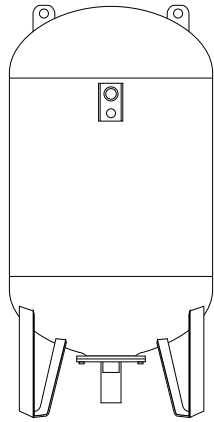


Global Water Solutions Ltd.

SuperFlow™ Series



Installed on \_\_\_\_\_ by \_\_\_\_\_

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

Revision: M-BT1-1.07

**CAUTIONS AND WARNINGS**

- ⚠ **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:** If the pressure tank leaks or shows signs of corrosion or damage do not use it.
- ⚠ **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™ 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.**

**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™ 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 over 4 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 4 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.

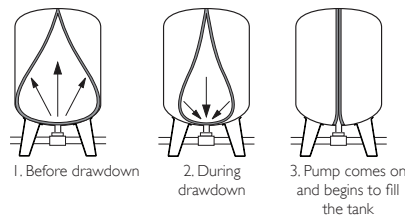


Fig. 1.4

**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.

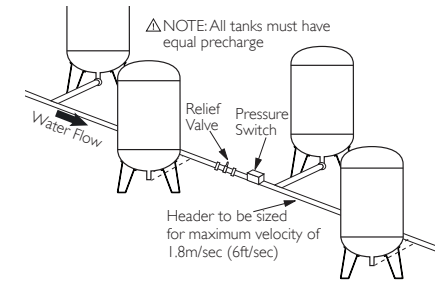


Fig. 1.5 Multi-tank Installation

**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™ tanks are designed to be self-supporting and should be connected to the system with additional piping (See Fig. 2.3).

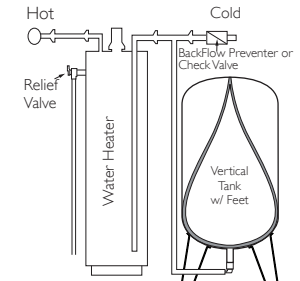


Fig. 2.3

## 2.4 Solar Heating System Connections

SuperFlow™ 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).

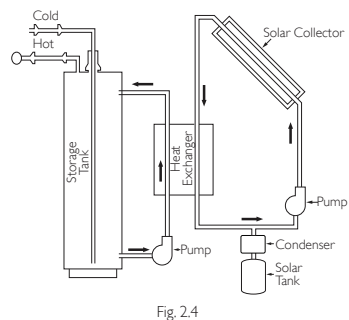


Fig. 2.4

## 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™ 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

1. Turn off the water and/or disconnect the power to the pump.
2. Release the air and drain all water from tank.
3. Unbolt and remove the flange (water connection) from the tank.
4. 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).
5. Pull and remove the membrane through the bottom opening to which the flange was attached.

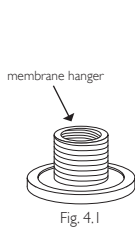


Fig. 4.1

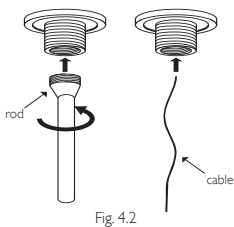


Fig. 4.2

6. Remove the top connection membrane hanger from the damaged membrane, this can be reused and should be cleaned.
7. Take the membrane hanger and attach it to a rod, a cable or alike, as seen in fig. 4.2.
8. 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).
9. Feed the rod from the bottom of the tank up through the opening at the top of the tank until the

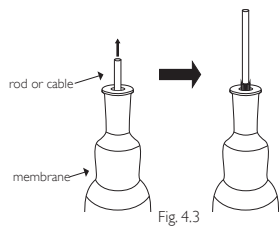


Fig. 4.3

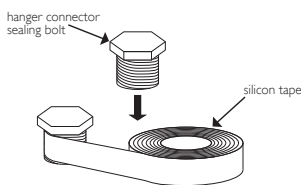


Fig. 4.4

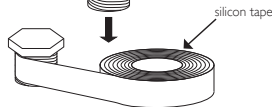


Fig. 4.5

hanger is protruding from the top of the tank and the threads are visible.

10. Slip the washer and then the hanger nut over the end of the rod/cable and tighten onto the exposed connector (fig. 4.4).
11. After tightening the hanger nut onto the exposed connector, disconnect and remove the rod.
12. If applicable, use silicon tape to thoroughly wrap and seal the hanger connector sealing bolt (fig. 4.5).
13. If applicable, insert the sealing bolt into the open connector, ensure it is properly seated and tighten it. Do NOT over-tighten (fig. 4.6).
14. 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.
15. Lift tank upright and attach to pressure system as described earlier in this manual.
16. 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.
17. Now open isolation gate valve to allow full functionality of tank.

Note: For tanks with a flange instead of a hanger on top of the tank, first mount the membrane to the top flange.

## 5. Disposal

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



## 6. Warranty

Global Water Solutions Ltd. (GWS) warrants its SuperFlow™ tanks for a period of 1 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 replacement of the membrane, 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 the same manual at a time interval of every 3 months, warranty is granted for a period of 3 months from date of manufacture on membrane defects.

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.

# DECLARATION OF CONFORMITY

## Pressure Vessels Types MBPA / MBPC

### EC declaration of conformity

We, Global Water Solutions Ltd., declare under our sole responsibility that the pressure vessels types MBPA / MBPC, to which this declaration relates, are in conformity with these Council directives on the approximation of the laws of the EC member states:

### Déclaration de Conformité

Nous, Global Water Solutions Ltd., déclarons sous notre seule responsabilité, que les vases d'expansion type MBPA / MBPC, auxquels se réfère cette déclaration, sont conformes aux Directives du Conseil concernant le rapprochement des législations des Etats membres CE relatives aux normes énoncées ci-dessous :

### Declaración de Conformidad

Nosotros, Global Water Solutions Ltd. declaramos bajo nuestra única responsabilidad que los tanques a presión type MBPA / MBPC, a los cuales se refiere esta declaración, están conformes con las Directivas del Consejo en la aproximación de las leyes de los Estados Miembros del EM:

### Dichiarazione di Conformità

Global Water Solutions Ltd. dichiara sotto la sua esclusiva responsabilità che i vasi di espansione tipo MBPA / MBPC, ai quali si riferisce questa dichiarazione, sono conformi alle seguenti direttive del Consiglio riguardanti il riavvicinamento delle legislazioni degli Stati membri CE:

### Декларация Соответствия

Мы, компания Global Water Solutions Ltd., полностью несем ответственность за то, что сосуды под давлением типов MBPA / MBPC, к которым относится настоящая декларация, соответствуют следующим Директивам Совета Евросоюза об унификации законодательных предписаний стран-членов ЕС:

### Konformitätserklärung

Wir, Global Water Solutions Ltd. erklären in alleiniger Verantwortung, dass die Druckbehälter Typ MBPA / MBPC, auf die sich diese Erklärung bezieht, mit den folgenden Richtlinien des Rates zur Angleichung der Rechtsvorschriften der EU-Mitgliedsstaaten übereinstimmen:

### Declaração de Conformidade

A Global Water Solutions Ltd. declaramos sob nossa única responsabilidade que os tanques de pressão type MBPA / MBPC, aos quais diz respeito esta declaração, estão em conformidade com as seguintes Directivas do Conselho sobre a aproximação das legislações dos Estados Membros da CE:

### Försäkran om överensstämmelse

Vi, Global Water Solutions Ltd. försäkrar härmed att tryckkärl av typen MBPA / MBPC, som omfattas av denna försäkran, är i överensstämmelse med rådets direktiv om inbördes närmande till EU-medlemsstaternas lagstiftning, avseende:

### Vastaavusvakuutus

Me, Global Water Solutions Ltd. vakuutamme, että valmistamamme paineastiat type MBPA / MBPC, joita tämä vakuutus koskee, ovat EY:n jäsenvaltioiden lainsäädännön yhdenmukaistamiseen tähtäviin Euroopan neuvoston direktiivien vaatimusten mukaisia seuraavasti:

### Overensstemmelseserklæring

Vi, Global Water Solutions Ltd. erklærer under ansvar, at trykbeholdere type MBPA / MBPC, som denne erklæring omhandler, er i overensstemmelse med disse af Rådets direktiver om indbyrdes tilnærmelse til EF-medlemsstaternes lovgivning:

PED 2014/68/EU

The products are diaphragm tanks. All products are examined under these conditions:

Type	Maximum Pressure [bar]	Volume [litres]	Category Used	Design Standard
MBPA-10	10	8-10000	II, III, IV	EN13831:2007
MBPA-16	16	8-10000	II, III, IV	EN13831:2007
MBPA-25	25	8-10000	II, III, IV	EN13831:2007
MBPC-10	10	8-500	II, III, IV	EN13831:2007

Fluid group: 2 Module: B + D Certificate Number: 458-C02-00-TR-PED-14-092  
Notified body: CE 2513 - Ali Nihat Tarlan Cad. No: 103 D: 9 Küçükbakkalköy Ataşehir / Istanbul  
Manufacturer: Baris Mah. Tübitak Yolu Anibal Cad.No:23 Gebze / Kocaeli / Turkey

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