

SENSIT ready



WATCHMAN[®] Sonic Advanced/Plus Installation Guide

Ultrasonic liquid level monitoring
device for tanks up to 3m high



INSTALLATION INSTRUCTIONS

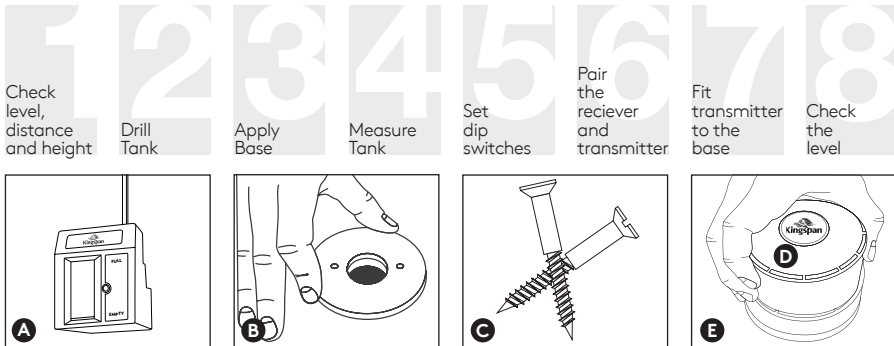
Watchman® Sonic Advanced/Plus

Ultrasonic liquid level monitoring
device for tanks up to 3m high

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



Read fully before installation and use



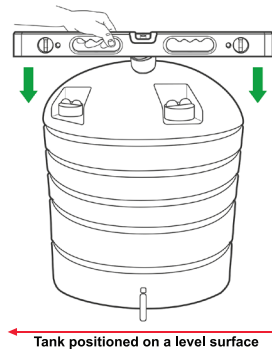
A. Receiver **B.** Weather Seal **C.** Screws **D.** Watchman Sonic Advanced Transmitter
E. Watchman Sonic Advanced Base Parts C and E are not needed if unit is supplied with EcoSafe tank.

1. CHECK LEVEL, DISTANCE AND HEIGHT

Before installation of the Watchman Sonic Advanced transmitter, please check that your tank is:

1. On a flat level base.
2. Within a 200 metre range from receiver position.
50 metre effective range (200 metre clear line of sight).
3. A maximum actual tank height of 3 metres.
4. Fitted in accordance with manufacturer's 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.



Pic 1

2. TANK PREPARATION

Sonic Advanced Transmitter

NOTE: it is important to keep all items dry during installation.

A) PRE-DRILLED TANKS.

Option 1: 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.

Option 2: There may already be a 2" threaded hole with a red cap screwed in to it. If so remove the red cap and disregard.

NB - Ensure the hole is a minimum DIAMETER 32mm.

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

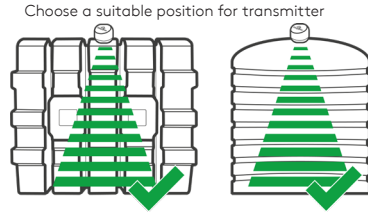


Pic 2

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)

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



Pic 3

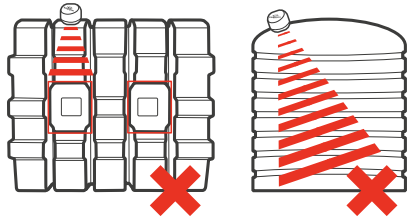
The Transmitter can't sit at an angle as this gives an incorrect level reading on the receiver. Take care not to choose an area on which water could gather i.e. a dent/depression or a position directly above any restricted area inside the tank. (See Picture 4)

WARNING: The transmitter base (Part E) can't sit at an angle as this gives an incorrect level reading on the receiver.



Pic 4

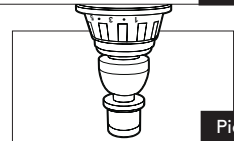
NB: For tanks with window corrugations or internal braces ensure that the Watchman Sonic Advanced is not positioned above or within 15cm of the area of the WINDOW or the edge of the tank. If the Watchman Sonic Advanced is positioned over or close to the WINDOWED area it transmits incorrect readings to the receiver. (See Picture 5) Ensure that the sonic path is clear to the bottom of the tank as per pic 2. When installed incorrectly on some windowed tanks the unit can experience false alarms as the oil level drops. It is important to ensure that the unit is positioned so that the ultrasonic beam has a 30cm diameter clear area to the bottom of the tank. Lack of 15cm clearance from obstructions or flat (level) space on the tank to install transmitter may cause false alarms or incorrect readings. In that case waveguide mode (pipe) installation is required. Go to Point 5.



Pic 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.

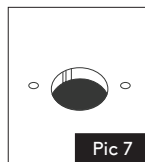


Pic 6

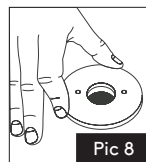
3. FITTING TRANSMITTER BASE (ONLY IF SUPPLIED)

For tanks with pre-drilled holes. Ensure guidelines from points 5 & 6 are adhered to.

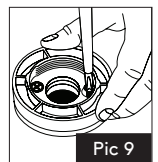
- Remove cap from the hole (Picture 7) and insert transmitter base, ensuring the weather seal is securely in place (Picture 8 & 9).



Pic 7



Pic 8



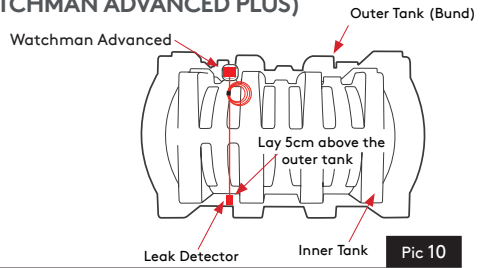
Pic 9

- Tighten the Watchman Sonic Advanced base (Part E) on to the tank with 2 stainless steel self-tapping, countersunk screws supplied (Part C). Do not over tighten!

Warning: The transmitter base (Part E) can't sit at an angle as this gives an incorrect level reading on the receiver.

4. FITTING THE BUND SENSOR (ONLY FOR WATCHMAN ADVANCED PLUS)

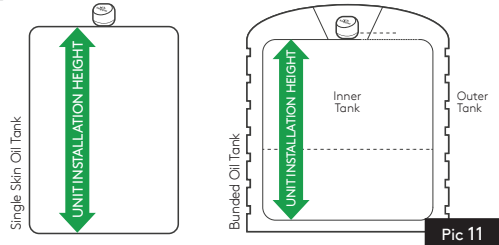
Having followed the steps 1 to 3 in the instructions the Watchman Sonic Advanced Plus transmitter should be fitted on the inner tank. The leak detector should hang 5cm above the bottom of the outer tank in the interstitial space of the outer tank as shown on the picture above. To avoid the leak detector 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.



5. DEFINE THE UNIT INSTALLATION HEIGHT

Accurately measure the height of your tank making note of this measurement. The permissible maximum tank height is 3 metres from the base of your tank to the position of the Watchman Sonic Advanced (which should be no lower than the fill point). (See in Picture 11).

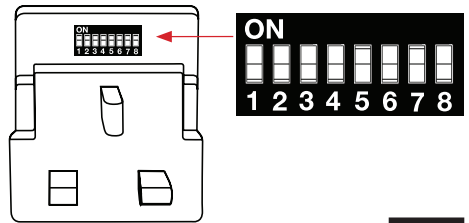
- Height does not include the base which tank sits on.
- For banded tanks, please ensure the **inner** tank is measured
- Offset is the space between base of the unit and top of the inner tank



6. SETTING THE SWITCHES ON THE RECEIVER

Using the tank height chart (see section 10), read across to the relevant multi switch settings using tank measurement you took 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: If **switch 1** is ON, it enables Sudden drop alarm. This functionality is valid only when used with advanced transmitters. If **switch 2** is ON, it enables Waveguide mode, this functionality is valid only when used with advanced sonic transmitters.



HOW SUDDEN DROP WORKS

The Watchman Sonic Advanced transmitter on tank checks the oil level approximately once every minute. Under normal conditions it communicates this level to the receiver approximately once every half hour. In the event that a level outside the predefined threshold trigger level is reached in a given period (approximately 1.5cm per hour) the on tank transmitter sends a signal to the receiver and an alarm will be set off on the receiver unit. In alarm mode the receiver unit will emit a siren type sound and the 10 bars will appear on the screen in sequence. The red LED will also flash. This can only be reset by plugging in and out the receiver unit from the mains. The maximum permissible usage of oil that the unit will allow in height terms is 1.5cm per hour. This is the maximum rate that the level can drop in one hour without the alarm going off.

WARNING:

- Alarm and level functionality will be disabled if the unit detects a no echo condition (ref: section 11 - Technical Information). The no echo condition is indicated by a triangle symbol in the centre of the screen

with a line to the right of it. The no echo condition can be caused by the unit being incorrectly installed on the tank, alternatively it can indicate in some instances that the unit has been moved or removed from the tank. An audible alarm can alert the user that a no echo condition or a transmission not heard condition has occurred (Refer to trouble shooting for explanation of these conditions). Please note this is not a tamper alarm and should not be used as such.

- The alarm functionality at ullage levels of less than 25cm is disabled. Therefore if a leak or sudden drop occurs when the oil level is closer than 25cm to the Watchman Transmitter on tank unit the alarm will not go off.

- In the event that the on tank unit detects a level drop there may be a delay in sending the information to the receiver. This delay is to enable validation and protect against false alarms.

- 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.

WAVEGUIDE MODE

Waveguide mode (pipe) is used in case of incorrect readings or false alarms caused by installation problems. Lack of 15cm clearance from obstructions or flat (level) space on the tank to install transmitter. For the tanks lower than 1.5m, pipe installation might not be required, simply enable the waveguide mode (dip switch 2)

and it should improve readings and eliminate no echo and false alarms. If the above doesn't help or the tank is higher than 1.5m, it requires an additional waveguide adapter and pipe installation. Contact the customer support team for information at sensor@kingspan.com or sensoreu@kingspan.com (Europe Only).

7. MATCHING RECEIVER & TRANSMITTER (ACTIVATING)

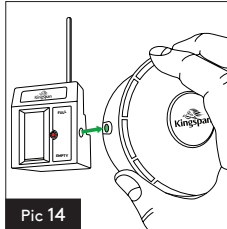
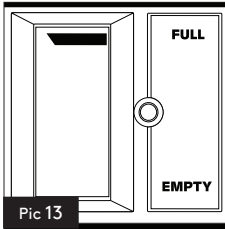
You should match the receiver (Part A) with the transmitter (Part C) so that the system code is unique to your tank. Plug receiver into a suitable and convenient electrical socket and switch on.

The display screen (Pic 13) 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 (Pic 14), 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.

After pairing, the unit will transmit every second for approx. 20 minutes (some alarms may be temporarily disabled during this period), after that time it will transmit once every 30 minutes.

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

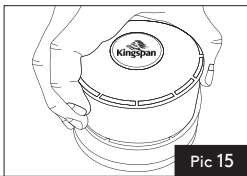


8. FITTING THE TRANSMITTER

(A) **With a base - if supplied:** Screw the transmitter (Part D) into the base (Part E). Ensure the transmitter is vertical on top of the tank and level.

(B) **Without a Base:** Screw the transmitter (Part D) and the weather seal (Part B) into the threaded hole.

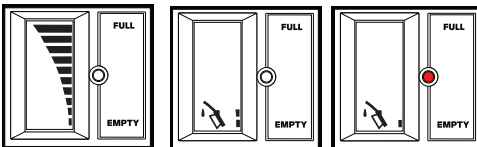
Ensure that the Watchman unit is screwed into the base or threaded hole (whichever applies) and that the threads have not crossed, to give a secure seal.
(See Picture 15)



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 Watchman to be displayed.



FULL

EARLY WARNING

ALMOST EMPTY

YOUR WATCHMAN SONIC ADVANCED HAS NOW BEEN SUCCESSFULLY INSTALLED

10. WATCHMAN SONIC RECEIVER MULTI SWITCH SETTING CHART

The sonic height is defined by measuring from the transmitter base to the bottom of the tank.
Read to the nearest measurement on the chart.
Dip Switch 1. Sudden drop alarm
Dip Switch 2. Waveguide mode.
Please be aware it will take up to 24 hours for the Sudden Drop and Waveguide settings to be updated to the transmitter.

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

11. TECHNICAL INFORMATION

The Watchman Sonic Advanced 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.

CHANGING BATTERY

Please note opening the unit will potentially affect the lifespan of the unit. We recommend using Varta CR2430.

Under Warranty

If a unit is still under warranty and is clearly showing low battery symbol (Shown in picture 16), please contact our Watchman helpline. Units under warranty **SHOULD NOT BE OPENED**. Warranty will be void if unit is opened within the warranty period.

Out of Warranty Only

Though the lithium battery will have a very long service life, it will eventually become exhausted and will need replacing. We recommend using 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
- Gently slide battery out from under battery holder clip
- Gently slide battery into battery holder taking care not to bend battery holder clip
- Re-fit cover
- Evenly tighten all four screws - do not over tighten
- Pair up transmitter and receiver by following Point 6 again
- 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 16)

*These notifications on the screen only apply to part number 17575905 or higher.

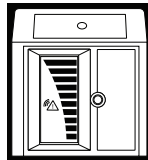
**No echo condition does not indicate a fault with the product. It is informative only.

GUARANTEE

For each product accepted by Kingspan Water & Energy as warrantable, Kingspan Water & Energy will rework or replace the product only and return to the customer at Kingspan Water & Energy expense. The warranty becomes invalid if the sealed unit is opened (Part D).

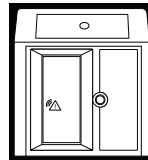
Kingspan Water & Energy will not warrant products that have been:

- Used outside the functional and Kingspan Water & Energy conditions for which they were designed.
- Physically abused, incorrectly handled/installed or damaged in transit.
- Proof of purchase will be required.
- Returned to Kingspan Water & Energy 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 Water & Energy's control.



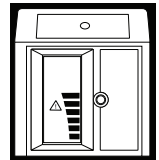
LOW BATTERY*
(Level & Flashing
Warning Triangle)

16



NO TRANSMISSION*
(No Level & Flashing
Warning Triangle)

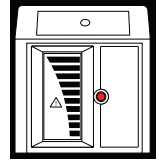
17



NO ECHO CONDITION*
(Level & Constant
Warning Triangle)

18

Leak Detection: If the leak is detected (Watchman Sonic Advanced Plus version) buzzer beeps every 10s, however there will not be an additional visual notifications. Please check the tank (bund). False alarms can be caused by damaged cable or incorrect installation. PLEASE NOTE that in the event of a leak detection, it may take up to 5 minutes to register on the unit/display.



SUDDEN DROP ALERT*
(Moving Levels in
Sequence, Alert Siren &
LED Flashing Red)

19

TRANSMISSION NOT HEARD

If the receiver detects a transmission not heard for a long time the symbol outlined in Pic 17 is displayed on the LCD. This starts approximately 24 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 7.

NO ECHO CONDITION**

No Echo condition (shown in picture 18) may appear due to temperate changes however the level displayed may be correct. Please wait and if this does not change within a few days, check possible reasons made below.

- overfilled tank (wait until level drops in tank)
- empty tank (no liquid in tank)
- transmitter is installed incorrectly (to rectify this situation check that the transmitter unit is levelled and correctly positioned from a tank wall, corrugation or window, minimum 15cm from any obstructions)
- enabling the waveguide mode, dip switch 2 (without the pipe installation) might help in the case of slimline tanks

FALSE ALARM

False alarms may be caused by poor installation of the unit on the tank. Please ensure that the unit is sitting correctly on the tank with the correct amount of clearance each side of it to the bottom of the tank. (See section 2).

Ensure that the tank is not prone to vibration by the wind or passing traffic. Sudden ripples of the fluid in the tank caused by vibrations may cause false alarms. Check the tank is sitting level on a stable base.

Any sensor product deemed damaged by the customer shall be returned to Kingspan Water & Energy's facility at the customer's expense. Kingspan Water & Energy shall not be liable for any costs in relation to the returned products. Warranty covers replacement product only.

The purchase invoice and a description issue should be joined with the faulty product. The product should be returned at your shop or directly at the following address:

REGISTER GUARANTEE ONLINE:

www.kingspanenergymanagement.com/warranty

Kingspan Water & Energy Ltd, 180 Gilford Road, Portadown, Co. Armagh, Northern Ireland BT63 5LF.

Each faulty product must receive Kingspan Water & Energy's After-Sale-Service approval before being returned.

SPECIFICATIONS

Tank Depth measurement:	Minimum depth: 15cm. 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 11). Tank empty warning flashes red LED at a predetermined height from tank bottom. (see section 11) 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 (dependent on tank height and fills, drain rates).
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 +50 ° C. Operating humidity: 0-100%. Sealed airtight unit made from PP3317 UV stabilized.
Hole size: for tank fitting:	32mm 2" BSP external thread adaptor
Transmission frequency:	Once every 30 minutes

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,

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

Supplied by Kingspan Water & Energy Ltd
180 Gilford 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.

© Kingspan Water & Energy Ltd



DISCLAIMER: The Sudden Drop acts as a warning for the householder and is intended as a deterrent for any potential thief. However, it cannot prevent theft or leakage and householders should take all reasonable steps to ensure the tank is secured. Kingspan Water & Energy Limited accepts no liability for any fuel losses.

Visit our YouTube channel
for installation videos:



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Watchman

Sonic Advanced/Plus



Product Manual Code: 0118345

We take every care to ensure that the information in this document is accurate at the point of publication. Specification may vary (within a small parameter) due to manufacturing process variations or environmental conditions. All images are for illustration purposes only and should not be taken as binding. The actual product may vary, and specification/ dimensions/ colour/ other attributes may differ. To ensure you are viewing the most recent and accurate product information, please visit this link: <https://www.kingspan.com>

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