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WATER SOLUTIONS

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GRP Cold Water Storage Tanks

OPERATION AND MAINTENANCE MANUAL

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OPERATION & MAINTENANCE
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flowstore GRP Cold Water Tank

GENERAL
INFORMATION

flowstore GRP Cold Water Tank

These instructions are to assist in the installation of the following products:

- Flowstore One Piece Tanks
- Flowstore Two Piece Tanks
- Flowstore Sectional Tanks

For self-assembly of two piece tanks please refer to the last three pages of this manual. please follow them carefully.

If, having read this Operation & Maintenance Manual, there is any doubt about any aspect of the installation please don't hesitate to contact our technical team.

CUSTOMER / CONTRACTOR
RESPONSIBILITIES

flowstore GRP Cold Water Tank

It is the responsibility of the customer and/or the contractor:

- To ensure that anyone working on the equipment is wearing all necessary protective gear and/or clothing.
- Is aware of appropriate health & safety warnings.
- Has read the information in this section of the manual.

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SAFETY INFORMATION

flowstore GRP Cold Water Tank

It is essential that correct and safe working practices are adhered to at all times when installing, operating and/or maintaining any piece of equipment. Always consult safety data sheets, operating and maintenance manuals, Health & Safety legislation and recommendations and specific requirements of any equipment manufacturer, site controller, building manager or any other persons or organisation relating to the procurement, installation, operation and/or maintenance of any piece of equipment associated or in conjunction with any product provided by **flow**tech Water Solutions.

This document is intended for ALL installers, operators, users and persons carrying out maintenance of this equipment and must be kept with the equipment, for the life of the equipment and made available to all persons at all times. Prior to carrying out any work associated with the set it is essential that the following sheets are read, fully understood and adhered to at all times:

The tank must only be installed, operated, used, and/or maintained by a competent person; A competent person is someone who is technically competent and familiar with all safety practices and all of the hazards involved.

Water storage tanks contain water and as such represent a risk of injury or death as a result of drowning and/or flooding and/or injury or death as a result of structural failure of the tank. The tank is not suitable for use as a working platform or designed to support the weight of standing on, walking across, and/or use of the tank as a support. Tanks are designed to operate at atmospheric pressure only and must not be pressurised or be subjected to vacuum. **flow**store tanks are designed to operate within a specific temperature range between 0°c & 30°c. UNLESS SPECIFICALLY STATED OTHERWISE.

Tanks are designed to contain clean, wholesome water only, and are not suitable to be in contact with water containing additives of any kind other than those included by any local water authority for the purposes of maintaining water hygiene and within standards and to concentrations allowing such water to remain as of a potable standard, being fit for drinking purposes.

Any damage caused to any equipment by misapplication, mishandling or misuse could lead to risk of Electrocution, Burns, Fire, Flooding, death or injury to people and/or damage to property dependent upon the circumstances involved. **flow**tech Water Solutions accepts no responsibility or liability for any damage, losses, injury, fatalities or consequences of any kind due to misapplication, mishandling or misuse of any equipment, or as a result of failure to comply with this manual.

Failure to install, operate, use or maintain the equipment in accordance with the information contained within this document could cause damage to the equipment and any other equipment subsequently connected to it, invalidating any warranties provided by **flow**tech Water Solutions to the buyer.

SAFETY WARNINGS & PRECAUTIONS

flowstore GRP Cold Water Tank

The tank must be inspected upon delivery to site, and prior to any site positioning and/or installation. Any damage to, and/or unsuitability of the tank must be identified prior to installation. Failure to do so may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

The foundation on which the tank is to be positioned must be inspected to ensure suitability for that purpose. The foundation must be no smaller than the gross external dimensions of the tank. The foundation must be solid & continuous and be level & flat being no greater than + or – 2mm over any given metre and no greater than + or – 6mm over the total area taken by the tank. The foundation area must be free of local high and/or low spots and be free from debris of any kind. Positioning and/or commissioning of the tank on an unsuitable foundation may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

It is essential that any base, foundation, plinth, wall or other supporting structure to which the tank and/or any associated equipment is to be positioned and/or attached is designed, engineered and fabricated to carry the entire mass of the equipment including the water that the tank will contain under worst-case fault conditions. E.g. Tank filled to maximum nominal capacity at overflow condition. Failure to observe this may result in death or serious injury and/or serious damage to equipment and/or property.

The tank is not suitable for use as a working platform or designed to support the weight of man traffic. Standing on, walking across, and/or use of the tank as a support may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

It is essential that the tank is correctly connected to all incoming, outgoing, drain and overflow and/or any other related pipe work and/or electrical equipment of any kind before the tank is filled. Failure to do so may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

Do not remove the main lid of the tank without first draining the tank. The lid is a structural part of the tank and MUST remain correctly fitted and fixed down at all times whether water is contained within the tank, or whether the tank is empty. Removal of the main lid of the tank when water is contained within the tank may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

Do not lean over or reach into any access hatch or attempt to enter the tank when water is contained within the tank. Accidental or deliberate entering of the tank may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

Do not attempt to enter the tank when the tank has been drained and water is not contained within the tank. Water storage tanks represent a confined space working environment. Only persons fully trained and correctly equipped to carry out work in a confined space environment should enter the tank. Failure to adhere to correct safe operating procedures when working in a confined space may result in death or serious injury.

Flowstore tanks are designed to operate at atmospheric pressure only and must not be pressurised or be subjected to vacuum. Should any tank be subjected to pressurisation and/or vacuum this may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

Flowstore tanks are designed to operate within a specific temperature range between 0°C & 30°C. UNLESS SPECIFICALLY STATED OTHERWISE the temperature of the tank and/or water contained within must not fall below 0°C or exceed 30°C. Should such a condition arise this may result in structural failure of the tank resulting in death or serious injury and/or serious damage to equipment and/or property.

Flowstore tanks are designed to contain clean, wholesome water only, and are not suitable to be in contact with water containing additives of any kind other than those included by any local water authority for the purposes of maintaining water hygiene and within standards and to concentrations allowing such water to remain as of a potable standard, being fit for drinking purposes.

Chlorination of the tank should take place using only chemicals and materials which are deemed suitable for use in contact with GRP tanks. Chemicals must be at concentrations which will not cause damage to the tank. Contact time for such materials should be no more than 1 hour duration and should be thoroughly flushed from the tank after use. Any unsuitable abrasive or aggressive chemical products and/or materials may cause damage to the structure of the tank.

Any damage to equipment which is attached and/or connected to any tank, for example Pump sets, vessels, valves and pipe work or any system components or similar items, which are damaged as a result of misapplication, mishandling, incorrect installation of any kind or misuse could lead to Electric shock hazard, Burns hazard, Fire hazard, Flooding hazard and cause death or injury to people, and/or serious damage to equipment and/or property.

Prior to Installation

Prior to carrying out any installation work it is essential that all sheets are read, fully understood and adhered to at all time:

The unit should only be installed and/or operated by a competent person; a competent person is someone who is technically competent and familiar with safety practices and the hazards involved.

When positioning, the tank MUST be lifted. The tank MUST NOT under any circumstances is dragged. The tank should be lifted using a suitable pallet to the underside and by using a pallet/ forklift or crane by passing strops underneath the tank and/or pallet using a spreader bar. Any pallets must be no smaller than the overall external length and width dimensions of the tank. It is essential that no load is placed by pallets, supports, and fork lift truck forks or similar, to the unsupported single skin base of any tank. Failure to utilise these correct lifting and/or movement procedures will result in damage to the base of the tank.

Any Storage of the tank should be inside in a dry place to avoid deterioration of the tank caused by general weather conditions.

Protect the tank against debris, dirt, damage and frost. It is absolutely essential that foreign matter such as pipe thread swarf, welding slag, grit, stones or any other debris are not allowed to enter the tank. Debris of this type can cause severe damage to the tank and/or associated equipment.

Prior to initial commissioning of the tank or if the tank is to be stored or taken out of service for a period of time (e.g. 1 week or more), then we would recommend draining the tank followed by pre-storage cleaning of the inside of the tank.

When re commissioning it is recommended that the tank be cleaned thoroughly and sterilised/ chlorinated prior to commissioning. It is our recommendation that the advice and recommendations of the local water authority and/or water hygiene facilities services provider is sought prior to re-commissioning of the tank and/or system.

Ensure that any base, foundation, plinth, wall or support of any kind to which the equipment is to be attached has sufficient mass compared to the equipment, in order to avoid noise/vibration transmission.

The tank is not suitable for use as a working platform or designed to support the weight of man traffic. Standing on, walking across, or use of the tank as a support of any kind and for any purpose may result in death or serious injury and/or structural failure of the tank resulting in serious damage to equipment and/or property.

When entering, exiting or generally working on the tank it is essential that no part of the tank is used as a support of any kind. Any internal or external flanges, fixings, bracing or connections are NOT suitable as hand or footholds or suitable for bearing weight. If internal bracing is used to provide support for persons entering or existing the tank this will result in leaks at the point at which any threaded bar passes through any tank panel(s).

The installer and/or user are responsible for the installation of the correct earthing and protection according to valid national and local standards. All operations must be carried out by a suitably qualified person.

Where the fitting of connections to the tank is to be carried out on site it is essential that the operator carrying out such work is fully trained and familiar with carrying out an operation of this type.

During the process of onsite fitting of connections, the cutting of the tank body and/or lid may result in the production of GRP dust, swarf, shards and/or splinters. It is essential that any persons carrying out such work are fully protected from these hazards by use of correct personal protection equipment.

During the process of the onsite fitting of connections and/or any other work requiring the use of hand tools or powered tools and/or equipment of any type it is essential that any operator is fully conversant with the correct use of the equipment and is fully protected by the use of the correct personal protection equipment. Always consult tool/equipment manufacturer's user's manuals prior to use.

When installing water storage tanks always consult the current water regulations and local water authority regulations and requirements to ensure that the installation of the tank is suitable for the application, correctly carried out and does not contravene such regulations.

Any connections, pipe work and/or equipment of any kind connected to or in association with the tank must be fully supported by independent brackets and/or similar structures and fixings. It is essential that the tank body and/or lid are NOT used to provide support of any kind for equipment or items of any kind.

Drain cocks and/or valves which are fitted to the tank and/or pipe work must not be left open as this could cause flooding.

General Use

The unit should only be operated and/or maintained by a competent person; a competent person is someone who is technically competent and familiar with safety practices and the hazards involved.

The tank should be inspected on a weekly basis to ensure that no leaks are present and that no damage or deterioration to the tank structure and associated connections and/or pipe work has taken place.

Any float valves, overflows and/or warning pipes should be inspected on a weekly basis to ensure that the tank is not in an overflow condition. Tanks which are in an overflow condition are a source of considerable waste of water. Water is an expensive and often scarce natural resource; its wastage comprises a threat to the environment and contributes to global climate change.

It is a requirement of current water regulations that water storage tanks should be thoroughly inspected at an interval not exceeding one year; in order to determine the state of hygiene inside the tank. If present, any dirt or debris, foreign matter, growths or contamination of any kind should be thoroughly cleaned from the inside of the tank and the tank chlorinated prior to re-commissioning.

All screen units which are fitted to any vents, overflows and/or warning pipes should be inspected and if necessary removed, cleaned and re-fitted prior to re-commissioning of the tank.

It is essential that tank inspection and cleaning and any other water hygiene work is carried out by the building water hygiene facilities services provider or similar specialist.

During any cleaning, and/or chlorination of the tank, only chemicals and materials which are deemed suitable for use in contact with GRP should be used. Chemicals must be at concentrations which will not cause damage to the tank. Contact time for such materials should be no more than 1 hour duration. Any abrasive or aggressive chemical products and/or materials may cause damage to the structure of the tank.

If the tank is to be stored or taken out of service for a period of time (e.g. 1 week or more), it is our recommendation that the tank is drained followed by pre-storage cleaning of the inside of the tank. When re-commissioning it is recommended that the tank be cleaned thoroughly and sterilised/chlorinated prior to commissioning. It is our recommendation that the advice and recommendations of the local water authority and/or water hygiene facilities services provider is sought prior to re-commissioning of the tank &/or system.

Where the tank and/or associated equipment is fitted with Building Management Services (BMS) interconnections, always notify the appropriate persons before switching OFF for maintenance or adjustments, to avoid unnecessary alarm conditions occurring.

WARNING: Any restriction of water supply from either supply to the tank or supply from the tank to any other equipment may result in failure of that equipment.

Pipework & Connections

Installers should use standard type hole cutters.

When drilling from outside always ensure that there is adequate support on the inside of the tank. Extreme care should be taken when working inside the tank not to damage the inner surface, and appropriate footwear should be worn. Any ladders used for access should also be provided with suitable to avoid damage to the tank base/walls.

Where tanks are fitted with internal steel bracing, under no circumstances should the bracing be stood on or walked across, as this could compromise the 'SEAL' where the bracing passes through the tank wall. We cannot accept responsibility should any leaks occur and any remedial work will be chargeable.

All pipe work, valves etc must be independently supported and must not impose a point load on the tank wall.

Please contact our after sales service for maintenance agreements and extended warranty packages.

Application.

Flowstore one-piece/two-piece tanks are suitable for the storage of water at ambient temperatures up to 50C and at atmospheric pressure. If higher heat resistance is required or storage other than water please contact our technical support team.

Please confirm in writing details of chemicals make up, temperature or pressure, prior to manufacture.

Important.

Where installation of a sectional tanks has been made by untrained or unsupervised labour, no responsibility can be accepted by the company for the installation.

Flowtech Water Solutions reserves the right to amend specifications and dimensions as necessary without prior notice.

Design and installation of all types of tank bases are undertaken by the customer/others.

The company will not hold itself responsible for any consequential cost or workmanship where the installation or design has been undertaken by other.

Maintenance & Cleaning

Flowstore tanks are manufactured from non-corrosive material and as a consequence require no specific or are in little need of preservation other than good housekeeping.

Sectional & One/Two Piece Tanks

- Tanks shall be inspected from time to time to ensure that overflow and warning pipes are clear from blockage. That covers are adequate and securely fixed and that there are no signs of leakage or deterioration likely to result in leakage.
- Tanks storing more than 1000 litres of drinking water shall be inspected at least once every six months, those storing less than 1000 litres drinking water at least once every year.
- These should be recorded within your operations booklet in the relevant section.

Sectional Tanks

- In terms of sectional tanks, this method of panel fusion, once an effective seal has been made and is used, it will remain water tight unless disturbed.
- If a tank is left empty for a prolonged period of time we would recommend that the tank is re-tightened by a Flowtech Water Solutions approved installer.

General Cleaning Of Screened Units & Cisterns

This section highlights the General Maintenance Practices for our GRP Water Tanks Depending on capacity size.

- Tanks are a WEAK point in the prevention of contamination of water distribution systems and therefore require particular attention. Overflow and warning pipes should be checked from time to time to ensure that they are freeform restrictions and that they comply with regulations.
- All foreign bodies removed from the cisterns and if they are of a contaminating character, the cistern should be emptied cleansed, disinfected and the system flushed out to remove debris etc.

The source of such contaminating matter should be identified and removed. Where drinking water has been stored in an inadequately protected cistern, a water analysis should be considered and adequate protection installed.

General Inspection of Water Quality

This section highlights the General Practices for our GRP Water Tanks with connection water quality recommendations by BS 280:2001.

- It is recommended within the British Standards BS 280:2001 that the water quality be checked every 6 months and records kept within your log books.
- It is also recommended that temperature readings are also logged with your log book.
- In multiple cistern installations a check should be made for stagnant water usually evidence by taste, ordure and dusty surface. If stagnant water is discovered the cistern should be flushed out and the inlet and outlet connections re arranged so that the flow is sequential and the problem does not re occur.

Special Note:

During the cleaning and chlorination of a tank with a divider installed either centrally or of offset. We strongly recommend that the water level is reduced on the opposite side to the one that is being chlorinated. This will therefore alleviate any damage to the dividing wall.

General Inspection of Thermal Insulation

This section highlights the General Practices for our GRP Water Tanks with reference to thermal Insulation.

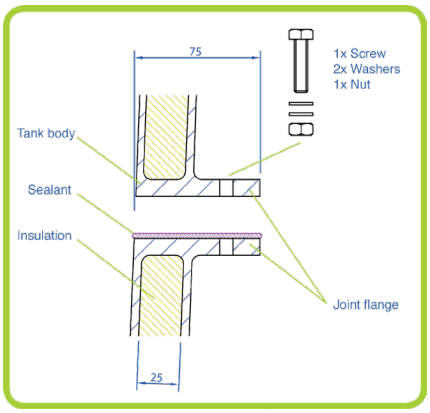
- It is recommended that your tank insulation is examined every 12 months for any damaged preferably at the beginning of each winter.
- If your tank is situated externally and open to the elements then this procedure should be enhanced to 6-month inspections.
- A thorough check of the roof sealant should be carried out. This procedure is most important if the tank is situated outdoors.

General Inspection of Connection & Pipework

This Section highlights the General Practices for our GRP Water Tanks with reference to tank connections & Pipe work Supports.

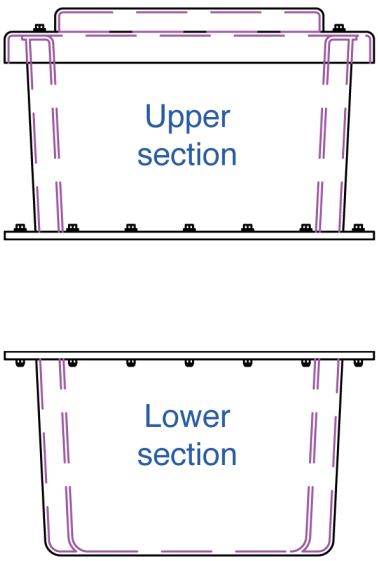
- The conditions of bearers, pipe work, supports, outlets and all associated structures should be checked for damage or decay. If replacements are required please contact our Technical Support teams for assistance.
- If any part of the installation becomes redundant and in particular if any appliance of fitting is disconnected, other than for purposes of repair, maintenance or renewal, then all pipe work supplying water to the disconnected or unused appliance or fitting should also be disconnected.
- All inspections should be recorded within your operations booklet and any new equipment should be added to the equipment.
- Any special level monitoring equipment should be maintained via your pump manufacturer.

Assembly for Flowstore Two Piece Tanks



Two Piece Tank General Specifications:

- Two piece joint flange adds 150mm to the internal length and width dimensions of the tank.
- Each section is normally half the height of the modified internal dimensions of the tank.
- Joint flanges are sealed using Butyl sealant.
- Sections are fixed using M8x40 plated set screws, nuts and washers.
- Sealant and fixings are supplied with the tank.
- The details shown here relate to tanks with 25mm insulation only



The tank will arrive with the 2 sections assembled with only 1 No fixing in each corner of the joint flange. Remove the corner fixings to allow positioning of the tank.

All sealant and fixings for assembly are packaged and contained inside the tank.

Component Check.

- Tank sections.
- Nuts, Bolts & Washers. Sealant.
- Flange support channels (If required).

1. Ensure that the foundation on which the tank is to be positioned is suitable for the application and is within the tolerances stated on the Conditions of installation sheet which was provided with the original quotation. It is essential that debris or similar foreign materials are NOT present on the foundation before the lower section of the tank is positioned.
2. Having removed the upper section c/w lid from the base section of the tank, position the lower section onto the foundation.
3. Position bottom section of tank on flat level surface so that THE BASE OF TANK IS FULLY SUPPORTED OVER ITS ENTIRE AREA. If placed on joists a minimum of 22mm plywood decking should be provided.
4. Ensure that the joint flange is clean, dry and free from any debris or material of any kind.
5. Roll out flange seal sealant gasket and apply (Butyl Rubber Surface Down) to the long flanges of the bottom tank section, ensure that the seal to the one edge of the tape is facing towards the inside of the tank and set back approx. 5mm from the inside face.
   Apply a second strip to fully cover other flange surface, any excess can be trimmed off after the sections have been bolted together (Care must be taken to ensure that the gasket is protected from dust and grit as this will impair the seal). Apply seal to remaining flanges ensuring that a 12mm-15mm lap occurs at the corners etc.... over the previously laid gasket. All sealants are WRAS approved products.
6. Carefully position the top section/middle section of the tank onto the lower section, ensuring that the holes on the flanges are correctly aligned. A FLAT will be evident on one of the corners of the joint flange, it is essential that these align. If they do not align the upper section is NOT orientated correctly on the lower section. Please take note to line up the bolt holes and ensuring seal is not disturbed.
7. Slide one washer on to the 12mm bolt. Push bolt through flanges (it may help to pre-punch holes through gasket with a screwdriver or similar instrument).
8. Fit another washer and then nut to the underside of flange.
9. Repeat above procedure working around tank starting at one corner, tighten hand tight. Proceed to tighten bolts mechanically in two stages working around the tank, stage 1 to approximately 30lbs/ft.
10. Please note that over a certain size of tank a galvanized steel flange channel will be installed to onto the flanges for extra support.
11. Place the fixings through the holes in the joint flange from above and secure using the washers and nuts provided. It is essential that washers are used on both top and bottom flange.
12. Where tanks are fitted with an internal division it is essential that the STAINLESS STEEL fixings are used for the division joint flange as these will be in contact with the water.
13. Once all of the fixings are in place carefully tighten working from one corner clockwise around the tank until all fixings have been tightened. DO NOT OVERTIGHTEN AT THIS STAGE.
14. Repeat stage 9 twice more increasing the tightness each time until 50lbs/ft. The joint flanges do not need to be tightened to such a degree that they touch. A typical gap should be 2 – 4 mm.

15. Fit the tank lid ensuring that it is correctly orientated and secured using all of the fixings provided. The lid is a structural component and must be fitted and correctly secured at all times when water is contained within the tank.
16. Do not be concerned if the sealant extrudes on the outside and inside of the tank, or if it emits cracking or popping noises as this is normal.
17. Fill tank, should any leakage occur carefully re-tension bolts around area until it stops.

If whilst carrying out the operation there are any concerns or advice is required please contact Flowtech Water Solutions on 0333 200 1756

Warranty

Failure to comply with the instructions provided in this instruction manual and/or any manipulations not carried out by an authorised technical service and/or the use of non-original spare parts will invalidate the warranty and exempt the manufacturer from any liability in case of accidents to people or damage to property and/or the product itself.

Once the product has been received, check that it has not suffered significant breaks or dents. Otherwise, inform the delivery person.

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MEMBERS AREA

This section of the **flow**tech© website holds information exclusively for members. Members will need to log in to gain access to these pages.

Our member's will be granted exclusive access to our technical resource library. Within this resource is a wide range of product information including data sheets, technical drawings, O&M Manuals and training videos

flowcare©
AFTER SALES SERVICE

At **flow**tech© we operate a network of Service Engineers located throughout the UK who are supported by our offices located in Cumbria and Greater Manchester. The distribution of engineers means that in the majority of cases we are less than 4 hours away from attending a customer call out.

We place great emphasis on providing technical back up to support our Service Engineers in resolving some difficult operational and technical issues. We pride ourselves on completing a project on time, within budget and never leaving a problem unresolved, or a customer waiting. This quality of service has made us the first choice for our customers.

FOR FURTHER INFORMATION OR ASSISTANCE

contact us

Flowtech Water Solutions are experts in water services and water booster sets. We have continuously supplied a wide range of standard and custom products since being founded in 1996.

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