MITSUBISHI CHEMICAL GROUP

MITSUBISHI CHEMICAL INFRATEC CO.,LTD.

Receiver Tank / Elevated Water Tank

HISHITANK™ Stainless Steel Panel Type

Seismic design



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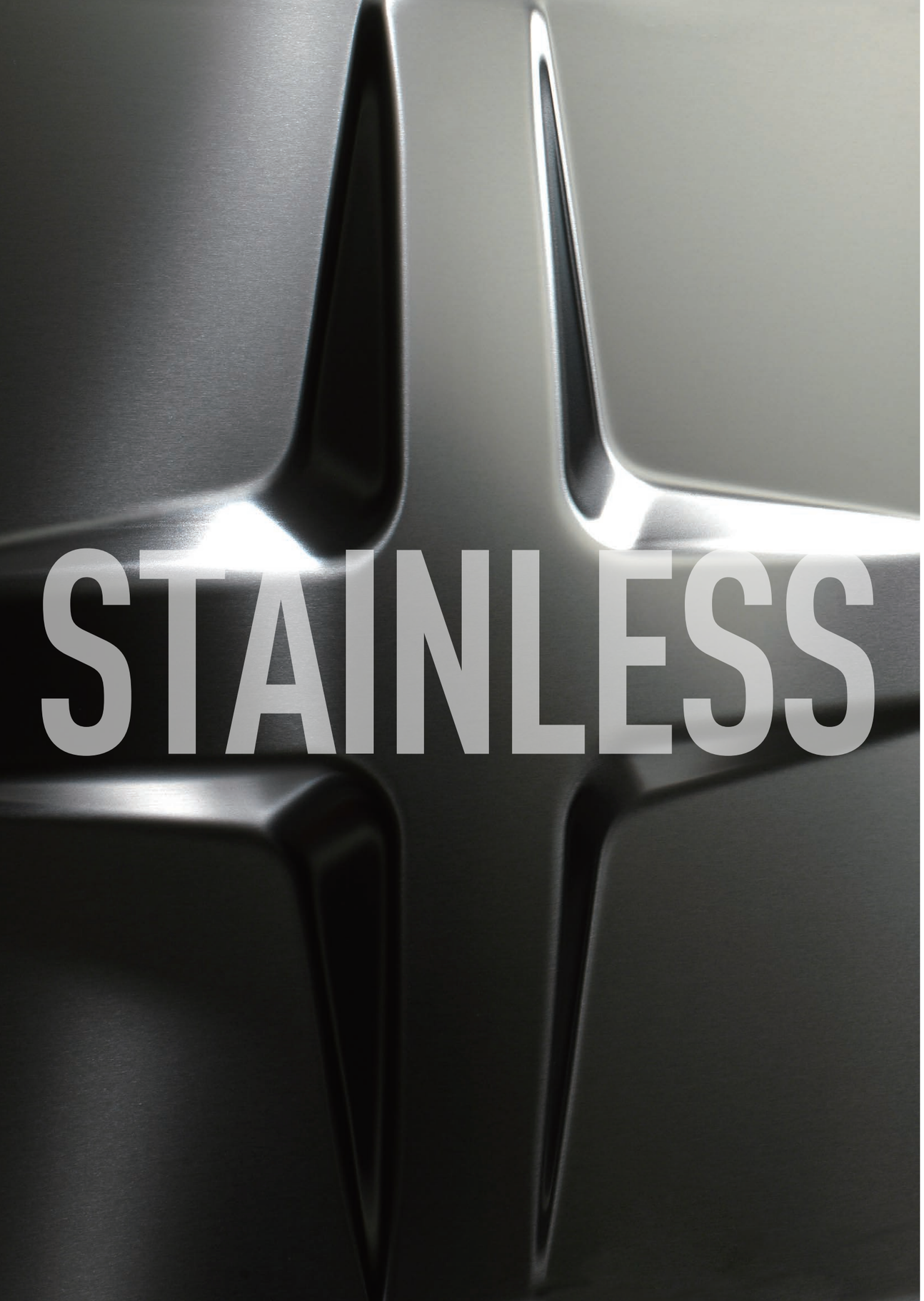
URL : https://www.hishitank.com
URL : https://mchem-infratec.com/setubi/eng/index.html

CAUTION UPON USAGE

- ✻Precautions for use.
- ✻Please read and understand “Operating Instruction” before using the water tank.
- ✻Please use the tank with the appropriate maintenances accordance with “Operating Instruction” provided by us.
- ✻Damages at the water tank might be caused due to modifications or changes is made to it. If any modifications or changes are required, please contact us.
- ✻If any damages to the water tank are found by the periodical inspection, please be sure to contact our distributor for determining if any repairs are required, etc. If any damages or accidents are caused by the continued use of water tank without contacting us or just by your emergency repair, it would not be covered by the warranty.

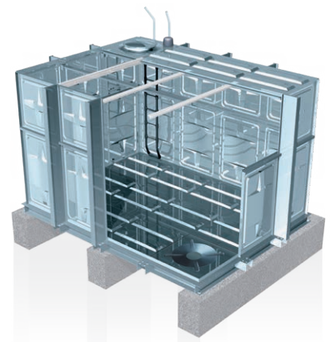
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HISHITANK™ was developed with the provision of
clean drinking water as its primary mission.
It achieves high standards of quality for
earthquake-resistance, sanitation, durability, and workability
that are required of water tanks,
making it optimal for condominiums,
office buildings, factories, and leisure facilities.



HISHITANK™ Stainless Steel Panel Type

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We at Mitsubishi Chemical Infratec

Preface

HISHITANK™ is a masterpiece water tank developed by MITSUBISHI CHEMICAL INFRATEC CO., LTD., a comprehensive plastic manufacturer, through tireless basic research and by combining its technologies.

With supplying water safely, securely, and hygienically as the top priority, we ensure strict and consistent quality control in design, purchasing materials, manufacturing, and shipping HISHITANK™ tanks.

To ensure the reliability of HISHITANK™ as a water storage tank, we use only parts and components that meet all applicable standards.

Through more than 60 years of experience in studying and improving HISHITANK™ in Japan, one of the world's most earthquake-prone countries, we make every effort to prove ourselves worthy of the trust of customers.

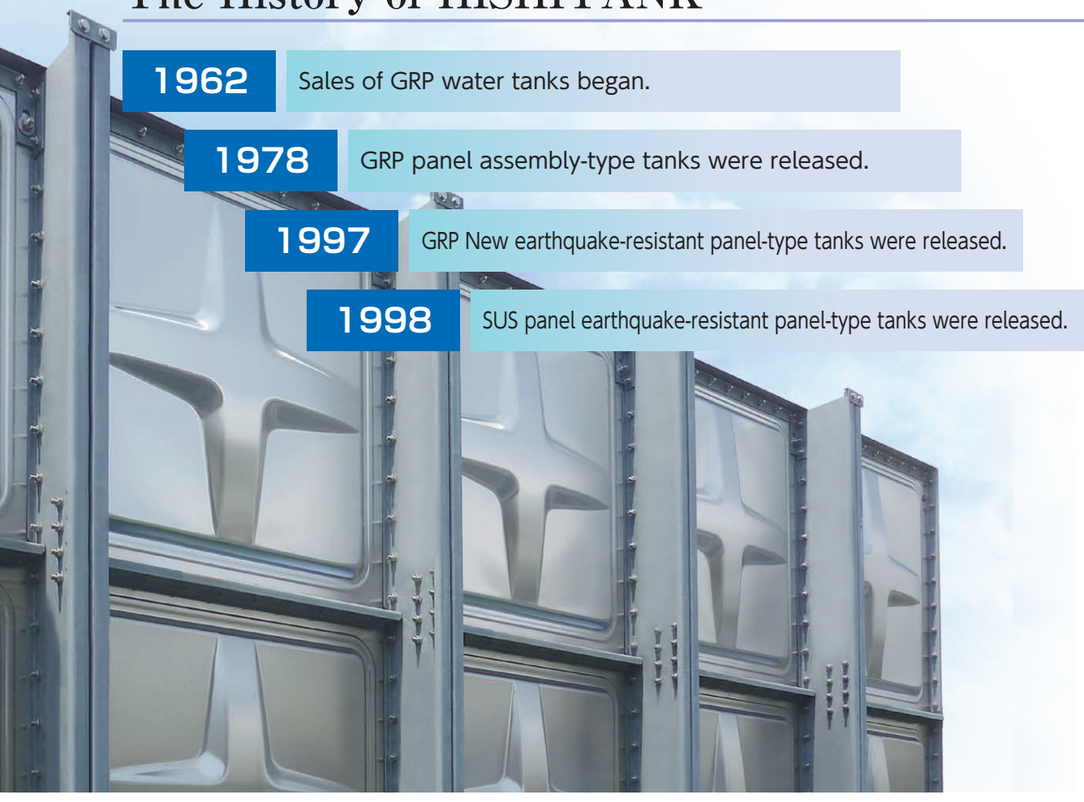
The History of HISHITANK™

1962 Sales of GRP water tanks began.

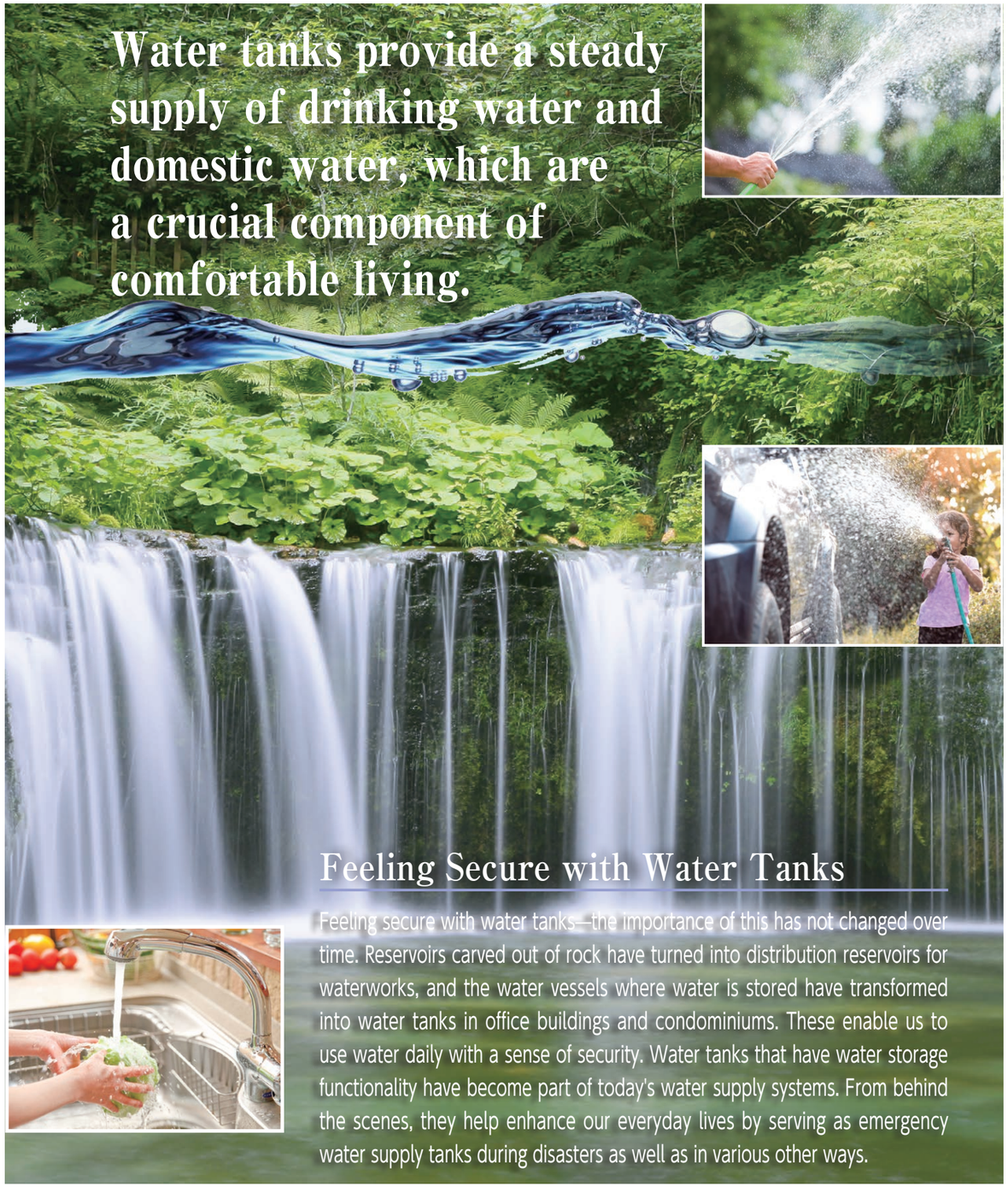
1978 GRP panel assembly-type tanks were released.

1997 GRP New earthquake-resistant panel-type tanks were released.

1998 SUS panel earthquake-resistant panel-type tanks were released.



Roles of Water Tanks



Feeling Secure with Water Tanks

Feeling secure with water tanks—the importance of this has not changed over time. Reservoirs carved out of rock have turned into distribution reservoirs for waterworks, and the water vessels where water is stored have transformed into water tanks in office buildings and condominiums. These enable us to use water daily with a sense of security. Water tanks that have water storage functionality have become part of today's water supply systems. From behind the scenes, they help enhance our everyday lives by serving as emergency water supply tanks during disasters as well as in various other ways.

Safety

Our design technology is constantly evolving.

We have been continuing, and will continue to accumulate and improve upon our technologies by making it a standard practice to verify design precision through experiments using actual products. All bolt-assembly type panel tanks adopt the external reinforcement frame method. Its high reliability has been demonstrated in some of Japan's largest earthquakes in the past. HISHITANK™ is a trusted brand created through design technologies that are supported by ample experimental data.

Seismic design

Points for the Seismic design

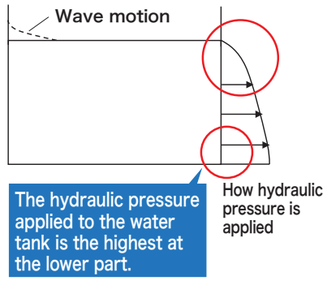
Acceleration response

High frequency of tremors
Rapid tremors in short intervals

Earthquake occurs



Applied seismic force

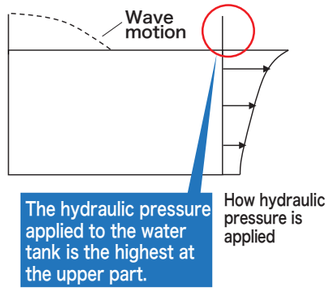


- Effect on the tank main unit
  - ・Effect on the interior reinforcement
  - ・Effect on the side panels
  - ・Effect on the bottom and side panels
  - ・Effect on the bottom panel
- Effect on the piping
- Tank movement/overturning
- Effect on the concrete foundation

Displacement response

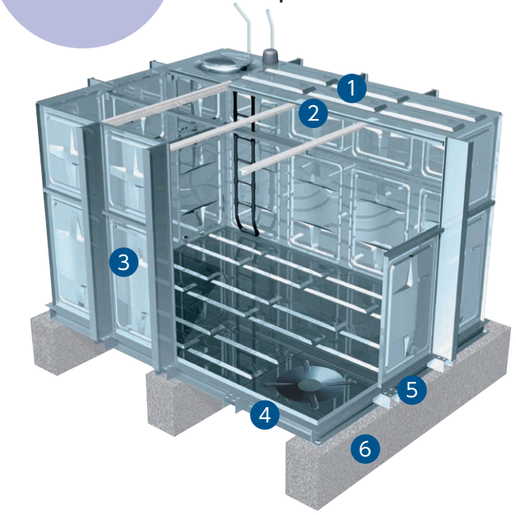
Low frequency of tremors
Large, slow tremors

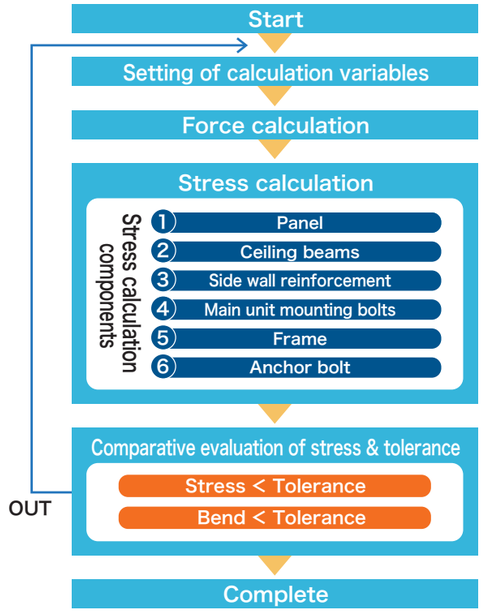
Applied seismic force



- Effect on the ceiling and side panels

Structure calculation procedure and water tank components





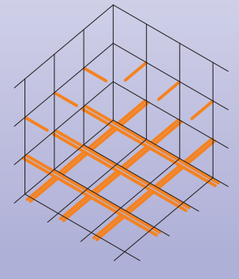
Change in water tank unit reinforcement method

In past major earthquakes, there were no cases of damage to the water storage functionality of external reinforcement structure bolt-assembly type stainless steel tanks. External organizations have also examined and confirmed the effectiveness of the external reinforcement structure.

Partial excerpt from a document published by the Japan Water Tank Association

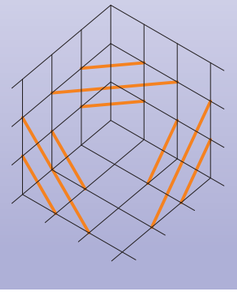
Stay bolt method

The intersecting points of the opposing side walls are pulled from both sides with the SUS rods.



Brace method

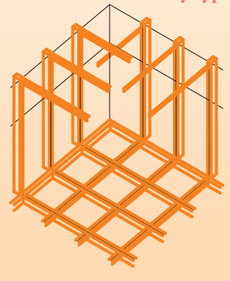
The brace method arranges reinforcement at the intersecting points of the side walls.



External reinforcement frame method

This high rigidity reinforcement method applies a portal frame structure to the side wall reinforcements, metal level frames, and ceiling reinforcements.

Based on data from earthquake disaster investigation and earthquake-resistance experiment, the highly reliable external reinforcement frame method is applied to all models of bolt-assembly type tanks.



Sanitation

Keeping the water clean.

Keeping water clean is HISHITANK™'s first and foremost function, as well as its primary mission. The external reinforcement frame method (external reinforcement structure) improves workability and enables thorough interior inspections.

Two-part water tank

By dividing the water tank into two or more tanks, inspections and cleaning of the tank's interior can be done without stopping the water supply.

Note : When cleaning the two-part water tank and using one of the two tanks to supply water, do so for only a short period of time with the water level below half capacity. If using only one tank for an extended period (one week or more), contact us beforehand.

Resin-coated bolts and nuts design

In the vapor phase part of the water tank, the free chlorine may cause the assembly bolts and nuts to rust. By using resin-coated bolts and nuts, the HISHITANK™ Stainless Steel Panel Type achieves strengthened rust resistance.

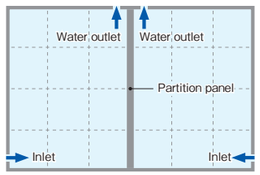


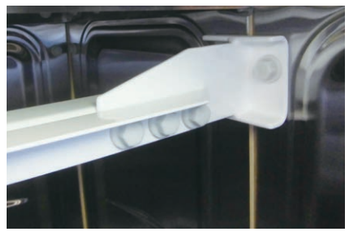
Resin-coated bolts used in the vapor phase part

■ Free-design partition panel

Partition panels can be placed freely based on the panel module measurements. However, there are some layouts in which this is not possible. Please contact us for details.

Layout

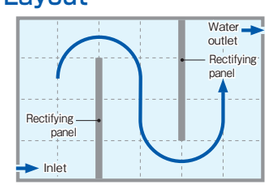




■ Rectifying panels for preventing water stagnation

Rectifying panels can be used to prevent water stagnation in high-capacity water tanks. The dimensional layout of the rectifying panels can be freely designed based on the panel module measurements.

Layout



● Application areas inside tanks

Part	Metal material	Bolt type
Liquid phase part	Stainless steel	Stainless steel
Vapor phase part	Resin coating on stainless steel	Resin coating on stainless steel bolts

Benefits

Bolt assembly type

The external reinforcement structure of the bolt assembly stainless steel tank offers several advantages: it makes it easy to upgrade, no heat is used, waste liquid disposal is unnecessary, and high voltage power is not needed.

100% recyclable

Using bolt-assembly type stainless steel panels makes separation easy, and the stainless steel used as materials in the water tank makes it 100% recyclable.



Easy to upgrade

The bolt-assembly structure makes it easy to disassemble, reassemble, and reuse, allowing easy and economic relocation and upgrade work.



No waste liquid disposal is required

The bolt-assemble structure makes the acid cleaning of welded parts and the waste liquid disposal that follows it unnecessary, preventing any water or soil pollution due to by industrial waste.



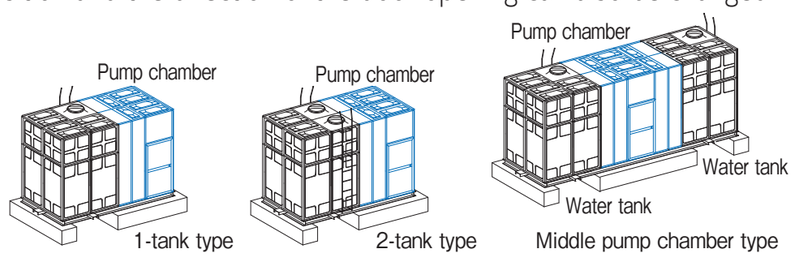
No heat is used

The bolt-assembly structure makes welding work unnecessary.
No heat is used during assembly or disassembly.



Receiver tank with pump chamber

The pump chamber can be mounted adjacent to the receiver tank.
(The pump chamber can be constructed using FRP panels or SUS panels.)
The door position and the direction of the door opening can also be changed.



Specifications and Certifications

Format

Format	Earthquake resistance grade	Vapor phase part specifications	Structure
TF type	Horizontal seismic intensity: K_H = 1.0 Sloshing : Sv = 150 cm/sec	High corrosion-resistant vapor phase part specification	Single panel specification
TSF type			Composite panel specification
SF type		Standard vapor phase part specification	Single panel specification
SSF type			Composite panel specification
TH type	Horizontal seismic intensity: K_H = 1.5 Sloshing : Sv = 375 cm/sec	High corrosion-resistant vapor phase part specification	Single panel specification
TSH type			Composite panel specification
SH type		Standard vapor phase part specification	Single panel specification
SSH type			Composite panel specification
TJ type	Horizontal seismic intensity: K_H = 2.0 Sloshing : Sv = 375 cm/sec	High corrosion-resistant vapor phase part specification	Single panel specification
TSJ type			Composite panel specification
SJ type		Standard vapor phase part specification	Single panel specification
SSJ type			Composite panel specification

1. The high corrosion-resistant vapor phase part specification features SUS329J4L (austenitic and ferritic dual-phase stainless steel) for the ceiling panels and the top section of the side walls.
2. The standard vapor phase part specification features SUS444 (ferritic stainless steel) for all panels.
3. The composite panel specification uses foam polystyrene for the heat insulating material, which has low thermal conductivity.
4. The external reinforcement material has a hot-dip galvanized finish.

Specifications

Item	Standard design specifications
Hydrostatic pressure	Water level (m) × 0.01 MPa [0.1 kgf/cm^2]
Design water level	Tank height (designated height) × 0.9 * The full water level position must be set at the vapor phase part (within 800 mm of the upper edge part of the side wall panels, within 300 mm for 1.0 mH and 1.5 mH). If operated with a water level below that mark, the interior components may corrode.
Earthquake	Horizontal seismic intensity by design: K_H = 1.0, 1.5, 2.0
	Vertical seismic intensity by design: = Horizontal seismic intensity by design × 1/2
	Sloshing design velocity response spectrum value: Sv = 150, 375 cm/sec
Snow accumulation	0.6×10^{-3}MPa [60 kgf/m^2] (vertical snow accumulation: 30 cm)
Wind pressure	1160 N/m^2 (load considering major urban area factors based on the Building Standards Act revised in 2000)
Water temperature	Room temperature (30°C or lower)
Water quality (pH)	5.8 to 8.6

* Any specification other than that described above is a special design. Please contact us for details.

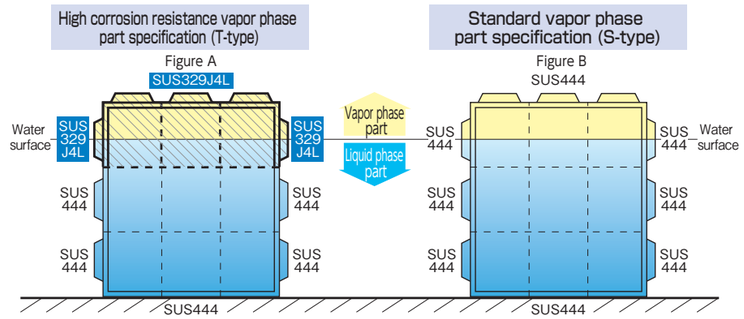
Certifications

■ Public Buildings Association evaluation document


評価書

Vapor phase part maintenance

Depending on the installation requirement of the stainless steel tank, rusting may occur only in the gas layer part called the vapor phase part inside the tank.
We carefully select materials considering the various rusting conditions, such as water quality and installation location, and offer two types of materials: the highly corrosion-resistant vapor phase part specification SUS329J4L (Figure A), which is used under severe conditions with large amounts of residual chlorine, such as in major urban areas, and the standard vapor phase part specification SUS444 (Figure B) used under other conditions.



(1) SUS444 (ferritic stainless steel)

Application part : Ceiling, side walls, bottom panels
Special traits : 1.Pitting corrosion-resistance and crevice corrosion resistance is higher than SUS304.
2.Ferritic steel is highly resistant to stress-corrosion cracking.

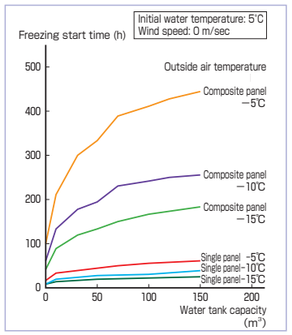
(2) SUS329J4L (austenitic and ferritic dual-phase stainless steel)

Application part : Ceiling, side panels (only the vapor phase part)
Special traits : 1.Uses both austenitic and ferritic steel, making it resistant to seawater corrosion, pitting corrosion, and crevice corrosion.
2.It is expensive, but due to its superb corrosion resistance, it is often called "super stainless steel."

Bolt-assembly type composite panel structure stainless steel panel tank

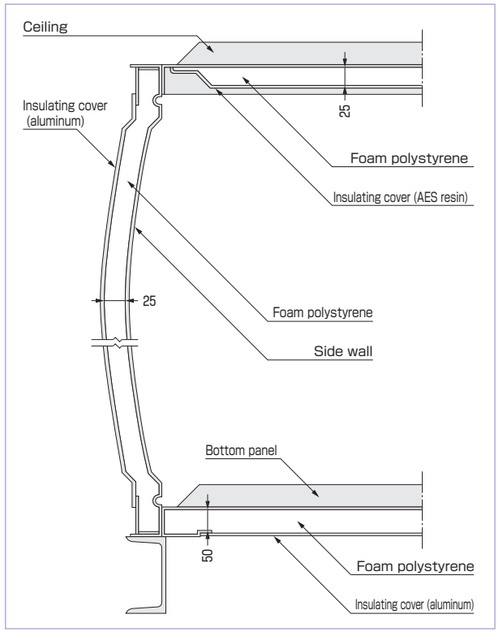
The bolt-assembly type composite panel structure stainless steel panel tank is used when insulation is required to prevent condensation in high-humidity rooms, or when heat insulation is required in extremely cold areas or for air conditioning purposes.
The composite panel structure is made by inserting heat insulating material (foam polystyrene) between the outer surface of the single panel structure and the insulating cover.

● Thermal insulation performance/freezing start time



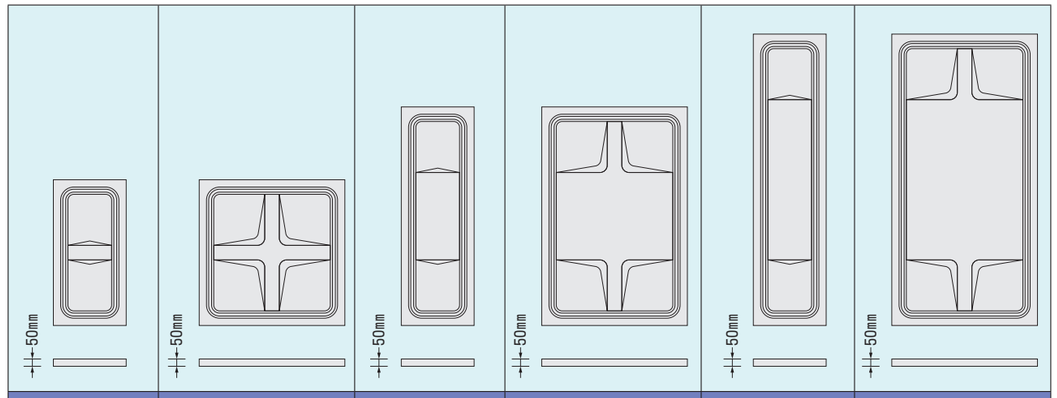
These values are estimates and are not guaranteed.

●Bolt-assembly type composite panel structure stainless steel panel tank

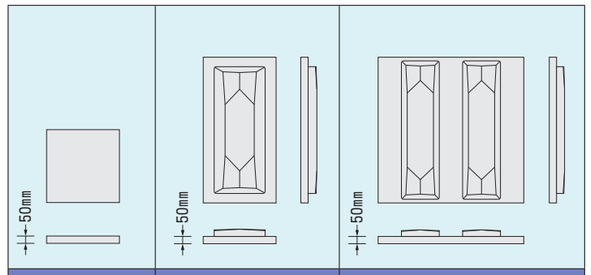


Panel Types

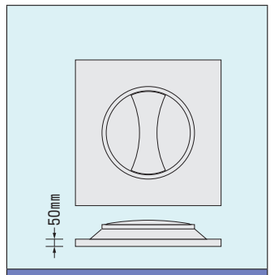
(1) Side wall panel



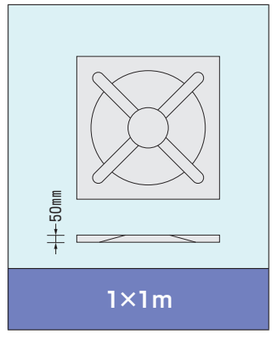
(2) Ceiling and bottom panels

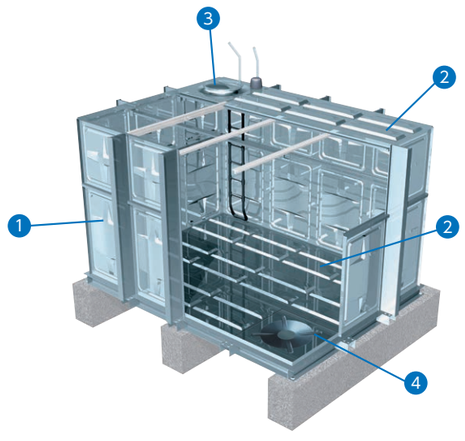


(3) Manhole panel

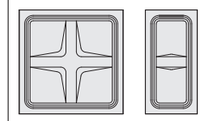
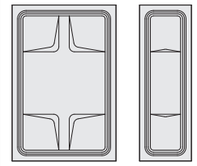
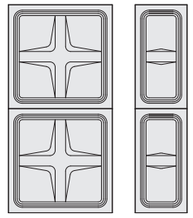
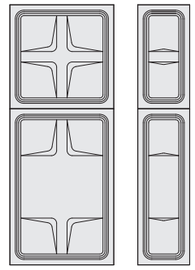
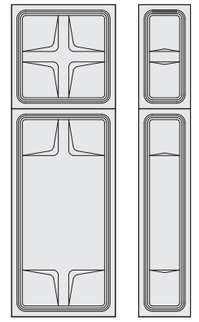


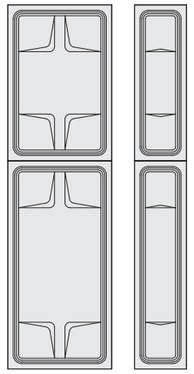
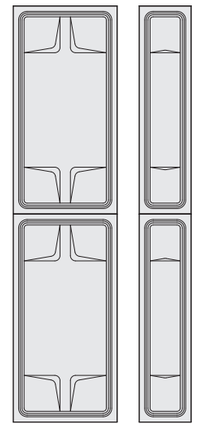
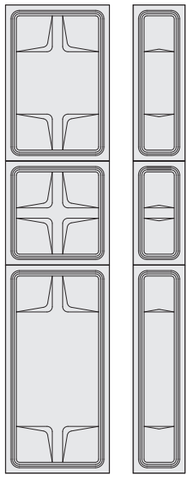
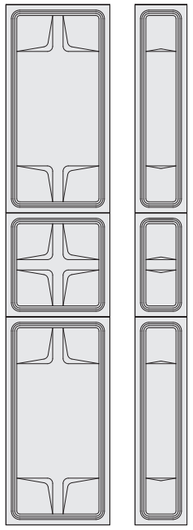
(4) Drainage pit panel





Panel Combinations

1mH	1.5mH	2mH	2.5mH	3mH
1～2G	1～2G	1～2G	1～2G	1～2G
				

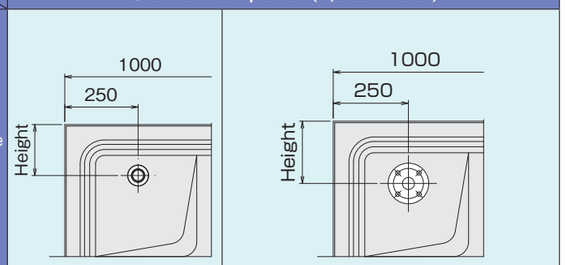
3.5mH	4mH	4.5mH	5mH
1～1.5G	1～1.5G	1G	1G
			

Pipe Mounting Positions

Upper part of the panel (water inlet)

Unit : mm

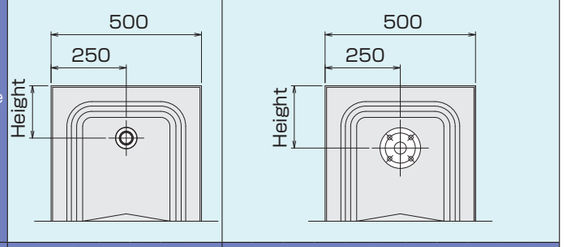
●Side wall panel (1,000 width)



	Screw socket							Flange									
Size (A)	15	20	25	32	40	50	65	15	20	25	32	40	50	65	80	100	125	150
Height	140	145	150	155	160	160	175	165	165	180	185	190	195	200	200	220	240	250

Unit : mm

●Side wall panel (500 width)

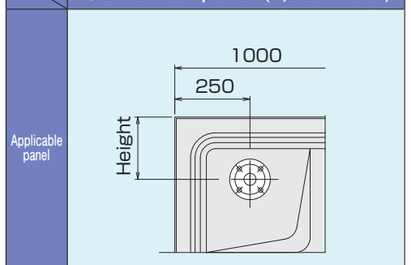


	Screw socket							Flange									
Size (A)	15	20	25	32	40	50	65	15	20	25	32	40	50	65	80	100	125	150
Height	140	145	150	155	160	160	175	165	165	180	185	190	195	200	200	220	240	250

Upper part of the panel (overflow outlet)

Unit : mm

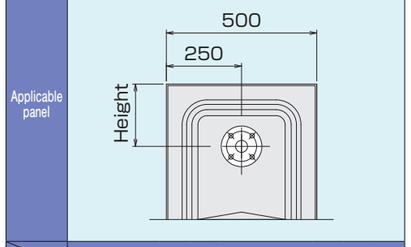
●Side wall panel (1,000 width)



	Flange										
Size (A)	15	20	25	32	40	50	65	80	100	125	150
Height	165	165	180	185	190	195	200	200	220	240	250

Unit : mm

●Side wall panel (500 width)

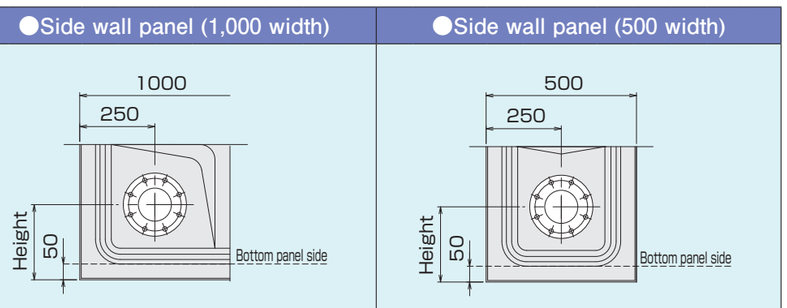


	Flange										
Size (A)	15	20	25	32	40	50	65	80	100	125	150
Height	165	165	180	185	190	195	200	200	220	240	250

Lower part of the panel (water outlet, overflow outlet)

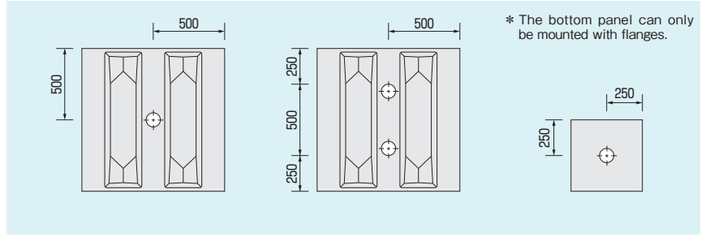
Unit : mm

	●Side wall panel (1,000 width)											●Side wall panel (500 width)										
	Flange											Flange										
Size (A)	15	20	25	32	40	50	65	80	100	125	150	15	20	25	32	40	50	65	80	100	125	150
Height	165	165	180	185	190	195	200	200	220	240	250	165	165	180	185	190	195	200	200	220	240	250



Ceiling (bottom panel) (1 m × 1 m) (0.5 m × 0.5 m)

Unit : mm



Part name	
	Vent
	Electrode mounting stand
	Double-sided flange: 20 A to 50 A
	Screw socket: 15 A to 50 A

(The bottom panel can only be mounted with flanges.)

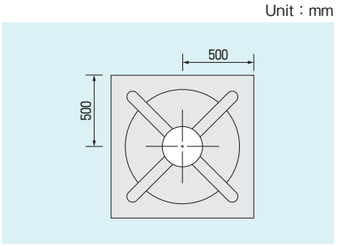
Part name	
	Vent
	Electrode mounting stand

Part name	
	Vent
	Electrode mounting stand
	Double-sided flange: 20 A to 200 A
	Screw socket: 15 A to 50 A

(The bottom panel can only be mounted with flanges.)

Drainage outlet (1 m × 1 m)

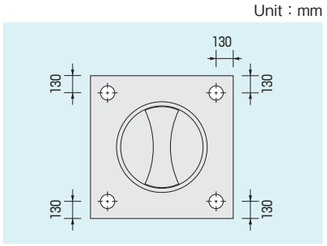
Unit : mm



Part name		
	Core flange	: 20 A to 150 A
	Double-sided flange	: 20 A to 150 A
	TS flange	: 15 A to 150 A

Manhole panel

Unit : mm



Part name		
	Vent	
	Electrode mounting stand	
	Double-sided flange	: 20 A to 50 A
	Core flange	: 20 A to 80 A
	Screw socket	: 15 A to 50 A



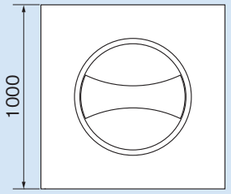
Standard Parts

Note: Specifications and shapes may change without prior notice for improvement purposes.

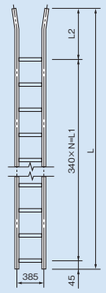
Manhole

Unit: mm





External ladder



Cap





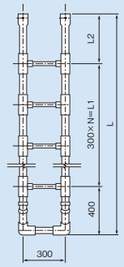
Unit: mm

Tank height	L	N	L1	L2
1.0	1597	2	680	872
1.5	2097	4	1360	692
2.0	2597	5	1700	852
2.5	3117	7	2380	692
3.0	3617	8	2720	852
3.5	4137	10	3400	692
4.0	4637	11	3740	852

* The ladder of 1m height tank is optional.

Material: hot-dip galvanized steel
(Stainless steel ladder is available as an option.)

Internal ladder





Unit: mm

Tank height	L	N	L1	L2
1.0	965	1	300	265
1.5	1465	2	600	465
2.0	1965	4	1200	365
2.5	2467	6	1800	267
3.0	2967	7	2100	467
3.5	3467	9	2700	367
4.0	3967	11	3300	267

* The ladder of 1m height tank is optional.

Material: Polyvinyl chloride.

Note: Specifications and shapes may change without prior notice for improvement purposes.

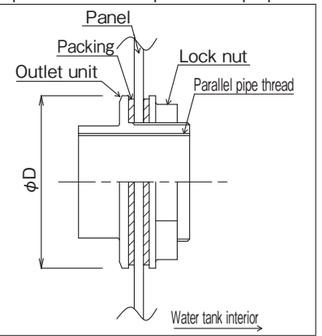
Socket



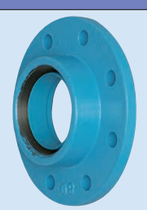
Unit: mm

Nominal diameter	ϕD
15	40
20	50
25	60
32	70
40	80
50	90
65	120

Material : Copper alloy casting (CAC)
S i z e : 15 A to 65 A
A ball valve (screw-type) can be attached.



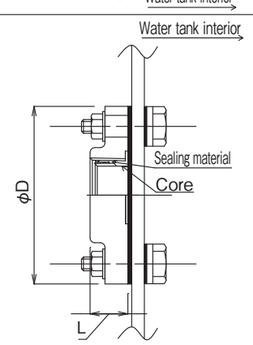
Core Flange (with PE Core)



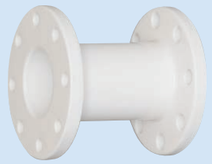
Unit: mm

Nominal diameter	ϕD	L	Nominal diameter	ϕD	L
20	100	25.5	65	175	39
25	125	29	80	185	41
32	135	31	100	210	48
40	140	32	125	250	53
50	155	35	150	280	53

Material: Cast iron epoxy powder coating
S i z e : 20 A to 150 A



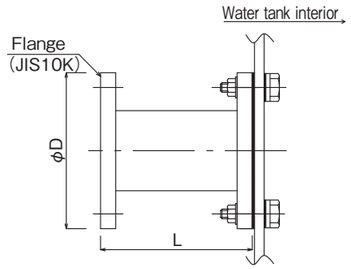
Both end flange



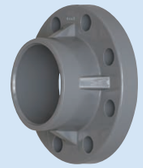
Unit: mm

Nominal diameter	ϕD	L
20	100	150
25	125	
32	135	
40	140	
50	155	
65	175	
80	185	180
100	210	
125	250	
150	280	
200	330	250

Water inlet, water outlet, overflow outlet, drainage outlet
Material : Cast iron nylon powder coating
S i z e : 20 A to 200 A



TS flange

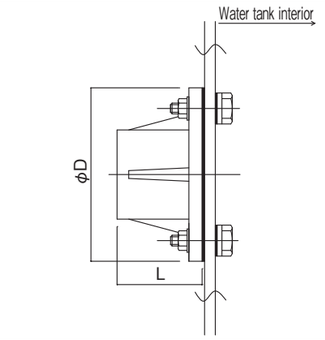


Unit: mm

Nominal diameter	ϕD	L
15	95	35
20	100	40
25	125	46
32	135	50.5
40	140	61.5
50	155	71
65	175	70

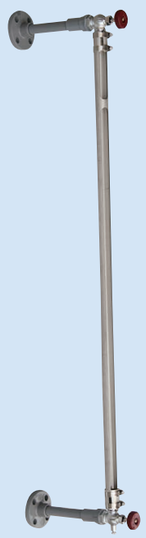
Nominal diameter	ϕD	L
80	185	73
100	210	93
125	250	114
150	280	142
200	330	161
250	400	167

Material : Polyvinyl chloride
S i z e : 15 A to 250 A



Optional parts

Water Level Indicator



With protective pipe

Hoop guard (outer ladder with backrest)



Material : SS hot-dip galvanized

Ceiling handrail

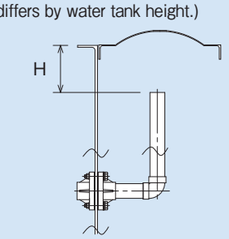


Material: SS hot-dip galvanized
*Available in different sizes depending on the combination.

TS flange with up pipe



*When gauging the overflow side height of the overflow outlet riser, refer to the table below (differs by water tank height.)

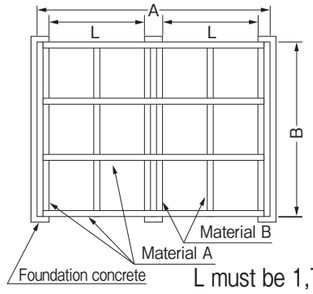


Material: Polyvinyl chloride Size: 15 A to 250 A

Standard Parts

Frame/Foundation

Level frame
Select materials according to the water tank's earthquake-resistant properties.



Frame description
1.The basic frame for the HISHITANK™ G Panel Type is a grid pattern shape.
2.Basic frame dimensions for full-sized panels are 1,002 mm pitch, and half-sized panels are 502 mm pitch.
3.The concrete foundation width should be 400 mm, and the height should be 500 mm.
4.The frame's external dimensions are as shown in Table 1.
5.The standard materials used for the frame (concrete foundation pitch with an interior distance of 1,700 mm or less) are as shown in Table 2 (frame material table). Concrete foundation pitch with an interior distance of over 1,700 mm is as shown in Table 3 (frame material table).

● Table 1: External dimensions of the level frame (A or B) Unit: mm

Nominal dimensions	External dimensions (A or B)	Nominal dimensions	External dimensions (A or B)	Nominal dimensions	External dimensions (A or B)
1,000	1,104	4,500	4,612	8,000	8,118
1,500	1,606	5,000	5,112	8,500	8,620
2,000	2,106	5,500	5,614	9,000	9,120
2,500	2,608	6,000	6,114	9,500	9,622
3,000	3,108	6,500	6,616	10,000	10,122
3,500	3,610	7,000	7,116		
4,000	4,110	7,500	7,618		

Note: The external dimensions of the 1.0-mH frame are the values listed above minus 30 mm.
The external dimensions of the 2.0-mH frame are the values listed above plus 20 mm.
The external dimensions of the 2.5-mH and 3.0-mH frames are the values listed above plus 20 mm.

● Table 2: Frame material list
(Standard foundation pitch with an interior distance of 1,700 mm) Unit: mm

Tank height \ Horizontal seismic intensity		1.0
1.0m	Material A	[100 × 50 × 5
	Material B	L65 × 65 × 6
1.5m	Material A	[125 × 65 × 6
	Material B	[75 × 40 × 5
2.0m	Material A	[125 × 65 × 6
	Material B	[75 × 40 × 5
2.5m	Material A	[150 × 75 × 6.5
	Material B	[75 × 40 × 5
3.0m	Material A	[150 × 75 × 6.5
	Material B	[75 × 40 × 5

●Table 3: Frame material list
(If the interior distance of the standard foundation pitch is over 1,700 mm) Unit: mm

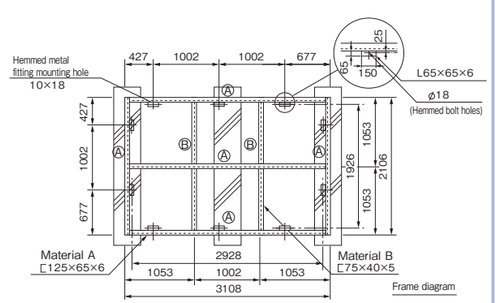
Tank height	Foundation interior distance \ Horizontal seismic intensity	1.0
1.0	1700 < L ≦ 2000	[125 × 65 × 6
	2000 < L ≦ 2500	[150 × 75 × 6.5
	2500 < L ≦ 3000	[180 × 75 × 7
1.5	1700 < L ≦ 2000	[150 × 75 × 6.5
	2000 < L ≦ 2500	H150 × 100 × 6 × 9
	2500 < L ≦ 3000	H194 × 150 × 6 × 9
2.0	1700 < L ≦ 2000	[150 × 75 × 6.5
	2000 < L ≦ 2500	H200 × 100 × 5.5 × 8
	2500 < L ≦ 3000	H194 × 150 × 6 × 9
2.5	1700 < L ≦ 2000	[180 × 75 × 7
	2000 < L ≦ 2500	H200 × 100 × 5.5 × 8
	2500 < L ≦ 3000	H300 × 150 × 6.5 × 9
3.0	1700 < L ≦ 2000	[180 × 75 × 7
	2000 < L ≦ 2500	H194 × 150 × 6 × 9
	2500 < L ≦ 3000	H300 × 150 × 6.5 × 9

*Due to the anchor casting, you may need to increase the number of foundations depending on the water tank size.
Note:The above only shows Material A. For Material B, please refer to the Table 2 specifications.

● Standard frame example diagrams

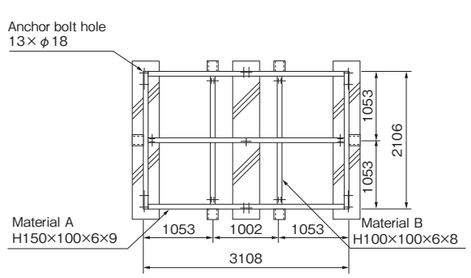
Unit: mm

Structural channel example



Unit: mm

H-type steel example



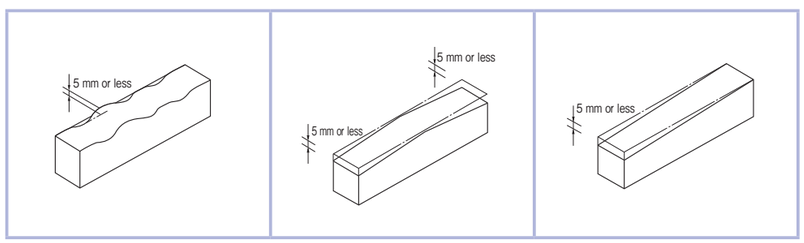
Concrete foundation intervals (Standard)

Unit: mm

Concrete Foundation	Tank length (longest)	1.0mH			1.5mH,2.0mH			2.5mH,3.0mH		
		L	A	B	L	A	B	L	A	B
L	1000	1034	—	—	1044	—	—	1064	—	—
	1500	1536	—	—	1546	—	—	1566	—	—
	2000	2036	—	—	2046	—	—	2066	—	—
A B L	2500	2538	1519	1019	2548	1524	1024	2568	1534	1034
	3000	2538	1519	1019	3048	1524	1524	3068	1534	1534
	3500	3540	1770	1770	3550	1775	1775	3570	1785	1785
	4000	4040	2020	2020	4050	2025	2025	4070	2035	2035
A B A L	4500	4542	1512	1518	4552	1517	1518	4572	1517	1518
	5000	5042	1679	1684	5052	1684	1684	5072	1694	1684
	5500	5544	1846	1852	5554	1851	1852	5574	1861	1852
	6000	6044	2013	2018	6054	2018	2018	6074	2028	2018
A B B A L	6500	6546	1634	1639	6556	1639	1639	6576	1524	1764
	7000	7046	1759	1764	7056	1764	1764	7076	1774	1764
	7500	7548	1885	1889	7558	1890	1889	7578	1900	1889
	8000	8048	2010	2014	8058	2015	2014	8078	2025	2014
A B B B A L	8500	8550	1710	1710	8560	1712	1712	8580	1722	1712
	9000	9050	1807	1812	9060	1812	1812	9080	1822	1812
	9500	9552	1908	1912	9562	1913	1912	9582	1923	1912
	10000	10052	2008	2012	10062	2013	2012	10082	2023	2012

Foundation

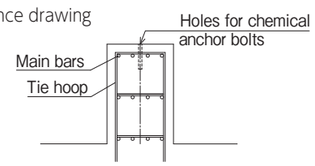
● Precision level of finished foundation



●Foundation width: 400 mm or more
●Foundation height: 500 mm or more
●Ensure the foundation's upper surface has a smooth finish.

●Fixing the anchor bolt and the frame

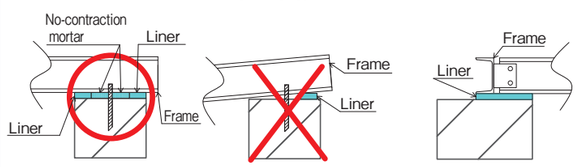
Reference drawing



●In case of using a chemical anchor bolt to fix a steel footing on a foundation, place the main bars so that it is not centered of the foundation as shown in this figure, to avoid hitting main bars when the foundation is drilled to make holes for chemical anchor bolts.

Adjusting unevenness

●Use liner to adjust the level; fill any gaps with mortar.



* Put liner on both edges of the foundation.
* If the frame has a split, use liner on the split part as well.

Frame/Foundation

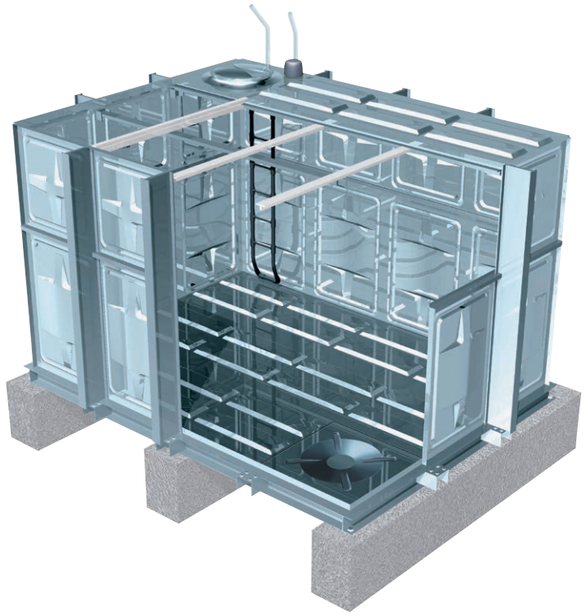
Stainless Steel Thermal Storage Tank/Hot Water Tank

HISHITANK™ Stainless Steel Panel Type

Heat resistant specifications

Maximum water temperature: 80°C

Highly corrosion-resistant SUS444 panels are used. Designed to store hot water with temperatures of up to 80°C. The heat insulating material comes in two types: the 25 mm thickness and the 50 mm thickness (optional) types. It can also be used as a hot water tank that uses economical late-night power. It is also effective in energy-saving efforts.



Bolt-assembly type

Easy transportation and installation

The panel-structure bolt-assembly build makes it easy to transport and install in places with narrow access paths.* Assembly time is also significantly shortened. Tank size is selected in 0.5 m pitches to match the installation space. The insulation material is post-installed, making it easy to separate and discard during maintenance or upgrades.
(* Please contact us for details.)

No need for welding or the use of heat

Heat is not used in assembly, making it possible to install in sites, such as factories, where fire cannot be used. Acid cleaning of welded parts and the waste liquid disposal that follows it are also unnecessary.

Earthquake-resistant design

Anti-sloshing tank

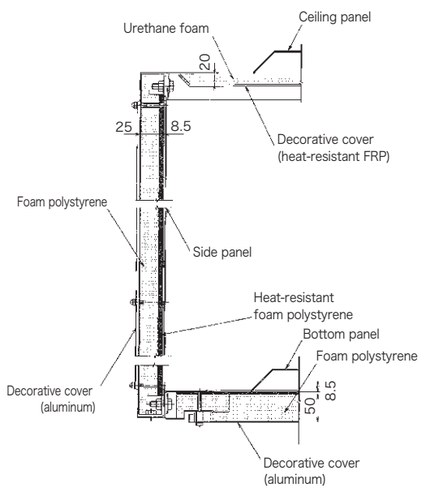
Leveraging HISHITANK™'s accomplishments and technological expertise, the design incorporates a highly earthquake-resistant structure that employs sloshing countermeasures (compliant with Ministry of Land, Infrastructure, Transport and Tourism Public Notice Nr. 1924). The strengthened external reinforcement frame method makes reinforcement of the tank interior obsolete, making it easier to perform cleaning and maintenance. Heat exchangers can also be installed.

Standard design specifications

Item	Standard design specifications
Hydrostatic pressure	Water level (m) × 0.01 MPa [0.1 kgf/cm²]
Design water level	Tank height (designated height) × 0.9 * The full water level position must be set at the vapor phase part (within 800 mm of the upper edge part of the side wall panels, within 300 mm for 1.0 mH and 1.5 mH). If operated with a water level below that mark, the interior components may corrode.
Earthquake	Horizontal seismic intensity by design: K_H = 1.0, 1.5
	Vertical seismic intensity by design: = Horizontal seismic intensity by design × 1/2
	Sloshing design velocity response spectrum value: Sv = 150, 375 cm/sec
Snow accumulation	0.6 × 10^{-3} MPa <60 kgf/m^2> (Vertical snow accumulation: 30 cm)
Wind pressure	1160 N/m² (load considering major urban area factors based on the Building Standards Act revised in 2000)
Max. water temperature	80°C
Water quality (pH)	5.8 to 8.6
Insulation spec	25 mm thickness (optional: 50 mm thickness)

* Any specification other than that described above is a special design. Please contact us for details.

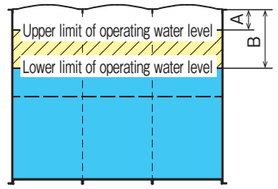
Bolt-assembly type heat insulation-build stainless steel panel composite panel structure



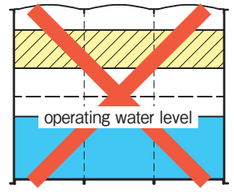
⚠ WARNING

Note on setting the full water level (operating water level)

- The operating water level should be set within the shaded range shown below.
- If the operating water level is not set at the correct level, the internal metal parts may corrode, resulting in water leakage.



○Correct use



× Inappropriate use

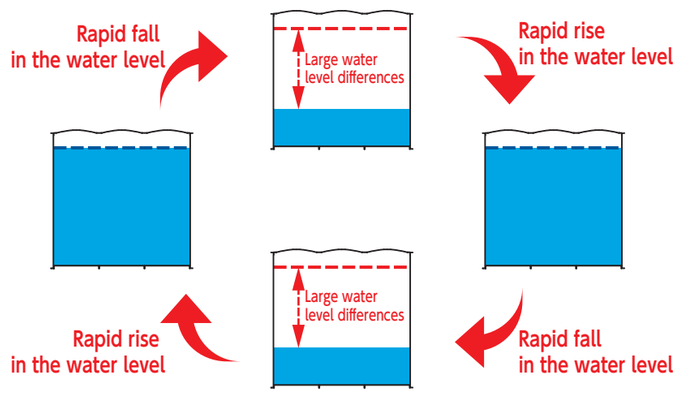
Tank Height	A	B	Operating water level settings
1.0mH	150	300	850mm ～ 700mm
1.5mH	150	300	1350mm ～ 1200mm
2.0mH	200	800	1800mm ～ 1200mm
2.5mH	250	800	2250mm ～ 1700mm
3.0mH	300	800	2700mm ～ 2200mm
3.5mH	350	800	3150mm ～ 2700mm
4.0mH	400	800	3600mm ～ 3200mm
4.5mH	450	800	4050mm ～ 3700mm
5.0mH	500	800	4500mm ～ 4200mm

⚠ WARNING

Note on operating the water tank

If any of the following conditions arise during the operation of the water tank, appropriate measures will be required to address the situation.

① The amount of water used in a day is abnormally high, such as twice the tank capacity, or there are periods within the day that experience high concentrations of water use.
② Significant water level changes in a short period of time (see diagrams below)



WARNING

- Ensure the full water level is set at the gas phase (within 800mm of the top side of the wall panel). If the water level is set lower than this, there is a possibility that internal components will become corroded. However, for the 1.0 mH tanks, the water level should be set at 85%.
- Please do not attempt to modify or make physical repairs to the product, as this may cause damages to the water tank. Any such work should be undertaken by qualified personnel.
- The water tank is not a pressure tank and should not be used for such a purpose.
- Tanks with partitions types should only use one compartment for short periods of time, such as when cleaning the tank. If you intend to use only one compartment for an extended period of time, you should seek appropriate advice.
- Please clean the water tank thoroughly after water flow tests or water tension tests are conducted. Dust, chips and other debris may cause rusting.
- If the water tank is filled rapidly from an empty state after installation or cleaning, there may be temporary leaks from the bolted joints. In addition, water leakage may also occur when the water tank is filled to full capacity for a short period of time.
- If the water tank is to be used after being empty and idle for a long period of time (more than one month), measures such as retightening bolts and inspection of the tank should be undertaken in advance.