Stormsaver
right as rain



Stormsaver Rainwater Harvesting

Technical Installation Manual

Stormsaver Ltd
Hockerton Moor Enterprise Park,
Winkburn Lane,
Kirklington,
Newark,
Nottinghamshire,
NG22 8FL

T: 0844 884 0015
e: enquiries@stormsaver.com
Like us on Facebook
@Stormsaver
Follow us on LinkedIn
Stormsaver Ltd
www.stormsaver.com

BS8515-2009

© Stormsaver Ltd 2016 All Rights Reserved

Section 1- INDEX Technical Manual

The Stormsaver™ technical manual is colour coded, making it easy to identify sections and find relevent infomation.

Please see below the following sections that the manual contains - You must ensure you have read all sections thoroughly before installing any Stormsaver™ system.

Section 1- INDEX Technical Manual

Section 2- Summary Combi System

Section 3- Groundworks

Section 4- Mechanical

Section 5- Electrical

System Summary - Stormsaver™ Combi

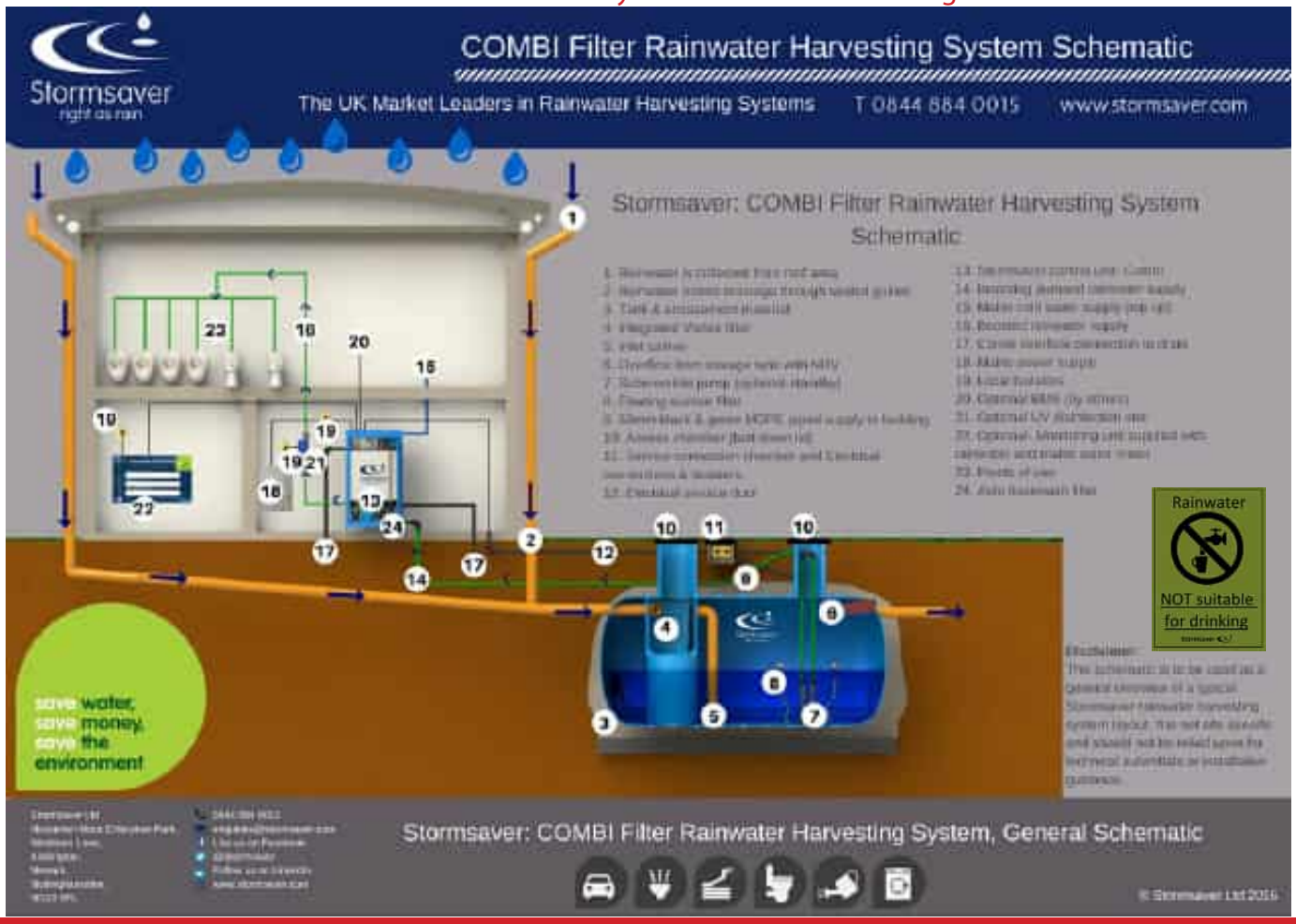
The Stormsaver™ rainwater harvesting system will make the most economic use of the local rainfall with predicted water consumption. Stormsaver recommend, that low water consuming products are used to complement the system, furthering a reduction in overall consumption.

Rainwater is collected from the roof area of the building. This is channelled through a pre-tank filter to remove large debris, leaves etc. Rainwater then enters the Stormsaver™ storage tank through a calmed inlet, which prevents the rainwater from disturbing sediment that settles on the base of the tank. If there is an excess of rainwater, this can flow out of an overflow to the storm drain, soak away or attenuation system. Inside the Combi are a number of control sensors and submersible pumps, which take water via a floating suction filter to the Stormsaver™ Combi control panel. On demand the Stormsaver™ Combi unit activates the pump and rainwater supplied, to the points of use via a twin pump booster set inside the Combi. In periods of low rainfall the mains water back up activates, providing a water supply to the Combi unit, ensuring the site has a continuous supply of water to meet the demand of the building.

Note:
The Stormsaver™ rainwater harvesting system is designed for storing and filtering rainwater collected from the roof of the building only and is not designed to recover surface ground water. It should not be integrated with any type of grey water system and is not designed for processing any other types of water.

Warning!

Rainwater from this system is not fit for drinking!



Introduction: Stormsaver™ Rainwater Harvesting System Summary

Thank you for purchasing the Stormsaver™ system. This manual contains instructions for installing the Stormsaver™ rainwater harvesting system.

Please read these instructions carefully, before installing the system.

The Stormsaver™ rainwater harvesting system, requires specialist installation. If you do not have relevant experience, please contact a contractor to assist, or call Stormsaver™ Ltd for further advice.

WARNING!
Failure to correctly install, operate or maintain the Stormsaver™ rainwater harvesting system can invalidate the manufacturers warranty!

Delivery

The Stormsaver™ system components will be delivered to site using a carrier service. Large equipment will be delivered by haulage distributors (such as the Stormsaver™ storage tank and header tanks).

Stormsaver™ will endeavour, where possible to deliver components to site at suitable times. However, THIS MAY NOT ALWAYS BE POSSIBLE. Should equipment arrive either early or late due to carriers, Stormsaver™ cannot be responsible for delays.

Due to the nature of the product, the Stormsaver™ storage tank and Stormsaver™ system components may not necessarily arrive together. The customer or appointed contractor is responsible for unloading and storing the tank and equipment on site. The Stormsaver™ storage tank should be offloaded to the nearest hardstanding by the site contractor.

A fee will be chargeable if goods are not accepted by site. If there is a delay in offloading, standing charges will apply after 2 hours. For goods returned without prior acceptance in writing from Stormsaver™ additional delivery charges may be levied.

Damage in transit

Stormsaver™ products are carefully checked and tested before dispatch, however the risk of damage during transit cannot be avoided.

- Check goods upon receipt for complete content and damage.
- Any damage is the responsibility of the carrier. Register any claim with them immediately
- A report must be made WITHIN THREE WORKING DAYS from date of delivery of any missing or damaged items. Stormsaver™ cannot accept responsability for missing or damaged items if not reported IN WRITING IMMEDIATELY

Please contact Stormsaver™ before returning any goods.

Introduction: Stormsaver™ Rainwater Harvesting System Summary

Those installing the Stormsaver™ system should be conversant and compliant with all current legislation and all relevant documentation pertinent to the rainwater harvesting installation. The following list can be used for guidance and is not a definitive list to those installing the Stormsaver™ rainwater harvesting system.

Health and Safety at Work Act
Construction (Design Management) Regulations
The Building Regulations
Water Supply (Water Fittings) Regulations
The IEE Wiring Regulations for Electrical Installations 17th Edition
Regulations under the Electricity Act
Control of Substances Hazardous to Health Regulations
BSI British Standards- Rainwater harvesting systems Code of practice: BS 8515:2009
The Chartered Institution of British Services Engineers Guides, codes of practice and commissioning codes.
Water Regulations Advisory Scheme Information and guidance Note No- 9-02-05 Marking and identification of pipe work
CHAS - Accredited Contractor
WRAS Compliant

Summary : Stormsaver™ storage tank installation:

The Stormsaver™ storage tank will be used to collect rainwater from the roof area only.

The installer shall install the Stormsaver™ rainwater storage tank below finished ground level. The size and dimensions for the tank are available on a site-specific drawing.

The Stormsaver™ storage tank should be installed as instructed by this installation guide. The installer is to ensure that the tank is sealed at all points to prevent surrounding natural ground water or soil contaminants to permeate the tank. The tank must be installed to be stable in full, part full and empty conditions.

The installer shall include for all necessary civil works associated with the installation of the Stormsaver™ Rainwater Storage tank including, but not restricted to; design, structural calculations, installation, excavation, shuttering, dewatering, trenching, backfilling and making good.

Warning!

It is the installers's responsibility to ensure that the correct installation instructions are followed to prevent flotation.

Stormsaver Ltd will accept no responsibility for incorrect tank installation

Note:

Proper installation of each storage tank is essential

- To ensure the safety of the individuals involved with the tank installation
- To prevent damage and / or failure, which could lead to product loss
- To validate the tank warranty
- Do not enter the tank installation unless it is in compliance with HSE regulations.
- Follow HSE guidelines for tank excavation.
- Collapsing excavation walls can cause injury and death!
- Safety issues are the responsibility of the installer.

Before you begin

- Read and understand the installation instructions
- Barricade the tank area until the job is completed
- Check with local authority for any specific site requirements (if any)
- If you have any queries relating to the installation contact Stormsaver Ltd. Tel: 01636 815 254

All Stormsaver™ storage tanks must be fitted with the lockable manhole cover provided. This is essential to prevent unauthorised access to the tank. If a vehicle duty lockable cover is required, please contact Stormsaver Ltd.

Tank Handling and offloading:

Tank offloading is the customers responsibility

Stormsaver arrange tank delivery to the nearest hard standing at site.

- It is not the responsibility of Stormsaver to offload the tank
- The customer or his appointed contractor is responsible for offloading and securing the tank and equipment on site.
- If you have appointed a different contractor to offload the tank, please ensure that someone from your company is on site to supervise the offloading and that they are advised on the offloading.
- It is the responsibility of site to ensure safe access and to ensure that the site has appropriate equipment for offloading including mechanical offloading equipment, trained operators, lifting straps, chains (which must not be in direct contact with the tank) and a safe area to store the tank. The tank may be lifted off by other suitable mechanical site equipment, but greater care is needed to control the lift and to ensure the tank is not damaged.
- Tanks will be delivered by external carriers. The external carriers may use whichever vehicle is available for delivery – which may consist of a range of transport including flat back trailers, curtain side trailers, fixed axle HGVs etc – Stormsaver are unable to stipulate the type of vehicle used and do not have control over this.
- No vehicles are fitted with a HIAB.
- **ENSURE THAT YOU ARE AWARE OF THE ACTUAL TANK DIMENSIONS ON YOUR SPECIFIC SIGNED APPROVED DRAWING**
- The driver of the delivery vehicle does not have the means to remove the tank from the vehicle and is not trained to operate site equipment
- If site are unable to remove the tank from the delivery vehicle or the delivery vehicle is held waiting on site a charge will be made.

Further charges will be made if a delivery is not accepted for any reason and has to be redelivered at a later date. A fee may also be chargeable if a delivery date is changed within 3 working days of the agreed date of delivery and the goods have already been dispatched. If a tank is not accepted by site and the tank is taken away for storage a daily storage charge may be made by the carrier and this will be passed on to the customer.

Express Caution when offloading in windy conditions to ensure the tank does not swing or collide with any objects



Spreader Beam required for large tanks over 8m

Stormsaver **DO NOT** provide slings

Do not use chains in contact with tank

Tank Handling and offloading - Tank with no ribbing



(An example of a Stormsaver tank being delivered to site)

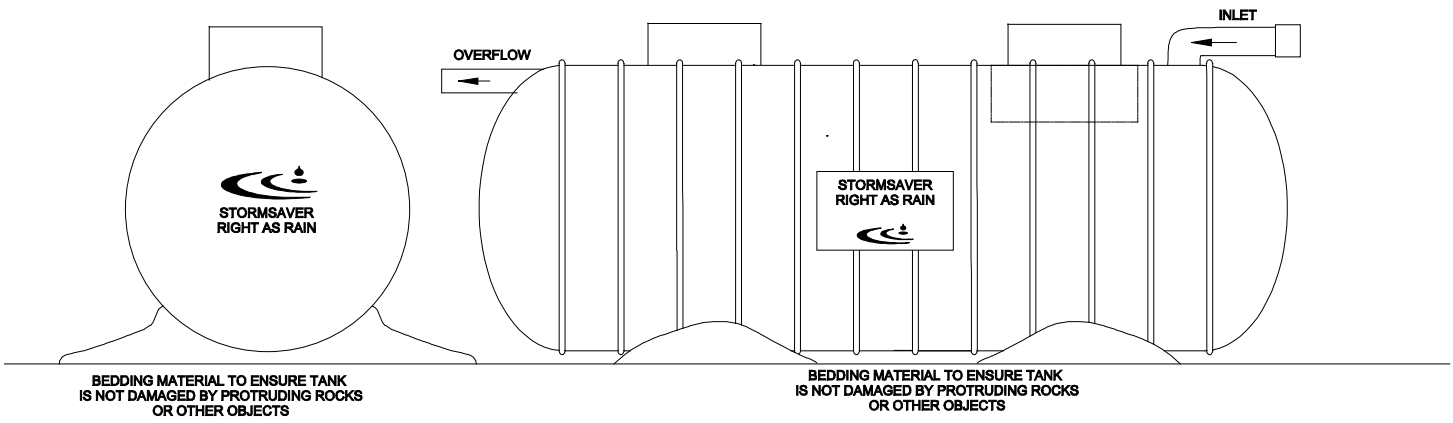
Please be aware not all underground tanks are manufactured with ribbing allowing for slings to be placed underneath.

We advise to make sure any site have the ability to lift the tank with the manufacturing loops provided on the tank allowing for slings to be placed underneath.

DO NOT lift the tank with the manufacturing loops, **ONLY** to place slings underneath.

Stormsaver Ltd will not take any responsibility in a site's inability to offload the tank.

For temporary storage of Stormsaver™ storage tanks at job site:



The Stormsaver™ Storage tank is often a large and bulky item and we take steps at every stage to co-ordinate the delivery to site. It is important for you to understand that Stormsaver arrange tank delivery to the nearest hard standing at site and it is not the responsibility of Stormsaver to offload the tank.

By receipt of this instruction you accept responsibility for offloading the Stormsaver™ Storage tank and any associated parts upon its arrival to site. Failure to accept responsibility will only delay delivery or result in charges for an aborted delivery. If a tank is not accepted by site and the tank is taken away for storage a daily storage charge will be made and this will be passed on to the customer.

Transportation, offloading and storage tanks

1. Tanks must be held down during transportation using nylon straps, do not use chains, cables or wire ropes to hold tanks.
2. Do not over tighten straps, causing deformation of the tank shell.
3. Tanks are best lifted by crane utilising webbing lifting straps. Do not use chains, cables or wire ropes in contact with the tank. Check capacity of lifting equipment before hoisting or moving tanks
4. It is recommended that a lifting beam is used for tanks longer than 8m.
5. Smaller tanks may be lifted with other suitable site equipment, but greater care is needed to control the lift and ensure that the tank is not damaged.
6. Not all tanks will have their centre of gravity at the centre of the tanks. This is particularly so with the pre-tank filter end of the tank (see site drawing). Therefore, the lifting straps need to be arranged to ensure the tank is stable during lifting.
7. Guide the tank with guidelines
8. Move tanks only by lifting and setting, do not drag or roll.
9. Do not drop or roll tanks from the delivery vehicle.
10. Place tanks carefully onto a smooth level even surface, free from rocks, large stones or other debris that could cause point load in the tank shell.
11. Chock with sandbags, rubber tyres, gravel or similar to prevent rolling.
12. In high wind conditions, consideration should be given to strapping down the tanks to prevent damage.

Pre-installation inspection

1. Stormsaver™ products are carefully checked and tested before dispatch, however the risk of damage during transit cannot be guaranteed. Tanks should be subject to a visual inspection prior to installation. Special consideration should be given to strap positions. Check for:

- Check the goods for complete content and damage on receipt
- Any damage is the responsibility of the carrier.
- Fractures to the shell or ribs
- Delaminations
- Scratches or abrasions deeper the 1.5 mm
- Stress cracks or star crazing
- Any damage should be notified to the delivery driver and to Stormsaver: Register any claim with them immediately. A report must be made within three working days from date of delivery of any missing or damaged items. Stormsaver cannot accept responsibility for missing or damaged items if not reported IN WRITING immediately.
- Contact Stormsaver Ltd before returning any goods

2. Do not undertake any unauthorised repairs, as this will invalidate the tank warranty.

3. Check that the end that depth is correct, the tank is correct grade for the concrete surround and that the inlet and outlet pipe orientations are correct.

4. Where present all fixings (nuts, bolts, screw fixings etc.) should be checked and re-tightened to correct any movement during transport. Stormsaver do not accept responsibility for fixings that have not been checked prior to the tank entering service.

Stormsaver Underground Tanks: Installation Guidelines Concrete Surround

General:

1. These guidance notes refer only to the installation of Stormsaver standard duty Underground GRP tanks suitable for concrete surround.
2. These guidance notes do not provide specific, site-related installation instructions.
3. You should confirm the installation with your structural engineer prior to installation.
4. If in any doubt about any aspect of the installation please contact Stormsaver on 01636 815 254
5. For standard duty tanks the depth from finished ground level to the top crown of the main tank shell should be no more than 2 metres.
6. Check that the location of the tank fits in the given space and does not effect ground conditions for any nearby structures.

Excavation:

1. Excavation should be planned with due regard to Health and Safety requirements and should be either shored a battered back to 'safe' angle.
2. The excavation should allow for the minimum concrete surround of at least 300mm thickness to all sides and ends including the base, while taking into account sufficient space for minimum concrete including any shoring used.
3. Ground instability at formation level e.g. running sand, may necessitate over- excavation and stabilisation with hard-core or blinding concrete.
4. Native soils with low bearing capacity (equivalent to less than 12 SPT blow counts) will require clearance to tank wall increased up to half of the tank diameter. Terram filter fabric may be required to prevent migration problems

Buoyancy and Anchoring:

The dimensions, of concrete surround may need to be increased if there is a risk of high groundwater at the tank location. To avoid flotation, please consult a qualified engineer who will ensure the design of the installation is correct. They will be able to carry out design calculations to very installation. Purely as an example a minimum factor of safety of 1.5x against flotation using mass concrete with a minimum density of 2,300 kg/m^3.

Concrete specifications:

1. The specification for the concrete mix to surround the tank should be selected by the tank installer taking into account the site conditions and application requirements. Specialist advice should be obtained by the installer.
2. For a typical non-structural application in good dry ground conditions, with non-aggressive soils, a concrete with a 28 day compression strength of 20 to 30 N/mm2 with a 25 to 50 mm slump, complying with the relevant BS EN, is generally suitable. For non-typical applications, high water table, aggressive soils or structural applications specialist advice should be obtained.

Concrete Surround

Lift height - Rate of Rise:
Determine the lift heights (m), or rate of rise (m/h) for the specific concrete type used, to ensure that the design (P Max) 15 kN/m2 on the tank is not exceeded.

Vibration:
The design of the tank assumes minimal compaction of the surrounding concrete. Where necessary, this may be extended to include light internal vibration. Do not use deep re-vibration which will substantially increase the pressure on the tank, possibly causing failure.

Impact of Concrete on Discharge:
The effects of concrete discharge impact are considerable. These effects must be considered to ensure the maximum pressure of 15 kN/m2 on the tank is not exceeded.

Under no circumstances should concrete be discharged directly onto the tank.

Live load:
If the tank is installed in an area where traffic, or other superimposed loadings can be applied, a structural engineer should be consulted, to design a reinforced concrete slab spanning over the tank. This is to prevent the load being transmitted to the tank (or its concrete surround). If this slab is constructed immediately above the tank, it should be separate from the concrete surrounding the tank by compressible material.

Tank Burial Depth:
1. This grade of tank is designed to be installed below ground and completely surrounded with concrete.
2. For a standard duty tank the depth from finished ground level to the top crown of the main tank shell should be no more than 2 metres. This may vary depending upon groundwater conditions. For deeper burial or for installation with high water table conditions heavy duty shells are available. If the tank is installed outside these parameters, it may suffer irreparable damage. Should you be in any doubt regarding suitable shell application please consult your structural engineer.

Control of Groundwater:
Tanks must not be subject to any buoyant forces during installation, taking account of groundwater levels and surface water run-off and their accumulation in the tank excavation. This applies even if the tanks are mechanically anchored.

Installation in wet Ground / where water level is higher than the base of installation:
Dig a well pit for pumping ground water away. For larger excavations this may require multiple well pits running continuously throughout the installation. Ensure the pump outlet is well away from the tank and is downhill from the excavation. Pump continuously to ensure that the ground water is below the base of the excavation at all times during the installation. Failure to keep the excavation free from ground water may result in voids underneath the tank. This can cause buckling and consequent failure of the tank structure. Continue to pump ground water from the excavation until concrete surround is set.

FAILURE TO DO THIS CAN VOID YOUR WARRANTY!

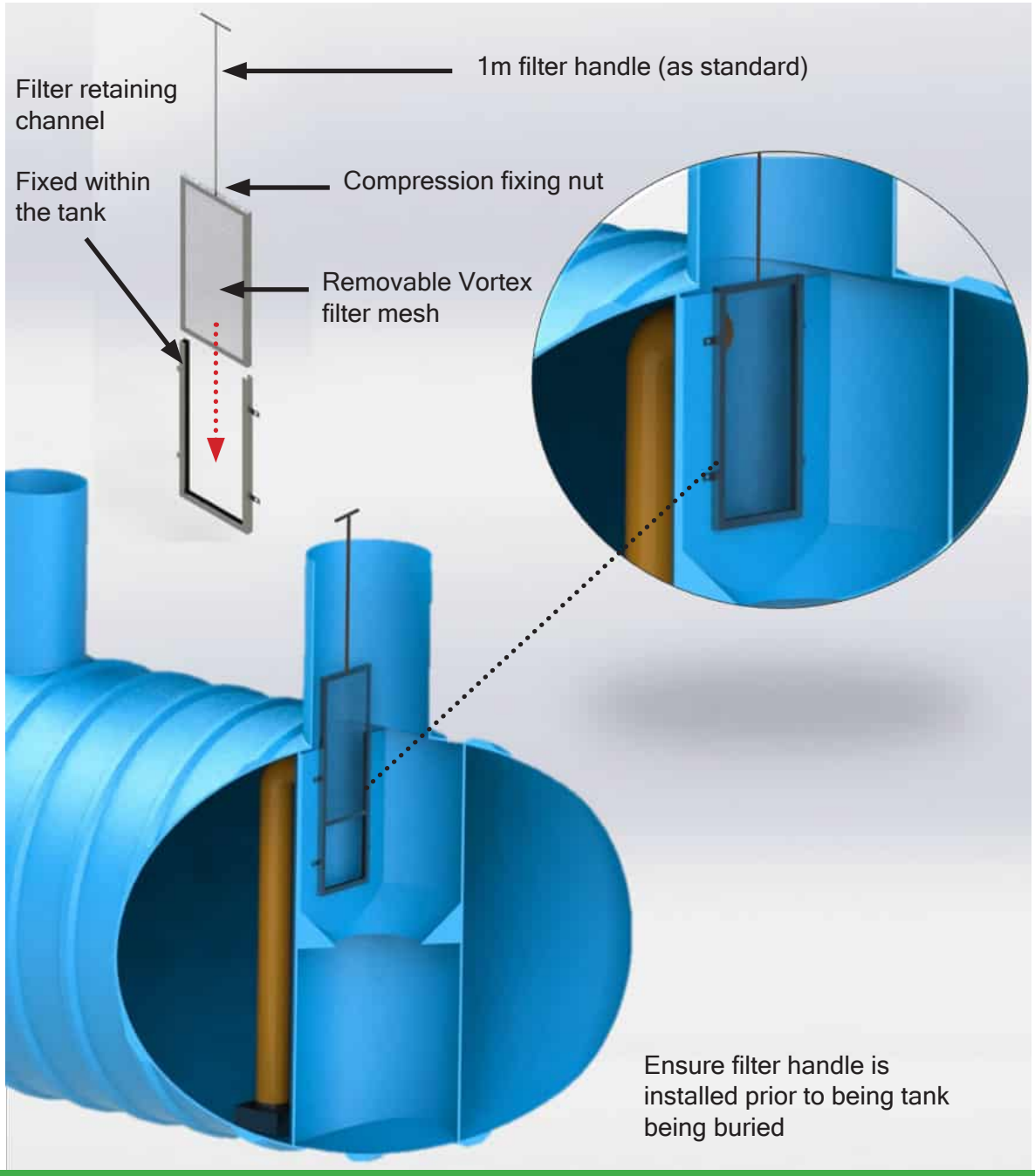
Pre - Tank Filter Handle Installation (before tank is installed)

Prior to the tank being installed it is imperative that the pre-tank filter handle is installed onto the removable Vortex filter. Failure to do this at this stage will result in confined space entry into the tank at a later stage. This can be costly and in some cases very difficult to gain permission from the relevant site Health and Safety officer.

The pre-tank filter handle is fixed to the Vortex filter by pushing the handle into the compression fixing nut and then tightening, until it is secure.

Please ensure the filter is then re-installed into the runners within the pre-tank filter chamber.

The handle for the filter is located within the pump turret with the service ducts, for transit. A 1x 1m handle is supplied as standard, but this can be cut down to size. As an option, bespoke sizes are available to order from Stormsaver to suit depth from finished ground level, for deeper excavations.



Installation procedure

1. Excavate hole at least 600mm wider and 600mm longer and 450mm deeper than the tanks overall external dimensions (see approved tank drawing). Allow for the minimum concrete surround of at least 300mm thickness to all sides and ends including the base, while taking into account sufficient space for minimum concrete including any shoring used.
2. Lay a hardcore base in the excavation at a minimum depth of 150mm.
3. Ensure the excavation is completely dry. (See control of Groundwater) Maintain a completely dry excavation until the final pour of concrete has set. Failure to do this may result in voids beneath or around the tank and subsequent tank failure.
4. Place the WET concrete in the base of the excavation to form a level and smooth base onto which the tank Ensure the tank is in the correct orientation for the tank pipework. Place the tank onto the concrete base, while the concrete is still wet. Connect the pipework to the tank, ensuring correct alignment and ensure the tank is level. The pre-tank filter will be on the inlet.
   DO NOT PUT THE TANK ON CONCRETE THAT IS DRY OR HAS SET.
5. Connect and seal turret extensions prior to completing the concrete encasement of the main tank (the height shown in the above table). Allow the concrete to cure.
6. Ensure that the pre-tank filter handle is fitted (see pre-tank filter handle installation),
   Please note the turret extension with the pre-formed pipe entries is for the pump chamber, and the turret extension without any entry holes is for the inlet pre-tank filter chamber. Turrets may be connected to tank prior to back filling. Turret extensions should be sealed to the tank with a suitable sealant. This is to prevent ground water leaking into the tank at a later date, to prevent any water quality issues. Take care not to distort the turret shape when back filling.
7. Fill each chamber of the tank equally with clean water to a depth of 300mm and re-check pipework levels and connections. Commence backfilling evenly around the tank with concrete ensuring there are no voids. Work evenly around the tank using the tampering technique, taking care to work concrete under the tank to prevent voids. Particular attention is drawn to the bottom of the tank shell where it is more difficult to see - Continue filling the tank chambers equally with water whilst evenly backfilling with concrete around the tank ensuring that the progressive water level is no more than 300mm above the concrete level.
8. Ensure the water levels are within 300mm of each other at all times and that all compartments within the tank are filled at equal rates to maintain constant levels. Failure to do this will result in damage to the internal baffles and delaminating of the tank walls.
9. If there is groundwater or surface water ensure on site ensure that at all times throughout the installation that the excavation remains completely dry: Failure to correctly keep the excavation dry could result in problems with the concrete curing and voids around the tank resulting in tank failure.
10. Using appropriate formwork continue pouring concrete around the tank superstructure i.e. access to it in lift heights not exceeding 500mm, allowing the concrete to set between each lift. The lift height, weight of concrete rise, or concrete compaction must not be to an extent which causes any part of the tank superstructure to distort as this will damage the tank.
11. Complete the backfill to ground level using free-flowing granular material. Trim all access to it and prepare suitable footings for each manhole frame ensuring that any loads on the covers are not transmitted to the tank access to its access extensions, if fitted.
12. Install 100mm ducting for electrical cables via a separate service chamber to house the pump isolators and 10% low level float connections. These should never be mounted within the tank turrets. This duct should be run from the building at the control panel location, to a separate service chamber (manhole) then from the service chamber into one of the 100mm pre formed duct entry points in the turret. The service chamber should be within 1m of the tank and in bird's eyes view of the pump turret.

13. Install 63mm black and green MDPE in a trench from the building, laid in sand blinding at a depth of between 750mm and 1350mm to avoid freezing. This should be clearly marked as rainwater pipework. The pipework should then be raised up to enter the one of the pre-formed 100mm entry points in the pump chamber. This should be NO MORE THAN 300MM BELOW FINISHED GROUND LEVEL. Where the pipework rises above 750mm from finished ground level it will need insulating to avoid freezing problems.

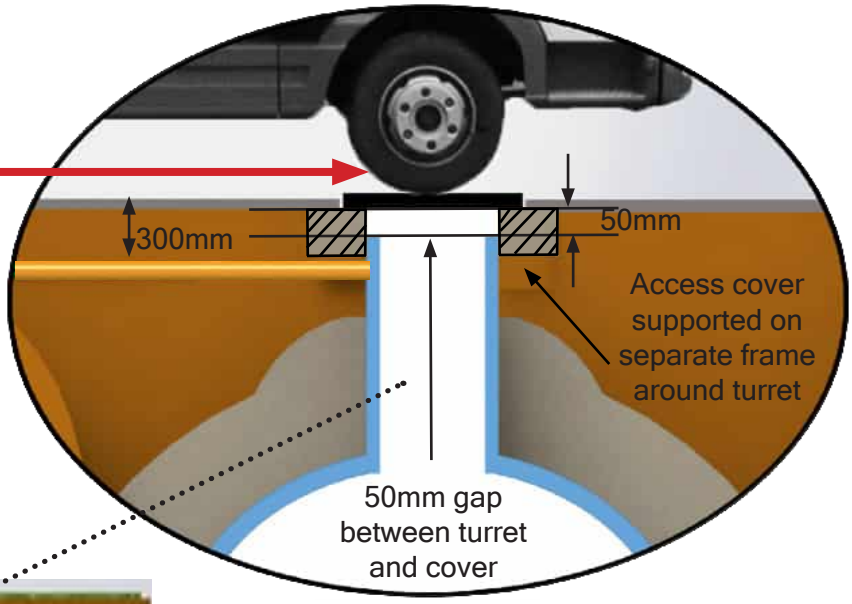
14. It is very important at this point to ensure that the pipework rises up to 300mm early enough so that it enters the turret level straight, otherwise the connections to the pumps will be impossible later in the installation process. It is important that the pumped pipework and electrical services are run in separate ducts.

Access turret extensions:

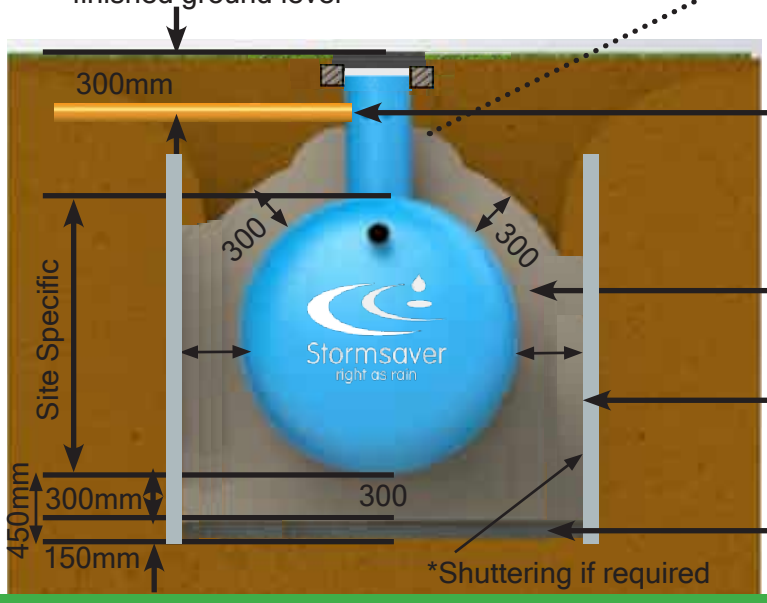
1. Access turret extensions should be surrounded with concrete poured in the 300mm lifts, allowing an initial set between each lift. The pressure from concrete placed in high lifts may cause excess extensions or distort or collapse.
2. Turret extensions should be sealed using silicon sealant, sikaflex-291, or similar prior to installation to prevent ingress of groundwater under high water table conditions. It is the installation contractor's responsibility to ensure a watertight seal.
3. Use of other than specified backfill/bedding materials will avoid tank warranty.
4. All backfill material shall be free of ice and snow at time of installation. Backfill material shall not, during placement, be frozen or contain lumps of frozen material.

LOAD BEARINGS MUST NOT BE TRANSFERRED DIRECTLY ON TO THE TURRET

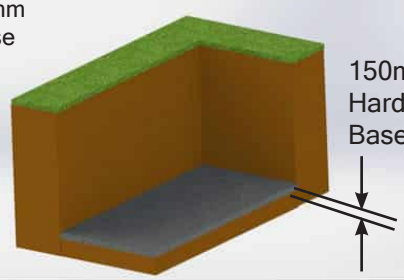
ACCESS COVER MUST BE SUPPORTED ON SEPARATE FRAME ABOVE TURRET WITH A 50MM CUSHION GAP



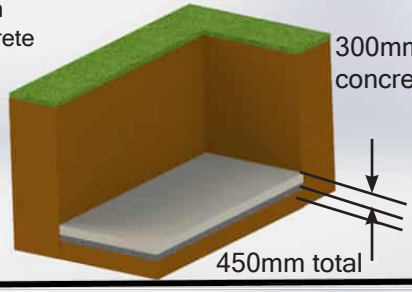
Option to upgrade to 'Vehicle Duty Cover'



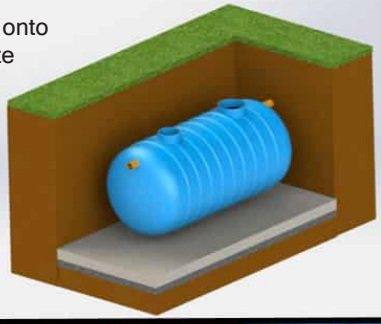
1 Lay flat 150mm hardcore base



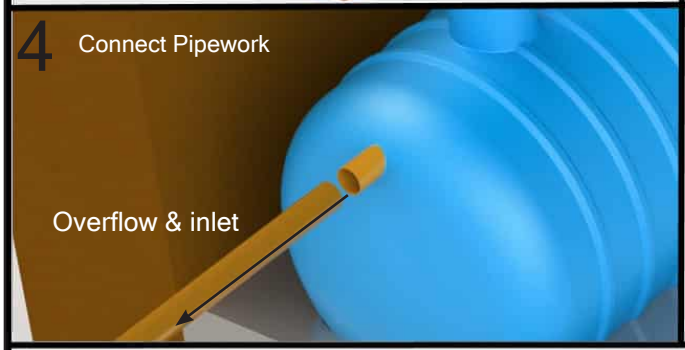
2 Pour 300mm of wet concrete



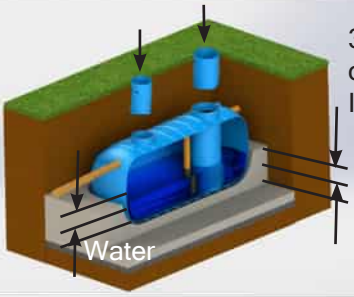
3 Lower tank onto wet concrete base



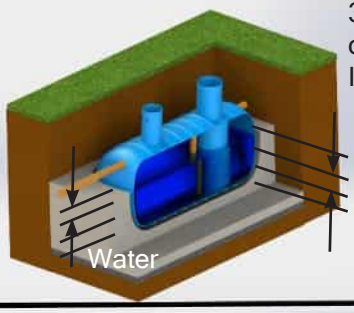
4 Connect Pipework



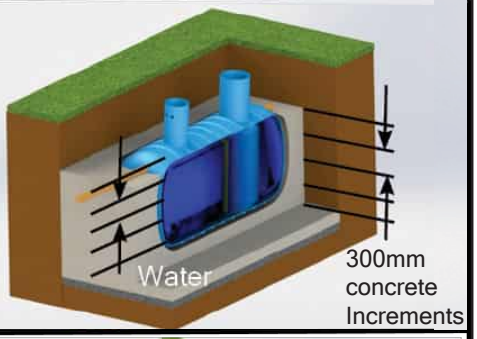
5 Fill tank chambers equally with clean water in 300mm increments at an equal rate



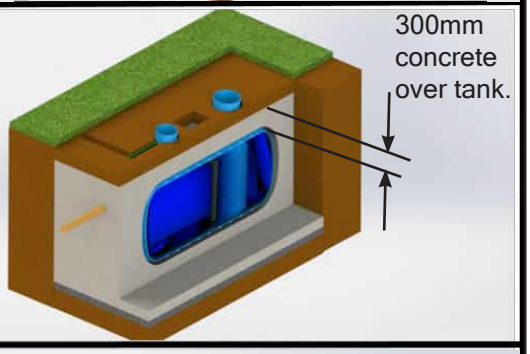
6 Fill tank chambers equally with clean water in 300mm increments at an equal rate to concrete



7 Fill tank chambers equally with clean water in 300mm increments at an equal rate to concrete backfill



8 Tank 100% full with clean water



9

Install manhole covers.

* See drawing on tank excavation

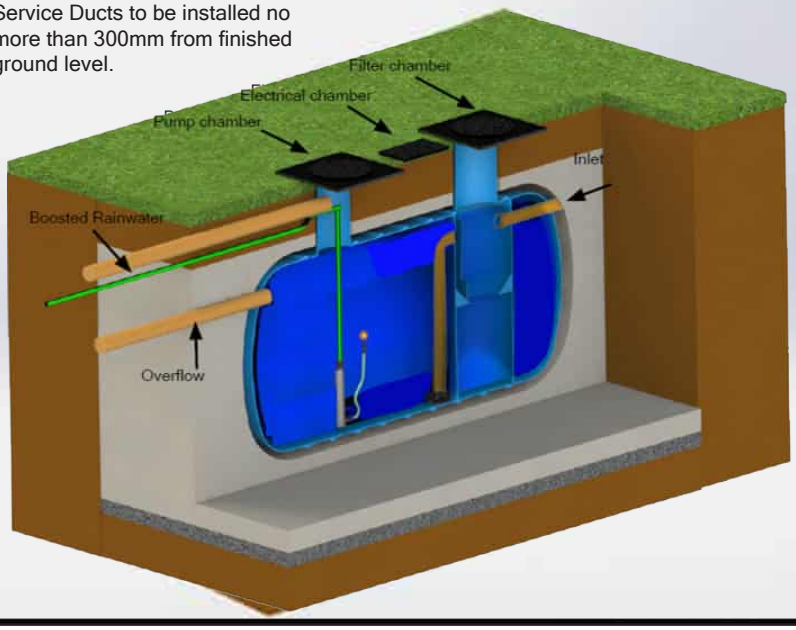
Take care to ensure the tank is kept clean, and that no debris contaminates the tank.

If the tank becomes contaminated, this will require professional cleaning prior to commissioning- contact Stormsaver Ltd for a quotation.

Dirty water and debris in the tank will lead to an aborted commissioning if not professionally cleaned.

GRP debris covers can be provided to keep the tank clean during installation.
Contact Stormsaver for more info- 01636 815 254

Service Ducts to be installed no more than 300mm from finished ground level.



Install manhole frames. The 2 x 100mm service ducts must be no more than 300mm below finished ground level. Ensure road loadings are not transferred directly onto the turret and in turn the tank . Install vehicle duty covers if required.

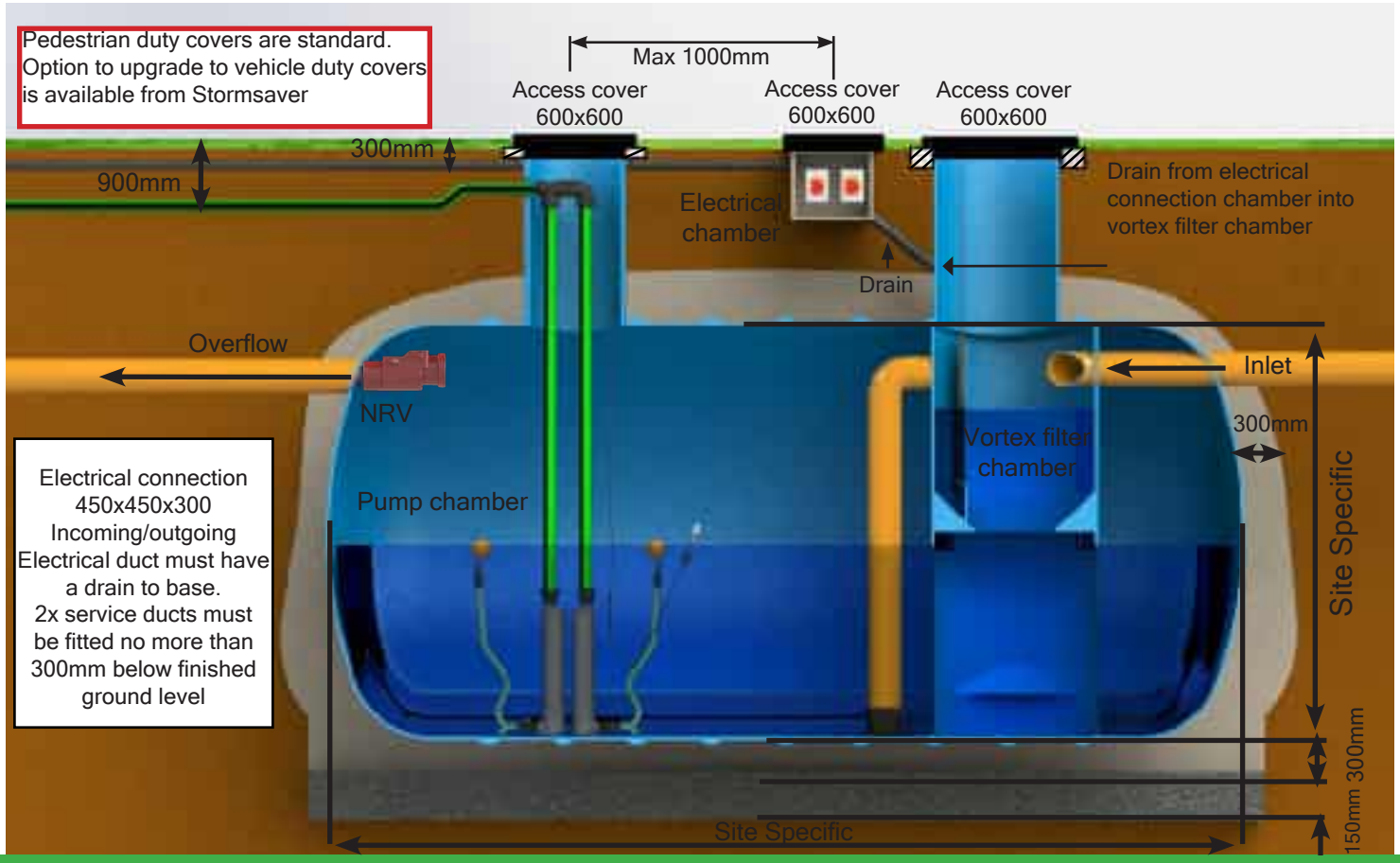
Lay a hard surround to the manhole covers ensuring that the surrounding surface water can freely drain away from the tank and is not able to create puddles over the tank covers. Surface water sitting over the tank covers could seep into the tank, causing water quality issues.

Check turret duct entry points are no lower than **300mm** from finished ground level. (This is to ensure the 90° pump pipework elbows are accessible for commissioning and servicing, and that the turrets are on the correct chambers)

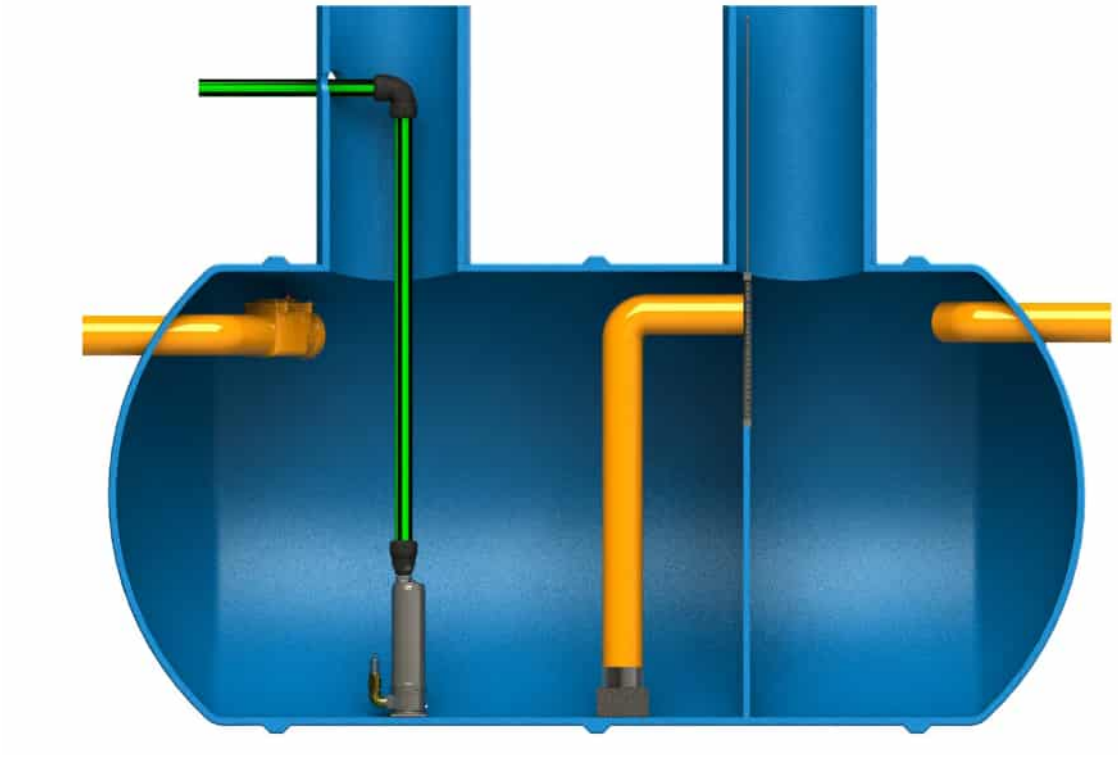
DO NOT Let any building debris or other contaminants such as concrete, soil, gravel, sand, or dirty water get into the tank during, or after installation. Otherwise the tank will have to be emptied and thoroughly cleaned out and refilled before commissioning can take place. (Tank cleaning is available from Stormsaver at an additional cost) TEL: 01636 815 254.

DO NOT connect inlets to foul drains

ACCESS COVER AND ANY LOADINGS TO BE SUPPORTED ON SEPARATE FRAME AROUND TURRET AND MUST NOT BE TRANSFERRED DIRECTLY ONTO TANK



Fixed foot filter - Underground tank



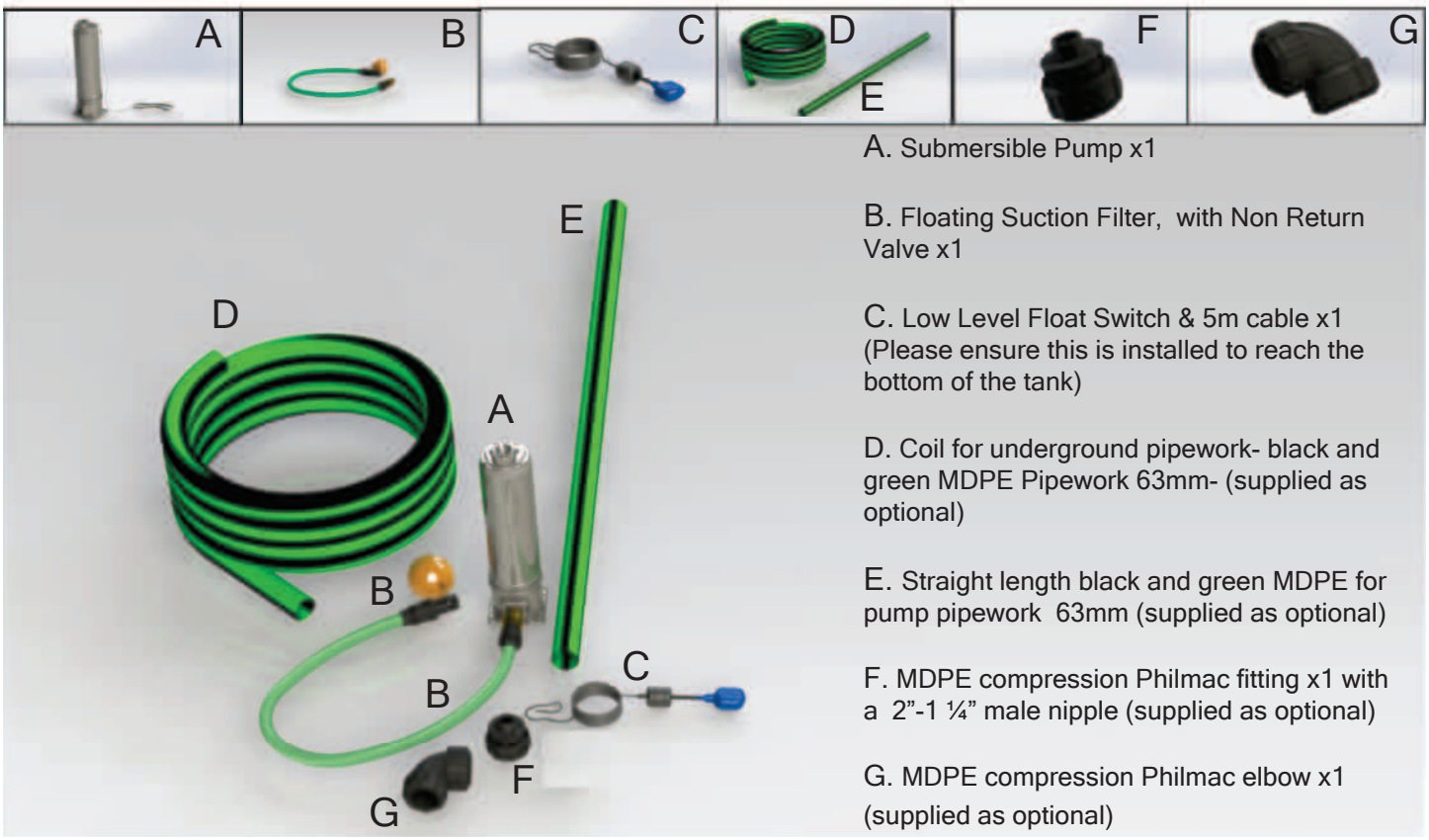


Sizing

The Stormsaver™ submersible pump is usually supplied with a floating suction filter kit. However if your underground tank is 9000L or less we will supply you with a fixed foot filter kit.

This is because at these tank sizes floating suction filters would not operate as designed. When space is a premium inside a tank a fixed foot filter kit is the perfect solution.

Equipment List for Single Pump Set



A. Submersible Pump x1

B. Floating Suction Filter, with Non Return Valve x1

C. Low Level Float Switch & 5m cable x1 (Please ensure this is installed to reach the bottom of the tank)

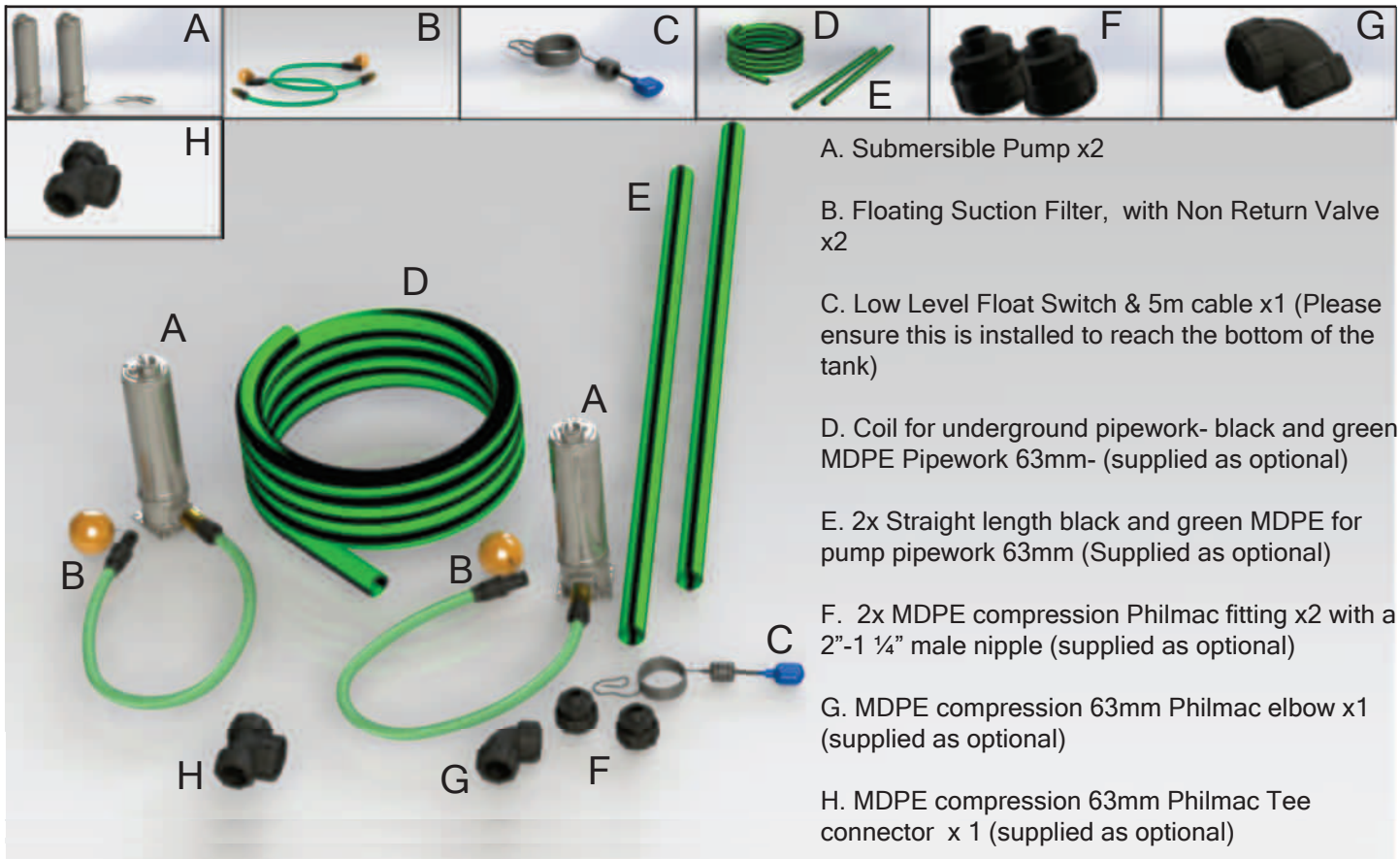
D. Coil for underground pipework- black and green MDPE Pipework 63mm- (supplied as optional)

E. Straight length black and green MDPE for pump pipework 63mm (supplied as optional)

F. MDPE compression Philmac fitting x1 with a 2"-1 ¼" male nipple (supplied as optional)

G. MDPE compression Philmac elbow x1 (supplied as optional)

Equipment List for Duty Standby Pump Set



A. Submersible Pump x2

B. Floating Suction Filter, with Non Return Valve x2

C. Low Level Float Switch & 5m cable x1 (Please ensure this is installed to reach the bottom of the tank)

D. Coil for underground pipework- black and green MDPE Pipework 63mm- (supplied as optional)

E. 2x Straight length black and green MDPE for pump pipework 63mm (Supplied as optional)

F. 2x MDPE compression Philmac fitting x2 with a 2"-1 ¼" male nipple (supplied as optional)

G. MDPE compression 63mm Philmac elbow x1 (supplied as optional)

H. MDPE compression 63mm Philmac Tee connector x 1 (supplied as optional)

Installation of pump and pipework within pump chamber

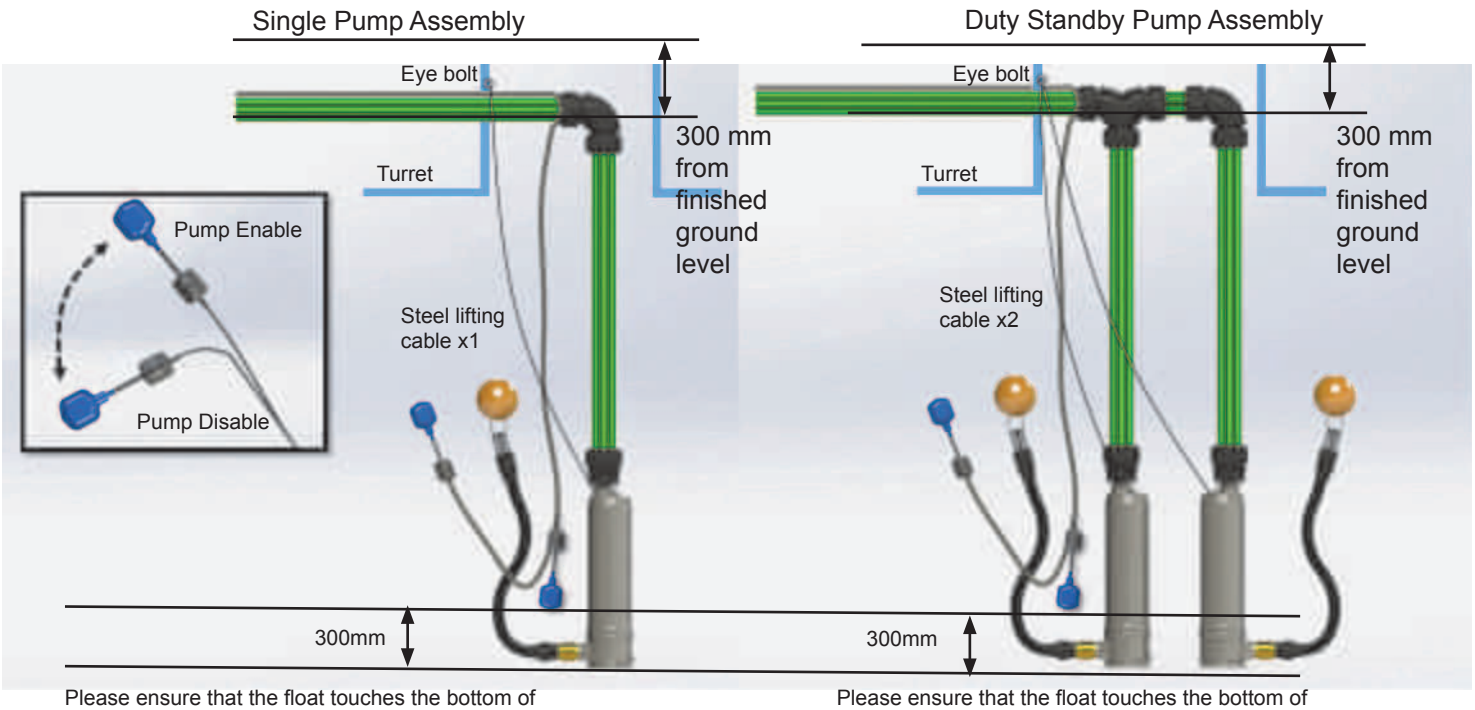
All pipework from the pump's to the building MUST be installed in 63MM BLACK AND GREEN MDPE.

Install the 63mm MDPE so it enters the turret no more than 300mm below finished ground level. It must be level and in the centre of the turret. Failure to do this will mean there will not be enough room to accommodate the bends required to connect the pumps. This is to ensure that the pumps can be safely removed during the commissioning process and during service maintenance visits. THIS IS THE MOST COMMON REASON FOR ABORTED COMMISSIONING VISITS.
Stormsaver will not be able to complete the commissioning if pipework enters the tank below 300mm from finished ground level. Please be aware this will incur additional costs.

Stormsaver recommend Philmac fittings. Complete pipe fitting kits, rolls and straight sticks of 63mm black and green MDPE can be ordered directly from Stormsaver if required as an option 0844 884 0015.

The pump, floating suction hose and pipework is to be assembled as per the diagram below.
The vertical pipework drops must be straight lengths of 63mm black and green MDPE and not from a coil.
Flexible pipework is NOT suitable as it is imperative the pump's do not move around during start up, as this causes damage to the tank, cables and/or float switches within the tank.
All connections should be 63mm MDPE compression tees and elbows to enable the pumps to be disconnected for commissioning, service and maintenance.

Gently lower the pump back into the pump chamber using the steel lifting rope provided. Fix the steel rope to the turret wall.

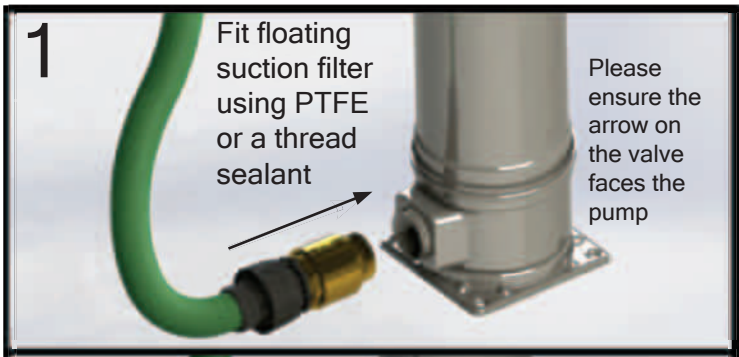


DO NOT
USE POWER CABLE TO LIFT PUMP

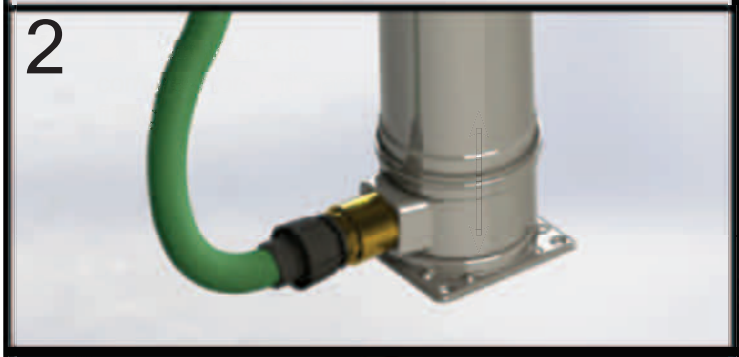
Assembly of M range Submersible Pump (Example shows both Single & Duty Standby assembly)

1 Fit floating suction filter using PTFE or a thread sealant

Please ensure the arrow on the valve faces the pump

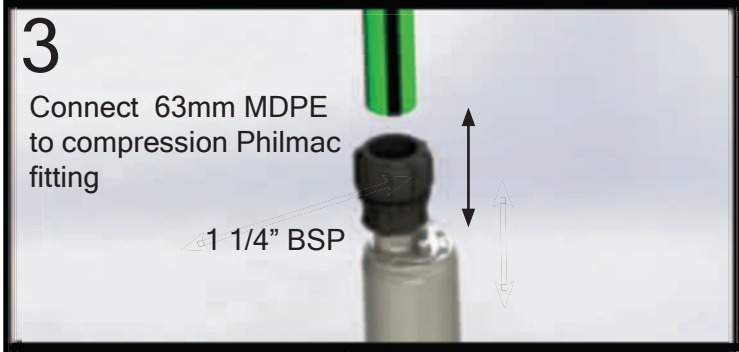


2



3 Connect 63mm MDPE to compression Philmac fitting

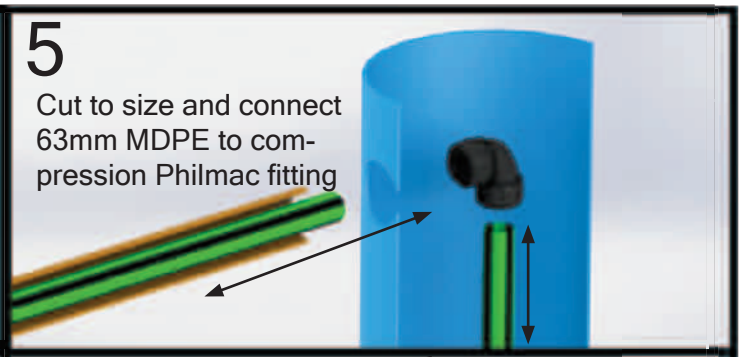
1 1/4" BSP



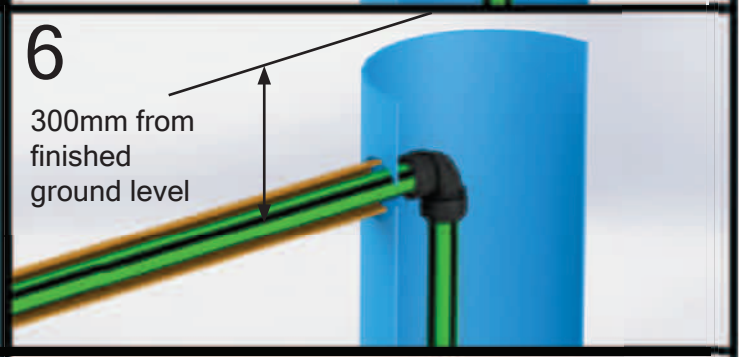
4 Lower pump and pipework into pump chamber- make sure to use steel lifting cable



5 Cut to size and connect 63mm MDPE to compression Philmac fitting

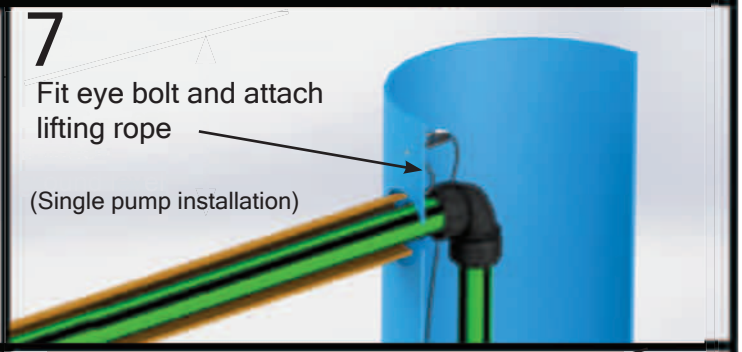


6 300mm from finished ground level



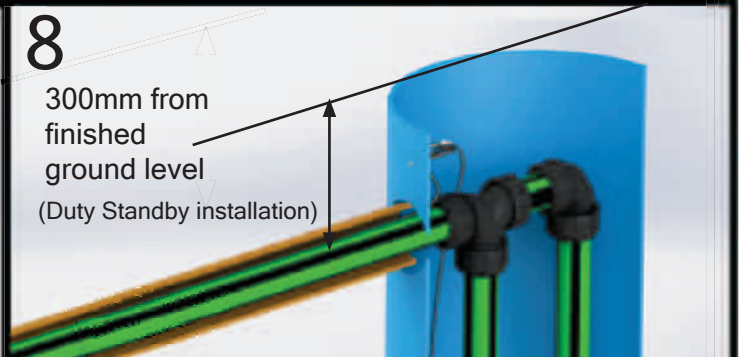
7 Fit eye bolt and attach lifting rope

(Single pump installation)



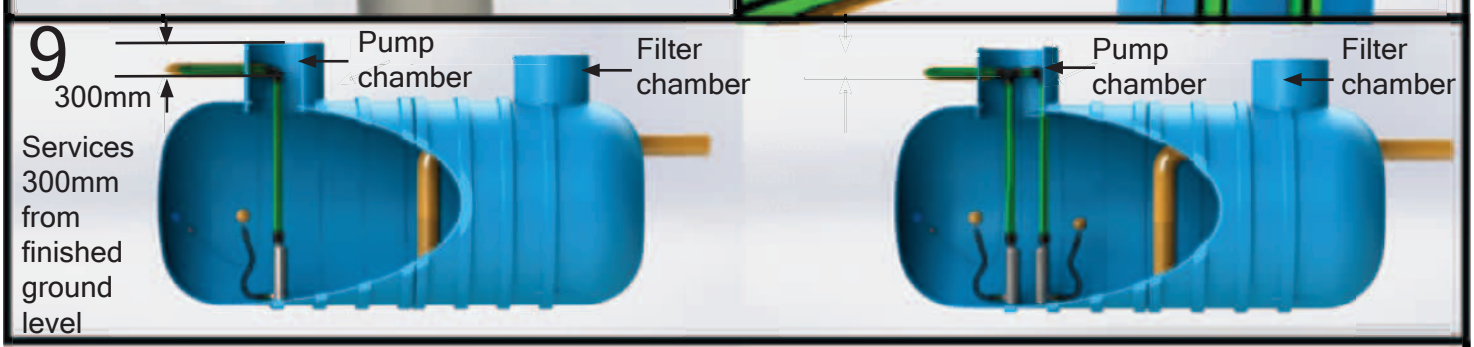
8 300mm from finished ground level

(Duty Standby installation)



9 300mm

Services 300mm from finished ground level



Single Pump Installation

Duty Standby Installation

Positioning of Combi unit

1. The Combi unit should be located within an appropriate area of the building, such as a plant room. The Combi unit is NOT weather proof and therefore should be positioned inside so it is kept dry, frost free and protected from the elements.

2. The Combi unit must be located higher than the storage tank. If the Combi unit is to be installed below the storage tank- please contact Stormsaver™ for technical advice

3. The Combi unit can only be floor mounted. Wall mounting is not possible. It is critical to ensure the floor is flat and level and the area of the building is designed to carry the weight of the unit and associated pipework when full of water, due to the weight of the unit.

4. The Combi unit must be located close to a mains water supply and will require a sealed floor drain. There must be adequate ventilation and lighting for commissioning and for future maintenance.

5. The Combi requires access to each side of the unit for service and maintenance purposes. Failure to adhere to these parameters can result in maintenance not being able to be carried out.

- minimum 600mm above
- minimum 400mm to each side
- minimum 1000mm to the front to allow the door to fully open.
- minimum 100mm to the rear, so that it conforms to the WRAS water regulations

6. Plant room must be able to accommodate the units dimensions and clearance requirements for maintenance and access.

7. All inlets must be isolated with lever or gate valves before connecting the Combi unit to ensure that each supply can be independently isolated (by others).

WRAS COMPLIANT PRODUCT

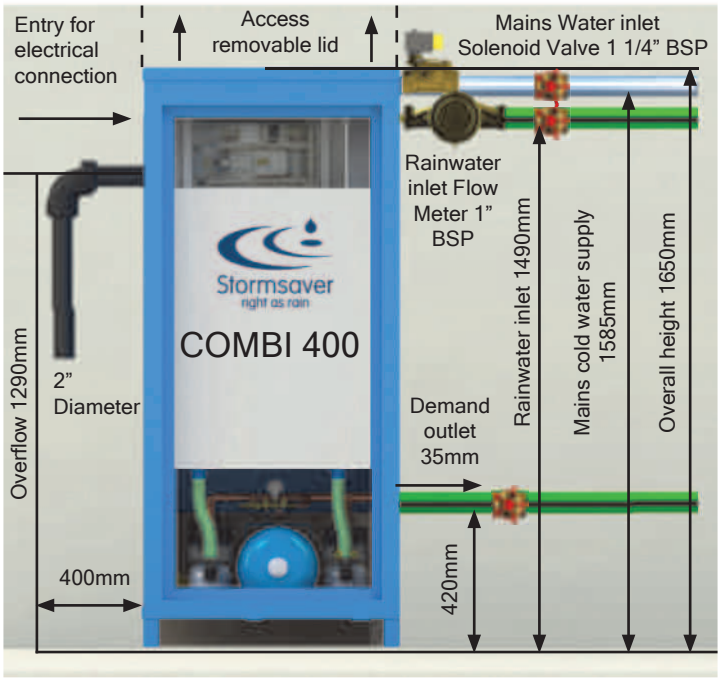
Unit	Dimensions L x W x H	Dry Weight	Wet Weight
Combi 400	840 x 740 x 1675	Min .250kg	Max .887kg
Combi 620	1000 x 750 x 1950	Min .350kg	Max .950kg
Combi 620 Filter	1000 x 750 x 1950	Min .400	Min .1000kg

Pipework connections to Combi unit: Connnect pipework to Combi as shown

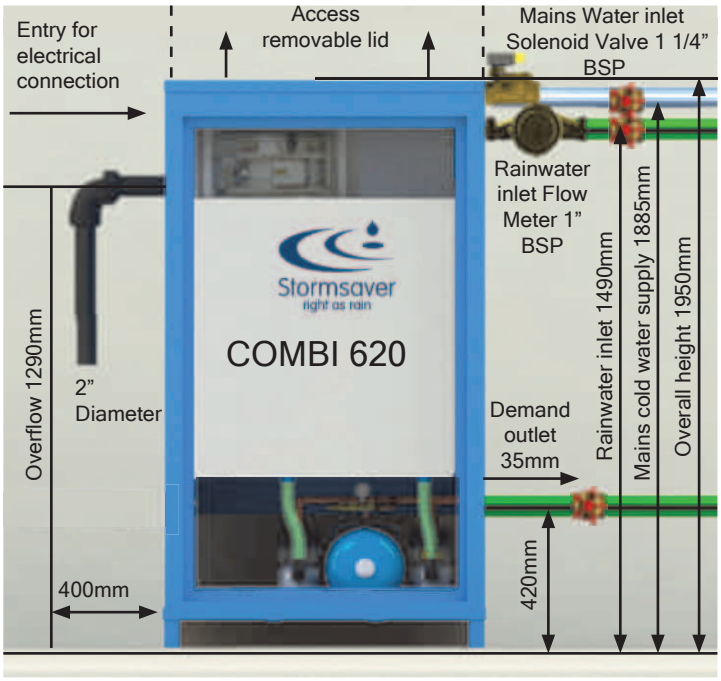
PLEASE NOTE: Check which model Combi you have. Each type of Combi has different pipework connection locations.

Units supplied loose with:
1x1" BSP Water Meter- (Combi 620 Filter has this built in)
1x1-1-1/4 Mains water Solenoid Valve

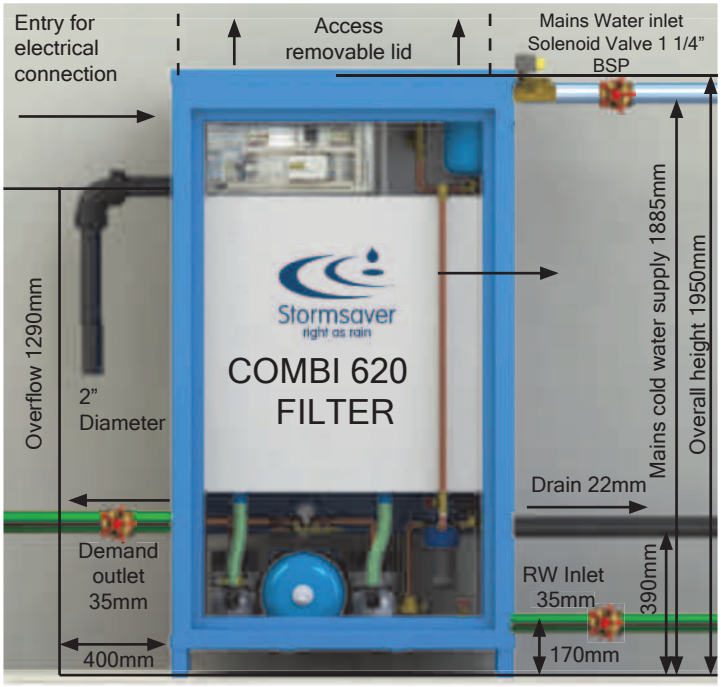
1. COMBI 400



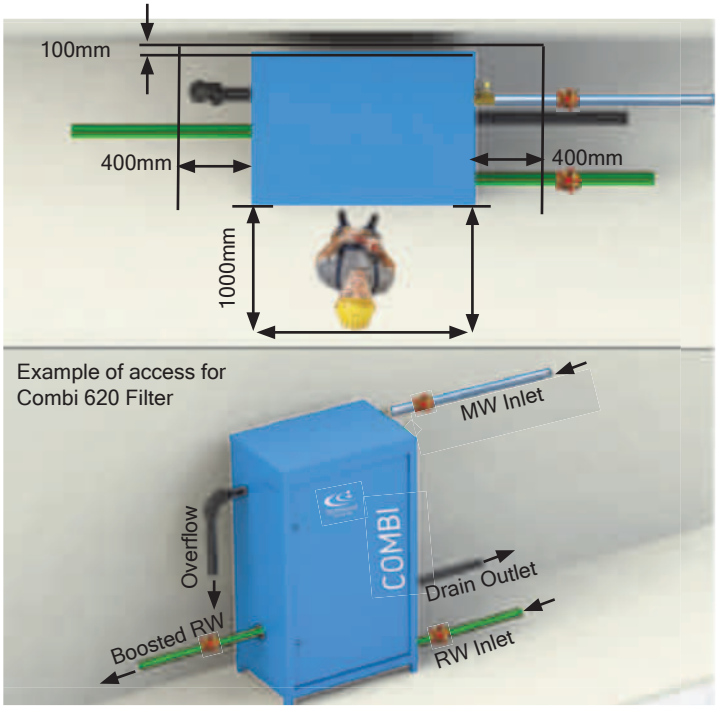
2. COMBI 620



3. COMBI 620 FILTER



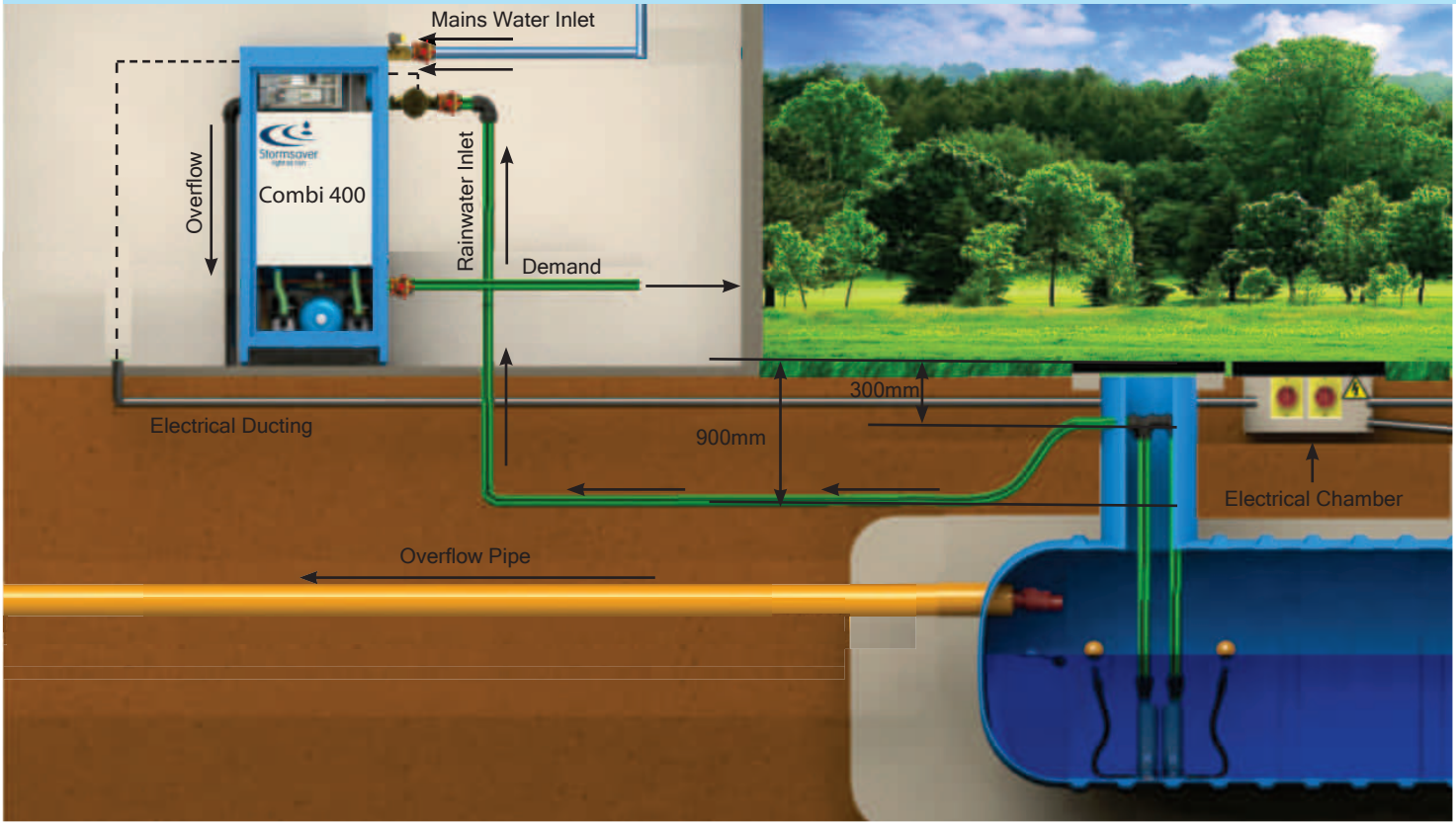
4. Access required: Applies to ALL MODELS



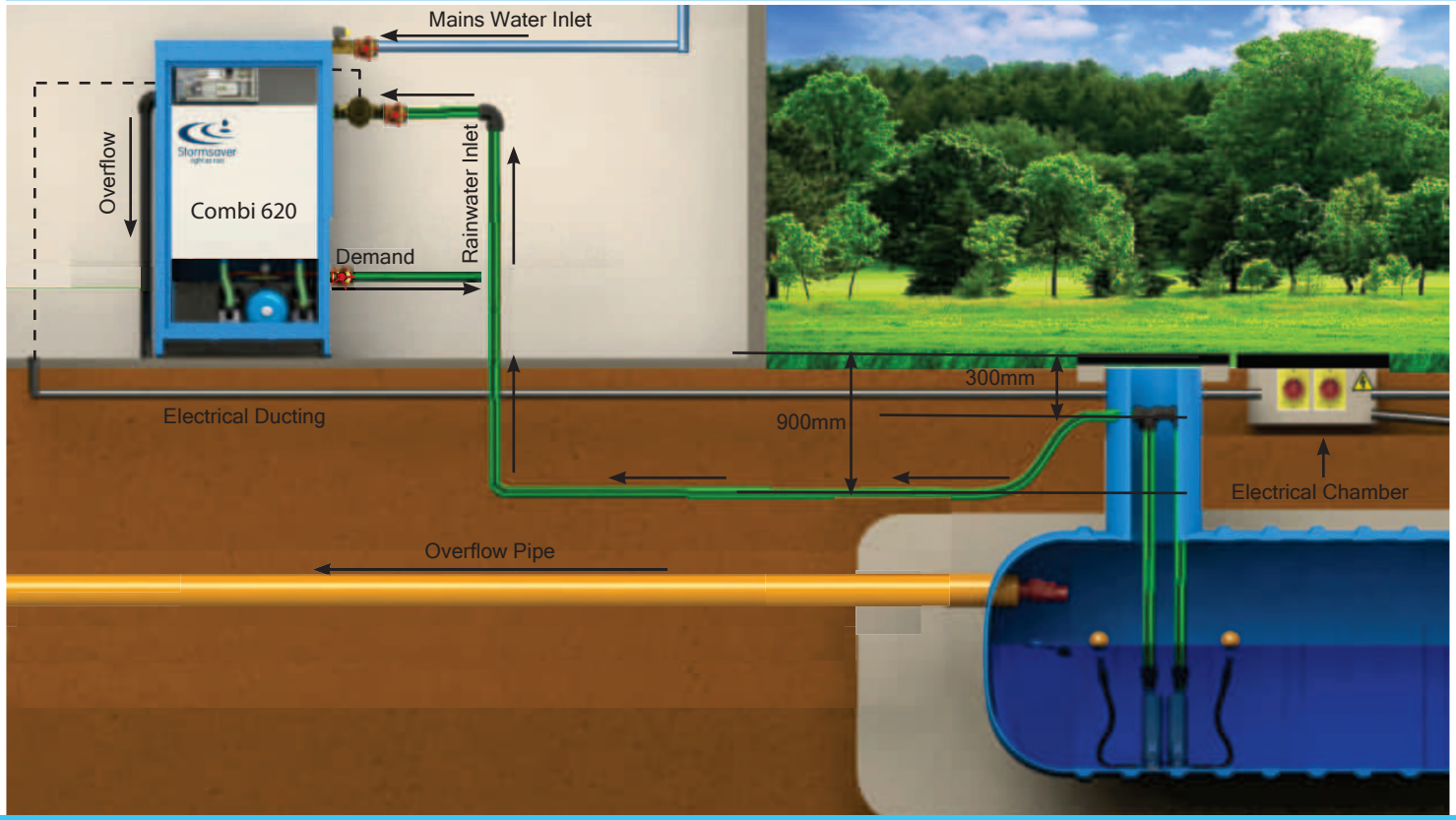
Pipework connections to Combi unit

Connect the mains water, rainwater, drain and outlet pipework to the Combi as per the below.
NOTE- that each drawing refers to a different Combi model. Please check which model you have prior to connecting the pipework, as stated previously.

1. Combi 400



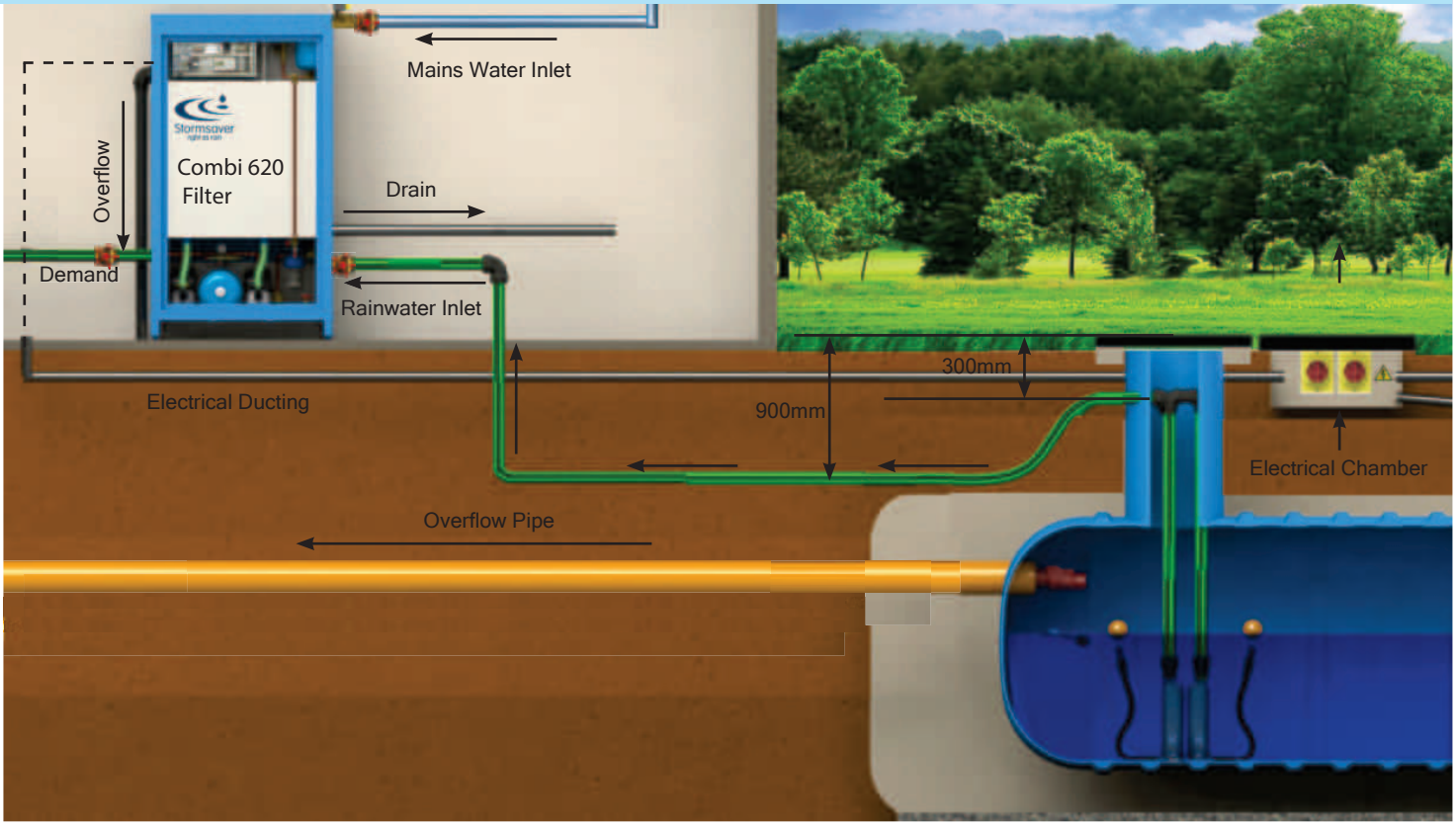
2. Combi 620



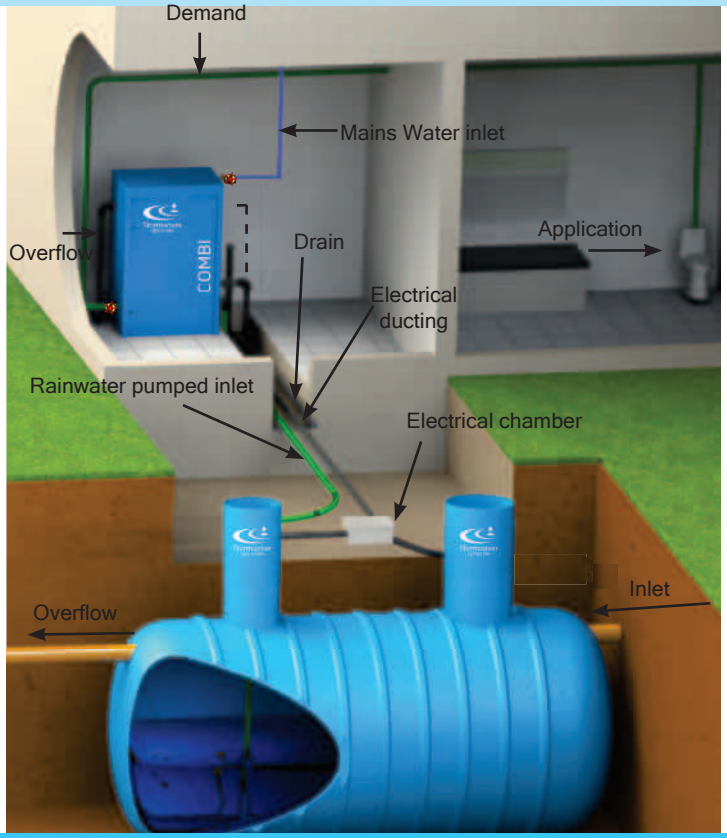
Pipework connections to Combi unit

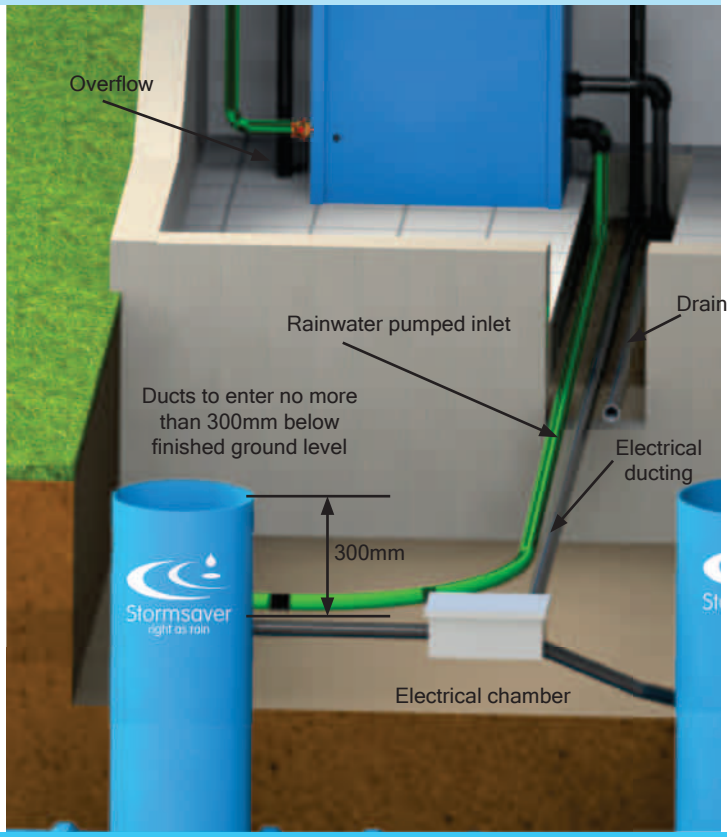
Connect the mains water, rainwater, drain and outlet pipework to the Combi as per the below.-
NOTE- that each drawing refers to a different Combi Model. Please check which model you have prior to connecting the pipework, as stated previously.

3. Combi 620 Filter

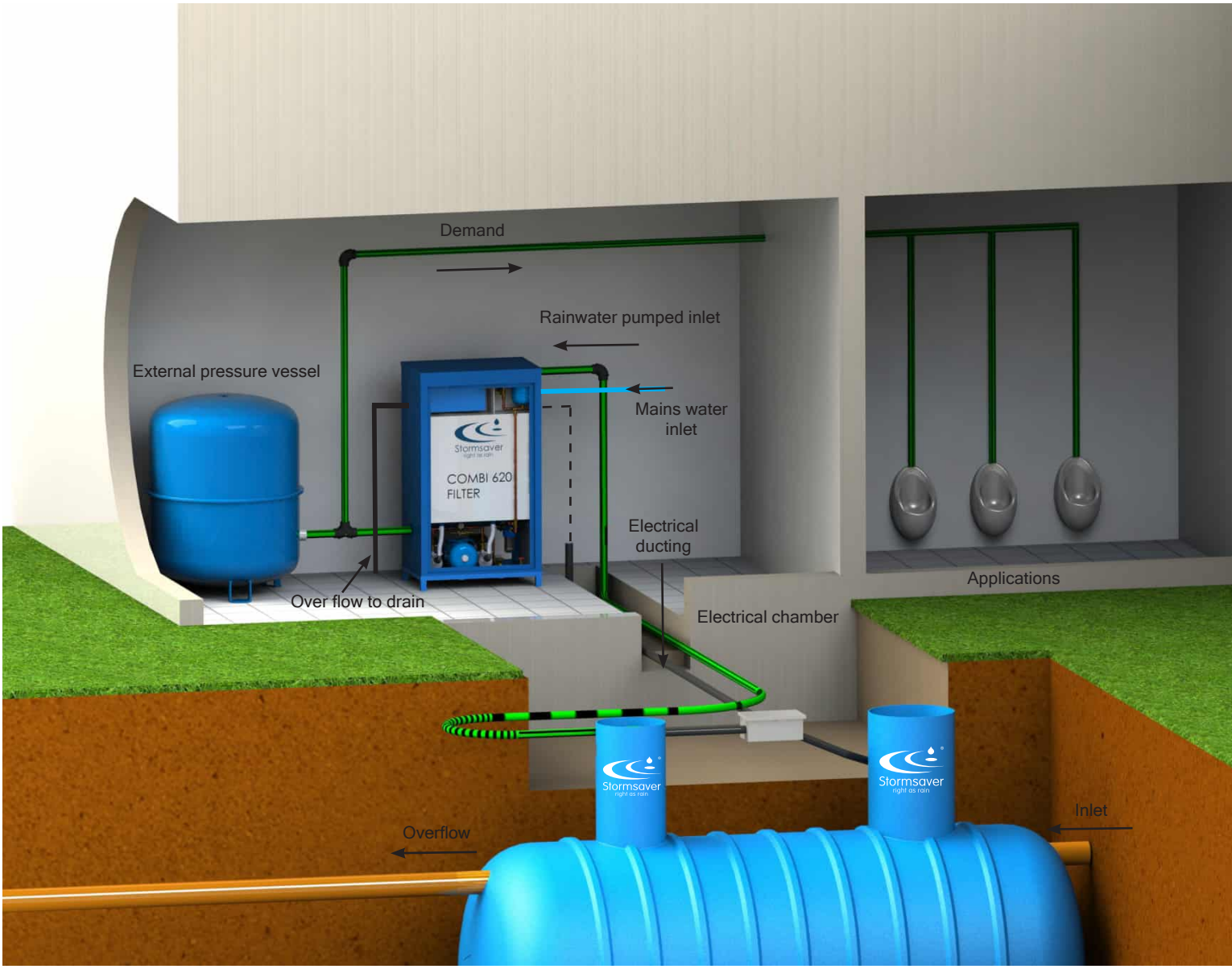


4. How pipework connects to Tank- For all Combi models (620 Filter pictured)





Pipework connections to Combi unit with external pressure vessel



Place an external floor mounted pressure vessel anywhere on the pressurised outlet to the demand.

Make sure the vessel is relatively close to the Combi unit.

Positioning of Cartridge Filter (Example shows Combi 620L)

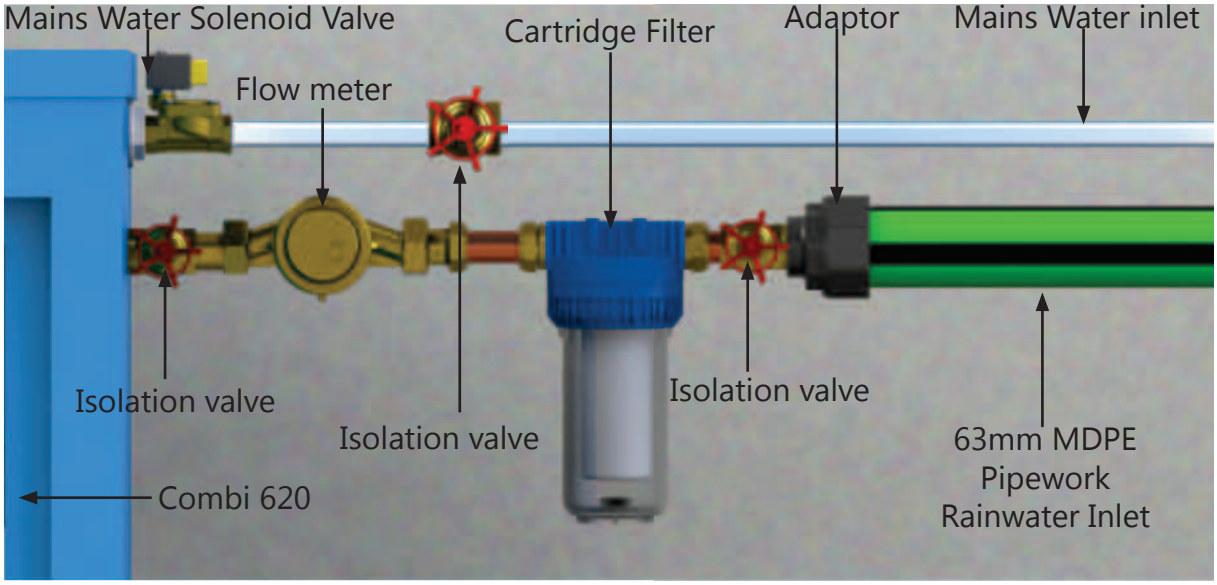
If a separate Cartridge Filter (optional) has been purchased as part of your package then this should be installed as below:

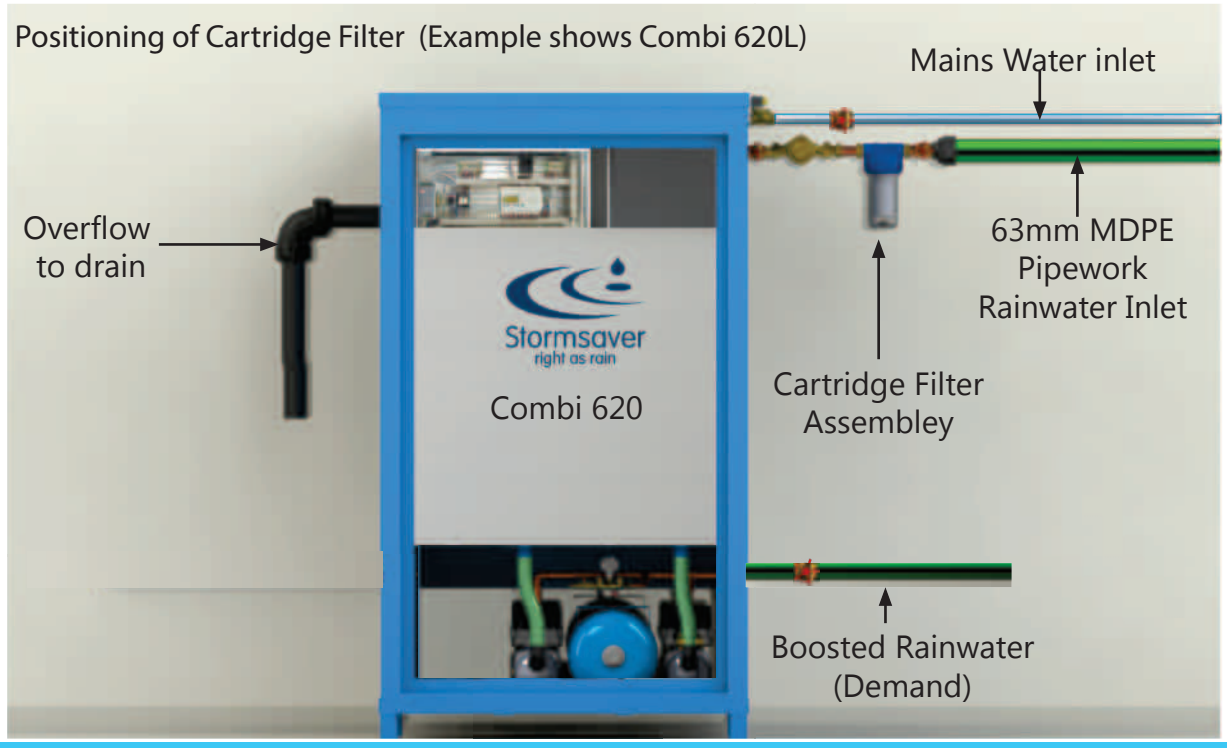
1. The Cartridge Filter should be fitted on the rainwater inlet pipework to the Combi unit, BEFORE the flow meter.

2. For maintenance an isolation valve should be fitted in the pipework before the filter and after the flow meter.

3. The Cartridge Filter arrangement is only applicable to Combi 400 and 620 models. If you have a Combi 620 Filter you will not need to install a separate Cartridge Fiter as an Auto Backwash Filter will have already been pre-assembled and installed inside the Combi by Stormsaver ™.

4. Install isolators on both RW and MW inlets



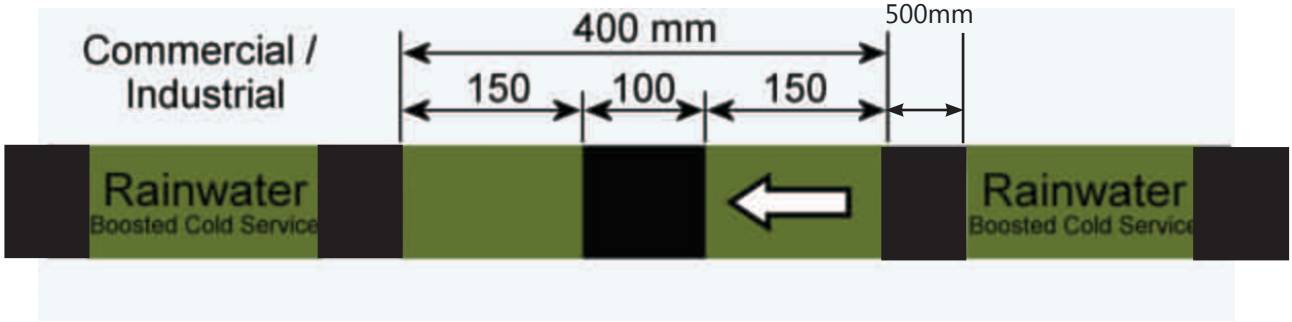


Labelling of pipework and points of use

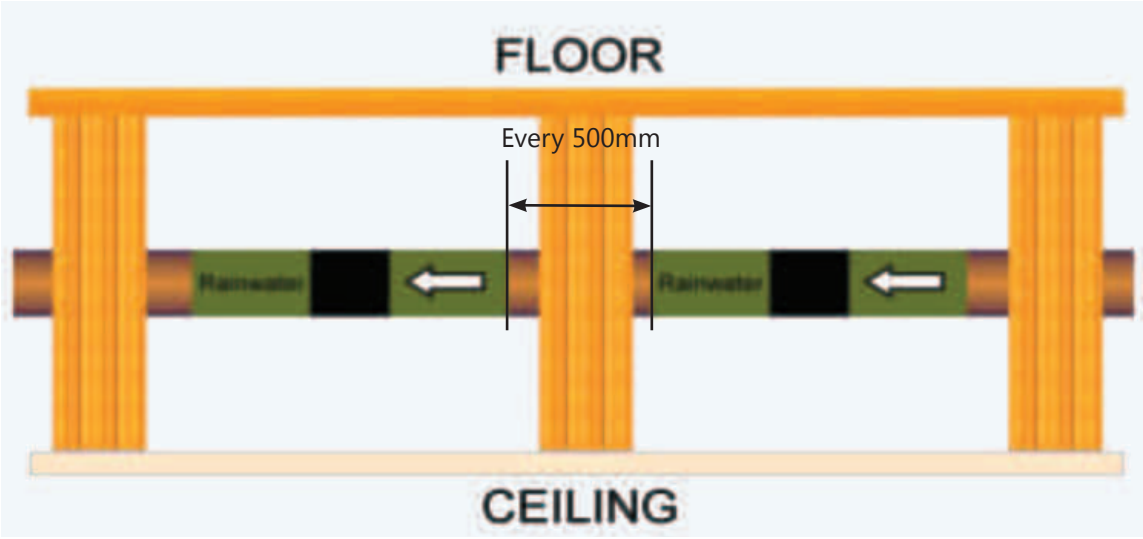
To reduce the risk of cross-connection and contamination of the wholesome water supply, it is essential that all reused water pipework is both readily distinguishable from other pipework and instantly recognisable wherever it is located, for example inside a property, beneath the street, or on private land.

So that accidental or deliberate operation, that could put the wholesome supply at risk, can be avoided, all apparatus such as valves and washouts on systems distributing reused water should be suitably marked and significantly different from those normally used on wholesome water distribution networks.

Please use the following instructions in connection with the Stormsaver™ warning labels (available as an option) to ensure your system is correctly labelled and meets WRAS regulation standards IGN: No 9.02.05.



Examples of recommended labelling for pipework inside buildings. All pipework inside buildings should be labelled as shown above to ensure it is easily identifiable as a rainwater supply.



Marking of pipework in areas not easily exposed. When only small sections of pipework are visible for example between floor joists, a label should be applied at least once in every void as demonstrated.





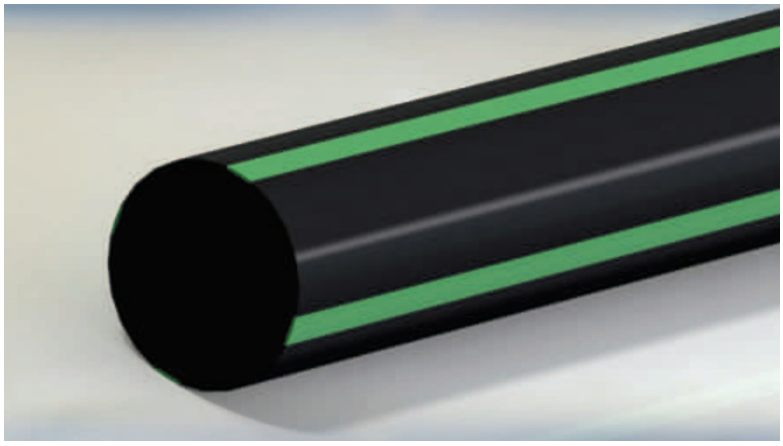
(Example shows Combi 620L)



All rainwater storage facilities and points of use should be clearly labelled using the above signage as shown. All labels kit can be purchased from Stormsaver™0844 884 0015



Example of labels that should be used at key connection points.





Any pipework carrying rainwater, to other points of use, that is located outside the building should be black plastic pipe marked with green horizontal stripes at the four quadrants as illustrated above.

All pipework and labels are available to purchase from Stormsaver™ but are not supplied as part of the standard package.

Mains Supply

1. The mains electrical supply to the unit requires 230v 50Hz 20A, type C MCB.

2. A separate rotary isolator mounted locally must be fitted by others to provide a means of safe isolation. This is in addition to the isolator provided within the control unit.

Pumps & float switch within the storage tank

1. Connect each pump into the appropriate IP rated local rotary isolators in the separate service chamber located next to the tank pump chamber

2. Each pump requires wiring back to the Combi unit control panel separately.
- Terminals 4A & 5A for pump one
- Terminals 6A & 7A for pump two (if supplied)

3. Fit the 10% low level switch with weight in the tank and terminate at the service chamber into a junction box. Wire back to the Combi unit
- Float switch core colour Brown - Terminal 11
- Float switch core colour Black - Terminal 12
- Float switch core colour Grey - Terminal unused. Leave in connector. DO NOT CONNECT TO EARTH.

Control Panel

1. Wire the mains water solenoid valve back to the Combi unit control panel - Terminals 19 & 20 + Earth

2. Wire the rainwater meter read cable back to the Combi unit control panel - Terminals RW1 & RW2 (do not connect any other BMS to these terminals). Only valid for Combi 400 and 620 units. (Not Combi 620 Filter).

Cable sizing will need to be calculated on-site and verified by others before installation. To suit individual site requirements.

Additional connections

The following items may be included. Please check Stormsaver specification of equipment ordered.

1) Monitoring Panel

Fit panel and supply with local fused 3A power supply. Connect back to control panel for metering

2) BMS

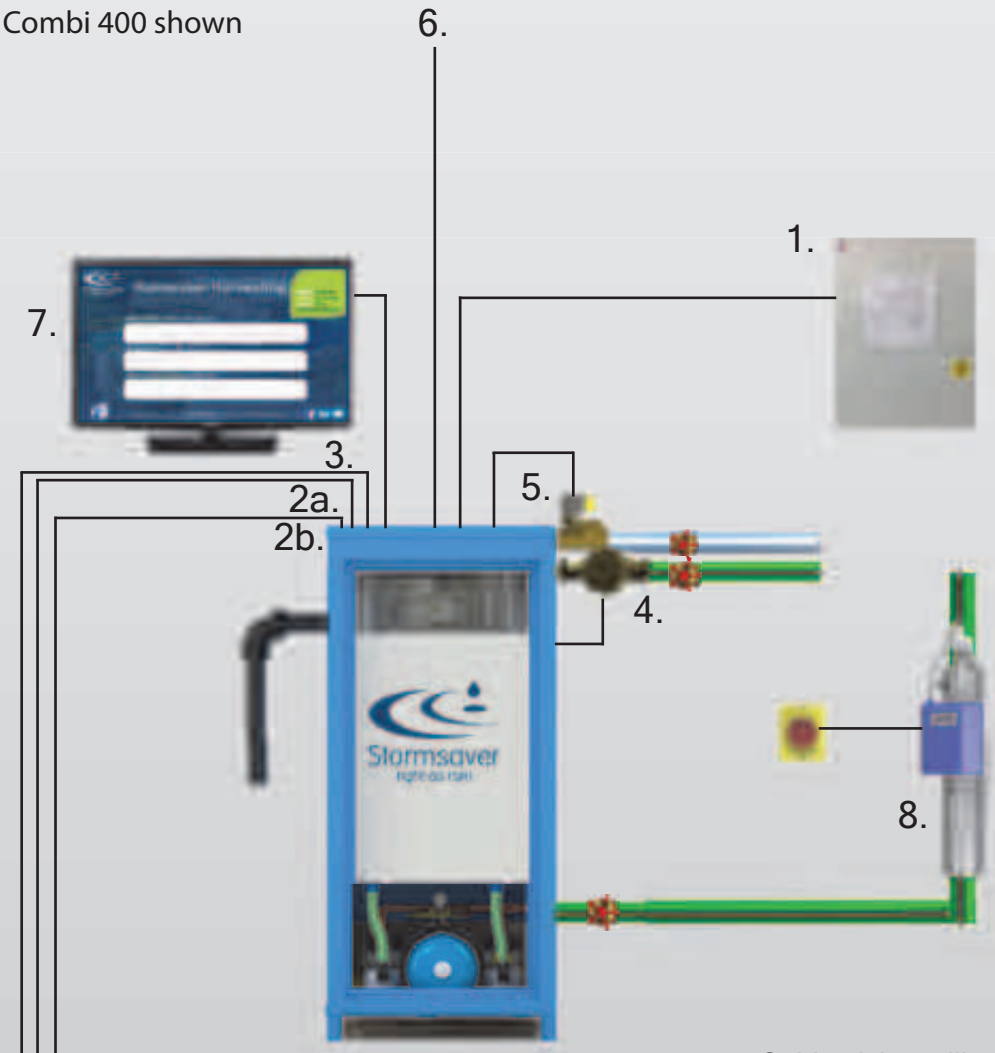
Connect BMS to control panel.

3) UV Disinfection Unit

The UV requires installing in the outlet pipework from the Combi unit. Connect local power supply to the UV disinfection unit. This does NOT need to be connected back to the control panel as this is a stand alone item

Electrical Diagram

Combi 400 shown



1. Mains Power Supply 230V 50Hz 20A Type C MCB

2a. Submersible pump 3 core, SWA 230v

2b. Submersible pump 2-3 core, SWA 230v

3. Tank 10% Low Level dry run protection switch 2 core 24v

4. Rainwater Flow Meter (400 and 620 non filter)

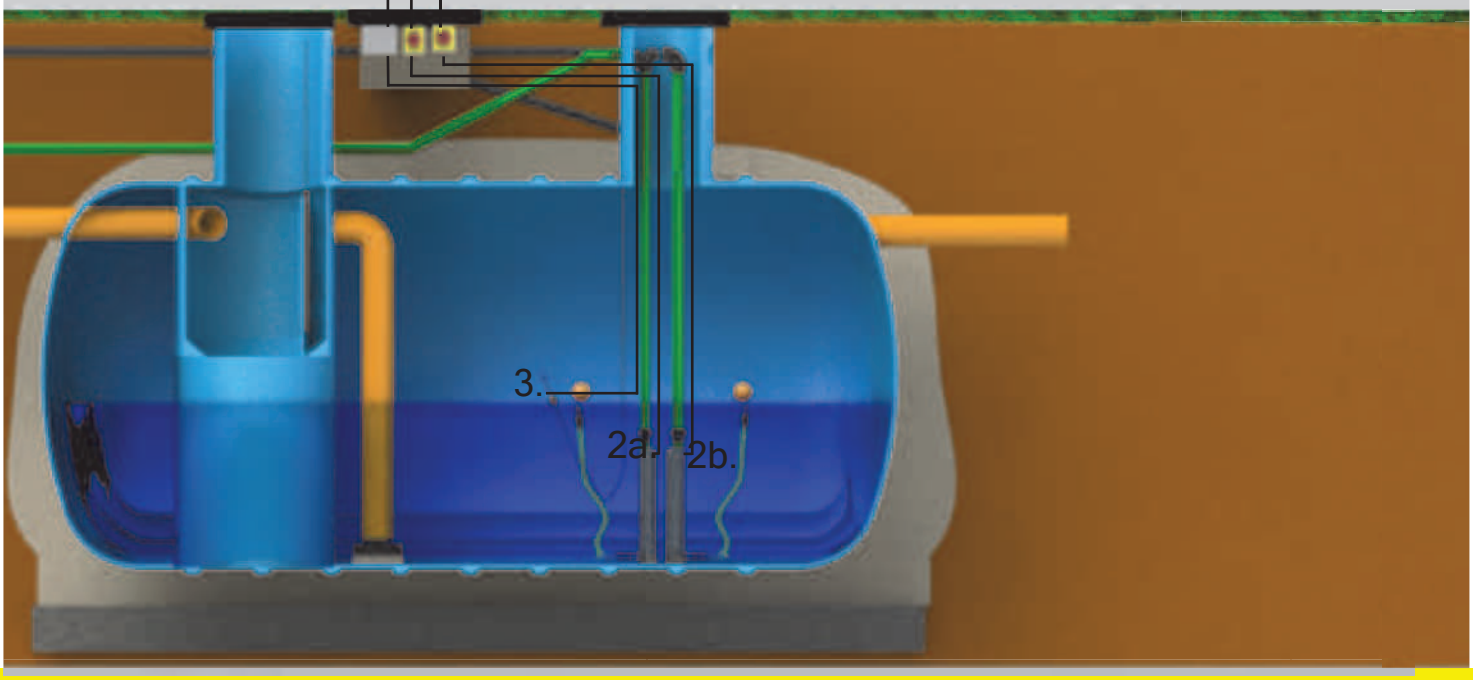
5. Mains Water Top- Up Solenoid Valve 3 core 24v

6. Common Alarm for BMS

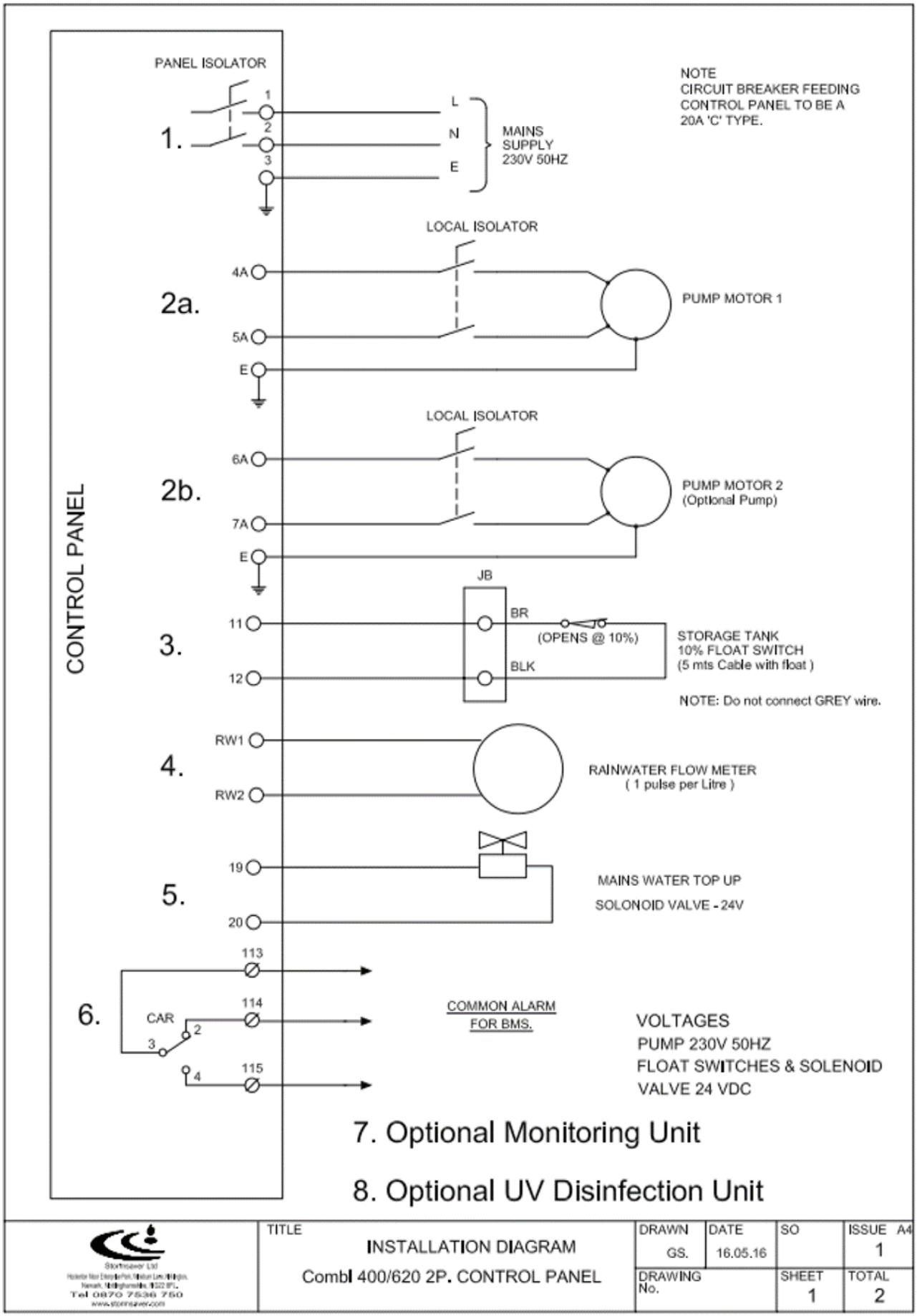
7. Monitor unit (optional)

8. UV Disinfection Unit (optional)

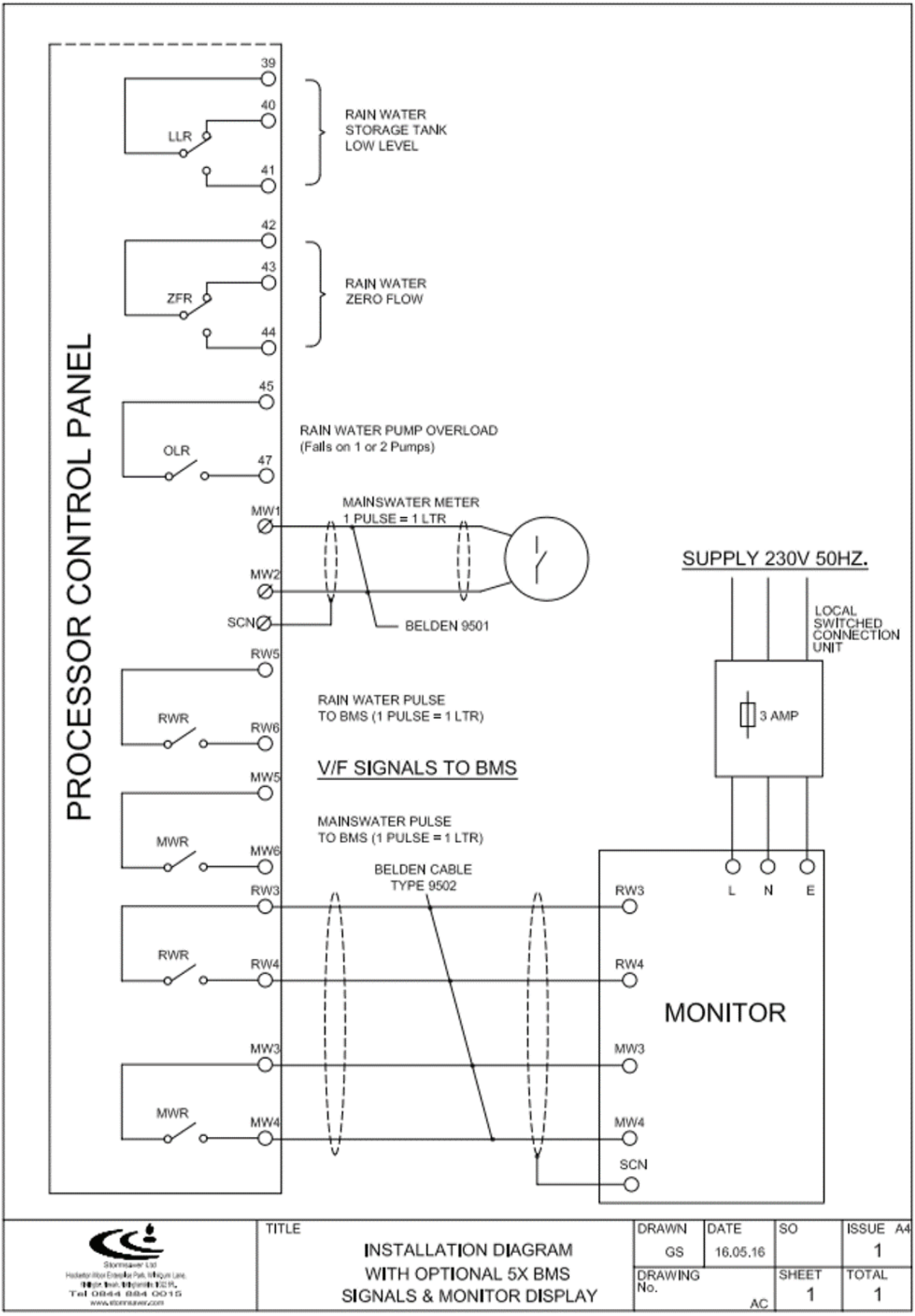
Cable sizing will need to be calculated on site and verified by others before installation to suit individual site requirements.



Wiring Diagram



Wiring Diagram



save water,
save money,
save the
environment

Stormsaver Ltd
Hockerton Moor Enterprise Park,
Winkburn Lane,
Kirklington,
Newark,
Nottinghamshire,
NG22 8FL

T: 0844 884 0015
e: enquiries@stormsaver.com
Like us on Facebook
@Stormsaver
Follow us on LinkedIn
Stormsaver Ltd
www.stormsaver.com

© Stormsaver Ltd 2016 All Rights Reserved