Installation Manual

Model 600RBC

Moisture Sensor Kit for Roll-Belt Round Balers

HARVEST TEC *Equipment and Products for Quality Hay.*™

P.O. Box 63 ☙ 2821 Harvey Street ☙ Hudson, WI 54016
800-635-7468 ☙ www.harvesttec.com

DECLARATION OF INCORPORATION

$$C \in$$

MANUFACTURER: Harvest Tec Inc.
                                                              2821 Harvey St.
                                                              P.O. Box 63
                                                              Hudson, WI 54016, U.S.A.

REPRESENTATIVE ESTABLISHED IN COMMUNITY: Profitable Farming Company
                                                              Middle Barlington, Roborough
                                                              Winkleigh, Devon, EX19 8AG
                                                              ENGLAND

The person above certifies and declares that:

VIRTUAL MACHINE: Equipment mounted on a farm press and for the application of innoculants onto forage crops.
MODEL: 600RBC-INST-17-Imp&Metric
BRAND: Harvest Tec
SERIAL NUMBER:

This application preservatives for hay Harvest Tec system meets the Directive 2006/42/EC of the European Parliment and the Council of 17 May 2006 and other applicable European Directives including Directive 2004/108/EC on the Electromagnetic compatability.

The application of preservatives for hay Harvest Tec system will be turned on after being installed on a farm press has been declard in conformity with the Machinery Directive.

Person in the community authorized to provide information on the partly completed machinery and making this statement:

Richard Snell, President, Profitable Farming Company
Signed on May 21, 2011: Middle Barlington, Roborough
                                          Winkleigh, Devon, EX19 8AG
                                          ENGLAND

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600RBC Installation Manual Table of Contents

Introduction

Thank you for purchasing a Harvest Tec Model 600RBC Moisture Monitor System. This 600RBC Moisture Monitoring System has been designed to be operated through an Apple iPad (not included) using the Hay App. As well as the option to plug directly into most tractors that have an ISOBUS Monitor. The 600RBC Moisture Monitoring System offers these advantages by operating through an Apple iPad:

1. Large bright, clear, colorful display
2. More durable and can be read in bright sunlight
3. Can be used for multiple other uses than just the applicator display
4. Option to tie-into the tractor ISOBUS system

The 600RBC Moisture Monitor kit includes the following parts: Dual Channel Processor (DCP), Moisture Sensors, Harnesses. For your convenience a parts break down for the 600RBC Moisture Monitoring System is included in the back of this manual. If you do have questions please bring this manual into the dealership.

Right and Left sides are determined by facing in the direction of forward travel.

System Requirements

*Made for iPad® (3ʳᵈ through Pro 2ⁿᵈ generation), running the current iOS operating system or one version previous required for iPad option
*iPad is a trademark of Apple Inc., registered in the U.S. and other countries.

**600 Series Applicators with serial number before DCP27000 will require the DCP to be sent to Harvest Tec for a required update in order to use the iPad Integration Module (030-6672C).

*Hay App version must be **at least 2.5.18 (or higher)** to operate with the iPad Integration Module

If choosing to operate the unit though the ISOBUS monitor, part number 006-6670A will need to be ordered through your local equipment dealer.

Tools Needed:

- Standard wrench set
- Electric drill and bits
- Side cutter
- Standard nut driver set
- Standard socket set
- Hammer
- Center punch

Installation of Dual Channel Processor (DCP)

1. Locate mounting bolts on support bar of right side of baler (Figure 1).
2. Install DCP mounting bracket 001-4703XI as shown (Figure 2).
3. Install DCP onto mounting bracket 001-4703XI and secure (Figure 3).
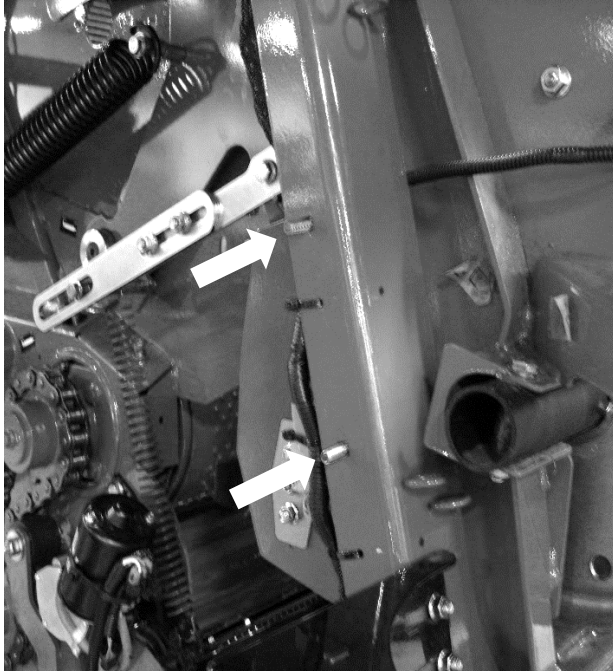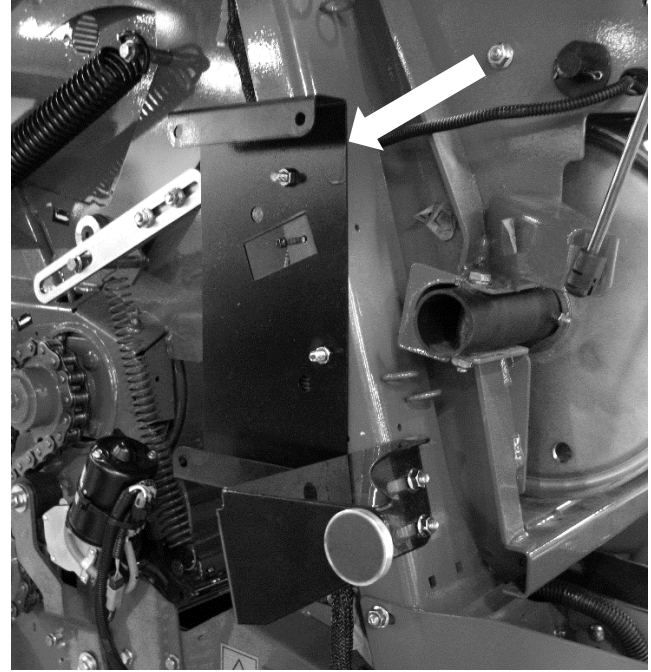4. Cover with DCP Shield 001-5650X (not shown).
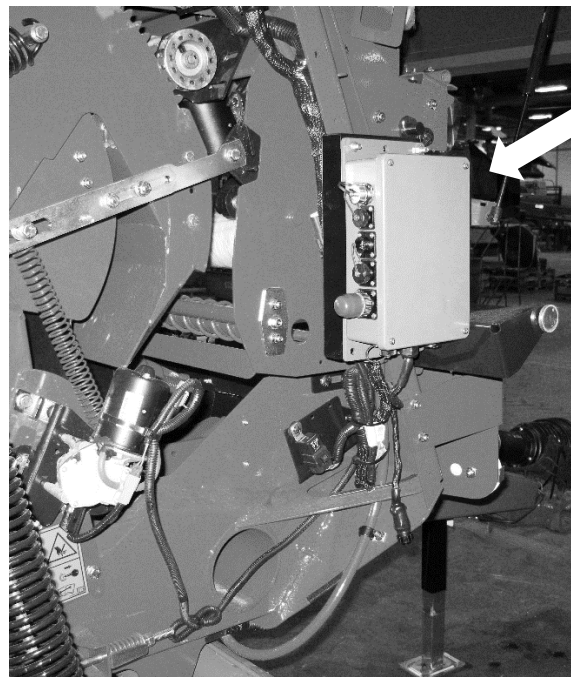

Figure 1

Figure 2

Figure 3

Installation of Moisture Sensing Pads

1. Open rear tail gate of baler and lock in the up position. Refer to baler manual to lock door open.
2. Remove bale shaping discs on each side of chamber by grinding welds. Once removed grind any remaining welds so sides of bale chamber are smooth.
3. Place plastic isolator (006-4641FX) in the same spot that the shaping disc had been. There should be a hole in the baler that matches up with the hole in the plastic isolator. If not, use the isolator as a template and mark the hole. Center punch the hole and drill it to 3/4" (19mm) (Note: before drilling make sure you are not drilling into sensitive equipment on the outside of the baler). Drill through the complete square tube. About two inches. Repeat for other side of the baler.
4. Insert plastic bushing (006-4641G) from the outside of baler. Make sure it is flush with the outside of the baler frame. Go to the inside of the baler and mark amount that protrudes into the chamber. Remove and cut off excess material. Repeat for other side.
5. Using 4" carriage bolt slide the parts on in following order: metal disc (001-4641HX), plastic isolator (006-4641FX) and shortened plastic bushing (006-4641G).
6. Insert disc assembly into 3/8" (10mm) hole from inside of bale chamber. Secure to outside of baler by attaching to the protruding carriage bolt in the following order: small isolator (006-4641), 1/2" D shaped washer, 1/2" lock washer, 1/2" jam nut. Tighten down and repeat for the other side. Make sure no part of the bolt or hardware makes contact with the frame of baler-no metal to metal.
7. Route moisture harness (006-4640G3E) from processor down to the carriage bolt on each side. Make sure it does not come in contact with any moving parts. Secure with cable ties.
8. Attach moisture cable to moisture carriage bolt by placing items in the following order: 1/2" D shaped washer, Ring terminal of moisture harness (006-4640G3E), second 1/2" D washer, 1/2" lock washer, 1/2" Jam Nut. Tighten down and repeat for other side. Make sure none of the hardware comes in contact with the frame of the baler.
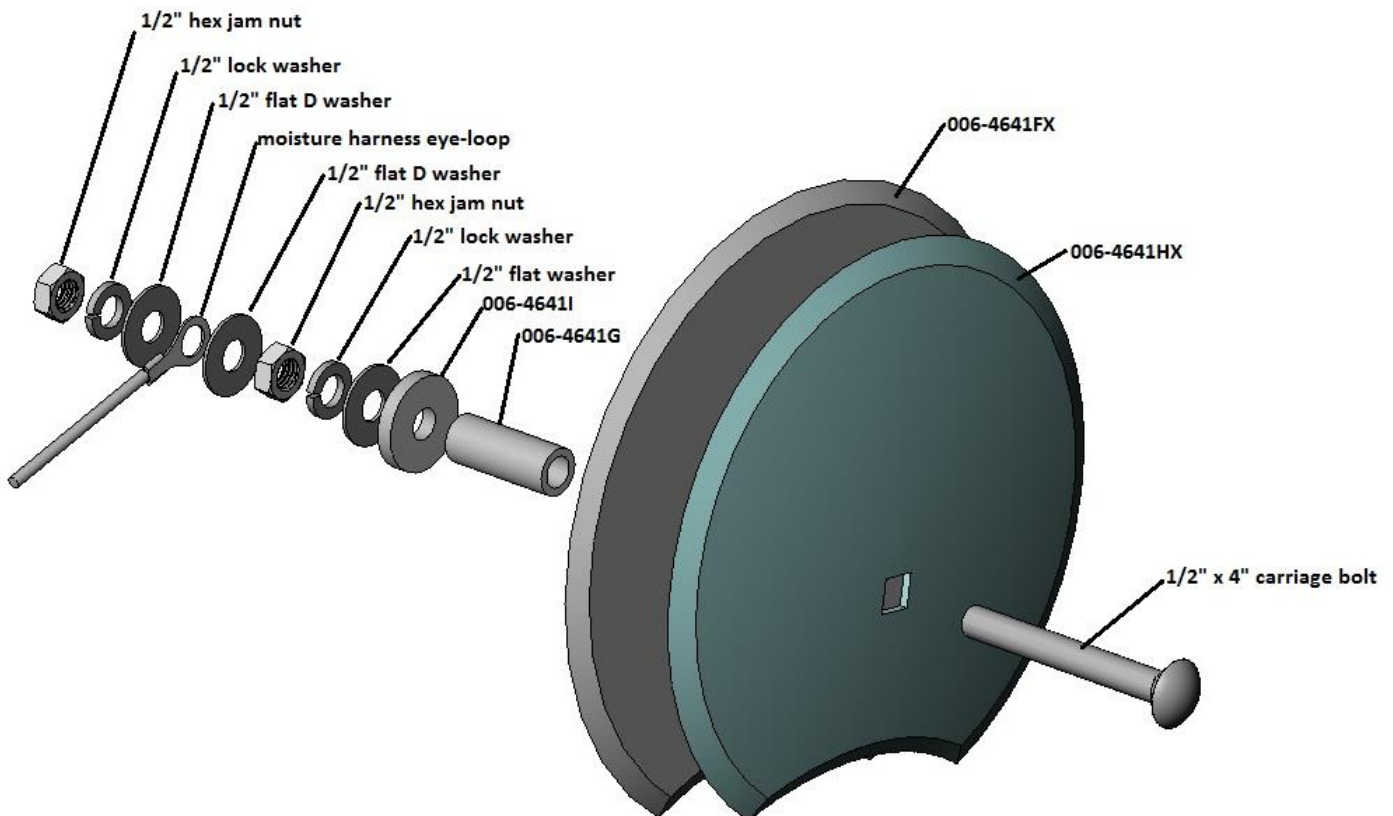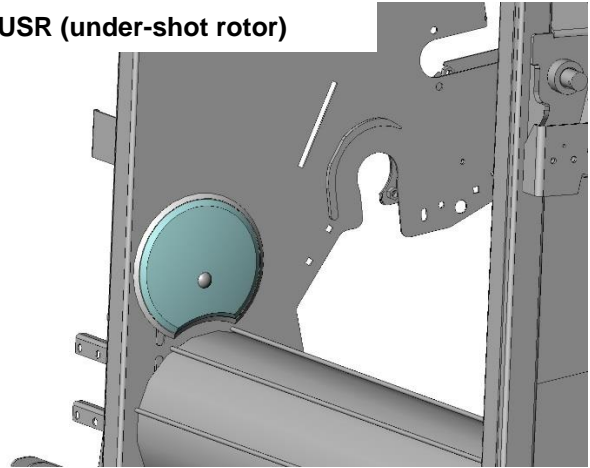
Installation of Moisture Sensor Pads and Disks (continued)

OSR (over-shot) rotor)
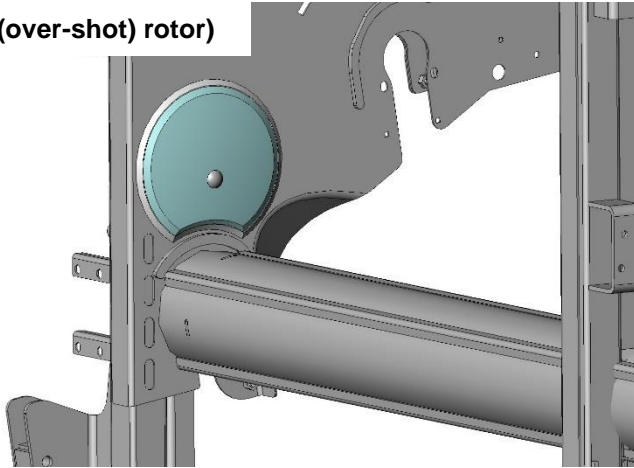
USR (under-shot rotor)

## Installation of Bale Rate Timer Sensor

The bale rate timer sensor is used to determine when the baler door is open. With this information the system is able to change the tons/hour automatically. Refer to Operation Manual for Operation Instructions, Automatic Mode and also record information per bale.

Locate the sensor (006-7400) and the sensor bracket (001-4648RB). On the right side of the baler find a location 1"– 6" (25mm-15cm) down from the hinge to mount the bracket. Check for clearance with hydraulic cylinders before mounting the bracket. The bracket should be mounted to the front side of the hinge point, with the sensor aligned over the back door.

Mark and drill two 1/4" holes and install the bracket using two 5/16" x 1-1/4" self-tapping bolts.

Install the sensor into the bracket and leave 1/4" (7mm) of clearance between the end of the sensor and the door.

The harness will need to be routed towards the DCP. Secure with cable ties, be sure to avoid pinch points and hydraulic lines. The harness extension (006-7400EXT) may need to be used.
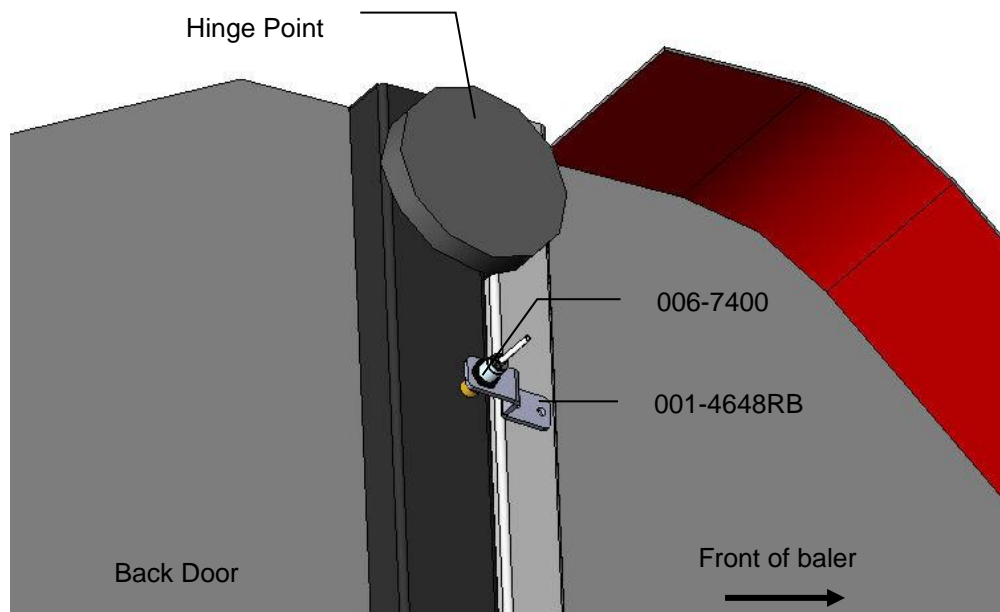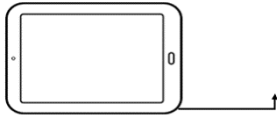
Installation of iPad Integration Control

Locate a safe location in the cab of the tractor to place the iPad Integration Control (030-6672C). Recommended location is securely fastened out of the operators way in a location that is close enough to reach with the iPad cord.

Connect the Power / Communication harness (006-6650TM(E)) to the bottom of the receiver.

To operate the applicator, plug the iPad cord into the communication port indicated by:

Made for
 iPad

iPad Integration Control Light Signals

Green Slow Blink – Power supplied to the applicator system and the unit is going through its startup process. This will take approximately 25-35 seconds.

Green Double Blink – Indicating the iPad module recognizes the iPad but the app is not open or connected.

Green Solid Light – Module is connected to the app and is ready to operate.

*Recommended to use the USB cable included with the applicator kit (006-6672USBC)

Bluetooth Receiver Lights

Pre-2020 applcaitors equipped with Bluetooth receivers (030-6672B) are now equipped with lights to indicate both power and Hay App connection on the Apple iPad. Clean light regularly

Blinking Lights – System is waiting for the processor to connect, which could take up to 35 seconds.

Red Light – The Bluetooth receiver has power

Green Light – The Bluetooth receiver is connected to the Hay App.

**600 Series Applicators with serial number before DCP27000 will require the DCP to be sent to Harvest Tec for a required update in order to use the iPad Integration Module (030-6672C).

Hay App version must be **at least 2.5.18 (or higher)** to operate with the iPad Integration Module


*Made for Apple iPad badge
Use of the Made for Apple iPad badge means that an accessory has been designed to connect specifically to the Apple product(s) identified in the badge and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards.

Please note that the use of this accessory with an Apple product may affect wireless performance.

Wiring Diagram

A. Locate the tractor power/communication harness (006-6650TM(E)).
B. On the back of the tractor run the power leads to battery and the communication lead to ISOBUS plug.
C. Connect the red power wire with the 50 amp fuse to the positive side of the battery (12 volt).
   a. **The power harness must be connected to the battery!** The unit will draw more amps than convenience outlets can handle. Any modifications of the power harness will void systems warranty. **CONTACT HARVEST TEC IF MODIFICATION IS REQUIRED!**
   b. **This unit will not function on positive ground tractors.**
   c. **If the unit loses power while operating it will not record accumulated product used.**
D. Connect the black ground wire to frame of tractor or negative side of battery (12 volt).
E. Connect the baler power and communication harness (006-6650LS) to the power port on the DCP and to the display port on the DCP (006-6671RB).
F. Connect the iPad Integration Control (030-6672C) to the Communication Harness (006-6650TM(E)).
G. Install one terminating resistor to the pump controller connection on the DCP (006-5650Z).
H. Attach moisture cable (006-4640G3E) to the DCP.
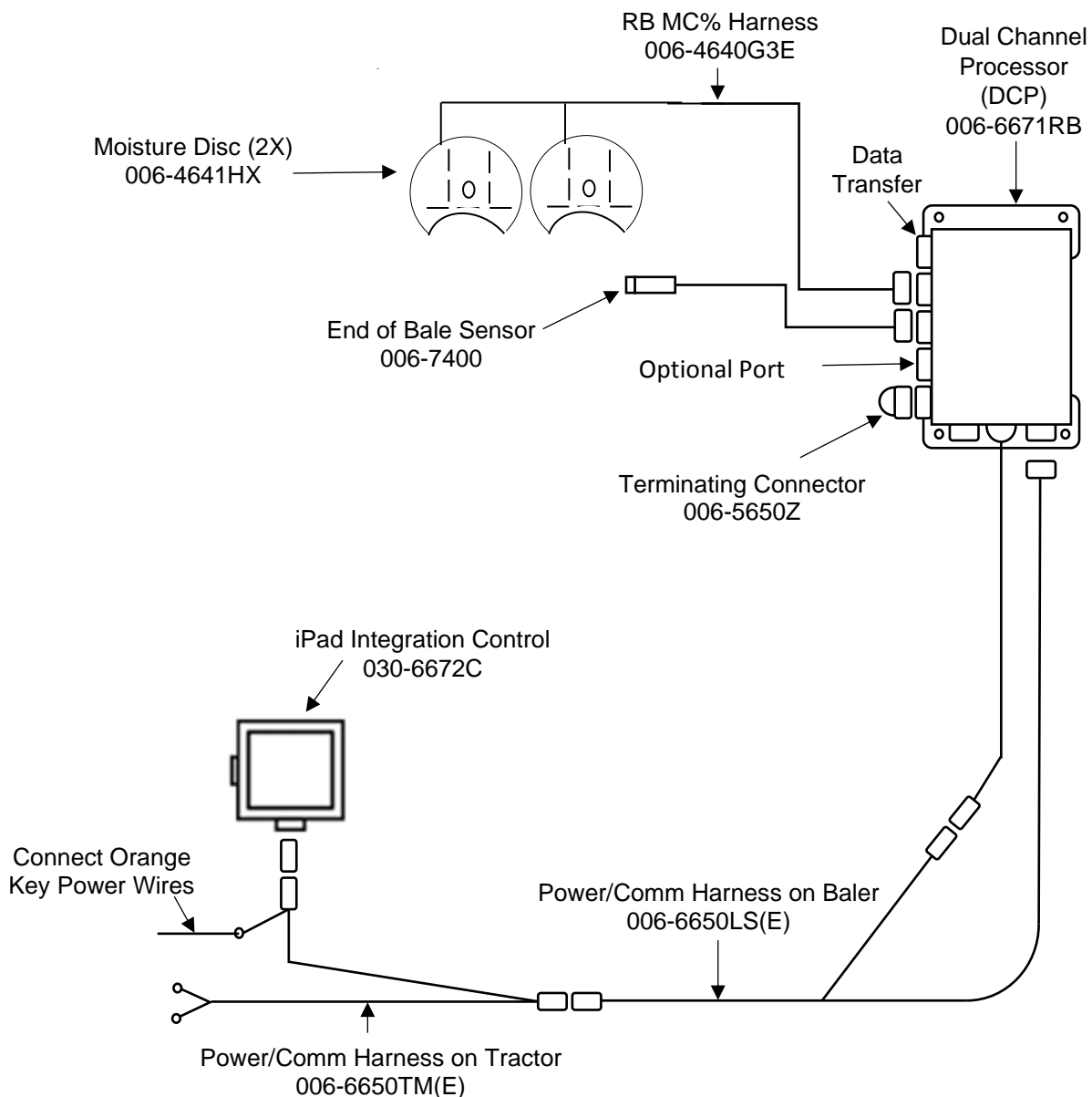
*Note: (E) indication is used for International Dealers

Pin Outs

Power/Comm Harness 006-6650TM(E) at Hitch
Pin 1 Red   +12V Power to TSD
Pin 2 Red   +12V Power to DCP
Pin 3 Orange   Keyed Power
Pin 4 Gray   Shield
Pin 5 Green   HT Can Low
Pin 6 Yellow   HT Can Hi
Pin 7 Orange   Can1 Hi
Pin 8 Black   Ground from TSD
Pin 9 Black   Ground from DCP
Pin 10 Blue   Can1 Low

Power/Comm Harness 006-6650LS(E) at Hitch
Pin 1 Red   +12V Power to TSD
Pin 2 Red   +12V Power to DCP
Pin 3 Orange   Keyed Power
Pin 4 Gray   Shield
Pin 5 Green   HT Can Low
Pin 6 Yellow   HT Can Hi
Pin 7 Orange   Can1 Hi
Pin 8 Black   Ground from TSD
Pin 9 Black   Ground from DCP
Pin 10 Blue   Can1 Low

iPad Integration Control / BLE Harness 006-6650TM(E) at TSD
Pin 1 Red   +12V Power from DCP
Pin 2 Black   Ground from TSD
Pin 3 Yellow   HT Can Low
Pin 4 Gray   Shield
Pin 5 Green   HT Can Hi
Pin 6 Orange   Can1 Hi
Pin 7 Blue   Can1 Low

ISOBUS Plug 006-6670A Baler Side
Pin 1   N/A
Pin 2   N/A
Pin 3   120 OHM with Pin 5
Pin 4   N/A
Pin 5   120 OHM with Pin 3
Pin 6 Orange   Can1 Hi
Pin 7 Blue   Can1 Low

ISOBUS Plug Tractor Side
Pin 1   N/A
Pin 2   N/A
Pin 3   +12V Keyed Tractor Power
Pin 4   N/A
Pin 5   N/A
Pin 6   N/A
Pin 7   N/A
Pin 8 Orange   Can1 Hi
Pin 9 Blue   Can1 Low
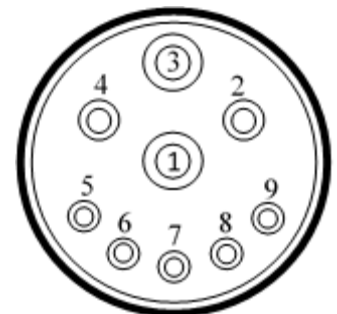
Pin Outs (continued)

Main Power Connector on DCP
Pin 1   Red   +12V Power from tractor
Pin 2   Black   Ground from tractor
Pin 3   Orange   Keyed power
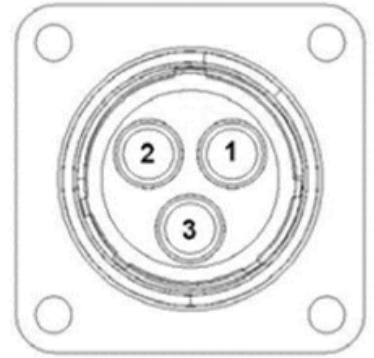
Star Wheel and Bale Rate Sensor connector on DCP
Pin 1   Blue   +12V Power
Pin 2   Orange   Ground
Pin 3   Black   Signal for sensor 1
Pin 4   White   Signal for sensor 2
Pin 5   N/A
Pin 6   N/A
Pin 7   N/A
Pin 8   Violet   Star wheel input 1
Pin 9   Brown   Star wheel input 2

End of Bale sensor on DCP
Pin 1   Brown   Sensor Power
Pin 2   Blue   Sensor Ground
Pin 3   N/A
Pin 4   Black   Signal from Sensor
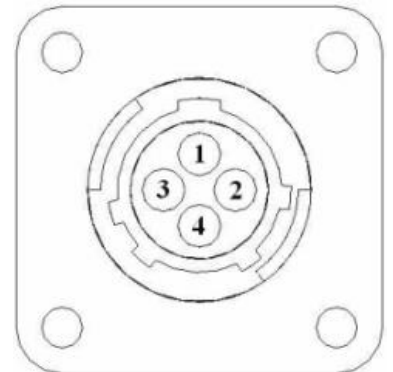
Troubleshooting

| PROBLEM	POSSIBLE CAUSE	SOLUTION
Moisture reading errors (high or low)	1. Wire disconnected or bad connection between star wheels and DCP	1. Reconnect wire.
	2. Low power supply to DCP	2. Check voltage at box. (Min of 12 volts required.) See Diagnostics section of manual.
	3. Dry hay lower than 8% moisture or wet hay over 75%.	3. System reads 8-70% moisture.
	4. Ground contact with one or both star wheels and baler mounted processor.	4. Reconnect.
	5. Short in wire between star wheels and DCP.	5. Replace wire.
	6. Check hay with hand tester to verify.	6. Contact Harvest Tec if conditions persist.
Moisture readings erratic.	1. Test bales with hand tester to verify that DCP has more variation than hand tester.	
	2. Check all wiring connections for corrosion or poor contact.	2. Apply dielectric grease to all connections.
	3. Check power supply at tractor. Voltage should be constant between 12 and 14 volts.	3. Install voltage surge protection on tractors alternator.
Terminal reads under or over power.	1. Verify with multi-meter actual voltage. Voltage range should be between 12-14 volts.	1. Clean connections and make sure applicator is hooked to battery. See Diagnostics section of manual.
Bale rate displays zero.	1. Bale rate sensors are reversed. 2. Short in cable. 3. Damaged sensor. 4. Sensor too far from starwheel.	1. Switch the sensors next to the star wheel. 2. Replace cable. 3. Replace sensor. 4. Adjust gap between prox sensor and star wheel so it is 1/8-1/4" away.
Bluetooth Receiver lights will not illuminate	1. Bluetooth receiver not connected 2. Harness disconnected 3. Low power	1. Check connections and voltage. Minimum 12.5V needed.
	Blinking Lights – System is waiting for the processor to connect, which could take up to 35 seconds. *Red Light* – The Bluetooth receiver has power *Green Light* – When the proper active connection is selected in the Hay App menu, the green light will indicate connection with the iPad.	

Parts Breakdown for 600RBC Series Control and Harnesses
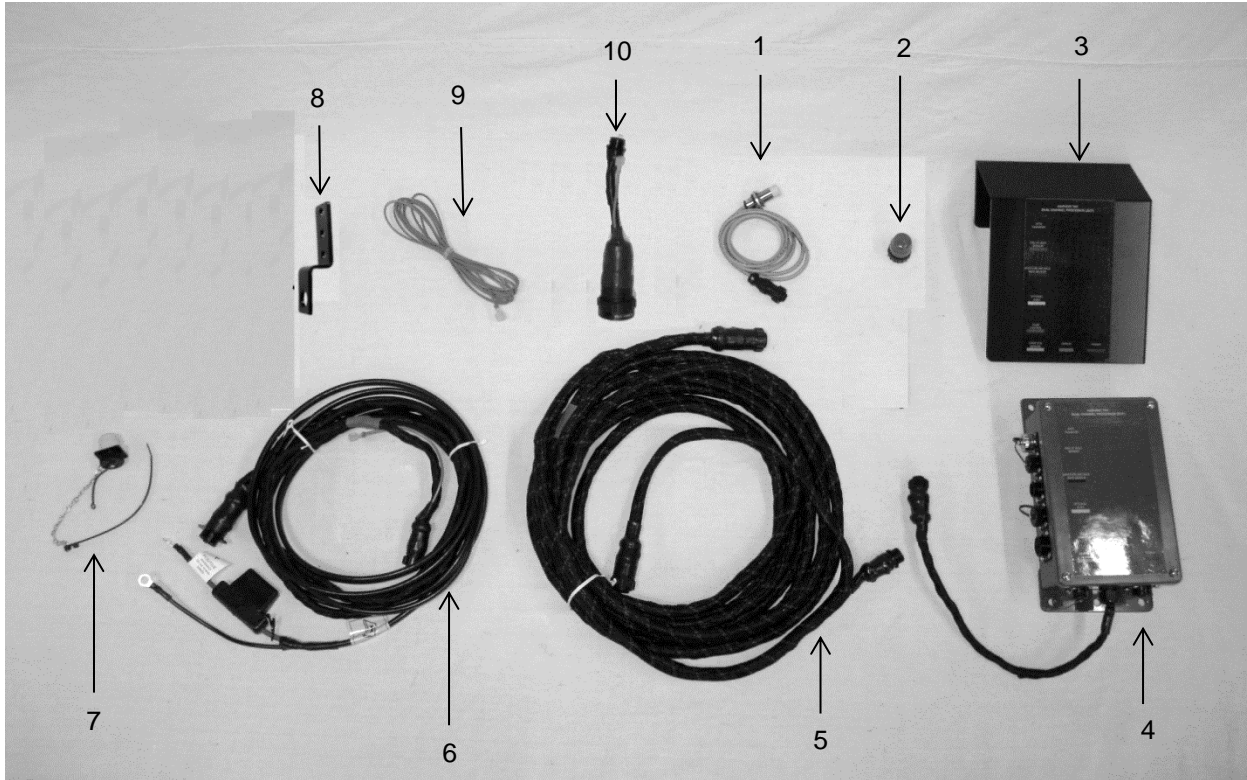
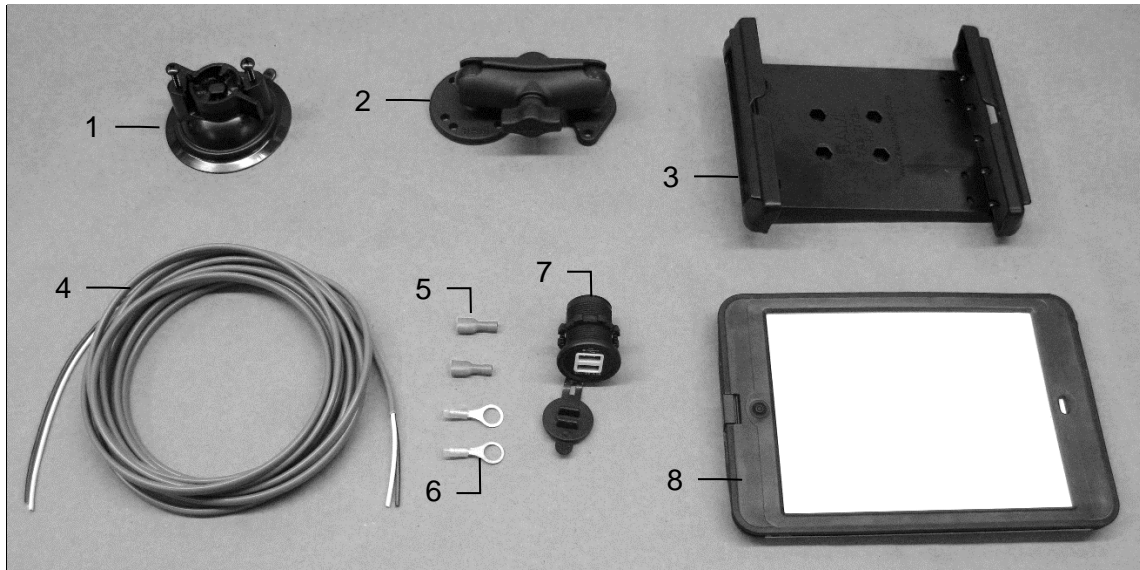| Ref	Description	Part Number	Qty
1	End Of Bale Sensor	006-7400	1
2	Terminating Connector w/ green cap	006-5650Z	1
3	DCP Shield/Cover	001-5650X	1
4	DCP Main Control LS 600 AUTO	006-6671RB	1
5	DCP Baler Harness 15 FT	006-6650LS	1
6	DCP Tractor Harness	006-6650TM	1
7	Dust Plugs	006-5651PLUGS	1
8	Round Baler End of Bale Bracket	001-4648RB	1
9	Key Switch Wire	006-5650K	1
10	Optional ISOBUS Tractor Plug (not included)	006-6670A	1
11	iPad Integration Control	030-6672C	1
NP	End of Bale Ext. Harness	006-7400EXT	1
NP	USB Cord	006-6672C	1
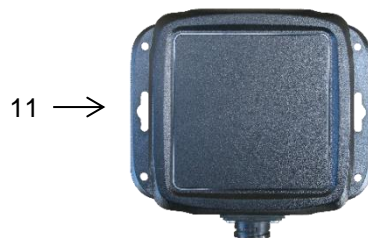
Moisture Pads Parts Breakdown
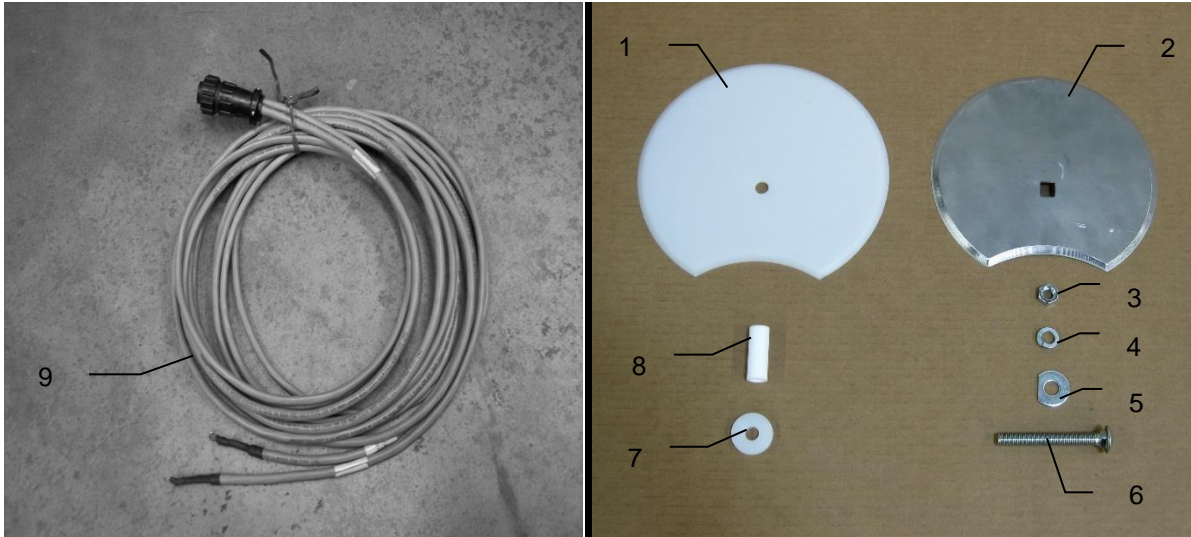
Ref	Description	Part #	Qty
1	CNH RB Moisture Isolator	006-4641FX	2
2	CNH RB Moisture Disk	006-4641HX	2
3	1/2" JAM Nut	Misc Hardware	4
4	1/2" Lock	Misc Hardware	4
5	1/2" D Washer	Misc Hardware	6
6	1/2"x 4" Bolt	Misc Hardware	2
7	Sensor Bushing	006-4641G	2
8	Sensor Isolator	006-4641I	2
9	Moisture Cable	006-4640G3	1
	Moisture Disc Assembly	030-4643C	
		(Includes Ref # 1-8)	

Optional iPad Mini Mounting Kit (030-2014MK)

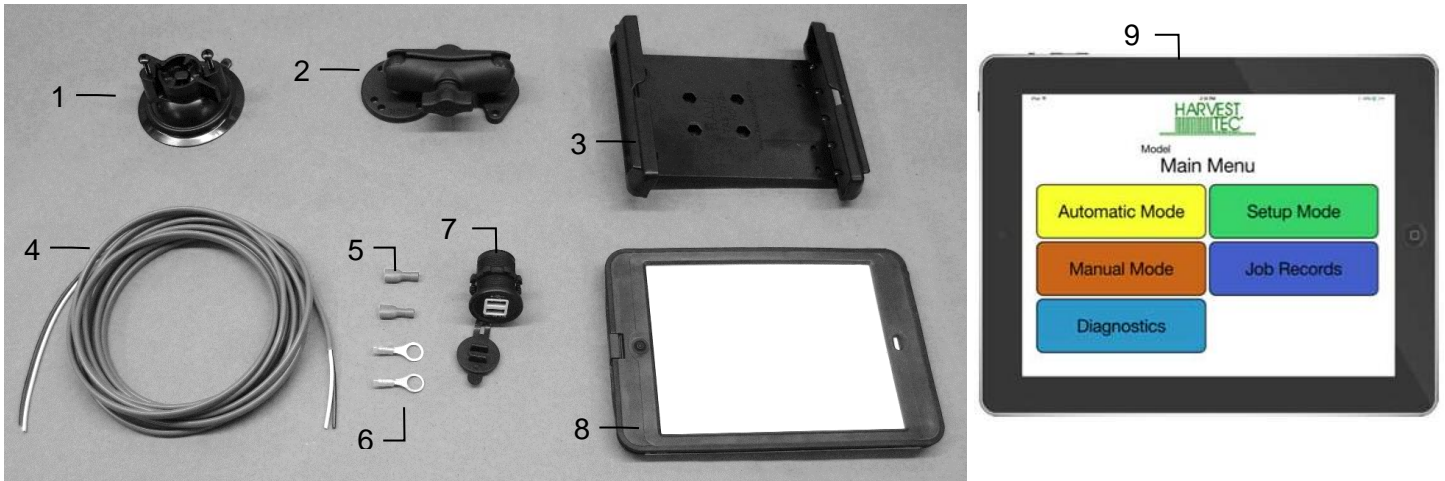| Ref	Description	Part #	Qty
1	Suction cup mount	001-2012SCM	1
2	Ram mount	001-2012H	1
3	iPad Mini® spring load cradle (Mini 4)	001-2012SLC	1
4	16 gauge power wire	006-4723P	1
5	Female spade connector	Hardware	2
6	Eye loop connector	Hardware	2
7	iPad Mini Charger 12V	001-2012P	1
8	iPad Mini 4 case	001-2012C4	1
NP	4 amp fuse	Hardware	1
	Mounting Kit Assembly	030-2014MK (Includes All Parts)	

Installation Instructions

1. Identify 12V power source for wires to connect.
   a. Eye loops included if wiring directly to the battery is desired.
   b. Test for key power source if preferred to have power to the USB shut off with the key.
2. Once power source is identified, cut wires to desired length.
3. Crimp the two supplied quick connectors onto each the white and black wire.
4. Remove the round locking plastic nut from USB plug before connecting the wires. Black (+) White (-).
5. The wires will then be hooked to the designated terminals on the bottom of the USB plug
6. Drill a 1 1/8" hole in the preferred mounting location. Be sure to clean any sharp edges after drilling.
7. Feed the wires through the mounting hole.
8. If using the round plastic nut to secure plug in place, slide the nut back over the wiring before connecting the wires to powered source.
9. Connect the wires to the identified power source if easier to do so before tightening the plug into place.
10. Tighten plug using either the round plastic nut or mounting plate and two screws, both options supplied.
11. Once connected, hook a USB charging cord into the plug and connect a mobile device/tablet to ensure the plug is operating as you wish (key power working properly if necessary).

NOTE: This plug is not designed to charge two iPads. System damage could occur if this is attempted. System will charge a mobile phone and iPad simultaneously without problem.

*iPad mini is a trademark of Apple Inc., registered in the U.S. and other countries.

Optional iPad Display Kit (030-4670DK)

Ref	Description	Part #	Qty	Ref	Description	Part #	Qty
1	Suction cup mount	001-2012SCM	1	7	iPad Mini Charger 12V	001-2012P	1
2	Ram mount	001-2012H	1	8	iPad Mini 4 case	001-2012C4	1
3	iPad Mini® spring load cradle (Mini 4)	001-2012SLC	1	9	iPad Mini 4	006-4670IP	1
4	16 gauge power wire	006-4723P	1	NP	4 amp fuse	Hardware	1
5	Female spade connector	Hardware	2				
6	Eye loop connector	Hardware	2		Mounting Kit Assembly	030-4670DK (Includes All Parts)	

Installation Instructions

1. Identify 12V power source for wires to connect.
    a. Eye loops included if wiring directly to the battery is desired.
    b. Test for key power source if preferred to have power to the USB shut off with the key.
2. Once power source is identified, cut wires to desired length.
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Notes

Notes

Harvest Tec Inc. Warranty and Liability Agreement

Harvest Tec, Inc. 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, Inc. 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, Inc.

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, Inc. within 30 days of the failure. If it is determined that a non-Harvest Tec branded hay preservative 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, Inc. 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, Inc. 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, Inc. will not affect our ability to obtain materials or manufacture necessary replacement parts.

Harvest Tec, Inc. 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.

Revised 4/17

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