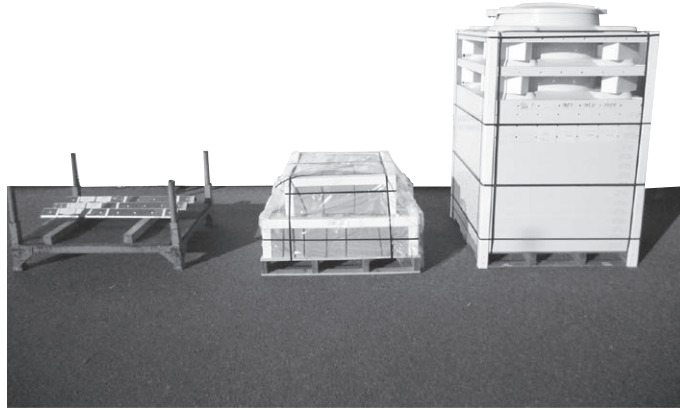


4. Construction Information

4-1 Packaging



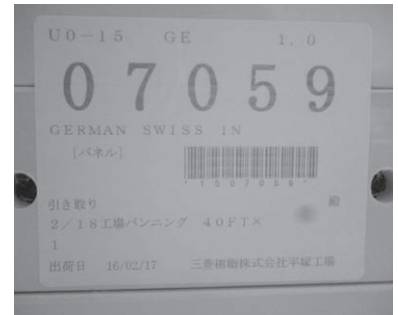
(Photo of entire panel package before shipment)



(Panels)



(Panel product code)



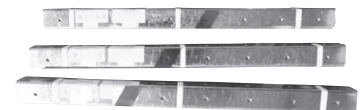
(Tank information sticker)



(Case mark)



(Cardboard boxes)



(Long objects)

4-2 Construction and assembly Outline

① Subject:

The general construction and assembly method of HISHITANK™ G Panel Type tanks is as follows.

② Foundation:

Preparation of a foundation is required before starting to build a tank.

Recommended foundation shape

Foundation height: 500 mm (for construction and maintenance)

Foundation width: 300 - 400 mm

Foundation length: Tank width/length + 200 mm

inside dimension of foundation: 1700 mm or less

Foundation surface must be level.



③ Base:

A base needs to be assembled when the foundation is complete. The base consists of main pieces and sub-pieces. Both the main pieces and sub-pieces must be set up at 1002 mm (502 mm) spaces apart. Assemble them using bolts. If the foundation is not completely level, insert spacers to make the base level so that the surfaces of the main pieces and sub-pieces are at the same height. The base must not twist. Make the Diagonal dimension difference as small as possible.



④ Panel formation:

Use standard tools (See section 4.3) and work in accordance with the drawings.

Check panel types with the panel codes on the panel flange (See the example in the photo).



④-1 Base panels

Set up the base panels in accordance with the installation manual and drawings.
Insert gaskets between panels and use M10 bolts when assembling the panels.



④-2 Sidewalls

Set up the sidewalls in accordance with the construction procedures and drawings.
Insert gaskets between panels, and use M10 bolts and sidewall reinforcement angles when assembling the panels. After the sidewalls installation, keep one line opening. This wall is used as a doorway (See the example in the photo).



④-3 Ceiling

Set up the ceiling panels in accordance with the construction procedures and drawings.
Insert gaskets between panels and use M10 bolts when assembling the panels.
Then attach ceiling reinforcement members and roof support.



④-4 Panel hole processing

Make flange holes in the panels on site.



⑤ Completion inspection:

Confirm that the following tasks have been completed in accordance with the construction procedures and drawings:

- *Attachment of the external reinforcement members and internal reinforcement members
- *Installation of the outside ladder and inside ladder
- *Setup of the flanges, air ventilation, and electrode base
- *Attachment of the nameplates (that include the serial number, date of shipment, specifications, size, capacity, and contractor)

G Panel Type completion inspection check sheet (sample)

Classification	Inspection item	inspection standards	Inspection should be performed	Inspection method
Appearance	Deformation of the whole tank	Should not be significant	On all items	Visual
	Flaws and cracks in panels	Should not be significant	On all items	Visual
	Attachment of the insulation cover	Should not be swollen abnormally Should be attached securely	Visually	Visual Tapping
	Contamination	Should not be significant	On all items	Visual
	Projection of gaskets	Should not be significant	On all items	Visual
	Attachment position of the nameplates	Should be as described in the installation manual	On all items	Visual
Reinforcement member	Partition reinforcement members	Should be as described in the installation manual	On all items	Visual
	Internal/external reinforcement members	Should be as described in the installation manual	On all items	Visual
usage Segment	Panels	Should be as described in the delivery specification and installation manual	On all items	Visual
	Assembly bolts	Should be as described in the delivery specification and installation manual	On all items	Visual
	Gasket	Should be as described in the installation manual	On all items	Visual
	Accessories	Should be as described in the delivery specification and installation manual	On all items	Visual
Flanges	Size	Should be as described in the delivery specification	On all items	Visual
	Position	Should be as described in the delivery specification	On all items	Measurement
	Number of flanges	Should be as described in the delivery specification	On all items	Visual
	Types	Should be as described in the delivery specification	On all items	Visual

⑥ Inspection for water leaks recommended:

Fill the tank with water to the overflow height, and then leave it for 48 hours without water level fluctuation. There should be no water leaks that can be visually detected.

⑦ Notes on tank construction work:

Confirm that the foundation and base are level.

Confirm that the positions of flange holes are consistent with the drawings and customer requests before starting the construction.

Remove dust and foreign objects from the panel surfaces before attaching gaskets.




Check that the surfaces of adjacent panels are completely flat when building panels.













Securely tighten all bolts again after the tank construction.







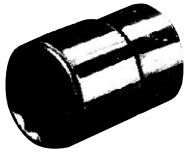


It is recommended to store a minimum amount of water in the tank if you do not intend to put water in the tank immediately after construction.












Before handing over the completed tank to the customer, clean and organize the construction site.



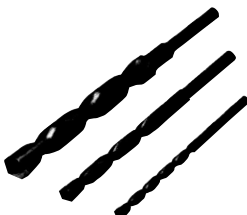




4-3 Assembly Tools

Tool name	Model (reference)	Quantity	Photo
Hammer drill	12.7 square drive shank for adhesive anchor SDS	1	
Accessory for the above			
Accessory for the above			
cleaning tool for drilled hole	Blower	1	
Automatic level	Automatic level or laser level (with a tripod stand)	1	

Chalk line	Chalk line + powder chalk	1	
Lubricant		2	
Cord reel	Three-core cord, 30 m	1	
Extension cord	Three-core, three-socket cord, 10 m	4	
Steel square	500 mm	1	
Measuring tape	5.5 m	1	
Measuring tape	15 m	1	
Round file	For iron work, $\varnothing 8 \times 200$ mm	1	
Disk sander		1	
Cut-off grinding wheel		2	
Impact wrench		3	
Scissors		1	
Cutter knife	Cutter knife + blade	1	

Monkey wrench	Opening from 0 mm to 36 mm	1	
Double-open ended spanner	17×19, 24×30	1	
Crowbar		2	
Metal hammer		1	
Plastic hammer		1	
Double close ended wrench	TOP 17 mm × 19 mm	2	
Socket	Sockets for impact wrench (12.7mm(base of square size) × 17 mm to 30 mm × 55 L)	2	
Socket	Sockets for impact wrench (12.7mm(base of square size) × 19 mm × 150 L)	1	
Ratchet socket wrench	Ratchet socket wrenches (17 mm to 19 mm)	2	
Stepladder	1.5m	4	

Caulking gun	For pump chamber using composite panels	1	
Waste cloth	For cleaning	Several sheets	
Adhesive for PVC	For adhesive bonding of internal piping and ceiling support pillars	1	
Helmet		One for each worker	
Safety belt		One for each worker	
Gloves		One for each worker	
Safety shoes		One for each worker	
Protective goggles	Or helmet with a shield	One for each worker	
Torque wrench	12.7 corner (torque adjustment range: up to 500 N·m)	1	
Water pump pliers		1	
Electric drill	Chuck capability: 14 mm, 25 mm	1	

Jigsaw		1	
Jigsaw blade	For FRP steel members	10	
Drill bit	For FRP, 12 to 24 mm	1	
Hole saw	For FRP, ϕ 22 to 115 mm	1	
Circle cutter	For insulation cover notch up to ϕ 500	1	
Wire cutter		1	
Construction work lamp	Rainproof type recommended	Depending on the site conditions	

4-4 Safety Precautions for Tank Construction and Assembly

*To the construction manager

- Set up safety fences and/or protective steel netting as well as no-entry signs around the tank, so that only those involved in the tank construction can enter the construction site.
- Leave a space about 600 mm or more around the tank so that workers can build and inspect the tank.
- Do not apply any pressure other than hydrostatic pressure to the tank.
- Avoid welding, cutting, or grinding near the tank. If you have no choice but to perform such work near the tank, be sure to cover and protect the tank with fireproof sheets to prevent sparks or iron powder from falling on the tank.
- Do not hit the tanks with any metal tools such as a screwdriver or wrench. If such tools hit the tank, it may be dented or scratched.
- Do not make alternations on the internal/external reinforcement members and the bolts securing the reinforcement members. If you remove any bolts needed for maintaining the structural strength, the tank may be damaged.
- Observe the following when applying paint or characters to the surface of the tank having a composite-panel structure:
 - a) For degreasing, use IPA (isopropyl alcohol).
(Use of acetone or thinner will corrode the panel surface.)
 - b) Use water-based paint when you paint the panel surface.
(Use of solvent paint will corrode the panel surface.)

*To the contractor of the tank construction

- a) Before the construction
 - The person responsible shall explain rules on site, work contents, and allocation of roles to all the workers.
 - Clearly inform all the workers of the emergency contact number in case of an accident.
 - Go around the work site with all the workers to make them aware of dangerous areas and dangerous tasks.
 - Set up barricades and pylons, etc. to keep third parties out of the work area.
 - Check the scaffolding, work platforms, and stepladders, etc. for abnormalities.
 - Set up construction work lamps if the work site is not bright enough to work.
- b) Carrying in the materials
 - Check for unevenness along the route for safety purposes.
 - Check that sufficient clearance is ensured between the tank and surrounding buildings, carry-in entrance, and objects attached to the ceiling.
 - Do not put materials directly on the floor. Use lumber and protective sheets, etc. to protect the floor.
- c) During the construction work
 - Every worker must wear a helmet, safety shoes, and safety belt.
 - Wear leather gloves when drilling.
 - Wear protective goggles when cutting.
 - When using a work platform or stepladder in the tank, take measures for its legs and feet so that they do not damage the panels.
 - Because of the risk of falling tools, do not work under another worker.
 - Move heavy or long objects with multiple workers while vocally confirming safety with each other.

d) After the Assembly

- Clean and organize the materials and tools, and remove the garbage from the site.
- Put away the barricade and pylons, etc.
- Report the completion of the construction to the person responsible, and then leave the work site.

4-7 Evaluation of Contractors

The evaluation of the new Assembly contractors should satisfy the points shown below.

*Evaluation criteria

For the purpose of observing an agency to determine whether to entrust the tank Assembly to them, evaluate each agency based on the following criteria:

Evaluation item	Evaluation content	5 points	3 points	1 point
Delivery deadline	Sufficient number of workers	Already secured workers	Able to secure workers	Impossible
Quality	Vehicles, electric tools, tools, inspection equipment	Already have necessary tools and equipment	Able to arrange necessary tools and equipment	Not able to arrange all the tools
Base	Building of an iron-frame base	Possible	Verify after the Assembly	Impossible
Technique	Understanding of the installation manual	Pass	Verify after the Assembly	Fail

9 or more points is a passing grade.

Assembly man-hours

reference guideline for the Assembly man-hours (number of workers)

Capacity M ³	10	25	50	100	250	500
Base	2	2	4	8	12	12
1meter height	2	2	12	—	—	—
2meter height	2	4	12	20	—	—
3meter height	4	8	16	24	48	96
4meter height	4	8	16	32	48	96

The above values can change depending on the tank size, accessories, proficiency of the workers, and conditions of the work site.