Owner's Manual

H_2O Sensor - Model 201SS
& 200DM
Small Square Baler Precision Moisture Sensing Kit

HarvestTec®

EST. 1976

H_2O Moisture Owner's Manual Table of Contents

	Page
Introduction	**2**
Requirements & Tools Needed	**2**
Star Wheel Moisture Sensors	**3-4**
Two-Tie Balers	3
Three-Tie Balers	3-4
Steamer Equipped Balers	4
Main Baler Moisture Harness	**5-6**
H2O Control Module and Harnesses	**6**
End of Bale Sensor Installation - 200FCA (Optional)	**7**
Dye Marker Installation - 200DM (Optional)	**8-9**
Wiring Diagram	**10**
Pin Outs	**11**
Downloading H_2O App	**12**
Screen Definitions	**12**
Operation	**13-15**
Reading Moisture	13
Moisture Range	13
Dye Marker System	14
Dye Sprayer Override	14
H_2O Firmware Update through App	15
Warranty Statement	**16**

Introduction

Congratulations and thank you for purchasing a Harvest Tec H_2O Moisture Sensing Kit Model 201LS system. Please read this manual carefully to ensure correct steps are taken to attach the system to the baler. This system is designed to read moisture at levels of 5-60%.

Requirements

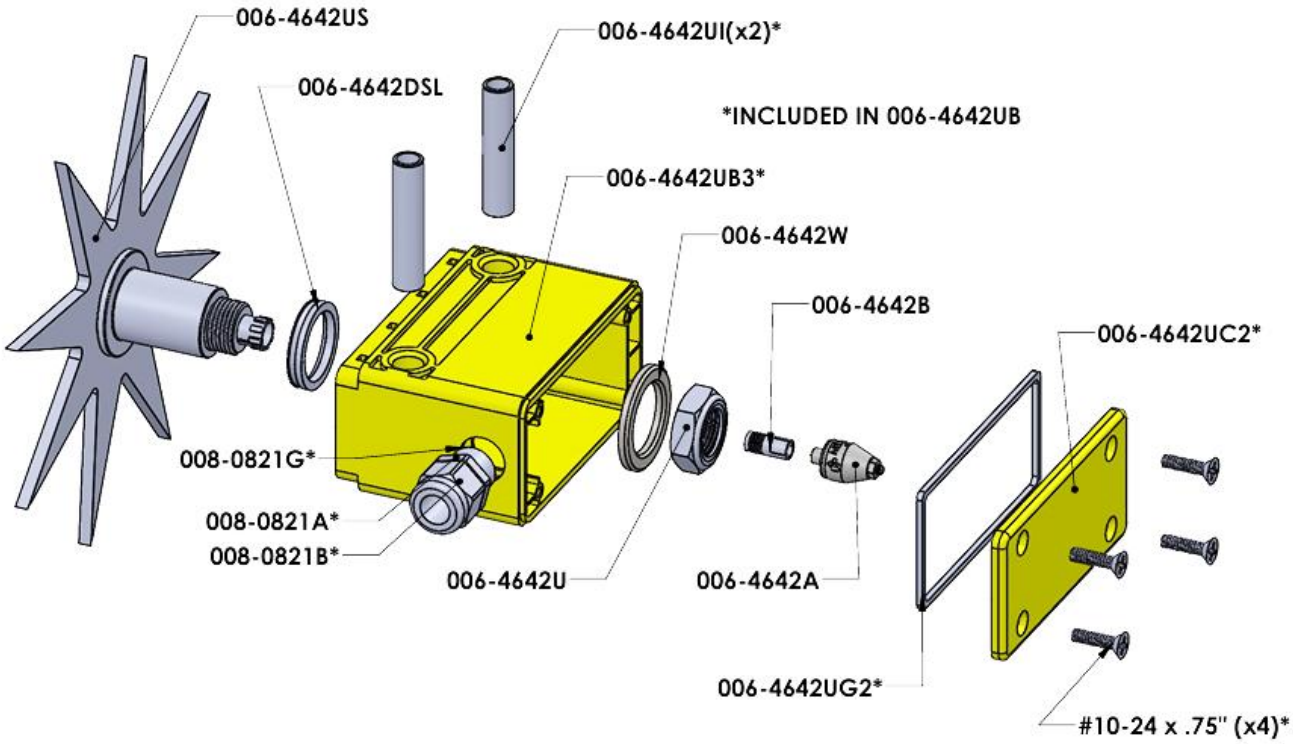
The H_2O Precision Moisture Sensor app will support operation of the current operating system and one previous version for both Apple and Android devices.

***It is recommended for proper communication that the original phone/tablet power cable is used. Many lower cost power cables do not meet requirements to properly charge and communicate to the Harvest Tec H2O module.*

Tools Needed

SAE wrench set	Hammer	Drill bit set
Standard screw driver	Measuring tape	Center punch
Side cutter	SAE socket set	

Star Wheel Sensors (030-4642UX)
For All Systems Pre-700 Series – Yellow Block 2026

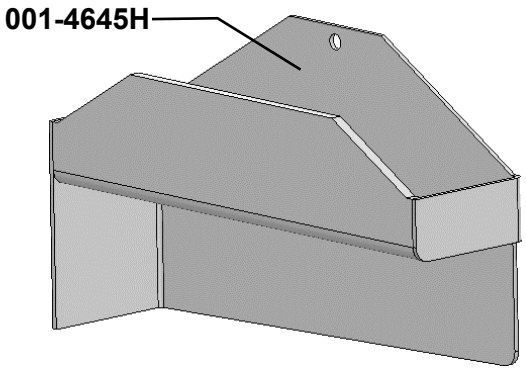


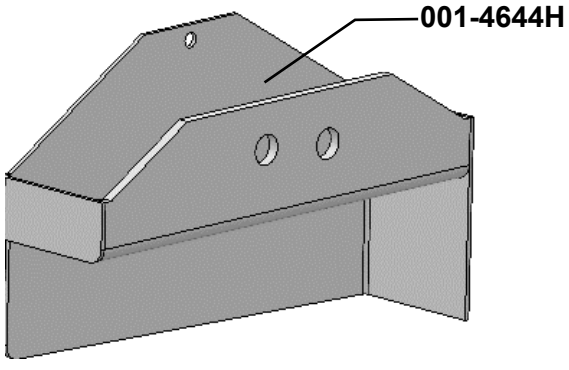
Description	Part#	Qty
Star Wheel (includes swivel insert)	006-4642US	1
Dust Seal Gasket	006-4642DSL	1
Star Wheel Block Only	006-4642UB3	1
Star Wheel Block End Cap	006-4642UEC	1
Block Inserts	006-4642UI	2
Wire Compression Grommet	008-0821A	1
Grommet Locking Nut (internal)	008-0821B	1
Washer for Wire Grommet	008-0821G	1
Bearing Washer	006-4642W	1
Star Wheel Nut	006-4642U	1
Swivel Insert	006-4642B	1
Electric Swivel	006-4642A	1
Star Wheel Block Gasket	006-4642UG2	1
Star Wheel Block Cover	006-4542UC2	1

Description	Part#	Qty
Star Wheel Spacer Plate (not pictured)	001-6707ES	1
Star Wheel Mounting Hardware (5/16" x 3-1/4" Allen Head Screws, nuts, locks and washers)		2

Optional Star Wheel Accessories:

Twine Guard -Left	001-4645H
Twine Guard -Right	001-4644H
Star Wheel Drilling Template	001-4642T
Replacement Star Wheel Block*	006-4642UB
Complete Universal Assembly	**030-4642UX**





Star Wheel Moisture Sensors (030-4642UX)

Star Wheel Mounting

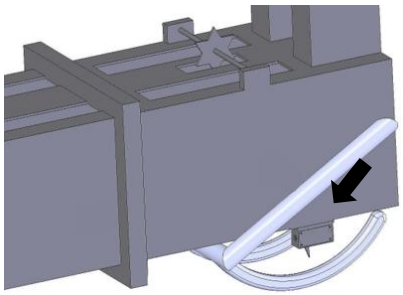
For Two-Tie Balers:

The pair of star wheels will need to mount on the bottom side as close to the front of the bale chute as possible and at least 3/8” (10mm) away from any metal. They will need to maintain a safe distance away from the twine.

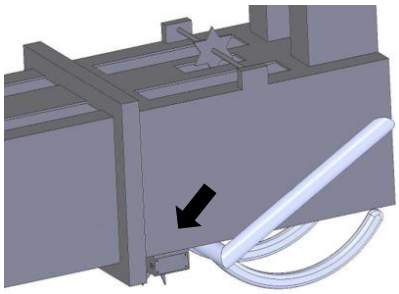
Depending on the baler model the star wheels can mount in front of the needle arm Option A (below) if there is space available. When there is not enough room for the star wheel use Option B

The star wheels will require two holes to be drilled per block, when drilling make sure to keep the wheel square to the bale chamber. Any angle will cause stress on the wheel and will eventually cause the wheel to work itself out of the block. Some balers may require a notch cut on the bottom of the bale chamber to mount the star wheels as close to the front of the chamber as possible.

Secure the star wheels with 5/16” x 3-1/4” BHCS (x2 each side) with bolt heads placed inside of the bale chamber. Spacer plate (001-6707ES) is placed between the star wheel block and bale chamber. Secure with flat washer, lock washer and nut. Be sure to hand tighten bolts with wrench or ratchet - not exceed 13 ft-lb torque. **DO NOT USE AN IMPACT TO TIGHTEN.** Over torquing star wheel mounting hardware can cause pre-mature wear of the star wheel blocks.



Option A



Option B

For Three-Tie Balers Only:

When using a three-tie baler the star wheels will need to be mounted on the top of the bale chamber as close to the knotters as possible (shown below). Use the instructions above for proper star wheel installation.





Alternative Installation Option for Agco 3-Tie Balers

Star wheel sensors can be mounted on the side of the bale chamber, within the gap of the side compression doors. Position sensors opposite of one another and centered within the gap to ensure no contact is made with the metal bale chamber.

***For Steamer Equipped Balers**:*
Ensure star wheels are positioned as far rearward on bale chute as possible for most accurate results in artificial moisture conditions. Main Moisture Harness (006-2470SS) extension cales are available for use with steamers:

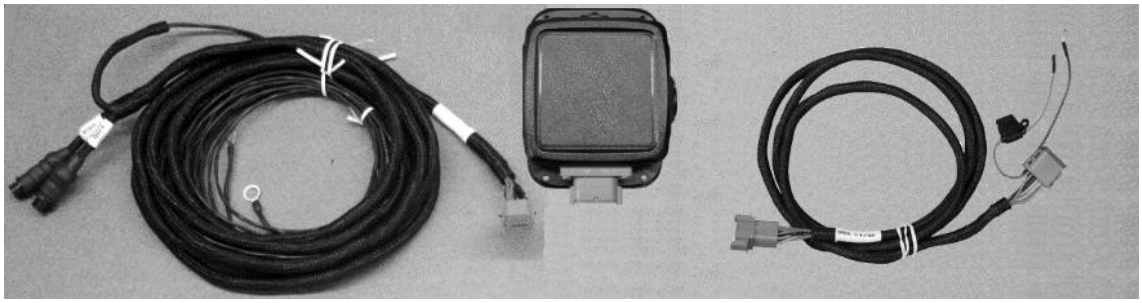
30’ Extension Harness (006-2470BL3) or
8’ Extension Harness (006-2470BL2)



Main Baler Moisture Harness (006-2470SS)

Remove the cover from the star wheel block and using a 1/4” (7mm) nut driver, remove the nut from the electronic swivel. Route the eye loop end of the star wheel sensor wire through the black grommet and place the eye terminal on the star wheel sensor. Tighten the nut eye with the eye loop on the sensor and put the star wheel cover back on the base. Tighten the grommet to form a tight seal around the wire. Route the harness from each star wheel towards the hitch in a suitable location, avoid moving parts and pinch points. Secure to baler using cable ties.

H_2O Control Module & Harnesses
For Small Square Balers



Ref	Description	Part #	Qty
1	Main Baler Moisture Harness	006-2470SS	1
2	H2O Control Module	006-2473SB	1
3	Tractor Power Harness	006-2470P	1
NP	USB-A to USB-C Comm. Cable	006-6672USBX	1
	Optional Extension Harnesses:		
NP	8’ Power/Comm Harness Ext.	006-2470BL2	
NP	30’ Power/Comm Steamer Ext.	006-2470BL3	

H2O Control Module (006-2473)

Installation

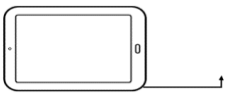


Locate a safe location in the cab of the tractor to place the Control and connect a USB cable ending in a USB-A plug to connect to the display device (smartphone or tablet).

Connect the main plug of the Power Harness (006-2470P) to control box and the other plug at the hitch to the Main Baler Moisture Harness (006-2470LS, 006-2470SS or 006-2473RB).

The control box (006-2473) is equipped with a green light to indicate both power and connection.

Plug the tablet/phone cord into the tablet communication port (closest to light) indicated by:

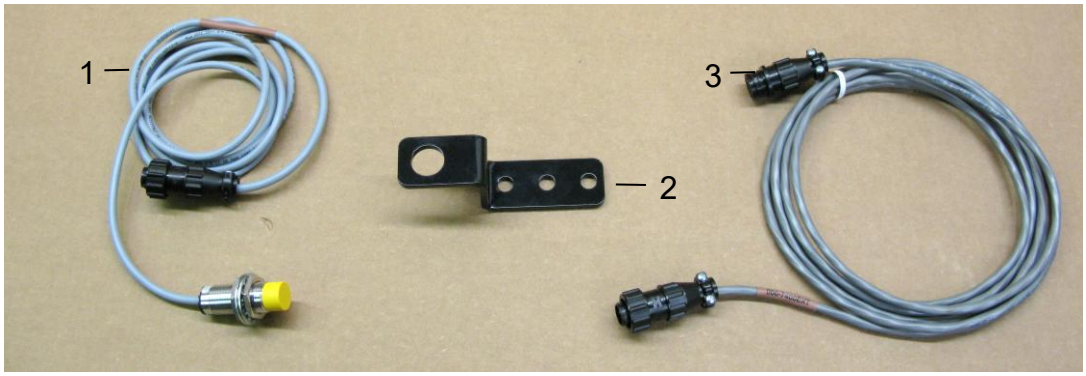


Slow Blink – System has power but not connected to phone or tablet.

Solid Green – Device is connected.

***A quality data communication/power cable ending in a USB-A plug is required. Many lower cost power cables do not meet requirements to properly charge and communicate with the Harvest Tec H2O module. Use of adapters is not supported. Communication cable USB-C to USB-A (006-6672USBX) included with kit or Lightning to USB-A cable (006-6672USBC) is available by ordering through Harvest Tec.*

Optional End of Bale Sensor Kit



Ref	Description	Part #	Qty	Ref	Description	Part #	Qty
1	End of Bale Sensor	006-7400	1	3	EOB Extension	006-7400EXT	1
2	End of Bale Bracket	001-4648RB	1				
					Complete Kit	**030-200FCA**	

Optional End of Bale Sensor Kit – 200FCA

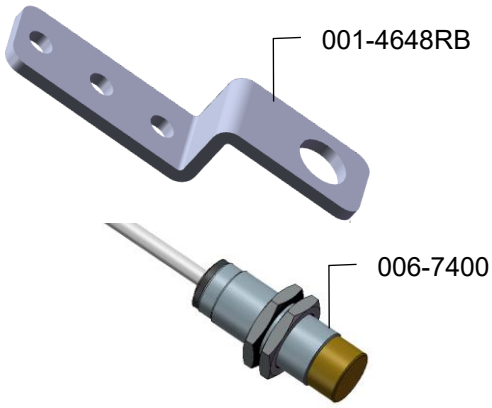
The end of bale sensor is used to determine when the baler needle arm moves. With this information the system is able to show the average moisture of the previous bale.

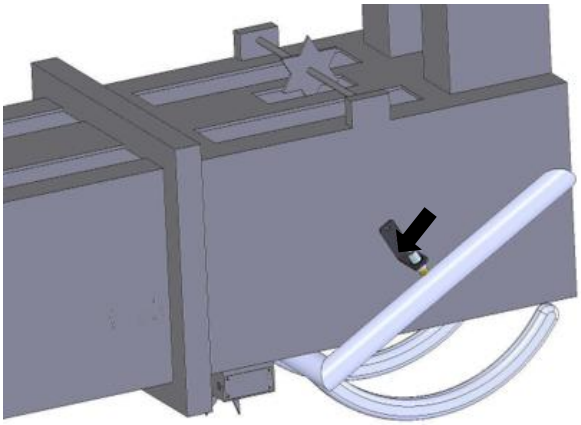
Installation

Mount the EOB Sensor (006-7400) to Mounting Bracket (001-4648RB) as shown below. Mount the assembly on the right side of the baler chamber. The face of the sensor needs to be parallel to the arm attached to the needles. *Note: The bracket may need to be slightly bent for the proper positioning.

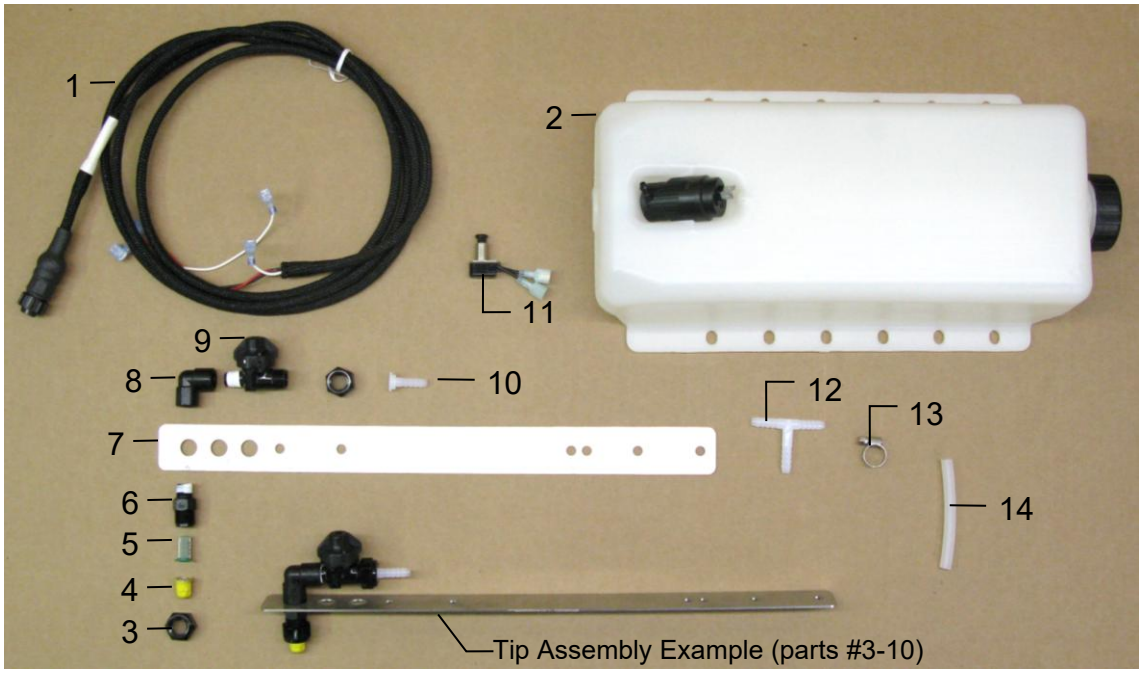
Mark and drill two 3/8” (10mm) holes. Install the sensor using two 5/16” x 1“ allen head bolts, locks, and nuts. The end of the sensor needs to be no greater than 1/4” (7mm) away from the needle arm. Tighten nuts on sensor after adjustment.

Connect EOB sensor to the plug labeled ‘EOB’ on main harness (006-2470LS or 006-2470SS). Use of Extension Harness (006-7400EXT) may be required. Secure sensor harness with cable ties, taking care to avoid pinch points and hydraulic lines.





Optional H_2O Dye Marker Kit - 200DM



Ref	Description	Part #	Qty	Ref	Description	Part #	Qty
1	H2O Harness (10')	006-2470C	1	8	1/4" Street Elbow	003-SE14F	2
2	Tank & Pump	005-9015	1	9	Check Valve	007-1207VB	2
3	Nozzle Cap	004-4723	4	10	1/4" Straight Fitting	003-A1414VB	2
4	Tip - Brass	004-TX-5	2	11	Push Switch	006-2850	1
5	Tip Strainer (Green)	004-1203-100	2	12	1/4" All Barb Tee	003-T1414	1
6	Nozzle Body	004-4722	2	13	Mini Hose Clamp	003-9002	6
7	Nozzle Holder	001-4215	2	14	1/4" Hose	002-9006	40
NP	Red Dye (Refill)	009-0800	1	NP	End of Bale Sensor Kit	030-200FCA	1

Complete Assembly **030-200DM**

Optional Dye Marker Kit– 200DM



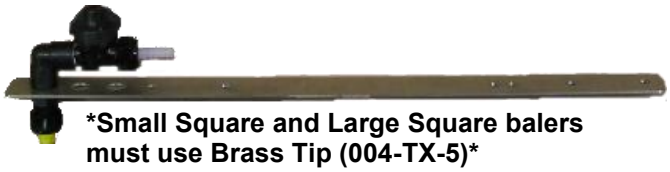
Tank Installation – for Small Square Balers

Locate the Dye Marking Tank and Pump Assembly (005-9015). Identify a suitable mounting location for the tank on the side of the baler away from moving parts and hydraulic lines. Be sure location is within 10’ of the wire plug connection on the Main Baler Moisture Harness (006-2470SS). See Wiring Details in the Wiring Diagram section of this manual.

Once a suitable mounting location has been identified, mount the tank vertically as shown (right) with the tank lid on the top by using the included mounting hardware. ***Note:*** *Tank mounting location may be different for each baler model. Due to baler design variations and modifications, Harvest Tec does not offer specific mounting location: specific location is at the installer’s discretion.*

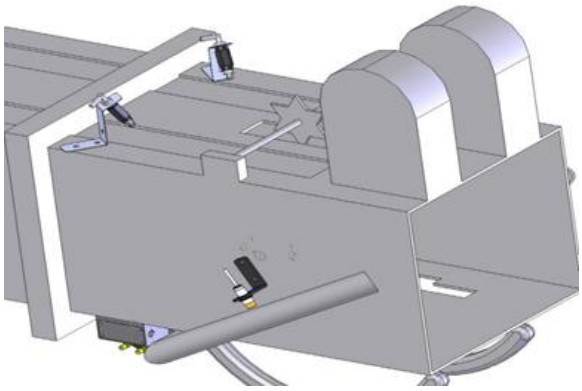
Nozzle Installation

Next locate the dye marking spray assemblies shown (below).



Small Square and Large Square balers must use Brass Tip (004-TX-5)

Nozzle straps should be placed directly below (or in line) with the star wheels so spray will be applied on the side of the bale. Mount the second tip assembly on the left side of the baler in a similar position (see picture right).



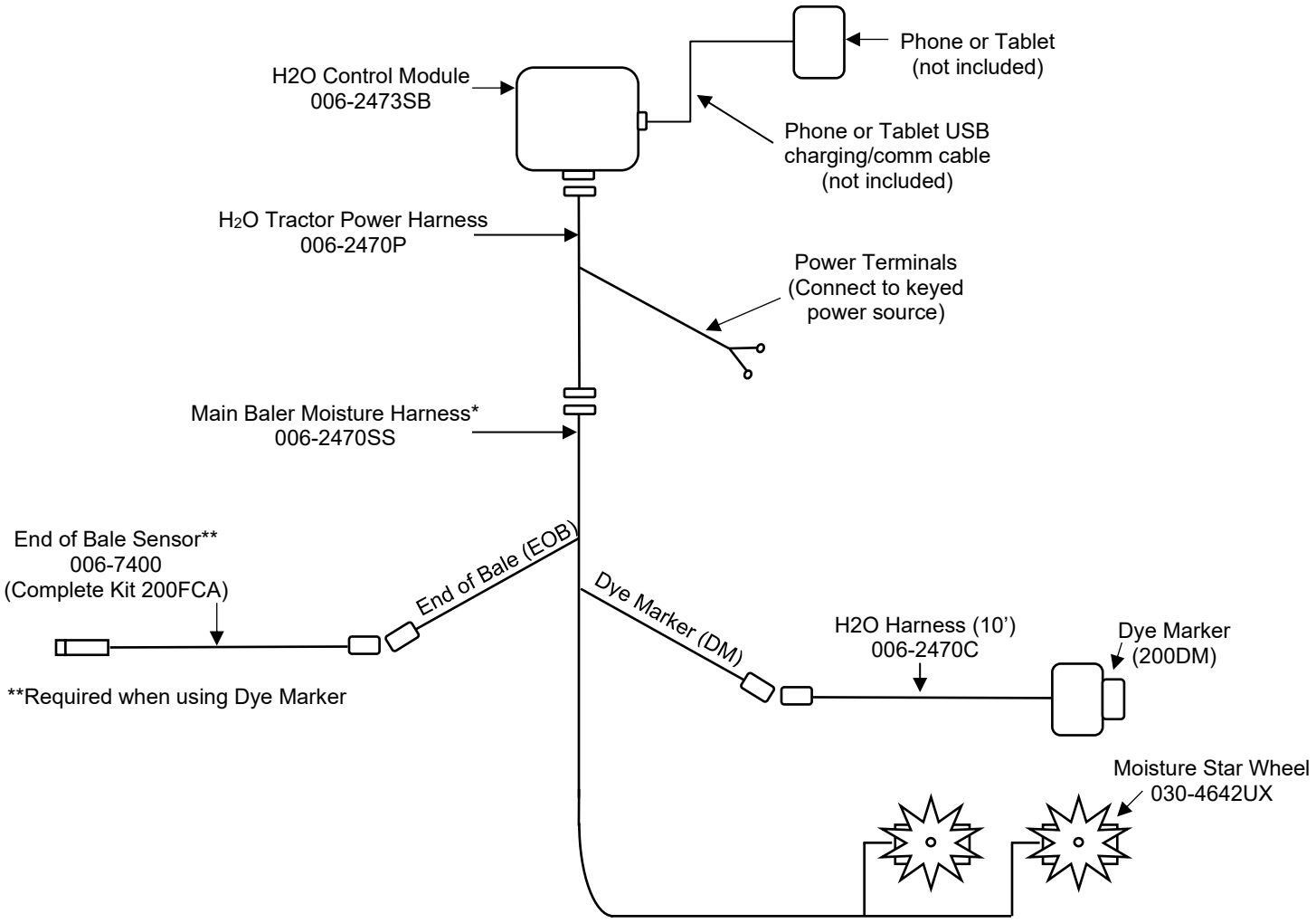
Routing the Hose

Connect the supplied 1/4” Hose (002-9006) to the pump and secure with hose clamp (003-9002). Route the hose to each tip assembly on each side of the baler and connect to main supply line from tank by using the 1/4" barbed tee (003-T1414). Secure hose to barb fittings using hose clamps. Be sure to leave ample slack in line to allow for bale chamber adjustments. Secure away from moving parts, pinch points and hydraulic lines. Secure hose to baler using cable ties.

Wiring Diagram – Small Square Balers – 201SS

1. Connect Tractor Power Harness (006-2470P) to the tractor convenience outlet keyed power switch using the red wire with fuse to the positive side and the black wire to the negative.
    a. Any modifications of the power harness will void the warranty. Contact Harvest Tec before modifications are made.
2. Tractor Power Harness (006-2470P) connects to the H2O Control Box (006-2473SB) mounted in the tractor with the 12-pin male Deutsch connection and the opposite end routed down to the draw bar.
3. Connect the Main Baler Moisture Harness (006-2470SB) to Tractor Power Harness (006-2470P).
4. Route the Main Baler Moisture Harness (006-2470SS) on the baler to each moisture sensor (030-4642UX) on both sides of bale chamber.
5. Connect the USB charging/comm cord for the phone or tablet being used to that device and the tablet port on the side of the H2O Control Box (006-2473SB).
6. When using a Dye Marker, the End of Bale Sensor kit will need to be added to the system in order to see when needle arm cycles. Part number (200FCA). Connect the sensor to the End of Bale (EOB) connection on the Baler Power/Comm Harness (006-2470SS).
7. When using the optional Dye Marker (200DM) connect 4 pin round end of the H2O harness (006-2470C) to the Dye Marker (DM) connection on the (006-2470SS) harness. Then connect the two straight spade connections with only the white wire to the push switch (006-2850). The remaining two connections with 90-degree female spades will connect to the pump.

System Wiring Diagram

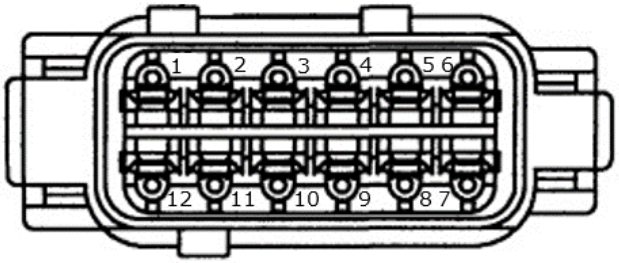


*Extension harnesses available if needed: 8' extension (006-2470BL2) or 30' extension (006-2470BL3).

Pin Outs

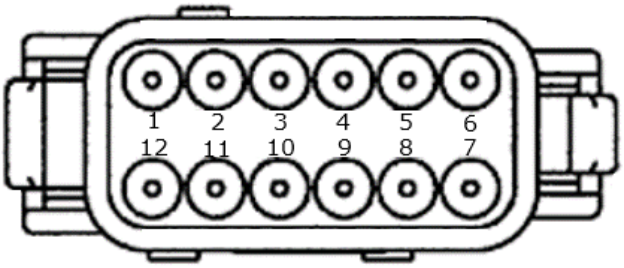
H2O Control Module 006-2473SB

Pin 1	Red	Module Power
Pin 2	Red/Black	EOB +
Pin 3	Black	EOB -
Pin 4	Grey	Left Moisture Sensor
Pin 5	Brown	Right Moisture Sensor
Pin 6	Purple	EOB Signal
Pin 7	Yellow	CAN +
Pin 8	Green	CAN -
Pin 9	Red/White	Dye Marker 12V +
Pin 10	Black/White	Dye Marker 12V -
Pin 11	Blue	Dye Marker Prime
Pin 12	Black	Ground



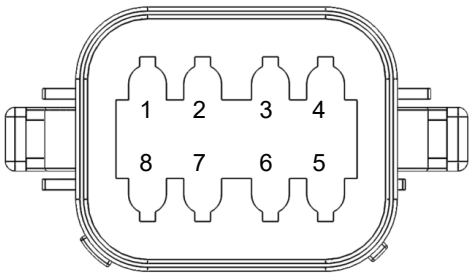
H2O Tractor Harness 006-2470P at Module Plug

Pin 1	Red	Module Power
Pin 2	Red/Black	EOB +
Pin 3	Black	EOB -
Pin 4	Grey	Left Moisture Sensor
Pin 5	Brown	Right Moisture Sensor
Pin 6	Purple	EOB Signal
Pin 7	Yellow	Not Used
Pin 8	Green	Not Used
Pin 9	Red/White	Dye Marker 12V +
Pin 10	Black/White	Dye Marker 12V -
Pin 11	Blue	Dye Marker Prime
Pin 12	Black	Ground



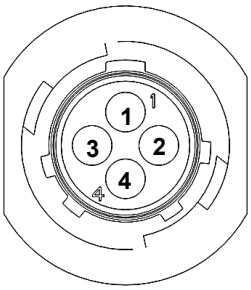
Main Baler Moisture Harness 006-2470SS at hitch

Pin 1	Red/Black	EOB +
Pin 2	Black	EOB -
Pin 3	Grey	Left Moisture Sensor
Pin 4	Brown	Right Moisture Sensor
Pin 5	Purple	EOB Signal
Pin 6	Red/White	Dye Marker 12V +
Pin 7	Black/White	Dye Marker 12V -
Pin 8	Blue	Dye Marker Prime



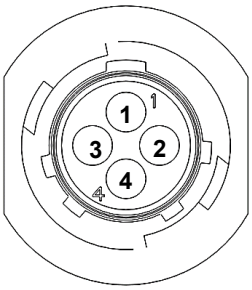
End of Bale Sensor (EOB) 006-2471B

Pin 1	Brown	EOB +
Pin 2	Blue	EOB -
Pin 3	N/A	Not Used
Pin 4	Black	EOB Signal



Dye Marker H2O Harness 006-2470C

Pin 1	Red	DS +
Pin 2	Black	DS -
Pin 3	White	DS Prime
Pin 4	N/A	Not Used

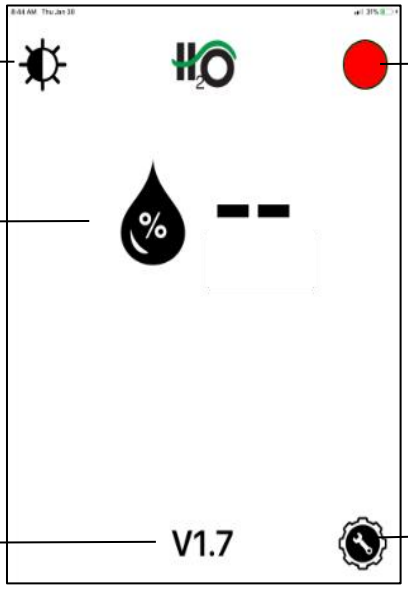


Downloading H_2O App

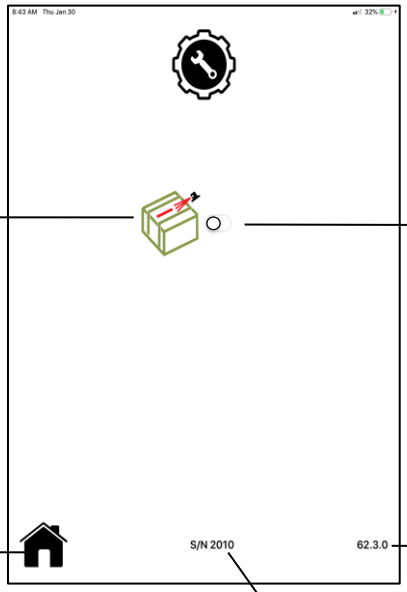
The H_2O App is available on any Apple or Android device running with the current operating system software and one previous version. Download the app by searching for H2O Sensor. App icon shown right.

Screen Definitions

Main Screen



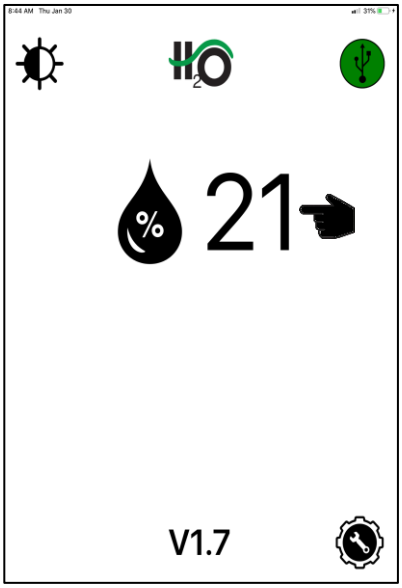
Settings Screen



Operation

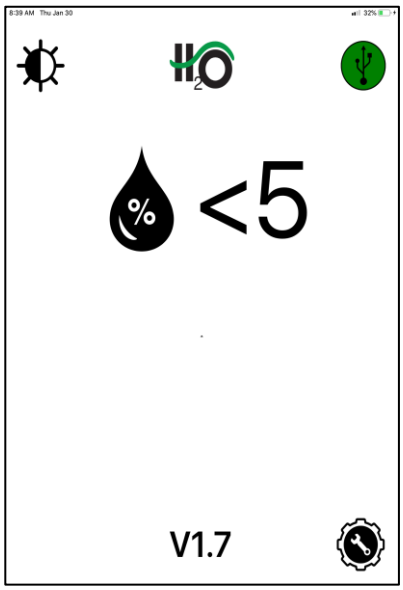
After installation of the H_2O app, turn the system on by turning the key in the tractor on. When the connection is made the green light on the control box will illuminate.

Reading Moisture

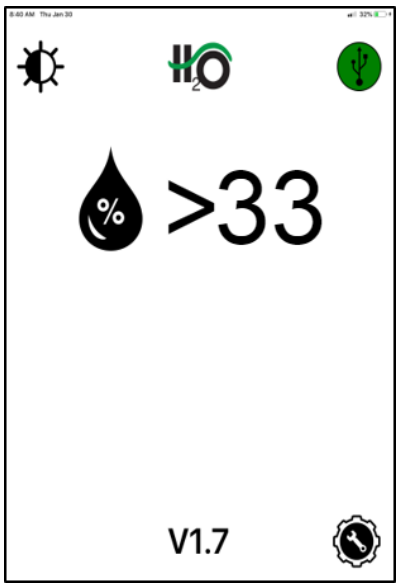


When hay begins to enter the bale chamber, current moisture will be displayed

Moisture Range 5-33%



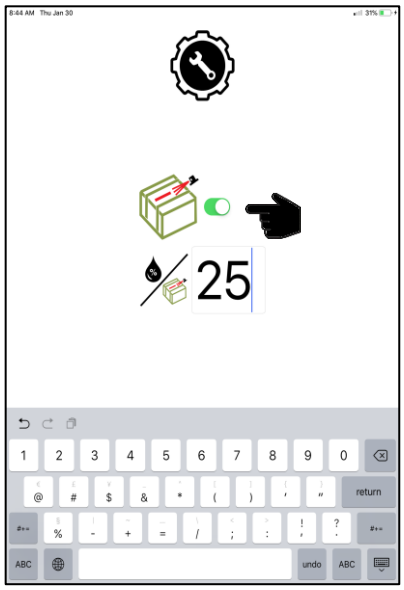
If the moisture being read is Less Than 5% the reading will appear as shown above



If the moisture being read is Greater Than 33% the reading will appear as shown above

Operation (continued)

Dye Marker System



When using the dye marker turn on the setting as shown and select the desired moisture to mark a bale. *Bales at or above this moisture level will be marked.

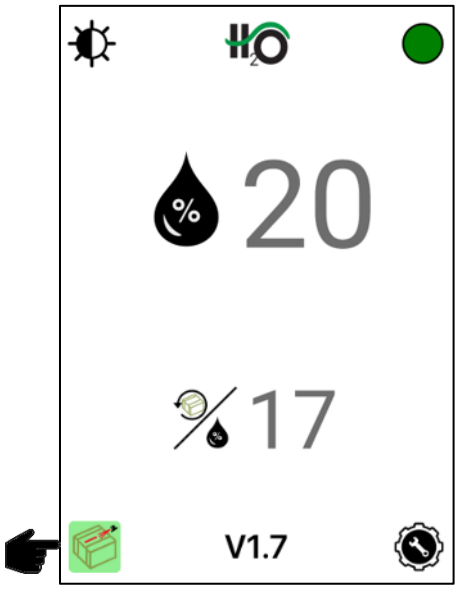


Dye Marker icon will now appear on the home screen. The last bale moisture will be highlighted in red and the bale will be marked at or above the set moisture.

Dye Marker Notes

- When the Dye Marker is activated by the moisture setting it will spray 3 seconds once per End of Bale (EOB) cycle. After an EOB signal the dye marker is then reset to be able to spray again for 3 seconds once on the next bale.
- A full tank of dye is estimated to mark 50-60 bales.

Dye Marker Override



If you would like to mark a bale for any reason, press the bale icon which will cause it to turn green. When the manual override is used the last bale moisture will not highlight in red.

The manual spray function can be used on a bale as many times as preferred in 3 second intervals.

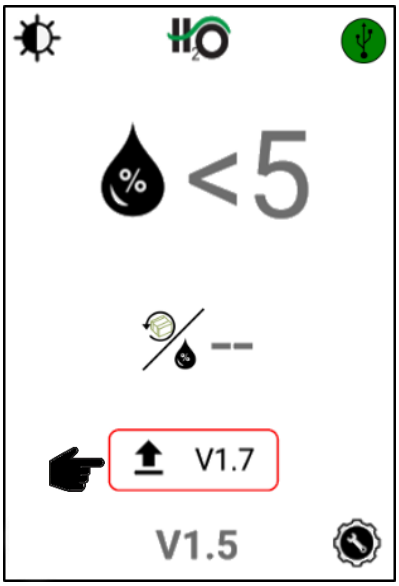
H_2O Firmware Update through App

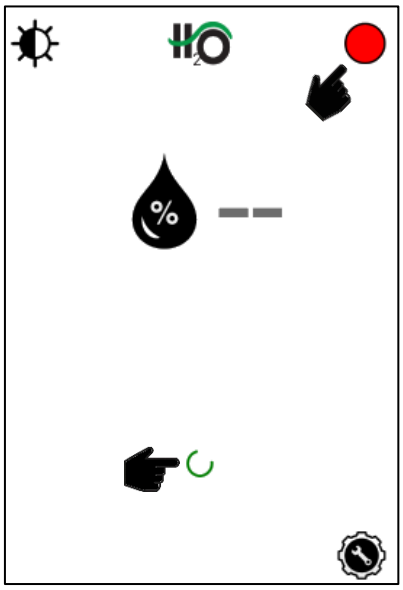
When there is an update available for the H_2O system the following information will appear, and the steps listed will need to be followed**.**

Once an operator downloads the app update (internet connection required) the “update available” symbol will appear along with the version number of the available update once connected to the system.

<u>At this point the system can run without updating if the operator chooses. The icon will simply remain on the screen.</u>

Once the operator decides to perform the software update, they will press the version number or upload arrow to begin.
Internet connection is not required to perform the update to the module once the app is downloaded

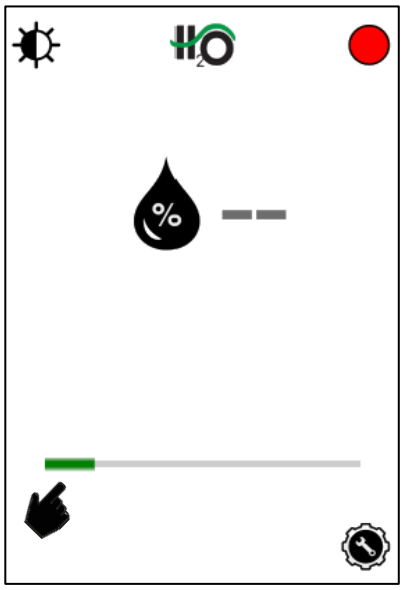




Once the update is initiated, the system will enter update mode

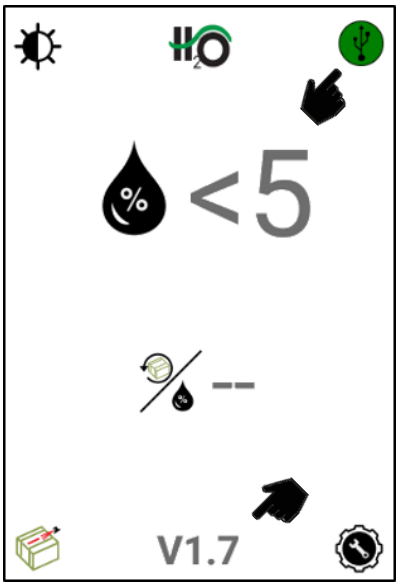
The status light will turn red

A green loading symbol will begin to circulate on the screen



A status bar with then appear to show the update progress

This can take 3-5 minutes to load software



Once the status bar load completely, the system will boot back up

The status light will again turn green

The updated version number will be shown at the bottom of the screen

***It is recommended for proper communication that the original phone/tablet power cable is used. Many lower cost power cables do not meet requirements to properly charge and communicate to the Harvest Tec H2O module.*

Harvest Tec LLC. Warranty and Liability Agreement

Harvest Tec, LLC. will repair or replace components that are found to be defective within 12 months from the date of manufacture. Under no circumstances does this warranty cover any components which in the opinion of Harvest Tec, LLC. have been subjected to negligent use, misuse, alteration, accident, or if repairs have been made with parts other than those manufactured and obtainable from Harvest Tec, LLC.

Our obligation under this warranty is limited to repairing or replacing free of charge to the original purchaser any part that in our judgment shows evidence of defective or improper workmanship, provided the part is returned to Harvest Tec, LLC. within 30 days of the failure. If it is determined that a non-Harvest Tec manufactured product has been used inside the Harvest Tec applicator system where the failure occurred, then Harvest Tec reserves the right to deny the warranty request at their discretion. Parts must be returned through the selling dealer and distributor, transportation charges prepaid.

This warranty shall not be interpreted to render Harvest Tec, LLC. liable for injury or damages of any kind, direct, consequential, or contingent, to persons or property. Furthermore, this warranty does not extend to loss of crop, losses caused by delays or any expense prospective profits or for any other reason. Harvest Tec, LLC. shall not be liable for any recovery greater in amount than the cost or repair of defects in workmanship.

There are no warranties, either expressed or implied, of merchantability or fitness for particular purpose intended or fitness for any other reason. This warranty cannot guarantee that existing conditions beyond the control of Harvest Tec, LLC. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, LLC. reserves the right to make design changes, improve design, or change specifications, at any time without any contingent obligation to purchasers of machines and parts previously sold.

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