

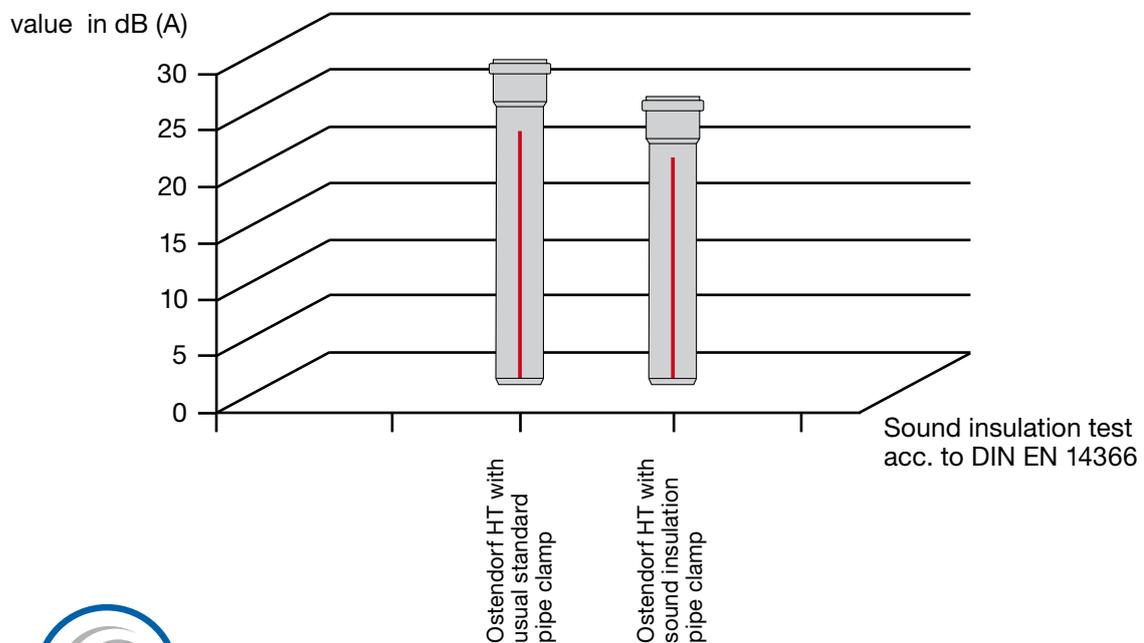
Sound insulation in building construction

The minimum requirements for sound insulation according the building authorities are specified in the standard **DIN 4109/A1**.

According to DIN 4109/A1 the characteristic sound pressure level due to installation noise of sewage systems in rooms in need of protection must not be more than 30 dB (A) for living and bed rooms resp. not more than 35 dB (A) for teaching rooms and offices.

Sound insulation advice for sanitary installations acc. to VDI

- valid for sewage systems inside buildings
- VDI 4100 specifies three different sound insulation levels
- Sound insulation level I – requirements of DIN 4109 corresponding to 30 dB (A)
- Sound insulation level II – higher sound insulation corresponding to 25 dB (A)
- Sound insulation level III – increased sound insulation corresponding to 20 dB (A)



HT Sound Insulation VDI sound insulation levels and classification



One family houses
Sound insulation level I
or on agreement



Apartment buildings, residential and office buildings, comfort apartemtents
Sound insulation level II or higher



Hotels, hospitals, residential complexes
Sound insulation level III enhanced agreements

Sound insulation – value

Installation Instructions

1. FIELD OF APPLICATION

The following instruction describes how the HT pipes and fittings - for discharging media in foul water, rainwater and ventilation pipes inside buildings - are to be handled, stored and mounted.

Orders for laying the detailed waste water piping systems are only to be placed with companies with a pool of trained operating personnel. The instruction is only for installing genuine pipes and fittings involving the use of the genuine sealing elements and lubricants.

2. TRANSPORT, HANDLING AND STORAGE

Unpalletized pipes should be laid completely flat along their entire length during transport. Heavy shocks – especially in freezing temperatures – must be avoided. For loading and unloading wide canvass lifting harnesses must be used.

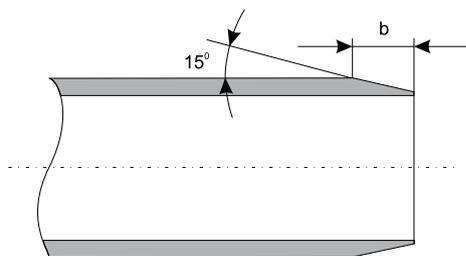
Pipes and fittings may be stored outdoors; pre-installed sealing elements should not be stored longer than three years. The following points must be observed when laying pipes:

- Pipes must be stored in a stable position so that no deformation or sagging can take place.
- The pipe sockets must be free, both in the vertical and horizontal directions.
- A stacking height of 1.5 meters should not be exceeded.

3. CUTTING TO LENGTH AND BEVELING

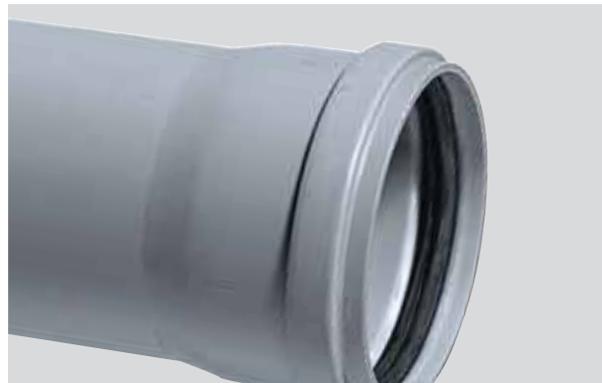
Cutting pipes to length is done at right angles by using a pipe cutter or a fine-toothed saw. The cut edges must be deburred. The pipe end is then beveled with a beveling tool or by using a coarse file at an angle of approx. 15° as shown in the following figure.

		BEVELING DIMENSIONS							
DN(OD)	32	40	50	75	90	110	125	160	
b[mm]	3,5	3,5	3,5	3,5	4,5	4,5	5,0	6,0	



4. CONNECTING PIPES AND FITTINGS

- a) Clean the pipe spigot end and clean the socket.



- b) Check the condition and quality of the factory pre-installed sealing element.

- c) Apply factory supplied lubricant lightly and evenly on the bevelled surface only of the spigot end.



When inserting, the ring seal must be free of lubricant. Center up the spigot end of the pipe and push until the pipe end reaches the end of the socket.

- d) Length changes between pipes and fittings as well as between pipes within the spigot and socket connection are possible.

It is required that the pipe be pulled back a maximum of 10 mm. For normal HT pipes, that means a maximum length of 2 meters.

The spigot ends of fittings may remain fully pushed into the socket.

Pipes must be secured with pipe clamps to prevent slippage during subsequent installation work. This is done after taking into account the necessary measures concerning length changes.

5. PIPE CLAMPS

In general, plastic waste water pipe systems must be installed so that they are not under mechanical stresses and are allowed to undergo natural length changes. As a rule, securing pipes is done with pipe clamps that have an inner lining and that are appropriate for the given outer diameter and which completely circumvent the pipe. If no inner lining is used inside the clamp, then the inside edge of the clamp must be rounded off and the inside surface must be smooth. Only an inner lining that is recommended by the pipe manufacturer can be used. Inner linings made of PVC or pipe hooks must not be used!

5.1 FIXED CLAMPS

Fixed points are achieved by completely tightening the pipe clamps in a piping system. They must be positioned so that each pipe length is prevented from slipping. The fixed clamps must be positioned directly behind the socket for pipe with sockets.

Fittings or groups of fittings must always be laid out as fixed points.

5.2 LOOSE CLAMPS

Pipe clamps which are not completely tightened (loose clamps) must allow unimpaired longitudinal movement of the pipeline after installation. For this reason the inside diameter of the clamp must be slightly bigger than the outside diameter of the pipe when installed.

5.3 Distance between Pipe Clamps

RECOMMENDED PIPE CLAMP INTERVALS		
DN(OD)	horizontal [m]	vertical [m]
32	0,50	1,2
40	0,50	1,2
50	0,50	1,5
75	0,80	2,0
90	0,90	2,0
110	1,10	2,0
125	1,25	2,0
160	1,60	2,0

6. LAYING PIPE LINES IN MASONRY STRUCTURES

Slots in masonry must be made to allow stress and tension free pipe installation.

If the pipes must be embedded in mortar without the use of mortar carriers or enclosures, then the pipes and fittings must be completely wrapped in flexible material, such as cardboard, mineral or glass wool.

At areas where high temperatures can occur, appropriate measures must be taken to protect the pipes (insulation of heat carrying lines e.g. heating lines).

In addition, the ZVSHK guidelines "Vorwandinstallation" and the ZVSHK instruction manual "Entwässerungsleitungen" must be referred to.

Horizontally laid pipelines (connecting or collecting lines) which, for example, serve as a connection for multiple wall fixture elements should have a wrapping along the entire length. Linear expansion of the pipes and fixtures must not be hindered.

7. PIPE INSTALLATION IN CEILINGS AND FLOORS

Laying pipes in ceilings must be done so that they are moisture proof and sound proof. The appropriate wrapping material must be used. In case of floors using poured asphalt, the pipeline parts must be protected by using protective pipes or by wrapping with heat insulating materials.

If fire protection requirements are placed on ceilings, then the appropriate fire protection steps are to be observed.

8. INSTALLING PIPE SYSTEMS IN CONCRETE

House waste water pipes and fittings may be embedded in concrete. Length changes of the pipes from thermal expansion must be considered as previously described.

The parts of the pipe system must be fastened so that movement and expansion is prevented during concrete pouring. To prevent penetration of concrete fluid into the gaps of connections, an adhesive tape strip must be used to seal the socket joint. All pipe openings must be closed off.

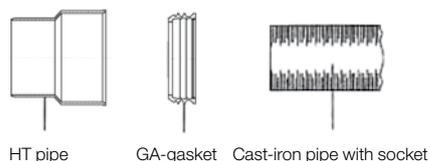
9. GENERAL REQUIREMENTS ON PIPES, FITTINGS AND CONNECTIONS

If pipes without factory-made sockets, for example rest lengths or cutted pipes, are installed, it is recommended to use double sockets as connection piece. Couplers are only to be used for renovation resp. repair purposes. In case that within one pipe line components of different product standards are used please note that they have to be connected by standardized or approved adaptor pieces and sealings.

10. CONNECTION TO PIPES OF OTHER MATERIALS AND PIPE CUTTINGS

To connect HT pipes to other pipe system parts made of some other material, the appropriate fittings and sealing materials from the manufacturer must be used.

Connection to cast-iron pipe socket DN(OD) 50, 75, 110



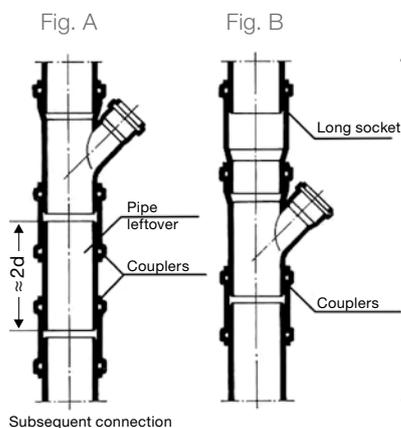
11. RAIN DOWN PIPES

If rain down pipes are installed through living areas, a condensate insulation is recommended also for the HT System. HT PP, measurement and evaluation according to DIN EN 14366, test result of the Fraunhofer Institut (test report P-BA 63/2010) 26 dB (A) sound insulation with a usual standard pipe clamp. Installation instruction of the pull-out protection at www.ostendorf-kunststoff.com.

12. SUBSEQUENT CONNECTION OF PIPES AND FITTINGS

If a connection must be done to an existing line, then fittings and components made by the manufacturer must be used.

- When using couplers a sufficiently long pipe length (length of the fitting $2d$) is cut out, the ends of the pipe are then to beveled and the branch connector is then installed. The remaining space in the line is closed off by inserting an appropriately long pipe length and two couplers (Fig A.).
- If long sockets are used, then a length of pipe that equals the length of the fitting plus the insert depth is cut out. The long socket is then inserted all the way to the end and the fitting is installed by using a coupler. Afterwards the spigot end of the long socket is to be inserted in the other socket end of the fitting (Fig B).

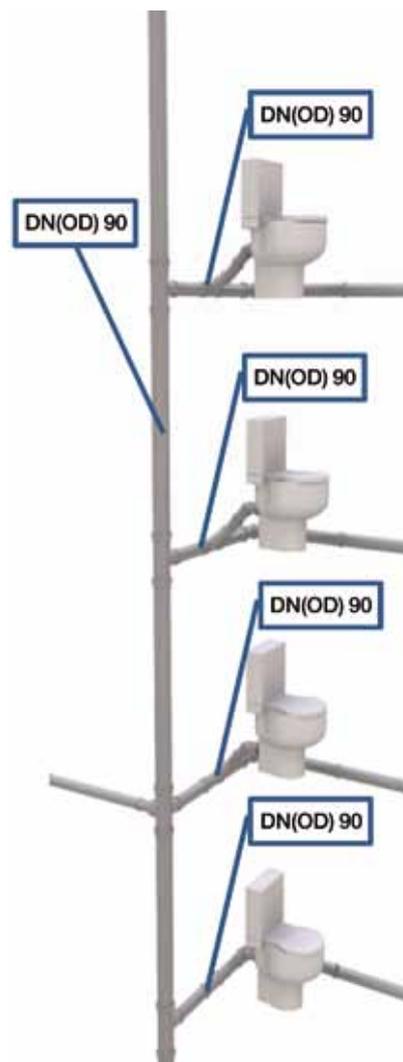


13. ADVANTAGES DN(OD) 90

The diameter DN(OD) 90 can nowadays be used as collecting pipe as well as falling- and ground pipe. Therefore a complete discharge line can be installed with only two dimensions (DN(OD) 50 and 90). There are further advantages of DN(OD) 90 like for example little space in supply shafts or in front wall installation. The smaller diameter supports the washing out behavior and provides for a good self cleaning in the pipe. DN(OD) 90 collecting lines can be used for

- a length up to 10 m
- for the connection of max. two 6 l WC cisterns
- for the connection of max. 6 sanitary items
- at a slope of 1 cm/m (1:100)
- with max. 3 changes of direction of 90° resp. 2 times 45°

According to the new DIN 1986-100 diameter DN(OD) 90 is required for water-saving toilets with 4,5 to 6 l flush volume. All over Europe water-saving toilets have been used for years with the dimension DN(OD) 90 without any problems. Further information at www.ostendorf-kunststoff.com.



Pull-out protection

Convincing facts:

1. Increased safety through stronger hold at high pressure
2. Applicable for lifting systems up to max. 2 bar overpressure according to MPA Darmstadt (without pressure surges)
3. Use for rain down pipes up to max. 2 bar overpressure
4. Easy application with "clamp lock" – without screwing



Practical application:

The stability and the functionality of a discharge system have to be ensured by a secure fastening. Discharge systems within the buildings structure can be subject to bigger inner pressure caused by particular stresses (for example the rain down pipe at heavy rainfall events).

This can refer to the following pipe lines:

- rain pipes in the back water level (mostly in basements)
- rain down pipes, which go from the roof through more floors without further drain outlets
- rain water pipes in the area of distortions from the down pipe to the collection pipe (particularly at a falling pipe height of more than 22m)
- conveying pipes of discharge lifting systems

Installation instruction of the pull-out protection at www.ostendorf-kunststoffe.com

Fire protection

The basis for the planning and the implementation of fire protection can be found in the German model pipe system guideline (MLAR).



Product range, further information and installation instructions of the fire protection solutions can be found on the respective website of the producer: www.walraven.com, www.rockwool.de

We assume no liability for use and contents. Solely responsible are the operators.