MITSUBISHI CHEMICAL GROUP

MITSUBISHI CHEMICAL INFRATEC CO.,LTD.

Receiver Tank / Elevated Water Tank

HISHITANK™ G Panel Type

Bolt Assembly Model



MITSUBISHI CHEMICAL INFRATEC CO.,LTD.

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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.

ICC ES PMG

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Easy to Assemble

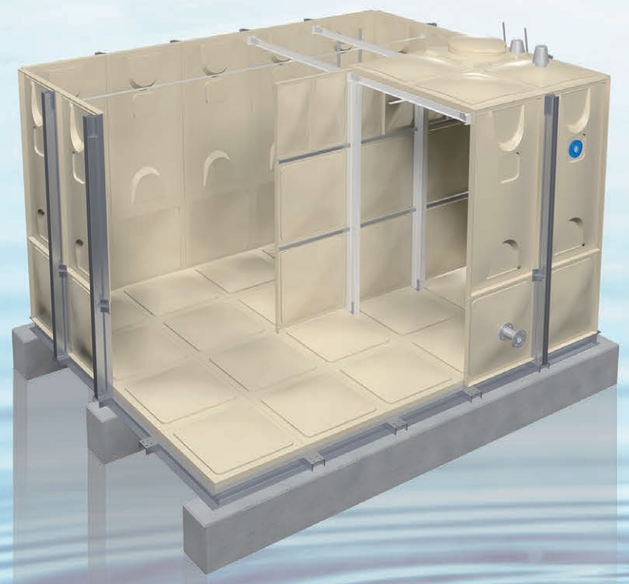
Bolt-on panels are easy to assemble without heavy machinery

Maintain clean water

GRP Panel prevents rust and it's easy to clean inside the tank

Easy to Transport

It comes in compact panels to fit any tight Space



HISHITANK™ G Panel Type

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We at Mitsubishi Chemical Infratec

Preface

HISHITANK™ is a revolution in water tank design. Developed by MITSUBISHI CHECMICAL INFRATEC CO.,LTD. a global leader in manufacturing that leverages it vast research and technological innovation.

Supplying water, safely, securely, and hygienically is our top priority. We ensure strict and reliable quality controls in the design, material sourcing, manufacturing, and delivery of HISHITANKS.

Rely on HISHITANK™ water storage systems to ensure every component meets the most stringent relevant industry standards.

Over 60 years, HISHITANK™ has continued to analyze and improve in one of the most earth-quake prone countries, Japan, earning the trust of our customers.

The History of HISHITANK™

1962	Sales of GRP water tanks began.
1978	GRP panel assembly-type tanks were released.
1981	Overseas tank sales began (in Singapore).
1987	GRP panel-type heat-resistant tanks were released.
1997	New earthquake-resistant panel-type tanks were released.
2005	Seawater tanks and hot water tanks were released.

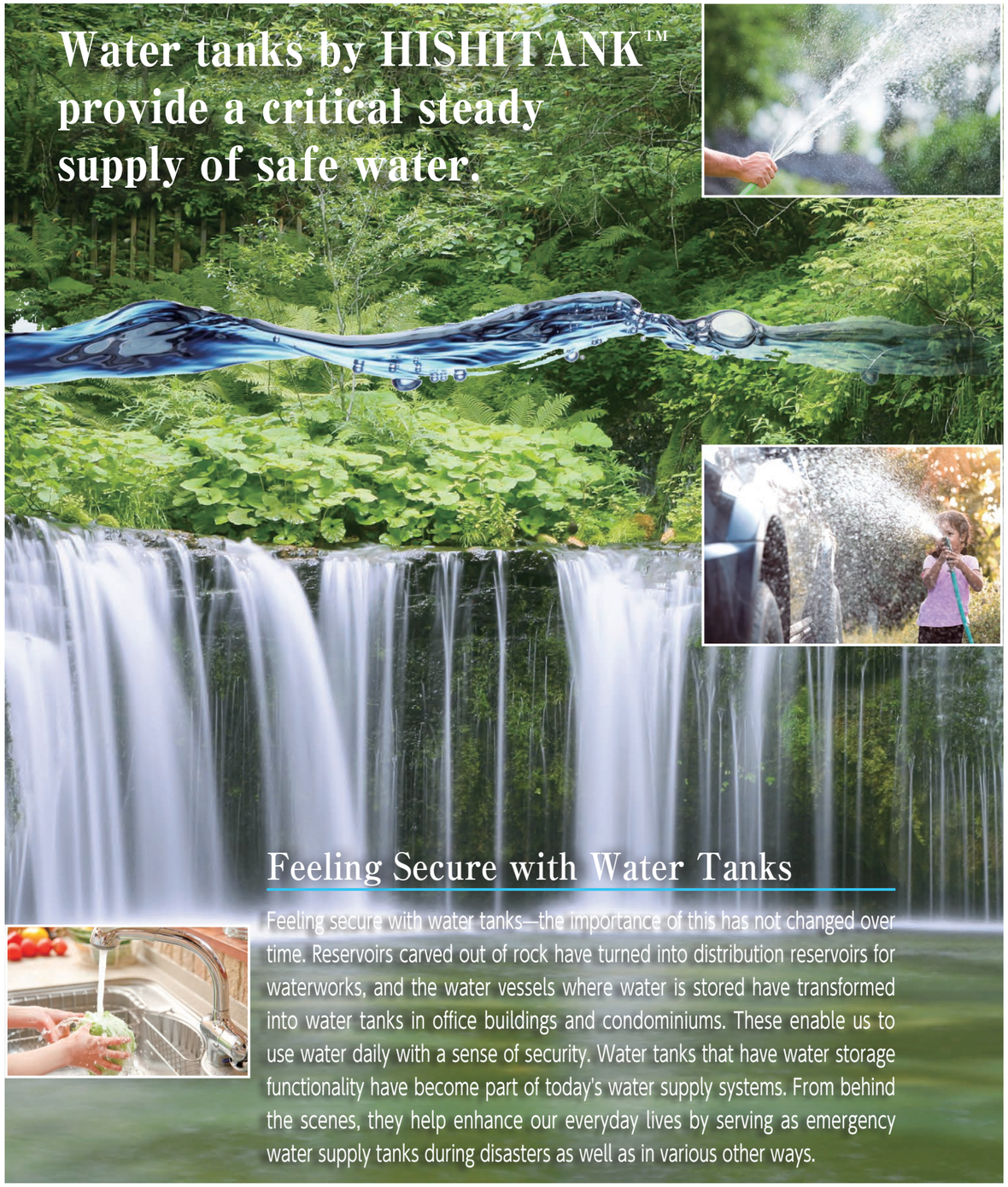
HISHITANK™ Overseas Expansion



MITSUBISHI CHECMICAL INFRATEC CO.,LTD. has been marketing to more than 30 countries over 40 years, which are: China, Taiwan, Hong Kong, Macao, Mongolia, Morocco, Singapore, Brunei, Myanmar, Laos, Philippines, Thailand, Cambodia, Vietnam, Saint Vincent and the Grenadines, Grenada, Palau, UAE, Oman, Qatar, Kuwait, Saudi Arabia, Algeria, Turkey, Djibouti, Egypt, Tuvalu, Seychelles, Mauritania, Rwanda, Antigua and Barbuda and USA.



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.

Materials Used in Various Types of Water Tanks



PE



Deterioration over time



Concrete



Weight problems



Stainless Steel



Metal corrosion



“HISHITANK™ ”

GRP panel tanks solve these problems.

Sanitation

Keeping the water clean

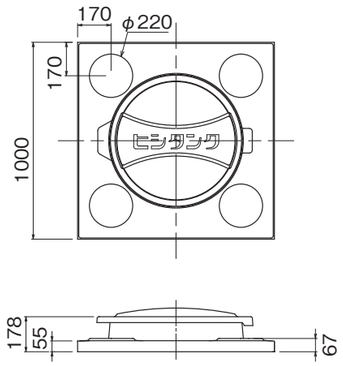
The primary mission of HISHITANK™ is to provide a clean water source.
Meeting international industry standards for water tanks, our structural frames are also reinforced to facilitate maintenance and inspections.



Manhole panel & Cover

Providing versatility, our manhole covers can be opened by a hinge or detached. The 100mm lip is designed to prevent the entry of rainwater or debris.





Ventilation

Air vents are also positioned at 100mm to mitigate rainwater intrusion and incorporate a 18x16 mesh net to prevent access to insects.



Products

1. Nylon powder reinforcing materials

HISHITANK™ steel supports located in potentially humid areas are reinforced with a protective coating to combat rust.



2. Resin lining bolts

Similarly, HISHITANK™ utilizes a resin coating to protect nuts and bolts from rust.



3. Nylon Coated flange / Core flange

Nylon or epoxy-coated flanges are also available as an optional part upgrade.



● Application areas inside tanks

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



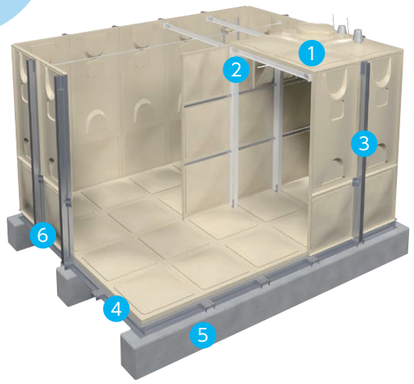
(Resin-coated reinforcement material used in the vapor phase area)

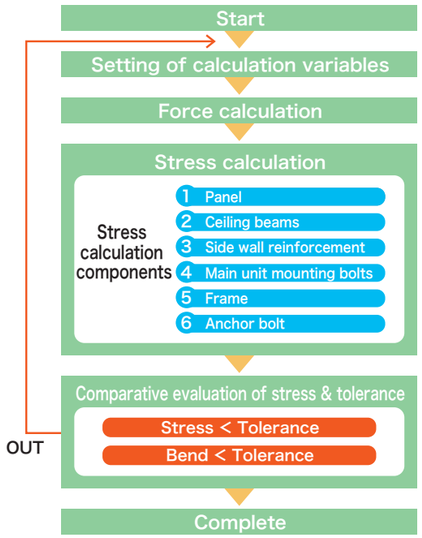
Designed to prevent algae

The illuminance ratio inside the HISHITANK™ is designed to achieve 0.05% or less, thereby clearing the requirement for an illuminance ratio of 0.1% at which algae occurs.

Safety

Structure calculation procedure and water tank components



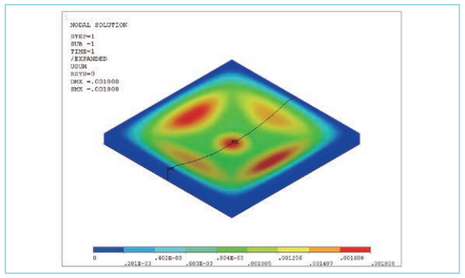


Panel strength design

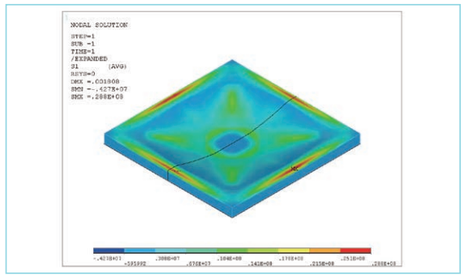
This panel has been created with the finite element method.

GRP panels that achieve both workability and strength are realized through SCM, our proprietary design.

● Displacement diagram

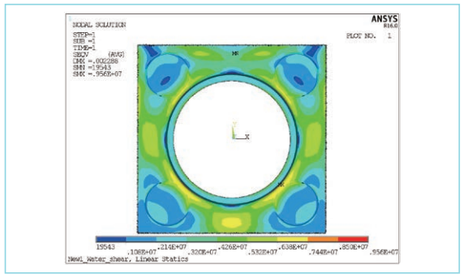


● Stress diagram

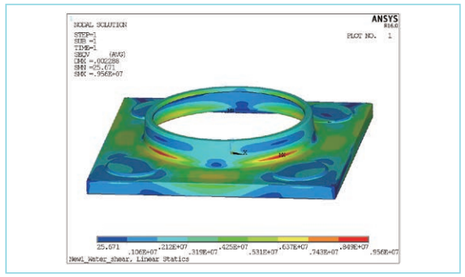


● Stress corresponding to water shear stress

View from above



View from a diagonal

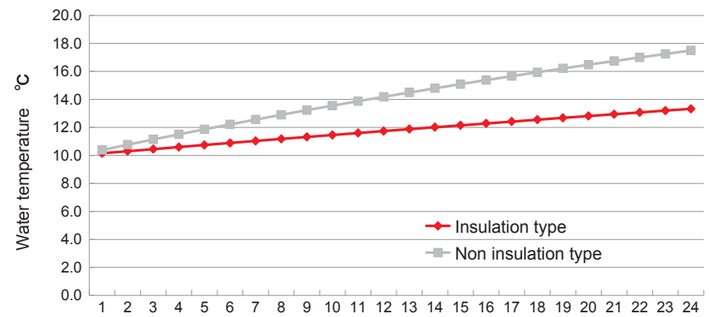


Functionality

Insulation design

The GRP composite panel structure type is a panel-structured water tank that features a three-layered structure: a GRP panel layer, which has excellent insulation properties; a synthetic resin foam layer; and a synthetic resin exterior panel with strong weather resistance and an aesthetically pleasing appearance. It also has strong insulation to prevent condensation.

● Changes in tank water temperature



2m×2m×2mH

Condition

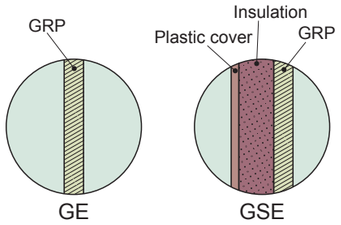
Outside temperature : ℃ 30℃

Initial water temperature : ℃ 10℃

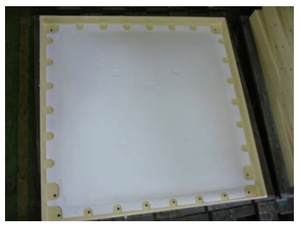
wind speed : m 0m

The data posted here is calculation
It is not a guaranteed value

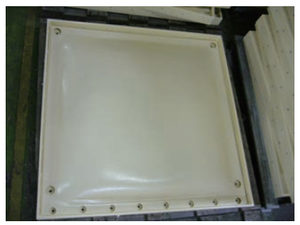
TYPE	PANEL
GE/GA/GF	GRP
GSE/GSA/GSF	GRP with insulation







① Set the insulation material (EPS).



② Place the decorative cover.

General Descriptions

Design Conditions

The design conditions of HISHITANK™ G Panel Type are as follows:

Hydrostatic pressure	Water level (m) × 0.01 Mpa {0.1 kgf/cm^2}
Design water level	Tank height (nominal height) × 0.9
Snow accumulation	0.6 × 10^{-3} Mpa {60 kgf/m^2}
Wind pressure	1160 N/m^2
Roof load	Short term central load per panel : 80 kg
Inlet water temperature	Ordinary temperature
Water quality	pH : 5.8 to 8.6
Illumination factor	0.1% or less
Weatherability	Since the roof is exposed to ultraviolet light when installed outdoors, better weatherability is provided by inserting non-woven fabric into the roof panel.

Physical Properties

The physical properties of the GRP panels of HISHITANK™ G Panel Type tanks are as follows:

Item	Test value	Testing standard
Tensile strength	113MPa	JIS K 6911
Tensile elastic modulus	13.9GPa	JIS K 7161
Bending strength	180Mpa	JIS K 6911
Bending elastic modulus	14.5GPa	JIS K 6911
Barcol hardness	52	JIS K 7060
Glass fiber content	37.7%	JIS K 7052
Specific gravity	1.87	JIS K 6911
Water absorption rate	0.078%	JIS K 7209
Compressive strength	340MPa	JIS K 6911
Interlaminar shearing stress	20.2MPa	JIS K 7057
Transverse shear strength	85.0MPa	JIS K 7058
Poisson ratio	0.41	JIS K 7161

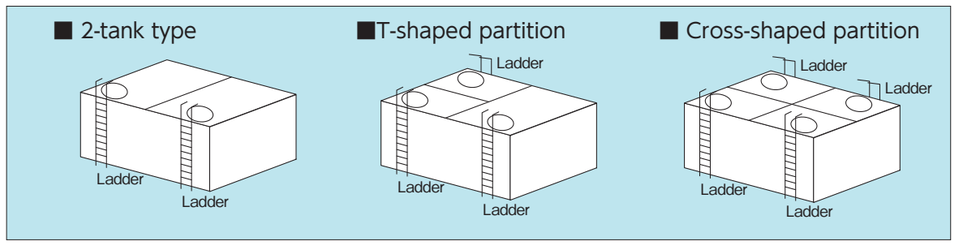
＊ The data are actual values of the samples and are not a guarantee level.

Optional Designs

Special Order Specifications

A tank separated into two or more sections allows users to perform internal inspections and cleaning of the tank without stopping the water supply.

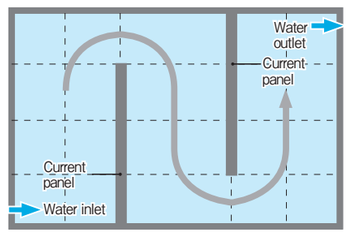
Note: When cleaning the inside of one section of a tank that is separated into two sections, lower the water level of the other section to half or less. If you will only use one section of the tank for more than 1 week, you will need to take additional measures.



＊Current panels

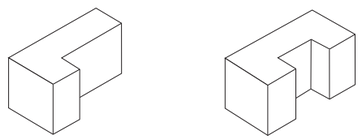
You can set up Current panels to avoid the occurrence of stagnant water in a large tank. Note, however, that the current panels will be set up parallel to the partitions if the tank has partitions.

Plane view

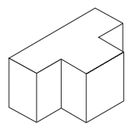


＊shape tanks

Note that we cannot produce some shape tanks depending on the height, size, and shape of the tank.

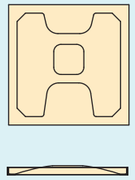
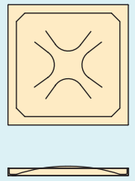
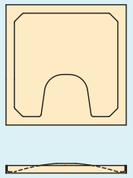
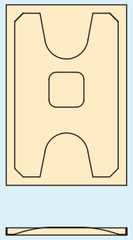
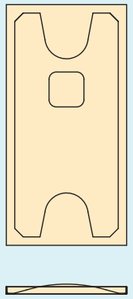


●Since it is not possible for us to produce some shape tanks depending on its height, contact us when you wish to order shape tanks.

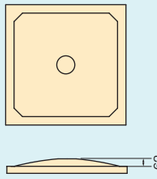
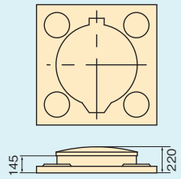
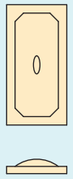


Panel Types

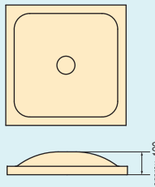
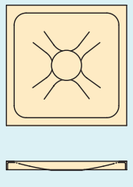
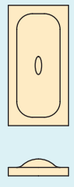
① Side wall panels

			
1×1m (for single levels and the upper levels in multi-level stacking)	1×1m (for the middle and lower levels in multi-level stacking)	1×1m (for piping)	0.5×1m
			
1×1.5m	0.5×1.5m	1×2m	0.5×2m

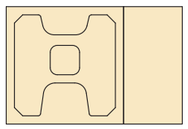
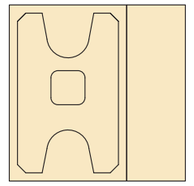
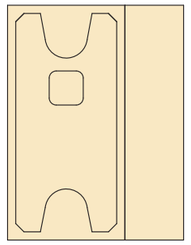
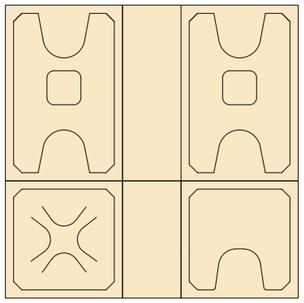
② Roof panels

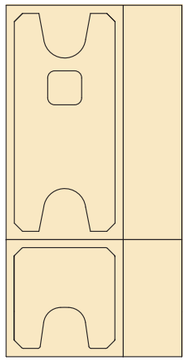
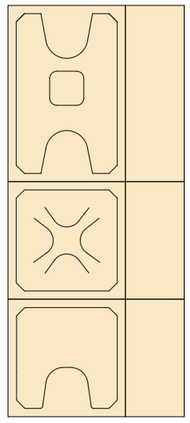
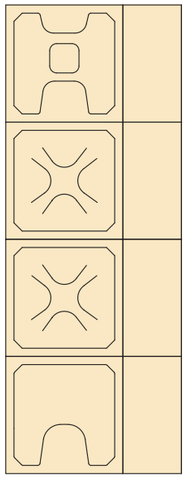
				
1×1m	Manhole	0.5×1m	0.5×1m	0.5×0.5m

③Bottom panels

 *Differs depending on the specifications.				
1×1m	Drainage panel	0.5×1m	0.5×1m	0.5×0.5m

Panel Assembly

1.0mH	1.5mH	2.0mH	2.5mH
			 With fitting panel

3.0mH	3.5mH	4.0mH
 With fitting panel	 With fitting panel	 With fitting panel

Precautions

This shows the basic side wall panel assembly.
The panels and reinforcement material used may change depending on the specifications.

Panel List

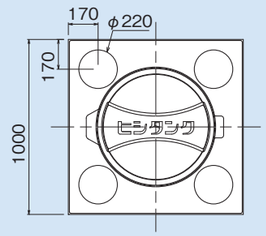
Standard Parts

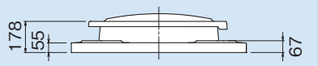
Note: Specifications and shapes may change without prior notice for improvement purposes.

Manhole

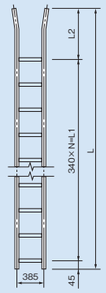
Unit: mm





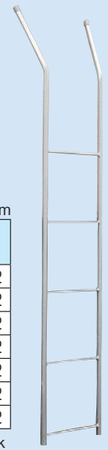


External ladder



Cap





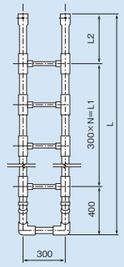
Unit: mm

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.

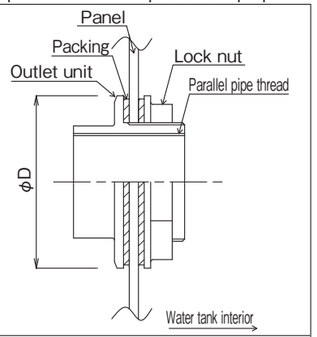
Socket



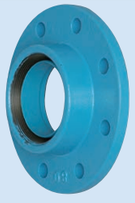
Material : Copper alloy casting (CAC)
S i z e : 15 A to 65 A
A ball valve (screw-type) can be attached.

Unit: mm

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



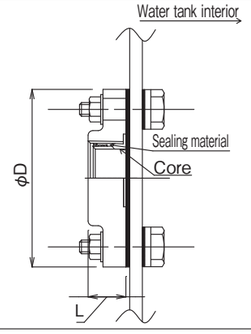
Core Flange



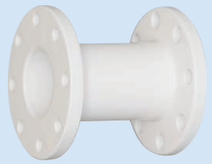
Material: Cast iron epoxy powder coating
S i z e : 20 A to 150 A

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



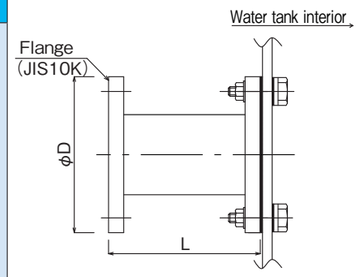
Both end flange



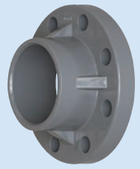
Water inlet, water outlet, overflow outlet, drainage outlet
Material : Cast iron nylon powder coating
S i z e : 20 A to 200 A

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



TS flange

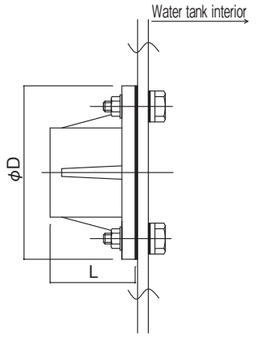


Material : Polyvinyl chloride
S i z e : 15 A to 250A

Unit: mm

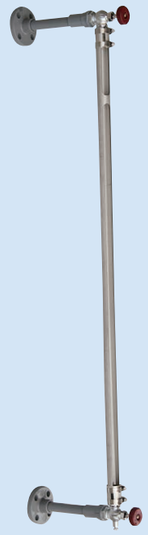
Nominal diameter	φD	L
15	95	35
20	100	40
25	125	46
32	135	50.5
40	140	61.5
50	155	71
65	175	70

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



Optional parts

Water Level Indicator



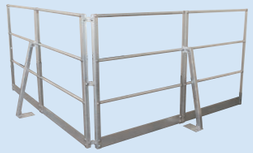
With protective pipe

Hoop guard
(outer ladder with backrest)



Material : SS hot-dip galvanized

Ceiling handrail

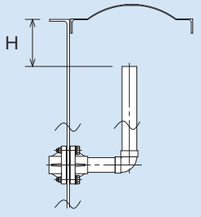


Material: SS hot-dip galvanized
*Available in different sizes depending on the combination.

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 250A

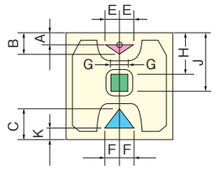
Parts

Pipe Fitting Positions

Side wall panels

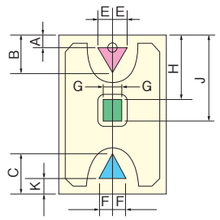
＊All measurements below are to the fitting pipe center.

●Tank height : 1mH



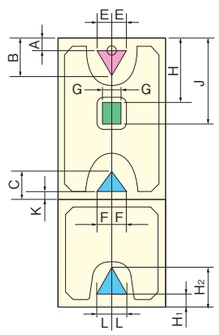
Outlet type		Pipe outlet for ball valves			Double-sided flange, TS flange, screw flange with core								
		Water inlet			Water inlet, overflow outlet, etc.			Overflow inlet (with riser), etc.			Water outlet etc.		
fitting position		A	B	E	A	B	E	G	H	J	K	C	F
Pipe diameter (A)	15	100	215	130	120	190	105	75	380	530	120	300	105
	20	105	210	125	120	190	105	75	380	530	120	300	105
	25	110	205	120	135	175	90	60	390	515	135	285	90
	32	115	200	115	140	170	85	55	400	510	140	280	85
	40	120	195	110	140	170	85	55	400	510	140	280	85
	50	125	190	105	150	160	75	45	410	500	150	270	75
	65	130	185	100	Does not fit. Use a flat panel.			35	420	490	160	260	65
	80							30	425	485	165	255	60
	100							20	435	475	175	245	50
	125							0	455	455	195	225	30
	150										210	210	15
	200												

● Tank height : 1.5mH
● Tank height : 2mH



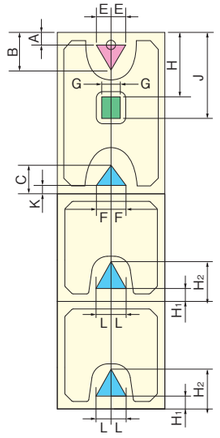
Outlet type		Pipe outlet for ball valves			Double-sided flange, TS flange, screw flange with core								
		Water inlet			Water inlet, overflow outlet, etc.			Overflow inlet (with riser), etc.			Water outlet etc.		
fitting position		A	B	E	A	B	E	G	H	J	K	C	E
Pipe diameter (A)	15	100	425	185	120	385	160	95	610	800	120	385	160
	20	105	420	180	120	385	160	95	610	800	120	385	160
	25	110	415	175	135	370	145	80	620	790	135	370	145
	32	115	410	170	140	365	140	75	630	780	140	365	140
	40	120	405	165	140	365	140	75	630	780	140	365	140
	50	125	400	160	150	355	130	65	640	770	150	355	130
	65	130	395	155	160	345	120	55	650	760	160	345	120
	80				165	340	115	50	655	755	165	340	115
	100				175	330	105	40	665	745	175	330	105
	125				195	310	85	20	685	725	195	310	85
	150				210	295	60	0	700	710	210	295	60
	200				Does not fit. Use a flat panel.								

● Tank height : 2.5mH
● Tank height : 3mH



Outlet type		Pipe outlet for ball valves			Double-sided flange, TS flange, screw flange with core											
		Water inlet			Water inlet, overflow outlet, etc.			Overflow inlet (with riser), etc.			Water outlet etc.					
fitting position		A	B	E	A	B	E	G	H	J	K	C	F	H_1	H_2	L
Pipe diameter (A)	15	100	425	185	120	385	160	95	610	800	120	385	160	120	370	140
	20	105	420	180	129	385	160	95	610	800	120	385	160	120	365	140
	25	110	415	175	135	370	145	80	620	790	135	370	145	135	355	125
	32	115	410	170	140	365	140	75	630	780	140	365	140	140	345	120
	40	120	405	165	140	365	140	75	630	780	140	365	140	140	345	115
	50	125	400	160	150	355	130	65	640	770	150	355	130	150	340	110
	65	130	395	155	160	345	120	55	650	760	160	345	120	160	330	95
	80				165	340	115	50	655	755	165	340	115	165	325	90
	100				175	330	105	40	665	745	175	330	105	175	310	75
	125				195	310	85	20	685	725	195	310	85	195	290	55
	150				210	295	70	0	700	710	210	295	60	210	275	35
	200				Does not fit. Use a flat panel.									235	250	0
	250															

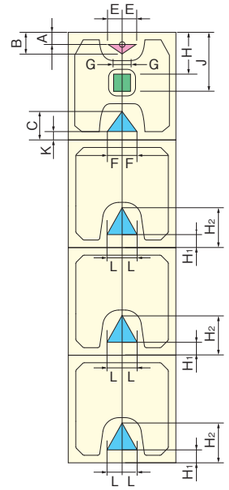
●Tank height : 3.5mH



unit:mm

Outlet type		Pipe outlet for ball valves			Double-sided flange, TS flange, screw flange with core											
		Water inlet			Water inlet, overflow outlet, etc.			Overflow inlet (with riser), etc.			Water outlet etc.					
fitting position		A	B	E	A	B	E	G	H	J	K	C	F	H_1	H_2	L
Pipe diameter (A)	15	100	425	185	120	385	160	95	610	800	120	385	160	120	370	140
	20	105	420	180	120	385	160	95	610	800	120	385	160	120	365	140
	25	110	415	175	135	370	145	80	620	790	135	370	145	135	355	125
	32	115	410	170	140	365	140	75	630	780	140	365	140	140	345	120
	40	120	405	165	140	365	140	75	630	780	140	365	140	140	345	115
	50	125	400	160	150	355	130	65	640	770	150	355	130	150	340	110
	65	130	395	155	160	345	120	55	650	760	160	345	120	160	330	95
	80				165	340	115	50	655	755	165	340	115	165	325	90
	100				175	330	105	40	665	745	175	330	105	175	310	75
	125				195	310	85	20	685	725	195	310	85	195	290	55
	150				210	295	60	0	700	710	210	295	60	210	275	35
	200				Does not fit. Use a flat panel.									235	250	0
	250															

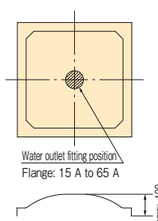
●Tank height : 4.0mH



unit:mm

Outlet type		Pipe outlet for ball valves			Double-sided flange, TS flange, screw flange with core											
		Water inlet			Water inlet, overflow outlet, etc.			Overflow inlet (with riser), etc.			Water outlet etc.					
fitting position		A	B	E	A	B	E	G	H	J	K	C	F	H_1	H_2	L
Pipe diameter (A)	15	100	215	130	120	190	105	75	380	530	120	300	105	120	370	140
	20	105	210	125	120	190	105	75	380	530	120	300	105	120	365	140
	25	110	205	120	135	175	90	60	390	515	135	285	90	135	355	125
	32	115	200	115	140	170	85	55	400	510	140	280	85	140	345	120
	40	120	195	110	140	170	85	55	400	510	140	280	85	140	345	115
	50	125	190	105	150	160	75	45	410	500	150	270	75	150	340	110
	65	130	185	100	Does not fit. Use a flat panel.			35	420	490	160	260	65	160	330	95
	80							30	425	485	165	255	60	165	325	90
	100							20	435	475	175	245	50	175	310	75
	125							0	455	455	195	225	30	195	290	55
	150										210	210	15	210	275	35
	200													235	250	0
	250															

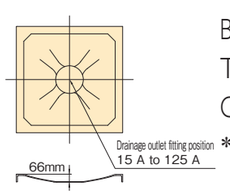
● Bottom panel (1 × 1 m)



Both end flange:20 A to 65 A,
TS flange:15 A to 65 A,
Core flange:20 A to 65 A

＊Please note that the panel center part has a bulge.
＊It can only be attached to bottom panels, drainage panel sets, and panel centers. Panel partition is required if attaching to parts other than panel centers, or if attaching flanges with diameters other than those listed above.

● Drainage panel (1 × 1 m)



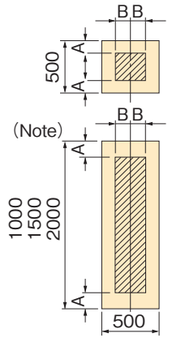
Both end flange:20 A to 125 A,
TS flange: 15 A to 125 A,
Core flange: 20 A to 125 A

＊Water tanks with a tank height of 3 mH horizontal seismic intensity 2.0 G specification, 3.5 mH, and 4 mH water tanks cannot use drainage panels, so panel partition is required and flat panels must be attached.

Pipe Fitting positions

Flat panel

These are the mountable ranges for 0.5-m-width panel parts. They are the same for each side wall height, ceiling, and floor panel. With panel partition (0.5-m-width double panel specification), the mountable range increases compared to the 1-m-width single panel specification. (Additional fees apply.)

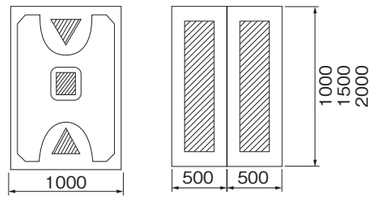


Unit: mm

	Pipe diameter (A)	Flange fitting position A	Flange fitting position B	Socket fitting position A	Socket fitting position B
Water inlet, overflow outlet, water outlet, drainage outlet	20	120(200)	130	90(170)	150
	25	135(215)	115	95(175)	145
	32	140(220)	110	100(180)	140
	40	140(220)	110	105(185)	135
	50	150(230)	100	110(190)	130
	65	160(240)	90	115(195)	125
	80	165(245)	85		
	100	175(255)	75		
	125	195(275)	55		
	150	210(290)	40		
	200	235(315)	15		
	250	270(350)	0		

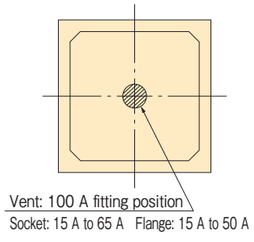
Note: If partitioning the upper and middle level side wall panels (width: 1.0 m) into two 0.5-m-width panels to attach flanges for water tanks with a height in the range of 2.0 mH to 3.0 mH, refer to the numbers in parentheses in column A in the above table.

●Panel partition image



Ceiling parts

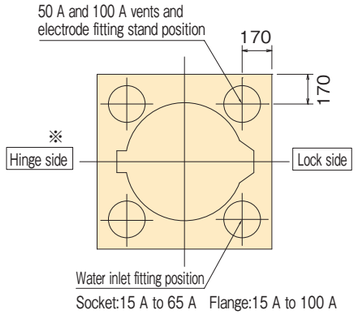
● Ceiling panel (1 × 1 m)



Vent: 50 A and 100 A
Electrode fitting stand
Ball valve screw socket:15 A to 65 A
Both end flange:20 A to 50 A
TS flange:15 A to 50 A
Core flange: 20 A to 50 A

*Can only be attached to panel centers.
*Panel partition is required if attaching to parts other than panel centers, or if attaching flanges with diameters of 65 A or more.

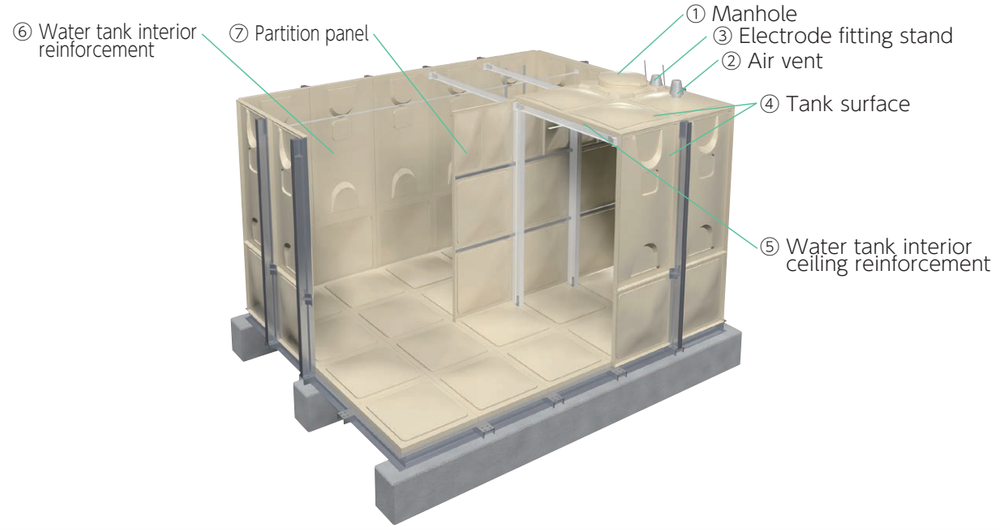
● Manhole panel (1 × 1 m)



Ball valve screw socket:15 A to 65 A
Both end flange:20 A to 100 A,
TS flange:15 A to 100 A,
Core flange:20 A to 100 A

* If you attach a flange of 80 A or more on the manhole hinge side, it becomes difficult to open the manhole. Please be aware of the manhole's opening direction.

Maintenance



	Problem to repair	Measures
①Manhole	Deteriorated packing	Replace the gasket. *Our manhole packings come in two types: the manhole neck cover type (old type) and the lid plastered type (current model). Please carefully confirm the specifications.
	Broken hinges	Replace the fittings. *Depending on the extent of damage, the entire manhole may need to be replaced. Please carefully confirm the parts in the diagram. *Manhole fitting varies by manhole specifications (old type or current type). Please carefully confirm the diagram.
② Air vent	Torn insect net	·Replace the vent. *There are four types in total: the 50 A type and 100 A type for each of the two models (old and current). Please carefully confirm the specifications shown in the diagram. *We do not offer replacement of insect nets only. Please replace the entire vent. *GRP water tanks require lining work. Please contact us for details.
③Electrode	Cracked electrode stand cover	·Replace the electrode cover. *There are two models: the old model and the current model. Please carefully confirm the specifications in the diagram. For the current model, we do not accept orders of covers only.
④Surface	Exposed, blackened glass fiber	Please consider performing coating.
⑤Ceiling reinforcement	Rusted ceiling reinforcement	This component is crucial to maintain durability. If the rusted part is left to deteriorate, it may rupture and damage the water tank. Repair or replacement will be required, so please contact us.
⑥Water tank interior reinforcement	Rusted internal stay and brace pipes	This component is crucial to maintain durability. If the rusted part is left to deteriorate, it may rupture and damage the water tank. Repair or replacement will be required, so please contact us.
⑦Partition panel	·Cracking ·Leakage	If you drain water in a tank and clean it when it has cracks, it may destroy the partition, which can be hazardous. The tank must be repaired before it can be used again, so please contact us. Even if there are no cracks, when cleaning a tank, ensure that the water levels of all other tanks are less than half full.

★ Match to Domestic Brochure

GRP water tank repair model

"Early detection of defects and early measures are crucial."

We recommend cleaning and inspecting GRP water tanks at least once a year. We also recommend replacing parts as follows.

Water tank repair model (designed service life of water tank unit: 15 years)

● : Replace (manufacturer recommendation)

Years elapsed	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Periodic inspection	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Manhole gasket					●					●					
Air vent					●					●					
Electrode cover								●							
Main unit renovation															●

* Adjust bolts, replace reinforcements, and perform other necessary repairs as needed according to inspection results.
* This table is an example of the timing of repairs.The repair period may be earlier depanding on usage status and installation environment of the tank.
* If the dirt of the tank stands out, please kindly consider painting.

Notes on Cleaning the Tank

- The elevated portion of the panels may be slippery, so be careful when walking on the roof or bottom panels for cleaning. Walk on the outer flat portion of each panel.
- Never remove the internal and external reinforcement members.
- When cleaning the tank, follow the rules and regulations of the country where the tank is located and always keep safety in mind.

Tank Diagnosis

We design our GRP water tanks with a useful life-span of 15 years based on the GRP water tank structure design calculation method. However, this useful life is based on the assumption that the user performs maintenance and inspections properly.

Since an GRP water tank may have problems such as water leakage or cracks due to age deterioration after 15 years of use, we recommend that you diagnose the level of deterioration based on the tank diagnosis checklist to promptly renovate it or replace it with a new one.

Inspection Points and Precautions

Maintenance Inspection, Renovation, and Replacement

Maintenance Inspection Items

Periodic inspection (once or twice a year)

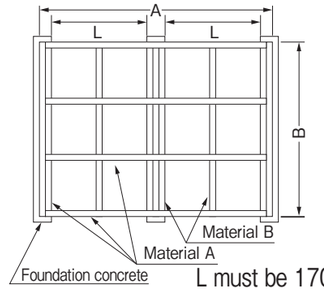
Inspection item	Remarks
Cleaning of the inside of the tank	Clean the tank with water to remove dust, foreign matter, rust, and scales, etc.
Loose or missing bolts that secure the internal reinforcement members	Tighten the bolts securely if they are loose. Replace them with new ones if necessary.
Inspection of the metal members including the external frames, outside ladder, and connecting nuts and bolts	Check for peeling paint and plating, rust, and loose bolts/nuts. Paint the relevant items in a systematic manner.

Regular inspection (once a month)

Inspection item	Remarks
Operation of the water-level control equipment and the alarm system	In particular, check whether the alarm system works well.
Blocking of the ventilation holes, overflow holes, and other holes	Immediately remove any objects that are blocking the holes.
Sealing condition of the manhole lid	Lock the manhole lid.
Abnormal deformation of the tank body	Contact your local agent.
Application of pressure (internal/external) other than hydrostatic pressure	If any pressure other than hydrostatic pressure is being applied, remove it immediately.

Steel footing/Foundation

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



L must be 1700 mm or less.

Frame description

1.The basic Steel footing for the HISHITANK™ G Panel Type is a grid pattern shape.
2.Basic frame dimensions for full-sized panels are 1002 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 1700 mm or less) are as shown in Table 2 (frame material table). Concrete foundation pitch with an interior distance of over 1700 mm is as shown in Table 3 (frame material table).

● Table 1: External dimensions of the Steel footing (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)
1000	1104	4500	4612	8000	8118
1500	1606	5000	5112	8500	8620
2000	2106	5500	5614	9000	9120
2500	2608	6000	6114	9500	9622
3000	3108	6500	6616	10000	10122
3500	3610	7000	7116		
4000	4110	7500	7618		

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

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

Tank height \ Horizontal seismic coefficent		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: Steel footing material list
(If the interior distance of the standard foundation pitch is over 1,700 mm) Unit: mm

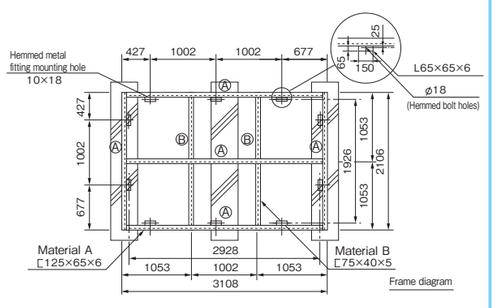
Tank height	Foundation interior distance \ Horizontal seismic coefficent	1.0
1.0	1700 < L ≦ 2000	[125 × 65 × 6
	2000 < L ≦ 2500	[150 × 75 × 6.5
	2500 < L ≦ 3000	[180 × 75 × 7
1.5	1700 < L ≦ 2000	[150 × 75 × 6.5
	2000 < L ≦ 2500	H150 × 100 × 6 × 9
	2500 < L ≦ 3000	H194 × 150 × 6 × 9
2.0	1700 < L ≦ 2000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

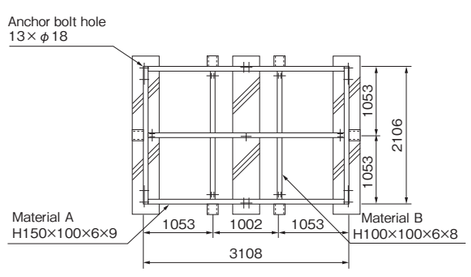
Unit: mm

Structural channel example



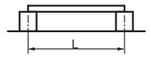
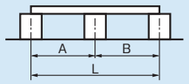
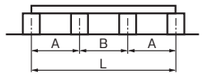
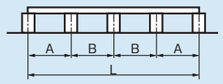
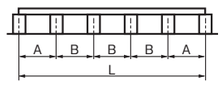
Unit: mm

H-type steel example



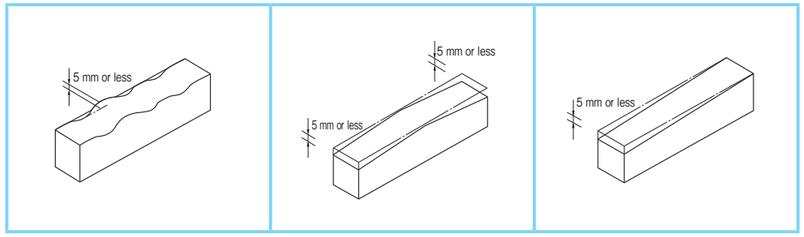
Concrete foundation intervals (Standard)

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
	1000	1034	—	—	1044	—	—	1064	—	—
	1500	1536	—	—	1546	—	—	1566	—	—
	2000	2036	—	—	2046	—	—	2066	—	—
	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
	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
	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
	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

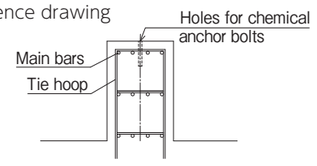
● Precision level of finished foundation



- 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 Steel footing

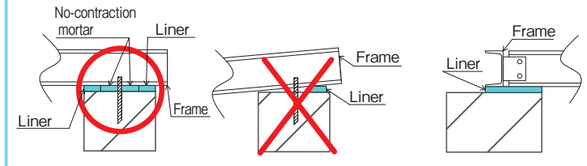
Reference drawing



●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.

GRP Hot Water Storage Tanks

Heat-Resistant GRP Panel-Type Thermal Storage Tank / Hot Water Tank

HISHITANK™ U Panel Type

Suitable for cold and heat-resistant needs, these tanks can withstand a maximum of 80°C. First introduced in 1987, the HISHITANK™ U Panel Type thermal storage tanks meets the needs of energy efficiency and sustainability, with excellent heat resistance, heat storage capability, and the ability to store both cold and hot water.



＊ Standard specifacation acccording with Japan seismic type.

Specifications

Item	Thermal storage tank/hot water tank specifications
Tank height	1.0 1.5 2.0 2.5 3.0mH
Panel-fastening bolts	Hot-dip galvanized (the vapor phase part uses resin lining bolts & nuts)
Vapor phase steel material	SS 400 + nylon powder coating
Liquid phase steel material	SUS304
Hydrostatic pressure	Water level [m] × 0.01 MPa [0.1 kgf/cm^2]
Design water level	Tank height (designated height) × 0.9
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)
Illumination factor	0.1% or less
Max water temperature	80 °C
Water quality (pH)	5.8 to 8.6

● Precautions

＊ Heat Resistant tanks cannot be designed with partitions.

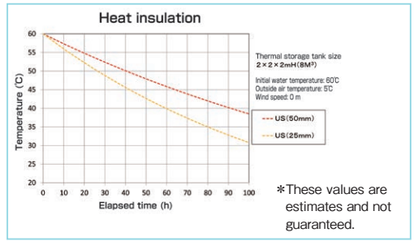
＊ We cannot design water tanks exceeding 3.5mH.

Structure

Excellent heat insulation

With two thicknesses available, the heat-resistant panels can be insulated to match the conditions required by the environment and used. Available in 25 and 50mm, these tanks deliver clean water at the temperature you need.

● Heat insulation



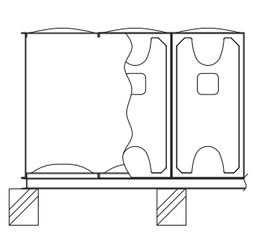
＊These values are estimates and not guaranteed.

Heat resistance specifications

Two types of heat insulating materials are available: 25mm average insulation and 50mm average insulation. Either can be selected depending on the usage purpose.

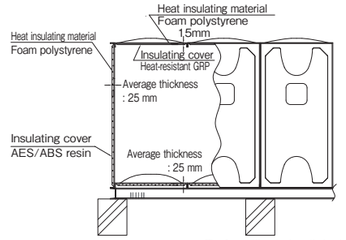
Single panel structure

<UF type/UH type>

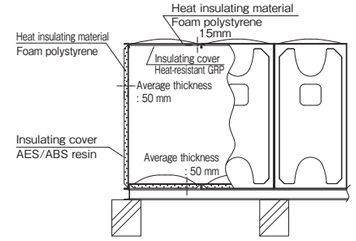


Composite panel structure

Standard type <USF type/USH type>



High-grade type (USF type/USH type) (heat insulating material average thickness: 50 mm)



＊ The form differs by installation location.

● Specifications

Application	Hot spring tank design specifications: GRP	Cold spring tank design specifications: GRP	Thermal storage tank/hot water tank specifications: GRP	Thermal storage tank/hot water tank specifications: SUS
Tank height	1.0 1.5 2.0 2.5 3.0mH			
Panel-fastening bolts	Hot-dip galvanized (the vapor phase part uses resin lining bolts & nuts)		Hot-dip galvanized or SUS 304 (optional) (the vapor phase part uses resin lining bolts & nuts)	SUS 304 (the vapor phase part uses resin lining bolts & nuts)
Vapor phase steel material	SS 400 + nylon powder coating			SUS 304 + nylon powder coating
Liquid phase steel material	SUS 304 + nylon powder coating		SUS304	
Hydrostatic pressure	Water level [m] × 0.01 MPa [0.1 kgf/cm^2]			
Design water level	Tank height (designated height) × 0.9			
Earthquake resistance	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=150,375cm/sec			
Snow accumulation	0.6×10^{-3}MPa {60kgf/m^2}(vertical snow accumulation: 30 cm)			
Wind pressure	1160N/m^2 (load considering major urban area factors based on the Building Standards Act revised in 2000)			
Max water temperature	80℃	Room temperature (30°C)	80℃	
Illumination factor	0.1% or less			
Water quality (pH)	4 to 10 (Please consult with us if it will exceed 10.)	5.8 to 8.6		

GRP Seawater Storage Tanks

Rust-resistant with excellent sanitation properties

HISHITANK™ has built on its reputation of pioneering technology since 1962. Continuously improving, we developed our Seawater
HISHITANK™ leveraging that accumulated expertise.



＊ Standard specifacation acccording with Japan seismic type.

Enhanced anti-rust performance

In addition to the rust-resistant GRP specification, all interior steel materials use a nylon coating. Its highly rust-resistant properties make this a truly effective seawater tank.



Nylon coating



Non-nylon coating

● Precautions

＊ Seawater tanks cannot be designed with partitions.

＊ We cannot design Seawater tanks exceeding 3.5mH.

● Specifications

Item	Seawater tank design specifications
Tank height	1.0 1.5 2.0 2.5 3.0mH
Panel-fastening bolts	Hot-dip galvanized (the vapor phase part uses resin lining bolts & nuts)
Vapor phase steel material	SS 400 + nylon powder coating
Liquid phase steel material	SUS 304 + nylon powder coating
Hydrostatic pressure	Water level [m] × 0.01 MPa [0.1 kgf/cm^2]
Design water level	Tank height (designated height) × 0.9
Snow accumulation	0.6 × 10-3 MPa [60 kgf/m^2] (vertical snow accumulation: 30 cm)
Wind pressure	1160 N/m (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
Illumination factor	0.1% or less
Chloride ion concentration	19,000 ppm or less

HISHITANK™
“GN type” NSF Authorized GRP Panel Tank





NSF-Authorized Series : GN type（GF-N, GSF-N）

Certified to NSF/ANSI/CAN 61

● What is NSF ?

NSF certification is your key to making sure that the products you use meet strict standards for public health protection.
Choosing a product certified by NSF lets you know the company complies with strict standards and procedures imposed by NSF.

cite : https://www.nsf.org/knowledge-library/what-is-nsf-certification

● HISHITANK™ GN type

NSF/ANSI/CAN 61 Drinking Water System Components - Health Effects

Place of Manufacture: Kanagawa, Japan

● Specifications

Item	NSF Authorized Tank design specifications
Tank height	1.0 1.5 2.0 2.5 3.0 3.5 4.0mH
Gasket	EPDM
BOLT SPECIFICATIONS	Outer fastening Bolts : Hot-dip galvanizing (HDG), Stainless Steel 304 / 316 Internal fastening Bolts : Hot-dip galvanizing (HDG), Stainless Steel 304 / 316 NOTE : We can arrange the bolt materials as you require.
Hydrostatic pressure	Water level [m] × 0.01 MPa [0.1 kgf/cm^2]
Design water level	Tank height (designated height) × 0.9
Snow accumulation	0.6 × 10-3 MPa [60 kgf/m^2] (vertical snow accumulation: 30 cm)
Wind pressure	1160 N/m (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
Illumination factor	0.1% or less
Chloride ion concentration	19,000 ppm or less

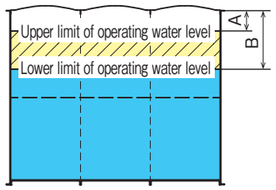
WARNING

- 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.

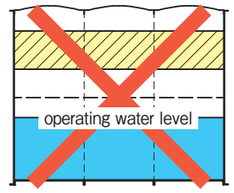
⚠ WARNING

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	800	850mm ～ 200mm
1.5mH	150		1350mm ～ 700mm
2.0mH	200		1800mm ～ 1200mm
2.5mH	250		2250mm ～ 1700mm
3.0mH	300		2700mm ～ 2200mm
3.5mH	350		3150mm ～ 2700mm
4.0mH	400		3600mm ～ 3200mm

⚠ 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)

