

# INSTALLATION GUIDELINES

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# PRODUCT INFORMATION

Master3Plus soil and waste pipes and fittings are tested to EN 1451 and marked with BD (building and drainage) for diameters equal or larger than 75 mm. The ring stiffness of SN4 pipes is at least 4.0 kN/m<sup>2</sup>. The fittings correspond to the S16 pipe series. Master3Plus is therefore approved for installations inside and outside buildings up to the junction into the street canal. Pipes and fittings are supplied with a plug-in socket and inserted double lip seal ring. When using PIPELIFE Master3Plus soil and waste pipe systems, EN 12056 (parts 1-5) and national standards, (e.g., for Austria ÖNORM B 2501) are binding regarding planning and dimensioning as well as the design of drainage systems for buildings and sites. Please get in touch with your local PIPELIFE contact for further local standards and regulations.



## APPLICATION AREAS

### STANDART APPLICATIONS

Master3Plus soil and waste pipe systems are mainly utilized as hot water resistant drainage pipes for domestic and industrial black-, grey- and rainwater.

#### **Within buildings, Master3Plus can be applied as:**

- Single and group connecting pipes
- Downpipes
- Collecting lines
- Bypass lines
- Ventilation lines
- Internal rainwater pipes with up to 5 meters of backwater height

### SPECIAL APPLICATIONS

In the case of requirements for oil resistance, the EPDM sealing ring is to be exchanged for an NBR sealing ring.

- Ventilation systems for commercial and residential buildings
- Central vacuuming systems
- Transport of chemically aggressive wastewater ranging from pH 2 to pH 12.

### DO NOT USE MASTER3PLUS FOR

- External applications (e.g. outdoor rainwater downpipes)
- Conveying wastewater containing petrol or benzene
- Environmental temperatures exceeding 100 °C
- Disposal lines in chemical plants
- Indoor rainwater pipes with more than 5 meters of backwater height



## COMPATIBILITY

The dimensions of PIPELIFE Master3Plus pipes and fittings comply with EN 1451-1 and can be combined with other products that comply with this standard.



## TRANSPORTATION AND HANDLING

### To avoid deformations and damage to the pipes during transportation:

- Loading and unloading must be carried out with due care. Do not throw or drag pipes and fittings. This applies especially for conditions below zero degrees Celsius.
- Make sure the pipes are fully supported along their entire length during transportation.
- The joints must be arranged in a staggered manner.
- Pipes projecting beyond the loading area must be supported to avoid bending loads.
- Protect the pipes from sharp edges (e.g., side walls).



## STORAGE

The pipes should be stored vertically and in storage bags to protect them from dirt and UV radiation.

If done correctly, Master3Plus soil and waste pipe systems can be stored outdoors for up to 2 years. If the pipes are stored horizontally, do not exceed a stacking height of 2 meters. To avoid any bending of the pipe rods during storage, the joints must be arranged in a staggered manner.

Make sure to secure pipe stacks from rolling apart.

Fittings and short lengths of 150, 250 and 500 mm are kept in cardboard boxes and must be kept dry.

# INSTALLATION INSTRUCTIONS

1.

## CUTTING PIPES TO LENGTH

1. Mark the cut surfaces and use a saw box or saw gauge if possible so that the cuts are made perpendicular to the pipe axis.
2. Use a pipe cutter and chamfering device, angle grinder or a fine-toothed saw (foxtail) to cut Master3Plus pipes.
3. Deburr the cut edges inside and out with a sharp knife or a deburring tool.
4. Chamfer the edges at an angle of approx. 15°. If you are not using a chamfering tool, use a suitable grinder, scraper or file. For the length of the bevel, see the table below for correct bevel lengths.

Do not cut fittings to length.

DN/OD	32	40	50	75	90	110	125	160
b(MM)	4	4	4	4.5	5	6	6.5	9

2.

## STANDARD CONNECTIONS

Master3Plus pipes and fittings are connected by means of a plug-in socket with a factory-fitted sealing ring.

1. Remove any dirt or residues from the spigot and the socket.
2. Thinly coat the spigot with PIPELIFE lubricant and push it into the socket up to the limit. Do not use oils or fats as lubricants.

The spigot of Master3Plus fittings is produced with an insertion-depth marking which serves as an orientation guide for the installer. Once the spigot is fully inserted, the socket end should be within the area of the insertion depth marking. The marking should be only partly or not visible at all.

**Please note:** Inserting the socket up to the insertion-depth marking is not a prerequisite for the tightness of the connection.

3.

## EXPANSION COMPENSATING CONNECTIONS

Thermal linear expansion must be taken into account for pipelines of more than 10 meters in length and without changes in direction.

Linear expansion does not have to be taken into account in detached houses, apartment buildings and residential buildings with installation temperatures of more than 15 °C and pipeline lengths of less than 10 meters.

Coefficient of linear expansion: 0.09 mm/(m.K)

Example: Temperature difference  $\Delta t$  50 K; length of straight pipeline 12 m = expansion 54 mm

Mark the pipe with a suitable marker pen on the edge of the socket. Then pull the pipe approximately 10 mm out of the socket. Repeat this procedure for several connectors.

Alternatively, use long sockets to accommodate the change in length.

The bonding of polypropylene is not possible due to its high solvent resistance.

4.

## INSTALLATION UNDERGROUND

Single and multiple connecting pipes are usually installed in the floor.

The minimum gradient is specified in the according local norms. For more information get in touch with your local PIPELIFE contact. Make sure that the pipes are adequately fixed and that they are fastened in a way that they are decoupled from structure-borne noise (e.g., with insulation material and no residual bricks as a base).

Sound-insulate exposed parts of the pipe with adequate material before casting the screed.

5.

## INSTALLATION IN MASONRY WALLS

Recesses and wall slots are only permitted if they do not impair the structural integrity of the building. The wall slots must be arranged so that the pipes can be installed in a stress-free state.

If the pipes are plastered directly, i.e. without using a plaster base, the pipes must be insulated with insulating materials (e.g. mineral wool, 4-mm PE insulation tube, art. no: M3-DS100/4).

## INSTALLATION IN CONCRETE

If necessary, the change in length of the pipes must be taken into account at the joints as described in the chapter “Connecting pipes and fittings” (page 14).

1. To further sound-proof Master3Plus in concrete, completely encase the pipes with a 4-mm PE insulation tube (e.g., M3-DS100/4)
2. Fasten the pipe sections in a way that their position cannot change when pouring the screed.
3. Close pipe openings with socket plugs.
4. Seal socket joint gaps with adhesive tape or by wrapping them with foil so that no slurry can penetrate.
5. The installation of Master3Plus pipes in solid concrete elements requires a structural analysis. Do not use vibrating machines. Due to the heavy weight of the concrete, deformations of the pipe can occur in such cases.

## CEILING FEEDTHROUGHS

Ceiling feedthroughs must be made moisture-proof and soundproof. If floating screed or mastic asphalt is applied to floors, exposed pipe sections must be protected with protective sleeves or heat-insulating materials. If another fire compartment is involved, the appropriate fire safety measures must be taken (see Fire Safety chapter).

## FASTENING AND CLAMP SPACING

Commercially available clamps that match the outer diameter and surround the pipe completely may be used on Master3Plus pipes and fittings. Do not use pipe hooks for fastening.

The maximum distance between the clamps for horizontal pipelines in general is 13 times its outer diameter.

Dimension (DN/OD)	Distance between clamps (mm)	
	horizontal	vertical
32	450	1500
40	550	1500
50	650	1500
75	900	2000
110	1450	2000
125	1650	2000
160	2100	2000

**Please note: These are approximate values. Always follow the instructions of the respective clamp manufacturer.**

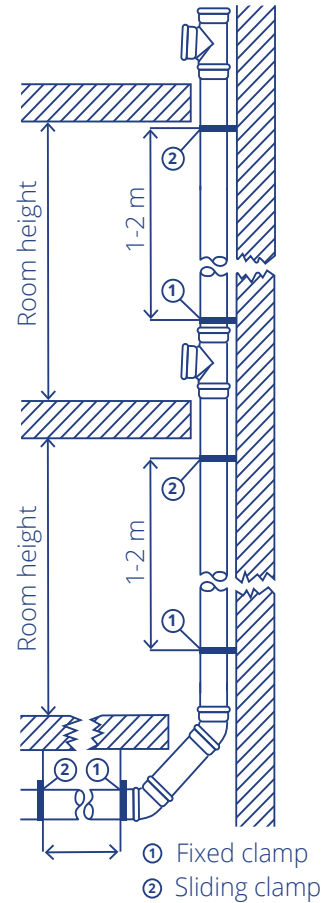


It is generally recommended to use only clamps with rubber inserts for fastening downpipes. We recommend the use of the PIPELIFE double clamp for fixing vertical pipes and the PIPELIFE clip or PIPELIFE single rubber clamp for fastening horizontal pipes, single and multiple connecting pipes, depending on the diameter.

When fastening downpipes, two pipe clamps with rubber inserts should be installed on each floor. The pipeline is to be fixed directly beneath the socket by means of a fixed clamp (1) and in a way that it cannot slip during further installation.

A sliding clamp (2) is used to stabilize the pipe. It should only be tightened to the extent that there is no, at maximum a slight contact between the rubber insert and the pipe. Sliding clamps allow longitudinal movement of the pipelines.

An explanation on the installation process of the various clamps we offer can be found in the respective installation guidelines that are available via the Pipelife webpages.



## 9.

### AVOIDING STRUCTURE-BORNE NOISE

Avoid any kind of structure-borne sound transmission. Even small acoustic bridges such as mortar residues between the pipe system and the building can lead to unwanted sound values in rooms that require protection.

In order to avoid transmission of structure-borne sound from the soil and waste pipe system to the building structure as well as possible, the pipes fed through walls and ceilings must be fitted with an insulation cover (e.g., PE insulation tube, 4-mm, art. no. M3-DS100/4).

If the pipe is plastered or concreted into the masonry, the pipe must be decoupled from the building with a 4-mm PE insulation tube throughout.

## 10.

### AVOIDING CONDENSATION

Inside buildings, the risk of condensation forming on the surface of rainwater pipes when temperatures fall below the dew point has to be taken into account.

To avoid condensation, potentially affected pipes must therefore be provided with suitable water-vapor-diffusion-tight insulation.

Generally, insulation thicknesses of 20 – 30 mm are sufficient. Insulation thickness calculators and tables can be found on the website of respective insulation material manufacturers.

# INSTALLING PUSH-ON SOCKETS

The Master3Plus double socket can be used in two ways:

## 1. DOUBLE SOCKET

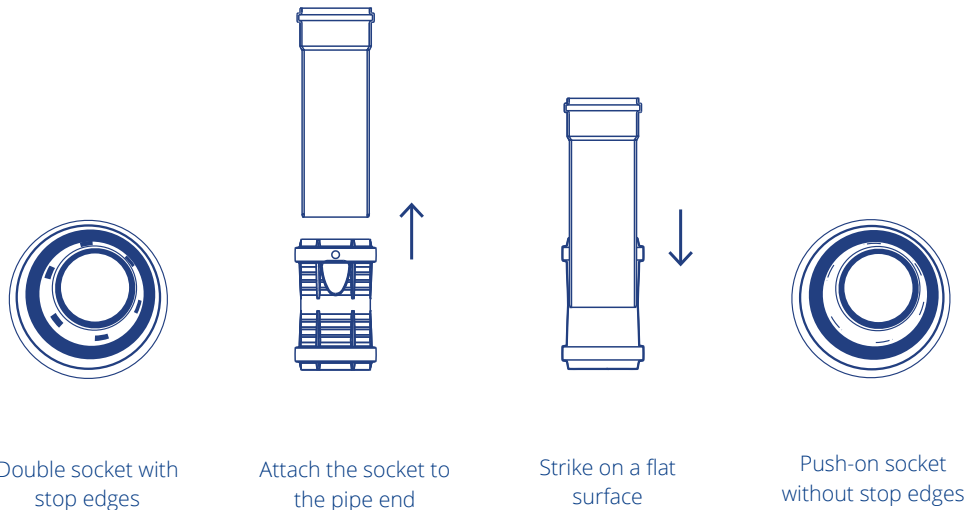
Stop edges in the double socket limit the insertion depth to the socket length. This allows it to be used as a double socket.

## 2. PUSH-ON SOCKET

If the double socket is to be used as a push-on socket for repair purposes, we recommend the following procedure:

- Remove both sealing rings from the double socket.
- Place the socket on the cut end (not chamfered) of a pipe.
- Take the pipe on the socket side and strike the double socket perpendicular to the pipe axis on a flat surface. This will break the stop edges off and the socket can be pushed over the pipe.
- Reinstall the sealing rings before installing the push-on socket.

Consider the risk of injury caused by the parts that break out. We therefore recommend wearing eye protection.



12.

## REPLACING FITTINGS

### USING TWO PUSH-ON SOCKETS (FIGURE 1):

1. Cut out a sufficiently long pipe section (length of the fitting + 2x outer pipe diameter).
2. Deburr and chamfer the pipe ends before pushing on the socket over the entire length of the pipe end.
3. Insert the fittings and fit the intermediate piece into the remaining space between the pipes.
4. Slide the second push-on socket completely onto the intermediate piece.
5. Insert the intermediate piece and close both gaps by shifting the push-on sockets.

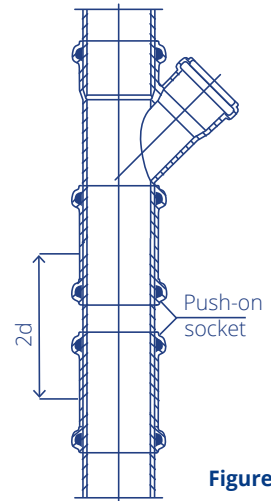


Figure 1

### USING LONG SOCKETS (FIGURE 2):

1. Cut out a pipe section according to the length of the fitting plus a single insertion depth.
2. Insert the long socket up to the base of the socket and then insert the fitting by means of a push-on socket.
3. Push the spigot of the long socket into the fitting socket.

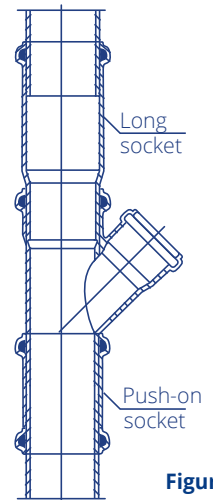


Figure 2

13.

## TRANSITION TO CAST IRON OR FIBRE CEMENT TIP ENDS

The connection of Master3Plus joints to cast iron and fibre cement tips is made by means of ÜFS... transition.

### Sealing area of the seal for spigots of cast iron and fibre cement pipes:

DN/OD 50 of 58–67 mm

DN/OD 75 of 78–86 mm

DN/OD 110 of 110–116 mm

DN/OD 125 of 135–142 mm

DN/OD 160 of 160–172 mm

14.

## TRANSITION TO CAST IRON AND FIBRE CEMENT SOCKETS

The connection of the Master3Plus spigot end to a cast iron or fibre cement socket is made using the transition ÜFM... or ÜFM/GAZ...

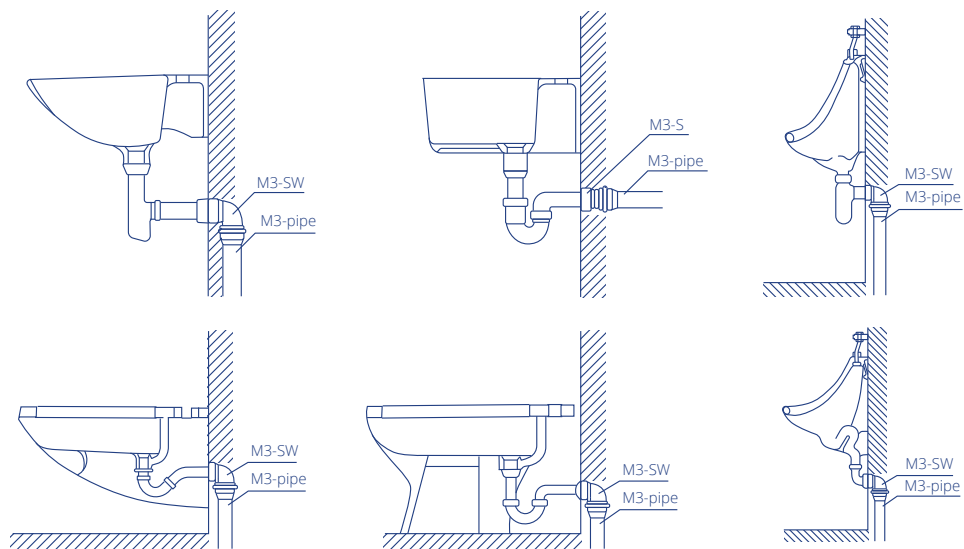
15.

## CONNECTING SIPHONS

The connection of siphons and metal pipes to PIPELIFE Master3Plus soil and waste pipes is made using a straight siphon connection or siphon bracket. Use the PIPELIFE combination nipple for this. It allows the connection of siphon pipes from 28–47 mm in diameter.

**Examples:** Connection of washbasins, sinks, bidets, urinals, laboratory sinks and the like.

**Note:** Before installation, coat the inside of the rubber nipple and the metal pipe or siphon with lubricant to facilitate insertion.



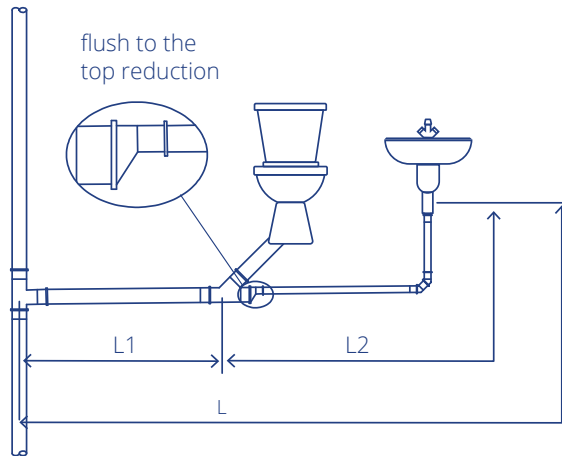
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## SYSTEM INSTALLATION INSTRUCTIONS

For planning as well as for installation please make sure to follow the respective (local) norms. The following instructions refer to the Austrian ÖNORM B 2501 Issue: 2015-04-01 "Drainage systems for buildings and sites and EN 12056 part 1-5 Issue: 2000-12-01 "Gravity drainage systems inside buildings".

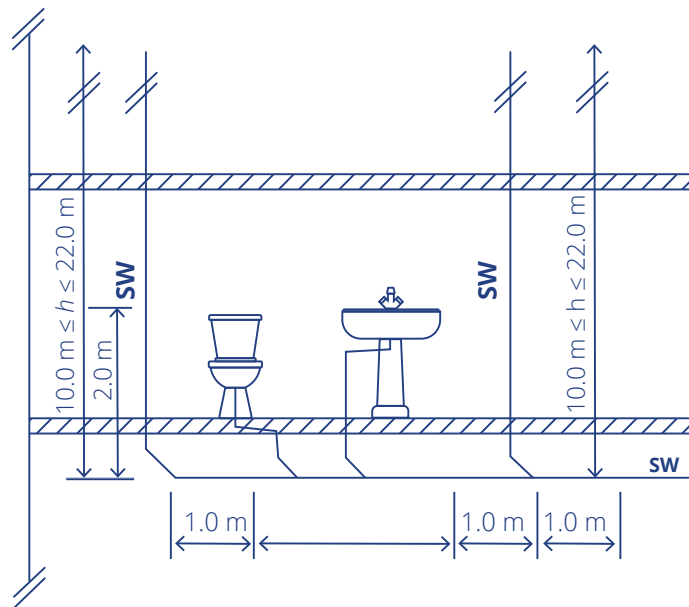
They are intended to provide an overview of important regulations and are not intended to be exhaustive. The illustrations have been taken from the Austrian standard and are simplified for basic understanding.

- For **semi-detached and terraced houses**, separate downpipes, collecting pipes and underground pipes must be arranged within the building for each object. Merging of the underground pipes outside the building is permitted.
- **Individual and group connecting pipes** must be installed with a minimum gradient of 1%.
- **Individual or group connecting pipes longer than 4 m (figure 1) or with more than 3 bends** must be ventilated separately. The air duct must be connected at the point in the pipe where the diameter of the pipe corresponds at least to the diameter of the air duct.



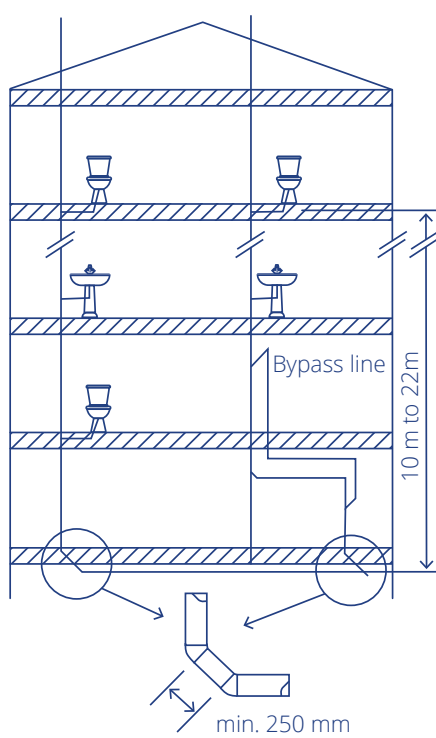
**Figure 1:**  
**L1=Length of group connecting pipe**  
**L2=Length of single connecting pipe**  
**L=Sum of the pipe lengths**

- Install **eccentric reducers in horizontal connecting and collecting lines** as flush as possible with the vertex (but never flush with the base) (see figure 1, detail). In underground pipes, they may also be installed flush with the base.
- Each drain must have a **secured water inlet** to supplement the seal water. If this water supply cannot be ensured, the drain must have a mechanical gas-tight cover in addition to the odor trap.
- The **minimum nominal diameter** for collecting and underground pipes for wastewater, rainwater and mixed water is DN/OD 110.
- The **minimum gradient** of collecting and underground pipes for wastewater, rainwater and mixed water at a filling degree of 70% is up to DN/OD 200 1%.
- **Changes of direction** in the collector and underground pipes may only be carried out with single bends with angles of up to 45°. This limitation does not apply if the individual bend has a radius of at least 500 mm.
- **Branches with angles of 45° or less** may be installed in collection and underground pipes. Double branches are not permitted.
- **Junctions** in the collector and underground pipes may only be made at a maximum angle of 45° in the direction of flow. The lateral connecting branch must be turned at least 15° to at most 45°. However, in the case of wastewater containing little solids (e.g. kitchen, bath, rainwater), the junction of the downpipe may be made with an angled branch twisted up to the perpendicular.
- **Below a drop height of 10 meters**, the junction of the downpipe into a horizontal pipe must be designed with at least 2 bends (e.g., 2 x 45°).
- **At drop heights from 10 to a maximum of 22 meters**, the downpipe (figure 2) must be kept clear of all connections up to a height of 2.0 m, measured from the channel bottom of the downpipe warping or the collector or underground pipe. At the junction with a collector or underground pipe (figure 2), a range of 1.0 m, measured from the deflector bend or from the junction of the downpipe, must be kept free from connections. The junction of the downpipe into a collector or underground pipe must be designed with two 45° bends and an intermediate piece with a length of 250 mm (figure 3).
- In the case of downpipes with a **drop height of more than 22 meters**, bypass pipes must be installed in the case of downpipe diverters and at the junction into a collecting and underground pipe. According to figure 4, this bypass line may only be connected to the collecting and underground pipe 1.5 m after the contact bend. The downpipe must be deflected with two bends at 45° and an intermediate piece with a length of 250 mm.
- When connecting single or group connecting lines to downpipes, branches with angles of 87° to 88.5° must be used.



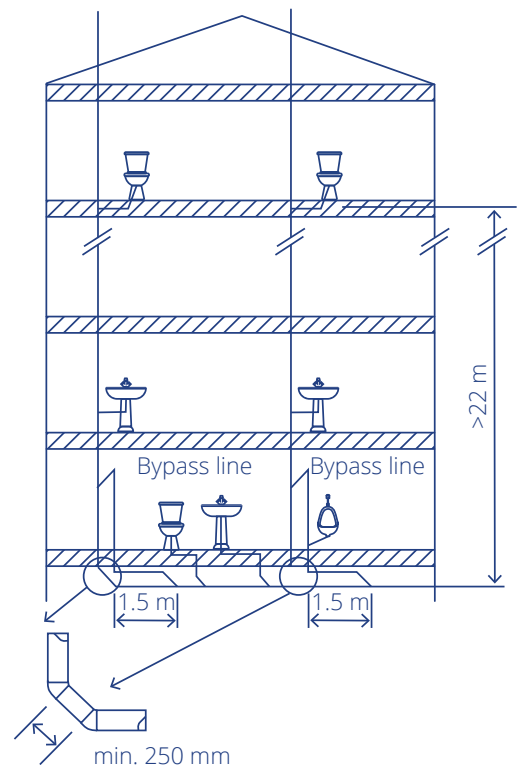
**Downpipe height 10 to 22 m**

**Figure 2: Connection-free zone at the junction into the collector or underground pipe; taken from ÖNORM B 2501: 2015-04-01.**



**Downpipe height 10 to 22 m**

**Figure 3: Junction of downpipes (10 m to 22m drop height) into a collecting pipe; taken from ÖNORM B 2501: 2015-04-01 (Figure 14).**



**Downpipe height more than 22 m**

**Figure 4: Junction of downpipes (more than 22m drop height) into a collecting pipe; from ÖNORM B 2501: 2015-04-01 (Figure 15).**

### Junction of adjacent drainage objects at the same height into the drainpipe:

For similar drainage objects, arrange a double branch at 180° as shown in figure 5.

In WC systems (figure 6) or various drainage objects (e.g. WC and shower; figure 7), arrange a double branch with a maximum internal angle of 135°.

### Junction of adjacent drainage objects at a different height into the drainpipe:

The larger connection line is to be connected to the downpipe below the smaller connection line as shown in figure 8.

If this is not possible, the distance in relation to the base heights must be at least 250 mm, as shown in figure 9.

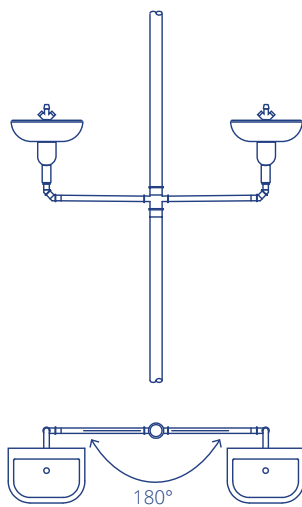


Figure 5

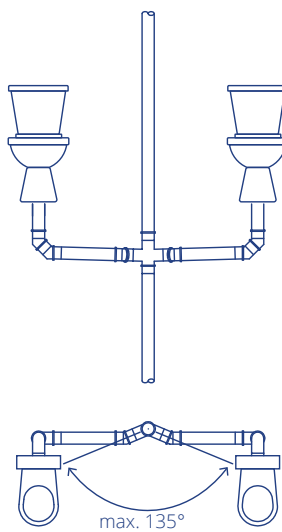


Figure 6

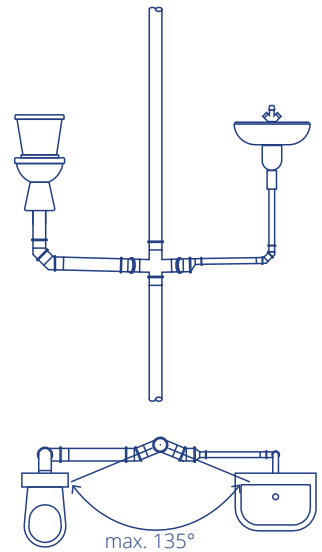


Figure 7

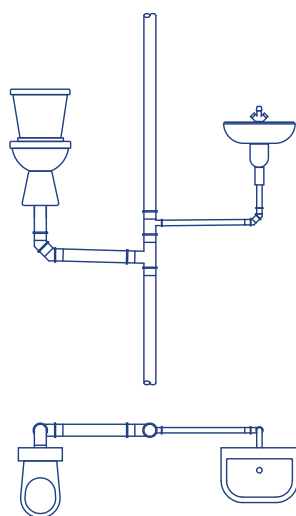


Figure 8

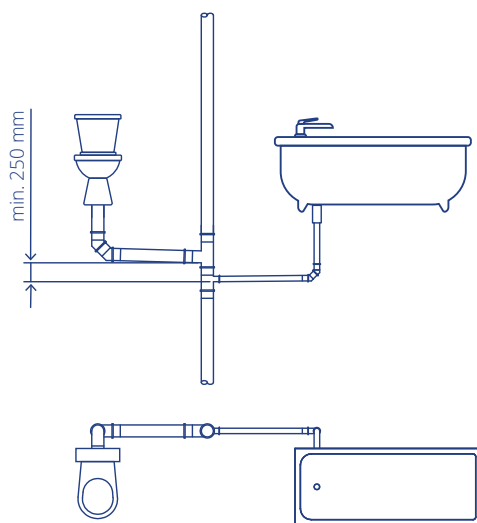


Figure 9



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