

Precautions for construction

Typical precautions for installing the water supply pump unit are described below. Some points may differ depending on the model. Be sure to check the installation precautions for each model.

1. Installation

- Install the unit so that the following conditions are met.
- Install the unit as close to the water supply source as possible.
 - Fix firmly with anchor bolts on level foundation concrete.
 - Provide a maintenance space on the entire surface of the unit.
For the dimensions of the maintenance space, confirm the precautions in the construction of each unit.
 - Be sure to provide a drain ditch around the unit.
 - If the system could be exposed to freezing temperature in winter, a unit with special anti-freezing measures is required.
 - When generated noise may pose a problem, take necessary measures to prevent noise, such as a sound insulating materials for the door and wall of the pump room.

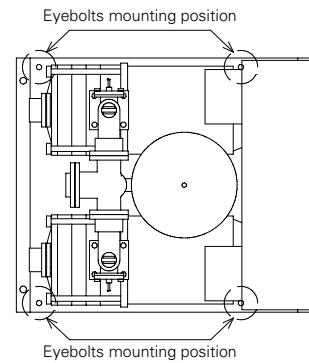


Fig. 1 Lifting position
(For NX type unit)

2. Electrical work

- (1) Install a ground fault interrupter dedicated to this equipment on the panel board. When selecting a ground fault interrupter for the panel board, check the capacity of the ground fault interrupter fitted inside the device and select one in consideration of protection coordination.
- (2) Connect the ground wire to the ground screw (earth seat) in the control panel. Perform Class D grounding (grounding resistance of 100Ω or less) for grounding.
- (3) Connect the primary power line to the power terminal block inside the control panel. Shield the primary side wiring on the control panel by placing it in a metal tube or duct, and ground the sheath of the tube.
- (4) All the electric wires to be used for grounding or power supply wiring shall comply with Indoor Wiring Regulations, according to the wiring distance and installation method.
- (5) Do not install the power supply wiring and instrumentation wiring using the same cable. Do not place the power supply wiring and instrumentation wiring in close proximity.

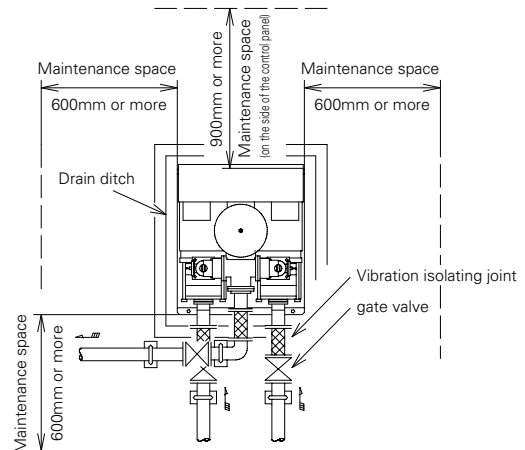


Fig. 2 Installation example
(For NX type unit)

3. Piping construction [Positive suction type]

- (1) Install an adequate pipe support so that the weight of the piping system will not be applied to the main unit.
- (2) Be sure to provide a gate valve in the unit discharge piping and suction piping for maintenance. For test operation and adjustment, it is recommended to attach a test pipe to the discharge pipe.
- (3) The suction pipes must be as short and straight as possible with minimal bends. The bore of the suction pipes must be equal to or one size larger than that of the pump to minimize the piping loss.
- (4) When combining suction pipes, use a pipe whose diameter is larger than the diameter of the unit discharge port, and install a gate valve for each pump.
- (5) Be sure to attach a strainer at the end of the suction pipe to prevent foreign matter from entering.
- (6) Provide a vibration isolation joint for the suction and discharge piping of the unit.
- (7) Do not use the piping material that may cause rust in the pipe, as this can cause unit failure.

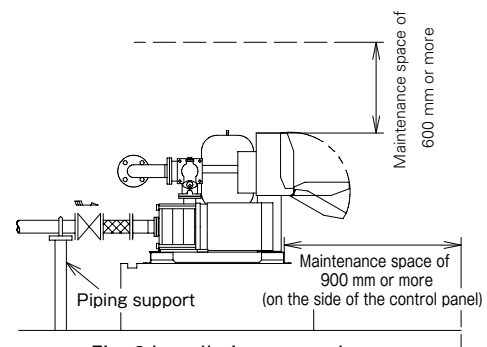


Fig. 3 Installation example
(For NX type unit)

4. Piping installation [Negative suction type]

- (1) If the water supply source is located below the pump, negative suction type water supply unit is required.
- (2) In the worst case, water supply may be cut off if the work is not carried out correctly. However, if there are guidelines or instructions by the local government, please follow those instructions.
- (3) Be sure to install a foot valve with a strainer at the end of the suction pipe to prevent foreign matter from entering.
- (4) Install the foot valve at least twice the pipe diameter (D) below the lowest water level, and at least 1 - 1.5 times the pipe diameter (D) above the bottom and sides of the water tank. (See Fig. 4.)
- (5) Be sure to install the suction pipe for each pump. Make sure to provide a rising slope (at least 1/100 degrees) leading up to each pump to prevent the formation of air pockets inside the pipe. (See Fig. 4.)
- (6) The suction pipes must be as short and straight as possible with minimal bends. The bore of the suction pipes must be equal to or one size larger than that of the pump to minimize the piping loss.
- (7) When changing the diameter of the suction piping to a smaller one just before the pump, use an eccentric reducer to prevent the formation of air pockets. (See Fig. 5.)
- (8) Provide piping supports so that the weight of the piping is not applied to the main unit.
- (9) Do not install a gate valve on the suction pipe.
- (10) Provide a vibration isolation joint for the suction and discharge piping of the unit. However, do not mount the ball type vibration isolation joint on the suction piping, as air pockets may occur.
- (11) Carefully attach joints and other parts to the suction pipe to block air suction. Also, keep the number of joints as small as possible.
- (12) Do not use the piping material that may cause rust in the pipe, as this can cause unit failure.

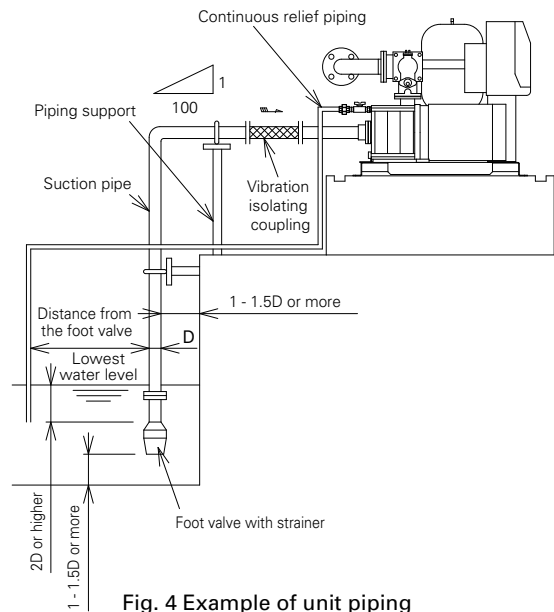


Fig. 4 Example of unit piping

5. Constant relief pipe

- (1) For negative suction, connect the relief piping and return the water to the water supply source. If air collects in the pump, the pump capacity will decrease and water may be cut in the worst case. Therefore, always install a relief pipe for each pump to discharge air.
- (2) Always immerse the end of the constant relief pipe below the water level to at least the same level as the suction pipe, and keep the relief pipe away from the suction pipe so that the pump does not always suck air from the constant relief pipe.
- (3) If the end of the constant relief pipe cannot be immersed in the water supply source, install the priming tank, raise the constant relief pipe to above the priming tank surface, and install a vacuum breaking valve at the top.
- (4) Be sure to fully open the ball valve of the constant relief pipe. Water around 10L/min (20 - 30L/min depending on the model) flows from the constant relief pipe.

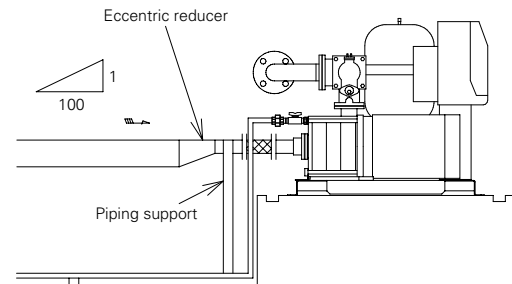


Fig. 5 Example of unit piping

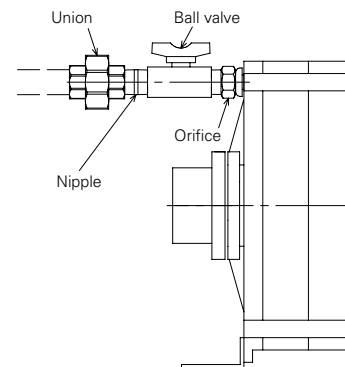


Fig. 6 Detailed view of the constant relief kit (For NX type unit)

- If a defect occurs in installation work which does not deviate from the construction procedures specified by our company, and the constructor carries out free repair or compensation for damages, insurance money will be provided under the Better Living Foundation, a general incorporated foundation, for the parts with the BL mark affixed (or stamping, etc.).
- In the event that our company or the installation contractor is bankrupt or otherwise, the Center of Better Living will take measures in lieu of our company's liability for defect warranty, etc., for good-quality parts with the BL mark certified by the Center of Better Living.
- Please refer to the following website for details on the BL insurance system and the construction procedures for housing parts.
The Center of Better Living (<https://www.cbl.or.jp/>)
TERAL INC. (<https://www.teral.net/>)

* The illustration shows the typical models. Some shapes may differ depending on the specifications.