MIURA

INSTALLATION MANUAL

SYSTEM INTEGRATED WATER SOFTENER

MW-35U - 1000U (America Product)

This document was formulated in Japan. Comply with the regulations and standards of the country of use regarding installation and usage.
The specifications of products and components may vary with country of use and the site situation.

INFORMATION IN THIS MANUAL MAY BE CHANGED WITHOUT NOTICE.

MIURA CO., LTD.

Manual Code No.	S827-089-030C

Applicable to All Water Treatment Equipment (Safety Information)	Document No.: 98-001-07-01

<Precautions for installation and use> — Safety information

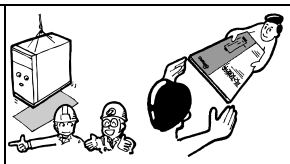
When installing and using a piece of water treatment equipment, you are obligated as an operator to submit official notification, and to install, construct and utilize your equipment strictly in compliance with applicable laws and regulations. In order that your MIURA water treatment equipment can be put to safe and reliable use, it is crucial that in addition to fulfilling these legal obligations, you also establish and implement a safety management system.

⚠ WARNING

This section highlights situations where failure to follow MIURA guidelines could lead to serious injury or death.

(1) Relocation & Resale

If you intend to relocate or sell your MIURA water treatment equipment, contact your dealer or MIURA sales office in order that installation work can be carried out correctly and that the peripheral equipment may be set up. In addition, ensure that Operation Manual and the like are kept in order that they may also be provided to the new owner in the event of resale.

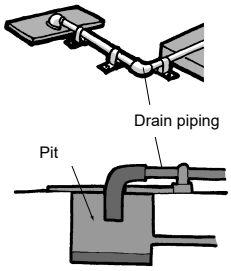


(2) Prohibition of Modification without Permission

Customization or modification not recommended by MIURA may present safety problems and is therefore prohibited. If you wish to modify your water treatment equipment, contact your dealer or MIURA sales office in advance. It should be noted that MIURA will accept no responsibility for the outcome of unapproved customization.

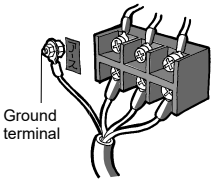
(3) Drain Piping

Ensure that drain piping is fixed securely in place to prevent it from moving in reaction to drain discharge and that the end of the piping opens in a safe location such as a pit. Failure to observe this precaution may lead to electric shock or other problems due to splashing of water. Do not touch the drain piping as the discharged water may be high temperature in some cases depending on the product used. Touching the drain pipe may result in burns or other injury. High concentration water or non-standard pH water may be discharged from the water treatment equipment temporarily in some cases. Additional water treatment may be necessary to prevent lakes and other bodies of water from being adversely affected depending on the volume of drain and the water quality.



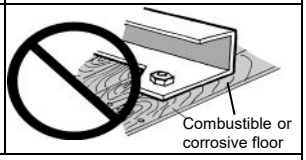
(4) Electrical Work

When connecting a power supply to the water treatment equipment, use wire of the specified rating and ensure that the equipment are correctly grounded (Japanese D-type grounding work or better). Furthermore, a dedicated power supply should be used, and an earth leakage circuit breaker (with overcurrent protection) should be installed. If this precaution is not observed, serious accidents such as electric shock and the outbreak of fire may result.



(5) Installation of Main Unit

Do not put any combustible material inside the control box.
If anchor installation is instructed for the equipment, do not install the equipment on a wood or combustible floor. Install the anchor bolts securely.

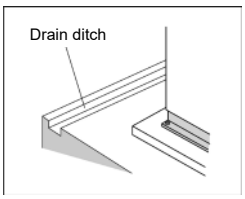


⚠ CAUTION

Indicates a situation which might cause minor injury to the user or the occurrence of physical damage only, if the product is mishandled.

(1) Dew Condensation and Water Leakage Countermeasures

Dew drops may occur depending on environment conditions including the raw water temperature and the atmosphere in the installation location. If necessary, take measures to prevent dew condensation, such as installing heat insulation.
Moreover, factors such as loose connectors and aging of pipe materials can lead to water leakage.
It is important that drain ditches be setup for the water treatment equipment and all peripheral equipment. (In order to prevent water from leaking outside the room or downstairs, set up a drain ditch that completely encloses the whole equipment, ensure that the floor itself is waterproof, make the floor slope downward to the drain ditch, and take any other necessary steps.)



NOTE

(1) Exporting from Japan

Under the Foreign Exchange and Foreign Trade Act, permission must be granted in advance by the Government of Japan for products under export control to be shipped overseas. In addition, many countries have enacted regulations and the like covering the import and usage of products from Japan—in certain cases, import and use of these products is prohibited. This product conforms to laws and regulations in Japan. It may not be used in the export destination country due to the laws and regulations there. Therefore, if you wish to export your water treatment equipment from Japan, contact your dealer or MIURA sales office in advance.

(2) Water Treatment Equipment Installation

Ensure that the installation work for the water treatment equipment is carried out correctly as set forth in the applicable MIURA Installation Manual. Furthermore, anybody who will work with the water treatment equipment should carefully study the content of the Operation Manual in advance and ensure that it is fully understood.

Applicable to All Water Treatment Equipment (Related Laws and Regulations)	Document No.: 98-002-05-01

<Precautions for equipment installation and use> — Related laws and regulations

1) The table below shows part of the laws and regulations on the installation and use of water treatment equipment. Refer to the separate document for more information on other relevant laws and regulations.
   (There are also prefectural and municipal ordinances; therefore, contact the supervisory authority or competent authority for more information.)
2) The information listed in the table was created based on the laws and regulations in effect when the information was published.
3) The documents to be submitted and their destination vary depending on your equipment and facilities.
   If you have any questions, contact your nearest dealer, MIURA sales office, or the competent supervisory authority.
4) The laws and regulations listed below may not apply to all water treatment equipment. Refer only to those laws and regulations that apply to your equipment and facilities.

Related laws and regulations	Form(s) to be submitted	Destination	Submission timing	Remarks
Water Quality Pollution Control Act, River Act, Sewerage Service Act, etc.	Verification required from local towns and cities in which the water treatment equipment or other equipment is installed. (The laws and regulations in some areas may be defined even more specifically in accordance with regional regulations.)			Drain water may be produced depending on the type of water treatment equipment and equipment operation. Drain water must be treated in other ways to prevent it from damaging waterways and the like. In cases where the total amount of drain water exceeds the legal amount on a per-plant basis or where the equipment is used at specified facilities, an application is necessary. However, the conditions may vary from region to region. Accordingly, you should contact your local authorities for more information.
Regional Pollution Prevention Ordinance	Notification as required by the applicable ordinance	As set forth by the relevant regional authorities	As set forth by the relevant regional authorities	Applicability is defined independently by regional pollution prevention ordinances based; accordingly, you should contact your local authorities for more information. (Certain regional ordinances concerning air pollution, noise, vibration, drain water, and the like may supersede the corresponding national regulations.)
Water Supply Act	—	—	—	(Prohibition of direct waterworks contact) Water treatment equipment (excluding certified equipment) cannot be connected directly to waterworks. Instead, it is necessary to either set up a feed water tank or to isolate the systems using, for example, a float valve. Details may vary from region to region; accordingly, you should contact your local authorities for more information.
	Design specifications for dedicated waterworks, Notification of the start of feeding water	As set forth by the relevant regional authorities	—	Business operators are to submit notification to local governments for drinking water wells for industrial use in facilities where the volume of water intake exceeds the allowed quantity as prescribed by law which require the use of dedicated waterworks systems regardless of the form of usage. Contact your local authorities for details.
Act on Maintenance of Sanitation in Buildings	—	—	—	Buildings are to be preserved and maintained (through cleaning, water quality analysis, and other activities) in accordance with Hygiene Control Standards.
Food Sanitation Act	No notification made for equipment and related matters	—	—	Measures are to be implemented to maintain hygiene and safety and prevent sanitation hazards in accordance with applicable laws.
Industrial Safety and Health Act	Notification of plans	Chief of the Labor Standards Inspection Office	30 days before the start of installation work	When installing a facility where substances specified in applicable laws (such as specified chemical substances) are handled, it is necessary to submit a notification of facility planning. (Dilute sulfuric acid and hydrochloric acid are specified chemical substances.)
	—	—	—	When using substances specified in applicable laws (such as specified chemical substances), a qualified operator must be selected, all such substances are to be handled and managed in accordance with applicable laws, and the operator's healthcare is necessary.
Poisonous and Deleterious Substances Control Act	—	—	—	All such substances are to be stored and managed in accordance with applicable laws. Chemical substances are to be handled properly in accordance with the guidance and information listed on the SDS for the relevant material.
Fire Service Act	Notification as set forth by local fire departments	The nearest fire department	Prior to the start of work	Local fire chiefs or fire department chiefs must be notified in advance of any plans for any party to use or store certain substances (chemical substances and other materials) of a designated quantity as specified by applicable laws and regulations.

<Precautions for chemical management and handling> — Related laws and regulations

1) The table below shows part of the laws and regulations on chemical management and handling. There are also prefectural and municipal ordinances; therefore, contact the competent administrative authority for more information.
2) This table shows the laws and regulations as of the end of September 2017. For the most up-to-date information, contact the competent administrative authority.
3) The management and handling differ depending on the chemicals you handle. If you have any questions, contact your nearest dealer, MIURA sales office, or the competent administrative authority.

Related laws and regulations	Destination	Submission timing	Remarks	Common precautions for management and handling
Poisonous and Deleterious Substances Control Act	—	—	If the chemical product is a deleterious substance, it is necessary to perform appropriate storage management, etc. as a person handling it in businesses.	The laws and regulations applicable to each chemical product are described in the SDS (Safety Data Sheet). Manage the chemical products in accordance with the laws and regulations. Refer to the SDS for details about proper handling of each chemical product.
Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (Law concerning Pollutant Release and Transfer Register (PRTR))	Authority in the prefecture to which the location of each office belongs	Yearly (April to June)	When handling one ton or more of a Class I designated chemical substance (0.5 ton or more of a specific Class I designated substance), as mentioned in the act, it is necessary to submit a notification depending on the target industry type and the number of permanent employees.	
Industrial Safety and Health Act	—	—	According to the act, if a chemical product containing chemical substances that require risk assessment in an amount equal to or more than the cut-off value is newly adopted, or the work procedures to handle it are changed, the business operator is required to perform risk assessment. * The risk assessment refers to the identification of the dangers and hazards of a chemical substance or its manufacture, estimation of the extent of possible harm or health hazard to the worker, and examination of the risk reduction measures.	

Introduction

This document is an instruction manual for transport and installation of the MW Series of water softener units (hereinafter the “Unit”).

When installing the Unit, read and understand this manual well and install it safely. In this manual, risk and damage associated with the Unit are classified in the following three levels.

DANGER Indicates an imminently dangerous situation which leads to a serious injury to or death of the user if the product is mishandled.

WARNING Indicates a situation which might cause a serious injury to or death of the user if the product is mishandled.

CAUTION Indicates a situation which might cause a minor injury to the user or the occurrence of physical damage, if the product is mishandled.

[Explanation of Notation]

The meanings of the symbols used in this manual are as shown below.

	Indicates a prohibited action (what you must not do).
	Indicates a possibility of injury when a specific part of the product is touched.
	Indicates the possibility of an electric shock when the product is handled with wet hands.
	Indicates an action to be taken according to an instruction (action to be executed).
	Indicates an action connecting a grounding wire.
	Indicates a caution.
	Indicates a possibility of injury due to high temperatures under specific conditions.
NOTE	Used to highlight important information to prevent equipment malfunction as well as tips for efficient work and other useful information.

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1. INSTALLATION PREPARATIONS

1.1 Check before Installation

Check the following points before installation.

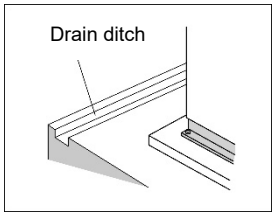
CAUTION

Caution

Dew drops may occur depending on environment conditions including the raw water temperature and the atmosphere in the installation location. If necessary, take measures to prevent dew condensation on this device and external piping, such as installing heat insulation.

Also, factors such as loose connectors and aging of pipe materials can lead to water leakage. In order to prevent water from leaking outside the room or downstairs, take appropriate measures against drain water on the installation surface of water treatment equipment and peripheral equipment.

- Setting up a drain ditch that completely encloses the whole equipment
- Applying a waterproof treatment to the floor, and making the floor slope downward to the drain ditch



NOTE

- The Unit is designed for indoor installation only. Install it at a place not subject to rainwater or direct sunlight.
- Check the pressure loss in the entire system in advance, and make sure the required water flow rate is obtained.

  The raw water pressure must not exceed 71 psi at all times. If the pressure exceeds 71 psi, install a pressure reducing valve. To protect the equipment in the case of malfunctioning of the pressure reducing valve, it is recommended to install a safety valve as well. The equipment could get damaged if the pressure exceeds 71 psi.

  The raw water pressure during regeneration (feed water pressure to the equipment) must be within the range given below. If the raw water pressure during regeneration is outside the range given below, poor regeneration may occur.

  Raw water pressure range: MW-35U, 65U, 100U, 150U, 250U, 400U --- 22 to 71psi
  MW-600U, 1000U ---------- 26 to 71psi
- Use raw water having a temperature of between 39 and 104°F . Using raw water having a temperature out of this range may lead to a failure of the water softener or other problems.
- If there is any concern of freezing in cold regions, provide antifreeze measures in the equipment and external piping in accordance with the environment at the sight, after consulting the customer.

- To drain water during regeneration, a drainage facility that can treat the drain water flow rate stipulated in the specifications is required. The drain water contains the salt content used during regeneration. Make sure there is no problem with the drainage facility. Do not put drainage piping together with other equipment.
- Perform work with the main power turned OFF.
- Use a non-interruptive power supply available 24 hours a day.
- A power supply (a wall socket with grounding) of 100 to 125 VAC single-phase 50/60 Hz is necessary. Use a single power source for each unit and install an earth leakage breaker (fitted with an overcurrent protective device).
- In cases where the inlet piping and outlet piping of the equipment are in a sealed state, an increase in ambient temperature or other factors may cause the pressure inside the internal piping of the equipment. If the pressure is likely to exceed 71 psi, install a safety valve or the like in the piping. The equipment could get damaged if the pressure exceeds 71 psi.

1.2 Protective Equipment

WARNING

Remember to wear a helmet, protective glasses, protective mask, safety shoes, safety gloves, and other protective equipment depending on the work.

1.3 Preparation for Special Tools

The following special tools are necessary. Have them ready before installation.

(1) Funnel, which is used to feed in gravel and resin.

(2) Pipe, which is used to flatten the top surface of the gravel layer after it has been fed in the resin tank. A pipe that is about 6.6 feet long is necessary for MW-600U and a pipe that is about 7.2feet long is necessary for MW-1000U.

(3) Hand lift or platform hand truck, which are used to transport resin tanks, MW-35U,65U,100U,150U, 250U and 400U. They are also used to transport heavy materials.

(4) Belt sling, which is necessary only for MW-600U and 1000U, used as a sling for resin tanks.

(5) Torque wrench, which is used to tighten PVC flanges and whose use is recommended only for MW-600U and 1000U.

1.4 Main Unit and Provide Check

When the unit is received, check for the parts listed below.

◆ MW-35U, 65U and their provides

Table 1-1 Water Softener Units and their Provides

NO.	ITEM	SPECIFICATION / REMARKS	QUANTITY	
			MW - 35U	MW - 65U
1	Resin tank	35U: 10 × 44 65U: 13 × 54	2	2
2	Control valve assembly -1	For specific model	1	1
3	Control valve assembly -2	For specific model	1	1
4	Bypass valve assembly		2	2
5	Collecting pipe assembly	For specific model	2	2
6	Brine tank assembly	35U:45 gal 65U:45 gal	1	1
7	Brine valve assembly	Items inside the brine tank	1	1
8	Control box assembly	Mount attached	1	1
9	Inlet pipe assembly		1	1
10	Outlet pipe assembly		1	1
11	Cation exchange resin		35L × 2 [1bag+10L] × 2	65L × 2 [2bags+15L] × 2
12	Gravel		5L × 2	9L × 2
13	Flexible hose	1” × 12”L, 304SS	1	1
14	Y-shape strainer	1”, 304SS	1	1
15	NPT-PT conversion joint	1”	4	4
16	Hardness indicator	9100H	1	1
17	Mini cup		1	1
18	Instruction manual		1	1
19	Vinyl hose	ø 12 × ø 16mm 2m	1	1
20	Vinyl hose	ø 15 × ø 19mm 2.5m	2	2
21	Hose clamp	ø 16mm	1	1
22	Hose clamp	ø 19mm	2	2
23	Nylon tube	ø 3/8	28feet	28feet
24	AC/DC adaptor	24VDC 60W	1	1
25	Power cable (for AC/DC adaptor)	125VAC 10A	1	1
26	Surge protector	125VAC 15A	1	1

◆ MW-100U, 150U, 250U, 400U and their provides

Table 1-2 Water Softener Units and their Provides

NO.	ITEM	SPECIFICATION / REMARKS	QUANTITY			
			MW-100U	MW - 150U	MW - 250U	MW - 400U
1	Resin tank assembly	100U: 14 × 65 150U: 18 × 65 250U: 24 × 72 400U: 30 × 72	2	2	2	2
2	Control valve assembly -1	For specific model	1	1	1	1
3	Control valve assembly -2	For specific model	1	1	1	1
4	Brine tank assembly	150U: 100 gal 250U: 150 gal 400U: 250 gal	1	1	1	1
5	Brine valve assembly	Items inside the brine tank	1	1	1	1
6	Control box assembly	Mount attached	1	1	1	1
7	Inlet pipe assembly		1	1	1	1
8	Outlet Pipe Assembly	MW-100U: 2 components	1	1	1	1
9	Cation exchange resin		100L×2 [4bags] × 2	150L×2 [6bags] × 2	250L×2 [10bags] × 2	400L×2 [16bags] × 2
10	Gravel		12L×2	30L×2 [2bags] × 2	60L×2 [4bags] × 2	100L×2 [6bags+10L] × 2
11	Flexible hose	1 1/4×18L inch, 304SS	4	0	0	0
		1 1/2×24L inch, 304SS	0	4	4	4
12	Nipple	1 1/4 inch, PP, SCH80	4	0	0	0
		1 1/2 inch, PP, SCH80	0	4	4	4
13	Y-shape strainer	1 1/4 inch, 304SS	1	0	0	0
		1 1/2 inch, 304SS	0	1	1	1
14	Tank adaptor wrench		1	1	1	1
15	Hex-bolt	M6 × 30, 304SS	16	16	16	16
16	Hardness indicator	9100H	1	1	1	1
17	Mini cup		1	1	1	1
18	Instruction manual		1	1	1	1
19	Vinyl hose	ø 19mm × ø 23mm	1	1	1	1
20	Hose clamp	ø 23mm	1	1	1	1
21	Nylon tube	ø 12mm	28feet	28feet	14feet	14feet
22	Nylon tube	ø 6mm	0	0	14feet	14feet
23	AC/DC adaptor	24VDC 60W	1	1	1	1
24	Power cable	125VAC 10A	1	1	1	1
25	Surge protector	125VAC 15A	1	1	1	1

◆ MW-600U, 1000U and their provides

Table 1-3 Water Softener Units and their Provides

No.	ITEM	SPECIFICATION / REMARKS	QUANTITY	
			MW-600U	MW-1000U
1	Resin tank assembly	600U：36 × 72 1000U：48 × 72	2	2
2	Control valve assembly	With stand No. 1 and No. 2 unit	2	2
3	Brine tank assembly	600U：300gal 1000U：500gal	1	1
4	Brine valve assembly	For each model Installed in the brine tank	1	1
5	Control box assembly	With stand and brine flowmeter	1	1
6	Upper main pipe assembly	No. 1 and No. 2 unit	2	2
7	Lower main pipe assembly	No. 1 and No. 2 unit	2	2
8	Upper drainage pipe assembly	No. 1 and No. 2 unit	2	2
9	Upper flange assembly including divided collecting pipes	No. 1 and No. 2 unit	2	2
10	Cation exchange resin		600L × 2 [24bags] × 2	1000L × 2 [40bags] × 2
11	Gravel		60L × 2 [4bags] × 2	100L × 2 [6bags+10L] × 2
12	Upper flange assembly bolt set	5/16 inch bolt and nut set	2 sets	2 sets
13	Flange packing bolt set	5/8 inch bolt and nut set	2 sets	2 sets
14	Y-shaped strainer	600U：2-1/2 inch BRASS 1000U：3 inch BRASS	2	2
15	Gate valve	600U：2-1/2 inch BRASS 1000U：3 inch BRASS	1	1
16	Flow monitor kit	600U：2-1/2 inch 304SS 1000U：3 inch 304SS	1	1
17	Hardness indicator	9100H	1	1
18	Mini cup		1	1
19	Valve tag	Yellow	1	1
20	Valve tag	Green	2	2
21	Operation manual		1	1
22	Vinyl hose	ø 19 × ø 23mm	1	1
23	Hose band	for ø 23 mm hose	2	2
24	Brine tank fixed plate	304SS	4	4
25	AC/DC adaptor	24VDC 60W	1	1
26	Power cable	125VAC 10A	1	1
27	Surge protector	125VAC 15A	1	1

2. Carrying-in

2.1 Dimensions and Weight when Shipped

The external dimensions and weight for each model capacity are shown in the following table.

Table 2-1 External dimensions and weight of the product

Items		Unit	System Integrated Water Unit			
Model		—	MW-35U	MW-65U	MW-100U	
Overall dimensions (W×D×H)	Resin tank	inch	ϕ10 1/2” × 44 5/16”	ϕ13 9/16” × 55 1/16”	ϕ14 3/8” × 65 7/8”	Note 1,3
	Water softener unit		ϕ10 1/2” × 50 5/16”	ϕ13 9/16” × 61”	ϕ14 3/8” × 76 11/16”	Note 3
	Control box		15 3/4” × 10 1/4” × 55 1/8”			
	Brine tank		ϕ18 1/2” × 40 15/16”		ϕ25 9/16” × 51 13/16”	
Dry weight	Resin tank	lb	15	24	33	Note 1,3
	Water softener unit		110	177	287	Note 2,3
	Control box		46.3			
	Brine tank		15.4		33	
Operating weight	Water softener unit	lb	165	309	463	Note 2,3
	Brine tank		375		882	

Items		Unit	System Integrated Water Unit			
Model		—	MW-150U	MW-250U	MW-400U	
Overall dimensions (W×D×H)	Resin tank	inch	ϕ19 3/8” × 67 3/4"	ϕ24 3/4" × 78"	ϕ30 3/4" × 75 1/8"	Note 1,3
	Water softener unit		ϕ19 3/8” × 78 5/8"	ϕ24 3/4" × 90 3/4"	ϕ30 3/4" × 87 7/8"	Note 3
	Control box		15 3/4” × 10 1/4” × 55 1/8”			
	Brine tank		ϕ25 5/8”× 51 3/4”	ϕ30 7/8” × 52 1/2”	ϕ42 1/8” × 50 3/4”	
Dry weight	Resin tank	lb	75	132	243	Note 1, 3
	Water softener unit		474	860	1378	Note 2, 3
	Control box		46.3			
	Brine tank		33	44	77	
Operating weight	Water softener unit	lb	827	1521	2238	Note 2, 3
	Brine tank		882	1213	2205	

Items		Unit	System Integrated Water Unit		
Model		—	MW-600U	MW-1000U	
Overall dimensions (W×D×H)	Resin tank	inch	Ø37 1/8" × 87 1/8"	Ø48 5/8" × 94 1/4"	Note 1,3
	Water softener unit		37 1/8"× 57 5/8" × 95 5/8"	48 5/8" × 66 3/8" × 103"	Note 3
	Control box		15 3/4" × 10 1/4" × 55"		
	Brine tank		Ø41 3/4"× 63"	Ø53" × 63"	
Dry weight	Resin tank	lb	316	567	Note 1, 3
	Water softener unit		1875	3021	Note 2, 3
	Control box		67		
	Brine tank		155	199	
Operating weight	Water softener unit	lb	3264	5800	Note 2, 3
	Brine tank		2757	4477	

Note 1: The resin tank is in the state with no control valve and no resin or gravel added to it.

Note 2: The water softener unit is in the state with a control valve installed and resin and gravel added to it.

Note 3: The dimensions and weight of the resin tank and water softener unit are for a single unit.

2.2 Carrying-in

WARNING

- Do not stay under a hoisted unit to make sure you are not injured by any unexpected fall of the unit. When hoisting the unit, be sure to keep the hoisting attachments firmly in place. Do not hoist a resin tank when it contains resin and gravel. If the unit falls, it may result in death.
- When carrying in the unit, make sure the unit will not overturn.Getting trapped under the unit could result in death.

NOTE

- When carrying in the equipment, do not work on the side where it could tip over (side where the center of gravity is located).
- If a jig to prevent tipping over is installed, use the jig.
- The table below shows the lifting heights for the carrying-in methods.

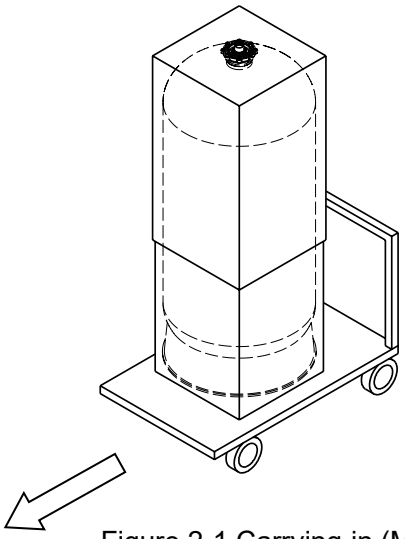
Table 2-2 Lifting height for each carrying-in method

Carrying-in method	Lifting height
Roller for pulling	50 mm
Heavy equipment transport roller (TIR roller, etc.)	70–150 mm
Hand lift	Max. 200 mm

◆ Carrying-in of MW-35U,65U,100U,150U, 250U, and 400U

NOTE

- Do not put the Unit sideways. When placed sideways, it could be damaged.
- Do not damage the piping on the outer surface of the Unit.



The resin tank is shipped as an empty tank. It shall be placed by two or more workers on the hand lift or platform hand truck and transported to the installation point.

Figure 2-1 Carrying-in (MW-35U,65U,100U,150U, 250U, 400U)

◆ Carrying-in of MW-600U and 1000U

NOTE

- Do not put the unit sideways. When placed sideways, it could be damaged.
- Do not damage the piping on the outer surface of the unit.
- Wind the belt string around the neck of the upper flange of the resin tank and lift it up with a crane (or a forklift).
  Do not use metal hoisting attachments such as chain-type slings or wires as they may damage the resin tank.
- When hoisting the unit, do not slow down during the lift and avoid giving it a physical shock when putting it down on the ground.
- Each resin tank should be properly positioned in terms of the direction. The side of the resin tank with a sticker pasted on its base is the control valve side.
- There are two types of resin tank, one for the No. 1 unit and the other for the No. 2 unit. Resin tanks with ((1)) sticker pasted on the base are intended for the No. 1 unit, while those with ((2)) for the No. 2 unit.

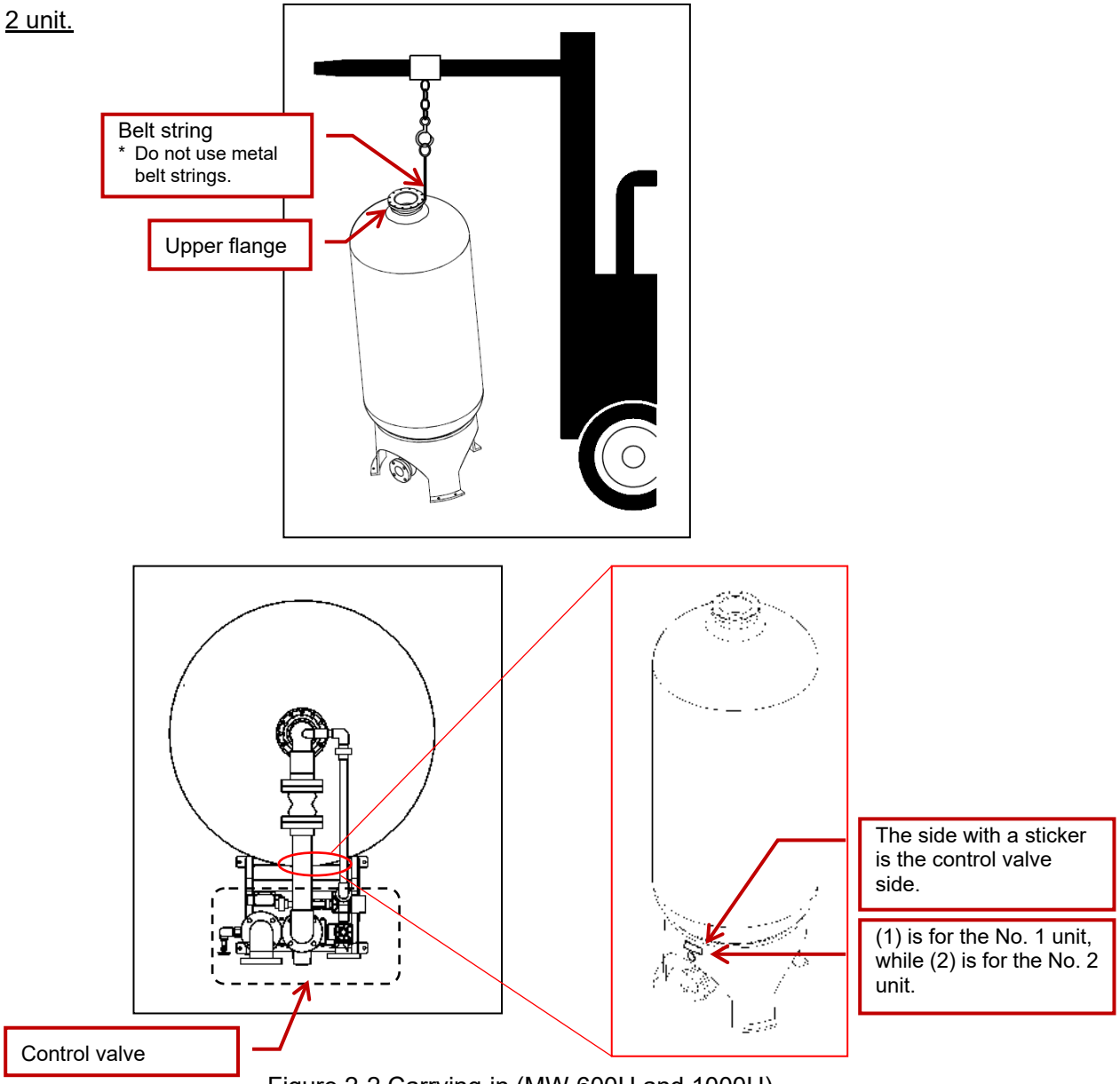


Figure 2-2 Carrying-in (MW-600U and 1000U)

3. LOCATION

3.1 Installation Location and Space Required

WARNING

Prohibited

Do not install the Unit on a wooden floor or a floor likely to be corroded.

Firmly fix the Unit on the foundation with predetermined anchor bolts. If the unit topples over, it could result in death.

Set aside a space necessary for maintenance, inspection and operation.
Install the brine tank on the same level as the Softener Unit and at a place that does not require a brine line to be more than 16.4feet long.

◆ Space required for installation of MW-35U and 65U

The recommended installation spaces are shown in the following diagram.

- Front: recommended space for maintenance and operation.
- Rear: recommended space for piping and maintenance.
- Side(s): recommended space for maintenance such as resin replacement or resin tank replacement.
- Top: recommended space for maintenance such as resin replacement and center pipe replacement
- (If sufficient space cannot be secured, the resin tank will have to be moved when replacing the center pipe).
- The area in front of the control box is a recommended space necessary for operation and maintenance of the Unit.

NOTE

- If it is difficult to secure the space, consult MIURA maintenance personnel and decide the installation position.
- If the space cannot be secured at the top of the equipment, it may not be possible to remove the collecting pipe from the resin tank, and it may become difficult to replace the resin.

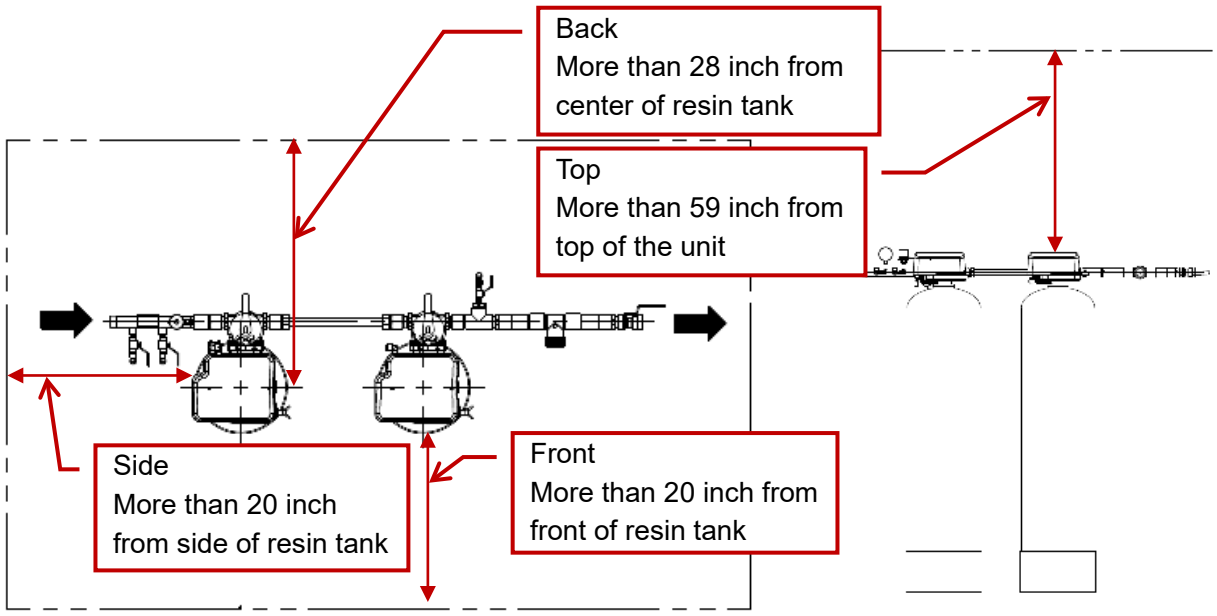


Figure 3-1 Recommended Space(MW-35U and MW-65U)

The brine tank should be installed near the main unit and where it is easily accesible for pouring the regeneration salt. The control box should also be located near the main unit and where it is easily maintained and operated.

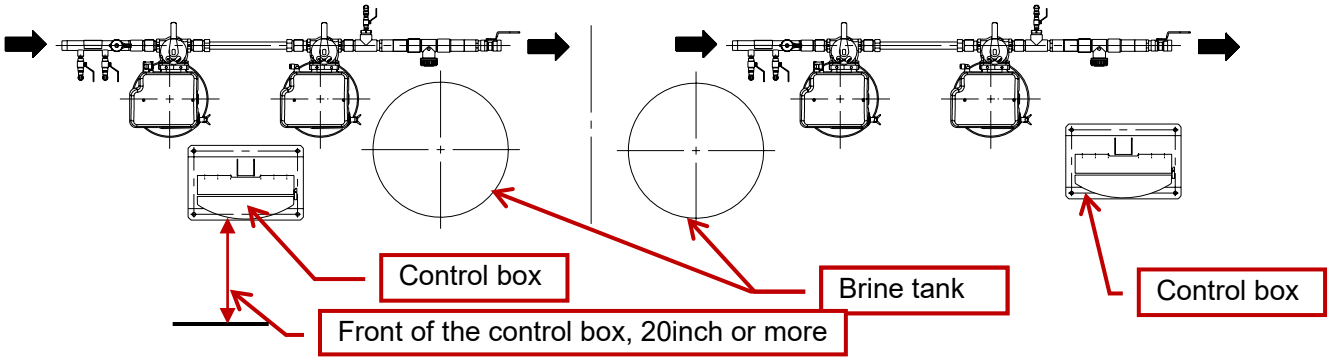


Figure 3-2 Example of Brine Tank and Control Box Installation (MW-35U and MW-65U)

◆ Space required for installation of MW-100U,150U, 250U or 400U

*MW-100U / 150U and MW-250U / 400U have different resin tank shapes, but the necessary installation space is the same. The resin tank of the illustration below is MW-100U / 150U.

The recommended installation spaces are shown in the following diagram.

- Front: recommended space for maintenance and operation.
- Rear: recommended space for piping and maintenance.
- Side(s): recommended space for maintenance such as resin replacement or resin tank replacement.
- Top: recommended space for maintenance such as resin replacement and center pipe replacement
- (If sufficient space cannot be secured, the resin tank will have to be moved when replacing the center pipe).
- The area in front of the control box is a recommended space necessary for operation and maintenance of the Unit.

NOTE

- If it is difficult to secure the space, consult MIURA maintenance personnel and decide the installation position.
- If the space cannot be secured at the top of the equipment, it may not be possible to remove the collecting pipe from the resin tank, and it may become difficult to replace the resin.

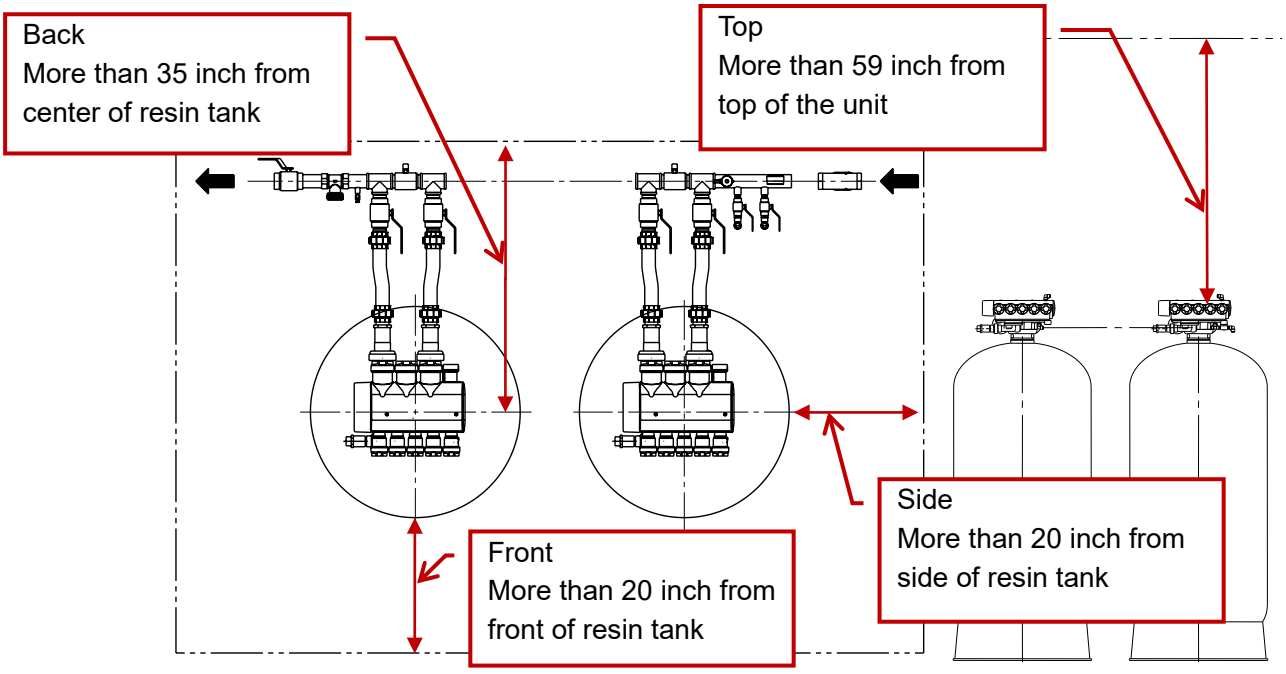


Figure 3-3 Recommended Space (MW-100U,150U,250U and 400U)

The brine tank should be installed near the main unit and where it is easily accesible for pouring the regeneration salt. The control box should also be located near the main unit and where it is easily maintained and operated.

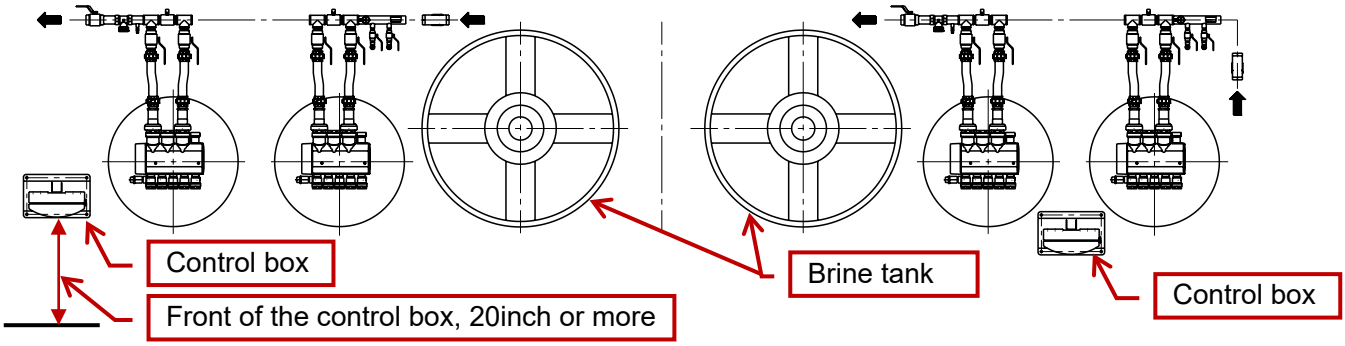


Figure 3-4 Example of Brine Tank and Control Box Installation(MW-100U,150U,250U and 400U)

◆ Space required for installation of MW-600U and 1000U and anchor hole positions

The recommended installation spaces are shown in the following diagram.

- The area in front of the unit is space necessary for piping work or maintenance.
- The area at the back of the unit is space necessary for maintenance work including changing resins or resin tanks.
- The area at the side of the unit is space necessary for maintenance work including changing resins or resin tanks.
- The area above the unit is space necessary for maintenance work including changing resins or collecting pipes.
- (If this space is not available, it will not be possible to install or remove collecting pipes.)
- The area in front of the control box is space necessary for operating or maintaining the unit.

NOTE

- If it is difficult to secure the space, consult MIURA maintenance personnel and decide the installation position.
- If the space cannot be secured at the top of the equipment, it may not be possible to remove the collecting pipe from the resin tank, and it may become difficult to replace the resin.

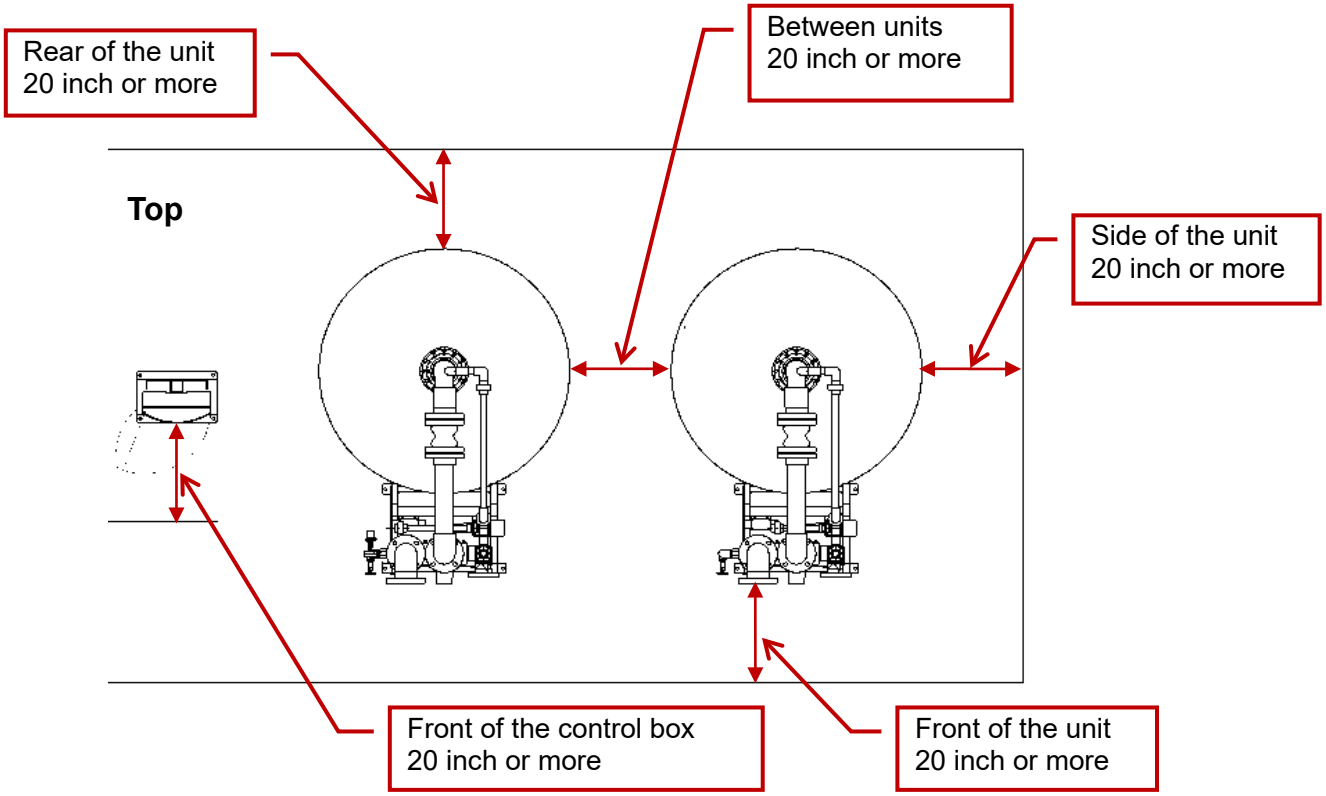


Figure 3-5 Installation space (top)

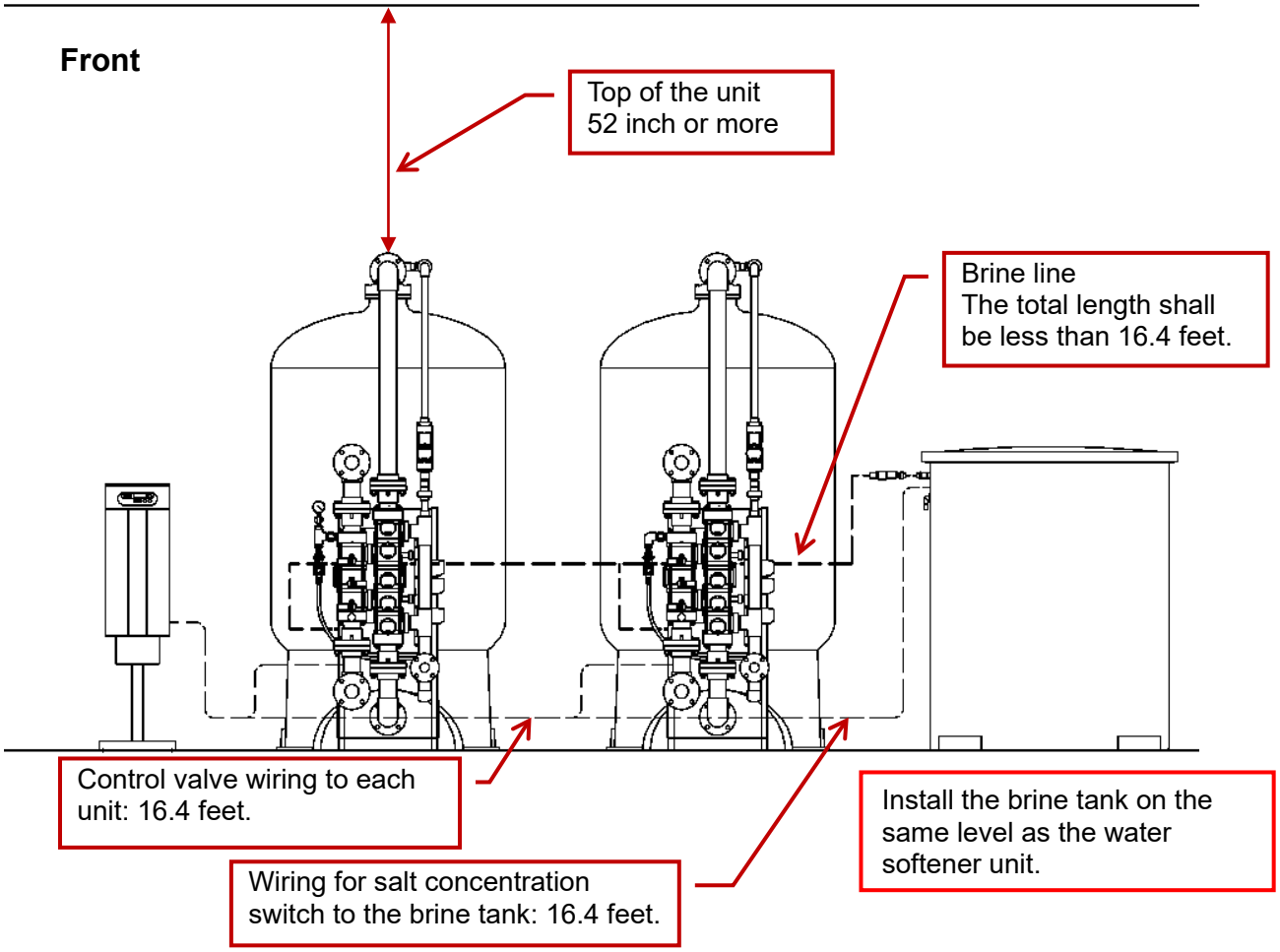


Figure 3-6 Installation space (front)

The following diagram shows the anchor hole positions.

NOTE

- Firmly fix the unit with anchor bolts.
- Since the resin tank base and brine tank are made of plastic, the location of the anchor holes may slightly differ. Apply anchors after installing the unit, assembling provide pipes and determining the positioning.

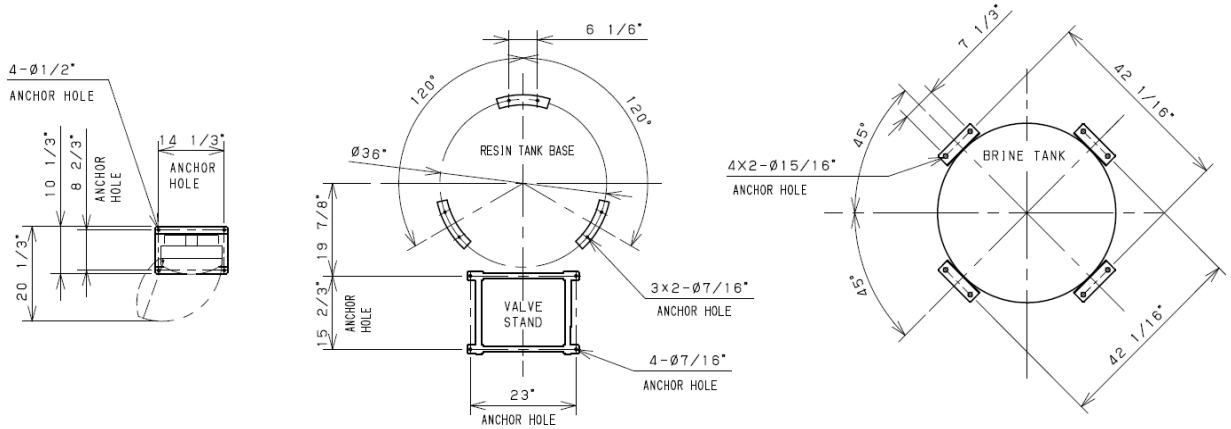


Figure 3-7 MW-600U anchor hole positions for control box, water softener unit, and brine tank (reference)

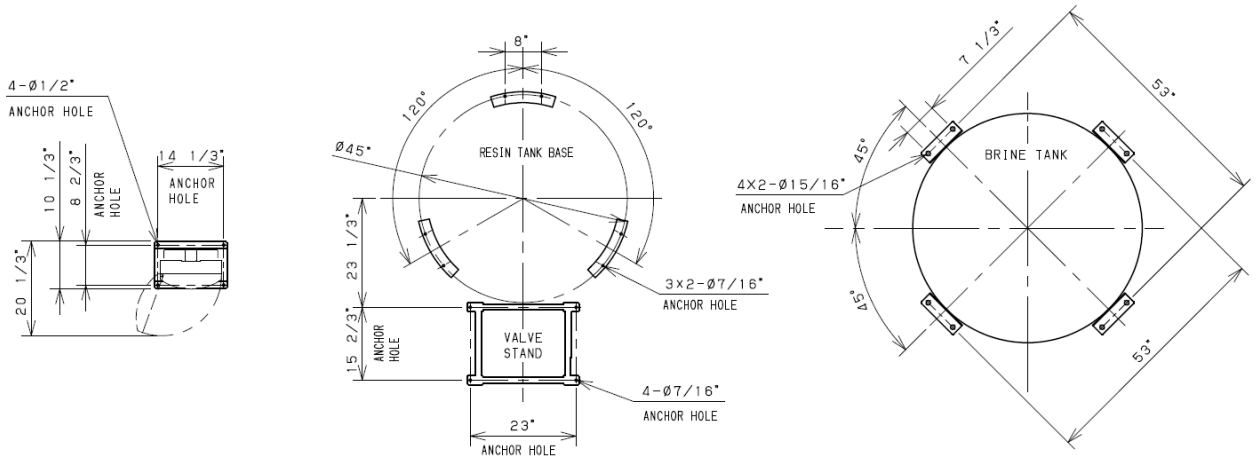


Figure 3-8 MW-1000U anchor hole positions for control box, water softener unit, and brine tank (reference)

4. Resin Filling and Unit Assembling of MW-35U,65U

WARNING

Instruction

Do not put your legs on the resin tank when assembling the softener unit while feeding gravel or resin. Doing so could cause an injury if it overturns and you fall. Avoid accidents caused by falling when adding gravel or resin or assembling the water softener unit by setting up a working floor such as scaffolding and using personal fall-arrest systems and other protective gear.

4.1 Resin Filling Preparation

・Cation exchange resin, Gravel (Provided)

	Gravel [L]	Cation exchange resin [L]
MW-35U	5×2	35×2
MW-65U	9×2	65×2

・Funnel
・Pipe

4.2 Filling with Gravel and Resin

Remove the control valve ASSY from the resin tank and insert the collecting pipe assembly into the resin tank. Cover the top portion of the collecting pipe with tape or a cap and such to prevent gravel and resin from falling inside the pipe. Place the funnel onto the opening of the resin tank. Do not scratch the opening area of the resin tank when inserting the funnel. If gravel or resin gets inside the collecting pipe, it may enter inside the control valve during water supply, possibly resulting in valve malfunctioning or outflow to the treated water side.

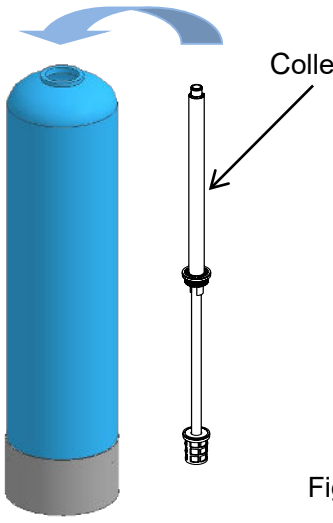


Figure 4-1 Installation diagram of collecting pipe

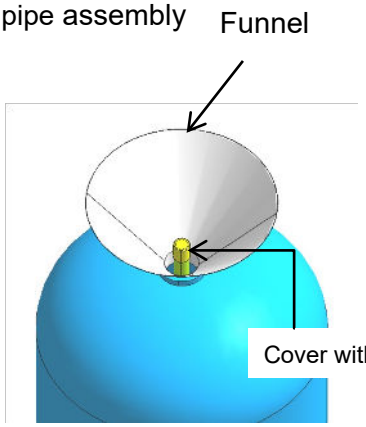


Figure 4-2 Preparation of Resin Tank -1

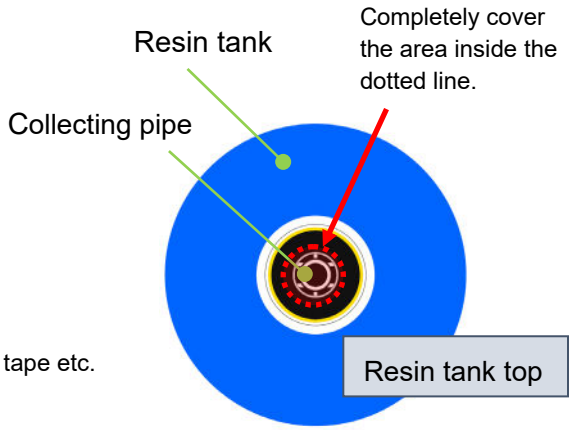


Figure 4-3 Preparation of Resin Tank -2

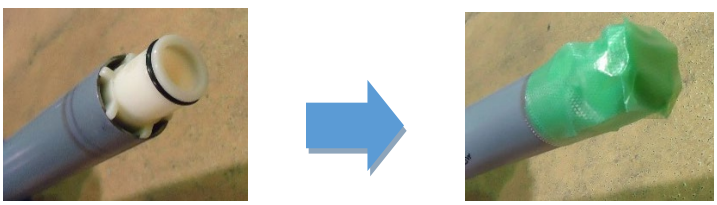


Figure 4-4 Example of covered top of collecting pipe

(1) Read the precautionary instructions below first, then pour the gravel into the tank as recommended.

* Pour only the specified amount of gravel.
  Amount of feed per unit MW-35U: 5L / MW-65U: 9L
* Always keep the collecting pipe near the center. If the collecting pipe is not centered, the control valve will have difficulty being attached to the tank (Figure 4-5 left).
* Do not allow the collecting pipe to float. The tip of the collecting pipe should be at 0.4～1.0 inch (17 – 27 mm) above the resin tank opening (Figure 4-5 center).
  If the tank adaptor is installed when the values are outside the specified range, the collecting pipe may get damaged, and gravel or resin may enter inside the control valve during water supply, possibly resulting in valve malfunctioning or outflow to the treated water side.
* Keep the layer of gravel as smooth as possible. If the layer is largely slanted or conically shaped, use the pipe to smooth the layer (Figure 4-5 right).

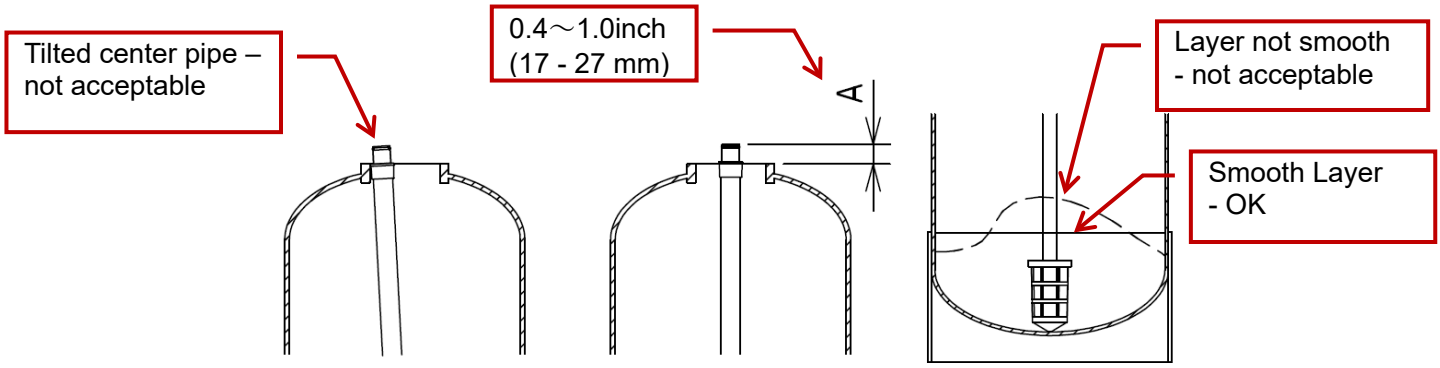


Figure 4-5 Gravel Filling Precautions

(2) Pour the resin into the tank in the same way as pouring the gravel. The resin layer does not have to be smooth at the top.

* Pour only the specified amount of resin.
  If the resin does not tend to fall inside the resin tank, apply vibrations or pass a small amount of water to cause the resin to loosen and fall.
  Amount of feed per unit
  MW-35U: 35L / MW-65U: 65L

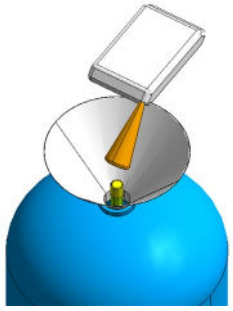


Figure 4-6 Filling with Resin

CAUTION

Caution

When filling resin and gravel into the resin tank, please top portion of the collecting pipe with tape etc. so that the resin and gravel does not enter the collecting pipe. If you fill resin and gravel without cover the top portion of the collecting pipe, there is a possibility that the equipment will be damaged or gravel and resin will enter the water supply line.

4.3 Mounting the Brine Flowmeter Assembly

When MW-35U or 65U is installed, the brine flowmeter assembly needs to be mounted.
Insert the tube joint (tee) included in the brine flowmeter assembly into the control valve assembly.

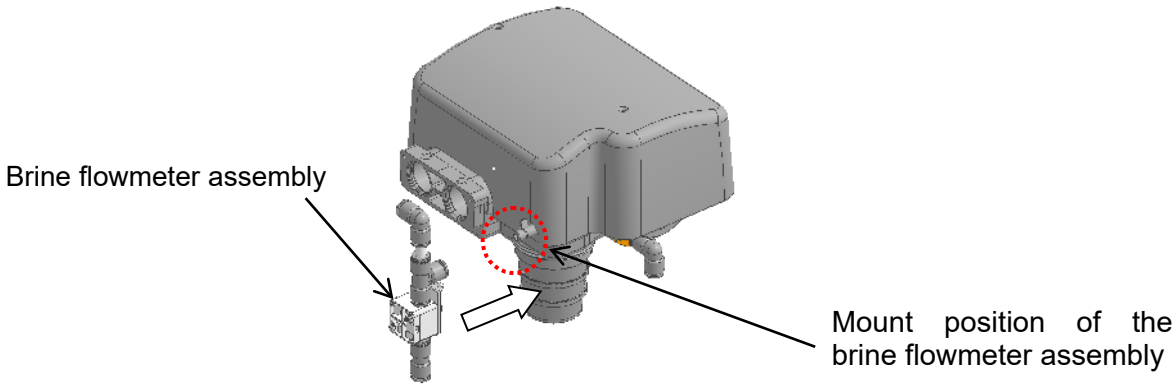


Figure 4-7 Mounting the Brine Flowmeter Assembly

4.4 Mounting the Control Valve Assembly

(1) Check that silicone oil is applied to the O-ring part on the top of the collecting pipe.

(2) Check that the O-ring is mounted on the bottom surface of the control valve and silicone oil is applied to the O-ring part.

(3) Connect the control valve to the resin tank. While paying attention to the tilt, screw in the control valve firmly until the gap between the end face of the resin tube and the control valve has nearly disappeared.

NOTE

- Do not use sealing tape on the thread part. The resin tank may get damaged due to over-tightening.
- Do not apply silicon oil to the thread part. The control valve may get damaged due to over-tightening.
- Do not screw in the control valve further if the gap between the end face of the resin tank and the control valve has disappeared.

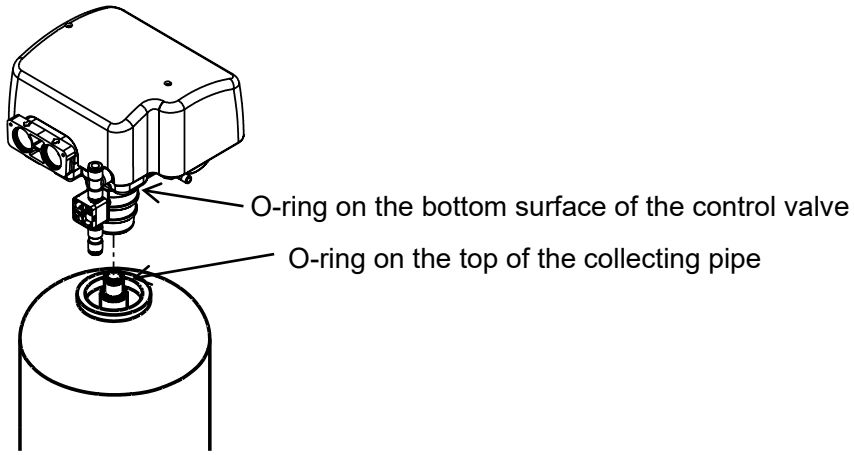


Figure 4-8 Mounting the Control Valve

5. Resin Filling and Unit Assembling of MW-100U, 150U, 250U, 400U

WARNING

Instruction

Do not put your legs on the resin tank when assembling the softener unit while feeding gravel or resin. Doing so could cause an injury if it overturns and you fall. Avoid accidents caused by falling when adding gravel or resin or assembling the water softener unit by setting up a working floor such as scaffolding and using personal fall-arrest systems and other protective gear.

5.1 Resin Filling Preparation

・Cation exchange resin, Gravel (Provided)

	Gravel [L]	Cation exchange resin [L]
MW-100U	12×2	100×2
MW-150U	30×2	150×2
MW-250U	60×2	250×2
MW-400U	100×2	400×2

・Funnel
・Pipe
・Tank adaptor wrench (Provided)

5.2 Filling with Gravel and Resin

Remove the tank adaptor assembly with the tank adaptor wrench (Provided). Remove the tank adaptor assembly from the collecting pipe assembly and insert the collecting pipe assembly into the resin tank. Cover the top portion of the center pipe with tape or a cap and such to prevent gravel and resin from falling inside the pipe. Place the funnel onto the opening of the resin tank. Do not scratch the opening area of the resin tank when inserting the funnel. If gravel or resin gets inside the collecting pipe, it may enter inside the control valve during water supply, possibly resulting in valve malfunctioning or outflow to the treated water side.

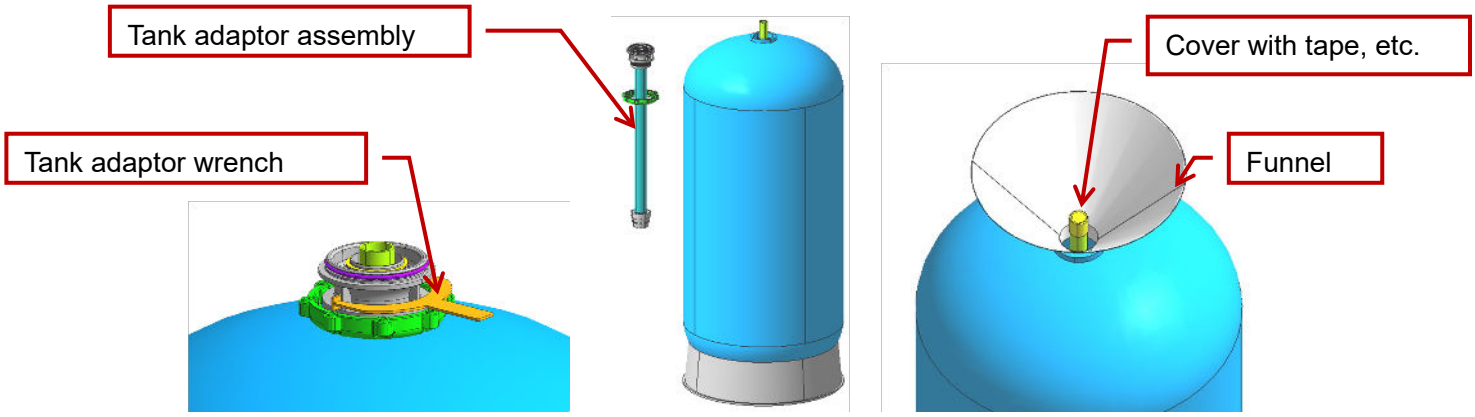


Figure 5-1 Preparation of Resin Tank

(1) Read the precautionary instructions below first, then pour the gravel into the tank as recommended.

* Pour only the specified amount of gravel.

  Amount of feed per unit MW-100U: 12L / MW-150U: 30L / MW-250U: 60L /MW- 400U: 100L

* Always keep the center pipe near the center. If the center pipe is not centered, the tank adaptor will have difficulty being attached to the tank (Figure 5 - 2 left).

* Do not allow the center pipe to float. The tip of the center pipe should be at 2.8 – 3.3 inch (70 – 85 mm) above the resin tank opening (Figure 5-2 center.right).

  If the tank adaptor is installed when the values are outside the specified range, the collecting pipe may get damaged, and gravel or resin may enter inside the control valve during water supply, possibly resulting in valve malfunctioning or outflow to the treated water side.

* Keep the layer of gravel as smooth as possible. If the layer is largely slanted or conically shaped, use the pipe to smooth the layer (Figure 5–3).

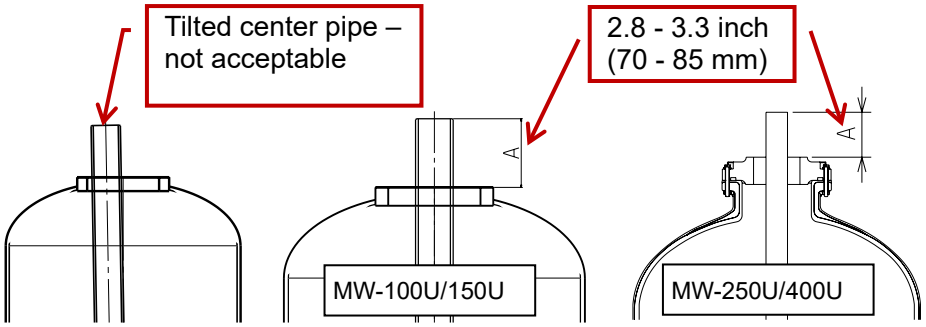


Figure 5-2 Gravel Filling Precautions

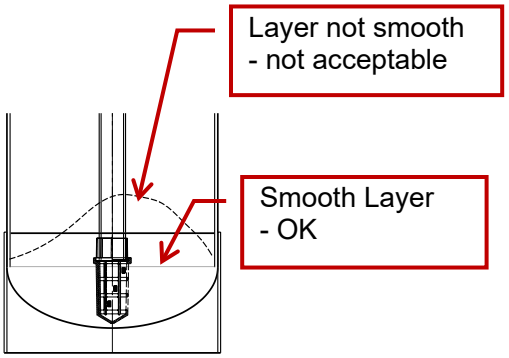


Figure 5-3 Gravel Filling Precautions-2

(2) Pour the resin into the tank in the same way as pouring the gravel. The resin layer does not have to be smooth at the top.

If the resin does not tend to fall inside the resin tank, apply vibrations or pass a small amount of water to cause the resin to loosen and fall.

* Pour only the specified amount of resin

  Amount of feed per unit

  MW-100U : 100L / MW-150U: 150L/ MW-250U: 250L/MW- 400U : 400L

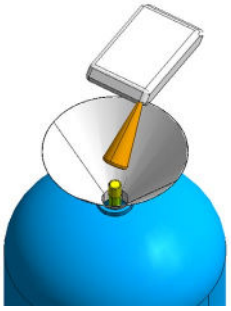


Figure 5-4 Filling with Resin

5.3 Mounting the Control Valve

(1) Before proceeding, read the precautionary items in Figure 5-5 first, then attach the tank adaptor assembly by backtracking the steps from the way it was disassembled. If insertion of tank adaptor is difficult, fill the resin tank with water up to the top of resin later and then attach the adaptor.

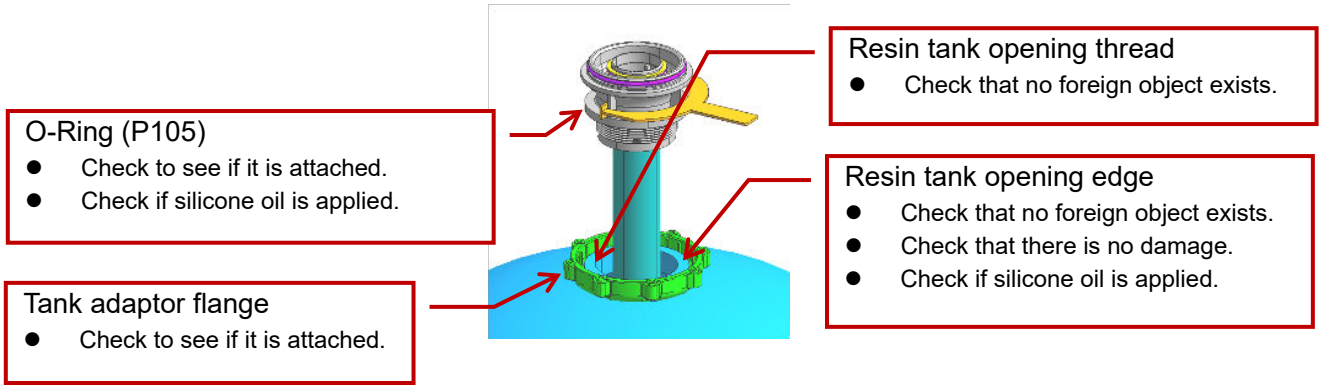


Figure 5-5 Tank Adaptor Mounting

(2) Read the precautionary items in Figure 5 - 6, and then mount the control valve assembly.

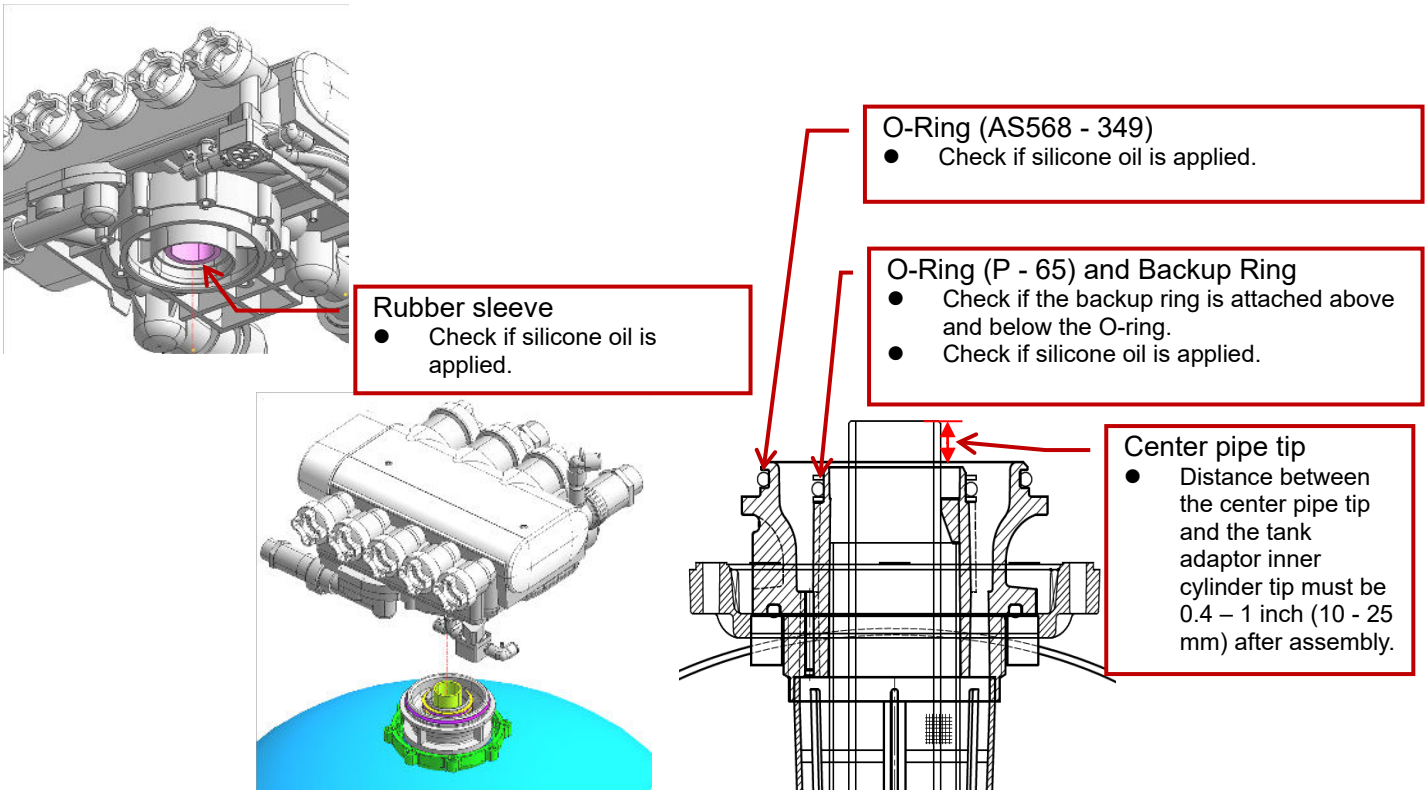


Figure 5-6 Mounting Control Valve Assembly -1

(3) Attach the tank adaptor flange and the control valve assembly with the provided hex bolts (x 8). Tighten the hexagon head bolt uniformly, over multiple times.
When viewing from front, the right side is “Unit #1” and the left side is “Unit #2.”

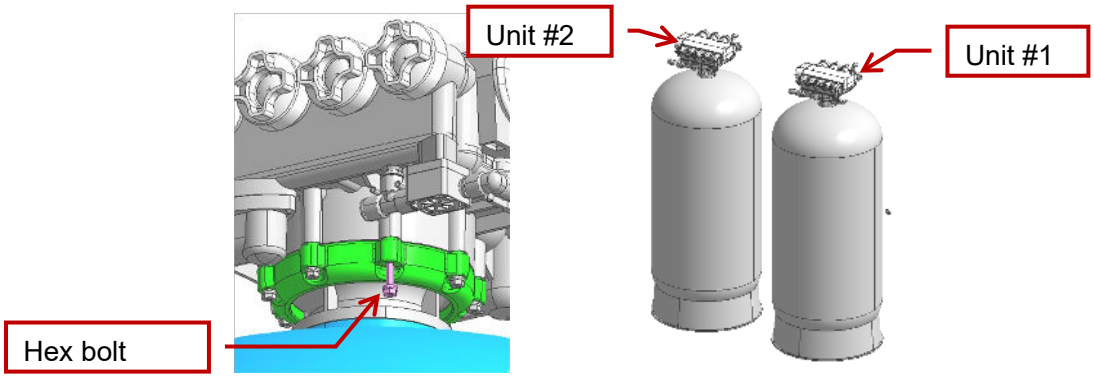


Figure 5-7 Mounting Control Valve Assembly -2

6. Resin Feeding and Unit Assembling of MW-600U and 1000U

WARNING

Instruction

Do not climb on the resin tank or put your legs on the resin tank. Doing so could cause an injury if it overturns or you fall.
Avoid accidents caused by falling when adding gravel or resin or assembling the water softener unit by setting up a working floor such as scaffolding and using personal fall-arrest systems and other protective gear.

6.1 Resin Filling Preparation

・Cation exchange resin, Gravel (Provided)

	Gravel [L]	Cation exchange resin [L]
MW-600U	60×2	600×2
MW-1000U	100×2	1000×2

・Funnel
・Pipe

6.2 Filling with Gravel and Resin

(1) Attach a funnel to the upper flange of the resin tank. Be careful not to damage the flange surface of the resin tank.

(2) Feed gravel at first. Pay attention to the following points:

* Feed the predetermined amount of gravel.
Amount to feed per unit MW-600U: 60L / 1000U: 100L

* After feeding gravel, use a pipe or the like to make the top surface of the fed gravel as flat as possible.

*

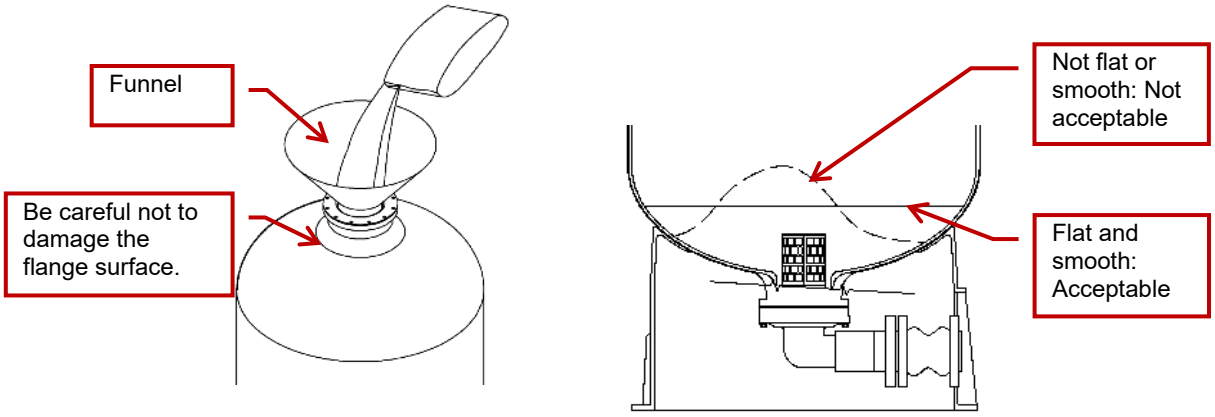


Figure 6-1 Feeding of gravel

(3) Feed the ion exchange resin by following the same procedure as that for gravel. The top surface of the resin layer does not need to be flat and smooth.

* Feed the predetermined amount of resin.
Amount of feed per unit MW-600U: 600L / MW-1000U: 1000L

6.3 Installation of Upper Flange Assembly

(1) Wrap the screw part of the collecting pipe with sealing tape and firmly screw it in to the upper flange assembly.

* The upper flange assembly with (1) sticker mark is for the No. 1 unit, while that with (2) sticker mark is for the No. 2 unit.
* A white marking is inscribed on the upper flange assembly. When the markings are not set on a straight line, align them to a straight line. If the markings are not in a straight line, it may not be possible to install the resin tank and control valve.
* Make sure there is an O-ring on the surface of the portion of the upper flange assembly in contact with the resin tank.

(2) Vertically insert the upper flange assembly to the ion exchange resin inside by slowing pushing it.

* The flange surface is the control valve side.
* Adjust the position of the white marking of the resin tank flange and that of the upper flange assembly for alignment.

(3) Tighten the upper flange assembly with 12 hexagonal bolts/nuts with even force. Tighten the hexagon head bolt uniformly, over multiple times.

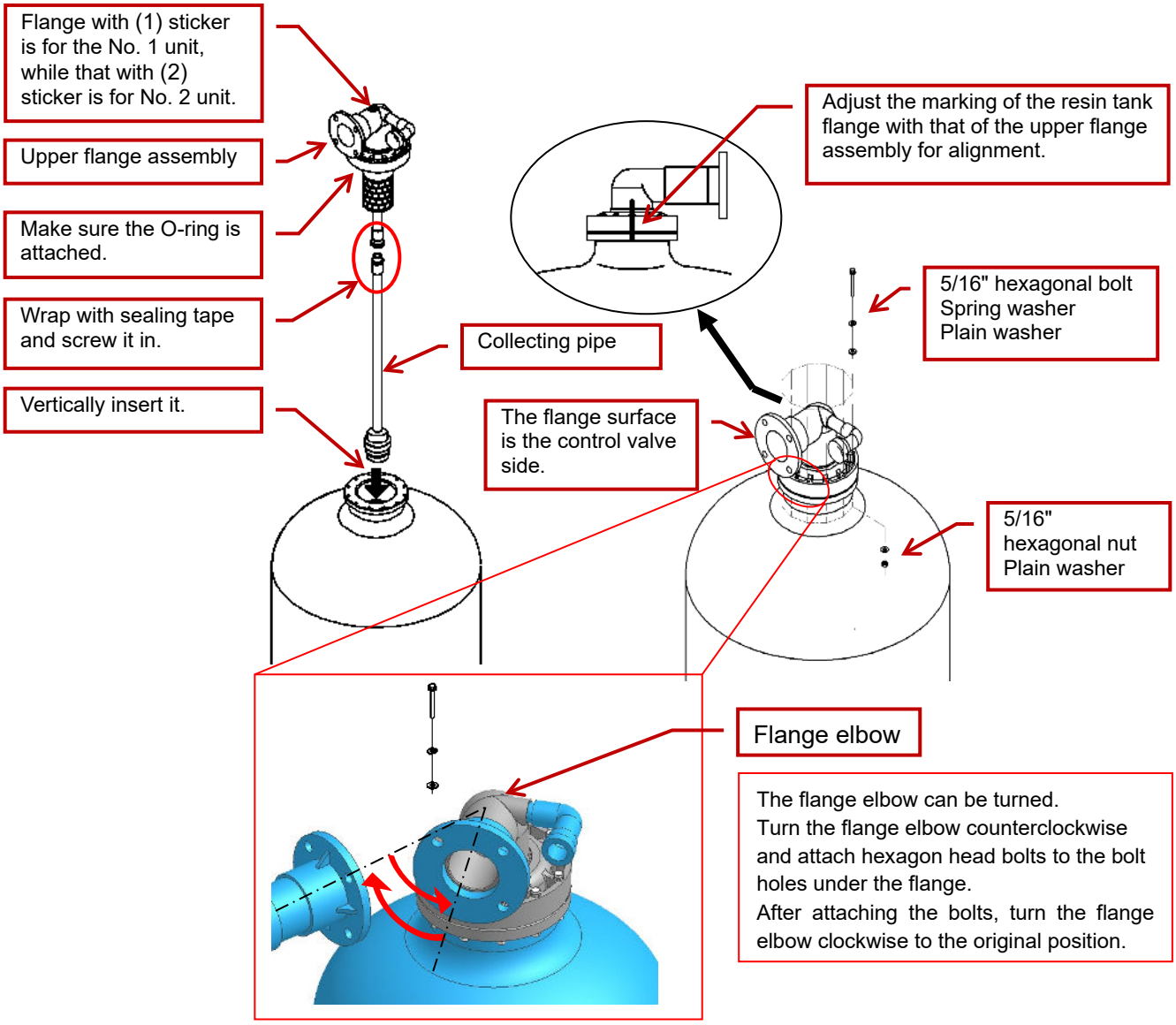


Figure 6-2 Installation of Upper Flange Assembly

6.4 Installation of Pipe Assembly

* Pipe assemblies with the sticker attached to it bearing the mark of (1) are for the No. 1 unit, while those with the mark (2) are for the No. 2 unit.

(1) Install the upper main pipe assembly.

* Apply packing to the connection with the control valve side.
* Make the head of each hexagonal bolt face downward when connecting to the control valve with the bolts.
* Set a tightening torque of 25 lbs.foot to connect the PVC flange to the control valve side.
* Screw in the flexible joint until the clearance between the joint side flange and the resin tank side flange becomes 1/8 inch to 5/32 inch. Be careful not to screw in excessively.
* Make the head of each hexagonal bolt face the flexible joint side when bolting to the flexible joint.

(2) Install the lower main pipe assembly.

* Apply packing to the connection with the control valve side.
* Make the head of each hexagonal bolt face downward when connecting to the control valve with the bolts.
* Set a tightening torque of 25 lbs.foot to connect the PVC flange to the control valve side.
* When connecting to the flexible joint at the lower side of the resin tank, screw in until the clearance between the main piping assembly side flange and the flexible joint flange becomes 1/8 inch to 5/32 inch. Be careful not to screw in excessively.
* Make the head of each hexagonal bolt face the flexible joint side when bolting to the flexible joint.

(3) Install the upper drainage pipe assembly.

* Make sure the union at the connections on both sides is fitted with an O-ring.
* Do not use a tool to tighten unions but manually tighten them.

NOTE

If the main piping assembly (upper) and the upper drain piping assembly have been installed properly as described above in (1) and (3), the two piping will be parallel to each other. If the two piping are not parallel to each other and appear distorted, the positional relationship between the resin tank and the valve stand may be deviated in comparison to that shown in Figure 3-7,3-8 on page 15,16. Set the piping parallel to each other by adjusting the position of the valve stand.

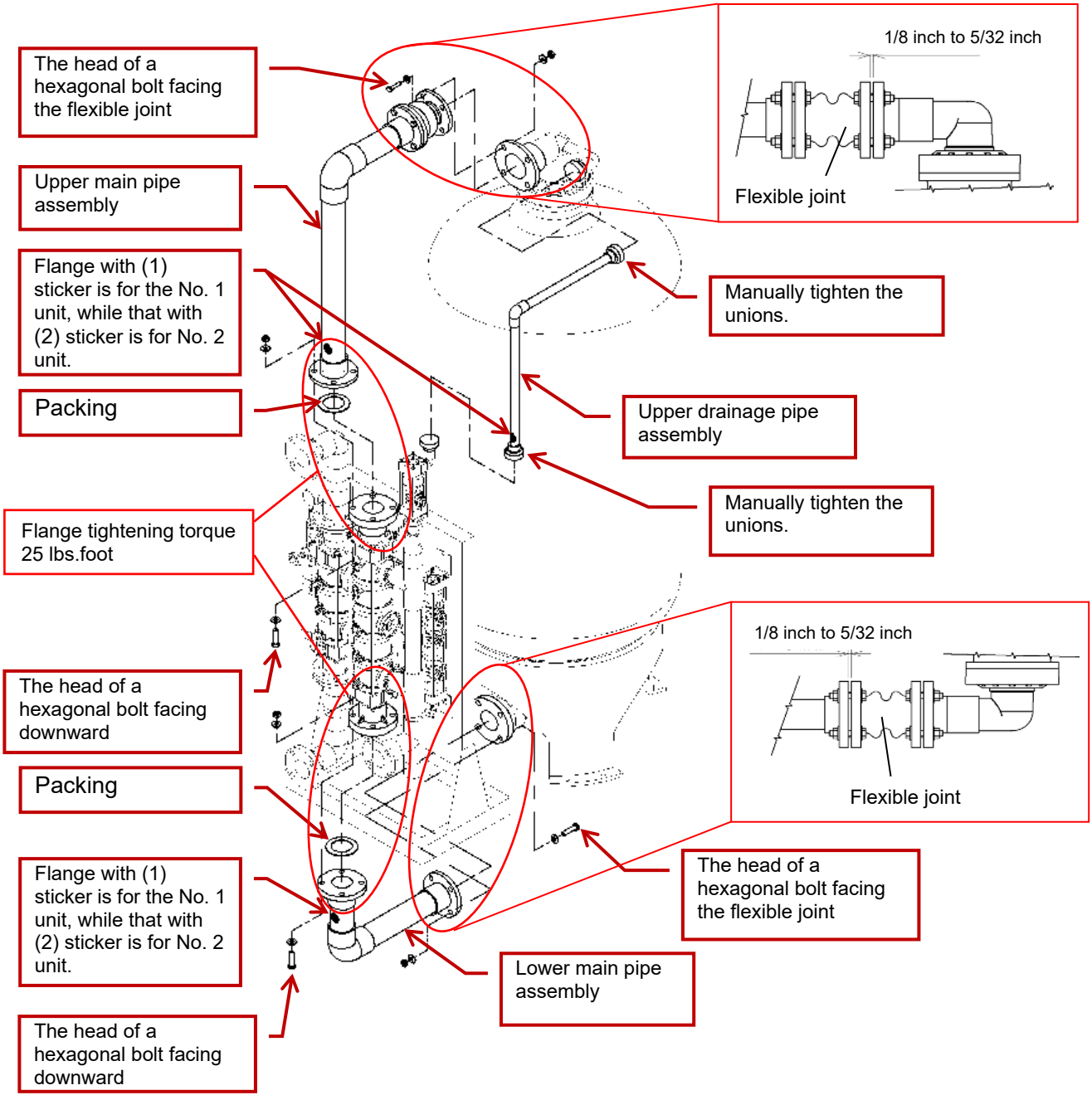


Figure 6-3 Installation of Pipe Assembly

7. PLUMBING

To maintain safety and further preserve the equipment capability, follow the plumbing precautions below.

WARNING

Prohibited

The water treated by this water softener is not for drinking and residential purpose. Doing so may be hazardous to health.

CAUTION

Caution

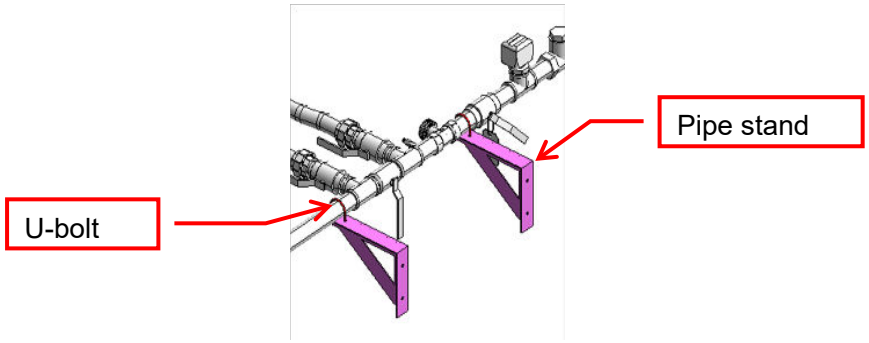
Install external pipes such as raw water inlets, treated water outlets, and drain ports without causing any negative pressure in the unit. In particular, when installing the unit at a place higher than the water source or treated water outlet, take actions to cope with negative pressure such as by providing construction joints. Negative pressure can cause damage to the unit.

If there is any concern of freezing, provide antifreeze measures in the piping in accordance with the environment at the sight, after consulting the customer. If condensation water occurs in the piping, causing a problem, apply insulation.

Where hot water (over 104°F) flows backward from the secondary side of the unit, provide an anti-backflow means to the secondary side of the unit. Use heat-resistant pipes for piping.

NOTE

- For the external piping, use PVC or stainless steel pipes. Do not use steel pipe or galvanized steel pipe.
- Insulation is recommended if freezing can occur.
- Creating appropriate pipe support is necessary to prevent the unit from applying the pipe weight to the unit(s).



NOTE

Connect the raw water, treated water, and drain piping so that it will not form a siphon that generates negative pressure in the equipment. In particular, if the equipment main unit is installed higher than the treated water tank and drain ditch, install a vacuum breaker (sold separately). Negative pressure may cause equipment damage, or increased flow rate during regeneration. For details, see Figure 7-1.

<Raw water piping>

Do not supply raw water (install the raw water pump, etc.) from a position lower than the equipment installation level. To supply raw water from a position lower than the equipment installation level, it is necessary to perform isolation measures such as installing the raw water tank at the same floor level as the equipment installation location.

<Treated water piping>

If the end of the piping is to be opened into the air, make sure it is not done at a position lower than the equipment installation level. To open the end of the piping into the air at a location lower than the equipment installation level (such as installing a treated water tank), it is necessary to set up the outlet piping above the equipment height and install a vacuum breaker at the topmost part.

<Drain piping>

Open the end of the piping into the air in a drain pit or the like on the same floor as the equipment installation level.

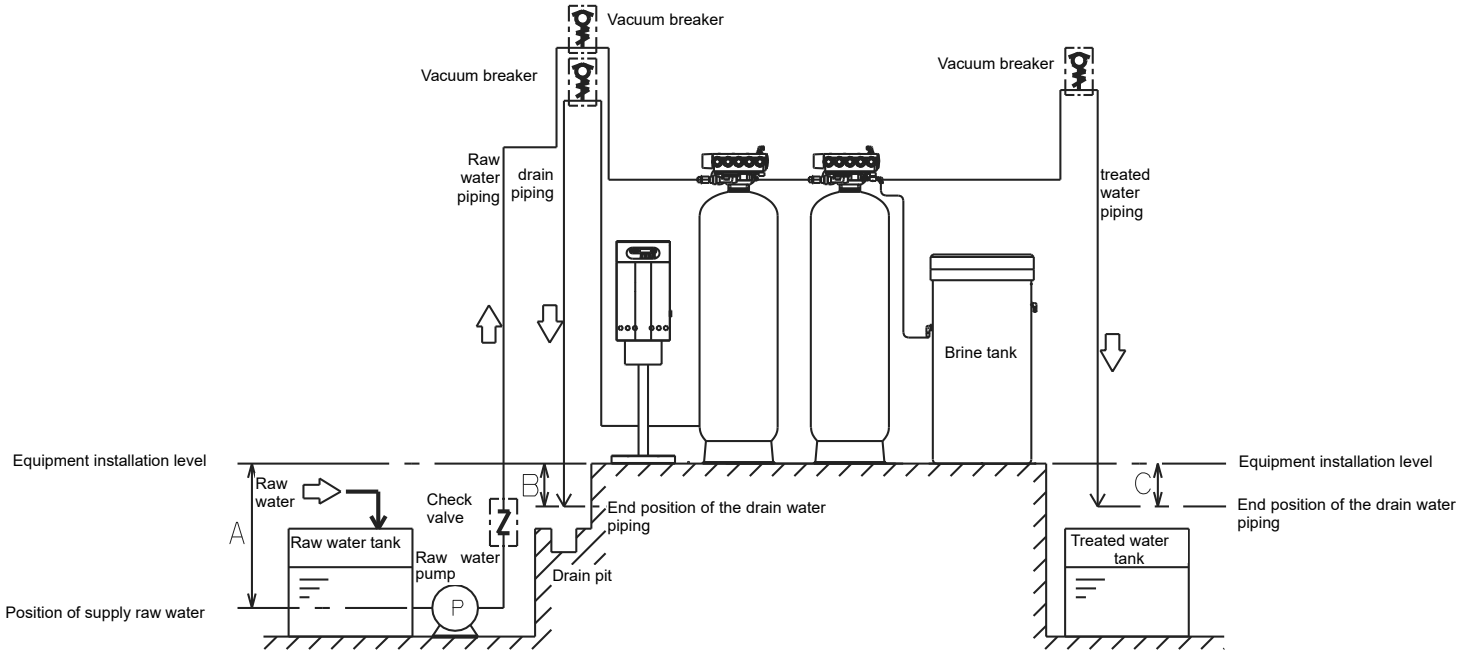


Figure 7-1**:** Piping conditions that may cause negative pressure and measures against negative pressure

If the distances A, B, and C exceed 3.3 feet respectively, install a vacuum breaker (sold separately). Also install a check valve (sold separately) in the raw water piping.

7.1 Pipe Connection Size

Connection diameters for each part are shown in Table 7-1 and Table 7-2, while the recommended diameters for the water supply inlet, treated water outlet and regeneration drain outlet piping are shown in Table 7-3.

Table 7-1 Pipe Connection Size 1

	MW-35U	MW-65U	MW-100U	MW-150U
Water supply inlet	1" (male screw)		1 1/4" (male screw)	1 1/2" (male screw)
Treated water outlet	1" (female screw)		1 1/4" (female screw)	1 1/2" (female screw)
Regeneration drain outlet	ϕ19 × ϕ15 (hose joint)		1" (male screw)	
Drain hole				
Ejector line	ϕ3/8" (tube joint)		ϕ12mm (tube joint)	
Brine line	ϕ3/8" (tube joint)		ϕ12mm (tube joint)	

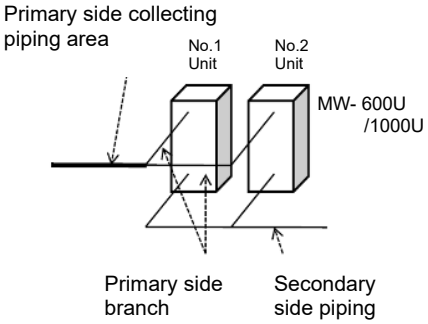
Table 7-2 Pipe Connection Size 2

	MW-250U	MW-400U	MW-600U	MW-1000U
Water supply inlet	1 1/2" (male screw)		2 1/2" (class 150 PVC flange)	3" (class 150 PVC flange)
Treated water outlet	1 1/2" (female screw)		2 1/2" (class 150 PVC flange)	3" (class 150 PVC flange)
Regeneration drain outlet	1" (male screw)		2" (class 150 PVC flange)	
Drain hole			1" (female screw)	
Ejector line	ϕ16mm (tube joint)			
Brine line	ϕ12mm (tube joint)		3/4" (sch 80 PVC pipe)	

Table 7-3 Piping Diameter(for one MW-U)

	MW-35U	MW-65U	MW-100U	MW-150U	MW-250U	MW-400U
Water supply inlet piping Treated water outlet piping	1" or more		1 1/4" or more		1 1/2" or more	
Regeneration drain outlet	Inner diameter ϕ15 or more		1" or more			

	MW-600U	MW-1000U
Primary side collecting piping area	3" or more	4" or more
From the primary side branch to the secondary side piping	2 1/2" or more	3" or more
Regeneration drain outlet	2" or more	2" or more



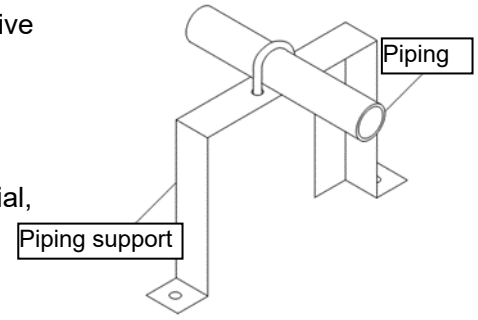
Note1 In the primary side piping of MW-600U and 1000U, the flow inside the pipe at the collecting pipe part where the fluid branches to each unit increases in speed when water supply and regeneration occur simultaneously. Therefore, the above pipe diameters are recommended.

Note2 The size of the Y type strainer provided is the same as the size of the water supply inlet and treated water outlet shown in Table 7-1 and Table 7-2.

Note3 This table is the pipe diameter required when one MW-U is installed. When installing multiple MW-Us, it is necessary to separately determine the pipe bore size according to the amount of treated water and regenerated wastewater.

7.2 Piping Installation (Common Items for All Piping)

- Do not mistake the feed water inlet and treated water outlet for each other.
- Perform piping works such as piping connection and piping arrangement on site.
- Apply thermal insulation to the piping to prevent condensation and freezing.and take measures.
- Install piping supports to prevent the equipment from bearing the weight of the piping. Especially be sure to install piping supports for PVC pipes that come out from the equipment to avoid bearing the weight of external piping.
- Take effective measures (such as using an anti-corrosive tape or a pipe sleeve) to prevent corrosion of buried pipes or pipes that pass through a wall.
- For piping that goes through a fire control area, fire protection wall, or partition wall, use steel pipes, and vibration absorption material, thermal insulation material, etc. for the piping must be incombustible materials.
- For piping that goes through a part of a building, use piping sleeve to prevent damaging the piping.



7.3 Treated Water Piping Installation

- Do not use a ball tap with the treated water tank.
  As the treated water flow rate fluctuates, if the value becomes equal to or lower than the detection lower limit of the flowmeter supplied with the equipment, it will not be possible to detect the flow of the treated water. There is a risk of hardness leakage.

7.4 Raw Water Plumbing and Treated Water Plumbing

CAUTION

Caution

MW - 35U, 65U and MW - 100U - 400U have different flow directions of water when the equipment is viewed from the front. Please pay attention so that the direction of raw water plumbing and treated water plumbing will not be confused.

◆ Piping of MW-35U, 65U

CAUTION

Caution

The flowmeter ASSY built into the outlet piping block is fragile because it is made of PVC. Please handle with care.

This product comes with bypass valve assembly, inlet pipe block, outlet pipe block, strainer, NPT-PT conversion joint and flexible hose (Length 12"). Refer to the figure below for assembly. For the plumbing materials, use PVC pipe, stainless steel pipe or other corrosion-resistant materials. If necessary, insulation will be required to prevent condensation and freezing.
Place the strainer in a location where it is easy to access for maintenance.
Include the items below as needed.

NOTE

- A pressure reducing valve required if the raw water pressure exceeds 71 psi. For additional protection, the use of relief valve along with the pressure reducing valve is recommended.
- A check valve is required in cases where backflow of hot water (104°F or above) may occur such as when drain recovery is performed on the outlet of the treated water.
- An flow switch is required in order to detect any failure of water flowmeter. For example, SMC Co. part# IF313-N10-11 works for the purpose.

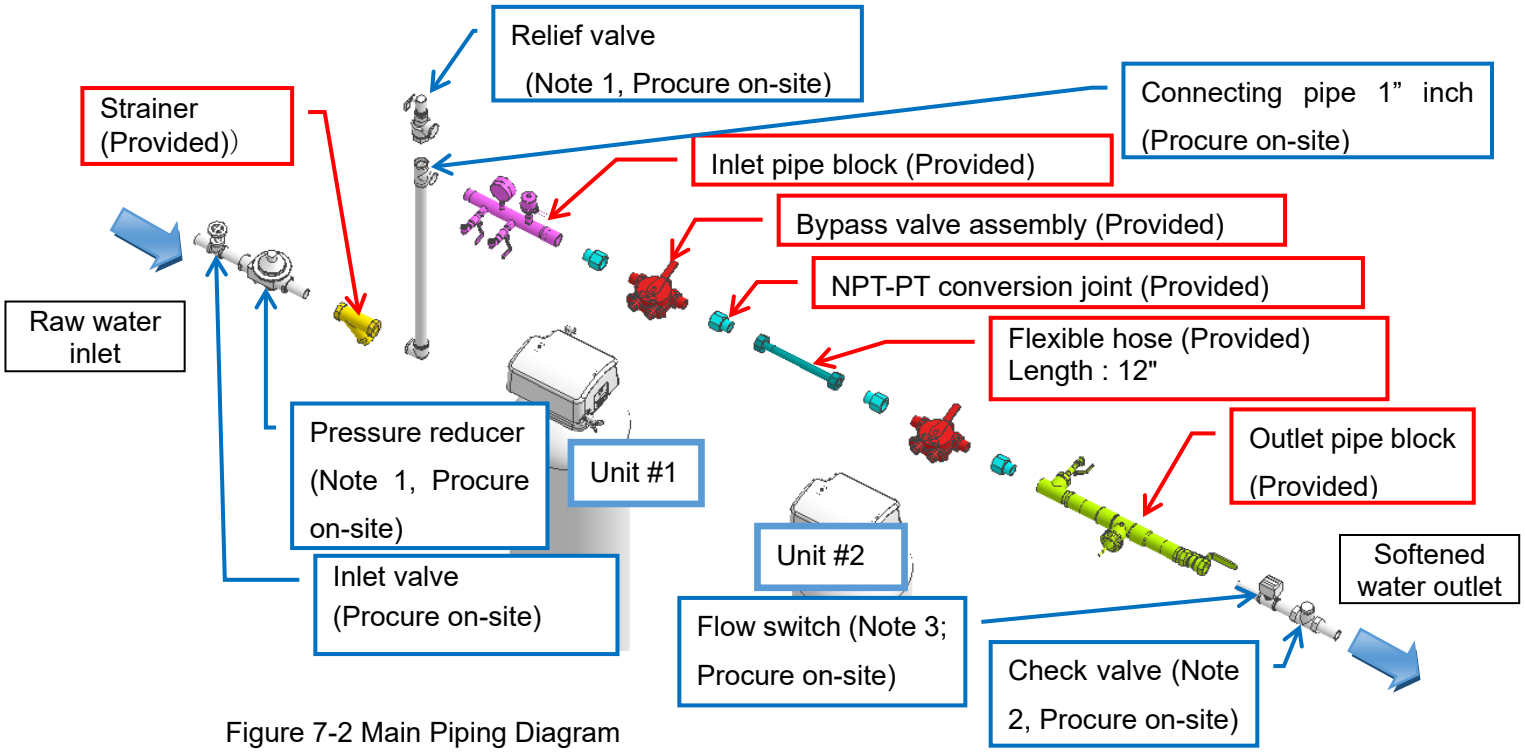


Figure 7-2 Main Piping Diagram

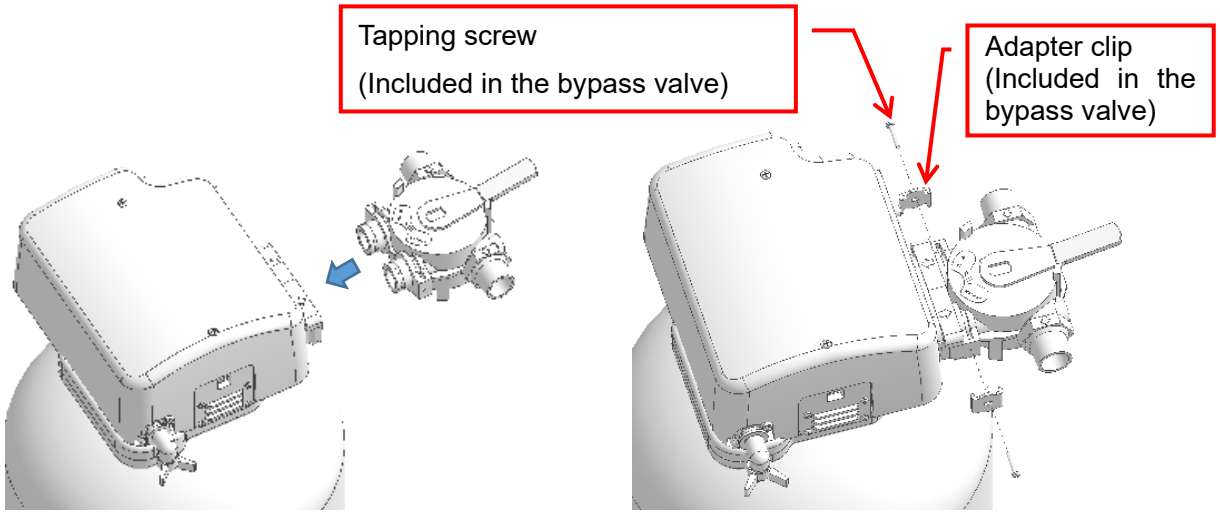


Figure 7-3 Connection of Bypass valve assembly

After the piping work is completed, execute a trial run with circulating water and regulate the flow with the flow regulating valve at the end of the outlet pipe block. After the flow regulation is completed, hang the “valve tag (regulation completed)”. (See “Start-up Operation Procedure”)

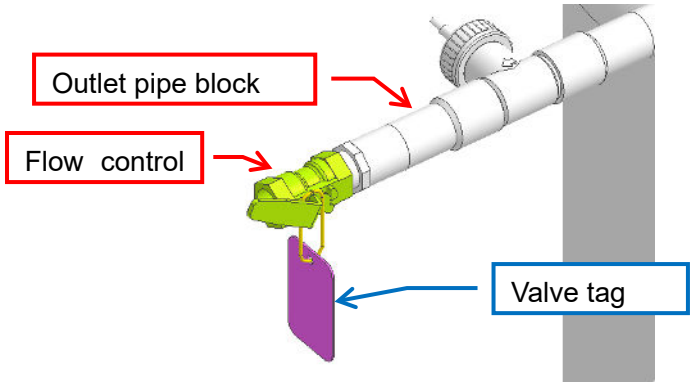


Figure 7-4 Arranging the Valve Tag

◆ Piping of MW-100U

CAUTION

Caution

The flowmeter ASSY built into the outlet piping block-2 is fragile because it is made of PVC. Please handle with care.

This product comes with inlet pipe block, outlet pipe block -1, outlet pipe block -2, strainer, hex nipple, and flexible hose (Length 18"). Refer to the figure below for assembly. For the plumbing materials, use PVC pipe, stainless steel pipe or other corrosion-resistant materials. If necessary, insulation will be required to prevent condensation and freezing.

Place the strainer in a location where it is easy to access for maintenance.

Include the items below as needed.

NOTE

- A pressure reducing valve required if the raw water pressure exceeds 71 psi. For additional protection, the use of relief valve along with the pressure reducing valve is recommended.
- A check valve is required in cases where backflow of hot water (104°F or above) may occur such as when drain recovery is performed on the outlet of the treated water.
- An flow switch is required in order to detect any failure of water flowmeter. For example, SMC Co. part# IF313-N10-11 works for the purpose.
- Please use seal tape and sealing compound for connection between outlet pipe block-1 and outlet pipe block-2.

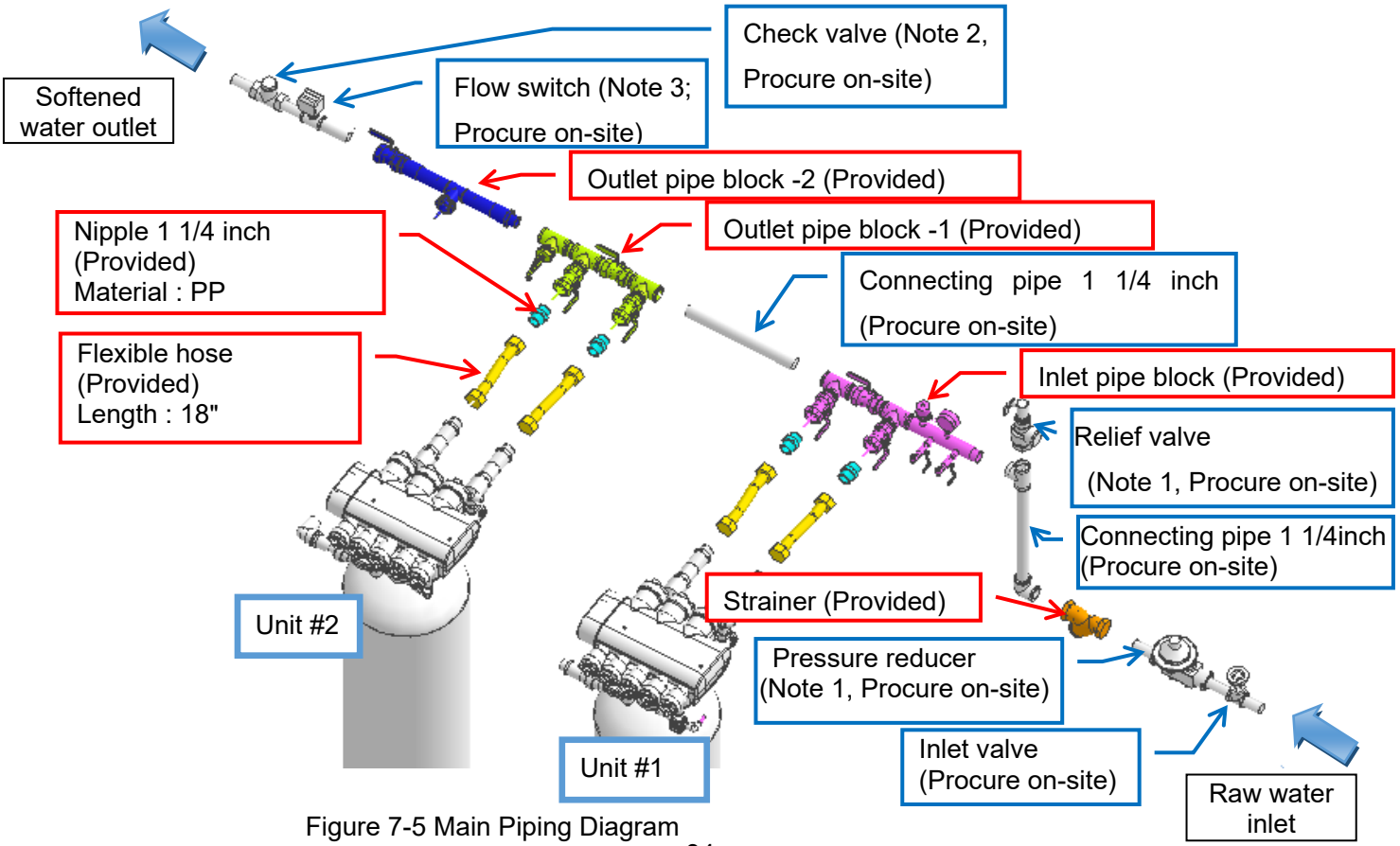


Figure 7-5 Main Piping Diagram

After the piping work is completed, execute a trial run with circulating water and regulate the flow with the flow regulating valve at the end of the outlet pipe block. After the flow regulation is completed, hang the “valve tag (regulation completed)”. (See “Start-up Operation Procedure”)

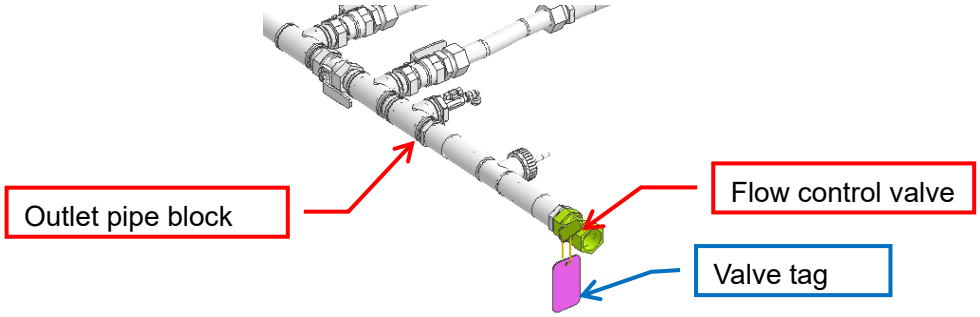


Figure 7-6 Arranging the Valve Tag

◆ Piping of MW-150U, 250U, 400U

This product comes with inlet pipe block, outlet pipe block, strainer, hex nipple, and flexible hose (Length 24"). Refer to the figure below for assembly. For the plumbing materials, use PVC pipe, stainless steel pipe or other corrosion-resistant materials. If necessary, insulation will be required to prevent condensation and freezing.

Place the strainer in a location where it is easy to access for maintenance.

Include the items below as needed.

NOTE

- A pressure reducing valve required if the raw water pressure exceeds 71 psi. For additional protection, the use of relief valve along with the pressure reducing valve is recommended.
- A check valve is required in cases where backflow of hot water (104°F or above) may occur such as when drain recovery is performed on the outlet of the treated water.
- An flow switch is required in order to detect any failure of water flowmeter. For example, SMC Co. part# IF313-N10-11 works for the purpose.

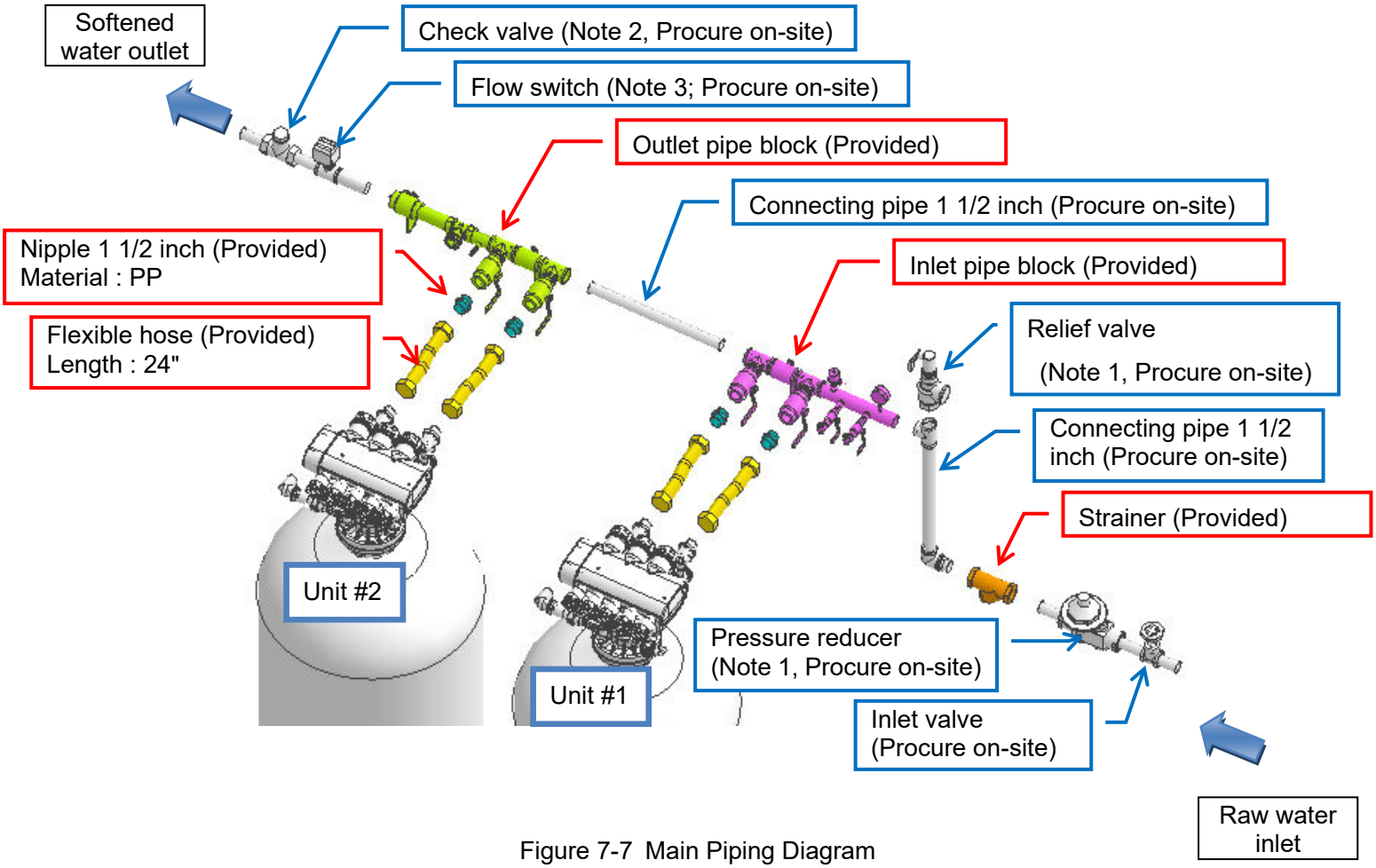


Figure 7-7 Main Piping Diagram

After the piping work is completed, execute a trial run with circulating water and regulate the flow with the flow regulating valve at the end of the outlet pipe block. After the flow regulation is completed, hang the “valve tag (regulation completed)”. (See “Start-up Operation Procedure”)

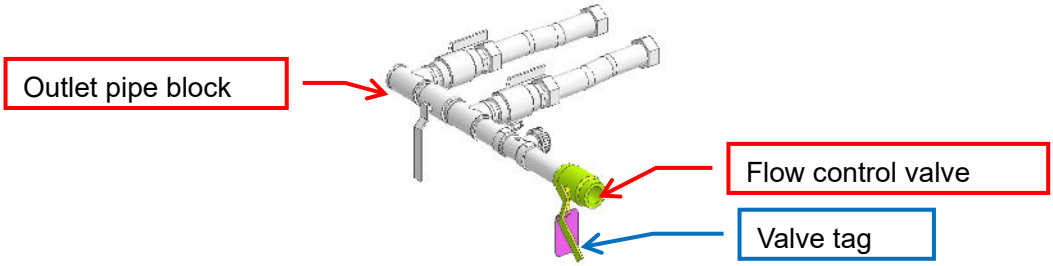


Figure 7-8 Arranging the Valve Tag

◆ Piping of MW-600U , 1000U

The product comes with two Y-strainers, a gate valve (for flow adjustment) and a flow monitor kit. Install piping based on the following diagram.
The parts in red circles in the following diagram are the provides of the product.
Use pipes made of corrosion-resistant material such as PVC or stainless steel.
Provide thermal insulation as required to prevent condensation or freezing.
Install strainers at places accessible for maintenance. Install a main valve in the primary unit. Provide the following whenever judged necessary.

NOTE

- A pressure reducing valve is required if the raw water pressure exceeds 71psi. For additional protection, the use of relief valve along with the pressure reducing valve is recommended.
- A check valve is required in cases where backwash of hot water (at 104°F or higher) may occur such as when drain recovery is performed on the treated water outlet side. In addition, use piping of heat-resistant material.
- Input of signals in service process is essential for MW to detect failure of the water flowmeter. Designated flow switches are necessary when signals cannot be obtained from the water supply control panel.

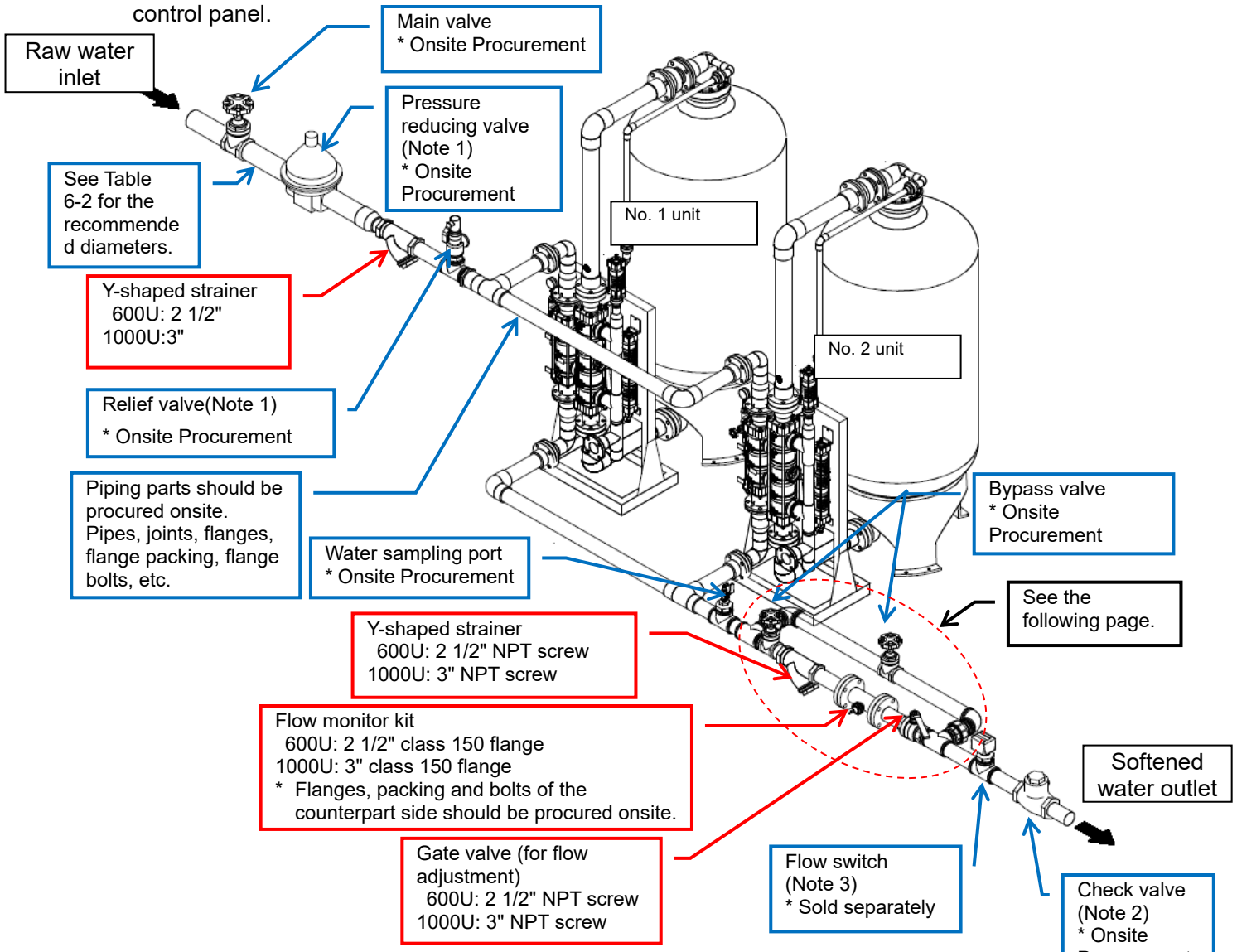


Figure. 7-9 Connection of outlet piping

Pay attention to the following points for piping of the flow monitor kit.

* Attached Y-strainers are meant for protection of the flow monitor kit. Attach them in front of the flow monitor kit.
* The right flow directions are predetermined. Check the sticker pasted on the body of the flow monitor kit to make sure of the right directions.
* Ensure the straight pipe section is more than five times greater than the diameter in the primary side of the flow monitor kit and more than three times greater than the diameter in the secondary side.
* Make sure the strainer is installed level with the floor.
* Make sure the sensor of the flow monitor kit is placed sideways.
* Install bypass piping for maintenance.

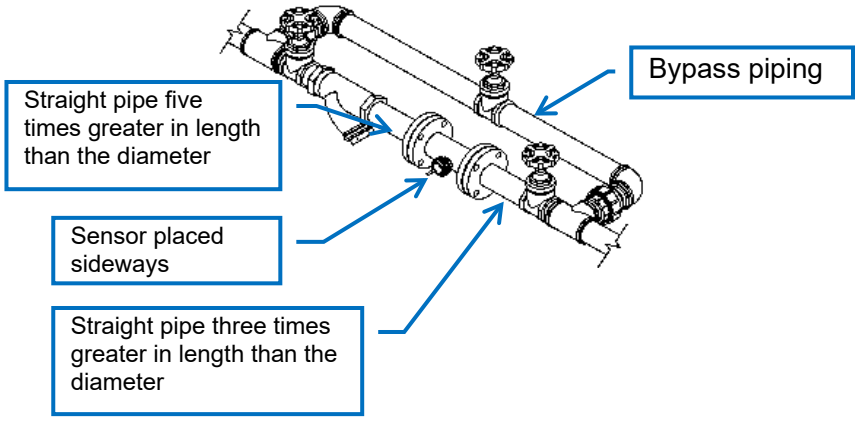


Figure. 7-10 Piping of the flow monitor kit

Three tags for valves are contained as provides. Tags should be used at the following points to prevent erroneous operation.

(See the Start-up Operation Procedure.)

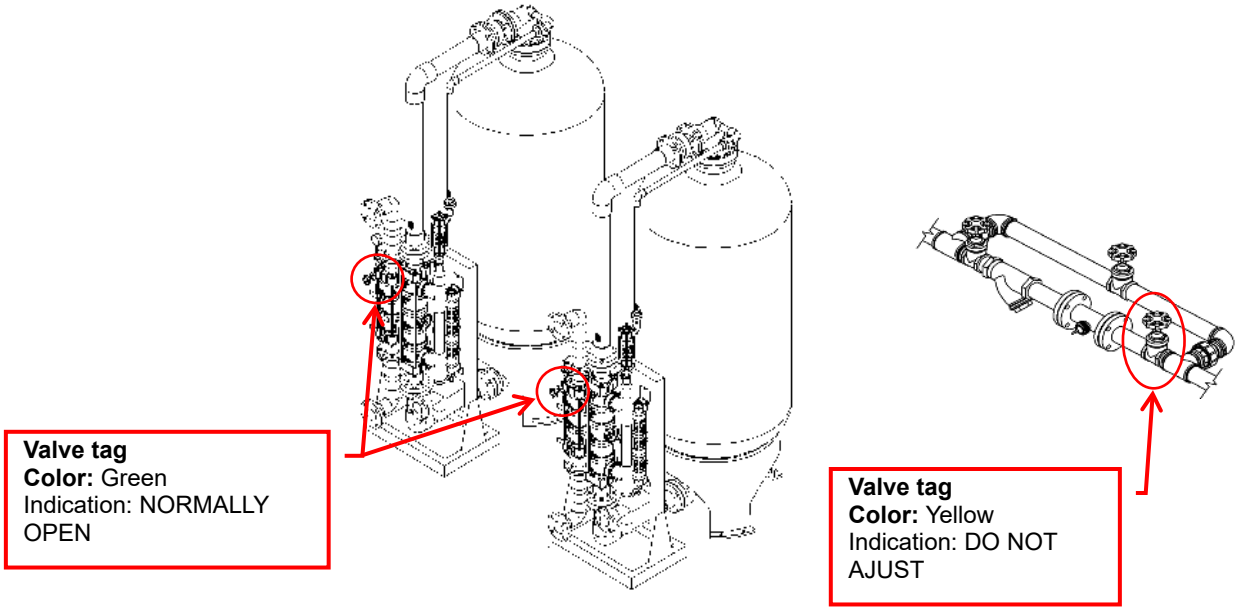


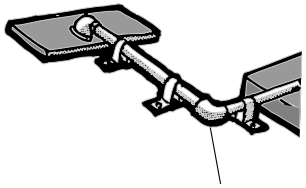
Figure. 7-11 Use points of valve tags

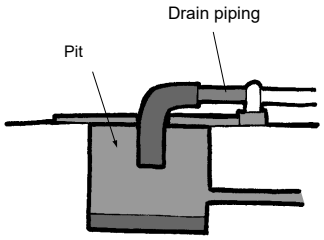
7.5 Drainage Plumbing

WARNING

Instruction

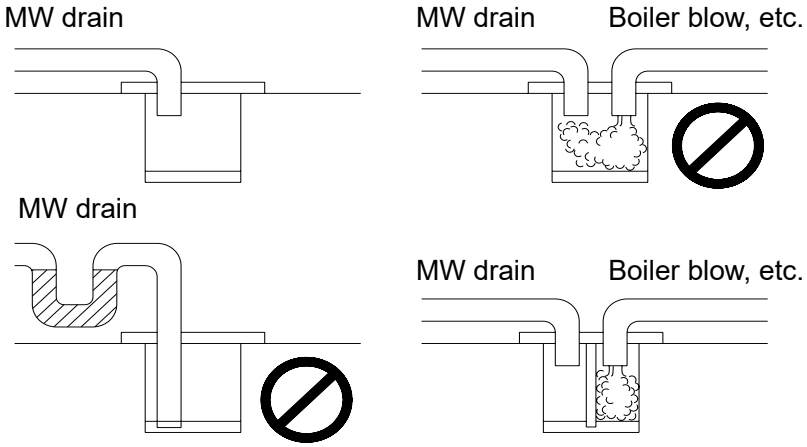
Ensure that drain piping is fixed securely in place to prevent it from moving during drain discharge and ensure that the end of the piping opens in a safe location such as a pit. Splashed water can cause electric shocks, burns, or other injuries.





NOTE

- Ensure that no drain piping is vertically laid and that piping is laid on a downward slope.
- Avoid submerging the hose end in the water; expose it to the air.
- Use pipes made of corrosion-resistant material such as PVC or stainless steel.
- Use pipes with the diameters shown in Table 7-3 and never use pipes with smaller diameters.
- Provide appropriate support for the pipes to prevent their weight from bearing down on the equipment.
- Avoid places near the piping that emit steam such as a boiler blow or overflow port of the drain recovery tank. In case piping has to be laid near such piping, use appropriate separation means to shut off steam such as by constructing partition boards.
- Do not make drain piping converge with drain piping of other equipment such as water softener. Back pressure may be applied, which may result in poor regeneration.
- Please do not mix regeneration drain water and boiler drain water with drain pit. Scale may precipitate and clogging of drainage equipment may occur.



◆ Piping of MW-35U, 65U

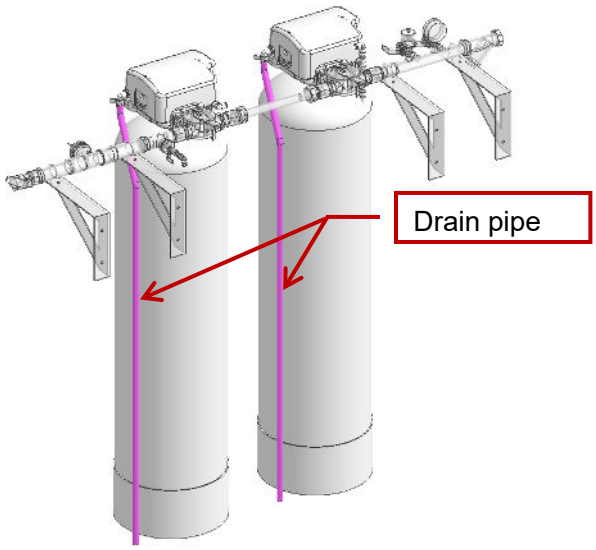


Figure 7-12 Drain Pipe Layout 1

◆ Piping of MW-100U,150U, 250U, 400U

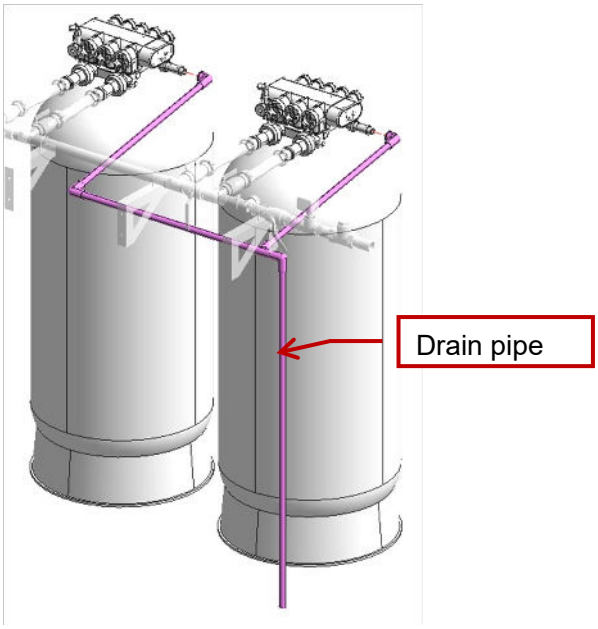


Figure 7-13 Drain Pipe Layout 2

◆ Piping of MW-600U, 1000U

Set the free end of the regeneration drain piping to the same level as the water softener unit.

* If the open end is placed higher than the installation level, it can cause regeneration failure. If it is lower than the installation level, it will cause negative pressure and eventually damage the unit.

There is a ball valve for draining water inside the resin tank at the lower part of the resin tank (for maintenance). Run piping whenever necessary.

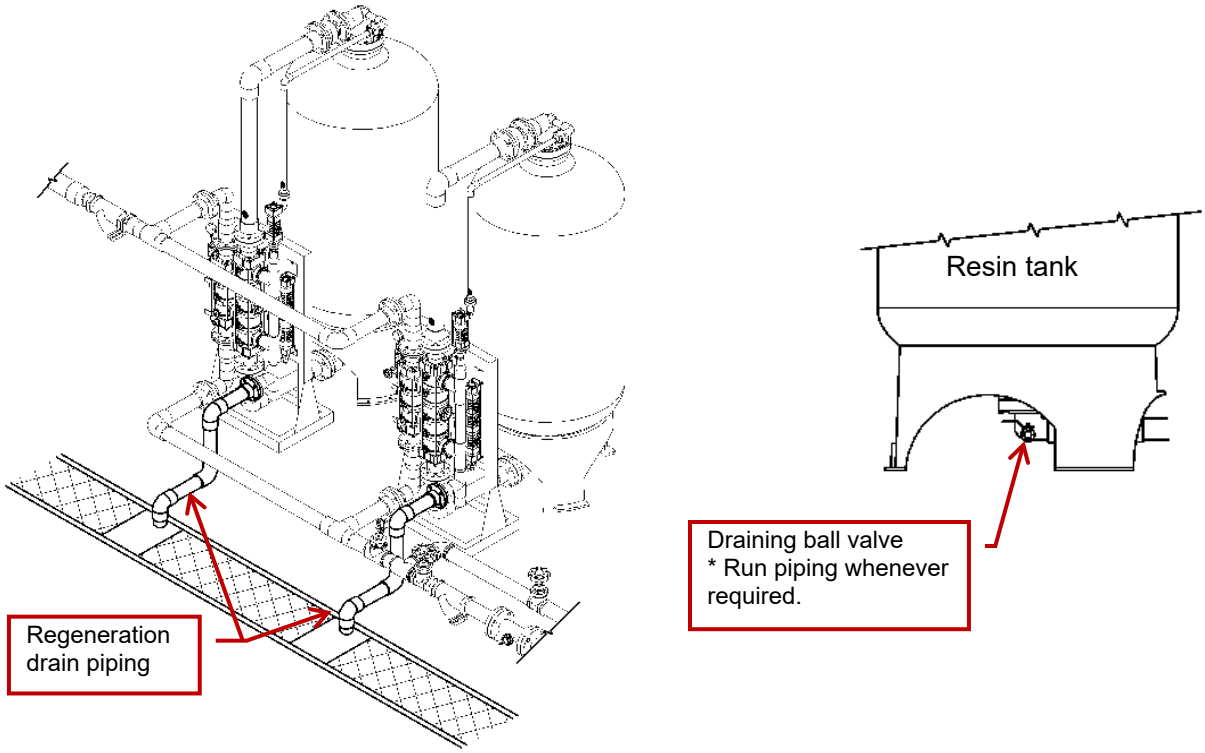


Figure 7-14 Installation of drain piping 2

7.6 Brine Plumbing

◆ Piping of MW-35U,65U

(1) Ejector line connection

Cut the ϕ 3/8" tube (Provided) to a suitable length and attach it to the tube joint on the inlet pipe block and to the tube joint at the bottom of the control valve.

(2) Brine line -1 connection

Cut the ϕ 3/8" tube (Provided) to a suitable length and attach it to the brine flowmeter of Unit #1 and Unit #2 tube joint.

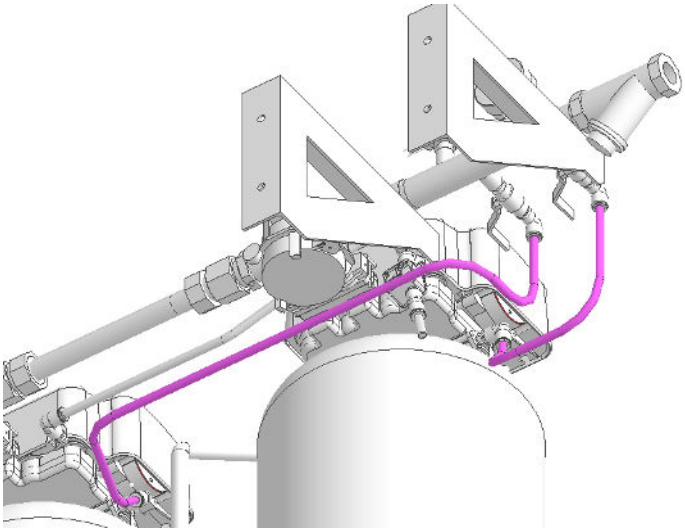


Figure 7-15 Ejector Line Connection

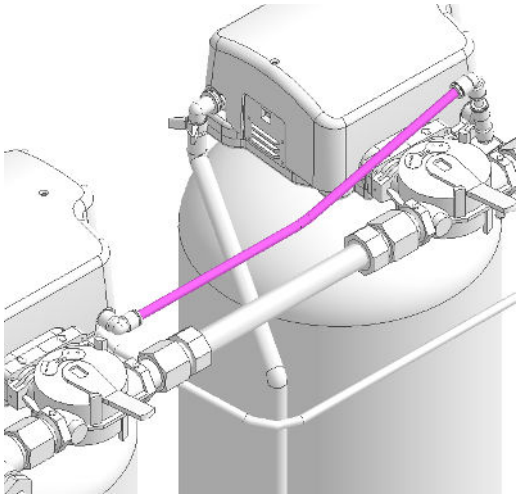


Figure 7-16 Brine Line -1 Connection

(3) Brine line -2 connection

Cut the ø 3/8" tube (Provided) to a suitable length, and attach it to the brine flowmeter of Unit #1 and the brine valve. Tube length should be less than 16.4 feet. If the total length of the brine line is long, poor regeneration may occur.

(4) Overflow hose connection

Attach the hose (Provided) to the overflow joint of the brine tank, and fix in place with the hose clamp. The pipe should not be placed with other drain system, should not be laid out upward, should not be submerged, and should be exposed to air. Never use smaller hose diameter then directed.

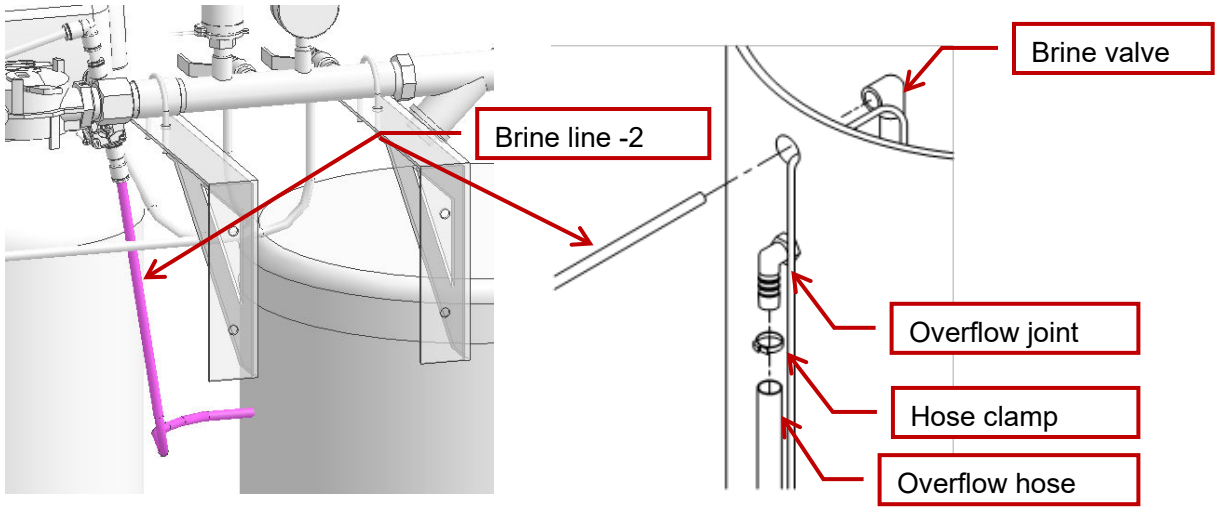


Figure 7-17 Brine Line -2 and Overflow Hose Connection

◆ Piping of MW-100U, 150U, 250U, 400U

(1) Ejector line connection

Cut the tube (Provided, MW – 100/150U: ø 12mm, MW - 250 / 400U: ø 16mm) to a suitable length and attach it to the tube joint on the inlet pipe block and to the tube joint at the top of the control valve.

(2) Brine line -1 connection

Cut the ø 12mm tube (Provided) to a suitable length and attach it to the brine flowmeter of Unit #1 and Unit #2 tube joint.

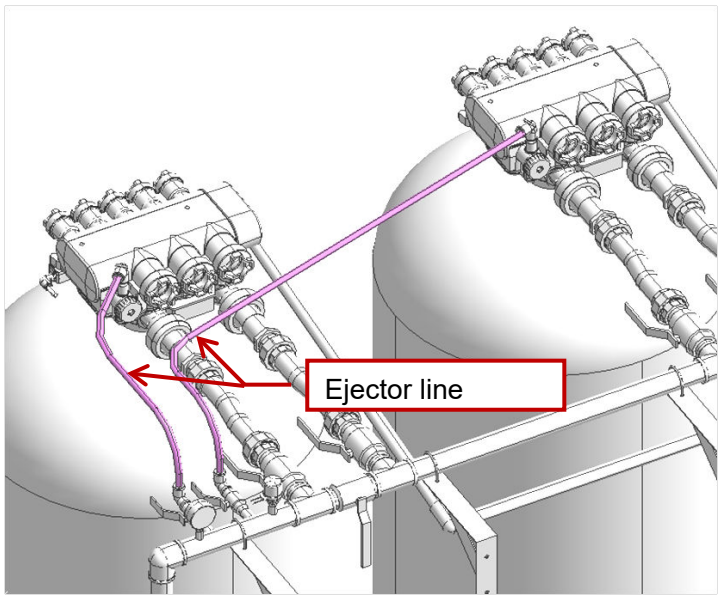


Figure 7-18 Ejector Line Connection

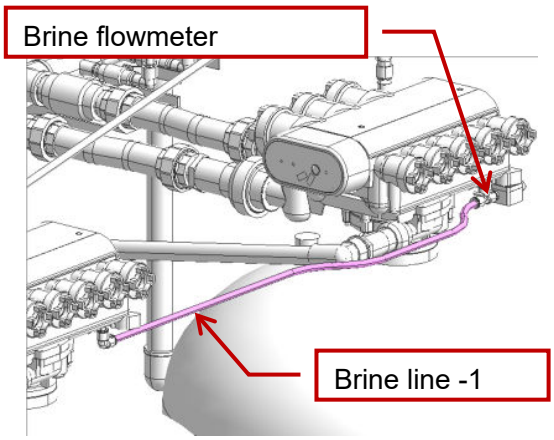


Figure 7-19 Brine Line -1 Connection

(3) Brine line -2 connection

Cut the ø 12mm tube (Provided) to a suitable length, and attach it to the brine flowmeter of Unit #1 and the brine valve. Tube length should be less than 16.4 feet. If the total length of the brine line is long, poor regeneration may occur.

(4) Overflow hose connection

Attach the hose (Provided) to the overflow joint of the brine tank, and fix in place with the hose clamp. The pipe should not be placed with other drain system, should not be laid out upward, should not be submerged, and should be exposed to air. Never use smaller hose diameter then directed.

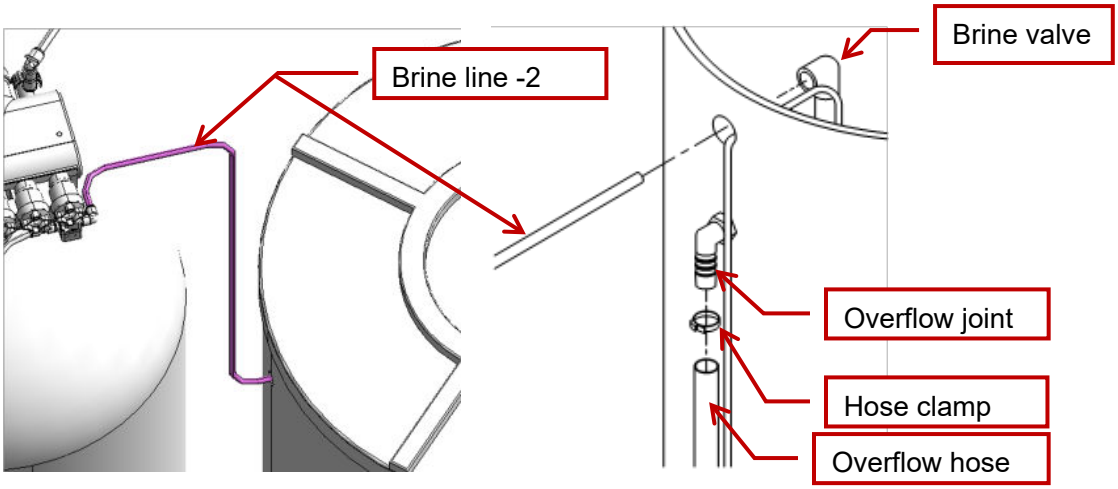


Figure 7-20 Brine Line -2 and Overflow Hose Connection

◆ Piping of MW-600U, 1000U

(1) Installation of brine flowmeter

Install the brine flowmeter assembly fixed on the back of the control box at the brine valve connection of the brine tank. Wrap the screw part of the brine valve connection with sealing tape and firmly screw in.

* Each brine flowmeter should be placed properly in terms of the direction. Install the flowmeter so that the arrow mark on the flowmeter faces toward the softener unit from the brine tank.
* Install the brine flowmeter on the floor horizontally as well as so that Ⓐ mark faces upward.

(2) Connecting Overflow Hose

Connect the provide hose to the overflow joint of the brine tank and fasten it with a hose band.

* Do not lay the overflow hose upright.
* Avoid submerging the hose end in water; expose it to the air.
* Make sure the open end is set below the installation level of the brine tank.
* Avoid reducing the pipe diameter (such as by pressing the hose) and do not bundle the piping with other pipes.
* Fix the end of the tube.

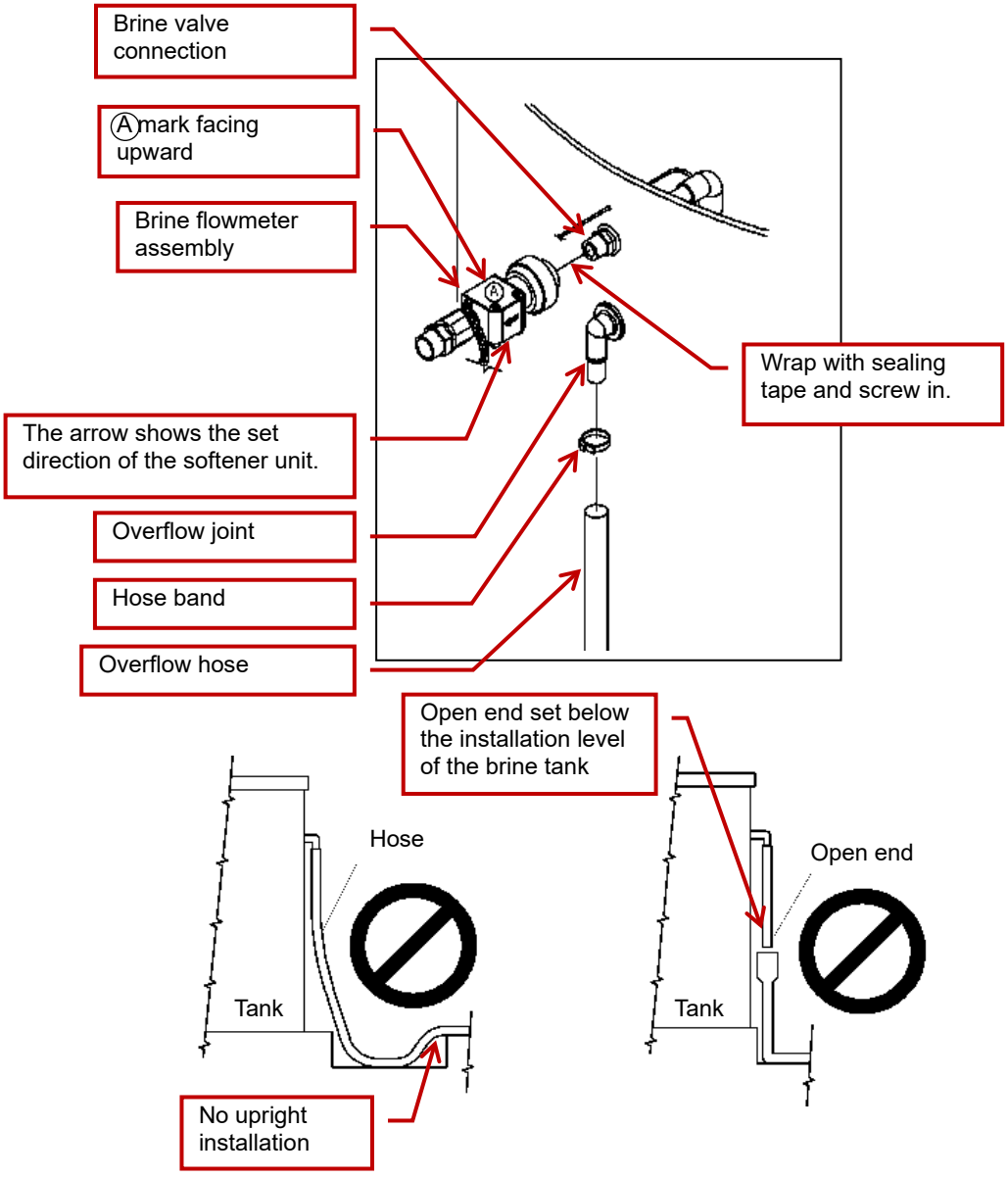


Figure 7-21 Connecting Brine Flowmeter to Oveflow Hose

(3) Connecting Brine Line

Use 3/4" SCH80 PVC piping for brine line.

Connect the softener unit to the brine tank while paying attention to the following points:

* Make sure the total length of the piping is below 16.4 feet. If the total length of the brine line is long, poor regeneration may occur.
* Minimize the vertical installation of the piping.
* Provide appropriate means to make it easy to disassemble and clean the piping such as by providing unions at the appropriate positions.
* Support and fix the piping at appropriate positions.

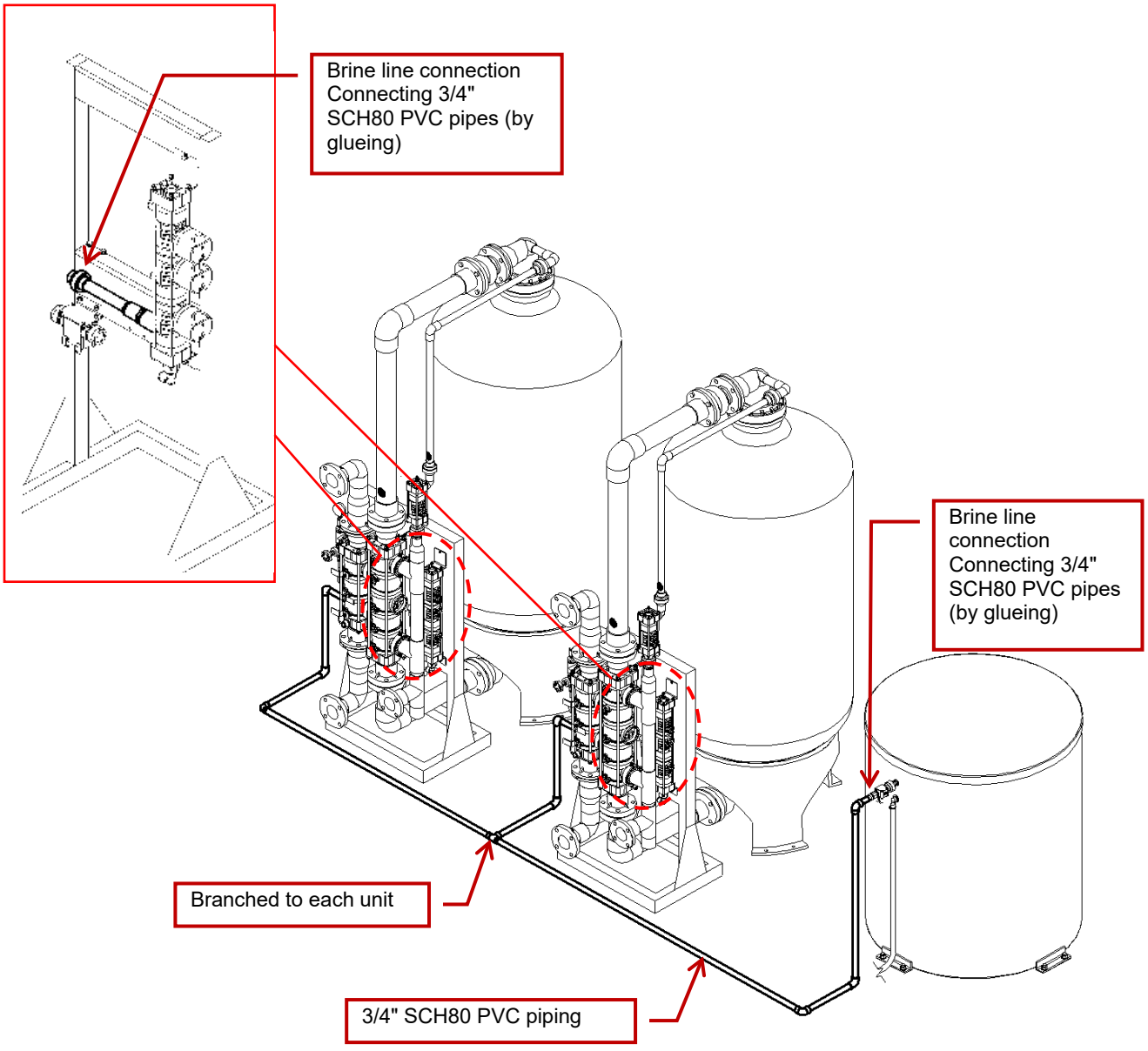


Figure 7-22 Connec0ting Brine Flowmeter to Oveflow Hose

8. ELECTRICAL WIRING

WARNING

Do not operate the power switch with wet hands.
Or it could cause an electric shock.

During power source installation work, use a specified wire diameter for connection and ensure that a ground is established. Japanese D-type grounding work or better.
Furthermore, use an earth leakage circuit breaker (with overcurrent protection) as a dedicated power source.
Not using any such device could cause a fire or other serious accidents.

The voltage drawn into the control box must be 24 VDC or less.
Or it could cause an electric shock.

The AC/DC adaptor and surge protector are not waterproof.
Do not place them on the floor but install them in a position not subject to water.
If this precaution is not observed, serious accidents such as electric shock and outbreak of fire may result.

Protect wires with conduits.
Failure to do so may cause damage or an electric shock.

NOTE

- Perform work with the main power turned OFF.
- Provide a dedicated power source (24-hour-powered wall socket with grounding).
- Use single phase 100 to 125 VAC 50/60Hz as a power source for the Unit.
- Use the AC/DC adaptor provided with the unit. Do not use any other AC/DC adaptor.
- Install an earth leakage circuit breaker for 5 A rated current and 30 mA sensitivity current with overcurrent protection, to the AC/DC adaptor power source (wall socket on site).
- Install the surge protector provided with the unit to the AC/DC adaptor power source (wall socket on site).
- Securely ground the “E” ground terminal in the control box using the wire with the diameter of AWG 14 or more.

8.1 Electrical Specification

Table 8-1 Electric capacity

Item		Unit	Model							
			MW-35U	MW-65U	MW-100U	MW-150U	MW-250U	MW-400U	MW-600U	MW-1000U
Power supply		—	100–125 VAC, 50/60 Hz, single-phase (a wall socket with grounding)							
Rated power consumption		W	22						42	
Electric capacity		VA	22						42	
Earth leakage breaker (equipped with overcurrent protective device)	Rated current	A	5							
	Rated sensed current	mA	Not more than 30							
AC/DC adaptor		-	TR9CI2500LCPCIMR6B OUTPUT:24VDC 2.5A 60W							
Surge protector		-	SPIKECUBE Power supply: 100–125 VAC, 50/60Hz, single-phase							
Grounding wiring gauge		Gauge	AWG#14(2.0mm^2) or more							

8.2 External Wiring Layout

The voltage drawn into the control box must be 24 VDC or less.

Protect the wiring by a conduit or a heat resistance tube.

Do not bundle the power line with the signal line or communication line.

Also in the control box, wire the power line and the other two lines separately as in the figure below.

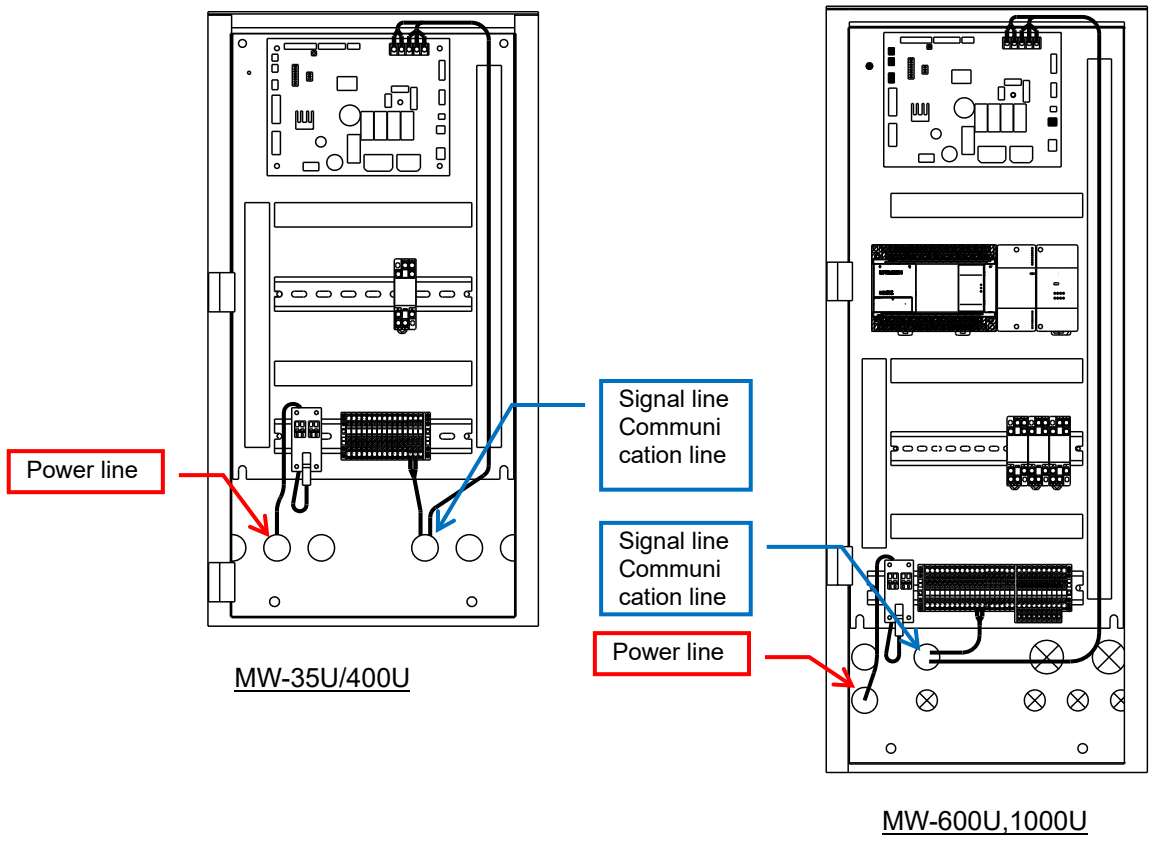


Figure 8-1 External Wiring

8.3 Main Wiring Layout

◆ Wiring of MW-35U, 65U

Follow the figure below for wiring connections.

To prevent damage to the wires, use a wiring rack or attach the wires to the pipe with wiring ties.

1) Actuator Wiring (connector attachment)

Remove the control cover of the control valve and connect the “actuator wiring” of each unit. The wirings are marked with No. 1 or No. 2 for identification. Be sure to connect the wirings correctly.

After connecting the wirings, install the control valve cover of the No. 2 unit.

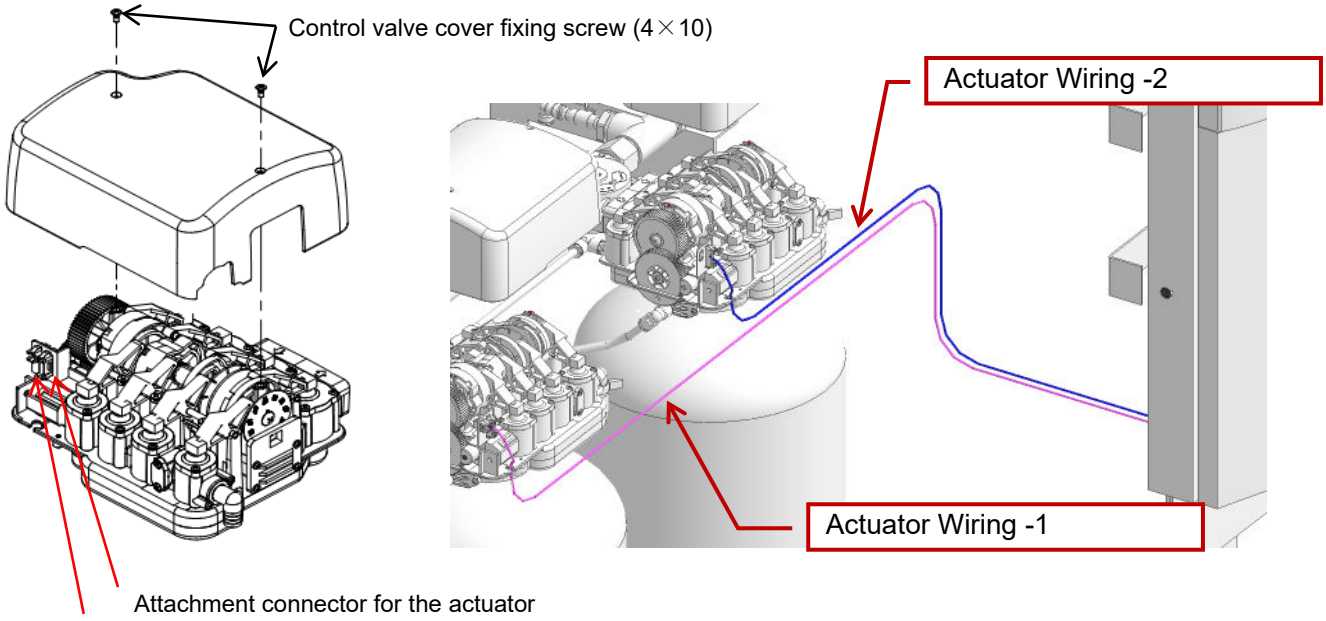


Figure 8-2 Actuator Wiring

2) Brine Flowmeter Wiring (connector attachment)

Connect the brine flowmeter wiring.

After connecting the brine flowmeter wiring, install the control valve cover of the No. 1 unit.

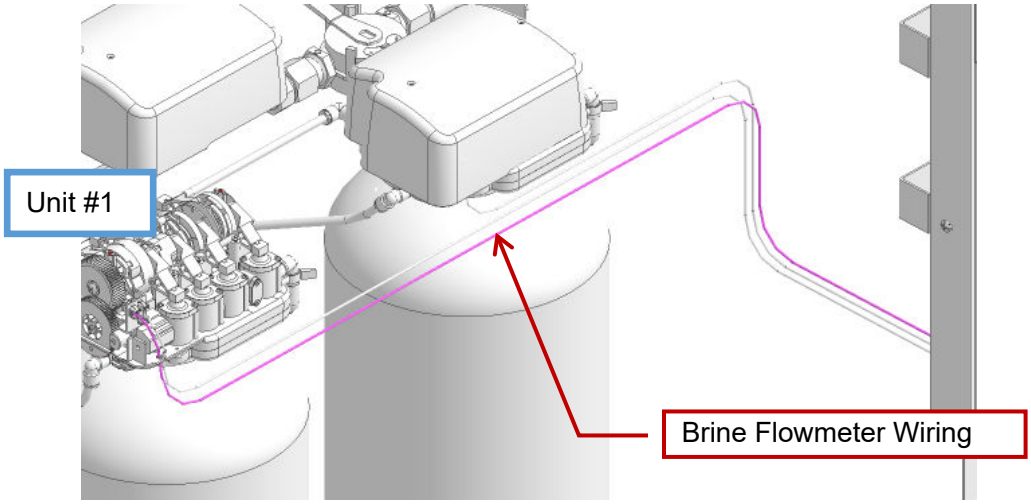


Figure 8-3 Brine Flowmeter Wiring

3) Raw Water Pressure Switch Wiring, Water Flowmeter Wiring (connector attachment)

Connect the raw water pressure switch wiring and the water flowmeter wiring.

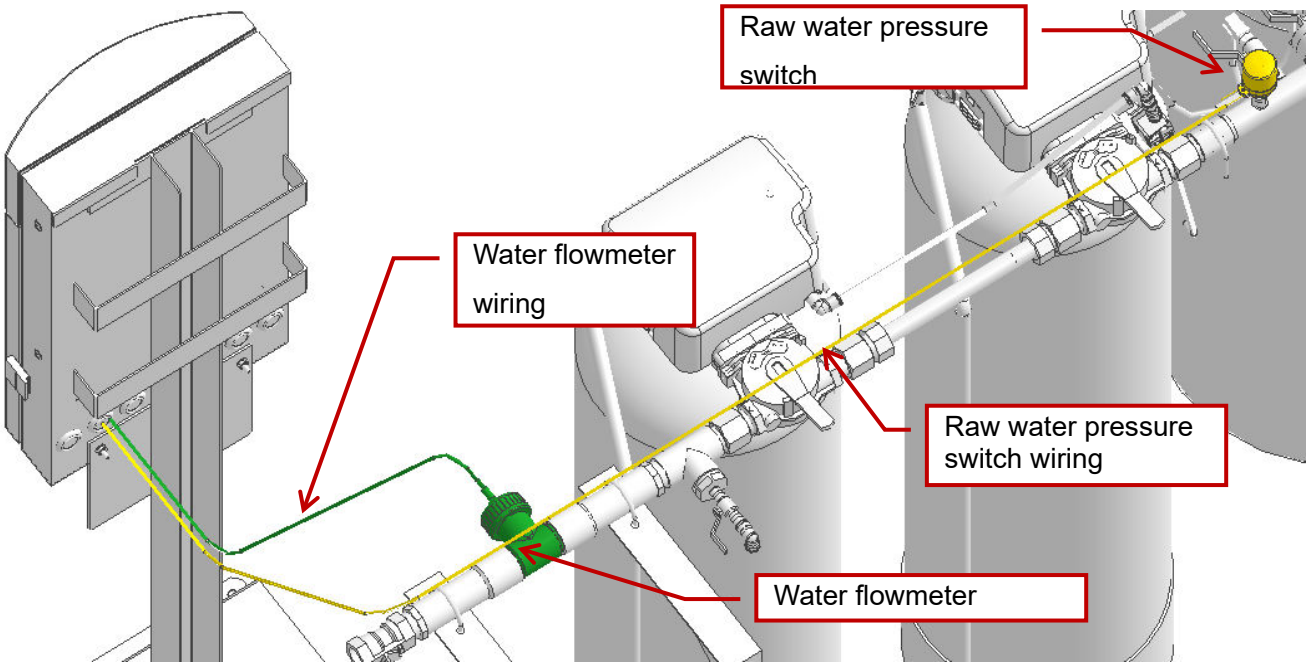


Figure 8-4 Raw water pressure switch wiring and Water Flowmeter Wiring

1) Brine concentration switch wiring (terminal attachment)

Connect the terminal pins. There is no color to determine the connection. Tighten the nut after connecting the water proof connector.

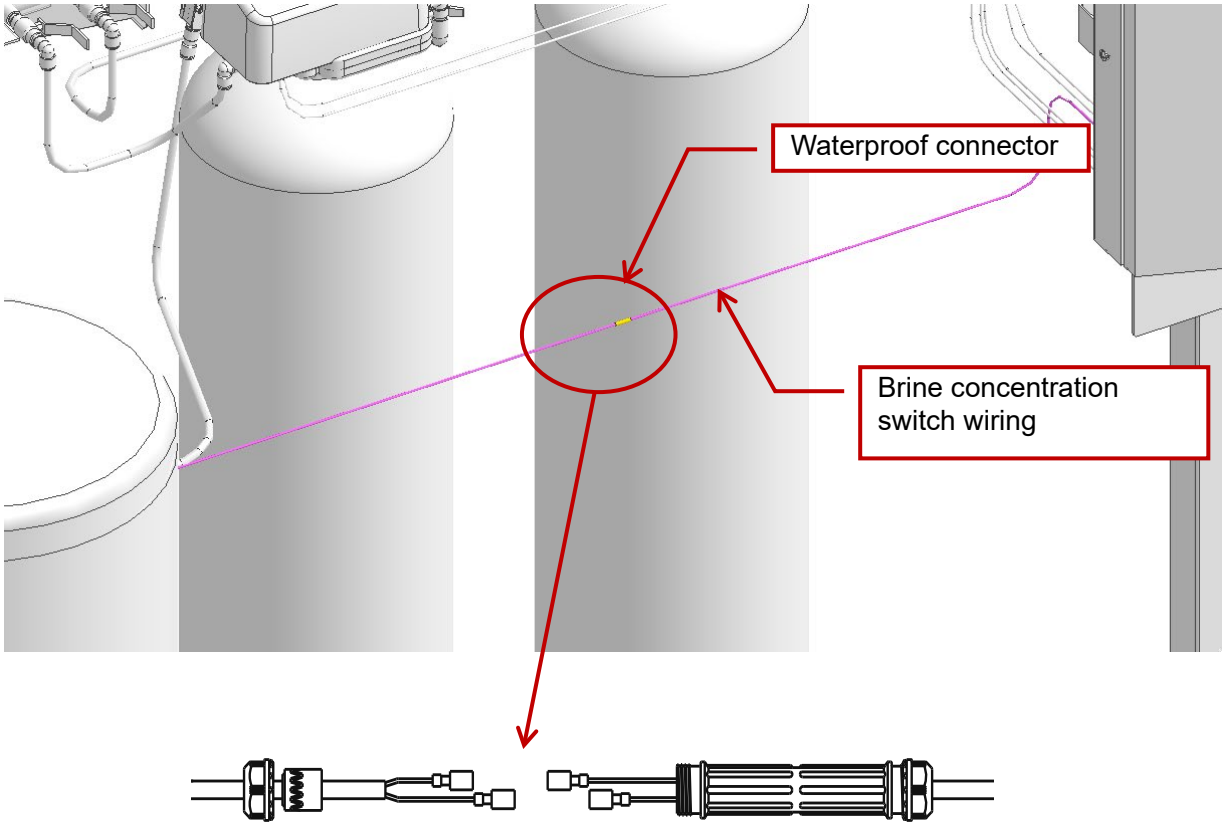


Figure 8-5 Brine Concentration Switch Wiring

◆ Wiring of MW-100U,150U, 250U, 400U

Follow the figure below for wiring connections.

To prevent damage to the wires, use a wiring rack or attach the wires to the pipe with wiring ties.

1) Actuator Wiring (connector attachment)

Connect actuator wiring of each unit. Wires should have identification markings for Unit #1 and Unit #2.

After connecting, tie wires onto the control valve with wire ties in order to keep them in place.

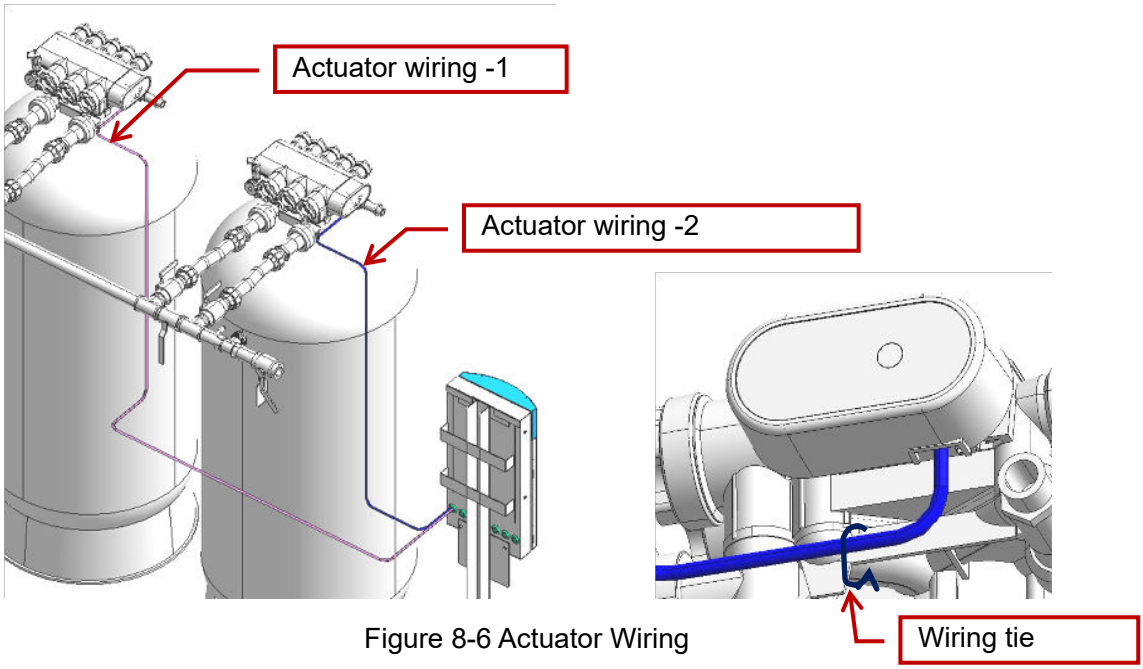


Figure 8-6 Actuator Wiring

2) Raw water pressure switch wiring and the water flowmeter wiring (connector attachment)

Connect the raw water pressure switch and the water flowmeter wirings.

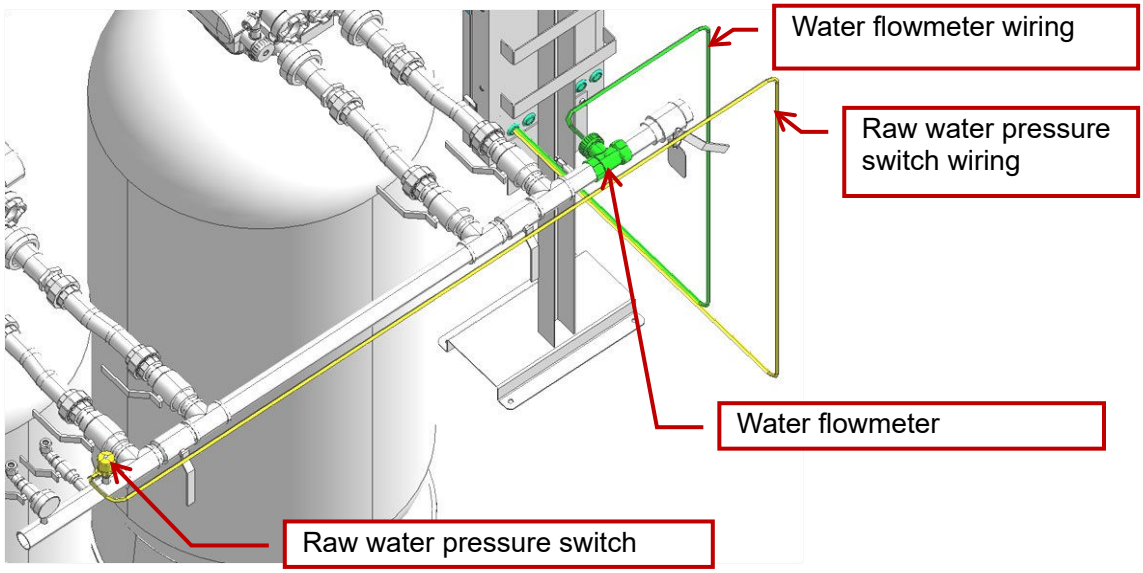


Figure 8-7 Raw Water Pressure Switch Wiring and Water Flowmeter Wiring

3) **Brine flowmeter wiring (connector attachment)**

Connect the brine flowmeter wiring.

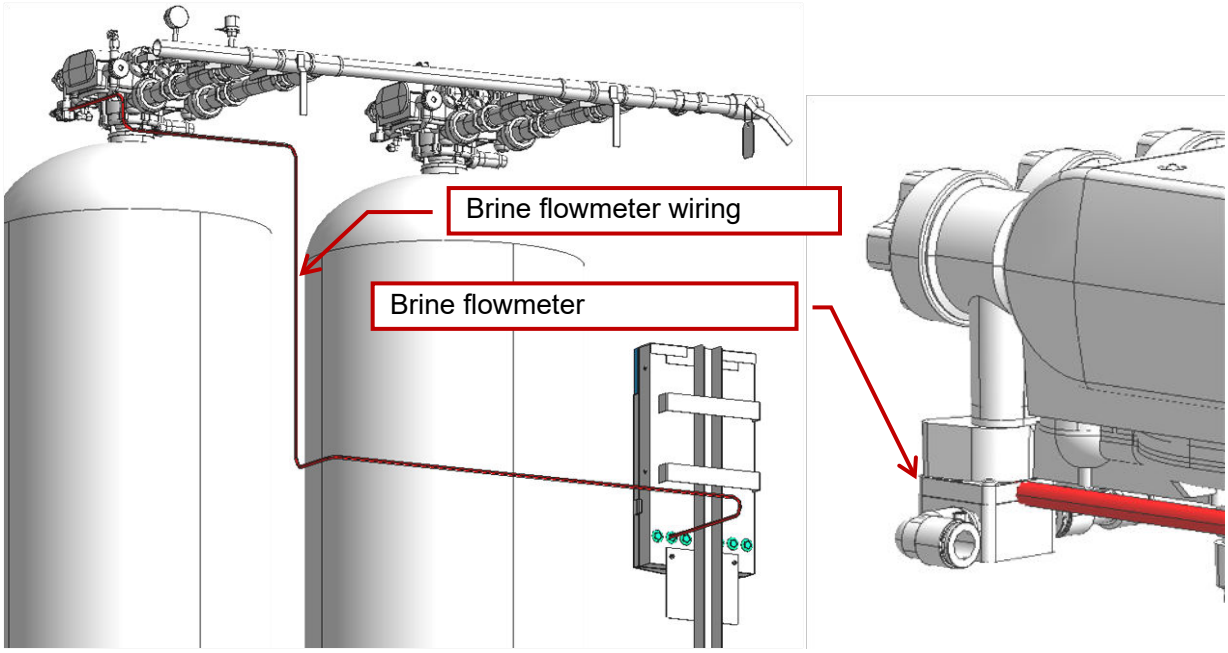


Figure 8-8 Brine Flowmeter Wiring

4) Brine concentration switch wiring (terminal attachment)

Connect the terminal pins. There is no color to determine the connection. Tighten the nut after connecting the water proof connector.

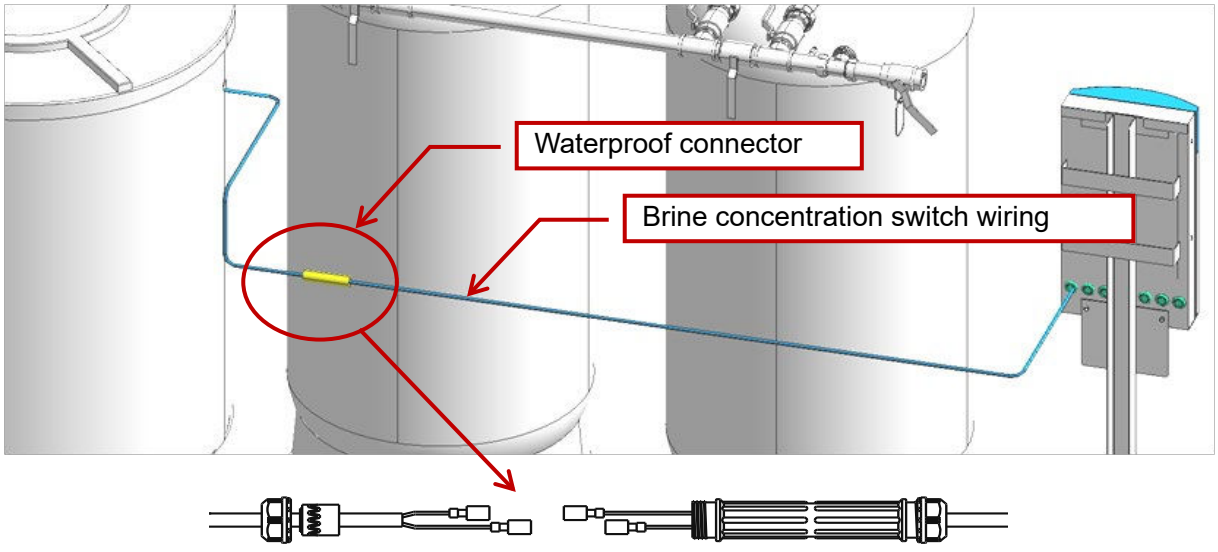


Figure 8-9 Brine Concentration Switch Wiring

◆ Wiring of MW-600U, 1000U

Connect wires using the following diagrams as reference.

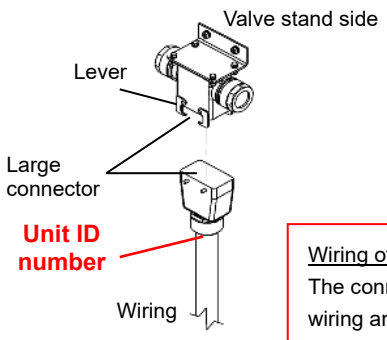
* When wiring, provide appropriate means such as wiring racks or attaching wires to the pipe with banding bands to prevent wiring from breaking or being damaged.
* Provide wires are protected with Plica Tube. The length of every wire outside the control box is 16.4 feet.

Wiring of No. 1 and 2 Unit Control Valves

There are two kinds of control valve wires, one for the No. 1 unit and the other for the No. 2 unit.

The connection is a large connector, and the unit identification number is inscribed at the bottom of the connector.

Insert the large connector and firmly fix it with a lever.



Wiring of brine concentration switch

The connection of the brine concentration switch wiring and the brine tank's brine concentration switch cable is a plug-in pin terminal.

After connection, tuck them in the waterproof connector and firmly tighten the nuts on both ends.

There is no distinction by the color of wire.

(Waterproof connector is attached to the wires as a provide.)

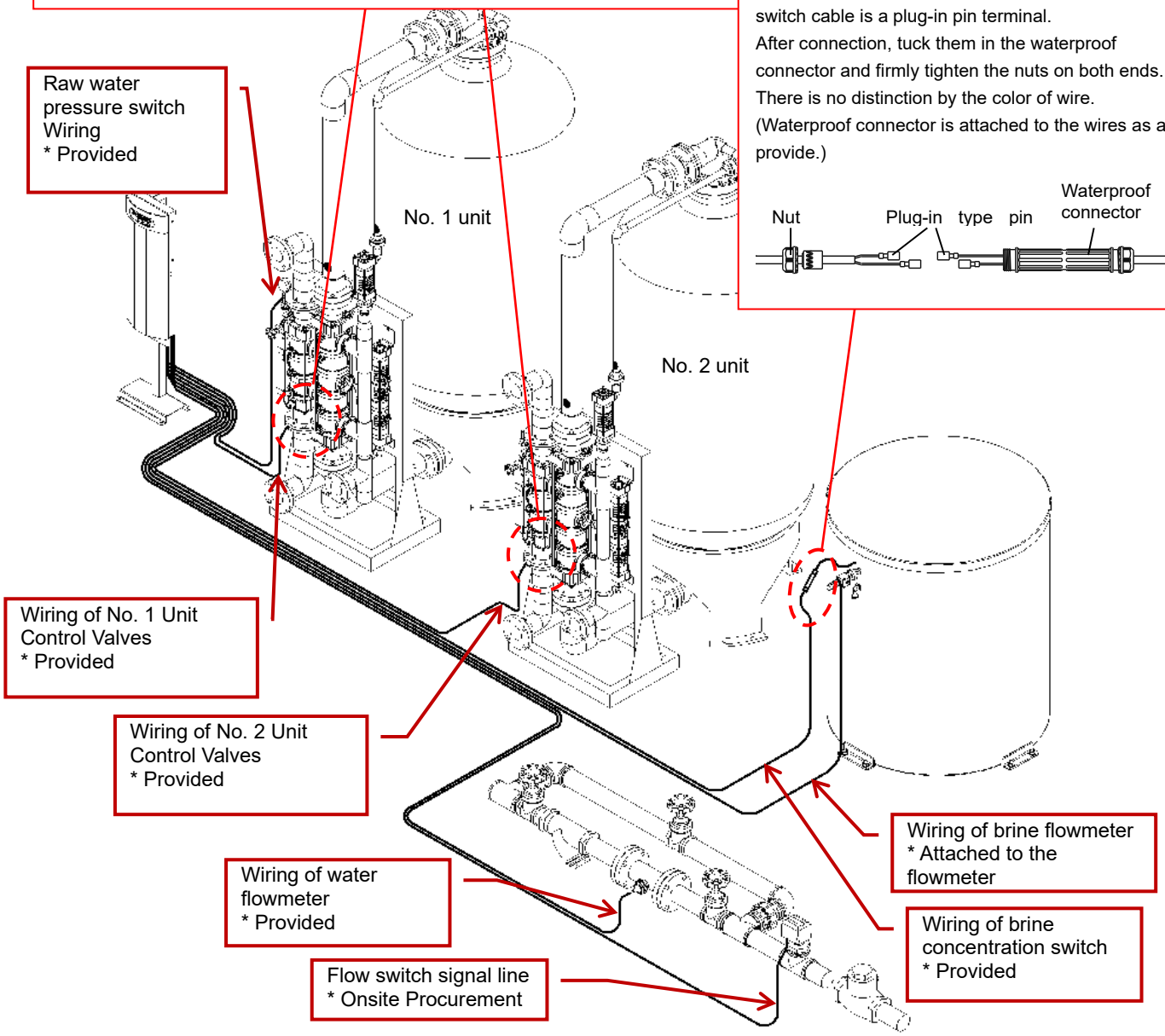


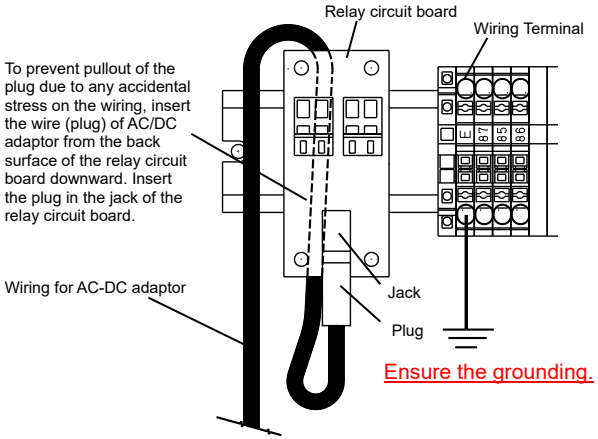
Figure 8-10 Wiring of MW-600U and 1000U

8.4 Power Supply Line and Signal Line Wiring Connection Layout

<Power and Earth Wirings>

■ Power and earth ground for MW

- Use 100 to 125 VAC, 50/60 Hz, single-phase power supply (a wall socket with grounding) and enable 24-hour power supply.
- Use the AC/DC adaptor and surge protector provided with the unit.
- To prevent pullout of the plug due to any accidental stress on the wiring, insert the wire (plug) of AC/DC adaptor from the back surface of the relay circuit board downward. Insert the plug in the jack of the relay circuit board. (See the figure below)
- Do not load the AC/DC adaptor inside the control box.
- Securely ground the “E” ground terminal in the control box using the wire with the diameter of AWG 14 or more.
- Install the surge protector to the on-site wall socket.
- When any control device is added inside the control box, do not use the power from the AC/DC adaptor for such a device. Electricity may become insufficient.



WARNING

Ground Connection

During power source installation work, use a specified wire diameter for connection and ensure that a ground is established. Japanese D-type grounding work or better. Use a dedicated power supply and an earth leakage circuit breaker for 5 A rated current and 30 mA sensitivity current with overcurrent protection.
Not using any such device could cause a fire or other serious accidents.

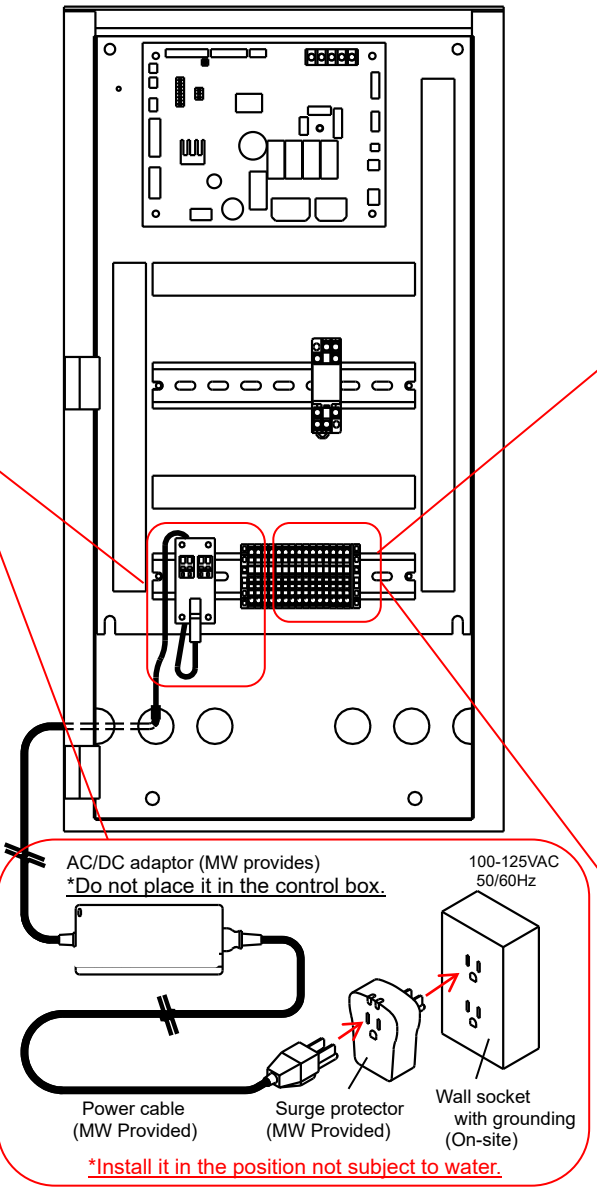
Instruction

The voltage drawn into the control box must be 24 VDC or less. Or it could cause an electric shock.

Instruction

The AC/DC adaptor and surge protector are not waterproof. Do not place them on the floor but install them in a position not subject to water.
If this precaution is not observed, serious accidents such as electric shock and outbreak of fire may result.

* The following diagram shows the control box of MW-35U — MW-400U. The descriptions, however, are also applicable to MW-600U or 1000U.



<Wiring Terminal Description>

■Integrated alarm signal output (87 - 85 - 86)

- During normal operation and alarm is not on, the terminal between “86 - 87” is turned ON and outputs voltage . (Contact capacity : 30 VDC 1 A)
- During blackout or alarm is on the terminal between ”85 - 86” is ON and outputs voltage. (Contact capacity : 30 VDC 1 A)

■Regeneration signal output (1 - 2)

- Terminals will output during regeneration process, excluding the regeneration standby mode.
- From the MW microcontroller setting, it is possible to set the output methodology. (Contact capacity : 30 VDC 1 A)

■Low water level alarm signal input (30 - 61)

- When the low water level warning system detects low water level, it will output “OPEN” (no voltage) to provide a warning for the system.
- It is also possible to set the microcontroller to output “OPEN” signal when low water level is reached.

■Regeneration standby signal input (30 - 11)

- When inputting filtration operation signal (no voltage) during the operation, during the filtration this can be set to standby. Use when water cannot be supplied to the MW or the raw water cannot be supplied during regeneration.

■Water flowmeter signal input (90 – 63)

- To determine the water flowmeter function, input a no voltage signal which closes during softened water is running. A water level controller signal or an optional flow switch signal is available.
  *As for MW-150U, MW-250U, and MW-400U, to whose control boxes AC power is supplied, the terminal numbers are (30 – 63).

■ Water flow signal output (No. 1 unit: 7-8; No. 2 unit: 9-10)

* MW-600U or 1000U only. MW-35U — MW-400U has no output terminals.

- Non-voltage contact output is conducted during the service process of each unit. Contact is "closed" during the service process. (Contact capacity: 30 VAC 1 A)

■ Remote signal output for Colormetry (31-32)

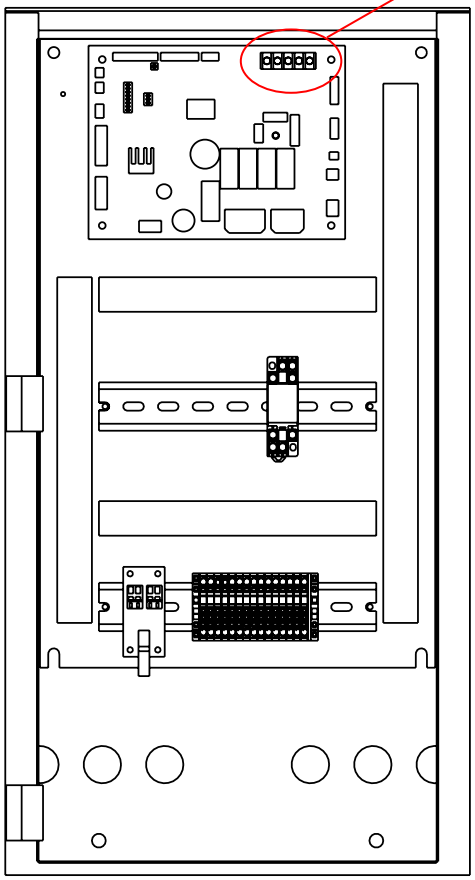
- To analyze data only during water flow, connect cables from above terminals to Colormetry terminals (3-4).

<Wiring to the Terminal(s)>

- Use at least 16 gauge (1.25mm^2) wire.

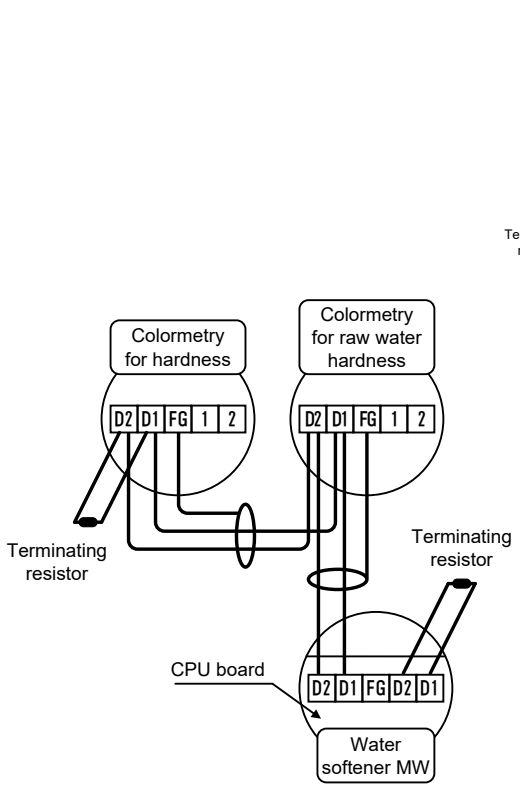
8.5 Communication Line Wiring Connection Layout

* The following diagram shows the control box of MW-35U – MW-400U. The descriptions, however, are also applicable to MW-600U or 1000U.

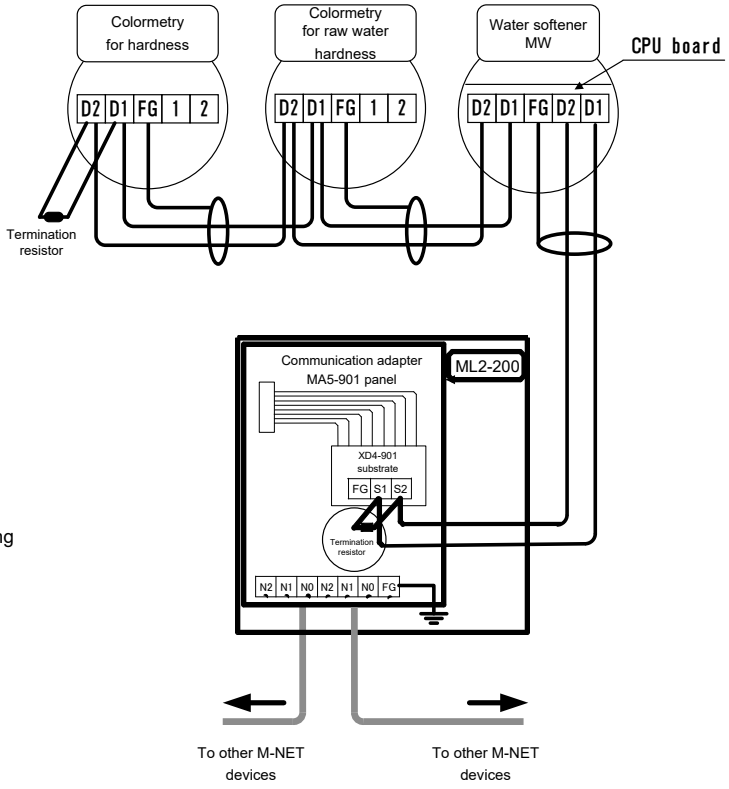


<DS-NET Wiring>
・For DS-NET only used the “shielded twisted pair cable” described below.
Shielded – twisted pair cable 1P (one pair) AWG-18-20
Y terminal: –#10
Terminal width: .23” or less
(Combine the shield lines, crimp with the Y terminal and use a shrink tube)

・Connect only one side of the twisted pair cable to FG.
・For the network unused terminals, always attach a terminating resistor (attached when being shipped)
For others, please remove from equipment.
・Follow the figure below for connection method with the devices.



DS-NET only



When connecting to M-NET