



**Technical Manual**  
**AustroPEX**



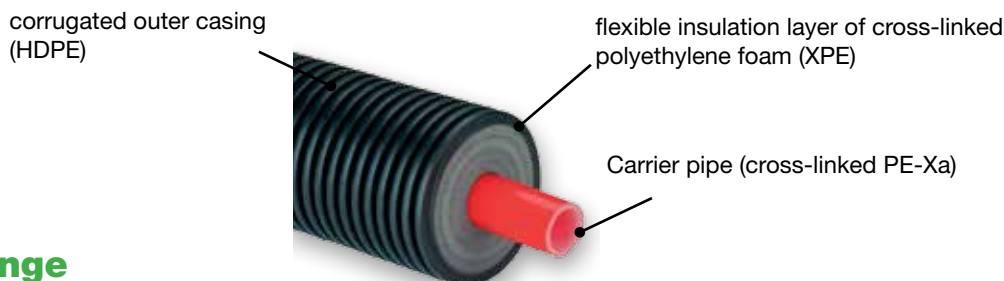
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## The AstroPEX - System Design

The AstroPEX - pipe system consists of three coordinated components:

- The corrugated outer casing made of HDPE and the layer structure of the insulation makes the rolling off and the installation much easier.
- The insulation layer of closed cell XPE- foam.
- The PE-Xa pipe is used as the carrier pipe, it has an nominal diameter of DN 20 to DN 160, an oxygen diffusion barrier, and resists a working pressure of 6 bar at a temperature of 95 °C.



## Product range

Saving energy requires good pipe-systems. Therefore, the pre-insulated pipe-system of AUSTROFLEX is an excellent choice. The lightweighted and very flexible pipes can be installed quickly and easily, even over obstacles and curves. The system accessories for the carrier pipe connections and the insulation of these connections are quick, easy and uncomplicated to install. There is the possibility to use electrofusion- or compression- fittings, or bolt type couplers. AustroPEX is available as single, double or combi pipesystem. The individual components and the manufacturing are free of CFC / HCFC and HFC.

## Properties of AstroPUR

- Pre-insulated pipes in standard coil length of 100m
- Factory- Short length cutting
- Single or double pipes
- renowned suppliers
- Widely applicable
- Oxygen diffusion barrier
- Low weight
- Completely corrosion resistant
- Environmentally friendly production
- Maintenance-free system
- Long lifetime

## Applications

- Local and district heating networks
- Cooling systems
- Transportation of chemicals
- Transportation of food

## Insulation

The used insulation material is made of a halogen-free cross linked XPE- foam. In combination with the corrugated outer casing this ensure maximum flexibility. In addition to the excellent insulating properties the closed cell structure of the material guarantes a minimal water absorption. The material is free of CFC / HCFC and HFC.

Properties	Test specification	Value XPE
Density	ISO 845	30 kg/m <sup>3</sup>
Tensile strength	ISO 1926	240 kPa
Working temperature	-	- 80°C to 110°C
Water absorption after 28 days	DIN 53428	< 1,04 % Vol.
Thermal conductivity	DIN 52612	40 °C : 0,040 W/m K

## Corrugated outer casing (HDPE)

The outer casing made of HDPE, protects the inner pipe and the insulation from external influences. Furthermore the pipe achieves longitudinal flexibility and rigidity against radial loads because of the waves. The AUSTROFLEX pipe is very robust and resistant to aggressive substances.

## PE-Xa-Carrier Pipe

As a carrier or medium transport tube as it is often called, AUSTROFLEX uses a PEX-pipe that is produced according to DIN 16892.

The PE-Xa Carrier pipe offers significant advantages:

### Excellent thermal properties

The PE-Xa pipe has been tested over a long period at a temperature of + 95 ° C / 6 bar for heating and + 95 ° C / 10 bar for sanitation (according to DIN 16892). The material is also resistant to temperatures up + 110 ° C for a short time.

### Proven long-term strength

Under fluctuating operating temperature, for example, + 90 ° C flow temperature in winter / + 70 ° C flow temperature in the summer, and an operating pressure of 5-6 bar, tests of public testing institutions have shown that the lifetime can be calculated up to more than 50 years.

### Chemical resistance

Most chemicals do not affect the pipe, even at higher temperatures. Chemicals that normally cause hairline cracks in other materials, don't harm PE-Xa.

### High abrasion resistance

PE-Xa pipes have improved abrasion resistance and a long lifetime. Even with abrasive materials and high speed the pipes work properly.

### Low resistance

The structure and surface condition offer the lowest resistance to any similar pipe systems, so outstandingly flow properties with low pressure loss and without formation of deposits are given.

### Environmentally friendly

PE-Xa is free of harmful substances. The tube is non-toxic, tasteless and odorless. Therefore, it is ideal for various applications in the food industry.

### Physiological behavior

PE-Xa pipes comply with international drinking water quality standards.

### Electrically non-conductive

Because the PE-Xa plastic pipe, an electrical potential equalization of Austroflex- pipe is not necessary.

## Chemical resistance

The changes in the properties of plastics in contact with chemicals are primarily based on physical processes such as swelling or resolution of the polymers.

PE-Xa pipes act affordable than non-crosslinked PE pipes because of the chemical crosslinking of the polymer chains.

To evaluate the resistance to various substances, the change in the tensile and cohesion properties was used. The chemical resistance may not be transferred generally on the behavior of a with the appropriate substance filled pressurized pipe. In this case so called longtime tests with test tubes are required.

## Oxygen diffusion barrier

The PE-Xa carrier pipes for central heating systems are equipped with an oxygen diffusion barrier (EVOH) equipped, such that no oxygen in the pipe system can enter (according to DIN 4726). Such oxygen diffusion barrier prolongs the lifetime of the system components (pumps, valves, etc.).

The oxygen permeability is  $\leq 1,8$  [mg/m<sup>2</sup> day] at 80°C.

## Mechanical & thermal properties according to DIN 16892/93

Properties	Test specification	Unit	Value
Density	DIN 53479	kg/m <sup>3</sup>	938
Modulus of elasticity 20 °C	DIN 53457	N/mm <sup>2</sup>	800 - 900
Tensile stress 20 °C 80 °C	DIN 53455	N/mm <sup>2</sup>	20 – 26 9 - 13
Tensile Strength 20 °C 80 °C 140 °C	DIN 53455	N/mm <sup>2</sup>	20 – 26 9 – 13 1,6 – 2,0
Ultimate elongation 20 °C 80 °C 140 °C	DIN 53455	%	≥ 400 ≥ 400 ≥ 250
Notch impact strength 20 °C -20 °C	DIN 53453	kJ/m <sup>2</sup>	without Break without Break
Thermal conductivity	DIN 52612	W/mK	0,35
Linear thermal expansion coefficient 20 °C 100 °C	DIN 43328	K <sup>-1</sup>	1,4x10 <sup>-4</sup> 2,0x10 <sup>-4</sup>
O2 permeability at 80 °C	EN15632		≤ 1,8 [mg/m <sup>2</sup> Tag]
Pipe roughness k		mm	0,007
at PN10: DVGW	W544		
Resistance	DIN 53482	Ω/cm	>1018
Spec. heat capacity	DIN 51005	kJ/kgK	2,3

## The long-term rupture strength

Long-term tests prove the strength of PE-Xa pipes in respect to time and temperature. PE-Xa is a cross-linked polyethylene. Because of the addition of hydrogen peroxide and the crosslink by the Engel process macromolecules are formed to build bridges between the PE molecules. That's why it's called „cross-linked“. Crosslinked molecules have greater capacity at extreme temperatures and chemical attacks and have been proven to be resistant to shrinking, so PE-Xa is an excellent material for hot water applications up to 95 ° C. In contrast to the non-crosslinked thermoplastic materials such as PP and PB, the strength curves have a linear course at higher temperatures.

Testing periods of over 30 years allow statements about the long-term rupture strength of the pipes up to 50 years. The allowable pipe performance can be calculated using the following table.

## Period of time - inner pressure resistance

Allowable working pressure according to DIN 16892 based on the flow medium water and are calculated with a safety factor of 1.25 (in accordance with DIN EN ISO 12162). The values are monitored by the plastic pipe producers by long-term studies and tested and confirmed by independent test institutes in different countries. The maximum operating temperature is set at 95°C, but a temporary overheating (malfunction temperature) of 110°C is taken into account. The pressure and temperature limits of the pipes depends on the combination of pressure, temperature and time. These technical data are determined in accordance with DIN 16892 and can only give a general statement on the long-term rupture strength, because the maximum temperature and pressure in the concrete application can vary widely.

### Long-term behavior in response to temperature and pressure:

average working temperature °C	Working pressure - years of operation		
	Heating pipes SDR11 bar	Sanitary pipes SDR 7.4 bar	years of operation
40	11,9	18,9	50
50	10,6	16,8	50
60	9,5	15,0	50
70	8,5	13,4	50
80	7,6	12,1	25
90	6,9	11,0	15

Class 1: hot water supply (60°C)

Temperature °C	years of operation
60	49 years
80	1 year
95	100 hours
<b>Total:</b>	<b>50 years</b>

Class 2: hot water supply (60°C)

Temperature °C	years of operation
70	49 years
80	1 year
95	100 hours
<b>Total:</b>	<b>50 years</b>

Class 4: low temperature heating

Temperature °C	years of operation
20	2,5 years
40	20 years
60	25 years
70	2,5 years
100	100 hours
<b>Total:</b>	<b>50 years</b>

Class 5: high temperature heating

Temperature °C	years of operation
20	14 years
60	25 years
80	10 years
90	1 year
100	100 hours
<b>Total:</b>	<b>50 years</b>

Because in most individual cases the temperature is not always constant, a temperature spectrum calculation makes sense. Certain applications have been classified into the ISO 15875 in classes.

According to ISO 15875 our PE-Xa pipes are categorized in classes with the following working pressures:

PE-Xa SDR11:

Class 1: 6bar

Class 2: 6bar

Class 4: 8bar

Class 5: 6bar



## AustroPEX

Flexible pre-insulated, self-compensating pipe, suitable for use as a district heating pipe for central heating systems. Corrosion-resistant transport pipe in cross-linked PE-Xa in accordance with DIN 16892/93, with red oxygen diffusion barrier EVOH in accordance with DIN 4726. Thermal, elastic, CFC-free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. The corrugated outside casing in PE-HD ensures high-great protection to the piping system.

- Max operating pressure: 6,6 bar at + 95 °C
- Max fluid temperature: + 95 °C
- PE-Xa pipes: SDR 11
- At 250mm outer casing the delivery form is in 12m bars
- Specific requests? Please contact us!

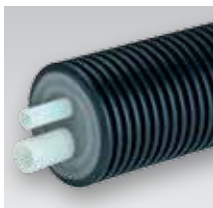
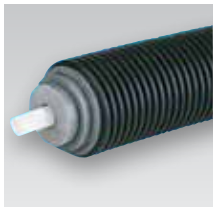


AustroPEX	PE-Xa (O.D. x s)	PE-Xa (I.D.)	Outer casing (O.D.)	Weight	Bendingradius
Art. No. single	mm	DN	mm	kg/m	m
115APE090125	25x2,3	20	90	0,9	0,25
115APE090132	32x2,9	25	90	1,0	0,25
115APE125140	40x3,7	32	125	1,3	0,35
115APE145150	50x4,6	40	145	1,9	0,40
115APE145163	63x5,8	50	145	2,3	0,55
115APE175175	75x6,8	65	175	3,3	0,80
115APE200190	90x8,2	75	200	4,3	1,10
115APE200110	110x10,0	90	200	5,2	1,20
115APE200125	125x11,4	100	200	6,1	1,40
115APE250160	160x14,6	130	250	15,1	—*
double					
115APE125220	2- 20x1,9	15	125	1,2	0,45
115APE145225	2- 25x2,3	20	145	1,6	0,50
115APE175232	2- 32x2,9	25	175	2,5	0,60
115APE175240	2- 40x3,7	32	175	2,7	0,80
115APE200250	2- 50x4,6	40	200	3,6	1,00
115APE200263	2- 63x5,8	50	200	4,3	1,20

## AustroPEX WW

Flexible pre-insulated, self-compensating single or double pipe, suitable for use as a district heating pipe for hot potable water and thermal water. Corrosion-resistant transport pipe in cross-linked PE-Xa in accordance with DIN 16892, with red oxygen diffusion barrier EVOH in accordance with DIN 4726. Thermal, elastic, CFC-free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. The corrugated outside casing in PE-HD ensures high-great protection to the piping system.

- Max operating pressure: 10 bar at + 95 °C
- Max fluid temperature: + 95 °C
- PE-Xa pipes: SDR 7,4



AustroPEX WW	PE-Xa (O.D. x s)	PE-Xa (di)	Outer Casing (O.D.)	Weight	Bending radius	Coil length
Art. No. single	mm	DN	mm	kg/m	m	m
115APR090125	25x3,5	20	90	1,0	0,30	100
115APR090132	32x4,4	25	90	1,1	0,30	100
115APR125140	40x5,5	32	125	1,4	0,35	100
115APR145150	50x6,9	40	145	1,9	0,40	100
115APR145163	63x8,7	50	145	1,3	0,55	100
double						
115APR125226	1- 25x3,5 1- 20x2,8	20 16	125	1,3	0,50	100
115APR145233	1- 32x4,4 1- 25x3,5	25 20	145	1,7	0,60	100
115APR175241	1- 40x5,5 1- 25x3,5	32 20	175	2,5	0,80	100
115APR175251	1- 50x6,9 1- 25x3,5	40 20	175	2,7	1,00	100
115APR200252	1- 63x8,7 1- 32x4,4	50 25	200	3,6	1,20	100



## Heat loss AustroPEX single

Coverage: 800 mm

Tf = Temperature flow

Tr = Temperature return

Tg = Temperature ground

For Single- Pipes:  $\Delta T = T_f - T_g$

For Double- Pipes:  $\Delta T = (T_f + T_r) / 2 - T_g$

Heat loss in W/m												
$\Delta T$ K	10	20	30	40	50	60	70	80	90	100	U-Value W/m · K	
Dimension	90 1x25	1,90	3,80	5,69	7,59	9,49	11,39	13,28	15,18	17,08	18,98	0,1898
90 1x32	2,36	4,71	7,07	9,42	11,78	14,13	16,49	18,84	21,20	23,55	0,2355	
125 1x40	2,16	4,32	6,48	8,64	10,80	12,96	15,12	17,28	19,44	21,60	0,2160	
145 1x50	2,29	4,57	6,86	9,14	11,43	13,71	16,00	18,29	20,57	22,86	0,2289	
145 1x63	2,93	5,85	8,78	11,70	14,63	17,55	20,48	23,40	26,33	29,25	0,2925	
175 1x75	2,87	5,74	8,60	11,47	14,34	17,21	20,07	22,94	25,81	28,68	0,2868	
200 1x90	3,09	6,18	9,28	12,37	15,46	18,55	21,65	24,74	27,83	30,92	0,3092	
200 1x110	4,16	8,32	12,48	16,64	20,81	24,97	29,13	33,29	37,45	41,61	0,4161	
200 1x125	5,33	10,67	16,00	21,34	26,67	32,01	37,34	42,67	48,01	53,34	0,5334	
250 1x160	4,67	9,35	14,02	18,70	23,37	28,05	32,72	37,40	42,07	46,75	0,4675	
$\Delta T$ K	10	20	30	40	50	60	70	80	90	100	U-Value W/m · K	
Dimension	125 2x20	2,19	4,37	6,56	8,74	10,93	13,11	15,30	17,48	19,67	21,86	0,2186
145 2x25	2,23	4,46	6,69	8,92	11,15	13,38	15,61	17,84	20,07	22,30	0,2230	
175 2x32	2,30	4,59	6,89	9,19	11,48	13,78	16,08	18,38	20,67	22,97	0,2297	
175 2x40	2,82	5,64	8,46	11,28	14,10	16,92	19,75	22,57	25,39	28,21	0,2821	
200 2x50	3,19	6,38	9,57	12,77	15,96	19,15	22,34	25,53	28,72	31,91	0,3191	
200 2x63	4,25	8,50	12,76	17,01	21,26	25,51	29,77	34,02	38,27	42,52	0,4252	

## AustroPEX Combi

Flexible pre-insulated, self-compensating underground pipe comprising two heating pipe and two sanitary pipes. Designed for heating water (flow and return), and equipped with a sanitary hot water pipe and a pipe for the circulation loop.

Corrosion-resistant transport pipe in cross-linked PE-Xa in accordance with DIN 16892/93, with red oxygen diffusion barrier EVOH in accordance with DIN 4726 for the heating water pipes.

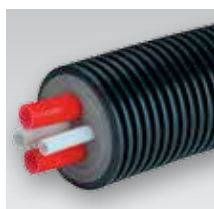
Thermal, elastic, CFC-free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. Insulating PE-X centrepiece guarantees an effective separation of flow, return, hot water and circulation pipes. The corrugated outside casing in PE-HD ensures high-great protection to the piping system.

### Heating pipes

- Max. operating pressure: 6,6 bar at +95 °C
- Max. fluid temperature: +95 °C
- PE-Xa pipes: SDR 11

### Sanitary pipes

- Max. operating pressure: 10 bar at +95 °C
- Max. fluid temperature: +95 °C
- PE-Xa pipes: SDR 7,4
- Standard full coil length: 100m



AustroPEX Combi	PE-Xa (O.D. x s)	PE-Xa (di)	Outer Casing (O.D.)	Weight	Bending radius	Coil length
Art. No.	mm	DN	mm	kg/m	m	m
115APX145418	2- 25x2,3	20	145	1,8	0,80	100
	1- 25x3,5	20				
	1- 20x2,8	16				
115APX175404	2- 32x2,9	25	175	3,0	0,80	100
	1- 25x3,5	20				
	1- 20x2,8	16				
115APX175403	2- 32x2,9	25	175	3,0	0,80	100
	1- 32x4,4	25				
	1- 25x3,5	20				
115APX200249	2- 40x3,7	32	200	3,9	0,80	100
	1- 40x5,5	32				
	1- 25/3,5	20				

## AustroPEX WPP heat pump pipes

Flexible pre-insulated and self-compensating cable with two heating pipes and two empty conduits. Corrosion resistant transport pipe in cross-linked PE-Xa in accordance with DIN 16892/93, with red oxygen diffusion barrier EVOH in accordance with DIN 4726.

The empty conduit can be used to feed cables to the heat pump. Thermal, elastic, CFC-free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. Insulating PE-X centrepiece guarantees an effective separation of flow and return pipes. The corrugated outside casing in PE-HD ensures high-great protection to the piping system.



AustroPEX WPP	PE-Xa (O.D. x s)	PE-Xa (I.D.)	Outer casing (O.D.)	Conduit (O.D.)	Conduit (O.D.)	Bending radius	Coil length
Art. No.	mm	DN	mm	mm	mm	m	m
118WPP125432	2- 32x2,9	25	125	Ø 32	Ø 25	0,50	100
118WPP145440	2- 40x3,7	32	145	Ø 32	Ø 25	0,60	100
118WPP175450	2- 50x4,6	40	175	Ø 32	Ø 25	0,70	100

## AustroPEX WPE heat pump pipes

Flexible pre-insulated and self-compensating cable with two heating pipes and two empty conduits.

Flexible transport pipe made of stainless steel 1.4404 (AISI 316L).

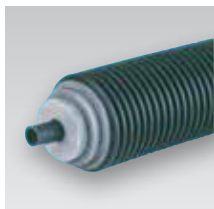
The empty conduits can be used to feed cables to the heat pump. Thermal, elastic, CFC-free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. Insulating PE-X centrepiece guarantees an effective separation of flow and return pipes. The corrugated outside casing in PE-HD ensures high-great protection to the piping system.



AustroPEX WPE	Stainless steel corrugated pipe	Outer casing (O.D.)	Conduit (O.D.)	Conduit (O.D.)	Bending radius	Coil length
Art. No.	DN	mm	mm	mm	m	m
118WPE125425	2 x DN 25	125	Ø 32	Ø 25	0,50	100
118WPE145432	2 x DN 32	145	Ø 32	Ø 25	0,60	100
118WPE175440	2 x DN 40	175	Ø 32	Ø 25	0,80	100

## AustroPEX CW, AustroPEX CW with self-regulating heating cable

Single flexible, pre-insulated, self-compensating, underground pipe. Suitable for cold potable water, cooling water and wastewater. Corrosion-resistant transport pipe in PE 100 in accordance with DIN 12201. Thermal, elastic, CFC-Free foam insulation made from cross-linked PE-X with closed microcellular structure. Minimal water absorption capacity of < 1% in accordance with DIN 53428. The corrugated outside casing in PE-HD ensures high-great protection to the piping system. Alternativ with a self-regulating heating cable at the transport pipe.



AustroPEX CW	AustroPEX CW with heating cable	PE 100 (O.D. x s)	PE 100 (I.D.)	Outer casing (O.D.)	Weight	Bending radius	Coil length
Art. No.	Art. No.	mm	DN	mm	kg/m	m	m
115APH090125	115APF090125	25x2,3	20	90	1,0	0,25	100
115APH090132	115APF090132	32x2,9	25	90	1,1	0,30	100
115APH125140	115APF125140	40x3,7	32	125	1,4	0,35	100
115APH145150	115APF145150	50x4,6	40	145	1,8	0,40	100
115APH145163	115APF145163	63x5,8	50	145	2,3	0,55	100
115APH175175	115APF175175	75x6,8	65	175	3,1	0,70	100
115APH175190	115APF175190	90x8,2	75	175	3,8	1,00	100
115APH200110	115APF200110	110x10,0	90	200	5,2	1,20	100
115APH200125	115APF200125	125x11,4	100	200	6,1	1,40	100

## Dimension of the coils

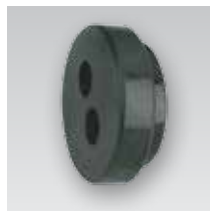
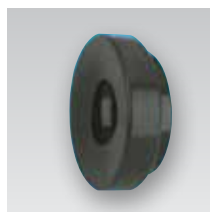
The standard length of the coil is 100m. Shorter length are also available. The pipe coils can be transported with the usual means of transport.

For transport and storage regulations see „transportation, storage and installation of Austroflex pipes“ on page 34.

Outer casing (O.D.) mm	Coil Dimension							
	25 m		50 m		75 m		100 m	
	W (m)	D (m)	W (m)	D (m)	W (m)	D (m)	W (m)	D (m)
90	0,2	1,8	0,8	1,9	0,4	1,9	0,5	2,0
125	0,3	1,9	0,7	2,0	0,5	2,0	0,7	2,1
145	0,3	2,0	0,5	2,2	0,6	2,2	0,8	2,2
175	0,4	2,5	0,4	2,4	0,9	2,4	1,2	2,4
200	0,5	2,50	0,8	2,5	1,0	2,5	1,2	2,5
250	12m bars							

## Austroflex rubber end- cap

They are used to prevent the ingress of water between the outer casing and insulated carrier pipe.



Art. No.	Outer casing (O.D.) mm	PE-Xa Pipe (DN) mm
<b>Rubber end-cap single</b>		
116ENS090025	90	25
116ENS090032	90	32
116ENS125040	125	40
116ENS145050	145	50
116ENS145063	145	63
116ENS175075	175	75
116ENS175090	175	90
116ENS200090	200	90
116ENS200110	200	110
116ENS200125	200	125
<b>Rubber end-cap double</b>		
116ENS125220	125	2 x 20
116ENS125224	125	1x25 1x20
116ENS145225	145	2 x 25
116ENS145226	145	1x32 1x25
116ENS175232	175	2 x 32
116ENS175240	175	2 x 40
116ENS175241	175	1x40 1x25
116ENS175251	175	1x50 1x25
116ENS200250	200	2 x 50
116ENS200252	200	1x63 1x32
116ENS200263	200	2 x 63
<b>Rubber end-cap combi</b>		
116ENS145426	145	3x25 1x20
116ENS175435	175	2x32 1x25 1x20
116ENS175434	175	3x32 1x25
116ENS200249	200	3x40 1x25

## Austroflex heat shrink end-cap

They are used to prevent the ingress of water between the outer casing and insulated carrier pipe.



Art. No.	Outer casing (O.D.)	PE-Xa Pipe (da)
<b>Heat shrink end-cap single</b>		
	mm	mm
116ENO125020	90	25
116ENO090030	90	32
116ENO125040	125	40
116ENO145050	145	50
116ENO145070	145	63
116ENO200080	175	75
116ENO200090	200	90
116ENO200090	200	110
116ENO200090	200	125
116ENO250110	250	125
<b>Heat shrink end-cap double</b>		
116ENO125220	125	2 x 20
116ENO145230	145	2 x 25
116ENO200260	175	2 x 32
116ENO200260	175	2 x 40
116ENO200270	200	2 x 50
116ENO200290	200	2 x 63

## Installation guideline – Heat shrink end-cap

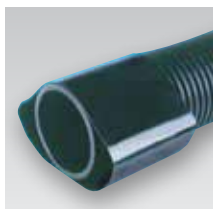
1. Slide the heat shrink end-cap over the carrier pipe and the jacket.
2. Use a heat gun or mini torch with soft yellow flame (do NOT use a too hot (blue) flame!) to shrink the cap gently.
3. Press the cap on the jacket, wearing protective gloves.
4. The tail end of the pipe is now waterproof.

Caution: Wear heat resistant work gloves!



## Wall feed-through for non pressurised water

The wall feed-through for non pressurised water comprises a profiled HDPE pipe and shrink sleeve. After the pipe is bricked in (protruding 10 cm out of the outside wall) the AUSTROPEX pipe is fed through and sealed with the shrink sleeve.

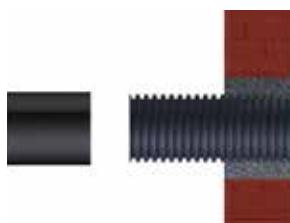


Art. No.	Outer casing (O.D.)	Wall feed-through (O.D.)	Length
	mm	mm	mm
116HEN125	125	160	500
116HEN145	145	175	500
116HEN175	175	235	500
116HEN200	200	250	500
116HEN250	250	280	500
116HEN125	125	160	500
116HEN145	145	175	500
116HEN175	175	235	500
116HEN200	200	250	500
116HEN250	250	280	500

## Installation guideline – Wall feed-through for non pressurised water



Brick in the wall feed-through and adjust it about 10 cm from the outside of the wall.



Slide the shrink sleeve over the corrugated jacket.  
**NEVER CUT THE SLEEVE LENGTHWISE!**



Feed the Austroflex pipe through the bricked-in corrugated jacket.



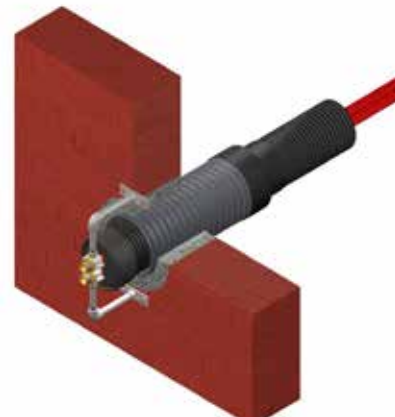
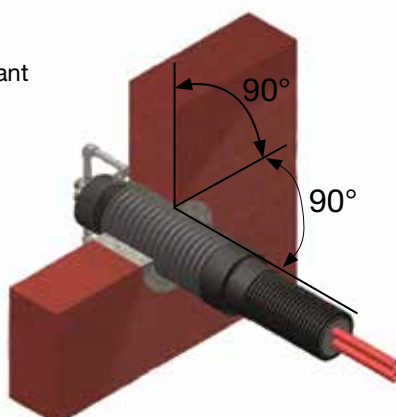
Shrink the sleeve over a width of 20 cm, half over the corrugated pipe and half over the Austroflex pipe. Use a gas burner with a soft yellow flame to CAREFULLY heat the shrink sleeve. Never use a non-luminous blue flame.  
Caution: Wear heat resistant work gloves!



Press frequently with heatproof gloves during the shrinking process.



The wall feed-through is now waterproof.



## Wall feed-through for pressurised water

This wall feed-through for pressurised water can be applied directly in core drilling, or in plastic or fiber cement wall sleeves. The seal consists of rubber sealing rings and two pressure discs, which can be pressed together with screws, thus ensuring the seal.



Art. No.	Outer casing (O.D)	Sealing range / Core drilling
	mm	mm
116HED125200	125	198 - 202
116HED145200	145	198 - 202
116HED145250		248 - 252
116HED175250	175	248 - 252
116HED200250	200	248 - 252
116HED200300		298 - 302
116HED250300	250	298 - 302
116HED250350		348 - 352

## Installation guideline – Wall feed-through for pressurised water

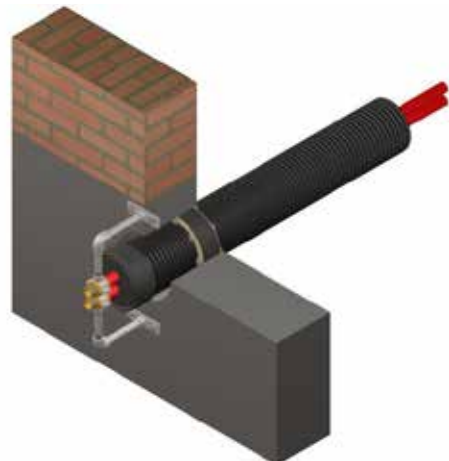
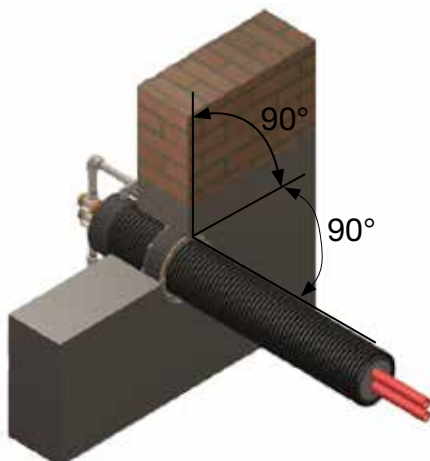
1. Clean the wall sleeves or core drilling and outer casing.
2. Compare wall sleeves or core drilling diameter and outer casing diameter with the specifications of the sealing kit.
3. Position the seal in a line with the outside of the wall. To make it possible to tighten the screws afterwards, the screws should show to the inside of the building. Now slide the pipe through the sealing inside the building.

4. Tighten the nuts with a torque wrench in accordance with table below.

Notes:

- The core drilling should be coated with epoxy to protect the concrete and to smooth out any voids or scratches
- For later assembly is a splitted seal available
- Medium pipes must be centered and supported

Max. Tightening torques in Nm	
Screw	Tightening torques
M 6	5 Nm
M 8	8 Nm for standard seals
	15 Nm for splitted seals
M 10	22 Nm
M 12	26 Nm





## Restraining clamps

The Austroflex- restraining clamp is available as a version for single and double pipes. Due the clamps movements of the carrier pipe, which can be caused by temperature changes, at the house connection points are compensated. The assembling of restraining clamps is part of our warranty requirements.



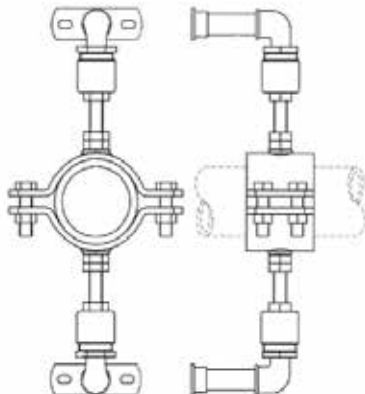
Outer Casing + Carrier pipe	Restraining clamp single
Typ	Art. No.
A90-1x25	116AFS125
A90-1x32	116AFS132
A125-1x40	116AFS140
A145-1x50	116AFS150
A145-1x63	116AFS163
A175-1x75	116AFS175
A200-1x90	116AFS190
A200-1x110	116AFS199
A200-1x125	116AFS200



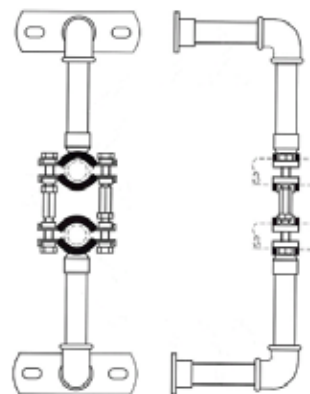
Outer Casing + Carrier pipe	Restraining clamp double
Typ	Art. No.
A125-2x20	116AFS225
A145-2x25	116AFS225
A175-2x32	116AFS232
A175-2x40	116AFS240
A200-2x50	116AFS250
A200-2x63	116AFS263

## Installation guideline – Restraining clamps

**Single:**



**Double:**



Mount building entry for non-pressurised or pressurised water and let the heating pipe sufficiently protrude into the building. The pipe should protrude at least 400mm from the wall into the room to work well.

Remove the insulation over a length of 300mm.

Cover the surface with the heat-shrink- or rubber-end caps. Now attach the connection fittings.

Mount the restraining clamps directly behind the fitting so that the fittings may touch the clamps. The base plates must be firmly embedded in the wall. In case of stone walls or brick walls, please use suitable fixing materials. Tighten all screws firmly.

After completion of the work, perform the pressure test. Documents can be found on the package insert to the pipe coil, in our price list or here on page 36/37.



## Chamber

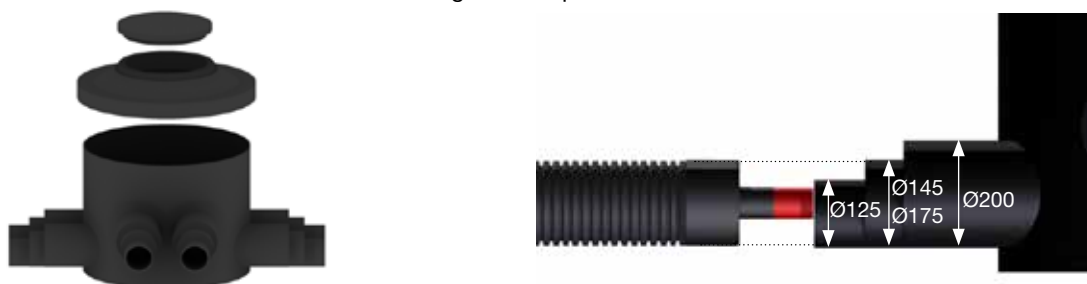


Art. No.	Outer casing (O.D.)	Diameter	H	Weight
	mm	mm	mm	kg
116ESD200	200 + 175 + 145 + 125	810	770	35
116ESD250	250 + 200 + 175 + 145 + 125	1200	800	55

As an alternative to the insulation kits a chamber made of impact-resistant polyethylene can be used. It has 6 marked outlets. Each outlet can be cut to different sizes (125, 145, 175 or 200mm). In this chamber various connections can be made and shut-off valves can be mounted. The chamber is delivered with a lid, stainless steel screws, a sealing adhesive and an instruction manual.

## Installation guideline – Chamber

The outlets of the chamber can be cut with a handsaw to get the required outlet diameter.



As preparation for the connection of the pipes to the chamber, the pipes will be equipped with a heat shrink-cap. Slide the heat shrink end-cap over the carrier pipe and the jacket. Use a heat gun or mini torch with soft yellow flame (do NOT use a too hot (blue) flame!) to shrink the cap gently. Press the cap on the jacket, wearing protective gloves. The assembling of heat shrink end-caps is part of our warranty requirements.



Slide the shrink sleeve over the pipe before the tube is connected to the chamber. Then the pipes are led into the chamber and all necessary contacts and connections are mounted.



The shrink sleeve is heated gently with a heat gun or a gas torch to ensure the sealing of the outer casing to the chamber. Caution: Wear heat resisting work gloves!



## Connection options

The chamber has a number of options for different types of connection:



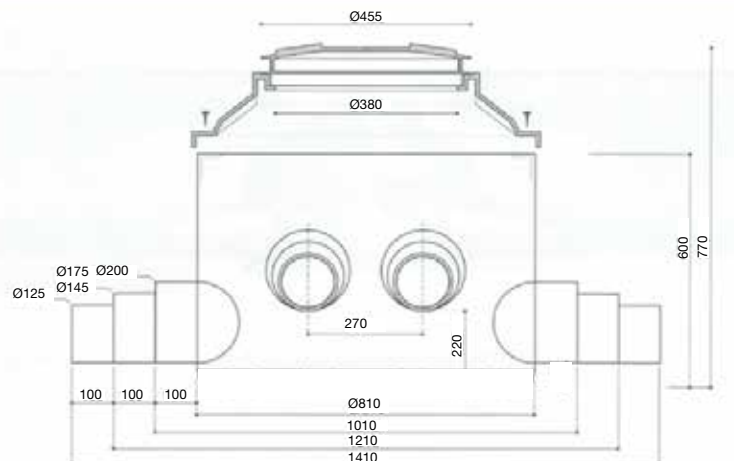
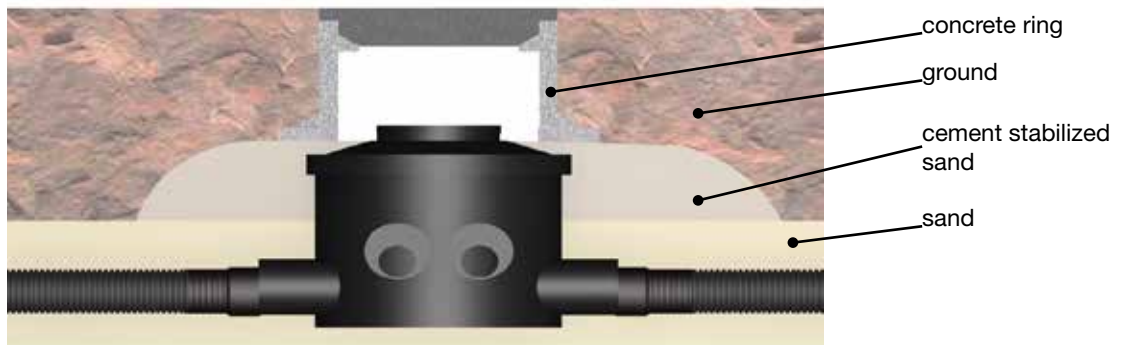
## Sealing of the chamber

The chamber is sealed with the supplied sealing material. That should be applied with a thickness of 1 cm over the complete circumference. Place the lid. Tighten the 6 stainless steel screws clockwise stepwise. Do not forget the pressure test before closing of the chamber.



## Covering the chamber

Cover the chamber with sand after it is completely sealed and closed. Make sure that the chamber completely stand up on the ground and the pipes run straight. After covering half of the chamber with sand, a layer of cement stabilized sand should be filled up to the lid. Finally a concrete ring should be fitted with a lid to keep the chamber easily accessible.



## Shroud kits

The shroud kits consists of two ABS plastic shells, stainless steel screws, a lubricant against the fretting of the screws and the installation instructions.

Attention: Do not forget to order the insulation tube bit and the desired insulation package!

## Insulation tube bit

The insulation tube bits are delivered with the right heat shrink-sleeve.



Art. No.	Outer casing (O.D)	L	Weight
	mm	mm	kg
116IRE125090	125	230	0,90
116IRE145150	145	230	0,95
116IRE175150	175	230	1,00
116IRE200200	200	230	1,10
116IRE250200	250	230	1,25

## T-Shroud set for tee connections



Art. No.	Outer casing (O.D)	L	W	H	Weight
		mm	mm	mm	kg
116IST005	universal	1070	730	300	5,75

## L-Shroud set for elbow 90° connections



Art. No.	Outer casing (O.D)	L	W	H	Weight
		mm	mm	mm	kg
116ISE003	universal	730	730	300	4,25

## I-shroud set for straight connections



Art. No.	Outer casing (O.D)	L	W	H	Weight
		mm	mm	mm	kg
116ISL002	universal	1070	160	300	4,75

## Installation guideline – Shroud kits



### Preliminary note:

During the entire assembling it's essential to ensure that all components are always dry, grease-free and clean.



1. Lay the pipe as straight and stress-free as possible.  
When removing the outer casing and the insulation make sure that 10 cm of the insulated pipe are protruding into the half shell.



2. Slide the shrink sleeves and insulation tube bits onto the pipe. Perform the pressing / welding (assembly instructions „pressing“) of the medium pipes, and check the system for leaks. Pressure test!



3. Insulate the pipe with the insulation material and secure it with the with supplied adhesive tape.  
(When using the PUR- Insulation kit skip this step)



4. Clean the adhesive surfaces of the half-shells and inserts with a non-greasy cleaning agent (eg ethanol / acetone).  
Apply 5 mm thick sealant, along all grooves of the lower half shell.



5. Insert the insulation tube bits with a click in the lower half shell (Pay attention to the marking „TOP“).

6. Apply the remaining sealant on the upper half-shell along all grooves (about 5 mm thick).

7. Now add the upper and lower part of the insulation shroud together and tighten the screws. Note: Put oil on the thread before tightening screws!

8. Clean the outer casing and insulating panels at their exits. Remove the protective backing of the shrink sleeves. One half of the heat-shrinkable sleeve is covering the outer casing, the other half the shells insert. Remove the paper on the inside of the shrink sleeve before shrinking.

9. The shrinking occurs with a soft flame from a gas torch or a heat gun at medium temperature. Shrink first centrally an approximately 4 cm wide strip in the circumferential direction. From this starting to shrink first in the direction of the outer casing and then the half-shell insert.

Caution: Wear Heat resisting work gloves! Only use a soft yellow flame when working with a gas torch!

## I-Shroud set (alternative for straight connections)



Art. No.	Outer casing (O.D.)	L	Insulation kit (da)	Weight
	mm	mm	mm	kg
116ISL125	125	710	140	2,5
116ISL145	145	830	160	3,0
116ISL175	175	830	200	4,5
116ISL200	200	1000	225	6,0
116ISL250	250	1000	280	10,5

### Installation guideline – I-shroud set

The kit consists of tube, insulation and two heat shrink sleeves.

1. Slide tube and shrink sleeves over the district heating pipe. (The use of heat-shrink end caps is required because of the guarantee requirements.)
2. Connect the carrier pipes with press couplings. Put the insulation around the carrier pipe so that the couplings are completely insulated. Perform a pressure test!
3. Push the tube back so that the couplings are covered and the outside casing reaches on both sides 10 cm into the tube.
4. Shrink with a heat gun or gas torch (with a soft, yellow flame) the two shrink sleeves carefully half on the tube and half on the district heating pipe. Be careful with gas torches: Do not use too hot (blue) flame!



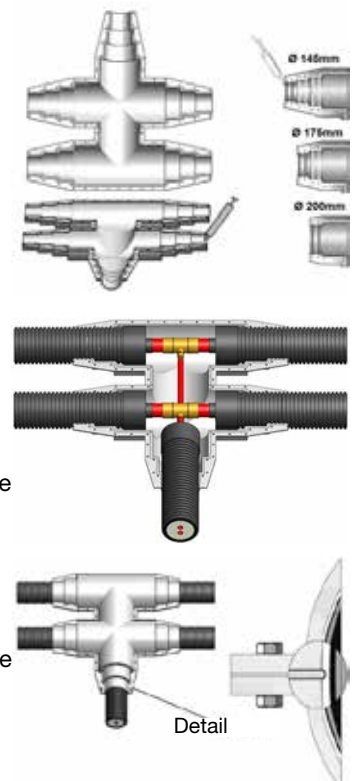
## Double T-Shroud set for tee connections



Art. No.	Outer casing (O.D.)	L	W	H	Weight
		mm	mm	mm	kg
116IST004	universal	1370	1250	270	14,00

### Installation guideline – Double T-Shroud set

1. There is no difference between the pre-drilled shells. The lower and upper parts are identical. The insulation set is suitable for jacket tubes with 125, 145, 175 or 200mm diameter. The half-shells can be cut along the step to achieve the required diameter.
2. Remove a sufficient amount of PE-Xa pipe insulation (Caution! Do not damage the PE-Xa pipe), so that the couplings can be mounted in the middle of insulation set. Ensure that the pre-insulated pipe protrude 10cm over the 200mm pipe support. To determine the correct distance between the medium pipes, one half-shells can be used as a template.
3. Connect the carrier pipe according to the installation guideline. Perform a pressure test!
4. Insulate the pipe with the insulation material and secure it with the with supplied adhesive tape. (When using the PUR- Insulation kit skip this step)
5. In both half-shells there are two juxtaposed grooves in the area of the pipe receiving. In the grooves adjust about 5mm sealant.
6. Lay the connected pipes into one of the two half-shells. Applying the sealant with a thickness of about 5 mm onto the edge of the upper and lower half-shell.
7. Press the two matched half-shells carefully together. Tighten the oiled steel screws. Ensure that the sealant everywhere emerges on the outer sides after tightening the screws.



## Y-Shroud set

Guarantees complete insulation and sealing of a connection between two single and one double pipe. Complete shroud includes: shroud made of HDPE, stainless steel bolts and a lubricant against fretting.

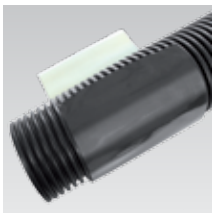
ATTENTION: Don't forget to order the disired insulation package.

Insulation tube bits are NOT required.



Art. No.	Outer Casing (O.D.)	L	W	H	Weight
	mm	mm	mm	mm	kg
<b>116ISH100</b>	2x (200-125) + 1x (200-125)	1170	460	230	7,00

## Repair tape

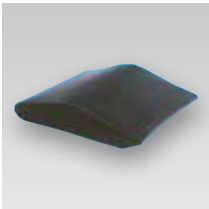


Repair tape suitable for repair of any incidental local damage to the outside casing.

Art. No.	Length	Width
	mm	mm
<b>116REP001</b>	1000	225

## Heat Shrink Sleeve

Used to repair incidental local damage to the outer casing.



Art. No.	Outer Casing (O.D.)	Width
	mm	mm
<b>116SSS125</b>	145 + 125	225
<b>116SSS175</b>	175	225
<b>116SSS200</b>	200	225
<b>116SSS250</b>	250	385

## Heat shrink blind end cap

Heat shrink cap for sealing blind ends in the ground, which are connected at a later time.



Art. No.	Outer Casing (O.D.)
	mm
<b>116ENO125000</b>	145 + 125
<b>116ENO175000</b>	175
<b>116ENO200000</b>	200
<b>116ENO250000</b>	250



## PU- insulation kit

The polyurethane foam insulation package consists of a 2 Component PU foam, a drill for produce the filling openings, three matching sealing plugs, adhesive patches and a sealant for the insulation kit.

Note: durability is 3 months.



Art. No.	Shroud kit	Weight
		kg
116ISD049	I-,L and double T-Shroud	5,10
116ISD058	T-Shroud	6,30

## Assembly instructions – PU- insulation kit

Store components away from sunlight only at room temperature (+15°C to max. +25°C). When processing the temperature of the foam components must be min. +20°C and max. +25°C. Higher temperatures accelerate the reaction time and make a decent processing impossible. Temperatures below +20°C lead to poor mixing results. At the foaming process the shroud kit and the district heating pipe should have a minimum temperature of +5°C and maximum +50°C.

Before foaming the shroud kit, the two components must be mixed thoroughly until the mixture has a uniform light brown colour. The mixing process should expeditiously accomplished, the foam components react as soon as they come together. Proper mixing for the foam quality is crucial. Press the mixture out of the container into the shroud kid.

Temperature °C	Mix time sek.	Process time sek.
25°	20	30
20°	25	40
15°	40	50

## Work hygienic information

The product must not be used in a confined space without mechanical ventilation or use of fresh-air masks. All work must be performed that the inhalation of steam and contact with skin is avoided. Use suitable clothing, gloves and goggles. Be careful when working with an open flame, the foam is combustible. Do not breathe smoke, fumes and dust.

## First Aid

If fumes are inhaled, remove the victim to fresh air and keep him stable. For splashes in the eyes immediately rinse for at least 15 minutes with running water. Remove contaminated clothing immediately and clean soiled skin with soap and water. Seek medical attention and show this data sheet or safety data sheet.

## In case of fire

Extinguish with powder, foam or carbon dioxide. Do not inhale fumes and dust. Clean burned skin immediately with cold water and cool. Contact a doctor for further treatment. Attention! Isocyanate reacts vigorously with water.

## After shedding

Any fire hazard must be avoided! Do not inhale steam! Absorb with chemical binders and implemented jointly by clothes and other remnants of the special waste disposal. Information about the components A (isocyanate) and B (polyol) See relevant safety data.



## Elastomeric foam- insulation

The elastomeric foam insulation package consists of a rubber mat plus a matching tape and a sealant for the Insulation kit. Note: durability is 3 months.



Art. No.	Shroud kit	Weight
		kg
116ISD002	elastomeric foam insulation package universal	0,9

## Installation guideline – Elastomeric foam- insulation

After the connections of the carrier pipe have been completed and properly checked for leaks, they can be insulated with the foam mat.

For this purpose, the rubber mat is cut to size and closed with the enclosed rubber strap.

Now you can proceed with installing the insulation set.

## Compression fittings PN6

Compression fittings for use in pipe systems with carrier pipes PN6 (SDR11) for heating, cold or cooling water. The compression fittings consist of a fitting with a long attachment pipe for optimal grip and matching sliding sleeves which are compressed with the appropriate tools. We recommend the use of compression fittings in all underground connections because after performing the pressure test there is no need to tighten the connection again. We can provide suitable compression tools three days for free. If required, equipment can be rented.

### Adaptor PE-Xa, PN 6



with male thread			with welding end	
Art. No.	PE-Xa (O.D. x s)	Thread (M)	Art. No.	PE-Xa (O.D. x s) - Steel (O.D. x s)
	mm	Inch		mm
116SHA020034	20x1,9	¾"	116SHS025026	25x2,3 - 26,9x2,3
116SHA025034	25x2,3	¾"	116SHS032033	32x2,9 - 33,7x2,6
116SHA032001	32x2,9	1"	116SHS040042	40x3,7 - 42,4x2,6
116SHA040054	40x3,7	1 ¼"	116SHS050048	50x4,6 - 48,3x2,6
116SHA050064	50x4,6	1 ½"	116SHS063060	63x5,8 - 60,3x2,9
116SHA063002	63x5,8	2"	116SHS075076	75x6,8 - 76,1x2,9
116SHA075052	75x6,8	2 ½"	116SHS090088	90x8,2 - 88,9x3,2
116SHA090003	90x8,2	3"	116SHS110114	110x10,0 - 114,3x3,6
116SHA110004	110x10,0	4"	116SHS125139	125x11,4 - 139,7x3,6
116SHA125005	125x11,4	5"	116SHS160168	160x14,6 - 168,3x4,1

### Straight coupler PE-Xa, PN 6



straight coupler			reducing coupler	
Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D.-O.D.)	Art. No.	PE-Xa (O.D.-O.D.)
	mm	mm		mm
116SHK020020	20x1,9	20 - 20	116SHK025020	25 - 20
116SHK025025	25x2,3	25 - 25	116SHK032025	32 - 25
116SHK032032	32x2,9	32 - 32	116SHK040020	40 - 20
116SHK040040	40x3,7	40 - 40	116SHK040032	40 - 32
116SHK050050	50x4,6	50 - 50	116SHK050032	50 - 32
116SHK063063	63x5,8	63 - 63	116SHK050040	50 - 40
116SHK075075	75x6,8	75 - 75	116SHK063050	63 - 50
116SHK090090	90x8,2	90 - 90	116SHK075063	75 - 63
116SHK110110	110x10,0	110 - 110	116SHK090075	90 - 75
116SHK125125	125x11,4	125 - 125	116SHK110090	110 - 90
116SHK160160	160x14,6	160 - 160		

### Elbow coupler 90°



Elbow coupler 90°		
Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D.-O.D.)
	mm	mm
116SHW020020	20x1,9	20 - 20
116SHW025025	25x2,3	25 - 25
116SHW032032	32x2,9	32 - 32
116SHW040040	40x3,7	40 - 40
116SHW050050	50x4,6	50 - 50
116SHW063063	63x5,8	63 - 63
116SHW075075	75x6,8	75 - 75
116SHW090090	90x8,2	90 - 90
116SHW110110	110x10,0	110 - 110

## Ball valve PE-Xa, PN 6



Art. No.	PE-Xa (O.D. - O.D. / male)
	mm
116SKS020020	20 - 20
116SKS025025	25 - 25
116SKS032032	32 - 32
116SKS040040	40 - 40
116SKS050050	50 - 50
116SKS063063	63 - 63
116SKA025001	25 - 1" AG
116SKA032001	32 - 1" AG

## T-Piece PE-Xa, PN 6

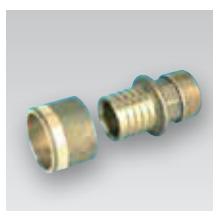


Art. No.	PE-Xa (O.D.-O.D.-O.D.)	Art. No.	PE-Xa (O.D.-O.D.-O.D.)
	end-branch-end (mm)		end-branch-end (mm)
116SHT202020	20-20-20	116SHT634063	63-40-63
116SHT202520	20-25-20	116SHT633263	63-32-63
116SHT252525	25-25-25	116SHT632563	63-25-63
116SHT252025	25-20-25	116SHT632063	63-20-63
116SHT252520	25-25-20	116SHT635050	63-50-50
116SHT252020	25-20-20	116SHT634050	63-40-50
116SHT323232	32-32-32	116SHT633250	63-32-50
116SHT322032	32-20-32	116SHT634040	63-40-40
116SHT322532	32-25-32	116SHT757575	75-75-75
116SHT323225	32-32-25	116SHT756375	75-63-75
116SHT322525	32-25-25	116SHT755075	75-50-75
116SHT404040	40-40-40	116SHT754075	75-40-75
116SHT403240	40-32-40	116SHT753275	75-32-75
116SHT402540	40-25-40	116SHT752575	75-25-75
116SHT402040	40-20-40	116SHT756363	75-63-63
116SHT403232	40-32-32	116SHT755063	75-50-63
116SHT505050	50-50-50	116SHT753263	75-32-63
116SHT504050	50-40-50	116SHT909090	90-90-90
116SHT503250	50-32-50	116SHT906390	90-63-90
116SHT502550	50-25-50	116SHT904090	90-40-90
116SHT502050	50-20-50	116SHT903290	90-32-90
116SHT503240	50-32-40	116SHT111010	110-110-110
116SHT502540	50-25-40	116SHT116311	110-63-110
116SHT636363	63-63-63	116SHT115011	110-50-110
116SHT637563	63-75-63	116SHT113211	110-32-110
116SHT635063	63-50-63		

## Compression fittings PN10

Compression fittings for use in pipe systems with carrier pipes PN10 (SDR7,4) for heating, cold or cooling and sanitary water. The compression fittings consist of a fitting with a long attachment pipe for optimal grip and matching sliding sleeves which are compressed with the appropriate tools. We recommend the use of compression fittings in all underground connections because after performing the pressure test there is no need to tighten the connection again. We can provide suitable compression tools three days for free. If required, equipment can be rented.

## Adaptor PE-Xa PE-Xa/AG, PN 10



Art. No.	PE-Xa (O.D. x s)	Thread (male)
	mm	inch
116SHB020034	20x2,8	¾"
116SHB025034	25x3,5	¾"
116SHB032001	32x4,4	1"
116SHB040054	40x5,5	1¼"
116SHB050064	50x6,9	1½"
116SHB063002	63x8,7	2"

## Straight and reducing coupler PE-Xa, PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. - O.D.)
	mm	mm
116SHL020020	20x2,8	20 - 20
116SHL025025	25x3,5	25 - 25
116SHL032032	32x4,4	32 - 32
116SHL040040	40x5,5	40 - 40
116SHL050050	50x6,9	50 - 50
116SHL063063	63x8,7	63 - 63

## Elbow 90° PE-Xa, PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. - O.D.)
	mm	mm
116SHX020020	20x2,8	20 - 20
116SHX025025	25x3,5	25 - 25
116SHX032032	32x4,4	32 - 32
116SHX040040	40x5,5	40 - 40
116SHX050050	50x6,9	50 - 50
116SHX063063	63x8,7	63 - 63

## T-Piece PE-Xa, PN 10



Art. No.	PE-Xa (O.D. - O.D. - O.D.)
	end-branch-end (mm)
116SHU202020	20-20-20
116SHU202520	20-25-20
116SHU252525	25-25-25
116SHU252520	25-25-20
116SHU252020	25-20-20
116SHU252025	25-20-25
116SHU323232	32-32-32
116SHU323225	32-32-25
116SHU322025	32-20-25
116SHU322032	32-20-32
116SHU322525	32-25-25
116SHU322532	32-25-32
116SHU404040	40-40-40
116SHU402040	40-20-40
116SHU402540	40-25-40
116SHU403232	40-32-32
116SHU403240	40-32-40
116SHU505050	50-50-50
116SHU503240	50-32-40
116SHU502550	50-25-50
116SHU503250	50-32-50
116SHU504050	50-40-50
116SHU636363	63-63-63
116SHU633263	63-32-63
116SHU635063	63-50-63

All press connections and the corresponding slide sleeves are included. We are happy to provide a suitable crimping tool free of charge for three days. If needed, equipment can be rented

## Installation guideline – Compression fittings



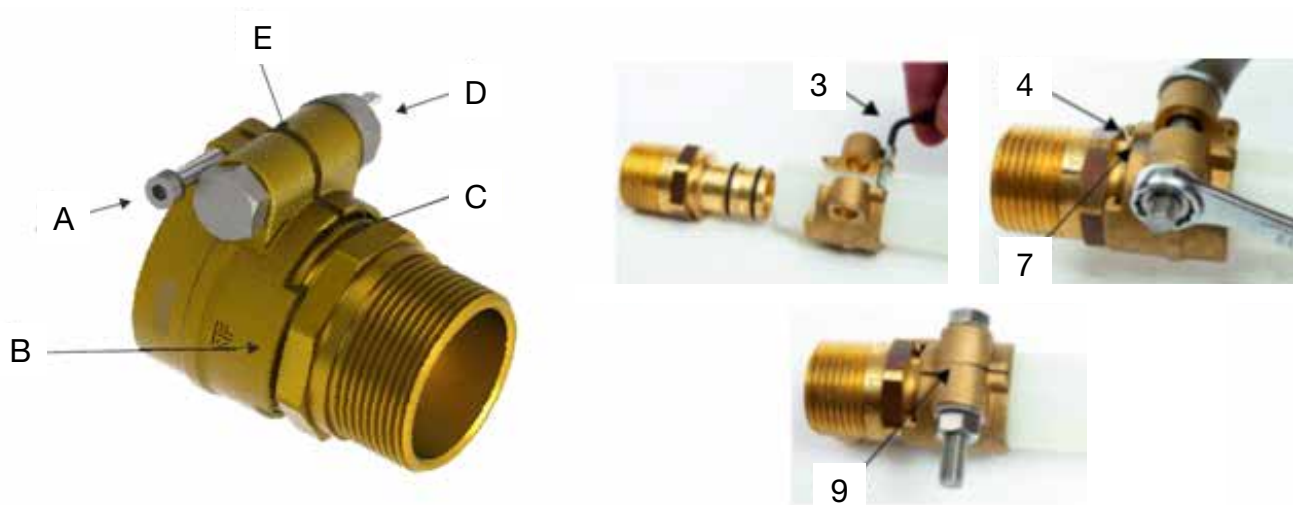
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1. Cut the pipe with a pipe shears (for dimensions from 125mm diameter using a pipe cutter) free of burrs and with a right angle to the desired level.
2. Push the sliding sleeves over the pipe. The inner chamfer must face the pipe's end.
3. Put the expansion tool as far as possible into the pipe, do not tilt. The sliding sleeve must not be located in the expansion zone. Expand the pipe twice, rotate 30 °.
4. Put the fitting into the pipe. After a short time the fitting is stuck in the pipe, this period may be extended by maintaining the expansion pressure when expander head is fully open. There must be a uniform gap between fitting collar and tube end (in case of large dimensions, it may be necessary to align the position using rubber hammer).
5. Place the pressing tool at the connection. Do not tilt the tool. The tool must be set at a right angle.
6. Push the sliding sleeve to the fitting collar and rotate 90 °, repeat the pressing operation. For large dimension lubricate the connecting area before pressing .

The connection can be loaded immediately with pressure and temperature after completion.

A leak test according to DIN 1988-2 must be carried out (See page 36-37) even before assembly the insulation kit and the backfilling the trench.

## Installation guideline – Compression fittings



1. Cut the pipe with a pipe shears (for dimensions from 125mm diameter using a pipe cutter) free of burrs and with a right angle to the desired level.
2. Remove the fastening screw (E) to wide the clamping ring by turning the screw (A). You can use the entire length of the screw to wide the clamping ring.
3. Slide the clamping ring over the pipe. Do not turn to the clamping ring. The tab (B) on the inside of the clamping ring must point in the direction of the fittings.
5. Slide the tube entirely over the connector.
6. Slide back the clamping ring so that it is fully seated on the fitting. The tab (B) of the clamping ring must engage into the groove of the connecting body (C).
7. Undo the screw (A) completely and remove it.
8. Install the Fastening screw (D), tighten it so far that the clamping ring is closed and has no gap(E). For larger diameters, it may be necessary to tighten the connection gradually and admit the pipe time to deform (large diameters up to 30 minutes).
9. A leak test according to DIN 1988-2 must be carried out (See page 36-37) even before assembly the insulation kit and the backfilling the trench.

**ATTENTION!** Ensure that screw threads be lubricated with copper grease to avoid seize of stainless steel screws! After about 30 minutes you should tighten the clamp connection with the same torque.



## Bolt type couplers

Bolt type couplers for use in pipe systems with carrier pipes PN 6 (SDR 11) for heating, cold or cooling water. The bolt type couplers consists of a fitting with a long attachment pipe for optimal grip and matching clamp ring with stainless steel screws .

- Max. working pressure: 6 bar (16 bar)
- Max. working temperature: + 95 °C (+ 25 °C)
- PE-Xa : SDR 11
- Material: CW617N

## Adaptor with male thread PE-Xa/M, PN 6 / PN 10

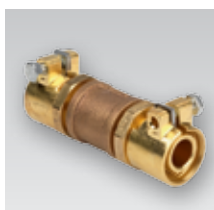
The adaptor comes with tapered pipe thread.



Art. No.	PE-Xa (O.D. x s)	Thread (M)
PN 6	mm	Inch
116WHA020034	20x1,9	¾"
116WHA025034	25x2,3	¾"
116WHA032001	32x2,9	1"
116WHA040054	40x3,7	1¼"
116WHA050064	50x4,6	1½"
116WHA063002	63x5,8	2"
116WHA075212	75x6,8	2½"
116WHA090003	90x8,2	3"
116WHA110004	110x10,0	4"
116WHA125004	125x11,4	4"
116WHA140005	140x12,7	5"
116WHA160005	160x14,6	5"

Art. No.	PE-Xa (O.D. x s)	Thread (male)
PN 10	mm	inch
116WSA020034	20x2,8	¾"
116WSA025034	25x3,5	¾"
116WSA032001	32x4,4	1"
116WSA040054	40x5,5	1¼"
116WSA050064	50x6,9	1½"
116WSA063002	63x8,7	2"

## Straight coupler PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. - O.D.)
PN 6	mm	mm
116WHK020020	20x1,9	20 - 20
116WHK025025	25x2,3	25 - 25
116WHK032032	32x2,9	32 - 32
116WHK040040	40x3,7	40 - 40
116WHK050050	50x4,6	50 - 50
116WHK063063	63x5,8	63 - 63
116WHK075075	75x6,8	75 - 75
116WHK090090	90x8,2	90 - 90
116WHK110110	110x10,0	110 - 110
116WHK125125	125x11,4	125 - 125
116WHK140140	140x12,7	140 - 140
116WHK160160	160x14,6	160 - 160

Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. - O.D.)
PN 10	mm	mm
116WSK025025	25x3,5	25 - 25
116WSK032032	32x4,4	32 - 32
116WSK040040	40x5,5	40 - 40
116WSK050050	50x6,9	50 - 50
116WSK063063	63x8,7	63 - 63

The bolt type couplers are supplied as single parts and should be self- sealed on site.

## Elbow 90° PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D.-O.D.)
PN 6	mm	mm
116WHW020020	20x1,9	20 - 20
116WHW025025	25x2,3	25 - 25
116WHW032032	32x2,9	32 - 32
116WHW040040	40x3,7	40 - 40
116WHW050050	50x4,6	50 - 50
116WHW063063	63x5,8	63 - 63
116WHW075075	75x6,8	75 - 75
116WHW090090	90x8,2	90 - 90
116WHW110110	110x10,0	110 - 110
116WHW125125	125x11,4	125 - 125

Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. - O.D.)
PN 10	mm	mm
116WSW025025	25x3,5	25 - 25
116WSW032032	32x4,4	32 - 32
116WSW040040	40x5,5	40 - 40
116WSW050050	50x6,9	50 - 50
116WSW063063	63x8,7	63 - 63

The bolt type elbows are supplied as single parts and should be self- sealed on site.

## T-piece PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D.-O.D.-O.D.)
PN 6	end-branch-end (mm)
116WHT202020	20 - 20 - 20
116WHT252525	25 - 25 - 25
116WHT323232	32 - 32 - 32
116WHT403240	40 - 32 - 40
116WHT404040	40 - 40 - 40
116WHT504050	50 - 40 - 50
116WHT505050	50 - 50 - 50
116WHT635063	63 - 50 - 63
116WHT636363	63 - 63 - 63
116WHT757575	75 - 75 - 75
116WHT909090	90 - 90 - 90
116WHT111111	110 - 110 - 110
116WHT121212	125 - 125 - 125

Art. No.	PE-Xa (O.D.-O.D.-O.D.)
PN 10	end-branch-end (mm)
116WST252525	25 - 25 - 25
116WST323232	32 - 32 - 32
116WST403240	40 - 32 - 40
116WST404040	40 - 40 - 40
116WST504050	50 - 40 - 50
116WST505050	50 - 50 - 50
116WST635063	63 - 50 - 63
116WST636363	63 - 63 - 63

The bolt type T-pieces are supplied as single parts and should be self- sealed on site.

## Anti-Seize copper base lubricant

Anti-Seize copper paste lubricant, available in handy stick.  
Provides a shield against seizing and galling.



Art. No.	Content
	kg
116LOC8065	0,02

## Fusapex connections

Fusapex- model parts with integrated resistance wire. By electrical current , this wire is heated to the required sealing temperature and thereby carries out the welding. Each fitting has an integrated detection resistance which ensures an automatic adjustment of welding parameters on the Monomatic welding machine. We are happy to provide a suitable welding tool free of charge for three days. If needed, renting the device is also possible. The processing is only permitted by certified personnel, we are happy to give you training for the Fusapex system.

### Fusapex coupler PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D.-O.D.)
	mm	mm
116ESM050050	50x4,6	50 - 50
116ESM063063	63x5,8	63 - 63
116ESM075075	75x6,8	75 - 75
116ESM090090	90x8,2	90 - 90
116ESM110110	110x10,0	110 - 110
116ESM125125	125x11,4	125 - 125
116ESM160160	160x14,6	160 - 160

### Fusapex adaptor with male thread PE-Xa/M, PN 6 7 PN 10



Art. No.	PE-Xa (O.D. x s)	Thread (M)
	mm	inch
116ESA050112	50x6,8	1 ½"
116ESA063002	63x5,8	2
116ESA075212	75x6,8	2 ½"

### Fusapex flanged adaptor PE-Xa, PN 6 / PN 10



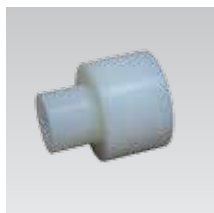
Art. No.	PE-Xa (O.D. x s)	flange dimension
	mm	DN
116SMF050040	50x6,8	40
116SMF063050	63x5,8	50
116SMF075065	75x6,8	65
116SMF090080	90x8,2	80
116SMF110100	110x10,0	100
116SMF125100	125x11,4	100

### Fusapex elbow 90° PE-Xa, PN6 / PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D.-O.D.)
	mm	mm
116ESW075075	75x6,8	75-75
116ESW090090	90x8,2	90-90
116ESW110110	110x10,0	110-110
116ESW125125	125x11,4	125-125

## Fusapex reducing fitting PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D. x s)	PE-Xa (O.D. x s)
	mm	mm
116SMG063050	63x5,8	50x4,6
116SMG075050	75x6,8	50x4,6
116SMG075063	75x6,8	63x5,8
116SMG090050	90x8,2	50x4,6
116SMG090063	90x8,2	63x5,8
116SMG090075	90x8,2	75x6,8
116SMG110050	110x10,0	50x4,6
116SMG110063	110x10,0	63x5,8
116SMG110075	110x10,0	75x6,8
116SMG110090	110x10,0	90x8,2
116SMG125050	125x11,4	50x4,6
116SMG125063	125x11,4	63x5,8
116SMG125075	125x11,4	75x6,8
116SMG125090	125x11,4	90x8,2
116SMG125110	125x11,4	110x10,0
116SMG160075	160x14,6	75x6,8
116SMG160090	160x14,6	90x8,2
116SMG160110	160x14,6	110x10,0
116SMG160125	160x14,6	125x11,4

## Fusapex T-piece PE-Xa, PN 6 / PN 10



Art. No.	PE-Xa (O.D.-O.D.-O.D.)
	end-branch-end (mm)
116SMT505050	50-50-50
116SMT636363	63-63-63
116SMT757575	75-75-75
116SMT909090	90-90-90
116SMT111111	110-110-110
116SMT121212	125-125-125

## Tangit KS cleaning wipes/special cleaner

Special cleaner to prepare the contact surfaces for the Fusapexsystem.



Art. No.	Quantity
116TRT001	100 pcs. /can
116TSR001	1 l / can

## Transport, storage and installation of Austroflex pipelines

The Austroflex- pipes are supplied in coils or in bars at big carrier pipe diameters.

The pipe ends are fitted with protective caps to prevent the entry of dirt and moisture. During storage, make sure that the PE-Xa Carrier pipe is protected from sunlight and that there is no unwanted deformation of the coil. The pipe must be transported and stored in such a way that damage from sharp, pointed or square objects are not possible. The pipe must not be ground over the ground. For securing and handling of the pipes at least 50mm wide textile straps (no ropes or chains) should be used. When manipulating the tubes with the help of forklifts, the pipe coils must be protected by suitable protective hoses or plastic pipes against damage.

## Laying of Austroflex- Pipes in the ground

Austroflex pipes can easily be laid in the earth. The corrugated jacket pipe provides the insulation material and the carrier pipe with the necessary protection. Any existing groundwater does not affect the Austroflex system. The pipes can be installed directly from the roll into the trench. The outer casing must not be perforated or damaged. The carrier pipes must not be kinked! The bending radii for the Pe-Xa carrier pipes must be strictly observed. It may only be drawn at the ends of the carrier pipe, not at the casing. It must be ensured that the outer tube ends not fold back when the textile straps are removed. The prescribed minimum bend radius must not be undershot during installation, as well as the final position of the pipe. To keep the pipe in the desired position, it can be ballasted at regular intervals with sand. When installing larger pipes and lengths pulling devices may be used for the carrier pipe, which are connected to a hand winch or diverting pulley. These devices must always be connected to the carrier pipe. The carrier pipe must be provided with an end cap that avoids pollution on the inside of the carrier pipe.

Attention: Minimal installation temperature for Austroflex-pipes: - 5 ° C.

## Wall and ceiling mounting or exposed pipes in the terrain

When installing to wall or ceiling, the tube must be supported over the entire length because of its flexibility. Here it is recommended that the pipe set in a cable tray and secure it with straps on it.

If the pipeline is laid in the terrain, fixed points must be provided to prevent slipping.

AustroPEX	PE-Xa (da/s)	PE-Xa (di)	Adaptor PE-Xa / AG	outer casing (DA)	core drilling (D)	weight AustroPEX	water content PE-Xa pipe	bending radius AustroPEX	U-value
Art. No. single	mm	DN	mm / Zoll	mm	+/-2 mm	kg/m	Liter / m	m	[W/m · K]
115APE090125	25x2,3	20	25 / ¾"	90	200	0,9	0,33	0,25	0,1898
115APE090132	32x2,9	25	32 / 1"	90	200	1,0	0,54	0,25	0,2355
115APE125140	40x3,7	32	40 / 1¼"	125	200	1,3	0,83	0,35	0,2160
115APE145150	50x4,6	40	50 / 1½"	145	200/250	1,9	1,31	0,40	0,2289
115APE145163	63x5,8	50	63 / 2"	145	250/250	2,3	2,07	0,55	0,2925
115APE175175	75x6,8	65	75 / 2½"	175	250/300	3,3	2,96	0,80	0,2868
115APE200190	90x8,2	75	90 / 3"	200	250/300	4,3	4,25	1,10	0,3092
115APE200110	110x10,0	90	110 / 4"	200	250/300	5,2	6,36	1,20	0,4161
115APE200125	125x11,4	100	125 / 4"	200	250/300	6,1	8,20	1,40	0,5334
115APE250160	160x14,6	130	160 / 5"	250	250/300	15,1	13,43	-*	0,4675
double									
115APE125220	2- 20x1,9	15	20 / ¾"	125	200	1,2	0,44	0,45	0,2186
115APE145225	2- 25x2,3	20	25 / ¾"	145	200/250	1,6	0,66	0,50	0,2230
115APE175232	2- 32x2,9	25	32 / 1"	175	250/300	2,5	1,08	0,60	0,2297
115APE175240	2- 40x3,7	32	40 / 1¼"	175	250/300	2,7	1,66	0,80	0,2821
115APE200250	2- 50x4,6	40	50 / 1½"	200	250/300	3,6	2,62	1,00	0,3191
115APE200263	2- 63x5,8	50	63 / 2"	200	250/300	4,3	4,14	1,20	0,4252

## Profile of the pipe trench

Up to a trench depth of 120cm, we recommend the excavation of a vertical trench, from 120cm should preferably a V-trench to be excavated. Excavation work must be carried out according the approved procedure and the rules and regulations of local authorities. Often a prior permission must be obtained. The trench depth must correspond with the provisions relating to the laying of Austroflex pipelines. A pipe cadastral plan may be useful to avoid possible conflicts between existing or future networks and structures. After completing the installation work, the route must be marked with a warning tape.

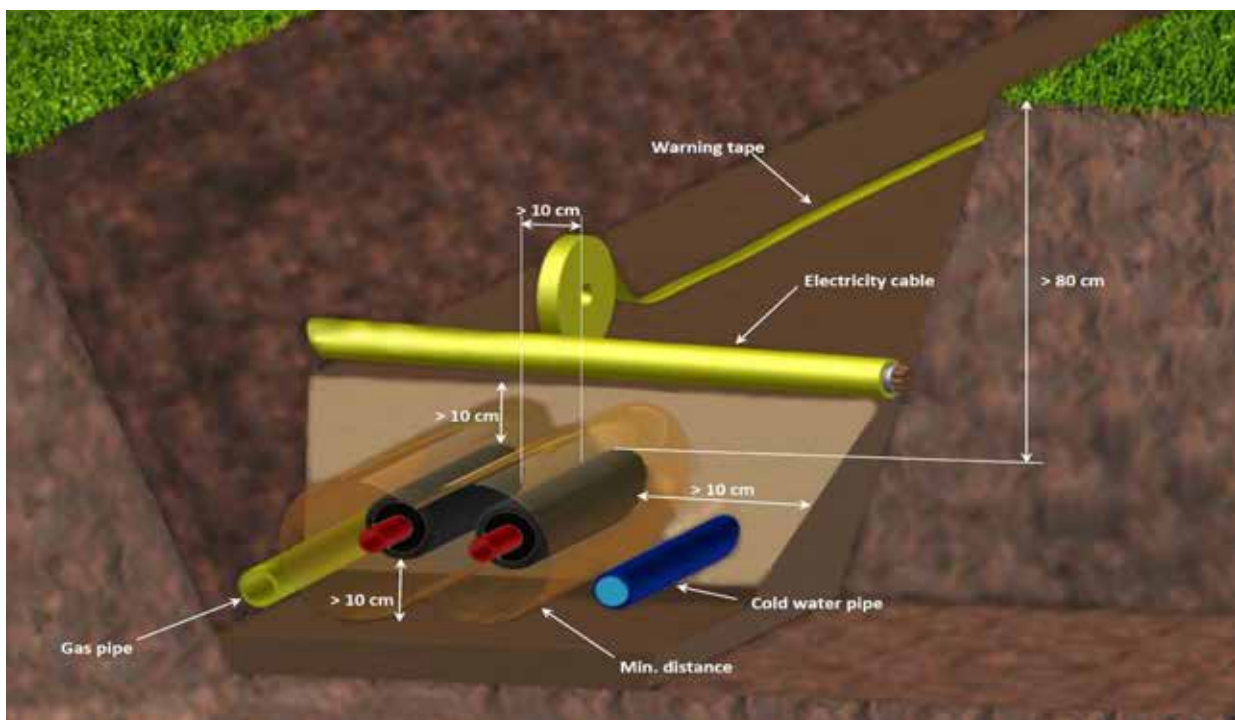
## Distances to other supply lines

In the immediate vicinity of the district heating pipeline the ground temperature is higher than normal. The transmission capacity of underground electrical cables can be influenced. Generally it is recommended to place the pipes next to each other and not on the top of each other.

To avoid possible interactions with other cable systems the Austroflex Rohr-Isoliertesysteme GmbH recommends to comply with the following minimum distances (see also VDE 0100 and VDE 0101):

Minimum distance from crossing pipes:	
Line Type	Minimum distance
1 kV, signal, measuring cables	0,3 m
10-kV- or a 30-kV- cable	0,6 m
Several 30 kV cables or cable >60 kV	1,0 m
Gas and water pipes	0,2 m

Minimum distance fro parallel pipes:		
Line Type	Minimum distance for parallel lines	
	< 5 m	> 5 m
1 kV, signal, measuring cables	0,3 m	0,3 m
10-kV- or a 30-kV- cable	0,6 m	0,7 m
Several 30 kV cables or cable >60 kV	1,0 m	1,5 m
Gas and water pipes	0,5 m	0,5 m



## Rules for filling trench

The Austroflex pipeline should be carefully completely embedded with 10 cm sand on the bottom of the trench. The quality of compact sand bed, which takes up the pipes equally, has a decisive influence on the compressive stress of the pipe. It must be ensured that the pipes are completely embedded (Sand granulation 0-4 mm). Further filling of the trench has to be made in layers of 20 cm and is to compress by hand. Spike objects and tree roots are to be removed from the trench. From surplus cover of 50 cm and more, the compression may also be carried out mechanically with a vibrating tamper. Approximately 20 cm above the pipe a warning tape should be placed.

Our pre-insulated pipes as well as our longitudinal, elbow- and T-insulation kits are suitable for the stress caused by heavy goods vehicles SLW 60 under defined installation conditions according to ATV DVWK-A127. The laying of the pipe must be carried out in accordance with the currently applicable guidelines DWA-A127 for underground pipes.

## Pressure Test

The pressure test procedure is obligatory before closing the trench!

### Leak-tightness testing with water:

1. Pipes must be accessible and must not be covered.
2. Dismantle safety and counting devices where required and replace with pipe pieces or pipe end stops.
3. Fill pipes from the deepest point of the system, excluding any air, with filtered drinking water. Here the water temperature must match the ambient temperature ( $\Delta \vartheta \leq 10 \text{ K}$  ambient temperature to water temperature)
4. Bleed the draw-off points until no air can be determined in the expelled water.
5. Use a pressure testing device with an accuracy of 100 hPa (0.1 bar) for the pressure test.
6. Connect the pressure testing device at the deepest point of the heating network system.
7. Carefully close all draw-off points.
8. Make sure that the temperature remains as constant as possible during the pressure test.
9. Prepare the pressure test record sheet and note the system data.

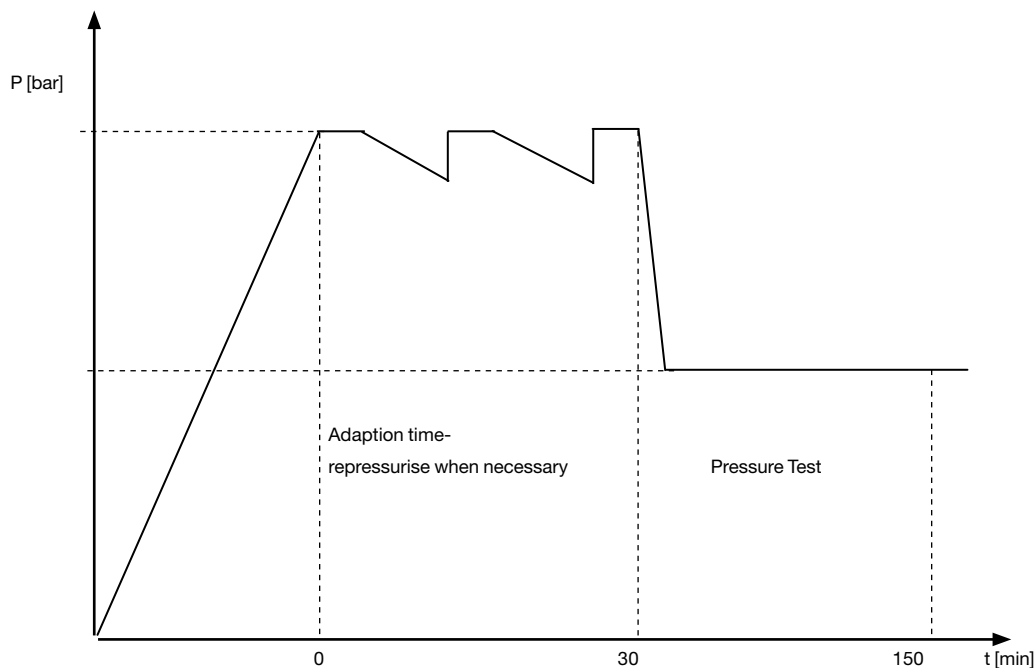
### Pressure test for system with PE-Xa-pipes:

1. Build up the test pressure (= 1.1 x max. operating pressure) slowly in the installation.
2. Maintain the test pressure for 30 minutes. Build up the test pressure again where necessary.
3. Note down the test pressure in the pressure test record after 30 minutes.
4. Verify the leak tightness of the entire installation, particularly the connecting points, by means of a visual inspection.
5. Slowly reduce the test pressure to 0.5 x maximum test pressure and note down the test pressure in the pressure test report.
6. Read the test pressure after 2 hours and note it down in the pressure test record.
7. Verify the leak tightness of the entire installation, particularly the connecting points, by means of a visual inspection.
8. If the test pressure drops away:
  - Carry out another precise visual inspection of the pipes, draw-off points and connecting points.
  - After rectifying the cause of the drop in pressure repeat the pressure test on the system (steps 1-7).
9. If no leaks have been found during the visual inspection the leak tightness test can be concluded.

### Concluding the pressure test with water

Following conclusion of the pressure test:

1. The company that performed the test and the client must confirm the pressure test in the pressure test record.
2. Remove the pressure test device.
3. Re-attach the removed safety and metering equipment.





# Pressure test record

## 1. Project data:

Object: \_\_\_\_\_ Builder: \_\_\_\_\_

Street/No.: \_\_\_\_\_ ZIP/Place: \_\_\_\_\_

The filling water is filtered and the pipesystem is without any air.

The allowable working pressure is: \_\_\_\_\_ bar

Water temperature  $\vartheta_W =$  \_\_\_\_\_ °C      Ambient temperature  $\vartheta_A =$  \_\_\_\_\_ °C       $\Delta\vartheta = \vartheta_A - \vartheta_W =$  \_\_\_\_\_ K

## 2. Pressure test

### Step 1:

$\Delta\vartheta \leq 10$  K between ambient temperature and water temperature

Test pressure: \_\_\_\_\_ bar (1,1 x max. working pressure)

Waiting time: \_\_\_\_\_ min. (minimum 30 minutes); hold test pressure, repressurise when necessary.

Pressure after 30 min.: \_\_\_\_\_ bar

The whole installation, specially the connections, are checked and no leaks are detected.

### Step 2:

Test pressure: \_\_\_\_\_ bar (0,5 x max. test pressure)

Test time: \_\_\_\_\_ min. (120 min.)

Pressure after 120 min.: \_\_\_\_\_ bar

The whole installation, specially the connections, are checked and no leaks are detected.

## 3. Check notes

At step 2 of the pressure test no pressure loss at the manometer was detected.

The whole installation is sealed.

## 4. Confirmation

For the client: \_\_\_\_\_

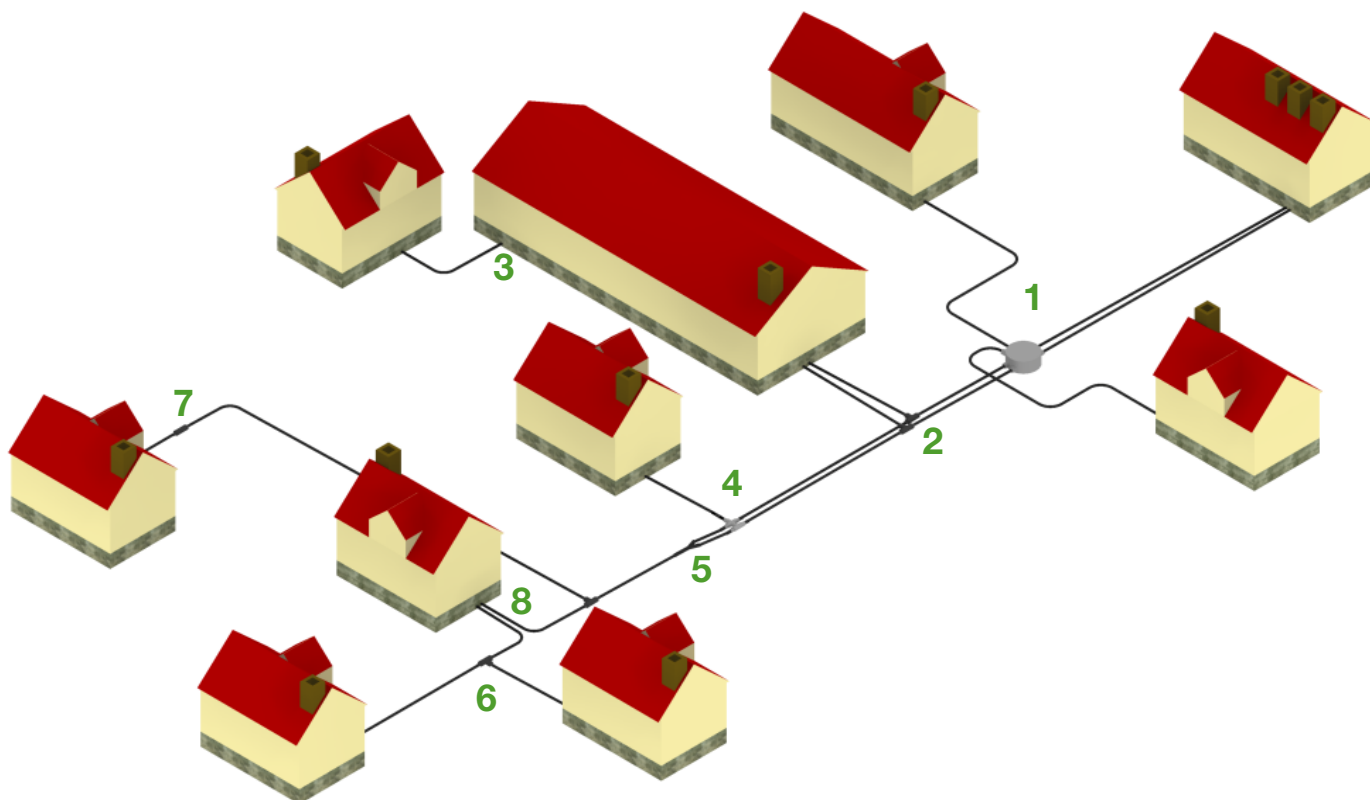
For the Contractor: \_\_\_\_\_

Place: \_\_\_\_\_

Date: \_\_\_\_\_

Attachment: \_\_\_\_\_

## Connectivity with the system of Austroflex



### 1. Chamber

Continuation of two single pipes and diversion of two double pipes in a chamber:

Components for chamber installation		
Art. No.	Component	Number
116ESD200	Chamber	1
116SSS000	Heat shrink sleeve	6
116ENO000000	Heat shrink end-cap	6
116SHT000000	Compression T-piece	4
116SHW000000	Compression elbow 90°(To make the connection in the chamber easier)	4

### 2. T-piece

Diversion of a main line to a secondary line with single pipes:

Components for a T-piece installation		
Art. No.	Component	Number
116IST005	Insulation kit for T-piece	2
116IRE000000	Insulation tube bit	6
116ENO000000	Heat shrink end-cap	6
116SHT000000	Compression T-piece	2
116ISD000	PUR- or elastomeric- foam insulation kit	2

### 3. House connection

Depending on the requirements a wall feed through for pressurized- or non-pressurized- water is used:

Components for a house connection installation		
Art. No.	Component	Number
116HED000 / 116HEN000	Wall-feed through for pressurized water/ Wall-feed through for non-pressurized water	1
116AFS000	Restraining clamp	1
116ENS000000	rubber- end cap	1
116WHA000000	Bolt type connector for male thread	1 / Pe-Xa Pipe

#### 4. Double T- piece

Diversion of a main line with single lines to a secondary line with a double pipes:

Components for a Double- T-piece installation		
Art. No.	Component	Number
116IST004	Insulation kit for double T-pieces	1
116ENO000000	Heat shrink end-cap	5
116SHT000000	Compression T-piece	2
116ISD000	PUR- or elastomeric- foam insulation kit	2

#### 5. Y-Piece

Merging of 2 single pipes to a double pipe:

Components for a Y-piece installation		
Art. No.	Component	Number
116ISH100	Y-piece insulation kit	1
116ENO000000	Heat shrink end-cap	3
116SHK000000	Compression coupler	2
116ISD000	PUR- or elastomeric- foam insulation kit	1

#### 6. T-piece

Diversion of a main to a secondary line with double pipes:

Components for a T-piece installation		
Art. No.	Component	Number
116IST005	Insulation kit for T-piece	1
116IRE000000	Insulation tube bit	3
116ENO000000	Heat shrink end-cap	3
116SHT000000	Compression T-piece	2
116ISD000	PUR- or elastomeric- foam insulation kit	1

#### 7. I-Shroud set or alternative kit

For the connection of two double pipes following components are required:

Components for a I-shroud set installation		
Art. No.	Component	Number
116ISL000	I-Shroud set or alternative kit	1
116IRE000000	Insulation tube bit (not needed in case of the alternative kit)	2
116ENO000000	Heat shrink end-cap	2
116SHT000000	Compression coupler	2
116ISD000	PUR- or elastomeric- foam insulation kit	1

#### 8. Line routing via „looping“

The continuation of a pipe can be done by routing the line in loops to reduce the number of T- pieces. Therefore the pipe will be distributed in the interior of one house and then passed through a second wall feed through to the next house.

CAUTION: When selecting components, take care of the dimensions of the insulation kits and carrier pipes.

### Pressure units converting table

Pressure units converting table									
Unit	1 Pa	1 kPa	1 bar	1 mbar	1 mmWs	1 atm	1 at	1 Torr	1 lb/in <sup>2</sup>
1 Pa = 1 N/m <sup>2</sup>	1	10 <sup>-3</sup>	10 <sup>-5</sup>	0,01	0,102	0,987x10 <sup>-5</sup>	1,02x10 <sup>-5</sup>	0,75x10 <sup>-2</sup>	1,45x10 <sup>-4</sup>
1 kPa	1000	1	0,01	10	102	0,987x10 <sup>-2</sup>	1,02x10 <sup>-2</sup>	7,50	0,145
1 bar = 1 N/mm <sup>2</sup>	10 <sup>5</sup>	100	1	1000	1,02x10 <sup>4</sup>	0,947	1,02	750	14,50
1 mbar	100	0,1	10 <sup>-3</sup>	1	10,2	0,987x10 <sup>-3</sup>	1,02x10 <sup>-3</sup>	0,75	0,0145
1 mmWs	9,81	9,81x10 <sup>-3</sup>	31x10 <sup>-5</sup>	9,81x10 <sup>-2</sup>	1	0,97x10 <sup>-4</sup>	10 <sup>-4</sup>	0,074	1,42x10 <sup>-3</sup>
1 atm	1,01x10 <sup>-5</sup>	101	1,01	1010	10332	1	1,033	760	14,70
1 at	9,81x10 <sup>4</sup>	98,1	0,981	981	10000	0,968	1	735	14,22
1 Torr	133	0,133	1,33x10 <sup>-3</sup>	1,33	13,6	1,32x10 <sup>-2</sup>	1,36x10 <sup>-2</sup>	1	0,019
1 lb/in <sup>2</sup>	6,89x10 <sup>3</sup>	6,89	0,069	68,9	703	0,068	0,070	51,7	1

		5 (K)	7 (K)	10 (K)	15 (K)	20 (K)	25 (K)	30 (K)	40 (K)		20 x 1,9	25 x 2,3	32 x 2,9	40 x 3,7	50 x 4,6	63 x 5,8	75 x 6,8	90 x 8,2
kg / h at H <sub>2</sub> O 70°C	ℓ / sec at H <sub>2</sub> O 70°C	kW ( at the several Temp. difference in Kelvin z.B.: 20 (K) = 80 / 60°C, TM = 70°C) 1 [ℓ / sec] x 3,6 = 1 [m³ / h]								Pressure loss Flow speed. (at H <sub>2</sub> O 70°C)	O.D. (Outside Diameter PE-Xa carrier pipe times wallthickness SDR11 = 6 bar bei 95°C) 100.000 Pa = 1 bar							
43	0,012	0,25	0,35	0,5	0,75	1	1,25	1,5	2	Pa/m m/sec	5 0,06	2 0,04						
107	0,031	0,625	0,875	1,25	1,875	2,5	3,125	3,75	5	Pa/m m/sec	24 0,15	8 0,09						
215	0,061	1,25	1,75	2,5	3,75	5	6,25	7,5	10	Pa/m m/sec	80 0,30	27 0,19	8 0,11					
430	0,122	2,5	3,5	5	7,5	10	12,5	15	20	Pa/m m/sec	273 0,59	90 0,37	27 0,23	10 0,15				
644	0,183	3,75	5,25	7,5	11,25	15	18,75	22,5	30	Pa/m m/sec	565 0,89	185 0,56	56 0,34	20 0,22				
859	0,244	5	7	10	15	20	25	30	40	Pa/m m/sec	952 1,18	310 0,75	93 0,45	32 0,29	11 0,19			
1.074	0,305	6,25	8,75	12,5	18,75	25	31,25	37,5	50	Pa/m m/sec	1432 1,48	465 0,93	138 0,57	48 0,37	16 0,23			
1.289	0,366	7,5	10,5	15	22,5	30	37,5	45	60	Pa/m m/sec		647 1,12	192 0,68	67 0,44	23 0,28			
1.504	0,427	8,75	12,25	17,5	26,25	35	43,75	52,5	70	Pa/m m/sec		858 1,31	254 0,79	88 0,51	30 0,33			
1.718	0,488	10	14	20	30	40	50	60	80	Pa/m m/sec		1096 1,49	323 0,91	112 0,58	38 0,37	13 0,24		
1.933	0,549	11,25	15,75	22,5	33,75	45	56,25	67,5	90	Pa/m m/sec			400 1,02	139 0,66	47 0,42	15 0,26		
2.148	0,610	12,5	17,5	25	37,5	50	62,5	75	100	Pa/m m/sec			485 1,13	168 0,73	57 0,47	19 0,29		
2.363	0,671	13,75	19,25	27,5	41,25	55	68,75	82,5	110	Pa/m m/sec			577 1,24	199 0,80	67 0,51	22 0,32		
2.578	0,732	15	21	30	45	60	75	90	120	Pa/m m/sec			677 1,36	233 0,88	79 0,56	26 0,35		
2.792	0,793	16,25	22,75	32,5	48,75	65	81,25	97,5	130	Pa/m m/sec			785 1,47	270 0,95	91 0,61	30 0,38		
3.007	0,854	17,5	24,5	35	52,5	70	87,5	105	140	Pa/m m/sec			899 1,58	309 1,02	104 0,65	34 0,41		
3.222	0,915	18,75	26,25	37,5	56,25	75	93,75	112,5	150	Pa/m m/sec			1021 1,70	350 1,10	118 0,70	39 0,44		
3.437	0,976	20	28	40	60	80	100	120	160	Pa/m m/sec				394 1,17	132 0,75	43 0,47	18 0,33	
3.652	1,037	21,25	29,75	42,5	63,75	85	106,25	127,5	170	Pa/m m/sec				441 1,24	148 0,79	48 0,50	20 0,35	
3.866	1,098	22,5	31,5	45	67,5	90	112,5	135	180	Pa/m m/sec				489 1,32	164 0,84	54 0,53	23 0,37	
4.296	1,220	25	35	50	75	100	125	150	200	Pa/m m/sec				594 1,46	199 0,93	65 0,59	27 0,41	
4.726	1,343	27,5	38,5	55	82,5	110	137,5	165	220	Pa/m m/sec				709 1,61	237 1,03	77 0,65	33 0,45	
5.155	1,465	30	42	60	90	120	150	180	240	Pa/m m/sec				833 1,76	277 1,12	90 0,71	38 0,49	
5.585	1,587	32,5	45,5	65	97,5	130	162,5	195	260	Pa/m m/sec				966 1,90	321 1,21	104 0,76	44 0,54	
6.014	1,709	35	49	70	105	140	175	210	280	Pa/m m/sec				1108 2,05	368 1,31	119 0,82	50 0,58	
6.444	1,831	37,5	52,5	75	112,5	150	187,5	225	300	Pa/m m/sec					418 1,40	135 0,88	57 0,62	
6.874	1,953	40	56	80	120	160	200	240	320	Pa/m m/sec					471 1,49	152 0,94	64 0,66	27 0,46
7.303	2,075	42,5	59,5	85	127,5	170	212,5	255	340	Pa/m m/sec					526 1,59	170 1,00	72 0,70	30 0,49
7.733	2,197	45	63	90	135	180	225	270	360	Pa/m m/sec					585 1,68	189 1,06	80 0,74	33 0,52
8.592	2,441	50	70	100	150	200	250	300	400	Pa/m m/sec					711 1,87	229 1,18	96 0,82	40 0,57
9.666	2,746	56,25	78,75	112,5	168,75	225	281,25	337,5	450	Pa/m m/sec					885 2,10	285 1,32	120 0,93	50 0,65
10.740	3,051	62,5	87,5	125	187,5	250	312,5	375	500	Pa/m m/sec					1077 2,33	346 1,47	145 1,03	60 0,72
11.814	3,356	68,75	96,25	137,5	206,25	275	343,75	412,5	550	Pa/m m/sec						412 1,62	173 1,13	71 0,79
12.888	3,661	75	105	150	225	300	375	450	600	Pa/m m/sec						485 1,76	203 1,24	84 0,86
13.962	3,966	81,25	113,75	162,5	243,75	325	406,25	487,5	650	Pa/m m/sec						562 1,91	235 1,34	97 0,93

		5 (K)	7 (K)	10 (K)	15 (K)	20 (K)	25 (K)	30 (K)	40 (K)		63 x 5,8	75 x 6,8	90 x 8,2	110 x 10,0	125 x 11,4	160 x 14,6
kg / h at H <sub>2</sub> O 70°C	ℓ / sec at H <sub>2</sub> O 70°C	kW ( at the several Temp. difference in Kelvin z.B.: 20 (K) = 80 / 60°C, TM = 70°C) 1 [ℓ / sec ] x 3,6 = 1 [m³ / h]								Pressure loss Flow speed. (at H <sub>2</sub> O 70°C)	O.D. (Outside Diameter PE-Xa carrier pipe times wallthickness SDR11 = 6 bar bei 95°C) 100.000 Pa = 1 bar					
15.036	4,272	87,5	122,5	175	262,5	350	437,5	525	700	Pa/m m/sec	645 2,06	269 1,44	111 1,00	42 0,67	23 0,52	
16.110	4,577	93,75	131,25	187,5	281,25	375	468,75	562,5	750	Pa/m m/sec	734 2,21	306 1,55	126 1,08	47 0,72	26 0,56	
17.184	4,882	100	140	200	300	400	500	600	800	Pa/m m/sec	828 2,35	345 1,65	142 1,15	53 0,77	29 0,60	
18.258	5,187	106,25	148,75	212,5	318,75	425	531,25	637,5	850	Pa/m m/sec	927 2,50	386 1,75	159 1,22	60 0,82	32 0,63	
19.332	5,492	112,5	157,5	225	337,5	450	562,5	675	900	Pa/m m/sec	1032 2,65	429 1,85	176 1,29	66 0,86	36 0,67	
20.406	5,797	118,75	166,25	237,5	356,25	475	593,75	712,5	950	Pa/m m/sec		475 1,96	195 1,36	73 0,91	39 0,71	
21.480	6,102	125	175	250	375	500	625	750	1000	Pa/m m/sec		522 2,06	214 1,43	80 0,96	43 0,74	
22.554	6,407	131,25	183,75	262,5	393,75	525	656,25	787,5	1050	Pa/m m/sec		572 2,16	234 1,51	88 1,01	47 0,78	
23.628	6,713	137,5	192,5	275	412,5	550	687,5	825	1100	Pa/m m/sec		624 2,27	256 1,58	96 1,06	51 0,82	16 0,50
24.702	7,018	143,75	201,25	287,5	431,25	575	718,75	862,5	1150	Pa/m m/sec		678 2,37	278 1,65	104 1,10	56 0,86	17 0,52
25.776	7,323	150	210	300	450	600	750	900	1200	Pa/m m/sec		734 2,47	300 1,72	112 1,15	60 0,89	18 0,54
26.850	7,628	156,25	218,75	312,5	468,75	625	781,25	937,5	1250	Pa/m m/sec		792 2,58	324 1,79	121 1,20	65 0,93	20 0,57
27.924	7,933	162,5	227,5	325	487,5	650	812,5	975	1300	Pa/m m/sec		853 2,68	349 1,86	130 1,25	70 0,97	21 0,59
28.998	8,238	168,75	236,25	337,5	506,25	675	843,75	1012,5	1350	Pa/m m/sec		916 2,78	374 1,94	139 1,29	75 1,00	23 0,61
30.072	8,543	175	245	350	525	700	875	1050	1400	Pa/m m/sec		980 2,89	400 2,01	149 1,34	80 1,04	24 0,64
31.146	8,848	181,25	253,75	362,5	543,75	725	906,25	1087,5	1450	Pa/m m/sec			427 2,08	159 1,39	85 1,08	26 0,66
32.217	9,153	187,5	262,5	375	562,5	750	937,5	1125	1500	Pa/m m/sec			455 2,15	169 1,44	91 1,12	27 0,68
33.294	9,459	193,75	271,25	387,5	581,25	775	968,75	1162,5	1550	Pa/m m/sec			484 2,22	180 1,49	97 1,15	29 0,70
34.368	9,764	200	280	400	600	800	1000	1200	1600	Pa/m m/sec			514 2,29	191 1,53	102 1,19	31 0,73
36.516	10,374	212,5	297,5	425	637,5	850	1062,5	1275	1700	Pa/m m/sec			575 2,44	214 1,63	115 1,26	34 0,77
38.664	10,984	225	315	450	675	900	1125	1350	1800	Pa/m m/sec			640 2,58	237 1,73	127 1,34	38 0,82
40.812	11,594	237,5	332,5	475	712,5	950	1187,5	1425	1900	Pa/m m/sec			709 2,73	263 1,82	141 1,41	42 0,86
42.959	12,205	250	350	500	750	1000	1250	1500	2000	Pa/m m/sec			781 2,87	289 1,92	155 1,49	46 0,91
45.107	12,815	262,5	367,5	525	787,5	1050	1312,5	1575	2100	Pa/m m/sec				317 2,01	169 1,56	51 0,95
47.255	13,425	275	385	550	825	1100	1375	1650	2200	Pa/m m/sec				345 2,11	185 1,64	55 1,00
49.403	14,035	287,5	402,5	575	862,5	1150	1437,5	1725	2300	Pa/m m/sec				375 2,21	201 1,71	60 1,04
51.551	14,646	300	420	600	900	1200	1500	1800	2400	Pa/m m/sec				406 2,30	217 1,79	65 1,09
53.699	15,256	312,5	437,5	625	937,5	1250	1562,5	1875	2500	Pa/m m/sec				439 2,40	234 1,86	70 1,14
55.848	15,866	325	455	650	975	1300	1625	1950	2600	Pa/m m/sec				472 2,49	252 1,93	75 1,18
57.995	16,476	337,5	472,5	675	1012,5	1350	1687,5	2025	2700	Pa/m m/sec				507 2,59	270 2,01	81 1,23
60.143	17,086	350	490	700	1050	1400	1750	2100	2800	Pa/m m/sec					290 2,08	86 1,27
62.291	17,697	362,5	507,5	725	1087,5	1450	1812,5	2175	2900	Pa/m m/sec					309 2,16	92 1,32
64.439	18,307	375	525	750	1125	1500	1875	2250	3000	Pa/m m/sec					329 2,23	98 1,36
66.587	18,917	387,5	542,5	775	1162,5	1550	1937,5	2325	3100	Pa/m m/sec					350 2,31	104 1,41
68.735	19,527	400	560	800	1200	1600	2000	2400	3200	Pa/m m/sec					372 2,38	110 1,45

Max transmissible power  
5100 [kW]  
at 30[K] Temp. difference.  
For further information  
pleas contact us.



# General Terms and Conditions of Business and Delivery

## 1. General:

The following „Terms and Conditions“ apply, for all supplies and services delivered by Austroflex Rohr-Isoliersysteme GmbH, Finkensteiner Strasse 7, A-9585 Gödersdorf, Austria (hereinafter referred to as „The Seller“), Austrian Registered Company Number FN 199010 m. All variations must be expressly agreed in writing.

Any commitment or supplementary agreement by the Company's employees or independent representatives, which fall outside these Terms and Conditions, require The Seller's written consent in order to be valid. Company sales representatives do not have signing authority. Any other conditions requested by the Purchaser cannot be considered an integral part of the contract, unless these have been accepted by The Seller in writing. All tenders are without obligation with regard to indications of price, quantity, delivery time and availability and only become part of the purchase contract with the written acknowledgement of the order with the expressly contracted points therein confirmed.

Verbal or telephone information and explanations shall remain unbinding until they shall have been confirmed in writing. These terms also apply to information in brochures, catalogues, price lists, newsletters, advertisements, etc.; Expressly stated or tacitly implied authorisations, Norm-tests, technical data, properties, application and performance specifications and instructions shall be considered as guaranteed features only if explicitly referred to as such in writing in the contract.

## 2. Place of Contractual Fulfilment and Court of Jurisdiction:

Unless otherwise agreed, the Place of Fulfilment shall be deemed the loading dock; for the Payment it shall be deemed the Headquarters of The Seller. Only Austrian law shall apply. As to the Court of Jurisdiction the competent commercial court of The Seller shall be deemed the agreed venue.

## 3. Delivery:

All delivery dates and deadlines given apply only approximately; they are only binding if The Seller indicated them as such in writing. Furthermore, The Seller shall not be held liable for adherence to the delivery deadline in case of impediments due to force majeure, or other unforeseeable extraordinary circumstances outside its control, which affect The Seller or its suppliers, with reference to interruption of operations, strikes, raw material or shortage of goods. If The Seller fails to meet agreed delivery times, the Purchaser has the right to withdraw from the non-fulfilled part of the contract after expiration of a reasonable grace period set by the Purchaser. Equally, in these cases The Seller reserves the right to withdraw from the agreement wholly or in part, with regard to the unfulfilled part of the delivery. Any damages claimed by the Purchaser shall be ruled out. Liability is restricted to wilful intent or gross negligence on the part of The Seller. Partial deliveries are permissible. In the case of call-forward orders, the delivery time begins on the next working day after the goods have been called forward upon receipt. (Mon.-Fri.). For transport- and production-related technical reasons The Seller reserves the right to an excess or short delivery of up to 5 % of the quantity ordered. If the Purchaser does not take delivery of the goods after expiration of a reasonable grace period, The Seller is entitled to withdraw from the contract and to claim damages due to non-fulfilment.

Return shipments are only admissible after permission has been obtained from The Seller, a handling fee of 15% shall apply and the Purchaser shall assume the freight costs.

Each return shall only be accepted when accompanied by the return coupon confirmation issued by Austroflex Rohr-Isoliersysteme GmbH. Special or custom-made products are non-returnable.

## 4. Shipping, Transfer of Risk, Non-acceptance:

Unless otherwise agreed, delivery is made ex-work at the contract Purchaser's risk and expense. The risk shall pass to the Purchaser upon the transfer of the goods to the first carrier (post, railway, transport company etc.). (This shall also apply to deliveries for which The Seller has agreed to pay for the transport of the goods.) It shall be the duty of the Purchaser, his receiver or designated agent to check out and exonerate the transport vehicle at the place of destination. Pallets, which are not explicitly declared as non-returnable, must be either replaced immediately upon delivery or returned to The Seller undamaged, at the expense of the Purchaser within two weeks.

Otherwise, the costs will be charged to the Purchaser at current market prices. Similarly, the Purchaser is liable for all additional costs incurred for any casual reason (such as demurrage, truck demurrage and the like).

Unless otherwise explicitly agreed in writing, delivery does not include unloading. Trucks organised by The Seller shall be unloaded within a maximum of two hours of arrival at the unloading site.

The receiver of the delivery will be billed for any resulting down time and other costs based on the Freight Forwarder's bill. If the fulfilment of the contract is prevented as the fault of the Purchaser and/or his vicarious agent, The Seller may either claim financial compensation due to non-fulfilment or withdraw from the contract. Any additional expenses (storage charges, transport, distress sale) can be added to the invoiced amount.

## 5. Warranty - Complaints - Deadlines:

The condition of the goods on arrival at the delivery point is fundamental. The Purchaser shall report immediately in writing to The Seller open defects, spe-

cifying them on the delivery note or waybill. The Purchaser expressly undertakes to inspect the delivered product for its suitability. In case of defective goods or incorrect delivery the Purchaser shall not in any way transform, adapt or resell the goods. The Seller reserves the right to inspect the products before processing. Otherwise all implied warranties are excluded.

The shipper or carrier is liable for damages or losses incurred during transit. Prerequisite for a warranty is compliance with Seller's written instructions concerning storage, processing, etc. and/or compliance with the guidelines and their relevant standards and regulations established. The Seller's processing instructions are in accordance with present knowledge and experience. Under no circumstances do they constitute a legal guarantee and do not form part of a sale's contract. Specific conditions with regard to building type, technology and regulations must always be taken into consideration when utilising the purchased items. Warranty in consulting is generally excluded.

## 6. Liability:

Liability for damage is limited in cases of deliberate or gross negligence The warranty covers only damage limitation (delivery of spare parts) and is limited to the amount of the order. The Seller is not liable for the fulfilment of specific rules or for import licenses and authorisations in Austria, unless they were expressly agreed by contract. The duty of replacement is excluded for damage resulting from product liability law and also product liability claims which might be derived from other provisions. The Purchaser is entitled to compensation, particularly for non-fulfilment, specific contract violation or damages resulting from defects, only in the case of gross negligence or intent.

Unless expressly acknowledged by The Seller in writing, claims for damages shall lapse six months after delivery.

## 7. Prices and Payment:

Prices are subject to change without notice and are based on the current price list and/or the order. The prices are, unless expressly agreed otherwise, "ex works" from The Seller, excluding freight, customs, and packaging, plus any statutory value added tax (VAT) due. Should relevant prices vary considerably after posting of the tender or confirmation of the order prior to delivery, customer and supplier shall consult each other and agree to a price adjustment. In the case of follow-up orders The Seller shall not be bound by previous prices. Payment shall be made within 30 days after the invoice date, net without any deductions of any kind, and net of bank costs and fees for the recipient (Seller). The Seller grants a 3 % discount when payment is made within eight days of the invoice date. Discounts or rebates shall be granted only if there are no other outstanding claims against the Purchaser. Terms of payment agreed verbally or over the phone shall not apply to new customers when a credit check does not support a line of credit. In this case, the delivery will only be on receipt of payment by cheque or cash on receipt of the goods.

In the case of non-payment, The Seller is entitled to charge interest for delayed payment at the rate of 5% above the discount rate of the Austrian National Bank and to claim additional costs of eleven (11) Euro for each reminder sent. Counterclaims cannot not be compensated with the invoice amount. In case of change in currency values, the currency amount on the day of the invoice shall be accounted. Bills of exchange shall be accepted only with a waiver of recourse by the involved bank (s) and then only as a payment on condition that all the costs associated with the realisation of a bill of exchange shall be borne by the Purchaser. If after successful delivery or part delivery a basic deterioration in the Purchaser's financial circumstances becomes known, payment becomes due immediately. Agreed bonuses cannot compensate open claims against The Seller, where the Purchaser is in arrears with payments for previous deliveries.

## 8. Retention of Title:

The goods are delivered exclusively under proprietary rights (retention of title) and pass into the property of the Purchaser only after payment in full.

In the event of processing the said goods either into a new object or by combining it with a new object, The Seller acquires co-ownership of the new product or of the main product as long as the relevant products are subject to retention of title. Should the Purchaser sell the reserved goods on credit, the resulting claims for the purchase price are understood as relinquished to The Seller from the moment they occur without the need for a transfer deed. With payment by means of a bill of exchange the agreed retention of title remains, until the bill of exchange has been honoured in favour of The Seller. The Purchaser shall not be entitled to pledge goods subject to reservation of title, nor transfer them as security.

## 9. Severability

Should one or more provisions of these general terms and conditions be partly or fully void, the remaining terms and conditions shall remain in full force and effect. The provision found unenforceable shall be replaced with a substitute provision that legally comes as close as possible to the reasonably inferred intent of the invalid provision.

Only with the product delivered installation guidelines are valid. All work should always be carried out by trained personnel.



# Austroflex - the experts for flexible insulated pipe systems and insulation applications



## ABOUT AUSTROFLEX:

In 1985, Austroflex was founded and began producing technical insulation and heating products. In the mid-90's Austroflex started the production of solar connection systems. The company headquarters is located in Gödersdorf / Villach and comprises a 25.000m<sup>2</sup> area. In addition to a wide range of own products, the company also imports specialized products.

## SERVICE:

With over 30 years of experience in transportation and preservation of thermal or cooling energy we are able to support our clients in solving general as well as individual problems. This includes all variations of

- Calculations regarding heat loss, insulation thickness and dimensions
- Training for technology, inside sales or marketing
- Advising on projects to be implemented

## SELF-UNDERSTANDING:

We at Austroflex are a partner for industry and wholesale while following a three-stage channel of distribution. Thanks to high innovation and flexibility we are able to meet the highest demands of our customers.

**Austroflex**<sup>®</sup>  
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