

Smart Top Link

Operator's Manual



<https://access.agcocorp.com/en.html>

Smart Top Link

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1. PRODUCT OVERVIEW

1.1 Introduction

This manual is the operators guide for the Smart Top Link. The instructions here apply to the operation and installation of the Smart Top Link. For general instructions regarding the operating, safety, maintenance, and service of the tractor, see other user documentation of the tractor.

The Smart Top Link system works to keep a mounted implement level during work. Supplied with the product is 1x wiring harness, 1x ECU, 1x hydraulic block, hoses, and connectors to suit and 2x radar sensors with mounting plates. These sensors are fitted to the front and rear of the desired implement which measure distance to ground. This information is used to control the hydraulic top link.

The weight change in the spreader during the spreading cycle leads to a change in the angle of the spreading discs, which in turn means a non-confirmative spread pattern. By adjusting the top link in real time, the coefficient of variation can be reduced, meaning the fertiliser is placed where it needs to be.

To view all manuals, access quick guides, view how-to-use videos and service materials, scan the QR code supplied with your Smart Top Link. This will direct you to a simple No-Login-Required website www.access.agcocorp.com which all materials can be easily accessed.

1.2 Requirements

Smart Top Link is installed in AGCO Customisation studio and to function correctly it requires these features on the tractor.

ISOBUS

Tractor must be ISOBUS compatible to allow communication between the implement and the terminal.

Hydraulic features

System requires load-sensing hydraulic lines and hydraulic top link installed in the tractor.

Implement

Smart Top Link system is designed to be used with mounted fertiliser spreader with discs. Installation of radar sensors may vary depending on the manufacturer and model of the spreader.

2. SAFETY

	<p>Follow the operation and safety instructions included with the machine, implement and system. Read this manual carefully before operating, installing, or servicing the Smart Top Link system.</p>
	<p>Stand clear when 3-point linkage is moving.</p>
	<p>Caution: Make sure implement and connected cables have enough space for movement.</p>
	<p>Warning: Angles for safe driving should be smaller than stated in the tractors Operator's Manual to avoid the tractor from tipping over.</p>

2.1 Safety Instructions

Displays and Control Consoles

Make sure that you are familiar operating the tractor and implements and react to any warnings given by tractor.

If Smart Top Link System behaves faulty or gives Diagnostic Trouble Codes, refer to Maintenance manual for further descriptions of causes and resolutions or contact your local AGCO service dealer.

Hydraulic Safety

****Use Only AGCO Approved Top-Link Cylinders**

When installing or servicing a hydraulic system or hydraulic components, be aware that hydraulic fluid may be extremely hot and under high pressure. Never attempt to open or work on a hydraulic system with the implement running or under load. The implement or machine must remain stationary during installation or maintenance.

Take precautions to prevent foreign material or contaminants from being introduced into the implement hydraulic system.

Use protection gears and stand clear of the implement when starting the system for the first time after installing or servicing hydraulic components in case a hose has not been properly connected or tightened.

Electrical Safety

Verify that electric harness cables are intact and connected correctly. To avoid entanglement hazards, route cables and harnesses carefully on the implement. Leave enough space for movement and make sure that moving parts cannot touch the cable.

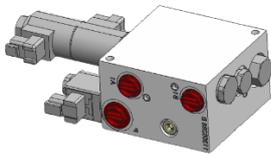
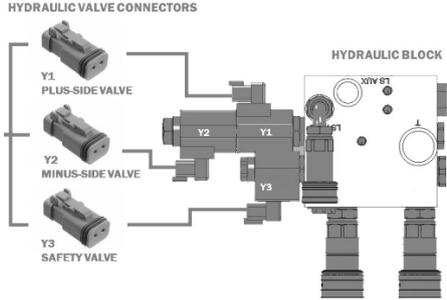
2.2 Machine Safety

Make sure that top link has enough range for movement and therefore doesn't cause implement collision with the tractor or ground surface.

When doing maintenance or other works near the top link or the implement outside the tractor, make sure that the smart top link is switched off.

3. INSTALLATION

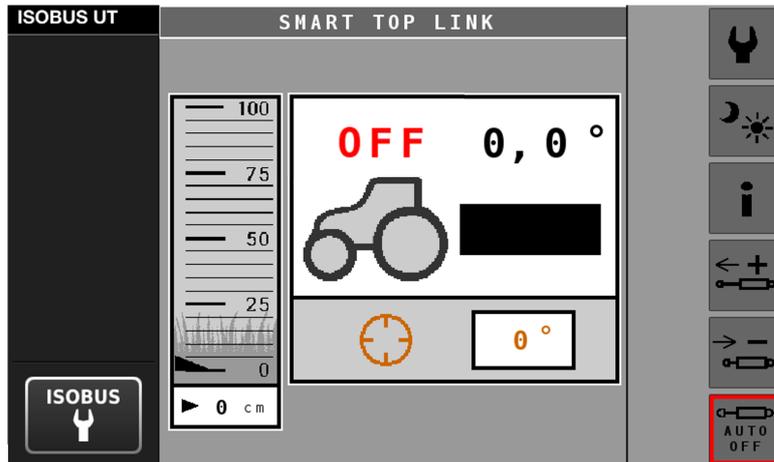
Smart Top Link contains:

Part	Location
Electronic Control Unit with wiring harness	Pre-installed in the cabin
Sensor wiring harness	To be installed in the implement and connected to tractor
2 pieces of Radar sensors	To be installed in the implement
2 Pieces of Stainless-Steel Plate	To be installed in the implement
Hydraulic valve block	Pre-installed in the tractor / Horizontal Level 
Hydraulic valve block wiring harness <ul style="list-style-type: none"> Connector 1 (Y1) = Plus Valve connector (inner solenoid) Connector 2 (Y2) = Minus Valve connector (outer solenoid) Connector 3 (Y3) = Safety Valve connector (separate solenoid) 	Pre-installed in the tractor 
Hydraulic hoses and connections <ul style="list-style-type: none"> T = Tank return line P = LS-hydraulic pressure line LS Pump = LS-hydraulics Pump signal line LS AUX = LS-hydraulics pump signal from external implement A1 = Top Link plus hose 	Pre-installed from factory Pre-installed from factory Pre-installed from factory 3/8" quick coupler for Fertiliser spreader 1/2" quick coupler 1/2" quick coupler

- B1 = Top Link minus hose

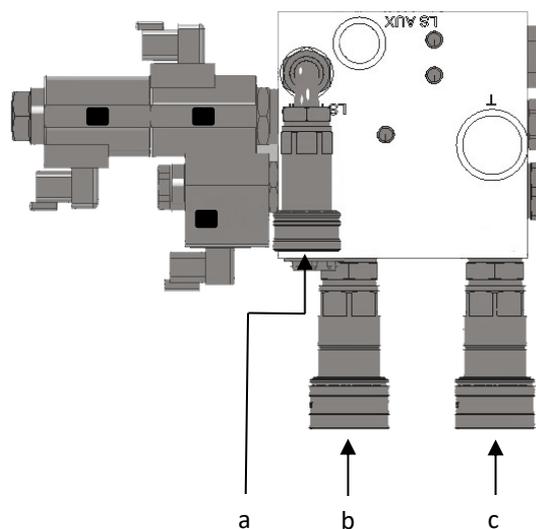
3.1 ISOBUS Terminal

Power on the machine and make sure ISOBUS UT is activated from tractor terminal. Open ISOBUS UT view from the terminal and wait for application to load. After loading, display shows the Home Screen view of the Smart Top Link system.



3.2 Hardware Installation

Smart Top Link's Control Unit is factory-fitted inside the cabin by an AGCO Customisation studio. The tractor is equipped with an additional hydraulic control valve block and requires a hydraulic top link to enable automated system control. Ensure that the hydraulic top link is connected to the additional hydraulic block, and that hoses are oriented correctly. Notice that the implement LS line needs to be connected to Smart Top Link hydraulic block with Valtra Unlimited N/T series installations.



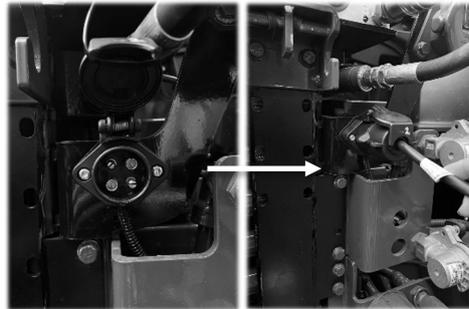
Hydraulic hoses:

- LS line from the implement (Valtra Unlimited N/T-Series)

- b. Top link hose
- c. Top link hose

Installation steps

1. Connect the wiring harness to the 4-pin socket located at the rear of the tractor.



2. Connect the sensors to wiring harness. Ensure that the connectors are properly locked in place.
3. Activate sensor identification mode on the ISOBUS terminal in Help view. The **sensor blinking blue** should be installed to the **rear of the implement**.



Figure 1. Help View

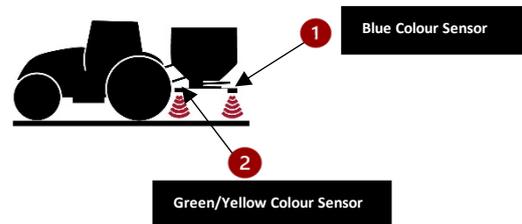


Figure 2. Sensor Position

4. Install the sensors to the bottom of the spreader, **underneath the spread pattern**, so the sensors have a clear visibility to the ground surface.

- Sensors should be pointing straight down, being in the **same angle as the spreader frame**.
- Sensors should be at the **minimum height of 30cm from the ground surface** (spreader at its spreading height). Sensors should be approximately at the same height.
- Mount sensor 1 (Blue) in the **rear of the implement** and sensor 2 (Green/Yellow) in the **front of the implement**. Both sensors should be approximately in the same line, installing them to the middle of the implement is preferred. Distance between sensors should be minimum of 70cm.

- ! Make sure that the sensors do not collide with ground surface when lowering the implement.
- ! If sensor is too close to the frame of the implement, there might be reflections which affect the sensor reading in a negative way.

5. Secure the cable **to the implement frame** to reduce the risk of cable interfering with any moving parts on the implement or on the tractor.

- ! Make sure that the cable is not too loose, being in a risk of interfering with ground surface.
- ! Make sure that the cable is not too tight, being in a risk of braking while the implement is moved.

4. OPERATION

4.1 Preparation

Familiarize yourself with the functions and positions of all controls. Ensure that all controls are in their neutral positions and engage the parking brake before starting the machine. Ensure that no one is within your working area.

Be aware of the machine's dimensions and ensure you have enough space to operate it safely. Confirm that the machine is in proper working condition. Consult the operator's manual specific to your machine. Verify that the machine is equipped with the isobus with the necessary components as required by local regulations.

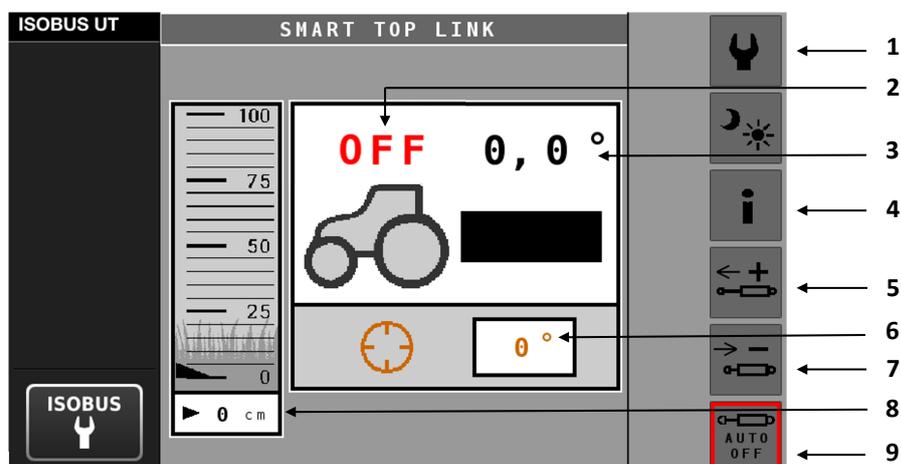
4.2 ISOBUS UT Operation

User interface has different views.

Home Screen

In the home screen are:

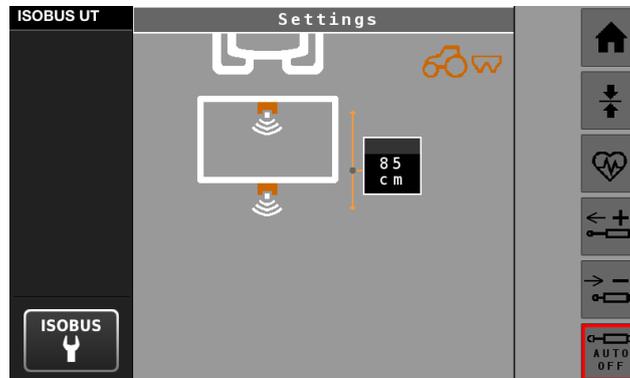
1. Settings menu
2. System status (OFF/PAUSE/AUTO)
3. Current angle of implement
4. Help view
5. Manually extend top link
6. Target angle
7. Manually shorten top link
8. Current height of implement
9. AUTO ON/OFF button to activate and deactivate Smart Top Link function



Settings



Measure distance between the sensors and add the value to the field.

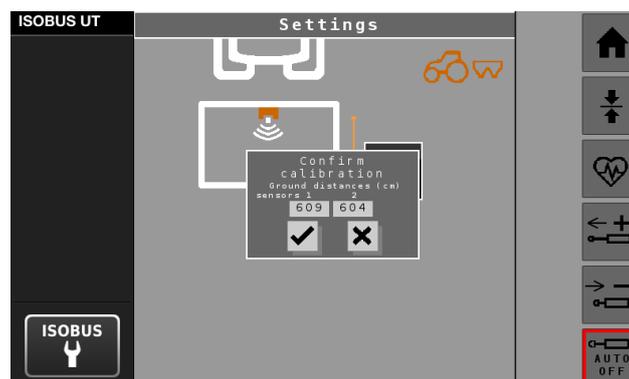


Calibration

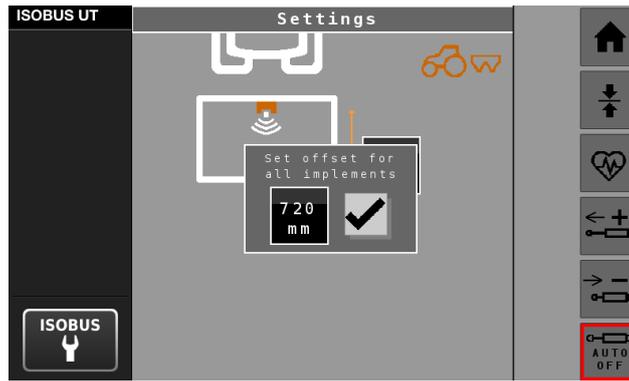


Calibration procedure needs to be executed every time installation of sensors is changed. It is preferred to perform calibration **with an empty spreader**.

1. Lift fertiliser spreader to **operating height** (you can check spreader manual for precise height requirements).
2. Drive on **flat and dry area**, such as workshop floor or concrete slab.
3. Make sure the **fertiliser spreader is levelled** (you can measure the front and rear part of the implement manually with a measuring tape)
4. Press **calibration button**.



5. Confirm that the **sensor values seem realistic**. You can measure the sensor heights with a measuring tape.



6. Measure the height of the spreading discs. Use that value as **offset for all implements** (for example 720mm in the picture)

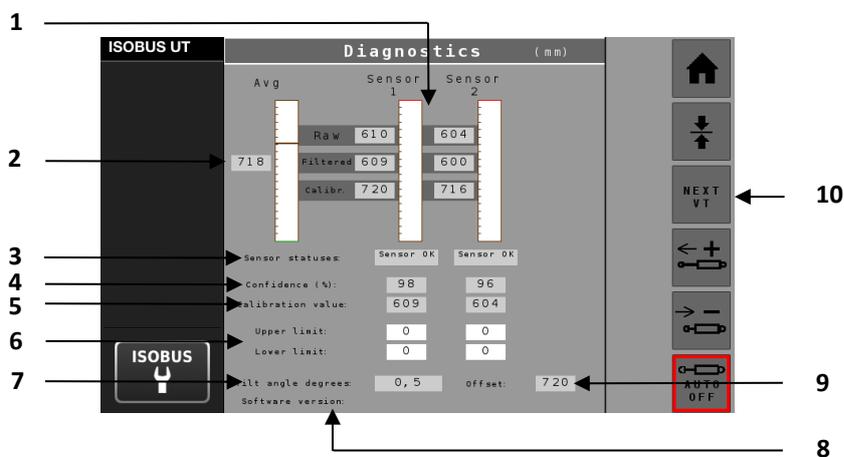
Diagnostics



In Diagnostics Screen you can see following:

1. Ground distance values (raw, filtered, and calibrated values)
2. Average ground distance value.
3. Sensor statuses.
4. Sensor confidence values (reliability of the data).
5. Calibration values.
6. Upper and Lower limit of the height range (can be adjusted).
7. Tilt angle degrees
8. Software version number
9. Offset values.
10. NEXT VT (change the ISOBUS UI priority when multiple ISOBUS implements)

Measurement unit is millimeters (mm) unless stated otherwise.



Help



In Help Screen you can see active errors and descriptions and find the ACCESS portal QR code for Operator's Manual.

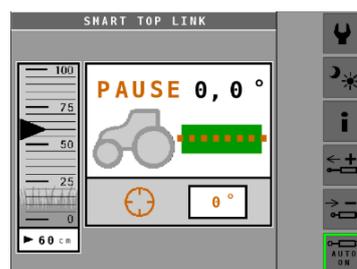
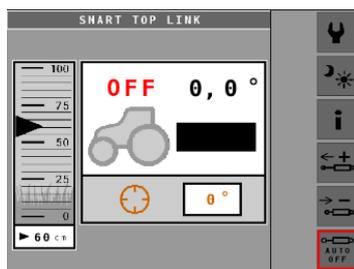


Tool for locating the 1st sensor in the system can also be found in the help screen.

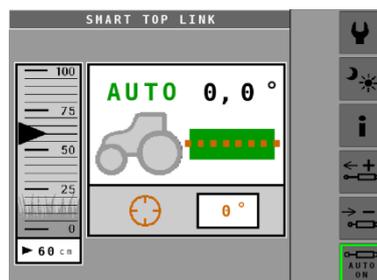


4.3 Field Operation

1. Once you have done the calibration, press AUTO ON/OFF button to activate the Smart Top Link.



- 2.



5. WARRANTY

Use product only for its intended purpose and refer to local regulations. Changes to product construction can decrease safety and durability and have an effect on the warranty terms.

Smart Top Link is installed in an AGCO Customisation studio as an option and covered by one year of factory warranty. All the components are installed on the factory assembly line and tested to be functioning in the installed machine as they should.