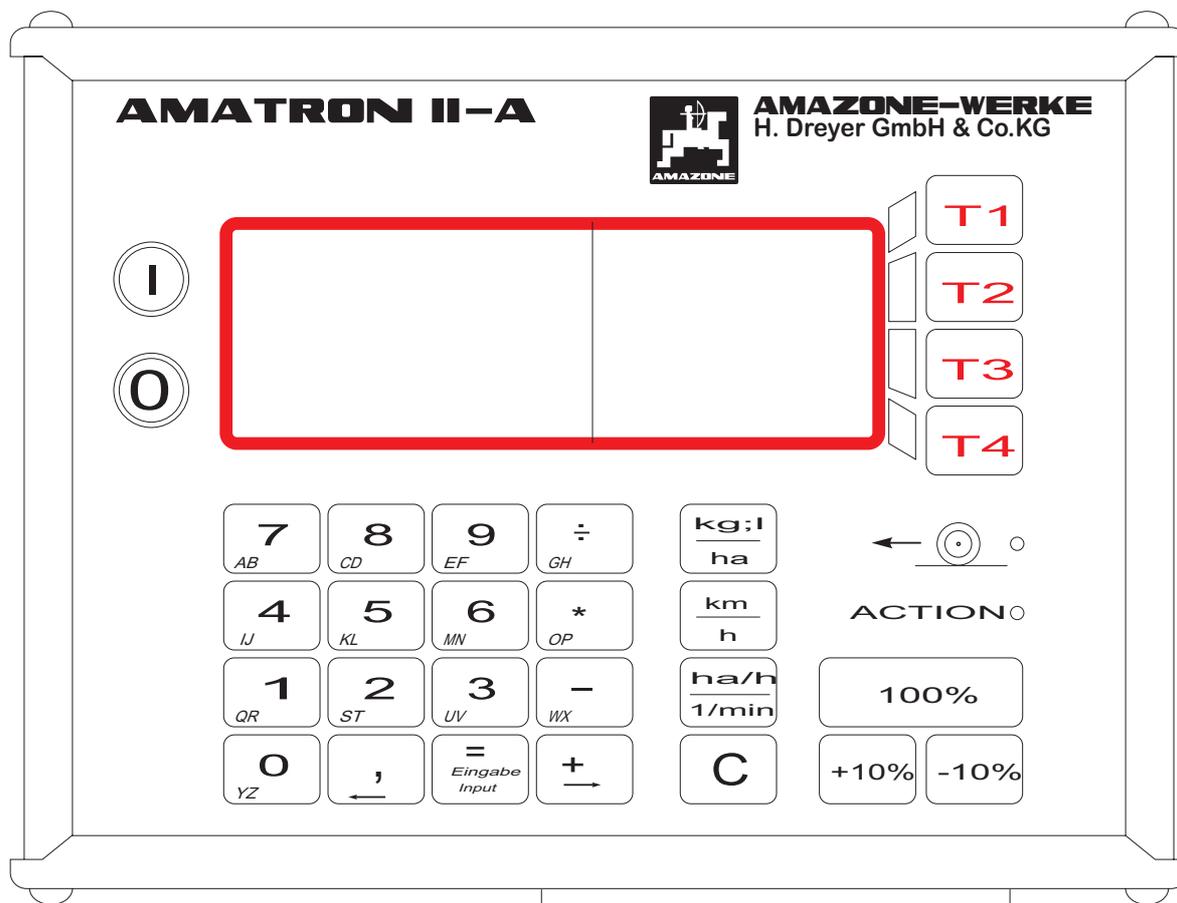


Instruction Manual

On board computer

AMATRON II-A



MG 807
DB 599 (GB) 09.01
Printed in Germany



Before starting to operate, please carefully read and adhere to this instruction manual and safety advice.





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On receipt of the computer

On receipt of the computer, please check whether transport damage has occurred or whether any parts are emitting. Only immediate claims to be filed with the forwarding agency may lead to replacement. Please check whether all parts mentioned in the following are provided.



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1. Information about the computer

1.1 Range of application

AMATRON II-A can be coupled with the AMAZONE-, BBG-field sprayers and AMAZONE fertiliser spreaders ZA-M and can be used as a display, monitoring and controlling device.

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

1.2 Manufacturer

AMAZONEN-Werke, H. Dreyer GmbH & Co. KG,
P.O. Box 51, D-49202 Hasbergen-Gaste.

1.3 Conformity declaration

AMATRON II-A fulfils the EMV-guide line 89/336/EC.

1.4 Details when making enquiries and ordering

When ordering spare parts **always** indicate the serial-number of the **AMATRON II-A**.



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 Designated use of the on board computer

AMATRON II-A has exclusively been designed for the usual operation in agriculture as a display-, monitoring and governing device in combination with the **AMAZONE** fertiliser spreaders and the **AMAZONE** and **BBG** field sprayers.

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

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

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, certain deviations from the application rate cannot totally be excluded. These deviations may be caused, e.g. by:

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 the 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 damage.

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.
- Failure of prescribed measures for maintenance and repair.

- Drifting.
- Blockage (e.g. by foreign particles, damp fertiliser, bag residue, deposits etc.)
- Undulated terrain.
- Wear of wearing parts.
- Damage by external influence.
- Wrong drive R.P.M. and forward speed.
- Wrong setting of the machine (incorrect mounting, not adhering to the setting chart).
- Fitting wrong spreading discs (e.g. mixing them up).

Before every operation and also during the operation check your machine for proper function and for sufficient application accuracy.

Claims regarding damage not having occurred on the **AMATRON II-A** itself will be rejected. This also applies to damage due to application errors when fertilising or spraying. Arbitrary modifications to the **AMATRON II-A** may result in damage and therefore, the manufacturer does not accept liability for such damage.

- Danger for persons by mechanical or chemical affects.
- Danger to persons or to the environment by leaking hydraulic oil.

2.2 Qualification of operator

The implement 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 manual

2.3.1 General danger symbol

Not adhering to the safety advice in this instruction manual may cause danger to health and life of persons. They are identified by the general danger symbol (Safety symbol according to DIN 4844-W9)



2.3.2 Attention symbol

Safety advice which may cause dangers for the machine and its function when not being adhered to, are identified with the attention symbol.



2.3.3 Hint symbol

Hints regarding machine's specific particularities, 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..

Install the transmitter spaced apart from the tractor's electronic.

When installing the antenna ensure an appropriate installation with proper earth connection between antenna and tractor earth.

For cabling and installation as well as for the maximum permissible current supply in addition adhere to the fitting instructions of the implement manufacturer.

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 AMATRON II-A.



3. Description of product

3.1 Description of system

The **AMATRON II-A** can be used as a fully automatic controlling device on fertiliser spreaders and field sprayers. The device allows an area specific spread rate control depending on the pre-set desired values and in relation to the actual forward speed and working width.

The actual application rate, the total amount and the residual amount is determined via **AMATRON II-A**.

In addition the actual forward speed (km/h) is displayed and the worked part area (ha), the worked total area (ha) and the operating hours (h) per job are determined and stored.

Filling the field sprayer's tank with a filling device (tank meter) or by pressing a key (tank full) has been automatically registered. When an electronic pressure sensor is installed the spray pressure is monitored and displayed.

AMATRON II-A displays the actual tank contents, and, after the "start function", determines the application rate in kg or litres and sends a visual and audible alarm when the hopper/tank is getting empty at a pre-set alarm limit.

The application rate can be adjusted in 10 % steps.

The unit consists of the **computer** (1), the **console** (10-14), and the **tractor signal distributor** (16) with the sensor **drive shaft/wheel** (20) for distance determination.



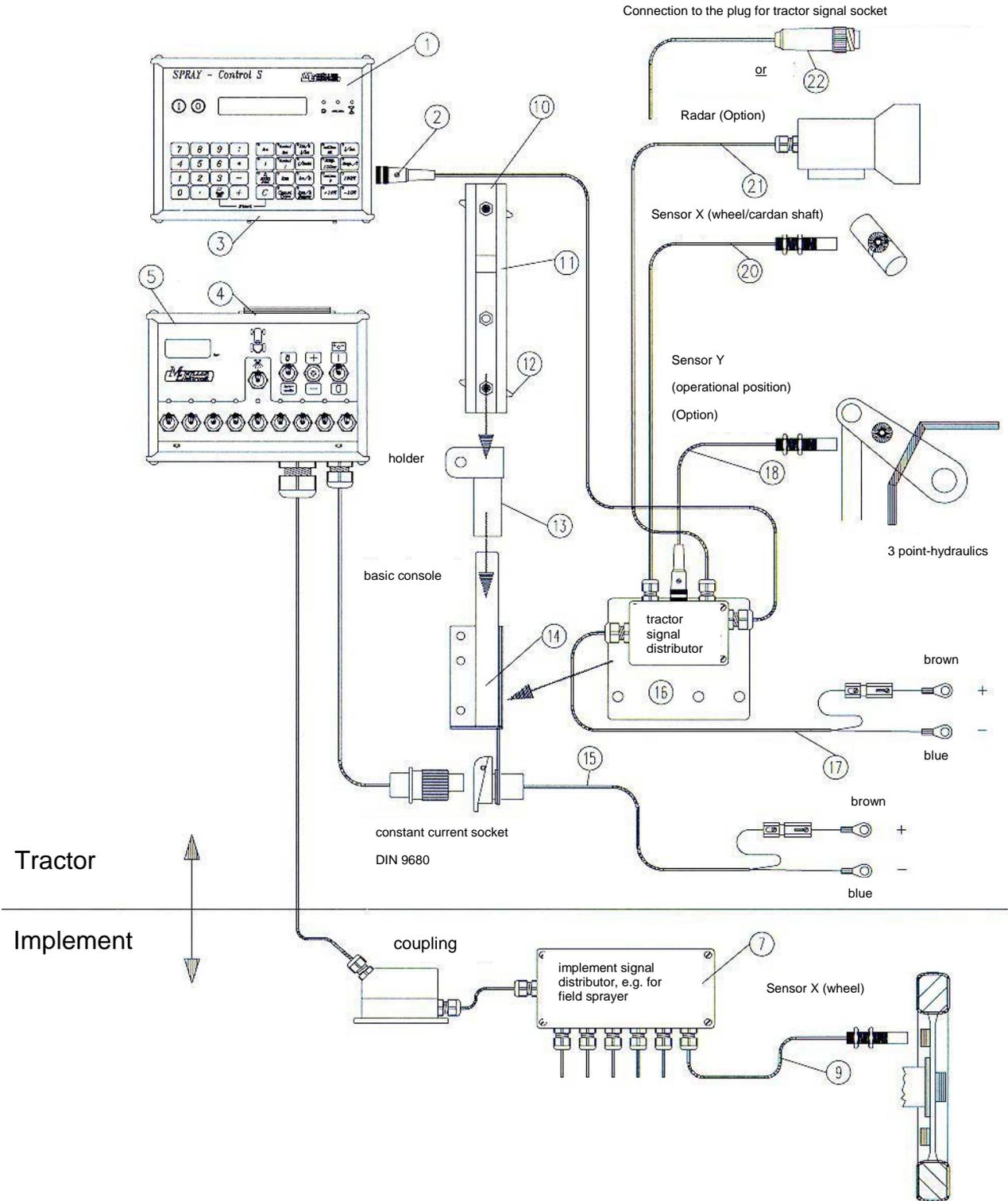
A radar sensor for a slip free determination of the speed may be installed.

The **tractor signal distributor** (16) with its connection to **signal socket tractor** (22) does not contain any sensors. The signals are taken from the tractor signal socket.

The field sprayer is connected with **AMATRON II A** with the switch box via the implement plug.



The AMATRON II-A can also be used as a hectare counter. The sensor Y (operating position) (18) is connected with the signal distributor (16) by using a 3-pole plug.





3.2 Review

- 1 AMATRON II-A computer.
- 2 Tractor plug (on the back)
Connection tractor signal distributor with the tractor specific sensor.
- 3 Implement plug on AMATRON II-A
Connection switch box or implement adapter.
- 4 Implement plug on the switch box or implement adapter, connection to AMATRON II-A.
- 5 Switch box
Control unit of the trailed implement (e.g. field sprayer) and connection to AMATRON II-A.
- 6 Implement adapter
Implement connection with AMATRON II-A, if no manual implement control is required.
- 7/8 Implement signal distributor
Combination of sensor and actuator connections on the implement (actuator = control element).
- 9 Sensor X (wheel) 6m
Distance impulse acceptance on the trailed implement (e.g. field sprayer).
- 10 Cap profile rail
Retainer for computer AMATRON II A and the switch box or the implement adapter.
- 11 Guide groove
for AMATRON II-A and switch box or implement adapter.
- 12 Clamping bolts
to affix the computer and the switch box or implement adapter.
- 13 Carrier-S (including cap profile rail (10))
Retaining part for the cap profile rail.
- 14 Basic console
is attached to the tractor cab. Retainer with cap profile rail and battery cable for switch box or implement adapter.
- 15 Battery cable
for power supply of switch box or implement adapter, connection to the 12 volt battery.
- 16 Tractor signal distributor S
Joint box of tractor specific sensors and the battery cable.
- 17 Battery cable for power supply of AMATRON II-A.
- 18 Sensor Y (operating position)
registers of the operating position (e.g. on the 3-point hydraulic).
- 19 Sensor universal joint shaft
registers the universal joint shaft speed.
- 20 Sensor X (cardan shaft / wheel)
registers the speed, the impulse acceptance on the cardan shaft or the tractor's front wheel..
- 21 Radar
for a slip-free determination of the speed.
- 22 Plug for tractor signal socket
Acceptance of the signals from the sensors which have already been installed on the tractor.

4. Fitting instructions

4.1 Console and computer



Fit basic console (14) 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 (13) is pushed on to the tube of the console.

Fit the cap profile rail (10) on the retainer. Push the computer AMATRON II-A (1) from above on to the profile and fix using the thumb bolt.

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 (1) receives via the console (10 – 14) an electrically conductive connection to the tractor chassis. Scratch off all paint from the fitting surfaces.

4.2 Tractor signal distributor for tractors without signal socket

The battery connection lead (of the computer (17) and the sensors (18-21) are connected with the tractor signal distributor (16). As standard available is the Sensor X (20) (drive shaft/wheel).



Sensor Y (18) (operational position), the speed sensor universal joint shaft (19) and the radar (21) can easily be retrofitted.

The tractor signal distributor (16) with its fixing plate is bolted on to the main console or on to any other place on the tractor.

If AMATRON II-A is exclusively used on a trailed field sprayer the tractor signal distributor can be dropped. The power supply is then ensured via the switch box. The distance impulses are taken from the wheel of the trailed field sprayer.

4.2.1 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



The minus pole of the battery must be connected with the chassis of the tractor.

4.2.2 Battery connecting cable for switch box or implement adapter



Fit the socket to the main console by using the provided bolts. For the electric connection please follow discription under 4.2.1.



4.2.3 Sensor X (determination of the travelled distance)

- **Fitting to tractors without 4-wheel drive:**



By using the provided V4A-steel bolts fit the magnets in the wheel rim. Evenly distribute the magnets around the circumference.

The number of magnets depends on the wheel size.

The travelled distance between 2 impulses of adjacent magnets must not exceed 60 cm.

Calculation:

wheel circumference ÷ 60 cm = number of magnets

e. g.:

$256 \text{ cm} \div 60 \text{ cm} = 4,27 = \text{min. } 5$



Fit the sensor to the stub axle bearing by using the provided carrier in such a way that the end of the sensor points towards the magnets. The gap should be 5 – 10 mm.

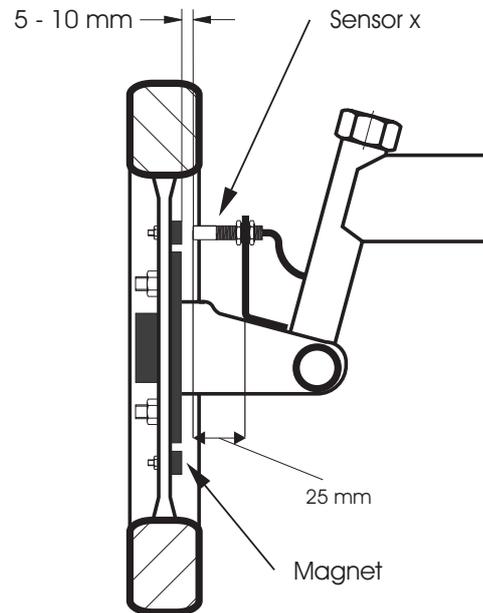


Fig. 1

- **Fitting to four wheel tractor and MB-Trac:**

The hose clamp with magnet is fitted to the drive shaft.



The sensor should point towards the magnet with a gap of 5 – 10 mm. It should be fitted so that it cannot vibrate.

Apply universal grease to tachometer shaft with the magnets and insert with the yoke downwards.

Screw on tachometer shaft to the free end of the adapter.

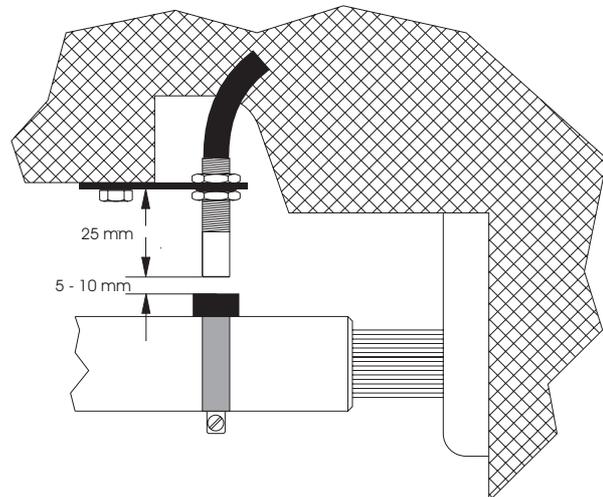


Fig. 2



A tachometer adapter is available for Unimog. Dismantle tachometer shaft from the gearbox and fit the provided adapter.

4.2.4 Sensor Y (operational position)

Connect sensor Y (18) via the 3-pole bushing with the tractor signal distributor (16). Herewith information about the operational position is given, e.g. on soil tillage implements by the three point hydraulics or on the beet puller from the breaker coulters. If a switch box or an implement adapter (e.g. field sprayer) is available, the computer receives information about the operational position from the implement plug (4). In this case the sensor is without any function.



By using the provided V4A-steel bolt the magnet is fitted to an implement part which does not change from transport into operational position. The sensor is installed on an opposite, fixed part of the vehicle. When in operational position the magnet must be in front of the sensor. The LED "operational position" lights up on the computer.

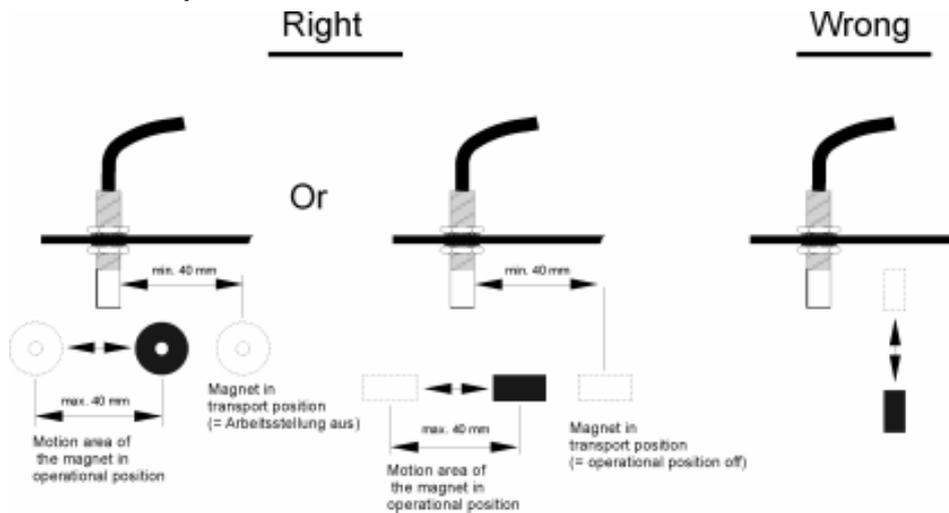


Fig. 3



If the machine part to be monitored is moving from the operational position by more than 4cm from the solenoid switch, a second magnet should be fitted in the direction of movement of the magnet. If the machine is in transport position the magnet should have a minimum spacing of 40 mm from the solenoid switch..

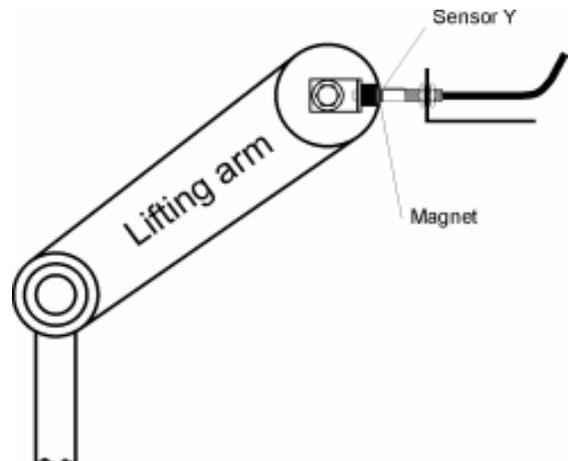


Fig. 4

Example: Tractor three point hydraulics.



4.3 Tractor signal distributor for tractors with signal socket

In this case the fitting of sensors is obsolete. Insert the plug (22) fitted to the **tractor signal distributor** (16) into the signal socket of the tractor.



Fit the housing on the basic console as described under 4.2.



Connect the battery cables as described under 4.2.1 and 4.2.2.

The entry Y (operational position) is connected with the plug "signal socket". An additional sensor Y (operational position) is required when:

- the tractor electronic system does not include the signal "operational position",
- the operational position is taken from a towed implement.

In the latter case take care that the operational position is not switched on via the tractor signal socket. Interrupt the lead "operational position" from the plug "tractor signal socket) in the tractor distributor.



Assembly as described under 4.2.2.

4.4 Connection of implements

The implements mounted to the tractor or trailed are connected via the **48-pole implement plug** (3 + 4). Via this plug the computer receives the information from sensors, boom part switches and the main switch. In addition the computer identifies the implement type via an implement specific coding. The implement relevant program and the once entered implement data are automatically selected. The implement plug also governs the machine. Two connecting variations are available.

4.4.1 Connection to a machine with a switch box

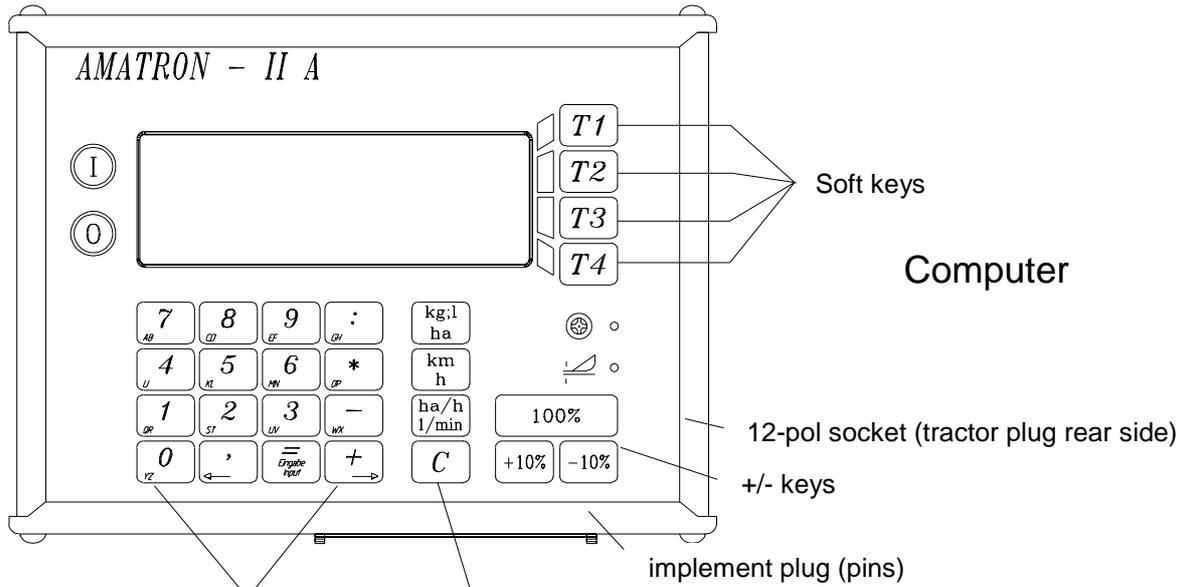
The switch box (5) is slid on to the cap profile rail, fitted to the computer and fixed with the thumb bolt (12).



Implicitly ensure that the implement plug (3) is safely inserted in the bushing (4).

4.4.2 Connection of implement with the implement adapter

The implement adapter (6) is fixed on the console (10-14) as described under 4.4.1 (switch box).

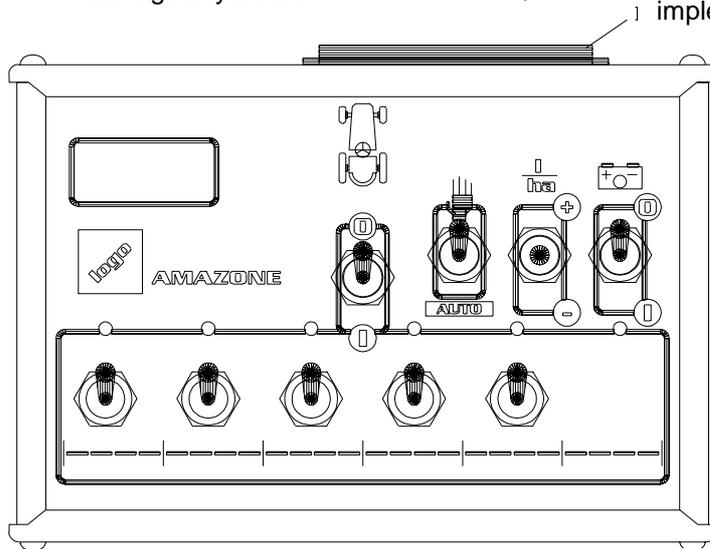


ten digit key board

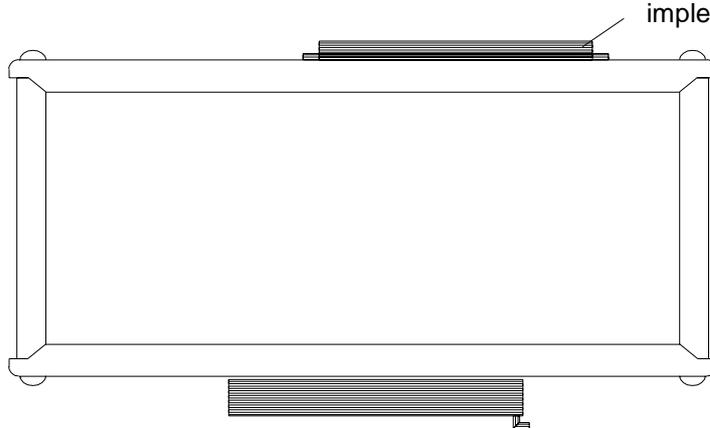
fuction keys

implement plug (pins)

implement plug (socket)



implement plug (socket)



implement adapter

required when the implement is not manually actuated (e.g. single seeder)



5. Putting to operation

5.1 General advice

After having installed **AMATRON II-A** proceed as follows:

- Mount the implement on to the tractor, connect the switch box or the implement adapter with the computer being switched off.
- Switch on the computer. The implement type is automatically identified via the implement plug and the relevant program with the once entered implement data is automatically selected.
- If the forward speed is faster 15 km/h and the machine is not in operational position, the computer changes to the forward speed display:



Fig. 5

5.1.1 Switching on / off the implement

By pressing key **I** switch on the **AMATRON II-A** and by pressing key **O** switch off.

When switching on the display briefly shows a choice of languages and the creation date (Fig. 6/1) in the first line and underneath the number of version (Fig. 6/2).

14.05.00		T1
2:52	Hollands	T2
ZAM - Streuer	English	T3
Angeschaltet	Deutsch	T4

Fig. 6



Always ensure that the servo motors of the fertiliser spreader set the shutter slides nearly into the range of the zero position (do not mind scales).



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.

After approx. 10 seconds the computer automatically shows the data block order (see para. 6 / Fig. 8) on the display.

5.1.2 Description of function

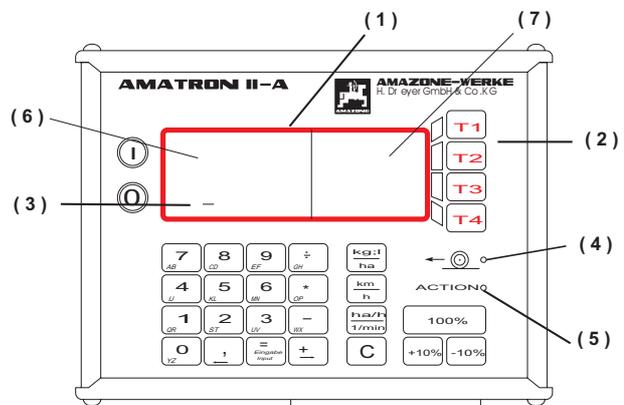


Fig. 7

- (1) Alphanumerical display which can show characters and figures.
- (2) Softkey-keys with changing meaning which is given by the software program via the display.
- (3) Cursor.
- (4)/(5) Light-emitting diode.

Display

The **AMATRON II-A** is provided with a 4 (lines) x 20 character alphanumerical display (Fig. 7/A). The display is divided into two fields. The l.h. field (6) with 4 x 12 (possible) characters is for user guidance and information display.

The r.h. field (7) with 4 x 8 characters describes the softkey-keys (Fig. 7/B). As the need arises the function of the 4 softkey-keys can this way be varied via the display.

Contrast control – Display

Depending on the lighting in the tractor cab the contrast of the display can be changed:

- Darken the contrasts

Simultaneously press key  and 

- Brighten the contrasts

simultaneously press key  and 

Ten digit key board

The ten digit key board is needed for the four basic operations and for entering implement data (e.g. quantities in kg) and texts (e.g. plot name).

Entering texts: The first pressing on a key shows the first letter on this key, the second pressing shows the second letter and the third pressing shows the digit. Before the next entering wait until the (Fig. 7/C) has moved on. With the arrow keys the cursor can be moved at random (correction, blanks).



All enterings are always confirmed

with key .

Function keys

Next to the ten digit key board are the function

keys , , , , , , .

. During operation specific additional operational data can be displayed with one key pressure. After approx. 10 seconds the display automatically returns to the actual operational display.

With the key  data can be deleted during the entering procedure.

Via the keys   it is possible to adjust the application rate in 10 %-steps, related to the required value.

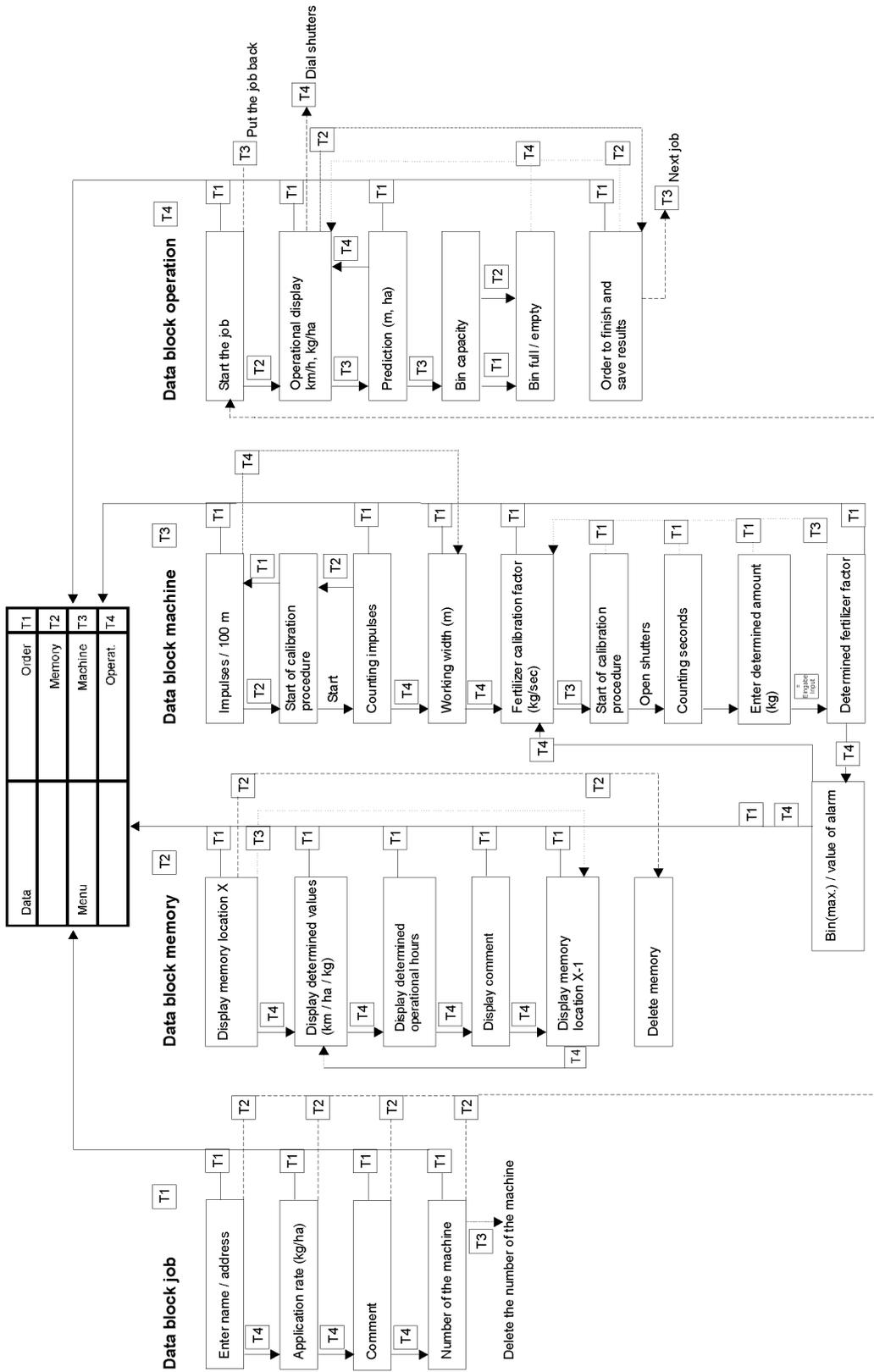
The light emitting diode (Fig. 7/E) next to the symbol "Action" shows the operational position, the light emitting diode (Fig. 7/D, function display travel) above must flick while travelling.



5.1.3 Operator review

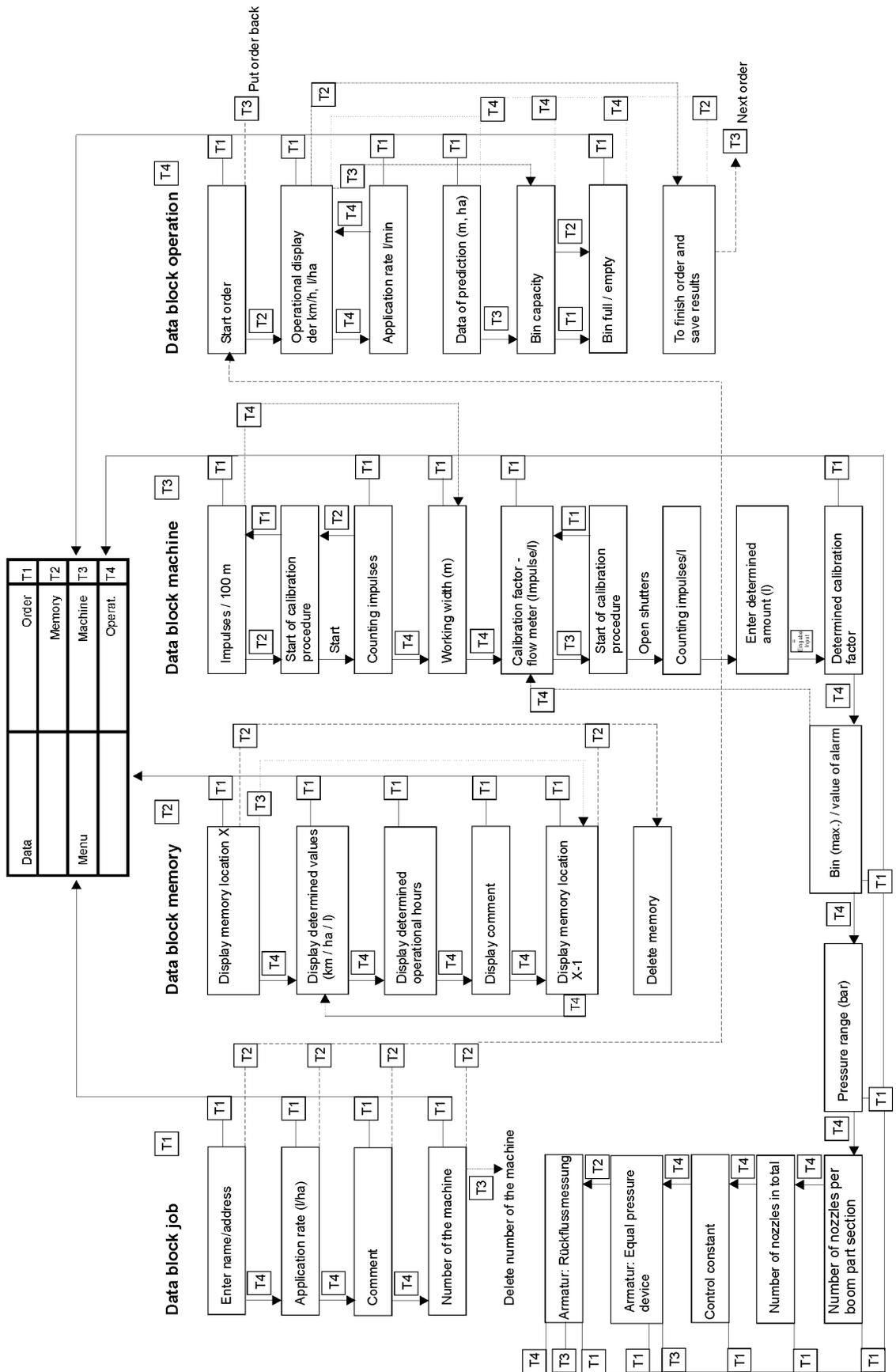
5.1.3.1 Fertiliser spreader

Operator review fertilizer spreader



5.1.3.2 Field sprayer

Operator review field sprayer





5.1.3.3 Data selection

The display and entering possibilities of information are divided into four data blocks, which can be selected via the softkey keys T1 to T4 in the display "menu selection" (Fig. 9).

The following data blocks are available at random:

- **Data block** T1 **(Job)**

This data block combines the job related data, e.g. name or description of the plot, the required value, comments and the implement number. Apart from the required value these data, e.g. worked area, operational hours etc. are stored. By pressing key T2 the job is started. From that time the operational hours are determined. At the end of the data block the computer automatically returns into the menu selection (see para. 6.1 / para. 7.1).

- **Data block** T2 **(Memory)**

Data of up to 20 jobs can be stored. These are job related data, as name, comment and data determined during operation (e.g. area, operational hours, etc.) (please compare para. 6.4 / para. 7.4).

The data block "Memory" can only be left via the key T1 (menu).

With the key T2 the memory can be deleted.
NOTE: All jobs in the memory will be reset.

- **Data block** T3 **(implement)**

Here, all implement specific data are entered, as, e.g. working width, calibration factors, hopper content, etc. When all data inquiries have been answered, the computer automatically returns to the menu selection (please see para. 6.2 / para. 7.2).

- **Data block** T4 **(operation)**

Here, the job-relevant data are displayed. When the machine is in operational position the display automatically changes to the data block "operation" after approx. 10 seconds. Data like forward speed and application rate are displayed (please compare para. 6.3 / para. 7.3).

Further information can be inquired during the operating procedure (for more detailed explanation, please refer to para. 6.5 / para. 7.5).

6. Operating sequence fertiliser spreader ZA-M

After the computer has been switched on and the initial picture has appeared the display automatically jumps into the data block "Job" after some seconds.

Order	Menu	T1
No.: 3	Start	T2
name / address		T3
-	Next	T4

Fig. 8

By pressing key  (Menu) you can change to "menu selection". Here four data blocks can be selected.

Data	Order	T1
	Memory	T2
Menu	Machine	T3
	Operat.	T4

Fig. 9

After every processing a complete data block the display automatically returns to the menu selection.

When entering data, via the key , you can change to the display "menu selection" at any time.

- By pressing key  in the menu selection you will return again to the data block "Job" (see para. 6.1).



In this instruction manual the sequence of the chapters corresponds to the sequence of the usual entering of data. Following this sequence helps to avoid entering mistakes.

6.1 Data block Job

6.1.1 Menu , name / address'

Order	Menu	T1
No.: 3	Start	T2
name / address		T3
_Plot 1	Next	T4

Fig. 10

Display of the job-number (Fig. 10/2), which is automatically allocated by the on board computer. The name (e.g. plot name) (Fig. 10/1) is entered via the ten digit key board.



After termination the data entering in one display always confirm by

pressing key  as otherwise the entered data will not be stored.

- By pressing key  (Start), the job is started (see para. 6.3.1). However, only press this key after all data have been completely entered in the different data blocks.
- By pressing key  (Next), in the next display will appear the inquiry for the application rate (see para 6.1.2).

6.1.2 Menu spread rate

Order	Menu	T1
Application	Start	T2
Rate		T3
_80kg/ha	Next	T4

Fig. 11

Via the 10 digit key board enter the spread rate (kg/ha) as required value (equivalent to the quantity which is intended to be constantly spread in



one job) (Fig. 11/1) After pressing key  the entered value is stored.

 **Enter the value for the desired spread rate with the vehicle stopped.**

 **During fertiliser spreading the spread rate can be adjusted via the keys   in +/- 10 %-steps (please refer to para. 6.5.4).**

- By pressing key  (Start), you will get into the display "Start job?" (please see para. 6.3.1).
- By pressing key  (Next), a comment can then be filed in the data block "job" (see para. 6.1.3).

6.1.3 Menu "Comment"

Order	Menu	T1
Comment	Start	T2
LIGHT		T3
EAST WIND	Next	T4

   1

Fig. 12

Here you can file a comment (Fig. 12/1), e.g. details about the weather etc. Entering via the 10-digit key board (see para. 6.1.1). Name and comment are not necessary for the operational procedure, however they ease the later reading and assignment of data.

Also in this case the data are only stored by pressing the input key.

- By pressing key  (Start) the job can be started also from here. Automatical change into the operational data.
- By pressing key  (Next) now the implement serial number is displayed (please refer to para. 6.1.4).

6.1.4 Menu "Implement serial number"

Order	Menu	T1
Name of the	Start	T2
No.: _2	Delete	T3
ZAM-Streuer	Next	T4

 2  1

Fig. 13

With the initial operation of the machine (Fig. 13/2) the implement serial number (Fig. 13/1) is automatically issued and will later on be automatically selected, i.e. no entry is necessary.

If different implements of the same type are connected with **AMATRON II-A** (e.g. a second fertiliser broadcaster with different implement data), the individual machines must receive different implement serial numbers (e.g. enter the next free number for the second spreader).

After connection the second spreader can be activated by entering its serial number via the ten digit key board.

- By pressing key  (Menu) and key  (Next) return to the menu selection.
- Start the job by pressing key  (Start). However, beforehand enter the necessary data into the data block "machine" as otherwise error messages would occur (see para. 6.6).
- By pressing key  (Delete) all data can be deleted. Corrections are also possible while entering via key .



It is useful to select in the menu selection now the data block "machine"

via the key  in order to enter the required data for the job (see para. 6.2).

6.2 Data block T3 machine

6.2.1 Menu ,Impulses / 100 m' – Calibrating the distance sensor

Impuls./100m	Menu	T1
_189 Impl.	Calibrat.	T2
_0 Gearb.		T3
_0 Radar	Next	T4

1
3 2

Fig. 14

Display of impulses/100 m which are determined by a trailed implement (Fig. 14/1) (the sensor of which has the first priority when being recognised), by the gearbox (Fig. 14/2) (drive shaft/wheel) or by the radar sensor (Fig. 14/3) (if existent).



If one of the sensors is not available ensure that its value has been returned to zero.

To determine the actual travelling speed **AMATRON II-A** requires the calibrating figure "Impulses/100 m", which the sensor "X" sends to the computer when travelling along the calibration distance of accurately 100 m.



The figure "Impulses/100 m" must not be smaller than 170. Otherwise AMATRON II A would not operate properly.

For entering the calibration figure "Imp./100m" two possibilities are provided:

- The calibration figure "Imp./100m" is **unknown** and will be determined by travelling along a calibration distance.

- The calibration figure ,Imp./100m' is **known** and is entered via the ten digit key board.



As the calibration figure "Impulses/100m" is ground related, we recommend in case of heavily changing soils, that you re-determine this calibration figure by travelling along the calibration distance.

Determination of the calibration figure if it is unknown.

If the calibration figure is unknown it should be determined by travelling along a calibration distance.

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

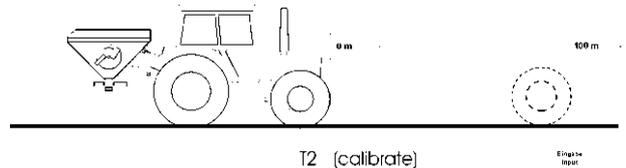


Fig. 15

- Bring vehicle in start position.

- In the display (Fig. 14) select with key T2 (Calibrat.).

Calibration	Back	T1
Drive exactly 100m		T2
Then stop and press		T3
"Input"!		T4

Fig. 16

- With key T1 (Back) the calibration procedure can be stopped.
- Accurately travel along the calibration distance from the starting to the ending point. With the first impulse after having started the vehicle the counter returns to "0". The determined impulses (Fig. 17/1) are shown on the display.



Impuls./100m	Menu	T1
_0 Impl.	Calibrat.	T2
_235 Gearb.		T3
_0 Radar	Next	T4

1

Fig. 17



AMATRON II-A automatically recognises from which sensor (even in case of several sensors) the signals for determination of the impulse figure are received.

- Stop after 100 m. The display (Fig. 17/1) now shows the determined impulse figure. By

pressing key  the determined value is stored.

- By pressing key  (Calibrat.) a fresh calibration procedure can be started.
- By pressing key  (Next) the working width can be entered in the next display (see para. 6.2.2).

Manual entering of the known value:

Stop the vehicle and by pressing key  select the range (implement, gearbox or radar) for which the impulse figure is known.

Enter the known figure in the data block "machine" "impulses/100 m" via the ten digit key board and

confirm by pressing key .

- By pressing key  (Calibrat.) the impulse figure can again be measured.
- Press key  (Next) to enter the working width in the next display (please refer to para. 6.2.2).



In case of deviations between

- the actual spread rate and the desired spread rate
- the finished area determined and displayed by AMATRON II-A and the actually finished area

newly determine the calibration figure

by travelling along a calibration distance of 100 m (please refer to chapter "impulse figure unknown").

6.2.2 Menu "working width"

Machine	Menu	T1
Working-		T2
Width		T3
_20,00 m	Next	T4

1

Fig. 18

AMATRON II-A requires information about the working width to control the shutter slide and to determine the worked area. Enter the desired working width in m (Fig. 18/1) via the ten digit key

board and confirm by pressing key .

- By pressing key  (Next) the calibration factor of the spread rate can then be determined (see para. 6.2.3/Fig. 19).

6.2.3 Determining the fertiliser calibration factor

The fertiliser calibration factor determines the controlling behaviour of **AMATRON II-A** and depends on

- the **flowing behaviour** of the fertiliser to be spread,
- the entered **spread rate** and
- the entered **working width**.

The fertiliser flowing behaviour on the other hand depends on

- the fertiliser **storing** and **storing time**,
- **climatic conditions** and
- **working conditions**.



The fertiliser flowing behaviour can change even after a short storing time.

Therefore newly determine the fertiliser calibration factor before any operation.



Always newly determine the calibration factor

- if the spread rate changes by more than 50 %,
- if deviations between the theoretical and the actual spread rate occur.

The fertiliser calibration factor is determined:

- stationary – for all broadcasters.



During the fertiliser calibration determination the spread rate entered into AMATRON II A must not exceed the value from the columns "to be entered maximum spread rate during the fertiliser calibration factor determination for 8 km/h" in table 1.

Table 1: „Maximum spread rate to be entered during the fertiliser calibration factor determination in dependence of working width and operational speed“.

Working width [m]	maximum to be entered spread rate [kg/ha] when determining the fertiliser calibration factor for the operational speed.
	8 km/h
10	2400
12	2000
15	1600
16	1520
18	1350
20	1220
21	1160
24	1010
27	900
28	870
30	810
32	760
36	680

Procedure:

- Check the entered values for the desired spread rate and the working width and correct if necessary.
- Fill a sufficient amount of fertiliser into the storage hopper.
- Remove the **left hand** (seen in driving direction) spreading disc.

- Place the collection bucket underneath the discharge opening (please observe the instruction manual for ZA-M).

Machine	Menu	T1
Kg/second		T2
-	Calibrat.	T3
_1,2345	Next	T4

Fig. 19

- Start the procedure by pressing key  (Calibr.).

Calibration	Back	T1
Calibrate, determine		T2
kg, put in kg and		T3
press "Input"!!		T4

Fig. 20

- The calibration procedure can be stopped by pressing the key  (Back).
- With the PTO shaft engaged run the tractor at the rated speed (540 R.P.M.).



To start the calibration procedure open the hydraulic shutter slide.



For measuring close the hydraulic shutter slide earliest after 30 seconds.

- After the hydraulic shutter slide has been opened the shutter opening time (seconds) (Fig. 21/1) is shown on the display.

Calibration	Back	T1
kg/seconds		T2
32.7 sec.		T3
_0,00 kg		T4

1 2

Fig. 21

- The calibration procedure can be stopped by pressing key  (Back).



- Weigh the collected fertiliser (consider net weight of bucket).



Fig. 22



The balance used must weigh very accurately. Larger inaccuracies may cause deviations in the actually applied spread rate.

- Enter the determined weight (Fig. 23/1) via the ten digit key board and confirm by pressing key



Calibration	Back	T1
kg/seconds		T2
32.7 sec.		T3
_2,5 kg		T4

1

Fig. 23

- The calibration procedure can be stopped by pressing key  (Back).
- The computer now determines the calibration factor (Fig. 24/1) typical for this specific kind of fertiliser and the working width. This factor is shown in the display. If a correction would be necessary, the value can be changed via the ten digit key board.

Machine	Menu	T1
Kg/seconds		T2
	Calibrat.	T3
_0,7172	Next	T4

1

Fig. 24

- After completing the calibration test reinstall the spreading disc.

- By pressing key  (Calibrat.) the calibration procedure can be repeated.
- By pressing key  (Next) the display "ma-
chine – hopper content" is dialled (please refer to the following para. 6.2.4).

6.2.4 Menu hopper content

Machine	Menu	T1
Bin capacity		T2
full: _850 kg		T3
Alarm: _50 kg	Next	T4

2 1

Fig. 25

Here the maximum hopper capacity (Fig. 25/1) is entered via the ten digit key board. An additional amount (e.g. 50 kg) (Fig. 25/2) can be entered as an alarm figure. If during spreading operation this amount is reached a visual and audible alarm is released (please refer to para. 6.6 / Fig. 48).

- By pressing key  (Menu) or key  (Next) you can return to the choice of menus.



All data required for the operational procedure have now been entered. Now the actual job can be started (please refer to para. 6.1.1 or following para 6.3.1 to start the job).

6.3 Data block T4 operation

6.3.1 Starting the spreading operation

From the menu selection select data block "operation" via key T4.

In data block "job" or "operation" press key T2 (start) to get to the start routine.

Order	Menu	T1
No.: 3	Yes	T2
To start?	No	T3
		T4

Fig. 26

The spreading procedure starts by opening the hydraulic shutter slide.

- During inquiry "start" the actual job can be started by pressing key T2 (yes) and the actual operational display appears (please see Fig. 28/ para. 6.3.2).
- By pressing key T3 (no) the start procedure is reset and the following display appears:

0,0 km/h	Menu	T1
		T2
0 kg/ha	Bin	T3
	% both	T4

Fig. 27

The job can again be started as described above.

6.3.2 Operational display

6,4 km/h ▲	Menu	T1
	Terminat	T2
78,47 kg/ha ▲	Bin	T3
+ 10% - 10% ▲	% both	T4

Fig. 28

On the operational display the forward speed (Fig. 28/1), the actual spread rate (Fig. 28/2) and the setting of the keys -10 % +10 % (Fig. 28/3) (corresponds to the increased or reduced spread rate, see para. 6.5.4) are shown.

- At the end of the operational procedure the job can be terminated and stored (see para. 6.3.5) by pressing key T2 (End).
- By pressing key T3 (Bin) you will receive information about the hopper content (see para. 6.3.3).
- By pressing key T4 (% both) the individual shutter slides (r.h. or l.h.) or both (total) can be selected. Here it is possible to change the spread rates via the keys -10 % +10 % (see para. 6.5.4).

6.3.3 Menu "hopper"

200 kg/ha ▲	Menu	T1
2852 m ▲		T2
4,01 ha ▲	Bin	T3
Rest 420 kg ▲	Next	T4

Fig. 29

This menu provides you with information about the entered spread rate (required value) (Fig. 29/1), a prediction about the remaining distance (m) (Fig. 29/2) and the worked area (ha) (Fig. 29/3) as well



as indication about the residual amount(kg) inside the hopper (Fig. 29/4).

- By pressing key T3 (Bin) indications for filling or emptying the spreader can be made (please refer to para. 6.3.4).
- By pressing key T4 (Next) (Fig. X1) you will return to the actual operational display.

6.3.4 Menu "filling the hopper"

Bin	Bin empty	T1
Capacity	Bin full	T2
		T3
850 kg	Next	T4

1

Fig. 30

The computer shows the actual filling level (Fig. 30/1) in the hopper.

If a smaller amount of fertiliser is filled in the value can be changed here via the ten digit key board.

When filling the broadcaster completely press key

T2 (Bin full). The content figure is taken from the earlier entering (please refer to para. 6.2.4). The following display appears:

	Bin empty	T1
	Bin full	T2
		T3
850 kg	Next	T4

Fig. 31

- By pressing key T4 (Next) return to the actual operational display.

When emptying the hopper press key T1 (hopper empty):

	Bin empty	T1
	Bin full	T2
		T3
0 kg	Next	T4

Fig. 32

- By pressing key T4 (Next) return to the actual operational display.

6.3.5 Menu "termination the job"

Order	Menu	T1
to finish a.	No	T2
Save results?	Yes	T3
		T4

Fig. 33

This display inquires information whether the actual job should be terminated and stored (e.g. when changing to another field, etc.).

- By pressing key T2 (no) the actual operational display appears (please refer to Display para. 6.3.2 / Fig. 29).
- By pressing key T3 (yes) the job is terminated and stored. Then the display jumps to the display for the next job (please refer to Display para. 6.1.1)

6.4 Data block T2 memory

Data	Order	T1
	Memory	T2
Menu	Machine	T3
	Operat.	T4

Fig. 34

By pressing key T2 (Memory) in the display of the menu selection you will get to the data block "memory" (see para. 6.4.1).

6.4.1 Display of memory space

Memory: 3	Menu	T1
	Delete	T2
Mach.No._2	Next Mem	T3
ZAM - spreader	Next	T4

Fig. 35

In this data block you may recall the data determined during the operational procedure.

The plot name (Fig. 35/2), the implement serial number (Fig. 35/3) and the implement type (Fig. 35/4) for the previously stored job (Fig. 35/1) are automatically shown.

- By pressing key T2 (Delete) the entire memory can be deleted (see para. 6.4.6).
- By pressing key T3 (Next Mem) the data for the previous job can be recalled (please refer to para. 6.4.5).
- By pressing key T4 (Next) the registered operational data for the relevant job can be recalled (see para. 6.4.2).

6.4.2 Display of the determined values

Memory: 3	Menu	T1
0,189 km		T2
0,05 ha		T3
20,8 kg	Next	T4

Fig. 36

Here the memory shows the travelled distance in km (Fig. 36/1), the worked area in ha (Fig. 36/2) and the spread rate in kg (Fig. 36/3) (line 4).

- By pressing key T4 (Next) you will receive information about the operational hours (see para. 6.4.3).

6.4.3 Display of the operational hours

Memory: 3	Menu	T1
0,34h Mach.		T2
1,04h Trac.		T3
2,34h Oper	Next	T4

Fig. 37

Here the working hours of the operator and the operational hours of the implements are shown.

The operational hours (Fig. 37/1) are counted when the implement is in operational position, the operational hours of the vehicle (Fig. 37/2) are counted when it moves faster than 1 km/h and the operator's working hours (Fig. 37/3) are registered when the on board computer is started.

- By pressing key T4 (Next) the entered comment for the relevant job can be read out (see the following para. 6.4.4).



6.4.4 Read out the comment

Memory: 3	Menu	T1
Comment		T2
LIGHT		T3
EAST WIND	Next	T4

1

Fig. 38

If a comment (Fig. 38/1) had been entered in data block "job" (para. 6.1.3) it has also been stored and can be read out.

- By pressing key T4 (Next) you will get into the memory space display of the previous job (please compare display para. 6.4.5).

6.4.5 Menu "next memory"

Memory: 2	Menu	T1
	Delete	T2
Mach.No.: 2	Next Mem	T3
E-Korndrille	Next	T4

Fig. 39

Reading out the other covered memories is done as described in the previous chapters.

6.4.6 Delete memory

If you select in the display for the memory space

(compare 6.4.1) key T2 (Delete), the following display appears:

Memory: 3		T1
	No	T2
Delete ?	Yes	T3
		T4

Fig. 40

After reading out all data memory spaces the entire memory can be deleted.

- By pressing key T3 (yes) the data are deleted and the choice of menu appears in the display.



However, during deletion all 20 jobs are irrevocably deleted.

- By pressing key T2 (no) the deletion procedure is reset and the display "choice of menus" (with stopped vehicle) or "operational display" (with driving vehicle, para. 6.3.2) appears.

6.5 Function keys and their use during the spreading operation

During the spreading operation the operational display appears on which the current forward speed in km/h and the actual spread rate in kg/ha are shown (please compare display para. 6.3.2 / Fig. X).

The function keys (on the right hand side of the ten digit key board) allow further inquiries or inputs during the spreading operation.

6.5.1 Pocket calculator function

The pocket calculator is started by pressing one of

the four calculating keys

Calculator		T1
_ 0.00		T2
+ 0.00		T3
= 0.00	Back	T4

Fig. 41

The figures are entered via the ten digit key board

and for the result press key

- By pressing key (Back) you will return to the previously selected display.

6.5.2 Key: Worked part or total area

By pressing key the so far spread quantity (Fig. 42/1) and the worked area (Fig. 42/2) of the actual job are displayed.

498 kg		T1
	Total	T2
10,5034 ha		T3
	Next	T4

Fig. 42

- Press key (Total) to receive information about the total spread quantity (Fig. 43/1) and worked area (Fig. 43/2) since the last deleting procedure.

23648 kg	Delete	T1
		T2
1024 ha	Delete	T3
	Next	T4

Fig. 43

- Press key (Delete) to delete the indication.
- By pressing key (Delete) the indication can be deleted.
- Press key (Next) of the relevant display to return to the actual operational display.

6.5.3 Key: Forward speed and operational times

Via key all so far registered data for the actual job are recalled. The travelled distance in km (Fig. 44/1) and the operational hours (Fig. 44/2) for implement, vehicle and operator are shown.

8,7 km/h		T1
0,34h Mach.		T2
1,04h Trac		T3
2,34h Oper	Next	T4

Fig. 44

- By pressing key (Next) you will return to the actual operational display.

Via key the present (Fig. 45/1) and the average (Fig. 45/2) area efficiency are displayed.



In this menu also the PTO shaft speed (Fig. 45/3) (only with additional PTO shaft sensor) can be monitored.

7,31 ha/h		T1
4,03 ha/h ϕ		T2
PTO:		T3
1020 1/min	Next	T4

For the individual spreading sides a spread rate change is also possible after the right or left hand shutter slide has been dialled.

Fig. 45

- By pressing key  (Next) you may return to the actual operational display.

6.5.4 Key: Change of application rate

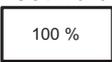
With the keys  and  it is possible to increase or reduce the application rate in the operational display (please refer to para. 6.3.2) whilst travelling.

6,4 km/h	Menu	T1
	Terminat	T2
78,47 kg/ha	Bin	T3
+ 20% - 20%	% both	T4

Fig. 46

- By pressing key  the individual shutter slides (r.h. or l.h.) or both shutter slides (,% total ) are dialled.

By pressing key  the total amount can be increased by 10 %. An additional pressing of the key will increase the application rate by 20 % etc. Increases up to 90 % are possible.

By pressing key  the application rate can be reduced or the pre-set value can be set again by once pressing key .

This also applies for key  in the reverse order.

6.6 Alarm

In case of missing inputs, critical implement condition or grave input mistakes **AMATRON II-A** releases a visual and audible alarm.

Required value

ALARM !		T1
Application rate can		T2
not be maintained!		T3
120 kg/ha		T4

Fig. 47

The entered required rate (spread rate) cannot be maintained, because, e.g. the speed is too high. As soon as the speed has been adapted or e.g. the required rate has been reduced, the alarm signals will stop.

Filling the hopper

ALARM !		T1
Bin		T2
Capacity		T3
		T4

Fig. 48

The hopper is empty or it only contains the amount for which an alarm value had been set.

Fill the container and enter the values into the computer as described in para. 6.3.3.



Additional fault messages and their remedy are described in para. 9.



6.7 Spreading extremely small spread rates



AMATRON II-A is not suited for spreading slug pellets.!



Spread rates below 50 kg/ha will have an unfavourable flowing effect of the material due to the small diameter of the discharge opening and therefore may lead to deviations of the spread rate.

Spreading green manure

Example: Rye grass

Spread rate: 43 kg/ha

Working width: 12 m

Forward speed: 10 km/h

Shutter position (from setting chart): "27"

Table 2: Spread rate setting for rye grass – excerpt from the setting chart

rye grass		0,51 kg/l														
Shutter position	m															
	10			12												
	8	10	12	8	10	12	8	10	12	8	10	12	8	10	12	
25	25	20	16	21	16	14										
26	39	31	26	33	26	22										
27	52	41	35	43	34	29										
28	64	51	43	53	42	35										
29	79	63	53	66	52	44										
30	96	77	64	80	64	53										



For spreading rye grass, please proceed with the calibration test in the following order:

- 1 - In the setting chart find the page for spread rate setting of CAN 27 N granular BASF.
- 2 - Look for column 20 m working width and 8 km/h. In this column for the setting lever position "27" (shutter position "27" for rye grass spread rate 34 kg/ha) read off the spread rate 165 kg/ha.

- 3 - Calibrate with the read off spread rate 165 kg/ha (see para. 6.1.XX), and then enter the desired spread rate 34 kg/ha.

Table 3: "Spread rate setting CAN 27% N granular BASF" – excerpt from setting chart

CAN 27 % gran. BASF; Hydro; DSM; Kemira; Agrolinz		1,06 kg/l													
CAN 27 % N gran. ø 3,36 mm SCHZ Lovosice CZ		1,04 kg/l													
KAS 27 % N gepr. ø 2,76 mm NET IRL		1,03 kg/l													
NP- und NPK-Sorten gran. BASF		1,13 kg/l													
NPK 15-15-15 gran. ø 3,65 mm Combilinz Agrolinz		1,11 kg/l													
NPK-1 12-19-19 gran. ø 2,81 mm															
SCHZ Lovosice CZ		1,05 kg/l													
Shutter position	m														
	20			21			24			27			28		
	8	10	12	8	10	12	8	10	12	8	10	12	8	10	12
24	119	95	79	113	91	76	99	79	66	88	71	59	85	68	57
25	133	107	89	127	102	85	111	89	74	99	79	66	95	76	63
26	147	119	99	142	113	94	124	99	83	110	88	73	106	85	71
27	165	132	110	157	126	105	137	110	92	122	98	81	118	94	79
28	182	146	121	173	139	116	152	121	101	135	108	90	130	104	87
29	200	160	134	191	153	127	167	134	111	148	119	99	143	114	95
30	219	175	146	209	167	139	183	146	122	162	130	108	157	125	104
31	239	191	160	228	182	152	199	160	133	177	142	118	171	137	114
32	260	208	173	248	198	165	217	173	144	193	154	128	186	149	124
33	282	225	188	268	215	179	235	188	156	209	167	139	201	161	134
34	304	243	203	289	232	193	253	203	169	225	180	150	217	174	145
35	327	262	218	311	249	208	272	218	182	242	194	161	233	187	156
36	351	280	234	334	267	223	292	234	195	260	208	173	250	200	167
37	375	300	250	357	286	238	312	250	208	278	222	185	268	214	178
38	400	320	266	381	305	254	333	266	222	296	237	197	285	228	190
39	425	340	283	405	324	270	354	283	236	315	252	210	304	243	202
40	451	361	301	429	344	286	376	301	250	334	267	223	322	258	215
41	477	382	318	454	364	303	398	318	265	353	283	236	341	273	227
42	504	403	336	480	384	320	420	336	280	373	298	249	360	288	240
43	531	424	354	505	404	337	442	354	295	393	314	262	379	303	253
44	558	446	372	531	425	354	465	372	310	413	331	275	398	319	266
45	585	468	390	557	446	371	488	390	325	433	347	289	418	334	279
46	612	490	408	583	467	389	510	408	340	454	363	302	437	350	292
47	640	512	427	610	488	406	533	427	356	474	379	316	457	366	305
48	667	534	445	636	509	424	556	445	371	494	396	330	477	381	318
49	695	556	463	662	529	441	579	463	386	515	412	343	496	397	331
50	722	578	481	688	550	459	602	481	401	535	428	357	516	413	344
51	749	599	500	714	571	476	624	500	416	555	444	370	535	428	357
52	776	621	517	739	591	493	647	517	431	575	460	383	554	443	370
53	803	642	535	764	611	510	669	535	446	594	476	396	573	459	382

7. Operating sequence field sprayer

After the computer has been switched on and the initial picture has appeared the display automatically jumps into the data block "job".

Order	Menu	T1
No.: 4	Start	T2
Name / address		T3
-	Next	T4

Fig. 49

By pressing key  (Menu) you may change to "menu selection". Here four data blocks can be selected.

Data	Order	T1
	Memory	T2
Menu	Machine	T3
	Operat.	T4

Fig. 50

After every processing a complete data block the display automatically returns to the menu selection.

When entering data, via the key , you can change to the display "menu selection" at any time.

By pressing key  in the menu selection you will return again to the data block "job" (see para. 7.1).



In this instruction manual the sequence of the chapters corresponds to the sequence of the usual entering of data. Following this sequence helps to avoid entering mistakes.

7.1 Data block job

7.1.1 Menu "name / address"

Order	Menu	T1
No.: 4	Start	T2
Name / address		T3
Gewann 2	Next	T4

Fig. 51

Display of the job number (Fig. 51/2), which is automatically allocated by the on board computer. The name (Fig. 51/1) (e.g. the plot name, name of customer, etc.) is entered via the ten digit key board.



After termination the data entering in one display always confirm by

pressing key  as otherwise the entered data will not be stored.

- By pressing key  (Start), the job is started (see para. 7.3.1). However, only press this key after all data have been completely entered in the different data blocks.
- By pressing key  (Next), in the next display will appear the inquiry for the spray rate (see para. 7.1.2).

7.1.2 Menu "spray rate"

Order	Menu	T1
Application		T2
Rate:		T3
800 l/ha	Next	T4

Fig. 52

Via the ten digit key board enter the desired spray rate (Fig. 52/1) (equals the spray rate in l/ha to be



sprayed within one job) and store by pressing key



Enter the value for the desired spray rate with the vehicle stopped.



During spraying procedure the spray rate can be adjusted via the keys



in + / - 10 %-steps (please refer to para. 7.5.4).

- By pressing key (Next), a comment can then be filed in the data block "job" (see para. 7.1.3).

7.1.3 Menu "Comment"

Order	Menu	T1
Comment	Start	T2
LIGHT		T3
EAST WIND	Next	T4

1

Fig. 53

Here you can file a comment (Fig. 53/1), e.g. details about the weather etc. Entering via the 10-digit key board (see para. 7.1.1). Name and comment are not necessary for the operational procedure, however, they ease the later reading and assignment of data.

Also in this case the data are only stored by

pressing

- By pressing key (Start) the job can be started also from here. The actual operational data are displayed.
- By pressing key (Next) now the implement serial number is displayed (please refer to para. 7.1.4).

7.1.4 Menu "implement serial number"

Order	Menu	T1
Name of the	Start	T2
No.: _1	Delete	T3
Feldspritze	Next	T4

2 1

Fig. 54

With the initial operation of the machine (Fig. 54/2) the implement serial number (Fig. 54/1) is automatically issued and will later on be automatically selected, i.e. no entry is necessary.

If different implement of the same type are connected with **AMATRON II-A** (e.g. a second field sprayer with different implement data), the individual machines must receive different implement serial numbers (e.g. enter the next free implement number for the second sprayer).

After connection the second sprayer can be activated by entering its serial number via the ten digit key board.

- By pressing key (Menu) and key (go) you can return to the menu selection.
- Start the job by pressing key (Start). However, beforehand enter the necessary data into the data block "machine" as otherwise error messages would occur (see para. 7.6).
- By pressing key (Delete) all data can be deleted. Correction are also possible while entering via key .



It is useful to select in the menu selection the data block "machine via

the key in order to enter the required data for the job (see para. 7.2).

7.2 Data block T3 machine

7.2.1 Menu "Impulses / 100 m" – Calibrating the distance sensor

Impuls. / 100 m	Menu	T1
400 Impl.	Calibrat.	T2
0 Gearb.		T3
0 Radar	Next	T4

Fig. 55

Display of impulses/100 m which are determined by a trailed implement (Fig. 55/1) (the sensor of which has the first priority when being recognised), by the gearbox (drive shaft/wheel) or by the radar sensor (if existent).



If one of the sensors is not available ensure that its value has been returned to zero.

To determine the actual travelling speed **AMATRON II-A** requires the calibrating figure "impulses/100 m", which the sensor "X" sends to the computer when travelling along the calibration distance of accurately 100 m.



The figure "impulses/100 m" must not be smaller than 170. AMATRON II-A would not operate properly.

For entering the calibration figure "Imp./100m" two possibilities are provided:

- The calibration figure "Imp./100m" is **unknown** and will be determined by travelling along the calibration distance.
- The calibration figure "Imp./100m" is **known** and is entered via the ten digit key board.



As the calibration figure "Impulses/100" is ground related, we recommend in case of heavily changing soils, that you re-determine this calibration figure by travelling along the calibration distance.

Determination of the calibration figure if it is unknown

If the calibration figure is unknown it should be determined by travelling along a calibration distance.

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

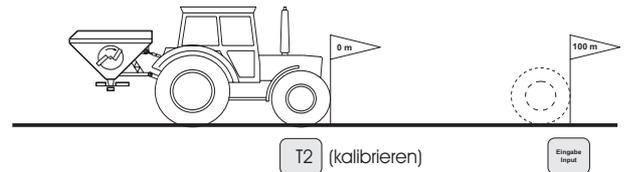


Fig. 56

- Bring vehicle in start position.

- In the display (Fig. 55) select with key T2 (Calibrat.).

Calibration	Back	T1
Drive exactly 100m,		T2
Then stop and press		T3
"Input"!		T4

Fig. 57

- With key T1 (Back) the calibration procedure can be stopped.
- Accurately travel along the calibration distance from the starting to the ending point. With the first impulse after having started the vehicle the counter returns to "0". The determined impulses are shown on the display.

Impuls./100m	Menu	T1
_489 Impl.	Calibrat.	T2
_235 Gearb.		T3
_0 Radar	Next	T4

Fig. 58



AMATRON II-A automatically recognises from which sensor (even in case of several sensors) the signals for determination of the impulse figure are received.



- Stop after 100 m. The display (Fig. 58/1) now shows the determined impulse figure. By pressing key  the determined value is stored

- By pressing key  (Calibrat.) a fresh calibration procedure can be started.

- By pressing key  (Next) the working width can be entered in the next display (see para. 7.2.2).

Manual entering of the known value:

Stop the vehicle and by pressing key  select the range (implement, gearbox or radar) for which the impulse figure is known.

Enter the known figure in the data block "machine" "impulses/100m" via the ten digit key board and

confirm by pressing key .

- By pressing key  (Calibrat.) the impulse figure can again be measured via the computer.

Press key  (Next) to enter the working width in the next display (see para. 7.2.2).

7.2.2 Menu "working width"

Machine	Menu	T1
Working-		T2
Width		T3
20,00 m 	Next	T4

1

Fig. 59

For determination of the worked area, etc. **AMATRON II-A** requires information about the working width. Enter the desired working width in m (Fig. 59/1) via the ten digit key board and confirm by

pressing key .

- By pressing key  (Next) the flow meter will now be calibrated (see para. 7.2.3).

7.2.3 Calibrating the flow meter

This calibration factor determines the control behaviour of **AMATRON II-A** and depends on the type of field sprayer and the type of control unit.

Machine	Menu	T1
Impuls./l		T2
	Calibrat.	T3
182 	Next	T4

1

Fig. 60

For entering the calibration (Fig. 60/1) "Imp./l" two possibilities are provided:

- The calibration figure "Imp./l" is **unknown** and has to be determined by a calibration procedure.
- The calibration figure "Imp./l" is **known** and will be entered via the ten digit key board.

Procedure when the calibration factor is unknown:

Pre-condition for an accurate calibration is the entering of the desired spray rate and of the working width and a sufficient amount of water (several hundreds of litres) in the storage tank.

The determination takes place **stationary**. There is no need to travel along a calibration distance as the computer measures the litres of liquid which per impulse flow out of the opening

- Start the calibration procedure by pressing key  (Calibrat.)(Fig. 60).

Calibrat.	Back	T1
Calibrate, determine		T2
liquids in l, put in		T3
litres press "Input"!		T4

Fig. 61

- With key  (Back) the calibration procedure can be stopped.
- With the PTO shaft engaged run the tractor at the rated speed (540 R.P.M.).



Start the field sprayer via the switch box and for calibrating let in minimum 500 litres flow into a collecting tank.

- After the start the display shows the counted impulses (Fig. 62/1 of the flow meter.

Machine		T1
Impulses/l		T2
28 Imp.		T3
0,00 l		T4

1

Fig. 62

- After in minimum 500 litres have been sprayed determine the accurate amount (Fig. 63/1) (e.g. by weighing) and enter via the ten digit key board. Then confirm the value by pressing key



Machine		T1
Impulses/l		T2
259325 Imp.		T3
512,50 l		T4

1

Fig. 63

- The computer now determined the impulses per litre and shows the calculated value (Fig. 64/1) on the display.

Machine	Menu	T1
Impulses/l		T2
		T3
507,5	Next	T4

1

Fig. 64

- Confirm the calculated value with key



Recheck the impulse figure of the flow meter at least once a year, especially before any season.

- By pressing key (Next) you will get to the next display (please see para. 7.2.4).

Manual entering of the value if it is known:

Enter the known value in the data block "machine" via the ten digit key board and confirm by pressing

key .

- By pressing key (Calibrat.) the impulse figure can again be measured.

Press key (Next) to enter the tank content into the next display (please refer to para. 7.2.4).

7.2.4 "Tank content"

Machine	Menu	T1
Bin		T2
Capacity		T3
92 Imp./l	Next	T4

1

Fig. 65

At random **AMATRON II-A** can be operated with the tank meter and the TANK-Control.



Tank meter:

Enter here the number of impulses / litre (Fig. 65/1), which the filling flow meter sends.

TANK-Control:

If TANK-Control is installed, enter here a "1".

- With key T4 (Next) you will get to the next display into which the tank filling quantity should be entered (see para. 7.2.4).

Machine	Menu	T1
Bin capacity		T2
full 4500 l		T3
Alarm 150 l	Next	T4

Fig. 66

Enter here the maximum tank content (Fig. 66/1). In addition a limit value (Fig. 66/2) (e.g. 150 l) can be entered. If this limit has been reached an visual and audible alarm is released which indicates that the tank is almost empty.

- Press key T4 (go) to get to the display in which the pressure range is determined (see para. 7.2.5).

7.2.5 Menu "pressure range"

Machine	Menu	T1
Pressure		T2
min:_0,0 bar		T3
max:_0,0 bar	Next	T4

Fig. 67

Here the minimum and maximum allowed value of the pressure range (in bar) is entered.



In order to monitor the spray pressure with AMATRON II-A the pressure range valid for the nozzles must be entered (NOTE: observe the type of nozzle and the advice of the nozzle manufacturer).

- By pressing key T4 (Next) you will get to the display of the number of nozzles for the relevant

part section (up to 12 part sections possible) (see para. 7.2.6).

7.2.6 Menu "number of nozzles"

Machine	Menu	T1
No. of nozzl.		T2
Part width 1		T3
_5	Next	T4

Fig. 68

In this display the number of nozzles (Fig. 68/1) per part section (Fig. 68/2) is entered. Confirm with key



The part section 1 is on the outer left hand side seen in driving direction. By pressing key



(Next) you will get to the next display in which the number of nozzles (Fig. 69/1) for the other part sections 2 – 12 are entered. 12 part sections in maximum can be entered.

Machine	Menu	T1
No. of nozzl.		T2
Teilbreite 3		T3
_5	Next	T4

Fig. 69

When, e.g. four part sections are available the number (Fig. 70/1) of nozzles of the fifth part section is set to zero.

Machine	Menu	T1
No. of nozzl.		T2
Part width 5		T3
_0	Next	T4

Fig. 70

- By pressing key T4 (Next) the total amount of nozzles (related to the entered part sections) is shown in the next display.

Here you may recheck whether the earlier data for the part sections have been entered correctly..

Machine	Menu	T1
No. Of nozzl.		T2
		T3
20	Next	T4

Fig. 71

- By pressing key T4 (Next) you get to the display in which the control constant is entered (see para. 7.2.7).

7.2.7 Menu "control constant"

Machine	Menu	T1
Control-		T2
Constant		T3
_2,00	Next	T4

Fig. 72

Enter here the implement specific control constant (Fig. 72/1) via the ten digit key board. Depending on the type of field sprayer values between 2 and 5 are possible.



If the control is acting too slow, increase the value.



In case of an overload, i.e. at a required value of e.g. 200 l/ha the regulation is from 160 l/ha to 230 l/ha and again to 180 l/ha etc., the control constant is too high. Reduce the entered value.

- By pressing key T4 (Next) the next display asks for the equipment of the control unit (see para. 7.2.8).

7.2.8 "Control unit"

The following table shows the equipment of the different control units:

Table 4: Type of control unit

Control unit	With equal pressure	With return flow measuring
TG	No	No
NG	Yes	Yes
G	Yes	Yes

Machine	Menu	T1
Contr. chest	Yes	T2
with const.	No	T3
Pressure ?	Next	T4

Fig. 73

This display queries the equipment of the control unit, please observe table 4 – type of control unit.

The arrow indicates the selected type of control unit.

- Press key T3 (No) to confirm that it is a control unit without equal pressure device.
- Press key T4 (Next) to return to the menu selection. By pressing this key automatically the situation is assumed which is marked by the arrow position.
- Press key T2 (yes) to confirm that a control unit with equal pressure device is connected. Now the next display inquires whether the control unit is equipped with a return flow measuring.

Machine	Menu	T1
Contr. chest	Yes	T2
W. backflow	No	T3
measurement ?	Next	T4

Fig. 74

- Press key T2 (yes) to confirm that the return flow is guided via the flow meter when one or several part sections have been switched off. , After confirmation the display automatically jumps into the menu selection.



- Press key T3 (no) to confirm that the return flow is not guided via the flow meter. After confirmation the display automatically jumps into the menu selection.
- Press key T4 (Next) to return to the menu selection. By pressing this key automatically the situation is assumed which is marked by the arrow position.
- Data block "operation"

7.3 Data block T4 operation

7.3.1 Starting the spraying procedure

Press key T4 to recall the data block "operation" in the menu selection.

Order	Menu	T1
No.: 4	Yes	T2
to start ?	No	T3
		T4

Fig. 75

The spraying procedure is begins by starting the field sprayer via the switch box.

- Press key T2 (yes) and with the inquiry "start" the actual job can be started and the actual operational display will appear (see Fig. X / para. 7.3.2).
- Press key T3 (no) to reset the start procedure and the following display will appear:

0,0 km/h	Menu	T1
		T2
0 kg/ha	Bin	T3
	% both	T4

Fig. 76

The job can again be started as described above.

7.3.2 Operational display

6,4 km/h	Menu	T1
	Terminat	T2
200,00 l/ha	Bin	T3
+ 10% 15,0 m	Next	T4

Fig. 77

The operational display shows the forward speed (Fig. 77/1), the actual spray rate (Fig. 77/2), changing the spray rate (Fig. 77/3) as well as the remaining working width (Fig. 77/4) in case of part width section control.

- After having finished the operational procedure press key T2 (End) to terminate and store the job (see para. 7.3.6).
- By pressing key T3 (Bin) you will receive information about the tank content (see in the following para. 7.3.4).
- By pressing key T4 (Next) further operational data can be inquired (please refer to the following para. 7.3.3)

7.3.3 Operational data – Spray rate "l/min"

54,3 l/min	Menu	T1
		T2
2,6 bar		T3
	Next	T4

Fig. 78

Here the current spray rate (Fig. 78/1) in l/min and the spray pressure (Fig. 78/2) in bar are displayed.

- Press key (Next) to return to the actual operational display (see Fig. X / para. 7.3.2)

7.3.4 Menu "Tank"

After having pressed key (Bin) in the operational display, the following display appears:

200 l/ha	Menu	T1
2852 m		T2
4,01 ha	Bin	T3
rest 3700 l	Next	T4

Fig. 79

This display contains information about the pre-set desired spray rate (Fig. 79/1), a prognosis about the remaining travelling distance in m (Fig. 79/2), the worked area in ha (Fig. 79/3) and the residual amount in l (Fig. 79/4), which is still in the tank.

With the keys the required value can be set in such a way that the prognosis coincide with the actual circumstances and no residual amount will remain.

- Press key (Bin) to enter data for filling or emptying the tank (see para. 7.3.5).

- Press key (Next) to return to the actual operational display (see Fig. 77).

7.3.5 Menu "Tank filling"

Bin	Bin empty	T1
Capacity	Bin full	T2
		T3
4500 l	Next	T4

Fig. 80

The computer shows the actual filling level (Fig. 79/1) of the tank which had already been entered when the tank content was inquired (see para. 7.2.4/Fig. 66).

If the tank is not filled completely, enter the amount via the ten digit key board.

Operation without tank metre, without TANK-Control

If the tank has been filled completely, press key (Bin full):

	Bin empty	T1
	Bin full	T2
		T3
4500 l	Next	T4

Fig. 81

- Press key (Next) to return to the actual operational display.

Operation with tank metre

Before filling enter the tank content.

- If the tank is empty, press key (Bin empty).



	Bin empty	T1
	Bin full	T2
		T3
01	Next	T4

Fig. 82

- If there is still a residual amount in the tank enter the content in the actual display via the ten digit key board.

During the filling procedure the signal is evaluated by the filling flow meter and the actual tank content is displayed.

After having finished the filling procedure confirm the displayed value via the "enter key" and by

pressing key T4 (Next) return to the operational display.

Operation with TANK-Control

TANK-Control constantly measures the tank content. Therefore it is not necessary to enter the tank content before filling.

- Press key T4 (Next) to return to the operational display.

7.3.6 Menu "termination of job"

Order	Menu	T1
to finish a.	No	T2
Save results?	Yes	T3
		T4

Fig. 83

This display inquires whether the actual job shall be terminated and stored (e.g. when changing the plot etc.).

- By pressing key T2 (no) the actual operational display will appear (see Display para. 7.3.2 / Fig. X)).
- Press key T3 (yes) to finish and store the job. The display will then jump into the next job display (see display Display para. 7.1.1).

7.4 Data block T2 Memory

Data	Order	T1
	Memory	T2
Menu	Machine	T3
	Operat.	T4

Fig. 84

Press key T2 (Memory) in the display menu selection to get to the data block "memory" (please see the following para. 7.4.1).

7.4.1 Display of memory space

Memory: 4	Menu	T1
Gewann 1	Delete	T2
Mach No. _1	Next Mem	T3
E-Korndrille	Next	T4

1
2
4
3

Fig. 85

In this data block you may recall the data determined during the operational procedure.

For the last stored job (Fig. 85/1) the plot name (Fig. 85/2), the implement serial number (Fig. 85/3) and the implement type (Fig. 85/4) are automatically displayed.

- By pressing key T2 (Delete) the total memory can be deleted (see para. 7.4.6).
- By pressing key T3 (Next Mem) the previous memory space, i.e. the data of the previous job, can be recalled (see para. 7.4.5). By pressing key T4 (Next) the registered operational data for the relevant job can be recalled (see following para. 7.4.2).

7.4.2 Display of the determined values

Memory: 4	Menu	T1
0,189 km		T2
0,34 ha		T3
_92 l	Next	T4

Fig. 86

The memory shows the travelled distance in km (Fig. 86/1), the worked area in ha (Fig. 86/2) and the sprayed amount of plant protective agent or liquid fertiliser in litres (Fig. 86/3).

- By pressing key T4 (Next) you will receive information about operational hours (see para. 7.4.3).

7.4.3 Display of operational hours

Memory: 4	Menu	T1
0,34 h Mach		T2
1,04 h Trac		T3
2,34 h Oper	Next	T4

Fig. 87

Here the working hours of the operator (Fig. 87/1) and the operational hours of the implement (Fig. 87/2) are shown.

The operational hours (line 2) are counted when the implement is in operational position, the operational hours of the vehicle (line 3), are counted when it moves faster than 1 km/h and the operator's working hours (line 4) are registered when the on board computer is started.

- By pressing key T4 (Next) the entered comment for the relevant job can be read out (see the following para.. 7.4.4).

7.4.4 Read out the comment

Memory: 4	Menu	T1
Comment		T2
LIGHT		T3
EAST WIND	Next	T4

Fig. 88

If a comment (Fig. 88/1) had been entered in data block "job" (para. 7.1.3) it has also been stored and can be read out.

- By pressing key T4 (Next) you will get into the memory space display of the previous job (please compare display para. 7.4.5).

7.4.5 Menu "next memory"

Memory: 3	Menu	T1
	Delete	T2
Mach.No._2	Next Mem	T3
ZAM - spreader	Next	T4

Fig. 89

Reading out the other covered memories is done as described in the previous chapters (7.4.1 ff).

7.4.6 Delete memory

If you select in the display for the memory space

(compare 7.4.1) key T2 (Delete), the following display appears:

Memory: 3		T1
	No	T2
To delete ?	Yes	T3
		T4

Fig. 90

After reading out all data memory spaces the entire memory can be deleted.



- By pressing key  (yes) the data are deleted and the choice of menu appears in the display.



However, during deletion all 20 jobs are irrevocably deleted.

- By pressing key  (no) the deletion procedure is reset and the display "choice of menus" (with stopped vehicle) or the "operational display" (with driving vehicle, para. 7.3.2) appears.

7.5 Function key and their use during the spraying operation

During the spraying operation the operational display appears on which the current forward speed in km/h and the actual spread rate in kg/ha are shown (please compare para. 7.3.2 / Fig. X).

The function keys (on the right hand side of the ten digit key board) allow further inquiries or inputs during the spraying operation.

7.5.1 Pocket calculator function

The pocket calculator is started by pressing one of

the four calculating keys

Calculator		T1
_ 0.00		T2
+ 0.00		T3
= 0.00	Back	T4

Fig. 91

The figures are entered via the ten digit key board

and for the result press key

By pressing key (Back) you will return to the previously selected display.

7.5.2 Key: Worked part or total area

By pressing key the so far sprayed quantity (Fig. 92/1) and the worked area (Fig. 92/2) of the actual job are displayed.

1225 l		T1
	Total	T2
6,1250 ha		T3
	Next	T4

Fig. 92

- Press key (Total) to receive information about the total sprayed quantity (Fig. 93/1) and the worked area (Fig. 93/2) since the last deleting procedure.

24810 l	Delete	T1
		T2
103,375 ha	Delete	T3
	Next	T4

Fig. 93

- Press key (Delete) to delete the indication.
- Press key (Delete) to delete the indication.
- Press key (Next) of the relevant display to return to the actual operational display.

7.5.3 Key: Forward speed and operational times

Via key all so far registered data for the actual job are recalled. The travelled distance in km (Fig. 94/1) and the operational hours (Fig. 94/2) for implement, vehicle and operator are shown.

127,321 km/h		T1
6.73h Mach		T2
7,55h Trac		T3
9,86h Oper	Next	T4

Fig. 94

- Press key (Next) to return to the actual operational display.

Via the key the present (Fig. 95/1) and the average (Fig. 95/2) area efficiency are displayed.



In this menu also the PTO shaft speed (Fig. 95/3) (only with additional PTO shaft sensor) can be monitored.

3,32 ha/h		T1
3,08 ha/h ϕ		T2
PTO:		T3
520 1/min	Next	T4

Fig. 95

- By pressing key (Next) you may return to the actual operational display.

7.5.4 Key: Change of application rate

With the keys and it is possible to increase or reduce the application rate in the operational display (please refer to para. 7.3.2) whilst travelling.

6,4 km/h	Menu	T1
	Terminat	T2
198 l/ha	Bin	T3
-10%	Next	T4

Fig. 96

By pressing key the total amount can be increased by 10 %. An additional pressing of the key will increase the application rate by 20 %, etc. Increases up to 90 % are possible.

By pressing key the total amount can be reduced or the pre-set value can be set again by

once pressing key .

This also applies for key in the reverse order.

7.6 Alarm

In case of missing inputs, critical implement condition or grave input mistakes **AMATRON II-A** releases a visual and audible alarm.

Required value

ALARM !		T1
Application rate can		T2
not be maintained !		T3
280 l/ha		T4

Fig. 97

The entered required rate (spray rate) cannot be maintained, because, e.g. the speed is too high. As soon as the speed has been adapted or e.g. the required rate has been reduced, the alarm signals will stop.

Tank filling

ALARM !		T1
Bin		T2
Capacity		T3
		T4

Fig. 98

The tank is empty or it only contains the amount for which an alarm value had been set.

Fill the tank and enter the values into the computer as described in para. 7.3.3.

Pressure range

ALARM !		T1
Pressure can not		T2
be maintained!		T3
2,7 bar		T4

Fig. 99

AMATRON II-A adjust the pre-set spray rate within the prescribed pressure range of the nozzles.

Now the operator would have to change the travelling speed in such a way that the pressure remains within the allowed range (please refer to the instruction manual for the relevant field sprayer or to

the indicated values for the pressure range of the different nozzle types).



Additional fault messages and their remedy are described in para. 9..



8. Repair, maintenance and servicing

8.1 Computer

AMATRON II-A is maintenance free. It is provided with an electronic safety device. During winter time **AMATRON II-A** should be stored at room temperature. To guard against dust and moisture –all outlets not in use must be protected with caps. in

8.2 Fertiliser spreader



When you intend to clean your fertiliser spreader with a high pressure cleaner take care that the cleaning jet is not directed towards the cable outlets, sensors and sockets.

After cleaning apply oil to the joints on the levers.



Before carrying out welding work on the tractor or spreader disconnect the electronic power supply for **AMATRON II-A**.

8.2.1 Check shutter slide main setting and the impulses of the setting motors



The setting motors have been set by the manufacturer in such a way that the rate setting slide at closed hydraulic shutter slides return after switching on **AMATRON II-A** nearly to the 0-position on the scale.



A change of the setting lever basic setting is only necessary if

- the setting motor had been exchanged.
- the desired and the actual spread rate considerably deviate and a calibration fault or other faults can be excluded.
- an uneven emptying of the two hopper tips is noted.

Prior to operation

- Mount the fertiliser spreader to the tractor and connect **AMATRON II-A** with the power supply. Do **not** fill the hopper with fertiliser.

- Switch on **AMATRON II-A**.
- Select **data block "job"**.
- Enter the **required spread rate** of **518 kg/ha** via the ten digit key board and store.
- Enter the **working width** of **20 m** and store.
- Enter the value **1.15** for the **fertiliser calibration factor** and store.

Execution

1. Check shutter slide position in the basic setting

- Open shutter slide.
- Speed up your tractor up to 8 km/h until the **AMATRON II-A** shows the following display:

8,0 km/h	Menu	T1
	Terminat	T2
518 kg/ha	Bin	T3
	% both	T4

Fig. 100

- While the display shows **8.0 km/h** and **518 kg/ha** switch off **AMATRON II-A**.
- Stop the tractor and read the shutter slide position for the metering shutter slides off the scale for the spread rate setting.
- The read-off edge of the pointer must indicate for both metering shutter slides the shutter slide position 41 ± 1 .



The shutter slide position 41 ± 1 is only a mean value. Decisive is the opened diameter of the outlet opening.

The opening allowed by the metering shutter slide must be 62 mm.



If the values for the read off shutter slide positions of the two shutters are far beyond the indicated maximum values, a fault in the control system or on the setting motor can be assumed. In this case check the impulse value of the setting motors.

2. Checking the dimension of the opened discharge outlet



When actuating the shutter slides, do not reach into the discharge opening. Danger of squeezing.

- The setting gauge (Fig. 101/1) must easily fit through the now released discharge opening diameter. (Special option, Order No.: 915018).

Should this not be the case (opened discharge outlet diameter too small or too big) readjust the fixing of the setting motor bracket with the linkage for the shutter slide as follows:

- Slacken the fixing bolts (Fig. 101/2) of the setting motor console (Fig. 101/3).
- Insert the setting gauge (Fig. 101/1) into the discharge outlet opening.
- Swivel the setting motor console (Fig. 101/3) towards the setting gauge and retighten the fixing bolts.

Check whether the shutter position 41 for the metering shutter slides is shown on the spread rate setting scale. If necessary, slacken the pointer fixing (Fig. 102/1) and align the pointer read off edge (Fig. 102/2) on top the scale figure 41.

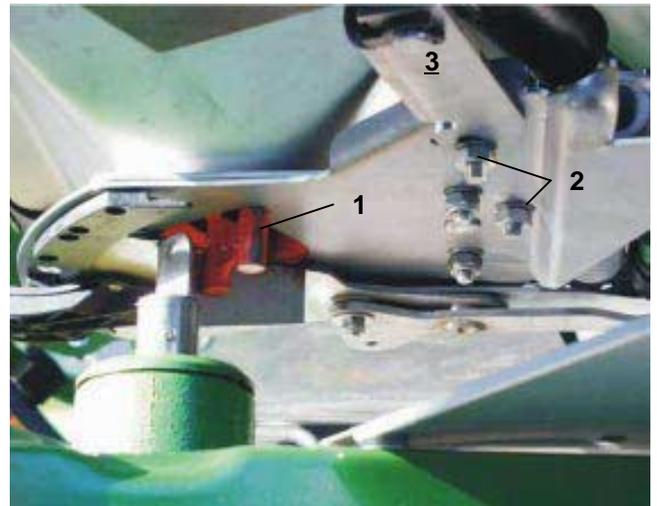


Fig. 101

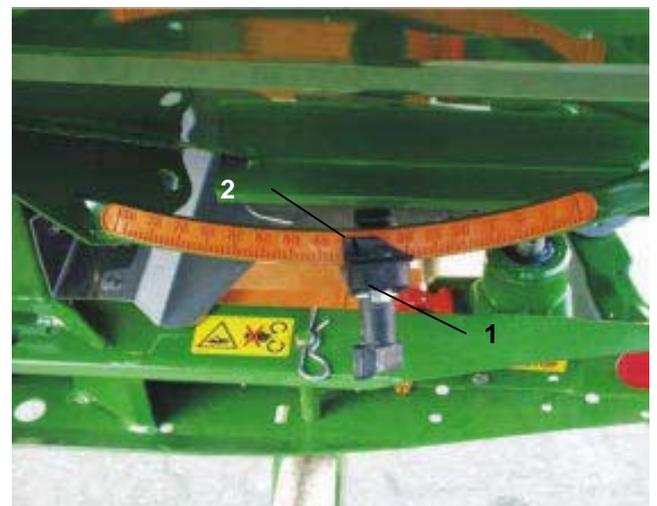


Fig. 102



8.3 Field sprayer

After every operation clean the flow meter with water. At the end of season always check the blower wheel and exchange if necessary. Before starting the season, calibrate your sprayer (please refer to para. 7.2.3).



For maintaining, repairing and servicing when operating your sprayer with the computer, please observe the instruction manual for the field sprayer.

9. Malfunions

9.1 Fault messages and remedy

Fault	Cause	Remedy
Two horizontal bars appear on the display.	Power supply is too low	Check power supply, take voltage off the battery or the starter.
No speed display	The computer does not receive any impulses (light "travel" (Fahrt) does not flick. The selected impulse is not calibrated	Check sensor, cable ducting and wiring.
No area determination.	"Working width" not entered. The computer does not recognise "working position".	Enter the working width. Depending on execution check sensor or switch "working position".
No application rate display.	Factor "Impulse/kg, l" had not been entered. The computer does not receive any impulses from the relevant sensor.	Enter "Impulses/kg, l". Check sensor.
The intended application rate is not maintained. The actual rate is lower than the required value. Honking.	Incorrect setting motor polarity. The rate is increased instead of lowered.	Change the motor polarity.
After switching on the display shows "memory error" (Speicherfehler) in several languages.	The memory contents is distorted by a disturbing pulse.	Switch on and off computer several times.



Claims regarding damage due to application errors will be rejected.

9.2 Operation of the fertiliser spreader in the event of electrical failure

In the event of electrical faults occurring on the computer **AMATRON II-A** or the electric setting motors, the operation can be continued even if the fault cannot be remedied straight away.

- Remove the two circlips (Fig. 103/1) by using circlip pliers (Fig. 103/2)

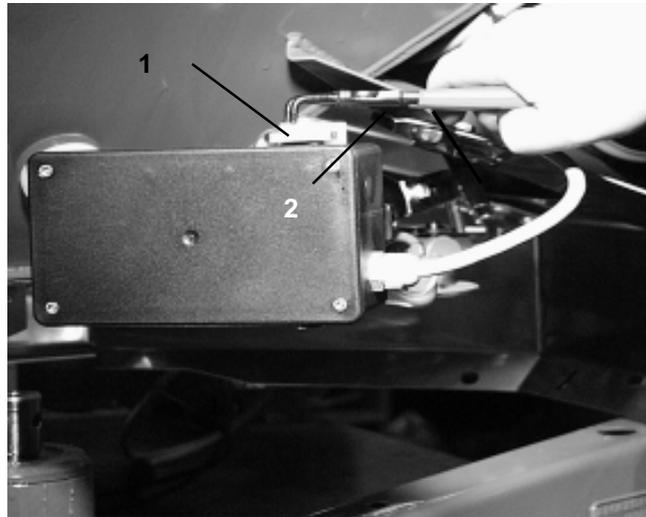


Fig. 103

- Pull off the two hinge pins (Fig. 104/1).
- Remove the setting motor from the motor retainer.

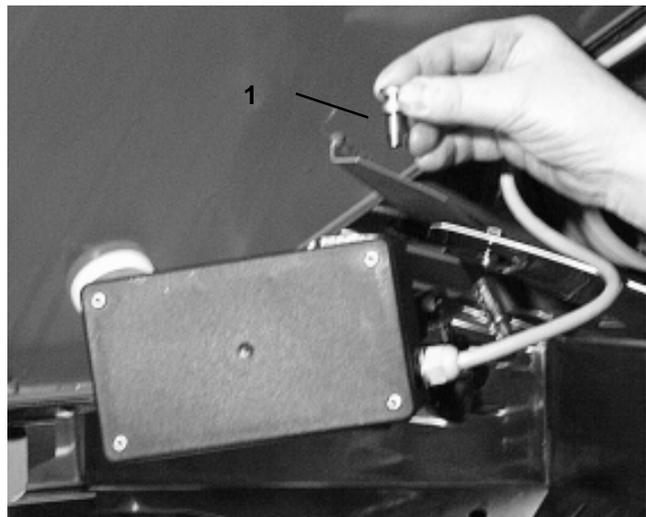


Fig. 104

- Lift the setting motor (Fig. 105/1) and unhook the setting spindle (Fig. 105/2) from the plug connection of the setting lever.

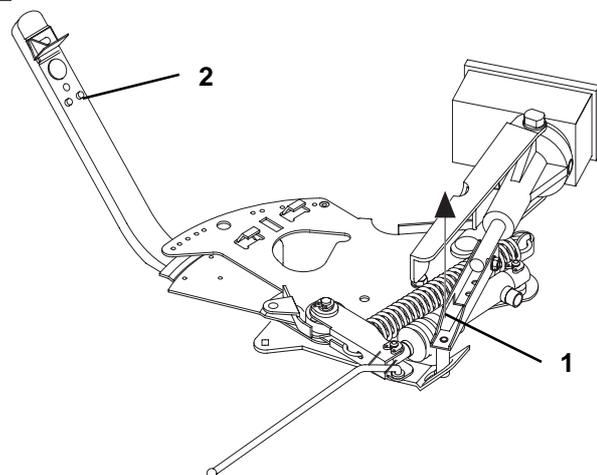


Fig. 105

- Then properly affix the setting motor with the unhooked setting spindle again in the motor retainer.



Secure the unhooked setting spindle (Fig. 106/1) with fixing aids from swivelling into the operational range of the hydraulic ram.



Fig. 106

- Install the clamping device (Fig. 107/1) for the metering shutter lever (Fig. 107/2) as follows:
 - Remove thumb nut (Fig. 107/3).
 - Remove the pins and exchange (Fig. 108) the position of the two washers (Fig. 107/4) from the rear (Fig. 107/5) to the front.

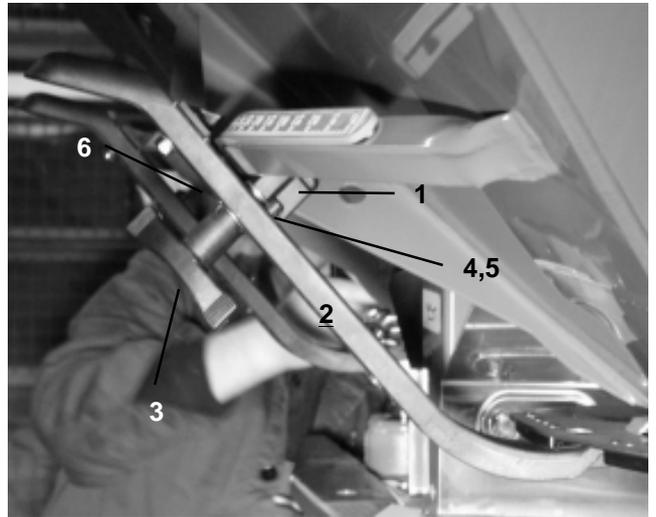


Fig. 107

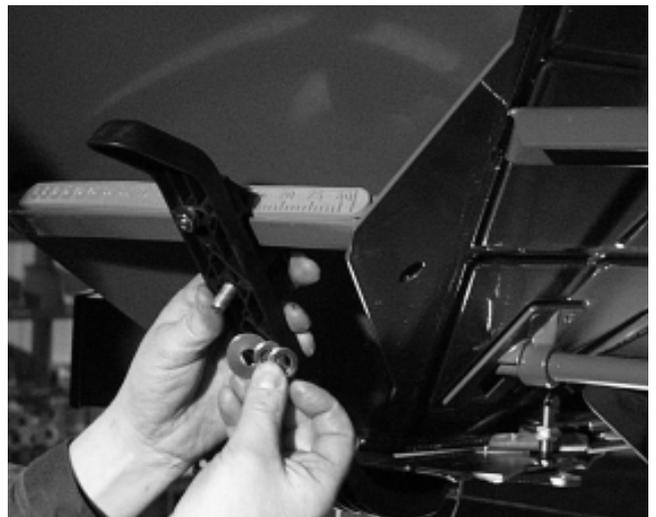


Fig. 108



9.3 Operation of the field sprayer in the event of electrical failure



For operating the field sprayer in the event of an electrical failure, please refer to the instruction manual for your field sprayer.



10. Determined implement data

Fertiliser spreader

Impulses/100 m (soft soil) _____

Impulses/100 m (medium soil) _____

Impulses/100 m (hard soil) _____

Kind of fertiliser _____

Fertiliser calibration factor _____

Spread rate (kg/ha) _____

Working width (m) _____

Field sprayer

Impulses/100 m (soft soil) _____

Impulses/100 m (medium soil) _____

Impulses/100 m (hard soil) _____

Working width (m) _____

Mittelart _____

Flow meter calibration factor (Imp./l) _____

Spray rate (l/ha) _____

Pressure (bar) _____

Control constant _____









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