

Make better connections!

1 Tube length determination

Option 1:

The dimension L1 is added per connection to the measurement between the tube stop of fitting body 1 and the tube stop of fitting body 2.

Option 2:

The dimension L2 is added per connection to the measurement between the end face of fitting body 1 and the end face of fitting body 2.

Remark: L1 and L2 dimensions are different for steel and stainless steel. The dimensions can be found in table 1.

Table 1: Additional dimensions L1 / L2

d (mm)	s (mm)								
	1,5	2	2,5	3	3,5	4	5	6	
6 L/S	6,5 / 13,5 6,5 / 13,5								
8 L/S	7,0 / 14,0 7,0 / 14,0	7,0 / 14,0 7,0 / 14,0	6,0 / 13,0**						
10 L	7,0 / 14,0 7,5 / 14,5	6,0 / 13,0 7,0 / 14,0	6,0 / 13,0**	5,5 / 12,5**					Steel L1 (mm) L2 (mm) Stainless steel (1.4571) L1 (mm) L2 (mm)
10 S	6,5 / 14,0 7,0 / 14,5	5,5 / 13,0 6,5 / 14,0							
12 L	7,0 / 14,0 7,0 / 14,0	6,5 / 13,5 6,5 / 13,5	6,0 / 13,0** 6,5 / 13,5	4,5 / 11,5** 6,0 / 13,0					
12 S	6,5 / 14,0 6,5 / 14,0	6,0 / 13,5 6,0 / 13,5	5,5 / 13,0** 6,0 / 13,5	4,0 / 11,5** 5,5 / 13,0					
15 L	6,5 / 13,5 7,5 / 14,5	6,5 / 13,5 7,0 / 14,0	6,0 / 13,0						
16 S		7,0 / 15,5 7,0 / 15,5	6,5 / 15,0 7,5 / 16,0	7,0 / 15,5 7,5 / 16,0		5,0 / 13,5**			
18 L		6,5 / 14,0 7,0 / 14,5	6,5 / 14,0** 7,0 / 14,5	6,5 / 13,5** 6,5 / 14,0					
20 S		8,5 / 19,0 9,5 / 20,0	8,0 / 18,5 9,0 / 19,5	7,5 / 18,0* 8,5 / 19,5	7,5 / 18,0*	7,5 / 18,0*			
22 L		7,0 / 14,5 7,5 / 15,0	7,0 / 14,5** 7,0 / 14,5	6,5 / 14,0** 7,0 / 14,5					
25 S		9,0 / 21,0* 10,0 / 22,0	8,0 / 20,0* 10,0 / 22,0	8,0 / 20,0* 7,5 / 19,5	8,5 / 20,5* 7,5 / 19,5	8,0 / 20,0* 9,0 / 21,0	7,5 / 19,5*		
28 L		6,5 / 14,0 8,0 / 15,5	6,5 / 14,0** 8,0 / 15,5	6,5 / 14,0** 8,0 / 15,5	7,5 / 14,5**	7,5 / 14,5**			
30 S			8,5 / 22,0 9,0 / 22,5	9,0 / 22,5 10,5 / 24,0		9,0 / 22,5* 10,5 / 24,0	9,0 / 22,5* 10,0 / 23,5	8,5 / 22,0*	
35 L			8,0 / 18,5**	8,0 / 18,5** 8,5 / 19,0		8,0 / 19,0** 9,5 / 20,0	8,0 / 18,5** 9,5 / 20,0		
38 S				9,5 / 25,5** 11,5 / 27,5		9,5 / 25,5** 11,0 / 27,0	10,0 / 26,0* 11,5 / 27,0	10,0 / 26,0*	
42 L				8,0 / 19,0 10,0 / 21,0	8,0 / 19,0**	8,5 / 19,5**			

*Dimensions may vary (L1/L2) for material E355 due to the use of different clamping jaws

**These dimensions are currently not suitable for the intended application with E355

Tube selection

The pressure specifications are based on the following tube grades:

Carbon steel

Material: E235 / E355, in accordance with EN 10305-4 (formerly St. 37.4 / 52.4 to DIN 1630).

Type: Seamless cold-drawn, normalized bright annealed steel, designation NBK in accordance with DIN EN 10305-4.

Stainless steel

Material: X6CrNiMoti17122 (1.4571) in accordance with DIN EN 10216-5:

Type: Seamless cold-drawn, scale-free, heat-treated stainless steel, designation CFA in accordance with DIN EN 10216-5 (formerly DIN 17458). Dimensions and tolerances in accordance with DIN EN 10305-4 (formerly DIN 2391-1).

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2 Sawing off at right angles

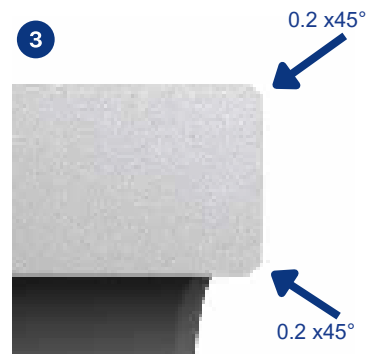
Saw off at least 10 mm on the tube manufacturer's cut to eliminate the source of error (a maximum of $1/2^\circ$ angular deviation from the tube axis is permissible). A sawing machine or an adequate device is recommended.

Caution! Deviations in shape have a negative effect on the service life and tightness of a tube connection.



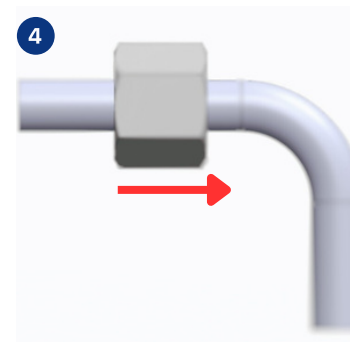
3 Deburring the tube ends / cleaning the tube

First deburr the tube (max. $0.2 \times 45^\circ$) before cleaning the tube. Keep the clamping and reshaping area free of paint, dirt, chips, grease and oil. An environmentally friendly solvent is recommended for cleaning.



4 Sliding the nut onto the tube

Caution! When fitting nuts made of 1.4571, the use of Volz grease paste 325 is recommended. To do this, apply a generous amount of grease paste to the touching threads.



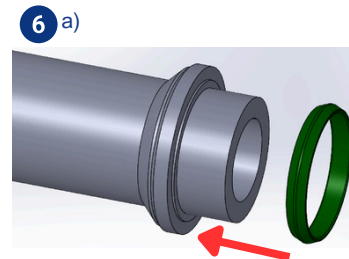
5 Tube forming with the WALFORM®-machine from Danfoss

Remark: See the operating instructions of your Danfoss WALFORM®-machine for detailed instructions

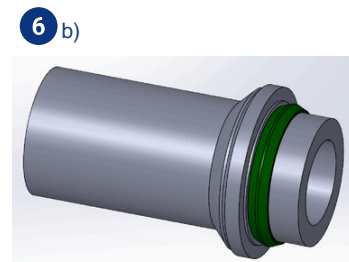
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6 Mounting the soft seal

a) Push the VU-WD soft seal up to the stop face of the reshaped tube. Ensure that the sealing is fitted without any torsional stress or damage before it is installed. This is the only way to guarantee the function and safety of the tube connection.



b) The soft seal must be in complete radial contact with the stop face and the tube. Check for damages and contamination again before the final assembly.



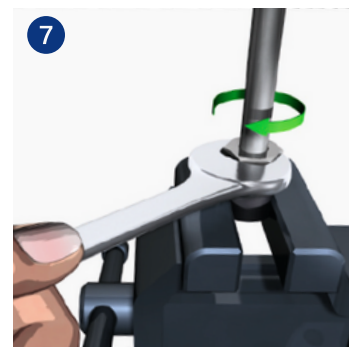
7 Final assembly into the fitting body

Torque reference values can be found in Table 2. Press the tube on the reshaped side into the fitting body up to the tube stop. Then tighten the nut.

A noticeable increase in force can be perceived in the area around the torque specifications when the nut is tightened. Ensure that a suitable wrench is used during installation.

Remark: Deviating tightening paths increase the probability of a reduced service life and performance of the tube connection.

Caution! Use a wrench to hold the fitting body during installation.



8 Re-assembly

Damage to the soft seal must be ruled out before each reassembly. If the soft seal is contaminated, it must be cleaned before reassembly. In the event of reassembly, the torque specifications in Table 2 apply.

Important: The threads of our stainless steel tube fittings must be greased with Volz Grease Paste 325, as for initial assembly.

Remark: Tube length differences must be equalised by appropriate length-compensating tube installations.



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Table 2: Assembly torques

Baureihe Serie	Tube OD Rohr AD (mm)	Carbon steel Stahl (Nm)	Stainless steel* Rostfreier Stahl* 1.4571 (Nm)
L	6	30	30
	8	35	35
	10	40	40
	12	55	55
	15	80	80
	18	110	120
	22	140	170
	28	210	250
	35	300	380
	42	400	520
S	6	35	35
	8	40	40
	10	55	55
	12	70	70
	16	110	110
	20	150	170
	25	210	260
	30	280	370
	38	410	590

Remark: The specified torques are reference values for locating the fixed point (end point of assembly), which only apply under optimal conditions.

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A1=Minimum dimension of the straight tube section of a bent tube before reshaping

A2=Minimum dimension of the straight, reshaped tube section of a bent tube (Diagram T3)

B1=Minimum dimension of the straight tube section before tube forming on both sides

B2=Minimum dimension of the straight tube section formed on both sides, measured in each case at the start of the tube forming process

Table 3: Minimum length determination of straight and bent tubes

d (mm)	A1 (mm)	A2 (mm)	B1 (mm)	B2 (mm)
06 L/S	69	56	90	64
08 L/S	66	52	88	60
10 L/S	62	48	84	57
12 L/S	62	48	85	57
15 L	69	56	90	64
18 L	79	65	102	74
22 L	87	72	112	83
28 L	103	87	129	98
35 L	112	93	144	106
42 L	114	94	146	107
16 S	73	58	99	68
20 S	85	66	115	77
25 S	114	93	148	106
30 S	121	98	157	112
38 S	127	102	169	116

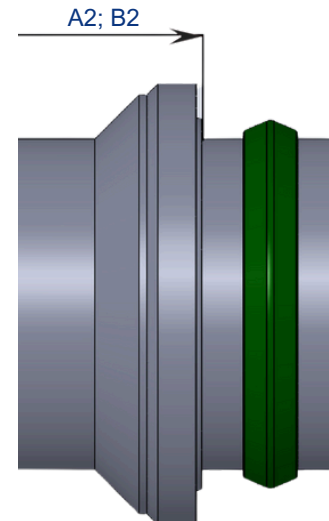


Diagram T3