User's manual for Cgrain Value

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A. Important information

Carefully read this Manual before use!

All information is liable to change without prior notice.
For latest information about documentation updates contact Cgrain AB.

Hardware Warranty
The warranty does not cover damages incurred if the instructions in this manual have not been followed.

Data storage
Cgrain is not responsible for any data loss due to malfunction of the instrument or any other cause.

Electromagnetic compatibility (EMC) standard compliances

EN 61326-1:2013 "Equipment for measurement, control and laboratory use – General requirements"

FCC Part 15 Subpart B "Radio Frequency Devices- subpart B – Unintentional radiators"

EN 61010-1:2010 "Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements"

EMF (magnetic field) have been measured. With lid open maximum field was measured as 79% of action level of 1999/519/EG for public exposure.

RoHS

WEEE

The symbol indicates that this product may not be treated as household waste. Please ensure this product is properly disposed of as inappropriate waste. Handling of this product may cause potential hazards to the environment and human health. For more detailed information about recycling of this product, please contact us.

Transport
The Cgrain Value™ is secured within the box. Disassemble the box carefully and check for damage!
Any damage shall be reported to Cgrain AB without delay.
Personal safety tools are required since the total weight of the box is more than 50kg.

Trademarks
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Licensing
To view the licenses of open-source packages used in this product, please contact Cgrain AB directly.

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B. Safety information

The following information is provided for personal safety and correct operation of Cgrain Value.

- Never insert objects in the mesh to the power supply.
- Use only the cables provided to external port connections.
- Keep the lid closed while running a sample to avoid exposure to flashing lights.
- Only operate Cgrain Value in dry and safe environments.
- Be careful, LED flashing lights inside the machine may stress your eyes. (May trigger photosensitive epilepsy)

C. Description

1. The scope of the manual

In addition to Cgrain Value, an external monitor, mouse and keyboard is required for the use of the instrument. This manual only describes the Cgrain Value. For instructions regarding the external monitor, mouse or keyboard see their respective manuals.

2. Instrument description and area of use

Cgrain Value is an analytical instrument developed to assess the visual quality of grain and to make size measurements. The analysis is performed using image analysis and the latest technology in grain control. The instrument is mainly intended for use in grain laboratories.

3. Package content

Description	Quantity
Cgrain Value image analysis instrument	1
User's manual for Cgrain Value	1
External monitor	1
Mouse	1
Keyboard	1
HDMI cord	1
AC C13 power cords	2

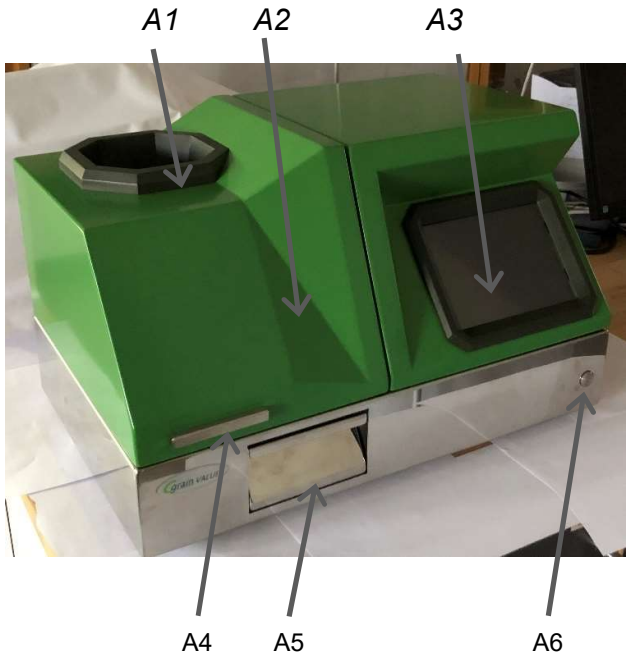
4. Technical specifications

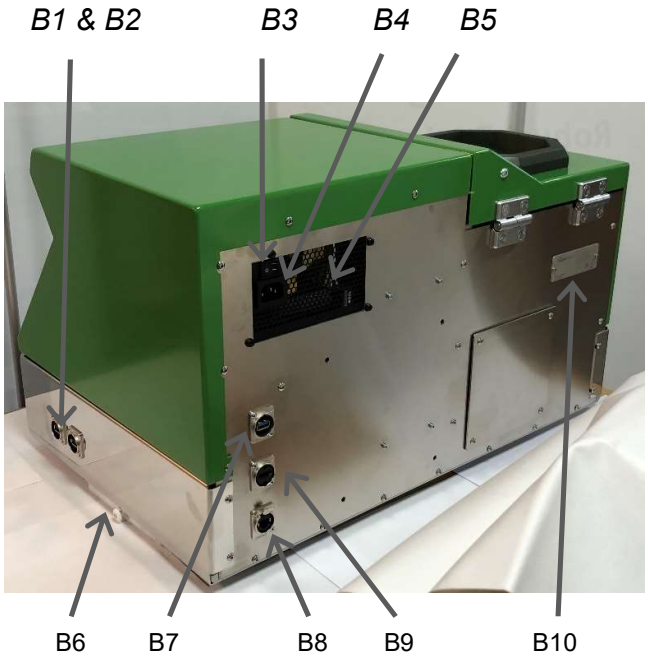
Dimensions:	600 x 400 x 370 mm (WxDxH), instrument only
Weight:	38 kg
Operating temperature:	10-40 °C
Operating conditions:	Humidity 20-80% non-condensing, Max altitude 2000m
Voltage:	100-240 VAC 50-60Hz
Power usage:	Operation 85-135 W
Max power:	0.55kW
External Ports:	1 x USB 3.1 Gen1 (up to 5Gbps) 2 x USB 2.0 1 x HDMI 1 x LAN (RJ-45) port
Internal Storage:	SSD 500 GB
Lighting	4 x Flash LED panels
Analysis principle:	RGB imaging
Operating system:	Ubuntu 20.04 LTS or later version
Transportation & Storage conditions	Suppliers' Recommendation Temp 5-45 °C, Humidity 20-80%

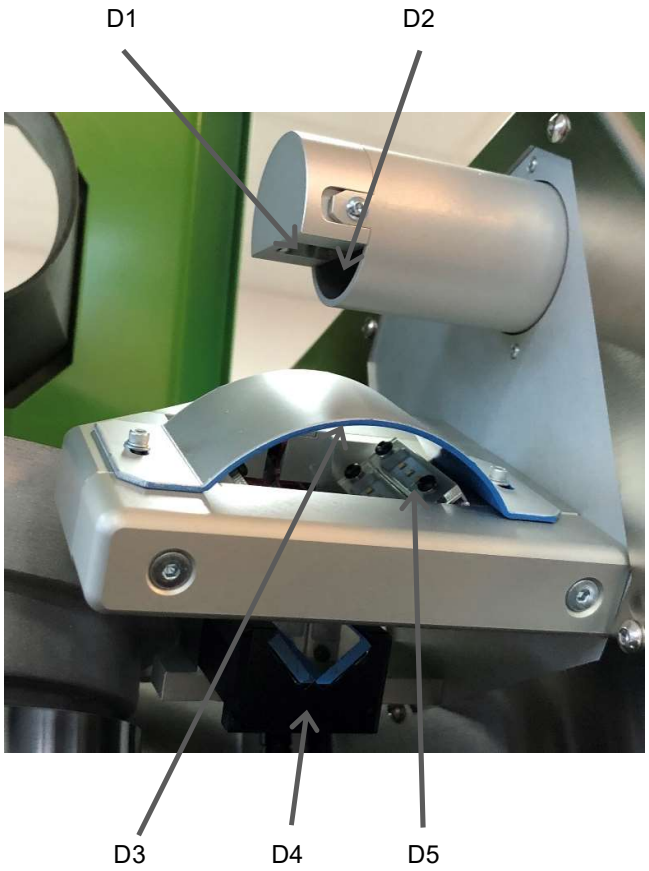
5. Analysis specification

Type of sample:	Grain, aspirated
Particle width:	1-5 mm, max length 16mm
Speed:	8-12 kernels per second
Sample size:	25-500 grams

6. Instrument parts and ports descriptions







The numbering of the parts described in the list below refers to the instrument pictures found in page 5 of this manual.

A1 Funnel
A2 Lid
A3 Touch screen
A4 Handle to open lid
A5 Collecting box
A6 On/Off button

B1 USB 2.0 port
B2 USB 2.0 port
B3 AC Power switch
B4 AC Power socket
B5 Power supply mesh
B6 Air filter, intake air
B7 USB 3.1 port
B8 LAN (RJ45) port
B9 HDMI port
B10 Instrument ID-plate

C1 Vibrating bowl
C2 Compressed air nozzle
C3 Imaging area, specified in picture D
C4 Camera tube
C5 Two of the four screws holding the vibrating bowl in position, the other two screws are not visible in the image
C6 Guiding frame

D1 Prism
D2 Opening into the camera tube
D3 Background plate
D4 Removable mirror holder
D5 2 x Lighting panels directed towards the background
2 panels, directed towards the mirror, are not visible in image

7. Possible accessories

Optional printer, barcode scanner, scale or external hard drives can be obtained from Cgrain AB.

D. Cleaning and maintenance

With the exception of the cleaning specified below, no other maintenance needs be performed by the user. Cgrain Value's fixed parts must not be loosened or detached by the user. Cgrain AB takes no liability for damages caused in connection with services performed by staff not specially trained in servicing Cgrain Value™.

Warning! No fixed parts need to be removed for cleaning. Opening or loosening fixed parts may affect the warranty for the product.

1. Exterior maintenance

The instruments exterior is cleaned by the use of a slightly damp cloth. Be particularly careful not to touch the connections for USB, Internet and power cords on the rear panel, picture B. The touch screen is cleaned using the special cleaning agents and cloths for touch screens. To remove dust and particles from the power supply mesh, use gentle vacuuming.

2. Cleaning of the interior

The inside of Cgrain Value should be cleaned, removing dust and debris regularly by gentle vacuuming. The vibrating bowl and the surfaces surrounding it are cleaned using a soft cloth.

3. Automatic cleaning of the mirrors

The instrument automatically cleans the mirrors before starting a sample and during analysis. Air is flushed over the mirrors from the built-in air compressor, which removes dust and debris sitting on the mirror glass surfaces.

In addition to this, the mirrors may need to be removed and manually cleaned as described below.

4. Manual cleaning needed

At the start of each sample the instrument checks the image quality after the automatic cleaning procedure has been performed. If the image quality still isn't OK, a warning is issued that the mirrors need cleaning. "Manual Cleaning needed". To perform the cleaning follow the procedure below.

i. Cleaning the mirrors

First remove the guiding frame, see picture C6, to access the mirror holder, picture D4. The mirrors are taken out by pulling them gently in a sloping down forward movement. The mirrors are polished with a dry cloth or fine glass wipes. They are then put back firmly and gently in the opposite way from their removal. The mirror assembly is held in place by a magnet and two guiding pins. Never snap it in place, since this can damage the glass surface. **Notice! Don't apply any force when attaching the mirrors. Make sure that the mirrors are positioned properly**.

ii. Cleaning the LED flash light panels, background and camera

Use a soft cloth to carefully clean all the lighting panels and the inside of the rounded background, see pictures D3 and D5 as well as the prism in the camera tube, see picture D1. To free the camera lens from dust, blow gently into the opening of the camera tube, picture D2. Use canned pressurized air graded for use with photographic equipment.

5. Replacing the air filter

The air filter should be checked regularly and replaced if found to be dirty. New filters can be obtained from Cgrain AB.

E. Service

In addition to the maintenance and cleaning of the instrument performed by the user, Cgrain AB recommends that the instrument is serviced regularly by an approved service technician.

A preventive maintenance service is recommended at least yearly.

Cgrain AB offers a standard service agreement and future upgrade packages.

F. Spare parts and consumables

Cgrain Value is a robust instrument with few moving parts to ensure low maintenance costs.

1. Consumables

Air filter

Cleaning products

2. Spare parts

Contact Service & support at Cgrain AB

G. Installation requirements and installation setup

The surrounding environment requirements are stated in Technical specifications in C.4.

1. Installation

The installation of the Cgrain Value™ shall only be performed by personnel authorized by Cgrain AB.

2. Placement

The product should be placed on a hard, level and stable surface indoors. An area of 1.2 m in length and 1 m in depth is recommended to hold the instrument as well as external monitor, keyboard and mouse. 0.5 m free space above the instrument is also need to accommodate the opening of the lid. The sample is poured into the funnel situated 35 cm above the bench top so the height of the bench should be adjusted to fit the user. The external monitor should be placed on an appropriate height for ergonomic purposes and ease of use. Do not block the power supply vent on the back of the instrument.

3. Electrical sockets

Two electrical sockets are needed, one for the instrument and one for the external monitor.

4. Network connection

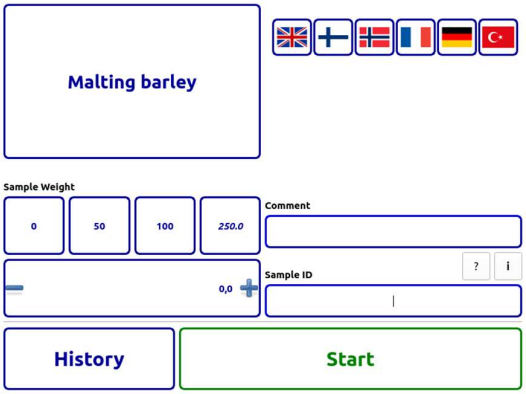
Cgrain AB needs access to the instrument for updates and support. Therefore, the instrument needs to be connected to a network. Internet connection to LAN via the Ethernet socket, RJ-45. Cgrain uses “TeamViewer” software to access the instrument. See pictures B7, B8 and B9.

The small button, above the Reference field in the Start menu, shows the status of the internet connection. If an “x” appears in the button, no network connection is available. If the button contains an “i”, you can press the button to obtain the instrument’s IP-address. The same button can also be used to terminate the program.

H. Installation – Software setting

This chapter describes software settings that are used to configure the instrument to match the user's procedure. These settings are configured by Cgrain AB. To fully understand the functions, please also read chapter "**I – Usage**".

1. The Start Menu — can be specified by the user



Programs	If there is only one available program, the Program button (here "Malting Barley") will not be visible.
Languages	When more than one language is available to choose between, flags will appear in the upper right corner. The user can change the language setting by pressing the flags. The default language is English. The language setting impacts both the software instructions as well as the reports.
Sample ID	Sample ID is entered using the keyboard or by scanning a bar code (optional) This field can be set to warn if the entered reference already has been used.
Comment	Default is one Comment field, but more fields (up to 4) can be added by Cgrain AB
Optional functions	Optional functions are: "Empty Bowl" emptying the sample into the collecting box at high speed without imaging and "Log in" when a login signature is required.
Warnings for required Sample ID and weight	The program warns if a sample is started without a "Sample ID" entry it is also possible to get a warning when no weight has been entered.

2. Edit and Lock

When automated data export is used, the sample must be approved so that editing is no longer possible. This is managed by locking its result.

Options for editing and locking samples

- By default, the samples are possible to Edit, no Lock function is activated and no automatic export is performed.
- The samples are not possible to Edit, an automatic export is performed directly after the sample is finished.
- The samples are possible to Edit, the Lock function is activated and the user is asked whether the samples should be locked directly after finishing.
- The samples are possible to Edit, the Lock function is activated but the user is not asked to Lock the samples directly but can Lock several samples at a time in the History directory.

Signatures

If the Lock-function is activated it is possible to specify the signatures that are allowed to lock samples.

3. Saving images - options

The instruments hard drive can save the pictures from about 200 samples of 50 grams. The instrument saves the images of the samples until the disk is full. When the instrument needs more space, it can automatically remove old samples, or ask before a sample can be run, so that the personnel can remove images manually from old samples, or save them for future reference.

There are two options

- By default, old pictures are removed automatically, without warning
- Scheduled backup to an external hard drive or a network location

4. Backup of database

Sample results the can be stored for a long time in the instrument, but Cgrain AB recommends that the user performs regular backups of data. It is possible to schedule backups of the database.

By default, “No backup” of the database is performed

A scheduled backup to an external hard drive or network location can be installed.

The Scheduled backup function requires that the instrument is left powered on at all times.

Cgrain AB takes no responsibility for lost data in case of a hardware failure.

5. Presentation of results

The programs and the presentation of result are dependent on the application and calibrations defined by Cgrain AB.

In the standard configuration the results are presented as count and weight % and thousand kernel weight (TKW). The Weight % is calculated based on the estimated volume and the relative densities for each category. TKW is calculated for each category that counts at least 200 kernels and if the weight for the sample has been entered. Other available outputs are count%, weight, volume, volume% and comments.

6. Warning levels for different categories

Revision of the result for a specific category is needed before locking and exporting the final results for the sample can be specified.

A warning level in weight % for the category is defined and is required for revision before finalizing the sample. Results exceeding the warning level will be marked with a red background colour in the Results table. The sample will also be marked in red in the History table.

Warning levels are installed by Cgrain Support.

7. Automatic export of results per sample

The default setting is No automatic export of results

An automatic export of results per sample can be performed when samples are Locked (section I9).

The results are exported in XML or CSV-format.

An automatic export of results can be installed by Cgrain support.

8. Automatic export of statistics for each kernel

The statistics of a sample contains one data set for every kernel in the sample.

By default, no automatic export of statistics is performed

The results are exported in XML or CSV-format.

An automatic export of statistics for each kernel can be installed by Cgrain support.

9. External hard drives, Printers & Hand scanner

Contact Cgrain AB for approved optional hardware.

I. Usage

1. Short analysis description

Sample requirement: The sample should be pre-cleaned, removing particles using an aspirator or sieving equipment with sieve widths less than 1 mm and greater than 5 mm, removing smaller and larger objects.

The instrument is loaded with a grain sample through a funnel on the top. If TKW is required, the sample weight needs to be entered.

The analysis is started using the built-in touch screen.

- Upon start-up of the analysis, the LED-light is calibrated and the background colour is verified.
- The vibrating bowl feeds the grain sample at 8-12 kernels per second past the imaging area.
- Images are captured by an RGB-camera using a mirror construction and LED illumination. The mirror construction enables the kernels to be analysed from three views. The images are analysed continuously during the run of the sample.
- A built-in compressor cleans the mirrors from dust when needed during the sample run.
- The sample is collected in a box at the bottom of the instrument.
- At the end of the run when no kernels have been detected for 30 seconds, a message will appear on the touch screen “Is the bowl empty?”. The vibrating bowl is inspected by the user to ensure that no kernels are left and if so, “Yes” is pressed. If not, press “No” and the process is repeated.
- When the analysis is finished the result is presented on the built-in touch screen.
- The images of the kernels can be viewed on the external monitor. The user can verify the images and/or reclassify images if needed.

2. Start the instrument

To start the instrument, turn the power on using the switch at the rear of the instrument, picture **B3**. Then press the On/Off button, picture **A6**, on the front panel. It will take a minute for the instrument to start and when the Start menu appears on the screen, the instrument is ready for use.

3. Turning the instrument off

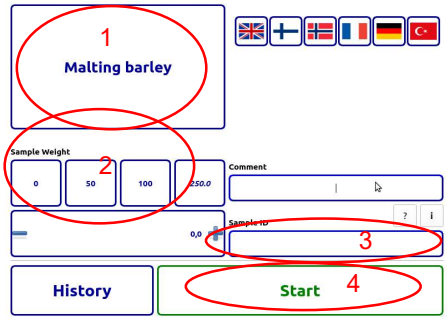
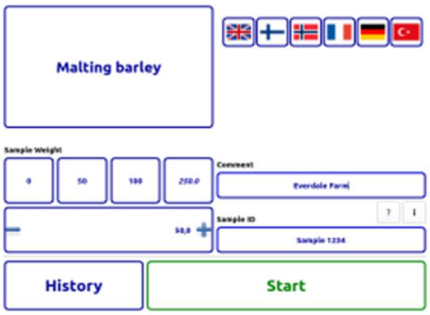
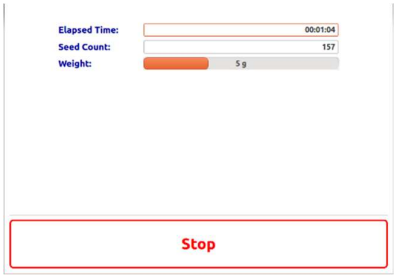
Check that the results of the latest analysis are saved, otherwise valuable data will be lost. Press the On/Off button, picture **A** and **A6**. When both the touch screen and the external computer monitor have turned off, turn the power off using the switch on the back, **B3**. Never unplug the power cord without turning off the instrument first. Cgrain AB recommends leaving the instrument with power on at all times. Warning, if backup of images or database to an external storage is installed this will be interrupted when the instrument is turned off (section **H4**).

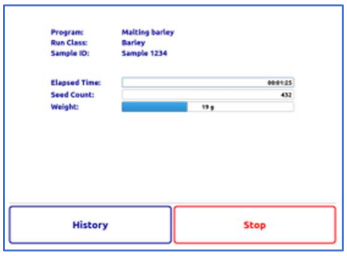
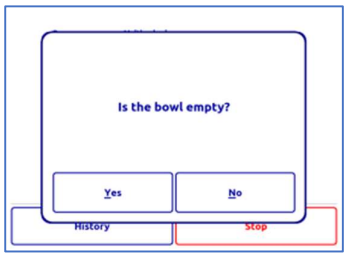
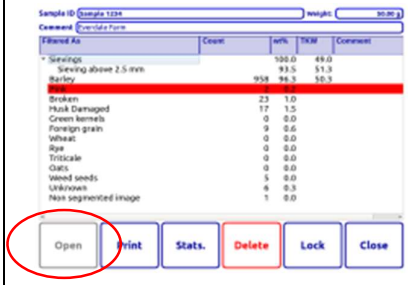
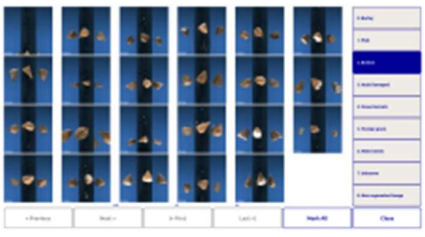
4. Restart of the instrument

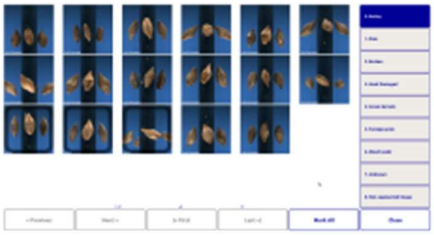
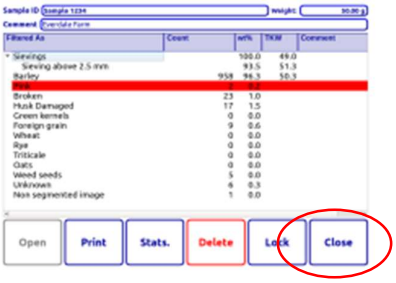
If a restart of the instrument is required, turn the instrument off as described above. Wait a few minutes before turning the power on again. Warning, never unplug the power without turning the instrument off first.

5. Running samples

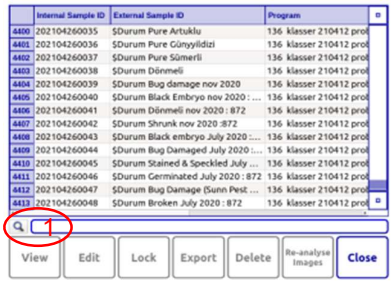
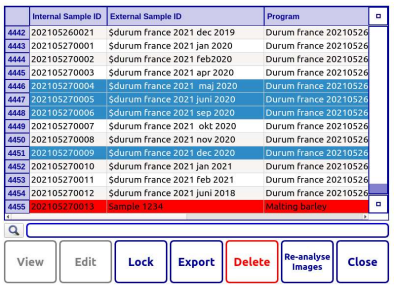
Step	Instruction	Illustration
a. Turn the instrument on	See section **I2**	
b. Check and empty the containers.	Check that no seeds are in the collecting box or the vibrating bowl (open the lid and check the bowl).	
c. Preparation of the sample	Weigh in an aspirated cereal sample (only necessary when TKW is requested). Samples containing dust and organic debris will disturb and prolong the analysis. The grain needs to be aspirated or sieved from dust and debris. Objects too large may get stuck, obstructing the flow of grain during the analysis. Recommended sieve sizes are 1-5 mm width. The sample funnel can hold a maximum 500 grams cereal sample.	
d. Introduction of the sample	Pour the sample into the funnel at the top of the instrument with the lid closed.	

e. Select the desired analysis	Select desired grain by pressing the Program button (1) until the correct grain is selected	
f. Enter the sample weight	To be able to get the TKW for the sample the weight is needed. Enter the weight of the sample by using the shortcut buttons (2) or the plus / minus buttons. The weight can also be entered using the keyboard or a barcode scanner.	
g. Programming a predefined weight of your own choice	It is also possible to predefine a weight of your own using the rightmost weight button. Add the weight numerically using the keyboard or plus / minus buttons. When pushing on the rightmost weight button the number will change to the last entered.	
h. Enter the sample ID	Enter the sample ID for reference by manually typing into the field (3) or by use of a barcode scanner. One reference field is the standard configuration.	The instrument checks that the collecting box is in place and that a reference and the weight have been entered, if not warning messages will appear.
i. Start the analysis	Start the analysis process by pressing the Start button (4) on the touch screen.	
j. Start of analysis	At the start, the instrument first calibrates the light which takes a few seconds. It also takes an image of the background to check that the mirrors are clean and the background has the correct colour. If not, a warning message will appear that “Manual Cleaning is needed”. See Trouble shooting section J4.	

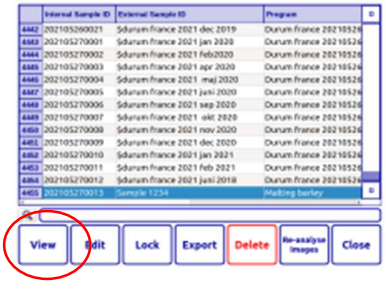
k. Analysis process	During analysis Program, Run Class and Sample ID as well as the elapsed time and the number of seeds counted will be displayed on the touch screen. If a sample weight is entered, a bar illustrating the progress of the analyses is shown. When the instrument has started you can cancel the analysis prematurely by pressing “Stop”. By pressing the “History” button you may enter the History Directory to evaluate earlier runs while still collecting new data, see I8 “Edit - Revise a sample afterwards” The instrument stops when no seeds have been detected for 30 seconds. Check that the vibrating bowl is empty by opening the lid. Then confirm if the bowl is empty or not.	 
l. Empty the collecting box.	Empty the collecting box by pulling out the container, **A5**. Empty the box and put it back in position. If the box is missing, the instrument will not start the next sample, and a warning sign will be shown.	
m. Results	The “Results table” will now be displayed. The revision of the results can be carried out immediately or at a later time. In this case, select “Close” and see **I8**. Revise a sample afterwards.	
n. Edit results	Mark a category in the result table and press “Open”.	
o. Display of the kernels	The images of the kernels belonging to the selected category are displayed on the external monitor. If the category contains more than 24 images you can scroll the image window using the “Next” and “Previous” keys.	

p. Enlarging the view of a kernel	By double or right clicking on an image it will be displayed in a larger format to scrutinize and verify. A right click will change the view back to the to the smaller images.	
q. Selection of images	Select the images you want to re-classify to another category by moving them to a different category by CTRL-clicking on the image/s one by one or select all the images by clicking Mark All. A selected image will appear with a red perimeter. Note that CTRL-clicking at an image again will deselect that image.	
r. Re-classification s. Save the reclassification	Move the selected images into a different category by clicking the appropriate “Category button” in the right column. Now, the selected images will appear with a dark frame and the text on the image/s change will reflect the new category. Press “Close” to save the changes to the classifications of the sample.	
t. Save and exit the analysis	In the Results table each category that has been revised is identified by the text turning blue for the category in question. This means that it has been approved. After going through the selected categories and possibly reclassifying pictures, save the result pressing the “Close” button.	
u. Optional warning limits and control questions before finalising the analysis report.	It is possible to set warning limits for each category. When a limit is exceeded, the background colour for that category turns red, and must be revised. This feature is configured by Cgrain.	
v. Locking of the analysis result	It is also possible in the program to specify that the user can lock the analysis results. This function is configured by Cgrain.	

6. Functions in the History directory

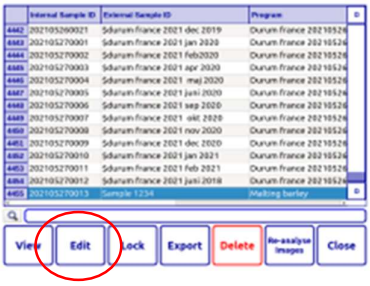
Step	Instruction	Illustration
a. Start Menu	On the Start menu, press the button “History”.	
b. History directory	The history directory contains a listing of the analyses made, saved and kept. Below the list of analysis reports you find a search field (1). In this field it is possible to text search for samples either by Internal sample ID, Sample ID or Program used. Samples marked in red are above set warning levels and have not been revised.	
c. Actions performed in the History directory	In the History list several actions can be carried out; “View”, “Edit”, “Lock”, “Export“ and “Delete”, described in sections 7 – 11 to follow. To select an analysis report by clicking the corresponding row. If you want to choose several reports, use Ctrl or shift key while clicking to select the reports. The “View” and “Edit” actions are disabled when more than one reports is marked. Press “Close” to return to the Start Menu or the current sample.	

7. View — view previous samples and corrections of each sample

Step	Instruction	Illustration
a. Choose the sample in the History directory	Mark the sample report you wish to evaluate in the directory list and select “View”.	

b. View- see result table	The current report is displayed.	
c. Show corrections	Press “Show corrections” when you want to see the manual corrections that have been made. When viewing the category in this mode, every image will state the category the kernels were first classified in. Press “Show Corrections” again to return to the final result.	

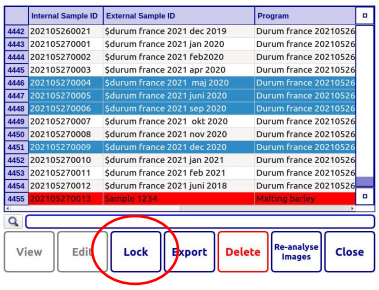
8. Edit — revise a sample afterwards

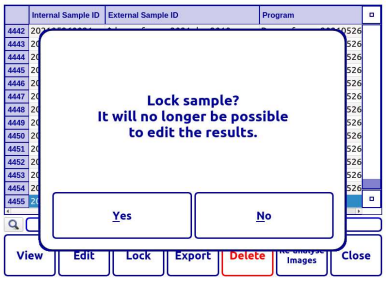
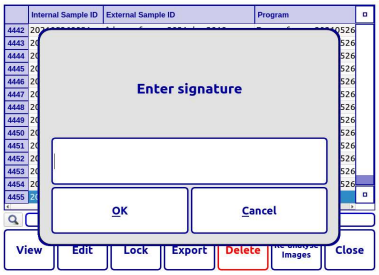
Step	Instruction	Illustration
a. Choose the sample in the History directory	Mark the sample report you wish to evaluate in the History table and select “Edit”.	
b. Revise results	Corrections are done as described in section section **I5,**“Running samples”, paragraphs ***n*** to ***s***.	

9. Lock — lock samples so that no changes can be made (optional)

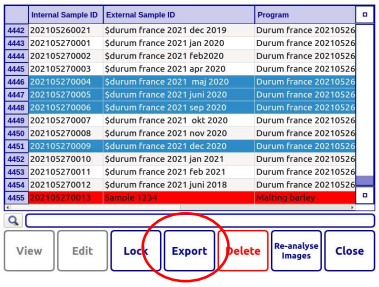
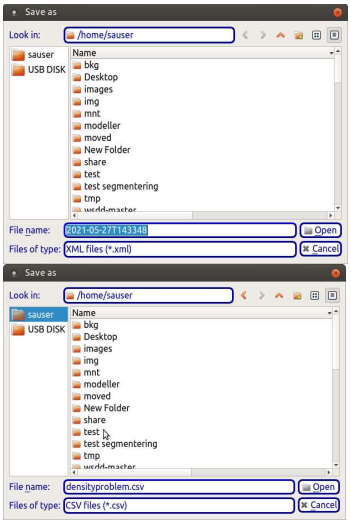
Sample results can be locked when the operator has accepted the result. Locking a result means that this sample can no longer be edited. To lock a sample, the operator adds his signature. It is also possible for the operator to lock the samples after each run. Locking of results are required to perform “Automated export of data” *(section **H8**)*.

How this should work is configured by Cgrain AB as specified by the user.

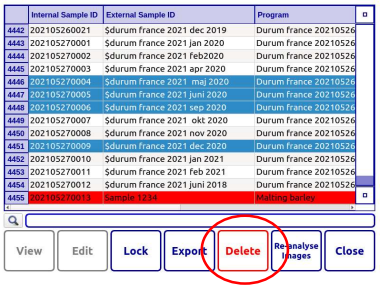
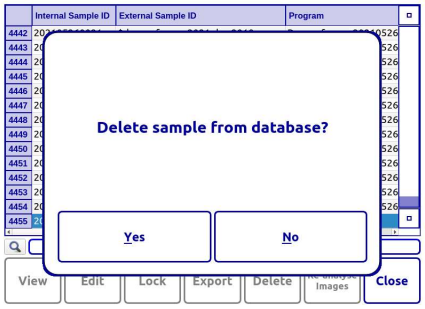
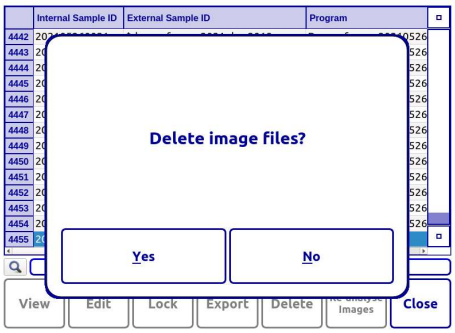
Step	Instruction	Illustration
1. Choose the sample or samples in the History directory	In “History” select the samples you want to lock. Press “Lock”. Select an analysis report by clicking the corresponding row. If you want to choose several reports, use Ctrl or shift key while clicking to select the reports. Lock sample? It will no longer be possible to edit the results. Press “Yes” to lock the sample.	

	Enter Signature with keyboard or barcode scanner. Press “Ok”. (It can be configured by Cgrain which signatures that are valid).	 

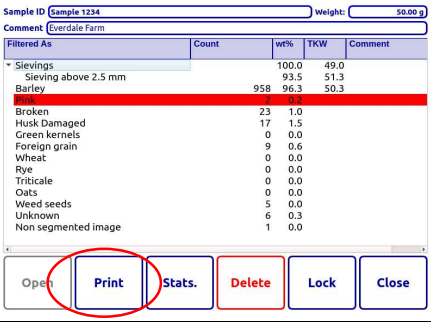
10. Export — export results, images or statistics from several samples

Step	Instruction	Illustration
1. Choose the sample or samples in the History directory	In “History” select the sample reports you want to export the results from. Press “Export”. To select an analysis report, click the report. If you want to choose several reports this is possible by using the mouse and Ctrl or shift key while clicking to select the reports.	
2 Select what you want to export	Data, Images or Statistics	
3. Select destination	Select the location to which the results are to be saved *e.g.,* to USB memory. Press “Open”. The Result file is exported in XML format. The file will contain the results from the result table as well as mean and standard deviations from the features in Statistics Images are saved in a folder specified by the user. Statistics are saved in CSV format with all kernel data in the same file.	

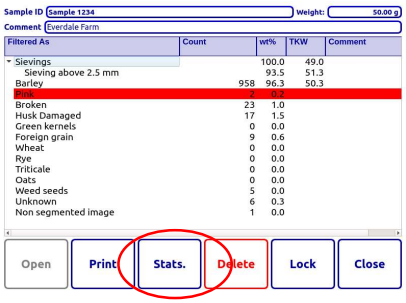
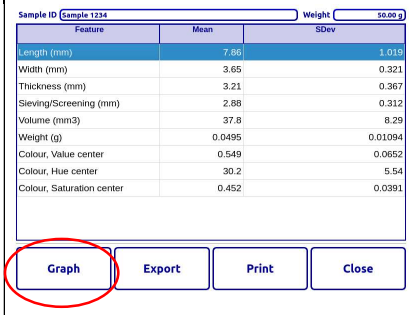
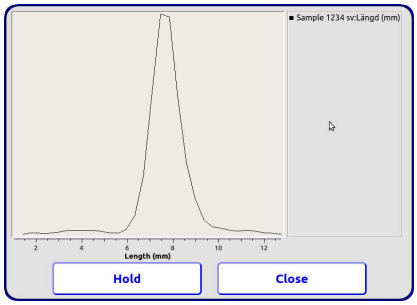
11. Delete analyses

Step	Instruction	Illustration
1. Choose the sample or samples in the History table	In “History” select the sample report you want to delete. Press “Delete”. To select an analysis report, click the report and that row turns orange. If you want to choose several reports this is possible by using the mouse and Ctrl or shift key while clicking to select the reports.	
2. Confirm	Select “Yes” to erase both the results and the images. Press “No” to cancel.	
3. Only erase images	Select “No” in the previous step. Next question is: Delete image files? Press “Yes” to erase image files but leaving the results intact. Press No and both results and images are left. NOTE! By default, the images are deleted automatically when space for new data is required. Results are not erased automatically.	

12. Print results per sample

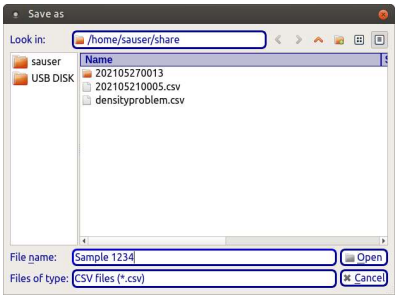
Step	Instruction	Illustration
1. Print results	In the “Results table”. Press “Print”.	
2. Choose a printer	Choose printer. The report is printed. If no printer is available, print to PDF and store report in a directory of your own choice.	

13. Statistics

Step	Instruction	Illustration
1. Result table	Open a report from a sample in the “History directory” or the report for the ongoing analysis. Press “Stats”.	
2. Statistics table	In the “Statistics table”, the measured and calculated features of the analysed grain are presented. For each feature the mean and the standard deviation is obtained. Select a feature. Press “Graph”.	
3. Graph	The distribution for the chosen feature sample is displayed in the “Graph “window.	
4. Features — overlay graph	To show distribution from more than one sample in the same graph - overlay view. Close the Graph window by clicking “Hold”. Close the “Results	

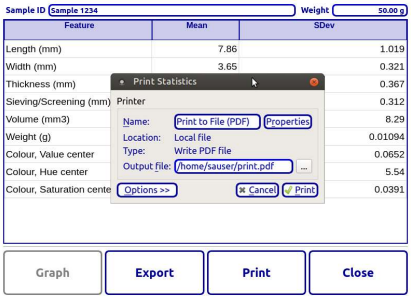
	table", back to the "History table". Chose another sample. Press "Stats" and choose the same feature as before. Now two distributions will be displayed in the same graph. If the procedure is repeated more distributions will be added to the graph. Press Close to empty the graph from previous samples.	

14. Export statistics for every kernel in the sample

Step	Instruction	Illustration
1. Statistics table	Select "Export" in the "Statistics table". An export will contain all statistics for all kernels will be created in CSV-format.	
2. Select destination	Select the folder where the file shall be saved *e.g.* to USB memory. Press "Open" and CSV-file will be saved.	

15. Print the statistics result

Step	Instruction	Illustration
1. Print statistics	In the "Statistics table" select "Print".	

2. Choose printer	Choose printer. The report is printed. If no printer is available, print to PDF and store report in directory of your own choice.	

J. Trouble shooting and support

1. Mouse/ Keyboard not working correctly

Check all cable connectors to USB ports are OK.

2. The program doesn't start

If possible, first try to restart the Cgrain Value instrument; that should bring the Seedanalyzer program back again, but don't hesitate to contact Cgrain Support by email or phone for quick remote help.

3. Support contact

For support issues please contact support@cgrain.se

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4. Explanation of error and information messages (in alphabetical order)

Message	Choices	Type	Context	Cause	Solution
A sample with that sample ID already exists. Delete it from history first.	OK	Information	Start a sample	The sample ID is already in use.	Use a new ID or delete the old sample from the history.
Backing up files, please wait!	Abort	Information	Backup	backup in progress	Wait for the backup to finish. If that is not possible press ”Abort”.
Bad image quality. Clean sample and run again!	Yes	Warning	Sample finshed	The sample contain too much dust or particles.	Clean sample by aspiration or sieving and run again.
Box is not in place	Yes	Error	Start a sample	The collector box is not detected.	Replace box.
Camera dropped images! (nnn)	Yes	Error	Sample finshed	The communication with the camera failed. The number of images dropped is indicated in the message	Restart the instrument and rerun the sample. If the problem persists, please contact Cgrain support.
Camera failed to init!	Yes	Error	Start a sample	The communication with the camera failed.	Restart the instrument. If the problem persists, please contact Cgrain support.
Camera stopped working!	Yes	Error	Sample finshed	The communication with the camera failed.	Restart the instrument and rerun the sample. If the problem persists, please contact Cgrain support.
Can't find the backup disk!	Yes	Warning	Backup	The backup disk is missing or has failed.	Reattach the external disk and if that does not help, connect the disk to a Windows computer and check it for errors.
Could not export CSV file	Yes	Error	Export	Disk write error.	Try another file name or location.
Could not export XML file	Yes	Error	Export	Disk write error.	Try another file name or location.
Could not log in	OK	Error	Export	Invalid user/password combination.	
CSV file exported successfully	Yes	Information	Export		
Delete image files?	Yes/No	Question	Delete sample		
Delete sample from database?	Yes/No	Question	Delete sample		
Disk is full, remaining images will not be saved!	Yes	Error	Running a sample	No space left on the internal disk.	Delete some files and empty the trashcan. If this does not help, please contact Cgrain support.
Disk is full. Move images to USB? Answering 'No' will delete them!	Yes/No	Error	Start a sample	No space left on the internal disk.	Delete some files and empty the trashcan. If this does not help, please contact Cgrain support.

Message	Choices	Type	Context	Cause	Solution
Enter code: ___ nn day(s) left	OK/Cancel	Information	Start a sample	Software license is due to expire.	Enter the new code and press ”OK”. Press ”Cancel” to enter the code at a later time. When the software license has finally expired, it will not be possible to use it until a code is entered. Contact Cgrain if a new code is needed.
Export data or images?	Results/ Images/ Stats	Question	Export		
File already exists!	Overwrite/ Append/ Cancel	Warning	Export		
File contains incompatible data!	Yes	Error	Export	Trying to append data to an incompatible data file.	Export to a new file or delete the old file.
Images exported successfully	Yes	Information	Export		
Is the bowl empty?	Yes/No	Question	Running a sample	To check and verify that the sample has finished and no kernels remain in the bowl.	Lift the lid and verify that the bowl is empty. Press ”no” to start the bowl again.
Lock sample? It will no longer be possible to edit the results.	Yes/No	Question	Lock sample		
Low space on backup!	Yes	Warning	Backup	no space left on the external disk	Delete some files and empty the trashcan or replace the disk
Manual cleaning is needed!	Retry/ Abort/ Ignore	Error	Start a sample	Image area needs cleaning	See chapter D. Cleaning and maintenance. Sample can still be analyzed with ”Ignore”, but performance may be affected.
No image from camera! Restart the machine if retry does not help.	No/Retry	Error	Start a sample	The communication with the camera failed.	Restart the instrument. If the problem persists, please contact Cgrain support.
Please check results!	Yes/No	Warning	Sample finshed	The result is outside specified limits.	Please check rows marked in red
Please check the mirrors.	Retry/ Abort/ Ignore	Error	Start a sample	The mirrors are off-center on the test image.	Contact Cgrain support. Sample can still be started with ”Ignore” but performance may be affected.

Message	Choices	Type	Context	Cause	Solution
Please check the mirrors.	Retry/Abort	Error	Start a sample	The test image was black.	Attach the mirrors. If it is already in place, check that the LED's are working properly.
Sample too small or wrong kind of grain.	Yes	Warning	Sample finshed	The sample is estimated to have weight much lower than the weight entered by the user.	Check that the bowl is empty and that the sample is run with the correct settings.
Signature cannot be empty!	OK	Error	Lock sample	Tried to lock a sample with an invalid signature.	Use a valid signature.
Signature not recognised!	OK	Error	Lock sample	Tried to lock a sample with an invalid signature.	Use a valid signature.
Some images could not be read from disk!	Yes	Error	Running a sample	Disk read error.	Please contact Cgrain support.
Some images could not be written to disk!	Yes	Error	Backup	No space left on the external disk.	Delete some files and empty the trashcan or replace the disk.
Some images were not exported successfully	Yes	Error	Export	Disk write error.	Try exporting to another location.
Start without a sample ID?	Yes/No	Question	Start a sample	Sample ID field is empty	
Start without a weight?	Yes/No	Question	Start a sample	The sample weight is missing. The weight is needed to calculate the result correctly.	
This sample is currently being edited by someone else!	OK	Error	Edit	The sample is being edited remotely.	Try again later.
Unchecked results cannot be locked!	Yes	Error	Lock sample	The result has values outside the specified limits.	Check rows marked in red. When all images have been checked the text for that row will turn blue..
Unknown file format!	Yes	Error	Export	You tried to export to a file with an unsupported file extension.	Use .xml or .csv
XML file exported successfully	Yes	Information	Export		

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