

**HANSA FLEX**

TECHNICAL INFORMATION  
**ASSEMBLY INSTRUCTIONS**  
**FOR 24° CONE CONNECTORS/  
COMPRESSION FITTINGS**

## Assembly instructions for 24° cone connectors/compression fittings

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**CAUTION**

Hydraulic lines are capable of causing serious personal injury and environmental damage, but this danger is very often underestimated in practice. Incorrect assembly or improper use of fittings, pipes, and accessories can compromise the product's functional reliability, causing it to fail and possibly pose a threat to people and equipment. In extreme cases, violently spraying oil and ruptured lines can even cause fatal injuries. We therefore strongly recommend that these assembly instructions be strictly followed!

**Machinery manufacturers and operators must also fulfil additional obligations.**

**They are responsible for:**

- ensuring that pipelines and fittings are used in compliance with the respective specifications
- ensuring scheduled monitoring and systematic inspections by authorised personnel with the appropriate qualification and knowledge of hose line equipment
- detecting and eliminating defects

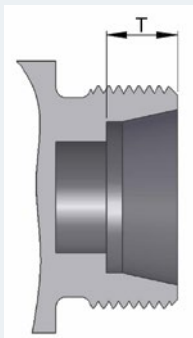
This active assumption of responsibility is documented in the legal framework. Tasks are specified further and set out in procedural regulations for those concerned based on the principles of industrial safety, the equipment and product safety act, the machine and pressure device directive and the ordinance on industrial safety and health.

This guide supplements the pertinent standards, guidelines and regulations. It also reflects the current state of the art. No claims are made regarding completeness.

**All tools and materials must be checked before each assembly procedure to ensure that they are in good condition.**



**For full assembly with cutting ring in a pre-assembly socket, always use pre-assembly sockets that have a corresponding depth dimension T!**



	T mm ± 0.05		T mm ± 0.05
VOM NW04 HL	7.00	VOM NW03 HS	7.00
VOM NW06 HL	7.00	VOM NW04 HS	7.00
VOM NW08 HL	7.00	VOM NW06 HS	7.50
VOM NW10 HL	7.00	VOM NW08 HS	7.50
VOM NW13 HL	7.00	VOM NW10 HS	8.00
VOM NW16 HL	7.50	VOM NW13 HS	8.50
VOM NW20 HL	7.50	VOM NW16 HS	10.50
VOM NW25 HL	7.50	VOM NW20 HS	12.00
VOM NW32 HL	10.50	VOM NW25 HS	13.50
VOM NW40 HL	11.00	VOM NW32 HS	16.00

LL series tolerances match those of the L series

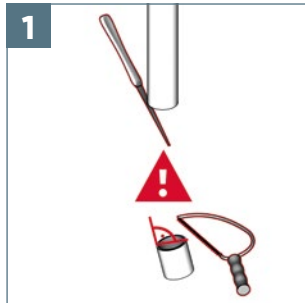
- Pipes must be cut to size at right angles  $\pm 0.5^\circ$  before all pipe fitting operations. Pipe cutters or angle grinders may not be used for this purpose.
- Lightly deburr the inside and outside of the pipe.
- After deburring, clean the pipes.
- Use reinforcing sleeves for thin-walled pipes.
- Markings (position of the nut) make it easier to determine the number of turns for assembly path-dependent tightening.
- If necessary, use appropriate spanner extensions.

# 1. Assembly with steel cutting ring

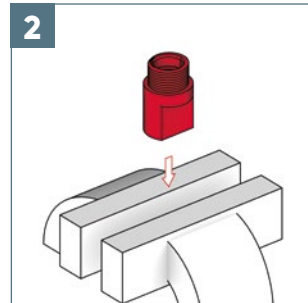
## 1.1 Full assembly with cutting ring in hardened pre-assembly socket

This instruction describes the full assembly of a cutting ring (SRD) on the pipe in a pre-assembly socket (VOMNW...). This is not pre-assembly!

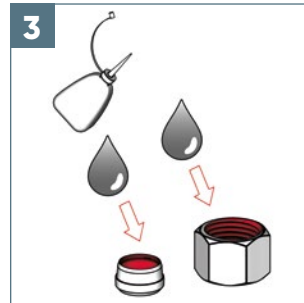
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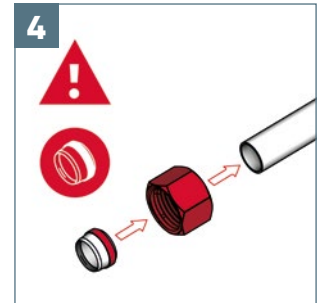
1 Cut the pipe to length at a right angle, deburr and clean.



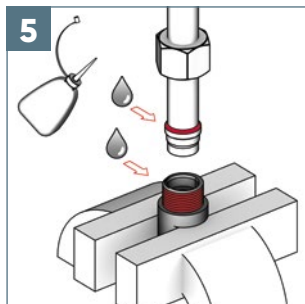
2 Clamp the pre-assembly socket.



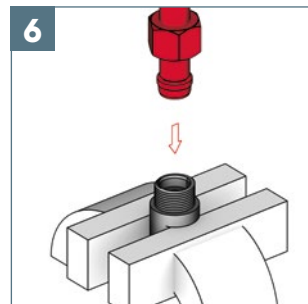
3 Lightly oil the union nut (thread) and cutting ring.



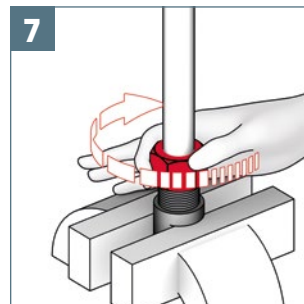
4 Slide the union nut and cutting ring onto the pipe.



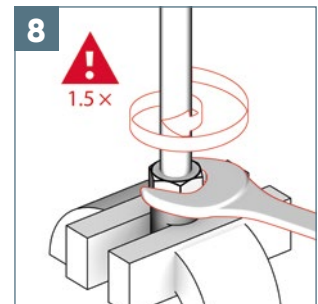
5 Lightly oil the pre-assembly socket and cutting ring edge.



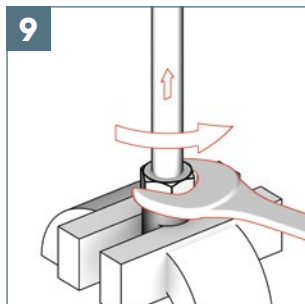
6 Push the pipe into the pre-assembly socket as far as it will go.



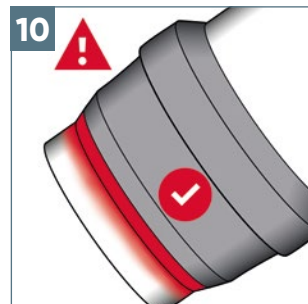
7 Tighten the union nut until there is a noticeable increase in the force required to turn it.



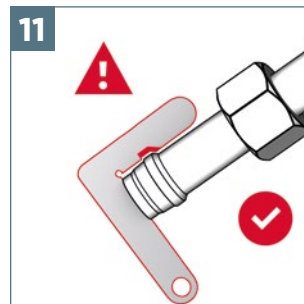
8 Tighten union nut 1.5 turns (full assembly).



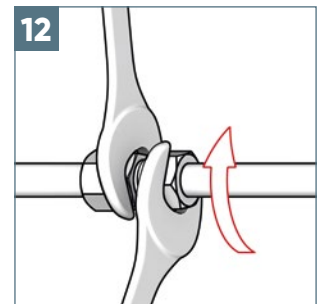
9 Release union nut, remove pipe.



10 Check the cutting ring for correct seating and shoulder protrusion (the front cutting edge must be evenly and fully covered).



11 Check cutting ring for correct seating using the cutting ring gauge (SRD LEHRE).

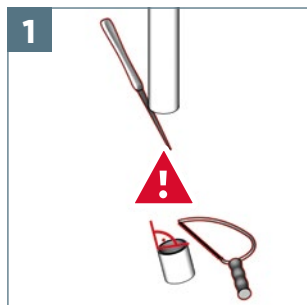


12 Recomplete assembly using ¼ turn after there is a noticeable increase in the force required to turn the union nut.

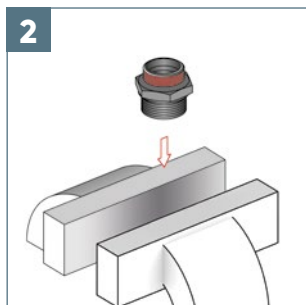
The cones of the pre-assembly socket are subject to normal wear and must be checked at regular intervals with taper gauges.

## 1.2 Full assembly with cutting ring in threaded connector

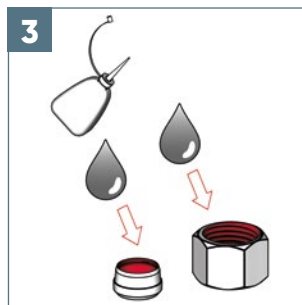
This instruction describes the full assembly of a cutting ring (SRD) on the pipe in a threaded connector. This is not pre-assembly!



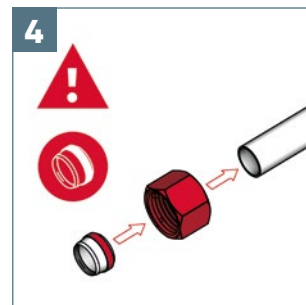
1 Cut the pipe to length at a right angle, deburr and clean.



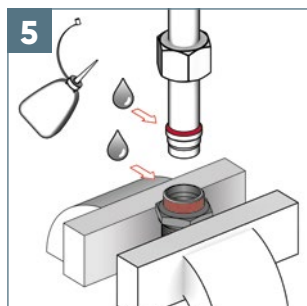
2 Clamp the threaded connector.



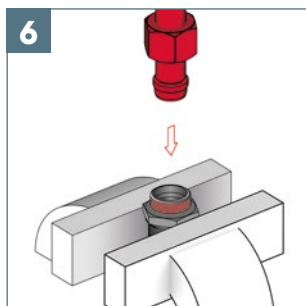
3 Lightly oil the union nut (thread) and cutting ring.



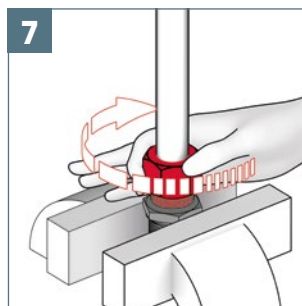
4 Slide the union nut and cutting ring onto the pipe.



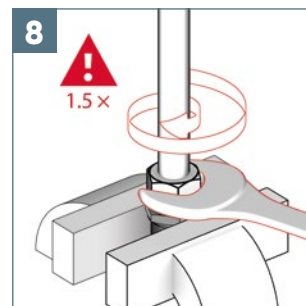
5 Lightly oil the threaded connector and cutting ring edge.



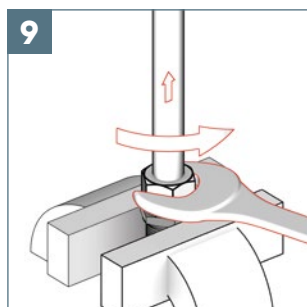
6 Push the pipe into the threaded connector as far as it will go.



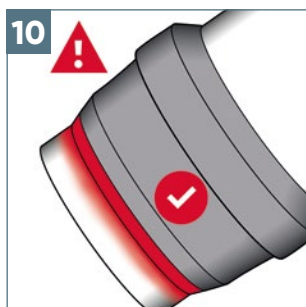
7 Tighten the union nut until there is a noticeable increase in the force required to turn it.



8 Tighten union nut 1.5 turns (full assembly).



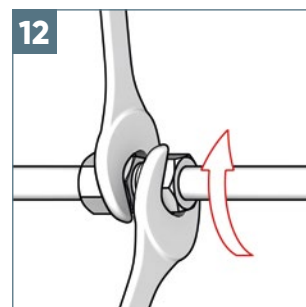
9 Release union nut, remove pipe.



10 Check the cutting ring for correct seating and shoulder protrusion (the front cutting edge must be evenly and fully covered).



11 Check cutting ring for correct seating using the cutting ring gauge (SRD LEHRE).



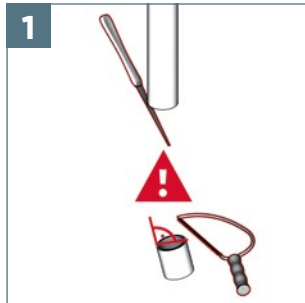
12 Recomplete assembly using ¼ turn after there is a noticeable increase in the force required to turn the union nut.

Each threaded connector must be used only once to assemble a cutting ring on the pipe; using the same threaded connector again may impair its function. For pipes with a diameter greater than 30 mm, we recommend assembling in a bench vice.

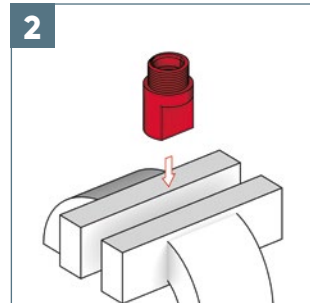
### 1.3 Pre-assembly in assembly socket or threaded connector

This instruction describes the pre-assembly of a cutting ring (SRD) on the pipe in a threaded connector or pre-assembly socket.

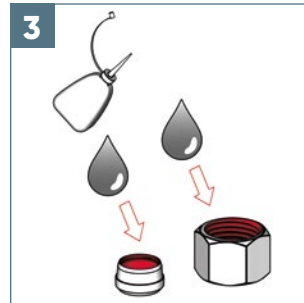
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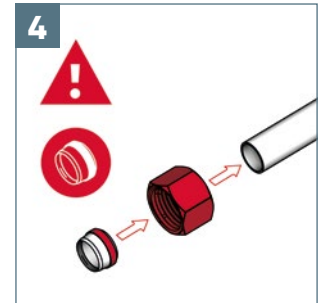
1 Cut the pipe to length at a right angle, deburr and clean.



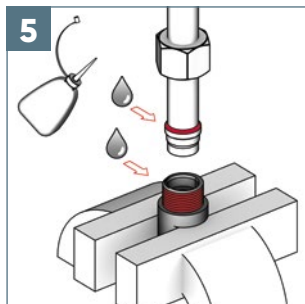
2 Clamp the pre-assembly socket.



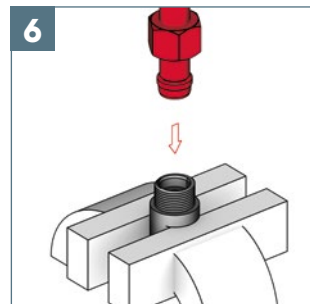
3 Lightly oil the union nut (thread) and cutting ring.



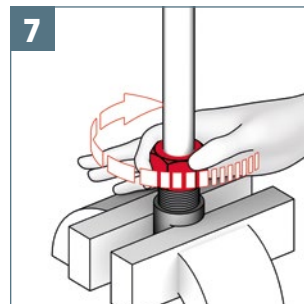
4 Slide the union nut and cutting ring onto the pipe.



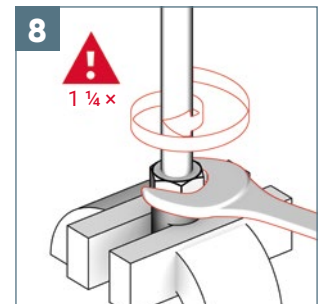
5 Lightly oil the pre-assembly socket and cutting ring edge.



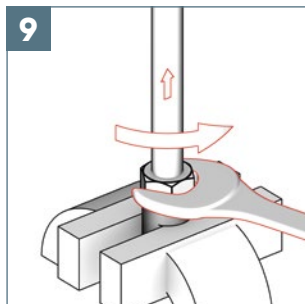
6 Push the pipe into the pre-assembly socket as far as it will go.



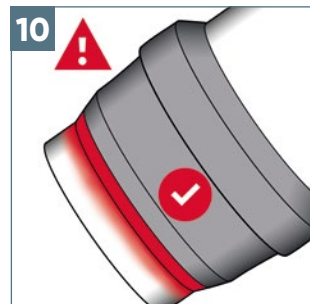
7 Tighten the union nut until there is a noticeable increase in the force required to turn it.



8 Tighten union nut 1 1/4 turn.



9 Release union nut, remove pipe.

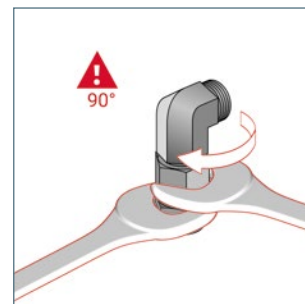


10 Check cutting ring for correct seating and shoulder protrusion (approximately 80% of the front cutting edge covered).

Disassemble the pipe and check that there is a clearly visible shoulder of cut material in front of the first (front) cutting edge. In this situation, the cutting ring may rotate, but must not move axially.

## 1.4. Finishing assembly of manufacturer-assembled fittings and pipelines in a threaded connector

- In these fittings and pipelines, the cutting ring has been pre-assembled by the manufacturer.
- Check that the cutting ring is positioned and seated correctly, and that the shoulder of the cut material is present.
- Oil the thread of the union nut, the cutting ring and the threaded connector thread.
- Tighten the union nut until there is a noticeable increase in the force\* required to turn it.
- Tighten union nut by 1/4 turn, bracing the threaded connector with a spanner.



Recomplete assembly using ¼ turn after there is a noticeable increase in the force required to turn the union nut.

**We recommend switching to HANSA-FLEX 24° sealing cone fittings.**

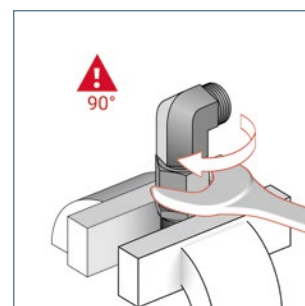
### \* Definition of "noticeable increase in force"

Tighten the union nut until the point at which it becomes noticeably more difficult to turn it. At this point, for example, the resistance due to minor damage on the thread caused by the union nut snagging slightly must be overcome.

## 2. 24° sealing cone fittings

### 2.1 Assembling 24° sealing cone fittings (AOL/AOS)

- Lightly oil the cone of the threaded connector and the thread of the union nut.
- Place the screw fitting component (sealing cone) evenly on the fitting.
- Tighten the union nut of the sealing cone fitting onto the fitting body until there is a noticeable increase in the force\* required to turn it.
- Turn the union nut of the sealing cone fitting a further 30° to 60° but no more than ¼ turn (90°) with the spanner (tighten / tighten fully).



Recomplete assembly using max. ¼ turn after there is a noticeable increase in the force required to turn the union nut.

### \* Definition of "noticeable increase in force"

Tighten the union nut until the point at which it becomes noticeably more difficult to turn it. At this point, for example, the resistance due to minor damage on the thread caused by the union nut snagging slightly must be overcome.

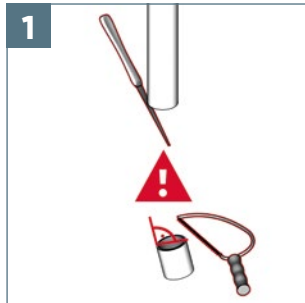
With sealing cone fittings with O-ring (AOL / AOS), the pre-tensioning of the O-ring must be bridged and the sealing cone must lie metallically flush against the cone of the HL/HS connector.

### 3. Assembly with stainless steel cutting ring (VA)

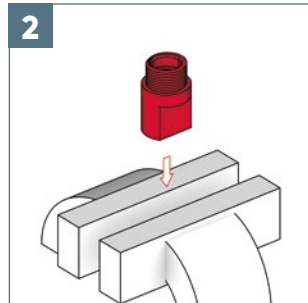
#### 3.1 Assembly in hardened pre-assembly socket (VOMNW...)

This instruction describes the pre-assembly of a cutting ring (SRD...VA) on the stainless steel pipe in the pre-assembly socket and the finishing assembly of the cutting ring in the threaded connector.

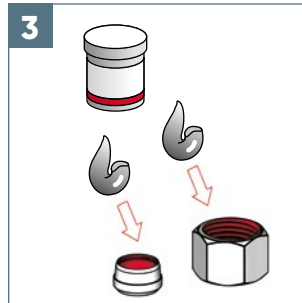
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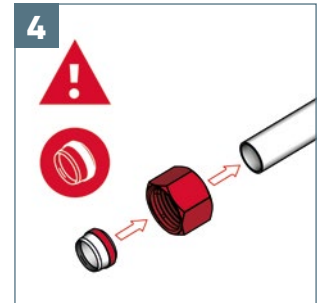
1 Cut the pipe to length at a right angle, deburr and clean.



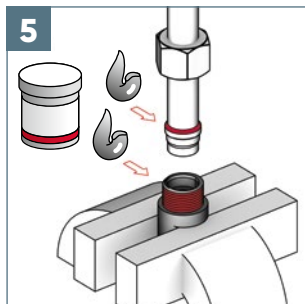
2 Clamp the pre-assembly socket.



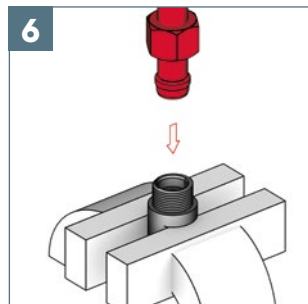
3 Lightly grease the union nut (thread) and cutting ring.



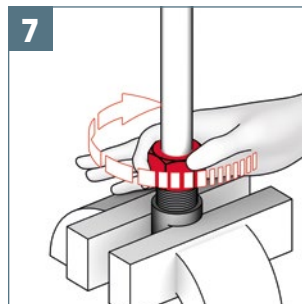
4 Slide the union nut and cutting ring onto the pipe.



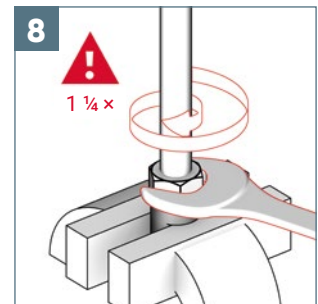
5 Lightly grease the pre-assembly socket and cutting ring edge.



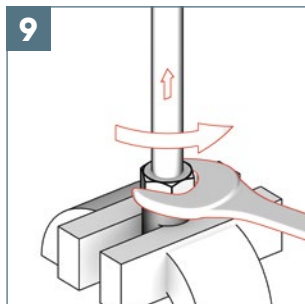
6 Push the pipe into the pre-assembly socket as far as it will go.



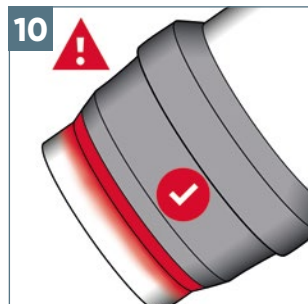
7 Tighten the union nut until there is a noticeable increase in the force required to turn it.



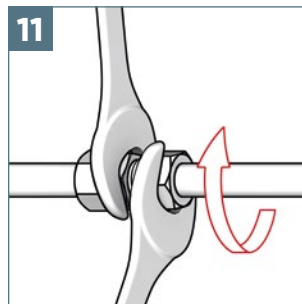
8 Tighten union nut 1 1/4 turn.



9 Release union nut, remove pipe.



10 Check cutting ring for correct seating and shoulder protrusion (approximately 80% of the front cutting edge covered).



11 Recomplete assembly using 1/2 turn after there is a noticeable increase in the force required to turn the union nut.

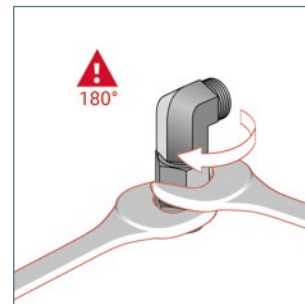
The cones of the pre-assembly socket are subject to normal wear and must be checked at regular intervals with taper gauges. Each threaded connector must be used only once for the finishing assembly on the pipe; using the same connector again may impair its function.

**It is not permitted to carry out pre-assembly in the threaded connector!**



### 3.2 Finishing assembly of manufacturer-assembled stainless steel fittings and pipelines in threaded connectors

- In these fittings and pipelines, the cutting ring has been pre-assembled by the manufacturer.
- Check that the cutting ring is positioned and seated correctly, and that the shoulder of cut material is present.
- Grease the thread of the union nut, the cutting ring and the thread of the threaded connector with HANSA-FLEX assembly paste.
- Tighten the union nut until there is a noticeable increase in the force\* required to turn it.
- Tighten union nut about 1/2 turn, bracing the threaded connector with a spanner.



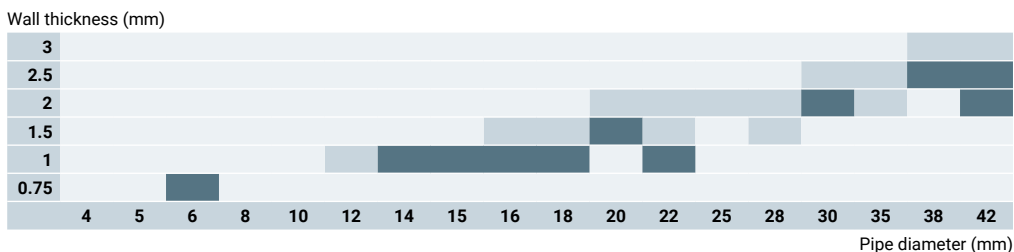
Recomplete assembly using 1/2 turn after there is a noticeable increase in the force required to turn the union nut.

**We recommend switching to HANSA-FLEX sealing cone fittings.**

## 4. Reinforcing sleeves

### 4.1. Correct selection of reinforcing sleeves for thin-walled pipes made from steel and stainless steel

HANSA-FLEX designation VSH..ID  
VSH..IDVA

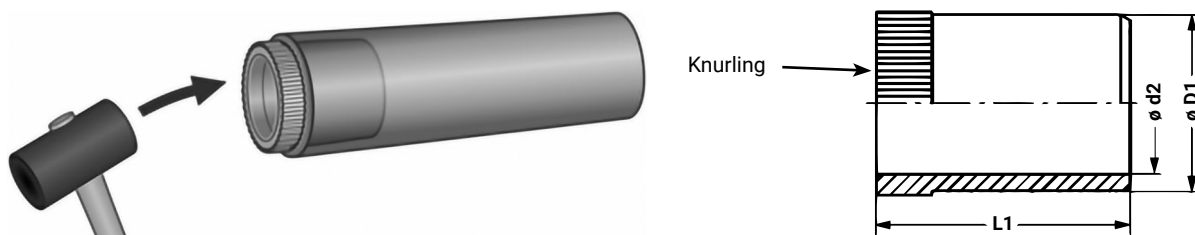


= Use reinforcing sleeves

= Use reinforcing sleeves in the case of vibration, oscillations and when the connection is to be disconnected frequently (harsh operating conditions)

**Reinforcing sleeves must be inserted into the pipe before cutting ring assembly in all cases.**

**The unknurled end of the reinforcing sleeve is first inserted and driven in with a soft-faced hammer. After driving in, the end of the reinforcing sleeve must be flush with the end of the pipe.**



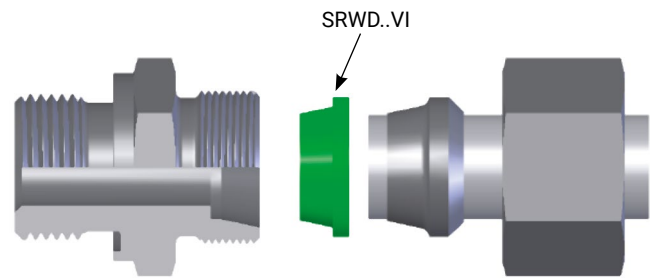
**It is not permitted to assemble reinforcing sleeves later!**

## 5. SRWD..VI soft seal

### 5.1 Assembling the SRWD..VI soft seal

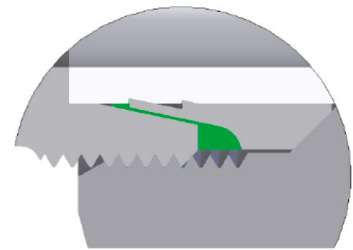
**The SRWD..VI soft seal cannot be assembled unless the cutting ring has already been assembled correctly.**

- Disassemble the pipe and check that there is a clearly visible shoulder of cut material in front of the first (front) cutting edge.
- Slide the SRWD..VI soft seal over the cutting ring.
- Tighten the union nut on the screw fitting until there is a noticeable increase in the force\* required to turn it.



- Full assembly with cutting ring:** Turn the union nut of the fitting or pipe about 30° to 60° further with the spanner (tighten / tighten fully).
- Pre-assembled cutting ring:** Turn the union nut of the threaded connection or pipe ¼ turn further with the spanner on pre-assembled cutting rings.

We recommend replacing the SRWD..VI soft seal whenever the connection is disassembled and re-assembled.



**Using a longer or shorter assembly path for the cutting rings and pipe fittings reduces the pressure load capacity and service life of the connections and fittings.**

**As a result, the cutting ring could slip off and leaks occur!**