

SpeedTube™

SpeedTube Operator's Manual For Gen 3 20|20 Displays



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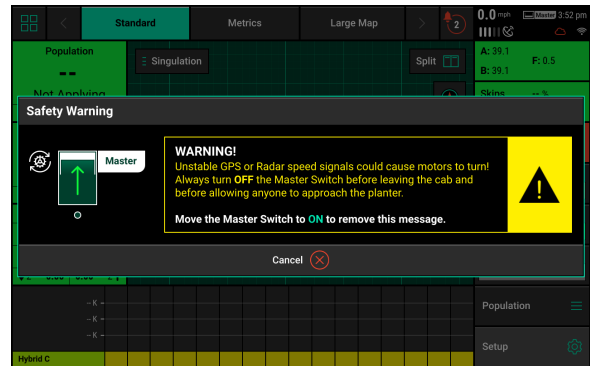
Safety Warning

Once any control product is configured on the 2020 display, the system will require a Cab Control Module (CCM) and will prompt the user to toggle the Master Plant switch on the CCM before any control products can be used. This warning is triggered any time the system is booted up, and when the system has traveled for more than half a mile.

Note: This Safety Warning will only appear in 2020.1.x and newer software.



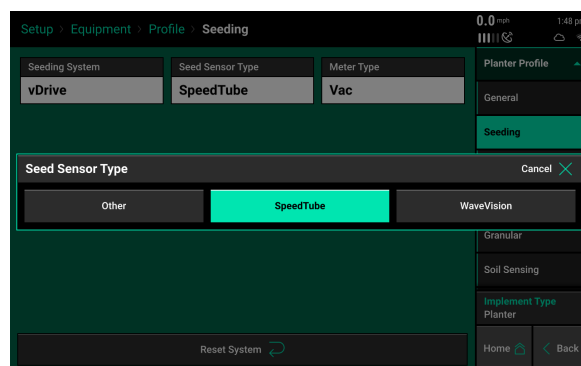
If a CCM is not installed, the cancel button can be used to bypass this warning. No control systems will operate until the Master Plant switch is toggled. This icon will be present in the status button in the top right if the Safety Warning was bypassed using the cancel button.



SpeedTube Setup

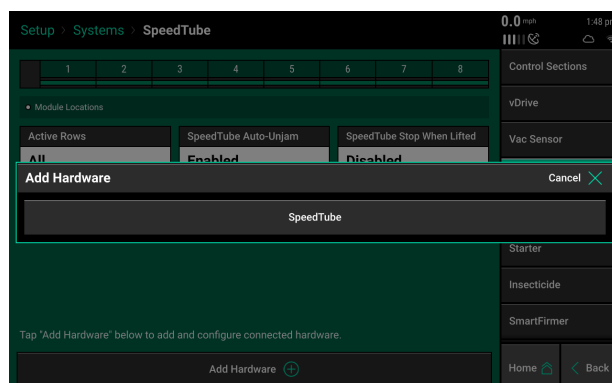
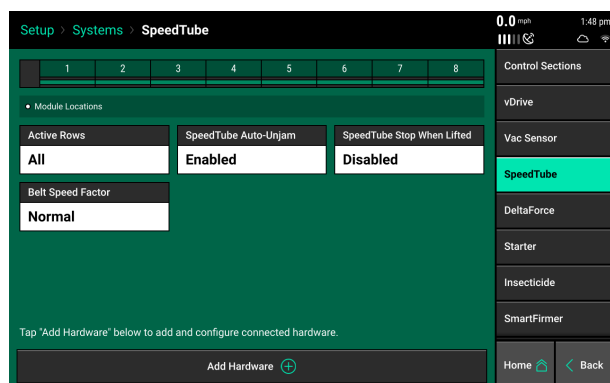
To begin configuring the monitor for Speedtube, navigate on the monitor to Setup — Equipment — Seeding. Select Seed Sensor Type and change it to SpeedTube.

Note: If the system is running 2020.0.x or older software, the system will automatically detect when SpeedTube is plugged in, and no setup is necessary.



Add Hardware

Once the seed tube type has been changed to SpeedTube, a SpeedTube tab will appear on the systems tab. Go to Setup — Systems — SpeedTube to configure SpeedTube. Use the 'Add Hardware' button at the bottom of this page to assign which rows have SpeedTube installed.



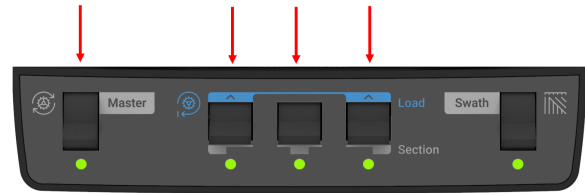
SpeedTube Auto-Unjam — When enabled, SpeedTubes will automatically reverse belt direction to clear a detected jam/obstruction.

SpeedTube Stop When Lifted — When Enabled, this setting will stop the SpeedTube belts when lifted. Enabling this is **NOT RECOMMENDED** unless specifically required requested by your dealer or Product Support.

Belt Speed Factor — Belt Speed Factor can be changed to adjust the belt to run at a factor slower or faster. Changing this is **NOT RECOMMENDED** unless specifically required requested by your dealer or Product Support.

SpeedTube Operation

SpeedTubes will operate anytime the Master Plant or a single Section Plant switch is active on the Cab Control Module. If the planter is not moving (lifted or lowered), SpeedTubes will operate at a minimum belt speed. To deactivate SpeedTube operation, the Master Plant and all three Section Plant switches must be off.



Vacuum Setting

Increased vacuum is sometimes necessary when operating SpeedTube at higher speeds. This will help limit seeds from dropping off the disk (due to increased rough ride) before reaching the feeder wheels.

Ride Quality Metric

Ride Quality is of limited significance when SpeedTube is installed across the whole planter. As long as other planting metrics (SRI, ground contact, etc.) are acceptable, “poor” Ride Quality will not impact performance. Operators should not limit speed based solely on Ride Quality. The “Smooth Ride Limit” can be adjusted as needed by going to Setup – Crops – Limit Adjustments.

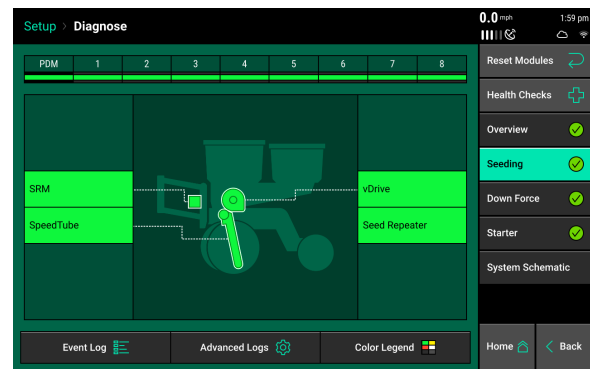
SpeedTube Diagnostics

When components are powered and communicating properly with the Monitor, modules will be green on the diagnose page.

Navigate to the SpeedTube Diagnose page by selecting: Setup — Diagnose — Seeding — SpeedTube.

Note: When running 2020.0.x and older software, simply navigate to the SpeedTube button on the Diagnose page.

The SpeedTube Diagnostic page displays the following information for each row:



The screenshot shows the 'SpeedTube' diagnostic page with a table of performance metrics for 8 rows. The table includes columns for Row, Flights per Second Act, Flights per Second Cmd, Stability, Supply Volts, Drive Amps, Duty Cycle, and Seed Count. The bottom of the page displays additional system metrics: Lift State (Lowered), Radar Speed (4.3 mph), GPS Speed (0.0 mph), FWD Accel (0.000 ft/s/s), Master Plant (On), and Turn Rate (0.00 deg/s).

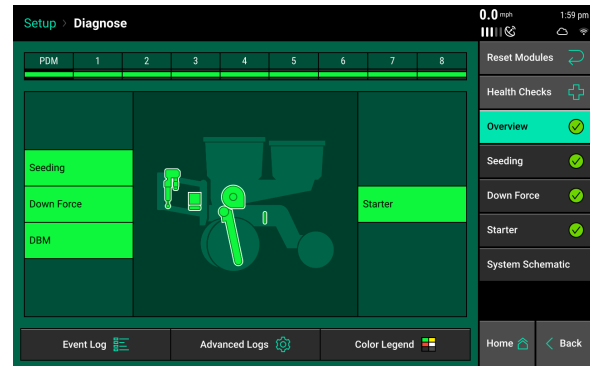
Row	Flights per Second Act	Flights per Second Cmd	Stability	Supply Volts	Drive Amps	Duty Cycle	Seed Count
1	54.0	54.4	99%	11.65	0.40	29%	0
2	0.0	54.4	0%	11.65	0.53	100%	0
3	55.5	54.4	99%	11.55	0.66	35%	0
4	55.1	54.4	98%	11.70	0.43	37%	0
5	55.6	54.4	99%	11.65	0.71	34%	0
6	55.1	54.4	99%	11.60	0.36	32%	0
7	54.1	54.4	99%	11.68	0.33	29%	0
8	55.5	54.4	99%	11.70	0.42	32%	0

- Speed Source – Will display speed readings for both GPS and Radar
- Actual FPS (Flights per Second) – Measure of SpeedTube belt speed and is the number of belt flights per second as detected by seed sensors.
- Command FPS (Flights per Second) – SpeedTube belt speed or flights per second as commanded.
- Stability – Displays stability of SpeedTube motor.
- Supply Volts – Voltage at SpeedTube Module.
- Drive Amps – SpeedTube current draw in amps.
- Duty Cycle – Displays SpeedTube motor output over the operating range.
- Total Seeds– Seeds detected on each row.

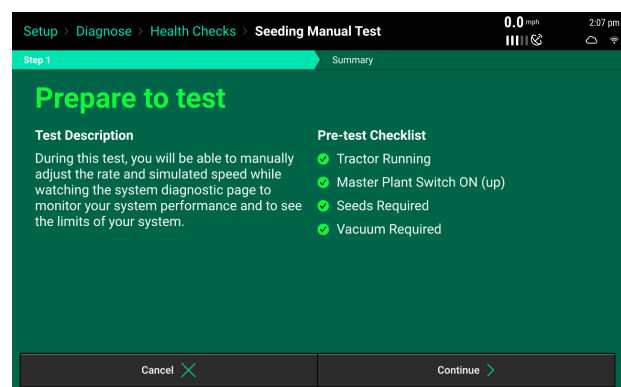
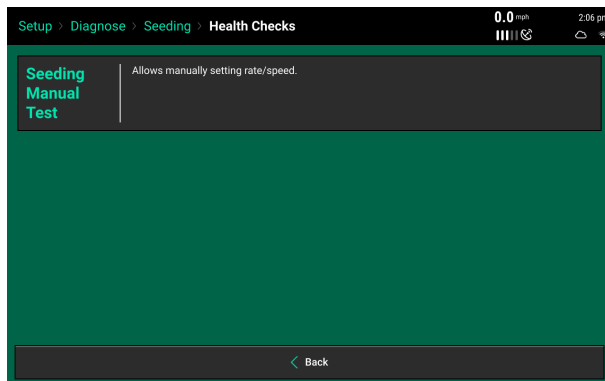
Additionally: Lift State position, Radar speed reading, GPS speed reading, Forward Acceleration, Master Planter Switch position, and Turn Rate will be displayed at the bottom of the page.

SpeedTube Health Checks

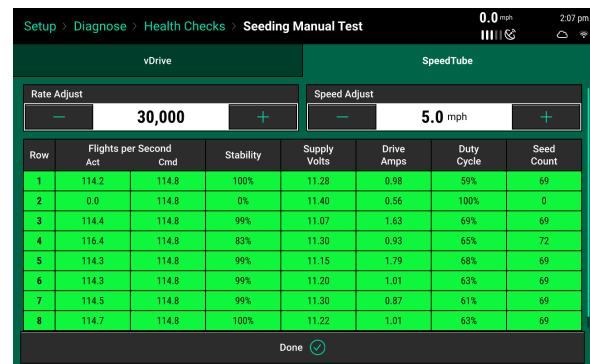
After all components are detected and communicating properly, SpeedTube Health Checks should be performed. The Health Check page can be accessed from the SpeedTube Diagnostic page by selecting “Health Checks” from the navigation pane on the right hand side of the screen.



Select “Seeding Manual Test” and follow the onscreen prompts for test requirements and to begin the test.



The health check will operate by changing the rate adjustment and speed adjustment. This will spin your vDrive meters and SpeedTubes and allow you to check the performance of the SpeedTubes individually.



Below are the failure thresholds to look for during the health check:

Stability

0.5 MPH Test: +/-6%

10 MPH Test: +/-3.5%

Voltage

<10 volts

Amperage

0.5 MPH Test: >0.5 Amps

10 MPH Test: >4.0 Amps

Duty Cycle

0.5 MPH Test: >30%

10 MPH Test: >95%

The results page will be red for rows which no information was received and yellow for any values out of range.

In the event of a failed Health Check, reference the instructions listed below.

- Voltage Failure: There is low supply voltage. Check harnessing for damage and ensure alternator is operating.
- Amperage Failure: Ensure voltage is within range. Check for obstructions or misaligned parts in SpeedTube.
- Duty Cycle Failure: Check for obstructions or misaligned parts in SpeedTube.

Note: If problems persist, refer to the Dealer Service Manual for more detailed information.