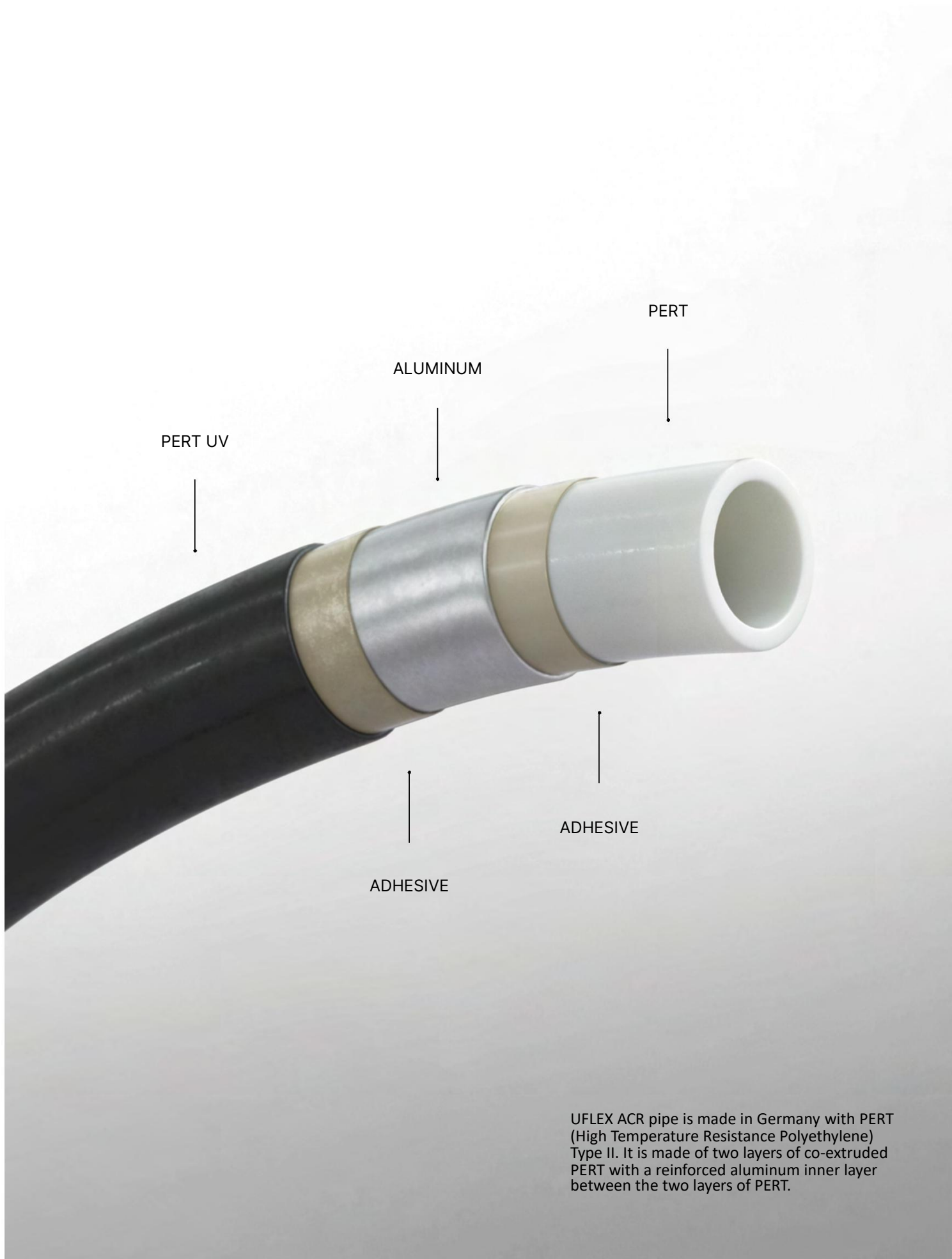


The new
generation
refrigerant
gas pipe

UFLEX





UFLEX ACR pipe is made in Germany with PERT (High Temperature Resistance Polyethylene) Type II. It is made of two layers of co-extruded PERT with a reinforced aluminum inner layer between the two layers of PERT.

UFLEX ACR SYSTEM

Performance. Reliability. Durability.

The UFLEX ACR System with up to 100-meter coils and secure Compression fittings, is designed to prevent leakage and optimize installation. The thermal conductivity of the pipes is just one thousandth that of a copper pipe, making it a more efficient system with less insulation. Its use represents a great saving in installation time and costs.

UFLEX ACR pipe is developed and manufactured in Germany to continuously withstand the temperature and pressure requirements in air conditioning systems.

We offer a 5-year guarantee against material and manufacturing faults in applications up to 45 bar and 95°C.

UFLEX ACR is certified to ASTM F3346-19 and ICC-ES LC 1039-2015 standards for PERT Type II / AL / PERT Type II pipe and its connections for use with refrigerants R22, R134a, R32, R404a, R407c, R410a and R507. The UFLEX ACR system from Cube Energy GmbH has been tested in the system for the first time and reflects the latest generation of refrigerant pipes.

Together with IMA Dresden, the continuous quality control of the UFLEX ACR system is externally audited. Thus, a system-related conformity has been worked out, which provides for a mandatory annual monitoring of all system-relevant components. The pipes are manufactured in Germany.

UFLEX ACR is very reliable as it does not need to be brazed or flanged. This safely avoids possible leaks. It has a service life of 30 years thanks to its high resistance to UV light and corrosion.



Faster, safer and easier to install.

Connections in less than two minutes.



01. Cut the pipe at 90° angle using the UFLEX pipe cutter.



02. Chamfer and calibrate the pipe ends with the original UFLEX Chamfer (2 to 3 turns).



03. Push the union nut and the clamping ring the end of the tube.

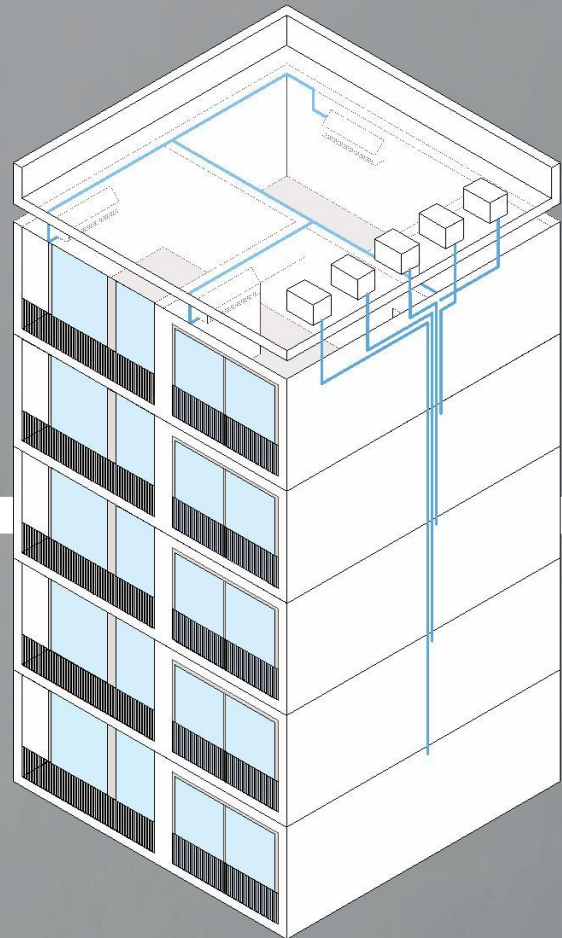


04. Push the pipe end onto the socket of the connection adapter. Screw on the union nut and tighten it to the recommended torque.



A very reliable system.

- Clamp connections instead of brazing or flanging, which avoids possible leaks.
- No kinking thanks to the highest flexibility.
- Minimal risk of stealing as it is not made of copper.
- German premium quality with 5 years guarantee.



Longer line-set without complications.

Up to 100-meter lengths of coils and compression fittings allow for the installation of refrigeration pipe networks without additional pipe couplings. Only minimal pipe offcuts.

UFLEX ACR Pipe

The UFLEX ACR pipe is characterized by high flexibility and low weight, which enables quick and clean installations with less effort. Its minimal thermal expansion, the absolute oxygen barrier and the corrosion resistance as well as the very high UV resistance should also be emphasized. In addition, the pipe has very low heat loss and vibration transmission, which minimizes noise and stress fractures. This makes UFLEX ACR one of the most efficient and reliable systems.

It is a very sustainable system, as it saves valuable resources in the pipe material as well as the insulation material.

The UFLEX ACR pipe system with the secure compression fittings is designed to significantly reduce the installation effort and improve the quality of the cooling networks.



100 m Coils
Diameters: 1/4", 3/8", 1/2", 5/8", 3/4"

50m Coils
Diameters: 7/8"



Pre-insulated Pipes

50 m Coils

Diameters: 1/4", 3/8", 1/2", 5/8", 3/4"

25 m Coils

Diameters: 7/8"

Benefits and advantages

- Less rework and waste due to cutouts, deformations, and kinks.
- Longer sections without couplings or soldered joints, which prevents possible leaks.
- No corrosion due to aggressive or salty air.
- Less risk of theft since it does not contain copper.
- More efficient and ecological system.
- Thermal conductivity of 0.42 W/(m*K) against 379.14 W/(m*K) of copper making it a more efficient system.

Dimensions

The dimensions of UFLEX ACR pipe for the different sizes available are specified in the following table:

MEASUREMENTS UFLEX ACR PIPE

Nominal Size	DIM / ASTM B-280	Ø Exterior Average	Ø Interior Average	Wall Thickness	Burst pressure at 25°C	
Outside Diameter x Wallthickness	Nominal Size Outside Diameter	MIN.	MIN.	MIN.	BAR	PSI
MM	INCHES	MM	MM	MM		
12 x 2,50	1/4"	12	7.0	2.5	125	1813
14 x 2,50	3/8"	14	8.5	2.5	115	1668
16 x 2,50	1/2"	16	11.0	2.5	105	1523
18 x 2,75	5/8"	18	12.3	2.75	98	1421
20 x 2,75	3/4"	20	14.3	2.75	92	1334
25 x 3,25	7/8"	25	18.3	3.25	85	1233

Technical specifications

Standards

ASTM F3346-19 and
ICC-ES LC 1039-2015

Operating pressure

40 bar (580 PSI)

Maximum system pressure

44 bar (650 PSI)

Operating temperature

-40° C to 95° C

Oxygen Diffusion

0.000

Bending Radius

5xD (D=outer diameter)
with pipe bender

Coefficient of thermal expansion

0.025 mm/(m*K)

Thermal conductivity

0.42 W/(m*K)

Corrosion resistance

unobjectionable

Installation

In walls, floors and ceilings

Lifetime /Guarantee

30 years / 5 years



Fittings

Manufactured using innovative technologies and the highest German quality standards. Our connectors and joints are designed for easy and safe installation.



Compression Fitting as adapter between UFLEX ACR pipe and device fitting.



Pipe coupling



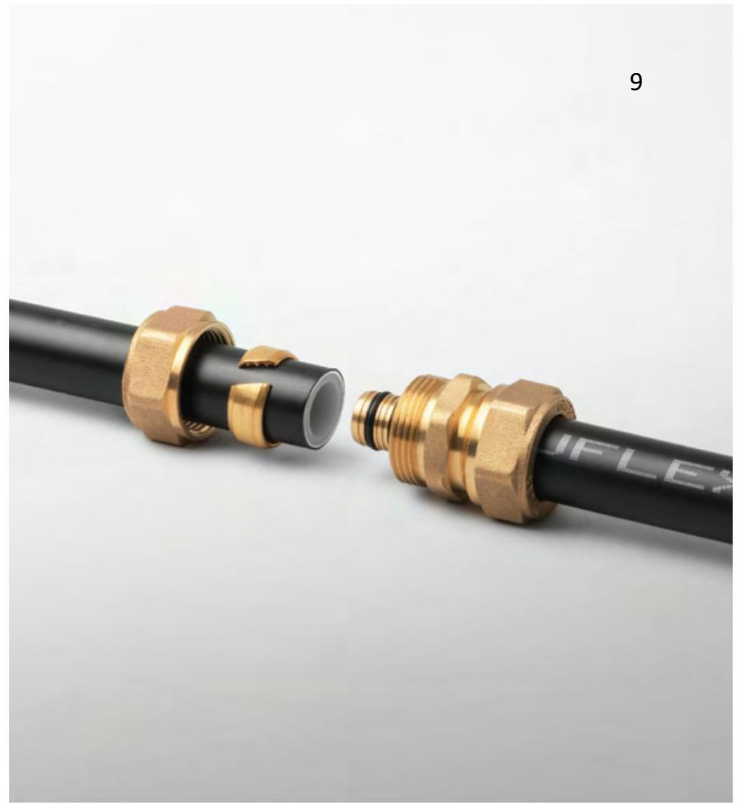
Schrader maintenance valve with male thread



Connector for soldering CU with male thread



Adapter between UFLEX ACR pipe and unit valve with flared socket.



UFLEX ACR pipe coupling

Torque

RECOMMENDED TORQUE FOR FLARE CONNECTOR

UFLEX ACR Pipe Size	1/4"	3/8"	1/2"	5/8"	3/4"	7/8"
45° Flare Thread Size	7/16" 20UNF	5/8" 18UNF	3/4" 16UNF	7/8" 14UNF	1 1/16" 14UNF	1 1/4" 12UNF
Torque Min Nm	12.2	27	40.5	60.8	107	147
Torque Max Nm	13.5	33.7	47.7	74.2	119	154

RECOMMENDED TORQUE FOR THE COMPRESSION NUT THAT FASTENS THE PIPE

UFLEX Tube Size	1/4" 12×2.5	3/8" 14×2.5	1/2" 16×2.5	5/8" 18×2.75	3/4" 20×2.75	7/8" 25×3.25
Torque Nm	11	24	28	36	42	54

Tools

The UFLEX ACR system tools are specially adapted to the UFLEX PIPE SYSTEM to ensure correct and safe installation.



Pipe cutter

Cutting pipe up to 1/4"(12x2,5) - 7/8" (25x3,25)



Pipe reamers

Diameters: 1/4"(12x2,5) - 7/8" (25x3,25)



Digital Torque Wrench

Torque 135 Nm



Pipe outside bending spring



Bending radius

The pipe should not be bent to a minimum bending radius of 5 times the pipe diameter ($r \geq 5 \times D_a$)

By using the UFLEX pipe bending springs, safe and fast bending is possible. If deformation of the pipe does occur, the affected section must be removed and can be connected using a UFLEX ACR pipe coupling.

BENDING RADIUS ($r \geq 5 \times D_a$)

Nominal Size	DIM / ASTM B-280	Ø Exterieur (Da)	Bending Radius (r)
MM	INCHES	MM	MM
12 × 2,50	1/4"	12	60
14 × 2,50	3/8"	14	70
16 × 2,50	1/2"	16	80
18 × 2,75	5/8"	18	90
20 × 2,75	3/4"	20	100
25 × 3,25	7/8"	25	125

UFLEX ACR

The most advanced system on the market in terms of:

- performance
- reliability
- and installation speed





Recommendations

Given the wide varieties of applications and operating conditions, the user is ultimately responsible for:

- The final selection of the product.
- The requirements of the user and manufacturer of the products is met, ensuring that there is no risk to health or safety.
- To comply with the recommended UFLEX installation instructions and the corresponding standards. To ensure that the guaranty conditions are complied with.
- Respect the maximum application parameters of the UFLEX ACR system.

Compatibility with types of refrigerants

R22, R134a, R32, R404a, R407c, R410a and R507 and similar.

The UFLEX ACR system may only be used for its intended purpose under the permissible operating parameters of temperature and pressure.

Dimensioning and use

Diameter selection

UFLEX ACR pipes must be selected in accordance with ASTM B-280 in dimensions from 1/4" to 7/8" outside diameter. 1/4" to 7/8".

Pressure

UFLEX ACR is designed for operating temperatures and pressure ratings for a wide range of air conditioning systems.

Pressures and temperatures can vary significantly between different manufacturers and system solutions.

It is the installer's responsibility to decide, whether the UFLEX ACR pipe is suitable for the intended application based on the system temperature and pressure parameters as per the UFLEX ACR pipe parameters. The use of appropriate safety pressure switch is recommended to prevent extreme

operating conditions. Improper installation can create temperature and pressure parameters that can lead to damage to the equipment and piping.

Temperature

Make sure that the temperatures (static and variable) of the refrigerant and the environment do not exceed the maximum specifications of the UFLEX ACR system.

Be particularly careful when installing the pipe in the vicinity of potential heat sources. Continuous use of the UFLEX ACR pipes at the limit of the maximum temperature load can reduce the service life.

Instructions

Tools

For correct installation, only original UFLEX ACR tools should be used. Failure to use the correct tools can lead to system failure and damage.

Bends

Even though UFLEX ACR pipe is much more flexible than conventional pipe, it should not be bent at less than 5 times the pipe diameter as this may cause damage. Use the UFLEX ACR pipe bending springs according to the recommended bending radii (see Bending Radius, p.11). If excessive deformation has occurred, the pipe section must be cut off and connected with a UFLEX ACR coupling. Generally, bending of the pipes is not recommended until 30 cm after a device connection adapter, as the deformations can lead to restrictions of the flow.

Pipe fixing

The tube installation should not be too tight. Always allow enough play so that the pipe can expand and contract since with variations in temperature and pressure the pipe can change in length.

Threaded pipe connectors

During operation, pipe connectors can become loose due to vibrations and sudden temperature changes. To prevent this, it is recommended to use a

To prevent this, we recommend the use of a thread locker such as Loctite 243 between the conical pipe connectors.

Insulation

Although the UFLEX ACR pipe has a significantly lower thermal conductivity compared to copper, appropriate insulation is recommended to protect against condensation and heat loss.

Pressure Test

It is required that any installation be vacuum tested to a minimum of 500 microns and pressure tested to a minimum of (400 PSI) 28 bar for cooling only systems and (600 PSI) 42 bar for heat pump systems.

(400 PSI) 28 bars for cooling only systems and (600 PSI) 42 bars for heat pump systems. This allows possible leaks to be detected. As with all refrigerant gas systems, the introduction of air, water or other contaminants can cause damage to the equipment and/or the UFLEX ACR system.

Guaranty

For a period of five (5) years from the date of manufacture, Cube Energy GmbH guarantees that the UFLEX® ACR pipes and fittings are free from material and manufacturing defects. The warranty is only valid if the installation is carried out by a qualified refrigeration engineer or installer with additional qualifications (refrigeration certificate), as well as appropriate instruction with the UFLEX® air-conditioning pipe system.

Furthermore, the UFLEX® installation instructions and product specifications must be observed.

Installation steps



01. Cut the pipe perpendicularly with the UFLEX pipe cutter. ¹



02. Lay the UFLEX® pipe along the desired installation routes. To bend the pipe, we recommend using the Uflex external bending springs while observing the minimum bending radiuses. ²



03. Select the suitable size of the connector according to the pipe dimension. Place the union nut on the pipe first, then the clamping ring (can be used on both sides).



04. Finish the pipe end to be mounted with the original UFLEX® pipe clammer and demurrer (2 to 3 full turns). Make sure that no chips fall into the pipe.



05. Screw the UFLEX® adapter fitting onto the unit valve of the air conditioner (condenser / compressor).



06. Use a torques wrench to tighten the the UFLEX® adapter while observing the recommended torques ³.



07. Push the pipe end with the union nut and the clamping ring onto the support body of the UFLEX® adapter. Make sure that you do not damage the O-rings.



08. Screw on the union nut by hand and also use a spanner here, observing the recommended torques ³.



09. Protect the UFLEX® ACR pipes and fittings with suitable pipe insulation to prevent condensation.

1. The tube is marked with meter count, which makes it easy to cut the necessary sections without using measuring tape.
 2. Important: Do not bend in with a bending radius of less than 5 times the pipe diameter (see table, page 11).
 3. Important: For the screwed connections (adapters, transitions and couplings) the torques according to the table, page 9, apply.

UFLEX

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