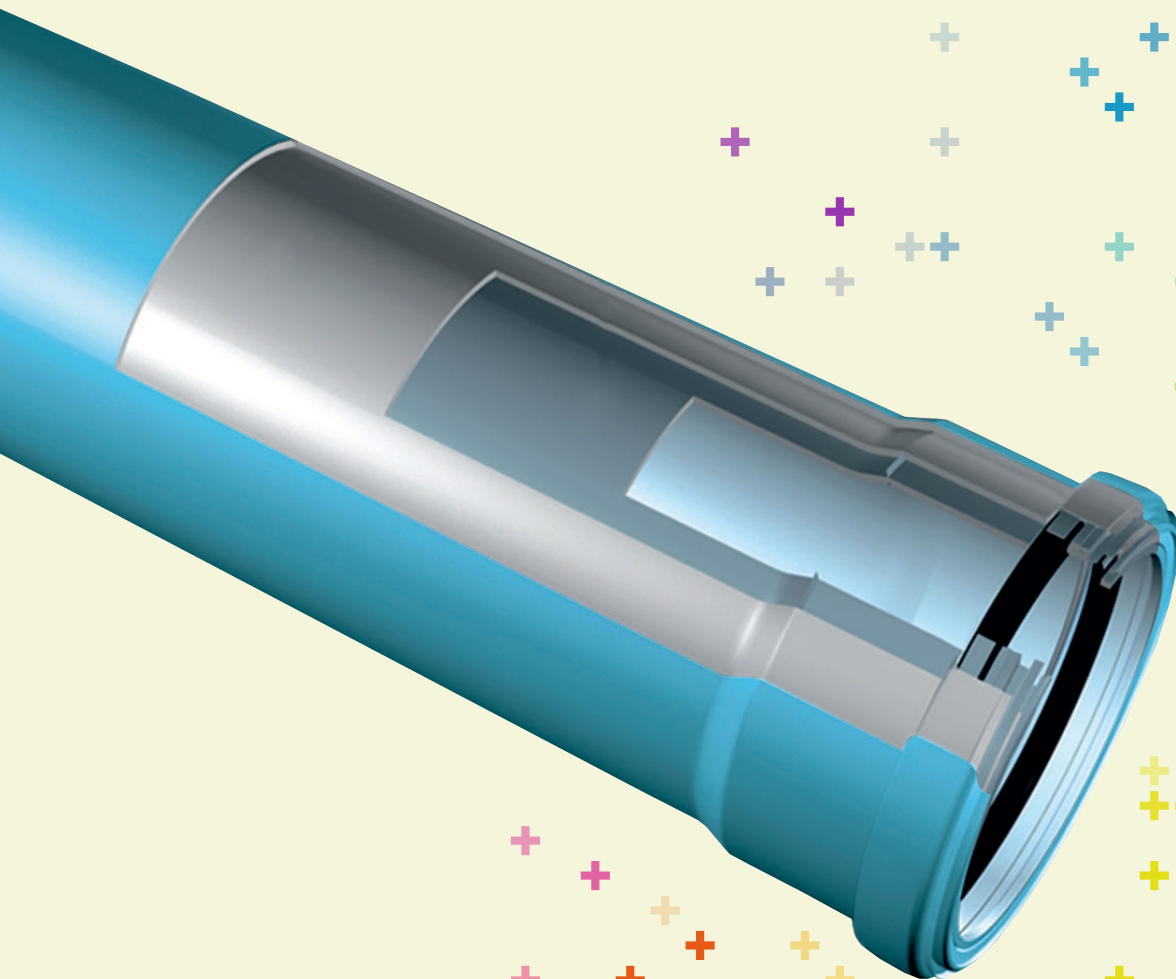


# SILENTA 3A

Low Noise Pipe System



## General Information

# History

Georg Fischer is proud of its long history of success with roots going back more than 200 years when Johann Conrad Fischer laid the foundation. What began in 1802 with a small copper smelting plant and development works for new alloys, has since developed to the global corporation as it is known today. Towards the end of 19th century, the company first began with producing the long-standing malleable cast iron fittings, thereby creating the basis of today's division GF Piping Systems. This day, it has become established on the market as a leading supplier of piping systems for the safe and reliable transport of liquids and gases. Despite constant changes, innovational strength and customer orientation remain the defining values for GF Piping Systems.



## + GF Piping Systems

### Leading supplier of plastic piping systems

We are consistently aligning our products and services to clearly defined market segments. With manufacturing sites in Europe, Asia and North America, we play a leading role in many industry segments such as water treatment, water transport and distribution, building services, plumbing and heating technology, gas supply, chemical process, microelectronics, food & beverage, energy, marine and life science.

For Building Technology (BT), we proudly produce the high quality SILENTA 3A soil, waste and vent (SWV) system. We produce the SILENTA 3A piping system in our production facilities in Malaysia and Turkey. Our production facility in SEA offers improved service and availability within this important region. We look forward to offer high level of service to our valued customers in the region.

GF stands for quality which has grown from our proud Swiss heritage. We certify all our products to international product and quality standards.

Our teams across SEA are ready to support your questions in design, installation and supply of the SILENTA 3A SWV system.

## General Information

# GF Malaysia



## + Business Activity

Starting as a representative office in 1996, the company grew until 2004 when George Fischer (M) Sdn. Bhd. was established as a Malaysian sales and production company. Since 2004, we have continued to support the SEA market demands and customer needs.

Being a major player in the market, GFPS offers an extensive product range which covers a diverse range of applications and specialized markets ranging from pipes, fittings, valves, measurement instruments to respective jointing technologies. Besides tailor-made piping solutions for applications in Industrial Systems (IS), Building Technology (BT), Water and Gas Utilities (UT), George Fischer (M) Sdn. Bhd. provides technical service and training directly to its customers in Malaysia and through our regional service and training centers throughout other ASEAN countries.

George Fischer (M) Sdn. Bhd. has in 2017 established a new production facility in Klang. We can now offer customized solutions as part of our commitment to serve our local and ASEAN customers.

George Fischer (M) Sdn. Bhd. is located in Klang, strategically located close to the two major ports of Malaysia, West Port and North Port. Our production, sales, service and training centre are all located on site for efficient operation. Currently, George Fischer (M) Sdn. Bhd. has 50 employees.

---

Amos Yeo  
Managing Director  
George Fischer (M) Sdn. Bhd.

## General Information

# SILENTA 3A Low Noise Pipe System

SILENTA 3A is a three-layer sewer pipe system made of PP material with noise-insulating properties. It is specially formulated and reinforced for non-pressurized domestic drainage in accordance with standards of DIN 4109, DIN 4102, BS EN 1451-1 and ISO 7671.

## + General Information

- SILENTA 3A achieves a sound-intensity level of 16 dB at 4L/s flow rate, officially recognized by the Fraunhofer Institute, Germany.
- SILENTA 3A is suitable for domestic soil, waste and vent (SWV) systems.
- SILENTA 3A can be used inside of buildings and for underground SWV systems.
- SILENTA 3A consists of pipes and fittings from 40mm to 200mm.
- SILENTA 3A is a GF globally registered trademark.

## + Benefits

- Provides excellent sound insulation to create an ideal living condition, which can then contribute to an increase in property value.
- Reduces vibrations and noises coming from the SWV systems.
- Flame-retardant according to DIN 4102 standard.
- High impact resistance.
- The coefficient of thermal expansion is only 0.06 mm/mK.
- Operating temperature from 0°C to 97°C.
- Corrosion-free, resistant to organic and inorganic acids.
- Suitable for pH value from 2 to 12.
- Alternative to cast iron.



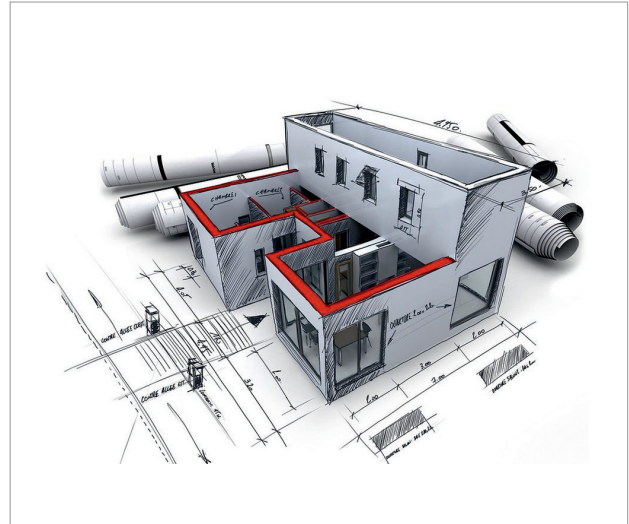
## Technical Properties

# Fields Of Application

SILENTA 3A is commonly installed in areas demanding low noise, high temperature and high impact resistance environment.

## + Soil, Waste and Vent Systems (SWV)

- **Working Areas:** Office buildings, conference rooms, etc.
- **Studying Areas:** Schools, colleges, libraries, community centers, tutoring centers, etc.
- **Sleeping Areas:** Hospitals, houses, residences, apartments, hotels, etc.
- **Commercial Kitchens:** Restaurants, industrial kitchens.
- **Underground Drainage Systems:** All underground SWV systems between buildings and sewer mains.



## + Chemical Transfer Systems

Industrial areas (short and long term usage)

### **SILENTA 3A pipes and fittings are not suitable for:**

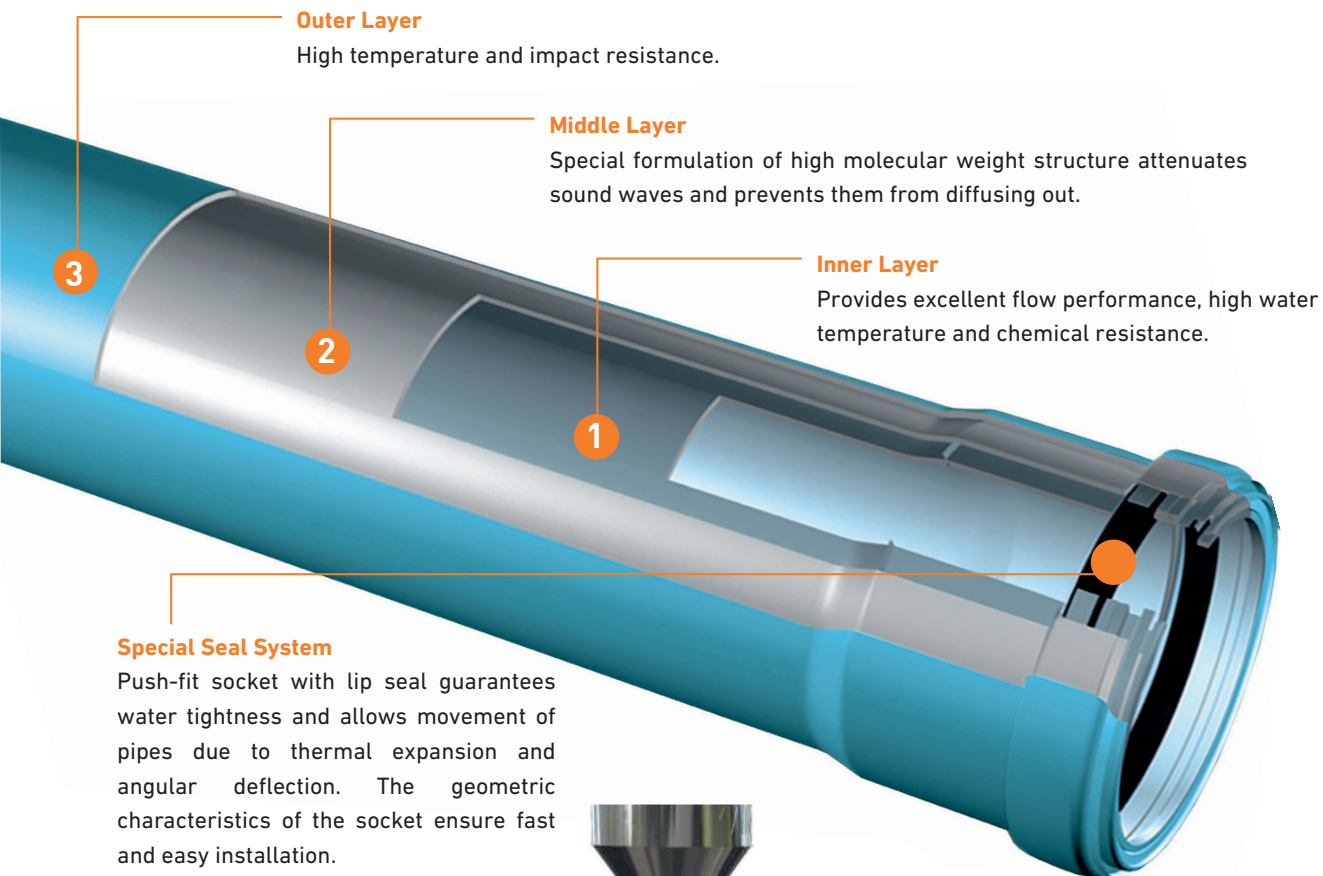
Transfer of waste water containing petrol or benzene and installations at temperatures below -20 °C.



## Product Properties

# Characteristics of Excellence

SILENTA 3A features a three-layer wall construction. The multi-layer structure increases pipe rigidity and provides sound attenuation characteristics.



### Special Seal System

Push-fit socket with lip seal guarantees water tightness and allows movement of pipes due to thermal expansion and angular deflection. The geometric characteristics of the socket ensure fast and easy installation.



## + Anti-Shrink System

“Anti-Shrink System” is a manufacturing process of SILENTA 3A that prevents any kind of deformation in case of ambient temperature or heat variations. If this system is not applied during the manufacturing process, the socket may be subject to shape deformations. SILENTA 3A Anti-Shrink System prevents problems such as changes in shape, impeded flow and leakages.

## + SILENTA 3A Technical Properties

### Raw Material

Inner Layer	PP
Middle Layer	Mineral Reinforced PP
Outer Layer	PP

Tensile Strength	13 N/mm
Colour Code	Light Blue
Elasticity Module	2400-3800 MPa
Coefficient Of Thermal Expansion	0.06 mm/mK
Diameter	40 Ø-50 Ø-75 Ø-90 Ø 110 Ø-125 Ø-160 Ø-200 Ø
Connection Type	Push-Fit System
Temperature of Operating Media	Min: 0°C Max: 97°C
Service Life	50 years

## Product Properties

# Sound Insulation Performance

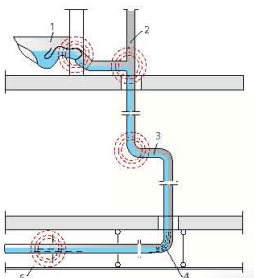
### + Why Sound Protection?

To minimize noise pollution in living quarters, occupants need to be shielded from disturbing air-borne and structure-borne noise. Architectural sound protection measures can be applied to the buildings and their elements where people spend longer period of time (offices, flats). Disturbing noise caused by sources within the building directly (structure-borne noise) or indirectly (e.g. noise deriving from SWV systems) can easily be prevented with SILENTA 3A.

### + Sound Reduction With SILENTA 3A

Both structure-borne and air-borne noises occur in SWV systems. The pipe vibrates due to fluid sloshing under gravity flow and change of flow direction. The type and intensity of these pipe vibrations depend on a variety of factors, such as the mass of pipe, pipe material and its damping properties. The pipe vibrations are transmitted directly from the pipe as air-borne noise and being transferred as structure-borne noise via the pipe attachments to the walls. When developing a low noise SWV systems, both types of noise sources must be taken into account.

### + The sources of noise in SWV systems can be listed as:



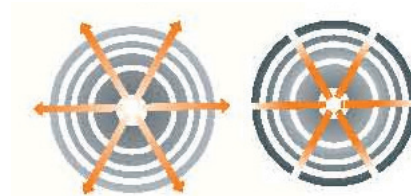
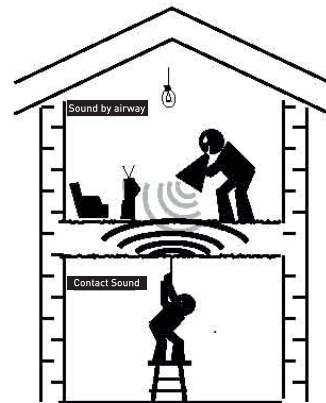
- Water sloshing
- Change of water direction
- High water velocities
- Converging flows
- Formation of cavitation
- Flushing toilets
- Excessive vibration due to insufficient pipe support

### + Air-Borne Noise

Air-borne noise is present when the sound source is transferred directly through the air.

### + Structure-Borne Noise

With structure-borne noise, the sound transfer first occurs through a solid body. This body vibrates and the vibration is conveyed as air-borne noise.



Sound waves generated by fluid flow in the pipe forms sound pressure level (dB) on the pipe wall. Special formulation of high molecular weight structure in the middle layer of SILENTA 3A pipe absorbs and reduces this noise from diffusing out.



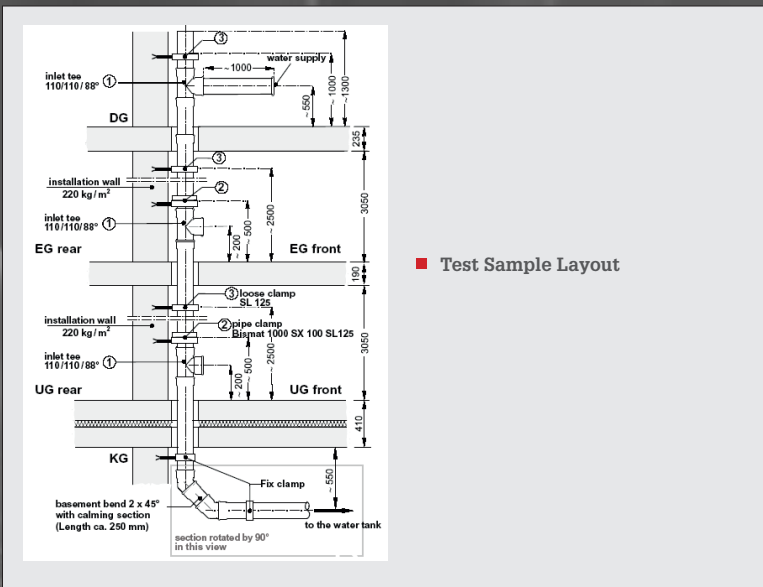
In the SWV systems installations, vibrations on the pipe systems occur as a result of waste water hitting the pipe surface. These vibrations are often transferred to the wall where the installation is assembled and creates noise. With SILENTA 3A low noise pipe system, this contact noise can be substantially reduced and absorbed.

# Technical Properties

## Significant Acoustic Performance

Flow rate [l/s]	Wastewater system "HAKAN SILENTA Premium highly noise-insulated" with pipe clamps "Bismat 1000 SX100 SL125"			
	0,5	1,0	2,0	4,0
Installation sound level $L_{dB(A)}$ measured in the basement test-room UG front *)	43	45	48	50
Installation sound level $L_{dB(A)}$ measured in the basement test-room UG rear *)	6	9	9	15
Airborne sound pressure level $L_{p,air}$ [dB(A)] *)	43	45	48	50
Structure-borne sound characteristic level $L_{w,s}$ [dB(A)] *)	4	7	7	13

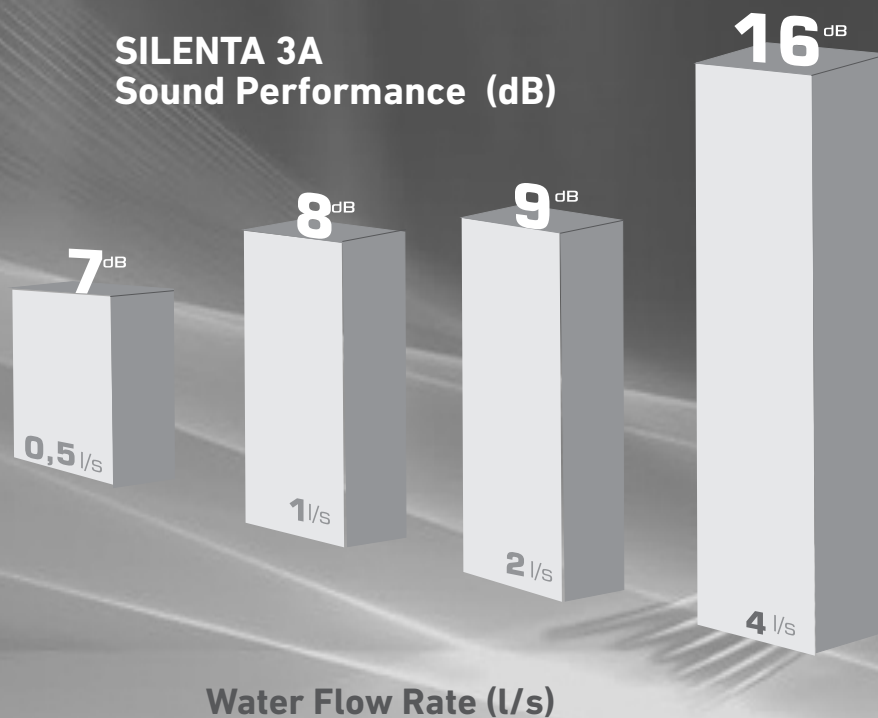
GF Hakan Plastik measurements of August 19, 2009. Sound pressure levels measured in the installation test facility. Test object was the waste water system "HAKAN SILENTA 3A Noise-Insulated DIN 4102" (manufacturer Hakan). The waste water system consisted of straight plastic pipes and fittings, nominal width OD 110 and pipe clamps "Bismat 1000 Sx100 SL125" (manufacturer BIS Walraven).



■ Test Sample Layout

SILENTA 3A low noise pipe system guarantees a low noise environment and high living comfort.

In the sound measurement test carried out by Fraunhofer Institute for Building Physics in Stuttgart, Germany, SILENTA 3A achieved a sound-intensity level of only 16 dB when measuring flow at a flow rate of 4 l/s.



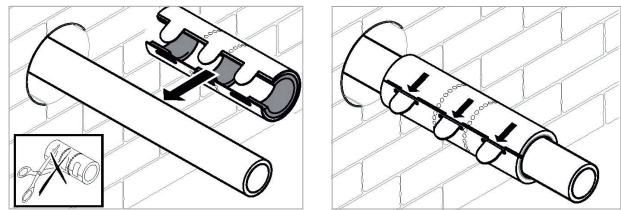


## Product Properties

# Fire Protection

During the assembly of SILENTA 3A pipes, it is recommended to use one of the below fire barriers and retarding products for wall and floor transitions. In case of fire, these items prevent the propagation of flames between the floors and adjacent rooms. Assembly of these fire retarding products can be done without extra tools.

### + Fire, Smoke and Noise Barrier



Fast and easy installation.

Maintenance-free and unaffected by moisture or building materials.

### + Fire Retarding Cuff



The cuffs are installed on both sides of the wall to prevent smoke or flames passing from one room to another.

They can be used with SWV pipes of up to 200mm diameter.

### + Fire Protection Stripe



The stripe covers the surface of the pipe and protects it from heat and flame.

It can be applied with glued tape on SILENTA 3A without extra tools.

## Assembly

# Comprehensive Range of Pipes and Fittings

The comprehensive range of SILENTA 3A pipes and fittings allows construction of the entire SWV systems.



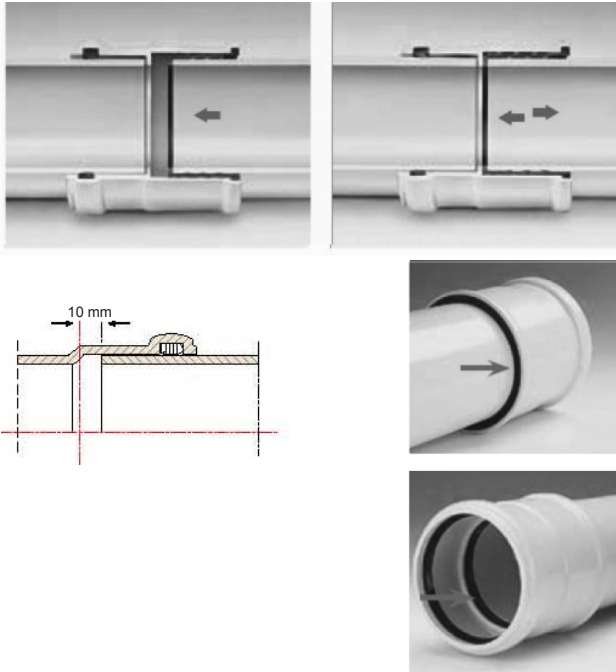
Pipe lengths are from 250 mm to 5500 mm, with diameters ranging from 40 mm to 200 mm, complemented by wide choice of fittings.

These pipe sizes are designed to cater for the needs of different internal bores and flow conditions. Special connection and transition fittings of SILENTA 3A make it possible to connect to other SWV systems made of different materials.

The range is completed with rubber insulated pipe clamps to reduce the vibrations that are transferred to the installation walls while in operation.

## Assembly

# Fast & Easy Installation



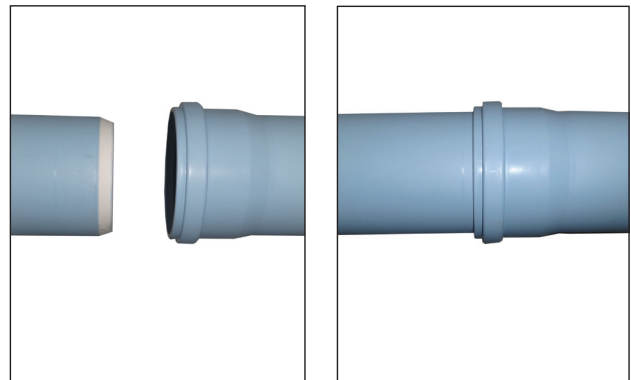
### + Connecting the Pipes with Fittings

1. Clean the jointing ends of pipe and fitting.
2. Apply a thin layer of lubricant to the ends of the pipe and fitting. Do not use grease or soft soap.
3. Insert the pipe completely into the fitting until it stops.
4. Mark inserted pipe end in this position at the sleeve edge with a pencil, felt pen, or similar.
5. In vertically laid pipework, retract the push-fit connection in the socket by 10 mm for each additional storey.
6. In horizontally laid pipework, retract the push-fit connections in the socket by 10 mm after every 4 m of laid pipe length.
7. It is not necessary to retract the push-fit connections between fittings, they can remain fully inserted.

### SILENTA 3A Thermal Expansion Coefficient: 0.06 mm/mK

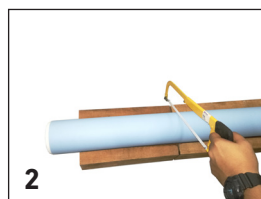
SILENTA 3A push-fit socket jointing system ensures fast and easy installations without the need of special tools.

With SILENTA 3A low thermal expansion coefficient, the push-fit joints are able to tolerate the changes in length of the pipe without taking any extra precautionary measures.



### + Shortening and Chamfering the Pipes

1. Cut the pipe at a 90° angle from the axis with a pipe cutter, fine-toothed saw or any other parting-off tool.
2. For connections to push-fit socket pipe systems, chamfer the pipe ends with chamfering tool or coarse file at an angle under approx. 10°.
3. Deburr the outside edges with a knife or a scraper.



## SILENTA 3A

# SILENTA 3A Pipe with Single Socket



Code	Diameter (mm)	Length (mm)	Packing (pcs)
300204111	40	250	154
300204112	40	500	98
300204113	40	1000	259
300204114	40	2000	259
300204115	40	3000	259
300204121	50	250	108
300204122	50	500	72
300204123	50	1000	167
300204124	50	2000	167
300204125	50	3000	167
300204126	50	5500	167
300204131	75	250	48
300204132	75	500	32
300204133	75	1000	88
300204134	75	2000	88
300204135	75	3000	88
300204136	75	5500	88
300204141	90	250	30
300204142	90	500	21
300204143	90	1000	74
300204144	90	2000	74
300204145	90	3000	74
300204146	90	5500	74
300204151	110	250	24
300204152	110	500	18
300204153	110	1000	43
300204154	110	2000	43
300204155	110	3000	43
300204156	110	5500	43
300204161	125	250	16
300204162	125	500	10
300204163	125	1000	38
300204164	125	2000	38
300204165	125	3000	38
300204166	125	5500	38
300204171	160	250	12
300204172	160	500	8
300204173	160	1000	28
300204174	160	2000	28
300204175	160	3000	28
300204176	160	5500	28
300204183	200	1000	14
300204184	200	2000	14
300204185	200	3000	14
300204186	200	5500	44

# Worldwide at home

Our sales companies and representatives ensure local customer support in over 100 countries.

[www.gfps.com](http://www.gfps.com)

## Malaysia

George Fischer (M) Sdn. Bhd.  
No. 2, 4 & 6, Jalan Permata 3/KS 09,  
Taman Perindustrian Air Hitam,  
41200 Klang, Selangor Darul Ehsan,  
Malaysia  
Phone : +603 3122 5585  
Fax : +603 3122 5575  
[www.gfps.com/my](http://www.gfps.com/my)

Malaysia Northern Region Sales & Service Centre  
No. 80-G & 80-1, Lingtang Sungai Pinang, Skyline City,  
10150 Georgetown, Penang.  
Malaysia  
Phone : +604 283 5575 / 6575  
Fax : +604 283 2575

Malaysia Southern Region Sales & Service Centre  
No. 6, Jalan Ekoperniagaan 1/15,  
Taman Ekoperniagaan,  
81100 Johor Bahru, Johor DT,  
Malaysia  
Phone : +607 522 4222  
Fax : +607 522 4333

## Singapore

George Fischer Pte. Ltd.  
11 Tampines Street 92, #04-01/07  
528872 Singapore  
Phone : +65 6747 0611  
Fax : +65 6747 0577  
[www.gfps.com/sg](http://www.gfps.com/sg)

## Indonesia

PT Georg Fischer Indonesia  
Karawang - Factory  
Jl. Desa Anggadita Klari,  
Karawang Timur,  
41371 Jawa Barat,  
Indonesia  
Phone : +62 267 432 044  
Fax : +62 267 431 857  
[www.gfps.com/id](http://www.gfps.com/id)

Surabaya - Office  
Jl. Raya Gilang No.33, Taman,  
Sidoarjo - 61257,  
Indonesia  
Phone : +62 31 788 1989

Bali - Office  
Jl. Raya Cargo (Mahendradatta) No. 63x Kav.B,  
Pemecutan, Denpasar Utara,  
Denpasar, Bali - 80116,  
Indonesia  
Phone : +62 811 1144 036

## Philippines

George Fischer Pte. Ltd.  
Philippines Representative Office  
#3 E, Rodriguez Jr. Avenue,  
Bagong Ilog (C5) Pasig City,  
1604 Philippines  
Phone : +632 571 2365 to 67  
Fax : +632 571 2368  
[www.gfps.com/ph](http://www.gfps.com/ph)

## Vietnam

George Fischer Pte. Ltd.  
Vietnam Representative Office  
Centre Point Building, Room 601,  
Floor 6, 106 Nguyen Van Troi Street,  
Ward 8, Phu Nhuan District,  
Ho Chi Minh City,  
Vietnam  
Phone : +84 28 3948 4000  
Fax : +84 28 3948 4010  
[www.gfps.com/vn](http://www.gfps.com/vn)