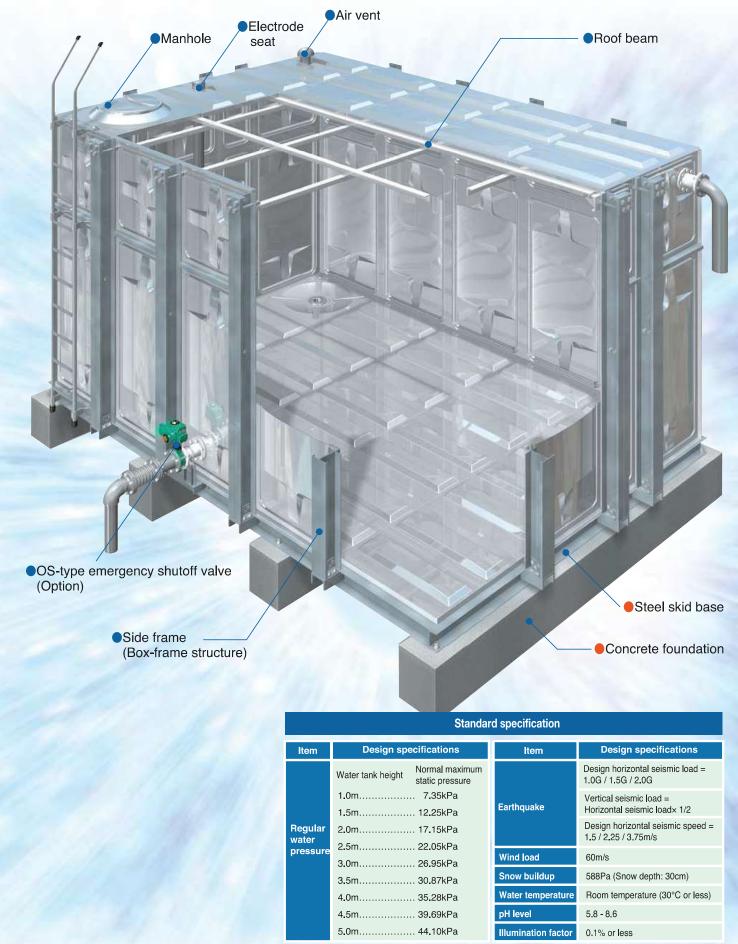


Sekisui's Environmentally, Safety and Workability Conscious Design



Excellent workability by bolt sectional type

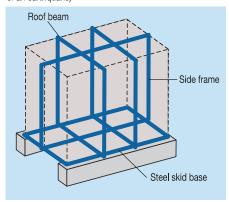
Since Sekisui Stainless Steel Tanks are on-site panel sectional type with bolts and nuts, they can be easily transported into and installed in confined or high locations promising the agreed installation schedule. Sekisui Stainless Steel Tanks can also be replaced or expanded in size regardless of installation site and/or tank size.

Safe installation without welding and fire

The on-site installation of Sekisui Stainless Steel Tanks requires NO welding and fire. Additionally, acid pickling and waste acid treatment are NOT required preventing environmental contamination and assuring a high level of safety.

Earthquake-resistant box-frame structure

Fundamental earthquake-resistant design of Sekisui GRP water tank is a proprietary box-frame specifications (externally reinforced structure), and its design has been already proven through the Great Hanshin Earthquake in Japan (1995). The design to counter "sloshing" offers enhanced rigidity and safety. (Sloshing: Vibrations transmitted on the surface of the stored liquid in the event of an earthquake)



Easy cleaning, maintenance and inspection of tank inside

The interiors of completed tanks are free of reinforcing members that would obstruct access of personnel. It provides excellent workability for tank interior cleaning, maintenance and inspection enabling engaged person(s) move freely inside the tank.

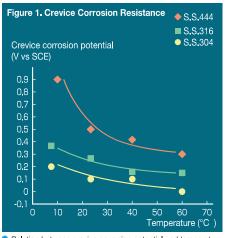
Excellent corrosion resistance

The corrosion resistance of a metal substance is typically determined based on how readily it ionizes in a solution (its ionization tendency) and is expressed on a scale of the material's standard electrode potential.

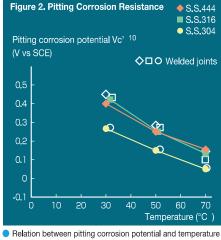
In short, metals that dissolve easily (i.e., those that have a low standard electrode potential) have low corrosion resistance, while metals that dissolve less easily (i.e., those that have a high standard electrode potential) provide high

corrosion resistance.

Figures 1 and 2 below show the typical corrosion forms of each stainless steel material. These figures make clear the superior characteristics of Stainless Steel 444 compared to other stainless steel (304 and 316).



 Relation between crevice corrosion potential and temperature in 0.01 mol NaCl water solution (0.01 mol 0.6% by weight)



 Relation between pitting corrosion potential and temperature in 3.5% NaCl water solution





Model number legend

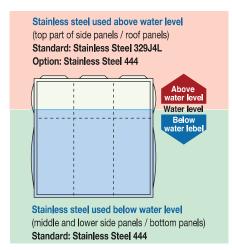
			PS AH - 50 - 15 N		
	0 0 0 0				
	No.	Symbol	Description		
	0	PS	Stainless steel storage tank		
		AH	Standard, non-insulated type, Above water level: S.S.329J4L		
	e	AL	Standard, non-insulated type, Above water level: S.S.444 (Option)		
	9	ВН	Insulated type, Above water level: S.S.329J4L		
		BL	Insulated type, Above water level: S.S.444 (Option)		
(©	Volume	Nominal volume: m ³		
		10	Design horizontal seismic load 10:1.0G		
	4	15	15:1.5G		
		20	20:2.0G		
		N	Design specifications N: With internal partitions		
	6	Р	P: With pump room		
		L	L: Irregular shaped design		

Panel Materials and Insulation Structure

Material composition used

The standard specification of Sekisui Stainless Panel Tanks is on Stainless Steel 329J4L and 444 for the panels above and below water level respectively.

As an option, Stainless Steel 444 panels can be used for both above and below water level in less harsh conditions where there is little residual chlorine.





The full water level must be set at no lower than the bottom of the stainless steel 329J4L panels. In case water is stored below stainless steel 329J4L panel part, there will be a chance of corrosion at the part of other stainless steel grade panels.

Insulated type

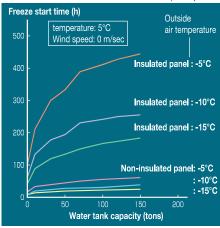
Insulated types are available for the tanks to be installed at high-humidity indoor sites, cold weather locations and for air-conditioning applications where insulation is required.

The insulated panel structure is that heat insulation material (foamed polystyrene) is set between the standard stainless steel panel and insulation outer cover.

The standard insulation is a 25 mm in thickness. The design is sufficient to avoid condensation in most geographic areas.

Insulation performance

Coefficient of heat transmission = 2.13 W/(m²-K)



This data complies with the testing procedure of thermal transmission set forth in section 6.6 of JIS A 1414-1994, "Performance Test Methods of Panel Components for Building Construction." Freeze start times are shown by water tank capacity based on initial water and ambient temperatures. Results may vary with water tank configuration.

Characteristics of stainless steel used

■ Stainless Steel 444 (Ferritic stainless steel)

Areas used: Side panels, bottom panels (optionally, roof panels)

Characteristics: Ferrite stainless steel offers exceptional resistance to crevice and pitting corrosion as well as stress corrosion cracking.

Stainless Steel 444 chemical composition (JIS G 4304)

Unit: Percent (%)

С	Si	Mn	Р	S	Cr	Мо	N	Other
0.025 or less	1.00 or less	1.00 or less	0.04 or less	0.03 or less	17.00 to 20.00	1.75 to 2.50	Max. 0.025	Ti, Nb, Zr, or a combination 8 X (C% + N%), or about 0.80

Stainless Steel 444 mechanical characteristics (JIS G 4304)

Yield strength	Tensile strength	Elongation	Hardness			
N/mm2	N/mm2	%	HB	HRB	HV	
245 or greater	410 or greater	20 or greater	217 or less	96 or less	230 or less	

Stainless Steel 329J4L

Austenite-ferritic duplex stainless steel)Areas used: Roof panels, side panels (above water level only) Areas used: Roof panels, side panels (above water level only)

Characteristics: Also known as "super stainless steel," austenite-ferritic duplex stainless steel offers a high level of resistance to both crevice and pitting corrosion possessing the characteristics of austenite and ferrite,

Stainless Steel 329J4L chemical composition (JIS G 4304) Unit: Percent (%)

С	Si	Mn	Р	S	Ni	Cr	Мо	N
						24.00 to 26.00		

Stainless Steel 329J4L mechanical characteristics (JIS G 4304)

Yield strength	Tensile strength	Elongation		Hardness	
N/mm2	N/mm2	%	НВ	HRB	HV
450 or greater	620 or greater	18 or greater	302 or less	32 or less	320 or less

Roof panel
Insulation outer cover (aluminum)
Foamed polystyrene
Insulation outer cover (ABS resin)

Side panel

Foamed polystyrene
Insulation outer cover (aluminum)

Original Product

Optional design features

Water level sensor unit

The vater level sensor unit allows changes in water level to be managed digitally. Erroneous operation is rare, and the unit makes it easy to change the required water storage volume as desired, even from a remote location. It is ideal for use in water level control systems at facilities such as large commencial buildings and recreational facilities where there are significant differences in water consumption on weekdays and he idays.

Contact Sekisui Adua for more information.

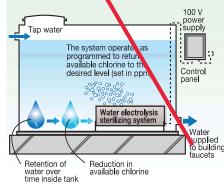


Water electrolysis sterilizing system

Water from natural sources, well water, and tap water all contain chlorine ions. This system uses electrolysis to convert the chlorine ions in water into available chlorine. Powered for several hours per day, this system can ensure hygiene by maintaining the available chlorine concentration inside the tank of or above 0.1 ppm, the level required by Japan's Water Warks Law.

Contact Sekisui Aqua for more information.

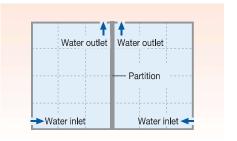
Water storage tank and water electrolysis sterilizing system





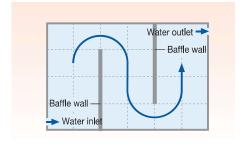
Freely designable partitions

Partitions can be designed freely based on panel module dimensions. Please consult Sekisui Aqua as panels cannot be designed to accommodate some shapes.



Baffle walls to prevent stagnation

Baffle walls can be added to large tanks to prevent stagnation of water. The dimensions of these walls can be designed freely based on the panel module dimensions.



Snow-resistant models

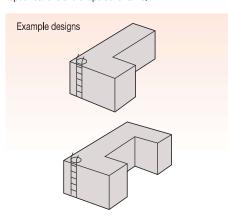
Be sure to specify a snow-resistant model when ordering a tank that will be installed outdoors in a region that receives significant snowfall.

In regions where snow accumulations of greater than 2 m are possible, tanks should be either installed indoors or covered with a protective roof.

Irregular shapes

Tanks with irregular shapes can be designed by combining panel modules, allowing available space to be used in as effective a manner as possible.

Contact Sekisui Aqua for more information as some tank designs are not possible due to earthquake-resistance specifications and shape constraints.

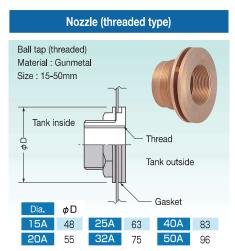


Ground tank with pump room

This design allows construction of a ground tank with an integrated pump room simply by combining stainless-steel panels.



Standard Components

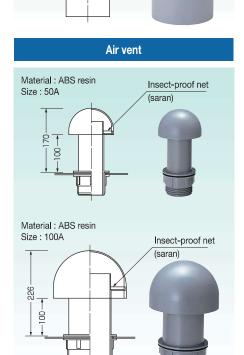


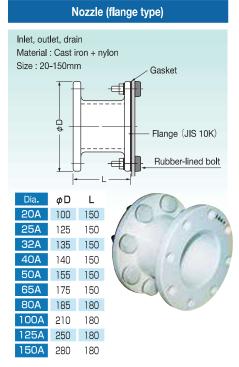


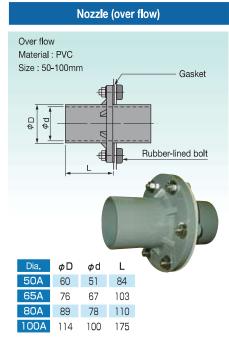
Electrode base & cover

Material : PVC Size : G2

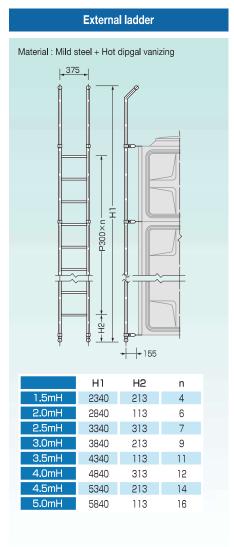
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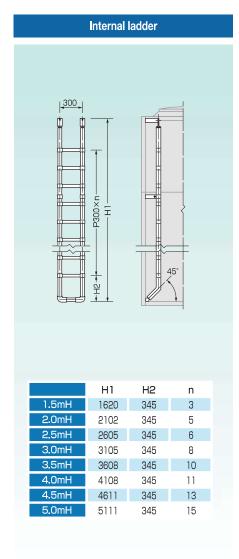




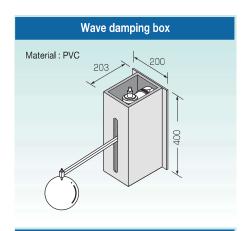


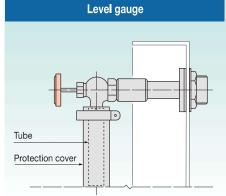
(Unit:mm)

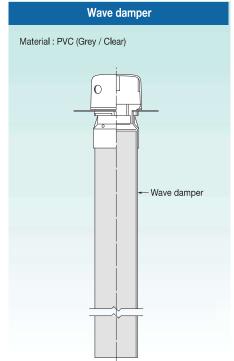


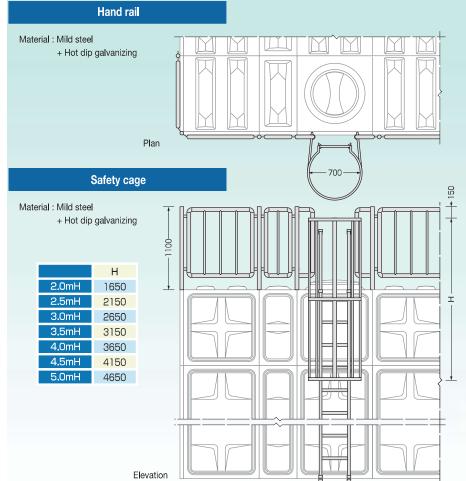


Optional Components

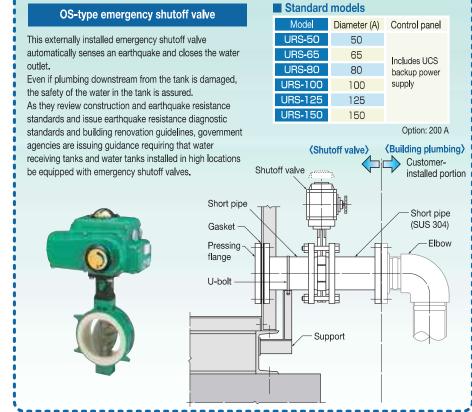






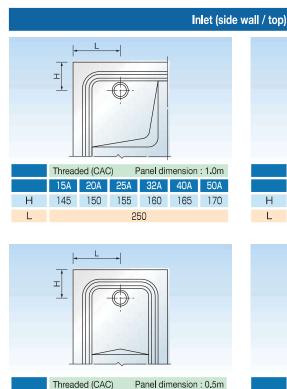


(Unit: mm)



Standard Position of Nozzle Installation

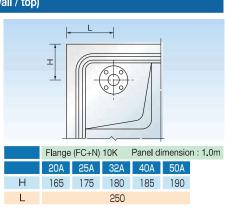


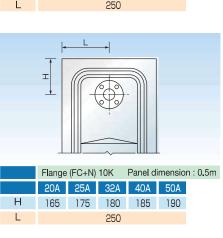


15A 20A 25A 32A 40A 50A

250

H 145 150 155 160 165 170





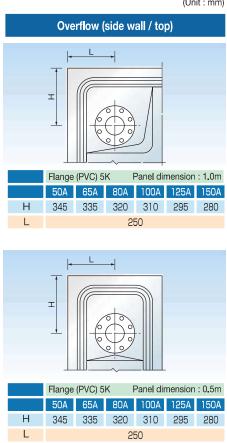
500

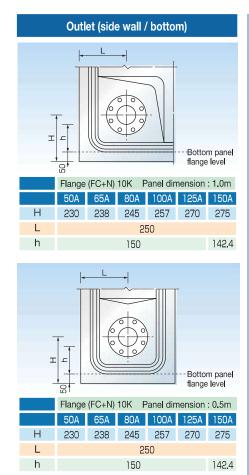
200

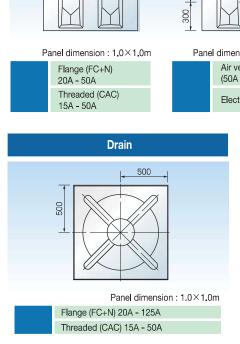
Roof and bottom panels

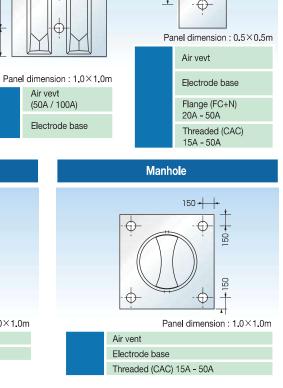
400

500



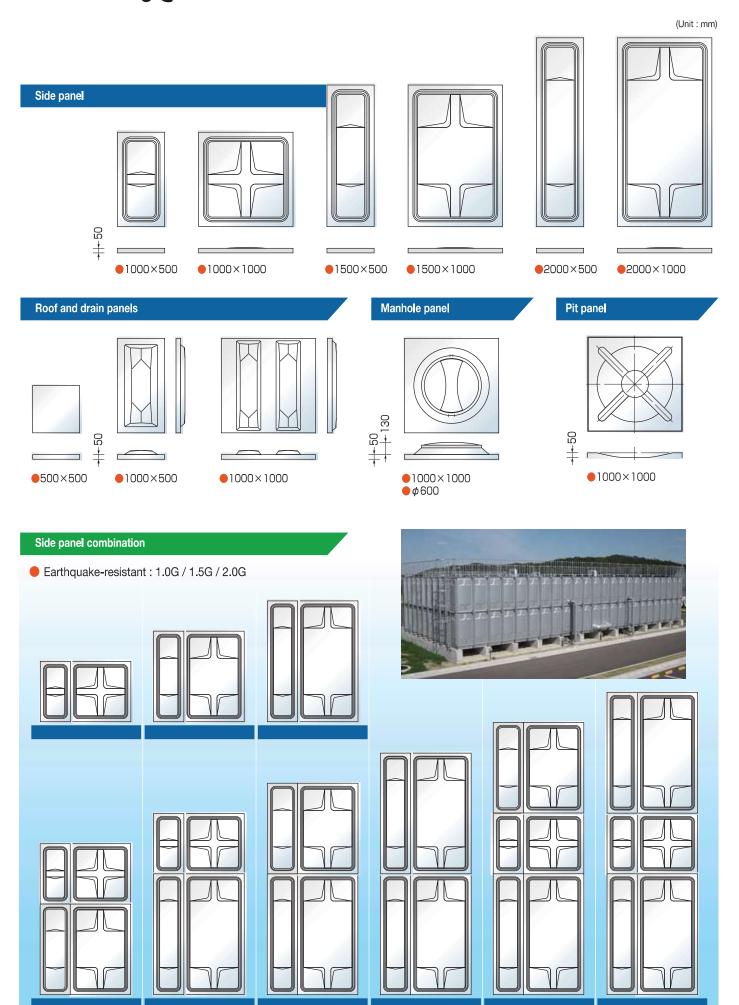






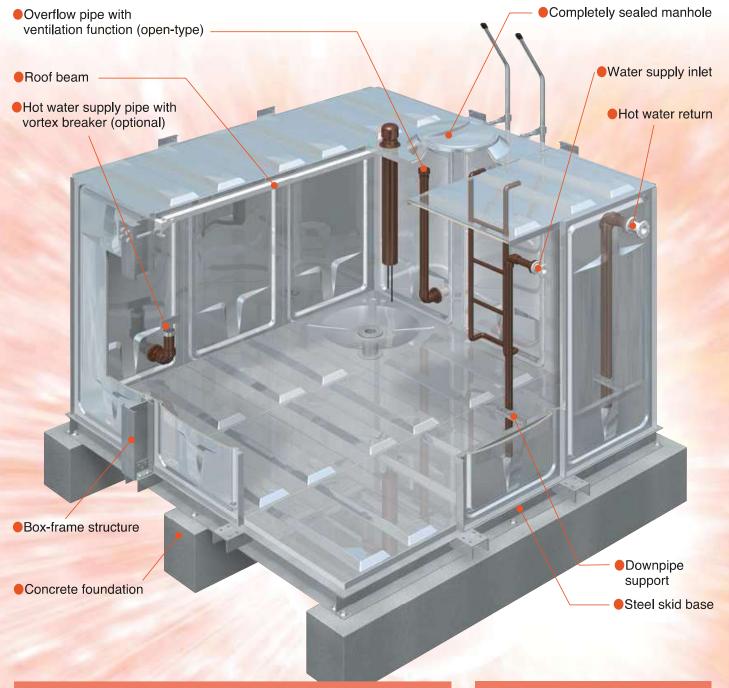
L_250

Panel Types



Stainless Steel Tanks for Hot Water Supply

Exceptional corrosion resistance, quality, and functionality to protect your hot water system



A1			
Stanc	lard s	neciti	cation
Otulio	iui u o	POULL	oution

Item	Design specifications				
Regular water pressure	Hot water storage tank height static pressure 1.0m. 7.35kPa 1.5m. 12.25kPa 2.0m. 17.15kPa 22.05kPa				
	3.0m 26.95kPa				

Contact Sekisui Aqua for more information about tanks ranging from 3.5 to 5.0 m in height.

Item	Design specifications		
	Design horizontal seismic load = 1.0G / 1.5G / 2.0G		
Earthquake	Vertical seismic load = Horizontal seismic load× 1/2		
	Design horizontal seismic speed = 1.5 / 2.25 / 3.75m/s		
Wind load	60m/s		
Snow buildup	588Pa (Snow depth: 30cm)		
Water temperature	80°C (continuous maximum operating temperature)		
pH level	5.8 - 8.6		
Heat insulation specifications	25mm thick (option: 50mm thick)		

Model number legend

HS AL - 50 - 15

	0	9 9 0
No.	Symbol	Description
0	HS	Stainless Steel Tanks for Hot Water Supply
e	AL	Panel: S.S. 444
G	BL	Heat insulation: S.S. 444
8	Volume	Nominal volume: m ³
	10	Design horizontal seismic load 10:1.0G
4	15	15:1 . 5G
	20	20: 2.0G
Con	toot Cakir	eui Agua for more information about nump rooms

 Contact Sekisui Aqua for more information about pump rooms and irregular shaped tanks.

Proprietary open structure

- Bolt-assembled hot water storage tanks feature a patented open design.
- The overflow pipe doubles as a ventilation mechanism.
- Hot water supply equipment and plumbing have been treated to prevent corrosion.
- Tanks are constructed from stanless steel 444, which provides exceptional corrosion resistance.
- Tanks incorporate a continuous insulated, heat-retaining structure with a heat-insulating layer that is 25 mm thick (or optionally 50 mm thick).

Hot water supply pipe with vortex breaker

The hot water supply pipe efficiently adds completely air-free hot water from the lift pipe and can accommodate an optional vortex breaker.

Efficient heating can be achieved if necessary by installing the hot water outlet on the bottom of the tank wall that is closest to the heater and installing the hot water return and water supply inlet on the top of the tank wall opposite the

Optional equipment >

Energy-saving system design

Systems can be designed to make effective use of thermal energy by installing a heater or heat exchanger that meets the system's needs-for example, a heater that uses inexpensive nighttime power or a heat exchanger that makes effective use of surplus heat from the building's air-conditioning system—inside the tank.

Compatible heaters and heat exchangers

Heat medium	Hardware type	
Steam	Immersed U-tube	
Hot water	Plate, bellows,	
Hot water	immersed U-tube, or trombone	
Electricity	Electric heater	

Verification of exceptional crevice corrosion resistance

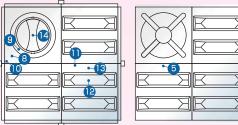
Sekisui Aqua has conducted a range of electric and chemical tests to verify the crevice corrosion resistance of stainless steel tanks used to store hot water at 80 °C. This process involves accurately reproducing the change in electrical potential that occurs inside hot water storage tanks and verifying that the tanks deliver an exceptional level of corrosion resistance.

Based on constant-potential test results using samples consisting of stainless steel panel pieces and resin type gaskets, we have concluded that stainless steel hot water storage tanks will not experience crevice corrosion while storing tap water with a chlorine concentration of 100 ppm or less at 80 °C.

> Contact Sekisui Aqua for more information. Additional documentation is available.

Insulated heat-retaining structure

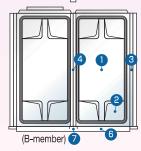
Exterior panel surface temperature measurement results



Test conditions: Outdoor tank (2mX2mX2mh) Water temperature: 80°C (using a circulating pump) Outside air temperature: 36.5°C Humidity: 53.0%

Water level: 1,800mm Water temperature: 80,8°C(0mm)

: 80.6°C(1.000mm) : 80.5°C(1,800mm)



Measurement position		Measurement point	Temperature (°C)	Remarks
		①	40.4	
Side	walls	2	39.8	
		3	43.2	
External reinforcement		4	49.2	
Bottom surface		5	48.3	
Skid k	2000	6	43.0	
SKIU I	Jase	7	40.1	
		8	55,3	In direct sunlight
	Manhole	9	52.9	In direct sunlight
Roof		10	56.2	In direct sunlight
11001	Roof panel	1	53.0	In direct sunlight
		12	53.0	In direct sunlight
		(13)	55.5	In direct sunlight
Manh	ole cover	(14)	39.0	In direct sunlight



Temperature change in tank after 24 hours

Test conditions: 25mm heat-insulating type Water temperature: 80°C Outside air temperature: 0°C

 Contact Sekisui Agua for more information. Additional documentation is available.

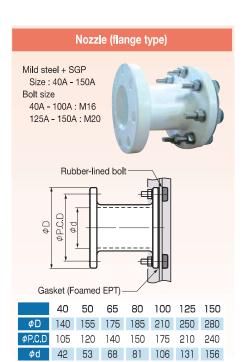
Precautions for hot water system design

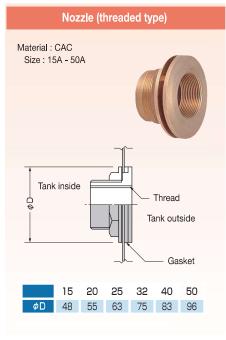
In order to take maximum advantage of the benefits of Sekisui Aqua's open-type hot water supply system, it is best to use a gravity-fed hot water supply by installing a stainless steel tank for hot water storage on the roof of the building.

This method makes it possible to secure a stable hot water supply without wasteful energy use.

- 1) Set the hot water storage temperature so that it does not exceed 80 °C.
- ② The hot water storage volume and required amount of heat can be calculated using the same method as is used for conventional sealed-type hot water storage tanks.
- For more information, consult a reference resource such as Heating, Air-conditioning and Sanitary Engineering Handbook or Knowledge for Plumbing and Sanitary Systems.
- 3 Ball-tap water supply systems are ideal due to their ability to continuously supply water. If using a pump to supply water, keep the difference between HWL and LWL to about 10 % of HWL and take steps to prevent abrupt drops of temperature inside the storage tank.
- 4 Plumbing connections should be located so as to promote complete mixing at the designated temperature inside the tank. Contact Sekisui Aqua for project-specific drawings.
- ⑤ If connecting the overflow pipe to a drain pipe outside the tank, do so after converting the overflow pipe to an indirect pipe.
- 6 Specify the thermometer port position for the thermal design that controls the heat source such that it can be mounted so as to allow detection of the temperature immediately above the hot water outlet.
- 7 Precautions related to internal partitions Internal partitions are not supported due to the need to prevent hazardous conditions during storage tank inspection and cleaning work. Please design your system as a single tank.

Standard components

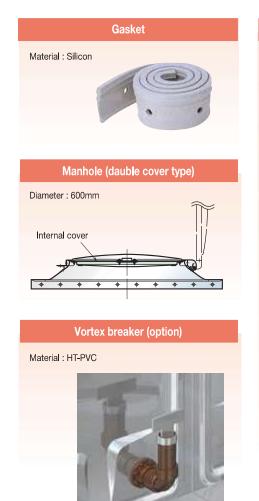


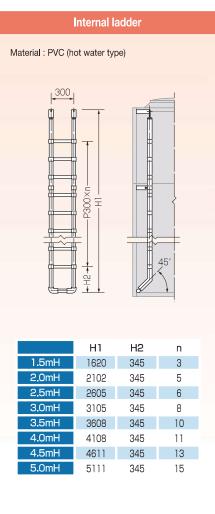


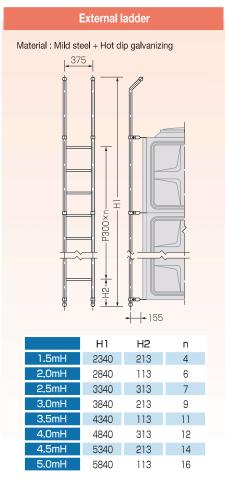


(Unit: mm)







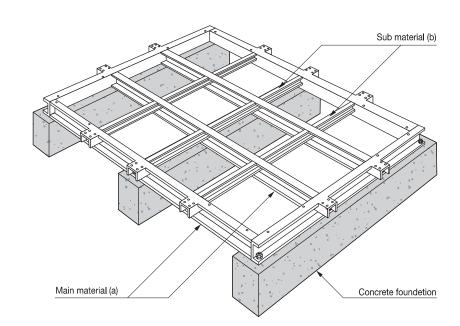


Steel skid base / Concrete foundation

Skid base

The skid base is designed based on the water tank's earthquake-resistant performance.

- A curb structure is used as the basic design for skid bases for bolt-assembled stainless steel tanks.
- Skid base dimensions use 1,002 mm spacing for full-size panels or 502 mm spacing for half-size panels.
- The concrete foundation must be 400 mm wide and at least 500 mm high. Refer to Sekisui Aqua's drawings for foundation spacing and anchor specifications.
- Table 1 lists skid base exterior dimensions.
- Table 2 lists the standard members used in skid base construction.



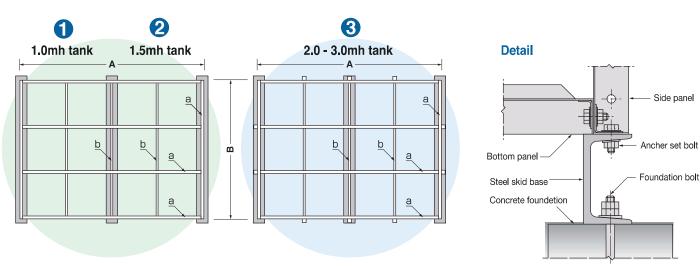


Table 1 Steel skid base dimension

(unit:mm)

Tank	A c	or B	
dimension	1	2 3	
1000	1092	1112	
1500	1594	1614	
2000	2094	2114	
2500	2596	2616	
3000	3096	3116	
3500	3598	3618	
4000	4098	4118	
4500	4600	4620	
5000	5100	5120	
5500	5602	5622	
6000	6102	6122	
6500	6604	6624	
7000	7104	7124	
7500	7606	7626	
8000	8106	8126	

Table 2 Steel skid base members

	(<u></u>		\
- (lunit	:	mm)

		(drift: Hill)			
	Tank	Code	Steel members		
	height	height	а	b	
Horizontal seismic load KH=1.0	1000	1	[-100×50×5	L - 65×65×6	
	1500	2		C−75×40×5	
	2000	3	E-125×65×6		
	2500				
	3000		E-150×75×6.5		
Horizontal seismic load KH=1.5	1000	1	E-100×50×5	L-65×65×6	
	1500	2	E−125×65×6	□ -75×40×5	
	2000	3			
	2500		[− 150×75×6.5		
	3000		L-150 × /5 × 6.5		
Horizontal seismic load KH=2.0	1000	2	[− 125×65×6	L-65×65×6	
	1500			E− 75×40×5	
	2000	3			
	2500		E-150×75×6.5	L-75×40×5	
	3000		E− 150×75×9		

Sekisui Stainless Steel Tanks with outstanding features





















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