



Installation, Operation and Servicing Manual Version 1.0.0



Models:

SINGLE SKIN: 1350SL | 1400V | 2500V | 2500H | 3500V | 6000V | 10000V | 15000V | 20000V

BUNDED: 1350SLB | 1400VB | 2500HB | 3500VB | 6000VB | 10000VB | 15000VB

FIRE PROTECTED: 1350SLBFP30 | 1400VBFP30 | 2500HBFP30 | 1350SLBFP60 | 1400VBFP60 | 2500HBFP60

TUFFA OIL TANKS





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1. Introduction

This manual contains specific instructions and information relating to the installation, operation and maintenance of Tuffa Tanks systems.

2. Conditions of use

- Read this manual before installing this system.
- Tuffa Tanks accepts no liability for personal injury or property damage resulting from working on or adjusting the equipment incorrectly or without authorisation.
- Tuffa Tanks accepts no liability for direct, indirect, incidental, special, or consequential damages resulting from failure to follow any warnings, instructions, and procedures set out in this manual.
- Tuffa Tanks reserves the right to change the specifications of its products or the information in this manual without necessarily notifying its users.
- Variations in installation and operating conditions may affect the Tuffa Tank systems performance. Tuffa Tanks makes no representations or warranties concerning the performance of the tank system under the operating conditions prevailing at the installation.
- Only parts supplied by or approved by Tuffa Tanks must be used and no unauthorised modifications to the hardware or software should be made. The use of non-approved parts or modifications will void all warranties and approvals and could lead to hazardous safety conditions.
- Unless otherwise noted, references to brand names, product names, or trademarks constitute the intellectual property of the owner thereof.

3. Safety

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE & COMPLY WITH ALL INSTRUCTIONS BELOW.

THIS MANUAL SHOULD BE KEPT WITH THE EQUIPMENT AT ALL TIMES.

1. The major hazard involved with installing and operating the unit is electrical shock. This hazard can be avoided if you adhere to the procedures in this manual and exercise all due care.
2. Installation and use of this product should only be carried out by properly trained and approved personnel.
3. Please refer to storage media MSDS which should be supplied by the proprietor of this system which will detail the PPE required for handling and emergency procedures.
4. The user of this product is responsible for the safe and correct use of this product.
5. This product is only suitable for storage and/or dispensing of the liquid media referenced at the point of sale.



4. Product description

Tuffa's oil tanks are designed solely for the storage of fuels. The static bunded systems enable safe fuel storage in an outdoor environment and ensures you meet all stringent fuel storage regulations. The high standard of specification ensures optimum safety and functionality. This product's standard specification is not approved for the resale of fuel.

4.1 Product identification

The identification plate is located within the cabinet of each system and will detail the capacity, serial number, model number and year of manufacture.

Technical Details

Model	
Capacity	
Date of manufacture	
Serial number	
Stored product	
Weight	
Material	LLDPE
Minimum wall thickness	5.4 mm
Bunded	Yes No
Fire protection rating	N/A 30 min 60 min
Quality check	

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SCAN FOR USER MANUAL

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LABC

Approved

TUFFA

TANKS

If a fuel spill occurs:

- Observe safety precautions (e.g. no smoking)
- Stop the fuel from entering drains or watercourses by containing it with sand or earth
- Do not spread the fuel by hosing it down. Do not add detergents.
- Call the Environment Agency (24 hours)

EMERGENCY HOTLINE

0800 80 70 60

TUFFA TANK SERVICE HISTORY

Date	Signature



4.2 Product specification

4.2.1 Single skin tanks

	1350SL	1400V	2500H	2500V	3500V	6000V	10000V	15000V	20000V
Capacity	1350 litres	1400 litres	2500 litres	2500 litres	3500 litres	6000 litres	10000 litres	15000 litres	20000 litres
Length	2060 mm	-	2105 mm	-	-	-	-	-	-
Width	670 mm	-	1255 mm	-	-	-	-	-	-
Diameter	-	1210 mm	-	1585 mm	1594 mm	2013 mm	2550 mm	2550 mm	2890 mm
Height	1440 mm	1500 mm	1410 mm	1740 mm	2360 mm	2295 mm	2450 mm	3360 mm	3590 mm
Weight (approx.)	60 kg	40 kg	120 kg	60 kg	120 kg	140 kg	240 kg	340 kg	360 kg
Inner tank material	Lower linear density polyethylene								
Description	Plastic single skin tank								
Fill point	2" BSP								
Outlet	Bottom outlet - 1" BSP female complete with oil filter valve assembly Optional - Top outlet - 10mm (as standard the Tank Top is calibrated for 1.6m anti siphon protection)								
Ventilation	1x 3" vent								
Gauge	Clock gauge Optional - Watchman Sonic				Watchman Sonic				

4.2.2 Fire protected tanks

	1350SLBFP30	1400VBFP30	2500HBFP30	1350SLBFP60	1400VBFP60	2500HBFP60
Capacity	1350 litres	1400 litres	2500 litres	1350 litres	1400 litres	2500 litres
Length	2680mm	-	2840mm	2680mm	-	2840mm
Width	870mm	-	1520mm	870mm	-	1520mm
Diameter	-	1585mm	-	-	1585mm	-
Height	1665mm	1740mm	1630mm	1665mm	1740mm	1630mm
Weight (approx.)	195kgs	140kgs	290kgs	238kgs	171kgs	337kgs
Bund material	Lower linear density polyethylene					
Inner tank material	Lower linear density polyethylene					
Description	Plastic bunded fire protected tank					
Fill point	2" BSP with overfill prevention valve					
Outlet	Bottom outlet - 1" BSP female complete with oil filter valve assembly Optional - Top outlet - 10mm (as standard the Tank Top is calibrated for 1.6m anti siphon protection)					
Ventilation	1x 2" spark arrestor vent					
Gauge	Clock gauge Watchman Sonic					

4. PRODUCT DESCRIPTION



4.2.3 Bunded tanks (no cabinet)

	1350SLB	1400VB	2500HB	3500VB	6000VB	10000VB	15000VB
Capacity	1350 litres	1400 litres	2500 litres	3500 litres	6000 litres	10000 litres	15000 litres
Length	2680mm	-	2840mm	-	-	-	-
Width	870mm	-	1520mm	-	-	-	-
Diameter	-	1585mm	-	2013mm	2550mm	2890mm	2890mm
Height	1665mm	1740mm	1630mm	2520mm	2585mm	2590mm	3500mm
Weight (approx.)	170kgs	120kgs	260kgs	280kgs	360kgs	430kgs	630kgs
Bund material	Lower linear density polyethylene						
Inner tank material	Lower linear density polyethylene						
Description	Plastic bunded tank						
Fill point	2" BSP			2" BSP with overfill prevention valve			
Outlet	Bottom outlet - 1" BSP female complete with oil filter valve assembly Optional 1350 / 1400 / 2500 top outlet - 10mm (as standard the Tank Top is calibrated for 1.6m anti siphon protection 3500 plus models - 1" top outlet						
Ventilation	1x 3" vent						
Gauge	Clock gauge			Watchman Sonic			

4.2.4 Bunded tanks (with cabinet)

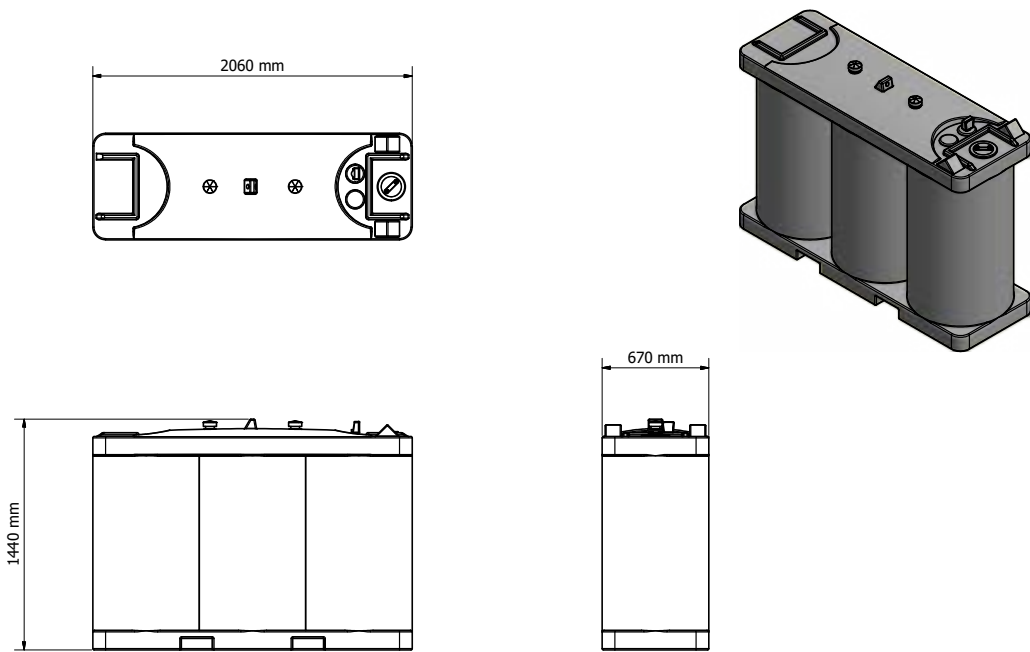
	3500VB	6000VB	10000VB	15000VB
Capacity	3500 litres	6000 litres	10000 litres	15000 litres
Length	-	-	-	-
Width	-	-	-	-
Diameter	2013mm	2550mm	2890mm	2890mm
Height	2520mm	2585mm	2590mm	3500mm
Cabinet depth	600mm	600mm	600mm	600mm
Weight (approx.)	330kgs	410kgs	480kgs	680kgs
Bund material	Lower linear density polyethylene			
Inner tank material	Lower linear density polyethylene			
Description	Plastic bunded tank			
Fill point	2" BSP with overfill prevention valve			
Outlet	Bottom outlet - 1" BSP female complete with oil filter valve assembly Optional 1" top outlet			
Ventilation	1x 3" vent			
Gauge	% Hydrostatic & Watchman Sonic (battery) Tuffa FMS gauge and bund alarm (230V)			

4. PRODUCT DESCRIPTION

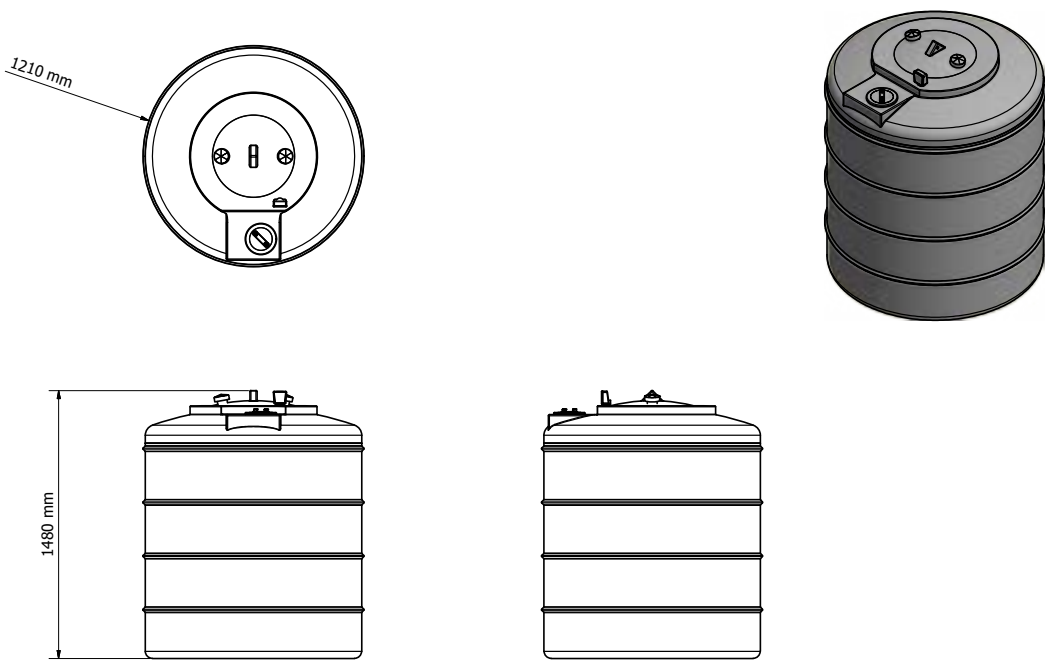


4.3 Product dimensions

1350SL



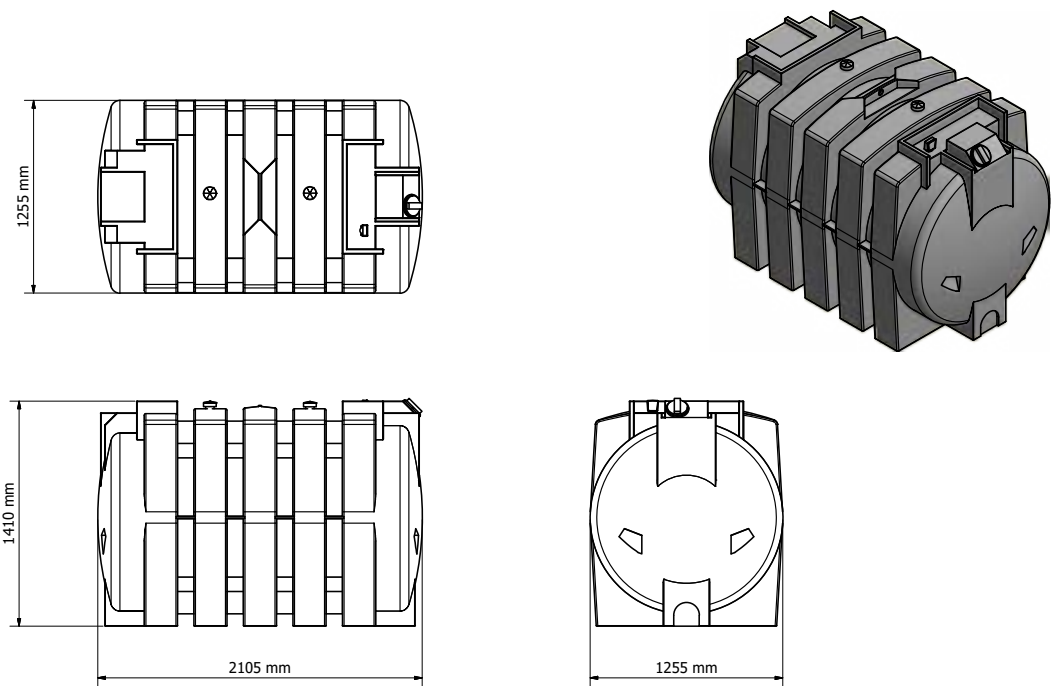
1400V



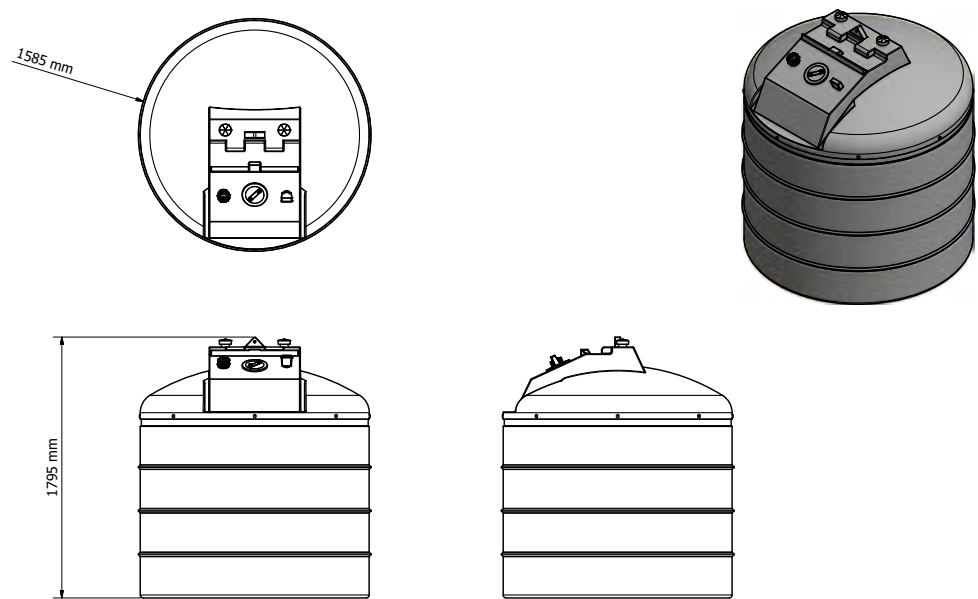
4. PRODUCT DESCRIPTION



2500H



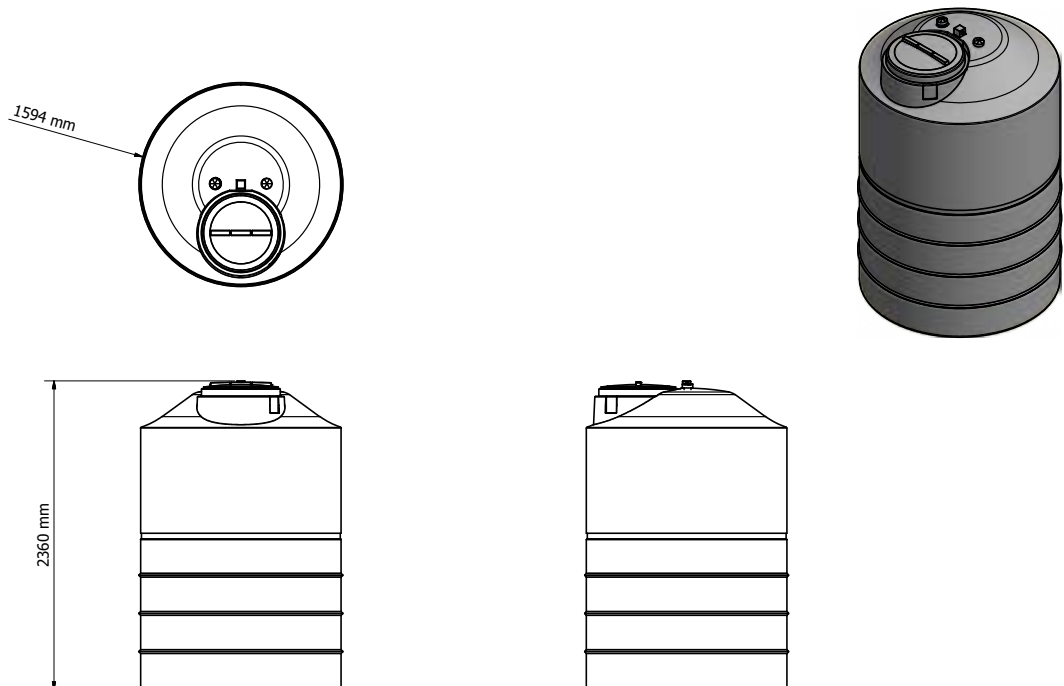
2500V



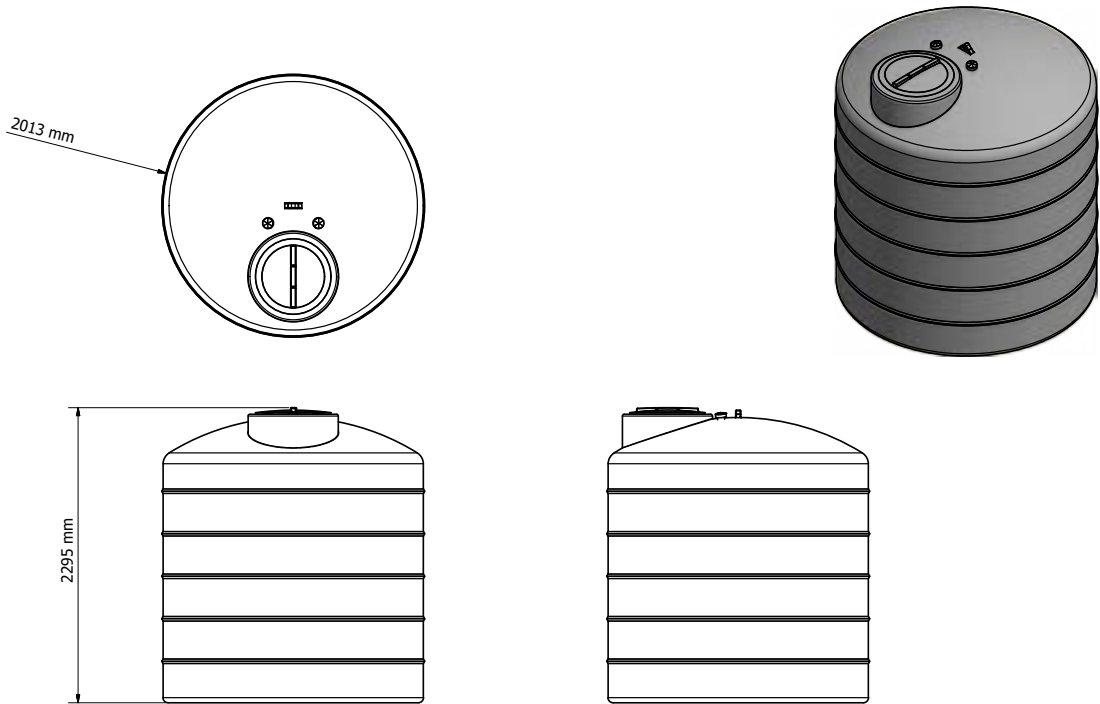
4. PRODUCT DESCRIPTION



3500V

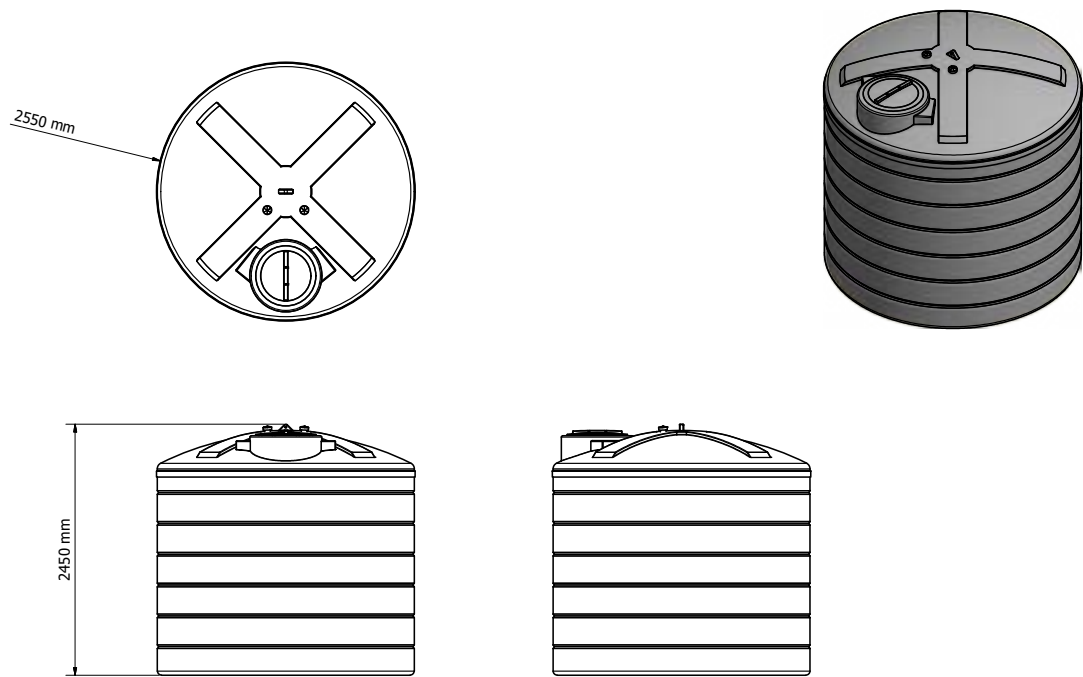


6000V

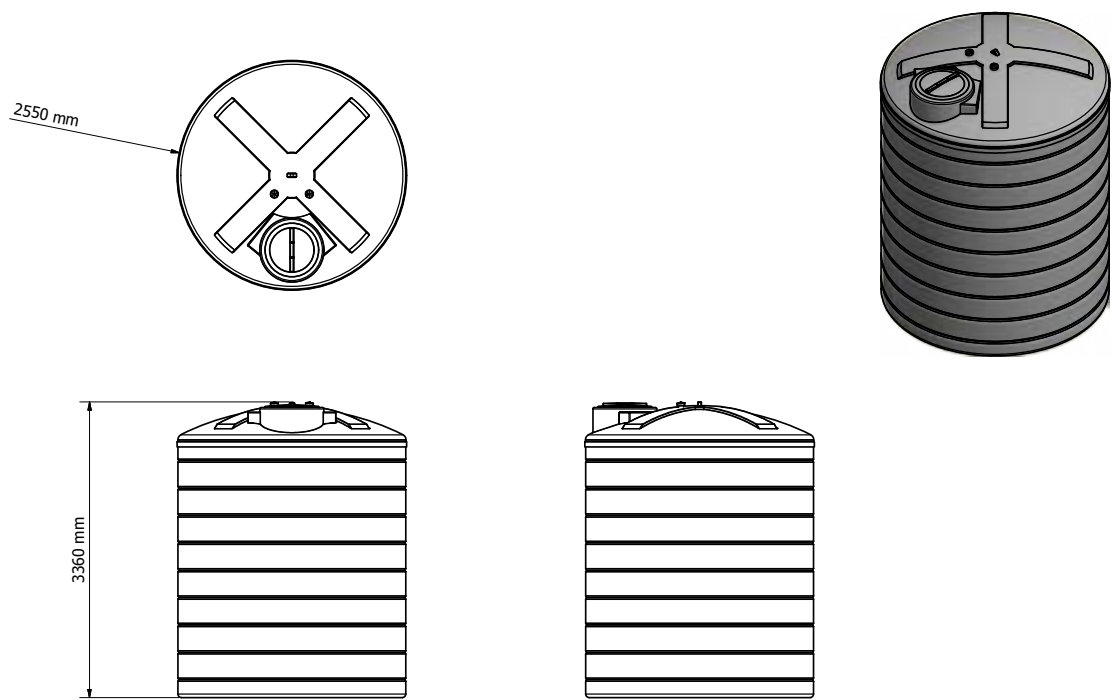




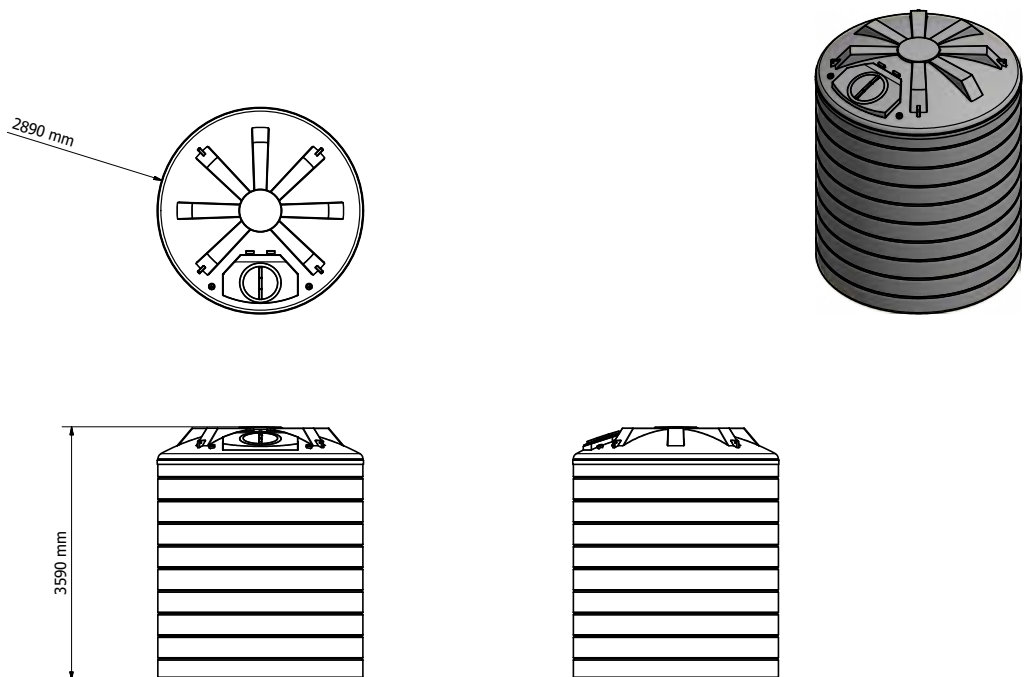
10000V



15000V



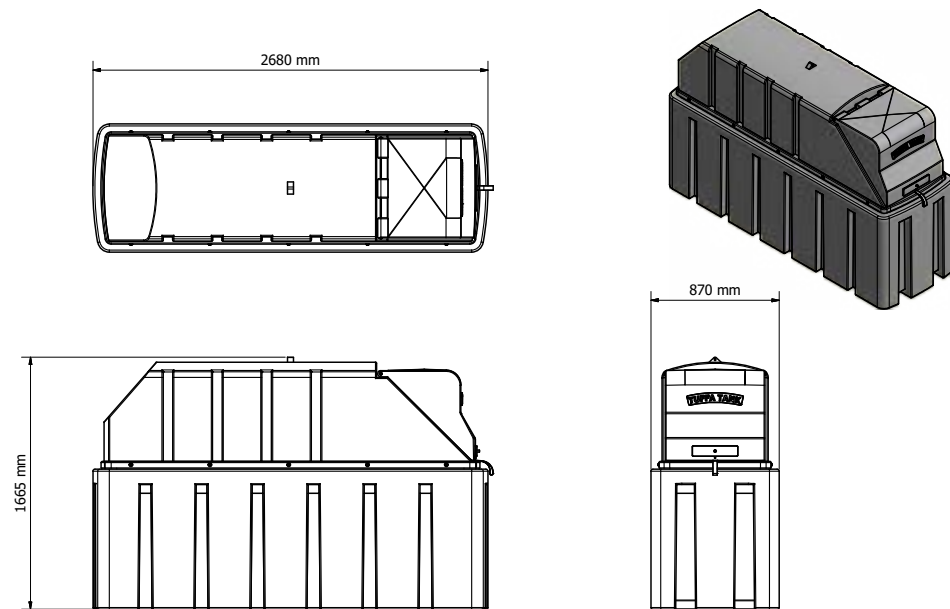
20000V



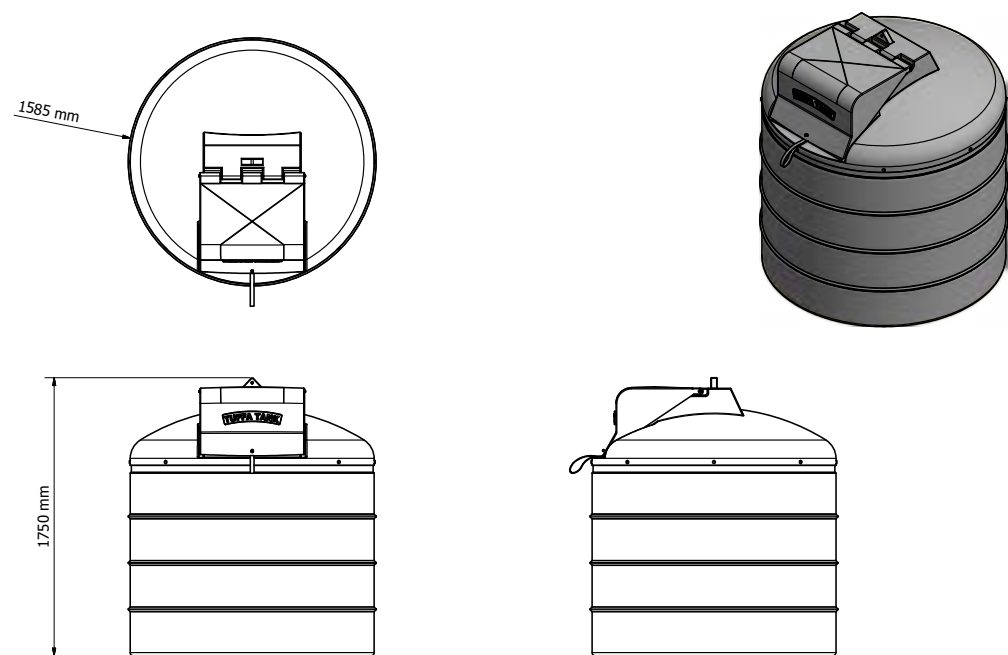
4. PRODUCT DESCRIPTION



1350SLB | 1350SLBFP30 | 1350SLBFP60



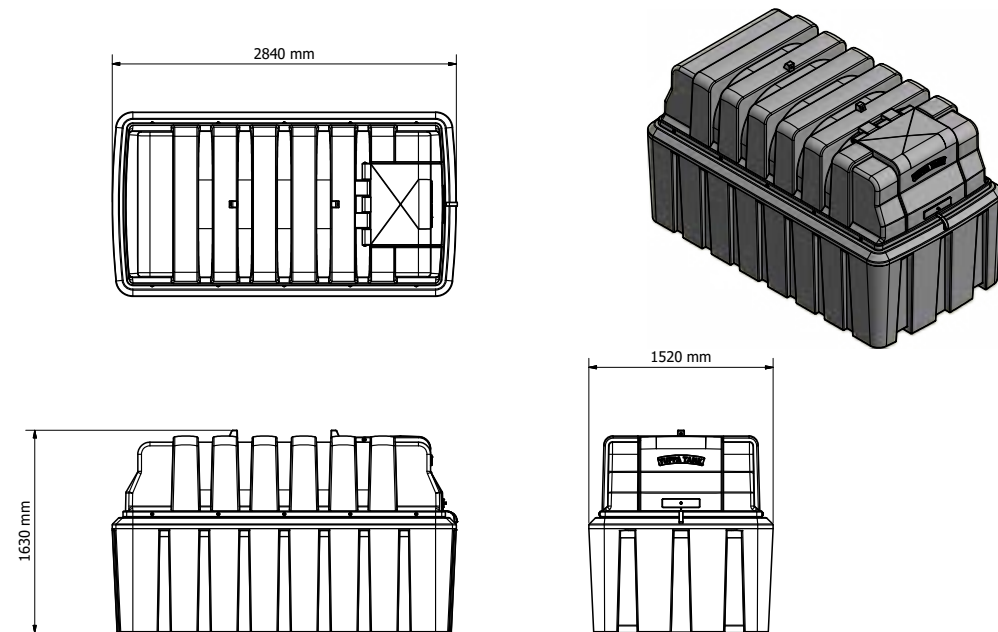
1400VB | 1400VBFP30 | 1400VBFP60



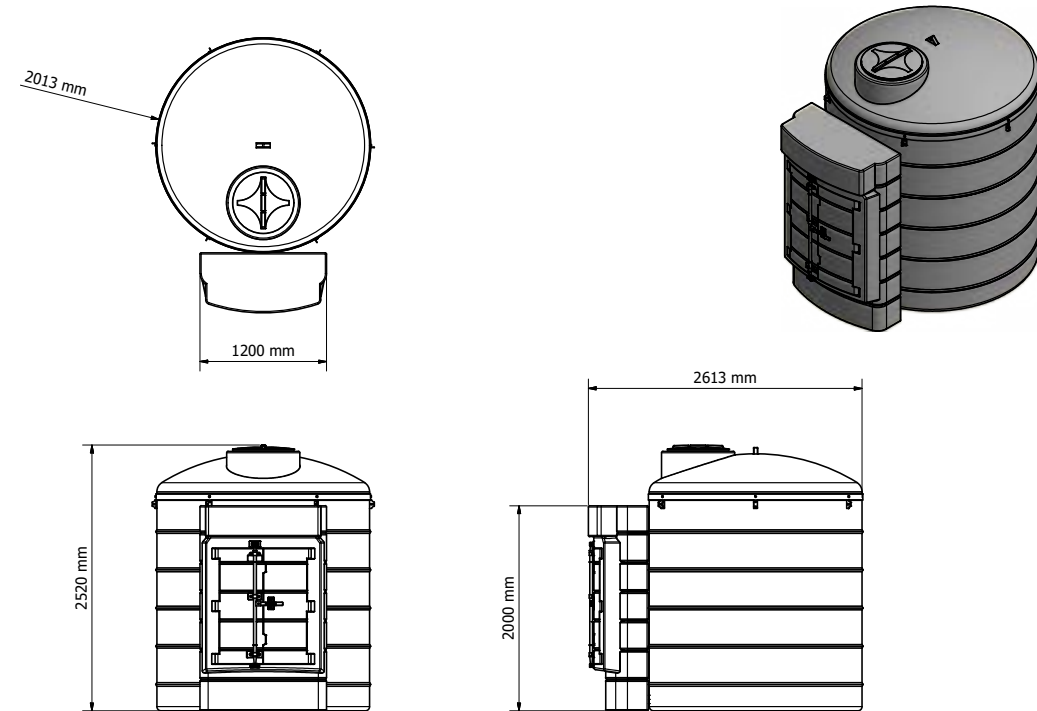
4. PRODUCT DESCRIPTION



2500HB | 2500HBFP30 | 2500HBFP60

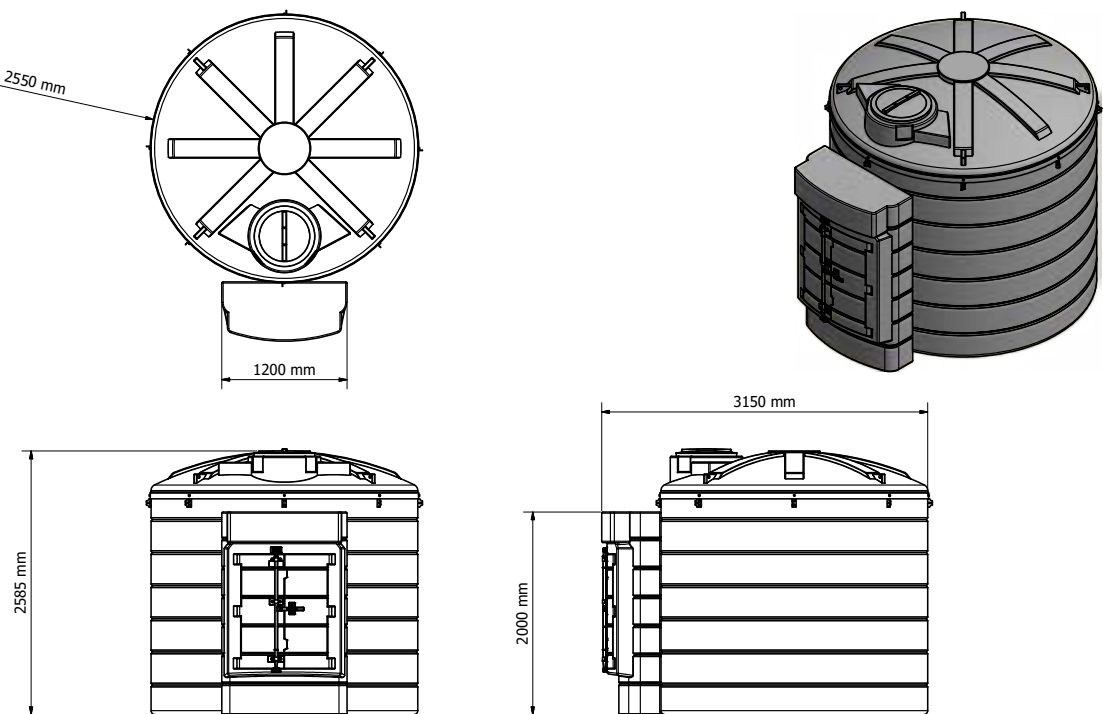


3500VB (with cabinet)

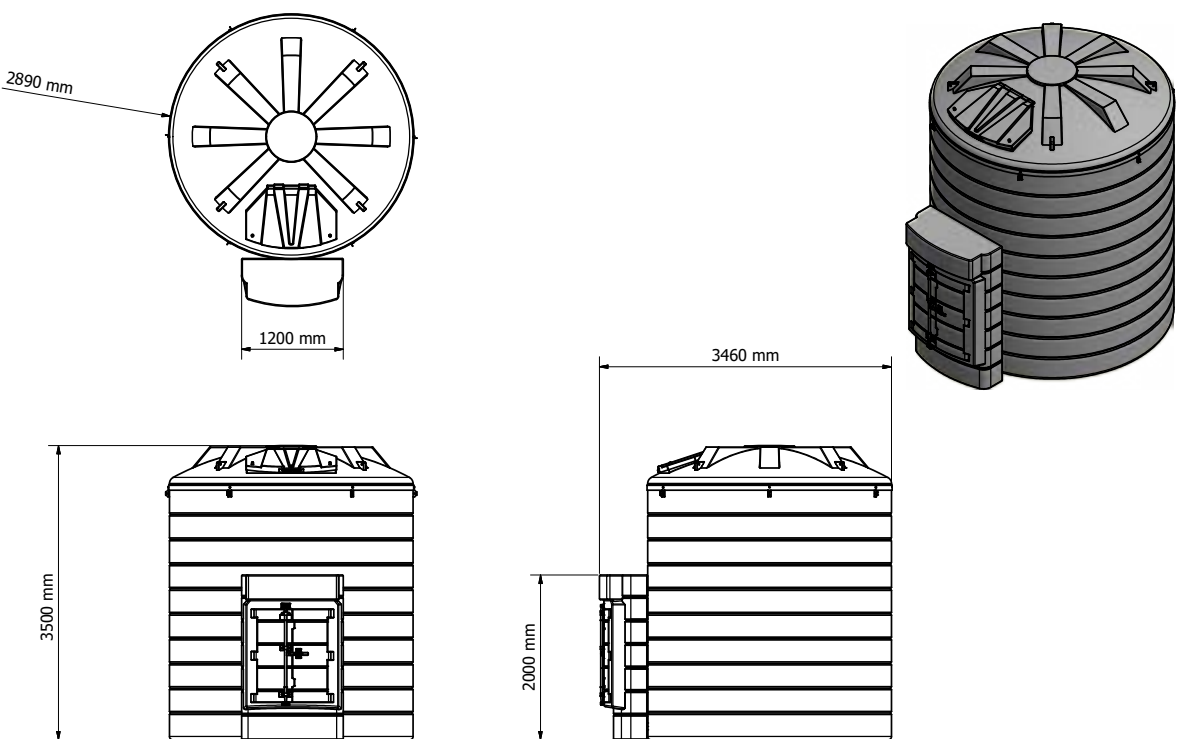




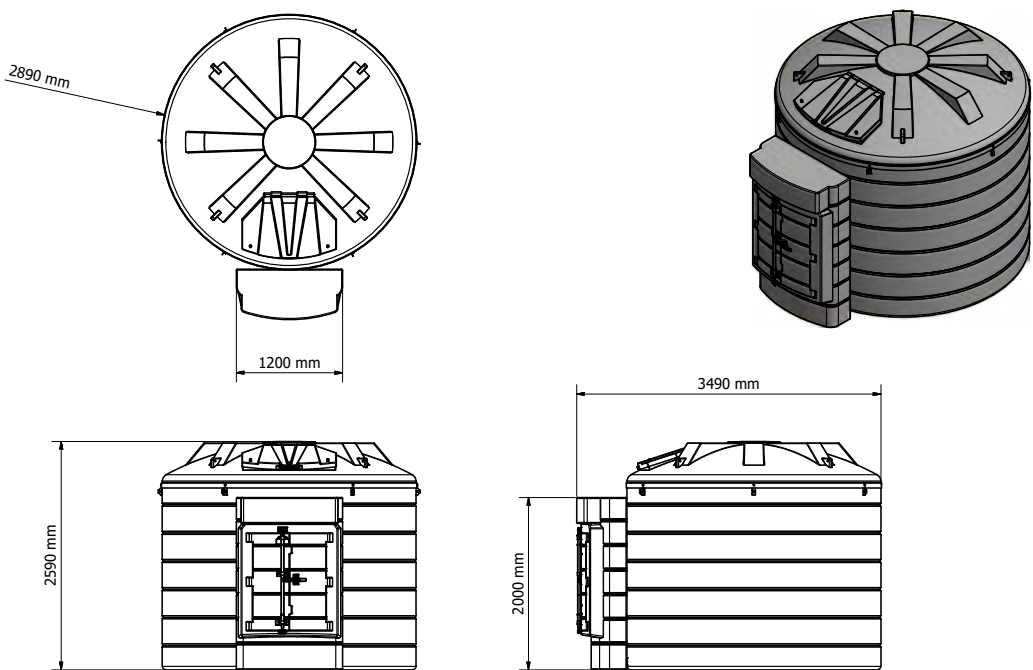
6000VB (with cabinet)



15000VB (with cabinet)



10000VB (with cabinet)





5. Transport & storage

DO NOT TRANSPORT WITH LIQUID INSIDE THE TANK

1. During transportation the flip lid and cabinet doors are secured by 1 x R clip. The R clip must be installed prior to transportation.
2. Loading and off-loading must be carried out by a competent person using suitable rated and maintained equipment, either a forklift with extended forks/tines or a crane. If lifting slings are used, they must be attached to the lifting points as shown in the pictures below using a steel lifting eye insert. If lifting from below use a suitable rated forklift with extended forks. If lifting from above use a suitable rating lifting slings / chains.
3. 1350SLB | 1350SLBFP30 | 1350SLBFP60 | 2500HB | 2500HBFP30 | 2500HBFP60 - Lift with main lifting eye highlighted in red in the image below or forklift from the side.



4. 1400VB | 1400VBFP30 | 1400VBFP60 | 3500VB | 6000VB | 10000VB | 15000VB - Lift with x4 equal spaced lifting brackets as highlighted in red in the image below or forklift from one side using a ratchet strap to secure the tank to the forklift mast.



5. Tuffa fuel tanks must never be pushed or rolled.
6. During transport and storage, the flip lid or cabinet doors must be closed and secured.
7. Loading, transport and storage areas must be smooth and free of sharp edges.



6. Installation & commissioning

6.1 Installation guidelines

The proprietor of the Tuffa fuel tank is responsible for complying with all legal requirements relating to the installation and use of this product, as well as the guidelines issued by local firefighting authorities and environmental authorities.

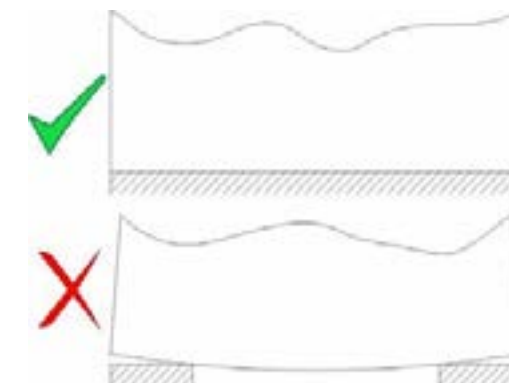
Once the Tuffa fuel tank has been received on site, check that no damage has occurred while in transit. Locate the tank in the desired location using either a crane, forklift or rollers.

Please refer to the British Standard guidelines for instructions on specific installation requirements for your type of location and use.

6.2 System installation

System foundation

The system must be installed and fully supported on a smooth levelled concrete base built in accordance with good building standards and engineering principles. It is recommended that tanks be installed on a concrete base at least 100mm thick which extends out 300mm on all sides of the tank. Please refer to diagram below:



6.3 System location

The location of the system should be positioned by a road or passing with sufficient width, and loading capacity to accommodate a tanker delivering fuel. Provision for the U-turn of a tanker should be considered. Potential obstacles in the form of tree branches, high voltage lines, or parked vehicles must be minimized.

The space around the system should allow free and collision-free movement of served vehicles. Provision should be made to protect tank from impact damage.



6.4 Electrical requirements (for 3500 litres and above models only containing mains supply equipment)

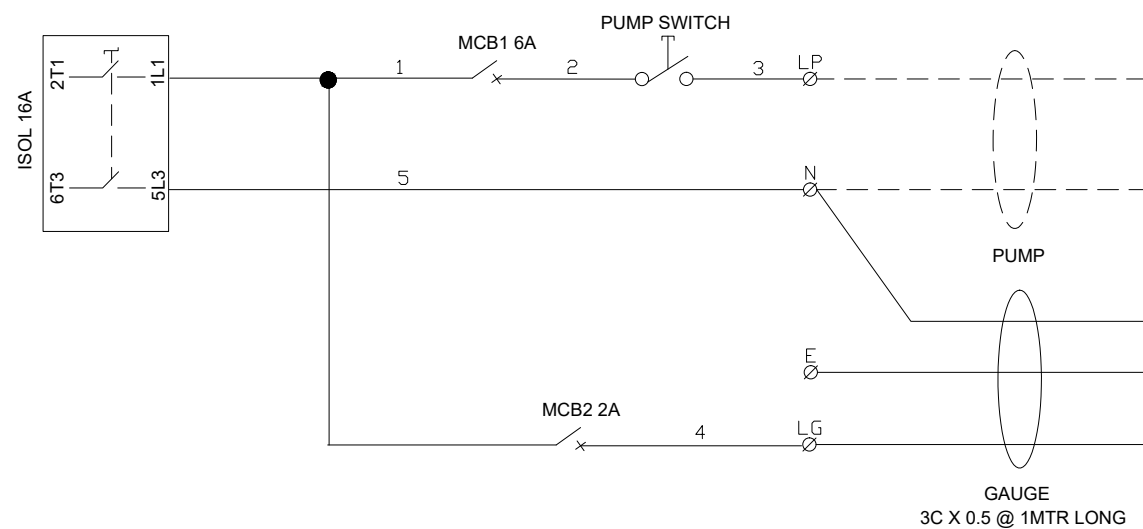
Only a suitably qualified electrician according to applicable regulations may work on the electric wiring installation. The system components under service, maintenance, and repair work must be disconnected from the power supply before any work is undertaken.

System power requirements:

- 220 - 240 Volts, 50 Hz +/- 10%
- 13 amp circuit breaker recommended
- Power cable recommendation: 3 Core 2.5mm flex cable

6.5 Electrical wiring diagram

6.5.1 3500VB / 6000VB / 10000VB / 15000VB



7. Operation of the system

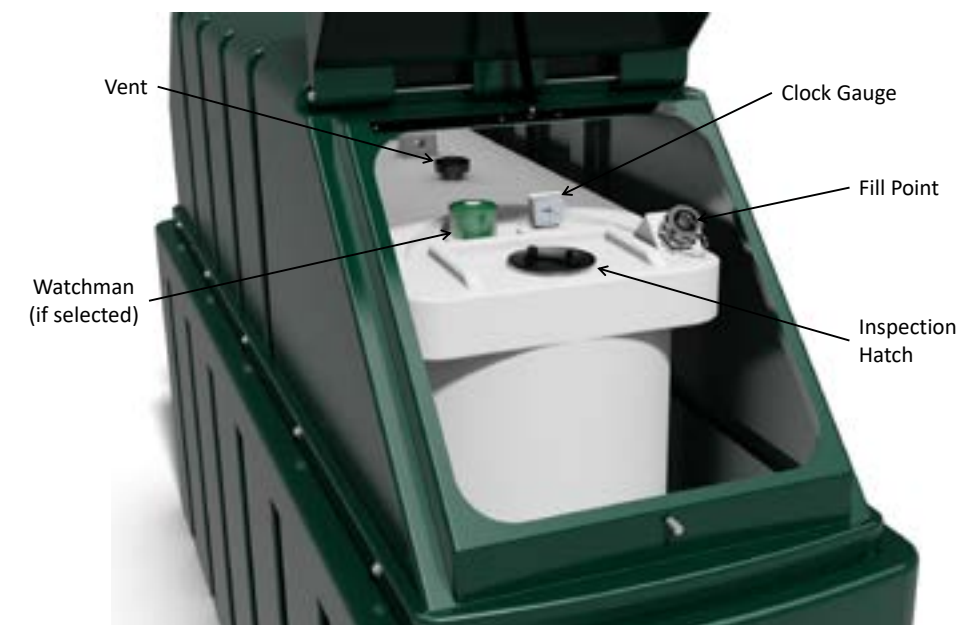
The system and its components are intended for fuel only and for the purposes described below. Use of this system in a means other than described below is regarded as mis-use of the system, the user of the system will be liable for any defects that occur due to its unintended use.

7.1 Using the system

The operation and maintenance personnel must be suitably trained to use the system, the user must make sure they fully understand the operation and maintenance sections of this manual.

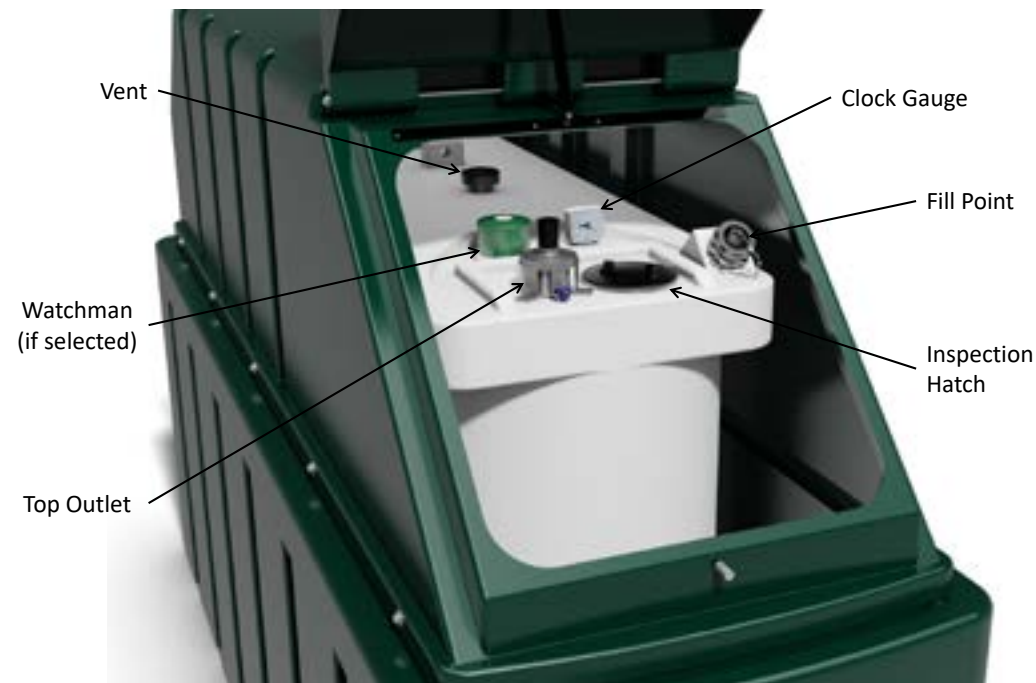
7.2 Summary of main parts 1350SLB / 1400VB / 2500HB

Bunded oil tank





Bunded oil tank (top outlet)

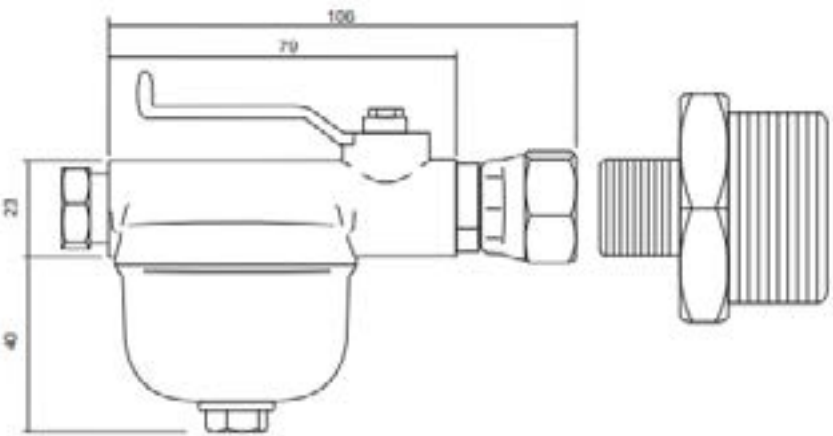


7.3 Summary of main parts 1350SLBFP / 1400VBFP / 2500HBFP

Fire protected oil tank



Oil filter valve assembly (bottom outlet models only)





Fire protected tank (top outlet)



7.4 Summary of main parts 3500VB / 6000VB / 10000VB / 15000VB

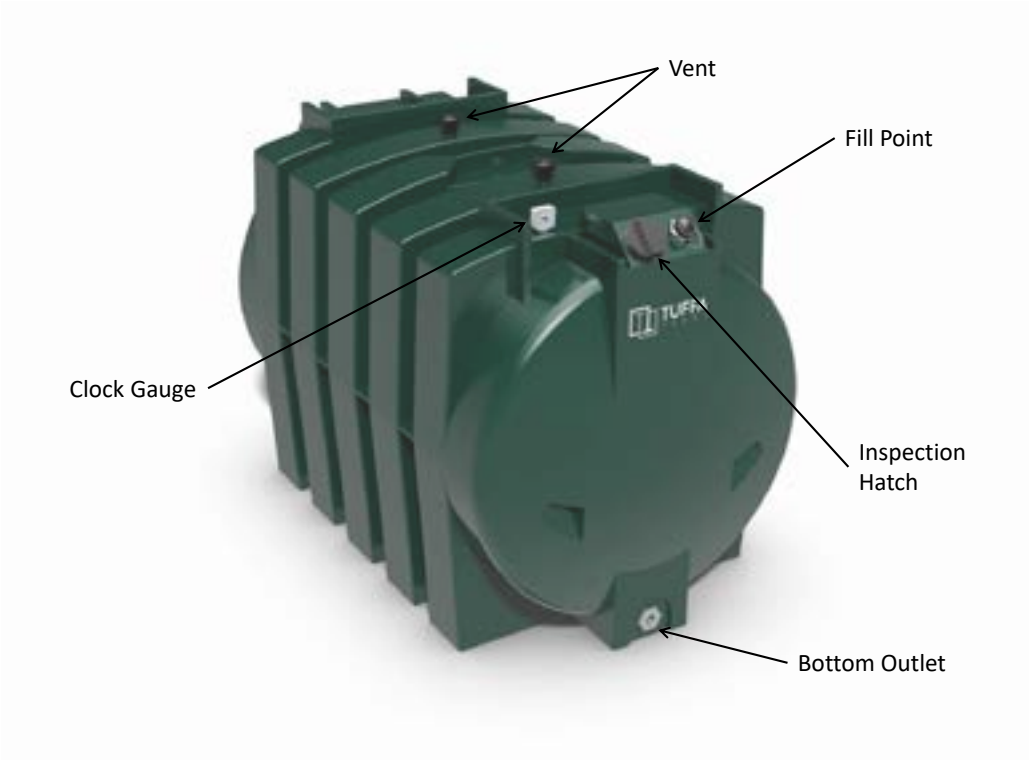




7.4 Summary of main parts 3500VB / 6000VB / 10000VB / 15000VB (230V)



7.5 Summary of main parts 1350SL / 1400V / 2500H / 2500V





7.6 Summary of main parts 3500V / 6000V / 10000V / 15000V/ 20000V



7.7 Filling Tuffa fuel tank

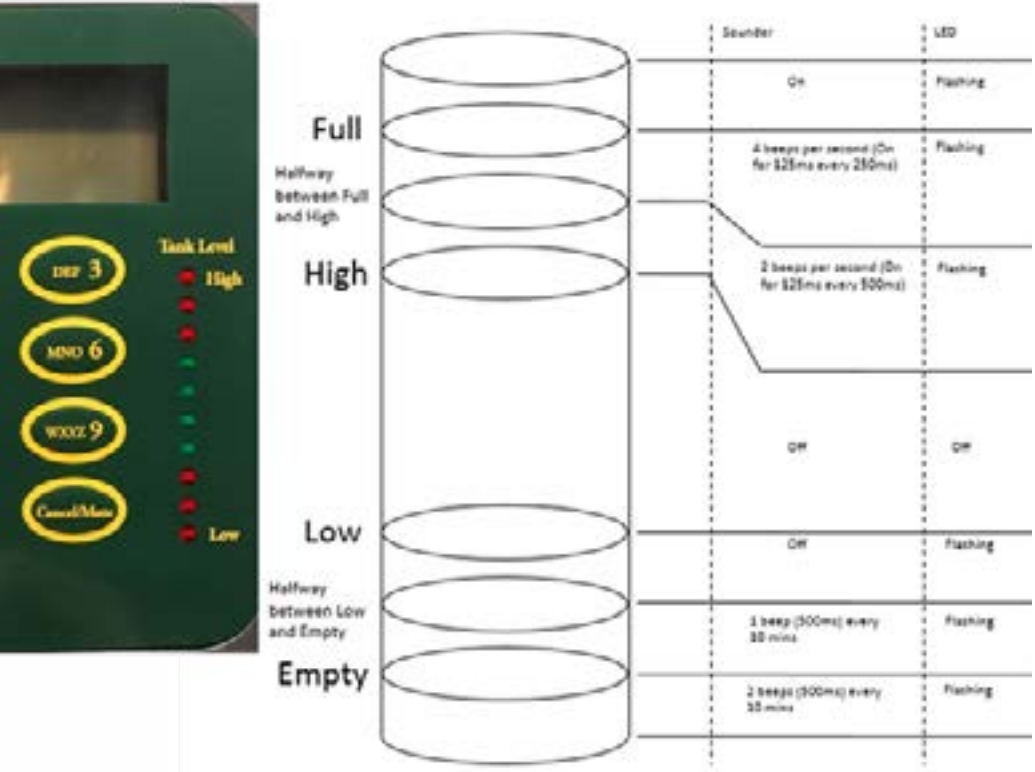
1. Filling should be performed only under constant supervision of an authorised person.
2. This tank can only be filled by a tanker equipped with a 2" female BSP coupling.
3. On 3500 / 6000 / 10000 / 15000 models before filling the tank with fuel, please check the level of the tank and make note of the tank level before filling, ensure the high-level alarm indicator functions correctly.
4. Fit tanker delivery hose to 2" BSP fill coupling on tank.
5. Engage tanker pump and begin to fill. Stop filling when desired amount has been dispensed into tank, or when high-level indicator is activated.
6. During the tanker fill always observe tank level gauge throughout the duration of the filling process. The tanker driver must observe the tank being filled at all times during this process.
7. Once complete disconnect delivery hose from tank coupling.



7.8 Equipment controls

A. Tuffa FMS gauge and bund alarm (230V) - 3500 litre models and above

The Fuel Level Monitoring System is a 240v combined digital tank level indicator and bund and high-level alarm that is designed to provide both visual and audible alarms whenever a predetermined level in a storage tank is reached. The FMS gives a content readout in both litres and a percentage.



a. Full alarm

Activation of this alarm indicates that the tank is full. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

b. High level alarm

Activation of this alarm indicates the tank has reached a high capacity and close attention must be paid to the diesel inside the tank. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.



c. Low level alarm

Activation of this alarm indicates the tank has reached a low level. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

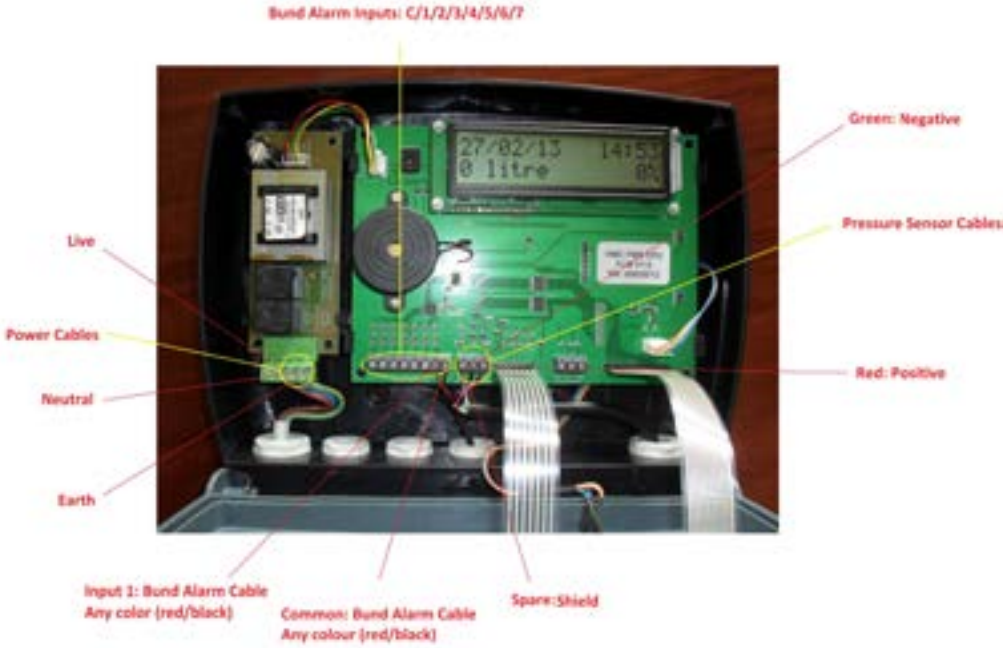
d. Empty alarm

Activation of this alarm indicates the tank is empty and needs filling. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

e. Bund alarm

Activation of this alarm indicates that there is product in the bund cavity. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered constantly until muted or until the product is removed. The audible can be muted using the mute button on the keypad. In the event of this it is advised the bund cavity is checked and drained as soon as practicable.

f. FMS Wiring diagram





B. Watchman Sonic

1. CHECK LEVEL, DISTANCE AND HEIGHT

Ensure before you start your install that the tank the WatchmanSonic is to be fitted to is:

1. On a flat level base.
2. Within a 200 metre range from receiver position.
3. A maximum actual tank height of 3 metres. 50 metre effective range (200 metre clear line of sight).
4. Tank must be fitted in accordance with manufacturers guidelines & instructions.

NB: Any radio frequency signal may be seriously inhibited if positioned underground. Please check that the transmitter / receiver link works in the desired location before installation.

2. TANK PREPARATION

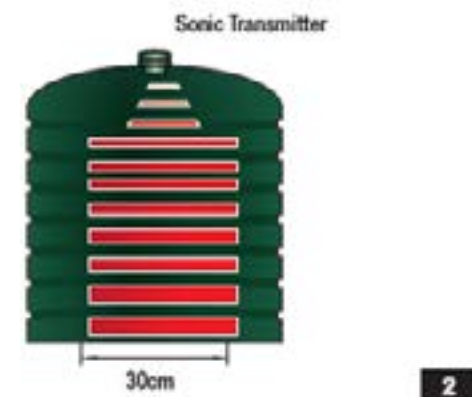
Please note- it is important to keep all items dry during installation.

A) PRE-DRILLED TANKS.

There may already be a 32mm pre-drilled opening in the tank top and possibly a tube fitted. If so, remove the cover by undoing the two screws holding it in place, and dispose of the tube in accordance with local government guidelines.

NB – Ensure the hole is a minimum DIAMETER 30mm.

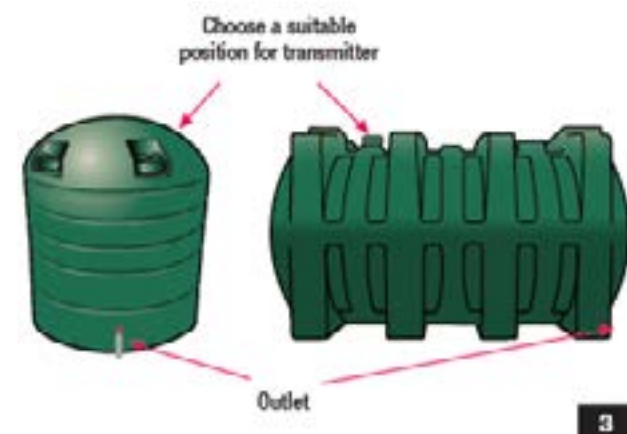
Ensure that the space beneath the WatchmanSonic unit is free of any obstacles and that the Itrasonic beam path is clear of obstructions. (See Picture 2)



2

B) UN-DRILLED TANKS.

Where drilling is required to fit the transmitter, choose a flat level point that is at the same level and no lower than any opening at the top of the tank (filling point etc.). (See Picture 3)



3

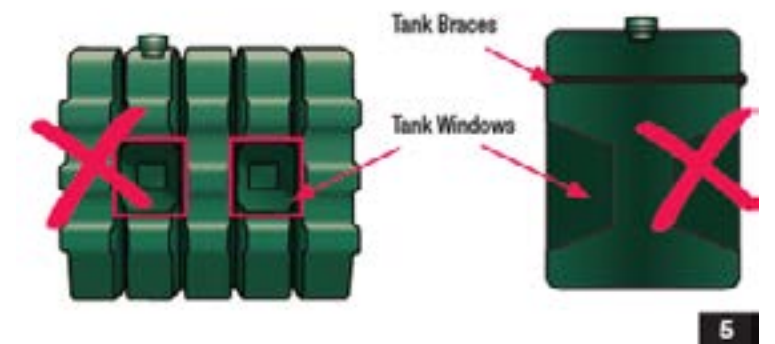


The Transmitter can't sit at an angle as this gives an incorrect level reading on the receiver. Take care not to choose an area on which water could gather i.e. a dent/depression or a position directly above any restricted area inside the tank. (See Picture 4)



4

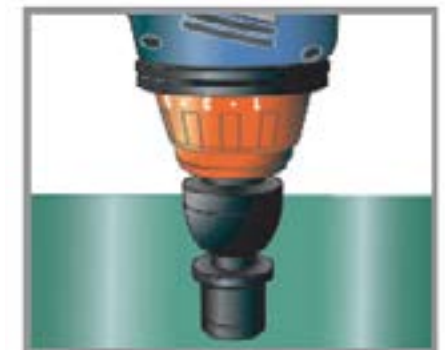
NB: For tanks with window corrugations or internal braces please ensure that the WatchmanSonic is not positioned above or within 15 cm of the area of the WINDOW or the edge of the tank. (See Picture 5). Ensure that the sonic path is clear to the bottom of the tank as per pic 2.



5

Drill a hole in the place that you have selected on the tank's top surface using a 32mm hole-saw. (shown in Picture 6)

Warning: If you are unsure if you should drill the tank please check with the tank manufacturer first.



6

3. FITTING TRANSMITTER BASE

For tanks with pre-drilled holes. Ensure guidelines from points 4 & 5 are adhered to.

- Remove cap from the hole (Picture 7) and insert transmitter base, ensuring the weather seal is securely in place (Picture 8 & 9).
- Tighten the WatchmanSonic base (Part E) on to the tank with 2 stainless steel self-tapping, counter sunkscrews supplied (Part C). Do not over tighten!



7

8

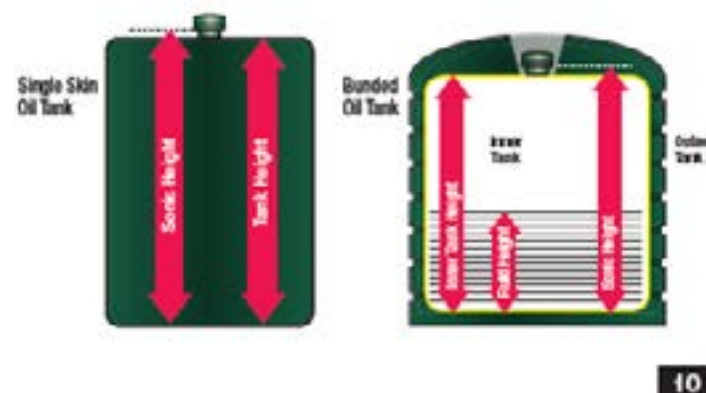
9



4. DEFINE THE SONIC HEIGHT

Accurately measure the sonic height making note of this measurement. The permissible maximum tank height is 3 metres from the base of your tank to the position of the WatchmanSonic (which should be no lower than the fill point). (Seen in Picture 10).

- Height does not include the base/piers which tank sits on.

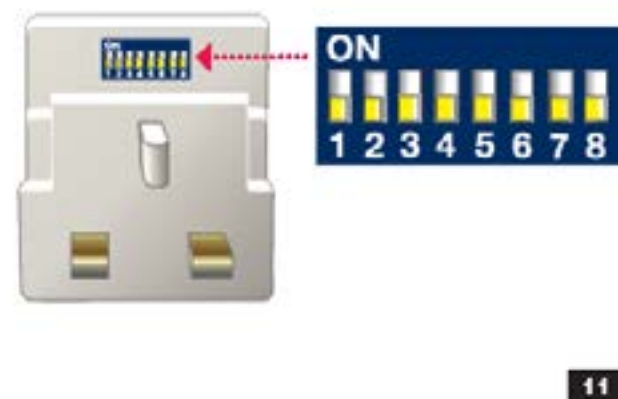


5. SETTING THE SWITCHES ON THE RECEIVER

Using the tank height chart (see section 9), read across to the relevant multi switch setting using tank measurements you took down earlier. The multi switches are located in a recess at the back of the receiver above the pins.

Using a screwdriver or tip of a ballpoint pen, flip the relevant switch (e.g.) upwards (= ON).

NOTE: Switches 1 & 2 are factory set switches and are no relevance to the end user. If you wish to set the audible ring feature the Switch1 needs to be moved up. Switch one if set in the on (up) position will cause the unit to bleep in the event of a low level reading.



6. MATCHING RECEIVER AND TRANSMITTER

You should match the receiver (Part A) with the transmitter (Part D) so that the system code is unique to your tank. Plug receiver into a suitable and convenient electrical socket and switch on.

Plug in the receiver and switch it on. The display screen on the front of the receiver will show a flashing bar (Picture 12). This indicates that the receiver is waiting on a unique code. This bar will continue to flash for 2 minutes **during which time you can match the transmitter to the receiver.**



Hold the transmitter against the receiver right hand side, as shown (Picture 13), **so that the white dot on the transmitter is touching the black dot on the receiver (important!)** for about 20 seconds to allow unique code to be transferred. Bars will increase up the display screen and you will hear a clicking sound. When all 10 bars are shown they will flash to indicate that the unique code is transferred. When matched the transmitter must immediately be placed on the tank.

- If you are installing more than one WatchmanSonic unit please wait 15 minutes between each matching.

7. FITTING THE TRANSMITTER TO THE BASE

Screw the transmitter (Part D) into the base (Part E). Ensure the transmitter is vertical on top of the tank and level.

Ensure that the WatchmanSonic unit is screwed correctly into the base and that the threads have not crossed, to give a secure seal.

(See Picture 14)



8. CHECK THE LEVEL OF OIL IN THE TANK

The bar graph represents the level of oil in your tank.

Note: It can take up to 2 hours for the first accurate reading from the Watchman Sonic to be displayed.





C. Hytek battery bund / overfill alarm

Battery version

- Battery 3 channel alarm.
- Each channel can be used as an overfill, low level or bund alarm.
- High power alarm sounder.
- No zenon beacon, but individual channel LED's.
- Test button checks float switches as well as batteries & sounder.
- Battery life depends on number of test & alarm incidents.

Power status

BATTERY VERSION: The Battery LED will flash every 2 seconds to indicate that there is battery power to the unit. If the battery charge is too low, then the sounder will activate intermittently to indicate this.

Alarm condition

When a high or low-level alarm condition occurs the corresponding channel LED on the tank alarm lid is illuminated and the sounder/beacon will activate. The external relay will also be activated.

Float switch fault indication

If any of the channel LEDs flashes repeatedly then this indicates a fault with the float switch.

Alarm mute

Pressing the mute button for 1.5 seconds will silence the sounder when an alarm condition is occurring, the beacon will continue to flash until the alarm condition has been rectified. This will not de-activate any relays (if fitted). The relays will only be de-activated when float switch returns to its normal position.

If the mute button is not depressed the sounder will silence after 20 minutes leaving the beacon and channel LED on.

The channel LED will remain on until the alarm condition has been rectified (float switch returns to its normal position).

Alarm test

To test the Tank Alarm, push and hold the test button on the lid. If the Tank Alarm is functioning correctly the sounder should activate, the beacon will flash (if fitted) and all activated channel LEDs will illuminate.

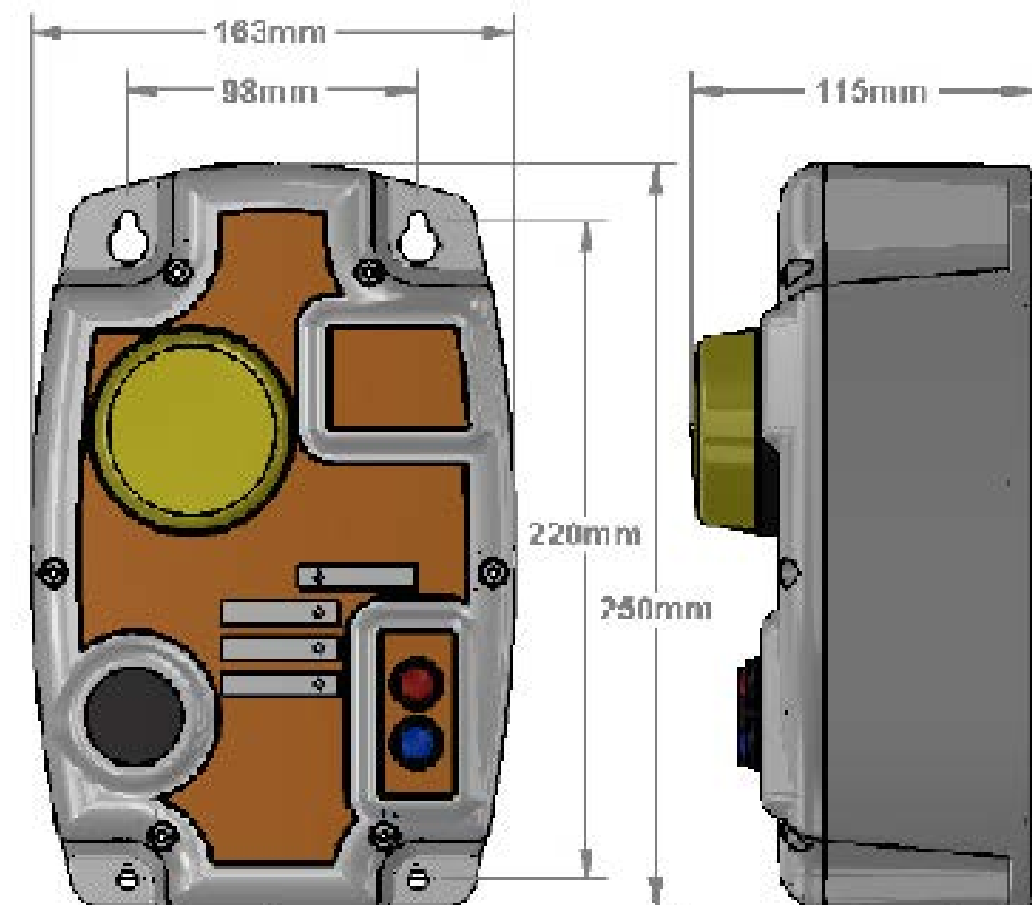


If any of the channel LEDs flashes repeatedly then this indicates a fault with the float switch.

Battery version: If no sounder is heard and no channel LED's illuminate, check batteries and change as necessary.

NB: Always push the Tank Alarm test button before filling the tank.

Fitting dimensions





D. Tank top

Installing the Tanktop

THE TANKTOP MUST BE FITTED IN CONJUNCTION WITH A DEAERATOR OR AN OIL LIFTER

Fitting on a Plastic Tank

(If the plastic tank has a moulded 1" insert, use the steel tank fitting instructions above).

1. Drill a 30mm hole in a flat area on top of the primary tank.
2. Thread the float and suction pipe through the 30mm hole.
3. Orientate the 10mm hydraulic or compression fitting to the desired pipe direction, screw the 3 legs down with the screws provided.
4. Cut the 10mm oil line to be used, with a tube cutter NOT a hacksaw.
5. Insert the 10mm pipe into the hydraulic or compression fitting (if using compression fittings make sure a support tube is used) making sure the pipe is fully home.
6. Having fitted all ancillary equipment in the line (using support tubes in all joints) to the pressure jet burner (including a de-aerator and the bypass screw in the burner pump) fire up the burner. The burner should be able to pull the fuel through but if the pipe is long with a lift to the burner the prime button can be pressed whilst the burner is running to open all the Tanktop valves. This will bypass the anti-siphon valve making it easier for the burner to prime the line.



TIP: Always use support tubes TM4172 inside soft copper oil lines to ensure air tight joints when using compression joints.

Fitting on a Steel Tank

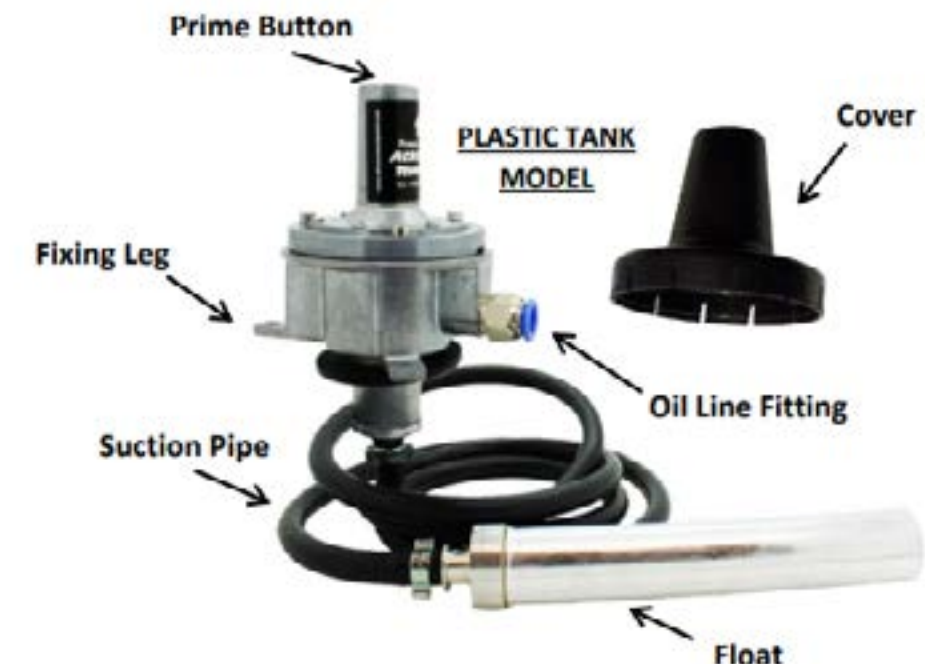
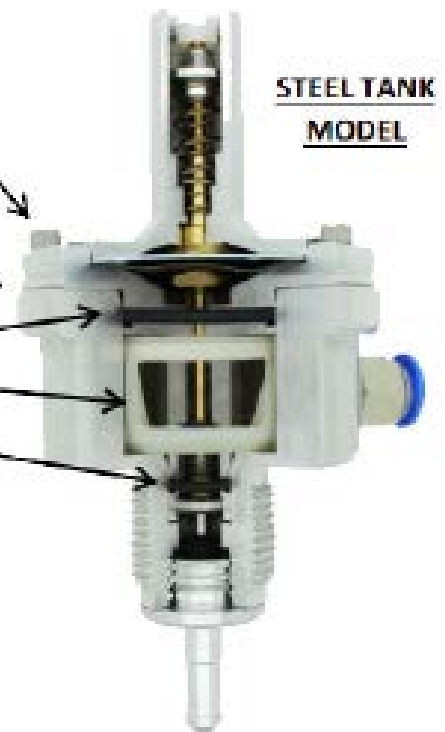
1. With the back nut still on, dress the Tanktop 1" BSP thread with PTFE tape. Thread the float and suction pipe through the 1" BSPP nipple on the top of the tank and screw home.
2. Position the Tanktop so the oil line fitting is pointing in the desired direction and nip the back nut down onto the tank nipple.
3. Cut the 10mm oil line to be used, with a tube cutter NOT a hacksaw.
4. Insert the 10mm pipe into the hydraulic 10mm fitting or compression fitting (if using compression fittings make sure a support tube is used) making sure the pipe is fully home.
5. Having fitted all ancillary equipment in the line (using support tubes in all joints) to the pressure jet burner (including a de-aerator and the bypass screw in the burner pump) fire up the burner. The burner should be able to pull the fuel through but if the pipe is long with a lift to the burner the prime button can be pressed whilst the burner is running to open all the Tanktop valves. This will bypass the anti-siphon valve making it easier for the burner to prime the line.



Replacing the Tanktop Filter

1. If fitted remove Tanktop cover.
2. Remove the three M4 socket cap head bolts.
3. * Using a flat screw driver insert into slot above the oil line fitting and gently twist to separate the filter housing.
4. Remove the two O-rings and the filter.
5. Fit the new large O-ring from the filter kit.
6. Fit the new filter from the filter kit.
7. Fit the new small O-ring ring from the filter kit.
8. Replace the top back into the body ensuring that the screw driver slot is over the oil line fitting.
9. Refit the three M4 socket cap head.

* NOTE: This filter chamber will be full of fuel.





8. Maintenance of the TUFFA TANKS

Keep this manual stored in a place of use so it can be obtained for future reference. All persons who install, commission, maintain, and operate the system must be deemed competent by their employers and have the adequate knowledge and training required to carry out any required tasks which are recommended by this manual, it is recommended that any persons carrying out work on the system have fully read and understood the instructions set out by this manual.

It is advised that no changes nor conversions with potential impact on safety may be performed on this system, any spare parts which are used must comply with the technical requirements which are defined in this manual or directly by the manufacturer.

ATTENTION

Please make sure prior to any maintenance work that power supply is turned OFF and that there is not an inadvertent chance to reconnect the system to power supply.

WARNING

System warranty will become void if any repairs are made by technicians not authorised by the manufacturer, the same applies to works with hazardous or potentially hazardous equipment.

ATTENTION

Do not use jet cleaners to clean the system. You can clean the system with water and household cleaners. Do not use an excessive amount of water when cleaning near any electrical items as this can cause a short circuit to occur potentially permanently damaging the equipment.



8.1 System maintenance tasks

Activity	Frequency of Task
Keep equipment in good working order by returning to its original position	After every use
Visually inspect operation of gauge equipment	Weekly
Visually inspect exterior condition of tank	Monthly
Physically check bund alarm by activating the float switch in bund cavity (audible alarm)	3 Months
Check electrical cables and cable connection points	3 Months
Visually inspect and if required maintain the tank id plate and warning labels	3 Months
Check and replace filter if necessary	3-6 Months
Physically check fixings and bracket stability	6 Months
Visually inspect inner tank and bund cavity	6 Months

8.2 Inspection by competent person

Inspections should be undertaken by a competent person that is receiving a delivery of product on every fill prior to and whilst filling.

This inspection should include:

- The fill point arrangement for soundness and leaks
- Any outlet valves should be checked for leaks and operation (open and close successfully)
- The testing of contents gauge, any high level / overfill alarm and bund alarm.
- If vents can be seen that they are clear and unblocked and free of debris.
- A visual inspection around the tank with emphasis on the base of the tank. The inspection for plastic tanks should include any deformation of the surface of the tank i.e. excessive bulging, change in colour due to chemical attack, crazing or stress fractures. The inspection of steel tanks should include looking for evidence of rust and heavy corrosion, damp patches on seams & seam fractures.
- Bund to be visually inspected for soundness and integrity, water, spilt product, or other debris.

8.3 Internal examination and cleaning

Internal examinations should be undertaken by a competent person at appropriate intervals, as determined by the product used, and its cleanliness i.e. solids or water falling out of suspension. Entry into confined spaces should be carefully planned and supervised and should be subject to a strict procedures dependent on the substance stored, and in accordance with HSE requirements.



8.4 Troubleshooting		
Symptom	Possible Causes	Solutions
No power	1. Local distribution board fuse	1. Check local distribution board RCD
	2. Power cable damaged	2. Check condition of power cables
	3. Power cable connection broken	3. Check power cable connections
	4. System control panel circuit breakers	4. Open system control panel and check circuit breakers
	5. System control panel connections loose	5. Check cable connections inside of system control panel
Level gauge does not show reading	1. Power failure to gauge	1. Check power supply and cable connections
	2. Sensor cable connection loose	2. Check sensor cable connections inside gauge unit
	3. Sensor failure	3. Refer to manufacturer
	4. Gauge unit failure	4. Refer to manufacturer
Level gauge shows incorrect reading	1. Pressure sensor not positioned at base of tank	1. Lower pressure sensor down until it touches base of tank
	2. Incorrect gauge parameters	2. Refer to manufacturer to alter gauge parameters
	3. Sensor failure	3. Refer to manufacturer
	4. Gauge unit failure	4. Refer to manufacturer
Can not fill tank	1. Valve on fill line closed	1. Open valve
	2. Overfill prevention valve blocked or faulty	2. Remove blockage or replace overfill prevention valve
Bund alarm not working	1. Bund float switch not positioned correctly	1. Alter position of float switch to hang approximately 1" off bund floor
	2. Bund float not able to move freely	2. Check float switch for blockage or replace if necessary
	3. Damage to bund cable	3. Refer to manufacturer
	4. Float switch cable	4. Refer to manufacturer
Fuel in bund cavity	1. Inner tank overfill	1. Fuel must be removed from the cavity as soon as possible
	2. Pipework leaking in bund cavity	2. See point 1
	3. Inner tank leaking	3. See point 1
Pipework leaking	1. Threaded connection loose	1. Connection must be tightened
	2. Thread sealant degraded	2. Thread sealant must be replaced
	3. O-ring or seal joint perished	3. O-ring or seal must be replaced
	4. Swaged hose ends leaking	4. Hose assembly needs replacing: refer to manufacturer
	5. Rubber hose perished	5. See point 4



8.4 Troubleshooting		
Symptom	Possible Causes	Solutions
Inner tank has lifted up and ruptured bund lid	1. Fuel inside bund is causing inner tank to float	1. Refer to manufacturer
Tank exterior damaged	1. Impact from external force	1. If the damage is significant refer to manufacturer for further information
Flip lid does not open easily	1. Gas strut(s) have de-gased and are not operating	1. Gas strut(s) need replacing
Watchman Sonic - Technical Information		
The WatchmanSonic is suitable for use in tanks for the storage of diesel, water, fuel, kerosene, and gas oil types A2, C1, C2 and D as defined by BS 2869. Check with the manufacturer and/or supplier before using with any other fluids.		
In the event of a power failure or if the receiver is switched off or moved to a new socket: When power returns again or unit is switched on, the receiver display screen will show the top bar flashing. There is no need to repeat the matching instruction. The top bar will continue to flash for 2 minutes, after which time the last valid signal is displayed. It may take up to two hours for the next transmission from the transmitter.		
Please note opening the unit will potentially affect the lifespan of the unit		
CHANGING BATTERY	<p><u>Under Warranty</u></p> <p>If a unit is still under warranty and is clearly showing low battery symbol (Shown in picture 15), please contact our Watchman helpline. Units under warranty SHOULD NOT BE OPENED. Warranty will be void if unit is opened within the warranty period.</p> <p><u>Out of Warranty Only</u></p> <p>Though the lithium battery will have a very long service life, it will eventually become exhausted and will need replacing. Batteries can be purchased from a good photographic shop or chemist. The battery model is: VARTA CR2430.</p> <ul style="list-style-type: none"> • Remove transmitter from tank • Take transmitter indoors, into a clean dry environment • Using a cross point screwdriver, undo the four screws, located under the main body of transmitter • Remove the top cover • Flip out battery • Clip in new battery • Re-fit cover • Evenly tighten all four screws - do not over tighten • Replace transmitter on the tank <p>If the receiver detects a low battery the following warning message is displayed on the LCD. The level of oil in the tank plus a constantly flashing warning triangle. (Shown in picture 15)</p>	



8.4 Troubleshooting

Watchman Sonic - Technical Information



TRANSMISSION NOT HEARD	If the receiver detects a transmission not heard for a long time the symbol outlined in Pic 16 is displayed on the LCD. This starts approximately 12 hours from the last received good signal. (Shown in picture 16). To rectify this re-site the receiver in a location where the transmission is heard. Rematch receiver and transmitter as per point 6.
NO ECHO CONDITION	If the receiver detects a No Echo Condition the following message is displayed on the LCD. Warning triangle constantly flashing plus indication bar 5 on. (Shown in picture 17). To rectify this situation check that the transmitter unit is correctly positioned on the tank and no interference is present from a tank wall, corrugation or window.



8.5 Tank maintenance record

[illegible]

[illegible][illegible]



9. WARRANTY



8.6 Fuel delivery log

[illegible]

9. Warranty

Subject to the conditions below, your product is supplied with a warranty against material defects in workmanship or materials from the date of delivery or invoice Tax point date, whichever is earliest for the following warranty period:

PRODUCT	WARRANTY PERIOD IF REGISTERED	WARRANTY PERIOD IF NOT REGISTERED
Single skin	2 years	12 months
Bunded	10 years	5 years

ACCESSORIES	WARRANTY PERIOD
Ancillary equipment and pipe work	1 year

The warranty is subject to the following conditions:

To qualify for the extended warranty period this product must be registered and installed by a registered competent person in accordance with prevailing statutory requirements. The period of the warranty will commence from the date of delivery or invoice Tax point date, whichever is earliest. The warranty is provided to the original purchaser only. Proof of purchase and evidence of annual inspection by a registered competent person will be required in the event of a claim.

To obtain the extended warranty period for your product, you must register the purchase and installation of your product with us within 21 days from date of purchase. To register, please complete and submit our registration form. Registration forms can be obtained and submitted online at www.tuffa.co.uk. Failure to register the purchase and installation of your product (or incomplete registration) within the 21 day period will mean that the shorter warranty period (above) only will apply to your product.

During the warranty period, any component of your product which is proved to contain any material defect in workmanship or materials will be exchanged or repaired, at our sole discretion, by us free of charge for material or labour.

In respect of your product, the warranty does not cover (and we will not accept responsibility for) any consumable items, any component which has not been manufactured by us (please refer to the manufacturer's warranty supplied with the relevant component), fair wear and tear, or any fault:

- in respect of any component not forming part of your product; or
- arising from any cause other than defect in original workmanship or materials; or
- caused by improper installation, maintenance, neglect, misuse or wilful or accidental damage; or



- caused by alteration or repair by you or by a third party who is not one of our authorised repairers; or
- caused by non-observance of either any applicable statutory requirement or any of the instructions contained in the installation and operating instructions appropriate to your product, and in this respect, we would draw particular attention to the fact that your product must not be used in conditions which are either below -17°C or which are above 35°C without protection from exposure to direct sunlight.

Your product has been used only for the purpose for which it is designed, and that any terms and conditions held with your installer have also been adhered to.

To the maximum extent permitted by UK law:

- the warranty is given in lieu of all other warranties, express or implied by statute or common law, including implied warranties or conditions of satisfactory quality and fitness for a particular purpose, provided that this warranty is in addition to your legal rights in relation to goods that are faulty or not as described; and
- we shall not in any circumstances be liable to you or any other party, whether in contract, tort (including for negligence and breach of statutory duty howsoever arising), misrepresentation (whether innocent or negligent), restitution or otherwise, for any special, indirect or consequential loss or damage.

10. Contact

Tuffa UK Limited
Dovefields Industrial Estate
Derby Road
Uttoxeter
Staffordshire
ST14 8SW

Tel: +44 (0) 1889 567700
Web: www.tuffa.co.uk
Email: sales@tuffa.co.uk

11. Guarantee registration

To register your tank warranty please visit the link to our website as below. The guarantee card must be completed online within 21 days of the date of the tank delivery to the first purchaser (namely the person or entity buying direct from Tuffa UK Limited).

<https://www.tuffa.co.uk/services/support/guarantee-registration/>

