
# K2-KAN

## PP EXTERNAL SEWAGE SYSTEM

Kaczmarek

## K2-KAN PIPES AND FITTINGS SYSTEM
INTRODUCTION

The **K2-Kan** system of polypropylene (**PP**) structured double-wall pipes for sewers. Searching for optimum solutions in construction of gravitational buried sewers and taking into account current works trends in production of plastic pipes, we have launched PP structured double-wall pipes and fittings that meet high technical requirements and are truly the **21st century** products.

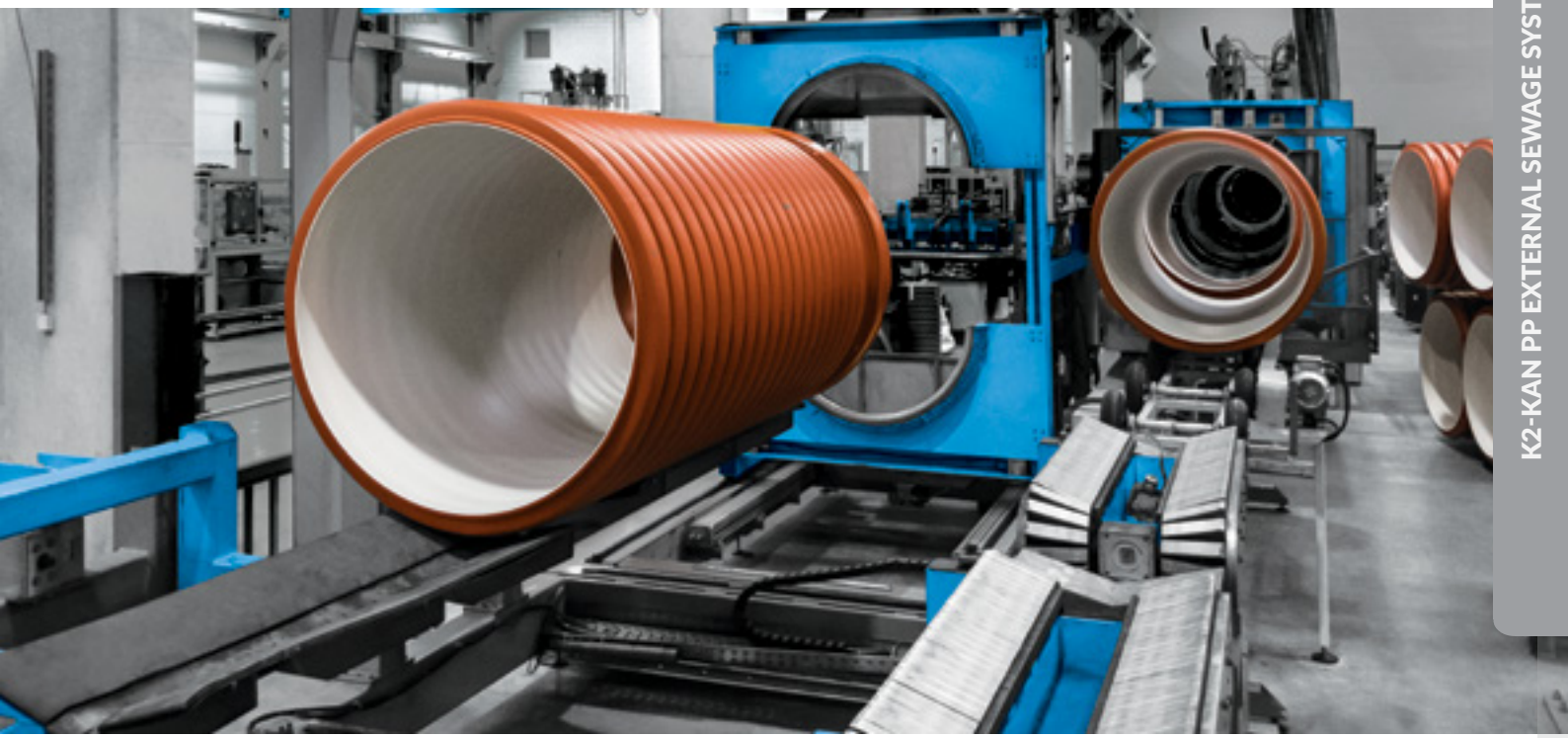
In terms of properties and possibility to conduct earthworks and lay the pipes in the ground, the **K2-Kan** pipe and fitting system is the optimal sewer system allowing the forecast that sanitary, storm, combined or industrial sewers buried under heavy-traffic roads or other areas will be in use for at least **100 years**, and the CAPEX will be optimal.

## K2-KAN PIPES AND FITTINGS SYSTEM
PRODUCT CHARACTERISTICS

In accordance with **PN-EN 13476-3**, the **K2-Kan** system pipes are qualified as **class B** structured (profiled) pipes. A new feature in their design is the fact that the outer wall has additional chevron-type reinforcements on top of the low wide rib which absorb point loads directly to the outer wall causing its deformation and not allowing a deformation of the inner wall.

In addition, the outer wall has a shape of low and wide wave with narrow grooves, and the last groove has an elastomer seal for connection. Such pipe design ensures a favourable increase of circumferential stiffness relative to the increase of outer wall thickness, while the inner wall thickness remains constant. Depending on the outer wall thickness, the circumferential stiffness of **SN = (4÷16) kN/m²** can be achieved.

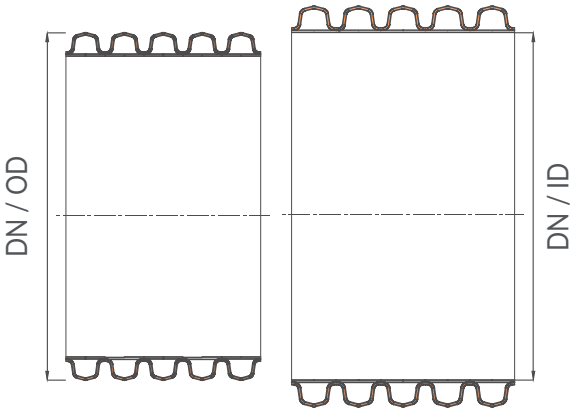
All **B-type** structured wall pipes (corrugated or profiled) have a very developed wall height in comparison to smooth-wall pipes (solid, foamed or other **A-type** structured wall pipes) and a relatively low wall thickness (which varies depending on circumferential stiffness) does not have that important impact on internal diameter and hydraulic calculations.



The **K2-Kan** pipes (**DN/ID** and **DN/OD**) are manufactured by co-extrusion in which two independent single-screw systems plasticize the PP granulate (of varying colours, but similar properties) which is fed to the head forming both pipes coaxially at the same time.

The inner pipe is smooth-wall, and the outer pipe has a wavy (**corrugated**) wall formed by a puller device. Both pipes are connected to each other during the hot-forming process by means of pressure, forming a two-layer, well welded wall in connection points. The smooth inner wall is light-grey, while the corrugated outer wall is orange-brown ( **DN/ID 150 - 600**) and black ( **DN/ID 800 - 1000** ), and light orange for **DN/OD 160 - 400**. The main advantage of such pipes lies in the fact that they combine a light weight and a high circumferential stiffness. The polypropylene **K2-Kan** system pipes usually have circumferential stiffness of **SN 8 kN/m²** acc. to **PN-EN ISO 9969** (whereas acc. to **DIN 16961** this stiffness is min. **31,5 kN/m²** ) and **SN 10 kN/m²** , **SN 12 kN/m²**, **SN 16 kN/m²**.

A comparison of pipes in which nominal dimension is referred to the inside diameter (**DN/ID**) with pipes in which the nominal dimension is referred to the outside diameter (**DN/OD**).



# PRODUCTION OF PP K2-KAN PIPES

## RAW MATERIAL

The **K2-Kan** pipes are made of polypropylene (**PP**), a thermoplastic, included along with polyethylene polybutene, in the polyolefin group made from semi-finished products obtained during the oil processing.

Polypropylene for **K2-Kan** pipes is made of propylene (gaseous hydrocarbon form) with the use of a catalyst in the process of block copolymerization. Hence, this material is also called a propylene block copolymer and designated as **PP-B**.

The material has valuable advantages which include:

- **High chemical resistance** – resistance to municipal household wastewater, from acidic (**pH2**) to alkaline (**pH12**), rainwater and groundwater polluted with organic compounds, and good resistance to a high content of chemicals in industrial wastewater. It however has a limited resistance to some solvents, however still significantly higher than PVC-U and PE. Polypropylene is particularly suitable for use in areas polluted with chemicals, on municipal and industrial landfills where effluents are very aggressive.

- **Resistance to high municipal wastewater temperature** – continuous temperature of transported wastewater can be as high as **95°C**, which in practice means that there are no limitations in that regard. .

- **High impact strength** – it can be assumed that perceptible brittleness occurs only below **-20°C**. Above that temperature there are no contraindications for pipe transport and laying. It is an important advantage in our climatic conditions where temperatures below **-20°C** are very rare and caution is required in such cases.

- **High modulus of elasticity** – much higher than that of PE (but lower than PVC-U) results in high circumferential stiffness, both short- and long-term.

- **High resistance to ageing** – both in natural conditions and in artificial conditions (accelerated ageing).

## K2-KAN PIPES AND FITTINGS SYSTEM
100-YEAR DURABILITY FORECAST

The longest experience with natural ageing of plastic pipes is for polyvinyl chloride pipes, and covers about 70 years in Germany. The experience with polypropylene pipes in Europe is for the period of 40 years.

There are however methods of accelerated ageing in laboratory conditions and by comparing the lab test results with natural ageing, the forecast life of PP buried pipes should be at least **100 years**. This means that the design of PP **K2-Kan** sewer system must be uniform, without any "weak spots" made of traditional material which could deteriorate earlier or fail to meet the tightness conditions. The longer life of the **K2-Kan** sewer system will also make your CAPEX payback period longer by amortization write-offs.

## K2-KAN PIPES AND FITTINGS SYSTEM
ENVIRONMENT

Waste generated during the pipe production is 100% recycled back to the process. There is no waste on constitution site, either, as any cut off pipe can be used by means of an additional connector. The buried pipes and fittings are chemically and biologically neutral to action of groundwater and resistant to aggressive wastewater, and are also leak-proof preventing the wastewater seeping to the ground. As already mentioned, polypropylene is 100% recycled, waste is not intended for incineration or landfilling, however an (accidental) burning does not cause the emission of gases harmful to health or the environment.

# K2-KAN SYSTEM ADVANTAGES

## PRODUCT CHARACTERISTICS

The **K2-Kan** pipe and fitting system is based is based on **2**, **3** and **6 m** K**2-Kan** pipes (other lengths to be agreed). Regardless of the length, each pipe has a socket on one end, and a seal in the last grove on the other end. Our range includes also spigot pipes (without sockets) to be connected by means of double-socket fittings.

**K2-Kan** pipes have both walls independently mass-coloured in a very clear and uniform way. The outer walls are orange-brown (**DN160 - DN 60**0) and black (**DN800 - DN1000**) adapted to the generally used colour of buried sewers. The inner walls are light-grey for a good reflection during the inspection of buried pipes by means of CCTV or video cameras passing through the pipe.

During correctly performed earthworks, the pipeline deflection should not exceed **3-4%** of the pipe cross section deformation. In design practice, maximum pipe deflection should not exceed **5%**. However, the maximum deflection of pipelines after completion of earthworks should not be greater than **8%**. Such deflection does not have any practical impact on the pipeline cross section reduction as the flow area of the deformed cross section will be above **99%**.

In addition, as a result of outer wall design the **K2-Kan** pipes feature a good stability at local point loads because the outer wall absorbs uneven loads by its deformation.

The **K2-Kan** pipes are intended for non-pressure gravity sewers, but they also have a good resistance to local water pressure during the high-pressure flushing (**120 bar**). Although the **K2-Kan** pipes are intended for non-pressure operation, the long-term pressure of **2,5 bar** does not cause any damage or limit the service life.

The internal surface of **K2-Kan** pipes is very smooth. The absolute surface roughness coefficient is **K=0,00011mm**. (test at the Main Mining Institute in Katowice, Poland). Smooth internal walls dot not favour the depositing of heavier factions as a result of sedimentation. The **K2-Kan** pipes are self-cleaning.

It can be said that such smooth walls will ensure a very good flow, and the required slopes will be minimal. The system of fittings also contributes to this fact as it does not cause an additional excessive hydraulic resistance because the fittings do not have natural barriers to reduce the flow speed. Smooth surfaces reduce the need for subsequent sewer maintenance by means of sporadic cleaning. In addition, the number of necessary inspection manholes for introducing the cleaning equipment is reduced.

The **K2-Kan** pipes are very easy to manoeuvre between the struts of excavation formwork. The press-in connections with elastomer seals are also very easy to make, even in deep excavations, particularly in areas with shallow groundwater where the groundwater level must be lowered for duration of excavations and works can be performed in short sections only.

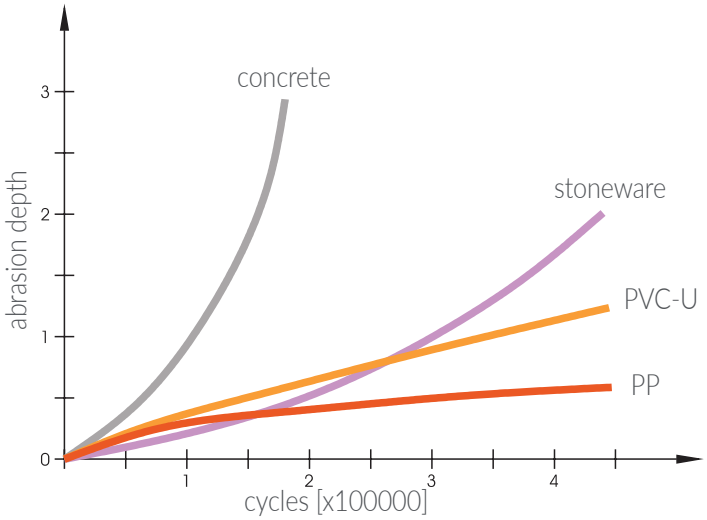
Very smooth inside walls of the **K2-Kan** pipes allow laying pipelines with less slope, and also at lesser depths. This has a decisive impact on construction costs. And in case of difficult soil conditions it affect the decision: build a wastewater pumping station which has high operating costs, or build a gravity system with less slope without a significant risk for its correct operation?

Pipes are lightweight, so the construction of buried pipelines is easier. The **K2-Kan** pipes are **2-3** times lighter than smooth-wall pipes, and **15-20** times lighter than stoneware or concrete pipes.

It is estimated that thanks to light weight and easy connecting of the pipes, the estimated savings on labour during construction works should be **20-30%**. The earthworks and installation works during the laying of **K2-Kan** pipes should conform to **PN-EN 1610** and **PN-EN 1046**.

## K2-KAN PIPES AND FITTINGS SYSTEM
### ABRASION RESISTANCE

Wastewater, particularly surface runoff that washes away salt and sand spread on the roads on which in winter, contains significant amounts of sharp sand. **Construction Institute in Darmstadt**, Germany developed a method to compare pipes made of different materials. The method is described in **DIN V 19534-2:1992**. The test involves making a **1-m** long trough (a half-pipe) of a given material. Then the trough is filled with water containing quartz sand and gravel of specific grain size and specific mutual proportions. After sealing it on the top, the trough is inclined in a pendulum movement at **±22,5°** at the rate of **20** inclinations per minute. The abrasion is measured after 100 thousand and more of such test cycles. The tests conducted for various materials have shown that PP pipes have the least abrasion, lower than PVC-U and stoneware pipes. In comparison to concrete pipes, the abrasion is even a few times lower. Consequently, the inner wall thickness of **K2-Kan** pipes ensures tightness and long service life.




## K2-KAN SYSTEM ADVANTAGES
### USE WITH OTHER SYSTEMS

The supplementary accessories include **DIAMIR 400**, **400K**, **425**, **600**, **800** and **1000** manholes with sockets adapted for connection with the **K2-Kan** pipe and fitting system. The pipes are joined and connected to the **DIAMIR** manholes by pressing the pipe end with a seal into the smooth (inside) socket of the other pipe. The dimensions of **K2-Kan** pipes ensure absolute tightness of sealed joints ensure at a **0,3 bar** overpressure, practically preventing any wastewater exfiltration or groundwater infiltration to the sewer. Pipeline deflection up to **10%** of inside diameter do not affect the tightness. The socket sealing system has a significant reserve resulting from linear expansion of pipelines.

In practice, it is believed that the socket length is only in **30%** used for expansion joints as a result of maximum temperature changes. The socket lengths are however sufficient to use the **K2-Kan** pipes on the mining damage areas according to the **opinion of the Main Mining Institute in Katowice**, Poland. The check comprises: **pipeline laying correctness** (even slopes, absence of pockets causing wastewater deposits, possible failures, and absence of additional connections of service pipes and or inflows, such as surface runoff, to the sewer system. The **K2-Kan** have a high circumferential stiffness and can be used to build sewers at depths from **0,8 m** to **8 m** in areas without load, and under roads with maximum dynamic load of **SLW 60**. It is important to use suitable soil in the pipeline zone and compact it correctly to prevent an excessive pipeline deformation, particularly at large loads.

Due to high circumferential stiffness, resistance to low temperatures and the outer wall design, the **K2-Kan** pipes are a perfect choice for road culvers. The detailed information of making culvers with plastic pipes are included in the **"Design and process recommendations for flexible road engineering structures made of plastics**". According to these recommendations the pipe should rest on a continuous footing or cement-stabilized soil. If case of low native soil strength, the footing should be reinforced with geosynthetics. The minimum continuous footing height should be **30 cm**, and its compaction ratio should be **0,98** acc. to standard Proctor test. A sand bedding shall be made direly under the laid pipe. The minimum bedding thickness must be **15 cm**. The top bedding layer, min. **5 cm**, must be loose, so that the pipe corrugation can easily penetrate into it. The bottom bedding layer must be compacted to **0,98** acc. to standard Proctor test.

The backfill (to the pipe surface level) is made of aggregate conforming to P**N-S-02205:1998** and **PN-B-11112:1996**. The backfill should be made in layers of **30 cm** maximum thickness and compacted – directly near the pipe to **0,95**, and in the remaining space to **0,98** w acc. to standard Proctor test. The backfill should not include lumps, agglomeration, or frozen soil.

The backfill above the pipe should be made of frost-resistant aggregate of the **0-40 mm** grain size, at least to **15-30 cm** above the top pipe surface. Its required that the maximum diameter of aggregate grains does not exceed the corrugation pitch on the outer wall. The overburden height is the distance from the pipe top to the road grade line. The minimum overburden height depends on the pipe diameter. For **600-1000 mm** dia pipes it is **0,5 m**; for pipes below **600 mm** it is **0,3 m**, although **0,2 m** is allowed on driveways. If the road structural layers are too thick, the overburden can be reduced to **0,1 m** (static calculations must be made). The overburden height can be additionally reduced by using a reinforced-concrete relieve slab or by reinforcing the backfill with a geogrid with rigid nodes.

According to the "***Design and process recommendations for flexible road engineering structures made of plastics***" the culvers with plastic pipes with circumferential stiffness of at least **8 kN/m²** can be made under all types of roads.

# K2-KAN PIPES AND FITTINGS SYSTEM
## STANDARDS, APPROVALS, TESTS

PN-EN 13476-3+Al:2009 - Plastics piping systems for non-pressure underground drainage and sewerage. Structured-wall piping systems of unplasticized poly(vinyl chloride) (PVC-U), polypropylene (PP) and polyethylene (PE). Specifications for pipes and fittings with smooth internal and profiled external surface and the system, Type B

PN-EN 476:2012 - General requirements for components used in drains and sewers

PN-EN 681-1:2002 - Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Part 1: Rubber

ITB-KOT-2017/0120 edition 1 – National technical evaluation by the Building Technology Institute for the product: Kaczmarek PP sewerage pipes and fittings and K2-Kan polypropylene (PP) sewerage pipes and fittings.

AT/07-2016-0241-01 – Technical Approval by the Railway Institute in Warsaw for the product: K2-Kan, sewerage, and casing pipes of structured (double) walls and corrugated (single-wall) pipes made of polypropylene (PP) or high-density polyethylene (PE).

Technical Opinion of the Main Mining Institute in Katowice of 30.06.2008 – on using the PE PP structured wall pipes in areas affected by mining operations

Current national declaration of performance is available at www.kaczmarek2.pl/pliki


Tests in **in-house laboratory** are carried out at all production stages, beginning from granulate inspection in accordance with its quality certificate, through the entire production process, to the end product. We check the storage conditions and offer our own transport of pipes and fittings to wholesalers or directly to the construction site in case of a larger purchase order. The document "Instructions for design and construction of buried sewers made of **K2-Kan** polypropylene (**PP**) pipes" is supplied along with the product.

According to **PN-EN 13476-3+Al:2009**; the **K2-Kan** pipes and fittings should meet the following requirements:

- Testing the effects of heating at temp. **150°C** for **30-60 min**. on change of appearance of **K2-Kan** pipes and fittings: no blistering or delamination should appear
- Determination of circumferential stiffness at the **30%** deformation of inside diameter
- Check of dimensions and appearance acc. to the manufacturer's documentation
- Check of circumferential flexibility. At normal temperature the pipe deformed to **30%** of its inside diameter should not crack and no scratches or wall delamination should appear
- Tightness check of socket joints with elastomer sealing ring (seal) – test is conducted at normal water temperature at low pressure (**0,05 bar**), increased pressure (**0,5 bar**) and at air vacuum (**-0,3 bar**) for straight socket joints and joints with **2°** angular deviation
- Impact test: drop test of pipes preconditioned at **0°C** on a hard surface

Strict supervision over quality of our products at Kaczmarek is ensured by the **ISO 9000** -compliant quality system certified by **TŰV-Rheinland and Office of Technical Inspection**. The **ISO 14001** environmental standards are rigorously observed at our company. All waste generated during the production of pipes and fittings is recycled back to the process.

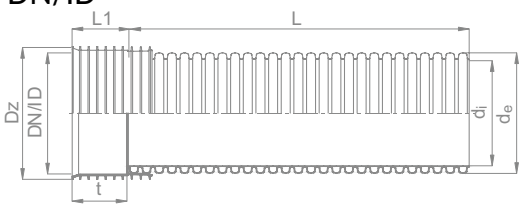
## Sewer corugated pipe DN/ID

PP K2-Kan with socket and seal

**SN 8**

Colour: ● , ● - selected dimensions

Standards: PN-EN 13476-3, Technical Opinion dated 30.06.2008 by GIG Katowice




| Dimension ( DN/ID x **L** ) [ mm ] | Index | $d_i$ | $d_e$ | $D_z$ | $L_1$ | t |
|---|---|---|---|---|---|---|
| 150 x 3000 | 0922343300 | 150 | 171 | 192 | 86 | 82 |
| 150 x 6000 | 0922343600 | 150 | 171 | 192 | 86 | 82 |
| 200 x 3000 | 0922543300 | 200 | 225 | 254 | 110 | 101 |
| 200 x 6000 | 0922543600 | 200 | 225 | 254 | 110 | 101 |
| 250 x 3000 | 0922743300 | 250 | 282 | 317 | 135 | 125 |
| 250 x 6000 | 0922743600 | 250 | 282 | 317 | 135 | 125 |
| 300 x 3000 | 0922943300 | 300 | 340 | 376 | 158 | 149 |
| 300 x 6000 | 0922943600 | 300 | 340 | 376 | 158 | 149 |
| 400 x 3000 | 0923143300 | 400 | 455 | 499 | 214 | 208 |
| 400 x 6000 | 0923143600 | 400 | 455 | 499 | 214 | 208 |
| 500 x 3000 | 0923343300 | 500 | 569 | 615 | 268 | 247 |
| 500 x 6000 | 0923343600 | 500 | 569 | 615 | 268 | 247 |
| 600 x 3000 | 0923543300 | 600 | 683 | 731 | 309 | 278 |
| 600 x 6000 | 0923543600 | 600 | 683 | 731 | 309 | 278 |
| 800 x 3000 ● | 0923749300 | 800 | 905 | 970 | 395 | 372 |
| 800 x 6000 ● | 0923749600 | 800 | 905 | 970 | 395 | 372 |
| 1000 x 3000 ● | 0923949300 | 1000 | 1135 | 1212 | 480 | 455 |
| 1000 x 6000 ● | 0923949600 | 1000 | 1135 | 1212 | 480 | 455 |

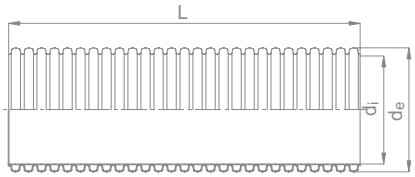
## Sewer corugated pipe DN/ID

PP K2-Kan without socket and seal

**SN 8**

Colour: ● , ● - selected dimensions

Standards: PN-EN 13476-3




| Dimension ( DN/ID x **L** ) [ mm ] | Index | $d_i$ | $d_e$ |
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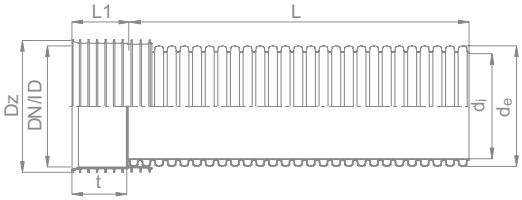
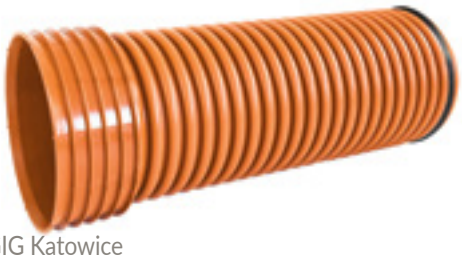
| 200 x 6000 | 0942543600 | 200 | 225 |
| 250 x 6000 | 0942743600 | 250 | 382 |
| 300 x 6000 | 0942943600 | 300 | 340 |
| 400 x 6000 | 0943143600 | 400 | 455 |
| 500 x 6000 | 0943343600 | 500 | 569 |
| 600 x 6000 | 0943543600 | 600 | 683 |
| 800 x 6000 ● | 0943749600 | 800 | 905 |
| 1000 x 6000 ● | 0943949600 | 1000 | 1135 |

## Sewer corugated pipe DN/ID

PP K2-Kan with socket and seal
**SN 10***
Colour: ● , ● - selected dimensions
Standards: PN-EN 13476-3,
ITB-KOT-2017/0120 edition 1, Technical Opinion dated 30.06.2008 by GIG Katowice



| Dimension ( DN/ID x **L** ) [ mm ] | Index | $d_i$ | $d_e$ | $D_z$ | $L_1$ | t |
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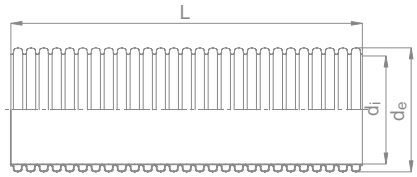
| 150 x 6000 | 0922353600 | 150 | 171 | 192 | 86 | 82 |
| 200 x 3000 | 0922553300 | 200 | 225 | 254 | 110 | 101 |
| 200 x 6000 | 0922553600 | 200 | 225 | 254 | 110 | 101 |
| 250 x 3000 | 0922753300 | 250 | 282 | 317 | 135 | 125 |
| 250 x 6000 | 0922753600 | 250 | 282 | 317 | 135 | 125 |
| 300 x 3000 | 0922953300 | 300 | 340 | 376 | 158 | 149 |
| 300 x 6000 | 0922953600 | 300 | 340 | 376 | 158 | 149 |
| 400 x 3000 | 0923153300 | 400 | 455 | 499 | 214 | 208 |
| 400 x 6000 | 0923153600 | 400 | 455 | 499 | 214 | 208 |
| 500 x 3000 | 0923353300 | 500 | 569 | 615 | 268 | 247 |
| 500 x 6000 | 0923353600 | 500 | 569 | 615 | 268 | 247 |
| 600 x 3000 | 0923553300 | 600 | 683 | 731 | 309 | 278 |
| 600 x 6000 | 0923553600 | 600 | 683 | 731 | 309 | 278 |
| 800 x 3000 ● | 0923759300 | 800 | 905 | 970 | 395 | 372 |
| 800 x 6000 ● | 0923759600 | 800 | 905 | 970 | 395 | 372 |
| 1000 x 3000 ● | 0923959300 | 1000 | 1135 | 1212 | 480 | 455 |
| 1000 x 6000 ● | 0923959600 | 1000 | 1135 | 1212 | 480 | 455 |

## Sewer corugated pipe DN/ID

PP K2-Kan without socket and seal

**SN 10***
Colour: ● , ● - selected dimensions

Standards: PN-EN 13476-3,
ITB-KOT-2017/0120 edition 1



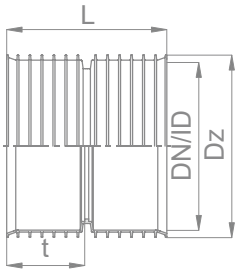

| Dimension ( DN/ID x **L** ) [ mm ] | Index | $d_i$ | $d_e$ |
|---|---|---|---|
| 150 x 6000 | 0942343600 | 150 | 171 |
| 200 x 6000 | 0942543600 | 200 | 225 |
| 250 x 6000 | 0942743600 | 250 | 382 |
| 300 x 6000 | 0942943600 | 300 | 340 |
| 400 x 6000 | 0943143600 | 400 | 455 |
| 500 x 6000 | 0943343600 | 500 | 569 |
| 600 x 6000 | 0943543600 | 600 | 683 |
| 800 x 6000 ● | 0943749600 | 800 | 905 |
| 1000 x 6000 ● | 0943949600 | 1000 | 1135 |

* **SN 12 i SN 16 pipes are** made to order after consultations with manufacturer

## PP coupling

K2-Kan
without seal
Colour: ● , ● - selected dimensions

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1




| Dimension ( DN/ID ) [ mm ] | Index | $D_z$ | L | t |
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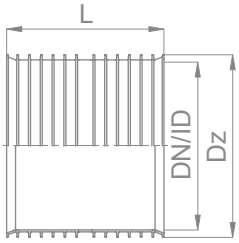
| 250 | 1003273000 | 317 | 270 | 125 |
| 300 | 1003293000 | 376 | 315 | 149 |
| 400 | 1003313000 | 499 | 427 | 208 |
| 500 | 1003333000 | 615 | 536 | 247 |
| 600 | 1003353000 | 731 | 618 | 278 |
| 800 ● | 1003373000 | 970 | 794 | 372 |
| 1000 ● | 1003393000 | 1212 | 972 | 455 |

## PP sleeve

K2-Kan
without seal
Colour: ● , ● - selected dimensions

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1




| Dimension ( DN/ID ) [ mm ] | Index | $D_z$ | L |
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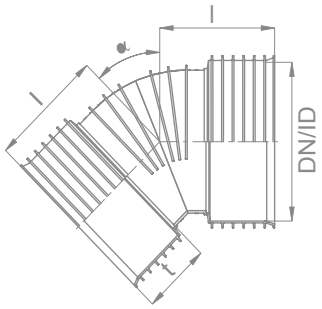
| 200 | 1001253000 | 254 | 220 |
| 250 | 1001273000 | 317 | 270 |
| 300 | 1001293000 | 376 | 315 |
| 400 | 1001313000 | 499 | 427 |
| 500 | 1001333000 | 615 | 437 |
| 600 | 1001353000 | 731 | 508 |
| 800 ● | 1001373000 | 970 | 657 |
| 1000 ● | 1001393000 | 1212 | 817 |

## PP bend

K2-Kan
without seal
double socket
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1




| Dimension ( DN/ID \| α ) [ mm ] | Index | l | t |
|---|---|---|---|
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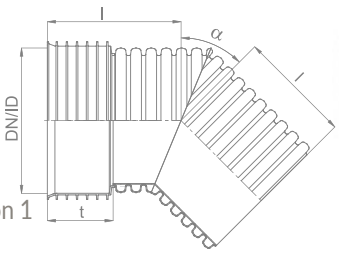
| 150 / 30° | 1012243300 | 119 | 83 |
| 150 / 45° | 1012243450 | 130 | 83 |
| 150 / 90° | 1012243900 | 182 | 83 |
| 200 / 15° | 1012253150 | 144 | 101 |
| 200 / 30° | 1012253300 | 152 | 101 |
| 200 / 45° | 1012253450 | 170 | 101 |
| 200 / 90° | 1012253900 | 215 | 101 |
| 250 / 15° | 1012273150 | 176 | 125 |
| 250 / 30° | 1012273300 | 192 | 125 |
| 250 / 45° | 1012273450 | 210 | 125 |
| 250 / 90° | 1012273900 | 273 | 125 |
| 300 / 15° | 1012293150 | 225 | 149 |
| 300 / 30° | 1012293300 | 245 | 149 |
| 300 / 45° | 1012293450 | 268 | 149 |
| 300 / 90° | 1012293900 | 310 | 149 |
| 400 / 15° | 1012313150 | 290 | 208 |
| 400 / 30° | 1012313300 | 317 | 208 |
| 400 / 45° | 1012313450 | 347 | 208 |
| 400 / 90° | 1012313900 | 404 | 208 |
| 500 / 15° | 1012333150 | 417 | 247 |
| 500 / 30° | 1012333300 | 451 | 247 |
| 500 / 45° | 1012333450 | 550 | 247 |
| 500 / 90° | 1012333900 | 620 | 247 |
| 600 / 15° | 1012353150 | 450 | 278 |
| 600 / 30° | 1012353300 | 494 | 278 |
| 600 / 45° | 1012353450 | 650 | 278 |
| 600 / 90° | 1012353900 | 735 | 278 |
| 800 / 15° | 1012373150 | 580 | 372 |
| 800 / 30° | 1012373300 | 620 | 372 |
| 800 / 45° | 1012373450 | 730 | 372 |
| 800 / 90 ° | 1012373900 | 950 | 372 |

## PP bend

K2-Kan
without seal
single socket
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

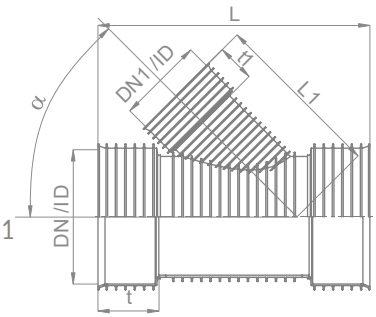



| Wymiar ( DN/ID \| α ) [ mm ] | Indeks | l | t |
|---|---|---|---|
| 1000 / 15° | 1012393150 | 710 | 455 |
| 1000 / 30° | 1012393300 | 790 | 455 |
| 1000 / 45° | 1012393450 | 930 | 455 |
| 1000 / 90 ° | 1012393900 | 1180 | 455 |

## PP branch 45 °

K2-Kan
without seal
Colour:

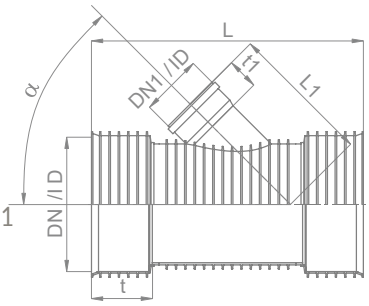
Standards: PN-EN 13476-3,, ITB-KOT-2017/0120 edition 1
Other dimensions available on request after consultations with manufacturer




| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Indeks | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 150 / 150 | 1022153455 | 449 | 83 | 298 | 82 |
| 200 / 150 | 1022183455 | 487 | 101 | 312 | 82 |
| 200 / 200 | 1022193450 | 549 | 101 | 387 | 101 |
| 250 / 200 | 1022233450 | 714 | 125 | 426 | 101 |
| 250 / 250 | 1022243450 | 857 | 125 | 614 | 125 |
| 300 / 200 | 1022283450 | 752 | 149 | 453 | 101 |
| 300 / 250 | 1022293450 | 899 | 149 | 650 | 125 |
| 300 / 300 | 1022303450 | 973 | 149 | 708 | 149 |
| 400 / 200 | 1022343450 | 896 | 208 | 644 | 101 |
| 400 / 250 | 1022353450 | 1013 | 208 | 727 | 125 |
| 400 / 300 | 1022363450 | 1087 | 208 | 784 | 149 |
| 400 / 400 | 1022373450 | 1244 | 208 | 918 | 208 |
| 500 / 200 | 1022413450 | 1006 | 247 | 720 | 101 |
| 500 / 250 | 1022423450 | 1123 | 247 | 802 | 125 |
| 500 / 300 | 1022433450 | 1197 | 247 | 860 | 149 |
| 500 / 400 | 1022443450 | 1354 | 247 | 993 | 208 |
| 600 / 200 | 1022493450 | 1088 | 278 | 791 | 101 |
| 600 / 250 | 1022503450 | 1205 | 278 | 873 | 125 |
| 600 / 300 | 1022513450 | 1279 | 278 | 931 | 149 |
| 600 / 400 | 1022523450 | 1436 | 278 | 1064 | 208 |
| 800 / 300 | 1022603450 | 1455 | 372 | 1071 | 149 |
| 1000 / 300 | 1022703450 | 1633 | 455 | 1286 | 149 |

## PP branch 45 °

K2-Kan
without seal
with connection for smooth pipe
Colour:
Standards: PN-EN 13476-3,, ITB-KOT-2017/0120 edition 1
Other dimensions available on request after consultations with manufacturer

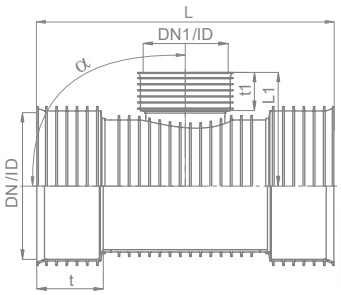



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Indeks | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 150 / 160 | 1020153455 | 449 | 83 | 294 | 82 |
| 200 / 160 | 1020183450 | 487 | 101 | 308 | 82 |
| 200 / 200 | 1020193450 | 549 | 101 | 378 | 101 |
| 250 / 160 | 1020223450 | 714 | 125 | 344 | 101 |
| 250 / 200 | 1020233450 | 714 | 125 | 380 | 125 |
| 250 / 250 | 1020243450 | 833 | 125 | 585 | 101 |
| 300 / 160 | 1020273450 | 752 | 149 | 380 | 125 |
| 300 / 200 | 1020283450 | 752 | 149 | 416 | 149 |
| 300 / 250 | 1020293450 | 875 | 149 | 621 | 101 |
| 400 / 160 | 1020333450 | 818 | 208 | 632 | 125 |
| 400 / 200 | 1020343450 | 876 | 208 | 627 | 149 |
| 400 / 250 | 1020353450 | 989 | 208 | 697 | 208 |
| 500 / 160 | 1020403450 | 928 | 247 | 708 | 101 |
| 500 / 200 | 1020413450 | 986 | 247 | 703 | 125 |
| 500 / 250 | 1020423450 | 1099 | 247 | 773 | 149 |
| 600 / 160 | 1020483450 | 1010 | 278 | 779 | 208 |
| 600 / 200 | 1020493450 | 1068 | 278 | 774 | 101 |
| 600 / 250 | 1020503450 | 1181 | 278 | 844 | 125 |
| 800 / 200 | 1020583450 | 1244 | 372 | 914 | 149 |
| 1000 / 200 | 1020683450 | 1422 | 455 | 1129 | 208 |

## PP branch 90 °

K2-Kan
without seal
Colour:

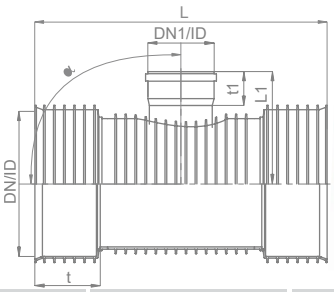
Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1
Other dimensions available on request after consultations with manufacturer




| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 150 / 150 | 1022153905 | 449 | 82 | 200 | 82 |
| 200 / 150 | 1022183905 | 497 | 101 | 200 | 82 |
| 200 / 200 | 1022193900 | 487 | 101 | 218 | 101 |
| 250 / 200 | 1022233900 | 650 | 125 | 275 | 101 |
| 250 / 250 | 1022243900 | 700 | 125 | 300 | 125 |
| 300 / 200 | 1022283900 | 700 | 149 | 300 | 101 |
| 300 / 250 | 1022293900 | 750 | 149 | 325 | 125 |
| 300 / 300 | 1022303900 | 800 | 149 | 350 | 149 |
| 400 / 200 | 1022343900 | 800 | 208 | 350 | 101 |
| 400 / 250 | 1022353900 | 850 | 208 | 375 | 125 |
| 400 / 300 | 1022363900 | 900 | 208 | 400 | 149 |
| 400 / 400 | 1022373900 | 1000 | 208 | 460 | 208 |
| 500 / 200 | 1022413900 | 900 | 247 | 315 | 101 |
| 500 / 250 | 1022423900 | 950 | 247 | 340 | 125 |
| 500 / 300 | 1022433900 | 1000 | 247 | 365 | 149 |
| 500 / 400 | 1022443900 | 1100 | 247 | 415 | 208 |
| 600 / 200 | 1022493900 | 1060 | 278 | 485 | 101 |
| 600 / 250 | 1022503900 | 1110 | 278 | 510 | 125 |
| 600 / 300 | 1022513900 | 1210 | 278 | 535 | 149 |
| 600 / 400 | 1022523900 | 1310 | 278 | 585 | 208 |
| 800 / 300 | 1022603900 | 1240 | 372 | 650 | 149 |
| 1000 / 300 | 1022703900 | 1410 | 455 | 750 | 149 |

## PP branch 90 °

K2-Kan
without seal
with connection for smooth pipe
Colour:
Standards: PN-EN 13476-3,, ITB-KOT-2017/0120 edition 1
Other dimensions available on request after
consultations with manufacturer

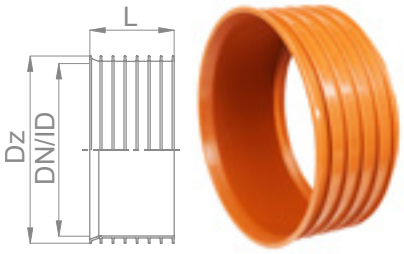



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 150 / 160 | 1020153905 | 449 | 82 | 202 | 77 |
| 200 / 160 | 1020183900 | 487 | 101 | 200 | 77 |
| 200 / 200 | 1020193900 | 487 | 101 | 218 | 92 |
| 250 / 160 | 1020223900 | 650 | 125 | 250 | 77 |
| 250 / 200 | 1020233900 | 650 | 125 | 265 | 92 |
| 250 / 250 | 1020243900 | 700 | 125 | 295 | 121 |
| 300 / 160 | 1020273900 | 700 | 149 | 290 | 77 |
| 300 / 200 | 1020283900 | 700 | 149 | 295 | 92 |
| 300 / 250 | 1020293900 | 750 | 149 | 325 | 121 |
| 400 / 160 | 1020333900 | 800 | 208 | 320 | 77 |
| 400 / 200 | 1020343900 | 800 | 208 | 335 | 92 |
| 400 / 250 | 1020353900 | 850 | 208 | 365 | 121 |
| 500 / 160 | 1020403900 | 900 | 247 | 380 | 77 |
| 500 / 200 | 1020413900 | 900 | 247 | 355 | 92 |
| 500 / 250 | 1020423900 | 950 | 247 | 420 | 121 |
| 600 / 160 | 1020483900 | 1060 | 278 | 440 | 77 |
| 600 / 200 | 1020493900 | 1060 | 278 | 455 | 92 |
| 600 / 250 | 1020503900 | 1110 | 278 | 480 | 121 |
| 800 / 200 | 1020583900 | 1140 | 372 | 595 | 92 |
| 1000 / 200 | 1020683900 | 1310 | 455 | 659 | 92 |

## PP Grommet

K2-Kan
without seal
through concrete manhole
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

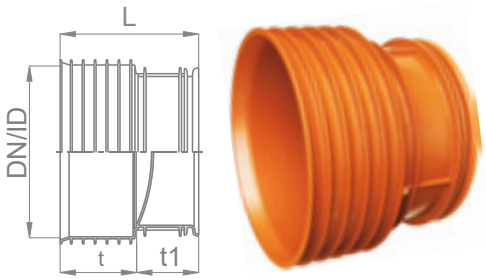



| Dimension ( DN/ID ) [ mm ] | Index | $D_z$ | L |
|---|---|---|---|
| 150 | 1049243000 | 192 | 110 |
| 200 | 1049253000 | 254 | 110 |
| 250 | 1049273000 | 317 | 131 |
| 300 | 1049293000 | 376 | 154 |
| 400 | 1049313000 | 499 | 209 |
| 500 | 1049333000 | 615 | 268 |
| 600 | 1049353000 | 731 | 309 |
| 800 | 1049373000 | 970 | 395 |
| 1000 | 1049393000 | 1212 | 480 |

## PP cap

K2-Kan
without seal
universal for socket or spigot
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

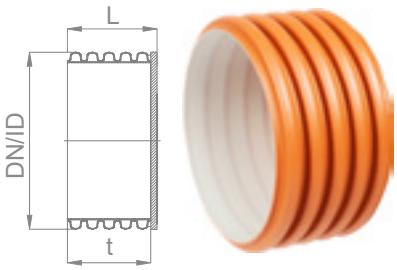



| Dimension ( DN/ID ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 150 | 1040243000 | 163 | 83 | 78 |
| 200 | 1040253000 | 197 | 101 | 96 |
| 250 | 1040273000 | 239 | 125 | 114 |
| 300 | 1040293000 | 283 | 148 | 135 |
| 400 | 1040313000 | 372 | 204 | 171 |
| 500 | 1040333000 | 480 | 233 | 228 |
| 600 | 1040353000 | 535 | 259 | 255 |

## PP cap

K2-Kan
without seal
external
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

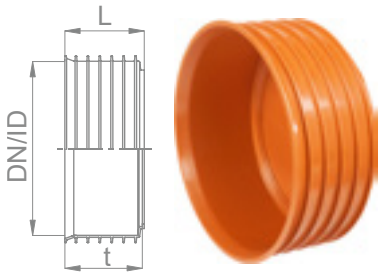



| Dimension ( DN/ID ) [ mm ] | Index | L | t |
|---|---|---|---|
| 800 | 1041373000 | 452 | 440 |
| 1000 | 1041393000 | 540 | 528 |

## PP cap

K2-Kan
without seal
gasket internal to socket
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

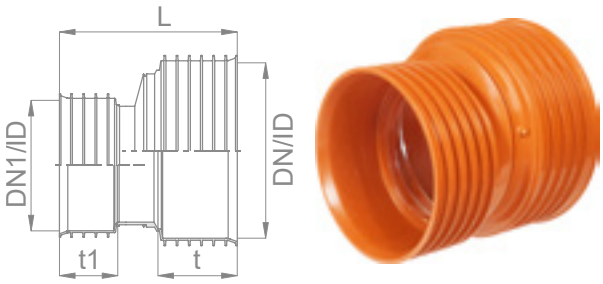



| Dimension ( DN/ID ) [ mm ] | Index | L | t |
|---|---|---|---|
| 800 | 1042373000 | 397 | 353 |
| 1000 | 1042393000 | 486 | 435 |

## PP eccentric reducer

K2-Kan
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

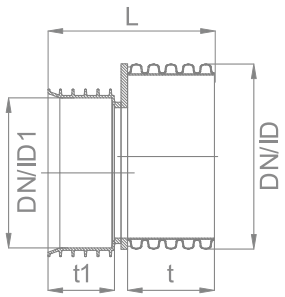



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 200 / 150 | 1030183500 | 224 | 101 | 83 |
| 250 / 200 | 1030233000 | 317 | 125 | 101 |
| 300 / 200 | 1030283000 | 278 | 149 | 101 |
| 300 / 250 | 1030293000 | 367 | 149 | 125 |
| 400 / 250 | 1030353000 | 493 | 208 | 125 |
| 400 / 300 | 1030363000 | 484 | 208 | 149 |
| 500 / 300 | 1030433000 | 436 | 247 | 149 |
| 500 / 400 | 1030443000 | 585 | 247 | 208 |
| 600 / 400 | 1030523000 | 534 | 278 | 208 |
| 600 / 500 | 1030533000 | 650 | 278 | 247 |
| 800 / 600 | 1030633000 | 718 | 372 | 278 |
| 1000 / 800 | 1030743000 | 895 | 455 | 372 |

## PP eccentric reducer

K2-Kan BK / K2-Kan
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

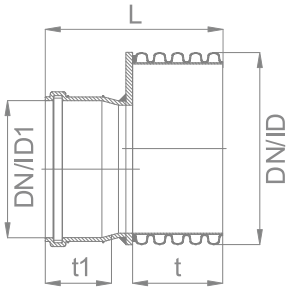



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 250 / 200 | 1032233000 | 314 | 132 | 101 |
| 300 / 200 | 1032283000 | 298 | 176 | 101 |
| 300 / 250 | 1032293000 | 387 | 176 | 125 |
| 400 / 250 | 1032353000 | 440 | 240 | 125 |
| 400 / 300 | 1032363000 | 511 | 240 | 149 |
| 500 / 300 | 1032433000 | 461 | 293 | 149 |
| 500 / 400 | 1032443000 | 610 | 293 | 208 |
| 600 / 400 | 1032523000 | 555 | 330 | 208 |
| 600 / 500 | 1032533000 | 671 | 330 | 247 |
| 800 / 600 | 1032633000 | 761 | 440 | 278 |
| 1000 / 800 | 1032743000 | 937 | 528 | 372 |

## PP eccentric reducer

K2-Kan BK / KG
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

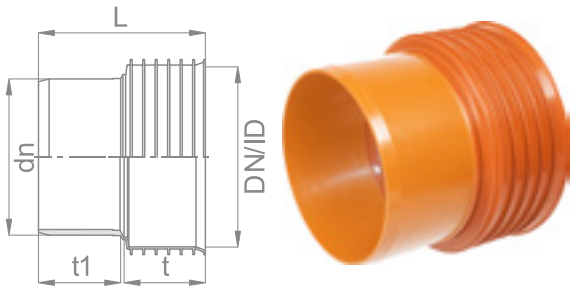



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 200 / 160 | 1034183000 | 212 | 110 | 90 |
| 250 / 160 | 1034223000 | 234 | 132 | 90 |
| 300 / 160 | 1034273000 | 278 | 176 | 90 |
| 400 / 160 | 1034333000 | 342 | 240 | 90 |
| 400 / 315 | 1034363000 | 407 | 240 | 155 |
| 500 / 160 | 1034403000 | 395 | 293 | 90 |
| 500 / 315 | 1034433000 | 460 | 293 | 155 |
| 600 / 160 | 1034483000 | 432 | 330 | 90 |
| 600 / 315 | 1034513000 | 497 | 330 | 155 |

## PP coupling for PVC socket

K2-Kan
without seal
single socket
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

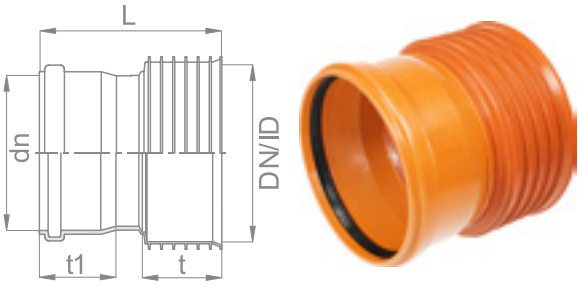



| Dimension ( DN/ID \| dn ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 150 / 160 | 1038243000 | 175 | 83 | 88 |
| 200 / 200 | 1038253000 | 226 | 101 | 102 |
| 250 / 250 | 1038273000 | 265 | 125 | 130 |
| 300 / 315 | 1038293000 | 314 | 149 | 155 |
| 400 / 400 | 1038313000 | 409 | 208 | 196 |
| 500 / 500 | 1038333000 | 502 | 247 | 218 |
| 600 / 630 | 1038353000 | 579 | 278 | 270 |

## PP coupling for PVC socket

K2-Kan
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

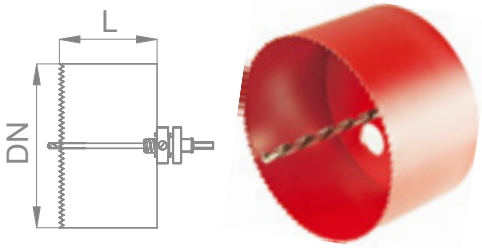



| Dimension ( DN/ID \| dn ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 150 / 160 | 1039243000 | 169 | 83 | 82 |
| 200 / 200 | 1039253000 | 235 | 101 | 92 |
| 250 / 250 | 1039273000 | 282 | 125 | 121 |
| 300 / 315 | 1039293000 | 328 | 149 | 140 |
| 400 / 400 | 1039313000 | 379 | 208 | 159 |
| 500 / 500 | 1039333000 | 475 | 247 | 172 |

## Hole saw with holder

for PP saddle connection
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

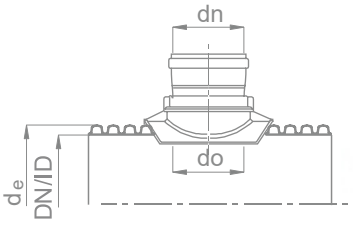



| Dimension ( DN/ID \| $DN_1$ ) [ mm ] | Index | L |
|---|---|---|
| 160 / 177 | 5191231100 | 90 |
| 200 / 214,5 | 5191253100 | 90 |

## PP Saddle conection

K2-Kan to smooth pipe ( KG )
mechanical connection
Colour: ●

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

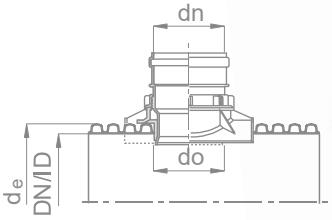



| Dimension ( DN/ID \| dn ) [ mm ] | Index | $d_e$ | $d_o$ |
|---|---|---|---|
| 250 - 160 | 1027223900 | 282 | 177 |
| 300 - 160 | 1027273900 | 340 | 177 |
| 300 - 200 | 1027283900 | 340 | 214,5 |
| 400 - 160 | 1027333900 | 455 | 177 |
| 400 - 200 | 1027343900 | 455 | 214,5 |
| 500 - 160 | 1027403900 | 569 | 177 |
| 500 - 200 | 1027413900 | 569 | 214,5 |
| 600 - 160 | 1027483900 | 683 | 177 |
| 600 - 200 | 1027493900 | 683 | 214,5 |
| 800 - 160 | 1027573900 | 905 | 177 |
| 800 - 200 | 1027583900 | 905 | 214,5 |
| 1000 - 160 | 1027673900 | 1135 | 177 |
| 1000 - 200 | 1027683900 | 1135 | 214,5 |

## Saddle 90 °

K2-Kan to smooth pipe( KG )
mechanical connection
Colour: ●

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1
* for custom orders




| Dimension ( DN/ID \| dn ) [ mm ] | Index | $d_e$ | $d_o$ |
|---|---|---|---|
| 250 - 200 * | 1028233900 | 282 | 200 |
| 300 - 200 * | 1028283900 | 340 | 200 |
| 400 - 200 * | 1028343900 | 455 | 200 |
| 500 - 200 * | 1028413900 | 569 | 200 |

## Rubber seal

Colour: ●


Standards: PN-EN 681, PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

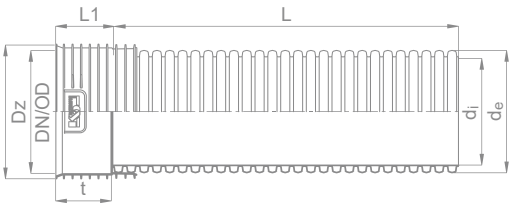
| Dimension ( DN ) [ mm ] | Index | H | B |
|---|---|---|---|
| 150 | 5131241010 | 11 | 10 |
| 200 | 5131251010 | 14 | 12 |
| 250 | 5131271010 | 17 | 14 |
| 300 | 5131291010 | 22 | 18 |
| 400 | 5131311010 | 31 | 27 |
| 500 | 5131331010 | 37 | 32 |
| 600 | 5131351010 | 45 | 35 |
| 800 | 5131371010 | 58 | 48 |
| 1000 | 5131391010 | 72 | 61 |

Oil-resistant seal made to order after consultations with manufacturer

## Sewer corugated pipe DN/OD

K2-Kan OD
with gasket, with socket
**SN 8**
Colour:

Standards: PN-EN 13476-3,
ITB-KOT-2017/0120 edition 1

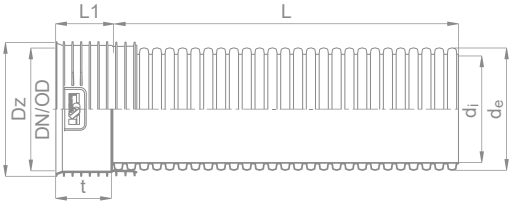



| Dimension ( DN/OD x **L** ) [ mm ] | Index | $d_i$ | $d_e$ | $D_z$ | $L_1$ | t |
|---|---|---|---|---|---|---|
| 160 x 3000 | 0912343300 | 137 | 160 | 182 | 90 | 82 |
| 160 x 6000 | 0912343600 | 137 | 160 | 182 | 90 | 82 |
| 200 x 3000 | 0912543300 | 175 | 200 | 225 | 104 | 97 |
| 200 x 6000 | 0912543600 | 175 | 200 | 225 | 104 | 97 |
| 250 x 3000 | 0912743300 | 219 | 250 | 281 | 120 | 113 |
| 250 x 6000 | 0912743600 | 219 | 250 | 281 | 120 | 113 |
| 315 x 3000 | 0912943300 | 276 | 315 | 350 | 142 | 135 |
| 315 x 6000 | 0912943600 | 276 | 315 | 350 | 142 | 135 |
| 400 x 3000 | 0913143300 | 346 | 400 | 439 | 214 | 208 |
| 400 x 6000 | 0913143600 | 346 | 400 | 439 | 214 | 208 |

## Sewer corugated pipe PP DN/OD

K2-Kan OD
with gasket, with socket
**SN 10** *
Colour:

Standards: PN-EN 13476-3



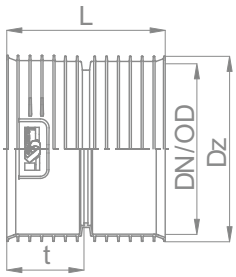

| Dimension ( DN/OD x **L** ) [ mm ] | Index | $d_i$ | $d_e$ | $D_z$ | $L_1$ | t |
|---|---|---|---|---|---|---|
| 160 x 3000 | 0912353300 | 137 | 160 | 182 | 90 | 82 |
| 160 x 6000 | 0912353600 | 137 | 160 | 182 | 90 | 82 |
| 200 x 3000 | 0912553300 | 175 | 200 | 225 | 104 | 97 |
| 200 x 6000 | 0912553600 | 175 | 200 | 225 | 104 | 97 |
| 250 x 3000 | 0912753300 | 219 | 250 | 281 | 120 | 113 |
| 250 x 6000 | 0912753600 | 219 | 250 | 281 | 120 | 113 |
| 315 x 3000 | 0912953300 | 276 | 315 | 350 | 142 | 135 |
| 315 x 6000 | 0912953600 | 276 | 315 | 350 | 142 | 135 |
| 400 x 3000 | 0913153300 | 346 | 400 | 439 | 214 | 208 |
| 400 x 6000 | 0913153600 | 346 | 400 | 439 | 214 | 208 |

* **SN 10** pipes made to order after consultations with manufacturer

## PP coupling

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

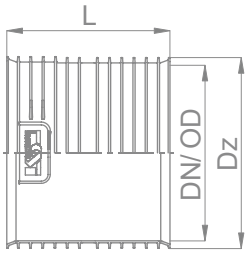



| Dimension ( DN/OD ) [ mm ] | Index | $D_z$ | L | t |
|---|---|---|---|---|
| 160 | 1000423300 | 182 | 167 | 82 |
| 200 | 1004253000 | 225 | 198 | 97 |
| 250 | 1004273000 | 281 | 231 | 113 |
| 315 | 1004293000 | 350 | 275 | 135 |
| 400 | 1004303000 | 439 | 409 | 202 |

## PP sleeve

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

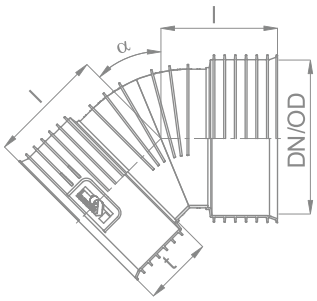



| Dimension ( DN/OD ) [ mm ] | Index | $D_z$ | L |
|---|---|---|---|
| 160 | 1002233000 | 182 | 167 |
| 200 | 1002253000 | 225 | 198 |
| 250 | 1002273000 | 281 | 231 |
| 315 | 1002293000 | 350 | 275 |
| 400 | 1002303000 | 439 | 409 |

## PP bend

K2-Kan OD
without seal
double socket
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

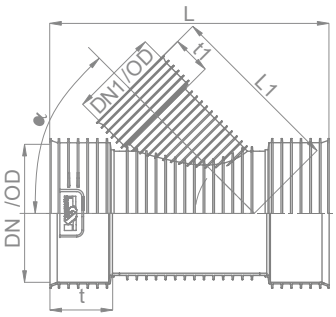



| Dimension ( **DN/OD** \| α ) [ mm ] | Index | **l** | **t** |
|---|---|---|---|
| 160 / 15° | 1013233150 | 106 | 82 |
| 160 / 30° | 1013233300 | 116 | 82 |
| 160 / 45° | 1013233450 | 126 | 82 |
| 160 / 90° | 1013233900 | 148 | 82 |
| 200 / 15° | 1013253150 | 138 | 101 |
| 200 / 30° | 1013253300 | 149 | 101 |
| 200 / 45° | 1013253450 | 163 | 101 |
| 200 / 90° | 1013253900 | 233 | 101 |
| 250 / 15° | 1013273150 | 161 | 117 |
| 250 / 30° | 1013273300 | 175 | 117 |
| 250 / 45° | 1013273450 | 192 | 117 |
| 250 / 90° | 1013273900 | 282 | 117 |
| 315/ 15° | 1013293150 | 187 | 139 |
| 315 / 30° | 1013293300 | 205 | 139 |
| 315 / 45° | 1013293450 | 222 | 139 |
| 315 / 90° | 1013293900 | 329 | 139 |
| 400 / 15° | 1013313150 | 267 | 208 |
| 400 / 30° | 1013313300 | 290 | 208 |
| 400 / 45° | 1013313450 | 311 | 208 |
| 400 / 90° | 1013313900 | 447 | 208 |

## PP branch 45 °

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

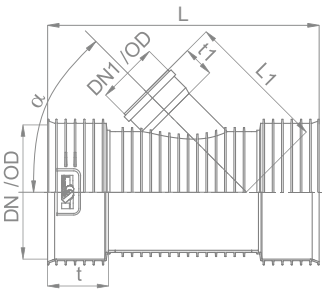



| Dimension ( DN/OD \| $DN_1$ ) [ mm ] | Index | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 160 / 160 | 1023153450 | 449 | 82 | 298 | 82 |
| 200 / 160 | 1023183450 | 478 | 101 | 360 | 82 |
| 200 / 200 | 1023193450 | 549 | 101 | 387 | 101 |
| 250 / 160 | 1023223450 | 669 | 117 | 528 | 82 |
| 250 / 200 | 1023233450 | 669 | 117 | 426 | 101 |
| 250 / 250 | 1023243450 | 857 | 117 | 614 | 117 |
| 315 / 160 | 1023273450 | 726 | 139 | 555 | 82 |
| 315 / 200 | 1023283450 | 726 | 139 | 453 | 101 |
| 315 / 250 | 1023293450 | 899 | 139 | 650 | 117 |
| 315 / 315 | 1023303450 | 973 | 139 | 708 | 139 |
| 400 / 160 | 1023333450 | 818 | 208 | 598 | 82 |
| 400 / 200 | 1023343450 | 896 | 208 | 644 | 101 |
| 400 / 250 | 1023353450 | 1013 | 208 | 727 | 117 |
| 400 / 315 | 1023363450 | 1087 | 208 | 784 | 139 |
| 400 / 400 | 1023373450 | 1244 | 208 | 918 | 208 |

## PP branch 45 °

K2-Kan OD
without seal
with connection for smooth pipe
Colour:

Standards: PN-EN 13476-3,, ITB-KOT-2017/0120 edition 1

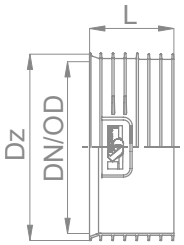



| Dimension ( DN/OD \| $DN_1$ ) [ mm ] | Index | L | t | $L_1$ | $t_1$ |
|---|---|---|---|---|---|
| 160 / 110 | 1021133450 | 449 | 82 | 294 | 78 |
| 200 / 110 | 1021163450 | 478 | 101 | 360 | 77 |
| 200 / 160 | 1021183450 | 478 | 101 | 300 | 92 |
| 250 / 110 | 1021203450 | 669 | 117 | 342 | 77 |
| 250 / 160 | 1021223450 | 669 | 117 | 342 | 92 |
| 250 / 200 | 1021233450 | 669 | 117 | 377 | 121 |
| 315 / 110 | 1021253450 | 726 | 139 | 378 | 77 |
| 315 / 160 | 1021273450 | 726 | 139 | 413 | 92 |
| 315 / 200 | 1021283450 | 726 | 139 | 634 | 121 |
| 315 / 250 | 1021293450 | 969 | 139 | 632 | 140 |
| 400 / 110 | 1021313450 | 818 | 208 | 627 | 77 |
| 400 / 160 | 1021333450 | 876 | 208 | 697 | 92 |
| 400 / 200 | 1021343450 | 989 | 208 | 697 | 121 |
| 400 / 250 | 1021353450 | 1083 | 208 | 710 | 140 |
| 400 / 315 | 1021363450 | 1206 | 208 | 779 | 159 |

## PP Grommet

K2-Kan OD
without seal
through concrete manhole
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

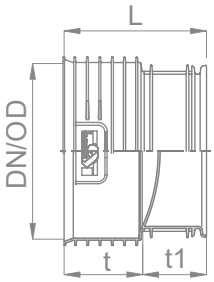



| Dimension ( DN/OD ) [ mm ] | Index | $D_z$ | L |
|---|---|---|---|
| 160 | 1049233100 | 182 | 110 |
| 200 | 1049253100 | 225 | 110 |
| 250 | 1049273100 | 281 | 125 |
| 315 | 1049293100 | 350 | 149 |
| 400 | 1049313100 | 439 | 220 |

## PP cap

K2-Kan OD
without seal
universal for socket or spigot
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

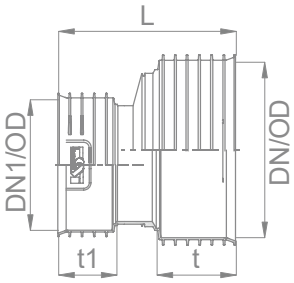



| Dimension ( DN/OD ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 160 | 1040233100 | 161 | 82 | 78 |
| 200 | 1040253100 | 190 | 97 | 89 |
| 250 | 1040273100 | 221 | 113 | 103 |
| 315 | 1040293100 | 260 | 135 | 120 |
| 400 | 1040313100 | 392 | 202 | 174 |

## PP eccentric reducer

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

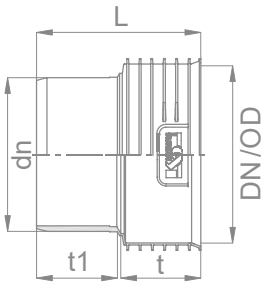



| Dimension ( DN/OD \| $DN_1$ ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 200 / 160 | 1030183100 | 224 | 97 | 82 |
| 250 /160 | 1030223100 | 244 | 113 | 82 |
| 250 / 200 | 1030233100 | 261 | 113 | 97 |
| 315 / 200 | 1030283100 | 383 | 139 | 97 |
| 315 / 250 | 1030293100 | 299 | 139 | 113 |
| 400 / 250 | 1030353100 | 382 | 208 | 113 |
| 400 / 315 | 1030363100 | 406 | 208 | 139 |

## PP coupling for PVC socket

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

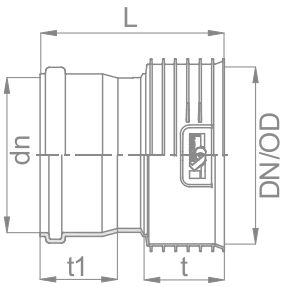



| Dimension ( DN/OD \| dn ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 160 / 160 | 1038233100 | 176 | 82 | 82 |
| 200 / 200 | 1038253100 | 200 | 97 | 100 |
| 250 / 250 | 1038273100 | 254 | 113 | 137 |
| 315 / 315 | 1038293100 | 287 | 139 | 146 |
| 400 / 400 | 1038313100 | 391 | 208 | 181 |

## PP coupling for PVC socket

K2-Kan OD
without seal
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1

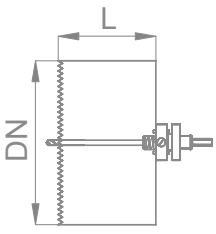


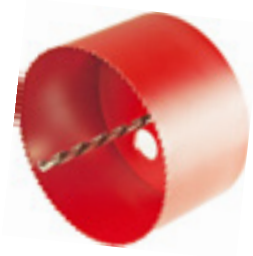

| Dimension ( DN/OD \| dn ) [ mm ] | Index | L | t | $t_1$ |
|---|---|---|---|---|
| 160 / 160 | 1039233100 | 167 | 82 | 82 |
| 200 / 200 | 1039253100 | 229 | 97 | 92 |
| 250 / 250 | 1039273100 | 280 | 113 | 121 |
| 315 / 315 | 1039293100 | 329 | 139 | 140 |
| 400 / 400 | 1039313100 | 408 | 208 | 159 |

## Hole saw with holder

for PP saddle connection
Colour:

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1



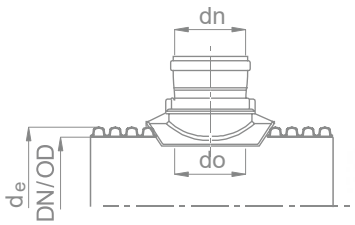



| Dimension ( DN/OD \| $DN_1$ ) [ mm ] | Index | L |
|---|---|---|
| 160 / 177 | 5191231100 | 90 |
| 200 / 214,5 | 5191253100 | 90 |

## PP Saddle conection

K2-Kan OD to smooth pipe ( KG )
mechanical connection
Colour: ●

Standards: PN-EN 13476-3, ITB-KOT-2017/0120 edition 1




| Dimension ( DN/OD \| dn ) [ mm ] | Index | $d_e$ | $d_o$ |
|---|---|---|---|
| 250 - 160 | 1027223900 | 282 | 177 |
| 315 - 160 | 1027273900 | 340 | 177 |
| 315 - 200 | 1027283900 | 340 | 214,5 |
| 400 - 160 | 1027333900 | 455 | 177 |
| 400 - 200 | 1027343900 | 455 | 214,5 |

## Rubber seal

Colour: ●


Standards: PN-EN 681, PN-EN 13476-3

| Dimension ( DN/OD ) [ mm ] | Index | H | B |
|---|---|---|---|
| 160 | 5131241010 | 11 | 10 |
| 200 | 5131251010 | 14 | 12 |
| 250 | 5131271010 | 17 | 14 |
| 315 | 5131291010 | 22 | 18 |
| 400 | 5131311010 | 31 | 27 |

Oil-resistant seal made to order after consultations with manufacturer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April 2018