

TOTO

Handrail Resin Coating Type/Stainless Steel Type

T112 Type/T113 Type

Follow the instructions in this installation manual to fully fulfill the functions of this product. After installation, give full explanation on how to use this product to the customer.

1. Safety Precautions (Be sure to observe these instructions.)

Please read these "Safety Precautions" before installation, and install the product correctly.


- This instruction manual shows various symbols to correctly install the product in order to prevent harm to customers and other users, and damage to property. Those symbols mean the following contents.
- The following symbols are used to classify and explain instruction that must be followed.




WARNING

When this appears next a topic, this indicates that ignoring this symbol and mishandling the product could result in death or serious injury.



The  symbol indicates something that is "Prohibited." The symbol on the left indicates "Do not disassemble."



The  symbol indicates something that "Must be implemented." The symbol on the left indicates "Required."

WARNING



Prohibit

Do not install the product outdoor or in areas that might be submerged.

Doing so could cause a user to fall due to the damage or coming-off of the handrail and may result in injury.



Do not disassemble

Anyone other than service engineers must not disassemble, repair, or modify the product.

Failure to observe this warning could cause a user to fall due to the damage or coming-off of the handrail and may result in injury.



Be sure to install this product on a strong wall or building structure.

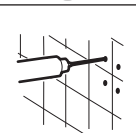
If the product is installed directly on a wall that is not strong enough, including a soil wall and a gypsum board wall, it may come off or the wall may collapse, which could result in user's fall and injury.



Required

When the product is used in wet areas such as a bathroom, be sure to apply sealant around the mounting holes.

If sealant is not applied, water may enter the back of the wall and cause the product to come off or the wall to collapse, which could result in user's fall and injury.



Be sure to use TOTO-designated fixing brackets.

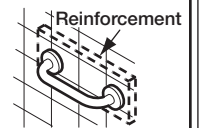
If TOTO-designated fixing brackets are not used, the handrail may come off or the wall may collapse, which could result in user's fall and injury.



WARNING

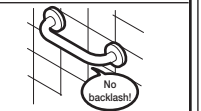
Make sure that the base has sufficient thickness and is reinforced, and install the handrail by the specified installation method.

If the base does not have sufficient thickness or is not reinforced, and if you do not follow the specified installation method for each base, the handrail may come off or the wall may collapse, which could result in user's fall and injury.



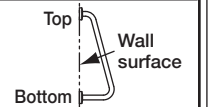
Make sure that the handrail has no backlash after the installation is complete.

If the handrail has backlash, the handrail may come off or the wall may collapse, which could result in user's fall and injury.



Check the installation orientation of the I type handrail for washing area in bathroom.

If the product is installed in the orientation not shown in the illustration, a part of the body (neck, etc.) could get caught between the handrail and the wall and may result in injury.



Check the space between the handrail for Japanese-style toilet and its surrounding fixed objects and the installation position of the handrail.

Failure to do so could cause a part of the body (neck, etc.) to get caught between the handrail and the fixed object and may result in injury.



2-1. Before Installation

Precautions before installation

- Make sure that **the wall where the handrail is attached** is strong enough.
- When installing the handrail in combination with a product with a photoelectric sensor, **make sure that the sensor does not detect the handrail.**

For the mounting positions of a product with photoelectric sensor and the handrail, see the manuals or catalogs for products with photoelectric sensor.

- Select **an appropriate mounting method depending on the structure of the building.**

As the part number of the handrail and those of the wall- (floor-) fixing brackets are different, please place an order for the fixing brackets separately depending on the wall structure.

See "**3. Fixing Brackets (Optional Parts)**" for the required number of fixing bracket sets.

*For installation methods not shown in this manual, contact TOTO's branch office, branch shop, or sales office.

- See the catalogue, etc. for the handrail installation position.

2-2. Before Installation

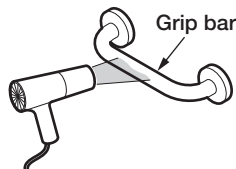
About the resin coating type grip bar

- If the resin coating type grip bar gets scratched on its surface, it cannot be repaired. Therefore, please handle the product with care.
- As the surface of the resin coating type grip bar is made of soft resin, if a tool or the like hits the grip bar, the surface of the grip bar may get dented. In that case, remedy it by the following procedure.

<Remedial method> Apply hot air to the dented portion with a hair dryer for about 2 or 3 minutes.
*The time to apply hot air varies depending on the degree of the dent.
Remedy it while checking its recovering condition.

Note

Do not apply hot air to the soft resin on the surface of the resin coating type grip bar too long. Doing so may cause the soft resin portion to burn or change in color.



3-1. Fixing Brackets (Optional Parts)

<Fixing bracket list>

(Unit: mm)

Part No.	Name	Shape	Details of the set
T110D11	Mounting plate	100×100×6 M6 φ8	Fixing position: 1 position • Mounting plate: 1 piece
T110D62	Mounting plate	φ8 M6 t6 260 150	Fixing position: 2 positions (top and bottom) • Mounting plate: 1 piece
T110D41	Welding set	M6×60	Fixing position: 1 position • Continuous-thread stud: 4 pieces • Washer: 4 pieces • Nut: 8 pieces
T110D42	Embedding set	M6×60 M6×50	Fixing position: 1 position • Continuous-thread stud: 4 pieces • Washer: 4 pieces, • Nut: 8 pieces • Anchor bolt: 4 pieces

<Fixing bracket list>

(Unit: mm)

Part No.	Name	Shape	Details of the set
T110D43	Clamping set	M6×150	Fixing position: 1 position • Continuous-thread stud: 4 pieces • Washer: 8 pieces • Nut: 12 pieces
T110D37	Mounting bracket for light-gauge steel frame	t=3.2 150 250 φ4×16	Fixing position: 1 position • Mounting bracket: 1 piece • Drilling screw: 10 pieces
T110D36	Mounting bracket for light-gauge steel frame	t=3.2 150 340 150 φ4×16	Fixing position: 2 positions (top and bottom) • Mounting bracket: 1 piece • Drilling screw: 10 pieces
T110D44	Bolt set (for light-gauge steel frame)	M6×50	Fixing position: 1 position • Bolt: 4 pieces • Washer: 4 pieces
T110D45	Drilling screw set (for light-gauge steel frame)	φ5×45	Fixing position: 1 position • Drilling screw: 4 pieces • Washer: 4 pieces
T110D46	Mechanical nut set (for light-gauge steel frame)	M6 M6×50	Fixing position: 1 position • Mechanical nut: 4 pieces • Bolt: 4 pieces • Washer: 4 pieces
T110D3R (L=85) T110D18R (L=105)	Anchor bolt	L M6	Fixing position: 1 position • Anchor bolt: 4 pieces
T110D15(L=70) T110D16(L=50) T110D23(L=33)	Coach screw	L φ6	Fixing position: 1 position • Coach screw: 4 pieces • Washer: 4 pieces
T110D22R	Clamping bracket (40 mm-thick, for additional installation to a toilet booth)	Use the outer bolt holes Resin pipe φ13 M6×55	Fixing position: 1 position • Mounting plate: 1 piece • Bolt: 4 pieces • Washer, nut, and resin pipe: 4 pieces each
T110D26	Resin plug	φ8×40	Fixing position: 5 positions • Resin plug: 20 pieces
T110D34 (L=50) T110D35 (L=30)	Fixing with hanger bolts	Hanger bolt φ6×L M6×11	Fixing position: 1 position • Hanger bolt: 4 pieces • Washer and nut: 4 pieces each

3-2. Fixing Brackets (Optional Parts)

<List of the required numbers of fixing brackets and those of parts to be procured in the field>

*● shows the parts that need to be procured in the field. "Pipe" indicates metal pipes (ϕ 13.8, t2). Please purchase them at a hardware store or a home improvement center. Prepare pipes with an appropriate length considering the thickness of the wall.

**"- " means that it cannot be installed.

Note 1: [GL method] Available only when the thickness of GL (Gypsum Lining) is 50 mm or less.

Note 2: [Concrete block base] Available only when the thickness from the back of the concrete block to the finished wall surface is 125 mm or less.

Note 3: For the thickness of reinforcing wooden blocks, see "7-3. (P. 10) Note."

Note 4: The toilet booths for which the fixing brackets are available are those made from paper honeycomb, melanin, or polyether decorative plywood, or the equivalent, which is 40 mm in thickness.

Note 5: Available only for toilet booths with a wall thickness of 30 mm or more.

Note 6: Please place an order for T110D26 (resin plug: 20 pieces) depending on the required number of screws. The required number of screws is 8 for I type and 12 for L type.

Note 7: Use hanger bolts for the intermediate support part, which facilitate installation. If coach screws are used, a screwdriver could interfere with the cover, making it difficult to install the product, and it may cause damage to the cover.

Note 8: If the thickness of the finished wall surface is 15 mm or less, T110D23 can also be used.

Note 9: If the thickness of the finished wall surface is 15 mm or less, T110D35 can also be used.

Note 10: Use bolts for the intermediate support part. If drilling screws are used, a screwdriver could interfere with the cover, making it difficult to install the product, and it may cause damage to the cover.

Note 11: Floor-fixing brackets shown in the list are for installation by fixing with anchor bolts (concrete floor). When the floor is a wooden base, change the floor-fixing type T110D3R (fixing with anchor bolts) to T110D15 (fixing with coach screws). In the case of a wooden base, reinforcement of 60 mm or more is required.

Product name	Base (mounting method)	Concrete base, GL (Gypsum Lining) method (Fixing by embedding a mounting plate) ^{Note 1}	Concrete base (Fixing with anchor bolts)	Concrete base/ Concrete block base (Fixing with plugs)	Wooden base/Concrete block base (Fixing by clamping a mounting plate) ^{Note 2}	Wooden base (Fixing with coach screws) ^{Note 3}
① Versatile I type handrail		T110D11×2, T110D42×2	T110D3R×2	T110D16 × 2, T110D26 ^{Note 6}	T110D11×2, T110D43×2	T110D16 × 2 ^{Note 8}
② Versatile L type handrail (T112CL9, T113BL9)		T110D11×3, T110D42×3	T110D3R×3	T110D16 × 2, T110D34 × 1 ^{Note 7} T110D26 ^{Note 6}	T110D11×3, T110D43×3	T110D16 × 2 ^{Note 8} , T110D34 × 1 ^{Notes 7 and 9}
③ L type handrail for sitting toilet (T112CL10, T113BL10)		T110D11×3, T110D42×3	T110D3R×3	T110D16 × 2, T110D34 × 1 ^{Note 7} T110D26 ^{Note 6}	T110D11×3, T110D43×3	T110D16 × 2 ^{Note 8} , T110D34 × 1 ^{Notes 7 and 9}
④ L type handrail for sitting toilet (T112CL11/CL12, T113BL11/BL12)		T110D11×3, T110D42×3	T110D3R×3	—	T110D11×3, T110D43×3	T110D15×3
⑤ P type handrail for sitting toilet (T112CP21/CP22, T113BP21/BP22) ^{Note 11}		T110D62×1, T110D42×2 T110D3R×1	T110D3R×3	—	T110D62×1, T110D43×2 T110D3R×1	T110D15×2, T110D3R×1
⑥ P type handrail for sitting toilet (T112CP26/CP27) Handrail for wall-mounted washbasin (T112CP31)		T110D62×1, T110D42×2	T110D3R×2	—	T110D62×1, T110D43×2	T110D15×2
⑦ Handrail for Japanese-style toilet (T112CW1, T113BW1)		—	T110D3R×2	—	—	T110D15×2
⑧ Handrail for urinal (T112CU22, T113BU22)		T110D62×2, T110D42×4	T110D3R×4	—	T110D62×2, T110D43×4	T110D15×4
⑨ Handrail for wall-mounted washbasin (T112CP23, T113BP23) ^{Note 11}		T110D62×1, T110D42×2 T110D3R×1	T110D3R×3	—	T110D62×1, T110D43×2 T110D3R×1	T110D15×2, T110D3R×1
⑩ Handrail for wall-mounted washbasin (T112CP28)		T110D11×1, T110D62×1 T110D42×3	T110D3R×3	—	T110D11×1, T110D62×1 T110D43×3	T110D15×3
⑪ I type handrail for washing area in bathroom (T112CD6, T113BD6)		T110D11×2, T110D42×2	T110D3R×2	—	T110D11×2, T110D43×2	T110D15×2

3-3. Fixing Brackets (Optional Parts)

	GL (Gypsum Lining) method (Fixing with anchor bolts + pipes) ^{Note 1}	Light-gauge steel base (Fixing with bolts)	Light-gauge steel base (Fixing with drilling screws)	Light-gauge steel base (Fixing with mechanical nuts)	Light-gauge steel base (Fixing by welding a mounting plate)	Toilet booth (Fixing by clamping) ^{Note 4}	Toilet booth (Fixing with coach screws) ^{Note 5}
①	T110D18R × 2, ●Pipe × 8	T110D37×2, T110D44×2	T110D37×2, T110D45×2	T110D37×2, T110D46×2	T110D11×2, T110D41×2	T110D22R×2	T110D23×2
②	T110D18R × 3, ●Pipe × 12	T110D37×3, T110D44×3	T110D37×3, T110D45×2 T110D44 × 1 ^{Note 10}	T110D37×3, T110D46×3	T110D11×3, T110D41×3	T110D22R×3	T110D23×2 T110D35 × 1 ^{Note 7}
③	T110D18R × 3, ●Pipe × 12	T110D37×3, T110D44×3	T110D37×3, T110D45×2 T110D44 × 1 ^{Note 10}	T110D37×3, T110D46×3	T110D11×3, T110D41×3	T110D22R×3	T110D23×2 T110D35 × 1 ^{Note 7}
④	T110D18R × 3, ●Pipe × 12	T110D37×3, T110D44×3	T110D37×3, T110D45×3	T110D37×3, T110D46×3	T110D11×3, T110D41×3	—	—
⑤	T110D18R×2, T110D3R×1 ●Pipe × 8	T110D36×1, T110D44×2 T110D3R×1	T110D36×1, T110D45×2 T110D3R×1	T110D36×1, T110D46×2 T110D3R×1	T110D62×1, T110D41×2 T110D3R×1	—	—
⑥	T110D18R × 2, ●Pipe × 8	T110D36×1, T110D44×2	T110D36×1, T110D45×2	T110D36×1, T110D46×2	T110D62×1, T110D41×2	—	—
⑦	—	—	—	—	—	—	—
⑧	T110D18R × 4, ●Pipe × 16	T110D36×2, T110D44×4	T110D36×2, T110D45×4	T110D36×2, T110D46×4	T110D62×2, T110D41×4	—	—
⑨	T110D18R×2, T110D3R×1 ●Pipe × 8	T110D36×1, T110D44×2 T110D3R×1	T110D36×1, T110D45×2 T110D3R×1	T110D36×1, T110D46×2 T110D3R×1	T110D62×1, T110D41×2 T110D3R×1	—	—
⑩	T110D18R × 3, ●Pipe × 12	T110D36×1, T110D37×1 T110D44×3	T110D36×1, T110D37×1 T110D45×3	T110D36×1, T110D37×1 T110D46×3	T110D11×1, T110D62×1 T110D41×3	—	—
⑪	T110D18R × 2, ●Pipe × 8	T110D37×2, T110D44×2	T110D37×2, T110D45×2	T110D37×2, T110D46×2	T110D11×2, T110D41×2	—	—

4-1. Completion Drawing

*The drawings show resin coating type T112, and dimensions in () indicate those for stainless steel type T113.

(Unit: mm)

Versatile I type handrail					Versatile L type handrail				
L	Resin coating	Weight	Stainless steel	Weight	Resin coating	Weight	Stainless steel	Weight	
300	T112C3	0.7kg	T113B3	0.7kg	T112CL9	2.3kg	T113BL9	2.0kg	
400	T112C4	0.8kg	T113B4	0.7kg					
500	T112C5	0.9kg	T113B5	0.8kg					
600	T112C6	1.1kg	T113B6	0.9kg					
800	T112C8	1.3kg	T113B8	1.1kg					
1000	T112C10	1.6kg	T113B10	1.3kg					

Wall surface

L

34

86 (85)

90

Resin coating	Weight
T112CM6	1.2kg

Wall surface

600

120

34

86 (85)

Resin coating	Weight
T112CL9	2.3kg
Stainless steel	Weight
T113BL9	2.0kg

Wall surface

700

18

700

90

34

86 (85)

Intermediate support part: 34 (27)

*In the case of T113BL9, the cover for the corner part is $\phi 84$.

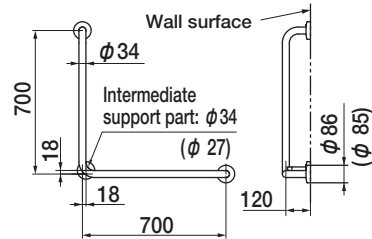
4-2. Completion Drawing

*The drawings show resin coating type T112, and dimensions in () indicate those for stainless steel type T113.

(Unit: mm)

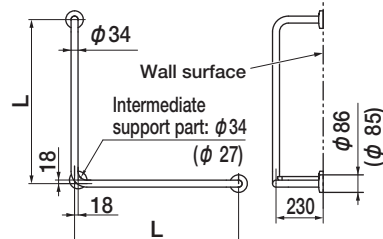
L type handrail for sitting toilet

Resin coating	Weight	Stainless steel	Weight
T112CL10	2.4kg	T113BL10	2.0kg



*In the case of T113BL10, the cover for the corner part is $\phi 84$.

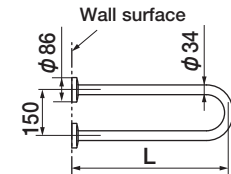
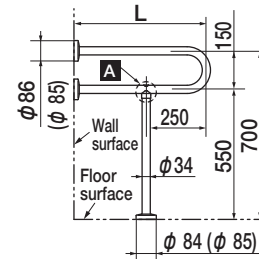
L	Resin coating	Weight	Stainless steel	Weight
700	T112CL12	3.0kg	T113BL12	2.3kg
800	T112CL11	3.1kg	T113BL11	2.5kg



*In the case of T113BL11/12, the cover for the corner part is $\phi 84$.

P type handrail for sitting toilet

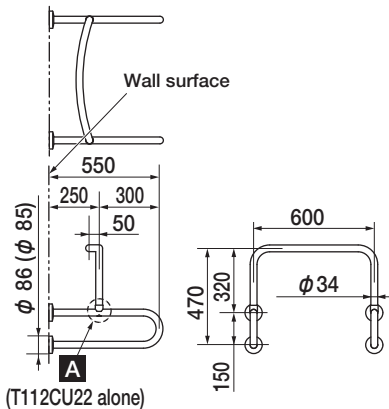
L	Resin coating	Weight	Stainless steel	Weight
550	T112CP21	2.5kg	T113BP21	2.4kg
700	T112CP22	2.9kg	T113BP22	2.7kg



Handrail for urinal

Resin coating	Weight
T112CU22	5.4kg

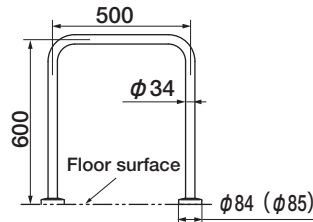
Stainless steel	Weight
T113BU22	4.6kg



Handrail for Japanese-style toilet

Resin coating	Weight
T112CW1	2.4kg

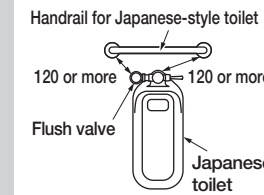
Stainless steel	Weight
T113BW1	2.1kg



WARNING

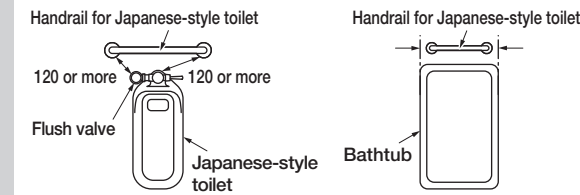
When installing a handrail for a Japanese-style toilet

Secure at least 120 mm of space between the handrail and the flush valve.



When installing a bathtub

Install the handrail inside the extension lines of both sides of the bathtub.



Failure to observe the above instructions could cause a part of the body (neck, etc.) to get caught between the handrail and the fixed object and may result in injury.

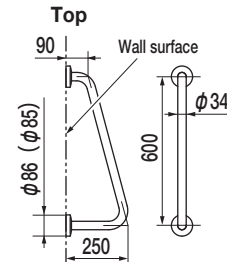
I type handrail for washing area in bathroom

Resin coating	Weight
T112CD6	1.3kg

Stainless steel	Weight
T113BD6	1.2kg

WARNING

Do not install the product in any orientation other than that shown in the completion drawing.

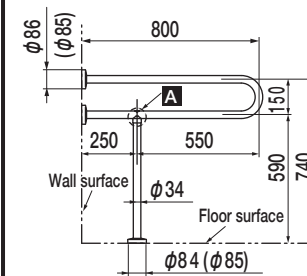


Bottom

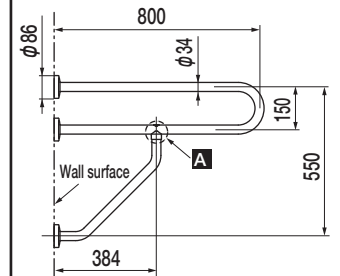
Handrail for wall-mounted washbasin

Resin coating	Weight
T112CP23	3.3kg

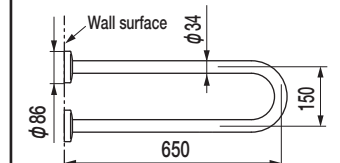
Stainless steel	Weight
T113BP23	2.9kg



Resin coating	Weight
T112CP28	3.2kg

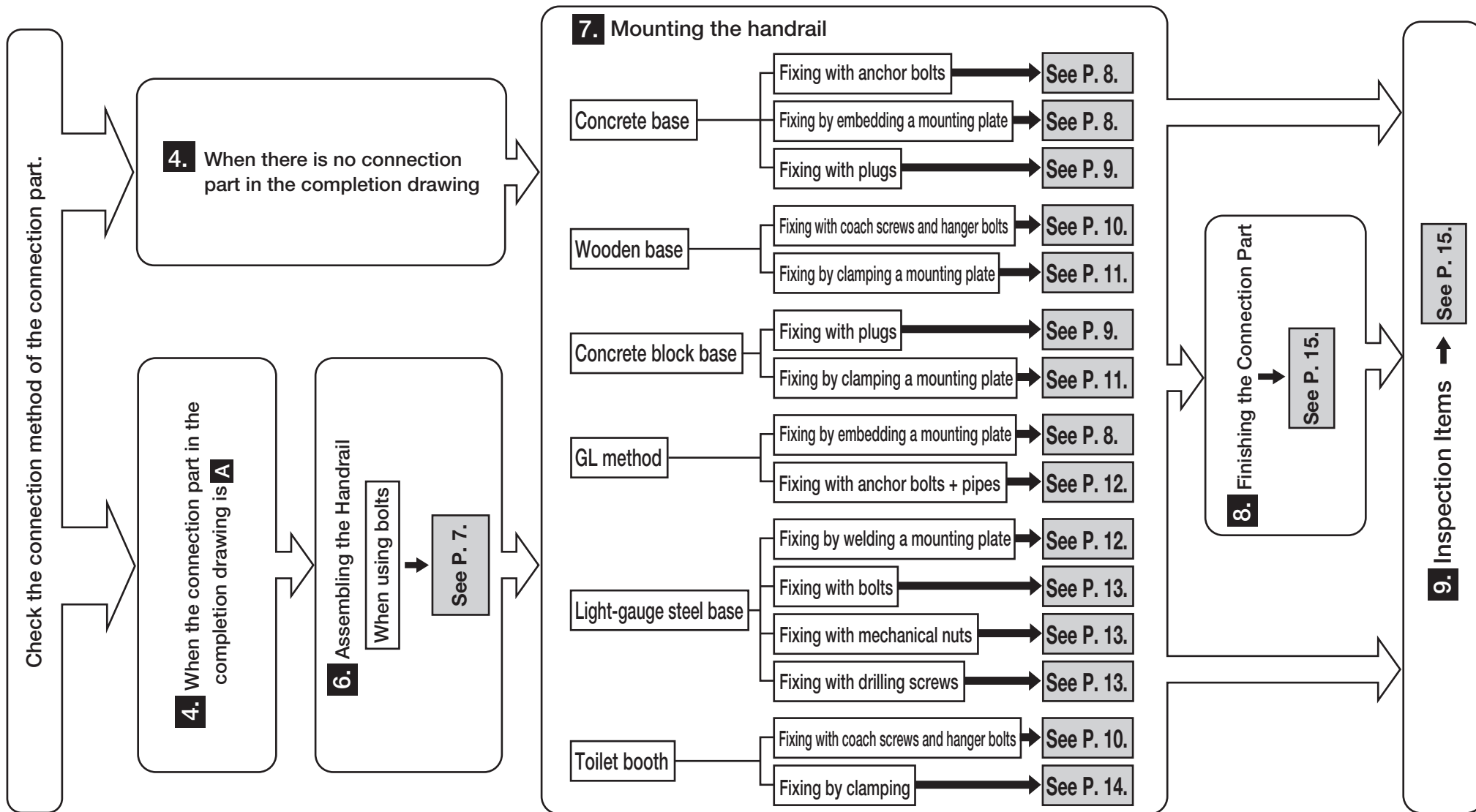


Resin coating	Weight
T112CP31	2.0kg



5. Installation Work Flow

- Temporarily tighten T112CP21, CP22, CP23, CP28, CU22, and T113BP21, BP22, BP23 to the specified shape, assemble the product, and then fully tighten again.
 - Make sure that the screws and bolts to be used to assemble the handrail are in the packing box. (Only for handrails to be assembled)
- *Fixing brackets for installing the handrail on the wall (floor) are optional parts.



6. Assembling the Handrail

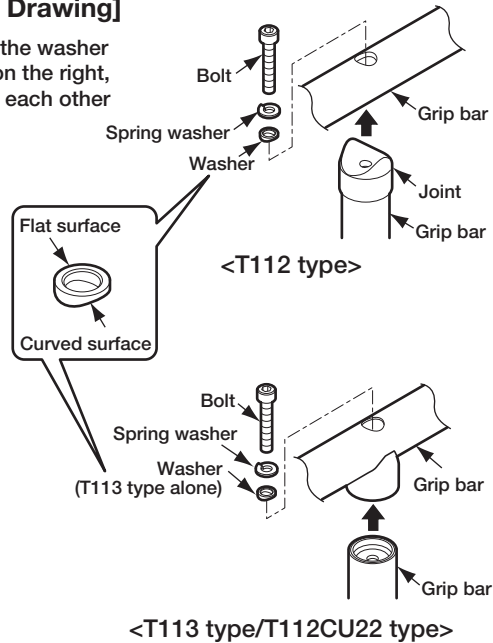
When using bolts

[4. In the case of in A Completion Drawing]

Put the bolt through the spring washer and the washer according to the order shown in the figure on the right, and then temporarily fasten the grip bars to each other with a hexagonal wrench.

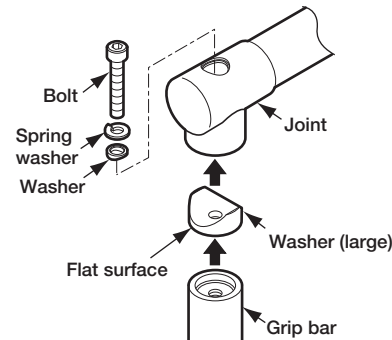
Notes

- Because a washer has a flat surface and a curved surface, place the flat surface on the spring washer side. If the washer is placed in the opposite orientation, the handrail may become loose. (Washers are not used for T112CU22.)
- Do not fully tighten the bolts before mounting the handrail. If the handrail is mounted after fully tightening the bolts, you may fail to install the handrail.



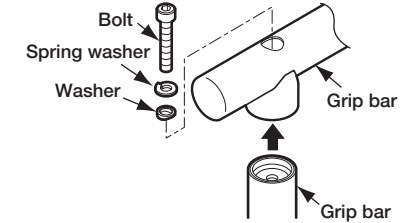
[In the case of a custom-made product or a semi-custom-made product of T112 type]

- ① Push the washer (large) into the joint, and then push the grip bar into the joint.
*Attach the washer (large) in such a way that its flat surface comes into contact with the grip bar.
- ② Attach the bolts in the same procedure as that of "part A in 4. Completion Drawing."



[In the case of a custom-made product or a semi-custom-made product of T113 type]

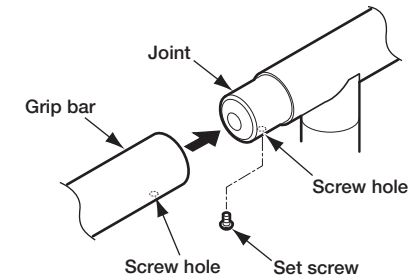
Put the bolt through the spring washer and the washer according to the order shown in the figure on the right, and then temporarily fasten the grip bars to each other with a hexagonal wrench.



When using set screws

[In the case of a custom-made product or a semi-custom-made product of T112 type/T113 type]

- ① Push the grip bar in such a way that the screw hole of the grip bar fits the screw hole of the joint.
- ② Firmly tighten the set screw with a hexagonal wrench.

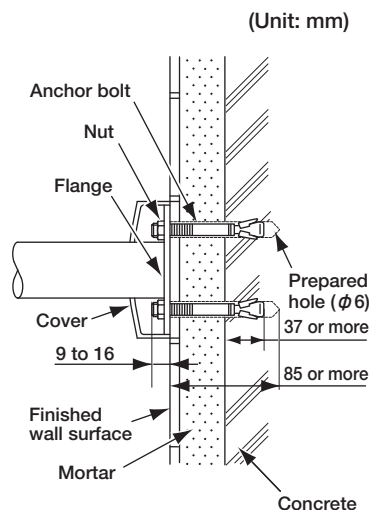


7-1. Installing the Handrail

Concrete base: Fixing with anchor bolts

Fixing bracket part number T110D3R

- ① Carry out centering and then make prepared holes of $\phi 6$ mm and 85 mm or more in depth for anchor bolts. **Note 1**
- ② Screw the nuts about 2 mm from the upper ends of the anchor bolts, and then drive them in the prepared holes lightly. **Note 2**
- ③ Tighten the nuts on the anchor bolt.
(This opens the wedges of the anchor bolts and prevents the anchor bolts from coming out.)
- ④ Remove the nuts from the anchor bolts.
- ⑤ Adjust the projecting length of the anchor bolts to be between 9 and 16 mm from the finished wall surface. **Note 3**
- ⑥ Put the anchor bolts through the mounting holes of the flange, and then tighten with the nuts.
- ⑦ Press the cover against the finished surface.



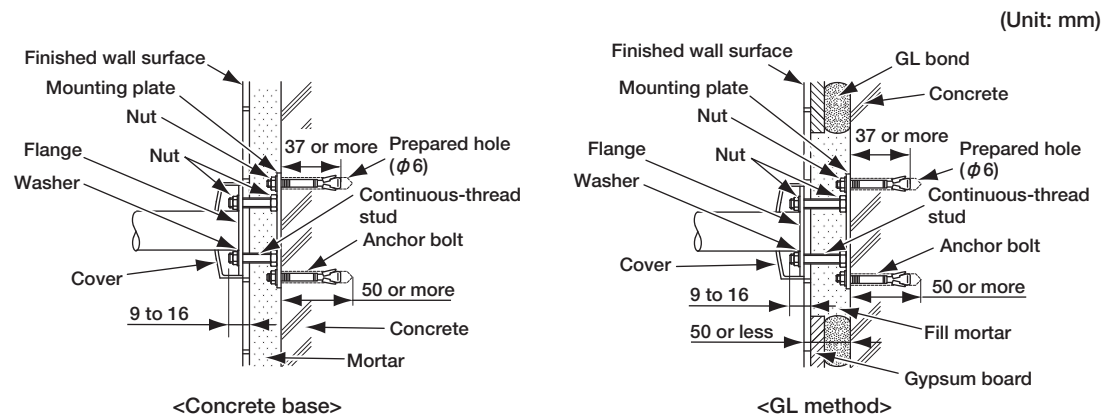
Notes

- Note 1:** Use a drill that can make prepared holes of $\phi 6$ mm and 85 mm or more in depth in concrete. If the bit size of the drill is too large or if it has core deviation, you may fail to fix it securely.
- Note 2:** The embedding length of the anchor bolts in concrete must be 37 mm or more.
- Note 3:** Adjust the projecting length of the anchor bolts to be between 9 and 16 mm from the finished wall surface.

Concrete base, GL method: Fixing by embedding a mounting plate

Fixing bracket part number T110D11,T110D62,T110D42

- ① Carry out centering and then make prepared holes of $\phi 6$ mm and 50 mm or more in depth for anchor bolts. **Note 1**
- ② Screw the nuts about 2 mm from the upper ends of the anchor bolts, put the bolts through the mounting hole of the mounting plate, and then drive them in the prepared holes lightly. **Note 2**
- ③ Tighten the nuts on the anchor bolt.
- ④ Screw continuous-thread studs into the bolt holes of the mounting plate and tighten them with nuts. **Note 4**
- ⑤ After finishing the wall, adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface. **Notes 3 and 4**
- ⑥ Put the continuous-thread studs through the mounting holes of the flange, and then tighten with the washers and nuts.
- ⑦ Press the cover against the finished surface.



Notes

- Note 1:** Use a drill that can make prepared holes of $\phi 6$ mm and 50 mm or more in depth in concrete. If the bit size of the drill is too large or if it has core deviation, you may not be able to secure the mounting plate securely.
- Note 2:** The embedding length of the anchor bolts in concrete must be 37 mm or more.
- Note 3:** Adjust the projecting length of the bolts to be between 9 and 16 mm from the finished wall surface.
- Note 4:** If the bolts are not long enough, procure M6 continuous-thread studs in the field.

7-2. Installing the Handrail

Concrete base/Concrete block base: Fixing with plugs

Fixing bracket part number T110D16,T110D26,T110D34

Note

Only versatile I type handrail, versatile L type handrail, and L type handrail for sitting toilet (front protrusion dimension: 120 mm) can be installed.

For the intermediate support parts of the versatile L type handrail and the L type handrail for sitting toilet (front protrusion dimension: 120 mm), use hanger bolts that facilitate installation.

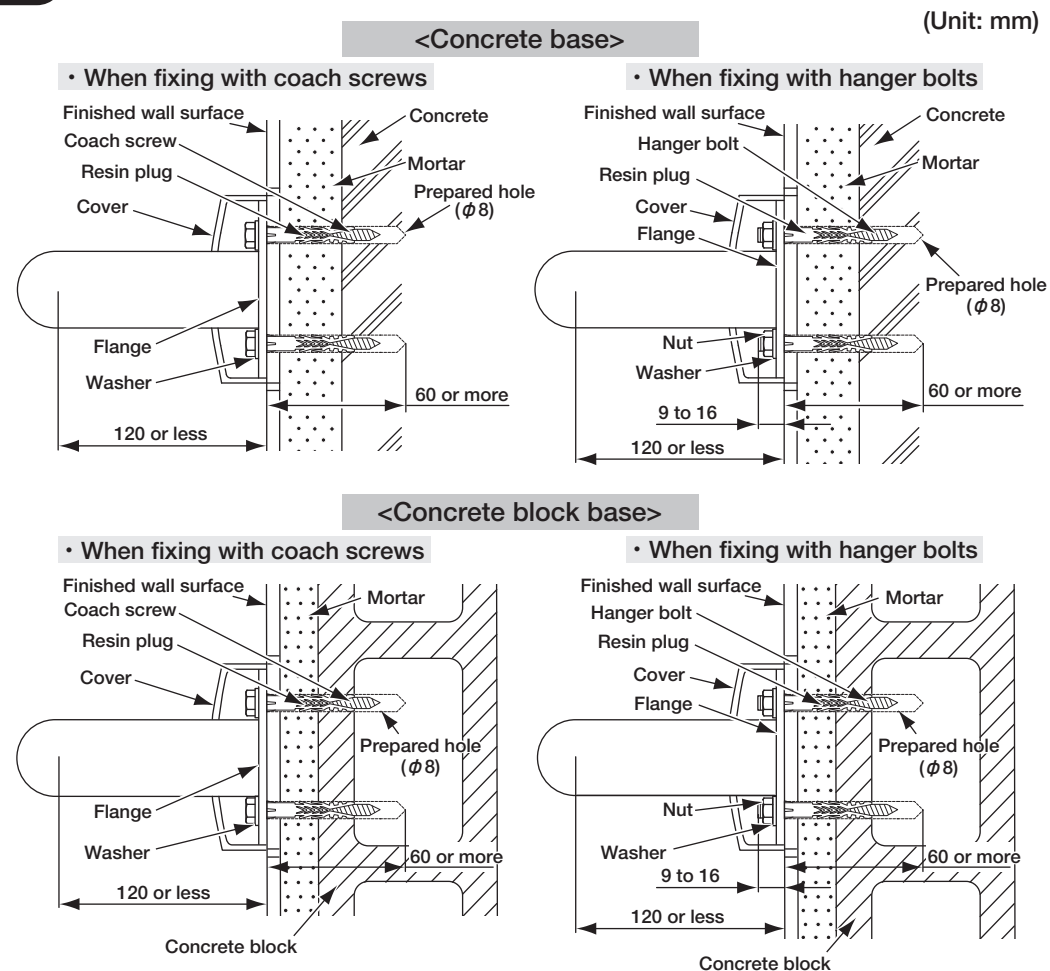
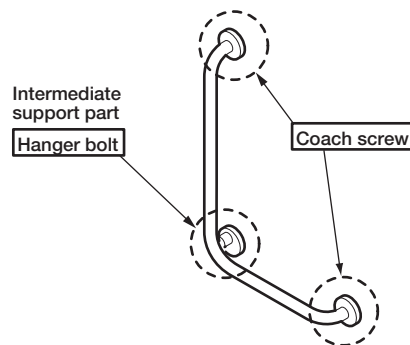
As the versatile I type handrail does not use hanger bolts, its installation procedure is ①, ②, ⑧, and ⑩.

- ① Carry out centering and then make prepared holes of $\phi 8$ mm and 60 mm or more in depth for resin plugs. **Note 1**
- ② Lightly drive the resin plugs into the prepared holes.
- ③ Fix using the nuts (2 pieces) as a double nut, which come with the hanger bolts.



Screw 2 nuts and turn the nuts to the different directions each other to tighten and fix.

- ④ Turn the double nut fixed in ③ using a tool, and screw the hanger bolt into the resin plug in the intermediate support part of the handrail.
- ⑤ Adjust the projecting length of the bolts to be between 9 and 16 mm from the finished wall surface. **Note 2**
- ⑥ Remove the double nuts.
- ⑦ Put the hanger bolt through the mounting hole of the flange in the intermediate support part of the handrail, and then temporarily tighten with the washer and nut.
- ⑧ Put the coach screws through the washers and attach to the wall through the mounting hole of the flange.
- ⑨ Fully tighten the nut that is temporarily tightening the hanger bolt.
- ⑩ Press the cover against the finished surface.



Notes

Note 1: Use a drill that can make prepared holes of $\phi 8$ mm and 60 mm or more in depth in concrete. If the bit size of the drill is too large or if it has core deviation, you may fail to fix it securely.

Note 2: Adjust the projecting length of the hanger bolts to be between 9 and 12 mm from the finished wall surface.

7-3. Installing the Handrail

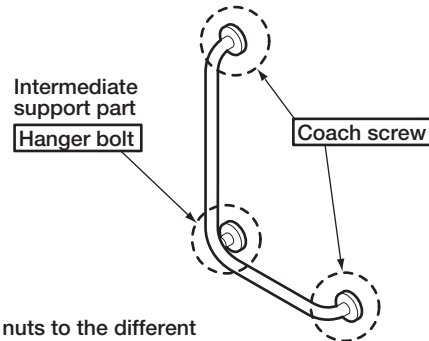
Wooden base, Toilet booth: Fixing with coach screws and a hanger bolt

Fixing bracket part number	Wooden base: T110D15, T110D16, T110D34 Toilet booth: T110D23, T110D35
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For the intermediate support parts of the versatile L type handrail and the L type handrail for sitting toilet (front protrusion dimension: 120 mm), use hanger bolts that facilitate installation.

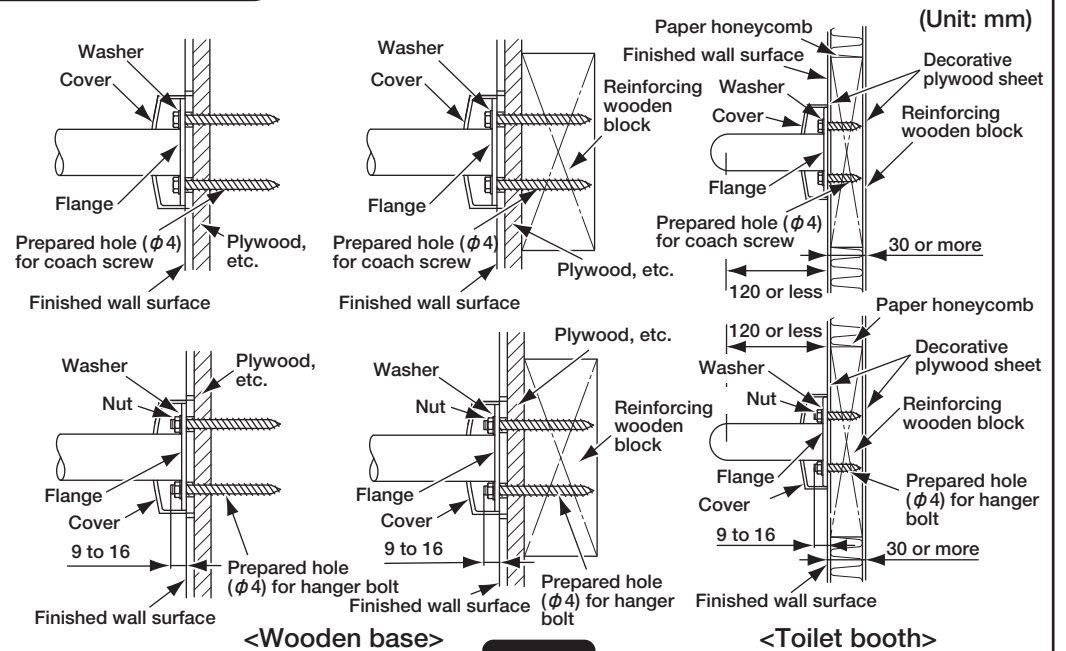
As the versatile I type handrail does not use hanger bolts, its installation procedure is ①, ②, ⑧, and ⑩.

- ① Mount reinforcing wooden blocks on the handrail mounting area beforehand. **Note 1**
- ② Carry out centering and then make prepared holes of $\phi 4$ mm for hanger bolts. (In the case of a tile wall, make through holes of $\phi 6.5$ mm only in the tile area.)
- ③ Fix using the nuts (2 pieces) as a double nut, which come with the hanger bolts.



Screw 2 nuts and turn the nuts to the different directions each other to tighten and fix.

- ④ Turn the double nut fixed in ③ using a tool, and screw the hanger bolt into the prepared hole in the intermediate support part of the handrail.
- ⑤ Adjust the projecting length of the bolts to be between 9 and 16 mm from the finished wall surface. **Note 2**
- ⑥ Remove the double nuts.
- ⑦ Put the hanger bolt through the mounting hole of the flange in the intermediate support part of the handrail, and then temporarily tighten with the washer and nut.
- ⑧ Put the coach screws through the washers and attach to the wall through the mounting hole of the flange.
- ⑨ Fully tighten the nut that is temporarily tightening the hanger bolt.
- ⑩ Press the cover against the finished surface.



Notes

Note 1: The thickness of the reinforcing wooden blocks differs depending on the type of handrail. Give reinforcement appropriate for the handrail.

Mount a reinforcing plywood sheet or wooden blocks with a thickness that conforms to the table below securely on a strong pillar, etc. If reinforcing wooden blocks are not mounted, the handrail may have backlash or come off.

Target product	Thickness of plywood sheet or reinforcing wooden block
<ul style="list-style-type: none"> • Versatile handrail I type • Versatile handrail L type 	<ul style="list-style-type: none"> • L type handrail for sitting toilet (T112CL10, T113BL10) <p>12 mm or more <small>*Only when the front protrusion dimension of the handrail is 120 mm or less. *Mount a structural plywood sheet (JAS standard product) or an equivalent or better one to the base material.</small></p>
<ul style="list-style-type: none"> • Handrail for sitting toilet L type (T112CL11 · CL12, T113BL11 · BL12) 	<ul style="list-style-type: none"> • I type handrail for washing area in bathroom <p>30 mm or more</p>
<ul style="list-style-type: none"> • Handrail for sitting toilet P type • Handrail for Japanese-style toilet 	<ul style="list-style-type: none"> • Handrail for urinal • Handrail for wall-mounted washbasin <p>60 mm or more</p>

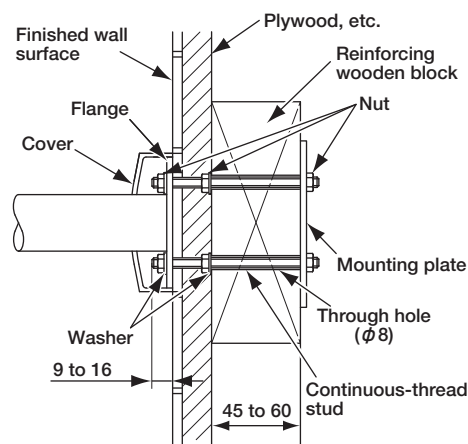
Note 2: Adjust the projecting length of the hanger bolts to be between 9 and 16 mm from the finished wall surface.

7-4. Installing the Handrail

Wooden base: Fixing by clamping a mounting plate

Fixing bracket part number T110D11,T110D62,T110D43

- ① Mount reinforcing wooden blocks of 45 to 60 mm in thickness on the handrail mounting area beforehand. **Note 1**
- ② Carry out centering and then make $\phi 8$ -mm through holes for continuous-thread studs.
- ③ Screw the continuous-thread studs into the bolt holes of the mounting plate and tighten them with nuts.
- ④ Insert the continuous-thread studs into the through holes, put the mounting plate on the back of the wall, and tighten with washers and nuts from the handrail mounting side.
- ⑤ After finishing the wall, adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface. **Notes 2 and 4**
- ⑥ Put the continuous-thread studs through the mounting holes of the flange, and then tighten with the washers and nuts.
- ⑦ Press the cover against the finished surface. **Note 3**



(Unit: mm)

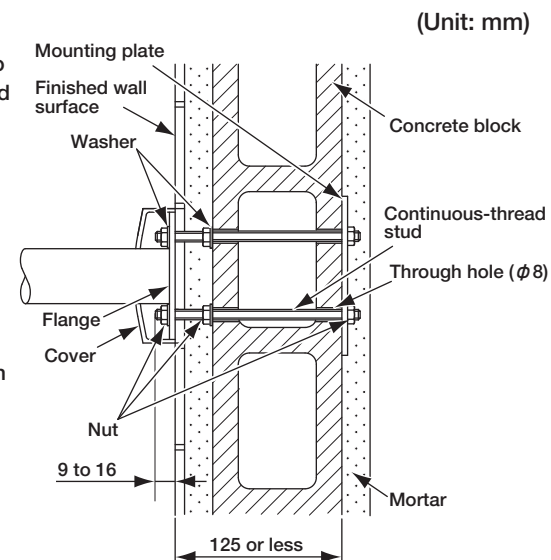
Notes

- Note 1:** Mount reinforcing wooden blocks of 45 to 60 mm in thickness securely on a strong pillar, etc.
- Note 2:** Adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface.
- Note 3:** Be careful not to overtighten the nuts to avoid tiles from breaking.
- Note 4:** If the bolts are not long enough, procure M6 continuous-thread studs in the field.

Concrete block base: Fixing by clamping a mounting plate

Fixing bracket part number T110D11,T110D62,T110D43

- ① Carry out centering and then make through holes of $\phi 8$ mm for continuous-thread studs. **Note 1**
- ② Screw the continuous-thread studs into the bolt holes of the mounting plate and tighten them with nuts.
- ③ Insert the continuous-thread studs into the through holes, put the mounting plate on the back of the wall, and tighten with the washers and nuts from the handrail mounting side.
- ④ After finishing the wall, adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface. **Notes 2 and 4**
- ⑤ Put the continuous-thread studs through the mounting holes of the flange, and then tighten with the washers and nuts. **Note 3**
- ⑥ Press the cover against the finished surface.



(Unit: mm)

Notes

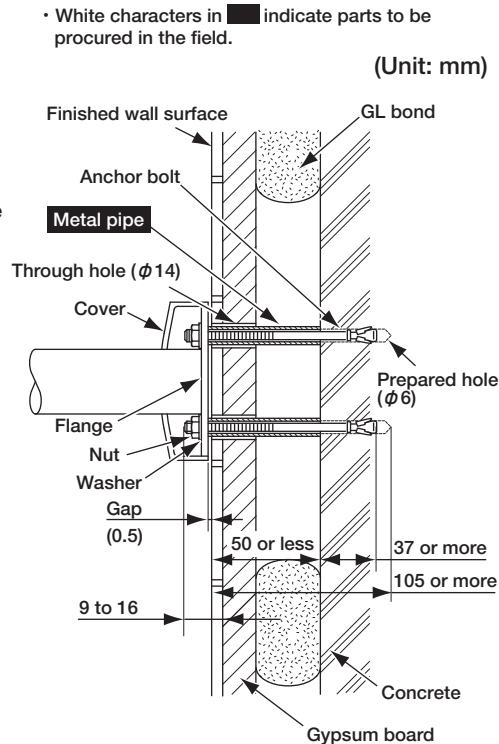
- Note 1:** It is not necessary to fill hollows with mortar, etc.
- Note 2:** Adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface.
- Note 3:** Be careful not to overtighten the nuts to avoid tiles from breaking.
- Note 4:** If the bolts are not long enough, procure M6 continuous-thread studs in the field.

7-5. Installing the Handrail

GL method: Fixing with anchor bolts + pipes

Fixing bracket part number	T110D18R	Part to be procured in the field	φ13.8 (t2) metal pipe
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- Carry out centering and then make prepared holes for anchor bolts, which are φ6 mm and 105 mm or more in depth from the finished wall surface. **Note 1**
- Make through holes of φ14 mm for metal pipes only in the gypsum board part.
- Insert the metal pipes until they hit the concrete base surface, and cut it in such a way that it protrudes about 0.5 mm from the finished wall surface.
*If the length is not enough, insert a washer to adjust the length.
- Screw the nuts about 2 mm from the upper ends of the anchor bolts, put the bolts through the metal pipes, and then drive them in the prepared holes lightly. **Note 2**
- Tighten the nuts on the anchor bolt. (This opens the wedges of the anchor bolts and prevents the anchor bolts from coming out.)
- Remove the nuts from the anchor bolts.
- Adjust the projecting length of the anchor bolts to be between 9 and 16 mm from the finished wall surface. **Note 3**
- Put the anchor bolts through the mounting holes of the flange, and then tighten with the washers and nuts.
- Press the cover against the finished surface.



Notes

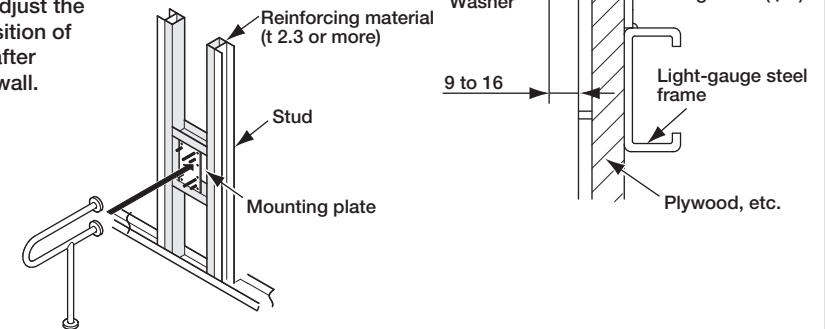
- Note 1:** Use a drill that can make prepared holes of φ6 mm and 105 mm or more in depth in concrete. If the bit size of the drill is too large or if it has core deviation, you may fail to fix it securely.
- Note 2:** The embedding length of the anchor bolts in concrete must be 37 mm or more.
- Note 3:** Adjust the projecting length of the anchor bolts to be between 9 and 16 mm from the finished wall surface.

Light-gauge steel base: Fixing a mounting plate by welding

Fixing bracket part number	T110D11, T110D62, T110D41
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- While carrying out centering, fix the mounting plate to the reinforcing light-gauge steel frame (t 2.3 mm or more) by welding. **Note 1**
- Screw the continuous-thread studs into the holes of the mounting plate, adjust their projecting length to be between 9 and 16 mm from the finished wall surface, and tighten from the back of the wall with nuts. **Note 2**
- Finish the wall.
- Put the continuous-thread studs through the mounting holes of the flange, and then tighten with the washers and nuts. **Note 3**
- Press the cover against the finished surface.

*You cannot adjust the mounting position of the handrail after finishing the wall.



Notes

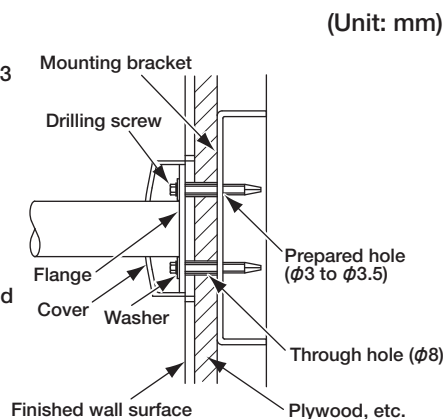
- Note 1:** Use reinforcing light-gauge steel frames of t 2.3 mm or more.
- Note 2:** Adjust the projecting length of the continuous-thread studs to be between 9 and 16 mm from the finished wall surface.
- Note 3:** Be careful not to overtighten the nuts to avoid tiles from breaking.

7-6. Installing the Handrail

Light-gauge steel base: Fixing with drilling screws

Fixing bracket part number T110D36,T110D37,T110D45

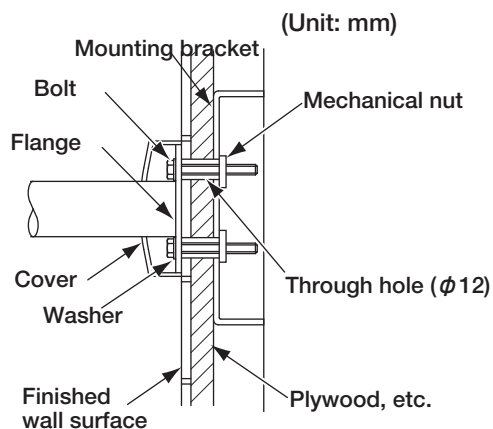
- ① In the handrail mounting position, fix the mounting bracket for light-gauge steel frames to the reinforcing light-gauge steel frames (t 2.3 mm or more) with drilling screws. **Note 1**
- ② After finishing the wall, carry out handrail centering and make prepared holes of $\phi 3$ to $\phi 3.5$ mm with a drill. **Note 2**
- ③ Make about $\phi 8$ -mm through holes for drilling screws in the finished wall area.
- ④ Put the drilling screws through the washers and attach to the wall through the mounting holes of the flange. **Note 3**
- ⑤ Press the cover against the finished surface.



Light-gauge steel base: Fixing with mechanical nuts

Fixing bracket part number T110D36,T110D37,T110D46

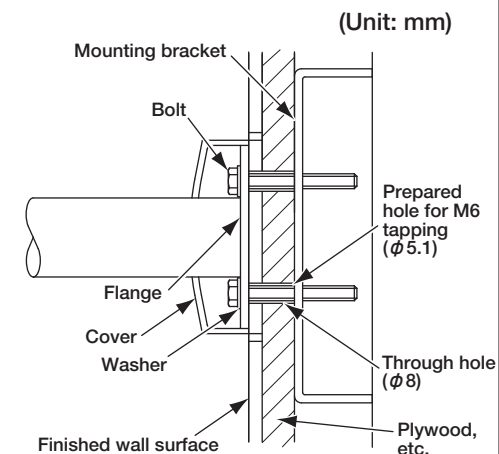
- ① In the handrail mounting position, fix the mounting bracket for light-gauge steel frames to the reinforcing light-gauge steel frames (t 2.3 mm or more) with drilling screws. **Note 1**
- ② After finishing the wall, carry out handrail centering and make $\phi 12$ -mm through holes for mechanical nuts.
- ③ Insert the mechanical nuts into the through holes and set them.
- ④ Put the bolts through the washers and attach to the wall through the mounting holes of the flange. **Note 3**
- ⑤ Press the cover against the finished surface.



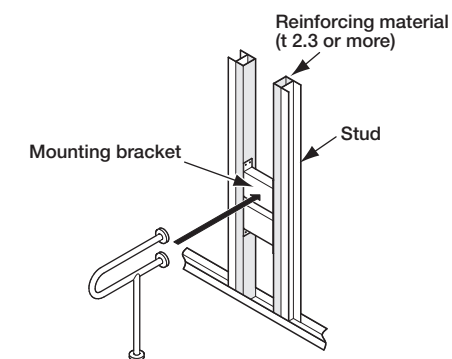
Light-gauge steel base: Fixing with bolts

Fixing bracket part number T110D36,T110D37,T110D44

- ① In the handrail mounting position, fix the mounting bracket for light-gauge steel frames to the reinforcing light-gauge steel frames (t 2.3 mm or more) with drilling screws. **Note 1**
- ② After finishing the wall, carry out handrail centering and make $\phi 5.1$ -mm prepared holes for M6 tapping. Make about $\phi 8$ -mm through holes in the finished wall area.
- ③ Perform M6 tapping in the mounting bracket for the light-gauge steel frames.
- ④ Put the bolts through the washers and attach to the wall through the mounting holes of the flange. **Note 3**
- ⑤ Press the cover against the finished surface.



*After finishing the wall, you can adjust the handrail-mounting position within the range of the mounting bracket.



Notes

- Note 1:** Use reinforcing light-gauge steel frames of t 2.3 mm or more.
Note 2: In order to prevent the handrail from being scratched, make prepared holes to facilitate installation.
Note 3: Be careful not to overtighten the nuts to avoid tiles from breaking.

7-7. Installing the Handrail

Toilet booth: Fixing by clamping

Fixing bracket part number T110D22R

Note

When the toilet booth is made from paper honeycomb, melamin/polyether decorative plywood, or the equivalent, which is 40 mm in thickness, only versatile I type handrail, versatile L type handrail, and L type handrail for sitting toilet (front protrusion dimension: 120 mm) can be installed.

- ① Carry out centering and then make $\phi 13$ -mm through holes for pipes. **Note 1**
- ② Insert the resin pipes into the through holes. Resin pipes are used to prevent wall buckling which occurs when the handrail is installed on a paper honeycomb wall or the like. **Note 1** Therefore, be sure to check the wall before installing the handrail.
- ③ Screw the continuous-thread studs in the outer bolt holes of the mounting plate to the end, and while inserting them into the resin pipes from the back of the booth, put the mounting plate on the wall.

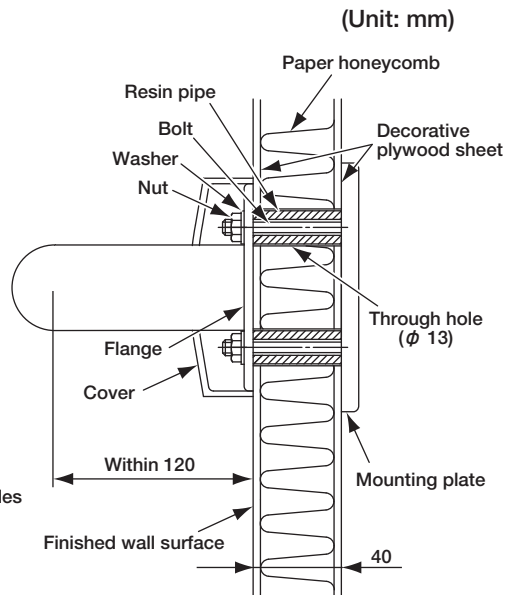
*The mounting plate has 4 outer bolt holes and 4 inner outer bolt holes. Check the bolt holes before installation.



- ④ Put the bolts through the mounting holes of the flange, and then tighten with the washers and nuts.
- ⑤ Press the cover against the finished surface.

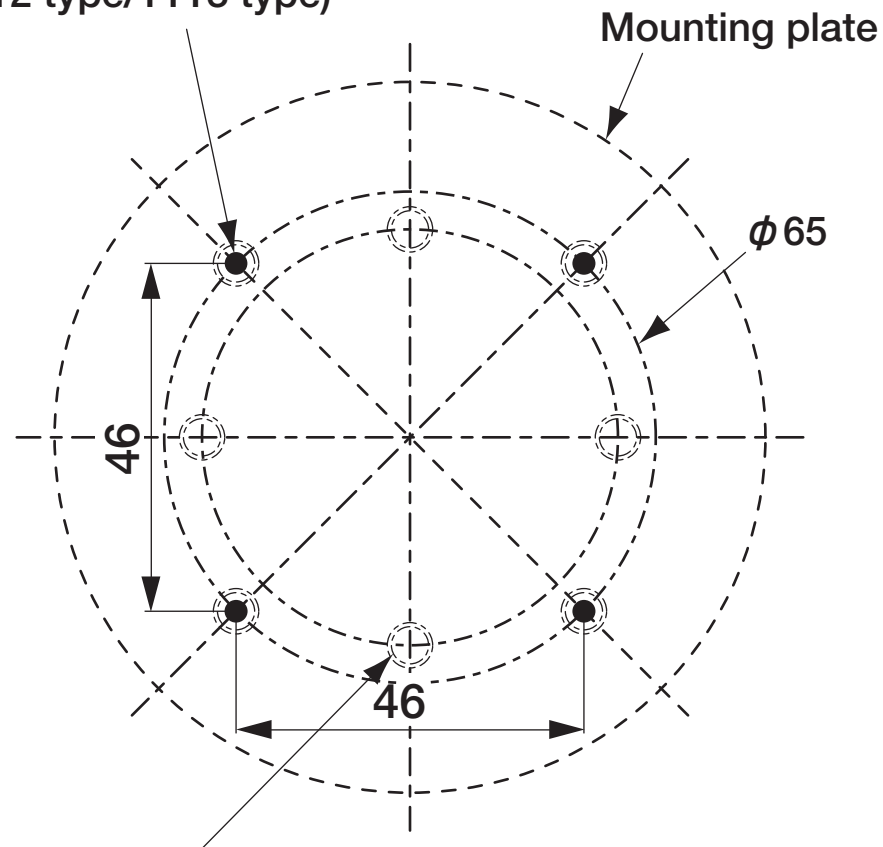
Note

Note 1: When you use reinforcing wooden blocks for the toilet booth or when the toilet booth has strong walls without hollow, do not use resin pipes that come with the product, but make $\phi 8$ -mm through holes for bolts, to mount the handrail.



Prepared hole guide for fixing bracket T110D22R

Mounting hole positions (outer holes) of the handrail (T112 type/T113 type)

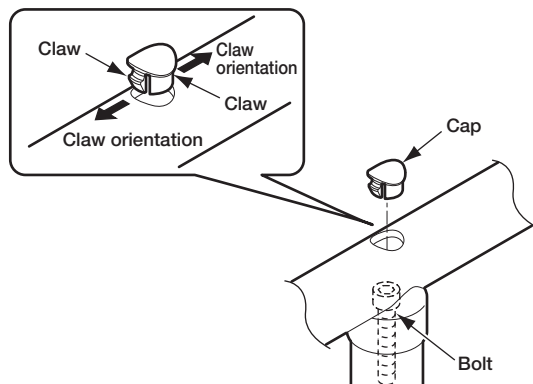


*Do not use the inner holes because they are the mounting hole positions for the handrail (T114 type).

*For installation methods not shown in this manual, please contact TOTO's branch office, branch shop, or sales office.

8. Finishing the Connection Part (When Using Bolts)

- ① After installing the handrail, fully tighten the bolt with a hexagonal wrench.
- ② Attach the cap.

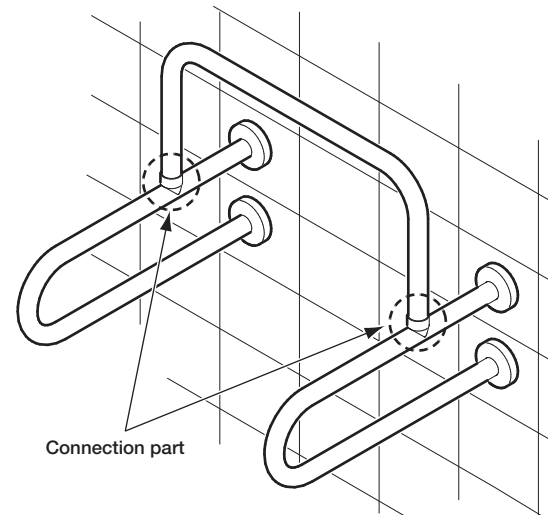


Note

Since the cap has a predetermined orientation, attach it in such a way that the claws face the axial direction of the grip bar.

9. Inspection Items

After the installation is complete, confirm the following items:



Checking for backlash

Make sure that the handrail has no backlash.

Is the connection part securely assembled?

→ See **6. Assembling the Handrail.**

→ See **8. Finishing the Connection Part.**

Is the handrail firmly secured to the wall?

→ See **7. Installing the Handrail.**

*Be sure to hand over the instruction manual to the customer.

Prepared Hole Guide

*Cut this sheet according to the number of fixing positions on the walls.

Precautions for use

Be sure to confirm that the prepared hole positions of the product match the handrail-mounting hole positions of the guide before making prepared holes.

⚠ CAUTION



Required

When you copy this sheet and use the copy, the size of the illustration may change depending on the printing machine. Please check the dimensions before use.

