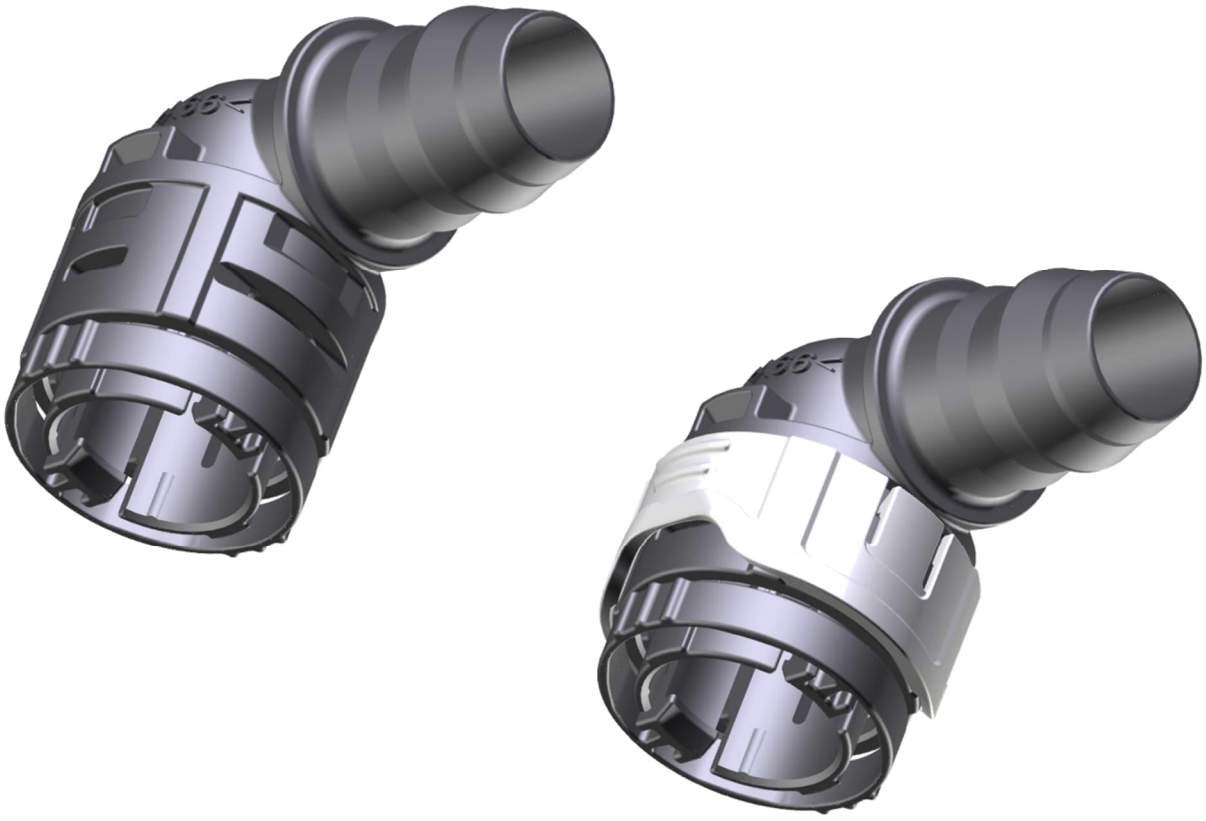
Assembly instructions
VOSS quick connect system 270



The benchmark for customized connection solutions
in thermal management

A. Important notices

System properties

- VOSS quick connect system 270 is a plastic coupling, optionally available with Double Lock (DL), for the connection of cooling lines (PA tubes), especially at filigree cooling plates of batteries.
- Connection port according to VOSS standard
- Available sizes: S6, S10, S14
- VOSS quick connect system 270 ^{DL} is available with a secondary lock (Double Lock) as additional safety device as well as visual and haptical connection indications.
- The connection of the VOSS quick connect system 270 is made by plugging the coupling onto the male connection. The locking element of the coupling engages behind the collar of the connection contour. The complete snap-in connection is both visual and haptical.

Please observe before using the quick connect systems

- VOSS quick connect system 270 is suitable for the fir-tree connection of cooling system lines, especially for battery temperature control.
- The temperature range is from -40 °C to +85 °C
- The maximum operating pressure is 2 bar.
- You can use quick connect system 270 for different requirements upon request.

Please observe during assembly of the quick connect systems

- The assembly of the quick connect system must be conducted by professional mechanics subject to these assembly instructions.
- Incorrectly assembled connections can result in leakage or failure of the system.
- VOSS quick connect system 270 may only be used with connections and tubes described in chapter B (“Components and material“).
- Before connecting both sides, components must be checked. They have to be clean and must not show any signs of damage.

B. Components and material

1. Tube dimensions and nominal sizes

Quick connect system 270			
PA tube		Available alignments: 90°/180°	
Inner diameter [mm]	Outer diameter x tube width [mm]	S6	S10
6	8x1	■	
8	10x1	■	
10	13x1		■
11	13x1,5		■
12	15x1,5		■

Further connection possibilities (e.g. hose), tube sizes or alignment possible on customer requests.

The tube/fir-tree connection is validated for series use exclusively with VOSS specific materials or dimensions.

2. The quick connect systems 270

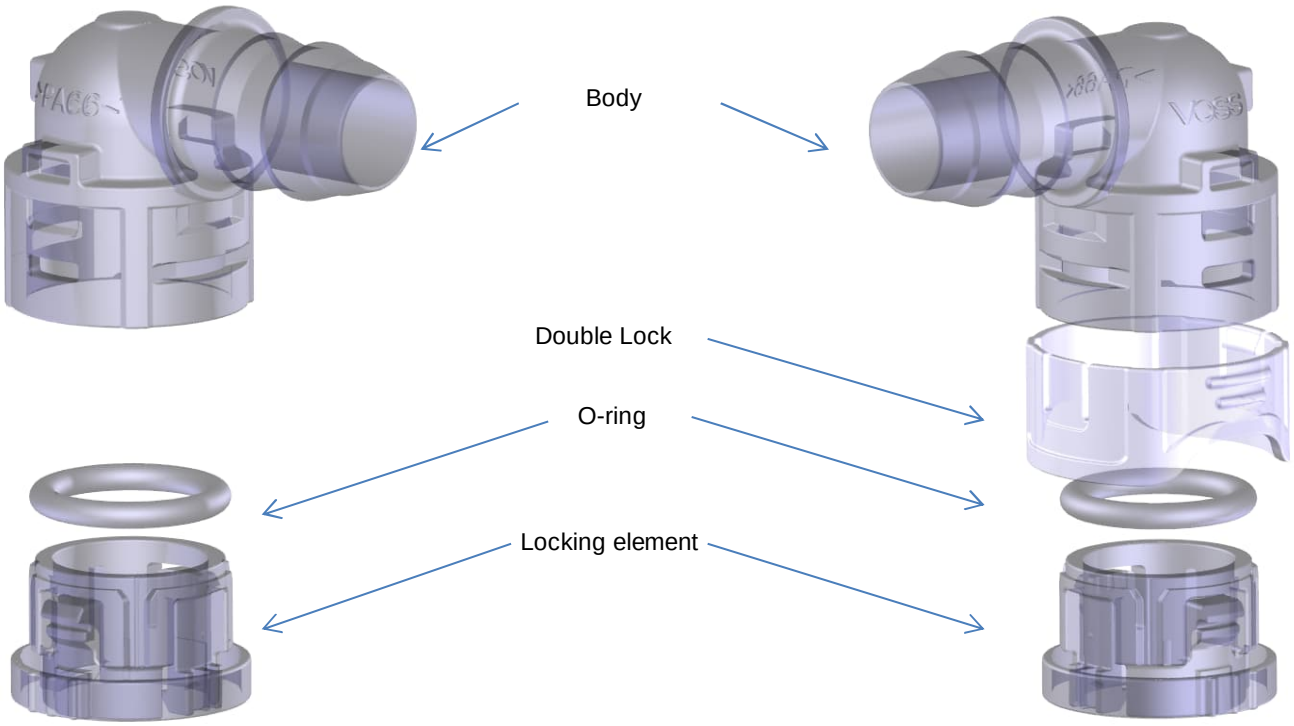


Fig. 1: Components of quick connect system 270 and 270 *DL*

Male connection profile

Fig. 2: Male connection profile according to VOSS standard (is provided)

Available alignments

Fig. 3: Straight and elbow coupling 270,
locking element can be rotated 90°

Fig. 4: Straight and elbow coupling 270 *DL*,
locking element can be rotated 90°

C. Assembly instructions

Use of arrow symbols in pictures:

Indicates special points of interest described in the text.

Indicates required manual actions and their direction.

Indicates operations that should be avoided.

As-delivered conditions

270

Fig. 5: As-delivered conditions quick connect system 270

270 *DL*

Fig. 6: As-delivered conditions quick connect system 270 *DL*
Double Lock in upper position

1. Assembly of nylon tube

1.1 Cutting of nylon tube to length

- The nylon tube must be cut at a right angle.
- The nylon tube must not be cut using a saw, as this causes burring. Burring reduces the sealing ability of the connection.

When cutting the nylon tubes to length, we recommend the use of the VOSS cutting pliers (see fig. 7) (VOSS article number: 5 9 94 55 00 00). Using the VOSS cutting pliers will ensure the tube is cut cleanly and at a right angle. Subsequent treatment of the cut surface, such as deburring, is then no longer necessary.

Fig. 7: VOSS cutting pliers for nylon tubes

1.2 Insertion of fir-tree to nylon tube

When pressing the fir-tree into the nylon tube:

- The insertion procedure must be performed at room temperature.
- The nylon tube must not be heated.
- The nylon tube must be undamaged.
- The fir-tree profile must be clean and free of any grease.
- The fir-tree profile must be undamaged; otherwise the connection to the nylon tube will not be tight.

Insertion with the manual assembly tool

The manual assembly tool and accessories (fig. 8) are available from VOSS (VOSS article numbers available on request).

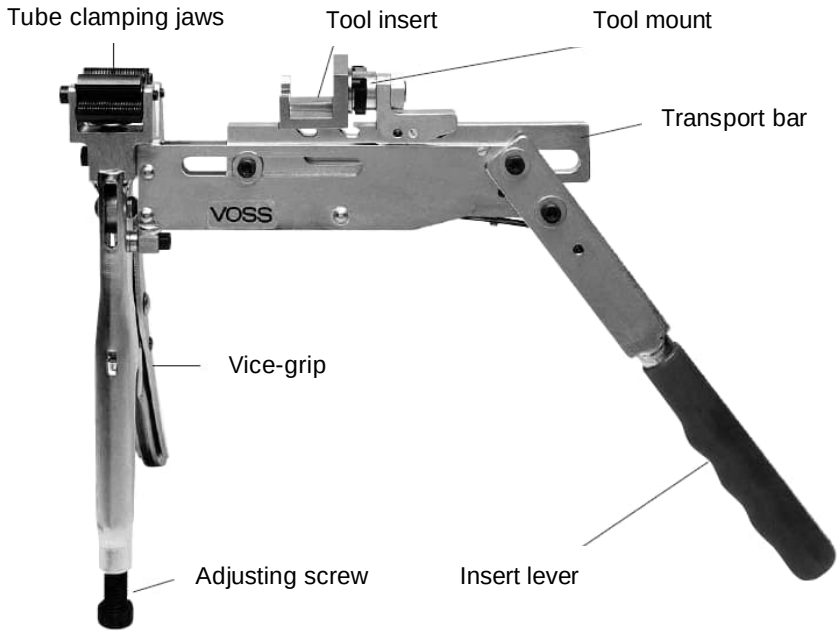


Fig. 8: VOSS manual assembly tool

Step 1

Insert a tool insert corresponding to the coupling to be mounted (straight or elbow coupling) into the tool mount.

The tool insert must be clean and free of damage, otherwise the inner O-ring of the coupling will be damaged.

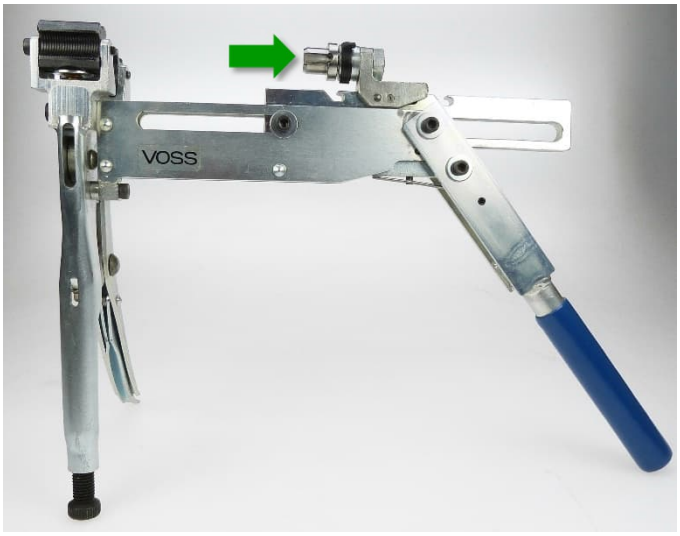


Fig. 9: Inserting the tool insert

Step 2

Place the intended coupling into the tool insert.

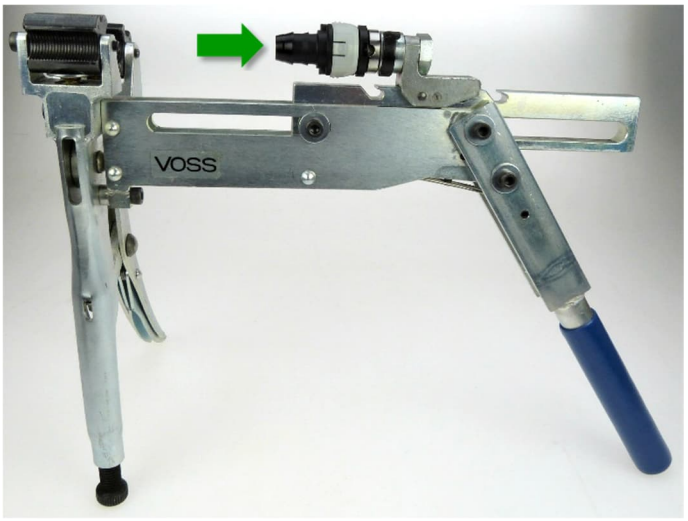


Fig. 10: Placing the coupling

Step 3

Rotate the tube clamping jaws to the correct position for the outside diameter of the tube to be mounted.

The marking of the tube sizes on the tube clamping jaws must be observed.

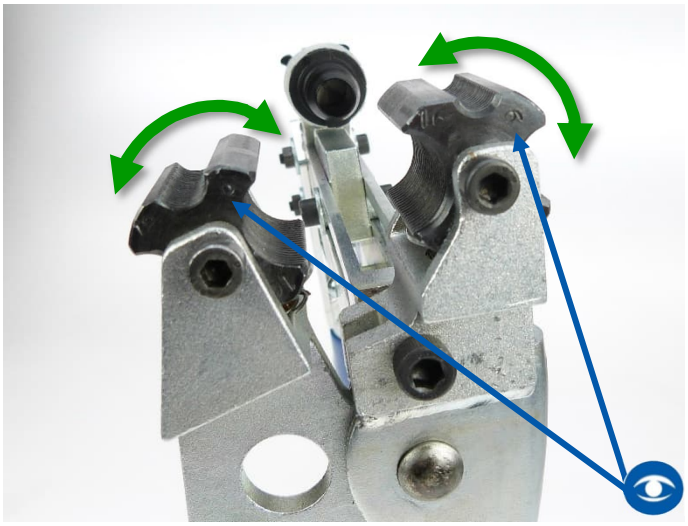


Fig. 11: Aligning the jaws

Step 4

Insert the nylon tube into the clamping jaws.

The overlap of the tube must be at least 2 mm longer than the length of the coupling´s fir-tree.

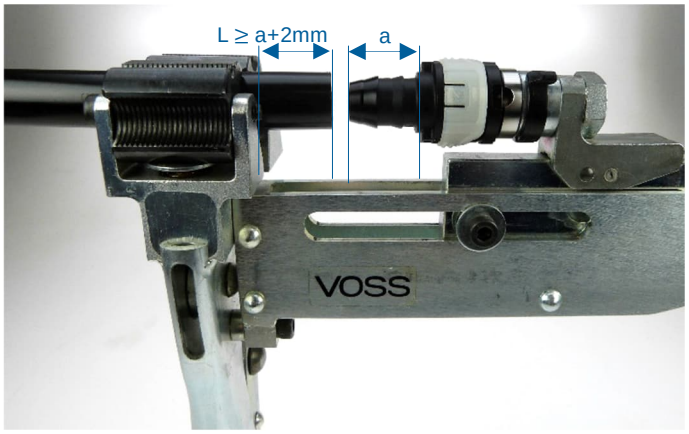


Fig. 12: Inserting of the nylon tube

Step 5

Squeeze the vice-grip to fix the nylon tube. The clamping force can be regulated with the adjusting screw.

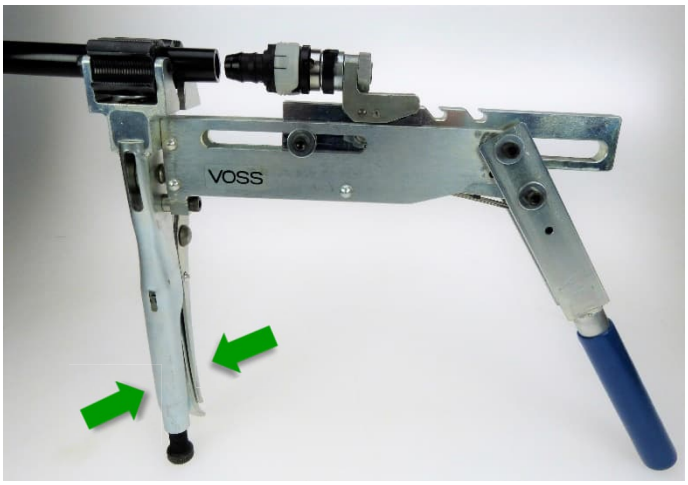


Fig. 13: Squeezing the vice-grip

Step 6

Move the transport bar, centering the fir-tree into the inner diameter of the nylon tube.

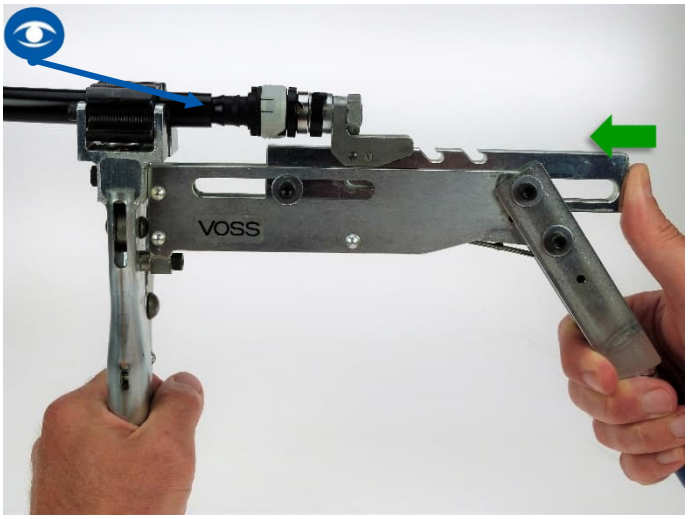


Fig. 14: Moving the transport bar

Step 7

The fir-tree has to be inserted completely into the nylon tube with the insert lever, until the stop limit is reached.

There should be no gap > 0.5 mm.

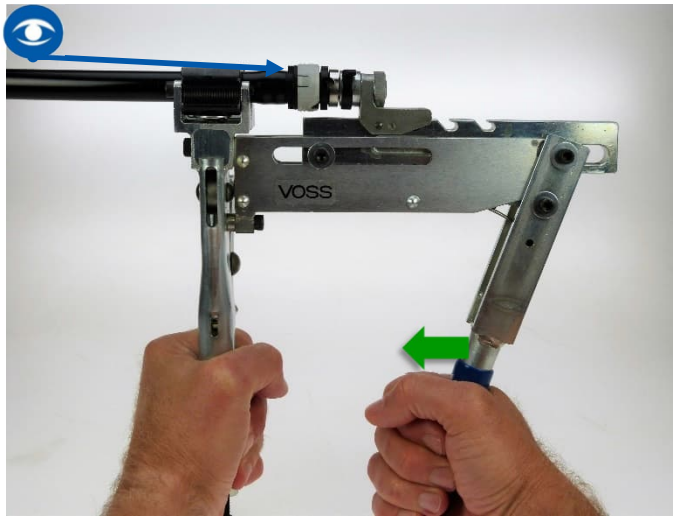


Fig. 15: Inserting the fir-tree

Step 8

Move the insert lever back.

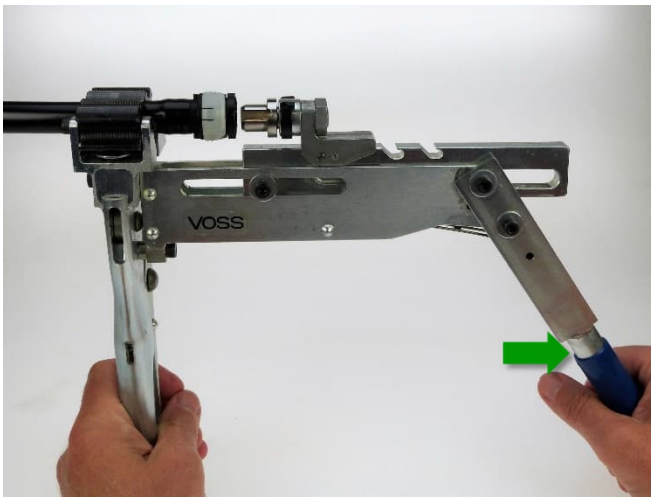


Fig. 16: Moving back the insert lever

Step 9

Move the transport bar back. The coupling is then released.

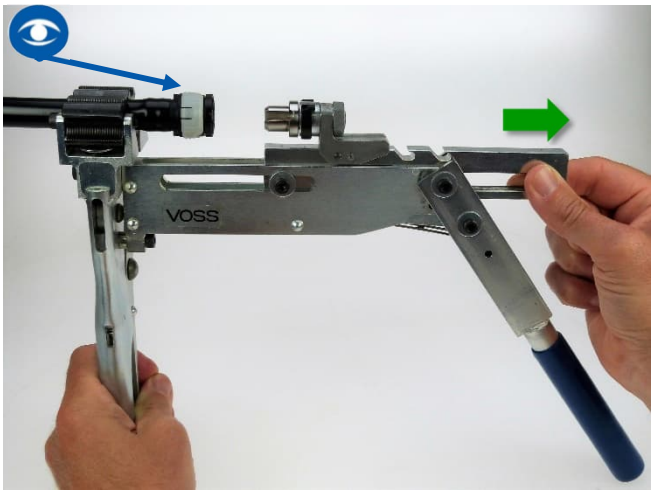


Fig. 17: Moving back the transport bar

Step 10

Release the vice-grip; remove the assembled line.

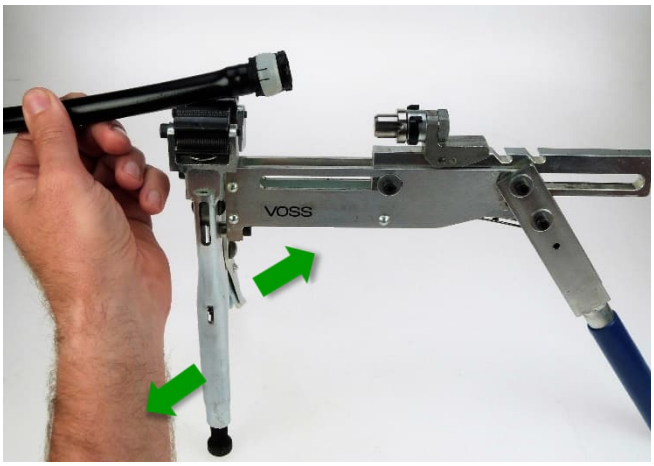


Fig. 18: Releasing the vice-grip

Step 11

Nylon tube correctly mounted on the fir-tree.

Fig. 19: Correctly assembled nylon tube

Assembly machine for series assembly

VOSS offers the assembly machine type 56 for series assembly of nylon tubes on fir-trees.

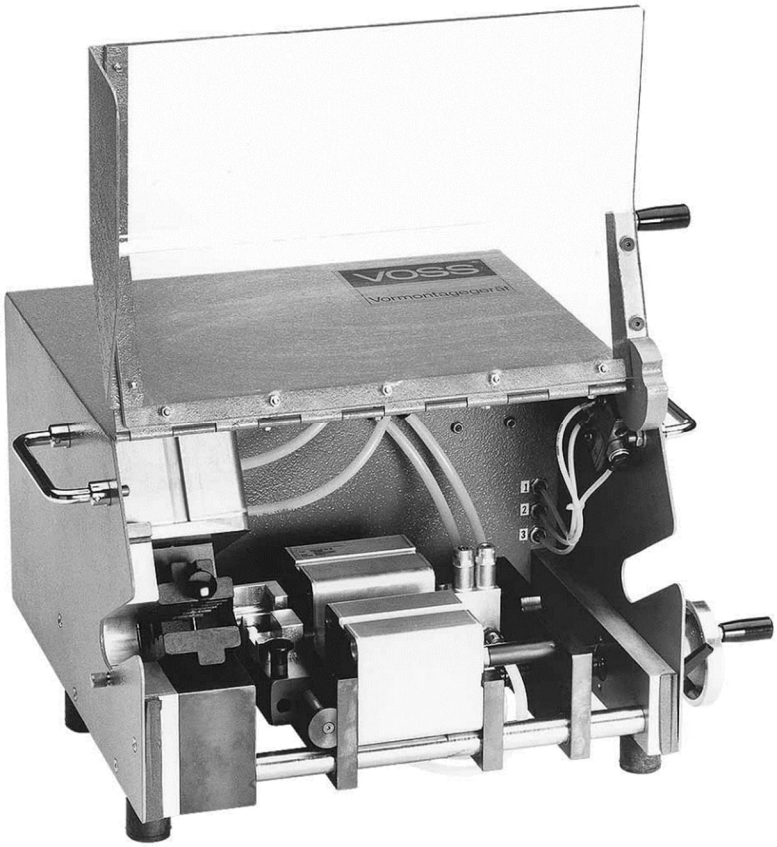


Fig. 20: VOSS assembly machine type 56

2. Assembly of QC system

270 | 270 DL

Step 1

Coupling and male connector are separated (starting situation)

Only 270 DL: Double Lock in upper position

Fig. 21: Coupling 270 and male connector separated

Fig. 22: Coupling 270 DL and male connector separated

Step 2

Place coupling centered above male connector.

Fig. 23: Centered placement of coupling 270 above male connector

Fig. 24: Centered placement of coupling 270 DL above male connector

Step 3

Plug coupling onto male connector.

270

Fig. 25: Plugging of coupling 270 onto male connector

270 *DL*

Fig. 26: Plugging of coupling 270 *DL* onto male connector

Incomplete assembly:
Coupling is not yet engaged and locking element is still slightly oval stretched.

Only 270 *DL*:
Double Lock cannot be activated in this position.

Fig. 27: Incomplete assembly of coupling 270

Fig. 28: Incomplete assembly of coupling 270 *DL*: blocked Double Lock

Step 4

Push the coupling onto the male connector as far as it will go. Locking element snaps into place haptically and visually recognizable.

Fig. 29: Plugging in coupling 270 as far as it will go

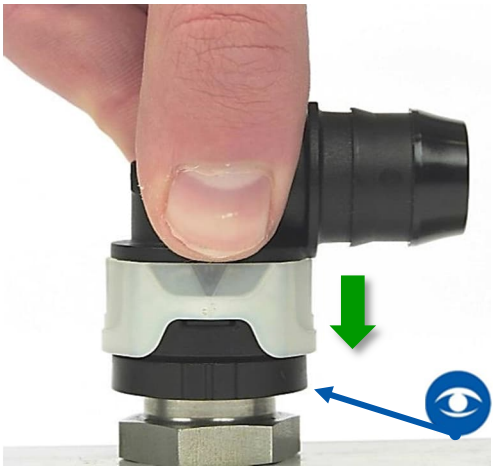


Fig. 30: Plugging in coupling 270 *DL* as far as it will go

Go on with step 6 (page 14)

270 | 270 DL

Step 5

Only 270 DL:
Grasp the Double Lock on the reduced/ribbed surfaces and push it down in the direction of the male connector …

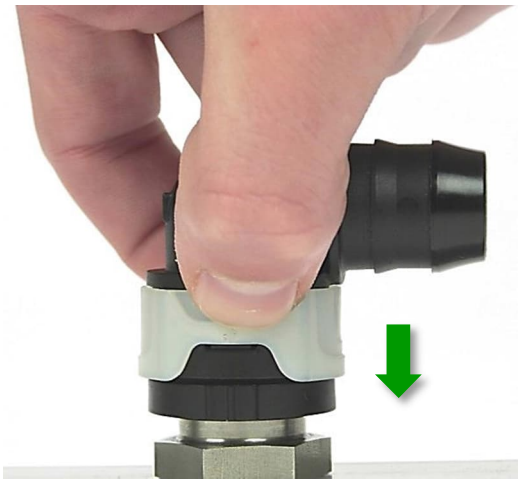


Fig. 31: Pushing down the Double Lock

… until the Double Lock engages and is flush with the locking element.

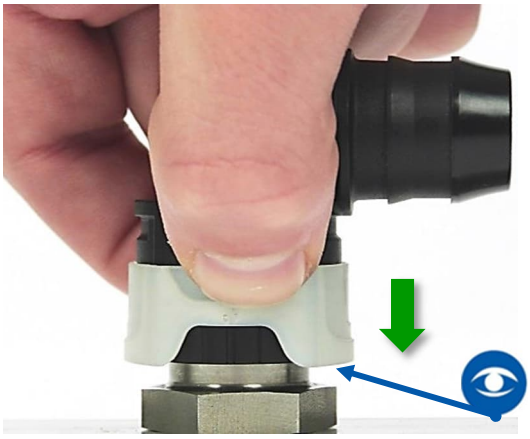


Fig. 32: Engaged Double Lock

Step 6

Completely assembled coupling (final position)

Fig. 33: Completely assembled coupling 270

Fig. 34: Completely assembled coupling 270 DL

3. Disassembly of QC system

Before disconnecting, the line must be free of pressure, and the area around the secondary lock must be free of dirt.

Do not use tools such as pliers or levers for disassembly, as this will damage the QC system.

270 | 270 *DL*

Step 1

Only 270 *DL*:
Double Lock is in engaged position. In this position locking element cannot be activated.

Fig. 35: Completely assembeled coupling with engagend Double Lock and locked locking element

Grasp Double Lock on the reduced/ribbed surfaces and pull off …

Fig. 36: Grasping and pulling off the Double Lock

…until Double Lock engages in upper position. Locking element is again unlocked.

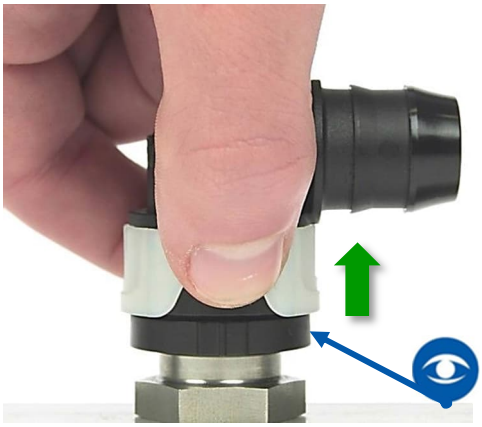


Fig. 37: Unlocked coupling 270 DL

270

270 DL

Step 2

Grasp locking element on the ripped surfaces and …

Fig. 38: Grasping the locking element of coupling 270

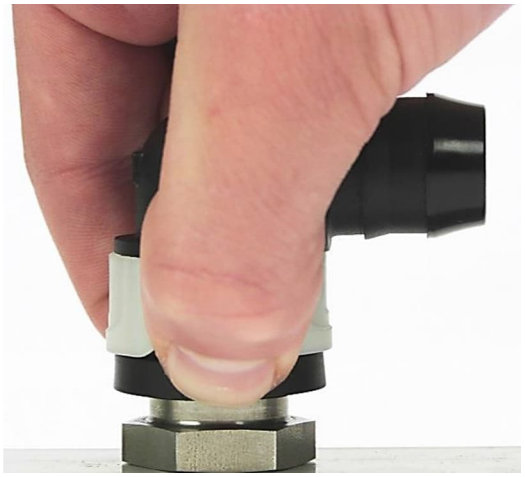


Fig. 39: Grasping the locking element of coupling 270 DL

… squeeze, so that it oval expands.

Fig. 40: Squeezed and expanded locking element of coupling 270

Fig. 41: Squeezed and expanded locking element of coupling 270 DL

Simultaneously pull up the coupling and separate it from the male connector.

Fig. 42: Pulling up of coupling 270

270

Fig. 43: Pulling up of coupling 270 *DL*

270 *DL*

Step 4

Completely dis-assembled coupling with male connector

Only 270 *DL*:
Double Lock is again in upper position (starting situation).

Fig. 44: Completely disassembled coupling 270 with male connector

Fig. 45: Completely disassembled coupling 270 *DL* with male connector

Customer service

Contact VOSS for questions concerning quick connectors, nylon tubes, line routing, etc.

Property rights

Technical modifications and errors excepted.

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