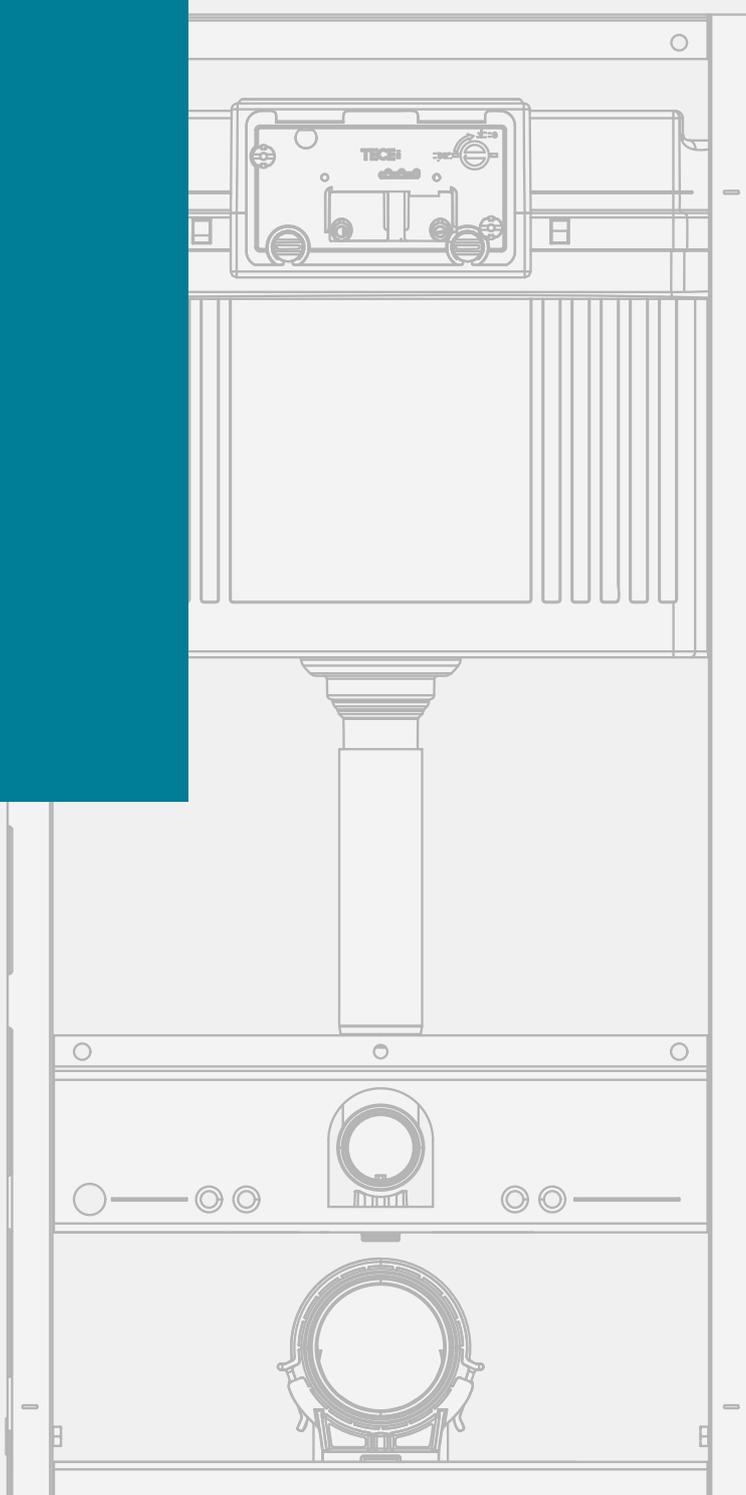




Sanitary systems

# TECEprofil

TECHNICAL GUIDELINES



<b>TECEprofil dry-wall construction system</b>	<b>3-4</b>
System description	3-5
Fields of application	3-6
<b>System installation/instructions</b>	<b>3-7</b>
Standard heights of installation walls	3-7
Standard applications	3-7
Building a supporting frame with module installation	3-12
Covering the facing with plasterboard	3-13
Filling of plasterboard panels	3-15
Facing for highly wet areas	3-16
Possible pre-wall heights and depths	3-18
Limits	3-19
Protection against moisture	3-19
Floor fixing	3-19
Equipotential bonding	3-19
Console loads	3-20
<b>TECEprofil universal module</b>	<b>3-21</b>
Installation in a TECEprofil pre-wall	3-21
Installation in front of a solid wall	3-22
Installation in a floor-to-ceiling C-profile metal stud wall	3-25
Installation in floor-to-ceiling metal stud wall with UA-profiles	3-26
Installation in a wooden stud wall	3-27
Attaching individual modules to the floor	3-27
Toilet module with connection for odour extraction	3-28
<b>Individual or modular construction</b>	<b>3-30</b>
Installing the vertical strut in the toilet module	3-30

<b>TECEprofil bath construction</b>	<b>3-31</b>
<b>Shower toilet solutions</b>	<b>3-34</b>
Toilet module for shower toilets with power connection	3-34
Fine installation kit for shower toilet module	3-34
Setting up the TECEone shower toilet on the toilet module	3-37
TOTO Neorest shower toilet module	3-38
Shower toilet attachments	3-38
<b>TECEprofil toilet module for baby/children's standing toilet</b>	<b>3-39</b>
<b>Barrier-free construction with TECEprofil</b>	<b>3-40</b>
Planning guidelines	3-40
Barrier-free toilet system in a TECEprofil wall	3-41
Barrier-free toilet system in an individual modular construction	3-42
TECEprofil Geronto module	3-42
<b>Sound insulation</b>	<b>3-45</b>
Relevant standards	3-45
TECEprofil sound insulation verification	3-47
TECEprofil dry-wall construction system – sound insulation according to DIN 4109-1:2016-07	3-52
TECEbox brick-wall structure system – sound insulation according to DIN 4109-1:2016-07	3-56
<b>Fire protection</b>	<b>3-58</b>
TECEprofil dividing walls with fire protection requirements	3-58
Construction of a dividing wall (EI 30–EI 120)	3-58

# TECEprofil – dry-wall construction system

## TECEprofil dry-wall construction system

TECEprofil is a pre-wall system that has proven its value over many years, and can be used to create bathroom walls quickly and effectively. The fitter not only produces the sanitary and heating installations but with TECEprofil, he is also able to provide complete bathrooms with surfaces ready for tiling, all from a single source.

TECEprofil is a dry-wall construction system which is particularly suitable for the renovation of old buildings due to its flexibility. Thanks to the time and cost savings compared with bricked-in pre-walls, the TECEprofil system is also of interest for new builds. The design freedom offered by the TECEprofil allows the fitter to realise unconventional bathrooms, and offers generous scope for creative ideas.

TECEprofil



Bathroom walls with TECEprofil – before



Bathroom walls with TECEprofil – after

The TECEprofil system offers universal modules for popular applications. These modules not only simplify installation in a TECEprofil wall, but can also be used for conventional dry-wall constructions and as individual modules.

The TECEprofil system basically consists of the supporting frame, the universal modules and the TECEprofil system facing. The supporting frame is based on a section tube which is connected with corner joints. The complete supporting frame is mounted to the structural shell using double joints or angle brackets.



The three basic components of the TECEprofil system:

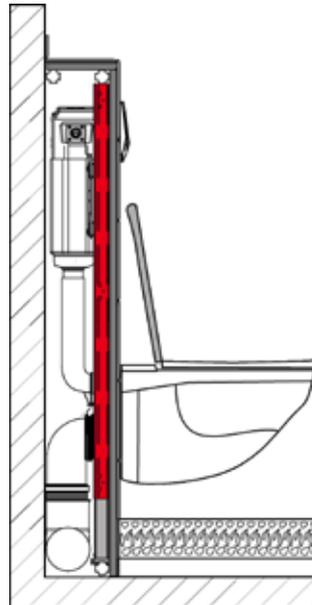
- section tube
- angle bracket
- corner joint

Special features of the TECEprofil system:

- Clearly structured range with only three basic components
- Generous dimensional tolerance when cutting the section tube to length
- Stable and safe fixing technology
- Clean and fast installation
- Highly versatile TECEprofil universal modules
- Installation without special tools
- Price advantages when considering the overall cost

## System description

The TECEprofil system is equally suitable for new builds and for the renovation of older buildings. Thanks to its universality, the TECEprofil system is ideal for difficult building situations such as sloping ceilings or wall recesses. The TECEprofil supporting frame is variable and extremely stable.



One of many advantages:  
a pre-wall is part of the living space

A particular advantage is that a pre-wall structure is added to the net floor space of the room. According to section 2.3 of DIN 277, free-standing installations and other shelf surfaces also belong to the net floor space. According to the "Second Calculation Regulation (II. BV), wall structures do not need to be subtracted when rooms are measured (II. BV, § 43, section. 2). So a pre-wall is therefore a living space! Therefore, it can be fully taken into account in living space calculations.

## Fields of application

### Pre-wall installation

Pre-walls are becoming increasingly popular in bathrooms. They offer additional shelf space and make installation of the sanitary items far easier.

### Free-standing installation wall

Free-standing installation walls can be erected anywhere in the room. They can be implemented at partial height or at floor-to-ceiling height. Free-standing walls must be firmly attached to the unfinished floor. Assembly on finished floors is not possible. Walls which project freely into the room must be additionally secured with a “support foot for free-standing walls”.

### Dividing walls

The TECEprofil system enables the creation of floor-to-ceiling dividing walls. For example, an existing room can be divided into separate toilets for men and women. The dividing wall can be directly equipped with toilet modules or washstands. The construction is performed according to DIN 4103.

Structural certification for TECEprofil dividing walls was provided by the Braunschweig Materials Testing Institute (MPA).

### Duct covering

The TECEprofil system allows all types of duct to be covered. Combinations of installation walls and ducts are also possible.

### Shelf heights

Practically all shelf heights are possible. The standard universal modules permit a minimum supporting frame height of 1,150 mm. The toilet universal modules for low construction heights have a minimum supporting frame height of 980 or 820 mm. For the universal modules, the TECEprofil range offers the possibility of creating an upwardly variable, infinitely adjustable supporting frame height using telescopic attachments (order no. 9380001), or a height-adjustable module attachment (order no. 9380002).

## System installation/instructions

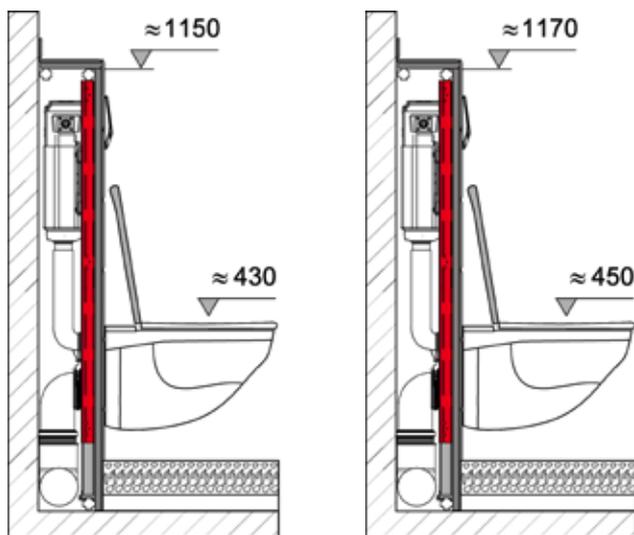
When installing a TECEprofil bathroom wall, minimum distances for struts and fixings must be adhered to. In the following sections, the guidelines for installing the system will be explained.

### Standard heights of installation walls

The standard supporting frame height of a TECEprofil pre-wall is 1,150 mm. This produces a toilet seat height of 430 mm.

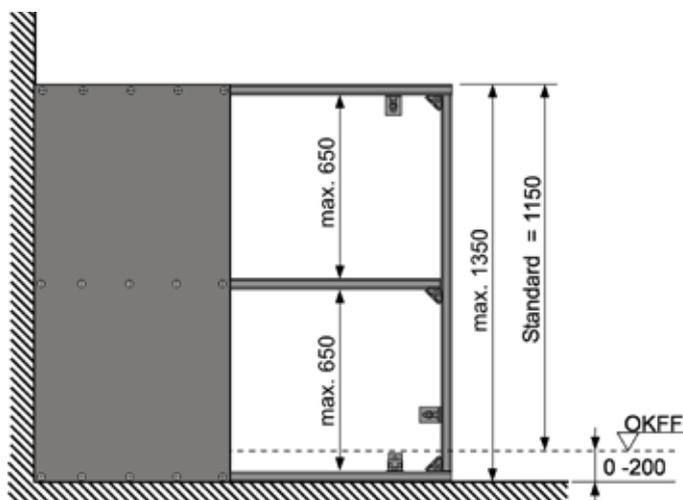
Tip:

For reasons of comfort, we recommend a seat height of 450 mm. The height of the supporting frame in this case is 1,170 mm. To guarantee secure fixing of the facing, a horizontal TECEprofil strut must be integrated at least every 650 mm.



Toilet seat height: Standard (left) and comfort

The dimensions of the TECE facing are 625 x 1,350 x 18 mm. The maximum floor construction is 200 mm.

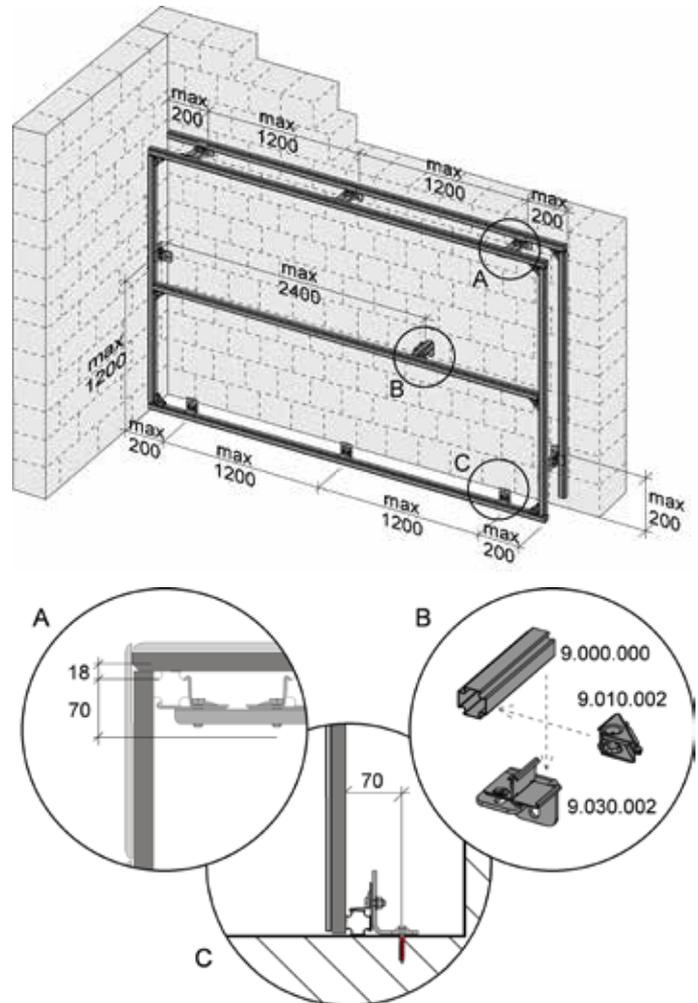


Facing dimensions

For easier installation, all universal modules have a meter line stamped on them.

## Standard applications

### In front of a solid wall

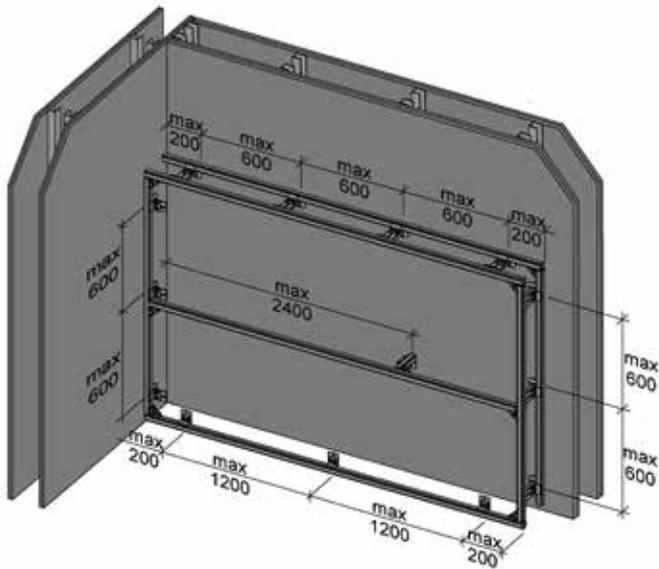


Profile wall in front of a solid wall

The distance between the attachments on the structural shell must be maximum 1.2 m. The first wall, floor or ceiling attachment must be maximum 20 cm from the edge of the pre-wall.

# TECEprofil – system installation/instructions

## Dry stud partition



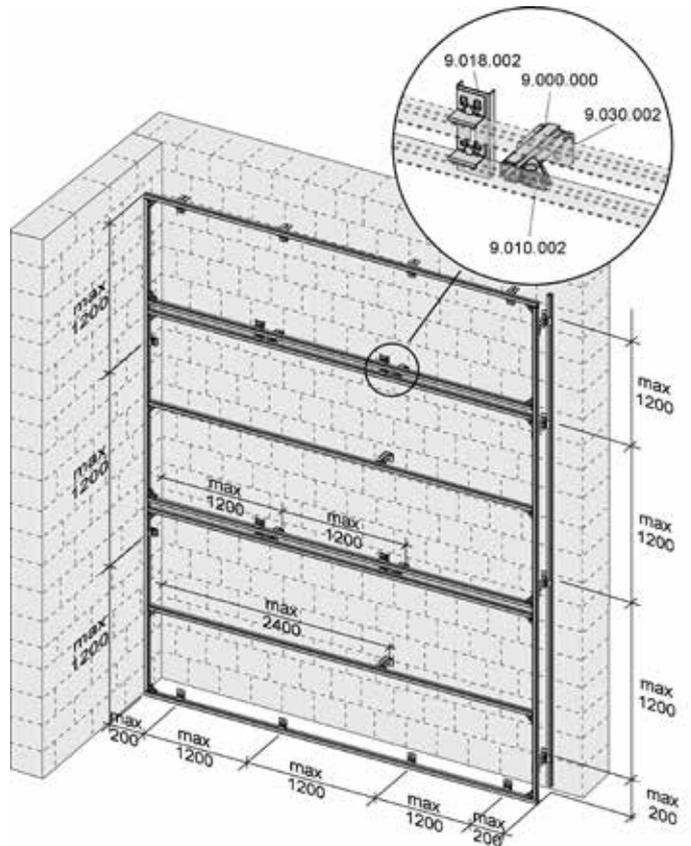
## Dry stud partition

TECEprofil installation walls can be set up in front of dry stud partitions. The stud partition must have been erected in accordance with DIN 18430.

The metal stud partition substructure must have been constructed out of sheet steel profiles according to DIN 18 182/T1. The minimum profile size is CW 75 x 50 x 0.6 mm for simple stud partitions, and CW 50 x 50 x 0.6 mm for supported double stud partitions.

The metal stud partitions must be panelled with 12.5 mm-thick facing panels on both sides. The minimum attachment spacing is 60 cm.

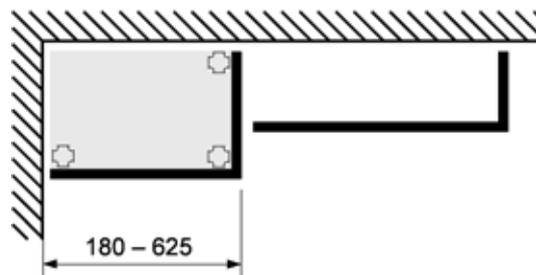
## Floor-to-ceiling installation wall



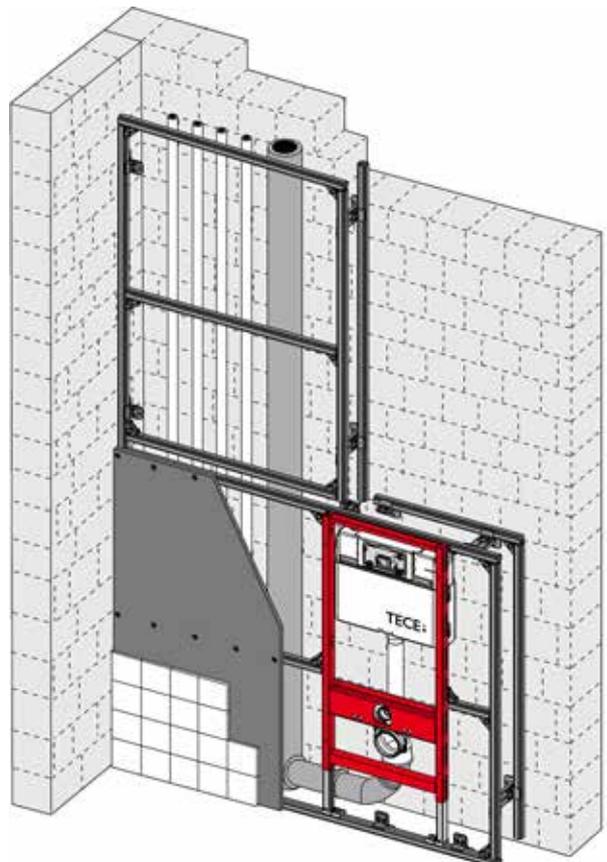
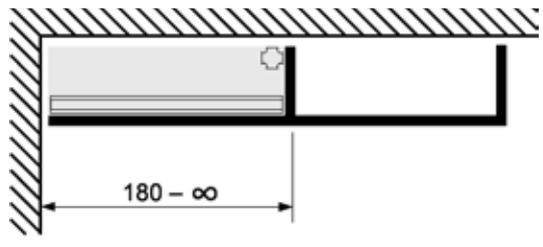
## Installation wall, floor-to-ceiling

Double struts are required for the facing. They must be fixed together at least every 1.2 m. They should also be additionally supported by the wall behind.

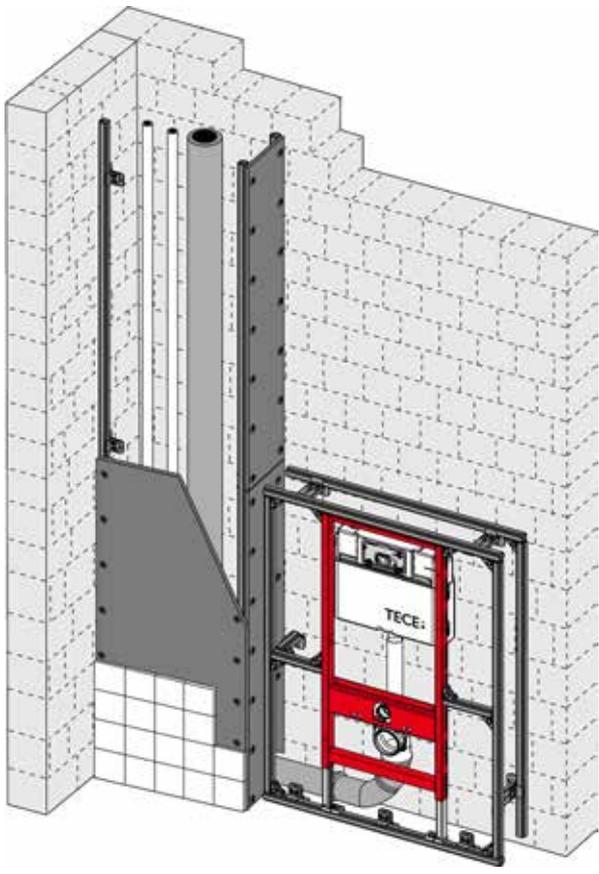
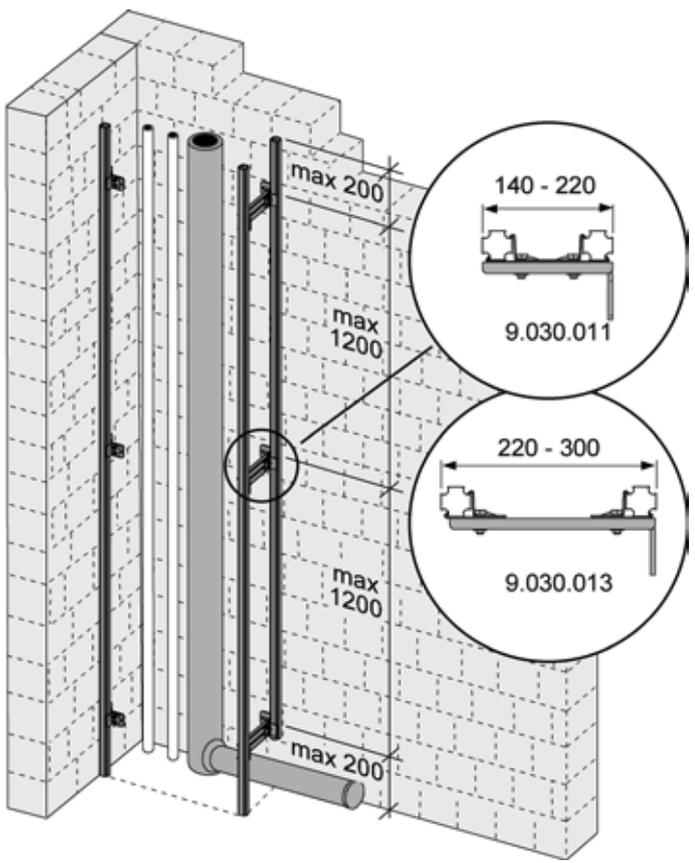
## Adjacent duct/pipe covering



Fitted duct



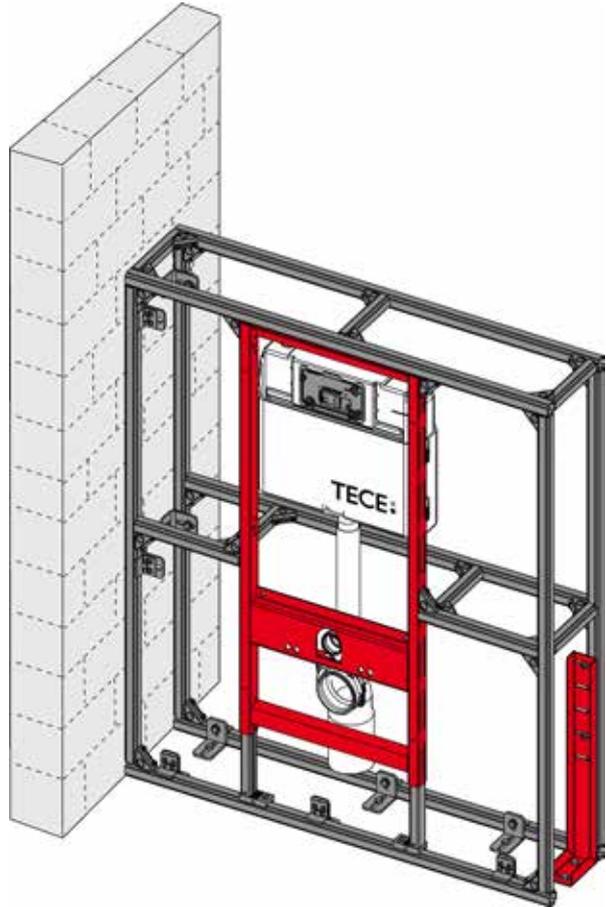
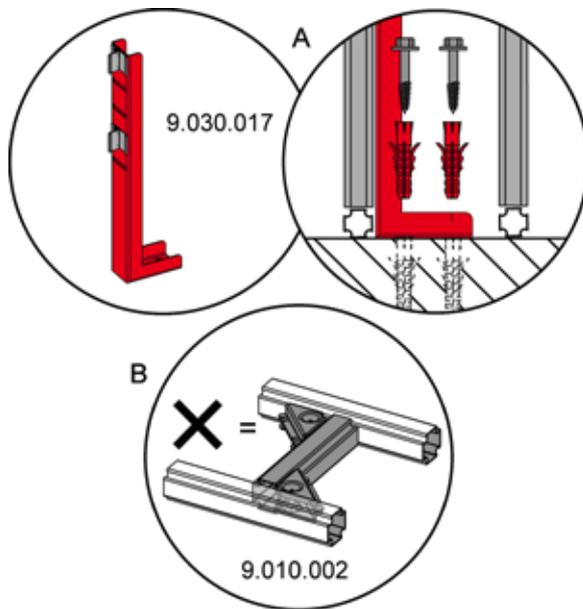
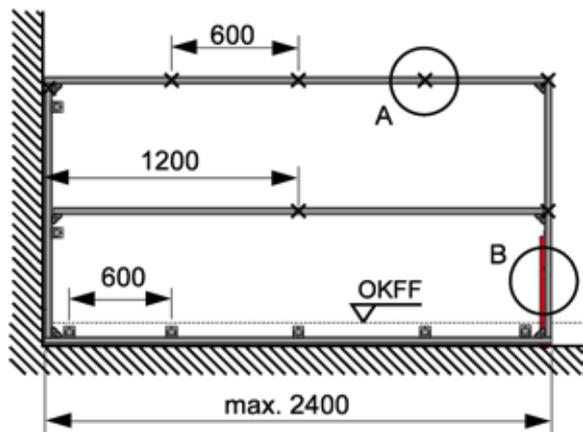
Fitted duct



Adjacent duct, pipe covering

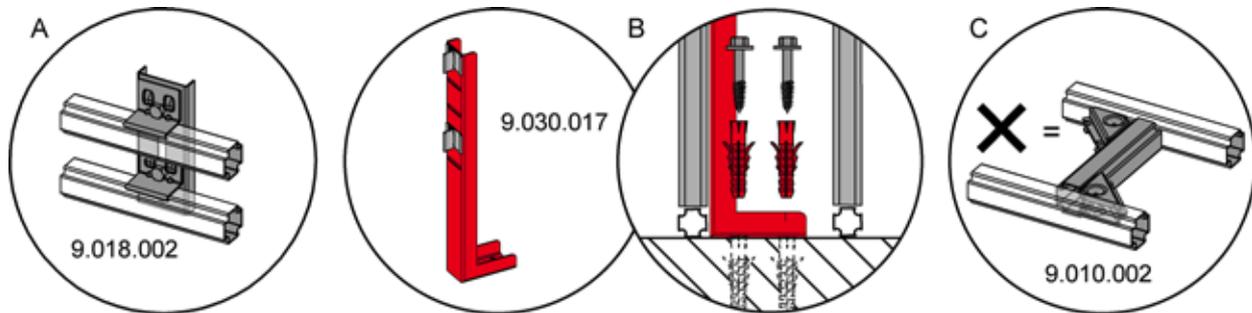
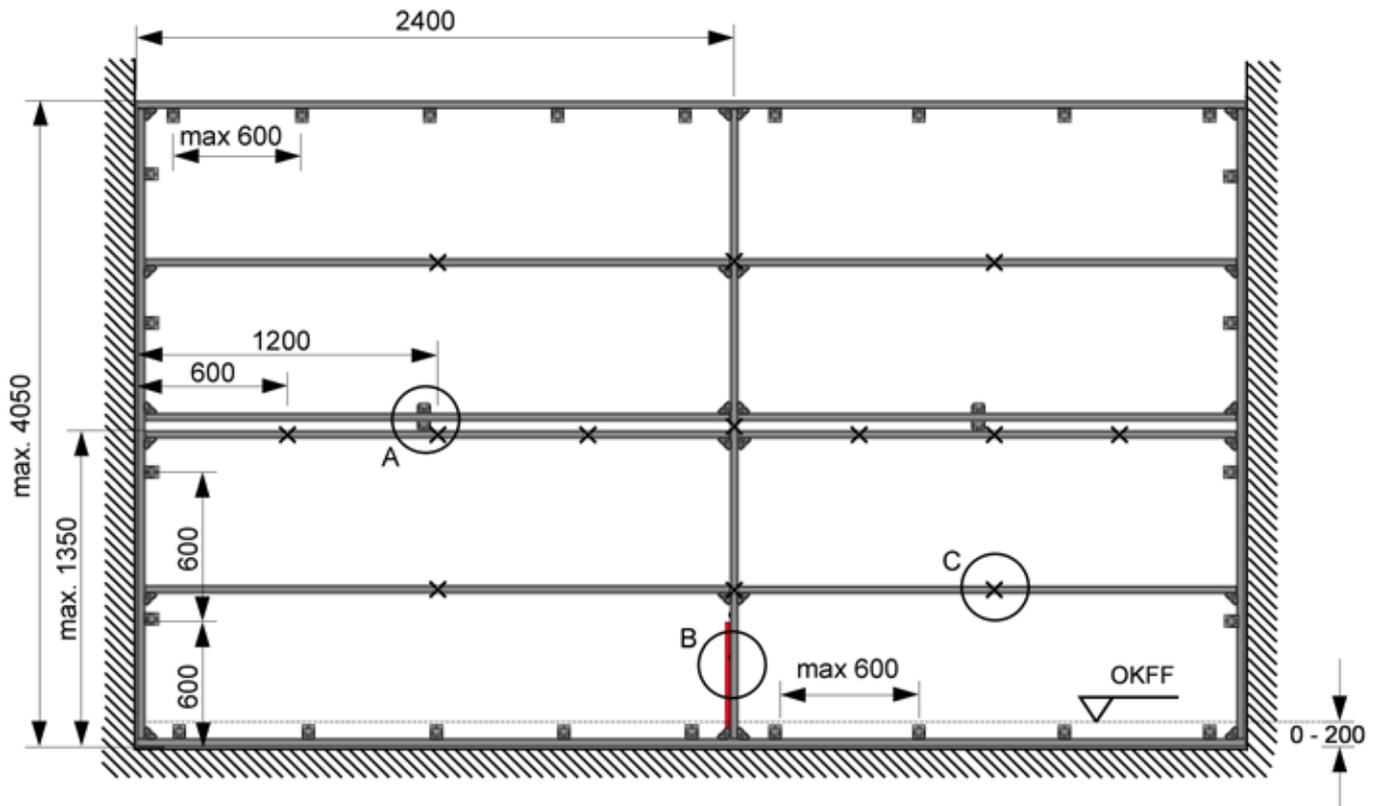
# TECEprofil – system installation/instructions

Free-standing wall, abutted on one side



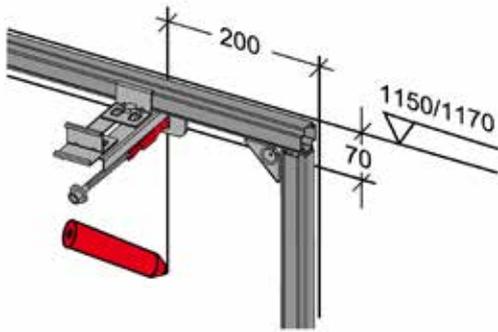
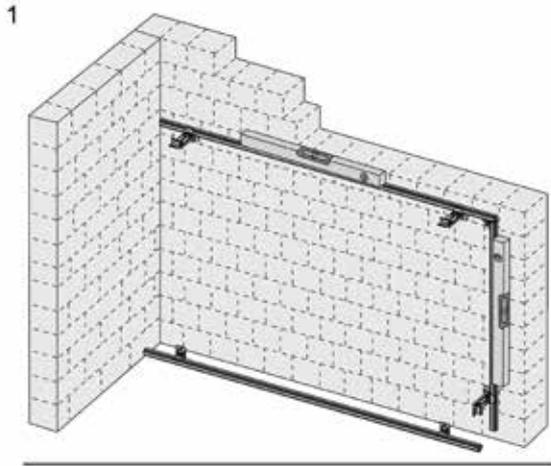
Free-standing wall, abutted on one side

Free-standing wall, abutted on both sides

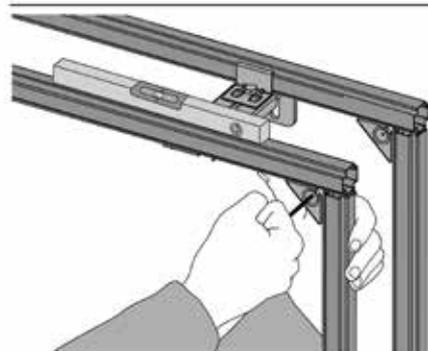
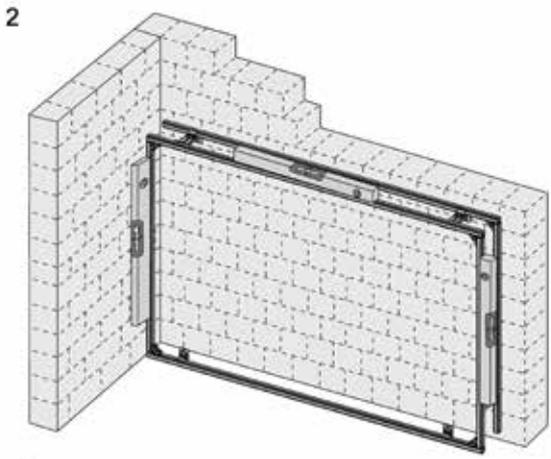


Free-standing wall, abutted on both sides

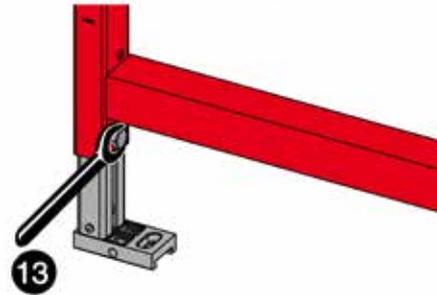
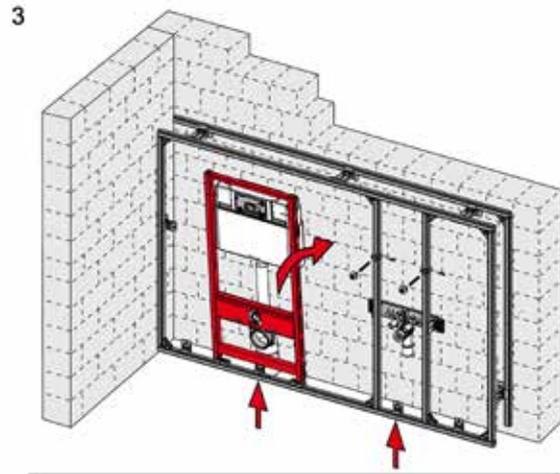
## Building a supporting frame with module installation



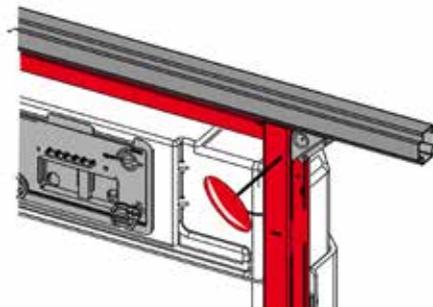
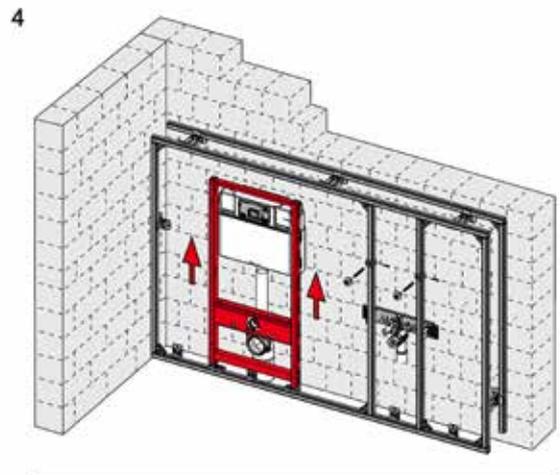
Secure the section tube to the wall with double joints, and to the floor with angle brackets



Use a spirit level to align the section tube and connect using corner joints

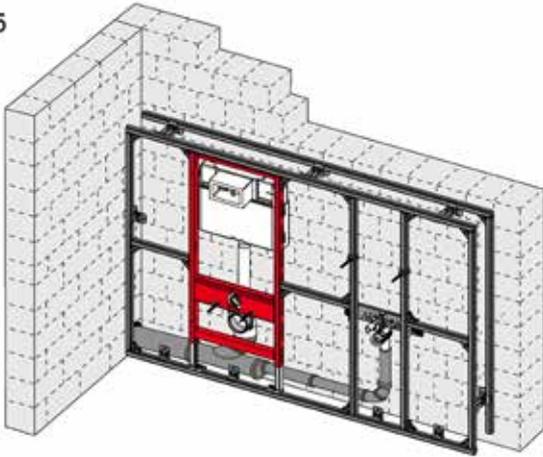


Place the angle bracket centred on the module or crossbeam, place the module feet onto the section tube, and release the foot brake



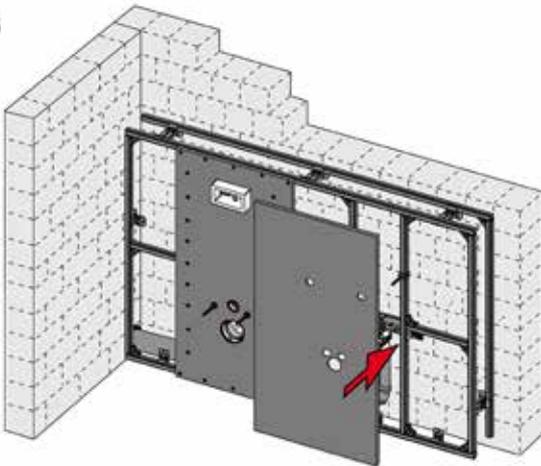
Pull out the module, secure it to the top section tube with corner joints, apply the foot brake and close the clip on the module foot

5



Install the horizontal middle struts

6

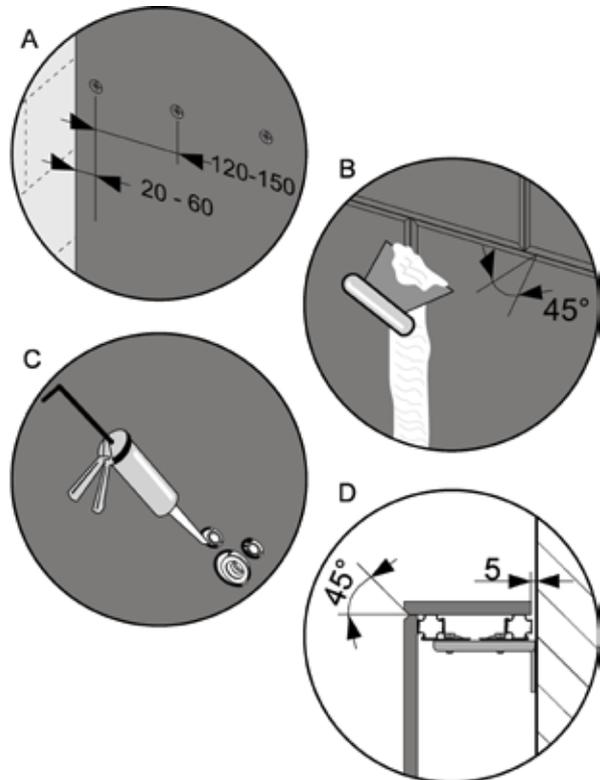
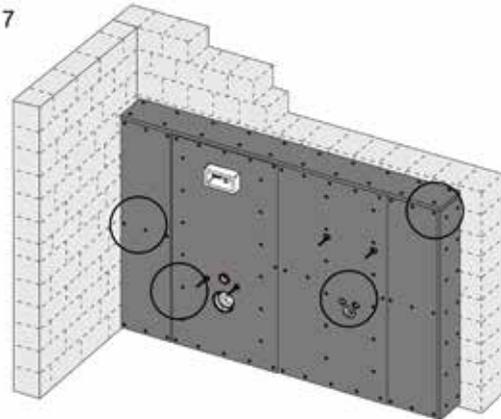


Make the cut-outs in the panel plates, put the facing in place

## Covering the facing with plasterboard

The walls are covered with 18 mm-thick single-layer plasterboard. Alternatively, 2 x 12.5 mm plasterboard or an equivalent facing can be used. "Equivalent" means, for example, a combination of plywood panels and plasterboard or facing made of gypsum boards. The facing panels must be screwed together both with the vertical module struts and with the adjacent, vertical supporting frame. The facing on the supporting frame should start at the toilet module as that is where the largest number of cut-outs is required.

7

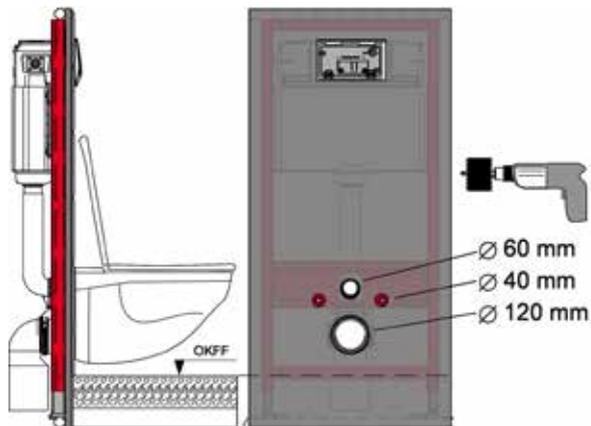


Covering the TECEprofil supporting frame with facing, and filling

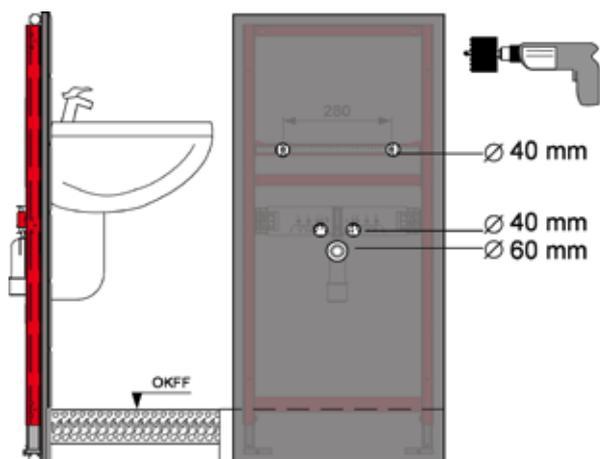
# TECEprofil – system installation/instructions

## Practical tip:

The required cut-outs can be easily marked out using the marking plugs supplied. To do so, press the panelling against the marking plugs. The centre points of the cut-outs are now clearly marked.



Size of cut-outs for the toilet module

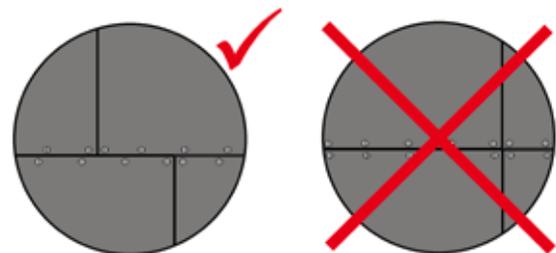
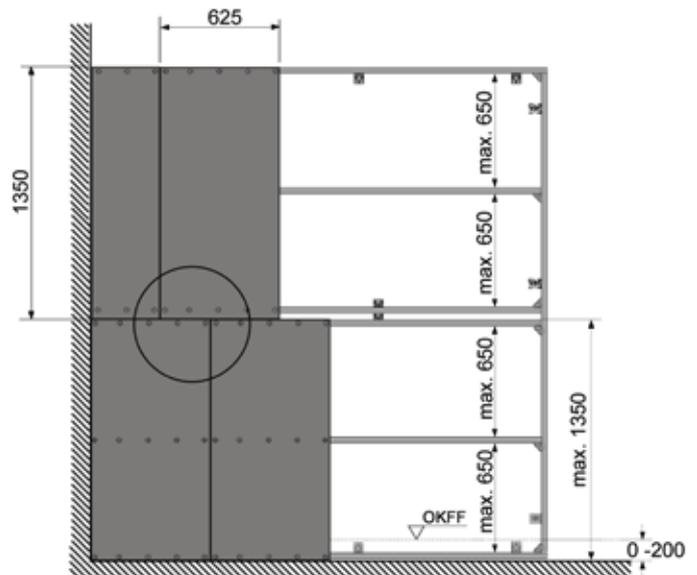


Size of cut-outs for the washstand module

## Note:

The marking plugs are not suitable for a pressure test.

When applying panel facing, the general guidelines for dry-wall constructions must be taken into account. The joints in the covering must be filled with TECEprofil knifing filler. On non-ceramic surfaces, additional fibreglass joint ceiling strips must be used. The 5 mm gap between the structural shell and the facing must be filled and sealed with a permanently flexible compound. Cross joints (panels butted vertically and horizontally) must be avoided; the joints should be offset by at least 15 cm.



Joint patterns on the facing

Important: all abutting edges on the plasterboard must be chamfered to 45°.

## Filling of plasterboard panels

When plasterboard panels are filled, a distinction must be made between four different levels of quality. Unless tender documents specify otherwise, quality level 1 generally applies.

Quality level 1 covers the following requirements for filling:

- filling of butted joints of plasterboard panels and
- coating of the visible parts of the fastening elements

Any excess material must be removed. Markings, scratches and burrs caused by tools are permitted.

Further information about filler surface quality can be read in data sheet no. 2 of the German Gypsum Industry Association.

### TECEprofil knifing filler

TECEprofil knifing filler is a white powder to mix with water and is based on gypsum and PVA with methyl cellulose and cellulose reinforced fibre. It offers all the advantages of a quick plaster, has a very high adhesion and does not sink. TECEprofil knifing filler can be applied as thickly as required in one step, and hardens in the process without strain or cracks.

#### Application (indoor area)

- Filling, plastering and smoothing of rough masonry, plaster, concrete, filigree ceilings, aerated concrete and foamed concrete, sand-lime brick, plasterboard, fibre-reinforced panels, light construction panels, and insulation panels.
- Filling the joints in plasterboard and gypsum fibreboard without fabric reinforcement. Take DIN 18181 + DIN 18183 and the processing guidelines of the board manufacturer into account. The site must be dry. On surfaces which are particularly subject to stress, e.g. in the area of installation openings, insert reinforcing strips if necessary.
- As an adhesive binder for securing plasterboard or gypsum fibreboard, expanded polystyrene and fibreboard panels to masonry in indoor areas. Absorbent substrates such as aerated concrete and sand-lime blocks must be primed first with penetrating primer/sealer.
- As a gypsum adhesive for non-load bearing gypsum partition wall panels.

#### Substrate

The substrate must be clean, solid and offer maximum grip. Dirt, dust, wallpaper, old paint and plaster which is not adhering reliably must be removed. Pre-treat smooth, concrete surfaces with a thinned plaster base; other smooth substrates such as gloss or emulsion paint must be pre-treated with a pigmented primer.

#### Mixing

Pour clean water into a container and sprinkle in the powder (1 part water to approx. 2.25 parts powder). Stir vigorously until a very fine, smooth, paste-like compound is formed. To achieve the optimum working properties, wait for about 1–2 minutes and stir vigorously again.

#### Application tips

Apply TECEprofil knifing filler evenly onto the substrate with a smoothing trowel.

- can be worked for about 30 minutes without difficulty,
- only use at temperatures above 8°C.

#### Post-treatment

It is not generally necessary to post-treat the smoothed surfaces. However, if emulsion or gloss paint is applied, we recommend applying a coat of penetrating primer/sealer beforehand.

## Facing for highly wet areas

The TECEprofil panel for highly wet areas is a 12.5 mm-thick, cement-bound light concrete panel with a sandwich structure, reinforced with a top layer of alkali-resistant fibreglass webbing on both sides.

In areas where the walls are subject to a very high degree of moisture stress – such as in public shower facilities, swimming pools, fitness areas etc. – special facing panels must be used.

For these areas, we recommended the use of especially durable and resistant water-repellent panelling material. The 12.5 mm-thick, cement-bound TECE facing panel for highly moisture-stressed areas fully meets these requirements.

The design of dry-wall constructions in these areas is only partly covered by standards and directives:

- For use in areas not regulated by the building authorities, the fundamental standard is the new information sheet “Bathrooms and wet rooms in wooden and dry-wall constructions” issued by the main associations and institutions for dry-wall constructions.
- For areas which are governed by the building authorities, the information sheet from the Central Association of the German Construction Industry (ZDB) applies.

## Storage guidelines

Panel storage and transport:

The panels are packed lying flat and delivered on pallets. They should always be stored lying flat on a smooth base. Storing them upright could distort the panels and damage the edges. If the panels are to be used to cover ceilings, the load-bearing capacity of the ceiling must be respected. Storage in the open air is possible because of the resistance to frost and water. However, because of their later surface handling, the panels should be provided with a water-repellent covering and protected from soiling by building work.

Construction site conditions:

As with all materials used in construction, fibreglass light concrete panels are subject to expansion and contraction due to the influence of temperature and moisture. The following installation conditions must be adhered to in order to perform dry-wall work correctly:

- Only install fibreglass light concrete panels when the air humidity is less than 80%.
- Soaked panels must never be handled until they have completely dried out. Do not install damaged materials.
- Due to the technical process, bonding of fibreglass light concrete panels must be performed with air relative humidity < 80% and at a room and material temperature of at least + 5°C.
- In the process the temperature of the adhesive must be > 10°C. The panels must have acclimatised to the conditions in the room because they must not change appreciably in the 12 hours following bonding.
- Low temperatures and high relative humidity prolong the hardening times. Heating using a gas torch can cause damage due to the risk of condensation being formed. This especially applies to indoor areas with poor ventilation. Sudden rapid heating should be avoided.

Cutting:

Cement-bound lightweight concrete panels can be cut using a standard rail-guided portable circular saw with extraction, preferably as a plunge saw. To cut panels as exactly to size as possible and with sharp edges, we recommend using a saw blade with a smaller number of teeth. Cut-outs and curves can be cut conveniently using a jigsaw.

Panel facing:

For the facing, TECEprofil walls can be covered with extremely robust fibreglass light concrete panels in a single layer construction. They should be installed with the noticeably smoother face to the front. Direct tiling is possible, depending on the application in question. With multi-layer facing, only the joints of the outer layer of facing panels need to be bonded together. Cross joints are not permitted. The offset of the joints between the panels must be at least 200 mm. For the purposes of good bonding, the panels must be cut absolutely straight and with sharp edges.

### Fixing:

The fibreglass light concrete panels are secured to the TECE supporting frame using the same types of screw and with the same screw spacing as for the plasterboard panels. Pre-drilling is not necessary.

### Joint technique:

Differently to plasterboard, fibreglass light concrete panels are bonded to each other bluntly. Only Fermacell joint adhesive (order no. 9200014) is permitted for this purpose. About 20 ml of adhesive is required per metre. A 310 ml-cartridge will therefore bond about 15.5 m of panel joints. Apply the bead of adhesive to the edge of the panel. It is important that the adhesive completely fills the joint when the two panels are pressed together (the adhesive should be visible on the joint). The maximum width of the joint must not exceed 1 mm. To prevent disturbance to the film of adhesive during subsequent fixing and hardening, the joint should not be pressed down "into nothing". Depending on room temperature and humidity, the adhesive is set after about 12–36 hours. Afterwards the excess adhesive is completely removed. This can be done using a putty knife or a scraper.

### Job steps for moisture stress class A (high degree of wetness)

In moisture stress class A areas, the whole surface of the facing panels must be sealed with a sealing system (including the flexible adhesive).

For sealing systems in the remaining moisture stress classes, please refer directly to the manufacturers of building chemical products.

### Work steps required:

1. Bond the abutting edges
2. Remove excess joint adhesive after it has set
3. Fill the visible fastening material using fine filler or skim coating
4. Apply a sealing system (penetrating primer, liquid membrane, sealing tape, possibly a wall sealing collar) (see figs. 1 and 2)
5. To seal the pipe penetrations, bed the sealing collar into the still-wet liquid membrane and immediately brush the sealing system over it again (see fig. 3)
6. Apply the flexible adhesive



Fig. 1: Applying the lower sealing coating



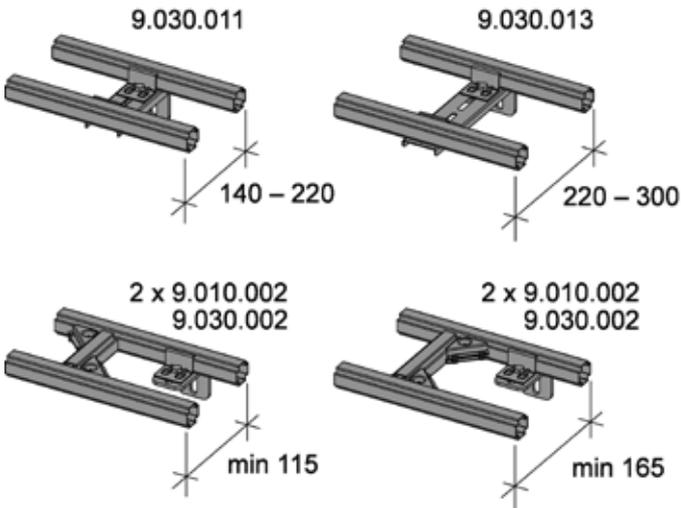
Fig. 2: Bedding the sealing collar into the still-wet sealing coating



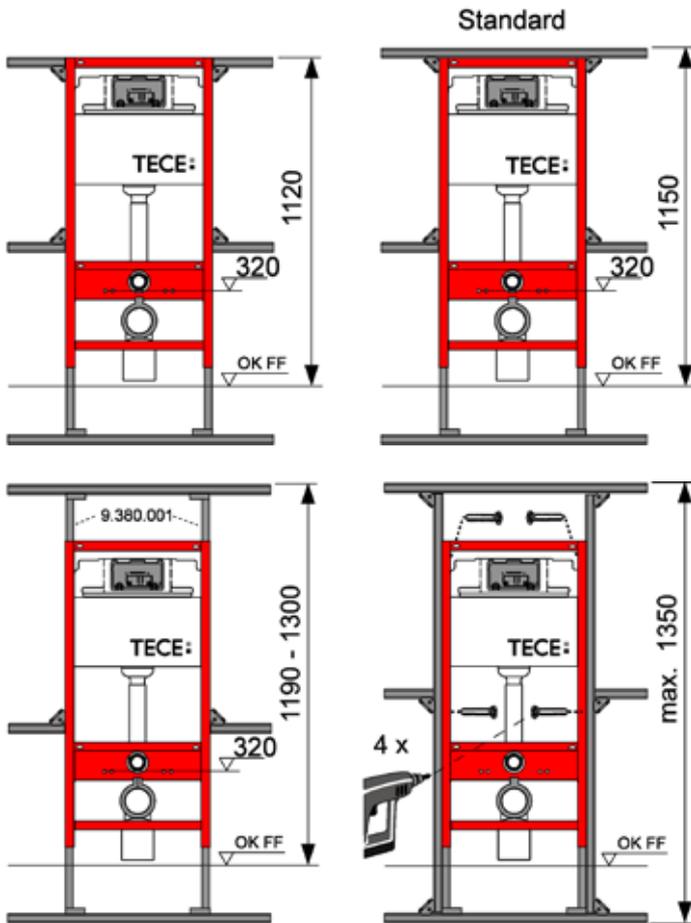
Fig. 3: Applying the upper sealing coating

# TECEprofil – system installation/instructions

## Possible pre-wall heights and depths



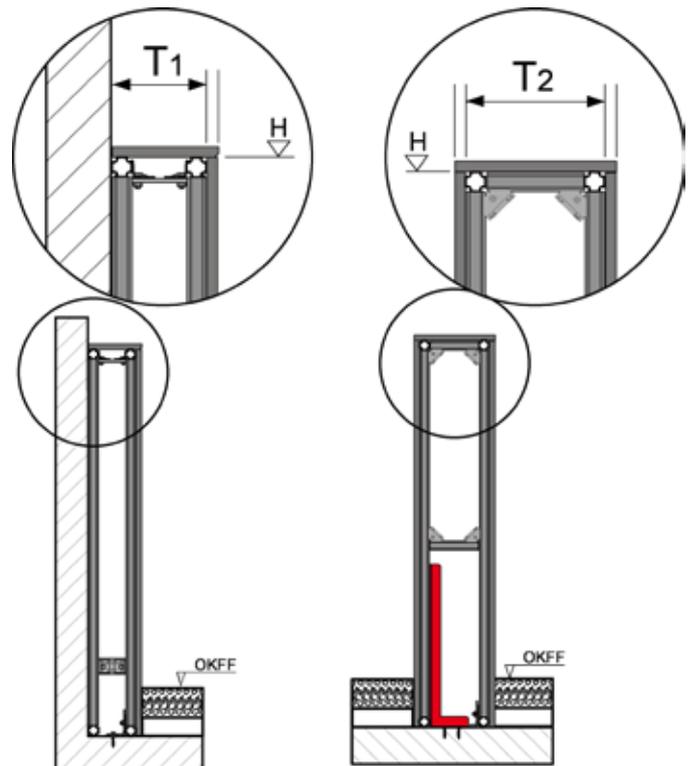
Possible pre-wall depths with TECEprofil supporting frame



Possible pre-wall heights with TECEprofil supporting frame – 1

	Order no.	Standard height	T1 min.	T2 min.
 O DN 100	9300000 9300003 9300007 9300011 9300033 9300044	1,150 (1,120–1,350)	160	210
	9300022	980–1,080	160	210
	9300001	820-920	160	210
	9041006	970-1,350	160	210
 O DN 50	9310000 9310004	1,150 (1,120–1,350)	140 (115)	210
	9020033 9020018 9020034	820–1,350	140 (115)	210
	9320002 9320000 9320001 9020017	1,150 (1,120–1,350)	140 (115)	170
	9330000	1,150 (1,120–1,350)	140 (115)	210

Possible pre-wall heights with TECEprofil supporting frame – 2



## Limits

Designation	Type	Height	Depth	Width	Symbol
Standard wall	Standard wall, partial height and floor-to-ceiling height, with or without side attachment	Standard 1,150 mm, max. 4,500 mm	-	-	
Free-standing wall	partial height, without side attachment	Standard 1,150 mm, max. 1,500 mm	min. 210 mm	max. 2,400 mm	
	partial height, attachment on one side	Standard 1,150 mm, max. 1,500 mm	min. 210 mm	max. 2,400 mm	
	Privacy screen, partial height, attachment on one side (only approved for fitting installations)	max. 2,000 mm	min. 170 mm	max. 1,200 mm	
	floor-to-ceiling height, attachment on one side	max. 4,500 mm	min. 210 mm	max. 2,400 mm	
	Floor-to-ceiling dividing wall, attachment on two sides	max. 4,500 mm	min. 170 mm	a vertical strut is required every 2,400 mm on all sides of the wall.	
Special wall	Partial height and room height corner construction 45° in front of a structural corner	max. 4,500 mm	min. 350 mm	min. leg length 495 mm	

The maximum wall heights given always include the floor construction. All dimensions refer to the supporting frame without facing. The standard shelf height of 1,150 mm (supporting frame height above top edge of finished floor) can be changed easily.

## Protection against moisture

TECEprofil can be used in damp rooms (bathrooms, guest toilets, cellars). Use in wet rooms (swimming pools) is not possible. The implementation of “Sealing against non-pressing water” is described in DIN 18195/T5 “Water-proofing of buildings”.

Penetrations at washstands, urinals, bidets, etc. must be sealed with permanently elastic material. All unfilled cut edges of panelling must be treated with penetrating primer/sealer before tiling. The edge between the floor and the TECEprofil panelling must be sealed with standard sealing tape.

Additional seals against moisture, such as in the shower area must be formed by the tile layer. The tile laying trade organisation has created a special information sheet about this.

(ZDB information sheet: Instructions for processing sealants together with coverings and claddings made of tiles and panels for indoor and outdoor areas)

## Floor fixing

The TECEprofil pre-wall can be mounted both on the unfinished floor and on the finished floor. In the process, the entire length of the dowels must be anchored in the screed. The screed strength must be at least 5 N/mm<sup>2</sup>. Free-standing walls must be firmly attached to the unfinished floor. If mounting on a wooden floor, reliable fastening to the floor structure must be ensured.

## Equipotential bonding

The TECEprofil system manages without equipotential bonding. Electrical equipment must be installed in accordance with the VDE regulations. Sanitary items made of metal, such as shower trays or stainless steel washstands as well as all metal pipework must be connected with equipotential bonding.

For more information, see: VDE 0100.

## Console loads

When items are attached to a TECEprofil light construction wall, console loads are introduced into the wall. A distinction is made here between light, medium and heavy console loads. Heavy console loads are generally absorbed by a module or by a special connection unit. Medium console loads must be connected to the supporting frame. Light console loads can be directly secured to the panel facing at any desired position.

Suitable dowels must be used for fixing. Usually the fastening materials supplied with hand towel holders or mirror cabinets are also suitable for fixing to plasterboard. Dowel manufacturers offer a large selection of suitable fixing dowels made of plastic or metal.

### Light console loads

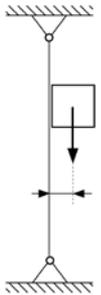
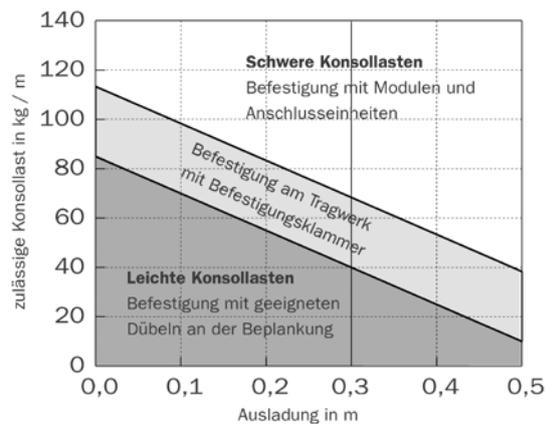
The permitted console load is given as load per metre of wall. The values given depend on the overhang of the load. Loads up to 40 kg/m of wall length with an overhang of 30 cm can be placed at any point on the supporting frame, directly onto the panel facing. For other values, please refer to the following diagram.

### Medium console loads

Medium console loads up to 70 kg/m of wall length with an overhang of 30 cm may be secured to the struts of the supporting frame. The fixing is made using an M 8 or M 10 anchoring clip (order no. 9040004/9040001).

### Heavy console loads

Console loads in excess of 70 kg/m of wall length require a special attachment to modules or connection units, e.g. to a toilet module or a mounting plate for handrail and support systems.



Console loads

The following maximum loads can be assumed for the usual items of equipment (reference values):

- Pictures and mirrors approx. 15 kg
- Bathroom and mirror cabinets approx. 40 kg
- Toilet paper roll approx. 2.5 kg
- Hand towel holder approx. 8 kg
- Grab rail approx. 80 kg
- Rail for bath towel approx. 25 kg

Depending on the overhang, these items can normally be screwed directly to the facing using the supplied fastening material.

## TECEprofil universal module

The TECEprofil universal module is an all-rounder. Only one module is required for all current dry-wall constructions. This saves storage space and makes calculation and logistics easier.

### Example

The TECEprofil universal module with TECE concealed cistern:



Toilet universal module, assembly height 1120 mm

- Clearly visible: installation mark.
- Robust, self-supporting mounting frame. All toilet modules are statically self-supporting and can withstand a max. load of 400 kg. Holes in the crossbeam enable shower toilet connections to be upgraded.
- Pilot holes for mounting in UA-profile walls and wooden stud walls.
- Strong crossbeam with four threaded holes for ceramics with a mounting distance of 180 or 230 mm. The crossbeam ensures that the ceramic is safely secured even under high loads.
- Optional retainers for additional supports for ceramics with a reduced supporting surface.
- Integrated foot brake facilitates height adjustment.
- Adjustable foot supports for floor construction of 0 to 200 mm. For attaching to the floor or on a TECEprofil rail.
- Two-part DN 90/100 toilet drain bend. This allows DN 90 and DN 100 wastewater pipes to be connected easily. The DN 90/100 adapter can also be individually installed as a horizontal outflow in the module. Downpipes behind the module are then easy to connect directly.

- Many upgrade options such as wooden panels for holding safety support arms, shower toilet solutions, corner installations, and many more.

Using universal module technology increases the possible areas of installation:

- in a TECEprofil pre-wall
- in front of a solid wall
- in a C-profile wall
- in a UA-profile wall
- in a wooden stud wall

### Installation in a TECEprofil pre-wall



Installation in a TECEprofil pre-wall

The simple mounting technology enables you to work swiftly and reliably. The universal modules can be integrated quickly and safely into a TECEprofil wall in a few simple steps:

- Release the foot brake
- Place the module foot on the lower continuous profile brace
- Pull the module out: the foot break is tight enough to hold the weight of the module and prevent it from slipping back
- Attach the module to the top profile brace with corner joints
- Apply the foot brake again
- Close the clip on the module feet
- Mount the centre profile braces

In addition to installation in a pre-wall, the module can also be mounted in a free-standing wall made up of TECEprofil system parts:

# TECEprofil – universal module

TECEprofil



Installation in a free-standing TECEprofil wall

## Installation in front of a solid wall

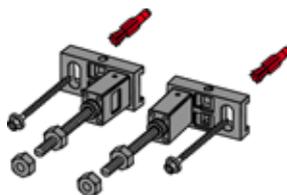
TECEprofil universal modules are also suitable for individual installation. Compatible attachments are available for various installation situations. The universal module is statically designed so that, in standard cases, it only has to be attached to the load-bearing structural shell at four points. Additional attachments such as elbow brackets are only necessary where high loads are involved (e.g. barrier-free toilet facilities). The mounting material supplied with the attachment units is suitable for mounting on solid walls. Use suitable cavity plugs when mounting in front of lightweight partition walls. The partition wall should also be reinforced at the mounting points. The procedure should be followed in line with the dry-wall construction. Take into account the installation instructions for the dry-wall system used.

Individual module installation with depth-adjustable universal attachment (order number 9380000):

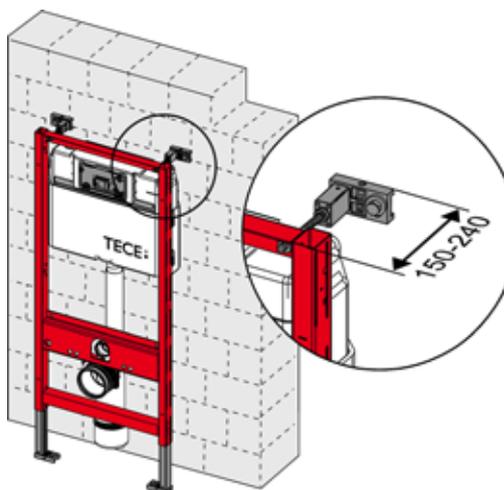


Individual mounting with depth-adjustable universal attachments

The universal module is placed directly against the wall. The pre-wall depth can be adjusted using the universal attachments. The module's height can be adjusted by means of the extractable module feet. The foot brake prevents the module from sinking down. In this way, the module can be accurately positioned before the module feet and universal attachments are attached to the structure.



Universal attachment 9380000



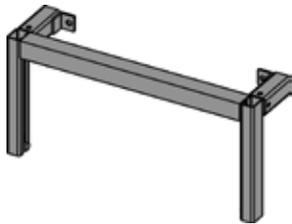
Adjustment range of universal attachment 150 – 240 mm

Individual module installation with height-adjustable universal attachment (order number 9380002):

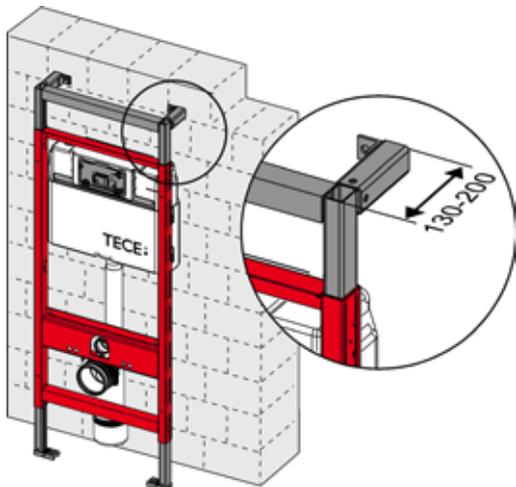


Individual assembly with height-adjustable module attachment

With the height- and depth-adjustable module attachment, variable supporting structure heights of 1,160 mm to 1,300 mm can be achieved. In this way, for instance, the height of the module can be adjusted to suit a given tile pattern.



Universal attachment 9380002



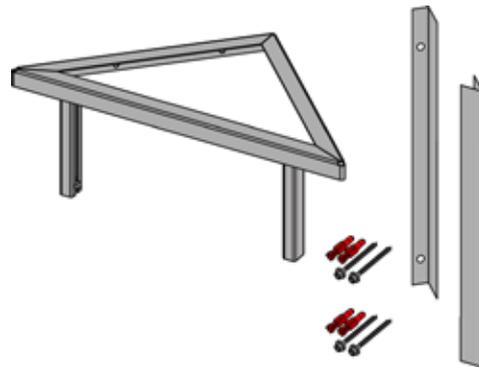
Adjustment range of the height-adjustable module attachment 130 – 200 mm

Installation with module attachment for wall corner installation (order number 9380004)



Individual module installation with module attachment for wall corner installation

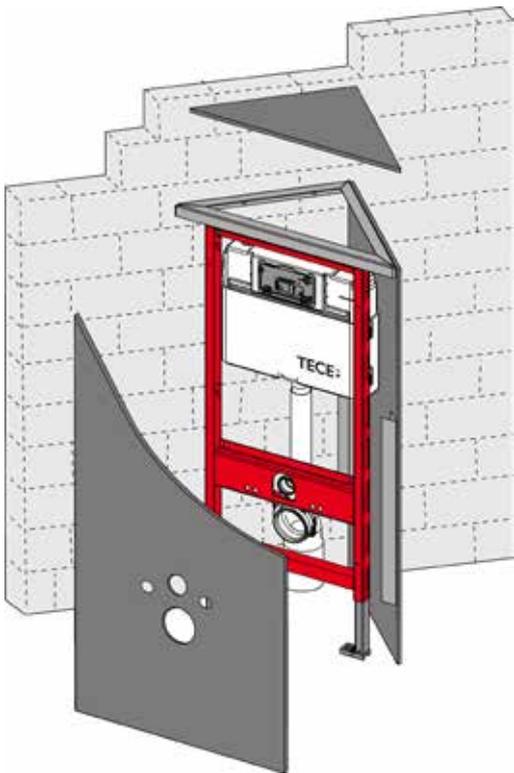
With the module attachment for wall corner installation, TECEprofil universal modules can be attached to a solid structural wall at an angle of 45°. In the process, only one side is screwed into the structure. Two angle brackets are included for mounting the panel facing. Thanks to the small side length of the attachment, structures with a base area of just 0.14 m<sup>2</sup> are possible.



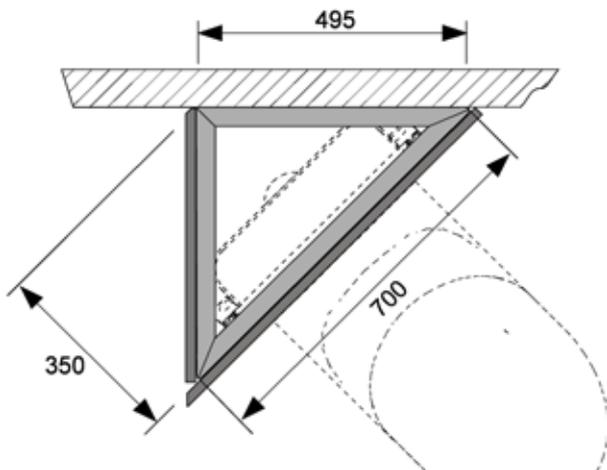
Module attachment for wall corner installation 9380004

# TECEprofil – universal module

TECEprofil



Mounting the module attachment for wall corner installation



Dimensions of module attachment for wall corner installation

Installation with module attachment for variable wall corner installation (order number 9380003)

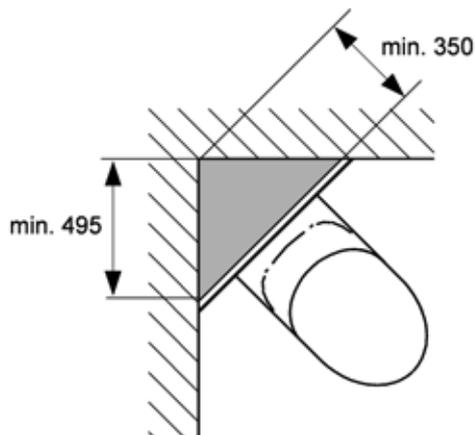


Module attachment for variable corner installation 9380003

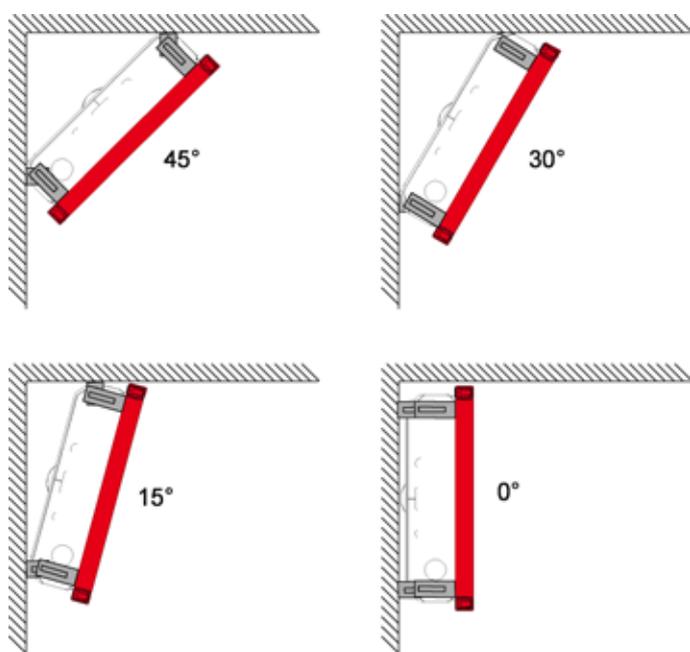


Installation of module attachment for variable corner installation

The universal module can be directly attached to the structure with the corner attachment. The corner attachment enables a TECEprofil brace to be mounted in parallel. A storage surface can be created with two TECEprofil panels, an angle bracket and a corner attachment. The corner installation requires very little space. The mounting set has a side length of just 49.5 cm. The depth from the front edge of the module up to the corner is only 35 cm. Despite the small installation depth, it is possible to install a DN 100 drainage pipe behind a toilet module.



Dimensions of module attachment for variable corner installation



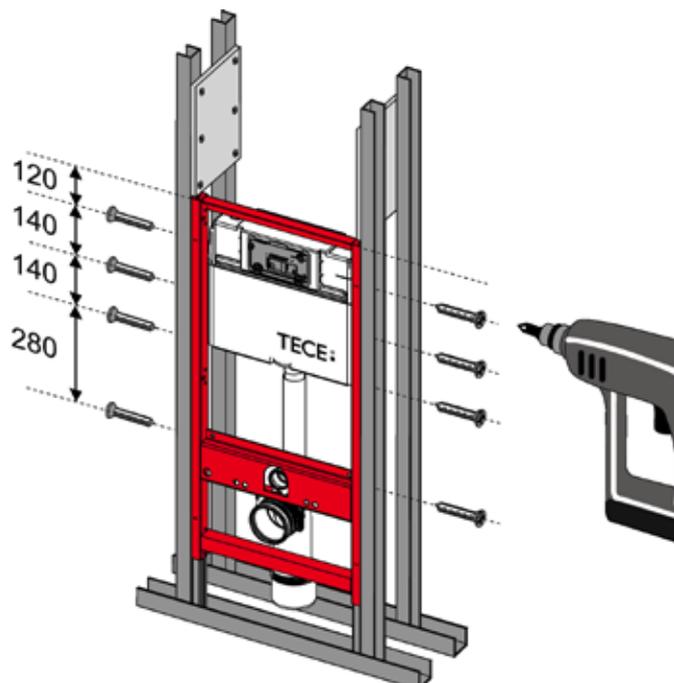
Installation examples with module attachments for variable corner installations

## Installation in a floor-to-ceiling C-profile metal stud wall



Installation in a floor-to-ceiling C-profile metal stud wall

In double-stud walls, the individual stud rows must be tightly connected to each other in accordance with DIN 18183. To achieve this, 30 cm-long brackets are screwed between the C-profiles. Two reinforcement brackets must be attached directly above the universal module. Using the supplied self-tapping screws, the module is screwed to each of the four points with the wall profiles. The module feet are at the front under the horizontal C-profile and can be dowelled to the floor.



Module attachment with installation in a floor-to-ceiling C-profile metal stud wall

Follow the installation instructions for the dry-wall system used.

# TECEprofil – universal module

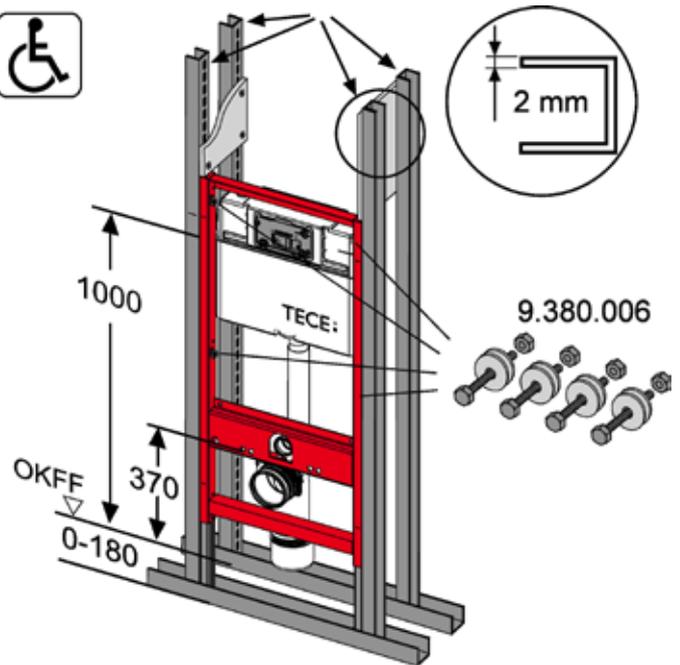
## Installation in floor-to-ceiling metal stud wall with UA-profiles



Installation in a floor-to-ceiling UA-profile metal stud wall

If particularly wide or high walls have a higher rigidity, UA-profiles (DIN 18182 part 1) can be used instead of C-profiles. This measure is only relevant for toilet and bidet modules.

For a disabled toilet facility only UA-profiles may be used for the front and rear struts for strength reasons. The installation of toilet facilities in public places for disabled and elderly people must be carried out in accordance with DIN 18040-1.



Module attachment with installation in a floor-to-ceiling UA-profile metal stud wall

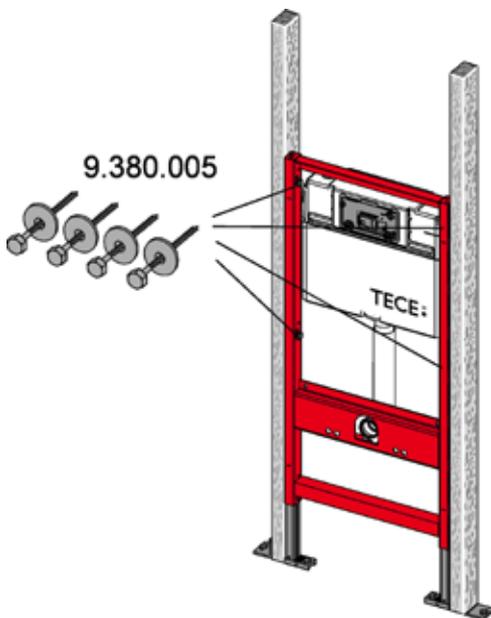
Due to the prescribed seat height of 48 cm, the universal module must be mounted 5 cm higher than the standard installation height. TECEprofil universal modules have pre-drilled holes in the side struts for attaching universal modules to the UA50 profiles. The holes are arranged so that there are at least two possible mounting options per strut.

## Installation in a wooden stud wall



Installation in a wooden stud wall

In addition to metal stud walls, the module can also be installed in wooden stud walls in accordance with DIN 4103-1. For this purpose, the frame can be mounted using special wood screws (order number 9380005) on the vertical struts.



Module attachment during installation in a wooden stud wall

In addition, the pre-drilled holes in the side struts should be used to mount the universal module on the wooden struts. The holes are arranged so that there are at least two possible mounting options per strut.

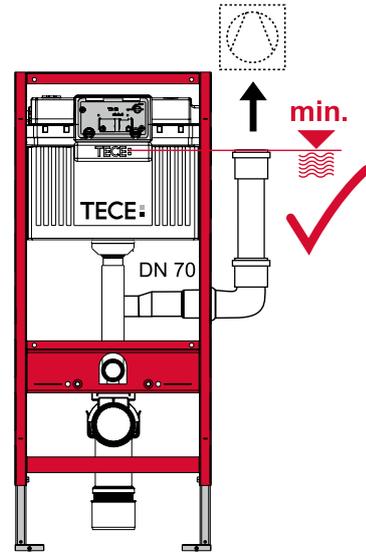
## Attaching individual modules to the floor

The universal module's feet are attached to the unfinished floor using the screws and dowels supplied. In the process, the entire length of the dowels must be anchored in the screed. The screed strength must be at least 5 N/mm<sup>2</sup>. If mounting on a wooden floor, reliable fastening to the floor structure must be ensured.

# TECEprofil – universal module

## Toilet module with connection for odour extraction

For applications including odour extraction, TECE offers a toilet module with a DN 70 outlet in the flush pipe. The DN 70 connection offers the advantage that no additional nominal width changes usually need to be made. The DN 70 fitting is universal and therefore allows any commercially available fans (e.g. Maico ER 60 or ER 100 with Maico ER-UP fan housing and ER-AS extraction sleeve) to be connected. Odours are extracted directly via the toilet ceramics through the flush pipe. Intensive testing confirms that the flush performance is not adversely affected by the side connection for the odour extraction. To prevent any draught effects, the extraction flow volume should not exceed 18 m<sup>3</sup>/h.

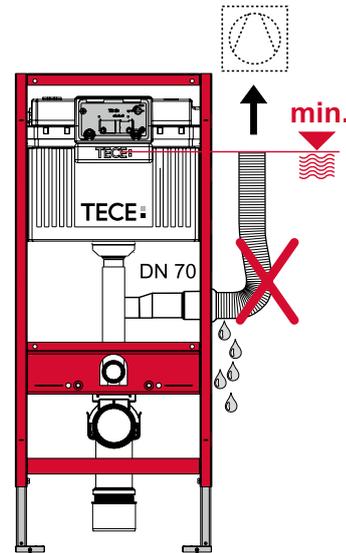


Watertight installation up to the cistern's water column

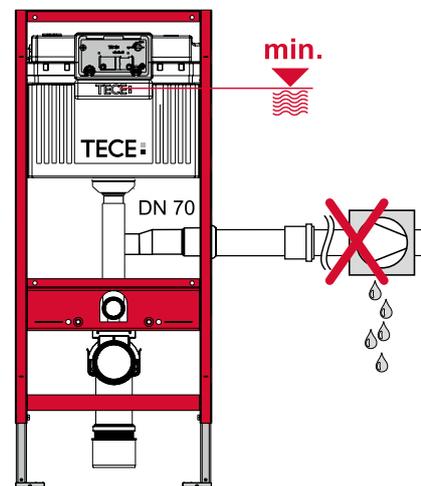


### Note:

Because some of the flushing water also reaches the vent pipe (principle of communicating pipes), the connected vent pipe must always be installed watertight to above the cistern's water column. Direct connection to a corrugated pipe at the flush pipe connection is not suitable for this.



When connecting, a corrugated pipe is not used



The fan must not be connected directly below the cistern's water column.

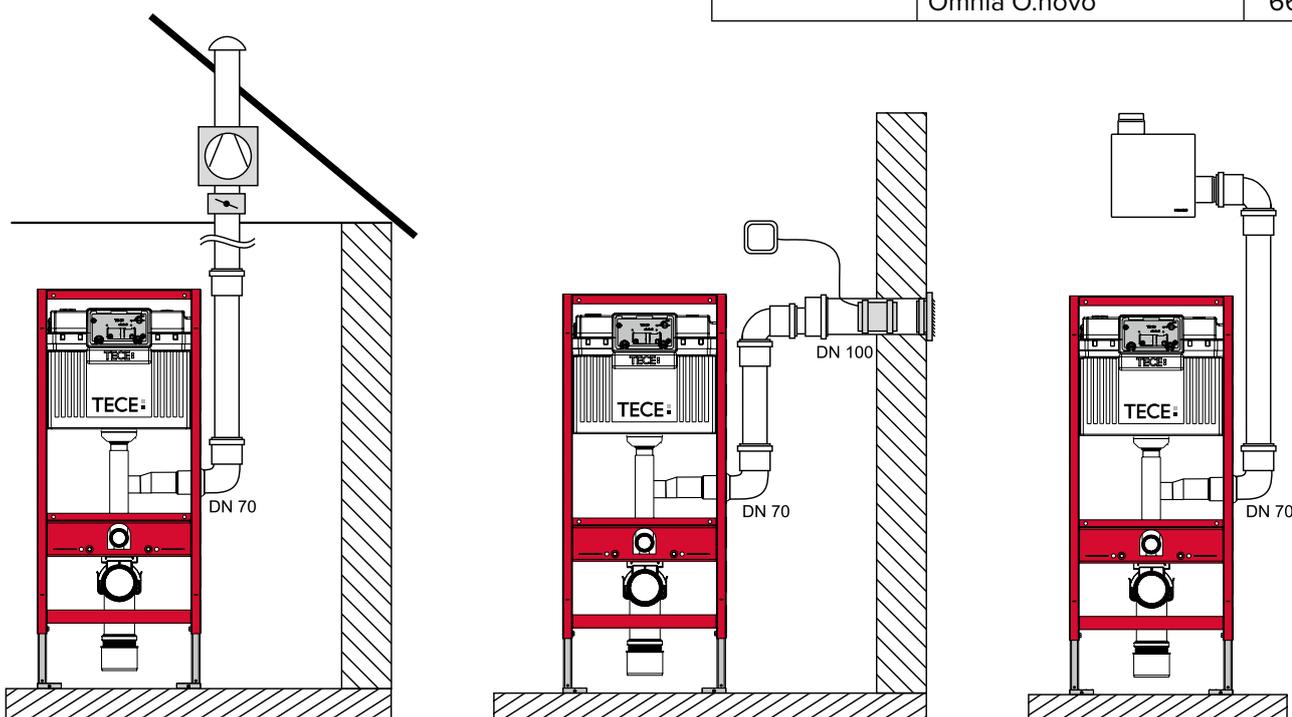
### Multi-storey dwelling:

In toilet areas without an outside wall in multi-storey dwellings, the toilet element can be easily connected to the room fan. This is achieved using the existing DN 70 connection sleeve, which permits connection to the concealed housing with a second room connection via plastic pipes. The large cross-section of 70 mm ensures a low air velocity and permits effective, draught-free odour extraction. The moisture in the extracted air condenses on the inner wall of the air extraction pipe before it reaches the fan.

### Detached house:

The toilet element with odour extraction can also be used in a detached house. If the bathroom has an outside wall, the extraction pipe from the toilet element is connected to an in-duct fan. Odour extraction can therefore be easily implemented, without adverse effects such as a temperature drop caused by opening a window, which in turn leads to higher heating costs.

### Installation examples:



### Note:

Odour extraction is possible for all conventional toilet ceramics. However, in some ceramics which have a higher seat position or higher flushing rim, the flushing water remains standing in the flush pipe, resulting in the bowl becoming partially or completely full.

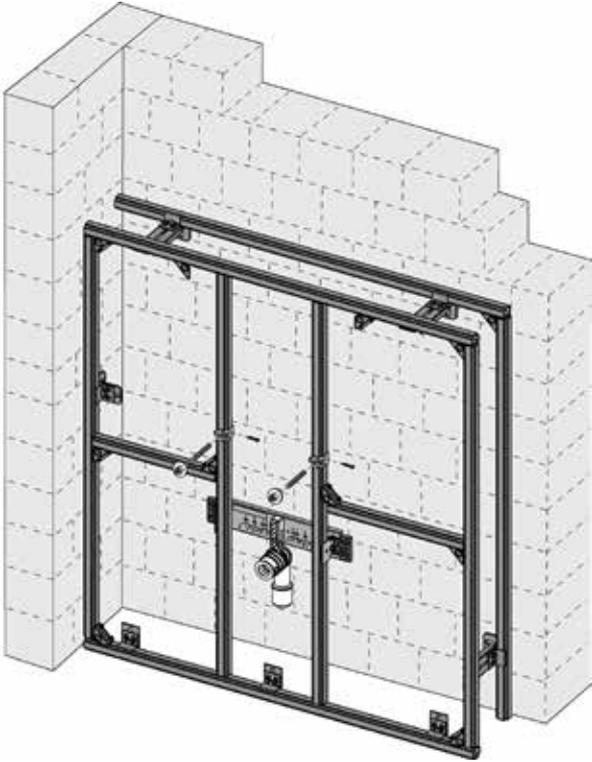
The following table lists the ceramics for which the use of the odour extraction is not possible:

Manufacturer	Product	Item no.
Catalano	Zero	1VSxxN00
Duravit	Strength 1	021009
	Strength 3	221509
	Architec (Duraplus)	254609
Ideal Standard	Mia/SimplyU	J4521xx
	SoftMood	T3226xx
	Ventuno standing toilet	T3161xx
Keramag	4U RimFree	203460
	500 by Citterio - tief	202100
	CASSINI - tief	203200
	EMANI by Citterio - tief	207800
	ERA - tief	208800
	It! RimFree	201950
	Plus 4	202010
	Silk - flach	203670
Visit	2063xx	
Laufen	LP3	20681
Villeroy & Boch	Omnia classic	66 65 10
	Omnia O.novo	66 95 10

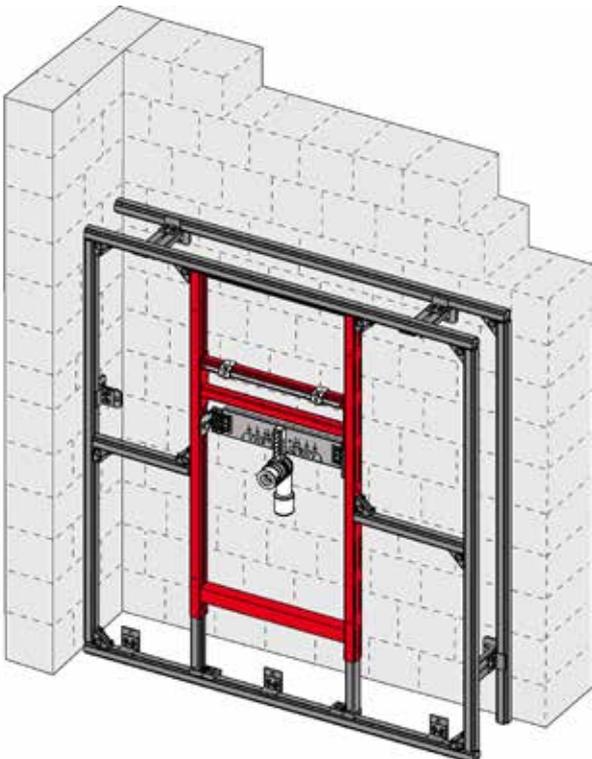
# TECEprofil – individual or modular construction

## Individual or modular construction

The supporting frame is built using the four basic components – section tube, corner joints, double joints and angle brackets. When installing sanitary items, the fitter has the choice between individually-installed connection units and the TECEprofil universal modules.



Individual construction with connection unit for washstand



Module construction with universal module for washstand

Alternatively, the same installation can be performed with a

TECEprofil universal module. It is not just in TECEprofil supporting frames that TECEprofil universal modules can be integrated, they can also be installed in metal or wooden stud walls.

## Installing the vertical strut in the toilet module

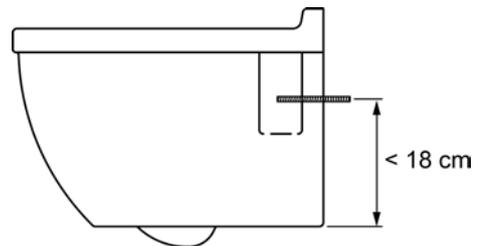
Vertical struts (order number 9041029) can be installed as an option in the lower build space of virtually all TECEprofil toilet modules. These struts are only necessary on toilet ceramics with a reduced supporting surface. (e.g. made by Villeroy & Boch: Memento, Sentique, Subway 2.0 or all Flaminia ceramics).



Installing the vertical strut in the toilet module

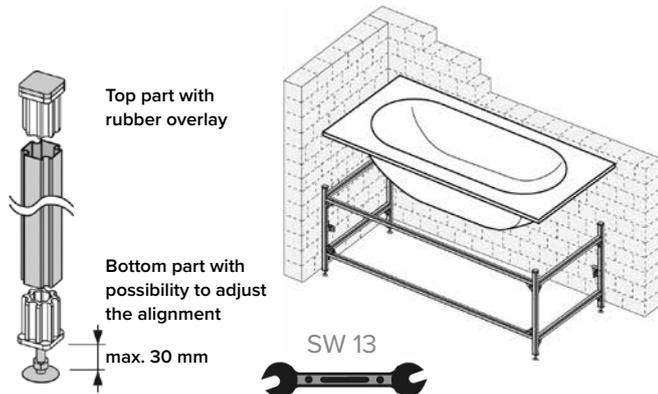
### Important:

The use of vertical struts is absolutely necessary for supporting surfaces of < 18 cm. Otherwise there is a risk that the dry wall installation will collapse behind the ceramic.



## TECEprofil bath construction

A framework base is created using TECEprofil. Plug-in feet (order no. 9140000) are inserted into the four side braces. With an adjustment range of 30 mm, these feet allow height adjustment and alignment. Steel bathtubs can be installed without the need for additional supporting feet under the bathtub.



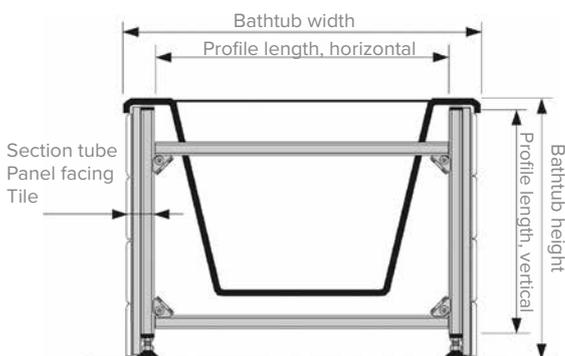
Installation of a steel bathtub in a TECEprofil supporting frame

### TECEprofil profile braces

When cutting the horizontal profile braces, the thickness of the vertical profile braces, the panel facing and the thickness of the tiles must be taken into account.

You can calculate the exact profile length using this formula:

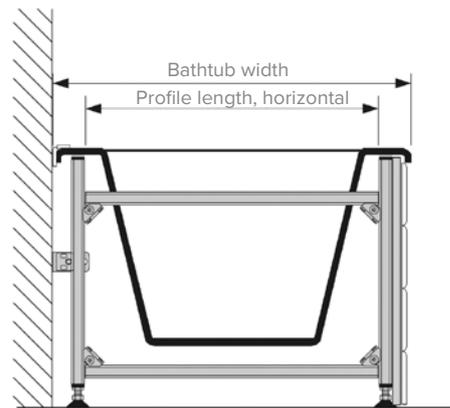
- Bathtub length/width
- 2 x thickness of vertical profile brace
- + panel facing
- + tile thickness
- = length of horizontal profile brace



Exact calculation of the bathtub length/width for free-standing bathtubs

For the horizontal braces, the following rule of thumb formula applies in most cases:

- Bathtub length/width
- 12 cm
- = length of horizontal profile brace



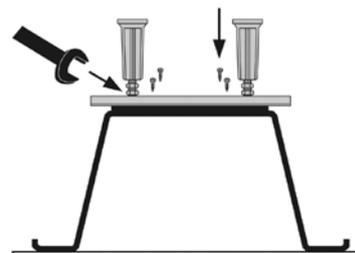
Exact calculation of the bathtub length/width for free-standing bathtubs

When being installed onto the unfinished floor, the floor construction must be taken into account during the calculation of the length of the vertical braces. The length of the profiles is as a result:

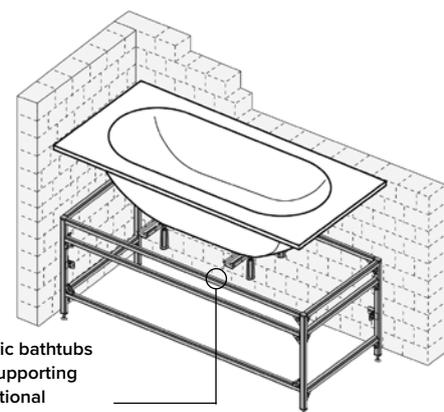
- Bathtub height
- + floor construction
- plug-in foot (4.5 cm)
- = length of vertical profile brace

### Special features of acrylic bathtubs

To safely install an acrylic bathtub, the base plate must be supported by an acrylic bathtub foot. This is screwed to the laminated base board. The required fastening material is usually supplied with the bathtub foot.



Installing acrylic bathtub feet



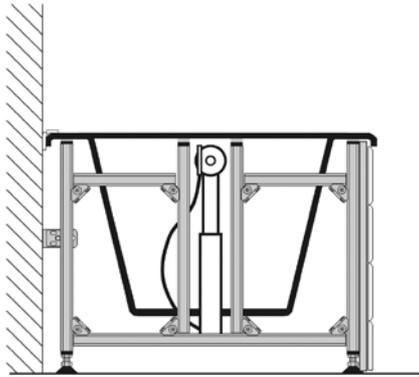
In the case of acrylic bathtubs with a thin edge, supporting the edge with additional horizontal profile braces may be necessary.

Installing a steel bathtub in a TECEprofil supporting frame

# TECEprofil – bathtub construction

## Particularities when installing the overflow fittings

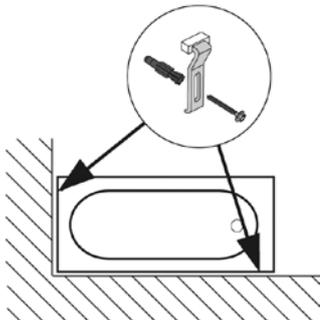
On some bathtubs, the outlet and overflow fittings are very close to the outer edge. In this case, it may be necessary to interrupt the upper horizontal brace. This can be done at any point using the universal TECEprofil tube and the corner joints.



TECEprofil supporting frame when installing an overflow fitting

## Securing the bathtub

To secure it in place, the edge of the bathtub is clamped to a wall of the structural shell using bathtub anchors.



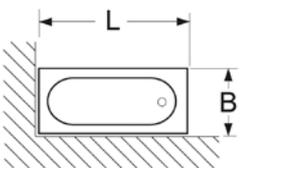
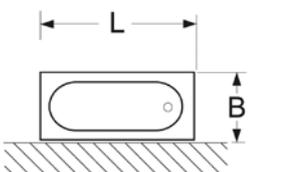
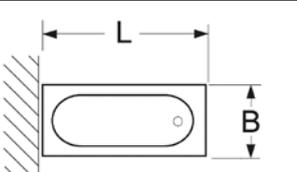
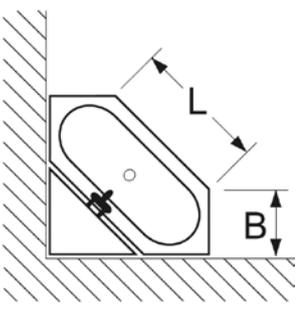
Securing the bathtub using bathtub anchors

## Bathtub insulation tape with tear-off edge

In order to prevent an acoustic bridge between the edge of the bathtub and the structural shell, bathtub insulation tape is fixed to the side of the bathtub edge. With the tear-off edge, the upper half of the tape can be cleanly removed during completion work. A silicone bead is then placed between the edge of the tiles and the bathtub.



Sealing with bathtub insulation tape and a silicone bead

	Bathtub length L	Bathtub width B	Section tube 9000000	Corner joint 9 010 002	Angle bracket 9030002	double joint 9030011	Universal attachment 9018002	Fitting connection crossbeam 9020035	Plug-in foot 9140000	Bathtub anchor	Bathtub insulation tape	Facing area 9200000
	m	m	m	Unit	Unit	Unit	Unit	Unit	Unit	Unit	m	m <sup>2</sup>
	1.60	0.70	7.4	12	2	-	-	-	4	2	2.3	1.3
	1.70	0.75	7.8	12	2	-	-	-	4	2	2.5	1.4
	1.80	0.80	8.2	12	2	-	-	-	4	2	2.6	1.5
	1.60	0.70	7.4	12	2	-	-	-	4	2	1.6	1.7
	1.70	0.75	7.8	12	2	-	-	-	4	2	1.7	1.9
	1.80	0.80	8.2	12	2	-	-	-	4	2	1.8	2.0
	1.60	0.70	9.2	12	2	-	-	-	4	2	0.7	2.3
	1.70	0.75	9.7	12	2	-	-	-	4	2	0.8	2.4
	1.80	0.80	10.2	12	2	-	-	-	4	2	0.8	2.6
	1.10	0.57	13.8	25	5	2	4	1	6	2	2.2	2.0
	1.10	0.62	14.2	25	5	2	4	1	6	2	2.3	2.0
	1.30	0.64	15.4	25	5	2	4	1	6	2	2.6	2.4

Material requirements for a typical TECEprofil bathtub construction

## Shower toilet solutions

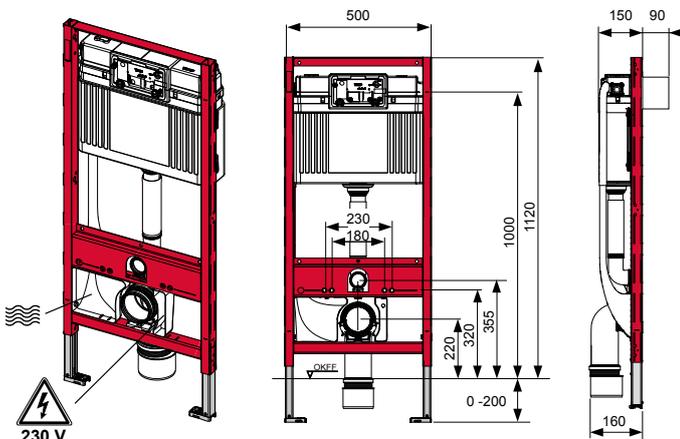
Shower toilet solutions are becoming increasingly popular. Modern shower toilets combine toilet and bidet technology. Thanks to universal module technology and the upgrade set for modules, TECE makes it possible to install the most modern shower toilet solutions on the market.

### Toilet module for shower toilets with power connection

The number of electrical shower toilets with concealed connections is continually increasing. It is not always easy to find the right connection position. With the shower toilet modules, connecting up shower toilets to the mains is significantly easier. The shower toilet module is available with installation heights 1,120 mm, 980 mm and 820 mm.

#### Note:

Due to the ever-increasing number of shower toilets, 100% compatibility of the toilet module cannot always be guaranteed. If in doubt, always test the connection position beforehand.



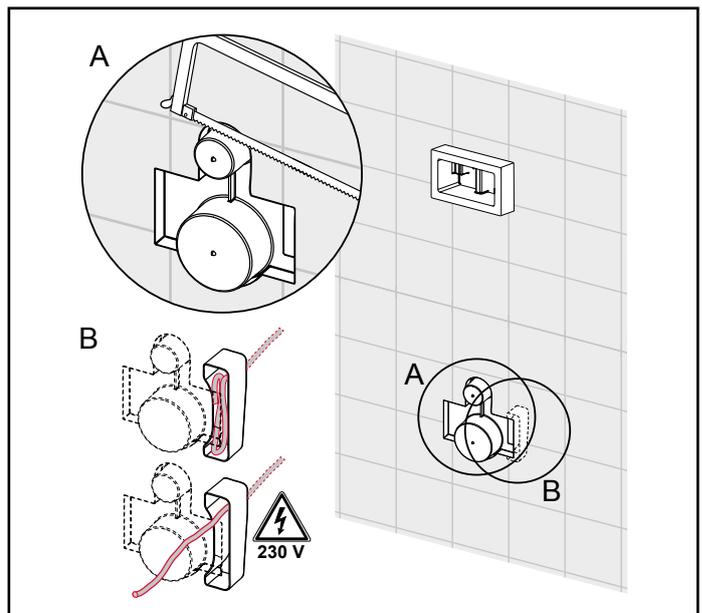
Shower toilet module 9300079

Beneath the main crossbeam, on the left-hand side, a large connection funnel which is connected via a connecting pipe to the cistern, supplies the cold water. The cable box on the right-hand side is intended for receiving a power cable. The connection funnel's and cable boxes large design means that the widest variety of water and electricity supply connection positions of many shower toilets made by other manufacturers can be covered.



This enables a high degree of universality when connecting shower toilets with concealed water and electricity connections.

The decision as to whether to install a shower toilet, or which one to install can be made at any time. The connection box must simply contain an NYM 3 x 1.5 mm<sup>2</sup> power connection cable. It must be ensured that this is not under tension if there is no shower toilet connected.

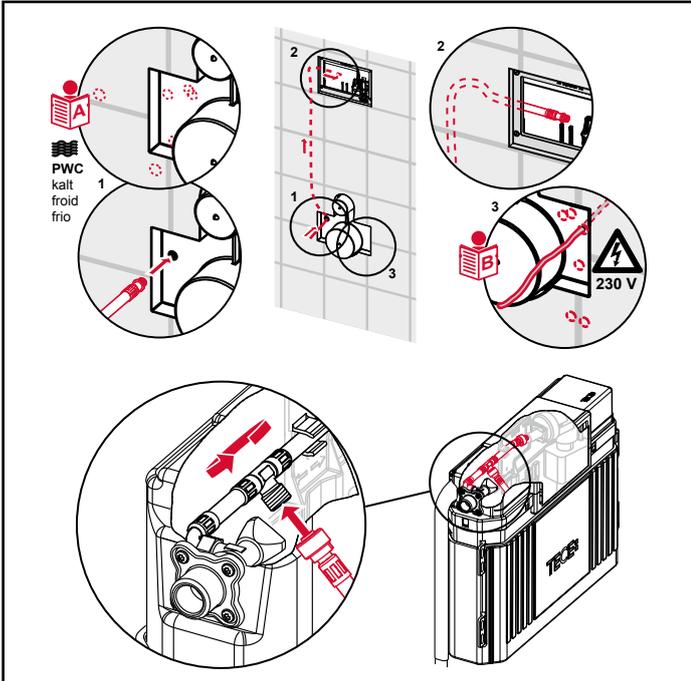


### Fine installation kit for shower toilet module

The fine installation kit is only needed to install a shower toilet in combination with the universal shower toilet module. In addition to the replacement reinforced hose with a tee, it also contains a long supply hose for connection to the shower toilet. There are three versions of this depending on the module's respective installation height. These differ in the length of the reinforced hose for the cold water supply.

When installing a shower toilet, the round plugs for the flush and wastewater pipe must be sawn off flush with the wall (A). The bare-wall protection can remain permanently in the wall. The toilet can be connected via the connection fittings. To connect water and electricity to a shower toilet, the bare-wall plug must be cut in at the height of the funnel opening and power box. Afterwards, both reinforced hoses from the fine installation kit can be mounted. The long reinforced hose is pushed through the funnel opening into the cistern. The short reinforced hose including tee must be replaced by the standard built reinforced hose in the cistern, and connected to the long reinforced hose on the tee.

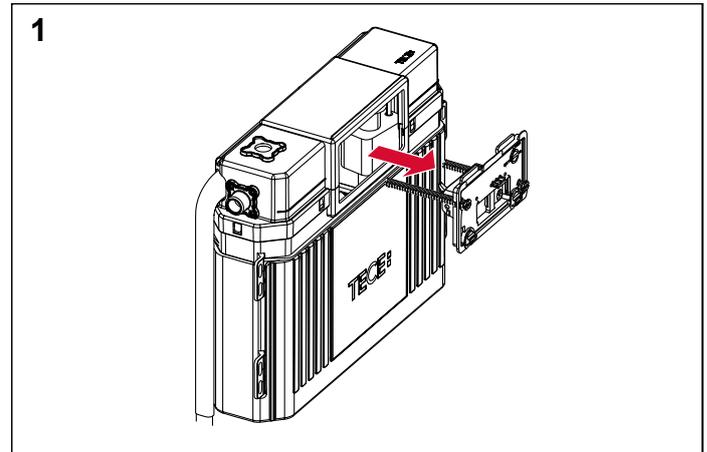
In doing so, it must be ensured that the reinforced hoses do not break off, or come into contact with the lever mechanism. Once the water connection has been made, the electric cable can be pulled out of the power box to connect the shower toilet in front of the wall.



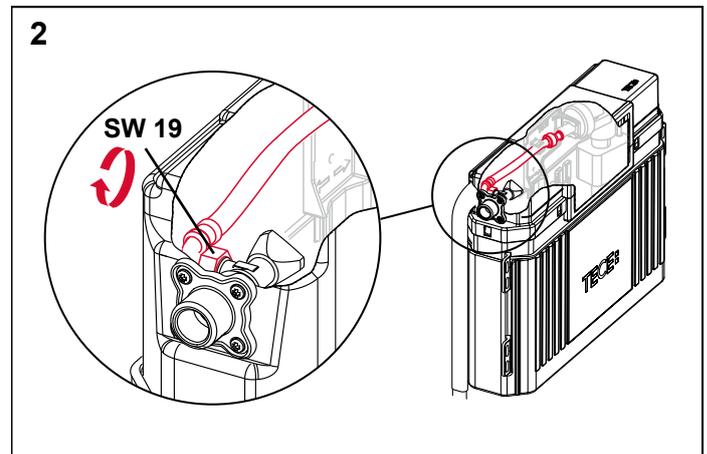
The reinforced hose and the electrical cable which are located in the lower part of the module, can be used at any time to connect the shower toilet. In the assembled state, the ceramic covers the water and power connections.

If ceramics with a reduced supporting surface are to be used, vertical struts must be inserted into the lower build space to prevent the wall from collapsing.

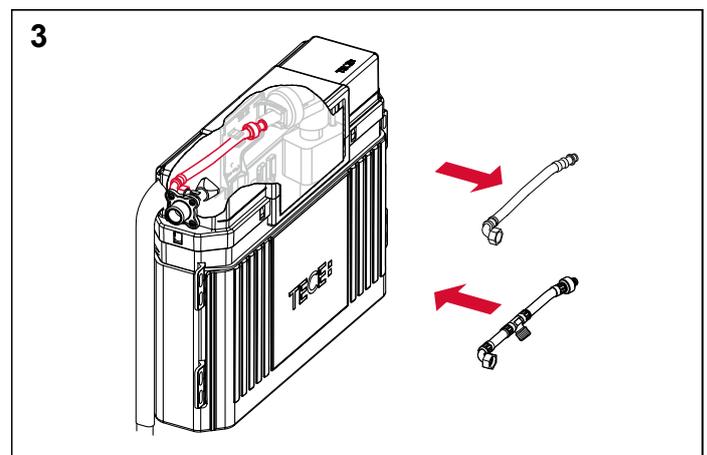
### Mounting the fine assembly set when installing a shower toilet



1 Disassemble the splash guard including the flush unit.

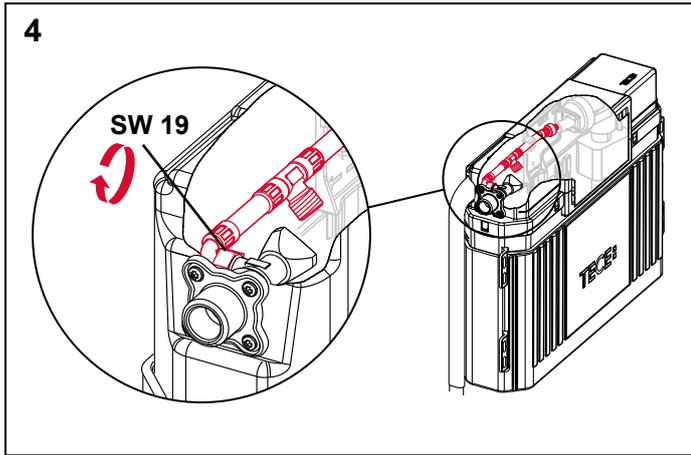


2 Close the corner valve in the cistern and loosen the reinforced hose including the thread connection on the filling valve.

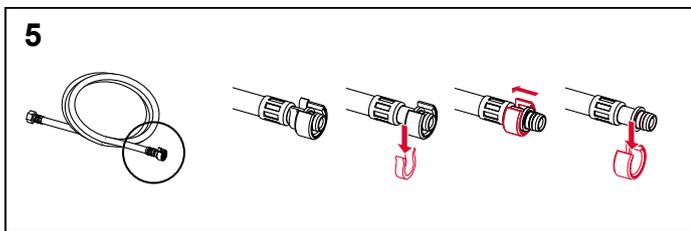


3 Remove the reinforced hose and mount the replacement reinforced hose in reverse order.

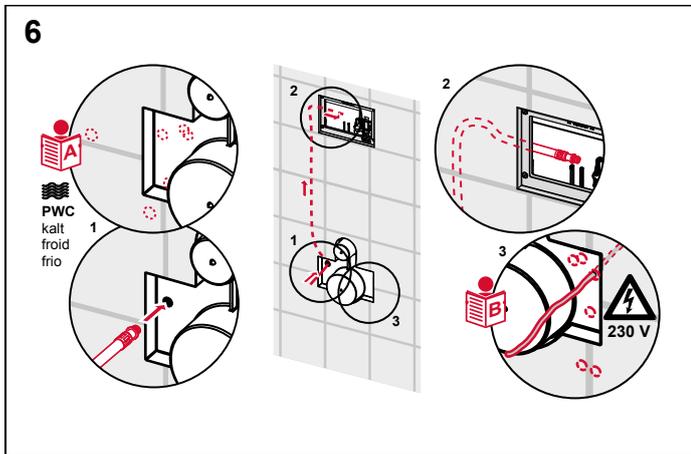
# TECEprofil – shower toilet solutions



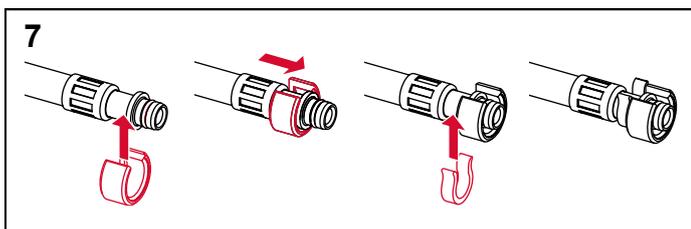
Mount the replacement reinforced hose.



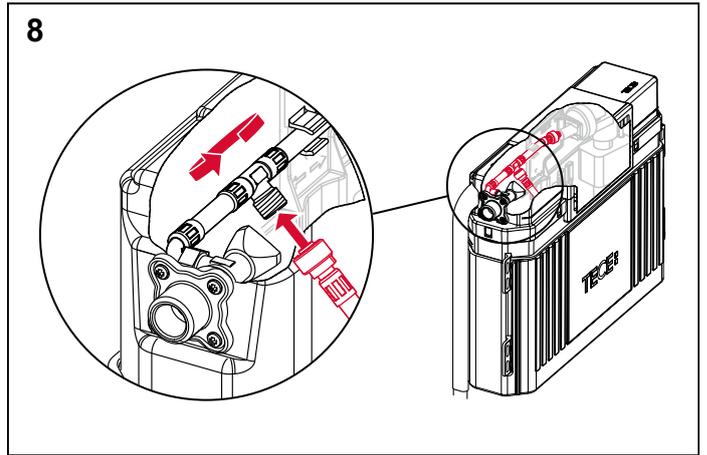
Before the hose can be pushed in, the union nut must be removed. To do so, remove the safety pins, push the union nut back and then pull it down. Do not lose the safety pins or nut!



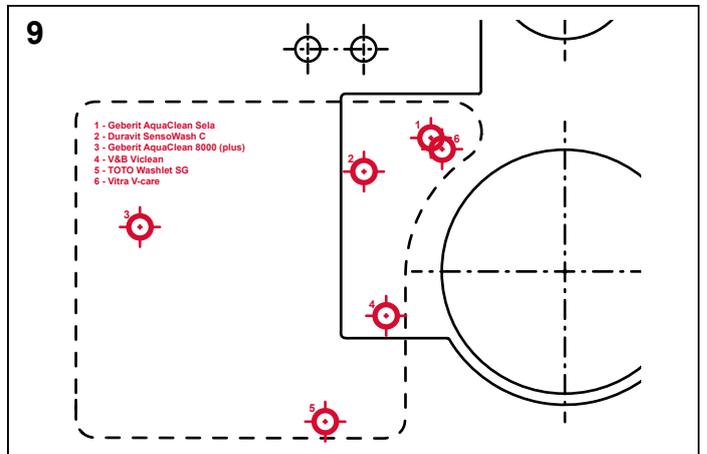
Depending on the shower toilet to be connected (see fig. 9), the hose is pushed through the space provided in the bare-wall protection, and the funnel is pushed into the cistern.



Attach the safety pin behind the union nut.



Connect the reinforced hose from the shower toilet to the tee of the replacement reinforced hose.



**At present, the following shower toilets fit:**

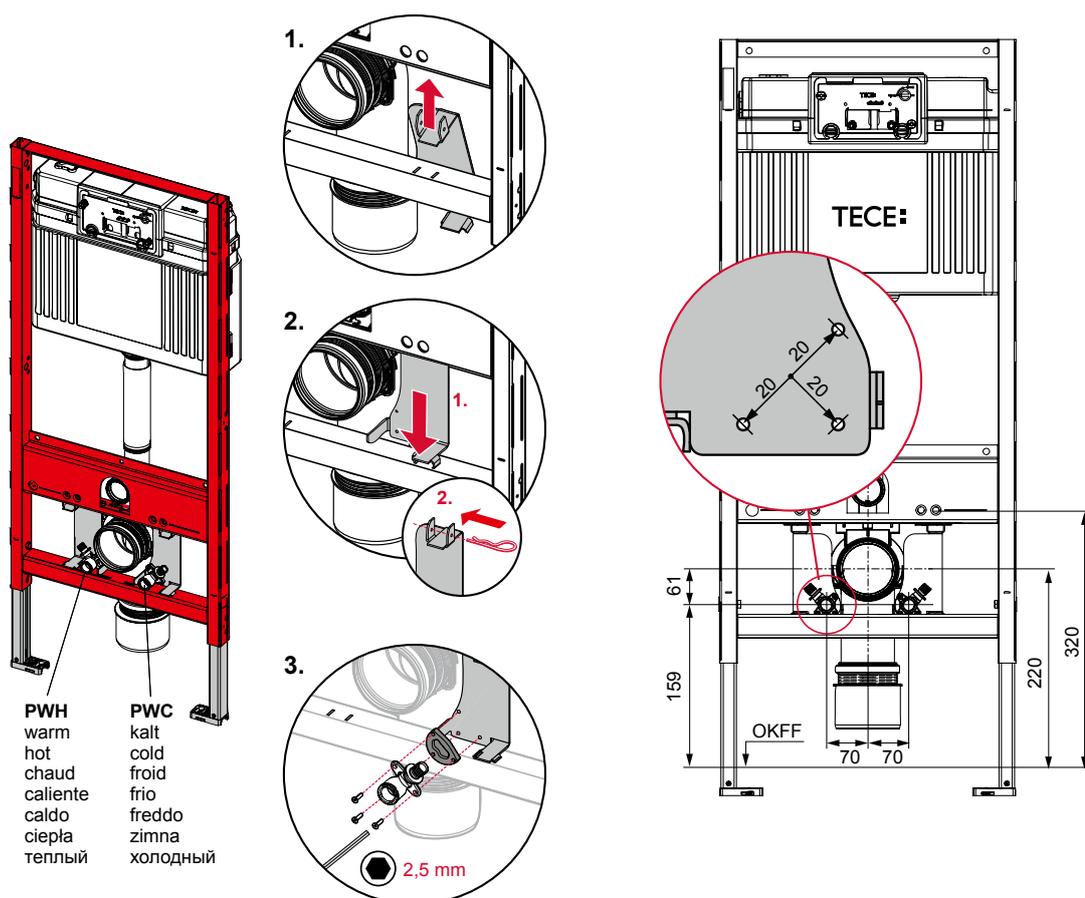
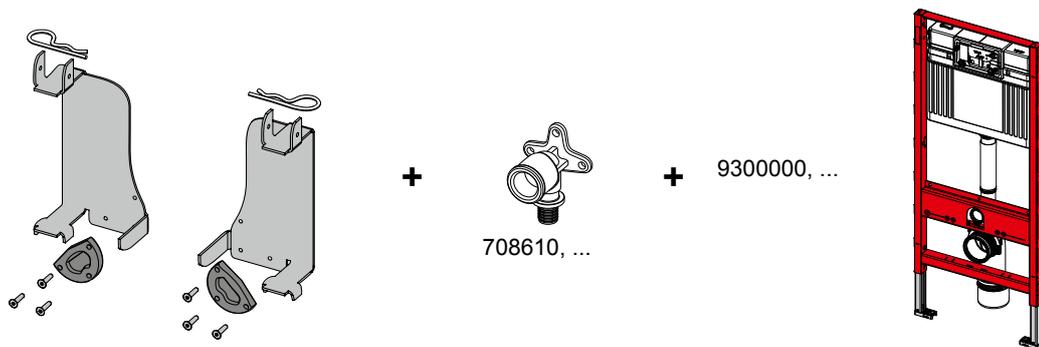
- Geberit AquaClean 8000 (plus)
- Geberit AquaClean Sela
- Duravit SensoWash C
- V & B ViClean
- TOTO Washlet EK/GL
- Vitra V-care

Other shower toilets possible. Please test the connection position beforehand!

## Setting up the TECEone shower toilet on the toilet module

The TECEone shower toilet operates without power. For this reason, only the hot and cold water connections are positioned in the appropriate locations in the lower build space of the toilet module. The upgrade set helps to ensure that the hot and cold water connections are positioned accurately. With the upgrade set, two prefabricated steel plates for supporting the wall disks are inserted into the pre-punched slots beneath the main crossbeam, and secured with a cotter pin. The upgrade set is supplied with screws and sound insulators for assembling the wall disks.

TECEone upgrade set for dry-wall (order no. 9880046)



A short stub line from the circulating hot water pipe to the module is recommended for the TECEone's hot water connection. This ensures that, when the water is circulating, hot water will come out of the shower rod immediately after the water supply has been opened. With a longer hot water stub line, by slightly opening the water inlet, cooled water will flow into the ceramic.

# TECEprofil – shower toilet solutions

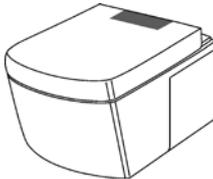
## TOTO Neorest shower toilet module

This toilet module has been specially developed for installing a TOTO Neorest shower toilet. All the components required for installation in the bare wall are included.



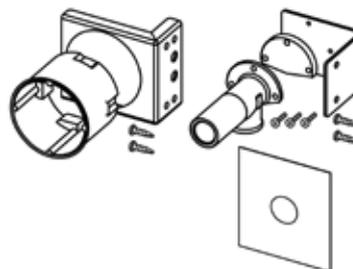
Toilet module for TOTO Neorest AC/EW shower toilet (order no. 9300044)

The module is fully equipped with a wall disk for the later water connection, a hollow-wall box for the power connection and a conduit plus control cable. The control cable is used to control the motor unit for the TOTO's electronic flush actuation. Everything required for the bare wall is supplied by TECE. The material for the fine installation (e.g. motor unit, Neorest shower toilet, etc.) is supplied by TOTO.

Shower toilet manufacturer	TECE item
<p>TOTO Neorest AC/EW, wall-hung</p> 	<p>Toilet module for TOTO Neorest, installation height 1120 mm 9300044</p> 

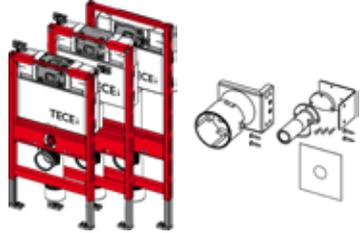
## Shower toilet attachments

e.g. TOTO Washlet GL



Upgrade set for wall-hung shower toilet attachments (order no. 9880037)

The upgrade set is required in the bare wall. It enables the later installation of a TOTO Washlet GL shower toilet attachment, for example. The upgrade set can be installed on any dry-wall module. For this purpose, the upgrade set, consisting of a hollow-wall box, water connection and retaining plates is screwed to the side at the module and connected.

Shower toilet manufacturer	TECE item
<p>Shower toilet attachment, e.g. TOTO Washlet GL</p> 	<p>Dry-wall modules, all heights + upgrade set for shower toilet attachments e.g. 9300000 + 9880037</p> 

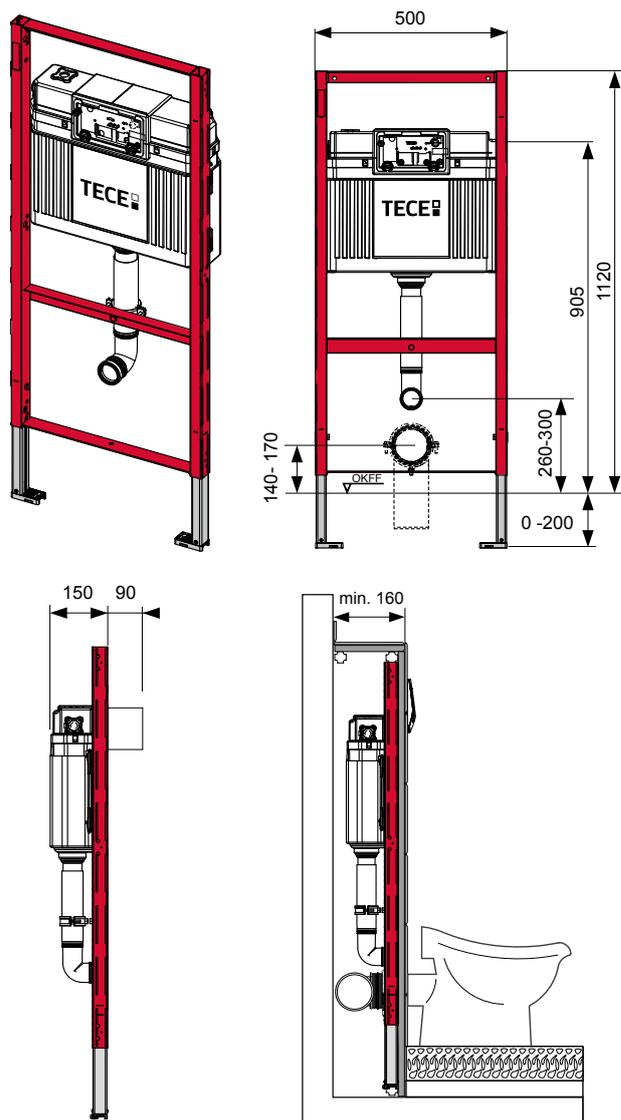
## TECEprofil toilet module for baby/ children's standing toilet

This toilet module has been specially developed for using a floor-standing baby/children's standing toilet. Baby/ children's standing toilets have a clearly lower seat height compared to normal toilet ceramics, and different connection dimensions. The actuation height is also lowered in a way which is appropriate for children.

Both types of ceramics can be connected with the special baby/children toilet module. The flush pipe for connecting a baby toilet is pre-set in the as-delivered state. To achieve the slightly higher connection dimensions of a children's toilet, either the flush pipe can be shortened, or the cistern can be positioned slightly higher. By boring a drill hole in the lower brace, an optional drain bend can be attached if necessary via a pipe clip.

When using a baby toilet, the standard flush volume of 6/3 litres can be changed to 4.5/3 litres at any time.

The universal module technology enables the toilet module to be installed in a TECEprofil wall, in metal or wooden stud walls or as an individual module. The toilet module is only suitable for baby/children's standing toilets. It is not possible to mount wall-hung toilet ceramics.



Toilet module for baby/children's standing toilet (order no. 9300088)

## Barrier-free construction with TECEprofil

### Planning guidelines

- DIN 18 040 – Part 1 Planning fundamentals “Barrier-free building” in public-access buildings and workplaces.
- DIN 18 040 – Part 2 “Barrier-free building” (describes the requirements for sanitary rooms for wheelchair users in dwellings, etc.)

### Barrier-free toilet system according to DIN 18 040 – part 1 in public buildings:

DIN 18 040 part 1 is the authoritative version for the creation of a public barrier-free toilet system. Because of the highest assumed disability of a person in the public area, the requirements are considerably higher than those for private areas.



Barrier-free toilet system

Seat height	46–48 cm including seat
Toilet depth	Overhang at least 70 cm
Back rest	55 cm behind the front edge of the toilet
Movement area to the sides	90 cm left and right
Movement area in front of toilet	150 x 150 cm
Safety support arms	Left and right; upper edge of safety support arm 28 cm above seat height; safety support arm protruding at least 15 cm beyond toilet; distance between support arms 65–70 cm
Toilet roll holder	Can be reached from the seat
Loading capacity of safety support arm	Concentrated load of 1 kN at front end of arm
Toilet flush	Can be reached by hand or arm from the sitting position
Emergency call system	Mounted near the toilet bowl, can be reached from the toilet bowl sitting or lying, designed to be visually contrasting, can be found and recognised by touch

Requirements for a barrier-free toilet system

Installation height top edge of washstand	Height of front edge max. 80 cm
Movement area in front of washstand	150 x 150 cm
Possibility to move underneath	Possibility to move underneath for at least 55 cm, knee freedom 67 cm, measured up to 30 cm behind the front edge, can move underneath across a width of 90 cm
Ability to move underneath washstand	Ability to move underneath for at least 45 cm
Fittings	One-lever mixer or touch-free fitting only in combination with temperature limitation, water temperature at outlet max. 45°C, distance between fitting and front edge of washstand max. 40 cm
Mirror	At least 100 cm high, access must be possible sitting and standing, positioned immediately above washstand.
Operating elements	Single-handed soap dispenser, paper towel dispenser, waste bin, hand drier, must be positioned in the area of the washstand.
Hooks	At least two different heights for sitting and standing persons

Requirements for a barrier-free washstand system

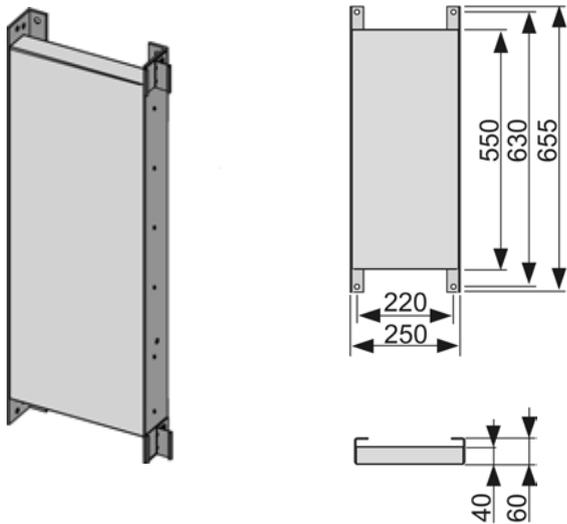


Washstand module with flush-mounted trap, and mounting plates for safety support arms

A senior-citizen and disabled toilet system places particular structural demands on the installation system. In order to resist the increased torque of the handles or safety support arms required, as well as from the extended toilet, it must be secured in a special way. The TECEprofil modules are constructed so solidly that it is possible to secure handles or safety support arms as well as a longer toilet with just two additional fixings.

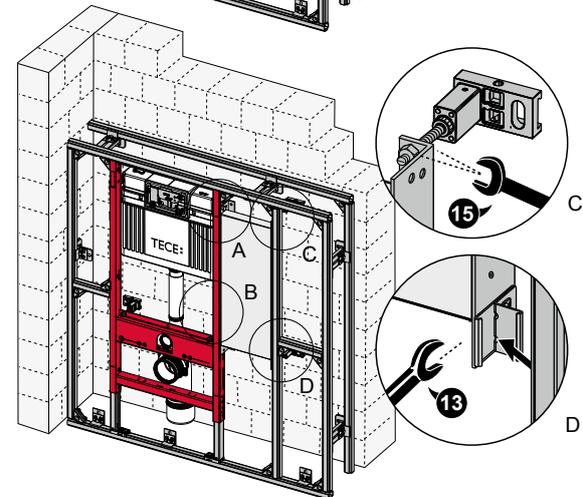
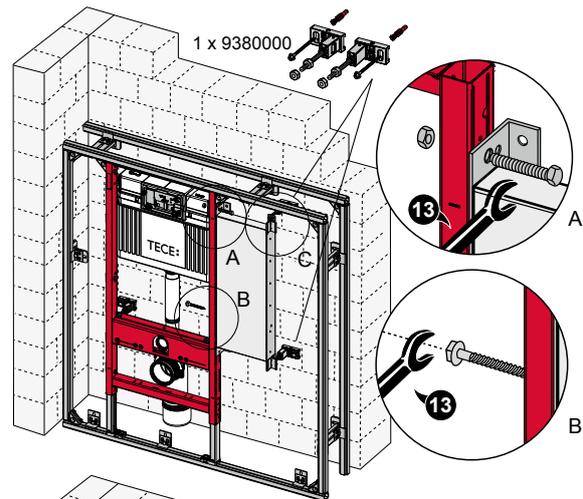
## Barrier-free toilet system in a TECEprofil wall

Just one TECEprofil mounting plate is required per support to secure the safety support arms or handrails in a TECEprofil wall.

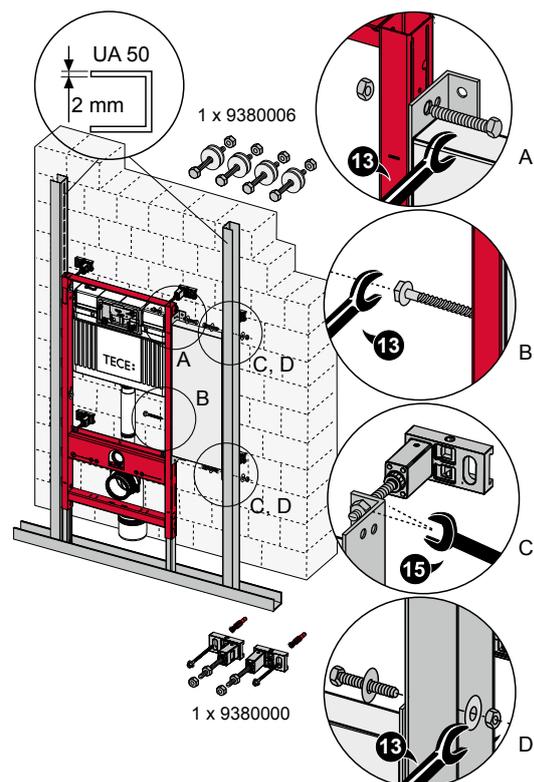


Mounting plate for safety support arms and support systems (order no. 9042003)

The mounting plate can be bolted directly to the universal module, and is equipped with multi-clips for securing to section tubes. The mounting plate must be secured to the solid wall with the TECEprofil modular attachments. The mounting plate is provided with the appropriate holes for this purpose. Furthermore, additional TECEprofil modular attachments (order no. 9380000) are required in the TECEprofil universal module's bowl area.



Installation of mounting plates for safety support arms with wall fixing (above) or multi-clips and section tube (below)



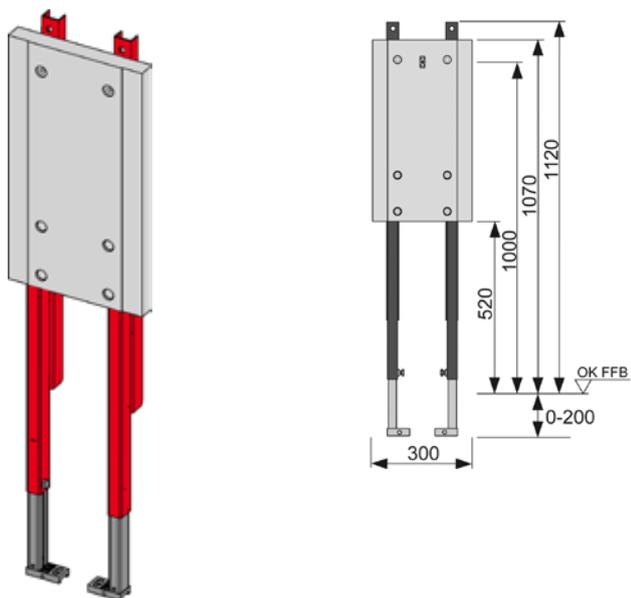
Installation in a metal stud wall

# TECEprofil – barrier-free construction

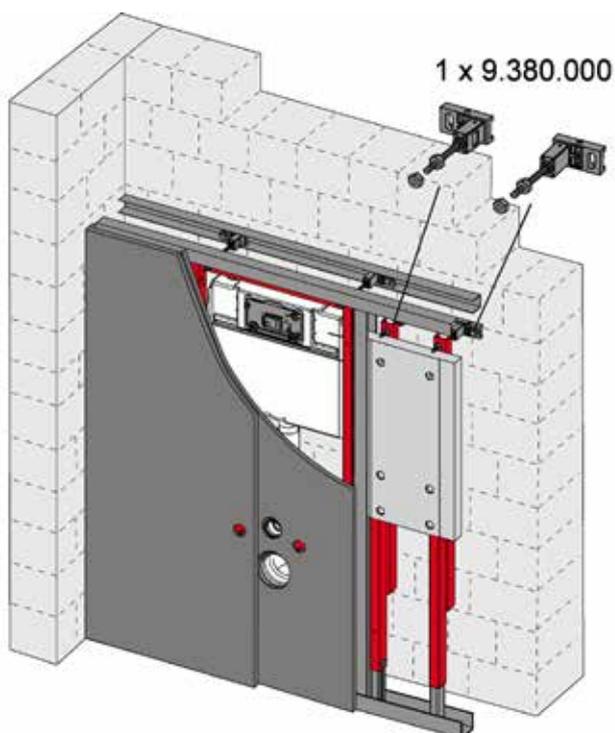
## Barrier-free toilet system in an individual modular construction

To mount the safety support arms, one TECEprofil universal module for safety support arms and support systems is used. Furthermore, an additional TECEprofil modular mounting set (order no. 9380000) is required in the TECEprofil universal module's bowl area. This will be sufficient to satisfy the increased structural demands imposed by a barrier-free toilet system.

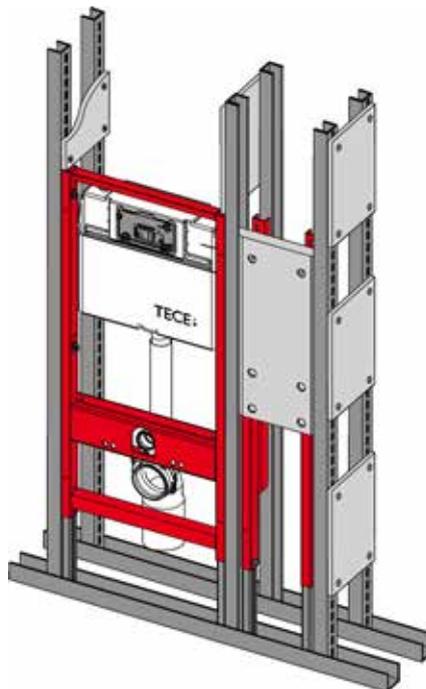
The toilet module and support arm module are prepared for installation on flush-mounted profiles (50 size).



Module for safety support arms and support systems (order no. 9360000)



Installing the module for the safety support arms and support systems with a flush-mounted profile in front of a solid wall

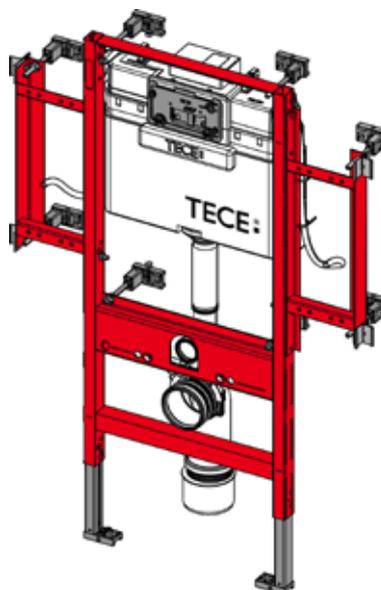


Installing the module for safety support arms and support systems in a free-standing wall with a flush-mounted profile

## TECEprofil Geronto module

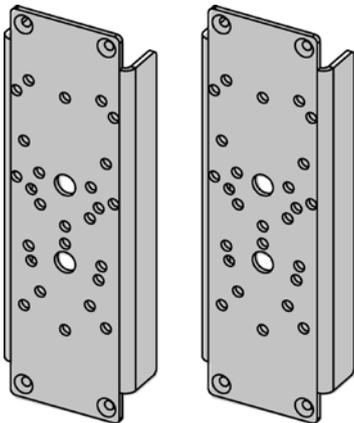
The Geronto module is based on the TECE toilet universal module. It has been specially developed for installation in barrier-free toilet systems.

All the required heights and widths from DIN 18 040-1 for creating a barrier-free toilet system in public buildings can be found again in this module. The crossbeam for fixing the toilet is 5 cm higher than in the standard module. The standard overall height of the pre-wall therefore remains unchanged.



TECE Geronto module (order no. 9300009)

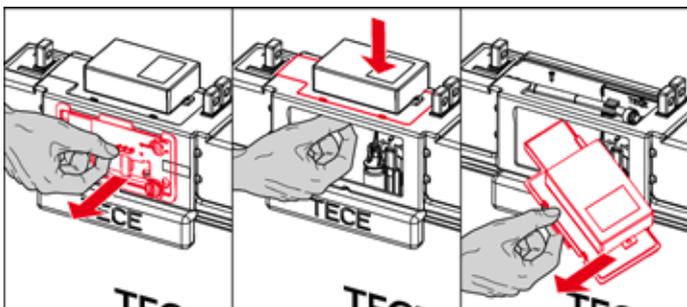
The steel side plates for mounting the safety support arms correspond exactly to the height and width requirements specified in DIN standard 18 040-1 for installing safety support arms. The steel side plates are easy to install. They are bolted to the basic frame using only four mounting bolts. Regardless which support arm manufacturer's equipment is installed, the dimensions will always fit.



Steel plate set, suitable for safety support arms made by most manufacturers

The steel side plates for mounting the safety support arms come in various sets for the different manufacturers' equipment and must be ordered separately. The modular system allows safety support arms from practically all manufacturers to be installed. The system retains its flexibility due to the fact that the toilet module and steel plates are separate.

Installing the cabling for the electronic flush actuation is child's play thanks to the conduit which is provided as standard. The conduit finishes at the top face of the tank and can be reached at any time via an inside opening tank cover. An electric socket screwed to the tank cover also makes it easy to wire up the electronics neatly. If servicing is required, the cables and electronics are accessible at all times.



Electric socket for wiring up on the tank top, can be taken out from inside

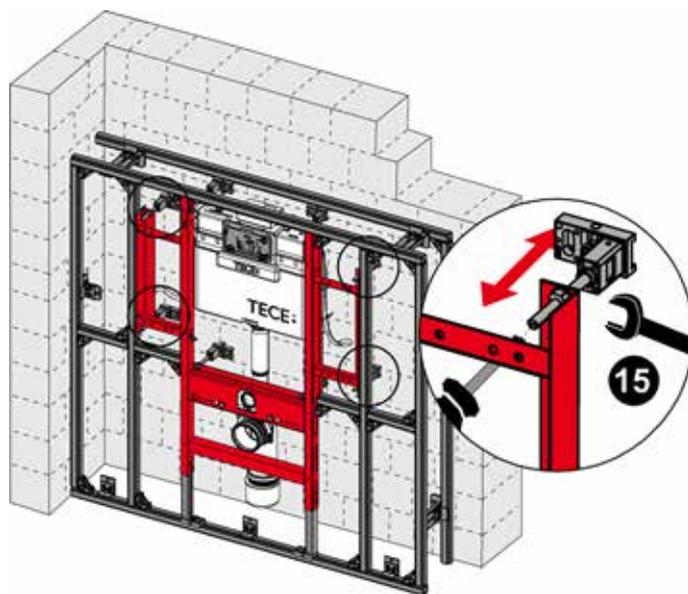
With the TECEplanus toilet electronics, TECE offers three flush actuation options to match the cistern: cable, wireless or infrared actuation. All three versions are available with battery or mains operation.

The electronic actuation unit works with a servo-motor that is operated with any commercially available 6 V lithium batteries or a 12 V power supply. The flush is actuated either by a button in the safety support arm or on the wall.

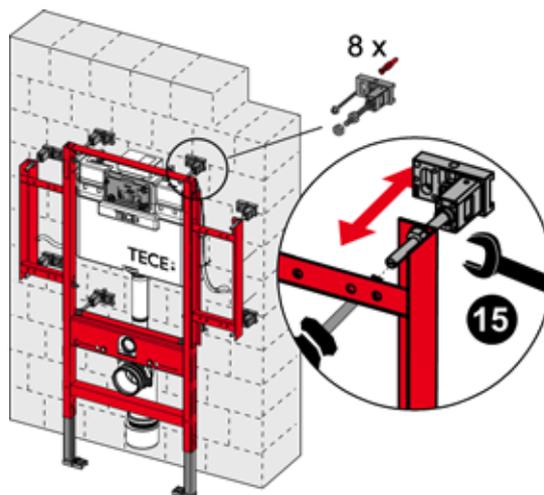
### Installation options for the Geronto module

The Geronto module is variably adjustable:

- Installation in a TECEprofil pre-wall
- Installation as an individual module in front of a solid wall
- Installation in a metal stud wall

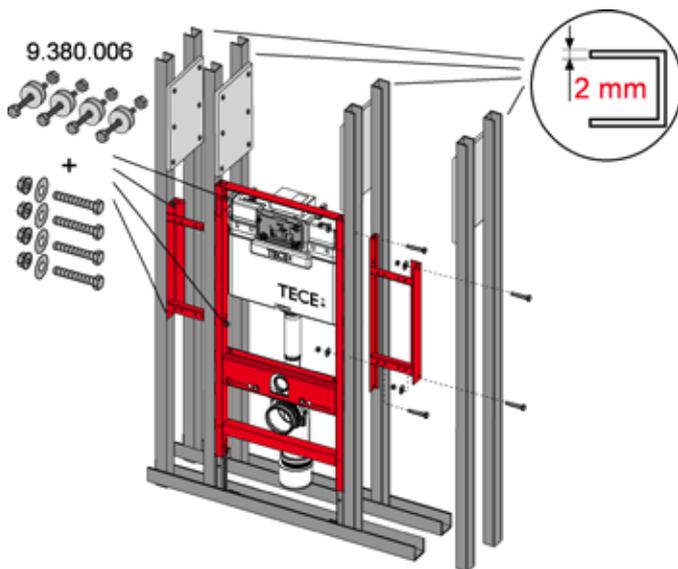


Installation in a TECEprofil pre-wall



Installation as an individual module in front of a solid wall

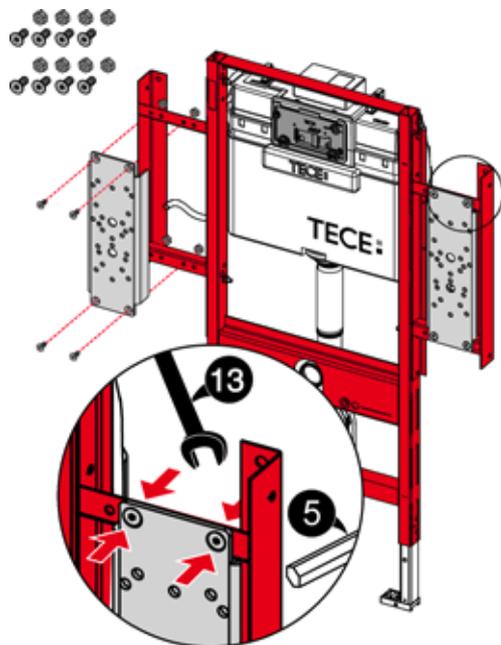
## TECEprofil – barrier-free construction



Installation in a metal stud wall

### Installing the steel plate set 90420xx on the Geronto module 9300009

The steel plate set belongs to the modular system of the toilet Geronto module 9300009. This set must be ordered to suit the safety support arms to be installed.



Installing the steel side plates on the Geronto module

On the installed toilet Geronto module, there are steel supporting frames at the sides for mounting the steel plate set. The steel plate set is bolted to the steel frame using four mounting bolts. Threaded plugs must be screwed into the appropriate threads, depending on the mounting points of the safety support arm. The exact position of the supported safety support arms is specified in the installation instructions. Later drilling of mounting points during the detailed installation phase is not necessary.

The conduit for a cable-connected release must be connected to the steel plate and the supplied screw fittings. This ensures secure retention of the conduit throughout the whole construction phase. The mounting plates must always be supported on a structural shell which is able to take the load, using the supplied wall attachments.

## Sound insulation

Insulation against installation noise is becoming increasingly important in sanitary and heating technology. Particular attention has been given to sound insulation requirements in the development of TECEprofil pre-wall elements. TECE products also enable the increased demands for structural sound insulation to be met.

Not only the properties of the product, but planning tasks such as floor plan layout and the weights of walls are also very important for ensuring good sound insulation.

### Relevant standards

Table 9 from DIN 4109-1:2016-07 describes the values for permissible sound pressure levels in rooms which require sound insulation. The values listed here are acknowledged as generally accepted engineering standards and always apply if no other agreement on sound insulation has been reached.

Table 9 from DIN 4109-1:2016-07

Column	1	2	3	4
Line	Sources of noise		Max. permissible A-rated sound pressure level in dB(A)	
			Living and sleeping spaces	Classrooms and work spaces
1	Plumbing technology/water installations (water supply and wastewater systems together)		LAF,max,n ≤ 30 a) b) c)	LAF,max,n ≤ 35 a) b) c)
2	Other permanently installed sources of noise in the building produced by technical equipment, supply and waste disposal systems or garage facilities		LAF,max,n ≤ 30 c)	LAF,max,n ≤ 35 c)
3	Restaurants including kitchens, sales outlets, companies, etc.	during the day from 6 a.m. to 10 p.m.	Lr ≤ 35 LAF,max ≤ 45	Lr ≤ 35 LAF,max ≤ 45
4		at night according to the German noise pollution prevention regulation (TA Lärm)	Lr ≤ 25 LAF,max ≤ 35	Lr ≤ 35 LAF,max ≤ 45

- a) Single short peaks which occur when operating the fittings and devices according to table 11 (opening, closing, changing over, interrupting, etc.) are not to be considered at the present time.
- b) Conditions for meeting the permitted sound pressure level:

the final planning documents must take into account the sound insulation requirements, i.e. the components must have the appropriate sound insulation certification;

In addition, the responsible construction management must be named and called in to take part in closing or cladding the installation.

- c) Notwithstanding DIN EN ISO 10052:2010-10, 6.3.3, measuring the loudest corner of a room is omitted (see also DIN 4109-4

Source: DIN 4109/table 9: The maximum available A-rated sound pressure level in another person's areas requiring sound insulation, generated by technical systems in buildings and services structurally connected to the building.

The main features of table 9 of DIN 4109-1:2016-07 are:

- Governs the requirements for structural sound insulation
- Sound insulation does not mean that noise must be completely prevented
- Requirements are different depending on building use and room use
- Individual short-term noise peaks during activation of fittings and devices (opening, closing, resetting, interrupting, etc.) are not taken into consideration.
- However, the building authorities do have requirements for minimum sound insulation in private living areas

The noise level requirements according to DIN 4109-1:2016-07 refer to “spaces requiring sound insulation” in another person's living area.

Rooms requiring sound insulation include:

- Living spaces including hall-cum-living rooms and eat-in kitchens
- Bedrooms including hotels and accommodation facilities
- Bedrooms in hospitals and nursing homes
- Classrooms in schools, high schools and similar institutions
- Office spaces
- Consulting rooms, meeting rooms and similar work-spaces

Rooms which do not require sound insulation within the meaning of DIN 4109 (only for installation noise) include for instance:

- One's own living area
- The room in which the sanitary fixture causing the noise is located
- “Loud” rooms in other people's living areas (e.g. bathroom, kitchen)
- Rooms in which persons do not regularly stay (e.g. cellars, storage spaces)
- Open-plan offices

### Increased sound insulation

At least the requirement for increased sound insulation should always be agreed under the specifications of the standards and the actual noise levels required.

Because of the different requirements in the standards in information sheet 2 of DIN 4109:1989-11 and VDI 4100:2012-10, the sole indication “increased sound insulation” is unclear. To meet the requirements for increased sound protection levels actually at the building site, the greatest care must be taken during the planning and implementation phase. In case of doubt, we advise contacting a building acoustics specialist.

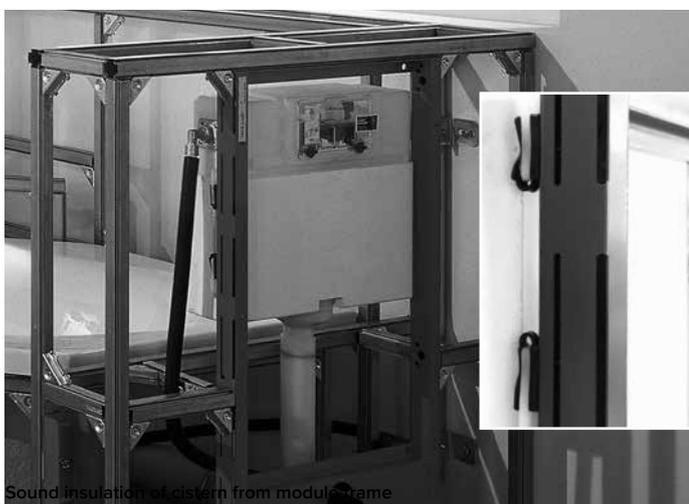
## Overview of acoustic standards (sources of noise: plumbing technology, water installations)

Acoustic standard	Protected areas		Max. permitted installation noise level			
			Standard	Increased sound insulation <sup>1)</sup>		
				Sound insulation level I	Sound insulation level II	Sound insulation level III
<b>DIN 4109</b> complies with the generally accepted engineering standard (recommendation: generally agreed under a works and services contract)	space requiring sound insulation, lying diagonally below in <b>another person's living area</b>		LAF,max,n ≤ 30 dB(A)	-	-	-
	neighbouring space requiring sound insulation in one's <b>own</b> area		no requirement	-	-	-
<b>Supplement 2 to DIN 4109<sup>1)</sup></b> (contract for works and services required)	space requiring sound insulation, lying diagonally below in <b>another person's living area</b>		-	LAF,max,n ≤ 25 <sup>2)</sup> dB(A)	-	-
	neighbouring space requiring sound insulation in one's <b>own</b> area		-	no requirement	-	-
<b>VDI 4100<sup>1)</sup></b> (contract for works and services required)	space requiring sound insulation, lying diagonally below in <b>another person's living area</b>		-	LAF,max,nT ≤ 30 dB(A)	LAF,max,nT ≤ 27 dB(A)	LAF,max,nT ≤ 24 dB(A)
	neighbouring space requiring sound insulation in one's <b>own</b> area		-	LAF,max,nT ≤ 30 <sup>3)</sup> dB(A)	LAF,max,nT ≤ 25 <sup>3)</sup> dB(A)	LAF,max,nT ≤ 22 <sup>3)</sup> dB(A)

- 1) If increased sound insulation is required, the standard and the exact numeric value of the increased sound insulation must be explicitly agreed in the works and services contract.
- 2) Sound pressure level values of 5 dB(A) or more under the values specified in DIN 4109/11.89, table 4 can be regarded as an effective reduction. In this case, additional measures for airborne and impact sound insulation are required.
- 3) Caution: According to VDI guideline 4100, increased sound insulation in one's own area is automatically understood as agreed in a works and services contract.

### TECEprofil system sound-proofing measures

Particular attention has been paid to sound insulation requirements in the development of TECEprofil. For example, special decoupling components specifically reduce the transfer of acoustic waves. Different structures have been tested in collaboration with various well-known institutes. The acoustic properties according to DIN 4109 have been confirmed by expert assessments.



Sound insulation of cistern from module frame



Sound insulation of crossbeam from module frame

Should you have any questions about structural sound insulation, including in relation to a project, we would be pleased to help. Expert reports and statements available on request.



Fraunhofer Institut Bauphysik

MPA NRW Materialprüfungsamt Nordrhein-Westfalen

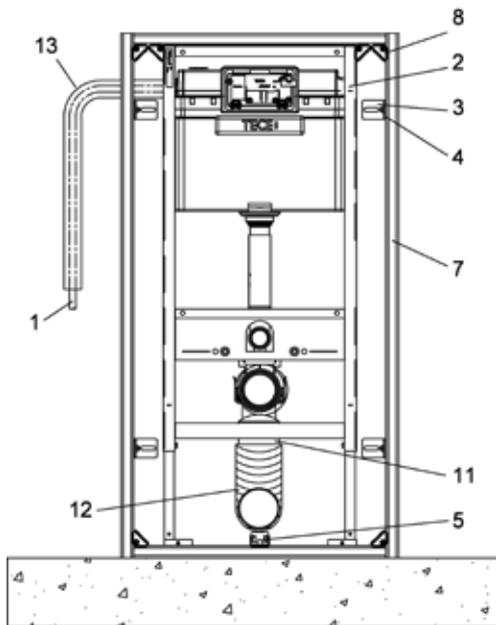


## TECEprofil sound insulation verification

### Installation sound level LAF,max,n (Lin)

Example:

For the experimental construction, a TECEprofil pre-wall was installed in front of a structural shell wall according to DIN 4109. The installation sound was measured in a room lying diagonally below the installation room.



Experimental construction with TECEprofil pre-wall and toilet module

A standard high temperature pipe was used for the insulated wastewater pipe (12). The condensation-protected fresh water pipe (13) was created using TECEflex (1). TECEprofil sound insulation set (order no. 9200010) was installed to sound-proof the toilet ceramics. All angle brackets (3) of the TECEprofil pre-wall were provided with a sound insulation set (4) (order no. 9021019). The TECEprofil universal module (order no. 9300000) was equipped with the TECE cistern (2). The standard volume of 6 litres was flushed. The filling time was 90 seconds.

Installation sound level LAF,max,n (Lin) according to DIN 52 219 and DIN 4109 in dB(A)	
Excitation	Measuring room rear lower floor (diagonally below the installation room)
TECEprofil universal module with TECE cistern (without wastewater pipes)	<b>19 dB(A)</b>

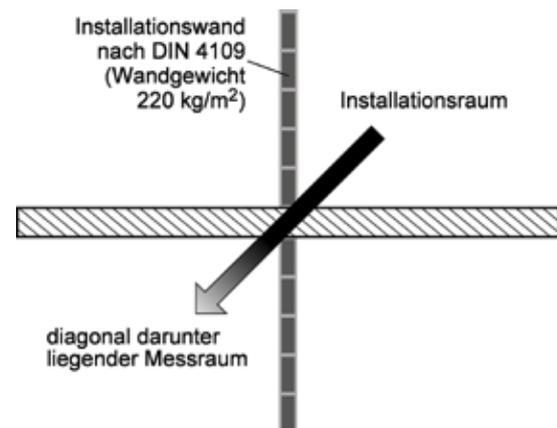
The acoustic data is based on measurements taken by the Fraunhofer Institute for Building Physics in Stuttgart (Germany). The measurements were taken on the basis of German standards and guidelines under real-life conditions.

Item	Item name	Item number
Shell construction installation		
1	TECEflex composite pipe 16 mm	732016
2	TECEprofil toilet module	9300000
3	TECEprofil double joint	9030011
4	TECEprofil sound insulation set for angle bracket	9021019
5	TECEprofil angle bracket	9030002
6	TECEprofil panel, 18 mm	9200000
7	TECEprofil section tube	9000000
8	TECEprofil corner joint	9010002
9	TECEprofil knifing filler	9200002
10	TECEprofil panel screw	9200001
11	DN 100 HT wastewater pipe	-
12	Adhesive felt bandage	-
Detailed installation		
13	TOTO deep flush toilet ceramic	
14	TECE sound insulation set for toilet	9200010
15	TECEambia toilet flush plate	9240200

TECEprofil list of components

All data relates to the structural relationships and the installation conditions shown which are found in the installation test rig at the Fraunhofer Institute for Building Physics. The test rig represents a section from a typical residential building and can be used as a direct verification of building authority sound insulation requirements. Other structural data may lead to different results.

### Influence of wall mass on the installation noise level

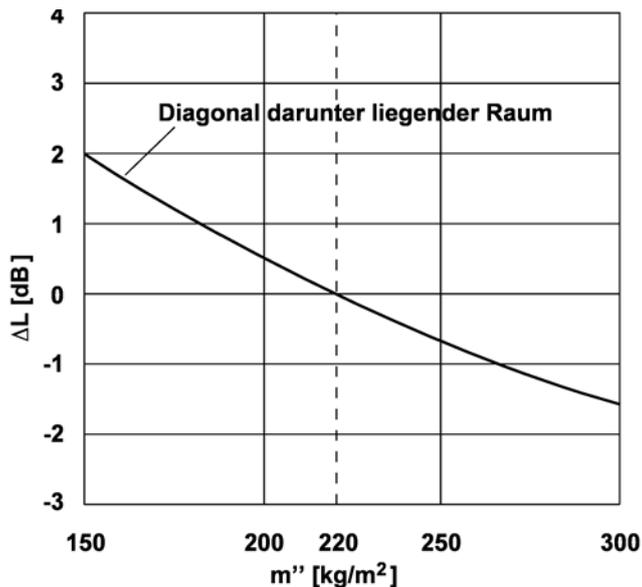


Location of installation and measuring rooms

The graph shows the change in installation noise in the room lying diagonally below the installation room (rear lower floor) as a function of the mass per unit area of the installation wall for the same noise excitation. The plot shown is the noise level difference compared with an installation wall with a mass per unit area of  $m'' = 220 \text{ kg/m}^2$ .

# TECEprofil – sound insulation

TECEprofil



Change in the installation noise level – calculated results

(calculated by the Fraunhofer Institute for Building Physics, Stuttgart)

The calculated results shown refer to the relationships in the installation test rig at the Fraunhofer Institute for Building Physics and cannot be directly applied to other building situations. To simplify the calculations, it was assumed that the thickness, inner damping and module of elasticity of the installation wall do not change.

## Rated sound reduction index $R'w$

According to DIN 4109, general requirements for sound insulation apply to dividing walls in other people's living and working areas. Here, this concerns the value known as "rated sound reduction index"  $R'w$ . The rated sound reduction index  $R'w$  characterises the airborne sound reduction by components.

Extract from DIN 4109-1:2016-07

## Requirements in multi-storey dwellings, offices and mixed-use buildings

The requirements for airborne sound reduction  $R'w$  and impact noise insulation  $L'n,w$  between other people's

functional units, e.g. between other people's flats and/or between flats and other people's work areas (offices, doctor's practices and businesses) are listed in table 2.

Extract from table 2:

Line	Components	Requirements		Comments
		$R'w$ dB	$L'n,w$ dB	
13	Walls dividing flats and walls between other people's work areas	$\geq 53$	–	Walls dividing flats are components which separate flats from each other or from other people's work areas.
14	Staircase walls and walls adjacent to hallways	$\geq 53$	–	For walls with doors, the requirement $R'w$ (wall) = $R'w$ (door) + 15 dB applies where, $R'w$ (door) means the required sound proofing for the door according to line 18 or line 19. wall widths $\leq 30$ cm are not taken into account in the process.
15	Walls adjacent to passageways and communal garages including driveways	$\geq 55$	–	
16	Walls of games rooms or common rooms	$\geq 55$	–	
17	Shaft walls of lift systems adjacent to residential rooms	$\geq 57$	–	

### Requirements between detached houses, terraced houses and between semi-detached houses

Table 3 contains requirements for airborne noise insulation R'<sub>w</sub> and impact noise insulation L'<sub>n,w</sub> between detached houses/terraced houses and between semi-detached houses.

Extract from table 3

Line		Components	Requirements		Comments
			R' <sub>w</sub> dB	L' <sub>n,w</sub> dB	
4	Walls	Separating walls between residential areas located on the lowest floor (in contact with the ground or not) of a building	≥ 59	–	
5		Separating walls between residential areas beneath which there is at least 1 of the building's floors (in contact with the ground or not)	≥ 62	–	

### Hotels and accommodation facilities

The airborne noise insulation R'<sub>w</sub> and impact noise insulation L'<sub>n,w</sub> in hotels and accommodation facilities are listed in table 4.

Extract from table 4

Line		Components	Requirements		Comments
			R' <sub>w</sub> dB	L' <sub>n,w</sub> dB	
5	Walls	Walls between accommodation facilities and walls between hallways and accommodation facilities	≥ 47	–	In the case of dividing walls between other people's accommodation facilities with doors, the resulting sound insulation of the wall/door combination R' <sub>w,res</sub> ≥ must be 49 dB.

### Hospitals and nursing homes

The airborne noise insulation R'<sub>w</sub> and impact noise insulation L'<sub>n,w</sub> in wards in hospitals and nursing homes are listed in table 5.

Extract from table 5:

Line		Components	Requirements		Comments
			R' <sub>w</sub> dB	L' <sub>n,w</sub> dB	
5	Walls	Walls between: - hospitals - halls and wards - examination or consultation rooms - halls and examination or consultation rooms - wards and workspaces and care rooms	≥ 47	–	
6		Walls between rooms which must remain quiet and particularly confidential (discretion)	≥ 52	–	
7		Walls between: - operating theatres or treatment rooms - hallways and operating theatres or treatment rooms	≥ 42	–	
8		Walls between: - intensive care rooms - hallways and intensive care rooms	≥ 37	–	

# TECEprofil – sound insulation

## Schools and similar institutions (e.g. training centres)

The airborne noise insulation  $R'_{w}$  and impact noise insulation  $L'_{n,w}$  between rooms in schools and similar facilities are listed in table 6.

Extract from table 6:

Line		Components	Requirements		Comments
			$R'_{w}$ dB	$L'_{n,w}$ dB	
4	Walls	Walls between classrooms or between similar rooms and hallways	$\geq 47$	–	Similar rooms also include rooms which must remain quiet e.g. dormitories.
5		Walls between classrooms or similar rooms and stairwells	$\geq 52$	–	
6		Walls between classrooms or similar rooms and “loud” rooms (e.g. dining rooms, cafeterias, music rooms, games rooms, technical centres)	$\geq 55$	–	
7		Walls between classrooms or similar rooms and sports halls and work areas, for instance	$\geq 60$	–	

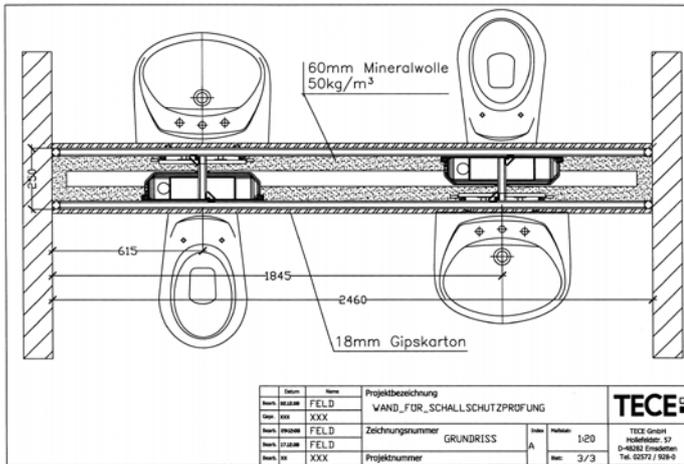
## Extract from supplement 2 to DIN 4109

### One's own living or work area

Sound insulation of dividing walls within one's own living or work space, rated sound reduction index  $R'_{w}$  between 2 rooms; suggestions according to DIN 4109 supplement 2 for normal and increased sound insulation:

Line	Description	Rated sound reduction index $R'_{w}$ according to DIN 4109 supplement 2	
		Normal requirements	Increased requirements
4	Residential building - Walls without doors between “loud” and “quiet” rooms with various uses	$\geq 40$ dB	$\geq 47$ dB
5	Offices and administration rooms - Walls between rooms with usual office activities - Walls between these and hallways - Walls of rooms for concentrated intellectual activity	$\geq 37$ dB $\geq 37$ dB $\geq 45$ dB	$\geq 42$ dB $\geq 42$ dB $\geq 52$ dB

Test rig measurement “rated sound reduction index  $R'_w$ ” according to DIN 4109

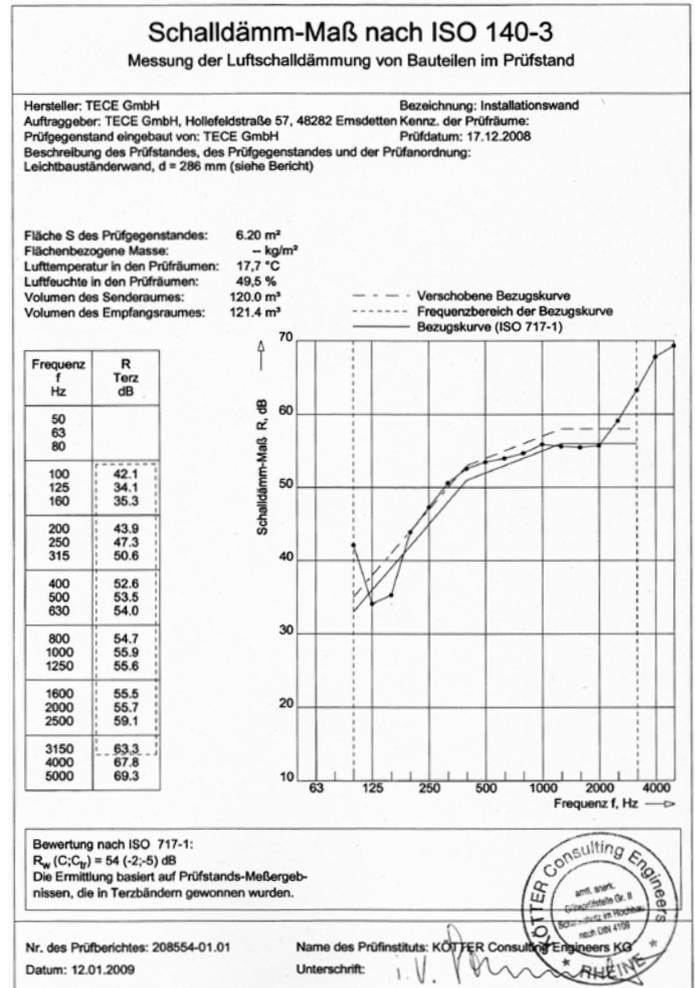


Construction of the tested TECEprofil dividing wall

An acoustics report has demonstrated that dividing walls using the TECEprofil system meet sound insulation requirements. The tested floor-to-ceiling TECEprofil dividing wall was allocated a cistern and a washstand on both sides. The thickness of the unpanelled dividing wall was 250 mm. The inside cavity of the dividing wall was filled with 60 mm-thick mineral wool ( $50 \text{ kg/m}^3$ ) on both sides. The dividing wall was covered with 18 mm-thick plasterboard panels and the joints between them were filled.

The rated sound reduction index  $R'_{w,R}$  which was determined gave a test value of 52 dB(A). As a consequence, dividing walls made of TECEprofil including sanitary fixtures, for instance in hotels, schoolrooms or hospitals etc. are permitted.

Dividing walls between dwellings may not be created with the TECEprofil system.



Extract from the test report

# TECEprofil – sound insulation

## TECEprofil dry-wall construction system – sound insulation according to DIN 4109-1:2016-07

TECEprofil pre-wall installation in front of a solid dividing wall made of sand-lime blocks or gypsum wall panels



Installation sound level (with wastewater pipes)	Sand-lime block 220 kg/m <sup>2</sup>		Multigips gypsum wall panels 140 kg/m <sup>2</sup>		Multigips gypsum wall panels 120 kg/m <sup>2</sup>		Multigips gypsum wall panels 112 kg/m <sup>2</sup>	
	LAF,max,n 23 dB(A)	LAF,max,nT 20 dB(A)	LAF,max,n 22 dB(A)	LAF,max,nT 21 dB(A)	LAF,max,n 30 dB(A)	LAF,max,nT 29 dB(A)	LAF,max,n 19 dB(A)	LAF,max,nT 18 dB(A)
DIN 4109-1:2016-07	✓		✓		✓		✓	
DIN 4109 supplement 2	✓		✓				✓	
VDI 4100:	SSt I	✓		✓		✓		✓
	SSt II		✓		✓			✓
2012-10		✓		✓				✓

## TECEprofil as a space-enclosing dividing wall



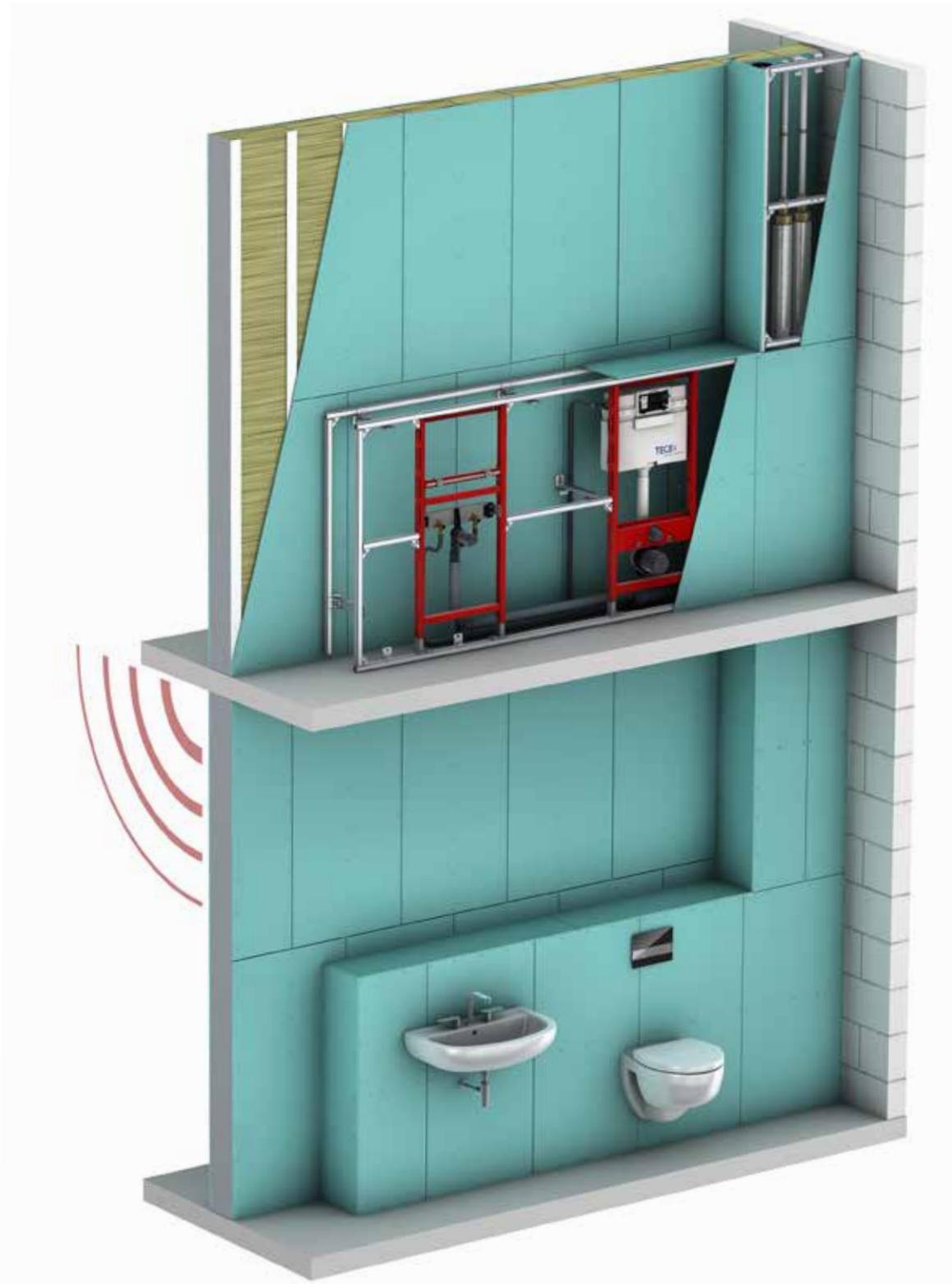
Sound reduction index

$$R_{w,R} = 52 \text{ dB(A)}$$

# TECEprofil – sound insulation

TECEprofil pre-wall installation in front of a dry-wall construction dividing wall (Knauf & Co., W112)

TECEprofil



Installation sound level* (without wastewater pipes)	Standard requirements DIN 4109/1	Increased requirements DIN 4109/supplement 2
LAF,max,n = 19 dB(A)	✓	✓

\*expert opinion of the Fraunhofer Institute in Stuttgart

TECEprofil in a space-enclosing dry-wall construction (Knauf, W116)



Installation sound level* (without wastewater pipes)	Standard requirements DIN 4109/1	Increased requirements DIN 4109/supplement 2
LAF,max,n = 19 dB(A)	✓	✓

\*expert opinion of the Fraunhofer Institute in Stuttgart

## TECEprofil – sound insulation

### TECEbox brick-wall structure system – sound insulation according to DIN 4109-1:2016-07

TECEbox 9370000/9375000 in front of a solid dividing wall made of sand-lime blocks with a weight per square metre of 220 kg/m<sup>2</sup>



Installation sound level (without wastewater pipes)	Standard requirements DIN 4109/1	Increased requirements DIN 4109/supplement 2
LAF,max,n = 29 dB(A)	✓	--

TECEbox plus 9371000 including building area cover 9200012



Installation sound level (without wastewater pipes)	Standard requirements DIN 4109/1	Increased requirements DIN 4109/supplement 2
LAF,max,n = 28 dB(A)*	✓	--

\*The cavity below the cistern and the cavity in the drain area must be filled with mineral wool for this purpose.

## Fire protection

### TECEprofil dividing walls with fire protection requirements

With the TECEprofil system, non-load-bearing, room-enclosing dividing walls with EI 30–EI 120 fire protection specifications can be created, which basically consist of a metal stud frame (TECEprofil), a two-sided plasterboard facing panel, sanitary fixtures and insulation material. The dividing walls may be implemented with any wall width and a maximum wall height of 4.5 metres. The structural proof for these wall constructions was produced at the Braunschweig Materials Testing Institute (MPA).

No special components are needed for the TECEprofil supporting frame. All standard components from the TECEprofil system can be used. The single-layer 18 mm-thick TECE system panel facing or alternatively 2 x 12.5 mm thick plasterboard can be used for the panel facing.

Depending on the required fire resistance class, the walls must be built according to the specifications and packed with mineral wool. For specifications EI 90 and above, the dividing walls must always be fully packed with mineral wool over the whole area (melting point > 1000°C). The thickness of the walls must be taken into account.

### Construction of a dividing wall (EI 30–EI 120)

The dividing wall must be divided into vertical box sections according to the width of the wall. One box section must not be wider than 1 metre. The maximum permitted height of a box section is limited to 4.5 metres. The vertical profiled tubes of neighbouring box sections are drilled and secured together using threaded bolts. This type of mounting considerably simplifies the prefabrication and on-site installation. Single box sections can easily be put together to form a dividing wall. The wall must be secured all-round to a solid wall. The distance between fixings into the wall, ceiling and floor must not exceed 0.6 metres. If there are any deviations from the tested construction, the TECE Service Department must always be consulted. Minor changes during construction are possible, however they must be approved by TECE.

### Quick overview of the EI 30–EI 120 construction variants

The required fire specification greatly influences the construction thickness and its fixtures. The following table provides a simplified overview of the differences between the fixtures.

Resistance time	EI 30	EI 30	EI 60	EI 90	EI 120
Min. wall thickness incl. panel facing in mm	286	386	286	386	386
max. height in m	4.5	4.5	4.5	4.5	4.5
max. width	unlim.*	unlim.*	unlim.*	unlim.*	unlim.*
Filling only in the area of the installed elements	no	yes	no	no	no
Full filling of the wall required	yes	no	yes	yes	yes
Standard flush-mounted E-socket	yes	yes	no	yes	yes
water meter	yes	yes	no	yes	no
fan installation	yes	yes	yes	yes	yes
cooling lines	yes	yes	yes	yes	yes
plasterboard 1 x 18 mm or 2 x 12.5 mm	yes	yes	yes	yes	yes
shower channel	yes	yes	yes	yes	yes
wooden panels	yes	yes	yes	yes	yes
One-sided allocation	yes	yes	yes	yes	yes
Double-sided allocation	yes	yes	yes	yes	yes
KF pipe, max. DN 125	yes	yes	yes	yes	yes
SML pipe, max. DN 125	yes	yes	yes	yes	yes

\* unlimited

### Mineral wool:

TECEprofil dividing walls for which fire protection specifications are stipulated, must be packed with mineral wool (melting point > 1000 °C) depending on the fire resistance class required. Only the following mineral wool types are permitted for packing TECEprofil dividing walls with fire protection specifications:

- Rockwool: Termarock 50 and Rockwool RL loose wool
- Isover: Protect BSP 50 and Isover loose wool SL
- TECE: TECEprofil fire protection panel set (9200017)

Only cavities which are not filled by the fire protection panels may be filled with the same type of loose fire-retardant wool.

### Packing the walls:

For the EI 30 requirements, there are two possible ways in which a room dividing wall with fire protection specifications can be suitably packed.

#### 1) Minimum distances between the insulation for EI 30 requirements

Sanitary fixtures	Minimum distance above/below in mm	Minimum distance left/right in mm
Ventilation boxes	≥ 171	≥ 192
Fittings crossbeam (shower)	≥ 176 header top edge	≥ 243.5
shower channel	≥ 154 header top edge	≥ 265 ≥ 412
washstand crossbeam	≥ 308 ≥ 417	≥ 223
Socket/flush-mounted box	≥ 166	≥ 166
water meter	≥ 240.5	≥ 322
Toilet module	≥ 196.5 ≥ 555	≥ 217

#### 2) Simplified rule for packing EI 30 room dividing walls

To make packing of the fixtures on an EI 30 room dividing wall easier and more practical, the following rules can be applied:

- The wall must be fully and consistently packed 0.5 m above the unfinished floor. Horizontal outlet pipes must only be laid in the insulated area of the wall.
- All fixtures within a circumference of 30 cm from the outside of the wall opening must be insulated.
- A fire protection set must be installed in the area near each toilet module. The cavities on the toilet module must be packed across the entire area.
- Insulation dimensions on fixtures installed back-to-back should be taken into account.



# TECEprofil – fire protection

## Packing for EI 90/EI 120 – requirements

For fire protection specifications EI 90 and above, the dividing wall must always be fully packed, tightly and without cavities. For toilet fixtures, a fire protection panel set must always be installed for each toilet. Only the listed mineral wools/packing wools from the manufacturers named above may be used to pack the dividing wall.

## Example constructions:



EI 90 from 386 mm wall thickness



EI 90 from 286 mm wall thickness

## Panel facing

The panel facing can be made with the 18 mm-thick TECEprofil system facing or alternatively with 2 x 12.5 mm-thick plasterboard (GKBi type). With double panelling, both panel faces must be completed with a panel offset of < 400 mm. Joints opposite each other must be avoided when building the wall. The size of the panels must be limited to < 1,350 mm x < 625 mm. To secure the panelling, 3.5 mm x 35 mm screws must be used, at a distance of a < 150 mm apart. The joints must be filled with TECEprofil knifing filler.

## Fixtures

Taking into consideration each technical regulation (e.g. building regulations) and fire resistance periods, the following fixtures may be used:

- a) fan housing with F 90 fire protection housing and maximum outside dimensions of 249 x 249 mm, distance between backs  $a \geq 160$  (wall  $d \geq 386$  mm) or  $a \geq 46$  mm (wall  $d \geq 286$  mm)
- b) installation boxes for water fittings (e.g. Hans Grohe i-box)
- c) shower channels, e.g. TECEdrainline
- d) connection units and modules e.g. for washstand, bidet, urinal etc.
- e) Toilet module with TECE cistern, with back-to-back installation, minimum distance apart  $a \geq 56$  mm
- f) mounting plates made of building plywood, e.g. for mounting safety support arms, max. dimensions (w x h x d) = 215 mm x 550 mm x 40 mm
- g) insulated water meter units with shut-offs, max. dimensions w x h = 290 mm x 290 mm, depth d = 70 mm, distance apart for back-to-back installation of the housing  $a \geq 210$  mm (wall  $d \geq 386$  mm)
- h) flush-mounted electric socket without fire protection approval

## Pipework

In TECEprofil dividing walls with fire protection specifications, the most varied pipe materials may be used. No special manufacturers are specified here. The following pipe materials have been tested and authorised:

Ventilation pipes:

- DN 125 folded spiral seam pipe  $\leq$  with DN 80 steel braided pipes

Foul water and rain water pipes:

- Sound insulated plastic pipe up to DN 125
- SML cast iron pipe up to DN 125

Fresh water, heating and cooling pipes:

- Plastic pipes up to 63 mm (outside diameter)
- Multi-layer composite pipes up to 63 mm (outside diameter)
- Metal pipes made of copper or stainless steel up to 63 mm (outside diameter)

Pipes may be insulated with foam insulation (e.g. rubber-based), aluminium-clad mineral wool (e.g. Rockwool RS 800) or corrugated tubes.

## Electric cables

Individual cables may pass through the classified space-enclosing wall structures, provided that the remaining hole cross-section is completely closed with plaster.

Implementation of bundled electric cables requires partitioning, the fire resistance class of which must be proven according to DIN 4102-9: 1990-05. Further evidence of suitability is necessary, e.g. within the scope of the issue of a general technical approval.

For the horizontal implementation of bundled electric cables, installation channels, cable ducts or ventilation lines, partitioning is required, the fire resistance class of which must be proven according to DIN 4102-11: 1985-12, DIN 4102-12: 1988-11 or DIN 4102-6: 1977-09. Further evidence of suitability is necessary, e.g. within the scope of the issue of a general technical approval or a general appraisal certificate.

## Electrical sockets

Depending on the application, standard wall-mounted electrical sockets may be used, combined with packing at the rear with mineral wool.

Only exception: EI 90 with a wall thickness of  $\leq 386$  mm. In this case, a flush-mounted electrical socket with EI 90 approval must be used.

## Fan fixtures

Fan boxes may be arranged in the dividing walls directly opposite each other or offset. Care must be taken to ensure that for all the required fire classes, only fan boxes with a EI 90 approval may be used. The connection ducts to the fan and the riser ducts must always be made of steel.

If shut-off units providing protection against the transmission of fire are to be built into fan ducts with certain fire resistance classes, the suitability of these fixtures in combination with the wall construction must be proven according to DIN 4102-5: 1977-09, DIN 4102-6: 1977-09 or DIN 4102-13: 1990-05. Further evidence of suitability is necessary, e.g. within the scope of the issue of a general technical approval.



All data contained in the Technical Guidelines has been compiled with the utmost care. The correctness of the data presented cannot be guaranteed, however. TECE assumes no liability for damages resulting from the use of this information. Text and images are protected by copyright law.

© Copyright 2018, TECE GmbH, Hollefeldstraße 57, 48282 Emsdetten, Germany

More information on  
[www.tece.com](http://www.tece.com)

**TECE GmbH**  
P +49 25 72 / 9 28 999  
[international-business@tece.com](mailto:international-business@tece.com)  
[www.tece.com](http://www.tece.com)