Install your **future**

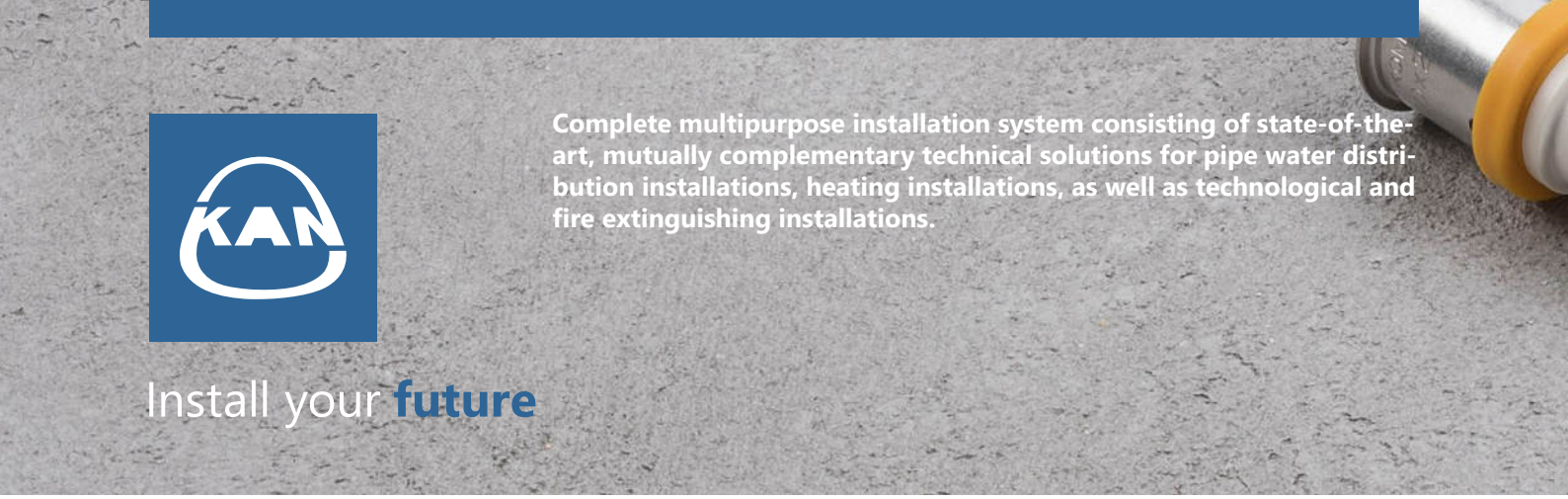
SYSTEM **KAN-therm**

Catalogue

SPECIALIZED INSTALLATIONS

EN 23/12

www.kan-therm.com



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.

Install your **future**

COLOUR SYSTEM						
						
SYSTEM NAME	ultraLINE	ultraPRESS	PP	Steel	Inox	Copper
DIAMETER RANGE [mm]	14-32	16-63	16-110	12-108	12-168,3	12-108
INSTALLATIONS TYPE						
TAP WATER	●	●	●		●	●
HEATING	●	●	●	●	●	●
TECHNOLOGICAL HEAT	○	○	○	○	○	
WATER STEAM					○	
SOLAR				○	○	
COOLING	○	○	○	○	●	●
COMPRESSED AIR	○	○	○	○	○	○
TECHNICAL GASES	○	○	○	○	○	○
FLAMMABLE GAS						
TECHNICAL OILS				○	○	○
INDUSTRIAL				○	○	
BALNEOLOGICAL			○		○	
SPRINKLER FIRE-FIGHTING						
HYDRANT FIRE-FIGHTING						
UNDERFLOOR HEATING AND COOLING	●	●				
WALL HEATING AND COOLING	●	●				
CEILING HEATING AND COOLING	●	●				
EXTERNAL SURFACES HEATING AND COOLING	●	●				

In untypical cases, it is necessary to check the conditions of using KAN-therm parts with technical and information materials or opinions of the KAN Technical Department. Use the form – Inquiry about the possibility to use KAN-therm elements – to send basic parameters of an installation operation. Based on the data sent, the Technical Department will assess he fitness of the system to the particular installation. The form can be found on the website. Scan the QR code to fill in the electronic form quickly.

 Surface heating and cooling	 Cabinets, manifolds	 Groove	 Copper Gas	 Sprinkler Steel	 Sprinkler Inox	 PowerPress
12-25	–	DN25-DN300	15-54	22-108	22-108	½"-2"
	●	○			○	
●	●	○				○
	○	○				○
○	○	○				○
		○	○	○	○	○
			○	○	○	
			●			
		○				
		○		●	●	○
		○		●	●	
●	●					
●	●					
●	●					
●	●					

● standard scope of application

○ possible use – the conditions to be confirmed with the KAN Technical Department

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SYSTEM **KAN-therm**

Sprinkler

Fire safety
for years to come

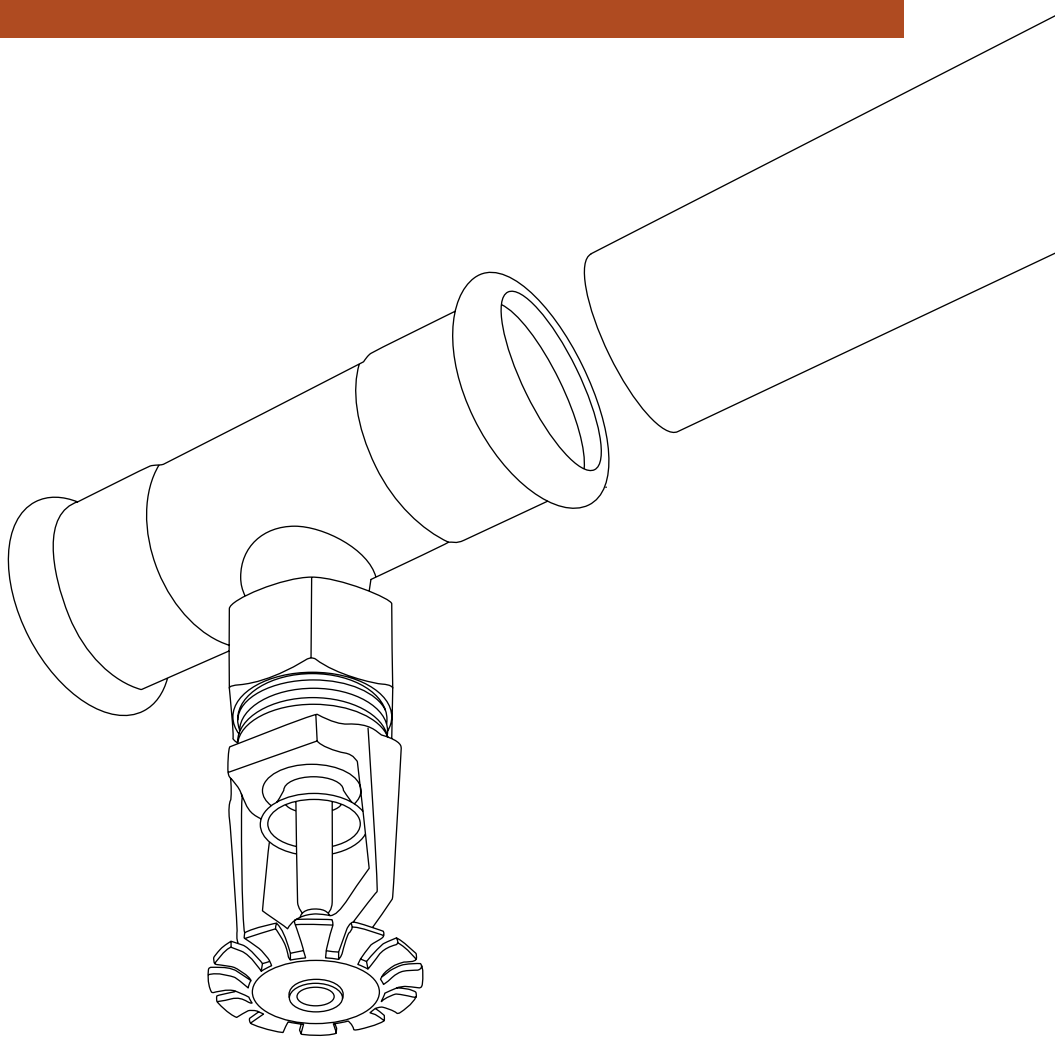
EN 23/12

∅ **22-108 mm**

System **KAN-therm** Sprinkler

System **KAN-therm** Steel Sprinkler

System **KAN-therm** Inox Sprinkler



System **KAN-therm** Sprinkler

KAN-therm Sprinkler is a complete fire extinguishing installation system consisting of pipes and fittings made of zinc-plated carbon steel (Steel Sprinkler) or stainless steel (Inox Sprinkler) in 22 – 108 mm (DN20 – DN100) diameter range.

Particular system elements are joined using the state of the art, professional and, most of all, safe "Press" technique based on pressing fittings on the pipe using dedicated tools.

The KAN-therm Sprinkler system is designed for constructing indoor-use, fire fighting hydrant and sprinkler systems. Both material versions are verified and certified according to VdS guidelines for application in stationary sprinkler systems after emergency valves, within rooms characterized by low or medium fire hazard (LH, OH1, OH2, OH3, and to OH4 in respect to exhibition halls, cinemas, theatres and concert halls, and also approved by the CNBOP for use in internal hydrant systems).

KAN-therm Sprinkler systems are ideal for constructing new and replacing old, traditional fire extinguishing sprinkler installations.

1 Introduction

As fire safety in newly created and renovated objects, as well as the pursue to minimize installation construction time become a big concern, innovative systems like KAN-therm Sprinkler appear as an obvious choice.

KAN-therm Sprinkler features

There are many systems on the constructions market using conventional solutions, such as threading, welding and soldering. The advantages brought by applying „Press" coupling technique, as compared to the above mentioned, have been already appreciated long time ago.

It is the aesthetics of systems constructed using KAN-therm Sprinkler that is frequently the main reason for which architects and designers choose our products for constructing fire extinguishing mechanisms.

All elements of the system are manufactured in a modern plant, which allows us to guarantee unshaken quality and availability of our products. Use of the advanced technology of laser welding in the production process assures an absolute control of all elements. Fully automated tightness testing is an integral part of the laser welding process. All straight couplings with screwed ending are produced from one element, thanks to which the couplings' dimensions are limited to the minimum, just like the risk of occurrence of leaks. Thanks to an extraordinarily smooth surface of pipes and fittings, the obtained flow characteristics allow for a significantly increased efficiency, as compared to conventional solutions. The high quality of KAN-therm Sprinkler system has been confirmed by national and international certifying bodies.

Reliability

In KAN-therm Sprinkler systems, the quality of joint mainly depends on the used tool. This minimizes risk of human-caused assembly faults.

To limit the risk of occurrence of human-caused assembly faults, all KAN-therm Sprinkler System fittings feature LBP (Leak Before Press) function, detecting non-pressed joints. For fittings of dimensions up to DN50, inclusive, the LBP functionality is assured by specific structure of the sealing O-Ring; for elements of dimensions above DN50, the fitting's stub pipe has been ovalized. The LBP function allows for occurrence of a distinct leakage from the pipe-fitting joint, if the joint has not been pressed. This makes it easy to quickly state which connections have not been pressed during installation, and perform the necessary repairs. After pressing the fitting on the pipe, tightness is guaranteed.

2 KAN-therm Sprinkler system advantages

- quick and secure installation and assembly, without the necessity of welding or screwing pipes (risk of working with open fire eliminated),
- wide range of pipe and fitting diameters - from 22 mm to 108 mm,
- high aesthetics of the performed installations, without the necessity of painting,
- low specific weight of pipes and fittings,
- optimized fitting dimensions assure easier construction of the installation.

The above features cause KAN-therm Sprinkler system to be easy and comfortable in assembly.

KAN-therm Sprinkler System assembly takes place without use of open fire (as opposed to welding or soldering), or applying other heavy and potentially dangerous tools.

Thanks to the minimal requirements, KAN-therm Sprinkler system is a perfect solution for modernizations or renovations. Additionally, the small weight of KAN-therm Sprinkler pipes and fittings and their precision of making contribute to improvement of conditions and increase of work comfort.

Short KAN-therm Sprinkler system assembly time, as compared to conventional assembly systems, is a very important factor, decreasing costs related with investment execution.

We are convinced that the presented advantages encourage you to try KAN-therm Sprinkler system when designing and constructing sprinkler systems.

3 KAN-therm Sprinkler system application

KAN-therm Sprinkler system may be used in the construction of stationary fire protection installations, both hydrants and sprinklers.

3.1 Indoor hydrant installations

KAN-therm Sprinkler System in indoor hydrant systems is certified by National Technical Assessment issued by Polish CNBOP.

KAN-therm Steel Sprinkler is suitable for performing only indoor, constantly filled with water, non-flow (until fire extinguishing) hydrant installations which are totally separated or single-side connected to potable water systems.

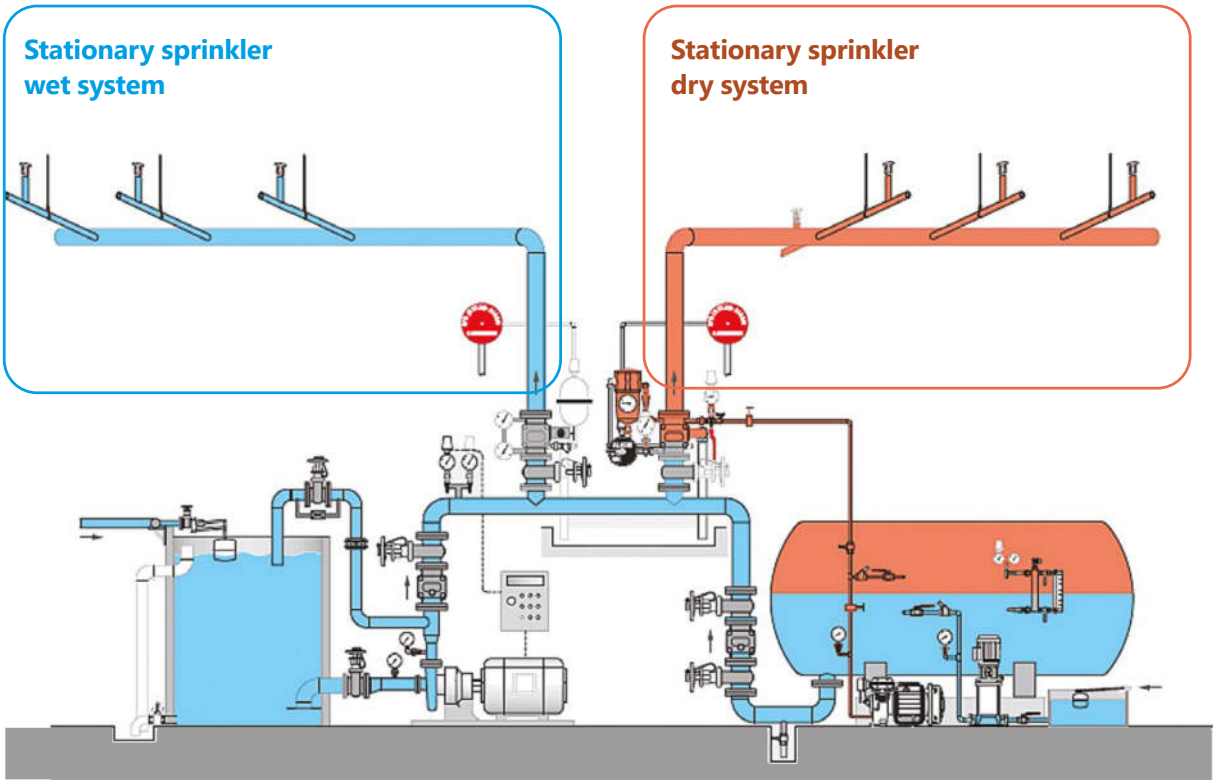
KAN-therm Inox Sprinkler is suitable for performing indoor dry and constantly filled with water hydrant installations. It may be combined with or be a part of potable water systems.

3.2 Sprinkler installations

Stationary sprinkler installations are built-in fire extinguishing and prevention systems that independently detect and report fire, and automatically initiate the extinguishing process.

KAN-therm Sprinkler system assembly in sprinkler systems should be performed according to the applicable guidelines (e.g. VdS-CEA 4001 or PN-EN 12845). Depending on the applied material (stainless steel or galvanized steel), the system may be used with water (wet) or dry stationary sprinkler systems.

KAN-therm Steel Sprinkler System is designed for use with only wet sprinkler systems, whereas KAN-therm Inox Sprinkler System may be applied with wet, as well as dry stationary sprinkler systems.



KAN-therm Steel Sprinkler and KAN-therm Inox Sprinkler systems have been tested and certified according to the VdS guidelines for application in stationary sprinkler installations equipped with emergency valve.

The following guidelines refer to all products comprising KAN-therm Sprinkler system, operating at working pressure stated in the below table:

Tab. 1. Operating pressure in KAN-therm Sprinkler System

DN	External Ø [mm]	Sprinkler system	
		Steel Sprinkler - wet [bar]	Inox Sprinkler - wet and dry [bar]
20	22	16	16
25	28	16	16
32	35	16	16
40	42	16	16
50	54	16	16
65	76,1	12,5	16
80	88,9	10	12,5
100	108	10	10

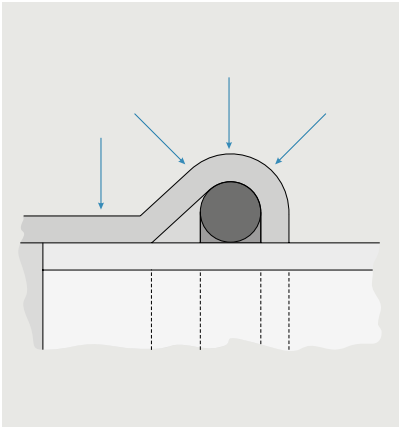
Application is limited exclusively to KAN-therm Sprinkler system original elements. Connecting elements other than the original (not included in the KAN-therm Sprinkler system offer) is permissible only on the condition of using detachable metal connections (threaded, grooved or flanged).

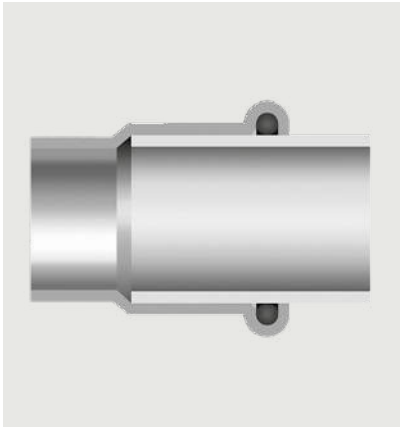
Assembly and installation of KAN-therm Sprinkler System may be performed only by qualified technical personnel, having formal qualifications for performing sprinkler system-related works. Requirements regarding assembly of stationary sprinkler installations are included in VdS-CEA 4001 or PN-EN 12845 guidelines. The company performing installation must assure conformity with the above guidelines.

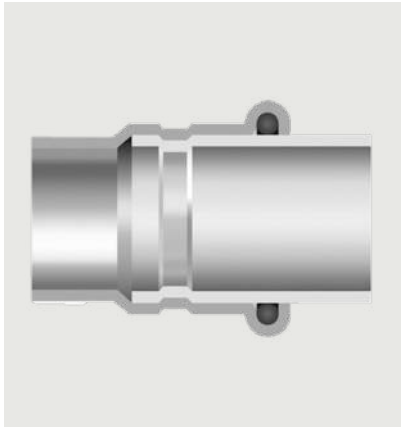
4 “Press” assembly technique

The „Press” coupling technique consists of pressing fittings on the pipe, using specialist power tools.

Tightness of the connections is assured by special O-Ring seals made of EPDM rubber resistant to high temperatures, and „M” type clamping system (O-Ring clamped in three spots). This guarantees long and reliable operation.







1. „M” type clamp system
2. Joint before pressing
3. Joint after pressing

4.1 LBP O-Ring seal

KAN-therm Sprinkler system pressed fittings are equipped with EPDM O-Rings of the following operating parameters:

Material	EPDM LBP (DN20 – DN50)	EPDM (DN65 – DN100)
Colour	black	black
Layer	without silicone, Teflon-based	without silicone, Teflon-based
Operating temperature	-35 °C to +135 °C	-35 °C to +135 °C
Max. temperature (short term)	150 °C	150 °C
Max. operating pressure	16 bar	up to 16 bar (depending on diameter - check application conditions for a given KAN-therm Sprinkler system)
Application range	Wet and dry sprinkler systems	Wet and dry sprinkler systems

Thanks to special slots of the LBP O-Ring body, optimum control of the system during pressure test is assured. The nonpressed joints are easy to locate, as they are not water tight. When pressing, the O-Ring changes its shape, adhering entirely to pipe and fitting surface, assuring reliable and tight joint.

KAN-therm Sprinkler system also offers internal threaded elements that are used for connecting threaded elements from outside of the system (not comprising KAN-therm Sprinkler system), such as sprinklers, valves or other fixtures. Internal and external threads are manufactured in compliance with DIN 2999/ ISO 7/1 (taper thread). It is recommended to perform the threaded connection before pressing the fitting, not to stress the pressed joint. To tighten the joint, do not apply Teflon tapes or any other compounds containing chlorides.

5 KAN-therm Sprinkler system tools

Pressing of the KAN-therm Sprinkler fittings should be performed using pressing units and press jaws („M" and „HP" profile depending on the diameter - and type of fire-fighting installation), delivered by KAN-therm Sprinkler system.

Depending on the type of installation, i.e. hydrant or sprinkler, as well as the diameter of the pipeline, it is possible to use of different tool configurations.

In order to select optimal set of tools, please follow below chart:

Tab. 2. Selection of tools table: System KAN-therm Steel Sprinkler & Inox Sprinkler

Producer	Press machine		Diameter [mm]	Jaws/press collars		Adapter		Fire protection systems			
								Hydrant installations		Sprinkler installations	
	Desc.	Code		Desc.	Code	Desc.	Code	Steel Sprinkler	Inox Sprinkler	Steel Sprinkler	Inox Sprinkler
NOVOPRESS	ACO203XL	1948267181	22	[J]M	1948267139	-	-	+	+	+	+
			28	[J]M	1948267141	-	-	+	+	+	+
			35	[J]M	1948267143	-	-	+	+	-	-
			35	HP Snap ON	1948267124	ZB203	1948267000	+	+	+	+
			42	M Snap ON	1948267119			+	+	-	-
			42	HP Snap ON	1948267126			+	+	+	+
			54	M Snap ON	1948267121			+	+	-	-
			54	HP Snap ON	1948267128			+	+	+	+
			76,1	M Snap ON	1948267145	ZB221	1948267005	+	+	-	-
			88,9	M Snap ON	1948267044			+	+	-	-
			108	M Snap ON	1948267038	ZB221 ZB222	1948267005 1948267007	+	+	-	-
	EFP203	1948267210	22	[J]M	1948267139	-	-	+	+	-	-
			28	[J]M	1948267141	-	-	+	+	-	-
			35	[J]M	1948267143	-	-	+	+	-	-
			35	HP Snap ON	1948267124	ZB203	1948267000	+	+	-	-
			42	M Snap ON	1948267119			+	+	-	-
			42	HP Snap ON	1948267126			+	+	-	-
			54	M Snap ON	1948267121			+	+	-	-
			54	HP Snap ON	1948267128			+	+	-	-
	ACO102* ACO103	1948055007 1948055008	22	[J]M	1942121002	-	-	+	+	-	-
			28	[J]M	1948267097	-	-	+	+	-	-
			35	[J]M	1942121004	-	-	+	+	-	-
	ECO301*	1948267163*	22	[J]M	1944267008	-	-	+	+	+	+
			28	[J]M	1944267011	-	-	+	+	+	+
			35	HP Snap ON	1948267124	ZB303	1948267166	+	+	+	+
			42	HP Snap ON	1948267126			+	+	+	+
			54	HP Snap ON	1948267128			+	+	+	+
	ACO401* ACO403	1948267151 1948267209	76,1	HP	1948267100	-	-	+	+	+	+
			88,9	HP	1948267102	-	-	+	+	+	+
			108	HP	1948267098	-	-	+	+	+	+
KLAUKE	UAP100*	1948267159*	76,1	KSP3	1948267080	-	-	+	+	+	+
			88,9	KSP3	1948267082	-	-	+	+	+	+
			108	KSP3	1948267074	-	-	+	+	+	+
	KAN-therm Mini	1936055008	22	[J]M	1936267278	-	-	+	+	-	-
			28	[J]M	1936267282	-	-	+	+	-	-

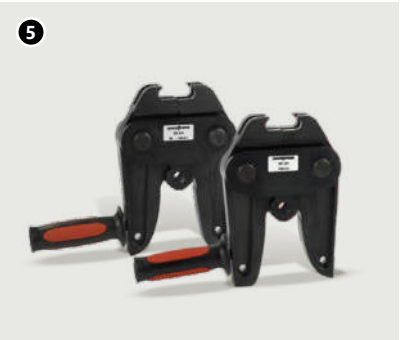
[J] - two segment jaw, other elements are press collars and may need additional adapter to combine with press machines
* the tool is not available in the KAN-therm offer

Tab. 2. Selection of tools table: System KAN-therm Steel Sprinkler & Inox Sprinkler

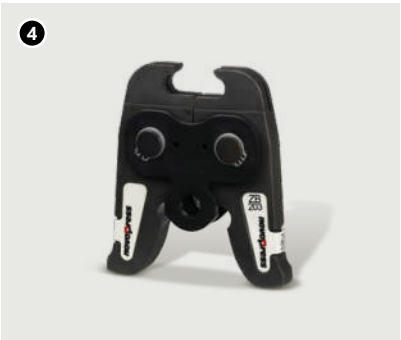
Producer	Press machine		Diameter [mm]	Jaws/press collars		Adapter		Fire protection systems			
								Hydrant installations		Sprinkler installations	
	Desc.	Code		Desc.	Code	Desc.	Code	Steel Sprinkler	Inox Sprinkler	Steel Sprinkler	Inox Sprinkler
REMS	Power-Press SE Akku Press Power-Press ACC	1936267160 1942267002 1936267152	22	[J]M	1948267056	-	-	+	+	-	-
			28	[J]M	1948267061	-	-	+	+	-	-
			35	[J]M	1948267065	-	-	+	+	-	-
			42	[J]M	1948267067	-	-	+	+	-	-
			54	[J]M	1948267069	-	-	+	+	-	-
KAN-therm	AC 3000 DC 4000	1936267239 1936267238	22	[J]M	1936267251	-	-	+	+	-	-
			28	[J]M	1936267252	-	-	+	+	-	-
			35	[J]M	1936267253	-	-	+	+	-	-
			42	M	1936267283	ZBS1	1936267285	+	+	-	-
			54	M	1936267284	ZBS1	1936267285	+	+	-	-

[J] - two segment jaw, other elements are press collars and may need additional adapter to combine with press machines
* the tool is not available in the KAN-therm offer

NOVOPRESS tools:



1. Battery-powered press ACO203XL
2. PB2 M22–35 mm jaws
3. HP/M 35–108 mm Snap On collars
4. ZB203 adapter
5. ZB221, ZB222 adapters



1. EFP203 electric press
2. PB2 M22–35 mm jaws
3. HP/M 35–54 mm Snap On collars
4. ZB203 adapter

1. Battery-powered press ACO 102*
2. Battery-powered press ACO 103
3. M22–35 mm jaws
* the tool is not available in the KAN-therm offer

1. ECO 301* electric press
2. PB3 M22–28 mm jaws
3. HP 35–54 mm Snap On collars
4. ZB303* adapter
* the tool is not available in the KAN-therm offer.

1. Battery-powered press ACO401*
2. Battery-powered press ACO403
3. HP 76,1–108 mm collars
* the tool is not available in the KAN-therm offer

KLAUKE tools:

1. Battery-powered press KAN-therm Mini
2. SBM M22–28 mm jaws

1. Battery-powered press UAP100*
2. 76,1–108 mm* jaws
* the tool is not available in the KAN-therm offer

REMS tools:

1. Power-Press ACC electric press
2. Battery-powered press Akku-Press
3. Power-Press SE electric press
4. M22–35 mm jaws
5. M42–54 mm jaws

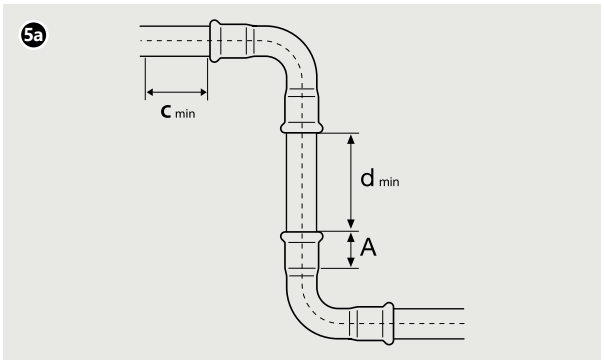
KAN-therm tools:

1. KAN-therm AC 3000 electric press
2. KAN-therm Battery-powered press DC 4000
3. M22–35 mm jaws
4. M42–54 mm collars
5. ZBS1 42–54 mm adapter

6 Assembly guidelines

1. Cutting pipes
Pipes must be cut perpendicularly to the axis, using pipe cutter. Cut pipes perpendicularly to the axis using a roll pipe cutter (breaking incompletely cut pipe sections is prohibited). You may also use other tools, such as hand saws and electric saws designed for cutting carbon or stainless steel, provided that the cut is made perpendicularly and the edges of the pipe are not chipped. Do not use torches or cutting discs for pipe cutting, which can generate significant amounts of heat, angle grinders, etc.
2. Bevelling
Use a manual chamfer (for 76,1 – 108 diameters – a semi-round steel file) to chamfer the internal and external edge of the pipe, removing all chips, which could potentially damage the O-Ring during assembly.

3. Control
Prior to assembly, visually inspect the presence and condition of the O-Ring. Check, if there are no chips or metal shavings or other pollutions on the pipe and the fitting, which could damage the seal during installation. Make sure if the distance between neighbouring fittings is above the permissible d_{min} (**Tab. 3 on page 20**, Fig. 5a).
4. Installing pipe and fitting
Before pressing, insert the pipe into the fitting up to the required depth (slight rotation permissible). Do not use lubricants, greases or fats when mounting the pipe (water or a soap solution is permissible – recommended for pressure tests conducted with compressed air).



5. Marking the insertion depth

To achieve sufficient joint strength, maintain correct insertion depth A (**Tab. 3 on page 20**, Rys. 5a). In the case of simultaneous assembly of many joints (sliding the pipes into the fittings) the pipe insertion depth in the fitting must be checked before pressing each subsequent joint. It is sufficient to check whether the pipe is inserted all the way.

In order to ease the identification of pipe insertion depth in the fitting the simple marking technique can be applied (not required in construction conditions).

It consist of inserting the pipe into the fitting up to the limit and making a mark on pipe with a marker, right up to the edge of the fitting socket. After pressing, the marking must be still visible but as close as possible to the fitting.

Special templates are also used for determining the insertion depth, without necessity of matching with fitting.

5a.

A – pipe insert depth

d_{min} – minimum distance between fittings in order to ensure correct pressing

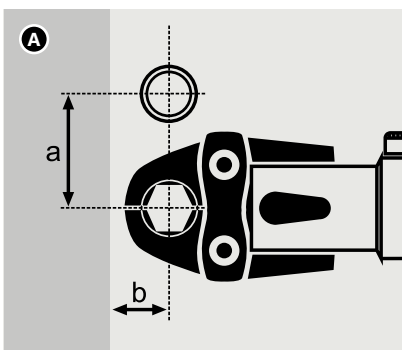
c_{min} – minimum distance of fitting from the wall

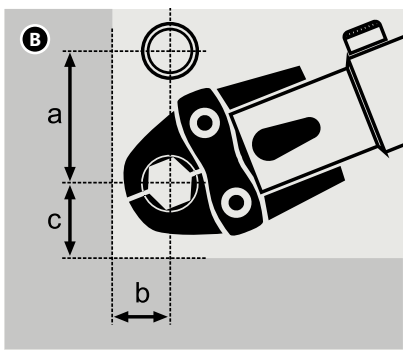
Note: Insertion depth marking templates are not part of the basic system offer and may be available depending on the specific market where the product is sold.

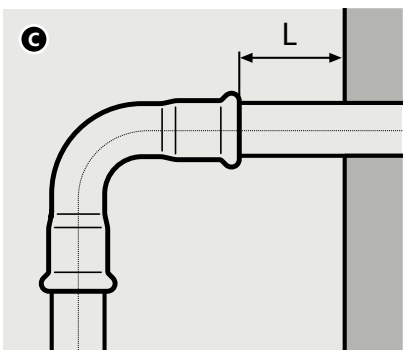
Tab. 3. Pipe insert depth and minimum installation spaces

DN	Ø external	Insert depth	Minimum distance between two pressed joints	Minimum pipe length
	[mm × mm]	A [mm]	d_{min} [mm]	d_{min}+2×A [mm]
20	22×1,2	21	10	52
25	28×1,2	23/46*	10	62
32	35×1,5	26/52*	10	80
40	42×1,5	30/60*	20	90
50	54×1,5	35/70*	20	90
65	76,1×2,0	55/54*	40	165
80	88,9×2,0	63/64*	50	186
100	108×2,0	77/74*	60	234

* applies to Groove type couplings







Tab. 4. Installation distances

DN	Ø external	Fig. A		Fig. B			Fig. C
	[mm × mm]	a	b	a	b	c	L - Pipe stand-off from wall distance [mm]
20	22×1,2	65	25	80	31	35	40
25	28×1,2	75	25	80	31	35	60
32*	35×1,5	115	75	115	75	75	70
40*	42×1,5	120	75	115	75	75	70
50*	54×1,5	200	85	120	85	85	70
65*	76,1×2,0	250	170	200	170	190	80
80*	88,9×2,0	250	170	250	170	210	90
100*	108×2,0	250	170	250	170	210	100

* applies to press collars

6. Pressing
Before starting any works, verify the proper operation of your tools. Use press tools and jaws recommended by KAN. Select the size of your press jaw basing on the diameter of the joint. Place the jaws on the joint so that its notch embraces the protruding part of the fitting (the space where the O-Ring is located). After starting the press, the process takes place automatically and cannot be stopped. If, for any reason, the process of pressing is stopped, the joint needs to be disassembled (cut off) and a new one needs to be executed. If the installer has press tools and jaws not supplied by the KAN-therm, the possibility of using them should be consulted with KAN's Technical Support Department.

Pipe bending (for diameters up to Ø28)

If needed, „cold" bending may be performed, on the condition of maintaining minimum bend radius:

$$R_{min} \geq 3,5 \times D$$

For greater diameters use available system bends and elbows.

For pipes bending, use manual, hydraulic or electrical bender. The pipes should not be „hot" bent.

6.1 Threaded connections

KAN-therm Sprinkler system also includes external and internal thread elements, which serve the purpose of connecting other threaded elements of the system (such as sprinklers, valves or other). External and internal threads are manufactured according to DIN 2999 / ISO 7/1 (taper thread). It is recommended to perform threaded connection before pressing the fitting, not to stress the pressed joint.

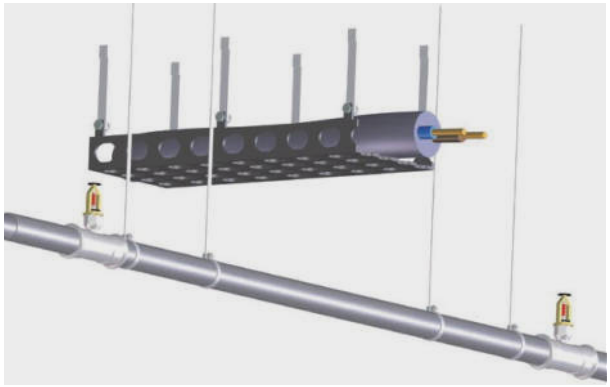
7 General information regarding system installation

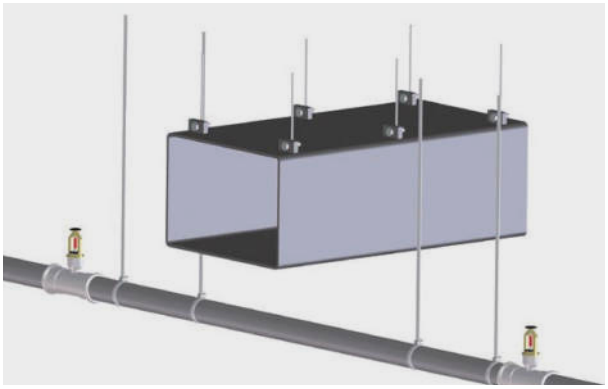
7.1 Fitting pipelines

While installing KAN-therm Sprinkler system, care must be taken not to overstress the pipelines network, while standby, as well as during an emergency. A/C channels or cable racks should not be placed above the sprinkler pipe.

In case if design or structural reasons make it impossible to avoid the sprinkler pipe crossing other system elements, such as A/C channels or cable racks, the sprinkler system should be secured from over stressing, using additional, certified fixture elements.

The required space between fixtures is provided in the table. Fixture distance from pipe ending must not exceed 90 cm.





DN	Pipe dimensions Ø [mm] external	Max clamp spacing [m]	
		DIN 1988–2	CEA 4001 (VdS)
20	22	2	2
25	28	2,25	2
32	35	2,75	2
40	42	3	2
50	54	3,5	2
65	76,1	4,25	2
80	88,9	4,75	2
100	108	5	2

KAN-therm Sprinkler maximal clamp distances apply only, if there are no other installations (pipelines, channels) above the sprinkler system pipe.

There should be at least one clamp within at least 0,9 m from each joint. Each pipe section should be held by at least one clamp. Clamps and supports must be designed and constructed in conformity with EN 12845.

7.2 Pipeline flushing

After performing the installation, the entire sprinkler system must be thoroughly flushed with treated water. The flushing is necessary for assuring proper operation of the sprinkler system and protecting it from contamination. After flushing, the installation should be emptied. After removing all materials required for flushing, sprinklers should be installed.

Filling and deaerating pipe networks

After flushing the pipelines, they must be filled with filtered drinking water and completely deareated. After rinsing and draining the installation performed using KAN-therm Steel Sprinkler it should be immediately filled with filtered water again in order to protect against possible corrosion.

8 Tightness test

Pipelines of the sprinkler system must be pressure tested, in conformity with applicable guidelines, such as CEA 4001, no. 17.1.1. (VdS). The test should last at least two hours at a pressure (measured at emergency valves) being a 1,5 multiple of admissible operating pressure, but not smaller than 15 bar.

Pressure decrease, e.g. due to meteorological factors, must be monitored at 24h basis.

Dry sprinkler installations must be pneumatically tested for pressure not smaller than 2,5 bar for a period of at least 24 hours. Each leak that causes a decrease of pressure greater than 0,15 bar for a period of at least 24 h, must be sealed. All detected defects, such as permanent deformations, breaks or leaks must be fixed and be tested again. During pneumatic test all leaks may be localized acoustically or utilizing foaming agents approved for contact with EPDM gaskets.

Hydrant installations should be pressure tested identically like potable water systems:

- test pressure = 1,5x admissible operating pressure but not less than 10 bar.

9 Transport and storage

- When transporting and storing KAN-therm Sprinkler system pipes and pressed fittings, they should be kept away from damage or contamination hazards.
- KAN-therm Sprinkler system elements should not be stored together with elements of other metal systems.
- It is not allowed to store system elements directly on the ground (concrete or earth).
- It is not allowed to store the elements in direct vicinity of chemical compounds.
- Pipe bundles should be stored and transported on wooden or plastic pads (avoid direct contact with other steel elements, such as steel pipe racks). To avoid ovalization of pipes, it is recommended to form piles not higher than 6 bundles. During transport, loading and unloading, avoid scratching or else mechanically damaging pipes and fittings - do not: throw, pull and bend.
- Rooms for storing the elements must be dry (maximum permissible relative humidity must not exceed 65%). Recommended temperature for storage is in the range of 10 to 25 °C.
- External pipe surfaces during storage, construction and operation must not be exposed to extensive and direct contact with humidity.

10 General hydraulic dimensioning guidelines for KAN-therm Sprinkler systems

10.1 Pressure losses

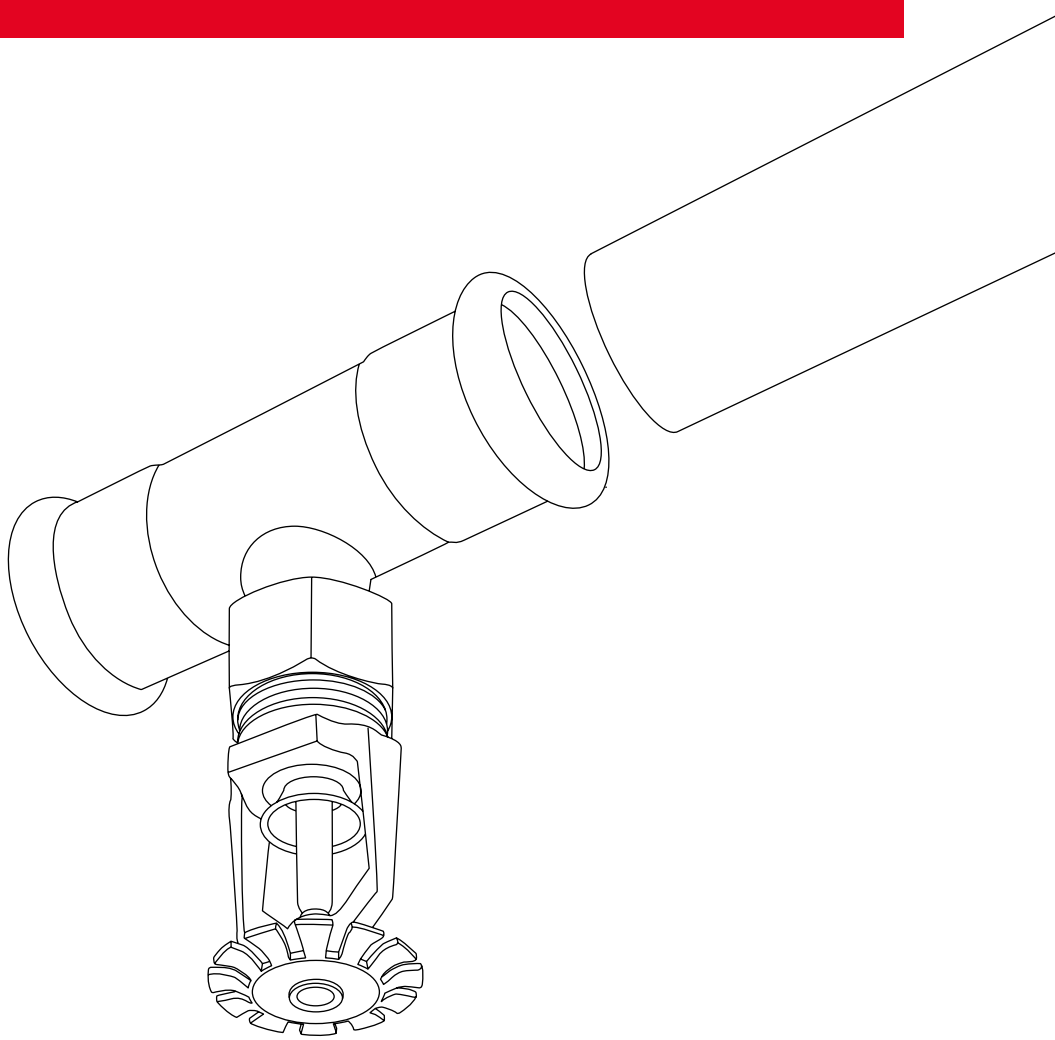
To calculate pressure loss in pipe network of sprinkler systems, Hazen-Williams formula should be applied.

$$p = \frac{6{,}05 \times 10^5}{C^{1{,}85} \times d^{4{,}87}} \times Q^{1{,}85} \times L$$

where:
p – linear pressure loss [bar]
Q – flow intensity [l/min]
d – internal pipe diameter
C – pipe constant, for KAN-therm Steel and Inox Sprinkler systems C = 140
L – substitute length for pipes and fittings [m]

The formula covers linear losses on the length of the calculated section of the pipelines, as well as local losses in form of equivalent (substitute) lengths for fittings and fixtures.

Designing and hydraulic dimensioning principles for sprinkler systems are defined by EN 12845 standard. Stationary fire extinguishing units. Automatic sprinkler systems. Design, assembly and maintenance.



System **KAN-therm** Steel Sprinkler

1 Application and operating conditions

KAN-therm Steel Sprinkler system is designed for constructing pipelines (distributing or pipe branches) of stationary wet (permanently filled with water) sprinkler systems installed in small or medium fire hazard areas (LH, OH1, OH2, OH3 and up to OH4 - in reference to exhibition rooms, theatres and concert halls) (according to VdS CEA 4001 guidelines).

KAN-therm Steel Sprinkler is also suitable for performing indoor, permanently filled with water, non-flow* (until fire fighting action), fully separated or single-side connected to potable water system hydrant installations.

Application in other fire extinguishing systems and dry sprinkler systems is prohibited.

* As non-flow hydrant installations with no intake points other than hydrant valves are understood, and the water flow occurs only during the fire fighting operation and / or annual performance tests, in accordance with EN 671-3 Fixed fire fighting equipment. Internal hydrants. Part 3: Maintenance of indoor hydrants with semi-rigid hose and indoor hydrants with flat folded hose.

System pipes and fittings hold certificates issued by Fire Protection Scientific Research Centre CNBOP and VdS certificate.

VdS

Certificate

of

Approval

of

Components and Systems

VSH Fittings B.V.
Oude Amersfoortseweg 99

NL-1212AA Hilversum

Approval No.	No. of pages	Valid from	Valid to
G 4080037	7	09.11.2009	24.02.2013

Pipe system, stainless steel
Type "VSH Press Sprinkler Edelstahl"

in Stationary water extinguishing systems

Procedure Guidelines - VdS 2344en: 2005-12

Guidelines for Water Extinguishing Systems - Requirements and Test Methods for Metal Press Fitting Pipe Systems
VdS 2100-26: 2007-03 (draft)

Köln (Cologne), 09.11.2009

Schlingel

i. V. Hesels

The installation should be designed and constructed according to guidelines included in this document, as well as with applicable standards and regulations.

Designing, assembly and commissioning of the sprinkler system is defined by EN 12845 standard. Stationary fire extinguishing units. Automatic sprinkler units. Design, assembly and maintenance.

The maximum working pressure for a hydrant system made with KAN-therm Steel Sprinkler pipes and fittings is:

- for 22–108 mm diameters: 16 bar

The maximum operating pressure for a sprinkler system made from KAN-therm Steel Sprinkler pipes and fittings is:

- 22–54 mm diameters: 16 bar
- 76,1 mm diameter: 12,5 bar
- 88,9 mm and 108 mm diameters: 10 bar

2 KAN-therm Steel Sprinkler system – carbon steel pipes

KAN-therm Steel Sprinkler system pipes for water sprinkler installations are precise carbon steel no. 1.0031 (EN 10305-3 compliant) pipes. They are made of cold rolled strip, galvanized using the Sendzimir method of coating the metal plate with zinc by immersing it in electrolytic zinc, after which the zinc is applied on both sides simultaneously. This means the pipe is protected by zinc layer on inside and outside. The zinc layer is never less than 20 µm thick. The Sendzimir galvanization is known for guaranteeing particularly good adherence and high resistance to corrosion.

Fire environment properties

KAN-therm Steel Sprinkler system carbon steel pipes may be classified as class A incombustible materials, according to DIN 4102, part 1.

Tab. 1. Technical details of pipes

DN	External diameter × wall thickness	Internal diameter	Unit mass	Water capacity
	mm × mm	[mm]	[kg/m]	[l/m]
20	22 × 1,5	19,0	0,761	0,284
25	28 × 1,5	25,0	0,980	0,491
32	35 × 1,5	32,0	1,241	0,804
40	42 × 1,5	39,0	1,542	1,195
50	54 × 1,5	51,0	1,999	2,043
65	76,1 × 2,0	72,1	3,503	4,083
80	88,9 × 2,0	84,9	4,412	5,661
100	108 × 2,0	104,0	5,382	8,495

Tab. 2. KAN-therm Steel Sprinkler pipes for fire fighting installations

Material	ULC („Ultra Light Carbon") galvanized (Sendzimir method) material no. 1.0031 acc. to EN 10305-3
External diameter tolerance	acc. to EN 10305-3
Thermal expansion coefficient	0,0108 mm/m at ΔT= 1K
Minimum bend radius (for diameters up to Ø28 mm)	3,5 × external pipe diameter (up to -10°C)
Delivery	6 m ± 50 mm lengths
Marking	name or manufacturer label, material identification, outside diameter x wall thickness, approval no., manufacture date
Zinc layer	at least 20 µm. The pipe joints are extra galvanized.
Max. operating pressure	16 bar (22-54 mm); 12,5 bar (76,1 mm); 10 bar (88,9-108 mm)

3 KAN-therm Steel Sprinkler system – pressed carbon steel couplings

KAN-therm Steel Sprinkler system pressed couplings are made of material no. 1.0034 [34-2 steel] carbon steel. They are rust protected by the applied zinc layer (8-15 µm). The couplings are equipped with EPDM rubber sealing ring (O-Ring). The DN20–DN50 O-Rings feature non-pressed joints detection function LBP (Leak Before Press).

Coupling diameter range DN20–DN100

System KAN-therm Steel Sprinkler - assortment

Pipes

Zinc coated carbon steel pipe Steel Sprinkler - bar 6 m

Size	Code	*			UM
22×1,5	**1530207013**		6	366	m
28×1,5	**1530207014**		6	222	m
35×1,5	**1530207016**		6	222	m
42×1,5	**1530207018**		6	114	m
54×1,5	**1530207020**		6	114	m
76,1×2,0	**1530207022**		6	222	m
88,9×2,0	**1530207010**		6	96	m
108×2,0	**1530207024**		6	78	m

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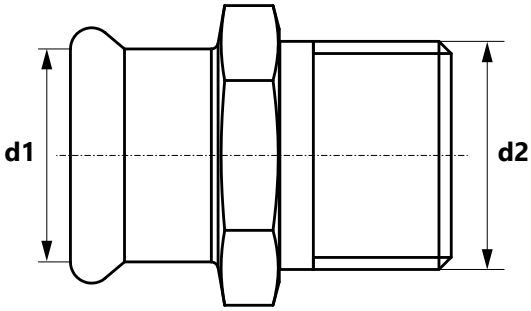
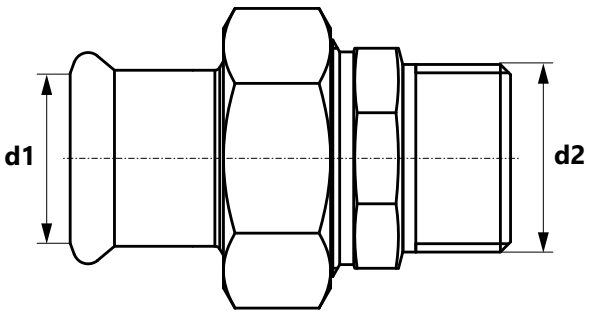
Connectors

Male connector



Size (d1×d2)	Code	*			UM
22 R½"	**1511045002**		10	70	pc.
22 R¾"	**1511045003**		10	100	pc.
22 R1"	**1511045001**		10	60	pc.
28 R¾"	**1511042000**		10	60	pc.
28 R1"	**1511045004**		10	60	pc.
35 R1"	**1509045021**		10	40	pc.
35 R1¼"	**1511045005**		5	40	pc.
42 R1½"	**1511045006**		4	24	pc.
54 R2"	**1511045007**		4	12	pc.
76,1 R2½"	**1511045000**		2	26	pc.
88,9 R3"	**1511045008**		2	20	pc.

Male union



Size (d1×d2)	Code	*			UM
22 R¾"	**1511272000**		2	40	pc.
28 R1"	**1511272001**		2	30	pc.
35 R1¼"	**1511272002**		2	16	pc.
42 R1½"	**1511272003**		2	12	pc.
54 R2"	**1511272004**		2	4	pc.

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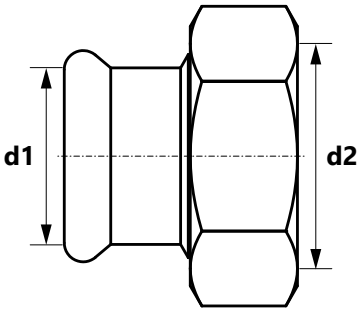
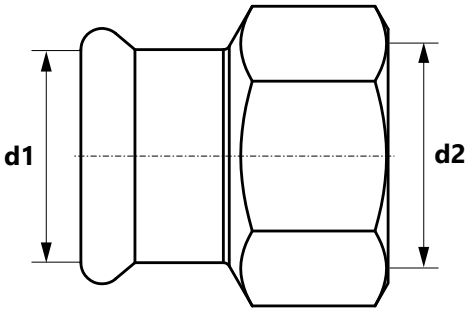
Female half union with flat sealing



Size (d1×d2)	Code	*			UM
22 G1"	**1511050001**		10	60	pc.
28 G1¼"	**1511050002**		10	40	pc.
35 G1½"	**1511050003**		4	32	pc.
42 G1¾"	**1511050004**		4	12	pc.
54 G2 ⅜"	**1511050005**		4	8	pc.

Female connector



Size (d1×d2)	Code	*			UM
22 Rp½"	**1509044042**		10	100	pc.
22 Rp¾"	**1511044001**		10	100	pc.
28 Rp½"	**1511044006**		10	60	pc.
28 Rp¾"	**1511044005**		10	60	pc.
28 Rp1"	**1511044002**		10	60	pc.
35 Rp½"	**1511044000**		10	40	pc.
35 Rp¾"	**1511044011**		10	40	pc.
35 Rp1"	**1509044029**		10	40	pc.
35 Rp1 ¼"	**1511044007**		10	30	pc.
42 Rp½"	**1511044003**		4	24	pc.
54 Rp2"	**1511044004**		4	12	pc.

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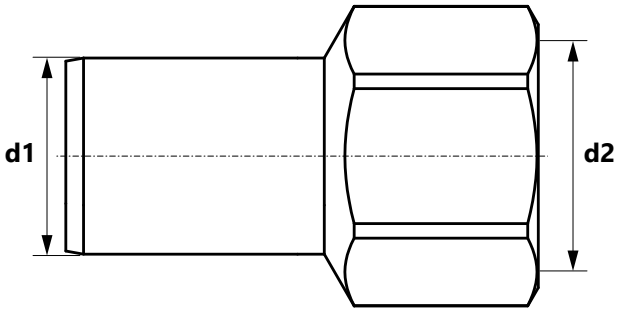
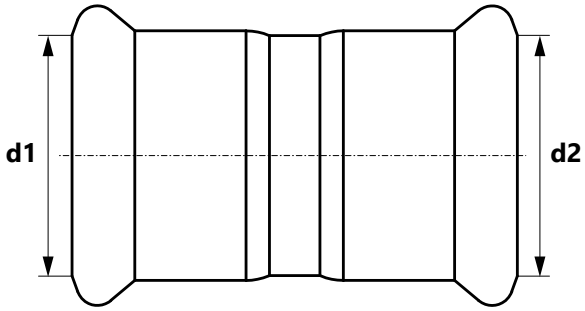
Female connector with plain end



Size (d1×d2)	Code	*			UM
22 Rp½"	1511076000		10	70	pc.
22 Rp¾"	1511076001		10	100	pc.

Straight coupling



Size (d1×d2)	Code	*			UM
22	1511245001		10	80	pc.
28	1511245002		10	60	pc.
35	1511245003		5	40	pc.
42	1511245004		4	24	pc.
54	1511245005		4	16	pc.
76,1	1511245006		4	24	pc.
88,9	1511245007		4	16	pc.
108	1511245000		2	10	pc.

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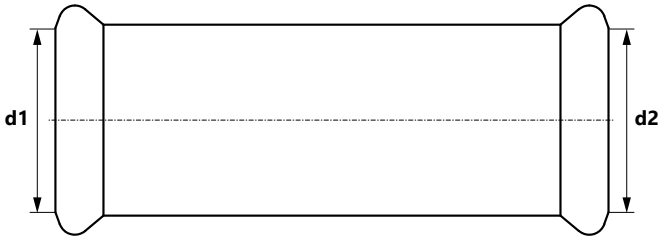
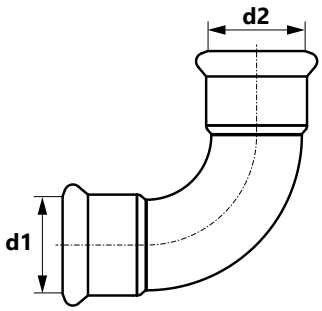
Slip coupling



Size (d1=d2)	Code	*			UM
22	**1511080001**		10	60	pc.
28	**1511080002**		5	40	pc.
35	**1511080003**		5	20	pc.
42	**1511080004**		4	16	pc.
54	**1511080005**		2	8	pc.
76,1	**1511080006**		2	16	pc.
88,9	**1511080007**		2	8	pc.
108	**1511080000**		2	6	pc.

Elbow 90°



Size (d1=d2)	Code	*			UM
22	**1511068020**		10	60	pc.
28	**1511068021**		5	30	pc.
35	**1511068022**		5	20	pc.
42	**1511068023**		2	8	pc.
54	**1511068024**		2	8	pc.
76,1	**1511068025**		2	10	pc.
88,9	**1511068026**		-	2	pc.
108	**1511068019**		2	4	pc.

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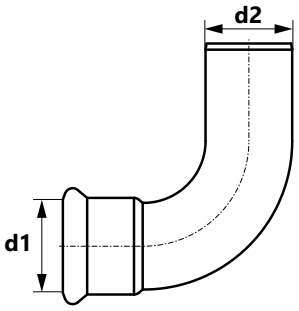
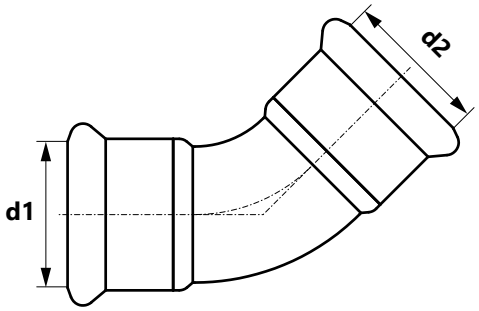
Plain end elbow 90°



Size (d1=d2)	Code	*			UM
22	**1511068028**		10	60	pc.
28	**1511068029**		5	30	pc.
35	**1511068030**		5	20	pc.
42	**1511068031**		2	8	pc.
54	**1511068032**		2	6	pc.
76,1	**1511068033**		2	10	pc.
88,9	**1511068034**		2	4	pc.
108	**1511068027**		2	4	pc.

Elbow 45°



Size (d1=d2)	Code	*			UM
22	**1511068004**		10	70	pc.
28	**1511068005**		10	40	pc.
35	**1511068006**		5	25	pc.
42	**1511068007**		4	16	pc.
54	**1511068008**		2	8	pc.
76,1	**1511068009**		2	16	pc.
88,9	**1511068010**		2	8	pc.
108	**1511068003**		2	6	pc.

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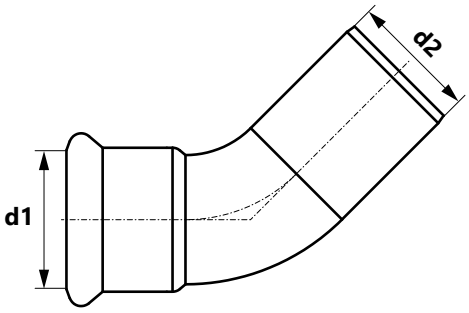
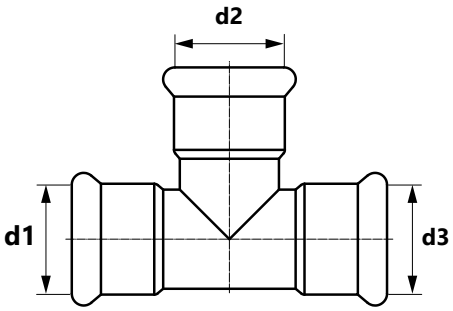
Plain end elbow 45°



Size (d1=d2)	Code	*			UM
22	**1511068012**		10	60	pc.
28	**1511068013**		10	40	pc.
35	**1511068014**		5	25	pc.
42	**1511068015**		4	16	pc.
54	**1511068016**		2	8	pc.
76,1	**1511068017**		2	14	pc.
88,9	**1511068018**		2	12	pc.
108	**1511068011**		2	6	pc.

Tee



Size (d1=d2=d3)	Code	*			UM
22	**1511257001**		10	40	pc.
28	**1511257002**		5	25	pc.
35	**1511257003**		5	15	pc.
42	**1511257004**		4	8	pc.
54	**1511257005**		2	6	pc.
76,1	**1511257006**		2	8	pc.
88,9	**1511257007**		2	6	pc.
108	**1511257000**		1	2	pc.

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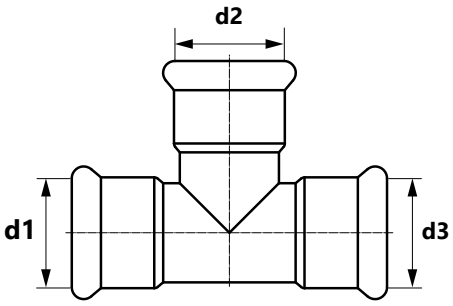
Reducing tee



Size (d1/d2/d3)	Code	*			UM
22 / 28 / 22	**1511260007**		5	30	pc.
28 / 22 / 28	**1511260008**		5	30	pc.
35 / 22 / 35	**1511260009**		5	20	pc.
35 / 28 / 35	**1511260010**		5	20	pc.
42 / 22 / 42	**1511260011**		4	12	pc.
42 / 28 / 42	**1511260012**		4	12	pc.
42 / 35 / 42	**1511260013**		4	12	pc.
54 / 22 / 54	**1511260014**		2	8	pc.
54 / 28 / 54	**1511260015**		2	8	pc.
54 / 35 / 54	**1511260016**		2	8	pc.
54 / 42 / 54	**1511260017**		2	8	pc.
76,1 / 22 / 76,1	**1509260043**		2	14	pc.
76,1 / 28 / 76,1	**1511260018**		2	14	pc.
76,1 / 35 / 76,1	**1511260019**		2	14	pc.
76,1 / 42 / 76,1	**1511260020**		2	12	pc.
76,1 / 54 / 76,1	**1511260021**		2	8	pc.
88,9 / 22 / 88,9	**1509260053**		2	8	pc.
88,9 / 28 / 88,9	**1511260025**		2	8	pc.
88,9 / 35 / 88,9	**1509260051**		2	6	pc.
88,9 / 42 / 88,9	**1511260022**		2	8	pc.
88,9 / 54 / 88,9	**1511260023**		2	12	pc.
88,9 / 76,1 / 88,9	**1511260024**		2	6	pc.
108 / 22 / 108	**1511260000**		2	6	pc.
108 / 28 / 108	**1511260001**		2	6	pc.
108 / 35 / 108	**1511260002**		2	6	pc.
108 / 42 / 108	**1511260003**		2	6	pc.
108 / 54 / 108	**1511260004**		2	6	pc.
108 / 76,1 / 108	**1511260005**		2	4	pc.
108 / 88,9 / 108	**1511260006**		0	2	pc.

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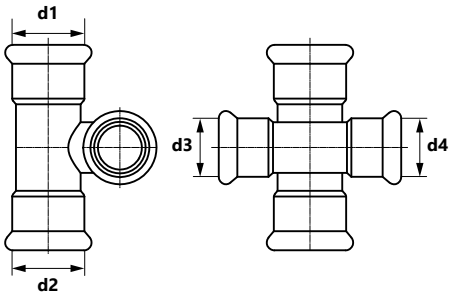
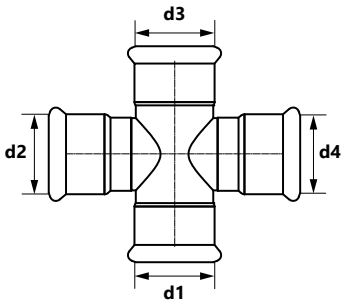
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Reducing pass crossing



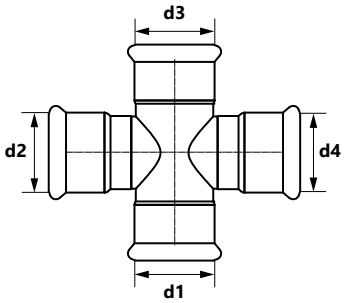
Size (d1=d2/d3=d4)	Code	*			UM
28 / 22	**1511057000**		5	20	pc.

Crossing



Size (d1=d2=d3=d4)	Code	*			UM
35	**1511057002**		2	8	pc.
42	**1511057003**		2	8	pc.
54	**1511057004**		2	4	pc.

Reducing crossing



Size (d1=d3/d2=d4)	Code	*			UM
35 / 28	**1511057005**		2	14	pc.
42 / 28	**1511057006**		2	8	pc.
54 / 28	**1511057001**		2	4	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

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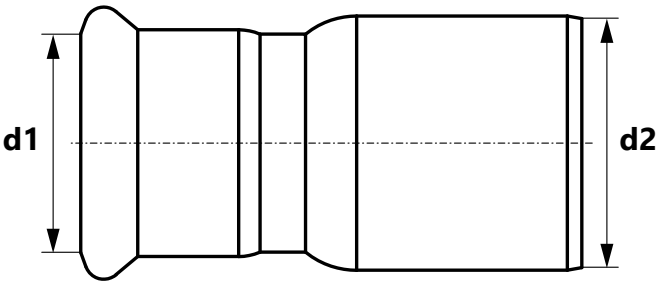
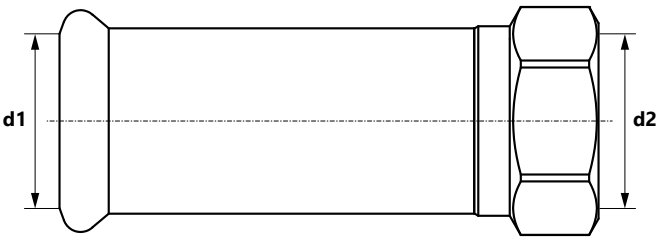
Plain end reducer



Size (d1/d2)	Code	*			UM
28 / 22	**1511221006**		10	80	pc.
35 / 22	**1511221007**		5	50	pc.
35 / 28	**1511221008**		5	60	pc.
42 / 22	**1511221013**		4	24	pc.
42 / 28	**1511221014**		4	24	pc.
42 / 35	**1511221009**		4	24	pc.
54 / 22	**1511221010**		4	16	pc.
54 / 28	**1511221011**		4	16	pc.
54 / 35	**1511221015**		4	16	pc.
54 / 42	**1511221012**		4	16	pc.
76,1 / 42	**1511221002**		4	32	pc.
76,1 / 54	**1511221003**		4	40	pc.
88,9 / 54	**1511221004**		4	32	pc.
88,9 / 76,1	**1511221005**		4	16	pc.
108 / 76,1	**1511221000**		2	10	pc.
108 / 88,9	**1511221001**		2	10	pc.

Female slip connector



Size (d1×d2)	Code	*			UM
22 Rp½"	**1511044008**		10	60	pc.
22 Rp¾"	**1511044009**		10	60	pc.
28 Rp½"	**1611042018**		10	40	pc.
28 Rp¾"	**1511044010**		10	40	pc.

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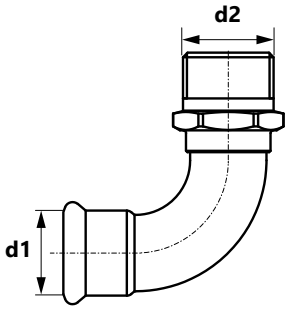
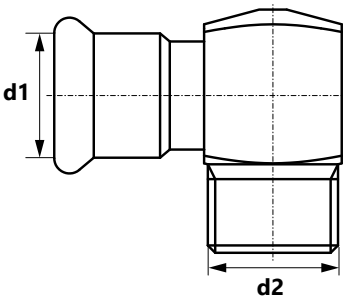
Male elbow 90°



Size (d1×d2)	Code	*			UM
22 R¾"	**1511070000**		10	50	pc.
28 R1"	**1511070001**		5	30	pc.
35 R1¼"	**1511070002**		5	10	pc.
42 R1½"	**1511070003**		2	12	pc.
54 R2"	**1511070004**		2	8	pc.

Short male elbow 90°



Size (d1×d2)	Code	*			UM
22 R¾"	**1511070005**		10	60	pc.

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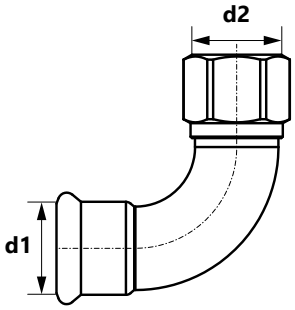
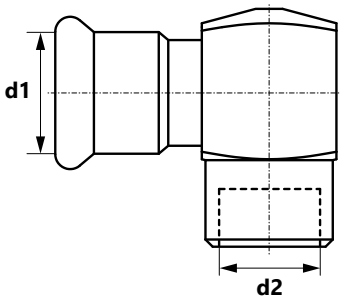
Female elbow 90°



Size (d1×d2)	Code	*			UM
22 Rp½"	**1511068000**		10	50	pc.
22 Rp¾"	**1511068001**		10	50	pc.
28 Rp½"	**1511069000**		5	30	pc.
28 Rp¾"	**1511069001**		5	30	pc.
28 Rp1"	**1511069002**		5	30	pc.
35 Rp½"	**1511069003**		5	10	pc.
35 Rp¾"	**1511069004**		5	10	pc.
35 Rp1"	**1511068002**		5	20	pc.

Short female elbow 90°



Size (d1×d2)	Code	*			UM
22 R½"	**1511069006**		10	50	pc.
28 R½"	**1511069005**		5	30	pc.
35 R½"	**1511069007**		5	10	pc.

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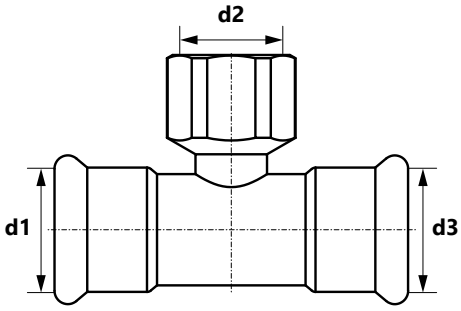
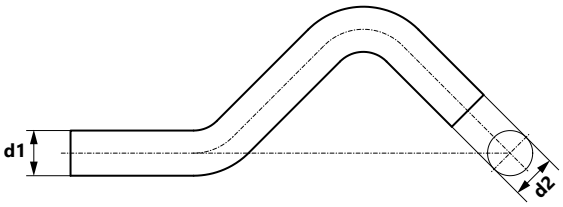
Female tee



Size (d1=d3×d2)	Code	*			UM
22 Rp½"	**1511258003**		10	50	pc.
22 Rp¾"	**1511258002**		10	40	pc.
28 Rp½"	**1511258004**		5	30	pc.
28 Rp¾"	**1511258005**		5	30	pc.
28 Rp1"	**1511257008**		5	30	pc.
35 Rp½"	**1511258006**		5	20	pc.
35 Rp¾"	**1511258007**		5	20	pc.
35 Rp1"	**1511257009**		5	20	pc.
42 Rp½"	**1511258008**		4	16	pc.
42 Rp¾"	**1511258009**		4	12	pc.
42 Rp1"	**1511257010**		4	12	pc.
54 Rp½"	**1511258010**		2	8	pc.
54 Rp¾"	**1511258011**		2	8	pc.
54 Rp1"	**1511258000**		2	8	pc.
76,1 Rp¾"	**1511258012**		2	12	pc.
88,9 Rp¾"	**1511258013**		2	8	pc.
108 Rp¾"	**1511258001**		2	6	pc.

Crossover



Size (d1=d2)	Code	*			UM
22	**1511022000**		10	40	pc.
28	**1511022001**		5	20	pc.

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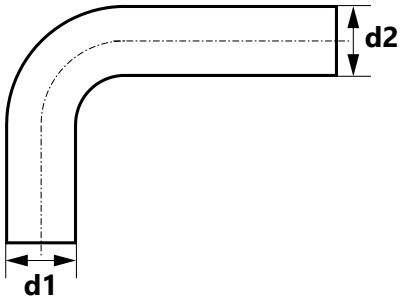
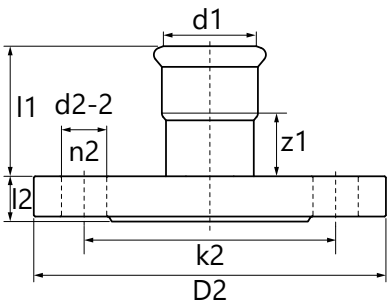
Bend 90°



Size (d1=d2)	Code	*			UM
22	**1511011000**		10	30	pc.
28	**1511011001**		5	20	pc.
35	**1511011002**		2	8	pc.
42	**1511011003**		2	4	pc.
54	**1511011004**		2	10	pc.

Flange PN16



Size (d1)	Code	*			UM
76,1 DN65	**1511091002**		1	4	pc.
88,9 DN80	**1511091003**		1	2	pc.
108 DN100	**1511091001**		1	2	pc.

Code	Size	l1	l2	z1	k2	D2	d2–2	n2
1511091002	76,1 DN65 PN16	94	18	39	145	185	18	4
1511091003	88,9 DN80 PN16	98	20	35	160	200	18	8
1511091001	108 DN100 PN16	94	20	17	180	220	18	8

Note:
The flat gasket must be completed on your own.

coil bar pipes in tube bag carton box pallet new available soon

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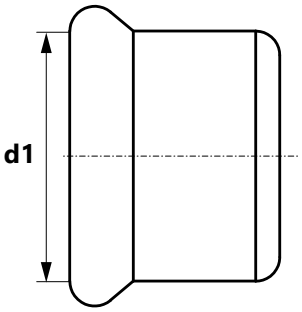
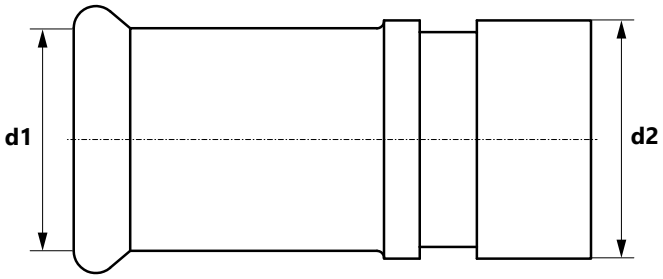
Stop end



Size (d1)	Code	*			UM
22	**1511250001**		10	150	pc.
28	**1511250002**		10	130	pc.
35	**1511250003**		5	75	pc.
42	**1511250004**		4	48	pc.
54	**1511250005**		4	32	pc.
76,1	**1511250006**		2	20	pc.
88,9	**1511250007**		2	4	pc.
108	**1511250000**		2	4	pc.

Coupling Steel/Groove



Size (d1/d2)	Code	*			UM
28 / 33,7	**1511042001**		10	30	pc.
35 / 42,4	**1511042002**		10	30	pc.
42 / 48,3	**1511042003**		5	20	pc.
54 / 60,3	**1511042004**		5	15	pc.
76,1	**1511042006**		2	2	pc.
88,9	**1511042007**		2	2	pc.
108 / 114	**1511042005**		2	2	pc.

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Accessories

O-Ring LBP EPDM Steel/Inox

Size	Code	*			UM
22	**1509182024**		20	500	pc.
28	**1509182025**		20	400	pc.
35	**1509182026**		20	400	pc.
42	**1509182027**		20	300	pc.
54	**1509182028**		20	300	pc.

O-Ring EPDM Steel/Inox

Size	Code	*			UM
76,1	**1609182023**		5	100	pc.
88,9	**1609182024**		5	100	pc.
108	**1609182025**		5	50	pc.

coil bar pipes in tube bag carton box pallet new available soon

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Tools

Roller cutter for pipes

Range	Code	*		UM
22-54	1948267025		1	pc.
35-108	1948267027		1	pc.

Cutting wheel for roller cutter

	Code	*			UM
	1941267037		1	10	pc.

Pipe cutting machine

Range	Code	*		UM
22-108	1948183001		1	pc.

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Deburrer for metal pipes

Range	Code	*			UM
12-54	**1948267015**		1	6	pc.

Novopress ACO203XL BT press tool

Range	Code	*		UM
22-54	**1948267181**		1	pc.

Novopress EFP203 electric press tool

Range [mm]	Code	*		UM
12-54	**1948267210**		1	pc.

Note:
The press tool is sold with a plastic case.

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Novopress PB2 "M" profile press jaws

Size	Code	*		UM
22	1948267139		1	pc.
28	1948267141		1	pc.
35	1948267143		1	pc.

Novopress "M" profile Snap On collar

Size [mm]	Code	*		UM
42	1948267119		1	pc.
54	1948267121		1	pc.
76,1	1948267145		1	pc.
88,9	1948267044		1	pc.
108	1948267038		1	pc.

Note:
Use jaws for diameters 66,7, 76,1 and 88,9 mm with adapter ZB221 for ACO203XL.
Use the jaw with a diameter of 66,7 mm with adapter ZB323 for ECO301.
Use the jaw with a diameter of 108 mm with adapter ZB221 and ZB222 for ACO203XL.

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HP Snap On collar for Novopress ECO301, ACO203XL, EFP203

Size	Code	*		UM
35	1948267124		1	pc.
42	1948267126		1	pc.
54	1948267128		1	pc.

Novopress ZB221 Adapter

Size [mm]	Code	*		UM
108	1948267005		1	pc.

Note:
Adapter for ACO203XL drive.
For a diameter of 108 mm, adapter ZB221 is used to make the first crimp, and adapter ZB222 for the second crimp.

Novopress ZB222 Adpater

Size [mm]	Code	*		UM
108	1948267007		1	pc.

Note:
Adapter for ACO203XL drive.
For a diameter of 108 mm, adapter ZB221 is used to make the first crimp, and adapter ZB222 for the second crimp.

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Novopress ACO403 battery press tool

Range	Code	*		UM
76,1-108	**1948267209**		1	pc.

Novopress "M" profile HP collar

Size	Code	*		UM
76,1	**1948267100**		1	pc.
88,9	**1948267102**		1	pc.
108	**1948267098**		1	pc.

Novopress ZB203 adapter

Range [mm]	Code	*		UM
35-54	**1948267000**		1	pc.

Note:
Adapter for EFP203 and ACO203XL drives.
Press: 50-63 mm
Steel & Inox: 35-54 mm
Copper: 42-54 mm

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Novopress tool set - ACO103 BT battery press tool + "M" profile jaws 15-28

Range [mm]	Code	*		UM
15-28	**1948055008**	*	1	set

Each set includes:
- Battery press tool - 1 pc.
- 1948267093 - Jaws M15 for press tool - 1 pc.
- 1948267095 - Jaws M18 for press tool - 1 pc.
- 1942121002 - Jaws M22 for press tool - 1 pc.
- 1948267097 - Jaws M28 for press tool - 1 pc.
- 1938267047 - Charger - 1 pc.
- 1938267002 - Battery 2 Ah - 2 pcs.
- Case

KAN-therm Mini press tool + "M" type jaws

Range [mm]	Code	*		UM
15-28	**1936055009**		1	pc.

Each set includes:
- 1936055008 - KAN-therm Mini press tool - 1 pc.
- 1936267278 - Jaws SBM M15 - 1 pc.
- 1936267279 - Jaws SBM M18 - 1 pc.
- 1936267280 - Jaws SBM M22 - 1 pc.
- 1936267282 - Jaws SBM M28 - 1 pc.
- 1936055009 - Battery for battery-powered tools - 2 pcs.
- 1967267024 - Charger LGML1 ~230V 35W
- Case - 1 pc.

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REMS Power-Press ACC electric press tool

Range [mm]	Code	*		UM
12-108	1936267219		1	pc.

Note:
The press tool is sold with a case.

REMS Power-Press SE Basic Pack electric press tool

Range [mm]	Code	*		UM
12-108	1936267160		1	pc.

Note:
The press tool is sold with a case.
The set does not include jaws.

REMS Akku Press battery press tool

Range [mm]	Code	*		UM
12-108	1936267152		1	pc.

Note:
The press tool is sold with a battery, charger and case.

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REMS "M" profile press jaws

Size [mm]	Code	*		UM
22	1948267056		1	pc.
28	1948267061		1	pc.
35	1948267065		1	pc.
42	1948267067		1	pc.
54	1948267069		1	pc.

Note:
The jaws work with Power-Press SE, Akku-Press, Power-Press ACC drives.

REMS tool set - electric Power-Press SE press tool and "M" profile jaws

Range [mm]	Code	*		UM
15-35	1948267033		1	set

Each set includes:
- 1936267160 - Electric press tool REMS Power-Press SE
- 1948267048 - Jaws M15 - 1 pc.
- 1948267052 - Jaws M18 - 1 pc.
- 1948267056 - Jaws M22 - 1 pc.
- 1948267061 - Jaws M28 - 1 pc.
- 1948267065 - Jaws M35 - 1 pc.
- Case

coil bar pipes in tube bag carton box pallet new available soon

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KAN-therm AC 3000 electric press tool

	Range [mm]	Code	*		UM
N	12-54	1936267239		1	pc.

Note:
The press tool is sold in a case.

KAN-therm DC 4000 battery press tool

	Range [mm]	Code	*		UM
N	12-54	1936267238		1	pc.

KAN-therm "M" profile press jaws

	Size [mm]	Code	*		UM
N	22	1936267251		1	pc.
N	28	1936267252		1	pc.
N	35	1936267253		1	pc.

Note:
The jaws work with KAN-therm AC 3000, DC 4000 drives.

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* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

KAN-therm "M" profile press jaws

	Size [mm]	Code	*		UM
N	12	1936267248		1	pc.
N	15	1936267249		1	pc.
N	18	1936267250		1	pc.
N	22	1936267251		1	pc.
N	28	1936267252		1	pc.
N	35	1936267253		1	pc.

Note:
The jaws work with KAN-therm AC 3000, DC 4000 drives.

KAN-therm "M" profile collar

	Size [mm]	Code	*		UM
N	42	1936267283		1	pc.
N	54	1936267284		1	pc.

Note:
Use KAN-therm "M" profile collar jaws with KAN-therm ZBS1 adapter for KAN-therm press tools: AC 3000 (Steel, Inox, Copper), DC 4000 (Steel, Inox, Copper).

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ZBS1 adapter for KAN-therm "M" profile collar jaws

	Range [mm]	Code	*		UM
N	42 - 54	**1936267285**		1	pc.

Note:
Use adapter ZBS1 KAN-therm for KAN-therm press tools: AC 3000 (Steel, Inox, Copper), DC 4000 (Steel, Inox, Copper).

coil bar pipes in tube bag carton box pallet N new ! available soon

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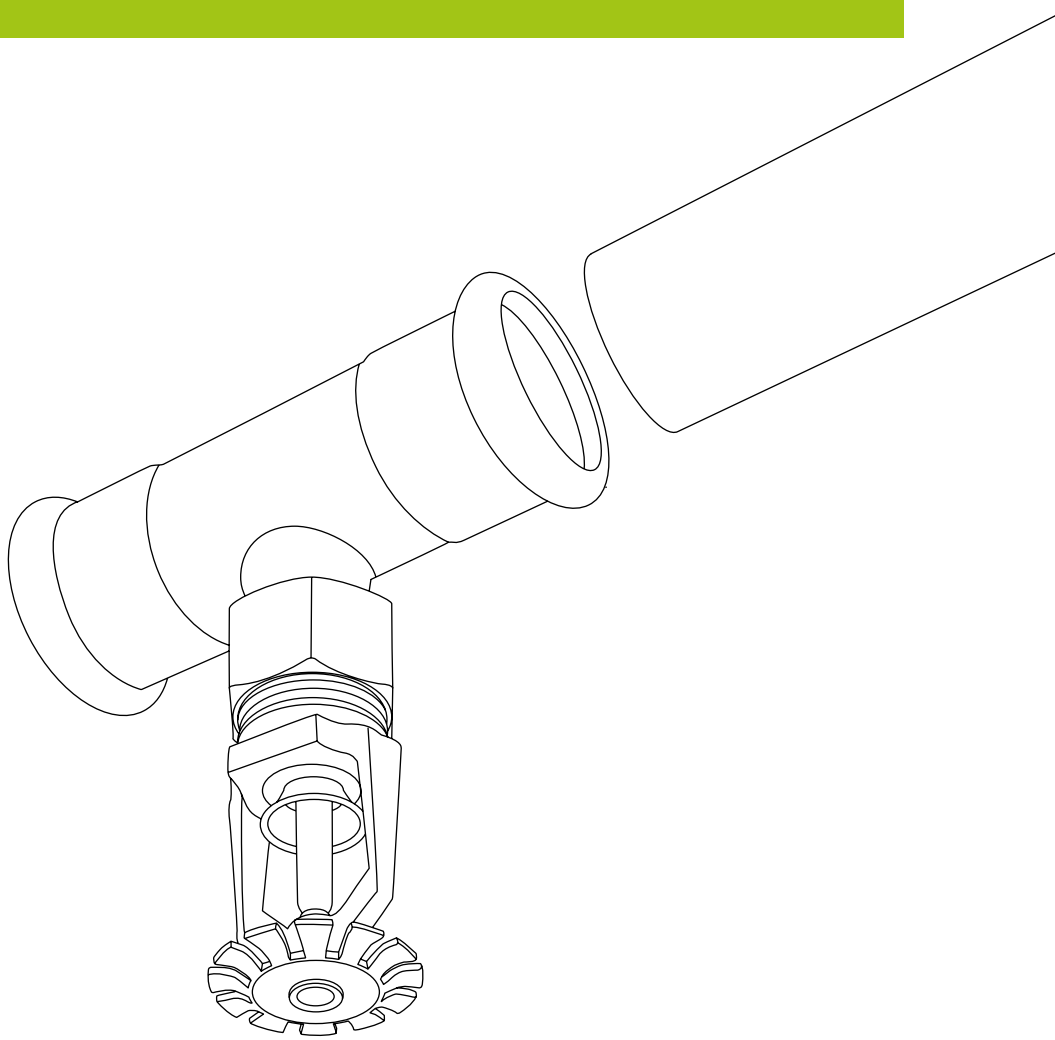
NOTES



System **KAN-therm** Inox Sprinkler

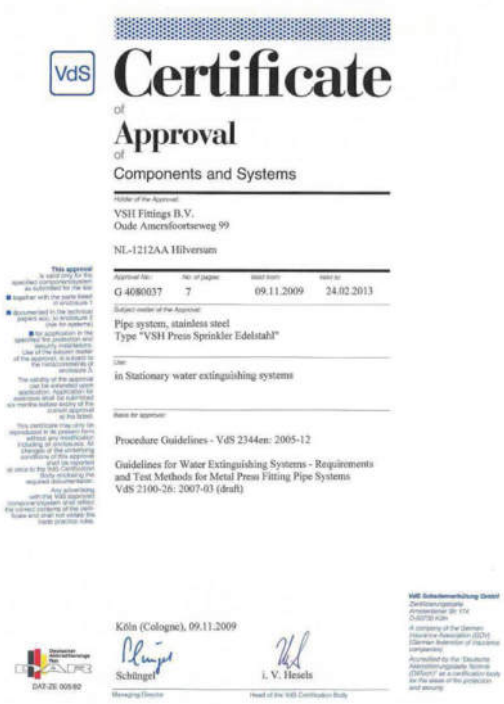
1 Application and operational conditions

KAN-therm Inox Sprinkler system is designed for constructing pipelines (distributing or pipe branches) of stationary sprinkler systems wet (permanently filled with water) or dry (air) installed in small or medium fire hazard areas (LH, OH1, OH2, OH3 and up to OH4 - in reference to exhibition rooms, theatres and concert halls) (according to VdS CEA 4001 guidelines).

KAN-therm Inox Sprinkler is also suitable for indoor hydrant installations. These installations may be both separate as well as a part of potable water systems.

Application in other fire extinguishing systems is prohibited.

System pipes and fittings hold certificates issued by Fire Protection Scientific Research Centre CNBOP as well as VdS and FM.


VdS

Certificate

of

Approval

of

Components and Systems

VSH Fittings B.V.
Oude Amersfoortseweg 99

NL-1212AA Hilversum

Approval No.	No. of pages	Valid from	Valid to
G 4080037	7	09.11.2009	24.02.2013

Pipe system, stainless steel
Type "VSH Press Sprinkler Edelstahl"

in Stationary water extinguishing systems

Procedure Guidelines - VdS 2344en: 2005-12

Guidelines for Water Extinguishing Systems - Requirements and Test Methods for Metal Press Fitting Pipe Systems VdS 2100-26: 2007-03 (draft)

Köln (Cologne), 09.11.2009

Schlingel

i. V. Hesels

The installation should be designed and constructed according to guidelines included in this document, as well as with applicable standards and regulations.

Designing, assembly and commissioning of the sprinkler system is defined by EN 12845 standard. Stationary fire extinguishing units. Automatic sprinkler units. Design, assembly and maintenance.

The maximum working pressure in a hydrant system made with KAN-therm Inox Sprinkler pipes and fittings is:

- for 22–108 mm diameters: 16 bar

The maximum operating pressure in a sprinkler system made of KAN-therm Inox Sprinkler pipes and fittings is:

- for 22–76,1 mm diameters: 16 bar
- for 88,9 mm diameter: 12,5 bar
- for 108 mm diameter: 10 bar

2 KAN-therm Inox Sprinkler system – stainless steel pipes

KAN-therm Inox Sprinkler system pipes for sprinkler and hydrant systems are precise X5CrNiMo (1.4401 acc. to EN 10088 AISI 316) stainless steel pipes.

KAN-therm Inox Sprinkler system pipes may be classified as A category incombustible materials, acc. to DIN 4102, part 1.

The pipes are distributed in 6 meters lengths. Minimum pipe bend radius 3,5 × D (for DN20–DN25 diameters).

Tab. 1. Pipe technical specification

DN	External diameter × wall thickness	Internal diameter	Unit mass	Water capacity
	mm × mm	[mm]	[kg/m]	[l/m]
20	22 × 1,5	19,6	0,624	0,302
25	28 × 1,5	25,6	0,790	0,515
32	35 × 1,5	32,0	1,240	0,804
40	42 × 1,5	39,0	1,503	1,195
50	54 × 1,5	51,0	1,972	2,043
65	76,1 × 2,0	72,1	3,550	4,548
80	88,9 × 2,0	84,9	4,150	5,661
100	108 × 2,0	104,0	5,050	8,495

Tab. 2. KAN-therm Inox Sprinkler pipes for fire fighting systems

Material	X5CrNiMo stainless steel material no. 1.4401 acc. to EN 10088-2 (AISI 316)
External diameter tolerance	acc. to EN 10305-3
Thermal expansion coefficient	0,0160 mm/m at ΔT= 1K
Minimum bend radius (for diameters up to Ø28 mm)	3,5 × external pipe diameter (up to -10 °C)
Delivery	6 m ± 50 mm lengths
Marking	name or manufacturer label, material identification, outside diameter x wall thickness, approval no., manufacture date
Max. operating pressure	16 bar (22-76,1 mm); 12,5 bar (88,9 mm); 10 bar (108 mm)

3 KAN-therm Inox Sprinkler system – pressed stainless steel couplings

KAN-therm Inox Sprinkler System pressed couplings are made of stainless steel, material no. 1.4404 acc. to EN 10088. The couplings are equipped with EPDM rubber sealing ring (O-Ring).

Coupling diameter range DN20–DN100

System KAN-therm Inox Sprinkler - assortment

Pipes

Stainless steel pipe 1.4401 - bar 6 m

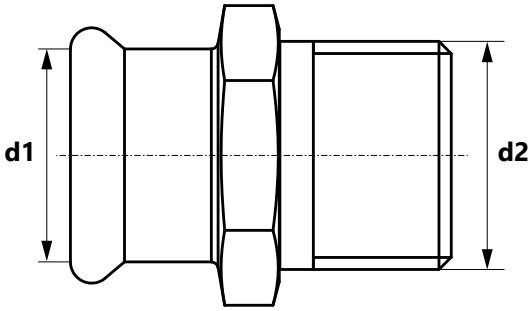
Size	Code	*			UM
22×1,2	1630194069		6	366	m
28×1,2	1630194070		6	222	m
35×1,5	1630194071		6	222	m
42×1,5	1630194072		6	114	m
54×1,5	1630194073		6	90	m
76,1×2,0	1630194074		6	144	m
88,9×2,0	1630194075		6	138	m
108×2,0	1630194066		6	78	m

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

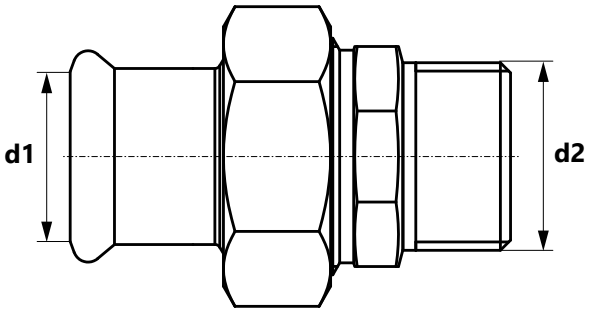
Connectors

Male connector



Size (d1×d2)	Code	*			UM
22 R½"	1611045001		10	70	pc.
22 R¾"	1611045002		10	100	pc.
22 R1"	1611045000		10	60	pc.
28 R¾"	1611045005		10	50	pc.
28 R1"	1611045004		10	60	pc.
28 R1¼"	1611045003		10	30	pc.
35 R1"	1611045007		10	40	pc.
35 R1¼"	1611045008		5	40	pc.
35 R1½"	1611045006		10	20	pc.
42 R1¼"	1611045009		4	12	pc.
42 R1½"	1611045010		4	24	pc.
54 R1½"	1611045011		4	16	pc.
54 R2"	1611045012		4	12	pc.
76,1 R2½"	1611045013		2	20	pc.
88,9 R3"	1611045014		-	2	pc.

Male union



Size (d1×d2)	Code	*			UM
22 R½"	1611272001		2	40	pc.
22 R¾"	1611272002		2	40	pc.
22 R1"	1611272000		2	30	pc.
28 R1"	1611272003		2	30	pc.
35 R1¼"	1611272004		2	16	pc.
42 R1½"	1611272005		2	12	pc.
54 R2"	1611272006		2	4	pc.

coil bar pipes in tube bag carton box pallet new available soon

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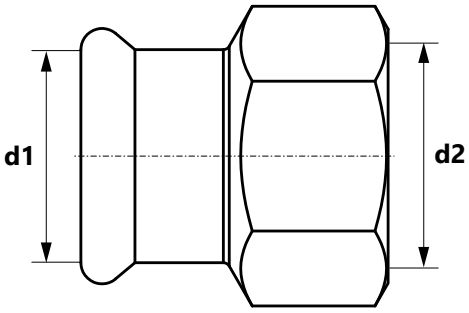
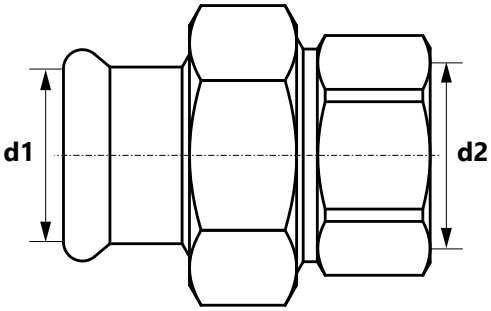
Female connector



Size (d1×d2)	Code	*			UM
22 Rp½"	1611042001		10	100	pc.
22 Rp¾"	1611042002		10	100	pc.
22 Rp1"	1611042000		10	60	pc.
28 Rp½"	1611042013		10	40	pc.
28 Rp¾"	1611042005		10	40	pc.
28 Rp1"	1611042003		10	60	pc.
28 Rp1¼"	1611042004		10	30	pc.
35 Rp1"	1611042007		10	20	pc.
35 Rp1¼"	1611042012		10	30	pc.
35 Rp1½"	1611042006		10	20	pc.
42 Rp1¼"	1611042009		4	12	pc.
42 Rp1½"	1611042008		4	24	pc.
54 Rp1½"	1611042010		1	12	pc.
54 Rp2"	1611042011		4	12	pc.

Female union

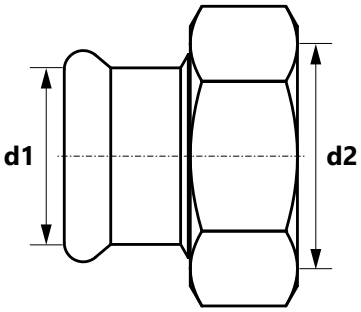


Size (d1×d2)	Code	*			UM
22 Rp¾"	1611271001		2	40	pc.
22 Rp1"	1611271000		2	30	pc.
28 Rp1"	1611271002		2	26	pc.
35 Rp1¼"	1611271003		1	20	pc.
42 Rp1½"	1611271004		2	8	pc.
54 Rp2"	1611271005		2	4	pc.

coil bar pipes in tube bag carton box pallet new available soon

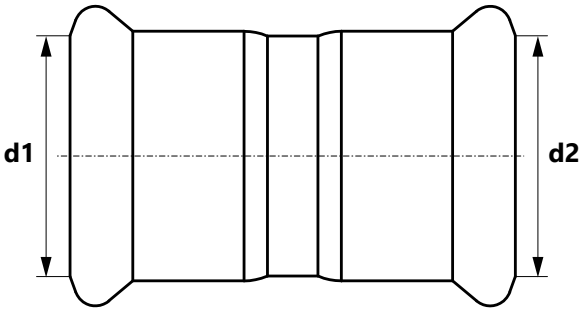
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Female half union with flat sealing



Size (d1×d2)	Code	*			UM
22 Rp1"	1611271006		10	60	pc.
28 Rp1¼"	1611271007		10	40	pc.
35 Rp1½"	1611271008		4	32	pc.
42 Rp1¾"	1611271009		4	12	pc.
54 Rp2⅜"	1611271010		4	8	pc.

Straight coupling



Size (d1=d2)	Code	*			UM
22	1611245001		10	80	pc.
28	1611245002		10	60	pc.
35	1611245003		5	40	pc.
42	1611245004		4	24	pc.
54	1611245005		4	16	pc.
76,1	1611245006		4	24	pc.
88,9	1611245007		1	8	pc.
108	1611245000		1	10	pc.

coil bar pipes in tube bag carton box pallet new available soon

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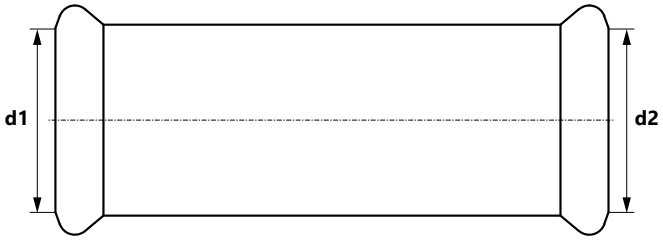
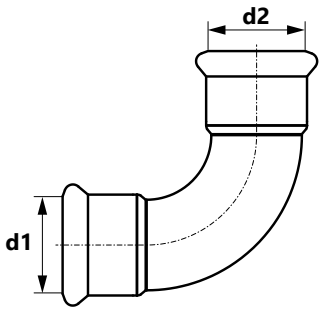
Slip coupling



Size (d1=d2)	Code	*			UM
22	**1611080001**		10	60	pc.
28	**1611080002**		10	40	pc.
35	**1611080003**		5	20	pc.
42	**1611080004**		4	16	pc.
54	**1611080005**		2	8	pc.
76,1	**1611080006**		2	6	pc.
88,9	**1611080007**		2	6	pc.
108	**1611080000**		2	6	pc.

Elbow 90°



Size (d1=d2)	Code	*			UM
22	**1611068026**		10	60	pc.
28	**1611068027**		5	30	pc.
35	**1611068028**		5	20	pc.
42	**1611068029**		2	8	pc.
54	**1611068030**		2	8	pc.
76,1	**1611068031**		2	10	pc.
88,9	**1611068032**		2	8	pc.
108	**1611068025**		2	4	pc.

coil bar pipes in tube bag carton box pallet new available soon

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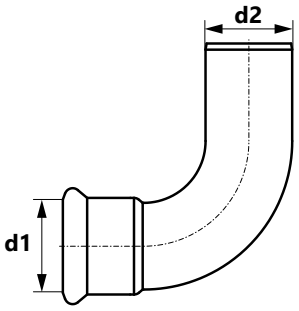
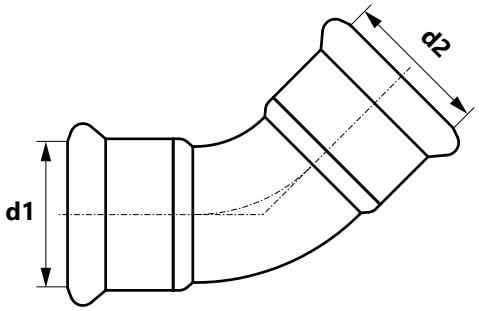
Plain end elbow 90°



Size (d1=d2)	Code	*			UM
22	1611068034		5	60	pc.
28	1611068035		5	30	pc.
35	1611068036		5	10	pc.
42	1611068037		2	8	pc.
54	1611068038		2	6	pc.
76,1	1611068039		2	10	pc.
88,9	1611068040		2	8	pc.
108	1611068033		1	4	pc.

Elbow 45°



Size (d1=d2)	Code	*			UM
22	1611068010		10	70	pc.
28	1611068011		10	40	pc.
35	1611068012		5	25	pc.
42	1611068013		2	16	pc.
54	1611068014		2	8	pc.
76,1	1611068015		2	8	pc.
88,9	1611068016		1	8	pc.
108	1611068009		2	6	pc.

coil bar pipes in tube bag carton box pallet new available soon

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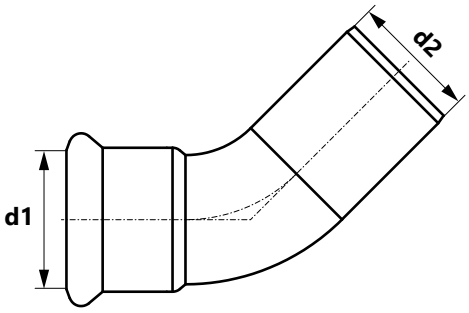
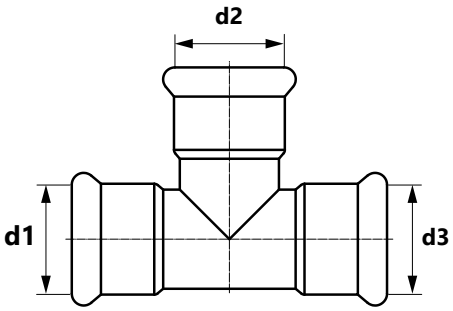
Plain end elbow 45°



Size (d1=d2)	Code	*			UM
22	1611068018		10	60	pc.
28	1611068019		10	40	pc.
35	1611068020		5	25	pc.
42	1611068021		4	16	pc.
54	1611068022		2	8	pc.
76,1	1611068023		1	12	pc.
88,9	1611068024		-	2	pc.
108	1611068017		2	4	pc.

Tee



Size (d1=d2=d3)	Code	*			UM
22	1611257001		10	40	pc.
28	1611257002		5	25	pc.
35	1611257003		5	15	pc.
42	1611257004		4	8	pc.
54	1611257005		2	6	pc.
76,1	1611257006		2	8	pc.
88,9	1611257007		1	6	pc.
108	1611257000		2	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

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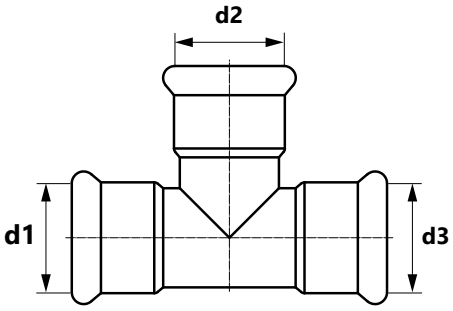
Reducing tee

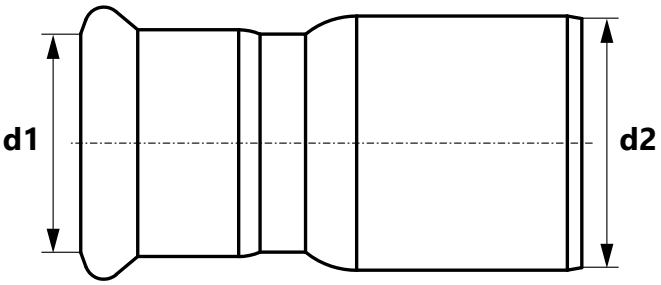


Size (d1/d2/d3)	Code	*			UM
28 / 22 / 28	1611260007		5	30	pc.
35 / 22 / 35	1611260008		5	20	pc.
35 / 28 / 35	1611260009		5	20	pc.
42 / 22 / 42	1611260010		4	12	pc.
42 / 28 / 42	1611260011		4	12	pc.
42 / 35 / 42	1611260012		4	12	pc.
54 / 22 / 54	1611260013		2	8	pc.
54 / 28 / 54	1611260014		2	8	pc.
54 / 35 / 54	1611260015		2	8	pc.
54 / 42 / 54	1611260016		2	8	pc.
76,1 / 22 / 76,1	1611260017		2	12	pc.
76,1 / 28 / 76,1	1611260018		-	2	pc.
76,1 / 35 / 76,1	1611260019		1	10	pc.
76,1 / 42 / 76,1	1611260020		1	4	pc.
76,1 / 54 / 76,1	1611260021		1	4	pc.
88,9 / 22 / 88,9	1611260022		-	2	pc.
88,9 / 28 / 88,9	1611260023		-	2	pc.
88,9 / 35 / 88,9	1611260024		-	2	pc.
88,9 / 42 / 88,9	1611260025		-	2	pc.
88,9 / 54 / 88,9	1611260026		-	2	pc.
88,9 / 76,1 / 88,9	1611260027		-	2	pc.
108 / 22 / 108	1611260000		-	2	pc.
108 / 28 / 108	1611260001		-	2	pc.
108 / 35 / 108	1611260002		-	2	pc.
108 / 42 / 108	1611260003		-	2	pc.
108 / 54 / 108	1611260004		-	2	pc.
108 / 76,1 / 108	1611260005		-	2	pc.
108 / 88,9 / 108	1611260006		-	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

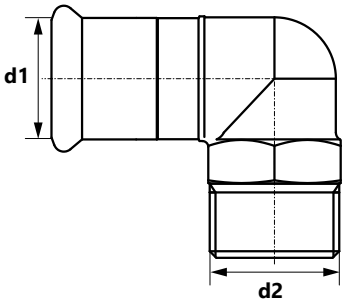
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Plain end reducer



Size (d1/d2)	Code	*			UM
28 / 22	1611220003		10	80	pc.
35 / 22	1611220004		5	50	pc.
35 / 28	1611220005		5	60	pc.
42 / 22	1611220006		4	24	pc.
42 / 28	1611220007		4	24	pc.
42 / 35	1611220008		4	24	pc.
54 / 22	1611220009		1	16	pc.
54 / 28	1611220010		1	16	pc.
54 / 35	1611220011		4	16	pc.
54 / 42	1611220012		4	16	pc.
76,1 / 42	1611220013		1	12	pc.
76,1 / 54	1611220014		4	32	pc.
88,9 / 54	1611220015		1	8	pc.
88,9 / 76,1	1611220016		1	8	pc.
108 / 54	1611220000		2	2	pc.
108 / 76,1	1611220001		2	2	pc.
108 / 88,9	1611220002		1	2	pc.

Male elbow 90°



Size (d1×d2)	Code	*			UM
22 R¾"	1611070000		10	60	pc.
28 R1"	1611070001		10	30	pc.
35 R1¼"	1611070002		5	20	pc.
42 R1½"	1611070003		2	16	pc.
54 R2"	1611070004		2	8	pc.

coil bar pipes in tube bag carton box pallet new available soon

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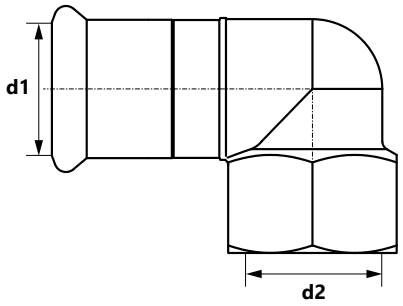
Female elbow 90°



Size (d1×d2)	Code	*			UM
22 R½"	1611068001		10	50	pc.
22 Rp¾"	1611068000		10	50	pc.
28 R½"	1611068006		5	30	pc.
28 Rp¾"	1611068003		5	30	pc.
28 R1"	1611068002		10	30	pc.
35 Rp½"	1611068008		5	10	pc.
35 Rp¾"	1611068005		5	10	pc.
35 R1"	1611068007		5	10	pc.
35 R1¼"	1611068004		5	10	pc.

coil bar pipes in tube bag carton box pallet new available soon

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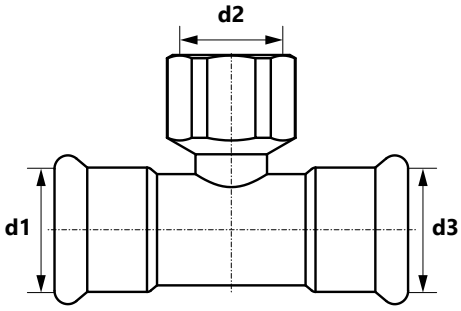
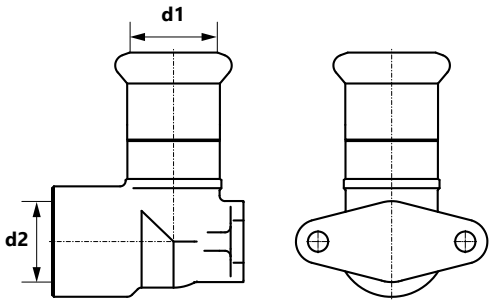
Female tee



Size (d1=d3×d2)	Code	*			UM
22 Rp½"	1611257010		10	40	pc.
22 Rp¾"	1611257011		10	40	pc.
28 Rp½"	1611257012		5	30	pc.
28 Rp¾"	1611257014		10	30	pc.
28 Rp1"	1611257013		5	30	pc.
35 Rp½"	1611257015		5	20	pc.
35 Rp¾"	1611257017		5	20	pc.
35 Rp1"	1611257016		5	20	pc.
42 Rp½"	1611257018		4	16	pc.
42 Rp¾"	1611257020		4	12	pc.
42 Rp1"	1611257019		4	12	pc.
54 Rp½"	1611257021		1	8	pc.
54 Rp¾"	1611257023		1	8	pc.
54 Rp1"	1611257022		1	8	pc.
54 Rp2"	1611257024		2	6	pc.
76,1 Rp¾"	1611257026		1	2	pc.
76,1 Rp2"	1611257025		-	2	pc.
88,9 Rp¾"	1611257028		1	8	pc.
88,9 Rp2"	1611257027		-	2	pc.
108 Rp¾"	1611257009		-	2	pc.
108 Rp2"	1611257008		-	2	pc.

Female directly fixed wallplate elbow



Size (d1×d2×l)	Code	*			UM
22 Rp¾" L = 64 mm	1611285001		10	40	pc.
22 Rp¾" L = 52 mm	1611285000		10	50	pc.

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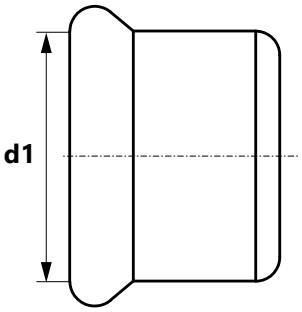
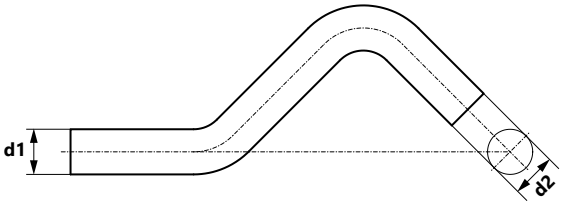
Stop end



Size (d1)	Code	*			UM
22	1611250001		10	150	pc.
28	1611250002		10	130	pc.
35	1611250003		5	75	pc.
42	1611250004		4	48	pc.
54	1611250005		1	24	pc.
76,1	1611250006		2	4	pc.
88,9	1611250007		2	4	pc.
108	1611250000		2	4	pc.

Crossover



Size (d1=d2)	Code	*			UM
22	1611022000		10	50	pc.
28	1611022001		10	20	pc.

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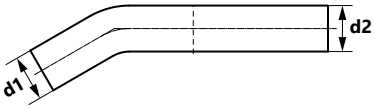
Bend 15°

Size (d1=d2)	Code	*			UM
28	1611011000		10	40	pc.
35	1611011001		5	15	pc.
42	1611011002		2	20	pc.
54	1611011003		1	6	pc.

Bend 30°



Size (d1=d2)	Code	*			UM
28	1611011004		10	40	pc.
35	1611011005		4	12	pc.
42	1611011006		2	20	pc.
54	1611011007		1	8	pc.

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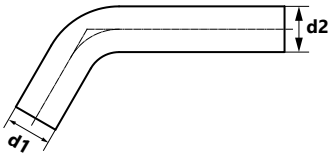
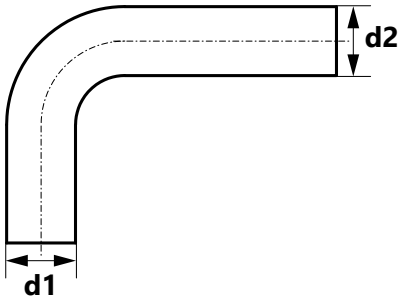
Bend 60°



Size (d1=d2)	Code	*			UM
28	1611011008		5	30	pc.
35	1611011009		4	12	pc.
42	1611011010		5	20	pc.
54	1611011011		2	6	pc.

Bend 90°



Size (d1=d2)	Code	*			UM
22	1611011012		2	4	pc.
28	1611011013		5	20	pc.
35	1611011014		4	8	pc.
42	1611011015		2	4	pc.
54	1611011016		-	2	pc.

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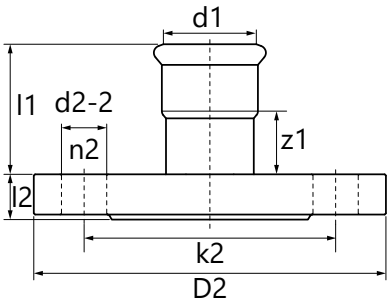
Flange PN16

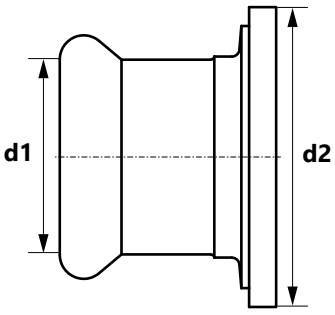


Size (d1)	Code	*			UM
22 DN20	1611091004		1	12	pc.
28 DN25	1611091005		1	12	pc.
35 DN32	1611091001		1	6	pc.
42 DN40	1611091006		1	4	pc.
54 DN50	1611091007		1	2	pc.
76,1 DN65	1611091002		1	4	pc.
88,9 DN80	1611091003		1	2	pc.
108 DN100	1611091000		1	2	pc.

Code	Size	l1	l2	z1	k2	D2	d2–2	n2
1611091004	22 DN20 PN16	45	14	24	75	105	14	4
1611091005	28 DN25 PN16	49	16	26	85	115	14	4
1611091001	35 DN32 PN16	51	17	26	100	140	18	4
1611091006	42 DN40 PN16	59	18	29	110	150	18	4
1611091007	54 DN50 PN16	69	18	34	125	165	18	4
1611091002	76,1 DN65 PN16	108	18	53	145	185	18	4
1611091003	88,9 DN80 PN16	127	20	64	160	200	18	8
1611091000	108 DN100 PN16	147	20	70	180	220	18	8

Note:
Complete the flat gasket yourself.

Flange adapter



Size (d1×d2)	Code	*			UM
22 R1¼"	1611090001		20	80	pc.
22 R1½"	1611090000		20	80	pc.
28 R1½"	1611090002		20	80	pc.
35 R2"	1611090003		10	30	pc.
42 R2¼"	1611090004		10	30	pc.
54 R2¾"	1611090005		5	20	pc.

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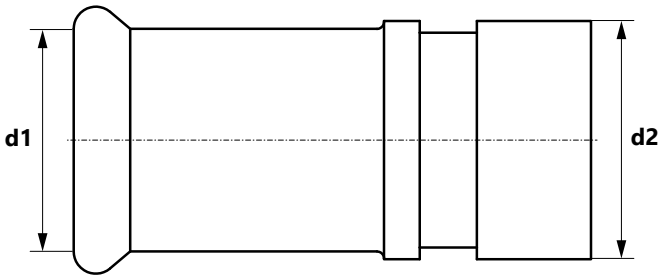
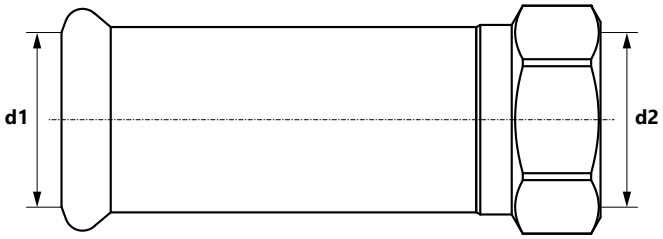
Coupling Inox/Groove



Size (d1×d2)	Code	*			UM
28 / 33,7	1611042014		10	30	pc.
35 / 42,4	1611042015		10	30	pc.
42 / 48,3	1611042016		5	20	pc.
54 / 60,3	1611042017		5	15	pc.
76,1	1611042019		2	30	pc.
88,9	1609042036		2	30	pc.
108 / 114	1609042029		2	30	pc.

Female slip connector



Size (d1×d2)	Code	*			UM
22 Rp½"	1611042020		10	60	pc.
22 Rp¾"	1611042021		10	60	pc.
28 Rp½"	1611042022		10	40	pc.
28 Rp¾"	1611042023		10	40	pc.

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Accessories

O-Ring LBP EPDM Steel/Inox

Size	Code	*			UM
22	1509**182024**		20	500	pc.
28	1509**182025**		20	400	pc.
35	1509**182026**		20	400	pc.
42	1509**182027**		20	300	pc.
54	1509**182028**		20	300	pc.

O-Ring EPDM Steel/Inox

Size	Code	*			UM
76,1	1609**182023**		5	100	pc.
88,9	1609**182024**		5	100	pc.
108	1609**182025**		5	50	pc.

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Tools

Roller cutter for pipes

Range	Code	*		UM
12-54	1948**267025**		1	pc.
35-108	1948**267027**		1	pc.

Cutting wheel for roller cutter

	Code	*			UM
	1941**267037**		1	10	pc.

Pipe cutting machine

Range	Code	*		UM
22-108	1948**183001**		1	pc.

Note:
The set includes a cutting wheel.

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Deburrer for metal pipes

Range	Code	*		UM
12-54	1948267015		1	pc.

Note:
Can be used by hand or on an electric drill.

Novopress ACO203XL BT press tool

Range	Code	*		UM
22-54	1948267181		1	pc.

Each set includes:
- Battery press tool - 1 pc.
- Battery 18 V/ 5.0 Ah Li-Ion Milwaukee - 2 pcs.
- Charger - 1 pc.
- Lubricant - 1 pc.
- Plastic case

Novopress EFP203 electric press tool

Range [mm]	Code	*		UM
12-54	1948267210		1	pc.

Note:
The press tool is sold with a plastic case.

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Novopress PB2 "M" profile press jaws

Size	Code	*		UM
22	1948267139		1	pc.
28	1948267141		1	pc.
35	1948267143		1	pc.

Note:
The jaws work with EFP203 and ACO203XL drives.

Novopress "M" profile Snap On collar

Size [mm]	Code	*		UM
42	1948267119		1	pc.
54	1948267121		1	pc.
76,1	1948267145		1	pc.
88,9	1948267044		1	pc.
108	1948267038		1	pc.

Note:
Use jaws for diameters 66,7, 76,1 and 88,9 mm with adapter ZB221 for ACO203XL.
Use the jaw with a diameter of 66,7 mm with adapter ZB323 for ECO301.
Use the jaw with a diameter of 108 mm with adapter ZB221 and ZB222 for ACO203XL.

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HP Snap On collar for Novopress ECO301, ACO203XL, EFP203

Size	Code	*		UM
35	1948267124		1	pc.
42	1948267126		1	pc.
54	1948267128		1	pc.

Note:
Jaws for diameters 35 - 54 mm with ECO301 press tool use with ZB303 adapter.
Jaws for diameters 35 - 54 mm with ACO203XL and EFP203 crimping tool use with ZB203 adapter.

Novopress ZB221 Adapter

Size [mm]	Code	*		UM
108	1948267005		1	pc.

Note:
Adapter for ACO203XL drive.
For a diameter of 108 mm, adapter ZB221 is used to make the first crimp, and adapter ZB222 for the second crimp.

Novopress ZB222 Adpater

Size [mm]	Code	*		UM
108	1948267007		1	pc.

Note:
Adapter for ACO203XL drive.
For a diameter of 108 mm, adapter ZB221 is used to make the first crimp, and adapter ZB222 for the second crimp.

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Novopress ACO403 battery press tool

Range	Code	*		UM
76,1-108	1948267209		1	pc.

Novopress "M" profile HP collar

Size	Code	*		UM
76,1	1948267100		1	pc.
88,9	1948267102		1	pc.
108	1948267098		1	pc.

Note:
The jaws work with ACO401 and ACO403 drives.

Novopress ZB203 adapter

Range [mm]	Code	*		UM
35-54	1948267000		1	pc.

Note:
Adapter for EFP203 and ACO203XL drives.
Press: 50-63 mm
Steel & Inox: 35-54 mm
Copper: 42-54 mm

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Novopress tool set - ACO103 BT battery press tool + "M" profile jaws 15-28

Range [mm]	Code	*		UM
15-28	1948055008	*	1	set

Each set includes:
- Battery press tool - 1 pc.
- 1948267093 - Jaws M15 for press tool - 1 pc.
- 1948267095 - Jaws M18 for press tool - 1 pc.
- 1942121002 - Jaws M22 for press tool - 1 pc.
- 1948267097 - Jaws M28 for press tool - 1 pc.
- 1938267047 - Charger - 1 pc.
- 1938267002 - Battery 2 Ah - 2 pcs.
- Case

KAN-therm Mini press tool + "M" type jaws

Range [mm]	Code	*		UM
15-28	1936055009		1	pc.

Each set includes:
- 1936055008 - KAN-therm Mini press tool - 1 pc.
- 1936267278 - Jaws SBM M15 - 1 pc.
- 1936267279 - Jaws SBM M18 - 1 pc.
- 1936267280 - Jaws SBM M22 - 1 pc.
- 1936267282 - Jaws SBM M28 - 1 pc.
- 1936055009 - Battery for battery-powered tools - 2 pcs.
- 1967267024 - Charger LGML1 ~230V 35W
- Case - 1 pc.

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REMS Power-Press ACC electric press tool

Range [mm]	Code	*		UM
12-54	1936267219		1	pc.

Note:
The press tool is sold with a case.

REMS Power-Press SE Basic Pack electric press tool

Range [mm]	Code	*		UM
12-108	1936267160		1	pc.

Note:
The press tool is sold with a case.
The set does not include jaws.

REMS Akku Press battery press tool

Range [mm]	Code	*		UM
12-108	1936267152		1	pc.

Note:
The press tool is sold with a battery, charger and case.

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REMS "M" profile press jaws

Size [mm]	Code	*		UM
22	1948267056		1	pc.
28	1948267061		1	pc.
35	1948267065		1	pc.
42	1948267067		1	pc.
54	1948267069		1	pc.

Note:
The jaws work with Power-Press SE, Akku-Press, Power-Press ACC drives.

REMS tool set - electric Power-Press SE press tool and "M" profile jaws

Range [mm]	Code	*		UM
15-35	1948267033		1	set

Each set includes:
- 1936267160 - Electric press tool REMS Power-Press SE
- 1948267048 - Jaws M15 - 1 pc.
- 1948267052 - Jaws M18 - 1 pc.
- 1948267056 - Jaws M22 - 1 pc.
- 1948267061 - Jaws M28 - 1 pc.
- 1948267065 - Jaws M35 - 1 pc.
- Case

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KAN-therm AC 3000 electric press tool

	Range [mm]	Code	*		UM
N	12-54	1936267239		1	pc.

Note:
The press tool is sold in a case.

KAN-therm DC 4000 battery press tool

	Range [mm]	Code	*		UM
N	12-54	1936267238		1	pc.

Note:
The press tool is sold with a battery, charger and case.

KAN-therm "M" profile press jaws

	Size [mm]	Code	*		UM
N	22	1936267251		1	pc.
N	28	1936267252		1	pc.
N	35	1936267253		1	pc.

Note:
The jaws work with KAN-therm AC 3000, DC 4000 drives.

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KAN-therm "M" profile press jaws

	Size [mm]	Code	*		UM
N	12	1936267248		1	pc.
N	15	1936267249		1	pc.
N	18	1936267250		1	pc.
N	22	1936267251		1	pc.
N	28	1936267252		1	pc.
N	35	1936267253		1	pc.

Note:
The jaws work with KAN-therm AC 3000, DC 4000 drives.

KAN-therm "M" profile collar

	Size [mm]	Code	*		UM
N	42	1936267283		1	pc.
N	54	1936267284		1	pc.

Note:
Use KAN-therm "M" profile collar jaws with KAN-therm ZBS1 adapter for KAN-therm press tools: AC 3000 (Steel, Inox, Copper), DC 4000 (Steel, Inox, Copper).

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ZBS1 adapter for KAN-therm "M" profile collar jaws

	Range [mm]	Code	*		UM
N	42 - 54	1936267285		1	pc.

Note:
Use adapter ZBS1 KAN-therm for KAN-therm press tools: AC 3000 (Steel, Inox, Copper), DC 4000 (Steel, Inox, Copper).

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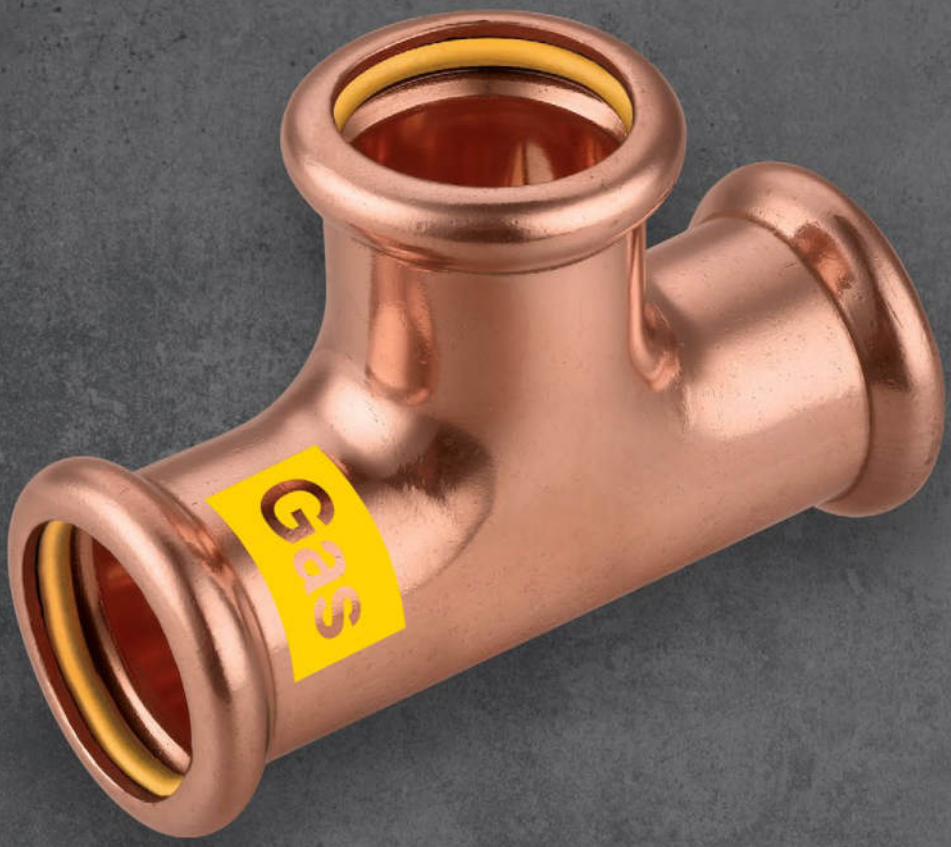
Install your **future**



SYSTEM **KAN-therm**

Copper Gas

Modern approach
to classic solutions

EN 23/12

∅ **15-54 mm**

System **KAN-therm** Copper Gas

System **KAN-therm** Copper Gas

KAN-therm Copper is a system of fittings made of high quality copper in diameters from Ø15 mm to Ø54 mm.

1 Modern connection technology

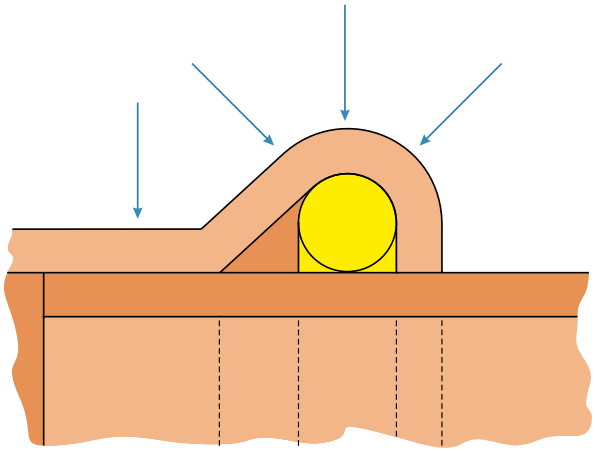
The press connection technology used in KAN-therm Copper Gas system ensures reliable and fast connections by pressing the fittings on the pipe. The assembly is carried out using common press machines, eliminating the process of threading or soldering individual components.

KAN-therm Copper system fittings are made of high-quality Cu-DHP copper and CC499K bronze.

Joining the elements in the "press" technology allows to obtain connections with a minimized narrowing of the pipe cross-section, which significantly reduces the pressure loss in the whole installation and creates excellent hydraulic conditions.

2 Durable connection technology

KAN-therm Copper system leak tightness is ensured by special O-Ring seals and an M-profile crimping at the three main points of the moulded part.



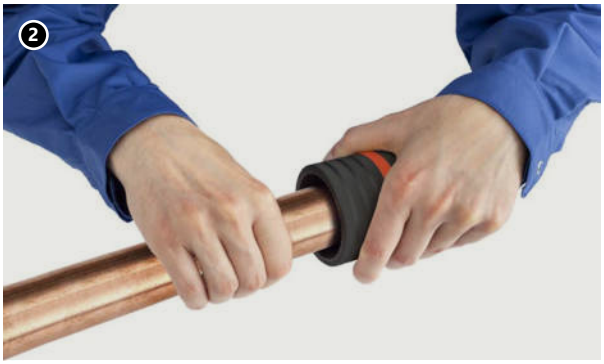
2.1 Applicability

- natural gas installations,
- LPG installations,
- compressed air systems,
- inert gases installations,
- vacuum.

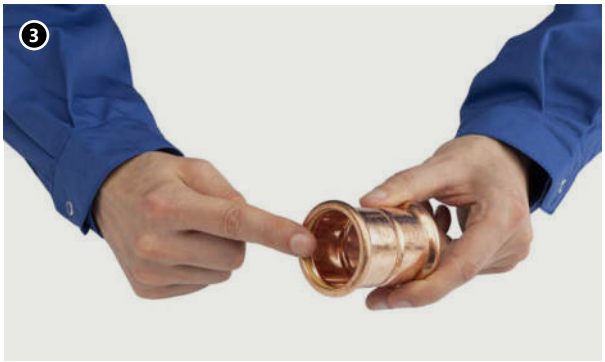
2.2 Advantages

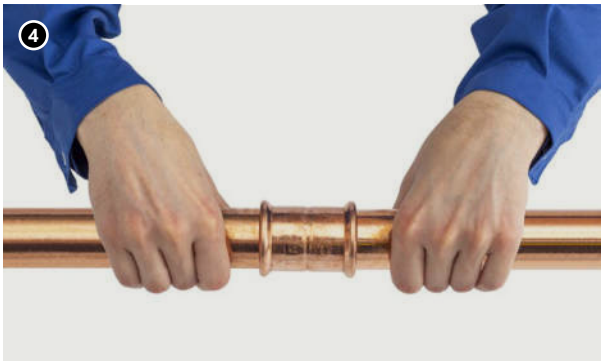
- simple and fast connection technology – "press",
- the most popular on the market, very accurate, three-point M crimping profile,
- quick and secure assembly, without soldering or threading, eliminating the risk of fire,
- wide range of diameters 15–54 mm,
- quick identification of diameter thanks to marking,
- special design of the fitting for easy fixing on the pipe,
- high corrosion resistance,
- high aesthetics of the installation.

3 Assembly of connections



1. Pipe cutting
Cut the pipe perpendicularly to its axis using a roll-cutter (the cut must be full without breaking off the cut pipe sections). It is permissible to use other tools provided that the cutting perpendicularity is maintained and that the cut edges are not damaged in the form of cracks, material losses and other deformations of the pipe cross-section.
2. Chamfering of pipe edges
Using a handheld chamfer, chamfer the tip of the cut pipe inside and out and remove any swarf that may damage the O-Ring during installation.



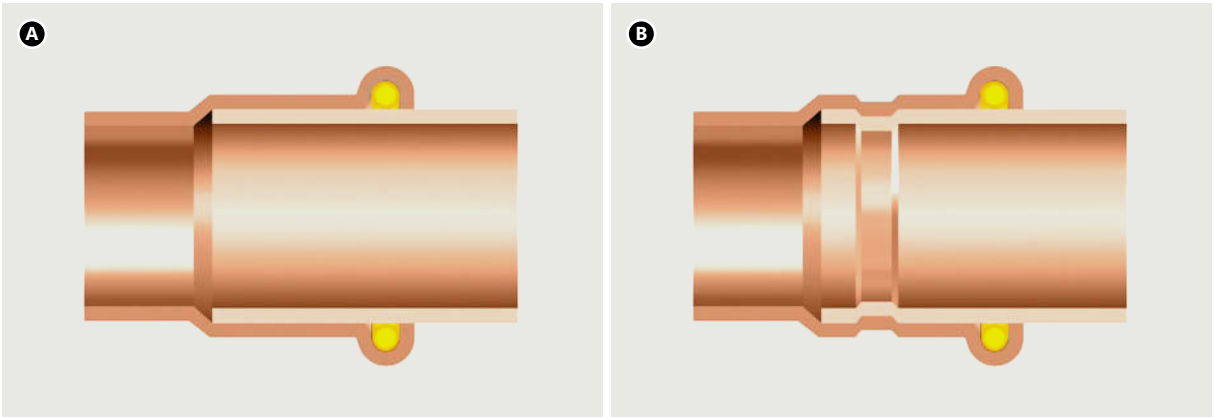


3. Control
Before installation, the presence of O-Rings in the fitting should be visually checked for damage, as well as for any contamination (swarf or other sharp objects) that may cause damage to the O-Rings during the pipe insertion phase. It is also necessary to make sure that the distance between adjacent fittings is not less than the permissible d_{min} (**Tab. 1 on page 95**).
4. Installing the pipe and fitting
Before pressing, the pipe should be inserted axially into the coupling to the required depth (light rotary motion is permissible). The use of oils, greases and fats to facilitate the insertion of the pipe is prohibited (water or aqueous soap solution is permitted).

5. Mark the insertion depth of the pipe into the fitting
In order to achieve the proper strength of the connection, it is necessary to maintain the appropriate depth A (Tab. 1, Rys. 1) of inserting the pipe into the fitting. In the case of simultaneous assembly of many joints (sliding the pipes into the fittings) the pipe insertion depth in the fitting must be checked before pressing each subsequent joint. It is sufficient to check whether the pipe is inserted all the way.
In order to ease the identification of pipe insertion depth in the fitting the simple marking technique can be applied (not required in construction conditions).
It consist of inserting the pipe into the fitting up to the limit and making a mark on pipe with a marker, right up to the edge of the fitting socket. After pressing, the marking must be still visible but as close as possible to the fitting.
Special templates are also used for determining the insertion depth, without necessity of matching with fitting.
Note: Insertion depth marking templates are not part of the basic system offer and may be available depending on the specific market where the product is sold.
6. Pressing fittings
Before starting the pressing process, check the efficiency of the tools. The use of press jaws and machines supplied as parts of KAN-therm Copper Gas system is recommended.
The size of the pressing jaw must always be selected according to the diameter of the connection to be made. The pressing jaw should be placed on the fitting in such a way that the groove inside the jaw exactly covers the place where the O-Ring is seated in the fitting (convex part of the fitting). Once the press machine been started, the pressing process is automatic and cannot be stopped. If, for some reason, the pressing process is interrupted, the connection must be disassembled (cut out) and a new one must be made in the correct way. If the installer has tools other than supplied by KAN-therm Copper Gas system, the possibility of using them should be consulted with KAN's Technical Department.

7. Pressing of 42-54 mm fittings. Preparation of the jaws.
For pressing larger diameters (42, 54 mm) pecial Snap-on press collars are used. The unfolded collar should be placed on the fitting. The jaws have a special groove in which the fitting should fit (the location of the O-Ring seal).
After correct seating collar on the fitting, connection is ready for pressing.
8. Connecting press tool to the collar
Press tool with a pre-mounted, suitable adapter must be connected to the collar.
It is essential to ensure that the pressing tool is connected to the collar in accordance with the instructions supplied with the tool. Press machine may be started to fully press the connection.

9. Pressing
After starting the press tool, the pressing process must not be stopped. If, for some reason, the pressing process is interrupted, the connection must be disassembled (cut out) and a new one must be made in the correct way. After pressing, the press machine automatically returns to its original position. The arms of the pressing tool (adapter) must then be pulled out of the collar. In order to remove the flange from the fitting, it must be unlocked again and then disassembled.

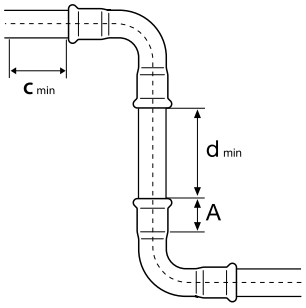


A. Joint before pressing
B. Joint after pressing

Mounting distances

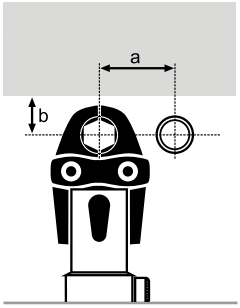
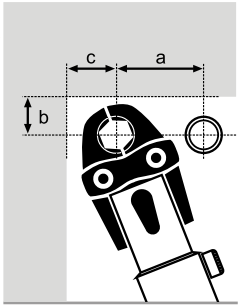
Tab. 1. Insertion depth of the pipe into the fitting and minimum distance between the press fittings

Ø [mm]	A [mm]	d_{min} [mm]	c_{min} [mm]
15	20	10	40
18	20	10	40
22	21	10	40
28	23	10	60
35	26	10	70
42	30	20	70
54	35	20	70



A – pipe insert depth,
d_{min} – minimum distance between fittings in order to ensure correct pressing,
c_{min} – minimum distance of fitting from the wall.

Tab. 2. Minimum installation distances

Ø [mm]	Fig. 2			Fig. 3			
	a [mm]	b [mm]		a [mm]	b [mm]	c [mm]	
15	56	20		75	25	28	
18	60	20		75	25	28	
22	65	25		80	31	35	
28	75	25		80	31	35	
35	75	30		80	31	44	
42	115*	75*		115*	75*	75	
54	120*	85*		120*	85*	85	

*applies to 4-piece pressing jaws

4 Tools

Depending on the mounted diameter, KAN-therm system provides different tool configurations. In order to select an optimal set of tools, use the following selection table:

Tab. 3. Tool selection table: KAN-therm Copper Gas system

Producer	Press machine		Diameter [mm]	Jaws/press collars		Adapter	
	Desc.	Code		Desc.	Code	Desc.	Code
NOVOPRESS	ACO203XL EFP203	1948267181 1948267210	15	[J] M	1948267135	-	-
			18	[J] M	1948267137	-	-
			22	[J] M	1948267139	-	-
			28	[J] M	1948267141	-	-
			35	[J] M	1948267143	-	-
			42	M Snap ON	1948267119	ZB203	1948267000
			54	M Snap ON	1948267121		
	ACO102* ACO103	1948055007 1948055008	15	[J] M	1948267093	-	-
			18	[J] M	1948267095	-	-
			22	[J] M	1942121002	-	-
			28	[J] M	1948267097	-	-
			35	[J] M	1942121004	-	-
REMS	Power-Press SE Akku-Press Power-Press ACC	1936267160 1936267152 1936267219	15	[J] M	1948267048	-	-
			18	[J] M	1948267052	-	-
			22	[J] M	1948267056	-	-
			28	[J] M	1948267061	-	-
			35	[J] M	1948267065	-	-
			42	[PR-3S] M *	-	Z2*	-
			54	[PR-3S] M *	-	Z2*	-

[J] - two segment jaw, other elements are press collars and may need additional adapter to combine with press machines
* the tool is not available in the KAN-therm offer

NOVOPRESS tools:

1. Battery-powered press ACO203XL
2. Electric press EFP203
3. PB2 M15–35 mm jaws
4. M42–54 Snap On collars
5. ZB203 adapter

1. Battery-powered press ACO 102
2. Battery-powered press ACO 103
3. PB1 M15– 35 mm jaws

REMS tools:

1. Electric press Power-Press ACC
2. Battery-powered press Akku-Press
3. Electric press Power-Press SE
4. M12–35 jaws

4.1 Tools – Safety

All tools must be used and used in accordance with their intended use and the manufacturer's operating instructions. Use for any other purpose is deemed to be improper. Intended use also requires observance of the operating instructions, the inspection and maintenance conditions and the relevant safety regulations in their current version. Any work using this tool that does not correspond to the intended use can lead to tool, accessories and pipes damage. The consequence may be leaks and/or damage to the connection point between the pipe and the fitting.

5 Detailed information

Fittings – material

- copper CU-DHP (CW024A) and bronze CC499K

Pipes - material and compliance

KAN-therm Copper system consists of fittings only. Therefore, the pipes used in cooperation with the system must meet specific requirements and have the appropriate properties:

- for gas installations – copper pipes according to EN 1057 R250/R290

Tab. 4. Copper pipes approved for use with KAN-therm Copper system

Ø [mm]	Wall thickness [mm]									
	0,6	0,7	0,8	0,9	1,0	1,1	1,2	1,5	2,0	2,5
15		R250			R250 R290					
18					R250 R290					
22					R250 R290					
28					R290		R250	R290		
35					R290		R290	R290		
42					R290		R290	R290		
54					R290		R290		R290	

The values in the table refer to tensile strength (250 and 290 N/mm^2). A distinction is made between medium-hard and hard tubes – R250 and R290 respectively. The higher the value, the harder the pipe material is.

O-Rings

Name of the O-Ring	Properties and operating parameters	Application for seals
NBR (yellow) 	■ max. operating pressure 5 bar (inside and outside buildings) ■ operating temperature: -20 °C to +70 °C	■ gas installations (inner) ■ LPG installations ■ compressed air installations ■ inert gas installations ■ vacuum installations

Applications out of given scope should always be consulted with KAN Technical Department.

6 Data on elongation and thermal conductivity

Type of material	Thermal expansion coefficient	4 m segment expansion at 60 °C temperature difference	Thermal conductivity
	[mm/(m×K)]	[mm]	[W/(m²×K)]
Copper	0,0170	1,02	397

7 Recommendations for use

- KAN-therm Copper Gas system fittings made of copper Cu-DHP and bronze CC499K cannot be used in installations that will be exposed to additional mechanical loads (e.g. hanging on pipelines, devastation, etc.),
- It is recommended to use ready-made bends and elbows 90° and 45° angle as part of KAN-therm Copper Gas system,
- If you are transporting a medium other than those included in this technical catalogue, the possibility of using KAN-therm Copper Gas system should be consulted with the KAN's Technical Department.
- Local regulations for the construction of gas installations must be followed.

8 Threaded connections, connection to other KAN-therm systems

KAN-therm Copper Gas system offers a full range of connectors with male and female threads.

In order not to strain pressed connection, it is recommended to make a threaded connection before pressing the connector.

Thread sealing

For threaded connections, use such amount of tow so that the thread peaks are still visible. If you use too much tow, the thread can be destroyed. Wrapping the tow just after the first thread reel avoids oblique screwing and damage to the thread.

Note!
Do not use chemical sealants or adhesives.

KAN-therm Copper Gas system components can be combined (through thread) with components made of other materials (see table).

Tab. 5. Possibilities of combining KAN-therm Copper Gas system with other materials

Type of installation	Pipes/fittings			
	Copper	Bronze/Brass	Carbon steel	Stainless steel
Copper Gas	yes	yes	yes	yes

Please note that direct joining of copper parts with stainless steel and galvanized carbon steel parts can lead to contact corrosion. This process can be eliminated by using the plastic inserts or independent metal inserts (bronze, brass) with minimal length of 50 mm (eg. using the brass ball valve).

9 Pipeline assembly

The maximum support spacing of the pipeline is shown in the table:

Tab. 6. Maximum support span

Pipe diameter [mm]	Mounting distance [m]
15 × 1,0	1,25
18 × 1,0	1,50
22 × 1,2	2,00
28 × 1,2	2,25
35 × 1,5	2,75
42 × 1,5	3,00
54 × 1,5	3,50

Attachment points can be done as:

- shifting (sliding) points should allow unobstructed axial motion of pipelines (caused by the thermal elongation factor), which is why they should not be mounted next to joints (the minimal distance from the edge of a joint must be higher than the maximal elongation of the pipe section ΔL). The slidable point can be made as "unscrewed" metal clamps with rubber pads,
- PS fixed points – To form fixed points (PS) use zinc-plated steel clamps with elastic pads, ensuring precise and reliable stabilization of the pipe on its entire circumference. The clamp should fully and tightly enclose the pipe,
- attachment points preventing the pipeline from moving downwards: used if the pipeline movement on compensation arm length was blocked by required PP position.

9.1 Fixed (PS) and slidable (PP) points

- fixed points should prevent any movement of pipelines and should be fixed next to fittings (at both sides of a fitting, e.g. coupling, tee connection),
- fixed or slidable points cannot be fixed directly onto fittings,
- when fixing PSs near tee connections make sure that clamps blocking the pipeline are not fixed onto branches of smaller diameters than one dimension in relation to the pipeline (forces induced by large diameter pipes can damage small diameters),
- PPs enable only axial motion of the pipeline (they should be treated as fixed points for perpendicular direction to the pipeline axis) and should be made by clamps,
- PPs should not be fixed next to fittings because this may block thermal motions of the pipeline,
- remember that PPs prevent the pipeline from moving transverse to its axis and that is why their position may determine compensation arms length.

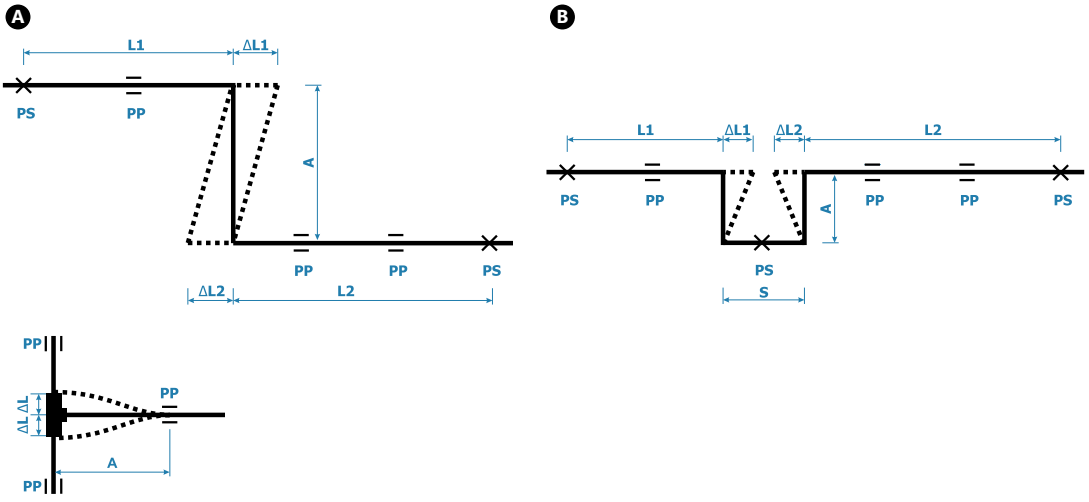
9.2 Elongation compensation

Along with water temperature rise ΔT pipelines become elongated by ΔL value. Thermal elongation ΔL causes pipeline deformation on expansion compensation length A. Expansion compensation length A should not cause excessive stresses in the pipeline and depends on the pipeline external diameter, thermal elongation ΔL and a linear expansion coefficient for a given material. Elongations ΔL in function of pipe length L and temperature rise ΔT are presented in table:

Tab. 7. Total length elongation ΔL [mm] – KAN-therm Copper Gas system

L [m]	ΔT [°C]						
	10	20	30	40	50	60	70
1	0,17	0,34	0,51	0,68	0,85	1,02	1,19
2	0,34	0,68	1,02	1,36	1,70	2,04	2,38
3	0,51	1,02	1,53	2,04	2,55	3,06	3,57
4	0,68	1,36	2,04	2,72	3,40	4,08	4,76
5	0,85	1,70	2,55	3,40	4,25	5,10	5,95
6	1,02	2,04	3,06	4,08	5,10	6,12	7,14
7	1,19	2,38	3,57	4,76	5,95	7,14	8,33
8	1,36	2,72	4,08	5,44	6,80	8,16	9,52
9	1,53	3,06	4,59	6,12	7,65	9,18	10,71
10	1,70	3,40	5,10	6,80	8,50	10,20	11,90
12	2,04	4,08	6,12	8,16	10,20	12,24	14,28
14	2,38	4,76	7,14	9,52	11,90	14,28	16,66
16	2,72	5,44	8,16	10,88	13,60	16,32	19,04
18	3,06	6,12	9,18	12,24	15,30	18,36	21,42
20	3,40	6,80	10,20	13,60	17,00	20,40	23,80

Significant pipe length changes must be compensated by a use of special expansion joints, fixed points or supports. The elongation may be compensated by changing the routing of the pipeline as shown in picture A ('Z'-shaped compensator) and picture B ('U'-shaped compensator).



The following formula is used to calculate changes in length:

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

ΔL – pipeline thermal elongation

L – initial pipeline length [m]

ΔT – temperature difference

α – Linear expansion coefficient 0,0170 mm/mK

In case of large elongations, compensators or, in complex cases, "Ω" type compensation loops must be calculated. Compensators are calculated using the following formula:

$$A = k \times \sqrt{(d_e \times \Delta L)}$$

A – extension length

k – pipe material constant, 35 for copper pipes

d_e – external pipe diameter [mm]

ΔL – pipeline elongation that must be compensated [mm]

9.3 Leak-tightness test

The leak-tightness test for gas installations must be carried out in accordance with local requirements. Pipes forming part of the gas installation must be subjected to a leakage test in the event of:

- new gas installation,
- its conversion or renovation,
- to take it out of service for more than 6 months.

To remove contaminants and check the patency of the installation, it should be blown with inert gas or compressed air free of contaminants or oil before the leakage test.

An appropriate protocol should be drawn up for each leakage test.

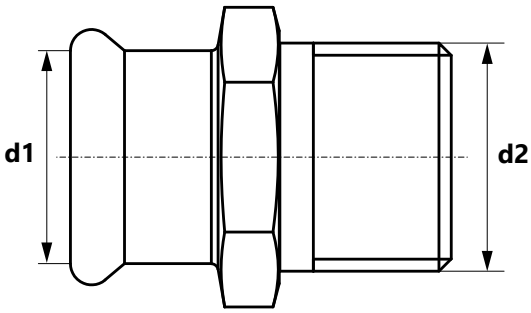
NOTES

System KAN-therm Copper Gas - assortment

Connectors

Male connector

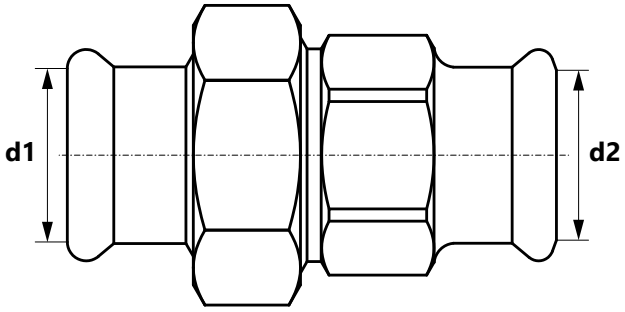
GROUP: P



Size (d1×d2)	Code	*			UM
15 R½"	2263045000		5	100	pc.
15 R¾"	2263045001		5	100	pc.
18 R½"	2263045002		5	125	pc.
18 R¾"	2263045003		5	100	pc.
22 R½"	2263045004		5	100	pc.
22 R¾"	2263045005		5	70	pc.
22 R1"	2263045006		5	75	pc.
28 R¾"	2263045007		5	75	pc.
28 R1"	2263045008		5	50	pc.
28 R1¼"	2263045009		5	50	pc.
35 R1"	2263045010		1	20	pc.
35 R1¼"	2263045011		1	20	pc.
42 R1¼"	2263045012		1	20	pc.
42 R1½"	2263045013		1	15	pc.
54 R2"	2263045014		1	10	pc.

Union coupling

GROUP: P



Size (d1=d2)	Code	*			UM
15	2263065000		1	40	pc.
22	2263065001		1	20	pc.
28	2263065002		1	20	pc.
35	2263065003		1	10	pc.

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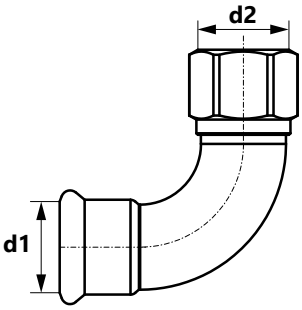
Female elbow 90°

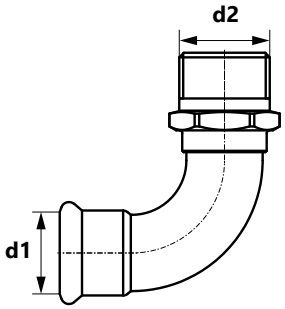
GROUP: P



Size (d1×d2)	Code	*			UM
15 Rp½"	2263069000		10	20	pc.
15 Rp¾"	2263069001		10	20	pc.
18 Rp½"	2263069002		1	25	pc.
18 Rp¾"	2263069003		1	25	pc.
22 Rp½"	2263069004		5	25	pc.
22 Rp¾"	2263069005		1	20	pc.
22 Rp1"	2263069006		5	15	pc.
28 Rp1"	2263069007		5	15	pc.
35 Rp1¼"	2263069008		1	10	pc.
42 Rp1½"	2263069009		1	10	pc.
54 Rp2"	2263069010		1	8	pc.

Male elbow 90°

GROUP: P



Size (d1×d2)	Code	*			UM
15 R½"	2263070000		10	50	pc.
18 R½"	2263070001		1	25	pc.
18 R¾"	2263070002		1	25	pc.
22 R¾"	2263070003		1	20	pc.
28 R1"	2263070004		1	15	pc.
35 R1¼"	2263070005		1	10	pc.
42 R1½"	2263070006		1	10	pc.
54 R2"	2263070007		1	4	pc.

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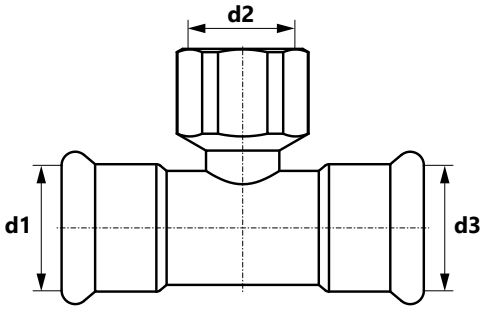
Female tee

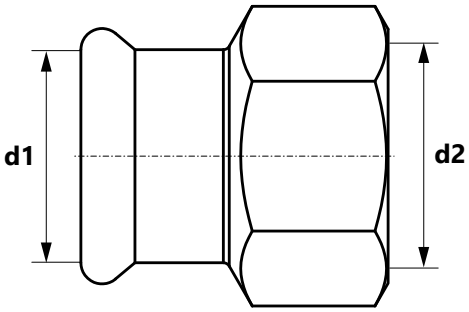
GROUP: P



Size (d1=d3×d2)	Code	*			UM
15 Rp½"	2263258000		5	20	pc.
18 Rp½"	2263258001		5	20	pc.
22 Rp½"	2263258002		5	20	pc.
22 Rp¾"	2263258003		5	20	pc.
28 Rp½"	2263258004		5	15	pc.
28 Rp¾"	2263258005		1	15	pc.
35 Rp½"	2263258006		1	10	pc.
35 Rp1"	2263258007		1	10	pc.
42 Rp½"	2263258008		1	15	pc.
54 Rp½"	2263258009		1	5	pc.

Female connector

GROUP: P



Size (d1×d2)	Code	*			UM
15 Rp½"	2263044000		5	100	pc.
15 Rp¾"	2263044001		5	100	pc.
18 Rp½"	2263044002		5	100	pc.
18 Rp¾"	2263044003		5	100	pc.
22 Rp½"	2263044004		5	100	pc.
22 Rp¾"	2263044005		5	75	pc.
28 Rp1"	2263044006		5	50	pc.
35 Rp1¼"	2263044007		1	20	pc.
42 Rp1½"	2263044008		1	10	pc.
54 Rp2"	2263044009		1	8	pc.

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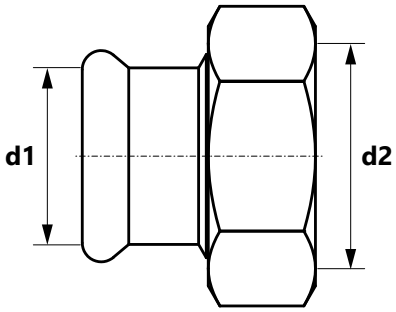
Female half union with flat gasket

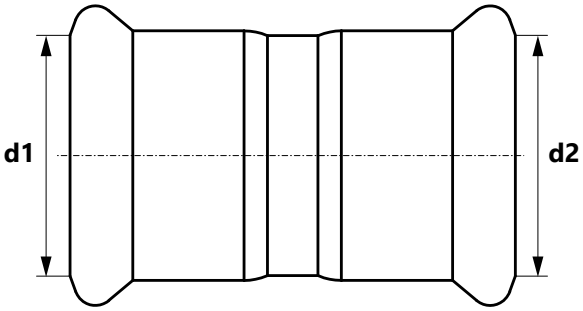
GROUP: P



Size (d1×d2)	Code	*			UM
15 G ⅞"	2263105000		5	80	pc.
28 G1⅜"	2263105001		5	40	pc.

Coupling

GROUP: P



Size (d1=d2)	Code	*			UM
15	2263245000		5	100	pc.
18	2263245001		5	100	pc.
22	2263245002		5	70	pc.
28	2263245003		5	50	pc.
35	2263245004		1	20	pc.
42	2263245005		1	10	pc.
54	2263245006		1	10	pc.

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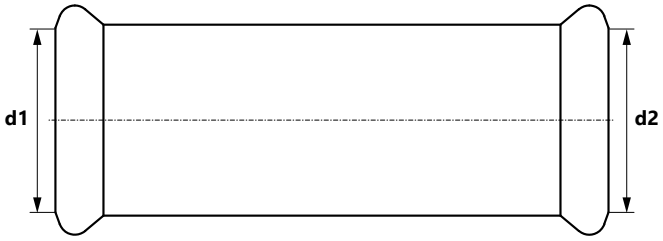
Slip coupling

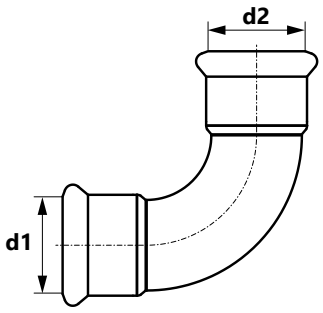
GROUP: P



Size (d1=d2)	Code	*			UM
15	2263245007		5	75	pc.
18	2263245008		5	75	pc.
22	2263245009		5	50	pc.
28	2263245010		5	50	pc.
35	2263245011		1	15	pc.
42	2263245012		1	5	pc.
54	2263245013		1	10	pc.

Elbow 90°

GROUP: P



Size (d1=d2)	Code	*			UM
15	2263302000		5	80	pc.
18	2263302001		5	70	pc.
22	2263302002		5	60	pc.
28	2263302003		5	40	pc.
35	2263302004		1	10	pc.
42	2263302005		1	10	pc.
54	2263302006		1	8	pc.

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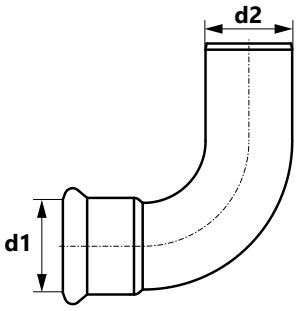
Nipple elbow 90°

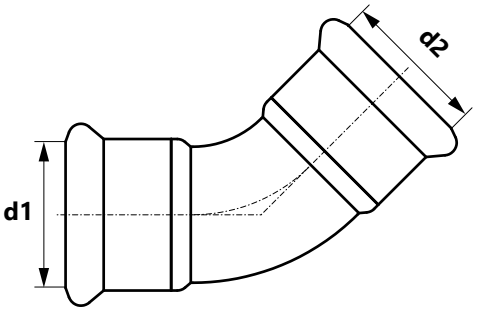
GROUP: P



Size (d1=d2)	Code	*			UM
15	2263326000		5	80	pc.
18	2263326001		5	70	pc.
22	2263326002		5	50	pc.
28	2263326003		5	40	pc.
35	2263326004		1	10	pc.
42	2263326005		1	10	pc.
54	2263326006		1	8	pc.

Elbow 45°

GROUP: P



Size (d1=d2)	Code	*			UM
15	2263325007		5	100	pc.
18	2263325008		5	80	pc.
22	2263325009		5	60	pc.
28	2263325010		5	50	pc.
35	2263325011		1	15	pc.
42	2263325012		1	10	pc.
54	2263325013		1	5	pc.

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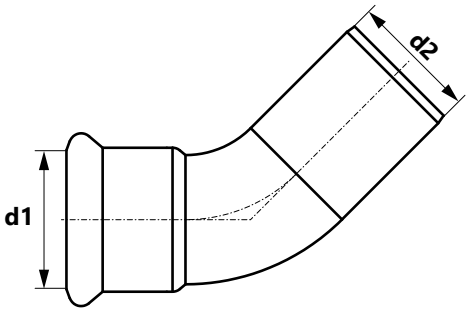
Nipple elbow 45°

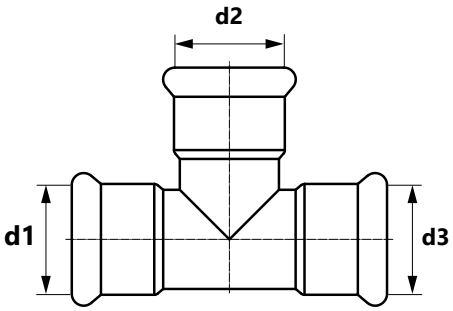
GROUP: P



Size (d1=d2)	Code	*			UM
15	2263325000		5	100	pc.
18	2263325001		5	80	pc.
22	2263325002		5	60	pc.
28	2263325003		5	50	pc.
35	2263325004		1	15	pc.
42	2263325005		1	10	pc.
54	2263325006		1	5	pc.

Tee

GROUP: P



Size (d1=d2=d3)	Code	*			UM
15	2263257000		5	60	pc.
18	2263257001		5	75	pc.
22	2263257002		5	40	pc.
28	2263257003		5	25	pc.
35	2263257004		1	10	pc.
42	2263257005		1	10	pc.
54	2263257006		1	4	pc.

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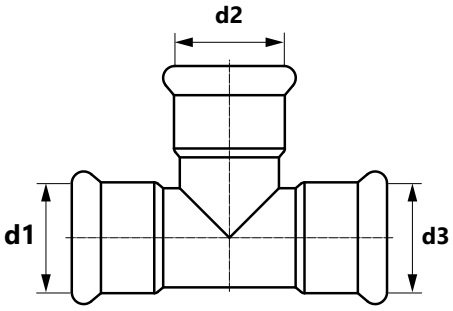
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Reducing tee

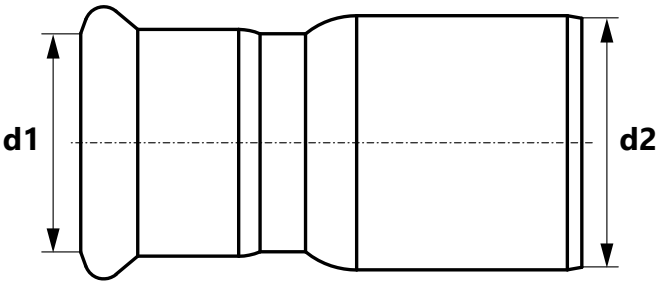
GROUP: P



Size (d1/d2/d3)	Code	*			UM
18 / 15 / 18	2263260000		5	60	pc.
22 / 15 / 15	2263260013		5	40	pc.
22 / 15 / 22	2263260001		5	40	pc.
22 / 18 / 22	2263260002		5	40	pc.
22 / 22 / 15	2263260012		5	50	pc.
28 / 15 / 28	2263260003		5	25	pc.
28 / 22 / 28	2263260004		5	25	pc.
35 / 22 / 35	2263260005		1	15	pc.
35 / 28 / 35	2263260006		1	15	pc.
42 / 28 / 42	2263260008		1	5	pc.
42 / 35 / 42	2263260009		1	8	pc.
54 / 42 / 54	2263260011		1	5	pc.

Nipple reducer

GROUP: P



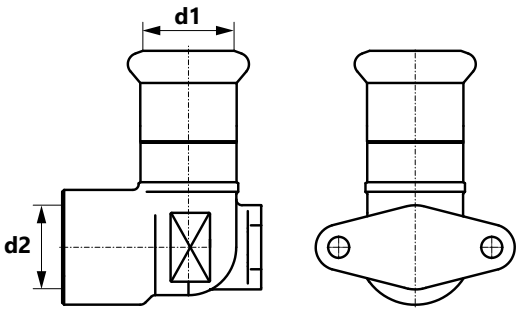
Size (d1/d2)	Code	*			UM
18 / 15	2263221000		5	100	pc.
22 / 15	2263221001		5	90	pc.
22 / 18	2263221002		5	80	pc.
28 / 15	2263221003		5	60	pc.
28 / 18	2263221004		5	75	pc.
28 / 22	2263221005		5	60	pc.
35 / 22	2263221006		1	30	pc.
35 / 28	2263221007		2	25	pc.
42 / 22	2263221008		1	20	pc.
42 / 28	2263221009		1	20	pc.
42 / 35	2263221010		1	10	pc.
54 / 35	2263221012		1	15	pc.
54 / 42	2263221013		1	10	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Female directly fixed wallplate elbow

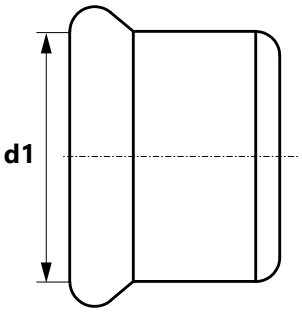
GROUP: P



Size (d1×d2×l)	Code	*			UM
15 Rp½" L = 43 mm	2263286000		1	20	pc.
18 Rp½" L = 44 mm	2263286001		1	20	pc.
22 Rp¾" L = 51 mm	2263286002		1	20	pc.

Stop end

GROUP: P



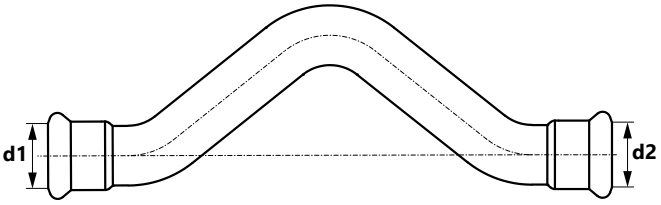
Size (d1)	Code	*			UM
15	2263250000		5	150	pc.
18	2263250001		5	130	pc.
22	2263250002		5	90	pc.
28	2263250003		5	75	pc.
35	2263250004		1	25	pc.
42	2263250005		1	20	pc.
54	2263250006		1	15	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Crossover

GROUP: P



Size (d1=d2)	Code	*			UM
15	2263022000		5	50	pc.
22	2263022002		10	20	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Accessories

O-Ring NBR Copper Gas

GROUP: P

Size [mm]	Code	*			UM
15	**2263182000**		20	2000	pc.
18	**2263182001**		20	2000	pc.
22	**2263182002**		20	2000	pc.
28	**2263182003**		20	2000	pc.
35	**2263182004**		20	2000	pc.
42	**2263182005**		20	2000	pc.
54	**2263182006**		20	600	pc.

Note:
Operating temperature from +20 °C to +70 °C.
Maximum operating pressure 5 bar.
For use in gas installations (internal), LPG installations, compressed air installations, inert gas installations and vacuum installations (0.8 bar).

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Tools

Roller cutter for pipes

GROUP: K

Range [mm]	Code	*		UM
15-54	1948267025		1	pc.

Pipe cutting machine

GROUP: K

Range [mm]	Code	*		UM
22-108	1948183001		1	pc.

Note:
The set includes a cutting wheel.

Deburrer for pipes

GROUP: K

Range [mm]	Code	*		UM
12-54	1905267012		1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Novopress tool set - ACO103 BT battery press tool + "M" profile jaws

GROUP: K

Range [mm]	Code	*		UM
15-28	1948**055008**		1	set

Each set includes:
- Battery press tool - 1 pc.
- 1948267093 - Jaws M15 for press tool - 1 pc.
- 1948267095 - Jaws M18 for press tool - 1 pc.
- 1942121002 - Jaws M22 for press tool - 1 pc.
- 1948267097 - Jaws M28 for press tool - 1 pc.
- 1938267047 - Charger - 1 pc.
- 1938267002 - Battery 2 Ah - 2 pcs.
- Case

Novopress ACO203XL BT press tool

GROUP: K

Range [mm]	Code	*		UM
12-54	1948**267181**		1	pc.

Each set includes:
- Battery press tool - 1 pc.
- Battery 18 V/ 5.0 Ah Li-Ion Milwaukee - 2 pcs.
- Charger - 1 pc.
- Lubricant - 1 pc.
- Plastic case

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Novopress EFP203 electric press tool

GROUP: K

Range [mm]	Code	*		UM
12-54	1948267210		1	pc.

Note:
The press tool is sold with a plastic case.

Novopress PB2 "M" profile press jaws

GROUP: K

Size [mm]	Code	*		UM
15	1948267135		1	pc.
18	1948267137		1	pc.
22	1948267139		1	pc.
28	1948267141		1	pc.
35	1948267143		1	pc.

Note:
The jaws work with EFP203 and ACO203XL drives.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Novopress "M" profile Snap On collar

GROUP: K

Size [mm]	Code	*		UM
42	1948**267119**		1	pc.
54	1948**267121**		1	pc.

Note:
Use jaws for diameters 66,7, 76,1 and 88,9 mm with adapter ZB221 for ACO203XL.
Use the jaw with a diameter of 66,7 mm with adapter ZB323 for ECO301.
Use the jaw with a diameter of 108 mm with adapter ZB221 and ZB222 for ACO203XL.

Novopress ZB203 adapter

GROUP: K

Range [mm]	Code	*		UM
35-54	1948**267000**		1	pc.

Note:
Adapter for EFP203 and ACO203XL drives.
Press: 50-63 mm
Steel & Inox: 35-54 mm
Copper: 42-54 mm

REMS Power-Press ACC electric press tool

GROUP: K

Range [mm]	Code	*		UM
15-35	1936**267219**		1	pc.

Note:
The press tool is sold with a case.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

REMS Power-Press SE Basic Pack electric press tool

GROUP: K

Range [mm]	Code	*		UM
15-35	1936267160		1	pc.

Note:
The press tool is sold with a case.
The set does not include jaws.

REMS Akku Press battery press tool

GROUP: K

Range [mm]	Code	*		UM
15-35	1936267152		1	pc.

Note:
The press tool is sold with a battery, charger and case.

REMS "M" profile press jaws

GROUP: K

Size [mm]	Code	*		UM
15	1948267048		1	pc.
18	1948267052		1	pc.
22	1948267056		1	pc.
28	1948267061		1	pc.
35	1948267065		1	pc.

Note:
The jaws work with Power-Press SE, Akku-Press, Power-Press ACC drives.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

REMS tool set - electric Power-Press SE press tool and "M" profile jaws

GROUP: K

Range [mm]	Code	*		UM
15-35	1948**267033**		1	set

Each set includes:
- 1936267160 - Electric press tool REMS Power-Press SE
- 1948267048 - Jaws M15 - 1 pc.
- 1948267052 - Jaws M18 - 1 pc.
- 1948267056 - Jaws M22 - 1 pc.
- 1948267061 - Jaws M28 - 1 pc.
- 1948267065 - Jaws M35 - 1 pc.
- Case

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

NOTES

Install your **future**

SYSTEM **KAN-therm**

Groove

System for special purposes

EN 23/12

DN25-DN300

System KAN-therm Groove

System **KAN-therm** Groove

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 DN8 to DN300 (12-323,9 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's 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 a product that enables custom pipe installations in industrial, shipbuilding and mining industries. Reliable connections, uncomplicated assembly and security are our priorities.

1.1 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,
- A wide range of high-quality products,
- Diameters from DN25 to DN300,
- Compatibility with other KAN-therm systems.

KAN-therm Groove products can be used in many types of pipelines - in compressed air and specialist systems used in mining and industry.

2 Technical specifications and application options

water | **heating** | **cooling** | **compressed air** | **vacuum systems** | **fire hydrant systems** | **sprinkler systems** | **industrial systems**

The KAN-therm Groove system is a ready-to-use technical solution made from the highest quality materials, for connecting components using the grooved connection technique. Resistance to high performance parameters give the product the technical ability to be used in a wide range of pipe installations. The technical application possibilities of the KAN-therm Groove system components are shown below.

2.1 Recommended use

NOTE:
The suitability of the product for the types of installation described depends on local requirements and regulations can therefore vary from market to market and from one region of the world to another. Before installation, the applicability of the product must always be checked in terms of the applicable local regulations and requirements as well as available certificates.

2.1.1 Drinking water system

The KAN-therm Groove system in the galvanized version can be used with pipes on both sides galvanised or stainless steel pipes in drinking water installations. Due to the zinc coating used on surfaces, it may only be used in cold water installations (the operating temperature must not exceed exceed 50 °C). If stainless steel tubes are used, the maximum permissible content of dissolved chloride ions must not exceed 250 mg/l.

Gasket: EPDM (grade E-pw)

- Operating temperature: from -34 °C to +110 °C,
- Operating pressure: depending on coupling type.

2.1.2 Central heating system

KAN-therm Groove connectors and couplings 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.

For heating systems where temperatures can rise to more than 65 °C, during the use of EHC grease is recommended when connecting pipes using KAN-therm Groove clamps. It is a lubricant based on high-constitution silicone, developed for improved lubricity in extremely hot and cold conditions.

2.1.3 Chilled water installations

KAN-therm Groove connectors and couplings 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.

2.1.4 Sprinkler systems

KAN-therm Groove Sprinkler connectors and couplings with carbon steel or stainless steel pipe, certified by VdS, FM, UL, ULc or LPCB.

Gasket: EPDM (Class E)

- Operating temperature: from -34 °C to +110 °C,
- Operating pressure: depending on coupling type.

KAN has a range of fittings and connectors specifically for the fire safety installation market (FPS). For more information on the use of KAN-therm Groove Sprinkler in sprinkler systems, please contact the KAN technical department.

2.1.5 Compressed air system

KAN-therm Groove connectors and couplings with carbon steel or stainless steel pipes. Galvanized elements of the KAN-therm Groove system together with galvanized steel pipes can be used for oil-free compressed air (max. synthetic oil concentration up to 25 mg/m^3; higher concentrations of synthetic oil as well as any mineral oil content requires the seals to be replaced with butyl rubber).

Gasket: EPDM (Class E) - max. 25 mg/m^3 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.

2.1.6 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

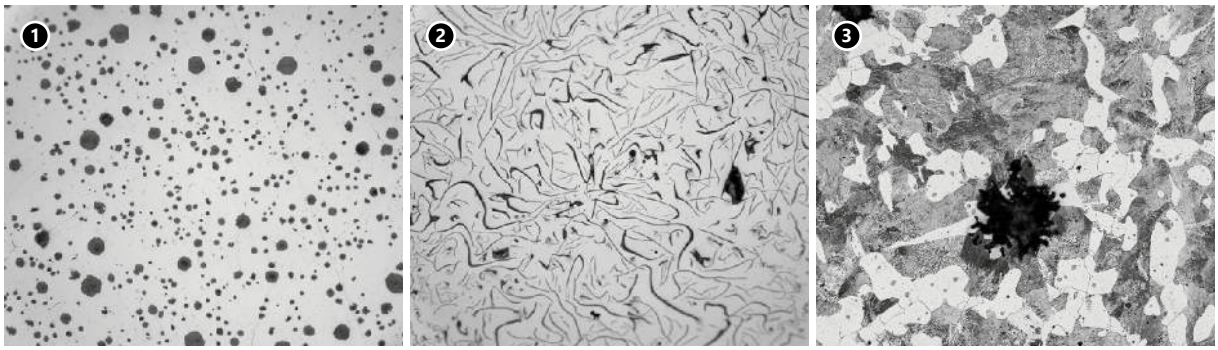
2.2.1 Housing material

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 irons 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,
- EN 1563: EN-GJS-450-10 or EN-GJS-450-15,
- JIS G5502: FCD450-10,
- SABS 936/937: SG42.

Tab. 1. 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.

Tab. 2. 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.

Tab. 3. 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).

Tab. 4. 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%

Tab. 5. 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)

Tab. 6. 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 × 45	M10 × 55	-	-	-	-	½ × 2 ⅜
32	42,4	M10 × 55	M12 × 75	M10 × 55	M10 × 55	M10 × 55	-	
40	48,3	M10 × 55	M12 × 60	M10 × 55	M10 × 55	-	-	½ × 2 ⅜
50	60,3	M10 × 55	M12 × 75	M10 × 70	M10 × 70	M10 × 55	M10 × 55	⅝ × 3 ½
65	73,0	M10 × 55	M12 × 75	M10 × 70	M10 × 70	M10 × 55	M12 × 75	⅝ × 3 ½
65	76,1	M10 × 55	M12 × 75	M10 × 70	M10 × 70	M10 × 55	M12 × 75	-
80	88,9	M12 × 75	M12 × 75	M10 × 70	M12 × 75	M12 × 75	M12 × 75	¾ × 4 ¾
	108,0	M12 × 75	-	M10 × 70	-	-	-	-
100	114,3	M12 × 75	M16 × 90	M10 × 70	M12 × 75	M12 × 75	M12 × 75	-
	133,0	M16 × 90	-	M12 × 75	-	-	-	-
125	139,7	M16 × 90	M16 × 90	M12 × 75	M16 × 90	M16 × 90	M16 × 90	-
	141,3	M16 × 90	M16 × 90	M12 × 75	M16 × 90	M16 × 90	M16 × 90	⅞ × 6 ½
150	168,3	M16 × 90	M20 × 120	M12 × 75	M16 × 90	M16 × 90	M16 × 135	⅞ × 6 ½
200	219,1	M16 × 90 M20 × 120 (7705H)	M20 × 120	M16 × 135	M20 × 120	M20 × 120	M20 × 120	¾ × 4 ¾
250	273,0	M20 × 120	⅞ × 6 ½	-	⅞ × 6 ½	-	-	⅞ × 6 ½
300	323,9	⅞ × 6 ½	⅞ × 6 ½	-	⅞ × 6 ½	-	-	1 × 6 ½

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 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.

Tab. 7. EPDM gaskets

Compound	Class	Colour code	Recommendations for use	Maximum range of temperature
EPDM	E	 Green strap	Suitable for 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

Warning! EPDM rubber gaskets 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 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 nitrile

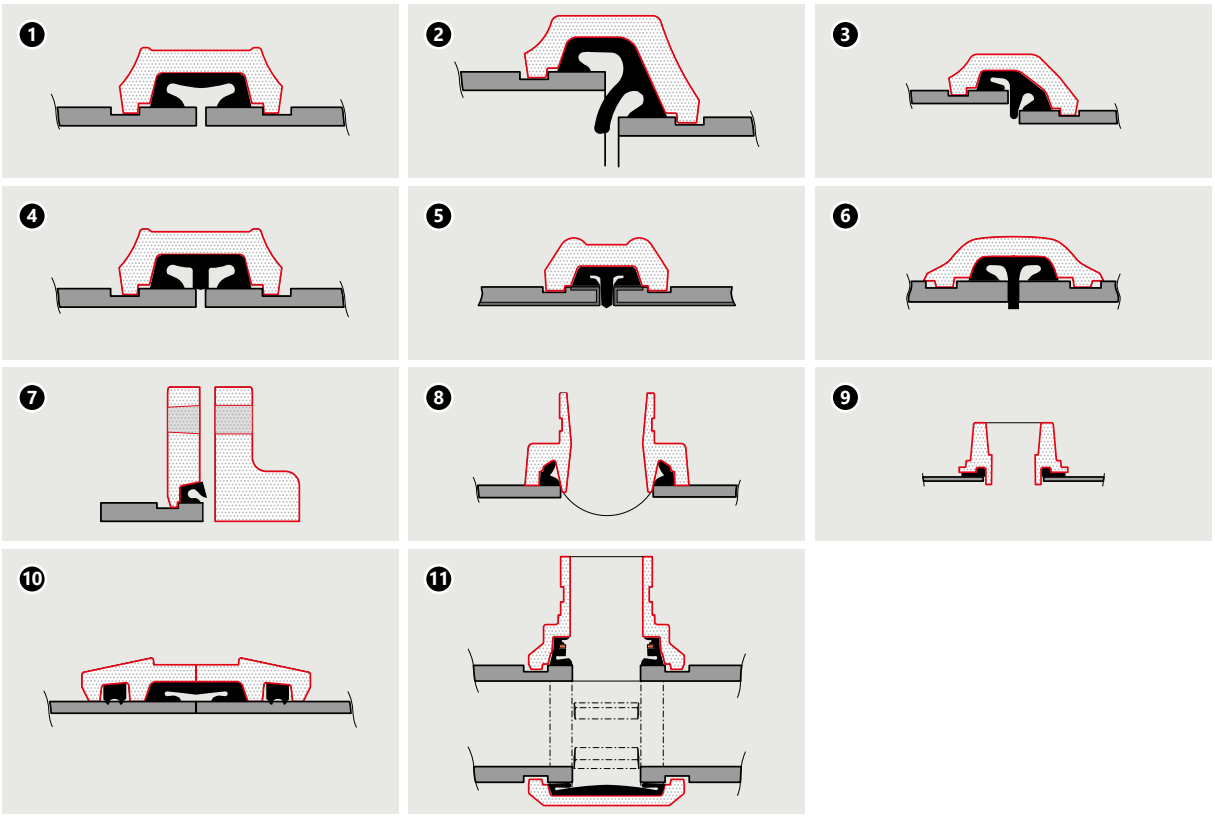
They all represent the same copolymer of butadiene and acrylonitrile (ACN) which is inherently resistant to hydraulic fluids, lubricating oils, gear oils and other non-polar petroleum based compounds as well as water at temperature not exceeding 65 °C. NBR has low resistance to hot water and steam.

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

Tab. 8. NBR gaskets

Compound	Class	Colour code	Recommendations for use	Maximum range of temperature
NBR	T	 Orange strip	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.	from -29 °C to +82 °C

2.4.2 Types of gaskets



1. Standard
2. Reducing
3. Reducing - (2" × 1½", 2½" × 2", 3" × 2½")
4. Gap Seal
5. End protection
6. Fast fit
7. Flange adapter
8. Saddle connector
9. Saddle
10. Wildcat
11. Outlet coupling

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's Technical Department.

For dry systems, it is recommended to use GapSeal class E gaskets which closes off the gap between the pipes or gasket cavity. This will prevent any remaining transported medium from entering the cavities. Rigid couplings are preferred for dry pipe, 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's Technical Department.

Tab. 9. Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by rolling

Pipe dimension					Nominal wall thickness		KAN-therm Groove couplings											
DN	inch/ mm	mm	inches	Type series			7705		7707		Z05		Z07		7706		7041	
					mm	inches	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
				5	1,7	0,065	20	300	35	500	-	-	-	-	-	-	-	-
25	1	33,7	1,315	10	2,8	0,109	28	400	52	750	-	-	-	-	-	-	-	-
				STD	3,4	0,13	35	500	69	1000	-	-	-	-	-	-	-	-
				5	1,65	0,07	20	300	35	500	17	250	28	400	-	-	-	-
32	1 ¼	42,4	1,660	10	2,77	0,11	28	400	52	750	28	400	42	600	-	-	-	-
				STD	3,56	0,14	35	500	69	1000	35	500	52	750	-	-	-	-
				5	1,65	0,07	20	300	35	500	17	250	28	400	20	300	-	-
40	1 ½	48,3	1,900	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	-	-
				5	1,65	0,07	20	300	35	500	17	250	28	400	20	300	NR	NR
50	2	60,3	2,375	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
				5	2,11	0,08	20	300	35	500	17	250	28	400	20	300	NR	NR
	2 ½	73,0	2,875	10	3,05	0,12	28	400	42	600	28	400	42	600	24	350	17	250
				STD	5,16	0,2	35	500	69	100	35	500	52	750	35	500	20	300
				5	2,11	0,08	20	300	35	500	17	250	28	400	20	300	NR	NR
65	76,1 mm	76,1	3,000	10	3,05	0,12	28	400	42	600	28	400	42	600	24	350	17	250
				STD	5,16	0,2	35	500	69	100	35	500	52	750	35	500	20	300
				5	2,11	0,08	20	300	35	500	17	250	28	400	20	300	NR	NR
80	3	88,9	3,500	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
				5	2,11	0,08	20	300	-	-	-	-	-	-	-	-	-	-
	108 mm	108,0	4,252	10	3,05	0,12	28	400	-	-	-	-	-	-	-	-	-	-
				STD	5,74	0,23	35	500	-	-	-	-	-	-	-	-	-	-
				5	2,11	0,08	20	300	28	400	14	200	28	400	17	250	NR	NR
100	4	114,3	4,500	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
				5	2,77	0,11	17	250	-	-	-	-	-	-	-	-	-	-
	133 mm	133,0	5,236	10	3,4	0,13	24	350	-	-	-	-	-	-	-	-	-	-
				STD	6,55	0,26	31	450	-	-	-	-	-	-	-	-	-	-
				5	2,77	0,11	17	250	24	350	12	175	24	350	17	250	NR	NR
125	139,7 mm	139,7	5,500	10	3,4	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	2,77	0,11	17	250	24	350	12	175	24	350	17	250	NR	NR
	5	141,3	5,563	10	3,4	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	2,77	0,11	17	250	-	-	-	-	-	-	-	-	-	-
	159 mm	159,0	6,260	10	3,4	0,13	24	350	-	-	-	-	-	-	-	-	-	-
				STD	7,11	0,28	31	450	-	-	-	-	-	-	-	-	-	-
				5	2,77	0,11	17	250	20	300	12	175	20	300	12	175	NR	NR
150	6	168,3	6,625	10	3,4	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
				5	2,77	0,11	14	200	17	250	10	150	17	250	12	175	NR	NR
200	8	219,1	8,625	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
				5	3,4	0,13	12	175	14	200	-	-	14	200	-	-	NR	NR
250	10	273,0	10,750	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
				5	4,06	0,16	12	175	14	200	-	-	10	150	-	-	NR	NR
300	12	323,9	12,750	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

Tab. 10. Operating pressure values in bars (psi) for ductile iron couplings connected with carbon steel pipes grooved by cutting

Pipe dimension					Nominal wall thickness		KAN-therm Groove couplings											
DN	inch/ mm	mm	inches	Type series			7705		7707		Z05		Z07		7706		7041	
					mm	inches	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 ¼	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 ½	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 ½	73	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	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	3,5	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	4,252	STD	5,74	0,23	42	600	-	-	-	-	-	-	-	-	-	-
				XS	8,08	0,32	42	600	-	-	-	-	-	-	-	-	-	-
100	4	114,3	4,5	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	5,236	STD	6,02	0,24	31	450	-	-	-	-	-	-	-	-	-	-
				XS	8,56	0,34	31	450	-	-	-	-	-	-	-	-	-	-
125	139,7 mm	139,7	5,5	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
	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	6,26	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	10,75	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	12,75	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

Tab. 11. Operating pressure values in bars (psi) for ductile iron couplings connected with stainless steel pipes grooved by rolling

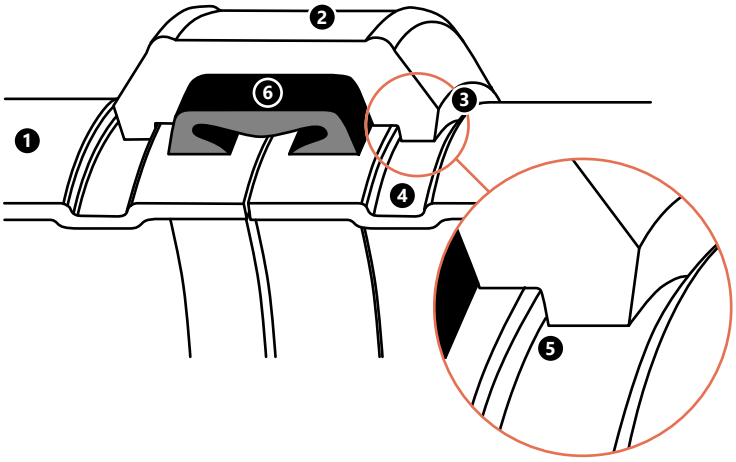
Pipe dimension					Nominal wall thickness		KAN-therm Groove couplings											
DN	inch/ mm	mm	inches	Type series			7705		7707		Z05		Z07		7706		7041	
					mm	inches	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi
				5	1,7	0,065	17	250	22	325	-	-	-	-	-	-	-	-
25	1	33,7	1,315	10	2,8	0,109	20	300	31	450	-	-	-	-	-	-	-	-
				40	3,4	0,133	31	450	48	300	-	-	-	-	-	-	-	-
				5	1,7	0,065	17	250	22	325	17	250	20	300	-	-	-	-
32	1 ¼	42,4	1,660	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	-	-	-	-
				5	1,7	0,065	17	250	22	325	17	250	20	300	17	250	-	-
40	1 ½	48,3	1,900	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	-	-
				5	1,7	0,065	17	250	22	325	17	250	20	300	17	250	12	175
50	2	60,3	2,375	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
				5	2,1	0,083	17	250	22	325	17	250	20	300	17	250	12	175
	2 ½	73,0	2,875	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
				5	2,1	0,083	17	250	22	325	17	250	20	300	17	250	12	175
65	2 ½	76,1	3,000	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
				5	2,1	0,083	17	250	22	325	17	250	20	300	17	250	12	175
80	3	88,9	3,500	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
				5	2,1	0,083	14	200	17	250	14	200	17	250	14	200	12	175
100	4	114,3	4,500	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
				5	2,8	0,109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	175
125	5	139,7	5,500	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	2,8	0,109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	12	175
	5	141,3	5,563	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	2,8	0,109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	9	125
150	6	168,3	6,625	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
				5	2,8	0,109	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
200	8	219,1	8,625	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
				5	3,4	0,134	NR	NR	NR	NR	-	-	NR	NR	-	-	NR	NR
250	10	273,0	10,750	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
				5	4,0	0,156	NR	NR	NR	NR	-	-	NR	NR	-	-	NR	NR
300	12	323,9	12,750	10	4,6	0,180	NR	NR	9	125	-	-	7	100	-	-	NR	NR
					9,5	0,375	14	200	28	400	-	-	17	250	-	-	14	200

Tab. 12. Operating pressure values in bars (psi) for ductile iron couplings connected with stainless steel pipes grooved by cutting

Pipe dimension					Nominal wall thickness		KAN-therm Groove couplings											
DN	inch/ mm	mm	inches	Type series			7705		7707		Z05		Z07		7706		7041	
					mm	inches	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 ¼	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 ½	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 ½	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



1. Pipe
2. Housing
3. Wedge
4. Groove
5. Precise engagement
6. Gasket

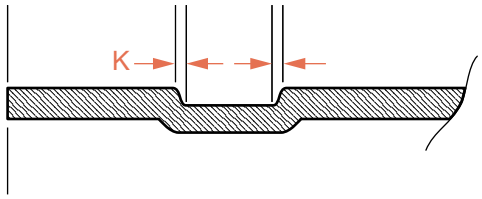
Grooving by rolling

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



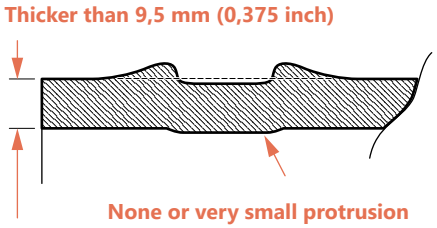
Grooves made by rolling should be defined as clearly as possible. To obtain the optimal coupling performance, "K" dimension should be as small as possible. During the grooving process, the machine operator should set the feed force of the upper roll set to obtain the best possible groove profile.

* Outside Diameter

Applicable pipe wall thickness

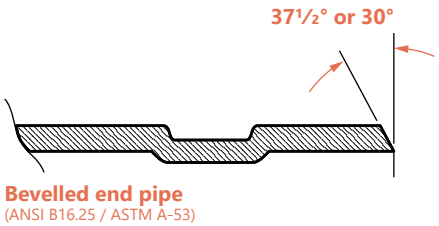
Grooving by rolling is performed in the case of carbon steel pipes, stainless steel pipes, copper pipes and aluminium pipes with wall thickness of 9,5 mm or thinner, depending on the type of grooving machine and the used set of rollers. Different wall thickness and dimensions require the use of different sets of rollers. For additional information, contact the manufacturer of the groove rolling machine.

Thick-walled pipes



During attempt to make grooves (by rolling) 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 antirust layer. In the case of thick-walled pipes, it is strongly recommended to use the grooving process by the cutting 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 ½ ± 2 ½° or 30°, according to ANSI B16.25 and ASTM A-53.

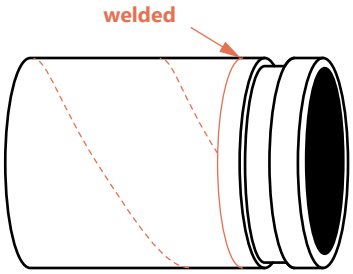
Removing welding beads

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



spiral pipe for groove joints

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 (21/2") 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 external diameter of the pipe for the same nominal dimension 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)

Tab. 13. Pipe dimension equivalents

Dimension in inches		Dimension in millimetres	
Nominal	Actual	Nominal	Actual
½	0,840	**DN15**	21,3
¾	1,050	**DN20**	26,7
1	1,315	**DN25**	33,7
1 ¼	1,660	**DN32**	42,4
1 ½	1,900	**DN40**	48,3
2	2,375	**DN50**	60,3
2 ½	2,875	-	73,0
3 OD	3,000	**DN65**	76,1
3	3,500	**DN80**	88,9
3 ½	4,000	-	101,6
4 ¼ OD	4,250	-	108,0
4	4,500	**DN100**	114,3
5	5,563	-	141,3
5 ¼ OD	5,250	-	133,0
5 ½ OD	5,500	**DN125**	139,7
6 ¼ 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.

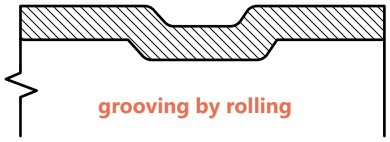
On the other hand, grooving by cutting takes place mainly in the factory or workshop because the grooving machines are not as common or mobile as the machines for grooving by rolling.

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° ± 2 1/2° (ANSI B16.25).

Tab. 14. Applications of rolled and cut grooves

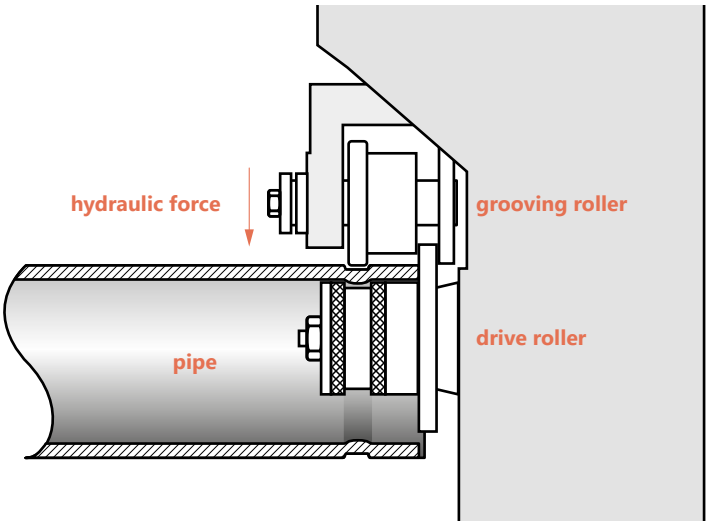
Pipe material	Rolled groove	Cut groove
Carbon steel pipe	Standard wall, Series of types 40 (10" and less), 30, 20, 10, 7, 5, BS1387 medium and light, JIS SGP	Series of types 80, 40, 30 BS1387 medium and heavy, JIS SGP
Stainless steel pipe	Series of types 40S, 20S, 10S, 5S	Series of types 80S, 40S

Grooving by rolling



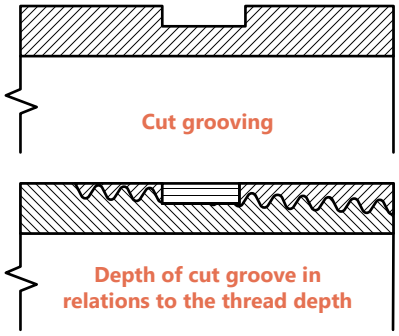
Grooving by rolling was used for the first time in the case of a light and thin pipe, the wall thickness of which was insufficient to apply the cutting method. Today, grooving by rolling is commonly used for standard pipes of series of shedule 40 (max. 9,5 mm wall thickness) up to 42 inches (DN1050) 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.

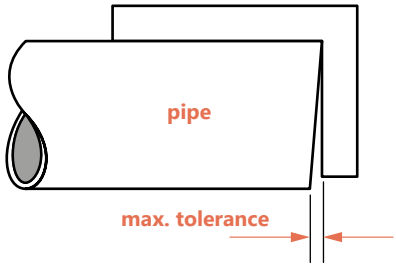
Contrary to grooving by rolling, grooving by cut causes grooving a rectangular slot in the pipe of without a protrusion on the inside of the pipe. Incision of grooves is widely used on pipeline elements such as 90° elbows, tees, grooved end valves, etc. It is also common practice to coat a grooved pipe 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



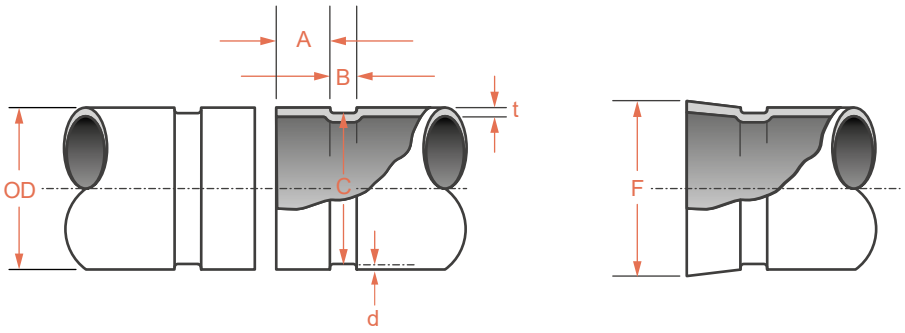
Maximum permissible tolerances for ends cut at right angle:

0,8 mm for diameter up to 3 ½"(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.

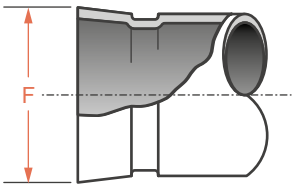
Minimal wall thickness (dimension „t")

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.

Tab. 15. Parameters for rolled grooves

Pipe or pipe duct			Dimensional specifications						
Nominal dimension	Outside Diameter (OD)		Gasket seat A ±0,76 A ±0.76	Groove width B ±0.76	Diameter after rolling C		Groove depth d (ref.)	Wall thickness t min.	Conicity F Max. Actual di-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	±0,61	15,88	8,74	57,15	0/-0,38	1,60	1,8	62,2
65	73	±0,74	15,88	8,74	69,09	0/-0,46	1,98	2,3	75,2
65	76,1	±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 ½"; 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.

Tab. 16. Parameters for cutted grooves

Pipe or pipe duct			Dimensional specifications					
Nominal dimension	Outside Diameter (OD)		Gasket seat A ±0.031 A ±0.79	Groove width B ±0.031 B ±0.79	Diameter after machining C		Groove depth d (ref.)	Wall thickness t min.
	Actual dimension	Tolerance			Actual dimension	Tolerance		
25	33,4	+0,33/-0,33	15,88	7,95	30,23	0/-0,38	1,60	3,38
32	42,2	+0,41/-0,41	15,88	7,95	38,99	0/-0,38	1,60	3,56
40	48,3	+0,48/-0,48	15,88	7,95	45,09	0/-0,38	1,60	3,68
50	60,3	+0,61/-0,61	15,88	7,95	57,15	0/-0,38	1,60	3,91
65	73,0	+0,74/-0,74	15,88	7,95	69,09	0/-0,46	1,98	4,78
80	88,9	+0,89/-0,79	15,88	7,95	84,94	0/-0,46	1,98	4,78
100	108,0	+1,04/-0,79	15,88	9,53	103,73	0/-0,51	2,11	5,16
100	114,3	+1,14/-0,79	15,88	9,53	110,08	0/-0,51	2,11	5,16
125	141,3	+1,42/-0,79	15,88	9,53	137,03	0/-0,56	2,11	5,16
150	168,3	+1,60/-0,79	15,88	9,53	163,96	0/-0,56	2,16	5,56
200	219,1	+1,60/-0,79	19,05	11,13	214,40	0/-0,64	2,34	6,05
250	273,0	+1,60/-0,79	19,05	12,70	268,27	0/-0,69	2,39	6,35
300	323,9	+1,60/-0,79	19,05	12,70	318,29	0/-0,76	2,77	7,09

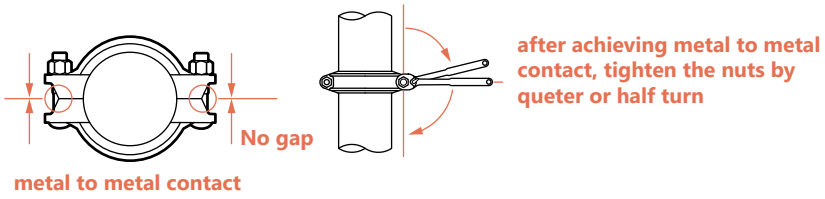
1. Outer diameter of the pipe Maximum permissible tolerances for cut ends at right angles is 0,03" for diameters not exceeding 3 1/2"; 0,045" for 4" to 6"; and 0,060" for diameters 8" and larger.
2. The surface of the gasket seat „A" should be free from deep scratches, spots and irregularities that would 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 cutting.
5. Value "d" is for guidance only. Groove depth must be specified using the groove diameter dimension „C".

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.

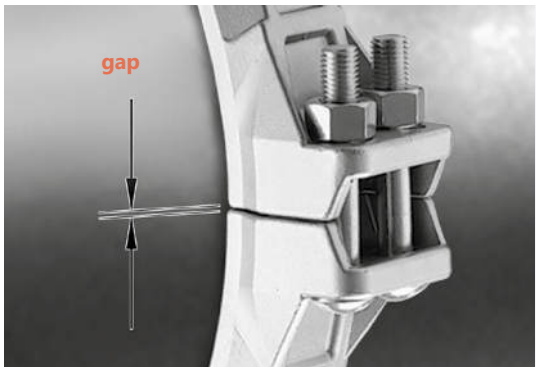
Metal-to-metal contact Tighten the bolts and nuts so that the clamps are tight against each other (metal-to-metal contact). After the contact of the metal surfaces of the clamp, the nuts should be tightened by a quarter or half turn to ensure that the bolts and nuts adhere tightly to the fastening element.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



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 factory supplied bolts and nuts for the assembly of KAN-therm Groove couplings. General recommended torque ranges for typical dimensions of carbon steel bolts are presentend in table below. 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.

Tab. 17. Tightening torque specifications

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

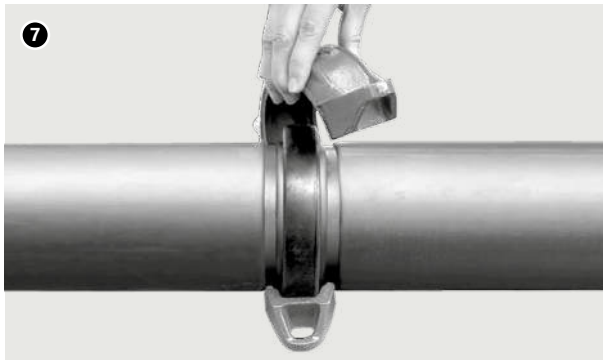
2.7.1 General installation steps for grooved couplings assembly

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.

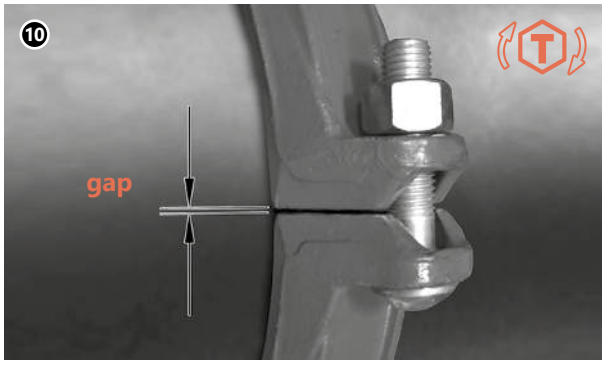
1. Check and prepare the ends of the pipes
o obtain optimal quality of sealing, the outer layer of pipe ends should be free of any dents, protrusions, rolling marks and other surface defects such as loosely adhering paint, scale, dust, chips, grease or rust.
2. Check the gasket
Make sure that the gasket supplied is suitable for the intended use. The colour of the stripe determines the type of gasket.

3. 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.
4. 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.

5. 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.
6. Install the coupling
Start the assembly with the separated housing parts of the coupling.



7. Mount both halves of the coupling
Mount both halves at the same time.
Make sure that the coupling keys are engaged in the grooves.
8. 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.

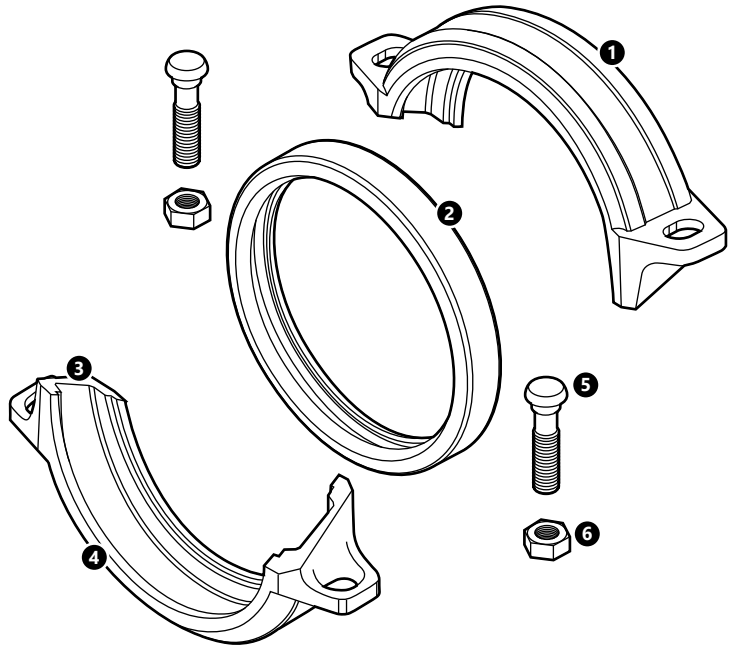


9. Tighten the nuts
Tighten nuts alternately and equally until the bolt pads meet and make metal-to-metal contact.
Tighten nuts by another one quarter to one half turn to make sure the bolts and nuts are snug and secure.
The use of a torque wrench is not required.
10. Tighten the nuts
Bolts and nuts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

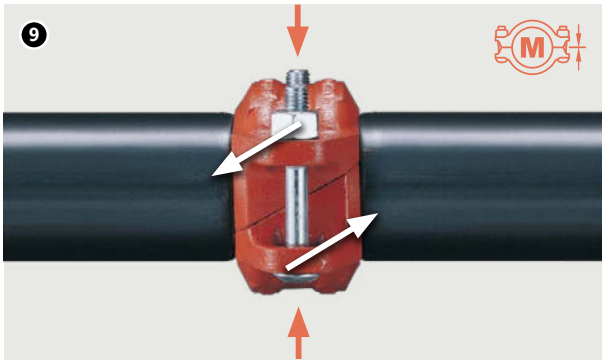
! NOTE! Excessive tightening torque can cause the bolts and nuts to jam. To correct the problem with stainless steel bolts and nuts, Loctite C5-A anti-galling grease should be used. A good solution for preventing seizures is the use of silicon bronze nuts.

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



1. connector casing element
2. gasket
3. oblique screw clamp
4. wedge
5. bolt
6. nut

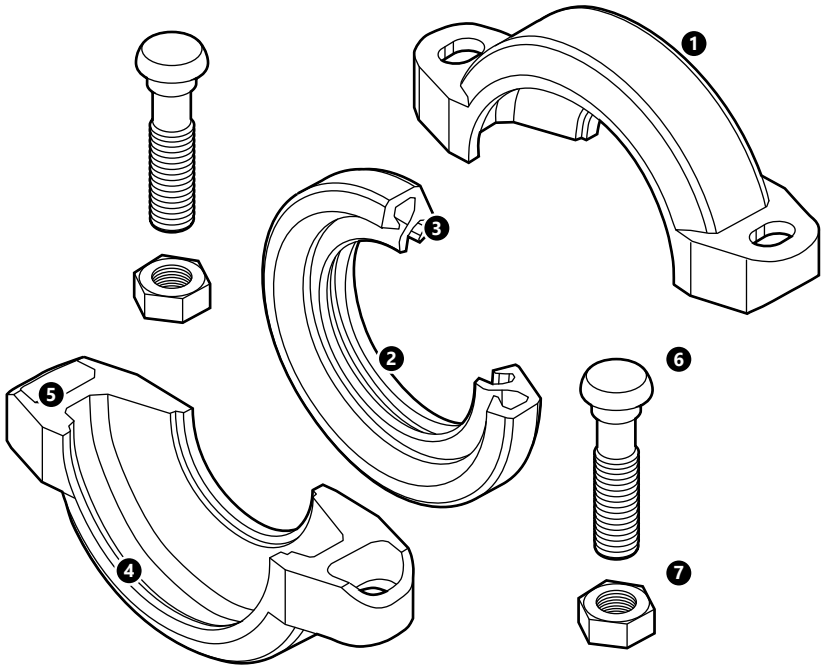
Please go to section 2.7.1 on page 148 to remind the initial stages of assembly 1 – 8.



9. 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).

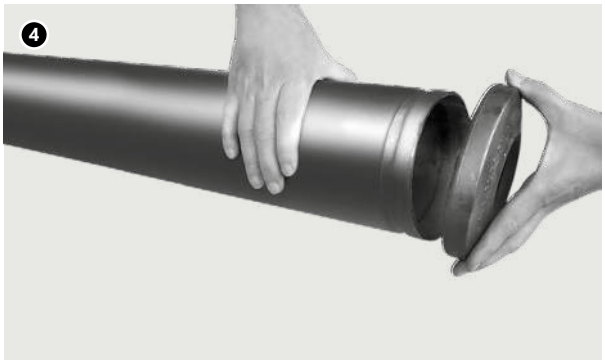
2.7.3 Installation of reducing coupling 7706



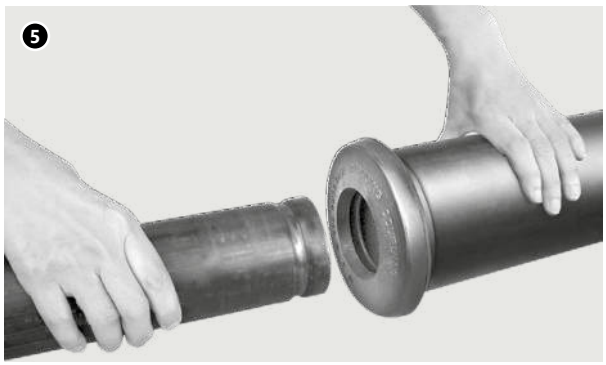
1. connector casing element
2. reducing gasket
3. gasket lip
4. wedge
5. screw clamp
6. bolt
7. nut

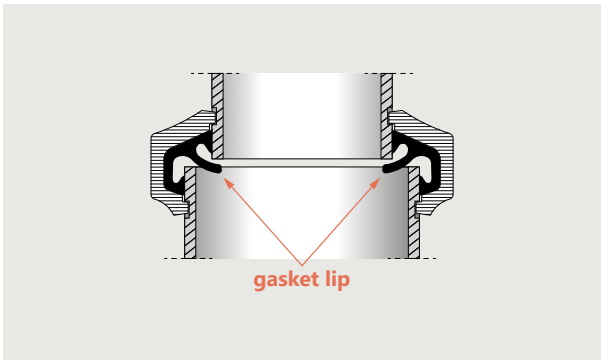
Please go to section 2.7.1 on page 148 to remind the initial stages of assembly 1 – 3.

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



4. First, install the gasket on the larger pipe
Mount the larger opening of the gasket on the larger pipe end.
The gasket should fit into but not over the the groove in the larger pipe.
A slight twisting motion on the pipe will help to seat the gasket on its surface.

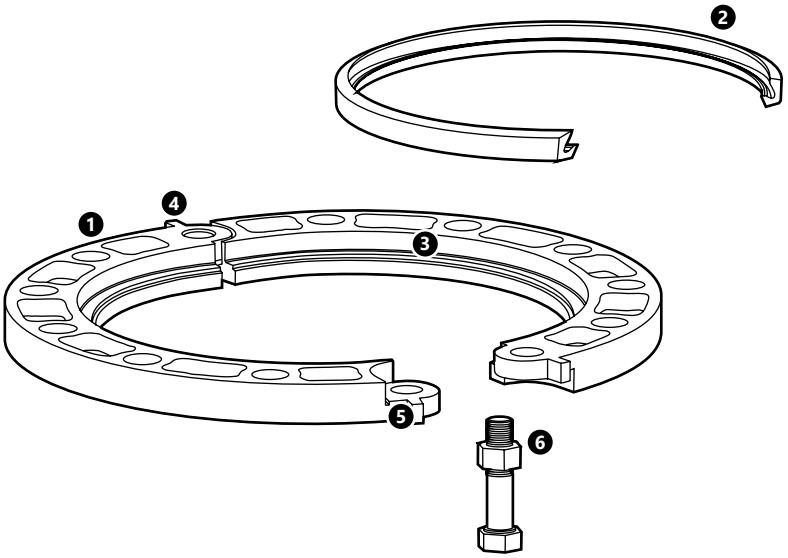




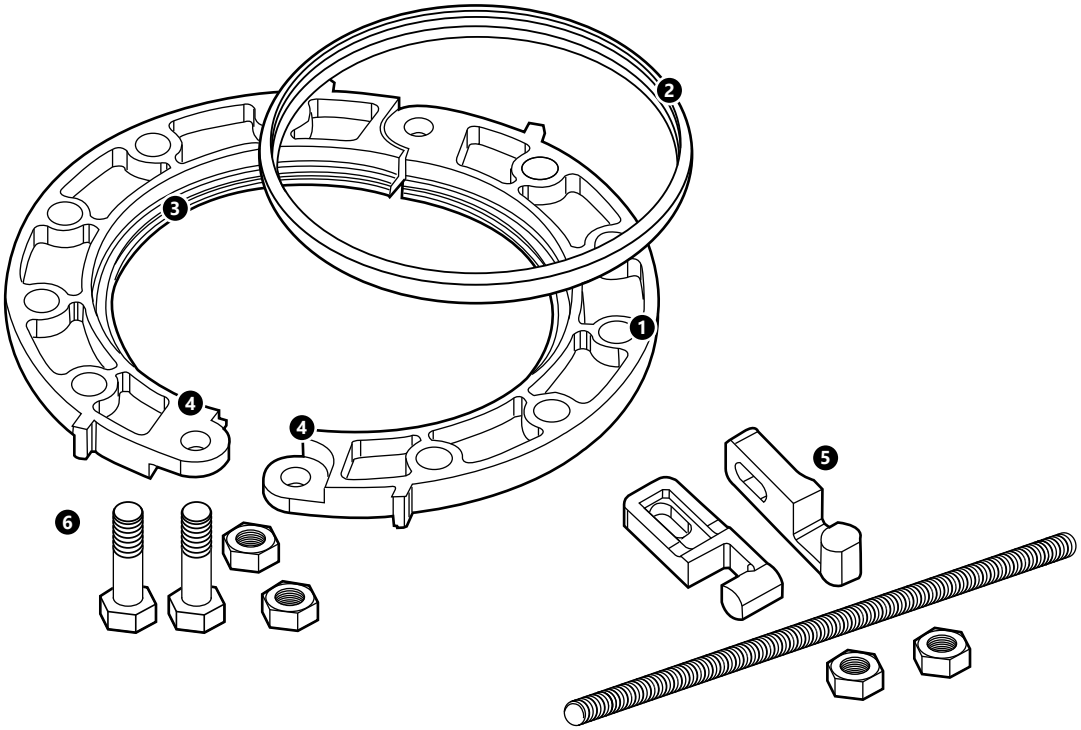
5. Insert the smaller pipe
Bring together and align the two pipes to be mated and insert the smaller pipe into the gasket.
A slight twisting motion on the pipe will make assembly easier.
Caution! Reducing couplings (such as model 7706) cannot be used with a plug as it can be sucked into the pipe when draining the piping system.
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.

6. 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

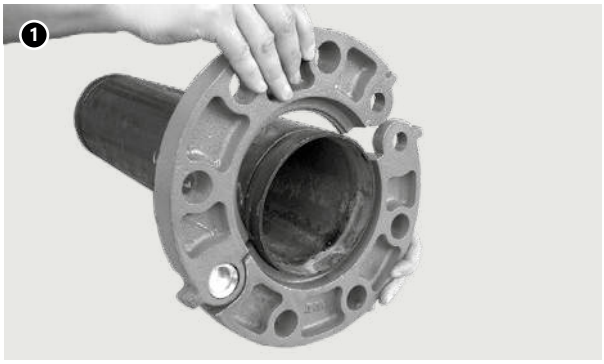


1. connector casing element
2. gasket
3. wedge
4. hinge
5. closure tab
6. factory-supplied bolt and nut

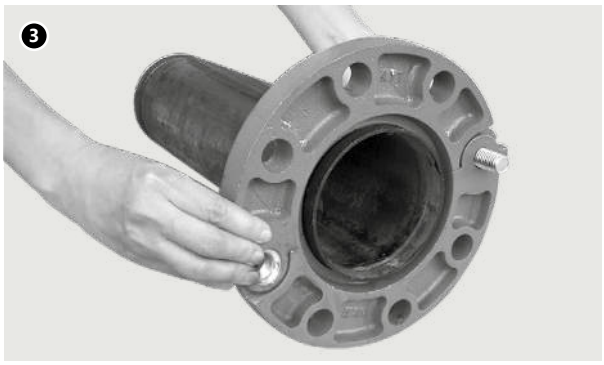


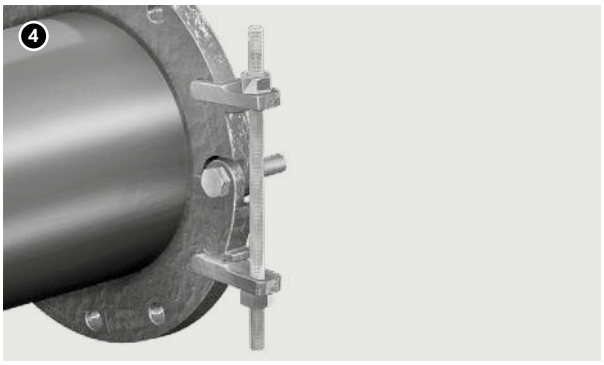
1. flange casing element
2. gasket
3. hollow for gasket
4. flange lap coupling
5. factory-supplied assembly kit
6. factory-supplied bolt and nut

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.

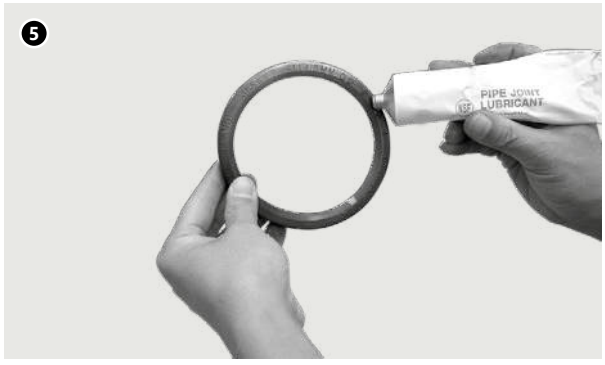


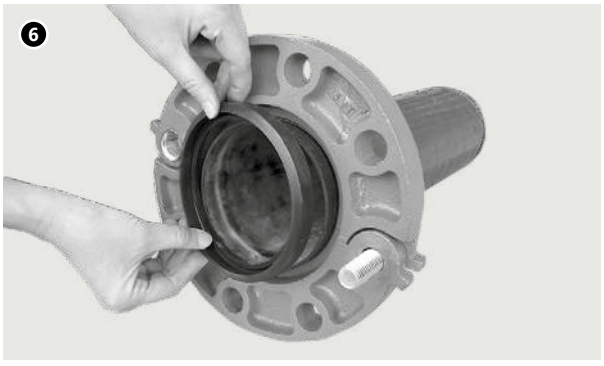
1. Install the articulated flange structure (2–12")
Open the articulated flange structure.
Place the flange segments around the groove at the end of the pipe and tighten them together until the bolt holes are aligned.
2. Tighten the flange segments (2–12")
Use a wrench, clamp or other similar tool to tighten the locking projections until the bolt holes are aligned.





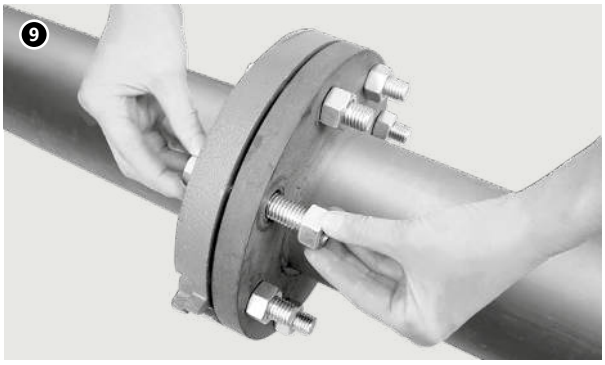
3. Insert the factory-supplied bolt (2–12")
Pass the factory-supplied bolt through the clamp hole, making sure that the flange completely adheres to the pipe grooves.
4. Insert the factory-supplied bolt (2–12")
Make sure that the flange is fully in contact with the pipe grooves.

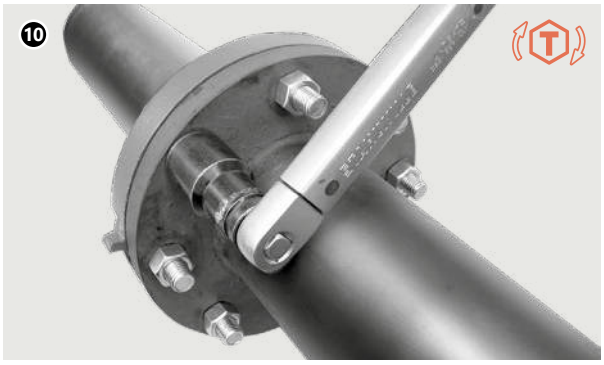




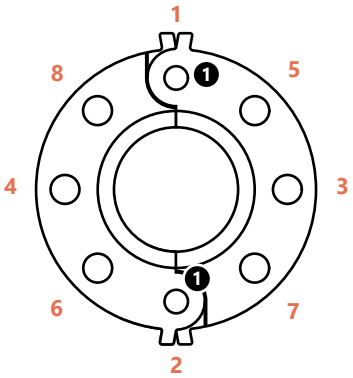
5. Check the gasket grade and lubricate it
Check the colour of the gasket strip and make sure that the gasket supplied is suitable for the intended use.
Then apply a thin layer of grease to the lip of the gasket.
6. Install the gasket
Place the gasket in the recess between the outside diameter of the 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.

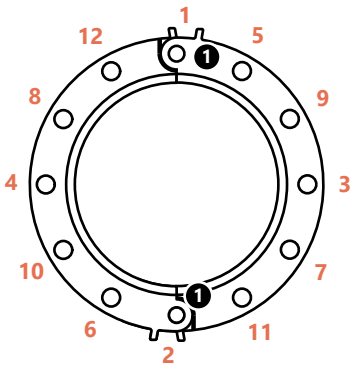
7. Match the second flange
Insert the industrial bolt to fix the flanges to the hinge hole (opposite to the factory-supplied bolt) and tighten the nuts of the industrial bolt and the factory-supplied bolt.
8. Match the second flange
Apply the matching flange surface to the surface of the flange adapter and thread the two factory-supplied bolts through the four holes in the flange couplings.





9. Add bolts
Insert the remaining industrial bolts and tighten the nuts manually.
All bolts must be pointed in the same direction.
10. Tighten the nuts
Tighten the nuts alternately, diagonally.
Bolts and nuts must always be tightened to the required torque by using a torque wrench.





1. 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.

Tab. 18. Model 7041 (ANSI CLASS 125/150) tightening torque requirements

Nominal dimension	Bolt dimension		Required tightening torque	
inches	inches	No.	Lbs-Ft	Nm
2	⅝	4	110–140	149–190
2 ½	⅝	4	110–140	149–190
3	⅝	4	110–140	149–190
4	⅝	8	110–140	149–190
5	¾	8	220–250	298–339
6	¾	8	220–250	298–339
8	¾	8	220–250	298–339
10	⅞	12	320–400	434–542
12	⅞	12	320–400	434–542

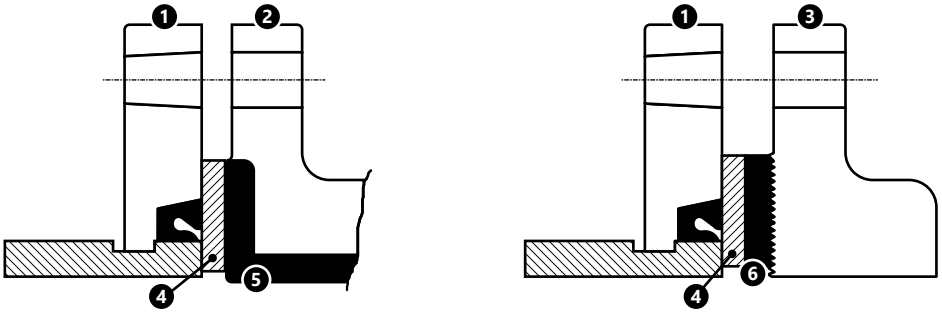
Tab. 19. Model 7041 (PN 10/16) tightening torque requirements

Nominal dimension	Bolt dimension		Required tightening torque	
DN	mm	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

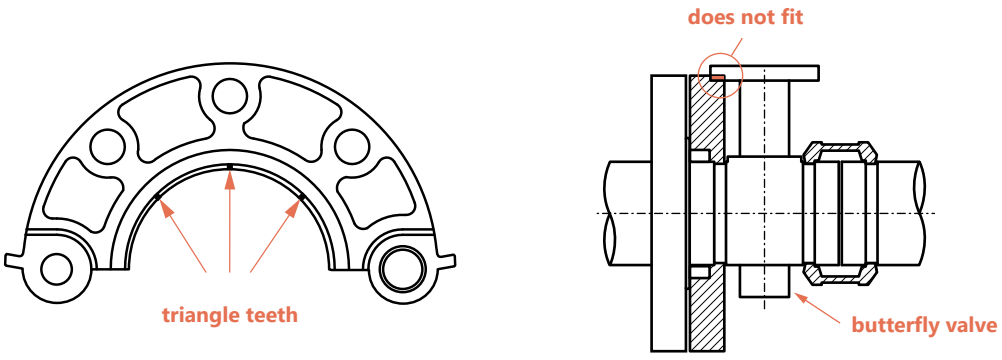
Installation of flat gasket in flange adapters 7041

Important remarks

— 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.



1. 7041 flange
2. flang and fitting element (rubber surface)
3. flange and fitting element (serrated surface)
4. flat gasket
5. layer covered and coated with rubber
6. standard flange gasket

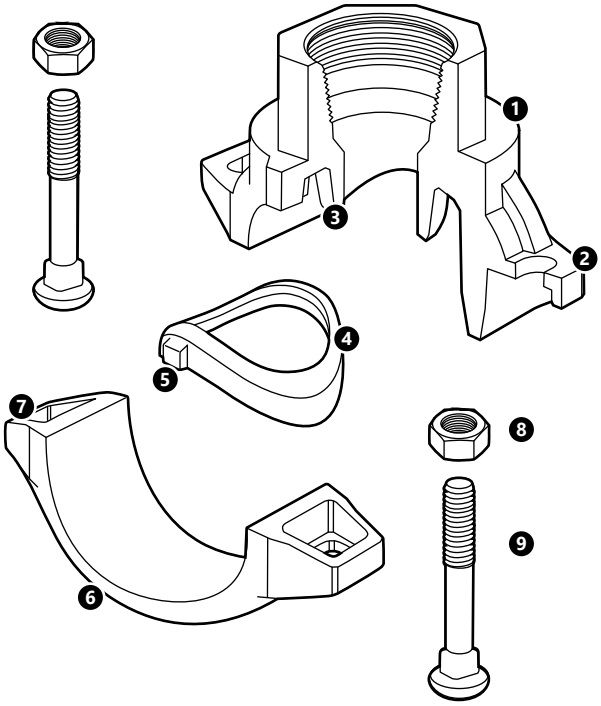


— Flange adapters 7041 have small triangular teeth inside the wedge arm to prevent the pipe from rotating. The teeth should be ground in the event of a connection with a flange with a rubber coating.

— Flange adapters 7041 cannot be used as anchor points for tendons on non-stretchable couplings.

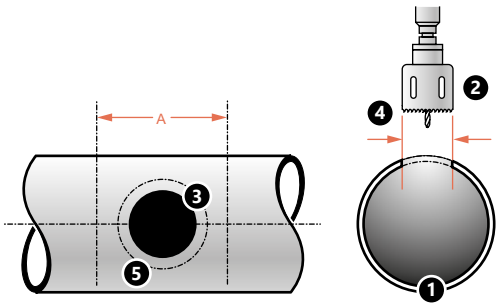
— When installing the flange adapter 7041 on the butterfly valve or ball valve, make sure that the outer diameter of the flange adapters does not interfere with the valve actuator or the actuator mounting washer.

2.7.5 Installation of saddle couplings



1. upper casing
2. retaining flange
3. gasket pocket
4. gasket
5. retaining projection
6. lower casing
7. screw clamp
8. nut
9. bolt

Saddle system



1. pipe
2. holesaw
3. hole size
4. holesaw drill size
5. +16 mm (⅝")

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.

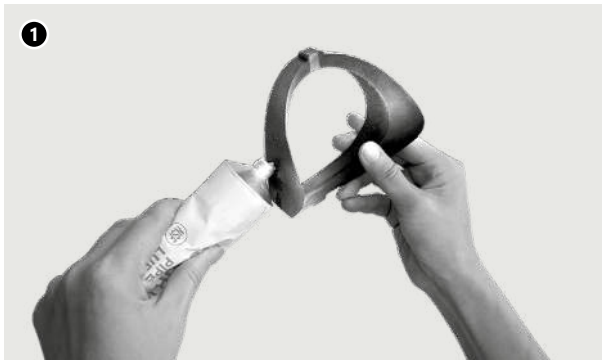
1. Cutting the hole
Determine the position of the hole on the pipe.
Use a suitable hole dimension drill saw, according to the table below regarding the required hole dimension.
2. Remove beads and rough edges
and clean the pipe surface within a radius of 16 mm around the hole in which the gasket is to 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.

Tab. 20. The dimensions of holes and area „A" for saddle coupling

Saddle-type coupling passage × branch		Hole dimensions				Preparation of "A" surface	
		Hole saw		Max. permissible diameter			
inches	mm	inches	mm	inches	mm	inches	mm
2 × ½	50 × 15	1 ½	38	1 ⅝	41	3½	89
2 × ¾	50 × 20	1 ½	38	1 ⅝	41	3½	89
2 × 1	50 × 25	1 ½	38	1 ⅝	41	3½	89
2 × 1 ¼	50 × 32	1 ¾*	45	1 ⅞*	47	4	102
2 × 1 ½	50 × 40	1 ¾*	45	1 ⅞*	47	4	102
2 ½ × ½	65 × 15	1 ½	38	1 ⅝	41	3 ½	89
2 ½ × ¾	65 × 20	1 ½	38	1 ⅝	41	3 ½	89
2 ½ × 1	65 × 25	1 ½	38	1 ⅝	41	3 ½	89
2 ½ × 1 ¼	65 × 32	2	51	2 ⅛	54	4	102
2 ½ × 1 ½	65 × 40	2	51	2 ⅛	54	4	102
3 × ½	80 × 15	1 ½	38	1 ⅝	41	3 ½	89
3 × ¾	80 × 20	1 ½	38	1 ⅝	41	3 ½	89
3 × 1	80 × 25	1 ½	38	1 ⅝	41	3 ½	89
3 × 1 ¼	80 × 32	2	51	2 ⅛	54	4	102
3 × 1 ½	80 × 40	2	51	2 ⅛	54	4	102
3 × 2	80 × 50	2 ½	64	2 ⅛	67	4 ½	114
4 × ½	100 × 15	1 ½	38	1 ⅝	41	3 ½	89
4 × ¾	100 × 20	1 ½	38	1 ⅝	41	3 ½	89
4 × 1	100 × 25	1 ½	38	1 ⅝	41	3 ½	89
4 × 1 ¼	100 × 32	2	51	2 ⅛	54	4	102
4 × 1 ½	100 × 40	2	51	2 ⅛	54	4	102
4 × 2	100 × 50	2½	64	2 ⅝	67	4 ½	114
4 × 2 ½	100 × 65	2¾	70	2 ⅞	73	4 ¾	121
4 × 3	100 × 80	3½	89	3 ⅝	92	5 ½	140
5 × 2	125 × 50	2½	64	2 ⅝	67	4 ½	114
5 × 2 ½	125 × 65	2 ¾	70	2 ⅞	73	4 ¾	121
6 × 1 ¼	150 × 32	2	51	2 ⅛	54	4	102
6 × 1 ½	150 × 40	2	51	2 ⅛	54	4	102
6 × 2	150 × 50	2 ½	64	2 ⅝	67	4 ½	114
6 × 2 ½	150 × 65	2 ¾	70	2 ⅞	73	4 ¾	121
6 × 3	150 × 80	3½	89	3 ⅝	92	5½	140
6 × 4	150 × 100	4 ½	114	4 ⅝	118	6 ½	165
8 × 2	200 × 50	2 ¾*	70	2 ⅞*	73	4 ¾	121
8 × 2 ½	200 × 65	2 ¾	70	2 ⅞	73	4 ¾	121
8 × 3	200 × 80	3 ½	89	3 ⅝	92	5 ½	140
8 × 4	200 × 100	4 ½	114	4 ⅝	118	6 ½	165

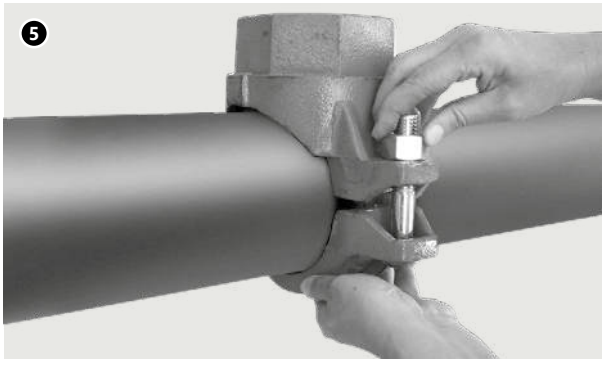
***Important!** Pay special attention to the dimension of the hole saw drill and the maximum diameter allowed for a given dimension, any deflection can lead to coupling damage.

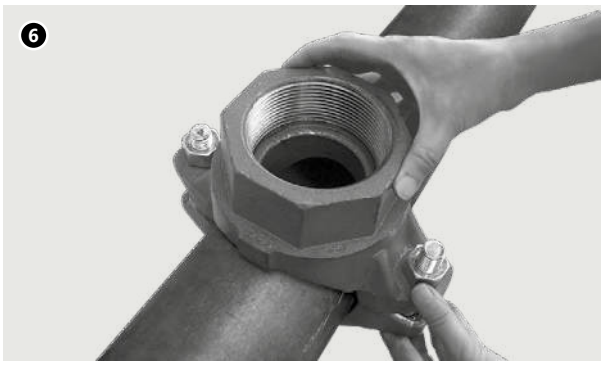
Specification of hole dimensions



1. 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-class EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.
2. 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.

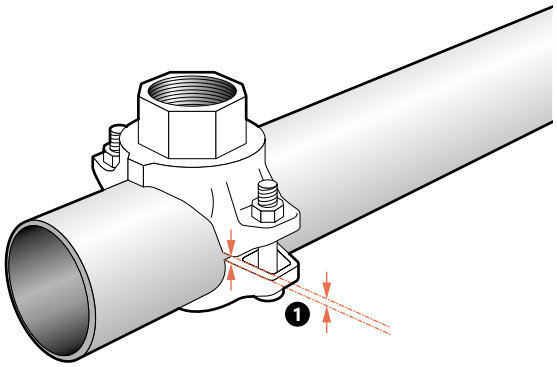
3. Prepare for assembly
Assemble the coupling casing loosely, leaving one bolt and nut disconnected to allow the hinge mechanism to be moved.
4. Position the upper casing in the correct position
Place the upper casing part on the pipe so that the retaining flange fits properly into the hole. Then add the lower casing part from the opposite side of the pipe.





5. 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.
6. 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.

7. 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.



1. slits between the screw clamps are normal occurrence

Tab. 21. Saddle-type couplings – models 7721 and 7722

Nominal dimension		Bolt dimension		Required tightening torque	
inches	mm	inches	No.	Lbs-Ft	Nm
2	50	⅜	2	30	40
2 ½	65	½	2	50	60
3	80	½	2		
4	100	½	2		
5	125	⅝	2		
6	150	⅝	2		
8	200	¾	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.

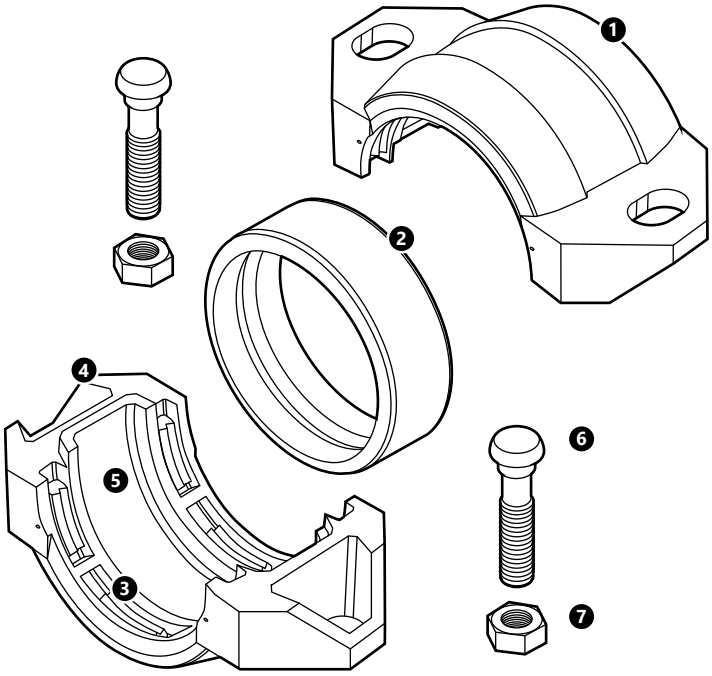
Tab. 22. Characteristics of the output flow

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 ½	65	15	15
1 ¼	32	6	6	3	80	16	16
1 ½	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 ½" outlet and 2½" course is 13 feet (4 meters)

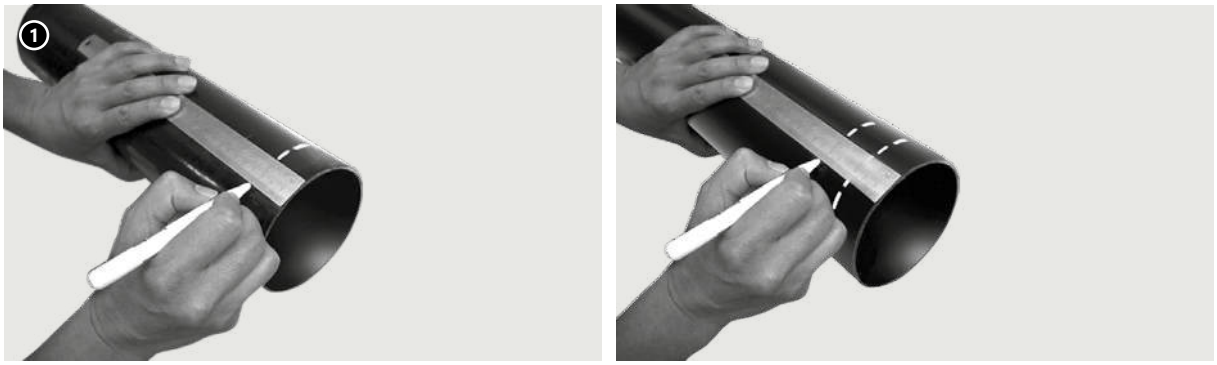
2.7.6 Couplings for steel pipe systems with smooth ends

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



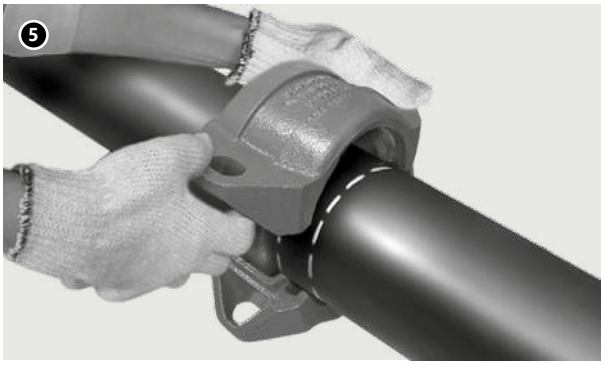
1. connector casing element
2. gasket
3. tempered-steel jaws
4. screw clamp
5. tonque and groove
6. bolt
7. nut

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.



1. 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 **Tab. 23 on page 164**. 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.

2. Check the gasket
Check the colour of the gasket strip and make sure it is suitable for the intended use. The standard, factorysupplied gasket is made of a mix of E-class EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.
3. 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.



4. 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.
5. 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.

6. 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.
7. 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.

Tab. 23. Centring markings and minimum tightening torque required for the WILDCAT coupling (model 79)

Dimension		Marking for centring the coupling		Bolts of the coupling set			
				Quantity	Bolt dimension	Required tightening torque	
inches	mm	inches	No.		inches	Lbs-Ft	Nm
1	25	1,50	40	2	½ × 2 ⅜	110	150
1 ½	40	1,50	40	2	½ × 2 ⅜	110	150
2	50	1,75	45	2	⅝ × 3 ½	150	200
2 ½	65	1,75	45	2	⅝ × 3 ½	150	200
3	80	1,75	45	2	¾ × 4 ¾	200	270
4	100	2,00	50	2	¾ × 4 ¾	200	270
5	125	2,00	50	2	⅞ × 6 ½	250	340
6	150	2,25	55	2	⅞ × 6 ½	250	340
8	200	2,50	65	4	¾ × 4 ¾	200	270
10	250	2,50	65	4	⅞ × 6 ½	300	400
12	300	2,50	65	4	1 × 6 ½	350	470
14	350	2,75	70	4	1 × 6 ½	350	470
16	400	2,75	70	4	1 × 6 ½	350	470

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

2.7.7 Couplings for plain-end HDPE piping systems

The KAN-therm Groove HDPE series has been designed to provide a fast and easy way to mechanically join HDPE (high density polyethylene) pipes. KAN-therm Groove HDPE couplings are intented to join HDPE pipes and fittings conforming to ISO 161/1, DIN 8074 and AS 8074, with SDR from 32,5 to 7,3. The connection method eliminates the need for costly heat fusion equipment, gluing or using complicated adapters.

The maximum working pressure at which KAN-therm Groove HDPE couplings can operate is limited by the strength of the HDPE pipes used.

HDPE pipes

The following table shows the permissible dimensional tolerances of HDPE rigid pipe with SDR 20, at ambient temperature of +21 °C.

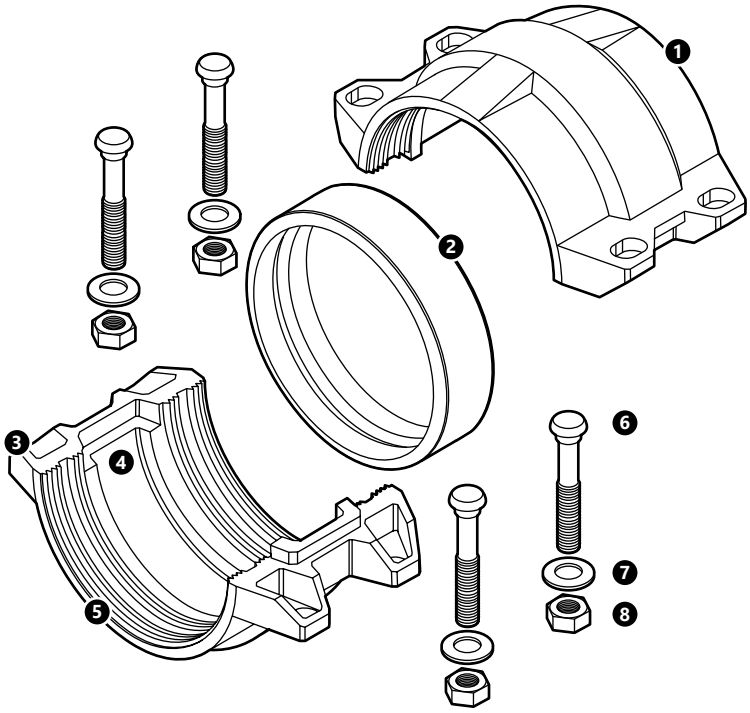
Tab. 24. Pipe size/tolerance – metric sizes (DIN and others)

Pipe O.D. min.	Pipe O.D. max.*
mm	mm
50	50,5
63	63,6
75	75,7
90	90,9
110	111,0
160	161,5
180	181,7
200	201,8
225	226,4
250	252,3
280	281,7
315	317,9
355	357,2
400	402,4
450	452,7
500	504,0

* tolerances at ambient temperature for pipes with SDR 20 or lower

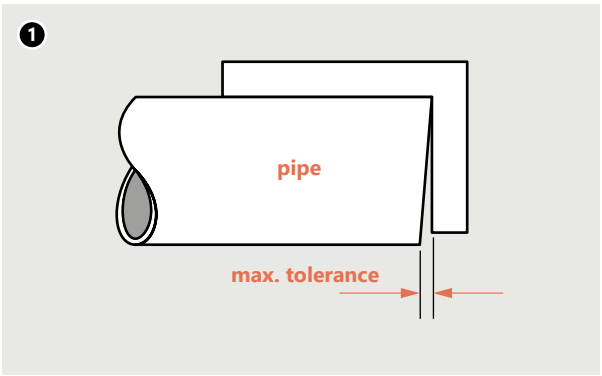
Note! KAN-therm HDPE series couplings are not intented for use with PVC or other materials.

Installation of H305 coupling for connecting HDPE pipes

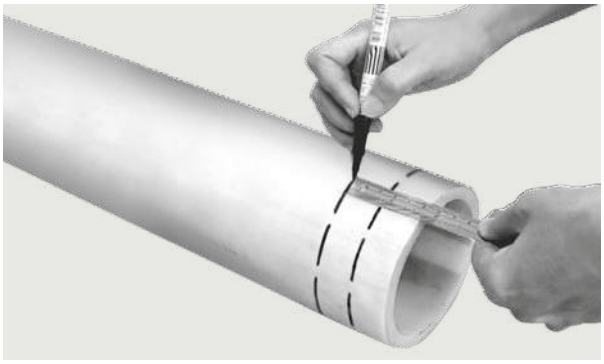


1. coupling housing segment
2. gasket
3. bolt pad
4. tonque and groove
5. refined notches
6. bolt
7. washer
8. nut

The KAN-therm H305 HDPE coupling is equipped with four bolt holes and a series of sharply refined notches which ensure a solid grip during tightening couplings bolts and nuts.

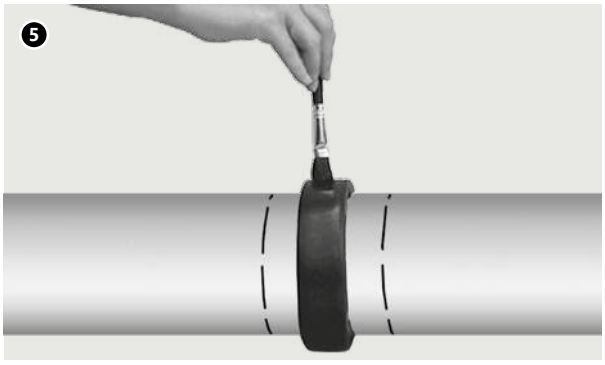


1. Cut pipe perpendicularly to the axis
HDPE pipe must be cut square. Maximum permissible tolerances for ends cut at right angle: ⅛" (3,2 mm) for HDPE pipe for diameter 2" up to 4" and 5⁄32 (4,0 mm) for 6" or higher. Make sure that end of the pipe, within 1" form the edge is clean and free of indentations, burrs, scratches or other harmful surface defects.

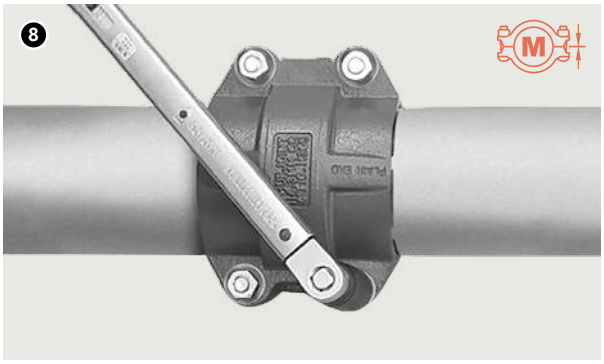


2. Marking
Use a marking pen or other marking tool and measuring tape to mark the appropriate distance from pipe end according to the table. The marking will be used as a reference point when the seal is centred during the assembly. It is recommended to make a minimum of 4 markings spaced at the same 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. 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.

3. Check the gasket grade
Check the colour of the gasket strip and make sure that the gasket supplied is suitable for the intended use. The standard, factory-supplied gasket is made of a mix of E-class EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.
4. 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.

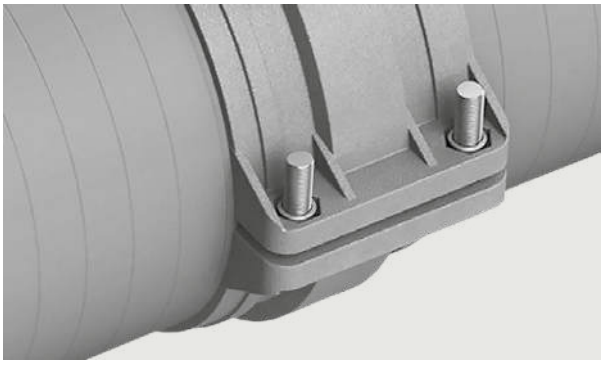


5. Lubricate the gasket
Apply a thin layer of silicone grease on the lip of the gasket and on the outer coating of the gasket. Other lubricants based on silicone, corn oil, soybean oil or glycerine, suitable for HDPE systems, can also be used.
Note: The use of oils, hydrocarbon-based lubricants and soaps is prohibited.
6. 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.
Caution! To avoid injury caused by sharp edges of the teeth, always wear protective gloves when working.

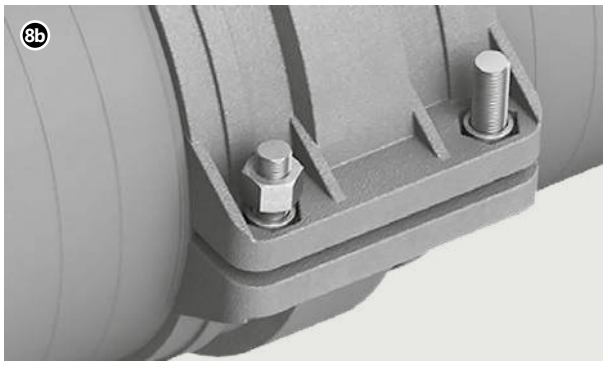


7. Insert the bolts and put on the nuts
Insert all bolts and pads and tighten the nuts manually. Make sure that the oval bolt head is locked in the bolt hole in the coupling casing.
8. Tighten the nuts
Tighten nuts alternately and equally until the bolt pads meet and make metalto-metal contact. Tighten 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.

Note! Large Diameter H305 HDPE couplings: 14" (355,6 mm) and larger inclued hex bolts, washers and nuts. Refer to the below steps for the correct tightening technique.



8a. Insert bolts and washers
Insert bolts and washers into specially prepared holes in the housings. Make sure that the each bolt head and washer are aligned with the recess in the housing.



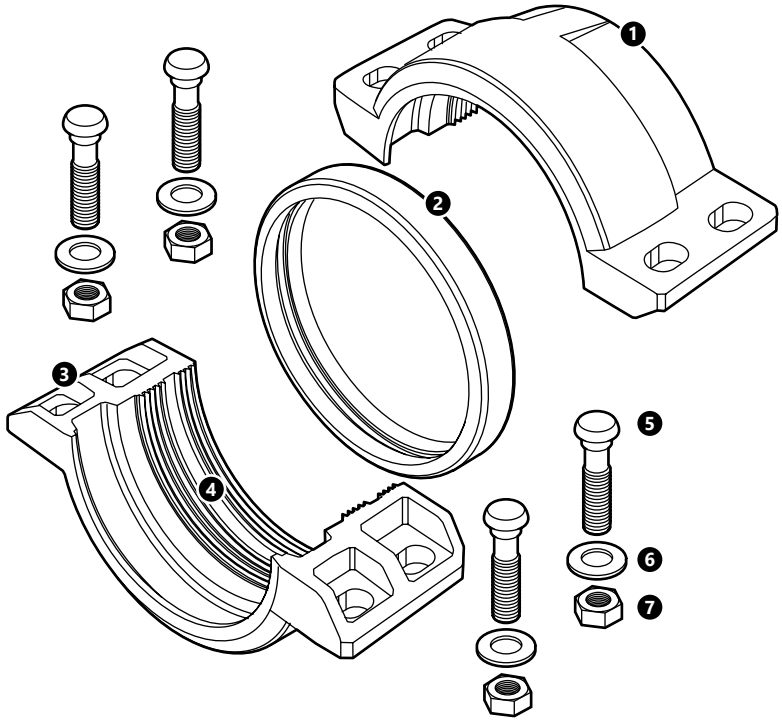
8b. Insert the nuts
Thread a nut onto the end of each bolt until the washer contacts the housing.
8c. Tighten the nuts
Tighten nuts alternately and equally until the bolt pads meet and make metal-to-metal contact. Tighten the nuts by a quarter or half turn to ensure that the bolts and nuts adhere tightly to the fastening element. Make sure that the pads are located in the bolt hole in the coupling casing.

Tab. 25. Table of markings for centering the gasket and coupling H305 HDPE on pipe

External pipe diameter	Gasket centering reference mark	Coupling centering reference mark
mm	mm	mm
50	22	53
63	22	53
75	22	53
90	22	53
110	22	56
160	25	59
180	25	59
200	26	64
225	26	64
250	26	67
280	26	67
315	26	67
355	37	129
400	37	129
450	37	129
500	37	131

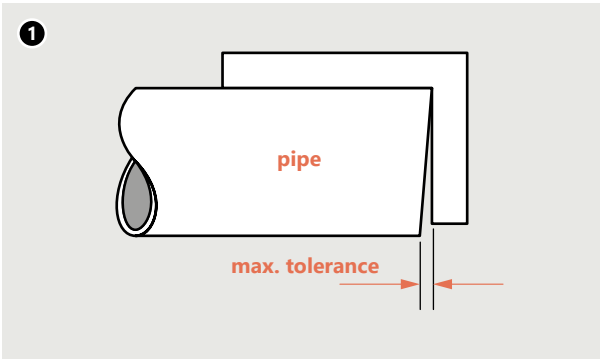
Caution! Uneven tightening of the bolts and nuts may cause pinching of the gasket, causing immediate or later leakage. Too high tightening torque can damage the bolts or coupling.

Installation of H307 HDPE transition coupling

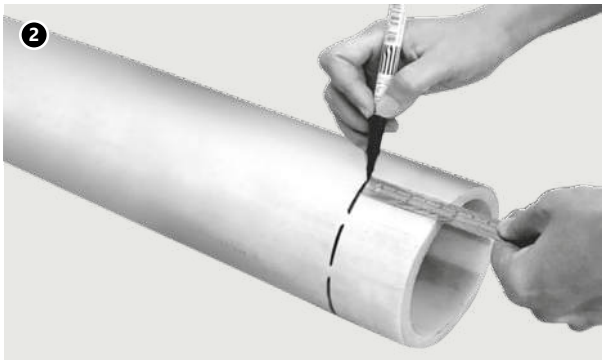


1. coupling housing element
2. gasket
3. bolt pad
4. refined notches
5. bolt
6. washer
7. nut

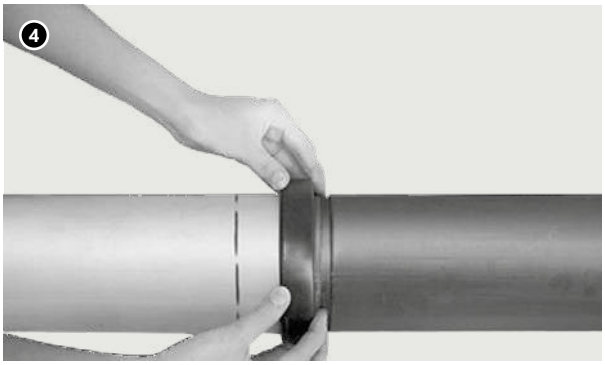
The KAN-therm Groove H307 HDPE transition coupling provides a direct transition from HDPE to steel pipe of the same outer diameter. The H307 transition coupling must be installed with the notched side on the HDPE pipe and the wedge section on the grooved steel pipe.



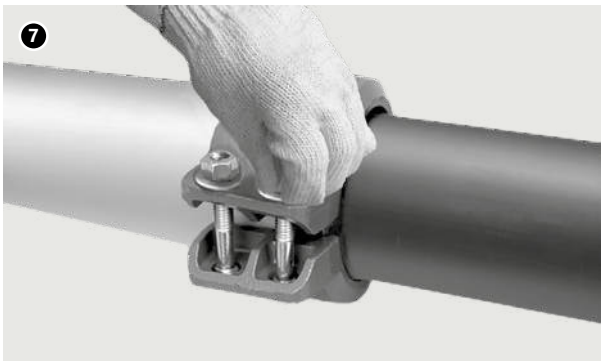
1. Cut pipe perpendicularly to the axis
HDPE pipe must be cut square. Maximum permissible tolerances for ends cut at right angle: ⅛" (3,2 mm) for HDPE pipe for diameter 2" up to 4" and 5⁄32" (4,0 mm) for 6" or higher. Make sure that pipe end, within 1" from the end, is clean and free of dents, burrs, scratches or other harmful defects. The steel pipe end must be grooved acc. to KAN-therm Groove guidelines..



2. Marking
Use a marking pen or other marking tool and masuring tape to mark the appropriate distance from the HDPE pipe end, according to the values given in the table. 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.
3. Check the gasket grade
Check the colour of the gasket strip and make sure that the gasket supplied is suitable for the intended use. The standard, factory-supplied gasket is made of a mix of E-class EPDM. It is marked with a green strip and is generally suitable for use in water pipelines.



4. Install the gasket
Place the gasket on the pipe ends and centre it between the marks on HDPE pipe and the groove of the steel pipe. The pipe ends should be butted against each other or with a controlled distance - the maxium allowable distance between HDPE pipe and steel pipe is ¼" (6,3 mm) for pipe diameters 2" to 4" and 5⁄16" (7,9 mm) for pipe diameters 6" and larger.
5. Lubricate the gasket
Apply a thin layer of silicone grease on the lip of the gasket and on the outer coating of the gasket. Other lubricants based on silicone, corn oil, soybean oil or glycerine, suitable for HDPE systems, can also be used.
Note: The use of oils, hydrocarbon-based lubricants and soaps is prohibited.



6. Install casing elements
Place the housings over the gasket, making sure that the gasket is centred between the marks made on HDPE pipes end and the groove of the steel pipe.
Caution! To avoid injury caused by sharp edges of the teeth, always wear protective gloves when working.
7. Insert the bolts and put on the nuts
Insert all bolts and pads and tighten the nuts manually. Make sure that the oval bolt head is locked in the bolt hole in the coupling casing.

8. Tighten the nuts
Tighten nuts alternately and equally until the bolt pads meet and make metalto-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.

Tab. 26. Table of markings for centering the gasket and coupling H307 HDPE on pipe

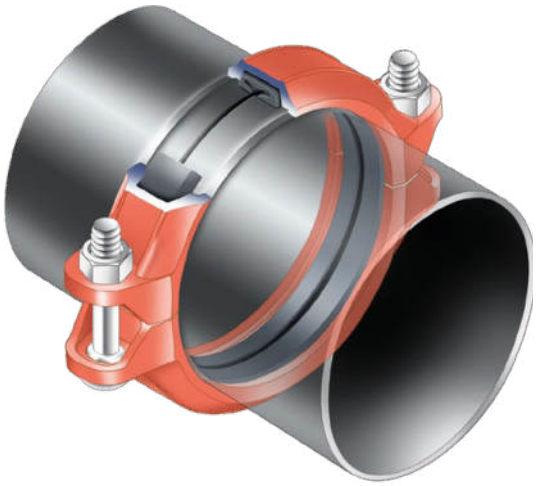
External pipe diameter	Mark location from the HDPE pipe end
mm	mm
63	50
75	50
90	50
110	50
160	50
200	53
250	64
315	64

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

2.8 Design data - rigid and flexible couplings

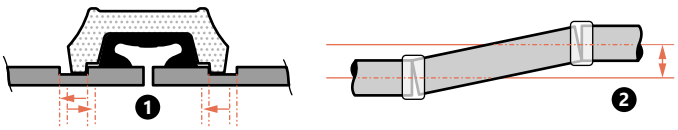
Mechanical grooved couplings are available in both rigid and flexible forms.

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.



1. axial motion
2. angular deflection

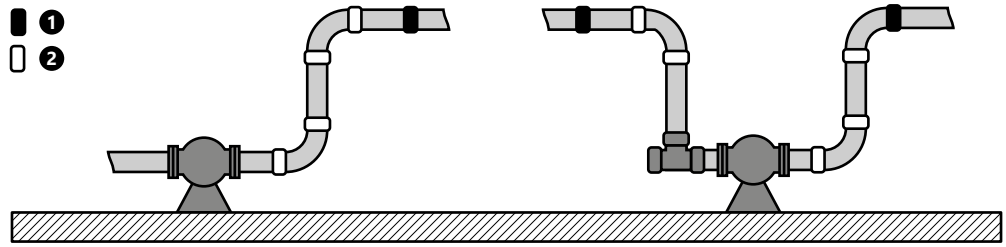
Tab. 27. Design data of KAN-therm Groove flexible couplings - models 7705, 7707

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 ¼	32	42,2	0 – 0,8	1,09°	19	0 – 1,6	2,17°	38
1 ½	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 ½	-	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°	34,5
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

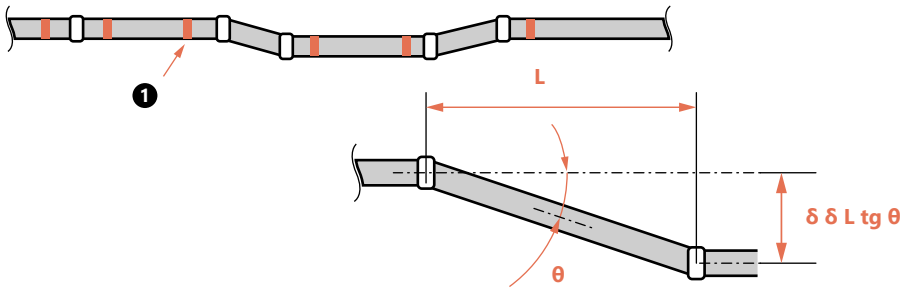
When the pump is in the frequent on and off mode, the piping system is exposed to noise and vibrations. The entire system can be significantly swayed which is referred to as resonant vibrations and occurs as a result of frequently repeated cycles. KAN-therm Groove flexible couplings help to reduce this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



1. rigid connector
2. flexible connector

Correction of misalignment

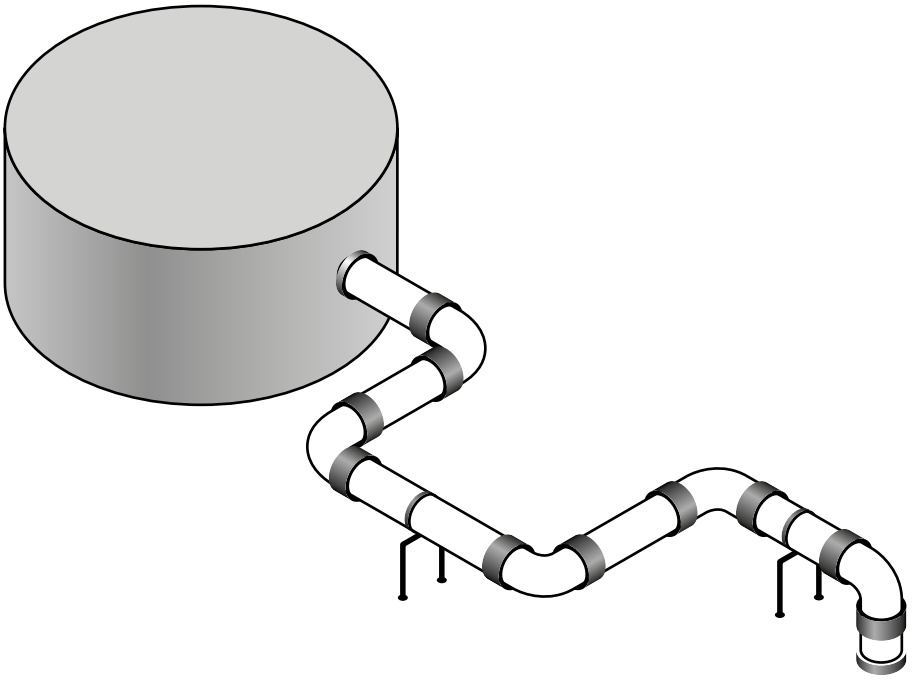
If a simple course requires a slight adjustment of the setting, as shown in the diagram, two flexible couplings can be used. The deflection value (δ) for elastic couplings KAN-therm Groove 7705 is given in the table below.



1. suspension handgrip assembly place

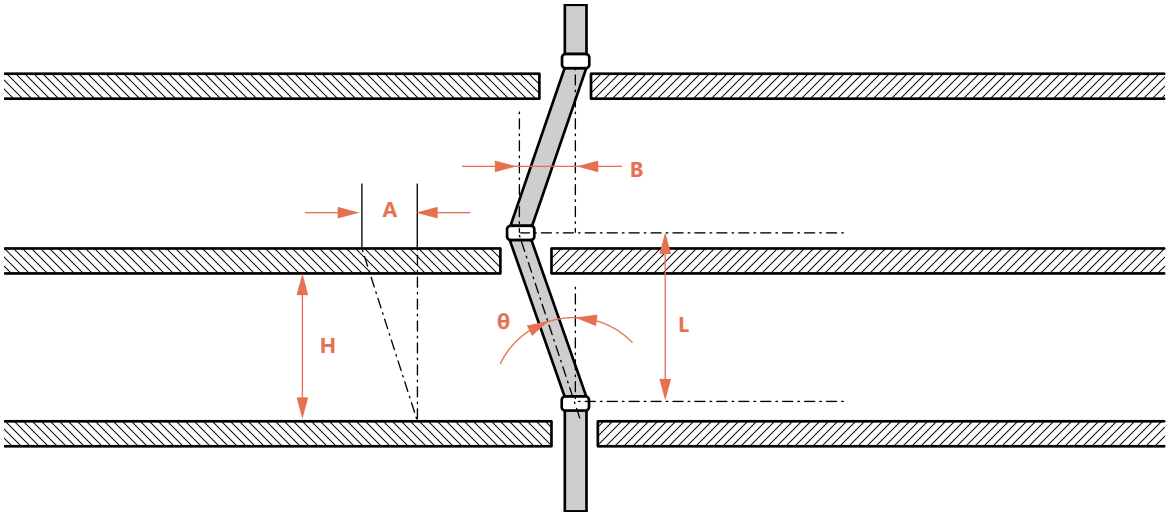
Tab. 28. Deflection dimension (δ)

Nominal dimension	Deflection angle (Θ)	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 x 1/150 = 4000 x 1/150 = 27 mm

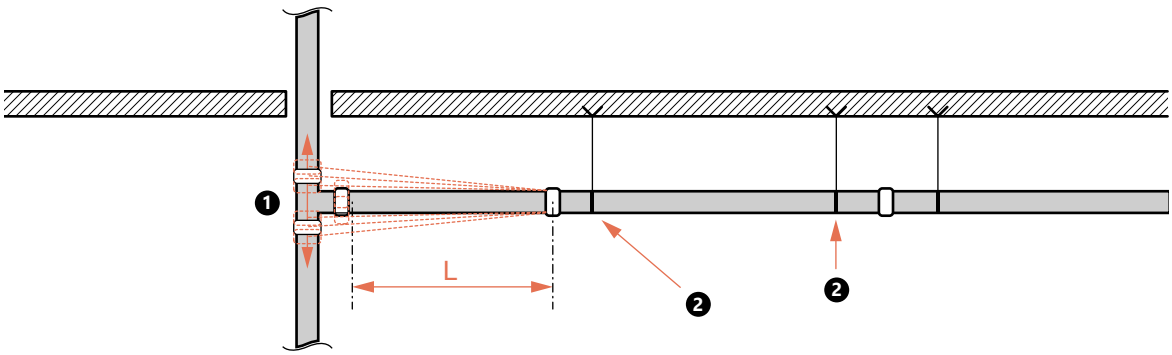
If a 200 mm (8") 7707 coupling is used for each floor, the maximum deflection (B) compensated by each coupling will be:

B = L x tan Θ = 4000 x 0,02915 = 4,56" = 116 mm (Θ = 1,67°)

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.



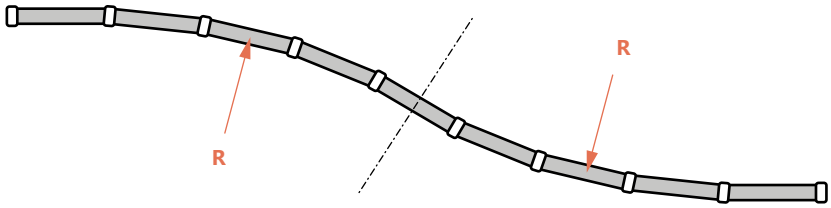
1. thermal expansions
2. suspension handgrip assembly place

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 Θ 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 (Θ) 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 (μ) depends on the length of the pipe (L) and the temperature difference (ΔT).

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

Tab. 29. Thermal expansion (metric system) sion (mm)

Temperature difference ΔT (°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 (α) is 1,2 × 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 (ΔT): 40 °C (from +5 °C to +45 °C)
- α= 1,2 × 10^{-5} /°C

$$\mu = \alpha \times L \times \Delta T = 1{,}2 \times 10^{-5}\ /°C \times 5500\ mm \times 40\ °C = 2{,}64\ mm$$

Thermal expansion of a standard length pipe of 5,5 meters (μ) 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 × E × ½, 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.

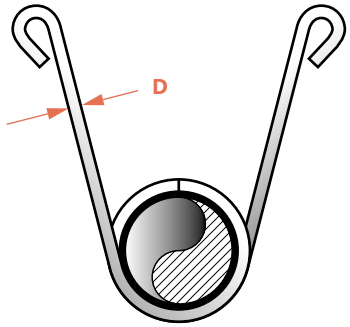
2.9 Anchoring, hanging and brackets

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

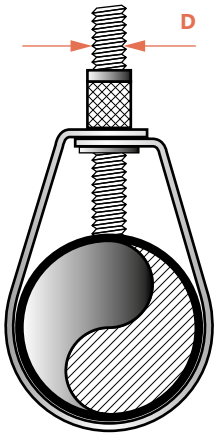


Roll-up hook handle

Tab. 30. Dimensions of U-type hook handles

Pipe dimension	Dimension D	
inches	inches	mm
≤ 2	5⁄16	7,9
2 ½ – 6	⅜	9,5
8	½	12,7

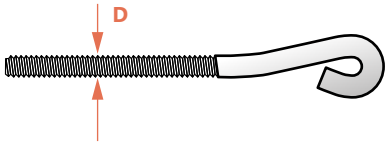
Dimensions of fixing rods



Adjusted bar with rotation pipe-adherent ring

Tab. 31. Dimensions of fixing rods

Pipe dimension	Dimension D	
inches	inches	mm
≤ 4	⅜	9,5
5 – 8	½	12,7
10 – 12	⅝	15,9



Tab. 32. Dimensions of fixing rods

Pipe dimension	Dimension D	
inches	inches	mm
≤ 4	⅜	9,5
5 – 6	½	12,7
10 – 12	¾	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.

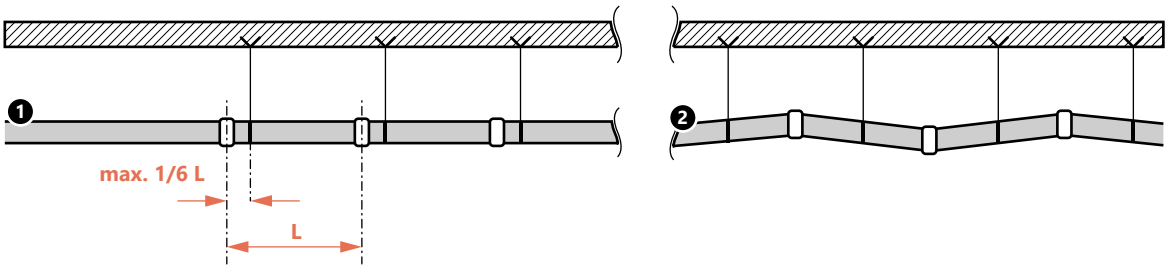
Tab. 33. Suggested max. spacing between the bearers (steel pipe)

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 ¼ / 32	7 / 2,1	11 / 3,4	12 / 3,7	6,6 / 2,0	9 / 2,7	12 / 3,7	12 / 3,7
1 ½ / 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 ½ / 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

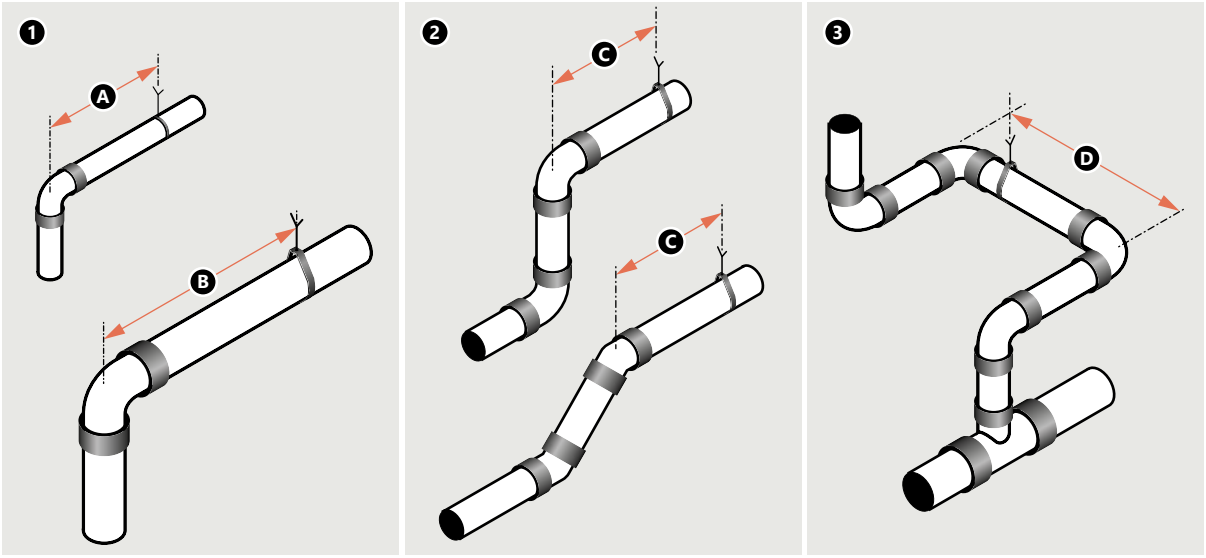
If that flexible couplings are used on a simple pipeline run, the retaining handles should be mounted as close as possible to each coupling or within a distance not exceeding ⅙ of the spacing.



1. correct placement of handle
2. incorrect placement of handle

Assembly points for handles on curved and branching patterns

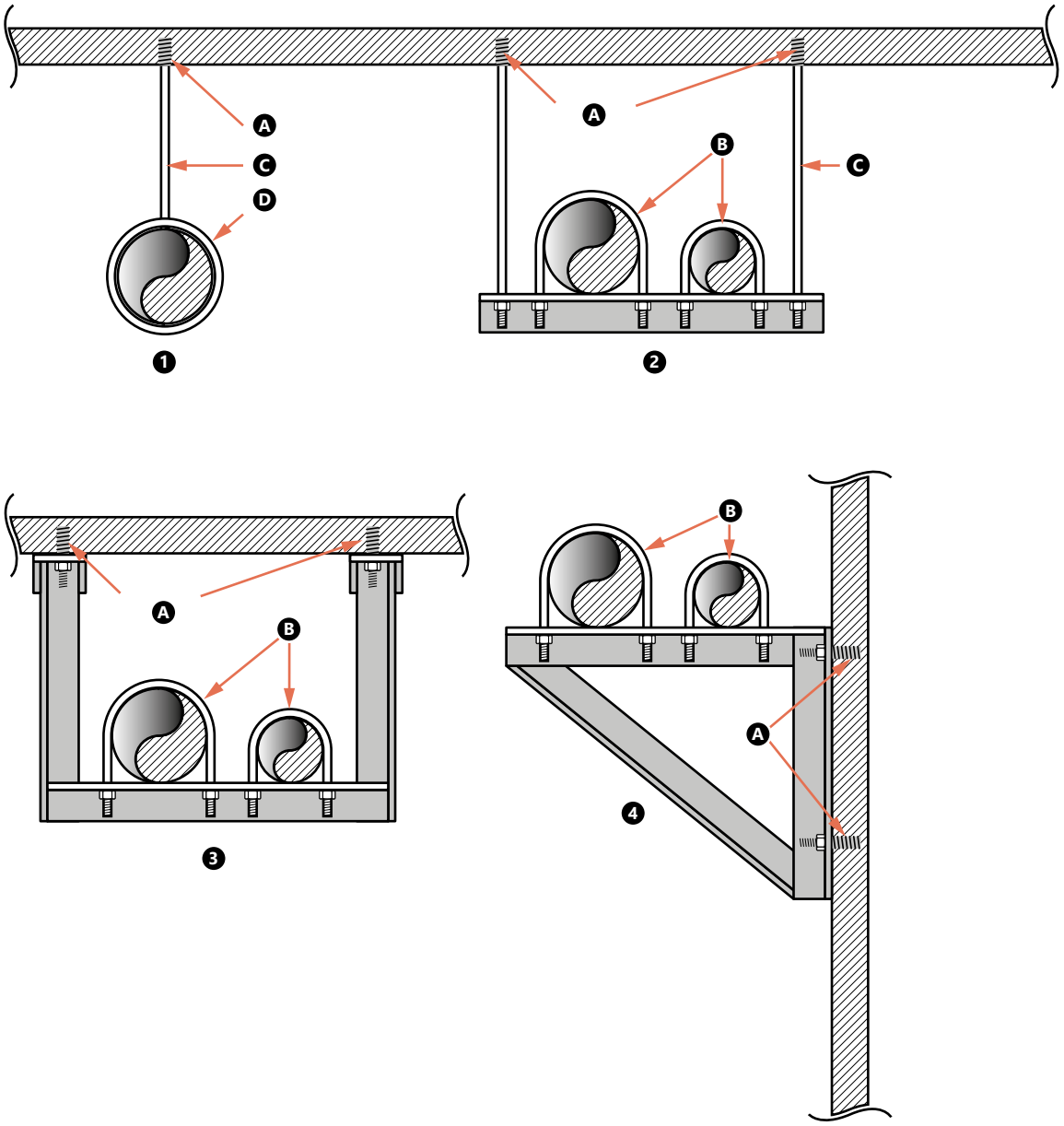
In the case of curved runs connected to the branch, short vertical string or bleed, additional brackets or brackets should be used.



1. bent sections
A. up to diameter 1" - max. 50 cm
B. diameter 1 ¼" and more - max. 80 cm
2. shor vertical section (or drop)
C. max. 30 cm
3. branch line
D. over 60 cm

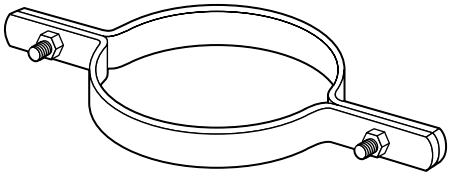
Typical designs of suspensions and clamps

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.

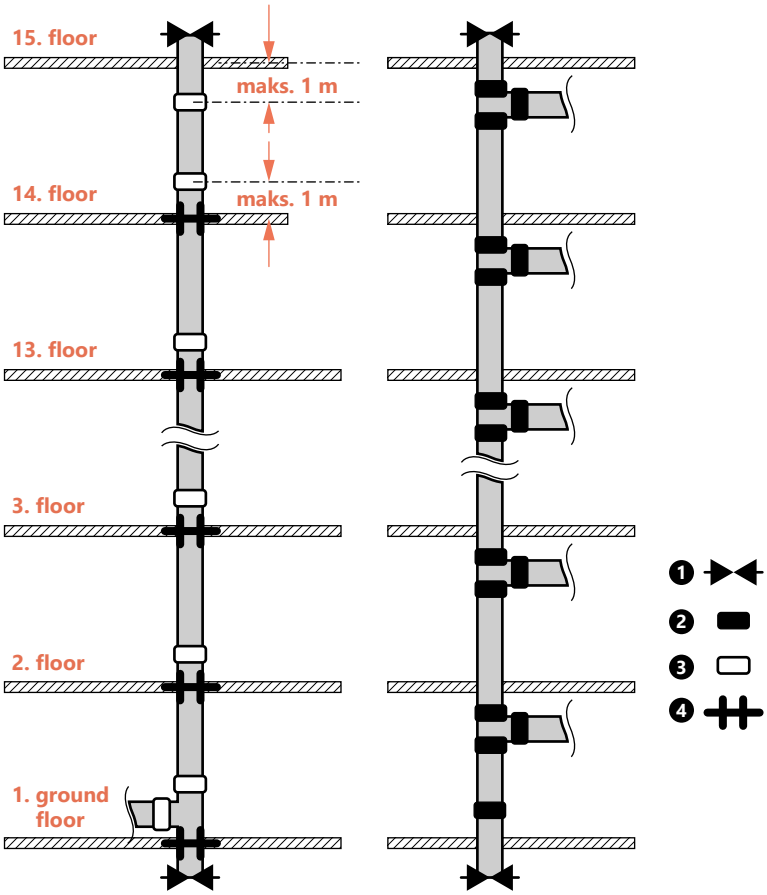


1. Bar hook for single pipeline
2. Trapezoidal hook for few pipelines
3. Trapezoidal hook suspended under the ceiling
4. Steel bevel fixed to the wall
A. Bar ends
B. Yoke screw
C. Hook bar
D. Belt grip

Brackets for vertical ducts

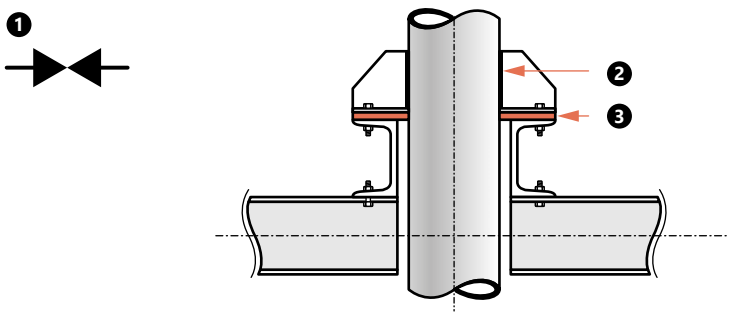


In multi-storey buildings, vertical ducts should be fixed (or anchored) at the lowest level and at the top of the stack and should be supported by clamps or shackle bolts at the level of each ceiling to prevent the ducts from swaying. If the vertical ducts have been stiffened by punctures in the ceilings, 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.

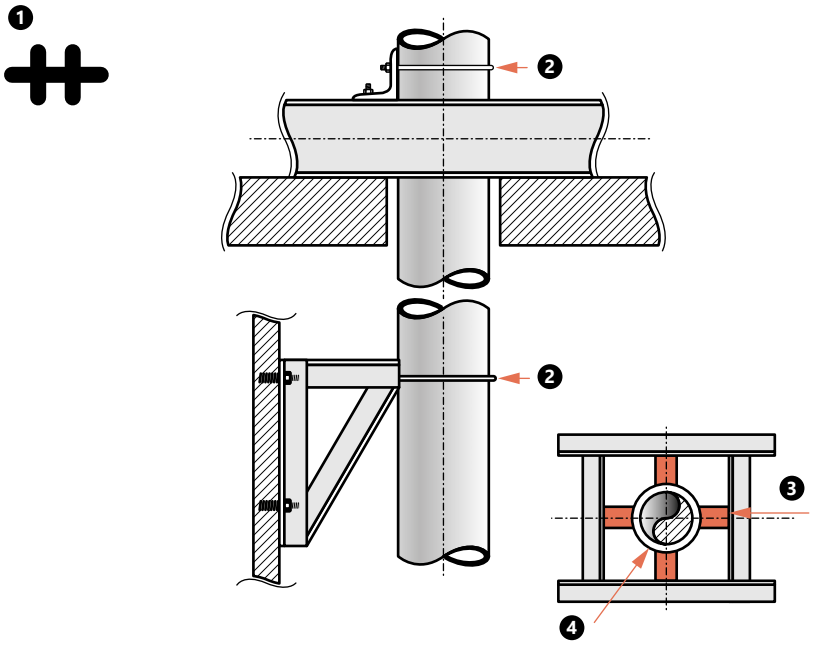


1. anchor (fixed point)
2. rigid connector
3. flexible connector
4. stabilizer (moving support)

- 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.



1. vertical line anchors
2. weld
3. flexible insulating material



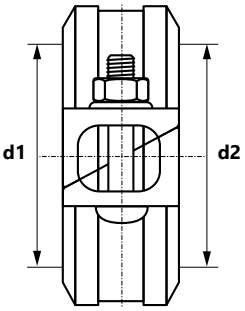
1. vertical line stabilizers
2. yoke screw
3. flexible insulating material
4. thermal insulation

System KAN-therm Groove - assortment

Connectors

Orange rigid coupling
(connection to oblique bolt clamp with class E gasket)

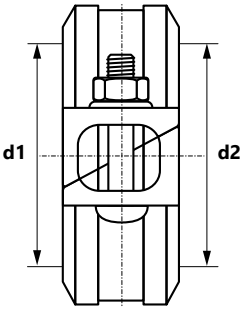
Z05
GROUP: S



Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2457301000		1	26	pc.
48,3 (DN 40)	2457301001		1	24	pc.
60,3 (DN 50)	2457301002		1	16	pc.
76,1 (DN 65)	2457301003		1	12	pc.
88,9 (DN 80)	2457301004		1	10	pc.
114,3 (DN 100)	2457301005		1	12	pc.
139,7 (DN 125)	2457301006		1	8	pc.
168,3 (DN 150)	2457301007		1	3	pc.
219,1 (DN 200)	2457301008		1	3	pc.

Galvanized rigid coupling
(connection to oblique bolt clamp with class E gasket)

Z05
GROUP: S



Size (d1=d2)	Code	*			UM
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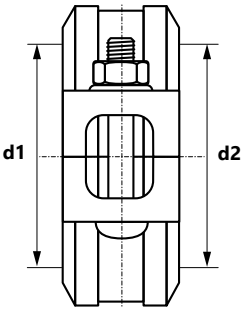
48,3 (DN 40)	2455301005		1	24	pc.
60,3 (DN 50)	2455301006		1	16	pc.
76,1 (DN 65)	2455301000		1	12	pc.
88,9 (DN 80)	2455301001		1	10	pc.
114,3 (DN 100)	2455301002		1	12	pc.
139,7 (DN 125)	2455301007		1	8	pc.
168,3 (DN 150)	2455301003		1	6	pc.
219,1 (DN 200)	2455301008		1	3	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red rigid coupling
(with class E gasket)

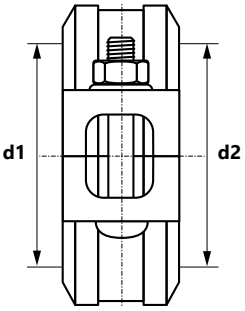
K9
GROUP: S



Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2458301000		1	26	pc.
48,3 (DN 40)	2458301001		1	22	pc.
60,3 (DN 50)	2458301002		1	18	pc.
76,1 (DN 65)	2458301003		1	25	pc.
88,9 (DN 80)	2458301004		1	20	pc.
114,3 (DN 100)	2458301005		1	12	pc.
139,7 (DN 125)	2458301006		1	9	pc.
168,3 (DN 150)	2458301007		1	7	pc.
219,1 (DN 200)	2458301008		1	3	pc.

Galvanized rigid coupling
(with class E gasket)

K9
GROUP: S



Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2456301000		1	26	pc.
48,3 (DN 40)	2456301001		1	22	pc.
60,3 (DN 50)	2456301002		1	18	pc.
76,1 (DN 65)	2456301003		1	25	pc.
88,9 (DN 80)	2456301004		1	20	pc.
114,3 (DN 100)	2456301005		1	12	pc.
139,7 (DN 125)	2456301006		1	9	pc.
168,3 (DN 150)	2456301007		1	7	pc.
219,1 (DN 200)	2456301008		1	3	pc.

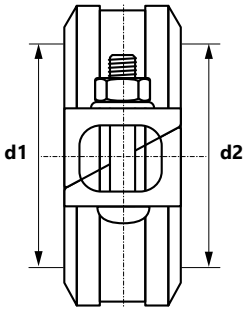
coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange rigid HD coupling

(connection to oblique bolt clamp with class E gasket)

Z07
GROUP: S

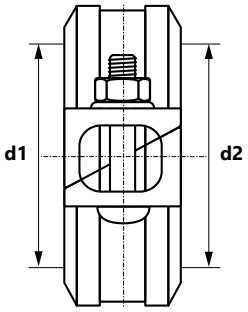


Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2457314000		1	24	pc.
48,3 (DN 40)	2457314001		1	20	pc.
60,3 (DN 50)	2457314002		1	16	pc.
76,1 (DN 65)	2457314003		1	12	pc.
88,9 (DN 80)	2457314004		1	9	pc.
114,3 (DN 100)	2457314005		1	5	pc.
139,7 (DN 125)	2457314006		1	7	pc.
168,3 (DN 150)	2457314007		1	6	pc.
219,1 (DN 200)	2457314008		1	3	pc.
273,0 (DN 250)	2457314009		1	1	pc.
323,9 (DN 300)	2457314010		1	1	pc.

Galvanized rigid HD coupling

(connection to oblique bolt clamp with class E gasket)

Z07
GROUP: S



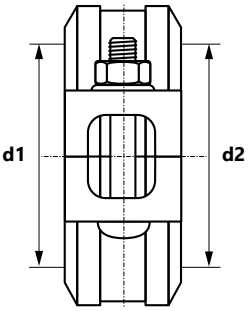
Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2455314000		1	24	pc.
48,3 (DN 40)	2455314001		1	20	pc.
60,3 (DN 50)	2455314002		1	16	pc.
76,1 (DN 65)	2455314003		1	12	pc.
88,9 (DN 80)	2455314004		1	9	pc.
114,3 (DN 100)	2455314005		1	5	pc.
139,7 (DN 125)	2455314006		1	7	pc.
168,3 (DN 150)	2455314007		1	6	pc.
219,1 (DN 200)	2455314008		1	3	pc.
273,0 (DN 250)	2455314009		1	1	pc.
323,9 (DN 300)	2455314010		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange flexible HD coupling
(with class E gasket)

7707
GROUP: S

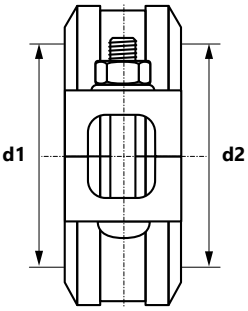


FM APPROVED

Size (d1=d2)	Code	*			UM
33,7 (DN 25)	2457313000		1	26	pc.
42,4 (DN 32)	2457313001		1	18	pc.
48,3 (DN 40)	2457313002		1	18	pc.
60,3 (DN 50)	2457313003		1	14	pc.
76,1 (DN 65)	2457313004		1	10	pc.
88,9 (DN 80)	2457313005		1	9	pc.
114,3 (DN 100)	2457313006		1	5	pc.
139,7 (DN 125)	2457313007		1	7	pc.
168,3 (DN 150)	2457313008		1	3	pc.
219,1 (DN 200)	2457313009		1	3	pc.
273,0 (DN 250)	2457313010		1	1	pc.
323,9 (DN 300)	2457313011		1	1	pc.

Galvanized flexible HD coupling
(with class E gasket)

7707
GROUP: S



FM APPROVED

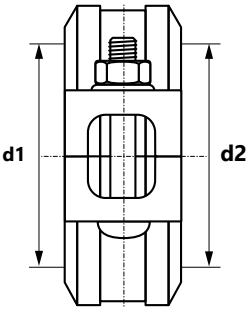
Size (d1=d2)	Code	*			UM
42,4 (DN 32)	2455313000		1	18	pc.
48,3 (DN 40)	2455313001		1	18	pc.
60,3 (DN 50)	2455313002		1	14	pc.
76,1 (DN 65)	2455313003		1	10	pc.
88,9 (DN 80)	2455313004		1	9	pc.
114,3 (DN 100)	2455313005		1	5	pc.
139,7 (DN 125)	2455313006		1	7	pc.
168,3 (DN 150)	2455313007		1	3	pc.
219,1 (DN 200)	2455313008		1	3	pc.
273,0 (DN 250)	2455313009		1	1	pc.
323,9 (DN 300)	2455313010		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange flexible coupling
(with class E gasket)

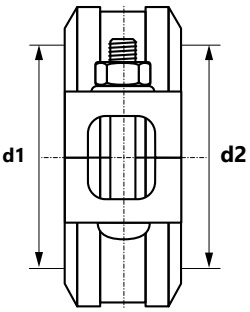
7705
GROUP: S



Size (d1=d2)	Code	*			UM
33,7 (DN 25)	2457312000		1	30	pc.
42,4 (DN 32)	2457312001		1	26	pc.
48,3 (DN 40)	2457312002		1	22	pc.
60,3 (DN 50)	2457312003		1	16	pc.
76,1 (DN 65)	2457312004		1	12	pc.
88,9 (DN 80)	2457312005		1	9	pc.
114,3 (DN 100)	2457312006		1	4	pc.
139,7 (DN 125)	2457312007		1	8	pc.
168,3 (DN 150)	2457312008		1	6	pc.
219,1 (DN 200)	2457312009		1	3	pc.

Galvanized flexible coupling
(with class E gasket)

7705
GROUP: S



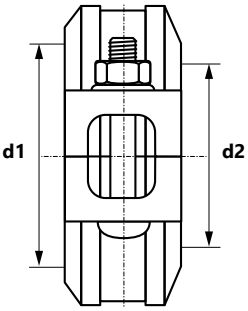
Size (d1=d2)	Code	*			UM
33,7 (DN 25)	2455312000		1	30	pc.
42,4 (DN 32)	2455312001		1	26	pc.
48,3 (DN 40)	2455312002		1	22	pc.
60,3 (DN 50)	2455312003		1	16	pc.
76,1 (DN 65)	2455312004		1	12	pc.
88,9 (DN 80)	2455312005		1	9	pc.
114,3 (DN 100)	2455312006		1	4	pc.
139,7 (DN 125)	2455312007		1	8	pc.
168,3 (DN 150)	2455312008		1	6	pc.
219,1 (DN 200)	2455312009		1	3	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red reducing coupling
(with class E gasket)

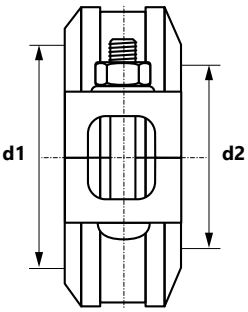
7706
GROUP: S



Size (d1×d2)	Code	*			UM
60,3 (DN 50) × 48,3 (DN 40)	2457046000		1	16	pc.
76,1 (DN 65) × 60,3 (DN 50)	2457046001		1	12	pc.
88,9 (DN 80) × 60,3 (DN 50)	2457046002		1	9	pc.
88,9 (DN 80) × 76,1 (DN 65)	2457046003		1	9	pc.
114,3 (DN 100) × 60,3 (DN 50)	2457046004		1	5	pc.
114,3 (DN 100) × 76,1 (DN 65)	2457046005		1	5	pc.
114,3 (DN 100) × 88,9 (DN 80)	2457046006		1	10	pc.
139,7 (DN 125) × 114,3 (DN 100)	2457046007		1	4	pc.
168,3 (DN 150) × 114,3 (DN 100)	2457046008		1	3	pc.
219,1 (DN 200) × 168,3 (DN 150)	2457046009		1	3	pc.

Galvanized reducing coupling
(with class E gasket)

7706
GROUP: S



Size (d1×d2)	Code	*			UM
60,3 (DN 50) × 48,3 (DN 40)	2455046000		1	16	pc.
76,1 (DN 65) × 60,3 (DN 50)	2455046001		1	12	pc.
88,9 (DN 80) × 60,3 (DN 50)	2455046002		1	9	pc.
88,9 (DN 80) × 76,1 (DN 65)	2455046003		1	9	pc.
114,3 (DN 100) × 60,3 (DN 50)	2455046004		1	5	pc.
114,3 (DN 100) × 76,1 (DN 65)	2455046005		1	5	pc.
114,3 (DN 100) × 88,9 (DN 80)	2455046006		1	10	pc.
139,7 (DN 125) × 114,3 (DN 100)	2455046007		1	4	pc.
168,3 (DN 150) × 114,3 (DN 100)	2455046008		1	3	pc.
219,1 (DN 200) × 168,3 (DN 150)	2455046009		1	3	pc.

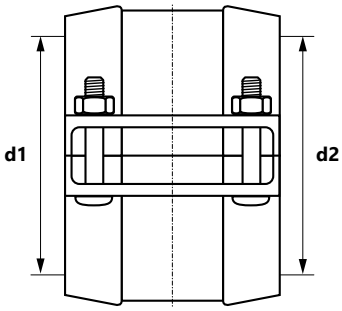
coil | bar | pipes in tube | bag | carton box | pallet | new | available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange wildcat type coupling

(2x smooth ends, with class E gasket)

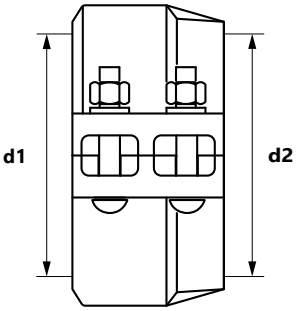
79
GROUP: S



Size (d1×d2)	Code	*			UM
60,3 (DN 50)	2457323000		1	6	pc.
88,9 (DN 80)	2457323001		1	4	pc.
114,3 (DN 100)	2457323002		1	3	pc.
168,3 (DN 150)	2457323003		1	2	pc.
219,1 (DN 200)	2457323004		1	1	pc.

Coupling HDPE/Groove

H307
GROUP: S



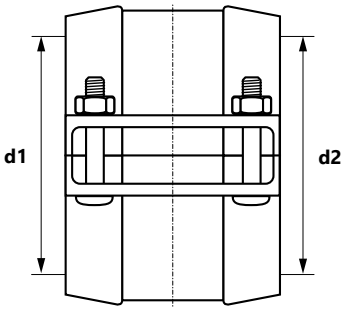
Size (d1/d2)	Code	*			UM
63 × 60,3 (DN 50)	2457042031		-	14	pc.
90 × 88,9 (DN 80)	2457042033		-	10	pc.
110 × 114,3 (DN 100)	2457042034		-	6	pc.
160 × 165,1 (DN 150)	2457042035		-	1	pc.
160 × 168,3 (DN 150)	2457042036		-	3	pc.
200 × 219,1 (DN 200)	2457042037		-	1	pc.
250 × 273 (DN 250)	2457042038		-	1	pc.
315 × 323,9 (DN 300)	2457042039		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Painted HDPE coupling

H305
GROUP: S

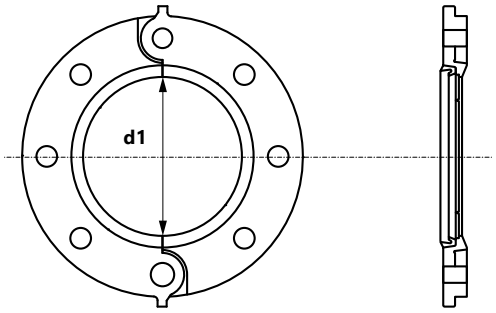


Size (d1=d2)	Code	*			UM
50	2457042030		-	1	pc.
63	2457042014		-	1	pc.
75	2457042015		-	1	pc.
90	2457042016		-	1	pc.
110	2457042017		-	1	pc.
140	2457042019		-	1	pc.
160	2457042020		-	1	pc.
180	2457042021		-	1	pc.
200	2457042022		-	1	pc.
225	2457042023		-	1	pc.
250	2457042024		-	1	pc.
280	2457042025		-	1	pc.
315	2457042026		-	1	pc.
355	2457042027		-	1	pc.
400	2457042028		-	1	pc.
450	2457042029		-	1	pc.

Painted flange adapter

PN10/PN16 (DN50-300 hinge, DN350-600 two-part, with class E gasket)

7041
GROUP: S



FM APPROVED

Size (d1)	Code	*			UM
60,3 (DN 50)	2457091000		1	1	pc.
76,1 (DN 65)	2457091001		1	1	pc.
88,9 (DN 80)	2457091002		1	1	pc.
114,3 (DN 100)	2457091003		1	1	pc.
139,7 (DN 125)	2457091004		1	1	pc.
168,3 (DN 150)	2457091005		1	1	pc.
219,1 (DN 200)	2457091006		1	1	pc.
323,9 (DN 300)	2457091007		1	1	pc.

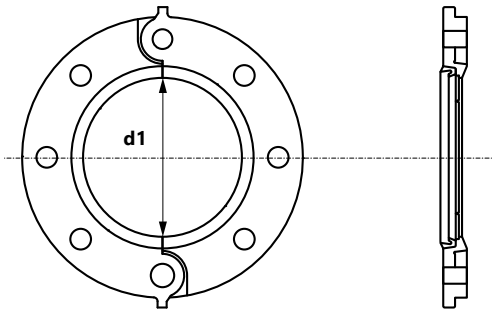
coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized flange adapter

PN10/PN16 (DN50-300 hinge, DN350-600 two-part, with class E gasket)

7041
GROUP: S



FM APPROVED

Size (d1)	Code	*			UM
60,3 (DN 50)	2455091000		1	1	pc.
76,1 (DN 65)	2455091001		1	1	pc.
88,9 (DN 80)	2455091002		1	1	pc.
114,3 (DN 100)	2455091003		1	1	pc.
139,7 (DN 125)	2455091004		1	1	pc.
168,3 (DN 150)	2455091005		1	1	pc.
219,1 (DN 200)	2455091006		1	1	pc.
323,9 (DN 300)	2455091007		1	1	pc.

Flat gasket Groove - DN50

(sandwich plates - cointain fibre and galvanized steel)

49
GROUP: S

FM APPROVED

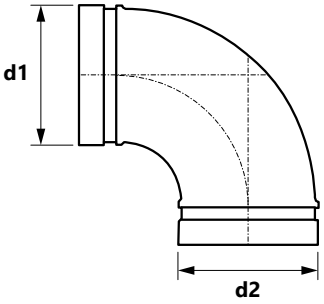
Size	Code	*			UM
DN50	2409237000		1	140	pc.
DN65	2409237001		1	110	pc.
DN80	2409237002		1	80	pc.
DN100	2409237003		1	70	pc.
DN125	2409237004		1	60	pc.
DN150	2409237005		1	40	pc.
DN200	2409237006		1	35	pc.
DN250	2409237007		1	10	pc.
DN300	2409237008		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange elbow 90°
(2x groove)

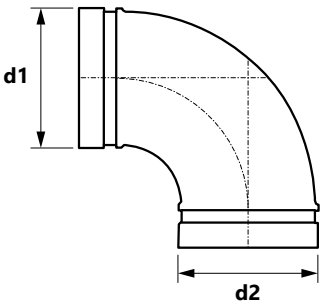
7110
GROUP: S



Size (d1×d2)	Code	*			UM
33,7 (DN 25)	2457302000		1	60	pc.
42,4 (DN 32)	2457302001		1	28	pc.
48,3 (DN 40)	2457302002		1	24	pc.
60,3 (DN 50)	2457302003		1	12	pc.
76,1 (DN 65)	2457302004		1	12	pc.
88,9 (DN 80)	2457302005		1	9	pc.
114,3 (DN 100)	2457302006		1	5	pc.
139,7 (DN 125)	2457302007		1	3	pc.
168,3 (DN 150)	2457302008		1	1	pc.
219,1 (DN 200)	2457302009		1	1	pc.
273,0 (DN 250)	2457302010		1	1	pc.
323,9 (DN 300)	2457302011		-	1	pc.

Galvanized elbow 90°
(2x groove)

7110
GROUP: S



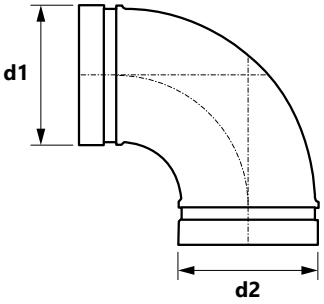
Size (d1×d2)	Code	*			UM
33,7 (DN 25)	2455302004		1	60	pc.
42,4 (DN 32)	2455302005		1	28	pc.
48,3 (DN 40)	2455302006		1	24	pc.
60,3 (DN 50)	2455302007		1	12	pc.
76,1 (DN 65)	2455302000		1	12	pc.
88,9 (DN 80)	2455302001		1	9	pc.
114,3 (DN 100)	2455302002		1	5	pc.
139,7 (DN 125)	2455302008		1	3	pc.
168,3 (DN 150)	2455302003		1	24	pc.
219,1 (DN 200)	2455302009		1	1	pc.
273,0 (DN 250)	2455302010		1	1	pc.
323,9 (DN 300)	2455302011		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red short elbow 90°
(small bending radius)

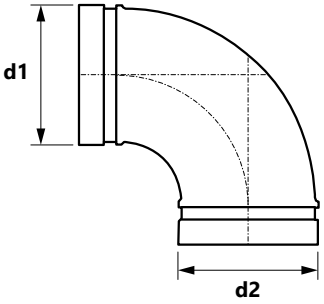
901
GROUP: S



Size (d1×d2)	Code	*			UM
60,3 (DN 50)	2458321000		1	30	pc.
76,1 (DN 65)	2458321001		1	16	pc.
88,9 (DN 80)	2458321002		1	12	pc.
114,3 (DN 100)	2458321003		1	6	pc.
139,7 (DN 125)	2458321004		1	4	pc.
168,3 (DN 150)	2458321005		1	2	pc.
219,1 (DN 200)	2458321006		1	1	pc.

Galvanized short elbow 90°
(small bending radius)

901
GROUP: S



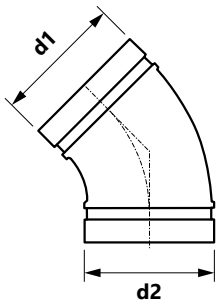
Size (d1×d2)	Code	*			UM
60,3 (DN 50)	2456321000		1	30	pc.
76,1 (DN 65)	2456321001		1	16	pc.
88,9 (DN 80)	2456321002		1	12	pc.
114,3 (DN 100)	2456321003		1	6	pc.
139,7 (DN 125)	2456321004		1	4	pc.
168,3 (DN 150)	2456321005		1	2	pc.
219,1 (DN 200)	2456321006		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange elbow 45°

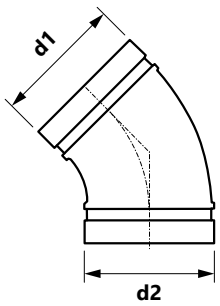
7111
GROUP: S



Size (d1×d2)	Code	*			UM
33,7 (DN 25)	2457303000		1	72	pc.
42,4 (DN 32)	2457303001		1	40	pc.
48,3 (DN 40)	2457303002		1	36	pc.
60,3 (DN 50)	2457303003		1	36	pc.
76,1 (DN 65)	2457303004		1	18	pc.
88,9 (DN 80)	2457303005		1	15	pc.
114,3 (DN 100)	2457303006		1	6	pc.
139,7 (DN 125)	2457303007		1	4	pc.
168,3 (DN 150)	2457303008		1	2	pc.
219,1 (DN 200)	2457303009		1	1	pc.
273,0 (DN 250)	2457303010		1	1	pc.
323,9 (DN 300)	2457303011		1	1	pc.

Galvanized elbow 45°

7111
GROUP: S



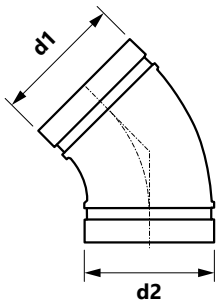
Size (d1×d2)	Code	*			UM
33,7 (DN 25)	2455303004		1	72	pc.
42,4 (DN 32)	2455303005		1	40	pc.
48,3 (DN 40)	2455303006		1	36	pc.
60,3 (DN 50)	2455303007		1	36	pc.
76,1 (DN 65)	2455303000		1	18	pc.
88,9 (DN 80)	2455303001		1	15	pc.
114,3 (DN 100)	2455303002		1	6	pc.
139,7 (DN 125)	2455303008		1	4	pc.
168,3 (DN 150)	2455303003		1	2	pc.
219,1 (DN 200)	2455303009		1	1	pc.
273,0 (DN 250)	2455303010		1	1	pc.
323,9 (DN 300)	2455303011		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red elbow 45°

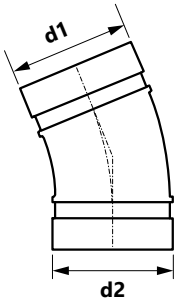
7111
GROUP: S



Size (d1×d2)	Code	*			UM
60,3 (DN 50)	2458303000		1	36	pc.
76,1 (DN 65)	2458303001		1	18	pc.
88,9 (DN 80)	2458303002		1	15	pc.
114,3 (DN 100)	2458303003		1	6	pc.
139,7 (DN 125)	2458303004		1	4	pc.
168,3 (DN 150)	2458303005		1	2	pc.
219,1 (DN 200)	2458303006		1	1	pc.

Orange elbow 22.5°
(2x groove)

7112
GROUP: S



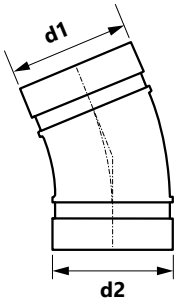
Size (d1×d2)	Code	*			UM
42,4 (DN 32)	2457304000		1	48	pc.
48,3 (DN 40)	2457304001		1	36	pc.
60,3 (DN 50)	2457304002		1	24	pc.
76,1 (DN 65)	2457304003		1	12	pc.
88,9 (DN 80)	2457304004		1	15	pc.
114,3 (DN 100)	2457304005		1	6	pc.
139,7 (DN 125)	2457304006		1	4	pc.
168,3 (DN 150)	2457304007		1	2	pc.
219,1 (DN 200)	2457304008		1	1	pc.
273,0 (DN 250)	2457304009		1	1	pc.
323,9 (DN 300)	2457304010		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized elbow 22.5°
(2x groove)

7112
GROUP: S

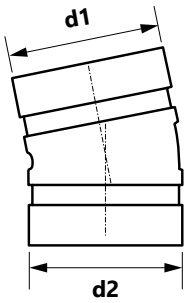


FM APPROVED

Size (d1×d2)	Code	*			UM
42,4 (DN 32)	2455304004		1	48	pc.
48,3 (DN 40)	2455304005		1	36	pc.
60,3 (DN 50)	2455304006		1	24	pc.
76,1 (DN 65)	2455304000		1	12	pc.
88,9 (DN 80)	2455304001		1	15	pc.
114,3 (DN 100)	2455304002		1	6	pc.
139,7 (DN 125)	2455304007		1	4	pc.
168,3 (DN 150)	2455304003		1	2	pc.
219,1 (DN 200)	2455304008		1	1	pc.
273,0 (DN 250)	2455304009		1	1	pc.
323,9 (DN 300)	2455304010		1	1	pc.

Orange elbow 11.25°
(2x groove)

7113
GROUP: S



FM APPROVED

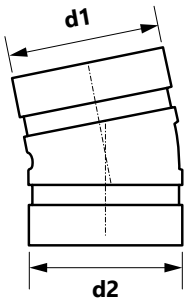
Size (d1×d2)	Code	*			UM
42,4 (DN 32)	2457316000		1	60	pc.
48,3 (DN 40)	2457316001		1	50	pc.
60,3 (DN 50)	2457316002		1	30	pc.
76,1 (DN 65)	2457316003		1	28	pc.
88,9 (DN 80)	2457316004		1	24	pc.
114,3 (DN 100)	2457316005		1	15	pc.
139,7 (DN 125)	2457316006		1	6	pc.
168,3 (DN 150)	2457316007		1	5	pc.
219,1 (DN 200)	2457316008		1	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized elbow 11.25°
(2x groove)

7113
GROUP: S

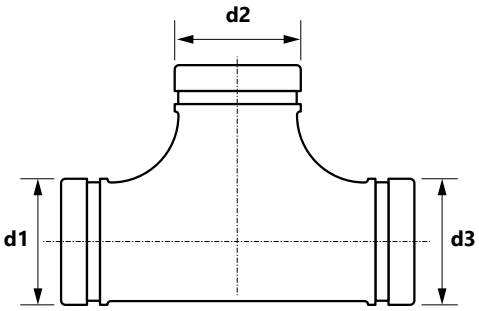


FM APPROVED

Size (d1×d2)	Code	*			UM
42,4 (DN 32)	2455316000		1	60	pc.
48,3 (DN 40)	2455316001		1	50	pc.
60,3 (DN 50)	2455316002		1	30	pc.
76,1 (DN 65)	2455316003		1	28	pc.
88,9 (DN 80)	2455316004		1	24	pc.
114,3 (DN 100)	2455316005		1	15	pc.
139,7 (DN 125)	2455316006		1	6	pc.
168,3 (DN 150)	2455316007		1	5	pc.
219,1 (DN 200)	2455316008		1	2	pc.

Orange tee Groove
(3x groove)

7120
GROUP: S



FM APPROVED VdS

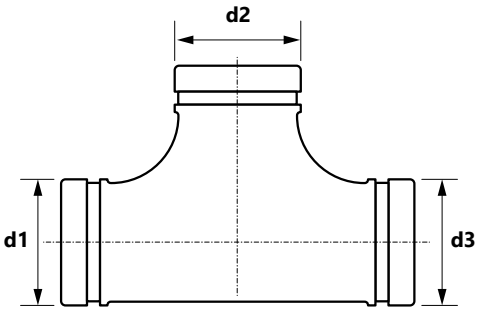
Size (d1=d2=d3)	Code	*			UM
33,7 (DN 25)	2457257000		1	40	pc.
42,4 (DN 32)	2457257001		1	20	pc.
48,3 (DN 40)	2457257002		1	15	pc.
60,3 (DN 50)	2457257003		1	16	pc.
76,1 (DN 65)	2457257004		1	10	pc.
88,9 (DN 80)	2457257005		1	5	pc.
114,3 (DN 100)	2457257006		1	3	pc.
139,7 (DN 125)	2457257007		1	1	pc.
168,3 (DN 150)	2457257008		1	1	pc.
219,1 (DN 200)	2457257009		1	1	pc.
273,0 (DN 250)	2457257010		-	1	pc.
323,9 (DN 300)	2457257011		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized tee Groove
(3x groove)

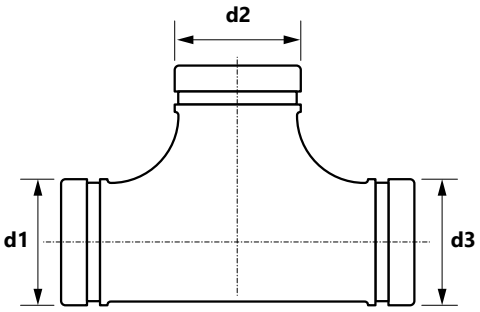
7120
GROUP: S



Size (d1=d2=d3)	Code	*			UM
33,7 (DN 25)	2455257001		1	40	pc.
42,4 (DN 32)	2455257002		1	20	pc.
48,3 (DN 40)	2455257003		1	15	pc.
60,3 (DN 50)	2455257004		1	16	pc.
76,1 (DN 65)	2455257005		1	10	pc.
88,9 (DN 80)	2455257006		1	5	pc.
114,3 (DN 100)	2455257007		1	3	pc.
139,7 (DN 125)	2455257008		1	1	pc.
168,3 (DN 150)	2455257000		1	24	pc.
219,1 (DN 200)	2455257009		1	1	pc.
273,0 (DN 250)	2455257010		-	1	pc.
323,9 (DN 300)	2455257011		-	1	pc.

Red short tee
(3x groove)

903
GROUP: S



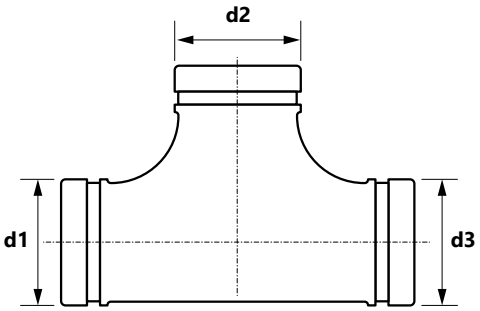
Size (d1=d2=d3)	Code	*			UM
60,3 (DN 50)	2458322000		1	20	pc.
76,1 (DN 65)	2458322001		1	12	pc.
88,9 (DN 80)	2458322002		1	8	pc.
114,3 (DN 100)	2458322003		1	5	pc.
139,7 (DN 125)	2458322004		1	2	pc.
168,3 (DN 150)	2458322005		1	1	pc.
219,1 (DN 200)	2458322006		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized short tee
(3x groove)

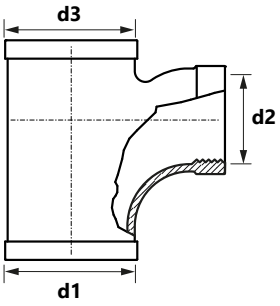
903
GROUP: S



Size (d1=d2=d3)	Code	*			UM
60,3 (DN 50)	2456322000		1	20	pc.
76,1 (DN 65)	2456322001		1	12	pc.
88,9 (DN 80)	2456322002		1	8	pc.
114,3 (DN 100)	2456322003		1	5	pc.
139,7 (DN 125)	2456322004		1	2	pc.
168,3 (DN 150)	2456322005		1	1	pc.
219,1 (DN 200)	2456322006		1	1	pc.

Galvanized arc tee
(2x groove)

7133
GROUP: S



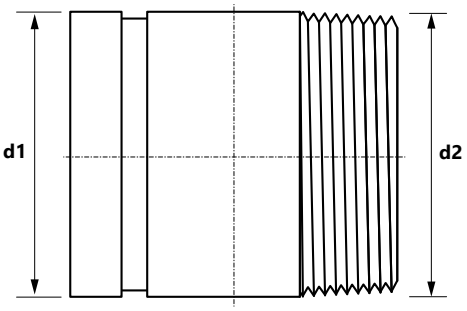
Size (d1=d3×d2)	Code	*			UM
114,3 (DN 100) × Rp2½	2455257012		1	4	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Male coupling
(groove x outside thread)

59
GROUP: S



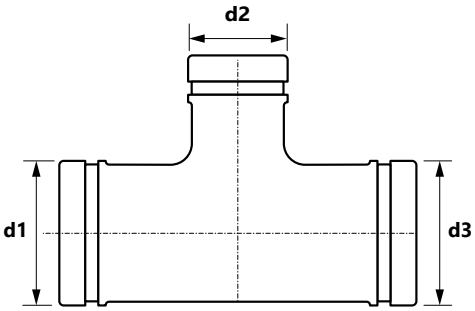
Size (d1×d2)	Code	*			UM
42,4 (DN 32) × R1¼	2409**309000**		1	38	pc.
48,3 (DN 40) × R1½	2409**309001**		1	65	pc.
60,3 (DN 50) × R2	2409**309002**		1	45	pc.
76,1 (DN 65) × R2½	2409**309003**		1	25	pc.
88,9 (DN 80) × R3	2409**309004**		1	20	pc.
114,3 (DN 100) × R4	2409**309005**		1	6	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange reducing tee
(3x groove)

7121
GROUP: S



FM APPROVED

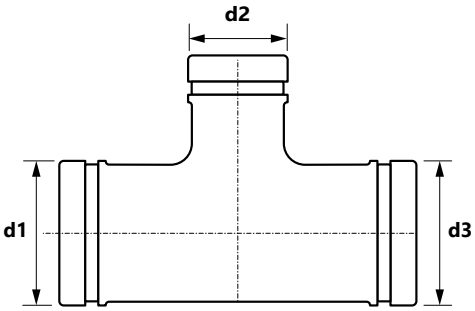
Size (d1×d2×d3)	Code	*			UM
60,3 (DN 50) × 33,7 (DN 25) × 60,3 (DN 50)	2457260000		1	20	pc.
60,3 (DN 50) × 48,3 (DN 40) × 60,3 (DN 50)	2457260001		1	16	pc.
76,1 (DN 65) × 60,3 (DN 50) × 76,1 (DN 65)	2457260002		1	10	pc.
88,9 (DN 80) × 33,7 (DN 25) × 88,9 (DN 80)	2457260003		1	8	pc.
88,9 (DN 80) × 48,3 (DN 40) × 88,9 (DN 80)	2457260004		1	8	pc.
88,9 (DN 80) × 60,3 (DN 50) × 88,9 (DN 80)	2457260005		1	6	pc.
88,9 (DN 80) × 76,1 (DN 65) × 88,9 (DN 80)	2457260006		1	6	pc.
114,3 (DN 100) × 48,3 (DN 40) × 114,3 (DN 100)	2457260007		1	3	pc.
114,3 (DN 100) × 60,3 (DN 50) × 114,3 (DN 100)	2457260008		1	3	pc.
114,3 (DN 100) × 76,1 (DN 65) × 114,3 (DN 100)	2457260009		1	3	pc.
114,3 (DN 100) × 88,9 (DN 80) × 114,3 (DN 100)	2457260010		1	3	pc.
139,7 (DN 125) × 76,1 (DN 65) × 139,7 (DN 125)	2457260011		1	2	pc.
139,7 (DN 125) × 88,9 (DN 80) × 139,7 (DN 125)	2457260012		1	2	pc.
139,7 (DN 125) × 114,3 (DN 100) × 139,7 (DN 125)	2457260013		1	2	pc.
168,3 (DN 150) × 60,3 (DN 50) × 168,3 (DN 150)	2457260014		1	1	pc.
168,3 (DN 150) × 88,9 (DN 80) × 168,3 (DN 150)	2457260029		-	1	pc.
168,3 (DN 150) × 114,3 (DN 100) × 168,3 (DN 150)	2457260015		1	1	pc.
219,1 (DN 200) × 60,3 (DN 50) × 219,1 (DN 200)	2457260016		1	1	pc.
219,1 (DN 200) × 114,3 (DN 100) × 219,1 (DN 200)	2457260017		1	1	pc.
219,1 (DN 200) × 168,3 (DN 150) × 219,1 (DN 200)	2457260018		1	1	pc.
273,0 (DN 250) × 60,3 (DN 50) × 273,0 (DN 250)	2457260019		-	1	pc.
273,0 (DN 250) × 88,9 (DN 80) × 273,0 (DN 250)	2457260020		-	1	pc.
273,0 (DN 250) × 114,3 (DN 100) × 273,0 (DN 250)	2457260021		-	1	pc.
273,0 (DN 250) × 168,3 (DN 150) × 273,0 (DN 250)	2457260022		-	1	pc.
273,0 (DN 250) × 219,1 (DN 200) × 273,0 (DN 250)	2457260023		-	1	pc.
323,9 (DN 300) × 88,9 (DN 80) × 323,9 (DN 300)	2457260024		-	1	pc.
323,9 (DN 300) × 114,3 (DN 100) × 323,9 (DN 300)	2457260025		-	1	pc.
323,9 (DN 300) × 168,3 (DN 150) × 323,9 (DN 300)	2457260026		-	1	pc.
323,9 (DN 300) × 219,1 (DN 200) × 323,9 (DN 300)	2457260027		-	1	pc.
323,9 (DN 300) × 273,0 (DN 250) × 323,9 (DN 300)	2457260028		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized reducing tee
(3x groove)

7121
GROUP: S



FM APPROVED

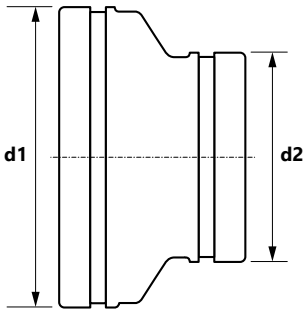
Size (d1×d2×d3)	Code	*			UM
60,3 (DN 50) × 33,7 (DN 25) × 60,3 (DN 50)	2455260002		1	20	pc.
60,3 (DN 50) × 48,3 (DN 40) × 60,3 (DN 50)	2455260003		1	16	pc.
76,1 (DN 65) × 60,3 (DN 50) × 76,1 (DN 65)	2455260004		1	10	pc.
88,9 (DN 80) × 33,7 (DN 25) × 88,9 (DN 80)	2455260005		1	8	pc.
88,9 (DN 80) × 48,3 (DN 40) × 88,9 (DN 80)	2455260006		1	8	pc.
88,9 (DN 80) × 60,3 (DN 50) × 88,9 (DN 80)	2455260007		1	6	pc.
88,9 (DN 80) × 76,1 (DN 65) × 88,9 (DN 80)	2455260008		1	6	pc.
114,3 (DN 100) × 60,3 (DN 50) × 114,3 (DN 100)	2455260000		1	3	pc.
114,3 (DN 100) × 76,1 (DN 65) × 114,3 (DN 100)	2455260009		1	3	pc.
114,3 (DN 100) × 88,9 (DN 80) × 114,3 (DN 100)	2455260010		1	3	pc.
139,7 (DN 125) × 76,1 (DN 65) × 139,7 (DN 125)	2455260011		1	2	pc.
139,7 (DN 125) × 88,9 (DN 80) × 139,7 (DN 125)	2455260012		1	2	pc.
139,7 (DN 125) × 114,3 (DN 100) × 139,7 (DN 125)	2455260013		1	2	pc.
168,3 (DN 150) × 60,3 (DN 50) × 168,3 (DN 150)	2455260014		1	1	pc.
168,3 (DN 150) × 114,3 (DN 100) × 168,3 (DN 150)	2455260001		1	24	pc.
219,1 (DN 200) × 60,3 (DN 50) × 219,1 (DN 200)	2455260015		1	1	pc.
219,1 (DN 200) × 114,3 (DN 100) × 219,1 (DN 200)	2455260016		1	1	pc.
219,1 (DN 200) × 168,3 (DN 150) × 219,1 (DN 200)	2455260017		1	1	pc.
273,0 (DN 250) × 88,9 (DN 80) × 273,0 (DN 250)	2455260018		-	1	pc.
273,0 (DN 250) × 114,3 (DN 100) × 273,0 (DN 250)	2455260019		-	1	pc.
273,0 (DN 250) × 168,3 (DN 150) × 273,0 (DN 250)	2455260020		-	1	pc.
273,0 (DN 250) × 219,1 (DN 200) × 273,0 (DN 250)	2455260021		-	1	pc.
323,9 (DN 300) × 219,1 (DN 200) × 323,9 (DN 300)	2455260022		-	1	pc.
323,9 (DN 300) × 273,0 (DN 250) × 323,9 (DN 300)	2455260023		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange concentric reducer
(2x groove)

7150
GROUP: S



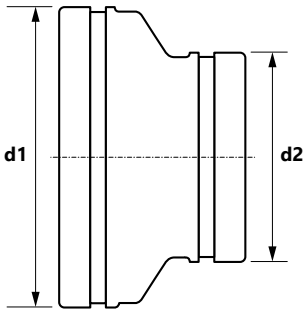
Size (d1×d2)	Code	*			UM
42,4 (DN 32) × 33,7 (DN 25)	2457305000		1	90	pc.
48,3 (DN 40) × 33,7 (DN 25)	2457305001		1	80	pc.
48,3 (DN 40) × 42,4 (DN 32)	2457305002		1	50	pc.
60,3 (DN 50) × 33,7 (DN 25)	2457305003		1	50	pc.
60,3 (DN 50) × 42,4 (DN 32)	2457305004		1	50	pc.
60,3 (DN 50) × 48,3 (DN 40)	2457305005		1	36	pc.
76,1 (DN 65) × 42,4 (DN 32)	2457305006		1	28	pc.
76,1 (DN 65) × 48,3 (DN 40)	2457305008		1	28	pc.
76,1 (DN 65) × 60,3 (DN 50)	2457305007		1	24	pc.
88,9 (DN 80) × 42,4 (DN 32)	2457305009		1	24	pc.
88,9 (DN 80) × 48,3 (DN 40)	2457305010		1	24	pc.
88,9 (DN 80) × 60,3 (DN 50)	2457305011		1	24	pc.
88,9 (DN 80) × 76,1 (DN 65)	2457305012		1	18	pc.
114,3 (DN 100) × 48,3 (DN 40)	2457305013		1	12	pc.
114,3 (DN 100) × 60,3 (DN 50)	2457305014		1	24	pc.
114,3 (DN 100) × 76,1 (DN 65)	2457305015		1	20	pc.
114,3 (DN 100) × 88,9 (DN 80)	2457305016		1	20	pc.
139,7 (DN 125) × 88,9 (DN 80)	2457305017		1	12	pc.
139,7 (DN 125) × 114,3 (DN 100)	2457305018		1	12	pc.
168,3 (DN 150) × 60,3 (DN 50)	2457305019		1	8	pc.
168,3 (DN 150) × 88,9 (DN 80)	2457305020		1	8	pc.
168,3 (DN 150) × 114,3 (DN 100)	2457305021		1	8	pc.
168,3 (DN 150) × 139,7 (DN 125)	2457305022		1	8	pc.
219,1 (DN 200) × 114,3 (DN 100)	2457305023		1	3	pc.
219,1 (DN 200) × 168,3 (DN 150)	2457305024		1	3	pc.
273,0 (DN 250) × 114,3 (DN 100)	2457305025		1	1	pc.
273,0 (DN 250) × 168,3 (DN 150)	2457305026		1	1	pc.
273,0 (DN 250) × 219,1 (DN 200)	2457305027		1	1	pc.
323,9 (DN 300) × 168,3 (DN 150)	2457305028		1	1	pc.
323,9 (DN 300) × 219,1 (DN 200)	2457305029		1	1	pc.
323,9 (DN 300) × 273,0 (DN 250)	2457305030		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized concentric reducer
(2x groove)

7150
GROUP: S



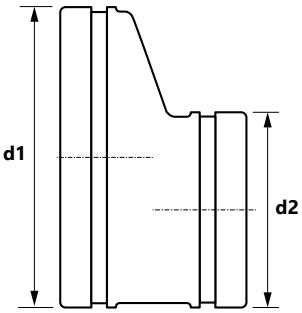
Size (d1×d2)	Code	*			UM
42,4 (DN 32) × 33,7 (DN 25)	2455305002		1	90	pc.
48,3 (DN 40) × 33,7 (DN 25)	2455305003		1	80	pc.
48,3 (DN 40) × 42,4 (DN 32)	2455305000		1	50	pc.
60,3 (DN 50) × 33,7 (DN 25)	2455305004		1	50	pc.
60,3 (DN 50) × 42,4 (DN 32)	2455305005		1	50	pc.
60,3 (DN 50) × 48,3 (DN 40)	2455305001		1	36	pc.
76,1 (DN 65) × 42,4 (DN 32)	2455305006		1	28	pc.
76,1 (DN 65) × 48,3 (DN 40)	2455305007		1	28	pc.
76,1 (DN 65) × 60,3 (DN 50)	2455305008		1	24	pc.
88,9 (DN 80) × 48,3 (DN 40)	2455305009		1	24	pc.
88,9 (DN 80) × 60,3 (DN 50)	2455305010		1	24	pc.
88,9 (DN 80) × 76,1 (DN 65)	2455305011		1	18	pc.
114,3 (DN 100) × 60,3 (DN 50)	2455305012		1	24	pc.
114,3 (DN 100) × 76,1 (DN 65)	2455305013		1	20	pc.
114,3 (DN 100) × 88,9 (DN 80)	2455305014		1	20	pc.
139,7 (DN 125) × 88,9 (DN 80)	2455305015		1	12	pc.
139,7 (DN 125) × 114,3 (DN 100)	2455305016		1	12	pc.
168,3 (DN 150) × 60,3 (DN 50)	2455305017		1	8	pc.
168,3 (DN 150) × 76,1 (DN 65)	2455305018		1	8	pc.
168,3 (DN 150) × 88,9 (DN 80)	2455305019		1	8	pc.
168,3 (DN 150) × 114,3 (DN 100)	2455305020		1	8	pc.
168,3 (DN 150) × 139,7 (DN 125)	2455305021		1	8	pc.
219,1 (DN 200) × 114,3 (DN 100)	2455305022		1	3	pc.
219,1 (DN 200) × 168,3 (DN 150)	2455305023		1	3	pc.
273,0 (DN 250) × 114,3 (DN 100)	2455305024		1	1	pc.
273,0 (DN 250) × 168,3 (DN 150)	2455305025		1	1	pc.
273,0 (DN 250) × 219,1 (DN 200)	2455305026		1	1	pc.
323,9 (DN 300) × 219,1 (DN 200)	2455305027		1	1	pc.
323,9 (DN 300) × 273,0 (DN 250)	2455305028		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange eccentric reducer
(2x groove)

7151
GROUP: S

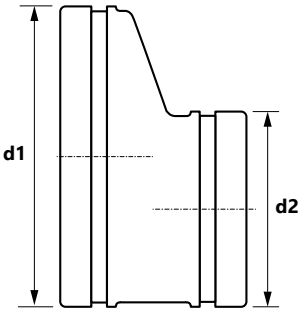


FM APPROVED

Size (d1×d2)	Code	*			UM
76,1 (DN 65) × 60,3 (DN 50)	2457319000		1	16	pc.
88,9 (DN 80) × 60,3 (DN 50)	2457319001		1	18	pc.
88,9 (DN 80) × 76,1 (DN 65)	2457319002		1	12	pc.
114,3 (DN 100) × 60,3 (DN 50)	2457319003		1	12	pc.
114,3 (DN 100) × 76,1 (DN 65)	2457319004		1	12	pc.
114,3 (DN 100) × 88,9 (DN 80)	2457319005		1	12	pc.
139,7 (DN 125) × 88,9 (DN 80)	2457319006		1	4	pc.
139,7 (DN 125) × 114,3 (DN 100)	2457319007		1	4	pc.
168,3 (DN 150) × 60,3 (DN 50)	2457319008		1	7	pc.
168,3 (DN 150) × 88,9 (DN 80)	2457319009		1	4	pc.
168,3 (DN 150) × 114,3 (DN 100)	2457319010		1	7	pc.
219,1 (DN 200) × 114,3 (DN 100)	2457319011		1	3	pc.
219,1 (DN 200) × 168,3 (DN 150)	2457319012		1	2	pc.
273,0 (DN 250) × 219,1 (DN 200)	2457319013		1	1	pc.
323,9 (DN 300) × 219,1 (DN 200)	2457319014		1	1	pc.

Galvanized eccentric reducer
(2x groove)

7151
GROUP: S



FM APPROVED

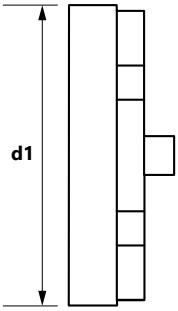
Size (d1×d2)	Code	*			UM
76,1 (DN 65) × 60,3 (DN 50)	2455319000		1	16	pc.
88,9 (DN 80) × 60,3 (DN 50)	2455319001		1	18	pc.
88,9 (DN 80) × 76,1 (DN 65)	2455319002		1	12	pc.
114,3 (DN 100) × 60,3 (DN 50)	2455319003		1	12	pc.
114,3 (DN 100) × 76,1 (DN 65)	2455319004		1	12	pc.
114,3 (DN 100) × 88,9 (DN 80)	2455319005		1	12	pc.
168,3 (DN 150) × 88,9 (DN 80)	2455319006		1	4	pc.
168,3 (DN 150) × 114,3 (DN 100)	2455319007		1	7	pc.
219,1 (DN 200) × 168,3 (DN 150)	2455319008		1	2	pc.
273,0 (DN 250) × 219,1 (DN 200)	2455319009		1	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red stop end
(grooved)

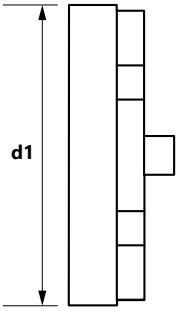
7160
GROUP: S



Size (d1)	Code	*			UM
33,7 (DN 25)	2457025000		1	220	pc.
42,4 (DN 32)	2457025001		1	145	pc.
48,3 (DN 40)	2457025002		1	110	pc.
60,3 (DN 50)	2457025003		1	75	pc.
76,1 (DN 65)	2457025004		1	50	pc.
88,9 (DN 80)	2457025005		1	30	pc.
114,3 (DN 100)	2457025006		1	18	pc.
139,7 (DN 125)	2457025007		1	12	pc.
168,3 (DN 150)	2457025008		1	8	pc.
219,1 (DN 200)	2457025009		1	3	pc.
273,0 (DN 250)	2457025010		1	3	pc.
323,9 (DN 300)	2457025011		1	1	pc.

Galvanized stop end
(grooved)

7160
GROUP: S



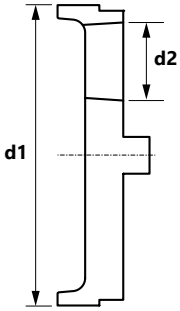
Size (d1)	Code	*			UM
33,7 (DN25)	2455025000		1	220	pc.
42,4 (DN 32)	2455025001		1	145	pc.
48,3 (DN 40)	2455025002		1	110	pc.
60,3 (DN 50)	2455025003		1	75	pc.
76,1 (DN 65)	2455025004		1	50	pc.
88,9 (DN 80)	2455025005		1	30	pc.
114,3 (DN 100)	2455025006		1	18	pc.
139,7 (DN 125)	2455025007		1	12	pc.
168,3 (DN 150)	2455025008		1	8	pc.
219,1 (DN 200)	2455025009		1	3	pc.
273,0 (DN 250)	2455025010		1	3	pc.
323,9 (DN 300)	2455025011		1	1	pc.

coil bar pipes in tube bag carton box pallet N new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red female transition fitting
(groove x inside thread)

7160T
GROUP: S

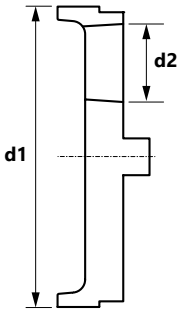


FM APPROVED

Size (d1×d2)	Code	*			UM
60,3 (DN 50) × Rp1	2457320000		1	75	pc.
76,1 (DN 65) × Rp1	2457320001		1	50	pc.
76,1 (DN 65) × Rp1¼	2457320002		1	50	pc.
76,1 (DN 65) × Rp1½	2457320003		1	50	pc.
88,9 (DN 80) × Rp1	2457320004		1	30	pc.
88,9 (DN 80) × Rp1¼	2457320005		1	30	pc.
88,9 (DN 80) × Rp1½	2457320006		1	30	pc.
114,3 (DN 100) × Rp1	2457320007		1	18	pc.
114,3 (DN 100) × Rp1¼	2457320008		1	18	pc.
114,3 (DN 100) × Rp1½	2457320009		1	18	pc.
114,3 (DN 100) × Rp2	2457320010		1	18	pc.
139,7 (DN 125) × Rp2	2457320011		1	12	pc.
168,3 (DN 150) × Rp2	2457320012		1	8	pc.
219,1 (DN 200) × Rp2	2457320013		1	3	pc.

Galvanized female transition fitting
(groove x inside thread)

7160T
GROUP: S



FM APPROVED

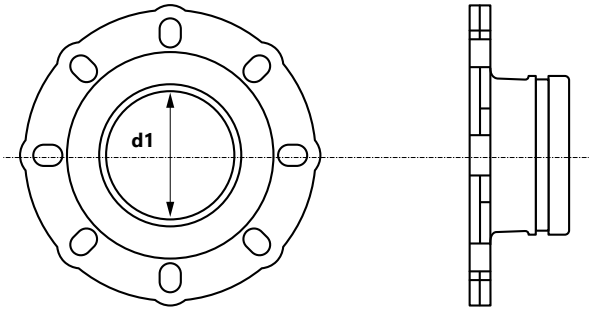
Size (d1×d2)	Code	*			UM
60,3 (DN 50) × Rp1	2455320000		1	75	pc.
76,1 (DN 65) × Rp1	2455320001		1	50	pc.
88,9 (DN 80) × Rp2	2455320002		1	30	pc.
114,3 (DN 100) × Rp1	2455320003		1	18	pc.
114,3 (DN 100) × Rp1½	2455320004		1	18	pc.
114,3 (DN 100) × Rp2	2455320005		1	18	pc.
139,7 (DN 125) × Rp2	2455320006		1	12	pc.
168,3 (DN 150) × Rp2	2455320007		1	8	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange universal flange
(PN 10/16, ANSI Class 125/150, BS10E)

7180
GROUP: S

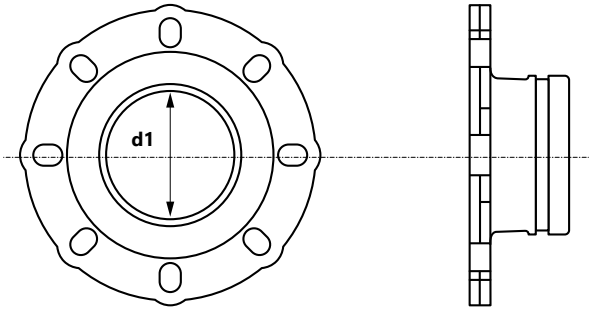


FM APPROVED

Size (d1)	Code	*			UM
60,3 (DN 50)	2457315000		1	4	pc.
76,1 (DN 65)	2457315001		1	3	pc.
88,9 (DN 80)	2457315002		1	6	pc.
114,3 (DN 100)	2457315003		1	4	pc.
139,7 (DN 125)	2457315004		1	2	pc.
168,3 (DN 150)	2457315005		1	2	pc.
219,1 (DN 200)	2457315006		1	1	pc.

Galvanized universal flange
(PN 10/16, ANSI Class 125/150, BS10E)

7180
GROUP: S



FM APPROVED

Size (d1)	Code	*			UM
60,3 (DN 50)	2455315000		1	4	pc.
76,1 (DN 65)	2455315001		1	3	pc.
88,9 (DN 80)	2455315002		1	6	pc.
114,3 (DN 100)	2455315003		1	4	pc.
139,7 (DN 125)	2455315004		1	2	pc.
168,3 (DN 150)	2455315005		1	2	pc.
219,1 (DN 200)	2455315006		1	1	pc.

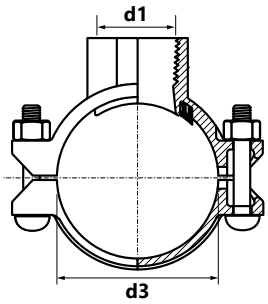
coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red female mechanical tee

(Outlet with internal thread ISO R7, with class E gasket)

7721
GROUP: S



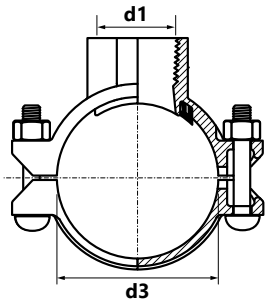
Size (d3×d1)	Code	*			UM
60,3 (DN 50) × Rp½	2457317000		1	10	pc.
60,3 (DN 50) × Rp¾	2457317001		1	10	pc.
60,3 (DN 50) × Rp1	2457317002		1	10	pc.
60,3 (DN 50) × Rp1¼	2457317003		1	8	pc.
60,3 (DN 50) × Rp1½	2457317004		1	8	pc.
76,1 (DN 65) × Rp½	2457317005		1	7	pc.
76,1 (DN 65) × Rp¾	2457317006		1	7	pc.
76,1 (DN 65) × Rp1	2457317007		1	7	pc.
76,1 (DN 65) × Rp1¼	2457317008		1	7	pc.
76,1 (DN 65) × Rp1½	2457317009		1	6	pc.
88,9 (DN 80) × Rp½	2457317010		1	7	pc.
88,9 (DN 80) × Rp¾	2457317011		1	7	pc.
88,9 (DN 80) × Rp1	2457317012		1	7	pc.
88,9 (DN 80) × Rp1¼	2457317013		1	10	pc.
88,9 (DN 80) × Rp1½	2457317014		1	6	pc.
88,9 (DN 80) × Rp2	2457317015		1	5	pc.
114,3 (DN 100) × Rp½	2457317016		1	12	pc.
114,3 (DN 100) × Rp¾	2457317017		1	12	pc.
114,3 (DN 100) × Rp1	2457317018		1	5	pc.
114,3 (DN 100) × Rp1¼	2457317019		1	4	pc.
114,3 (DN 100) × Rp1½	2457317020		1	8	pc.
114,3 (DN 100) × Rp2	2457317021		1	8	pc.
114,3 (DN 100) × Rp2½	2457317022		1	5	pc.
114,3 (DN 100) × Rp3	2457317023		1	3	pc.
168,3 (DN 150) × Rp1¼	2457317024		1	4	pc.
168,3 (DN 150) × Rp1½	2457317025		1	4	pc.
168,3 (DN 150) × Rp2	2457317026		1	4	pc.
168,3 (DN 150) × Rp2½	2457317027		1	3	pc.
168,3 (DN 150) × Rp3	2457317028		1	3	pc.
219,1 (DN 200) × Rp2	2457317029		1	2	pc.
219,1 (DN 200) × Rp2½	2457317030		1	2	pc.
219,1 (DN 200) × Rp3	2457317031		1	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized female mechanical tee
(Outlet with internal thread ISO R7, with class E gasket)

7721
GROUP: S



Size (d3×d1)	Code	*			UM
60,3 (DN 50) × Rp½	2455317000		1	10	pc.
60,3 (DN 50) × Rp¾	2455317001		1	10	pc.
60,3 (DN 50) × Rp1	2455317002		1	10	pc.
60,3 (DN 50) × Rp1¼	2455317003		1	8	pc.
60,3 (DN 50) × Rp1½	2455317004		1	8	pc.
76,1 (DN 65) × Rp½	2455317005		1	7	pc.
76,1 (DN 65) × Rp¾	2455317006		1	7	pc.
76,1 (DN 65) × Rp1	2455317007		1	7	pc.
76,1 (DN 65) × Rp1¼	2455317008		1	7	pc.
76,1 (DN 65) × Rp1½	2455317009		1	6	pc.
88,9 (DN 80) × Rp½	2455317010		1	7	pc.
88,9 (DN 80) × Rp¾	2455317011		1	7	pc.
88,9 (DN 80) × Rp1	2455317012		1	7	pc.
88,9 (DN 80) × Rp1¼	2455317013		1	10	pc.
88,9 (DN 80) × Rp1½	2455317014		1	6	pc.
88,9 (DN 80) × Rp2	2455317015		1	5	pc.
114,3 (DN 100) × Rp½	2455317016		1	12	pc.
114,3 (DN 100) × Rp¾	2455317017		1	12	pc.
114,3 (DN 100) × Rp1	2455317018		1	5	pc.
114,3 (DN 100) × Rp1¼	2455317019		1	4	pc.
114,3 (DN 100) × Rp1½	2455317020		1	8	pc.
114,3 (DN 100) × Rp2	2455317021		1	8	pc.
114,3 (DN 100) × Rp2½	2455317022		1	5	pc.
114,3 (DN 100) × Rp3	2455317023		1	3	pc.
168,3 (DN 150) × Rp1¼	2455317024		1	4	pc.
168,3 (DN 150) × Rp1½	2455317025		1	4	pc.
168,3 (DN 150) × Rp2	2455317026		1	4	pc.
168,3 (DN 150) × Rp2½	2455317027		1	3	pc.
168,3 (DN 150) × Rp3	2455317028		1	3	pc.
219,1 (DN 200) × Rp2	2455317029		1	2	pc.
219,1 (DN 200) × Rp2½	2455317030		1	2	pc.
219,1 (DN 200) × Rp3	2455317031		1	2	pc.

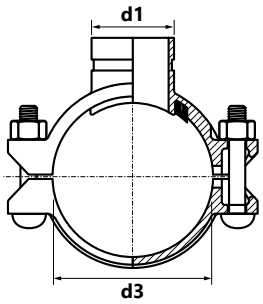
coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red mechanical tee

(grooved end of the outlet with class E gasket)

7722
GROUP: S



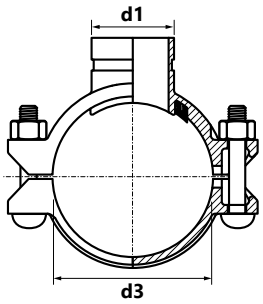
Size (d3×d1)	Code	*			UM
60,3 (DN 50) × 42,4 (DN 32)	2457318000		1	10	pc.
60,3 (DN 50) × 48,3 (DN 40)	2457318001		1	10	pc.
76,1 (DN 65) × 42,4 (DN 32)	2457318002		1	7	pc.
76,1 (DN 65) × 48,3 (DN 40)	2457318003		1	6	pc.
88,9 (DN 80) × 42,4 (DN 32)	2457318004		1	10	pc.
88,9 (DN 80) × 48,3 (DN 40)	2457318005		1	10	pc.
88,9 (DN 80) × 60,3 (DN 50)	2457318006		1	10	pc.
114,3 (DN 100) × 33,4 (DN 25)	2457318024		-	1	pc.
114,3 (DN 100) × 42,4 (DN 32)	2457318007		1	8	pc.
114,3 (DN 100) × 48,3 (DN 40)	2457318008		1	8	pc.
114,3 (DN 100) × 60,3 (DN 50)	2457318009		1	8	pc.
114,3 (DN 100) × 76,1 (DN 65)	2457318010		1	5	pc.
114,3 (DN 100) × 88,9 (DN 80)	2457318011		1	3	pc.
139,7 (DN 125) × 60,3 (DN 50)	2457318012		1	4	pc.
139,7 (DN 125) × 76,1 (DN 65)	2457318013		1	4	pc.
168,3 (DN 150) × 42,4 (DN 32)	2457318014		1	4	pc.
168,3 (DN 150) × 48,3 (DN 40)	2457318015		1	4	pc.
168,3 (DN 150) × 60,3 (DN 50)	2457318016		1	4	pc.
168,3 (DN 150) × 76,1 (DN 65)	2457318017		1	3	pc.
168,3 (DN 150) × 88,9 (DN 80)	2457318018		1	2	pc.
168,3 (DN 150) × 114,3 (DN 100)	2457318019		1	2	pc.
219,1 (DN 200) × 60,3 (DN 50)	2457318020		1	2	pc.
219,1 (DN 200) × 76,1 (DN 65)	2457318021		1	2	pc.
219,1 (DN 200) × 88,9 (DN 80)	2457318022		1	2	pc.
219,1 (DN 200) × 114,3 (DN 100)	2457318023		1	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Galvanized mechanical tee
(grooved end of the outlet with class E gasket)

7722
GROUP: S



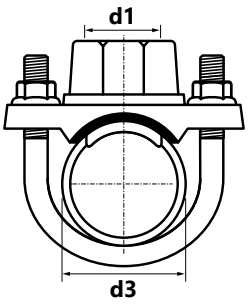
Size (d3×d1)	Code	*			UM
60,3 (DN 50) × 42,4 (DN 32)	2455318000		1	10	pc.
60,3 (DN 50) × 48,3 (DN 40)	2455318001		1	10	pc.
76,1 (DN 65) × 42,4 (DN 32)	2455318002		1	7	pc.
76,1 (DN 65) × 48,3 (DN 40)	2455318003		1	6	pc.
88,9 (DN 80) × 42,4 (DN 32)	2455318004		1	10	pc.
88,9 (DN 80) × 48,3 (DN 40)	2455318005		1	10	pc.
88,9 (DN 80) × 60,3 (DN 50)	2455318006		1	10	pc.
114,3 (DN 100) × 42,4 (DN 32)	2455318007		1	8	pc.
114,3 (DN 100) × 48,3 (DN 40)	2455318008		1	8	pc.
114,3 (DN 100) × 60,3 (DN 50)	2455318009		1	8	pc.
114,3 (DN 100) × 76,1 (DN 65)	2455318010		1	5	pc.
114,3 (DN 100) × 88,9 (DN 80)	2455318011		1	3	pc.
168,3 (DN 150) × 42,4 (DN 32)	2455318012		1	4	pc.
168,3 (DN 150) × 48,3 (DN 40)	2455318013		1	4	pc.
168,3 (DN 150) × 60,3 (DN 50)	2455318014		1	4	pc.
168,3 (DN 150) × 76,1 (DN 65)	2455318015		1	3	pc.
168,3 (DN 150) × 88,9 (DN 80)	2455318016		1	2	pc.
168,3 (DN 150) × 114,3 (DN 100)	2455318017		1	2	pc.
219,1 (DN 200) × 60,3 (DN 50)	2455318018		1	2	pc.
219,1 (DN 200) × 76,1 (DN 65)	2455318019		1	2	pc.
219,1 (DN 200) × 88,9 (DN 80)	2455318020		1	2	pc.
219,1 (DN 200) × 114,3 (DN 100)	2455318021		1	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Red female saddle
(with class E gasket)

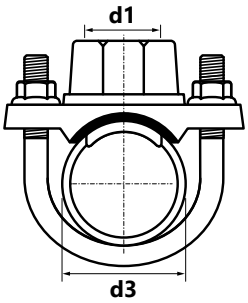
723
GROUP: S



Size (d3×d1)	Code	*			UM
42,4 (DN 32) × Rp½	2458230000		1	35	pc.
42,4 (DN 32) × Rp¾	2458230001		1	35	pc.
42,4 (DN 32) × Rp1	2458230002		1	35	pc.
48,3 (DN 40) × Rp½	2458230003		1	35	pc.
48,3 (DN 40) × Rp¾	2458230004		1	35	pc.
48,3 (DN 40) × Rp1	2458230005		1	35	pc.
60,3 (DN 50) × Rp½	2458230006		1	35	pc.
60,3 (DN 50) × Rp¾	2458230007		1	35	pc.
60,3 (DN 50) × Rp1	2458230008		1	35	pc.
76,1 (DN 65) × Rp½	2458230009		1	28	pc.
76,1 (DN 65) × Rp¾	2458230010		1	28	pc.
76,1 (DN 65) × Rp1	2458230011		1	28	pc.

Galvanized female saddle
(with class E gasket)

723
GROUP: S



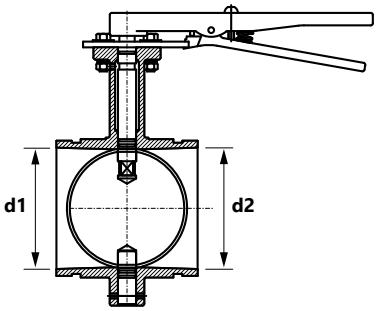
Size (d3×d1)	Code	*			UM
42,4 (DN 32) × Rp½	2456230000		1	35	pc.
42,4 (DN 32) × Rp¾	2456230001		1	35	pc.
42,4 (DN 32) × Rp1	2456230002		1	35	pc.
48,3 (DN 40) × Rp½	2456230003		1	35	pc.
48,3 (DN 40) × Rp¾	2456230004		1	35	pc.
48,3 (DN 40) × Rp1	2456230005		1	35	pc.
60,3 (DN 50) × Rp½	2456230006		1	35	pc.
60,3 (DN 50) × Rp¾	2456230007		1	35	pc.
60,3 (DN 50) × Rp1	2456230008		1	35	pc.
76,1 (DN 65) × Rp½	2456230009		1	28	pc.
76,1 (DN 65) × Rp¾	2456230010		1	28	pc.
76,1 (DN 65) × Rp1	2456230011		1	28	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Coated throttle valve
(2x groove, with handle of lever and disc covered with EPDM coating)

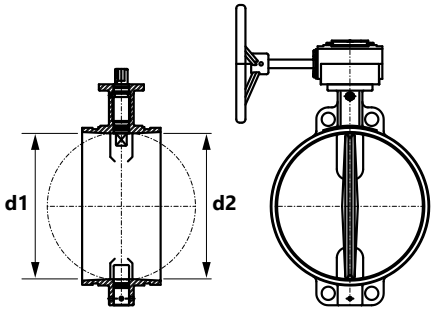
SJ-300N-L
GROUP: S



Size (d1=d2)	Code	*			UM
60,3 (DN 50)	2409310000		1	2	pc.
76,1 (DN 65)	2409310001		1	2	pc.
88,9 (DN 80)	2409310002		1	2	pc.
114,3 (DN 100)	2409310003		1	2	pc.
139,7 (DN 125)	2409310004		1	2	pc.
168,3 (DN 150)	2409310005		1	2	pc.
219,1 (DN 200)	2409310006		-	1	pc.

Coated throttle valve with gear
(2x groove, with handle of lever and disc covered with EPDM coating)

SJ-300N-W
GROUP: S



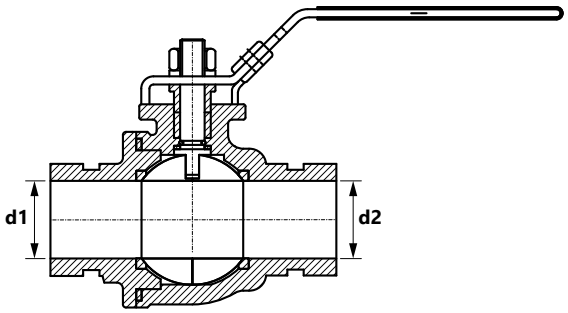
Size (d1=d2)	Code	*			UM
168,3 (DN 150)	2409311000		1	2	pc.
219,1 (DN 200)	2409311001		-	1	pc.
273,0 (DN 250)	2409311002		-	1	pc.
323,9 (DN 300)	2409311003		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Carbon steel ball valve
(2x groove)

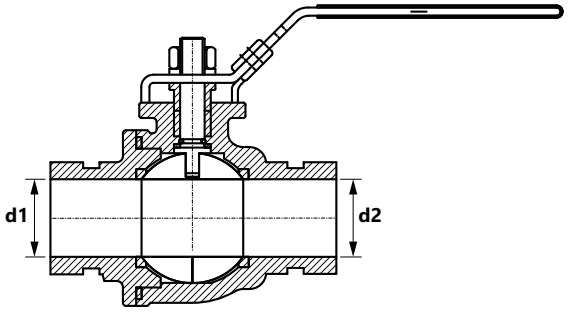
SJ-500-L
GROUP: S



Size (d1=d2)	Code	*			UM
48,3 (DN 40)	2409**278000**		1	10	pc.
60,3 (DN 50)	2409**278001**		1	5	pc.
76,1 (DN 65)	2409**278002**		1	3	pc.
88,9 (DN 80)	2409**278003**		1	2	pc.

Carbon steel ball valve
(2x groove)

SJ-500-L
GROUP: S



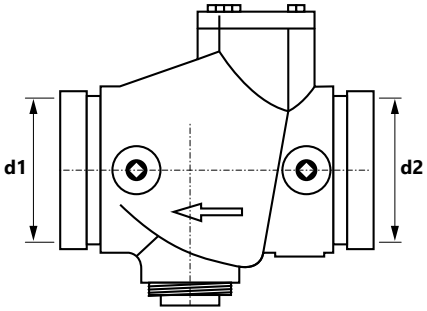
Size (d1=d2)	Code	*			UM
48,3 (DN 40)	2409**278004**		1	10	pc.
60,3 (DN 50)	2409**278005**		1	5	pc.
76,1 (DN 65)	2409**278006**		1	3	pc.
88,9 (DN 80)	2409**278007**		1	2	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Coated swing check valve
(2x groove)

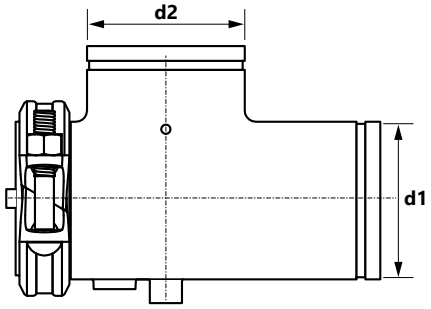
SJ-900
GROUP: S



Size (d1=d2)	Code	*			UM
76,1 (DN 65)	2409308000		1	4	pc.
88,9 (DN 80)	2409308001		1	4	pc.
114,3 (DN 100)	2409308002		1	2	pc.
139,7 (DN 125)	2409308003		-	1	pc.
168,3 (DN 150)	2409308004		-	1	pc.
219,1 (DN 200)	2409308005		-	1	pc.
273,0 (DN 250)	2409308006		-	1	pc.
323,9 (DN 300)	2409308007		-	1	pc.

Orange suction diffuser
(2x groove)

725G
GROUP: S



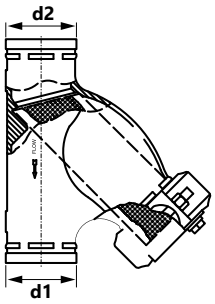
Size (d1=d2)	Code	*			UM
76,1 (DN 65)	2457324000		1	4	pc.
88,9 (DN 80)	2457324001		1	3	pc.
114,3 (DN 100)	2457324002		-	1	pc.
168,3 (DN 150)	2457324003		-	1	pc.
219,1 (DN 200)	2457324004		-	1	pc.
273,0 (DN 250)	2457324005		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Orange Y type strainer Groove
(3x groove)

726
GROUP: S



Size (d1=d2)	Code	*			UM
60,3 (DN 50)	2457086000		1	4	pc.
76,1 (DN 65)	2457086001		1	3	pc.
88,9 (DN 80)	2457086002		1	2	pc.
114,3 (DN 100)	2457086003		1	1	pc.
139,7 (DN 125)	2457086004		1	1	pc.
168,3 (DN 150)	2457086005		1	1	pc.
219,1 (DN 200)	2457086006		-	1	pc.
273,0 (DN 250)	2457086007		-	1	pc.

coil bar pipes in tube bag carton box pallet new available soon

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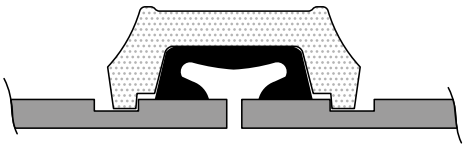
Accessories

EPDM "C" type gasket
(for Z05, Z07, 7707, 7705 couplings)

GROUP: S



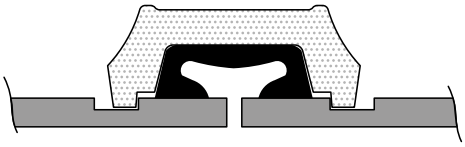
Size	Code	*			UM
33,7 (DN 25)	2409**237009**		1	300	pc.
42,4 (DN 32)	2409**237010**		1	210	pc.
48,3 (DN 40)	2409**237011**		1	170	pc.
60,3 (DN 50)	2409**237012**		1	120	pc.
76,1 (DN 65)	2409**237013**		1	100	pc.
88,9 (DN 80)	2409**237014**		1	65	pc.
114,3 (DN 100)	2409**237015**		1	40	pc.
139,7 (DN 125)	2409**237016**		1	33	pc.
168,3 (DN 150)	2409**237018**		1	25	pc.
219,1 (DN 200)	2409**237019**		1	15	pc.
273,0 (DN 250)	2409**237020**		1	12	pc.
323,9 (DN 300)	2409**237021**		1	8	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

NBR "C" type gasket
(for Z05, Z07, 7707, 7705 couplings)

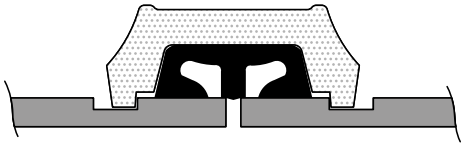
GROUP: S



Size	Code	*			UM
33,7 (DN 25)	2409237022		1	300	pc.
42,4 (DN 32)	2409237023		1	210	pc.
48,3 (DN 40)	2409237024		1	170	pc.
60,3 (DN 50)	2409237025		1	120	pc.
76,1 (DN 65)	2409237026		1	100	pc.
88,9 (DN 80)	2409237027		1	65	pc.
114,3 (DN 100)	2409237028		1	40	pc.
139,7 (DN 125)	2409237029		1	33	pc.
168,3 (DN 150)	2409237031		1	25	pc.
219,1 (DN 200)	2409237032		1	15	pc.
273,0 (DN 250)	2409237033		1	12	pc.
323,9 (DN 300)	2409237034		1	8	pc.

EPDM gasket
(for Z05, Z07, 7707, 7705 couplings)

GROUP: S



Size	Code	*			UM
42,4 (DN 32)	2409237035		1	210	pc.
48,3 (DN 40)	2409237036		1	170	pc.
60,3 (DN 50)	2409237037		1	115	pc.
76,1 (DN 65)	2409237038		1	90	pc.
88,9 (DN 80)	2409237039		1	60	pc.
114,3 (DN 100)	2409237040		1	35	pc.
139,7 (DN 125)	2409237041		1	30	pc.
168,3 (DN 150)	2409237043		1	22	pc.
219,1 (DN 200)	2409237044		1	12	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Lubricant 550H

G223
GROUP: S

Capacity [g]	Code	*			UM
450	2400183000		1	24	pc.
900	2400183001		1	9	pc.

Tape measure Groove

GR600
GROUP: S

Range [mm]	Code	*			UM
¾-24"	2400183003		-	1	pc.

Lubricant EHC Groove

GROUP: S

Capacity [g]	Code	*			UM
270	2400183004		1	-	pc.

coil bar pipes in tube bag carton box pallet new available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Install your **future**

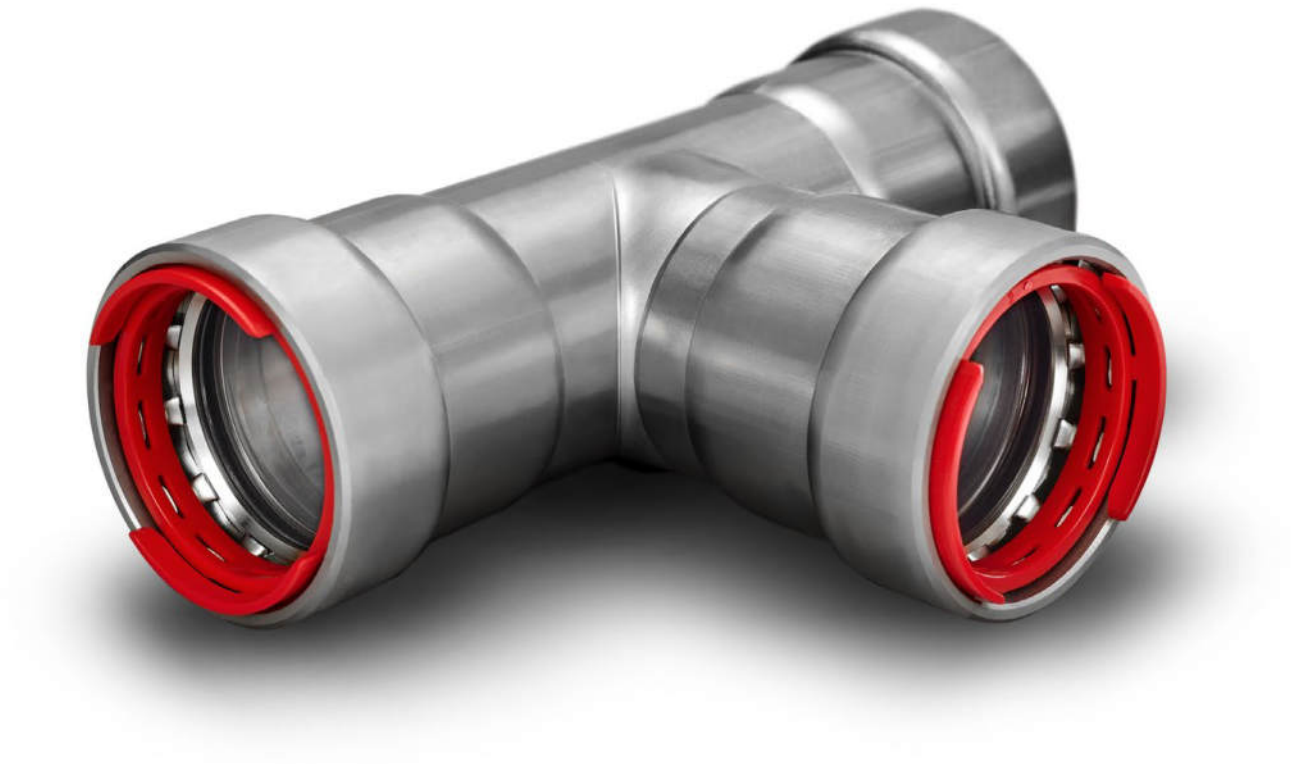
KAN-therm SYSTEM

PowerPress

EN 23/12

½" - 2"

KAN-therm PowerPress system



KAN-therm PowerPress system

KAN-therm PowerPress is a system of press connectors and fittings dedicated to thick-walled carbon steel pipes complying with EN 10255, EN 10220, EN 10216-1, EN 10217-1 and ASTMA53, A106, A135, A795 (series 10 to 40).

Using KAN-therm PowerPress fittings with traditional steel pipes significantly speeds up and simplifies the joining process.

1 KAN-therm PowerPress system

1.1 Advantages of the KAN-therm PowerPress system

- A full range of connectors, fittings and valves from ½" to 2",
- Visu-Control® ring: visual indicator of pressing,
- LBP function, i.e. signalling unpressed connections,
- Simple, fast connection technology with traditional steel pipes,
- Clear definition of material and dimensions,
- Professional tools.

The KAN-therm PowerPress system offers installers a complete solution and a wide range of components. The system consists of couplings with threads, fittings, valves and dedicated tools so that all components can be connected to standard carbon steel pipes.

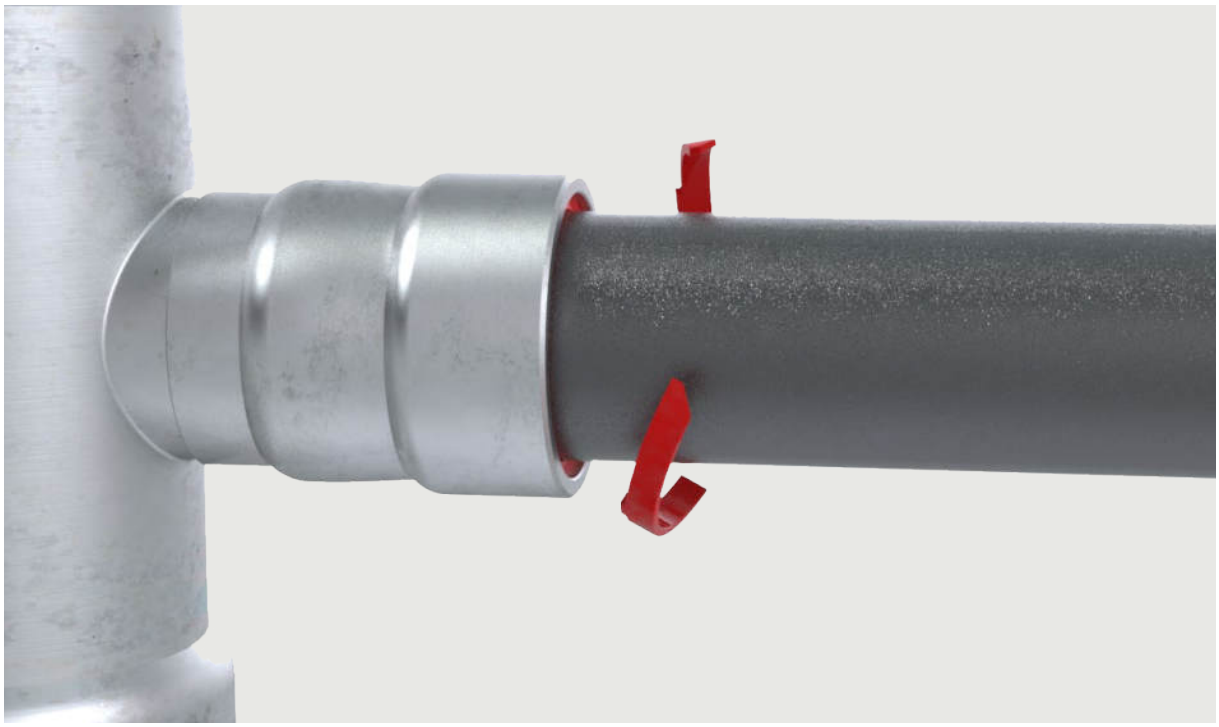
Guaranteed performance

KAN-therm PowerPress products are manufactured using specially developed, ultra-modern machinery, allowing KAN to guarantee consistent and high quality components. All welded products undergo a “leak test” to avoid leakage problems after the joint has been made. All threaded straight connectors are made from a single piece, so there is no risk of leakage at the weld and the installation dimensions are fixed.

Reliable

With KAN-therm PowerPress, the quality of the connection depends primarily on the condition of the tools, less so on the installer. This significantly reduces the risk of installation errors. All fittings include the LBP function. As a result, the risk of errors during installation is further reduced. The task of the LBP function is to cause a clear leak for connections that have not been pressed. This makes such situations and leakage points much easier to identify during the visual inspection of the leakage test.

In addition to the LBP function, all fittings are equipped with the patented Visu-Control® ring. During pressing, the Visu-Control® ring is destroyed and falls away from the connector, thus indicating that the connection has been pressed. This eliminates the need for subsequent inspection of already crimped connectors, providing additional safety and time savings.



Favourable price

The pressing of PowerPress fittings onto the steel pipe using radial clamping technology ('press' technology) makes the assembly process itself very easy, fast and cost-effective. The connection is achieved using the pressing tool and jaws alone.

Easy and clean

Compared to other connection methods, KAN-therm PowerPress is an extremely user-friendly solution:

- It eliminates the need for complicated installation techniques, time-consuming drying or cooling preparations, making the whole process quick, easy and clean,
- No pipe threading required,
- Easy insertion of the pipe into the fitting thanks to the special socket design in combination with VisuControl®,
- The compact design of fittings (small bending radii) saves installation space.

Thanks to the above properties, no special skills or qualifications are required to install the connections and the work takes place in clean and safe conditions.

Safe

The installation of KAN-therm PowerPress connections does not require any heat source (as with welding or soldering) or other heavy and potentially dangerous tools. This property makes KAN-therm PowerPress the ideal solution for repairing or renovating installations.

1.2 Intended use

The PowerPress system is a turnkey technical solution, made of top-quality materials, for connecting components using reliable radial press technology. The high performance resistance gives the product the technical ability to be used in a wide range of pipe installations. The technical options for the use of KAN-therm PowerPress system components are shown below.

NOTE:
The product's suitability for the types of installation described depends on local requirements and regulations and can therefore vary from market to market and from region to region. Before installation, the applicability of the product must always be checked against the applicable local regulations and requirements as well as the available certifications.

Heating systems

KAN-therm PowerPress connectors with carbon steel pipes that meet the requirements of EN 10220 (EN 10216-1 and EN 10217-1), EN 10255, ASTMA53, A106, A135 or A795 (series 10 to 40) can be used in closed (pressure) heating installations, according to the conditions described in the table below.

O-Ring	
EPDM (black)	■ operating temperature: -40 to +135°C ■ max. temperature: 150 °C (short-term) ■ max. operating pressure: 16 bar

Check local requirements for the use of the product in the heating system.

Cooling systems

KAN-therm PowerPress connectors with carbon steel pipes that meet the requirements of EN 10220 (EN 10216-1 and EN 10217-1), EN 10255, ASTMA53, A106, A135 or A795 (series 10 to 40) can be used in closed (pressure) cooling installations, according to the conditions described in the table below.

O-Ring	
EPDM (black)	■ operating temperature: -40 to +135°C ■ max. temperature: 150 °C (short-term) ■ max. operating pressure: 16 bar

Check local requirements for the use of the product in the cooling system.

Compressed air system

KAN-therm PowerPress connectors with carbon steel pipes that meet the requirements of EN 10220, (EN 10216-1 and EN 10217-1), EN 10255, ASTMA53, A106, A135 or A795 (series 10 to 40) can be used to construct compressed air systems under the following conditions:

- Water content [%], max. 0,5 g/m³, class 7, ISO8573,
- Oil content: max. 5 mg/m³, class 4, ISO8573.

O-Ring	
EPDM (black)	■ operating temperature: -40 to +135 °C ■ max. temperature: 150 °C (short-term) ■ max. operating pressure: 16 bar

Once the installation work has been completed, the compressed air system must undergo a leak test. The leak test must comply with all applicable health and safety regulations and guidelines for leak tests. Do not exceed the maximum system pressure during leakage tests.

Sprinkler systems

KAN-therm PowerPress connectors with carbon steel pipes that meet the requirements of EN 10255 (medium and heavy classification), ASTMA53, A106, A135 or A795(series 10 to 40) can be used in a fire-fighting wet sprinkler system, according to FM guidelines.

O-Ring	
EPDM (black)	■ operating temperature: -40 to +107 °C ■ max. temperature: 150 °C (short-term) ■ max. operating pressure: 12,1 bar (175 psi) ■ application: wet sprinkler systems in accordance with FM

Check local requirements for the use of the product in a fire-fighting wet sprinkler system.

Vacuum installations

KAN-therm PowerPress connectors with carbon steel pipes that meet the requirements of EN 10220, EN 10216-1 and EN 10217-1, EN 10255, ASTMA53, A106, A135 or A795 (series 10 to 40) can be used in closed vacuum installations.

The vacuum value for KAN-therm PowerPress connectors, at relative pressure, is -0,85 bar.

1.3 Connectors and fittings

Technical specification

KAN-therm PowerPress connectors and fittings are made from E235 carbon steel and protected against corrosion with a 3-5 µm zinc-nickel layer. The zinc-nickel coating provides protection against corrosion caused by condensation that can form on the external surface of cooling system components.

KAN-therm PowerPress fittings are fitted with an EPDM O-Ring.

Thread connectors

The KAN-therm PowerPress system also includes connectors and fittings with female and male threads made to ISO7-1 or ISO228. In the case of components with threads, it is advisable to seal and twist them in advance in order to prevent stress on the press connection.

Marking

Tab. 1. KAN-therm PowerPress fittings

	Marking
	■ VSH PowerPress ■ dimension: e.g. 1/2" ■ certifications: e.g. FM ■ identification code: e.g. 315J ■ country of origin: e.g. NL

O-Rings

KAN-therm PowerPress connectors and fittings are fitted with O-Rings sealing made of EPDM. The operating parameters of the O-Ring sand their range of application are shown in the table below:

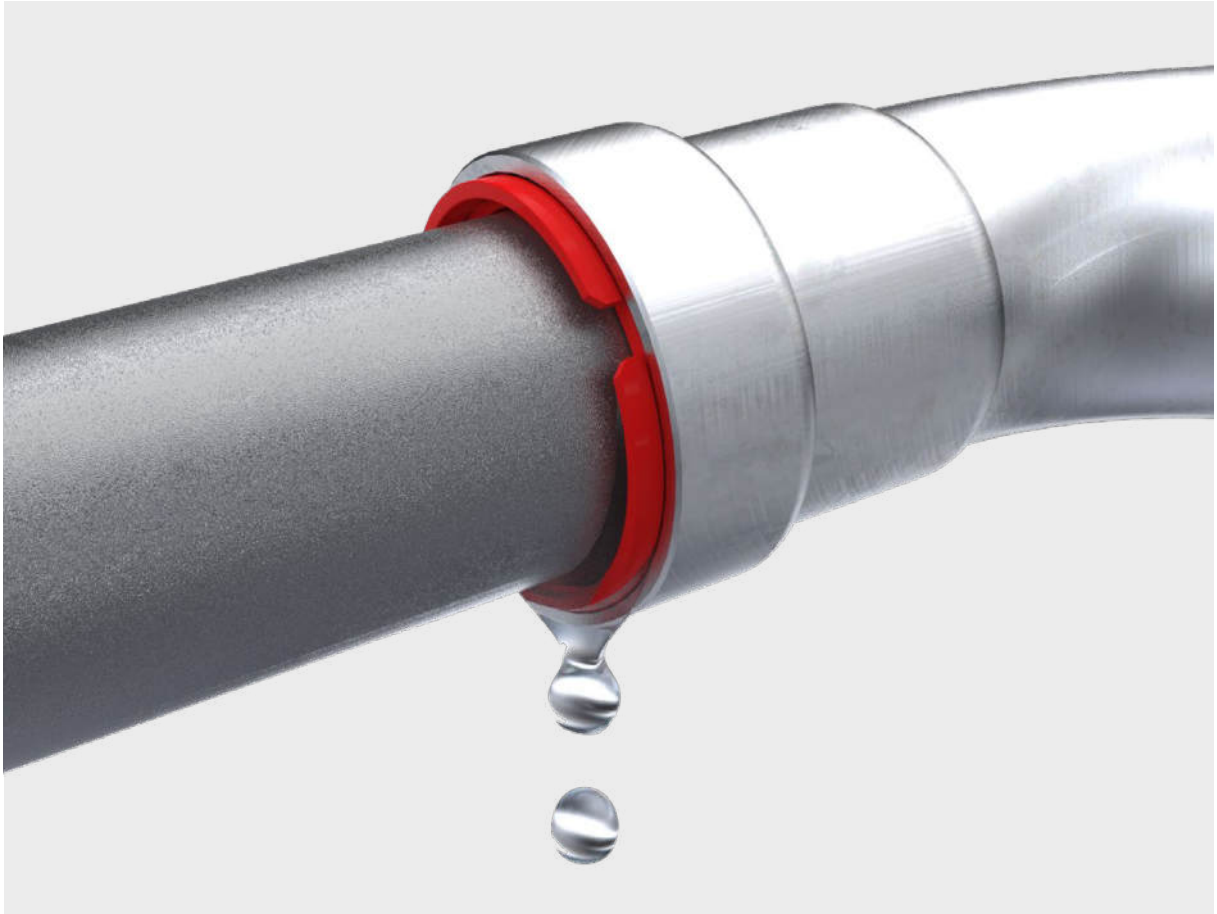
Tab. 2. O-Ring

EPDM (black)	Temperature	Application
	■ -40 to +135°C ■ short term +150 °C	■ heating, cooling, compressed air, vacuum installations.

For applications other than those specified in the table, consult KAN Technical Support.

Leak Before Press (LBP) function

KAN-therm PowerPress is equipped with the LBP function. Connectors with the LBP function signal connections that have not been pressed. This makes it easy to identify an unpressed joint. Correctly assembled fittings will be leak-proof when pressed.



Electric heating

PowerPress elements can be used in conjunction with electrical anti-freeze systems (pipeline-mounted heating cables). However, it should be borne in mind that excessive heating of the pressure installation may result in an additional, unacceptable increase in pressure inside the installation.

Potential equalisation

Any finished metallic installation must be provided with electrically equipotential bonding - i.e. "earthed" to prevent stray currents and electrochemical corrosion.

In accordance with the regulations in force, earthing cable connections must be made by welding or with threaded clamps, while connections to pipelines must be made with screw clamps. In order to realise correct equalisation connections it is necessary to:

- Obtain information on the electric shock protection solution (method of earthing) in the building.
- Connect the alignment cable to the pipe using the correct clamp. In order to eliminate the risk of contact corrosion, the clamp must be selected according to the type of pipe covered by the earth connection the earthing connection.
- Connect all individual branches of the piping system in series with the equalising conductors and connect them to the main equipotential rail of the building.

NOTE!
Insulation, paint and debris must be removed at the point where the clamp is fitted to the pipe.

1.4 Pipes

Carbon steel pipes for KAN-therm PowerPress

KAN-therm PowerPress connectors and accessories in the ½" to 2" diameter range can be connected to carbon steel pipes complying with EN 10220, EN 10216-1 and EN 10217-1, EN 10255 and ASTMA53, A106, A135 and A795.

This section sets out all the guidelines and technical parameters that apply to KAN-therm PowerPress system connections to carbon steel pipes.

Pipe surfaces

Pipe surfaces, in all cases, must be smooth, free of dents, pits and deformations and must be clean and free of dirt, rust, scale, oil and grease.

It is not necessary to completely remove protective coatings or expose the native steel surface. To avoid potential leaks, pipes with uneven surfaces, pronounced deformations or cavities must not be connected to KAN-therm PowerPress system components (nor is it possible to make such connections even after repairing such surfaces by using grinders or other tools).

Black painted (and lacquered) pipes

Pipes should be checked for uneven layers of paint. If there are excessive paint runs, the surface of the pipe should be smoothed with fine-grained sandpaper.

Epoxy-coated carbon steel pipe

Epoxy coatings on carbon steel pipe increase external dimensions. The thickness of the coating should be reduced to allow the installation of KAN-therm PowerPress system components . The maximum permissible thickness of the epoxy coating is 300 µm. If necessary, the surface of the pipe should be smoothed with fine-grained sandpaper.

Pipes according to EN 10220

KAN-therm PowerPress connectors and fittings can be used in combination with series 1 pipes in accordance with EN 10220. Series 2 pipes cannot be combined with KAN-therm PowerPress components.

Tab. 3. Pipes according to EN 10220 (series 1)

Dimension	DN	External diameter [mm]			
		d	min.	max.	wall thickness [mm]
½"	15	21.3	21.0	21.8	2.0 - 5.4
¾"	20	26.9	26.5	27.3	2.0 - 8.0
1"	25	33.7	33.3	34.2	2.0 - 8.8
1 ¼"	32	42.4	42.0	42.9	2.0 - 10.0
1 ½"	40	48.3	47.9	48.8	2.0 - 12.5
2"	50	60.3	59.7	60.8	2.0 - 16.0

Pipes according to EN 10255

KAN-therm PowerPress can be used in combination with pipes complying with EN 10255. EN 10255 distinguishes between heavy-duty (H-series), medium-duty (M-series) and L-, l1- and l2-type pipes . Within these series, there are both longitudinally seamed and seamless pipes.

Tab. 4. Pipes conforming to EN 10255 (M and H series)

Dimension	DN	External diameter [mm]				
		d	min.	max.	wall thickness M - medium type [mm]	wall thickness H - heavy type [mm]
½"	15	21.3	21.0	21.8	2.6	3.2
¾"	20	26.9	26.5	27.3	2.6	3.2
1"	25	33.7	33.3	34.2	3.2	4.0
1 ¼"	32	42.4	42.0	42.9	3.2	4.0
1 ½"	40	48.3	47.9	48.8	3.2	4.0
2"	50	60.3	59.7	60.8	3.6	4.5

Tab. 5. Pipes conforming to EN 10255 (L and l1 series)

Dimension	DN	External diameter [mm]			
		d	min.	max.	wall thickness [mm]
½"	15	21.3	21.0	21.7	2.3
¾"	20	26.9	26.4	27.1	2.3
1"	25	33.7	33.2	34.0	2.9
1 ¼"	32	42.4	41.9	42.7	2.9
1 ½"	40	48.3	47.8	48.6	2.9
2"	50	60.3	59.6	60.7	3.2

Tab. 6. Pipes conforming to EN 10255 (l2 series)

Dimension	DN	External diameter [mm]			
		d	min.	max.	wall thickness [mm]
½"	15	21.3	21.0	21.3	2.0
¾"	20	26.9	26.4	26.9	2.3
1"	25	33.7	33.2	33.8	2.6
1 ¼"	32	42.4	41.9	42.5	2.6
1 ½"	40	48.3	47.8	48.4	2.9
2"	50	60.3	59.6	60.2	2.9

ASTM compliant tubes

KAN-therm PowerPress can be used in conjunction with carbon steel pipes in accordance with ASTM A53, A106, A135 and A795. Within these series, there are both longitudinally welded pipes and seamless pipes.

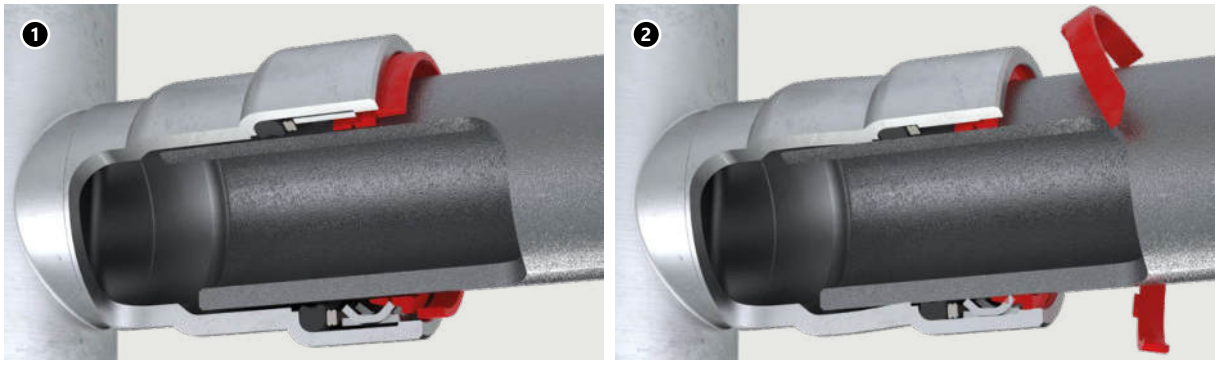
Tab. 7. Pipe dimensions according to ASTM

Dimension	DN	External diameter [mm]	Series	Wall thickness [mm]
½"	15	21.3	10	2.11
			40	2.77
¾"	20	26.7	10	2.11
			40	2.87
1"	25	33.4	10	2.77
			40	3.38
1 ¼"	32	42.2	10	2.77
			40	3.56
1 ½"	40	48.3	10	2.77
			40	3.68
2"	50	60.3	10	2.77
			40	3.91

1. black steel
2. galvanised steel
3. epoxy-coated

1.5 Tools

The complete tool consists of a crimping tool and a suitable crimping jaw with a "DW" profile. The press tool can be supplied in either a rechargeable or mains version. In order to achieve a tight and robust connection, the appropriate pressing jaws must be used for each pipe diameter in the system. The figure below shows a cross-section of a KAN-therm PowerPress connection before and after pressing.



1 Before crimping
2 After crimping

All KAN-therm PowerPress products with diameters from ½" to 2" can be pressed using dedicated tools. For KAN-therm PowerPress connections, use the DW pressing profile jaws available from KAN. Additional adapters may be required for certain diameters and pressing jaws.

Maintenance and correct use of crimping tools

KAN guarantees the achievement of leak-proof and durable connections provided that the tools are used correctly. Periodic inspection of the condition of the tools (press tools, adapters and pressing jaws), their regular maintenance and lubrication is required. The instructions for use and maintenance of the tools as well as the manufacturer's periodic maintenance guidelines must be strictly adhered to. Poorly maintained and/or damaged tools can endanger the safety of users as well as people in the vicinity of their use.

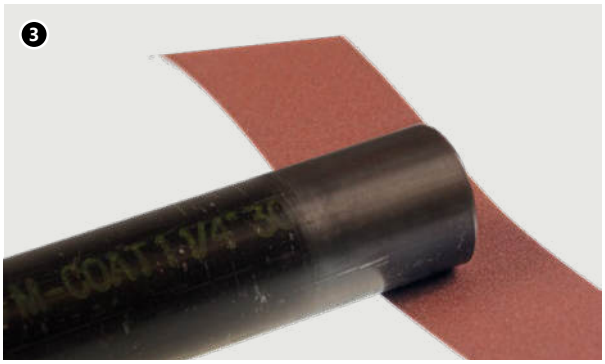
1.6 Installation

When making KAN-therm PowerPress connections, special care should always be taken to use protective equipment in accordance with health and safety regulations.

Transport and storage

When transporting and storing KAN-therm PowerPress connectors or valves, damage and contamination must be avoided. The optimum storage temperature is between 10 °C and 25 °C. Products should be stored in their original packaging in a dry place (maximum humidity 65%). It is recommended not to remove the product from the packaging before installation.

1 Pipe cutting
Cut the pipes to the correct length using a pipe cutter, a fine-toothed hand saw or an electric power saw suitable for the pipe material. The pipe must be cut all the way through. The edges of the cut pipe must be free of damage in the form of breakages, loss of material and other deformations. The pipe must not be partially cut or broken, as this can result in a leaking connection. When cutting already installed pipes, a minimum distance from welds and bends of 3 x d (minimum 100 mm) must always be taken into account.
Note: Do not use oil-cooled saws, angle grinders or torches.
2 Deburring of pipes
The ends of the cut pipe should be thoroughly deburred inside and out. This avoids damage to the O-Ring when inserting the pipe into the fitting. For deburring both the inside and outside of the pipe, you can use a file or hand deburrer, an electric deburrer suitable for the material. Any burrs on the pipe should be removed.



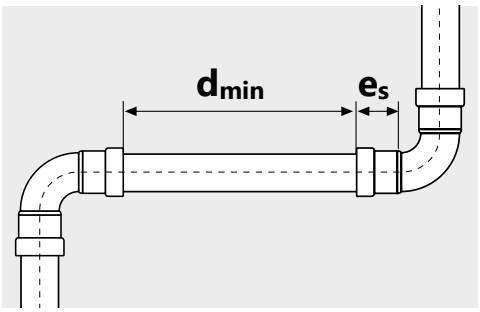
3 Cleaning the outside of the pipe
Ensure that the external surface of the pipe is free of dirt, scale, excess paint or corrosion particles. If necessary, the pipe surfaces can be cleaned with a wire brush or fine-grained sandpaper. The surface of the pipe must be smooth, free of dents, pits and deformations and must be free of oil and grease.
4 Insertion depth marking
In order to achieve the correct joint strength, the correct insertion depth of the pipe in the connector must be maintained (see **Tab. 8 on page 237**). This depth must be marked on the outside surface of the pipe or connector (in the case of connectors with pipe ends). The marking on the pipe must remain visible (right next to the connector itself) after the connection has been pressed to identify any movement before or after pressing.

5 Inspection of fittings
Remove the protective cap before installation. Then check that the O-Rings are in place and that they are well seated. Make sure they are clean, in good condition and free from damage. Before pressing, ensure that the Visu-Control® ring is correctly, i.e. evenly aligned.

6 Pipe installation
Carefully slide the pipe into the press connector by rotating and pressing it towards the fitting until you feel resistance (up to the end of the fitting socket). The insertion depth marking must remain visible right next to the fitting itself. In the case of fittings with no socket section, the pipe must be inserted to the minimum depth marked on the outer surface of the pipe. Special care must be taken when fitting the pipe into the fitting to prevent damage to the O-Ring.

To minimise the inconvenience of difficult pipe installation (e.g. due to possible size differences resulting from permissible tolerances), an additional lubricant in the form of soapy water can be used. Oils, fats and greases are not permitted as a lubricant.

In order to optimise on-site assembly work, it is possible to shorten the assembly time by assembling parts of the installation and then carrying out the pressing of the prepared connections.

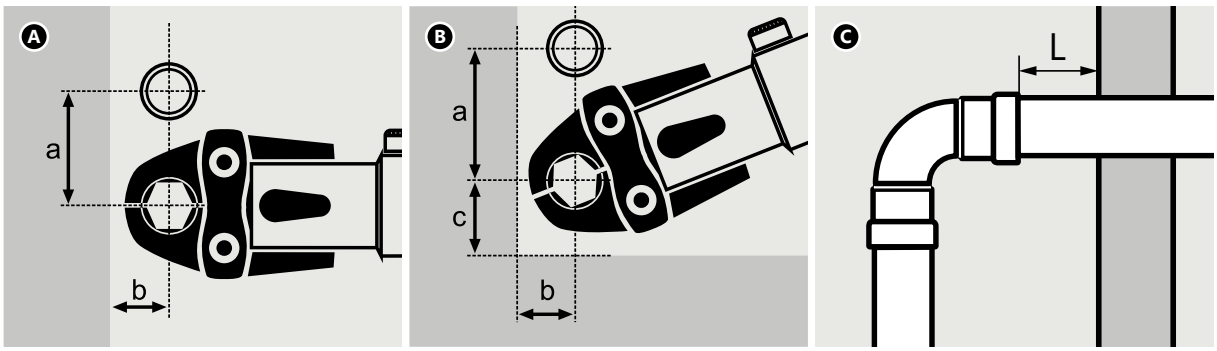


The insertion depth marking makes it possible to check that the pipe has not slipped out of the fitting during the pressing process. When assembling the installation, it is important to consider the minimum spacing required between fittings as well as the distances to building partitions.

Tab. 8. Insertion depth and minimum distances between joints

Diameter	Insertion depth e_s	Minimum distance between fittings d_{min}	Minimum pipe length $2 \times e_s + d_{min}$
	[mm]	[mm]	[mm]
½"	29	5	63
¾"	32	5	69
1"	37	5	79
1 ¼"	49	10	108
1 ½"	50	10	110
2"	54	10	118

The table shows the minimum assembly distances required to make a correct press connection with Novopress tools. These distances refer to the general situations indicated below in diagrams **A**, **B** and **C**. If you are using a different type of crimper, please refer to the relevant instruction manual.



Tab. 9. Required installation distances when using Novopress crimping tools

Diameter	Fig. A		Fig. B			Fig. C
	a	b	a	b	c	L - minimum distance of the fitting from the wall surface [mm]
½"	70	30	70	30	50	30
¾"	80	40	90	40	60	30
1"	90	40	95	40	65	30
1 ¼"	100	75	100	75	75	30
1 ½"	115	80	115	80	85	30
2"	125	80	125	80	90	30

7. Pressing
Before commencing pressing, the condition and cleanliness of the press jaws must be checked. If necessary, the jaws should be cleaned and lubricated. To achieve a properly pressed connection, the crimping tool should encompass the flange of the connector. The pressing process must be carried out in one cycle and must not be interrupted once the pressing process has started.

The connection must not be crimped more than once.
The pressing process can have the effect of slightly deflecting the pipeline from its axis. This situation can be corrected by placing the jaw on the individual fittings correctly, i.e. the jaw should be placed on the fitting alternately, i.e. one on the left and one on the right side of the pipe axis.

1.7 General information

Thermal expansion

The level of thermal expansion in piping systems depends on the type of materials used. The phenomenon of temperature-induced pipeline expansion must be taken into account during the design and installation of the system. Thermal elongations of the pipelines must be compensated for by means of shape compensation (natural L-, Z- or U-shaped routing of the installation) and appropriate arrangement of fixed and sliding points.

The level of elongation to be compensated can be determined using the following formula:

$$\Delta l = l \times \alpha \times \Delta T$$

Δl = total elongation of the pipeline [mm]

l = pipeline length [m]

ΔT = temperature difference between the operating temperature and the installation temperature of the pipeline [K]

α = coefficient of expansion [mm / m x K]

1.8 Pipeline installation guidelines

Welding requirements

The following requirements must be taken into account when welding in the vicinity of KAN-therm PowerPress components.

Welding adjacent to a pipeline with KAN-therm PowerPress connectors/fittings/valves installed

When welding in the vicinity of installed KAN-therm PowerPress connectors/fittings/valves, maintain a minimum distance of 10 cm from the press connection. This will prevent damage to the O-Ring seal. To protect PowerPress press connections, the following precautions should be taken before welding:

- If possible, it is recommended that a welded connection is made before the PowerPress component is pressed. The pipe must be allowed to cool before pressing the connector/fitting/valve.
- Wrap the joint with a cold, wet cloth.
- Secure the joint with a welding blanket.
- Use the spray as a coolant.

Welding on a pipeline with KAN-therm PowerPress connectors/fittings/valves installed

When welding a pipeline with a KAN-therm PowerPress connector installed, maintain a minimum distance of 90 cm from the press connection. This will prevent damage to the O-Ringseal. In order to protect PowerPress press connections, the following precautions should be taken before welding to ensure cooling of the connection:

- If possible, it is recommended that a welded connection is made before the PowerPress component is pressed. The pipe must be allowed to cool before pressing the fitting/fitting/valve.
- Wrap the joint with a cold, wet cloth.
- Secure the joint with a welding blanket.
- Use the spray as a coolant.

Guidelines for pipe fixing spacing

Ensure that the clamps and brackets used comply with local requirements. All components of the pipeline fixing system (clamps, brackets) must be selected and installed in a manner consistent with the sling manufacturer's recommendations and guaranteeing a solid and durable fixing of the pipeline to the building's permanent structure.

It must be ensured that the various types of fixing fulfil their specific role, e.g. sliding points must be fitted to allow longitudinal movement of the pipeline and fixed points must be fitted to prevent any movement of the pipeline.

Tab. 10. Distance between handles according to EN806, part 4

Pipe diameter	Maximum distance
	[mm]
½"	2.75
¾"	3.00
1"	3.50
1 ¼"	3.75
1 ½"	4.25
2"	4.75

When using KAN-therm PowerPress in sprinkler systems, other guidelines may apply regarding the distance of the mounting brackets.

Compliance with the above distances between fixing points may not be sufficient. Due to the possible thermal expansion of the pipeline and the need to compensate for it, the distances given above will probably have to be adjusted accordingly.

Pipeline fixing

The following points should be borne in mind when fixing the pipes: The load-bearing capacity of the clamps and mounting brackets must correspond to the weight of the (filled) pipes and withstand tensile and torsional forces. The clampsand mounting brackets, which perform the function of fixed points and sliding points, must be correctly positioned and assembled.

Fixing points can only be made on straight pipe sections. Installation of clamps and mounting brackets on fittings, connectors and valves is not permitted.

Leak-tightness test

Once the installation has been assembled, a leak test must be carried out before it is built into the partitions and operated. For heating and cooling systems, the leakage test should be carried out under pressure using water, air or inert gases. The results of the leakage test are to be documented in the form of a leakage test report.

Note: In the case of pipelines made of KAN-therm PowerPress system components, before they are covered in building envelopes, insulated or painted, it is essential to carry out a leak test to ensure that all connections are pressed and tight. Pressure tests must always be carried out in accordance with local regulations.

System flushing

Each installation, before it is put into service, must be thoroughly flushed with clean, potable water. This will remove any dirt from its interior and guarantee a high level of hygiene.

Flushing of the system must be carried out in accordance with local applicable regulations and requirements. In exceptional cases, it may be necessary to flush the installation with disinfectant. When flushing with water containing disinfectant, special care must be taken to ensure that no chlorides remain in the pipework. Always rinse with clean, potable water.

1.9 Corrosion

There are different types of corrosion: chemical corrosion, electrochemical corrosion, localisedcorrosion, internal and external corrosion, corrosion caused by stray current, etc. All these types of corrosion can be the result of different factors and situations. Below are some simple tips on how to avoid such problems.

Galvanic Corrosion

Electrochemical corrosion occurs in the following circumstances:

- there is a difference in electrochemical potential between the interconnected components,
- is the presence of a conductive fluid (electrolyte), such as water,
- presence of oxygen.

If it is necessary to connect two metal components with different electrochemical potentials , a non-ferrous metal or plastic coupling should be used between them (see DIN1988).

Carbon steel tubes

Internal corrosion

Internal corrosion, in closed (pressurised) heating systems, does not occur in practice. The oxygen in the water as it fills the system, in a closed system, forms a layer of iron oxide on the inner surface of the pipe, thus preventing further corrosion. When the heating system is not in use, it must be filled at all times or, alternatively, completely drained and then dried out to avoid the simultaneous presence of water and oxygen in the system.

The use of anti-freeze fluids with corrosion inhibitors can be used to further protect the installation from damage caused by frost or corrosion. The use of such fluids should be consulted with KAN's Technical Support Department. In any case, the applicable regulations and local guidelines for the protection of the installation against the effects of corrosion must be observed.

External corrosion

Installations made of steel pipes and PowerPress connectors and fittings, are to be installed inside buildings in such a way that the external surfaces do not come into contact with corrosive agents. If the external surfaces of the installation will be exposed to a corrosive environment, appropriate measures must be taken to effectively protect the installation from its effects.

In many cases, the external pipe surfaces can be exposed to prolonged exposure to moisture, rain penetration or condensation on the pipe surface (in cooling mode).

In such cases, the installation should be adequately protected by the use of tight, non-absorbent closed-pore thermal insulation.

Under no circumstances may the insulation contain moisture from e.g. precipitation, penetrating through the thickness of the insulation or condensation (this may particularly occur with mineral fibre insulation) mineral fibre insulation). The insulation must be airtight for the lifetime of the pipelines.

Correctly executed insulation, which prevents water penetration and dampness in pipes and fittings, will provide adequate protection against corrosion. Paint coatings suitable for the surface of pipes and PowerPress connectors and fittings are permitted.

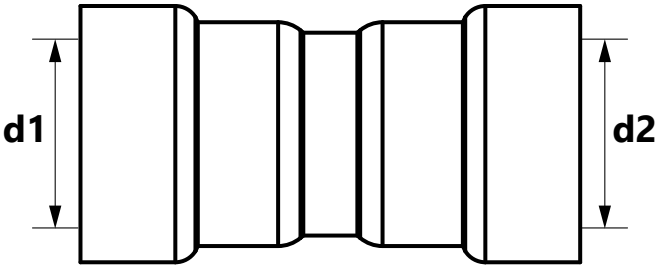
NOTES

System KAN-therm PowerPress - assortment

Connectors

Coupling

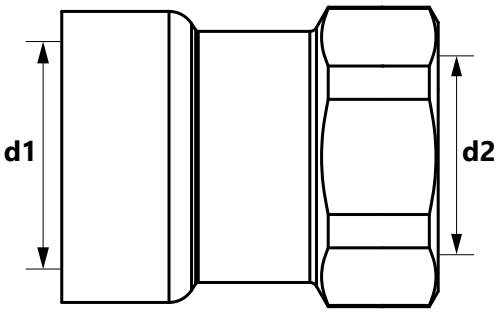
GROUP: R



	Size (d1=d2)	Code	*			UM
N	½"	2609245000		10	30	pc.
N	¾"	2609245001		10	30	pc.
N	1"	2609245002		5	20	pc.
N	1¼"	2609245003		1	10	pc.
N	1½"	2609245004		1	10	pc.
N	2"	2609245005		1	6	pc.

Female connector

GROUP: R



	Size (d1×d2)	Code	*			UM
N	½" Rp½"	2609044000		10	30	pc.
N	¾" Rp¾"	2609044001		10	30	pc.
N	1" Rp1"	2609044002		5	20	pc.
N	1¼" Rp1¼"	2609044003		5	10	pc.
N	1½" Rp1½"	2609044004		1	10	pc.
N	2" Rp2"	2609044005		1	10	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

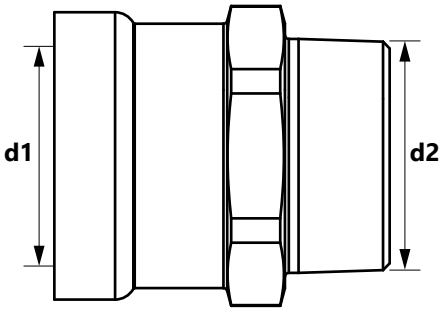
Slip coupling

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609080000		10	30	pc.
N	¾"	2609080001		10	30	pc.
N	1"	2609080002		5	20	pc.
N	1¼"	2609080003		1	10	pc.
N	1½"	2609080004		1	10	pc.
N	2"	2609080005		1	4	pc.

Male connector

GROUP: R



	Size (d1×d2)	Code	*			UM
N	½" R½"	2609045000		10	30	pc.
N	¾" R¾"	2609045001		10	30	pc.
N	1" R1"	2609045002		5	20	pc.
N	1¼" R1¼"	2609045003		5	15	pc.
N	1½" R1½"	2609045004		1	10	pc.
N	2" R2"	2609045005		1	10	pc.

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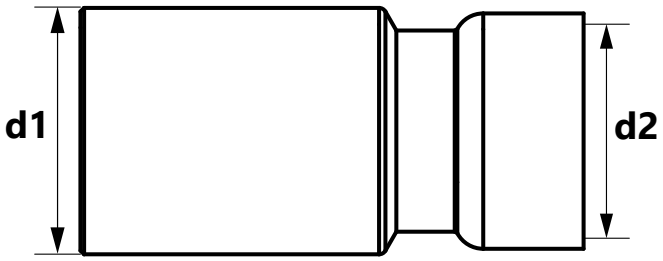
Nipple reducer

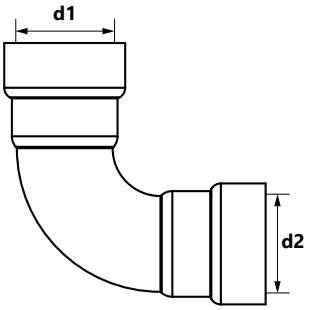
GROUP: R



	Size (d1/d2)	Code	*			UM
N	½" / ¾"	2609221000		5	20	pc.
N	1¼" / 1½"	2609221009		1	5	pc.
N	½" / 2"	2609221010		1	10	pc.
N	¾" / 2"	2609221011		1	6	pc.
N	1" / 2"	2609221012		1	10	pc.
N	1¼" / 2"	2609221013		1	5	pc.
N	1½" / 2"	2609221014		1	10	pc.
N	½" / 1"	2609221001		5	20	pc.
N	¾" / 1"	2609221002		5	20	pc.
N	½" / 1¼"	2609221003		1	10	pc.
N	¾" / 1¼"	2609221004		1	10	pc.
N	1" / 1¼"	2609221005		1	10	pc.
N	½" / 1½"	2609221006		1	10	pc.
N	¾" / 1½"	2609221007		1	10	pc.
N	1" / 1½"	2609221008		1	10	pc.

Elbow 90°

GROUP: R



	Size (d1=d2)	Code	*			UM
N	½"	2609068000		10	20	pc.
N	¾"	2609068001		10	20	pc.
N	1"	2609068002		5	10	pc.
N	1¼"	2609068003		1	4	pc.
N	1½"	2609068004		1	4	pc.
N	2"	2609068005		1	3	pc.

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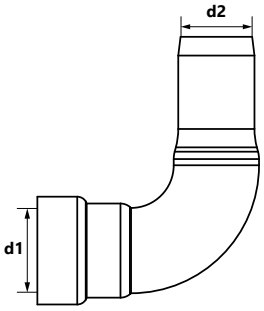
Nipple elbow 90°

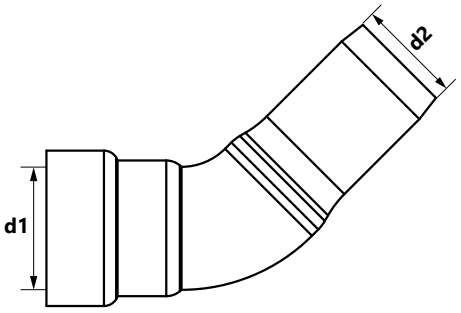
GROUP: R



	Size (d1=d2)	Code	*			UM
N	½"	2609068006		10	20	pc.
N	¾"	2609068007		10	20	pc.
N	1"	2609068008		5	10	pc.
N	1¼"	2609068009		1	4	pc.
N	1½"	2609068010		1	5	pc.
N	2"	2609068011		1	2	pc.

Nipple elbow 45°

GROUP: R



	Size (d1=d2)	Code	*			UM
N	½"	2609068012		10	20	pc.
N	¾"	2609068013		10	20	pc.
N	1"	2609068014		5	10	pc.
N	1¼"	2609068015		1	4	pc.
N	1½"	2609068016		1	6	pc.
N	2"	2609068017		1	4	pc.

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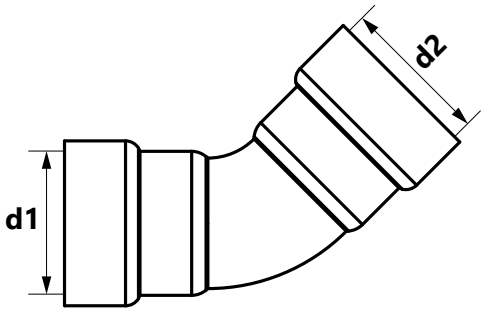
Elbow 45°

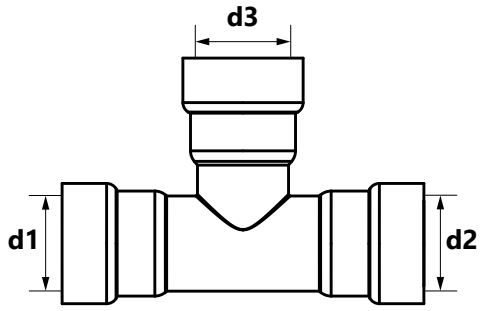
GROUP: R



	Size (d1=d2)	Code	*			UM
N	½"	2609068018		10	20	pc.
N	¾"	2609068019		10	20	pc.
N	1"	2609068020		5	10	pc.
N	1¼"	2609068021		1	4	pc.
N	1½"	2609068022		1	4	pc.
N	2"	2609068023		1	2	pc.

Tee

GROUP: R



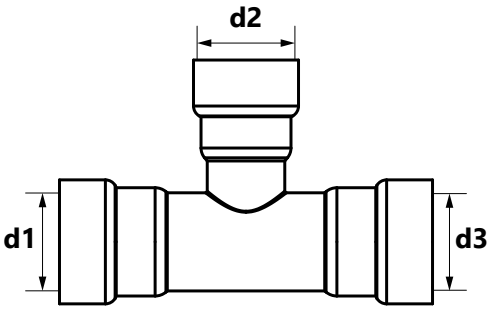
	Size (d1=d2=d3)	Code	*			UM
N	½"	2609257000		5	15	pc.
N	¾"	2609257001		5	15	pc.
N	1"	2609257002		5	10	pc.
N	1¼"	2609257003		1	4	pc.
N	1½"	2609257004		1	3	pc.
N	2"	2609257005		1	2	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Reducing tee

GROUP: R



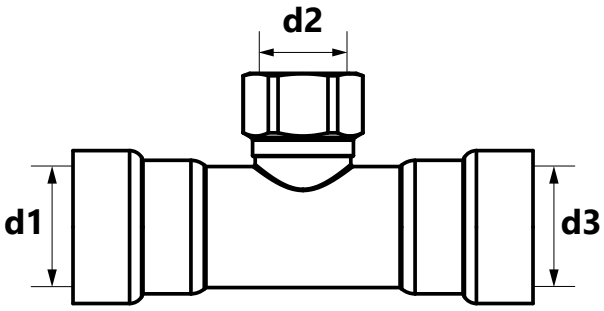
	Size (d1=d3/d2)	Code	*			UM
N	¾" / ½"	2609260000		5	15	pc.
N	1½" / 1¼"	2609260009		1	2	pc.
N	2" / ½"	2609260010		1	2	pc.
N	2" / ¾"	2609260011		1	2	pc.
N	2" / 1"	2609260012		1	2	pc.
N	2" / 1¼"	2609260013		1	2	pc.
N	2" / 1½"	2609260014		1	2	pc.
N	1" / ½"	2609260001		5	10	pc.
N	1" / ¾"	2609260002		5	10	pc.
N	1¼" / ½"	2609260003		1	6	pc.
N	1¼" / ¾"	2609260004		1	4	pc.
N	1¼" / 1"	2609260005		1	4	pc.
N	1½" / ½"	2609260006		1	2	pc.
N	1½" / ¾"	2609260007		1	2	pc.
N	1½" / 1"	2609260008		1	2	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Female tee

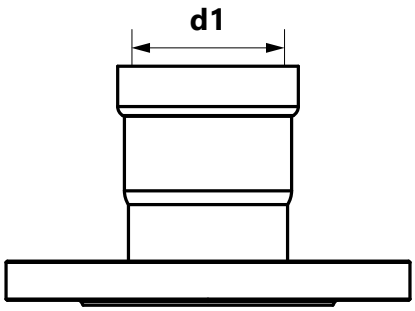
GROUP: R



	Size (d1=d3×d2)	Code	*			UM
N	½" Rp½"	2609258000		5	15	pc.
N	2" Rp¾"	2609258009		1	2	pc.
N	2" Rp1"	2609258010		1	2	pc.
N	1¼" Rp¾"	2609258011		1	2	pc.
N	1¼" Rp1"	2609258012		1	2	pc.
N	¾" Rp½"	2609258001		5	15	pc.
N	1" Rp½"	2609258002		5	10	pc.
N	1" Rp¾"	2609258003		5	10	pc.
N	1¼" Rp½"	2609258004		1	4	pc.
N	1½" Rp½"	2609258005		1	2	pc.
N	1½" Rp¾"	2609258006		1	2	pc.
N	1½" Rp1"	2609258007		1	2	pc.
N	2" Rp½"	2609258008		1	2	pc.

Flange PN16

GROUP: R



	Size (d1)	Code	*			UM
N	1¼" (DN32)	2609091000		1	2	pc.
N	1½" (DN40)	2609091001		1	2	pc.
N	2" (DN50)	2609091002		1	2	pc.

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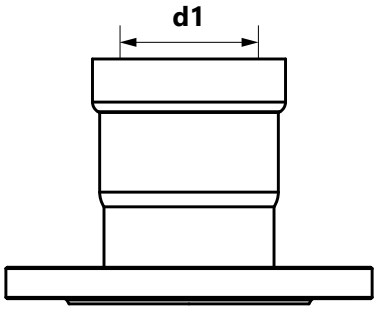
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Flange PN6

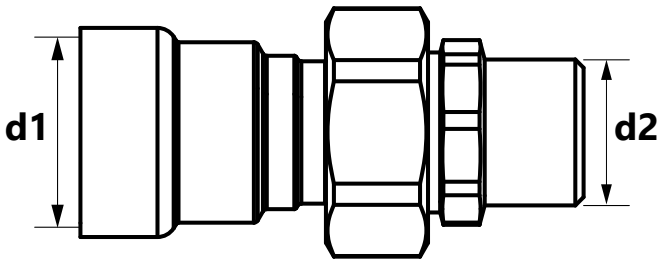
GROUP: R



	Size (d1)	Code	*			UM
N	1¼" (DN32)	2609**091003**		1	5	pc.
N	1½" (DN40)	2609**091004**		1	5	pc.
N	2" (DN50)	2609**091005**		1	2	pc.

Male union connector

GROUP: R



	Size (d1×d2)	Code	*			UM
N	½" R½"	2609**272000**		5	20	pc.
N	¾" R¾"	2609**272001**		2	20	pc.
N	1" R1"	2609**272002**		2	24	pc.
N	1¼" R1¼"	2609**272003**		2	12	pc.

Note:
Operating temperature max. 120 °C.

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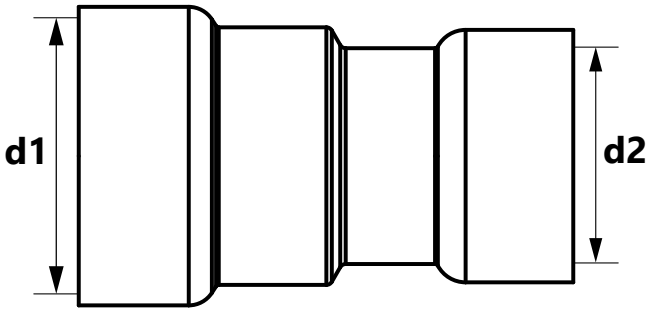
* custom-made - lead time max 4 weeks | ** availability as agreed | *** while stock lasts

Reducing coupling

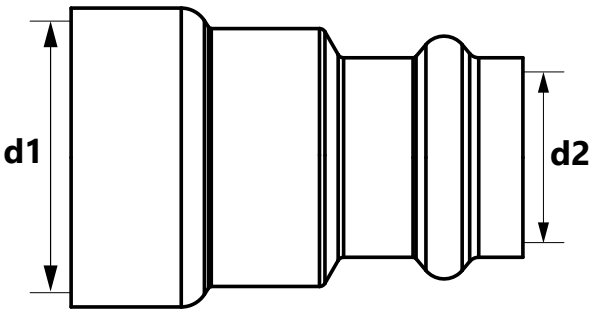
GROUP: R



	Size (d1/d2)	Code	*			UM
N	¾" / ½"	2609330000		10	20	pc.
N	1" / ½"	2609330001		5	15	pc.
N	1" / ¾"	2609330002		1	20	pc.
N	1¼" / ¾"	2609330003		1	10	pc.
N	1¼" / 1"	2609330004		1	10	pc.
N	1½" / 1¼"	2609330005		1	5	pc.
N	2" / 1¼"	2609330006		1	5	pc.
N	2" / 1½"	2609330007		1	5	pc.

Coupling PowerPress/SudoPress

GROUP: R



	Size (d1/d2)	Code	*			UM
N	½" / 15	2609042000		5	25	pc.
N	¾" / 15	2609042002		5	20	pc.
N	1" / 15	2609042004		5	25	pc.
N	¾" / 22	2609042006		10	40	pc.
N	1" / 28	2609042008		2	20	pc.
N	1¼" / 35	2609042009		1	10	pc.
N	1½" / 42	2609042010		1	12	pc.
N	2" / 54	2609042011		1	10	pc.

coil bar pipes in tube bag carton box pallet N new ! available soon

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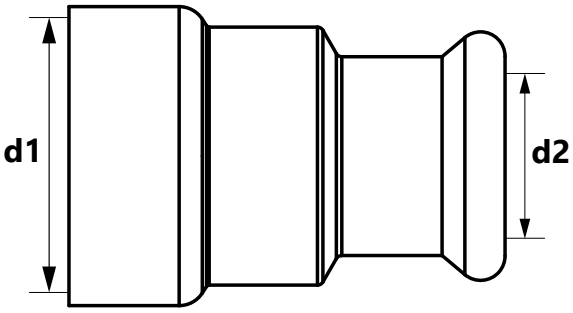
Coupling PowerPress/XPress

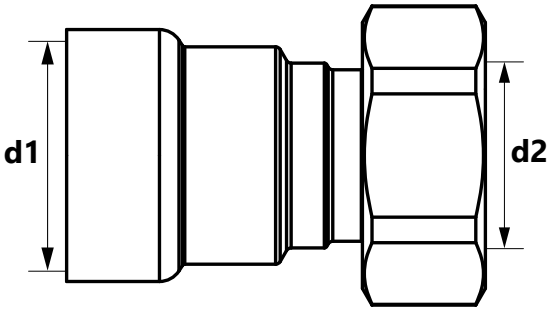
GROUP: R



	Size (d1/d2)	Code	*			UM
N	½" / 15	2609042012		10	20	pc.
N	¾" / 22	2609042013		6	24	pc.
N	¾" / 15	2609042014		10	40	pc.
N	1" / 15	2609042015		5	25	pc.
N	1" / 28	2609042016		2	20	pc.
N	1¼" / 35	2609042017		1	10	pc.
N	1½" / 42	2609042018		1	10	pc.
N	2" / 54	2609042019		1	10	pc.

Female half union with flat gasket

GROUP: R



	Size (d1×d2)	Code	*			UM
N	½" G¾"	2609050000		5	15	pc.
N	¾" G1"	2609050001		5	20	pc.
N	1" G1¼"	2609050002		1	10	pc.
N	1" G1½"	2609050003		1	10	pc.
N	1¼" G1½"	2609050004		1	5	pc.
N	1¼" G2"	2609050005		1	5	pc.
N	1½" G2"	2609050006		1	5	pc.
N	2" G2½"	2609050007		1	5	pc.

Note:
Operating temperature max. 120 °C.

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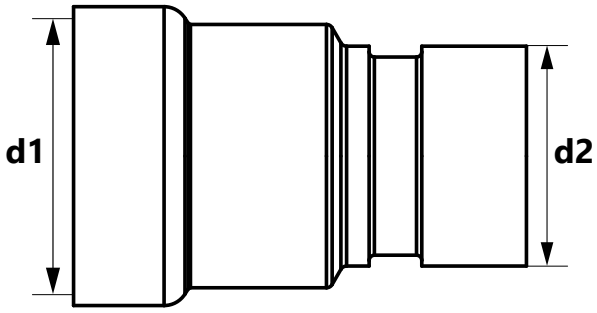
Coupling PowerPress/Groove

GROUP: R



	Size (d1/d2)	Code	*			UM
N	1" / 33,7	2609042001		5	20	szt,
N	1¼" / 42,4	2609042003		1	10	pc.
N	1½" / 48,3	2609042005		1	10	pc.
N	2" / 60,3	2609042007		1	10	pc.

Swing check valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609308000		1	5	pc.
N	¾"	2609308001		1	5	pc.
N	1"	2609308002		1	5	pc.
N	1¼"	2609308003		1	2	pc.
N	1½"	2609308004		1	1	pc.
N	2"	2609308005		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: 0 to 65 °C.

coil bar pipes in tube bag carton box pallet N new available soon

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Globe valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609**277000**		1	5	pc.
N	¾"	2609**277004**		1	5	pc.
N	1"	2609**277008**		1	3	pc.
N	1¼"	2609**277012**		1	2	pc.
N	1½"	2609**277016**		1	1	pc.
N	2"	2609**277020**		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -10 to 110 °C.

Balancing valve FODRV

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½" LF	2609**277024**		1	5	pc.
N	½" SF	2609**277028**		1	4	pc.
N	¾" SF	2609**277032**		1	5	pc.
N	1" SF	2609**277036**		1	5	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -10 to 120 °C.

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Balancing valve SF

GROUP: R

	Size (d1=d2)	Code	*			UM
N	1¼" SF	2609277040		1	2	pc.
N	1½" SF	2609277044		1	1	pc.
N	2" SF	2609277048		1	1	pc.

Pressure reducing valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609277052		1	1	pc.
N	1"	2609277058		1	1	pc.
N	1¼"	2609277061		1	1	pc.
N	1½"	2609277064		1	1	pc.
N	2"	2609277065		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -10 to 120 °C.

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Check valve double

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609277066		1	5	pc.
N	¾"	2609277067		1	5	pc.
N	1"	2609277068		1	5	pc.
N	1¼"	2609277069		1	3	pc.
N	1½"	2609277070		1	3	pc.
N	2"	2609277071		1	1	pc.

Ball valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609278000		1	5	pc.
N	¾"	2609278002		1	5	pc.
N	1"	2609278004		1	5	pc.
N	1¼"	2609278006		1	2	pc.
N	1½"	2609278008		1	2	pc.
N	2"	2609278010		1	1	pc.

Note:
Ball made of DZR brass (CW511L).
Working pressure max. 16 bar.
Operating temperature: -10 to 135 °C.

coil bar pipes in tube bag carton box pallet N new ! available soon

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High ball valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609**278012**		1	4	pc.
N	¾"	2609**278014**		1	4	pc.
N	1"	2609**278016**		1	4	pc.
N	1¼"	2609**278018**		1	2	pc.
N	1½"	2609**278020**		1	2	pc.
N	2"	2609**278022**		1	1	pc.

Note:
Ball made of DZR brass (CW511L).
Working pressure max. 16 bar.
Operating temperature: -10 to 135 °C.

Balancing valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½" LF	2609**277001**		1	5	pc.
N	½" SF	2609**277005**		1	3	pc.
N	¾" SF	2609**277009**		1	5	pc.
N	1" SF	2609**277013**		1	5	pc.
N	1¼" HF	2609**277017**		1	2	pc.
N	1½" HF	2609**277021**		1	1	pc.
N	2" HF	2609**277025**		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -20 to 120 °C.

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Dynamic balancing valve

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½" (DN15) LF	2609**277029**		1	5	pc.
N	½" (DN15) SF	2609**277033**		1	5	pc.
N	½" (DN15) HF	2609**277037**		1	5	pc.
N	¾" (DN20) SF	2609**277041**		1	3	pc.
N	¾" (DN20) HF	2609**277045**		1	3	pc.
N	1" (DN25) SF	2609**277049**		1	1	pc.
N	1" (DN25) HF	2609**277053**		1	1	pc.
N	1¼" (DN32) HF	2609**277056**		1	1	pc.
N	1½" (DN40) SF	2609**277059**		1	1	pc.
N	2" (DN50) HF	2609**277062**		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -20 to 120 °C.

Globe valve with union

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609**277002**		1	5	pc.
N	¾"	2609**277006**		1	5	pc.
N	1"	2609**277010**		1	3	pc.
N	1¼"	2609**277014**		1	2	pc.
N	1½"	2609**277018**		1	1	pc.
N	2"	2609**277022**		1	1	pc.

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Balancing valve with union FODRV

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½" LF	2609**277026**		1	4	pc.
N	½" SF	2609**277030**		1	2	pc.
N	¾" SF	2609**277034**		1	5	pc.
N	1" SF	2609**277038**		1	5	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -10 to 120 °C.

Balancing valve with union

GROUP: R

	Size (d1=d2)	Code	*			UM
N	1¼" SF	2609**277042**		1	1	pc.
N	1½" SF	2609**277046**		1	1	pc.
N	2" SF	2609**277050**		1	1	pc.

Note:
Working pressure max. 16 bar.
Operating temperature: -10 to 120 °C.

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Ball valve with union

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609278001		1	5	pc.
N	¾"	2609278003		1	5	pc.
N	1"	2609278005		1	5	pc.
N	1¼"	2609278007		1	2	pc.
N	1½"	2609278009		1	2	pc.
N	2"	2609278011		1	1	pc.

Note:
Ball made of DZR brass (CW511L).
Working pressure max. 16 bar.
Operating temperature: -10 to 120 °C.

High ball valve with union

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609278013		1	4	pc.
N	¾"	2609278015		1	4	pc.
N	1"	2609278017		1	4	pc.
N	1¼"	2609278019		1	2	pc.
N	1½"	2609278021		1	2	pc.
N	2"	2609278023		1	1	pc.

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Balancing valve with union

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½" LF	2609277003		1	4	pc.
N	½" SF	2609277007		1	2	pc.
N	1¼" HF	2609277019		1	2	pc.
N	¾" SF	2609277011		1	5	pc.
N	1½" HF	2609277023		1	2	pc.
N	1" SF	2609277015		1	4	pc.
N	2" HF	2609277027		1	1	pc.

Dynamic balancing valve with union

GROUP: R

	Size (d1/d2)	Code	*			UM
N	½" (DN15) LF	2609277031		1	4	pc.
N	½" (DN15) SF	2609277035		1	4	pc.
N	½" (DN15) HF	2609277039		1	4	pc.
N	¾" (DN20) SF	2609277043		1	3	pc.
N	¾" (DN20) HF	2609277047		1	3	pc.
N	1" (DN25) SF	2609277051		1	1	pc.
N	1" (DN25) HF	2609277054		1	1	pc.
N	1¼" (DN32) HF	2609277057		1	1	pc.
N	1½" (DN40) SF	2609277060		1	1	pc.
N	2" (DN50) HF	2609277063		1	1	pc.

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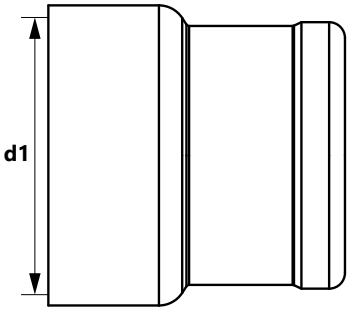
Accessories

Stop end

GROUP: R



	Size (d1)	Code	*			UM
N	½"	2609250000		10	30	pc.
N	¾"	2609250001		10	30	pc.
N	1"	2609250002		5	20	pc.
N	1¼"	2609250003		1	10	pc.
N	1½"	2609250004		1	10	pc.
N	2"	2609250005		1	10	pc.

Flat gasket

GROUP: R

	Size	Code	*			UM
N	1"	2609237000		20	200	pc.
N	1¼"	2609237001		20	200	pc.
N	1½"	2609237002		20	200	pc.
N	2½"	2609237003		20	200	pc.
N	¾"	2609237004		20	200	pc.
N	2"	2609237005		20	200	pc.

Note:
Operating temperature max. 120 °C.

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Y type strainer

GROUP: R

	Size (d1=d2)	Code	*			UM
N	½"	2609086000		1	5	pc.
N	¾"	2609086001		1	5	pc.
N	1"	2609086002		1	2	pc.
N	1¼"	2609086003		1	1	pc.
N	1½"	2609086004		1	1	pc.
N	2"	2609086005		1	1	pc.

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Tools

Novopress "DW" type PB2 jaws

GROUP: R

	Size [mm]	Code	*		UM
N	½"	2600267000		1	pc.
N	¾"	2600267001		1	pc.
N	1"	2600267002		1	pc.

Novopress "DW" type SNAP ON collar

GROUP: R

	Size [mm]	Code	*		UM
N	1¼"	2600267003		1	pc.
N	1½"	2600267004		1	pc.
N	2"	2600267005		1	pc.

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Novopress ACO203XL BT press tool

GROUP: K

Range [mm]	Code	*		UM
12-54	1948267181		1	pc.

Each set includes:
- Battery press tool - 1 pc.
- Battery 18 V/ 5.0 Ah Li-Ion Milwaukee - 2 pcs.
- Charger - 1 pc.
- Lubricant - 1 pc.
- Plastic case

Novopress EFP203 electric press tool

GROUP: K

Range [mm]	Code	*		UM
12-54	1948267210		1	pc.

Note:
The press tool is sold with a plastic case.

Novopress ZB203 adapter

GROUP: K

Range [mm]	Code	*		UM
35-54	1948267000		1	pc.

Note:
Adapter for EFP203 and ACO203XL drives.
Press: 50-63 mm
Steel & Inox: 35-54 mm
Copper: 42-54 mm

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NOTES

Install your **future**

THE PRODUCTS WITH THE LABEL KAN-therm ARE DISTRIBUTED TO 68 COUNTRIES IN THE WORLD.

The distribution network covers Europe, a large part of Asia and also reaches Africa and America.

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