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Operating instructions

Seed drill monitor

Multitronic II for

Multidrill eco / eco-line

Multidrill eco A / eco-line A



Multitronic II – Seed drill monitor for MULTIDRILL

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1) General information

In order to avoid operating and adjustment errors, please read the following references and explanations thoroughly before operating the unit.

2) Operating features of the seed drill monitor

2.1) Electrical connection

Power is supplied to the seed drill monitor from the tractor's 12V electrical system via a DIN 9680 plug connection. These three-pin plugs also exist in two-pin format, as only the two main terminals (+12V, earth) are required here.

On request, the seed drill monitor can also be fitted to operate via an ISO 11786 signal socket.

2.2) Technical data

Operating voltage: +10V+15V

Power consumption of the seed drill monitor 70 mA

Operating temperature range: -5°C +60°C

Storage temperature -25°C +60°C

Protection rating IP65

Fuse 6A multi-fuse in power supply plug

The circuit breaker resets itself automatically, once the short circuit has been dealt with and after a delay period of approx. 2 min has passed.

LCD unit: Four-line back-lit display

2.3) Operating functions

The Multitronic II seed drill monitor is a compact on-board computer, which carries out a number of useful functions. It helps run important control and monitoring functions, providing practical display and system utility functions designed to simplify operation and save work.

The monitor is designed as a highly versatile unit, suitable for trouble-free application throughout both the "MULTIDRILL ME/MEL" range of mechanical seed drill machines and the "TURBODRILL" range of air-operated units.

There now follows a brief overview of these operating functions:

Control functions:

- Tramline setup
- Additional tramline marking setup
- Automatic or manual relaying of tramline cycles
- Interruption of automatic relaying of tramline cycles driving in order to drive around obstacles

Display functions:

- Tramline cycle and tramline rhythm display
- Partial surface area hectare meter
- Total surface area hectare meter
- Drive speed
- Sowing shaft revolutions

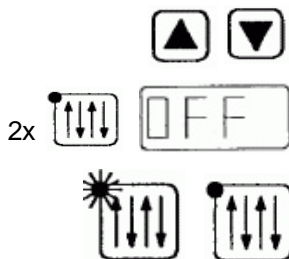
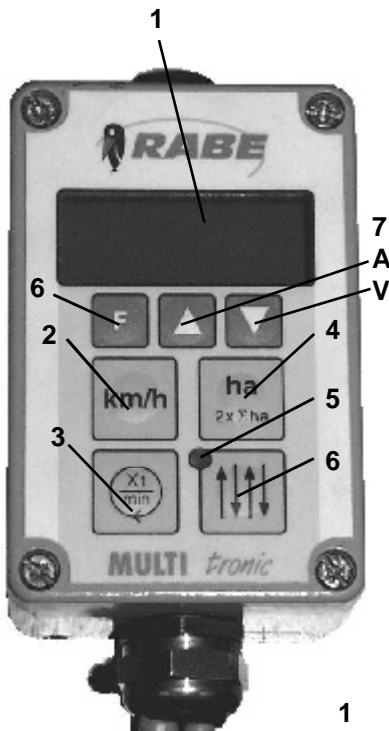
Monitoring functions:

- Sowing shaft monitoring
- Hopper level monitoring

System utility functions:

- Sensor test
- Calibration assistance for calculation and inclusion of crank handle revolutions
- Calibration of hectare meter (adaptation of hectare meter to ground conditions)
- Adjustable time delay for automatic relaying of tramline cycle
- Menu language selection in English, German or French

E - EL



Err1

Err2

3) Starting the seed drill monitor for the first time

The Multitronic II seed drill monitor is activated by inserting the power supply plug in the socket. A short horn signal indicates that the unit is active. The display is then active for about two seconds, to show the type of machine in use: **<E-EL>** for the MULTIDRILL ME/MEL range of units or **<turb>** for the TURBODRILL range of units.

Displays can now be activated for drive speed, hectare meter, sowing shaft revolutions or tramline circuit.

<E-EL> should be displayed for the **MULTIDRILL** range.

<turb> should be displayed for the TURBODRILL range.

If the wrong type of machine is displayed, the unit must be readjusted according to machine type (see sect. 8) before the seed drill monitor can operate correctly.

4) Multitronic II quick startup instructions for the MULTIDRILL

4.1) Control panel of the Multitronic II seed drill monitor

Readout/Display (1/1), Function key Drive speed (1/2), Sowing shaft revolutions (1/3) Hectare meter (1/4), LED (1/5), Tramline (1/6), Arrow keys (1/7, A,V) und F-Taste (1/7)

4.2) Readout pushbuttons

The green keys are readout pushbuttons

Drive speed indicator (1/2)

Push once to readout drive speed

Readout Hectare meter (1/4)

Push once to display partial surface area hectare meter

Push twice to display total surface area hectare meter

To reset the partial surface area hectare meter, press both arrow keys **A** and **V** for 2 sec.

To reset both hectare meters, press the two arrow keys **A** and **V** for 10 sec.

Display Turnings (1/3)

Press once to display sowing shaft revolutions

Tramline cycle and Tramline rhythm indicator (1/6)

Use the arrow keys **A** or **V** to alter the tramline cycle manually.

Press twice to switch **<OFF>**

LED (1/5) ON = tramline active

LED (1/5) OFF = tramline inactive

4.3) Alarm messages

<Err1> = Sowing shaft monitoring alarm

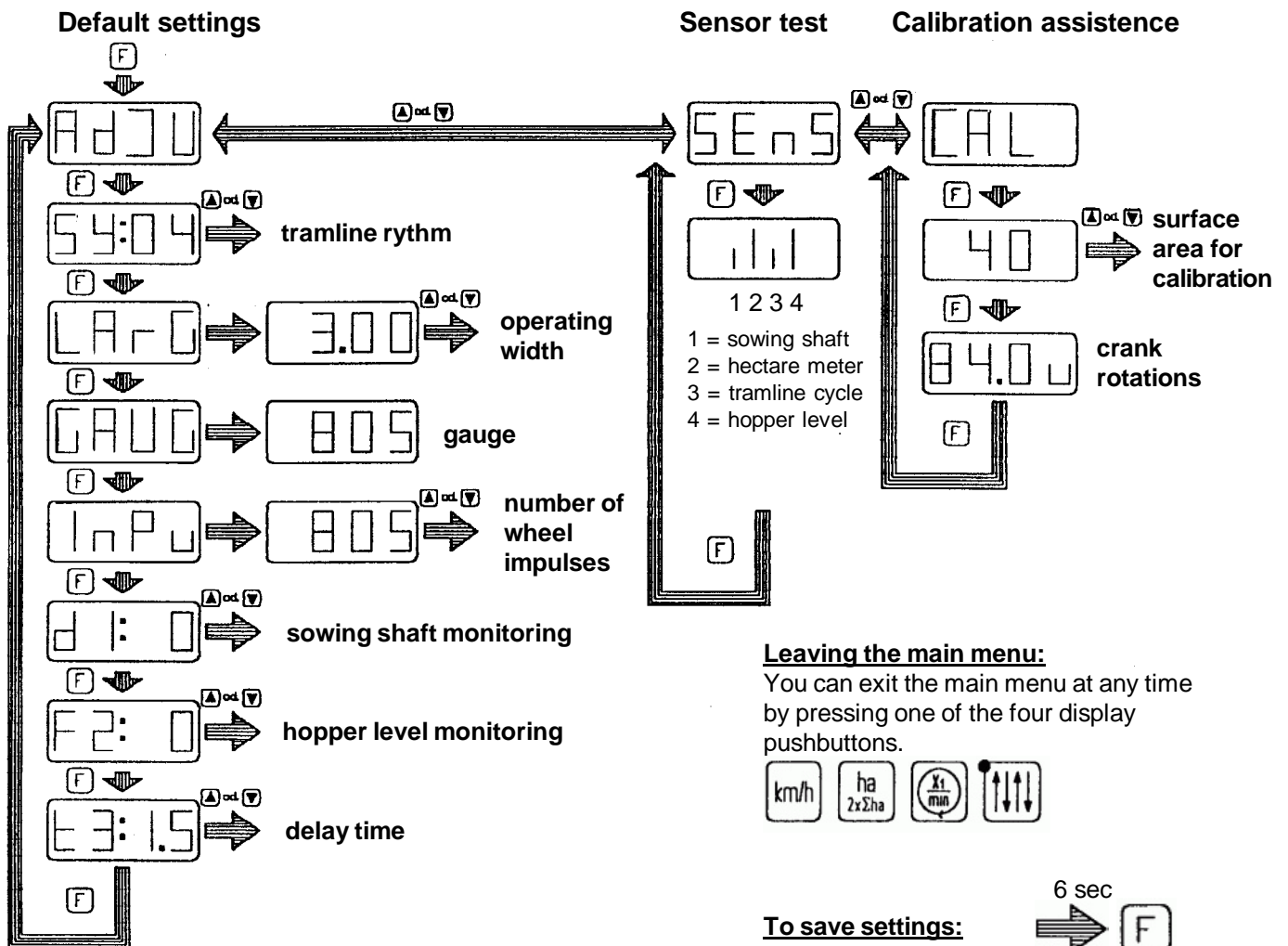
<Err2> = Hopper level monitoring alarm

4.4) Main menu

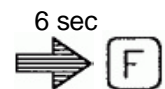
Press the **F** function key to activate the main menu.

The seed drill unit is now running with its default settings <AdJU>. This operation also activates the system utility functions sensor test <SEns> and calibration assistance <CAL>.

Quick guide Multitronic II MULTIDRILL

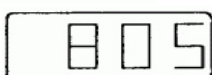
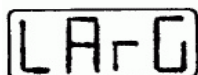
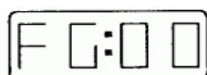
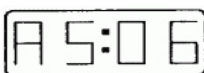
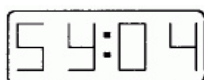
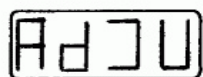
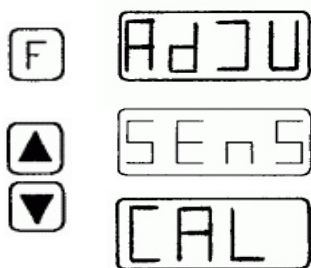


To save settings:



Keep the **F** key pressed for 6 sec. The display will start flashing after 2.5 sec and an acoustic signal will sound after 6 sec. When the sound stops, the setting is saved and the **F** key can be released. If the **F** key is released any earlier, the old setting will be retained.

Please refer to the operating manual for further information.



5) Multitronic II main menu for MULTIDRILL

Three different functions can be activated via this menu:

Seed drill unit default settings <AdJU>

Sensor test <SEnS>

Calibration assistance <CAL>

Press the **F** key and use arrow key **A** or **V** to select the desired function. Press the **F** key again to activate the selected function.

5.1) Default settings

The default settings must be established before the seed drill monitor can be used for the first time. This operation allows the seed drill monitor to receive data on the configuration of the seed drill unit.

Erroneous default settings lead to functioning errors and incorrectly calculated readouts.

Press the **F** key and use **A** or **V** to select the default setting.

Press the **F** key again to activate the default setting.

This operation displays the tramline rhythm setting.

5.1.1) Tramline rhythm

This menu allows adjustment of the symmetric and asymmetric tramline rhythms, or deactivation of the tramline circuit.

Symmetric tramline rhythms:

<SY:02>, 03, 04, 05, 06, 07, 08, 09, 10, 11, 12

Asymmetric tramline rhythms:

<AS:02>, 04, 06, 08, 10, 12

Deactivated tramline circuit: <FG:00>

Use **A** or **V** to select the tramline rhythm and press **F** to save. (See sect. 5.1.7)

The next stage is adjustment of the seed drill unit operating width

5.1.2) Operating width

The operating width symbol <LARG> is now displayed and, after three seconds, the previously set operating width.

Use **A** or **V** to select the operating width and press **F** to save. (See sect. 5.1.7)

The following stage is hectare meter calibration.

5.1.3) Calibration of the hectare meter or entry of wheel impulses

An impulse count for an operating length of 100 m is required for accurate hectare metering and correct drive speed display.

This can be determined in two different ways:

Entry of wheel impulses using the table

Or by taking an actual reading of the number of impulses

The table value should always be entered first. Calibration of the hectare meter should only be carried out if the unit is giving inaccurate readings.

5.1.3.1) Calibration of the hectare meter

Calibration of the hectare meter involves adapting it to the ground conditions of the land being cultivated. This operation should only be carried out if the unit is giving inaccurate readings. Calibration is carried out directly in the field.

The calibration symbol <GAUG> will appear first, followed after 3 seconds by the previously set wheel impulse count.

Stop calibration:

If you need to stop the calibration procedure, or carry it out later, briefly press the **F** key. The program will then jump directly to the next adjustment setting menu, wheel impulses <InPu>.

Calibrating the unit:

Proceed as follows if calibration is required:

Drive the machine to the beginning of the field test section.

Measure out a 100 m stretch of field

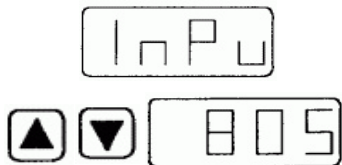
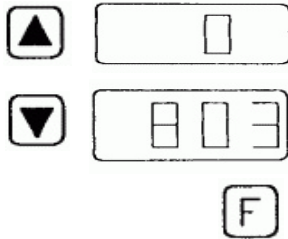
Press arrow key **A** to display a zero

Drive along the test section. The seed drill monitor will now total up the number of hectare meter impulses.

After reaching the end of the test section, press arrow key **V** and the seed drill monitor will stop recording the number of impulses.

Press the **F** key to save the impulse reading. (See sect. 5.1.7)

The program will now move on to the next adjustment setting menu: wheel impulses <InPu>.



5.1.3.2) Entry of wheel impulses

The wheel impulse symbol <InPu> will be displayed first, followed after 3 sec by the previously set impulse count.

In the case of the MULTIDRILL, impulse count depends on the size of the drive wheel:

MULTIDRILL	Impulse count / 100 m
Tyre 6.00-16	805
Tyre 10.0/75-15.3	762
Ground wheel	743

Use arrow key **A** or **V** to select impulse count and press the **F** key to save. (See sect. 5.1.7)

The following step is sowing shaft monitoring adjustment.

5.1.4) Sowing shaft monitoring

Sowing shaft monitoring is enabled or disabled in this menu.

Sowing shaft monitoring on = <d1: 1>

Sowing shaft monitoring off = <d1: 0>

Use arrow key **A** or **V** to enable or disable the monitoring function and press the **F** key to save. (See sect. 5.1.7)

The following step is hopper level monitoring adjustment.

5.1.5) Hopper level monitoring

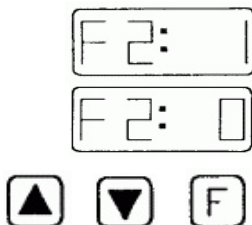
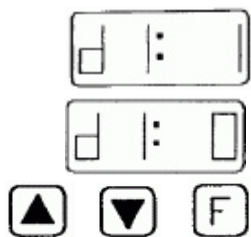
This menu is used to enable or disable hopper level monitoring.

Hopper level monitoring on = <F2: 1>

Hopper level monitoring off = <F2: 0>

Use arrow key **A** or **V** to enable or disable the monitoring function and press the **F** key to save. (See sect. 5.1.7)

The following step is delay time adjustment.



5.1.6) Delay time

Delay time **t3** (t=time) involves delaying the switching impulses for automatic relaying of the tramline cycles. The purpose of this function is to avoid incorrect activation. Delay time is adjustable between 0.5 sec and 7.0 sec, steps of 0.5 sec.

The following values should be entered before operating the unit.

<u>Automatic relaying via:</u>	<u>Display readout (= delay time in sec)</u>
Automatic marker arm sensor	1.5
Shuttle valve pressure switch	1.5
Hydrolift sensor	1.5
Fendt signal plug socket	1.5
Ground wheel sensor	4.0
Level compensator sensor	4.0

Other values can also be entered however. Use arrow keys **A** or **V** to select delay time and press the **F** key to save. (See sect.5.1.7)

The seed drill unit default adjustment setting procedure is now complete. The program will now return to the main menu and the default setting symbol <AdJU> will be displayed once more.

Press any of the four green display pushbuttons to exit this menu.

5.1.7) Saving the machine settings

If the pre-set default settings are altered, they must be saved to memory.

All settings can be saved in the same way:

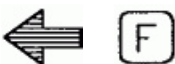
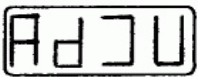
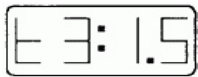
Keep the **F** key pressed for 6 sec.

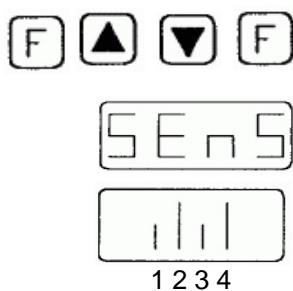
The display will start flashing after 2.5 sec and an acoustic signal will sound after 6 sec.

When the sound stops, the setting is saved.

The **F** key can now be released, giving automatic access to the following menu.

If the **F** key is released early, access is gained to the following menu, but any new setting that may have been entered will be ignored and the previous setting retained.





5.2) Sensor test

The sensor test offers a method of testing the function of the seed drill unit sensors.

Press the **F** key and use arrow keys **A** or **V** to select the sensor test function, then press the **F** key again to start the test.

A four-bar display will now appear:

- 1=Sowing shaft monitoring
- 2=Hectare meter
- 3=Tramline cycle relaying
- 4=Hopper level monitoring

Each bar shows the activation status of its corresponding control function.

For sowing shaft monitoring, hectare meter and hopper level monitoring (sensors with opening function):

- Long bar = no metal detected
- Short bar = metal detected

Tramline cycle relaying via

Automatic marker arm, Hydrolift or level compensator sensor (Sensors with opening function)

- Long bar = no metal detected
- Short bar = metal detected

Shuttle valve pressure switch

- Long bar = Switch under pressure
- Short bar = Switch pressure released

Fendt signal plug socket

- Long bar = lifting gear raised
- Short bar = lifting gear lowered

Ground wheel sensor (sensor with closing function):

- Long bar = metal detected
- Short bar = no metal detected



You can test the functioning of a sensor by holding a metallic object (e.g. a screwdriver) in front of it and then moving it away again.

Pressure switch functioning, with closed hydraulic circuit, can be tested by raising the marker arms.



When the sensor test is over, press any one of the four green display pushbuttons to leave the menu.



CAL

40



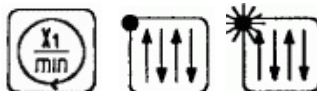
167.0

79.50

5.00

0.00

-1.00



ha 2xΣha 5.06

ha 2xΣha 10.48

5.3) Calibration assistance

Calibration assistance is a system utility for the seed calibration test. This function computes the number of crank rotations, showing them on the display, and also counts the number of crank rotations during the calibration test.

Press the **F** key and use arrow keys **A** or **V** to select calibration assistance <CAL>. Press the **F** key again to activate the function.

The following choice of surface areas for calibration will now be displayed:

1/10 ha display <10>
 1/20 ha display <20>
 1/40 ha display <40>

Use arrow keys **A** or **V** to select the size of surface area to be calibrated and confirm the selection by a short press on the **F** key.

The seed drill monitor will now compute the number of crank rotations and display the figure. During this operation, values greater than 100 revolutions are displayed as whole figures. Values under 100 revolutions are shown exactly to the nearest half-turn.

The calibration test can now start. The seed drill monitor will now count the number of hand crank rotations, starting from the displayed value and running in reverse, thus providing a constant display of the crank turns that remain to be carried out. The final five turns of the crank are accompanied by an additional acoustic signal, in order to warn the operator of the impending end of the calibration procedure.

Once the value reaches zero <0> a constant acoustic signal is activated to warn the operator to stop calibration immediately.

If calibration does continue, the display will show the corresponding negative value and the constant acoustic signal will continue to be heard until no more impulses are being detected at the hectare meter.

To repeat the calibration test: press the **F** key, the calibration test will restart from the beginning.

To stop the calibration test, press any one of the four green display pushbuttons to leave this menu.

6) Display (readout) pushbuttons

The green keys are the display pushbuttons, which are used to operate the following functions:

- Display / reset hectare meter
- Display drive speed
- Display sowing shaft revolutions
- Display / alter tramline cycle

6.1) Hectare meter

The seed drill monitor operates via two separate hectare meters: namely a partial area meter and a total surface area meter.

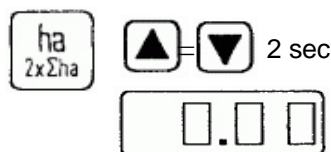
Data are displayed as follows, with floating decimal point:

0.00 – 9.99 10.00 – 99.99 100 – 999 1000 – 9995

6.1.1) Partial / total surface area meter display

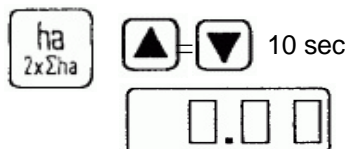
Press the display key to show the partial surface area count.

Press the display key again and the total surface area count will appear for 5 sec, followed once more by the reading for the partial surface area hectare meter.



6.1.2) Partial hectare meter reset

Press the display key to show the partial surface area meter. Now press both arrow keys **A** and **V** at the same time and maintain pressed for 2 sec. The display will now start flashing and will reset to zero <0> after a further 2 sec, when it will stop flashing. This completes the reset procedure.



6.1.3) Partial surface area and total hectare meter reset

Press the display key again to show the total hectare meter. Now press both arrow keys **A** and **V** at the same time and maintain pressed for 10 sec. The display will now start flashing and will reset to zero <0> after a further 10 sec, when it will stop flashing. This completes the reset procedure.



6.2) Drive speed display

Press the display key to show drive speed in km/h.



6.3) Sowing shaft revolutions display

Press the display key to show sowing shaft revolutions as a rotating <0>.

6.4) Tramline cycle

The tramline cycle can be displayed and altered, with tramline cycle relaying being carried out either automatically or manually. It is also possible to interrupt automatic relaying, when avoiding obstacles for example, without altering the tramline cycle itself.

6.4.1) Tramline cycle display / adjustment

Press the display key to show the tramline cycle and rhythm.

Left : **Tramline cycle**

Right : **Tramline rhythm**

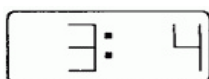
Please refer to sect. 5.1.1 for details of tramline rhythm adjustment.

Tramline cycle relaying:

The tramline cycle is automatically relayed by means of sensors or pressure switches, although it can also be activated manually.

Use arrow keys **A** or **V** to alter the tramline cycle

Once a tramline is established, the red LED in the tramline display key will light up.



6.4.2) Automatic relaying interruption

Press the display key again to make <OFF> appear. This operation interrupts automatic relaying of the tramline cycle. It is now possible to operate the marker arms or raise the seed drill unit, without relaying the tramline cycle. The tramline can now also be directly activated or deactivated:

Tramline ON: press arrow key **A** (LED lights up)

Tramline OFF: press arrow key **V** (LED goes out)



Press the display key again to return to normal tramline cycle relaying. The tramline cycle that was active before the interruption will now reappear on the display.

7) Alarm functions / messages

Seed hopper level and sowing shaft revolutions can be monitored, on condition that the seed drill unit is fitted with the corresponding activated monitoring device. (See sections 5.1.4 and 5.1.5 for information on activating hopper level and sowing shaft monitoring.)

The monitoring systems are only active when the seed drill unit is in operating position (with lowered seed drill unit and/or marker arms).

The monitoring systems are not active when the seed drill unit is in transport position (with raised seed drill unit and/or marker arms).

7.1) Sowing shaft alarm

The sowing shaft monitoring system controls the turning of the sowing shaft. (Please refer to sect. 5.1.4 for information on how to activate sowing shaft monitoring).

A sensor receives impulses from a transmitting device on the sowing shaft. If 10 seconds pass without an impulse being received (with the unit in operating mode), visual and acoustic alarm signals are activated.

Acoustic alarm = intermittent sound

Visual alarm = <Err1>

The alarm can be stopped by pressing one of the green display keys, but will nevertheless be reactivated if the marker arms are operated or the machine is raised.

In the event of a fault occurring that cannot be dealt with immediately (e.g. a faulty sensor), it is possible to disable the monitoring system completely as a temporary measure, until the fault can be rectified. (Please refer to sect. 5.1.4 for details on how to disable sowing shaft monitoring).

7.2) Hopper level alarm

The hopper level monitoring system controls the amount of seed in the hopper. (Refer to sect. 5.1.5 for details of how to activate hopper level monitoring).

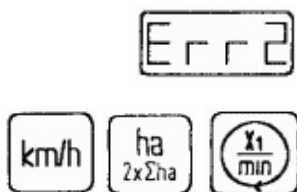
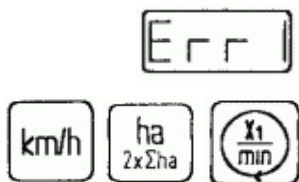
The level display receives a sensor signal when the quantity drops to a certain level, activating an acoustic and visual alarm signal.

Acoustic alarm = intermittent sound

Visual alarm = <Err2>

The alarm can be stopped by pressing one of the green display keys, but will nevertheless be reactivated if the marker arms are operated or the machine is raised.

In the event of a fault occurring that cannot be dealt with immediately (e.g. a faulty sensor), it is possible to disable the monitoring system completely as a temporary measure, until the fault can be rectified. (Please refer to sect. 5.1.5 for details on how to disable hopper level monitoring).



8) Configuring for machine type and local language

The Multitronic II seed drill monitor can be operated with both the MULTIDRILL range of mechanical seed drill machines and the TURBODRILL range of air-operated units.

The menus can be configured to appear in English, German or French.

The seed drill monitor is supplied factory-adjusted for the corresponding machine, but the user can change these parameters at any time:

Remove the power supply plug from its socket

With the **F** key pressed, push the plug back into the socket.

The display will show <tYPE> for the corresponding type of machine

Release the **F** key once more

Press the **F** key again to activate machine type configuration.

Use arrow keys **A** or **V** to select machine type **MULTIDRILL ME/MEL** (display <E-EL>)

and press the **F** key to save. (See sect. 5.1.7)

The display will show <tYPE> once more

Use arrow keys **A** or **V** to activate local language configuration (and to display <nAt>)

Press the **F** key to activate the language selection feature.

Use arrow keys **A** or **V** to select the desired language

English	Anzeige <EnGL>
French	Anzeige <FrAn>
German	Anzeige <EnGL>

Press the **F** key to save the selected language. (See sect. 5.1.7).

The display will show <nAt>once more

Configuration is now complete. Press any one of the green display pushbuttons to leave the menu.

