SmartPro™ Monitor Alarm Systems
SmartPro G2 Wired Alarm

Control Unit Setup

SEPTIC watch™

11/27/00   10:00
TANK 1

SELECT   PREVIOUS   NEXT   ALARM OFF

ZURN

Patent No. 5,946,967

Zurn, LIMITED WARRANTY

Zurn warrants that this product shall be free from manufacturing defects for a period of 2 yea 1 year the date of consumer purchase. Any parts found to be defective during the warranty period shall be replaced at no charge to the buyer. SmartPro, SEPTICwatch[TM] and GREASEwatch[TM] tank monitors are designed to complement, not replace normal service practices. Zurn's liability is limited to repair or replacement of the part. In no event shall Worldstone be liable for any consequential damages or any labor, material, freight or expense required to replace, correct or reinstall the product.

This warranty does not apply to temperature sensing, and is voided by:

(a) Defects or malfunctions resulting from failure to properly install, operate or maintain the product in accordance with the installation and maintenance manuals.
(b) The product being modified without prior authorization from Worldstone, Inc..
(c) Misuse or abuse.
(d) Damage due to lightning.
(e) Installation in septic tanks and grease traps not designed to meet present state and local codes without prior authorization from Worldstone, Inc. or its authorized representatives.

Contents

Control Unit Set-up

Pay particular attention to items proceeding with (i)

The current product offerings of SmartPro, SEPTICwatch™ and GREASEwatch™ are the same. In the future, the products will be enhanced and additional features will be added to satisfy application requirements. In the current form, the products are installed and configured in the same way.

ⓘ Because of the different logos of the control units, the "G" button of the GREASEwatch unit will replace the "S" button of the SEPTICwatch unit.

For the purposes of this document, SEPTICwatch and GREASEwatch should be considered as the same product. Both products will be referred to as the "monitor" or "monitor device".

The Control Unit displays readings from the septic tank or grease trap. The Control Unit has 4 main buttons. They are:

"SELECT" Press this button to scroll through the different screens

"PREVIOUS"   To go back in time to view historical readings

"NEXT"   To go forward in time to view historical readings

"ALARM OFF"   Press to turn off the alarm sound

There is also a button on the logo. Press the "S" (or "G") button at any time to return to the "Main Screen".

"S" Button

"G" Button

The LCD display is backlit. After a button is pressed, the light will stay on for 60 seconds. The display returns to the "Main Screen" after 60 seconds, if no other button is pressed.

During normal operation the Control Unit displays the main screen.

MAIN SCREEN

Current Date and Time ⟶

Tank # ⟶

```
11/27/00      10:00
TANK   1
```
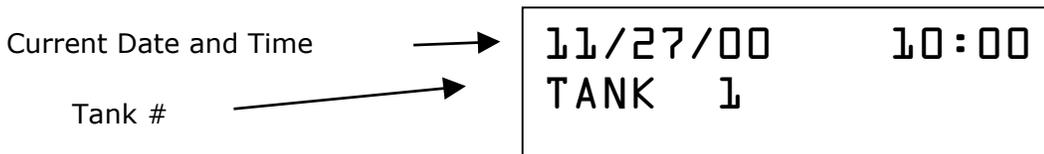
The Control Unit can operate up to 2 Septic tanks or 2 Grease Traps, or a combination of each, at the same time. (On a 2-tank system, press the "NEXT" button to select "TANK 2")

Press the "SELECT" button to view the first screen – Total Solids.

```
SOLIDS    75%            *
11/27/00      10:00
```

The "SOLIDS" screen shows the total amount of solids in the tank, as a percentage of when the tank needs to be pumped.

When the Control Unit is installed, the unit is set up so that when the total solids (floating solids, plus bottom solids), reaches a predetermined amount, the tank needs to be pumped.

Press the "SELECT" button to select the next screen.

```
TOP SOLIDS 30%          *
11/27/00      10:00
```

Top Solids is set so that when the total reaches a predetermined maximum level, the tank should be pumped.

Press the "SELECT" button to select the next screen.

```
BOT SOLIDS 60%          *
11/27/00      10:00
```

Bottom Solids is set so that when the total reaches a predetermined maximum level, the tank should be pumped.

The level of "Top Solids" and "Bottom Solids" is independent from "Total Solids".

In the above configuration, the tank will need to be pumped when total solids reach 12".

If the Bottom Solids reach 10" and the top solids is only 1", the total solids reading will be 92%, however the Bottom Solids will have reached an alarm setting of 10". The percentages displayed for solids, top solids and bottom solids are the average for the previous hour.

ⓘ * The "SOLIDS", "TOP SOLIDS", and "BOT SOLIDS" screens may not appear when scrolling through the menu, depending on the configuration settings of the tank.

Press the "SELECT" button to select the next screen.

```
LIQUID  0.0"
11/27/00     10:00
```

The "Liquid" screen shows the level of liquid, plus or minus, in relation to what the true liquid level should be. When the Monitor is installed, the true liquid level is determined by measuring from the bottom of the tank to the bottom of the outlet pipe. The above reading of "0.0" indicates the Liquid Level is normal. The liquid level message may show during a pumping cycle and while the tank is refilling. Once the tank is filled up again, that message will not show.

Press the "SELECT" button to select the next screen.

```
TEMP   65°F
11/27/00     10:00
```

This screen indicates effluent temperature. The liquid level and temperature levels displayed are current (real time) readings.

Pressing the "SELECT" button one more time returns to the Main Screen.

Historical Readings

When looking at any of the above screens, stored data can be viewed by pressing the "Previous" button on the Control Unit.

While viewing the Liquid Level and Temperature Screens:
The first screen will show the current reading. Hold down or repeatedly press the Previous button to view historical (stored) readings.

The Control Unit will display readings in this sequence:

- Actual reading for every minute for the last 60 minutes
- Average reading for every hour for the last 24 hours
- Average reading for every day for the last month
- Average reading for every month for up to 20 years

While viewing the Solids, Top Solids, Bottom Solids Screens:*

The first screen shows the Average reading for the last 24 hours.

1. Hold down, or repeatedly press, the Previous button to view readings in this sequence;

- Average reading for every day for the last month
- Average reading for every month for up to 20 years

2. Hold down, or repeatedly press, the Next button to view readings in this sequence;

5

- Average reading for every hour for the last 24 hours
- Average reading for every minute for the last 60 minutes
-

* The "Solids," "Top Solids," and "Bottom Solids" screen may not appear when scrolling through the menu, depending upon the configuration settings of the tank**.**

Historical Data

Last 60 Minutes – Reading every Minute. 60 Readings

Current Day – Average for every Hour. 24 Readings

Current Month – Average for each day. 28 to 31 readings.

The Control Unit will keep a record of readings for 20 years. This data is compressed, depending on how old the data is.

Average every month for 20 Years. Up to 240 readings over a 20 year period

This Data is stored separately for each parameter:

- Total Solids
- Top Solids
- Bottom Solids
- Liquid Level
- Temperature

The data stored contains the High, Low and Average for all of these readings.

Press the "G" (or "S") button at any time to return to the "User Mode"

```
ENTERING SET-UP
```

ⓘ Tank Setup Mode

When the Control unit is installed, it must be given instructions on the dimensions of the tank.

This is done by pressing the "G" (or "S") button of the logo and holding it for 5 seconds. Press the "SELECT" button to advance through the menus.

```
CHANGE  CLOCK?
    *NO     YES
```

Press "PREVIOUS"
For "NO"

"YES"

~~See page 10 for instructions on changing real-time clock.~~

```
TANK SETTINGS
    *NO   YES
```

"NO"   "YES"

```
TANK INSIDE
HEIGHT 60"
```

Tank dimensions are set at these levels as default settings. To change any of the levels, press the "NEXT" button to increase or the "PREVIOUS" button to decrease.

Press the "SELECT" button to advance through different screens.

```
LIQUID LEVEL
HEIGHT 48"
```

```
TRANSDUCER LEVEL
HEIGHT 24"
```

```
TANK PUMPED AT
25% OF SOLIDS
```

When any of these parameters are set to "0", that parameter will not appear in the "User Mode".

Example: If "TANK PUMPED WHEN 0" ON TOP" is set, there will not be a Top Solid's reading in the User Mode.

```
TANK PUMPED
WHEN 12" ON TOP
```

```
TANK PUMPED
WHEN 12" ON BOT
```

Continued on next page…………….

…Continued

```
┌─────────────────────┐
│ LIQUID LEVEL        │
│ HIGH 6"             │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ LIQUID LEVEL        │
│ LOW 0"              │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ ALARM ?             │
│    *NO    YES       │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ SERVICE PROVIDER    │
│ 800 555 5555        │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│ SAVE CHANGES        │
│    *NO    YES       │
└─────────────────────┘
          │
   "YES" or "NO"
   Returns to Main Screen
          │
          ▼
┌─────────────────────┐
│ 11/27/00    10:33   │
│ TANK  1             │
└─────────────────────┘
```

Liquid Level Settings. Press the "NEXT" button to Advance. Press the "PREVIOUS" button to Set Back any of these settings.

Alarm. Press the "NEXT" button to disable the audible alarm. Press the "PREVIOUS" button to enable the audible alarm.

~~**Service Provider Telephone Number.** Using the "PREVIOUS" and "NEXT" buttons, enter the Service Providers phone #. After a digit is entered, press "ALARM OFF" button to advance to the next digit.~~

ⓘ**Save Changes.** Press the "NEXT" (YES) button to save the changed settings Press the "PREVIOUS" (NO) or "SELECT" button to exit, without saving changes

┌───────────────────────────────────┐
│ Press the "G" (or "S") button at any │
│ time to return to the "User Mode" │
│ without saving changes.   │
└───────────────────────────────────┘

Changing Real-Time Clock

```
YEAR 2000
```

```
CHANGE CLOCK?
  *NO    YES
```

Press "NEXT" for "YES"

```
MONTH 11
```

No

```
DAY 28
```

```
TANK SETTINGS
  *NO    YES
```

```
HOUR 10
```

Back to page 8

Press "NEXT" for "YES" or "PREVIOUS" for "NO"

```
MINUTE
```

```
SAVE CHANGES?
  *NO    YES
```

For Real-Time Clock

Press the "NEXT" button to Advance.

Press the "PREVIOUS" button to Set Back any of these settings.

Press the "SELECT" button to move through items.

Select "YES" to save Real Time Clock Settings
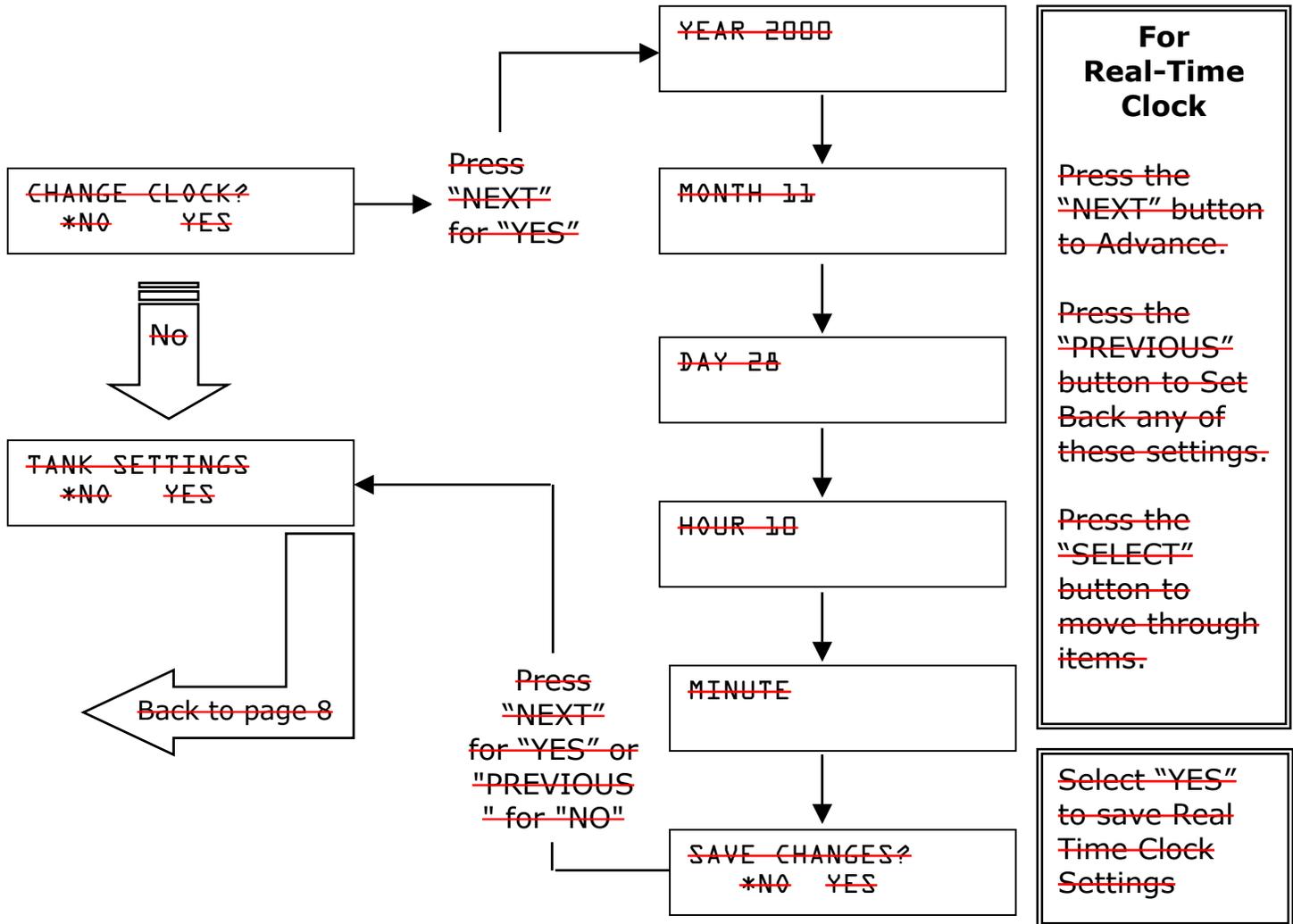
ⓘ Do you have a 2 Tank System?

If the Control Unit has been set-up for 2 tanks, it will be necessary to repeat the process the second tank.

Press the "NEXT" button on the Control Unit to select "TANK 2" and repeat the configuration Process, starting on page 8.

Additional Control Unit configuration is required for a 2-Tank system. These directions are detailed in the "Supplemental Installation Instructions" manual.

ⓘ Special consideration for a small Tank

There are minimum clearance requirements for the transducer. In order to read correctly, the transducer must be at least 12" away from the maximum solids settings in the tank.
A simple calculation can be performed to verify this;

Transducer Level *minus* Max Bottom Solids setting should be greater than 12 (inches)

Liquid Level *minus* Transducer Height *minus* Top Solids setting should be greater than 12 (inches)

Time to Pump, Service Required, Solid and Liquid Level Settings

The service provider sets the time to pump and solid and liquid level parameters. Whenever any of these parameters are reached, the display will indicate that it is time to pump or other service is required.

The Total Solids, Bottom Solids and Top Solids settings are optional and if set to "0" will be ignored. If all of these parameters are set to "0", the Control Unit will display liquid level and temperature only.
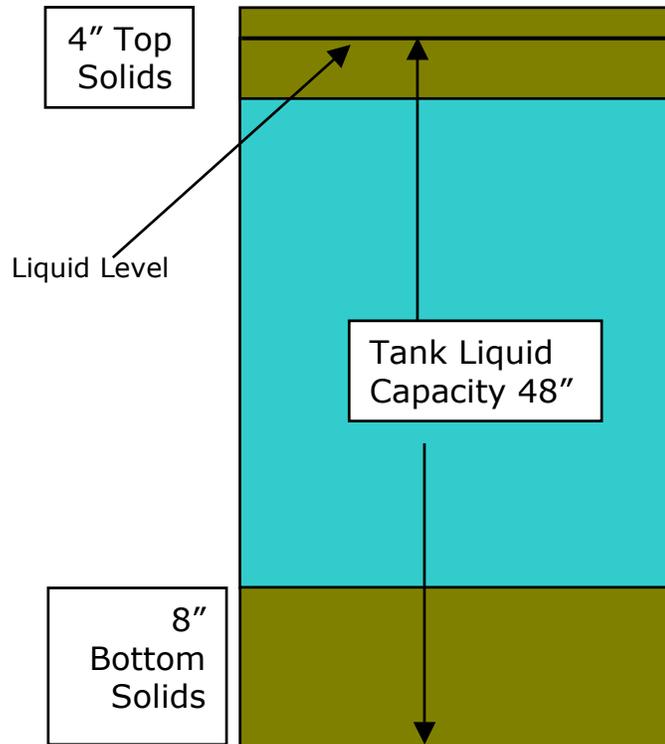
Solids — Time To Pump

The Solids level is set as a percentage of the total capacity of the tank. When the amount of solids in the tank reaches this level, the unit will display the "time to pump" message.
For example, a tank can be set so that when total solids reach 25% of the total capacity of the tank, the tank should be pumped. This is a MA Title 5 recommendation. In this example, a tank that has a total (liquid) capacity of 48" can be set so that when the total solids reach 25%, or 12", the tank needs to be pumped.

When this preset level is reached, the display will light up and will alternate between two screens, shown below.

4" Top Solids

Liquid Level

Tank Liquid Capacity 48"

8" Bottom Solids

```
TIME TO PUMP
CALL 18005555555
```

⟺

```
SOLIDS 100%
12/20/00   09:30
```
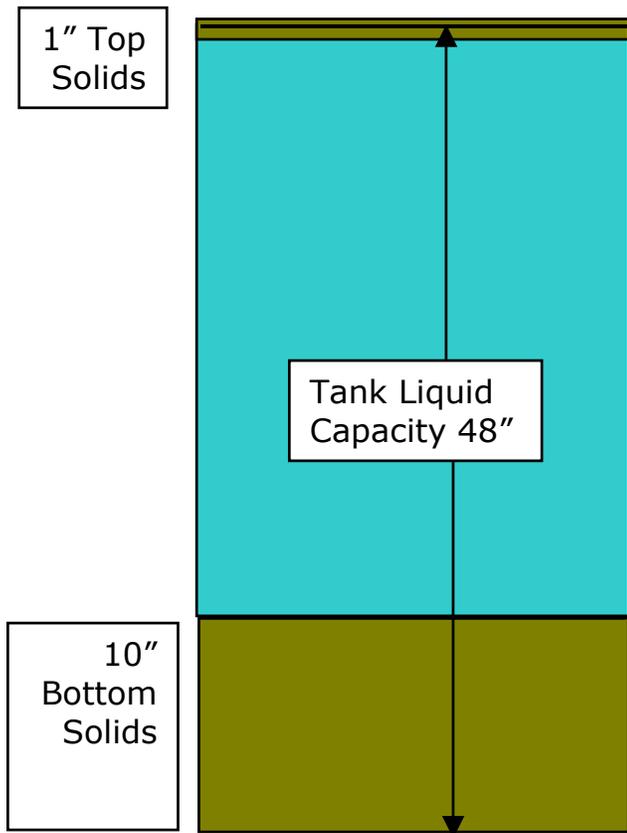
ⓘ If Alarm Sound is Enabled - In addition to the display, when Total Solids reach 110% or greater, the audible alarm will sound.

Top and Bottom Solids

The Control Unit also has the ability to independently monitor maximum levels of top and bottom solids. There are separate settings for maximum Top and Bottom solids. These settings are independent of the Total solids setting.

The Top and Bottom solids settings are set as a maximum level, in inches.

Bottom Solids

In this example, the Maximum Bottom Solids has been set at 10".

The allowable solids have been set to 25% of the total capacity of the tank. The tank has total solids of 11", which is 92% of the total allowable solids.

However because the maximum bottom solids have been set for 10", the maximum bottom solids setting has been reached and the display will indicate that it is time to pump.

When this preset level is reached, the display light up and will alternate between two screens, shown below.

| 1" Top Solids |
| Tank Liquid Capacity 48" |
| 10" Bottom Solids |

```
TIME TO PUMP
CALL 18005555555
```
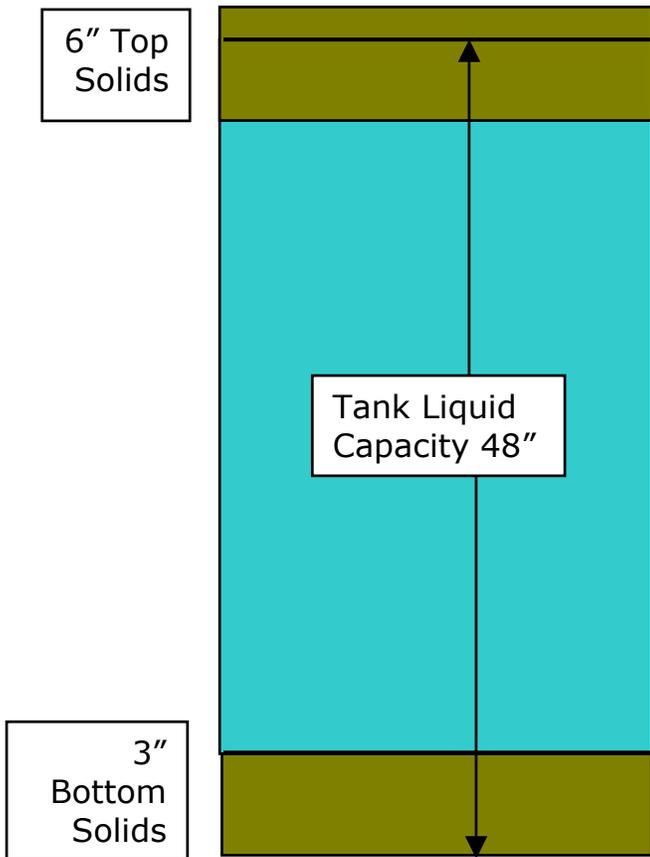
⟷

```
BOT SOLIDS 100%
12/20/00   09:30
```

(i) If Alarm Sound is Enabled - In addition to the display, if when Bottom Solids reach 110% or greater, the audible alarm will sound.

When the Control Unit is set up with this configuration and the above levels are reached, the (total) Solids reading will look like the screen below.

```
SOLIDS 92%
12/20/00   09:30
```

Top Solids

6" Top Solids

Tank Liquid Capacity 48"

3" Bottom Solids

In this example, the Maximum Top Solids has been set at 6".

The allowable solids have been set to 25% of the total capacity of the tank. The tank has total solids of 9", which is 75% of the total allowable solids.

However because the maximum top solids have been set for 6", the maximum top solids setting has been reached and the display will indicate that it is time to pump.

When this preset level is reached, the display light up and will alternate between two screens, shown below.

```
TIME TO PUMP
CALL 18005555555
```

⟺
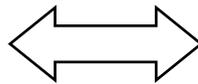
```
TOP SOLIDS 100%
12/20/00   09:30
```

ⓘ If Alarm Sound is Enabled - In addition to the display, when Top Solids reach 110% or greater, the audible alarm will sound.

The Alarm sound can be turned off by pressing the "ALARM OFF" button. However the message will continue to display until the alarm condition has been corrected.

When the Control Unit is set up with this configuration and the above levels are reached, the (total) Solids reading will look like the screen below.

```
SOLIDS 75%
12/20/00   09:30
```

Liquid level Settings

The Liquid level is set for a Maximum and Minimum allowable liquid levels, relative to the normal liquid level.

When a Liquid setting is reached, the screen will light up and the display will alternate between two screens.

```
SERVICE REQUIRED
CALL 18005555555
```
⟷
```
LIQUID 6.5"
11/30/00   09:30
```
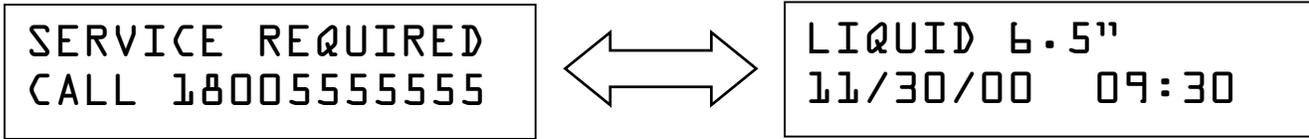
In the above example, the figure of "6.5" " indicates the liquid level is 6.5 inches above normal. This may signify excessive flow into the tank or a blocked outlet.

A low liquid level will be displayed as a minus reading and may indicate that the tank is leaking.

ⓘ The Alarm sound can be turned off by pressing the "ALARM OFF" button.
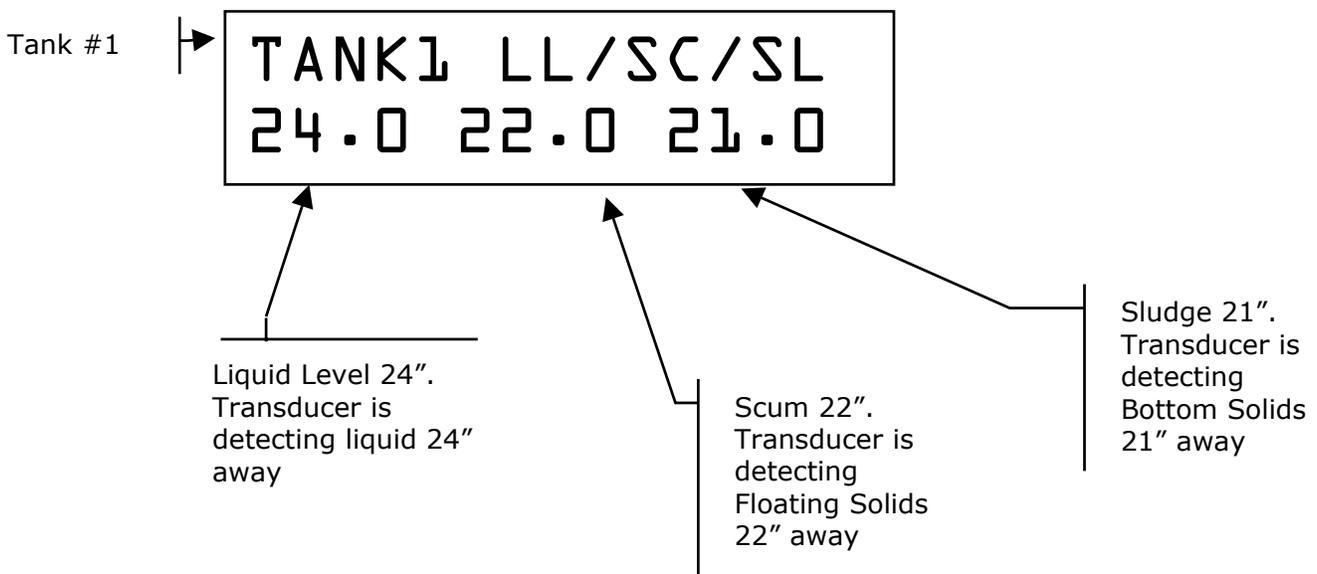However the message will continue to display until the condition has been corrected.

Additional Control Unit Settings

Using the "Help" Button

To use the Help mode, press and hold down the "h" of the "SEPTICwatch" or "GREASEwatch" logo for 5 seconds.

SEPTICwatch™
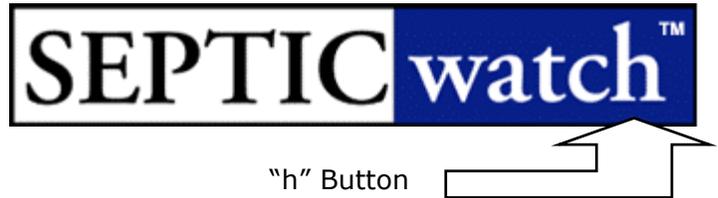
"h" Button

This is the first Screen seen. This screen shows the actual distance from transducer in inches. While this screen is displayed, a beep will be heard when the reading is updated.

Tank #1 ►
```
TANK1 LL/SC/SL
24.0 22.0 21.0
```

Liquid Level 24". Transducer is detecting liquid 24" away

Scum 22". Transducer is detecting Floating Solids 22" away

Sludge 21". Transducer is detecting Bottom Solids 21" away

If the Control Unit is set up for 2 tanks, press the "NEXT" button to select tank 2.

Press the "SELECT" button for the next screen.

Voltage in, to
Control Unit

Voltage out, to
Transducer

```
12.3 12.2 SO
000
```

Counter
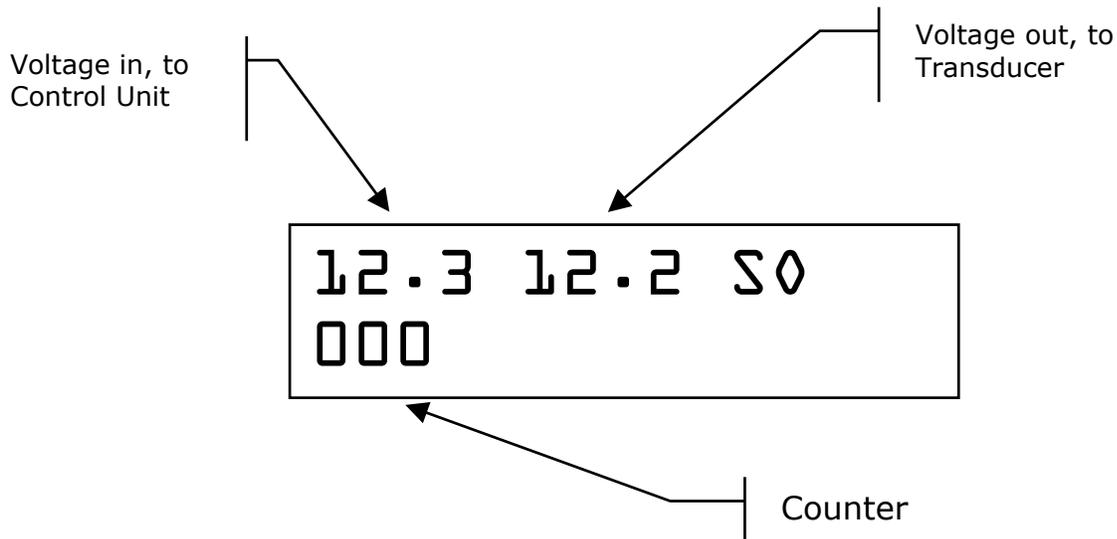
Press the "S" (or "G") on the logo to exit at any time.

If no other button is pressed, the Control Unit will return to the main screen within 1 hour.

Modem Option

ⓘ **The Control Unit must be connected to a modem and phone line and configured for modem operations, for these options.**

Accept inbound calls

As a default setting, the control unit cannot accept inbound calls. To temporarily change this setting, press and hold down the "Circle" in the "Worldstone" logo.

Press & Hold
for 4 Seconds

ZURN.®

The following menu appears:

```
ACCEPT CALLS?
  *NO   YES
```

Press the "NEXT" button for "YES" then "SELECT" to save, or "PREVIOUS"/"SELECT" for "NO".

After this option is used, make sure to go back and reverse the option to "NO" when done.

Dial out immediately (Control Unit must be set up to call out)

If required, the Control Unit can dial out immediately to a computer, or the internet.

Press the Alarm Off / Dial-Out Button for 1 second

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