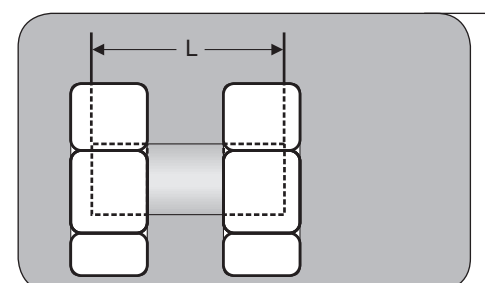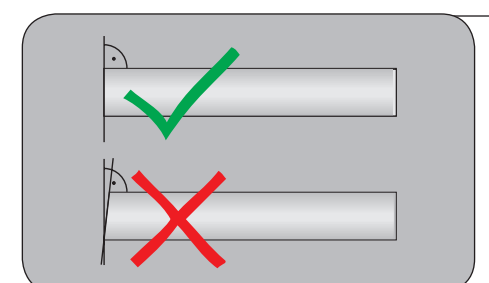# ASSEMBLY OF TUBE FITTINGS

CUTTING RING FITTING
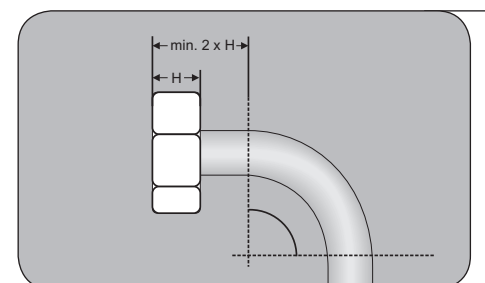
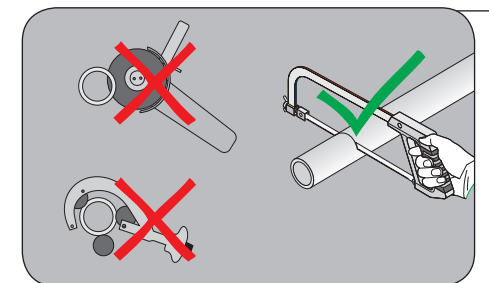### REQUIREMENTS

- Minimum tube length for short tube segments:
  - Note minimum lengths specified in table below.

- Minimum distance to bends:
  - Note minimum lengths specified in table below.

Sawing off tube:
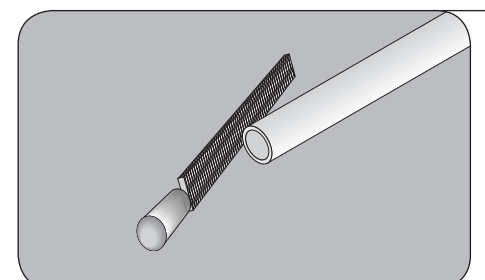- Cut in 90 ° angle.
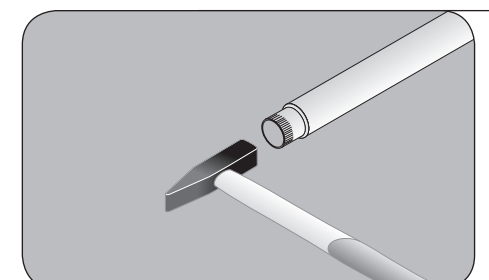- Angle tolerance of 0.5 ° is tolerable!

Cutting the tube:
- Use saw.
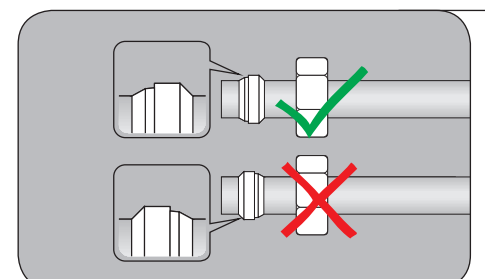- Do **not** use grinder or pipe cutter!
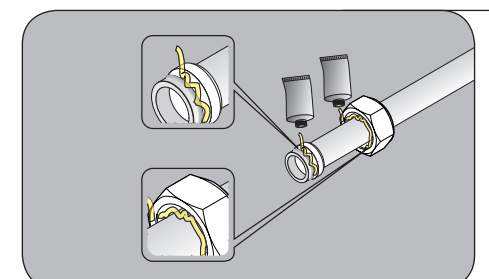
PREPARATION

- Deburr tube inside and outside.
  Note: do **not** slant the tube wall! Slightly rounded corner up to 0.2 mm x 45 ° is tolerable.

- Tubes with thin walls and soft tubes require reinforcement sleeve. Further information is provided in table "Assembly with reinforcement Sleeves".
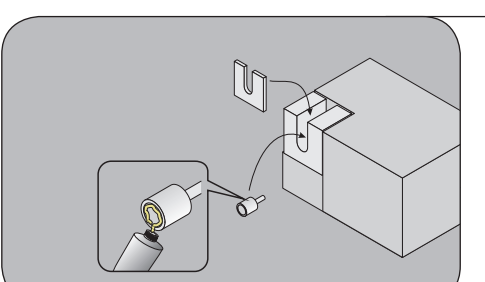
- Slide nut and cutting ring onto tube

- Apply lubricant on threading of swivel nut and cutting ring.

SUPPORT SLEEVES

For steel tube in accordance with DIN 2391 made of the material St 37-4 and tubes made austenitic steel e.g. 1.4571

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 not required
⊙ 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 can have negative effects on the function of the cutting ring connection. The deformation may not exceed 0.3 mm with tubes up to an outer diameter of 16 mm and 0.4 mm for tubes starting with an outer diameter of 18 mm.
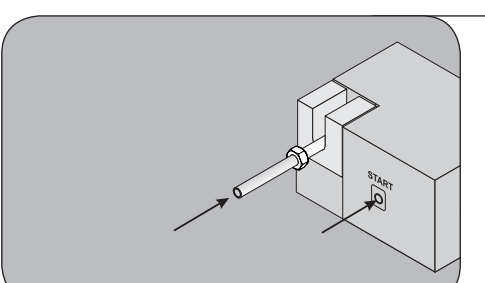
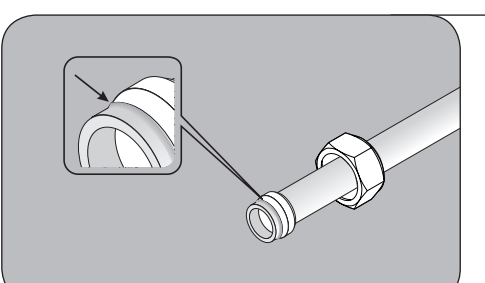### INSTALLATION WITH PREASSEMBLY MACHINE

- Insert assembly cone and plate into the preparation machine.
- Apply lubrication to the preassembly cone before every preassembly.
  Note: periodically (after approx. every 50 usages) check assembly cone for wear and tear!
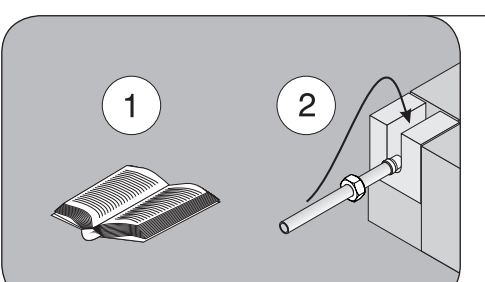
Notice: Read documentation of the preassembly machine before usage!
- Adjust pressure according to the tube diameter.
- Insert prepared tube into the machine.

- Firmly insert pipe
- Press "START" button.
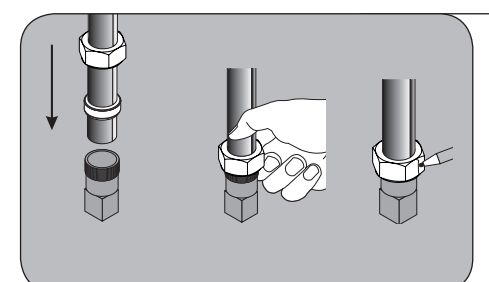- Firmly insert pipe until machine is finished with the preassembly.

- After preassembly with preassembly machine: check tube end for correct ridge on the tube.

Note: The cutting ring can be turned but it cannot slide up and down the tube when it is correctly installed.
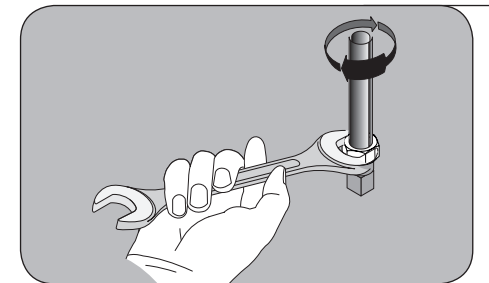
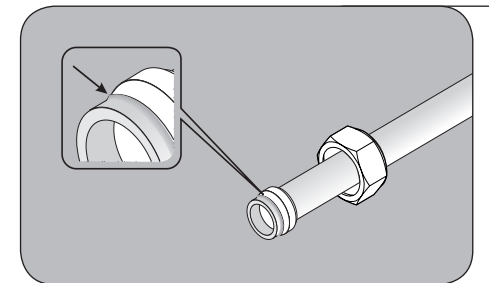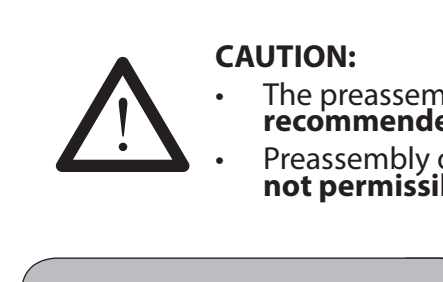### INSTALLATION IN TEMPERED ASSEMBLY CONE
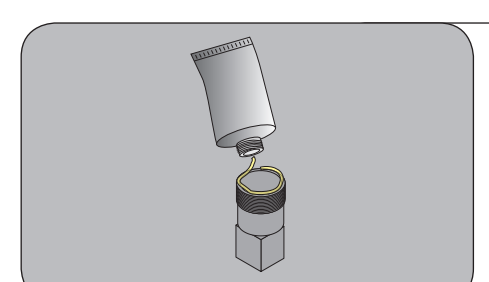
- Fasten assembly cone in vice
- Apply lubrication on cone and cone threading before every preassembly.
  Note: periodically (after approx. every 50 usages) check assembly cone for wear and tear!

- Insert tube with cutting ring and swivel nut into the preassembly cone. **Note:** push tube into the fitting all the way, otherwise the tube connection might leak!
- Tighten swivel nut by hand.
- For control of the according rotations of the nut: mark nut.

- Tighten swivel nut with spanner approx. 1 1/4 rotations. **Note:** The tube itself may not be turned!
- Loosen swivel nut.

- After preassembly with preassembly cone: check tube end for correct ridge on the tube.

Note: The cutting ring can be turned but it cannot slide up and down the tube when it is correctly installed!

DIRECT INSTALLATION IN FITTING

⚠️ **CAUTION:**
- The preassembly of **steel tubes** directly in the fitting is **only recommended as an exception.**
- Preassembly of **stainless steel** tubes directly in the fitting **is not permissible!**
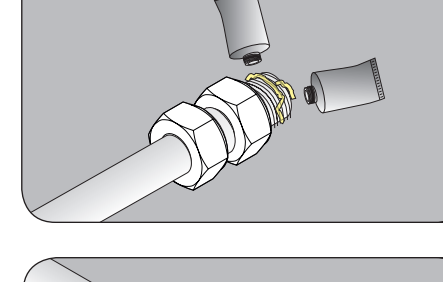
- Apply lubrication on the fitting (threading and cone).
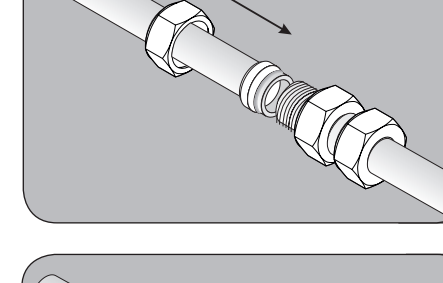
- Insert tube with cutting ring and swivel nut into the fitting. **Note:** push tube into the fitting all the way, otherwise the tube connection might leak!
- Tighten swivel nut by hand.
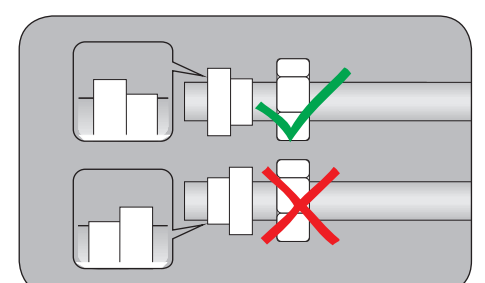- For control of the according rotations of the nut: mark nut.
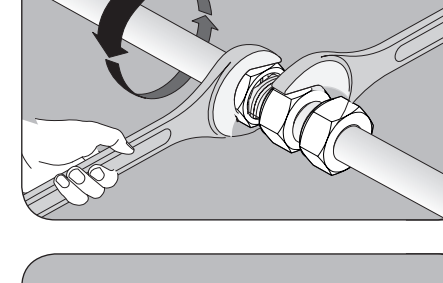
- Tighten swivel nut with spanner approx. 1 1/2 rotations. Hold fitting with spanner. **Note:** The tube itself may not be turned!
- Loosen swivel nut.
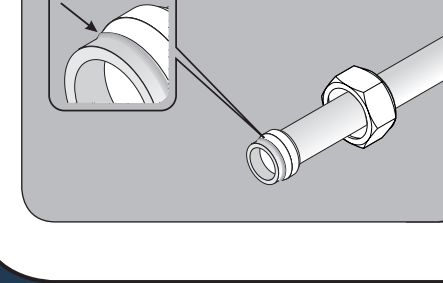
- After the preassembly in the tube fitting: Check that the cutting ring has cut into the tube.
  Note: The cutting ring can be turned but it cannot slide up and down the tube when it is correctly installed!
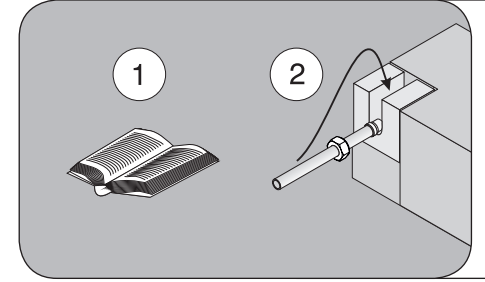
INSTALLATION IN THE TUBE SYSTEM

- Always apply lubrication on nut and cutting ring with stainless steel fittings and steel fittings starting with 20 mm tube diameter.
- Insert preassembled tube with cutting ring and swivel nut into the fitting.

REPEATED INSTALLATION

- The swivel nut is tightened without increased force when the installation is repeated.

REQUIRED MINIMUM LENGTHS FOR SHORT TUBES OR TUBES WITH BENDS:

| Series	LL				L										S								
Outer tube diameter [mm]	4	5	6	8	6	8	10	12	15	18	22	28	35	42	6	8	10	12	14	16	20	25	30	38
H min. [mm]	24	25	25	26	31	31	33	33	36	38	42	42	48	48	35	35	37	37	43	43	50	54	58	65
L min. [mm]	30	32	32	33	39	39	42	42	15	48	53	53	60	60	44	44	47	47	54	54	63	63	73	82

FLARED TUBE FITTING

REQUIREMENTS

Preparation of tube:
- Cut in 90 ° angle. Angle tolerance of 0.5 ° is tolerable!
- Slide pressure ring and swivel nut on tube as illustrated.
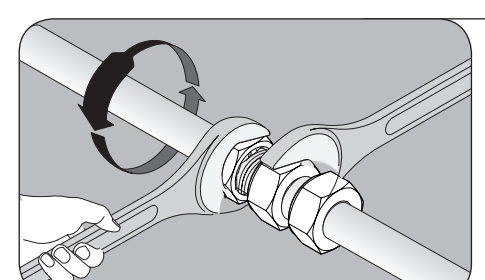
PREPARATION

Caution: Read documentation of the flaring machine before usage!
- Flare tube with flaring machine.
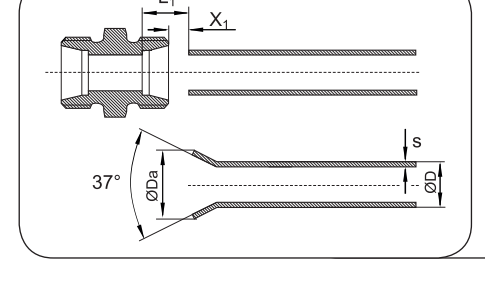
- Check tube for suitable flare: the diameter of the flare must comply with the values specified in the table below.

INSTALLATION IN THE TUBE SYSTEM

- Apply threads of the fitting with lubrication
- Insert flare adapter into tube fitting.
- Fasten swivel nut with spanner until the intermediate ring is firmly attached in the shaft. Tighten nut approx. 1/4 rotation after sharp increase of required force.

REPEATED INSTALLATION
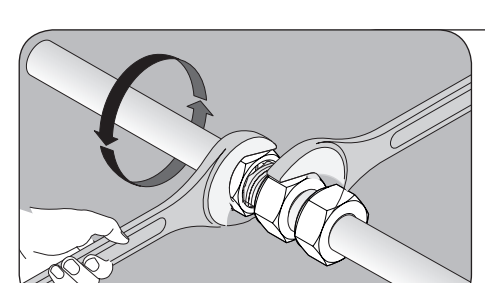
- The swivel nut is tightened without increased force when the installation is repeated.

TUBE LENGTH

d [mm]	6		8		10		12			15			16			18			20		
l [mm]	1	1.5	1	1.5	1	1.5	1	1.5	2	1	1.5	2	1.5	2	2.5	1.5	2	2.5	1.5	2	3
x1 [mm]	1	2	1	2	2.5	1	2	3	1	2	3	1	2	3	1	1.5	2.5	1	1.5	1	2
L1 [mm]	8	9	8	9	9.5	8	9	10	8	9	10	8.5	9.5	10	11	7.5	8.5	9	11.5	12.5	13.5
Da min [mm]	9.1		11.3		13.1		15.3			19.1			20.6			23.2			25.6		
Da max [mm]	10		12		14		16			20			22			24			26.8		

d [mm]	22			25			28			30			35			38			42		
l [mm]	1.5	2	2.5	3	2	2.5	3	4	2	2.5	3	4	2.5	3	4	5	3	4	2.5	3	4
x1 [mm]	1	2	3	3.5	1	1.5	2.5	3	0.5	0.5	1	3	4.5	1.5	2	3	4.5	0	0.5	2	4
L1 [mm]	8.5	9.5	10.5	11	13	13.5	14.5	16	9	10	10.5	13	14	14.5	16.5	14	14.5	15.5	13.5	15	16
Da min [mm]	26.5			31.1			32.7			37			41.8			46			46.8		
Da max [mm]	27.5			33			33.3			38.7			42.7			47.2			49.8		

WELD FITTING

REQUIREMENTS

- Use tubes made of weldable steel for steel fittings.
- Use tubes made of weldable stainless steel for stainless steel fittings.

PREPARATION

Cutting the tube:
- Use saw.
- Cut in 90 ° angle.
- Angle tolerance of 0.5 ° is tolerable!

- Slant tube end 30 ° for single V-joint. The slant of the tube must resemble slant of the welding nipple.
- The O-ring must be removed when you are welding!

INSTALLATION IN THE TUBE SYSTEM
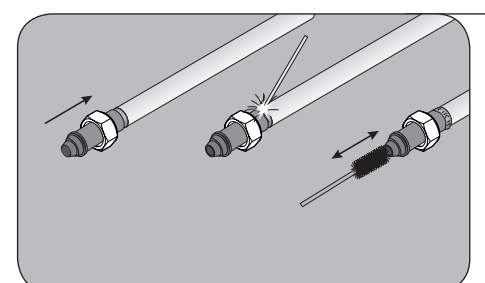
- Slide nut over welding nipple.
- Weld nipple to tube according to applicable regulations.
- **Notice:** remove welding residue inside the tube!
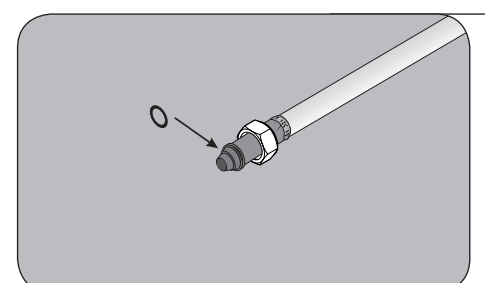
- Apply O-ring, O-ring can be lubricated if necessary.
- For stainless steel fittings: apply lubrication on threading of swivel nut and fitting.
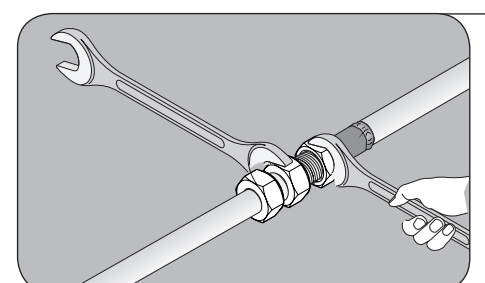
- Tighten swivel nut by hand.
- Tighten swivel nut with spanner approx. 1/3 to 1/4 rotations.

The welding nipple fitting installation is completed.

FITTINGS WITH SEALING CONE

INSTALLATION IN THE TUBE SYSTEM
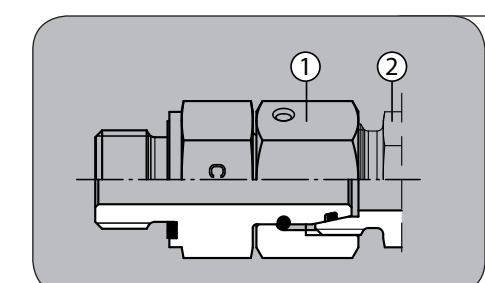
- Apply lubrication on the threading and cone of the fitting.
- Tighten swivel nut (1) by hand until you can feel that it is firmly pressed onto the fitting.
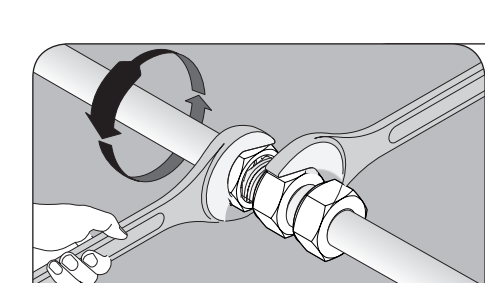
- Hold fitting (2) with spanner.
- Fasten swivel nut (1) 1/4 to 1/3 rotations after sharp increase of required force.
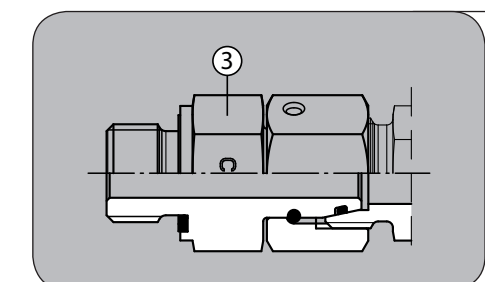
- Install tube side (3) according to respective version of the tube fitting.

PREASSEMBLED STANDPIPE FITTINGS

INSTALLATION IN THE TUBE SYSTEM

- Apply lubrication on the threading and cone of the fitting.
- Tighten swivel nut (1) by hand until you can feel that it is firmly pressed onto the fitting.

- Hold fitting with spanner.
- Fasten swivel nut (1) 1/4 to 1/3 rotations after sharp increase of required force.

SAFETY NOTICE

Tube fittings from CONEXA are only suitable for fluid systems.
All safety notices and applicable regulations must be observed.
The operational safety of the CONEXA tube fittings includes that the respective installation guidelines and operation conditions are kept to. Not keeping to these restrictions can result in malfunctions and failures of the entire system. Incorrect usage such as improper installation revokes any warranty claims.

Vibrations in the system must be compensated with suitable tube clamps and parts of the system with different vibrations frequencies must be separated from each other.

Tubes must be installed without any residual tension. The tube fittings must be installed easily, while it must be possible to easily turn the nut along the entire length of the threads.
CAUTION!
Tightening the nuts and venting the system must be done when there is no pressure in the system. Danger of death!

⚠️ **Only use fittings for welding that are made of weldable material.**
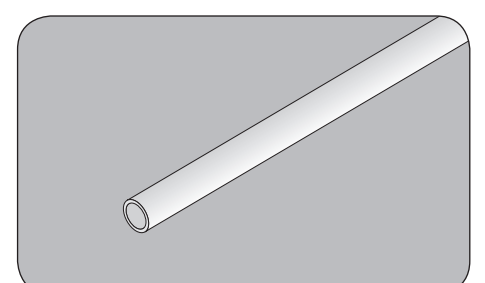**The design and installation of a tube system must be done by qualified personnel!**
Any combination of elements (cutting rings, fittings Tubes etc.) made of different materials (steel, stainless steel etc.) is not permitted!
The nominal pressure of a combination of fittings is defined by the fitting with the lowest pressure rating.

Stud connectors must be installed with the correct torque. The ports for must be made in accordance with the respective standards.
Pay attention to the tube weight and according media and the thermal expansion.
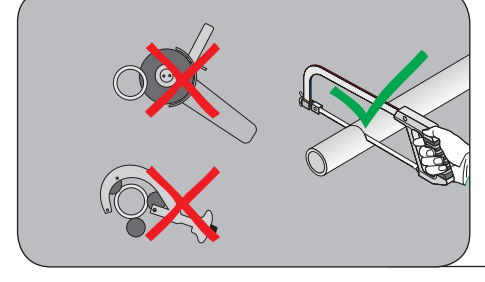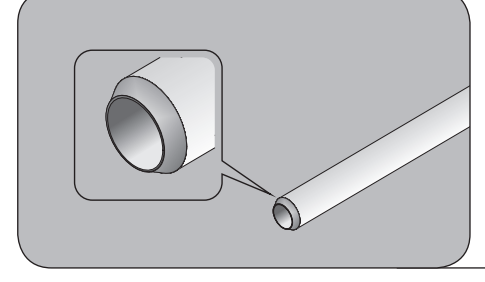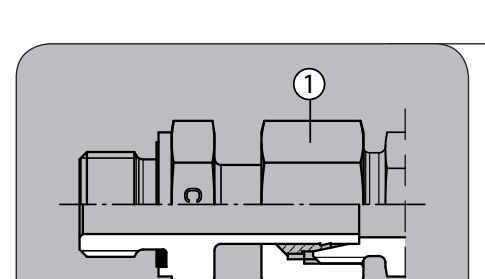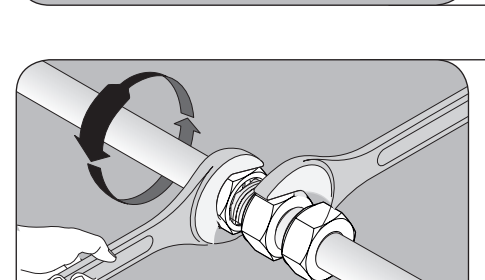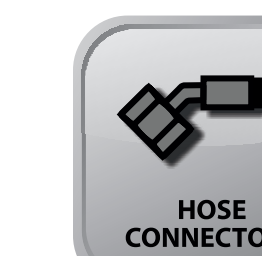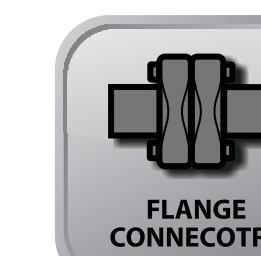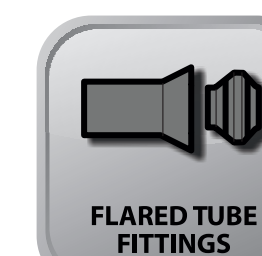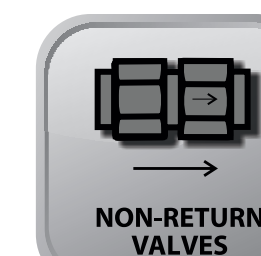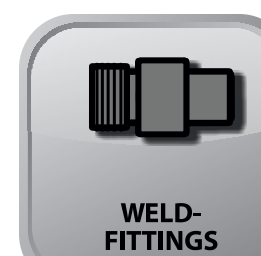Please contact us when you have any questions.

INSTALLATION OF TUBES

FIXING IN PLACE

When fixing the tubes in place:
- Use suitable tube clamps.
- Attach tube clamps to suitable underground.
- Install tube clamp near the fitting (1).
- See table (2) for distance between tube clamps.
- Install tube clamps before and after bends (3).
- Note distance from the tube clamp to the bend.
- Do not directly connect tubes.

Outer tube diameter [mm]	Distance of tube clamps [m]
6 - 12	1.00
14 - 22	1.20
25 - 30	1.50
35 - 38	2.00
38 - 42	2.70

REQUIREMENTS FOR THE CORRECT INSTALLATION OF TUBES

- Pay attention to the thermal expansion of the tubes.
- Relieve tension with tube curves
- Determine the tube length very carefully.
- Make sure that the components can be easily accessed later on.
- Design the tube system in an organized manner.
- Install the tubes without tension.

TUBE FITTINGS FROM CONEXA

HIGH-END COMPONENTS
+ CORRECT INSTALLATION

= RELIABLE CONNECTION

CONEXA Präzisionsarmaturen GmbH
Vorn Berge 1
D 34346 Hann. Münden

Phone: +49 55 41 98 77-0
Fax: +49 55 41 98 77 77
service@conexa.de

www.CONEXA.de

ORDERED BY 5 PM, SHIPPING ON THE SAME DAY.

DIN-FITTINGS | WELD-FITTINGS | NON-RETURN VALVES | FLARED TUBE FITTINGS | STAINLES STEEL TUBES | FLANGE CONNECOTRS | CUSTOM TAILORED PARTS | HOSE CONNECTORS

AVAILABLE IN STEEL AND STAINLESS STEEL