



# WATCHMANSONIC PLUS

ULTRASONIC OIL LEVEL MONITOR PLUS BUND SENSOR

This product is to be used only on domestic oil tanks within the parameters outlined in the specifications. Any use of the product on applications that lie outside a domestic environment is done so at users own risk.

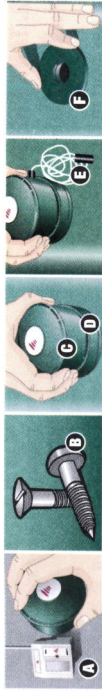
## READ FULLY BEFORE INSTALLATION AND USE

|                                  |                  |                                 |
|----------------------------------|------------------|---------------------------------|
| Check level, distance and Height | Tank Preparation | Apply Base                      |
| Measure tank                     | Set Dip Switches | Pair the Receiver & Transmitter |
| Fit Transmitter to the Base      | Fit Bund Sensor  | Check the level                 |

### NOTE ON BUND ALARM

The Bund sensor is used to determine whether fluid is present in the interstitial space between the outer and inner tank. The bund sensor is checked every 20 minutes and if fluid is detected the bund alarm will be indicated on the receiver as per section 11. Please note a leak may take up to 20 minutes to be detected. Having cleared the bund of any fluid the receiver will reset itself and a time period of up to 20 minutes may elapse before the bund alarm condition has reset and before normal operation of the receiver is resumed. The Audible Bund Alarm may be enabled or disabled using dip switch 1 on the receiver as per part 5 of the instructions.

9-5480-01



- A** RECEIVER **B** SCREWS **C** WATCHMANSONIC PLUS TRANSMITTER  
**D** WATCHMANSONIC PLUS BASE **E** BUND SENSOR **F** WEATHER SEAL

### 1. CHECK LEVEL, DISTANCE AND HEIGHT

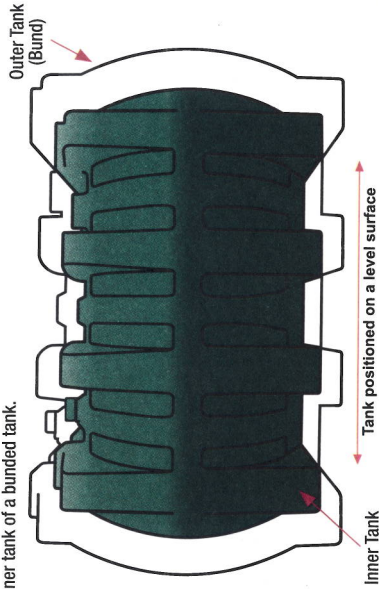
Suitable for use in tanks for the storage of diesel fuel, kerosene, and gas oil types A2, C1, C2 and D as defined by BS 2869. Check with the manufacturer and/or supplier before using with any other fluids. Ensure before you start your install that the tank the WatchmanSonic Plus is to be fitted to is:

1. Level (See Picture 1)
2. Within a 200-metre range of the line of sight of receiver position.

#### NB: Underground Tanks

Please note 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.

3. A maximum height of 3 meters
4. The WatchmanSonic Plus must at all times be kept at least 10cm from the surface of the liquid in the tank. Where the unit is placed closer than 10cm to the fluid surface the readings may not be coherent and an incorrect reading may occur.
5. The inner tank of a bundled tank.



## 2. TANK PREPARATION

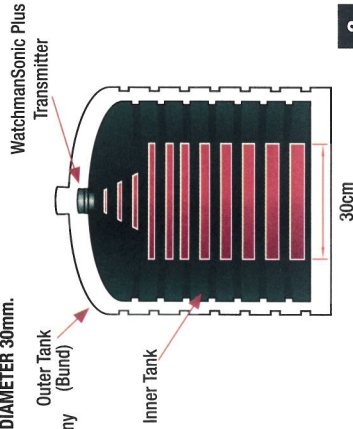
Please note- it is important to keep all items dry during installation.

### A) PRE-DRILLED TANKS.

There may already be a 32mm pre-drilled opening in the tank top. If so, remove the cover by undoing the two screws holding it in place.

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

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



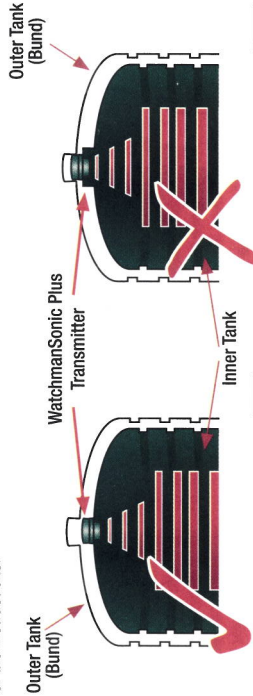
2

### B) 2" BSP THREADED OPENING.

Where a tank has a 2" opening with a female thread located in a suitable position on the tank the WatchmanSonic Plus may be screwed directly into this. (See Picture 3 & 4)

It is important to ensure that the WatchmanSonic Plus unit is located so that the horn aperture at the bottom of the WatchmanSonic Plus is protruding into the tank.

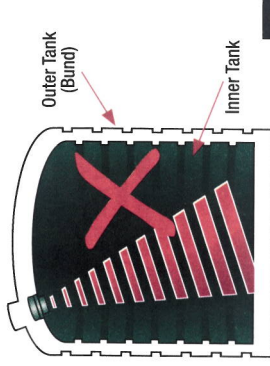
In this case the base of the unit is not necessary and may be discarded. Please skip part 3 & 7 of the instructions.



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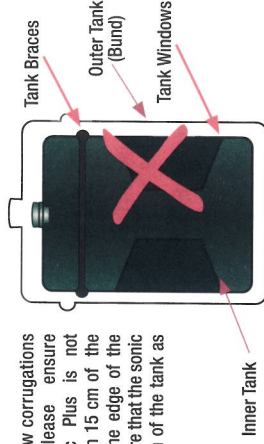
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The Transmitter can't sit at an angle as this gives an incorrect level reading on the receiver. Take care not to choose an area on which water could gather i.e. a dent/ depression or a position directly above any restricted area inside the tank. (See Picture 5)



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**NB:** For tanks with window corrugations or internal braces please ensure that the WatchmanSonic Plus is not positioned above or within 15 cm of the area of the WINDOW or the edge of the tank (See Picture 6). Ensure that the sonic path is clear to the bottom of the tank as per pic 2.

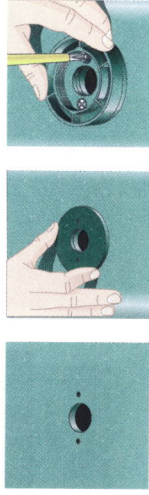


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## 3. FITTING TRANSMITTER BASE

For tanks with pre-drilled holes

- 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 Plus base (Part D) on to the tank with 2 stainless steel self-tapping, counter sunkscrews supplied (Part B). Do not over tighten!



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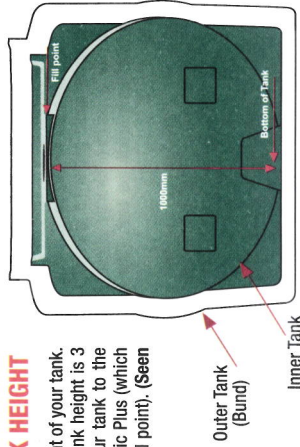
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## 4. DEFINE THE TANK HEIGHT

Accurately measure the height of your tank. The permissible maximum tank height is 3 metres from the base of your tank to the position of the WatchmanSonic Plus (which should be the same as the fill point). (Seen in Picture 10).



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## 5. SETTING THE SWITCHES ON THE RECEIVER

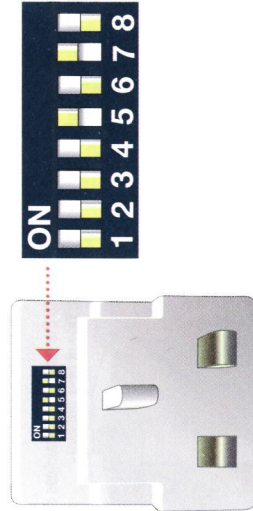
Using the tank height chart (see section 11), read across to the relevant multi switch settings. The multi switches are located in a recess at the back of the receiver above the pins.

Using a screwdriver or tip of a ballpoint pen, flip the relevant switch (e.g.) upwards (= ON). As an example, if the tank is 100 cm high, set switches 5 & 7 ON (Up). (See Picture 11)

NOTE: Switches 1 & 2 are factory set to the off (O) zero position. If you wish to set the audible ring feature when the tank level is low or the bund alarm is active Switch1 needs to be moved up.

Switch one if set in the on (up) position has two functions.

- (1) It will cause the unit to sleep in quick succession 5 times every 60 minutes in the event of a low level reading.
  - (2) It will also cause the unit to beep for 1 second every 10 seconds in the event of a bund alarm.
- Switch 2 is of no relevance to the user.



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## 6. MATCHING RECEIVER AND TRANSMITTER

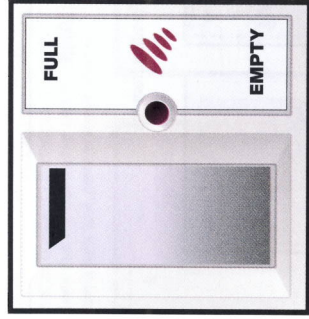
You should match the receiver (Part A) with the transmitter (Part C) so that the system code is unique to your tank. You only need to do this once. Plug receiver into a suitable and convenient electrical socket and switch on.

The display screen (Picture 12) on the front of the receiver will show a flashing top bar as shown in diagram. This indicates that the receiver is waiting for the unique code. The 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. 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.

- / The receiver will wait for a code for 2 minutes when plugged in.
- / If you should want to change the height, just unplugging the receiver, change the dip switches and plug it back in.
- / If you are installing more than one WatchmanSonic Plus unit please wait 9 minutes between each matching.

/ 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.



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## 7. FITTING THE TRANSMITTER TO THE BASE

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



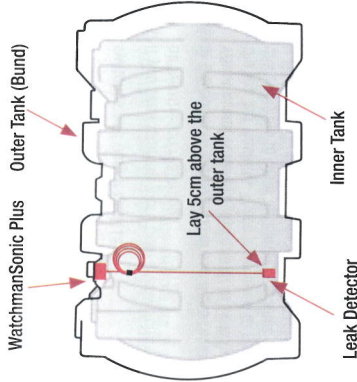
Ensure that the WatchmanSonic Plus unit is screwed correctly into the base and that the threads have not crossed, to give a secure seal. (See Picture 14)

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## 8. FITTING THE BUND SENSOR

Having followed the steps 1 to 7 in the instructions the WatchmanSonic Plus receiver should be fitted on the inner tank. The leak detector should hang 5cm above the bottom of the outer tank in the interstitial space of the outer tank as shown on the picture above. To avoid the leak detector resting on the bottom of the tank, adjust the cable length using a cable tie provided.

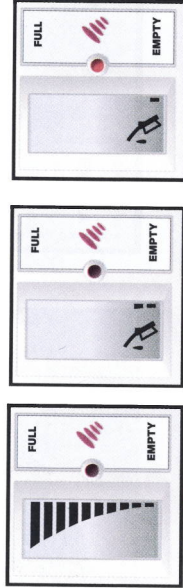
**Note:** It is imperative that the leak sensor is positioned vertically above the floor on the inner tank and that the cable is fixed to avoid any slippage or lengthening of the cable. Length of the cable can be adjusted using the cable tie provided.



## 9. 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 WatchmanSonic Plus to be displayed.



FULL

EARLY WARNING

ALMOST EMPTY

## 10. TROUBLESHOOTING

### CHANGING BATTERY

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.

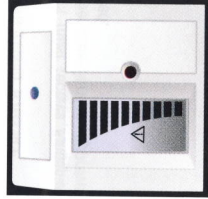
- Remove transmitter from tank
- Take transmitter indoors, into a clean dry environment
- Using a cross point screwdriver, undo the four screws, located under the main body of transmitter
- Remove the top cover
- Flip out battery
- Clip in new battery
- Re-fit cover
- Evenly tighten all four screws - do not over tighten
- Replace transmitter on the tank

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)

### RECEIVER FAULT DISPLAY KEY:

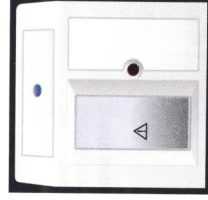
If the receiver detects a transmission not heard for a long time the symbol outlined in Pic 16 is displayed on the LCD. This starts approximately 12 hours from the last received good signal. (Shown in picture 16). To rectify this re-site the receiver in a location where the transmission is heard.

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.



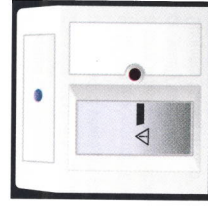
LOW BATTERY

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TRANSMISSION NOT HEARD

16



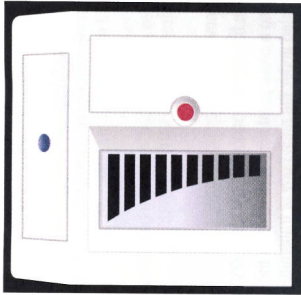
NO ECHO CONDITION

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11. BUND ALARM INDICATION

When a leak is detected all 10 bars on the display will flash in quick succession together with the red LED. This indicates that the interstitial space between the inner tank and the outer tank is flooded and corrective action must be taken to rectify this situation as soon as possible. The unit will stay in this mode for as long as the sensor is immersed in fluid.

Note: Leaving the sensor in this state for long periods of time will reduce the battery life considerably and negate the warranty.



BUND ALARM

12. GUARANTEE

The WatchmanSonic Plus has a warranty period of 2 years. For each product accepted by Kingspan Environmental Ltd as warrantable, Kingspan Environmental will rework or replace the product and return to the customer at Kingspan Environmental expense. The warranty becomes invalid if the sealed unit is opened (Part C).

Kingspan Environmental Ltd will not warrant products that have been:

- Used outside the functional and environmental conditions for which they were designed.
- Physically abused, incorrectly handled installed or damaged in transit.
- Despatched from Kingspan Environmental more than 2 years previously.
- Returned to Kingspan Environmental in a form other than in which they were originally supplied.
- Subjects to "Act of God", e.g.: lightning strike, flood or any other catastrophic event beyond Kingspan Environmental control.

13. WATCHMANSONIC PLUS RECEIVER MULTI SWITCH SETTING CHART

Measure the vertical height of the tank from the transmitter position on top of the tank to the bottom of the tank. Read to the nearest measurement on the chart. Ignore dip-switches 1 & 2. Unless see NOTE under point 5.

| Tank Height (cms) | DIP 3 | DIP 4 | DIP 5 | DIP 6 | DIP 7 | DIP 8 |
|-------------------|-------|-------|-------|-------|-------|-------|
| 50                |       |       |       |       |       | ON    |
| 55                |       |       |       |       | ON    | ON    |
| 60                |       |       |       |       | ON    | ON    |
| 65                |       |       |       | ON    |       | ON    |
| 70                |       |       |       | ON    |       | ON    |
| 75                |       |       |       | ON    |       | ON    |
| 80                |       |       |       | ON    |       | ON    |
| 85                |       |       |       | ON    |       | ON    |
| 90                |       |       | ON    |       |       | ON    |
| 95                |       |       | ON    |       |       | ON    |
| 100               |       |       | ON    |       | ON    | ON    |
| 105               |       |       | ON    |       | ON    | ON    |
| 110               |       |       | ON    |       |       | ON    |
| 115               |       |       | ON    |       |       | ON    |
| 120               |       |       | ON    | ON    |       | ON    |
| 125               |       |       | ON    | ON    |       | ON    |
| 130               |       | ON    |       |       |       | ON    |
| 135               |       | ON    |       |       |       | ON    |
| 140               |       | ON    |       |       | ON    | ON    |
| 145               |       | ON    |       |       | ON    | ON    |
| 150               |       | ON    |       | ON    |       | ON    |
| 155               |       | ON    |       | ON    |       | ON    |
| 160               |       | ON    |       | ON    |       | ON    |
| 165               |       | ON    |       | ON    |       | ON    |
| 170               |       | ON    | ON    |       |       | ON    |
| 175               |       | ON    | ON    |       |       | ON    |
| 180               |       | ON    | ON    |       | ON    | ON    |
| 185               |       | ON    | ON    |       | ON    | ON    |
| 190               |       | ON    | ON    | ON    |       | ON    |
| 195               |       | ON    | ON    | ON    |       | ON    |
| 200               |       | ON    | ON    | ON    |       | ON    |
| 205               |       | ON    | ON    | ON    |       | ON    |
| 210               | ON    |       |       |       |       | ON    |
| 215               | ON    |       |       |       |       | ON    |
| 220               | ON    |       |       |       | ON    | ON    |
| 225               | ON    |       |       |       | ON    | ON    |
| 230               | ON    |       |       | ON    |       | ON    |
| 235               | ON    |       |       | ON    |       | ON    |
| 240               | ON    |       |       | ON    |       | ON    |
| 245               | ON    |       |       | ON    |       | ON    |
| 250               | ON    |       |       | ON    |       | ON    |
| 255               | ON    |       | ON    |       |       | ON    |
| 260               | ON    |       | ON    |       |       | ON    |
| 265               | ON    |       | ON    |       |       | ON    |
| 270               | ON    |       | ON    |       | ON    | ON    |
| 275               | ON    |       | ON    |       | ON    | ON    |
| 280               | ON    |       | ON    |       | ON    | ON    |
| 285               | ON    |       | ON    |       | ON    | ON    |
| 290               | ON    | ON    |       |       |       | ON    |
| 295               | ON    | ON    |       |       |       | ON    |
| 300               | ON    | ON    |       |       | ON    | ON    |



## SPECIFICATIONS

**Tank Depth measurement:** Minimum depth: 0.5m.  
Maximum depth: 3m.

**Display:** Bar graph level display, 10% tank height per bar. Early warning indication (flashing tank fill) at a predetermined height above tank bottom (see section 13). Tank empty warning flashes red LED at a predetermined height from tank bottom. (see section 13) Meets EN60335.

**Max communication distance:** 200m in normal "line of sight" conditions. The effective range of this product can be influenced by external sources that may reduce the range of the transmitter or sensitivity of the receiver.

**Power supply:** Receiver: 230V, 50-60HZ +/- 10%. Transmitter: 3-voltlithium cell.

**Battery life:** Up to 3 years (dependant on tank height).

**Wireless com:** 433 mHz. FM transmission. EN 300-220.

**Dimensions:** Receiver: 50 x 55 x 35mm (not including aerial). Transmitter: 70x93mm.

**Max and min operating temp. (transmitter):** Operating temp. Range -10° to +60 ° C.  
Operating humidity: 0-100%.

Sealed airtight unit made from PP3317 UV stabilized.

**Hole size for tank fitting:** 32mm  
2" BSP external thread adaptor

**Declaration:** this apparatus is designed to: Not give rise to physical injury or other harm due to contact. Not to produce excessive surface temperatures, infrared, electromagnetic, ionising radiation. To have no non-electrical dangers. When used in accordance with these user and installation instructions.

**Warning:** If the equipment is likely to come in to contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection is not compromised. Aggressive substances - e.g. liquids or gases that may attack metals, or solvents that may affect polymeric materials.

In order to minimize the risks of electric shock,

- ✓ The receiver is for indoor use only, never use outdoors.
- ✓ The receiver is a sealed unit; do not attempt to open it.

Warranty: 2 years.

### FOR SUPPORT CONTACT:

sales@sensor-systems.com

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Supplied by Kingspan Environmental Ltd  
180 Gifford Road, Portadown, Co. Armagh,  
Northern Ireland

#### Safety Information

Do not replace in a potentially explosive atmosphere. Periodically check that the unit is intact and securely fastened to the tank. Check with the manufacturer on the chemical compatibility prior to use. Do not attempt to repair this equipment. It must be returned to the manufacturer for repair.

Warning! Electrostatic hazard! Clean only with damp cloth. Use only VARTA CR2430 batteries. Not suitable for pressurised containers. Use on tanks vented to atmosphere.

