

The "Taege" controller has built in features that enable the operator to "Troubleshoot" various electrical problems caused by damaged components.

The **DIAGNOSTIC MODE** screen enables onboard diagnosis of sensors, encoders and motors and assists with troubleshooting in the event your drill does not operate correctly. Your TAEGE Technician or TAEGE Dealer will ask you to activate this screen, when troubleshooting in the field.

The **POWER STATUS** screen may also be requested.

**Warning:-** When trouble shooting, care must be taken to identify a specific cause, before replacing components, otherwise you risk damaging the replacement parts.

## Important

Correct identification of the **controller version software** is a must before diagnosing electrical problems.

1. Turn the controller "OFF"
2. Turn the controller "ON" and read the software "ver ???" number. It is one of the following:- ver 1.03, or, ver 2.2\*etc., Eg, ver 2.52d. It is very important to identify this correctly if you are talking to your TAEGE Technician or TAEGE Dealer.
3. How to identify problems with the sensor (encoder) and the motor or motor sensor (encoder).

Go to the "diagnostic" screen by holding down the "cancel" key and pressing the "area reset" button at the same time, then release both buttons. The controller will be on the 'MAINTENANCE' screen, press the down arrow once and highlight 'Diagnostics' then press the "OK" button. You are now on the "Diagnostic mode screen". (Go to your operator manual and see the displayed screen in diagnostic mode.)

4. This screen will appear

DIAGNOSTIC MODE			
11.96 Volts	RPM:	0	
Wheel:Open			
Msw:Open:Close:Close			
Pw%: 0:	0:	0	0
RPM: 0:	0:	0	0

- A. Line 1. Shows the mode
- B. Line 2. Voltage at the controller and a nominated RPM
- C. Line 3. Shows the wheel pulse open/closed. Spin the wheel or jockey wheel slowly and the 'open/closed' will change indicating that the wheel pulse is reaching the controller.
- D. Line 4. Shows that the motor pulse is reaching the controller when a nominated 'RPM' is asked for by pressing the "plus" or "minus" buttons in this mode one press equals 100x rpm, press 2x times gives 200x rpm etc.,

E. Line 5. Shows the Pwr%, this is the percentage of the available power being used by the motor.

F. Line 6. Shows the actual motor 'rpm'. When an 'RPM' is requested by pressing the "+" or "-" buttons one press nominates 100x rpm, press 2x gives 200x rpm etc, The rpm usually moves by one to two rpm from the requested set 'rpm'.

## Explanation

If the nominated 'rpm' shows 0 and the power shows 100% either **the motor signal is not reaching the controller** or the motor is fitted. The usual maximum 'rpm' available with the gearbox disengaged is 1400 rpm at 95%, if you motor exceeds this, no problem exists.

However if the motor is at 400rpm and the power at 95% a number of conditions exist.

1. There is a problem with the power supply. This condition usually results in the motor going out of control and shows high % and low voltage. If the voltage is 13.6vdc with the tractor running and 11.00vdc or lower with the tractor not running this usually indicates poor battery maintenance (clean the battery terminals) or a weak cell in the battery. Usually this is shown as a **"Too fast"** signal. When this screen shows on the controller it also shows which hopper this condition is for.

2. The motor has a problem. (shorted field windings) or damaged brushes. Usually shows as a **"Too fast"** signal.

If you have gone through the above diagnostics, then engage the gearbox and go through the same procedure.

3. Check the hopper for obstruction.

4. Make sure that the drive chain is in good condition and adjusted correctly.

## Too Fast Signal

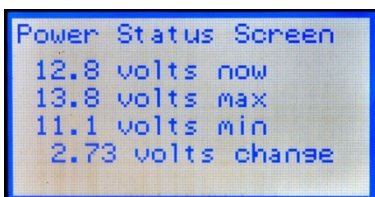
The "Too Fast" signal will show on the controller if the operator is travelling at sowing speed and puts the drill into the ground, particularly when applying heavy rates such as fertiliser at 150-20kKg as well as grain at 120kg. This happens because the available power supply is unable to provide adequate "amps" momentarily. This is normal and should only show for several seconds. If this problem is excessive then check your power supply and/or leads for damage and poor connections.

## Dynamic Mode

Dynamic Mode Status Screens are available any time that the controller is in the "Run" mode by pressing the "Ok" button. All screens are shown on page 17 of your Operators Manual.



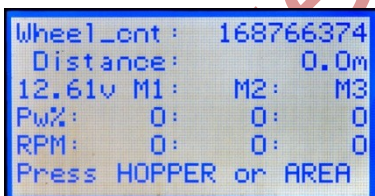
This screen shows the real time voltage at the controller.



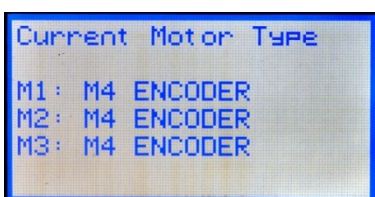
Shows the voltage when the drill is operating.



This shows the real time wheel count and the gear ratio and the same for the other motors on the machine.



The wheel count and distance travelled since the last reset and motor rpm and voltage in real time.



Current motor types.

## Understanding the "Dynamic" Operators Screens

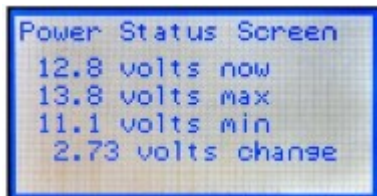
If "too fast" shows on the operators screen usually the drill cannot get enough power and is caused by poor connections, incorrect calibration, the wrong motor selected, and/or 2x hoppers selected on a single hopper drill.



This is generally seen by the operator when the drill is plugged in and the tractor is started with controller in the standard mode. The computer "greys out" or when the voltage drops below 10.58volts turns off.

1. When the tractor engine is not running, the standby voltage should read at least 12 volts, any less than this indicates poor battery connections, power cables, corroded power cable connections or weak battery cell.

**Taego Engineering Ltd** recommend that a power supply, directly connected to the tractor battery with at least 50amp 12vdc wiring be used, with a separate 30amp fuse fitted inline on the positive cable.



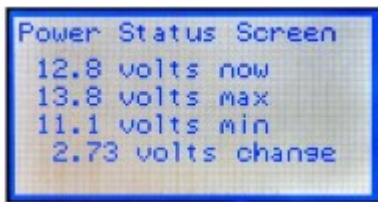
2. This is generally seen by the operator when the drill is plugged in and the tractor is started. This indicates the drop in voltage when the tractor is started. If the voltage is below 10.58vdc the controller will turn off. This also indicates a weak battery.

**How do I find the following screens?**

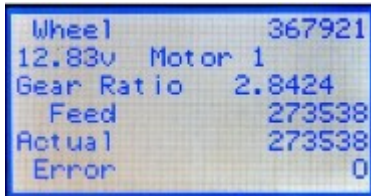
**Press the "OK" button when the drill is in the "Run" mode**

**How do I find more screens?**

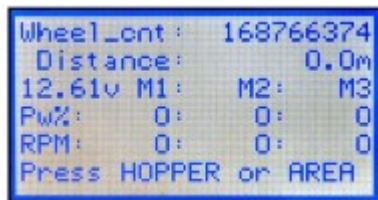
**Press the "Down arrow" button**



1. Shows the voltage when the drill is operating



1. The first line "Wheel" shows the wheel count and should be counting when in this mode.
2. The second line gives an indication of the voltage of the selected motor.
3. The "gear ratio is set by calibration.
4. Feed', "Actual" & "Error" are exactly that and indicate the condition of the 12vdc motor or a wrong motor selected.



1. The "Wheel\_cnt" screen gives:-
2. Wheel count in pulses
3. Distance travelled since last cleared
4. Voltage and Motor information.
5. "Pw%" which gives an indication of the % power available to that motor at that time.
6. "RPM" is the working rpm of the motor. In general terms this is always fluctuating, if the reading is 100% and 1200rpm, you may have reached the available power limit, or available rpm limit.  
In some crops such as lupin and beans, optional motor drive sprockets are available, and special "pea sponges" can be fitted to help to overcome extreme sowing rates.
7. Press "Hopper" or "Area reset" to return to the normal operating screen.

## Checking the Wheel Encoder Signal

In the dynamic mode you are able to check the encoder wheel signal by using the following procedure.

1. Clear the drive wheel from the ground so it may be easily turned.
2. Press the "Area reset" button and clear all settings.
3. Press the "Run/stop" button and then go to the dynamic mode by holding the "Cancel" button and pressing the "Power" button at the same time.
4. You are now in the Dynamic mode.  
Go down to the "Wheel\_cnt" screen. The Wheel count and the Distance should both be at zero.
5. Rotate the drive wheel (jockey wheel) once. Identify the sensor (encoder) type, and making sure to go in one direction only, rotate the wheel one revolution.
6. Sensor (encoder)Types

Part number	Description	Number of counts per revolution
DD0007.000	N-p-N sensor	40
DD0003.001	Optical Encoder	1000
DD0003.000	Magnetic encoder	1024

7. If the result shows a difference to the above table check the following:-  
DD0007.000 N-p-N sensor adjust the distance between the star wheel and the sensor end. On machine with ver 1.03 software the distance should be between 1mm-2mm. On machines with ver 2.30 or later software the distance should be 2mm-4mm.

DD0003.001 Optical Encoder. Check that the drive rod DD8018.000 is driving the encoder, if moisture is present dry the rod and encoder thoroughly and re-test. If the count is still incorrect replace the encoder using p/no DD0003.000 magnetic encoder and drive rod DD8018.001. When fitting this part please talk to your Dealer or Taege support person about changing the configuration settings in your controller.

DD0003.000 Magnetic Wheel Encoder. When fitting DD0003.000 please fit a DD8018.001 drive rod and ensure that you have chosen the correct direction and that the positive/ negative wires are in the correct positions. You can find this information at

<http://taege.com/wp/seed-drills/manuals-2/rc300-wiring-manual>

## NOTES