HEXAGON

Operator Guide

Operating with Guidance and Automatic Steering

User Guide
21 May 2026

HEXAGON

Content

Introduction

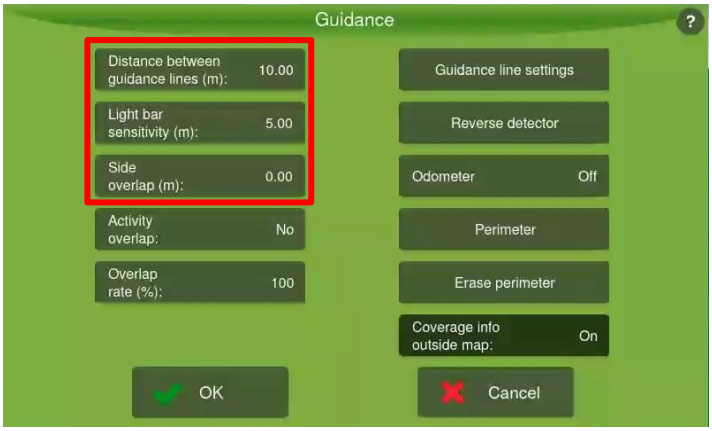
This guide assists the operator in using **Guidance** and the **Automatic Steering**. The combined use of these tools makes each pass more uniform, reducing over-application during field operations and input waste.

Guidance

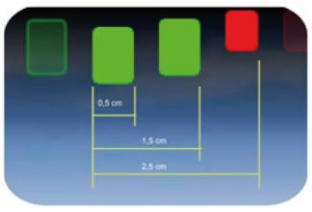
Guidance is the orientation module of the **Ti5+**, **Ti7** and **Ti10** displays. With it, the operator creates and follows reference lines in the field, defining the pattern of parallel passes for each operation.

Settings

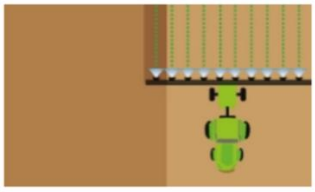
To change Guidance parameters, access **Guidance** in the **Settings Menu**, select the desired parameter, enter the values and press **OK**.



- **Distance between guidance lines (meters)**: Defines the pass width according to the selected implement.
- **Light bar sensitivity (meters):** Determines the deviation needed to light an LED on the light bar. This value is associated with the 5 central LEDs; the others divide the remaining width between them. For greater sensitivity, decrease the spacing; for less, increase. Example: for 15 centimetres of sensitivity, enter 0.15.



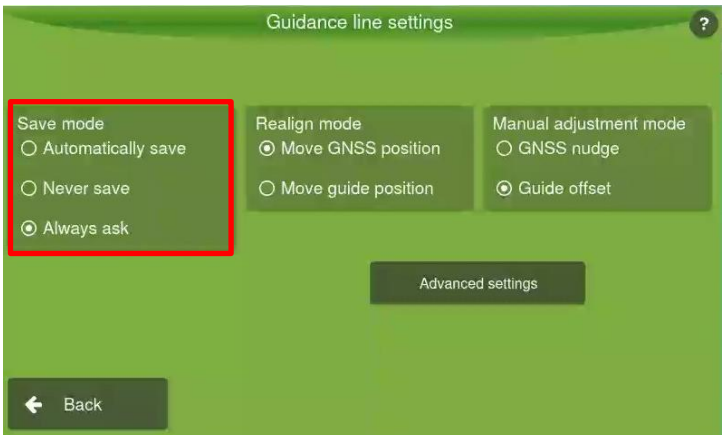
- **Side overlap (meters):** Defines how much the application should overlap. Widely used in sprayer implements to avoid gaps between passes.



Tip: Correctly configuring the overlap rate and lateral overlap is essential to reduce product waste. Well-adjusted values prevent you from applying inputs unnecessarily in already treated areas.

Guidance Line Settings

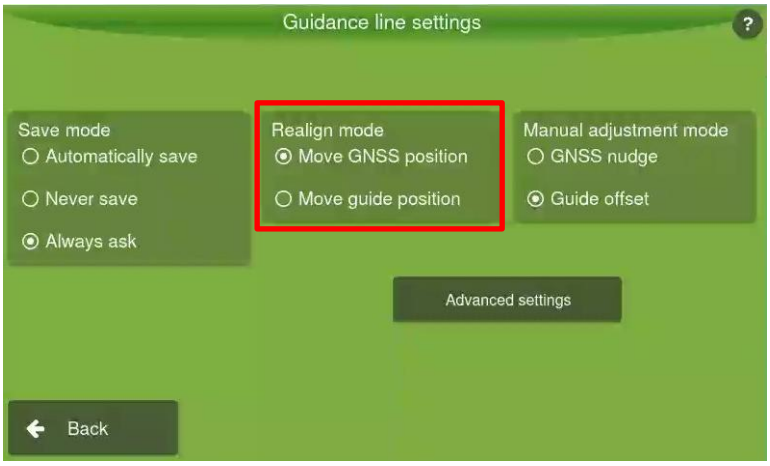
Access **Guidance line settings** in the **Guidance** menu. This screen contains the options for saving, realignment, manual adjustment and advanced curve settings.



- **Guidance saving:** Defines how the system saves newly created guidance lines. There are three options:
    - **Save automatically:** The system saves the guidance line with an automatically generated name (date + numbering).
    - **Never save:** The guidance line is not saved, remaining available only as a temporary guidance.
    - **Always ask:** The system asks the operator whether they want to save and allows editing the name.

Realign

Defines the behaviour of the **Realign** button during operation.



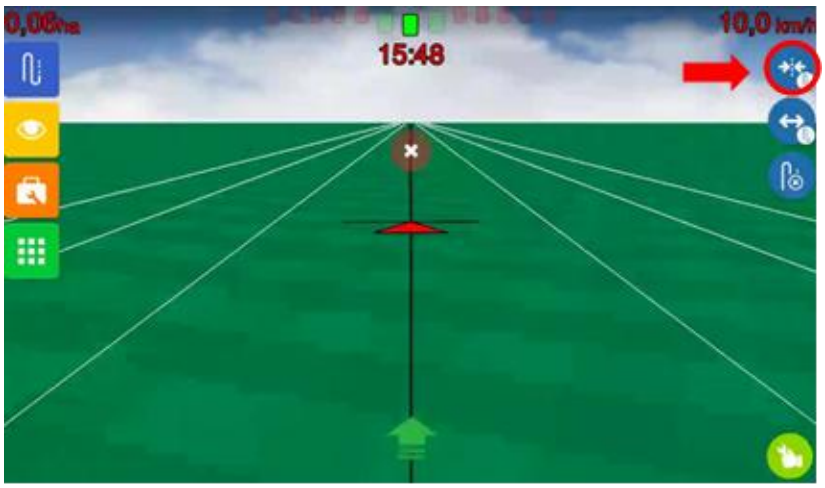
- **Move GNSS position** Adjusts the GNSS position of the guidance to where the vehicle/antenna is, aligning with zero error. The original guidance positions are discarded. This option is recommended to compensate for steering deviation due to variation in satellite positioning.

  Tip: When using TerraStar-C PRO or RTK, it is not recommended to move the GNSS position.

- **Move guide position (creating a new one):** Creates a guidance line at the current vehicle position. The original guidance remains accessible in the manager, if saved.

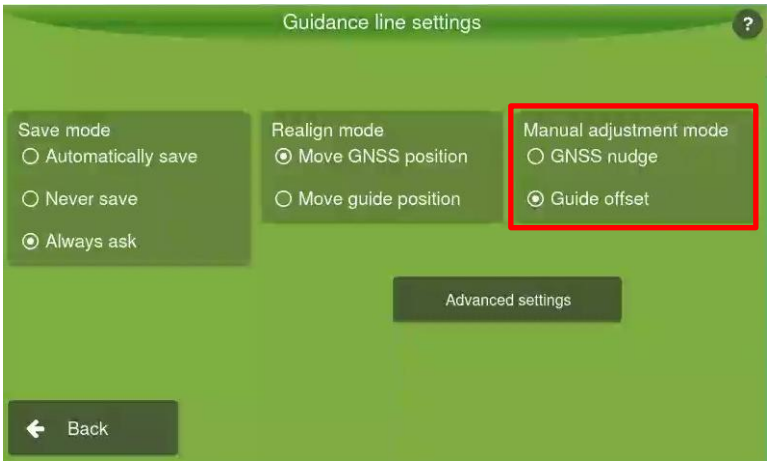
  Tip: Recommended for those who intend to reuse original guidance line, moving the guidance position when entering a parallel where there is a spacing change due to irrigation lines, roads, fences and the like.

The button is located near the upper right corner after pressing the **Guide** button.



Nudge

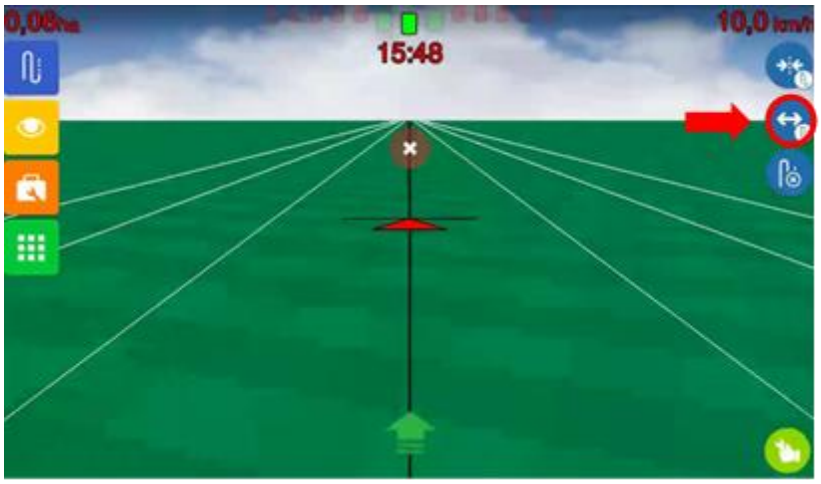
Defines the behaviour of the **Nudge** button during operation.



- **GNSS nudge:** Moves the guidance line 2 cm per tap, to the left or right. Use when the line is slightly out of position and you want to correct it gradually, without needing to enter a distance.

  Warning: The original line is lost.

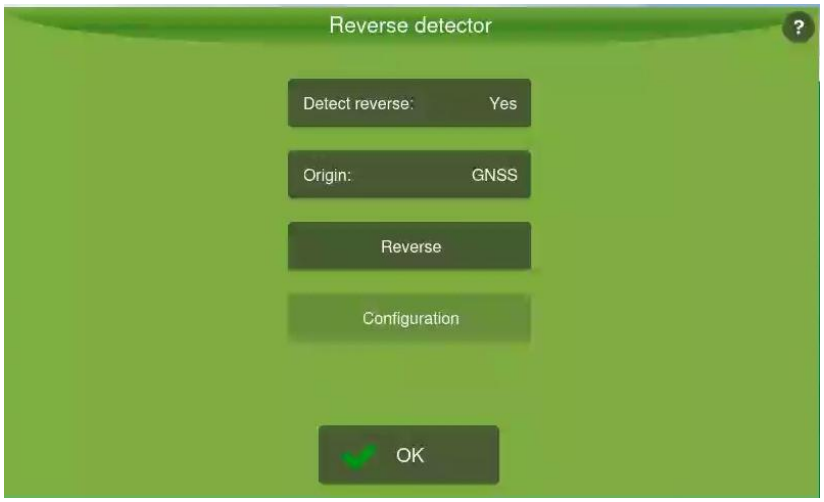
- **Guidance offset**: Creates a guidance line at the distance and direction entered by the operator. The original guidance line and its parallels continue to exist. Use when you know exactly how much you need to shift — for example, when entering a lane with different spacing due to a road or irrigation.



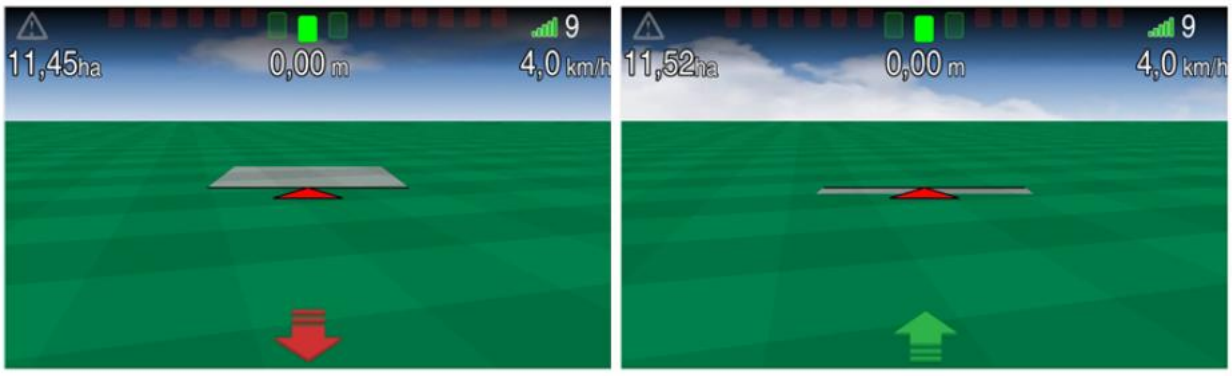
Reverse Detector

The **Reverse Detector** is automatically identified when the vehicle is moving backwards. To activate it:

Guidance > **Reverse detector** > Option: **Detect reverse** > **Yes**



- On the operation screen, a **red arrow** backwards appears when reverse gear is detected, and a **green arrow** forward appears for 10 seconds when forward movement is detected.
- If the direction shown on the screen is inverted in relation to the actual movement, just **press the arrow on the screen** to correct it.
- **It is recommended to keep the Reverse Detector active**, which is the system default, for correct track marking and for the operation of the Automatic Steering.



False movements may occur during the first GNSS synchronization or after the vehicle has been stationary for a long time.

Creating a Guidance Line

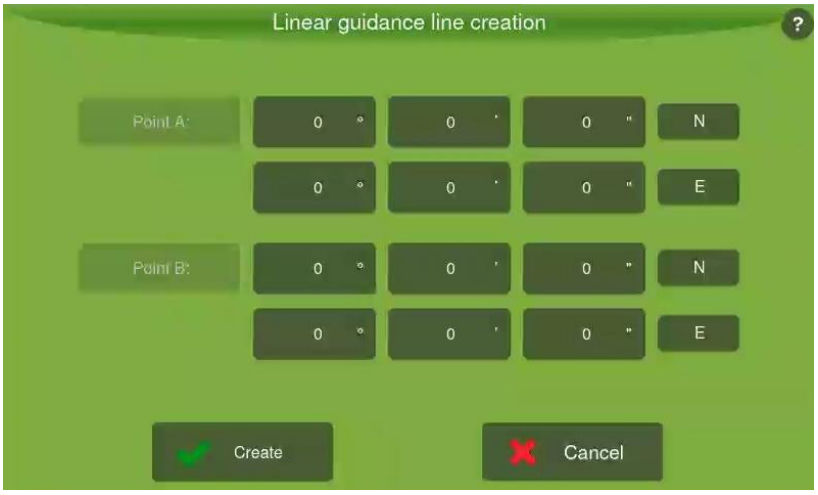
Before creating a guidance line, verify that the vehicle and implement dimensions are correct and that the GNSS is operating without alerts, green colour status ("GNSS Syncing", "GNSS without communication", "No Glide", "No RTK" or less than 4 satellites).

The display works with six types of orientation:

- **Parallel line (A-B)**: Defines a straight line in the field. All working lines will be parallel to it. Mark **Point A** at the beginning and **Point B** at the end. The minimum distance between A and B is 30 meters (maximum 20 km). Lines to the right are positive (+) and to the left negative (-).
- **Parallel curve:** Stores the actual path travelled between A and B (instead of a straight line). All following lines will be parallel to the original curve. Ideal for areas with gentle curves. Minimum distance: 30 m; maximum: 20 km.
- **Adaptive curve:** Provides guidance line along the curve and **updates the line after each pass**, considering the deviations made. Continuously records the path and adapts the orientation to match the last route taken. Useful for irregular areas where the operator needs to avoid obstacles.
- **Pivot:** For areas with centre pivot irrigation. The working lines are concentric circles, defined by **three points** (A, B and C) on the circumference. The parallels are generated according to the implement width.
- **Straight A + Angle:** Defines a line using a starting point and an angle in relation to North (0°–360°) or in relation to an already saved parallel straight guidance. Ideal for creating lines with precise orientation without having to travel the field.
- **Insert coordinates (Parallel straight line):** Allows creating a straight line (A-B) by manually entering the latitude and longitude coordinates of points A and B, without having to travel the field.

To access, select the **Parallel line** and press the "**+**" button.

A screen will open to enter the coordinates of both points.



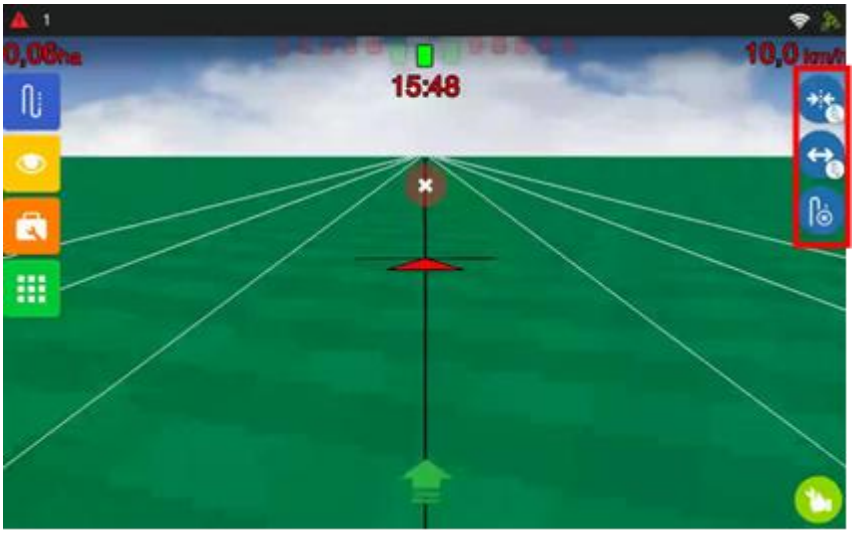
The straight line will be created between the entered points, and the parallel lines will be calculated automatically.

Tip: Useful for synchronizing guidance lines between multiple machines in the same field.

In all types, you can cancel the guidance creation by selecting the **"X"** option at any time.

Working with an Active Guidance Line

When a line is loaded, three tools are available:



- **Realign:** Use when, upon resuming operation after a pause, the guidance is not aligned with the actual vehicle position. Depending on the chosen configuration, the system adjusts the GNSS position or creates an aligned guidance line. To reuse lines, prefer the mode that creates a new guidance.
- **Nudge:** This configuration allows correcting the line's position during operation. **In GNSS mode**, the system moves the guidance 2 cm per tap, to the left or right — use when the line is slightly out of position and you want to correct it gradually, without needing to enter a distance.

  Warning: the original guidance is replaced by the new position.

  In **Guidance Offset**, the operator enters the desired distance and direction and the system creates a guidance line at that location, keeping the original line and its parallels saved — use when you know exactly how much you need to shift, such as when entering a lane with different spacing due to a road or irrigation.
- **Unload active guide:** Unloads the active guidance line from the field. Does not delete the line from the system — you can reload it or create/load another through the **Guidance line management**.

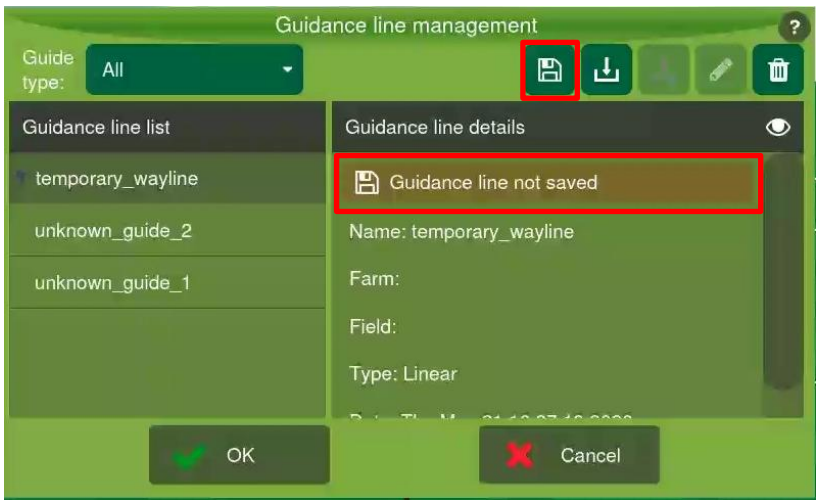
Guidance Line Management

Access through the **Guide** > **Guidance line management** menu on the operation screen.

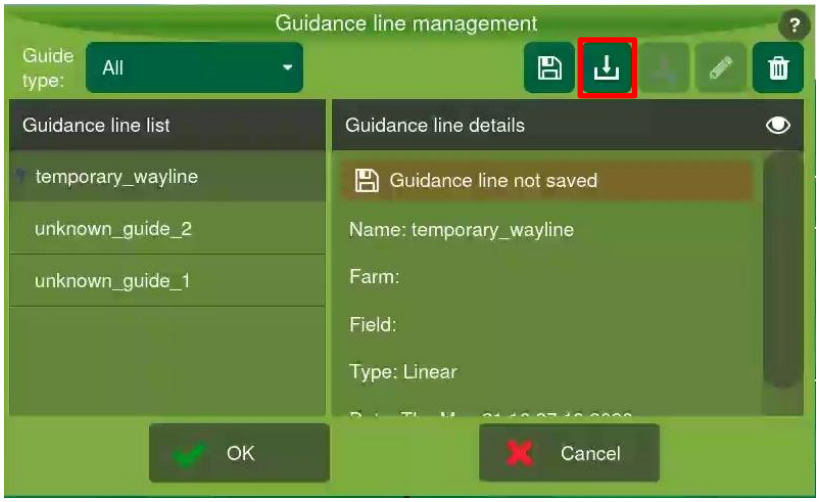
This menu allows:

- **Guidance line management:** Displays all lines created in the same field, including from other work sessions. When selecting a line, the following are displayed: name, farm, field, type and creation date. The active guidance is indicated by a lightning bolt icon. It is possible to filter by type (Curve, Linear, Pivot, Angle, Adaptive, Line map) and view line details.

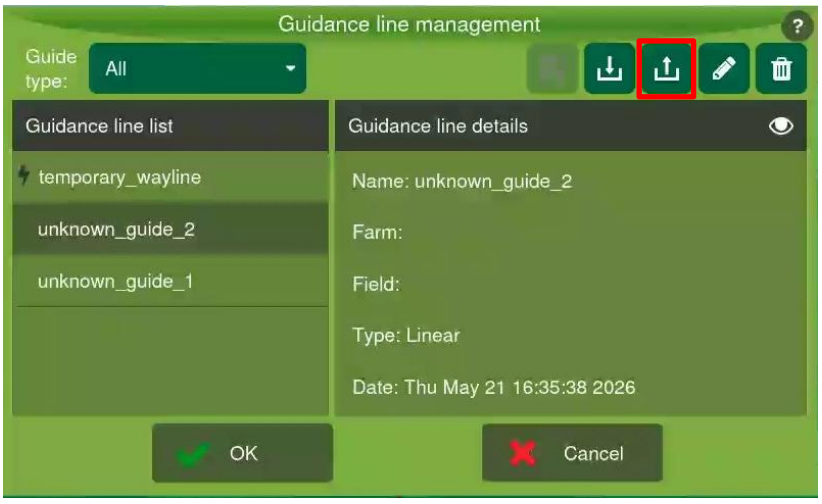
- **Save guide:** Available only for temporary guide. If you did not save a guide when creating it, it remains as temporary in the manager. **The system allows only one temporary guidance per type** — creating a guidance of the same type will replace the previous one. Save to ensure future access.



- **Import guide:** Allows importing guides from a USB drive to the display. Insert the USB drive, select **Import**, choose the files and confirm. Guides imported from Hexagon Agriculture displays can be imported as Original guide or Line map. Guides from incompatible manufacturers will be imported as Line map. The map must contain at least 75 points.

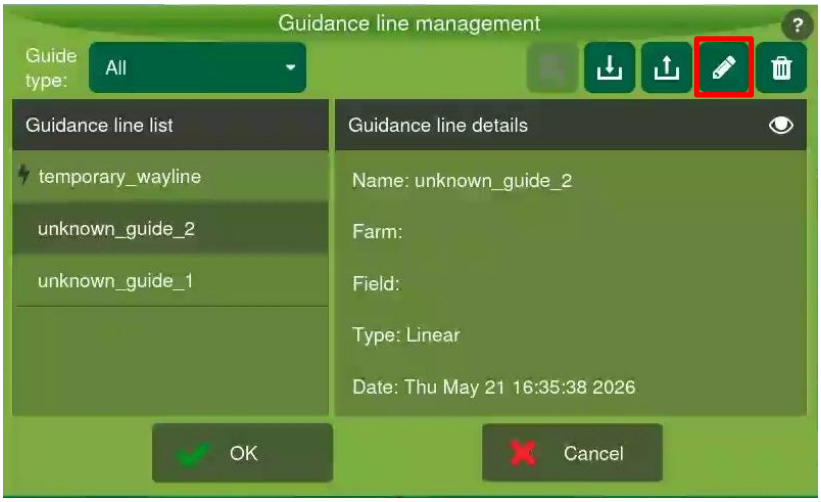


- **Export guide:** Exports guides to USB drive in shapefile format (.shp). Two options:



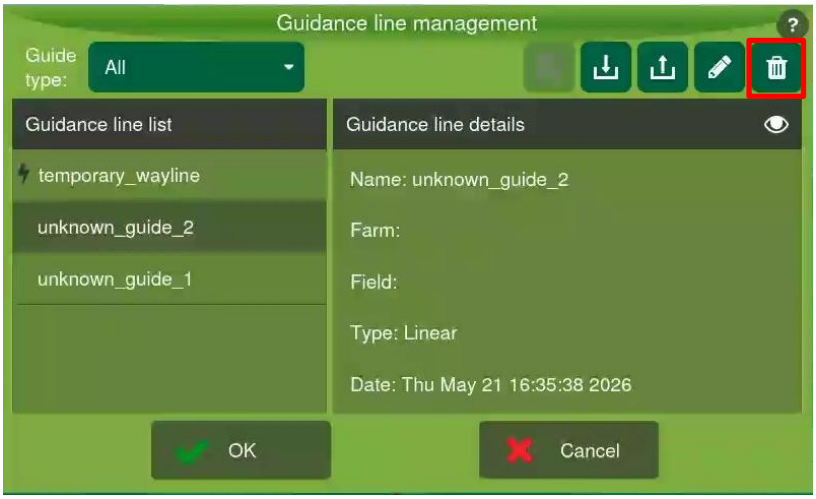
  - **Original guide:** Exports only the original guide, without parallel lines. Can be reimported by the equipment.
  - **Line map:** Exports the complete set (original + parallels), generating a Line map. You define the number of lines for each side.

- **Edit guide name:** Allows renaming saved guides (maximum 32 characters). It is not possible to use existing names without overwrite confirmation



- **Delete guide:** Permanently deletes a saved guide.

  Warning: the guidance will be deleted from all work sessions in the same field. Not available for temporary guides.



Automatic Steering

The Automatic Steering, when correctly configured, allows the vehicle to follow a line precisely, avoiding product waste and ensuring uniform coverage.

General Config

Operational and safety parameters of the Automatic Steering:

- **Override gain (0–100%):** Effort required for the operator to resume steering through manual actuation directly on the steering wheel. Higher value = more rigid/difficult; lower = lighter/more sensitive.
- **Error security (meters):** Defines the maximum allowed distance between the entry/engagement line and the nearest line. If this limit is exceeded, the automatic steering will be deactivated. Recommended: up to **5 meters** for self-propelled operations.
- **Angle sec (degrees):** Defines the entry angle into the line. If this limit is exceeded, the automatic steering will be deactivated. Recommended: up to **40 degrees**.
- **Wheel alarm (degrees):** If an anomaly is detected in the wheel position sensor, the steering is deactivated.
- **Alarm behaviour:** Defines whether the alarms suspend the operation (section cut, fertilization, etc.).
- **Max. allowed speed (km/h):** Above this value, the steering does not turn on or is automatically disarmed.
- **Road mode (inactive time):** Time to display a steering inactivity warning.

Warning: Low saturation and delta values impair response in curves. High minimum saturation and maximum delta values can cause abrupt movements at high speed.

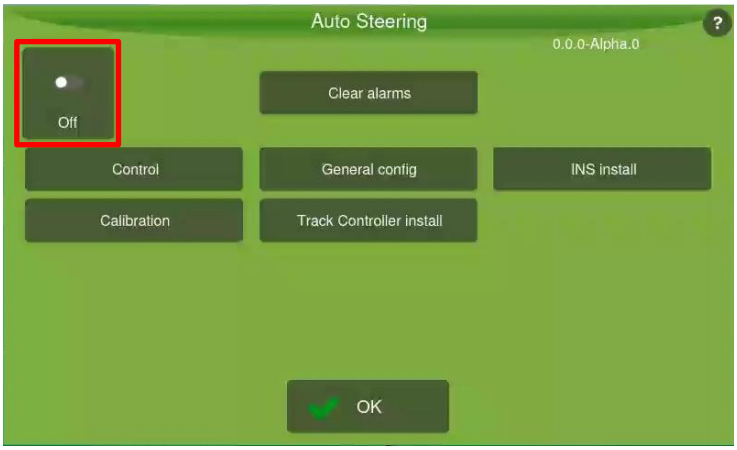
Using the Automatic Steering in the Field

On the operation screen, check the Automatic Steering icon:

Icon	Meaning
	**Auto steering activated** - the device is on and controlling the wheel.
	**Auto steering enabled** - the devices is enabled to operate.
	**Auto steering blocked** - the device cannot be activated. Critical alarm occurrence (makes operation impossible). High error and angle regarding the guide.
	**Auto steering** pilot **unavailable** - no communication with the ATCD control driver.

To turn the steering on or off:

- Press the Automatic Steering icon on the operation screen, or



- Touch the screen simultaneously with **three fingers**, or
- Use an **on/off pedal** (if installed)
- Also, **if using the hydraulic steering**, it is possible **to turn off by forcing the steering wheel with your hand**.

Warning: When turning on, a message will request confirmation that the vehicle is in a field. The same message appears after 30 minutes without operation or if the maximum speed is exceeded.

Requirements for the pilot to steer:

- The vehicle must be on an **active guide**.
- Movement **between lines** must be done **manually** by the operator or using the Auto Turn function — available separately, requiring commercial activation, available from version 4.14.x.

Tip: A well-calibrated and adjusted pilot keeps the vehicle precisely on the guidance line, reducing overlap and failures. This translates directly into **lower input consumption** and a **more uniform application** in the field. Invest time in calibration and adjustments — the return comes in product savings with each pass.

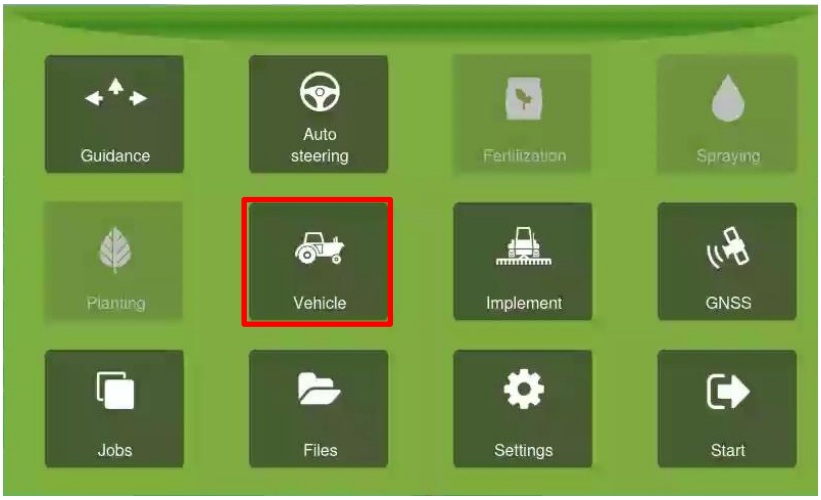
Additional Articles

Vehicle Selection

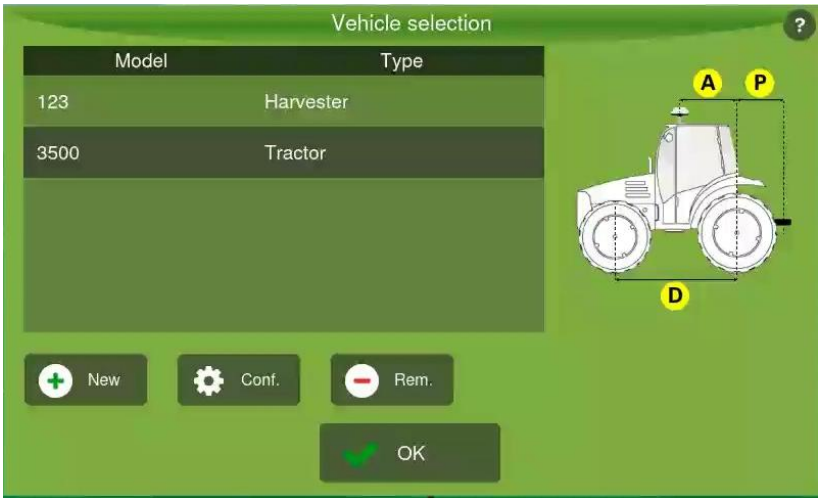
Before starting the operation, verify that the correct vehicle is selected in the display. Incorrect selection can compromise the validity of all work.

To select the vehicle:

1. Access **Vehicle Selection** in the Settings Menu.



2. Select the desired vehicle from the list on the left side of the screen.



3. Verify that the information displayed is correct and press **OK**.

Warning: If there is no vehicle created in the system, it will not be possible to access the Automatic Steering Configuration Menu. In this case, contact the technician responsible.

The vehicle data configuration and editing is available only in **Advanced mode** and must be performed by the technician responsible.

Warning: If the vehicle information is incorrect or you need to register a new vehicle, contact the technician. Incorrect configuration can compromise the operation of the Automatic Pilot.