

YieldSense™

Installation Guide

John Deere 50, 60, 70, and S-Series Combines

Precision Planting®

Note: The information presented in this document was accurate at the time of publishing. The most current revision of this document can be found at <http://cloud.precisionplanting.com/pubs>

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System Overview

Qty.	Part #	Description
1	750105	Flow Sensor
1	750190	YieldSense Module
1	750601	Cab Harness
1	750602	Bulkhead Harness
1	750411	Flow Sensor Harness
1	750603	Diagnostic Y Harness
1	725822	RAM Mount Base - Triple Suction Mount
1	728028	RAM Kit Arm (10in) with U-Bolt
1	725708	RAM Kit Arm (6in) with Ball Mounts
1	750599	Replacement Cover Plate
1	750206	Installation Template Kit
1	750207	Install Hardware Kit

Tools for Install

Drill

Hammer

1 3/8" Step Bit

SAE and Metric Socket or Nut Driver Sets

Tape Measure

Grinder

Thin cut-off wheel

Side Cutter

Cutting oil

Torque Wrench Capable of 8 ft-lbs

Quick Start Guide

Complete the following steps in order to make the YieldSense system operational.

*** For Further Information on each step, see the Operator's Guide.**

1. Ensure all Current Season Planting Data is in FieldView. If FieldView is missing any Planting Maps, connect the iPad to the 20/20 and open the FieldView app. Any current year data will sync to the FieldView app and planting maps will automatically be built.

2. Backup Current Season Planting Data and Delete from 20/20 SeedSense. Ensure all planting data is backed up in the Precision Cloud or export it to a USB drive. Then, delete planting data from the 20/20 Display to ensure adequate space is available for YieldSense data.

3. Install the latest iPad iOS software. Make sure that your iPad software is up to date. If your iPad software is not up to date, you might not see the latest version of FieldView in the App store.

4. Download the latest FieldView app from the App Store. Press the App Store button on the iPad home screen and either search for FieldView in the top right search box or, if you already have FieldView, press the Updates button in the bottom right.

5. Connect your iPad to the 20/20 Display and launch the FieldView app. For Gen 1 displays, a FieldView module is required. For Gen 2 displays, connect cable from the iPad to the middle USB port on the back of the 20/20.

6. Update your 20/20 display with YieldSense software from USB or FieldView. The current version of YieldSense is available on FieldView under **Tools, 20/20 Software Update**, and **YieldSense Updates**. It is also available on the YieldSense Support page at <http://www.precisionplanting.com>. Copy the file to a USB drive and insert it into the 20/20 display. Press **Setup, Data**, and **Software Update**. Select YieldSense on the bottom of the screen and update to the current version available on the USB.

7. On the 20/20 display, enter your combine configuration. Press **Setup** and under the **Harvest** Tab select **Combine**. Enter the make, series, and model of the combine as well as the four required GPS measurements.

8. Enter your head configuration. Press **Setup** and under the **Harvest** Tab select **Head**. Enter the make, model, and crop for the head. Each crop requires its own head setup. If the head is used for both wheat and soybeans, 2 separate heads need to be setup. Also complete the Harvesting Height Setup for the head/crop.

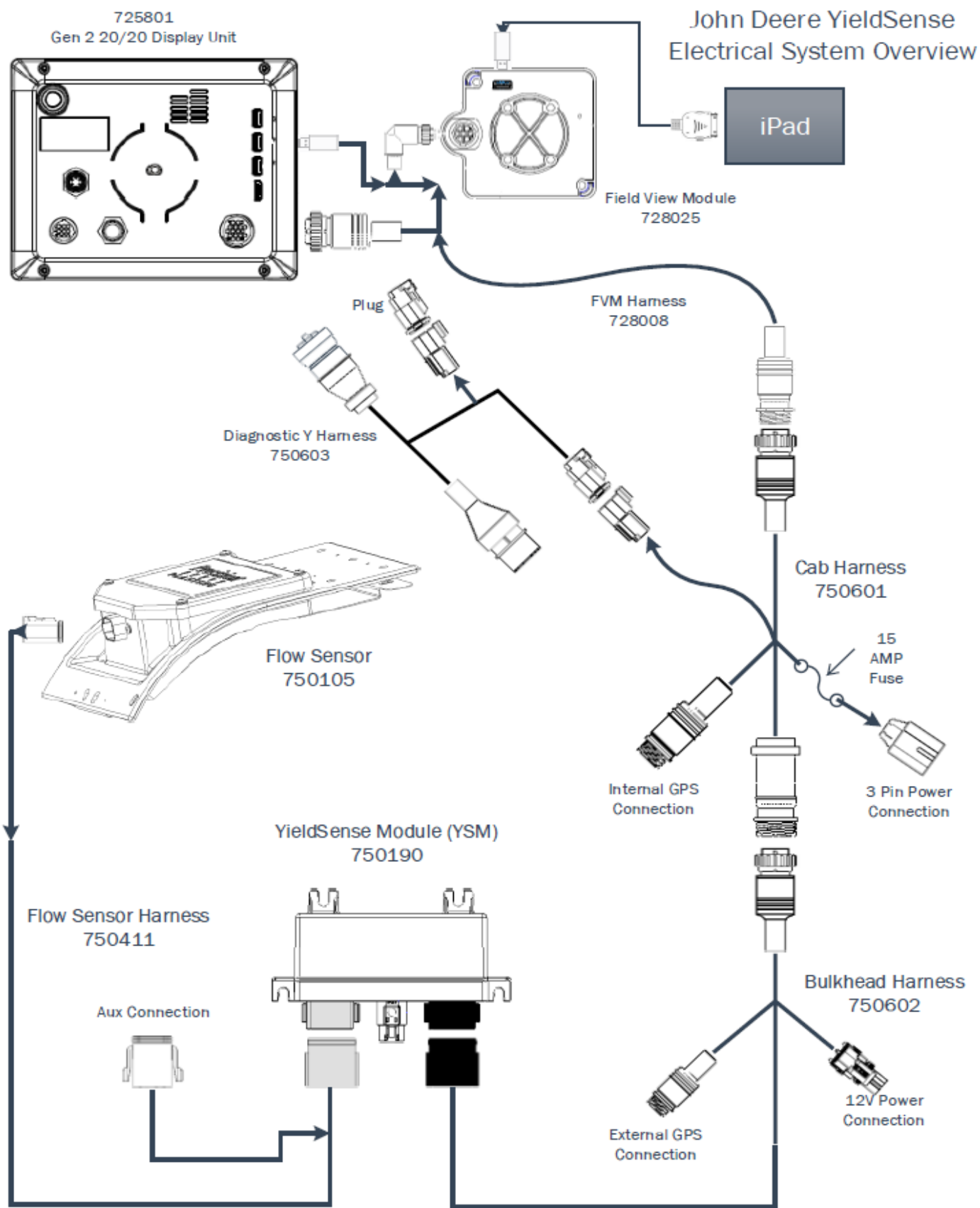
9. Ensure the 20/20 contains the correct Client, Farm, and Field List. Upon loading YieldSense Software, the field list from SeedSense will copy to YieldSense. If other fields exist in FieldView, they will transfer automatically to the 20/20 display.

10. In YieldSense, select the correct Client, Farm, and Field. From the home screen, press **Setup** and then press **Field** under the **Harvest** tab. Select the correct Client, Farm, and Field and press **Make Active** on the field setup page.

11. Complete Crop Setup. After opening the first field, follow the on screen instructions to continue harvesting while waiting for actual elevator scale weight. Enter actual weight to complete crop setup. Remember that the setup load must be at least 25,000 pounds.

12. Enter Moisture Offset. Obtain the actual moisture reading and compare it to your Moisture Sensor results. Press **Setup, Systems**, and **Moisture Sensor**. Then, enter an offset amount. If using an aftermarket AL yield monitor, enter in both the AL display and YieldSense.

13. GPS Setup Guides. These can be found in the Cloud under Tech Docs—2020 Products—GPS Setup Guides.



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Preparing For Installation

Step 1: Locate the tensioning spring for the clean grain elevator chain behind the clean grain elevator.



Figure 1

Step 2: Using two 18mm wrenches, loosen the bottom nut away from the top nut and spin the nut down the entire length of the bolt. Loosen the top nut down until it touches the bottom nut, and remove the drive belt from the drive pulley.



Figure 2

Step 3: Loosen the three nuts on the top bolt of the bearing block with a 15mm wrench. Then loosen the four bolts that hold the plate.

Note: There may be a cover that must be removed to get to the bearing block.

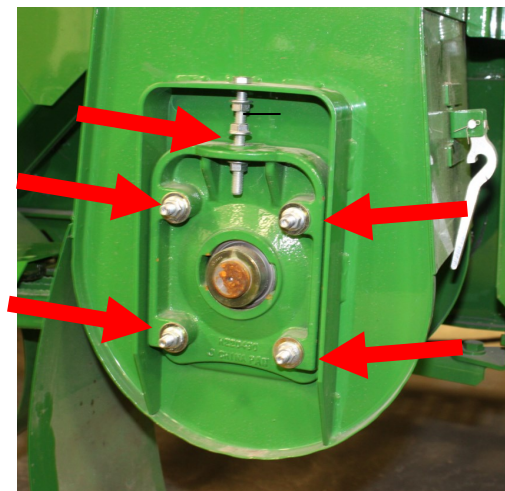


Figure 3

Flow Sensor Installation

Step 1: Attach the Shaft Alignment Indicator to the Punch Guide (both from the Installation Template Kit) as shown at right.

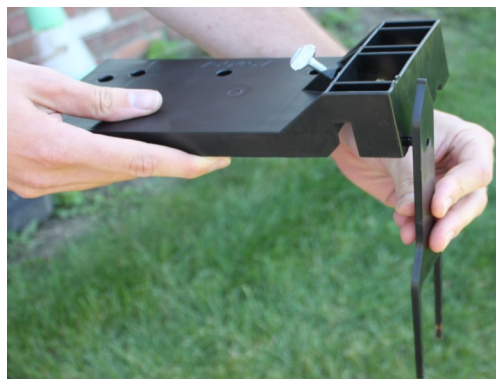


Figure 1

Step 2: Place the Punch Guide on top of the clean grain elevator. The indicator will fit over the top bearing. On combines with 10 or 11 tooth sprockets, the indicator will need to spread around the bearing.

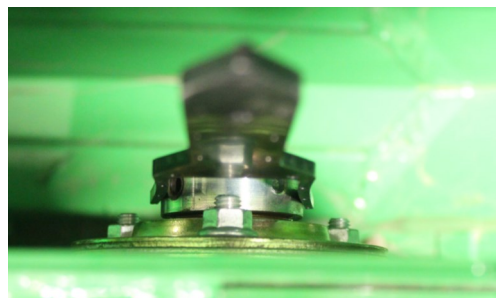


Figure 2

Step 3: Slide the Punch Guide horizontally until the tip of the Indicator aligns with the centering marks of the Punch Guide. Tighten the set screw until it contacts the metal. Tighten an additional half turn only. Over tightening the bolt will deform the Punch Guide and cause the drill holes to be misaligned.

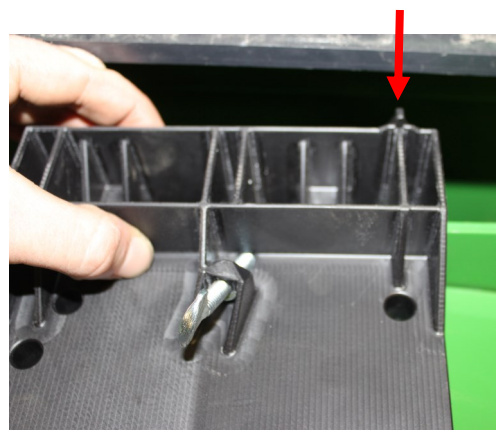


Figure 3

Step 4: Verify that the Punch Guide is parallel to the top of the clean grain elevator. If it is not parallel, loosen or tighten the set screw realigning the Punch Guide if necessary.

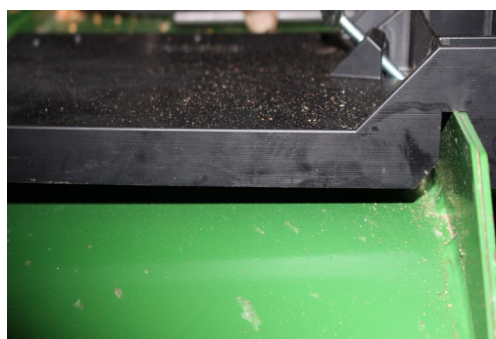


Figure 4

Flow Sensor Installation

Step 5: Use the centering punch to mark the center point of the seven holes in the Punch Guide. **Do not push down on the Punch Guide while marking the holes.** Doing so will deform the Punch Guide and cause the drill holes to be misaligned.



Figure 5

Step 6: Remove the Punch Guide, then reinstall it as done in steps 1—4. Check the locations of the center punch marks to verify that the Punch Guide was properly aligned the first time. Repeat until marks are consistent.

Step 7: Remove the punch guide. Use the center punch to increase the size of the punch mark by swinging the hammer harder. The larger punch marks will help prevent the drill from walking.



Figure 7

Step 8: Drill and tap the front three holes indicated by red arrows in Step 5 with the provided bit and tap. Ensure the drill is perpendicular to the top of the elevator. Angled holes will make installation difficult. The four punch marks indicated by yellow arrows in Step 5 will be used as reference points and will not be drilled.

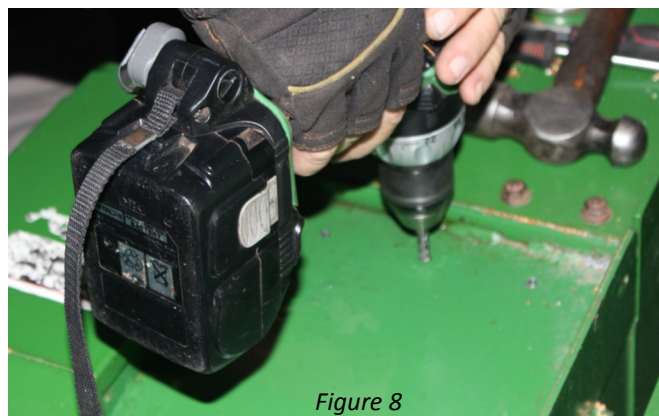


Figure 8

Note: We recommend using a cordless drill to tap (with lubrication) with low RPMs and low torque to avoid breaking the tap. S-Series combines with stainless steel elevators are more difficult to drill and tap. Use even lower RPMs and extra lubrication to prevent the steel from heating up and hardening.

Flow Sensor Installation

Note: Some John Deere combines have a wear plate welded on top of the clean grain elevator. Cut the sticker around the plate to prevent air pockets during installation.

Step 9: Remove all dirt and metal debris from the top of the elevator with the provided cleaning wipe kit. Without removing the backing, attach the template on top of the elevator using the 1/4"-20 bolts in the three top holes. Use the reference marks to verify that the template is aligned properly.



Figure 9

Step 10: Peel the backing off of the bottom half of the template and smooth with your hand so that the template adheres evenly and consistently. Then, remove the bolts from the top and remove the backing from the top half of the template. Smooth with your hand. Ensure that the template is installed with no wrinkles or air pockets. Remove the template and install the spare template if needed.



Figure 10



Use appropriate Personal Protective Equipment such as safety glasses, ear protection, face mask, and face shield while cutting the clean grain elevator.

Step 11: Open the grain tank auger and rotate the chain so that no paddles are under the template while cutting. Then use a thin cutting wheel to make a shallow cut all the way around the template along the black line between the maroon and yellow colors. Now complete the cut along the top and bottom, then the sides. If the metal is rusty, the paint is peeling, or the metal dirty, drill guide holes in the four corners in case the template slips. When done, remove the template.



Figure 11

Clean Grain Elevator Chain Installation

Elevator Health Check:

- **Check the bottom and top elevator sprocket for wear.** It is recommended that you install a new sprocket for any used elevator. A worn sprocket will cause accelerated wear to the new YieldSense chain, and can affect the accuracy of the YieldSense system.
- **Check middle divider plate.** At the bottom of the elevator verify there is no damage to the divider plate. Repair or replace as necessary. A damaged or missing divider plate will cause potential failure to the chain and paddles.

Step 1: Rotate the OEM chain to find the master link and remove it.

Step 2: Use the old master link to connect the new chain to one end of the OEM chain—attaching to the side that is toward the rear of the combine as shown in figure 2.

Note: Make sure that the paddles are facing the correct direction as shown in the picture below.

Step 3: Pull out the old chain and feed in the new one as shown in figure 3.



Warning: When the loose end of the new chain is close to the bottom drive sprocket, be careful that the chain doesn't go past the bottom sprocket. This may cause the extra weight of the old chain to pull the new chain out of the clean grain elevator.

Step 4: Remove the old master link and connect the two ends of the new chain using the new master link as shown in figure 4.



Figure 2



Figure 3



Figure 4

Chain & Paddle Kits and Combine Models:

750632 (8 Tooth—Grey Paddles)

9x50, 9x60, 9570, 9670, S550, S660, & S670

750634 (10 Tooth—White Paddles)

9770, 9870, S670, & S680

750636 (11 Tooth—Black Paddles)

S690

Clean Grain Elevator Chain Installation

Step 5: Install new chain then check for paddle contact in the elevator. Locate the Grain Property bucket on the chain. Then spin the chain by hand one revolution until the bucket has come back around. This is to insure that no paddles are making contact with anything in the elevator.

Step 6: Adjust the tension bolt on top of the bearing block to add tension to the chain. Adjust until the chain can slide side to side on the sprocket but cannot be pulled away. Tighten the four carriage bolts, verifying that the tension on the sprocket is still correct.

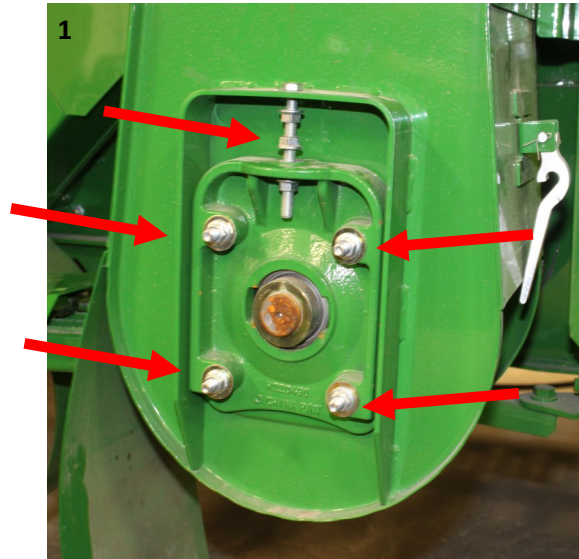


Figure 6

Step 7: Next mark the location you are at on the sprocket. Rotate to 90°, 180°, and 270° making sure at each point you are still able to slide the chain side to side and not be pulled away from the sprocket at any point. (Figure 7)

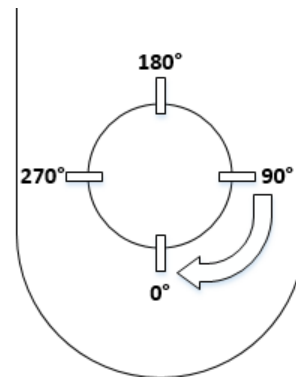


Figure 7

Step 8: Check clearance between the auger and the bottom of the tube. If clearance between transfer auger and auger tube is less than 1/4", remove a half link and adjust the bearing up. Check to make sure you have at least 1/4" of clearance to the top of the tube as well. (Figure 8)

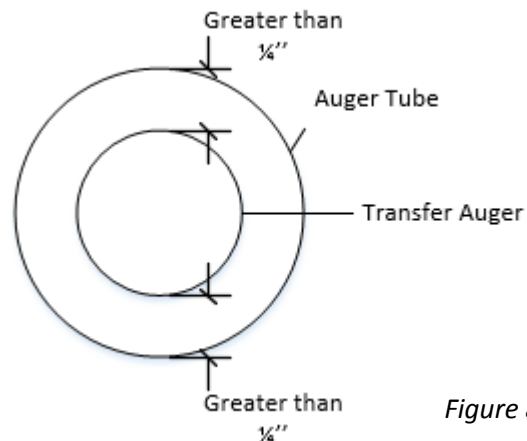


Figure 8

Flow Sensor Installation (Cont.)

Step 1: Prepare to gauge the number of shims required to properly align the flow sensor. Take the Shim Gauge in hand and bend the long arm 90° to the side.

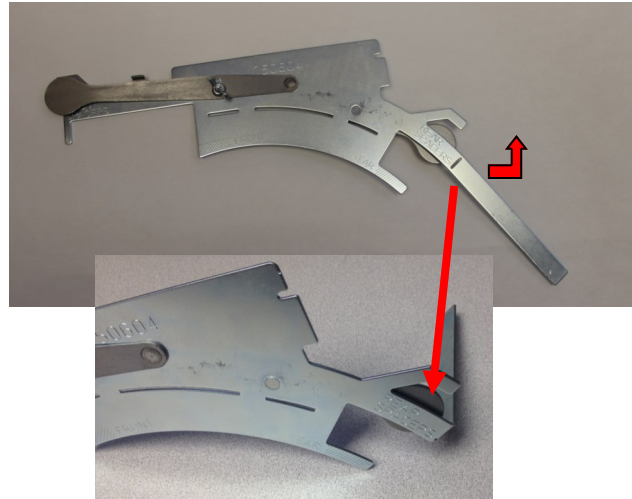


Figure 1

Step 2: Insert the tab on the front end of the Shim Gauge into the middle flow sensor hole. Rotate the Shim Gauge so that the bent end contacts the side of the elevator to ensure that the gauge is square to the hole.



Figure 2

Step 3: Rotate the chain until a paddle aligns with the rear position marked on the Shim Gauge.

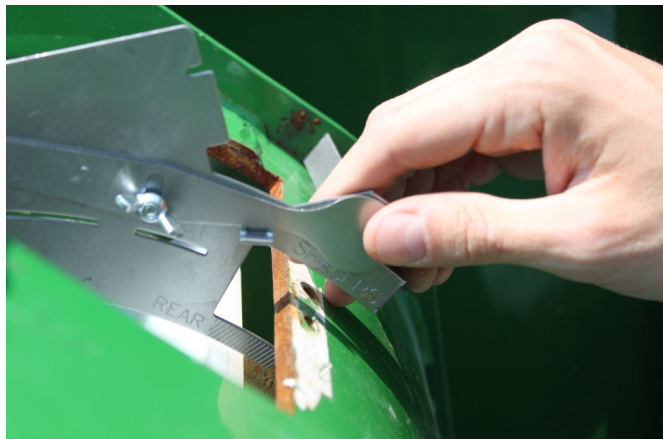


Figure 3

Flow Sensor Installation (Cont.)

Step 4: Loosen the rear lobe on the Shim Gauge and slide the lobe down until it contacts the top of the elevator. Tighten the wing nut with the rear lobe resting on the combine steel.



Figure 4

Step 5: Move the same paddle to the front position on the gauge. Loosen the front lobe on the Shim Gauge and slide the lobe down until it contacts the top of the elevator. Tighten the wing nut with the front lobe resting on the combine steel.

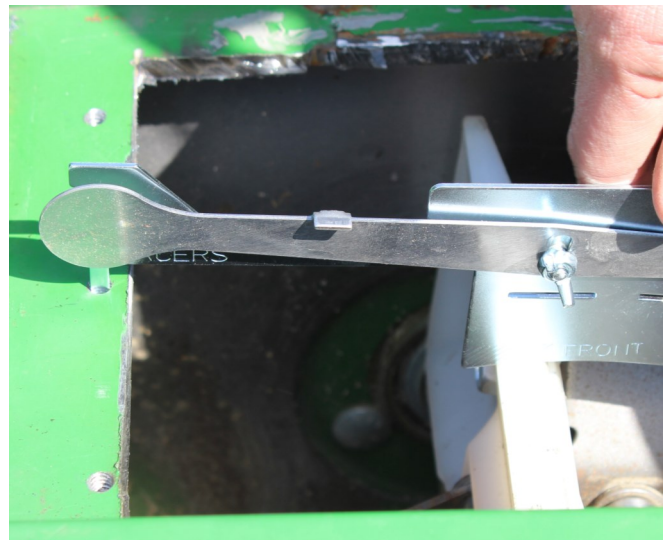


Figure 5

Note: Repeat steps 3—5 until the paddle follows the curve of the Shim Gauge.

Step 6: Move several paddles past the Shim Gauge. Verify that the paddles follow the curve of the gauge and they neither contact the gauge nor leave large gaps.



Figure 6

Flow Sensor Installation (Cont.)

Step 7: Remove the Shim Gauge from the hole and determine the number of shims needed in both the front and rear gaps. Only use the number of shims that will easily fill the gap—do not force.

Note: It is common for the number of required front and rear shims to be different.

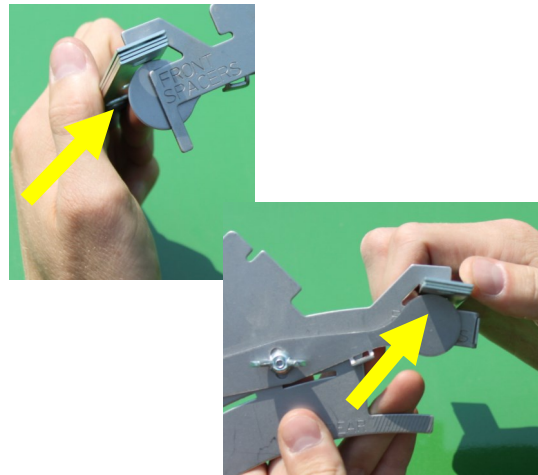


Figure 7

Step 8: Install the number of shims determined in step 7 between the spoiler and the flow sensor on the top/front end of the flow sensor.



Figure 8

Step 9: Install the number of shims determined in step 7 on the bottom side of the lower end of the flow sensor.



Figure 9

Flow Sensor Installation (Cont.)

Step 10: Insert three 1/4"-20 bolts into the top mounting holes but do not tighten the bolts.

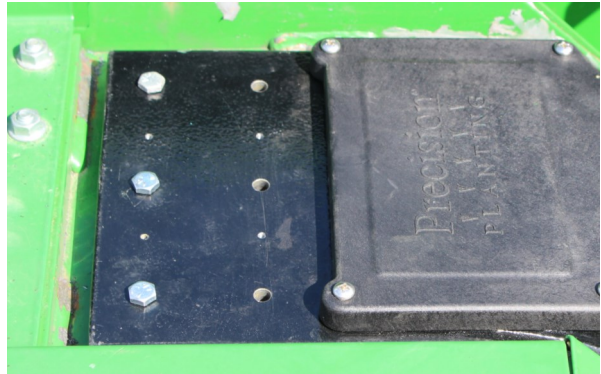


Figure 10

Step 11: With the bottom side shims installed, use the provided drill bushing to drill the first hole. Then remove the bushing, tap the hole, and insert a bolt to keep the sensor from shifting. Repeat this process for the second hole.

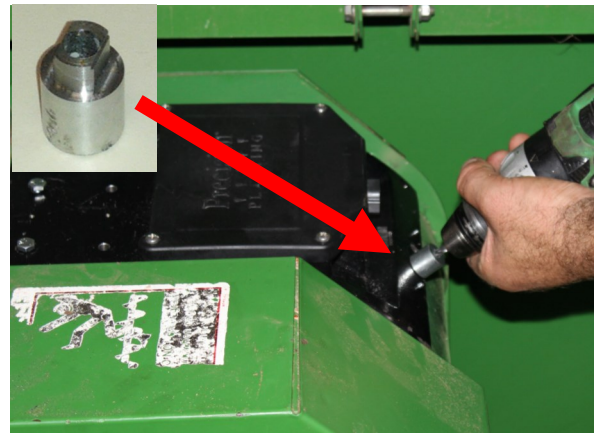


Figure 11

Step 12: A total of seven shims are needed to keep the bolts from damaging the paddles. If you installed three shims below the sensor, add four shims on top of the sensor. If you installed five shims below the sensor, add two shims on top of the sensor.

Step 13: Torque all five bolts on the flow sensor—the three on the top as well as the two on the bottom—to 8 ft-lbs.

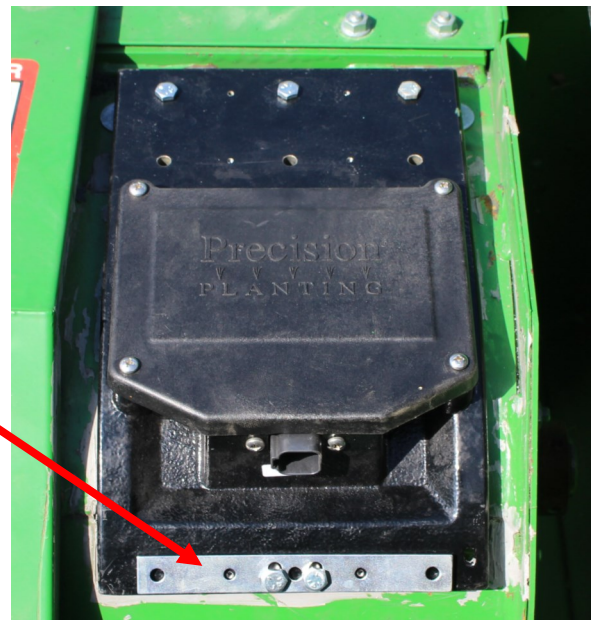


Figure 12

Flow Sensor Installation (Cont.)

Step 14: Lower the bubble auger to access the underside of the Flow Sensor. Move a paddle directly below the sensing pad of the Flow Sensor.

Sensing
Pad



Figure 14b



Figure 14a

Step 15: Gently insert the Paddle Clearance Gauge at the center of the paddle until it becomes tight against the sensing pad on the Flow Sensor. Use a finger to identify how far the gauge inserts into the gap. Remove the gauge and note the position.



Figure 15b



Figure 15a

Step 16: If the Paddle Clearance Gauge becomes tight within regions A through D, the sensor is in the correct location. If the gauge does not become tight within this range, remove the Flow Sensor, ensure that the shims are installed correctly, and, if necessary, repeat the shim gauging process. Also, verify that the correct chain and paddle kit is installed.

Clean Grain Elevator Chain Installation

Step 1: Place the belt back on the pulleys and verify that the routing of the belt is correct. Then tighten the nuts below the spring, returning the washer to the correct location on the Spring Tensioning Gauge.

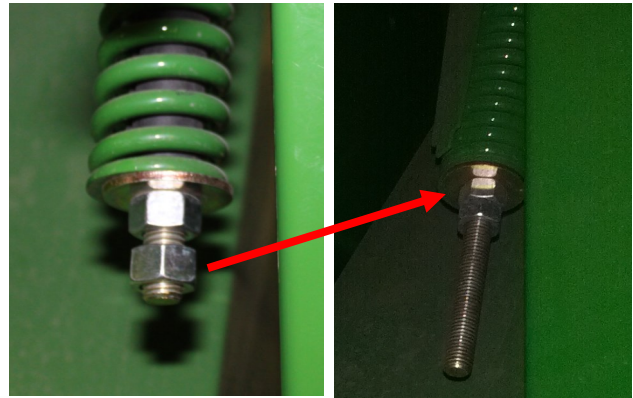


Figure 1

Step 2: After 10 hours of operation, check the chain tension. Adjust the tension if needed.

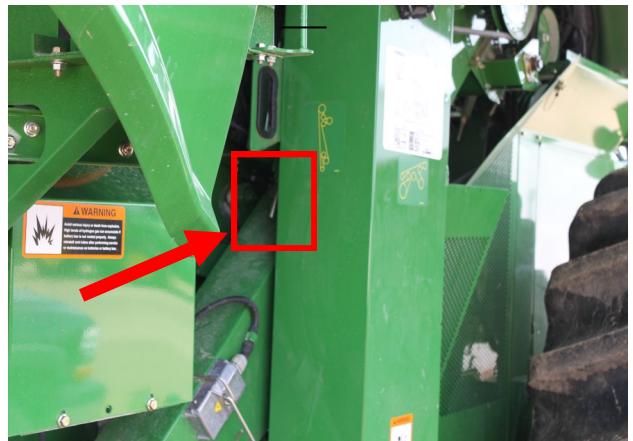


Figure 2

YieldSense Module (YSM) Installation

Step 1: To mount the YSM to the combine, open the right side panel of the combine. Identify a mounting location as pictured below based on your model of combine. Use the YSM mounting plate to mark the location where two holes can be drilled to mount the YSM to the combine. The YSM will need to be level $\pm 5^\circ$ when bolted in place.



Figure 1a

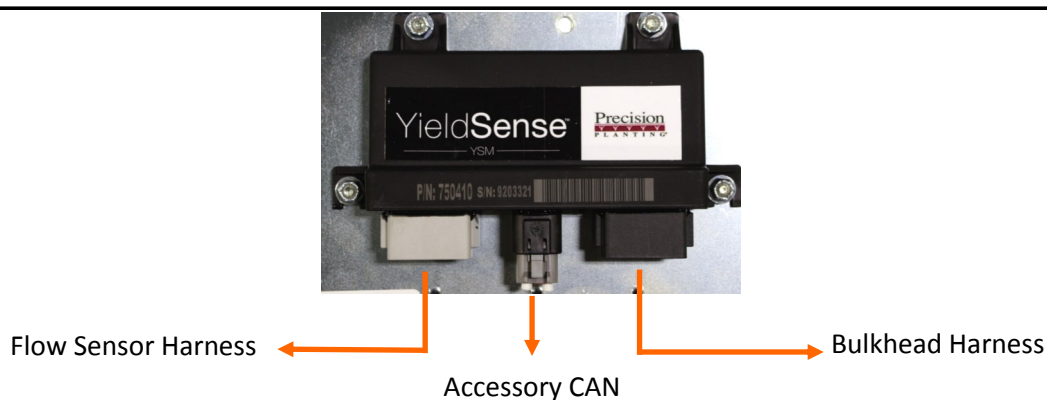


Figure 1b

Step 2: Drill two holes as marked in step 1 using the provided #4 bit.

Step 3: Tap the holes using the provided 1/4"-20 tap.

Step 4: Mount the YieldSense Module using two of the provided 1/4"-20 bolts.



Bulkhead Connector Installation

Step 1: Remove the six screws from the firewall panel located above the front, right tire. Use an 8mm or 10mm nut driver, depending on the size of the screws.



Figure 1

Step 2: Use a 1 3/8" (35mm) step bit or a hole saw to create a hole in the firewall panel. Ensure that the hole is well centered so that plastic ribs in the firewall do not interfere with the rubber grommet.



Figure 2

Step 3: Unscrew the back of the bulkhead connector on the cab harness and pass the front of the connector through the hole in the firewall. Then place the front of the connector in the grommet and screw the bulkhead connector back together. Reinstall the firewall panel.



Figure 3

Step 4: Connect the Bulkhead Harness to the bulkhead connector in the firewall panel and route it to the YSM. Connect the Bulkhead Harness to the black connector on the YSM.

Flow Sensor Harness Installation

Step 1: Plug the Flow Sensor Harness into the matching grey connector on the YSM. Then route the Flow Sensor Harness towards the Flow Sensor, avoiding any two-way radio cables. Secure the harness with zip ties that are just snug.



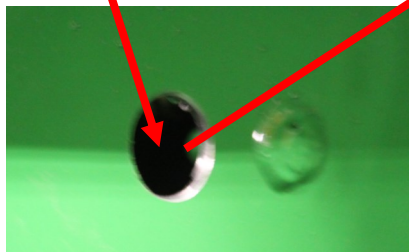
Flow Sensor Harness

Figure 1

Step 2: Use the step bit to drill a 1.25" hole 1.5" to the left of the leftmost weld for the brace holding the front cover on. A grommet is included to fill the hole.



Figure 2



Step 3: Feed the harness into the grain tank and run it along the edge of the tank and then inside the edge of the elevator to the back side of the Flow Sensor. Connect the Flow Sensor Harness to the Flow Sensor.



Figure 3

Cab Harness Installation

Step 1: Plug the power connection on the cab harness into the combine power strip.

Step 2: Plug the open 4-pin deutsch connector on the Diagnostic Y-Harness into the cab harness. Then plug it into the Diagnostic Service Port. On **50, 60, & 70 Series combines** this is located below the combine power strip. On **S Series combines** it is located inside the cup holder.

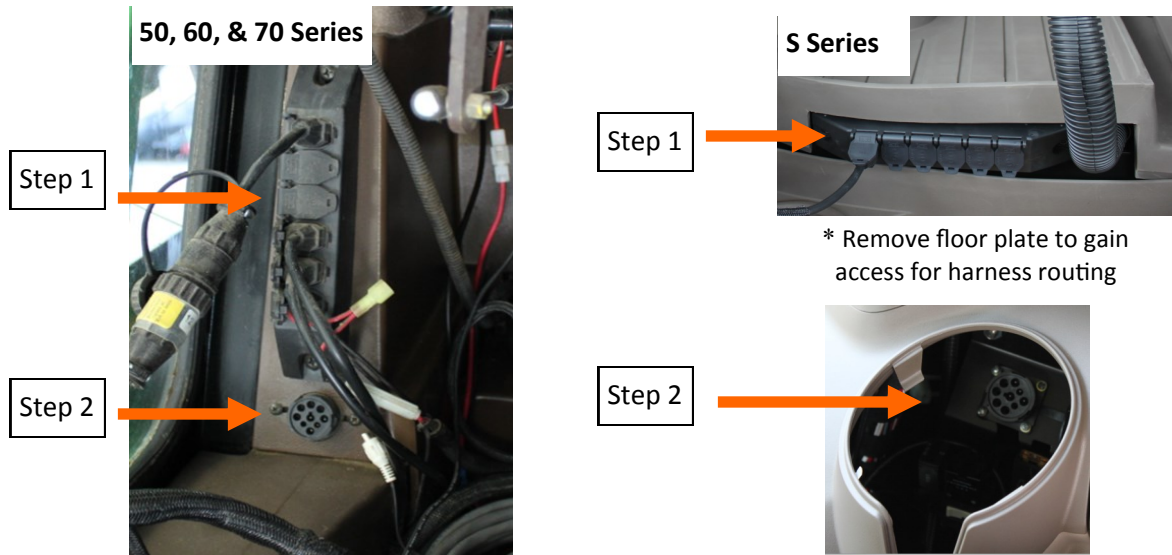


Figure A

Cab Harness Installed

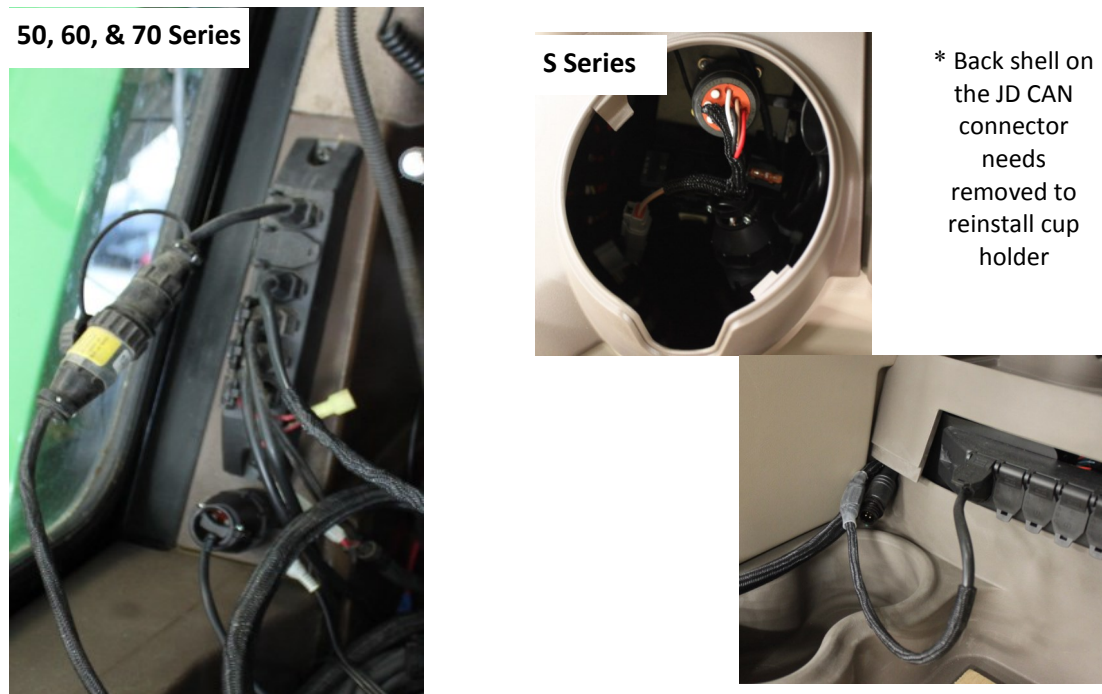


Figure B

20/20 and iPad Installation

Step 1: Mount the 20/20 display and the iPad RAM mount in the cab as you desire. A display mounting bracket and two mounting options are provided.

- 1) Two 1/4"-20 bolts are provided if drilling and tapping is required.
- 2) Use the triple suction cup mount for the other display.

Step 2: For Gen 1 20/20 displays, connect the Cab Harness to the FieldView Display Harness and then plug the FieldView Display Harness into the 20/20 display. For Gen 2 20/20 displays, plug the cab harness to the back of the 20/20 display.



Warning: Do not connect the Cab Control Module when using YieldSense. All connectors for the CCM should be disconnected.



Figure C

Connecting to GPS

There are two options for connecting to GPS: the cab harness inside the cab and the bulkhead harness outside of the cab. Both connectors are labeled GPS. Only connect to one of these connectors. Use a StarFire GPS Adapter Harness and the outside connector if using a StarFire Receiver. Use the appropriate GPS adapter and the inside connector for most other GPS sources. If the combine is not providing power to the receiver, plug the adapter harness (not included) into the outside GPS connector and then connect the adapter harness to the 2-pin weather pack on the cab harness.

WARNING: If the GPS is being powered by the combine **DO NOT** connect the 2 pin weather pack. If connected the two-pin weather packs will back feed battery power to the switched power circuit. After GPS harness is connected verify the GPS signal on both the 20/20 monitor and a combine monitor if applicable.

Inside the cab



Figure 1a

Outside the cab



Figure 1b