

DESCRIPTION

WATER TANK INSTALLATION SYSTEM

5 **Technical Field:**

The present invention relates to an installation system that enables easy installation and uninstallation of the water tanks installed on the toilet bowls.

10 **Prior Art:**

Water tanks of toilet bowls in the prior art are preferably secured on the water tank mounting area that is provided on the toilet bowl by utilizing the installation holes provided on the water tank and water tank mounting area. The installation holes in question extend
15 to the lower section of the mounting area. The lower section of the mounting area cannot be reached after installation since side walls covers the lower section, and the toilet bowl is usually secured to the ground in such a way that the toilet bowl will be adjacent to a back wall. Therefore, the water tank should be installed before the toilet bowl is installed according to the installation systems of the prior art.

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In the case that the installation is made according to the known installation system, it is required that the toilet bowl is completely separated from where it is installed in order to remove the water tank. Separating the toilet bowl from where it is installed is a time consuming procedure in which the drain pipe of the toilet bowl needs to be removed and
25 the risk of damaging the toilet bowl is high.

The patent document No US 3448466 A, which discloses one of the embodiments related to the solution of the said problem, uses a threaded stud for fastening a toilet bowl to its water tank. The said stud is inserted into the installation holes on said tank and said bowl,
30 and the stud is tightened by nuts at both ends, and the installation is done. The said embodiment does not offer a solution for the studs to remain in the installation holes in the case that the water tank is again removed after the installation of the toilet bowl. Thus, no solution is offered for the said problem.

The patent document No US 2927496 A discloses another embodiment related to the solution of the said problem. In the said embodiment, a stem head extends in at least one axis different from the longitudinal axis of the stem. One more slot is formed on the extended head and two stems arranged in such manner are inserted through the slots on
5 their heads such that the stems extend in opposite directions. Mounted on at least one stem, the nut clamps the stems. By using the bidirectional stem structure, the water tank is installed onto the toilet bowl by means of the nuts. During uninstallation of the water tank, the stems, thanks to the plate structure, remain installed on toilet bowl when the nuts in the water tank are removed. The said embodiment ensures that the water tank can be
10 uninstalled after the toilet bowl is installed. However, the distance between the installation holes in the water tank, unlike the toilet bowls and water tanks of the prior art, should differ from the installation holes on the toilet bowl in order to utilize the developed installation system.

Brief Description of the Invention

The installation system developed by the present invention ensures installation of a water tank onto a toilet bowl, uninstallation and reinstallation of the water tank without
20 uninstalling the toilet bowl from where it is installed.

The installation system developed by the present invention comprises a guide bolt and an installation element mounted on this guide bolt. There is a slot through the guide bolt. This slot is used for inserting another bolt through the guide bolt. The guide bolt is inserted into an installation hole on the toilet bowl and is secured by a fastening element, preferably.
25 An installation element, which comprises at least two screw sockets having different diameters, is engaged on one end of the guide bolt. The installation element is engaged on the guide bolt through the screw socket having larger diameter, and the installation of the portion of the system, remaining on the toilet bowl is completed. For the installation of the water tank, a bolt is passed through an installation hole on the water tank and through
30 the guide bolt and is screwed into the screw socket of the installation element that has small diameter. The installation of the water tank to the toilet bowl is therefore completed. The firmness and water tightness of the developed installation system is ensured by using at least one washer and a sealing.

Unscrewing the bolt which has been screwed into the small diameter socket of the installation element is enough to remove the water tank from the toilet bowl. The installation element remains screwed into the guide bolt. Thus, the bolt that is used for the reinstallation of the water tank can be engaged without moving the installation element.

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Thanks to the installation system developed by the present invention, there is no need to uninstall the toilet bowl in order to uninstall the water tank from the toilet bowl and reinstall it on the toilet bowl after the installation of the toilet bowl.

10 **Objective of the Invention**

The aim of the present invention is to develop an installation system that can be used for the installation of a water tank on a toilet bowl.

15 Another aim of the present invention is to develop an installation system which does not require that the toilet bowl is uninstalled for removing the water tank from the toilet bowl.

A further aim of the present invention is to ensure water tightness in the installation system developed.

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Description of the Drawings

The sample embodiments of the water tank installation system of the present invention are illustrated in the annexed figures wherein;

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Figure 1 is a view of the system parts before installation in an embodiment of the installation system.

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Figure 2 is a view of the installed state of the system parts to the water tank and the toilet bowl.

The parts in the drawings are individually enumerated and the corresponding meanings of the references are as follows:

35 Installation system (A)

	Water tank	(B)
	Installation hole of the water tank	(B1)
	Toilet bowl	(C)
	Installation hole of the toilet bowl	(C1)
5	Bolt	(1)
	Washer	(2a, 2b)
	Sealing member	(3)
	Fastening element	(4)
	Guide bolt	(5)
10	Slot	(5a)
	Shoulder	(5b)
	Installation element	(6)
	Guide nut	(7)
	Large diameter socket	(7a)
15	Claw	(7b, 8b)
	Nut	(8)
	Small diameter socket	(8a)

Disclosure of the Invention

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Figure 1 illustrates the system parts before installation in an embodiment of the water tank installation system (A) developed by the present invention. The installation system (A) comprises at least one guide bolt (5). The guide bolt (5) is inserted in at least one installation hole (C1) on the toilet bowl and is preferably secured by at least one fastening element (4) (e.g. by a nut). At least one slot (5a) is provided in the guide bolt (5) which extends throughout the bolt (5). There is preferably at least one shoulder (5b) provided at one end of the guide bolt (5) which extends in an axis different from the longitudinal axis of the bolt (5) and which ensures that the bolt (5) remains in the installation hole (C1) on the toilet bowl. As an alternative for the said shoulder (5a), a secondary fastening element (not shown in the figures) may be inserted in the said guide bolt (5), ensuring that the said bolt (5) remains in the installation hole (C1) on the toilet bowl. Before the fastening element (4) is engaged, preferably at least one washer (2a) is engaged with the bolt (5) to protect the surface to which the fastening element (4) contacts.

The said installation system (A) comprises an installation element (6) comprising at least two sockets (7a, 8a) having at least two different diameters. This installation element (6) may be single-piece or it can be formed by engaging at least one guide nut (7) comprising a large diameter socket (7a) and at least one nut (8) comprising a small diameter socket (8a) with each other. As an example, this installation element is illustrated (6) the figures as a two-piece element, the pieces being at least one guide nut (7) and at least one nut (8). In an embodiment of the invention shown in the figures, at least one claw (7b, 8b) is provided on the guide nut (7) and nut (8) each. The installation element (6) is formed by engaging the said claws (7b, 8b). The installation element (6) is secured on the guide bolt (5) by using the guide nut (7).

When the water tank (B) (a sectional view of the water tank and the toilet bowl is shown in Figure 2) is placed on the toilet bowl (C), at least one bolt (1) is passed through at least one installation hole of the water tank (B1) and the slot (5a) in the guide bolt (5) and is screwed into the nut (8) provided on the installation element (6). At least one washer (2b) and/or a sealing member (3) are engaged with the bolt (1) before the bolt (1) is inserted into the installation hole of the water tank (B1). Therefore, the stress area of the bolt (1) can be protected thanks to the washer (2b), and the water tightness of the installation hole (B1) is ensured by means of the sealing member (3). The sealing member (3) is preferably conical.

Figure 2 illustrates a sample installation system (A) installed on the toilet bowl (C) and water tank (B). For the installation, the guide bolt (5) is at first inserted into the installation hole (C1) on the toilet bowl (C) and is secured by means of a fastening element (6) and preferably a washer (2a). Then, an installation element (6) is secured to the guide bolt (5) by the guide nut (7). Thus, the toilet bowl (C) is ready for the installation of the water tank. Next, the water tank (B) is placed on the toilet bowl (C), and a bolt (1), preferably with a washer (2b) and a sealing member (3), is passed through the installation hole (C1) on the toilet bowl (C) and the guide bolt (5) by means of the installation hole of the water tank (B1) and is screwed into the nut (8) provided on the installation element (6).

Thanks to the installation system (A) developed by the present invention, it is sufficient to unscrew the bolt (1) which has been passed through the installation hole (B1) on the water tank (B) in order to remove the water tank (B) from the toilet bowl (C). When the bolt (1) is unscrewed, the installation element (6), to which the bolt (1) is screwed, retains its

position since it is secured to the guide bolt (5) by means of the guide nut (7). Thus, during the reinstallation of the water tank (B) to the toilet bowl (C) when the bolt is passed through the installation hole of the water tank (B1) and the guide bolt (5), the bolt (1) can be easily screwed to the installation element. In this manner, the uninstallation and
5 reinstallation of the water tank (B) is ensured without performing any other procedure on the toilet bowl (C).

CLAIMS

1. An installation system (A) for installing a water tank (B) to a toilet bowl (C) **characterized in that** it comprises

- at least one guide bolt (5) which is inserted in an installation hole (C1) provided on the toilet bowl (C) and which comprises at least one slot (5a);
- at least one installation element (6) which comprises at least two screw sockets having different diameters and which is secured to the guide bolt (5) through the large diameter screw socket (7a);
- at least one bolt (1) which is screwed to the small diameter screw socket (8a) of the installation element (6) by passing through at least one installation hole (B1) provided on the water tank and the said slot (5a).

2. An installation system (A) according to Claim 1 **characterized in that** the said installation element (6) comprises at least one guide nut (7) and at least one nut (8) which are engaged with each other.

3. An installation system (A) according to Claim 2 **characterized in that** the guide nut (7) comprises a large diameter socket (7a).

4. An installation system (A) according to Claim 2 **characterized in that** the said nut (8) comprises a small diameter socket (8a).

5. An installation system (A) according to Claim 2 **characterized in that** the said guide nut (7) comprises at least one claw (7b).

6. An installation system (A) according to Claim 2 **characterized in that** the said nut (8) comprises at least one claw (8b).

7. An installation system (A) according to Claim 1 **characterized in that** the said installation element (6) is single piece.

8. An installation system (A) according to Claim 1 **characterized in that** the said guide bolt (5) comprises at least one shoulder (5b) which extends in an axis different from the longitudinal axis of the bolt (5).

9. An installation system (A) according to Claim 1 **characterized by** comprising at least one washer (2a) which is engaged with the said guide bolt (5).

5 10. An installation system (A) according to Claim 1 **characterized by** comprising at least one washer (2b) which is engaged with the said bolt (1).

11. An installation system (A) according to Claim 1 **characterized by** comprising at least one sealing element (3) which is engaged with the said bolt (1).

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12. An installation system (A) according to Claim 11 **characterized in that** the said sealing element (3) is conical.

13. An installation system (A) according to Claim 1 **characterized by** comprising at least one fastening element (4) which secures the said guide bolt (5) to the installation hole of the toilet bowl (C1).

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14. An installation system (A) according to Claim 1 **characterized by** comprising at least one other fastening element which keeps the guide bolt (5) in the installation hole of the toilet bowl (C1).

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