

LOAD CELL TROUBLESHOOTING GUIDE

SeedMaster is offering this tutorial for all dealers and customers regarding 2012 and newer equipment manufactured with Product Scale technology. This technology is what enables SeedMaster machines to further increase metering accuracy through an automated calibration check. Through 2012-2016 model years, SeedMaster proudly used Digi-Star technology. During the implementation of ISO compatibility, SeedMaster shifted into Scale-Tec components for 2017 and newer. Infrequently, the load cells that provide the readings from each individual product tank can malfunction or become inaccurate. This will manifest on the monitor as erratic readings or no reading at all. Small weight fluctuations are completely normal and to be expected while operating in the field; however, if these fluctuations begin to reach into the thousands, are a consistent “clock ticking” up or down, or the reading is lost altogether, the following 2 methods will assist in diagnosing the issue. The first procedure will require a multimeter. The second procedure will be used if you do not have access to a multimeter.

Multimeter Procedure

This procedure will work for load cells that utilize wires in clip-style terminals or 6-pin Deutsch plugs. Please ensure that you refer to Figure 1 for Digi Star and Figure 2 for Scale Tec to ensure that your wire combinations are correct.

1. If no scales are reading, start with performing a scale set up, calibration, and zero. This procedure can be found within your model year's Operator's Manual.
2. If a scale's readout remains lost, open the junction box, look for breaks, pinches, or corrosion and separate each load cell's wires from the terminal.
3. Check the resistance on the wires according to the following charts:

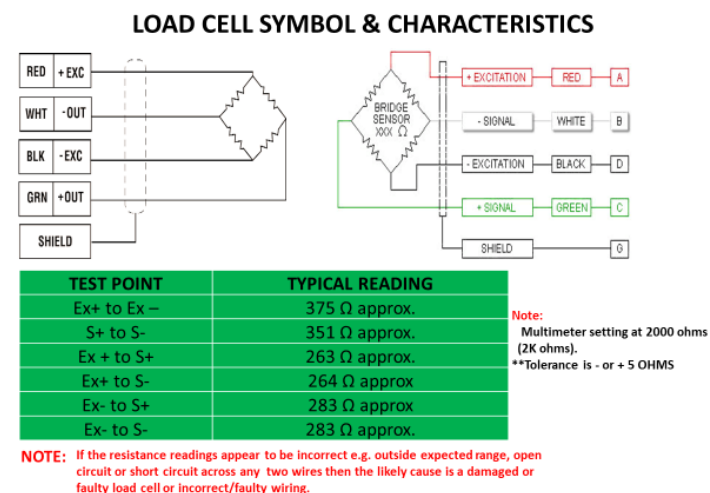


Figure 1 Digi Star Load Cells

LOAD CELL 6 PIN DEUTSCH CONNECTOR

PIN	Color	
1	RED	=POSITIVE (+)
2	BLACK	=GROUND (-)
3	WHITE	=LOAD CELL SIGNAL (+)
4	GREEN	=LOAD CELL SIGNAL (-)
5	BLACK	=SHIELD
6	EMPTY	

Figure 2 Scale Tec Load Cells

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4. If your readings come back within the specifications listed, then the load cell being tested is functional. If they are outside that specification, then the load cell will require replacement. Repeat this for all four load cells on the tank.
5. If the load cells all test as operational, you will need to then check the Scale Link (2012 – 2016) or RCM harness (2017 – present). If you are checking the RCM harness, verify there is no corrosion and all pins are intact and not pushed back. If you have a Scale Link, follow this sub-procedure:
 - a) For a single scale link, you will need to remove the cover and inspect the internal wiring. A wiring diagram is available on the inside of the protective cover. Ensure that the gaskets are not damaged since moisture ingress will cause future issues. Check for breaks, pinches, or corrosion.
 - b) If multiple scale links are available, or you are using an SL 130, switch the wiring around from link to link or tank to tank to prove whether the malfunction follows the swap. If it does not, the scale link will need to be replaced.
6. When replacing load cells, there is a possibility that different brands may be used as they are available. Please use Figure 3 to ensure that the wiring is correct for each different brand:

PIN	FUNCTION	DIGI STAR BLACK	DIGI STAR SILVER	SCALE TEC	AVERY WEIGH TRONIX
1	POSITIVE SUPPLY	RED	RED	RED	GREEN
2	NEGATIVE SUPPLY	BLACK	BLACK	BLACK	BLACK
3	POSITIVE SIGNAL	WHITE	GREEN	WHITE	WHITE
4	NEGATIVE SIGNAL	GREEN	WHITE	GREEN	RED
5	GROUND	TRANSP	TRANSP	TRANSP	BARE

Figure 3

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No Multimeter Procedure

1. If no scales are reading, start with performing a scale set up, calibration, and zero. This procedure can be found within your model year's Operator's Manual.
2. If a scale's readout remains lost, start by checking the wiring from each load cell on that tank, following it to their junction box (Figure 4 – Digi-Star, Figure 5 – Scale-Tec) and then to their "Scale Link" (Figure 6), or Raven RCM harness (2017 and newer). Look for breaks, pinches, or corrosion.
3. After examining the wiring, check the junction boxes. Older models will require you to open them up to inspect. Ensure that the gaskets are not damaged since moisture ingress will cause future issues. Analyze internal wiring for breaks, pinches, or corrosion. Newer model junction boxes will simply require pins to be checked for damage, corrosion, and continuity. If issues are found, replace the faulty junction boxes.
4. Once the junction boxes have been confirmed as functional, check the Scale Link. Depending on your setup, you may have a SL110, SL130, or both. If you don't have a Digi Star Scale link in your system, continue to step 5:
 - a. For a single scale link, you will need to remove the cover and inspect the internal wiring. A wiring diagram is available on the inside of the protective cover. Ensure that the gaskets are not damaged since moisture ingress will cause future issues. Check for breaks, pinches, or corrosion.
 - b. If multiple scale links are available, or you are using an SL 130, switch the wiring around from link to link or tank to tank to prove whether the malfunction follows the swap. If it does, proceed to the next step. If it does not, the scale link will need to be replaced.



Figure 4



Figure 5



Figure 6

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5. With all wiring, junction boxes, and scale links confirmed functional, the load cells will need to be diagnosed. It is recommended to perform the following diagnostic procedure when empty:
 - a. Disconnect all load cells on the tank with the malfunction. Depending on your generation of machine, you will do this either at the load cell (Figure 7), or the junction box (Figures 8 & 9).
 - b. Connect one load cell back into the system.
 - c. Add a known weight to the tank.
 - d. Check the monitor's reading. It should be 25% of the known weight applied.
 - e. After confirming the weight, disconnect that load cell and move in sequence to the next. Keep testing in this manner until you find a load cell that produces an erratic or no reading.
 - f. Once the defective load cell has been identified, it will need to be replaced. Refer to Figure 3 to ensure that the wiring is correct.



Figure 7



Figure 8 Scale Tec



Figure 9 Digi Star

We thank you for maintaining your SeedMaster equipment. If you have any questions, please contact your SeedMaster Certified Dealer directly.