

DN25-DN300



System **KAN-therm**

Groove

System for special purposes

EN 01/2019



TECHNOLOGY OF SUCCESS



ISO 9001

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## Integrated KAN-therm pipeline systems

**All KAN-therm systems are characterized by consistently high quality as well as quick and uncomplicated assembly. Due to the full compatibility, it is possible to combine systems, achieving a range of diameters from DN25 to DN300 (33,7-323,9 mm).**

Integrated KAN-therm pipeline systems are produced on many different production lines, the combination of which leads to the creation of the best quality technical solutions. These systems are applicable both in the transport of gases and liquids, in housing and commercial construction, industry, fire protection installations as well as shipbuilding and mining industries.

### **The right technology for proper application.**

In KAN we know that the right technology should be chosen for each application to ensure the best product quality, joining technique and maximum efficiency of the process. The KAN technical department will advise and guide you through the entire complicated process of project implementation. The use of the KAN-therm Groove System will allow for avoiding situations where it is necessary to combine products from different manufacturers.

# 1. KAN-therm Groove SYSTEM

Thanks to a wide range of high-quality elements and expertise within the innovative system solutions, KAN-therm Groove offers additional, innovative technology on the market of HVAC systems, compressed air as well as in the industry, shipbuilding and mining sectors. Reliable connections, uncomplicated assembly and security are our priorities.

## KAN-therm Groove SYSTEM advantages

- Up to 70% shorter assembly time compared to welding,
- Higher level of work safety, no need to work with open fire (welding),
- Systems adapted to pipelines made of steel, ductile iron and copper,
- A wide range of high-quality products,
- Diameters from DN25 to DN300,
- Compatibility with other KAN-therm systems.

KAN-therm products can be used in many types of pipelines - in heating, cooling, compressed air, fire extinguishing systems (firefighting and sprinkler systems) and specialist systems used in mining and industry.

## 2. Technical parameters

### 2.1. HVAC systems



heating



cooling



compressed  
air



firefighting  
systems



sprinkler  
systems



vacuum  
systems

#### 2.1.1. Central heating system

KAN-therm Groove couplings and fittings with carbon steel or stainless steel pipes.

Gasket:	EPDM (Class E)
Operating temperature:	from -34°C to +110°C
Operating pressure:	Depending on coupling type

In the case of heating systems in which the temperatures can rise to over 65°C, it is recommended to use EHC grease when connecting pipes utilizing KAN-therm Groove couplings. It is a high-consistency silicone grease developed to provide better lubricity in extremely hot and cold conditions.

### 2.1.2. Chilled water systems

KAN-therm Groove couplings and fittings with carbon steel or stainless steel pipes.

<b>Gasket:</b>	EPDM (Class E)
<b>Operating temperature:</b>	from -34°C to +110°C
<b>Operating pressure:</b>	Depending on coupling type

### 2.1.3. Sprinkler systems

KAN-therm Groove Sprinkler couplings and fittings with a carbon or stainless steel pipe, which are VdS, FM, UL, ULc or LPCB approved.

<b>Gasket:</b>	EPDM (Class E)
<b>Operating temperature:</b>	from -34°C to +110°C
<b>Operating pressure:</b>	Depending on coupling type

KAN-therm Groove carries a special range of couplings and fittings specially designed for the fire protection market. For more information regarding KAN-therm Groove in sprinkler installations, please consult KAN technical department.

### 2.1.4. Compressed air systems

KAN-therm Groove couplings and fittings with carbon steel or stainless steel pipes.

Galvanized elements of KAN-therm Groove System along with the galvanized steel pipes can be used for compressed air without oil content (maximal allowable concentration of synthetic oil up to 25 mg/m<sup>3</sup>, higher concentrations of synthetic oil as well as any content of mineral oil requires replacement of gaskets for butyl rubber NBR).

- **Gasket:** EPDM (Class E) - max. 25 mg/m<sup>3</sup> of synthetic oil  
Operating temperature: from -34 to +110 °C  
Operating pressure: depending on coupling type
- **Gasket:** NBR (Class T)  
Operating temperature: from -29 to +82 °C  
Operating pressure: depending on coupling type

### 2.1.5. Industrial systems

KAN-therm Groove products can be used in many industrial applications, such as:

- Aggressive media
- Sewage networks
- Water treatment
- Chemical lines
- Tunnel boreholes
- Reverse osmosis of sea water
- Irrigation

For more information and details of specific projects please contact with KAN.



## 2.2. KAN-therm Groove couplings and fittings

### 2.2.1. Certificates

KAN is certified in accordance to ISO 9001. Our products meet all applicable national and international standards and have certificates or approvals from various national and international certification bodies.

### 2.2.2. Housing material

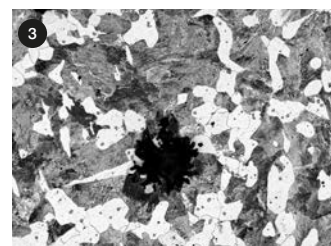
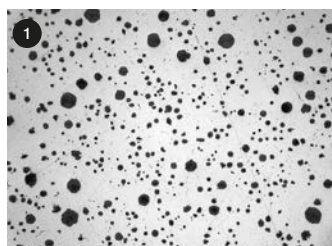
#### Ductile iron

Ductile iron is a perfect material for the production of grooved mechanical parts because it provides very high strength of manufactured components, in accordance with ASTM A536 and ASTM A395 standards.

Superior strength was achieved by crystallizing graphite in the shape of nodules. The result was ductile iron that had tensile and yield strength properties that were equal to or greater than some steel castings. This superior strength combined with ductile iron's excellent castability helped to reduce the weight and cost of many components.

Because of these advantages and benefits, many components have been converted from grey iron, malleable iron and steel castings to ductile iron over the past 60 years.

1. Ductile iron exceptional tensile strength and good castability
2. Grey iron perfect castability but lower strength (higher brittleness)
3. Malleable iron more resistant than grey iron but characterized by worse castability



International specifications for the ductile iron, equivalent to ASTM A536 class 65-45-12 and/or ASTM A395 class 65-45-15 are:

- SAE J434: D4512
- EN1563: EN-GJS-450-10 or EN-GJS-450-15
- JIS G5502: FCD450-10
- SABS 936/937: SG42

#### Specifications of A536 ductile iron, class 65-45-12 (UNS F33100)

Chemical composition*	
Carbon	3.0 – 3.9%
Silicon	2.5 – 3.0%
Manganese	0.1 – 0.4%
Phosphorus	< 0.07%
Sulphur	< 0.02%
Magnesium	0.03 – 0.05%
Chromium	< 0.1%
Physical properties	
Tensile strength	448 MPa
Yield strength	310 MPa
Elongation	12%

\* Data is only approximate because the ASTM A536 standard does not specify requirements for chemical composition.

## Specifications of A395 ductile iron, class 65-45-15 (UNS F33100)

Chemical composition	
Carbon	> 3.0%
Silicon	< 2.5%
Phosphorus	< 0.08%
Physical properties	
Tensile strength	448 MPa
Yield strength	310 MPa
Elongation	15%

## 2.3. Bolts and nuts



### 2.3.1. Carbon steel

KAN-therm Groove products use oval neck track bolts, in accordance with ASTM A449 or ASTM A183 standard class 2 and heavy duty nuts, in accordance with ASTM A563 standard class B, available with UNC threads or ISO metric threads. Bolts and nuts have an electrolytic zinc coating in silver chrome. Hot-dip galvanized bolts and nuts are also available on request.

### Specifications of ASTM A449 standard, hardened and tempered steel bolts\*

Chemical composition	
Carbon	0.28% – 0.55%
Manganese	> 0.60%
Phosphorus	< 0.040%
Sulphur	< 0.050%
Physical properties	
Tensile strength	825 MPa
Yield strength	635 MPa
Elongation	14%

\* Equivalent to bolts with strength class 8.8 (ISO 898).

### Specifications of the ASTM A563 standard, heavy duty hex nuts made of grade B carbon steel and alloy steel

Chemical composition	
Carbon	> 0.30%
Phosphorus	< 0.05%
Sulphur	< 0.06%
Physical properties	
Tensile strength	760 MPa
Yield strength	550 MPa
Elongation	12%

## Specifications of ASTM A183 standard class 2 carbon steel track bolts

Chemical composition (bolts)	
Carbon	< 0.55%
Phosphorus	< 0.12%
Sulphur	< 0.15%
Physical properties	
Hardness	B69 (C32 Rockwell)

## Bolt dimensions for KAN-therm Groove couplings

Pipe dimension		KAN-therm Groove couplings						
DN	mm	7705	7707	Z05	Z07	7706	7721 7722	79
25	33.7	M10 x 45	M10 x 55	-	-	-	-	1/2 x 2 3/8
32	42.4	M10 x 55	M12 x 75	M10 x 55	M10 x 55	M10 x 55	-	
40	48.3	M10 x 55	M12 x 60	M10 x 55	M10 x 55	-	-	1/2 x 2 3/8
50	60.3	M10 x 55	M12 x 75	M10 x 70	M10 x 70	M10 x 55	M10 x 55	5/8 x 3 1/2
65	73.0	M10 x 55	M12 x 75	M10 x 70	M10 x 70	M10 x 55	M12 x 75	5/8 x 3 1/2
65	76.1	M10 x 55	M12 x 75	M10 x 70	M10 x 70	M10 x 55	M12 x 75	-
80	88.9	M12 x 75	M12 x 75	M10 x 70	M12 x 75	M12 x 75	M12 x 75	3/4 x 4 3/4
	108.0	M12 x 75	-	M10 x 70	-	-	-	-
100	114.3	M12 x 75	M16 x 90	M10 x 70	M12 x 75	M12 x 75	M12 x 75	-
	133.0	M16 x 90	-	M12 x 75	-	-	-	-
125	139.7	M16 x 90	M16 x 90	M12 x 75	M16 x 90	M16 x 90	M16 x 90	-
	141.3	M16 x 90	M16 x 90	M12 x 75	M16 x 90	M16 x 90	M16 x 90	7/8 x 6 1/2
150	168.3	M16 x 90	M20 x 120	M12 x 75	M16 x 90	M16 x 90	M16 x 135	7/8 x 6 1/2
200	219.1	M16 x 90 M20 x 120 (7705H)	M20 x 120	M16 x 135	M20 x 120	M20 x 120	M20 x 120	3/4 x 4 3/4
250	273.0	M20 x 120	7/8 x 6 1/2	-	7/8 x 6 1/2	-	-	7/8 x 6 1/2
300	323.9	7/8 x 6 1/2	7/8 x 6 1/2	-	7/8 x 6 1/2	-	-	1 x 6 1/2



## 2.4. Gaskets

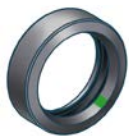


Over the past 50 years, we have witnessed a huge progress in the field of synthetic elastomer technology, thanks to which we can offer a diverse range of sealing materials for use in piping systems. The KAN-therm Groove System uses the finest materials available on the market that meet and exceed industry standards, such as ASTM D2000, AWWA C606, NSF61, IAPMO, etc. Our continuous research allows us to improve products to meet the changing requirements of the industry. Proper selection of a gasket for a specific application requires consideration of many factors to ensure maximum service life-span of the system.

### 2.4.1. Gasket materials

#### EPDM

The EPDM compound is considered the most waterproof, currently available elastomer. Gaskets made of this type of material are most often used in systems such as cold and hot water up to 110°C, waste water, water with acids, deionized water and sea water. EPDM compound is not suitable for use with petroleum-based fuels and oils, hydrocarbon solvents and aromatic hydrocarbons.

Compound	Grade	Colour code	Recommendations for use	Maximum range of temperature
EPDM	E		Suitable for cold and hot water up to + 110°C, a mixture of water and acid, chlorinated water, deionized water, seawater and sewage water as well as diluted acids and compressed air without oil content. Do not use with petroleum products, mineral oils, solvents and aromatic hydrocarbons.	from -34°C to +110°C

Green strap

**Warning!** EPDM rubber gaskets intended for water supply services are not recommended for use in steam systems, unless couplings or components are in places allowing for frequent gasket replacement. Incorrect selection of the gasket and its compound may result in a leakage or failure leading to personal or property damage. Gaskets should never be exposed to temperatures above rated values.


EPDM compound class E is compliant with ASTM D2000 standard. Peroxide cross-linking and hardening processes guarantee higher cross-linking density which ensures greater resistance to ageing processes than criteria provided for in AWWA C606 standard.

Note: EPDM gaskets used in drinking water systems with a high chlorine and/or chloramine content should be subjected to durability tests because not all materials are suitable for this type of application. In order to increase resistance to chloramine and chlorine it is recommended to use EPDM compounds with a higher content of saturated ethylene and a lower content of black carbon.

## NBR\*, BUNA-N and i nitrile

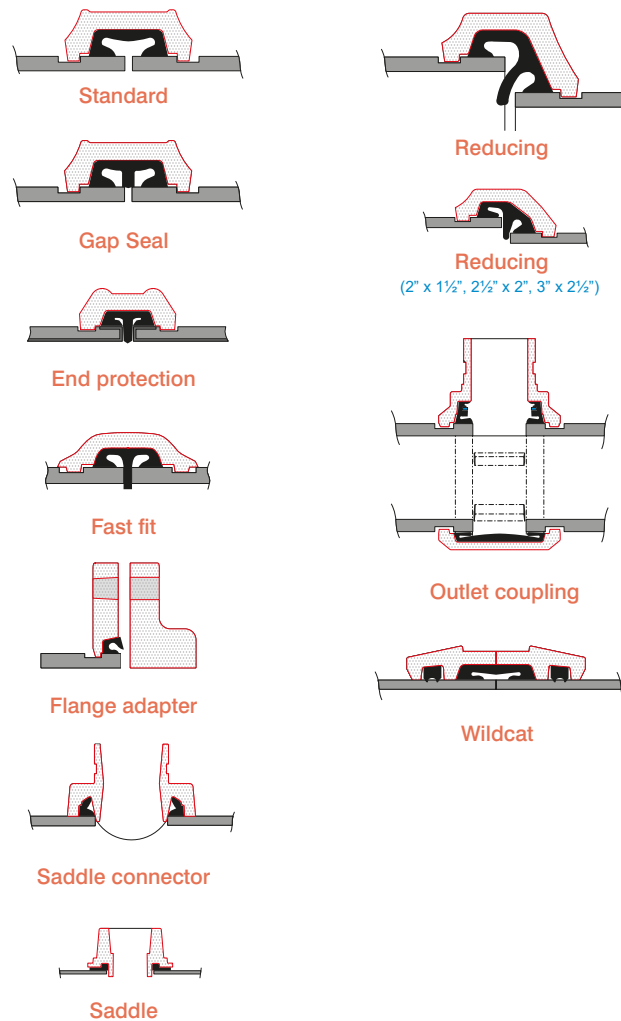
They all represent the same copolymer of butadiene and acrylonitrile (ACN) which is inherently resistant to hydraulic fluids, lubricating oils, gear oils and other non-polar petroleum based compounds as well as water at temperature not exceeding 65°C. NBR has low resistance to hot water and steam.

The "T"-type NBR compound is manufactured based on ASTM D2000 standard and exceeds AWWA C606 standard. Type "T" is a general-purpose compound with an average ACN level.

Compound	Grade	Colour code	Recommendations for use	Maximum range of temperature
NBR	T		It is suitable for use with petroleum products, mineral oils, vegetable oils, non-aromatic hydrocarbons, many acids and water (max + 65°C). Seal suitable for use in compressed air systems containing large amounts of synthetic oils or mineral oils. Do not use in high-temperature water systems.	-29°C to +82°C

Orange strip

### 2.4.2. Types of gaskets



Proper selection of gaskets is essential for optimum performance of grooved couplings, flange adapters and saddle connectors. KAN-therm Groove couplings are used with various types of gaskets: standard, GapSeal (slotted), EP (with end-protection) and FF (quick-release). GapSeal gaskets are compatible with standard gaskets and can be used interchangeably. Always use gaskets that match the selected coupling model.

Standard gaskets ensure effective sealing under vacuum conditions up to 0.34 bar which can occur during emptying the system. In the case of continuous operation, with pressure lower than 0.34 bar, it is recommended to use EP gaskets (with end-protection) in combination with rigid couplings. For specific recommendations, please contact with KAN technical department.

For dry fire-protection systems and cooling applications, it is recommended to use GapSeal type "E" gaskets which closes off the gap between the pipes or gasket cavity. This will prevent any remaining liquid from entering the cavities and freezing when the temperature drops. Rigid couplings are preferred for dry pipe, freezer and vacuum applications. Reducing couplings are not recommended for these applications.

**!** **NOTE!** In the case of dry and cooling systems do not use standard grease. Instead, it is recommended to use a silicone-based grease that does not contain petroleum.

To prevent pinching (damaging) the gasket, it is recommended to use during assembly a lubricant available in the KAN-therm Groove offer. It is enough to apply a thin layer of grease to the outer wall of the gasket, lip of the gasket and/or the inside of the casing of the sealed element. Grease is available in containers with a capacity of 450 or 900 grams. It has NSF/ANSI 61 certificate.

## 2.5. Pressure performance data

The following tables present the maximum operating pressure values ( $P_{max}$ ) for ductile iron couplings and flange adapters connected with carbon steel and stainless steel pipes. Ductile iron couplings can be used with a stainless steel pipe in a non-corrosive environment because the transported media do not come in direct contact with the coupling housing but only with the gasket.

For more information on the maximum operating pressure value for different combinations, please contact with KAN technical department.

### Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by rolling

Pipe dimension				Nominal wall thickness	Coupling type															
					7705		7707		Z05		Z07		7706		7041					
DN	inch/mm	mm	inches	Series of types	mm	inches	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi		
25	1	33.7	1.315	5	1.7	0.065	20	300	35	500	-	-	-	-	-	-	-	-	-	
				10	2.80	0.109	28	400	52	750	-	-	-	-	-	-	-	-	-	-
					3.40	0.13	35	500	69	1000	-	-	-	-	-	-	-	-	-	-
32	1 1/4	42.4	1.660	5	1.65	0.07	20	300	35	500	17	250	28	400	-	-	-	-	-	
				10	2.77	0.11	28	400	52	750	28	400	42	600	-	-	-	-	-	-
					3.56	0.14	35	500	69	1000	35	500	52	750	-	-	-	-	-	-
40		48.3	1.900	5	1.65	0.07	20	300	35	500	17	250	28	400	20	300	-	-	-	
				10	2.77	0.11	28	400	52	750	28	400	42	600	24	350	-	-	-	-
				STD	3.68	0.15	35	500	69	1000	35	500	52	750	35	500	-	-	-	-
50	2	60.3	2.375	5	1.65	0.07	20	300	35	500	17	250	28	400	20	300	NR	NR	-	
				10	2.77	0.11	28	400	52	750	28	400	42	600	24	350	17	250	-	
				STD	3.91	0.15	35	500	69	1000	35	500	52	750	35	500	20	300	-	
	2 1/2	73.0	2.875	5	2.11	0.08	20	300	35	500	17	250	28	400	20	300	NR	NR	-	
				10	3.05	0.12	28	400	42	600	28	400	42	600	24	350	17	250	-	
				STD	5.16	0.20	35	500	69	100	35	500	52	750	35	500	20	300	-	
65	76.1 mm	76.1	3.000	5	2.11	0.08	20	300	35	500	17	250	28	400	20	300	NR	NR	-	
				10	3.05	0.12	28	400	42	600	28	400	42	600	24	350	17	250	-	
				STD	5.16	0.20	35	500	69	100	35	500	52	750	35	500	20	300	-	
80	3	88.9	3.500	5	2.11	0.08	20	300	35	500	17	250	28	400	20	300	NR	NR	-	
				10	3.05	0.12	28	400	42	600	28	400	42	600	24	350	17	250	-	
				STD	5.49	0.22	35	500	69	100	35	500	52	750	35	500	20	300	-	
	108 mm	108.0	4.252	5	2.11	0.08	20	300	-	-	-	-	-	-	-	-	-	-	-	
				10	3.05	0.12	28	400	-	-	-	-	-	-	-	-	-	-	-	
				STD	5.74	0.23	35	500	-	-	-	-	-	-	-	-	-	-	-	

## Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by rolling

Pipe dimension				Series of types	Nominal wall thickness		Coupling type												
DN	inch/mm	mm	inches		mm	inches	7705		7707		Z05		Z07		7706		7041		
							bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	
100	4	114.3	4.500	5	2.11	0.08	20	300	28	400	14	200	28	400	17	250	NR	NR	
				10	3.05	0.12	28	400	42	600	28	400	42	600	20	300	17	250	
				STD	6.02	0.24	35	500	69	1000	35	500	52	750	35	500	20	300	
	133 mm	133.0	5.236	5	2.77	0.11	17	250	-	-	-	-	-	-	-	-	-	-	-
				10	3.40	0.13	24	350	-	-	-	-	-	-	-	-	-	-	-
				STD	6.55	0.26	31	450	-	-	-	-	-	-	-	-	-	-	-
	125	139.7 mm	139.7	5.500	5	2.77	0.11	17	250	24	350	12	175	24	350	17	250	NR	NR
					10	3.40	0.13	24	350	35	500	20	300	35	500	20	300	17	250
					STD	6.55	0.26	31	450	69	1000	24	350	52	750	28	400	20	300
5		141.3	5.563	5	2.77	0.11	17	250	24	350	12	175	24	350	17	250	NR	NR	
				10	3.40	0.13	24	350	35	500	20	300	35	500	20	300	17	250	
				STD	6.55	0.26	31	450	69	1000	24	350	52	750	28	400	20	300	
159 mm		159.0	6.260	5	2.77	0.11	17	250	-	-	-	-	-	-	-	-	-	-	-
				10	3.40	0.13	24	350	-	-	-	-	-	-	-	-	-	-	-
				STD	7.11	0.28	31	450	-	-	-	-	-	-	-	-	-	-	
150	6	168.3	6.625	5	2.77	0.11	17	250	20	300	12	175	20	300	12	175	NR	NR	
				10	3.40	0.13	24	350	31	450	20	300	28	400	20	300	17	250	
				STD	7.11	0.28	31	450	69	1000	24	350	48	700	28	400	20	300	
200	8	219.1	8.625	5	2.77	0.11	14	200	17	250	10	150	17	250	12	175	NR	NR	
				10	3.76	0.15	17	250	24	350	20	300	24	350	20	300	14	200	
				STD	8.18	0.32	20	300	55	800	24	350	42	600	28	400	20	300	
250	10	273.0	10.750	5	3.40	0.13	12	175	14	200	-	-	14	200	-	-	NR	NR	
				10	4.19	0.17	14	200	20	300	-	-	20	300	-	-	14	200	
				STD	9.27	0.37	20	300	55	800	-	-	35	500	-	-	20	300	
300	12	323.9	12.750	5	4.06	0.16	12	175	14	200	-	-	10	150	-	-	NR	NR	
				10	4.57	0.18	14	200	20	300	-	-	17	250	-	-	14	200	
				STD	9.53	0.38	20	300	55	800	-	-	28	400	-	-	20	300	

## Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by cutting

Pipe dimension				Series of types	Nominal wall thickness		Coupling type											
DN	inch/mm	mm	inches		mm	inches	7705		7707		Z05		Z07		7706		7041	
							bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
25	1	33.7	1.315	STD	3.40	0.13	42	600	69	1000	-	-	-	-	-	-	-	-
				XS	4.55	0.18	42	600	69	1000	-	-	-	-	-	-	-	-
32	1 1/4	42.4	1.66	STD	3.56	0.14	42	600	69	1000	42	600	52	750	-	-	-	-
				XS	4.85	0.19	42	600	69	1000	42	600	52	750	-	-	-	-
40	1 1/2	48.3	1.9	STD	3.68	0.15	42	600	69	1000	42	600	52	750	35	500	-	-
				XS	5.08	0.20	42	600	69	1000	42	600	52	750	35	500	-	-
50	2	60.3	2.375	STD	3.91	0.15	42	600	69	1000	42	600	52	750	35	500	20	300
				XS	5.54	0.22	42	600	69	1000	42	600	52	750	35	500	20	300
	2 1/2	73.0	2.875	STD	5.16	0.20	42	600	69	1000	42	600	52	750	35	500	20	300
				XS	7.01	0.28	42	600	69	1000	42	600	52	750	35	500	20	300
65	76.1 mm	76.1	3.000	STD	5.16	0.20	42	600	69	1000	42	600	52	750	35	500	20	300
				XS	7.01	0.28	42	600	69	1000	42	600	52	750	35	500	20	300
80	3	88.9	3.500	STD	5.49	0.22	42	600	69	1000	42	600	52	750	35	500	20	300
				XS	7.62	0.30	42	600	69	1000	42	600	52	750	35	500	20	300
	108 mm	108.0	4.252	STD	5.74	0.23	42	600	-	-	-	-	-	-	-	-	-	-
				XS	8.08	0.32	42	600	-	-	-	-	-	-	-	-	-	-
100	4	114.3	4.500	STD	6.02	0.24	42	600	69	1000	42	600	52	750	35	500	20	300
				XS	8.56	0.34	42	600	69	1000	42	600	52	750	35	500	20	300
	133 mm	133.0	5.236	STD	6.02	0.24	31	450	-	-	-	-	-	-	-	-	-	-
				XS	8.56	0.34	31	450	-	-	-	-	-	-	-	-	-	-
125	139.7 mm	139.7	5.500	STD	6.55	0.26	31	450	69	1000	31	450	52	750	28	400	20	300
				XS	9.53	0.38	31	450	69	1000	31	450	52	750	28	400	20	300

## Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by cutting

Pipe dimension				Series of types	Nominal wall thickness		Coupling type											
							7705		7707		Z05		Z07		7706		7041	
DN	inch/mm	mm	inches		mm	inches	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
5		141.3	5.563	STD	6.55	0.26	31	450	69	1000	31	450	52	750	28	400	20	300
				XS	9.53	0.38	31	450	69	1000	31	450	52	750	28	400	20	300
159 mm	159	6.260		STD	7.11	0.28	31	450	-	-	-	-	-	-	-	-	-	-
				XS	10.97	0.43	31	450	-	-	-	-	-	-	-	-	-	-
150	6	168.3	6.625	STD	7.11	0.28	31	450	69	1000	31	450	48	700	28	400	20	300
				XS	10.97	0.43	31	450	69	1000	31	450	48	700	28	400	20	300
200	8	219.1	8.625	STD	8.18	0.32	31	450	55	800	31	450	42	600	28	400	20	300
				XS	12.70	0.50	31	450	55	800	31	450	42	600	28	400	20	300
250		273.0	10.750	STD	9.27	0.37	24	350	55	800	-	-	35	500	-	-	20	300
				XS	12.70	0.50	24	350	55	800	-	-	35	500	-	-	20	300
300	12	323.9	12.750	STD	9.27	0.37	24	350	55	800	-	-	28	400	-	-	20	300
				XS	12.70	0.50	24	350	55	800	-	-	28	400	-	-	20	300

## Operating pressure values in bars (psi) for ductile iron couplings connected with stainless steel pipes grooved by rolling

Pipe dimension				Series of types	Nominal wall thickness		Coupling type												
							7705		7707		Z05		Z07		7706		7041		
DN	inch/mm	mm	inches		mm	inches	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	
25	1	33.7	1.315	5	1.7	0.065	17	250	22	325	-	-	-	-	-	-	-	-	
				10	2.8	0.109	20	300	31	450	-	-	-	-	-	-	-	-	-
				40	3.4	0.133	31	450	48	300	-	-	-	-	-	-	-	-	-
32	1 1/4	42.4	1.660	5	1.7	0.065	17	250	22	325	17	250	20	300	-	-	-	-	
				10	2.8	0.109	20	300	31	450	20	300	35	500	-	-	-	-	
				40	3.6	0.140	31	450	48	300	31	450	48	700	-	-	-	-	
40	1 1/2	48.3	1.900	5	1.7	0.065	17	250	22	325	17	250	20	300	17	250	-	-	
				10	2.8	0.109	20	300	31	450	20	300	35	500	20	300	-	-	
				40	3.7	0.145	31	450	48	300	31	450	48	700	24	350	-	-	
50	2	60.3	2.375	5	1.7	0.065	17	250	22	325	17	250	20	300	17	250	12	175	
				10	2.8	0.109	20	300	31	450	20	300	35	500	20	300	19	275	
				40	3.9	0.154	31	450	48	300	31	450	48	700	24	350	19	275	
2 1/2	73.0	2.875		5	2.1	0.083	17	250	22	325	17	250	20	300	17	250	12	175	
				10	3.0	0.120	20	300	31	450	20	300	35	500	20	300	19	275	
				40	5.2	0.203	31	450	48	300	31	450	48	700	24	350	19	275	
65	2 1/2	76.1	3.000	5	2.1	0.083	17	250	22	325	17	250	20	300	17	250	12	175	
				10	3.0	0.120	20	300	31	450	20	300	35	500	20	300	19	275	
				40	5.2	0.203	31	450	48	300	31	450	48	700	24	350	19	275	
80	3	88.9	3.500	5	2.1	0.083	17	250	22	325	17	250	20	300	17	250	12	175	
				10	3.0	0.120	20	300	31	450	20	300	35	500	20	300	19	275	
				40	5.5	0.216	31	450	48	300	31	450	48	700	24	350	19	275	
100	4	114.3	4.500	5	2.1	0.083	14	200	17	250	14	200	17	250	14	200	12	175	
				10	3.0	0.120	20	300	28	400	20	300	28	400	17	250	19	275	
				40	6.0	0.237	31	450	48	700	31	450	48	700	20	300	19	275	
125	5	139.7	5.500	5	2.8	0.109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	175	
				10	3.4	0.134	14	200	20	300	14	200	20	300	17	250	14	200	
				40	6.6	0.258	20	300	42	600	20	300	42	600	20	300	19	275	
5	141.3	5.563		5	2.8	0.109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	175	
				10	3.4	0.134	14	200	20	300	14	200	20	300	17	250	14	200	
				40	6.6	0.258	20	300	42	600	20	300	42	600	20	300	19	275	
150	6	168.3	6.625	5	2.8	0.109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	9	125	
				10	3.4	0.134	9	125	14	200	9	125	14	200	12	175	14	200	
				40	7.1	0.280	20	300	35	500	20	300	35	500	20	300	17	250	

## Operating pressure values in bars (psi) for ductile iron couplings connected with stainless steel pipes grooved by rolling

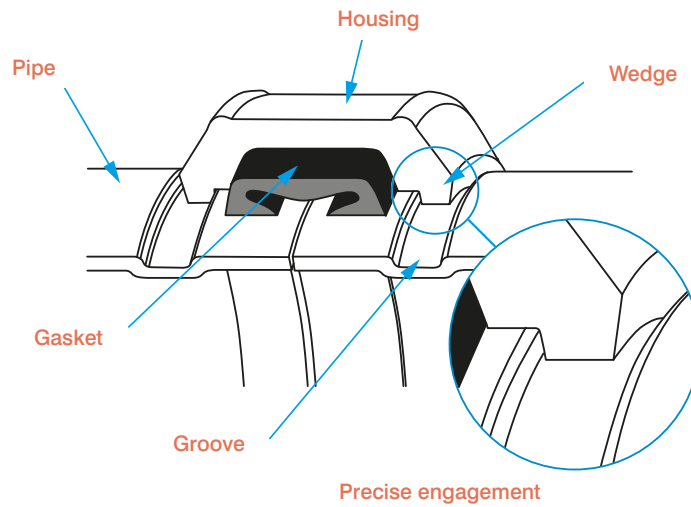
Pipe dimension				Series of types	Nominal wall thickness		Coupling type											
DN	inch/mm	mm	inches		mm	inches	7705		7707		Z05		Z07		7706		7041	
							bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
200	8	219.1	8.625	5	2.8	0.109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
				10	3.8	0.148	7	100	10	150	7	100	10	150	12	175	NR	NR
				40	8.2	0.322	20	300	31	450	20	300	28	400	20	300	14	200
250	10	273.0	10.750	5	3.4	0.134	NR	NR	NR	NR	-	-	NR	NR	-	-	NR	NR
				10	4.2	0.165	NR	NR	9	125	-	-	7	100	-	-	NR	NR
				40	9.3	0.365	14	200	28	400	-	-	20	300	-	-	14	200
300	12	323.9	12.750	5	4.0	0.156	NR	NR	NR	NR	-	-	NR	NR	-	-	NR	NR
				10	4.6	0.180	NR	NR	9	125	-	-	7	100	-	-	NR	NR
				40	9.5	0.375	14	200	28	400	-	-	17	250	-	-	14	200

## Operating pressure values in bars (psi) for ductile iron couplings connected with stainless steel pipes grooved by cutting

Pipe dimension				Series of types	Nominal wall thickness		Coupling type											
DN	inch/mm	mm	inches		mm	inches	7705		7707		Z05		Z07		7706		7041	
							bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
25	1	33.7	1.315	40S	3.40	0.13	42	600	52	750	-	-	-	-	-	-	-	-
				80S	4.55	0.18	42	600	52	750	-	-	-	-	-	-	-	-
32	1 1/4	42.4	1.660	40S	3.56	0.14	42	600	52	750	42	600	52	750	-	-	-	-
				80S	4.85	0.19	42	600	52	750	42	600	52	750	-	-	-	-
40	1 1/2	48.3	1.900	40S	3.68	0.15	42	600	52	750	42	600	52	750	35	500	-	-
				80S	5.08	0.20	42	600	52	750	42	600	52	750	35	500	-	-
50	2	60.3	2.375	40S	3.91	0.15	42	600	52	750	42	600	52	750	35	500	20	300
				80S	5.54	0.22	42	600	52	750	42	600	52	750	35	500	20	300
65	2 1/2	73.0	2.875	40S	5.16	0.20	42	600	52	750	42	600	52	750	35	500	20	300
				80S	7.01	0.28	42	600	52	750	42	600	52	750	35	500	20	300
65	76.1 mm	76.1	3.000	40S	5.16	0.20	42	600	52	750	42	600	52	750	35	500	20	300
				80S	7.01	0.28	42	600	52	750	42	600	52	750	35	500	20	300
80	3	88.9	3.500	40S	5.49	0.22	42	600	52	750	42	600	52	750	35	500	20	300
				80S	7.62	0.30	42	600	52	750	42	600	52	750	35	500	20	300
100	4	114.3	4.500	40S	6.02	0.24	42	600	52	750	42	600	52	750	35	500	20	300
				80S	8.56	0.34	42	600	52	750	42	600	52	750	35	500	20	300
125	139.7 mm	139.7	5.500	40S	6.55	0.26	31	450	52	750	31	450	52	750	28	400	20	300
				80S	9.53	0.38	31	450	52	750	31	450	52	750	28	400	20	300
125	5	141.3	5.563	40S	6.55	0.26	31	450	52	750	31	450	52	750	28	400	20	300
				80S	9.53	0.38	31	450	52	750	31	450	52	750	28	400	20	300
150	6	168.3	6.625	40S	7.11	0.28	31	450	52	750	31	450	48	700	28	400	20	300
				80S	10.97	0.43	31	450	52	750	31	450	48	700	28	400	20	300
200	8	219.1	8.625	40S	8.18	0.32	31	450	42	600	31	450	42	600	28	400	20	300
				80S	12.70	0.50	31	450	42	600	31	450	42	600	28	400	20	300
250	10	273.0	10.750	40S	9.27	0.37	24	350	42	600	-	-	35	500	-	-	20	300
				80S	12.70	0.50	24	350	42	600	-	-	35	500	-	-	20	300
300	12	323.9	12.750	40S	9.27	0.37	24	350	42	600	-	-	28	400	-	-	20	300
				80S	12.70	0.50	24	350	42	600	-	-	28	400	-	-	20	300

## 2.6. Pipe end preparation

### 2.6.1. Pipe grooving



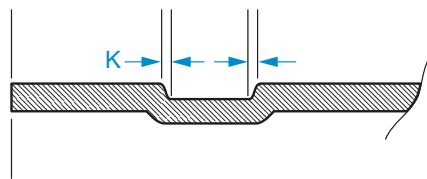
#### Grooving by rolling

Grooved pipe systems require grooving by cutting or rolling to connect the pipe ends. The engagement of the housing keys in the grooves is an essential issue in the context of providing a secure and tight coupling. The grooves must be correctly made to ensure optimum coupling performance.

#### Nominal pipe dimension

KAN-therm Groove couplings and fittings are identified by the nominal pipe diameter (DN) specified in millimetres or inches. The actual outside diameter (OD) of the pipe and the couplings connected to it must always be checked, as it is customary in some markets to relate different pipe diameters to the same nominal dimension.

#### Roll groove profile

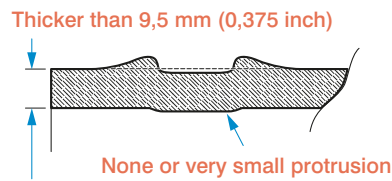


Grooves made by rolling should be defined as clearly as possible. To obtain the optimal coupling performance, "K" dimension should be as small as possible. During the grooving process, the machine operator should set the feed force of the upper roll set to obtain the best possible groove profile.

#### Applicable pipe wall thickness

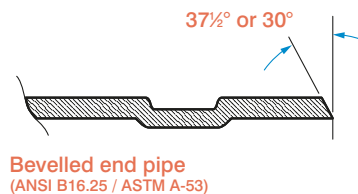
Grooving by rolling is performed in the case of carbon steel pipes, stainless steel pipes, copper pipes and aluminium pipes with wall thickness of 9.5 mm or thinner, depending on the type of grooving machine and the used set of rollers. Different wall thickness and dimensions require the use of different sets of rollers. For additional information, contact the manufacturer of the groove rolling machine.

## Thick-walled pipes



During attempt to make grooves on a pipe with a wall thicker than 9.5 mm, the metal may be deformed and swelled on both sides of the groove, instead of radially changing the shape and forming a protrusion towards the inside of the pipe. Additional metal swelling can lead to a coupling defect. In this case, the swollen metal layer should be grinded off to obtain a flat and smooth surface being in favour of effective sealing. The surface must be coated with anti-rust layer. In the case of thick-walled pipes, it is strongly recommended to use the grooving process by the machining method.

## Plain-end and bevelled end pipes



Although pipes with plain-ends are preferred, the use of a bevelled pipe is permissible provided that the wall thickness is 9.5 mm or less and the bevel is  $37\frac{1}{2} \pm 2\frac{1}{2}^\circ$  or  $30^\circ$ , according to ANSI B16.25 and ASTM A-53.

## Removing welding beads

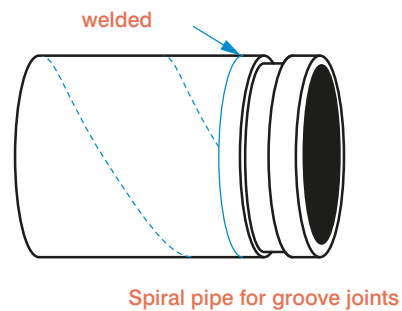
Depending on the particular pipe and manufacturer, welding beads may remain on the surface of the pipe (internally and externally). Always remove harmful welding beads near the pipe ends, as they may cause uneven operation of the grooving machine, resulting in inaccurate grooves.

## Galvanized pipes

Galvanized pipes are acceptable, provided that the surface of the gasket seat is smooth and free from scale or defects that could affect the quality of the seal. Each time after removing welding beads or protrusions from the surface of the galvanized pipe, care should be taken to avoid excessive grinding of the surface. After grinding the surface should always be covered with applicable anti-corrosion coating.



## Spirally welded pipes



Spirally welded pipes are acceptable as long as the welding beads have been removed from the gasket placement surface. It is also permissible and recommended to weld a grooved part with the coupling to the pipe end. Each time after removing welding beads from the surface of the gasket seat, care should be taken to avoid excessive grinding of the surface. After grinding the surface should always be covered with anti-corrosion coating.

### 2.6.2. Checking the diameter of outer pipe

It must be ensured that the prepared pipe has an outside diameter (OD) and wall thickness applicable for the application. Due to the fact that the KAN-therm Groove couplings are usually identified according to the nominal dimension, the actual outer diameter (OD) of the pipe and the couplings connected to it must always be checked, as it is customary in some markets to relate different pipe diameters to the same nominal dimension.

For example: According to the IPS standard, the nominal dimension DN65 (2-1/2") refers to a pipe with outer diameter of 73.0 mm, while according to the standards EN, AS, BS, DIN (ISO), JIS and KS the outside diameter of the pipe for the same dimension, the nominal accident is 76.1 mm.

**EN** – European standard (metric system)

**ISO** – ISO standard (metric system)

**BS** – British standard (metric system)

**DIN** – German standard (metric system)

**IPS** – American standard (metric system)

## Pipe dimension equivalents

Dimension in inches		Dimension in millimetres	
Nominal	Actual	Nominal	Actual
1/2	0.840	DN15	21.3
3/4	1.050	DN20	26.7
1	1.315	DN25	33.7
1 1/4	1.660	DN32	42.4
1 1/2	1.900	DN40	48.3
2	2.375	DN50	60.3
2 1/2	2.875	-	73.0
3 OD	3.000	DN65	76.1
3	3.500	DN80	88.9
3 1/2	4.000	-	101.6
4 1/4 OD	4.250	-	108.0
4	4.500	DN100	114.3
5	5.563	-	141.3
5 1/4 OD	5.250	-	133.0
5 1/2 OD	5.500	DN125	139.7
6 1/4 OD	6.250	-	159.0
6	6.625	DN150	168.3
8	8.625	DN200	219.1
10	10.750	DN250	273.0
12	12.750	DN300	323.9

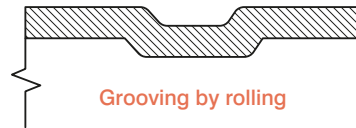
### Which pipe can be grooved by rolling and which by cutting?

KAN-therm Groove couplings require grooving of joined pipe ends by cutting or rolling. The dimensions and configurations of the groove may vary depending on several factors, including the material of the pipe; wall thickness and required operating pressure. Grooving by rolling is the practice most commonly used and can be carried out in a production workshop, in the field or on the construction site. On the other hand, grooving by cutting takes place mainly in the factory or workshop because the grooving machines are not as common or mobile as the machines for grooving by rolling. All grooves (both rolled and cut) must meet the ANSI/AWWA C606 (latest version) and ISO/FDIS 6182-12 standards. For other pipe dimensions not specified in ANSI/AWWA C606 (latest version) and ISO/FDIS 6182-12, please refer to the respective groove specifications in this manual. In the pipe grooving process, it is recommended to start with a smooth end pipe, although in some cases it is permissible to use a bevelled pipe, provided that the wall thickness is standard or smaller and the slant is  $37\ 1/2^\circ \pm 2\ 1/2^\circ$  (ANSI B16.25).

## Applications of rolled and cut grooves

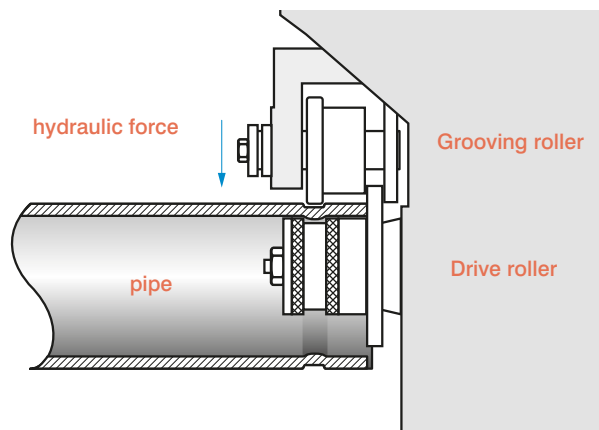
Pipe material	Rolled groove	Cut groove
<b>Carbon steel pipe</b>	Standard wall, Series of types Series of types 40 (10" and less), 30, 20, 10, 7, 5, BS1387 medium and light, JIS SGP	Series of types 80, 40, 30 80, 40, 30 BS1387 medium and heavy, JIS SGP
<b>Stainless steel pipe</b>	Series of types 40S, 20S, 10S, 5S	Series of types 80S, 40S

### Grooving by rolling



Grooving by rolling was used for the first time in the case of a light and thin pipe, the wall thickness of which was insufficient to apply the cutting method. Today, grooving by rolling is commonly used for standard pipes of series of schedule 40 (max. 9.5 mm wall thickness) up to 42 inches (DN1050) depending on the type of grooving machine and the set of rolls used.

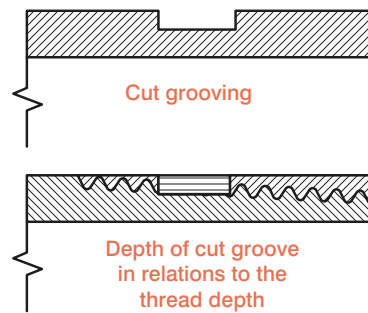
Roll grooving radially displaces the pipe material. Because roll grooving removes no material from the pipe itself, the integrity of the pipe remains intact when properly grooved. The inside protrusion or upset of roll groove is small and smooth at its entry and exit and thus has insignificant or negligible effect on both flow and/or line pressure. Roll grooving is limited to pipe having a hardness of HB180 or less.



In the pipe grooving process, its end is placed between a set of rollers.

When the rollers are tightened and rotated, a groove is formed from the outside and uplifted towards the inside of the pipe. Grooving by rolling can be used on carbon steel, stainless steel, copper and aluminium pipes. Care should be taken to use the right equipment and roller sets suitable for grooving specified material. Different materials may require different set of rollers, such as for copper, stainless steel or thick (9.5 mm) carbon steel pipes. For more information, refer to the grooving machine/rolling set manual.

## Grooving by machining



In the process of grooving by cutting, material from the outer diameter of the pipe is physically removed to form a groove. Therefore, this type of grooving is usually used for pipes with standard or heavy wall thickness. Most of the tubes designed for threading can be subjected to the grooving process, as the depth of the cut groove is usually smaller than the depth of the standard thread. Please refer to the values of the minimum wall thickness indicated in the table of standard parameters for cut grooves.

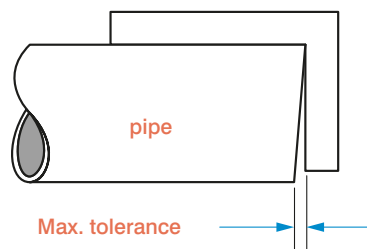
Contrary to grooving by rolling, grooving by cut causes grooving a rectangular slot in the pipe of without a protrusion on the inside of the pipe. Incision of grooves is widely used on pipeline elements such as 90° elbows, T-pipes, grooved end valves, etc. It is also common practice to coat a grooved pipe with a plastic coating or cement cladding, as grooving by rolling can damage internal coating or pipe linings.

### 2.6.3. General remarks on the dimension of rolled and cut grooves

#### Nominal dimension

KAN-therm Groove couplings and fittings are identified by pipe nominal dimension, in inches, or nominal outside diameter of the pipe, given in millimetres.

#### External diameter: Pipe ends must be cut square



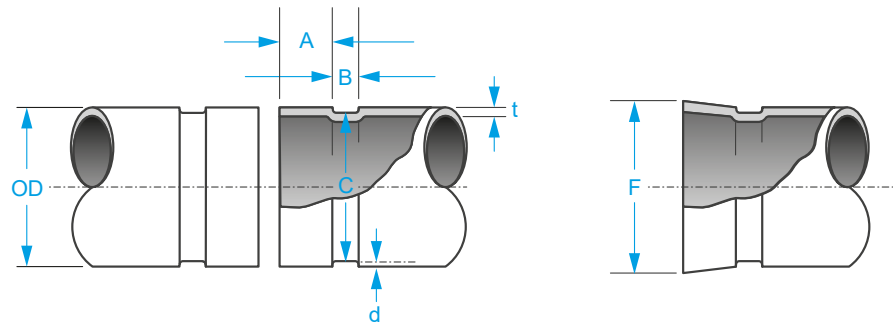
Maximum permissible tolerances for ends cut at right angle:

0.8 mm for diameter up to 3 1/2" (DN90),

1.2 mm for 4" to 6" (DN100-150)

1.6 mm up to 8" (DN200) and higher.

## Standard dimensions of the rolled grooves



### Surface of the gasket seat (dimension "A")

The exterior surface of the gasket seating area shall be free from any indentations, projections, roll marks or other harmful surface defects such as loose paint, scale, dirt, chips, grease and rust.

### Groove width (dimension "B")

Width of the groove is measured between the vertical sides of the groove walls and results from the width pressed to the upper roller tube. The groove in the pipe should be visually inspected to ensure that it has distinct edges for effective wedging of the coupling. If the edges appear to be rounded and their lips are not vertical enough, the pipe should be replaced, as this situation can lead to a reduction in the tightness of the joint or a joint defect.

### Groove diameter (dimension "C")

Groove diameters are average values. The groove must have uniform depth around the entire circumference of the pipe.

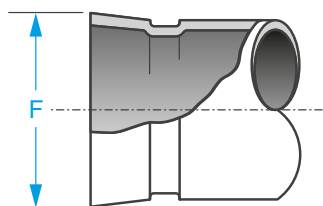
### Minimal wall thickness (dimension "t")

Dimension "t" corresponds to the minimum permissible wall thickness which can be subjected to grooving by rolling.

### Groove depth (dimension "d")

The values listed in the parameter tables for grooves are for guidance only.

### Diameter flare (dimension "F")



The diameter of the pipe end, which may expand during rolling, should be within the specified tolerance at the extreme end of the pipe.

## Parameters for rolled grooves

Pipe or pipe duct			Dimensional specifications						
Nominal dimension	Outside Diameter (OD)		Gasket seat A $\pm 0.76$ A $\pm 0.76$	Gasket width B $\pm 0.76$	Diameter after rolling C		Groove depth d (ref.) d (ref.)	Wall thickness t Allow for min.	Conicity Max. diam.
	Actual dimension	Tolerance			Actual dimension	Tolerance			
25	33.7	+0.41/-0.68	15.88	7.14	30.23	0/-0.38	1.70	1.8	34.5
32	42.4	+0.50/-0.60	15.88	7.14	38.99	0/-0.38	1.70	1.8	43.3
40	48.3	+0.44/-0.52	15.88	7.14	45.09	0/-0.38	1.60	1.8	49.4
50	60.3	$\pm 0.61$	15.88	8.74	57.15	0/-0.38	1.60	1.8	62.2
65	73	$\pm 0.74$	15.88	8.74	69.09	0/-0.46	1.98	2.3	75.2
65	76.1	$\pm 0.76$	15.88	8.74	72.26	0/-0.46	1.93	2.3	77.7
80	88.9	+0.89/-0.79	15.88	8.74	84.94	0/-0.46	1.98	2.3	90.6
90	101.6	+1.02/-0.79	15.88	8.74	97.38	0/-0.51	2.11	2.3	103.4
100	108	+1.07/-0.79	15.88	8.74	103.73	0/-0.51	2.11	2.3	109.7
100	114.3	+1.14/-0.79	15.88	8.74	110.08	0/-0.51	2.11	2.3	116.2
125	133.9	+1.32/-0.79	15.88	8.74	129.13	0/-0.51	1.93	2.9	134.9
125	139.7	+1.40/-0.79	15.88	8.74	135.48	0/-0.56	2.11	2.9	141.7
125	141.3	+1.42/-0.79	15.88	8.74	137.03	0/-0.56	2.13	2.9	143.5
150	159	+1.60/-0.79	15.88	8.74	154.50	0/-0.56	2.20	2.9	161.0
150	168.3	+1.60/-0.79	15.88	8.74	163.96	0/-0.56	2.16	2.9	170.7
200	219.1	+1.60/-0.79	19.05	11.91	214.40	0/-0.64	2.34	2.9	221.5
250	277.4	+1.60/-0.79	19.05	11.91	268.28	0/-0.69	2.39	3.6	275.4
300	328.2	+1.60/-0.79	19.05	11.91	318.29	0/-0.76	2.77	4.0	326.2

1. Outer diameter of the pipe Maximum permissible tolerances for cut ends at right angles is 0.03" for diameters not exceeding 3 1/2"; 0.045" for 4" to 6"; and 0.060" for diameters 8" and larger.
2. The surface of the gasket seat "A" should be free from deep scratches, spots and irregularities that would prevent effective sealing.
3. Dimensions "C" are average values. The groove must have the same depth around the entire circumference. To check the diameter of the groove, slide calliper or ruler should be used.
4. Dimension "t" corresponds to the minimum permissible wall thickness which can be subjected to grooving by rolling.
5. Value "d" is for guidance only. Groove depth must be specified using the groove diameter dimension "C".
6. Diameter flare: The diameter of the pipe end, which may expand during rolling, should be within this value at the extreme end of the pipe.

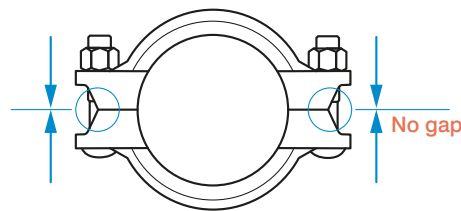
## 2.6.4. Bolts and nuts - tightening torque and assembly

### Information useful for correct assembly

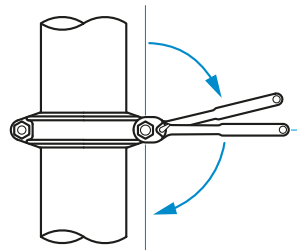
Some connectors and components require the housing bolt pads to allow metal parts to come in contact with each other, while others require a specific tightening torque to maintain the same spacing between the bolts. The following icons and information will be useful in identifying this type of elements and will help to ensure correct assembly. The assembly instructions for each installed component should be read and followed.



**Metal-to-metal contact** Tighten the bolts and nuts so that the clamps are tight against each other (metal-to-metal contact). After the contact of the metal surfaces of the clamp, the nuts should be tightened by a quarter or half turn to ensure that the bolts and nuts adhere tightly to the fastening element. A torque wrench is not required. Too high tightening torque can damage the bolts or coupling.



Metal to metal contact



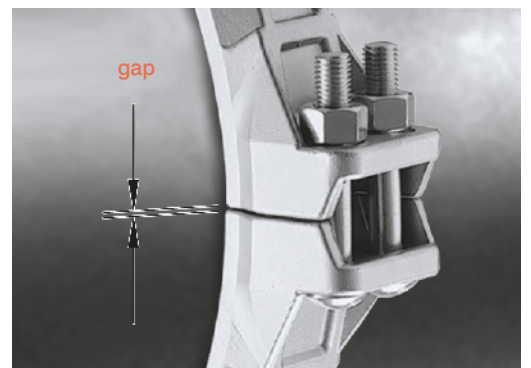
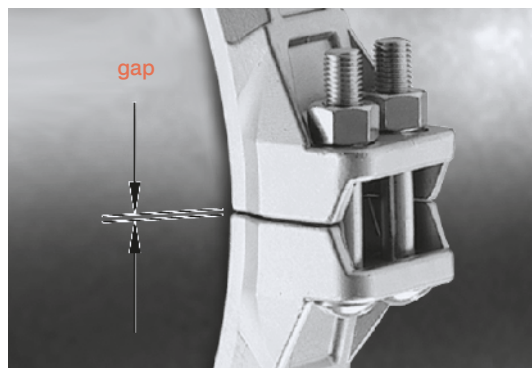
After achieving metal to metal contact, tighten the nuts by quarter or half turn

If after the assembly the gaps between the elements of the clamp hinge are visible, the coupling must be removed and reassembled, making sure in advance that:

- The connected coupling, pipe and/or fitting are of correct dimension.
- The coupling keys are completely interlocked in the pipe grooves and/or the component grooves.
- The gasket is not pinched.
- The grooves are in accordance with the applicable dimensional specification.
- The flare of the pipe end is within the tolerance range.



**Tightening torque required!** The bolts and nuts should always be tightened to the required tightening torque with a torque wrench. Usually, after tightening the bolts and nuts, gaps will be visible between the pads of the clamp. Models requiring the use of tightening torque include all dimensions in the case of couplings and saddles of type 79.



## Recommended bolt torque



always use a torque wrench

Always use factory supplied bolts and nuts for the assembly of KAN-therm Groove couplings. The next page shows general recommended torque ranges for typical dimensions of carbon steel bolts. Never exceed the recommended torque range by more than 25%, as excessive tightening torque can lead to damage of the coupling, personal injury and/or property damage. Before disassembly, adjusting or removing any piping element, always depressurize and drain the piping system. In order to execute the installation consisting of KAN-therm Groove components properly, follow the installation instructions.

### Tightening torque specifications

Bolt dimension		Tightening torque range Nm	
mm	inches	Lbs-Ft	Nm
<b>M8</b>	5/16" – 18	15 – 25	20 – 34
<b>M10</b>	3/8" – 16	30 – 40	40 – 55
<b>M12</b>	1/2" – 13	90 – 105	120 – 140
<b>M16</b>	5/8" – 11	100 – 130	135 – 175
<b>M20</b>	3/4" – 10	150 – 200	200 – 270
<b>M22</b>	7/8" – 9	180 – 220	240 – 300
<b>M24</b>	1" – 8	200 – 225	270 – 305
<b>M29</b>	1 1/8" – 7	250 – 300	340 – 400
<b>M32</b>	1 1/4" – 7	375 – 500	510 – 680

**For stainless steel bolts the tightening torque is reduced by 20%**



## 2.7. Installation guidelines

When installing the KAN-therm Groove system, always make sure that the right protective equipment at the installation site is used. The minimum protective equipment during the installation of the system are safety shoes, helmet and glasses.

### 2.7.1. General installation steps for grooved couplings assembly

Below is a list of the steps to be taken during assembly of the grooved couplings. If additional activities are required for some models, they can be found in the relevant chapters.



**Check and prepare the ends of the pipes:** To obtain optimal quality of sealing, the outer layer of pipe ends should be free of any dents, protrusions, rolling marks and other surface defects such as loosely adhering paint, scale, dust, chips, grease or rust.



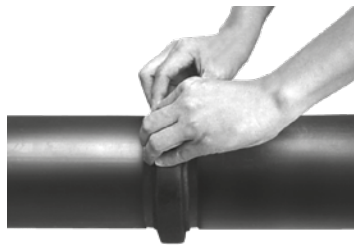
**Check the gasket:** Make sure that the gasket supplied is suitable for the intended use. The colour of the stripe determines the type of gasket.



**Lubricate the gasket:** To facilitate insertion of the pipe and installation of couplings without pinching effect, apply a thin layer of grease available in KAN-therm Groove's offer on the lip of the gasket and on the outer coating of the gasket. Other suitable lubricants may be used as long as they do not have properties that may damage the gasket.



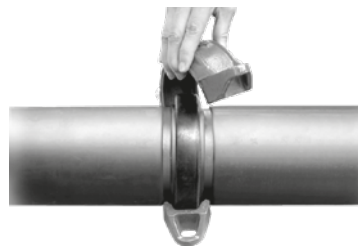
**Install the gasket:** Install the gasket at one end of the pipe so that the end of the pipe is visible. No part of the gasket should overhang this end of the pipe.



**Connect the second pipe:** match the two ends of the pipes to be connected. Slide the gasket into the ends and centre it between the grooves of the joined pipes. No part of the gasket should enter the grooves of the pipes.



**Install the coupling:** Start the assembly with the separated housing parts of the coupling.



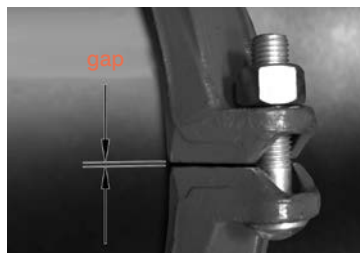
**Turn both halves of the coupling:** Mount both halves at the same time. Make sure that the coupling keys are engaged in the grooves.



**Insert the bolts and put on the nuts:** Insert all bolts and tighten the nuts manually. Make sure that the oval bolt head is locked in the bolt hole in the coupling casing.



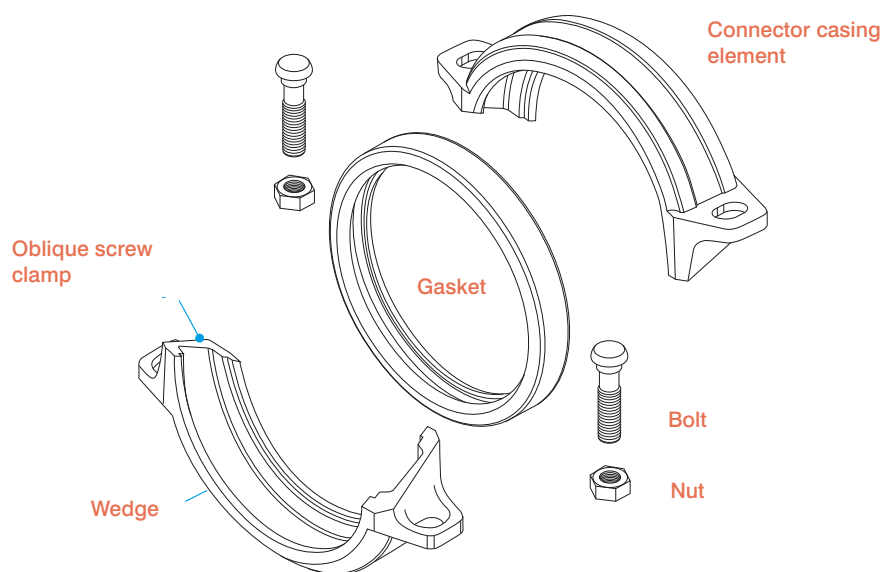
**Tighten the nuts:** Tighten nuts alternately and equally until the bolt pads meet and make metal-to-metal contact. Tighten nuts by another one quarter to one half turn to make sure the bolts and nuts are snug and secure. The use of a torque wrench is not required.



**Tighten the nuts.** Bolts and nuts must always be tightened to the required torque by using a torque wrench. Normally there will be gaps seen between the bolt pads after the bolts and nuts are fully tightened. Bolt pad gaps should be equal on both sides of the coupling.

- ! CAUTION!** Uneven tightening of the bolts and nuts may cause pinching of the gasket, causing immediate or later leakage. If a hammer wrench is used, excessive tightening of the nuts may damage the bolt or the coupling.
- ! NOTE!** Excessive tightening torque can cause the bolts and nuts to jam. To correct the problem with stainless steel bolts and nuts, Loctite C5-A anti-galling grease should be used. A good solution for preventing seizures is the use of silicon bronze nuts.

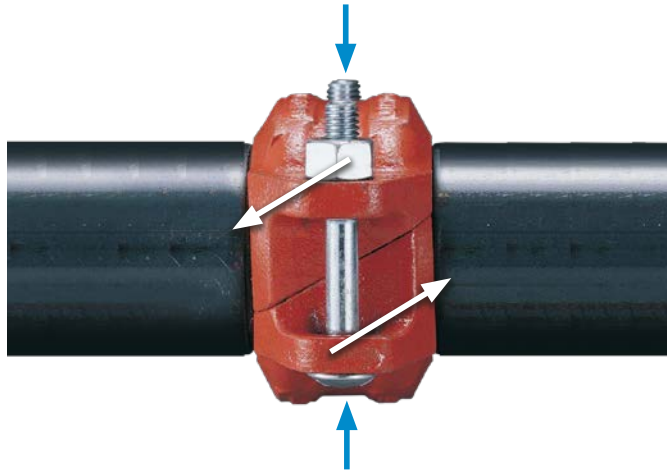
### 2.7.2. Installation of a rigid coupling with oblique bolt clamps Z05, Z07



Please go to section 3.7.1. to remind the initial stages of assembly 1 - 8.

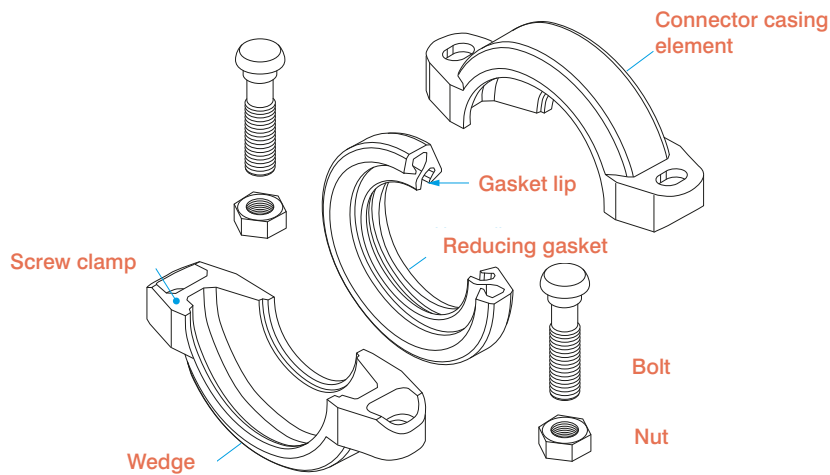


**Tighten the nuts:** Tighten the nuts alternately and with equal force until the projections of the clamp come into contact with each other (metal-to-metal contact). Tighten the nuts by a quarter or half turn to ensure that the bolts and nuts adhere tightly to the fastening element. The use of a torque wrench is not required.



**!** **NOTE!** After tightening the bolts of the coupling, the oblique bolt clamps move in the opposite directions, causing the wedges to be pressed against the surface of the pipe and making the grooves on the pipe pressed against the wedges of the coupling. Metal bolt clamps must always touch each other (metal-to-metal contact).

### 2.7.3. Installation of reducing coupling 7706

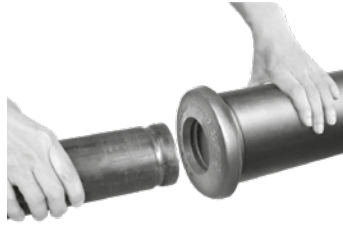


Please go to section 2.7.1. to remind the initial stages of assembly 1 - 3.

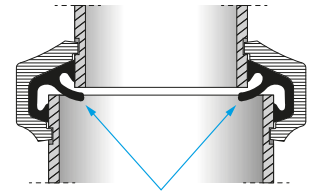
When assembling the reducing couplings, always install the gasket on the larger pipe. All other installation steps remain as described.



**First, install the gasket on the larger pipe:** Place a larger gasket opening on the larger end of the pipe and match both pipes to be joined. Insert the smaller pipe into the gasket. The gentle torsional movement will help to match the gasket to the pipe. The gasket should not protrude beyond the end of the pipe or its groove.



**Insert the smaller pipe:** Try and match the pipes to be connected. Insert the smaller pipe into the gasket. The gentle torsional movement will help to match the gasket to the pipe. The gasket should not protrude beyond the end of the pipe or its groove.



Gasket lip

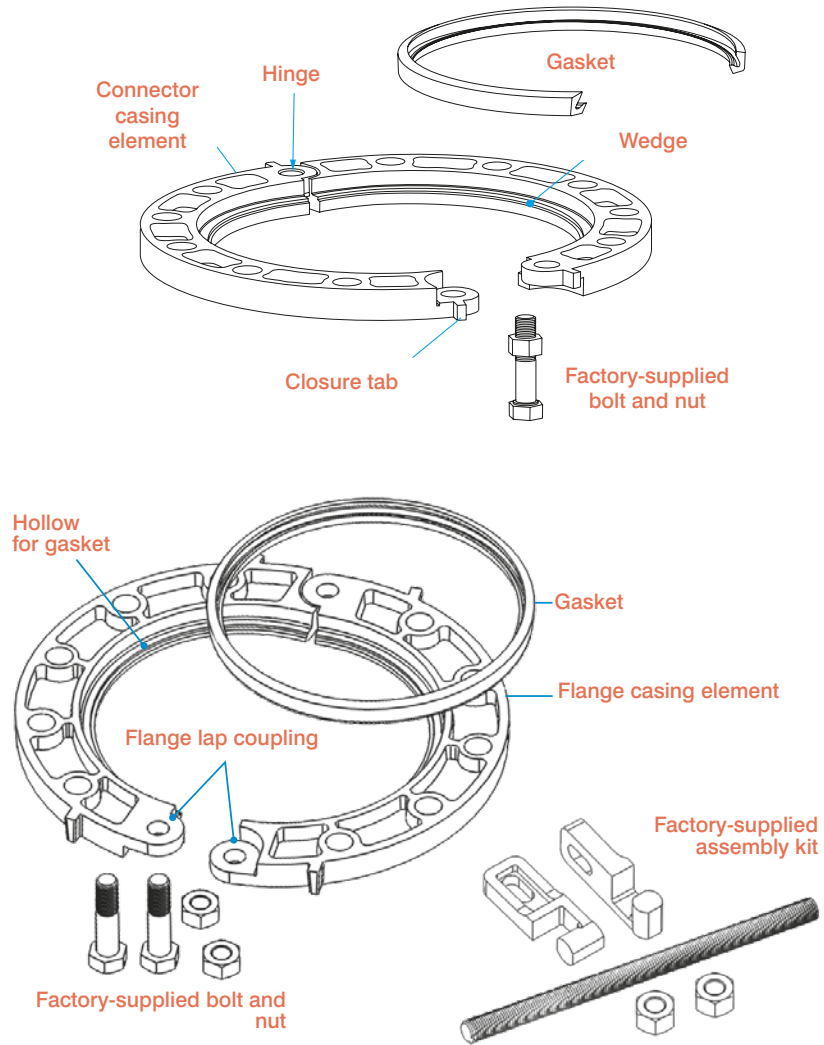
**Note:** To prevent the smaller pipe from cutting in, no washer is needed. The built-in blocking element (gasket lip) of the gasket helps to prevent the smaller pipe from cutting in. However, the smaller pipe should be inserted carefully and gently until the coupling casing is properly completed.

**Caution!** Reducing couplings (such as model 7706) cannot be used with a plug as it can be sucked into the pipe when draining the piping system.



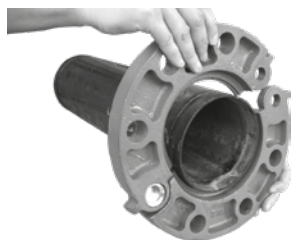
**Tighten the nuts:** Tighten the nuts alternately and with equal force until the projections of the clamp come into contact with each other (metal-to-metal contact). Tighten the nuts by a quarter or half turn to ensure that the bolts and nuts adhere tightly to the fastening element. The use of a torque wrench is not required.

## 2.7.4. Installation of grooved flange adapters 7041



## 2.7.5. Bolts and nuts

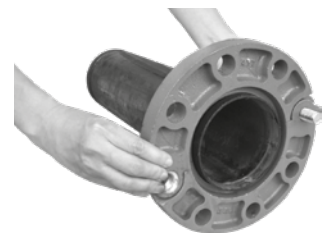
KAN-therm Groove flange adapters comply with the PN10/16 standard, however, they are also available in accordance with ANSI standard class 125/150 and class 300.



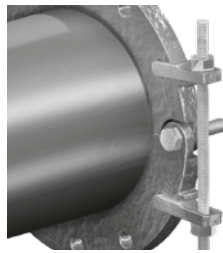
**Install the articulated flange structure (2-12"):** Open the articulated flange structure. Place the flange segments around the groove at the end of the pipe and tighten them together until the bolt holes are aligned.



**Tighten the flange segments (2-12"):** Use a wrench, clamp or other similar tool to tighten the locking projections until the bolt holes are aligned.



**Insert the factory-supplied bolt (2-12"):** Pass the factory-supplied bolt through the clamp hole, making sure that the flange completely adheres to the pipe grooves.



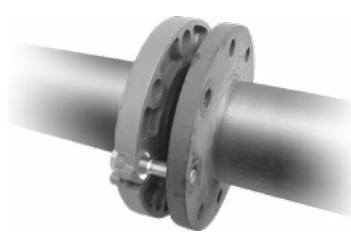
**Insert the factory-supplied bolt (2-12”):** Make sure that the flange is fully in contact with the pipe grooves.



**Check the gasket grade and lubricate it:** Check the colour of the gasket strip and make sure that the gasket supplied is suitable for the intended use. Then apply a thin layer of grease to the lip of the gasket.



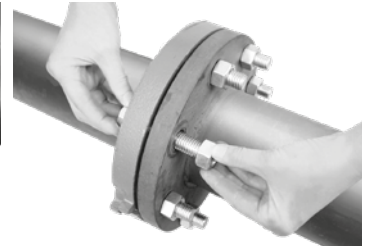
**Install the gasket:** Place the gasket in the recess between the outside diameter of the pipe and the recess in the flange. Make sure that the lower part of the gasket (marking side) is positioned and seated on the bottom of the gasket pocket.



**Match the second flange:** Insert the industrial bolt to fix the flanges to the hinge hole (opposite to the factory-supplied bolt) and tighten the nuts of the industrial bolt and the factory-supplied bolt.




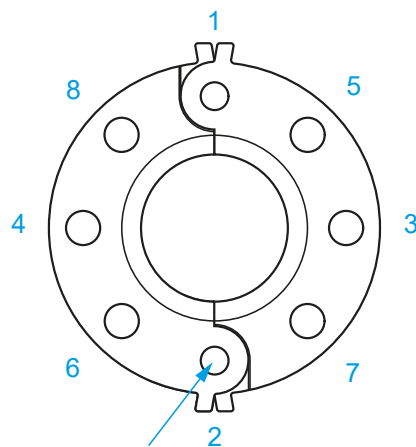
**Match the second flange:** Apply the matching flange surface to the surface of the flange adapter and thread the two factory-supplied bolts through the four holes in the flange couplings.



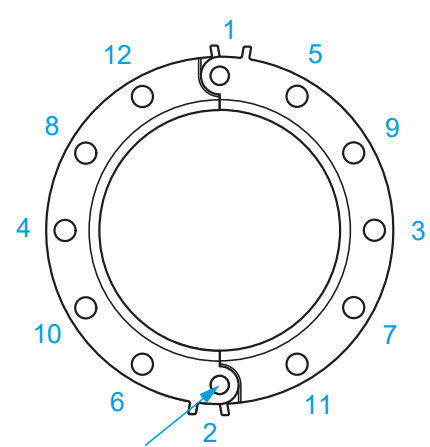
**Add bolts:** Insert the remaining industrial bolts and tighten the nuts manually. All bolts must be pointed in the same direction.



 **Tighten the nuts:** Tighten the nuts alternately, diagonally, until the surfaces of the flanges come into contact with each other (metal-to-metal contact). It is important that the surfaces of the flanges meet parallel.



Hinge fastening



Hinge fastening

## Required tightening torque

The tables below show standard values of the tightening torque for the correct installation of KAN-therm Groove flange adapters. Use a torque wrench so that all nuts are evenly tightened according to the same tightening torque value.

These tightening torque values are not maximum values and bolts can be tightened to values higher than specified. Obtaining the maximum tightening torque is not necessary because the KAN-therm Groove flange adapters are equipped with flexible (rubber) gaskets that require a much lower tightening torque than metal gaskets.

### 7041 (ANSI CLASS 125/150) tightening torque requirements

Nominal dimension	Bolt dimension		Required tightening torque	
	inches	Nr	Lbs-Ft	Nm
2	5/8	4	110-140	149-190
2 1/2	5/8	4	110-140	149-190
3	5/8	4	110-140	149-190
4	5/8	8	110-140	149-190
5	3/4	8	220-250	298-339
6	3/4	8	220-250	298-339
8	3/4	8	220-250	298-339
10	7/8	12	320-400	434-542
12	7/8	12	320-400	434-542

### 7041 model (PN 10/16) tightening torque requirements

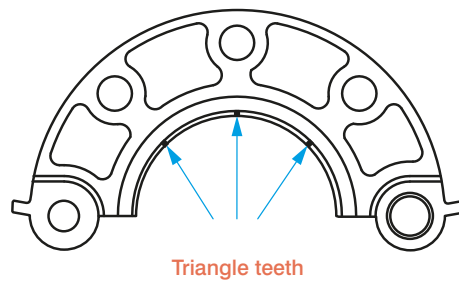
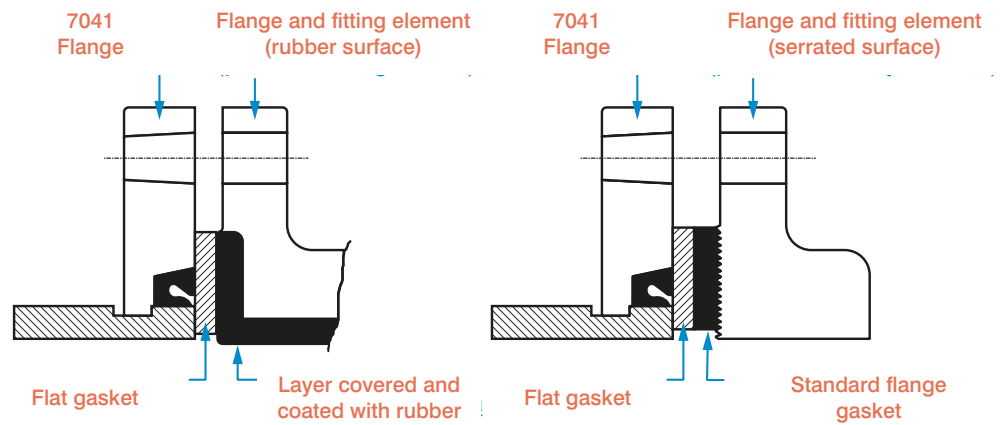
Nominal dimension	Bolt dimension		Required tightening torque	
	inches	No.	Lbs-Ft	Nm
50	M16	4	110-140	149-190
65	M16	4	110-140	149-190
80	M16	8	110-140	149-190
100	M16	8	110-140	149-190
125	M20	8	220-250	298-339
150	M20	8	220-250	298-339
200	M20	12	220-250	298-339
250	M24	12	320-400	434-542
300	M24	12	320-400	434-542

## Installation of flat gasket in flange adapters 7041

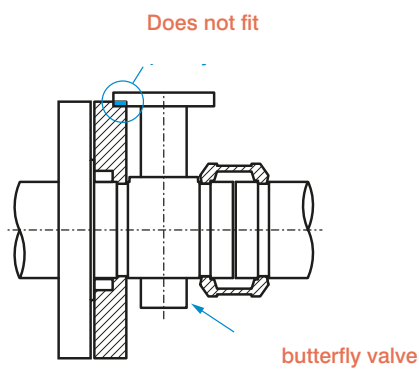


### Important remarks

1. Flange adapters 7041 require a hard, flat surface that allows effective sealing. If the co-working surface is not suitable, as with the serrated surfaces of some valves or dampers with a rubberised surface, a flat gasket (Model 49) should be used.



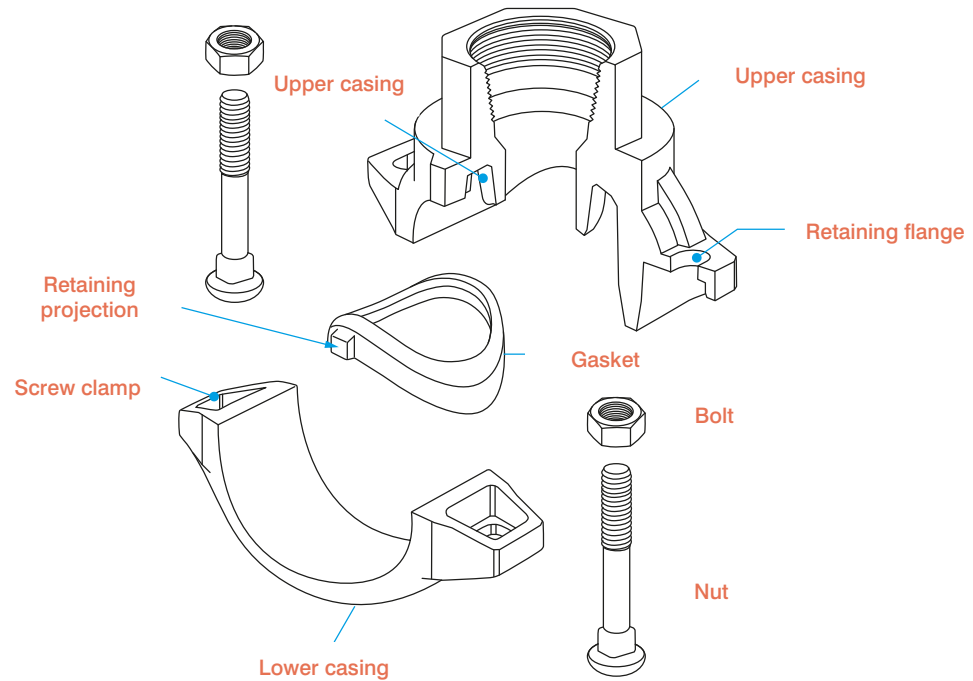
2. Flange adapters 7041 have small triangular teeth inside the wedge arm to prevent the pipe from rotating. The teeth should be ground in the event of a connection with a flange with a rubber coating.
3. Flange adapters 7041 cannot be used as anchor points for tendons on non-stretchable couplings.



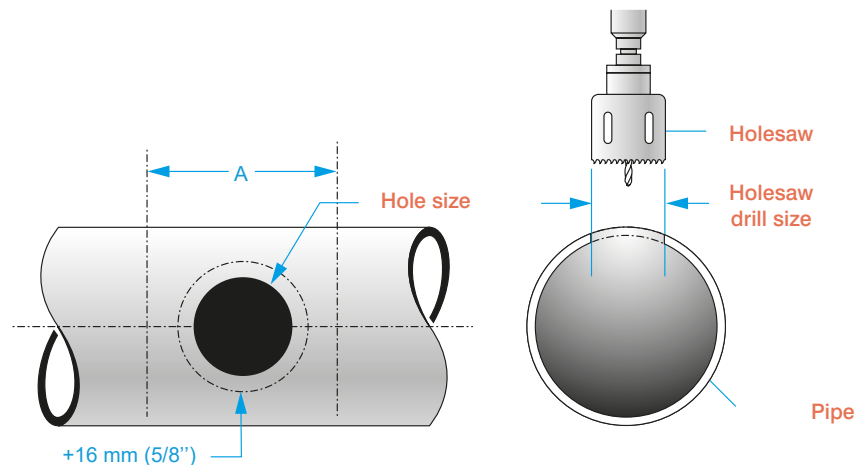
4. When installing the flange adapter 7041 on the butterfly valve or ball valve, make sure that the outer diameter of the flange adapters does not interfere with the valve actuator or the actuator mounting washer.



## 2.7.6. Installation of saddle couplings



Saddle system



When installing saddle and cross type couplings, it is required to prepare the pipe by making the hole. This method of pipe preparation requires cutting or drilling a certain hole dimension in the pipe axis. Always use the right dimension keyhole saw as shown in this document.

**Caution!** The hole must be cut to the end and should have a smooth edge. Never use a burner to drill the hole, as this can affect the quality of the seal.



### Cutting the hole:

Determine the position of the hole on the pipe. Use a suitable hole dimension drill saw, according to the table below regarding the required hole dimension.



**Remove beads and rough edges** and clean the pipe surface within a radius of 16 mm around the hole in which the gasket is to be seated. This area should be checked to ensure a clean, smooth surface, with no recesses or protrusions that could affect the quality of the seal. The area within the "A" dimension should also be checked for dirt, scale or any defects that could affect the effective seating of the gasket or the assembly of the coupling.

### The dimensions of holes and area "A" for saddle coupling

The specific hole dimensions are described in the table below.

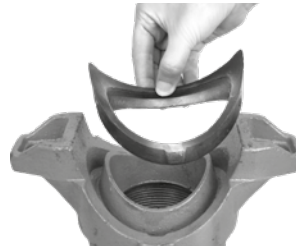
Saddle-type coupling passage x branch		Hole dimensions				Preparation of "A" surface	
		Hole saw		Max. permissible diameter			
inches	mm	inches	mm	inches	mm	inches	mm
<b>2 x 1/2</b>	50 x 15	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 x 3/4</b>	50 x 20	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 x 1</b>	50 x 25	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 x 1 1/4</b>	50 x 32	1 3/4*	45	1 7/8*	47	4	102
<b>2 x 1 1/2</b>	50 x 40	1 3/4*	45	1 7/8*	47	4	102
<b>2 1/2 x 1/2</b>	65 x 15	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 1/2 x 3/4</b>	65 x 20	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 1/2 x 1</b>	65 x 25	1 1/2	38	1 5/8	41	3 1/2	89
<b>2 1/2 x 1 1/4</b>	65 x 32	2	51	2 1/8	54	4	102
<b>2 1/2 x 1 1/2</b>	65 x 40	2	51	2 1/8	54	4	102
<b>3 x 1/2</b>	80 x 15	1 1/2	38	1 5/8	41	3 1/2	89
<b>3 x 3/4</b>	80 x 20	1 1/2	38	1 5/8	41	3 1/2	89
<b>3 x 1</b>	80 x 25	1 1/2	38	1 5/8	41	3 1/2	89
<b>3 x 1 1/4</b>	80 x 32	2	51	2 1/8	54	4	102
<b>3 x 1 1/2</b>	80 x 40	2	51	2 1/8	54	4	102
<b>3 x 2</b>	80 x 50	2 1/2	64	2 1/8	67	4 1/2	114
<b>4 x 1/2</b>	100 x 15	1 1/2	38	1 5/8	41	3 1/2	89
<b>4 x 3/4</b>	100 x 20	1 1/2	38	1 5/8	41	3 1/2	89
<b>4 x 1</b>	100 x 25	1 1/2	38	1 5/8	41	3 1/2	89
<b>4 x 1 1/4</b>	100 x 32	2	51	2 1/8	54	4	102
<b>4 x 1 1/2</b>	100 x 40	2	51	2 1/8	54	4	102
<b>4 x 2</b>	100 x 50	2 1/2	64	2 5/8	67	4 1/2	114
<b>4 x 2 1/2</b>	100 x 65	2 3/4	70	2 7/8	73	4 3/4	121
<b>4 x 3</b>	100 x 80	3 1/2	89	3 5/8	92	5 1/2	140
<b>5 x 2</b>	125 x 50	2 1/2	64	2 5/8	67	4 1/2	114
<b>5 x 2 1/2</b>	125 x 65	2 3/4	70	2 7/8	73	4 3/4	121
<b>6 x 1 1/4</b>	150 x 32	2	51	2 1/8	54	4	102
<b>6 x 1 1/2</b>	150 x 40	2	51	2 1/8	54	4	102
<b>6 x 2</b>	150 x 50	2 1/2	64	2 5/8	67	4 1/2	114
<b>6 x 2 1/2</b>	150 x 65	2 3/4	70	2 7/8	73	4 3/4	121
<b>6 x 3</b>	150 x 80	3 1/2	89	3 5/8	92	5 1/2	140
<b>6 x 4</b>	150 x 100	4 1/2	114	4 5/8	118	6 1/2	165
<b>8 x 2</b>	200 x 50	2 3/4*	70	2 7/8*	73	4 3/4	121
<b>8 x 2 1/2</b>	200 x 65	2 3/4	70	2 7/8	73	4 3/4	121
<b>8 x 3</b>	200 x 80	3 1/2	89	3 5/8	92	5 1/2	140
<b>8 x 4</b>	200 x 100	4 1/2	114	4 5/8	118	6 1/2	165

**\*Important!** Pay special attention to the dimension of the hole saw drill and the maximum diameter allowed for a given dimension, any deflection can lead to coupling damage.

## Specification of hole dimensions



**Check the gasket grade and lubricate it:** Check the colour of the gasket strip and make sure that the gasket supplied is suitable for the intended use. Then apply a thin layer of grease to the lip of the gasket. The standard, factory-supplied gasket is made of a mix of E-type EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.



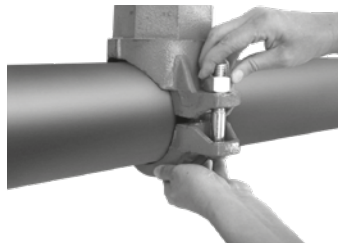
**Insert the gasket:** Insert the gasket into the gasket seat in the casing. The retaining projections on both sides of the gasket should properly fit into the recesses.



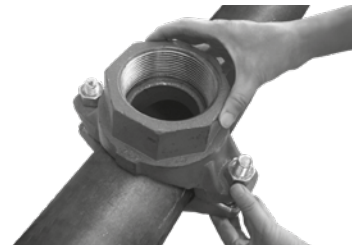
**Prepare for assembly:** Assemble the coupling casing loosely, leaving one bolt and nut disconnected to allow the hinge mechanism to be moved.



**Position the upper casing in the correct position:** Place the upper casing part on the pipe so that the retaining flange fits properly into the hole. Then add the lower casing part from the opposite side of the pipe.




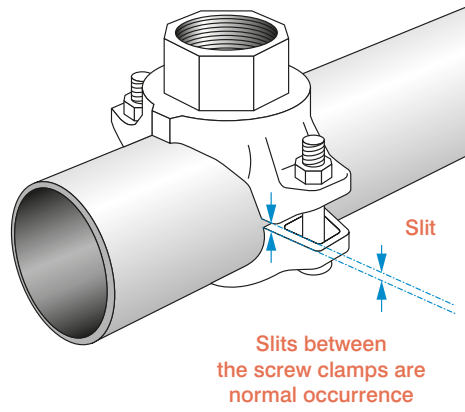
**Insert the bolts and put on the nuts:** Insert the remaining bolt and tighten the nut manually. Make sure that the oval bolt head is locked in the bolt hole in the coupling casing.



**Check the retaining flange:** Make sure that the retaining flange is properly seated in the hole. You can check this by swinging the top of the casing in the hole. Make sure also that the oval bolt head is locked in the bolt hole in the coupling casing.



 **Tighten the nuts:** Tighten the nuts alternately and with equal force until the casing of the outlet come into contact with the outer surface of the pipe (metal-to-metal contact). Gaps between bolt clamps are acceptable but they should be the same on both sides. Use a torque wrench and tighten the nuts to get the correct tightening torque values.



### Saddle-type couplings – models 7721 and 7722

Nominal dimension		Bolt dimension		Required tightening torque	
inches	mm	inch- es	No.	lbs-Ft	Nm
2	50	3/8	2	30	40
2 1/2	65	1/2	2		
3	80	1/2	2		
4	100	1/2	2	50	68
5	125	5/8	2		
6	150	5/8	2		
8	200	3/4	2		

**Caution!** Do not exceed the above tightening torque range by more than 25%, as excessive tightening torque can lead to damage of the bolt and/or the coupling.

### Characteristics of the output flow

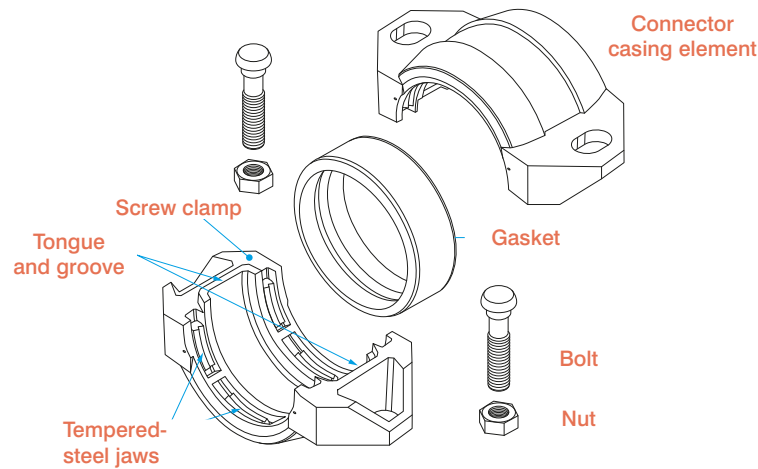
Outlet dimension		Equivalent length		Outlet dimension		Equivalent length	
		7721	7722			7721	7722
inches	mm	feet	feet	inches	mm	feet	feet
1	25	3	3	2 1/2	65	15	15
1 1/4	32	6	6	3	80	16	16
1 1/2	40	8	8*	4	100	17	17
2	50	9	9				

Values in feet and meters for a steel outlet pipe (series 40) with a coefficient of friction, calculated according to the Hazen-Williams formula, of 120.

\* Equivalent length for models 7721 with 1 1/2" outlet and 2 1/2" course is 13 feet (4 meters)

## 2.7.7. Couplings for pipe systems with smooth ends

### Installation of a Wildcat coupling (model 79) for connecting carbon steel pipes



The KAN-therm Groove coupling with a smooth end of Wildcat type (model 79) has been designed for mechanical joining of carbon steel pipes with smooth ends or bevelled. Grooving is not required. The Wildcat coupling (model 79) is recommended for use on carbon steel pipes with hardness less than HB150. It is not recommended for use on stainless steel, plastic, HDPE, cast iron and other brittle materials.



**Marking:** Use a pen or other marking tool and measuring tape to mark a distance of 1 inch from the end of the pipe. The marking will be used as a reference point when the seal is centred during the assembly. It is recommended to make a minimum of 4 markings spaced at the same intervals around the circumference of the pipe. Use a measuring tape and a pen or other marking tool to make a second marking at the ends of the pipes according to the measurement values given in the table on page 93. This marking will be used during visual inspection to ensure that the pipe has been correctly placed in the coupling. Markers should run parallel to the reference marks for centring the gasket.

**Check the gasket:** Check the colour of the gasket strip and make sure it is suitable for the intended use. The standard, factory-supplied gasket is made of a mix of E-type EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.



**Lubricate the gasket:** To facilitate insertion of the pipe and installation of coupling without pinching effect, apply a thin layer of KAN-therm grease on the lip of the gasket and on the outer coating of the gasket. Other suitable lubricants may be used as long as they do not have properties that may damage the gasket. In systems exposed to extremely high or low temperatures, it is recommended to use a silicone grease.

**Caution!** Do not use gaskets made of EPDM in installations containing hydrocarbons or petroleum, as this may cause leakage or damage to the coupling.

**Install the gasket:** Place the gasket on the ends of the pipes and centre it between the first marks marked on the inside. The ends of the pipes should always come into contact.

**Install casing elements:** Place the casing components around the gasket, making sure that it is centred between the first marks drawn at the pipe ends on the inside and that the casing elements are centred between the second markings drawn on the outside. Make also sure that the feather and groove of the casing are aligned.



**Insert the bolts and put on the nuts:** Insert all bolts and tighten the nuts manually. Make sure that the oval bolt head is locked in the bolt hole in the coupling casing.



**Tighten the nuts:** Using a torque wrench, tighten the nuts alternately and with the same force until the desired tightening torque is reached. Insufficient tightening torque can lead to pipe separation, which can cause damage to the body and/or property. The required tightening torque values are given in the adjacent table.

**Caution!** To avoid injury caused by sharp edges of the teeth, always wear protective gloves when working.

### Centring markings and minimum tightening torque required for the WILDCAT coupling (model 79)

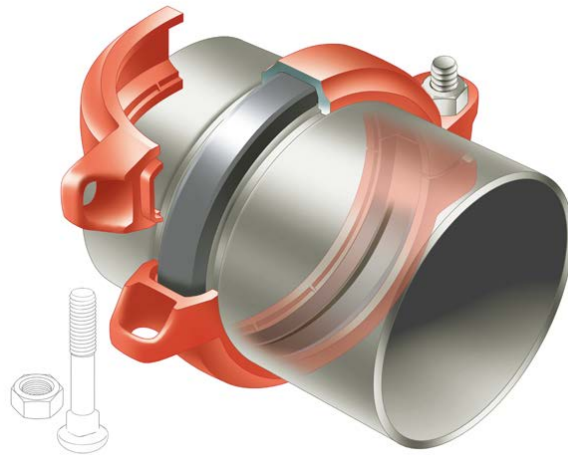
Dimension		Marking for centring the coupling		Bolts of the coupling set			
inches	mm	inches	mm	Quantity	Bolt dimension in inches	Required tightening torque	
						Lbs-Ft	Nm
1	25	1.50	40	2	1/2 x 2 3/8	110	150
1 1/2	40	1.50	40	2	1/2 x 2 3/8	110	150
2	50	1.75	45	2	5/8 x 3 1/2	150	200
2 1/2	65	1.75	45	2	5/8 x 3 1/2	150	200
3	80	1.75	45	2	3/4 x 4 3/4	200	270
4	100	2.00	50	2	3/4 x 4 3/4	200	270
5	125	2.00	50	2	7/8 x 6 1/2	250	340
6	150	2.25	55	2	7/8 x 6 1/2	250	340
8	200	2.50	65	4	3/4 x 4 3/4	200	270
10	250	2.50	65	4	7/8 x 6 1/2	300	400
12	300	2.50	65	4	1 x 6 1/2	350	470
14	350	2.75	70	4	1 x 6 1/2	350	470
16	400	2.75	70	4	1 x 6 1/2	350	470

#### Caution!

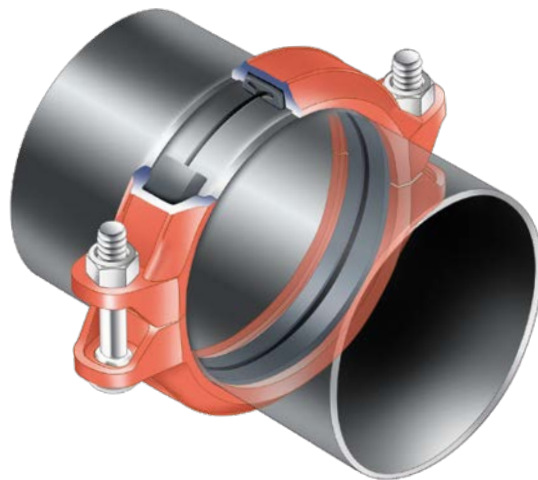
1. Uneven tightening of the bolts and nuts may cause pinching of the gasket, causing immediate or later leakage.
2. Too high tightening torque can damage the bolts or coupling.

## 2.8. Design data - rigid and flexible couplings

Mechanical grooved couplings are available in both rigid and flexible forms.

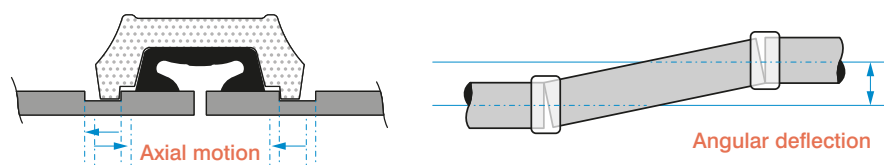


**The rigid coupling** is intended for uses where a rigid connection is required, similar to a traditional flange, welded or threaded connection. In order for the coupling to be considered rigid, its deflection rate or angular movement value must be less than one.



**Flexible couplings** are designed to adapt to axial movements, rotational movement and angular movement of a minimum of one degree. Flexible couplings are used in applications where pipework is a curved and deformed structure or in which pipeline systems are exposed to external forces beyond normal static conditions, such as seismic events or when there is a problem of excessive exposure to vibrations or noise.

**Grooved couplings** become less flexible when the dimension of the pipe increases. The following table contains design data on the permissible axial movement and angular deflection for flexible couplings.



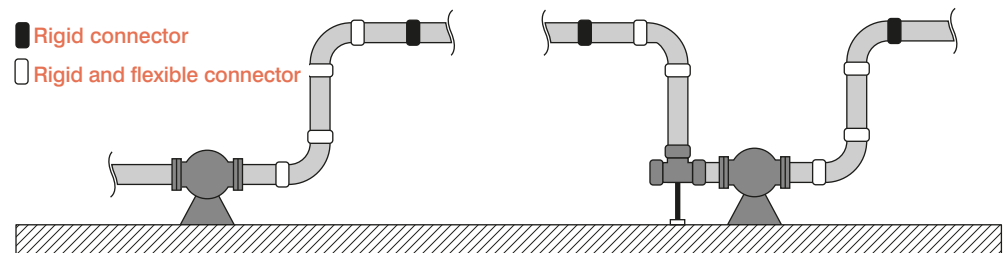
## Design data of KAN-therm Groove flexible couplings - models 7705, 7707

Dimension			Rolled groove		Machined groove			
			Axial movement	Angle bend	Axial movement	Angle bend		
inches	DN	mm	mm/ coupling	degrees	mm/m	mm/ coupling	degrees	mm/m
1	25	33.4	0 – 0.8	1.37°	24	0 – 1.6	2.74°	48
1 1/4	32	42.2	0 – 0.8	1.09°	19	0 – 1.6	2.17°	38
1 1/2	40	48.3	0 – 0.8	0.95°	16.5	0 – 1.6	1.90°	33
2	50	60.3	0 – 0.8	0.76°	13.5	0 – 1.6	1.52°	27
2 1/2	-	73	0 – 0.8	0.63°	11	0 – 1.6	1.26°	22
-	65	76.1	0 – 0.8	0.60°	10.5	0 – 1.6	1.20°	21
3	80	88.9	0 – 0.8	0.52°	9	0 – 1.6	1.03°	18
		101.6	0 – 0.8	0.45°	8	0 – 1.6	0.90°	16
		108	0 – 2.4	1.27°	22.5	0 – 4.8	2.54°	45
4	100	114.3	0 – 2.4	1.20°	21	0 – 4.8	2.40°	42
	-	125	139.7	0 – 2.4	0.98°	17.25	0 – 4.8	1.97°
5	-	141.3	0 – 2.4	0.97°	17.25	0 – 4.8	1.95°	34.5
		159	0 – 2.4	0.86°	15	0 – 4.8	1.73°	30
6	150	168.3	0 – 2.4	0.82°	14.25	0 – 4.8	1.63°	28.5
8	200	219.1	0 – 2.4	0.63°	11.25	0 – 4.8	1.26°	22.5
10	250	273	0 – 2.4	0.50°	9	0 – 4.8	1.01°	18
12	300	323.9	0 – 2.4	0.42°	7.5	0 – 4.8	0.85°	15

\*Note! Bearing in mind the design goals, the safety factor was taken into account in the values given in the table above

### Absorbing vibrations and noise

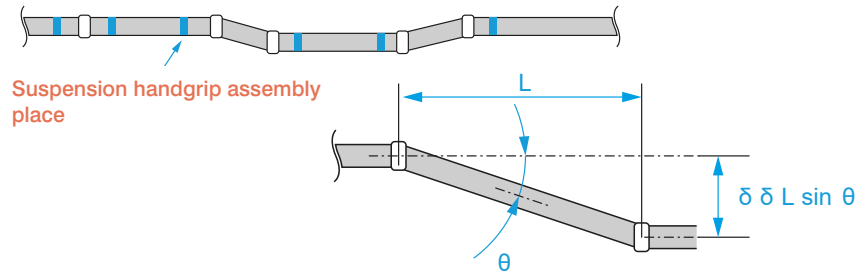
When the pump is in the frequent on and off mode, the piping system is exposed to noise and vibrations. The entire system can be significantly swayed which is referred to as resonant vibrations and occurs as a result of frequently repeated cycles. KAN-therm Groove flexible couplings help to reduce this type of vibrations and the related noise. The system should always be properly secured with steel angle stabilizers which protects it against significant swinging.



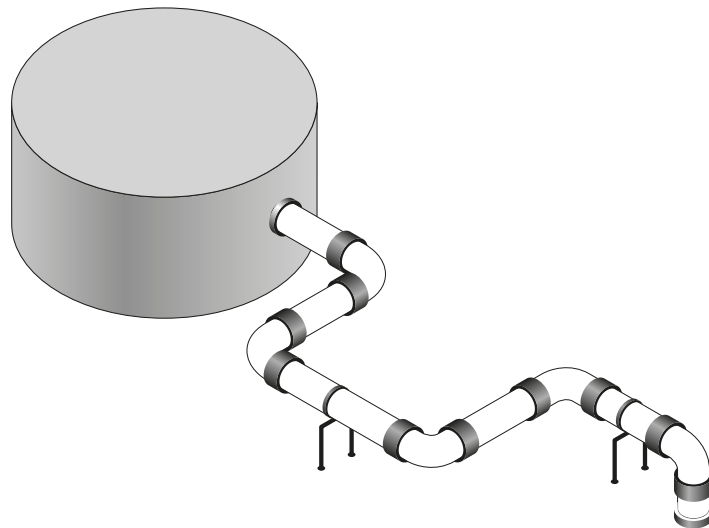


## Correction of misalignment

If a simple course requires a slight adjustment of the setting, as shown in the diagram, two flexible couplings can be used. The deflection value ( $\delta$ ) for elastic couplings KAN-therm Groove 7705 is given in the table below.

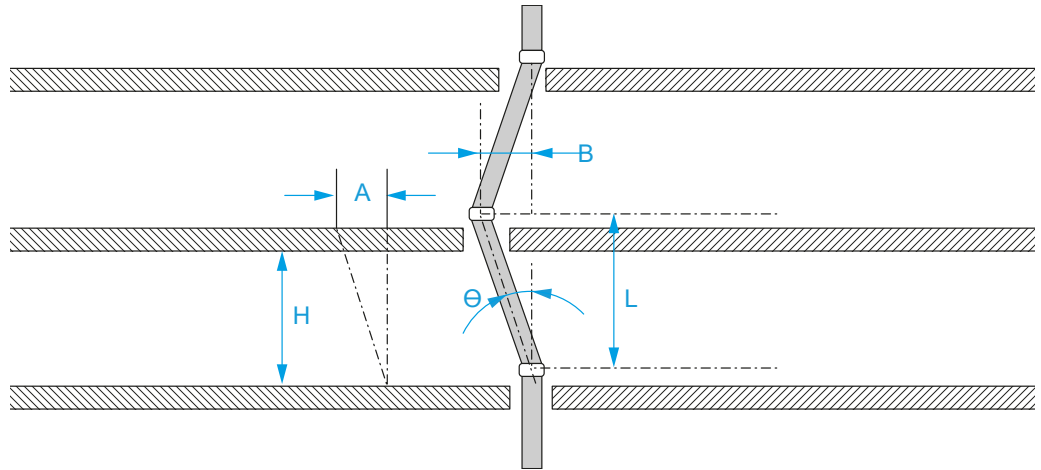


Deflection dimension ( $\delta$ )						
Nominal dimension	Deflection angle ( $\theta$ )	Distance between the couplings (L) mm				
		600	1200	1500	2000	3000
2"/50	3° 02'	32	64	79	106	159
2½"/65	2° 30'	26	52	65	87	131
3"/80	2° 04'	22	43	54	72	108
4"/100	3° 12'	34	67	84	112	168
5"/125	2° 36'	27	54	68	91	136
6"/150	1° 10'	12	24	31	41	61
8"/200	1° 40'	17	35	44	58	87
10"/250	1° 20'	14	28	35	47	70
12"/300	1° 08'	12	24	30	40	59



## Compensation of inter-ceiling deflection

When an earthquake strikes, vertical strings of high building structures are subjected to lateral swaying (inter-ceiling deflection). If it is assumed that the inter-ceiling deflection is 1/150 and the ceiling height (H) is 4 meters, the estimated inter-ceiling deflection (A) will be:



$$A = H \times 1/150 = 4000 \times 1/150 = 27 \text{ mm}$$

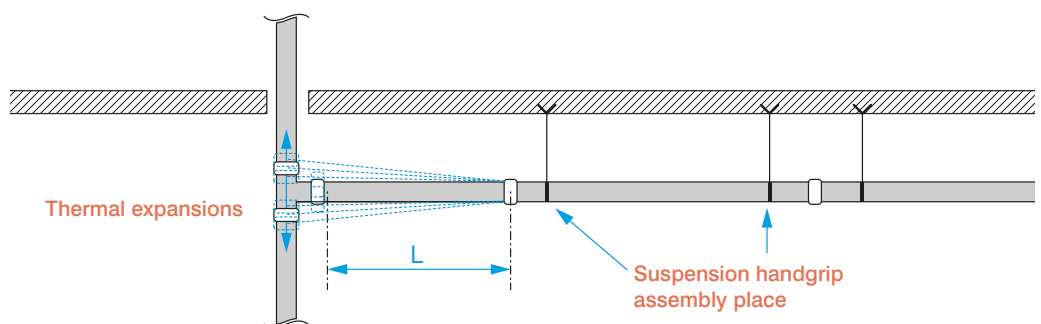
If a 200 mm (8") 7707 coupling is used for each floor, the maximum deflection (B) compensated by each coupling will be:

$$B = L \times \tan \Theta = 4000 \times 0,02915 = 4,56'' = 116 \text{ mm } (\Theta = 1,67^\circ)$$

The example shows that the flexible coupling will be able to compensate for the seismic shock at a certain scale.

## Misalignment compensation

As shown in the diagram, each branch from free vertical thrust is subjected to high lateral forces, due to increasing pressure and increased thermal movement. The use of two flexible couplings can solve this problem.

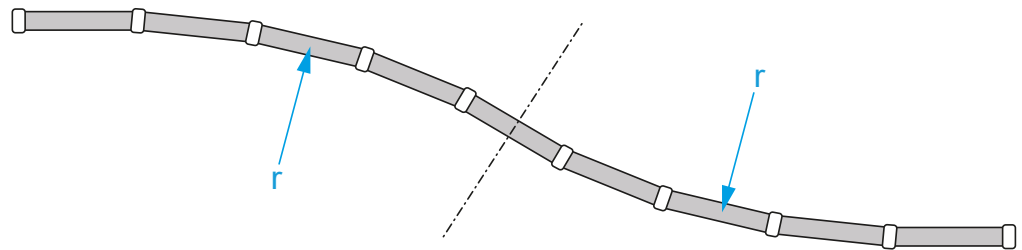


## Curved pipeline

Thanks to the KAN-therm Groove flexible couplings, a curved pipeline running along a curved tunnel, a winding road or a curved building can be designed.

$$R = \frac{L}{2 \times \sin(\theta/2)}$$

(where: R is the radius of curvature, L is the length of the pipe and  $\theta$  is the maximum permissible deflection of the coupling)



For example, using a 100 mm (4") 7705 coupling in the pipeline shown in the diagram, the maximum permissible deflection ( $\theta$ ) of the coupling will be 3.4°, the pipe length (L) will be 5.5 meters and the radius of curvature (R) reaches 92.7 meters.

## Absorption of thermal stresses

Thermal stresses result from temperature changes that cause the material to expand or shrink. With the KAN-therm Groove flexible couplings, the system can be designed to compensate for this type of movement without the need for costly compensating couplings. The expansion or heat shrinkage ( $\mu$ ) depends on the length of the pipe (L) and the temperature difference ( $\Delta T$ ).

$$\mu = \alpha \times L \times \Delta T$$

Thermal expansion (metric system) sion (mm)						
Temperature difference $\Delta T$ (°C)	Pipe length L (in metres)					
	1	5.5	10	20	30	40
	Thermal expansion (in millimetres)					
1	0.012	0.07	0.12	0.24	0.36	0.48
5	0.06	0.33	0.6	1.2	1.8	2.4
10	0.12	0.66	1.2	2.4	3.6	4.8
20	0.24	1.3	2.4	4.8	7.2	9.6
30	0.36	2	3.6	7.2	11	15
40	0.48	2.6	4.8	9.6	14	20
50	0.6	3.3	6	12	18	24
60	0.72	4	7.2	14	22	29
70	0.84	4.6	8.4	17	25	34
80	0.96	5.3	9.6	19	29	39

As the coefficient of linear expansion for steel ( $\alpha$ ) is  $1.2 \times 10^{-5}$ , the above table can be used to determine the value of thermal expansion. Example:

- Pipe dimension: 100 mm (4")
- Max. separation of pipe ends (E): 3.2 mm
- Pipe length (l): 5500 mm
- Temperature difference ( $\Delta T$ ): 40°C (from +5°C to +45°C)
- $\alpha = 1.2 \times 10^{-5} / ^\circ\text{C}$

$$\mu = \alpha \times l \times \Delta T = 1.2 \times 10^{-5} / ^\circ\text{C} \times 5500 \text{ mm} \times 40^\circ\text{C} = 2.64 \text{ mm}$$

Thermal expansion of a standard length pipe of 5.5 meters ( $\mu$ ) is within the limits (= max. pipe end separation) permissible for the flexible coupling. In other words, if a flexible coupling for each 5.5-meter pipe is used, this coupling will compensate for expansion or thermal shrinkage under temperature changes of 40°C. After calculating the necessary number of flexible couplings (N) for the anchoring system, leave clearance, calculated according to the formula  $N \times E \times 1/2$ , acting as a safety factor.

Regardless of whether there is a phenomenon of expansion or heat shrinkage or their alternating occurrence, the system requires the use of applicable anchoring systems with guides that align space and elements supporting the weight. Where greater thermal movement is anticipated, additional expansion couplings should be used.

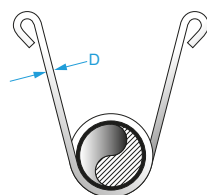
## 2.9. Anchoring, hanging and brackets

KAN-therm Groove grooved couplings are designed to withstand axial loads of 4–5 times greater than their nominal operating pressure, even though their bending strength is lower than for steel pipes. The coupling can be damaged by the occurrence of a bending motion exceeding the maximum value of the permissible deflection. System designers should provide anchors (main and intermediate) and pipe guides that provide adequate spacing to protect the system from unexpected large bending movements.

The pictures presented are of illustration nature only and should not be used as examples because the conditions and requirements vary depending on the situation. Relying on general data and information provided in this document is the sole risk of the user and KAN Sp. z o.o. does not bear any responsibility for this.

Suspension holders should be designed to be able to support five times the weight of a pipe filled with water plus an additional 250 pounds (115 kg) at each point of the tube support (NFPA 13 9.1.1.1.). Illustrations below present examples of permissible types and dimensions of holders according to NFPA 13.

### Dimensions of U-type hook handles



Roll-up hook handle

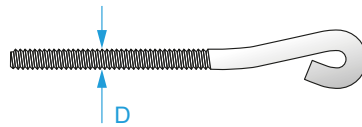
Pipe dimension	Dimension D	
	inches	mm
≤ 2	5/16	7.9
2 1/2 – 6	3/8	9.5
8	1/2	12.7

## Dimensions of fixing rods



Adjusted bar with rotation  
pipe-adherent ring

Pipe size	Dimension D	
	inches	mm
≤ 4	3/8	9.5
5 – 8	1/2	12.7
10 – 12	5/8	15.9



Pipe size	Dimension D	
	inches	mm
≤ 4	3/8	9.5
5 – 6	1/2	12.7
10 – 12	3/4	15.1

## Handles for straight sections

In the case of straight sections, both rigid and flexible couplings can be used. If rigid couplings are used, the same grip spacing can be used as for other pipe design methods. We encourage you to familiarize with the grip spacing standards according to ANSI B31.1 Power Piping Code, B31.9 Building Services Piping Code, NFPA 13 Sprinkler Systems or Mechanical Equipment Construction Guide (Japan). See table below.

### Suggested max. spacing between the bearers (steel pipe)

Nominal pipe dimension inches/mm	Water system (feet/metres)				Gas or air system (feet/metres)		
	1)	2)	3)	4)	1)	2)	3)
1 /25	7 /2.1	9 /2.7	12 /3.7	6.6 /2.0	9 /2.7	10 /3.0	12 /3.7
1 1/4 /32	7 /2.1	11 /3.4	12 /3.7	6.6 /2.0	9 /2.7	12 /3.7	12 /3.7
1 1/2 /40	7 /2.1	12 /3.7	15 /4.6	6.6 /2.0	9 /2.7	13 /4.0	15 /4.6
2 /50	10 /3.0	13 /4.0	15 /4.6	6.6 /2.0	13 /4.0	15 /4.6	15 /4.6
2 1/2 /65	11 /3.4	15 /4.6	15 /4.6	6.6 /2.0	14 /4.3	17 /5.2	15 /4.6
3 /80	12 /3.7	16 /4.9	15 /4.6	6.6 /2.0	15 /4.6	19 /5.8	15 /4.6
4 /100	14 /4.3	18 /5.5	15 /4.6	6.6 /2.0	17 /5.2	21 /6.4	15 /4.6
5 /125	16 /4.9	20 /6.1	15 /4.6	6.6 /2.0	20 /6.1	24 /7.3	15 /4.6
6 /150	17 /5.2	21 /6.4	15 /4.6	10 /3.0	21 /6.4	26 /7.9	15 /4.6
8 /200	19 /5.8	23 /7.0	15 /4.6	10 /3.0	24 /7.3	29 /8.8	15 /4.6
10 /250	19 /5.8	25 /7.6	15 /4.6	10 /3.0	24 /7.3	33 /10.1	15 /4.6
12 /300	23 /7.0	26 /7.9	15 /4.6	10 /3.0	30 /9.1	36 /11.0	15 /4.6

1) ANSI B31.1 Power Piping Code

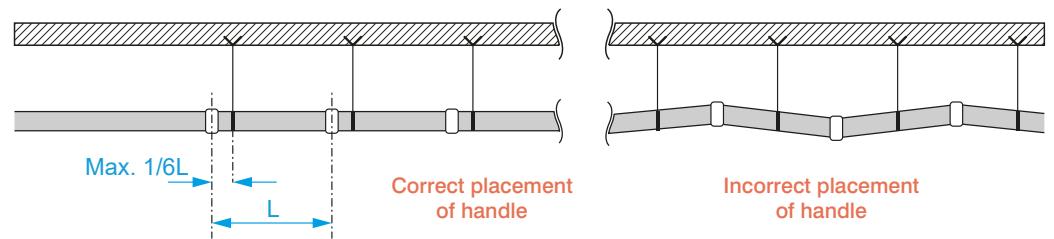
2) ANSI B31.9 Building Services Piping Code

3) NFPA 13 Sprinkler Systems

4) Japanese Ministry of Infrastructure and Transport: Mechanical Equipment Construction Guide

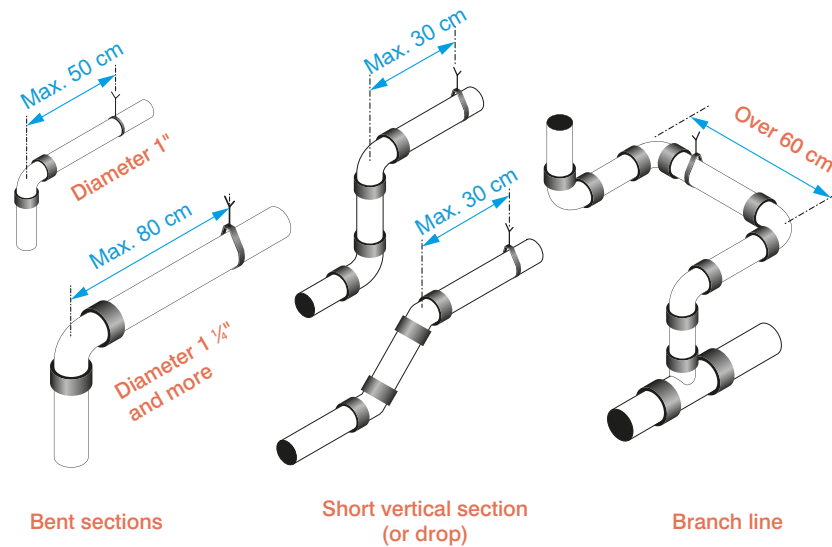
## Assembly points for handles on straight sections using flexible couplings

If that flexible couplings are used on a simple pipeline run, the retaining handles should be mounted as close as possible to each coupling or within a distance not exceeding  $1/6$  of the spacing.



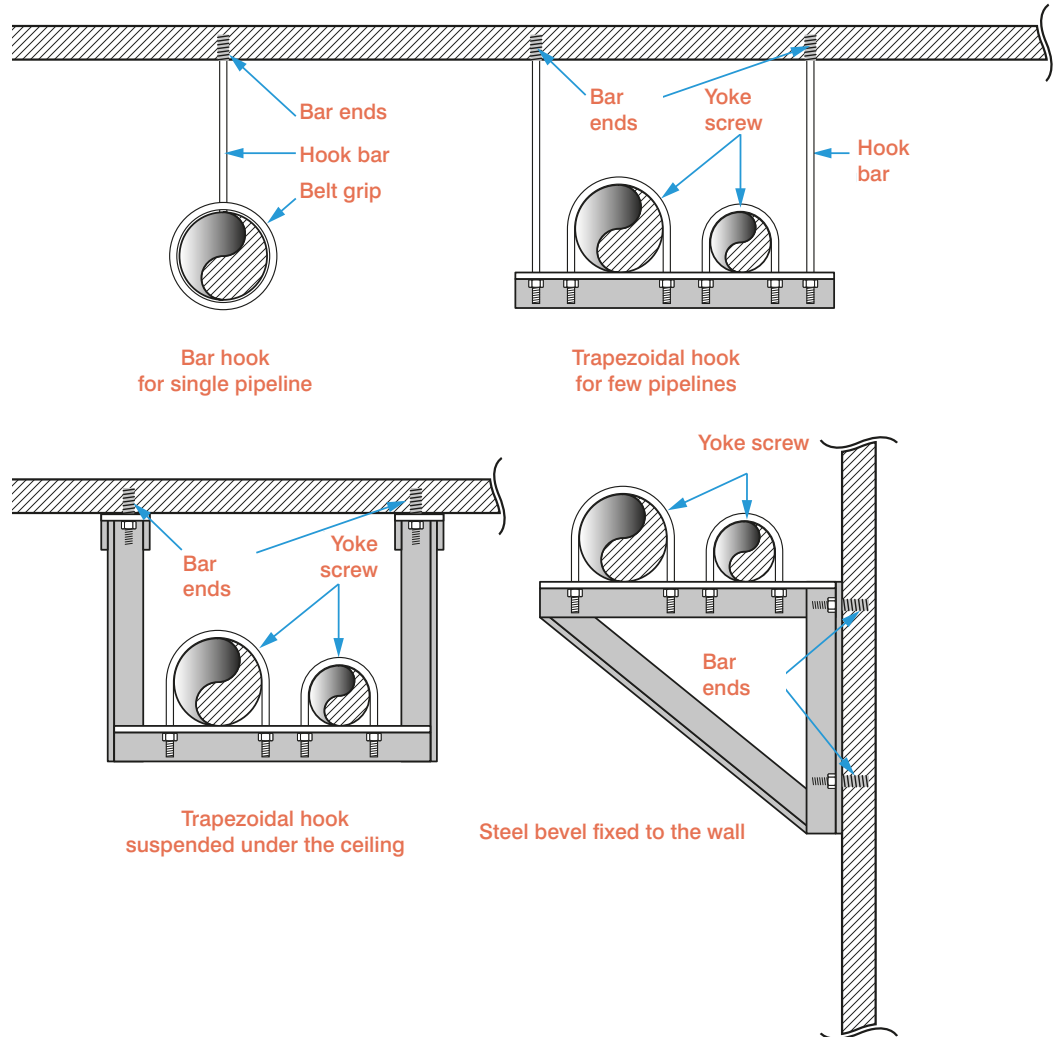
## Assembly points for handles on curved and branching patterns

In the case of curved runs connected to the branch, short vertical string or bleed, additional brackets or brackets should be used.

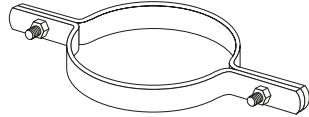


## Typical designs of suspensions and clamps

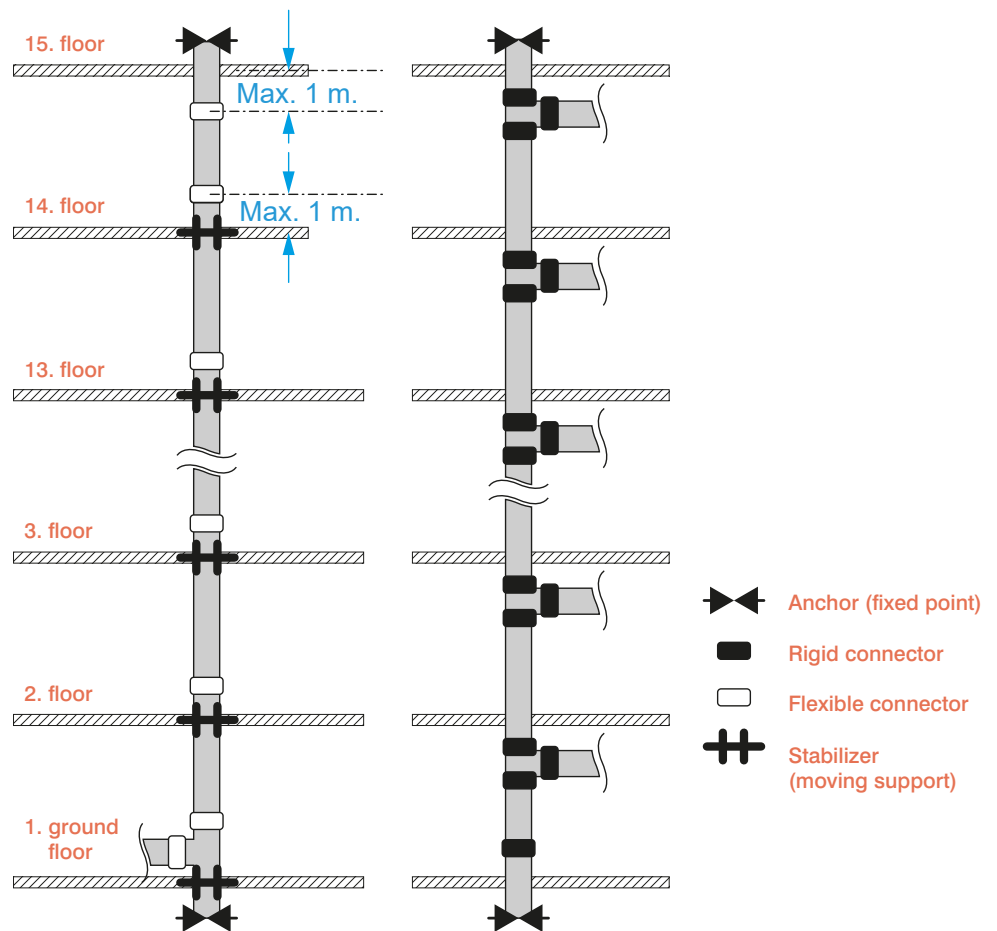
Pipelines should be suitably anchored by means of bars or steel angle sections which are directly attached to the building structure in order to limit movement of the pipelines. Hangers and their components should be made of steel. The maximum distance between hangers is given in the table on the previous pages.



## Brackets for vertical ducts

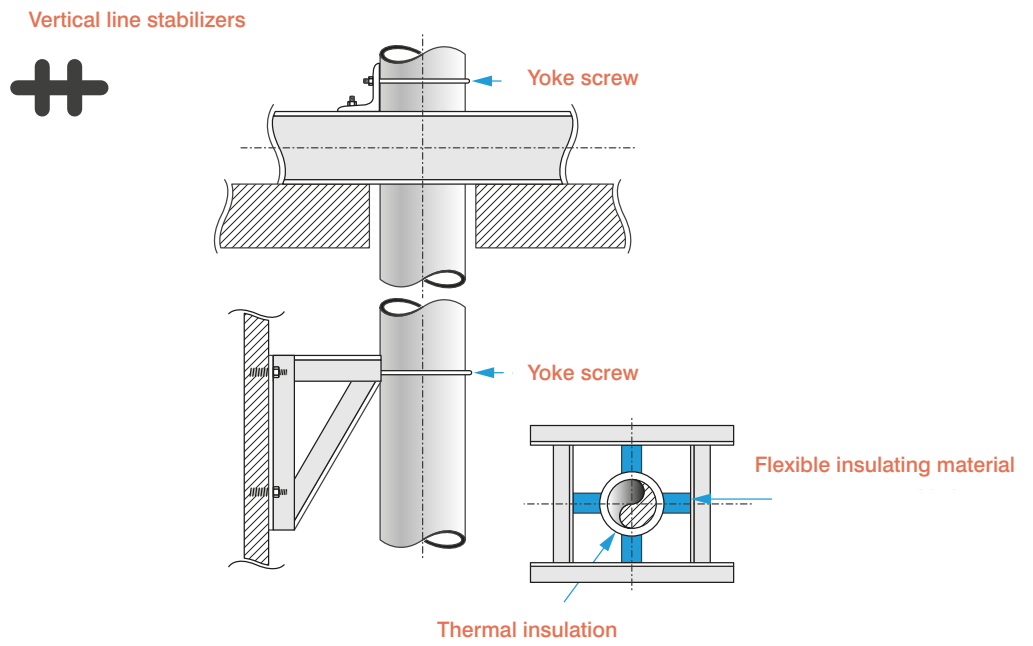
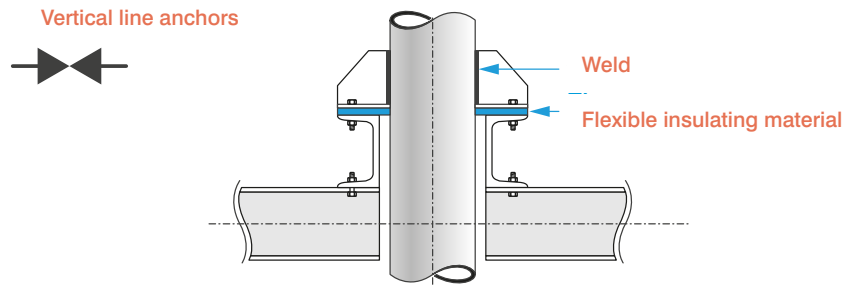


In multi-storey buildings, vertical ducts should be fixed (or anchored) at the lowest level and at the top of the stack and should be supported by clamps or shackle bolts at the level of each ceiling to prevent the ducts from swaying. If the vertical ducts have been stiffened by punctures in the ceilings, the number of clamps or shackle bolts can be reduced to one piece for every three floors. In the case of vertical ducts, both rigid and flexible couplings can be used, provided that adequate anchoring and fixing are provided.



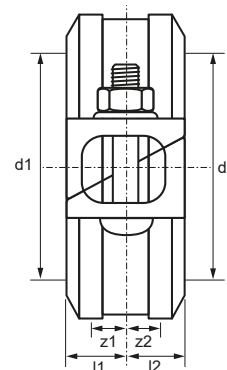
- Anchors should support the weight of the pipe filled with water and withstand pressure forces.
- Pipe guides (stabilizers/sliding supports) should stabilize the lateral movement of the system.





# KAN-therm Groove System

## Z05 Rigid coupling connection to oblique bolt clamp with type E gasket



### Painted element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
42.4 (DN 32)	23	0.6	0-1.2	2457301000	26	10,99
48.3 (DN 40)	23	0.6	0-1.2	2457301001	24	11,09
60.3 (DN 50)	24	0.9	0-1.7	2457301002	16	13,74
76.1 (DN 65)	24	0.9	0-1.7	2457301003	12	15,89
88.9 (DN 80)	24	0.9	0-1.7	2457301004	10	18,55
114.3 (DN 100)	27	2.0	0-4.1	2457301005	12	26,39
139.7 (DN 125)	27	2.0	0-4.1	2457301006	8	34,24
168.3 (DN 150)	27	2.0	0-4.1	2457301007	3	45,84
219.1 (DN 200)	32	2.4	0-4.8	2457301008	3	66,99

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

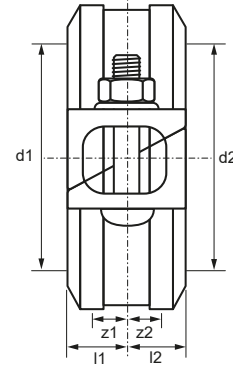
### Galvanized element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
42.4 (DN 32)	23	0.6	0-1.2	2455301004	26	13,19
48.3 (DN 40)	23	0.6	0-1.2	2455301005	24	13,30
60.3 (DN 50)	24	0.9	0-1.7	2455301006	16	17,78
76.1 (DN 65)	24	0.9	0-1.7	2455301000	12	On request
88.9 (DN 80)	24	0.9	0-1.7	2455301001	10	On request
114.3 (DN 100)	27	2.0	0-4.1	2455301002	12	On request
139.7 (DN 125)	27	2.0	0-4.1	2455301007	8	45,33
168.3 (DN 150)	27	2.0	0-4.1	2455301003	3	On request
219.1 (DN 200)	32	2.4	0-4.8	2455301008	3	86,07

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

## Z07 High-strength rigid coupling

connection to oblique bolt clamp with type E gasket



### Painted element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
42.4 (DN 32)	24	0.6	0-1.2	2457314000	24	13,72
48.3 (DN 40)	24	0.6	0-1.2	2457314001	20	13,85
60.3 (DN 50)	24	0.9	0-1.7	2457314002	16	17,18
76.1 (DN 65)	24	0.9	0-1.7	2457314003	12	19,86
88.9 (DN 80)	24	0.9	0-1.7	2457314004	9	23,19
114.3 (DN 100)	27	2.0	0-4.1	2457314005	5	32,99
139.7 (DN 125)	27	2.0	0-4.1	2457314006	7	42,80
168.3 (DN 150)	27	2.0	0-4.1	2457314007	6	57,29
219.1 (DN 200)	32	2.4	0-4.8	2457314008	3	83,74
273.0 (DN 250)	33	1.6	0-3.2	2457314009	1	129,46
323.9 (DN 300)	33	1.6	0-3.2	2457314010	1	148,95

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

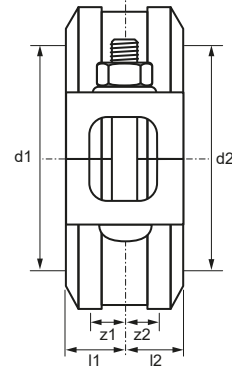
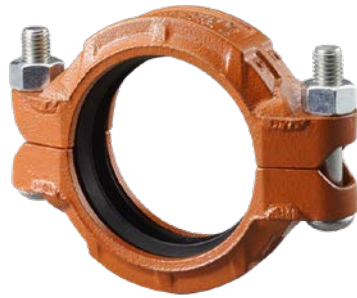
### Galvanized element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
42.4 (DN 32)	24	0.6	0-1.2	2455314000	24	16,48
48.3 (DN 40)	24	0.6	0-1.2	2455314001	20	16,63
60.3 (DN 50)	24	0.9	0-1.7	2455314002	16	22,23
76.1 (DN 65)	24	0.9	0-1.7	2455314003	12	26,08
88.9 (DN 80)	24	0.9	0-1.7	2455314004	9	30,65
114.3 (DN 100)	27	2.0	0-4.1	2455314005	5	43,58
139.7 (DN 125)	27	2.0	0-4.1	2455314006	7	56,66
168.3 (DN 150)	27	2.0	0-4.1	2455314007	6	75,24
219.1 (DN 200)	32	2.4	0-4.8	2455314008	3	107,58
273.0 (DN 250)	33	1.6	0-3.2	2455314009	1	175,49
323.9 (DN 300)	33	1.6	0-3.2	2455314010	1	182,16

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

## 7707 High-strength flexible coupling

with E type gasket



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	23	0.8	2457313000	26	15,76
42.4 (DN 32)	23	0.8	2457313001	18	20,99
48.3 (DN 40)	23	0.8	2457313002	18	23,00
60.3 (DN 50)	23	0.8	2457313003	14	24,34
76.1 (DN 65)	24	0.8	2457313004	10	29,21
88.9 (DN 80)	24	0.8	2457313005	9	32,34
114.3 (DN 100)	26	1.6	2457313006	5	47,19
139.7 (DN 125)	27	1.6	2457313007	7	72,48
168.3 (DN 150)	27	1.6	2457313008	3	85,54
219.1 (DN 200)	31	1.6	2457313009	3	139,68
273.0 (DN 250)	33	1.6	2457313010	1	192,94
323.9 (DN 300)	33	1.6	2457313011	1	219,66

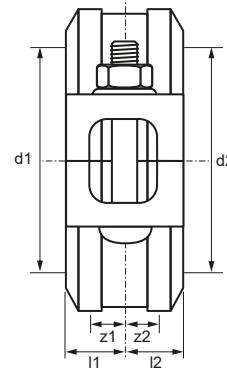
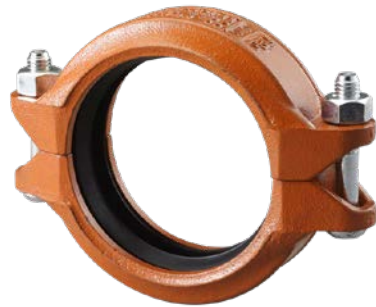
Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42.4 (DN 32)	23	0.8	2455313000	18	28,22
48.3 (DN 40)	23	0.8	2455313001	18	30,79
60.3 (DN 50)	23	0.8	2455313002	14	32,82
76.1 (DN 65)	24	0.8	2455313003	10	40,56
88.9 (DN 80)	24	0.8	2455313004	9	45,04
114.3 (DN 100)	26	1.6	2455313005	5	66,54
139.7 (DN 125)	27	1.6	2455313006	7	103,95
168.3 (DN 150)	27	1.6	2455313007	3	122,80
219.1 (DN 200)	31	1.6	2455313008	3	190,20
273.0 (DN 250)	33	1.6	2455313009	1	275,45
323.9 (DN 300)	33	1.6	2455313010	1	313,08

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7705 Flexible coupling with E type gasket



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	23	0.8	2457312000	30	13,55
42.4 (DN 32)	23	0.8	2457312001	26	13,55
48.3 (DN 40)	23	0.8	2457312002	22	13,55
60.3 (DN 50)	24	0.8	2457312003	16	24,34
76.1 (DN 65)	24	0.8	2457312004	12	29,21
88.9 (DN 80)	24	0.8	2457312005	9	32,34
114.3 (DN 100)	26	1.6	2457312006	4	47,19
139.7 (DN 125)	26	1.6	2457312007	8	72,48
168.3 (DN 150)	27	1.6	2457312008	6	85,54
219.1 (DN 200)	31	1.6	2457312009	3	132,40

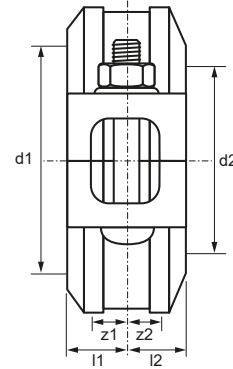
Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33,7 (DN 25)	23	0.8	2455312000	30	16,21
42.4 (DN 32)	23	0.8	2455312001	26	16,21
48.3 (DN 40)	23	0.8	2455312002	22	16,21
60.3 (DN 50)	24	0.8	2455312003	16	32,82
76.1 (DN 65)	24	0.8	2455312004	12	40,56
88.9 (DN 80)	24	0.8	2455312005	9	45,04
114.3 (DN 100)	26	1.6	2455312006	4	66,54
139.7 (DN 125)	26	1.6	2455312007	8	103,95
168.3 (DN 150)	27	1.6	2455312008	6	122,80
219.1 (DN 200)	31	1.6	2455312009	3	190,20

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7706 Reducing coupling with E type gasket



### Painted element

Dimension	l1/l2	z1	z2	Code	Packing	Price EUR
60.3 (DN 50) × 48.4 (DN 40)	24	0.8	0.8	2457046000	16	34,36
76.1 (DN 65) × 60.3 (DN 50)	24	0.8	0.8	2457046001	12	53,79
88.9 (DN 80) × 60.3 (DN 50)	24	0.8	0.8	2457046002	9	51,40
88.9 (DN 80) × 76.1 (DN 65)	24	0.8	0.8	2457046003	9	53,79
114.3 (DN 100) × 60.3 (DN 50)	25	1.6	0.8	2457046004	5	82,22
114.3 (DN 100) × 76.1 (DN 65)	25	1.6	0.8	2457046005	5	92,51
114.3 (DN 100) × 88.9 (DN 80)	26	1.6	0.8	2457046006	10	68,77
139.7 (DN 125) × 114.3 (DN 100)	26	1.6	1.6	2457046007	4	97,71
168.3 (DN 150) × 114.3 (DN 100)	26	1.6	1.6	2457046008	3	140,73
219.1 (DN 200) × 168.3 (DN 150)	27	1.6	1.6	2457046009	3	211,21

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

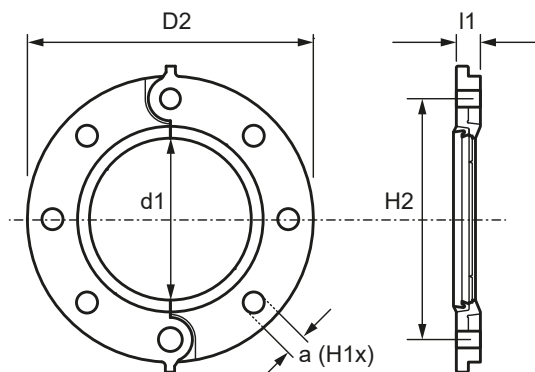
### Galvanized element

Dimension	l1/l2	z1	z2	Code	Packing	Price EUR
60.3 (DN 50) × 48.4 (DN 40)	24	0.8	0.8	2455046000	16	42,08
76.1 (DN 65) × 60.3 (DN 50)	24	0.8	0.8	2455046001	12	69,38
88.9 (DN 80) × 60.3 (DN 50)	24	0.8	0.8	2455046002	9	66,38
88.9 (DN 80) × 76.1 (DN 65)	24	0.8	0.8	2455046003	9	69,38
114.3 (DN 100) × 60.3 (DN 50)	25	1.6	0.8	2455046004	5	105,14
114.3 (DN 100) × 76.1 (DN 65)	25	1.6	0.8	2455046005	5	118,56
114.3 (DN 100) × 88.9 (DN 80)	26	1.6	0.8	2455046006	10	90,42
139.7 (DN 125) × 114.3 (DN 100)	26	1.6	1.6	2455046007	4	130,44
168.3 (DN 150) × 114.3 (DN 100)	26	1.6	1.6	2455046008	3	179,84
219.1 (DN 200) × 168.3 (DN 150)	27	1.6	1.6	2455046009	3	271,04

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7041 Flange adapter

PN10/PN16 (DN50-300 hinge)



### Painted element

Dimension	PN	I1	D2	H1	H2	a	Code	Packing	Price EUR
60,3 (DN 50)	10/16	22	165	4	125	M16	2457091000	1	95,56
76.1 (DN 65)	10/16	22	185	4	145	M16	2457091001	1	105,33
88.9 (DN 80)	10/16	24	200	8	160	M16	2457091002	1	83,85
114.3 (DN 100)	10/16	24	220	8	180	M16	2457091003	1	85,67
139.7 (DN 125)	10/16	25	250	8	210	M16	2457091004	1	108,81
168.3 (DN 150)	10/16	24	285	8	240	M20	2457091005	1	108,81
219.1 (DN 200)	16	29	340	12	295	M20	2457091006	1	172,83
323.9 (DN 300)	16	32	460	12	410	M24	2457091007	1	423,72

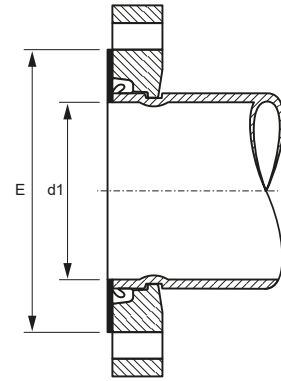
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	PN	I1	D2	H1	H2	a	Code	Packing	Price EUR
60,3 (DN 50)	10/16	22	165	4	125	M16	2455091000	1	111,47
76.1 (DN 65)	10/16	22	185	4	145	M16	2455091001	1	125,69
88.9 (DN 80)	10/16	24	200	8	160	M16	2455091002	1	109,16
114.3 (DN 100)	10/16	24	220	8	180	M16	2455091003	1	112,97
139.7 (DN 125)	10/16	25	250	8	210	M16	2455091004	1	141,28
168.3 (DN 150)	10/16	24	285	8	240	M20	2455091005	1	141,28
219.1 (DN 200)	16	29	340	12	295	M20	2455091006	1	227,34
323.9 (DN 300)	16	32	460	12	410	M24	2455091007	1	On request

The maximum values of the permissible working pressure are presented in chapter 2.5

## 49 Flat gasket of the flange galvanized steel

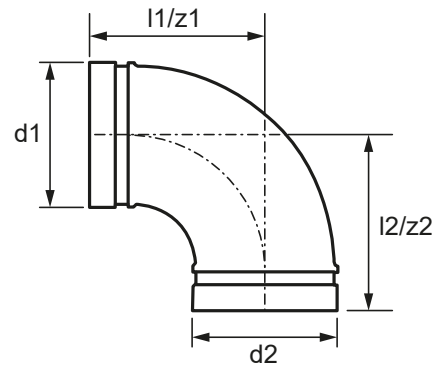


### Galvanized element

Dimension	E	d1	Code	Packing	Price EUR
DN50	95	54	2409237000	140	11,96
DN65	118	67	2409237001	110	15,22
DN80	130	81	2409237002	80	17,23
DN100	158	105	2409237003	70	20,70
DN125	188	128	2409237004	60	24,68
DN150	216	155	2409237005	40	29,51
DN200	271	205	2409237006	35	39,71
DN250	326	258	2409237007	10	55,02
DN300	381	305	2409237008	1	68,28



## 7110 Elbow 90° 2 x groove



### Painted element

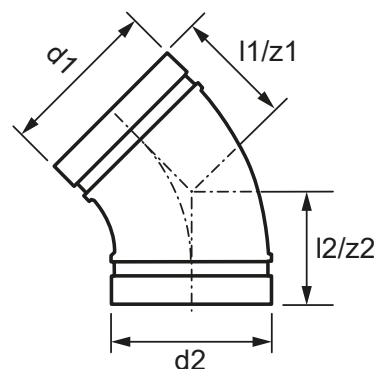
Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	57	57	2457302000	60	21,15
42.4 (DN 32)	70	70	2457302001	28	12,11
48.3 (DN 40)	70	70	2457302002	24	13,50
60.3 (DN 50)	83	83	2457302003	12	14,41
76.1 (DN 65)	95	95	2457302004	12	20,70
88.9 (DN 80)	108	108	2457302005	9	26,69
114.3 (DN 100)	127	127	2457302006	5	37,37
139.7 (DN 125)	140	140	2457302007	3	89,90
168.3 (DN 150)	165	165	2457302008	1	109,77
219.1 (DN 200)	197	197	2457302009	1	194,90
273.0 (DN 250)	229	229	2457302010	1	363,21
323.9 (DN 300)	254	254	2457302011	1	528,63

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	57	57	2455302004	60	26,09
42.4 (DN 32)	70	70	2455302005	28	15,53
48.3 (DN 40)	70	70	2455302006	24	17,67
60.3 (DN 50)	83	83	2455302007	12	17,69
76.1 (DN 65)	95	95	2455302000	12	On request
88.9 (DN 80)	108	108	2455302001	9	On request
114.3 (DN 100)	127	127	2455302002	5	On request
139.7 (DN 125)	140	140	2455302008	3	111,75
168.3 (DN 150)	165	165	2455302003	1	On request
219.1 (DN 200)	197	197	2455302009	1	267,00
273.0 (DN 250)	229	229	2455302010	1	522,75
323.9 (DN 300)	254	254	2455302011	1	707,25

Availability of goods according to individual arrangements. Discount group S.

## 7111 Elbow 45° 2 x groove



### Painted element

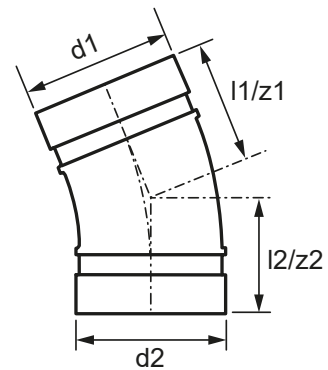
Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33,7 (DN 25)	45	45	2457303000	72	21,15
42,4 (DN 32)	45	45	2457303001	40	12,11
48,3 (DN 40)	45	45	2457303002	36	13,50
60,3 (DN 50)	51	51	2457303003	36	14,41
76,1 (DN 65)	57	57	2457303004	18	20,70
88,9 (DN 80)	57	57	2457303005	15	26,69
114,3 (DN 100)	76	76	2457303006	6	37,37
139,7 (DN 125)	83	83	2457303007	4	89,90
168,3 (DN 150)	89	89	2457303008	2	109,77
219,1 (DN 200)	108	108	2457303009	1	194,90
273,0 (DN 250)	121	121	2457303010	1	302,19
323,9 (DN 300)	133	133	2457303011	1	365,47

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33,7 (DN 25)	45	45	2455303004	72	26,09
42,4 (DN 32)	45	45	2455303005	40	15,53
48,3 (DN 40)	45	45	2455303006	36	17,67
60,3 (DN 50)	51	51	2455303007	36	17,69
76,1 (DN 65)	57	57	2455303000	18	On request
88,9 (DN 80)	57	57	2455303001	15	On request
114,3 (DN 100)	76	76	2455303002	6	On request
139,7 (DN 125)	83	83	2455303008	4	111,75
168,3 (DN 150)	89	89	2455303003	2	On request
219,1 (DN 200)	108	108	2455303009	1	267,00
273,0 (DN 250)	121	121	2455303010	1	403,15
323,9 (DN 300)	133	133	2455303011	1	488,66

Availability of goods according to individual arrangements. Discount group S.

## 7112 Elbow 22 1/2° 2 x groove



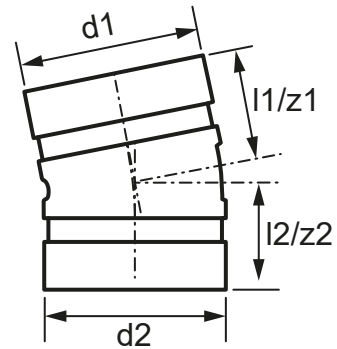
### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42,4 (DN 32)	45	45	2457304000	48	60,67
48.3 (DN 40)	45	45	2457304001	36	66,25
60.3 (DN 50)	48	48	2457304002	24	25,63
76.1 (DN 65)	51	51	2457304003	12	35,75
88.9 (DN 80)	57	57	2457304004	15	52,31
114.3 (DN 100)	73	73	2457304005	6	67,43
168.3 (DN 150)	79	79	2457304007	2	199,02
219.1 (DN 200)	98	98	2457304008	1	416,98
273.0 (DN 250)	111	111	2457304009	1	572,28
323.9 (DN 300)	124	124	2457304010	1	773,85

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42,4 (DN 32)	45	45	2455304004	48	70,93
48.3 (DN 40)	45	45	2455304005	36	77,68
60.3 (DN 50)	48	48	2455304006	24	34,13
76.1 (DN 65)	51	51	2455304000	12	On request
88.9 (DN 80)	57	57	2455304001	15	On request
114.3 (DN 100)	73	73	2455304002	6	On request
168.3 (DN 150)	79	79	2455304003	2	On request
219.1 (DN 200)	98	98	2455304008	1	525,31
273.0 (DN 250)	111	111	2455304009	1	752,79
323.9 (DN 300)	124	124	2455304010	1	972,15

## 7113 Elbow 11 ¼° 2 x groove



### Painted element

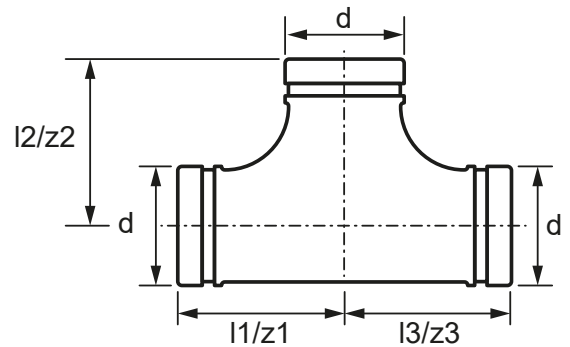
Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42,4 (DN 32)	35	35	2457316000	60	60,67
48,3 (DN 40)	35	35	2457316001	50	66,25
60,3 (DN 50)	35	35	2457316002	30	25,72
76,1 (DN 65)	38	38	2457316003	28	35,75
88,9 (DN 80)	38	38	2457316004	24	52,31
114,3 (DN 100)	45	45	2457316005	15	70,17
139,7 (DN 125)	51	51	2457316006	6	85,56
168,3 (DN 150)	51	51	2457316007	5	199,02
219,1 (DN 200)	51	51	2457316008	2	355,87

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42,4 (DN 32)	35	35	2455316000	60	68,01
48,3 (DN 40)	35	35	2455316001	50	82,28
60,3 (DN 50)	35	35	2455316002	30	38,64
76,1 (DN 65)	38	38	2455316003	28	46,87
88,9 (DN 80)	38	38	2455316004	24	63,77
114,3 (DN 100)	45	45	2455316005	15	84,53
139,7 (DN 125)	51	51	2455316006	6	108,26
168,3 (DN 150)	51	51	2455316007	5	272,78
219,1 (DN 200)	51	51	2455316008	2	422,63

## 7120 T-pipe

3 x groove



### Painted element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
33,7 (DN 25)	57	57	2457257000	40	27,77
42,4 (DN 32)	70	70	2457257001	20	19,74
48,3 (DN 40)	70	70	2457257002	15	21,03
60,3 (DN 50)	83	83	2457257003	16	24,59
76,1 (DN 65)	95	95	2457257004	10	35,72
88,9 (DN 80)	108	108	2457257005	5	46,96
114,3 (DN 100)	127	127	2457257006	3	63,71
139,7 (DN 125)	140	140	2457257007	1	140,98
168,3 (DN 150)	165	165	2457257008	1	152,22
219,1 (DN 200)	197	197	2457257009	1	380,76
273,0 (DN 250)	229	229	2457257010	1	621,28
323,9 (DN 300)	254	254	2457257011	1	866,15

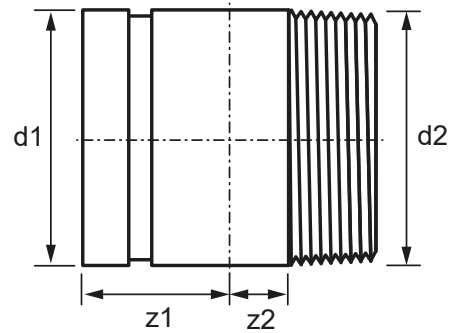
### Galvanized element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
33,7 (DN 25)	57	57	2455257001	40	36,50
42,4 (DN 32)	70	70	2455257002	20	23,41
48,3 (DN 40)	70	70	2455257003	15	24,62
60,3 (DN 50)	83	83	2455257004	16	31,11
76,1 (DN 65)	95	95	2455257005	10	43,72
88,9 (DN 80)	108	108	2455257006	5	57,49
114,3 (DN 100)	127	127	2455257007	3	78,46
139,7 (DN 125)	140	140	2455257008	1	173,86
168,3 (DN 150)	165	165	2455257000	1	On request
219,1 (DN 200)	197	197	2455257009	1	572,30
273,0 (DN 250)	229	229	2455257010	1	814,57
323,9 (DN 300)	254	254	2455257011	1	1 120,31

Availability of goods according to individual arrangements. Discount group S.

## 59 GZ coupling

groove x outside thread

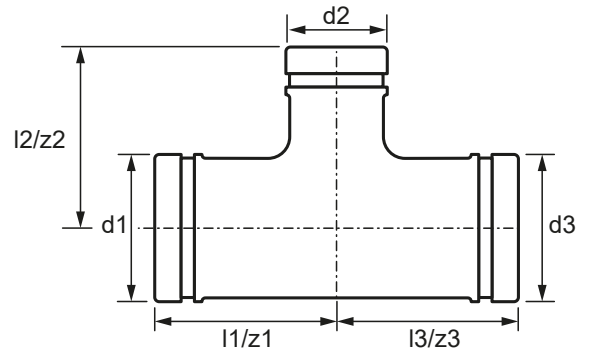


### Uncoated element

Dimension	l1	l2	Code	Packing	Price EUR
42.4 (DN 32) × R1 ¼	51	38	2409309000	38	13,84
48.3 (DN 40) × R1 ¼	51	38	2409309001	65	19,38
60.3 (DN 50) × R2 ¼	51	35	2409309002	45	19,38
76.1 (DN 65) × R2 ¼	51	34	2409309003	25	30,45
88.9 (DN 80) × R3	51	30	2409309004	20	38,90
114.3 (DN 100) × R4	76	26	2409309005	6	68,02

## 7121 Reducing T-pipe

### 3x groove

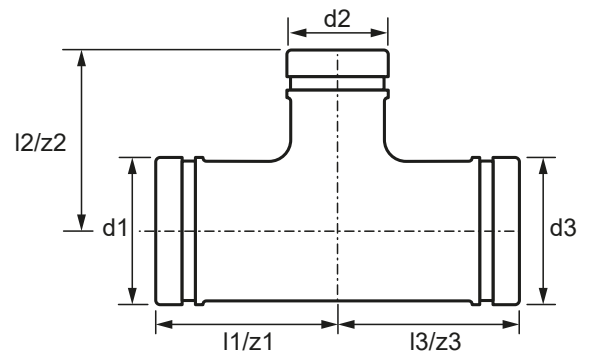


#### Painted element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
60.3 (DN 50) × 33.7 (DN 25) × 60.3 (DN 50)	83	83	2457260000	20	79,71
60.3 (DN 50) × 48.3 (DN 40) × 60.3 (DN 50)	83	83	2457260001	16	68,93
76.1 (DN 65) × 60.3 (DN 50) × 76.1 (DN 65)	95	95	2457260002	10	78,74
88.9 (DN 80) × 33.7 (DN 25) × 88.9 (DN 80)	108	108	2457260003	8	84,01
88.9 (DN 80) × 48.3 (DN 40) × 88.9 (DN 80)	108	108	2457260004	8	84,01
88.9 (DN 80) × 60.3 (DN 50) × 88.9 (DN 80)	108	108	2457260005	6	72,44
88.9 (DN 80) × 76.1 (DN 65) × 88.9 (DN 80)	108	108	2457260006	6	72,44
114.3 (DN 100) × 48.3 (DN 40) × 114.3 (DN 100)	127	127	2457260007	3	114,32
114.3 (DN 100) × 60.3 (DN 50) × 114.3 (DN 100)	127	127	2457260008	3	114,32
114.3 (DN 100) × 76.1 (DN 65) × 114.3 (DN 100)	127	127	2457260009	3	98,55
114.3 (DN 100) × 88.9 (DN 80) × 114.3 (DN 100)	127	127	2457260010	3	98,55
139.7 (DN 125) × 76.1 (DN 65) × 139.7 (DN 125)	140	140	2457260011	2	196,92
139.7 (DN 125) × 88.9 (DN 80) × 139.7 (DN 125)	140	140	2457260012	2	182,31
139.7 (DN 125) × 114.3 (DN 100) × 139.7 (DN 125)	140	140	2457260013	2	182,31
168.3 (DN 150) × 60.3 (DN 50) × 168.3 (DN 150)	165	165	2457260014	1	250,58
168.3 (DN 150) × 88.9 (DN 80) × 168.3 (DN 150)	165	165	2457260029	1	On request
168.3 (DN 150) × 114.3 (DN 100) × 168.3 (DN 150)	165	165	2457260015	1	232,02
219.1 (DN 200) × 60.3 (DN 50) × 219.1 (DN 200)	197	197	2457260016	1	711,40
219.1 (DN 200) × 114.3 (DN 100) × 219.1 (DN 200)	197	197	2457260017	1	711,40
219.1 (DN 200) × 168.3 (DN 150) × 219.1 (DN 200)	197	197	2457260018	1	658,72
273.0 (DN 250) × 60.3 (DN 50) × 273.0 (DN 250)	229	229	2457260019	1	769,15
273.0 (DN 250) × 88.9 (DN 80) × 273.0 (DN 250)	229	229	2457260020	1	769,15
273.0 (DN 250) × 114.3 (DN 100) × 273.0 (DN 250)	229	229	2457260021	1	769,15
273.0 (DN 250) × 168.3 (DN 150) × 273.0 (DN 250)	229	229	2457260022	1	725,60
273.0 (DN 250) × 219.1 (DN 200) × 273.0 (DN 250)	229	229	2457260023	1	725,60
323.9 (DN 300) × 88.9 (DN 80) × 323.9 (DN 300)	254	254	2457260024	1	1 111,03
323.9 (DN 300) × 114.3 (DN 100) × 323.9 (DN 300)	254	254	2457260025	1	1 111,03
323.9 (DN 300) × 168.3 (DN 150) × 323.9 (DN 300)	254	254	2457260026	1	1 111,03
323.9 (DN 300) × 219.1 (DN 200) × 323.9 (DN 300)	254	254	2457260027	1	1 048,10
323.9 (DN 300) × 273.0 (DN 250) × 323.9 (DN 300)	254	254	2457260028	1	1 048,10

Availability of goods according to individual arrangements. Discount group S.

## 7121 Reducing T-pipe 3x groove

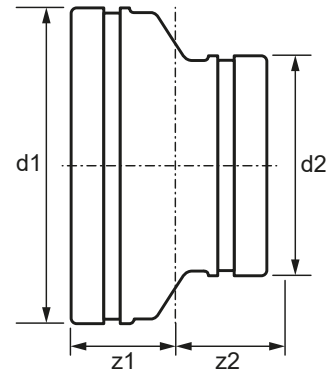


### Galvanized element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
60.3 (DN 50) × 33.7 (DN 25) × 60.3 (DN 50)	83	83	2455260002	20	83,74
60.3 (DN 50) × 48.3 (DN 40) × 60.3 (DN 50)	83	83	2455260003	16	73,81
76.1 (DN 65) × 60.3 (DN 50) × 76.1 (DN 65)	95	95	2455260004	10	98,75
88.9 (DN 80) × 33.7 (DN 25) × 88.9 (DN 80)	108	108	2455260005	8	105,96
88.9 (DN 80) × 48.3 (DN 40) × 88.9 (DN 80)	108	108	2455260006	8	105,96
88.9 (DN 80) × 60.3 (DN 50) × 88.9 (DN 80)	108	108	2455260007	6	90,67
88.9 (DN 80) × 76.1 (DN 65) × 88.9 (DN 80)	108	108	2455260008	6	90,67
114.3 (DN 100) × 60.3 (DN 50) × 114.3 (DN 100)	127	127	2455260000	3	On request
114.3 (DN 100) × 76.1 (DN 65) × 114.3 (DN 100)	127	127	2455260009	3	124,14
114.3 (DN 100) × 88.9 (DN 80) × 114.3 (DN 100)	127	127	2455260010	3	124,14
139.7 (DN 125) × 76.1 (DN 65) × 139.7 (DN 125)	140	140	2455260011	2	268,66
139.7 (DN 125) × 88.9 (DN 80) × 139.7 (DN 125)	140	140	2455260012	2	231,58
139.7 (DN 125) × 114.3 (DN 100) × 139.7 (DN 125)	140	140	2455260013	2	231,58
168.3 (DN 150) × 60.3 (DN 50) × 168.3 (DN 150)	165	165	2455260014	1	334,42
168.3 (DN 150) × 114.3 (DN 100) × 168.3 (DN 150)	165	165	2455260001	1	On request
219.1 (DN 200) × 60.3 (DN 50) × 219.1 (DN 200)	197	197	2455260015	1	996,01
219.1 (DN 200) × 114.3 (DN 100) × 219.1 (DN 200)	197	197	2455260016	1	996,01
219.1 (DN 200) × 168.3 (DN 150) × 219.1 (DN 200)	197	197	2455260017	1	862,38
273.0 (DN 250) × 88.9 (DN 80) × 273.0 (DN 250)	229	229	2455260018	1	971,18
273.0 (DN 250) × 114.3 (DN 100) × 273.0 (DN 250)	229	229	2455260019	1	971,18
273.0 (DN 250) × 168.3 (DN 150) × 273.0 (DN 250)	229	229	2455260020	1	879,17
273.0 (DN 250) × 219.1 (DN 200) × 273.0 (DN 250)	229	229	2455260021	1	879,17
323.9 (DN 300) × 219.1 (DN 200) × 323.9 (DN 300)	254	254	2455260022	1	1 414,38
323.9 (DN 300) × 273.0 (DN 250) × 323.9 (DN 300)	254	254	2455260023	1	1 414,38



## 7150 Axial reduction 2 x groove

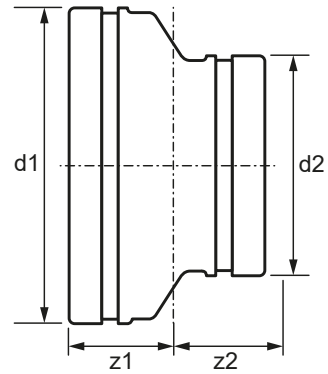


### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42.4 (DN 32) × 33.7 (DN 25)	32	32	2457305000	90	36,12
48.3 (DN 40) × 33.7 (DN 25)	32	32	2457305001	80	35,22
48.3 (DN 40) × 42.4 (DN 32)	32	32	2457305002	50	35,22
60.3 (DN 50) × 33.7 (DN 25)	32	32	2457305003	50	42,02
60.3 (DN 50) × 42.4 (DN 32)	32	32	2457305004	50	35,22
60.3 (DN 50) × 48.3 (DN 40)	32	32	2457305005	36	35,22
76.1 (DN 65) × 42.4 (DN 32)	32	32	2457305006	28	64,96
76.1 (DN 65) × 48.3 (DN 40)	32	32	2457305008	28	42,79
76.1 (DN 65) × 60.3 (DN 50)	32	32	2457305007	24	42,79
88.9 (DN 80) × 42.4 (DN 32)	32	32	2457305009	24	44,75
88.9 (DN 80) × 48.3 (DN 40)	32	32	2457305010	24	44,75
88.9 (DN 80) × 60.3 (DN 50)	32	32	2457305011	24	40,65
88.9 (DN 80) × 76.1 (DN 65)	32	32	2457305012	18	40,65
114.3 (DN 100) × 48.3 (DN 40)	38	38	2457305013	12	43,99
114.3 (DN 100) × 60.3 (DN 50)	38	38	2457305014	24	43,99
114.3 (DN 100) × 76.1 (DN 65)	38	38	2457305015	20	40,76
114.3 (DN 100) × 88.9 (DN 80)	38	38	2457305016	20	40,76
139.7 (DN 125) × 88.9 (DN 80)	45	45	2457305017	12	105,15
139.7 (DN 125) × 114.3 (DN 100)	45	45	2457305018	12	105,15
168.3 (DN 150) × 60.3 (DN 50)	51	51	2457305019	8	100,02
168.3 (DN 150) × 88.9 (DN 80)	51	51	2457305020	8	100,02
168.3 (DN 150) × 114.3 (DN 100)	51	51	2457305021	8	92,62
168.3 (DN 150) × 139.7 (DN 125)	51	51	2457305022	8	92,62
219.1 (DN 200) × 114.3 (DN 100)	64	64	2457305023	3	220,21
219.1 (DN 200) × 168.3 (DN 150)	64	64	2457305024	3	203,89
273.0 (DN 250) × 114.3 (DN 100)	76	76	2457305025	1	366,03
273.0 (DN 250) × 168.3 (DN 150)	76	76	2457305026	1	338,92
273.0 (DN 250) × 219.1 (DN 200)	76	76	2457305027	1	338,92
323.9 (DN 300) × 168.3 (DN 150)	79	79	2457305028	1	474,09
323.9 (DN 300) × 219.1 (DN 200)	79	79	2457305029	1	438,97
323.9 (DN 300) × 273.0 (DN 250)	79	79	2457305030	1	438,97

Availability of goods according to individual arrangements. Discount group S.

## 7150 Axial reduction 2 x groove

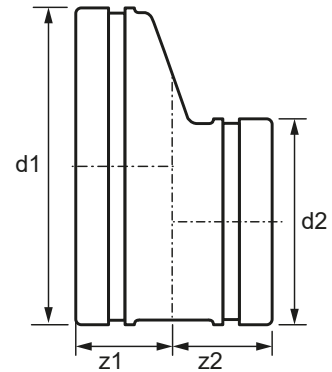


### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42.4 (DN 32) × 33.7 (DN 25)	32	32	2455305002	90	40,12
48.3 (DN 40) × 33.7 (DN 25)	32	32	2455305003	80	40,12
48.3 (DN 40) × 42.4 (DN 32)	32	32	2455305000	50	On request
60.3 (DN 50) × 33.7 (DN 25)	32	32	2455305004	50	52,68
60.3 (DN 50) × 42.4 (DN 32)	32	32	2455305005	50	43,90
60.3 (DN 50) × 48.3 (DN 40)	32	32	2455305001	36	On request
76.1 (DN 65) × 42.4 (DN 32)	32	32	2455305006	28	75,50
76.1 (DN 65) × 48.3 (DN 40)	32	32	2455305007	28	46,23
76.1 (DN 65) × 60.3 (DN 50)	32	32	2455305008	24	46,23
88.9 (DN 80) × 48.3 (DN 40)	32	32	2455305009	24	55,36
88.9 (DN 80) × 60.3 (DN 50)	32	32	2455305010	24	51,25
88.9 (DN 80) × 76.1 (DN 65)	32	32	2455305011	18	51,25
114.3 (DN 100) × 60.3 (DN 50)	38	38	2455305012	24	54,80
114.3 (DN 100) × 76.1 (DN 65)	38	38	2455305013	20	48,30
114.3 (DN 100) × 88.9 (DN 80)	38	38	2455305014	20	48,30
139.7 (DN 125) × 88.9 (DN 80)	45	45	2455305015	12	108,48
139.7 (DN 125) × 114.3 (DN 100)	45	45	2455305016	12	108,48
168.3 (DN 150) × 60.3 (DN 50)	51	51	2455305017	8	110,21
168.3 (DN 150) × 76.1 (DN 65)	51	51	2455305018	8	110,21
168.3 (DN 150) × 88.9 (DN 80)	51	51	2455305019	8	110,21
168.3 (DN 150) × 114.3 (DN 100)	51	51	2455305020	8	102,62
168.3 (DN 150) × 139.7 (DN 125)	51	51	2455305021	8	102,62
219.1 (DN 200) × 114.3 (DN 100)	64	64	2455305022	3	249,84
219.1 (DN 200) × 168.3 (DN 150)	64	64	2455305023	3	235,70
273.0 (DN 250) × 114.3 (DN 100)	76	76	2455305024	1	434,55
273.0 (DN 250) × 168.3 (DN 150)	76	76	2455305025	1	409,95
273.0 (DN 250) × 219.1 (DN 200)	76	76	2455305026	1	409,95
323.9 (DN 300) × 219.1 (DN 200)	79	79	2455305027	1	483,17
323.9 (DN 300) × 273.0 (DN 250)	79	79	2455305028	1	483,17

Availability of goods according to individual arrangements. Discount group S.

## 7151 Eccentric reduction 2 x groove



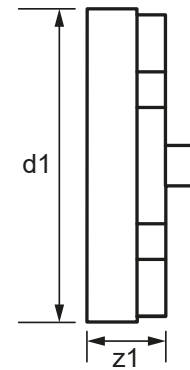
### Painted element

Dimension	I1/ I2	z1/z2	Code	Packing	Price EUR
76.1 (DN 65) × 60.3 (DN 50)	45	45	2457319000	16	82,20
88.9 (DN 80) × 60.3 (DN 50)	45	45	2457319001	18	75,45
88.9 (DN 80) × 76.1 (DN 65)	45	45	2457319002	12	215,17
114.3 (DN 100) × 60.3 (DN 50)	51	51	2457319003	12	86,65
114.3 (DN 100) × 76.1 (DN 65)	51	51	2457319004	12	83,44
114.3 (DN 100) × 88.9 (DN 80)	51	51	2457319005	12	80,23
139.7 (DN 125) × 88.9 (DN 80)	51	51	2457319006	4	101,13
139.7 (DN 125) × 114.3 (DN 100)	51	51	2457319007	4	97,24
168.3 (DN 150) × 60.3 (DN 50)	51	51	2457319008	7	140,61
168.3 (DN 150) × 88.9 (DN 80)	51	51	2457319009	4	124,38
168.3 (DN 150) × 114.3 (DN 100)	51	51	2457319010	7	115,18
219.1 (DN 200) × 114.3 (DN 100)	64	64	2457319011	3	252,43
219.1 (DN 200) × 168.3 (DN 150)	64	64	2457319012	2	224,32
273.0 (DN 250) × 219.1 (DN 200)	76	76	2457319013	1	On request
323.9 (DN 300) × 219.1 (DN 200)	89	89	2457319014	1	On request

### Galvanized element

Dimension	I1/ I2	z1/z2	Code	Packing	Price EUR
76.1 (DN 65) × 60.3 (DN 50)	45	45	2455319000	16	89,95
88.9 (DN 80) × 60.3 (DN 50)	45	45	2455319001	18	82,56
88.9 (DN 80) × 76.1 (DN 65)	45	45	2455319002	12	82,56
114.3 (DN 100) × 60.3 (DN 50)	51	51	2455319003	12	95,00
114.3 (DN 100) × 76.1 (DN 65)	51	51	2455319004	12	87,99
114.3 (DN 100) × 88.9 (DN 80)	51	51	2455319005	12	87,99
168.3 (DN 150) × 88.9 (DN 80)	51	51	2455319006	4	125,93
168.3 (DN 150) × 114.3 (DN 100)	51	51	2455319007	7	125,93
219.1 (DN 200) × 168.3 (DN 150)	64	64	2455319008	2	248,84
273.0 (DN 250) × 219.1 (DN 200)	76	76	2455305026	1	409,95

# 7160 Plug grooved



### Painted element

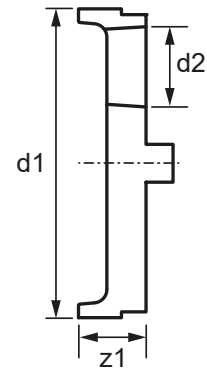
Dimension	z1	Code	Packing	Price EUR
33.7 (DN 25)	22	2457025000	220	10,47
42.4 (DN 32)	25	2457025001	145	10,47
48.3 (DN 40)	25	2457025002	110	10,47
60.3 (DN 50)	25	2457025003	75	10,47
76.1 (DN 65)	25	2457025004	50	16,64
88.9 (DN 80)	25	2457025005	30	16,64
114.3 (DN 100)	25	2457025006	18	19,31
139.7 (DN 125)	25	2457025007	12	40,68
168.3 (DN 150)	25	2457025008	8	46,08
219.1 (DN 200)	30	2457025009	3	90,97
273.0 (DN 250)	30	2457025010	3	196,60
323.9 (DN 300)	32	2457025011	1	330,22

### Galvanized element

Dimension	z1	Code	Packing	Price EUR
33.7 (DN25)	22	2455025000	220	12,99
42.4 (DN 32)	25	2455025001	145	12,99
48.3 (DN 40)	25	2455025002	110	12,99
60.3 (DN 50)	25	2455025003	75	12,99
76.1 (DN 65)	25	2455025004	50	20,55
88.9 (DN 80)	25	2455025005	30	20,55
114.3 (DN 100)	25	2455025006	18	24,02
139.7 (DN 125)	25	2455025007	12	50,44
168.3 (DN 150)	25	2455025008	8	57,18
219.1 (DN 200)	30	2455025009	3	112,99
273.0 (DN 250)	30	2455025010	3	242,75
323.9 (DN 300)	32	2455025011	1	407,74

Availability of goods according to individual arrangements. Discount group S.

## 7160T Plug with culvert groove x inside thread



### Painted element

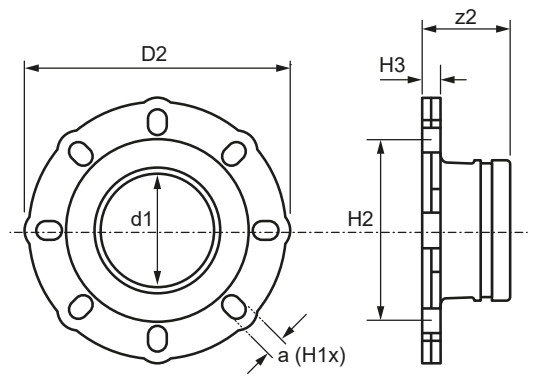
Dimension	z1	d2	Code	Packing	Price EUR
60.3 (DN 50) × Rp1	24	Rp1	2457320000	75	28,65
76.1 (DN 65) × Rp1	24	Rp1	2457320001	50	34,74
76.1 (DN 65) × Rp1 ½	24	Rp1 ½	2457320002	50	34,74
76.1 (DN 65) × Rp1 ¼	24	Rp1 ¼	2457320003	50	34,74
88.9 (DN 80) × Rp1	25	Rp1	2457320004	30	34,74
88.9 (DN 80) × Rp1 ½	25	Rp1 ½	2457320005	30	34,74
88.9 (DN 80) × Rp1 ¼	25	Rp1 ¼	2457320006	30	34,74
114.3 (DN 100) × Rp1	25	Rp1	2457320007	18	37,51
114.3 (DN 100) × Rp1 ½	25	Rp1 ½	2457320008	18	37,51
114.3 (DN 100) × Rp1 ¼	25	Rp1 ¼	2457320009	18	37,51
114.3 (DN 100) × Rp2	25	Rp2	2457320010	18	37,51
139.7 (DN 125) × Rp2	25	Rp2	2457320011	12	58,86
168.3 (DN 150) × Rp2	25	Rp2	2457320012	8	64,13
219.1 (DN 200) × Rp2	30	Rp2	2457320013	3	109,10

### Galvanized element

Dimension	z1	d2	Code	Packing	Price EUR
60.3 (DN 50) × Rp1	24	Rp1	2455320000	75	32,56
76.1 (DN 65) × Rp1	24	Rp1	2455320001	50	40,20
88.9 (DN 80) × Rp2	25	Rp1 ½	2455320002	30	40,20
114.3 (DN 100) × Rp1	25	Rp1	2455320003	18	43,57
114.3 (DN 100) × Rp1 ½	25	Rp1 ½	2455320004	18	43,57
114.3 (DN 100) × Rp2	25	Rp2	2455320005	18	43,57
139.7 (DN 125) × Rp2	25	Rp2	2455320006	12	70,17
168.3 (DN 150) × Rp2	25	Rp2	2455320007	8	76,88

# 7180 Basic flange adapter

PN 10/16, ANSI Class 125/150, BS10E



### Painted element

Dimension	z2	D2	H1	H2	H3	a	Code	Packing	Price EUR
60.3 (DN 50)	64	165	4	114-125	16	M16	2457315000	4	71,76
76.1 (DN 65)	76	185	4	127-145	16	M16	2457315001	3	78,99
88.9 (DN 80)	75	200	4/8	146-160	16	M16	2457315002	6	86,61
114.3 (DN 100)	75	225	8	175-191	16	M16	2457315003	4	109,49
139.7 (DN 125)	75	254	8	210-216	16	M16/20	2457315004	2	124,80
168.3 (DN 150)	75	272	8	240-241	16	M20	2457315005	2	141,32
219.1 (DN 200)	102	343	8/12	290-298	22	M20	2457315006	1	305,12

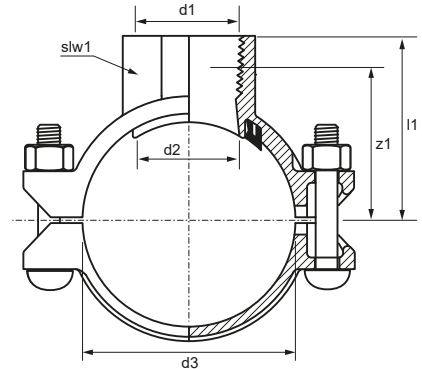
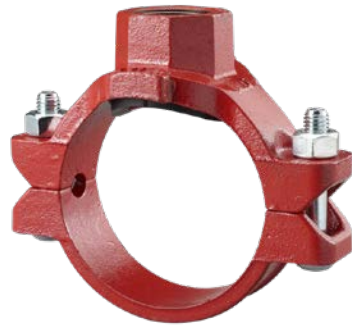
### Galvanized element

Dimension	z2	D2	H1	H2	H3	a	Code	Packing	Price EUR
60.3 (DN 50)	64	165	4	114-125	16	M16	2455315000	4	78,32
76.1 (DN 65)	76	185	4	127-145	16	M16	2455315001	3	90,50
88.9 (DN 80)	75	200	4/8	146-160	16	M16	2455315002	6	93,24
114.3 (DN 100)	75	225	8	175-191	16	M16	2455315003	4	120,05
139.7 (DN 125)	75	254	8	210-216	16	M16/20	2455315004	2	139,10
168.3 (DN 150)	75	272	8	240-241	16	M20	2455315005	2	159,71
219.1 (DN 200)	102	343	8/12	290-298	22	M20	2455315006	1	344,84

Availability of goods according to individual arrangements. Discount group S.

## 7721 GW saddle

Outlet with internal thread ISO R7, with type E gasket



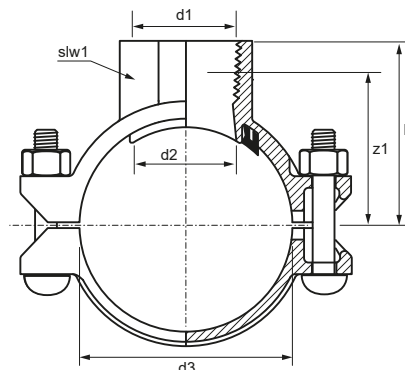
### Painted element

Dimension	l1	z1	d1	d2*	d3	slw1	Code	Packing	Price EUR
60.3 (DN 50) × R3	64	50	21.3	38	60.3	30	2457317000	10	22,11
60.3 (DN 50) × Rp $\frac{3}{4}$	64	50	26.9	38	60.3	36	2457317001	10	22,11
60.3 (DN 50) × Rp1	68	51	33.7	38	60.3	44	2457317002	10	22,11
60.3 (DN 50) × Rp1 $\frac{1}{2}$	71	53	42.4	45	60.3	55	2457317003	8	25,57
60.3 (DN 50) × Rp1 $\frac{1}{2}$	71	53	48.3	45	60.3	60	2457317004	8	25,57
76.1 (DN 65) × Rp $\frac{1}{2}$	71	57	21.3	38	76.1	30	2457317005	7	24,27
76.1 (DN 65) × Rp $\frac{3}{4}$	73	59	26.9	38	76.1	36	2457317006	7	24,26
76.1 (DN 65) × Rp1	75	58	33.7	38	76.1	44	2457317007	7	31,30
76.1 (DN 65) × Rp1 $\frac{1}{4}$	79	61	42.4	45	76.1	55	2457317008	7	31,30
76.1 (DN 65) × Rp1 $\frac{1}{2}$	79	61	48.3	45	76.1	60	2457317009	6	31,30
88.9 (DN 80) × Rp $\frac{1}{2}$	81	63	21.3	38	88.9	30	2457317010	7	25,47
88.9 (DN 80) × Rp $\frac{3}{4}$	81	62	26.9	38	88.9	36	2457317011	7	25,47
88.9 (DN 80) × Rp1	81	64	33.7	38	88.9	44	2457317012	7	31,30
88.9 (DN 80) × Rp1 $\frac{1}{4}$	89	71	42.4	45	88.9	55	2457317013	10	31,30
88.9 (DN 80) × Rp1 $\frac{1}{2}$	89	71	48.3	45	88.9	60	2457317014	6	31,30
88.9 (DN 80) × Rp2	91	72	60.3	64	88.9	73	2457317015	5	31,30
114.3 (DN 100) × Rp $\frac{1}{2}$	94	76	21.3	38	114.3	30	2457317016	12	36,69
114.3 (DN 100) × Rp $\frac{3}{4}$	94	75	26.9	38	114.3	36	2457317017	12	36,69
114.3 (DN 100) × Rp1	94	77	33.7	38	114.3	44	2457317018	5	36,69
114.3 (DN 100) × Rp1 $\frac{1}{4}$	99	81	42.4	45	114.3	55	2457317019	4	36,69
114.3 (DN 100) × Rp1 $\frac{1}{2}$	99	81	48.3	45	114.3	60	2457317020	8	36,69
114.3 (DN 100) × Rp2	105	86	60.3	64	114.3	73	2457317021	8	37,88
114.3 (DN 100) × Rp2 $\frac{1}{2}$	111	82	76.1	70	114.3	89	2457317022	5	37,88
114.3 (DN 100) × Rp3	112	82	88.9	89	114.3	107	2457317023	3	37,88
168.3 (DN 150) × Rp1 $\frac{1}{4}$	127	109	42.4	45	168.3	55	2457317024	4	47,99
168.3 (DN 150) × Rp1 $\frac{1}{2}$	127	109	48.3	45	168.3	60	2457317025	4	47,99
168.3 (DN 150) × Rp2	132	113	60.3	64	168.3	72	2457317026	4	47,99
168.3 (DN 150) × Rp2 $\frac{1}{2}$	140	111	76.1	70	168.3	88	2457317027	3	47,99
168.3 (DN 150) × Rp3	140	110	88.9	89	168.3	108	2457317028	3	47,99
219.1 (DN 200) × Rp2	166	135	60.3	64	219.1	73	2457317029	2	69,88
219.1 (DN 200) × Rp2 $\frac{1}{2}$	166	137	76.1	70	219.1	89	2457317030	2	69,88
219.1 (DN 200) × Rp3	166	136	88.9	89	219.1	107	2457317031	2	108,35

Availability of goods according to individual arrangements. Discount group S.

## 7721 GW saddle

Outlet with internal thread ISO R7, with type E gasket



### Galvanized element

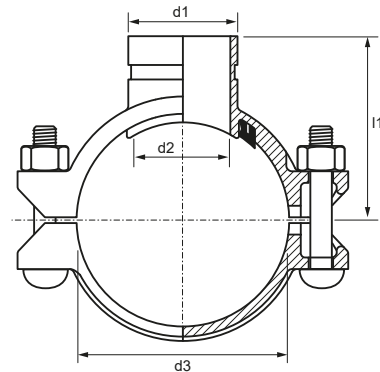
Dimension	l1	z1	d1	d2*	d3	slw1	Code	Packing	Price EUR
60.3 (DN 50) × Rp½	64	50	21.3	38	60.3	30	2455317000	10	28,62
60.3 (DN 50) × Rp¾	64	50	26.9	38	60.3	36	2455317001	10	28,62
60.3 (DN 50) × Rp1	68	51	33.7	38	60.3	44	2455317002	10	28,62
60.3 (DN 50) × Rp1¼	71	53	42.4	45	60.3	55	2455317003	8	33,15
60.3 (DN 50) × Rp1½	71	53	48.3	45	60.3	60	2455317004	8	33,15
76.1 (DN 65) × Rp½	71	57	21.3	38	76.1	30	2455317005	7	31,42
76.1 (DN 65) × Rp¾	73	59	26.9	38	76.1	36	2455317006	7	31,42
76.1 (DN 65) × Rp1	75	58	33.7	38	76.1	44	2455317007	7	40,54
76.1 (DN 65) × Rp1¼	79	61	42.4	45	76.1	55	2455317008	7	40,54
76.1 (DN 65) × Rp1½	79	61	48.3	45	76.1	60	2455317009	6	40,54
88.9 (DN 80) × Rp½	81	63	21.3	38	88.9	30	2455317010	7	33,01
88.9 (DN 80) × Rp¾	81	62	26.9	38	88.9	36	2455317011	7	33,01
88.9 (DN 80) × Rp1	81	64	33.7	38	88.9	44	2455317012	7	40,54
88.9 (DN 80) × Rp1¼	89	71	42.4	45	88.9	55	2455317013	10	40,54
88.9 (DN 80) × Rp1½	89	71	48.3	45	88.9	60	2455317014	6	40,54
88.9 (DN 80) × Rp2	91	72	60.3	64	88.9	73	2455317015	5	40,54
114.3 (DN 100) × Rp½	94	76	21.3	38	114.3	30	2455317016	12	47,55
114.3 (DN 100) × Rp¾	94	75	26.9	38	114.3	36	2455317017	12	47,55
114.3 (DN 100) × Rp1	94	77	33.7	38	114.3	44	2455317018	5	47,55
114.3 (DN 100) × Rp1¼	99	81	42.4	45	114.3	55	2455317019	4	47,55
114.3 (DN 100) × Rp1½	99	81	48.3	45	114.3	60	2455317020	8	47,55
114.3 (DN 100) × Rp2	105	86	60.3	64	114.3	73	2455317021	8	49,10
114.3 (DN 100) × Rp2½	111	82	76.1	70	114.3	89	2455317022	5	49,10
114.3 (DN 100) × Rp3	112	82	88.9	89	114.3	107	2455317023	3	49,10
168.3 (DN 150) × Rp1¼	127	109	42.4	45	168.3	55	2455317024	4	62,15
168.3 (DN 150) × Rp1½	127	109	48.3	45	168.3	60	2455317025	4	62,15
168.3 (DN 150) × Rp2	132	113	60.3	64	168.3	72	2455317026	4	62,15
168.3 (DN 150) × Rp2½	140	111	76.1	70	168.3	88	2455317027	3	62,15
168.3 (DN 150) × Rp3	140	110	88.9	89	168.3	108	2455317028	3	62,15
219.1 (DN 200) × Rp2	166	135	60.3	64	219.1	73	2455317029	2	90,47
219.1 (DN 200) × Rp2½	166	137	76.1	70	219.1	89	2455317030	2	90,47
219.1 (DN 200) × Rp3	166	136	88.9	89	219.1	107	2455317031	2	140,44

Availability of goods according to individual arrangements. Discount group S.



## 7722 Saddle

grooved end of the outlet with type E gasket

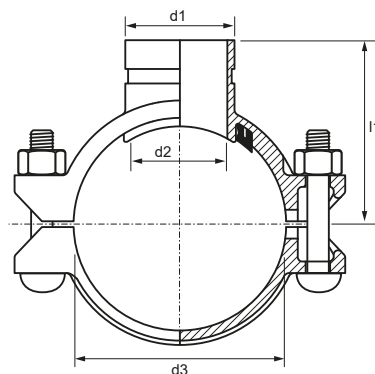


### Painted element

Dimension	l1/z1	d1	d2	d3	Code	Packing	Price EUR
60.3 (DN 50) × 42.4 (DN 32)	71	42.4	45	60.3	2457318000	10	25,57
60.3 (DN 50) × 48.3 (DN 40)	71	48.3	45	60.3	2457318001	10	25,57
76.1 (DN 65) × 42.4 (DN 32)	79	42.4	45	76.1	2457318002	7	31,30
76.1 (DN 65) × 48.3 (DN 40)	79	48.3	45	76.1	2457318003	6	31,30
88.9 (DN 80) × 42.4 (DN 32)	89	42.4	45	88.9	2457318004	10	31,30
88.9 (DN 80) × 48.3 (DN 40)	89	48.3	45	88.9	2457318005	10	31,30
88.9 (DN 80) × 60.3 (DN 50)	91	60.3	64	88.9	2457318006	10	31,30
114.3 (DN 100) × 42.4 (DN 32)	99	42.4	45	114.3	2457318007	8	36,69
114.3 (DN 100) × 48.3 (DN 40)	99	48.3	45	114.3	2457318008	8	36,69
114.3 (DN 100) × 60.3 (DN 50)	105	60.3	64	114.3	2457318009	8	37,88
114.3 (DN 100) × 76.1 (DN 65)	111	76.1	70	114.3	2457318010	5	37,88
114.3 (DN 100) × 88.9 (DN 80)	112	88.9	89	114.3	2457318011	3	37,88
139.7 (DN 125) × 60.3 (DN 50)	124	60.3	64	139.7	2457318012	4	45,74
139.7 (DN 125) × 76.1 (DN 65)	127	76.1	70	139.7	2457318013	4	45,74
168.3 (DN 150) × 42.4 (DN 32)	127	42.4	45	168.3	2457318014	4	47,99
168.3 (DN 150) × 48.3 (DN 40)	127	48.3	45	168.3	2457318015	4	47,99
168.3 (DN 150) × 60.3 (DN 50)	132	60.3	64	168.3	2457318016	4	47,99
168.3 (DN 150) × 76.1 (DN 65)	140	76.1	70	168.3	2457318017	3	47,99
168.3 (DN 150) × 88.9 (DN 80)	140	88.9	89	168.3	2457318018	2	47,99
168.3 (DN 150) × 114.3 (DN 100)	140	114.3	114	168.3	2457318019	2	69,88
219.1 (DN 200) × 60.3 (DN 50)	166	60.3	64	219.1	2457318020	2	69,88
219.1 (DN 200) × 76.1 (DN 65)	166	76.1	70	219.1	2457318021	2	69,88
219.1 (DN 200) × 88.9 (DN 80)	88.9	88.9	89	219.1	2457318022	2	108,35
219.1 (DN 200) × 114.3 (DN 100)	114.3	114.3	114	219.1	2457318023	2	123,39

## 7722 Saddle

grooved end of the outlet with type E gasket

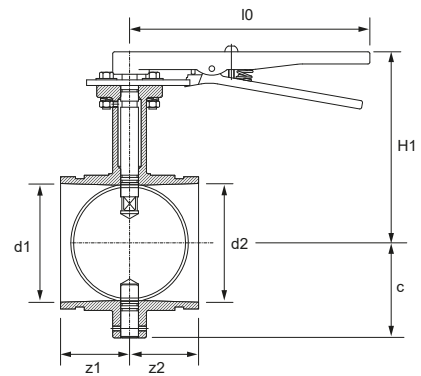


### Galvanized element

Dimension	l1/z1	d1	d2	d3	Code	Packing	Price EUR
60.3 (DN 50) × 42.4 (DN 32)	71	42.4	45	60.3	2455318000	10	33,15
60.3 (DN 50) × 48.3 (DN 40)	71	48.3	45	60.3	2455318001	10	33,15
76.1 (DN 65) × 42.4 (DN 32)	79	42.4	45	76.1	2455318002	7	40,54
76.1 (DN 65) × 48.3 (DN 40)	79	48.3	45	76.1	2455318003	6	40,54
88.9 (DN 80) × 42.4 (DN 32)	89	42.4	45	88.9	2455318004	10	40,54
88.9 (DN 80) × 48.3 (DN 40)	89	48.3	45	88.9	2455318005	10	40,54
88.9 (DN 80) × 60.3 (DN 50)	91	60.3	64	88.9	2455318006	10	40,54
114.3 (DN 100) × 42.4 (DN 32)	99	42.4	45	114.3	2455318007	8	47,55
114.3 (DN 100) × 48.3 (DN 40)	99	48.3	45	114.3	2455318008	8	47,55
114.3 (DN 100) × 60.3 (DN 50)	105	60.3	64	114.3	2455318009	8	49,10
114.3 (DN 100) × 76.1 (DN 65)	111	76.1	70	114.3	2455318010	5	49,10
114.3 (DN 100) × 88.9 (DN 80)	112	88.9	89	114.3	2455318011	3	49,10
168.3 (DN 150) × 42.4 (DN 32)	127	42.4	45	168.3	2455318012	4	62,15
168.3 (DN 150) × 48.3 (DN 40)	127	48.3	45	168.3	2455318013	4	62,15
168.3 (DN 150) × 60.3 (DN 50)	132	60.3	64	168.3	2455318014	4	62,15
168.3 (DN 150) × 76.1 (DN 65)	140	76.1	70	168.3	2455318015	3	62,15
168.3 (DN 150) × 88.9 (DN 80)	140	88.9	89	168.3	2455318016	2	62,15
168.3 (DN 150) × 114.3 (DN 100)	140	114.3	114	168.3	2455318017	2	90,47
219.1 (DN 200) × 60.3 (DN 50)	166	60.3	64	219.1	2455318018	2	90,47
219.1 (DN 200) × 76.1 (DN 65)	166	76.1	70	219.1	2455318019	2	90,47
219.1 (DN 200) × 88.9 (DN 80)	88.9	88.9	89	219.1	2455318020	2	140,44
219.1 (DN 200) × 114.3 (DN 100)	114.3	114.3	114	219.1	2455318021	2	159,96

## SJ-300N-L False rafter

2 x groove, with handle of lever and disc covered with EPDM coating

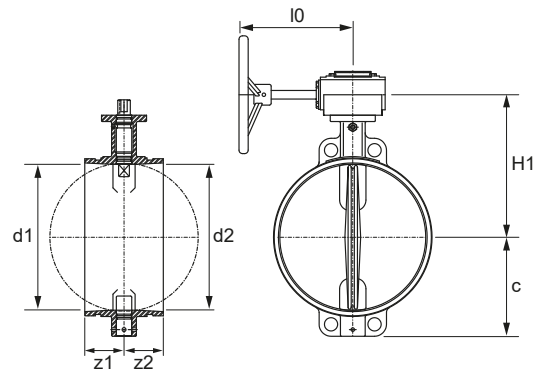


### Black epoxy coating

Dimension	z1/z2	H1	I0	c	Code	Packing	Price EUR
60.3 (DN 50)	41	106	192	63	2409310000	2	274,21
76.1 (DN 65)	49	111	192	68	2409310001	2	296,20
88.9 (DN 80)	49	126	192	76	2409310002	2	321,65
114.3 (DN 100)	58	135	260	89	2409310003	2	373,81
139.7 (DN 125)	74	168	260	102	2409310004	2	518,13
168.3 (DN 150)	74	184	260	114	2409310005	2	578,50
219.1 (DN 200)	67	208	260	140	2409310006	1	876,38

## SJ-300N-W False rafter with lever

2 x groove, with handle of lever and disc covered with EPDM coating

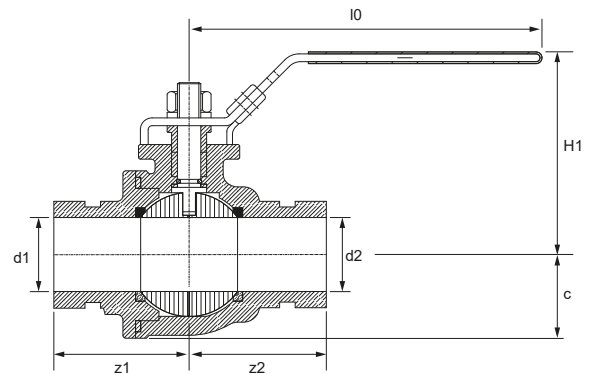


### Black epoxy coating

Dimension	z1/z2	H1	l0	c	Code	Packing	Price EUR
168.3 (DN 150)	74	184	152	114	2409311000	2	783,16
219.1 (DN 200)	67	208	152	140	2409311001	1	1 114,95
273.0 (DN 250)	80	235	203	170	2409311002	1	1 653,28
323.9 (DN 300)	83	260	203	205	2409311003	1	1 863,11

## SJ-500-L Ball valve

2 x groove



### Black epoxy coating, carbon steel finishing

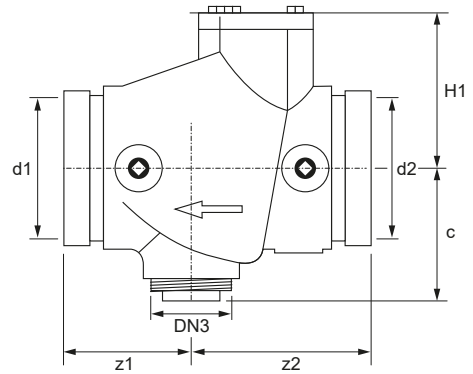
Dimension	z1/z2	H1	l0	Code	Packing	Price EUR
48.3 (DN 40)	65	86	178	<b>2409278000</b>	10	<b>168,98</b>
60.3 (DN 50)	70	95	178	<b>2409278001</b>	5	<b>216,49</b>
76.1 (DN 65)	80	132	265	<b>2409278002</b>	3	<b>296,20</b>
88.9 (DN 80)	84	143	265	<b>2409278003</b>	2	<b>321,65</b>

### Black epoxy coating, stainless steel finishing

Dimension	z1/z2	H1	l0	Code	Packing	Price EUR
48.3 (DN 40)	65	86	178	<b>2409278004</b>	10	<b>178,44</b>
60.3 (DN 50)	70	95	178	<b>2409278005</b>	5	<b>228,70</b>
76.1 (DN 65)	80	132	265	<b>2409278006</b>	3	<b>340,98</b>
88.9 (DN 80)	84	143	265	<b>2409278007</b>	2	<b>487,31</b>

## SJ-900 Flap check valve

2 x groove

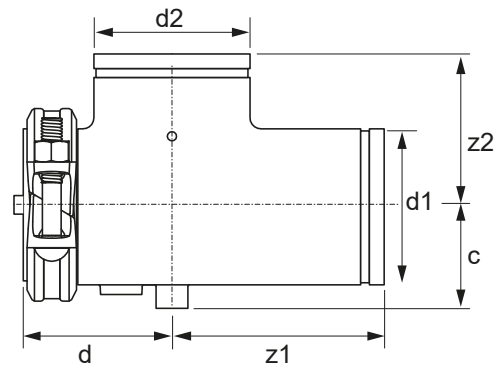


### Black epoxy coating

Dimension	z1	z2	H1	c	DN3	Code	Packing	Price EUR
76.1 (DN 65)	88	102	95	64	Rp1 ¼	<b>2409308000</b>	4	<b>256,25</b>
88.9 (DN 80)	76	102	95	64	Rp1 ¼	<b>2409308001</b>	4	<b>379,59</b>
114.3 (DN 100)	89	127	117	80	Rp2	<b>2409308002</b>	2	<b>397,29</b>
139.7 (DN 125)	136	194	178	114	Rp2	<b>2409308003</b>	1	<b>562,32</b>
168.3 (DN 150)	51	254	178	114	Rp2	<b>2409308004</b>	1	<b>597,56</b>
219.1 (DN 200)	60	305	217	140	Rp2	<b>2409308005</b>	1	<b>1 147,53</b>
273.0 (DN 250)	254	254	273	184	Rp2	<b>2409308006</b>	1	<b>1 770,53</b>
323.9 (DN 300)	305	305	327	217	Rp2	<b>2409308007</b>	1	<b>2 438,71</b>

## 725G Suction diffuser

2 x groove

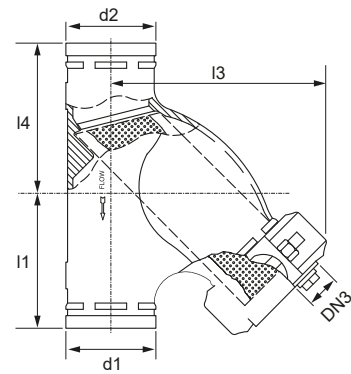


### Painted element

Dimension	z1	z2	d	Code	Packing	Price EUR
76.1 (DN 65)	127	95	97	2457324000	4	685,92
88.9 (DN 80)	160	140	105	2457324001	3	718,03
114.3 (DN 100)	187	127	125	2457324002	1	771,16
168.3 (DN 150)	229	165	156	2457324003	1	2 267,01
219.1 (DN 200)	260	229	204	2457324004	1	2 573,81
273.0 (DN 250)	315	229	247	2457324005	1	3 211,18

## 726 Mesh Y-type filter

3 x groove

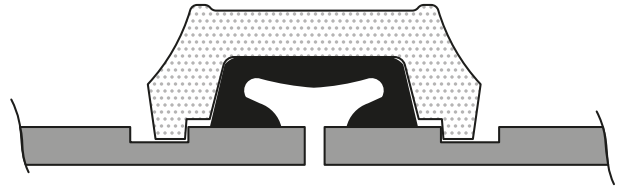


### Painted element

Dimension	l1/2	l3	DN3	Code	Packing	Price EUR
60.3 (DN 50)	124	181	DN15	2457086000	4	215,53
76.1 (DN 65)	137	199	DN15	2457086001	3	254,45
88.9 (DN 80)	150	221	DN25	2457086002	2	274,27
114.3 (DN 100)	181	269	DN25	2457086003	1	390,03
139.7 (DN 125)	210	330	DN25	2457086004	1	855,10
168.3 (DN 150)	235	357	DN25	2457086005	1	1 089,48
219.1 (DN 200)	305	454	DN40	2457086006	1	1 636,36
273.0 (DN 250)	343	522	DN40	2457086007	1	2 354,82



## Standard gaskets for Z05, Z07, 7707, 7705 couplings



### EPDM (Class E)

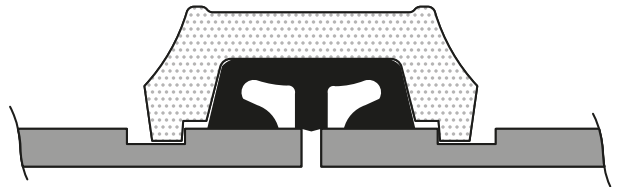
Dimension	Code	Packing	Price EUR
33.7 (DN 25)	2409237009	300	11,18
42.4 (DN 32)	2409237010	210	11,52
48.3 (DN 40)	2409237011	170	12,52
60.3 (DN 50)	2409237012	120	12,52
76.1 (DN 65)	2409237013	100	15,17
88.9 (DN 80)	2409237014	65	16,68
114.3 (DN 100)	2409237015	40	21,26
139.7 (DN 125)	2409237016	33	27,59
168.3 (DN 150)	2409237018	25	30,28
219.1 (DN 200)	2409237019	15	41,60
273.0 (DN 250)	2409237020	12	53,28
323.9 (DN 300)	2409237021	8	61,97

### NBR (T class - nitrile)

Dimension	Code	Packing	Price EUR
33.7 (DN 25)	2409237022	300	11,18
42.4 (DN 32)	2409237023	210	11,52
48.3 (DN 40)	2409237024	170	12,52
60.3 (DN 50)	2409237025	120	12,52
76.1 (DN 65)	2409237026	100	15,17
88.9 (DN 80)	2409237027	65	16,68
114.3 (DN 100)	2409237028	40	21,26
139.7 (DN 125)	2409237029	33	27,59
168.3 (DN 150)	2409237031	25	30,28
219.1 (DN 200)	2409237032	15	41,60
273.0 (DN 250)	2409237033	12	53,28
323.9 (DN 300)	2409237034	8	61,97

Availability of goods according to individual arrangements. Discount group S.

## Spare gaskets (for Z05, Z07, 7707, 7705 connectors)



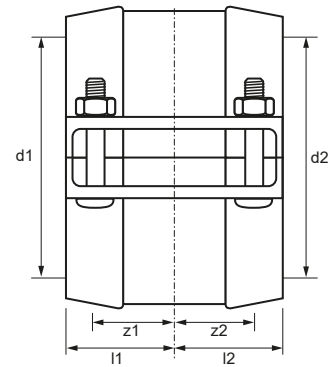
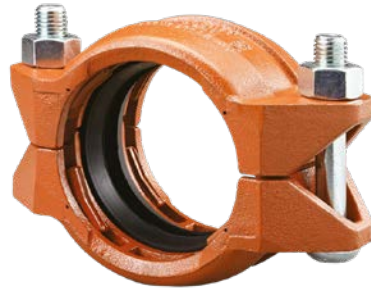
### EPDM (Class E)

Dimension	Code	Packing	Price EUR
42.4 (DN 32)	2409237035	210	23,09
48.3 (DN 40)	2409237036	170	23,33
60.3 (DN 50)	2409237037	115	23,74
76.1 (DN 65)	2409237038	90	29,38
88.9 (DN 80)	2409237039	60	29,38
114.3 (DN 100)	2409237040	35	40,03
139.7 (DN 125)	2409237041	30	72,33
168.3 (DN 150)	2409237043	22	73,61
219.1 (DN 200)	2409237044	12	76,67

Availability of goods according to individual arrangements. Discount group S.

## 79 Couplings with smooth "Wildcat" end for steel pipes (T)

2 x smooth ends, with type E gasket



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
60.3 (DN 50)	45	0	2457323000	6	64,54
88.9 (DN 80)	45	0	2457323001	4	87,32
114.3 (DN 100)	51	0	2457323002	3	107,16
168.3 (DN 150)	56	0	2457323003	2	230,36
219.1 (DN 200)	64	0	2457323004	1	352,76

## G223 Grease



Content	Description	Product no.	Packing	Price EUR
450 g	Standard grease	2400183000	24	25,84
900 g	Standard grease	2400183001	9	50,41

Availability of goods according to individual arrangements. Discount group S.

# KAN-therm Groove Sprinkler System

## K9 Rigid coupling with E type gasket



### Painted element

Dimension	Code	Packing	Price EUR
42.4 (DN 32)	2458301000	26	
48.3 (DN 40)	2458301001	22	
60.3 (DN 50)	2458301002	18	
76.1 (DN 65)	2458301003	25	
88.9 (DN 80)	2458301004	20	
114.3 (DN 100)	2458301005	12	
139.7 (DN 125)	2458301006	9	
168.3 (DN 150)	2458301007	7	
219.1 (DN 200)	2458301008	3	

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	Code	Packing	Price EUR
42.4 (DN 32)	2456301000	26	
48.3 (DN 40)	2456301001	22	
60.3 (DN 50)	2456301002	18	
76.1 (DN 65)	2456301003	25	
88.9 (DN 80)	2456301004	20	
114.3 (DN 100)	2456301005	12	
139.7 (DN 125)	2456301006	9	
168.3 (DN 150)	2456301007	7	
219.1 (DN 200)	2456301008	3	

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

Availability of goods according to individual arrangements. Discount group S.

## 901 Elbow 90° small bending radius



### Painted element

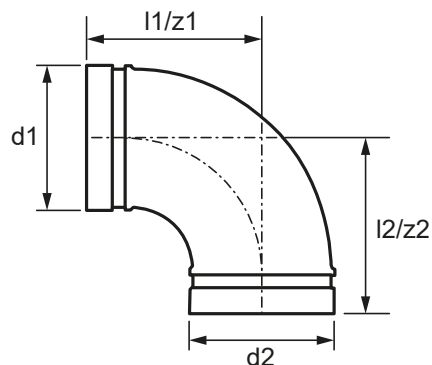
Dimension	Code	Packing	Price EUR
60,3 (DN 50)	2458321000	30	
76.1 (DN 65)	2458321001	16	
88.9 (DN 80)	2458321002	12	
114.3 (DN 100)	2458321003	6	
139.7 (DN 125)	2458321004	4	
168.3 (DN 150)	2458321005	2	
219.1 (DN 200)	2458321006	1	

### Galvanized element

Dimension	Code	Packing	Price EUR
60.3 (DN 50)	2456321000	30	
76.1 (DN 65)	2456321001	16	
88.9 (DN 80)	2456321002	12	
114.3 (DN 100)	2456321003	6	
139.7 (DN 125)	2456321004	4	
168.3 (DN 150)	2456321005	2	
219.1 (DN 200)	2456321006	1	

Availability of goods according to individual arrangements. Discount group S.

## 7110 Elbow 90°



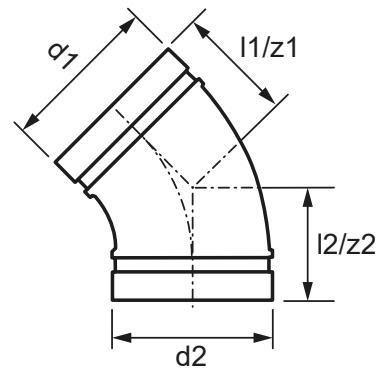
### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN25)	57	57	2457302000	60	
42.4 (DN32)	70	70	2457302001	28	
48.3 (DN40)	70	70	2457302002	24	
273.0 (DN250)	229	229	2457302010	1	
323.9 (DN300)	254	254	2457302011	1	

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN25)	57	57	2455302004	60	
42.4 (DN32)	70	70	2455302005	28	
48.3 (DN40)	70	70	2455302006	24	
273.0 (DN250)	229	229	2455302010	1	
323.9 (DN300)	254	254	2455302011	1	

## 7111 Elbow 45°



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	45	45	2457303000	72	
42.4 (DN 32)	45	45	2457303001	40	
48.3 (DN 40)	45	45	2457303002	36	
60.3 (DN 50)	51	51	2458303000	36	
76.1 (DN 65)	57	57	2458303001	18	
88.9 (DN 80)	57	57	2458303002	15	
114.3 (DN 100)	76	76	2458303003	6	
139.7 (DN 125)	83	83	2458303004	4	
168.3 (DN 150)	89	89	2458303005	2	
219.1 (DN 200)	108	108	2458303006	1	
273.0 (DN 250)	121	121	2457303010	1	
323.9 (DN 300)	133	133	2457303011	1	

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33.7 (DN 25)	45	45	2455303004	72	
42.4 (DN 32)	45	45	2455303005	40	
48.3 (DN 40)	45	45	2455303006	36	
60.3 (DN 50)	51	51	2455303007	36	
76.1 (DN 65)	57	57	2455303000	18	
88.9 (DN 80)	57	57	2455303001	15	
114.3 (DN 100)	76	76	2455303002	6	
139.7 (DN 125)	83	83	2455303008	4	
168.3 (DN 150)	89	89	2455303003	2	
219.1 (DN 200)	108	108	2455303009	1	
273.0 (DN 250)	121	121	2455303010	1	
323.9 (DN 300)	133	133	2455303011	1	

Availability of goods according to individual arrangements. Discount group S.



## 903 T-pipe



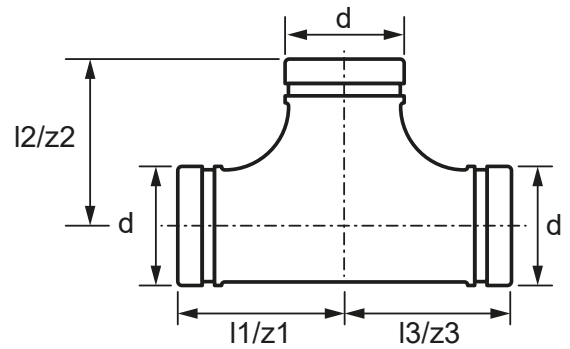
### Painted element

Dimension	Code	Packing	Price EUR
60,3 (DN 50)	2458322000	20	
76.1 (DN 65)	2458322001	12	
88.9 (DN 80)	2458322002	8	
114.3 (DN 100)	2458322003	5	
139.7 (DN 125)	2458322004	2	
168.3 (DN 150)	2458322005	1	
219.1 (DN 200)	2458322006	1	

### Galvanized element

Dimension	Code	Packing	Price EUR
60.3 (DN 50)	2456322000	20	
76.1 (DN 65)	2456322001	12	
88.9 (DN 80)	2456322002	8	
114.3 (DN 100)	2456322003	5	
139.7 (DN 125)	2456322004	2	
168.3 (DN 150)	2456322005	1	
219.1 (DN 200)	2456322006	1	

## 7120 T-pipe



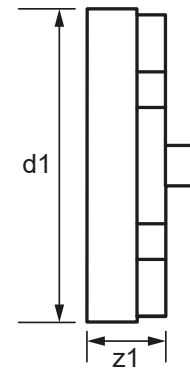
### Painted element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
33.7 (DN25)	57	57	2457257000	40	
42.4 (DN32)	70	70	2457257001	20	
48.3 (DN40)	70	70	2457257002	15	
273.0 (DN250)	229	229	2457257010	1	
323.9 (DN300)	254	254	2457257011	1	

### Galvanized element

Dimension	l1/l2/l3	z1/z2/z3	Code	Packing	Price EUR
33.7 (DN25)	57	57	2455257001	40	
42.4 (DN32)	70	70	2455257002	20	
48.3 (DN40)	70	70	2455257003	15	
273.0 (DN250)	229	229	2455257010	1	
323.9 (DN300)	254	254	2455257011	1	

## 7160 Plug grooved



### Painted element

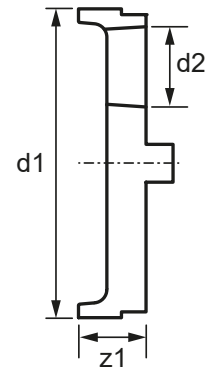
Dimension	z1	Code	Packing	Price EUR
33.7 (DN25)	22	2457025000	220	
42.4 (DN32)	25	2457025001	145	
48.3 (DN40)	25	2457025002	110	
60.3 (DN50)	25	2457025003	75	
76.1 (DN65)	25	2457025004	50	
88.9 (DN80)	25	2457025005	30	
114.3 (DN100)	25	2457025006	18	
139.7 (DN125)	25	2457025007	12	
168.3 (DN150)	25	2457025008	8	
219.1 (DN200)	30	2457025009	3	
273.0 (DN250)	30	2457025010	3	
323.9 (DN300)	32	2457025011	1	

### Galvanized element

Dimension	z1	Code	Packing	Price EUR
33.7 (DN25)	22	2455025000	220	
42.4 (DN32)	25	2455025001	145	
48.3 (DN40)	25	2455025002	110	
60.3 (DN50)	25	2455025003	75	
76.1 (DN65)	25	2455025004	50	
88.9 (DN80)	25	2455025005	30	
114.3 (DN100)	25	2455025006	18	
139.7 (DN125)	25	2455025007	12	
168.3 (DN150)	25	2455025008	8	
219.1 (DN200)	30	2455025009	3	
273.0 (DN250)	30	2455025010	3	
323.9 (DN300)	32	2455025011	1	

Availability of goods according to individual arrangements. Discount group S.

## 7160T Plug with culvert groove x inside thread



### Painted element

Dimension	z1	d2	Code	Packing	Price EUR
60.3 (DN 50) × Rp1	24	Rp1	2457320000	75	28,65
76.1 (DN 65) × Rp1	24	Rp1	2457320001	50	34,74
76.1 (DN 65) × Rp1 ½	24	Rp1 ½	2457320002	50	34,74
76.1 (DN 65) × Rp1 ¼	24	Rp1 ¼	2457320003	50	34,74
88.9 (DN 80) × Rp1	25	Rp1	2457320004	30	34,74
88.9 (DN 80) × Rp1 ½	25	Rp1 ½	2457320005	30	34,74
88.9 (DN 80) × Rp1 ¼	25	Rp1 ¼	2457320006	30	34,74
114.3 (DN 100) × Rp1	25	Rp1	2457320007	18	37,51
114.3 (DN 100) × Rp1 ½	25	Rp1 ½	2457320008	18	37,51
114.3 (DN 100) × Rp1 ¼	25	Rp1 ¼	2457320009	18	37,51
114.3 (DN 100) × Rp2	25	Rp2	2457320010	18	37,51
139.7 (DN 125) × Rp2	25	Rp2	2457320011	12	58,86
168.3 (DN 150) × Rp2	25	Rp2	2457320012	8	64,13
219.1 (DN 200) × Rp2	30	Rp2	2457320013	3	109,10

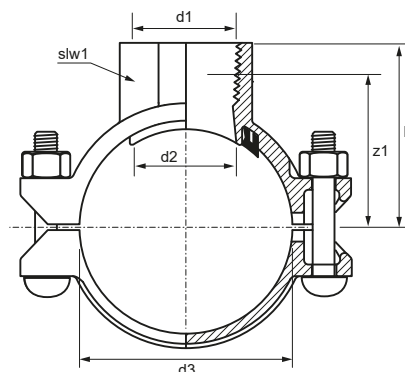
### Galvanized element

Dimension	z1	d2	Code	Packing	Price EUR
60.3 (DN 50) × Rp1	24	Rp1	2455320000	75	32,56
76.1 (DN 65) × Rp1	24	Rp1	2455320001	50	40,20
88.9 (DN 80) × Rp2	25	Rp2	2455320002	30	40,20
114.3 (DN 100) × Rp1	25	Rp1	2455320003	18	43,57
114.3 (DN 100) × Rp1 ½	25	Rp1 ½	2455320004	18	43,57
114.3 (DN 100) × Rp2	25	Rp2	2455320005	18	43,57
139.7 (DN 125) × Rp2	25	Rp2	2455320006	12	70,17
168.3 (DN 150) × Rp2	25	Rp2	2455320007	8	76,88

Availability of goods according to individual arrangements. Discount group S.

## 7721 Saddle with GW

Outlet with internal thread ISO R7, with type E gasket



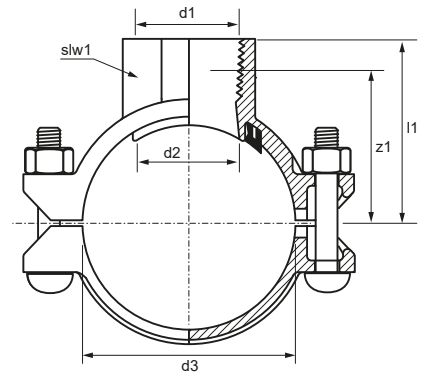
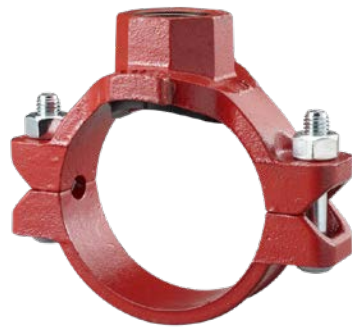
### Painted element

Dimension	l1	z1	d1	d2*	d3	slw1	Code	Packing	Price EUR
60.3 (DN 50) × Rp½	64	50	21.3	38	60.3	30	2457317000	10	22,11
60.3 (DN 50) × Rp¾	64	50	26.9	38	60.3	36	2457317001	10	22,11
60.3 (DN 50) × Rp1	68	51	33.7	38	60.3	44	2457317002	10	22,11
60.3 (DN 50) × Rp1¼	71	53	42.4	45	60.3	55	2457317003	8	25,57
60.3 (DN 50) × Rp1½	71	53	48.3	45	60.3	60	2457317004	8	25,57
76.1 (DN 65) × Rp½	71	57	21.3	38	76.1	30	2457317005	7	24,27
76.1 (DN 65) × Rp¾	73	59	26.9	38	76.1	36	2457317006	7	24,26
76.1 (DN 65) × Rp1	75	58	33.7	38	76.1	44	2457317007	7	31,30
76.1 (DN 65) × Rp1¼	79	61	42.4	45	76.1	55	2457317008	7	31,30
76.1 (DN 65) × Rp1½	79	61	48.3	45	76.1	60	2457317009	6	31,30
88.9 (DN 80) × Rp½	81	63	21.3	38	88.9	30	2457317010	7	25,47
88.9 (DN 80) × Rp¾	81	62	26.9	38	88.9	36	2457317011	7	25,47
88.9 (DN 80) × Rp1	81	64	33.7	38	88.9	44	2457317012	7	31,30
88.9 (DN 80) × Rp1¼	89	71	42.4	45	88.9	55	2457317013	10	31,30
88.9 (DN 80) × Rp1½	89	71	48.3	45	88.9	60	2457317014	6	31,30
88.9 (DN 80) × Rp2	91	72	60.3	64	88.9	73	2457317015	5	31,30
114.3 (DN 100) × Rp½	94	76	21.3	38	114.3	30	2457317016	12	36,69
114.3 (DN 100) × Rp¾	94	75	26.9	38	114.3	36	2457317017	12	36,69
114.3 (DN 100) × Rp1	94	77	33.7	38	114.3	44	2457317018	5	36,69
114.3 (DN 100) × Rp1¼	99	81	42.4	45	114.3	55	2457317019	4	36,69
114.3 (DN 100) × Rp1½	99	81	48.3	45	114.3	60	2457317020	8	36,69
114.3 (DN 100) × Rp2	105	86	60.3	64	114.3	73	2457317021	8	37,88
114.3 (DN 100) × Rp2½	111	82	76.1	70	114.3	89	2457317022	5	37,88
114.3 (DN 100) × Rp3	112	82	88.9	89	114.3	107	2457317023	3	37,88
168.3 (DN 150) × Rp1¼	127	109	42.4	45	168.3	55	2457317024	4	47,99
168.3 (DN 150) × Rp1½	127	109	48.3	45	168.3	60	2457317025	4	47,99
168.3 (DN 150) × Rp2	132	113	60.3	64	168.3	72	2457317026	4	47,99
168.3 (DN 150) × Rp2½	140	111	76.1	70	168.3	88	2457317027	3	47,99
168.3 (DN 150) × Rp3	140	110	88.9	89	168.3	108	2457317028	3	47,99
219.1 (DN 200) × Rp2	166	135	60.3	64	219.1	73	2457317029	2	69,88
219.1 (DN 200) × Rp2½	166	137	76.1	70	219.1	89	2457317030	2	69,88
219.1 (DN 200) × Rp3	166	136	88.9	89	219.1	107	2457317031	2	108,35

Availability of goods according to individual arrangements. Discount group S.

## 7721 Saddle with GW

Outlet with internal thread ISO R7, with type E gasket



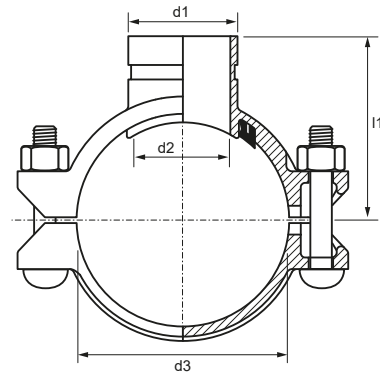
### Galvanized element

Dimension	l1	z1	d1	d2*	d3	slw1	Code	Packing	Price EUR
60.3 (DN 50) × Rp½	64	50	21.3	38	60.3	30	2455317000	10	28,62
60.3 (DN 50) × Rp¾	64	50	26.9	38	60.3	36	2455317001	10	28,62
60.3 (DN 50) × Rp1	68	51	33.7	38	60.3	44	2455317002	10	28,62
60.3 (DN 50) × Rp1¼	71	53	42.4	45	60.3	55	2455317003	8	33,15
60.3 (DN 50) × Rp1½	71	53	48.3	45	60.3	60	2455317004	8	33,15
76.1 (DN 65) × Rp½	71	57	21.3	38	76.1	30	2455317005	7	31,42
76.1 (DN 65) × Rp¾	73	59	26.9	38	76.1	36	2455317006	7	31,42
76.1 (DN 65) × Rp1	75	58	33.7	38	76.1	44	2455317007	7	40,54
76.1 (DN 65) × Rp1¼	79	61	42.4	45	76.1	55	2455317008	7	40,54
76.1 (DN 65) × Rp1½	79	61	48.3	45	76.1	60	2455317009	6	40,54
88.9 (DN 80) × Rp½	81	63	21.3	38	88.9	30	2455317010	7	33,01
88.9 (DN 80) × Rp¾	81	62	26.9	38	88.9	36	2455317011	7	33,01
88.9 (DN 80) × Rp1	81	64	33.7	38	88.9	44	2455317012	7	40,54
88.9 (DN 80) × Rp1¼	89	71	42.4	45	88.9	55	2455317013	10	40,54
88.9 (DN 80) × Rp1½	89	71	48.3	45	88.9	60	2455317014	6	40,54
88.9 (DN 80) × Rp2	91	72	60.3	64	88.9	73	2455317015	5	40,54
114.3 (DN 100) × Rp½	94	76	21.3	38	114.3	30	2455317016	12	47,55
114.3 (DN 100) × Rp¾	94	75	26.9	38	114.3	36	2455317017	12	47,55
114.3 (DN 100) × Rp1	94	77	33.7	38	114.3	44	2455317018	5	47,55
114.3 (DN 100) × Rp1¼	99	81	42.4	45	114.3	55	2455317019	4	47,55
114.3 (DN 100) × Rp1½	99	81	48.3	45	114.3	60	2455317020	8	47,55
114.3 (DN 100) × Rp2	105	86	60.3	64	114.3	73	2455317021	8	49,10
114.3 (DN 100) × Rp2½	111	82	76.1	70	114.3	89	2455317022	5	49,10
114.3 (DN 100) × Rp3	112	82	88.9	89	114.3	107	2455317023	3	49,10
168.3 (DN 150) × Rp1¼	127	109	42.4	45	168.3	55	2455317024	4	62,15
168.3 (DN 150) × Rp1½	127	109	48.3	45	168.3	60	2455317025	4	62,15
168.3 (DN 150) × Rp2	132	113	60.3	64	168.3	72	2455317026	4	62,15
168.3 (DN 150) × Rp2½	140	111	76.1	70	168.3	88	2455317027	3	62,15
168.3 (DN 150) × Rp3	140	110	88.9	89	168.3	108	2455317028	3	62,15
219.1 (DN 200) × Rp2	166	135	60.3	64	219.1	73	2455317029	2	90,47
219.1 (DN 200) × Rp2½	166	137	76.1	70	219.1	89	2455317030	2	90,47
219.1 (DN 200) × Rp3	166	136	88.9	89	219.1	107	2455317031	2	140,44

Availability of goods according to individual arrangements. Discount group S.

## 7722 Saddle

grooved end of the outlet with type E gasket

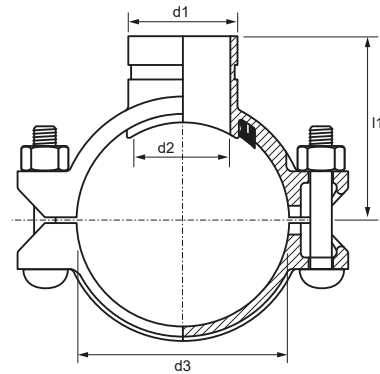


### Painted element

Dimension	l1/z1	d1	d2	d3	Code	Packing	Price EUR
60.3 (DN 50) × 42.4 (DN 32)	71	42.4	45	60.3	2457318000	10	25,57
60.3 (DN 50) × 48.3 (DN 40)	71	48.3	45	60.3	2457318001	10	25,57
76.1 (DN 65) × 42.4 (DN 32)	79	42.4	45	76.1	2457318002	7	31,30
76.1 (DN 65) × 48.3 (DN 40)	79	48.3	45	76.1	2457318003	6	31,30
88.9 (DN 80) × 42.4 (DN 32)	89	42.4	45	88.9	2457318004	10	31,30
88.9 (DN 80) × 48.3 (DN 40)	89	48.3	45	88.9	2457318005	10	31,30
88.9 (DN 80) × 60.3 (DN 50)	91	60.3	64	88.9	2457318006	10	31,30
114.3 (DN 100) × 42.4 (DN 32)	99	42.4	45	114.3	2457318007	8	36,69
114.3 (DN 100) × 48.3 (DN 40)	99	48.3	45	114.3	2457318008	8	36,69
114.3 (DN 100) × 60.3 (DN 50)	105	60.3	64	114.3	2457318009	8	37,88
114.3 (DN 100) × 76.1 (DN 65)	111	76.1	70	114.3	2457318010	5	37,88
114.3 (DN 100) × 88.9 (DN 80)	112	88.9	89	114.3	2457318011	3	37,88
139.7 (DN 125) × 60.3 (DN 50)	124	60.3	64	139.7	2457318012	4	45,74
139.7 (DN 125) × 76.1 (DN 65)	127	76.1	70	139.7	2457318013	4	45,74
168.3 (DN 150) × 42.4 (DN 32)	127	42.4	45	168.3	2457318014	4	47,99
168.3 (DN 150) × 48.3 (DN 40)	127	48.3	45	168.3	2457318015	4	47,99
168.3 (DN 150) × 60.3 (DN 50)	132	60.3	64	168.3	2457318016	4	47,99
168.3 (DN 150) × 76.1 (DN 65)	140	76.1	70	168.3	2457318017	3	47,99
168.3 (DN 150) × 88.9 (DN 80)	140	88.9	89	168.3	2457318018	2	47,99
168.3 (DN 150) × 114.3 (DN 100)	140	114.3	114	168.3	2457318019	2	69,88
219.1 (DN 200) × 60.3 (DN 50)	166	60.3	64	219.1	2457318020	2	69,88
219.1 (DN 200) × 76.1 (DN 65)	166	76.1	70	219.1	2457318021	2	69,88
219.1 (DN 200) × 88.9 (DN 80)	166	88.9	89	219.1	2457318022	2	108,35
219.1 (DN 200) × 114.3 (DN 100)	166	114.3	114	219.1	2457318023	2	123,39

## 7722 Saddle

grooved end of the outlet with type E gasket



### Galvanized element

Dimension	l1/z1	d1	d2	d3	Code	Packing	Price EUR
60.3 (DN 50) × 42.4 (DN 32)	71	42.4	45	60.3	<b>2455318000</b>	10	<b>33,15</b>
60.3 (DN 50) × 48.3 (DN 40)	71	48.3	45	60.3	<b>2455318001</b>	10	<b>33,15</b>
76.1 (DN 65) × 42.4 (DN 32)	79	42.4	45	76.1	<b>2455318002</b>	7	<b>40,54</b>
76.1 (DN 65) × 48.3 (DN 40)	79	48.3	45	76.1	<b>2455318003</b>	6	<b>40,54</b>
88.9 (DN 80) × 42.4 (DN 32)	89	42.4	45	88.9	<b>2455318004</b>	10	<b>40,54</b>
88.9 (DN 80) × 48.3 (DN 40)	89	48.3	45	88.9	<b>2455318005</b>	10	<b>40,54</b>
88.9 (DN 80) × 60.3 (DN 50)	91	60.3	64	88.9	<b>2455318006</b>	10	<b>40,54</b>
114.3 (DN 100) × 42.4 (DN 32)	99	42.4	45	114.3	<b>2455318007</b>	8	<b>47,55</b>
114.3 (DN 100) × 48.3 (DN 40)	99	48.3	45	114.3	<b>2455318008</b>	8	<b>47,55</b>
114.3 (DN 100) × 60.3 (DN 50)	105	60.3	64	114.3	<b>2455318009</b>	8	<b>49,10</b>
114.3 (DN 100) × 76.1 (DN 65)	111	76.1	70	114.3	<b>2455318010</b>	5	<b>49,10</b>
114.3 (DN 100) × 88.9 (DN 80)	112	88.9	89	114.3	<b>2455318011</b>	3	<b>49,10</b>
168.3 (DN 150) × 42.4 (DN 32)	127	42.4	45	168.3	<b>2455318012</b>	4	<b>62,15</b>
168.3 (DN 150) × 48.3 (DN 40)	127	48.3	45	168.3	<b>2455318013</b>	4	<b>62,15</b>
168.3 (DN 150) × 60.3 (DN 50)	132	60.3	64	168.3	<b>2455318014</b>	4	<b>62,15</b>
168.3 (DN 150) × 76.1 (DN 65)	140	76.1	70	168.3	<b>2455318015</b>	3	<b>62,15</b>
168.3 (DN 150) × 88.9 (DN 80)	140	88.9	89	168.3	<b>2455318016</b>	2	<b>62,15</b>
168.3 (DN 150) × 114.3 (DN 100)	140	114.3	114	168.3	<b>2455318017</b>	2	<b>90,47</b>
219.1 (DN 200) × 60.3 (DN 50)	166	60.3	64	219.1	<b>2455318018</b>	2	<b>90,47</b>
219.1 (DN 200) × 76.1 (DN 65)	166	76.1	70	219.1	<b>2455318019</b>	2	<b>90,47</b>
219.1 (DN 200) × 88.9 (DN 80)	166	88.9	89	219.1	<b>2455318020</b>	2	<b>140,44</b>
219.1 (DN 200) × 114.3 (DN 100)	166	114.3	114	219.1	<b>2455318021</b>	2	<b>159,96</b>

Availability of goods according to individual arrangements. Discount group S.



## 723 Sprinkler saddle with GW

with E type gasket



### Painted element

Dimension	Code	Packing	Price EUR
42.4 (DN 32) × Rp½	2458230000	35	10,90
42.4 (DN 32) × Rp¾	2458230001	35	10,90
42.4 (DN 32) × Rp½	2458230000	35	10,90
48.3 (DN 40) × Rp½	2458230003	35	11,78
48.3 (DN 40) × Rp¾	2458230004	35	11,78
48.3 (DN 40) × Rp1	2458230005	35	11,78
60.3 (DN 50) × Rp½	2458230006	35	12,60
60.3 (DN 50) × Rp¾	2458230007	35	12,60
60.3 (DN 50) × Rp1	2458230008	35	12,60
76.1 (DN 65) × Rp½	2458230009	28	12,61
76.1 (DN 65) × Rp¾	2458230010	28	12,61
76.1 (DN 65) × Rp1	2458230011	28	13,58

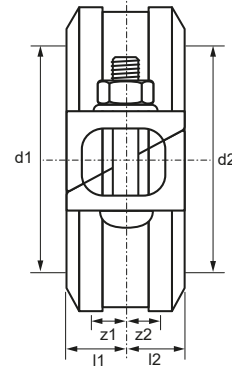
### Galvanized element

Dimension	Code	Packing	Price EUR
42.4 (DN 32) × Rp½	2456230000	35	12,73
42.4 (DN 32) × Rp¾	2456230001	35	12,73
42.4 (DN 32) × Rp½	2456230000	35	12,73
48.3 (DN 40) × Rp½	2456230003	35	13,75
48.3 (DN 40) × Rp¾	2456230004	35	13,75
48.3 (DN 40) × Rp1	2456230005	35	13,75
60.3 (DN 50) × Rp½	2456230006	35	14,68
60.3 (DN 50) × Rp¾	2456230007	35	14,68
60.3 (DN 50) × Rp1	2456230008	35	14,68
76.1 (DN 65) × Rp½	2456230009	28	15,95
76.1 (DN 65) × Rp¾	2456230010	28	15,95
76.1 (DN 65) × Rp1	2456230011	28	15,95

Availability of goods according to individual arrangements. Discount group S.

## Z07 High-strength rigid coupling

connection to oblique bolt clamp, with type E gasket



### Painted element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
273,0 (DN 250)	33	1.6	0-3.2	<b>2457314009</b>	1	<b>129,46</b>
323.9 (DN 300)	33	1.6	0-3.2	<b>2457314010</b>	1	<b>148,95</b>

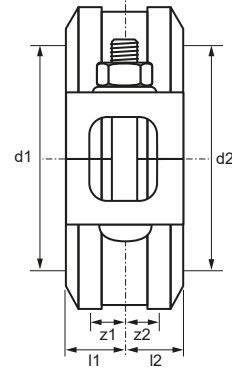
\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	l1/l2	z1/z2	A.d.*	Code	Packing	Price EUR
273,0 (DN 250)	33	1.6	0-3.2	<b>2455314009</b>	1	<b>175,49</b>
323.9 (DN 300)	33	1.6	0-3.2	<b>2455314010</b>	1	<b>182,16</b>

\* Axial displacement. For assembly only with grooved tubes by rolling or machining. Rigid couplings do not expand or shrink. The maximum values of the permissible working pressure are presented in chapter 2.5

## 7705 Flexible coupling with E type gasket



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33,7 (DN 25)	23	0.8	2457312000	30	13,55
42,4 (DN 32)	23	0.8	2457312001	26	13,55
48,3 (DN 40)	23	0.8	2457312002	22	13,55
60,3 (DN 50)	24	0.8	2457312003	16	24,34
76,1 (DN 65)	24	0.8	2457312004	12	29,21
88,9 (DN 80)	24	0.8	2457312005	9	32,34
114,3 (DN 100)	26	1.6	2457312006	4	47,19
139,7 (DN 125)	26	1.6	2457312007	8	72,48
168,3 (DN 150)	27	1.6	2457312008	6	85,54
219,1 (DN 200)	31	1.6	2457312009	3	132,40

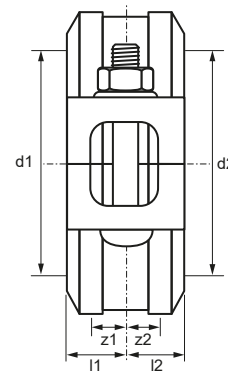
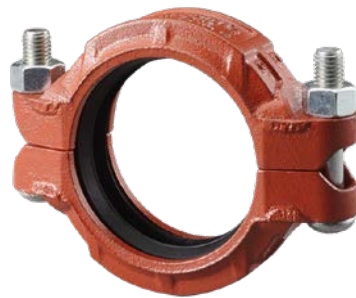
Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
33,7 (DN 25)	23	0.8	2455312000	30	16,21
42,4 (DN 32)	23	0.8	2455312001	26	16,21
48,3 (DN 40)	23	0.8	2455312002	22	16,21
60,3 (DN 50)	24	0.8	2455312003	16	32,82
76,1 (DN 65)	24	0.8	2455312004	12	40,56
88,9 (DN 80)	24	0.8	2455312005	9	45,04
114,3 (DN 100)	26	1.6	2455312006	4	66,54
139,7 (DN 125)	26	1.6	2455312007	8	103,95
168,3 (DN 150)	27	1.6	2455312008	6	122,80
219,1 (DN 200)	31	1.6	2455312009	3	190,20

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7707 High-strength flexible coupling with E type gasket



### Painted element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
273,0 (DN 250)	33	1.6	<b>2457313010</b>	1	<b>192,94</b>
323.9 (DN 300)	33	1.6	<b>2457313011</b>	1	<b>219,66</b>

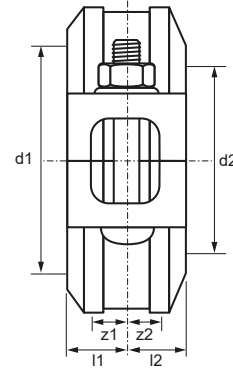
Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
273,0 (DN 250)	33	1.6	<b>2455313009</b>	1	<b>275,45</b>
323.9 (DN 300)	33	1.6	<b>2455313010</b>	1	<b>313,08</b>

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7706 Reducing coupling with E type gasket



### Painted element

Dimension	l1/l2	z1	z2	Code	Packing	Price EUR
60.3 (DN 50) × 48.4 (DN 40)	24	0.8	0.8	2457046000	16	34,36
76.1 (DN 65) × 60.3 (DN 50)	24	0.8	0.8	2457046001	12	53,79
88.9 (DN 80) × 60.3 (DN 50)	24	0.8	0.8	2457046002	9	51,40
88.9 (DN 80) × 76.1 (DN 65)	24	0.8	0.8	2457046003	9	53,79
114.3 (DN 100) × 60.3 (DN 50)	25	1.6	0.8	2457046004	5	82,22
114.3 (DN 100) × 76.1 (DN 65)	25	1.6	0.8	2457046005	5	92,51
114.3 (DN 100) × 88.9 (DN 80)	26	1.6	0.8	2457046006	10	68,77
139.7 (DN 125) × 114.3 (DN 100)	26	1.6	1.6	2457046007	4	97,71
168.3 (DN 150) × 114.3 (DN 100)	26	1.6	1.6	2457046008	3	140,73
219.1 (DN 200) × 168.3 (DN 150)	27	1.6	1.6	2457046009	3	211,21

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

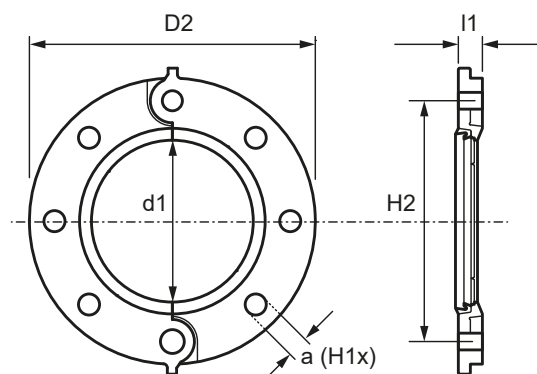
### Galvanized element

Dimension	l1/l2	z1	z2	Code	Packing	Price EUR
60.3 (DN 50) × 48.4 (DN 40)	24	0.8	0.8	2455046000	16	42,08
76.1 (DN 65) × 60.3 (DN 50)	24	0.8	0.8	2455046001	12	69,38
88.9 (DN 80) × 60.3 (DN 50)	24	0.8	0.8	2455046002	9	66,38
88.9 (DN 80) × 76.1 (DN 65)	24	0.8	0.8	2455046003	9	69,38
114.3 (DN 100) × 60.3 (DN 50)	25	1.6	0.8	2455046004	5	105,14
114.3 (DN 100) × 76.1 (DN 65)	25	1.6	0.8	2455046005	5	118,56
114.3 (DN 100) × 88.9 (DN 80)	26	1.6	0.8	2455046006	10	90,42
139.7 (DN 125) × 114.3 (DN 100)	26	1.6	1.6	2455046007	4	130,44
168.3 (DN 150) × 114.3 (DN 100)	26	1.6	1.6	2455046008	3	179,84
219.1 (DN 200) × 168.3 (DN 150)	27	1.6	1.6	2455046009	3	271,04

Design data on axial movement and angular deflection are presented in the table on page 39.  
The maximum values of the permissible working pressure are presented in chapter 2.5

## 7041 Flange adapter

PN10/PN16 (DN50-300 hinge)



### Painted element

Dimension	PN	I1	D2	H1	H2	a	Code	Packing	Price EUR
60.3 (DN50)	10/16	22	165	4	125	M16	2457091000	1	95,56
76.1 (DN65)	10/16	22	185	4	145	M16	2457091001	1	105,33
88.9 (DN80)	10/16	24	200	8	160	M16	2457091002	1	83,85
114.3 (DN100)	10/16	24	220	8	180	M16	2457091003	1	85,67
139.7 (DN125)	10/16	25	250	8	210	M16	2457091004	1	108,81
168.3 (DN150)	10/16	24	285	8	240	M20	2457091005	1	108,81
219.1 (DN200)	16	29	340	12	295	M20	2457091006	1	172,83
323.9 (DN300)	16	32	460	12	410	M24	2457091007	1	423,72

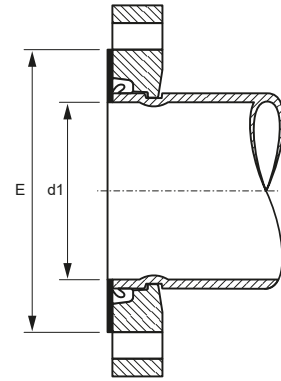
The maximum values of the permissible working pressure are presented in chapter 2.5

### Galvanized element

Dimension	PN	I1	D2	H1	H2	a	Code	Packing	Price EUR
60.3 (DN50)	10/16	22	165	4	125	M16	2455091000	1	111,47
76.1 (DN65)	10/16	22	185	4	145	M16	2455091001	1	125,69
88.9 (DN80)	10/16	24	200	8	160	M16	2455091002	1	109,16
114.3 (DN100)	10/16	24	220	8	180	M16	2455091003	1	112,97
139.7 (DN125)	10/16	25	250	8	210	M16	2455091004	1	141,28
168.3 (DN150)	10/16	24	285	8	240	M20	2455091005	1	141,28
219.1 (DN200)	16	29	340	12	295	M20	2455091006	1	227,34
323.9 (DN300)	16	32	460	12	410	M24	2455091007	1	On request

The maximum values of the permissible working pressure are presented in chapter 2.5

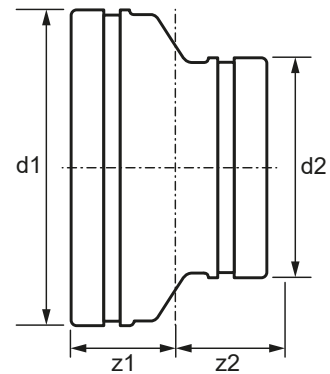
## 49 Flat flange gasket galvanized steel



### Galvanized element

Dimension	E	d1	Code	Packing	Price EUR
DN50	95	54	2409237000	140	11,96
DN65	118	67	2409237001	110	15,22
DN80	130	81	2409237002	80	17,23
DN100	158	105	2409237003	70	20,70
DN125	188	128	2409237004	60	24,68
DN150	216	155	2409237005	40	29,51
DN200	271	205	2409237006	35	39,71
DN250	326	258	2409237007	10	55,02
DN300	381	305	2409237008	1	68,28

## 7150 Axial reduction 2 x groove



### Painted element

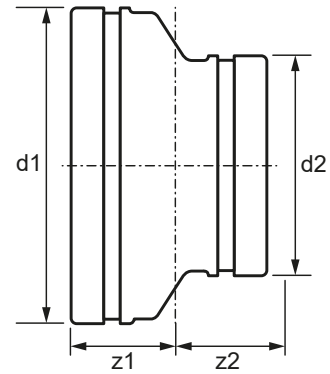
Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42.4 (DN 32) × 33.7 (DN 25)	32	32	2457305000	90	36,12
48.3 (DN 40) × 33.7 (DN 25)	32	32	2457305001	80	35,22
48.3 (DN 40) × 42.4 (DN 32)	32	32	2457305002	50	35,22
60.3 (DN 50) × 33.7 (DN 25)	32	32	2457305003	50	42,02
60.3 (DN 50) × 42.4 (DN 32)	32	32	2457305004	50	35,22
60.3 (DN 50) × 48.3 (DN 40)	32	32	2457305005	36	35,22
76.1 (DN 65) × 42.4 (DN 32)	32	32	2457305006	28	64,96
76.1 (DN 65) × 48.3 (DN 40)	32	32	2457305008	28	42,79
76.1 (DN 65) × 60.3 (DN 50)	32	32	2457305007	24	42,79
88.9 (DN 80) × 42.4 (DN 32)	32	32	2457305009	24	44,75
88.9 (DN 80) × 48.3 (DN 40)	32	32	2457305010	24	44,75
88.9 (DN 80) × 60.3 (DN 50)	32	32	2457305011	24	40,65
88.9 (DN 80) × 76.1 (DN 65)	32	32	2457305012	18	40,65
114.3 (DN 100) × 48.3 (DN 40)	38	38	2457305013	12	43,99
114.3 (DN 100) × 60.3 (DN 50)	38	38	2457305014	24	43,99
114.3 (DN 100) × 76.1 (DN 65)	38	38	2457305015	20	40,76
114.3 (DN 100) × 88.9 (DN 80)	38	38	2457305016	20	40,76
139.7 (DN 125) × 88.9 (DN 80)	45	45	2457305017	12	105,15
139.7 (DN 125) × 114.3 (DN 100)	45	45	2457305018	12	105,15
168.3 (DN 150) × 60.3 (DN 50)	51	51	2457305019	8	100,02
168.3 (DN 150) × 88.9 (DN 80)	51	51	2457305020	8	100,02
168.3 (DN 150) × 114.3 (DN 100)	51	51	2457305021	8	92,62
168.3 (DN 150) × 139.7 (DN 125)	51	51	2457305022	8	92,62
219.1 (DN 200) × 114.3 (DN 100)	64	64	2457305023	3	220,21
219.1 (DN 200) × 168.3 (DN 150)	64	64	2457305024	3	203,89
273.0 (DN 250) × 114.3 (DN 100)	76	76	2457305025	1	366,03
273.0 (DN 250) × 168.3 (DN 150)	76	76	2457305026	1	338,92
273.0 (DN 250) × 219.1 (DN 200)	76	76	2457305027	1	338,92
323.9 (DN 300) × 168.3 (DN 150)	79	79	2457305028	1	474,09
323.9 (DN 300) × 219.1 (DN 200)	79	79	2457305029	1	438,97
323.9 (DN 300) × 273.0 (DN 250)	79	79	2457305030	1	438,97

Availability of goods according to individual arrangements. Discount group S.



## 7150 Axial reduction

2 x groove



### Galvanized element

Dimension	l1/l2	z1/z2	Code	Packing	Price EUR
42.4 (DN 32) × 33.7 (DN 25)	32	32	2455305002	90	40,12
48.3 (DN 40) × 33.7 (DN 25)	32	32	2455305003	80	40,12
48.3 (DN 40) × 42.4 (DN 32)	32	32	2455305000	50	On request
60.3 (DN 50) × 33.7 (DN 25)	32	32	2455305004	50	52,68
60.3 (DN 50) × 42.4 (DN 32)	32	32	2455305005	50	43,90
60.3 (DN 50) × 48.3 (DN 40)	32	32	2455305001	36	On request
76.1 (DN 65) × 42.4 (DN 32)	32	32	2455305006	28	75,50
76.1 (DN 65) × 48.3 (DN 40)	32	32	2455305007	28	46,23
76.1 (DN 65) × 60.3 (DN 50)	32	32	2455305008	24	46,23
88.9 (DN 80) × 48.3 (DN 40)	32	32	2455305009	24	55,36
88.9 (DN 80) × 60.3 (DN 50)	32	32	2455305010	24	51,25
88.9 (DN 80) × 76.1 (DN 65)	32	32	2455305011	18	51,25
114.3 (DN 100) × 60.3 (DN 50)	38	38	2455305012	24	54,80
114.3 (DN 100) × 76.1 (DN 65)	38	38	2455305013	20	48,30
114.3 (DN 100) × 88.9 (DN 80)	38	38	2455305014	20	48,30
139.7 (DN 125) × 88.9 (DN 80)	45	45	2455305015	12	108,48
139.7 (DN 125) × 114.3 (DN 100)	45	45	2455305016	12	108,48
168.3 (DN 150) × 60.3 (DN 50)	51	51	2455305017	8	110,21
168.3 (DN 150) × 76.1 (DN 65)	51	51	2455305018	8	110,21
168.3 (DN 150) × 88.9 (DN 80)	51	51	2455305019	8	110,21
168.3 (DN 150) × 114.3 (DN 100)	51	51	2455305020	8	102,62
168.3 (DN 150) × 139.7 (DN 125)	51	51	2455305021	8	102,62
219.1 (DN 200) × 114.3 (DN 100)	64	64	2455305022	3	249,84
219.1 (DN 200) × 168.3 (DN 150)	64	64	2455305023	3	235,70
273.0 (DN 250) × 114.3 (DN 100)	76	76	2455305024	1	434,55
273.0 (DN 250) × 168.3 (DN 150)	76	76	2455305025	1	409,95
273.0 (DN 250) × 219.1 (DN 200)	76	76	2455305026	1	409,95
323.9 (DN 300) × 219.1 (DN 200)	79	79	2455305027	1	483,17
323.9 (DN 300) × 273.0 (DN 250)	79	79	2455305028	1	483,17

Availability of goods according to individual arrangements. Discount group S.

## G223 Grease



























Content	Description	Code	Packing	Price EUR
450 g	Standard grease	2400183000	24	25,84
900 g	Standard grease	2400183001	9	50,41

Availability of goods according to individual arrangements. Discount group S.



# SYSTEM **KAN-therm**

Optimal, complete multipurpose installation system consisting of state of the art, mutually complementary technical solutions for pipe water distribution installations, heating installations, as well as technological and fire extinguishing installations.

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