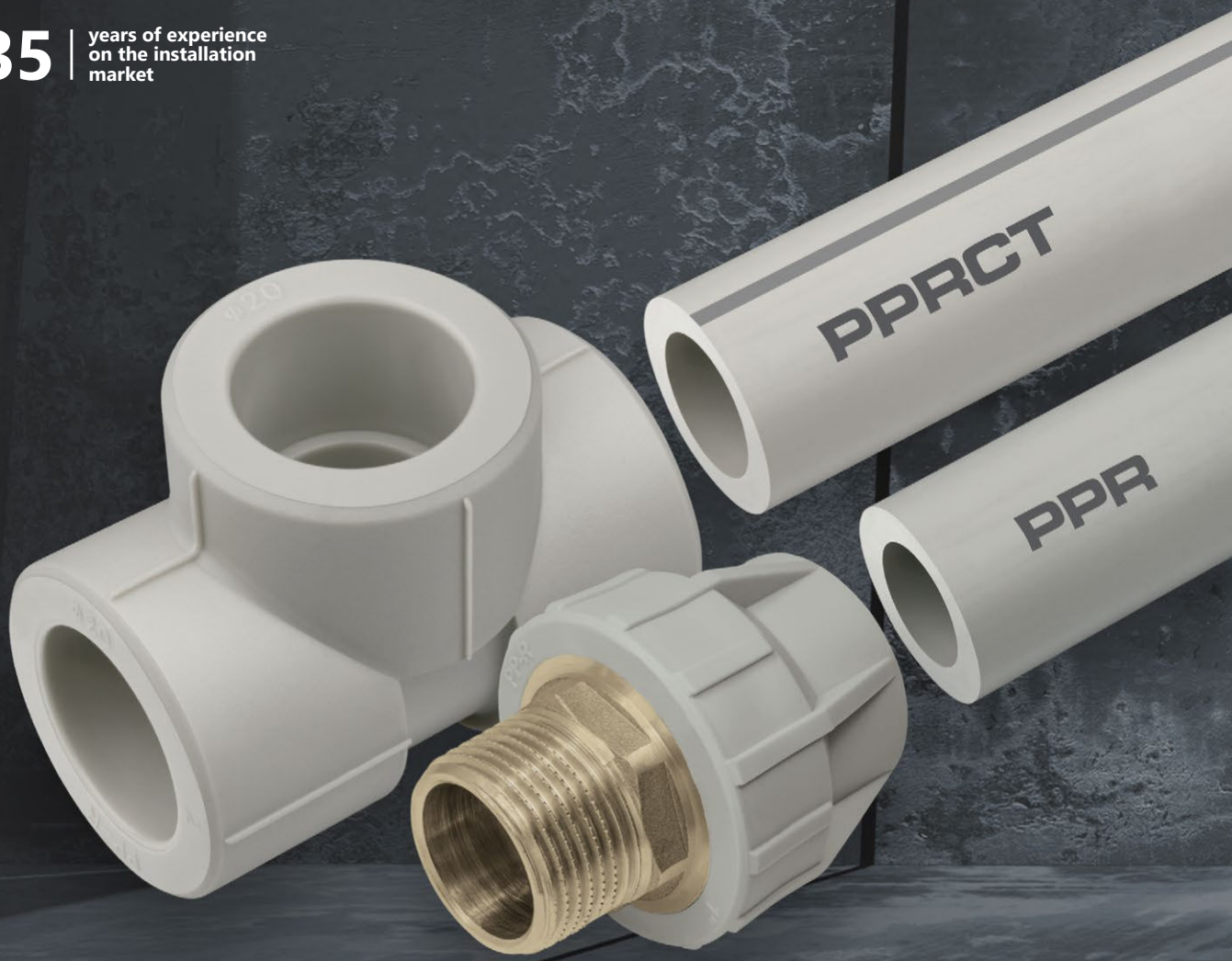
KAN-therm
MULTISYSTEM

>35 years of experience on the installation market




# KAN-therm
# PP

HIGH QUALITY WITH
REASONABLE PRICE

Install the **future**

EN 25/07

∅ 16-110 mm

SYSTEM **KAN-therm** PP

# SYSTEM **KAN-therm** PP

## 1 General information

KAN-therm PP is a complete installation system consisting of pipes and fittings made of polypropylene PP-R (type 3) or PP-RCT (type 4), a thermoplastic material, with diameter range: 16–110 mm. Connecting elements is performed using the socket welding technique (thermal polyfusion) and electric welders. This welding technique creates continually uniform joints and therefore guarantees exceptional tightness and mechanic durability of the installation. The system is designed for indoor water supply installations (hot and cold potable water), heating installations and technological installations.

The KAN-therm PP system is characterized by:

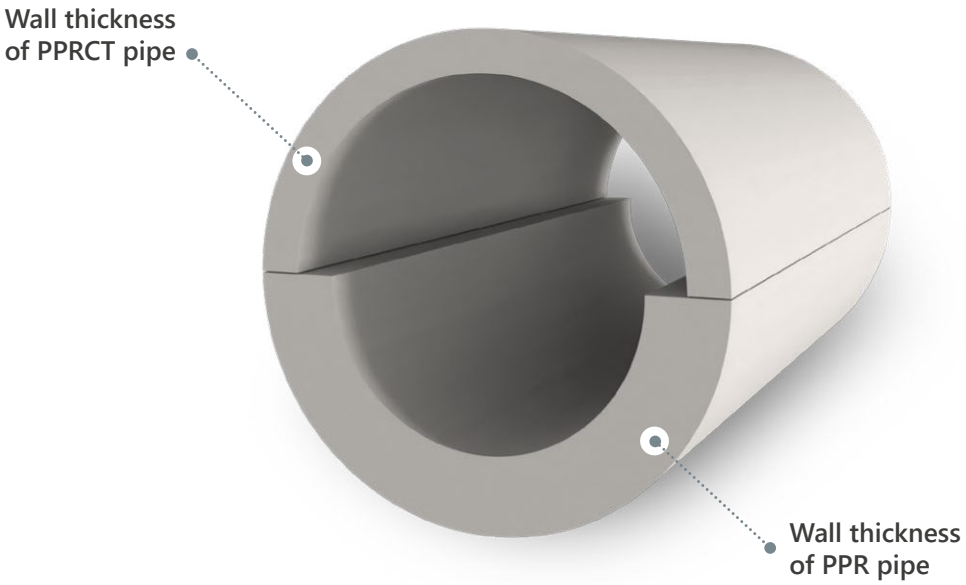
- high hygiene of all products (physiological and microbiological neutrality),
- high chemical resistance,
- resistance to material corrosion,
- low thermal conductivity (high thermal isolation of pipes),
- low specific weight,
- resistance to scaling,
- muffling vibrations and noises,
- mechanic durability,
- uniform joints,
- high usage durability.

# 2 KAN-therm PP pipes

KAN-therm PP pipes and fittings are manufactured of high quality PP-R polypropylene (random copolymer of polypropylene), formerly marked as polypropylene type 3. The offer also includes pipes made of the latest generation material - PP-RCT (Random Crystallinity Temperature Polypropylene).

In terms of construction, we differentiate these types of pipes: uniform (homogenous PPR and PPRCT) and multilayer pipes: reinforced with a layer of glass fiber, the so-called stabiGLASS PPR pipes.

New PP-RCT material is characterized by uniqe crystalline structure thanks to which pipes made of this material are able to operate with relatively higher pressure and temperature that PP-R pipes, espiecially in long-term perspective. Such properties make PPRCT pipe with the same pressure class is distinguished with larger internal cross-section, which in turn translates into better hydraulic capabilities.

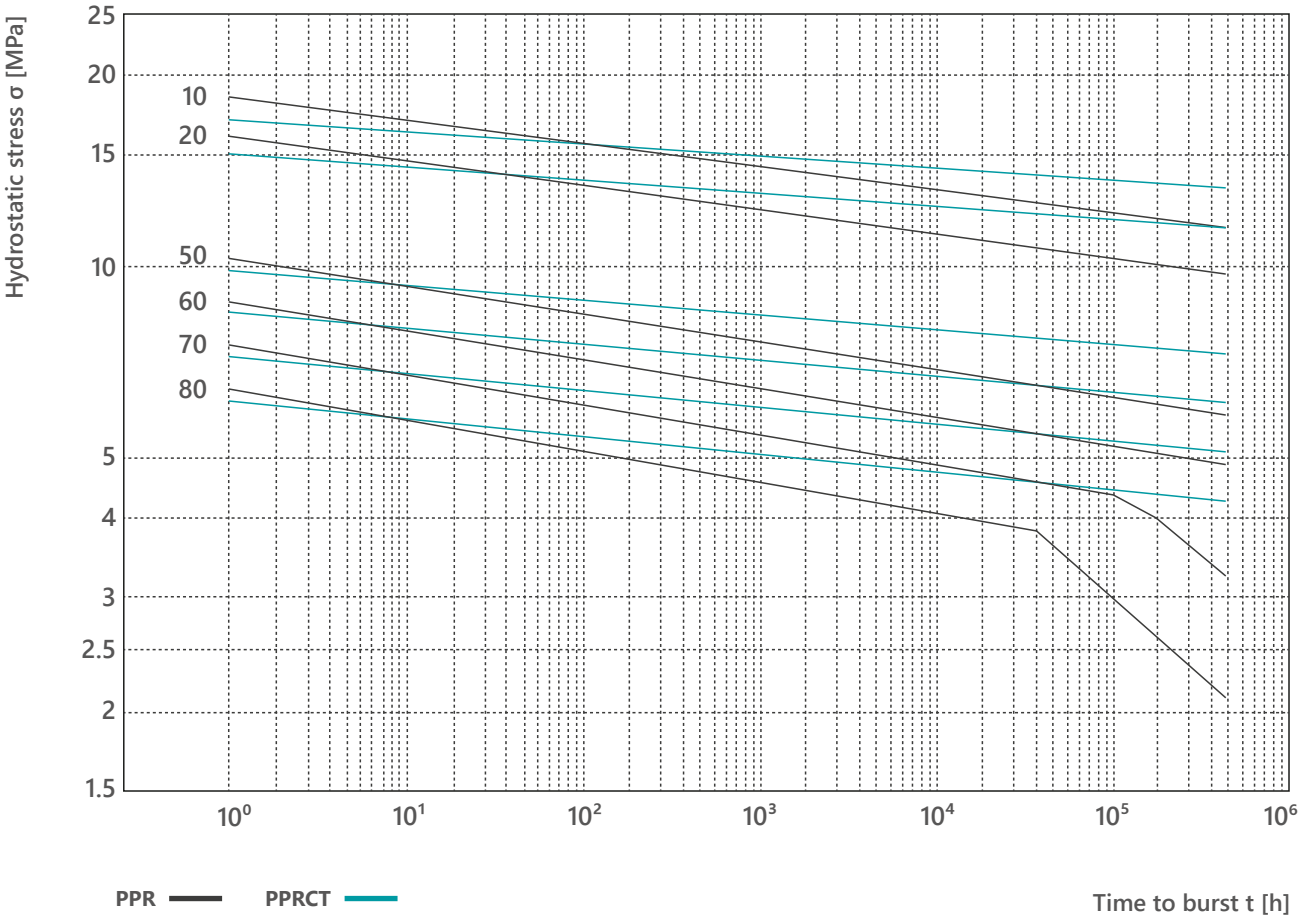


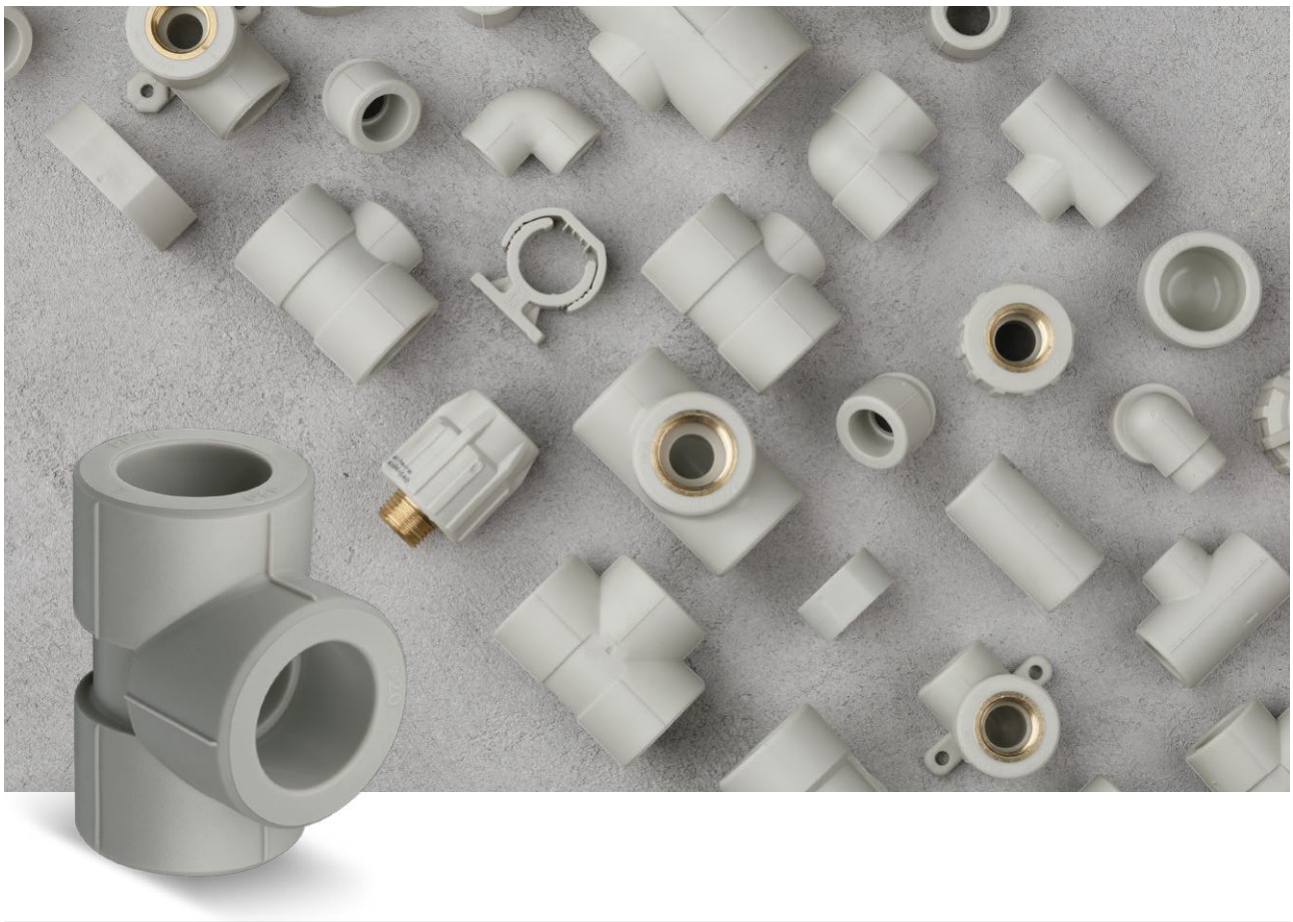

PPR and PPRCT pipe with equivalent pressure rating

PP-RCT makes it possible for designers to select pipes with thinner walls and in some cases also smaller diameter pipes.

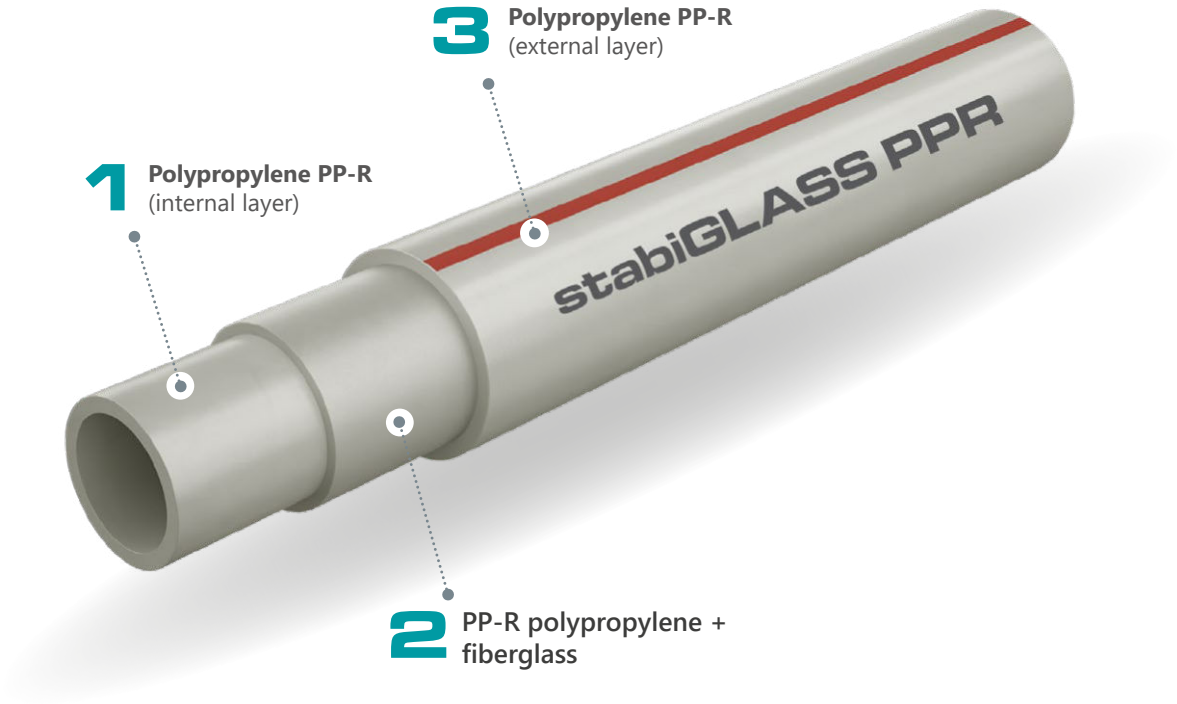
| PPRCT SDR7,4 PN20 | | | | PPR SDR6 PN20 | | | | PPRCT SDR7,4 PN20 | PPR SDR6 PN20 | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dimension [mm] | Outer diameter D [mm] | Wall thickness s [mm] | Inner diameter d [mm] | Dimension [mm] | Outer diameter D [mm] | Wall thickness s [mm] | Inner diameter d [mm] | Internal cross-section surface [mm$^2$] | Internal cross-section surface [mm$^2$] | PPRCT > PPR % |
| Ø 20 × 2,8 | 20 | 2,8 | 14,4 | Ø 20 × 3,4 | 20 | 3,4 | 13,2 | 162,8 | 136,8 | 19,0 |
| Ø 25 × 3,5 | 25 | 3,5 | 18 | Ø 25 × 4,2 | 25 | 4,2 | 16,6 | 254,3 | 216,3 | 17,6 |
| Ø 32 × 4,4 | 32 | 4,4 | 23,2 | Ø 32 × 5,4 | 32 | 5,4 | 21,2 | 422,5 | 352,8 | 19,8 |
| Ø 40 × 5,5 | 40 | 5,5 | 29 | Ø 40 × 6,7 | 40 | 6,7 | 26,6 | 660,2 | 555,4 | 18,9 |
| Ø 50 × 6,9 | 50 | 6,9 | 36,2 | Ø 50 × 8,3 | 50 | 8,3 | 33,4 | 1028,7 | 875,7 | 17,5 |
| Ø 63 × 8,6 | 63 | 8,6 | 45,8 | Ø 63 × 10,5 | 63 | 10,5 | 42 | 1646,6 | 1384,7 | 18,9 |
| Ø 75 × 10,3 | 75 | 10,3 | 54,4 | Ø 75 × 12,5 | 75 | 12,5 | 50 | 2323,1 | 1962,5 | 18,4 |
| Ø 90 × 12,3 | 90 | 12,3 | 65,4 | Ø 90 × 15,0 | 90 | 15 | 60 | 3357,6 | 2826,0 | 18,8 |
| Ø 110 × 15,1 | 110 | 15,1 | 79,8 | Ø 110 × 18,3 | 110 | 18,3 | 73,4 | 4998,9 | 4229,2 | 18,2 |

Reference curves for PPR and PPRCT pipes (t=[10-80]°C)

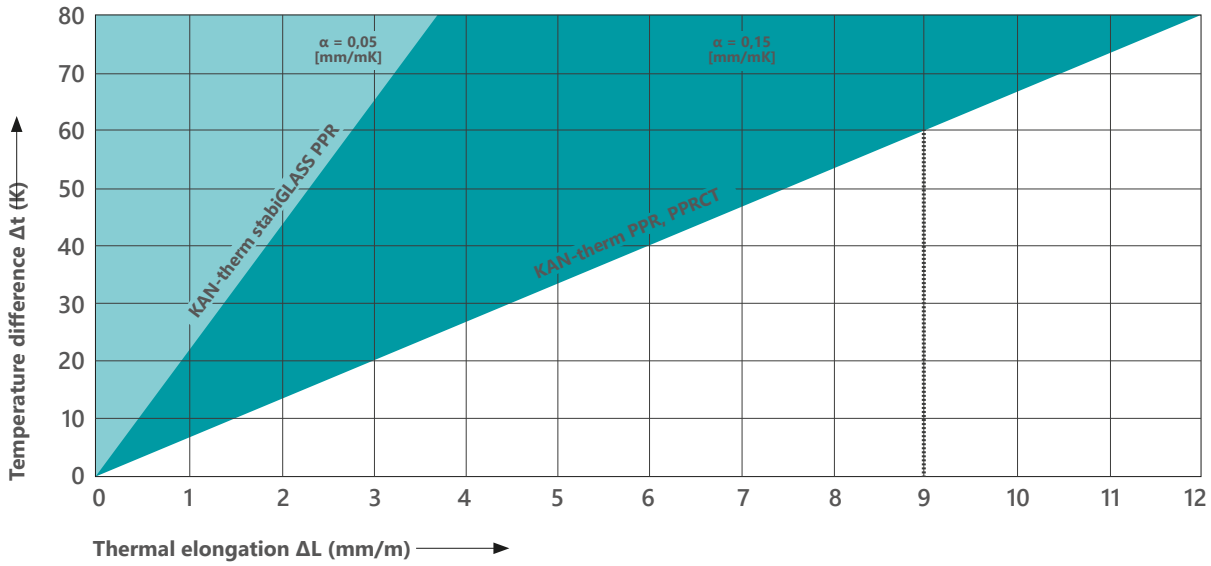


KAN-therm PP stabiGLASS PPR pipes feature multilayer construction. Their internal layer, which is reinforced with glass fibre (40% of pipe wall thickness) determines very high durability of the pipe and its low thermal elongation α=(0,05 mm/m × K).




Construction of a stabiGLASS PPR




Comparison of the thermal expansion factor in uniform PPR or PPRCT and stabiGLASS PPR pipes.

## 2.1 Physical properties of KAN-therm PP pipe material

| Property | Symbol | Unit | Value | |
|---|---|---|---|---|
| | | | PPR | PPRCT |
| **linear elongation coefficient** | α | mm/m × K | 0,15 for uniform pipes<br>0,05 for stabiGLASS PPR pipes | 0,15 for uniform pipes |
| **thermal conductivity** | λ | W/m × K | 0,24 | |
| **density** | ρ | g/cm³ | 0,90 | |
| **elasticity module** | | N/mm² | 900 | 850 |
| **minimum bend radius** | $R_{min}$ | mm | 8 x Dz (for diameters 16-32) | |
| **internal wall roughness** | k | mm | 0,007 | |

## 2.2 Pipe marking, color

KAN-therm PP pipes are marked in a continuous manner with inscriptions with a 1-meter span, containing i. e. the following indications:

| Marking description | Example of marking |
|---|---|
| **Name of manufacturer and/or trademark:** | KAN, KAN-therm |
| **Nominal external diameter x wall thickness** | 16 × 2,7 |
| **Dimension class** | A |
| **Pipe structure (material)** | PP-R |
| **Pipe code** | 04000316 |
| **Number of Standard or Technical Certificate** | PN-EN 15874 |
| **Pressure/dimension ratio** | PN20 SDR6 |
| **Application class/es with design pressure** | Class 1/10 bar – 2/8 bar – 4/10 bar – 5/6 bar |
| **Date of production** | 18.08.09 |
| **Other manufacturer markings, e.g. running meter, batch number** | 045 m |

**Notice – other, additional markings, e.g. numbers of certificates may also be inscribed on the pipe.**

**Pipe color:** gray;

**Pipe surface:** mat stabiGLASS PPR pipes are gray with a red stripe.

Pipes are supplied 4 m long bars.

## 2.3 Dimension parameters of KAN-therm PP pipes

KAN-therm PP system offers some types of pipes, differing in terms of wall thickness and construction (compound pipes):

| | |
|---|---|
| PPR PN16 pipes | (20 –110 mm) |
| PPR PN20 pipes | (16 –110 mm) |
| PPRCT PN20 pipes | (20 –110 mm) |
| stabiGLASS PPR PN16 pipes | (20 –110 mm) |
| stabiGLASS PPR PN16 pipes | (20 –110 mm) |


### KAN-therm PP PPR PN16 pipes (S3,2/SDR7,4)

| Size [mm] | External diameter D [mm] | Wall thickness s [mm] | Internal diameter d [mm] | Capacity by unit [l/m] | Weight by unit [kg/m] |
|---|---|---|---|---|---|
| **20 × 2,8** | 20 | 2,8 | 14,4 | 0,163 | 0,148 |
| **25 × 3,5** | 25 | 3,5 | 18,0 | 0,254 | 0,230 |
| **32 × 4,4** | 32 | 4,4 | 23,2 | 0,415 | 0,370 |
| **40 × 5,5** | 40 | 5,5 | 29,0 | 0,615 | 0,575 |
| **50 × 6,9** | 50 | 6,9 | 36,2 | 1,029 | 0,896 |
| **63 × 8,6** | 63 | 8,6 | 45,8 | 1,633 | 1,410 |
| **75 × 10,3** | 75 | 10,3 | 54,4 | 2,307 | 2,010 |
| **90 × 12,3** | 90 | 12,3 | 65,4 | 3,358 | 2,870 |
| **110 × 15,1** | 110 | 15,1 | 79,8 | 4,999 | 4,300 |

## KAN-therm PP PPR PN20 pipes (S2,5/SDR6)

| Size [mm] | External diameter D [mm] | Wall thickness s [mm] | Internal diameter d [mm] | Capacity by unit [l/m] | Weight by unit [kg/m] |
|---|---|---|---|---|---|
| **16 × 2,7** | 16 | 2,7 | 10,6 | 0,088 | 0,110 |
| **20 × 3,4** | 20 | 3,4 | 13,2 | 0,137 | 0,172 |
| **25 × 4,2** | 25 | 4,2 | 16,6 | 0,216 | 0,266 |
| **32 × 5,4** | 32 | 5,4 | 21,2 | 0,353 | 0,434 |
| **40 × 6,7** | 40 | 6,7 | 26,6 | 0,556 | 0,671 |
| **50 × 8,3** | 50 | 8,3 | 33,4 | 0,866 | 1,050 |
| **63 × 10,5** | 63 | 10,5 | 42,0 | 1,385 | 1,650 |
| **75 × 12,5** | 75 | 12,5 | 50,0 | 1,963 | 2,340 |
| **90 × 15,0** | 90 | 15,0 | 60,0 | 2,827 | 3,360 |
| **110 × 18,3** | 110 | 18,3 | 73,4 | 4,208 | 5,040 |

## KAN-therm PP PPRCT PN20 pipes (S3,2/SDR7,4)

| Size [mm] | External diameter D [mm] | Wall thickness s [mm] | Internal diameter d [mm] | Capacity by unit [l/m] | Weight by unit [kg/m] |
|---|---|---|---|---|---|
| **20 × 2,8** | 20 | 2,8 | 14,4 | 0,163 | 0,163 |
| **25 × 3,5** | 25 | 3,5 | 18,0 | 0,254 | 0,213 |
| **32 × 4,4** | 32 | 4,4 | 23,2 | 0,415 | 0,343 |
| **40 × 5,5** | 40 | 5,5 | 29,0 | 0,615 | 0,537 |
| **50 × 6,9** | 50 | 6,9 | 36,2 | 1,029 | 0,841 |
| **63 × 8,6** | 63 | 8,6 | 45,8 | 1,633 | 1,323 |
| **75 × 10,3** | 75 | 10,3 | 54,4 | 2,307 | 1,884 |
| **90 × 12,3** | 90 | 12,3 | 65,4 | 3,358 | 2,702 |
| **110 × 15,1** | 110 | 15,1 | 79,8 | 4,999 | 4,052 |

## KAN-therm PP stabiGLASS PPR PN16 (S3,2/SDR7,4) pipes

| Size [mm] | External diameter D [mm] | Wall thickness s [mm] | Internal diameter d [mm] | Capacity by unit [l/m] | Weight by unit [kg/m] |
|---|---|---|---|---|---|
| **20 × 2,8** | 20 | 2,8 | 14,4 | 0,163 | 0,160 |
| **25 × 3,5** | 25 | 3,5 | 18,0 | 0,254 | 0,250 |
| **32 × 4,4** | 32 | 4,4 | 23,2 | 0,415 | 0,430 |
| **40 × 5,5** | 40 | 5,5 | 29,0 | 0,615 | 0,650 |
| **50 × 6,9** | 50 | 6,9 | 36,2 | 1,029 | 1,000 |
| **63 × 8,6** | 63 | 8,6 | 45,8 | 1,633 | 1,520 |
| **75 × 10,3** | 75 | 10,3 | 54,4 | 2,307 | 2200 |
| **90 × 12,3** | 90 | 12,3 | 65,4 | 3,358 | 3,110 |
| **110 × 15,1** | 110 | 15,1 | 79,8 | 4,999 | 4,610 |

### KAN-therm PP stabiGLASS PPR PN20 (S2,5/SDR6) pipes

| Size [mm] | External diameter D [mm] | Wall thickness s [mm] | Internal diameter d [mm] | Capacity by unit [l/m] | Weight by unit [kg/m] |
|---|---|---|---|---|---|
| **20 × 3,4** | 20 | 3,4 | 13,2 | 0,137 | 0,218 |
| **25 × 4,2** | 25 | 4,2 | 16,6 | 0,216 | 0,328 |
| **32 × 5,4** | 32 | 5,4 | 21,2 | 0,353 | 0,520 |
| **40 × 6,7** | 40 | 6,7 | 26,6 | 0,556 | 0,770 |
| **50 × 8,3** | 50 | 8,3 | 33,4 | 0,866 | 1,159 |
| **63 × 10,5** | 63 | 10,5 | 42,0 | 1,385 | 1,770 |
| **75 × 12,5** | 75 | 12,5 | 50,0 | 1,963 | 2,780 |
| **90 × 15,0** | 90 | 15,0 | 60,0 | 2,830 | 3,590 |
| **110 × 18,3** | 110 | 18,3 | 73,4 | 4,210 | 5,340 |

### Explanation of markings of uniform PPR pipes

| | | |
|---|---|---|
| S | dimension series according to ISO 4 | S = (D-s)/2s |
| SDR | Standard Dimension Ratio | SDR = 2 × S+1 = D/s |
| D(dn) | nominal external pipe diameter | in brackets: markings acc. to standard |
| s(en) | nominal wall thickness | |
| PN | Pressure Nominal | |

| S | SDR | PN |
|---|---|---|
| **3,2** | 7,4 | 16 |
| **2,5** | 6 | 20 |

# 3 Fittings and other elements of the system

The basic method of executing joints in polypropylene installations is thermal welding which, thanks to the use of proper fittings, allows connecting pipes (pipe couplings), closing the pipeline (end caps), redirecting the pipeline (elbows, bends, passing loops, tees), changing the diameter of the pipe (couplings and reducers), executing branch-offs (tees, four-ways), connecting devices and fixtures (collar joints and metal threaded joints). Ball valves with polypropylene couplings serve as the joints here.

All of the above mentioned elements allow connecting fittings to pipes or connecting two or more pipe sections, forming inseparable joints, requiring the pipe to be cut off if there is a need for disassembling the fitting. In order to execute a separated joint, sleeves for collar joints and union adapters must be used. All joints are universal and may be used with all types of KAN-therm PP pipes, irrespective of their wall thickness or structure.

All of the KAN-therm PP system fittings are designed in PN20 pressure rating.

KAN-therm PP system, apart from pipes, consists of the following elements:

- fittings (uniform) made of PP-R polypropylene (couplings, reducers, elbows, nipple elbows, tees),
- couplings with female and male metal threads ½" – 3" – used for connecting to devices and fixtures,
- sleeves for collar joints with loose collars, union adapters – for detacheable joints,
- expansion bends, mounting plates, ball valves,
- mounting elements – plastic or metal with rubber insert clamps,
- tools for pipe bending, treatment and welding.

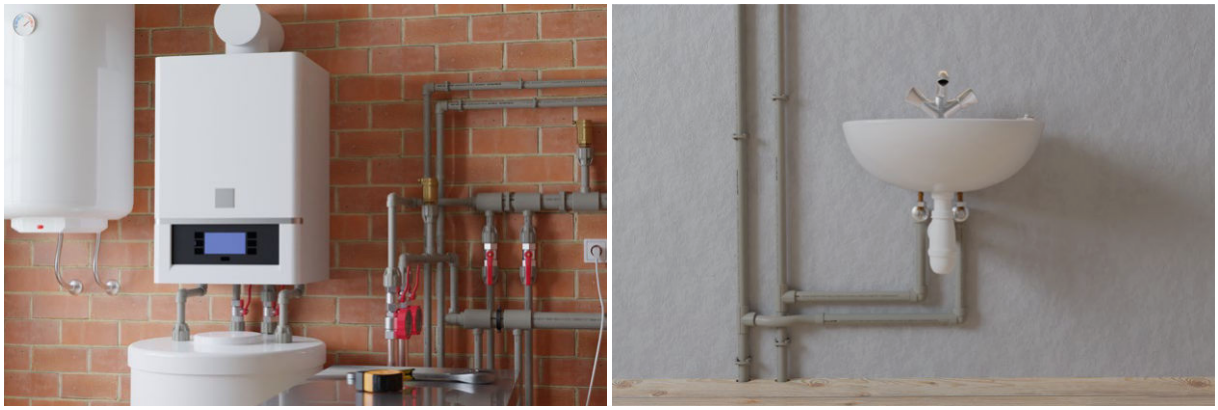
# 4 Scope of use

Thanks to the properties of PP-R and PP-RCT material, the KAN-therm PP installation system has a wide spectrum of applications:

- cold (20 °C/1,0 MPa) and hot (60 °C/1,0 MPa) water installations in housing buildings, hospitals, hotels, office buildings, schools,
- central heating installations (temp. up to 90 °C, working pressure up to 0,8 MPa),
- compressed air installations,
- balneology installations,
- installations in agriculture and horticulture,
- pipelines in the industry, e.g. for transporting aggressive media and food products,
- ship installations.

The scope of use assumes new installations, as well as repairs, modernization and exchange projects.

Thanks to special properties of polypropylene (physiological and microbiological neutrality, resistance to corrosion, resistance to scaling, immunity to vibrations, very good thermal insulation of pipes), KAN-therm PP system installations are widely used, particularly in water supply installations, when mounting water supply risers and installation levels. This refers to both hot and cold tap water installations in housing buildings, hospitals, hotels, office buildings, schools, on ships, etc.



KAN-therm PP installations

KAN-therm PP is an ideal solution for the renovation of old, corroded water supply systems. They are also used in renovations of old heating installations.

Pipes and joints in the KAN-therm PP system are in full compliance with applicable standards, which guarantees their long-term and reliable operation as well as full security of assembly and use of the installation.

Certificates and technical approvals are available at www.kan-therm.com.

The operational parameters and scopes of use of KAN-therm PP pipe installations in heating and water supply installations are presented in the table.

| | | | | PPR | | PPRCT |
|---|---|---|---|---|---|---|
| | | | | SDR6 (S2,5), SDR6 (S2,5) stabiGLASS | SDR7,4 (S3,2), SDR7,4 (S3,2) stabiGLASS | SDR7,4 (S3,2) |
| **Application (acc. to ISO 10508)** | **Total time of exploitation, years** | **Time of operation years/hours** | **Operating temperature T °C** | **Maximum operating pressure (bar)** | | |
| Hot domestic water **[application class 1]** $T_d$ /$T_{max}$= 60/80 °C | 50 | 49 | 60 | 10 | 8 | 10 |
| | | 1 | 80 | | | |
| | Time of operation at $T_{kr}$ | 100 hours | 95 | | | |
| Hot domestic water **[application class 2]** $T_d$/$T_{max}$= 70/80 °C | 50 | 49 | 70 | 8 | 6 | 10 |
| | | 1 | 80 | | | |
| | Time of operation at $T_{kr}$ | 100 hours | 95 | | | |
| Radiant heating, low temperature radiator heating **[application class 4]** $T_d$ /$T_{max}$= 60/70 °C | 50 | 2,5 | 20 | 10 | 10 | 10 |
| | | 20 | 40 | | | |
| | | 25 | 60 | | | |
| | | 2,5 | 70 | | | |
| | Time of operation at $T_{kr}$ | 100 hours | 100 | | | |
| Radiator heating **[application class 5]** $T_d$ /$T_{max}$= 80/90 °C | 50 | 14 | 20 | 6 | 6 | 8 |
| | | 25 | 60 | | | |
| | | 10 | 80 | | | |
| | | 1 | 90 | | | |
| | Time of operation at $T_{kr}$ | 100 hours | 100 | | | |

## Maximal operating pressure of PPR and PPRCT pipes depending on the temperature and service life of the installation (safety factor C = 1,25)

| **Temperature [°C]** | **Time [years]** | **PPR pipes** | | **PPRCT** |
|---|---|---|---|---|
| | | **PN16 / SDR7,4 / S3,2** | **PN20 / SDR6 / S2,5** | **PN20 / SDR7,4 / S3,2** |
| **10** | 1 | 33,1 | 42,5 | 36,2 |
| | 5 | 31,2 | 40 | 35,1 |
| | 10 | 30,5 | 39 | 34,7 |
| | 25 | 29,4 | 37,7 | 34,1 |
| | 50 | 28,7 | 36,7 | 33,6 |
| **20** | 1 | 28,3 | 36,2 | 31,5 |
| | 5 | 26,6 | 34,1 | 30,5 |
| | 10 | 25,9 | 33,1 | 30,1 |
| | 25 | 25 | 32 | 29,6 |
| | 50 | 24,4 | 31,2 | 29,2 |
| **40** | 1 | 20,4 | 26,2 | 23,5 |
| | 5 | 19,1 | 24,5 | 22,6 |
| | 10 | 18,6 | 23,8 | 22,3 |
| | 25 | 17,9 | 22,8 | 21,8 |
| | 50 | 17,4 | 22,2 | 21,5 |
| **60** | 1 | 14,6 | 18,7 | 17 |
| | 5 | 13,6 | 17,4 | 16,3 |
| | 10 | 13,2 | 16,8 | 16,0 |
| | 25 | 12,6 | 16,1 | 15,7 |
| | 50 | 12,2 | 15,6 | 15,4 |
| **70** | 1 | 12,2 | 15,7 | 14,3 |
| | 5 | 11,4 | 14,5 | 13,7 |
| | 10 | 11 | 14 | 13,5 |
| | 25 | 9,6 | 12,2 | 13,1 |
| | 50 | 8 | 10,3 | 12,9 |

| Temperature [°C] | Time [years] | PPR pipes | | PPRCT |
|---|---|---|---|---|
| | | PN16 / SDR7,4 / S3,2 | PN20 / SDR6 / S2,5 | PN20 / SDR7,4 / S3,2 |
| 80 | 1 | 10,3 | 13,2 | 11,9 |
| | 5 | 9,1 | 11,6 | 11,4 |
| | 10 | 7,7 | 9,8 | 11,2 |
| | 25 | 6,1 | 7,9 | 10,9 |
| 95 | 1 | 7,3 | 9,4 | 8,9 |
| | 5 | 4,9 | 6,4 | 8,5 |
| | 10 | 4,2 | 5,3 | 8,3 |

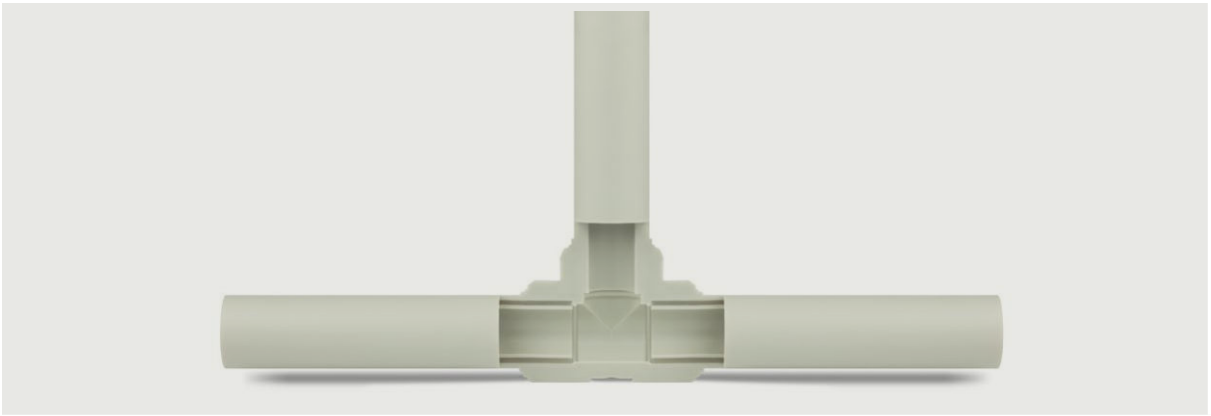
**Note**

Conditions of using the KAN-therm PP system in installations other than heating and water supply installations - chemical resistance.

Elements of the KAN-therm PP system are characterized by high chemical resistance. You should remember, however, that the chemical resistance feature of polypropylene depends on the type and concentration of substances, as well as other factors, e.g. temperature and pressure of the medium, and ambient temperature. Chemical resistance of the couplings inserts (metal) must not be compared to the resistance of PP-R elements. Due to this fact, transition couplings are not applicable for all industrial usages. Before deciding on the application of KAN-therm PP pipes and joints in installations conducting substances different than water, please contact the KAN's Technical Support Department.

# 5 Technique of connecting KAN-therm PP installations – welded joints

Welding is the basic technology used for connecting KAN-therm PP polypropylene pipelines. The welding process is based on plasticizing the elements to be connected under high temperature (to a certain depth), and then joining, under right pressure, the plasticized layers and, finally, cooling the entire area to a temperature of hardening.



Cross-section of a welded joint

KAN-therm PP tools

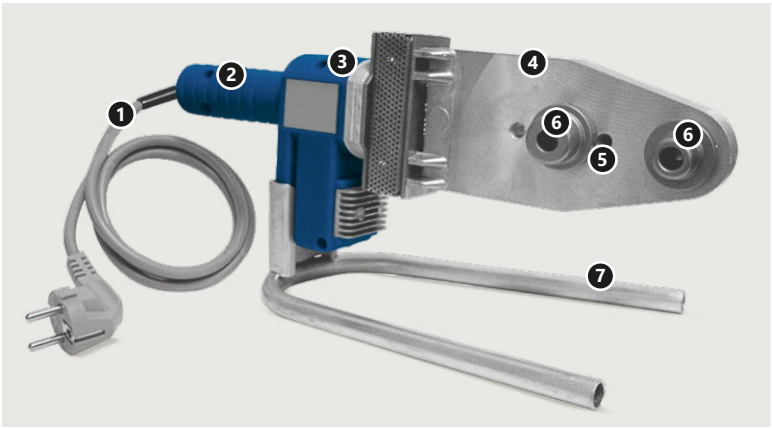
Plasticization of layers to be connected takes place at 260 °C in a temporal function, taking into account the need to warm up a layer of material (external surface of the pipe and internal surface of the coupling) and a required depth. The essence of the process of welding polypropylene, also called thermal polyfusion, is relocating and mixing the polymer chains of plasticized and then pressed layers of elements being connected. Maintaining proper conditions in this process (temperature, time, pressure force and area, cleanness of elements being connected) guarantees proper execution of the joint and its durability.

The process of heating (plasticizing) takes place with the use of an electric welder equipped with a heating plate with exchangeable (for each diameter) heating inserts covered with Teflon.

Depending on the diameter of the pipe, heating takes from 5 to 50 seconds. After this time, heated elements are removed from the inserts and the pipe is immediately mounted (without rotation!) inside the coupling at a depth which must be marked earlier. It is then that the particles of both elements penetrate one another and mix. A joint formed through thermal welding has impressive mechanic durability, exceeding the durability of the pipe itself (the cross section of the joint exceeds the cross section of the pipe).

## 5.1 Tools – preparation of the welder

In order to execute a polypropylene joint, use a welder designed to work under 230 V. This device consists of a power supply cable (1), a grip (2) with an in-built thermostat and controls (diodes) (3) and a heating plate (4), which heating inserts (6) are mounted to. The power of KAN-therm welders is 800 or 1600 W.




Welder elements
**1.** Power supply cable
**2.** Welder grip
**3.** Power supply and thermostat controls
**4.** Heating plate
**5.** Openings in the heating plate
**6.** Heating inserts
**7.** Stand

**Welding temperature 260 °C**

- Before starting any works, read the instruction manual to the corresponding welder type.
- Heating inserts (coupling and heating rod) must be screwed tightly using a wrench included in the set. They must contact the surface of the heating plate tightly. The inserts must not extend over the edge of the heating plate.
- Secure the inserts against scratching or polluting. Clean all pollutions with a natural cloth and rubbing alcohol.
- Connection to power supply is signaled by the lamp or diode on the casing lighting up.
- The required welding temperature (on the surface of inserts) is 260 °C. The temperature of the heating plate is higher (280-300 °C). When the device reaches the correct welding temperature, a thermostat control most often (depends on the model of the welder) signals it.
- After finishing all works, disconnect the welder from power supply and leave it to cool down. Do not cool the welder rapidly, e.g. using cold water, since this may lead to the damage of heating circuits.
- Do not use a power supply cable of small cross section or one which is too long. Voltage fluctuations might disturb the proper operation of the device.
- Do not use the power supply cable to transport or hang the welder. When out of work, place it on the stand included in the set.

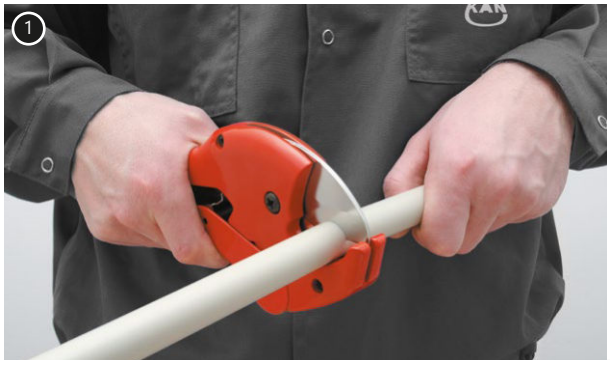
**NOTICE**

Due to varying tolerances of pipes and fittings by other manufacturers, to ensure the execution of a sealed and durable joint, we suggest the use of original tools, particularly heating inserts, as offered within the KAN-therm PP system.

**Tools – work safety**

**All tools must be used according to their dedication and the manufacturer's instruction manual. During the use of tools, one must observe the terms of regular inspections and all applicable safety regulations. Using tools against their designed use may lead to their damage or to the damage of their accessories. It may also lead to the occurrence of leakages in installation joints.**

## 5.2 Preparation of elements for welding





**1. Cutting the pipe.**

Use a pipe cutter, (or for bigger diameters) a round pipe cutter or a mechanic saw with a blade adapted to cutting polypropylene to cut the pipe. When cutting the pipe with a saw, remove all remainings from the surface and from the interior of the pipe.

**2. Marking the depth of the weld.**

Mark (using a ruler or, a template and a pencil) the depth of the weld at the end of the pipe (PPR, PPRCT and stabiGLASS PPR pipes). Insufficient welding depth may weaken the joint. On the other hand, if the pipe is mounted too deep, it may become narrower (flange). The depths of welds are provided in the table.

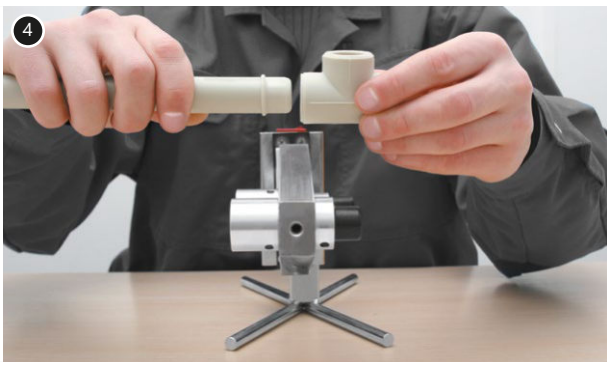
### Welding parameters

| External pipe diameter [mm] | Welding depth [mm] | Heating time [sek] | Binding time [sek] | Cooling time [min] |
|---|---|---|---|---|
| **16** | 13,0 | 5 | 4 | 2 |
| **20** | 14,0 | 5 | 4 | 2 |
| **25** | 15,0 | 7 | 4 | 2 |
| **32** | 16,0 | 8 | 6 | 4 |
| **40** | 18,0 | 12 | 6 | 4 |
| **50** | 20,0 | 18 | 6 | 4 |
| **63** | 24,0 | 24 | 8 | 6 |
| **75** | 26,0 | 30 | 10 | 8 |
| **90** | 29,0 | 40 | 10 | 8 |
| **110** | 32,5 | 50 | 10 | 8 |

### Notice

The time of heating in ambient temperatures below +5 °C should be increased by 50%.

## 5.3 Welding technique

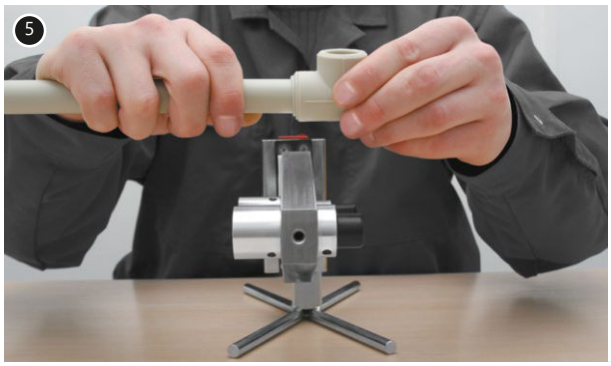




**3. Heating the pipe and the joint.**

The surfaces to be heated must be clean and dry. Slide the pipe end (without rotation) into the heating sleeve, up to the marked depth of the weld. At the same time, slide the fitting (also without rotation) on the heating rod, until it stops. Start counting the heating time when the pipe and the fitting are mounted at their entire welding depths. After the lapse of a half of the heating time (according to the table), continue to heat the fitting and start heating the pipe, until the end of required heating time.

**4. Connecting elements.**

After heating take the pipe and fitting out of heating inserts in a continuous manner and immediately, without rotating, connect them. The marked welding border should then be covered by outflowing excess material. Do not heat beyond the marked welding border, since it could result in a narrowing or even a clog in the joint. When connecting elements, the joint can be slightly adjusted on the axis (up to a few degrees). Rotating elements being connected is absolutely prohibited.




**5. Stabilizing and cooling.**

After the welding time has lapsed, the joint must be stabilized and cooling must be initiated (time of cooling is provided in the table). In this period, you must not apply any mechanic pressure on the pipe. After all joints have cooled down, connect the installation to water supply and conduct a pressure test.

## 5.4 Fittings with metal threads and collars

Apart from welded joints, KAN-therm PP offers threaded and collar joints.

KAN-therm PP fittings with brass threads

The most basic elements with metal threads are PP-R polypropylene fittings (couplings, elbows, tees) with brass "inserts" with male and female threads. They form inseparable joints. Unscrewing a joint like this requires the pipe to the cut off. Such joints are used for connecting installations to heating and water supply devices and fixtures. Joints with 1" and bigger female and male threads are equipped with a six-sided mount for a flat wrench, allowing devices to be screwed-in and – out without applying excessive pressure on the weld and the fitting itself.

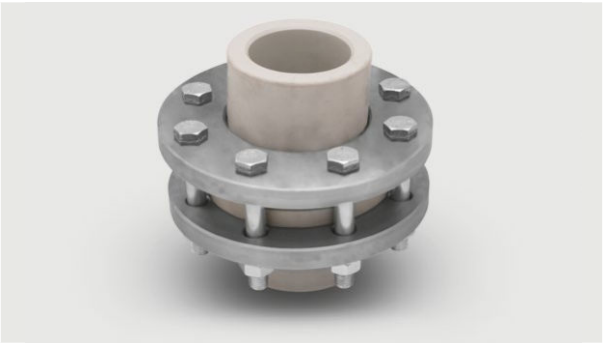
The group of detachable joints, allowing performance of multiple, exchangeable connections, includes KAN-therm PP union adapters (used e.g. to connect water meters) and "half unions" with specially formed stubs (for mounting rubber seals) and metal nuts.

KAN-therm PP detachable fittings – male union adapter, female union adapter, half-union and union

KAN-therm PP also offers double union adapters (with two PP-R couplings) which allow mounting flanges on the pipe. An additional coupling with internal diameter corresponding to the external diameter of the pipe is required to connect these joints with the pipe.

For large pipe diameters, use flange couplings to execute detachable joints. Flange couplings are used e.g. to connect devices to flange stubs (pumps, valves, water meters). In installations, KAN-therm PP adapters are used with loose flanges.

It is necessary to assemble a separate, flat seal. The seal should be made of a material type suitable for the parameters of the medium running through the joint. The connection between flange adapter and pipe is done with a utilization of muff coupling or by other fitting.

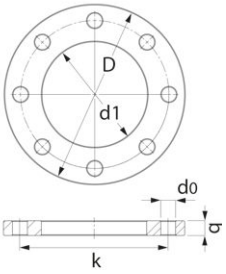


Ø110 mm flange joint

## Flanges

| Sleeve size | DN | D | d1 | k | d0 | q | N |
|---|---|---|---|---|---|---|---|
| **Ø40** | 32 | 140 | 43 | 100 | 18 | 18 | 4 |
| **Ø50** | 40 | 150 | 53 | 110 | 18 | 18 | 4 |
| **Ø63** | 50 | 165 | 66 | 125 | 18 | 20 | 4 |
| **Ø75** | 65 | 185 | 78 | 145 | 18 | 20 | 8 |
| **Ø90** | 80 | 200 | 95 | 160 | 18 | 20 | 8 |
| **Ø110** | 100 | 220 | 114 | 180 | 18 | 22 | 8 |

N - number of bolt holes



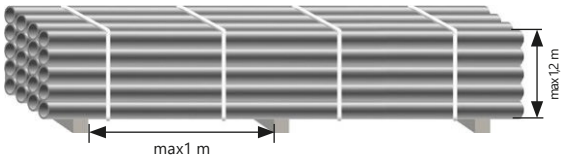

KAN-therm PP offers a wide selection of shut-off valves and fixtures welded onto pipelines:

- ball valves,
- shut-off globe valves,
- globe valves for flush assembly.

# 6 Transport and storage

— Store and transport pipes in horizontal position, preventing them from bending,

— Maximum storage height – 1,2 m,




— During storage, pipes and joints must not be exposed to sun rays (they must be protected against heat and UV rays),

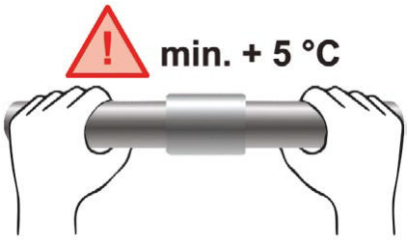
— Store pipes away from sources of strong heat,

— Protect pipes against shocks or mechanic impacts, particularly their endings. Do not throw or drag pipes during transport,

— Do not use damaged (chipped, cracked, etc.) pipes.

— Be extra careful when transporting or carrying pipes in temperatures below 0 °C (in these conditions pipes are more vulnerable to mechanic damages, especially stabiGLASS PPR pipes),

— Perform assembly at temperatures above +5 °C. If it is necessary to install at temperatures lower than recommended, read the specific recommendations for the installation of the KAN-therm PP system at temperatures below 0 °C and absolutely use increased heating times for pipes and fittings,




— Protect pipes and fittings against polluting (particularly with oil or grease),

— Protect pipes and joints from the access of chemical substances (e.g. paint or organic solvents, steam containing chlorine).

Detailed information about storage and transport of components can be found at en.kan-therm.com.

# NOTES

# SYSTEM KAN-therm PP - assortment

## Pipes

### Pipe PPRCT SDR7.4 PN20 - bar

**GROUP: L**

| | Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|---|
| N | 20×2,8 | | 1229348001 | 4 | 160 | m |
| N | 25×3,5 | | 1229348002 | 4 | 100 | m |
| N | 32×4,4 | | 1229348003 | 4 | 60 | m |
| N | 40×5,5 | | 1229348004 | 4 | 40 | m |
| N | 50×6,9 | | 1229348005 | 4 | 28 | m |
| N | 63×8,6 | | 1229348006 | 4 | 16 | m |
| N | 75×10,3 | | 1229348007 | 4 | 12 | m |
| N | 90×12,3 | | 1229348008 | 4 | 8 | m |
| N | 110×15,1 | | 1229348000 | 4 | 4 | m |

**Note:**
Application class 1; 10 bar.
Application class 2; 10 bar.
Application class 4; 10 bar.
Application class 5; 8 bar.

### Pipe PPR SDR7.4 PN16 - bar

**GROUP: L**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20×2,8 | | 1229203001 | 4 | 160 | m |
| 25×3,5 | | 1229203003 | 4 | 100 | m |
| 32×4,4 | | 1229203005 | 4 | 60 | m |
| 40×5,5 | | 1229203008 | 4 | 40 | m |
| 50×6,9 | | 1229203010 | 4 | 28 | m |
| 63×8,6 | | 1229203012 | 4 | 16 | m |
| 75×10,3 | | 1229203014 | 4 | 12 | m |
| 90×12,3 | | 1229203016 | 4 | 8 | m |
| 110×15,1 | | 1229203000 | 4 | 4 | m |

**Note:**
Application class 1; 8 bar.
Application class 2; 6 bar.
Application class 4; 10 bar.
Application class 5; 6 bar.

### Pipe PPR stabiGLASS SDR7.4 PN16 - bar

**GROUP: M**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20×2,8 | | 1229204002 | 4 | 100 | m |
| 25×3,5 | | 1229204003 | 4 | 80 | m |
| 32×4,4 | | 1229204004 | 4 | 40 | m |
| 40×5,5 | | 1229204005 | 4 | 28 | m |
| 50×6,9 | | 1229204006 | 4 | 20 | m |
| 63×8,6 | | 1229204007 | 4 | 12 | m |
| 75×10,3 | | 1229204008 | 4 | 8 | m |
| 90×12,3 | | 1229204009 | 4 | 8 | m |
| 110×15,1 | | 1229204000 | 4 | 4 | m |

**Note:**
Application class 1; 8 bar.
Application class 2; 6 bar.
Application class 4; 10 bar.
Application class 5; 6 bar.

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## Pipe PPR SDR6 PN20 - bar

**GROUP: L**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16×2,7 | | **1229206031** | 4 | 200 | m |
| 20×3,4 | | **1229206033** | 4 | 160 | m |
| 25×4,2 | | **1229206035** | 4 | 100 | m |
| 32×5,4 | | **1229206037** | 4 | 60 | m |
| 40×6,7 | | **1229206039** | 4 | 40 | m |
| 50×8,3 | | **1229206041** | 4 | 28 | m |
| 63×10,5 | | **1229206043** | 4 | 16 | m |
| 75×12,5 | | **1229206045** | 4 | 12 | m |
| 90×15,0 | | **1229206047** | 4 | 8 | m |
| 110×18,3 | | **1229206029** | 4 | 4 | m |

**Note:**
Application class 1; 10 bar.
Application class 2; 8 bar.
Application class 4; 10 bar.
Application class 5; 6 bar.

## Pipe PPR stabiGLASS SDR6 PN20 - bar

**GROUP: M**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20×3,4 | | **1229205025** | 4 | 100 | m |
| 25×4,2 | | **1229205026** | 4 | 80 | m |
| 32×5,4 | | **1229205027** | 4 | 40 | m |
| 40×6,7 | | **1229205011** | 4 | 28 | m |
| 50×8,3 | | **1229205014** | 4 | 20 | m |
| 63×10,5 | | **1229205017** | 4 | 12 | m |
| 75×12,5 | | **1229205020** | 4 | 8 | m |
| 90×15,0 | | **1229205024** | 4 | 8 | m |
| 110×18,3 | | **1229205001** | 4 | 4 | m |

**Note:**
Application class 1; 10 bar.
Application class 2; 8 bar.
Application class 4; 10 bar.
Application class 5; 6 bar.

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# Connectors

## Saddle fitting PP/Push

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 63 / 18×2,0 | | 1209238010 | 20 | 160 | pc. |
| 75 / 18×2,0 | | 1209238011 | 20 | 160 | pc. |
| 90 / 18×2,0 | | 1209238012 | 20 | 160 | pc. |
| 110 / 18×2,0 | | 1209238009 | 20 | 160 | pc. |

**Note:**
The external diameter of PP pipe is given to which the saddle is welded, as well as the connection pipe diameter.

## Female saddle fitting

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 40 Rp½" | | 1209238022 | 20 | 160 | pc. |
| 50 Rp½" | | 1209238023 | 20 | 160 | pc. |
| 63 Rp½" | | 1209230007 | 20 | 160 | pc. |
| 75 Rp½" | | 1209230009 | 20 | 160 | pc. |
| 90 Rp½" | | 1209230011 | 20 | 160 | pc. |
| 110 Rp½" | | 1209230003 | 20 | 160 | pc. |

**Note:**
The external diameter of PP pipe is given to which the saddle is welded, as well as the diameter and type of thread.

## Compensation loop

**GROUP: N**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 16 | | 1209036000 | 20 | pc. |
| 20 | | 1209036002 | 20 | pc. |
| 25 | | 1209036003 | 15 | pc. |
| 32 | | 1209036004 | 10 | pc. |

**Note:**
Loop diameter Ø150, length 370 mm.

## Crossover

**GROUP: N**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 16 | | 1209269000 | 200 | pc. |
| 20 | | 1209269001 | 200 | pc. |
| 25 | | 1209269002 | 130 | pc. |
| 32 | | 1209269003 | 75 | pc. |

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## Coupling

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209245001 | 80 | 1360 | pc. |
| 20 | | 1209245002 | 100 | 700 | pc. |
| 25 | | 1209245003 | 50 | 550 | pc. |
| 32 | | 1209245004 | 40 | 280 | pc. |
| 40 | | 1209245005 | 30 | 180 | pc. |
| 50 | | 1209245006 | - | 110 | pc. |
| 63 | | 1209245007 | - | 60 | pc. |
| 75 | | 1209245008 | | 45 | pc. |
| 90 | | 1209245009 | | 24 | pc. |
| 110 | | 1209245000 | | 16 | pc. |

## Coupling reducer

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| N 25 / 20 | | 1209220021 | 50 | 550 | pc. |
| N 32 / 25 | | 1209220022 | 40 | 280 | pc. |

## Nipple reducer

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 / 16 | | 1209220004 | 100 | 1200 | pc. |
| 25 / 16 | | 1209220005 | 50 | 1100 | pc. |
| 25 / 20 | | 1209220006 | 100 | 900 | pc. |
| 32 / 20 | | 1209220007 | 80 | 640 | pc. |
| 32 / 25 | | 1209220008 | 80 | 560 | pc. |
| 40 / 20 | | 1209220009 | 50 | 400 | pc. |
| 40 / 25 | | 1209220010 | 50 | 350 | pc. |
| 40 / 32 | | 1209220011 | 50 | 300 | pc. |
| 50 / 32 | | 1209220000 | 30 | 180 | pc. |
| 50 / 40 | | 1209220012 | 30 | 150 | pc. |
| 63 / 32 | | 1209220013 | - | 100 | pc. |
| 63 / 40 | | 1209220014 | - | 100 | pc. |
| 63 / 50 | | 1209220015 | - | 100 | pc. |
| 75 / 50 | | 1209220016 | - | 80 | pc. |
| 75 / 63 | | 1209220017 | - | 50 | pc. |
| 90 / 50 | | 1209220018 | - | 48 | pc. |
| 90 / 63 | | 1209220019 | - | 45 | pc. |
| 90 / 75 | | 1209220020 | - | 45 | pc. |
| 110 / 63 | | 1209220001 | - | 27 | pc. |
| 110 / 75 | | 1209220002 | - | 27 | pc. |
| 110 / 90 | | 1209220003 | - | 27 | pc. |

**Note:**
Nipple reducers are intended for direct welding into the fitting socket from the bigger diameter side.
The smaller diameter is intended for direct connection with the pipe.

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## Female connector

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 Rp½" | | 1209050002 | 20 | 200 | pc. |
| 20 Rp½" | | 1209050003 | 20 | 180 | pc. |
| 20 Rp¾" | | 1209050004 | 30 | 150 | pc. |
| 25 Rp½" | | 1209050005 | 20 | 160 | pc. |
| 25 Rp¾" | | 1209050006 | 30 | 150 | pc. |
| 25 Rp1" | | 1209245020 | - | 100 | pc. |
| 32 Rp1" | | 1209050007 | - | 100 | pc. |
| 40 Rp1¼" | | 1209050009 | - | 60 | pc. |
| 50 Rp1½" | | 1209050011 | - | 35 | pc. |
| 63 Rp2" | | 1209050012 | - | 18 | pc. |
| 75 Rp2½" | | 1209050013 | - | 12 | pc. |
| 90 Rp3" | | 1209050014 | - | 8 | pc. |

**Note:**
Elements with 1" thread and bigger have a polygon for a wrench.

## Male connector

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 R½" | | 1209051003 | 20 | 160 | pc. |
| 20 R½" | | 1209051004 | 20 | 140 | pc. |
| 20 R¾" | | 1209051005 | 30 | 120 | pc. |
| 25 R½" | | 1209051006 | 20 | 140 | pc. |
| 25 R¾" | | 1209051007 | 20 | 120 | pc. |
| 25 R1" | | 1209245018 | - | 80 | pc. |
| 32 R1¼" | | 1209245019 | - | 50 | pc. |
| 40 R1¼" | | 1209051010 | - | 50 | pc. |
| 50 R1½" | | 1209051012 | - | 36 | pc. |
| 63 R2" | | 1209051013 | - | 18 | pc. |
| 75 R2½" | | 1209051014 | - | 10 | pc. |
| 90 R3" | | 1209051015 | - | 6 | pc. |

**Note:**
Elements with 1" thread and bigger have a polygon for a wrench.

## Elbow 90°

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209068010 | 50 | 900 | pc. |
| 20 | | 1209068011 | 100 | 500 | pc. |
| 25 | | 1209068012 | 50 | 350 | pc. |
| 32 | | 1209068013 | 20 | 200 | pc. |
| 40 | | 1209068014 | 20 | 100 | pc. |
| 50 | | 1209068015 | - | 60 | pc. |
| 63 | | 1209068016 | - | 32 | pc. |
| 75 | | 1209068017 | - | 20 | pc. |
| 90 | | 1209068018 | - | 12 | pc. |
| 110 | | 1209068009 | - | 8 | pc. |

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## Nipple elbow 90°

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | **1209068022** | 50 | 1000 | pc. |
| 20 | | **1209068023** | 100 | 600 | pc. |
| 25 | | **1209068024** | 50 | 400 | pc. |
| 32 | | **1209068025** | 50 | 200 | pc. |

## Elbow 45°

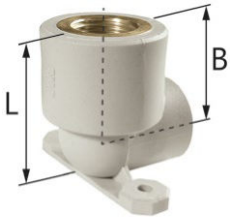
**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | **1209068000** | 50 | 950 | pc. |
| 20 | | **1209068001** | 100 | 700 | pc. |
| 25 | | **1209068002** | 50 | 400 | pc. |
| 32 | | **1209068003** | 40 | 200 | pc. |
| 40 | | **1209068004** | 20 | 140 | pc. |
| 50 | | **1209068005** | - | 80 | pc. |
| 63 | | **1209068006** | - | 40 | pc. |
| 75 | | **1209068007** | - | 25 | pc. |
| 90 | | **1209068008** | - | 14 | pc. |
| 110 | | **1209068028** | - | 10 | pc. |

## Nipple elbow 45°

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | **1209068019** | 50 | 1050 | pc. |
| 20 | | **1209068020** | 100 | 700 | pc. |
| 25 | | **1209068021** | 50 | 450 | pc. |

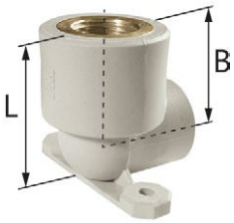



## Female directly fixed wallplate elbow - L = 45 mm

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 Rp½" | | **1209069007** | 20 | 140 | pc. |

**Note:**
B = 29 mm.




## Female directly fixed wallplate elbow - L = 47 mm

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 Rp½" | | **1209069006** | 20 | 140 | pc. |

**Note:**
B = 35 mm.

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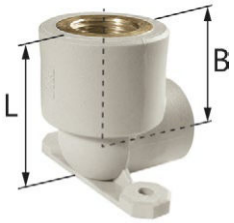
## Female directly fixed wallplate elbow - L = 57 mm

**GROUP: N**

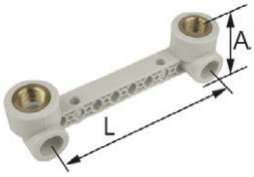



| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 25 Rp½" | | **1209069008** | 20 | 120 | pc. |

**Note:**
B = 36 mm.

## Double female directly fixed wallplate elbow 90° - L = 148,5 mm

**GROUP: N**




| | Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|---|
| N | 20 Rp½" | | **1209285000** | 1 | 30 | pc. |
| N | 25 Rp½" | | **1209285001** | 1 | 30 | pc. |

**Note:**
20 Female thread ½ A = 45,5 mm.
25 Female thread ½ A = 50,7 mm.

## Female elbow 90°

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 Rp½" | | **1209069000** | 20 | 180 | pc. |
| 20 Rp½" | | **1209069001** | 20 | 140 | pc. |
| 20 Rp¾" | | **1209069002** | 30 | 120 | pc. |
| 25 Rp½" | | **1209069003** | 30 | 120 | pc. |
| 25 Rp¾" | | **1209069004** | 30 | 120 | pc. |
| 32 Rp¾" | | **1209069005** | 30 | 90 | pc. |
| 32 Rp1" | | **1209069009** | - | 50 | pc. |

**Note:**
The fitting has a polygon for a wrench.

## Male elbow 90°

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 R½" | | **1209070000** | 20 | 140 | pc. |
| 20 R½" | | **1209070001** | 30 | 90 | pc. |
| 20 R¾" | | **1209070002** | 30 | 90 | pc. |
| 25 R½" | | **1209070003** | 20 | 120 | pc. |
| 25 R¾" | | **1209070004** | 30 | 90 | pc. |
| 32 R¾" | | **1209070005** | 30 | 60 | pc. |
| 32 R1" | | **1209070006** | - | 50 | pc. |

**Note:**
A fitting with 1" thread and bigger has a polygon for a wrench.

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## Tee

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209257001 | 40 | 640 | pc. |
| 20 | | 1209257002 | 80 | 400 | pc. |
| 25 | | 1209257003 | 20 | 240 | pc. |
| 32 | | 1209257004 | 20 | 140 | pc. |
| 40 | | 1209257005 | 15 | 75 | pc. |
| 50 | | 1209257006 | - | 50 | pc. |
| 63 | | 1209257007 | - | 24 | pc. |
| 75 | | 1209257008 | - | 15 | pc. |
| 90 | | 1209257009 | - | 10 | pc. |
| 110 | | 1209257000 | - | 6 | pc. |

## Reducing tee

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 / 16 / 20 | | 1209257011 | 20 | 180 | pc. |
| 25 / 20 / 20 | | 1209260012 | 20 | 140 | pc. |
| 25 / 16 / 25 | | 1209257012 | 20 | 260 | pc. |
| 25 / 20 / 25 | | 1209257013 | 20 | 240 | pc. |
| 25 / 25 / 20 | | 1209260014 | 20 | 140 | pc. |
| 32 / 16 / 32 | | 1209257016 | 20 | 140 | pc. |
| 32 / 20 / 20 | | 1209260013 | 20 | 140 | pc. |
| 32 / 20 / 32 | | 1209257017 | 20 | 140 | pc. |
| 40 / 20 / 40 | | 1209257019 | 20 | 80 | pc. |
| 40 / 25 / 40 | | 1209257020 | 15 | 90 | pc. |
| 40 / 32 / 40 | | 1209257021 | 15 | 90 | pc. |
| 50 / 20 / 50 | | 1209257022 | - | 60 | pc. |
| 50 / 25 / 50 | | 1209257023 | - | 65 | pc. |
| 50 / 32 / 50 | | 1209257024 | - | 60 | pc. |
| 50 / 40 / 50 | | 1209257025 | - | 50 | pc. |
| 63 / 32 / 63 | | 1209257026 | - | 30 | pc. |
| 63 / 40 / 63 | | 1209257027 | - | 22 | pc. |
| 63 / 50 / 63 | | 1209257028 | - | 22 | pc. |
| 75 / 40 / 75 | | 1209257029 | - | 17 | pc. |
| 90 / 50 / 90 | | 1209257030 | - | 12 | pc. |
| 90 / 63 / 90 | | 1209257031 | - | 10 | pc. |
| 90 / 75 / 90 | | 1209257032 | - | 12 | pc. |
| 110 / 63 / 110 | | 1209260011 | - | 8 | pc. |
| 110 / 75 / 110 | | 1209260010 | - | 8 | pc. |
| 110 / 90 / 110 | | 1209260009 | - | 8 | pc. |

## Side outlet tee

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 | | 1209257010 | 40 | 360 | pc. |

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## Cross

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209057000 | 80 | 480 | pc. |
| 20 | | 1209057001 | 40 | 320 | pc. |

## Female tee

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 Rp½" | | 1209258000 | 20 | 140 | pc. |
| 20 Rp½" | | 1209258002 | 20 | 120 | pc. |
| 20 Rp¾" | | 1209258003 | 30 | 90 | pc. |
| 25 Rp½" | | 1209258004 | 20 | 180 | pc. |
| 25 Rp¾" | | 1209258005 | 30 | 180 | pc. |
| 32 Rp1" | | 1209258007 | 15 | 60 | pc. |

**Note:**
An element with 1" thread has a polygon for a wrench.

## Male tee

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 R½" | | 1209259000 | 20 | 120 | pc. |
| N 25 R½" | | 1209259005 | 30 | 90 | pc. |
| N 25 R¾" | | 1209259006 | 30 | 90 | pc. |

## Union

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 G¾" | | 1209065001 | 20 | 200 | pc. |

## Female half union with flat sealing

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 G¾" | | 1209105000 | 50 | 300 | pc. |
| 20 G¾" | | 1209105001 | 50 | 400 | pc. |
| 25 G1" | | 1209105002 | 20 | 100 | pc. |
| N 32 G1¼" | | 1209105003 | 10 | 100 | pc. |

## Female half union coupling with flat sealing

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 G½" | | 1209271006 | 20 | 200 | pc. |
| 20 G¾" | | 1209271007 | 20 | 200 | pc. |
| 25 G¾" | | 1209271008 | 20 | 200 | pc. |

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## Female union

**GROUP: N**

| | Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|---|
| N | 20 G½" | | 1209271010 | 20 | 200 | pc. |
| N | 25 G¾" | | 1209271011 | 20 | 100 | pc. |
| N | 32 G1" | | 1209271012 | 20 | 80 | pc. |

## Male union

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 G½" | | 1209271000 | 20 | 200 | pc. |
| 20 G½" | | 1209271001 | 20 | 200 | pc. |
| 20 G¾" | | 1209271002 | 20 | 200 | pc. |
| 25 G¾" | | 1209271004 | 20 | 100 | pc. |
| 25 G1" | | 1209271003 | 20 | 100 | pc. |
| 32 G1" | | 1209272000 | 20 | 80 | pc. |

## Flange adapter

**GROUP: N**

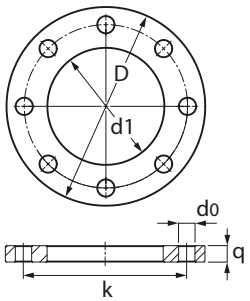
| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 40 | | 1209091016 | 1 | 40 | pc. |
| 50 | | 1209091017 | 1 | 30 | pc. |
| 63 | | 1209091018 | 1 | 20 | pc. |
| 75 | | 1209091019 | 1 | 15 | pc. |
| 90 | | 1209091020 | 1 | 10 | pc. |
| 110 | | 1209091015 | 1 | 6 | pc. |

**Note:**
The flange adapter is delivered with an EPDM seal.

## Steel flange PN16

**GROUP: N**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 40 DN32 | | 1209091002 | 1 | pc. |
| 50 DN40 | | 1209091003 | 1 | pc. |
| 63 DN50 | | 1209091004 | 1 | pc. |
| 75 DN65 | | 1209091005 | 1 | pc. |
| 90 DN80 | | 1209091006 | 1 | pc. |
| 110 DN100 | | 1209091001 | 1 | pc. |




| Code | D | d1 | k | d0 | q | N |
|---|---|---|---|---|---|---|
| 1209091002 | 140 | 43 | 100 | 18 | 18 | 4 |
| 1209091003 | 150 | 53 | 110 | 18 | 18 | 4 |
| 1209091004 | 165 | 66 | 125 | 18 | 20 | 4 |
| 1209091005 | 185 | 78 | 145 | 18 | 20 | 8 |
| 1209091006 | 200 | 95 | 160 | 18 | 20 | 8 |
| 1209091001 | 220 | 114 | 180 | 18 | 22 | 8 |

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## Stop end

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209025001 | 100 | 1000 | pc. |
| 20 | | 1209025002 | 200 | 1000 | pc. |
| 25 | | 1209025003 | 100 | 700 | pc. |
| 32 | | 1209025004 | 50 | 500 | pc. |
| 40 | | 1209025005 | 50 | 250 | pc. |
| 50 | | 1209025006 | - | 170 | pc. |
| 63 | | 1209025007 | - | 80 | pc. |
| 75 | | 1209025008 | - | 50 | pc. |
| 90 | | 1209025009 | - | 30 | pc. |
| 110 | | 1209025000 | - | 20 | pc. |

## Ball valve

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 | | 1209278001 | 10 | 80 | pc. |
| 25 | | 1209278002 | 10 | 50 | pc. |
| 32 | | 1209278014 | 5 | 25 | pc. |
| 40 | | 1209278003 | 5 | 15 | pc. |
| 50 | | 1209278004 | 2 | 10 | pc. |
| 63 | | 1209278005 | 2 | 8 | pc. |
| 75 | | 1209278006 | 1 | 5 | pc. |

## Globe valve

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 | | 1209280000 | 1 | 30 | pc. |
| 25 | | 1209280001 | 1 | 30 | pc. |
| 32 | | 1209280002 | 1 | 30 | pc. |

## Concealed globe valve with a knob

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 | | 1209280006 | 1 | 30 | pc. |
| 25 | | 1209280007 | 1 | 30 | pc. |
| 32 | | 1209280008 | 1 | 30 | pc. |

**Note:**
The valves are delivered in a set with two plastic clips to mark hot (red) or cold (blue) water.

## Concealed globe valve with masking

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 20 | | 1209280003 | 1 | 30 | pc. |
| 25 | | 1209280004 | 1 | 30 | pc. |
| 32 | | 1209280005 | 1 | 30 | pc. |

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# Accessories

## Pipe clip

**GROUP: N**

| Size [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 16 | | 1209107030 | 20 | 1000 | pc. |
| 20 | | 1209107031 | 20 | 800 | pc. |
| 25 | | 1209107032 | 20 | 700 | pc. |
| 32 | | 1209107033 | 20 | 440 | pc. |
| 40 | | 1209107034 | 20 | 300 | pc. |
| 50 | | 1209107035 | 20 | 240 | pc. |
| 63 | | 1209107036 | 20 | 120 | pc. |
| 75 | | 1209107037 | 10 | 100 | pc. |
| 90 | | 1209107038 | 10 | 60 | pc. |

**Note:**
Use only as sliding points.

## Single pipe clamp with rubber insert

**GROUP: A**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 15-18 | | 1700081025 | 100 | pc. |
| 20-23 | | 1700081028 | 100 | pc. |
| 25-28 | | 1700081029 | 100 | pc. |
| 32-36 | | 1700081030 | 50 | pc. |
| 40-44 | | 1700081031 | 50 | pc. |
| 47-52 | | 1700081032 | 50 | pc. |
| 57-63 | | 1700081034 | 50 | pc. |
| 74-78 | | 1700081035 | 25 | pc. |
| 85-91 | | 1700081036 | 25 | pc. |
| 108-112 | | 1700081023 | 25 | pc. |

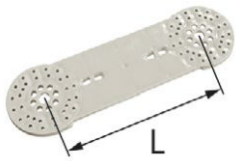
**Note:**
The clamp has a double-threaded screw with a collar (8×70) a plastic dowel (Ø12) in the set.

## Double pipe clamp with rubber insert

**GROUP: A**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 15-18 | | 1700081019 | 50 | pc. |
| 20-23 | | 1700081020 | 50 | pc. |
| 25-28 | | 1700081021 | 50 | pc. |
| 32-36 | | 1700081022 | 50 | pc. |

**Note:**
The clamp has a double-threaded screw with a collar (8×70) a plastic dowel (Ø12) in the set.




## Mounting plate

**GROUP: N**

| Spacing (L) [mm] | * | Code | | | UM |
|---|---|---|---|---|---|
| 150 | | 1209210000 | 30 | 150 | pc. |

**Note:**
Mounting plate 150 mm - plate total length 215 mm, width 64 mm, depth 6 mm.

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# Tools

## Cutter for pipes Virax PC 42

**GROUP: K**

| Range [mm] | * | Code | | UM |
|---|---|---|---|---|
| 16-40 | | 1933267029 | 1 | pc. |

## Roller cutter for PP pipes REMS RAS P

**GROUP: K**

| Range [mm] | * | Code | | UM |
|---|---|---|---|---|
| 50-100 | | 1933267032 | 1 | pc. |

## Stationary welding device

**GROUP: K**

| Range [mm], power [W] | * | Code | | UM |
|---|---|---|---|---|
| 63-110, 1600 W | | 1933267036 | 1 | pc. |

Each set includes:
- welding device PZ-125,
- welding machine 1600 W,
- 1933345003 - jaws PZ-125 for pipes Ø 63 mm,
- 1933345002 - jaws PZ-125 for pipes Ø 75 mm,
- 1933345001 - jaws PZ-125 for pipes Ø 90 mm,
- 1933345000 - jaws PZ-125 for pipes Ø 110 mm,
- case.

**Note:**
The set does not include heating sockets!

## KAN-therm welding set

**GROUP: K**

| Range [mm], power [W] | * | Code | | UM |
|---|---|---|---|---|
| 16-50, 800 W | | 1933267078 | 1 | pc. |
| 63-110, 1600 W | | 1933267079 | 1 | pc. |

Each set includes:
- electric welding machine 800 W or 1600 W,
- rack for the welding machine,
- bolt for fastening heating sockets,
- case,
- set of heating inserts 16-50 mm or 63-110 mm.

**Note:**
The set does not include heating sockets for saddle fittings!

## Welding device RITMO PRISMA JIG

**GROUP: K**

| Range [mm] | * | Code | | UM |
|---|---|---|---|---|
| 63-125 | | 1933267081 | 1 | pc. |

**Note:**
Tool is sold in set with case.

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## Welding device SPIDER 125 McElroy

**GROUP: K**

| Range [mm] | * | Code | | UM |
|---|---|---|---|---|
| 63-125 | | 1933267082 | 1 | pc. |

**Note:**
Tool is sold in set with case.

## Bolt for heating sockets - service part

**GROUP: K**

| | * | Code | | UM |
|---|---|---|---|---|
| | * | 1933267037 | 1 | pc. |

## Heating sockets for saddle fittings

**GROUP: K**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 40 | ** | 1933267004 | 1 | pc. |
| 50 | ** | 1933267005 | 1 | pc. |
| 63 | ** | 1933267006 | 1 | pc. |
| 75 | ** | 1933267007 | 1 | pc. |
| 90 | ** | 1933267008 | 1 | pc. |
| 110 | ** | 1933267002 | 1 | pc. |

**Note:**
The set includes a female and male socket and a mounting bolt (Allen).
Heating sockets for saddle fittings are not included in heating sets: 1933267078, 1933267079.

## Drill bit for mounting saddle fittings

**GROUP: K**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 25 | | 1933267038 | 1 | pc. |

## Heating sockets

**GROUP: K**

| Size [mm] | * | Code | | UM |
|---|---|---|---|---|
| 16 | | 1933267011 | 1 | pc. |
| 20 | | 1933267013 | 1 | pc. |
| 25 | | 1933267015 | 1 | pc. |
| 32 | | 1933267017 | 1 | pc. |
| 40 | | 1933267019 | 1 | pc. |
| 50 | | 1933267021 | 1 | pc. |
| 63 | | 1933267023 | 1 | pc. |
| 75 | | 1933267025 | 1 | pc. |
| 90 | | 1933267027 | 1 | pc. |
| 110 | | 1933267009 | 1 | pc. |

**Note:**
The heating sockets are intended for electric welding machines.

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