



Operations Manual

Revision 6

Wellmann Farms LLC
Solving Problems For Farmers, By Farmers

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Overview

- Compatible with any make or model of sprayer. From self-propelled to pull-type.
- Accurately compensates for sprayer tilt angle when not sitting on a level surface.
- Easily adjustable for solutions of various densities with no additional calibration required
- Bluetooth communication allows you view the fluid level in your tank from up to 180 feet away
- Compatible with Android and Apple tablets and smart phones
- Installation is simple and takes around an hour to complete

Disclaimer & Liability Waiver

Fill Sight is intended to provide **approximate guidance only** and is **not designed or intended** for precise measurement of products when filling spray tanks. It is the sole responsibility of the user to accurately measure, calibrate, and properly mix all herbicides, fertilizers, pesticides, and other agricultural products according to label instructions and best management practices. Any over-application, under-application, or misapplication of products resulting from reliance on Fill Sight readings, feedback, or estimates is the **user's exclusive responsibility**. By using Fill Sight, you acknowledge and agree that:

- Wellmann Farms LLC., its owners, officers, employees, distributors, and affiliates are not responsible for any errors, inaccuracies, or failures of the system.
- Wellmann Farms LLC. shall not be held liable for any damages, crop loss, yield reduction, environmental harm, regulatory violations, or any other direct or indirect losses arising from the use or misuse of Fill Sight.

WARNING

Use of Fill Sight constitutes your acceptance of this disclaimer and full release of liability.

Quick Start Guide

Get Fill Sight running in about 1 hour

Installing Fill Sight is simple. Follow these steps in order for best results.

1. Mount the Control Box

- Choose a protected location (inside the sprayer cab is best)
- Mount the box **flat** with the label facing **up**
- Orient the indicator lights **parallel or perpendicular** to your tank sump (see the *Control Box Orientation* section for a diagram)
- Control box is threaded for 1/4" – 20 bolts. **DO NOT OVER TIGHTEN, it will damage the box**

NOTE

Proper orientation is required for accurate tilt compensation.

2. Connect Power

- Use a **12-volt keyed** power source (unit turns on/off with the key)
- Red wire → positive 12V
- Black wire → ground

WARNING

Do not connect directly to the battery — it will drain your battery over time.

3. Install the Sensor

- Plumb the sensor at the **bottom** of the tank
- Preferred locations: sight tube, existing bung, or new 1" tank bung
- Mount sensor **upright or angled upward** so it drains and won't freeze
- The blue end of the sensor harness plugs into the sensor, keep the white sensor vent tube oriented to prevent it from filling with water or debris

NOTE

Sensor height affects accuracy with different density solutions. Plumb even with or slightly below the bottom of your tank

4. Set Up the RemoteXY App

- Download **RemoteXY** from Google Play or Apple App Store
- Purchase the **"Buy Forever"** license (one-time fee)
- Add device → select **Bluetooth** → choose **Fill Sight**

5. Zero the Tilt & Pressure Sensors (One-time step)

- Park on a **level** surface
- Open the app → go to **Tilt** settings → press “**Zero Tilt Sensor**”
- Open app → Settings → Sensors press → “**Zero Pressure Sensor**”

TIP

Park on level ground when leveling your tilt sensor. The ride profile of your sprayer may naturally have the tank leaning in one direction or another (i.e. Forward or backward) that is fine as it's the normal operating stance of the sprayer.

6. Set Up the RemoteXY App

- Download **RemoteXY** from Google Play or Apple App Store
- Purchase the “**Buy Forever**” license (one-time fee)
- Add device → select **Bluetooth** → choose **Fill Sight**

NOTE

Only one device can connect at a time. Green light = powered. Blue light = connected.

7. Calibrate the System

Calibration is **critical** — Fill Sight is only as accurate as your calibration. Fill tank with water and follow the full Calibration section later in this manual.

You're done! Your Fill Sight is now ready to use. For complete details, troubleshooting, density calculations, and maintenance, refer to the full manual.

Fill Sight Installation

Installing Fill Sight is a very simple process and takes around an hour, however exact details of the installation vary depending on the make and model of your sprayer.

Control Box Location

The Fill Sight control box can be placed anywhere it is convenient; however, it is important that you keep it out of harms way from excessive water or areas where crop damage may occur - such as tall corn plants that may rub along the machine.

When identifying a suitable location for the Fill Sight control box it is important to mount the unit flat with the label facing up, this will provide the most accurate tilt sensing results.

The control box is tapped with 1/4 – 20 holes. Do not overtighten bolts when securing the control or you will damage it.

NOTE

The recommended location for the control box is inside the sprayer cab if possible.

Control Box Orientation

When determining the best location for the control box it is important to orient the control box with the **label facing** up and such that the indicator lights are either parallel or perpendicular to the orientation of the sump in your tank. This will allow the volume reporting will be able to accurately compensate for tilt.

Most spray tanks have a tapered bottom allowing all the spray solution to be completely emptied from the tank. This sump is generally oriented along the lengthwise axis of the tank and can impact the weight of the solution the sensor feels when the tank and sprayer are tilted and not sitting level.

NOTE

Mount the control box with the label facing up.

If you choose to mount it with a different orientation, the integrated tilt sensor will not function properly and the volume calculations will not be able to compensate for tilt. In this case, you will want to operate Fill Sight with the tilt compensation disabled, which may reduce the accuracy of the volume reporting.

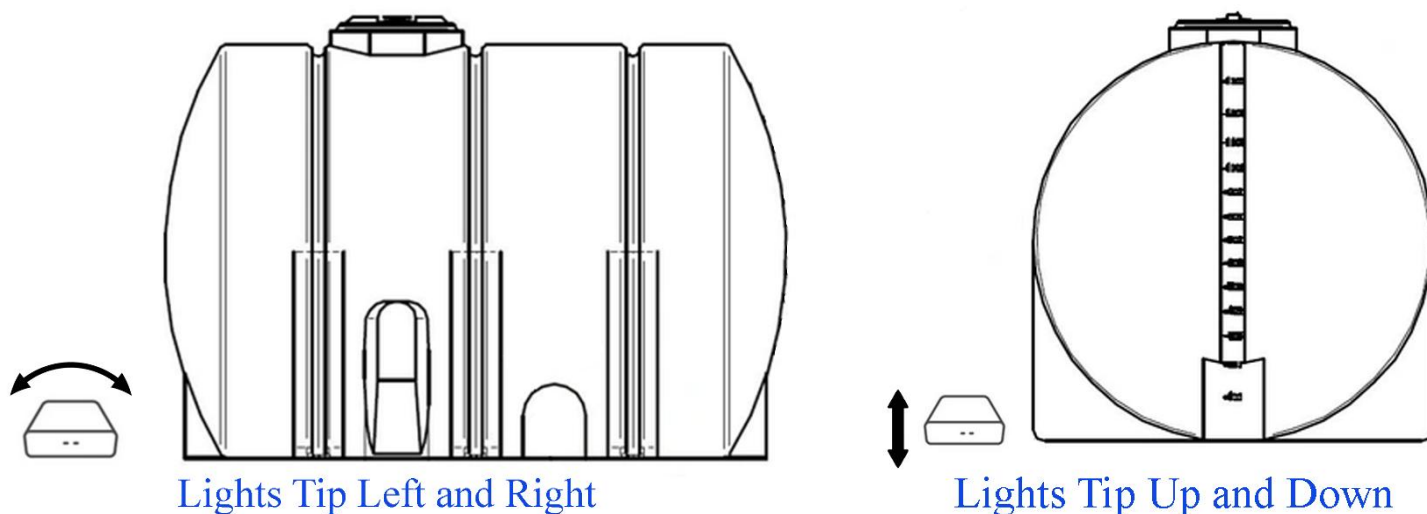


Diagram showing the two desired control box orientations relative to the tank

Once a suitable location has been found for the control box, route the power and sensor harness wires appropriately and make their connections.

Power Requirements

Fill Sight requires a 12-volt keyed power source so that the control box will be powered when the key is on and the machine is running and turns off when the machine is off. If you hook it directly to the battery or a constant 12-volt power source it will remain on and will continually draw power, eventually draining your battery.

If you are installing on a pull-type sprayer, power can generally be found in the wiring harness that hooks the hazard lights to the tractor. Refer to your sprayer specific owner's manual for additional details about where you can locate a 12-volt power source on the sprayer.

The power harness for Fill Sight is the 2 pin connector with the Red and Black wire pigtails.

- Connect the Red wire to the positive 12-volt source
- Connect the Black wire to the negative ground

Installing the Sensor

The sensor must be installed in a location where the “weight” of the liquid in the tank can be accurately measured - most sprayers have a sight tube or bung that comes out of the bottom of the tank, this is a preferred location to tee into for installing the Fill Sight sensor.

When choosing a suitable location for the sensor, you want it to be located at the same vertical height as the bottom of the tank or slightly below. This is important and will impact the accuracy when trying to compensate for liquids that have a different density than what was used during the calibration.

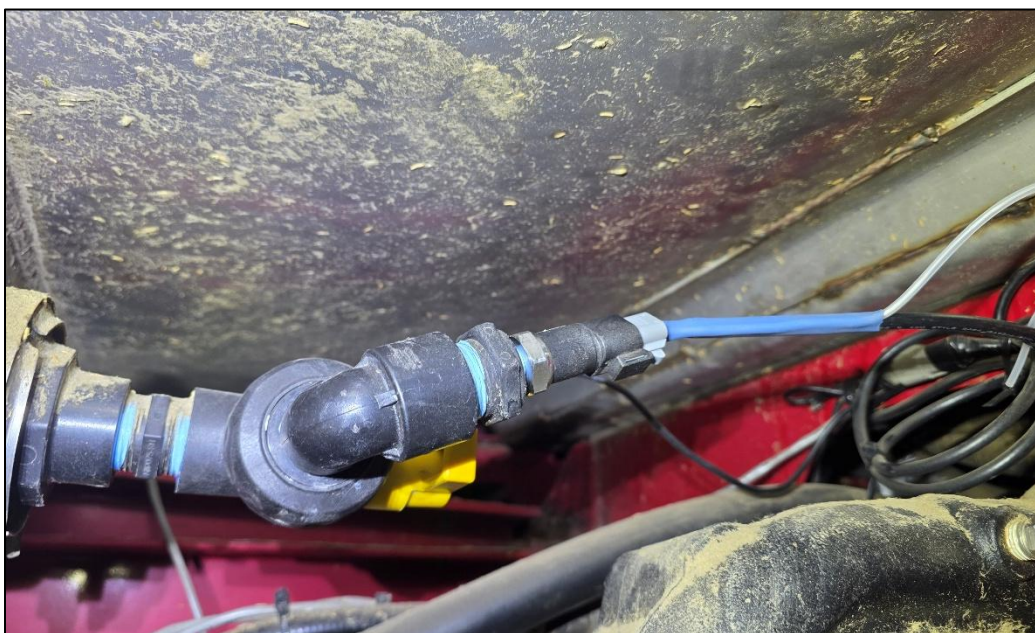
If your tank does not have a suitable location, you may need to drill a hole and install a bung into the bottom of the tank. A 1” tank bung is recommended in these situations.

The sensor has a 1/4” NPT fitting.

The blue end of the sensor harness plugs into the sensor, keep the white sensor vent tube oriented to point down to prevent it from filling with water or debris. Routinely check and clean the opening of the vent tube to ensure proper operation of the sensor.

NOTE

When installing the sensor, it is recommended that you orient it upright or at an angle upward so it automatically drains out and is not susceptible to freezing.



The sensor is plumbed into the bottom of this tank at a slight angle.

NOTE The orientation of the vent tube

Communicating With Fill Sight

Fill Sight communication is done through the RemoteXY App, a powerful yet simple system that allows for reliable communication and compatibility with Android and Apple tablets or smart phones. Think about the RemoteXY platform similar to ISOBUS systems that you may already be familiar with where you can connect any ISOBUS compatible implement or system to your existing tractor's display and control its functionality.

RemoteXY is a 3rd party application, meaning it is not associated with Fill Sight, but rather an app that enables you to easily communicate with the Fill Sight system.

You will need to download the RemoteXY app from Google Play or the Apple App Store before you can communicate with Fill Sight. RemoteXY is free to download however it has limited functionality without purchasing a “**Pro License**” from within the app. It is recommended that you purchase the **Buy Forever** license for a one-time fee (price subject to change – check the app store) vs the monthly subscription. This license is like a feature unlock you may have purchased for an advanced feature in the display of your tractor.

Like other purchased Android or Apple apps, each purchase is associated with your Android or Apple account and can be installed on any devices that uses the same account login credentials. With that in mind, if you have multiple employees that will be using Fill Sight, you may want to have a dedicated account that you purchase RemoteXY on and a dedicated set of tablets that use that account.

For example, if you choose to have a tablet in your sprayer and one on your tender trailer both using the same login credentials you would only be required to purchase one RemoteXY License. Once purchased, RemoteXY can connect and communicate with any Fill Sight unit because it is a one-time purchase of the communication platform and is not tied to any particular Fill Sight unit.

Installing RemoteXY

RemoteXY is available in Google Play and the Apple App store.



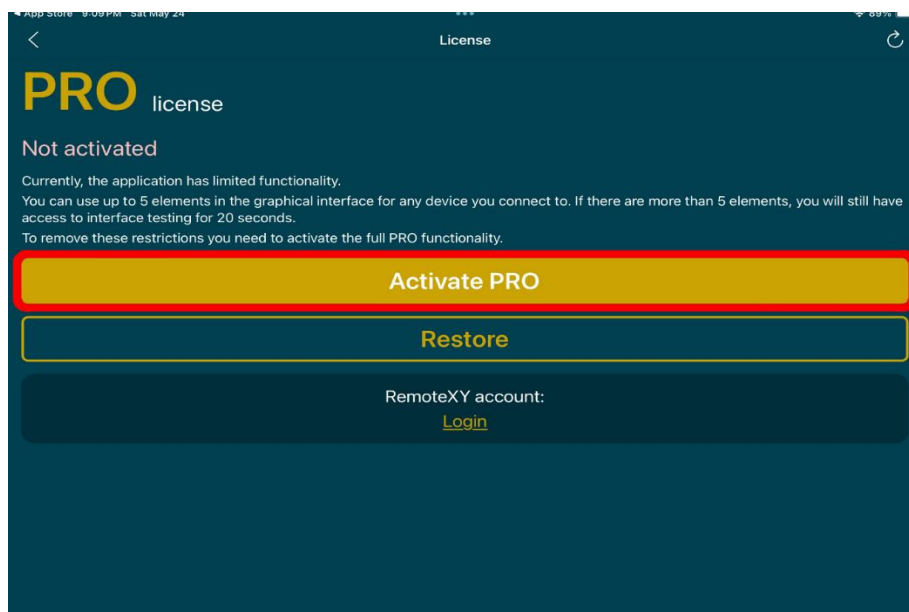
Scan the QR codes below or search for **RemoteXY** in Google Play or the App Store. The App icon looks like the icon to the left.



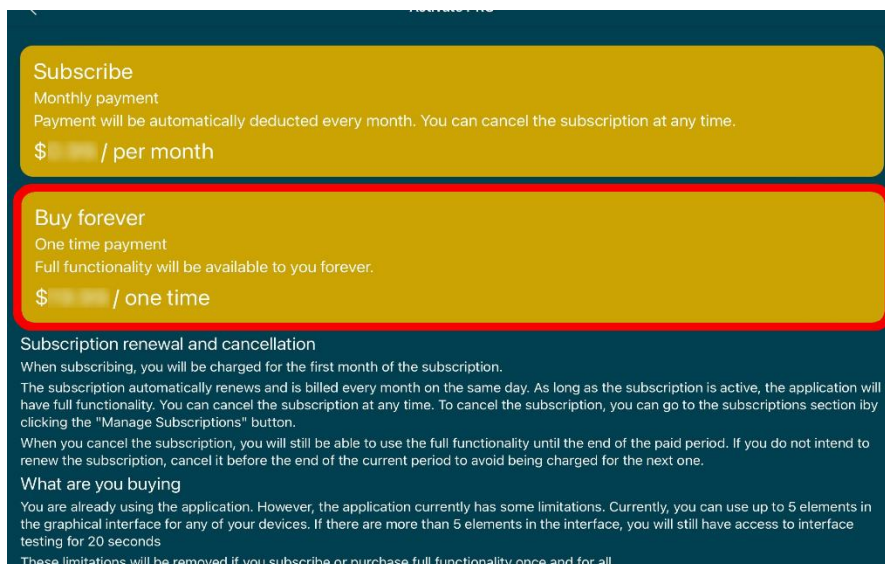
Activating the RemoteXY Pro License

When you first launch RemoteXY, the app will prompt you to purchase a license.

Below are screen shots showing the screens you will encounter once you have installed RemoteXY and wish to activate it for use.



*License Activation Screen shown in the RemoteXY app.
The suggested selection is highlighted in red.*



*License Purchase Screen shown in the RemoteXY app
The suggested activation option is highlighted in red.*

Operation

The Fill Sight control box communicates to the RemoteXY app over a Bluetooth connection.

Only one viewing device can be connected to the Fill Sight unit at a time.

If you cannot connect to the Fill Sight control box, make sure the unit is powered on and is not currently connected to another viewing device. You can determine this by the status lights on the side of the Fill Sight control box.

Status Lights

- Green: The unit is powered on and running
- Blue: The unit has an active connection to the RemoteXY app on a tablet or smart phone

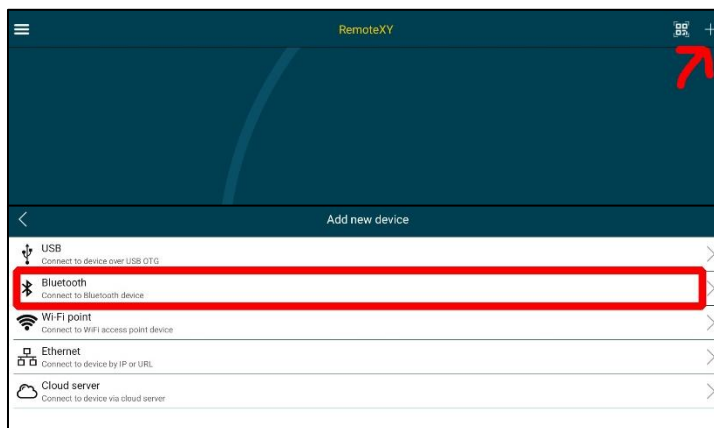


Control box indicator lights

Connecting RemoteXY to the Fill Sight Control box

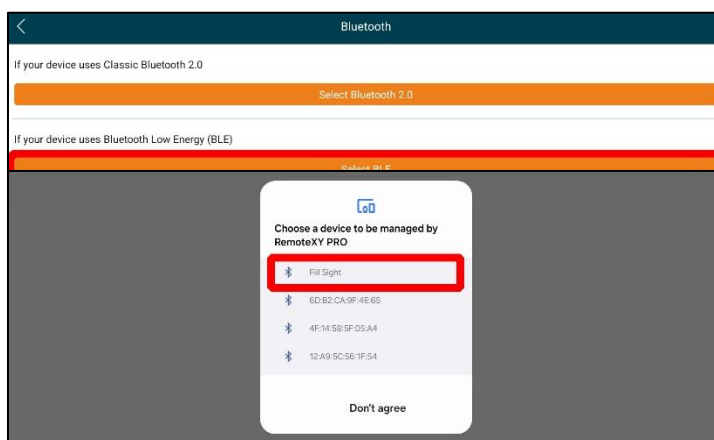
Once you have installed the RemoteXY app on your tablet or smart phone and have the Fill Sight control box powered on, you can easily set up a new connection with the following steps:

1. Start the RemoteXY App
2. Add a Device by clicking the “+” in the upper right corner of the screen



3. Select **Bluetooth** from the list

4. Click on the **Select BLE** orange button.



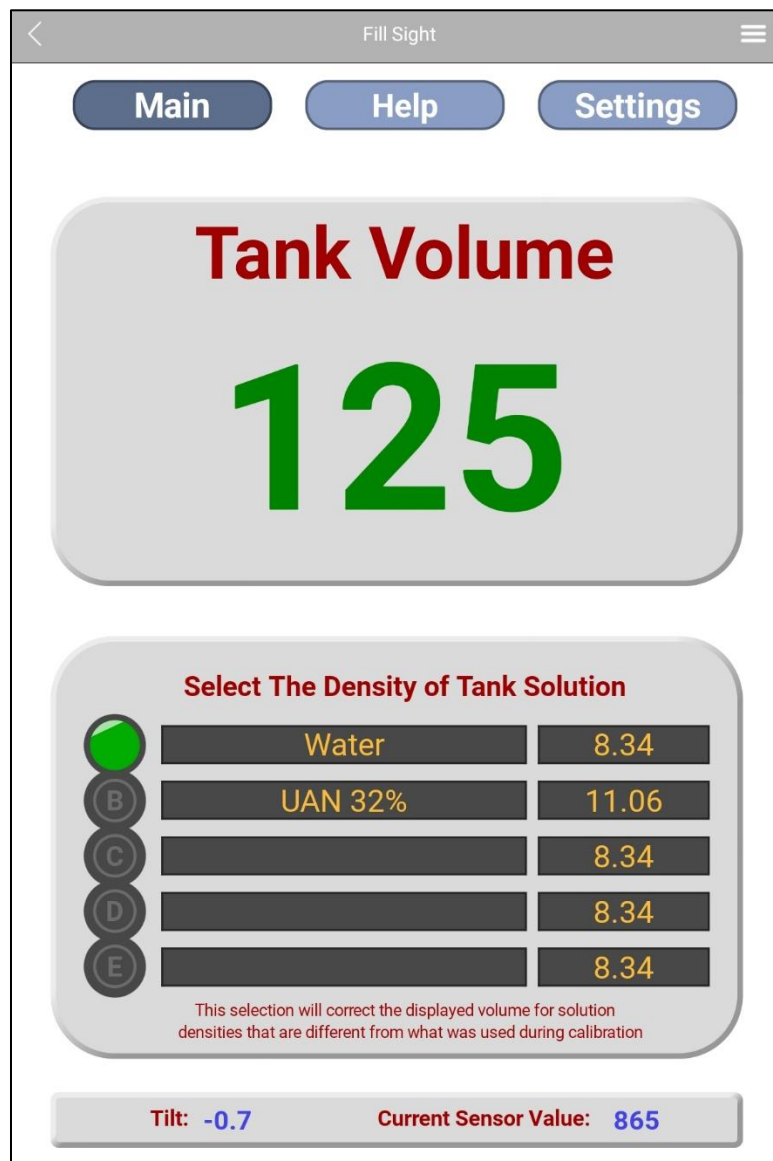
5. Select **Fill Sight** from the list of available Bluetooth items.
NOTE: Your list will vary depending on what Bluetooth items are nearby

NOTE

If “Fill Sight” does not appear, make sure Bluetooth is enabled, the control box is powered, and no other device is already connected.

Once you are connected to a Fill Sight unit the connection will be saved in the the RemoteXY application for quick access next time.

The Main Display



Example Main Screen

Key Items

- **Tank Volume**
- The **Density of Tank Solution** selection
- The current **Sensor Value**
- The current **Tilt**

Tank Volume

This is the volume of solution in your tank. It is automatically adjusted based on the **Tank Solution Density** selection. There are no specified units necessary. It will work with whatever

system you use during calibration. For example, if you calibrate using gallons, it will show the volume in gallons. If you calibrate using liters, the volume will show your tank volume in liters, etc.

NOTE

The tank volume will not be accurate until you've zeroed your sensors for the first time and have performed the tank calibration.

It is critical that your calibration be as accurate as possible to get a good and reliable tank volume value.

Density of Tank Solution

Tap these boxes to enter up to 5 tank mix solutions and their density values to be remembered and allow for quick switching between various tank mixes with varying densities. The tank volume will display a density corrected value that is based the selection.

The most accurate way to determine solution density is to measure and weigh one unit of solution. For example, if using gallons, measure out and weigh one gallon of solution – don't forget to subtract the weight of the container from the final value or it will significantly impact the accuracy of the reported tank volume.

See Appendix B for information on calculating the solution density from known product weights. To edit an item name or density, simply tap on the field you want to edit and enter the updated information. Any changes will be automatically saved.

When entering the density for your solution, it is important that you use the same units here as you do in the calibration page.

WARNING

Any product added to your tank solution can impact the density and the accuracy of the reported volume.

For the most accurate results, weigh or calculate the density of the tank solution.

Sensor Value

The sensor reading is shown for informational purposes. If this value is jumping around a lot and does not feel very stable – this can indicate that your sensor is experiencing excessive vibration and in the case of a self-propelled sprayer, simply adjusting the engine RPM can result in a more stable and accurate reading that doesn't have the harmonic vibration interference from the engine.

Tilt

This is the current tilt of the sprayer, as detected by the Fill Sight control box. If you have the tilt feature disabled in the settings, the tilt will not display the angle.

Sensor Settings

The sensor settings can be accessed from the Main Display page by pressing the **Settings** button, then selecting **Sensors**.

Tilt Sensor Setting

Control Box Orientation Relative To Tank



Lights Tip Left and Right



Lights Tip Up and Down



Disabled - Do Not Factor In Tilt

Select how the control box is oriented relative to the tank
NOTE: If "Disabled" is selected, only the level calibration table is used
NOTE: The control box must be mounted flat with the label up

Tilt Sensor Calibration

Current Tilt: -0.6

Zero Tilt Sensor

Make sure your tank is level before zeroing the tilt sensor.
Zero the tilt sensor while sitting stationary and not moving.
Zeroing the tilt sensor while at an incline will impact the volume accuracy.

Pressure Sensor Calibration

Current PSI: 0.00

Zero Pressure Sensor

Make Sure your tank is completely empty with no liquid in contact with the sensor prior to zeroing as it will impact volume accuracy.

Sensor Settings Screen

Key Items

- **Control Box Orientation Relative To Tank**
- **Zero Tilt Sensor**
- **Zero Pressure Sensor**

Control Box Orientation Relative To Tank

This selection tells the Fill Sight control box how it was oriented during installation. Selecting the proper orientation will allow accurate detection and volume reporting based on the data entered in the calibration tables and the detected tilt angle.

Choose the option that represents how the primary axis of your tank will tilt relative to how your control box is installed.

TIP

If you are unsure what the proper selection is, you can manually tip the box left/right or forward/back and see how the tilt angle responds.

Options:

- Lights Tip Left and Right
- Lights Tip Up and Down
- Disabled – Do Not Factor In Tilt

If your Fill Sight control box is not installed with the label facing up, the integrated tilt sensor will not accurately detect the tilt. In this case, select the **Disabled** option. *Refer to the Calibration section for more details about calibration tables.*

NOTE

When the tilt is Disabled, only the values from the **Level (No Tilt)** calibration table are used.

Zero Tilt Sensor

Zeroing your tilt sensor only needs to be done once after initial installation.

Find a level location and then press the **“Zero Tilt Sensor”**. Within a few moments of pressing the Zero Tilt Sensor button, the Current Tilt value should read 0.0 or very close. You can re-zero the sensor if it is still off a little bit.

When zeroing the tilt sensor, do not worry if the natural profile of your sprayer naturally leans forward or backward. By zeroing the tilt sensor, you are just calibrating the Fill Sight control box to accurately display how your sprayer is leaning. This information is used during calibration and is factored in when determining the total tank volume to report during normal usage.

WARNING

Zero your tilt sensor once before calibration.

Zeroing the sensor after you've performed the calibration procedure can impact the accuracy of the reported tank volume. This is especially important if you calibrated with a sensor that was not properly zeroed out first.

Zero Pressure Sensor

Zeroing your pressure sensor should be done prior to calibration and can be repeated annually during pre-season checks and startup.

Zeroing the sensor prior to calibration ensures accurate calibration data is collected and in the event that you need to replace a sensor your calibration will still be valid after sensor replacement so you will not need to perform another tank volume calibration.

WARNING

Zero your pressure sensor prior to Tank Volume Calibration.

ONLY zero the pressure sensor when the tank is empty and there is no liquid in contact with the pressure sensor. If you plumbed into a sight tube, make sure all liquid has been drained from the tube and sensor prior to zeroing.

Calibration

Calibration is a critical step in the setup process. Until you've calibrated Fill Sight you will not get accurate volume readings reported. This is because the default table your Fill Sight shipped with likely does not match your tank size and dimensions.

Care and attention to detail should be made during the calibration as Fill Sight is only as accurate as your calibration and the more accurate you make it, the happier you will be with its performance.

The calibration tables are accessed from the Main Display page by pressing the **Settings** button, then selecting **Calibration**.

The Calibration Screen Layout

The Calibration screen layout includes the following elements:

- Navigation Tabs:** Main, Sensors, Calibration (selected).
- Calibration Table:** A dropdown menu set to "Level (No Tilt)".
- Tank Volume / Sensor Value Table:**

Tank Volume	Sensor Value
1661	3652
1561	3556
1461	3498
1361	3444
1261	3392
1161	3341
1061	3292
961	3247
861	3204
761	3160
661	3119
561	3076
461	3029
361	2981
261	2931
161	2877
111	2843
86	2823
36	2760
0	2667
- What Tilt Angle Does This Table Represent:** 0.0
- Warnings:** Calibration is valid
- IMPORTANT:** Zero the Tilt and Pressure sensors before calibrating to ensure accuracy.
- TIP:** Record the sensor value and tank volume for each tilt table using the exact same volume of water for the most accurate results.
- TIP:** Tap the dots to the right to toggle the calibration table entry.
 - Green = ENABLED
 - Red = DISABLED
- Density of Calibration Solution:** 8.34
- Current Tilt:** -0.4 **Current Sensor Value:** 2667

Calibration Screen Example – your values will differ

Key Items

- **Current Sensor Value**
- **Current Tilt**
- The **Tank Volume** column
- The **Sensor Value** column
- **Density of Calibration Solution**
- The **Calibration Table** selection
 - Level (No Tilt)
 - Negative Tilt
 - Positive Tilt
- The **Tilt Angle** the calibration table represents
- **Green** and **Red** dots allowing individual calibration entries to be enabled or disabled
- A **Warning** box to give feedback regarding potential issues with the data entered

Current Sensor Value

This value represents what the sensor “feels”.

If this value is jumping around a lot and does not seem very stable it may indicate that your sensor mounting location is experiencing excessive vibration or a tank solution that is sloshing around inside the tank.

In the case of engine vibration when installed on a self-propelled sprayer, simply adjusting the engine RPM can impact the sensor value stability. If you continue to experience sensor value stability problems at all RPM ranges, please contact customer support for further assistance.

Current Tilt

This value represents the tilt of the Fill Sight control box.

NOTE

To ensure accurate performance it is important that you zero your control box after installation. This only needs to be done one time. More information is below in the *Tilt Settings* section.

Tank Volume

Along the left side, under the **Tank Volume** column you will record the amount of water in your tank at various levels. The top of the list represents a full tank and the bottom represents an empty tank.

You can enter any values in this column that suit your application.

IMPORTANT

The tank volume values must be in decreasing order from the top to the bottom. The highest tank volumes will always be above a lower value in the list.

You can disable any individual calibration entry by changing the Red/Green dot to Red, indicating that entry is not to be considered.

NOTE

Most tanks have more capacity than they typically state.

This is why you want to start with a totally full tank and spray it out until it is empty, or until you lose pressure and cannot reasonably spray anymore – even if there is still water in your tank you would consider this empty.

Sensor Value

Along the right side, under the **Sensor Value** column you will record the sensor value that represents the current tank volume in the adjacent entry box to the left.

Density of Calibration Solution

Enter in the density of one unit of your calibration solution.

For example, if you are using water, this value will be 8.34 as it represents the weight of one gallon of water.

If you are using the metric system, you would enter 1.0 as this would represent the kilogram weight of one liter of water.

Calibration Tables

The Fill Sight control box allows you to enter three sets of calibration data allowing accurate volume sensing regardless of how your sprayer is oriented. This is critical if your sensor is plumbed into your tank in a location that is not necessarily perfectly centered in the tank.

There are three calibration table options:

- Level Tilt
 - This table should be calibrated with values that represent a level tank (as close to 0.0 as possible).
- Negative Tilt
 - This table should be calibrated with values that represent a tank that is tilted in the negative direction, as indicated by the “Current Tilt” value at the bottom of the screen. For example: -5.0 degrees.
- Positive Tilt
 - This table should be calibrated with values that represent a tank that is tilted in the positive direction, as indicated by the “Current Tilt” value at the bottom of the screen. For example: 5.0 degrees.

Tilt Angle

For each of the three calibration tables, enter the tilt angle that the calibration data represents.

It is important to ensure that the tilt angle is consistent for every tank volume and sensor reading association as you calibrate the Fill Sight unit. If your angle is changing throughout the calibration process by more than a small amount, your calibration will not be very accurate and you may not be satisfied with the volume accuracy.

TIP

Calibrate using a tilt that is reasonable for what you expect to experience when filling.

A -5.0 degree to 5.0 degree tilt range is a reasonable recommendation.

Density of Calibration Solution

Enter in the density of one unit of your calibration solution.

The Calibration Process

The calibration process requires that you fill your tank full with water and pick a suitable location to spray the entire tank empty, recording the sensor and tank levels along the way.

Most sprayers have flow meters on that are already being used to regulate measure the amount of product that is flowing out through the sprayer and giving you feedback. You are going to use that system in the calibration process by pausing the spraying at various tank volume points and recording the sensor value associated with that volume. If your sprayer does not have a flow meter you will need to judge the amount of water remaining in the tank at various points along the calibration process.

There are tables in the appendix that you can use to record the calibration data as you progress through the following steps. It is often easiest to record the calibration data on paper and once the tank has been emptied and all the calibration data has been collected, then enter it into the Fill Sight calibration tables as a final step.

IMPORTANT

Clean and ensure your flow meter is in good working order prior to calibration.

NOTE

You will not end perfectly at zero as you are spraying the water out – and the last thing you want is for your spray monitor to reach 0 and you still have water in the tank to spray.

To avoid running having to re-run the calibration a second time it is recommended that you initially tell your spray monitor that you have more in it than you do and adjust accordingly as you run through the calibration.

For example, for a 1000 gallon tank, tell your spray monitor that you have 2000 gallons that way you ensure that the monitor will still be tracking volume when your tank is empty.

Calibration Steps:

1. Fill your sprayer's tank with water - full all the way to the very top.
2. Ensure your flow meter is in good working condition and is accurate
3. Verify suspension (air bags, springs, etc.) are in working correctly and not sagging.
4. Set your sprayer's monitor to a value much higher than your tank size.
 - a. For example, enter 2000 gallons for a 1000 gallon tank.
5. Verify the Tilt Sensor and Pressure Sensor have both been properly zeroed.
6. Connect to Fill Sight through the RemoteXY app to view the sensor values and tilt angles.
7. Using the calibration worksheet located in the appendix of this manual, record the initial calibration data with the full tank
 - a. Monitor Gallons – what your sprayer's monitor shows for the remaining volume
 - b. Sensor values for each tilt angle.
 - i. For the most accurate results, you should adjust your sprayer such that you can record all three tilt angle values with the same physical amount of water in your spray tank.
 - ii. This means you will need to move the sprayer or drive it onto an incline or onto blocks to cause it to tilt to your desired angle.
8. Spray some of the water out of your sprayer and stop at the next logical point, for example, stop every 100 gallons and record the volume and sensor data on the worksheet (same as above)
9. Repeat steps 7 & 8 until your spray tank is empty.
10. Make the final adjustments to the tank volume data (see below)
11. Enter the data into the calibration table.
12. Disable any calibration entries that you do not want to use – for example if you have additional entry slots that you did not use during your calibration.
 - a. A **GREEN** dot in the table means the entry is enabled
 - b. A **RED** dot in the table means the entry is not enabled

NOTE

It is critical that you have a consistent tilt angle for each reading in the table to get the most accurate results.

If you plant on enabling the tilt compensation, collect all three tilt sensor readings with the same physical volume of water. This produces more accurate results than performing 3 separate calibrations for each tilt angle.

Final Calibration Adjustments:

Once you finish the calibration procedure you can complete the calibration worksheet by filling in the Gallon Delta for each line and compute the Final Tank Volume – starting from the bottom and working your way up the worksheet.

The Final Tank Volume entry at the very bottom should be 0 as your tank is empty. Work your way up the worksheet and compute the Final Tank Volume for each line.

DO NOT ADJUST THE SENSOR VALUES, JUST THE TANK VOLUME VALUES.

EXAMPLE

Once you've finished the calibration and your sprayer's monitor thinks you still have 25 gallons left in the tank. Simply subtract 25 gallons from each Final Tank Volume value in the list to adjust each entry. This will result in an accurate end volume of zero.

Troubleshooting Guide

This section covers the most common issues users encounter and how to resolve them quickly. Most problems are simple to fix once you know what to check.

Bluetooth Connection Problems

Fill Sight does not appear in the RemoteXY device list

1. Make sure the Fill Sight control box is powered on (green light should be lit).
2. Confirm the unit is **not** already connected to another tablet or phone (blue light off).
3. Ensure Bluetooth is enabled on your tablet/phone.
4. Move closer to the sprayer (within 50–100 feet) and refresh the device list.
5. Power cycle the sprayer (turn key off for 10 seconds, then back on).

NOTE

Only one device can be connected to the Fill Sight control box at a time – an active connection is indicated by the blue LED light on the control box.

Connection drops or will not stay connected

- Move the viewing device closer to the control box.
- Reduce interference by moving away from other Bluetooth devices or Wi-Fi routers.
- Restart the RemoteXY app and reconnect.
- If the problem continues, power cycle the sprayer.

Sensor / Volume Reading Problems

Sensor Value is unstable or jumping around

- Make sure the sensor and sensor harness is plugged in securely and properly. The blue end of the sensor harness plugs into the sensor.
- Make sure the vent tube on the sensor harness is clean and free from obstructions.
- On self-propelled sprayers, try lowering the engine RPM — harmonic vibration from the engine is the most common cause.
- Check that the sensor is mounted securely and not vibrating against metal parts.
- Make sure the tank solution is not sloshing excessively (park on level ground when checking).

Tank Volume reading is inaccurate

- Verify you have completed the full calibration process (see Calibration section).
- Confirm the sensor is plumbed at a height that is at or below the as the bottom of the tank.
- Double-check that the correct **Density of Tank Solution** is selected on the Main Display and the value is entered correctly (see Appendix B).

Sensor Value stays at 0 or maximum

- Confirm the sensor is installed at the bottom of the tank and not higher up on a hose.
- Ensure there are valid calibration table entries enabled with the GREEN dot next to the entries in the table.

Tilt Compensation Problems

Tilt value stays at 0.0 even when the sprayer is tilted

- Confirm the control box is mounted **flat** with the label facing up.
- In Tilt Settings, make sure tilt compensation is **not** set to “Disabled”.
- Re-zero the tilt sensor on a known level surface (see Zero Tilt Sensor).

Volume readings change incorrectly when the sprayer is tilted

- Verify the Control Box Orientation setting matches how the lights tip relative to the tank sump (Lights Tip Left and Right vs. Lights Tip Up and Down).
- Make sure you calibrated all three tilt tables (Level, Negative, and Positive) using the same physical amount of water (see Calibration Steps).

Power / Indicator Light Problems

No green light (unit not powering on)

- Check the 12-volt keyed power connection (red wire to positive, black to ground).
- Verify the sprayer key is on.
- Test the power source with a multimeter or another 12V accessory.

Green light is on but no blue light when trying to connect

- The unit is powered but not paired — follow the Bluetooth connection steps.
- Another device may already be connected (only one connection allowed).

App / Display Problems

Tank Volume shows “0” even when tank is full

- The unit has not been calibrated yet or the calibration data was entered incorrectly.
- Re-check the calibration table (Tank Volume values must decrease from top to bottom).
- Ensure there are calibration table entries with the GREEN dot next to them indicating they are enabled.

Density selection does not change the displayed volume

- Make sure you are editing the correct line in the Density of Tank Solution list.
- Confirm you are using the same units (gallons or liters) as during calibration.

Winter / Freezing Issues

Sensor is frozen or will not drain

- The sensor must be mounted upright or angled upward.
- Before winter storage, drain the sensor line completely.
- If frozen, allow the unit to thaw slowly in a warm shop before use.

Still Having Problems?

If you have tried the steps above and the issue persists, please contact Wellmann Farms LLC. support:

- Phone: 507-295-1128
- Email: TLWellmann@gmail.com

Provide the following information when contacting support:

- Sprayer make and model
- Approximate tank size
- Description of the problem (including sensor value, tilt reading, and lights status)
- A photo of the control box installation and sensor plumbing is very helpful.

Maintenance & Winterization

Fill Sight is designed to be low-maintenance and reliable in the field. Following these simple steps will keep your system accurate and prevent common winter-related problems.

Routine Maintenance

- **Inspect wiring and connections** — Once per season, check the power harness and sensor cable for damage, loose plugs, or corrosion.
- **Clean the sensor** — If the sensor value becomes unstable or inaccurate, flush the sensor with clean water to remove any buildup or debris and ensure the vent tube is clean and unobstructed.
- **Check control box mounting** — Ensure the box is still mounted flat with the label facing up and has not shifted. Vibration or impact can affect tilt accuracy.

Winterization & Storage

Perform these steps before storing the sprayer for winter:

1. Completely drain any liquid that may be in contact with the sensor.
2. Confirm the sensor is mounted **upright or angled upward** so any remaining liquid can drain out.
3. Store the control box in a dry location if possible, or leave it mounted but protected from direct water spray.

WARNING

Failure to drain the liquid in contact with the sensor prior to freezing temperatures can cause permanent damage to the sensor. This is not covered under warranty.

Annual Verification

- Re-zero the tilt sensor after any major service work or if the control box is ever removed and remounted (see Zero Tilt Sensor).
- Perform a quick calibration check each spring: Fill the tank to a known volume and confirm the displayed Tank Volume is within $\pm 5\%$ of actual. If it is off, run a full calibration.
- Check that your Density of Tank Solution values are still correct for the products you use.
-

NOTE

Most users only need to perform a full calibration once. Annual verification is usually sufficient unless the sensor or tank has been modified.

Appendix A: Calibration Table

The following table can be used to aid in the calibration process.

- **Final Tank Volume**
 - Once you have recorded all the sensor values as you work through the calibration process, you can calculate the actual tank volume the sensor value represents, starting with zero at the bottom of the table and adding the gallon delta values as you work up the table.
 - It is important to note that it does not matter what the final tank values are in the left column, you are simply going to associate that volume with the sensor value when you enter the data into the Fill Sight app.
- **Gallon Delta**
 - Use this column to plan out how you will split the 20 available table values up to match your tank size.
 - The bottom of the table represents an empty tank and the top represents a full tank.
 - **TIP:** Generally, 100-gallon increments work well
- **Monitor Gallons**
 - Enter a large value in your sprayer monitor to represent a full tank. For example, when calibrating a 1000 gallon tank, tell the monitor that you have 2000 gallons in the tank. This ensures that your monitor will not go to zero when you still have solution left in the tank. If this happens, you will need to rerun the entire calibration process to get accurate results
- **Sensor Value**
 - Record the sensor value that represents the volume in the tank at the various points where you are stopping and recording a calibration point.
- **Negative, Level and Positive Tilt Angles**
 - Record the tilt angle the sensor values in the column below are associated with.

Negative Tilt Angle	Level Tilt Angle	Positive Tilt Angle
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Example of a filled-out table for a 1600 gallon tank

Fill In Tilt Angle The Column Below Represents -->			Negative Tilt Angle	Level Tilt Angle	Positive Tilt Angle
			-5.0	0.0	5.0
Final Tank Volume	Gallon Delta	Monitor Gallons	Sensor Value	Sensor Value	Sensor Value
1634	100	2000	12700	12700	12700
1534	100	1900	11478	11665	11782
1434	100	1800	10835	11014	11147
1334	100	1700	10280	10460	10583
1234	100	1600	9755	9935	10059
1134	100	1500	9250	9444	9566
1034	100	1400	8777	8972	9094
934	100	1300	8317	8502	8618
834	100	1200	7882	8060	8172
734	100	1100	7450	7620	7727
634	100	1000	7004	7168	7286
534	100	900	6535	6694	6823
434	100	800	6060	6223	6357
334	100	700	5557	5727	5859
234	100	600	5015	5190	5316
134	100	500	4428	4600	4725
84	100	450	4077	4235	4367
59	100	425	3881	4040	4160
34	100	400	3637	3800	3920
0	100	366	2830	3012	3066

Appendix B: Density Calculations

The easiest and most accurate way to determine density is to measure out and weigh one unit (gallon or liter – whatever you used during calibration) of your solution and use that as your density. Be sure to account for the weight of the bucket or pail you are using during the weighing.

If you are unable to measure and weigh one unit of your solution, you can generally calculate the density to be reasonably accurate.

NOTE

The industry standard is to state volume weights at a 60 degrees Fahrenheit. Warmer or cooler temperatures will impact the final weight of the solution.

Density Calculation Example: consider the following solution recipe:

- 15 gallons per acre
 - 5 gallons of 32% UAN
 - 32% UAN generally has a weight of 11.06 pounds per gallon
 - 2 gallons of ATS
 - ATS generally has a weight of 11.04 pounds per gallon
 - 1 quart of a herbicide
 - Assume a weight of 9.45 pounds per gallon in this example
 - The remainder of the solution is water as the carrier
 - Water has a weight of 8.34 pounds per gallon

Product	Volume	Density	Total Weight
32% UAN	5 Gallons	11.06	55.3 pounds
ATS	2 Gallons	11.04	22.08 pounds
Herbicide	0.25 Gallons	9.45	2.36 pounds
Water – Carrier	7.75 Gallons	8.34	64.64 pounds
Total	15 Gallons		144.38 pounds

- The total weight of our solution from the recipe is 144.38 pounds.
- Divide 144.38 by 15 for a unit density of 9.62 pounds per gallon.
- **9.62 is the calculated solution density for one gallon in this example.**

Support & Contact

Thank you for choosing Fill Sight!

We are committed to your success with the system. If you have any questions or need assistance after reviewing the Troubleshooting Guide and Maintenance & Winterization section, please reach out to us.

Wellmann Farms LLC. Support

- **Phone:** 507-295-1128
- **Email:** TLWellmann@gmail.com

When contacting support, please provide the following information (this helps us assist you faster):

- Sprayer make and model
- Approximate tank size
- Description of the problem or question
- Current Sensor Value and Current Tilt reading (from the Main Display)
- A photo of the control box installation and sensor plumbing (highly recommended)

We typically respond to emails and phone calls within one business day. For urgent issues during spraying season, please call.

Your feedback is always welcome — it helps us continue improving Fill Sight for other farmers.

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Solving Problems For Farmers, By Farmers