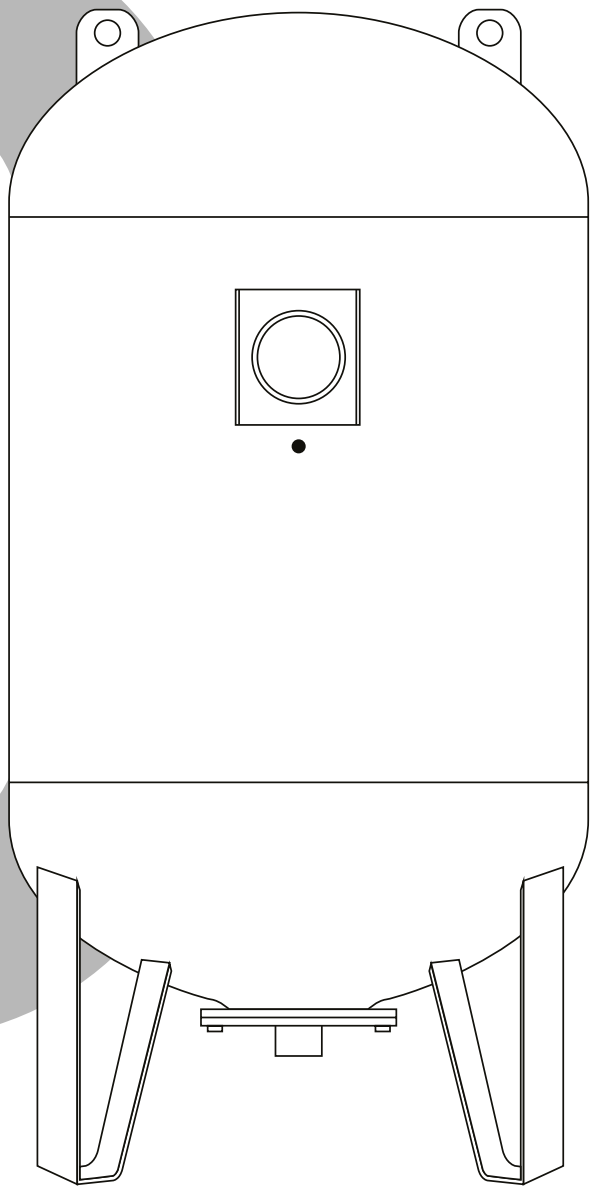
globalwater solutions

SuperFlow™ / InoxFlow™ / ASME Series

Installation and Operating Manual



Installed on _____ by _____

en

Where **Water** Gets **Better**



⚠ CAUTIONS AND WARNINGS

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING YOUR NEW GLOBAL WATER SOLUTIONS (GWS) TANK

These symbols ⚠ [!] indicate the level of risk resulting from failure to observe the prescribed safety precautions.

[!] **CAUTION**	To prevent personal injury, ensure all water pressure is released from the pressure system prior to work being performed. Ensure pumps are disconnected and/or electrically isolated.
⚠ **WARNING**	It is strongly recommended that the system is protected by a suitable pressure relief valve set at or below the maximum tank pressure rating. Failure to install a relief valve may result in tank explosion in the event of a system malfunction or over pressurization, resulting in property damage, serious personal injury or death.
⚠ **WARNING**	WARNING: If the pressure tank leaks or shows signs of corrosion or damage do not use it.
⚠ **WARNING**	WARNING: If the expansion tank is heavier than 30 kgs, proper equipment such as lifting crane etc. should be used in order to avoid damage to the tank and personnel.

These instructions have been prepared to acquaint you with the correct method of installing and operating your GWS pressure tank. We urge you to study this document carefully and follow all of the recommendations. In the event of installation difficulties or the need for further advice, you should contact the dealer from whom you purchased the system or the nearest GWS sales office.

- SuperFlow™, InoxFlow™ and ASME™ Series tanks are designed for use in well water, potable water booster systems (Refer to Sec. 1 for installation details) and for use in non-potable closed loop hydronic or solar water heating systems (Refer to Sec. 2 for installation details) as well as for use in open loop potable water heating applications. (Refer to Sec. 2 for installation details)
- See tank data label for maximum working pressure and maximum temperature
- Be sure to protect tank, piping and all system components from freezing temperatures
- The manufacturer is not responsible for any water damage in connection with this pressure tank

INSTALLATION MUST BE IN ACCORDANCE WITH LOCAL AND STATE PLUMBING CODES.

TECHNICAL SPECIFICATIONS

1. Well Water and Booster System Tank Installation

1.1. Proper GWS Tank Location

In order to ensure your tank provides its maximum service life it should always be installed in a covered, dry position. The tank should not be allowed to rub against any surrounding hard surfaces, such as walls etc..

1.2. System Connection

1. Place the GWS tank in its final desired location.
2. Level as necessary. All vertical and horizontal model tanks should be placed on a firm base. If vibration is likely to occur in the vicinity the tank should be mounted on a resilient mounting.
3. Connect the tank to the pump supply line with a short pipe to eliminate unnecessary friction loss.
4. All piping should be in accordance with prevailing local codes and standards
5. Tanks mounted on booster sets should be strapped down for shipment

1.3. Adjusting Precharge Pressure

Correct precharge is required for proper tank performance.

1. For tanks installed with a pressure switch controlled pump with a differential pressure set up to 2 bar (30 psi), the precharge should be set to 0.2 bar (2 psi) below the cut-in pressure
2. For tanks installed with a pump controlled by a pressure switch with a pressure differential greater than 2 bar (30 psi), electronic controls or variable speed controls, the precharge should be set to 65% of the cut-out or maximum system pressure
3. For tanks installed on mains' pressure, the tank precharge should be set equal to the mains' pressure. For mains' pressure exceeding 6 bar (88 psi), a suitable pressure regulator should be installed
4. Precharge of SuperFlow™, InoxFlow™ and Asme tanks should be checked every 3 months

For correct operation, pressure tanks should be precharged as follows:

1. Turn off the pump, disconnect the tank from the system and completely drain all water inside the tank to avoid water pressure affecting precharge readings
2. Using a suitable pressure gauge, check the precharge pressure of the tank
3. Release or add air as necessary to adjust to the required precharge pressure
4. Replace protective air valve cap and seal with the air valve label, if provided. This will enable you to determine if the valve has been tampered with in case of future service calls

⚠ CAUTION: Never over-charge the tank and precharge the tank with air at ambient temperature only!
If the tank is to be precharged over4 bar (58 psi):

1. Adjust the precharge of the tank to 4 bar (58 psi)
2. Install the tank into the system
3. Fill the system with water to equalise the system and precharge pressure at 4 bar (58 psi)
4. Increase precharge pressure in maximum 3 bar (44 psi) steps and afterwards adjust the system pressure to the new precharge pressure by filling water into the system
5. Repeat steps 3 and 4 until the required precharge is reached

Emptying a tank that has a precharge over bar (58 psi):

1. Make sure there is some water in the tank
2. Isolate the tank from the system (close isolation valve)
3. Make sure no additional water can get into the tank (shut off the pump and/or any water supply)
4. Release air from tank until 3 bar (44 psi) tank/air pressure is remaining
5. Open a drain valve and afterwards the isolation valve to drain the tank

⚠ CAUTION: Make sure that the system pressure is never lower than 4 bar (58 psi) below precharge. If system pressure needs to be lowered, the tank should be isolated or emptied as previously described.

1.4. Pump Run Control Operating Principles

Without a pressure tank, a water system's pump would cycle (turn on) every time there was a demand for water. This frequent and potentially short cycling would shorten the life of the pump. Pressure tanks are designed to store water when the pump is running and then deliver pressurized water back to the system when the pump is shut off (Fig 1.4). A properly sized tank will store at least one liter of water for every liter per minute (LPM) of pump capacity. This allows for fewer pump starts and longer run times which should maximize the life of the pump.

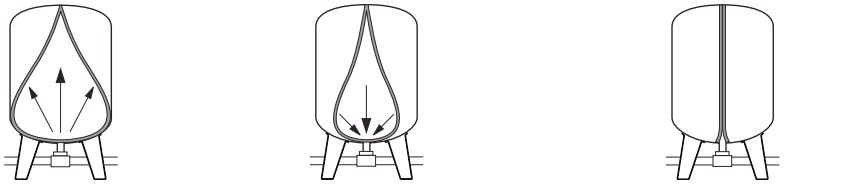


Fig. 1.4

1.5. Multiple Tank Installation

All tanks must have the same precharge for the system to function properly. Tanks should be installed on a header to ensure all tanks receive equal and balanced pressure. Adjust each tank precharge as detailed in section 1.3. The system pressure switch or control should be centrally located (see Fig 1.5) in order for the tanks to function properly.

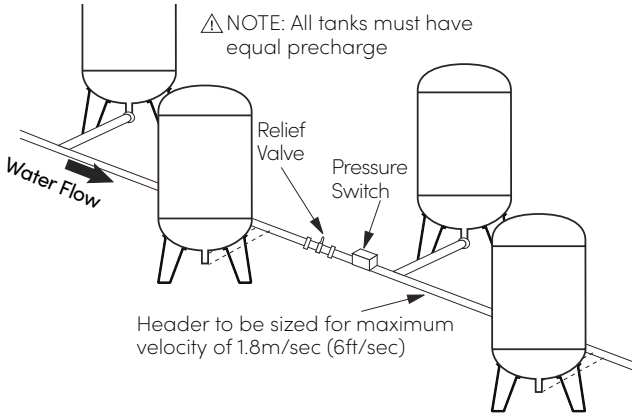


Fig. 1.5 Multi-tank Installation

2. Thermal Expansion Tank Installation

Thermal expansion tanks are designed to accommodate the natural expansion of water as it is heated. Thermal expansion tanks may be used in several different applications including closed loop hydronic heating systems, direct and indirect solar heating systems, and open loop potable water heating systems. GWS has developed three different series of tanks to be used for each application: HeatWave™ for closed loop hydronic heating systems, SolarWave™ for indirect closed loop solar heating systems, and ThermoWave™ for direct solar heating and open loop potable water heating systems. For high volume thermal expansion applications Challenger™ and SuperFlow Series tanks may be used.

⚠ CAUTION: Check tank data label for maximum operating pressure and temperature prior to installing.

⚠ CAUTION: Additives (such as glycol) can affect the thermal expansion and expansion tank operation. Check with your GWS dealer or nearest GWS sales office for more details.

2.1. Precharge

Using a suitable pressure gauge, check the tank precharge pressure prior to installation. Refer to the tank data label for factory precharge pressure. Tanks in closed loop heating circuits should be precharged to system fill pressure. Tanks in open loop heating storage systems should be precharged to mains' pressure. For tanks in closed loop solar systems precharge should be set at minimum system operating pressure and/or fill pressure. Release or add air by the tank air valve accordingly. Make sure the tank is completely drained of water and there is no system pressure affecting the precharge pressure reading when adjusting tank precharge..

2.2. Thermal Expansion Tank Location

As tanks, pipes and connections can leak even when installed correctly; make sure to install the tank at a location where any leak will not cause water damage. The thermal expansion tank should be installed on the cold or supply side of any heating system. The tank should be installed indoors and protected from freezing temperatures.

2.3. System Connection

SuperFlow, InoxFlow and ASME tanks are designed to be self-supporting and should be connected to the system with additional piping (See Fig. 2.3).

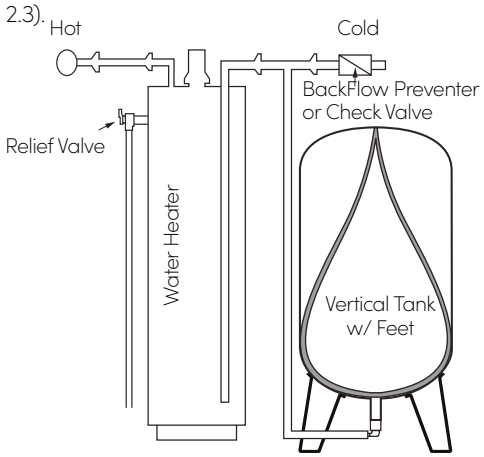


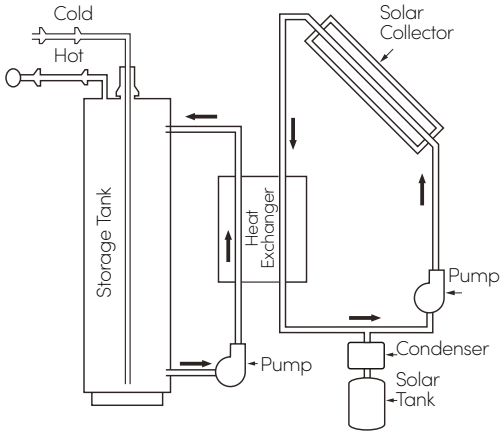
Fig. 2.3

2.4. Solar Heating System Connections

SuperFlow™ and InoxFlow™ tanks can be used in the solar liquid loop of indirect thermal transfer systems and may be mounted either on the suction or pressure side of the circulation pump.

If a condenser is employed to cool evaporated solar liquid it must be in the location between the solar liquid loop and the expansion tank. A relief valve should be employed and maximum operating parameters must not be exceeded. If the temperature of the solar system has the potential to rise above the evaporation point of the solar liquid, a condenser chamber or coil is required between the solar collector and the expansion tank* (See Fig. 2.4).

*It is critical to ensure proper system design when using SuperFlow/InoxFlow tanks in solar heating applications. The system should include components such as heat exchangers and condenser tanks or coils to reduce temperature risks and prevent the generation of heat levels exceeding the 90°C maximum rating of the expansion tank.



2.5. Thermal Expansion Operating Principles

As water is heated it expands. A thermal expansion tank is used to accommodate for this natural water expansion, which otherwise may lead to increased system pressure and cause damage to piping, fittings and other system components. A thermal expansion tank uses a membrane sealed inside the vessel to create a barrier between water and air chambers. The air chamber acts as a cushion which compresses as heated water expands. The thermal expansion tank absorbs the expanded water volume and ensures constant system pressure is maintained. Using a thermal expansion tank also conserves water and energy. This is accomplished by eliminating the need to refill and reheat water lost due to venting from the relief valve during heating cycles.

3. Maintenance

SuperFlow and InoxFlow pressure tanks should be checked by an authorized service professional, every 3 months. To check precharge, shut off power to the pump, isolate and drain the tank. Check precharge using a pressure gauge. If needed, top up air to appropriate precharge level using an air pump or compressor. Open isolation gate valve allowing the pump to fill the tank with water.

Always release all water and air from tank before disassembling the parts exposed to pressure such as flanges, air valve, pressure gauge etc. Make sure that the system is switched off and no electricity or electrical devices are running.

If the pump short cycles or the heating system relief valve constantly opens, check the air valve mounted on the tank. If water bleeds from the valve the membrane has burst. Please call an authorized service provider to replace the membrane with a factory replacement, following the instructions for membrane replacement in this manual.

Check the quality of the water by draining water from the tank using the drain valve. If the water is rusted, calcified, or has solid deposits, then either the membrane has failed which can be verified by above mentioned process or the tank is blocked.

4. Membrane Replacement Instructions

Preparations:

1. Turn off the water and/or disconnect the power to the pump
2. Release the air and drain all water from tank

Removing the membrane from tanks with lower and upper flange:

1. Unbolt and remove bottom flange and pull membrane out through the bottom opening
2. Push membrane into the tank
3. Unbolt and remove the upper flange
4. Remove membrane by pulling the membrane out through upper flange

Removing the membrane from tanks with bottom flange only:

1. Remove the nut and the washer on the top of the tank which is attached to the membrane hanger that is anchoring the top of the membrane (fig. 4.1, fig. 4.4)
2. Pull and remove the membrane through the bottom opening to which the flange was attached
3. Remove the top connection membrane hanger from the damaged membrane, this can be reused and should be cleaned

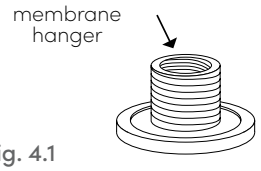


Fig. 4.1

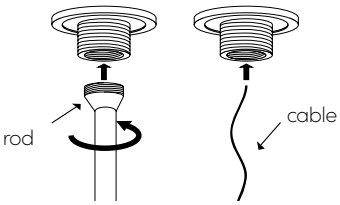


Fig. 4.2

Installing a new membrane in tanks with lower and upper flange:

1. Insert the membrane through the upper flange opening
2. Seat the top neck of the membrane into position and install the upper flange and tighten the bolts
3. Pull the membrane out of the bottom opening and seat the bottom neck into position
4. Install the lower flange and tighten the bolts

Intalling a new membrane in tanks with lower flange only:

1. Take the membrane hanger and attach it to a rod, a cable or alike, as seen in fig. 4.2
2. Pull the rod and hanger up through the membrane until the top of the hanger is protruding from the top of the membrane (fig. 4.3)
3. Feed the rod from the bottom of the tank up through the opening at the top of the tank until the hanger is protruding from the top of the tank and the threads are visible
4. Install the flange and tighten all bolts
5. Slip the washer and then the hanger nut over the end of the rod/cable and tighten onto the exposed connector (fig. 4.4)
6. After tightening the hanger nut onto the exposed connector, disconnect and remove the rod

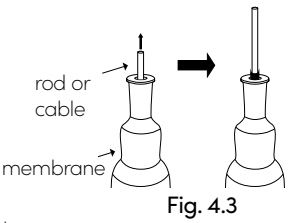


Fig. 4.3

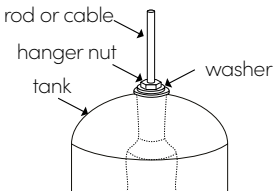


Fig. 4.4

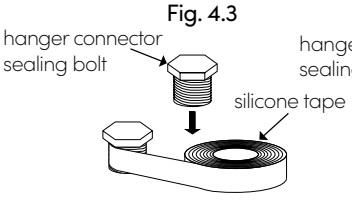


Fig. 4.5

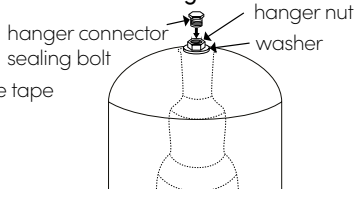


Fig. 4.6

7. If applicable; use silicon tape to thoroughly wrap and seal the hanger connector sealing bolt (fig. 4.5). For hanger connector sealing bolts equiped with an o-ring or gasket, silicone tape is not needed
8. If applicable; insert the sealing bolt into the open connector, ensure it is properly seated and tighten it
9. Do NOT over-tighten (fig. 4.6)

Testing and repressurizing the system

1. Fill 2 bar (30 psi) of precharge air or nitrogen and using a soap solution check for leaks all around the air valve, pressure gauge, top nut and bottom flange
2. Lift tank upright and attach to pressure system as described earlier in this manual
3. Open gate valve and allow some water into tank and then pump more air/nitrogen to set tank to appropriate precharge as described in section 1.3
4. Now open isolation gate valve to allow full functionality of tank

5. Warranty

Global Water Solutions Ltd. (GWS) warrants its SuperFlow, InoxFlow and ASME tanks for a period of 3 years from the date of manufacture for manufacturing defects on the steel shell. Warranty applies to GWS products only when used for their intended purpose, and does not apply if a defect is due to improper use of the product, result of accident, misuse, or abuse. If the product was improperly installed or altered in any way, not specifically authorized by the factory, the warranty is void. The warranty set forth in this paragraph is made expressly in lieu of all other warranties expressed, or implied, including but not limited to merchantability or fitness for a particular purpose.

For EPDM replacement membranes warranty is granted for a period of 3 months from date of manufacture, and for BUTYL replacement membranes warranty is granted for a period of 1 year from date of manufacture, provided the tank is installed by an authorized installer and pre-charge is set properly as per instruction manual and the pre-charge is checked as per same manual at a time interval of every 3 months.

In no event shall GWS be liable for cost of processing, lost profits, goodwill or any other consequential or incidental damage of any kind resulting from the order or use of its products whether arriving from breach of warranty, nonconformity to ordered specifications, delay in delivery, or any loss sustained by the buyer nor will GWS be liable for labor and expenses necessary to remove and reinstall replacement product.

To obtain service under this warranty, consumer must deliver alleged defective product, freight prepaid, to an authorized GWS distributor or OEM partner. GWS will either issue credit or at its option, repair or replace defective product freight prepaid to the distributor. GWS reserves the right to make changes in construction, which, in its judgment, constitutes a product improvement.

All warranty is subject to verifiable proper installation, adjustment of pre-charge as per our engineering bulletins and installation of a pressure relief valve as recommended in the installation manual.

Standard manufacturer's warranty as defined in the standard GWS warranty terms and conditions.

6. Disposal

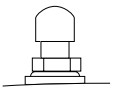
Check with local authorities for proper disposal and recycling. Do not dispose of the manual - keep it for further reference.



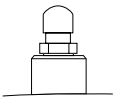
7. Torque values

Part		Size	10/16 bar	25 bar
Flange Bolts		≤150L	31 Nm	
		200L~850L	45 Nm	65 Nm
		1000L~3000L	65 Nm	76 Nm
Hanger Nut		95 Nm		
M5 Bolt In Hanger		4 Nm		
Air Valve	Version 1*	5 Nm		
	Version 2*	7 Nm		

*** Air valve versions**



Version 1: Internally mounted air valve with external nut



Version 2: Externally screwed in air valve

DECLARATION OF CONFORMITY

Pressure Vessels Types MCP* / MCM* / MCU* / SCP* / SCM* / SCU*

EN - Declarations of conformity for EU and UK can be found on our website.

ES - Las declaraciones de conformidad para la UE y el Reino Unido se pueden encontrar en nuestro sitio web.

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FI - EU: n ja Ison-Britannian vaatimustenmukaisuusvakuutukset löytyvät verkkosivustoltamme.

RU - Декларации соответствия для ЕС и Великобритании можно найти на нашем сайте.

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