

HOW TO GUIDE: RTK Fallback

This document describes the RTK Fallback feature, which can be enabled by entering an unlock code.

Description

- The mojoRTK system provides guidance for a tractor along, and parallel to, a single straight line (the wayline)
- Accurate guidance can only be guaranteed whilst the mojoRTK console has a good GPS fix and is receiving reference corrections
- RTK Fallback allows the operator to continue working for a period of time after the loss of signal being received from the base station
- The mojoRTK must be receiving GPS data for RTK Fallback to be enabled
- Following the restoration of signals from the base station the mojoRTK console will correct for offset if the offset error is less than the limit set for Maximum Drift
- RTK Fallback is primarily a fall-back mechanism and accuracy to the line will degrade over time

Benefits

Using RTK Fallback allows the mojoRTK to continue to guide the vehicle for up to 10 minutes after the base station signal has been lost. The loss of signal may be due to terrain, vegetation, or interference.

Availability

RTK Fallback is available from Service Pack 4. Existing customers will need to purchase an unlock code to activate this feature. All systems sold as of 1 January 2009 will have this software enabled.

Limitations

RTK Fallback can not be initiated until a GPS fix has been obtained on both the mojoRTK console and the base station.

RTK Fallback will cease to operate if the mojoRTK console loses GPS fix.



RTK Fallback, when activated, will initiate 30 seconds after a loss of signal from the base station.

RTK Fallback operation is limited to a maximum of 10 minutes without receiving corrections from the base station. The mojoRTK console must receive at least 15 seconds of continuous reference corrections for the 10 minute interval to reset.

If the position drift upon signal restoration is greater than the Maximum Drift set, guidance will be disabled and an error screen will be displayed on the mojoRTK console.

Required Items

- Updated ME3 firmware (v3.610 B4 or later) does need to be installed via a USB stick for RTK Fallback to be enabled. Talk to your Value Added Reseller or Leica Geosystems representative about how to obtain the ME3 firmware.
- Unlock code to unlock the RTK Fallback (SP4 and higher) feature on the mojoRTK console. The unlock code will automatically be generated by Leica Geosystems for consoles purchased after 1 January 2009. For consoles purchased before 1 January 2009, an unlock code can be purchased from Leica Geosystems.
- Value Added Resellers can obtain the unlock code directly from Leica or by logging onto www.mojoRTK.com and viewing the information for the particular console which is uniquely identified by its serial number.
- Service Pack 4 or later software.

ME3 upgrade procedure

(Once service pack 4 or later software has been installed the ME3)

- With the console turned off insert a USB with the ME3 firmware into the top USB port on the console.
- Turn on the console
- In the menu go to service - > upgrade gps and press ok
- The console will start to install the ME3 upgrade, this process will take around 5minutes
- DO NOT TURN OFF THE CONSOLE DURING THE UPGRADE
- Once the install is finished the screen should be green in colour with "upgrade complete" on the screen
- Turn off the console and remove the USB stick

mojoRTK Configuration

Installing the unlock codes manually on the mojoRTK console

- Start the mojoRTK console
- Press the OK button to enter the Menu
- Using the Main Dial, select Settings -> Extended Features -> Enter New Code
- Enter the 16 digit code by using the Main Dial to select the value for a digit and pressing OK or Escape to move backwards and forwards between digits
- Once all 16 characters are entered and checked press OK
- After the code has been accepted the Console will restart

Installing the unlock codes using Virtual Wrench on the mojoRTK Console

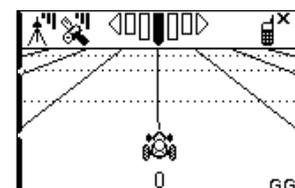
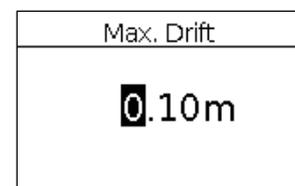
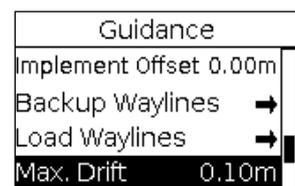
1. Start the mojoRTK console
2. Press softkey 3 twice to bring up the Virtual Wrench connection screen
3. Select Yes using the Main Dial and press the OK button to connect to Virtual Wrench
4. Once connected the new unlock codes will be automatically downloaded and installed
5. A message will then appear stating which unlock codes have been installed, press OK and the console will restart

RTK Fallback

Under RTK Fallback the vehicle may drift left or right. Over time this drift may become significant. The default maximum drift limit is 0.1m. The user has the option to set a maximum drift value for RTK Fallback. Navigate to Menu -> Settings -> Guidance -> Max. Drift. The maximum allowable value is 10.00m.

With the RTK Fallback feature enabled, RTK Fallback will automatically activate following the loss of signal from the base station.

In a typical scenario the user would set up for the days work. A GPS fix would be obtained by the mojoRTK console and the base station. The user would then commence operating. The base station icon would have at least one bar and the satellite icon would have at least one bar.

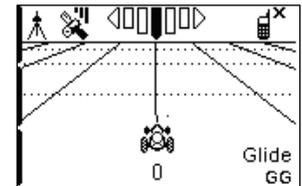


If at some point the signal to the base station is lost, after 15 seconds the user is presented with the continue on RTK Fallback screen.



Selecting **No** will disengage steering.

Selecting **Yes** will allow steering to remain engaged. The next time RTK Fallback activates the confirmation screen will be displayed.



Selecting **Always** will allow steering to remain engaged. RTK Fallback will remain activated for a maximum of 10 minutes. After the 10 minutes a RTK fix will be needed before RTK Fallback can be used again. The next time RTK Fallback activates the confirmation screen will not be displayed.

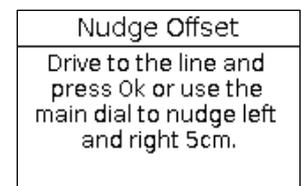
If **Always** has been selected the prompt to activate RTK Fallback will not be shown unless the mojoRTK console has been restarted.

If **Yes** or **Always** has been selected then RTK Fallback will remain activated for a maximum of 10 minutes. After the 10 minutes a RTK fix will be needed before RTK Fallback can be used again. **Be aware** there will be some drift and it may be necessary to make some corrections using **Nudge Offset**.

Note: If guidance is being performed using the John Deere Greenstar™ 1 or 2 then the nudge function cannot be performed on the mojoRTK console. It must be performed on the Greenstar™.

Nudge Offset

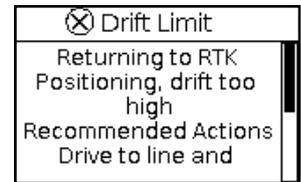
Nudge Offset provides the operate a mechanism to correct the drift that will occur while RTK Fallback is activated. To use the Nudge Offset press the Esc key repeatedly until the main screen is displayed. Press function 2 (the mojo button) and you are presented with the Nudge Offset menu.



Either drive to the line and press Ok or tune the main dial left or right to nudge the vehicle left or right 5cm per click.

Note: The Nudge Offset is a temporary offset and will not be kept after corrections are re-acquired.

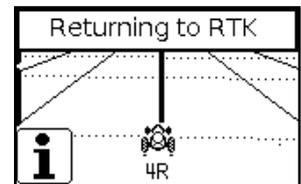
When the base station signal is re-acquired, the mojoRTK console determines the error. If the error is outside of the maximum drift the mojoRTK console will issue an audible warning, turn off the steering and display a message on a red background.



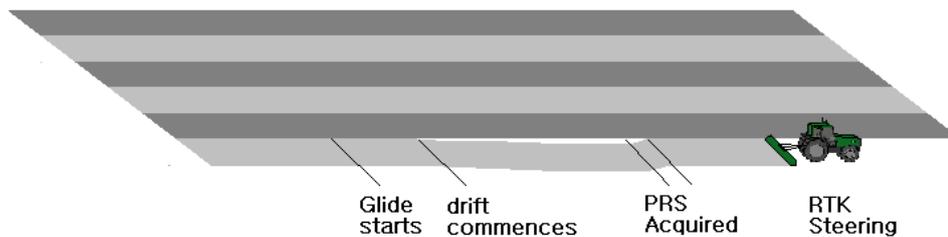
Press OK to acknowledge and clear the error, drive to within the engage limits for the wayline and engage guidance.



Alternatively if the error is under the maximum drift limit the mojoRTK console will snap back to the wayline.



Depending on the error there can be between 0.1 to 10.00 metre jump in the working line.



These jumps can be mitigated using the nudge functionality.