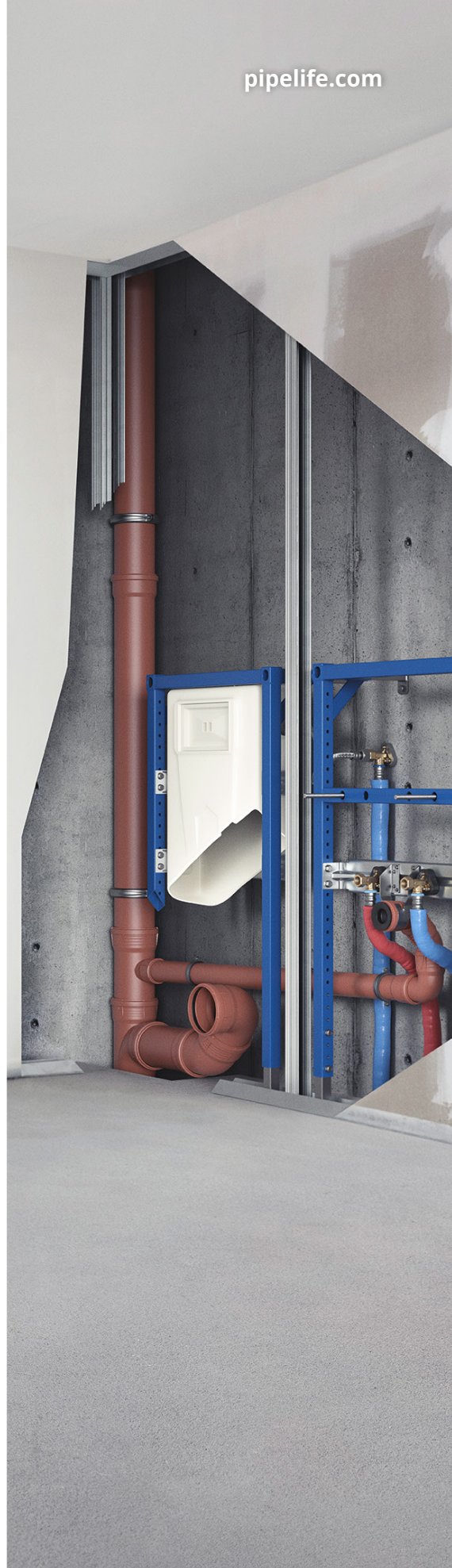


MASTER 3 PLUS TECHNICAL MANUAL



Low noise. Best choice.

Discover our full service portfolio online.

PIPELIFE 
always part of your life



January 2021

Subject to technical changes. No responsibility can be taken for the correctness of this information.

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1. PRODUCT INFORMATION

1.1 All benefits at a glance

Highly insulated, advanced three-layer Soil & Waste pipe system

MASTER 3 PLUS is a state-of-the-art system of Soil & Waste pipes and fittings designed and manufactured to meet today's construction and housing challenges.

Three layers that deliver tangible benefits

The smooth inner layer prevents incrustation and aids sound insulation. The solid middle layer ensures high rigidity, outstanding robustness and is the key source of sound insulation.

The brown outer layer provides outstanding impact resistance – even at low temperatures.



An advanced fitting with a new look-and-feel

MASTER 3 PLUS combines excellent rigidity and high weight with above-average wall thickness. It also features a plug-in depth mark. As a result, it offers trade professionals effective sound insulation properties, and enables simple, reliable installation.

The perfect product for trade professionals

MASTER 3 PLUS is excellent value for money, and opens up opportunities to generate healthy profit margins. It is not a product sold via do-it-yourself stores.

Exceptionally high quality

MASTER 3 PLUS is manufactured exclusively from carefully sourced materials of the highest calibre. State-of-the-art three-layer extrusion and socket technology guarantees an exceptionally good fit and tightness.

MASTER 3 PLUS is designed and made by a leading Austrian pipe manufacturer with a proven track record for reliability and quality.



1.2 The layers of the MASTER 3 PLUS pipe

The **Pipelife MASTER 3 PLUS** Soil & Waste pipe comprises three carefully matched layers. It is designed and manufactured to address the pipe system challenges encountered in today's residential and industrial construction projects.

Each layer is engineered to achieve specific properties.

The smooth inner layer

Made of polypropylene copolymer (PP-CO)

- No tearing of the water column – less noise generation
- Signal white for easier camera inspection
- High flowrate

The solid middle layer

Made of mineral-reinforced polypropylene (PP-MV)

- Excellent rigidity
- Good sound absorption
- High dimensional stability

The impact-resistant outer layer

Made of polypropylene copolymer (PP-CO)

- Exceptionally robust
- No socket bursts
- Installation, transportation and on-site handling possible at low temperatures ❄️

In combination, the three layers give the **MASTER 3 PLUS** pipe system multiple strengths:

- + **High ring and longitudinal rigidity**
- + **High soil pipe flowrate**
- + **Excellent sound insulation**
- + **High impact resistance**

Overall, this is an exceptional product of outstanding quality.





Shock-proof sealing bead



Plug-in depth mark



Assembly aid angle marking

1.3 The MASTER 3 PLUS fitting

MASTER 3 PLUS from Pipelife is manufactured from mineral-reinforced polypropylene copolymer. It is designed to address the waste water discharge pipe system challenges encountered in today's residential and industrial construction projects.

Enhanced features

- **Higher weight and thicker walls**
The latest generation of MASTER 3 PLUS fittings is of a higher rigidity class (SN4). This is the result of an average weight increase of 60%.
- **Excellent sound insulation**
Increased weight results in greatly improved sound insulation.
- **Flow-optimised connections**
The new shape of the socket ensures a smooth transition from inserted spigot end to fitting. This significantly reduces turbulence.
- **Bent branch**
The hydraulically optimised swept (bent) branch enables connection of a larger number of households to the downpipe. This is a result of significantly higher flowrate compared to conventional branches.

Easy, accurate installation

The **plug-in depth mark** enables at-a-glance verification of correct installation. It is a vital aid for the plumber.

- **Fail-safe rectangular sealing bead**
The redesigned, rectangular sealing bead is a highly effective means of preventing accidental seal knock-out. The seal itself is a tried and trusted component that has been evolved and refined over many years. It is protected against external damage, but can be easily removed and replaced.
- **Angle marking**
The outer reinforcing ribs are positioned at a 60° angle, helping the installation worker to correctly orient fittings.
- The **double sockets** can easily be used as **push-on sockets** by knocking out the bars.

Evolved and improved

- Attractive look-and-feel **MASTER 3 PLUS** has an appealing, up-to-date look-and-feel, including reinforcing ribs and embossed logos.
- The new Pipelife inspection pipe has been engineered for optimum flow, and harmonises visually with the **MASTER 3 PLUS** system.
- EAN codes on each fitting and each carton support rapid data capture for your inventory management system.
- **MASTER 3 PLUS** fittings are supplied in distinctive brown cartons with white lettering for quick-and-easy recognition.

1.4 Technical specifications of MASTER 3 PLUS

Materials

Pipe:	PP-CO/PP-MV/PP-CO
Fitting:	PP-CO-MV
Gasket:	Styrene-butadiene rubber (SBR) elastomer

The **MASTER 3 PLUS** system is free from halogens, cadmium and heavy metals.

Colour

Outer layer	RAL 8012 reddish brown
Middle layer	RAL 9011 graphite black
Inner layer	RAL 9003 signal white

Application class

Pipes	BD with diameter 75 and bigger
Fittings	BD with diameter 75 and bigger

MASTER 3 PLUS is tested and approved for BD (building/drainage) with diameter 75 and bigger applications in accordance with EN 1451-1. As a result, underground installation to the road sewer system junction is permitted.

Identification

The pipes are clearly visible and permanently marked with the company name, date, time, production line, product name, stiffness class, ice crystal, outer diameter, wall thickness, overall length, material, test number and an EAN code.

The fittings are clearly and permanently marked with the company name, material, outside diameter, pipe series with the application class, production date and EAN code as stickers.

Temperature resistance in reference to EN 1451-1

Long-term temperature load max. 95 °C (temperature change test according to EN 1451-1)

Continuous load 60 °C

Chemical resistance

MASTER 3 PLUS is resistant to acids and alkalis ranging from pH 2 to pH 12

Fire classification

Reaction to fire, smoke production, flaming droplets/particles D - s2, d2, according to EN 13501-1

Fire classification B2 "normal flammability", according to DIN 4102.



Suitable for installation at temperatures below -10 °C

Snowflake symbol

The **MASTER 3 PLUS** Soil & Waste pipe system offers enhanced impact resistance. It is therefore suitable for installation at temperatures below -10 °C.

Standards

MASTER 3 PLUS Soil & Waste pipes and fittings are tested in accordance with ÖNORM EN 1451, Part 1.

Approvals

In reference to EN 1451-1:2014 Plastic piping systems for soil and waste discharge (low and high temperature) within the building structure. (OFI Test Report no 1800325)

Approval for Germany (DIBt)

Tests

The tests were carried out by an authorised and accredited Austrian testing institute, the "OFI", Austrian Research Institute for Chemistry and Technology.

Rigidity

Pipe stiffness class SN4 ($\geq 4.0 \text{ kN/m}^2$)

Pipe series S16 fittings

Vacuum tightness

-0.8 bar; OFI Test Report no. 1800325

Coefficient of linear expansion

0.09 mm/(m.K)

Physical properties:

Designation	Unit	Value	Standard
Average density	kg/dm ³	1.2	EN ISO 1183
Modulus of elasticity	MPa	>2400-3100	ISO 178

1.5 Sound-insulation in general

The requirements on sound insulation are regulated via various local norms in the different markets. Please refer to your local Pipelife company for more details on the for you applicable regulations. This calls for consideration to be given to the technical installations of the building as early as the planning stage. As an example, walls with sanitary installations should not connect to bedrooms.

Drainage pipes must generally not be arranged exposed in rooms to be protected from noise and must be separated from solid walls with structure-borne sound insulation.

When fastening without structure-borne sound insulation, the mass per unit area of the wall should be at least 350 kg/m².

Domestic installations must be arranged and designed in such a way that the noise level resulting from the operation of these installations from other units in use does not exceed the value specified in the table. System noise levels may be 5 dB(A) higher in ancillary rooms.

	Minimum requirement	Increased sound insulation
Type of noise	$L_{AF, max, nT}$ in dB(A)	$L_{AF, max, nT}$ in dB(A)
Short-term, fluctuating noise (e.g. WC flushing)	≤ 30	≤ 25

FOR EXAMPLE, REQUIREMENTS FOR SOUND INSULATION ACCORDING TO ÖNORM B 8115-2

The technical equipment in buildings to be assigned exclusively to the respective unit in use are excluded from this requirement.

Increased sound insulation during operation of technical equipment in buildings is given if the permissible A-weighted system noise level is lower by at least 5 dB(A), which corresponds to 25 dB(A), and this is also maintained within the unit of use.

Increased sound insulation of a building must be specified by the client before the start of the planning work and recorded in the invitation to tender.

In comparison to apartments in other countries, the German VDI guideline 4100:2012 distinguishes 3 sound insulation levels. Higher requirements in your own area are marked with the sound insulation levels SSt EB.

The VDI 4100 recommends the following sound insulation values in dB(A) [$L_{AF, max, nT}$] for technical equipment (including both water supply and wastewater installations)

VDI 4100

Type of building	SSt I	SSt II	SSt III	SSt EB I	SSt EB II
Multi-family dwellings	≤ 30	≤ 27	≤ 24	≤ 35	≤ 30
Single family semi-detached houses Single-family terraced houses	≤ 30	≤ 25	≤ 22	≤ 35	≤ 30

RECOMMENDED SOUND INSULATION VALUES ACCORDING TO VDI 4100

According to DIN 4109-1:2018, the maximum permissible sound pressure level in rooms requiring external protection must not exceed the values in the following table.

DIN 4109-1

	Living rooms and bedrooms	Classrooms and workrooms
Type of noise	$L_{AF, max, n}$ in dB(A)	$L_{AF, max, n}$ in dB(A)
Short-term, fluctuating noise (e.g. WC flushing)	≤ 30	≤ 25

PERMISSIBLE SOUND PRESSURE LEVELS ACCORDING TO DIN 4109-1

1.6 Sound measurements for the MASTER 3 PLUS system

Pipelife has subjected the MASTER 3 PLUS Soil & Waste pipe system to extensive standard-compliant sound measurements in reference to DIN EN 14366:2005 and with 2 different fastening clamps in accordance with DIN 4109 and VDI 4100 at the Fraunhofer Institute in Stuttgart. According to the standard, the sound pressure levels in the reception room of the basement are relevant.

The following clamps were used for testing:

- **Bismat 1000**, structure-borne sound absorbing support fastening
- **Bismat 2000**, standard steel clamp with rubber insert

Installation sound level for MASTER 3 PLUS installation with our acoustic bottom bend in “basement rear” measured at Fraunhofer Institute, test report numbers P-BA 258/2020 and P-BA 25/2021.

	Flow rate l/s			
with Bismat 1000 clamp	0.5	1.0	2.0	4.0
Structure borne sound according to DIN EN 14366 , $L_{sc,A}$ [db(A)]	<10	<10	<10	<10
Installation sound level according to DIN 4109 , $L_{AFeg,n}$ [db(A)]	<10	<10	<10	13
Installation sound level according to VDI 4100 , $L_{AFeg,nT}$ [db(A)]	<10	<10	<10	<10

	Flow rate l/s			
with Bismat 2000 clamp	0.5	1.0	2.0	4.0
Structure borne sound according to DIN EN 14366 , $L_{sc,A}$ [db(A)]	9.2	11.6	13.4	18.0
Installation sound level according to DIN 4109 , $L_{AFeg,n}$ [db(A)]	11.4	13.8	16.2	20.8
Installation sound level according to VDI 4100 , $L_{AFeg,nT}$ [db(A)]	7.9	10.3	12.7	17.2

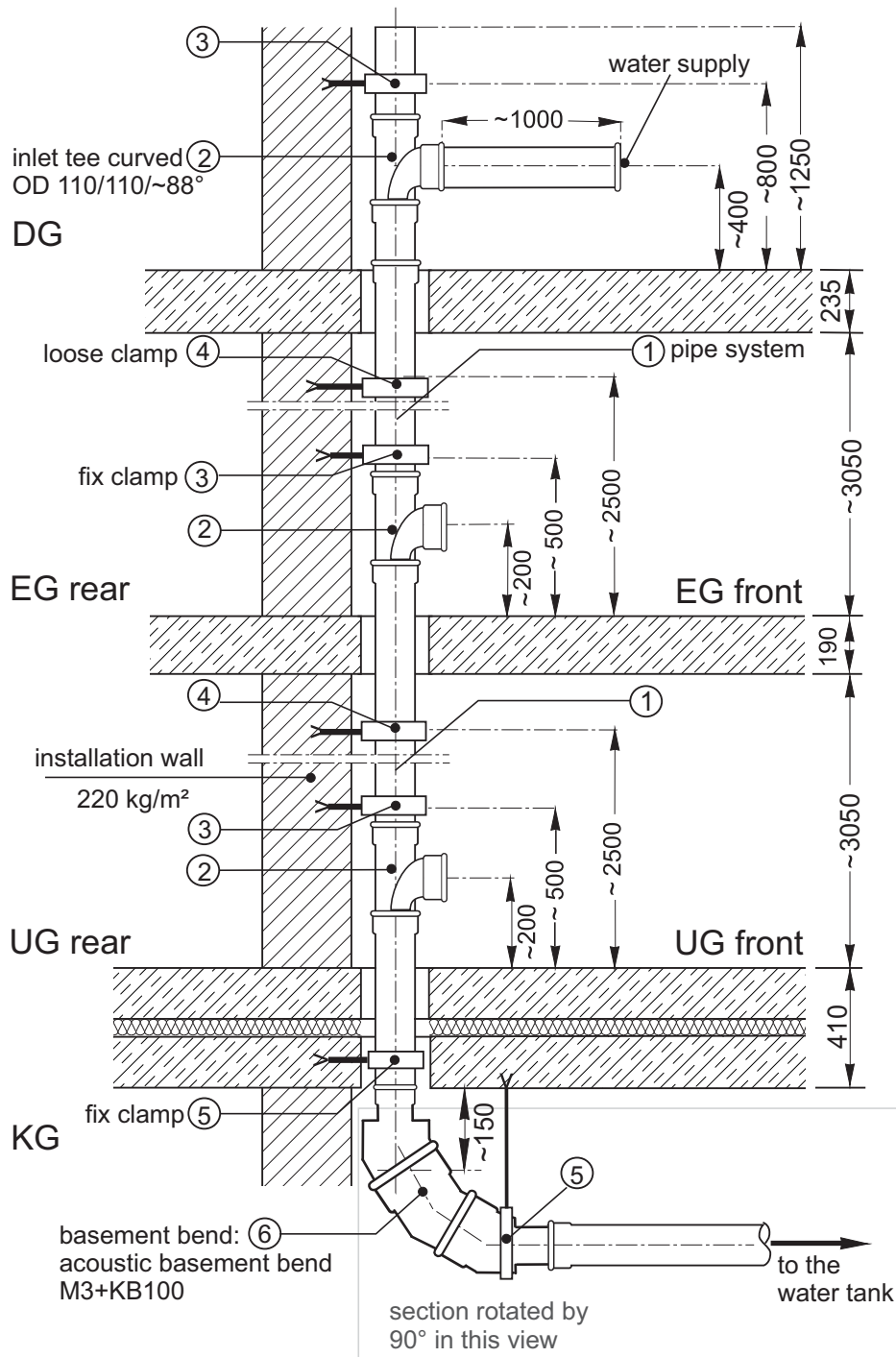
The **MASTER 3 PLUS** Soil & Waste pipe system with both fastening variants fulfils the requirements for sound insulation of technical equipment in buildings according to DIN 4109 and VDI 4100 and represents one of the most silent systems on the market.

The measured values from these tests at the Fraunhofer Institute are used to compare the sound insulating properties of various wastewater systems.

The sound values of wastewater installations measured on site in practice can deviate from the measured laboratory values due to various influencing factors such as installation, downpipe distortion, fastening or sound bridges.

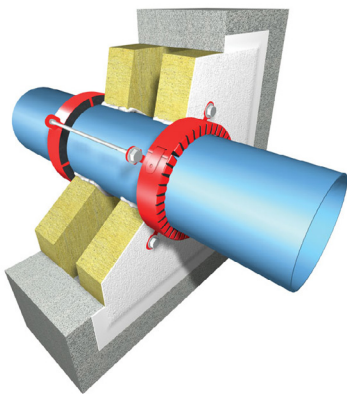
Observe the notes on installing the pipe clamps in the fastening and clamp spacing chapter on page 16 and on avoidance of structure-borne noise transmission on page 17.

Measuring arrangement of the MASTER 3 PLUS system at the Fraunhofer Institute, Stuttgart / Germany

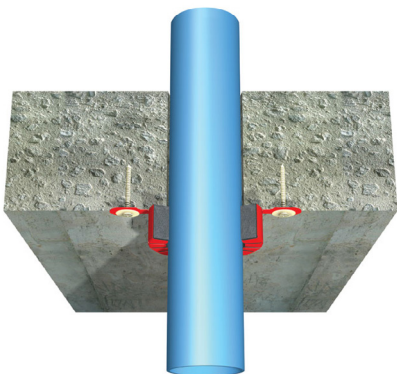


Installation diagram of the sound measurements for the **MASTER 3 PLUS** system at the Fraunhofer Institute in Stuttgart (not to scale, dimensions in mm)

**REGARDING THE CIRCUMSTANCES
IN YOUR LOCAL MARKET, PLEASE
CONTACT YOUR LOCAL PIPELIFE
COMPANY.**



**Intumex RS10 fire protection collars,
wall feedthrough**



**Intumex RS10 fire protection collars,
ceiling feedthrough**

1.7 Fire safety

Fire-resistant sealing with fire protection collars

As an example, the provisions of the Austrian Institute of Construction (OIB) Guideline 2 (Fire Protection, March 2015; www.oib.or.at) apply to installations that penetrate a fire section-forming component (wall or ceiling). With regard to uniform handling with regard to the interpretation of the provisions of point 3.4 of OIB Guideline 2 "Fire Safety" in conjunction with Section 88 of the Building Regulations for Vienna, the "Installation Guideline, Fire Protection Requirements for Cable Routing" published by MA 37 must be observed.

This guideline permits the use of drinking water pipes and wastewater pipes made of combustible building materials (PE, PP) in garages, cellars and the like in compliance with the sealing measures (fire protection collars, section insulation) under point 8.

Therefore, the **MASTER 3 PLUS** Soil & Waste pipe system may also be used in basements and underground garages.

The openings for installation in partition walls and/or ceilings forming fire partitions must be closed by suitable measures (e.g. bulkheading or cladding) in such a way that the fire resistance period of the component is not impaired or the transmission of smoke and fire over the time of the required fire resistance period is effectively contained.

If fire safety measures are required for plastic pipelines, fire protection collars can be used.

Pipelife offers two types of fire protection collar for the MASTER 3 PLUS system:

- **Intumex RS10 fire protection collars**
- **Hilti Endless fire protection collars**

Intumex RS10 fire protection collars

Intumex RS10 is a fire pipe collar for plastic pipes made of powder-coated stainless steel with Intumex L as an intumescent insert.

This fire pipe collar was tested with the MASTER 3 PLUS system according to EN 1366-3 and classified according to EN 13501-2.

Intumex RS10 fire protection collars are tested for wall and ceiling bulkheads in walled and top-mounted installation.

The space-closing effect of the fire pipe collar is based on the active substance insert Intumex L which expands in the event of a fire. Above 150 °C, the active ingredient expands many times its initial volume under pressure, thereby reliably closing the cavity of the burning plastic pipe and thus preventing the passage of smoke and fire to the side facing away from the fire for the required fire resistance period.

Furthermore, the permitted maximum temperature is not exceeded on the side facing away from the fire, which means that spontaneous combustion can be ruled out there.

The fire pipe collars must be fitted in accordance with the valid test report. If this is not possible, the persons responsible for the building and an expert must be consulted prior to installation.

Advantages

- + Ready-made collar, therefore simple and short installation time
- + No minimum distance between collars required (zero distance according to MLAR)
- + Installation depth - 30 mm for straight pipe ducts

We are happy to send you processing guidelines just contact your local Pipelife company.



Intumex RS10 fire protection collars

Hilti Endless fire protection collar

The Endless M3-BSM/CFS/EL fire protection collar is a very versatile solution for fire protection of the **MASTER 3 PLUS** system.

It may only be installed on top.

For EI90 walls, it is used on both sides. For ceiling ducts, it is used on the underside of the ceiling.

To fasten the endless fire protection collar, either short or long hooks are required for the different combinations.

The annular gap around the pipes may be 5 to 40 mm and must be filled with CFS-FIL.

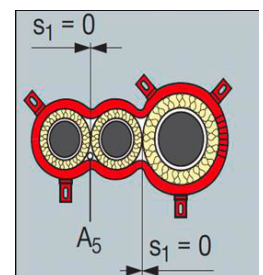
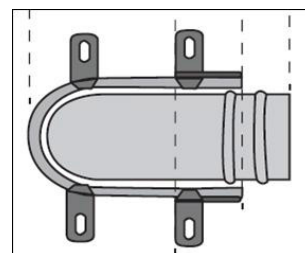
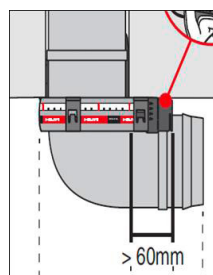
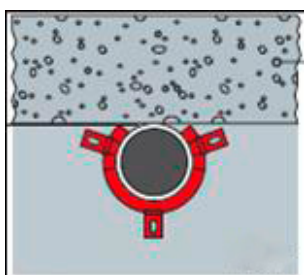


Hilti endless fire protection collar

Advantages:

- + Flexible in dimension, you always have the right fire protection collar on site
- + Versatile to use; straight feedthroughs, inclined ducts, shaft solutions, special solutions and problem solutions

Request a technical data sheet and an instruction manual from us or download them from www.pipelife.at.





2. INSTALLATION INSTRUCTIONS FOR MASTER 3 PLUS

Pipelife **MASTER 3 PLUS** Soil & Waste pipes and fittings are tested in reference to EN 1451, Part 1, and marked with "BD". The ring stiffness of SN4 pipes is at least 4.0 kN/m². The fittings correspond to the S16 pipe series. The **MASTER 3 PLUS** system is therefore only approved for installation inside and outside buildings up to the junction into the street canal. Pipes and fittings are supplied with a plug-in socket and inserted lip seal ring. When using Pipelife **MASTER 3 PLUS** Soil & Waste pipes and fittings, EN 12056 Parts 1-5 and for example for Austria, ÖNORM B 2501 are binding with regard to planning and dimensioning as well as the design of drainage systems for buildings and sites.

For other local circumstances and regulations, please contact your local Pipelife company.

FOR DOMESTIC AND INDUSTRIAL USE

2.1 Area of application

MASTER 3 PLUS Soil & Waste pipes and fittings are mainly used for hot water-resistant drainage pipes for domestic and industrial grey, black and rainwater:

- in single-family homes and apartment buildings
- in apartment construction
- in multi-storey buildings and high-rise buildings
- in renovation work
- in industrial facilities
- in schools, universities
- in hotels, health resorts
- in hospitals
- in garages and underground garages, etc.

Within these buildings, the Pipelife **MASTER 3 PLUS** Soil & Waste pipe system can be used for:

- single and group connecting pipes
- downpipes
- collecting lines
- bypass lines
- ventilation lines
- internal rainwater pipes with up to 5 m backwater height.

ALSO SUITABLE FOR DWELLING VENTILATION SYSTEMS

ALSO SUITABLE FOR CENTRAL VACUUM CLEANING SYSTEMS

2.2 Special uses:

- ventilation lines for dwelling ventilation systems
- lines for central vacuum cleaning systems
- pipes, fittings and sealing elements are also suitable for the transport of chemically aggressive wastewater in the range from pH 2 (acidic) to pH 12 (basic).

Pipelife MASTER 3 PLUS Soil & Waste pipes cannot be used fo

- r:lines outdoors (e.g. external rainfall line)
- pipes carrying wastewater containing petrol or benzene
- lines where temperatures in excess of 100 °C can occur due to external influences
- disposal lines in chemical plants
- internal rainwater pipes with more than 5 m backwater height

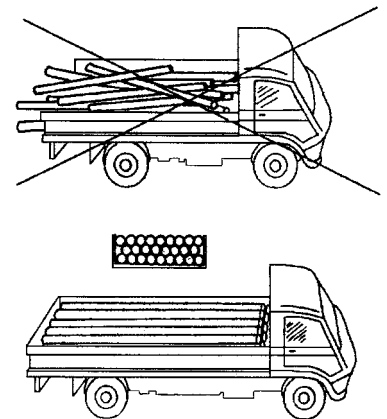
2.3 Compatibility

The dimensions of Pipelife **MASTER 3 PLUS** pipes and fittings comply with ÖNORM EN 1451-1 and can be combined with other makes that comply with this standard.

2.4 Transport

During transport, ensure that the pipes are fully supported along their entire length. The joints must be arranged in a staggered manner. Pipes projecting beyond the loading area must be supported in order to avoid bending loads. The pipes must be protected from edges (e.g. side walls). Deformations of the pipes must be avoided.

Loading work must be carried out with due care. The throwing and grinding of pipes and fittings must be avoided. This applies in particular at temperatures below freezing.



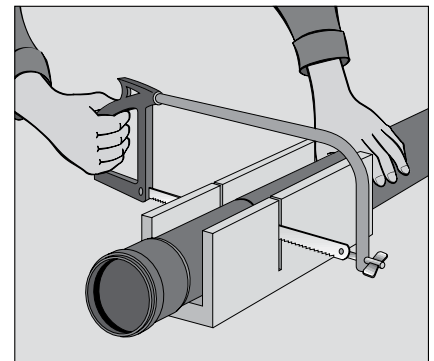
2.5 Storage

The pipes must be stored vertically, protected from dirt and UV radiation in foil bags.

Suitable modification of the PP-CO outer layer of the MASTER 3 PLUS domestic Soil & Waste pipes provides high UV protection which safeguards outdoor storage. Therefore, the pipe can also be stored outdoors if stored correctly (max. 2 years).

When storing the pipes horizontally, do not exceed a stacking height of 2 metres. To avoid any bending of the pipe rods during storage, the joints must be arranged in a staggered manner. Pipe stacks must be secured against rolling apart.

Fittings and short lengths of 150, 250 and 500 mm are packed in cardboard and must be protected from moisture.



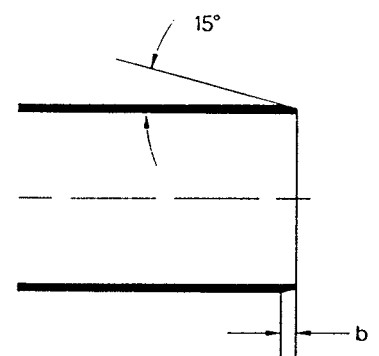
2.6 Cutting pipes to length

When cutting or fitting the MASTER 3 PLUS Soil & Waste pipes, cut them with a pipe cutting and chamfering device, angle grinder or a fine-toothed saw (foxtail). 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.

The cut edges must be deburred inside and out with a knife or scraper.

After cutting, the cut surfaces must be chamfered at an angle of approx. 15°. If a chamfering tool is not used, a suitable angling device or rasp must be used. For the length of the taper, see the table below. Fittings must not be cut to length.

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



2.7 Connecting pipes and fittings

The pipes and fittings are connected to each other by means of a plug-in socket with a factory-fitted lip seal ring.

Clean the tip end and the socket of dirt.

The tip end is thinly coated with Pipelife lubricant "MGN" and pushed into the socket limit stop.

Do not use oils or fats as lubricants.

Plug-in depth mark



The tip end of the **MASTER 3 PLUS** fittings is provided with an insertion depth marking. The insertion depth marking is only an orientation aid for the fitter. If the tip end is completely inserted into a socket, the socket end is in the area of the insertion depth marking. This is only partly visible or no longer visible at all.

Please note that inserting the socket up to the insertion depth marking is not a prerequisite for the tightness of the connection.

Linear expansion

In industrial and project buildings, linear expansion must be taken into account for cable lengths of more than 10 m without changing direction.

Expansion coefficient

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

(e.g.: Temperature difference Δt 50 K; length of straight pipeline 12 m = expansion 54 mm)



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

Alternatively, long sockets can also be used to accommodate the change in length.

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 m.

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

2.8 Installing pipelines in the ground

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

The minimum gradient is specified in the according (local) norms. For more information contact your local Pipelife company. Ensure that the pipes are adequately fixed and that they are fastened in such a way that they are decoupled from structure-borne noise (e.g. insulation material and no residual bricks as a base).

Exposed pipe parts must be sound-proofed with insulating material before the screed is laid.

Linear expansion in detached houses and residential buildings

2.9 Installing pipelines in masonry

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).

2.10 Installing pipelines in concrete

Pipelife **MASTER 3 PLUS** pipes and fittings can be installed in the screed in a sound-proof manner. If necessary, the change in length of the pipes must be taken into account at the joints as described in "Connecting pipes and fittings" (page 14).

The pipe sections must be fastened in such a way that their position cannot change when the screed is laid. Pipe openings must be closed with socket plugs. Socket joint gaps must be sealed with adhesive tape or by wrapping with foil so that no cement slurry can penetrate.

The use of **MASTER 3 PLUS** pipes in solid concrete elements requires structural analysis. It is not permitted to use vibrating machines.

Due to the heavy weight of the concrete, deformations of the pipe can occur in such cases. To decouple sound, the pipe must be completely surrounded by a 4-mm PE insulation tube (M3-DS100/4).

Ensure that the pipelines are well fastened so that their position cannot change during concreting.

2.11 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 by protective pipes or by wrapping with heat-insulating materials. If another fire compartment is involved, the appropriate fire safety measures must be taken (see Fire Safety chapter on page 10).

2.12 Fastening and clamp spacing

For Pipelife **MASTER 3 PLUS** pipes and fittings, commercially available pipe clamps that are matched to their outer diameter and completely surround the pipe may be used. Pipe hooks must not be used for fastening.

The maximum distance between the clamps for horizontal pipes is 13x the outside diameter
For downpipes, DN/OD 32 to 50 max. 1.5 m, DN/OD 75 to 160 max. 2 m.

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

In principle, it is recommended to use only clamps with rubber inserts for fastening downpipes. We recommend the use of the Pipelife clip-on clamp for fastening horizontal pipes, single and group connecting pipes. For collecting pipes, use the sound-proofing element.

When fastening downpipes, 2 pipe clamps with rubber inserts should be installed on each floor. The pipes are to be fixed directly under the pipe socket by means of fixed clamp 1 in such a way that they cannot slip during further installation.

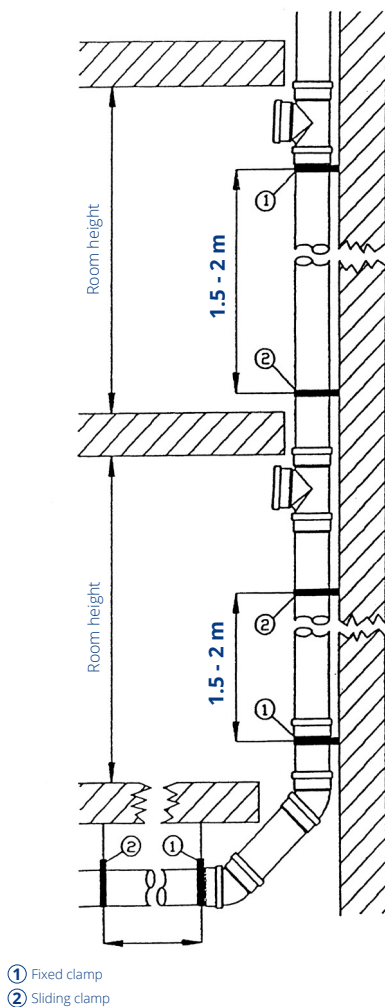
Do not tighten the fixed clamp fully, but only to the extent that good contact with the pipe is established, but the pipe is prevented from slipping.

Full tightening of the pipe clamp increases sound transmission to the masonry.

Fixed clamps should prevent axial movement of the pipeline. They represent fixed points in the pipe system.

Sliding clamp 2 is used to stabilise the pipe. It should only be tightened to such an extent that there is merely slight contact between the rubber insert and the pipe.

Sliding clamps allow longitudinal movement of the pipelines.



2.13 Avoidance of structure-borne noise

Avoid any kind of structure-borne sound transmission. Even small sound bridges from the pipe system to the building through mortar residues can mean that the required sound values cannot be achieved in rooms requiring protection.

In order to avoid transmission of structure-borne sound from the Soil & Waste pipe system to the building structure as far as possible, the pipe for wall and ceiling feedthroughs must be fitted with a transfer, 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.

2.14 Avoidance of condensate

Inside buildings, the possibility of condensation on the surface of rainwater pipes by falling below the dew point temperature must be taken into account.

To avoid condensate, vulnerable pipes must therefore be provided with a suitable water vapour diffusion-tight insulation.

As a rule, insulation thicknesses of 20 – 30 mm are sufficient.

Insulation thickness calculators and tables can be found on the homepage of the respective insulation material manufacturer.

2.15 Retrofitting of fittings

When using two push-on sockets (Fig.1), a sufficiently long pipe section (length of the fitting + 2x outer pipe diameter) is cut out, the pipe ends are deburred and chamfered. The push-on socket is pushed over the entire length of the pipe end. Insert the fittings and fit the intermediate piece into the remaining space between the pipes. Slide the second push-on socket completely onto the intermediate piece. Insert the intermediate piece and close both gaps by shifting the push-on sockets.

When using long sockets (Fig.2), a pipe section is cut out of the pipeline according to the length of the fitting plus single insertion depth. The long socket is inserted up to the base of the socket and then the fitting is inserted by means of a push-on socket. Then the tip end of the long socket is pushed into the fitting socket.



**PE insulation tube
M3-DS100/4**

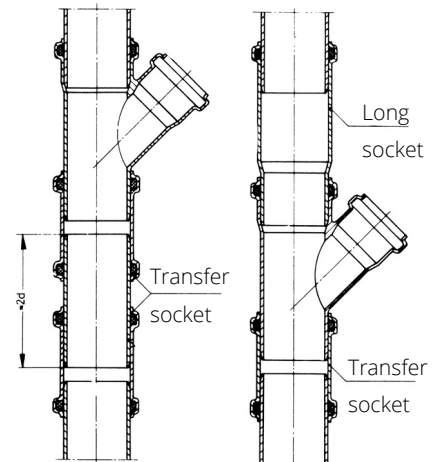


Fig. 1

Fig. 2



Double socket with bars

2.16 Installation of push-on sockets

The **MASTER 3 PLUS** double socket can be used in 2 ways:

- as a connecting socket
- as a push-on socket

Bars in the double socket limit the insertion depth to the socket length. This allows it to be used as a connection 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 of the double socket
- Place the socket on the cut (not chamfered) end 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 causes the bars to break 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 safety goggles.



Attach the socket to the pipe end

2.17 Transition to cast iron or fibre cement tip end

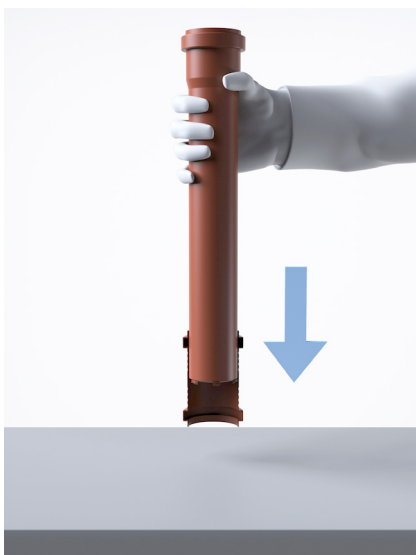
The connection of **MASTER 3 PLUS** joints to cast iron and fibre cement tips is made by means of ÜFS... transition.

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

2.18 Transition to cast iron socket and fibre cement socket

The connection of the **MASTER 3 PLUS** spigot end to a cast iron or fibre cement socket is made using the transition ÜFM.... or ÜFM/GAZ....



Strike on a straight surface



Transfer socket without bar

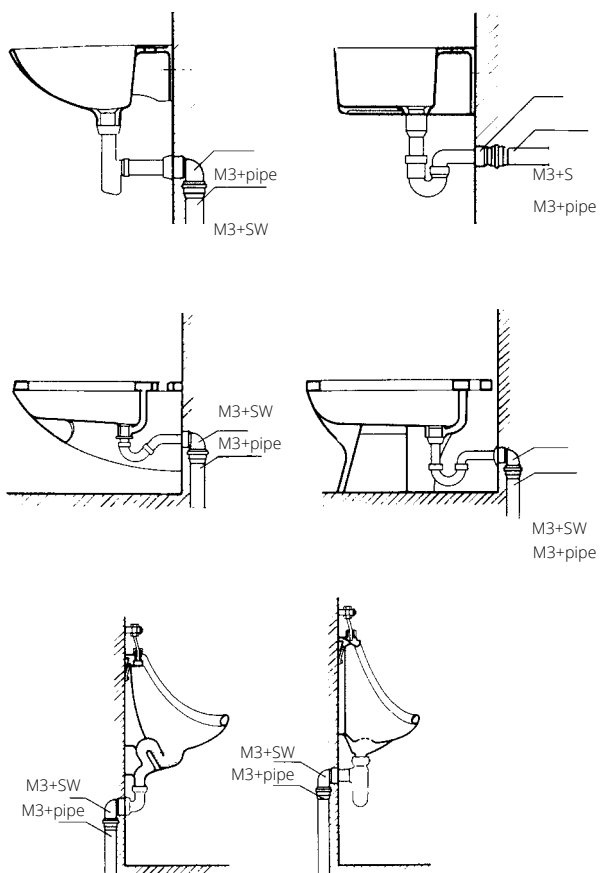
2.19 Connection of siphons

The connection of siphons and metal pipes to Pipelife **MASTER 3 PLUS** Soil & Waste pipes is made using a straight siphon connection M3+S... or siphon bracket M3+SW.

Pipelife has the 5/4", 6/4" combination nipple in its range for this. This allows the connection of siphon pipes from 28–47 mm diameter.

Examples:

Connection of washbasins, sinks, bidets, urinals, laboratory sinks and the like. The inside of the rubber nipple and the metal pipe or siphon are coated with lubricant before installation to facilitate insertion.



3. PLANNING AND INSTALLATION INSTRUCTIONS

For planning and installation follow the respective (local) norms. The following instructions refer to 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 from the standards and are not intended to be exhaustive.

The illustrations are taken from the aforementioned standards or depicted symbolically.

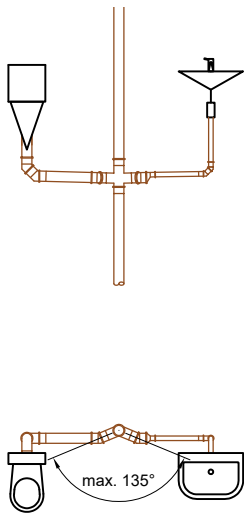


Figure 1

L1 = Length of group connecting pipe

L2 = Length of single connecting pipe

L = Sum of the pipe lengths

- 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 (see Fig. 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.
- When installing eccentric reducers in horizontal connecting and collecting lines, they should be installed as flush as possible with the vertex (but never flush with the base) (see Fig. 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 odour 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 collecting 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 manifold and underground pipes. Double branches are not permitted.
- Junctions in collecting and underground pipes may only be made at an angle of no more than 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 m, 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 m to a maximum of 33 m, the downpipe (Fig. 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 collecting or underground pipe. At the junction with a collecting or underground pipe (Fig. 2), a range of 1.0 m, measured from the deflector bend or from the junction of the downpipe, must be kept free of connections. The junction of the downpipe into a collecting or underground pipe must be designed with two 45° bends and an intermediate piece with a length of 250 mm (Fig. 3).

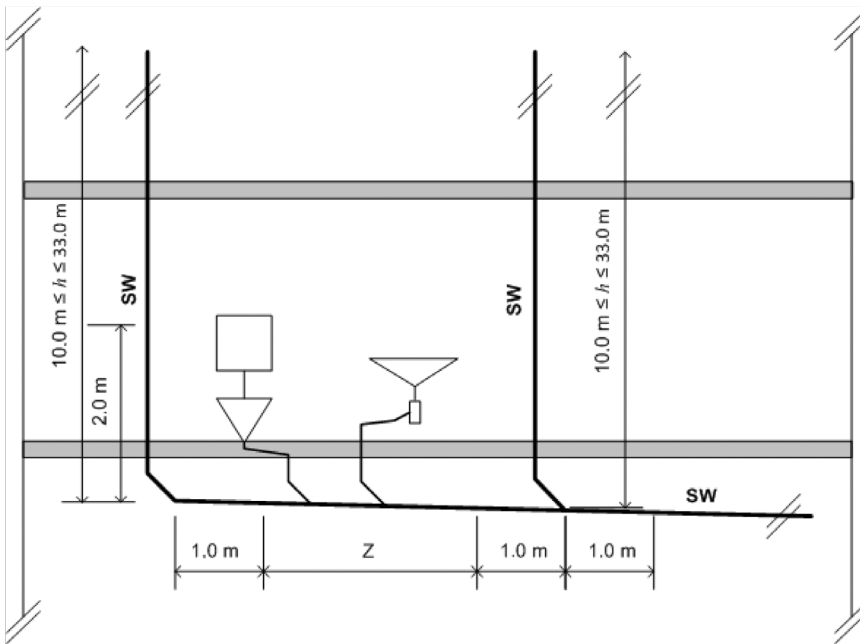


Figure 2: Connection-free zone at junction into the collecting or underground pipe; taken from ÖNORM B 2501: 2015-04-01 (Figure 11).

Downpipe height 10 to 33 m

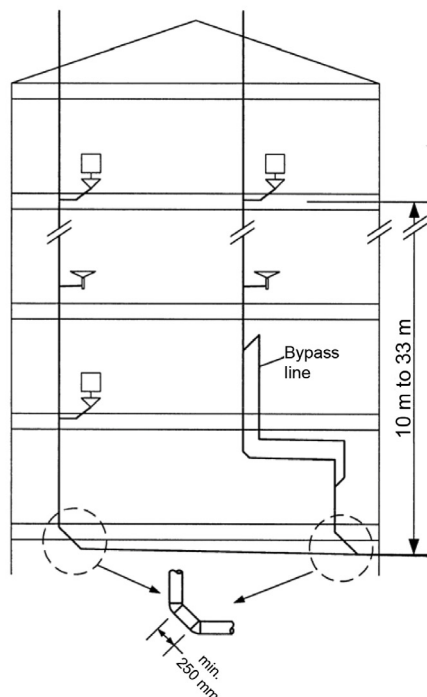


Figure 3: Junction of downpipes (10 m to 33 m drop height) into a collecting pipe; taken from ÖNORM B 2501: 2015-04-01 (Figure 14).

- In the case of downpipes with a drop height of more than 33 m, bypass pipes must be installed in the case of downpipe diverters and at the junction into a collecting and underground pipe. According to Fig. 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.

Downpipe height of more than 33 m

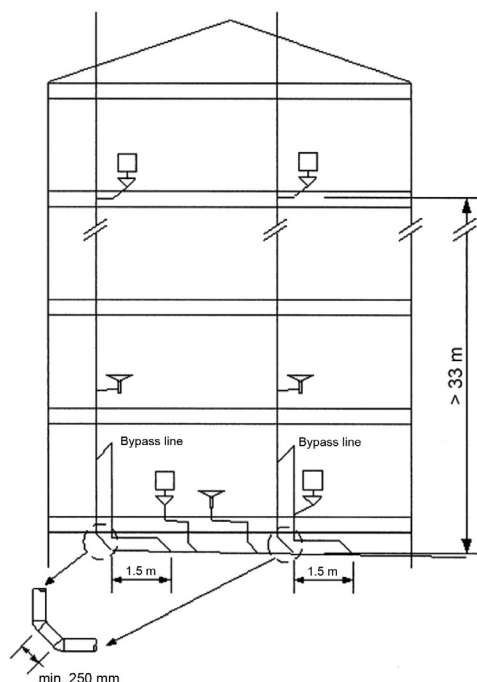


Figure 4: Junction of downpipes (more than 33 m drop height) into a collecting pipe; from ÖNORM B 2501: 2015-04-01 (Figure 15).

- When connecting single or group connecting lines to downpipes, branches with angles of 87° to 88.5° must be used.

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 Fig. 5.

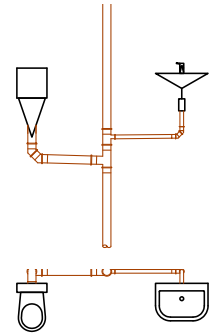


Figure 5

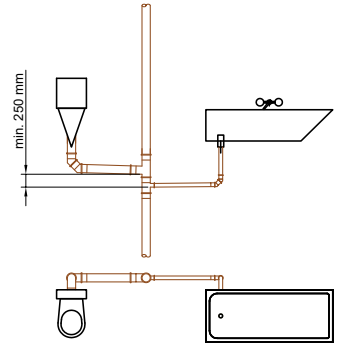


Figure 6

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

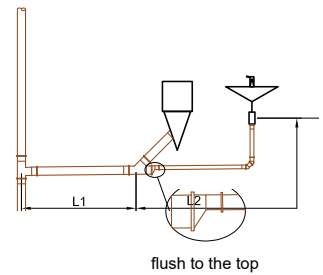


Figure 7

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 Fig. 8.

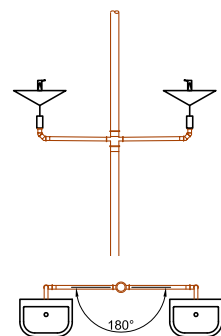


Figure 8

- If this is not possible, the distance in relation to the base heights must be at least 25 cm as shown in Fig. 9.

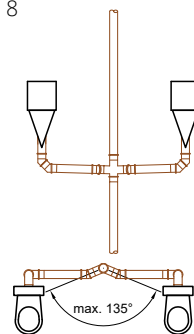


Figure 9

4. FACTORY STANDARD

Sound-insulating Soil & Waste pipe system made of polypropylene, PP-3-Layer-FLOW SYSTEM

Pipe material, marking:

3-layer, mineral-reinforced composite pipe made of halogen-free plastics, with reinforced pipe wall, minimum stiffness 4 kN/m² (SN4).

Noise-reducing, slide-reinforced white inner layer of PP-CO, resistant to hot water up to 95 °C (Pipelife).

Mineral-reinforced fittings, polypropylene (PP-CO-MV), pipe series S16 tested in reference to ON EN 1451-1.

Pipes and fittings are each designed with a moulded plug-in socket and factory-fitted sealing ring.

Installation

According to the respective norms and our installation instructions.

Colour

Outer layer	RAL 8012 red brown
Middle layer	RAL 9011 graphite black
Inner layer	RAL 9003 signal white

Structural lengths

0.15; 0.25; 0.50; 1.0; 1.5; 2.0 m in DN/OD 32-160,
2.65 m in DN/OD 75, 90, 110, 125, 160.

Connections

Push-in socket formed from the pipe with synthetic rubber (SBR) lip seal

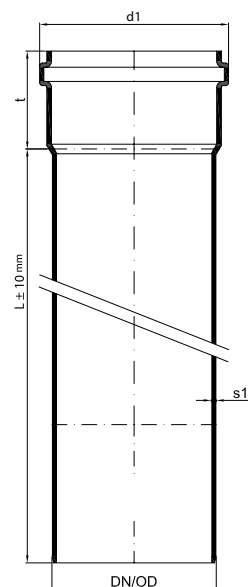
4.1 Pipe

MASTER 3 pipe

M3+... /...

With one-sided plug-in socket and integrated lip seal

DN/OD	32	40	50	75	90	110	125	160
s1	1.8	1.8	2.0	2.1	2.5	3.0	3.5	4.4
d1	43.0	54.2	64.2	89.4	105.4	127.8	145.5	183.9
t=	45	52	52	56	58	62	68	77
l mm	Weight (kg/pc.)							
150	0.04	0.06	0.07	0.13	0.20	0.29	0.40	0.69
250	0.06	0.08	0.10	0.19	0.29	0.41	0.57	0.96
500	0.12	0.15	0.19	0.33	0.50	0.72	0.98	1.63
1000	0.22	0.28	0.35	0.63	0.95	1.34	1.81	2.96
1500	0.32	0.41	0.51	0.92	1.39	1.96	2.64	4.30
2000	0.42	0.54	0.68	1.21	1.82	2.57	3.47	5.63
2650	-	-	-	1.59	2.38	3.37	4.54	7.37



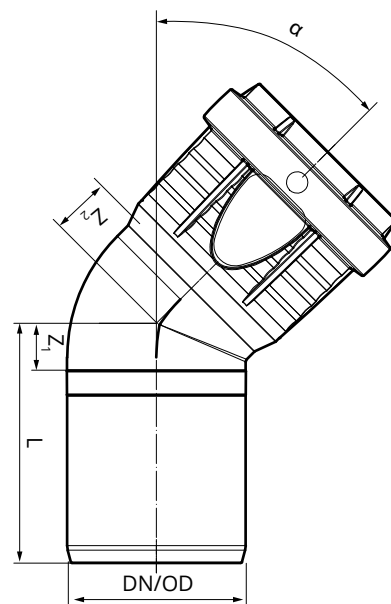
4.2 Fittings

With integrated lip seal

MASTER 3 PLUS-bend

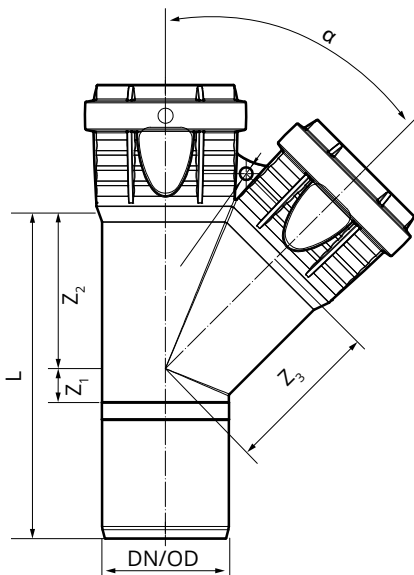
M3+B... /..

	DN/OD	32	40	50	75	90	110	125	160
15°	Z ₁	9	5.5	6	8	10	10	16	14
	Z ₂	9	8	9	12	14	16	23	22
	L	46	59	60	68	72	76	88	95
	kg/pc.	0.030	0.043	0.057	0.190	0.164	0.248	0.390	0.663
30°	Z ₁	10	8.5	10	14	16	18	24	25
	Z ₂	10	8	12	17.5	20	24	31	33
	L	47	62	64	74	78	84	96	106
	kg/pc.	0.030	0.044	0.059	0.117	0.172	0.271	0.407	0.729
45°	Z ₁	11	11.5	13	19	23	26	33	38
	Z ₂	14	14	16	22	27	32	40	46
	L	48	65	67	79	85	92	105	114
	kg/pc.	0.030	0.046	0.066	0.124	0.189	0.298	0.439	0.802
67.5°	Z ₁	18	17	20	29	34	40		
	Z ₂	19	19	22.5	32	39	46		
	L	55	70	74	89	96	106		
	kg/pc.	0.030	0.049	0.066	0.136	0.193	0.329		
87.5°	Z ₁	25	23	27	41	48	58	66	81
	Z ₂	24	25.5	29.5	44	53	64	73	89
	L	62	76	81	101	110	124	138	162
	kg/pc.	0.030	0.052	0.068	0.147	0.224	0.363	0.519	0.997



MASTER 3 PLUS-single branch

M3+EA.../.../...



$\alpha = 45^\circ$					
DN/OD	Z ₁	Z ₂	Z ₃	L	kg/pc.
32/32	10	40	35	47	0.040
40/32	6	44	43	103	0.072
40/40	12	48	48	114	0.088
50/32	0	52	48	102	0.084
50/40	6	55	54	114	0.100
50/50	13	60	60	127	0.115
75/50	-1	75	79	135	0.205
75/75	18	91	91	169	0.249
90/50	0	80	90	152	0.248
90/75	11	102	98	171	0.292
90/90	23	109	109	194	0.374
110/50	-16	102	92	142	0.361
110/75	1	117	108	175	0.429
110/90	12	123	119	197	0.511
110/110	26	133	133	225	0.514
125/110	20	144	142	234	0.796
125/125	31	152	152	255	0.933
160/110	1	168	158	240	1.210
160/125	13	177	169	263	1.370
160/160	37	192	192	310	1.760

$\alpha = 67.5^\circ$					
DN/OD	Z ₁	Z ₂	Z ₃	L	kg/pc.
50/50	20	42	42	116	0.107
110/50	8	74	57	131	0.359
110/75	21	80	71	158	0.420
110/110	41	84	84	191	0.548

$\alpha = 87.5^\circ$					
DN/OD	Z ₁	Z ₂	Z ₃	L	kg/pc.
32/32	15	30	35	52	0.040
40/32	18	25	21	93	0.068
40/40	23	24	24	101	0.078
50/32	18	30	22	94	0.081
50/40	23	29	25	102	0.093
50/50	28	29	29	111	0.103
75/50	28	42	32	111	0.169
75/75	41	45	45	146	0.218
90/50	26	50	33	121	0.229
90/75	39	52	46	147	0.277
90/90*	81	79	44	191	0.372
110/50	27	59	35	128	0.345
110/75	39	61	46	151	0.350
110/90*	81	79	60	207	0.490
110/110*	81	79	60	207	0.559
125/110	57	72	66	195	0.655
125/125	73	81	81	226	0.801
160/110	55	90	67	203	1.051
160/160	80	92	92	253	1.760

*Bend junction (r = 117 mm)

MASTER 3 PLUS-double branch

M3+DA.../.../...

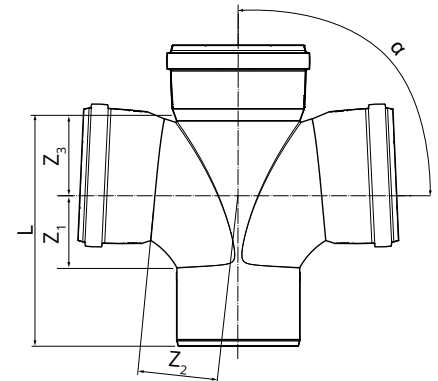
$\alpha = 87.5^\circ$					
DN/OD	Z ₁	Z ₂	Z ₃	L	kg/pc.
110/50	26	59	36	120	0.393
90/90*	73	85	49	185	0.622
110/110*	73	85	65	195	0.796

*Bend junction (r = 117 mm)

MASTER 3 PLUS-corner branch

M3+ECK.../.../...

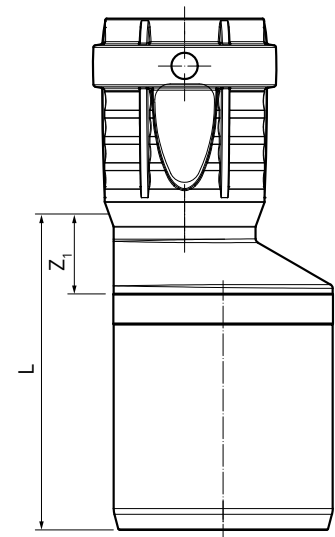
$\alpha = 87.5^\circ$					
DN/OD	Z ₁	Z ₂	Z ₃	L	kg/pc.
110/110	60	63	67	185	0,735



MASTER 3 PLUS reducer

M3+R.../..

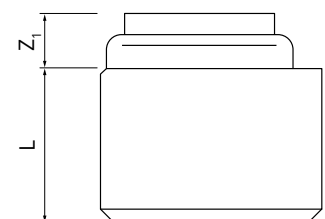
DN/OD	Z ₁	L	kg/pc.
40/32	11	65	0.033
50/32	16	70	0.041
50/40	10	64	0.050
75/40	23	83	0.083
75/50	17	77	0.086
90/50	25	87	0.116
90/75	13	75	0.125
110/50	38	104	0.176
110/75	23	89	0.183
110/90	16	82	0.024
125/110	25	87	0.298
160/110	35	116	0.486
160/125	27	108	0.502

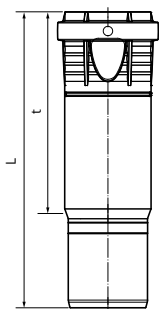


MASTER 3 PLUS short reducer

M3+R.../...K

DN/OD	Z ₁	L	kg/pc.
40/32	15	43	0.04
50/32	16	47	0.05
50/40	16	47	0.05
75/50	17	54	0.08
90/40	17	66	0.10
90/50	17	66	0.11
90/75	17	61	0.12
110/50	18	66	0.16
110/75	19	66	0.16
110/90	19	66	0.17
160/110	19	89	0.43

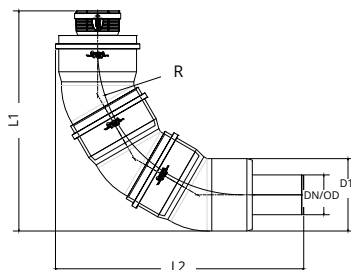




MASTER 3 PLUS long socket

M3+L...

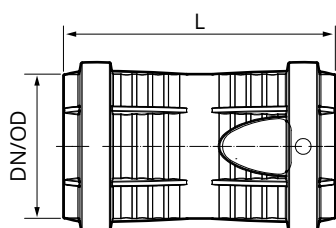
DN/OD	t	L	kg/pc.
40	115	177	0.052
50	125	187	0.083
75	135	205	0.164
90	150	224	0.259
110	165	244	0.391



MASTER 3 PLUS acoustic bottom bend

M3+KB100

DN/OD	L1	L2	D1	R
110	608	686	200	400



MASTER 3 PLUS double/push-on socket

M3+U...

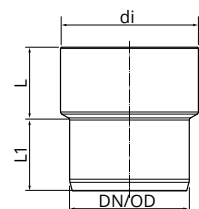
DN/OD	t	L	kg/pc.
40	3.2	102	0.050
50	3.2	103	0.061
75	3.4	116	0.115
90	3.6	120	0.171
110	3.9	129	0.261
125	4	140	0.374
160	4.5	159	0.609



MASTER 3 PLUS socket plug

M3+M...

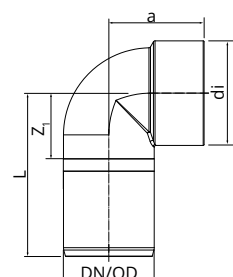
DN/OD	32	40	50	75	90	110	125	160
L	33	39	39	39	42	46	50	58
kg/pc.	0.008	0.010	0.014	0.027	0.041	0.068	0.089	0.174



MASTER 3 PLUS straight siphon connection piece

M3+S...

DN/OD	di	L1	L	kg/pc.
32	53.7	30	33	0.023
40	53.7	31	29	0.024
50	53.7	30	30	0.025



MASTER 3 PLUS siphon connection elbow

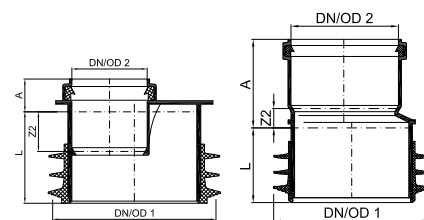
M3+SW...

DN/OD	di	Z ₁	a	L	kg/pc.
32	53.7	25	54	47	0.029
40	53.7	35	57	88	0.045
50	53.7	35	52	90	0.052

MASTER 3 PLUS internal reducer

M3+RI.../...

DN/OD1	DN/OD2	Z ₂	A	L	kg/pc.
110	50	-27	22	62	0.18
160	110	20	91	77	0.48



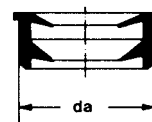
Combination nipple

Fits M3+S... and M3+SW....,

DN32, DN40 and DN50

M3+NI...

DN/OD	Metal pipe	da	kg/pc.
32/40/50	28-47	54	0.03

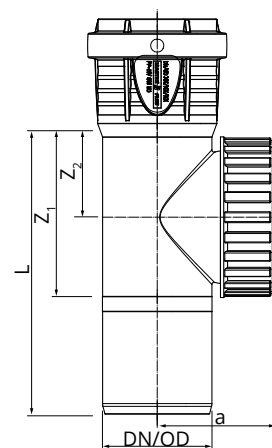


MASTER 3 PLUS cleaning pipe

(with screwcap and sealing ring)

M3+RE...

DN/OD	Z ₁	Z ₂	a	L	kg/pc.
50	73	37	56	127	0.155
75	79	39	70	139	0.227
90	126	64	72	188	0.436
110	126	64	80	192	0.567
125	152	79	98	224	0.870
160	170	90	113	251	1.326

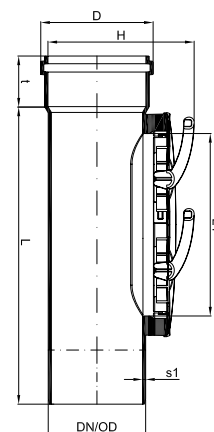


PP cleaning piece

(Colour: brown)

PP-KGRK....

DN/OD	110	125	160
L mm	468	474	488
s1 mm	3.6	4.0	5.1
t socket mm	65	73	84
D mm	129	146	185
H mm	196	222	251
L1 mm	301	301	301
kg/pc.	2.3	2.5	3.2



Ventilation cap

(Colour: grey)

KADH...

DN/OD	50	75	110	125	160
L mm	670	667	751	1038	1143
b mm	-5	16	177	200	246
kg/pc.	0.25	0.373	1.35	1.332	2.374

