

ReconBlockage™

Troubleshooting Guide

Document number 600820-000045

Revision 2.1

Last revised: January 10, 2025



ReconBlockage™ Troubleshooting Guide

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Record of Revisions

Revision Number	Change Description	Revision Date	Inserted By
1.0	Initial release	July 27, 2022	AAL
1.1	Updated damaged ECU question, added warning about incorrect wiring, updated gateway harness pinout, added question about checking CAN network	March 1, 2023	AAL
2.0	Updated branding	September 30, 2024	AAL
2.1	Updated for ReconHub app	January 10, 2025	AAL




TIP: If you don't see your problem listed or your problem is not resolved after completing all troubleshooting steps, contact your Precision Planting® dealer for assistance.

Before you Begin

Before you begin troubleshooting, make sure that you complete the following items.

iPad and app checks

1. Make sure that your iPad has 17.5.1 or newer software installed.
2. Make sure that you have the latest version of the ReconHub app.
3. Make sure that you have the ReconHub app, not the Intelligent Ag app or the Recon Blockage Monitor app.

ReconHub app	
Recon Blockage Monitor app	
Intelligent Ag app	

4. If you are using more than one Recon product in the app (such as ReconSpreader), make sure that you are in the ReconBlockage product.
5. Plug in your iPad and make sure that it's charging.
6. Force-restart (hard reboot) your iPad. Refer to Apple's website for instructions based on your iPad type: support.apple.com/guide/ipad/force-restart-ipad-ipad9955c007/ipados.
7. Close all apps except for the ReconHub app.

Hardware checks

1. Make sure that the tractor is running.
2. Make sure that the gateway is powered on.
3. Make sure that your iPad is connected to the PrP-XXXXXX Wi-Fi network in the iPad settings.
4. Make sure that the ECUs are powered on.
5. Make sure that the ECU LED is green and blinking once per second.
6. Make sure that all other electronics in the cab are powered down.

Gateway

The gateway still broadcasts the IASBlockage Wi-Fi network after updating to the ReconHub app.

Once you've updated the gateway using the ReconHub app, the gateway will automatically reboot. Reboot the gateway again for the Wi-Fi network to update.

*To reboot the gateway through the ReconHub app, navigate to the **Diagnostics** screen in the app settings. Then, tap **Restart Gateway**.*

The new network will be named PrP-XXXXXX. "XXXXXX" represents the gateway's serial number.

The network name only changes when upgrading from the old BlockageMonitor app to the new ReconBlockage app, not during routine gateway updates.

I can't communicate with the system.

1. Verify that you are connected to the PrP-XXXXXX Wi-Fi network in the iPad's Settings page.
2. Check for app updates in the App Store. You must be connected to a home Wi-Fi network (not the PrP-XXXXXX network). If an update is available, download it.
3. Verify that you have power to your ECUs and that the green LED is blinking about once per second.
4. Verify that your gateway has power and that the LED is green.
5. Check for possible Wi-Fi interference. "Forget" any networks that the iPad has been connected to in the past that appear in the My Networks network list.
6. If you have any of the following devices connected, disconnect them:
 - Wireless camera (disconnect both the cab display and camera on implement)
 - Wi-Fi booster/relay station
 - 2-way radio
7. Go to a "quiet" location. If you're in the farmyard, drive out to a field away from the yard's electrical interference and any other interference.
8. Shut off all other electronics except for your blockage and flow monitor components.

The gateway doesn't power down.

Open the ReconHub app. If it prompts you to update the gateway, perform the update. If the update is successful, your wireless network will be named PrP-XXXXXX and the gateway will recognize the key switch (blue wire) to power off the gateway with key power.

I can see the Wi-Fi network, but I can't connect to it.

If you've recently gotten a new gateway, the system may be trying to connect to the old one. "Forget" and re-connect to the PrP-XXXXXX network.

1. Tap the **Settings** icon on the iPad home screen.
2. Tap **Wi-Fi**, then tap the network name.
3. Tap **Forget This Network**.
4. Re-connect to the network.

Where is the Gateway LED?

The LED is located on the model number label.



What does the Gateway LED mean?

LED Color	LED State	Description
Yellow	Solid	Base SDK (Software Development Kit)
White	Solid	Startup – Powered Pre-Boot
Purple/Blue	Flashing	Startup – Booting
Green	Solid	Normal Operation
Green	Flashing	Performing Safe Shutdown Sequence
Red	Solid	Recovery Mode – Boot Error
Red	Flashing	BIT Error
Blue	Flashing	Reprogramming Mode

ECU

What is an ECU?

The Electronic Control Unit (ECU) communicates the flow measurement data recorded by the flow sensors to ReconBlockage™.



The ECUs will not update.

Refer to the steps in *Before you Begin* on page 6.

Why is there a Wi-Fi symbol or disconnected plug symbol over an ECU in the app?

If you see a disconnected plug symbol , you have lost connection to that ECU.

1. Close and re-open the app.
2. Ensure that the ECU Power LED is illuminated. If it isn't:
 - a. Power down the gateway and ECUs, then power them back on.
 - b. Ensure that the ECU is plugged in to tractor power. If it is on key power, the key has to be on.
 - c. Ensure that the connectors are not damaged and that the leads are properly seated.
 - d. Check if any wiring has been pinched or cut by folding the implement wings. This may be the problem if the system was working before moving to another field.
 - e. Connect the ECU wiring harness to a different ECU and see if it powers on.
 - f. Use a multimeter to verify that the ECU power is 11 to 14 volts.

The ECU will not fit on the tower.

Refer to the instructions below for your drill manufacturer.

Pillar: These drills have a sub frame that sits under the main frame of the drill. The manifolds are mounted low, preventing the standard vertical mounting on the riser.

The ECU can be mounted horizontally on the frame directly in front of the paired manifolds with factory "frame" 3/8" u-bolts. If all run blockage is installed, it may be necessary to bolt the ECU to the back of the risers horizontally in order for the auditory tubes to reach. A bracket is required to secure one end of the ECU bracket to the risers.

John Deere: Use a horizontal bracket to mount the ECU. Otherwise, zip tie on the bottom of the bracket. A 3" U-Bolt can be used on the top of the bracket to mount it over the bottom of the manifold.

Bourgault: Use self-tapping screws into the drill's 1" support bracket.

Horsch: Primaries are 5" diameter and require a larger u-bolt than is supplied. The following parts can be procured from Butler Machinery or Horsch:

Description	Part #	Qty
U-bolt 5"	04119709	20
Washer 1/4"	S5A04000	40
Lock Nut 1/4"	00508062	40

Morris: Manifolds are a horizontal fan style. Use self-tapping screws into the frame just below the manifolds.

Other manufacturer: Contact Precision Planting for alternative mounting options for your drill.

I cannot see all of my ECUs when configuring the system.

1. Verify that you are connected to the PrP-XXXXXX Wi-Fi network in the iPad’s Settings page.
2. Check for app updates in the App Store. You must be connected to a home Wi Fi network (not the PrP-XXXXXX network). If an update is available, download it.
3. Verify that you have power to your ECUs and that the green LED is blinking about once per second.
4. Verify that your gateway has power and that the gateway LED is green.
5. Shut off all other electronics except for your blockage and flow monitor components.
6. If you’re configuring your system for the first time, make sure that the 4-pin terminator plugs are installed in the correct locations:
 - Install a 4 pin terminator plug into S2 of the leftmost and the rightmost 20’ ECU harnesses at the end of the implement.
 - If your gateway harness has two open CAN terminator receptacles and you received CAN terminator plugs with your shipment, install a 3 pin CAN terminator plug into T1 and T2 of the gateway harness.
7. Complete all other steps in *Before you Begin* on page 6.

ECUs were damaged during storage and now the ECU will not read flow.

If the ECUs were damaged during storage, it is likely that moisture or dust got into the microphone and has damaged it. Swap the auditory hose to an unused port and see if the new port works.

- If it works, navigate to **Machine Setup** in the app settings and re-assign the port.
- If it still does not work, verify that the sensor has been replaced with a new one and that the auditory tube is not kinked or pinched anywhere.

The ECUs are not connecting.

1. Refer to the table below to understand the ECU’s LED status.

LED status	Meaning
Flashing green	Normal operation
Flashing purple/blue	ECU is starting up
Flashing blue	ECU is reprogramming
Flashing white	ECU is in high fan noise calibration mode
Light off	No power to ECU or faulty ECU

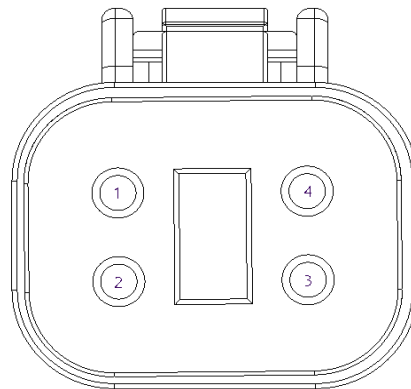
2. Refer to the steps in *Before you Begin* on page 6.
3. Check for voltage starting at the ECU closest to the center Y of the harness and record measurement observed. ECUs require a minimum of 10 VDC but may experience disconnects when below 12 VDC. If low voltage is found, trace the issue back to the closest ECU that had 12 VDC and begin checking all connections from that point on for corroded pins, debris in the connectors or damaged harness. Replace components as required.

There is power at the 4-pin plug going into the ECU, but the ECU will not turn on.

1. Check to make sure the pins are seated in the 4-pin plug.
2. Thoroughly clean the plug and make sure there is no debris or corrosion in or on the pins.
3. If the ECU still will not turn on, replace the ECU.

What is the ECU harness (353050 000097) pinout?

Refer to the pinout information below to troubleshoot ECU harness issues. The pins for each connector are the same.



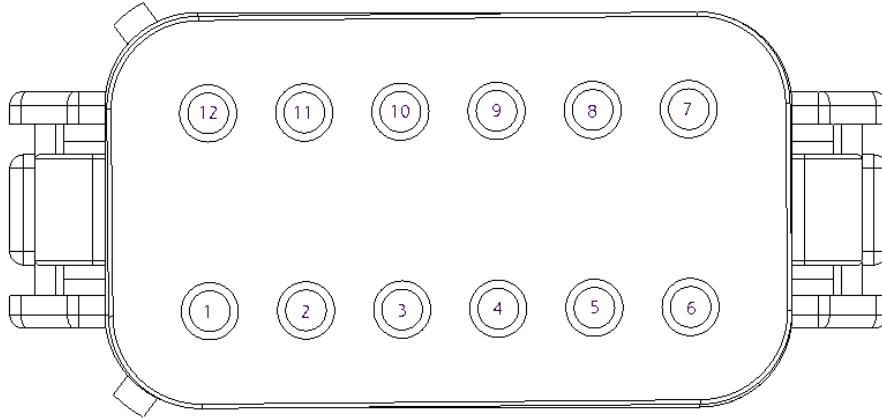
Pin	Color	Circuit Name
1	Black	Ground
2	Red	Switched Power
3	Yellow	CAN High
4	Green	CAN Low

What is the gateway harness (353050-000101) pinout for S1 and S2?

Refer to the pinout information below to troubleshoot gateway harness issues.

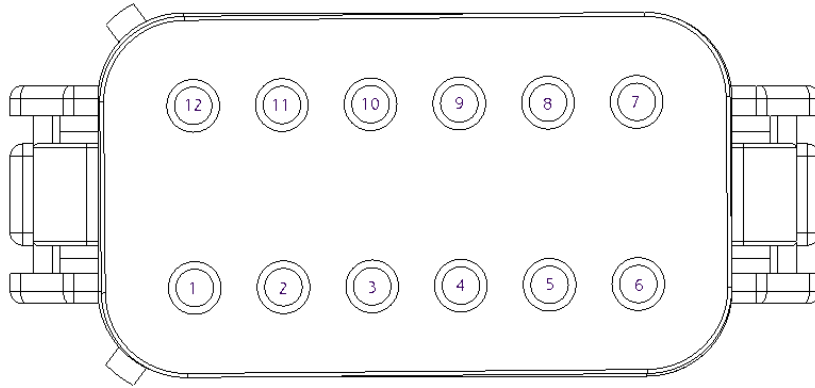
IMPORTANT: Damage could occur, and your warranty will be voided if harnessing is wired incorrectly.

S1 Pinout



Pin	Color	Circuit Name
1	Red	Power
2	Black	Ground
3	n/a	Plugged
4	White	Work Switch Positive
5	n/a	Plugged
6	n/a	Plugged
7	n/a	Plugged
8	n/a	Plugged
9	White/Black Stripe	Work Switch Ground
10	n/a	Plugged
11	n/a	Plugged
12	Blue	Switched Power

S2 Pinout



Pin	Color	Circuit Name
1	n/a	Plugged
2	n/a	Plugged
3	n/a	Plugged
4	n/a	Plugged
5	Yellow	CAN 3 High
6	Yellow	CAN 4 High
7	Green	CAN 4 Low
8	Green	CAN 3 Low
9	n/a	Plugged
10	n/a	Plugged
11	n/a	Plugged
12	n/a	Plugged

How much current does each ECU use?

Each ECU draws .088 Amps at 12 VDC.

How much current does the gateway use?

The gateway draws .295 Amps at 12 VDC.

What does the LED on the ECU indicate?

LED status	Meaning
Flashing green	Normal operation
Flashing purple/blue	ECU is starting up
Flashing blue	ECU is reprogramming
Flashing white	ECU is in high fan noise calibration mode
Light off	No power to ECU

App

Why am I experiencing section variance?

Once product flow has stabilized during seeding, use the tare function to zero out all manifold variance and start new.

1. While seeding with all sections open on a straight pass with no blockages present, tap **Settings** on the bottom navigation, then tap **General** on the top navigation.
2. Swipe up until you see Tower Variance Tare. Tap **Tare**.

*If you are not sure that your tare is current, clear the existing tare and tap **Tare** again.*

Manifold flow variances of up to 10% are common. On large implements, outer manifolds may consistently vary by more than 10%. If variances are still high after taring:

1. Verify that primary runs are clear of obstructions and buildup.
2. Remove manifold caps and run your fan to clear any debris.
3. Check for obstructions and buildup at the cart's meter roll.
4. Check for obstructions and buildup at the bottom of the bin.

If your machine is outside of the ranges above, there could be more air going to that section. The only way to verify this is with an anemometer at the towers and comparing the wind speed.

If you're experiencing section variance with a low-rate product (such as canola), refer to the steps in the next section.

Why am I experiencing section variance with a low-rate product (canola)?

This is normal. The system works by hearing the amount of sound generated by product striking the sensor plate. The size and speed of the product has a large effect on the amount of sound generated.

What is the mass flow number?

ReconBlockage™ provides a mass flow number to help you ensure consistent product application. Mass flow can alert you to equipment issues that are disrupting flow such as open bin lids, product bridging, meter buildup, and primary blockage.

It is a relative number and shouldn't be confused with seeding rate or population. The mass flow number is affected by changes in ground speed, fan speed, product type, and application rate. The best way to ensure your desired application rate is being met is by obtaining a seeds-per-pound figure from your seed supplier.

What do I do if the mass flow number is abnormal?

If there has been a recent change in rate, fan speed, or product, a different mass flow number is normal. If there hasn't, try the following steps.

1. Verify that there is product left in your bins. Flow will be reduced if a bin runs empty.
2. See if there is product bridging over the metering roll.
3. Verify that bin lids are securely latched. Verify that all primary hoses are securely attached.
4. Tap the mass flow graph at the top of the screen. Tap each time span to see if there has been a drop or rise in the mass flow over time.

Why can't I see mass flow or individual flow levels?

1. Refer to the steps in *Before you Begin* on page 6.
2. Restart the app.
 - a. Double-click the Home button (if you have one) or swipe up and right from the bottom of the screen.
 - b. Swipe left or right until you have located the ReconHub app.
 - c. Swipe up on the app's preview to close it.
 - d. Press the Home button (if you have one) or swipe up from the bottom of the screen to return to your home screen. Re-open the app.
3. Check for app updates in the App Store. You must be connected to a home Wi Fi network (not the PrP-XXXXXX network). If an update is available, download it.
4. If you have a dual or triple product system but can only see one mass flow number, make sure that the system is configured to monitor multiple products and that Airstream A, B, and C manifolds are correctly assigned and enabled in the crop type preset.

Why am I seeing false blockages?

1. Do a crank test to ensure that product flows from each opener.
2. On air seeders, ensure that you can feel air flow beneath the opener.
3. Ensure that the flow rate is set correctly in the app's settings page.
4. Configure light products, such as canola, flax, alfalfa, and grass, as "low" product flow in the job preset settings. Configure very low-rate products such as sunflower as "very low" product flow.
5. Navigate to the **Machine Setup** screen in the app settings. Tap **Next** to navigate to the **ECUs** page, and verify that each primary or section has the correct ECU serial number assigned to it.
6. Navigate to the **Machine Setup** screen in the app settings. Tap **Next** twice to navigate to the **Ports** page, then verify that ECU ports are correctly mapped.
7. Verify that you are checking the right hose. Before shutting off product flow, take a screenshot of the blockage screen by tapping **Snapshot** in the upper left corner. The screenshot will be stored in your iPad's photos.
8. Verify that the auditory hose is not kinked or pinched.
9. Verify that the auditory hose is attached to the correct ECU port.
10. Verify that the auditory hose is securely attached to the ECU by pushing the hose onto the ECU port.
11. Move the auditory hose to a new port on the ECU to assess if the problem is a port on the ECU not functioning correctly. Ensure that you re-assign that run to the new ECU port in the app.
12. Verify that sensors are not installed backwards or upside down. The arrow on the sensor should point downward.
13. Check if the sensor is clogged or has buildup on the membrane.
14. Disconnect the seed hose to check for buildup on the sensor membrane.

How do I add additional sensors (runs) to an existing system?

1. Verify that the sensors you have are the same size and style as the currently installed sensors.
2. Verify that you have enough available and working ports to accept the new sensors on the ECUs.
3. Install the sensors in the same manner as the other sensors on the drill. Make note of what tower, ECU serial number, run, and ECU port the sensors are connected to.
4. Open the app. Tap the **Settings** icon, then tap **Machine Setup**. Change the number of runs accordingly on each tower.
5. Navigate to the next setup page (ECU). Edit each ECU to make the layout on screen match the actual layout on the drill by assigning the correct ECU serial number to the correct location on the machine.
6. Navigate to the next setup page (Ports). Edit each ECU to make the layout on screen match the actual layout on the machine by assigning the correct sensor to the correct port.
7. Tap **Apply Changes**.
8. Navigate to the Dashboard screen and verify that the new sensors were added.

The mass flow does not change in the app.

1. Verify that the work switch position is correct in the Settings page.
2. Verify that the work switch status in the app is green when seeding.

The work switch status in the app is green when the drill is in the air and red when it is in the ground.

Navigate to the **Settings** page in the app and change the work switch position to match your machine.


The alarms are not making any noise.

1. Verify that the iPad is not muted with the side switch (if you have one).
2. Verify that the iPad volume is not at zero.
3. Adjust the alarm volume in the Alarms settings.
4. Verify that the work switch status in the app is green.
5. Verify that you are on the Dashboard screen. Alarms are silenced on other pages.
6. Make sure that the iPad is not connected to any other audio devices via Bluetooth.
7. Force-restart the iPad. Refer to Apple's website for instructions based on your iPad type: support.apple.com/guide/ipad/force-restart-ipad-ipad9955c007/ipados.

How do I update the ReconHub app?

1. Download updates from the App Store.
 - a. Connect the iPad to an internet-enabled network.
 - b. Open the App Store and search for *ReconHub*. If there is an update available, tap **Update**.
 - c. Keep the iPad connected to the internet until the app is downloaded.
2. Update the ReconBlockage applet in the Hub:
 - a. Connect the iPad to an internet-enabled network.
 - b. Open the ReconHub app.
 - c. Sign in to your account if required.
 - d. If there is an update available, there will be a green **Update** button in place of the Downloaded button.
 - e. Keep the iPad connected to the internet and download the update.
3. Take the iPad to the machine and connect to the PrP-XXXXXX network. Check the following:
 - a. Verify that the tractor is running.
 - b. Verify that the iPad is fully charged and connected to a charging cable.
 - c. Verify that the ECUs all have a minimum of 12 VDC.
 - d. Verify that the gateway has power.
4. Open the app. The first time you open the app, it will automatically update your gateway, then your ECUs.

Why are there no audible alarms when a blocked run is displayed?

1. Verify that the iPad is not muted with the side switch (if applicable) or that the volume is not turned all the way down. Swipe down from the top right corner of the iPad screen and make sure that the mute  icon does not appear.
2. Adjust the alarm volume in the Alarms settings.
3. Verify that audible alarms are enabled in the app's settings.
4. Make sure that the iPad is not connected to any other audio devices via Bluetooth.
5. Verify that the alarm delay in the app's settings isn't set too high.
6. If you are dual or triple shooting, ensure that the app is configured for multiple products.
 - a. Tap **Settings**.
 - b. Tap **Machine Setup**.
 - c. Make sure that **Double** or **Triple** is selected in the top right corner.
 - d. Re-configure the system if necessary.

7. Lift and lower the implement and verify that the work switch indicator in the app changes.
8. Restart the app.
 - a. Double-click the Home button (if you have one) or swipe up and right from the bottom of the screen.
 - b. Swipe right until you have located the ReconHub app.
 - c. Swipe up on the app's preview to close it.
 - d. Press the Home button (if you have one) or swipe up from the bottom of the screen to return back to your home screen.
 - e. Re-open the app.

My port configuration isn't saving.

Make sure that you tap **Apply Changes** in the upper right corner to save your configuration.

I have the Intelligent Ag™ or Recon Blockage Monitor app. How do I get the ReconHub app?

NOTE: For the ReconHub app to pull in your existing configuration, make sure that you have at least version 3.4 of the Recon Blockage Monitor app.

1. Download the ReconHub app from the App Store.
 - a. Connect the iPad to the internet.
 - b. Tap the App Store icon from the iPad's home screen.
 - c. Type *ReconHub* in the search field and tap **Search**.
 - d. Tap **Get** next to the ReconHub app in your search results and install the app.
2. Delete the old app once you've started using the new app and it has imported your existing configuration.

The High Fan Noise calibration is not working.

NOTE: High fan noise calibration is only compatible with 14-port ECUs.

1. Make sure that your tractor is idled up to the RPM that you're seeding at.
2. Make sure that your fan RPM is set to the speed that you're seeding at.
3. Make sure that you have the correct airstreams selected.
4. Make sure the calibration has run, and no warnings are present.
5. Your system may not need to be calibrated for high fan noise. These machines are most likely to need high fan noise calibration:
 - SR750
 - John Deere 1990 CCS
 - Case IH Precision Disk 500T

Sensors

I have fertilizer buildup on my sensors.

Cleaning Buildup

Fertilizer buildup on sensors can cause false blockages in the app. Gently scrape off buildup with a plastic scraper. Or, use a garden hose with a nozzle. If you use water to clean the sensor, make sure the system is completely dry before running product through it.

Preventing Buildup

Fertilizer build-up issues often depend on the quality of the product supplied to you. Dusty products combined with high humidity can coat many components throughout an air seeder. The blockage sensor is oftentimes the first indication of poor quality fertilizer, and without it, you may be caught unaware when this muck plugs a manifold or metering roll. If you have encountered this issue, we recommend adding one or more of the following:

- Soy or canola oil additives: thecombineforum.com/threads/anyone-applied-soy-canola-oil-to-fertilizer.201322
- Nitrogen Stabilizer (Agrotain): kochagronomicservices.com/agrotain
- Substitute sulfate products with Mezz or 40 Rock
 - Mezz (12-40-0-10s-1zn)
 - 40 rock (12-40-0-7s-1zn) (least dusty)
- Blockage Prevention System: The BPS is a hydraulic oil cooler that significantly reduces humidity. More info: airguardproducts.com/Store/Airguard-Blockage-Prevention
Detailed results: thecombineforum.com/threads/airguard-blockage-prevention-system.199930

How do I mount my sensors?

Refer to the section called *Installing Flow Sensors* in the ReconBlockage™ Installation Manual at cloud.precisionplanting.com/product-resources.

Why are my sensors wearing out?

It is normal for sensors to start to wear out after 5-7 years in regular conditions.

Can I shorten or lengthen the auditory tubes?

No, all of the auditory tubes need to be the same length so that the same amount of sound is coming from each sensor.

What is the maximum distance that a sensor can be mounted from the tower?

There is no maximum as long as all of the sensors on the machine can be mounted at equal distances from the tower. They must also be mounted so that the exit end of the sensor is lower than any other portion of the hose between the manifold and sensor. We recommend a minimum of 8” from the tower.

My sensors are not showing flow.

1. Swap sensor locations to the opposite part of the manifold or try a different manifold. It is possible the sensor is on a part of the manifold that does not have as much product running through it as the other runs, thus giving a lower acoustic signal.
2. Checked for a kinked acoustic hose.
3. Take off the sensor and look to see if there is build-up on the plate.
4. Swap the acoustic hose with another sensor that is working and see if it moves to the other sensor.
 - If it moves to the other sensor, then the sensor is damaged.
 - If it stays on the same port, then the microphone in the ECU is damaged.
5. Check for unusual wear in the poly around the metal plate in the sensor.
6. Check for cracked gaskets.
7. Check for dented plates.

Can I replace parts of a sensor?

No, the sensors are not repairable components.

Can I replace the auditory tubes?

Yes, order the 10’ auditory tube from your dealer (part number 353070-000082).

My hoses are loose in the sensor. Do I need adapters?

Yes, refer to the list of part numbers below for your sensor type. Call your dealer to order adapters.

Adapter Measurement	Part Number
1-1/4" to 1"	353070-000252
1-1/4" to 15/16"	353070-000112
1-1/2" to 1"	353070-000022

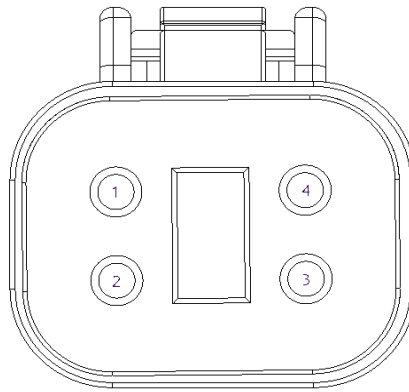
Harness

Do I need to run power to the tractor cab?

Yes, the gateway and ECUs require clean 12-volt power and key switch power.

How do I check if the CAN network is working properly?

Use a multimeter to check the resistance across the ECU harness (353050 000097) CAN High and CAN Low wires. When the CAN network is terminated properly, it should be approximately 60 ohms.



Pin	Color	Circuit Name
1	Black	Ground
2	Red	Switched Power
3	Yellow	CAN High
4	Green	CAN Low

Work Switch

The work switch is not working.

The work switch is a mercury switch, which means the switch is engaged when the mercury inside is tilted toward the wires and it contacts the electrical leads.

Mount the work switch in a location where the work switch tilts from one end to the other when the toolbar is changing from raised to lowered positions.

Appendix A: System Configuration Table

Use the following table to record notes about your system configuration. To view your current configuration in the app, tap **Settings > General > Machine Setup**.

Airstream A, B, or C	Manifold or Section #	# of Runs	ECU Serial #	Notes on Ports Out of Sequence (e.g. "Run 5 on Port 12")