

Assembly Instructions - Tube Couplings



1. Notes

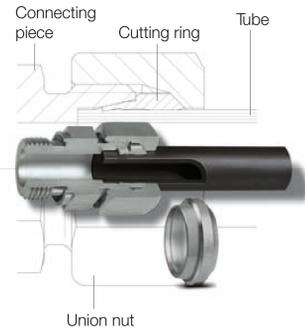
These assembly instructions describe the two assembly methods provided for under DIN 3859, Part 2:

- Direct assembly in the coupling connecting piece.
- Pre-assembly in the hardened pre-assembly mandrel.

All the following data were determined on the basis of the following preconditions:

- Seamless steel tubes for precision applications to EN 10305-1.
- Corrosion protection Zink-Nickel.

For series assemblies we recommend the use pre-assembly equipment. The information in the respective assembly instructions apply for the assembly procedures here.



In order for the cutting ring couplings to fulfil their function, observance of the assembly instructions is of the greatest importance. Incorrect handling can result in risks with respect to safety and leak tightness that can under certain circumstances result in the complete failure of the coupling.



Caution!
Please observe the safety instructions for installation and the recommendation on the use of tube supports.

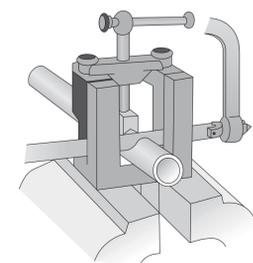
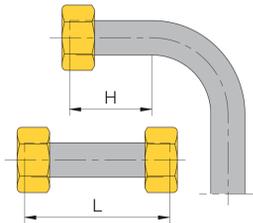
2. Tube preparation

2.1 Minimum lengths of the straight pipe ends must be taken into consideration when determining the tube lengths.

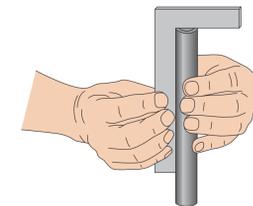
With machine pre-assembly the minimum lengths can be found in the operating instructions of the respective pre-assembly equipment.

Series	Tube-OD	H	L
L	06/08	31	39
L	10/12	33	42
L	15	36	45
L	18	38	48
L	22/28	42	53
L	35/42	48	60

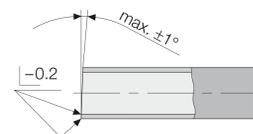
Series	Tube-OD	H	L
S	06/08	35	44
S	10/12	37	47
S	14/16	43	54
S	20	50	63
S	25	54	68
S	30	58	72
S	38	65	82



2.2 Saw off the tube at right angles. An angle tolerance of $\pm 1^\circ$ is admissible. Do not use tube cutters or angle grinders.



2.3 Deburr the tube ends lightly on the inside and outside. Clean the tube.



Caution!
■ Tubes sawn off crooked or incorrectly deburred tubes reduce the service life and leak tightness of the connection.
■ Use reinforcement sleeves with thin-walled steel tubes or soft tubes of NF metals (see ARMATURE Catalogue).

2.4 Support sleeves

■ Tubes with thin walls and soft tubes require support sleeve (look at the table below).

■ Lightly coat the outer circumference of the support sleeve with lubricant (e.g. mineral-oil based hydraulic oil). Then insert the sleeve into the tube up to the knurled section.

■ Use a hammer (plastic or hard rubber) to drive in the sleeve totally. In doing so, the knurled section is pressed against the inner wall of the tube and prevents the sleeve from being displaced or falling out.



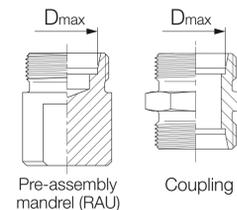
Outer tube diameter [mm]	Tube thickness [mm]							
	0.5	0.75	1	1.5	2	2.5	3	3.5
4	○	○						
6		●	○					
8			○					
10			○					
12			●					
14			●					
15			●					
16			●	○				
18			●	○				
20				●	○			
22				●	○			
25					○			
28				○	○			
30					●	○		
35					○	○		
38						●	○	
42						●	○	

○ Support sleeve required when the connection is opened often and when the system is subject to intensive wear and tear (vibrations)

● Support sleeve definitely required

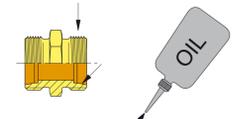
Note:
Tube deformations near the cutting ring (after driving support sleeve), can have negative effects on the function of the cutting ring connection.

The deformation may not exceed Dmax (maximum diameter of pre-assembly mandrel (RAU) or coupling).

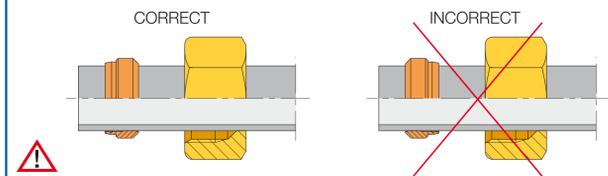
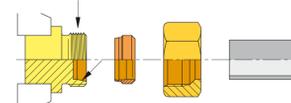


3. Assembly preparation

3.1 To simplify assembly, we recommend that the thread and the taper of the coupling connecting piece of the manual pre-assembly support are coated with lubricant.



3.2 Push the union nut and the cutting ring onto the tube end. The cutting edges of the cutting ring face towards the tube end.



Caution!
Ensure that the progressive cutting ring is positioned correctly, otherwise assembly will not be correct.

4. Direct assembly in the coupling connecting piece

4.1 Insert the tube end into the coupling connecting piece and push in completely. During the assembly process, the tube must be held fully inserted to prevent incorrect assembly.

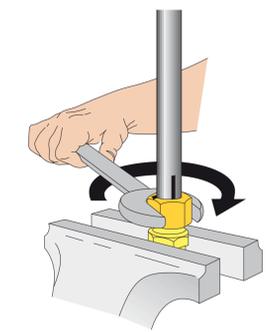
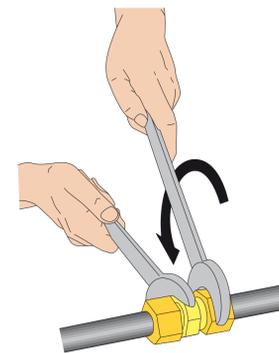
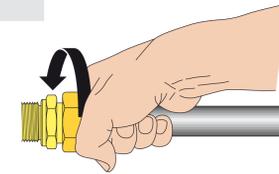
4.2 Screw on the union nut until there is tangible contact between the coupling connecting piece, cutting ring and union nut.

4.3 Tighten the union nut with an open-end wrench.

- Up to a tube OD 18 mm 1 1/2 turns
- From a tube OD 20 mm 1 1/4 turns

Notes:

- When installing in the pipeline, hold the coupling connecting piece with a wrench.
- In order to ensure the prescribed number of turns, we recommend that marks are made on the union nut and tube.
- The assembly procedure described under 4.3 also applies to pre-assembly in a vice.

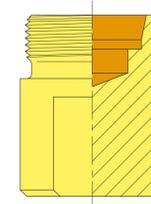


Caution!

- Each coupling connecting piece may only be used once for an initial assembly. If it is used several times, functional impairments are possible.
- After assembly, a visual inspection to check the correct assembly result is absolutely crucial (see under point 6. checking).

5. Pre-assembly in hardened pre-assembly mandrel (RAU)

The hardened pre-assembly mandrel are wear-resistant and permit uniform assembly results as they have closer tolerances. They should, however, be inspected for correct dimensions after approx. 50 pre-assemblies.

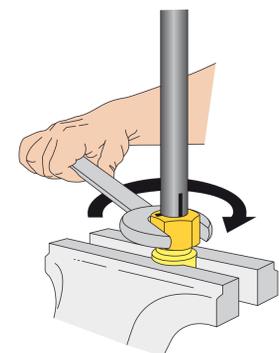


5.1 Replace pre-assembly mandrel that are no longer within the tolerances or are damaged in the taper area to prevent incorrect assembly.

5.2 Screw on the union nut until there is tangible contact between the pre-assembly mandrel, cutting ring and union nut.

5.3 Tighten the union nut with an open-end wrench.

- Up to a tube OD 18 mm 1 1/2 turns
- From a tube OD 20 mm 1 1/4 turns



Caution!
After each pre-assembly, a visual inspection to check the correct assembly result is absolutely crucial (see under point 6. checking).

6. Checking

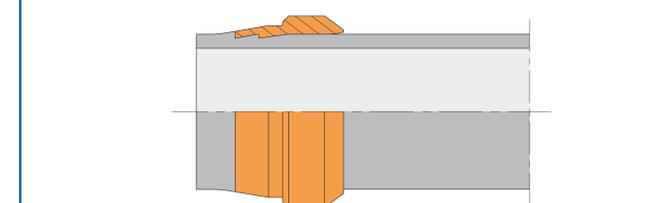
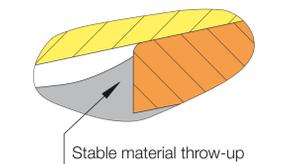
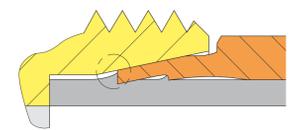
Loosen the union nut and inspect the material discharge. The material discharge must cover at least 80 % of the cutting edge face.

In this position it must still be possible to turn the cutting ring on the tube. Remove any impurities.



Caution!

If the collar is not raised sufficient, repeat the assembly with greater force. Check the result again.



7. Final Assembly

7.1 Carefully insert the tube end installed in the coupling connecting piece again into the coupling connecting piece in which it was installed. Then tighten the union nut strain-free by hand.

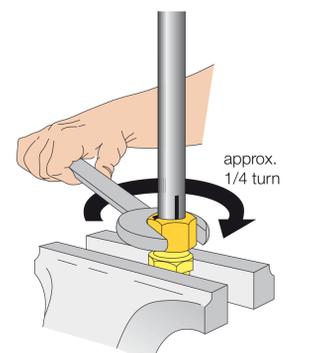
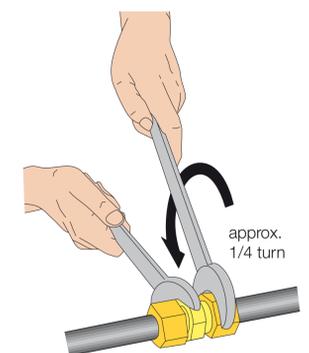
7.1.1 Tighten the union nut with a wrench (without extension) until a noticeable increase in force is felt.

7.1.2 Then tighten by a further 1/4 turn.

7.2 Carefully insert the tube end installed in the hardened pre-assembly support or machine pre-assembled pipe end into a (new) coupling connecting piece that has not yet been used for assembly and tighten the union nut strain-free by hand.

7.2.1 Tighten the union nut with a wrench (without extension) until a noticeable increase in force is felt.

7.2.2 Then tighten by a further 1/4 turn.



8. Repeat Assembly

Repeat assemblies can be carried out on the tube coupling. Tighten the union nut with the same force as for the original installation.