-Mount	TUBSD-S-Bending-Roll-Mount-W101
Round-Head-Rivet Kit 4 pcs.	Kit-TUBSD-S-Round-Head-Rivet-W5
SAW-Guide Kit 2 pcs.	Kit-TUBSD-S-SAW-Guide-W101
Pivot-Pin	TUBSD-S-Pivot-Pin-W101
Guide-Roller-Mount	TUBSD-S-Guide-Roller-Mount-W101
Guide-Roller	TUBSD-S-Guide-Roller-W101
Butterfly lock bolt	TUBSD-S-Butterfly lock bolt W101

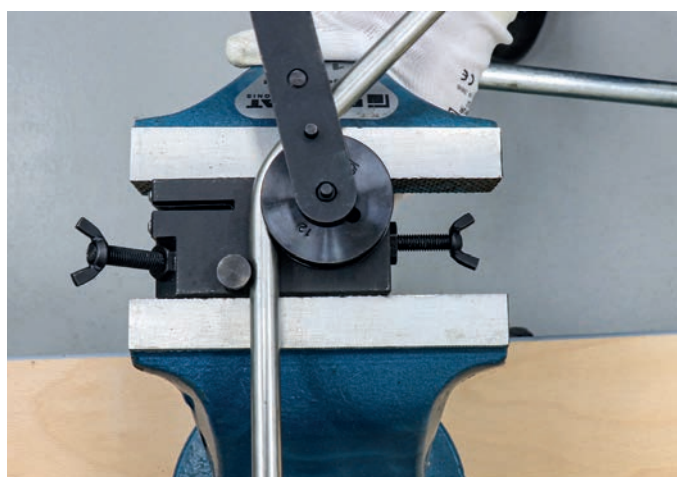
Parts assignment: www.stauff.com/en/category/025000/025026/025022D

Product Features

- Bending and sawing with one device
- Wear-resistant steel bending rollers
- Small bending radii for compact installations
- Optimised bending contour: The tube diameter is not deformed during the bending process
- Saw blade guiding ensures 90° cuts
- Can be used with or without a vice
- Ideal for flexible mobile use, e.g. for installation work at a construction site

Technical Data

- Dimensions (W x D x H):
355 mm x 125 mm x 56 mm
13.98 in x 4.92 in x 2.20 in
- Weight (incl. Case): 3,4kg / 7.50 lbs



Tube Saw Device Type TUSD-MA

Product Description

This device can be used to cut steel and stainless steel tubes with an outer diameter between 6 and 42 mm at a precise 90° angle. It can either be used with a vice or simply clamped onto the tube for cutting.

A standard hacksaw is used for sawing off the tube.

Product Features

- 90° cut on tubes up to 42 mm
- Tube diameter is not deformed during the clamping process
- Robust, durable design
- No vice required, device can also simply be clamped onto the tube
- The saw blade guide can easily be replaced separately when it is worn
- Ideal for flexible mobile use, e.g. for installation work at a construction site

Technical Data

- Dimensions (W x D x H):
80 mm x 70 mm x 140 mm
3.15 in x 2.76 in x 5.51 in
- Weight: 1,6 kg / 3.5 lbs



Ordering Code

- Tube Saw Device

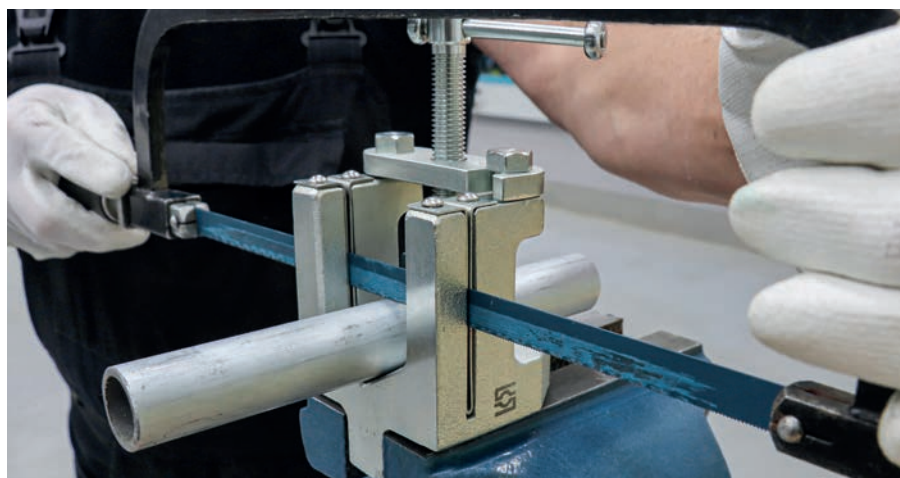
TUSD-MA-M642

Spare Parts / Accessories

Description	Ordering Codes
Round-Head-Rivet Kit 4 pcs.	Kit-SD-MA-S-Round-Head-Rivet-W5
SAW-Guide Kit 2 pcs.	Kit-SD-MA-S-Saw-Guide-W101
Barcked Bolt Kit 2 pcs.	Kit-SD-MA-S-Bolt-W32
Bracked-compl.	SD-MA-S-Bracked-compl.-W32

Parts assignment: www.stauff.com/en/category/025000/025027/025022E

R



Tube Reamer Type TUD-MA

Product Description

The STAUFF universal internal and external tube reamer for tube diameters from 6 to 35 mm features high-quality sharpened cutting edges made of hardened special steel and ensures a flowing, "chatter-free" work process. Also available for tubes with an outer diameter from 10 to 54 mm.

Particularly convenient: An adapter for using the device with an electric drill at low speed is available for both sizes.

Product Features

- Easy and quick burr removal on steel and stainless steel tubes
- High-quality sharpened cutting edges made of hardened special steel
- Chatter-free working

Technical Data

- Dimensions TUD-MA-0635 (Ø x H):
48 mm x 60 mm
1.89 in x 2.36 in
- Weight: 0,2 kg / .44 lbs
- Dimensions TUD-MA-1054 (Ø x H):
70 mm x 90 mm
2.76 in x 3.54 in
- Weight: 0,6 kg / 1.32 lbs
- Dimensions TUD-ADA1-0635 (Ø x H):
65 mm x 85 mm inkl. Welle
2.55 in x 3.35 in
- Weight: 0,2 kg / .44 lbs
- Dimensions TUD-ADA2-1054 (Ø x H):
91 mm x 92 mm inkl. Welle
3.58 in x 3.62 in
- Weight: 0,4 kg / .88 lbs

Ordering Codes

Description	Ordering Codes
Tube reamer 6-35mm	TUD-MA-0635
Adapter for Tube reamer 6-35mm	TUD-ADA1-0635
Tube reamer 10-54mm	TUD-MA-1054
Adapter for Tube reamer 10-54mm	TUD-ADA2-1054





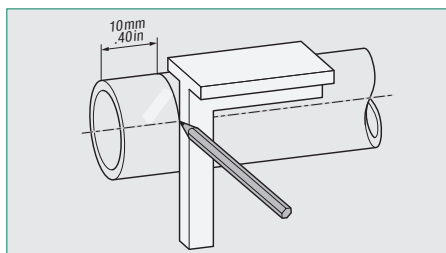
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)	290-297
100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body	290
50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body	292
Direct Assembly with the Fitting Body	294
Machine-Assisted 100% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body	296
Machine-Assisted 50% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body	297
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Soft-Sealing Cutting Ring (Type FI-WDDS)	298-303
100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body	298
Direct Assembly with the Fitting Body	300
Machine-Assisted 100% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body	302
Assembly Instructions for Support Sleeves	304
Assembly Instructions for STAUFF Form EVO Tube Fittings	306
Assembly Instructions for STAUFF Connect 37° Flared Tube Fittings	310
Assembly Instructions for 24° Weld Cones with O-Ring	314
Assembly Instructions for Tube Fittings with 24° Taper and O-Ring	316
Assembly Instructions for Tube Fittings with Standpipe	316
Assembly Instructions for Tube Fittings with Male Threaded Stud	317
Assembly Instructions for Banjo Fittings	320
Assembly Instructions for Adjustable Fitting with Locknut (WEE, VEE, TEE, LEE)	321



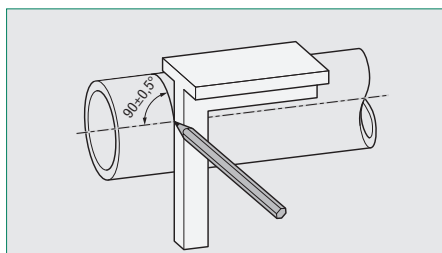
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body

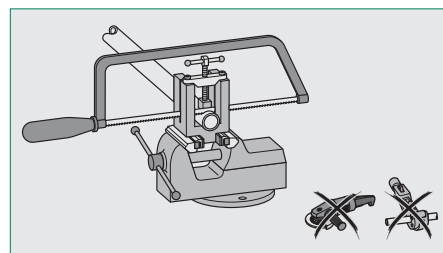
1. Tube Preparation



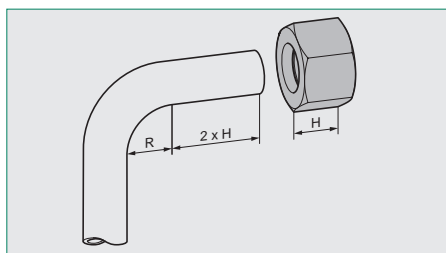
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



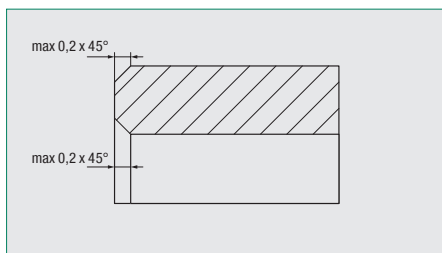
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

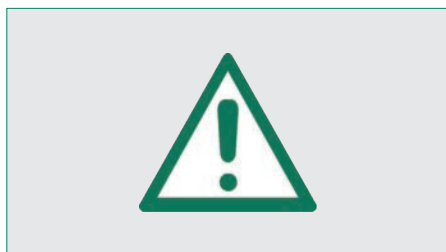


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

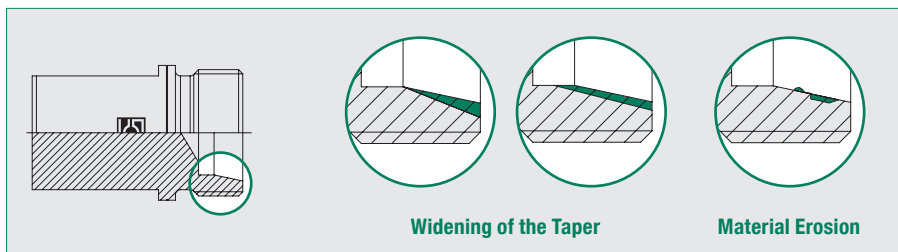


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation

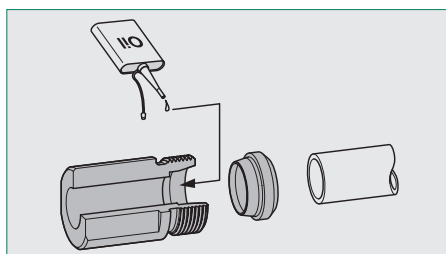


Please note: Hardened final assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



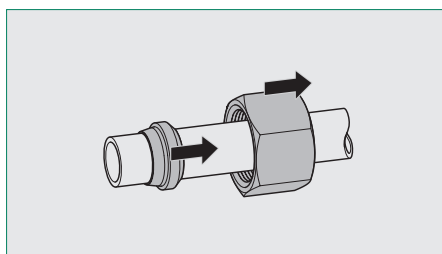
However, they have to be checked for dimensional accuracy regularly. Assembly studs that are damaged and/or dimensionally not accurate must be replaced under any circumstances!

Typical damages include widening of the 24° angle or the entire taper, as well as material erosion.



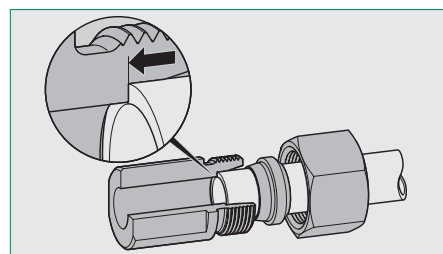
Lightly lubricate the 24° taper of the final assembly stud (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the final assembly stud and push it firmly against the inner stop.

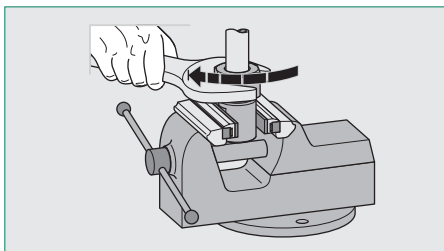
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



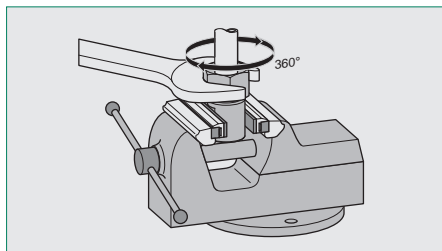
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

100% Assembly with the Manual Final Assembly Stud (Type FI-FK) and Assembly with the Fitting Body

3. Assembly in the Assembly Stud

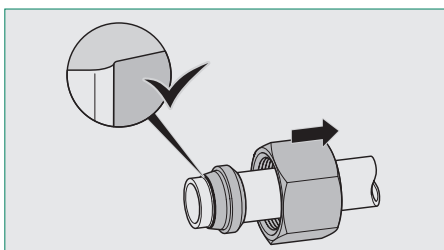


Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



Use a suitable spanner to tighten the union nut another full turn (360°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

4. Inspection



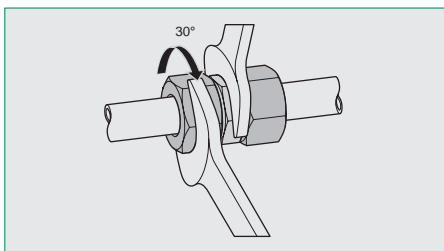
Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



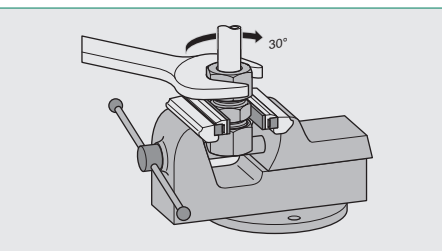
Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

5. Assembly with the Fitting Body



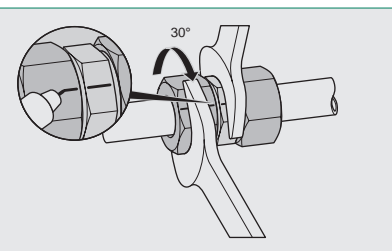
Carefully insert the assembled tube end into the 24° taper of the fitting body.

Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.



A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

6. Repeated Assembly

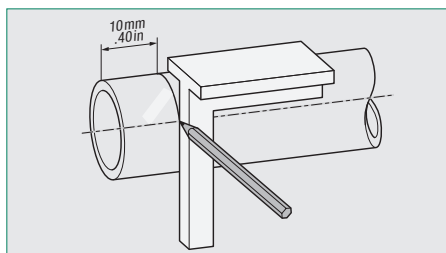
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



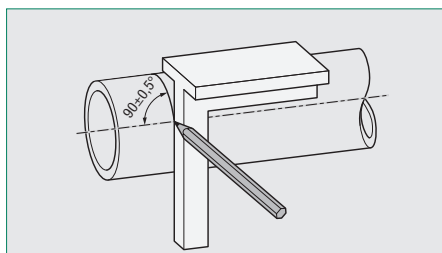
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

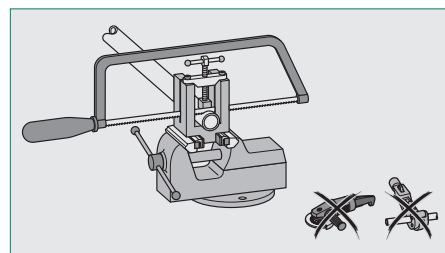
1. Tube Preparation



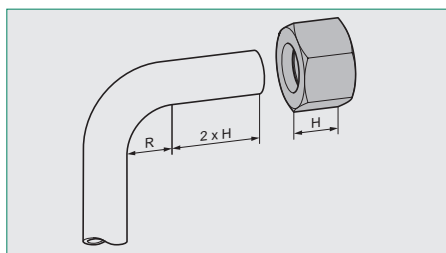
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



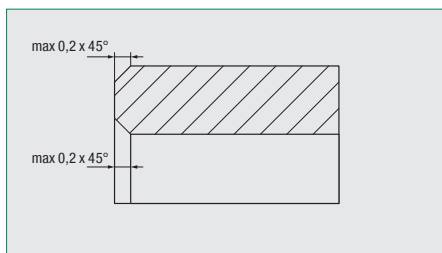
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

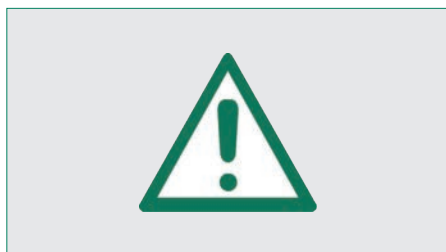


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

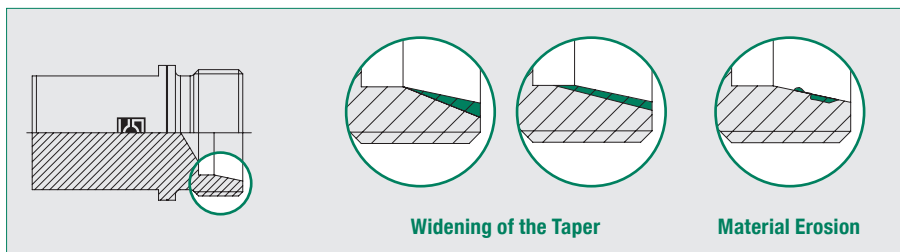


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation

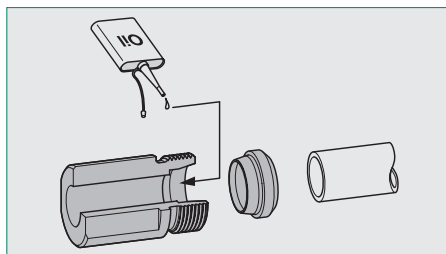


Please note: Hardened pre-assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



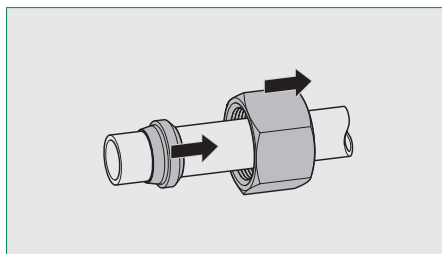
However, they have to be checked for dimensional accuracy regularly. Assembly studs that are damaged and/or dimensionally not accurate must be replaced under any circumstances!

Typical damages include widening of the 24° angle or the entire taper, as well as material erosion.



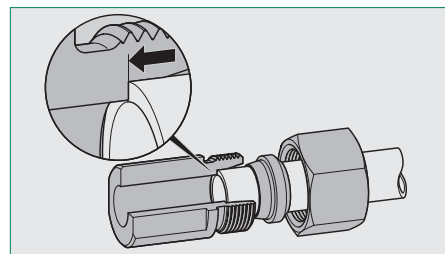
Lightly lubricate the 24° taper of the pre-assembly stud (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.



Consecutively put the union nut first and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.



Carefully insert the tube end into the 24° taper of the pre-assembly stud and push it firmly against the inner stop.

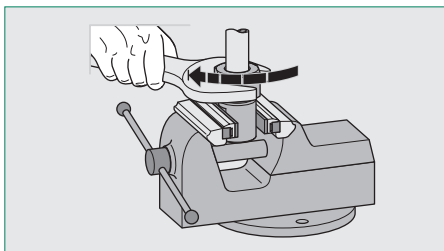
The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.



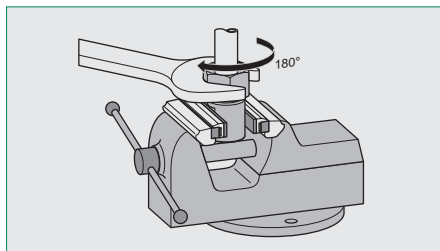
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

50% Assembly with the Manual Pre-Assembly Stud (Type FI-VK) and Assembly with the Fitting Body

3. Assembly in the Assembly Stud

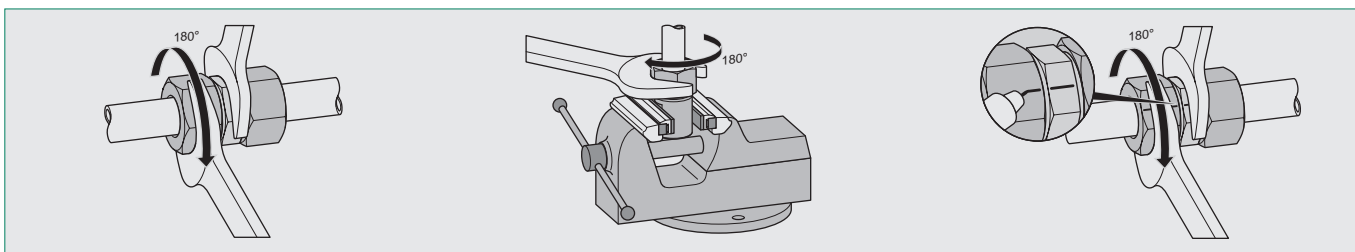


Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



Use a suitable spanner to tighten the union nut another 1/2 a turn (180°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

4. Assembly with the Fitting Body



Carefully insert the assembled tube end into the 24° taper of the fitting body.

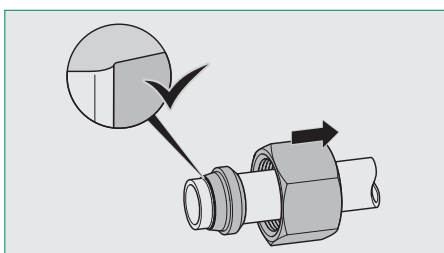
Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/2 a turn (180°) beyond this point.

Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.

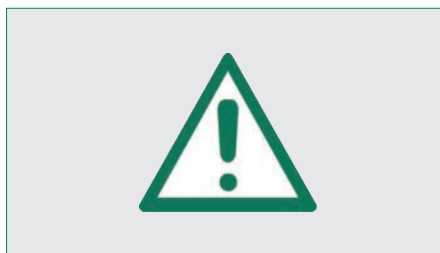
A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

5. Inspection



Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

6. Repeated Assembly

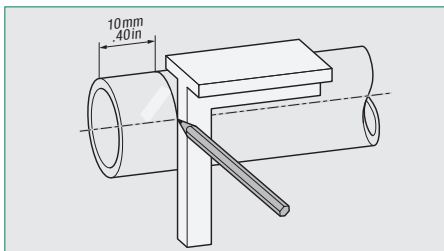
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



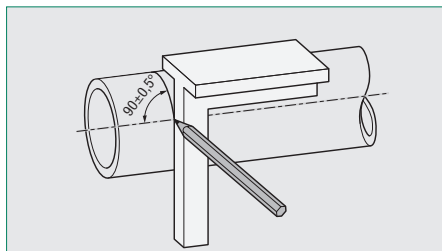
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Direct Assembly with the Fitting Body

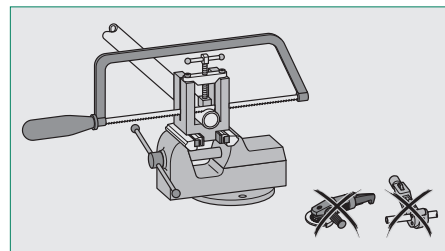
1. Tube Preparation



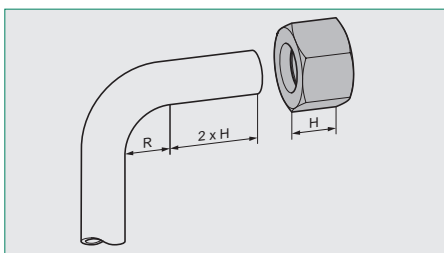
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



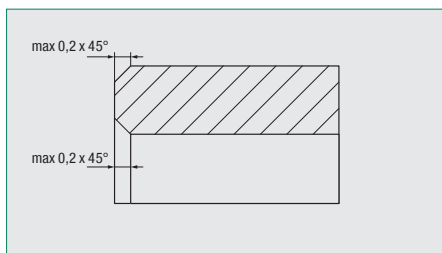
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



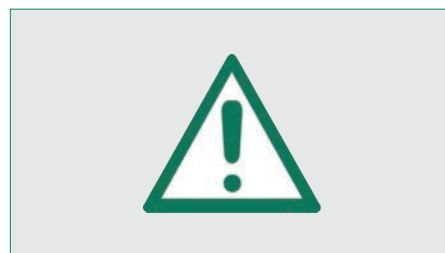
Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.

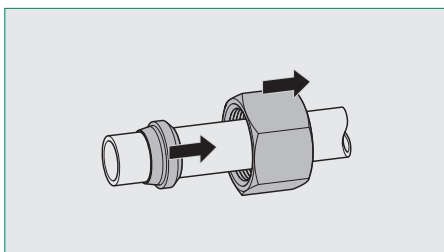


Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.

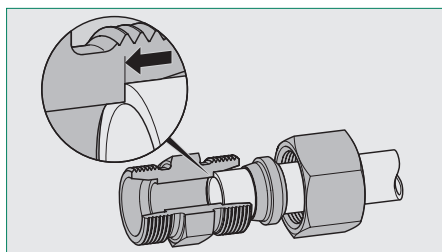


Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation



Consecutively put the union nut first and then the cutting ring onto the tube end.



Carefully insert the tube end into the 24° taper of the fitting body and push it firmly against the inner stop.

Pay attention to the correct alignment of the cutting ring: The cutting edges have to face to the tube end.

The tube must be held in this position during the entire assembly process in order to avoid faulty assembly.

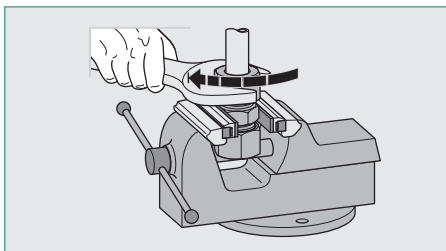
S



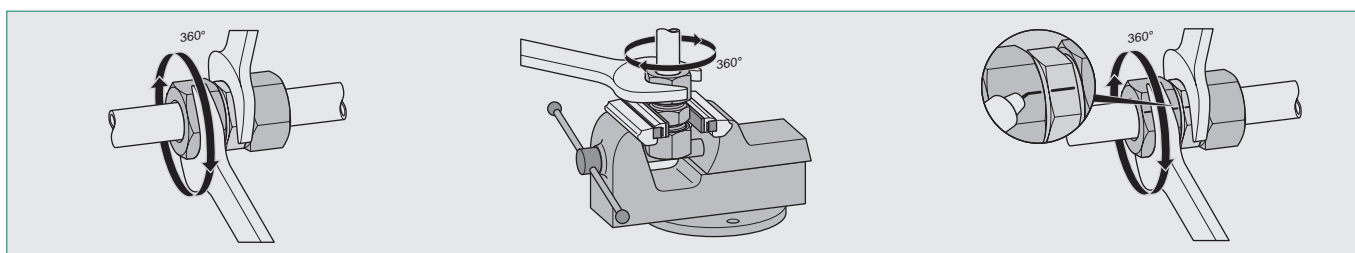
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Direct Assembly with the Fitting Body

3. Assembly in the Fitting Body



Tighten the union nut until the noticeable increase in force (pressure point). The cutting ring now grips the tube, which can no longer be rotated.



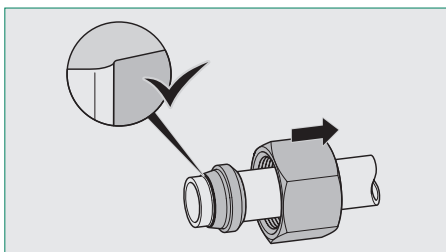
Use a suitable spanner to tighten the union nut another full turn (360°) beyond the pressure point. In doing so, the cutting ring will uniformly cut into the tube.

Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.

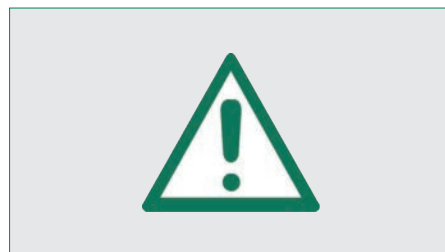
A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

4. Inspection



Fully untighten the union nut for a visual inspection after the assembly. A raise of tube material must be clearly visible in front of the cutting edge.

In this position, it is still permissible for the cutting ring to turn on the tube, but not to be displaced in axial direction of the tube.



Please note: If not enough tube material has been raised in front of the cutting edge or if the cutting ring is still capable of being displaced in axial direction, the assembly procedure must be repeated by using more force, and the result must be re-checked.

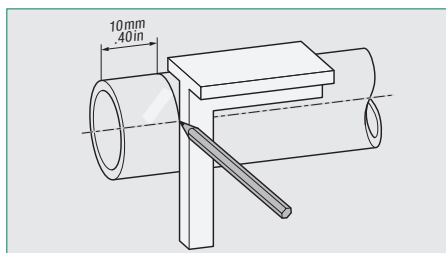
5. Repeated Assembly

For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.

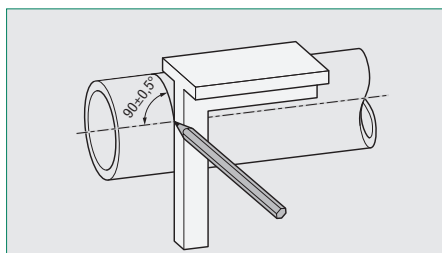
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Machine-Assisted 100% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body

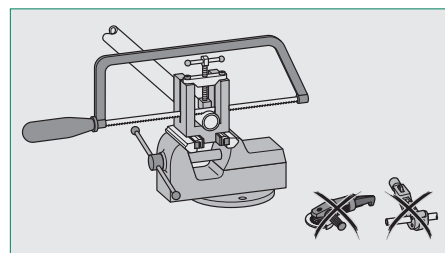
1. Tube Preparation



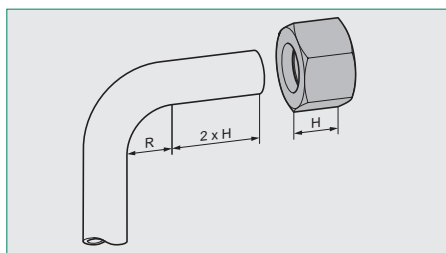
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



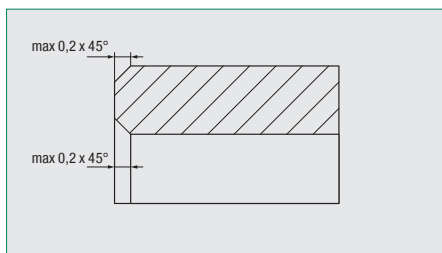
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.



Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



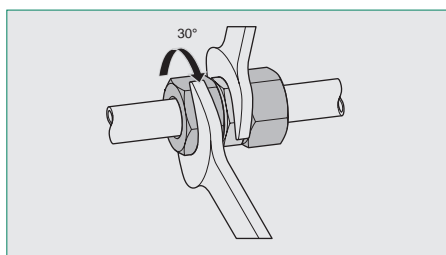
Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation, Machine-Assisted Assembly and Inspection

With regards to assembly preparation, the actual assembly as well as the inspection of assembled tube ends, please follow the detailed instructions in the operating manual of the machine.

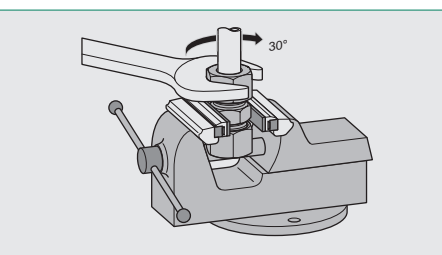


3. Assembly with the Fitting Body



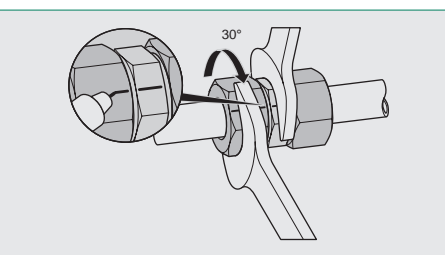
Carefully insert the assembled tube end into the 24° taper of the fitting body.

Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.



A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

4. Repeated Assembly

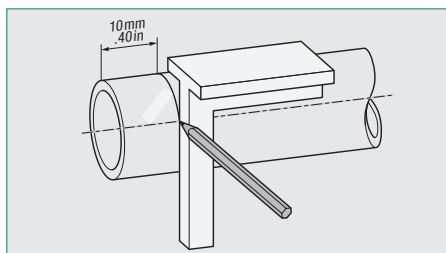
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



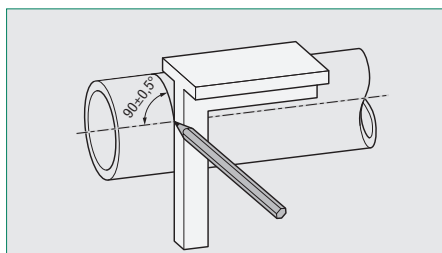
Assembly Instructions for STAUFF Connect 24° Tube Fittings with Double Edge Cutting Ring (Type FI-DS)

Machine-Assisted 50% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body

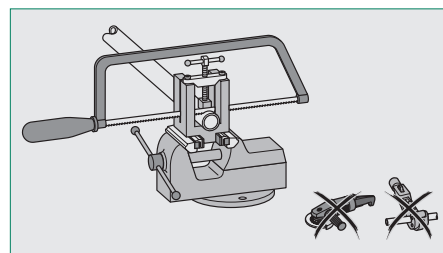
1. Tube Preparation



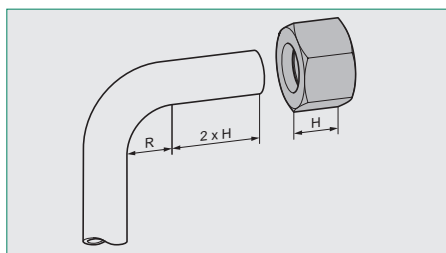
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



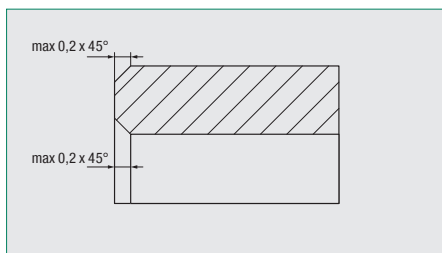
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.



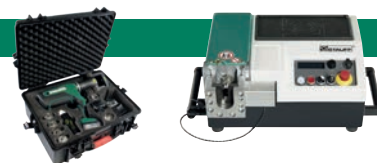
Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



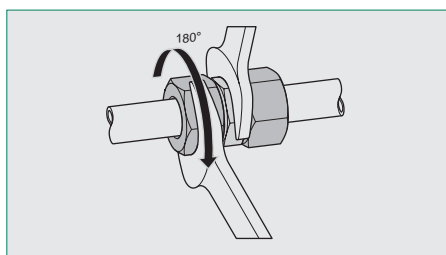
Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation, Machine-Assisted Assembly and Inspection

With regards to assembly preparation, the actual assembly as well as the inspection of assembled tube ends, please follow the detailed instructions in the operating manual of the machine.

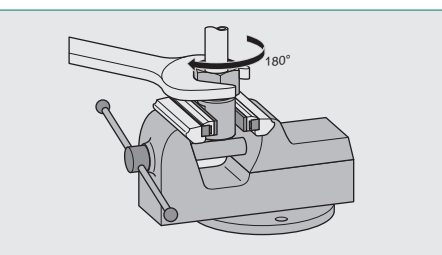


3. Assembly with the Fitting Body



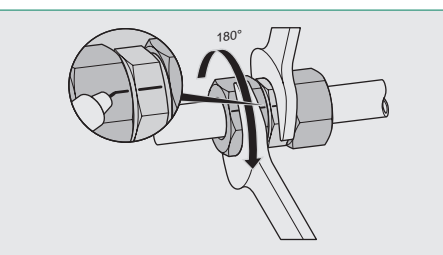
Carefully insert the assembled tube end into the 24° taper of the fitting body.

Use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/2 a turn (180°) beyond this point.



Always use a second spanner to hold the fitting body during the entire assembly procedure.

In case of unfavourable mounting conditions or larger tube dimensions, use a bench vice for the assembly.



A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.

4. Repeated Assembly

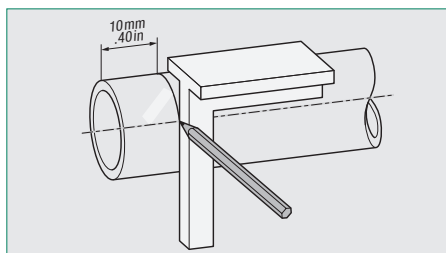
For repeated assemblies, please use a suitable spanner to tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.



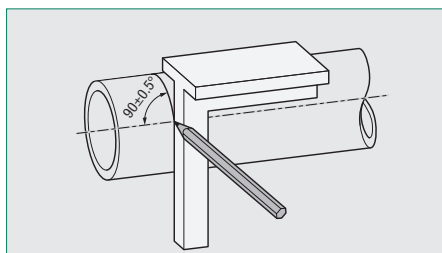
Assembly Instructions for 24° Tube Connectors with Soft-Sealing Cutting Ring (Type FI-WDDS/FI-WDDS-W5)

100% Assembly with the Manual Final Assembly Stud Type FI-FK and Assembly in the Fitting Body

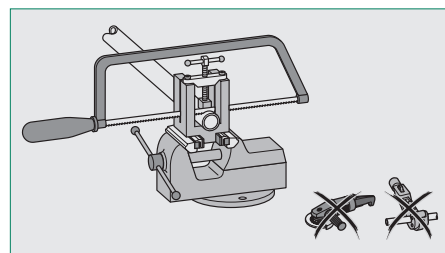
1. Tube Preparation



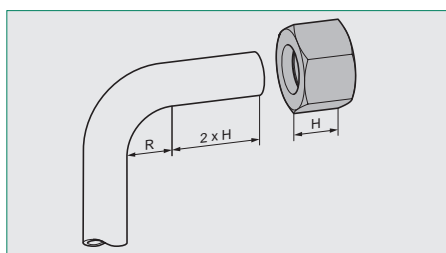
Saw off tube at a right angle (90°) and at least 10 mm from the cut made by the manufacture / supplier.



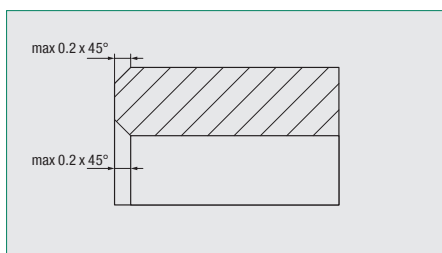
A maximum angular deviation of $\pm 0.5^\circ$ to the tube axis is permissible.



Do not use tube cutters or grinders.



The length of the straight sections of the tube of tube bends has to be twice the length of the union nut.



Slightly deburr the inside and outside of the tube end (max $0.2 \times 45^\circ$). The assembly area of the tube has to be free of dirt, chips and paint.

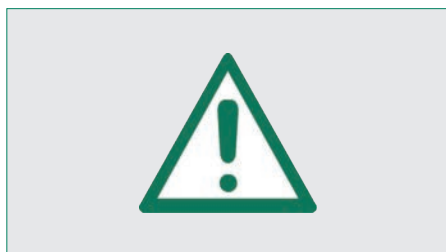


Please note: Improperly prepared and contaminated tubes will affect the service life of the tube connectors and may result in leakage. Poorly deburred tube ends can result in damage to the internal O-ring!

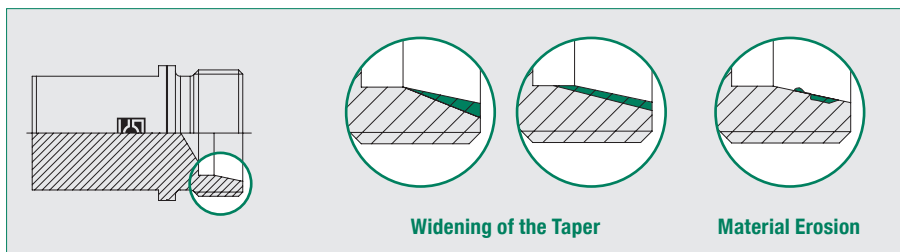


Please note: Assembly of reinforcing sleeves is essential when using thin-walled tubes. Refer to page 304.

2. Assembly Preparation

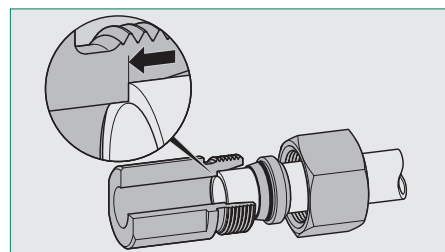
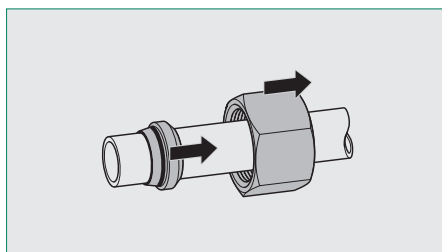
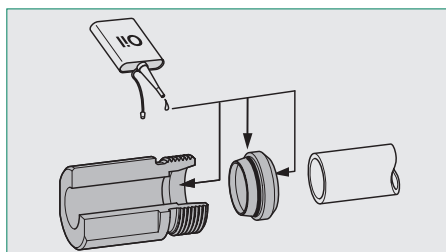


Hardened assembly studs are wear-resistant, thus allowing for consistent assembly results with a maximum degree of accuracy, reliability and process stability.



Assembly studs must be checked regularly for damage and dimensional accuracy. Replace assembly studs that are damaged and/or dimensionally inaccurate in all cases.

Typical damage includes the partial or complete widening of the 24° taper, as well as material erosion.



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Lubricate the 24° taper of the assembly stud as well as the two soft-sealing elements of the cutting ring (e.g. using hydraulic oil HLP32). Do not use lubricating grease!

Immediately proceed with assembly to avoid the adhesion of dirt.

Consecutively push the union nut and then the cutting ring onto the tube end.

Pay attention to the correct alignment of the cutting ring: the cutting edges of the cutting ring have to face the tube end.

Carefully insert the tube end into the 24° taper of the assembly stud until it is flush with the stop.

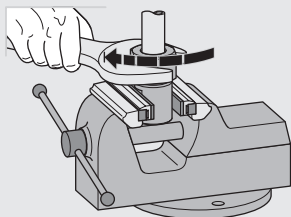
The tube must be held in this position during the entire assembly process.



Assembly Instructions for 24° Tube Connectors with Soft-Sealing Cutting Ring (Type FI-WDDS/FI-WDDS-W5)

100% Assembly with the Manual Final Assembly Stud Type FI-FK and Assembly in the Fitting Body

3. Assembly in the Assembly Stud



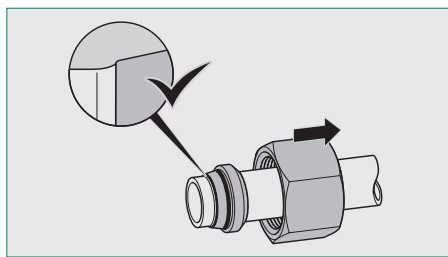
Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Use a suitable spanner.
Tighten the union nut to the point where there is a first increase in force, the pressure point.
The pressure point defines the point at which the cutting ring starts gripping the tube.

The tube can then no longer be rotated in the fitting. Now tighten the union nut to the end of the assembly. The end of the assembly is situated approx. 1 to 1-1/4 turns (360° - 450°) beyond the pressure point and is signalled by a significant increase in force.

The cutting ring comes into contact with the face side of the fitting body.

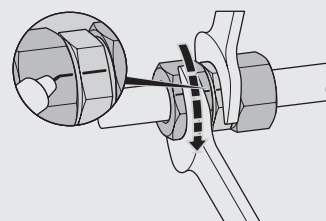
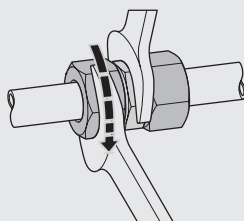
4. Inspection



Fully loosen the union nut to visually inspect the assembly. There must be raised material clearly visible in front of the cutting edge.

Under certain circumstances, it is still possible at this time to turn the cutting ring on the tube (radial direction). It can no longer be moved in the direction of the tube (axial direction).

5. Assembly with the Fitting Body



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Lightly lubricate the soft-sealing element located on the 24° taper of the cutting ring (e.g. using hydraulic oil HLP32). Do not use lubricating grease!

Immediately proceed with assembly to avoid the adhesion of dirt.

Carefully insert the assembled tube end into the 24° taper of the fitting body.

Tighten the union nut to the point where there is a first increase in force. Then tighten the union nut to the end of the assembly.

The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.

Use a suitable spanner to hold the fitting body within the tube during the entire assembly process. Use a bench vice for assembly in the event of unfavourable assembly conditions or larger tube dimensions.

A marking line on the union nut and the fitting body makes it easier to note and check the correct tightening angle.

6. Repeated Assembly

Check the soft-sealing element located on the 24° taper of the cutting ring for possible damage.

Carefully insert the tube end into the 24° taper of the fitting body.

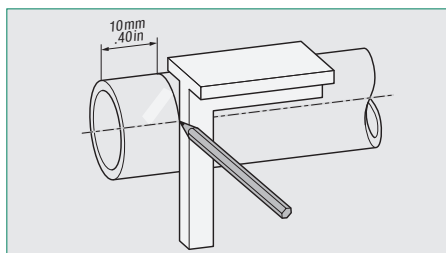
Then tighten the union nut to the end of the assembly. The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.



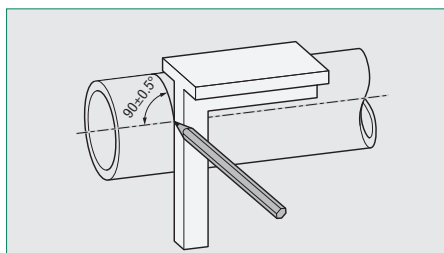
Assembly Instructions for 24° Tube Connectors with Soft-Sealing Cutting Ring (Type FI-WDDS/FI-WDDS-W5)

Direct Assembly in the Fitting Body

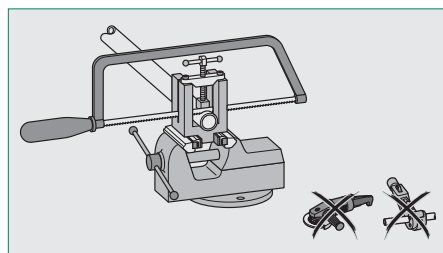
1. Tube Preparation



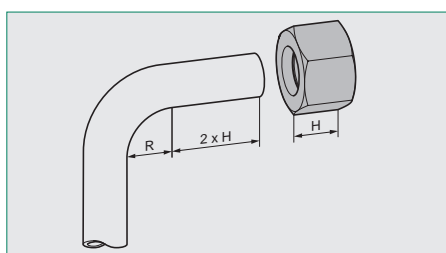
Saw off tube at a right angle (90°) and at least 10 mm from the cut made by the manufacture / supplier.



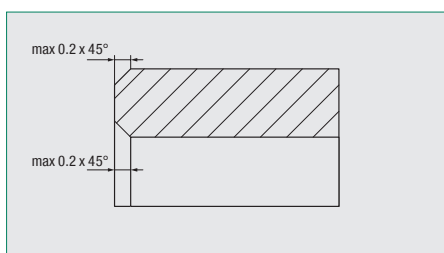
A maximum angular deviation of $\pm 0.5^\circ$ to the tube axis is permissible.



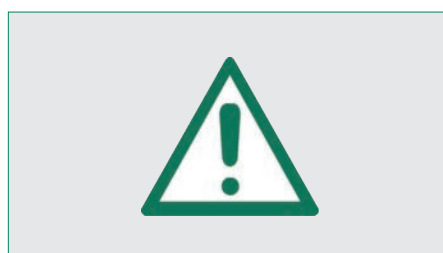
Do not use tube cutters or grinders.



The length of the straight sections of the tube of tube bends has to be twice the length of the union nut.



Slightly deburr the inside and outside of the tube end (max 0.2 x 45°). The assembly area of the tube has to be free of dirt, chips and paint.

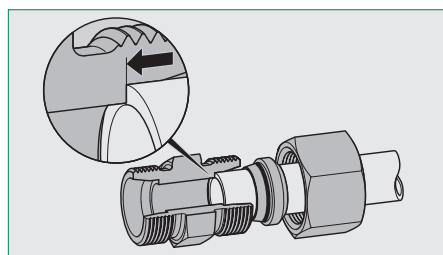
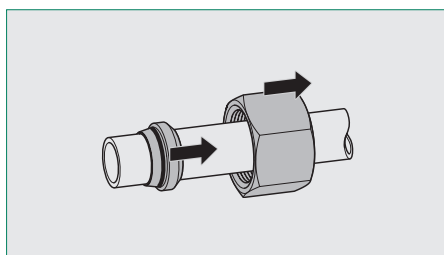
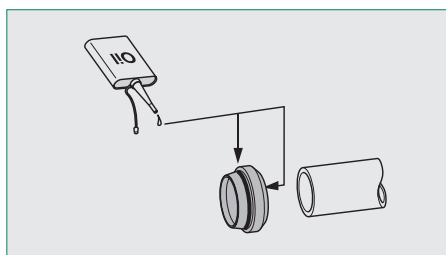


Please note: Improperly prepared and contaminated tubes will affect the service life of the tube connectors and may result in leakage. Poorly deburred tube ends can result in damage to the internal O-ring!



Please note: Assembly of reinforcing sleeves is essential when using thin-walled tubes. Refer to page 304.

2. Assembly Preparation



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Lightly lubricate the two soft-sealing elements of the cutting ring (e.g. using hydraulic oil HLP32). Do not use lubricating grease!

Consecutively push the union nut and then the cutting ring onto the tube end.

Carefully insert the tube end into the 24° taper of the fitting body until it is flush with the stop.

Immediately proceed with assembly to avoid the adhesion of dirt.

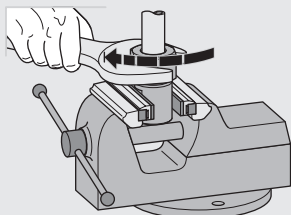
Pay attention to the correct alignment of the cutting ring: the cutting edges of the cutting ring have to face the tube end.

The tube must be held in this position during the entire assembly process.



Assembly Instructions for 24° Tube Connectors with Soft-Sealing Cutting Ring (Type FI-WDDS/FI-WDDS-W5) Direct Assembly in the Fitting Body

3. Assembly in the Fitting Body



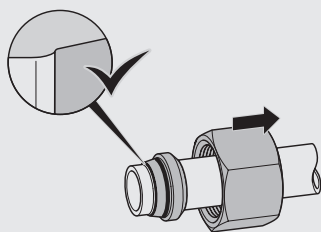
Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Use a suitable spanner. Tighten the union nut to the point where there is a first increase in force, the pressure point. The pressure point defines the point at which the cutting ring starts gripping the tube.

The tube can then no longer be rotated in the fitting. Now tighten the union nut to the end of the assembly. The end of the assembly is situated approx. 1 to 1-1/4 turns (360° - 450°) beyond the pressure point and is

signalled by a significant increase in force. The cutting ring comes into contact with the face side of the fitting body.

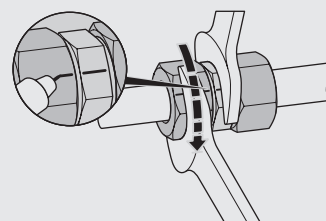
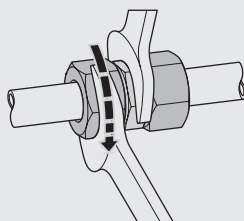
4. Inspection



Fully loosen the union nut to visually inspect the assembly. There must be raised material clearly visible in front of the cutting edge.

Under certain circumstances, it is still possible at this time to turn the cutting ring on the tube (radial direction). It can no longer be moved in the direction of the tube (axial direction).

5. Assembly with the Fitting Body



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Lightly lubricate the soft-sealing element located on the 24° taper of the cutting ring (e.g. using hydraulic oil HLP32). Do not use lubricating grease!

Immediately proceed with assembly to avoid the adhesion of dirt.

Carefully insert the assembled tube end into the 24° taper of the fitting body.

Tighten the union nut to the point where there is a first increase in force. Then tighten the union nut to the end of the assembly.

The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.

Use a suitable spanner to hold the fitting body within the tube during the entire assembly process. Use a bench vice for assembly in the event of unfavourable assembly conditions or larger tube dimensions.

A marking line on the union nut and the fitting body makes it easier to note and check the correct tightening angle.

6. Repeated Assembly

Check the soft-sealing element located on the 24° taper of the cutting ring for possible damage.

Carefully insert the tube end into the 24° taper of the fitting body.

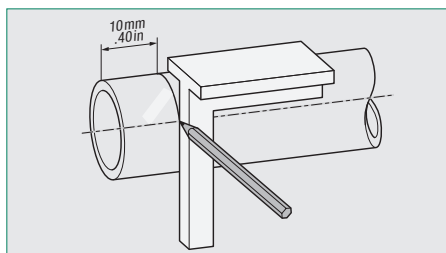
Then tighten the union nut to the end of the assembly. The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.



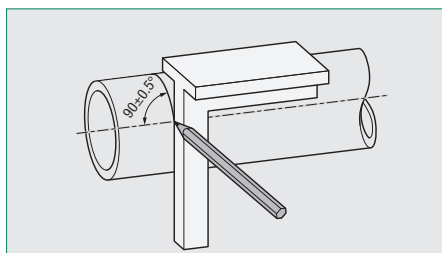
Assembly Instructions for 24° Tube Connectors with Soft-Sealing Cutting Ring (Type FI-WDDS/FI-WDDS-W5)

Machine-Assisted 100% Assembly with a STAUFF Press Assembly Machine and Assembly with the Fitting Body

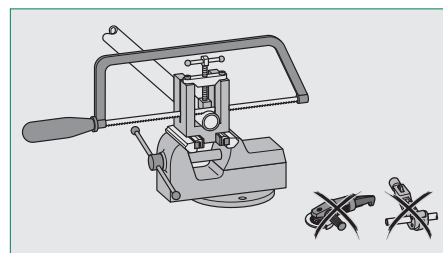
1. Tube Preparation



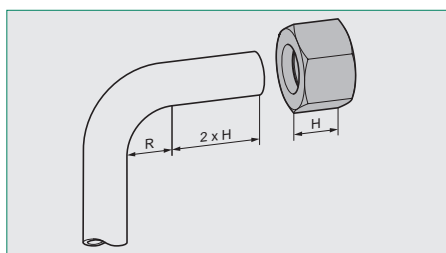
Saw off tube at a right angle (90°) and at least 10 mm from the cut made by the manufacture / supplier.



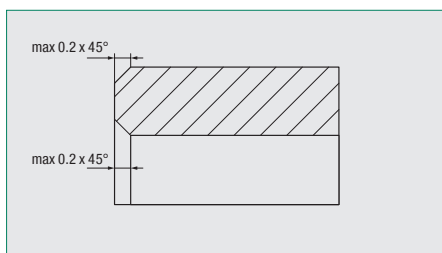
A maximum angular deviation of $\pm 0.5^\circ$ to the tube axis is permissible.



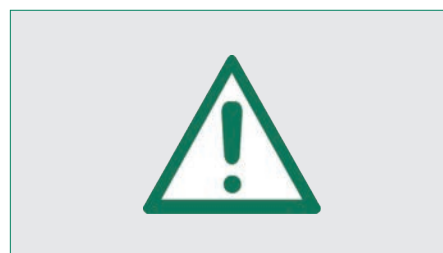
Do not use tube cutters or grinders.



The length of the straight sections of the tube of tube bends has to be twice the length of the union nut.



Slightly deburr the inside and outside of the tube end (max 0.2 x 45°). The assembly area of the tube has to be free of dirt, chips and paint.



Please note: Improperly prepared and contaminated tubes will affect the service life of the tube connectors and may result in leakage. Poorly deburred tube ends can result in damage to the internal O-ring!



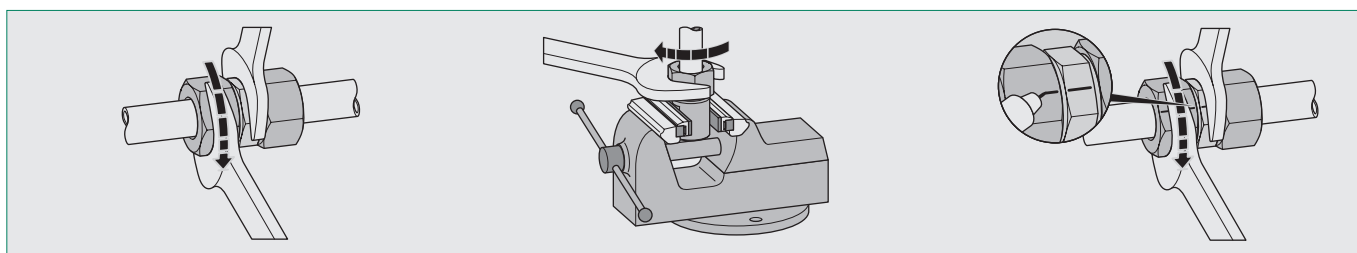
Please note: Assembly of reinforcing sleeves is essential when using thin-walled tubes. Refer to page 304.

2. Assembly Preparation, Machine-Assisted Assembly and Inspection

Please refer to the detailed instructions in the operating manual for the machine with regard to assembly preparation, actual assembly and inspection of the assembled tube ends.



3. Assembly with the Fitting Body



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

Lightly lubricate the soft-sealing element located on the 24° taper of the cutting ring (e.g. using hydraulic oil HLP32). Do not use lubricating grease!

Immediately proceed with assembly to avoid the adhesion of dirt.

Carefully insert the assembled tube end into the 24° taper of the fitting body.

Tighten the union nut to the point where there is a first increase in force. Then tighten the union nut to the end of the assembly.

The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.

Use a suitable spanner to hold the fitting body within the tube during the entire assembly process. Use a bench vice for assembly in the event of unfavourable assembly conditions or larger tube dimensions.

A marking line on the union nut and the fitting body makes it easier to note and check the correct tightening angle.

6. Repeated Assembly

Check the soft-sealing element located on the 24° taper of the cutting ring for possible damage.

Carefully insert the tube end into the 24° taper of the fitting body.

Then tighten the union nut to the end of the assembly. The cutting ring comes into contact with the face side of the fitting body after approx. 90° - 150°. The end of the assembly is once again indicated by a significant increase in force.



Please note when use FI-WDDS-W5 with Stainless Steel Fitting Body: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.



Assembly Instructions for Support Sleeves (Type FI-VH)

Selection Chart for Tubes made of Steel / Stainless Steel

Series	Tube OD		Tube Wall Thickness									
	(mm)	(in)	(mm)	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
LL	4	.16										
	6	.24	●									
	8	.31	●									
L	6	.24	●	●								
	8	.31	●	●								
	10	.39	●	●								
	12	.47	●	●	○							
	15	.59	●	●	●							
	18	.71	●	●	●	○						
	22	.87	●	●	●	○	○					
	28	1.10	●	●	●	○	○	○				
	35	1.38	●	●	●	●	○	○	○			
	42	1.65	●	●	●	●	○	○	○			
S	6	.24	●	●								
	8	.31	●	●								
	10	.39	●	●								
	12	.47	●	●	○							
	14	.55	●	●	●							
	16	.63	●	●	●	○						
	20	.79	●	●	●	●	○					
	25	.98	●	●	●	●	○	○				
	30	1.18	●	●	●	●	●	○	○			
	38	1.50	●	●	●	●	●	●	○	○		

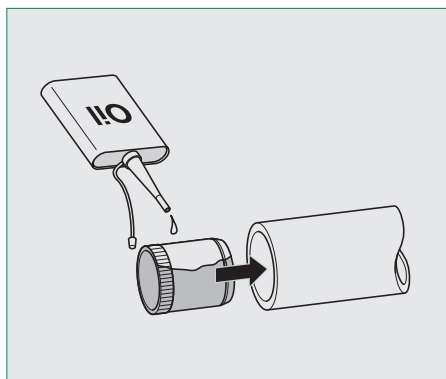
Selection Chart for Tubes made of Non-Ferrous Metals

Series	Tube OD		Tube Wall Thickness									
	(mm)	(in)	(mm)	0,5	0,75	1,0	1,5	2,0	2,5	3,0	3,5	4,0
LL	4	.16										
	6	.24	●	●								
	8	.31	●	●								
L	6	.24	●	●	●							
	8	.31	●	●	●							
	10	.39	●	●	●	○						
	12	.47	●	●	●	●						
	15	.59	●	●	●	●						
	18	.71	●	●	●	●	●					
	22	.87	●	●	●	●	●	●				
	28	1.10	●	●	●	●	●	●	●			
	35	1.38	●	●	●	●	●	●	●	●		
	42	1.65	●	●	●	●	●	●	●	●	●	
S	6	.24	●	●	●							
	8	.31	●	●	●							
	10	.39	●	●	●							
	12	.47	●	●	●							
	14	.55	●	●	●	●						
	16	.63	●	●	●	●	●					
	20	.79	●	●	●	●	●	●				
	25	.98	●	●	●	●	●	●	●			
	30	1.18	●	●	●	●	●	●	●	●		
	38	1.50	●	●	●	●	●	●	●	●	●	

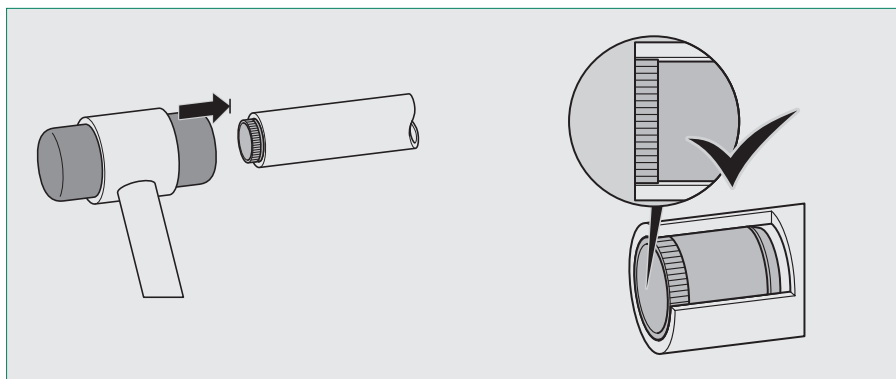
- Generally required ○ Highly recommended, especially for adverse operating conditions (vibrations, risks of self-loosening of fittings etc.)

Support sleeves are generally required for use with tubes made of plastics.

Assembly



Lubricate the outside of the support sleeve (e.g. using mineral-oil based hydraulic fluid HLP32) and insert it into the tube end up to the knurled section.



Use a hammer (plastic or rubber) to fully drive the support sleeve into the tube end, so that the knurled section is pressed against the inner wall of the tube and the sleeve is firmly flush with the tube end.

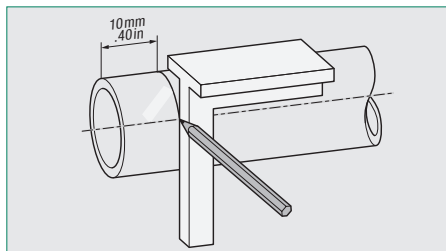
In doing so, the support sleeve is prevented from subsequent turning, sliding and falling out.



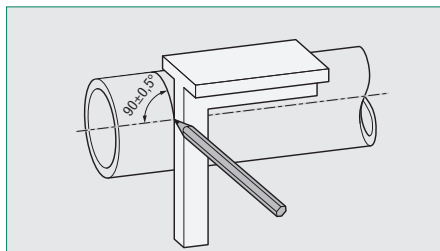
Assembly Instructions for STAUFF Form EVO Tube Fittings

Tube End Forming with a STAUFF Form EVO Machine and Assembly with the Fitting Body

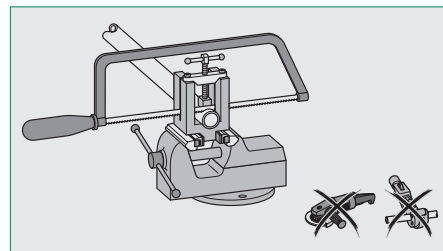
1. Tube Preparation



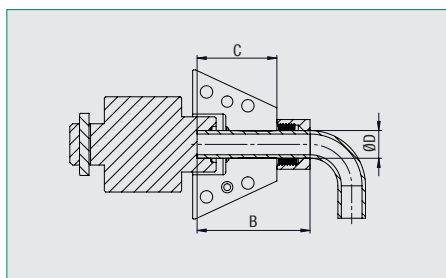
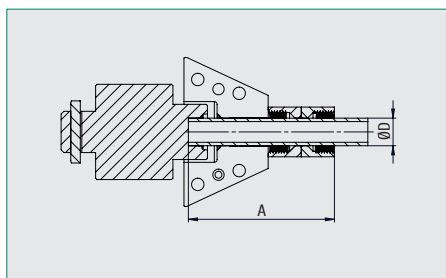
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.

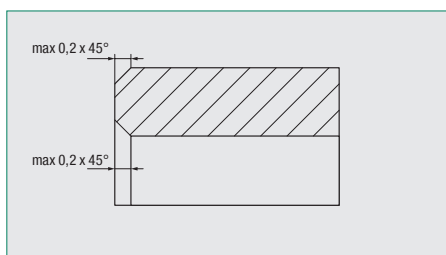


Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



Series	Tube OD		Minimum Length A		Minimum Length B		Insertion Depth C	
			Straight Tube Ends		Straight Sections next to Tube Bends		incl. 10 mm Door thickness	
	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
L	6	.24	75	2.95	52	2.05	52	2.05
	8	.31	75	2.95	52	2.05	52	2.05
	10	.39	74	2.91	52	2.05	52	2.05
	12	.47	75	2.95	54	2.13	54	2.13
	15	.59	89	3.50	66	2.60	59	2.32
	18	.71	99	3.90	74	2.91	67	2.64
	22	.87	106	4.17	82	3.23	72	2.83
	28	1.10	112	4.41	87	3.43	75	2.95
	35	1.38	138	5.43	106	4.17	81	3.19
	42	1.65	139	5.47	106	4.17	81	3.19
S	6	.24	77	3.03	54	2.13	54	2.05
	8	.31	77	3.03	54	2.13	52	2.05
	10	.39	77	3.03	54	2.13	52	2.05
	12	.47	78	3.07	56	2.20	54	2.13
	16	.63	98	3.86	72	2.83	61	2.40
	20	.79	115	4.53	84	3.31	70	2.76
	25	.98	129	5.08	96	3.78	79	3.11
	30	1.18	148	5.83	111	4.37	82	3.23
	38	1.50	170	6.69	126	4.96	94	3.70

Please note the minimum lengths for straight tube ends (dimension A) as well as for straight tube sections next to tube bends (dimension B) that are listed in the table.



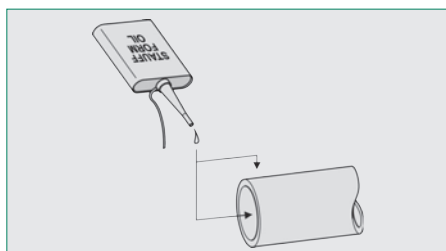
Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.



2. Preparation and Machine-Assisted Tube Forming



Lightly lubricate the inside and outside of the tube end (e.g. with a thin film of mineral-oil based hydraulic fluid HLP32) before starting the machine-assisted tube forming process. Do not use lubricating grease!

Important: For tube ends made of stainless steel, always and only use original STAUFF Form EVO Oil. The use of any other fluid is not allowed and may result in damage of the assembly tools.

Immediately proceed with the assembly in order to avoid exposure to contamination.

If the lubricant film on the outside of the tube end is too thick, fluid will be trapped between the forming tool and the tube end, thus resulting in inaccurate contours.

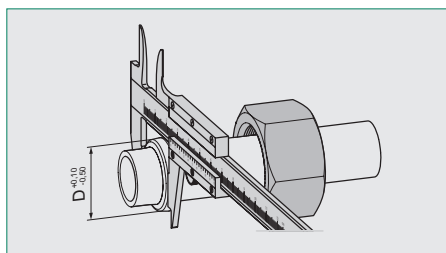
With regards to the actual tube forming process, please follow the detailed instructions in the operating manual of the machine.



Assembly Instructions for STAUFF Form EVO Tube Fittings

Tube End Forming with a STAUFF Form EVO Machine and Assembly with the Fitting Body

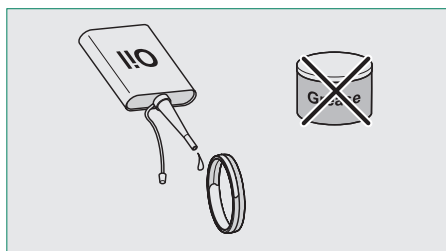
3. Inspection



Use a suitable measuring device (caliper gauge) to check control diameter D of the formed tube end based on the dimension table on the right.

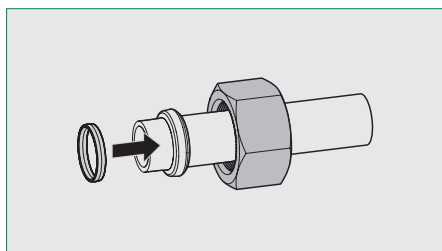
Series	Tube OD		Dimensions D	
	(mm)	(in)	(mm)	(in)
L	6	.24	9,5	.37
	8	.31	12,1	.48
	10	.39	14,0	.55
	12	.47	16,1	.63
	15	.59	20,1	.79
	18	.71	23,7	.93
	22	.87	27,1	1.07
	28	1.10	33,1	1.30
	35	1.38	42,1	1.66
	42	1.65	49,4	1.94
S	6	.24	9,5	.37
	8	.31	12,1	.48
	10	.39	14,0	.55
	12	.47	16,1	.63
	16	.63	21,7	.85
	20	.79	26,1	1.03
	25	.98	31,1	1.22
	30	1.18	37,1	1.46
	38	1.50	46,9	1.85

4. Assembly with the Fitting Body

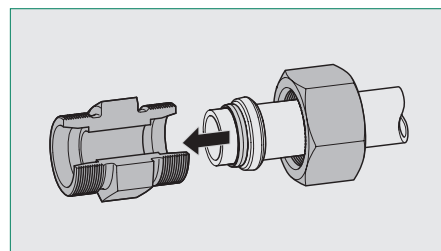


Lightly lubricate the inside and outside of the sealing element of the form ring (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

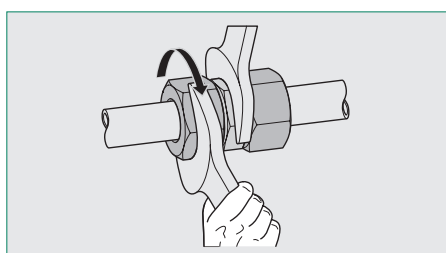
Immediately proceed with the assembly in order to avoid exposure to contamination.



Slide the sealing ring onto the formed tube end (laterally identical profile to avoid assembly errors).

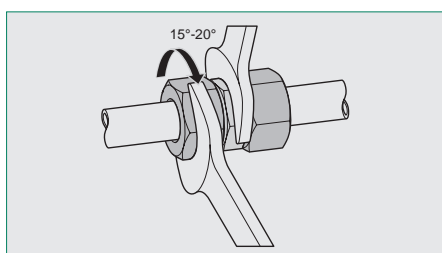


Carefully insert the formed tube end with the assembled sealing into the 24° taper of the fitting body.



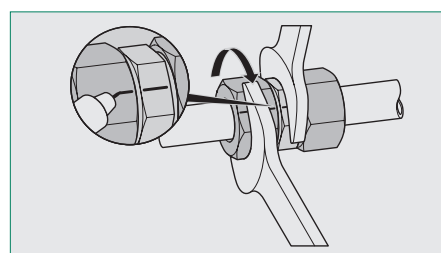
Use a suitable spanner to tighten the nut until there is a noticeable increase in force required (fixed point).

Avoid over-tightening by gripping the spanner close to the union nut.



Finish the assembly by using a suitable spanner to tighten the union nut approximately 15-20° beyond the fixed point. Always use a second spanner to hold the fitting body during the entire assembly procedure.

Alternatively, the assembly can be done via a torque.
Table with torques see point 6.



A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening angle.



Please note when using stainless steel components: Thread and 45° cone of the union nut and thread of the fitting body grease with special stainless steel fitting grease or use a silver coated union nut.

5. Repeated Assembly

For repeated assemblies, please follow the instructions from point 4 on.



Assembly Instructions for STAUFF Form EVO Tube Fittings

Tube End Forming with a STAUFF Form Machine and Assembly with the Fitting Body

6. Torques for alternative assembly for STAUFF Form EVO Tube Fittings

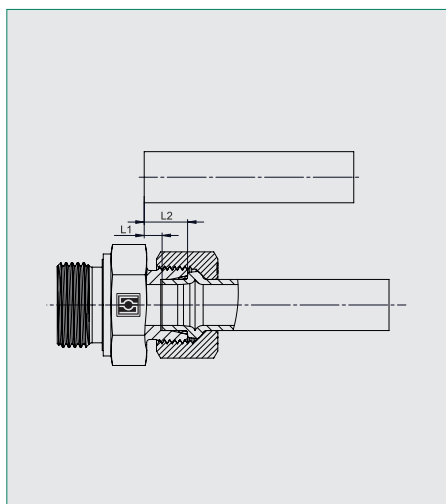
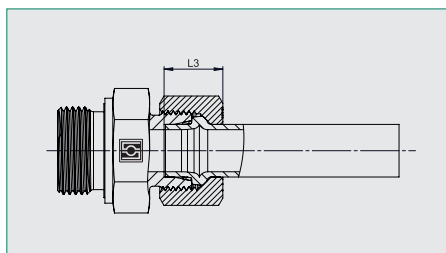
Series	Tube OD (mm/in)	Dimensions (mm/in) Thread	Turn till increase in force (fix point), than Assembly Angle	Torque (N·m/lb·ft)
L	6	M 12 x 1,5	15° ... 20°	23
	.24			17
	8	M 14 x 1,5		32
	.31			23.6
	10	M 16 x 1,5		40
	.39			29.5
	12	M 18 x 1,5		50
	.47			36.9
	15	M 22 x 1,5		65
	.59			47.9
	18	M 26 x 1,5		110
	.71			81.1
	22	M 30 x 2		120
	.87			88.5
	28	M 36 x 2		160
	1.10			118
	35	M 45 x 2		275
	1.38			202.8
S	42	M 52 x 2		410
	1.65			302.4
	6	M 14 x 1,5		30
	.24			22.1
	8	M 16 x 1,5		40
	.31			29.5
	10	M 18 x 1,5		55
	.39			40.6
	12	M 20 x 1,5		60
	.47			44.3
	16	M 24 x 1,5		85
	.63			62.7
	20	M 30 x 2		160
	.79			118
	25	M 36 x 2		200
	.98			147.5
	30	M 42 x 2		270
	1.18			199.1
	38	M52 x 2		400
	1.50			295



Assembly Instructions for STAUFF Form EVO Tube Fittings

Tube End Forming with a STAUFF Form EVO Machine and Assembly with the Fitting Body

Calculation Dimensions



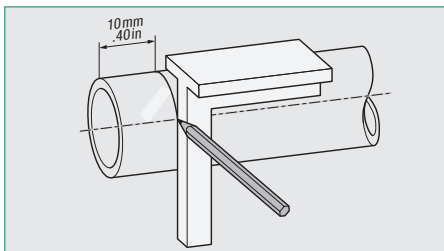
Tube OD		Tube Wall Thickness		L1		L2		L3	
(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
6	.24	1,5	.06	7,3	.29	13,8	.54	14,6 (L+S)	.57 (L+S)
8	.31	1,5	.06	7,5	.30	14,0	.55	14,6 (L+S)	.57 (L+S)
		2,0	.08	7,1	.28	13,6	.54		
		2,5	.10	6,6	.26	13,1	.52		
10	.39	1,5	.06	6,0	.24	12,4	.49	14,5 (L)	.57 (L+S)
		2,0	.08	6,3	.25	12,7	.50		
		2,5	.10	6,0	.24	12,4	.49	15,5 (S)	.61 (L+S)
		3,0	.12	5,7	.22	12,1	.48		
12	.47	1,5	.06	5,2	.20	11,7	.46	14,6 (L)	.57 (L)
		2,0	.08	5,4	.21	11,9	.47		
		2,5	.10	5,1	.20	11,6	.46	15,6 (S)	.61 (L+S)
		3,0	.12	4,9	.19	11,4	.45		
15	.59	1,5	.06	6	.24	12,5	.49	15,6	.61
		2,0	.08	6,4	.25	12,9	.51		
		2,5	.10	6,4	.25	12,9	.51		
16	.63	2,0	.08	7,4	.29	15,3	.60	18,4	.72
		2,5	.10	7,0	.28	14,9	.59		
		3,0	.12	7,0	.28	14,9	.59		
		4,0	.16	6,2	.24	14,1	.56		
18	.71	1,5	.06	6,2	.24	14,1	.56	16,4	.65
		2,0	.08	6,8	.27	13,7	.54		
		2,5	.10	6,5	.26	13,4	.53		
		3,0	.12	6,8	.27	13,7	.54		
		4,0	.16	6,4	.25	13,3	.52		
20	.79	2,0	.08	7,7	.30	17,7	.70	21,6	.85
		2,5	.10	7,8	.31	17,8	.70		
		3,0	.12	7,7	.30	17,7	.70		
		4,0	.16	7,3	.29	17,3	.68		
		2,0	.08	5,5	.22	12,5	.49	17,5	.69
22	.87	2,5	.10	5,7	.22	12,7	.50		
		3,0	.12	5,8	.23	12,8	.50		
		3,5	.14	5,9	.23	12,9	.51		
		2,0	.08	7,1	.28	18,6	.73	24,5	.96
25	.98	2,5	.10	7,6	.30	19,1	.75		
		3,0	.12	7,7	.30	19,2	.76		
		3,5	.14	7,7	.30	19,2	.76		
		4,0	.16	7,8	.31	19,3	.76		
		5,0	.20	7,8	.31	19,3	.76		
28	1.10	2,0	.08	5,4	.21	12,4	.49	18	.71
		2,5	.10	5,8	.23	12,8	.50		
		3,0	.12	5,7	.22	12,7	.50		
		3,5	.14	5,3	.21	12,3	.48		
		4,0	.16	6,2	.24	13,2	.52		
30	1.18	2,5	.10	7,9	.31	20,8	.82	27,2	1.07
		3,0	.12	8,0	.31	20,9	.82		
		4,0	.16	8,2	.32	21,1	.83		
		5,0	.20	8,5	.33	21,4	.84		
		6,0	.24	8,2	.32	21,1	.83		
35	1.38	2,5	.10	7,7	.30	17,6	.69	22	.87
		3,0	.12	7,8	.31	17,7	.70		
		4,0	.16	8,6	.34	18,5	.73		
		5,0	.20	8,7	.34	18,6	.73		
38	1.50	3,0	.12	9,8	.39	25,2	.99	31	1.22
		4,0	.16	11,0	.43	26,4	1.4		
		5,0	.20	11,3	.44	26,7	1.5		
		6,0	.24	11,4	.45	26,8	1.6		
42	1.65	3,0	.12	8,1	.32	18,5	.73	22,7	.89
		3,5	.14	7,9	.31	18,3	.72		
		4,0	.16	8,6	.34	19,0	.75		



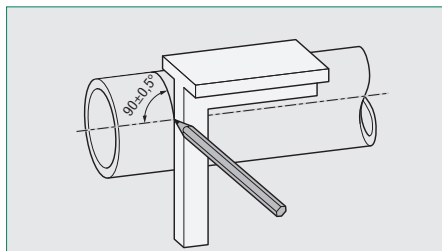
Assembly Instructions for STAUFF Connect 37° Flared Tube Fittings

Tube Flaring with a STAUFF Press Machine and Assembly with the Fitting Body

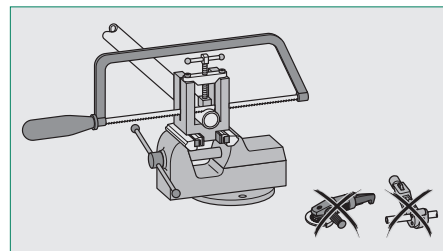
1. Tube Preparation



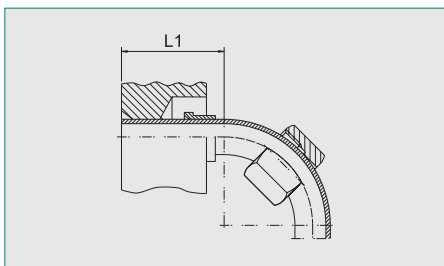
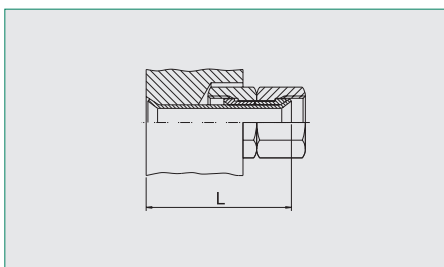
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.

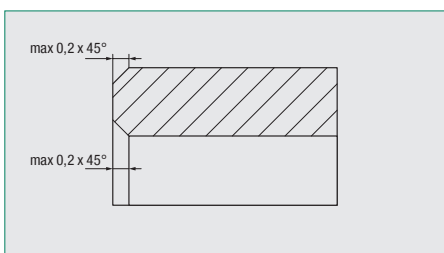


Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.

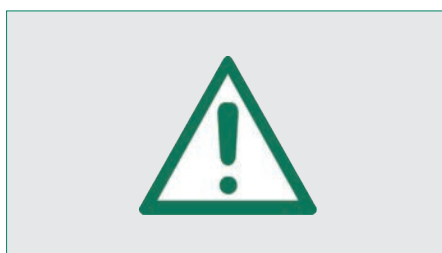


Series	Tube OD		Minimum Length L Straight Tube Sections		Minimum Length L1 Straight Tube Sections next to Tube Bends	
	(mm)	(in)	(mm)		(mm)	(in)
L	6	.24	59	2.32	43	1.69
	8	.31	62	2.44	44	1.73
	10	.39	64	2.52	46	1.81
	12	.47	67	2.64	47	1.85
	15	.59	75	2.95	50	1.97
	18	.71	76	2.99	58	2.28
	22	.87	81	3.19	60	2.36
	28	1.10	88	3.46	60	2.36
	35	1.38	92	3.62	62	2.44
	42	1.65	130	5.12	70	2.76
S	6	.24	61	2.40	43	1.69
	8	.31	64	2.52	44	1.73
	10	.39	66	2.60	46	1.81
	12	.47	68	2.68	47	1.85
	16	.63	79	3.11	52	2.05
	20	.79	82	3.23	58	2.28
	25	.98	94	3.70	60	2.36
	30	1.18	96	3.78	62	2.44
	38	1.50	136	5.35	70	2.76

Please note the minimum lengths for straight tube ends (dimension L) as well as for straight tube sections next to tube bends (dimension L1) that are listed in the table. If installation situations demand that the length of straight tube sections next to tube bends (dimension L1) has to be shorter than indicated in the table, tube bending has to be carried out after flaring.



Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Preparation and Machine-Assisted Tube Flaring

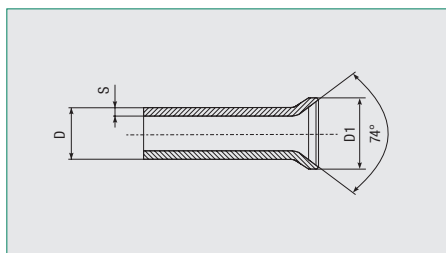
With regards to assembly preparation as well as the actual tube flaring process, please follow the detailed instructions in the operating manual of the machine.



Assembly Instructions for STAUFF Connect 37° Flared Tube Fittings

Tube Flaring with a STAUFF Press Machine and Assembly with the Fitting Body

3. Inspection



Check the flared tube end for cracking and impurities after flaring.

Always verify the dimensional accuracy of the flare.

The checking diameter corresponds to the outside diameter D1 of the flared tube end (according to dimension table on the right). The flare must be at right angle to the tube axis and concentric with the tube.

Please note: If the flare is eccentric, too short or not wide enough, perfect function of the tube fitting cannot be guaranteed!

4. Assembly with the Fitting Body

Lubricate the o-rings of the 24°/37° flared tube adaptor (e.g. using mineral-oil based hydraulic fluid HLP32) and carefully insert it into the 24° taper of the fitting body.

It is recommended to use a bench vice to press and permanently capture the 24°/37° flared tube adaptor into the 24° taper of the tube fitting – a great help to the tube fitter during re-assembly. In this case, please make sure that all components are suitably protected against damage.

Apply the flared tube end to the 24°/37° flared tube adaptor, which is attached to the fitting body, tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/2 a turn (180°) beyond this point.

Important: Always use a spanner to hold the fitting body during the assembly procedure.

Tube OD		Dimensions		D1 _{min}		D1 _{max}	
D	(mm)	S	(in)	(mm)	(in)	(mm)	(in)
6	.24	1	.04	9,1	.36	10	.39
		1,5	.06				
8	.31	1	.04	11,3	.44	12	.47
		1,5	.06				
		2	.08				
10	.39	1	.04	13,1	.52	14	.55
		1,5	.06				
		2	.08				
12	.47	1	.04	15,3	.60	16	.63
		1,5	.06				
		2	.08				
14	.55	1,5	.06	18,6	.73	19,6	.77
		2	.08				
		2,5	.10				
		3	.12				
15	.59	1,5	.06	19,1	.75	20	.79
		2	.08				
		2,5	.10				
16	.63	1,5	.06	20,6	.81	22	.87
		2	.08				
		2,5	.10				
		3	.12				
18	.71	1,5	.06	23,2	.91	24	.94
		2	.08				
		2,5	.10				
20	.79	2	.08	25,6	1.01	26,8	1.06
		2,5	.10				
		3	.12				
		3,5	.14				
22	.87	1,5	.06	26,5	1.04	27,5	1.08
		2	.08				
		2,5	.10				
		3	.12				
25	.98	2	.08	31,1	1.22	33	1.30
		2,5	.10				
		3	.12				
		4	.16				
28	1.10	2	.08	32,7	1.29	33,3	1.31
		2,5	.10				
		3	.12				
		4	.16				
30	1.18	2,5	.10	37	1.46	38,7	1.52
		3	.12				
		4	.16				
		5	.20				
		2	.08				
35	1.38	2,5	.10	41,8	1.65	42,7	1.68
		3	.12				
		4	.16				
		2,5	.10				
38	1.50	3	.12	46	1.81	47,2	1.86
		4	.16				
		5	.20				
		2	.08				
42	1.65	3	.12	48,8	1.92	49,8	1.96
		4	.16				
		2	.08				

5. Repeated Assembly

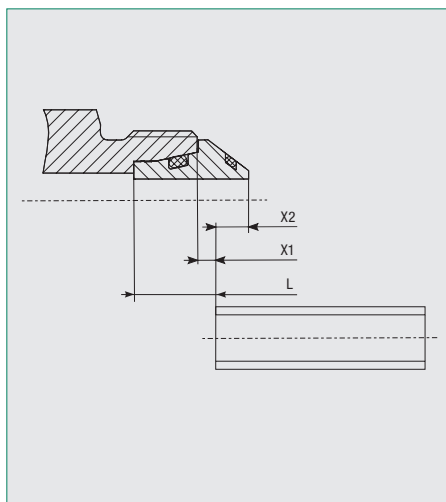
For repeated assembly, the union nut has to be tightened using exactly the same force as for the original assembly.



Assembly Instructions for STAUFF Connect 37° Flared Tube Fittings

Tube Flaring with a STAUFF Press Machine and Assembly with the Fitting Body

Calculation Dimensions



The correct tube length can be determined by measuring the distance between the 24°/37° flared tube adaptors pressed into the fitting bodies. Dimension X2 has then to be added for each of the connections.

The correct tube length can also be determined by measuring the distance between the fitting bodies. Dimension X1 has then to be subtracted for each of the connections.

Dimension L corresponds to the difference in tube length compared to cutting ring fittings. When changing over from cutting ring fittings to flared tube fittings, the tube has to be shortened by dimension L.

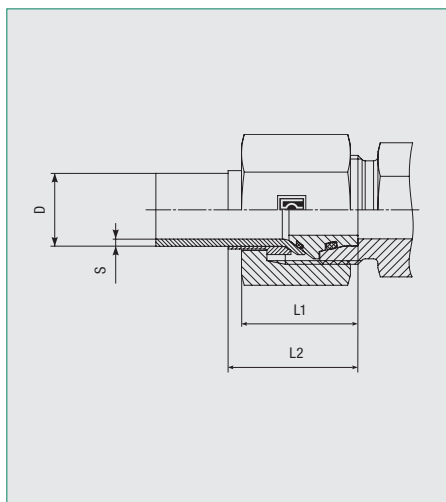
Tube OD D (mm)	(in)	Dimensions		X2 (mm)	(in)	L (mm)	(in)
		X1 (mm)	(in)				
6	.24	1	.04	3,5	.14	8	.31
		2	.08	2,5	.10	9	.35
8	.31	1	.04	4	.16	8	.31
		2	.08	3	.12	9	.35
		2,5	.10	2,5	.10	9,5	.37
10	.39	1	.04	4,5	.18	8	.31
		2	.08	3,5	.14	9	.35
		3	.12	2,5	.10	10	.39
12	.47	1	.04	4,5	.18	8	.31
		2	.08	3,5	.14	9	.35
		3	.12	2,5	.10	10	.39
14	.55	0,5	.02	5,5	.22	8,5	.33
		1	.04	5	.20	9	.35
		2	.08	4	.16	10	.39
		3	.12	3	.12	11	.43
15	.59	1	.04	4,5	.18	8	.31
		2	.08	3,5	.14	9	.35
		3	.12	2,5	.10	10	.39
		0	.00	6,5	.26	8,5	.33
16	.63	1	.04	5,5	.22	9,5	.37
		1,5	.06	5	.20	10	.39
		2,5	.10	4	.16	11	.43
		0	.00	5,5	.22	7,5	.30
18	.71	1	.04	4,5	.18	8,5	.33
		1,5	.06	4	.16	9	.35
		1	.04	7	.28	11,5	.45
20	.79	2	.08	6	.24	12,5	.49
		3	.12	5	.20	13,5	.53
		4	.16	4	.16	14,5	.57
		1	.04	5,7	.22	8,5	.33
22	.87	2	.08	4,7	.19	9,5	.37
		3	.12	3,7	.15	10,5	.41
		3,5	.14	3,2	.13	11	.43
		1	.04	7	.28	13	.51
25	.98	1,5	.06	6,5	.26	13,5	.53
		2,5	.10	5,5	.22	14,5	.57
		4	.16	4	.16	16	.63
		1,5	.06	5,7	.22	9	.35
28	1.10	2,5	.10	4,7	.19	10	.39
		3	.12	4,2	.17	10,5	.41
		-0,5	-.02	9	.35	13	.51
30	1.18	0,5	.02	8	.31	14	.55
		1	.04	7,5	.30	14,5	.57
		3	.12	5,5	.22	16,5	.65
		4,5	.18	4	.16	18	.71
		1,5	.06	6,5	.26	12	.47
35	1.38	2	.08	6	.24	12,5	.49
		3	.12	5	.20	13,5	.53
		4,5	.18	3,5	.14	15	.59
		0	.00	10	.39	16	.63
		0,5	.02	9,5	.37	16,5	.65
38	1.50	2	.08	8	.31	18	.71
		4	.16	6	.24	20	.79
		1,5	.06	7	.28	12,5	.49
		3	.12	6,5	.26	14	.55
42	1.65	4,5	.18	5	.20	15,5	.61



Assembly Instructions for STAUFF Connect 37° Flared Tube Fittings

Tube Flaring with a STAUFF Press Machine and Assembly with the Fitting Body

Calculation Dimensions

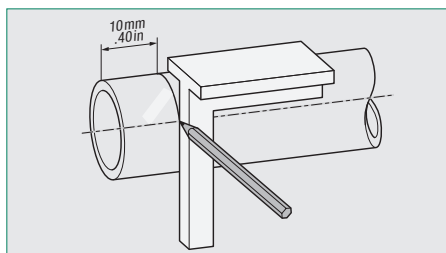


Series	Tube OD x Wall Thickness (mm/in) D x S	Dimensions (mm/in)		Corrected Tube Lengths for Different Wall Thicknesses (mm/in)									
		L1	L2	1	1,5	2	2,5	3	3,5	4	5		
L	6 x 1	17,5	20,5	•	1	1							
	.24 x .04	.69	.81		.04	.04							
	8 x 1	18,5	21,5	•	1	1,5							
	.31 x .04	.73	.85		.04	.06							
	10 x 1,5	19,5	24	-1	•	1							
	.39 x .06	.77	.94	-.04		.04							
	12 x 1,5	20	24,5	-1	•	1							
	.47 x .06	.79	.96	-.04		.04							
	15 x 1,5	21,5	25,5		•	1	2						
	.59 x .06	.85	1.00			.04	.08						
	18 x 2	23	27		-1	•	1						
	.71 x .08	.91	1.06		-.04		.04						
	22 x 2	24	30,5		-1	•	1	1,5					
	.87 x .08	.94	1.20		-.04		.04	.06					
	28 x 3	26	31,5			-1,5	-0,5	•					
	1.10 x .12	1.02	1.24			-.06	-.02						
	35 x 3	30	36			-1,5	-1	•			1,5		
	1.38 x .12	1.18	1.42			-.06	-.04				.06		
	42 x 3	34	40			-1,5		•			1,5		
	1.65 x .12	1.34	1.57			-.06					.06		
S	6 x 1	17,5	20,5	•	1	1							
	.24 x .04	.69	.81		.04	.04							
	8 x 1	18,5	21,5	•	1	1,5							
	.31 x .04	.73	.85		.04	.06							
	10 x 1,5	20	24,5	-1	•	1							
	.39 x .06	.79	.96	-.04		.04							
	12 x 1,5	20,5	25	-1	•	1							
	.47 x .06	.81	.98	-.04		.04							
	14 x 2	23	27,5		-0,5	•	1	2					
	.55 x .08	.91	1.08		-.02		.04	.08					
	16 x 2	25	31		-1	•	0,5	1,5					
	.63 x .08	.98	1.22		-.04		.02	.06					
	20 x 2	27,5	33			•	1	2	3				
	.79 x .08	1.08	1.30				.04	.08	.12				
	25 x 3	32	38,5			-1,5	-1	•			1,5		
	.98 x .12	1.26	1.52			-.06	-.04				.06		
	30 x 3	33	41,5			-2	-1	•			2	3,5	
	1.18 x .12	1.30	1.63			-.08	-.04				.08	.14	
	38 x 3	37,5	48				-0,5	•			1,5	3,5	
	1.50 x .12	1.48	1.89				-.02				.06	.14	

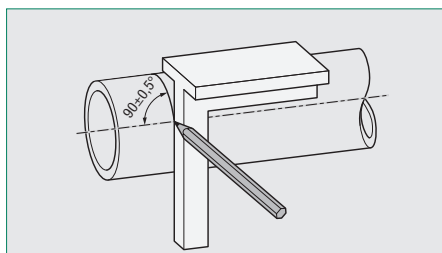


Assembly Instructions for 24° Weld Cones with O-Ring

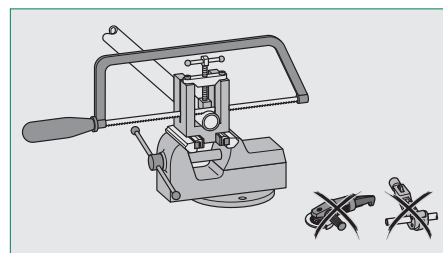
1. Tube Preparation



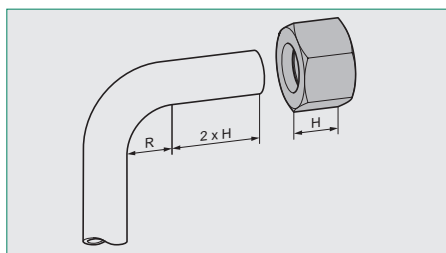
Saw off tube in right angle and at least 10 mm / .40 in from the cut made by the tube manufacturer / supplier in order to avoid failures caused during shipment.



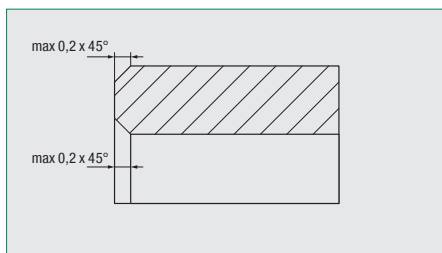
A maximum angular deviation / tolerance of $\pm 0,5^\circ$ relative to the tube axis is permissible.



Only use proper tube sawing machinery or equipment. Do not use tube cutters or grinders as this may result in unwanted angled cuts and cause severe burring.



For tube bends, the length of the straight section of the tube end to the start of the bending radius has to be twice the height of the union nut.



Slightly deburr inside and outside of the tube end (max 0,2 x 45°). The assembly area of the tube has to be free of contamination, chips and paint.



Please note: Improperly prepared and contaminated tubes will affect the service life of the connection and may result in leakage.

2. Assembly Preparation and Welding

Place the union nut on the weld cone.

Remove the o-ring from the front end of the weld cone before welding (usually supplied separately).

Weld the weld cone and the tube end according to any applicable guidelines for welding.

The user is fully responsible for the quality of the welding work.

Descall the welded area and clean the o-ring groove.

Assemble the o-ring and make sure that it is located in the groove of the weld cone without being twisted.

Lubricate the o-ring of the weld cone (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.

3. Assembly with the Fitting Body

Carefully insert the weld cone into the 24° taper of the fitting body.

Tighten the union nut until the noticeable increase in force.

Then finish the assembly with another approximately 1/3 a turn (120°) beyond this point.

A marking line applied on the union nut and the fitting body makes it easier to indicate the sufficient tightening turns.

4. Repeated Assembly

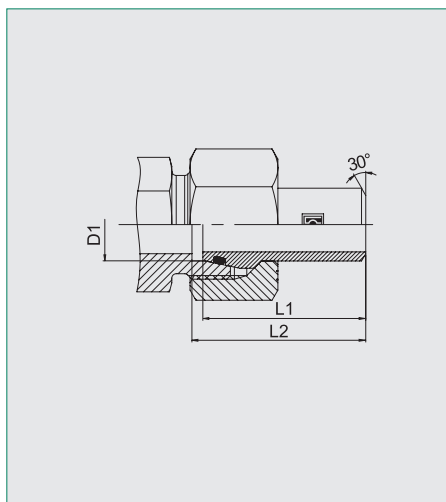
For repeated assembly, the union nut has to be tightened using exactly the same force as for the original assembly.

The o-ring has to be checked for possible damages and, if necessary, replaced prior to the re-assembly.



Assembly Instructions for 24° Weld Cones with O-Ring

Calculation Dimensions



Series	Tube OD		Dimensions		L2	
	D1 (mm)	(in)	L1 (mm)	(in)	(mm)	(in)
L	6	.24	31	1.22	32	1.26
	8	.31	31	1.22	32	1.26
	10	.39	32,5	1.28	33,5	1.32
	12	.47	32,5	1.28	33,5	1.32
	15	.59	35	1.38	36	1.42
	18	.71	36	1.42	37	1.46
	22	.87	38,5	1.52	39,5	1.56
	28	1.10	41,5	1.63	42,5	1.67
	35	1.38	47	1.85	49,5	1.95
	42	1.65	47	1.85	50	1.97
S	6	.24	31	1.22	32	1.26
	8	.31	31	1.22	32	1.26
	10	.39	32,5	1.28	33,5	1.32
	12	.47	32,5	1.28	33,5	1.32
	14	.55	38,5	1.52	39,5	1.56
	16	.63	39	1.54	41	1.61
	20	.79	44,5	1.75	47	1.85
	25	.98	49,5	1.95	53,5	2.11
	30	1.18	52,5	2.07	57,5	2.26
	38	1.50	56,5	2.22	64,5	2.54



Assembly Instructions for Tube Fittings with 24° Taper and O-Ring

1. Assembly Preparation

Make sure that the o-ring is located in the groove of the taper without being twisted.

Lubricate the o-ring of the taper fitting (e.g. using mineral-oil based hydraulic fluid HLP32). Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.

2. Assembly with the Fitting Body

Keep the taper fitting aligned and carefully insert it into the 24° taper of the fitting body.

Tighten the wire-pin nut until the noticeable increase in force, and then finish the assembly with another approximately 1/3 a turn (120°) beyond this point.

Important: Always use a spanner to hold the fitting body during the assembly procedure.

A marking line applied on the nut and the fitting body makes it easier to indicate the sufficient tightening turns.

Assembly Instructions for Tube Fittings with Standpipe

1. Assembly Preparation

Standpipe fittings are always supplied with factory-assembled cutting rings and union nuts.

2. Assembly with the Fitting Body

Keep the fitting with standpipe aligned and carefully insert it into the 24° taper of the fitting body.

Tighten the union nut until the noticeable increase in force, and then finish the assembly with another approximately 1/12 a turn (30°) beyond this point.

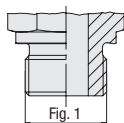
Important: Always use a spanner to hold the fitting body during the assembly procedure.

A marking line applied on the nut and the fitting body makes it easier to indicate the sufficient tightening turns.



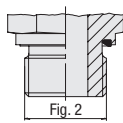
Assembly Instructions for Tube Fittings with Male Threaded Stud Whitworth Parallel Pipe Thread

Tightening Torques



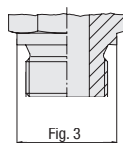
Metallic Sealing Edge

Whitworth Parallel Pipe Thread
DIN 3852-2 (Form B) / ISO 1179-4 (Type B)



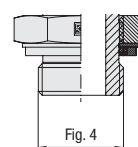
Profile Sealing Ring

Whitworth Parallel Pipe Thread
ISO 1179-2 (Type E)



Sealing Surface for Gaskets

Whitworth Parallel Pipe Thread



**O-Ring with Retaining Ring
(Adjustable)**

Whitworth Parallel Pipe Thread

Series	Thread	Male Threaded Studs			Check Valves	Adjustable Male Threaded Studs	Blanking Screws		
		fig. 1 Metallic Sealing Edge Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 3 Sealing Surface for Gaskets Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 4 O-Ring with Retaining Ring Torque (N-m) ca.	FI-VSV fig. 2 Profile Sealing Ring Torque (N-m) ca.	FI-VS fig. 1 Metallic Sealing Edge Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.
L	G 1/8	25	18	20	18	25	18	25	15
		18.5	13.32	14.8	13.3	18.5	13.3	18.5	11.1
	G 1/4	55	35	50	35	50	33	40	25
		40.5	25.8	36.9	25.9	37.0	24.4	29.6	18.5
	G 3/8	95	70	80	70	80	70	95	50
		70.1	51.8	59.0	51.8	59.2	51.8	70.3	37.0
	G 1/2	185	90	140	90	105	90	130	70
		136.4	66.6	103.3	66.6	77.7	66.6	96.2	51.8
	G 3/4	250	180	190	180	220	180	250	120
		184.4	133.2	140.1	133.2	162.8	133.2	185.0	88.8
S	G 1	400	310	330	310	370	250	400	200
		295	229.4	243.4	229.4	273.8	185.0	296.0	148.0
	G 1 1/4	670	450	540	450	500	400	600	320
		494.2	333	398.3	333.0	370.0	296.0	444.0	236.8
	G 1 1/2	800	540	630	540	600	500	800	400
		590	399.6	464.7	399.6	444.0	370.0	592.0	296.0
	G 1/8	30	25				18	25	15
		22.1	18.4				13.3	18.5	11.1
	G 1/4	80	55	60	55	50	33	40	25
		59.0	40.7	44.3	40.7	37.0	24.4	29.6	18.5
S	G 3/8	130	80	100	80	80	70	95	50
		95.9	59.0	73.8	59.2	59.2	51.8	70.3	37.0
	G 1/2	220	115	160	115	105	90	130	70
		162.3	84.8	118.0	85.1	77.7	66.6	96.2	51.8
	G 3/4	350	180	280	180	220	181	250	120
		258.1	133.2	206.5	133.2	162.8	133.2	185.0	88.8
	G 1	700	310	440	310	370	250	400	200
		516.3	229.4	324.5	229.4	273.8	185.0	296.0	148.0
	G 1 1/4	850	450	580	450	500	400	600	320
		627	333	427.8	333.0	370.0	296.0	444.0	236.8
S	G 1 1/2	1000	540	700	540	600	500	800	400
		737.6	399.6	516.3	399.6	444.0	370.0	592.0	296.0
S	G 2	1200							
		885.1							

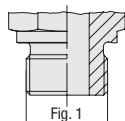
Please note: The tightening torques for male threaded studs listed in this catalogue are approximate values with a tolerance of +10% and always refer to original components of the STAUFF Connect range made of steel with the default Zinc/Nickel coating and a steel mating material.

Please contact STAUFF prior to the assembly for recommended tightening torques for use with any mating materials other than Steel!



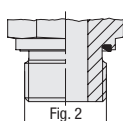
Assembly Instructions for Tube Fittings with Male Threaded Stud Metric Parallel Thread

Tightening Torques



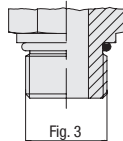
Metallic Sealing Edge

Metric Parallel Thread
DIN 3852-1 (Form B) /
ISO 9974-3 (Type B)



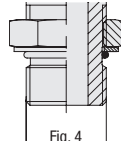
Profile Sealing Ring

Metric Parallel Thread
ISO 9974-2 (Type E)



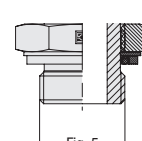
O-Ring

Metric Parallel Thread
ISO 6149-2 /-3



**O-Ring without Retaining Ring
(Adjustable)**

Metric Parallel Thread
ISO 6149-2 /-3



**O-Ring with Retaining Ring
(Adjustable)**

Metric Parallel Thread

Series	Thread	Male Threaded Studs			Check Valves	Adjustable Male Threaded Studs		Blanking Screws		
		fig. 1 Metallic Sealing Edge Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 3 O-Ring Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 5 O-Ring with Retaining Ring Torque (N-m) ca.	fig. 4 O-Ring Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 2 Profile Sealing Ring Torque (N-m) ca.	fig. 3 O-Ring Torque (N-m) ca.
L	M 8 x 1	14							10	
		10.3								
	M 10 x 1	25	18	15	18	18	15	12	12	15
		18.4	13.32	11.1	13.3	13.3	11.1	8.9	8.9	11.1
	M 12 x 1,5	45	25	25	25	35	25	25	23	22
		33.3	18.5	18.5	18.4	25.9	18.5	18.5	17.0	16.3
	M 14 x 1,5	70	45	35	45	55	35	45	30	45
		51.6	33.3	25.9	33.3	40.7	25.9	33.3	22.2	33.3
	M 16 x 1,5	90	55	40	55	80	40	55	50	55
		66.4	40.7	29.6	40.7	59.2	29.6	40.7	37.0	40.7
	M 18 x 1,5	120	70	45	70	105	45	70	65	70
		88.5	51.8	33.3	51.8	77.7	33.3	51.8	48.1	51.8
	M 22 x 1,5	170	125	60	125	125	60	125	90	100
		125.4	92.5	44.4	92.5	92.5	44.4	92.5	66.6	74.0
	M 26 x 1,5 ²	230	180		180			180	100	170
		169.6	133.2		132.8			133.2	74.0	125.8
S	M 27 x 2		180	100		200	100	180	130	180
			132.8	74.0		147.5	74.0	132.8	96.2	132.8
	M 33 x 2	400	310	160	310	370	160	250	250	215
		295.0	229.4	118.4	229.4	273.8	118.4	185.0	185.0	159.1
	M 42 x 2	700	450	210	450	500	210	400	310	330
		516.3	333	155.4	333	370.0	155.4	296.0	229.4	244.2
	M 48 x 2	900	540	260	540	600	260	500	380	420
		663.8	399.6	192.4	399.6	44.0	192.4	370.0	281.2	310.8
	M 12 x 1,5	60	35	35	35	35	35	25	23	22
		44.3	25.8	25.8	25.9	25.9	25.9	18.5	17.0	16.3
	M 14 x 1,5	80	55	40	55	55	45	45	30	45
		59.0	40.6	29.6	40.7	40.7	33.3	33.3	22.2	33.3
	M 16 x 1,5	130	70	55	70	80	55	55	50	55
		95.9	51.6	40.7	51.8	59.2	40.7	40.7	37.0	40.7
	M 18 x 1,5	190	90	70	90	105	70	70	65	70
		140.1	66.4	51.6	66.4	77.7	51.8	51.8	48.1	51.8
	M 20 x 1,5	220	125		125			80	80	
		162.3	92.2		92.5			59.2	59.2	
	M 22 x 1,5	300	135	100	135	125	100	125	90	100
		221.3	99.6	74	99.6	92.5	74.0	92.5	66.6	74.0
	M 26 x 1,5		180					180	100	170
			132.8					132.8	74.0	125.8
	M 27 x 2	420	180	170	180	220	170	180	130	180
		309.8	132.8	125.8	132.8	162.8	125.8	132.8	96.2	132.8
	M 33 x 2	600	310	310	310	370	310	250	250	215
		442.5	229.4	229.4	229.4	273.8	229.4	185.0	185.0	159.1
	M 42 x 2	700	450	330	450	500	330	400	310	330
		516.3	333	244.2	333	370.0	244.2	296.0	229.4	244.2
	M 48 x 2	950	540	420	540	600	420	500	380	420
		700.1	399.6	310.8	399.6	444.0	310.8	370.0	281.2	310.8

²M 27 x 2 according to ISO 6149.

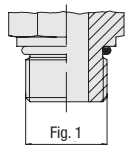
Please note: The tightening torques for male threaded studs listed in this catalogue are approximate values with a tolerance of +10% and always refer to original components of the STAUFF Connect range made of steel with the default Zinc/Nickel coating and a steel mating material.

Please contact STAUFF prior to the assembly for recommended tightening torques for use with any mating materials other than Steel!



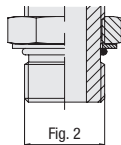
Assembly Instructions for Tube Fittings with Male Threaded Stud UN/UNF-Thread

Tightening Torques



**O-Ring without Retaining Ring
(Non-Adjustable)**

UN/UNF-Thread



**O-Ring without Retaining
Ring (Adjustable)**

UN/UNF-Thread
ISO 11926-2/-3

Series	Thread	Male Threaded Studs	Adjustable Male Threaded Studs
		fig. 1 O-Ring Torque (N-m) ca.	fig. 2 O-Ring Torque (N-m) ca.
L	7/16-20 UNF	18	18
		13.3	13.3
	1/2-20 UNF	28	
		20.7	
	9/16-18 UNF	30	34
		22.2	25.1
	3/4-16 UNF	50	55
		37.0	40.7
	7/8-14 UNF	60	80
		44.2	59
	1 1/16-12 UN	95	100
		70.3	73.7
S	7/16-20 UNF	150	150
		111.0	111.0
	9/16-18 UNF	200	290
		148.0	213.9
	1 7/8-12 UN	325	325
		239.7	239.7
	7/16-20 UNF	20	20
		14.8	14.8
	9/16-18 UNF	35	46
		25.9	33.9
	3/4-16 UNF	70	80
		51.8	59
	7/8-14 UNF	100	80
		74.0	59
	1 1/16-12 UN	170	185
		125.8	136.4
	1 5/16-12 UN	270	
		199.1	
	1 5/8-12 UN	285	340
		210.9	250.7
	1 7/8-12 UN	415	415
		306.1	306.1

Please note: The tightening torques for male threaded studs listed in this catalogue are approximate values with a tolerance of +10% and always refer to original components of the STAUFF Connect range made of steel with the default Zinc/Nickel coating and a steel mating material.

Please contact STAUFF prior to the assembly for recommended tightening torques for use with any mating materials other than Steel!



Assembly Instructions for Banjo Fittings

1. Assembly Preparation

Lubricate the o-ring of the banjo bolt (e.g. using mineral-oil based hydraulic fluid HLP32).
Do not use lubricating grease!

Immediately proceed with the assembly in order to avoid exposure to contamination.

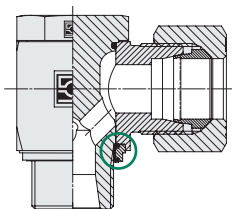
2. Assembly with the Fitting Body

Place the external metallic sealing ring or the retaining ring with captive seal on the opposite side of the banjo fitting into the larger bore and center it through the thread for the banjo bolt. Retaining rings with captive seal are additionally centered through the bore in the fitting body – any clearance between the ring and the fitting body is not allowed.

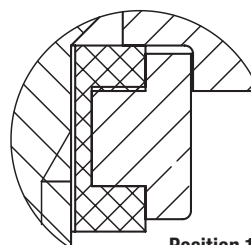
Align the body of the banjo fitting and tighten the banjo bolt with a spanner until the noticeable increase in force (pressure point).

Use a suitable spanner to finish the assembly with either another approximately 1/6 a turn (60°, applicable for retaining rings with captive seal) or 1/4 a turn (90°, applicable for external metallic sealing rings) beyond this point while holding the body of the banjo fitting in position using a second spanner.

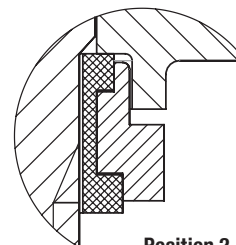
Positioning and Orientation of Retaining Rings with Captive Seal



Applicable for RSWND / RSW / RST



Position 1



Position 2

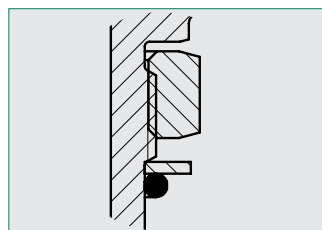
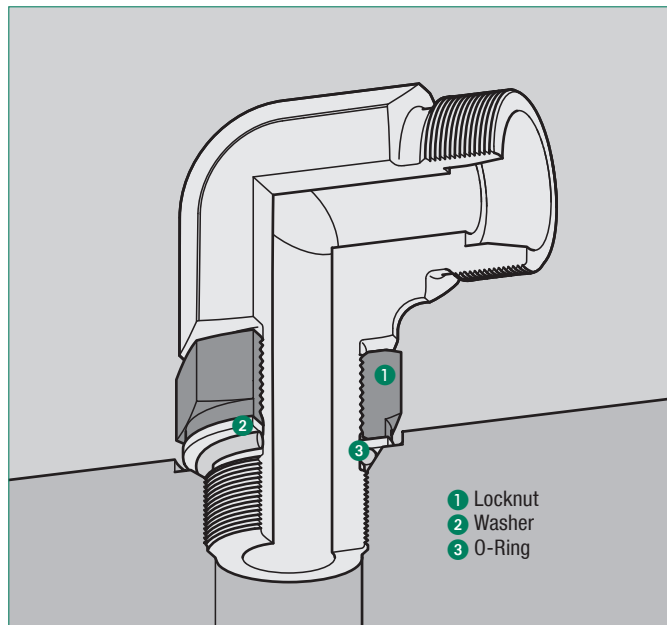
Series	Tube OD (mm/in)	Thread	Position
L	6	G 1/8	2
	.24		
	8	G 1/4	2
	.31		
	10	G 1/4	2
	.39		
	12	G 3/8	1
	.47		
	15	G 1/2	1
	.59		
	18	G 1/2	1
	.71		
	22	G 3/4	1
	.87		
	28	G 1	1
	1.10		
S	35	G 1 1/4	1
	1.38		
	42	G 1 1/2	1
	1.65		
	6	G 1/4	2
	.24		
	8	G 1/4	2
	.31		
	10	G 3/8	1
	.39		
	12	G 3/8	1
	.47		
	14	G 1/2	1
	.55		
	16	G 1/2	1
	.63		
	20	G 3/4	1
	.79		
	25	G 1	1
	.98		
	30	G 1 1/4	1
	1.18		
	38	G 1 1/2	1
	1.50		

Series	Tube OD (mm/in)	Thread	Position
L	6	M 10x1	2
	.24		
	8	M 12x1,5	1
	.31		
	10	M 14x1,5	2
	.39		
	12	M 16x1,5	1
	.47		
	15	M 18x1,5	1
	.59		
	18	M 22x1,5	1
	.71		
	22	M 26x1,5	1
	.87		
	28	M 33x2	1
	1.10		
S	35	M 42x2	1
	1.38		
	42	M 48x2	1
	1.65		
	6	M 12x1,5	1
	.24		
	8	M 14x1,5	2
	.31		
	10	M 16x1,5	1
	.39		
	12	M 18x1,5	1
	.47		
	14	M 20x1,5	1
	.55		
	16	M 22x1,5	1
	.63		
	20	M 27x2	1
	.79		
	25	M 33x2	1
	.98		
	30	M 42x2	1
	1.18		
	38	M 48x2	1
	1.50		

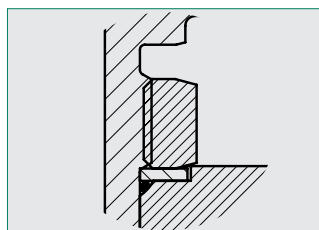


Assembly Instructions for Adjustable Fitting with Locknut (WEE, VEE, TEE, LEE)

For use in Ports to ISO 6149 and SAE UNO

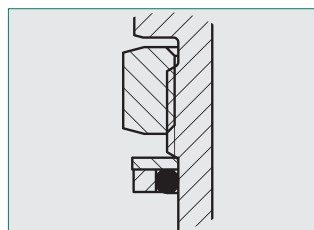
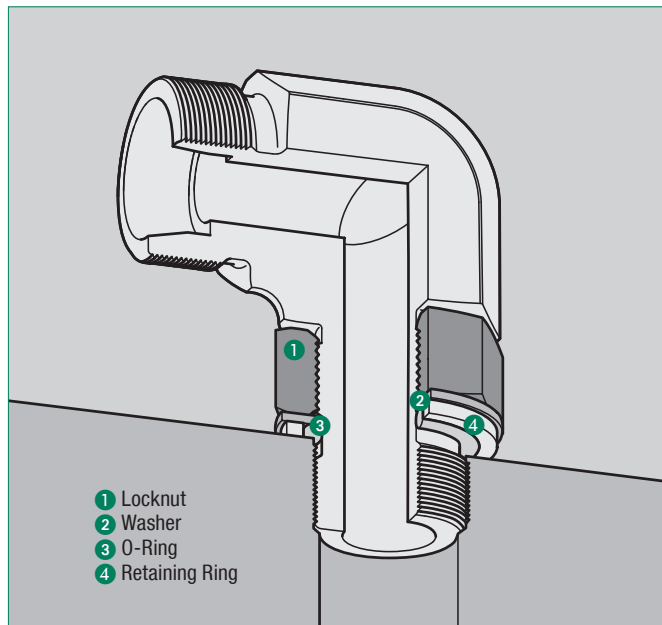


Pre-assembly

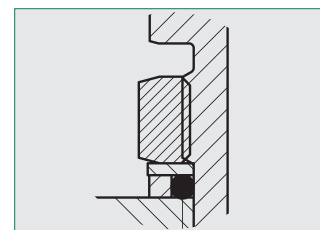


Post-assembly

For use in Ports Form X acc. to DIN 3852-2, ISO 1179-1

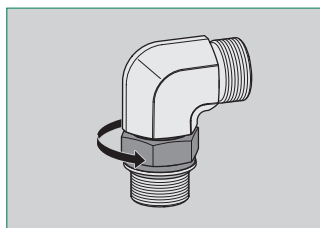


Pre-assembly



Post-assembly

1. Assembly Preparation



Lubricate the o-ring (e.g. using mineral-oil based hydraulic fluid HLP32).
Do not use lubricating grease!

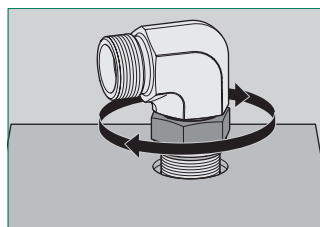
Immediately proceed with the assembly in order to avoid exposure to contamination.

Ensure that the Locknut, O-Ring and Washer are fully raised.

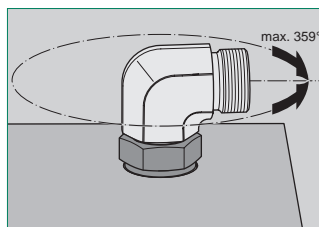


Please Note:
For use in Ports Form X, ensure that the Retaining Ring is placed.

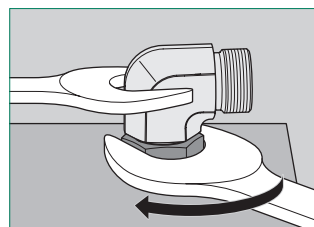
2. Assembly



Fully screw in the fitting body.



Adjust the direction.
Caution: Turn back by no more than one rotation against the direction in which the fitting body was installed!



Tighten the locknut with the defined torque (see p. 171-179) while using a spanner to counter the fitting body in the direction of adjustment.

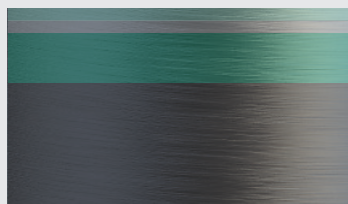




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Tube Fitting Materials and Surface Finishings



Layers

- Sealing
- Passivation
- Zinc/Nickel
- Steel

STAUFF Zinc/Nickel Coating

Fitting bodies of the STAUFF Connect range are usually machined from drawn or forged steel in accordance with DIN 3859-1 (Technical Specification for Tube Fittings).

Union nuts are either cold-pressed or hot-pressed.

Unless otherwise stated, all metal parts of the STAUFF Connect range of tube fittings are made of Steel with standard Zinc/Nickel coating (material code: W3), that offers excellent surface protection far beyond the market standard.

One of the few exceptions, weld fittings are made of Steel, phosphated (material code: W2).

Alternative surface coatings are available upon request.

Do not hesitate to contact STAUFF for further information.

Main Advantages of the STAUFF Zinc/Nickel Coating

- Premium long-life surface protection against corrosion with more than 1200 hours resistance to red rust / base metal corrosion in the salt-spray test according to DIN EN ISO 9227
- Free of hexavalent chrome Cr(VI)
- ELV compliant according to 2000/53/EC (End of Life Vehicles Directive)
- REACH compliant according to 1907/2006/EC (Registration, Evaluation, Authorisation and Restriction of Chemicals)
- RoHS compliant according to 2002/95/EC (Restrictions of the Use of Hazardous Substances)
- Easily surpassing the requirements of the corrosion protection class K5 (360 hours resistance to white rust / 720 hours resistance to red rust) as defined by the VDMA, the German Engineering Association (VDMA Standard Sheet 24576 „Fluid Power - Requirements and designations for corrosion-protection coatings free of hexavalent chrome“)
- Significantly reduced tendency to corrosion by contact with other metals such as Aluminium and Stainless Steel
- High abrasion resistance due to the ductility / plastic deformability of the coating
- Appealing colour scheme with a bright semi-gloss surface finish – comparable to Stainless Steel
- Surface is paintable with good paint adhesion properties (However, a painting test and, if necessary, degreasing of the surfaces to be painted are highly recommended)
- Little to no risk of triggering allergies, as the Zinc/Nickel base layer with a nickel content of 12-15 % is covered by both a passivation and a sealing layer to avoid the release of nickel and any direct physical contact
- Resistant against all commonly used hydraulic media



Elastomer Seal Materials

Unless otherwise stated, standard elastomer seals are made of NBR (Perbunan®).

Elastomer seals made of NBR (Perbunan® – material code: B) are especially suitable for liquid or gaseous media at operating temperatures that range from **-35 °C to +100 °C / -31 °F to +212 °F**.

Elastomer seals for applications with higher temperatures or aggressive media, such as FKM (Viton® – material code: V – operating temperature range from **-25 °C to +200 °C / -13 °F to +392 °F** and EPDM (material code: E), are available upon request.

Do not hesitate to contact STAUFF for further information.

The performance of elastomer seals during operation can be negatively affected by various influences. Elastomer seals should be inspected for any kind of damage (cracks, deformation, hardening or softening, swelling, reduced elasticity etc.) or contamination prior to the assembly process and when carrying out service and maintenance work, and should be replaced, if necessary.

Spare seals are available as part of the STAUFF Connect range.

Storage Recommendations

Please observe the following storage recommendations for elastomer seals in accordance with DIN 7716 (Requirements for Storage, Cleaning and Maintenance of Rubber Products):

- Store seals in a dry place, away from draughts, at temperatures not exceeding +25 °C / +77 °F.
- Protect seals from sunlight, ozone and strong artificial lightning during storage.

These recommendations do not only apply for separate elastomer seals, but also for tube fittings with pre-assembled o-rings and seals.

Not following these storage recommendations can cause brittle fracture of elastomer seals and result in leakage!

*Perbunan® is a registered trademark of Lanxess Deutschland GmbH.
Viton® is a registered trademark of DuPont Performance Elastomers L.L.C.*

Overview of media resistance

Thanks to their zinc/nickel surface coating, STAUFF Connect Tube Connectors made of steel have a high resistance to all common hydraulics fluids, which also applies to contact with other media and aggressive substances.

However, STAUFF still recommends verifying the suitability of media which are not designated as common hydraulics fluids or to contact STAUFF before use if in doubt.

In addition to the resistance of the STAUFF zinc/nickel surface coatings, compatibility of the elastomers and other hydraulic components also have to be considered.

The following table shows a general overview of this.
This is only intended for guidance!

Medium	STAUFF Connect fitting Steel	Sealing material NBR (Buna-N®)	FKM (Viton®)	EPDM
Acetone				
ASTM - oil no. 1				
ASTM - oil no. 2				
ASTM - oil no. 3				
ASTM - oil no. 4				
Petrol				
Benzene				
Brake fluid				
Diesel fuel				
Compressed air (dry, oil-free)				
Natural gas				
Oil/petroleum				
Ethanol (ethyl alcohol)				
Ether				
Liquid gas LPG (propane/butane)				
Gear oil				
Glycol (ethylene glycol)				
Heating oil				
Hydraulic fluids, biodegradable HEES (synthetic esters)	*	*		
Hydraulic fluids, biodegradable HEPG (polyglycol-based)			*	
Hydraulic fluids, flame-resistant HFC (water-glycol)				
Hydraulic oils HL/HLP (mineral oil-based)				
Carbon dioxide				
Carbon monoxide				
Seawater				
Methane				
Methanol (methyl alcohol)				
Mineral oils				
Natural gas, untreated (sour gas)				
Petroleum				
Crude oil				
Soap solution				
Silicone oils				
Skydrol 500				
Skydrol 7000				
Turpentine				
Water (up to 70°)				
Water vapour				

resistant limited resistance not resistant * temperature-dependent

Note: The media resistance of the material always also depends on the temperature of the medium used.



Pressure and Temperature Ratings

General Information

Unless otherwise stated, all pressure ratings in this product catalogue are indicated in bar and PSI. All temperature ratings are indicated in °C (degree Celsius) and °C (degree Fahrenheit).

Pressure ratings are usually rounded to correspond with standardised pressure ratings, which are internationally recognised and assist to identify and match common sizes of components together.

All tube fittings and other components of the STAUFF Connect range meet or exceed common standardised pressure ratings for mobile and industrial fluid power applications up to nominal pressures of 800 bar / 11600 PSI (depending on series, type and size of the component – pressure reduction factors to be considered).

Pressure ratings are divided into nominal pressures (PN) and permissible operating pressures (PB).

Nominal Pressure (PN)

Nominal pressure (PN) is a term used to describe the pressure that tube fittings and other components are designed to safely withstand, and indicates the maximum operating pressure of tube fittings and other components that should be applied to the component when operating the system under stationary conditions.

During static load tests, burst pressures must be at least 4 times higher than the nominal pressures (safety factor of 4).

Permissible Operating Pressure (PB)

The permissible operating pressure (PB) of a component (as defined in DIN 2401, part 1) is identical to the maximum internal overpressure at regular operating conditions (operating temperature of +120 °C without dynamic loads / pressure peaks) as calculated based on the material in use and considering the permissible operating temperature (TB).

During static load tests, burst pressures must be at least 2,5 times higher than the permissible operating pressures (safety factor of 2,5).

Please note:

The pressure ratings and safety factors as specified are only applicable when strictly following the assembly instructions (e.g. tightening torques for male stud fittings) and only refer to original components of the STAUFF Connect range. Avoid mixing with other brands' products!

If components are exposed to vibrations, dynamic loads or pressure peaks, the pressure ratings must be reduced accordingly in order to keep the same level of safety.

Permissible Operating Temperature (TB)

Unless otherwise stated, the permissible operating temperature (TB) for tube fittings and other components in this product catalogue ranges from -20 °C to +120 °C / -4 °F to +248 °F in accordance with DIN 3859-1 (Technical Specification for Tube Fittings).

Please observe that the permissible operating temperature may differ for tube fittings and other components that use elastomer seals. Deviations for tube fittings made of stainless steel see next page.



Pressure Reduction Factors

Pressure reduction factors (in percent) have to be considered when intending to use the components at operating temperatures exceeding +120 °C / +248 °F for steel and +50 °C / +122 °F for stainless steel.

Calculation Example

Component Straight Fitting FI-G-10S-W3-MS made of Steel
with a nominal pressure (PN) rating of 800 bar / 11600 PSI

Temperature +175 °C / +347 °F

Reduction Factor 15 %

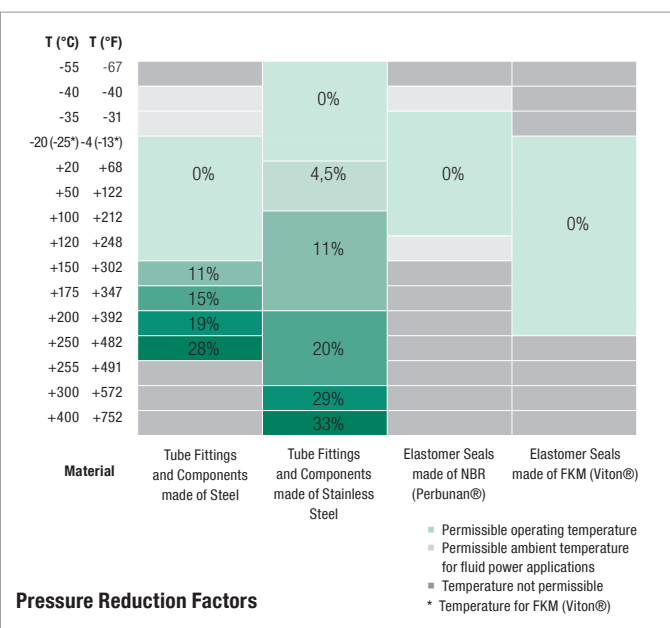
$$PN = \frac{800 \text{ bar}}{100 \%} \times (100 \% - 15 \%) = 680 \text{ bar}$$

Reduced Nominal Pressure

$$PN = \frac{11600 \text{ PSI}}{100 \%} \times (100 \% - 15 \%) = 9860 \text{ PSI}$$

Please note:

When selecting tubes and other components for your system, any additional potential pressure reduction factors stated by the manufacturers / suppliers have to be considered.



Selection Criteria for Tube

STAUFF recommends to use seamless, cold-drawn and normalized precision steel tubes as specified in DIN EN 10305-4, material E235+N (material number 1.0308+N, formerly St37.4) or material E355 (material number 1.0580, formerly St52.4).

In order to avoid misdeliveries, the tubes have to be ordered from the supplier by specifying the exact outer and inner diameter.

Tube materials and tolerances differing from these recommendations may lead to system faults or leakages and may even result in total breakdowns.

Unless otherwise stated, the pressure / temperature ratings as well as all other operating conditions indicated in this product catalogue do not refer to the actual tube. Specifications made by the respective tube manufacturers / suppliers have to be considered.



Calculated Design / Burst Pressures for Tube (bar)

Tube OD (mm)	Tube ID (mm)	Tube Wall (mm)	STAUFF Nominal pressure (bar)		Calculated Design Pressure (bar) in accordance with DIN 2413 - Load Case I (predominantly static loads, up to +120 °C)			Calculated Design Pressure (bar) in accordance with DIN 2413 - Load Case III (dynamic / pulsating loads, up to +120 °C)			Calculated Burst Pressure (bar) in accordance with ISO 10763		
D1	D2	S	Light Series	Heavy Series	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571
6	4,5	0,75	500	800	338	491	368	303	310	256	1116	1525	1346
6	4	1	500	800	450	655	490	391	400	330	1573	2149	1898
6	3	1,5	500	800	675	983	735	551	563	465	2689	3674	3244
6*	2	2	500	800	900	1310	980	692	708	585	4263	5823	5142
6*	1,5	2,25	500	800	1013	1474	1103	757	774	639	5379	7347	6488
8	6	1	500	800	338	491	368	303	310	256	1116	1525	1346
8	5	1,5	500	800	506	737	551	433	443	366	1824	2491	2200
8	4	2	500	800	675	983	735	551	563	465	2689	3674	3244
8*	3	2,5	500	800	844	1228	919	659	673	556	3806	5198	4590
10	8	1	500	800	270	393	294	248	253	209	866	1183	1044
10	7	1,5	500	800	405	590	441	357	365	301	1384	1890	1669
10	6	2	500	800	540	786	588	458	468	386	1982	2707	2391
10	5	2,5	500	800	675	983	735	551	563	465	2689	3674	3244
10*	4	3	500	800	810	1179	882	638	652	539	3555	4856	4288
12	10	1	400	630	225	328	245	209	214	177	707	966	853
12	9	1,5	400	630	338	491	368	303	310	256	1116	1525	1346
12	8	2	400	630	450	655	490	391	400	330	1573	2149	1898
12	7	2,5	400	630	563	819	613	474	484	400	2091	2857	2523
12	6	3	400	630	675	983	735	551	563	465	2689	3674	3244
12*	5	3,5	400	630	823	1180	858	624	638	527	3397	4640	4097
12*	4	4	400	630	940	1348	980	692	708	585	4263	5823	5142
14	12	1		630	193	281	210	181	185	153	598	817	721
14	11	1,5		630	289	421	315	264	270	223	936	1278	1129
14	10	2		630	386	561	420	342	349	289	1306	1783	1575
14	9	2,5		630	482	702	525	415	425	351	1714	2342	2068
14	8	3		630	579	842	603	485	496	410	2171	2966	2619
14	7	3,5		630	705	1011	735	551	563	465	2689	3674	3244
15	13	1	400		180	262	196	170	174	143	555	758	670
15	12	1,5	400		270	393	294	248	253	209	866	1183	1044
15	11	2	400		360	524	392	321	329	271	1203	1644	1452
15	10	2,5	400		450	655	490	391	400	330	1573	2149	1898
15	9	3	400		540	786	588	458	468	386	1982	2707	2391
16	14	1		630	169	246	184	160	163	135	518	708	625
16	13	1,5		630	253	368	276	233	239	197	806	1100	972
16	12	2		630	338	491	368	303	310	256	1116	1525	1346
16	11	2,5		630	422	614	459	370	378	312	1454	1986	1754
16	10	3		630	506	737	551	433	443	366	1824	2491	2200
16	8	4		630	705	1011	735	551	563	465	2689	3674	3244
18	16	1	400		150	218	163	143	146	121	457	624	551
18	15	1,5	400		225	328	245	209	214	177	707	966	853
18	14	2	400		300	437	327	273	279	230	975	1332	1176
18	13	2,5	400		375	546	408	333	341	281	1263	1725	1523
18	12	3	400		450	655	490	391	400	330	1573	2149	1898
18	10	4	400		627	899	653	500	511	422	2281	3115	2751
20	17	1,5		420	203	295	221	190	194	160	631	861	761
20	16	2		420	270	393	294	248	253	209	866	1183	1044
20	15	2,5		420	338	491	368	303	310	256	1116	1525	1346
20	14	3		420	405	590	441	357	365	301	1384	1890	1669
20	13	3,5		420	494	708	515	408	417	345	1671	2283	2016
20	12	4		420	564	809	588	458	468	386	1982	2707	2391
20	10	5		420	705	1011	735	551	563	465	2689	3674	3244

Load case I according to DIN 2413 describes predominantly static loads at temperatures not exceeding +120 °C.
Load case III according to DIN 2413 describes dynamic / pulsating loads at temperatures not exceeding +120 °C.

For some sizes of thin-walled steel tube, support sleeves are highly recommended and in some case generally required.
Please see page G11 for selection charts and detailed assembly instructions.



Calculated Design / Burst Pressures for Tube (bar)

Tube OD	Tube ID	Tube Wall	STAUFF Nominal pressure	Calculated Design Pressure			Calculated Design Pressure			Calculated Burst Pressure			
(mm)	(mm)	(mm)	(bar)	(bar) in accordance with DIN 2413 - Load Case I (predominantly static loads, up to +120 °C)			(bar) in accordance with DIN 2413 - Load Case III (dynamic / pulsating loads, up to +120 °C)			(bar) in accordance with ISO 10763			
D1	D2	S	Light Series	Heavy Series	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571
22	20	1	250		123	179	134	118	121	100	370	505	446
22	19	1,5	250		184	268	200	173	177	146	569	777	686
22	18	2	250		245	357	267	227	232	192	779	1064	939
22	17	2,5	250		307	447	334	278	285	235	1000	1366	1207
22	16	3	250		368	536	401	328	335	277	1236	1688	1490
22	15	3,5	250		449	643	468	376	384	317	1486	2030	1792
22	14	4	250		513	735	535	422	431	356	1754	2396	2115
25	22	1,5		420	162	236	176	154	157	130	496	678	598
25	21	2		420	216	314	235	201	206	170	676	924	816
25	20	2,5		420	270	393	294	248	253	209	866	1183	1044
25	19	3		420	324	472	353	292	299	247	1065	1455	1284
25	18	3,5		420	395	566	412	336	343	283	1275	1741	1537
25	17	4		420	451	647	470	378	386	319	1496	2044	1805
25	16	4,5		420	508	728	529	418	428	353	1732	2365	2089
25	15	5		420	564	809	588	458	468	386	1982	2707	2391
28	25	1,5	250		145	211	158	138	141	117	440	601	530
28	24	2	250		193	281	210	181	185	153	598	817	721
28	23	2,5	250		241	351	263	223	228	188	763	1043	921
28	22	3	250		289	421	315	264	270	223	936	1278	1129
28	21	3,5	250		353	506	368	303	310	256	1116	1525	1346
28	20	4	250		403	578	420	342	349	289	1306	1783	1575
30	26	2		420	180	262	196	170	174	143	555	758	670
30	25	2,5		420	225	328	245	209	214	177	707	966	853
30	24	3		420	270	393	294	248	253	209	866	1183	1044
30	23	3,5		420	329	472	343	285	291	241	1031	1408	1243
30	22	4		420	376	539	392	321	329	271	1203	1644	1452
30	20	5		420	470	674	490	391	400	330	1573	2149	1898
30	18	6		420	564	809	588	458	468	386	1982	2707	2391
35	32	1,5	250		121	173	126	111	114	94	348	475	419
35	31	2	250		161	231	168	147	150	124	471	643	568
35	30	2,5	250		201	289	210	181	185	153	598	817	721
35	29	3	250		242	347	252	215	220	181	730	997	880
35	27	4	250		322	462	336	280	286	236	1007	1375	1215
35	25	5	250		403	578	420	342	349	289	1306	1783	1575
38	34	2		420	148	213	155	136	139	115	432	589	521
38	33	2,5		420	186	266	193	168	171	142	547	748	660
38	32	3		420	223	319	232	199	203	168	667	911	804
38	30	4		420	297	426	309	260	265	219	917	1253	1106
38	28	5		420	371	532	387	318	325	268	1185	1619	1429
38	26	6		420	445	639	464	373	382	315	1472	2011	1776
38	24	7		420	519	745	542	427	436	360	1783	2436	2151
38	22	8		420	594	851	619	478	488	404	2121	2897	2558
42	39	1,5	250		101	144	105	93	96	79	288	393	347
42	38	2	250		134	193	140	123	126	104	388	530	468
42	37	2,5	250		168	241	175	153	156	129	492	672	593
42	36	3	250		201	289	210	181	185	153	598	817	721
42	34	4	250		269	385	280	237	242	200	820	1120	989
42	32	5	250		336	481	350	290	297	245		1441	1273

All figures are based on calculations carried out in accordance with DIN 2413 and ISO 10763.

They are intended to assist the user in the pre-selection of the correct tube only, and do not discharge the obligation to carry out own calculations in consideration of the actual conditions of use.

DIN 2413 does not apply to tube sizes marked by * (where D1/D2 > 2).



Calculated Design / Burst Pressures for Tube (PSI)

Tube OD	Tube ID	Tube Wall	STAUFF Nominal pressure	Calculated Design Pressure				Calculated Design Pressure			Calculated Burst Pressure		
(in)	(in)	(in)	(bar)		(PSI) in accordance with DIN 2413 - Load Case I (primary static loads, up to +248 °F)			(PSI) in accordance with DIN 2413 - Load Case III (dynamic loads, up to +248 °F)			(PSI) in accordance with ISO 10763		
D1	D2	S	Light Series	Heavy Series	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571
.24	.18	.03	7252	11603	4901	7120	5337	4394	4495	3713	16182	22113	19522
.24	.16	.04	7252	11603	6525	9498	7107	5670	5800	4786	22809	31161	27529
.24	.12	.06	7252	11603	9788	14254	10660	7990	8164	6744	38991	53273	47051
.24*	.08	.08	7252	11603	13050	18995	14214	10034	10266	8485	61814	84434	74580
.24*	.06	.09	7252	11603	14689	21373	15998	10977	11223	9268	77996	106532	94102
.31	.24	.04	7252	11603	4901	7120	5337	4394	4495	3713	16182	22113	19522
.31	.20	.06	7252	11603	7337	10687	7992	6279	6424	5308	26448	36120	31909
.31	.16	.08	7252	11603	9788	14254	10660	7990	8164	6744	38991	53273	47051
.31*	.12	.10	7252	11603	12238	17806	13329	9556	9759	8064	55187	75371	66573
.39	.31	.04	7252	11603	3915	5699	4264	3596	3669	3031	12557	17154	15142
.39	.28	.06	7252	11603	5873	8555	6396	5177	5293	4366	20068	27405	24207
.39	.24	.08	7252	11603	7830	11397	8528	6641	6786	5599	28739	39252	34679
.39	.20	.10	7252	11603	9788	14254	10660	7990	8164	6744	38991	53273	47051
.39*	.16	.12	7252	11603	11745	17096	12793	9251	9454	7818	51548	70412	62193
.47	.39	.04	5802	9138	3263	4756	3553	3031	3103	2567	10252	14007	12372
.47	.35	.06	5802	9138	4901	7120	5337	4394	4495	3713	16182	22113	19522
.47	.31	.08	5802	9138	6525	9498	7107	5670	5800	4786	22809	31161	27529
.47	.28	.10	5802	9138	8164	11876	8891	6873	7018	5802	30320	41427	36594
.47	.24	.12	5802	9138	9788	14254	10660	7990	8164	6744	38991	53273	47051
.47*	.20	.14	5802	9138	11934	17110	12444	9048	9251	7644	49257	67280	59423
.47*	.16	.16	5802	9138	13630	19546	14214	10034	10266	8485	61814	84434	74580
.55	.47	.04		9138	2799	4075	3046	2625	2683	2219	8671	11847	10457
.55	.43	.06		9138	4191	6105	4569	3828	3915	3234	13572	18531	16375
.55	.39	.08		9138	5597	8135	6092	4959	5061	4192	18937	25854	22844
.55	.35	.10		9138	6989	10179	7615	6018	6163	5091	24853	33959	29994
.55	.31	.12		9138	8396	12209	435	7033	7192	5947	31480	43007	37986
.55	.28	.14		9138	10223	14660	10660	7990	8164	6744	38991	53273	47051
.59	.51	.04	5802		2610	3799	2843	2465	2523	2074	8048	10991	9718
.59	.47	.06	5802		3915	5699	4264	3596	3669	3031	12557	17154	15142
.59	.43	.08	5802		5220	7598	5686	4655	4771	3931	17444	23838	21060
.59	.39	.10	5802		6525	9498	7107	5670	5800	4786	22809	31161	27529
.59	.35	.12	5802		7830	11397	8528	6641	6786	5599	28739	39252	34679
.63	.55	.04		9138	2451	3567	2669	2320	2364	1958	7511	10266	9065
.63	.51	.06		9138	3669	5336	4003	3379	3466	2857	11687	15950	14098
.63	.47	.08		9138	4901	7120	5337	4394	4495	3713	16182	22113	19522
.63	.43	.10		9138	6119	8903	6657	5365	5481	4525	21083	28797	25440
.63	.39	.12		9138	7337	10687	7992	6279	6424	5308	26448	36120	31909
.63	.31	.16		9138	10223	14660	10660	7990	8164	6744	38991	53273	47051
.71	.63	.04	5802		2175	3161	2364	2074	2117	1755	6627	9048	7992
.71	.59	.06	5802		3263	4756	3553	3031	3103	2567	10252	14007	12372
.71	.55	.08	5802		4350	6337	4743	3959	4046	3336	14138	19314	17057
.71	.51	.10	5802		5438	7917	5918	4829	4945	4076	18314	25013	22090
.71	.47	.12	5802		6525	9498	7107	5670	5800	4786	22809	31161	27529
.71	.39	.16	5802		9092	13036	9471	7250	7410	6121	33075	45168	39901
.79	.67	.06		6092	2944	4278	3205	2755	2813	2321	9150	12485	11038
.79	.63	.08		6092	3915	5699	4264	3596	3669	3031	12557	17154	15142
.79	.59	.10		6092	4901	7120	5337	4394	4495	3713	16182	22113	19522
.79	.55	.12		6092	5873	8555	6396	5177	5293	4366	20068	27405	24207
.79	.51	.14		6092	7163	10266	7470	5916	6047	5004	24230	33104	29240
.79	.47	.16		6092	8178	11731	8528	6641	6786	5599	28739	39252	34679
.79	.39	.20		6092	10223	14660	10660	7990	8164	6744	38991	53273	47051

Load case I according to DIN 2413 describes predominantly static loads at temperatures not exceeding +248 °F.
Load case III according to DIN 2413 describes dynamic / pulsating loads at temperatures not exceeding +248 °F.

For some sizes of thin-walled steel tube, support sleeves are highly recommended and in some case generally required.
Please see page G11 for selection charts and detailed assembly instructions.



Calculated Design / Burst Pressures for Tube (PSI)

Tube OD	Tube ID	Tube Wall	STAUFF Nominal pressure		Calculated Design Pressure			Calculated Design Pressure			Calculated Burst Pressure		
(in)	(in)	(in)	(bar)		(PSI) in accordance with DIN 2413 - Load Case I (primary static loads, up to +248 °F)			(PSI) in accordance with DIN 2413 - Load Case III (dynamic loads, up to +248 °F)			(PSI) in accordance with ISO 10763		
D1	D2	S	Light Series	Heavy Series	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571	Material E235+N	Material E355	Material 1.4571
.87	.79	.04	3626		1784	2596	1944	1711	1755	1450	5365	7323	6469
.87	.75	.06	3626		2668	3886	2901	2509	2567	2118	8251	11267	9950
.87	.71	.08	3626		3553	5177	3873	3292	3364	2785	11296	15428	13619
.87	.67	.10	3626		4452	6482	4844	4031	4133	3408	14500	19807	17506
.87	.63	.12	3626		5336	7772	5816	4756	4858	4018	17922	24476	21611
.87	.59	.14	3626		6511	9324	6788	5452	5568	4598	21547	29435	25991
.87	.55	.16	3626		7439	10658	7760	6119	6250	5163	25433	34742	30676
.98	.87	.06		6092	2349	3422	2553	2233	2277	1886	7192	9831	8673
.98	.83	.08		6092	3132	4553	3408	2915	2987	2466	9802	13398	11835
.98	.79	.10		6092	3915	5699	4264	3596	3669	3031	12557	17154	15142
.98	.75	.12		6092	4698	6844	5120	4234	4336	3582	15443	21098	18623
.98	.71	.14		6092	5728	8207	5976	4872	4974	4105	18488	25245	22293
.98	.67	.16		6092	6540	9382	6817	5481	5597	4627	21692	29638	26180
.98	.63	.18		6092	7366	10556	7673	6061	6206	5120	25114	34293	30299
.98	.59	.20		6092	8178	11731	8528	6641	6786	5599	28739	39252	34679
1.10	.98	.06	3626		2103	3060	2292	2001	2045	1697	6380	8715	7687
1.10	.94	.08	3626		2799	4075	3046	2625	2683	2219	8671	11847	10457
1.10	.91	.10	3626		3495	5090	3815	3234	3306	2727	11064	15124	13358
1.10	.87	.12	3626		4191	6105	4569	3828	3915	3234	13572	18531	16375
1.10	.83	.14	3626		5119	7337	5337	4394	4495	3713	16182	22113	19522
1.10	.79	.16	3626		5844	8381	6092	4959	5061	4192	18937	25854	22844
1.18	1.02	.08		6092	2610	3799	2843	2465	2523	2074	8048	10991	9718
1.18	.98	.10		6092	3263	4756	3553	3031	3103	2567	10252	14007	12372
1.18	.94	.12		6092	3915	5699	4264	3596	3669	3031	12557	17154	15142
1.18	.91	.14		6092	4771	6844	4975	4133	4220	3495	14950	20416	18028
1.18	.87	.16		6092	5452	7816	5686	4655	4771	3931	17444	23838	21060
1.18	.79	.20		6092	6815	9773	7107	5670	5800	4786	22809	31161	27529
1.18	.71	.24		6092	8178	11731	8528	6641	6786	5599	28739	39252	34679
1.38	1.26	.06	3626		1755	2509	1828	1610	1653	1363	5046	6888	6077
1.38	1.22	.08	3626		2335	3350	2437	2132	2175	1798	6830	9324	8238
1.38	1.18	.10	3626		2915	4191	3046	2625	2683	2219	8671	11847	10457
1.38	1.14	.12	3626		3509	5032	3655	3118	3190	2625	10585	14457	12764
1.38	1.06	.16	3626		4669	6699	4873	4060	4147	3423	14602	19938	17622
1.38	.98	.20	3626		5844	8381	6092	4959	5061	4192	18937	25854	22844
1.50	1.34	.08		6092	2146	3089	2248	1972	2016	1668	6264	8541	7557
1.50	1.30	.10		6092	2697	3857	2799	2436	2480	2060	7932	10846	9573
1.50	1.26	.12		6092	3234	4626	3365	2886	2944	2437	9672	13210	11661
1.50	1.18	.16		6092	4307	6177	4482	3770	3843	3176	13297	18169	16041
1.50	1.10	.20		6092	5380	7714	5613	4611	4713	3887	17183	23476	20726
1.50	1.02	.24		6092	6453	9266	6730	5409	5539	4569	21344	29160	25759
1.50	.94	.28		6092	7526	10803	7861	6192	6322	5221	25854	35322	31198
1.50	.87	.31		6092	8613	12340	8978	6931	7076	5860	30755	42007	37101
1.65	1.54	.06	3626		1465	2088	1523	1349	1392	1146	4176	5699	5033
1.65	1.50	.08	3626		1943	2799	2031	1784	1827	1508	5626	7685	6788
1.65	1.46	.10	3626		2436	3495	2538	2219	2262	1871	7134	9744	8601
1.65	1.42	.12	3626		2915	4191	3046	2625	2683	2219	8671	11847	10457
1.65	1.34	.16	3626		3901	5583	4061	3437	3509	2901	11890	16240	14344
1.65	1.26	.20	3626		4872	6975	5076	4205	4307	3553		20895	18464

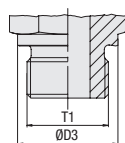
All figures are based on calculations carried out in accordance with DIN 2413 and ISO 10763.

They are intended to assist the user in the pre-selection of the correct tube only, and do not discharge the obligation to carry out own calculations in consideration of the actual conditions of use.

DIN 2413 does not apply to tube sizes marked by * (where D1/D2 > 2).

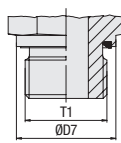


Port Dimensions for Fittings with Male Threaded Stud



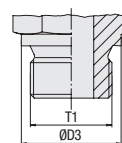
Metallic Sealing Edge

Metric Parallel Thread
DIN 3852-1 (Form B) / ISO 9974-3 (Type B)
Whitworth Parallel Pipe Thread
DIN 3852-2 (Form B) / ISO 1179-4 (Type B)



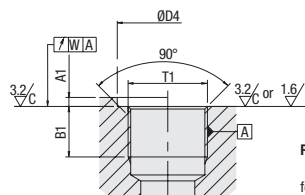
Profile Sealing Ring

Metric Parallel Thread
ISO 9974-2 (Type E)
Whitworth Parallel Pipe Thread
ISO 1179-2 (Type E)



Sealing Surface for Gasket (DIN 7603)

Metric Parallel Thread
DIN 3852-1 (Form A)
Whitworth Parallel Pipe Thread
DIN 3852-2 (Form A)



Port (Parallel Thread)

for Male Studs with Metric Parallel Thread
DIN 3852-1 (Form X) / ISO 9974-1
for Male Studs with Whitworth Parallel Pipe Thread
DIN 3852-2 (Form X) / ISO 1179-1

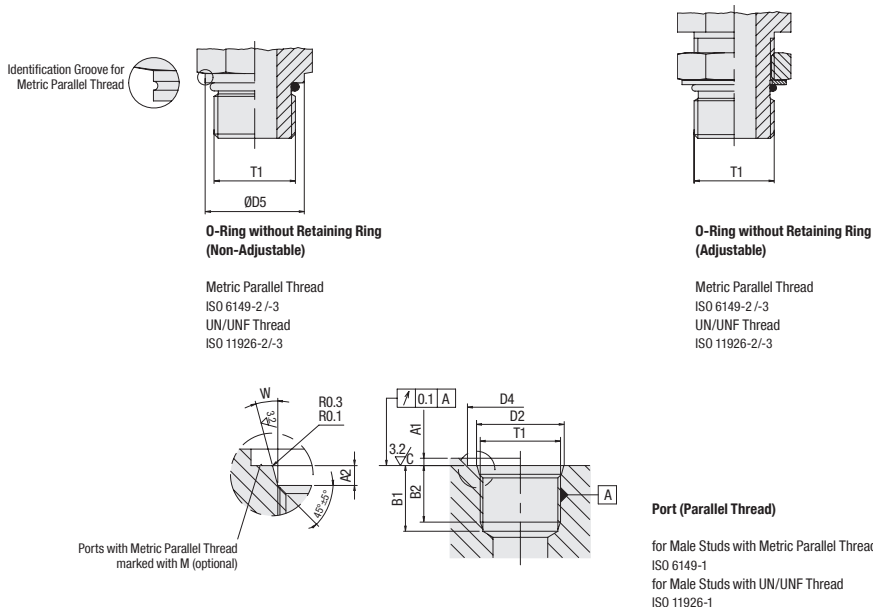
Dimensions

(mm/in)							
Thread T1 ¹	D3	D7 _{-0.2}	D4 small _{min}	D4 wide _{min}	A1 _{max}	B1 _{min}	W
M 8 x 1	12 .47		13 .51	17 .67	1 .04	8 .31	0,1 .0039
M 10 x 1	14 .55	13,9 .55	15 .59	20 .79	1 .04	8 .31	0,1 .0039
M 12 x 1,5	17 .67	16,9 .67	18 .71	25 .98	1,5 .06	12 .47	0,1 .0039
M 14 x 1,5	19 .75	18,9 .74	20 .79	25 .98	1,5 .06	12 .47	0,1 .0039
M 16 x 1,5	21 .83	21,9 .86	23 .91	28 1.10	1,5 .06	12 .47	0,1 .0039
M 18 x 1,5	23 .91	23,9 .94	25 .98	30 1.18	2 .08	12 .47	0,1 .0039
M 20 x 1,5	24 .94	25,9 1.02	27 1.06	34 1.34	2 .08	14 .55	0,1 .0039
M 22 x 1,5	27 1.06	26,9 1.06	28 1.10	34 1.34	2,5 .10	14 .55	0,1 .0039
M 26 x 1,5	31 1.22	31,9 1.26	33 1.30	42 1.65	2,5 .10	16 .63	0,2 .0079
M 27 x 2	32 1.26	31,9 1.26	33 1.30	42 1.65	2,5 .10	16 .63	0,2 .0079
M 33 x 2	39 1.54	39,9 1.57	41 1.61	47 1.85	2,5 .10	18 .71	0,2 .0079
M 42 x 2	49 1.93	49,9 1.96	51 2.01	58 2.28	2,5 .10	20 .79	0,2 .0079
M 48 x 2	55 2.17	54,9 2.16	56 2.20	65 2.56	2,5 .10	22 .87	0,2 .0079
G 1/8 A	14 .55	13,9 .55	15 .59	19 .75	1 .04	8,5 .33	0,1 .0039
G 1/4 A	18 .71	18,9 .74	20 .79	25 .98	1,5 .06	12,5 .49	0,1 .0039
G 3/8 A	22 .87	21,9 .86	23 .91	28 1.10	2 .08	12,5 .49	0,1 .0039
G 1/2 A	26 1.02	26,9 1.06	28 1.10	34 1.34	2,5 .10	15 .59	0,1 .0039
G 3/4 A	32 1.26	31,9 1.26	33 1.30	42 1.65	2,5 .10	16,5 .65	0,2 .0079
G 1 A	39 1.54	39,9 1.57	41 1.61	47 1.85	2,5 .10	19 .75	0,2 .0079
G 1 1/4 A	49 1.93	49,9 1.96	51 2.01	58 2.28	2,5 .10	21,1 .83	0,2 .0079
G 1 1/2 A	55 2.17	54,9 2.16	56 2.20	65 2.56	2,5 .10	22,5 .89	0,2 .0079

¹ Appendix A in the thread description does not apply to (female) threaded ports.



Port Dimensions for Fittings with Male Threaded Stud



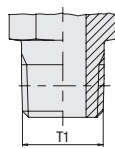
Dimensions

(mm/in)

Thread T1 ¹	D5	D4 small _{min}	D4 wide _{min}	D2 _{+0,1 (UN/UNF: ±0,05)}	A1 _{max}	A2 _{+0,4}	B1 _{min}	B2 _{min}	W _{±1*}
M 8 x 1	11,8 .46	14 .55	17 .67	9,1 .36	1 .04	1,6 .06	11,5 .45	10 .39	12 .47
M 10 x 1	13,8 .54	16 .63	20 .79	11,1 .44	1 .04	1,6 .06	11,5 .45	10 .39	12 .47
M 12 x 1,5	16,8 .66	19 .75	23 .91	13,8 .54	1,5 .06	2,4 .09	14 .55	11,5 .45	15 .59
M 14 x 1,5	18,8 .74	21 .83	25 .98	15,8 .62	1,5 .06	2,4 .09	14 .55	11,5 .45	15 .59
M 16 x 1,5	21,8 .86	24 .94	28 1.10	17,8 .70	1,5 .06	2,4 .09	15,5 .61	13 .51	15 .59
M 18 x 1,5	23,8 .94	26 1.02	30 1.18	19,8 .78	2 .08	2,4 .09	17 .67	14,5 .57	15 .59
M 22 x 1,5	26,8 1.06	29 1.14	33 1.30	23,8 .94	2 .08	2,4 .09	18 .71	15,5 .61	15 .59
M 27 x 2	31,8 1.25	34 1.34	40 1.57	29,4 1.16	2 .08	3,1 .12	22 .87	19 .75	15 .59
M 33 x 2	40,8 1.61	43 1.69	49 1.93	35,4 1.39	2,5 .10	3,1 .12	22 .87	19 .75	15 .59
M 42 x 2	49,8 1.96	52 2.05	58 2.28	44,4 1.75	2,5 .10	3,1 .12	22,5 .89	19,5 .77	15 .59
M 48 x 2	54,8 2.16	57 2.24	63 2.48	50,4 1.98	2,5 .10	3,1 .12	25 .98	22 .87	15 .59
7/16-20 UNF-2A	14,4 .57	21 .83		12,45 .49	1,6 .06	2,4 .09	14 .55	11,5 .45	12 .47
1/2-20 UNF-2A	16 .63	23 .91		14,05 .55	1,6 .06	2,4 .09	14 .55	11,5 .45	12 .47
9/16-18 UNF-2A	17,6 .69	25 .98		15,7 .62	1,6 .06	2,5 .10	15,5 .61	12,7 .50	12 .47
3/4-16 UNF-2A	21,8 .86	30 1.18		20,65 .81	2,4 .09	2,5 .10	17,5 .69	14,3 .56	15 .59
7/8-14 UNF-2A	25,5 1.00	34 1.34		24 .94	2,4 .09	2,5 .10	20 .79	16,7 .66	15 .59
1 1/16-12 UN-2A	31,9 1.26	41 1.61		29,2 1.15	2,4 .09	3,3 .13	23 .91	19 .75	15 .59
1 5/16-12 UN-2A	38,2 1.50	49 1.93		35,55 1.40	3,2 .13	3,3 .13	23 .91	19 .75	15 .59
1 5/8-12 UN-2A	47,7 1.88	58 2.28		43,55 1.71	3,2 .13	3,3 .13	23 .91	19 .75	15 .59
1 7/8-12 UN-2A	54,8 2.16	65 2.56		49,9 1.96	3,2 .13	3,3 .13	23 .91	19 .75	15 .59

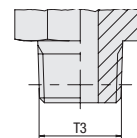
¹ Appendix -2B instead of -2A applies for (female) threaded ports.


Port Dimensions for Fittings with Male Threaded Stud



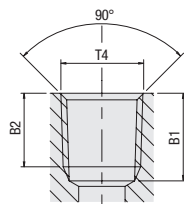
Taper Thread

National Pipe Thread (NPT)
ANSI/ASME B1.20.1-1983



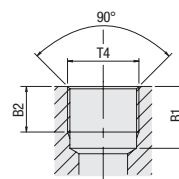
Taper Thread

Metric Taper Thread
DIN 3852-1 (Form C)
Whitworth Taper Pipe Thread
DIN 3852-2 (Form C)



Port (Taper Thread)

for Male Studs with National Pipe NPT Thread
ANSI/ASME B1.20.1-1983



Port (Parallel Thread)

for Male Studs with Metric Taper Thread
DIN 3852-1 (Form Z)
for Male Studs with Whitworth Taper Pipe Thread
DIN 3852-2 (Form Z)

Dimensions

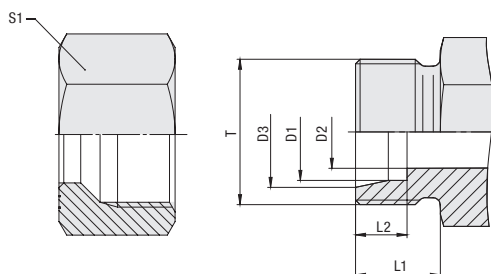
(mm/in)

Thread T1	Thread T3	Thread T4	B1 _{min}	B2 _{min}
1/8-27 NPT		1/8-27 NPT		6,9 .27
1/4-18 NPT		1/4-18 NPT		10 .39
3/8-18 NPT		3/8-18 NPT		10,3 .41
1/2-14 NPT		1/2-14 NPT		13,6 .54
3/4-14 NPT		3/4-14 NPT		14,1 .56
1-11.5 NPT		1-11.5 NPT		16,8 .66
1 1/4-11.5 NPT		1 1/4-11.5 NPT		17,3 .68
1 1/2-11.5 NPT		1 1/2-11.5 NPT		17,3 .68
	M 8 x 1 keg.	M 8 x 1	10 .39	5,5 .22
	M 10 x 1 keg.	M 10 x 1	10 .39	5,5 .22
	M 12 x 1,5 keg.	M 12 x 1,5	13,5 .53	8,5 .33
	M 14 x 1,5 keg.	M 14 x 1,5	13,5 .53	8,5 .33
	M 16 x 1,5 keg.	M 16 x 1,5	13,5 .53	8,5 .33
	M 18 x 1,5 keg.	M 18 x 1,5	13,5 .53	8,5 .33
	M 20 x 1,5 keg.	M 20 x 1,5	15,5 .61	10,5 .41
	M 22 x 1,5 keg.	M 22 x 1,5	15,5 .61	10,5 .41
	R 1/8 keg.	Rp 1/8	8,5 .33	5,5 .22
	R 1/4 keg.	Rp 1/4	12,5 .49	8,5 .33
	R 3/8 keg.	Rp 3/8	12,5 .49	8,5 .33
	R 1/2 keg.	Rp 1/2	16,5 .65	10,5 .41

Suitable liquid / plastic sealant required to achieve leak-tightness.



Dimensions of the 24° Conical Bore / Union Nut



Series	Tube OD (mm/in) D1	Dimensions (mm/in) Thread T	D2	D3	L1	L2	S1
LL	4	M 8 x 1	3	5	8	4	10
	.16		.12	.20	.31	.16	.39
	6	M 10 x 1	4,5	7,5	8	5,5	12
	.24		.18	.30	.31	.22	.47
	8	M 12 x 1	6	9,5	9	5,5	14
	.31		.24	.37	.35	.22	.55
L	6	M 12 x 1,5	4	8,1	10	7	14
	.24		.16	.32	.39	.28	.55
	8	M 14 x 1,5	6	10,1	10	7	17
	.31		.24	.40	.39	.28	.67
	10	M 16 x 1,5	8	12,3	11	7	19
	.39		.31	.48	.43	.28	.75
	12	M 18 x 1,5	10	14,3	11	7	22
	.47		.39	.56	.43	.28	.87
	15	M 22 x 1,5	12	17,3	12	7	27
	.59		.47	.68	.47	.28	1.06
	18	M 26 x 1,5	15	20,3	12	7,5	32
	.71		.59	.80	.47	.30	1.26
	22	M 30 x 2	19	24,3	14	7,5	36
	.87		.75	.96	.55	.30	1.42
	28	M 36 x 2	24	30,3	14	7,5	41
	1.10		.94	1.19	.55	.30	1.61
S	35	M 45 x 2	30	38	16	10,5	50
	1.38		1.18	1.50	.63	.41	1.97
	42	M 52 x 2	36	45	16	11	60
	1.65		1.42	1.77	.63	.43	2.36
	6	M 14 x 1,5	4	8,1	12	7	17
	.24		.16	.32	.47	.28	.67
	8	M 16 x 1,5	5	10,1	12	7	19
	.31		.20	.40	.47	.28	.75
	10	M 18 x 1,5	7	12,3	12	7,5	22
	.39		.28	.48	.47	.30	.87
	12	M 20 x 1,5	8	14,3	12	7,5	24
	.47		.31	.56	.47	.30	.94
	14 ¹	M 22 x 1,5	10	16,3	14	8	27
	.55 ¹		.39	.64	.55	.31	1.06
	16	M 24 x 1,5	12	18,3	14	8,5	30
	.63		.47	.72	.55	.33	1.18
	20	M 30 x 2	16	22,9	16	10,5	36
	.79		.63	.90	.63	.41	1.42
	25	M 36 x 2	20	27,9	18	12	46
	.98		.79	1.10	.71	.47	1.81
	30	M 42 x 2	25	33	20	13,5	50
	1.18		.98	1.30	.79	.53	1.97
	38	M 52 x 2	32	41	22	16	60
	1.50		1.26	1.61	.87	.63	2.36

¹ Tube size is no longer covered by the applicable standard.


Standard Threads and Widths Across Flats for Fittings with Male Threaded Stud

Series	Tube OD (mm) D1	Male Stud		Male Stud		Union Nut	
		Metric Parallel Thread Thread Size	Width Across Flats	Whitworth Parallel Pipe Thread Thread Size	Width Across Flats	Metric Parallel Thread Thread Size	Width Across Flats
L	6	M 10 x 1	14	G 1/8	14	M 12 x 1,5	14
	.24		.55		.55		.55
	8	M 12 x 1,5	17	G 1/4	19	M 14 x 1,5	17
	.31		.67		.75		.67
	10	M 14 x 1,5	19	G 1/4	19	M 16 x 1,5	19
	.39		.75		.75		.75
	12	M 16 x 1,5	22	G 3/8	22	M 18 x 1,5	22
	.47		.87		.87		.87
	15	M 18 x 1,5	24	G 1/2	27	M 22 x 1,5	27
	.59		.94		1.06		1.06
	18	M 22 x 1,5	27	G 1/2	27	M 26 x 1,5	32
	.71		1.06		1.06		1.26
	22	M 26 x 1,5 ²	32	G 3/4	32	M 30 x 2	36
	.87		1.26		1.26		1.42
	28	M 33 x 2	41	G 1	41	M 36 x 2	41
	1.10		1.61		1.61		1.61
	35	M 42 x 2	50	G 1 1/4	50	M 45 x 2	50
	1.38		1.97		1.97		1.97
	42	M 48 x 2	55	G 1 1/2	55	M 52 x 2	60
	1.65		2.17		2.17		2.36
S	6	M 12 x 1,5	17	G 1/4	19	M 14 x 1,5	17
	.24		.67		.75		.67
	8	M 14 x 1,5	19	G 1/4	19	M 16 x 1,5	19
	.31		.75		.75		.75
	10	M 16 x 1,5	22	G 3/8	22	M 18 x 1,5	22
	.39		.87		.87		.87
	12	M 18 x 1,5	24	G 3/8	22	M 20 x 1,5	24
	.47		.94		.87		.94
	14 ¹	M 20 x 1,5	27	G 1/2	27	M 22 x 1,5	27
	.55 ¹		1.06		1.06		1.06
	16	M 22 x 1,5	27	G 1/2	27	M 24 x 1,5	30
	.63		1.06		1.06		1.18
	20	M 27 x 2	32	G 3/4	32	M 30 x 2	36
	.79		1.26		1.26		1.42
	25	M 33 x 2	41	G 1	41	M 36 x 2	46
	.98		1.61		1.61		1.81
	30	M 42 x 2	50	G 1 1/4	50	M 42 x 2	50
	1.18		1.97		1.97		1.97
	38	M 48 x 2	55	G 1 1/2	55	M 52 x 2	60
	1.50		2.17		2.17		2.36

¹ Tube size is no longer covered by the applicable standard.

² M 27 x 2 according to ISO 6149.



Certificates and Approvals

Our in-house laboratories carry out constant checks and tests in line with international standards on all STAUFF products. Certified in accordance with ISO 9001, ISO 14001, OHSAS 18001 and ISO 50001, the STAUFF quality assurance system continually strives for perfection.

The QA system encompasses both product quality, which is driven by customer requirements, and all related services. The QA focuses on the expectations of all partners involved. Quality management at STAUFF is a dynamic process that is checked on a daily basis to ensure that continuous improvements are made.

Please note:

All named approvals and certificates refer to certain products and designs, as well as to the application.

STAUFF is tuned in to the needs of the global market and this, together with the benefit of an experienced and highly motivated team of employees and the use of innovative technology, enables the company to offer a sophisticated product range which will satisfy the requirements of each and every customer worldwide.

The most common STAUFF Connect Tube Fittings have received certifications and approvals from various international institutes, organisations and authorities who have independently confirmed the quality and performance of the products:

- Bureau Veritas
- DNV - GL
- DVGW
- Lloyd's Register

Please contact STAUFF for further approvals.

The validity of the approvals will be continuously extended at the approval offices after expiry. Details, such as the period of validity, can be found in the respective certificates.

Please find a current version of the approvals and certificates at: **www.stauff.com/certificates**





Product-Specific Abbreviations

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Product-Specific Abbreviations

Abbreviation	Product Category	Product Description	Page
FI-AB	Connecting Parts	37° Flared Tube Fitting Set	37
FI-AS	Weld Fittings	Straight Weld Fitting	114
FI-ASV	Weld Fittings	Straight Weld Fitting for Tubes	120
FI-BA	Connecting Parts	24°/37° Flared Cone Adaptor with O-Rings	34
FI-BH	Connecting Parts	Support Sleeve for 37° Flared Tube Fittings	35
FI-BM	Connecting Parts	Union Nut for 37° Flared Tube Fittings	36
FI-Box-... (FI-KOL-...)	Measuring and Test Equipment	Cone Gauge Kit	277
FI-BUZ	Spare Parts / Accessories	Blanking Plug with Sealing Edge	235
FI-DGWE-...-M-WD	Swivel Fittings	Swivel Elbow	197
FI-DGWE-...-R-WD	Swivel Fittings	Swivel Elbow	196
FI-DIR	Spare Parts / Accessories	Retaining Ring with Captive Seal for Male Studs of Banjo Fittings	245
FI-DKI	Spare Parts / Accessories	Internal Metallic Sealing Ring for Female Studs of Gauge Fittings	246
FI-DKR	Spare Parts / Accessories	External Metallic Sealing Ring for Male Studs of Banjo Fittings	244
FI-DS	Connecting Parts	Double-Edge Cutting Ring	28
FI-EGE-...-M	Standpipe Fittings	Straight Male Stud Standpipe Fitting	157
FI-EGE-...-M-WD	Standpipe Fittings	Straight Male Stud Standpipe Fitting	160
FI-EGE-...-N	Standpipe Fittings	Straight Male Stud Standpipe Fitting	161
FI-EGE-...-R	Standpipe Fittings	Straight Male Stud Standpipe Fitting	156
FI-EGE-...-R-WD	Standpipe Fittings	Straight Male Stud Standpipe Fitting	158
FI-EGED-...-M-WD	Fittings with 24° Taper / O-Ring (DKO)	Straight Male Stud Fitting with 24° Taper / O-Ring	136
FI-EGED-...-N	Fittings with 24° Taper / O-Ring (DKO)	Straight Male Stud Fitting with 24° Taper / O-Ring	137
FI-EGED-...-R-WD	Fittings with 24° Taper / O-Ring (DKO)	Straight Male Stud Fitting with 24° Taper / O-Ring	134
FI-EL	Standpipe Fittings	Adjustable Standpipe Barrel Tee	168
FI-ELD	Fittings with 24° Taper / O-Ring (DKO)	Adjustable Barrel Tee with 24° Taper / O-Ring (DKO)	153
FI-EMA-...-R	Female Stud / Gauge Fittings	Gauge Standpipe Fitting	131
FI-EMAD-...-R	Female Stud / Gauge Fittings	Gauge Fitting with 24° Taper / O-Ring	130
FI-ES	Bulkhead Fittings	Straight Bulkhead Weld Fitting	110
FI-ET	Standpipe Fittings	Adjustable Standpipe Branch Tee	167
FI-ETD	Fittings with 24° Taper / O-Ring (DKO)	Adjustable Branch Tee with 24° Taper / O-Ring (DKO)	152
FI-EVD	Fittings with 24° Taper / O-Ring (DKO)	Adjustable Elbow (45°) with 24° Taper / O-Ring	151
FI-EW	Standpipe Fittings	Adjustable Standpipe Elbow	166
FI-EWD	Fittings with 24° Taper / O-Ring (DKO)	Adjustable Elbow (90°) with 24° Taper / O-Ring	150
FI-FB	Assembly Tools / Devices	Clamping Jaws	271
FI-FD	Connecting Parts	STAUFF Form EVO Sealing Ring	32
FI-FK	Assembly Tools / Devices	Final Assembly Stud for the Manual Cutting Ring Assembly	250
FI-FST	Assembly Tools / Devices	Tube Shapers	270
FI-G	Tube Fittings / Unions	Straight Union	96
FI-G	Tube Fittings / Unions	Straight Reducer	97
FI-GA-...-M	Female Stud / Gauge Fittings	Straight Female Stud Fitting	126
FI-GA-...-N	Female Stud / Gauge Fittings	Straight Female Stud Fitting	127
FI-GA-...-R	Female Stud / Gauge Fittings	Straight Female Stud Fitting	124
FI-GE-...-M	Male Stud Fittings	Straight Male Stud Fitting	44
FI-GE-...-Mk	Male Stud Fittings	Straight Male Stud Fitting	64
FI-GE-...-M-OR	Male Stud Fittings	Straight Male Stud Fitting	57
FI-GE-...-M-WD	Male Stud Fittings	Straight Male Stud Fitting	52
FI-GE-...-N	Male Stud Fittings	Straight Male Stud Fitting	65
FI-GE-...-R	Male Stud Fittings	Straight Male Stud Fitting	40
FI-GE-...-R-DF	Male Stud Fittings	Straight Male Stud Fitting	55
FI-GE-...-Rk	Male Stud Fittings	Straight Male Stud Fitting	60
FI-GE-...-R-WD	Male Stud Fittings	Straight Male Stud Fitting	48
FI-GE-...-U	Male Stud Fittings	Straight Male Stud Fitting	70
FI-GP	Assembly Tools / Devices	Support Plate for Machine-Assisted Assembly	255
FI-GP-PRC	Assembly Tools / Devices	Support Plate for Machine-Assisted Cutting Ring Assembly	262
FI-GS	Bulkhead Fittings	Straight Bulkhead Fitting	108
FI-ID	Assembly Tools / Devices	Internal Tube Supports	270
FI-K	Tube Fittings / Unions	Equal Cross	104
FI-KB	Assembly Tools / Devices	Clamping Jaws for 37° Tube Flaring	263
FI-KR	Spare Parts / Accessories	Retaining Ring (Small) for Male Studs of Fittings with Lock Nut	247
FI-LE-...-M	Male Stud Fittings	Male Stud Barrel Tee	89
FI-LE-...-Mk	Male Stud Fittings	Male Stud Barrel Tee	91
FI-LE-...-N	Male Stud Fittings	Male Stud Barrel Tee	92
FI-LE-...-R	Male Stud Fittings	Male Stud Barrel Tee	88
FI-LE-...-Rk	Male Stud Fittings	Male Stud Barrel Tee	90
FI-LEE-...-M-OK	Fittings with Lock Nut	Adjustable Male Stud Barrel Tee with Lock Nut	175
FI-LEE-...-M-OR	Fittings with Lock Nut	Adjustable Male Stud Barrel Tee with Lock Nut	177
FI-LEE-...-R-OK	Fittings with Lock Nut	Adjustable Male Stud Barrel Tee with Lock Nut	173
FI-LEE-...-U	Fittings with Lock Nut	Adjustable Male Stud Barrel Tee with Lock Nut	179
FI-M	Connecting Parts	Union Nut	33
FI-MA-...-R	Female Stud / Gauge Fittings	Gauge Fitting	129
FI-MFK	Assembly Tools / Devices	Cutting Ring Assembly Stud for Machine-Assisted Assembly	254
FI-MFK	Assembly Tools / Devices	Cutting Ring Assembly Stud for Machine-Assisted Assembly	261
FI-MVK-PRC-H-M	Assembly Tools / Devices	Cutting Ring Assembly Stud for Machine-Assisted Assembly	266
FI-RED-...-R	Spare Parts / Accessories	Thread Reducer	226
FI-RED-...-R-WD	Spare Parts / Accessories	Thread Reducer	224
FI-REDS	Standpipe Fittings	Straight Standpipe Reducer	162
FI-RST-...-M-DK	Banjo Fittings	Banjo Tee (High-Pressure Version)	191
FI-RST-...-M-WD	Banjo Fittings	Banjo Tee (High-Pressure Version)	193
FI-RST-...-R-DK	Banjo Fittings	Banjo Tee (High-Pressure Version)	190
FI-RSW-...-M-WD	Banjo Fittings	Banjo Elbow (High-Pressure Version)	189



Product-Specific Abbreviations

Abbreviation	Product Category	Product Description	Page
FI-RST-...-R-WD	Banjo Fittings	Banjo Tee (High-Pressure Version)	192
FI-RSW-...-M-DK	Banjo Fittings	Banjo Elbow (High-Pressure Version)	187
FI-RSW-...-R-DK	Banjo Fittings	Banjo Elbow (High-Pressure Version)	186
FI-RSW-...-R-WD	Banjo Fittings	Banjo Elbow (High-Pressure Version)	188
FI-RSWND-...-M-DK	Banjo Fittings	Banjo Elbow (Medium-Pressure Version)	183
FI-RSWND-...-M-WD	Banjo Fittings	Banjo Elbow (Medium-Pressure Version)	185
FI-RSWND-...-R-DK	Banjo Fittings	Banjo Elbow (Medium-Pressure Version)	183
FI-RSWND-...-R-WD	Banjo Fittings	Banjo Elbow (Medium-Pressure Version)	184
FI-RV	Hydraulic Valves	Check Valve	200
FI-RVA	Hydraulic Valves	Check Valve	201
FI-RVI-...-R	Hydraulic Valves	Female Stud Check Valve	210
FI-RVIA-...-R	Hydraulic Valves	Female Stud Check Valve	211
FI-RVV-...-M-WD	Hydraulic Valves	Male Stud Check Valve	203
FI-RVV-...-R-WD	Hydraulic Valves	Male Stud Check Valve	202
FI-RVVA-...-M-WD	Hydraulic Valves	Male Stud Check Valve	205
FI-RVVA-...-R-WD	Hydraulic Valves	Male Stud Check Valve	204
FI-RVZ-...-M-WD	Hydraulic Valves	Male Stud Check Valve	207
FI-RVZ-...-R-WD	Hydraulic Valves	Male Stud Check Valve	206
FI-RVZA-...-M-WD	Hydraulic Valves	Male Stud Check Valve	209
FI-RVZA-...-R-WD	Hydraulic Valves	Male Stud Check Valve	208
FI-S	Connecting Parts	Single-Edge Cutting Ring	28
FI-SKM	Spare Parts / Accessories	Hexagon Lock Nut	237
FI-SN	Weld Fittings	24° Weld Cone with O-Ring	116
FI-SNR	Weld Fittings	24° Weld Cone Reducer with O-Ring	118
FI-SNV	Fittings with 24° Taper / O-Ring (DKO)	Straight Male Stud Fitting with 24° Taper / O-Ring	138
FI-SNV	Fittings with 24° Taper / O-Ring (DKO)	Straight Reducer with 24° Taper / O-Ring	140
FI-T	Tube Fittings / Unions	Equal Tee	100
FI-T	Tube Fittings / Unions	Tee Reducer	101
FI-TE-...-M	Male Stud Fittings	Male Stud Branch Tee	83
FI-TE-...-Mk	Male Stud Fittings	Male Stud Branch Tee	85
FI-TE-...-N	Male Stud Fittings	Male Stud Branch Tee	86
FI-TE-...-R	Male Stud Fittings	Male Stud Branch Tee	82
FI-TE-...-Rk	Male Stud Fittings	Male Stud Branch Tee	84
FI-TEE-...-M-OK	Fittings with Lock Nut	Adjustable Male Stud Branch Tee with Lock Nut	175
FI-TEE-...-M-OR	Fittings with Lock Nut	Adjustable Male Stud Branch Tee with Lock Nut	177
FI-TEE-...-R-OK	Fittings with Lock Nut	Adjustable Male Stud Branch Tee with Lock Nut	173
FI-TEE-...-U	Fittings with Lock Nut	Adjustable Male Stud Branch Tee with Lock Nut	179
FI-TIB	Measuring and Test Equipment	Thread Identification Board	276
FI-VD	Spare Parts / Accessories	Blanking Plug with 24° Taper / O-Ring (DKO)	234
FI-VEE-...-M-OK	Fittings with Lock Nut	Adjustable Male Stud Elbow (45°) with Lock Nut	175
FI-VEE-...-M-OR	Fittings with Lock Nut	Adjustable Male Stud Elbow (45°) with Lock Nut	177
FI-VEE-...-R-OK	Fittings with Lock Nut	Adjustable Male Stud Elbow (45°) with Lock Nut	173
FI-VEE-...-U	Fittings with Lock Nut	Adjustable Male Stud Elbow (45°) with Lock Nut	179
FI-VES	Hydraulic Valves	Check Valve Installation Kit	212
FI-VH	Connecting Parts	Support Sleeve	31
FI-VK	Assembly Tools / Devices	Pre-Assembly Stud for the Manual Cutting Ring Assembly	251
FI-VS-...-M-OR	Spare Parts / Accessories	Blanking Screw for Ports	233
FI-VS-...-M-WD	Spare Parts / Accessories	Blanking Screw for Ports	231
FI-VS-...-R	Spare Parts / Accessories	Blanking Screw for Ports	232
FI-VS-...-R-WD	Spare Parts / Accessories	Blanking Screw for Ports	230
FI-VSK	Spare Parts / Accessories	Blanking Plug for Tube Ends	236
FI-VSV-...-M-WD	Spare Parts / Accessories	Blanking Screw for Ports (Heavy Duty)	229
FI-VSV-...-R-WD	Spare Parts / Accessories	Blanking Screw for Ports (Heavy Duty)	228
FI-W	Tube Fittings / Unions	Straight Reducer	99
FI-WAS	Weld Fittings	Elbow Weld Fitting	115
FI-WDDS	Connecting Parts	Soft-Sealing Cutting Ring	29
FI-WDDS-W5	Connecting Parts	Soft-Sealing Cutting Ring (Stainless Steel)	30
FI-WE-...-M	Male Stud Fittings	Male Stud Elbow	75
FI-WE-...-Mk	Male Stud Fittings	Male Stud Elbow	78
FI-WE-...-N	Male Stud Fittings	Male Stud Elbow	80
FI-WE-...-R	Male Stud Fittings	Male Stud Elbow	74
FI-WE-...-Rk	Male Stud Fittings	Male Stud Elbow	76
FI-WEE-...-M-OK	Fittings with Lock Nut	Adjustable Male Stud Elbow (90°) with Lock Nut	174
FI-WEE-...-M-OR	Fittings with Lock Nut	Adjustable Male Stud Elbow (90°) with Lock Nut	176
FI-WEE-...-R-OK	Fittings with Lock Nut	Adjustable Male Stud Elbow (90°) with Lock Nut	172
FI-WEE-...-U	Fittings with Lock Nut	Adjustable Male Stud Elbow (90°) with Lock Nut	178
FI-WS	Bulkhead Fittings	Elbow Bulkhead Fittings	109
FI-WV	Hydraulic Valves	Alternating Valve	213
Oel-Stauff-Form-1L	Assembly Tools / Devices	STAUFF Form EVO Oel	272
O-RING	Spare Parts / Accessories	O-Ring for Male Studs	239
O-RING	Spare Parts / Accessories	O-Ring for 24°/37° Flared Cone Adaptors	240
O-RING	Spare Parts / Accessories	O-Ring for for DKO Taper Fittings / 24° Weld Cones	242
O-RING	Spare Parts / Accessories	O-Ring for Banjo Bolts of Banjo Fittings	243
SFO/PRC-POC-FS	Assembly Tools / Devices	External Foot Control Switch	254/272
SFO-F-A-A	Assembly Tools / Devices	Tube Forming Machine	268
SFO-F-IOT	Assembly Tools / Devices	Optional Cloud connection for Tube Forming Machine	268
SPR-PRC-FS	Assembly Tools / Devices	External Foot Control Switch	260
SPR-PRC-H-SET	Assembly Tools / Devices	Portable Cutting Ring Assembly Machine with Manual Pressure Setting (Set)	264
SPR-PRC-MA-D-A	Assembly Tools / Devices	Combined Cutting Ring Assembly and 37° Tube Flaring Machine	258



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FI-REDS	Fittings with 24° Taper / O-Ring (DKO)	Straight Reducer for Tube Ends with 24° Taper / O-Ring	144
FI-REDS	Fittings with 24° Taper / O-Ring (DKO)	Distance Adaptors with 24° Taper / O-Ring	148
SPR-PRC-POC-A-A	Assembly Tools / Devices	Cutting Ring Final Assembly Machine	252
SPR-PRC-POC-A-A-IOT	Assembly Tools / Devices	Optional Cloud connection for Cutting Ring Final Assembly Machine	256
SPR-PRC-POC-RTH	Assembly Tools / Devices	Optional tool holder for tubes with small bending radii	256
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