VOSS

Assembly instructions
VOSS lines for liquid cooling
of Battery Energy Storage Systems

Easy to maintain and assemble
throughout the entire service life

A. Important notes

System properties

- VOSS lines for liquid cooling of Battery Energy Storage Systems are suitable for a glycol-water mixture in the ratio of 50:50.
- Temperature range from -30 °C to +80 °C
- Maximum operating pressure of 3 bar rel.
- Use in case of deviating requirements on request

To be observed before using the lines

- Lines should be stored correctly (protective caps fitted).
- Avoid bending smooth tubes, and do not over-bend corrugated tubes: Be mindful of the ovality and bending in the corrugated section to ensure the tube functions properly.
- Lines should be protected from physical and chemical influences.
- Lines should not be dragged across the ground and sharp edges.
- During assembly and disassembly, care must be taken to ensure protective clothing for the high-voltage range.

To be observed when assembling the lines

- The assembly of the lines must be carried out by qualified technicians in accordance with the specifications of this and other corresponding assembly instructions.
- Incorrectly plugged connections may cause leakage and system failure.
- When assembling or disassembling lines, follow the specific assembly instructions for the VOSS quick connect systems being used.
- The components must be checked before connecting. They must be clean and have no damage.
- Protective caps must only be removed shortly before line assembly.
- During assembly and disassembly of the lines, care must be taken to protect the lines from abrasion, kinking or mechanical loads. Do not lay lines over sharp edges.

B. Assembly instructions for feed or return lines

Use of icons in illustrations:

Indicates points described in the text that require special attention.

Indicates necessary manual actions and their direction.

Indicates processes to avoid.

Delivered condition

Feed or return lines with connection contour as well as vertical line with VOSS quick connect system 246 *NAX* (nominal size 22) and integrated double flow stop valve

Fig. 1: Delivered condition of the feed or return line and vertical line with quick connect system 246 *NAX* (protective cap is fitted)

For assembly, see from page 4 ("1. Assembly of feed or return lines")

1 . Assembly of feed or return lines

Before connecting the quick connect system, ensure that the connection contour, especially the bore, is thoroughly checked.

The connection contour must be clean and not have any damage or dirt.

The O-ring must be greased with special grease "Syntheso Glep1" from Klüber Lubrication.

Only remove the protective caps just before assembling the connectors.

Step 1

Vertical line with 246 *NAX* as well as feed or return line separated (initial situation)

Only remove the protective caps immediately before assembling the connectors.

Fig. 2: Feed or return line and vertical line with 246 *NAX* disconnected

Step 2

Position the feed or return line centrally in front of the quick connect system 246 *NAX*.

Fig. 3: Centered position of the feed or return line in front of the QC system 246 *NAX*

Step 3

Plug the feed or return line onto quick connect system 246 *NAX*...

The retaining element is briefly expanded during assembly.

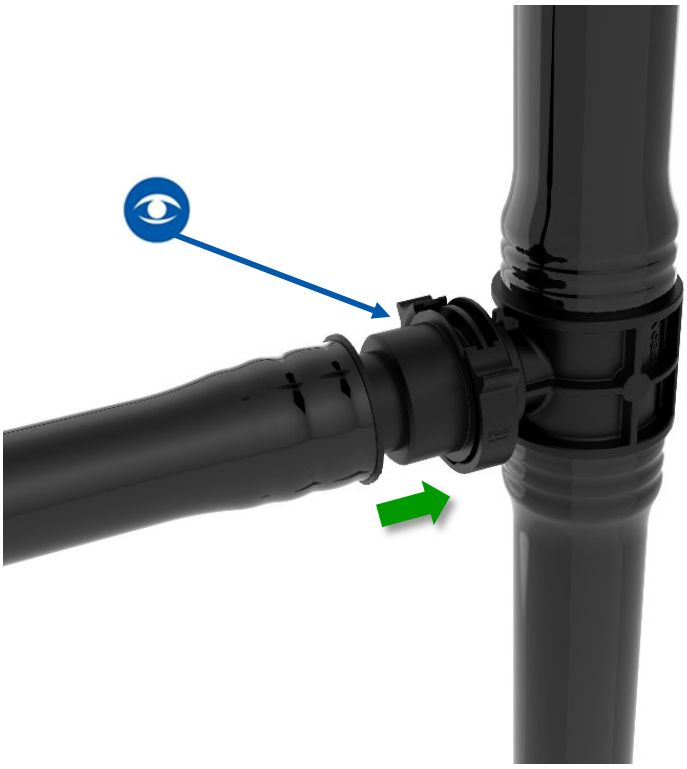

Fig. 4: Plugging the feed or return line onto the QC system 246 *NAX*

... until the feed or return line at the stop of the quick connect system 246 *NAX* is fully engaged.

When assembly is complete, the retaining element locks into place behind the collar of the connection contour with an audible click noise. The retaining element is no longer spread apart.

If no click sound is heard or the retaining element remains spread, the connection has not been properly made. It is essential to check the connection process and reconnect until the click sound is heard and the retaining element is fully engaged.

The double flow stop valve opens automatically when assembly is complete.

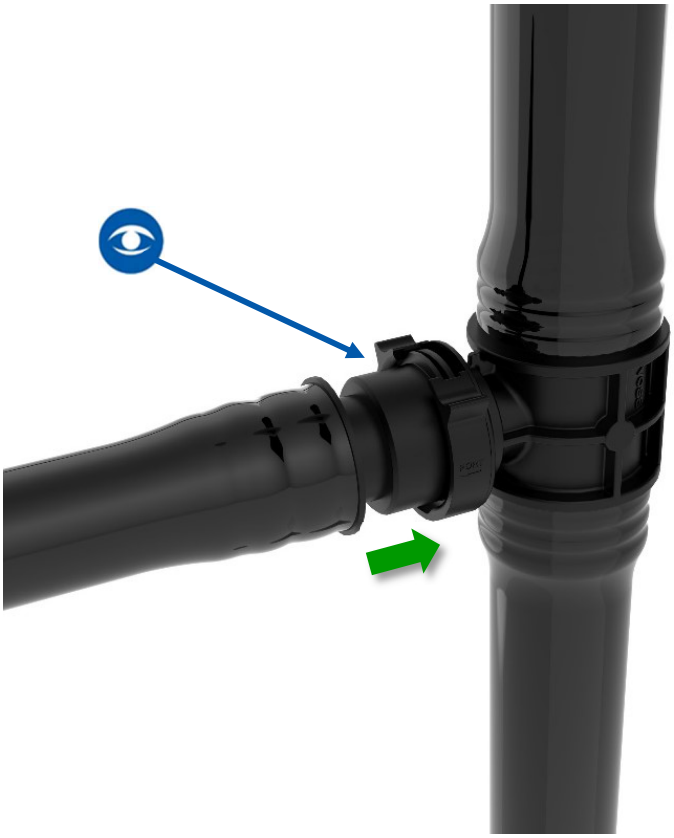

Fig. 5: Connection plugged in up to the stop

Step 4

The complete engagement shall be checked by pulling against the direction of insertion.

When the connection is completely engaged, the connector can be pulled only minimally, because the retaining element is engaged behind the collar of the connection contour.

The double flow stop valve opens automatically when assembly is complete.

Feed or return lines

Fig. 6: Checking the correct connection of the feed or return lines

Step 5

Fully connected feed or return line (end position)

The double flow stop valve opens automatically when assembly is complete.

Fig. 7: Fully connected feed or return line

2 . Removal of feed or return lines

Before the connection is released, the line must be free of pressure, and the area of the retaining element must be free of dirt.

Step 1

Spread the retaining element of the quick connect system 246 *NAX* slightly outward at both tabs and remove from the connector body...

The retaining element can be brought into the most favorable position for disassembly by turning in advance.

Fig. 8: Spreading the retaining element of the QC system 246 *NAX*

... until the retaining element is completely separated from the connector body.

Set the retaining element aside carefully, it will have to be reassembled later.

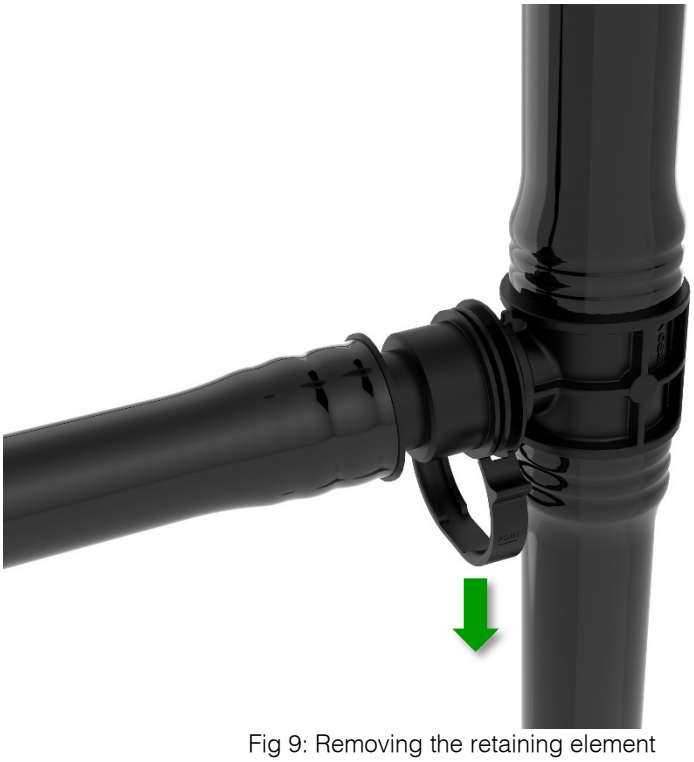

Fig 9: Removing the retaining element

Step 2

Disconnect the feed or return line opposite the assembly direction of the quick connect system 246 *NAX*.

The double flow stop valve closes at this point automatically by separating the feed line or return line and the quick connect system 246 *NAX*. Only a small amount of cooling medium (<15 ml) can escape.

Fig. 10: Disconnecting the feed or return line from the QC system 246 *NAX*

Step 3

Replace the retaining element on the connector body of the quick connect system 246 *NAX*...

Make sure the retaining element is aligned properly:

1. The arrow on the retaining element must point in the direction of the opening of the quick connect system during assembly.
2. The upper retaining contour of the retaining element must be inserted into the groove of the connector body.

Without a reassembled retaining element, a repeated assembly of the feed or return line is not permitted.

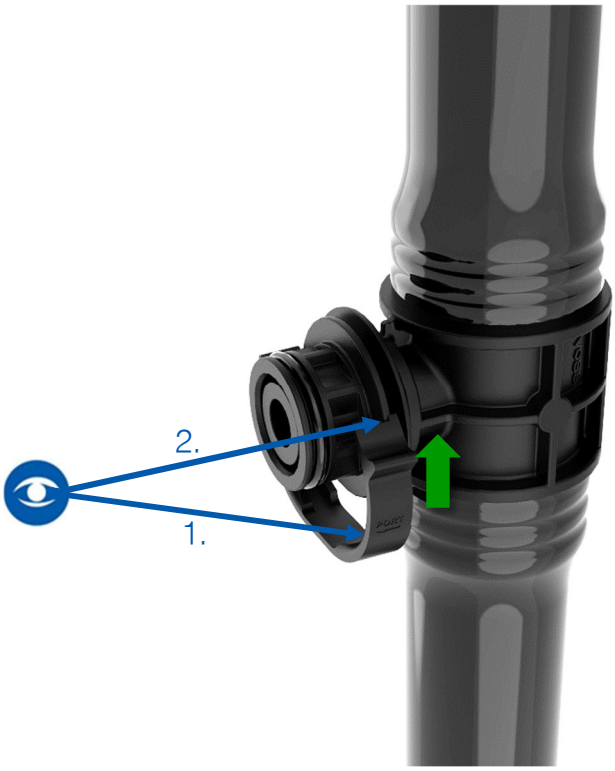

Fig. 11: Reassembling of the retaining element

... until the retaining element is completely on the connector body of the quick connect system 246 *MAX* and encloses it.

Make sure the retaining element is aligned properly:

1. The arrow on the retaining element must point in the direction of the opening of the quick connect system during assembly.
2. The upper retaining contour of the retaining element must be inserted into the groove of the connector body.

Without a reassembled retaining element, a repeated assembly of the feed or return line is not permitted.

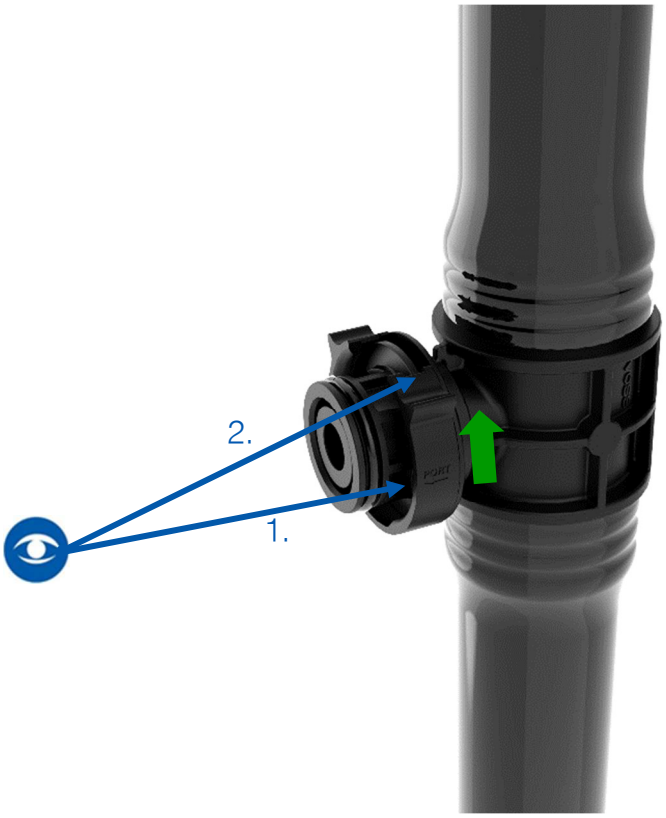

Fig. 12: Reassembled retaining element

Step 4

Feed or return line completely removed from the vertical line

Fig. 13: Fully removed feed or return line from the vertical line

C. Assembly instructions for filling and venting lines

Use of icons in illustrations:

Indicates points described in the text that require special attention.

Indicates necessary manual actions and their direction.

Indicates processes to avoid.

Delivered condition

Filling and venting line with quick connect system 246 *NX*

Fig. 14: Delivered condition of the filling and venting line (protective cap is fitted)

For Assembly, see from page 11 ("1. Assembly of filling and venting lines")

1 . Assembly of filling and venting lines

For filling and venting the system, a VOSS line with VOSS quick connect system 246^{NX} (nominal size 8) with integrated flow stop valve can be used.

For assembly of the filling and venting line with VOSS quick connect system 246^{NX} the “Assembly instructions VOSS quick connect system 246^{NX}” (Art. No 9177183102) in their most recent version must be observed.

Before connecting, the connection contour, especially the bore, must be checked for accuracy.

The connection contour must be clean and not have any damage or dirt.

The O-ring must be greased with special grease “Syntheso Glep1” from Klüber Lubrication.

Only remove the protective caps just before assembling the connectors.

Step 1

The filling and venting line and the connection contour of the venting valve are separated (initial situation).

Only remove the protective caps immediately before assembling the connectors.

Fig. 15: Filling and venting line and venting valve separated

Step 2

Position the filling and venting line centrally over the connection contour of the venting valve.

Fig. 16: Central placement of the filling and venting line above the connection contour of the venting valve

Step 3

Plug the filling and venting line onto the connecting contour of the venting valve...

The retaining element is briefly expanded during assembly.

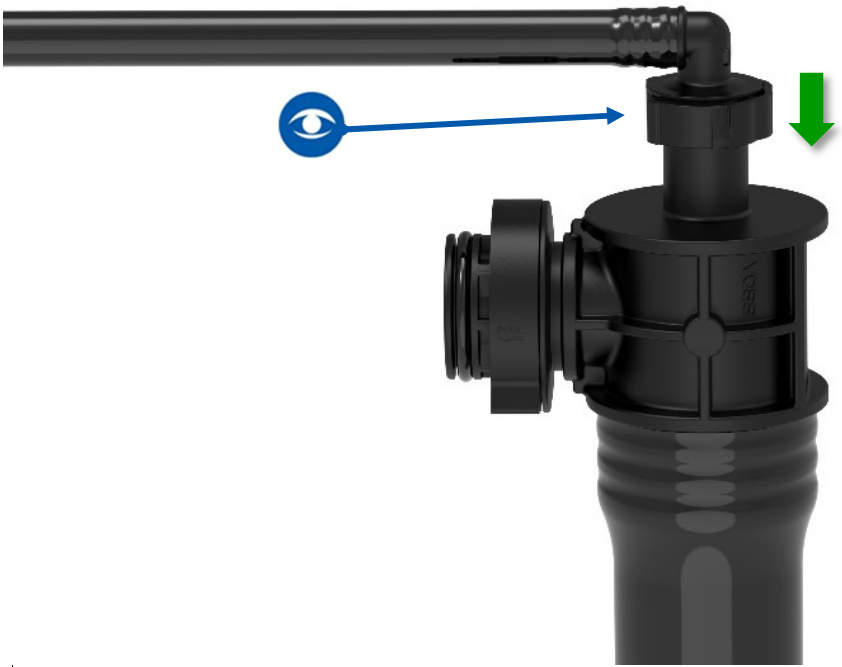

Fig. 17: Plugging the filling and venting line onto the connection contour of the venting valve

... until the retaining element of the quick connect system locks completely onto the connection contour of the venting valve.

When assembly is complete, the retaining element locks into place with a clear audible click noise under the collar of the connection contour. The retaining element is no longer spread apart.

If no click sound is heard or the retaining element remains spread, the connection has not been properly made. It is essential to check the connecting process and to reconnect until the click sound is heard and the retaining element is fully engaged.

When assembly is complete, the flow stop valve in the filling and venting line opens automatically.

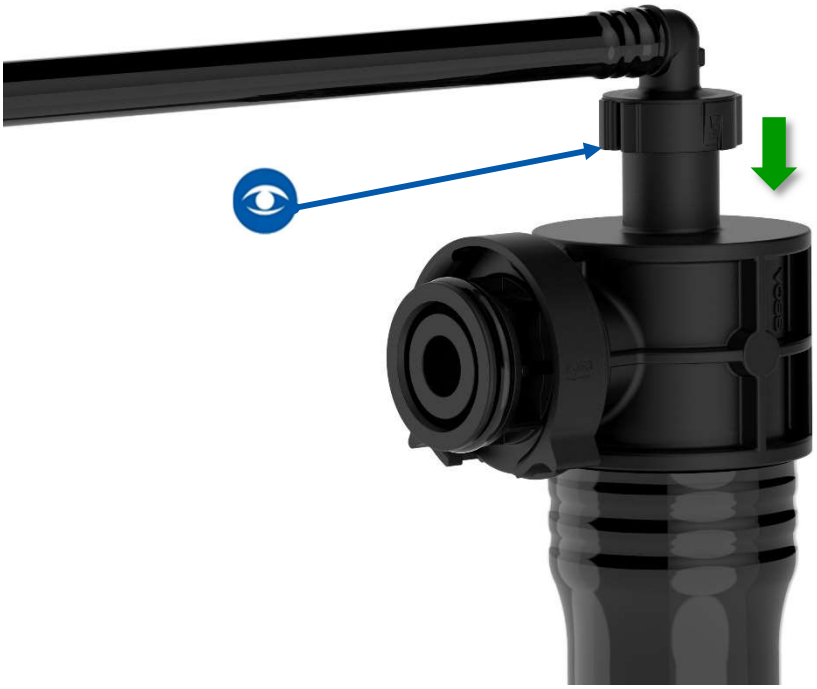

Fig. 18: Engaged filling and venting line on the connection contour of the venting valve

Step 4

The complete engagement shall be checked by pulling against the direction of insertion.

When the connector is completely engaged, the connector can only be pulled up minimally, because the retaining element is engaged behind the collar of the connection contour.

When assembly is complete, the flow stop valve in the filling and venting line opens automatically.

Fig. 19: Checking of the correct connection of the filling and venting line

Step 5

Fully connected filling and venting line (end position)

When assembly is complete, the flow stop valve in the filling or venting line opens automatically.

Fig. 20: Fully connected filling and venting line

2 . Removal of filling and venting lines

Before the connection is released, the line must be free of pressure and the area of the retaining element must be free of dirt.

For removing the filling and venting line with VOSS quick connect system 246^{NX} the “Assembly instructions VOSS quick connect system 246^{NX}” (Art. No 9177183102) in their most recent version must be observed.

Step 1

Press the corrugated segment of the retaining element of the quick connect system 246^{NX} to open it.

The retaining element is thereby spread apart.

Do not remove the retaining element.

The retaining element can be brought into the most favorable position for disassembly by rotating in advance.

Filling and venting lines

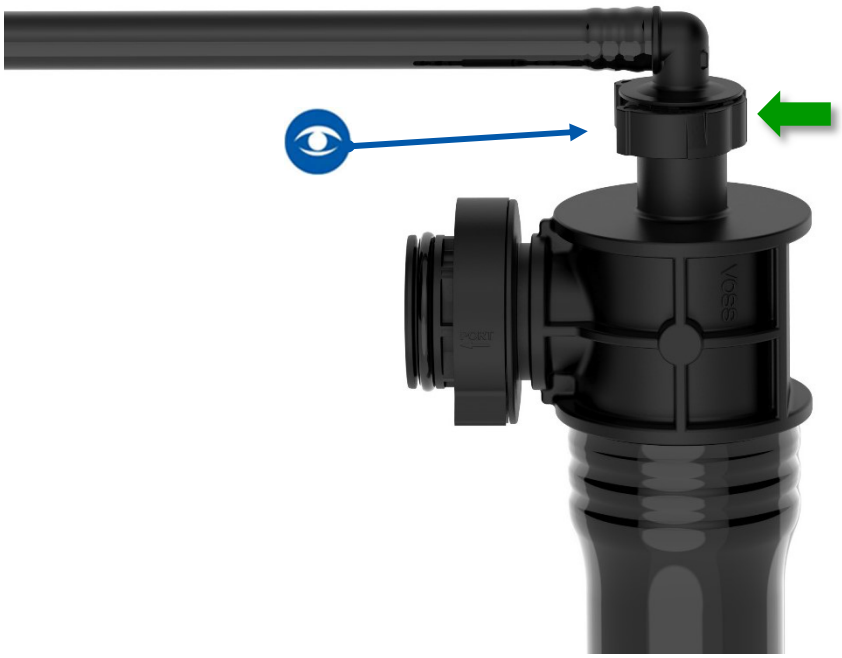

Fig. 21.1: Opening the retaining element of QC system 246^{NX}

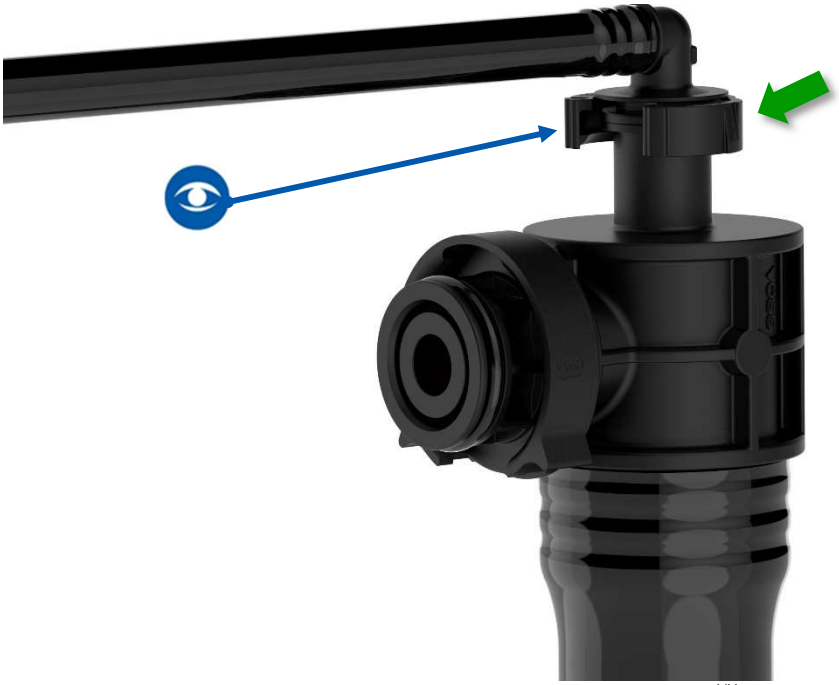

Fig. 21.2: Opening the retaining element of QC system 246^{NX}

Step 2

While maintaining the pressure on the retaining element, remove the filling and venting line from the connection contour of the venting valve opposite to the connection direction.

At this point, the flow stop valve closes automatically by separating the filling or venting line and the venting valve. Only a small amount of cooling medium (<15 ml) can escape.

Fig. 22: Disconnecting the filling or venting line

Step 3

Filling and venting line completely removed from the venting valve

Fig. 23: Filling and venting line completely removed from the venting valve

Customer service

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

Property rights

Technical changes errors excepted.

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