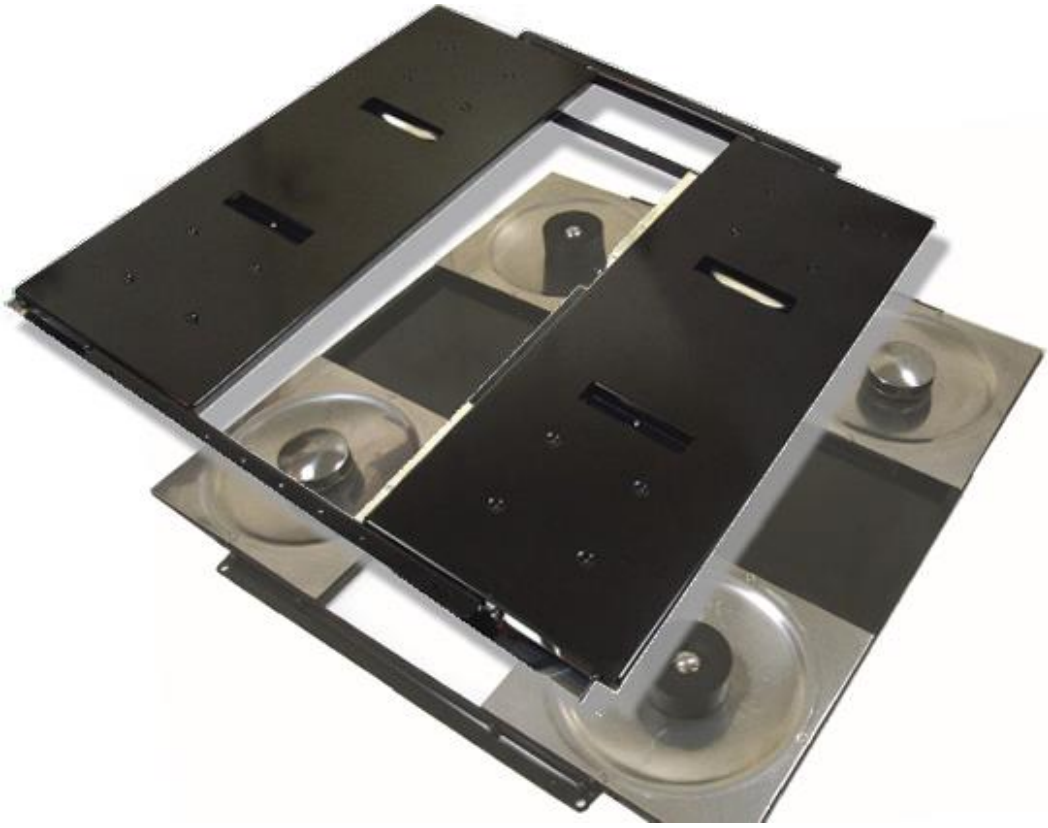
Installation Manual

abserver®



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For your safety

The items listed below are for the safe use of the product and to prevent harm or damage to you and others.
“Alarm” and “Caution” are categorized as contents that can cause malfunctions or injuries due to improper handling. Please be sure to observe them.

⚠ Alarm	Possibility to damage the human body if not strict observance.
⚠ Caution	Possibility of property damage if handled incorrectly.

⚠ Alarm

Do not use outdoors.

When using this product outdoors, it may not be able to exercise its original performance at the time of earthquake.

Carefully read this manual for installation

Failure to install may cause falls, dropouts, etc.

Please install in a place enough to withstand the load

If the strength is insufficient or the installation is incomplete, the mounted object may cause falling

Do not load more than specified load

Loading more than the prescribed load on this product may cause the load to fall over.

Do not place any objects within the range of product operation

Since the object on this product moves relative to the floor at the time of an earthquake, it may cause injury etc. if it is bumped by being hit or pinched.

Do not step on the product during installation work.

If you put it on the product, it may move, it may fall or get injured by being caught in the product

⚠ Caution

Please fix the load when there is a possibility it may shift

If objects (equipment) loaded on this product move with human power, it may be displaced from this product and cause damage.

Do not disassemble

If you disassemble the product, it will be out of the scope of the warranty.

Attention on installation

When installing Abserver, it is necessary to deal with loads and installation environment. It is recommended to carefully conduct the preliminary survey on the site, to clearly grasp the size / weight of the loading device and cable wiring and to decide the installation method based on it.

1. Installation Site

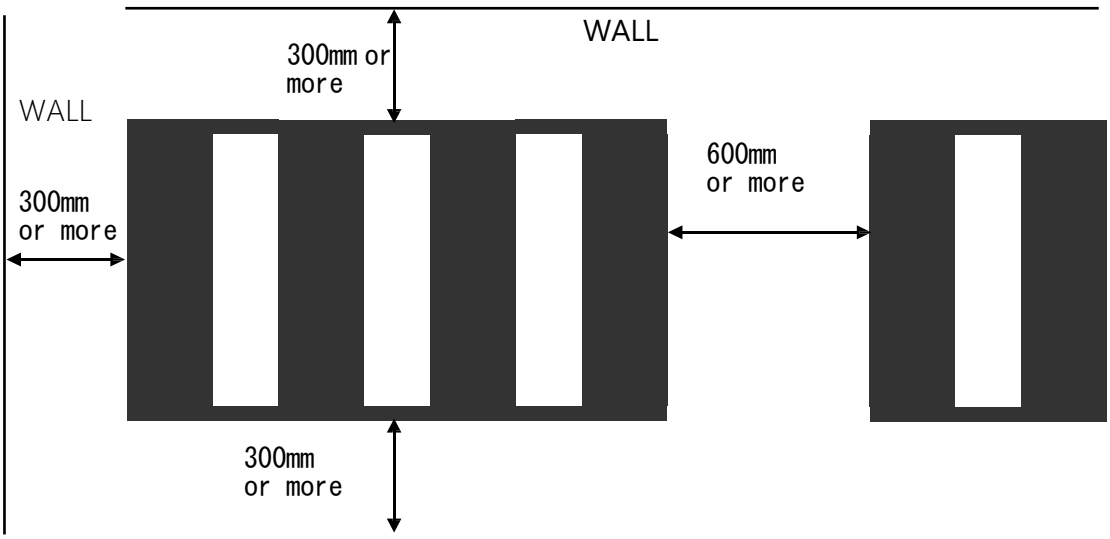
1-1 Field survey

Please investigate the installation site in advance.

- Prepare enough space to jack up or move existing racks.
- Check the wiring position at field investigation.
  Be sure to take sufficient extra length of 30 cm or more in advance for the cable wiring of the rack.

1-2 Floor situation

- Install abserver on a level and smooth floor within an inclination of about 6/1000 mm.
- If there is a problem with the leveling of the installation floor, please adjust using a shim plate such as steel plate or an optional rubber mat so that Abserver is installed horizontally.
- Abserver moves about ± 200 mm at the time of an earthquake, so please take a space of 300 mm or more around it.
- It is also recommended to keep the space between abservers 600 mm or more for safety.



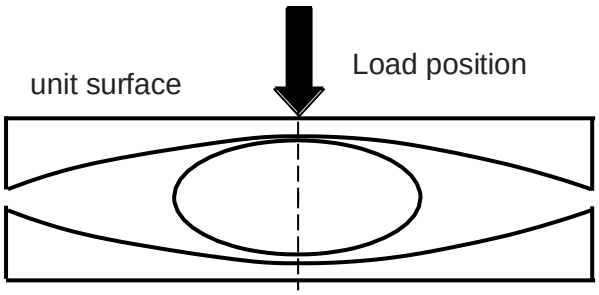
2. Center of gravity of the object

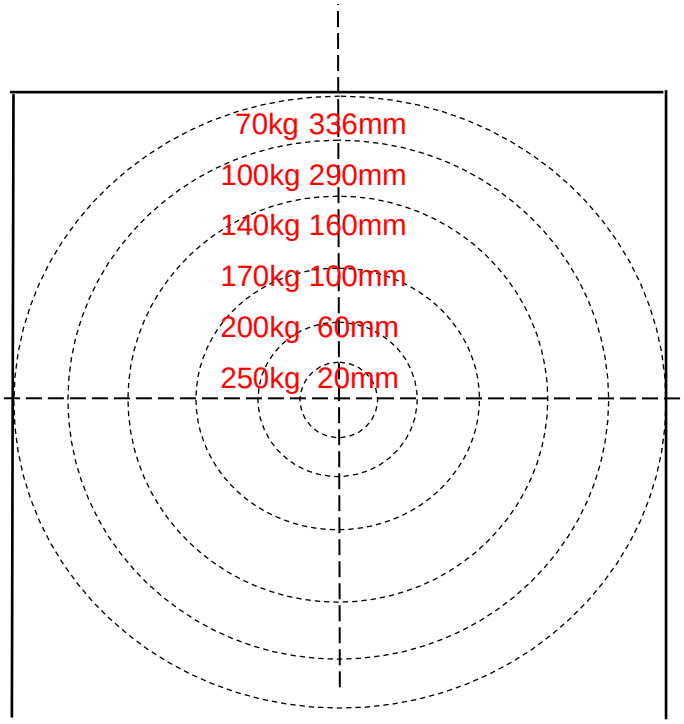
2-1 Position setting between load and abserver

- If not connecting Abserver, install the rack in the center of the unit.
- If connecting Abservers, both racks should be installed at the same position from both ends of the unit.

- When installing with a single point load such as a caster or support pillar bracket, the allowable range of the rack installation position is as follows, as shown in the following drawing, the allowable range per one point from the circular center of the four corners of the Abserver It depends on the allowable weight.
  (The figure below is an image diagram of one bearing part, please calculate the load total weight by 1/4)

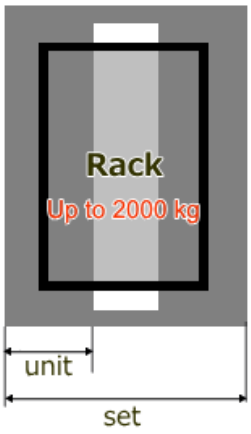
In case of casters or support pillar brackets, be sure to use the load distribution plate of the accessory

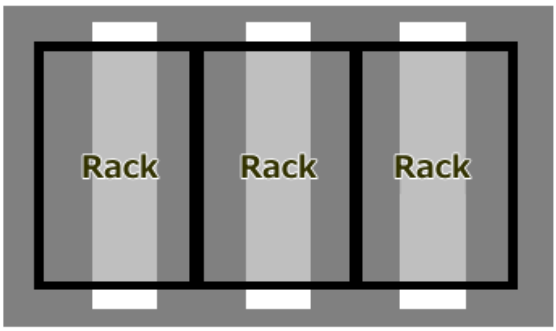




2-2 Weight restriction and installation position of the object

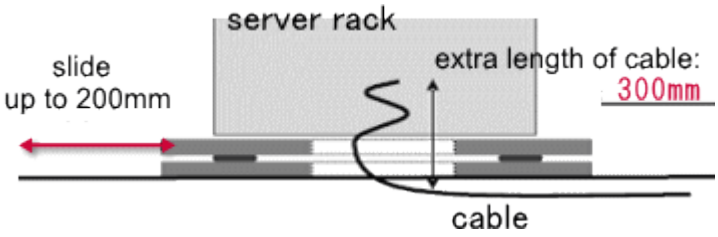
- Weight of the load for one set of Abserver (two units Abserver per rack) should be within 2,000 kg maximum.
  If the load point deviates from the curved plate center in the unit by a concentrated load, refer to above and calculate the maximum load.
- When the rack weight exceeds 2,000 kg, do not raise the rack, prepare 2 sets of Abservers.





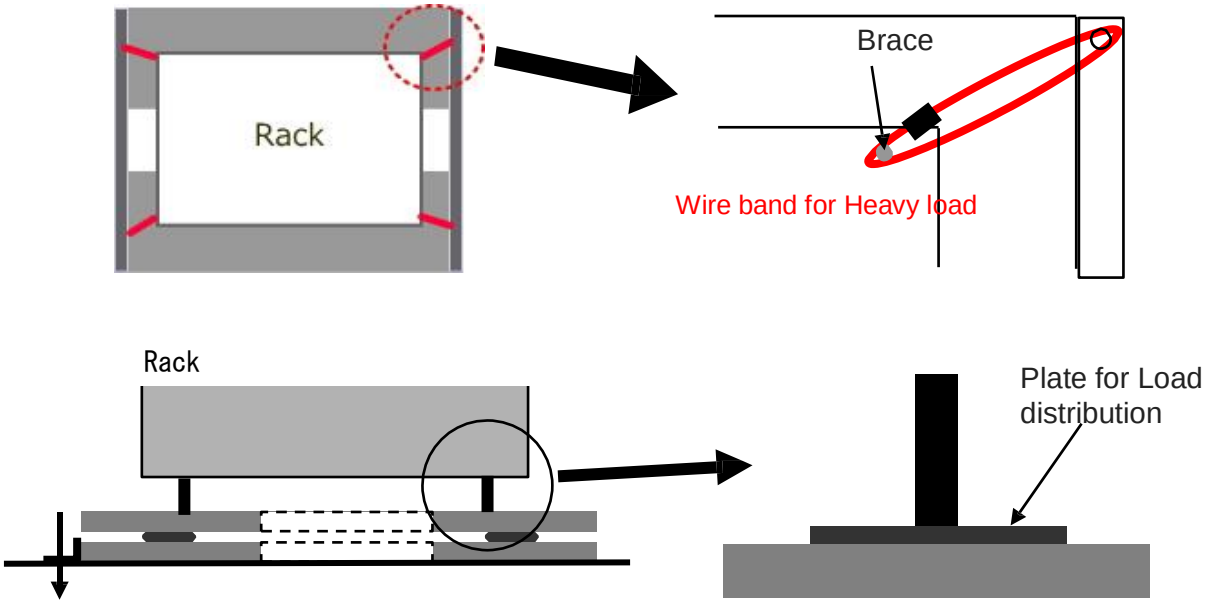
2-3 Allowance for cable wiring

Abserver usually moves around 200mm horizontally.
If there is any wiring or cables connected to the load we recommend there be at least 300mm of slack.



2-4 Fixing of objects (server rack etc.)

There is a possibility that the loaded object will be displaced from the Abserver when it is artificially pushed or an earthquake occurs.
It is recommended to fix Abserver and the load with standard fixing band.
If the caster or leveler is the load point, the load will be concentrated, so please lay it on the attached fixed plate (for load distribution).



3. Packing of Abserver

The factory shipment of the Abserver is as shown in the figure below.
The seismic isolation unit which fixed the upper and lower plates with temporary fixing metal fittings, the connector bar which connects it, and other parts are packed.
Please check whether it is packed as shown in the figure below.
One packing consists of one unit Abserver. For one rack, use 2 units.
When two or more racks are consecutive, add one unit at a time and connect them.

3-1 Packing for one unit of Abserver

1) Square connector bar
   (2 for upper plate connection)
2) L-shaped connector bar
   (2 for lower plate connection)
3) Inner bar for connection
   (to connect upper square connector × 2)

1. Main Unit of Abserver
   - Upper and Lower plate × 1 each
   - Bearing × 2
   - Hexagon socket head bolt M 8 short × 6
   - Temporary fixing bracket × 2
2. Insulation sheet (100 mm × 1,000 mm)
3. Plate for Load distribution (100 mm × 100mm)
4. Wire band for rack fixing (541 mm × 4, tensile strength 100 kgf)
5. Hexagon bolt (M8 long × 8 pieces, washer × 8 pieces)
6. Installation manual

3-2 Packing for End-Connector (One Package)

- End-connector is used at both ends when connecting multiple units of Abserver.
- The end-connector is required only at both ends of unit of abserver to be connected.
- This is not necessary for connecting the middle unit of abserver.

4. Installation instructions

4-1 Preparation at installation site

Please prepare the installation site in advance.
If there is unevenness on the floor of Abserver installation place, the function of the equipment will not be fully demonstrated. Please put a shim plate etc. on a flat floor.
Also, if you prepare the equipment installation drawing in advance, assembly work such as alignment can be done smoothly.

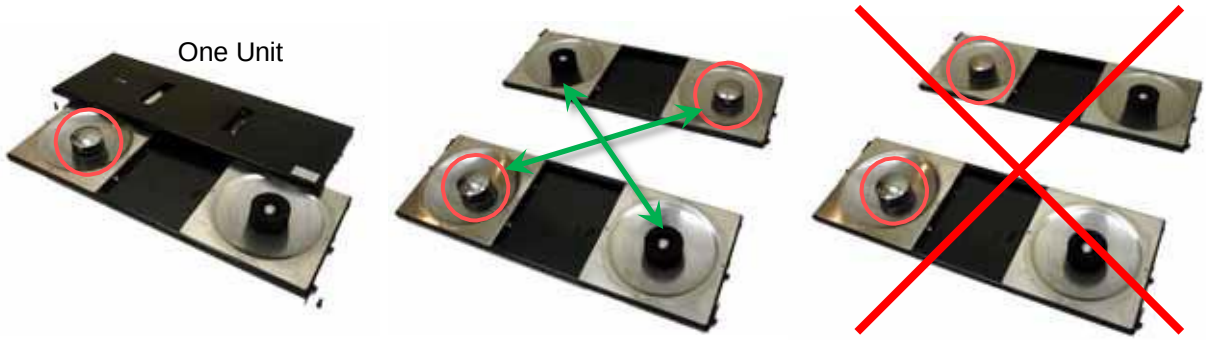
4-2 Assembly

Abserver should be assembled with 2 units or more.

(1) The main unit has a marble type bearing and a ball type bearing (with pad) inside.

There is a "marble" seal on the top of the unit on the marble type bearing side.
Since two or more units are used, please be sure to set the marble bearing on the diagonal as shown below.

* Damping ratio of marble bearing and ball bearing is different.
When installing each in parallel, the size to slide at the occurrence of an earthquake will change in the front and back, left and right, there is a possibility of collapse, be sure to set it on the diagonal.



When the upper and lower plate of the Abserver unit is already set, as shown in the figure, there is a "Marble" sticker on the side where the marble bearing is located.

(2) Remove all bolts (front and rear 6 pieces) from the main unit.

Put all bolts in a container etc. so that the bolt will not go away, please temporarily keep it. Remove the temporary fixing bracket in the same way and keep it (temporary fixing bracket is necessary when fastening the rack and the device).

Hexagon socket screw

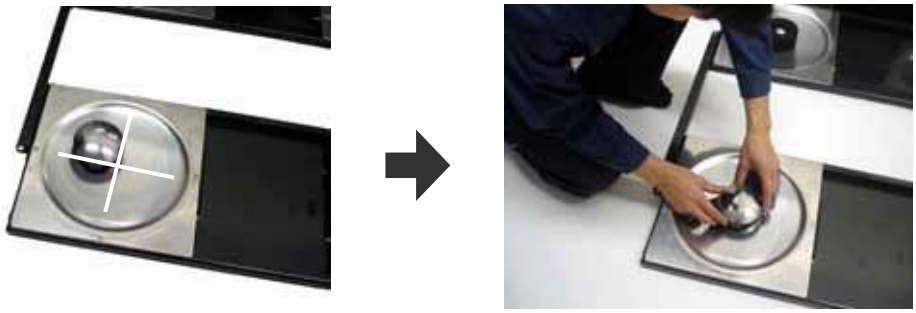
Temporary fixing bracket

(3) Connect the units.

First, install the L-shaped connector bar between the lower units. Please fix it to each unit with 2 bolts (short) removed. As for the fixing part, it is two inner parts as seen from the unit (Since it becomes free at the two ends of the lower unit, it is recommended to install the bolt directly to the unit.)

(4) Remove the upper unit once.

Make sure that the position of the bearing is in the center of the isolation plate.
In case of misplacement, please correct the position. Also, when you exchange optional parts, please change at this time.

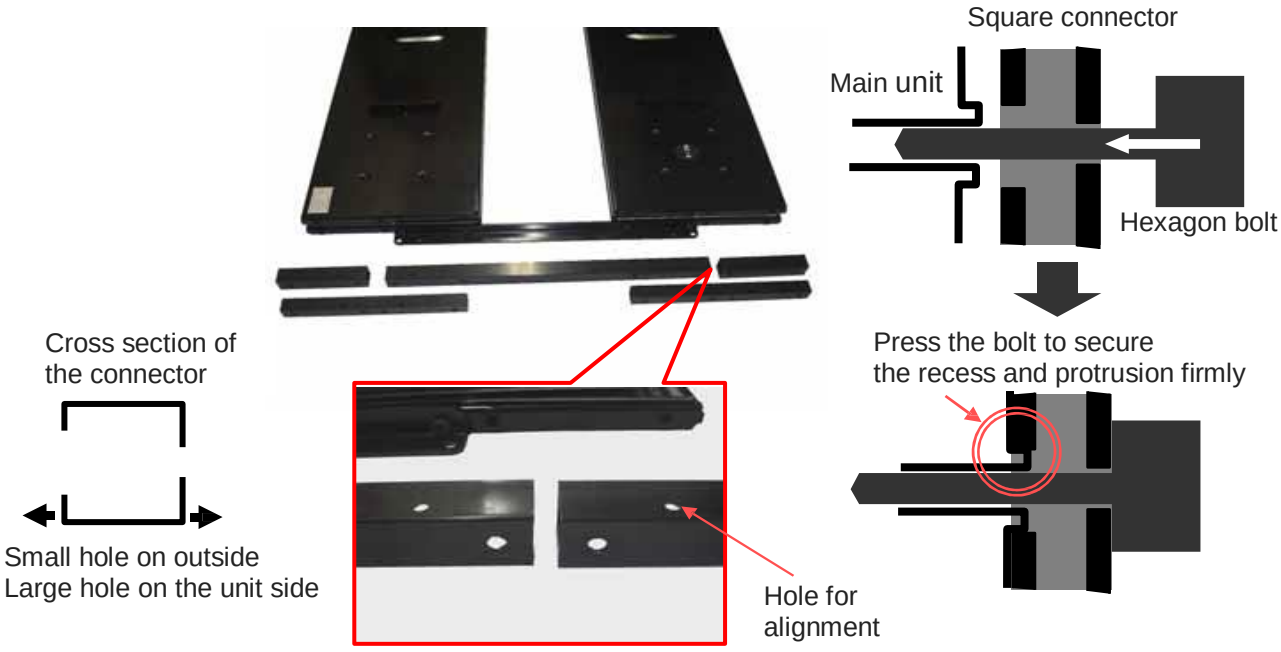


(5) Then attach the square connector bar to the upper unit.

Be sure to insert the inner bar at both ends of the square connector bar. Tighten the bolt hole and temporarily fix it, the work will be smooth (There are positioning holes at the top, so please work together).
The connector bar has an inside and outside direction. As the large hole of the connector bar comes into the unit side convex part, please tighten tightly until the concave and convex of the connection part disappears with the bolt.

Always use both end connector bars of separate packaging at both ends of the unit.
Please connect it in the same way as a square connector bar.
(There is a standard hole at the top, so please work together).

* If a convex portion of the unit and a concave portion of the connector bar are misaligned, the strength may be insufficient and the function of the device may not be fully demonstrated, so please be careful.



Check the position of the hole.
Inner and outer hole diameters are different.

(6) When arranging two or more racks, connect three or more Abserver units.

In this case, connect the end connectors only for both end sides.
Use only the square connector bar for the middle part.

(7) Make sure that the assembled Abserver is in the correct installation position.

Also check by levelers etc. to see if the level is maintained.

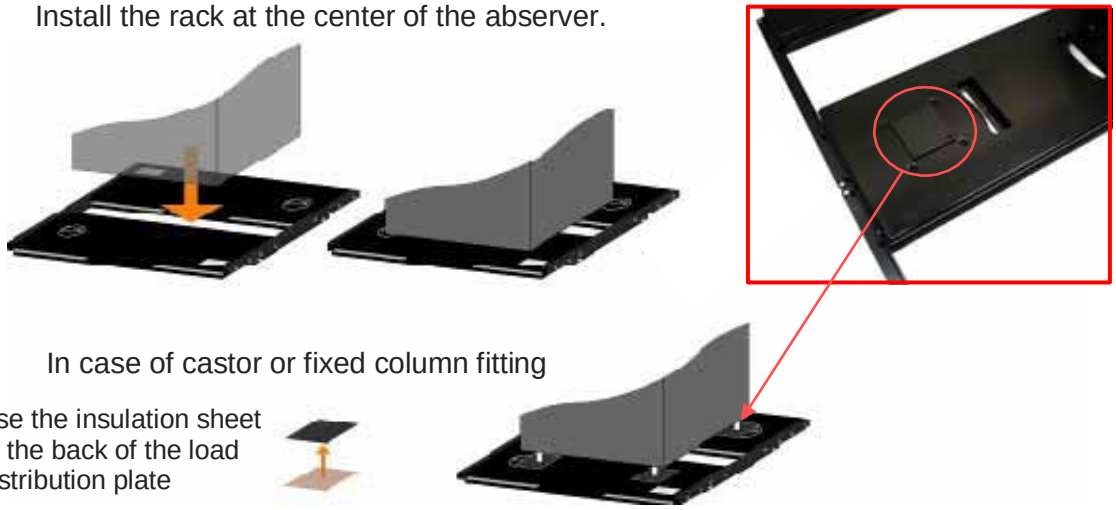
(8) Apply an insulating sheet to the bottom of the rack.

In the case of direct placement, paste the insulation sheet on the back of both ends of the rack. For casters and fixed pillar brackets, stick them to the back side (Abserver side) of the "load distribution plate" (only when insulation is required).
※ Before using the load distribution plate, measure it beforehand so that the caster and the fixed support bracket can be installed in the center.

(9) Place the rack on the absorber.

To align the center of the unit with the center of gravity of the rack, install the rack so that the widths of the front and back and the right and left are uniform.
If it is to be a castor or fixed bracket, do not install it directly, but install it with the "Load Balancing Plate" attached to the abserver unit, as described in 2-(1).

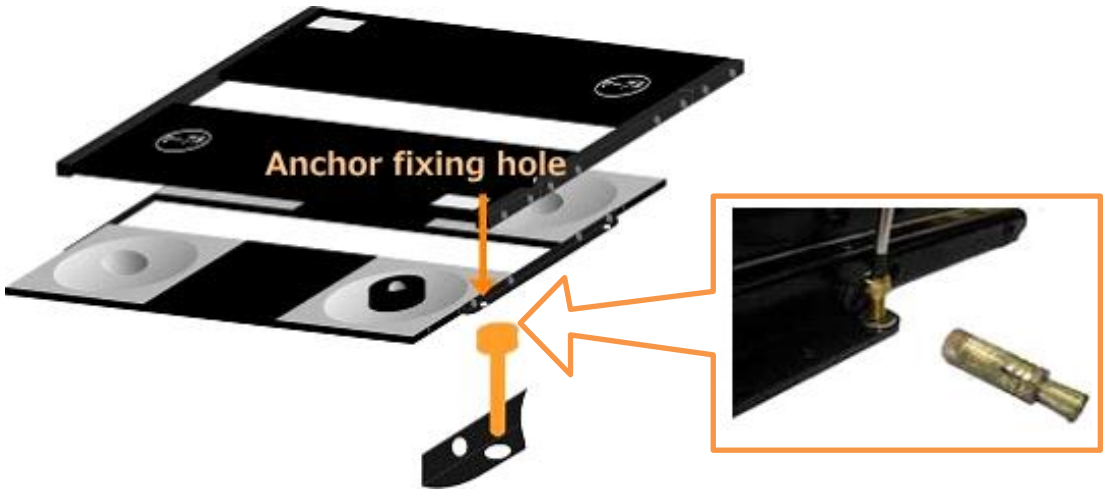
Install the rack at the center of the abserver.



In case of castor or fixed column fitting

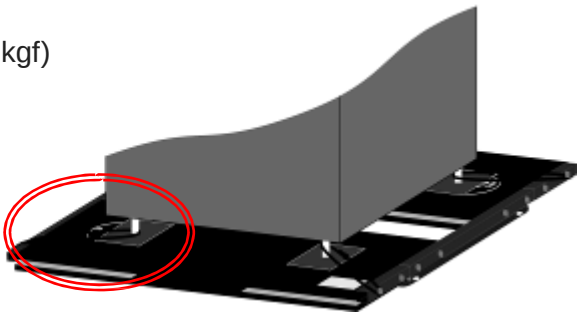
Use the insulation sheet to the back of the load distribution plate

(10) If you want to use anchor fixing, use the hole of the L connector on the lower plate of the abserver to fix it (no fixing bolt is attached).

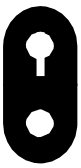


(11) To fix the rack and the abserver, attach the temporary fixing bracket to an optional bolt on the upper connector of the abserver, and fasten it to the four positions of the rack or chassis of the rack with the attached fixed bend.

・ Wire band (tension load 500kgf)
・ temporary fixing bracket
・ Fixing bolt (short)



Temporary fixing bracket



* Fix it to any bolt on the upper part of the main unit in the lower hole.
* Connect to the rack after passing through the vertical hole at the top of the wire band.

5. Optional products

Abserver has the feature that the attenuation rate can be changed by using an option product. High-rise buildings have the inherent vibrations at the building structure and the level of building, and if the attenuation rate is not changed, the seismic isolation equipment may resonate.

* Please consult with our specialist for the use of optional items, as it is necessary to analyze the structure of the building.

Optional Products:

1. Pads for the upper floors:
   Increase the damping factor by 20% relative to the standard product
2. Marble bearing for the upper floors
   Increase the attenuation factor by 60% compared to standard products
3. Base isolation for art works
   Effective for absorbing minor vibrations for art objects and precision machinery

* Optional items can be used separately depending on the building structure, the level of building and load weight, so please contact us for details.

6. Secifications

Part number		ab-M3100-6	ab-M3100-7	ab-M3100-8	ab-M3118-6	ab-M3118-7	ab-M3118-8
Name		Marble bearing type (Oblate spheroid bearing) base isolator					
Unit Size	W	350 mm					
	D	1000mm			1180mm		
	H	63mm (*1)					
Unit Weight		39.6kg	40.4kg	41.1kg	42.9kg	43.7kg	44.4kg
Max. Set Size		944mm	1044mm	1144mm	944mm	1044mm	1144mm
Maximum load weight		1000kg per unit (*2)					
Material		Main body and Connector: SS 400 or equivalent, Saucer: SUS 430, Marble (Oblate spheroid) bearing: Ductile Iron, Steel ball: Bearing steel, Pad: Special rubber, Surface treatment: Cation electrodeposition coating					
accessories		Instruction manual, Insulation seal, Wire Bands, Load distribution plate, Connector Bar set (Individual packing), End-connector bar set					

(*1) Upon earthquake, it will raise up to 100 mm high.

(*2) For one-point load type such as support fittings and casters, 1/2 of the notation may be the maximum load capacity