Installation Manual

Model 601BB, 700, 701

Microwave Moisture Bale Chute System & Pre-Compression Chamber System

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

CE

MANUFACTURER: Harvest Tec LLC.
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: 601BB, 700, 701-17-INST- Imp&Metric
BRAND: Harvest Tec
PATENT NUMBER: US 9,854,743 B2:

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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Introduction

Congratulations and thank you for purchasing a Harvest Tec Model 601BB, 700, 701 Microwave Moisture kit. Please read this manual carefully to ensure correct steps are taken to attach the system to the baler. This is designed to read moisture through the baler's monitor or Apple iPad. A parts break of the system is located in the back of the manual.

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

System Requirements

**The Baler Control Module (BCM)
must have Version 4.2.0.0 or higher.**

***Requirement to run iPad option are
iOS8 or greater operating system, plus the Hay App.**

In order for the CNH Baler to receive the ThirtyPlus or CropSaver System messages regarding Status, Moisture and preservative, and display this information on the Baler Work Screen, the software in the Baler Control Module (BCM) needs to be updated to version 4.2.0.0 or higher. Dealers can log an ASIST incident and request the BCM software from CNH Technical Support Services if they need the software prior to those release dates.

Tools Needed

Standard wrench set	Hammer
Electric drill and bits	Center punch
Side cutter	Plasma cutter
Standard nut driver set	Grinding wheel
Standard socket set	

Microwave Sensor Installation 601BB, 700MWM

Begin by opening the front shield, twine box doors, and pre-compression chamber (PCC) shield doors. Locate the mounting template in the kit, and go to the right side of the baler.

Figure 1

Follow the curvature of the PCC and locate the fillet weld at the top. Index the bottom of that weld with the point at the top of the curved edge of the template (figure 2). The top and bottom points of the curved edge should align with the radius of the PCC (figure 3). Hold the template in place and use a marker or paint pen to mark the location for the eight holes that will need to be drilled, and also mark the rectangular area that will be cut out.

Figure 2

Figure 3

In the eight locations indicated by the marks, drill 3/8" (10mm) diameter holes for the mounting bolts. Cut the rectangular area out using a grinder with cutoff wheel, reciprocating saw, or plasma cutter. Final results should look similar to the picture (figure 4). Test the fitment by placing the plastic filler plate (001-2600FP) in the rectangular hole. If the filler plate extrusion does not fully fit in the cutout, modify the cutout until the flanges of the filler plate fit flush against the outside of the PCC (figure 5).
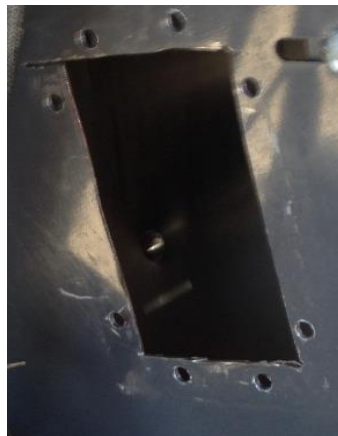
Figure 4

Figure 5

Microwave Sensor Installation 600BB, 700MWM (continued)

Install eight bolts 5/16"x 1" BHCS from the inside of the pre-compression chamber through the side of the PCC and the plastic filler plate (001-2600FP). Secure the top two bolts and bottom two bolts with 5/16" flanged nuts. Place a mounting bracket over each of the two bolts on the sides of the filler plate and secure with 5/16" flanged nuts (figure 6).

The mounting brackets (001-2600) should be aligned parallel with the long edges of the filler plate. Locate the sensor that says RX on the gray connector and mount it to the brackets using four 5/16-3/4" bolts and flanged nuts (figure 7). The grey connector should be pointing down toward the ground.

Figure 6   Figure 7

Repeat the procedure on the left side of the PCC for marking the locations, drilling and cutting, and mounting. The sensor labeled TX on the gray connector needs to be mounted on the left hand side with the connector towards the ground.

Locate the 006-7400 harness (stuffer sensor) and the L-shaped bracket (001-4648SS) from the parts bag. Bend the L-shaped bracket so it is approximately at 120 degrees. Attach the stuffer sensor to the bracket loosely and locate the shielding on the right hand side of the baler ahead of the stuffer (figure 8).

Figure 8

Position the stuffer sensor and bent L-bracket against the outside of the shield so the sensor is positioned within 3/8" (10mm) of the stuffer (see below). Mark mounting hole location and attach bracket to the shielding using at least one of the 5/16-1" hex bolts and a flange nut. Secure the sensor to the bracket by tightening the jam nuts (figure 9).

Figure 9

6

Microwave Sensor Installation (continued)

Route the rest of the harness along the steel hydraulic lines and existing wiring toward the top of the chamber. The wire from the stuffer sensor will be connected to the 4 pin connector coming off the main harness about 2' (.6M) from the right hand sensor. Secure with cable ties.

Route the MWM harness (006-6650MW) to the DCP on the baler and remove the green capped terminating resistor (006-5650Z) on the pump modular port, connecting the MWM sensors. Secure the harness.

If connecting to a complete applicator system route the MWM harness (006-6650MW) to the Pump Controller (006-5672) on the pump plate next to the tank and remove the green capped terminating resistor (006-5650Z) on the pump modular port. Connect the MWM harness to the pump controller in the modular port. Secure the harness. The green resistor is no longer needed. However, keep if updates are needed.

Figure 10   Figure 11

Microwave Moisture Sensor Installation 701MWM

Locate the mounting holes on the back of both the left and right side of the bale chute (figure 1).

Mount the rear microwave moisture mounting brackets 001-2601 (figure 2) on the holes using two 3/8" x 3 1/2" hex bolts, nuts and lock washers located in parts bag D.

Figure 1

Figure 2

Attach the microwave moisture sensors to each mounting bracket. Sensor 006-4641MTX will be mounted or the left side of the bale chute (figure 3). Sensor 006-4641MRX will be mounted on the right side (figure 4). Mount the sensors with the wire connection port toward the baler.


Figure 3

Figure 4

Locate the MWM wiring harness (006-6650MW) in the kit. Start by locating the connector with the white heat shrink label marked RX. Connect this connector to the sensor mounted on the right side chute (006-4641MRX).

If connecting to a *moisture only system* route the MWM harness (006-6650MW) to the DCP on the baler and remove the green capped terminating resistor (006-5650Z) on the pump modular port, connecting the MWM sensors. Secure the harness.

If connecting to a *complete applicator system* route the MWM harness (006-6650MW) to the Pump Controller (006-5672) on the pump plate next to the tank and remove the green capped terminating resistor (006-5650Z) on the pump modular port. Connect the MWM harness to the pump controller in the modular port. Secure the harness. The green resistor is no longer needed.
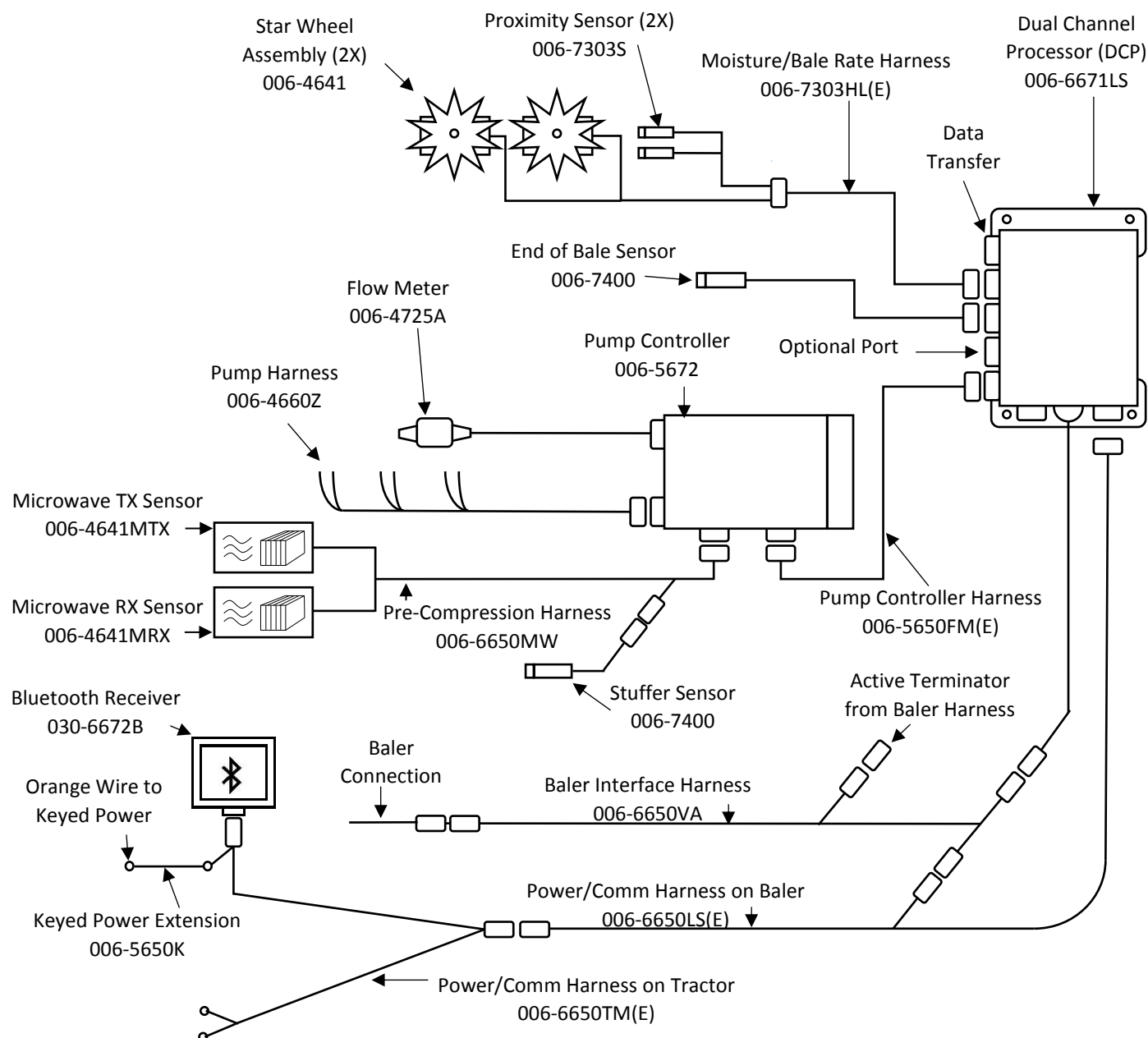
601BB - Wiring Diagram – Connecting to Moisture Only System

1. Locate the tractor power/communication harness (006-6650TM(E)).
2. At the back of the tractor run the power leads to the battery.
3. Connect the red power wire with the 50 amp fuse to the positive side (12 volt) of the battery.
   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. IF MODIFICATIONS ARE REQUIRED CONTACT HARVEST TEC FIRST!
   b. **This unit will not function on positive ground tractors.**
   c. **If the unit loses power while operating it will not keep track of accumulated pounds of product used and bale records.**
4. Connect the black ground wire to frame of tractor or negative side of (12 volt) battery.
5. Connect the Bluetooth Receiver (030-6672B) to the Communication Harness (006-6650TM(E)). Place in a safe location in the cab. Behind the seat for example.
6. Connect the orange Keyed Power wire (006-5650K) to a keyed power source.
7. Connect the end to the Communication Harness (006-6650TM(E)) to the Bluetooth Receiver.
8. Connect the orange keyed power wire (006-5650K) to a keyed power source on the tractor.
9. Connect the Pre-Compression Harness (006-6650MW) into the Pump Controller port on the DCP.
10. Connect Microwave Sensors (006-4641MTX & 006-4641MRX) to the Pre-Compression Harness.
11. Connect the Stuffer Sensor (006-7400) to the Pre-Compression Harness.

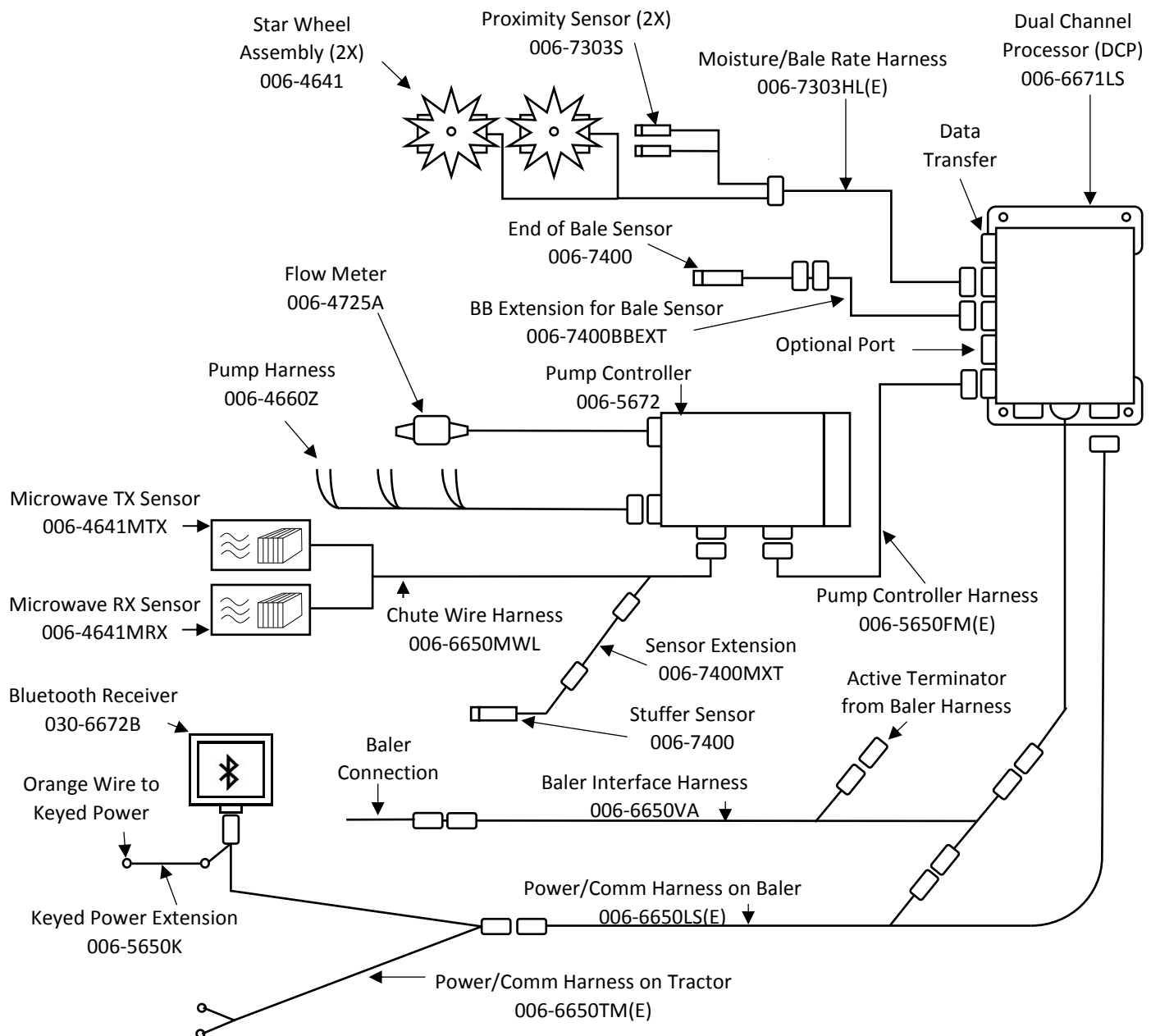*Note: (E) indication is used for International Dealers
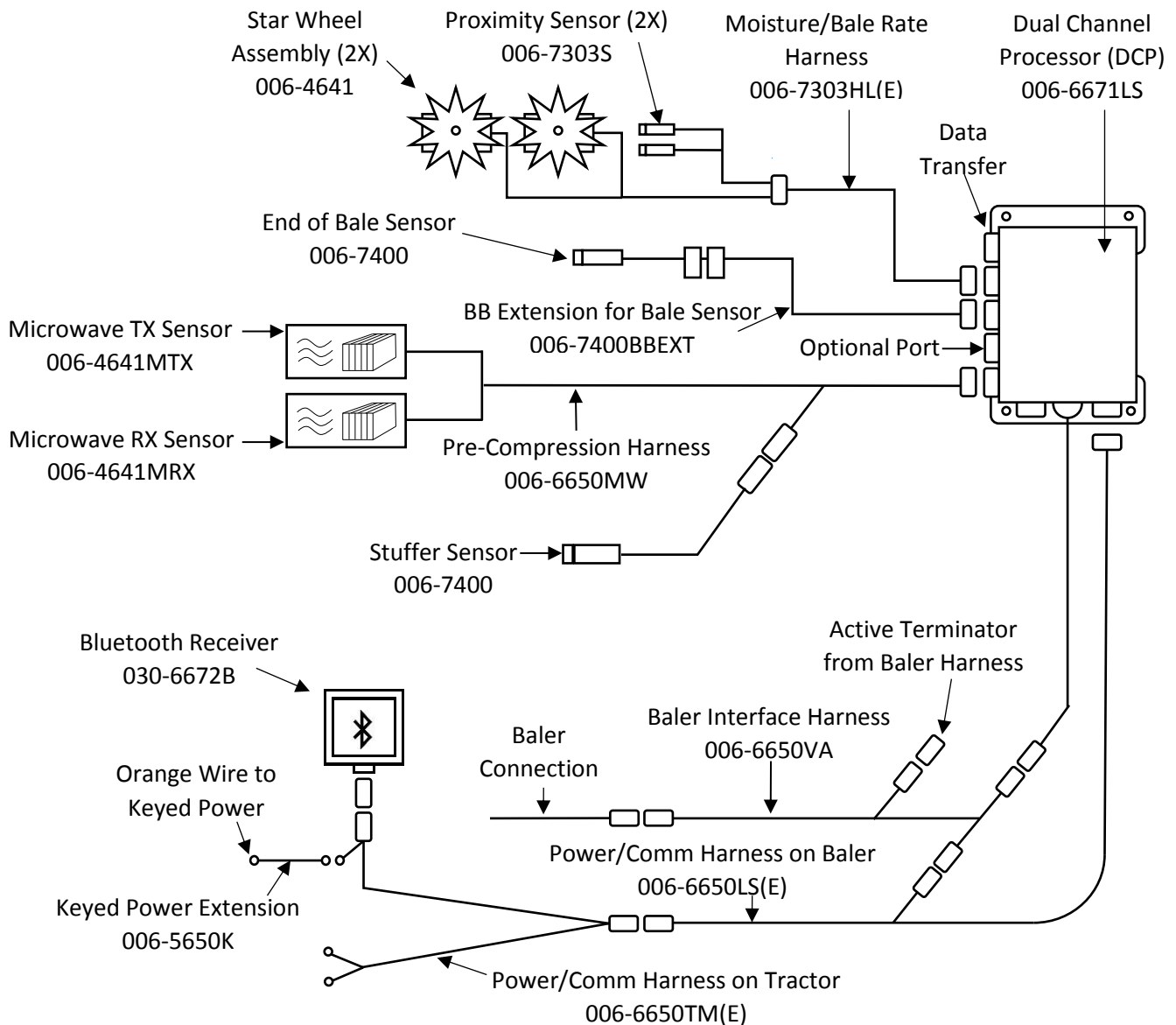
700BB - Wiring Diagram – Connecting to 696BB Preservative Applicator System

1. The Baler Power/Communication Harness (006-6650LS2(E)) will attach to the open port of the Tractor Harness (006-6650TM) and run back to the Dual Channel Processor (006-6671LS(E)). Connect the large plug of the Baler Power/Communication Harness (006-6650LS(E)) to the bottom (shorter side) of the DCP.
2. Attach the Baler Interface Harness (006-6650VA) in between the short whip cable hardwired to the DCP and the main Power/Communication Harness (006-6650LS(E)). Make sure Active Terminator removed from the top of the baler processor is attached to Baler Interface Harness (006-6650VA).
3. Attach moisture and bale rate harness (006-7303HL(E)) and end of bale harness (006-7400) to the DCP.
4. Attach the Pump Control Harness (006-5650F3M(E)) between Pump Controller (006-5672) and the DCP.
5. Connect Keyed Power Extension harness (006-5650K) to a keyed power source on tractor.
6. Connect the Bluetooth Receiver (030-6672B) to the Communication Harness (006-6650TM).
7. Connect the Pre-Compression Harness (006-6650MW) into the Pump Controller port on the DCP.
8. Connect Microwave Sensors (006-4641MTX & 006-4641MRX) to the Pre-Compression Harness.
9. Connect the Stuffer Sensor (006-7400) to the Pre-Compression Harness.

*Note: (E) indication is used for International Dealers

701BB - Wiring Diagram – Connecting to 696BB Preservative Applicator System

1. The Baler Power/Communication Harness (006-6650LS2(E)) will attach to the open port of the Tractor Harness (006-6650TM) and run back to the Dual Channel Processor (006-6671LS). Connect the large plug of the Baler Power/Communication Harness (006-6650LS(E)) to the bottom (shorter side) of the DCP.
2. Attach the Baler Interface Harness (006-6650VA) in between the short whip cable hardwired to the DCP and the main Power/Communication Harness (006-6650LS(E)). Make sure Active Terminator removed from the top of the baler processor is attached to Baler Interface Harness (006-6650VA).
3. Attach moisture and bale rate harness (006-7303HL(E)), extension harness (006-7400BBEXT), and the end of bale harness (006-7400) to the DCP.
4. Attach the Pump Control Harness (006-5650F3M(E)) between Pump Controller (006-5672) and the DCP.
5. Connect Keyed Power Extension harness (006-5650K) to a keyed power source on tractor.
6. Connect the Bluetooth Receiver (030-6672B) to the Communication Harness (006-6650TM(E)).
7. Connect the Chute Wire Harness (006-6650MWL) into the Pump Controller port on the DCP.
8. Connect Microwave Sensors (006-4641MTX & 006-4641MRX) to the Chute Wire Harness.
9. Connect the Stuffer Sensor (006-7400), and extension (006-7400MXT0 to the Pre-Compression Harness.

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*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
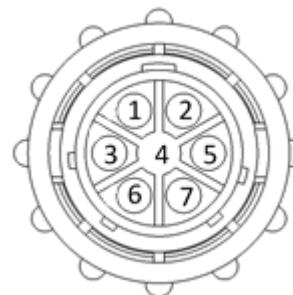Pin 10 Blue   Can1 Low

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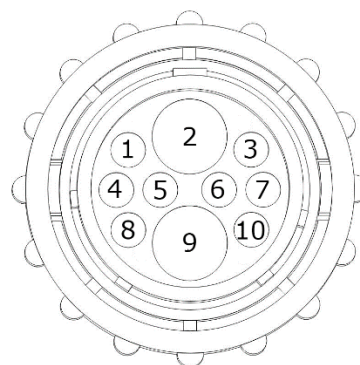
Bluetooth Receiver on Harness 006-6650TM(E)
Pin 1   Red   +12V Power from DCP
Pin 2   Black   Ground from TSD
Pin 3   Yellow   HT Can Low
Pin 4   Gray   Shield
Pin 5   Green   HT Can Hi
Pin 6   Orange   Can1 Hi
Pin 7   Blue   Can1 Low

006-6650VA to DCP Whip
Pin 1   Red   Can Power
Pin 2   Black   Can Ground
Pin 3   Yellow   HT Can Hi
Pin 4   Gray   Shield
Pin 5   Green   HT Can Low
Pin 6   Orange   Can1 Hi
Pin 7   Blue   Can1 Low

Pin Outs (continued)
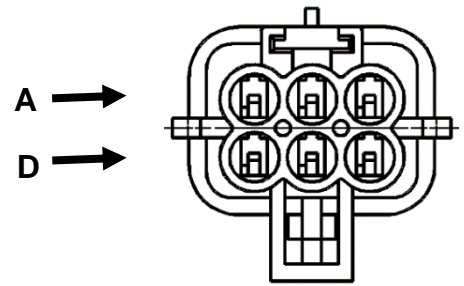
006-6650VA to 006-6650LS(E)
Pin 1   Red   Can Power
Pin 2   Black   Can Ground
Pin 3   Yellow   HT Can Hi
Pin 4   Gray   Shield
Pin 5   Green   HT Can Low
Pin 6   N/A
Pin 7   N/A
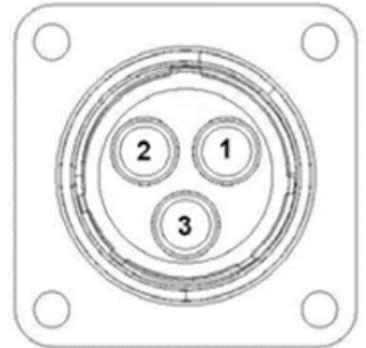
006-6650VA Harness to Baler Plug
Pin A   N/A
Pin B   Red   TBC Power
Pin C   N/A
Pin D   Gray   TBC Ground
Pin E   Orange   Can1 Hi
Pin F   Blue   Can1 Low

Main Power Connector on DCP
Pin 1   Red   +12V Power from tractor
Pin 2   Black   Ground from tractor
Pin 3   Orange   Keyed power

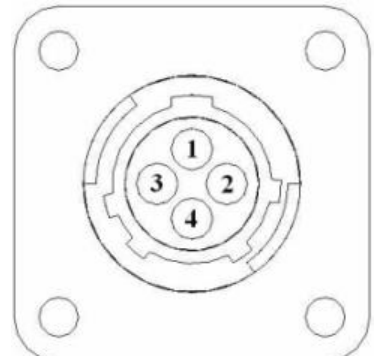Star Wheel and Bale Rate Sensor Connector on DCP
Pin 1   Blue   +12V Power
Pin 2   Orange   Ground
Pin 3   Black   Signal for sensor 1
Pin 4   White   Signal for sensor 2
Pin 5   N/A
Pin 6   N/A
Pin 7   N/A
Pin 8   Violet   Star wheel input 1
Pin 9   Brown   Star wheel input 2
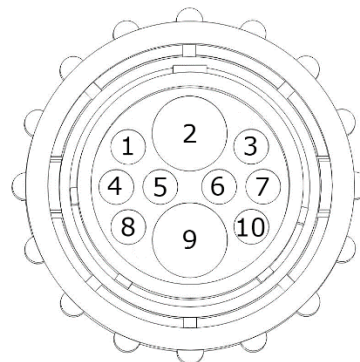
End of Bale Sensor on DCP
Pin 1   Brown   Sensor Power
Pin 2   Blue   Sensor Ground
Pin 3   N/A
Pin 4   Black   Signal from Sensor

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Pin Outs (continued)
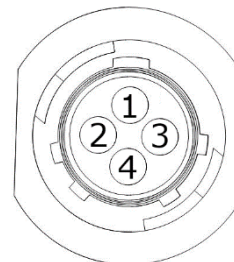
Microwave Pre-Compression Chamber Harness 006-6650MW
Pin 1   Red   Power
Pin 2   N/A   Not Used
Pin 3   N/A   Not Used
Pin 4   Yellow   Can H In
Pin 5   Green   Can L In
Pin 6   Orange   Can H Out
Pin 7   Blue   Can L Out
Pin 8   Black   Ground
Pin 9   N/A   Not Used
Pin 10 N/A   Not Used
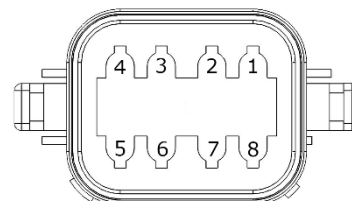

Microwave Pre-Compression Chamber Harness 006-6650MW
Pin 1   Red   Power
Pin 2   Black   Ground
Pin 3   N/A   Not Used
Pin 4   Brown   Signal

Microwave Pre-Compression Chamber Harness 006-6650MW (RX)
Pin 1   Black   Ground
Pin 2   Red   Power
Pin 3   Yellow   Can H
Pin 4   Green   Can L
Pin 5   Plugged
Pin 6   Plugged
Pin 7   Brown   Signal
Pin 8   Black   Ground

Microwave Pre-Compression Chamber Harness 006-6650MW (TX)
Pin 1   Black   Ground
Pin 2   Red   Power
Pin 3   Yellow   Can H
Pin 4   Green   Can L
Pin 5   Plugged
Pin 6   Plugged
Pin 7   Plugged
Pin 8   Plugged
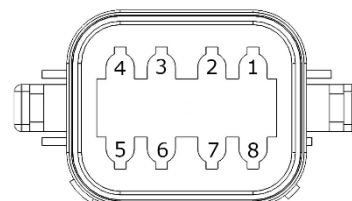
Common Questions

1. **Can microwave sensors function with 500 series PIP?**
   No, microwave sensors are only compatible w/600 Series unit running software version dcp46227 or later.

2. **Can microwave sensors function through a Harvest Tec Touch Screen Display?**
   No, microwave sensors require an ISOBUS Interface (VT) or iPad system to set the microwave settings.

3. **What terminal is required to operate microwave sensor?**
   Microwave sensors are compatible with VT & iPads.

4. **What moisture range will sensors detect?**
   Pre-Compression Chamber microwave sensors have a moisture range of 6-60% moisture. The Bale Chute chamber sensors have a range of 6-40%.

5. **How do I know if I'm displaying microwave or star wheel moisture?**
   The sensor type selected is indicated in the upper right corner of the run screen (right). MC-0 indicates starwheels, MC-1 indicates MWM Pre-Compression Chamber, MC-2 indicates MWM Bale Chamber System, MWM-3 indicates other.
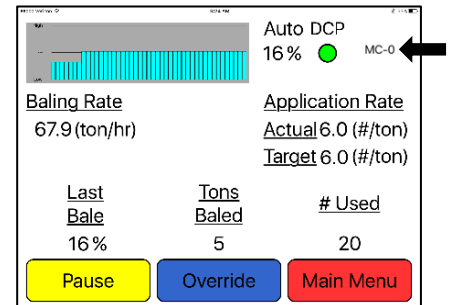
6. **What crops are the microwave sensors designed for?**
   The Microwave sensors are designed and calibrated for Alfalfa.

7. **Is there a calibration to the microwave sensors for different crops?**
   No, there is no adjustments needed.

8. **Do the sensors emit harmful waves?**
   No

9. **How often should a Zero Adjust (ZA) be performed?**
   A zero adjust should be performed on initial installation. It is also recommended during a zero adjust calibration at the beginning of each season.

10. **When reading moisture with microwave sensors why can I <u>not</u> select Automatic mode?**
    MWM Pre-Compression sensors can be used in both Auto and Manual mode.
    MWM Bale Chute sensors can only be used in Manual Mode due to the lag time between the application tops and the sensors.

11. **Where does the green terminating resistor plug in to microwave sensors?**
    The green resistor (006-5650Z) is not used. Store the resistor for potential updates and changes you may make to the system in the future.

12. **Where do I position 840 moisture dye marker spray tip when operating microwave sensors in pre-compression chamber?**
    Dye marking tips should be located behind (toward rear end of chute) MWM Chute sensors, with the tips angled toward the rear at a 45 degree angle. Alternative mounting would locate the dye marking tips above the bale w/ the brackets mounted off the top cross beam.
    When using a Pre-Compression system mount the tips as close to the front of the bale chamber as possible, either on the side if there is clearance or on the top of the bale.

13. **What do the lights on the 030-6672B indicate?**
    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.

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. Pre-Compression System reads 6-60% moisture. The Bale Chute system read 6-40% 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.
Display 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.
MWM moisture reads low all the time	1.Stuffer sensor out of adjustment	1. Verify stuffer sensor is not damage and is sensing the stuffer moving each time
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.
	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.	

Microwave Moisture Pre-Compression System - 601BB & 700MWM
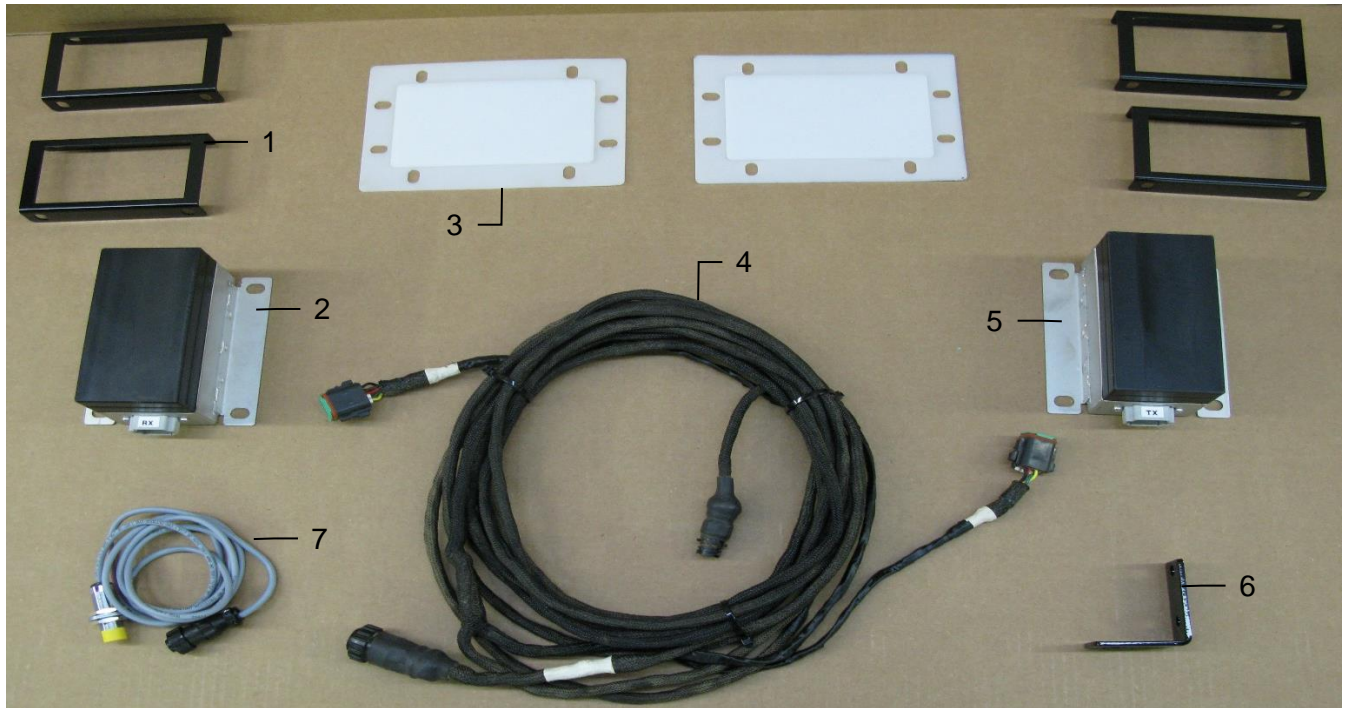
Ref	Description	Part #	Qty
1	MWM Mounting Bracket	001-2600	4
2	Microwave TX Sensor	006-4641MTX	1
3	MWM Filter Plate	006-2600FP	2
4	MWM Pre-Compression Harness	006-6650MW	1
5	Microwave RX Sensor	006-4641MRX	1
6	End of Bale Bracket (Stuffer Bracket)	001-4648SS	1
7	End of Bale Sensor (Stuffer Sensor)	006-7400	1

Complete Assembly   030-0700MWM

Microwave Moisture Bale Chute System – 701MWM
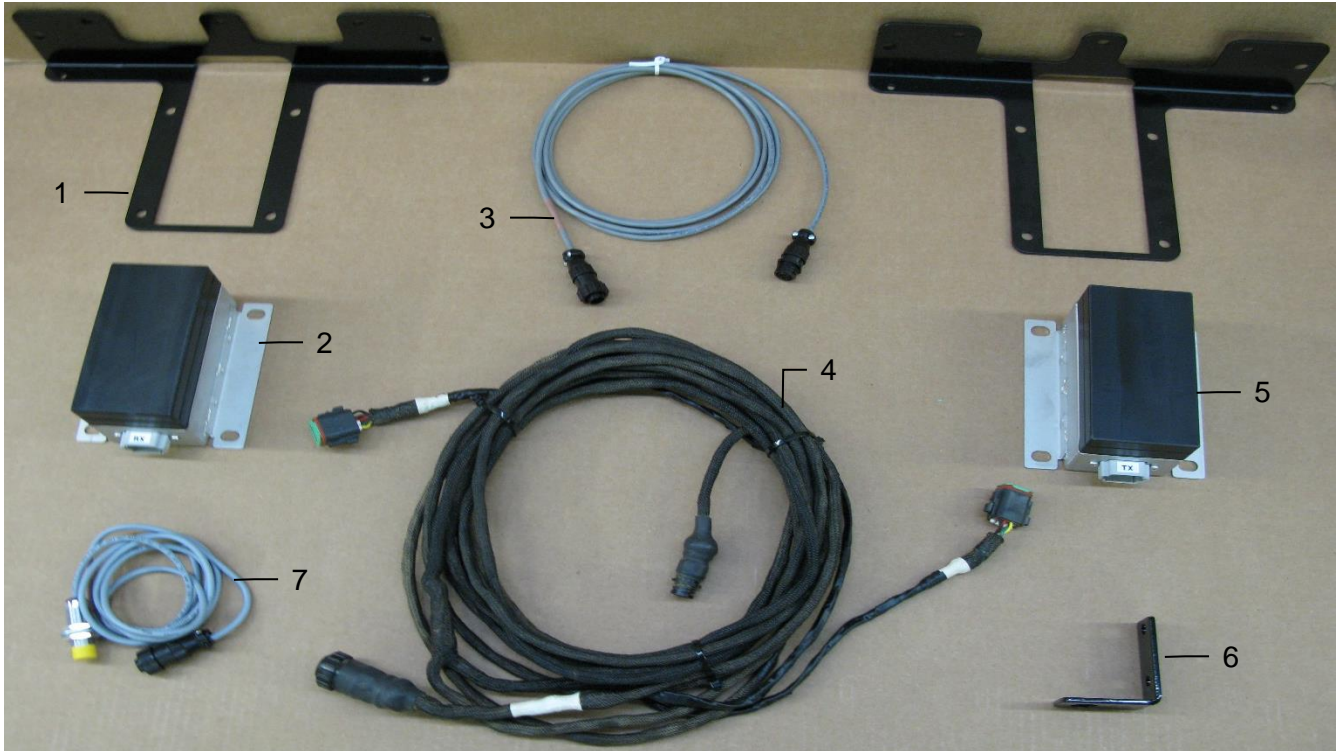
Ref	Description	Part #	Qty
1	MWM Rear Mounting Bracket	001-2601	2
2	Microwave TX Sensor	006-4641MTX	1
3	End of Bale Extension Harness (20')	006-7400MXT	1
4	MWM Pre-Compression Harness	006-6650MWL	1
5	Microwave RX Sensor	006-4641MRX	1
6	End of Bale Bracket (Stuffer Bracket)	001-4648SS	1
7	End of Bale Sensor (Stuffer Sensor)	006-7400	1
NP	Power / Comm Extension Harness (25')	006-6650FMX	1

Complete Assembly   030-0701MWM
(Ref 1-7)

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 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, 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.

Revised 6/22

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Email: info@harvesttec.com