

GEBERIT SILENT-PP

QUIETLY GETTING  
ON WITH BEING  
**SUPER EFFICIENT**



**KNOW  
HOW  
INSTALLED**



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# QUIET DRAINAGE

## EASY PUSH FIT

Reliably robust and safe even at low temperatures, Geberit Silent-PP has the strength to significantly reduce the risk of damage or breakage. The award-winning push fit design enhancements such as visible insertion depths and gripping ribs on sockets make insertion, alignment and fitting quick and easy. And with advanced performance capability comes affordability, thanks to competitively cost-efficient pricing. Wherever rapid, economical, sound optimised drainage solutions are required, fit Silent-PP.

### HIGH RIGIDITY AND RELIABLE LEAKPROOF MATERIALS

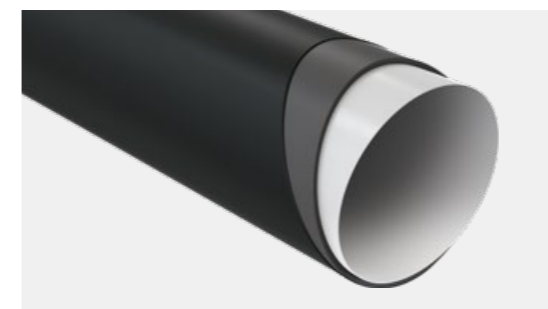
The ring stiffness of the Geberit Silent-PP system pipes and the tried and tested EPDM lip seals in the sockets of the pipes and fittings ensuring a reliable and permanent seal of the drainage system.

### AWARD-WINNING DESIGN FOR EASY INSTALLATION

Not just a push fit pipe system, Geberit Silent-PP incorporates a number of design innovations which make it easier and faster to install, easier to assemble, faster to align and visible insertion depth.

### GEBERIT SILENT-PP PIPE WITH TWO SOCKETS

Pipe lengths are also available with two sockets which enable offcuts to be used with a socket already attached. This generates fewer offcuts and waste. Shorter lengths are also available which can further reduce waste. Space requirements in the warehouse, during transport and at the site of use are also reduced. This means less capital commitment, more cost-effectiveness and a more environmentally friendly process.



Mineral-reinforced three-layer construction



Geberit Silent-PP pipe with two sockets



**SOUND-OPTIMISED CONSTRUCTION**

Geberit Silent-PP ensures less sound resulting from waste water. This is ensured by the mineral-reinforced three-layer construction of the pipe material and the hydraulically optimised fittings.



**LARGE ASSORTMENT**

Geberit Silent-PP is available in seven lengths and more than 100 fittings. For the connection of toilets and low shower drains (e.g. Geberit shower element), a double branch fitting is available that makes the joint installation of toilet and floor-even shower easier, more efficient and more space-saving.



**LOW LINEAR EXPANSION**

The minimal expansion of the three-layer pipes in the Geberit Silent-PP push fit system means that the entire drainage system can be fitted without expansion sockets. Linear expansion is thereby compensated for in the sockets. This contributes to cost saving and reduction of the assembly time.



**SYSTEM COMPATIBILITY**

Compatible with the highly sound-insulating drainage system Geberit Silent-db20. Adapter sockets create a reliably sealed connection to the stacks from the Geberit Silent-db20.



**COLD IMPACT STRENGTH**

Because Geberit Silent-PP features robust product materials which have cold impact strength, the pipes and fittings can even be safely processed at low temperatures, easily and without risk of breakage.



**UV-RESISTANT**

The high proportion of carbon black particles in the piping material and the high-quality seals made of EPDM make the system resistant to sunlight for outside storage for up to two years.



**EASY ALIGNMENT**

All fittings of the push fit Geberit Silent-PP drainage system have a 30° marking for quick and easy alignment of the entire drainage system. The rib-enforced fittings enable easy handling.



**CONTROLLABLE INSERTION DEPTH**

The insertion depth marking serves as the stop position and is used for simple control of correct insertion depth. This is an added bonus in terms of more safety and permanent tightness in all your discharge pipes.

# A SOUND COMPARISON

Whether PVC is your traditional preference and you're keen to compare new alternatives, or you're simply looking for new drainage innovation, Geberit Silent-PP is the perfect solution. An excellent way to maximise noise insulation performance whilst minimising cost. This push fit system is perfect wherever rapid, economical and sound optimised drainage installations are required.

Geberit Silent-PP	PVC pipe
<p><b>→ FLEXIBLE PIPE OPTIONS</b></p> <p>Geberit Silent-PP has multiple pipe lengths and options, dramatically reducing discarded waste offcuts and improving efficiency and economy. And because they're readily available to order, merchants don't have to hold all the stock options.</p> <p>Geberit Silent-PP's unique double socketed design means most offcuts can be used, further reducing wastage (once the pipe is cut to length the offcut can still be easily utilised because it has a socket attached).</p>	<p>PVC pipe systems typically come in standard, limited pipe lengths.</p> <p>PVC pipes offer commonly used design options.</p>
<p><b>→ EASY INSTALLATION</b></p> <p>Geberit Silent-PP fittings feature innovative and award-winning push fit design enhancements such as visible insertion depths on fittings, orientation nubs and gripping ribs on sockets, making insertion, alignment and installation quicker and easier.</p>	<p>PVC uses traditional installation methods.</p>
<p><b>→ INNER STRENGTH</b></p> <p>Geberit Silent-PP is robust and safe, even at low temperatures. This intrinsic cold impact strength significantly reduces the risk of damage or breakage during and after installation.</p>	<p>PVC has a tendency towards brittleness especially at low temperatures, so can sometimes be susceptible to second-corner damage, necessitating replacement.</p>
<p><b>→ PRICE COMPETITIVE</b></p> <p>Geberit Silent-PP is a low cost, high performance solution that compares favourably to the installed cost of other drainage methods - providing reduced labour costs and time for installers.</p>	<p>PVC is a commoditised drainage product which is well used throughout the UK, it's a low product cost, but incurs additional labour costs through insulation and potential breakages on site.</p>
<p><b>→ PROVEN LEAKPROOF CAPABILITY</b></p> <p>Geberit Silent-PP pipes and rib-reinforced fittings enable safe and easy processing. The EPDM lip seals have been reliably used for decades, guaranteeing permanent tightness of the entire system.</p>	<p>PVC fittings offer varying degrees of leakproof capability.</p>

Geberit Silent-PP	PVC pipe
<p><b>→ ACOUSTIC PERFORMANCE</b></p> <p>Geberit Silent-PP reduces noise. The hydraulically optimised fittings ensure a higher discharge capacity and reduced noise, guaranteeing excellent acoustic performance. On many standard installations, this can omit costly lagging. It also means that Silent-PP is not only ideal for fast, sound-optimised floor connections but also the drainage stack too.</p>	<p>PVC offers conventional acoustic performance, usually requiring lagging to facilitate effective noise prevention.</p>
<p><b>→ COLOUR</b></p> <p>Geberit Silent-PP is black on the outside for excellent UV resistance allowing it to be stored outside for up to 2 years. The inside of the pipe is white enabling easier location of blockages should they occur.</p>	<p>PVC is available in black, grey or white.</p>
<p><b>→ PUSHFIT/ORDINARY FIT</b></p> <p>Geberit Silent-PP features enhanced push fit technology, which is already the system of choice for some sound-optimised and many standard installations in some areas of the UK.</p>	<p>PVC follows traditional fitting system techniques.</p>
<p><b>→ SOLVENT WELDING</b></p> <p>Geberit Silent-PP requires no adhesive solvents.</p>	<p>PVC requires chemical-based solvent welds, which are known to cause dizziness and drowsiness.</p>
<p><b>→ WASTEWATER TRANSPORTATION</b></p> <p>Geberit Silent-PP can be used for wastewater up to 80° and even 100° for short periods.</p>	<p>PVC can be used for wastewater up to 70°.</p>
<p><b>→ CHEMICAL RESISTANCE</b></p> <p>Geberit Silent-PP is not affected by chemicals*.</p>	<p>PVC has limited resistance to chemicals.</p>
<p><b>→ VERSATILITY</b></p> <p>Geberit Silent-PP is ideal as a branch discharge pipe in combination with Geberit Silent-db20, our highly effective sound insulating, secure drainage system specified for high end apartments, hotels and similar applications.</p>	<p>PVC is used in conventional applications.</p>
<p><b>→ ENVIRONMENTAL IMPACT</b></p> <p>Geberit Silent-PP is made from readily recyclable polypropylene ensuring that overall waste impact is minimalised. Combined strength and material stability enable great life expectancy and the pipe delivery scope reduces waste. Geberit Silent-PP has positive benefits for the environment.</p>	<p>PVC is not a favoured material from an environmental perspective.</p>

\*Seal compatibility should be confirmed with Geberit before use on any industrial waste applications.

# A STRONG PARTNER FOR EVERY TASK

Quality and innovation are worth a great deal. Equally valuable are reliability, partnership and personal advice. We operate at full steam not only in the development of high-quality products, but also in offering you the services and support you need for your success – even on the building site if necessary.



#### PERSONAL ADVICE AND SERVICES

Regardless of whether you need us on the service helpline, in a personal meeting or on site – Geberit is available to you with advice and action everywhere. Whether it be specialist information or technical advice or support for all planning issues, we offer you comprehensive and uncomplicated help. We go the extra mile for your project and also supervise entire building projects on request. And even on the rare occasion something doesn't work you can rely on Geberit's support.

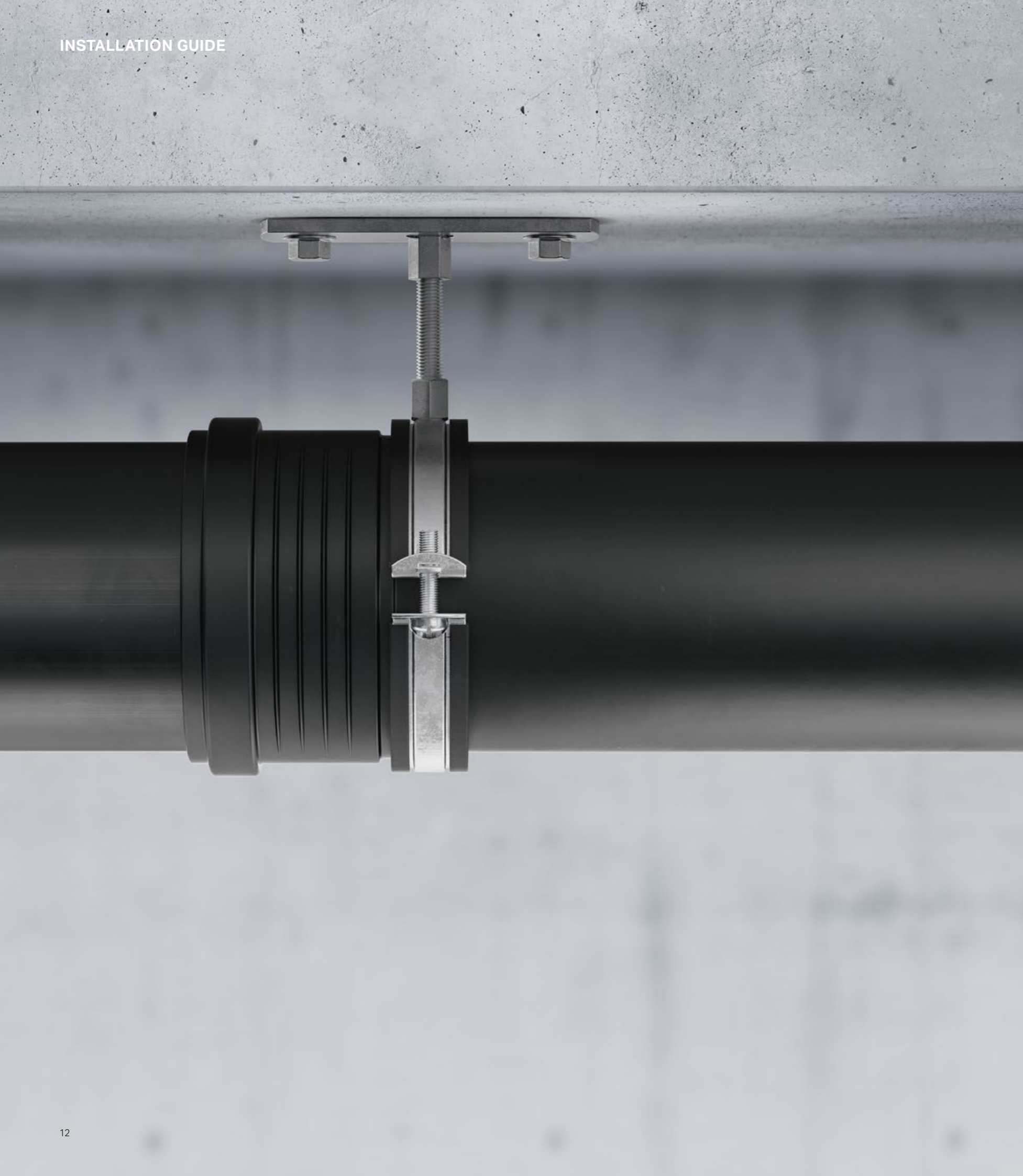
#### OUR KNOW-HOW FOR YOU

With the comprehensive training courses it offers, Geberit supports the sanitary industry in preparing for the challenges of the future. In our own seminars or directly at your building site, we share our knowledge with you and thereby contribute to our shared success. We provide you with a range of useful information and tools, from manuals to installation videos.

#### DIGITAL PLANNING SUPPORT

Successful sanitary projects start with good planning. With the practical Geberit ProApp and numerous other tools, we support you in your day-to-day operations. BIM data is also available for building planning in Autodesk Revit.





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## 1.1 FUNCTION

Silent-PP is an acoustically optimised drainage system consisting of three-layer pipes and mineral filled fittings. It is reliably robust and safe even at low temperatures and its award winning push fit design makes fitting quick and easy. Geberit Silent-PP has been developed as a conventional, non-pressurised drainage pipe system for building drainage. The system can be used within buildings as well as buried within the building structure (application identifier "BD" - Building / Drainage) in accordance with DIN EN 1451-1. The system must not be negative pressure-loaded with water and thus must not be used for the Geberit Pluvia roof drainage system or other syphonic roof drainage systems.

### 1.2.1 GENERAL CHARACTERISTICS REGARDING PIPES AND FITTINGS

#### Cold impact strength

Geberit Silent-PP pipes and fittings are tested with regard to their cold impact strength at -10 °C and can be processed and installed down to this temperature.

#### Chemical resistance

Like those of Geberit HDPE, the product materials of Geberit Silent-PP are resistant to many chemicals. A comprehensive overview regarding chemical resistance can be found in ISO / TR 10358. However, it does not indicate the resistance of sealing materials such as EPDM. The use of Geberit Silent-PP in special and industrial applications must be clarified with Geberit.

To ensure that clarifications of this kind can be handled efficiently, the following information is required:

- Medium / liquid
- Temperature
- Concentration (specification in %)
- Duration of exposure / frequency (e.g. 40 x 1 min/year)

#### Tightness of pressed joints

The pressed joints of the Geberit Silent-PP pipes and fittings have been subjected to a short pressure test at 0.5 bar with water and air. However, the system must not be pressure-loaded. Geberit HDPE or Silent-db20 must be used for applications with pressure loading.

#### Negative pressure tightness

Geberit Silent-PP pipes and fittings have been subjected to a sealing test with an internal partial vacuum based on DIN EN 1277: 2004-03. The test pressure was 0.5 bar.

#### Electrostatic charge

Geberit Silent-PP pipes and fittings are insulating and not electrically conductive. For this reason, they may only be used when explosive atmospheres can be excluded.

#### UV resistance

The outer layer of the Geberit Silent-PP pipes is UV-stabilised with carbon. The middle and inner layer are treated with other UV-stabilising agents.

The Geberit Silent-PP fittings are UV-stabilised with carbon.

Geberit Silent-PP pipes and fittings can be stored outdoors for up to two years. However, they are not suitable for creating exterior rainwater stacks that are exposed to sunlight for years. Geberit HDPE or Silent-db20 must be used for this application.

## 1.2.2 TECHNICAL DATA FOR PIPES

### Technical data for Geberit Silent-PP pipes

Characteristic	Value
Basic material	Polypropylene copolymer
Filler for middle layer	Talcum
Density (depending on dimension)	1.1–1.2 g/cm <sup>3</sup>
Thermal stability 200 °C (oxidation induction time OIT), middle layer	At least 8 min
Longitudinal reversion 150 °C / 60 min.	≤ 2 %
Ring stiffness	≥ 4 kN/m <sup>2</sup>
Temperature resistance	90–100 °C*
Fire protection class	B2 acc. to DIN 4102
Coefficient of linear expansion	0.08 mm/(m*K)

\*see also chapter "Temperature resistance"

## 1.2.3 TECHNICAL DATA FOR FITTINGS

### Technical data for Geberit Silent-PP fittings

Characteristic	Value
Basic material	Polypropylene copolymer
Filler	Chalk
Density	1.2 g/cm <sup>3</sup>
Melt flow rate (MFR 230 °C / 2.16 kg), middle layer	0.4–2.0 g/10 min
Thermal stability 200 °C (oxidation induction time OIT), middle layer	At least 8 min
Temperature resistance	90–100 °C*
Fire protection class	B2 acc. to DIN 4102
Coefficient of linear expansion	0.08 mm/(m*K)

\*see also chapter "Temperature resistance"



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### 1.2.4 TEMPERATURE RESISTANCE OF THE PIPES AND FITTINGS

In an unpressurised state, Geberit Silent-PP can sustain temperatures of up to 90 °C (waste water within buildings). Without mechanical load, temperatures of up to 100 °C can be sustained for short periods of time\*. For industrial plants with constant temperature loads > 80 °C, contact Geberit with regard to the use possibilities.

\*Short periods of time: Without mechanical, chemical and static load, up to 100 °C, whereas the duration of such a peak cycle must not exceed 1 minute. Then the pipe must be allowed to return to its normal ambient or operating temperature. The peak cycles described are permitted no more than 400 x per year. They affect the service life of the pipes and fittings. All coupling connections must be secured against being pulled out.

### 1.2.5 TECHNICAL DATA FOR EPDM SEALS

Seals made of EPDM are highly resistant to acids, alkalis, hot water and steam. Moreover, EPDM has a very good resistance to aging (weather, ozone and light resistance).

Characteristic	Unit	EPDM
Hardness range	IRHD	30–90
Working temperature min. / max.	°C	-50 – +140
Price	€	Low
Tensile strength (for actively filled mixtures)	MPa	o
Breaking elongation	%	o
Rebound resilience	%	o
Tear resistance	N/mm	o
Abrasion resistance	mm <sup>3</sup>	o
Resistance to permanent deformation: at high temperatures	%	+
Resistance to permanent deformation: at low temperatures	%	+
Low-temperature flexibility	-	o
Heat resistance	-	+
Resistance to acids (25 percent H <sub>2</sub> SO <sub>4</sub> ) at 50 °C vol.	%	+
Resistance to alkalis (50 percent NaOH) at 50 °C vol.	%	+
Resistance to water at 100 °C vol.	%	+
Resistance to weather and ozone	-	+
UV resistance	-	+
Gas permeability	-	o
Service life > 20 years	-	+

+ Very good  
o Satisfactory  
- Poor

### 1.3 PRODUCT STANDARDS

DIN EN 1451-1	1999-03	Plastic piping systems to drain off waste water (low and high temperature) within the building structure - polypropylene (PP) - Part 1: Requirements concerning pipes, mouldings and the piping system.
DIN EN 1277	2004-03	Plastics piping systems – Thermoplastics piping systems for buried nonpressure applications – Test methods for leaktightness of elastomeric sealing ring type joints.
DIN 4119		Acoustic insulation in building - requirements and testing.
DIN 4102-22	2003	Fire behaviour of building materials and building components - Part 22: Application standard for DIN 4102-4.
SIA 181	1988	Acoustic insulation in buildings.
VDI 4100	1994-09	Acoustic insulation in apartments - Criteria for planning and assessment.

### 1.4 REGISTRATIONS AND DECLARATIONS OF CONFORMITY

Germany Deutsches Institut für Bautechnik, Berlin Z-42.1-432.

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## 2.1 FIRE PROTECTION

If the piping system is routed through separating, fire-resistant ceilings and walls, additional fire protection measures must be taken. These measures are implemented with Geberit RS90 Plus according to the compartmentalisation principle.

### 2.1.1 ACOUSTIC INSULATION

To achieve optimal acoustic performance, it must always be ensured that no sound bridges arise conveying solid-borne sound to walls and ceilings. Where Geberit Silent-PP pipe and fittings pass through solid structures they must be wrapped with Geberit insulation hose. Geberit Silent-PP pipes and fittings mortared in place must be jacketed with the Geberit insulation hose. Pipe brackets with insulation insert must be used to fasten the pipes to the building structure. If pipes are routed in suspended ceilings, the pipelines must be additionally jacketed against airborne sound with acoustic wrap.

The Fraunhofer Institute in Stuttgart has carried out various comparison measurements with regard to acoustic insulation. Documents concerning these measurements can be obtained from Geberit Sales Ltd.

	Geberit Duofix system wall prewall installation in front of drywall partition (Knauf, W112)			Geberit Duofix installation elements in separating drywall partition (Knauf, W116)		
<b>Stack</b>	Silent-db20	Silent-db20	Silent-PP	Silent-db20	Silent-db20	Silent-PP
<b>Collector branch pipe</b>	Silent-db20	Silent-PP	Silent-PP	Silent-db20	Silent-PP	Silent-PP
<b>System sound pressure level <math>L_{AFmax,n}</math></b>	20 dB(A)	22 dB(A)	23 dB(A)	21 dB(A)	25 dB(A)	26 dB(A)
<b>DIN 4109-1:2016-07</b>	✓	✓	✓	✓	✓	✓
<b>DIN 4109/Supplement 2:1989-11</b>	✓	✓	✓	✓	✓	-

The acoustics information is based on measurements and calculations done by the Fraunhofer Institute for Building Physics in Stuttgart, Germany. The measurements were carried out in accordance with the German standards and directives under real-life conditions. All information refers to the structural setting in the installation test facility of the Building Technology and Acoustics Laboratory of Geberit AG under the described installation conditions. The test facility represents a section from a typical residential building and can be used directly for proving compliance with the sound insulation requirements stipulated by construction supervision authorities.

Other building conditions can lead to different results.

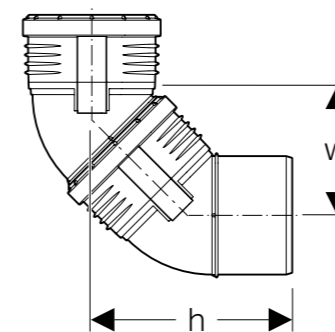
These tests have been carried out using a selection of the most frequent construction situations. You can find the evidence in the Geberit's sound insulation brochure.

## 2.2 DIMENSIONING

The dimensioning of the Geberit Silent-PP push-fit connection system complies with EN 12056. Correspondingly, the topics listed in the following can be treated in a similar way:

- Dimensioning of discharge pipes, stacks and connection pipes
- Calculation of the discharge capacity
- Connecting the maximum allowable waste water values
- Application of country-specific regulations

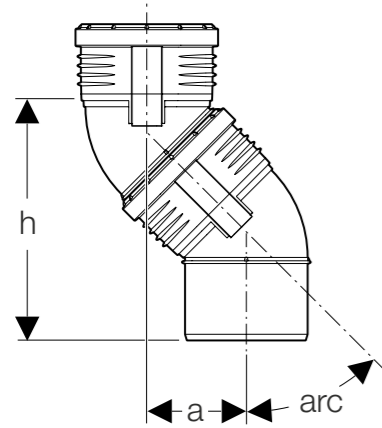
### 2.2.1 DIMENSIONS FOR COMBINATION OF DIRECTION CHANGES WITH TWO BENDS 45°



d / ø pipe (mm)	h (cm)	w (cm)
32	10.1	5.8
40	11.1	6.4
50	12.2	7.0
75	14.4	8.9
90	16.3	10.2
110	18.7	11.9
125	20.7	13.3
160	23.7	15.5

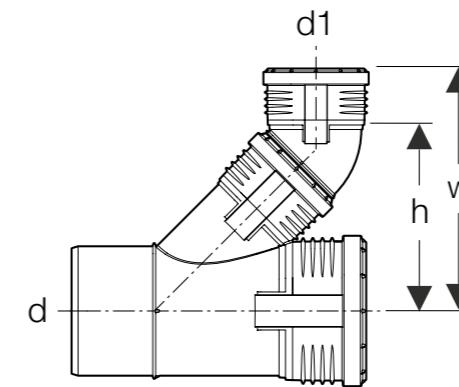
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## 2.2.2 DIMENSIONS FOR COMBINATION OF ONE OFFSET WITH TWO BENDS



arc	d / øpipe (mm)	a (cm)	h (cm)
15°	32	1.6	11.8
15°	40	1.7	12.7
15°	50	1.8	13.6
15°	75	2.1	15.8
15°	90	2.3	17.5
15°	110	2.6	20.0
15°	125	2.9	22.2
15°	160	3.3	24.8
30°	32	3.1	11.4
30°	40	3.3	12.3
30°	50	3.6	13.4
30°	75	4.3	15.9
30°	90	4.8	17.9
30°	110	5.5	20.7
30°	125	6.2	23.0
30°	160	6.9	25.9
45°	32	4.7	11.3
45°	40	5.1	12.3
45°	50	5.6	13.6
45°	75	6.8	16.5
45°	90	7.8	18.8
45°	110	9.0	21.7
45°	125	9.9	24.0
45°	160	11.5	27.8

## 2.2.3 DIMENSIONS FOR COMBINATION OF A Y-BRANCH 45° WITH BEND 45°



d / øpipe (mm)	d1 / øpipe (mm)	w (cm)	h (cm)
32	32	12.2	7.8
40	32	12.6	8.2
50	32	13.2	8.7
40	40	13.8	9.0
50	40	14.3	9.6
50	50	15.5	10.5
75	40	15.6	10.9
75	50	16.9	11.8
75	75	19.7	14.1
90	50	17.6	12.5
90	75	20.3	14.8
90	90	22.6	16.5
110	40	17.4	12.6
110	50	18.6	13.5
110	75	21.4	15.8
110	90	23.5	17.4
110	110	26.4	19.6
125	90	24.2	18.1
125	110	27.0	20.0
125	125	29.2	21.8
160	110	28.9	22.1
160	125	31.0	23.6
160	160	34.6	26.5

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## 2.2.4 HYDRAULIC DISCHARGE CAPABILITY

Hydraulic discharge capability of partially filled horizontal Geberit Silent-PP pipes.

Filling level 0.5  
Operating roughness  $k_b = 1.0$  mm

		Slope										
		0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	
Discharge capacity	d/ø	di(mm)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)
	32	28	0.06	0.09	0.11	0.13	0.15	0.16	0.17	0.18	0.20	0.20
	40	36	0.13	0.18	0.22	0.26	0.29	0.32	0.34	0.37	0.39	0.40
	50	46	0.25	0.35	0.43	0.50	0.56	0.61	0.66	0.71	0.75	0.79
	75	69.8	0.76	1.08	1.33	1.54	1.72	1.89	2.04	2.18	2.32	2.44
	90	83.8	1.24	1.77	2.17	2.51	2.81	3.08	3.33	3.57	3.78	3.99
	110	102.8	2.15	3.06	3.76	4.34	4.86	5.33	5.76	6.16	6.54	6.89
	125	116.6	3.01	4.28	5.26	6.08	6.81	7.46	8.06	8.62	9.15	9.65
160	149.6	5.87	8.33	10.23	11.82	13.23	14.50	15.67	16.76	17.78	18.75	
Flowrate	d/ø	di(mm)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)
	32	28	0.21	0.30	0.37	0.43	0.48	0.53	0.57	0.61	0.65	0.68
	40	36	0.25	0.36	0.44	0.52	0.58	0.63	0.68	0.73	0.78	0.82
	50	46	0.30	0.43	0.53	0.61	0.69	0.75	0.81	0.87	0.92	0.98
	75	69.8	0.41	0.58	0.71	0.82	0.92	1.01	1.09	1.16	1.24	1.30
	90	83.8	0.46	0.65	0.80	0.93	1.04	1.14	1.23	1.32	1.40	1.48
	110	102.8	0.53	0.75	0.92	1.07	1.19	1.31	1.42	1.51	1.61	1.69
	125	116.6	0.58	0.82	1.01	1.16	1.30	1.43	1.54	1.65	1.75	1.84
160	149.6	0.68	0.97	1.19	1.37	1.54	1.68	1.82	1.95	2.06	2.18	

Filling level 0.7  
Operating roughness  $k_b = 1.0$  mm

		Slope										
		0.5%	1.0%	1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%	5.0%	
Discharge capacity	d/ø	di(mm)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)	V□ (l/s)
	32	28	0.11	0.15	0.19	0.22	0.24	0.27	0.29	0.31	0.33	0.34
	40	36	0.21	0.30	0.37	0.43	0.48	0.53	0.57	0.61	0.65	0.68
	50	46	0.41	0.58	0.72	0.83	0.93	1.02	1.11	1.18	1.26	1.32
	75	69.8	1.27	1.80	2.22	2.56	2.87	3.15	3.40	3.64	3.86	4.07
	90	83.8	2.07	2.95	3.62	4.19	4.69	5.14	5.56	5.94	6.31	6.65
	110	102.8	3.59	5.10	6.26	7.24	8.10	8.88	9.60	10.27	10.89	11.49
	125	116.6	5.02	7.14	8.77	10.14	11.34	12.44	13.44	14.37	15.25	16.08
160	149.6	9.78	13.89	17.04	19.70	22.05	24.17	26.11	27.93	29.63	31.24	
Flowrate	d/ø	di(mm)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)	v (m/s)
	32	28	0.23	0.33	0.41	0.47	0.53	0.58	0.63	0.67	0.71	0.75
	40	36	0.28	0.40	0.49	0.56	0.63	0.69	0.75	0.80	0.85	0.90
	50	46	0.33	0.47	0.58	0.67	0.75	0.83	0.89	0.96	1.01	1.07
	75	69.8	0.44	0.63	0.78	0.90	1.01	1.10	1.19	1.28	1.35	1.43
	90	83.8	0.50	0.72	0.88	1.02	1.14	1.25	1.35	1.45	1.53	1.62
	110	102.8	0.58	0.82	1.01	1.17	1.31	1.44	1.55	1.66	1.76	1.86
	125	116.6	0.63	0.90	1.10	1.27	1.43	1.56	1.69	1.81	1.92	2.02
160	149.6	0.75	1.06	1.30	1.50	1.68	1.84	1.99	2.13	2.26	2.39	

## 3.1 INSTALLATION RULES

The following are installation rules to be used as guidance when installing any Geberit Silent-PP piping.

### 3.1.1 USE OF ANCHOR PIPE BRACKETS AND GUIDE PIPE BRACKETS

- Anchor and guide pipe brackets are used for the installation and fastening of Silent-PP pipelines.
- Anchor pipe bracket: This is installed directly after the ring seal socket in horizontal as well as vertical installation and prevents the corresponding pipe or fitting from slipping out.
- Guide pipe bracket: This is used for laying pipes in the case of vertical installation. In the case of horizontal installation, the guide pipe bracket serves as the actual support bracket. The fastening distances according to the table in chapter 3.1.0 apply for vertical as well as horizontal installation.

# INSTALLATION GUIDE

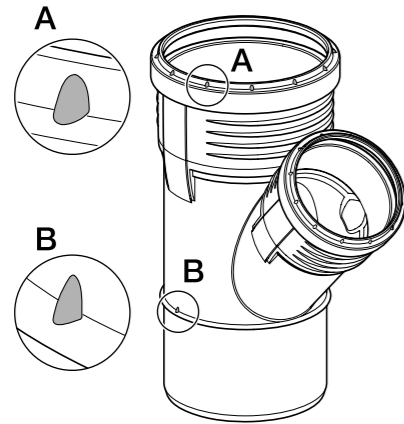
## 3.1.2 LAYING OF GEBERIT SILENT-PP PIPELINES

Geberit Silent-PP pipelines are laid against the direction of flow.

- Begin laying at the outer wall or at the transition to the underground pipe
- Build stacks from the bottom going up
- Lay connection pipes from the stack to the appliance

Do not shorten fittings with insertion depth markings.

The fittings can be aligned with the help of the reference nubs A / B (30° increments).

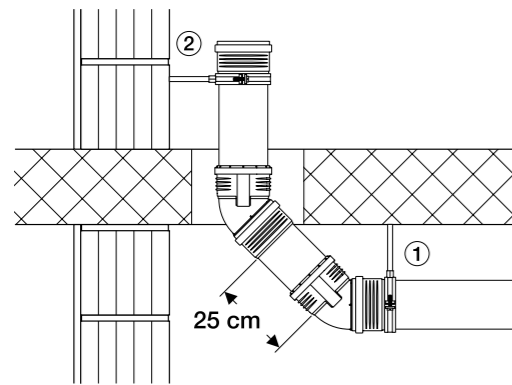


Starting at a certain length, socket pipes must be installed with a fixed pipe bracket as follows:

- For horizontal installation: Socket pipe  $\geq 25$  cm, fixed pipe bracket next to socket (1)
- For vertical installation: Socket pipe  $\geq 50$  cm, fixed pipe bracket under socket (2)

Use 45° bends to realise changes in direction for improved hydraulic performance.

Ideally, stack deflections should be realised with an intermediate section of 25 cm.

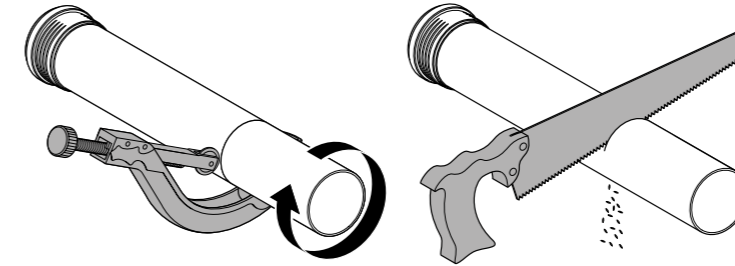


Observe the minimum slope of the underground, collector and connection pipes stipulated in BS EN 12056 and Building Regulations.

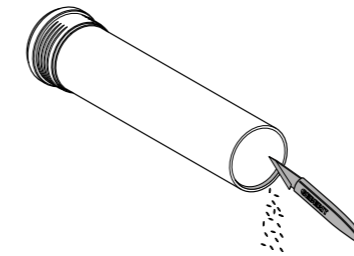
## 3.1.3 PREPARING GEBERIT SILENT-PP PIPES

Geberit Silent-PP pipes can be cut to length and chamfered with tools that are typically available on a building site.

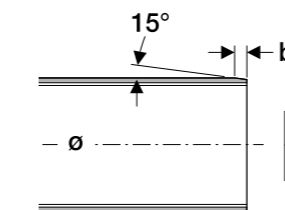
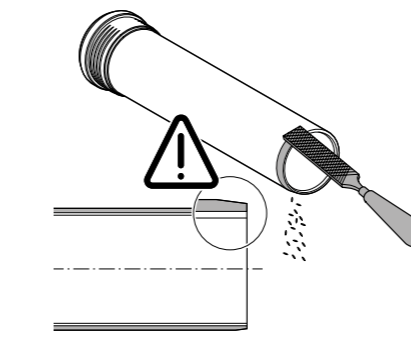
- Cut Geberit Silent-PP pipes to length at a right angle to the longitudinal axis; use saw or plastic pipe cutter



- Debur Geberit Silent-PP pipe on the inside



- Chamfer Geberit Silent-PP pipe on the outside; observe the dimensions given in the table



ø (mm)	32	40	50	75	90	110	125	160
b (mm)	4	4	4	4	5	5	5	9

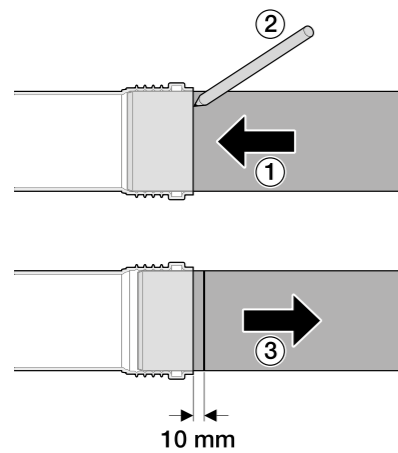
## INSTALLATION GUIDE

### 3.1.4 USE OF LUBRICANTS

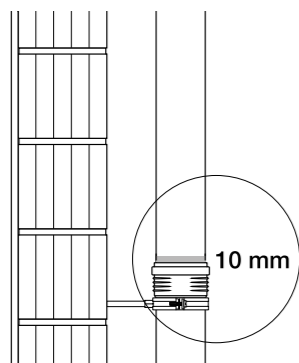
- The recommended lubricant is the Geberit lubricant, article number 953.761.00.1.
- The use of all standard lubricants suitable for push-in connections with seals made of EPDM is also permitted.
- Do not use any oils or greases as lubricants.

### 3.1.5 ESTABLISHING PUSH FIT CONNECTIONS

- Check the position of the inserted lip seal in the socket and make sure it is intact
- Clean the inside of the socket and the push fit end with a clean cloth
- Spread a thin layer of lubricant evenly on the spigot
- Insert the spigot up to the socket pipe stop while twisting the pipe slightly
- Mark the inserted pipe at the sleeve edge with a marker pen or grease pencil
- If necessary, pull the inserted pipe end back 10 mm out of the socket. This way, changes in the length of the pipe caused by heat can be accommodated in the ring seal sockets. This expansion compensation only refers to socket pipes, not to fittings. Fittings must always be inserted into the socket up to the insertion depth marking.

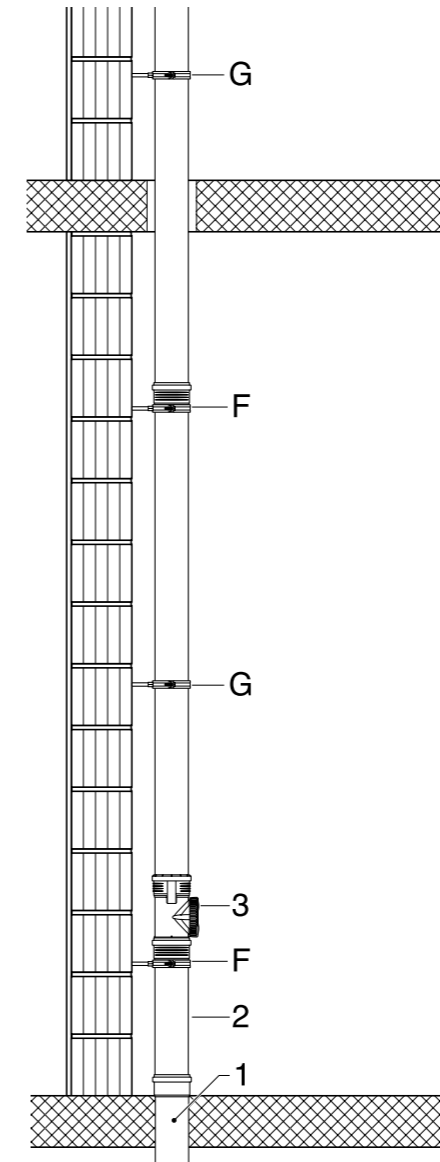


- For the vertical installation of pipelines, the individual socket pipes must be fastened with pipe brackets under the socket. This prevents the pipe ends which were pulled back by 10 mm for expansion compensation from subsequent slipping



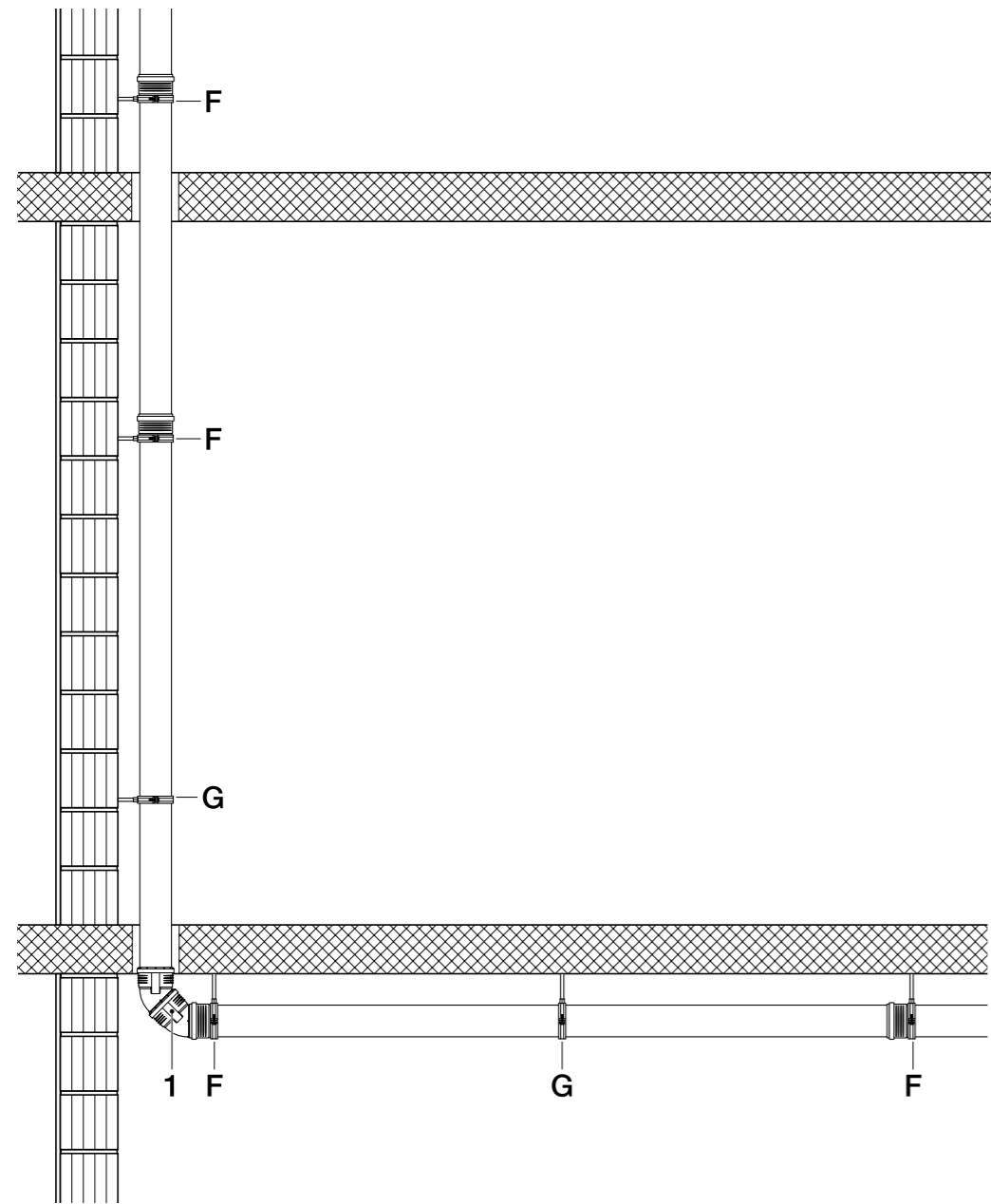
- Sections must be equipped with an expansion compensation of 10 mm created in this way at least every 3 m or once per floor

### 3.1.6 ARRANGEMENT OF STACK



- 1 Connection to underground pipe
- 2 Socket pipe L = 50 cm
- 3 Access pipe; about 50 cm above top edge of finished floor
- G Guide brackets
- F Anchor brackets

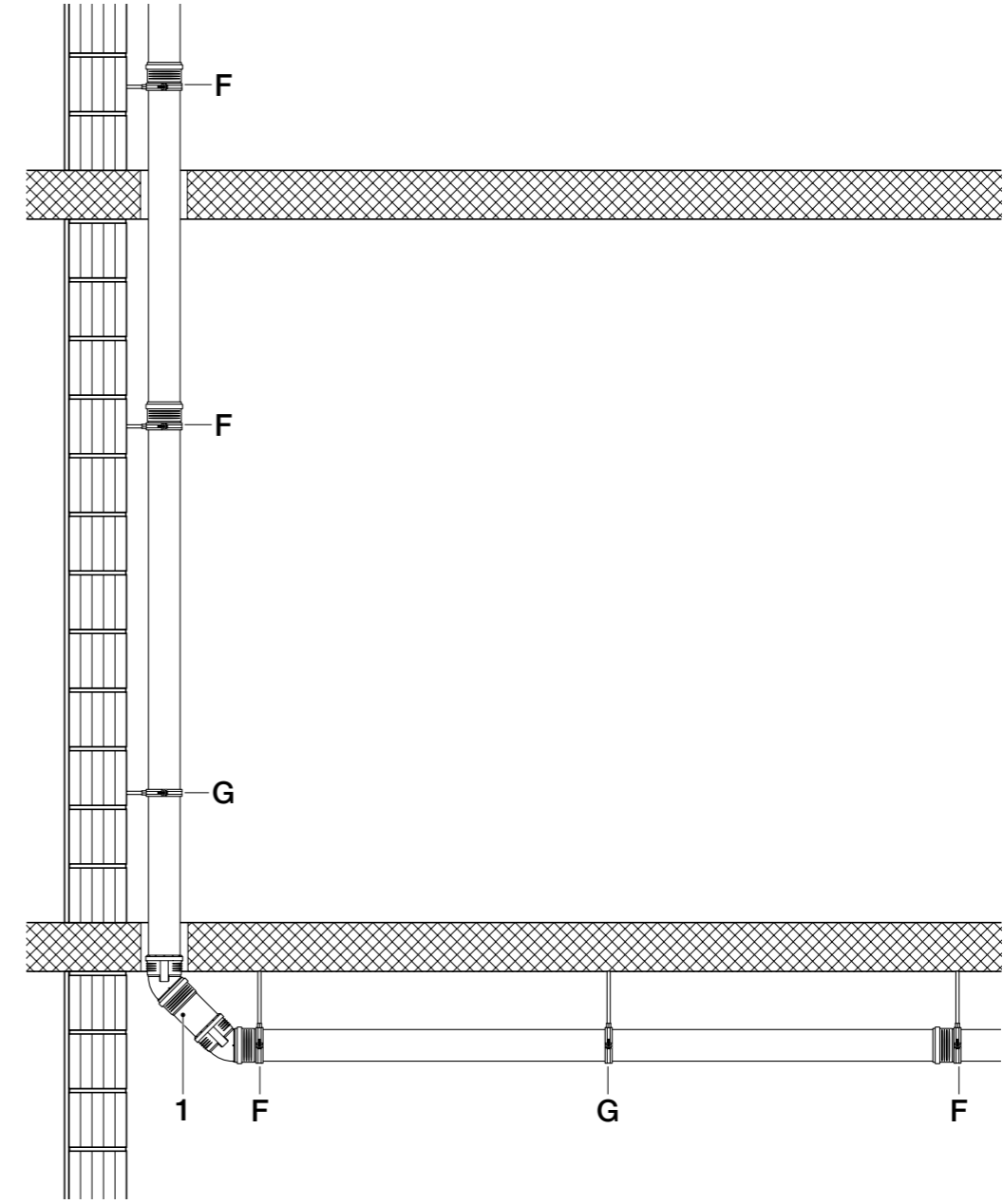
3.1.7 ARRANGEMENT OF DEFLECTION WITH TWO 45° BENDS



Note: Distribute the guide brackets (G) evenly between the anchor brackets (F). Observe the permissible fastening distances. (See table in chapter 3.1.10 "Fastening pipelines".)

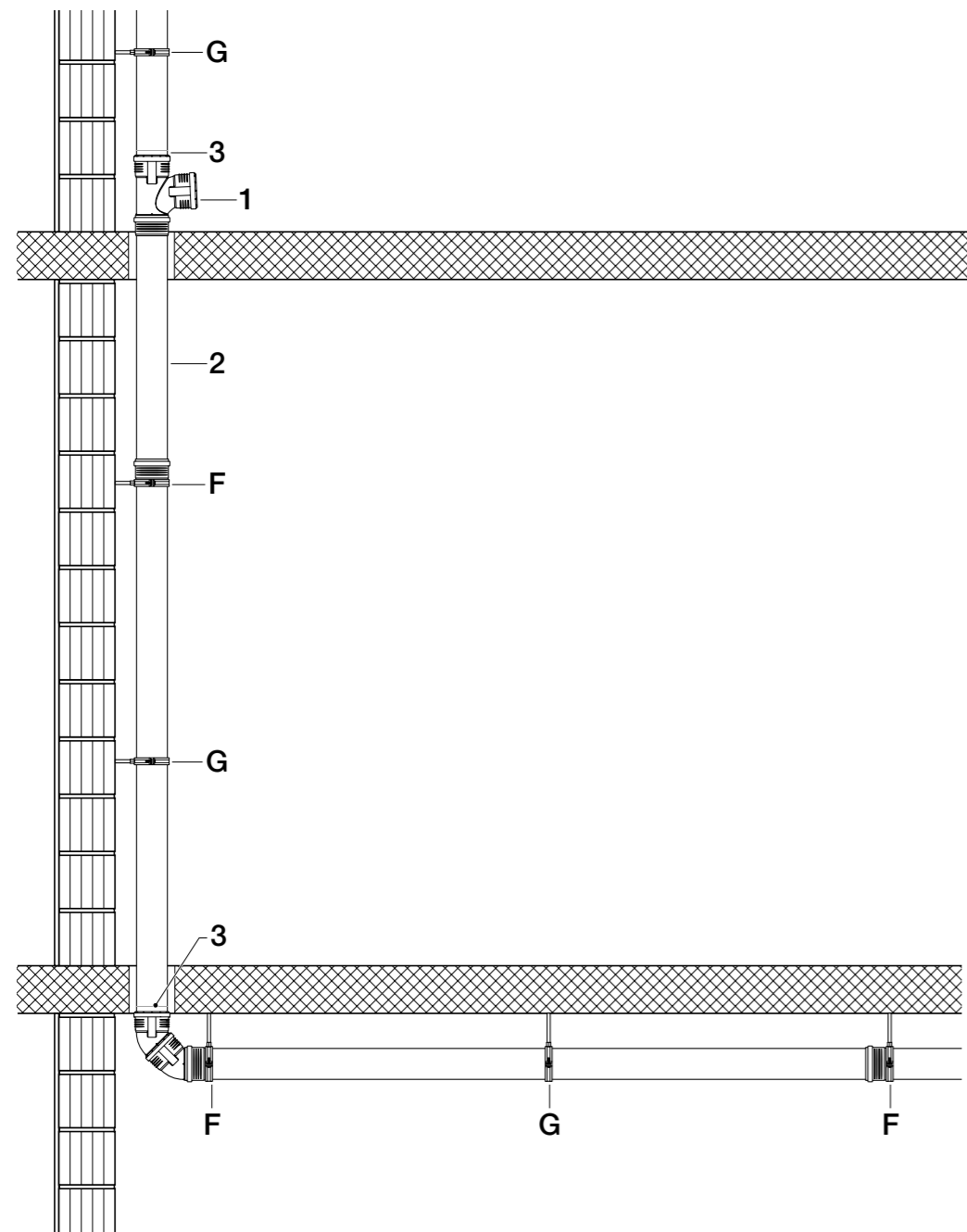
- 1 Deflection with two 45° bends
- G Guide brackets
- F Anchor brackets

3.1.8 ARRANGEMENT OF DEFLECTION WITH TWO 45° BENDS AND INTERMEDIATE SECTION



- 1 Intermediate section with socket pipe L = 25 cm
- G Guide brackets
- F Anchor brackets

3.1.9 ARRANGEMENT OF COLLECTOR BRANCH PIPES ON THE FLOOR



- 1 Connection of the collector branch pipe
- 2 Socket pipe, if required (if  $\geq 50$  cm, additional anchor bracket)
- 3 10 mm expansion compensation per floor or after 3 m
- G Guide brackets
- F Anchor brackets

3.1.10 FASTENING PIPELINES

- Fasten Geberit Silent-PP pipelines to the building structure with pipe brackets
- Match the pipe brackets to the outside pipe diameter
- Install fittings / fitting groups as anchor points (with fixed pipe brackets)
- The fixed pipe brackets must be fastened directly under / beside the ring seal socket
- Fasten loose pipe brackets with a distance of 10 cm to the ring seal socket (thermal expansion of the pipe must not be hindered)

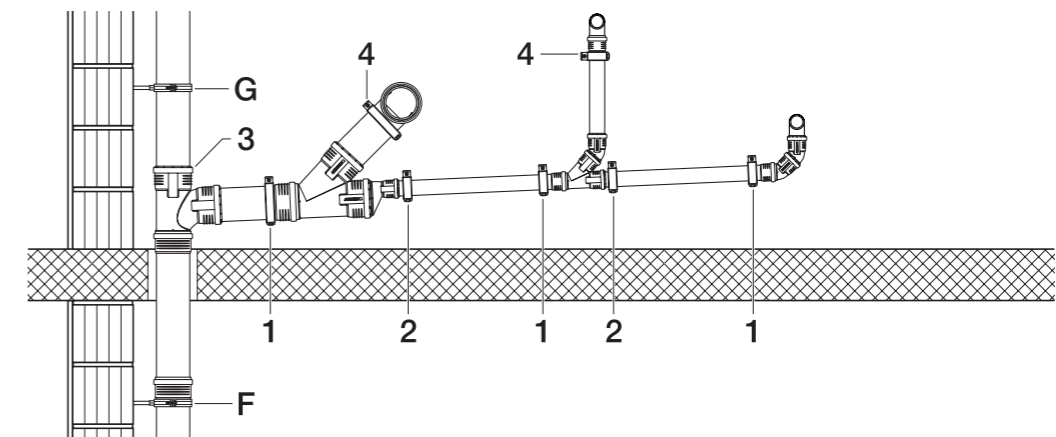
Fastening distances for Geberit Silent-PP in the case of drainage systems

Outside diameter	Maximum fastening distance with horizontal pipe layout	Maximum fastening distance with vertical pipe layout
ø 32 mm	0.50 m (= 15 x ø)	1.50 m
ø 40 mm	0.60 m (= 15 x ø)	1.50 m
ø 50 mm	0.75 m (= 15 x ø)	1.50 m
ø 75 mm	1.10 m (= 15 x ø)	2.00 m
ø 90 mm	1.35 m (= 15 x ø)	2.00 m
ø 110 mm	1.65 m (= 15 x ø)	2.00 m
ø 125 mm	1.85 m (= 15 x ø)	2.00 m
ø 160 mm	2.40 m (= 15 x ø)	2.00 m

3.1.11 Arrangement of collector branch pipe with waste fittings and traps

Fastening rules for branch fittings and fitting groups

- Always make sure that branch fittings / fitting groups are sufficiently supported. They must not sag
- The rule of the maximum fastening distance does not apply for branch fittings / fitting groups that are mounted close to one another. Branch fittings / fitting groups must always be supported in the front (item 1) and back (item 2)
- Branch fittings / fittings that are connected to the stack directly or via a socket pipe  $\leq 25$  cm (item 3), do not have to be fastened
- Socket pipes  $\geq 25$  cm must be fastened with a fixed pipe bracket
- In a conventional installation, waste fittings and traps (item 4) must be fastened with a fixed pipe bracket





## 3.1.12 LAYING OF PIPELINES IN MASONRY

- Any channels cut into masonry must be made so that the pipes can be laid free of any tension
- If pipes and fittings are installed in masonry, they must be jacketed with sound insulation tape, sound insulation hoses or sound insulation mats

## 3.1.13 LAYING OF PIPELINES IN CONCRETE

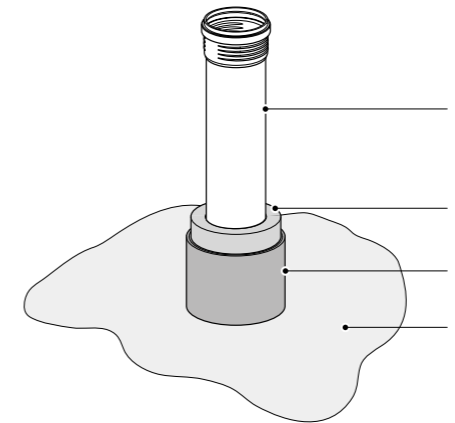
- Fasten the pipe so that it does not move when it is embedded in concrete
- Seal pipe openings and ring seal socket gaps with adhesive tape to prevent cement water from entering
- In case of acoustic insulation requirements, the pipes must be insulated



Geberit PE is recommended for embedding in concrete.

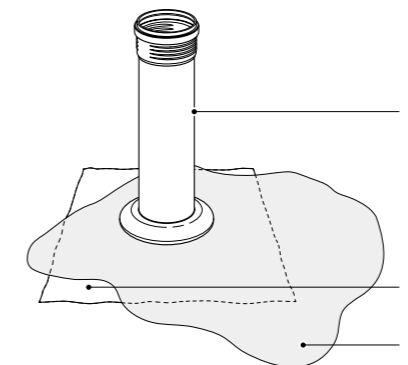
## 3.1.14 CREATING WALL AND CEILING FEED-THROUGHS

- Pipes must be sealed against moisture and acoustically insulated when they are guided through ceilings and walls
- Use the appropriate tapes, hoses or mats for sound insulation
- Before mastic asphalt is applied to the floor, exposed pipes must be protected with heat-insulating materials



- 1 Geberit Silent-PP pipe
- 2 Thermal insulation made of mineral insulation with aluminium cladding; thickness at least 20 mm
- 3 Sheet metal pipe as additional mechanical protection (recommended)
- 4 Mastic asphalt

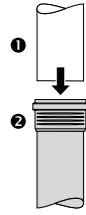
- If a bituminous coat or liquid plastic is applied to the wall or the floor, the feed-through can be sealed using a corresponding Geberit moisture protection



- 1 Geberit Silent-PP pipe
- 2 Geberit moisture protection with Resistit or PVC foil
- 3 Bituminous coat or liquid plastic

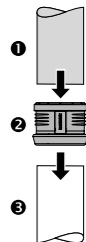
3.1.15 CREATING TRANSITIONS TO PIPELINES MADE OF OTHER PRODUCT MATERIALS

Geberit Silent-PP fittings and pipes (spigots) can be connected to Geberit Silent-db20, Geberit HDPE and cast-iron SML pipes. The connection is made using one of the adapters listed in the following. Note the installation direction with all adapters.



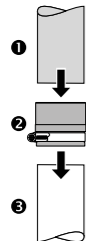
1. Geberit Silent-db20 / Geberit PE	2. Geberit Silent-PP
DN 50 / ø 50mm	DN 50 / ø 50mm
DN 70 / ø 75mm	DN 75 / ø 75mm
DN 90 / ø 90mm	DN 90 / ø 90mm
DN 100 / ø 110mm	DN 110 / ø 110mm

Adapter variants from Geberit Silent-db20 / Geberit PE directly into Geberit Silent-PP ring seal sockets

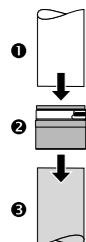


1. Geberit Silent-PP	2. Adapter Sleeve	3. Geberit Silent-db20 / Geberit HDPE
DN 50 / ø 50mm	Art. Nr. 390.296.14.1	DN 56 / ø 56mm
DN 75 / ø 75mm	Art. Nr. 390.396.14.1	DN 70 / ø 75mm
DN 90 / ø 90mm	Art. Nr. 390.496.14.1	DN 90 / ø 90mm
DN 110 / ø 110mm	Art. Nr. 390.596.14.1	DN 100 / ø 110mm

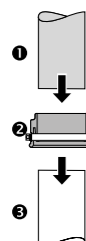
Adapter variants to Geberit Silent-db20 / Geberit PE (see also installation instructions 997.162.00.0)



1. Geberit Silent-PP	2. Rubber collar	3. Cast iron
DN 40 / ø 40mm	Art. Nr. 390.295.14.1	DN 56 / ø 58mm
DN 50 / ø 50mm	Art. Nr. 390.295.14.1	DN 50 / ø 58mm
DN 75 / ø 75mm	Art. Nr. 390.395.14.1	DN 70 / ø 78mm
DN 75 / ø 75mm	Art. Nr. 390.495.14.1	DN 80 / ø 83mm
DN 110 / ø 110mm	Art. Nr. 390.595.14.1	DN 100 / ø 110mm



1. Cast iron	2. Rubber collar	3. Geberit Silent-PP
DN 50 / ø 58mm	Art. Nr. 390.295.14.1	DN 50 / ø 50mm
DN 70 / ø 78mm	Art. Nr. 390.395.14.1	DN 75 / ø 75mm
DN 80 / ø 83mm	Art. Nr. 390.495.14.1	DN 90 / ø 90mm
DN 100 / ø 110mm	Art. Nr. 390.595.14.1	DN 110 / ø 110 mm



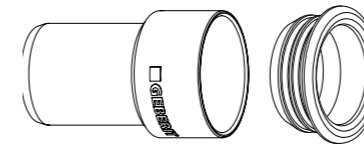
1. Geberit Silent-PP	2. Adapter	3. Cast iron
DN 90 / ø 90mm	Art. Nr. 367.009.16.1	DN 100 / ø 110mm

Adapter variants to cast-iron SML

3.1.16 TRANSITIONS FROM PVC TO GEBERIT SILENT-PP

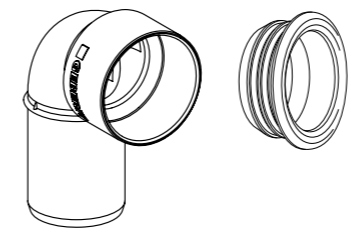
Geberit Silent-PP fittings and pipes (spigots) can be connected to PVC and ABS branch pipes using Geberit Silent-PP straight connectors or connection bends in combination with Geberit sleeves from the standard Drainage range. The connection is made using one of the adapters listed in the following.

Straight connections:



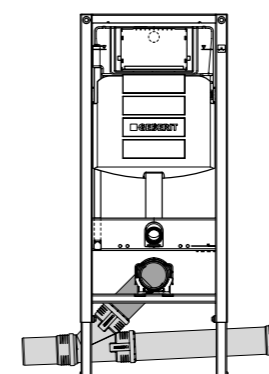
1. Geberit Silent-PP	2. Straight connector	3. PVC / ABS
DN30 / 32mm	Art. Nr. 390.080.14.1 Art. Nr. 152.495.00.1	DN30 / 36mm / 1¼"
DN40 / 40mm	Art. Nr. 390.180.14.1 Art. Nr. 152.495.00.1	DN30 / 36mm / 1¼"
DN40 / 40mm	Art. Nr. 390.180.14.1 Art. Nr. 152.796.00.1	DN 40 / 43mm / 1½"
DN50 / 50mm	Art. Nr. 152.796.00.1 (No connector required, sleeve into pipe end, not socket)	DN 40 / 43mm / 1½"

Connection bends:

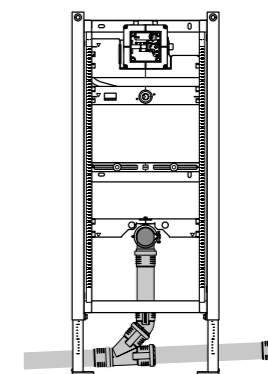


1. Geberit Silent-PP	2. Straight connector	3. PVC / ABS
DN30 / 32mm	Art. Nr. 390.083.14.1 Art. Nr. 152.495.00.1	DN30 / 36mm / 1¼"
DN40 / 40mm	Art. Nr. 390.183.14.1 Art. Nr. 152.495.00.1	DN30 / 36mm / 1¼"
DN40 / 40mm	Art. Nr. 390.183.14.1 Art. Nr. 152.796.00.1	DN 40 / 43mm / 1½"
DN50 / 50mm	Art. Nr. 390.283.14.1 Art. Nr. 152.796.00.1	DN 40 / 43mm / 1½"

3.1.17 CONNECTIONS FROM GEBERIT DUOFIX FRAMES ONTO GEBERIT SILENT-PP



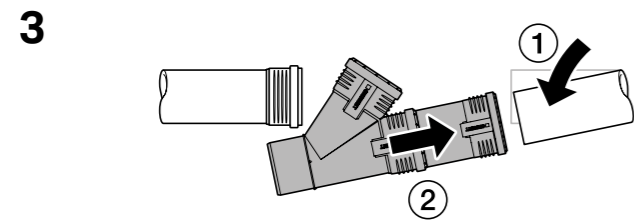
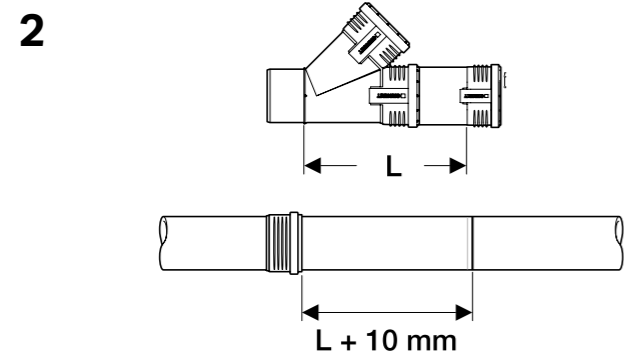
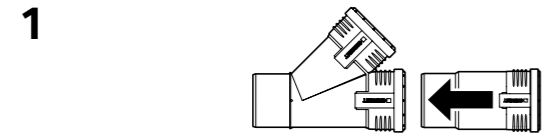
Connection option for WC outlet. Geberit Silent-db20 and HDPE connection bends can be inserted directly into the same sized Geberit Silent-PP socket.



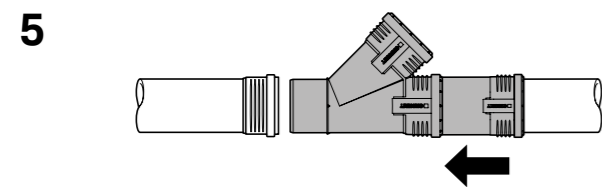
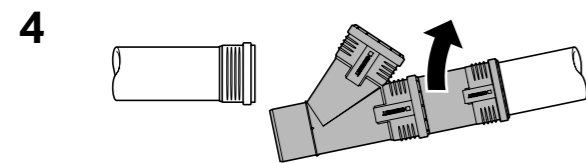
Connection option for urinal outlet. Geberit HDPE connection bends can be inserted directly into the same sized Geberit Silent-PP socket.

3.2 INSTALLATION INSTRUCTIONS

Later installation of branch fitting; with expansion socket in existing ring seal socket



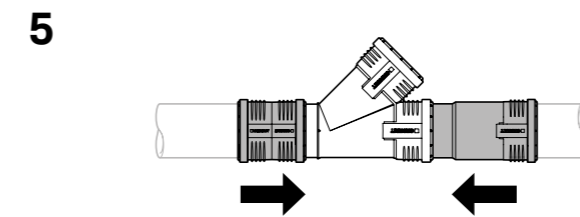
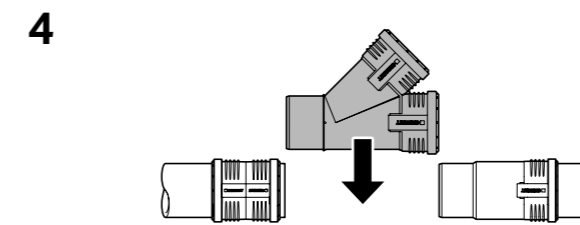
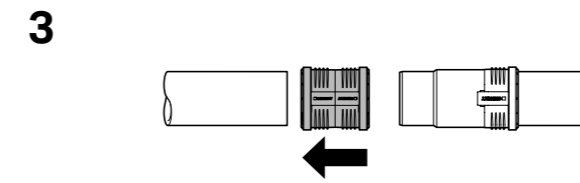
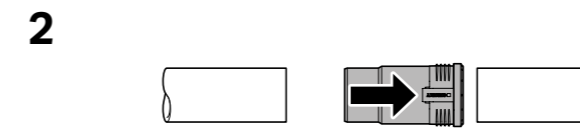
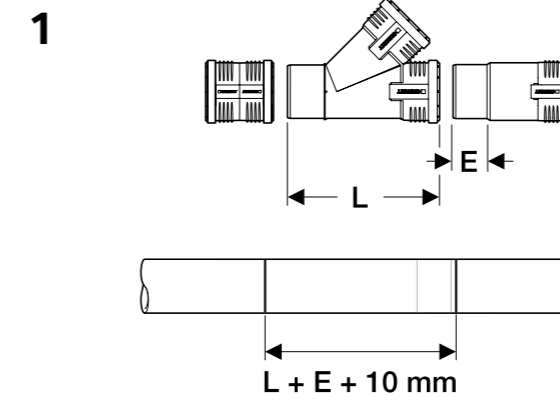
**i** To deflect the pipe, remove the nearest pipe bracket



**i** Re-install the pipe bracket you had removed for deflecting the pipe

**i** Secure the installed fittings / fitting group against sliding out of position using fixed pipe brackets

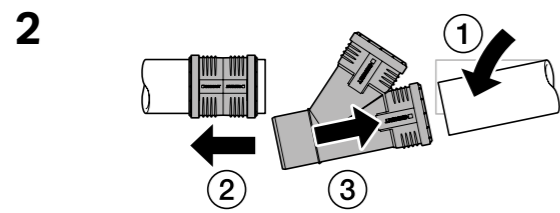
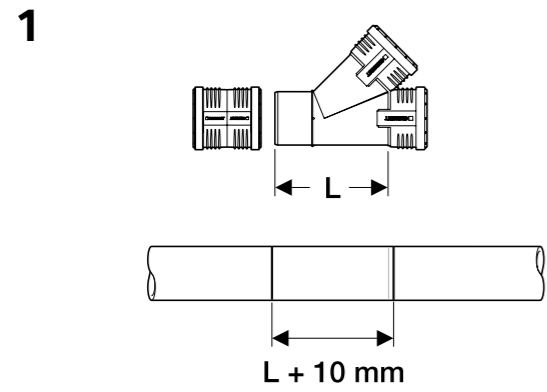
Later installation of branch fitting without pipe deflection; with expansion socket and slide-over sleeve



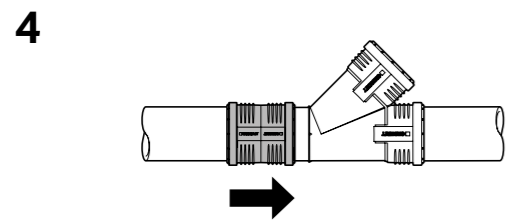
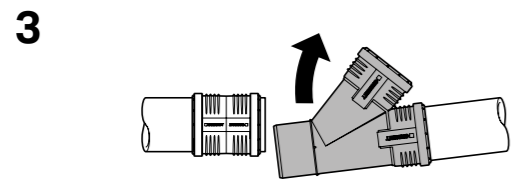
**i** Secure the installed fittings / fitting group against sliding out of position using fixed pipe brackets

# INSTALLATION GUIDE

Later installation of branch fitting with pipe deflection; with slide-over sleeve



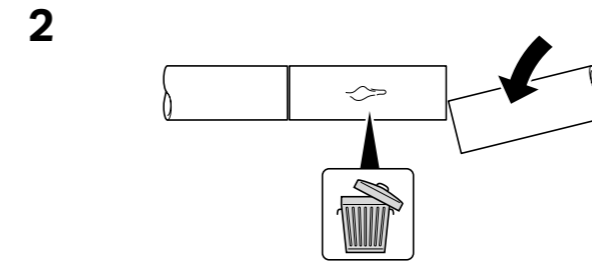
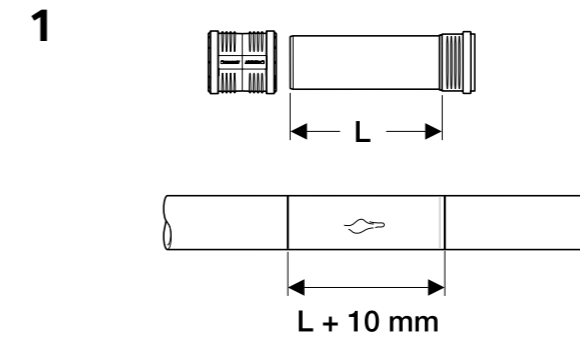
**i** To deflect the pipe, remove the nearest pipe bracket



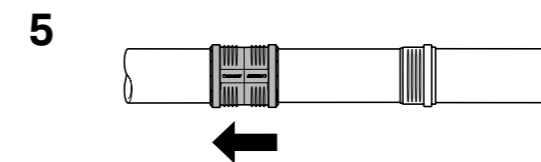
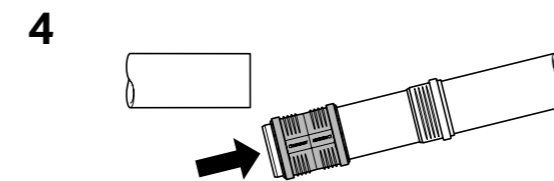
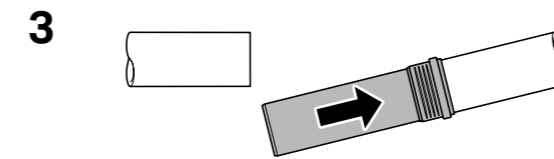
**i** Re-install the pipe bracket you had removed for deflecting the pipe

**i** Secure the installed fittings / fitting group against sliding out of position using fixed pipe brackets

Repair to the pipeline



**i** To deflect the pipe, remove the nearest pipe bracket



**i** Re-install the pipe bracket you had removed for deflecting the pipe

**i** Secure the installed fittings / fitting group against sliding out of position using fixed pipe brackets

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