

Weigh Pin Diagnostics

The 20/20 is constantly assessing the weigh pins for accurate healthy performance. The monitor will classify weigh pins in one of three states at any one time. There are three modes in which weigh pins are assessed in the 20/20 monitor. Healthy (ACTIVE), Faulted, & Monitored. This document will explain the diagnostic process used by the 20/20 to determine the health of the weigh pin.

1. **ACTIVE:** Weigh pin is healthy and reliable. The 20/20 trusts it's readings.
2. **Faulted:** This generates a pop-up on the 20/20. The 20/20 will no longer react to the readings that are given from this weigh pin. This will show yellow on the Load Cell & Diagnostic Screen and gray on FieldView.
3. **Monitored:** The pin readings cause the 20/20 to be uncertain on the reliability of the pin. In this scenario, the 20/20 will show this weigh pin as ignored (gray on Fieldview), but will continue to monitor the readings of the weigh pin. **NO pop-up message is generated on the 20/20 at this time.** After the planter is lifted, the 20/20 will monitor the readings from this weigh pin for 120 seconds and determine whether the readings from this pin are accurate. If unexpected readings continue, the pin will continue to be ignored. If the readings are within spec, the 20/20 will automatically bring this weigh pin back into an active status. If a weigh pin stays in a monitored state for multiple cycles, the 20/20 will deem the weigh pin faulted.

All weigh pins use the same diagnostic process within the 20/20, but we have found certain instances weigh pins are more susceptible for entering a monitored status.

- Sudden impacts or any other momentary shock to the row unit typically will alert the 20/20 to gray out the weigh pins.
- Higher speeds with higher downforce target (example Target 190lbs @ 7MPH).

Proper installation of load cells is mandatory to ensure accurate readings from weigh pins. The weigh pin will not read weight accurately if the CAL Factor is incorrect. Use the chart below to reference CAL Factors.

Calibration Factors for each type of load cell:		
Load Cell	Row Units	Calibration Factor
1/2" Load Pin	John Deere 7000 and Kinze 2000 row units	85
5/8" Load Pin	John Deere 7200 row units and newer	85
Kinze Link	Kinze 3000 and 4900 row units	65
White Smart Link	White 6000 and 8000 row units	65

White Smart Pin	White 9000/Precision Ready Row units	143
Case 1200 Sensor	Case IH 1200 row units	65
Case 2100 Sensor	Case IH 2100 row units	196
Monosem 5/8" Load Pin	Monosem NG+ 3 and 4	95

Here are examples of the difference between a Faulted pin and a Monitored pin on the 20/20 Monitor and FieldView.

20/20

Row 1-Monitored
Row 2-Active
Row 3-Faulted
Row 4- Active

Down Force Calibration

Row	Pin Reading	Cal Factor	Reference Value	Load Sensor
1	352	85.00	32.03	Ignored
2	377	85.00	32.05	Active
3	--	--	--	Disabled
4	377	85.00	32.05	Active

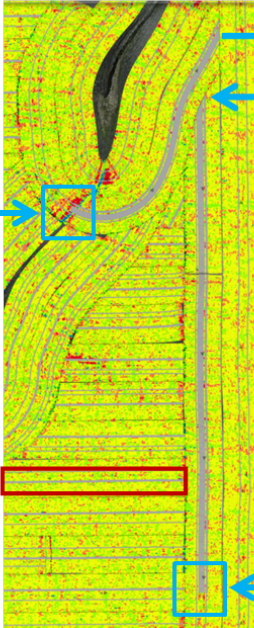
Row 3- Faulted row generates Pop-up

Event #930

Load sensor on row 3 is reporting a signal failure. Please replace the load sensor

OK
More Info

FieldView



1- At ditch, weigh pins give unexpected readings due to terrain. 20/20 automatically disables control & mapping of this weigh pin, but continue to monitor readings.

2- Planter lifts and begins next pass. Weigh pin will be monitored for 120 seconds.

Pin is faulted generating pop-up. 20/20 will not re-activate weigh pin automatically

3- 20/20 deems readings from weigh pins acceptable after for the 120 seconds of planting. Pins are automatically reactivated

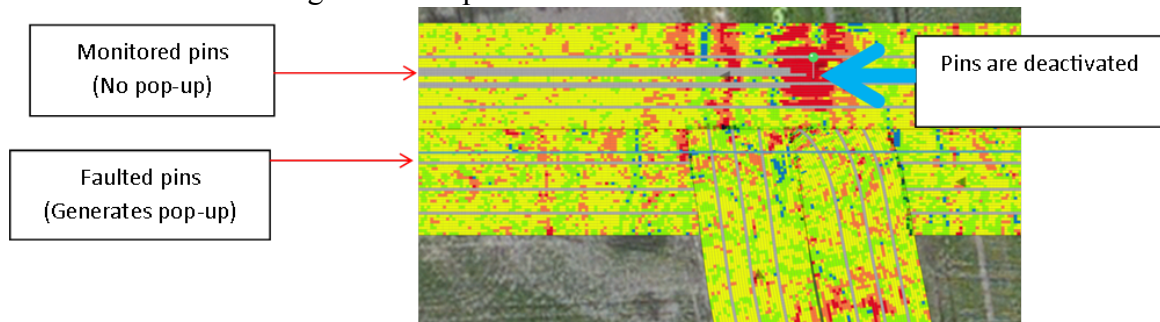
When does a weigh pin map turn gray on FieldView?

- A weigh pin will show gray on the downforce map when the 20/20 does not trust the readings from the weigh pin, this includes faulted and monitored.

What is the difference between a faulted weigh pin and a monitored weigh pin?

- A failed weigh pin may or may not be easily detected by the 20/20. In a scenario with an unexpected weigh pin reading, but the reading does not meet criteria of a faulted pin, the 20/20 will place the weigh pin in a monitored mode.
 - Faulted: A failed weigh pin will promptly flag the 20/20 and give the user a pop-up.

- **Monitored:** A weigh pin being monitored will not create a pop-up, but will be ignored in the 20/20 for monitoring. See example Below.



When do we let a monitored weigh pin back in?

- The 20/20 will automatically bring a monitored weigh pin back to active if it shows healthy during the monitored timeframe. In a case where the weigh pin is monitored, it has flagged the 20/20 that there could be an error in signal from the weigh pin. Once the 20/20 ignores this pin it will show gray on the downforce map (FieldView). This weigh pin will continue to show gray on the planter map for the rest of the pass, then once the planter is lifted and lowered for next pass it will continue to monitor for a minimum for 120 seconds on the next pass. If the weigh pin shows readings that are acceptable within spec, then the 20/20 will allow this weigh pin back into system as active. If a weigh pin stays in a monitored state for multiple cycles, the 20/20 will deem the weigh pin faulted.

When do we need to replace the weigh pin?

- Anytime, the user gets a pop-up that advises to replace a weigh pin, the weigh pin needs to be replaced
- If no pop-up is given for a weigh pin diagnostics, best practice is to use the multi-tester to determine health of weigh pin. The multi-tester will be able to determine all faults except that of when the weigh pin is being monitored.
- Also re-Zero weigh pins to see if weigh pin has true zero.
- Another check is to press LOAD CELL on Diagnose page and look at REF VALUE- (This value should be between 28-36).

What do we control to when the pin is being monitored or faulted?

- DeltaForce (still individual) will control to the 80% of the overall planter average for its commanded downforce or lift.
- AirForce will continue to use the rest of the pins (minimum 3) to determine what downforce or lift needed on row units.