STAUFF FI-G-04LL-W3-MS 24° straight tube union kit

Manufacturer: STAUFF

Manufacturer part number / published order designation: 6010000751

Published model: FI-G-04LL-W3-MS

About this compilation

Prepared by Hydmaster from selected manufacturer documentation. Original technical pages follow without cropped drawings, rewritten data or altered units. This cover and index are Hydmaster editorial material, not a manufacturer-issued exact-execution datasheet.

Coverage: selected pages relevant to the identified size and configuration. Other options or neighbouring models retained on an original page apply only where explicitly identified.

Execution notes and conditions

Page96 body ordering row plus explicit MS suffix definition and exact primary article BOM establish kit applicability; do not describe body-only weight as complete-kit weight.

This excerpt contains system principles and rating limitations, not a complete assembly procedure; installation needs the applicable STAUFF instructions.

Alternative soft-sealing/forming/flaring configurations on retained pages do not apply automatically.

Page16 illustrates the double-edge operating principle; the actual LL kit uses the single-edge FI-S ring, established by exact BOM and page28. Do not relabel LL as FI-DS.

Source-page index

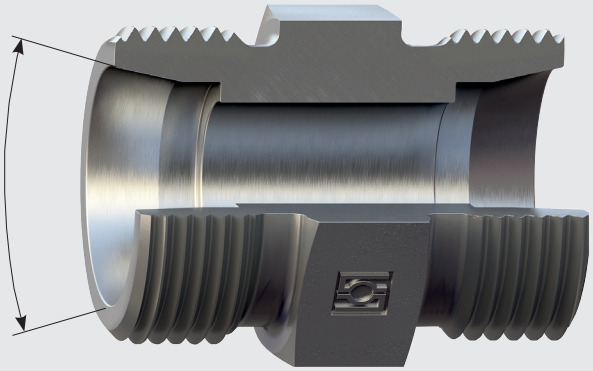
Source page numbers below are physical pages of each complete original PDF. The original printed page labels and technical content remain unchanged. Compiled page numbers count this cover/index.

Source A: Stauff Connect 24 Degree Tube Fittings

Original pages	Compiled pages	Relevant content
14	2	24° fitting body conical bore and DIN2353/ISO8434-1 family interface context.
16	3	Sectional assembly operating principle for cutting-ring connection; component roles, not an assertion that a body-only article includes them.
28	4	Actual kit cutting-ring family: FI-S (single-edge LL), same series/tube size; dimensions and ordering rows.
33	5	Actual kit FI-M union nut series/size, mechanical thread designation and dimensions.
96	6	Exact body series/size row, dimensions, PN, assembly-length/weight footnotes and explicit body-only/MS kitting definition.
332	7	Pressure/temperature-rating definitions and limitations; assembly rules and dynamic-load derating.

24° Tube Fittings in General

A



24° Tube Fittings are surely among the most commonly used and established industrial tube connector systems worldwide. They are regarded as the universal standard for fluid power applications in markets that use the metric system, such as Europe, Asia, Africa and South America.

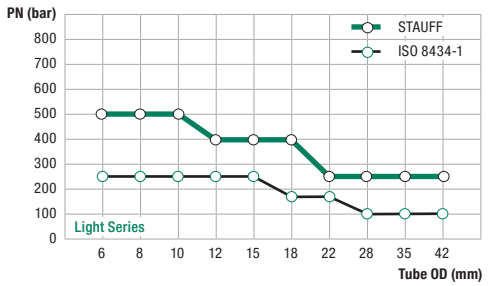
Even in regions that traditionally used or still use the imperial measurement system (such as Australia or Northern America) 24° tube fittings are gaining more and more acceptance due to the ongoing metrification and specifications by globally operating OEMs.

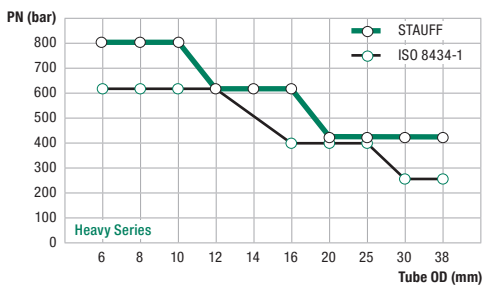
24° Tube Fittings are specified in the ISO 8434-1 and DIN 2353 standards.

At least one tube connection end of the fitting body is characterized by a 24° conical bore (shape W according to DIN 3861), which serves as a metallic sealing surface, while the other end of the body is available with a variety of different connection types, such as male and female threaded or weld studs.

Various shapes (e.g. straight fittings, elbows, tees, crosses etc.) and designs (e.g. unions, studs, bulkheads or adjustable fittings) are available.

The portfolio consists of the Extra-Light (LL) Series as defined in the DIN 2353 standard as well as the Light Series (L) and the Heavy Series (S) as defined in the ISO 8434-1 standard, which differ from each other in particular with regards to their dimensions and pressure ratings.





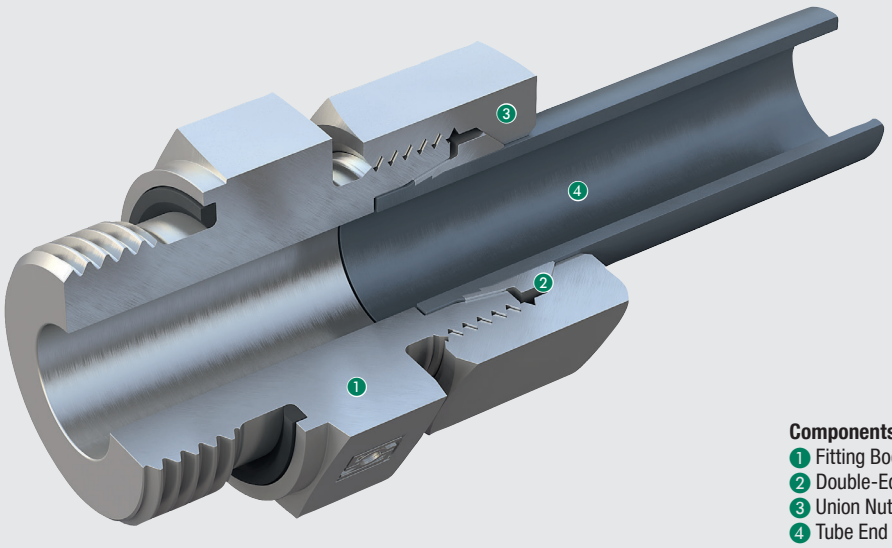
Nominal pressure levels of tube fittings

Main Advantages of the 24° Tube Fitting System

- 24° Tube Fittings can be quickly and easily field-assembled and even re-assembled with just a couple of standard wrenches and no requirement for hours of expensive staff training or special tube treatment. Under regular conditions, subsequent re-tightening of 24° Tube Fittings is not necessary.
- Most types of 24° Tube Fittings are available and suitable for light, medium, heavy and extra-heavy wall tubing with outside diameters ranging from 4 to 42 mm, which allows optimum dimensioning of pipework circuits and saves material cost.
- The 24° Tube Fitting System is available in the Extra-Light (LL), the Light (L) and the Heavy (S) Series and provides suitable components with regards to sufficient pressure ratings and maximum leak-tightness up to nominal pressures of 800 bar (depending on series, type and size of the component – pressure reduction factors to be considered) for literally each application.
- Thanks to their optimised inner contour and design, 24° Tube Fittings offer ideal flow rates and therefore guarantee best performance without the excessive generation of vibrations, noise or heat.
- 24° Tube Fittings are small and compact in design compared to other systems, which makes them perfect for applications with space considerations.
- The recommended material raise in front of the first edge of the cutting ring after the assembly is clearly visible to tube fitters and inspectors and makes it easy to check and confirm the correct assembly of 24° Tube Fittings.
- On-site piping with 24° Tube Fittings is very efficient and offers maximum flexibility for tube fitters as the exact required tube length can be easily checked in advance by just trying out.
- 24° Tube Fittings are easy to combine with other tube fitting systems – even hoses can be connected without difficulties.

24° Tube Fittings with Single / Double Edge Cutting Ring

A

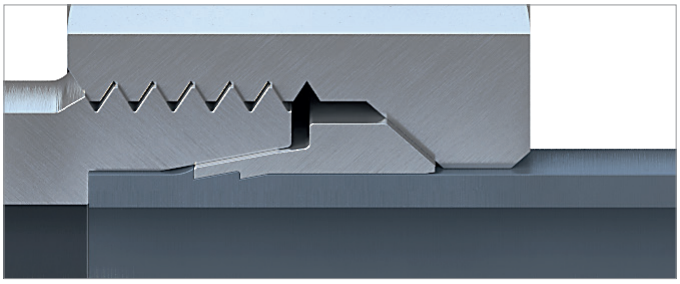


Components
1. Fitting Body – ISO 8434-1 / DIN 2353
2. Double-Edge Cutting Ring
3. Union Nut – ISO 8434-1 / DIN 3870
4. Tube End

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

Thanks to the optimised geometry of this ring, the two edges do not cut simultaneously, but rather one after the other. In addition to increasing the incising effect, this method maximises the tear strength of the fitting.

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



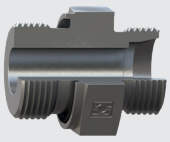


Design
1. First metallic cutting edge
2. Second metallic cutting edge
3. Over-assembly protection (max. number of repeat assemblies reached)

Features

- 100% final Assembly
- Only 30° final tightening after the noticeable increase in force (repeatability significantly)
  - Increase in process reliability due to lower error potential during final tightening compared to DIN 3859-2
- Over-assembly protection (indication of the last possible assembly)
- Proven 2 cutting edge technology (Metallic sealing)
- Up to 500 bar in the light series and Up to 800 bar in the heavy series
- High-quality STAUFF zinc/nickel surface
  - cuts into stainless steel and serves as an insulator between steel and stainless steel
  - no contact corrosion
  - Rust resistance higher than VDMA K5 class (720h according to DIN EN ISO 9227)

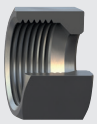
Fitting Body



Cutting Ring



Union Nut



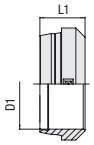
Tube End



B

Cutting Ring
Type FI-S (Single-Edge) ▪ Series LL
Type FI-DS (Double-Edge) ▪ Series L / S





Ordering Codes

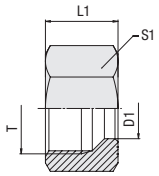
***FI-DS*-15*L*-W3**

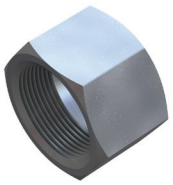
* Cutting Ring	Single-Edge Version	**FI-S**
	Double-Edge Version	**FI-DS**
* Outside Tube Diameter D1 (in mm)		**-15**
* Series	Extra-Light Series	**LL**
	Light Series	**L**
	Heavy Series	**S**
* Material Code	Steel, zinc/nickel-plated	**-W3**

Please contact STAUFF for alternative materials and surface finishings.

Series	Tube OD mm D1	PN bar	Dimensions mm L1	Weight kg ca. per 100	Ordering Codes Double-Edge Cutting Ring	Single-Edge Cutting Ring
LL	4	100	6	0,04		FI-S-04LL-W3
	5	100	7	0,07		FI-S-05LL-W3
	6	100	7	0,08		FI-S-06LL-W3
	8	100	7	0,1		FI-S-08LL-W3
	10	100	7	0,12		FI-S-10LL-W3
	12	100	7,5	0,15		FI-S-12LL-W3
L	6	500	9,5	0,21	FI-DS-06L/S-W3	
	8	500	9,5	0,26	FI-DS-08L/S-W3	
	10	500	10	0,34	FI-DS-10L/S-W3	
	12	400	10	0,44	FI-DS-12L/S-W3	
	15	400	10	0,54	FI-DS-15L-W3	
	18	400	10	0,71	FI-DS-18L-W3	
	22	250	11,5	1,01	FI-DS-22L-W3	
	28	250	11,5	1,23	FI-DS-28L-W3	
	35	250	13,5	2,35	FI-DS-35L-W3	
	42	250	13,5	2,69	FI-DS-42L-W3	
S	6	800	9,5	0,21	FI-DS-06L/S-W3	
	8	800	9,5	0,26	FI-DS-08L/S-W3	
	10	800	10	0,34	FI-DS-10L/S-W3	
	12	630	10	0,44	FI-DS-12L/S-W3	
	14	630	10,5	0,63	FI-DS-14S-W3	
	16	630	10,5	0,69	FI-DS-16S-W3	
	20	420	12,5	1,26	FI-DS-20S-W3	
	25	420	12,5	1,52	FI-DS-25S-W3	
	30	420	13,5	2,06	FI-DS-30S-W3	
	38	420	13,5	2,54	FI-DS-38S-W3	

Union Nut
Type FI-M ▪ Series LL / L / S





Series	Tube OD mm D1	PN bar	Dimensions mm Thread T	L1	S1	Weight kg ca. per 100	Ordering Codes
LL	4	100	M 8 x 1	11	10	0,40	**FI-M-04LL-W3**
	5	100	M 10 x 1	11,5	12	0,62	**FI-M-05LL-W3**
	6	100	M 10 x 1	11,5	12	0,50	**FI-M-06LL-W3**
	8	100	M 12 x 1	12	14	0,70	**FI-M-08LL-W3**
	10	100	M 14 x 1	12,5	17	1,10	**FI-M-10LL-W3**
	12	100	M 16 x 1	13	19	1,30	**FI-M-12LL-W3**
L	6	500	M 12 x 1,5	14,5	14	0,90	**FI-M-06L-W3**
	8	500	M 14 x 1,5	14,5	17	1,40	**FI-M-08L-W3**
	10	500	M 16 x 1,5	15,5	19	1,70	**FI-M-10L-W3**
	12	400	M 18 x 1,5	15,5	22	2,40	**FI-M-12L-W3**
	15	400	M 22 x 1,5	17	27	4,10	**FI-M-15L-W3**
	18	400	M 26 x 1,5	18	32	6,00	**FI-M-18L-W3**
	22	250	M 30 x 2	20	36	8,00	**FI-M-22L-W3**
	28	250	M 36 x 2	22	41	14,20	**FI-M-28L-W3**
	35	250	M 45 x 2	25	50	19,80	**FI-M-35L-W3**
	42	250	M 52 x 2	25	60	22,00	**FI-M-42L-W3**
S	6	800	M 14 x 1,5	16,5	17	1,70	**FI-M-06S-W3**
	8	800	M 16 x 1,5	16,5	19	2,00	**FI-M-08S-W3**
	10	800	M 18 x 1,5	17,5	22	3,00	**FI-M-10S-W3**
	12	630	M 20 x 1,5	17,5	24	3,40	**FI-M-12S-W3**
	14	630	M 22 x 1,5	20,5	27	5,20	**FI-M-14S-W3**
	16	630	M 24 x 1,5	20,5	30	6,50	**FI-M-16S-W3**
	20	420	M 30 x 2	24	36	10,10	**FI-M-20S-W3**
	25	420	M 36 x 2	27	46	19,80	**FI-M-25S-W3**
	30	420	M 42 x 2	29	50	21,60	**FI-M-30S-W3**
	38	420	M52 x 2	32,5	60	31,40	**FI-M-38S-W3**

Union Nut: DIN 3870

Ordering Codes

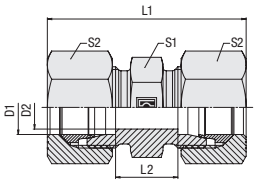
FI-M-15*L*-W3

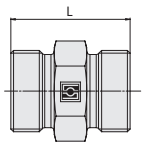
* Union Nut		**FI-M**
* Outside Tube Diameter D1 (in mm)		**-15**
* Series	Extra-Light Series	**LL**
	Light Series	**L**
	Heavy Series	**S**
* Material Code	Steel, zinc/nickel-plated	**-W3**

Please contact STAUFF for alternative materials and surface finishings.

Straight Union
Type FI-G ▪ Series LL / L / S







D

Ordering Codes

FI-G-10*L*-W3*-MS

* Straight Union		**FI-G**
* Outside Tube Diameter D1 (in mm)		**-10**
* Series	Extra-Light Series	**LL**
	Light Series	**L**
	Heavy Series	**S**
* Material Code	Steel, zinc/nickel-plated	**-W3**
	Please contact STAUFF for alternative materials and surface finishings.	
* Assembling / Kitting	Fitting body only	**—**
	Fitting body supplied with cutting rings and union nuts	**-MS**
	Fitting body supplied with soft-sealing cutting rings and union nuts	**-MSV**

Connecting Parts


Cutting Ring
Type **FI-DS** Page 28


Soft-Sealing Cutting Ring
Type **FI-WDDS** Page 29


Support Sleeve
Type **FI-VH** Page 31


STAUFF Form EVO Sealing Ring
Type **FI-FD** Page 32


Union Nut
Type **FI-M** Page 33


37° Flared Tube Fitting Set
Type **FI-AB** Page 37

Series	Tube OD mm D1	PN bar	Dimensions mm D2	L	L1[1]	L2	S1	S2	Weight kg ca. per 100	Ordering Codes[3]
LL	4	100	3	20	31	12	9	10	0,53	**FI-G-04LL-W3**
	5	100	3,5	20	32	9	11	12	0,95	**FI-G-05LL-W3**
	6	100	4,5	20	32	9	11	12	0,79	**FI-G-06LL-W3**
	8	100	6	23	35	12	12	14	1,05	**FI-G-08LL-W3**
	10	100	8	23	35	12	14	17	1,29	**FI-G-10LL-W3**
	12	100	10	23	35	11	17	19	1,83	**FI-G-12LL-W3**
L	6	500	4	24	39	10	12	14	1,44	**FI-G-06L-W3**
	8	500	6	25	40	11	14	17	1,90	**FI-G-08L-W3**
	10	500	8	27	42	13	17	19	2,60	**FI-G-10L-W3**
	12	400	10	28	43	14	19	22	2,67	**FI-G-12L-W3**
	15	400	12	30	46	16	24	27	4,81	**FI-G-15L-W3**
	18	400	15	31	48	16	27	32	6,65	**FI-G-18L-W3**
	22	250	19	35	52	20	32	36	8,94	**FI-G-22L-W3**
	28	250	24	36	54	21	41	41	13,90	**FI-G-28L-W3**
	35	250	30	41	63	20	46	50	21,11	**FI-G-35L-W3**
	42	250	36	43	66	21	55	60	29,26	**FI-G-42L-W3**
S	6	800	4	30	45	16	14	17	2,52	**FI-G-06S-W3**
	8	800	5	32	47	18	17	19	3,67	**FI-G-08S-W3**
	10	800	7	32	49	17	19	22	4,23	**FI-G-10S-W3**
	12	630	8	34	51	19	22	24	5,88	**FI-G-12S-W3**
	14	630	10	38	57	22	24	27	7,52	**FI-G-14S-W3**
	16	630	12	38	57	21	27	30	9,20	**FI-G-16S-W3**
	20	420	16	44	66	23	32	36	14,27	**FI-G-20S-W3**
	25	420	20	50	74	26	41	46	24,99	**FI-G-25S-W3**
	30	420	25	54	80	27	46	50	33,08	**FI-G-30S-W3**
	38	420	32	61	90	29	55	60	53,80	**FI-G-38S-W3**

[1] Approximate dimension in assembled condition.
[2] Weight excluding cutting rings and union nuts.
[3] Standard scope of delivery: Fitting body only.

Pressure and Temperature Ratings

General Information

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

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 (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 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.