

TOTO

Flip-Up Type Handrail for Public Use

T112H Type
T113H Type
T114H 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.)

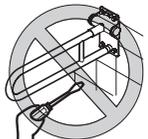
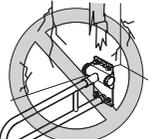
Please read these "Safety Precautions" before installation, and install the product correctly.

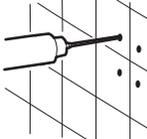
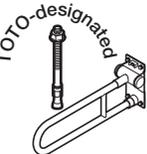
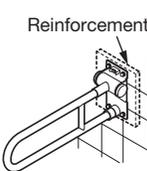
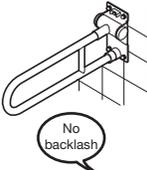
- This instruction manual shows various symbols to correctly install the product in order to prevent harm to customers and other users, and damage to property. The meanings of those symbols are as follows:
- The following symbols are used to classify and explain instruction that must be followed.

 **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 in places where water may be splashed over the product or in humid places, including outdoor and in a bathroom. Doing so could cause the functions of the movable handrail to be damaged 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.	
 Required	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.	

 WARNING	
 Required	<p>When the product is used in wet areas such as a restroom, 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.</p> 
	<p>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.</p> 
	<p>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.</p> 
	<p>Make sure that the handrail has no backlash after the installation is complete. If the handrail has backlash, it may come off or the wall may collapse, which could result in user's fall and injury.</p> 

2-1. Before Installation

Precautions before installation

- Make sure that **the wall where the handrail is attached** is strong enough.
- **Select an appropriate installation method depending on the building structure.**

As the part number of the handrail and that of the wall-fixing bracket are different, please place an order for the fixing brackets separately depending on the wall structure. One fixing bracket is required for one handrail. See “**3. Fixing Brackets (Optional Parts)**” for the required number of fixing bracket sets.

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

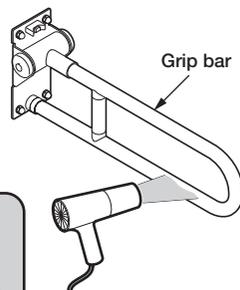
- Make sure that **there is no obstacle in the handrail moving area**. See “**5. Completion Drawing**” for the moving area.
- See the catalogue, etc. for the handrail installation position.
- Check the functions of the flip-up type after installation, not before installation.

The flip-up type fulfills its functions only after it is installed on a wall, so if you move the grip bar without attaching the handrail to the wall, you may feel it heavy.

About the resin coating type and combination type grip bars

- If the resin coating type or combination 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 or combination 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.



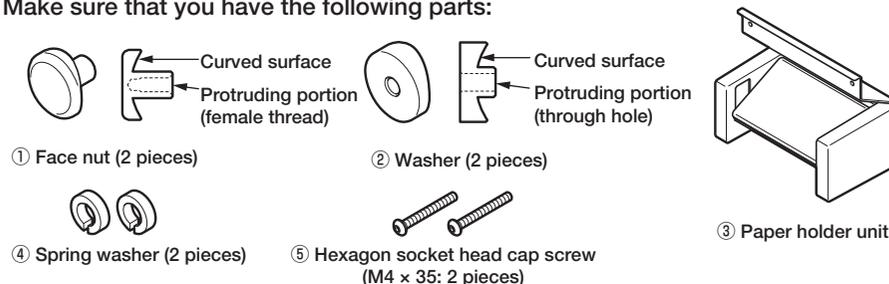
Note

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

Handrail with paper holder (T112HP type)

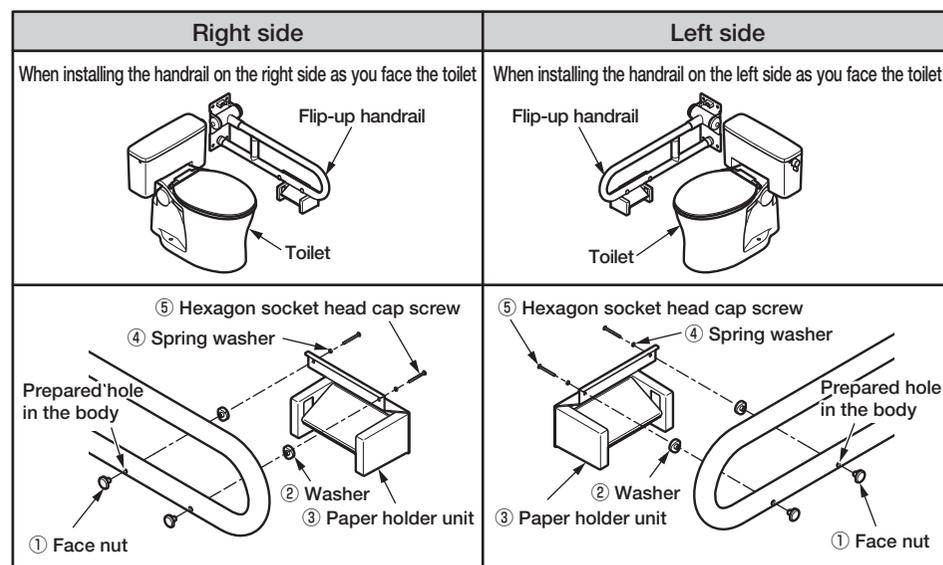
- Checking the assembly parts

Make sure that you have the following parts:



- Confirming the installation direction

There are the right side type and the left side type for paper holders. Before fixing the product to the wall, install the paper holder unit correctly according to the position of the toilet as shown in the figure below.



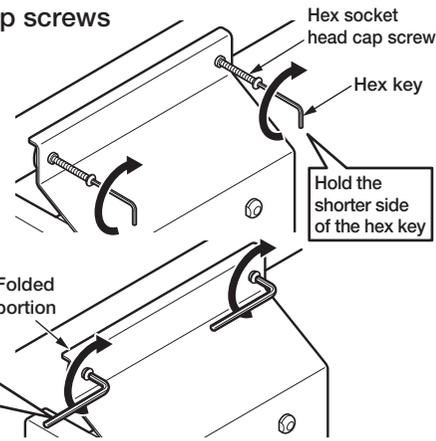
1. Put the hexagon socket head cap screw (5) through the spring washer (4), the paper holder unit (3), and washer (2) in this order, and then insert the protruding portion of the washer into the prepared hole in the body.
2. Insert the protruding portion of the face nut (1) into the prepared hole of the body on the opposite side of the washer (2).

2-2. Before Installation

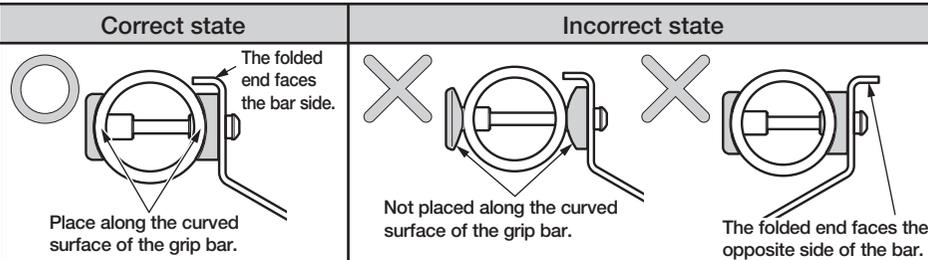
Tightening the hexagon socket head cap screws

① Screw the hexagon socket head cap screws (2 pieces) equally and lightly using the longer side of a hex key (opposite side size: 2.5 mm) until the screws come in contact with the wall.

② Change to the shorter side of the hex key and tighten the screws equally and firmly. (Additional tightening about 180° from the state of ①)



Assembled state



Notes

- After installation, make sure that the paper holder unit has been fixed firmly.
- Pay attention to the orientations of the assembly parts and their mounting order. If their orientations or mounting order is incorrect, users of the handrail may get injured at the corners of the parts.
- Attach the washers and the face nuts in such a way that the curved surfaces of the washers and face nuts are placed along the curved surface of the grip bar. If the curved surfaces are not placed properly, the paper holder unit may have backlash or incline.
- On the handrail with paper holder (T112HP type), be sure to mount the paper holder unit supplied with the handrail. If the paper holder unit is not mounted, the handrail may flip up on its own, which could result in user's injury.
- Use a hex key (opposite side size: 2.5 mm) to screw hexagon socket head cap screws.

3. Fixing Brackets (Optional Parts)

*P1a: Mounting positions of T112H, T113H, and T114H types
 <Fixing bracket list> P1b: Mounting position of EWC730 and EWC731 types (Unit: mm)

Part No.	Shape	Details of the set	Part No.	Shape	Details of the set
T110D49R P1a=220 P1b=190		• Mounting plate: 1 piece	T110D36		• Mounting bracket for light-gauge steel: 1 piece • Drilling screw: 10 pieces
T110D50		• Continuous-thread stud: 4 pieces • Washer: 4 pieces • Nut: 8 pieces	T110D53		• Continuous-thread stud: 4 pieces
T110D51		• Continuous-thread stud: 4 pieces • Nut: 4 pieces • Anchor bolt: 4 pieces	T110D54		• Continuous-thread stud: 4 pieces • Mechanical nut: 4 pieces
T110D52		• Continuous-thread stud: 4 pieces • Nut: 4 pieces	T110D17S		• Anchor bolt: 4 pieces
			T110D25		• Hanger bolt: 4 pieces • Nut: 2 pieces *The nuts are used for putting a wrench on them when the hanger bolts are screwed in.

<List of the required numbers of fixing brackets>

Base (mounting method) Type	Concrete baseGL (Gypsum Lining) method (Note 1) (Fixing by embedding a mounting plate)	Concrete base (Fixing with anchor bolts)	Wooden base/Concrete block base (Fixing by clamping a mounting plate) Note 2	Wooden base (Fixing with hanger bolts)
Flip-up type	T110D49R×1 T110D51×1	T110D17S×1	T110D49R×1 T110D50×1	T110D25×1

Base (mounting method) Type	Light-gauge steel base (Fixing with bolts)	Light-gauge steel base (Fixing with mechanical nuts)	Light-gauge steel base (Fixing by welding a mounting plate)
Flip-up type	T110D36×1 T110D53×1	T110D36×1 T110D54×1	T110D49R×1 T110D52×1

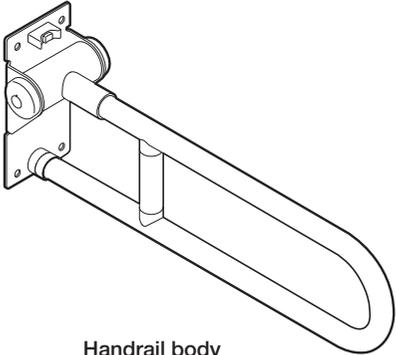
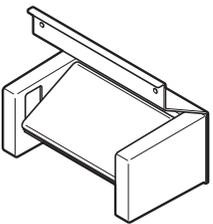
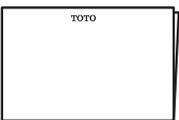
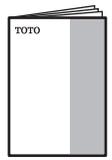
Note 1: [GL method] Available only when the thickness of gypsum lining is 40 mm or less. When the thickness is 40 mm or more, prepare bolts (M10 continuous-thread studs) separately (procure in the field).

Prepare bolts with an appropriate length considering the thickness of the wall.

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.

4. Checking the Parts

Make sure that you have the following parts:

Handrail body	
	 Face nut (M10: 4 pieces)
	 Spring washer (4 pieces)
Handrail body <T112H type>	
Other parts	
<Paper holder (T112HP type alone)>	
	 Face nut (2 pieces)
	 Washer (2 pieces)
 Hexagon socket head cap screw (M4 x 35: 2 pieces)	 Spring washer (2 pieces)
	 Installation manual
	 Instruction manual
	 Use method label

*Part of the shape may be different between the figure and the actual part depending on the part number.

5. Completion Drawing

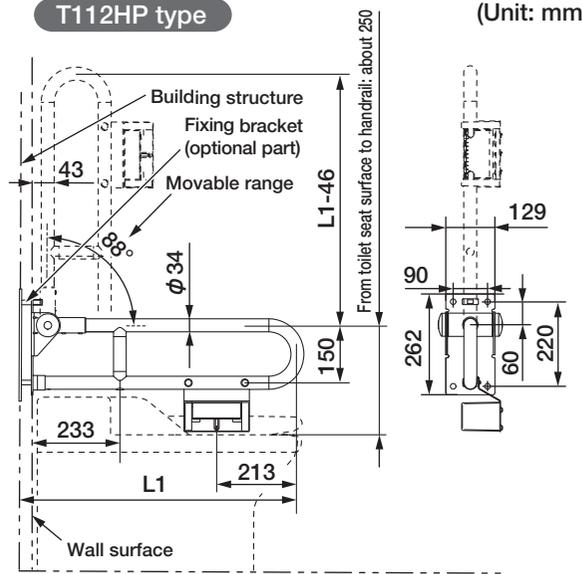
*The dimensions indicated below are standard values.

If users can be identified, determine the mounting position for the users to be able to use easily.

Flip-up type				
Resin coating type				L1
No lock	Weight	Lock type	Weight	
T112H6R	4.6kg	T112HK6R	5.5kg	600
T112H7R	4.9kg	T112HK7R	5.8kg	700
T112H8R	5.2kg	T112HK8R	6.2kg	800
T112HP7	5.7kg	-	-	700
T112HP8	5.9kg	-	-	800

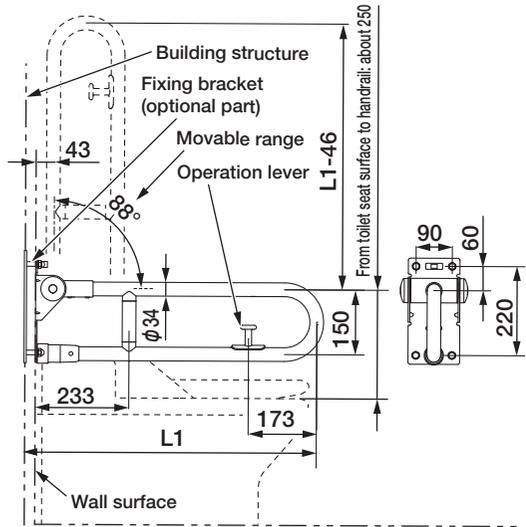
Stainless steel type		Combination type		L1
Lock type	Weight	Lock type	Weight	
T113HK6R	5.4kg	T114HK6R	5.6kg	600
T113HK7R	5.7kg	T114HK7R	6.1kg	700
T113HK8R	6.0kg	T114HK8R	6.5kg	800

T112HP type

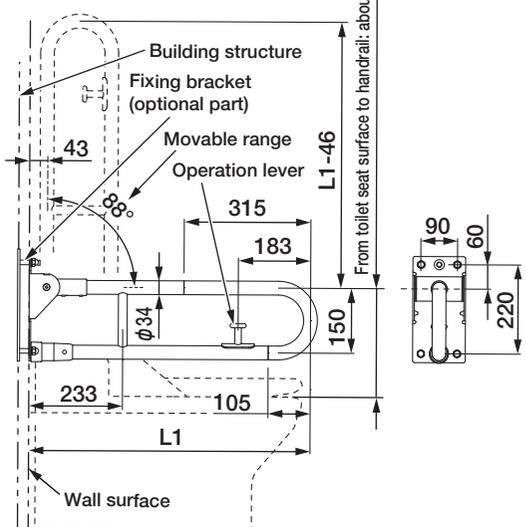


(Unit: mm)

T112H type, T112HK type, and T113HK type



T114HK type



*T112H type does not have an operation lever.

6. Installation Procedures

1 Positioning

Determine the mounting position of the handrail and make prepared holes. Carry out centering using the paper pattern on the reverse side of the installation manual when positioning the handrail.

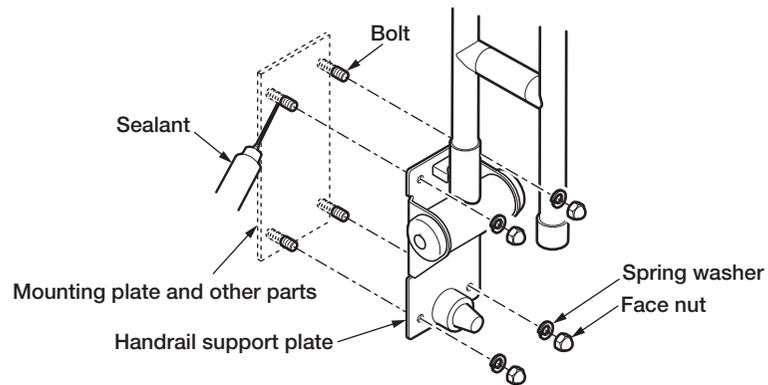
*For how to make holes, see each fixing method in “7. Mounting the Fixing Bracket on the Wall.”

2 Mounting the fixing bracket on the wall

*For how to mount the fixing bracket, see each fixing method in “7. Mounting the Fixing Bracket on the Wall.”

3 Mounting the handrail

Put the bolts protruding from the finished wall surface through the handrail support plate and the spring washers, and then tighten them with the face nuts.



Note

Be careful not to overtighten the face nuts to avoid tiles from breaking.

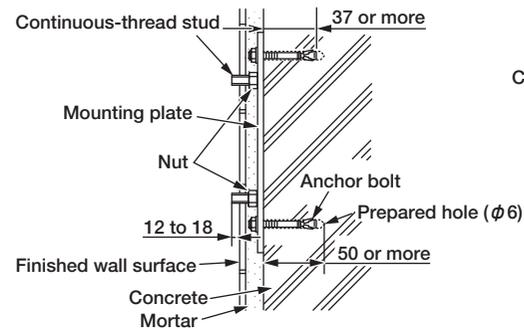
7-1. Mounting the Fixing Bracket on the Wall

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

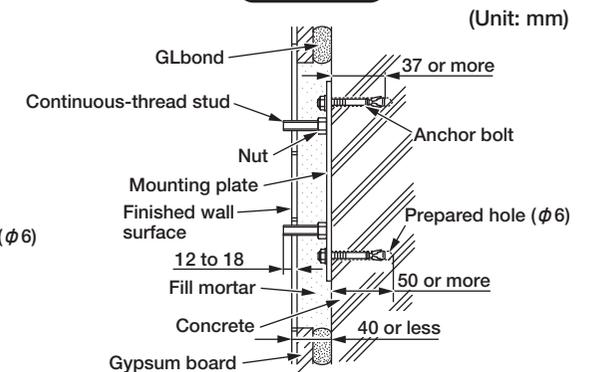
Fixing bracket part number T110D49R+T110D51

- Carry out centering and then make prepared holes of $\phi 6$ mm and 50 mm or more in depth for anchor bolts. **Note 1**
- 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. **Notes 2 and 3**
- Tighten the nuts on the anchor bolt.
- Screw continuous-thread studs into the bolt holes of the mounting plate and tighten them with nuts. **Note 5**
- After finishing the wall, adjust the projecting length of the continuous-thread studs to be between 12 and 18 mm from the finished wall surface. **Notes 4 and 5**

Concrete base



GL method



Notes

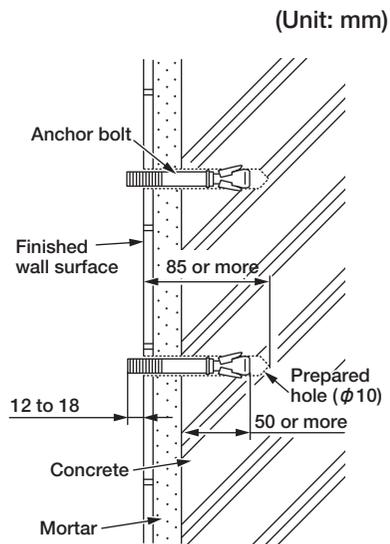
- Note 1:** Use a drill that can make prepared holes of $\phi 6$ mm and 50 mm or more in depth in concrete. If the bit size of the drill is too large or if it has core deviation, you may not be able to secure the mounting plate securely.
- Note 2:** In the case of T110D49R, be sure to install it with the indication of “UP” facing upward on the mounting surface.
- Note 3:** The embedding length of the anchor bolts in concrete must be 37 mm or more.
- Note 4:** Adjust the projecting length of the bolts to be between 12 and 18 mm from the finished wall surface.
- Note 5:** If the bolts are not long enough, procure M10 continuous-thread studs in the field.

7-2. Mounting the Fixing Bracket on the Wall

Concrete base: Fixing with anchor bolts

Fixing bracket part number T110D17S

- Carry out centering and then make prepared holes of $\phi 10$ mm and 85 mm or more in depth for anchor bolts. **Note 1**
- 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**
- 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 12 and 18 mm from the finished wall surface. **Note 3**



*The nuts of the anchor bolts supplied with the fixing bracket are not used when the handrail is mounted.

Notes

Note 1: Use a drill that can make prepared holes of $\phi 10$ 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.

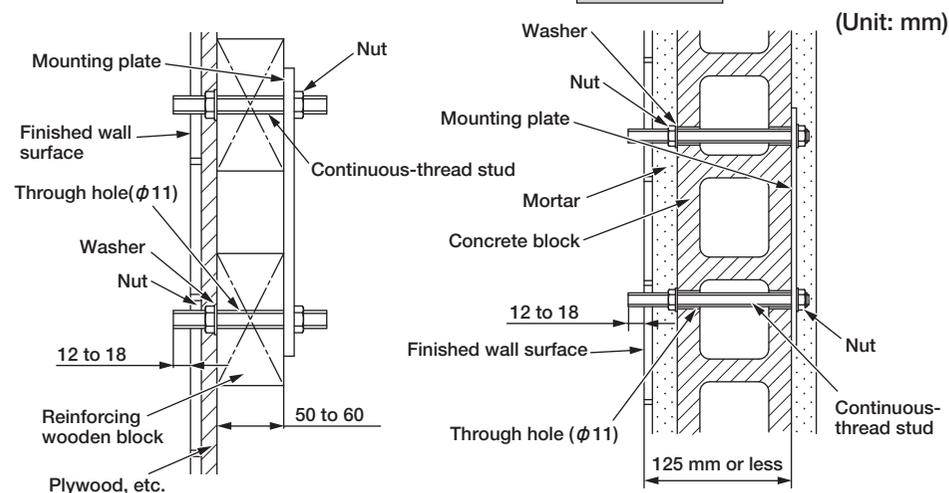
Note 2: The embedding length of the anchor bolts in concrete must be 50 mm or more.

Note 3: Adjust the projecting length of the anchor bolts to be between 12 and 18 mm from the finished wall surface.

Wooden base/Concrete block base: Fixing by clamping a mounting plate

Fixing bracket part number T110D49R+T110D50

- In the case of a wooden base, mount reinforcing wooden blocks that are 50 to 60 mm in thickness on the handrail mounting area beforehand. **Note 1**
- Carry out centering and then make through holes of $\phi 11$ mm for continuous-thread studs. **Note 2**
- Screw the continuous-thread studs into the bolt holes of the mounting plate and tighten them with nuts. **Note 3**
- 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.
- After finishing the wall, adjust the projecting length of the continuous-thread studs to be between 12 and 18 mm from the finished wall surface. **Notes 4 and 5**



Notes

Note 1: In the case of a wooden base, mount reinforcing wooden blocks that are 50 to 60 mm in thickness securely on a strong pillar, etc.

Note 2: In the case of a concrete block base, it is not necessary to fill hollows with mortar, etc.

Note 3: In the case of T110D49R, be sure to install it with the indication of "UP" facing upward on the mounting surface.

Note 4: Adjust the projecting length of the continuous-thread studs to be between 12 and 18 mm from the finished wall surface.

Note 5: If the bolts are not long enough, procure M10 continuous-thread studs in the field.

7-3. Mounting the Fixing Bracket on the Wall

Wooden base: Fixing with hanger bolts

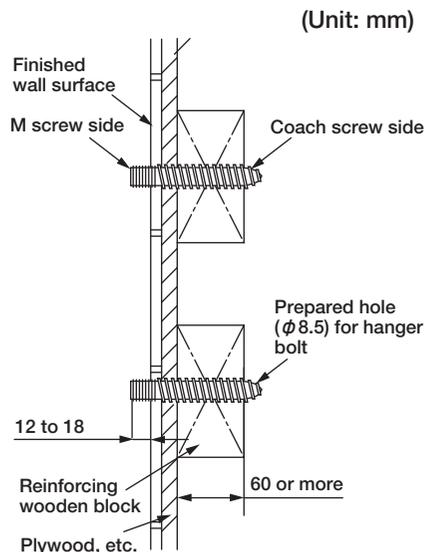
Fixing bracket part number T110D25

- Mount reinforcing wooden blocks that are 60 mm or more in thickness on the handrail mounting area beforehand. **Note 1**
- Carry out centering and then make prepared holes $\phi 8.5$ mm for hanger bolts. **Note 2**
(In the case of a tile wall, make through holes of $\phi 11$ to 13 mm only in the tile area.)
- Fix using the nuts (2 pieces) as a double nut, which come with the hanger bolts. (See the figure below.)



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

- Turn the double nuts fixed in ③ using a tool, and screw the hanger bolts into the prepared holes. **Note 3**
- Adjust the projecting length of the bolts to be between 12 and 18 mm from the finished wall surface. **Note 4**
- Remove the double nuts.



Notes

Note 1: Be sure to mount reinforcing wooden blocks that are 60 mm or more in thickness.

Note 2: Use a drill that can make prepared holes of $\phi 8.5$ mm in the reinforcing wooden blocks. If the bit size of the drill is too large or if it has core deviation, you may fail to fix it securely.

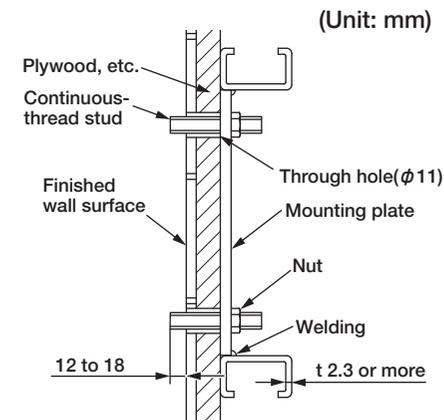
Note 3: Be sure to use the nuts (2 pieces) as a double nut to put the hanger bolt in the wall. If face nuts are used, the heads of the face nuts may be damaged.

Note 4: Adjust the projecting length of the hanger bolts to be between 12 and 18 mm from the finished wall surface.

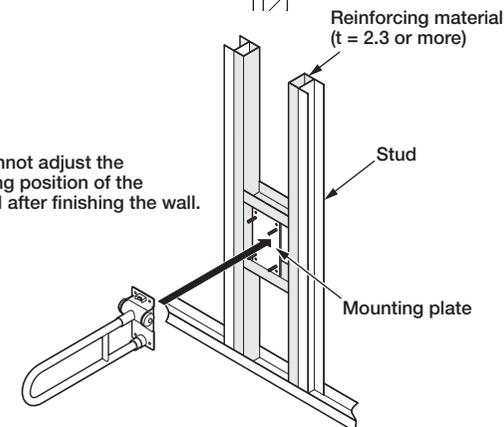
Light-gauge steel base: Fixing a mounting plate by welding

Fixing bracket part number T110D49R+T110D52

- 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 12 and 18 mm from the finished wall surface, and tighten from the back of the wall with nuts. **Notes 2 and 3**
- Finish the wall.



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



Notes

Note 1: Use reinforcing light-gauge steel frames that are t 2.3 mm or more.

Note 2: Adjust the projecting length of the continuous-thread studs to be between 12 and 18 mm from the finished wall surface.

Note 3: In the case of T110D49R, be sure to install it with the indication of "UP" facing upward on the mounting surface.

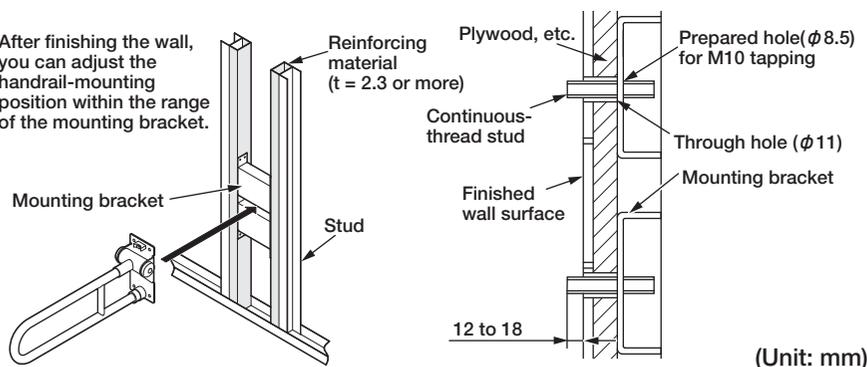
7-4. Mounting the Fixing Bracket on the Wall

Light-gauge steel base: Fixing with bolts

Fixing bracket part number T110D36+T110D53

- 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 $\phi 8.5$ -mm prepared holes for M10 tapping.
Make about $\phi 11$ -mm through holes in the wall finishing area.
- ③ Make M10 tapped holes in the mounting bracket for light-gauge steel frames.
- ④ Screw continuous-thread studs and adjust their projecting length to be between 12 and 18 mm from the finished wall surface. **Note 2**

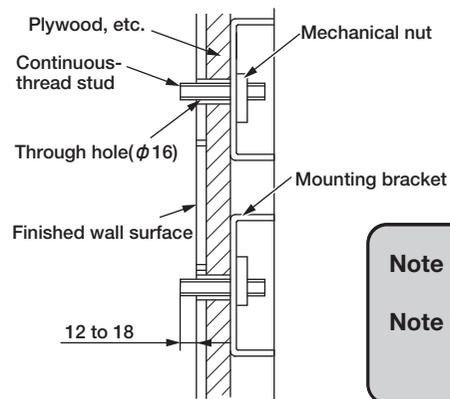
*After finishing the wall, you can adjust the handrail-mounting position within the range of the mounting bracket.



Light-gauge steel base: Fixing with mechanical nuts

Fixing bracket part number T110D36+T110D54

- 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 $\phi 16$ -mm through holes for mechanical nuts.
- ③ Insert the mechanical nuts into the through holes and set them.
- ④ Screw continuous-thread studs and adjust their projecting length to be between 12 and 18 mm from the finished wall surface. **Note 2**

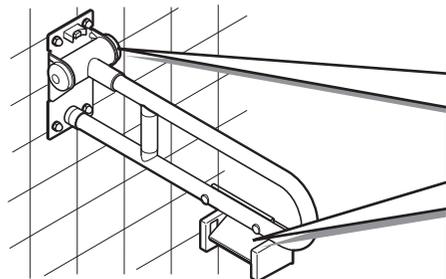


Notes

- Note 1:** Use reinforcing light-gauge steel frames that are t 2.3 mm or more.
- Note 2:** Adjust the projecting length of the bolts of the mounting plate to be between 12 and 18 mm from the finished wall surface.

8. Inspection Items

After the installation is complete, confirm the following items:



Checking for backlash

Make sure that the handrail has no backlash.

Is the handrail firmly secured to the wall?

➔ See **7. Mounting the Fixing Bracket on the Wall.**

Make sure that the paper holder has no backlash.

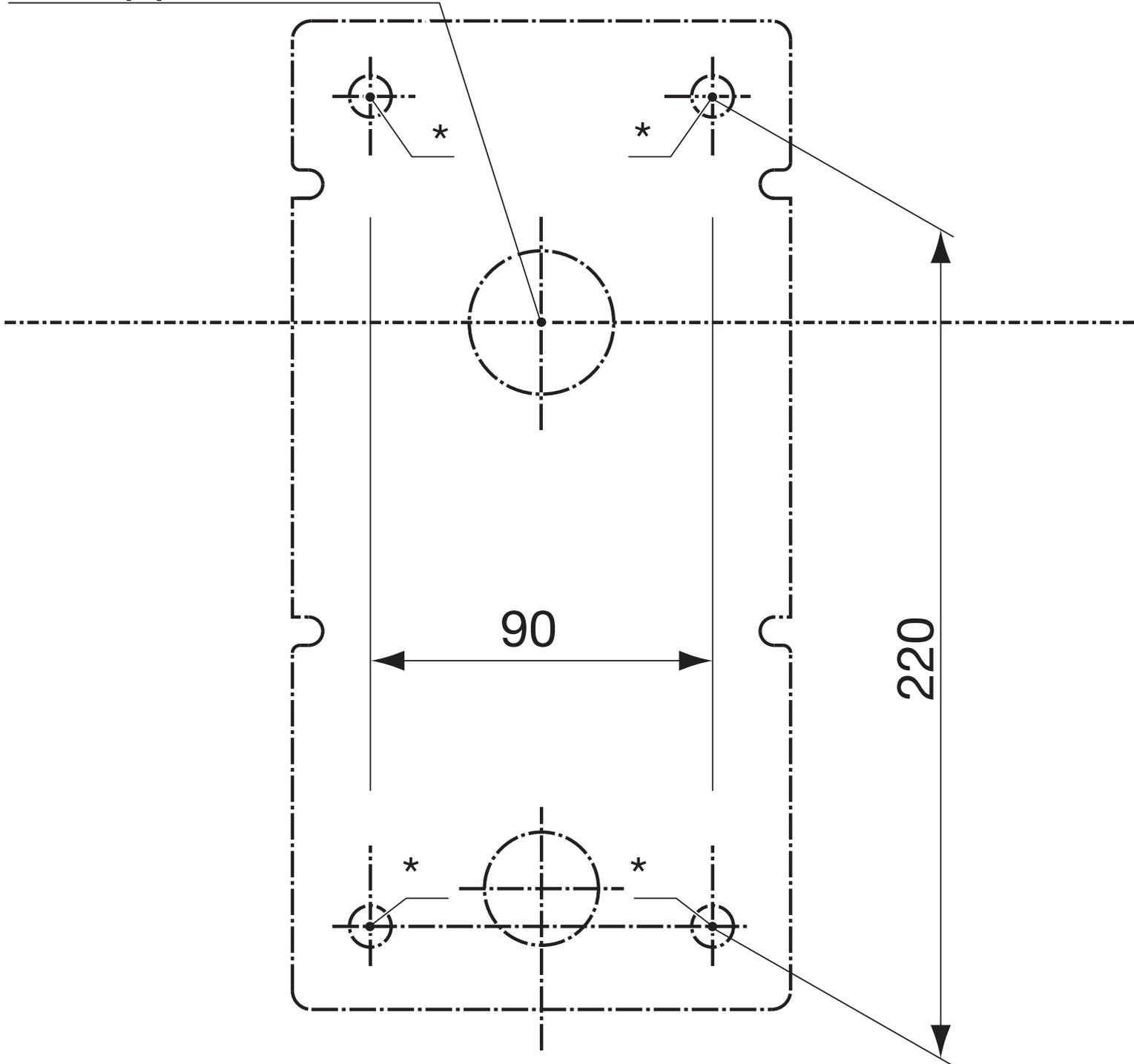
Is the paper holder firmly secured?

➔ See **2. Handrail with paper holder (T112HP type).**

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

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

Center position of
the upper bar



T112H Type

T113H Type

T114H Type

The “*” marks indicate the
positions of prepared holes.