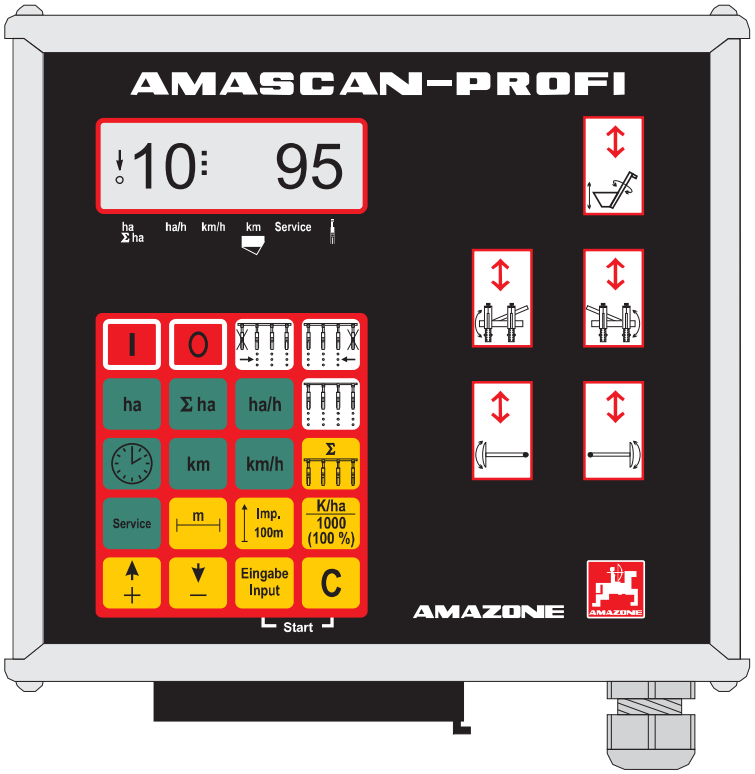
Instruction Manual

AMAZONE

AMASCAN – PROFI

On-Board Computer



MG 2472
BAG0025.2 01.14
Printed in Germany

Please read this operating manual before first commissioning. Keep it in a safe place for future use!

en

Contents **page**

1. Details about the implement AMASCAN PROFI

1.1 Range of application

The computer is a display-, controlling and monitoring device for Precision Airplanters.

The micro computer is provided with a memory and a lithium battery. All entered and determined values are stored for approx. 10 years, even if the on-board power supply is switched off.

AMASCAN PROFI is suitable for Airplanters ED 02 with max. 12 sowing units.

1.2 Manufacturer

AMAZONEN-WERKE

H. DREYER GmbH & Co. KG

Postfach 51, D-49202 Hasbergen-Gaste

1.3 Conformity declaration

The calculator fulfils the EMV-guide line 89/336/EC.

1.4 Details when making enquiries and ordering.

When ordering spare parts indicate the serial-number of the computer.

The safety requirements are only fulfilled when in the event of repair original AMAZONE spare parts are used. Using other parts may rule out the liability for resulting damage!

1.5 Identification

Type plate on the on-board computer.

The type plate is of documentary value and may not be changed or disguised!

1.6 Declined use of the machine

The computer has exclusively be designed for the usual operation for agricultural machinery as a display, monitoring and controlling device in combination with the **AMAZONE** Airplanter **ED**.

The **computer** is a display- and monitoring device which has been designed for the common use in agriculture.

Any use other than that stipulated above is no longer regarded as designed use. The manufacturer does not accept any responsibility for damage resulting from this. Therefore, the operator himself will carry the full risk.

Under "designed use" the operator must adhere to the manufacturer's prescribed operation, maintenance and repair conditions, and exclusively use **original AMAZONE spare parts.**

The implements may only be operated, maintained and repaired by such persons who have been made acquainted with it and who have been advised about the dangers.

All applicable accident prevention advice as well as any further generally accepted safety-, working-, medical- and road traffic rules should be adhered to.

AMAZONE machines have been manufactured with great care, however, even in case of designed use, certain deviations from the seed rate of even a total failure cannot totally be excluded. These deviations may be caused e.g. by:

- Blocking or bridging (e.g. by foreign particles, bag residue, etc.).
- Wear of wearing parts (e.g. singling discs . . .).
- Wear of wearing parts (e.g. singling discs . . .).
- Incorrect drive RPM and travelling speed.
- Incorrect setting of the machine (incorrect mounting).

Therefore, check before any use and also during operation your machine for the proper function and sufficient seed rate accuracy.

Claims regarding damage not having occurred on the **AMAZONE** Airplanter itself would be rejected. This also applies to damage due to sowing errors. Modifications made to the **AMAZONE** Airplanter by the owner/user may result in consecutive damage and the manufacturer does not accept liability for such damage.

2. Safety

This instruction manual contains basic advice which must be adhered to when mounting, operating and maintaining the machine. Ensure that this instruction manual has been read by the user/operator before starting to operate the device and that it is made readily available at all times to the user.

Please strictly observe and adhere to all safety advice given in this instruction manual.

2.1 Dangers when not adhering to safety advice

Not adhering to the safety advice given

- may result in endangering the user or other persons, the environment and/or the machine itself.
- may result in the loss of any claim for damages.

Not paying attention to the safety advice may cause the following risks:

- Danger for persons by not secured operational range.
- Failure of important functions of the machine.
- Failures of prescribed measures for maintenance and repair.
- Danger for persons by mechanical or chemical affects.
- Dangers to persons or to the environment by leaking hydraulic oil.

2.2 Qualification of operator

The machine may only be operated, maintained and repaired by persons, who are acquainted with it and have been informed of the relevant dangers.

2.3 Symbols in this instruction manuals

2.3.1 General danger symbol

The safety advice in this operation manual which may lead to a danger of persons when not being observed, are identified with the general danger symbol (DIN 4844 W9).

2.3.2 Attention symbol

The safety advice in this operation manual which may cause dangers for the machine and it's function when not being adhered to, are identified with the attention symbol.

2.3.3 Hint symbol

Hints regarding machine's specific functions, which have to be adhered to for a faultless function of the machine are identified with the hint symbol

2.4 Safety advice for retrofitting electric and electronic devices and/or components

The function of the implements' electronic components and parts may be affected by the electric-magnetic transmittance of other devices. Such affects may endanger people when the following safety advice will not be adhered to:

When retrofitting electric and electronic devices and/or components to the implement with connection to the on-board electric circuit, the user must ensure by himself that the installation will not cause any disturbance to the tractor electronic or other components.

Special attention must be paid that the retrofitted electric and electronic parts correspond to the EMV-guide 89/336/EC in the relevant valid edition and that they bear the CE-sign.

For retrofitting mobile communication systems (e.g. radio, telephone) the following requirements must be fulfilled:

- Only install devices which have officially been authorised in your country.
- Firmly install the device.

The use of portable or mobile devices inside the tractor cab is only permissible with a connection to a firmly installed external antenna.

2.5 Safety advice for repair work

Before carrying out any repair work on the electric system or arc welding on the tractor or the mounted implement, disconnect all connections of devices.

3. Fitting instructions

3.1 Console and computer

Fit basic console (Fig. 1/2) (special option) within reach and sight to the right hand of the operator; it must be free of vibrations and electrically conductive inside the tractor cab. The distance from a radio transmitter and an antenna should at least be 1 m.

The **retainer** (Fig. 1/1) is pushed on to the tube of the console.

The optimum viewing angle of the display is between 45° and 90° seen from below. Bring into the desired position by swivelling the console.

Make sure that the computer housing receives via the console an electrically conductive connection to the tractor chassis. Scratch off all paint from the fitting surfaces.

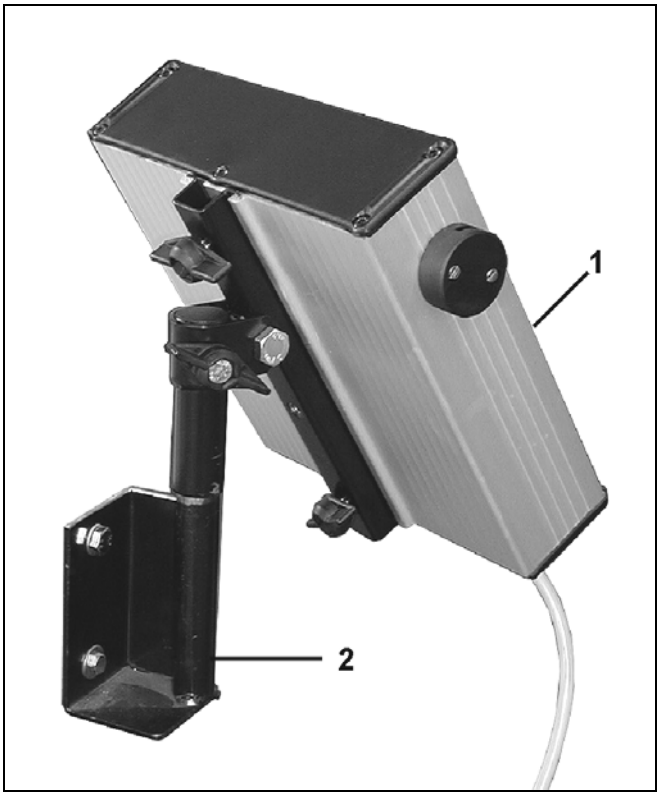


Fig. 1

3.2 Battery connection lead

The power supply is **12 V** and should be taken directly from the battery or from the 12 V-starter. Carefully lay the **cable** (17) and shorten if necessary. Fit the ring tongue for the earth cable (blue) and the wire end bushing for the + cable (brown) with appropriate pliers. The wire end bushing for the + cable is located in the connecting clamp of the fuse holder.

brown = + 12 volt
blue = mass

3.3 Connection of the implement

The airplanter ED mounted to the tractor is connected via one/two implement plugs.

Via the 39 pole implement plug "Electric“ (Fig. 2/1) the computer receives information about the sensors and part section control switches.

Via the 30 pole implement plug “Hydraulic“ (Fig. 2/2) the hydraulic functions of the machine are controlled.

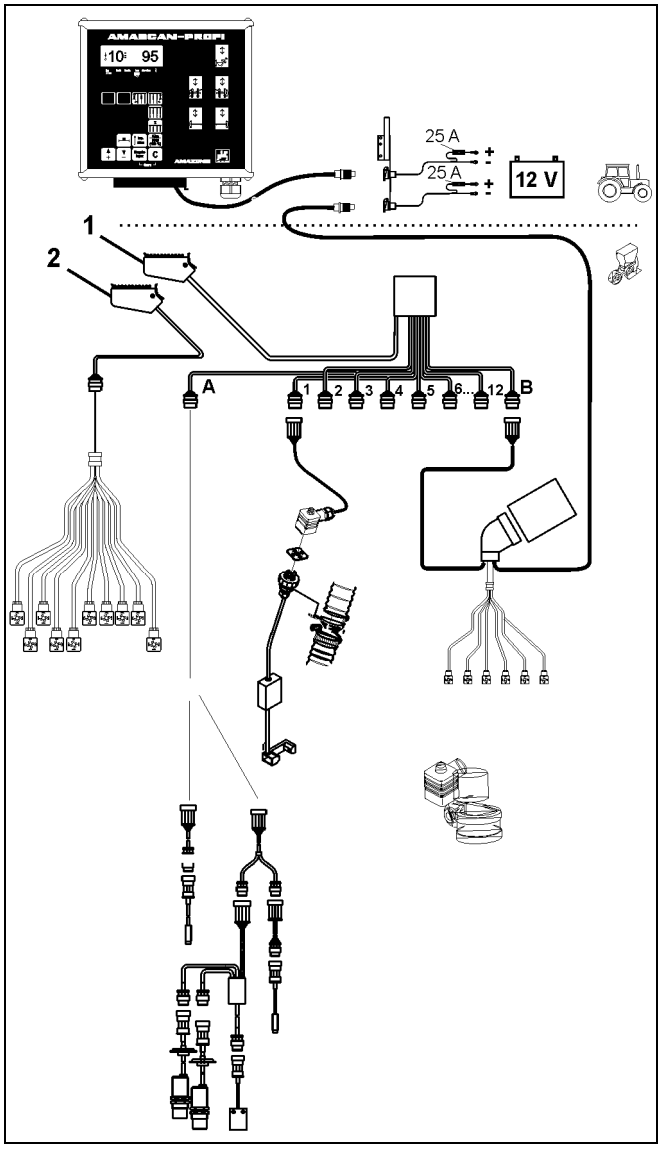


Fig. 2

4. Description of product

AMASCAN PROFI is a display- and monitoring- device for Airplanters ED with up to 12 sowing units maximum..

The computer has been equipped with a memory and a lithium battery. All entered and determined values are stored, even if the on-board power supply is switched off. At the next switching on all data are available again.

AMASCAN PROFI (Fig. 3/...) consists of:

1. **AMASCAN PROFI** .

AMASCAN PROFI is installed on the tractor within view of the tractor operator on a mounting bracket and a console (2).

2. Console battery power supply cable. Connect the battery power supply cable with the tractor battery.
3. Opto sensor. Each sowing unit is provided with an opto sensor.
4. Movement sensor (Sensor X) for travelled distance and area monitoring. This sensor simultaneously gives the reference signal for the operational situation (implement in operation "yes" (ja) / "no" (nein). The sensor fitted to the setting gearbox is transmitting impulses (Imp./100m), as soon as the gearbox input shaft is driven by the ground wheels.
5. Implement plugs.
6. Cable-tree-system **AMASCAN PROFI** for 12 rows in maximum incl. movement sensor.
7. Fertiliser hopper monitoring consisting of two filling level indicators and metering shaft monitoring (for visual and audible alarm signals via the **AMASCAN PROFI**)
8. Option: Cable harness system for electric unit on/off.
9. Blind coupling: Required for continual row reduction, e.g. from 8 rows with sunflowers down to 6 rows on maize.
10. Hydraulic cable harness.

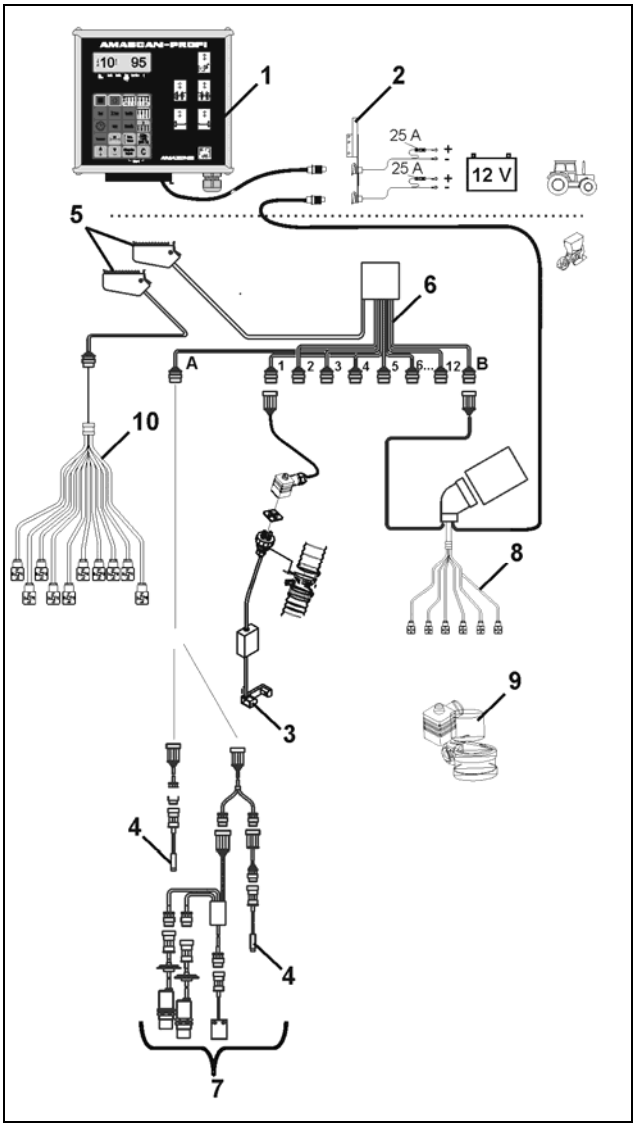


Fig. 3

AMASCAN PROFI and its functions:

- Function monitoring of the individual sowing units.
  - After having dropped from the singling disc and passed the opto sensor infrared light barrier), every individual seed grain creates an impulse which monitors the sowing units.
  - The currently counted number of seed grains is extrapolated to seed grains/ha, shown on the display and compared with the pre-determined rated value.
  - **If the rated value falls short by more than 15 % a honk sounds and the arrow above the symbol "sowing unit" flicks.** Simultaneously the number of the defect unit is shown on the display with the **actual value** (seed grains/ha)/1000.
- Determination of the worked area per task in [ha].
- Determination of the worked total area, e. g. per season in [ha].
- Display of the current area efficiency in [ha/h].
- Determination of the time of operation in [h].
- Display of the travelled distance in [km].

AMASCAN PROFI and it's hydraulic functions

- Folding in and out right hand boom.
- Folding in and out left hand boom.
- Folding in and out right hand track marker.
- Folding in and out left hand track marker.
- Filling auger: lowering and switching on drive / lifting and switching off drive.

When the Airplanter is in operational position the following data are shown on the 6-digit display (Fig. 4/1):

- right hand – the current number [seed grains/ha]/1000 (Fig. 4/2).
- on the left hand side (Fig. 4/3) the display (figures 1, 2, 3 etc.) changes automatically after 5 seconds. The number of the actually monitored sowing unit is shown.

If the computer recognises a defect on one of the sowing units or a deviation from the pre-set rated value, the arrow above the symbol "sowing unit" flicks. At the same time the number of the defect sowing unit (e. g. 3) with its current value (e. g. 50) (seed grains/ha)/1000 is shown on the display and an audible alarm sounds (honking).

Seen in travelling direction the sowing units are numbered from the left hand outer side to the right hand outer side. That means, seen in travelling direction, the sowing unit on the left hand outer side bears the number 1, etc..

Display in case of a defect sowing unit

- the vertical arrow (Fig. 4/4) and the flicking circle below (Fig. 4/5), as soon as the movement sensor (Sensor "X") is transmitting impulses to the **AMASCAN PROFI**.

The key pad (Fig. 4/6) is divided into the following areas:

- Red = Implement on / off.
- Green = Function keys (display of the determined data).
- Yellow = Input keys (entering the machine data).
- White = Control keys (monitoring function to switch on or off one or several units for a short time

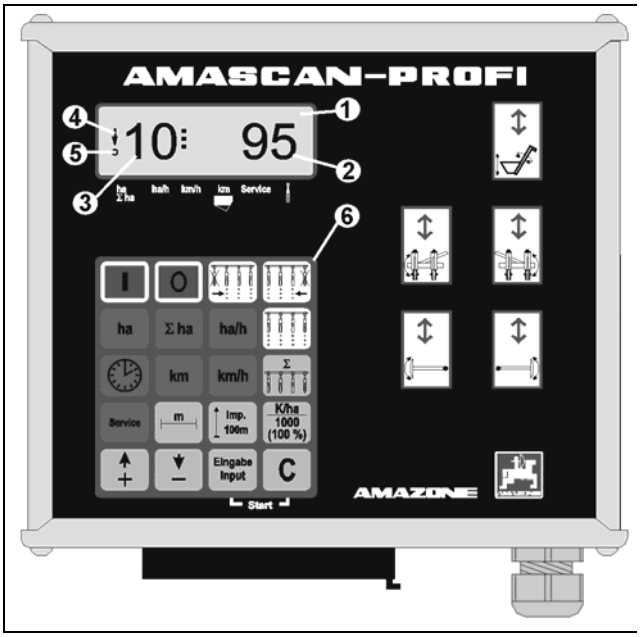
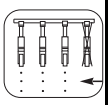
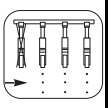
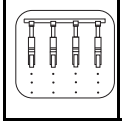


Fig. 4

Keypad layout

Key	Function
I	AMASCAN PROFI „ ON “
0	AMASCAN PROFI „ OFF “
ha	Display of the covered area [ha] after having entering the "start function"
Σ ha	Display of the covered total area
ha/h	Display area efficiency in [ha/h]
	Display working time in [h] after having entered the "start function"
km	Display of the travelled distance in [km] after having entered the "start function"
km/h	Display of the operational speed in [km/h]
Service	Checking the monitoring function
m	Working width in [m] – display and entering
Σ	Entering the number of sowing units
Imp. 100 m	Imp/100 m – display and entering (directly or via the calibration procedure)
K/ha 1000 (100%)	Rated value seed grains/ha)/1000] display and entering

Key	Function
+	Input key for increasing the displayed value
–	Input key for reducing the displayed value
Eingabe Input	Key used to confirm all entries
C	Correction key
	Pre-selection switching on/off sowing units beginning at the r.h. outer side.
	Pre-selection switching on/off sowing units beginning at the l.h. outer side.
	Complete reset the switching off of the sowing units.

4.1 Putting to operation

- Plug the implement plug of the Airplanter ED, mounted to the tractor, on to **AMASCAN PROFI**.

Before starting to operate check the implement specific data by pressing the corresponding keys in the mentioned order or enter newly:

1. Switch on **AMASCAN PROFI**.
2. Check distance sensor calibration value "Imp./100m" and correct if necessary (by direct entering the calibration of the movement sensor).
3. Check the working width [m] and correct if necessary.
4. Enter the rated value for the application rate [(seed grains/ha)/1000].
5. Check the number of sowing units and correct if necessary.

Release start function and start sowing operation.

4.2 Operating procedure and description of the keypad

Before starting operation AMASCAN PROFI vor Arbeitsbeginn requires the implement specific data (values) in order to monitor the connected Airplanter ED:

and .

After having pressed the corresponding key  or  or  or  and then pressing the keys  or  these data (values) can be dialled directly on the display.

After having dialled the desired values via the keys  or  always press key  in order to store the dialled value.

By the first pressing on one of the keys  or  the display jumps by one position into the desired direction.

4.2.1 Operating sequence

1. AMASCAN PROFI on/off switching

By pressing key I **AMASCAN PROFI** ein- is switched on and by pressing key 0 it is switched off.

When switched on the calculator tests itself. Then automatically the function is dialled which was displayed before the calculator had been switched off.

In case of a fault in the electronic system, the device shows:

HALP 00 or **HALP 88**

In this case return the computer for repair.

Whenever the supply voltage drops to below 10 volts, e. g. when starting the tractor, the computer automatically switches off. It has to be switched on again as described above.

2. Calibrating the distance sensor

For determining the actual forward speed **AMASCAN PROFI** requires the value "Imp./100m", which sensor "X" releases to **AMASCAN Profi** when driving down a calibration distance of 100 m.

There are two possibilities to enter the calibration value "Imp./100m":

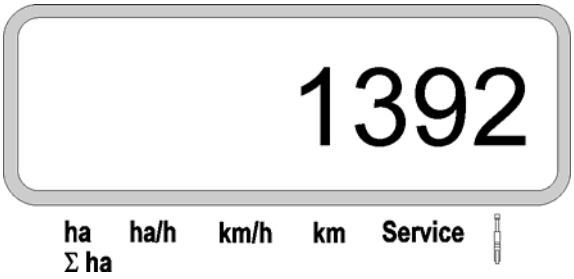
- The value "Imp./100m" is known and dialled via the keypad.
- The value "Imp./100m" is unknown and should be determined by driving down a calibration distance.

As the calibration value "Imp./100m" depends soil, we recommend that you always newly determine this value by driving down a calibration distance, in case of heavily deviating types of soil.

a) The calibration value "Imp./100 m" is known:

- Press key Imp. 100 m with the tractor stopped..
- Dial the known calibration value "Imp./100m" via the keys + or −.

Display of the dialled calibration value



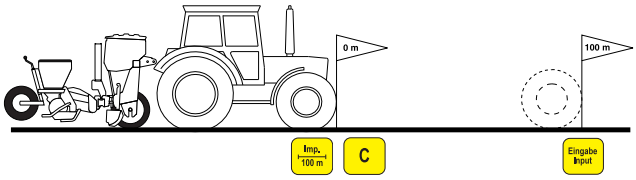
- Press key Eingabe Input to store the dialled calibration value.
- Once again press key Imp. 100 m to check the stored calibration value. Now the dialled calibration value should appear on the display.

In case of deviations between

- **the sown application rate and the actually covered area**
- **the covered area determined by AMASCAN or AMASCAN PROFI and the actually covered area**
- **newly determine the calibration value by driving down a 100 m calibration distance (please refer to item b).**

b) The value "Imp./100 m" is unknown:

- Accurately measure out in the field a calibration distance of 100 m. Mark the starting- and ending point of the calibration distance.

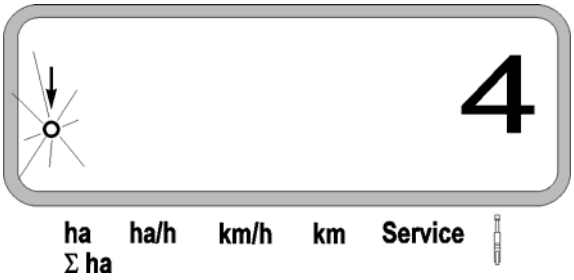


- Bring tractor to start position and Airplanter ED into operational position (if necessary, lift the sowing units to interrupt the drive of the sowing units).
- Press key C keep pressed and simultaneously press key Imp. 100 m.

Accurately drive down the calibration distance from the starting to the ending point (when starting the counter returns to "0"). The display shows the currently determined impulses.

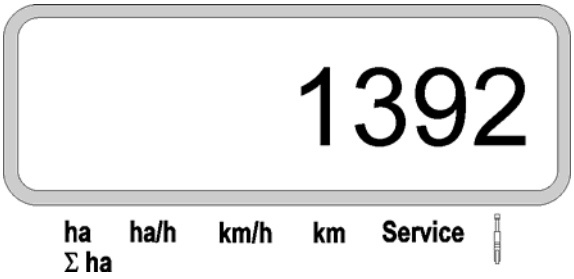
When driving down the calibration distance, do not press any key.

Display during calibrating



- Stop after 100 m. Now the number of determined impulses is shown on the display.
- Press key Eingabe Input to store the displayed, determined calibration value (Imp./100 m).

Display of the determined calibration value



- Once more press key Imp. 100 m to check the stored calibration value. Now, the determined calibration value (Imp./100 m) should appear on the display.
- Enter the determined calibration value into Table 4.1.

Table 4.1: Soil related calibration value "Imp./100m“

Type of soil	Imp./100m
Soft soil	
Medium heavy soil	
Hard soil	

3. Working width

For determining the operated area **AMASCAN PROFI** requires information about the working width. The working width should be entered as follows:

- Press key m .
- Via the keys + or – dial the desired working width [m] on the display, e. g. “3.00” for 3 m working width.

Display working width

requires information about the working width. The working width should be entered as follows:

- Press key m .
- Via the keys + or – dial the desired working width [m] on the display, e. g. “3.00” for 3 m working width.

4. Application rate

Enter the value for the desired application rate whilst the tractor is not moving..

Example:

Desired: **95.000 seed grains per hectare**

Row spacing R: **0,75 m**

Singling disc: **30 holes**.

Determined seed grain spacing **a**: **14,04 cm** (please refer to chapter. 7.5)

Singling disc used: **30 holes**

- Take from the gearbox setting table a seed grain spacing nearest to the determined seed grain spacing whereby you have to bear in mind the holes in the singling discs.
- seed grain spacing found in the table a: **13,9 cm**
- In the "**review table seed grains / ha singling disc 30 holes**" find **the seed grain spacing 13,9 cm**. Read off this line underneath row spacing **R = 75 cm** the number of **95923 seed grains/ha** (95923 seed grains/ha corresponds to 96000 seed grains/ha).
- Press key K/ha 1000 (100%).
- Via the key + or − dial the desired application rate [(seed grains/ha)/1000] on the display, e. g. "96" for 96000 seed grains//ha.

Display of the desired application rate

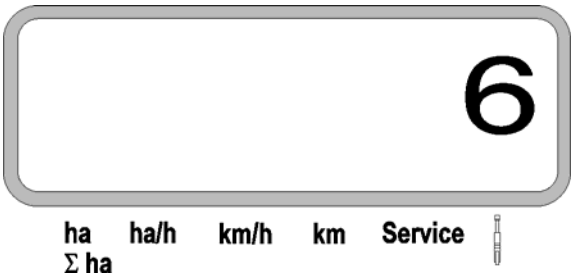
- Press key Eingabe Input. The dialled value "96" will be stored.
- press once again K/ha 1000 (100%) key to check the stored value. On the display then the figure "96" should appear.

5. Entering the number of sowing units

The entered value must not exceed the figure "12" (12 sowing units in maximum).

- Press key Σ.
- Via the keys + or − dial the figure for the number of sowing units on the display (e.g. "6" for 6 sowing units).

Display number of sowing units



- Press Eingabe Input The dialled value "6" is stored.
- Once again press key Σ to check the stored value. On the display the figure "6" must be shown.

1. Starting the sowing procedure

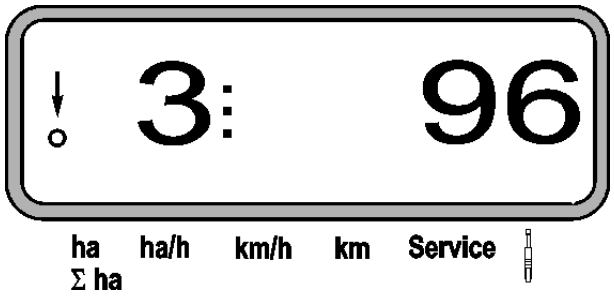
Before starting operation, actuate the "start function" Eingabe Input + C (Start) Then the implement is ready for operation. For this

- press key Eingabe Input , keep it pressed and simultaneously press key C.

This way, the memory of the function keys , ha and km return to "0".

4.3 Sowing operation

Display "operation"



Explanation for the display "operation"

The vertical arrow is shown when the implement is in operational position. During travel the circle below must flick. That means that the sensor for storing the covered area and the travelled distance is transmitting impulses to **AMASCAN PROFI**

This display (figures 1, 2, 3 etc.) automatically changes after 5 seconds. The number of the current monitored sowing unit id displayed.

During the sowing operation the display shows the actual seed rate, e. g. "96" for 96000 seed grains /ha.

If the actual seed rate deviates by 15 % an audible signal sounds. An arrow appears above the sowing unit symbol and the sowing unit with the incorrect seed rate is displayed.

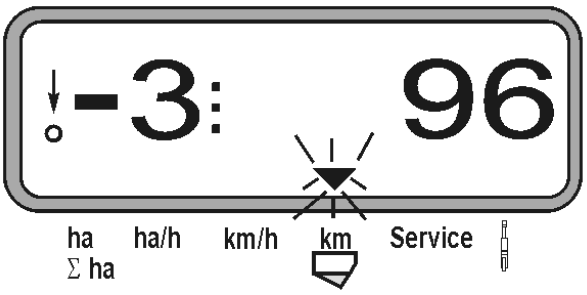
When sowing rape, the application rate can not be determined nor can it be indicated due to the fine grain. An audible alarm sounds and the arrow above the flashes.

Monitoring the fertiliser hopper (Option):

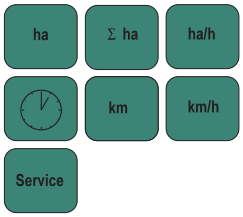
A "fertiliser hopper" alarm signal (triangle flashes above the fertiliser hopper symbol and a signal sounds for 5 seconds) if:

- fertiliser hopper level falls below preset minimum quantity.
- fertiliser hopper metering shaft does not rotate.

fertiliser hopper indicator failure



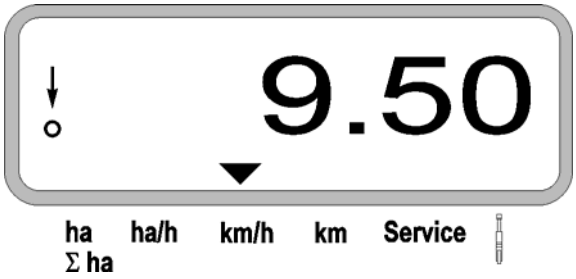
Description of the function keys

Via the function keys 

the determined data can be displayed during sowing at any time.

By pressing one of the following function keys the desired value (e.g. 9.50 for 9,5 km/h) will appear for approx. 5 seconds.

Display after the function key km/h has been pressed



Am unteren Rand des Displays zeigt der Pfeil auf das On the lower edge of the display the arrow points towards the symbol of the currently pressed function key. Thereafter, the computer automatically switches back to the "operational display".

1. Part area after having actuated the "start function"

After having pressed the key 

the **covered area** in [ha] is displayed (e.g. 10.5110 for 10,5110 ha), which had been covered **after having actuated the "start function“** .

Only the covered area is determined at which the Airplanter is in operational position.

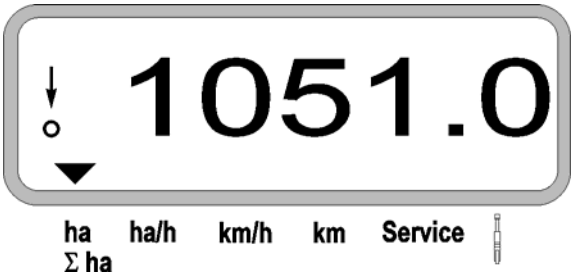
Display after having pressed key "ha“

2. Total area, e. g. one season

After having pressed key 

the **covered total area** is displayed in [ha] (e.g. 1051.0 for 1051 ha).

Display after having pressed key "Σ ha“

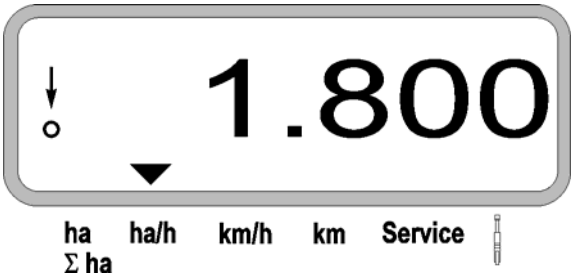


3. Area efficiency

After pressing key 

the current area efficiency is displayed in [ha/h] (e.g. 1.800 for 1,8 ha/h).

Display after having pressed key "ha/h"



4. Hours of operation

After pressing key  the operational time is displayed in [h] (e.g. 1:15:51 for 1 hour 15 min. 51 sec.), which passed after having actuated the "start function".

Display after having pressed key "clock" ("Uhr")

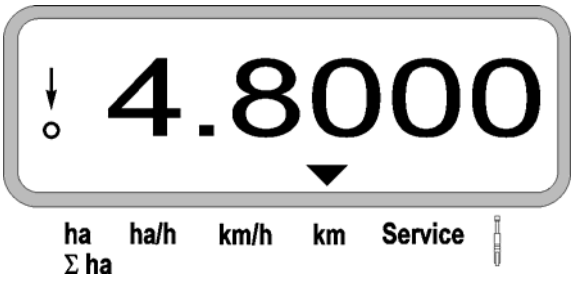
If the tractor engine is stopped and thus the computer currentless the time interception is interrupted. After the tractor has been started again the time interception is automatically continued.

During operation the time interception can be stopped by pressing key twice. After pressing this key again the time interception is continued.

5. Travelled distance

After pressing key km the distance [km] is displayed (e.g. 4.8000 for 4,8 km), which has been travelled after having actuated the "start function"..

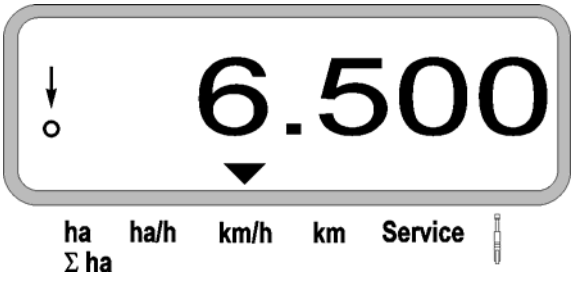
Display after having pressed key "km“



6. Operational speed

After pressing key km/h the actual operational speed is displayed [km/h] (e.g. 6.500 for 6,5 km/h).

Display after having pressed key "km /h“



7. Service-key for checking the function ability of the opto sensors

After pressing the key Service the service function is dialled.

If now the light barrier on one of the opto sensors is interrupted,

- the computer displays the sowing unit number into which this opto sensor is installed (e.g. "1" for the outer left hand sowing unit) and
- at the same time a honk signal sounds.

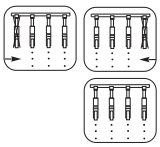
Display after having pressed the key "Service“

This display is only shown for about 1 second.

Do not push any firm particles into the sowing coulters. These might damage the opto sensor.

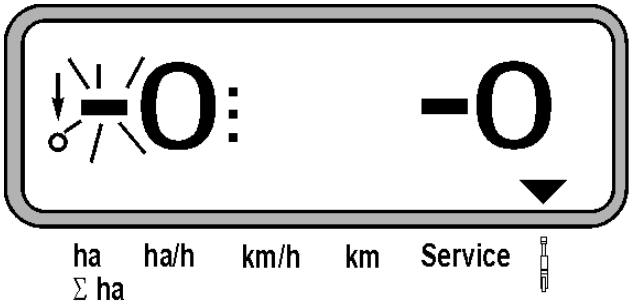
4.4 Switching on and off or monitoring the on/off switching of the individual sowing units during sowing operation

Sowing units with solenoid can be switched off.
On sowing units without solenoid only the monitoring is switched off.

Via the white control keys  the switching on and off (or the monitoring function) of the individual sowing units can be switched during operation.

Press once key  or  to pre-select from which side (l.h. / r.h.) the individual sowing units should be switched off. The display shows the side by a flashing minus.

Display after having pressed the key



With the minus key  the sowing units can be switched off by each one key pressure, starting from the outer side.

With the plus key  the sowing units can be switched on, starting from the inner side.

After pressing key  all sowing units are switched on again and the operational display appears again.

All sowing units are automatically switched on again if the AMASCAN PROFI realises an interruption of the operational position, i. e. the movement sensor does not send impulses any more. This is the case, e.g. when the machine is raised ad the headlands, however also when it is stopped in the field.

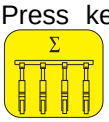
4.5 Permanentes Abschalten (bzw. Permanent switching off (of switching off the monitoring) of individual sowing units

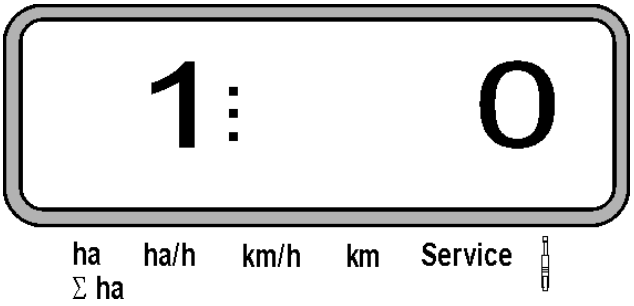
Besides the switching of the sowing units from outside towards the inner side any desired sowing unit can additionally be switched off for a lasting time.

This setting remains existing beyond switching off and on the AMASCAN PROFI and the lifting.

The setting is deleted via key  Then all sowing units are switched on again.

To allow a check of the permanent switching off, the disengaged rows are still monitored in the operational display (The seed rate must be 0).

Press key "Number of sowing units / permanent“  for 5 seconds until the display.



appears.

The left hand figure indicates the sowing unit [1 for sowing unit on the outermost left hand side].

With the keys  (switching off) and  (switching on) the right hand figure can be changed.

- 1 = Sowing permanently switched off (of monitoring switched off)
- 0 = Sowing unit permanently switched on (or monitoring switched on)

Press key 

"enter“ and switch on/off the next sowing unit.

After the entering for the last sowing unit has be confirmed the following information is shown.

- Left hand: Number of sowing units
- Right hand: Number of sowing unit switched off

5. Fault remedy

For searching faults please proceed in the outlined order!

Fault	Cause	Remedy
The calculator cannot be switched on	Wrong poling on the power supply	Check for proper poling
	Power supply interrupted	Check battery connecting lead fuse, binders of the battery and fuses.
	Total failure	Send the calculator to your dealer
The calculator shows HALP 88 or HALP 00	Memory failure	Send the calculator to your dealer
The forward speed is not displayed.	Entering"Impulses/100 m" is missing.	Enter numbers of "Impulses/100 m".
	Sensor "X" does not send impulses to the calculator, the ring in the display does not flick while travelling.	Set the distance between Sensor "X" and impulse disc onto 3 to 4 mm.
		Connect cable properly in the distributor black = sw = Signal brown = br = +12 Volt blue = bl = - mass(earth)
		Sensor "X" is defect, replace.
	Drive interrupted (chain torn off).	Repair the chain.
The area is not displayed.	Working width has not been entered.	Enter working width.
The set application rate is not displayed. (Display 0 seed grains/ha)	Scraper position has not been set properly.	Re-adjust the scraper position.
	Opto sensor does not send any impulses to the calculator	Seed box is empty.
		Sowing unit is defect. With the aid of the service-key determine the defective sowing unit and proceed as follows: Opto sensors are dirty, clean them thoroughly
		Check whether the opto sensor or the cable of the connecting unit are defect. Remove the cube plug and apply the adjacent cube plug. If the fault has been remedied, the cable is defect. If the fault has not been remedied, the opto sensor is defect.
		Connect the cables in the distributor in the appropriate manner green = gn = Signal brown = br = + 12 Volt white = ws = 0 Volt

Fault	Cause	Remedy
The set application rate is not displayed. (Display 0 seed grains /ha)		Sensor is defect, replace.
		Calculator is defect, replace.
		Distributor is defect, replace.
The display seed grains/ha heavily deviates.	The opto sensors send uneven impulses to the calculator.	Inaccurate seed placement – readjust sowing units properly.
		Opto sensors are dirty, clean them thoroughly.
	Cable is broken.	Find out the defective sowing unit. For this remove the relevant cube plug and apply the adjacent cube plug. If the fault has been remedied, the defective sowing unit has been found. If not, proceed in the same way for all sowing units.
Only 4 sowing units are monitored instead of 8.	"Number of sowing units" has not been entered correctly.	Enter "number of sowing units".

6. Maintenance

6.1 Calculator

The calculator is maintenance-free. During winter store the calculator in a frost-free room and protect it from humidity.

6.2 Sensors

If dirty, clean the opto-sensor with a soft brush.

If the dirt cannot be removed without water, clean the opto sensor with dish water. Dry with a grease-free cloth.

The cleaning applies to the inside of the opto sensor (infrared diode and photo transistors).

Before starting to operate in the season clean the sensors by using dishwater and a soft brush. Dry afterwards.

The movement sensor (sensor "X") is maintenance-free.

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