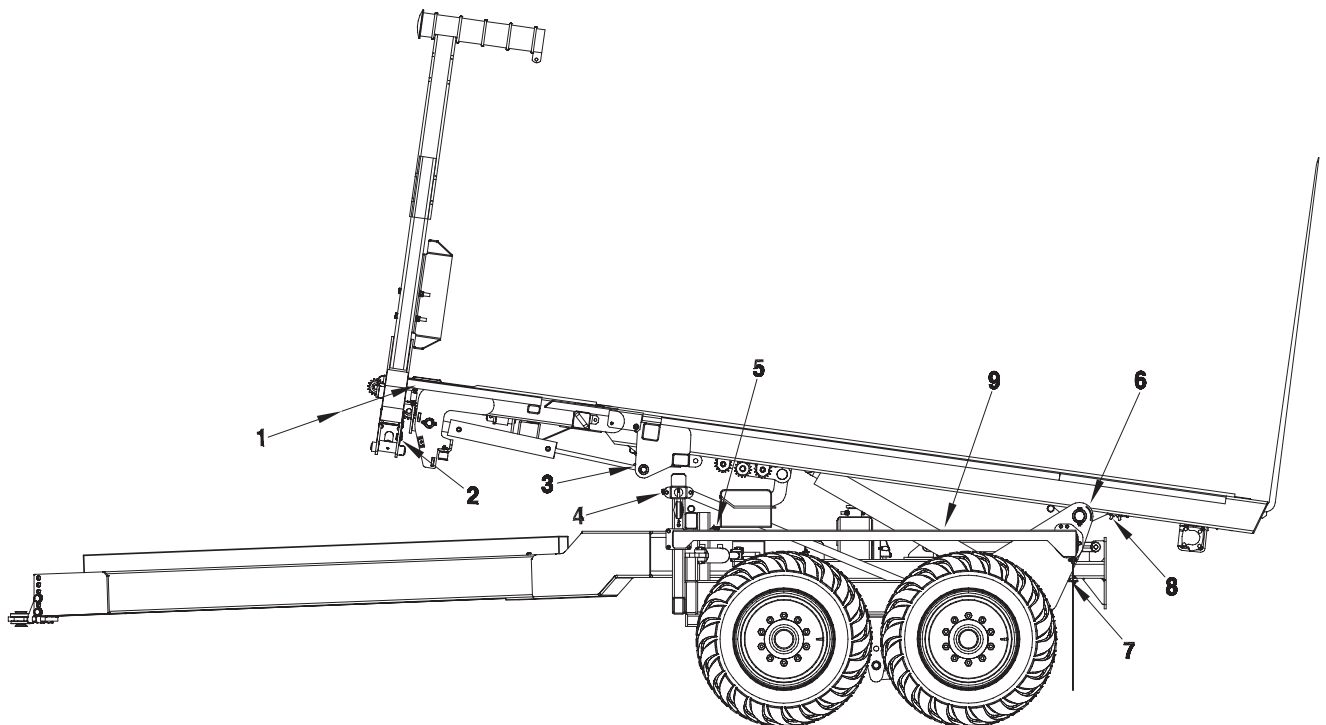


16k PLUS Control System

The 16k PLUS is operated from the monitor in the cab of the tractor, which contains all the computer programming and controls the functions of the stacker. The monitor communicates with the control box on the stacker via a hitch cable. The control box is responsible for opening and closing the valves and monitoring the sensors.

Common Sensor Troubleshooting

There are eleven sensors on the 16k PLUS: nine ferrous metal sensors, one pressure sensor, and one shaft sensor. This manual will refer to each of the sensors by name. Use the following diagram to locate each sensor:



Ferrous Metal Sensors

Ferrous Metal Sensors are located at points 1, 2, 3, 4, 5, 6 and 7 in diagram above. See next two pages for photos of sensors.

The ferrous metal sensors read either true or false. A true reading indicates a piece of steel is near the sensor. (must be magnetic steel). The function of a sensor can be checked by placing a steel washer on the sensor, and checking the reading on the monitor (see Measure - Sensors menu) the sensor should read "true" when it is activated. If the sensor is unplugged, it should read false.

Important: Insufficient gap may allow the sensor to contact moving parts and be destroyed.

Troubleshooting

16k PLUS Control System - Continued

Sensor Troubleshooting - Continued

Ferrous Metal Sensors - Continued

Common causes for the ferrous metal sensors to not function properly include:

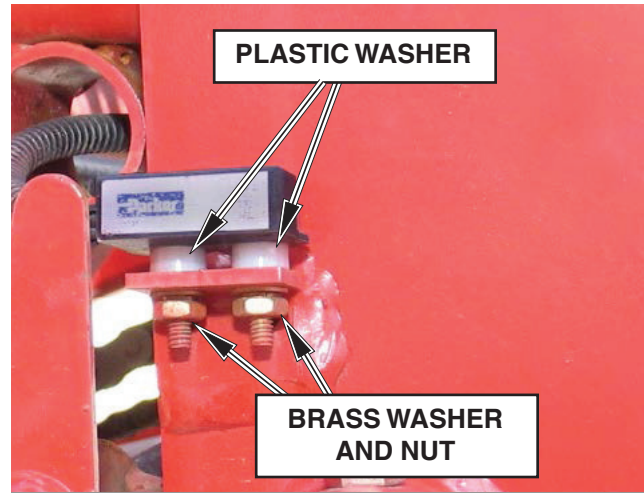
- Incorrect sensor gap: The gap between the sensor and the metal meant to activate it should be between 1/8 and 1/4 of an inch. If the gap is too large, the sensor will not turn true.

Important: Insufficient gap may allow the sensor to contact moving parts and be destroyed.

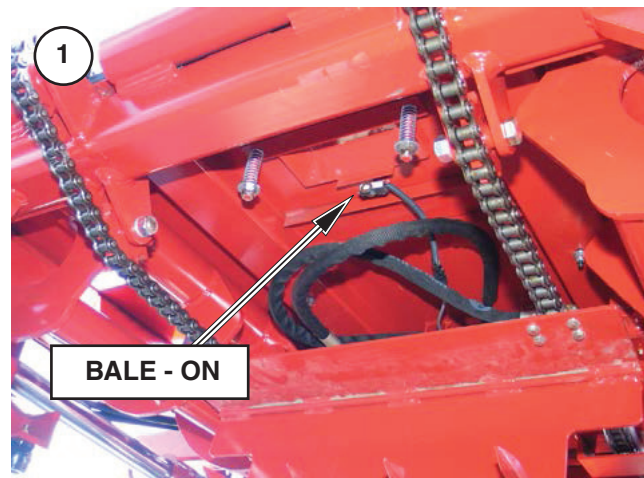
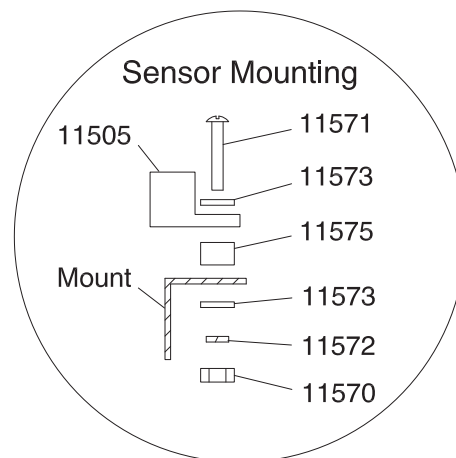
- Debris on sensor: Small metallic particles can build up on the sensor causing it to give a true reading. If metal filings are building up on the sensor, determine the cause of the filings and rectify the problem. If the machine is being operated in an area with volcanic ash, such as the Pacific North West, it may be necessary to regularly clean the sensors of debris.
- Sensor failure: To check the operation of a sensor, unplug the sensor and use an ohmmeter to test the continuity between the two wires. There should be no continuity when the switch is free. There should be no resistance when the switch is placed on a piece of steel. If the state of the sensor does not change, it has failed and should be replaced.

Important: The Ferrous Sensors are installed using brass nuts and bolts and plastic washers. If the sensor is not assembled as shown, it may not work properly.

- Wire Harness Failure: To test the wire harness, unplug the sensor. If the computer still shows “true”, there is a short in the harness. Next, use a short piece of wire to short between the two pins of the plug. If the sensor still reads “false”, there is a break in one of the wires. See “Harness Schematics” for more information.



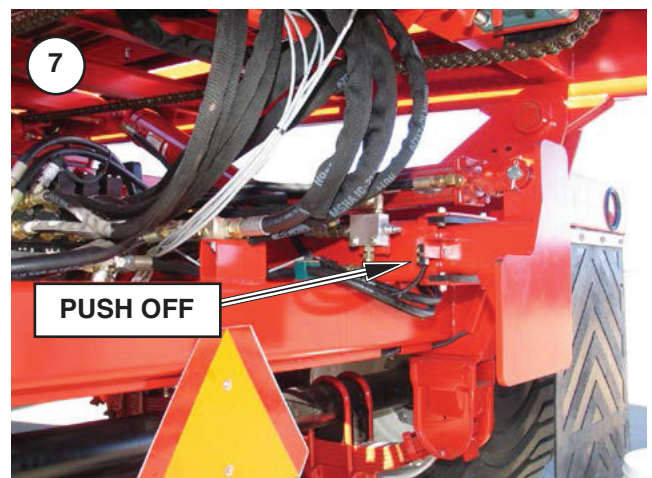
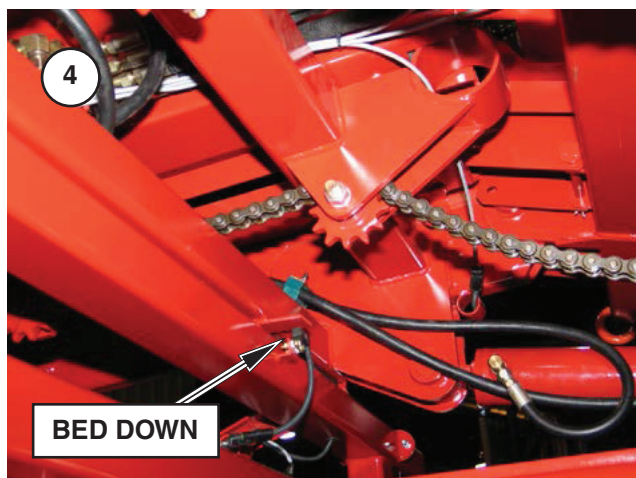
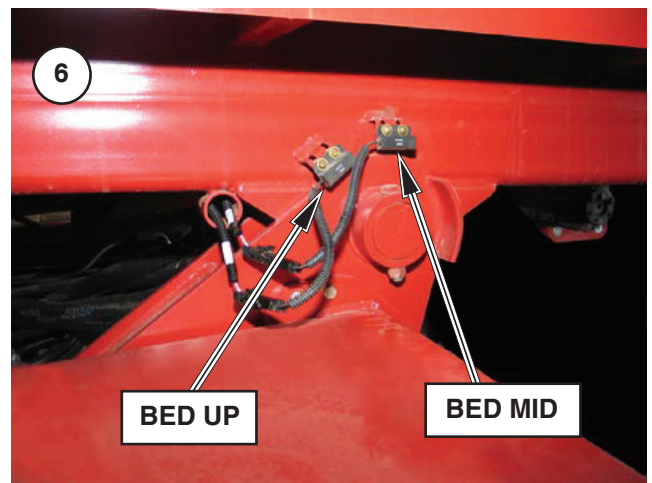
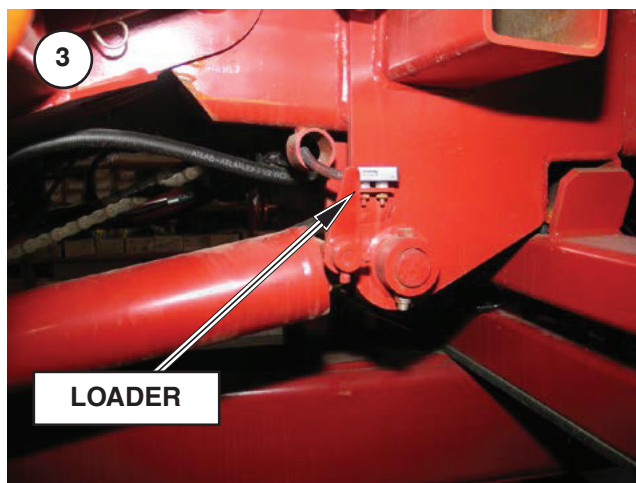
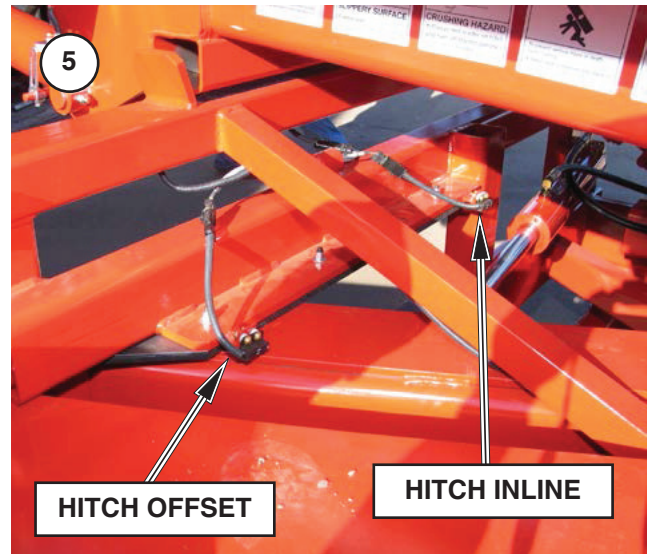
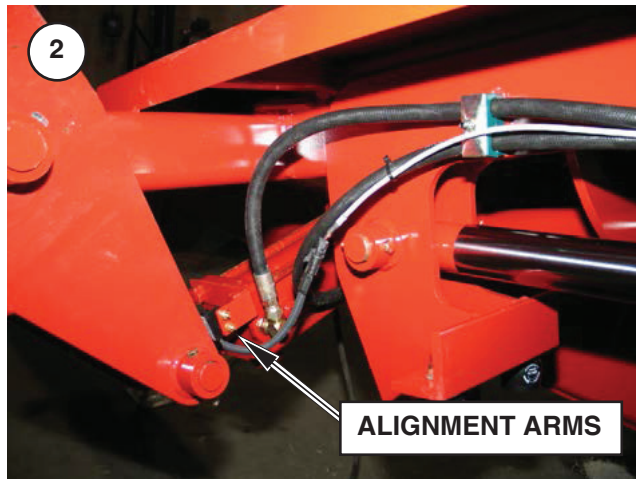
Ferrous Metal Sensor Mounting



16k PLUS Control System - Continued

Sensor Troubleshooting - Continued

Ferrous Metal Sensors - Continued



Troubleshooting

16k PLUS Control System - Continued

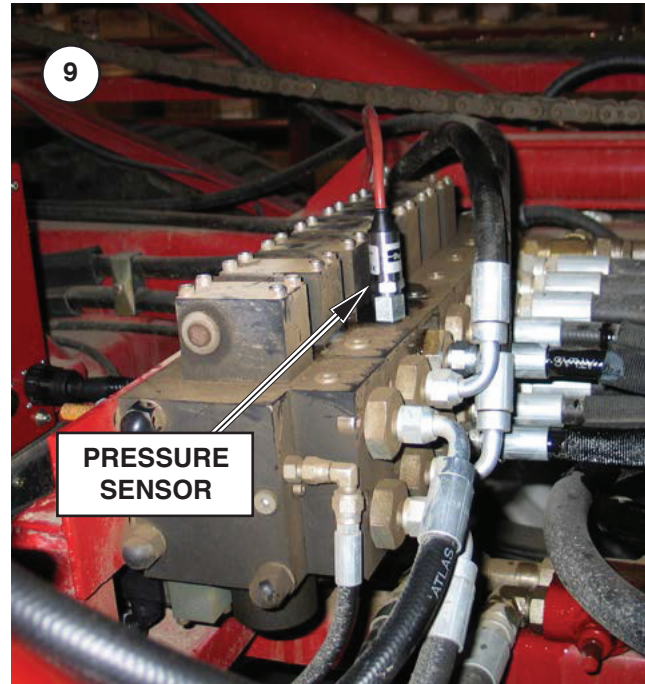
Sensor Troubleshooting - Continued

Pressure Sensor

The pressure sensor on the 16k PLUS measures the squeeze pressure in the alignment arm cylinders. To view what pressure the computer is reading, go to the “Measure - Sensors” menu. The units of measurement are pounds per square inch.

The Monitor may display a low or high pressure warning if the pressure sensor malfunctions.

- To check the operation of the pressure sensor, watch the pressure reading in the “Measure - Sensors” menu as the alignment arm close. The pressure should increase as the bales are being squeezed.
- Sensor failure: From time to time sensors will fail. If you suspect this, first test the wire harness for shorts or broken wires. Otherwise, use a known working sensor to test the operation of computer and harness. See “Harness Schematics” for more information.



16k PLUS Control System - Continued

Sensor Troubleshooting - Continued

Shaft Sensor Shaft Sensor

The Shaft sensor is used to monitor the location of the power slide as it moves up and down the bed. To view what the computer is reading for the power slide position, go to the "Measure - Sensors" menu. The units of measurement are "pulses". Each time a tooth of the star wheel passes by the sensor, it either adds or subtracts a "pulse" depending on the direction the tooth is going.

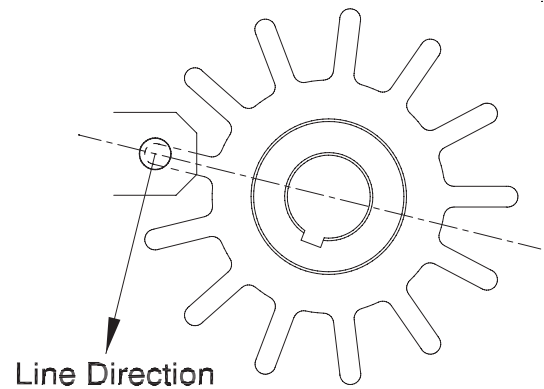
It is very important that the shaft sensor is oriented correctly so it reads in the correct direction. See the following diagram to determine the correct sensor position.

Common causes for the Shaft sensor to not function properly include:

- Incorrect orientation: If the sensor is not oriented correctly, it will not function properly. The number of "Pulses" should increase as the power slide move to the back of the machine, and should decrease as the power slide returns toward the home position. Typically, the power slide "Pulses" should be as shown
- Incorrect sensor gap: The gap between the sensor and the star wheel should be $\frac{1}{16}$ of an inch. Too large a gap may give inconsistent readings.

Important: Insufficient gap may allow the sensor to contact moving parts and be destroyed.

- Debris on sensor: Small metallic particles can build up on the sensor causing it stop working. If metal filings are building up on the sensor, determine the cause of the filings and rectify the problem. If the machine is being operated in an area with volcanic ash, such as the Pacific North West, it may be necessary to regularly clean the sensors of debris.
- Sensor failure: From time to time sensors will fail. If you suspect this, first test the wire harness for shorts or broken wires. Otherwise, use a known working sensor to test the operation of computer and harness. See "Harness Schematics" for more information.



Note: Failure to orient the Shaft sensor correctly will result in erratic or incorrect readings.

