

Assembly instructions

For a process reliable and correct pre-assembly and final-assembly



Important notes on VOSS assembly instructions

In order to ensure maximum performance and functional reliability of VOSS products, the respective assembly instructions, operating conditions and tube recommendations have to be adhered to.

We recommend that you use VOSS pre-assembly devices at all times. The use of pre-assembly devices is a strict requirement from tube sizes L18/S16 and larger! It is absolutely essential to follow the operating instructions for the respective pre-assembly device used.

Do not start with assembly until you are absolutely sure that you have understood the operating and assembly instructions for each VOSS pre-assembly device or machine, tool and product. Incorrect handling leads to risks regarding safety and leak-tightness and can result in failure of the entire connection.

It is impossible for the manufacturer to monitor whether the user is adhering to the operating and assembly instructions for individual pre-assembly devices or machines, tools and products, as well as what conditions prevail and what methods are used for installation, operation, application and maintenance of the individual products. Improper workmanship can lead to material damage, which in turn may pose a danger to life and limb. This means that VOSS Fluid GmbH can accept no responsibility or liability for loss, damage or costs incurred due to faulty installation, improper operation or incorrect application and maintenance or from any related issue. Failure to heed this warning will lead to loss of guarantee.

VOSS Fluid GmbH reserves the right to make changes or additions to the information provided without prior notification. Customers can obtain the latest version of the operating and assembly instructions upon request, or from our download area at: www.voss.net

General notes on VOSS assembly instructions

Make sure that all components, including the tubes, are clean before assembly is started and that they remain clean during the entire assembly process. Soiled components may lead to failure of the system.

Before starting assembly, make sure that you have carried out all preparatory work in accordance with the respective instructions.

Specifications concerning permissible steel tubes:

seamless, cold-drawn and normalized precision steel tubes as specified in DIN EN 10305-4, material E235+N, mat. no. 1.0308+N or E355, mat. no. 1.0580. The tubes must be ordered by specifying the outer diameter and the inner diameter.

Specifications concerning permissible stainless steel tubes:

seamless, cold-drawn and solution-annealed, scale-free stainless steel tubes in CFA or CFD delivery condition of dimensions and tolerances according to DIN EN 10305-1 and all other delivery conditions as specified in DIN EN 10216-5, material X6CrNiMoTi17-12-2, mat. no. 1.4571. The tubes must be ordered by specifying the outer diameter and the inner diameter.

The tubes should be prepared with the same thoroughness as pre-assembly and final assembly of the connection. Especially when using long tubes, check the end sections for damage or distortion.

We recommend that pre-assembled tubes which are not to be finally assembled yet should be fitted with protective caps.

Marking a stroke on the union nut and the tube makes it easier to achieve the correct number of turns when tightening the coupling.

Before starting to assemble VOSS components with elastomer seals, always check that:

- the nut and the seal surfaces are clean and undamaged and/or
- the elastomer sealing is clean and undamaged

Determining the tightening torque for screw couplings

The tightening torques specified in the catalogue apply under the following conditions:

- steel fittings with VOSS coat surface coating
- the specified nominal pressure ranges assume that the mating material has a tensile strength of $\geq 600 \text{ N/mm}^2$
- our recommendations on lubrication of the threaded studs are observed

If other values for strength, modulus of elasticity and friction-surface combinations are used, the user has to adapt the tightening torque empirically.

The recommended tightening torques have to be adhered to if the pressure range is to be fully utilized and the appropriate safety level is to be maintained.

The recommended tightening torques for the threads are given in the tables for the respective type of thread.

Explanation of symbols and other notes



Visual inspection



Turn until hand-tight or carry out another manual activity



Use the tool to tighten the coupling according to the instructions



Oil and lubricate at the point marked with an arrow

All dimensions in millimetres [mm]

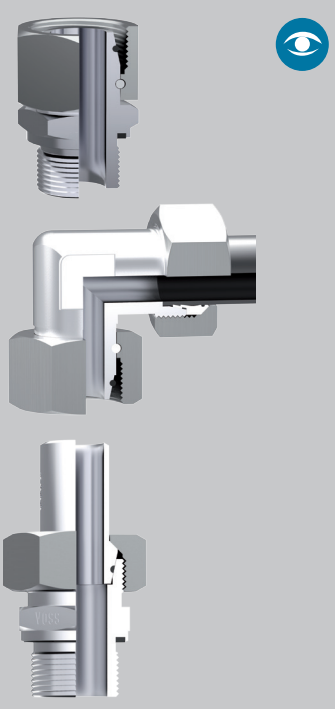
Assembly instructions for taper (DKO) and weld nipple

1 Notes

Before starting the assembly work, read and observe the general notes in the up-to-date VOSS catalogue and check that your assembly instructions are up to date.

These assembly instructions describe the assembly of VOSS couplings and coupling parts with taper coupling (DKO) according to ISO-8434-1.

Attention!
When the tube coupling is being connected, the DKO coupling must always be held with a spanner to counter tightening torques.



2 Assembly of taper coupling

Assembly procedure

1. Check that the O-ring is not twisted and that it is bedded correctly in the groove of the taper.
2. Lubricate the threads, the cone surface and the O-ring lightly (e.g. using mineral-oil based hydraulic fluid HLP32).
3. Keeping the taper aligned, insert it into the cone and press it in firmly.

Attention!
After this step, no further alignment correction is possible.

4. Turn the union nut until it is hand-tight.
5. Then use a spanner to finally tighten up the coupling by the required angle or number of turns.

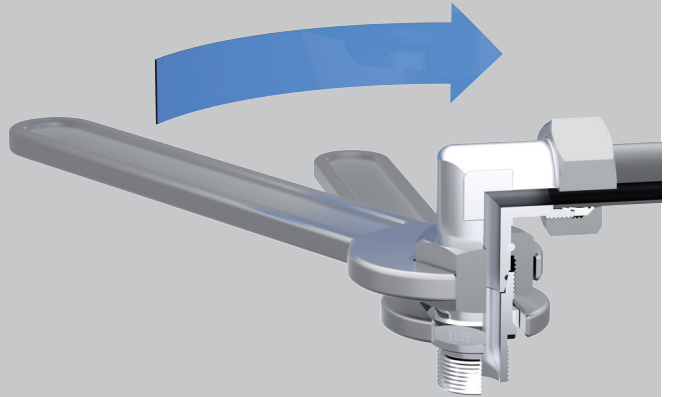
Marking a stroke on the DKO union nut and the coupling connecting piece makes it easier to achieve the correct number of turns when tightening the coupling.



DKO

Attention!

The DKO coupling must be tightened by turning the union nut, not the counter connecting piece.



3

Assembly parameters

As an alternative to achieving pre-assembly and final assembly states by distance dependent assembly, the tightening torques can be applied directly. The stated tightening torques are guideline values which have been determined under the following conditions:

Series	Tube OD [mm]	Union nut thread	Number of turns, first assembly	Number of turns, re-assembly	Tightening torque [Nm] \pm 5 %
L	6	M 12 x 1.5	approx. 2/3	approx. 1/3	20
L	8	M 14 x 1.5	approx. 2/3	approx. 1/3	30
L	10	M 16 x 1.5	approx. 2/3	approx. 1/3	40
L	12	M 18 x 1.5	approx. 2/3	approx. 1/3	50
L	15	M 22 x 1.5	approx. 2/3	approx. 1/3	70
L	18	M 26 x 1.5	approx. 1/2	approx. 1/3	90
L	22	M 30 x 2	approx. 1/2	approx. 1/3	120
L	28	M 36 x 2	approx. 1/3	approx. 1/3	160
L	35	M 45 x 2	approx. 1/3	approx. 1/3	250
L	42	M 52 x 2	approx. 1/3	approx. 1/4	380
S	6	M 14 x 1.5	approx. 2/3	approx. 1/3	25
S	8	M 16 x 1.5	approx. 2/3	approx. 1/3	40
S	10	M 18 x 1.5	approx. 2/3	approx. 1/3	50
S	12	M 20 x 1.5	approx. 2/3	approx. 1/3	60
S	16	M 24 x 1.5	approx. 1/2	approx. 1/3	85
S	20	M 30 x 2	approx. 1/2	approx. 1/3	140
S	25	M 36 x 2	approx. 1/3	approx. 1/4	190
S	30	M 42 x 2	approx. 1/3	approx. 1/4	270
S	38	M 52 x 2	approx. 1/3	approx. 1/4	400

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Assembly of weld nipple couplings



4.1 General notes

Weld nipples can be used with any tube coupling conforming to ISO 8434-1.

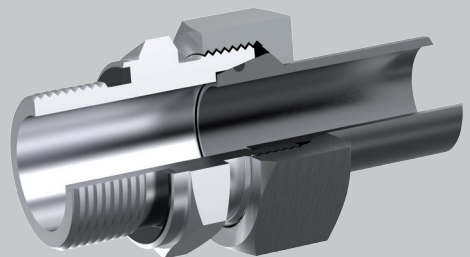
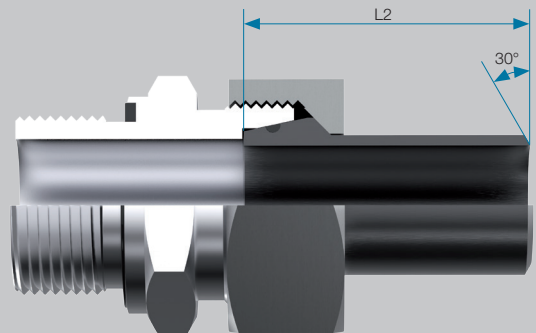
The weld nipples are phosphated and designed with a V-seam when delivered.

The weld nipples are welded on to the prepared tube end without the O-ring.

The user (installation company) is responsible for the welding work.

4.2 Determining the tube length

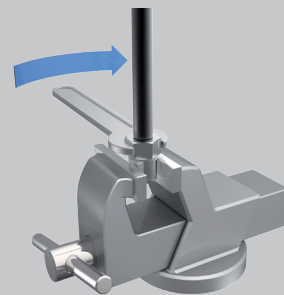
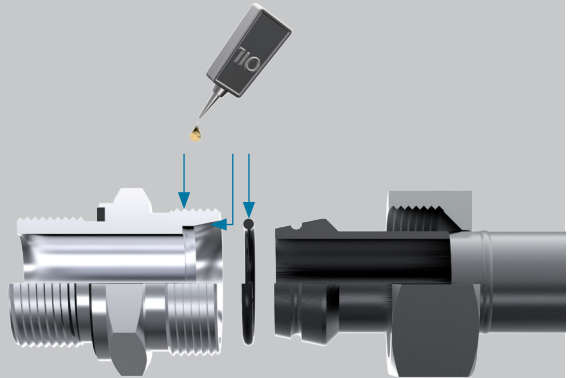
Series	Tube OD [mm]	L2
L	6	31.5
L	8	31.5
L	10	33.5
L	12	33.5
L	15	34.5
L	18	37
L	22	39.5
L	28	42.5
L	35	49.5
L	42	50
S	6	31.5
S	8	31.5
S	10	33.5
S	12	33.5
S	14	39.5
S	16	41
S	20	47
S	25	53.5
S	30	57
S	38	64



4.3 Assembly procedure

The principle of final assembly of weld nipple couplings is the same as for taper couplings.

1. Push the O-ring on and check that it is bedded in the groove of the taper without being twisted.
2. Lubricate the threads, the taper surface and the O-ring lightly (e.g. using mineral-oil based hydraulic fluid HLP32).
3. Insert the taper into the cone and press it in firmly. Turn the union nut until it is hand-tight.
4. To complete the assembly, turn the nut by approx. **1/4 turn.**



approx. 1/4 turns