



skipper **LT**


SATELLITE NAVIGATOR

CE

467020

Software rel. 2.0X

INSTALLATION, USE AND MAINTENANCE

 = Generic danger = Warning

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1 PRODUCT DESCRIPTION

SKIPPER LT is a satellite navigation system that can be used for agricultural spraying and navigation applications, once connected to the external GPS antenna.

2 INTENDED USE

This device is designed to work on agricultural machinery for crop spraying applications. The machine is designed and built in compliance with EN ISO 14982 standard (Electromagnetic compatibility - Forestry and farming machines), harmonized with 2004/108/EC Directive.



Skipper LT is not a road navigator and should only be used on agricultural land.

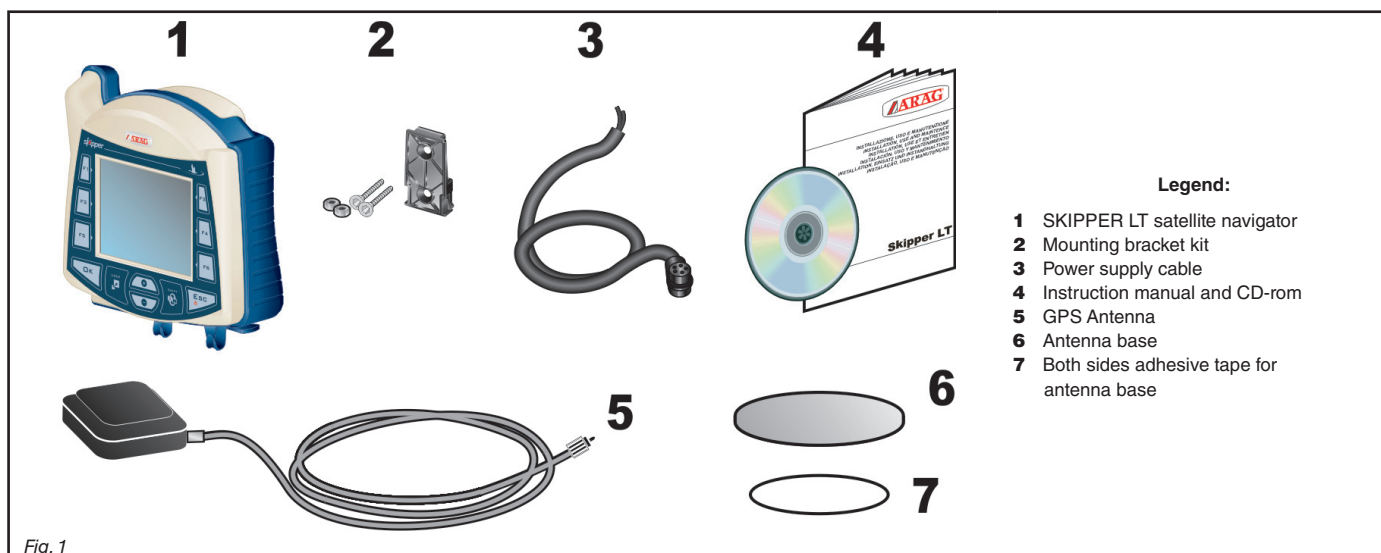
3 PRECAUTIONS



- Do not aim water jets at the equipment.
- Do not use solvents or fuel to clean the case outer surface.
- Do not clean equipment with direct water jets.
- Comply with the specified power voltage (12 Vdc).
- If doing arc-welding, disconnect the connectors from Skipper LT and disconnect its power cables.
- Only use ARAG genuine spare parts and accessories.

4 CONTENTS OF THE PACKAGE

The table below shows the components you will find inside the Skipper LT satellite navigator package:



5 INSTALLATION

5.1 Introduction

Installation of the Skipper LT system does not require specialist knowledge.

We recommend however that this be done by a qualified technician in as much as the installation also requires electrical connections to be made.

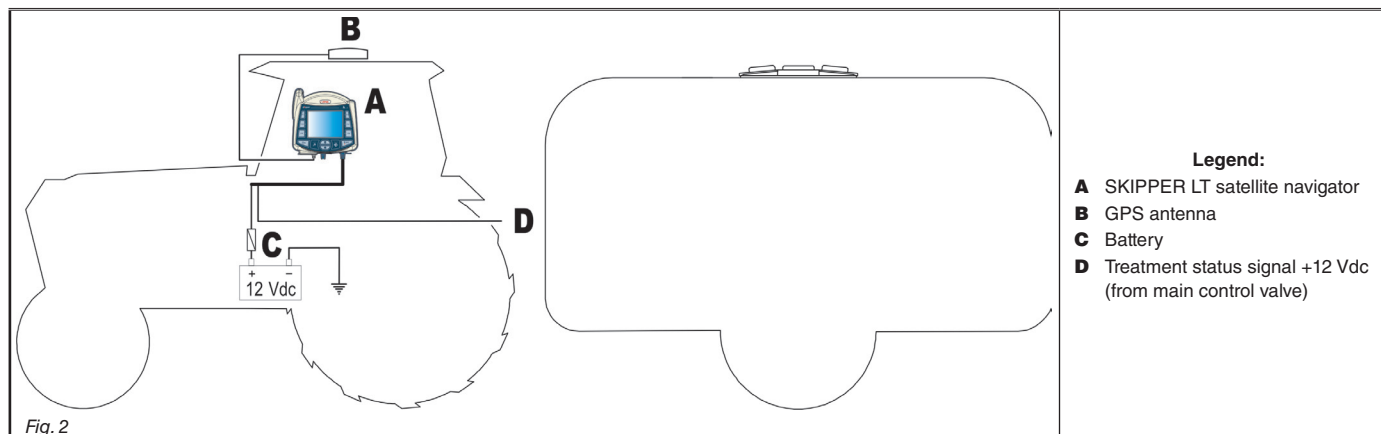


ARAG IS NOT LIABLE FOR ANY DAMAGE CONSEQUENT ON INSTALLATION BY UNQUALIFIED PERSONS. IF CASE OF DAMAGE TO THE SYSTEM CAUSED BY INCORRECT INSTALLATION OR CONNECTIONS, THE WARRANTY IS AUTOMATICALLY VOIDED.



CAUTION! DO NOT CONNECT ANY ANTENNA DIFFERING FROM THE RECOMMENDED ONE (art. no. 520110.600). ARAG WILL BE HELD HARMLESS FROM ANY LIABILITY IN CASE OF PRODUCT DAMAGES, FAULTS AND RISKS OF ANY KIND CAUSED BY THE CONNECTION OF THE MODULE WITH NON-ORIGINAL ANTENNAS OR ANTENNAS NOT SUPPLIED BY ARAG.

5.2 System configuration



5.3 General precautions for locating the Skipper LT and cable runs

Positioning the Skipper LT device in the cab:

- **DO NOT** place the navigator in areas subject to excessive vibrations and shocks or close to moving parts which might cause damages;
- Mount the remote control unit in a visible position, without obstructing the operator's view, and within easy reach by hand;
- Take care to position the device away from moving parts to avoid accidental operation of its keys.

Inserting the connectors:

- Fit supplied O-rings into connectors and then connect paying special attention to the notch. Press gently and then tighten the ring nut.



WARNING: Tighten connector ring nuts finger tight. Do not use any tools.

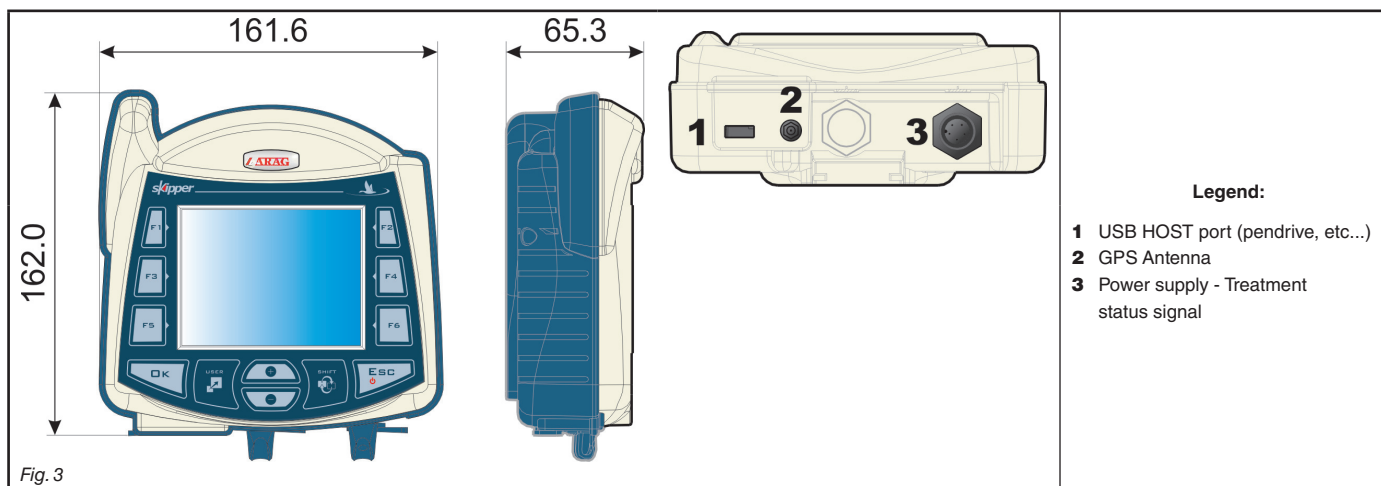
- Do not force insertion of connectors by pressing excessively or bending: contacts could damage and compromise correct operation of the monitor.

Securing the cables:

- Note the various connections required for the Skipper LT system to operate, the necessary length of the cables, and ensure that there is sufficient space for the cable runs and connectors;
- Route the cables in such a way that twisting and machine movements cannot damage or break them;
- Route the cables in such a way that they cannot come into contact with moving parts;
- If, due to limited space, the cabling has to run around a corner, make sure that the bend is not too sharp as this may cause the cable to break.

Use **ONLY** the accessories indicated in the catalogue, having technical features suitable for the use to be made of them.

5.4 Overall dimensions

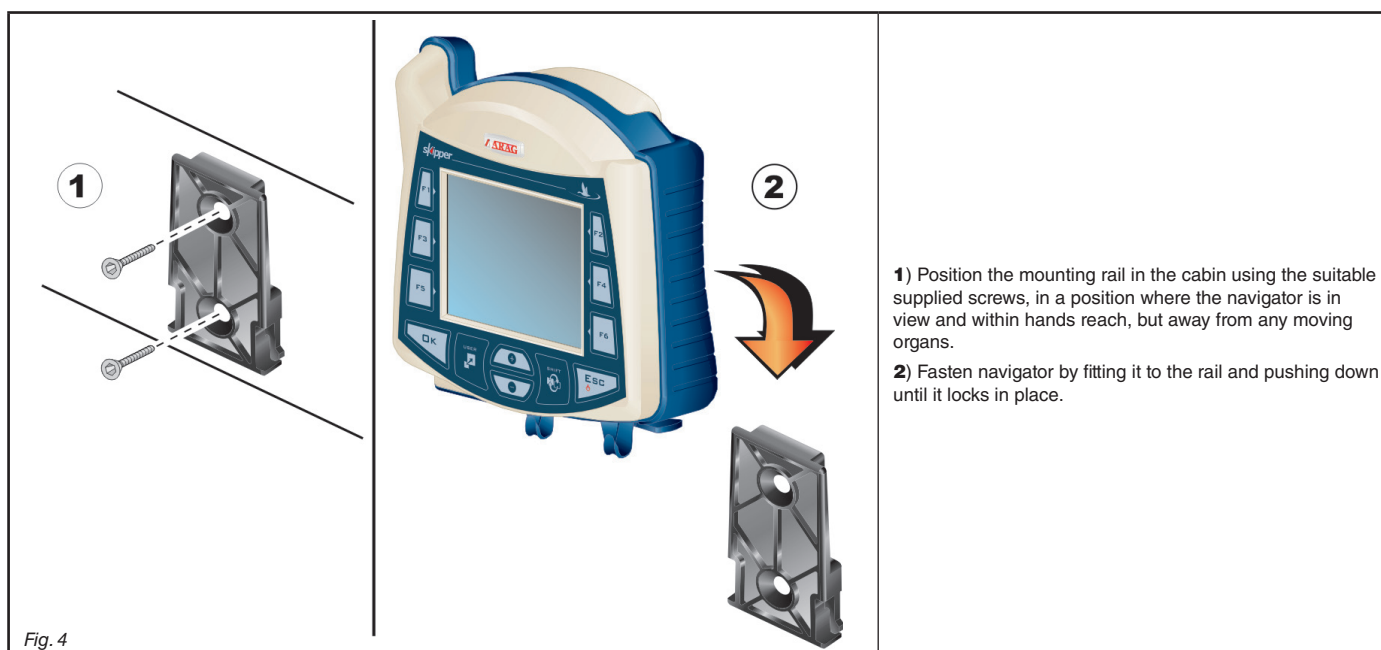


5.5 Skipper LT navigator position



Before positioning the satellite navigator, carefully read all information given under par. 5.3 - General precautions for locating the Skipper LT and cable runs.

Position Skipper LT centrally into the cabin so that it does not impair driving visibility while allowing data check during treatment.



5.6 Locating the antenna

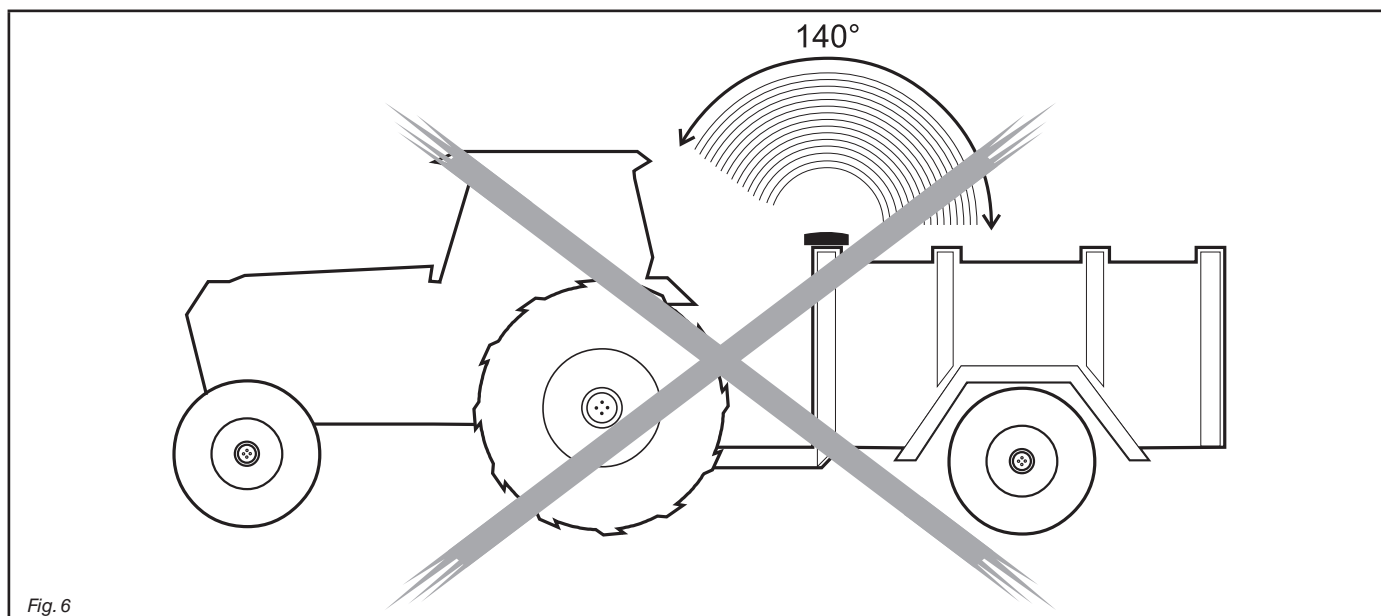
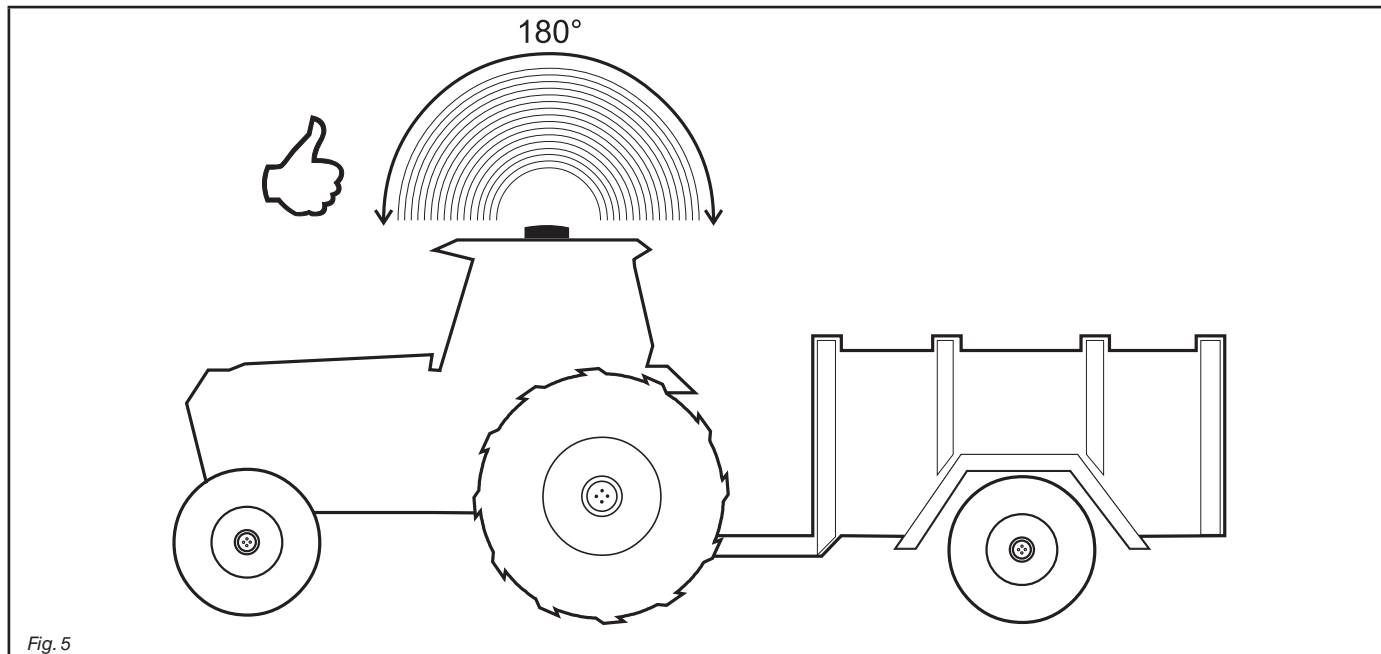


The user must position the GPS antenna as indicated in this manual and make sure that the modified vehicle height does not lead to an impact with any obstacle.

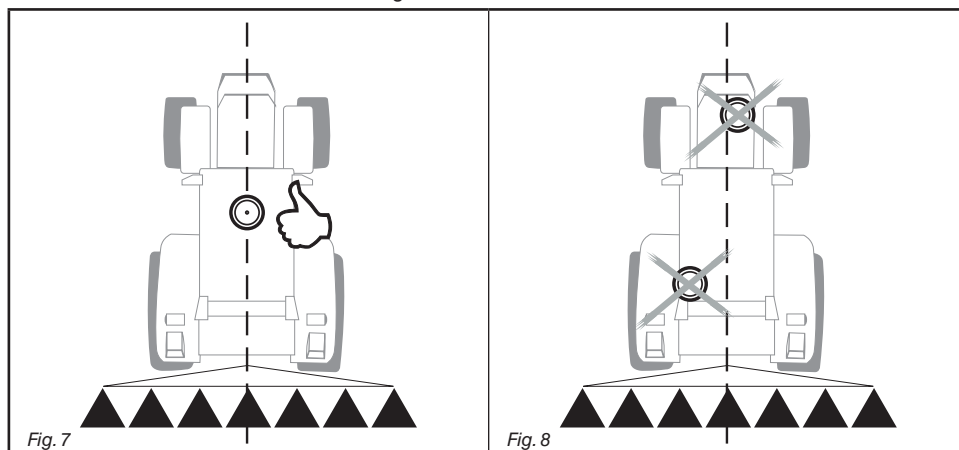
Installing the antenna:

Installation of the antenna on agricultural equipment must observe certain basic requirements:

- it must be installed on the highest point of the machine (including trailer): the skywards reception angle must be as unobstructed as possible.



The antenna must be installed on the lengthwise axis of the machine.



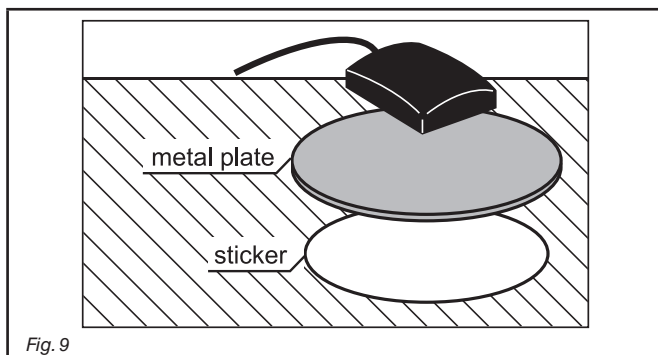
Antenna fastening:

The antenna has a magnetic base and should be positioned on a flat metal surface (e.g. farm machine roof). In case of plastic roof, use the supplied metal plate and sticker.

Remove one of the protective films from the sticker and stick it onto the metal plate. Then remove the other protective film and position the plate where the antenna is being fitted after cleaning the whole area.

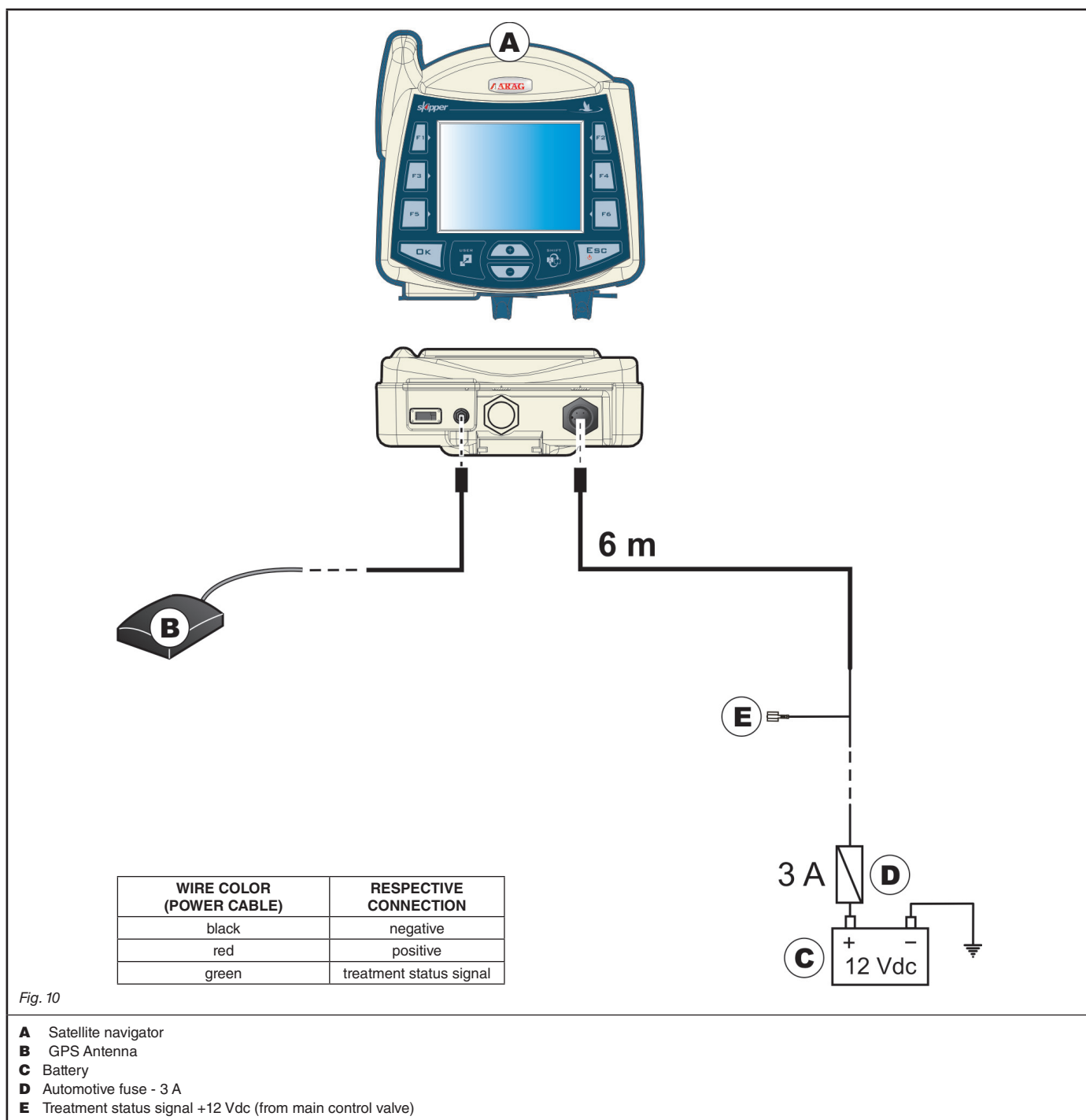


It is important that the metal plate and the antenna are positioned onto a flat surface free from any objects which might reduce adhesive adherence.



Check for proper metal plate fixing at regular intervals so to avoid its accidental detachment.

5.7 Electrical connections - general diagram



5.8 Connection to the GPS antenna



Only use the specific ARAG GPS antenna to be used in connection with SKIPPER LT. ARAG shall not be held liable for loss or damage due to use of different types of antenna.

Before making the connection, carefully read par. 4.3 - General precautions for locating the SKIPPER LT and cable runs.

Connect the external GPS antenna to Skipper LT.

The connection points are given in par. 4.7 - Electrical connections - general diagram.

5.9 Treatment status signal

If the machine is equipped with a treatment control, such as a switch on the control valve, the SKIPPER LT can be connected to a corresponding treatment status signal, so that it receives a +12 Vdc signal directly from the control itself when treatment starts. We recommend that the control be connected to the main control valve positive pole. Since the current in question is very low, the cable connection to the control need not be of any special cross-section.



CAUTION: the connection to the treatment control must be done by a qualified technician.

ARAG is not liable for damage to the system, persons, animals or things due to incorrect connection of the above control or modifications to the system, cabling, connectors or any other components required to make the connection.

- If the treatment start control connection is not made, the operational status of the equipment must be entered into the SKIPPER LT manually with the key **USER**.

5.10 Connection to the power source



WARNING!

To avoid short circuits, do not connect the power cables to battery before the installation is completed.

Before powering up the satellite navigator, make sure the tractor battery voltage rating is correct (12 Vdc).

Skipper LT is directly powered by the farming machine battery (12 Vdc): ALWAYS switch satellite navigator on through the relevant procedure; after use, remember to manually switch Skipper LT off through the relevant push-button on control panel.



Leaving Skipper LT on for too long while farming machine is stopped could drain the tractor's battery. If the machine stays with engine off for a long time, make sure you disconnect Skipper LT from the battery (Fig. 10).



WARNING:

- The power circuit must ALWAYS be fitted with a 3 Amp automotive fuse.
- All cables connected to the battery shall have a minimum cross-section of 1 sq. mm.
- Use cables with suitable terminals ensuring correct connection of all wires.

6 PROGRAMMING

6.1 Switching on

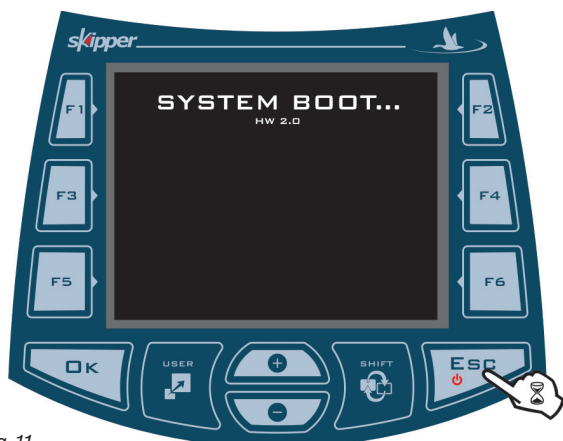


Fig. 11



Fig. 12

Hold the push-button depressed until Skipper LT displays the page shown in Fig. 11.
After that, Skipper LT shows the software version (Fig. 12).

FIRST START-UP OF THE DEVICE



Fig. 13

Upon its first start-up, after showing the software version, Skipper LT directly opens the page for setting the language (Fig. 13).
Enter value and proceed to the normal switch-on procedure (Fig. 14).

CONT'D



Confirm access or data changes.



Scrolling menu items.
Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par.
6.3

NORMAL SWITCH-ON PROCEDURE

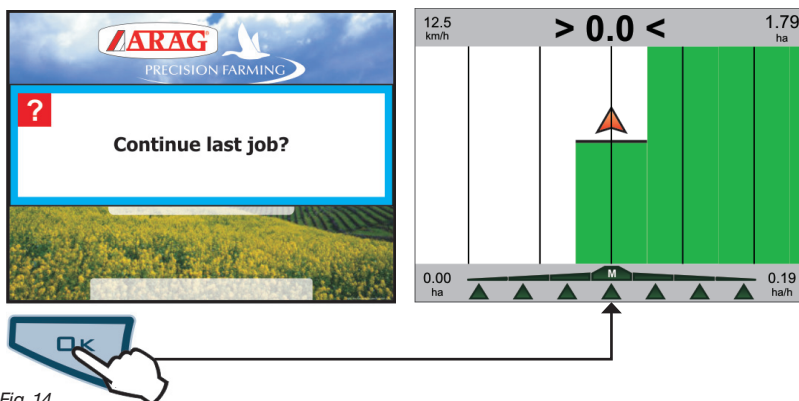


Fig. 14

After showing the software version, Skipper LT displays the following message **Continue last job?** (Fig. 14).

Button **OK** allows you to continue the last job done before switching off, using the active machine.

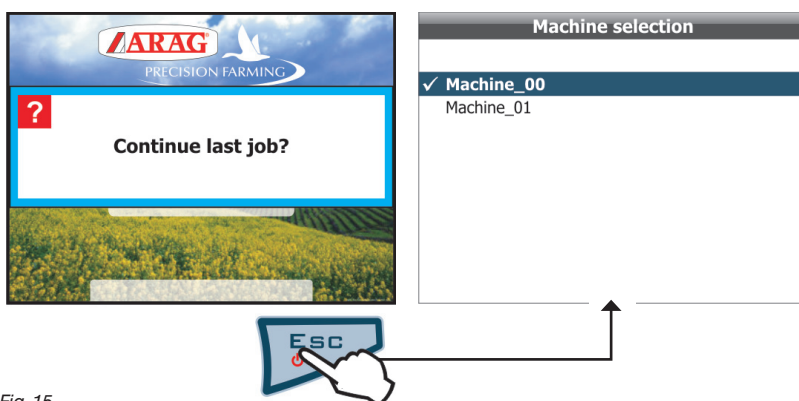


Fig. 15

Button **ESC** moves on to a new job without saving the last one done before switch-off.



WARNING: all job data not duly saved will be lost.

6.2 Switching off

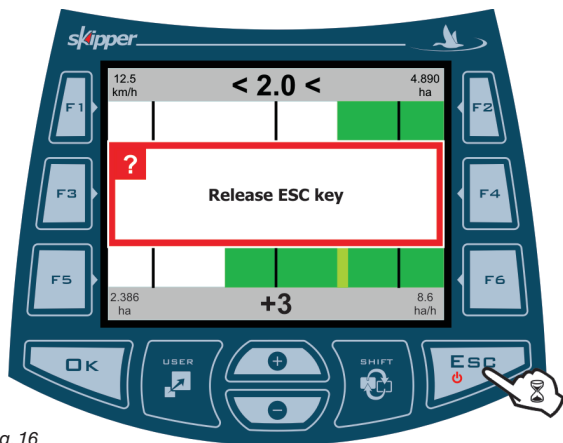


Fig. 16



Fig. 17

Hold **ESC** push-button depressed until Skipper LT displays the page shown in Fig. 16. Release the button and device will switch off after a few seconds.



While switching off, Skipper LT automatically saves current job.



While system is switching off, **DO NOT** press any button, **DO NOT** cut off power and allow for Skipper LT to switch off.

WARNING: ALWAYS use the suitable button to switch device off; failure to do so will cause ALL jobs and programming data to be lost.



Confirm access or data changes.



Scrolling menu items. Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par. 6.3

6.3 Using the programming keys

SELECTION AND ACCESS TO MENU ITEMS

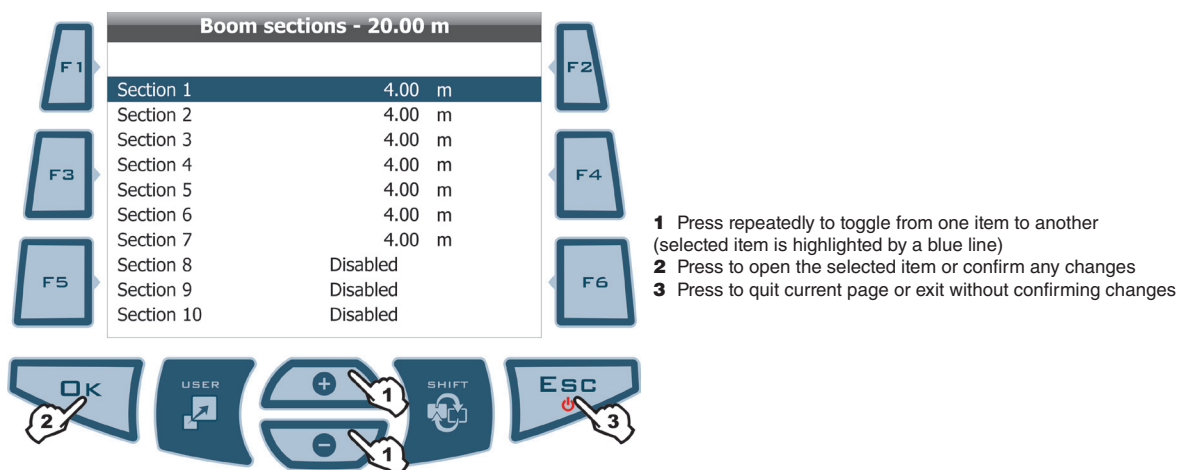


Fig. 18

ENTERING A NUMERICAL VALUE

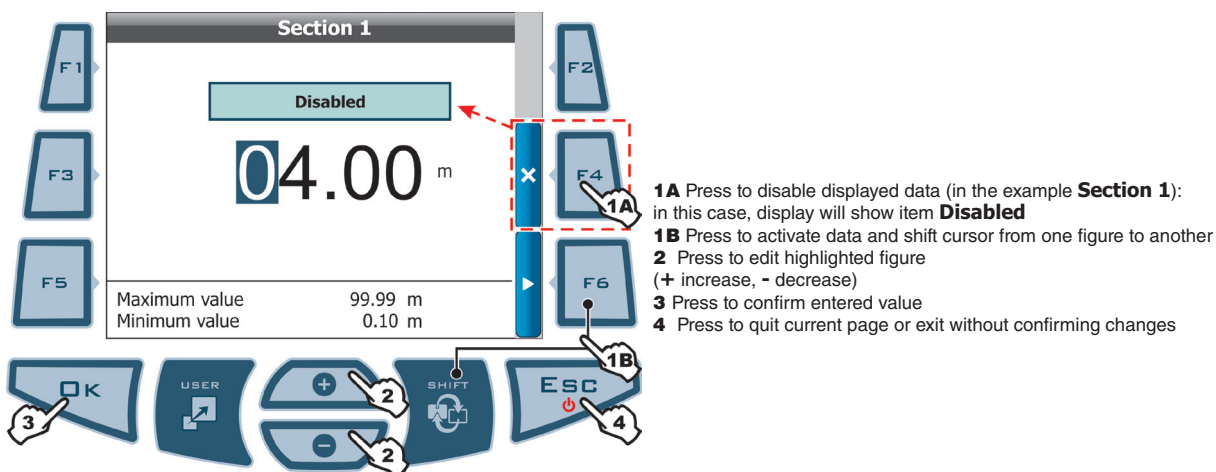


Fig. 19

ENTERING TEXT

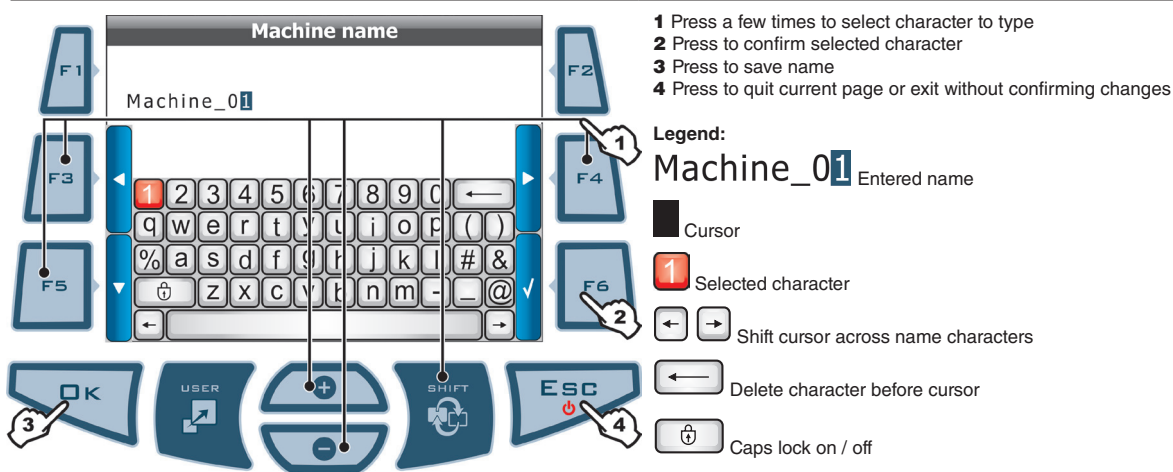


Fig. 20

6.4 Programming menu

Enter this menu to set all Skipper LT features necessary to correctly use the device.

Before programming, ensure:

- correct installation of all components
- connection to the power source



Failure to correctly connect system components or to use specified components might damage the device or its components.

ACCESS TO MENU

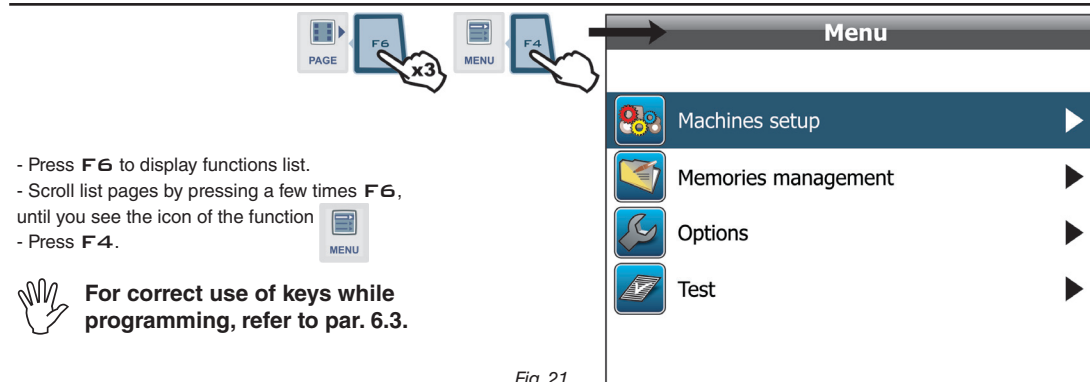


Fig. 21

MENU STRUCTURE

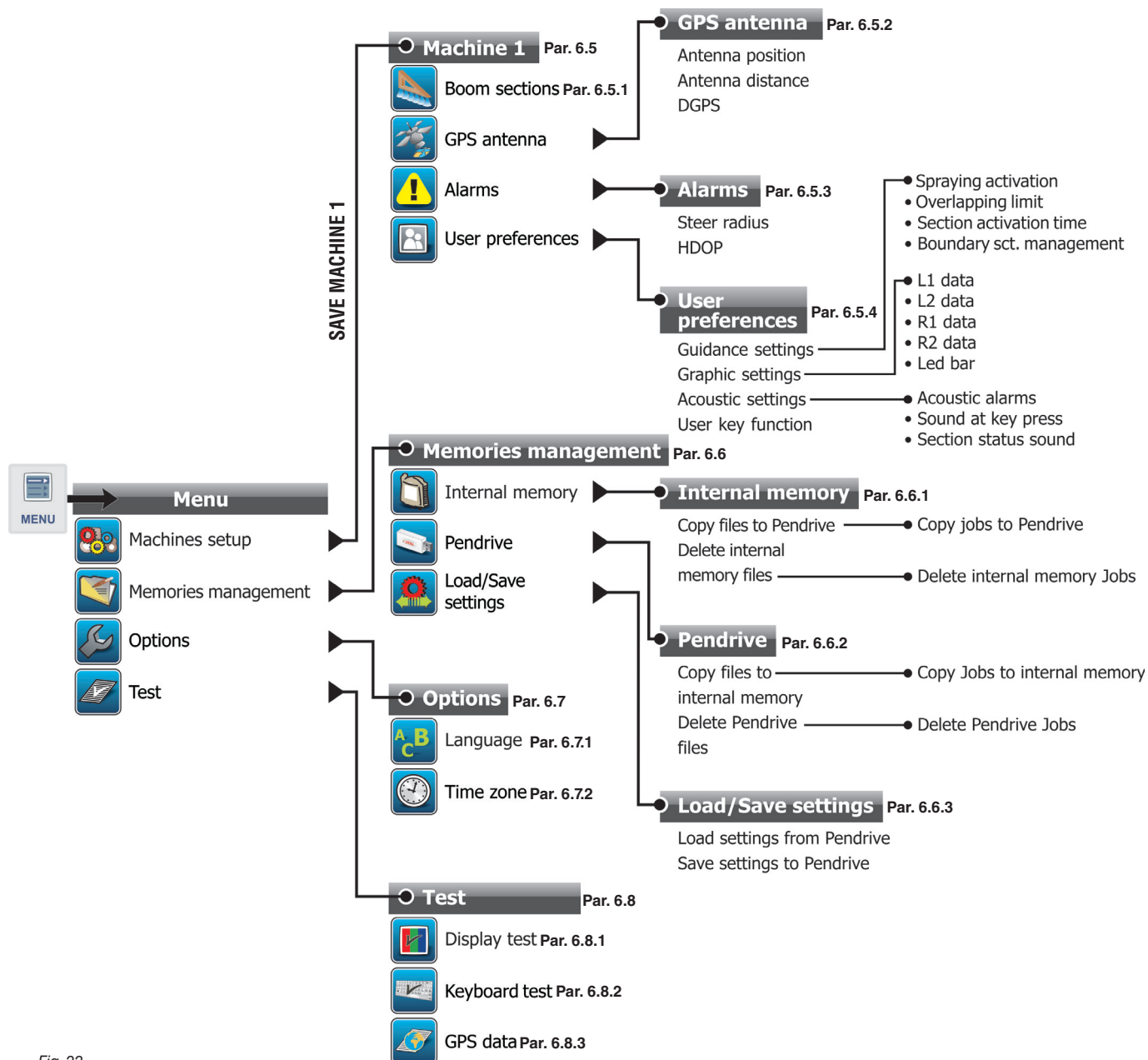


Fig. 22

6.5 Machines setup

Enter **Machines setup** menu (Fig. 21) then select machine* to be set using buttons + or - and press **OK**; as an alternative, create a new one using the function keys (Fig. 23).

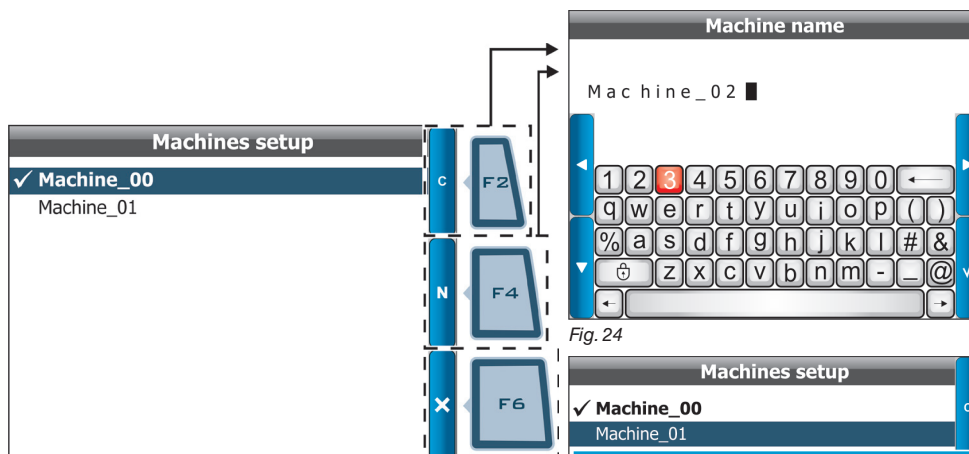


Fig. 23

* "machine": includes all tractor settings you use to carry out the spraying job.
For instance, you could use Skipper LT with many machines so to obtain the correct information you shall recall the features of the machine in use.
Active machine is marked with the symbol ✓
(Fig. 25, Machine_00).

Fig. 24

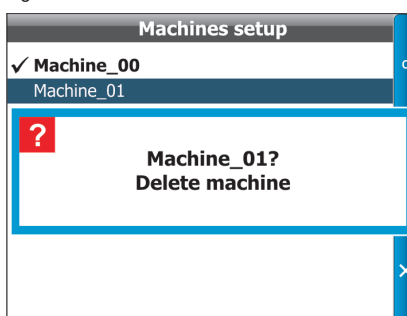


Fig. 25

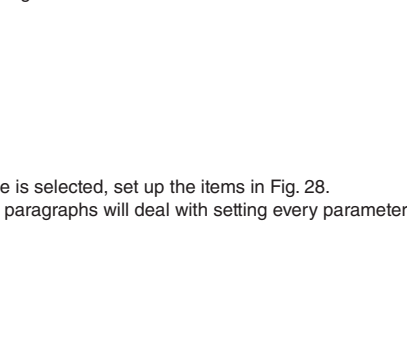


Fig. 26

Once machine is selected, set up the items in Fig. 28.
The following paragraphs will deal with setting every parameter.

SAVE ERRORS

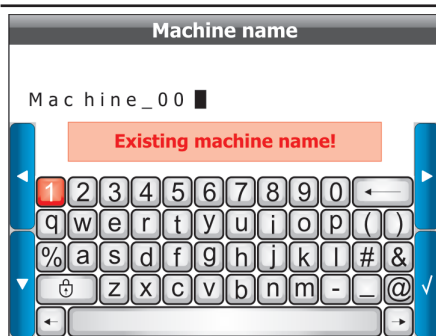


Fig. 27



Fig. 28

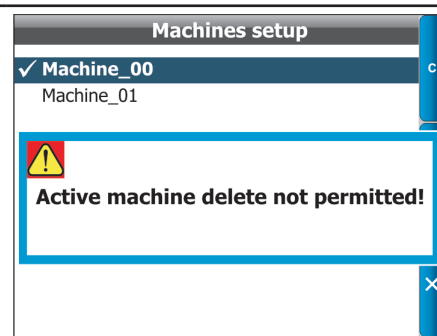


Fig. 29

The desired operation can not be performed in the following cases:

- Existing machine name (Fig. 27)

Entered name has already been allocated to another machine: edit name.

- Invalid file name (Fig. 28)

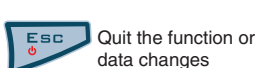
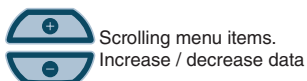
Entered name is not correct: edit name.

- name can not start with a number or space.

- max. number of characters allowed: 16.

- Active machine deletion (Fig. 29)

The machine configuration you would like to delete is the active one (checked): activate a different machine configuration before deleting.





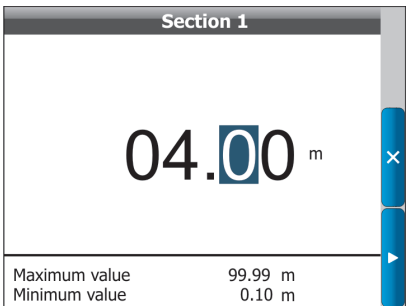
6.5.1 - Boom sections



Boom sections - 20.00 m	
Section 1	4.00 m
Section 2	4.00 m
Section 3	4.00 m
Section 4	4.00 m
Section 5	4.00 m
Section 6	Disabled
Section 7	Disabled
Section 8	Disabled
Section 9	Disabled
Section 10	Disabled

Overall width (Fig. 32)

Fig. 30




Indicate the width of every boom section.
Repeat programming for each item shown in Fig. 30 and disable the sections not connected.
Message **Disabled** will appear on the display.
 According to set programming, the displayed bar appearance will change (par. 7.3).

Fig. 31

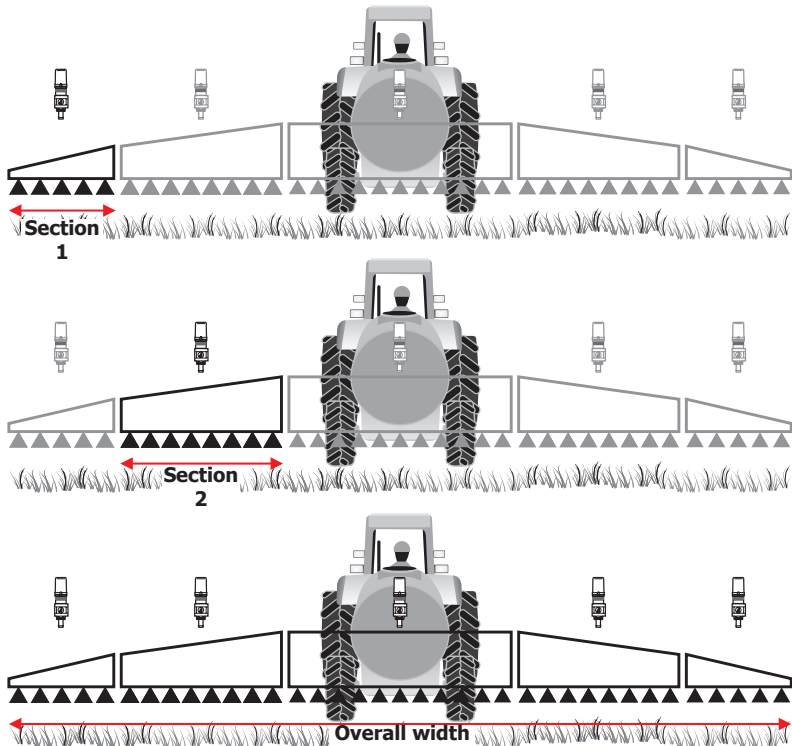


Fig. 32



6.5.2 - GPS antenna

GPS antenna	
Antenna position	Front
Antenna distance	0.0 m
DGPS	Disabled

Within every item, active options are marked with ✓.

Fig. 33

Antenna position

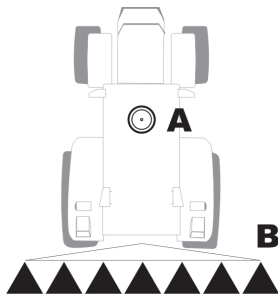


Fig. 34

Indicate the position of the antenna with respect to the point where tractor is spraying (crop spraying boom, spreader plate, etc.).

In the example shown in Fig. 34, antenna **A** is installed in **Front** of the spraying boom **B**.



Warning: Before setting this item, modify the **Antenna distance** (Fig. 35): if **Antenna distance** is zero, item **Antenna position** cannot be modified.

Antenna distance

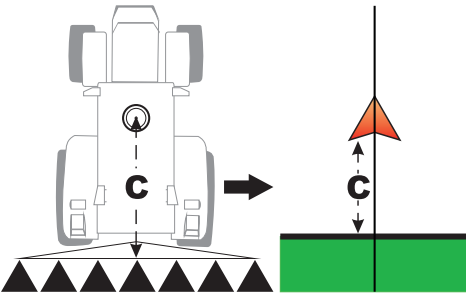


Fig. 35

Indicate distance **C** between antenna and work point (Fig. 35).



Depending on entered value, the displayed sketch will change accordingly.

DGPS

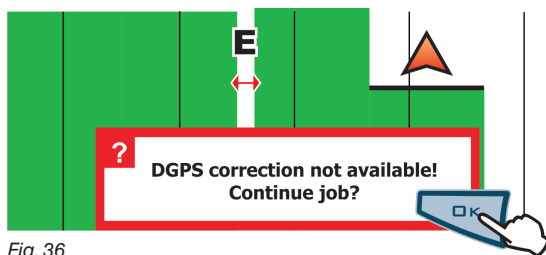


Fig. 36

Allows you to enable the DGPS differential correction function (SBAS): SBAS differential correction signal is a free signal only available in some areas world-wide that ensures a higher work accuracy.



WARNING: this function can only be used in Europe (EGNOS), United States of America (WAAS) and Japan (MSAS).

Enabling / disabling the differential correction during the job could lead to a rather big measurement error between the vehicle and the tracks sprayed until that moment (**E** in Fig. 36). The following passes will be correctly measured (equidistant one from the other).

In the example shown in Fig. 36, press **OK** to continue job. It is recommended to perform a track alignment JUST AFTER THIS, using function "Align" (par. 8.2.4 - F4 Align).



Confirm access or data changes.



Scrolling menu items.
Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par.
6.3



6.5.3 - Alarms

Alarms	
Steer radius	Disabled
HDOP	4.0

Fig. 37

Steer radius

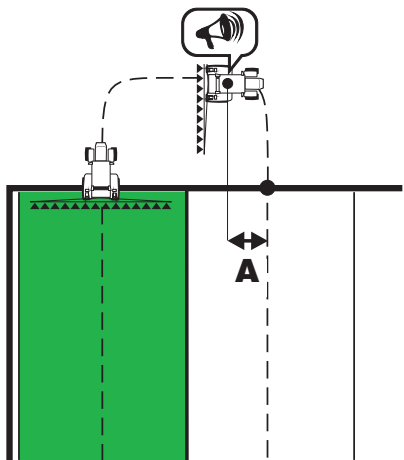


Fig. 38

Entered value allows system to trigger an acoustic alarm at the exact moment when operator must turn to center the following track, without leaving any unsprayed areas or overlapping areas. This distance should correspond to tractor steering radius (A in Fig. 38), used at field end to revert travel direction and resume spraying on the nearby track, but value shall be adjusted according to the operator skills and vehicle speed.
Alarm is triggered ONLY if vehicle travel direction creates an angle wider than 60° compared to the track to be run through.

HDOP

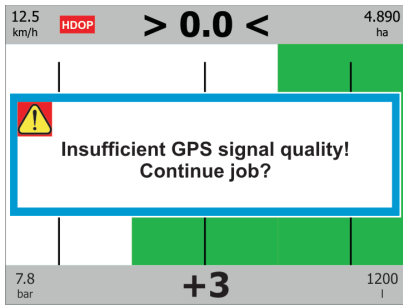


Fig. 39

"HDOP" is the value by which satellites number and position affect latitude and longitude accuracy; the lower the value, the higher the accuracy. Accuracy alarm is triggered when HDOP value measured by the GPS receiver exceeds set threshold: in this case Skipper LT asks the operator whether to continue job underway (Fig. 39). We suggest NOT to set values higher than 4.0.

 Refer to par. 9.1 for the steps to take during the alarm.



Confirm access or data changes.



Scrolling menu items. Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par. 6.3



6.5.4 - User Preferences

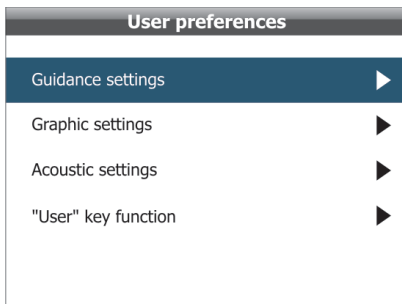
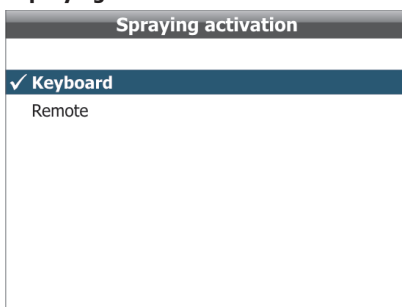


Fig. 40

Guidance settings

• Spraying activation



Allows you to determine how the spraying state signal is output to Skipper LT. Skipper LT must know when the machinery is working in order to make all necessary spraying calculations (for instance tractor could move forward but not spray).

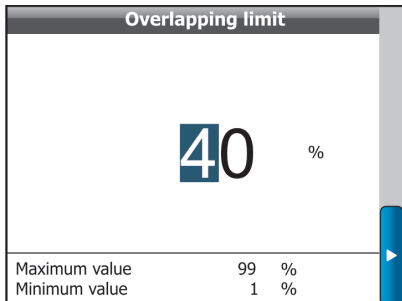
- **Keyboard option:** spraying job state is indicated through keyboard using **USER** key.
- **Remote option:** connection to a remote device supplies Skipper LT information about spraying job state, for instance a switch for the main valve of a spraying machine. Skipper LT shall be duly connected to it to be able to receive information about its state (par. 5.7).



WARNING: Keyboard option locks the "User" key function menu described below.

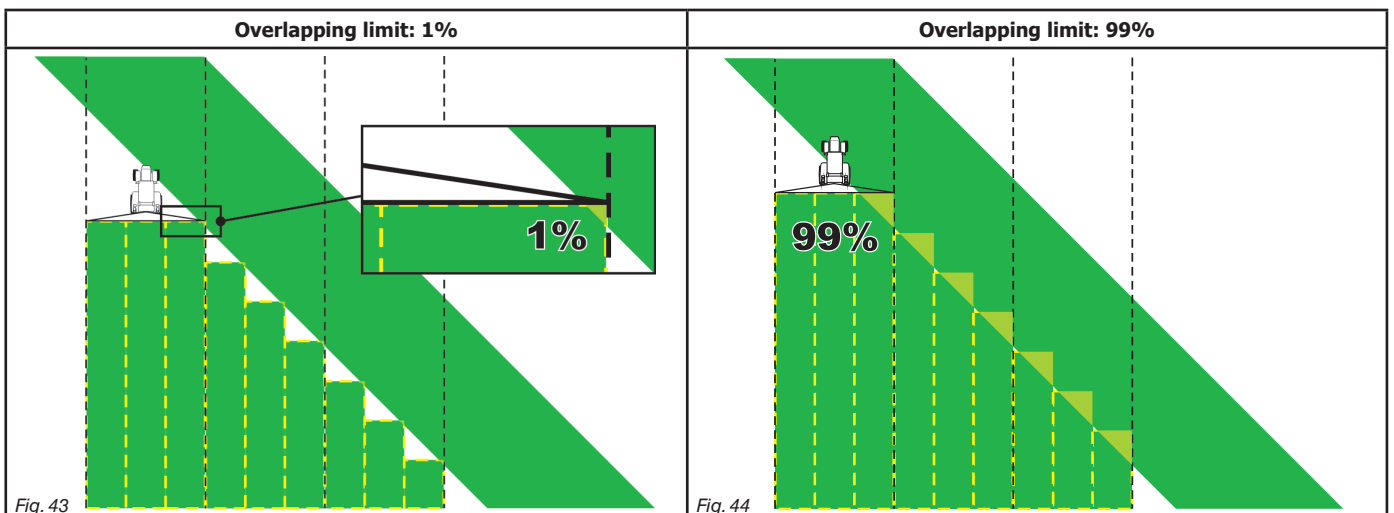
Fig. 41

• Overlapping limit



Enables you to set the allowed threshold for spraying overlapping. When this value is exceeded, Skipper LT indicates to close the relevant valves.

Fig. 42



CONT'D



Confirm access or data changes.



Scrolling menu items.
Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par.
6.3

Guidance settings (CONTINUED)

Section switch-ON time

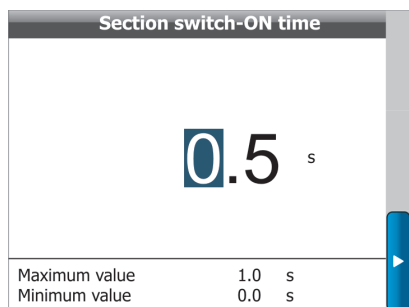


Fig. 45

Set this menu to indicate time elapsed between sending the control to the section valve and the actual product spraying stop. Skipper LT will use this information to make all calculations concerning the spraying job.

Boundary sct. management

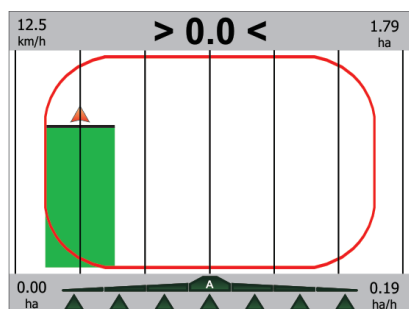


Fig. 46

Sets the moment when Skipper LT will signal that the section valves spraying out of the field boundaries must be opened or closed.

- **Min. overstep** option: in Fig. 47 the close / open the section valves signal will be triggered upon any field boundaries overstep.
- **Max. coverage** option: in Fig. 48 the close section valves signal will occur ONLY when the machine is spraying outside the field boundaries for the whole coverage.

To use these settings you need to:

- have marked field boundaries (red track in Fig. 51), using the function "Area" (par. 8.2.5).

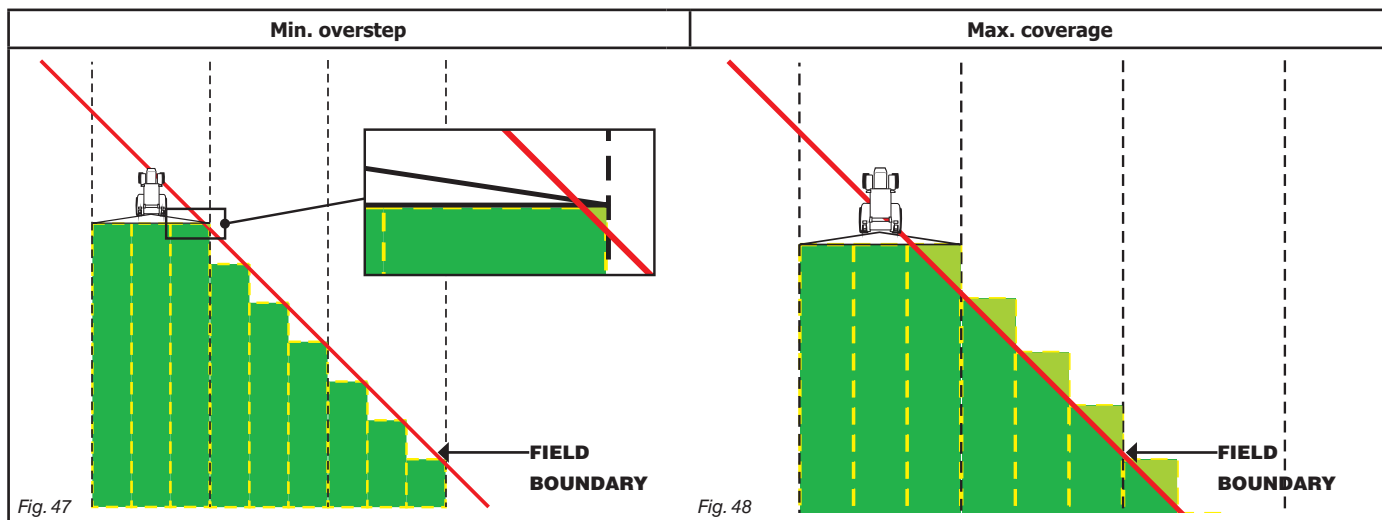
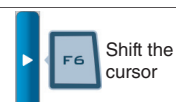
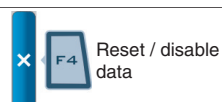
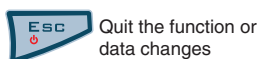
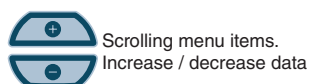


Fig. 47

Fig. 48


Par.
6.3

Graphic settings

Graphic settings	
L1 data	Speed
L2 data	Calculated area
R1 data	Sprayed area
R2 data	Productivity
Led bar	Disabled

Fig. 49

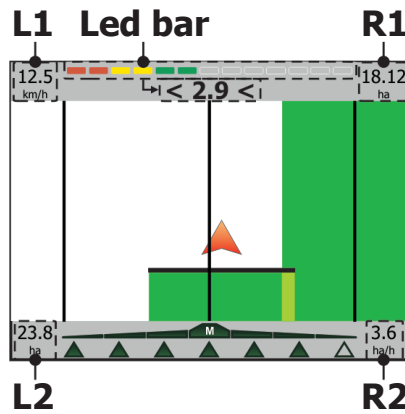


Fig. 50

• L1 - L2 - R1 - R2 data

Allows setting spraying job data you wish to view on guidance page (Fig. 50).

• LED bar

Allows viewing the led bar on guidance page (Fig. 50).

Acoustic settings

Acoustic settings	
Acoustic alarms	Enabled
Sound at key press	Disabled
Section status sound	Disabled

Fig. 51

• Acoustic alarms

Allows enabling/disabling acoustic warning activated during alarms.

• Sound at key press

Allows enabling/disabling tone activated when pressing keys.

• Section status sound

Allows enabling/disabling acoustic warning (two close beeps) indicating that it is necessary to open or close sections.

"User" key function

"User" key function	
Alignment	
✓ Store job pause point	
Pause point return	
Toggle 2D-3D view	

Fig. 52

Allows customization of the **USER** key.

When button is pressed, one of the following options is executed:

- Alignment (par. 8.2.4 - **F4** Align).
- Store job pause point (par. 8.2.1 - **F1** Pause).
- Pause point return (par. 8.2.3 - **F3** Return).
- Toggle 2D-3D view (par. 8.4.2 - **F2** 2D-3D).
- Toggle sections management mode (par. 6.5.4 - **User preferences / Guidance settings / Boundary sct. management**).

WARNING! This menu can be programmed **ONLY** if:

- spraying job is performed by a remote device (Remote option, par. 6.5.4 - **User preferences / Guidance settings / Spraying activation**).

In other cases, **USER** key is programmed to activate the spraying job.

END OF PAR. 6.5 - MACHINES SETTINGS

6.6 Memories management

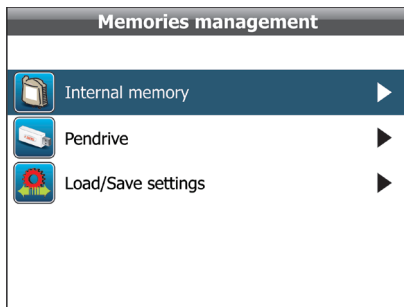


Fig. 53

Allows you to load, save and/or delete information stored on Skipper LT or on a remote memory (pendrive); this data concern jobs done or machine configurations.
The possible operations will be explained in the paragraphs below.



Preparing the Pendrive for data exchange: refer to par. 6.6.4.



6.6.1 - Internal memory

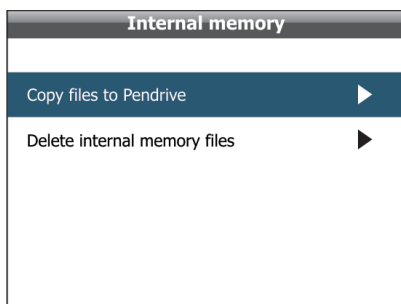


Fig. 54

Copy files to Pendrive

Allows you to transfer saved data, about jobs, from Skipper LT internal memory to a pendrive.



**To display the menu items it is necessary to connect the pendrive to Skipper LT using the suitable connector (par. 5.4).
If connection is not made, the message **Pendrive not found!** is displayed.**

• Copy jobs to Pendrive

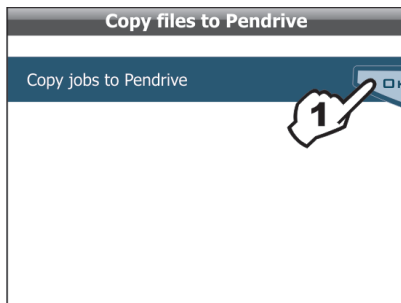


Fig. 55

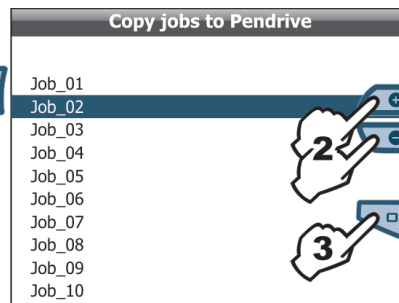


Fig. 56

- 1 Select item **Copy jobs to Pendrive** (Fig. 55) and press **OK**;
- 2 Scroll the jobs list (Fig. 56) using keys **+** or **-** and select the file to copy;
- 3 Confirm copy by pressing **OK**.
A confirmation message is displayed once copy is completed (Fig. 57). Press **ESC**.

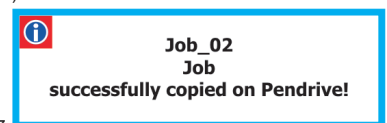


Fig. 57

ERROR MESSAGES

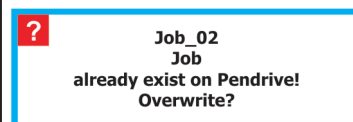


Fig. 58

The pendrive already contains a file with this name.
Following are the two possible instances:
- Press **OK** to replace file.



WARNING: ALL data concerning replaced file will be lost.

- Press **ESC** to avoid replacing the file: check file content or change name before repeating save option.

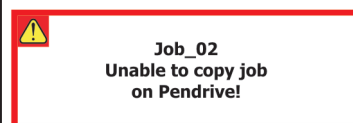


Fig. 59

Possible causes:

- Space available on pendrive is over: eliminate some files from pendrive as explained under par. 6.6.2 **Pendrive / Delete Pendrive files** and try saving again.
- The pendrive is locked: unlock and repeat saving.



Confirm access or data changes.



Scrolling menu items.
Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor

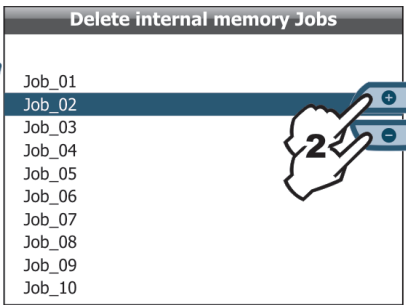
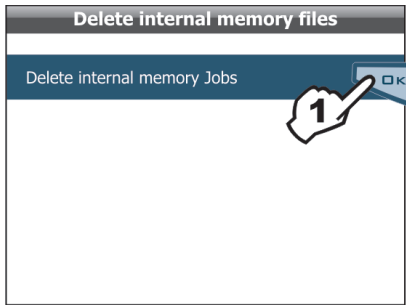


Par. 6.3

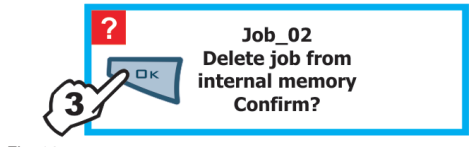
.....➤ **Delete internal memory files**

Allows you to delete saved data, about jobs, from Skipper LT internal memory.

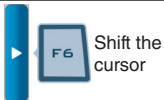
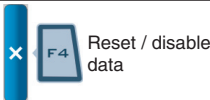
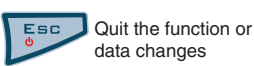
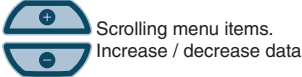
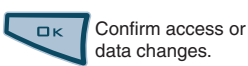
• **Delete internal memory Jobs**



- 1 Select item **Delete internal memory Jobs** (Fig. 60) and press **OK**;
- 2 Scroll the jobs list (Fig. 61) using keys **+** or **-** and select the file to delete;
- 3 The message shown in Fig. 62 is displayed: confirm deletion by pressing **OK**.



END OF PAR. 6.6.1 - I





6.6.2 - Pendrive

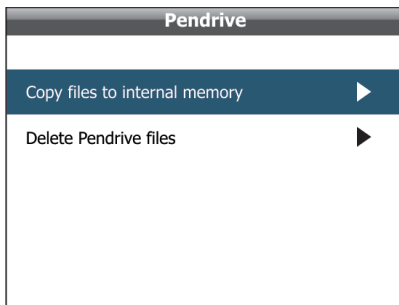


Fig. 63



To display the menu items it is necessary to connect the pendrive to Skipper LT using the suitable connector (par. 5.4).
If connection is not established, the message **Pendrive not found!** is displayed.

Copy files to internal memory

Allows you to transfer saved data, about jobs, from a pendrive to Skipper LT internal memory.

• Copy Jobs to internal memory

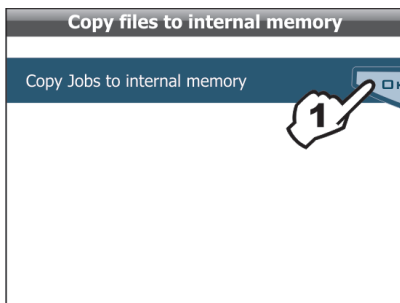


Fig. 64

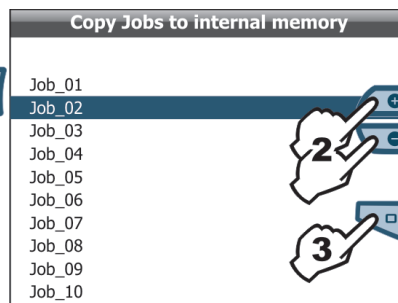


Fig. 65

- 1 Select item **Copy Jobs to internal memory** (Fig. 64) and press **OK**;
 - 2 Scroll the jobs list (Fig. 65) using keys **+** or **-** and select the file to copy;
 - 3 Confirm copy by pressing **OK**.
- A confirmation message is displayed once copy is completed (Fig. 66). Press **ESC**.



Fig. 66

ERROR MESSAGES

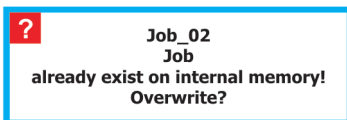


Fig. 67

The internal memory already contains a file with this name.

Following are the two possible instances:

- Press **OK** to replace files.

WARNING: ALL data concerning replaced file will be lost.

- Press **ESC** to avoid replacing the file: check file content or change name before repeating save option.

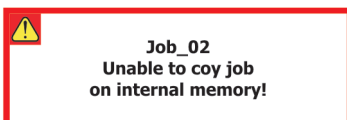


Fig. 68

Possible causes:

- Space available on internal memory is over: eliminate some files from pendrive as explained under par. 6.6.1 Internal memory / Delete Internal memory files and try saving again.

Delete Pendrive files

Allows you to delete saved data, about jobs, from pendrive.

• Delete Pendrive Jobs

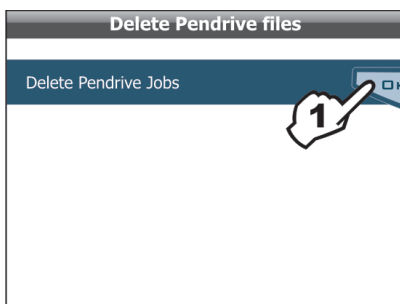


Fig. 69

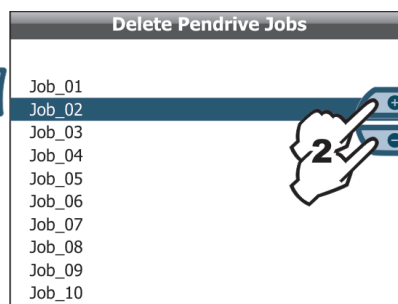


Fig. 70

- 1 Select item **Delete Pendrive Jobs** (Fig. 69) and press **OK**;
- 2 Scroll the jobs list (Fig. 70) using keys **+** or **-** and select the file to delete;
- 3 The message shown in Fig. 71 is displayed: confirm deletion by pressing **OK**.

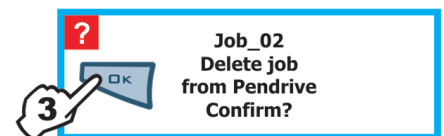


Fig. 71



Confirm access or data changes.



Scrolling menu items. Increase / decrease data



Quit the function or data changes



Reset / disable data



Shift the cursor



Par. 6.3



6.6.3 - Load/Save settings

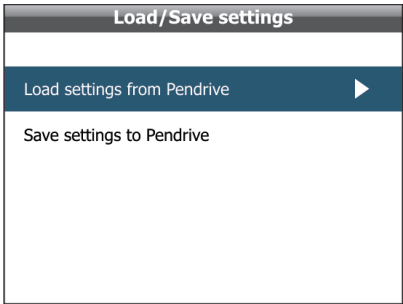


Fig. 72

Skipper LT settings can be loaded or saved to pendrive to be able to restore device settings when needed, solve problems or set another Skipper LT without having to repeat all operations manually.



Once installation is completed, and you checked machine correct operation, we recommend you to store the whole configuration onto pendrive.

To display the menu items it is necessary to connect the pendrive to Skipper LT using the suitable connector (par. 5.4). If connection is not established, the message **Pendrive not found!** is displayed.

Load settings from Pendrive

Allows you to select a configuration file stored on pendrive and reset Skipper LT.



WARNING: UPLOADING A CONFIGURATION FILE TO Skipper LT WILL DELETE ALL SETTINGS MADE SO FAR.

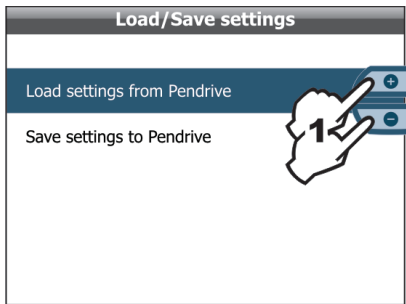


Fig. 73

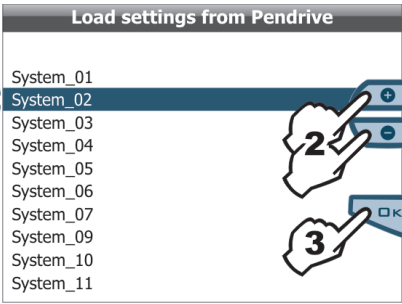


Fig. 74

- 1 Select item **Load settings from Pendrive** (Fig. 73) and press **OK**;
- 2 Scroll the settings list (Fig. 74) using keys **+** or **-** and select the file to load;
- 3 Confirm loading by pressing **OK**. A confirmation message is displayed once setting is completed (Fig. 75). Press **ESC**.

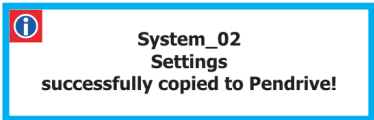


Fig. 75

Save settings to Pendrive

Allows saving Skipper LT configuration to pendrive: you can upload it again at a later moment, any time it is necessary to repeat the same settings.

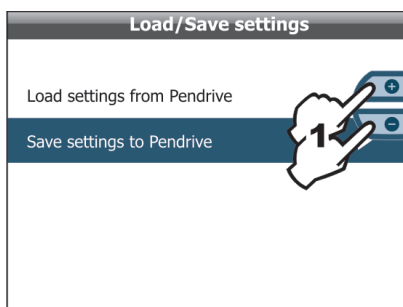


Fig. 76

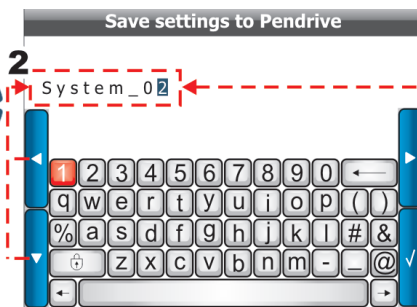


Fig. 77

- 1 Select item **Save settings to Pendrive** (Fig. 76) and press **OK**;
 - Skipper LT prompts you to set a new name.
 - 2 Enter file name using keys shown in Fig. 77, as described in par. 6.3 - Using the programming keys;
 - 3 Confirm name by pressing **OK**.
- A confirmation message is displayed once saving is completed (Fig. 78). Press **ESC**.

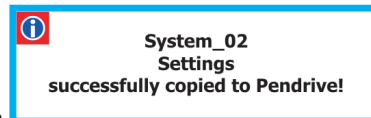


Fig. 78

ERROR MESSAGES

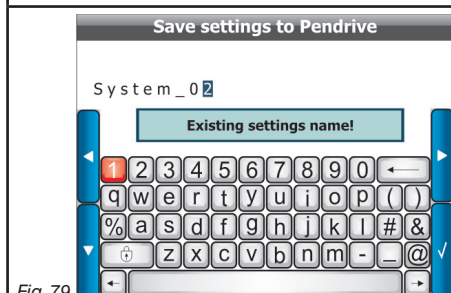


Fig. 79

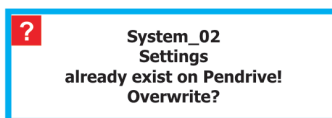


Fig. 80

The pendrive already contains a file with this name. Following are the two possible instances:

- Press **OK** twice to replace file.

WARNING: ALL data concerning replaced file will be lost.

- Press **ESC** to avoid replacing file: check file content or change its name before repeating saving control.

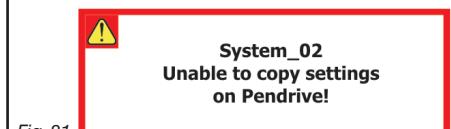


Fig. 81

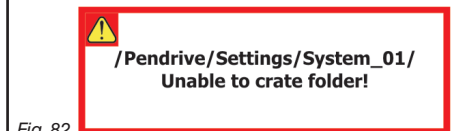


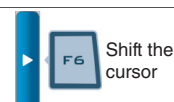
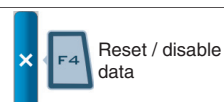
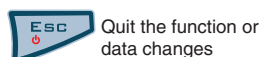
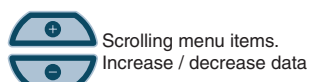
Fig. 82

Possible causes:

- Space available on pendrive is over: eliminate some files from pendrive and try saving again.
- The pendrive is locked: unlock and repeat saving.

If the problems persist, please contact the service centre.

END OF PAR. 6.6.3 - LOAD / SAVE SETTINGS



6.6.4 - Preparing the Pendrive for data exchange.....>.....>.....>

.....> Introduction



Fig. 83

To prepare the pendrive, you need a Personal computer* (we suggest you use Windows XP operating system).

* Not compatible with Apple Macintosh.

.....> Formatting the Pendrive

Format the Pendrive before attempting any operation (note: icons may vary according to installed operating system).



IMPORTANT: before formatting, save a backup of all Pendrive data since formatting will delete all data.

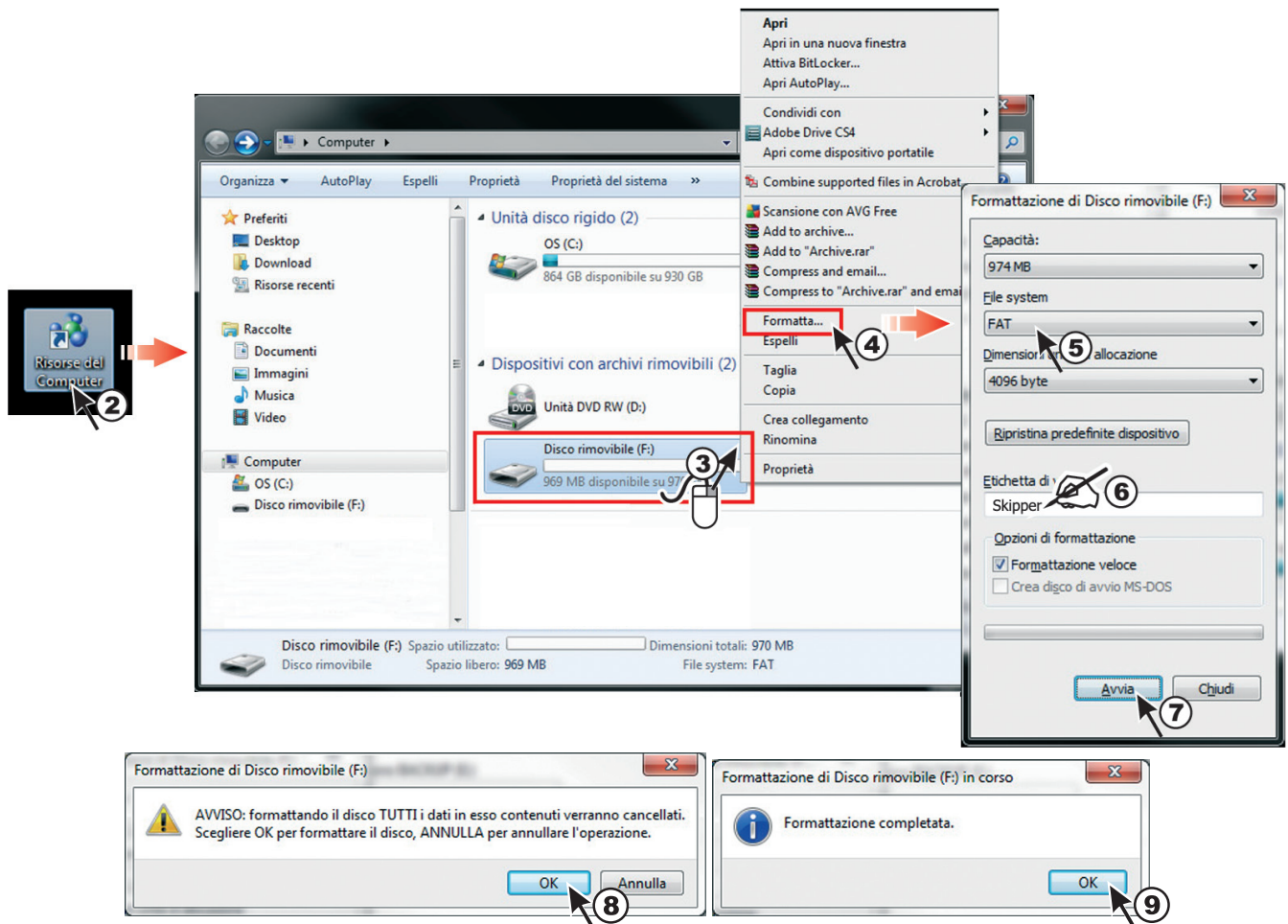


Fig. 84

- 1 Insert the Pendrive into the relevant computer drive.
- 2 Click twice on **My computer** icon. Content window will open.
- 3 Click with the mouse RH button on the icon corresponding to the connected Pendrive (**Removable drive F:** in Fig. 84).
- 4 Select **Format**. The window showing formatting settings will open.
- 5 Select the **FAT system File**
- 6 OPTION: enter the name you want to assign to the Pendrive (**Skipper LT**, in Fig. 84).
- 7 Click to start formatting.
- 8 A warning reminds you that formatting entails deletion of all data. Confirm with **OK**.
- 9 Once procedure is completed, a warning is displayed. Click on **OK**.

6.7 Options

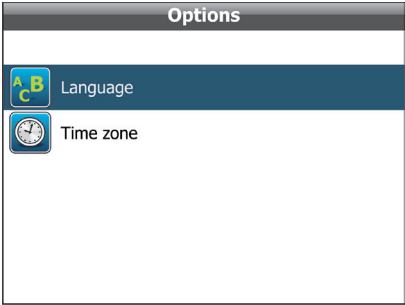


Fig. 85



6.7.1 - Language

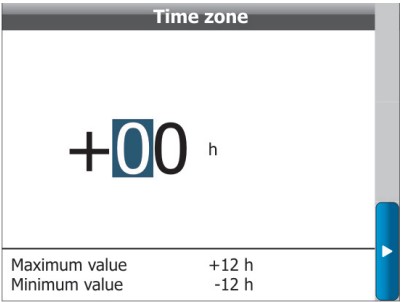


Allows you to set Skipper LT use language.
Active item is marked with ✓.

Fig. 86



6.7.2 - Time zone



Allows you to set the local time zone with reference to the Greenwich prime meridian *.
Local time will be constantly updated thanks to the signal detected by the GPS receiver.

Fig. 87

* List of main time zones:

United Kingdom, Portugal, Liberia	0
Azores Islands	-1
Mid-Atlantic Islands	-2
Argentina, Brazil	-3
AST (USA), Venezuela	-4
EST (USA), Colombia	-5
CST (USA), Eastern Mexico	-6
MST (USA)	-7
PST (USA)	-8
AKST (USA)	-9
HST (USA), Hawaii	-10
Midway Islands	-11
Enewetak	-12

Central Europe (Germany, France, Italy)	+1
Latvia, Lithuania, Romania, Greece, Israel	+2
Western Russia, Iraq	+3
United Arab Emirates	+4
Pakistan	+5
Kazakhstan	+6
Thailand	+7
China, Western Australia	+8
Japan	+9
Eastern Australia	+10
Eastern Russia	+11
Fiji Islands, New Zealand	+12



Confirm access or data changes.



Scrolling menu items.
Increase / decrease data



Quit the function or data changes



Reset / disable data

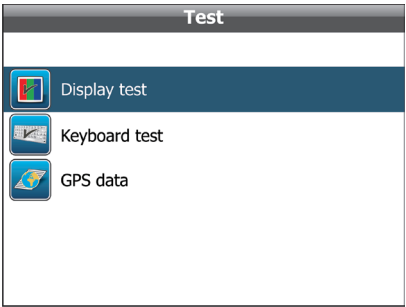


Shift the cursor



Par.
6.3

6.8 Test

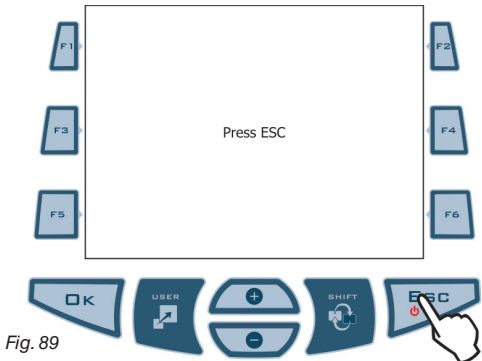


Allows you to check Skipper LT correct operation:
Tests are **READING-ONLY** data.

Fig. 88



6.8.1 - Display test

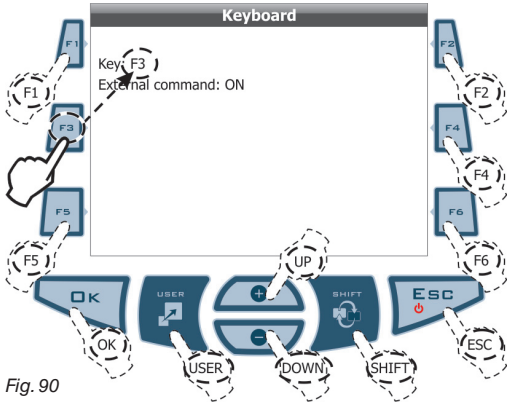


Test basically consists in switching display on to check its correct operation; press **ESC** to quit.

Fig. 89



6.8.2 - Keyboard test



Key: press all keys one at a time: if operation is correct, the display will show the name of key depressed.
External command: the display shows the presence of an external command to start the spraying job (par. 6.5.4 - User preferences / Guidance settings / Spraying activation).

Fig. 90



6.8.3 - GPS data

GPS data	
Longitude	44.784617 deg.
Latitude	10.877977 deg.
Altitude	26 m
Number of satellites	10
HDOP	0.8
DGPS	Attivo
DGPS Age	3.6 sec
Update frequency	5 Hz
Baudrate	19200 bps

Allows you to read data sent by GPS receiver.

Fig. 91

Confirm access or data changes.

Scrolling menu items.
Increase / decrease data

Quit the function or data changes

Reset / disable data

Shift the cursor

Par. 6.3

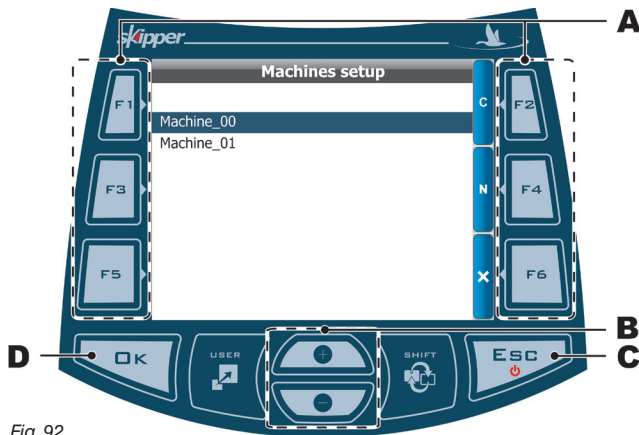
7 USE**7.1 Using keys****SELECT / EDIT / SAVE DATA**

Fig. 92

A F 1 ÷ F 6 Context-sensitive keys.

Use these keys to edit data: their function is linked to displayed content, so **use of these keys will be explained during the description of the procedures.**

B + / -

Scroll menu items; edit data (increase or decrease).

C ESC

Switch on / off; stop modifying data.

D OK Confirmation key.

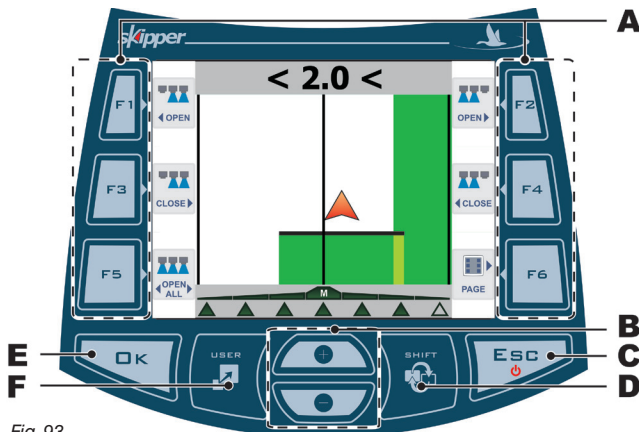
NAVIGATION

Fig. 93

A F 1 ÷ F 6 Job functions (chapt. 8).

Use these keys to do specific job functions: their function is linked to displayed content when functions list is displayed.

B + / - Display zoom (+ zoom in, - zoom out).

Hold depressed the corresponding key to toggle from max.zoom in to max. zoom out.

C ESC

Switch on/off; disabling the functions list; interrupting a function.

D SHIFT Scrolling pages of guidance / spraying data / prescription map.

Hold depressed key (1 s) to go back to guidance page.

E OK Confirmation key.

F USER Key with customisable function (par. 6.5.4).

7.2 Display

GUIDANCE PAGE

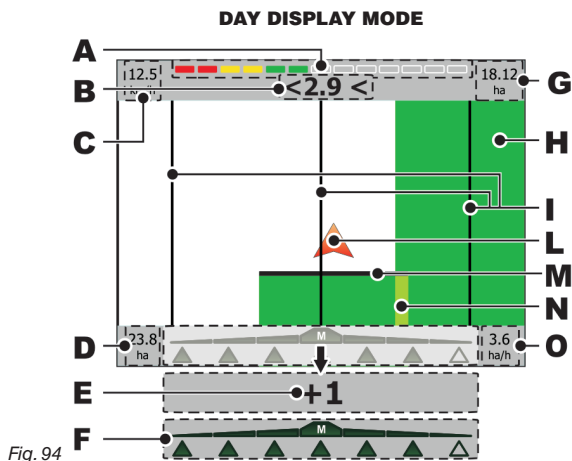
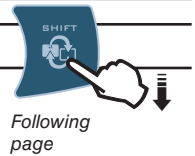
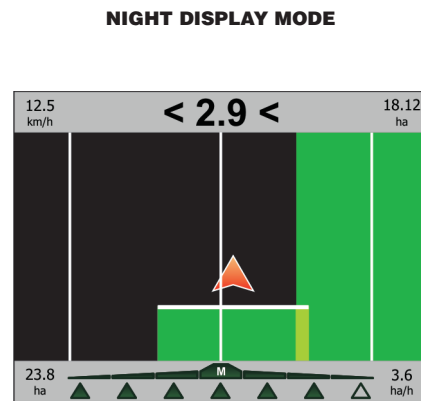


Fig. 94

- A** Graphical chart of deviation **B**.
Every led corresponds to 50 cm.
- B** Deviation: distance between tractor position and the track to be followed.
- C** L1 data: spraying job data, customisable by user*
(par. 6.5.4 User preferences - Graphic settings).
- D** L2 data: spraying job data, customisable by user*
(par. 6.5.4 User preferences - Graphic settings).
- E** Spray pass number (displayed ONLY IF machine features just one section valve, par. 6.5.1): the reference line, calculated with the function "Mark AB", is number 0, tracks on the left are negative while the ones on the right are positive.
- F** Boom sections (displayed ONLY IF machine features more than one section valve, par. 6.5.1): each triangle corresponds to a boom section (par. 7.3)

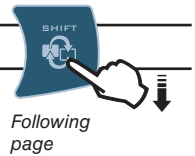
Fig. 95



- G** R2 data: spraying job data, customisable by user*
(par. 6.5.4 User preferences - Graphic settings).
- H** Sprayed area
- I** Reference tracks
- L** Machine position
- M** Point where spraying job is performed
- N** Sprayed areas overlap
- O** R2 data: spraying job data, customisable by user*
(par. 6.5.4 User preferences - Graphic settings).

* List of spraying job data that can be viewed:
Speed, Applied area, Calculated area, Spraying time, Productivity, Perimeter, Date, Time, Direction, GPS signal quality, Track number, Available memory.

JOB DATA



Job data		
Sprayed area	18.12	ha
Calculated area	23.86	ha
Job duration	05:25	hh:mm
Productivity	3.6	ha/h
Job start date	15/12/09	dd/mm/yy
Job start time	10:49	hh:mm
Perimeter	86.32	m

Fig. 96

Displayed data and relevant units of measurement are specified in par. 10.3.

FIELD OVERVIEW

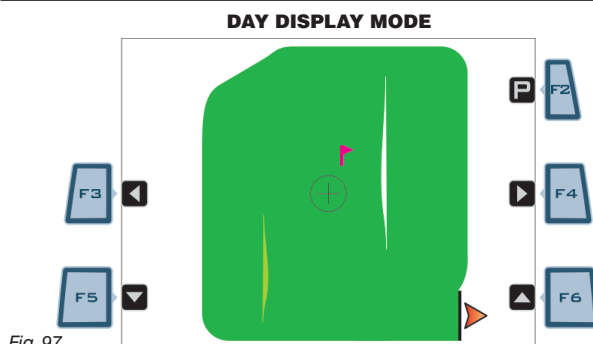
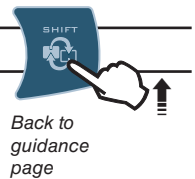
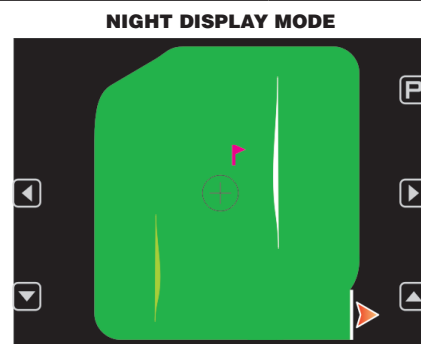


Fig. 97

Indicators:

- Machine position
- Point where spraying job is performed
- Cursor
- Sprayed area
- Sprayed areas overlap

Fig. 98



Keys in Figures 97 - 98

- F2** Mark point (break job).
- F3** Shift cursor to the left
- F4** Shift cursor to the right
- F5** Shift cursor down
- F6** Shift cursor up

Points of interest marked on field:

- Job breaking point, entered using function "Pause" (chapt. 8)

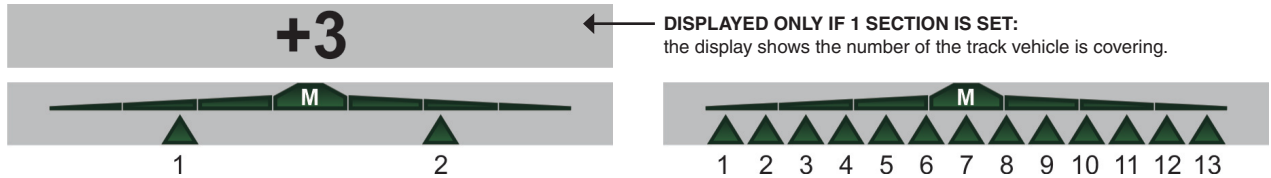
7.3 Spraying boom

Allows enabling/disabling acoustic warning (two close beeps) indicating that it is necessary to open or close sections (par. 6.5.1).

The display shows the following:

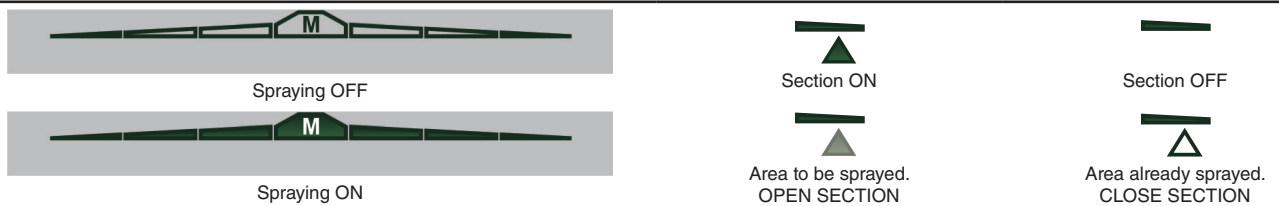
- Number of boom sections (max. 13)
- Spraying status (ON / OFF)
- Boom section status (ON / OFF)
- Opening or closing indications.

NUMBER OF BOOM SECTIONS



The display does not actually indicate the boom number, it is shown here just for ease of reference.

INDICATION OF BOOM SECTION STATE



OPENING OR CLOSING INDICATIONS

- When overlapping exceeds set value for **Overlapping limit**, Skipper LT prompts you to CLOSE affected sections (Fig. 99).

Close section valve and inform Skipper LT about its closing using the relevant function key (par. 8.1).

As far as vehicle moves on, signal will be triggered for every overlapping section.

- When overlapping goes back to allowed limits, Skipper LT prompts you to OPEN affected sections (Fig. 100).

Open section valve and inform Skipper LT about its opening using the relevant function key (par. 8.1).

As far as vehicle moves on, signal will be triggered for every section.

CLOSING PROMPT

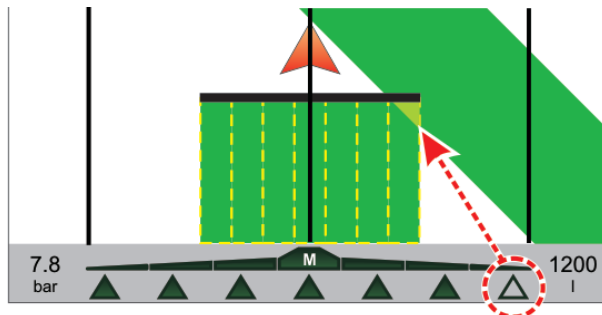


Fig. 99

OPENING PROMPT

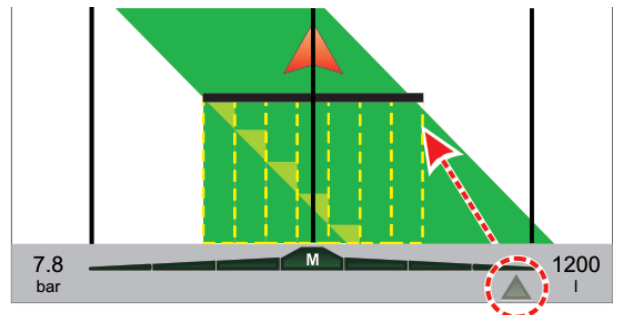


Fig. 100


7.4 Spraying a field



Fig. 101

Let's consider to wish to spray field by parallel lines, but only after spraying field borders.

- Switch Skipper LT on (par 6.1).
After self-diagnosis routine, system asks if you wish to continue a previous job (Fig. 101). Press **ESC** to start a new spraying job.

- Select guidance mode you wish to use during spraying job: execute function  (par. 8.2.2).
- Set at the beginning of field to spray (Fig. 102).
- Start spraying by working the relevant activation command according to system in use: press **USER** key and enable spraying job on machine.
- Start driving along field border. During this path, message **Mark A?** is displayed.

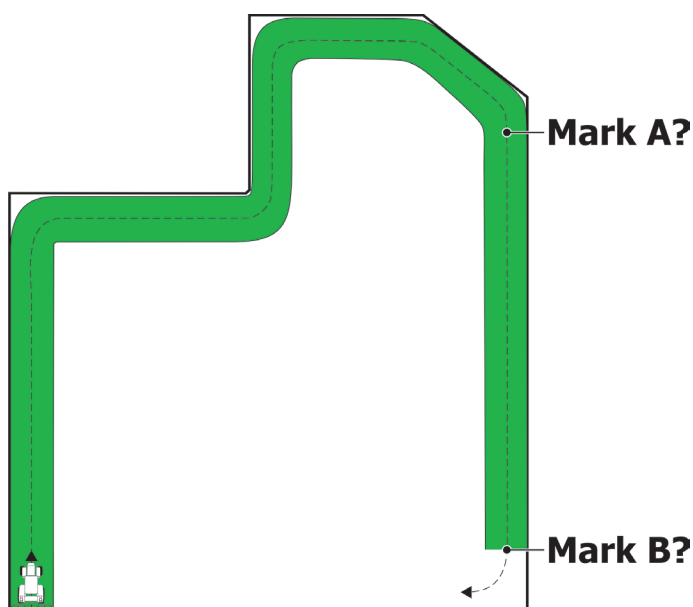



Fig. 102

MARKING POINTS A AND B

- While driving field border you will mark two points A and B (as described under par. 8.3.1 - function ).

This step is essential to allow Skipper LT to guide you, during the job, along tracks parallel to the reference one, obtained by marking points A and B.

We recommend that you mark A and B at the ends of a straight length as long as possible and while vehicle is moving: the longer the marked length across points A and B, the lower the error caused by your deviation while driving.

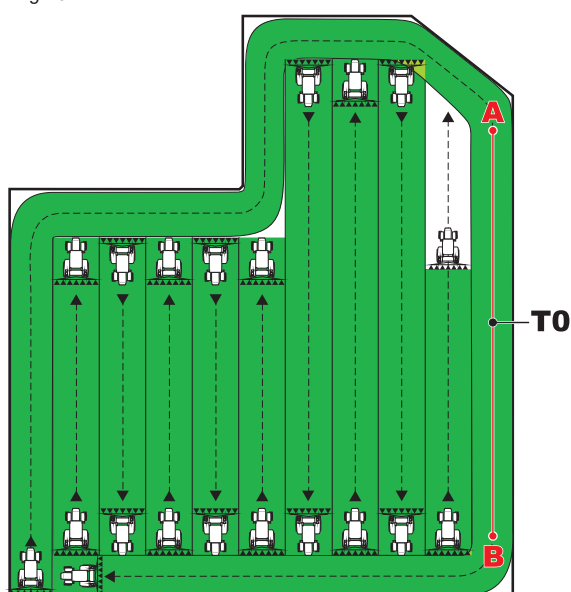


Fig. 103

- Once straight line A/B (**T0**) is tracked, the whole field could be sprayed along tracks parallel to it (Fig. 103), following the reference tracks that will be displayed (Fig. 104).

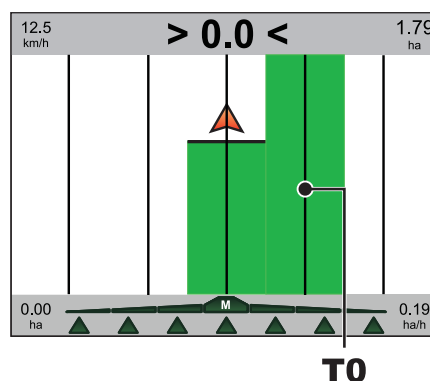
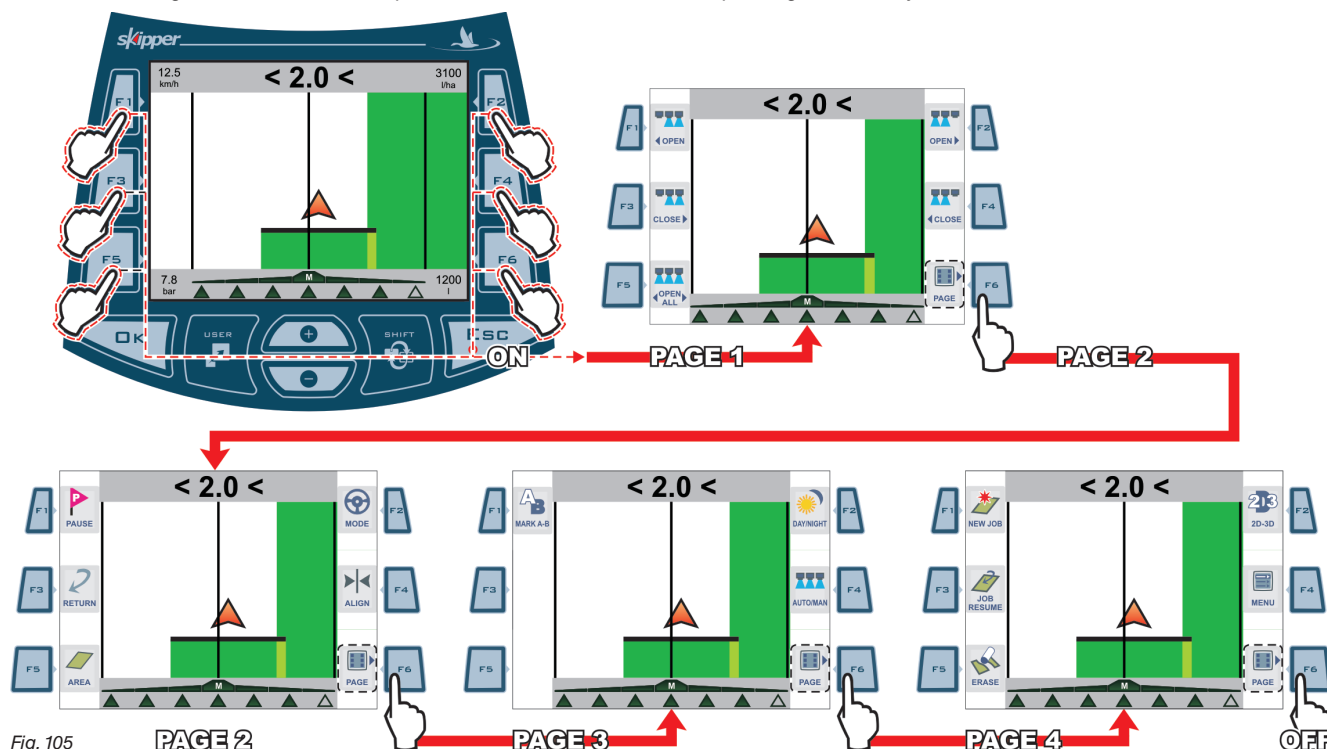


Fig. 104

8 WORK FUNCTIONS

Displaying the work functions list: press any function key while driving (page shown in Fig. 105); when list is active, pressing every key will activate the corresponding function displayed on the side; use **F6** to scroll the pages.

The table below gives an overview of all possible work functions and corresponding function key:



FUNCTION		Par.
PAGE 1	F 1 Open (LEFT) Indicates opening of first closed section valve, starting from boom left-hand side	8.1.1
	F 2 Open (RIGHT) Indicates opening of first closed section valve, starting from boom right-hand side	8.1.2
	F 3 Close (LEFT) Indicates closing of first opened section valve, starting from boom left-hand side	8.1.3
	F 4 Close (RIGHT) Indicates closing of first opened section valve, starting from boom right-hand side	8.1.4
	F 5 Open All Indicates opening of all boom section valves	8.1.5
	F 6 Page Go to page 2 of functions list	--
PAGE 2	F 1 Pause Store a job breaking point on field	8.2.1
	F 2 Mode Select guidance mode between Straight parallel and Curved parallel	8.2.2
	F 3 Return Activate procedure to go back to job breaking point previously stored using function "Pause"	8.2.3
	F 4 Align Shift the closest reference track and realign it to machine position	8.2.4
	F 5 Area Activate the procedure to calculate the field area, while driving on borders	8.2.5
	F 6 Page Go to page 3 of functions list	--

FUNCTION		Par.
PAGE 3	F 1 Mark AB Store two field points A and B, that Skipper LT will use to create a line to be used as a reference track for spraying job underway.	8.3.1
	F 2 Day / Night Toggle from day display guidance mode to night one and vice versa	8.3.2
	FUNCTION NOT AVAILABLE	
PAGE 4	FUNCTION NOT AVAILABLE	
	FUNCTION NOT AVAILABLE	
	FUNCTION NOT AVAILABLE	
	F 6 Page Go to page 4 of functions list	--
	F 1 New job Start a new job	8.4.1
	F 2 2D-3D Toggle from 2D display mode to 3D and vice versa	8.4.2
PAGE 4	F 3 Job resume Activate the procedure to resume a spraying job previously interrupted	8.4.3
	F 4 Menu Display menu page for programming Skipper LT	8.4.4
	F 5 Erase Delete stored job data	8.4.5
	F 6 Page Disables functions list view	--

8.1 Functions List: PAGE 1 - SECTION VALVES COMMANDS



IMPORTANT: Activated function indicates section status but does not make any check on them: valves shall be worked using other devices, referring to the relevant instructions manual.

Indicating what happens on the field, Skipper LT could give guidance indications and gather all work data.

Using the function keys on PAGE 1 it is possible to indicate "sequential" opening and closing of section valves, from right to left and vice versa, according to the depressed function key. State of spraying boom sections will be displayed (par. 7.3).

8.1.1
F 1 Open (LEFT)
 Press a few times to indicate valve opening, one at a time, from right to left, starting from the first closed section valve (Fig. 106).

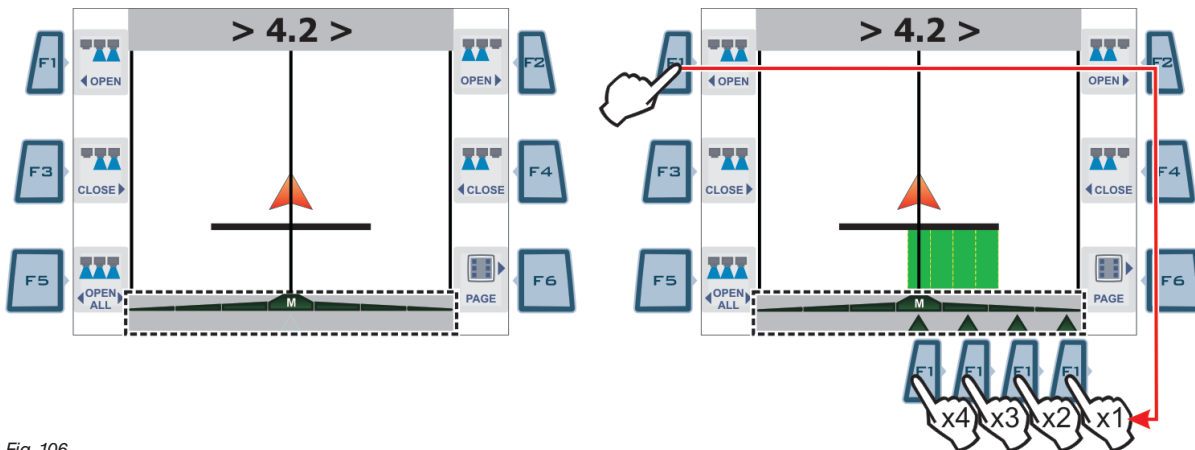


Fig. 106

8.1.2
F 2 Open (RIGHT)
 Press a few times to indicate valve opening, one at a time, from left to right, starting from the first closed section valve (Fig. 107).

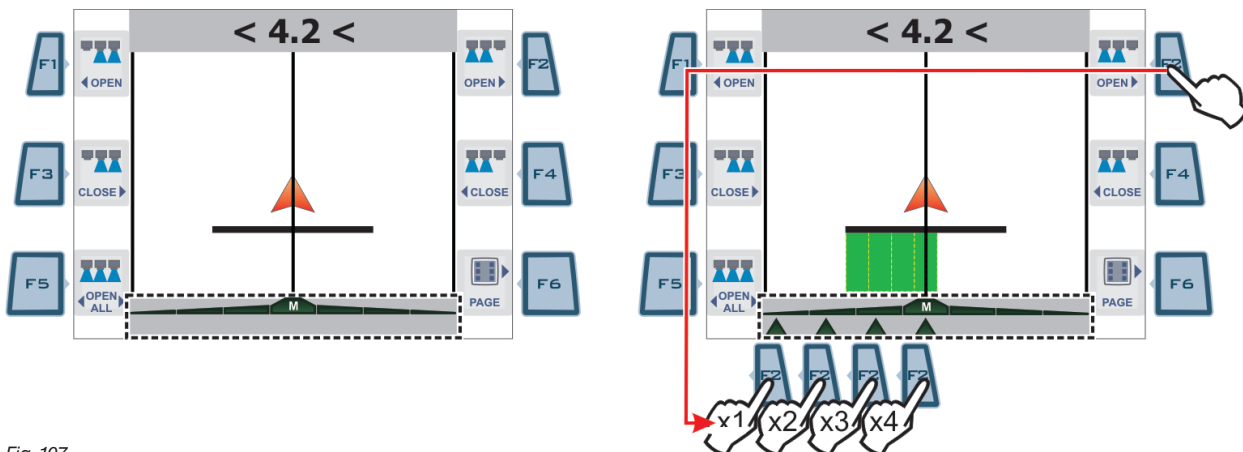


Fig. 107

F3

CLOSE

8.1.3
F3 Close (LEFT)

Press a few times to indicate valve closing, one at a time, from left to right, starting from the first opened section valve (Fig. 108).

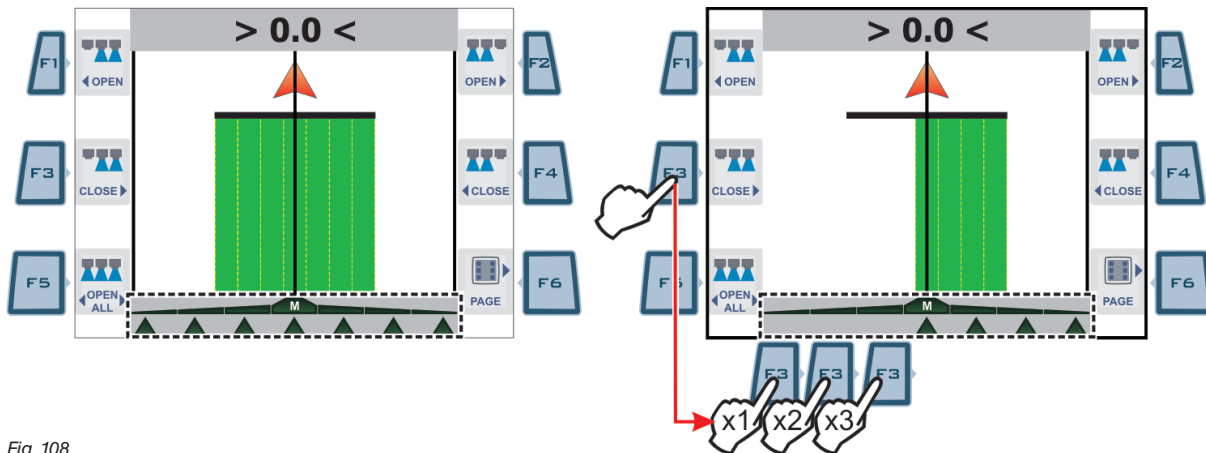


Fig. 108

CLOSE

F4

8.1.4
F4 Close (RIGHT)

Press a few times to indicate valve closing, one at a time, from right to left, starting from the first opened section valve (Fig. 109).

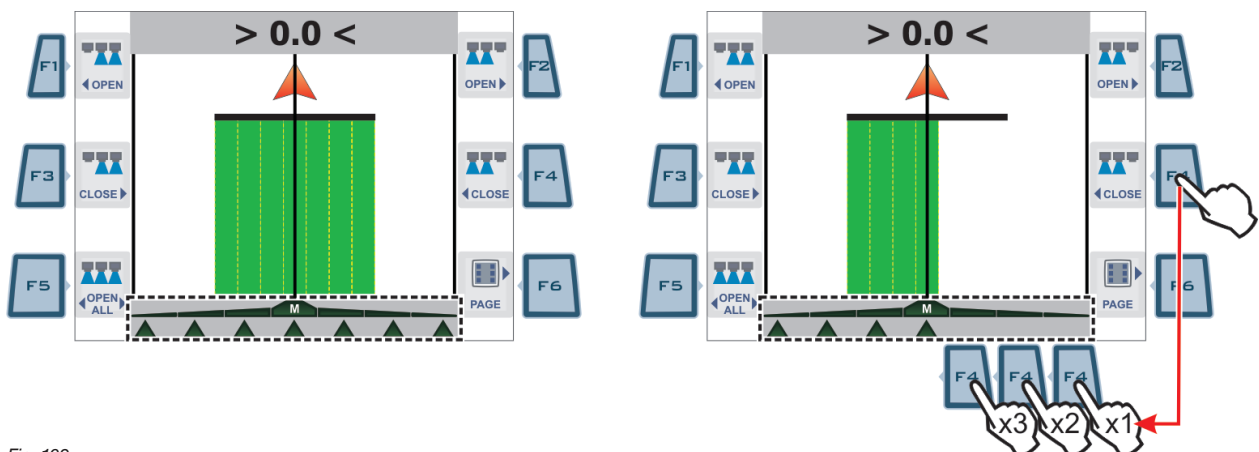


Fig. 109

F5

OPEN ALL

8.1.5
F5 Open All

Open all boom section valves (Fig. 110)

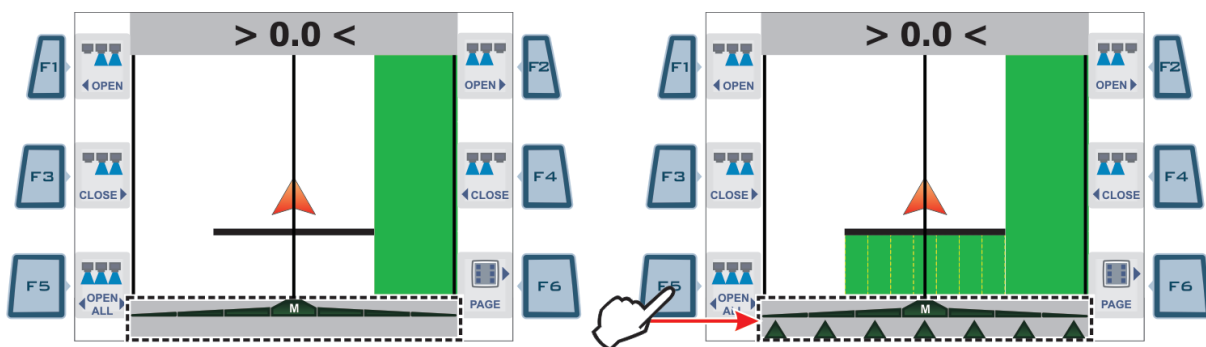





Fig. 110

8.2 Functions List: PAGE 2



8.2.1

F 1 Pause

Store job breaking point "Pause" on field, represented by a flag at the point where it is stored  .

Flag can be seen on guidance page (Fig. 111) and on field full zoom page (Fig. 112).

"Pause" breaking point can be stored using the two procedures described below:

GUIDANCE PAGE

1a Press **F 1** when you are in the position to be stored: flag will be positioned at that point (**A** in Fig. 111).

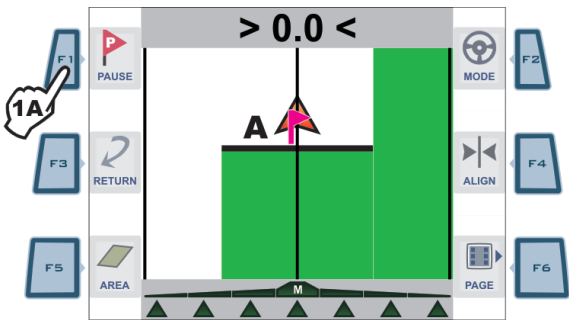



Fig. 141

 **Skipper LT can store only one breaking point, so that every time you set a flag, the previous one will be deleted.**

FIELD FULL ZOOM

From this page, you can store a field point even if tractor is in another position.

1b Press keys **F 3**, **F 4**, **F 5**, **F 6** to shift position of cursor **B** (Fig. 112) on field.

2b Once you reach the desired position, press **F 2**.

3b Confirmation prompt is displayed: press **OK**.

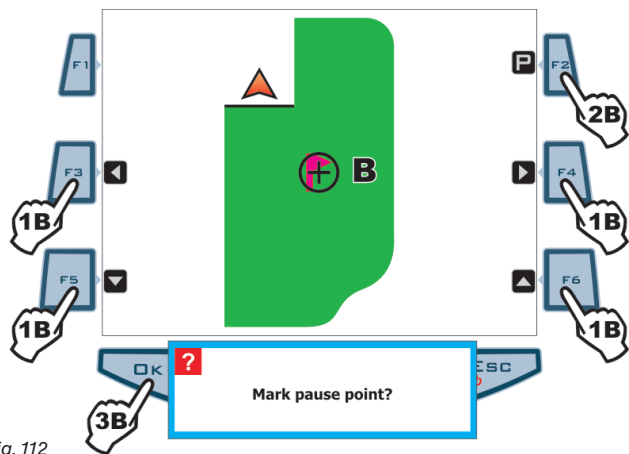


Fig. 112



8.2.2 F2 Mode

Select guidance mode between **Straight parallel** and **Curved parallel**.

- 1 Press **F2**.
- 2 Selection page is displayed: press **+** or **-** to scroll across items.
- 3 Confirm selection.

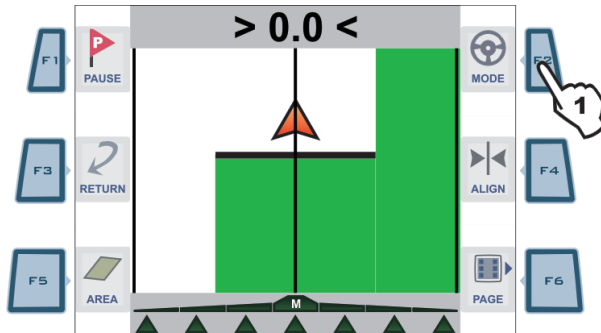


Fig. 113

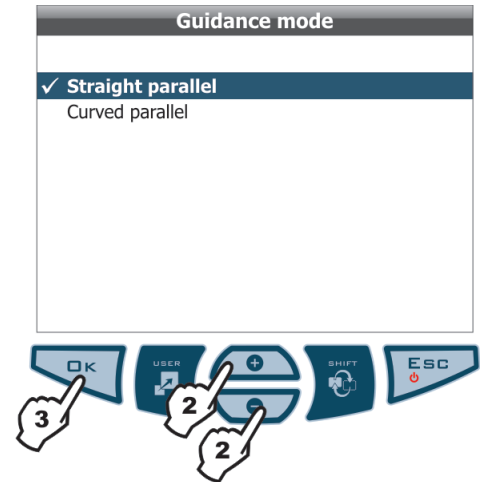


Fig. 114

STRAIGHT PARALLEL

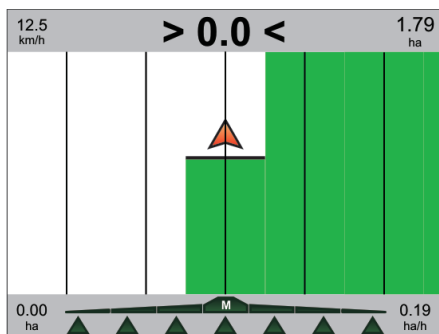


Fig. 115

Track on display will be used as driving reference and are perfectly straight and parallel with each other.

CURVED PARALLEL

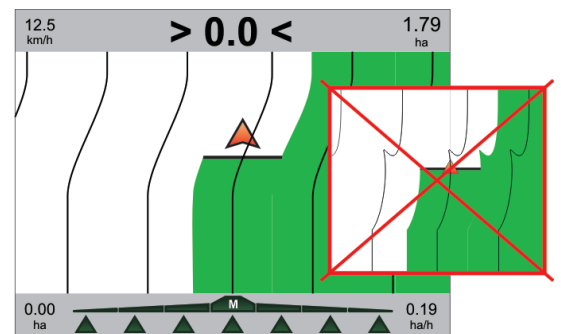



Fig. 116

Displayed tracks will be used as driving reference and are parallel with each other, they feature no straight but ONLY with trajectories with not too sharp curves.



8.2.3 F3 Return

Activate the procedure to go back to job breaking point , as previously stored using the function "Pause" (Fig. 102)

Press **F3** to receive guidance information and go back to point of interest "Pause" (Fig. 117):

- A fuchsia line connecting the middle position to the flag shows the trajectory to be followed to get closer to marked point (**C** in Fig. 117).

- The display shows in fuchsia the number of tracks to be crossed before reaching point (**D** in Fig. 117):

in the example, **+** next to the number indicates you shall move to the right, **-** indicates you shall move to the left.

Carry on driving.

- When you reach the track with the point of interest, the display shows the distance between your position and the point (**E** Fig. 118).

- Move along the track and check that distance in metres decreases: you are getting closer to the point.

When you are nearby, you can see the flag displayed.

- Once you reach the flag position, distance value gets to "zero" (Fig. 119): press **OK** or **ESC** to quit this procedure.

OK Skipper LT recalls spraying job guidance information and flag is deleted.

ESC Skipper LT recalls spraying job guidance information but flag remains memorised.

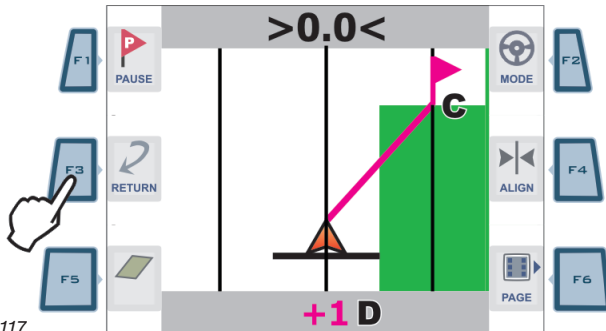


Fig. 117

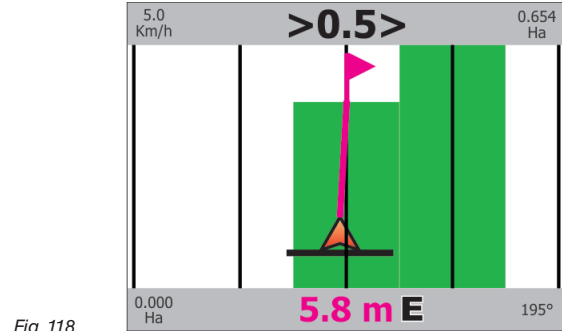


Fig. 118

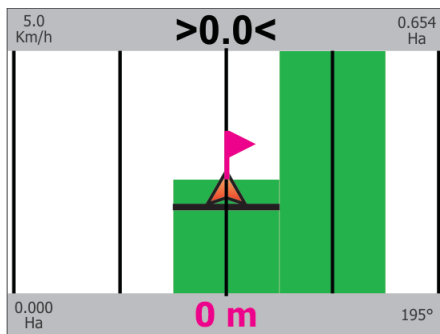



Fig. 119



ALIGN

F4

8.2.4
F4 Align Shift the closest reference track and realign it to machine position

- Press **F4** if you need to realign, maintaining the same direction (such as with maize, sugar cane).
- Set to the position you would like to set as new reference track and press **F4**.
 - The "old" reference track **F** (Fig. 120) shifts and aligns to tractor centre: all other reference tracks shift accordingly.
 - The "old" deviation value **>4.2<** (**G**) becomes **>0.0<** because it takes the "new" track as reference.

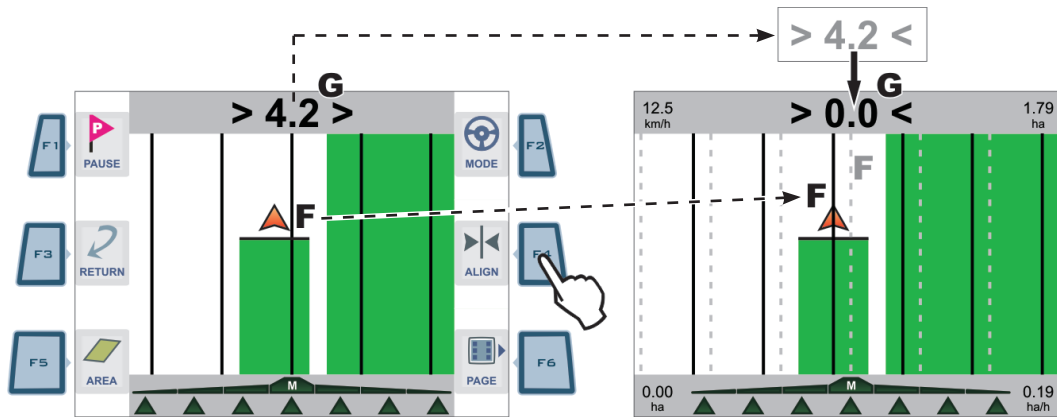


Fig. 120



After using the "Align" function, it is not possible to recover the initial reference track.

F5

AREA

8.2.5

F5 Area

Activate the procedure to calculate the field area, while driving on borders

- 1 Press **F5** to start the procedure and calculate the area (functions list is no longer displayed).
Message **Select field border** is displayed to set machine side to be used as field outer edge.
- 2 Press **F3 (Left)** or **F4 (Right)**: the display will show a red line drawing the field border as far as the tractor moves along.

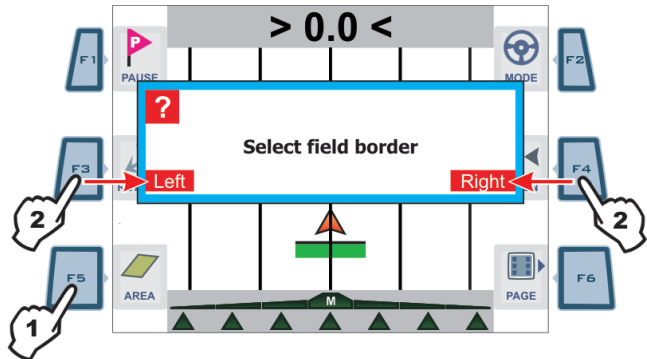


Fig. 121

Following are the two possible instances:

FIELD BORDER ON MACHINE LEFT-HAND SIDE

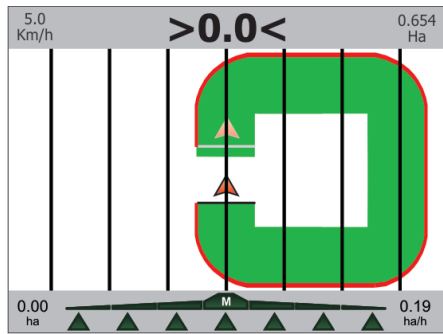


Fig. 122

FIELD BORDER ON MACHINE RIGHT-HAND SIDE

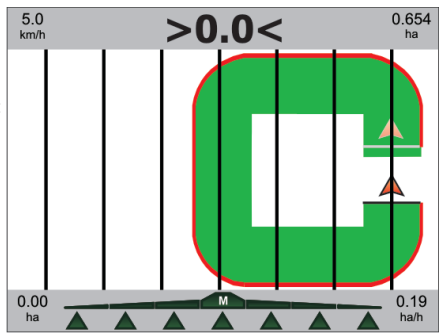


Fig. 123

Field outer edge (red line) follows the path of the outermost section valve open. When all section valves are closed, field border (red line) starts from boom centre.

- 3 Drive along field borders or border of the area to be calculated.
To complete the procedure, view again the corresponding functions list page (Fig. 105) and press **F5**.
- 4 Message **Boundary closure?** is displayed. Press **OK** (Fig. 124).
- 5 To view calculated data (**Calculated** area and **Perimeter**), press **SHIFT** a few times until viewing **Job data** page on the display (Fig. 125).

At any moment, during this procedure, press **ESC** to quit and delete drawn field border.

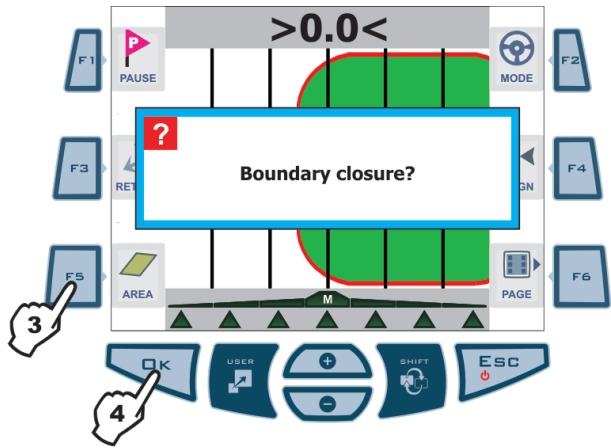


Fig. 124

Job data	
Sprayed area	1.79 ha
Calculated area	0.47 ha
Job duration	06.15 hh:mm
Productivity	0.29 ha/h
Job start date	21/02/10 dd/mm/yy
Job start time	18:48 hh:mm
Perimeter	239 m

Fig. 125

8.3 Functions List: PAGE 3



8.3.1 Stores two points A and B on field; they are used by Skipper LT to create a line to be used as reference track
F 1 Mark AB (T0, Fig. 129) for spraying job underway.

Mark points A and B as follows:

1 Press **F 1** : Confirmation prompt is displayed **Mark new AB reference?**

2 Press **OK**.

3 Drive along the path you wish to use as a reference for the spraying job. Prompt **Mark A?** is displayed Press **OK**.

4 Message **Drive!** is displayed Continue to drive; once you covered the minimum distance (30 m / 95.5 ft), request **Mark B?** is displayed Press **OK**.
The display will show the reference track **T0** and all tracks to follow when spraying (Fig. 129).

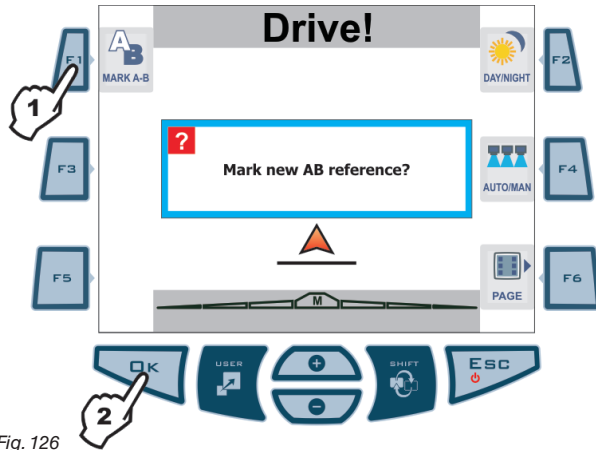


Fig. 126

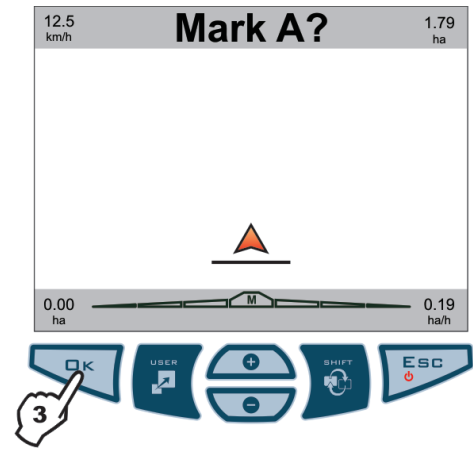


Fig. 127

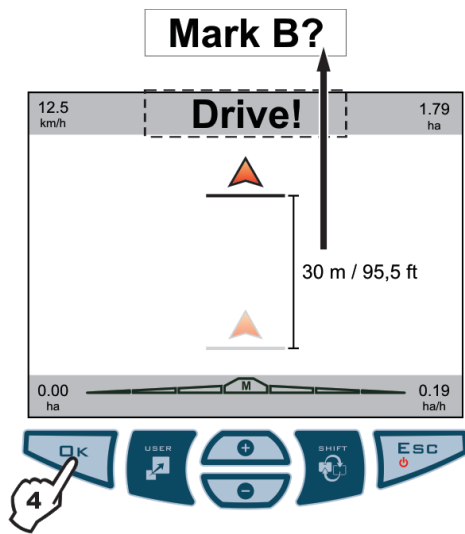


Fig. 128

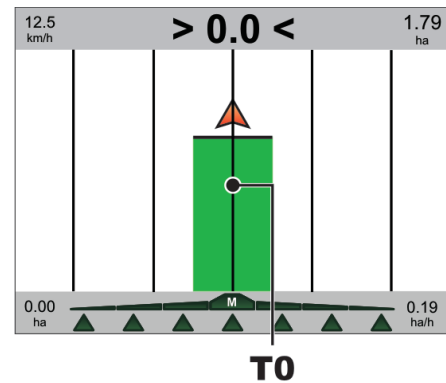




Fig. 129

Using the "Mark AB" function, Skipper LT deletes the previous **T0** reference track (if any), and prompts you to store two **NEW** points A and B on field, which create a **NEW** reference track.
Points A and B can only be marked with vehicle moving. It is **NOT** possible to recover the previous track **T0**.



8.3.2
F2 Day / Night

Toggle from day display guidance mode to night one and vice versa (Figures 130 - 131)
Default display mode is Day. Following are the two possible instances:

DAY DISPLAY MODE

1A Night display mode is active.
Press **F2** to shift to Day mode (Fig. 130).

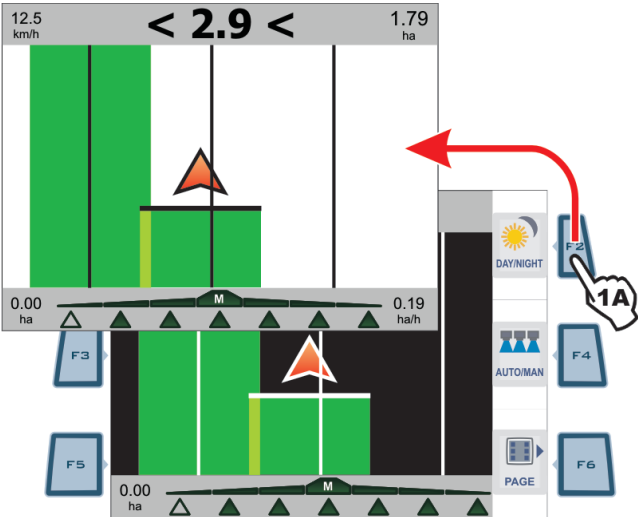


Fig. 130

NIGHT DISPLAY MODE

1B Day display mode is active.
Press **F2** to shift to Night mode (Fig. 131).

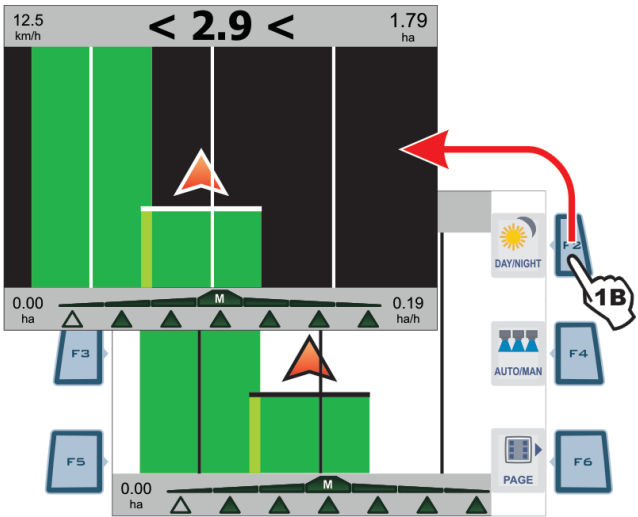


Fig. 131

8.4 Functions List: PAGE 4



8.4.1 F 1 New job

Start a new spraying job (Fig. 132)



Fig. 132

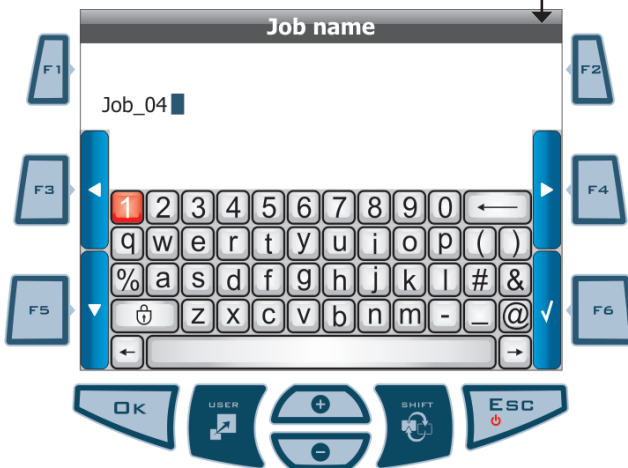


Fig. 134

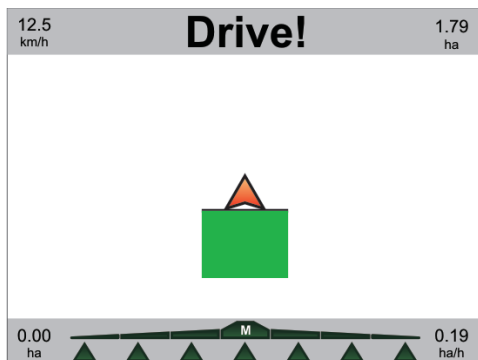


Fig. 136

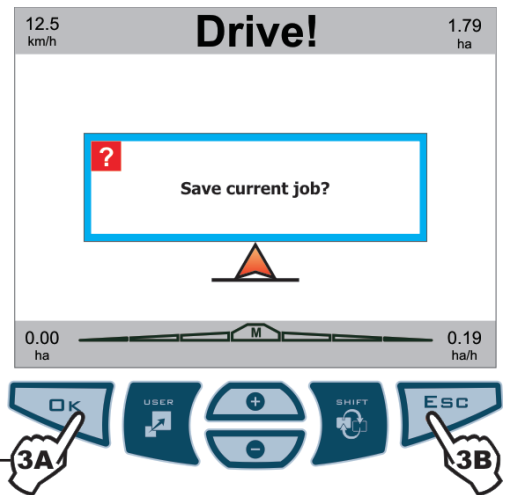


Fig. 133

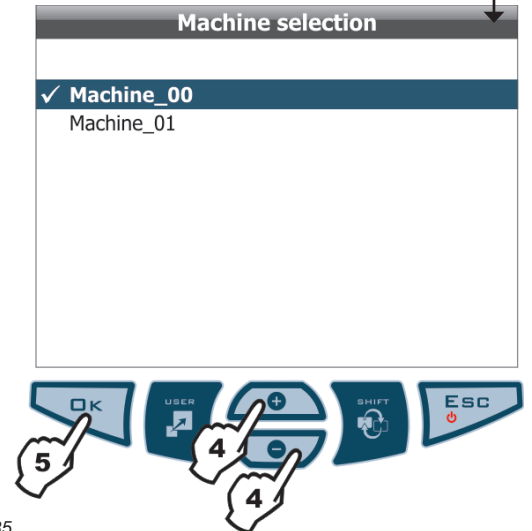


Fig. 135

- 1 Press **F 1** to start a new spraying job. Confirmation prompt is displayed to start procedure.
- 2 Press **OK**.

Skipper LT requests you to save job you were carrying out before starting the procedure. Press **OK (3A)** or **ESC (3B)**:

3A OK allows you to save job: enter a name (Fig. 134).

Type in name as described under par. 6.3 - Using the programming keys.

3B ESC lets you go to machine selection page (Fig. 135) without saving job: **work data displayed so far will be lost**.

4 Press keys to select the "machine"* in use among the listed ones.

5 Press **OK** to confirm machine selection.

Drive and perform the job. (Fig. 136)

* "machine": includes all settings you set up during Skipper LT programming (chapt. 6.5), concerning tractor you will use for the job. For instance, you could use Skipper LT with many machines so to obtain the correct information you shall recall the features of the machine in use.

213

2D-3D

F2

8.4.2

F2 2D-3D

Toggle from 2D display guidance mode to 3D one and vice versa (Figures 137 - 138)

Default display mode is 2D. Following are the two possible instances:

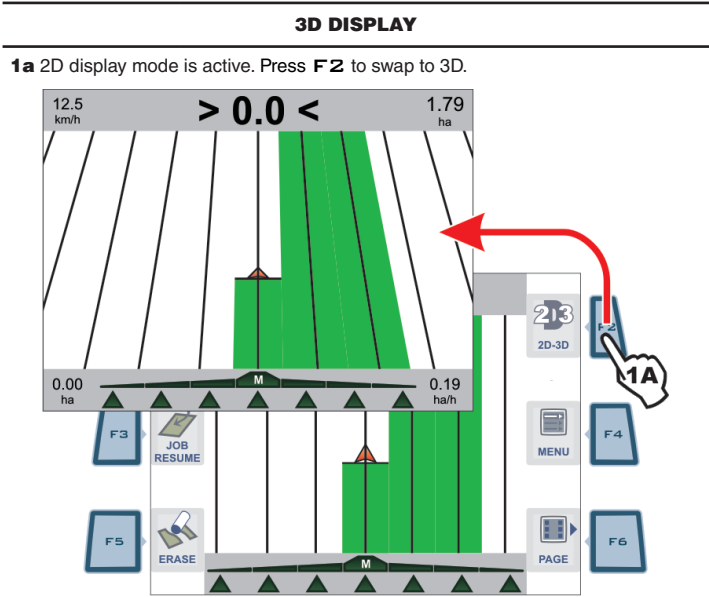


Fig. 137

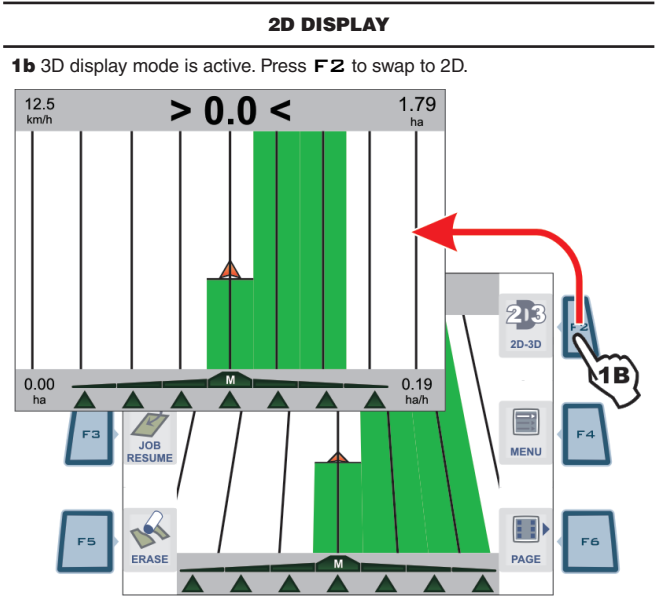


Fig. 138

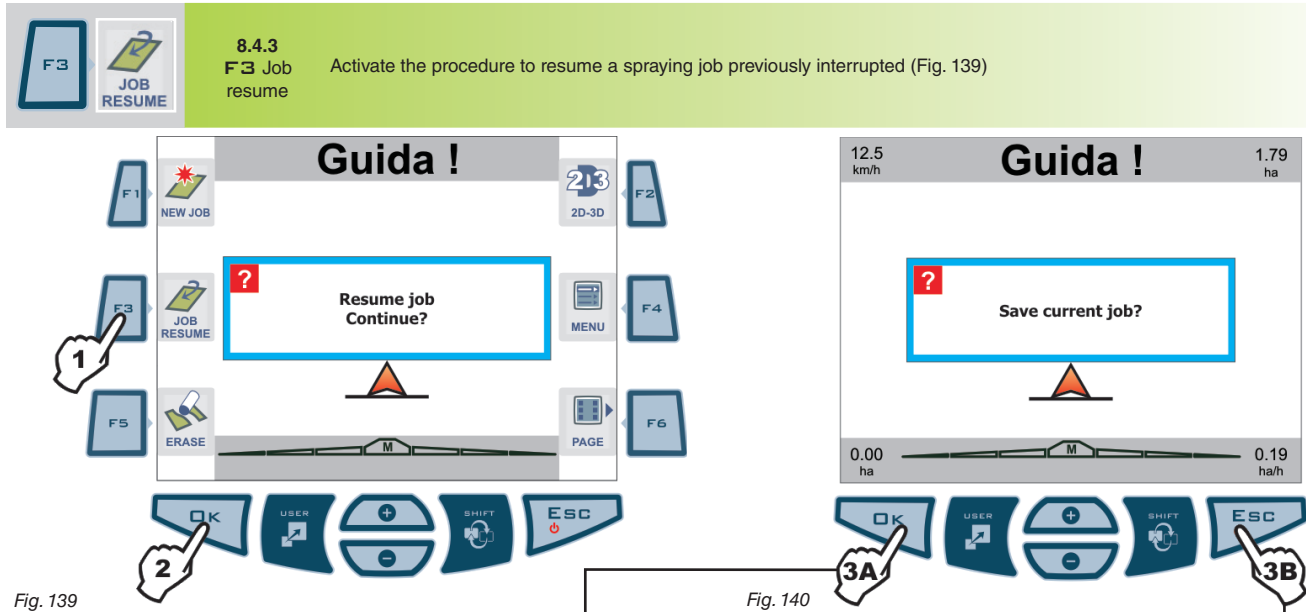


Fig. 139

Fig. 140



Fig. 141

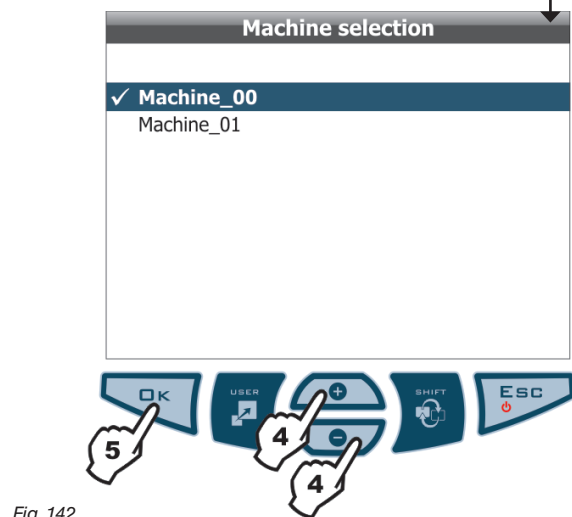


Fig. 142

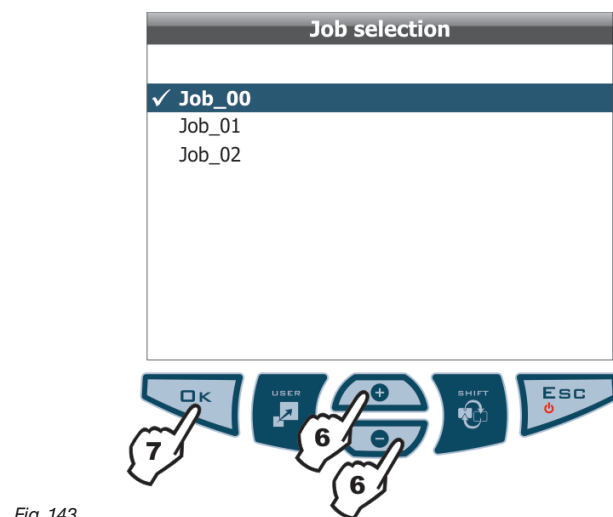


Fig. 143

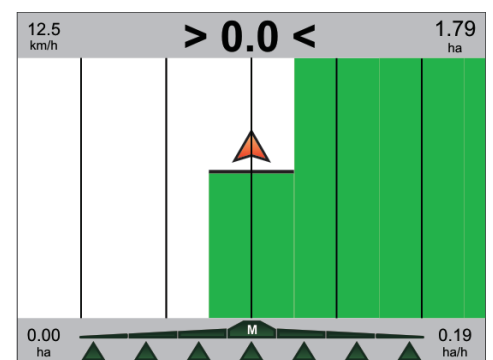


Fig. 144

When resuming an "old" job, Skipper LT gives guidance indications by recalling active conditions upon saving:

- Guidance mode.
- Marking points A and B.
- Marking points to calculate the area.

1 Press **F3** to resume a job previously interrupted, among the saved ones. Confirmation prompt is displayed to start procedure.

2 Press **OK**. Skipper LT requests you to save job you were carrying out before starting the procedure.

Press **OK (3A)** or **ESC (3B)**:

3A **OK** allows you to save job: enter a name (Fig. 141). Type in name as described under par. 6.3 - Using the programming keys.

3B **ESC** lets you go to machine selection page (Fig. 142) **without saving job**: work data displayed so far will be lost.

4 Press keys to select the "machine" in use among the listed ones.

5 Press **OK** to confirm machine selection.

6 Skipper LT asks you to select job to be resumed. Press keys to select among listed jobs.

7 Press **OK** to confirm machine selection. Drive and perform the job.

* "machine": includes all settings you set up during Skipper LT programming (chapt. 6.5), concerning tractor you will use for the job.

For instance, you could use Skipper LT with many machines so to obtain the correct information you shall recall the features of the machine in use.



MENU



F4

8.4.4

F4 Menu

Displays the menu page for programming Skipper LT (Fig. 145)

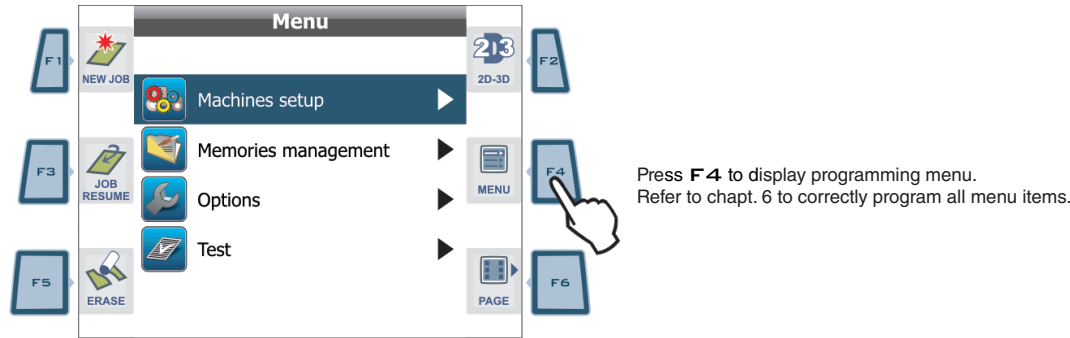


Fig. 145

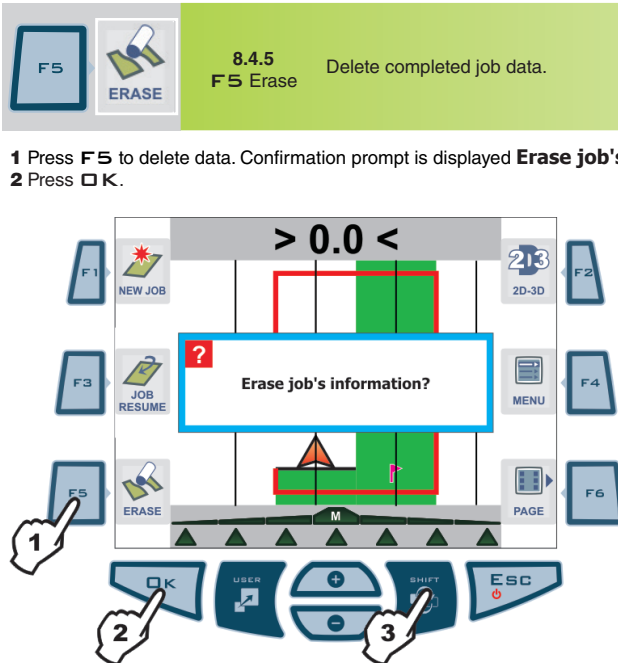


Fig. 146

REFERENCES ABOUT GUIDANCE PAGE

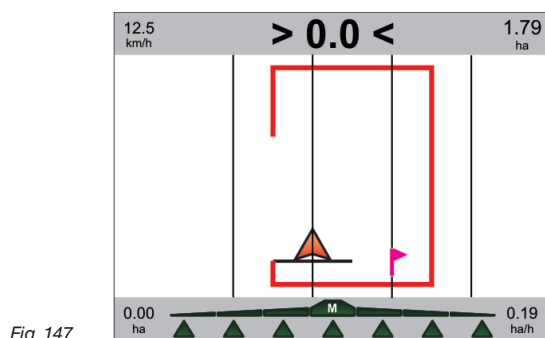



Fig. 147

Sprayed areas are deleted and job data is reset.

Reference tracks are maintained in the memory (par. 8.3.1 - **F 1** Mark AB) as well as the following, if any:

- The job breaking point  (par. 8.2.1 - **F 1** Pause).
- The perimeter drawn during the procedure for calculating the area (par. 8.2.5 - **F 5** Area).

9 MAINTENANCE / DIAGNOSTICS / REPAIRS

- Clean only with a soft wet cloth.
- DO NOT use aggressive detergents or products.
- DO NOT aim water jets directly at the navigator.

9.1 Error messages

DISPLAYED MESSAGE	CAUSE	REMEDY
Unable to load last job!	Power failure during switch-off: Skipper LT has not completed storage of job underway.	DATA FROM LAST JOB CAN NOT BE RECOVERED
Low memory available! Delete jobs to free memory	Available internal memory is insufficient to start a new job or save data.	Run the procedure to delete files from internal memory (par. 6.6.1).
Insufficient GPS signal quality! Continue job?	Position and number of satellites do not allow for suitably accurate guidance	Press OK to continue job. Skipper LT will output inaccurate data. Press ESC and wait for signal quality to improve.
GPS receiver invalid data!	Wrong connection of cable for receiver to Skipper LT.	Check connection with receiver (par. 5.7 - 5.8).
	Connecting to satellites.	Wait for connection to be established.
DGPS correction not available! Continue job?	DGPS signal not present within work area.	Press OK to continue job. Skipper LT could generate a displaying error in the guidance page (par. 6.5.2): carry out tracks alignment using "Align" function (par. 8.2.4).
	DGPS connection in progress.	Press ESC and wait until connection is established: display shows message DGPS correction not available! Please wait... until connection is established.

9.2 Troubleshooting

FAULT	CAUSE	REMEDY
The display does not switch on	No power supply	• Check power supply connection.
No signal enabling treatment to Skipper LT	Power cable improperly connected	• Check connection of green cable to power cable (par. 4.7).
	Improper setup	• Check setup (par. 4.7).
Speed reading is erratic	Job start procedure was initiated at a point distant from field to be sprayed.	• Repeat the job start procedure (par. 7.4) nearby the field.

10 TECHNICAL DATA

DESCRIPTION	Skipper LT
Display	LCD 4", 65000 colors, 350 cd/m ²
Power supply	9 - 15 Vdc
Working temperature	0 °C ÷ 45 °C +32 °F ÷ +113 °F
Storage temperature	-20 °C ÷ 60 °C -4 °F ÷ +140 °F
Weight	650 g
1 USB 1.1 port	HOST
Treatment input	Active high (+12 Vdc)

10.1 Displayed data and relevant units of measurement

• Machines setup

Data	Description	Min.	Max.	UoM	DEFAULT	Other possible settings
Boom sections	Section 1	0.1	99.99	Metric units: m	20.0 m	Disabled
	Section 2 ÷ 13	0.1	99.99	Metric units: m	Disabled	
GPS antenna	Antenna position	--	--	--	Front	Rear
	Antenna distance	0.0	10.0	Metric units: m	0.0 m	--
	DGPS	--	--	--	Disabled	Enabled
Alarms	Steer radius	0.1	19.9	Metric units: m	Disabled	--
	HDOP	1.0	10.0	--	4.0	Disabled
Guidance settings	Spraying activation	--	--	--	Keyboard	Remote
	Overlapping limit	1	99	%	Disabled	--
	Section switch-ON time	0.0	1.0	s	0.0 s	--
	Boundary sct. management	--	--	--	Disabled	Max. coverage, Min. overstep
Graphic settings	L1 data	--	--	--	Speed	Speed, Applied area, Calculated area, Spraying time, Productivity, Perimeter, Date, Time, Direction, GPS signal quality, Track number, Available memory
	L2 data	--	--	--	Calculated area	
	R1 data	--	--	--	Applied area	
	R2 data	--	--	--	Productivity	
	Led bar	--	--	--	Disabled	Enabled
Acoustic settings	Acoustic alarms	--	--	--	Enabled	Disabled
	Sound at key press	--	--	--	Enabled	Disabled
User key function	Function done by pressing the key	--	--	--	Store job pause point	Alignment, Store job pause point, Pause point return, Toggle 2D-3D view

• Options

Data	Description	Min.	Max.	UoM	DEFAULT	Other possible settings
Language	Display language	--	--	--	English	Italian, English, Spanish, Portuguese, French, German, Czech, Polish, Russian, Hungarian
Time zone	Time zone of the area of use	+12	-12	h	0 h	--

• Job data

Data	Min.	Max.	UoM
Speed	0.0	99999	km/h
Applied area	0.00	99999	ha
Calculated area	0.00	99999	ha
Spraying time	00:00	99:59	hh:mm
Productivity	0.00	99999	ha/h
Perimeter	0.00	99999	m
Date	01/01/00	31/12/99	dd/mm
Time	00:00	23:59	hh:mm
Direction	0	359	deg.
Track number	0	99999	track
Target rate	0	99999	l/ha
Available memory	100	0	%

11 END-OF-LIFE DISPOSAL

Dispose of the system in compliance with the established legislation in the country of use.

12 GUARANTEE TERMS

1. ARAG s.r.l. guarantees this apparatus for a period of 360 day (1 year) from the date of sale to the client user (date of the goods delivery note).
The components of the apparatus, that in the unappealable opinion of ARAG are faulty due to an original defect in the material or production process, will be repaired or replaced free of charge at the nearest Assistance Centre operating at the moment the request for intervention is made. The following costs are excluded:
 - disassembly and reassembly of the apparatus from the original system;
 - transport of the apparatus to the Assistance Centre.
2. The following are not covered by the guarantee:
 - damage caused by transport (scratches, dents and similar);
 - damage due to incorrect installation or to faults originating from insufficient or inadequate characteristics of the electrical system, or to alterations resulting from environmental, climatic or other conditions;
 - damage due to the use of unsuitable chemical products, for spraying, watering, weedkilling or any other crop treatment, that may damage the apparatus;
 - malfunctioning caused by negligence, mishandling, lack of know how, repairs or modifications carried out by unauthorised personnel;
 - incorrect installation and regulation;
 - damage or malfunction caused by the lack of ordinary maintenance, such as cleaning of filters, nozzles, etc.;
 - anything that can be considered to be normal wear and tear;
3. Repairing the apparatus will be carried out within time limits compatible with the organisational needs of the Assistance Centre.
No guarantee conditions will be recognised for those units or components that have not been previously washed and cleaned to remove residue of the products used;
4. Repairs carried out under guarantee are guaranteed for one year (360 days) from the replacement or repair date.
5. ARAG will not recognise any further expressed or intended guarantees, apart from those listed here.
No representative or retailer is authorised to take on any other responsibility relative to ARAG products.
The period of the guarantees recognised by law, including the commercial guarantees and allowances for special purposes are limited, in length of time, to the validities given here.
In no case will ARAG recognise loss of profits, either direct, indirect, special or subsequent to any damage.
6. The parts replaced under guarantee remain the property of ARAG.
7. All safety information present in the sales documents regarding limits in use, performance and product characteristics must be transferred to the end user as a responsibility of the purchaser.
8. Any controversy must be presented to the Reggio Emilia Law Court.



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Conformity Declaration **CE**



ARAG s.r.l.
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Dichiara

che il prodotto
descrizione: **Navigatore satellitare**
modello: **Skipper LT LT**
serie: **467020**

risponde ai requisiti di conformità contemplati nelle seguenti Direttive Europee:
2004/108/CE
(Compatibilità Elettromagnetica)

Riferimenti alle Norme Applicate:
UN EN ISO 14982 : 2001
(Macchine agricole e forestali - Compatibilità elettromagnetica
Metodi di prova e criteri di accettazione)

Rubiera, 9 febbraio 2009

Giovanni Montorsi

A handwritten signature in black ink, appearing to read "G. Montorsi", is written over a horizontal line. Below the signature, the word "(Presidente)" is printed in a standard black font.

(Presidente)

Only use genuine ARAG accessories or spare parts to make sure manufacturer guaranteed safety conditions are maintained in time. Always refer to ARAG spare parts catalogue.

D20219_GB-m00 10/2010



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