

SHOWER TOILET AND CONNECTION DEVICE THEREFOR

The invention relates to a mounting frame for a shower toilet, an appropriate shower toilet and a toilet arrangement comprising this mounting frame and the shower toilet.

Water closets (WCs) with a bidet function have been known and have been in use for a long time. Here a WC is additionally equipped with at least one shower for cleaning the lower body of a user, this shower often being called the bottom shower in short. For example, a motor-driven shower arm of the bottom shower can be moved forward into the toilet bowl for operation and direct a jet of shower water upwards and move back after having performed its function. In many cases these shower devices are equipped with further devices, for example water heaters such as boilers or continuous-flow water heaters, blow-dryer devices, shower arm cleaning devices etc. An additional shower water connection, for example as a cold water connection of a water heater in the shower toilet, and an electrical connection, for example for supplying a water heater, a drive motor or other devices, are generally provided for the shower device. Basically, technical parts of the shower device can also be disposed “behind” the actual body of the toilet in a mounting wall; for example, a water heater could be provided here so that the aforementioned additional shower water connection can also serve water that is already heated up. Within the framework of this invention it is basically also conceivable to provide just one further line connection for the shower device, for example this type of water connection.

Generally, toilets are attached to a wall lying behind the latter, in particular if, as preferred here, they do not have a pedestal and are suspended. For this purpose a toilet connection device as or in a mounting frame for the toilet is generally provided in the wall or in a covered projection from the wall. These mounting frames generally consist of two vertical struts of a support frame arranged to the right and to the left on the outside and structures held in between running transversely – for example horizontal struts or mounting plates. Generally, load-bearing connection devices on which the body of the toilet can be suspended, connecting pieces for the flushing water and the waste water from the toilet bowl and connection devices

for the aforementioned specific lines of the shower device are formed on these mounting frames.

It is the object of the invention to further develop a shower toilet with regard to advantageous connection possibilities and to provide a corresponding toilet connection device.

In order to achieve this object the invention relates to a toilet connection device according to Claim 1, a shower toilet according to Claim 8 and corresponding use of the connection device and of the shower toilet.

According to the invention, at least one further connection device for a specific line of the shower device lies more centrally in relation to the width than in the prior art, i.e. specifically within the middle 300 mm, but outside of the middle 30 mm. Here the middle should be defined by the middle of the wall-side and toilet-side connection device for the flushing water inlet pipe and the waste water pipe. These two pipes are basically run centrally and one over the other and so form a reference point independent of details of the fitting of the shower toilet.

The shower line connection device according to the invention can be an electrical or also a shower water connection. An arrangement of two connection devices for the shower device, in particular a shower water connection device and an electrical connection device, that is central in the above sense and in particular that is in accordance with the invention, is particularly preferred.

It is basically the case that connection positions lying further to the inside are increasingly preferred, in any case up to a specific upper limit. Accordingly, instead of the aforementioned 300 mm, the following central widths are increasingly preferred as upper limits (respectively in mm): 275, 250, 225, 200, 175, 150, 125, 120, 115, 110. More preferred lower limits are in the following sequence: 40 mm, 50 mm, 60 mm, 70 mm, 80 mm.

These details that are symmetrical to both sides do not mean, of course, that there have to be two connection positions or two connection positions have to lie sym-

metrically. Therefore, only a range to be understood as being in accordance with the invention is quantified. For example, the narrowest limit of 110 mm means that the middle of the shower line connection device has to lie a maximum of 55 mm horizontally away from the vertical centre line.

In this regard it is also significant that in the vast majority of today's toilets there are more or less standardized connection positions for the flushing water inlet pipe connection device, the waste water pipe connection device and mechanical, and for suspended toilets, load-bearing fastening devices, in particular threaded rods. Here the aforementioned line connections are provided centrally, the flushing water inlet pipe running of course over the waste water pipe, and mechanical connection devices are predetermined in a height range just below the flushing water inlet pipe connection device 90 mm and 115 away from the middle to the side, in particular threaded rods on the wall side and corresponding receiving holes on the toilet side.

Thus, connection positions for the shower line connection device according to the invention are therefore basically "more central" than in the prior art, but particularly preferably are even more central than the outer and very particularly preferably even more central than the inner normal position of the mechanical fastening.

This more central arrangement facilitates accessibility to the connection devices for a fitter or a maintenance technician, in particular from below, and enables or uses a corresponding configuration of the rear side of the toilet. Generally toilets have a region kept clear of the rear side around central flushing water inlet pipes and waste water pipes of the toilet bowl; in other words, the contact surfaces of the toilet body lie against the mounting wall outside of this clear region. A corresponding arrangement of the aforementioned connection devices thus allows a configuration of the toilet in which one can reach the connection devices by grasping from below without having to dismantle the body of the toilet. This applies to reaching by hand or at any rate with a tool, depending on the application. As an illustration, reference is made to the exemplary embodiment. Here, the region kept clear is approximately in the shape of an inverted V and the connection devices can be accessed from below past the waste water pipe. (According to this example a toilet

can therefore be connected itself or with an adapted rear-side configuration to a device according to the invention). Here these connection devices lie, furthermore, just outside of the region of the flushing water inlet pipe for the toilet bowl relative to the horizontal extension and approximately at the level of its lower edge relative to the vertical extension and, moreover, at the level of the connection devices supporting the load of the body of the toilet. However, these are only preferred positions and are in no way compulsory.

Furthermore, fitting and connection or maintenance work in the region between the flushing water inlet pipe and the waste water pipe is regularly made difficult by these lines and their connection devices. Provision is therefore made such that the middle of the at least one shower line connection device lies outside of the actual middle, specifically the middle 30 mm.

One means by the term “connection device” in particular a separable interface, i.e. for example an electrical plug contact or a water-tight coupling between two shower line sections. However, this term also relates to a wall-side or also to a toilet-side device which only determines the wall-side position of a corresponding shower line or that on the toilet. For example, in a horizontal mounting plate extending between the vertical frame struts of a mounting frame a hole could be made through which an over-long shower line is guided and can be continued to the front, i.e. in the direction of the toilet bowl. In this case the actually separable interfaces could also lie somewhat in front of the plane of the wall or of the mounting frame; however, they preferably lie approximately in this plane. The same applies to an over-long shower pipe piece on the rear side of the toilet and to an arrangement of an interface behind the front side of the wall.

In general, with regard to the vertical arrangement a shower line connection position on the one hand below the upper edge and preferably the centre line of the flushing water inlet pipe connection for the toilet bowl and on the other hand over the lower edge and preferably over the centre line of a waste water pipe connection for the toilet bowl is preferred for reasons relating to accessibility and simplicity of construction. Particularly preferred with regard to the vertical positioning are arrangements in the region around the load-bearing connection devices, in particu-

lar between 15 % above and 40 % below, the percentage values relating to the vertical height of the load-bearing connection devices with respect to the floor. Also preferred are upper limits of plus 10 % and plus 5 % and, independently of this, lower limits of minus 30 %, minus 20 % and minus 10 %. With adjustable mounting frames a floor position in the centre of the adjustment range is meant. The statements relate once again to at least one shower line.

In the prior art, however, the connection devices for the specific shower lines of shower toilets were positioned a long way to the outside as regards the horizontal direction. They either lay in a mounting plate connecting two vertical frame struts, directly within the frame struts or even outside of the frame struts and so, in accordance with Claim 1, at approximately 390 mm or over (195 mm away from the middle). The reason for this presumably is that in many shower toilets the shower lines are not connected out of sight behind the body of the toilet, but visibly, next to it. This applies in particular to shower toilets having a shower attachment, i.e. a technical housing placed on a normal toilet body between the toilet seat and the mounting wall and which contains the technology required for the shower device outside of and above the rest of the toilet body. Such retrofittable solutions are then connected by lines run visibly to the side of the toilet body. In this sense one will have sought to keep the corresponding toilet connection devices or mounting frames for attachment solutions and integrated shower toilets, in which at least part of the shower device is integrated into the body of the toilet, universal.

In the central arrangement according to the invention obscuration from sight, in particular by the body of the toilet, is preferred and easily possible.

In addition, the invention relates to toilet connection devices which are designed for a position according to the invention of a shower line connection device and moreover for a position lying further to the outside. One can therefore take different toilets which are possibly only partly suitable for a position according to the invention into account. For example, a line run within a mounting frame or a pipe duct run within the mounting frame could be made sufficiently flexible for this purpose so that, for example, they can be dismantled between a position within the mounting frame lying further to the inside and a position lying further to the out-

side. In one advantageous solution this pipe duct is branched and so offers a choice of two different pipe duct pieces which respectively fit in their own attachment position. Of course more than two alternatives are also conceivable. For example, this type of pipe duct can be run downwards from a valve arranged above a cistern integrated into a mounting frame for a shower water pipe approximately along one of the frame struts and be configured somewhat above the connection position then branching from the latter in an approximate V shape.

In the following the invention is described in more detail by means of an exemplary embodiment, wherein the individual features may also be essential to the invention in combinations different than those shown and basically relating to all claim categories.

- Figure 1 shows a toilet body of a shower toilet according to the prior art, illustrated partially in section and partially perspectively;
- Figure 2 shows a rear view of a corresponding toilet body, also in accordance with the invention;
- Figure 3 shows a front view of a toilet connection device according to the invention for the wall-side connection of the shower toilet from Figures 1 and 2.

In Figure 1 one can see a perspectively illustrated toilet body, as viewed from behind at an angle and slightly elevated. Furthermore, Figure 1 is sectioned, so only shows one half of the body of the toilet. One can clearly see a classic toilet bowl 1, an elbow 2 of a discharge siphon and, adjoining the latter, a pipe socket 3 pointing to the right as a waste water pipe connection device of the toilet to the wall connection. Furthermore, over the pipe socket 3 one can see another pipe socket 4, namely a flushing water inlet pipe connection device. This pipe socket 4 leads into a flushing channel 5 running around the upper edge of the toilet bowl 1. Above the flushing channel the body of the toilet terminates substantially horizontally and flat to the top.

A shower attachment, known in its own right, can be built onto this flat upper side of the body of the toilet, from which shower attachment a shower arm, for exam-

ple, can be moved into the upper opening of the toilet bowl 1, at an angle downwards and to the front. Conventionally, these shower attachments themselves are provided with side connection devices or connection lines running out to the side for their water supply and shower water connection pipes. In this context, to the side means the region approximately above the upper rear edge of the body of the toilet in Figure 1 in its straight region, and to the right of the bowl opening.

Moreover, Figure 1 shows on the right an approximately triangular profile rear wall region 6 to be supported against a mounting wall. This profile rear wall region 6 is closed between the approximately vertical (V-shaped) frame struts shown and the horizontal struts. It can easily be seen that it contains a cylindrical hole 7 as a mounting hole for a bolt for mechanically fastening the body of the toilet, i.e. as a load-bearing connection device. This mechanical mounting is conventional and well-established.

Figure 2 largely shows the same toilet body, the same reference numbers accordingly being used. Here one is viewing from precisely behind and horizontally onto the rear side, the second half of the body of the toilet also being shown.

One can clearly see that the profile rear wall region 6 shown in Figure 1 together with its mirror-symmetrical counter-piece leaves a central area clear which is filled at the top by the pipe socket 4 of the flushing water inlet pipe and below, with space to the right and to the left of it however, it contains the pipe socket 3 of the waste water pipe. This clear region is approximately shaped like an inverted "V" with a rounding or like an inverted "U" with side pieces diverging somewhat. One can clearly see that on the outer edge of this clear region two pipe line pieces 8 and 9, one respectively on each side, are drawn in. These are a shower water inlet pipe 8 and an electrical supply line 9 or are empty conduits for this purpose. With regard to the vertical height, these lie on the same level as the load-bearing connection devices, i.e. bolt holes 7, already described by means of Figure 1. With regard to the horizontal extension they lie offset to the outside by 50 mm from the middle, i.e. 100 mm apart from one another. This relates to the respective circle centre of the section through the line, as indicated by the drawing. In contrast, the

centre points of the bolt mounting holes 7 lie 90 mm outside of the centre, i.e. 180 mm apart from one another.

One can easily see that the corresponding lines 8 or 9 can respectively run on from here, for example upwards at an angle and outwards, and within inner cavities of the ceramic toilet body run up behind the rear wall of the profile 6 and, for example, through an opening, not shown in Figure 1, in the upper side of the toilet body, into a shower attachment. The lines can maintain the position shown in Figure 2 as a result of their own dimensional stability and/or as a result of fixing, for example onto the ceramic toilet body. For example, they can be stuck on by an adhesive body. Flexible lines with an undefined position are basically also conceivable which can be brought into the positions shown when fitted and in this respect are designed for this purpose.

A fitter or a maintenance technician can reach the positions according to the invention of the shower lines 8 and 9 with his hand or with a tool from below without any particular difficulty, even when the shower toilet is fitted. For this purpose he can reach past the waste water line pipe socket 3 and does not have to reach “around the corner” into the somewhat less accessible region between the latter and the pipe socket 4 of the flushing water inlet pipe. One can see, furthermore, that the positions of the lines 8 and 9, depending on the detailed configuration of the rear side contact surface of the toilet body, are or can be variable to different sides. In particular, the region within the profile rear walls 6 could also be partially accessible and so positions horizontally outside of the mounting holes 7 could also be considered for the load-bearing bolts.

For example, parts of the profiles of the profile rear walls 6 or of the fillings in the latter could be left out and so further surfaces for load-bearing connections or also for shower line positions according to the invention could be opened up. It is basically preferred within the framework of this invention to arrange the shower line positions according to the invention according to the geometric features described (relative to their vertical and horizontal position) within profile frames of rear-side profile rear walls of a shower toilet, and particularly preferably within a central region left clear between such profile frames, as shown by this example.

The pipe line pieces 8 and 9 shown are essentially symbolic. They preferably end in an interface for example of a plug-in connection or of other connection devices which is disposed in the region shown or somewhat behind or in front of this region. As already explained, the “interfaces” could however also lie within the body of the toilet or in the installation wall and the positions of the lines illustrated or comparable ones could nevertheless be chosen.

Figure 3 shows a corresponding toilet connection device. The latter has, in a form known in its own right, a mounting frame with two vertical steel profile struts 10 on adjustable feet and a lower steel profile cross bar 11 and a further upper steel profile cross bar (not drawn in accurately). The cross bar 11 carries an angled pipe piece 12, namely the wall-side connection device for the waster water pipe of the toilet. Over this is a cross plate 13 as a mounting plate with optional inner and outer mounting holes 14 and 15 for the aforementioned fastening bolts, i.e. matching the receiving holes 7 in Figures 1 and 2. The inner mounting holes 15 lie 180 mm apart from one another, as required by Figure 1 and Figure 2, and the outer mounting holes, which could also be used, but require adaptation of the toilet body, are 230 mm apart from one another. Furthermore, the mounting plate 13 includes a recess in the centre with a semi-circular shape at the top and a rectangular shape at the bottom through which a wall-side connection device 16 for the flushing water inlet pipe projects, i.e. complementary to the pipe socket 4 in Figures 1 and 2. Located above the mounting plate 13 in these devices is a cistern 17, i.e. a water tank for the flushing water inlet pipe, and over the latter a triggering mechanism 18 for the flushing process.

In so far as they have been described up till now, the elements in Figure 3 are conventional and together with a toilet body according to Figure 1 would form a conventional toilet arrangement. Corresponding to the lines 8 and 9 added in Figure 2, in Figure 3 there is an opening 19 in the mounting plate 13 for a water supply connection, i.e. matching the line 9 in Figure 2, and a further opening 20 with a shower water connection, i.e. matching the line 8 in Figure 2. A moulded plastic body passing from the opening 20 is drawn in – initially by means of dashes (because it is positioned behind the mounting plate 13) as a line duct and identified by

number 21. This moulded plastic body leads ultimately into the region behind the triggering plate of the triggering mechanism 18 drawn in at the top of Figure 3. Located here is a fresh water valve that supplies the cistern 17 and from which the shower water pipe branches off. This pipe runs within this empty duct 21 to the opening 20.

Here the empty duct branches behind the upper edge of the mounting plate 13 in the way shown and leads with a further possible line section to a further opening 22 in the mounting plate 13 which, apart from its position lying further to the outside, corresponds to the opening 20.

This position of the opening 22 is in itself conventional; shower toilets to be found on the market are connected with these positions. In the present case the toilet connection device in Figure 3 should be configured to be flexible and enable the water pipe to thread through for both connection positions 20 and 22. Therefore, shower toilets with connection positions according to the invention as in Figure 2 or also conventional shower toilets can be connected. The latter can be those with concealed connection, i.e. with obscuration from sight in relation to a line of vision from the front through the shower attachment or the rest of the toilet body below, or also those with which the connection is visible. Therefore, the connection device according to Figure 3 together with a shower toilet according to Figure 2 allows use according to the invention and the creation of a toilet arrangement according to the invention, or a different one however.

One can easily see that the mounting positions 19 and 20 within the mounting plate 13 could also be somewhat higher or further to the outside. They could also be located beneath the mounting plate 13, for example mounted on its lower edge or also independently of the latter. The mounting plate 13 could also be extended downwards.

The interfaces, i.e. the connection devices themselves, with which the lines pass from the body of the toilet into the installation wall in Figure 3, are conventional in nature in their own right and are not described in any more detail.

Claims

1. A use of a toilet connection device for the wall-side connection of a shower toilet in which use the shower toilet is connected to the toilet connection device and wherein the toilet connection device comprises
a connection-device-side flushing water inlet pipe connection device (16) for a toilet bowl (1) of the shower toilet,
a connection-device-side waste water pipe connection device (12) for the toilet bowl of the shower toilet and
a connection-device-side shower line connection device (19, 20) in the implementation of a separable shower line interface or of a positioning device for defining the shower line position of a shower line (8, 9) to a shower device, which shower line (8, 9) leads to a separable shower line interface in front of the plane of the wall or of the toilet connection device,
wherein the flushing water inlet pipe and the waste water pipe for the shower toilet are connected,
wherein a centre of the waste water pipe at the waste water pipe connection device (12) and a centre of the flushing water inlet pipe at the flushing water inlet pipe connection device (16) define a vertical reference line and the centre of a section of the shower line at the shower line connection device (19, 20) or at the positioning device, respectively, are horizontally spaced from the reference line by more than 15 mm and less than 75 mm,

characterized in that the separable shower line interface between two portions of the shower line (8, 9) to the shower device of the shower toilet is connected in the plane of the wall or on a bowl-side in front of the plane of the wall or of the toilet connection device.
2. The use of a toilet connection device according to Claim 1 wherein the connection-device-side shower line connection device (19, 20) or the positioning device for defining the shower line position, respectively, are provided for two shower lines (8, 9) of the shower device, namely one electrical line and one shower water line, and the respective centre of the section of the elec-

trical line and of the shower water line lie within the horizontal interval given in Claim 1 at the shower line connection device (19, 20) or at the positioning device, respectively.

3. The use of a toilet connection device according to Claim 1 or 2, wherein the centre of the section of the shower line at the shower line connection device (19, 20) or of the positioning device, respectively, lies below the upper edge, preferably the horizontally lying centre line, of the flushing water inlet pipe at the flushing water inlet pipe connection device (16) for the toilet bowl (1).
4. The use of a toilet connection device according to Claim 1, 2 or 3, wherein the centre of the section of the shower line at the shower line connection device (19, 20) or of the positioning device lies above the lower edge, preferably the horizontally lying centre line, of the waste water pipe at the waste water pipe connection device (12) for the toilet bowl (1).
5. The use of a toilet connection device according to one of the preceding claims wherein a line-guiding pipe duct (21) for a shower line to the shower line connection device (20) or to the positioning device, respectively, is provided and enables the position of the centre of the section of the shower line within the horizontal range given in Claim 1 and furthermore enables an optional position (22) lying further to the outside.
6. The use of a toilet connection device according to Claim 5, wherein the line-guiding pipe duct (21) has a branching on the path to the shower line connection device (20), and between this branching and the two connection device positions (20, 22) a respective particular pipe duct piece.
7. A use of a shower toilet for the connection to a toilet connection device in which use the shower toilet is connected to the toilet connection device and wherein the shower toilet comprises
a toilet-side flushing water inlet pipe connection device (4) for a wall connection,

a toilet-side waste water pipe connection device (3) for the wall connection and

a toilet-side shower line connection device (8, 9) in the implementation of a separable shower line interface or

of a positioning device for defining the shower line position of a shower line (8, 9) to a shower device, which shower line (8, 9) leads to a separable shower line interface in front of the plane of the wall or of the toilet connection device,

wherein the flushing water inlet pipe and the waste water pipe for the shower toilet are connected,

wherein a centre of the waste water pipe at the waste water pipe connection device (12) and a centre of the flushing water inlet pipe at the flushing water inlet pipe connection device (16) define a vertical reference line and the centre of a section of the shower line at the shower line connection device (19, 20) or at the positioning device, respectively, are horizontally spaced from the reference line by more than 15 mm and less than 75 mm,

characterized in that the separable shower line interface between two portions of the shower line (8, 9) to the shower device of the shower toilet is connected in the plane of the wall or on a bowl-side in front of the plane of the wall or of the toilet connection device.

8. The use of a shower toilet of Claim 7 in connection with the use of a toilet connection device of one of Claims 1 to 6.