



chemagic 360-D

CE IVD

REF

2024-0010 INSTRUMENT MANUAL

revvity



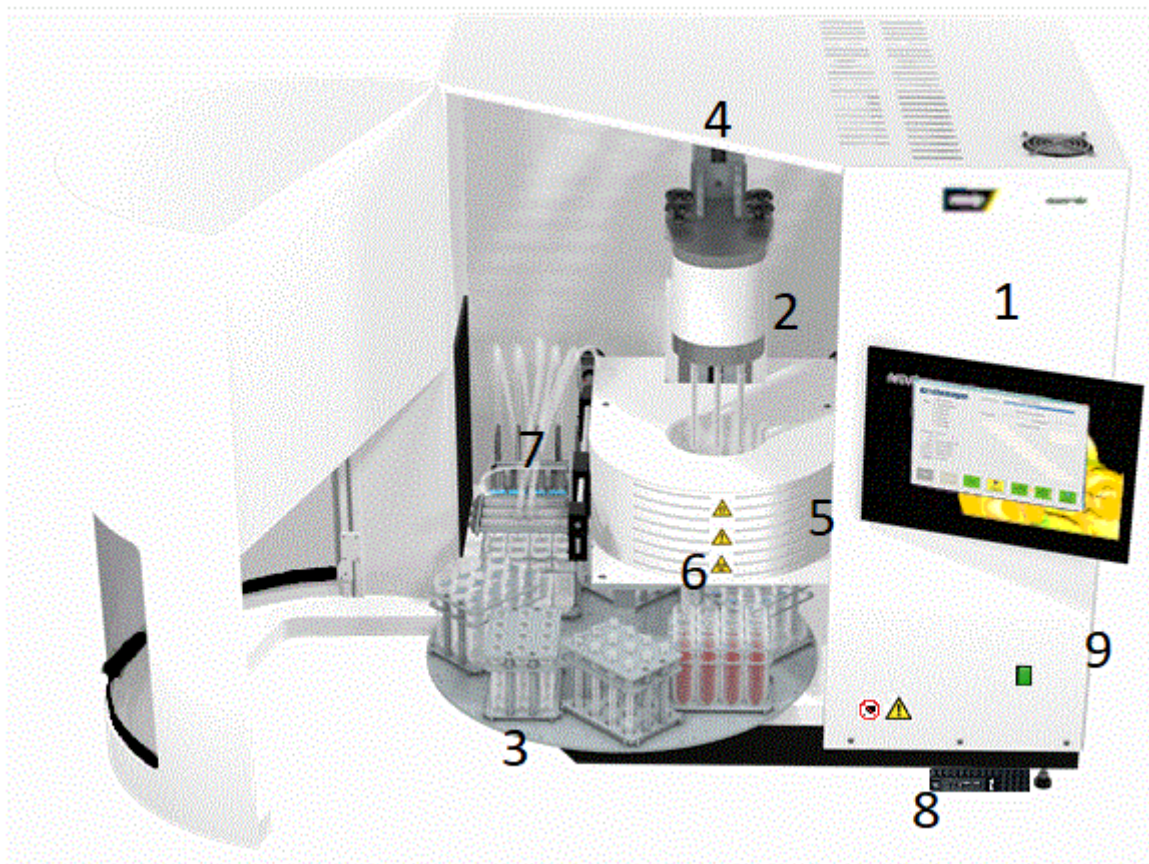
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## General information

The **chemagic 360-D** system can be used with broad variety of sample material and sample volumes.



**Figure 1: Overview of the chemagic 360-D instrument and its main components**

1. panel with monitor and power switch
2. chemagic Rod Head
3. x-axis (sample carrier)
4. z-axis
5. electromagnet
6. drop cover
7. chemagic dispenser
8. PC
9. electronic cabinet

## Changes from previous manual version

No content changes between the current and previous version. Company name and logo updated.

## Trademarks

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## Intended purpose

The chemagic 360-D is an IVD instrument intended to be used for DNA and RNA extraction. The instrument is automated and intended to be used by trained laboratory personnel.

The instrument can be used in combination with an IVD assay if the instrument is listed as a compatible device in the instructions for use of that particular assay. The function, specific disorder, condition, risk factor to be identified, the product's quantitative and qualitative properties, the specimen type, and the testing population are based on and described within the intended purpose of the applicable assay.

## Table of symbols

Symbol	Description
	CE conformity marking
	Manufacturer
	Date of manufacture
	Biological risks
	Powerful electromagnet included
	Hot surface
	Caution, consult instructions for use
	Persons wearing a pacemaker must keep a safe distance of at least two meters from the instrument
	<i>In vitro</i> diagnostic medical device
	Catalogue number

Symbol	Description
	Serial number
	Consult instructions for use
	Certificate from SGS testing laboratory
	This way up
	Fragile, handle with care
	Keep dry
	WEEE, follow local guidelines when disposing of the instrument

## Principles of operation

The instrument is used in combination with various chemagic Kits delivering high yield of pure DNA/RNA. Protocols can be added to the system by loading the appropriate protocol in to the PC controlling the instrument.

The magnetic separation is achieved by metal rods, magnetized by an electromagnet. Resuspension of once separated magnetic particles in to liquid is accomplished by rotation of demagnetized metal rods.

## Safety information

This section describes the main safety precautions (electrical, mechanical and biological) to be taken while operating the **chemagic 360-D** instrument as well as the main hazards involved. Please read this section very carefully before using the **chemagic 360-D** instrument and ensure that you understand the described topics.

### Conventions

The following conventions are used in all system documentation:



**Warning:** A warning indicates a hazardous situation or operation that, if not avoided, could result in serious personal injury or death to the operator or the patient. Follow all stated precautions.



**Caution:** A caution indicates an operation that could cause damage to the instrument or loss of data, or personal injury to the operator or the patient if correct procedures are not followed.

**Note:** A note emphasizes significant information in a procedure or description, and alerts users to key points of interest not related to personal injury.

In cases where a specific hazard or warning has been identified – such as an electrical or burn hazard – that symbol is added to the cautions and warnings.

### Warnings and precautions



**Caution:** The **chemagic 360-D** instrument should only be used by adequately trained personnel.



**Caution:** Any interruption of power during an extraction run can cause the loss of your sample material. If this is unacceptable, use an uninterruptible power supply (make sure the power supply can provide the required overall capacity).



**Caution:** When operating the **chemagic 360-D** instrument, always wear appropriate protective equipment, consisting of a laboratory coat, protective gloves and safety glasses. Do not touch the lab ware with unprotected hands to avoid direct contact with potentially hazardous substances and to prevent any cross contamination of the hardware.



**Caution:** For a safe and reliable operation of the **chemagic 360-D** instrument, it is a prerequisite to follow the cleaning and maintenance intervals as described in [Service and maintenance](#) on page 40. Do not use aggressive cleaning agents such as acetone or hypochlorite solutions (or similar) to clean and disinfect the system.



**Caution:** The **chemagic 360-D** instrument includes a powerful electromagnet that is activated during the extraction process.



**Warning:** Persons wearing a pacemaker must keep a safe distance of at least two meters from the instrument.



**Warning:** To build up and maintain a sufficient magnetic field the electromagnet is charged with a high electrical current, which generates a significant amount of heat. Thus the magnet's housing can be very hot during and also after operation. Do not touch it and do not cover the ventilation outlets of the system.



**Caution:** Always operate the system with the door closed. While the **chemagic 360-D** instrument is running do not place your hands in the way of any moving part - keep your head and hands away from the deck, the magnet, the **chemagic Rod Heads** and all other parts and areas of the system. Unless explicitly prompted, do not manipulate any lab ware during a running extraction procedure.



**Caution:** Always use disposable sleeves according to the positions of your samples in extraction runs. Failure to do so results in contamination of the system and will require immediate disinfection and cleaning of the instrument (see section [Cleaning and disinfection of the chemagic 360-D instrument](#) on page 42).



**Caution:** Switch off the power during maintenance, service and cleaning of the **chemagic 360-D** instrument and when the system is not used.



**Caution:** Never disable or override any safety measure of the system.



**Caution:** At the end of an extraction run and prior to setting up a new one, ensure that no disposable sleeves are left on the metal rods of the **chemagic Rod Head**.



## Electrical safety precautions



**Caution:** Before opening the electric cabinet of the **chemagic 360-D** instrument or removing any electrical or mechanical parts, the instrument has to be switched off and disconnected from the electrical power supply.



**Warning:** All servicing of the instrument is to be performed by qualified Revvity personnel.

**Note:** The instrument must be connected to a grounded electrical outlet.

**Note:** Ensure clear access to the rear of the instrument so that the power cord may be disconnected easily if needed.

## Biological safety precautions



**Caution:** The **chemagic 360-D** instrument maybe used with a broad variety of sample materials. These can include potentially biohazardous substances. If the **chemagic 360-D** instrument becomes contaminated with any sample material it has to be disinfected and cleaned as soon as possible. Please follow the instructions in [Cleaning and disinfection of the chemagic 360-D instrument](#) on page 42.



**Caution:** Treat all samples and waste as potentially infectious. Wear protective clothing and gloves and use safety glasses. For instructions on reagent handling, refer to the corresponding kit insert. Treat all waste as potentially infectious and dispose of it according to your local guidelines.

## Computer precautions



**Caution:** Only the PC that is delivered with the **chemagic 360-D** instrument including the original chemagic Software may be used to control the **chemagic 360-D** instrument. The chemagic Software also needs to be licensed for the use in combination with a liquid handling system. Extraction protocols must not be changed by operators or anyone else who has not been trained and authorized in these matters by Revvity.



**Caution:** Power saving and screensaver functions are configured to be disabled on the PC controlling the **chemagic 360-D** instrument and they must remain so. If enabled, one of these functions may activate while the instrument is running, which will result in the interruption of the instrument control, leading to a run failure.

## Electromagnetic information and precautions

The **chemagic 360-D** instrument electromagnetic compatibility complies with IEC/EN 61326-2-6.

This equipment has been designed and tested to CISPR 11 Class A. In a domestic environment it may cause radio interference, in which case, you may need to take measures to mitigate the interference.

The electromagnetic environment should be evaluated prior to operation of the device.



**Caution:** Biological hazard. Treat all samples and waste as if they were infectious. Wear adequate protective gloves and clothing and use safety glasses



**Warning:** Moving parts. Keep your hands, head and other body parts away from the moving parts while the instrument is in operation.



**Warning:** Electrical current. Do not touch electrical parts, cables or wires while the instrument is powered up.



**Warning:** Hot parts. Do not touch hot parts in the instrument. Give them time to cool down before you handle them.



**Warning:** Strong magnetic field.



**Warning:** Persons wearing a pacemaker must keep a safe distance of at least two meters from the instrument.



**Caution:** Hot surface. Do not touch. Allow for cooling before service.

### Safety when using the equipment



**Caution:** When operating inside the instrument, wear safety goggles, protective clothing, and gloves.



**Warning:** Touching hot parts may lead to severe injuries.



**Warning:** Serious injury may occur if body parts get pinched between moving parts.



**Caution:** When power is switched on, do not open the instrument's cover.



**Caution:** The instrument is very heavy. Do not attempt to lift the instrument.

### Notice regarding serious incidents

For a patient/user/third party in the European Union and in countries with an identical regulatory regime (IVDR; EU 2017/746/EU); if, during the use of this device or as a result of its use, a serious incident has occurred, please report it to the manufacturer and to your national authority. The contact information for the manufacturer of this device to report a serious incident is:

Wallac Oy

Mustionkatu 6, FI-20750 Turku, Finland

<http://www.revivity.com>

Phone: +358 2 2678 111

### Installation and calibration

**The chemagic 360-D instrument installation and calibration is only to be performed by personnel trained and authorized by Revvity.**

**Note:** Instrument needs to be connected to grounded electrical outlet.

**Note:** The instrument needs to be placed on clean, dry, level, and stable surface able to bear the weight of 140kg.

**Note:** Ensure clear access to the rear of the instrument so that the power cord may be disconnected easily if needed.

**Note:** The instrument should not be positioned within two meters of instruments that may be affected by magnetic field.

## The chemagic Software

The **chemagic Software** offers advanced features for quality assurance purposes. To have these functions available you have to obtain a license key that has to be entered in the "License for Enhanced Functions" area of the **System Settings**.

This manual describes the setup and use of the **chemagic Software** with Enhanced Functions enabled. For instructions on using the **chemagic Software** without features please refer to the respective manual.

## Installing the chemagic Software

The **chemagic 360-D** system is delivered with a PC on which the **chemagic Software** has been preinstalled. By default a folder "chemagic\_360" exists in the root directory of the operating system. In this folder a file "ChemagicModule\_360.exe" must be present. This is the executable for the **chemagic Software**. In addition the files "Parameter\_S1.msm", "Settings\_S1.msm" and "User\_Settings\_S1.msm" have to be in the same folder. Three subdirectories in the **chemagic 360-D** folder are needed for the software to run: "Logfiles, Protocols and Parameter".

## Starting the chemagic Software

Before you start ensure that all software components are installed according to the instructions given in the previous section of this manual.

Switch on the **chemagic 360-D** before double-clicking the desktop icon to start the **chemagic Software**. A splash screen appears, giving information about the software version and the type of license. This window will disappear after 5 seconds or on clicking the **OK** button.



*Figure 2: Splash screen with software information*

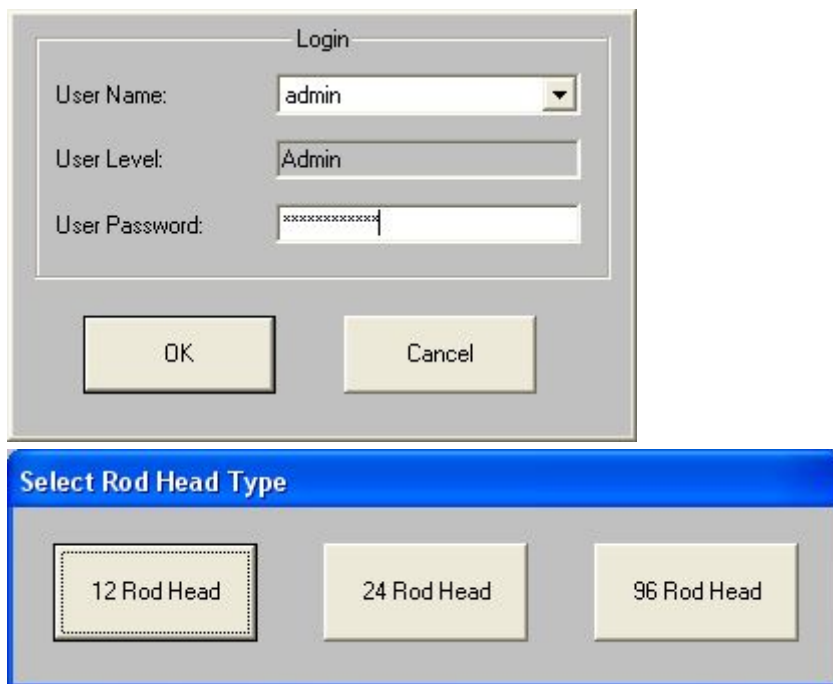
## Logging into the system

Access to the chemagic 360-D instrument user interface is restricted to users with login credentials. The credentials are system-wide.

**Important:** The temporary password provided by your administrator cannot be used to log into the system. Before logging in for the first time, you need to log into the LifeCycle program using the temporary password provided by the administrator and then create your own password. After creating your own password, you can log into the chemagic 360-D system.

## Login and Rod Head Selection

Subsequent to the splash screen a login window will open. After selecting your user name from the drop-down list, information about your user level is shown and you can enter your password. Clicking the **OK** button or hitting **Enter** opens a window for selection of the **chemagic Rod Head** of your choice.



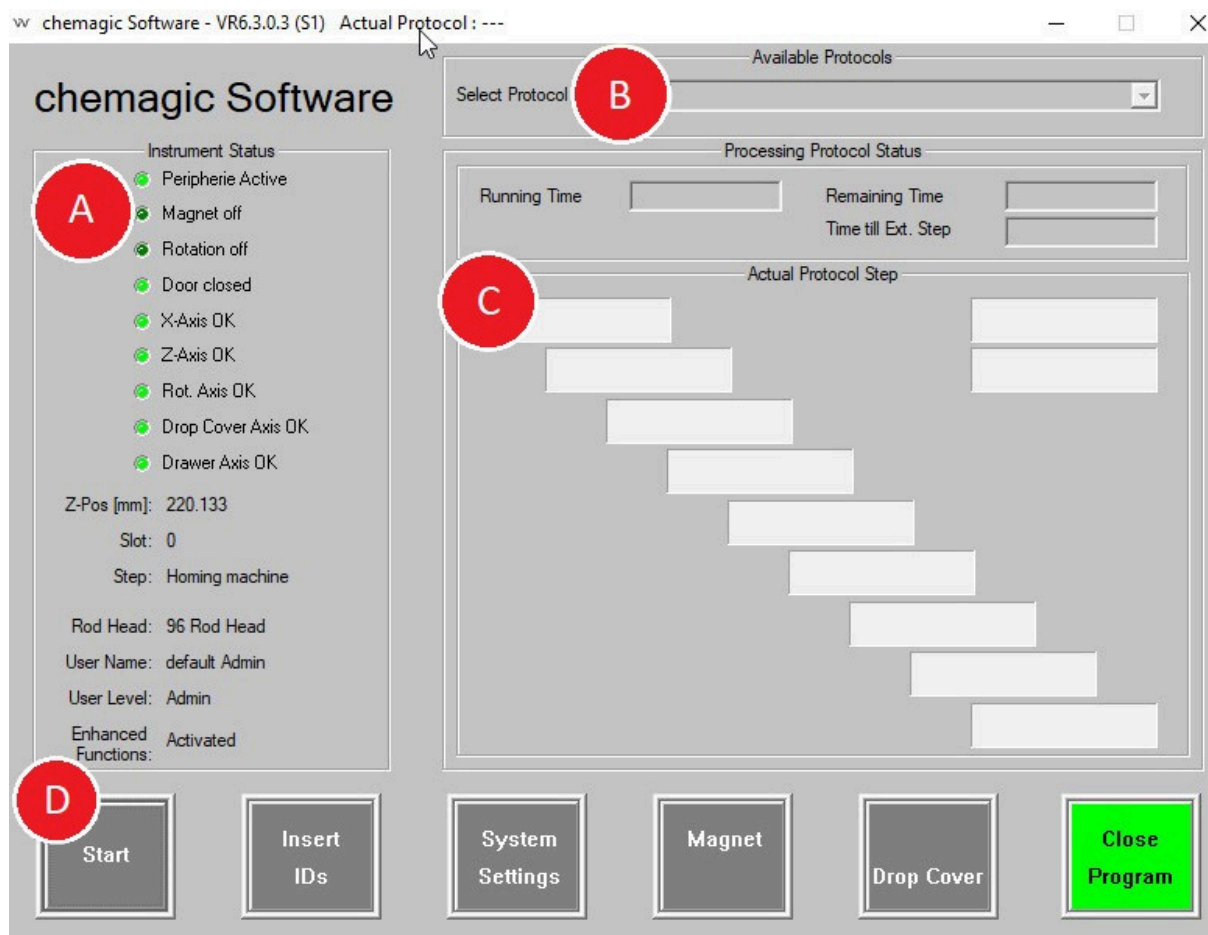
**Figure 3: Login screen and Rod Head selection**

Just click on the **chemagic Rod Head** you want to use and the Main Program Window will open. In case you have already installed a **chemagic Rod Head** before starting the software it will be detected automatically and the selection menu will be skipped.

## The main program window

Subsequent to the selection/detection of the **chemagic Rod Head** the main program window will open and both axes of the **chemagic 360-D** instrument will move into their reference positions. If this process finishes without any complications, the red lights in the "**Instrument Status**" panel next to the X- and Z-axis become green and the text changes from "**Failure**" to "**OK**" (A). In case of any errors a message box will appear.

The main window is separated into 4 different panels:



**Figure 4: The main program window**

**Panel A** shows the status of the instrument and its single components. Bright green lights indicate active components, dark green lights indicate inactive components and a red light shows a possible error situation or - in case of the axes - indicates a running calibration process. The lower part of **[Panel A]** gives information about the position of the axes, the installed **chemagic Rod Head**, the currently logged in user and the availability of the enhanced functions.

**Panel B** contains a drop-down menu for the selection of the protocols - each protocol is stored in a single file that can be found in the "Protocols" folder within the installation directory.

**For your information:** only protocols that are configured for the use with the selected **chemagic Rod Head** will be listed.

**Panel C** shows the status of the currently running protocol - e.g. it monitors the elapsed time and the time remaining for the run. In the event of using "external steps" the computer monitors the estimated time until the next external step has to be carried out. During external steps the **chemagic 360-D** instrument will pause the running protocol e.g. allowing you to access the rack carrier to add a buffer, take out a rack for a heating step etc. Some protocols require an external step.

**Panel D** comprises of different buttons to start an automated isolation protocol, to edit the Sample IDs, to access the system settings, to turn the table in the tracking system or control the drop cover. To exit the **chemagic Software** click the **Close Program** button.

## Loading and unloading the chemagic 360-D instrument with racks and/or consumables

Loading: For the automated extraction protocol racks for disposable tips and reaction tubes and/or deep well plates need to be placed on the tracking system (x-axis, [Figure 1: Overview of the chemagic 360-D instrument and its main components](#) on page 1). The racks must be loaded to the tracking system before starting the protocol run if the enhanced functions are not activated or if the sample and elution IDs are read from a file. When the enhanced functions are activated, the loading sequence and the positions are given by explicit commands of the **chemagic Software** according to the selected protocol. Open the front door and follow the single command step given by the **chemagic Software**.

Unloading: After the finished extraction protocol the before placed items need to be removed from the tracking system. Open the door and press the **Turn Table** button to have access to any position on the tracking system (Figure 4: The main program window on page 10) for unloading.



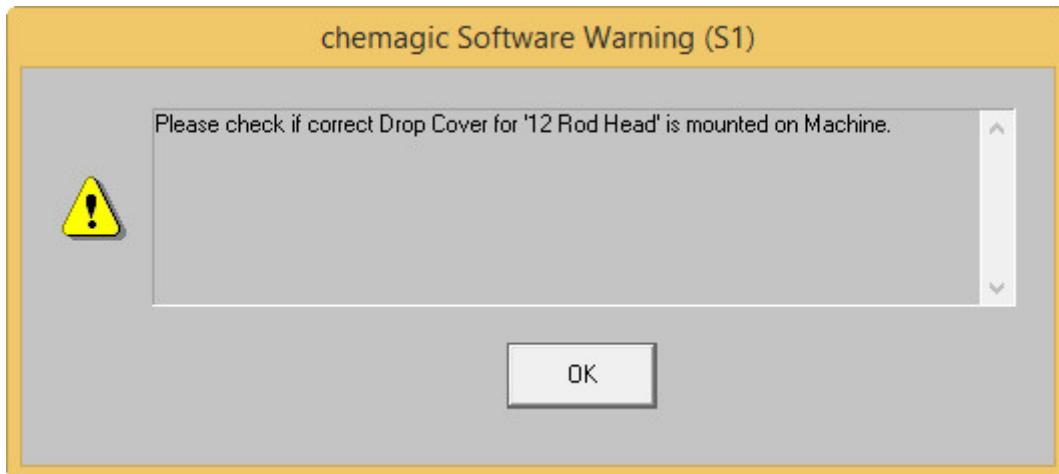
**Caution:** Do not turn the x-axis by hand. Doing so may damage the equipment.

## Switching off procedure

To power the instrument down, first close the software, then switch off the PC, and then switch off the instrument itself.

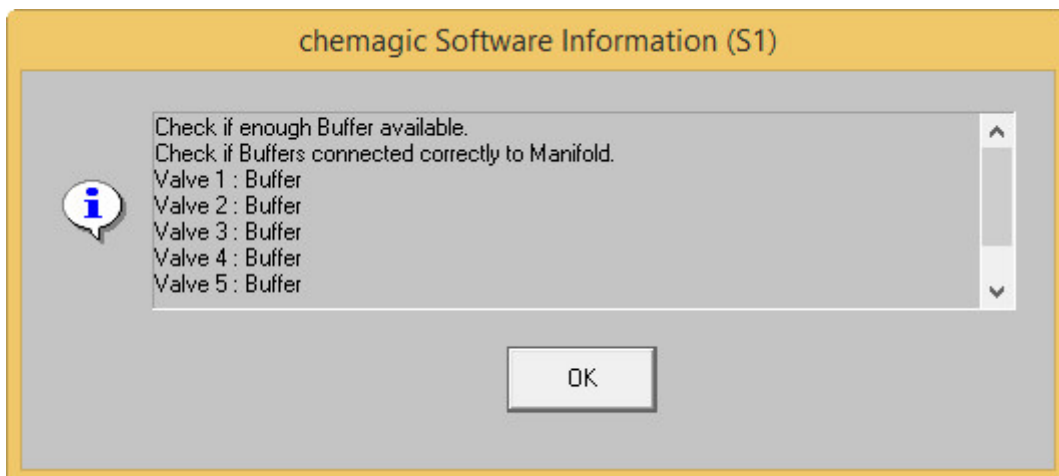
## Starting a protocol with the chemagic 12 Rod Head

With the **chemagic 12 Rod Head** installed or after selecting the **chemagic 12 Rod Head** during the startup of the software a warning window will open reminding you to ensure that the correct drop cover is installed. As the tips will automatically be removed during the isolation process it is absolutely necessary to have the right drop cover for the **chemagic 12 Rod Head** installed.



**Figure 5: Reminder for installing the Drop Cover**

To run an automated isolation procedure, select the protocol of your choice from the drop-down menu from the Main Program Window and click the green **Insert IDs** button.



**Figure 6: Instructions for connecting the buffers**

Depending on the individual configuration of your **chemagic 360-D** system, you will have different setup steps to follow:

## Running a protocol with the chemagic Dispenser installed

**Note:** If you do not have the **chemagic Dispenser** installed, please refer to section [Running a protocol without the chemagic Dispenser installed](#) on page 14.

Clicking the **Insert IDs** button opens an information window with instructions for connecting the buffers to the different valves of the **chemagic Dispenser**.



Starting a protocol with the chemagic 12 Rod Head

**Number of Samples for Prefilling**

Position in Rack

A4	B4	C4
A3	B3	C3
A2	B2	C2
A1	B1	C1

Insert Tubes to 'all Racks' according to color of Rack Position :  
Green (Tube for Sample), Orange (empty Tube), Grey (no Tube)

Select Number of Samples

12

OK

**A**

**Number of Samples for Prefilling**

Position in Rack

A4	B4	C4
A3	B3	C3
A2	B2	C2
A1	B1	C1

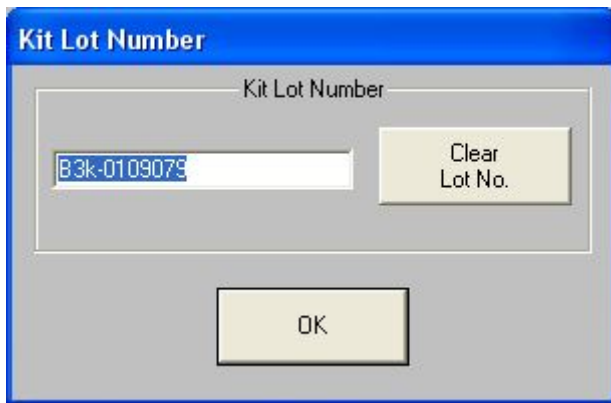
Insert Tubes to 'all Racks' according to color of Rack Position :  
Green (Tube for Sample), Orange (empty Tube), Grey (no Tube)

Select Number of Samples

7

OK

**B**



**Figure 7: Setting up the chemagic Dispenser for the chemagic 12 Rod Head**

Please read these instructions carefully and make sure that all buffer containers contain sufficient amounts of buffer. To continue click the **OK** button. A new window opens, allowing you to select the sample positions to be automatically filled by the **chemagic Dispenser** (A). By default all 12 tube positions are preselected and therefore green.

If you have less than 12 samples, you can select the exact number of samples from the drop-down menu (B). Please keep in mind that due to its design the **chemagic Dispenser** always fills entire rows i.e. manifolds of 4. Positions without samples in partially filled rows will be marked in orange to indicate that those positions will be filled with buffer. Make sure to place empty tubes into those positions to avoid any spillage.

After entering the sample positions for automated buffer dispensing click **OK** and a new input window opens asking you to enter the lot number of the kit to be used during the isolation run. By default this window shows the last entered kit lot number. The easiest way to enter the data is by using the barcode scanner, but you can also enter the number manually. After entering the lot number of the kit and confirming with **OK** a new window for the registration of your samples will open.

A detailed instruction of how to register your samples is given in section [Entering Sample IDs \(chemagic 12 Rod Head\)](#) on page 14, so please continue reading there.

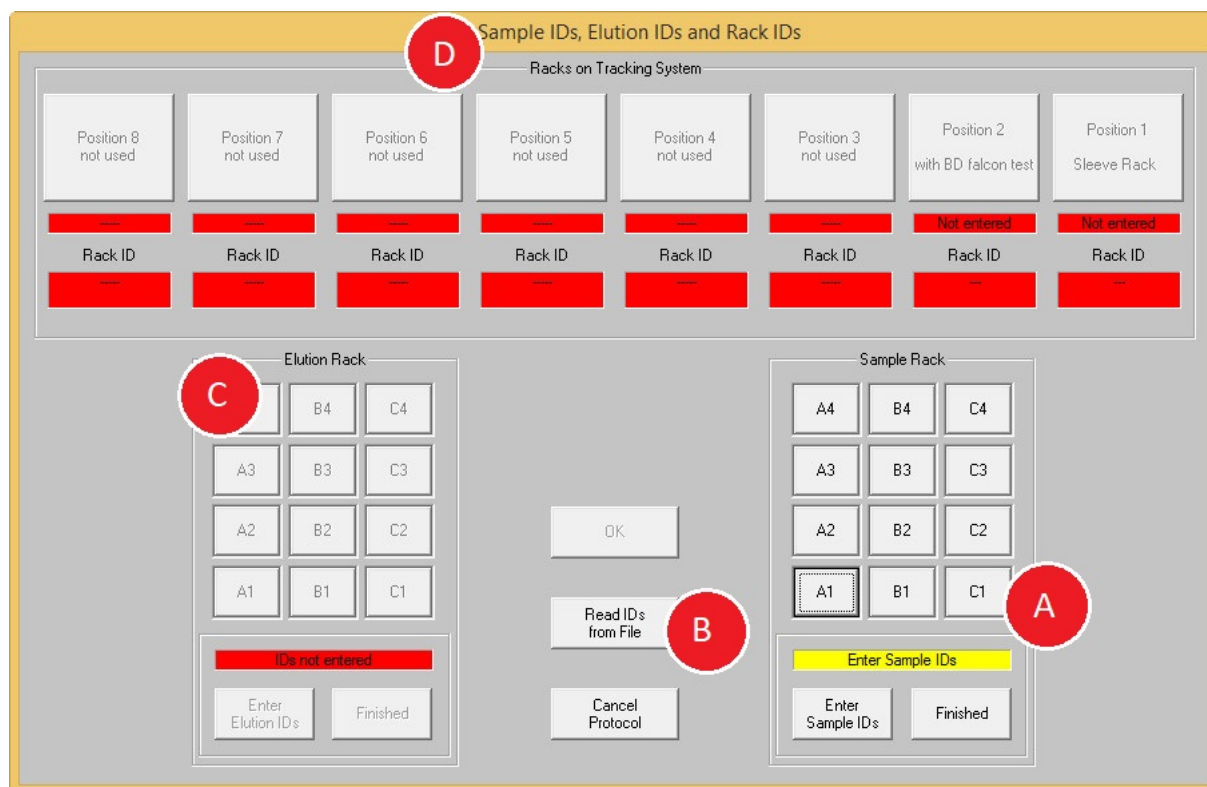
## Running a protocol without the chemagic Dispenser installed

Without the **chemagic Dispenser** you have to pipette the buffers manually into their respective tubes on the different racks. Please refer to the individual protocol of the kit you are using for detailed information about the pipetting scheme.

After clicking the **Insert IDs** button you can enter the lot number of the kit before you can continue with registering the IDs of your samples (see section below).

## Entering Sample IDs (chemagic 12 Rod Head)

The **chemagic Software** offers a feature to register the IDs of your samples and their respective eluates which will be stored in the log files generated during the isolation process. In addition you can register the IDs of the racks used for buffers, eluates and tips.



**Figure 8: Entering the Sample IDs (chemagic 12 Rod Head)**

The process of sample registration is started subsequently to entering the lot number of the kit to be used. A new window which is separated into 4 different areas will open.

**Panel A** gives a schematic overview of the rack and allows you to allocate the positions of your samples.

**Panel B** comprises of 3 buttons to cancel the protocol, read the Sample IDs from a file and an **OK** button to finish the registration process.

**Panel C** gives a schematic overview of the elution rack and the positions of the eluates and allows assigning IDs to the elution tubes.

**Panel D** shows the positions of the racks containing the tips and tubes for samples, buffers, eluates and magnetic beads on the Tracking System x-axis and allows you to assign individual IDs to them.

Overview Sample IDs, Elution IDs : Enter Sample IDs

A4	Sample ID	<input type="text"/>	B4	Sample ID	<input type="text"/>	C4	Sample ID	<input type="text"/>
	Elution ID	<input type="text"/>		Elution ID	<input type="text"/>		Elution ID	<input type="text"/>
A3	Sample ID	<input type="text"/>	B3	Sample ID	<input type="text"/>	C3	Sample ID	<input type="text"/>
	Elution ID	<input type="text"/>		Elution ID	<input type="text"/>		Elution ID	<input type="text"/>
A2	Sample ID	Sample 2	B2	Sample ID	<input type="text"/>	C2	Sample ID	<input type="text"/>
	Elution ID	<input type="text"/>		Elution ID	<input type="text"/>		Elution ID	<input type="text"/>
A1	Sample ID	Sample 1	B1	Sample ID	<input type="text"/>	C1	Sample ID	<input type="text"/>
	Elution ID	<input type="text"/>		Elution ID	<input type="text"/>		Elution ID	<input type="text"/>

Insert Sample/Elution ID

Sample ID

Elution ID

**Figure 9: Entering the Sample IDs**

To enter the Sample IDs click on the sample position you want to start with. A new window will open with the sample position preselected (A). Alternatively you can click on the **Enter Sample IDs** button which will open the window mentioned above, but without preselection of the first sample position.

You can easily enter your Sample IDs with the barcode scanner or by typing them into the provided input field (B). After entering the Sample ID (and clicking **ID entered** or hitting **Enter** for the manual input) the color changes from red to green and the ID appears in the adjacent text field. The next sample position is automatically selected - either horizontally or vertically - depending on the settings. Repeat this procedure until all Sample IDs are entered.

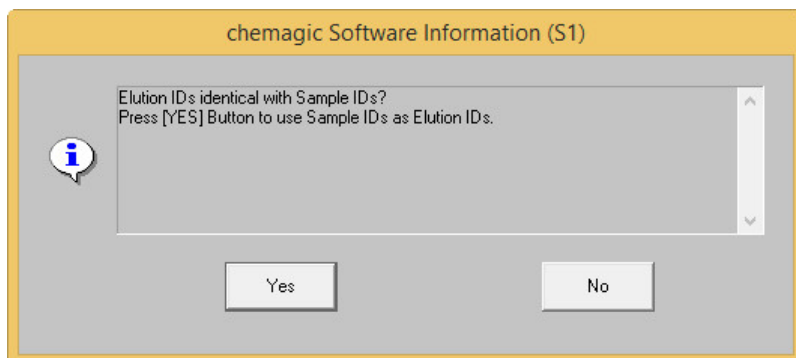
Once the registration of the samples is completed you can print the list (C) as a template for pipetting or for archiving purposes. Click **OK** to return to the previous screen.

## Reading IDs from a file

Instead of entering the Sample IDs one by one you can prepare the sample sheets in advance and load them from a file into the program. The file has to be saved in the \*.txt format and the Sample IDs have to be entered one per row. To read the IDs from a file click the **Read IDs from File** button (Figure 8: Entering the Sample IDs (chemagic 12 Rod Head) on page 15). A dialogue window will open allowing you to select the file you have prepared earlier. After the selection of the file a window opens from which you can directly start the isolation procedure (Figure 12: Final instructions before starting the run on page 18).

## Entering Elution IDs

After entering the Sample IDs, continue by clicking the **Finished** button. A small window opens and you can choose whether the Elution IDs are identical to the Sample IDs.



**Figure 10: Option to apply the Sample IDs as Elution IDs**

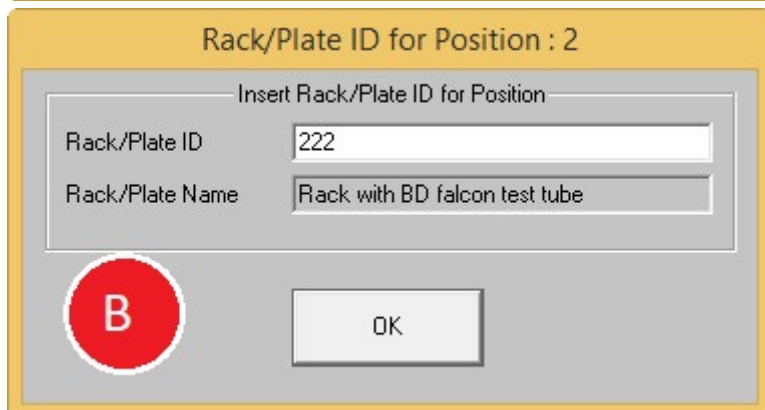
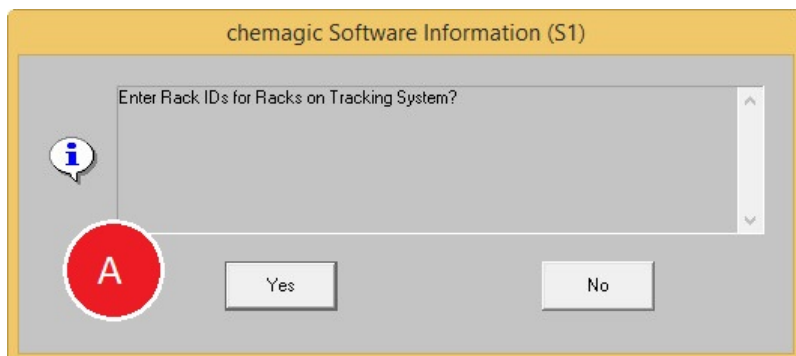
If you select **Yes** the Sample IDs are automatically copied to their respective Elution ID positions. In case you want to assign IDs to the eluates different from the Sample IDs click **No** and a window similar to the one for entering the Sample IDs (Figure 9: *Entering the Sample IDs* on page 16) will open allowing you to enter the Elution IDs.

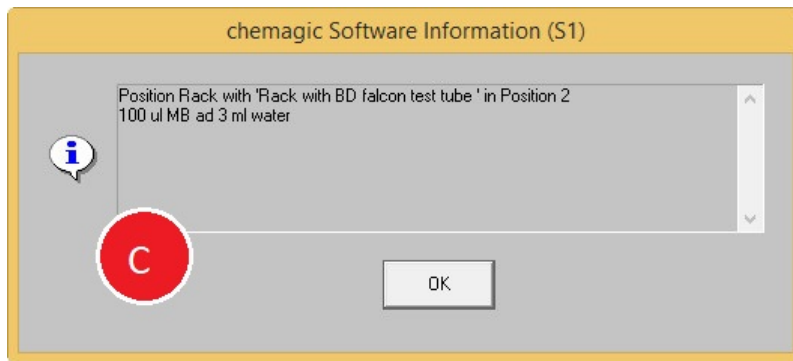
## Assigning IDs to the Tube Racks

To facilitate routine isolation procedures without an installed **chemagic Dispenser** you may want to prepare the racks containing the buffer tubes for later use. To minimize the risk of confusion you can assign individual IDs to these racks. Subsequent to registering the elution IDs a new dialogue is started during which you can register the IDs of the buffer racks.

A). To do this, answer the question "**Enter Rack IDs for Racks on Tracking System?**" with **Yes** and you can subsequently enter the IDs for each tube rack.

B). After entering each ID a window will open with information about the positioning of the respective tube rack.



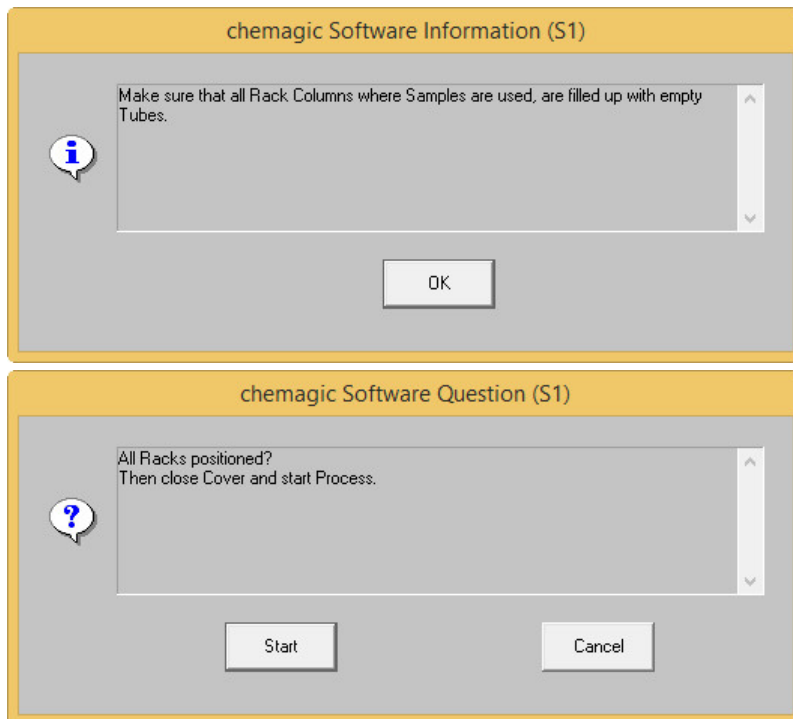


**Figure 11: Registering and positioning the Plates/Racks**

If you do not follow the guided ID registration procedure, you can also start the dialogue for entering the IDs of the racks from the central registration window (Figure 8: [Entering the Sample IDs \(chemagic 12 Rod Head\)](#) on page 15). To do this, simply click on the button corresponding to the rack you want to register.

## Starting the Isolation Procedure

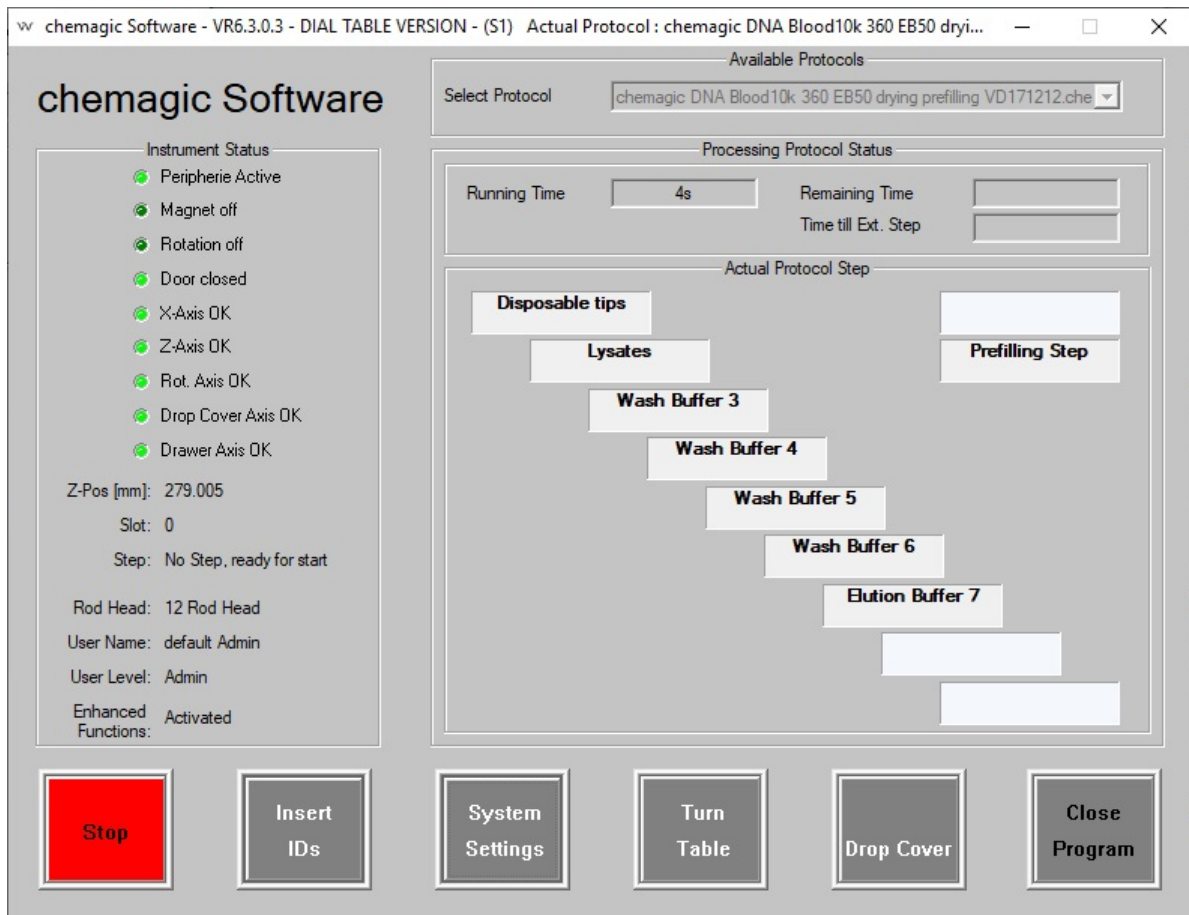
On completion of the registration procedure an information window opens reminding you of positioning empty tubes to all sample positions.



**Figure 12: Final instructions before starting the run**

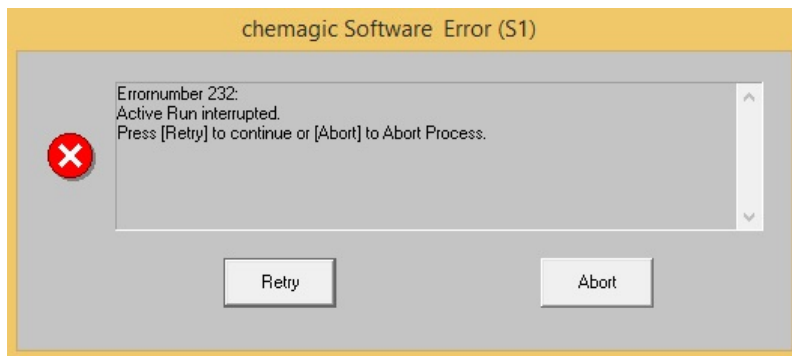
Before you can start the isolation procedure a final window asks you to check the positioning of the racks and to close the doors and covers.

To start the isolation process, click the **Start** button and the **chemagic 360-D** instrument will immediately start working. During the run the Main Program Window will be active showing the progress of the running protocol - e.g. the elapsed time, the estimated remaining time and the time until the next external step has to be done. In addition the current protocol step will be highlighted in green.



**Figure 13: The main program window during an Isolation Procedure**

A running process can be aborted anytime by clicking the **Stop** button (C). Opening one of the doors during a running process will be indicated by turning the 'Door closed' light to red. Detected z-axis movement while any of the doors is open will pause the machine and an error window will open.



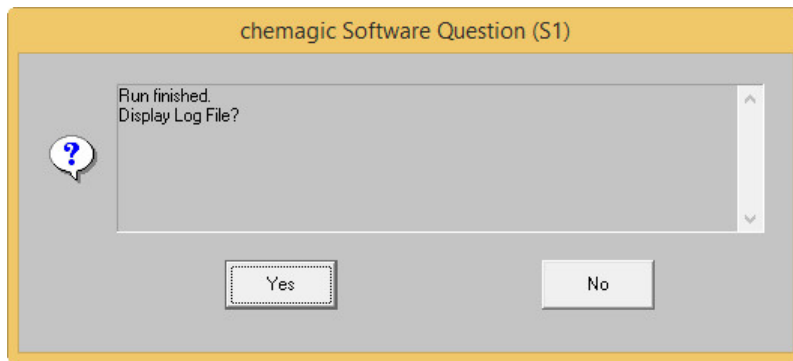
**Figure 14: Error message after opening a door**

The isolation procedure can be resumed after closing the door and clicking the **Retry** button. Please keep in mind that the protocol step that has been interrupted will be restarted.



**Caution:** Pausing and resuming a running process is not recommended, because it will influence the incubation times and can lead to inconsistent results.

Once a run is successfully completed, a status window will open and you can choose to view the log file of the run by clicking **Yes**. Click **No** to return to the Main Program Window.

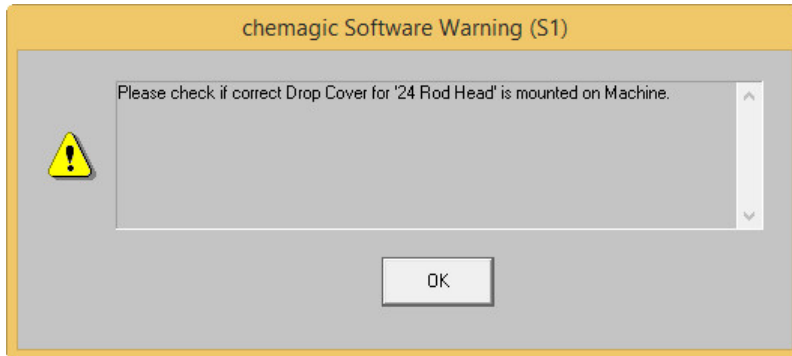


**Figure 15: Final message on completion of a run**



## Starting a protocol with the chemagic 24 Rod Head

With the **chemagic 24 Rod Head** installed or after selecting the **chemagic 24 Rod Head** during the startup of the software a warning window will open reminding you to ensure that the correct drop cover is installed. As the tips will automatically be removed during the isolation process it is absolutely necessary to have the right drop cover for the **chemagic 24 Rod Head** installed.



**Figure 16: Reminder for installing the Drop Cover**

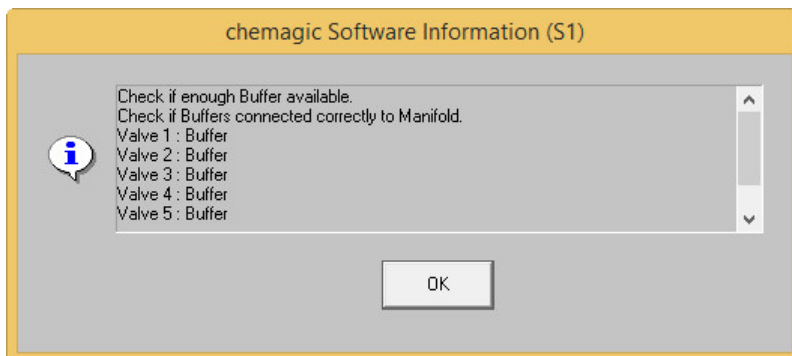
To run an automated isolation procedure, select the protocol of your choice from the drop-down menu of the Main Program Window (Figure 13: [The main program window during an Isolation Procedure](#) on page 19) and click the green **Insert IDs** button.

Depending on the individual configuration of your **chemagic 360-D** system, you will have different setup steps to follow:

## Running a protocol with the chemagic Dispenser installed

**Note:** If you do not have the **chemagic Dispenser** installed, please refer to section [Running a protocol without the chemagic Dispenser installed](#) on page 24.

Clicking the **Insert IDs** button opens an information window with instructions for connecting the buffers to the different valves of the **chemagic Dispenser**.



**Figure 17: Instructions for connecting the buffers**

Please read these instructions carefully and make sure that all buffer containers contain sufficient amounts of buffer. To continue click the **OK** button. A new window opens, allowing you to select the sample positions to be automatically filled by the **chemagic Dispenser**. By default all 24 wells are preselected and therefore green - you can deselect (and select) whole rows by clicking on the respective buttons.

Starting a protocol with the chemagic 24 Rod Head

**Number of Samples for Prefilling**

Position in Rack/Plate

D1	C1	B1	A1
D2	C2	B2	A2
D3	C3	B3	A3
D4	C4	B4	A4
D5	C5	B5	A5
D6	C6	B6	A6

Column D    Column C    Column B    Column A

Insert Tubes/Wells to Rack/Plate according to color of Rack/Plate Position :  
Green (Tube/Well for Sample), Orange (empty Tube/Well), Grey (no Tube/Well)

Select Number of Samples

**A**    24

OK

**Number of Samples for Prefilling**

Position in Rack/Plate

D1	C1	B1	A1
D2	C2	B2	A2
D3	C3	B3	A3
D4	C4	B4	A4
D5	C5	B5	A5
D6	C6	B6	A6

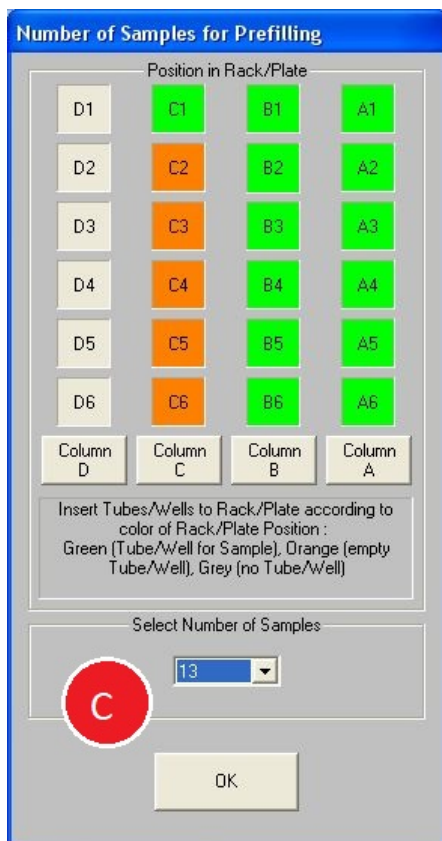
Column D    Column C    Column B    Column A

Insert Tubes/Wells to Rack/Plate according to color of Rack/Plate Position :  
Green (Tube/Well for Sample), Orange (empty Tube/Well), Grey (no Tube/Well)

Select Number of Samples

24

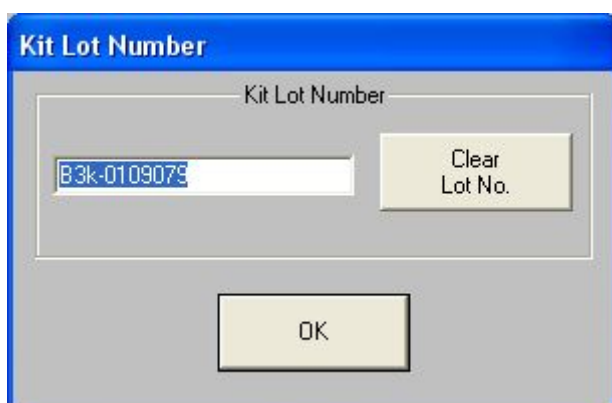
OK



**Figure 18: Setting up the chemagic Dispenser for the chemagic 24 Rod Head**

If you have a number of samples that is not divisible by 6 you can select the exact number of samples from the drop-down menu (C). Please keep in mind that due to its design the **chemagic Dispenser** always fills entire rows i.e. manifolds of 6. Wells without samples in partially filled rows will be marked in orange to indicate that those positions will be filled with buffer. In case you do not use 24 well plates make sure to place empty tubes into those orange positions to avoid any spillage.

After entering the sample positions for automated buffer dispensing click **OK** and a new input window opens, asking you to enter the lot number of the kit to be used during the isolation run.



**Figure 19: Registering the Kit Lot Number**

By default this window shows the last entered kit lot number. The easiest way to enter the data is by using the barcode scanner, but you can also type the number. After entering the lot number of the kit and confirming with **OK** a new window for the registration of your samples will open (Figure 20: Positions of the samples on the plates and IDs of the disposables on page 24).

A detailed instruction of how to register your samples is given in the section [Entering Sample IDs \(chemagic 24 Rod Head\)](#) on page 24, so please continue reading there.

## Running a protocol without the chemagic Dispenser installed

Without the **chemagic Dispenser** you have to pipette the buffers manually into their respective wells/tubes on the different plates/racks. Please refer to the individual protocol of the kit you are using for detailed information about the pipetting scheme.

After clicking the **Insert IDs** button you can enter the lot number of the kit before you can continue with registering the IDs of your samples (see section below).

## Entering Sample IDs (chemagic 24 Rod Head)

The **chemagic Software** offers a feature to register the IDs of your samples and their respective eluates which will be stored in the log files generated during the isolation process. In addition you can register the IDs of all plates and racks used for buffers, eluates and tips.

The process of sample registration is started subsequently to entering the lot number of the kit to be used (Figure 19: Registering the Kit Lot Number on page 23). A new window which is separated into 4 different areas will open.

The screenshot displays the 'Enter Sample IDs, Elution IDs and Rack/Plate IDs' window. It features four main panels:

- Panel D:** 'Racks/Plates on Tracking System' showing positions 1-8. Positions 1-6 are 'not used', position 2 is 'with BD falcon test', and positions 7 and 8 are 'Not entered'.
- Panel C:** 'Elution Rack/Plate' showing a 6x4 grid (A1-D6). A red bar indicates 'IDs not entered'.
- Panel B:** 'Sample Rack/Plate' showing a 6x4 grid (A1-D6). A red bar indicates 'Enter Sample IDs'.
- Panel A:** 'Enter Sample IDs' and 'Finished' buttons.

Central buttons include 'OK', 'Read IDs from File', and 'Cancel Protocol'.

**Figure 20: Positions of the samples on the plates and IDs of the disposables**

**Panel A** gives a schematic overview of the plate/rack and allows you to allocate the positions of your samples.

**Panel B** comprises of 3 buttons to cancel the protocol, read the Sample IDs from a file and an **OK** button to finish the registration process.

**Panel C** gives a schematic overview of the elution plate/rack and the positions of the eluates.

**Panel D** shows the positions of the plates/racks containing the tips, buffers, eluates and magnetic beads on the Tracking System and allows you to assign individual IDs to them.

To enter the Sample IDs click on the sample position you want to start with. A new window will open with the sample position preselected. Alternatively you can click on the **Enter Sample IDs** button which will open the window mentioned above, but without preselection of the first sample position.

Overview Sample IDs, Elution IDs : Enter Sample IDs

A6		B6		C6		D6	
A5		B5		C5		D5	
A4		B4		C4		D4	
A3		B3		C3		D3	
A2	Sample 2	B2		C2		D2	
A1	Sample 1	B1		C1		D1	

Insert Sample/Elution ID

Sample ID: Sample 3

Elution ID:

**Figure 21: Entering the Sample IDs**

You can directly start entering your Sample IDs with the barcode scanner or by typing them into the provided input field. After entering the Sample ID (and clicking **ID entered** or hitting **Enter** for the manual input) the color changes from red to green and the ID appears in the adjacent text field. The next sample position is automatically selected - either horizontally or vertically - depending on the settings. Repeat this procedure until all Sample IDs are entered.

Once the registration of the samples is completed you can print the list as a template for pipetting or for archiving purposes. Click **OK** to return to the previous screen.

## Reading IDs from a file

Instead of entering the Sample IDs one by one you can prepare the sample sheets in advance and load them from a file into the program. The file has to be saved in the \*.txt format and the Sample IDs have to be entered one per row. To read the IDs from a file click the **Read IDs from File** button (Figure 20: Positions of the samples on the plates and IDs of the disposables on page 24). A dialogue window will open allowing you to select the file you have prepared earlier. After the selection of the file a window opens from which you can directly start the isolation procedure (Figure 24: Final instructions before starting a run on page 27).

## Entering Elution IDs

After entering the Sample IDs, continue by clicking the **Finished** button. A small window opens and you can choose whether the Elution IDs are identical to the Sample IDs.

chemagic Software Information (S1)

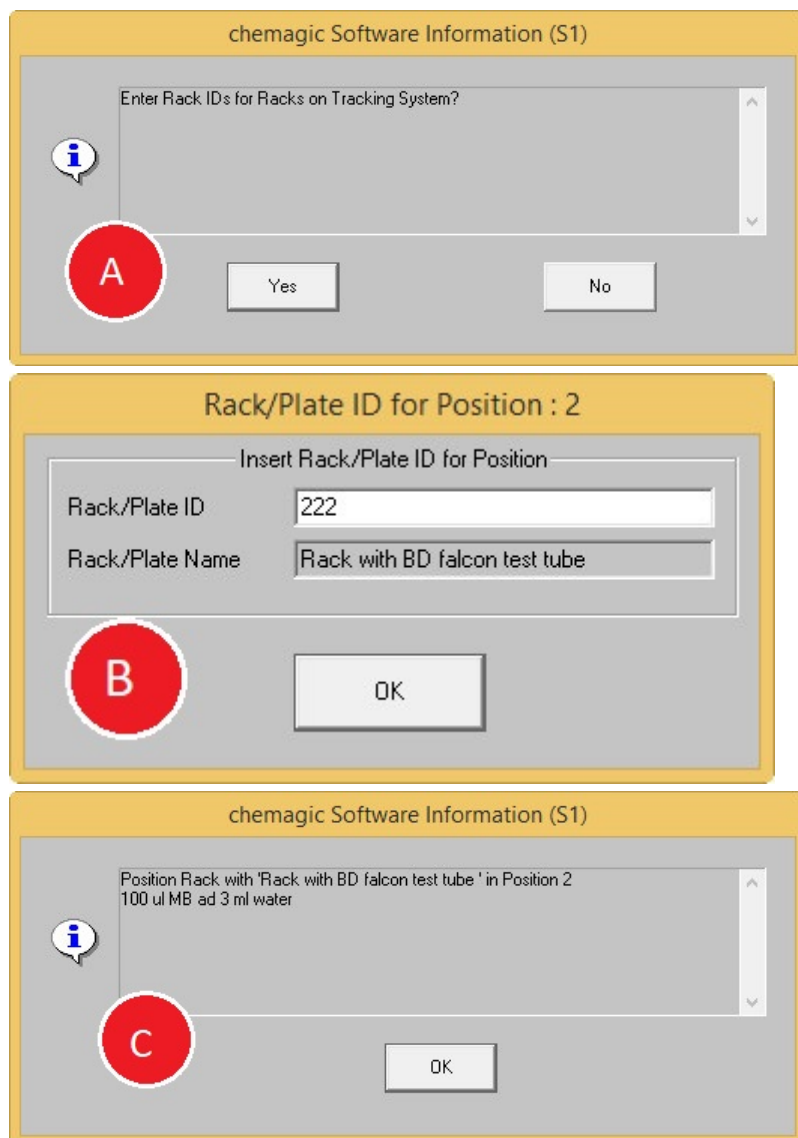
Elution IDs identical with Sample IDs?  
Press [YES] Button to use Sample IDs as Elution IDs.

**Figure 22: Option to apply Sample IDs as Elution IDs**

If you select **Yes** the Sample IDs are automatically copied to their respective Elution ID positions. In case you want to assign IDs to the eluates different from the Sample IDs click **No** and a window similar to the one for entering the Sample IDs will open allowing you to enter the Elution IDs.

## Assigning IDs to the Plates or Tube Racks

To facilitate routine isolation procedures without an installed **chemagic Dispenser** you may want to prepare the plates or tube racks containing the buffers for later use. To minimize the risk of confusion you can assign individual IDs to these plates/racks. Subsequent to registering the elution IDs a new dialogue is started during which you can register the IDs of the buffer plates/racks. To do this answer the question "**Enter Plate IDs for Plates on Tracking System?**" (A) with **Yes** and you can subsequently enter the IDs for each plate/rack (B). After entering each ID a window will open, with information about the positioning of the respective plate (C).

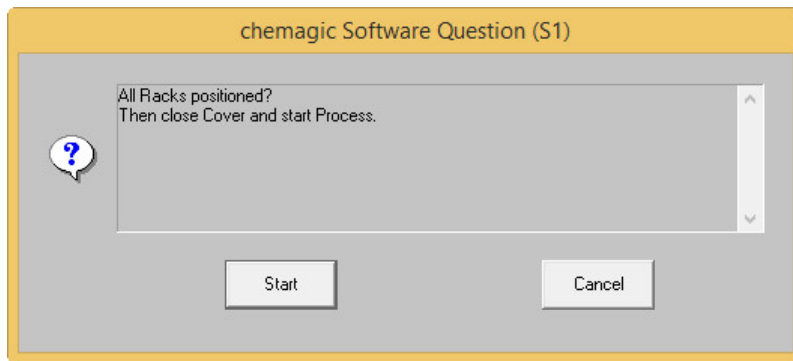


**Figure 23: Registering and positioning the Plates/Racks**

If you do not follow the guided ID registration procedure, you can also start the dialogue for entering the IDs of the racks from the central registration window (Figure 20: Positions of the samples on the plates and IDs of the disposables on page 24). To do this, simply click on the button corresponding to the plate/rack you want to register.

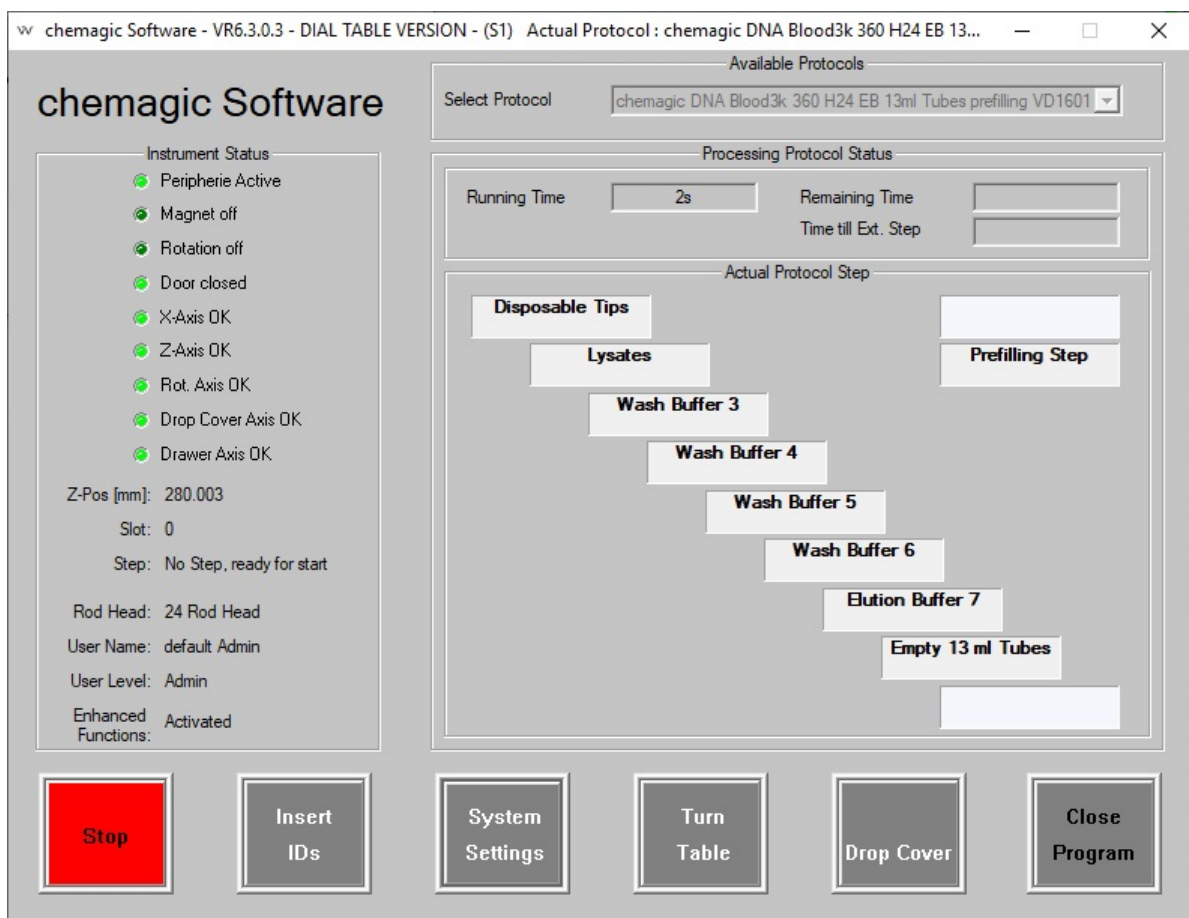
## Starting the Isolation Procedure

On completion of the registration procedure a final window will open. Please ensure that all covers and doors are properly closed and that the plates/racks are on their correct positions.



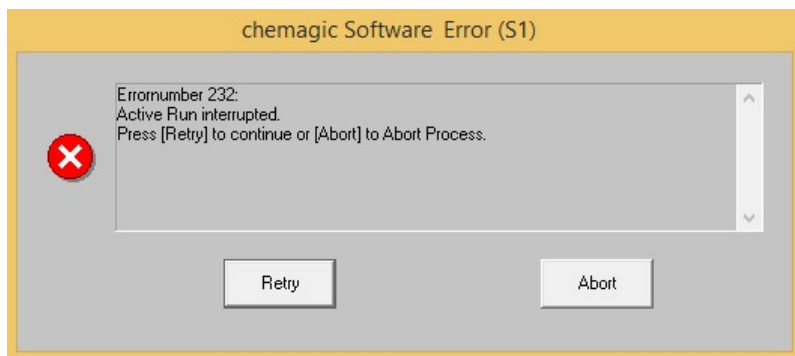
**Figure 24: Final instructions before starting a run**

To start the isolation process, click the **Start** button and the **chemagic 360-D** instrument will immediately start working. During the run the Main Program Window will be active showing the progress of the running protocol - e.g. the elapsed time, the estimated remaining time and the time until the next external step has to be done. In addition the current protocol step will be highlighted in green.



**Figure 25: The Main Program Window during an Isolation Procedure**

A running process can be aborted anytime by clicking the **Stop** button. Opening one of the doors during a running process will be indicated by turning the 'Door closed' light to red. Detected z-axis movement while any of the doors is open will pause the machine and an error window will open.

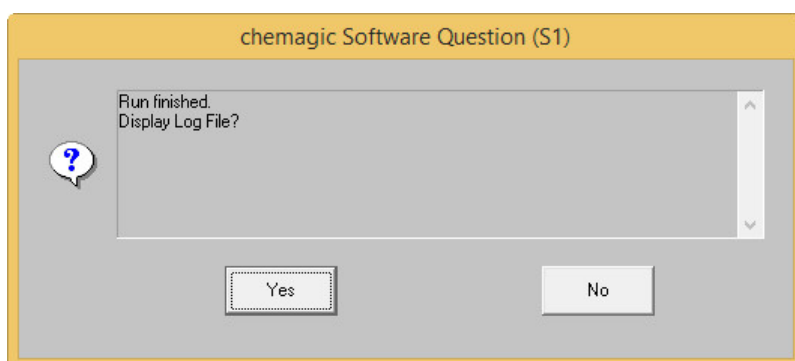


**Figure 26: Error message after opening a door**

The isolation procedure can be resumed after closing the door and clicking the **Retry** button. Please keep in mind that the protocol step that has been interrupted will be restarted.



**Caution:** Pausing and resuming a running process is not recommended, because it will influence the incubation times and can lead to inconsistent results.



**Figure 27: Final message on completion of a run**

Once a run is successfully completed, a status window will open and you can choose to view the log file of the run by clicking **Yes**. Click **No** to return to the Main Program Window.



## Starting a protocol with the chemagic 96 Rod Head

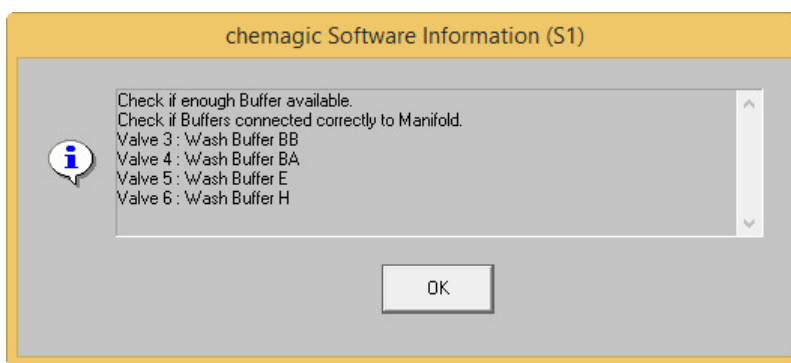
To run an automated isolation procedure, select the protocol of your choice from the drop-down menu of the Main Program Window (Figure 4: The main program window on page 10) and the **Insert IDs** button will turn green.

Depending on the individual configuration of your **chemagic 360-D** system you will have different setup steps to follow:

## Running a protocol with the chemagic Dispenser installed

**Note:** If you do not have the **chemagic Dispenser** installed, please refer to the section *Running a protocol without the chemagic Dispenser installed* on page 31.

Clicking the **Insert IDs** button opens an information window with instructions for connecting the buffers to the different valves of the **chemagic Dispenser**.



**Figure 28: Instructions for connecting the buffers**

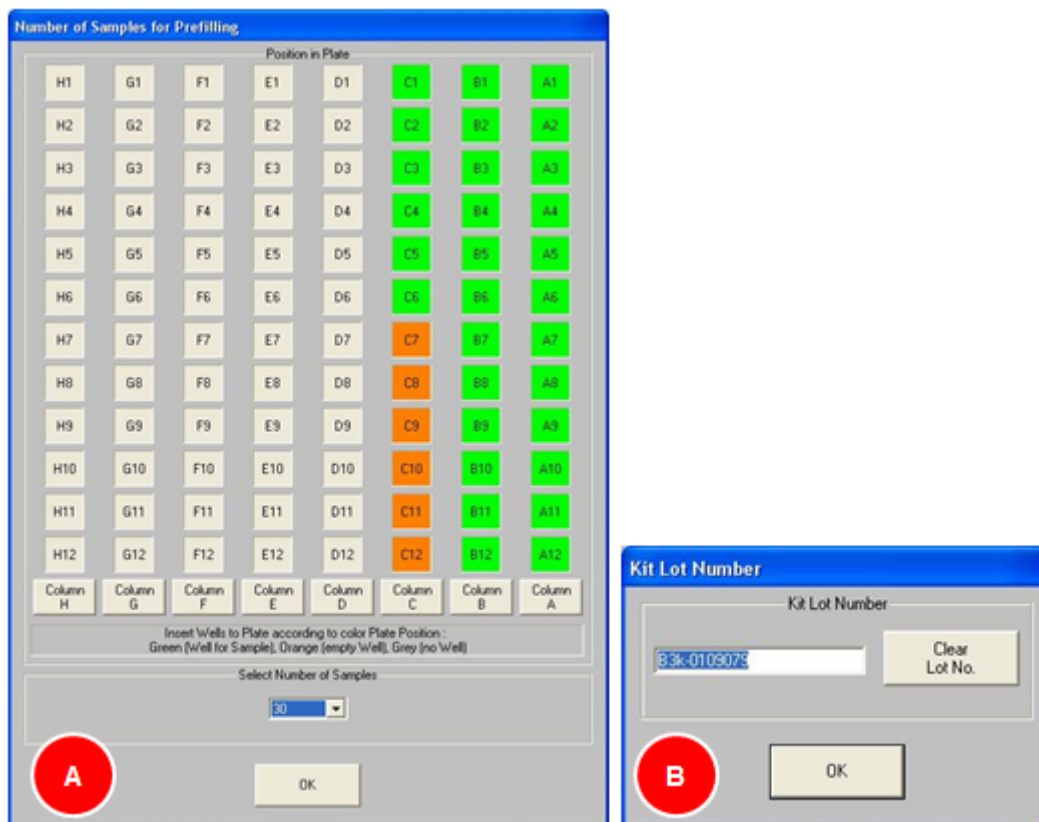
Please read these instructions carefully and make sure that all buffer containers contain sufficient amounts of buffer. To continue click the **OK** button. A new window opens, allowing you to select the sample positions to be automatically filled by the **chemagic Dispenser** (A). By default all 96 wells are preselected and therefore green - you can deselect (and select) whole rows by clicking on the respective buttons (B).





**Figure 29: Setting up the chemagic Dispenser for the chemagic 96 Rod Head**

If you have a number of samples that is not divisible by 12 you can select the exact number of samples from the drop-down menu. Please keep in mind that due to its design the **chemagic Dispenser** always fills entire rows i.e. manifolds of 12. Wells without samples in partially filled rows will be marked in orange to indicate that those positions will be filled with buffer. In case you do not use 96 well plates make sure to place empty tubes into those orange positions to avoid any spillage.



**Figure 30: Selecting an individual number of samples**

## Starting a protocol with the chemagic 96 Rod Head

After entering the sample positions for automated buffer dispensing click **OK** and a new input window opens asking you to enter the lot number of the kit to be used during the isolation run (B). By default this window shows the last entered kit lot number. The easiest way to enter the data is by using the barcode scanner, but you can also enter the number manually. After entering the lot number of the kit and confirming with **OK** a new window for the registration of your samples will open.

A detailed instruction of how to register your samples is given in the section [Entering Sample IDs \(chemagic 96 Rod Head\)](#) on page 31, so please continue reading there.

## Running a protocol without the chemagic Dispenser installed

Without the **chemagic Dispenser** you have to pipette the solutions manually into their respective positions on the different plates. Please refer to the individual protocol of the kit you are using for detailed information about the pipetting scheme.

After clicking the **Insert IDs** button you can enter the lot number of the kit before you can continue with registering the IDs of your samples (see section below).

## Entering Sample IDs (chemagic 96 Rod Head)

The **chemagic Software** offers a feature to register the IDs of your samples and their respective eluates which will be stored in the log files generated during the isolation process. In addition you can register the IDs of all plates used for samples, buffers, eluates and tips.

The process of sample registration is started subsequently to entering the lot number of the kit to be used. A new window which is separated into 4 different areas will open:

The screenshot shows the 'Enter Sample IDs, Elution IDs and Plate IDs' window. At the top, it lists 'Plates on Tracking System' with positions 1-9 and their corresponding Plate IDs: Position 9 (not used), Position 8 (Elution Buffer, ID 888), Position 7 (Wash Buffer H, ID 777), Position 6 (Wash Buffer E, ID 666), Position 5 (Wash Buffer BA, ID 555), Position 4 (Wash Buffer BB, ID 444), Position 3 (Lysates, ID 450 µl Lysate Buffer P or B), Position 2 (Magnetic Beads, ID 222), and Position 1 (Disposable tips, ID 111). Below this are two 12-well plate grids: 'Elution Plate' (left) and 'Sample Plate' (right). The control panel at the bottom includes buttons for 'OK', 'Read IDs from File', 'Cancel Protocol', 'Enter Elution IDs', 'Enter Sample IDs', and 'Finished'. Red circles A, B, C, and D highlight these key areas.

**Figure 31: Positions of the samples on the plates and IDs of the disposables**

**Panel A** gives a schematic overview of the plate and allows you to allocate the positions of your samples.

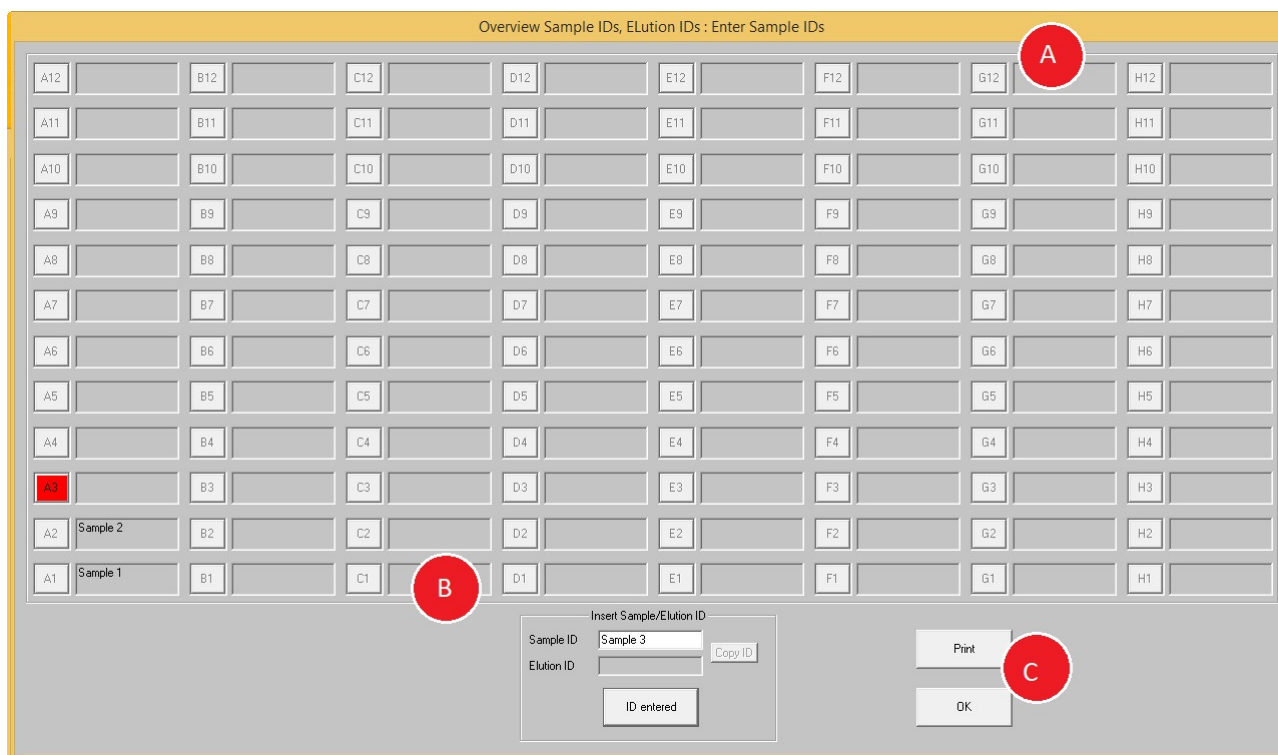
**Panel B** comprises of 3 buttons to cancel the protocol, read the Sample IDs from a file and an **OK** button to finish the registration process.

**Panel C** gives a schematic overview of the elution plate and the positions of the eluates. In addition to that you can assign IDs to the wells containing the eluates.

**Panel D** shows the positions of the disposable plastic material on the Tracking System and allows you to assign individual IDs to them.

## Starting a protocol with the chemagic 96 Rod Head

To enter the Sample IDs click on the sample position you want to start with. A new window will open with the sample position preselected. Alternatively you can click on the **Enter Sample IDs** button which will open the window mentioned above, but without preselecting the first sample position.



**Figure 32: Entering the Sample IDs**

You can directly start entering your Sample IDs with the barcode scanner or by typing them into the provided input field. After entering the Sample ID (and clicking **ID entered** or hitting **Enter** for the manual input) the color changes from red to green and the ID appears in the adjacent text field. The next sample position is automatically selected - either horizontally or vertically - depending on the settings. Repeat this procedure until you have entered all Sample IDs.

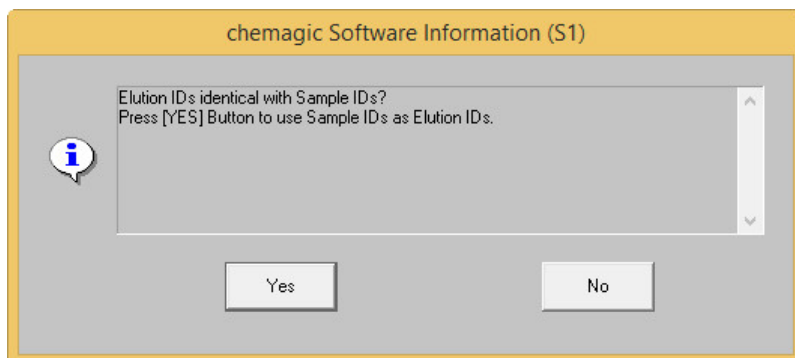
Once the registration of the samples is completed you can print the list as a template for pipetting or for archiving purposes. Click **OK** to return to the previous screen.

## Reading IDs from a File

Instead of entering the Sample IDs one by one you can prepare the sample sheets in advance and load them from a file into the program. The file has to be saved in the \*.txt format and the Sample IDs have to be entered one per row. To read the IDs from a file click the **Read IDs from File** button (Figure 31: Positions of the samples on the plates and IDs of the disposables on page 31). A dialogue window will open allowing you to select the file you have prepared earlier. After the selection of the file a window opens from which you can directly start the isolation procedure (Figure 35: Final instructions before starting a run on page 34).

## Entering Elution IDs

After entering the Sample IDs, continue by clicking the **Finished** button. A small window opens and you can choose whether the Elution IDs are identical to the Sample IDs.

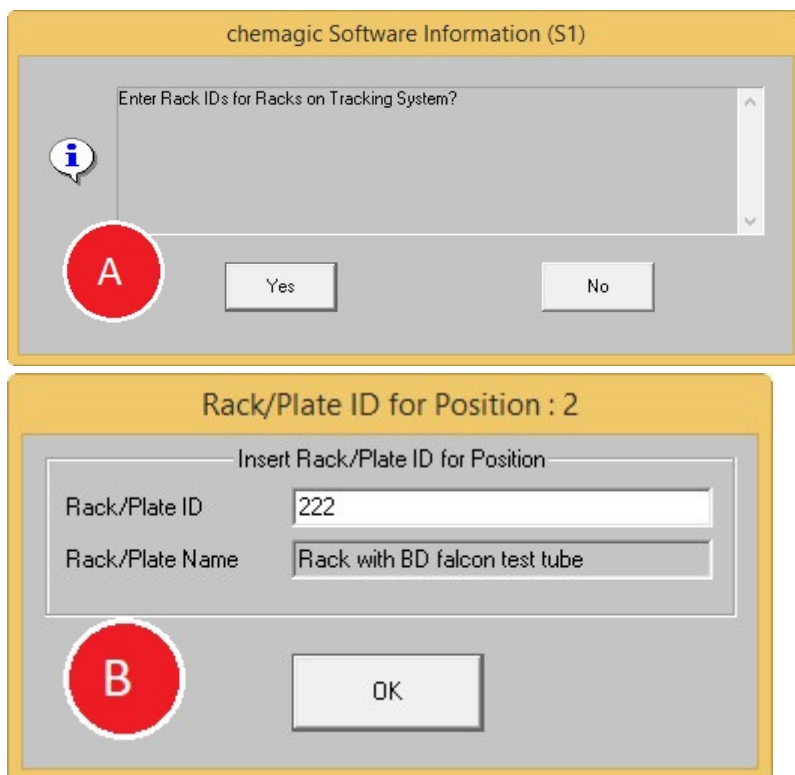


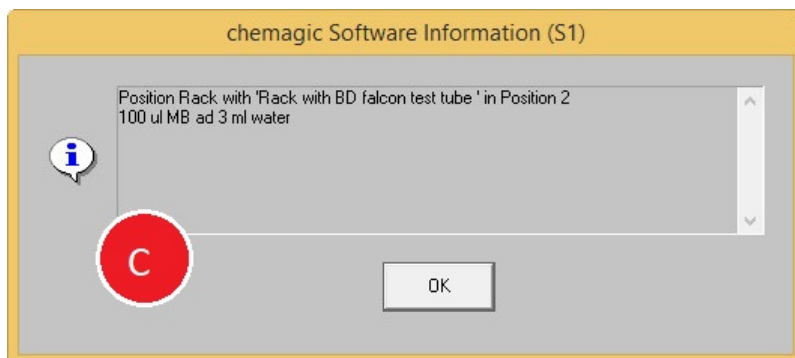
**Figure 33: Option to use Sample IDs as Elution IDs**

If you select **Yes** the IDs are automatically copied to their respective Elution ID positions. In case you want to assign IDs to the eluates different from the Sample IDs click **No** and a window similar to the one for entering the Sample IDs will open allowing you to enter the Elution IDs.

## Assigning IDs to the Plates

To facilitate routine isolation procedures without an installed **chemagic Dispenser** you may want to prepare the plates containing the buffers for later use. To minimize the risk of confusion you can assign individual IDs to these plates. Subsequent to registering the elution IDs a new dialogue is started during which you can register the IDs of the buffer plates. To do this, answer **Yes** to the question "**Enter Plate IDs for Plates on Tracking System?**" (A) and enter the IDs for each plate (B). After entering each ID a window will open, with information about the positioning of the respective plate (C).



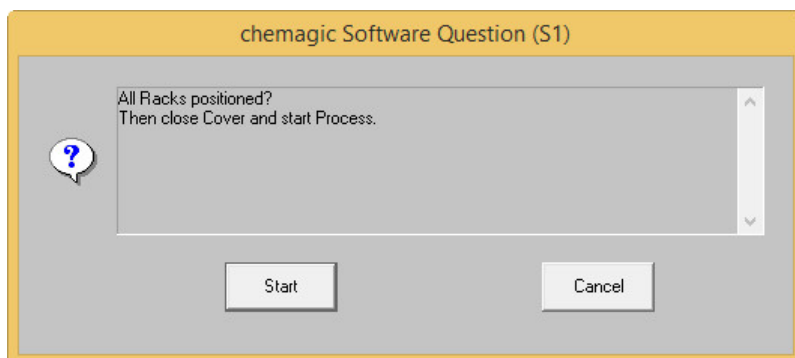


**Figure 34: Registering and positioning Plates/Racks**

You can also start the dialogue for entering the IDs of the disposable plates from the central registration window (Figure 31: Positions of the samples on the plates and IDs of the disposables on page 31). To do this, simply click on the button corresponding to the plate you want to register.

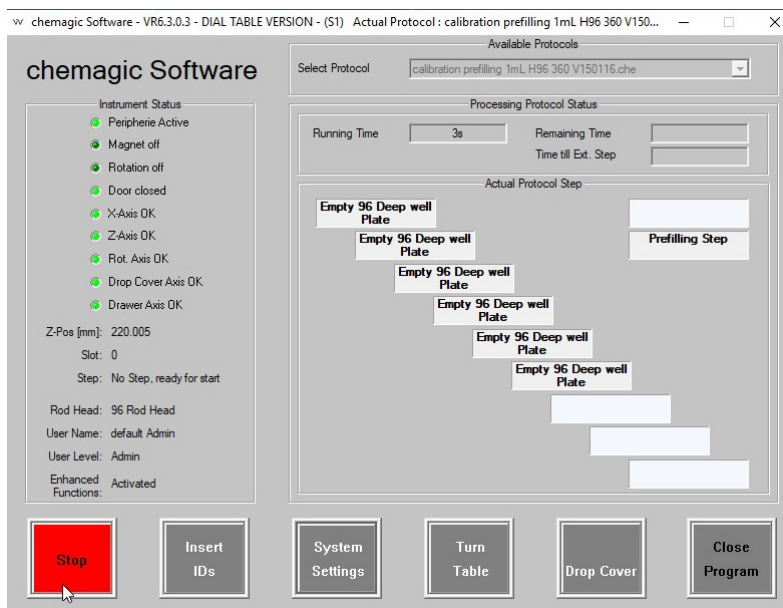
## Starting the Isolation Procedure

After completion of the registration procedure a final window will open. Please ensure that all covers and doors are properly closed and that all plates are on their correct positions.



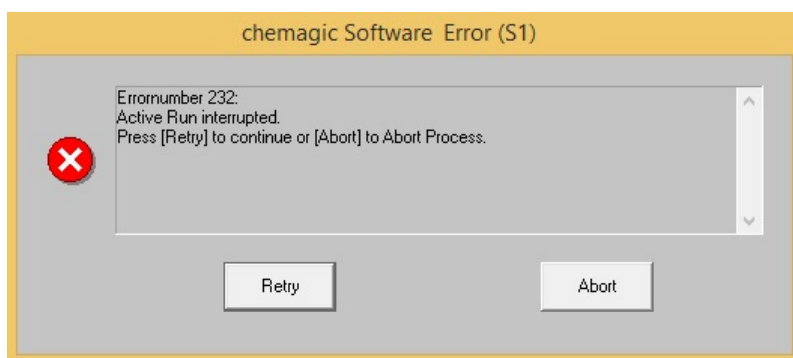
**Figure 35: Final instructions before starting a run**

To start the isolation process, click the **Start** button and the **chemagic 360-D** instrument will immediately start working. During the run the Main Program Window will be active showing the progress of the running protocol - e.g. the elapsed time, the estimated remaining time and the time until the next external step has to be done. In addition the current protocol step will be highlighted in green.



**Figure 36: The Main Program Window during an isolation run**

A running process can be aborted anytime by clicking the **Stop** button. Opening one of the doors during a running process will be indicated by turning the 'Door closed' light to red. Detected z-axis movement while any of the doors is open will pause the machine and an error window will open.



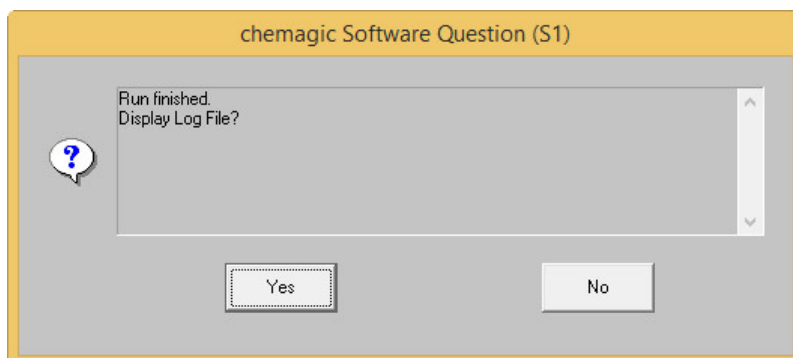
**Figure 37: Error message after opening a door**

The isolation procedure can be resumed after closing the door and clicking the **Retry** button. Please keep in mind that the protocol step that has been interrupted will be restarted.



**Caution:** Pausing and resuming a running process is not recommended, because it will influence the incubation times and can lead to inconsistent results.

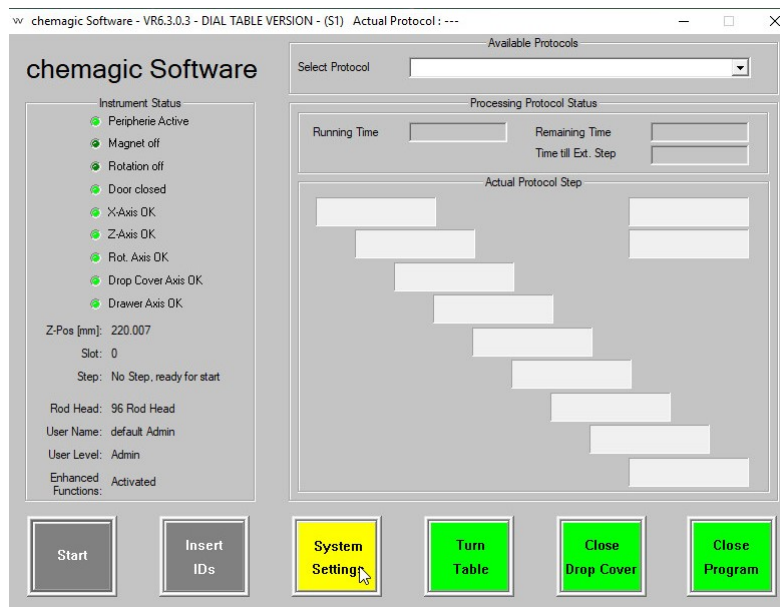
Once a run is successfully completed, a status window will open and you can choose to view the log file of the run by clicking **Yes**. Click **No** to return to the Main Program Window.



**Figure 38: Final message on completion of a run**

## System Settings

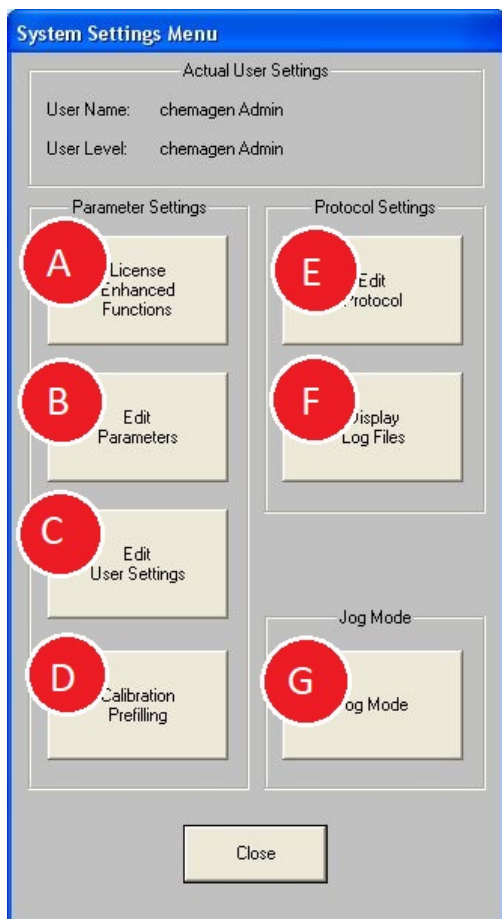
In the System Settings window you can set up the **chemagic Software** as well as the **chemagic 360-D** instrument. To have access to all functions, please ensure that the **chemagic Software** is running without any warnings and that the **chemagic 360-D** instrument is switched on and has successfully finished the calibration process of its axes. The System Settings can be accessed via the main program window. Clicking the corresponding button will open the **System Settings Menu** where you can select the settings you want to edit.



**Figure 39: Accessing the System Settings from the Main Program Window**

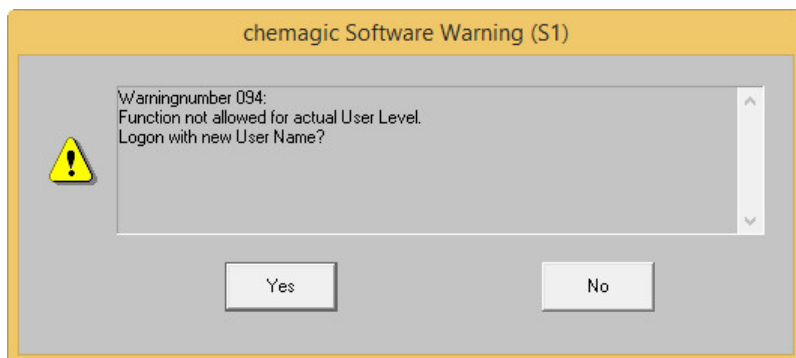
Please keep in mind that as a user with operator privileges you only have access to the log files, the Jog Mode-Editing any other system settings will not be possible. For being able to edit any system settings or protocols you must at least have Admin privileges. For further information on the user management please refer to the section [Edit user settings](#) on page 37.





**Figure 40: System Settings Menu**

Whenever you do not have sufficient rights to access a certain function a warning window will open, in which you can choose to change to a user account with Admin privileges - always provided that you know the corresponding login data.

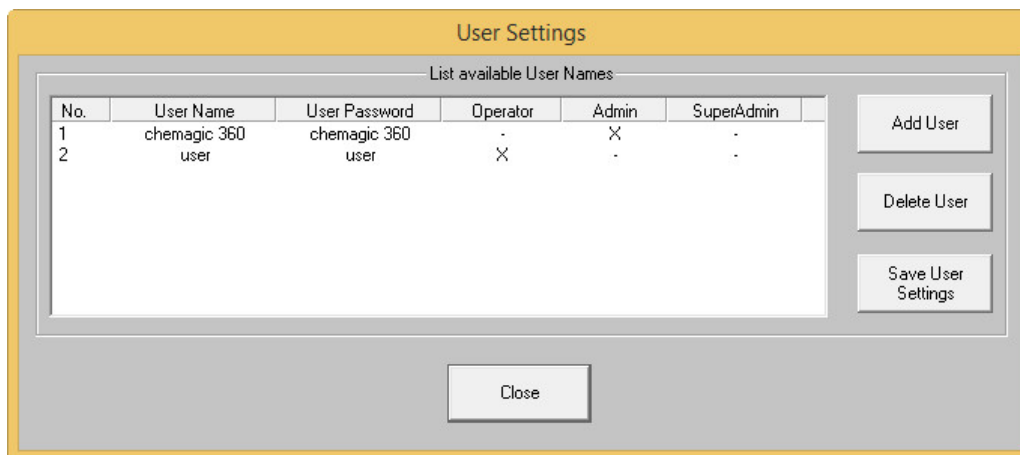


**Figure 41: Insufficient rights for editing System Settings**

The following sections give you detailed information and instructions about the options you have to setup the System Settings.

## Edit user settings

The **chemagic Software** offers a user management with 3 levels restricting the access to system settings and protocol files to a selected person or group of persons. Editing user settings can only be done by users with at least Admin privileges. To open the **User Settings** window, click on the corresponding button in the **System Settings Menu** (Figure 40: System Settings Menu on page 37). The **User Settings** menu opens and shows a list of all registered users with the respective passwords and their group memberships. In this menu you can add, delete and edit users.



**Figure 42: Editing the User Settings**

When a user is added a default name and password will be given with a membership in the Operator group. To change any settings of a new or existing user, double-click on the respective parameter and it will become editable. Names and passwords have to be typed, the group memberships will be defined by activating the corresponding checkbox. After you have made your changes do not forget to save the User Settings. The next time the **chemagic Software** starts the new user(s) will be available.

The 3 User levels available in the **chemagic Software** are the following:

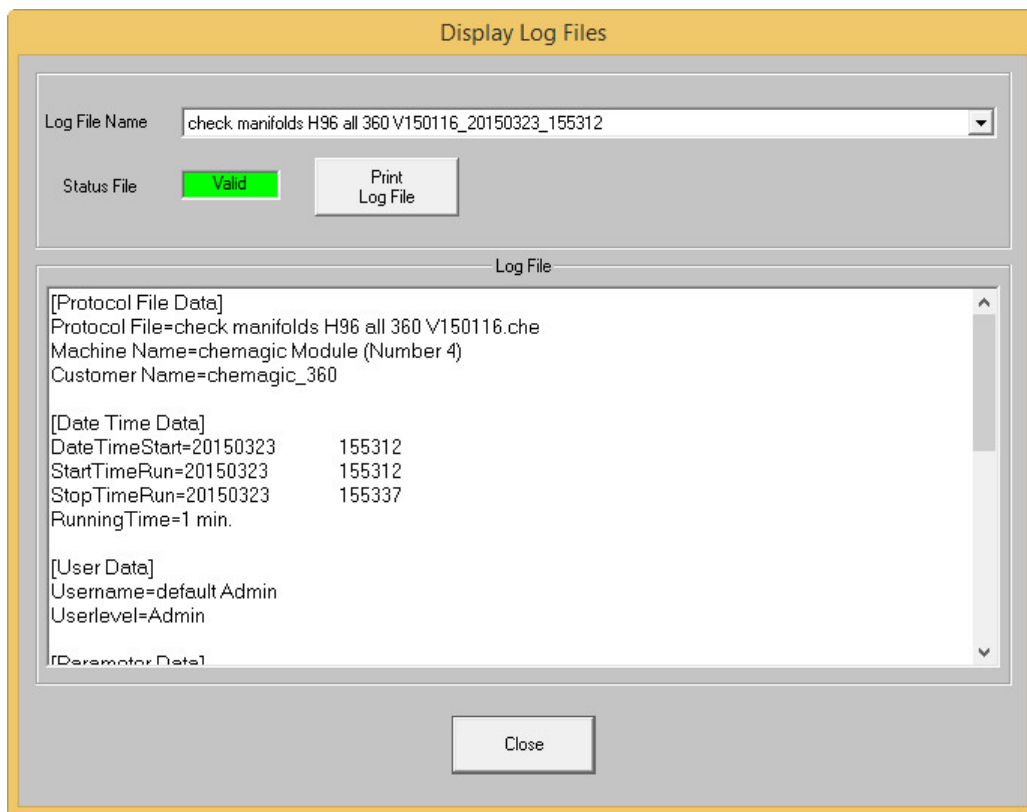
**Operator** : Users of the operator group can run protocols and view/print log files of the isolation runs. In addition to that Operators have access to the calibration tool for the **chemagic Dispenser**.

**Admin** : Users belonging to the Admin group can additionally edit the Parameters and the User Settings and have access to the Jog Mode which allows calibrating the axes and thus the setup of the **chemagic 360-D** instrument. Admin users cannot edit protocols.

**SuperAdmin** : Users with SuperAdmin privileges have access to all system settings and can edit protocols.

## Display Log Files

During each isolation process a log file is generated. This log file contains information about the protocol file, the date and time of the run, the duration, the user and all the data you have entered e.g. the lot number of the kit, the Sample IDs, the IDs of the plates.



**Figure 43: Displaying log files**

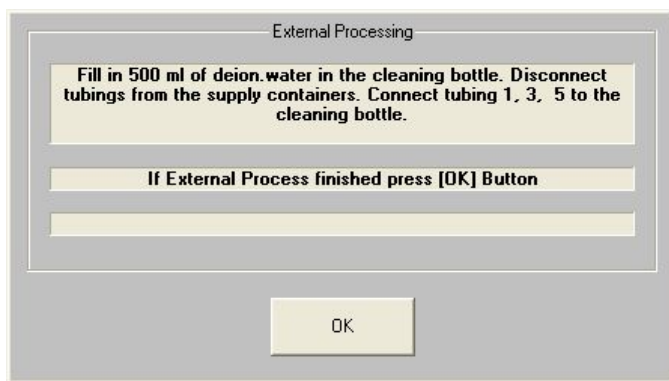
To view log files, open the **System Settings Menu** from the main program window and click on the **[Display Log Files]** button.

## Service and maintenance

This section includes information on the service and maintenance of the chemagic 360-D instrument.

### Cleaning of the chemagic Dispenser

For routine cleaning cycles or in case of irregular buffer dispensing the tubes and manifolds can be cleaned and rinsed. To do this, open the Main Program Window, select a cleaning protocol (e.g. "Regular Cleaning" or "Intensive Cleaning") and start it. You will need the cleaning bottle, but there is no need to place tubes/plates on the sample carrier as the entire cleaning procedure will be done in the parking position of the **chemagic Dispenser**. Please ensure that the waste container is connected and provides enough space for at least 1 L ("regular cleaning") or 2 L ("intensive cleaning") of liquid. During the cleaning procedure you will have to carry out external steps. At the beginning of these external steps an information window will open giving detailed instructions of what to do.



**Figure 44: Instructions for an external step**

If a cleaning procedure for troubleshooting reasons has been run without solving the initial problem, please refer to the technical handbook.

### Displaying the version number of the chemagic Software

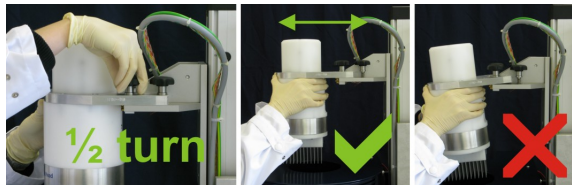
From the Main Program Window the version information can be displayed by right-clicking the title bar of the window and selecting "About VESerialBaseApp...". The same splash screen as during the startup of the **chemagic Software** will open.



**Figure 45: Splash screen with software information**

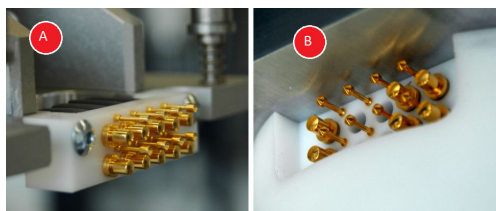
## Changing the chemagic Rod Heads

The **chemagic 360-D** instrument usually comes with an installed **chemagic Rod Head**. To remove a **chemagic Rod Head** from the system, open the front door and loosen the 4 screws by  $\frac{1}{2}$  turn only - this ensures that the head can only be removed and reattached in a straight angle without the risk of tilting. Newer versions of the **chemagic Rod Heads** will have guiding brackets that minimize the risk of tilting.



**Figure 46: Installation of the chemagic Rod Heads**

The **chemagic Rod Heads** have a panel with golden contact pins that connect to their counterparts on the z-axis flange on which the heads are installed. There are two types of contact pins - the thinner ones are fragile so the heads have to be handled very carefully - especially when installing or uninstalling them. Make sure not to tilt the heads as this can break the contact pins - slide the Heads in a straight angle to and from the z-axis flange.



**Figure 47: Contact pins on the chemagic Rod Head and the z-axis flange**

To prevent any scratches on the paint of the magnet housing use a sheet of paper, a cardboard or a mouse pad to cover the top of the magnet. Gently pull the head to the front and carefully take it out of the instrument's housing. If you want to insert the same type of head into the instrument you can simply slide it on the flange and fix it with the screws. The section below describes how to install a head that is of a different type from the one that has been uninstalled.

## End-user maintenance and controls



**Caution:** When operating inside the instrument, wear safety goggles, protective clothing, and gloves.



**Warning:** Serious injury may occur if body parts get pinched between moving parts.

Item	Location	Workflow	Interval
Cleaning	Interior/ round table	Clear and clean the roundtable after each run using the turn table function	After each run
Reagents by the use of the <b>chemagic dispenser</b>	Periphery	Ensure correct connection and function of spikes and tubes  Ensure sufficient buffer volume	Before each run
Dispenser manifolds performance	Dispenser	Run 'check' and 'prime' protocols as instructed below.	Before first run of a day. When reagents are changed.
Safety device	Door locking mechanism	Check for accurate function	Weekly
Electrical connections	Instrument, accessories	Visual inspection for damage and correct connection	Weekly

Item	Location	Workflow	Interval
Dispensing unit	Instrument, tubing	Visual inspection for damage; leakage, wear and tear	Weekly
Cleaning	Interior	By soiling, clean and if necessary decontaminate the instrument	Monthly or when visibly soiled
<b>chemagic Rod Heads</b>	Interior, rod heads	Visual inspection for soiling and bending	After each run

## Checking and priming of the dispenser manifolds

Checking proper performance of dispenser manifolds is recommended for the first run of a day by running the protocol 'check manifolds H96 all 360 Vxxxxxx'. If the manifolds do not deliver buffer properly, the manifolds should be primed by running the protocol 'prime manifolds H96 all 360 Vxxxxxx'.

Protocol 'prime manifolds H96 all 360 Vxxxxxx' should as well be run always when bulk reagents are changed.

## Cleaning and disinfection of the chemagic 360-D instrument

A complete cleaning of the **chemagic 360-D** instrument is recommended once a week and whenever necessary. Always wear the appropriate protective equipment when cleaning and disinfecting the **chemagic 360-D** instrument (laboratory coat, gloves, and safety glasses).



**Caution:** When operating inside the instrument, wear safety goggles, protective clothing, and gloves.



**Caution:** When power is switched on, do not open the instrument's cover.



**Warning:** When cleaning inside the instrument, to avoid electric shocks, switch off the power.



**Warning:** Touching hot parts may lead to severe injuries.



**Warning:** The magnet's housing can be very hot during and after operation.



**Caution:** During operation, the temperature in the operating room should be between +18° celsius and +35° celsius.

Do not clean the **chemagic 360-D** instrument with aggressive agents such as acetone or hypochlorite solution, since this can corrode the material. A wipe disinfectant with a 4% solution of Kohrsolin FF (Bode Chemie, Hamburg) is recommended. Alternatively a 70% ethanol solution can be used on all non-painted surfaces. To achieve a complete disinfection allow an incubation time of 1 hour prior to cleaning of the treated surfaces with a wipe soaked with deionized water. Subsequent to the Kohrsolin treatment removal of nucleic acids can be done with e.g. DNA-Exitus or similar formulations - followed by cleaning with deionized water (wipe). Make sure that residual Kohrsolin or DNA-Exitus is completely removed to prevent corrosion.

There is no need to treat the linear guiding rail, the spindles and the runner-blocks of the axes with disinfecting substances unless sample material or buffers have been spilled on them. In such a case after treatment with disinfecting agents, carefully remove all grease from the surfaces and re-lubricate the components.

## Cleaning of the chemagic Rod Heads



**Caution:** When operating inside the instrument, wear safety goggles, protective clothing, and gloves.



**Caution:** Treat all samples as potentially infectious.



**Warning:** Touching hot parts may lead to severe injuries.



**Warning:** The magnet's housing can be very hot during and after operation.

Usually the **chemagic Rod Heads** do not need cleaning, unless any unanticipated contamination with sample material or reagent(s) has occurred. If this is the case, wipe the affected areas/parts of the head with a lint free cloth moistened with the appropriate disinfectant/cleaning agent. If you need to uninstall the **chemagic Rod Head** for a better access to the contaminated parts, please ensure that no liquid runs into the ball bearings at the top of the rods.

In case contaminants on the metal rods of the **chemagic Rod Head** had the time to dry and/or are hard to remove, then it might help to place tubes/plates filled with 70% ethanol or 4% Kohrsolin, on the carrier and rotate the bare metal rods in it for a while. To do so, use the **Jog Mode** to position the vessels properly below the head and carefully lower the head into the liquid until all affected areas of the rods are submerged. Turn on the rotation e.g. on 1000 rpm. Make sure that the liquid is not spilled by too high rotation or due to too much liquid in the vessels. Once the cleaning procedure is finished, drive the head to its **Starting Position** and thoroughly wipe any residual liquid from the rods, clean with deionized water and finally dry the rods with a lint free cloth.

## Cleaning of the drop cover



**Caution:** When operating inside the instrument, wear safety goggles, protective clothing, and gloves.



**Caution:** Treat all samples as potentially infectious.



**Warning:** Touching hot parts may lead to severe injuries.



**Warning:** The magnet's housing can be very hot during and after operation.

In most cases it is sufficient to clean the left part of the drop cover that can be accessed while it is in the parking position in front of the magnet housing. Simply wipe the surface with an appropriate agent.

## Moving the instrument

Lifting of the instrument has to be done from the gray bottom frame. Do not lift from the door! Consider the weight (140kg) of the instrument.



**Caution:** The instrument is very heavy. Do not attempt to lift the instrument.

## Specifications

### Technical specifications

Width: 900mm (1500mm with display attached and door open)

Depth: 820mm (1000mm with door open)

Height: 900mm

Weight: 140kg

Input voltage: 100 - 120 / 200 - 240 V

Power frequency: 50/60 Hz

Power consumption: 1700 VA

Noise: < 80 dB

### Performance specifications

Buffer and Washer liquid dispenser:

Range 200 µl - 45 ml

Accuracy: < +/- 12%

### Environmental conditions

During operation:

- Ambient temperature: +18 to +35°C
- Ambient humidity: < 80%
- Operating altitude: <1950 m AMSL (Above Mean Sea Level)

For storage and transportation, keep ambient temperature between -25 °C and +60°C.

### Operator

Operator of the instrument has to read and understand this User Manual and has to be trained for the use of the instrument.



## Error messages

### Error messages during startup of software

**Error number 001: The Program is already running**

- The program is already running and has not been closed yet.

**Error number 002: Unable to open Parameter File.**

- The parameter file 'Parameter.msm' could not be opened (e.g. file not available in program directory).

**Error number 003: Unable to open Com-Port.**

- The COM port defined in parameter file 'Parameter.msm' could not be opened (wrong COM port defined or COM port not available).

**Error number 004: Unable to open Axis Parameter File.**

- The parameter file 'AxisParameter.msm' could not be opened (e.g. file not available in program directory).

### Error messages during reading of saving parameter file

**Error number 020: Unable to find Parameter --- in Parameter File.**

- The parameter --- was not found in the parameter file.

**Error number 021: Parameter --- in Parameter File exceeds max Speed Limit.**

- The parameter exceeds the setup limit for the maximum speed.

**Error number 022: Parameter --- in Parameter File exceeds max Limit Voltage Rotation.**

- The parameter exceeds the setup limit for the maximum voltage for the rotation axis.

**Error number 023: Parameter --- in Parameter File must be in the Range 1 to 255.**

- The parameter is outside of the allowed range.

**Error number 024: Parameter --- in Parameter File Position deeper than deepest Pos.**

- The parameter is below the deepest possible position.

**Error number 025: Unable to save Parameter --- to Parameter File.**

- The parameter could not be saved to the parameter file.

**Error number 026: Unable to save Parameter File.**

- The parameter file 'Parameter.msm' could not be saved.

**Error number 027: Unable to save Parameter Backup File.**

- The backup file for the parameter file 'Parameter.msm' could not be saved (e.g. setup directory does not exist).

**Error number 028: Value for Parameter --- not valid or out of range.**

- The entered value for the parameter is invalid or outside of the allowed range.

**Error number 030: Unable to find Parameter --- in Axis Parameter File.**

- The parameter was not found in the parameter file with axis parameters.

**Error number 035: Unable to save Parameter --- to Axis Parameter File.**

- The parameter could not be saved to the parameter file with axis parameters.

**Error number 036: Unable to save Axis Parameter File.**

- The parameter file 'AxisParameter.msm' could not be saved.

**Error number 038: Value for Axis Parameter --- not valid or out of range.**

- The entered value for the axis parameter is invalid or outside of the allowed range.

### Error messages during reading or saving protocol file

**Error number 040: Error in Pattern File, Line No. ---. One or more Parameters are missing for last Steptype.**

- Error while reading data from protocol file in line ---, one or more parameters are missing for the step type read at last.

**Error number 041: Error reading Data from Pattern File. The File contains no Parameter Sets.**

- The protocol file does not contain any protocol steps.

**Error number 042: Error in Pattern File, Line No. --- Parameter Mismatch: ---**

- Error while reading data from protocol file in line ---, an invalid parameter values has been detected (see info after text 'Parameter mismatch')

**Error number 043: Error in Pattern File, Line No. ---.The Rod Head Type Parameter is not in the valid Range.**

- Error while reading data from protocol file in line ---, the given rod head type is not in the valid range

**Error number 043: Error in Pattern The Rod Head Type Parameter is not in the valid Range.**

- Invalid rod head type selected in dialog 'Edit Protocol'.

**Error number 044: Error in Pattern File, Line No. ---. Transport Slot Position exceeds the available Range.**

- Error while reading data from protocol fine in line ---, the given transport slow position is not in the valid range

**Error number 044: Error in Pattern, Step No. ---. Transport Slot Position exceeds the available Range.**

- Invalid transport slot position entered in dialog 'Edit Protocol'.

**Error number 045: Error in Pattern File, Line No. ---. One of the Positions is deeper than the deepest Position.**

- Error while reading data from protocol file in line ---, the position value is deeper the setup deepest position.

**Error number 045: Error in Pattern, Step No. ---. One of the Positions is deeper than the deepest Position.**

- One of the positions entered at the dialog 'Edit Protocol' in step --- is deeper than the setup deepest position.

**Error number 046: Error in Pattern File, Line No. ---. One of the Speed Parameters exceeds the max Speed Limit.**

- Error while reading data from protocol file in line ---, the speed value exceeds setup maximum speed.

**Error number 046: Error in Pattern, Step No. ---. One of the Speed Parameters exceeds the max Speed Limit.**

- One of the speeds entered at the dialog 'Edit Protocol' i jns step --- exceeds the setup maximum speed.

**Error number 047: Error in Pattern File, Line No. ---. Value Rotation Parameter exceeds the max Limit.**

- Error while reading data from protocol file in line ---, the voltage for the rotation axis exceeds the setup maximum value.

**Error number 047: Error in Pattern, Step No. ---. Value Rotation Parameter exceeds the max Limit.**

- The voltage for the rotation entered at the dialog 'Edit Protocol' in line --- exceeds the setup maximum value.

**Error number 048: Error in Pattern File, Line No. ---. Unknown Steptype detected.**

- Error while reading data from protocol file in line ---, an unknown step type has been detected.

**Error number 048: Error in Pattern, Step No. ---. Unknown Steptype detected.**

- The step type entered at the dialog 'Edit Protocol' in line --- is unknown.

**Error number 049: Error open Pattern File for reading Data.**

- The protocol file could not be opened.

**Error number 050: Error in Pattern, Step No. ---. The Position for the External Step Is invalid or out of Range.**

- The position for the external step entered at the dialog 'Edit Protocol' in line --- is invalid or outside of the allowed range.

**Error number 051: Error in Protocol file, creating Validation ID failed!**

- Error in protocol file while creating validation ID.

**Error number 052: Error in Protocol file, checking Validation ID failed!**

- Error in protocol file while verifying the validation ID (e.g. file changed manually).

### Error messages while editing protocol file

**Error number 060: Error save Protocol Data to File. Cannot open File for writing.**

- The protocol file could not be saved

**Error number 061: Error read Rack/Plate Data from Protocol.**

- The rack data (Rack ID, description...) from the info text area of the protocol file is invalid.

**Warning number 061: Rack/Plate Data could not be read from Protocol.**

- The rack data (Rack ID, description...) from the info text area of the protocol file is invalid.

**Error number 062: Error read Buffer Data from Protocol.**

- The buffer data from the info text area of the protocol file is invalid.

**Warning number 062: Buffer Data Could not be read from Protocol.**

- The buffer data from the info text area of the protocol file is invalid.

**Error number 063: Error read External Process Data from Protocol.**

- The data for external steps from the info text area of the protocol file is invalid.

**Warning number 063: External Process Data could not be read from Protocol.**

- The data for external steps from the info text area of the protocol file is invalid.

### Error messages while reading data from dialog edit fields

**Error number 070: Error read Data from edit field. Value is not valid or out of Range.**

- The entered value in one of the edit fields (e.g. Dialog Calibration) is invalid.

### Error messages / warning while working with file "Settings.msm"

**Error number 080: Error read Settings from File.**

- The file 'Settings.msm' could not be opened for reading.

**Error number 081: Error save Settings to File.**

- The file 'Settings.msm' could not be saved.

### Error messages / warnings while working with file with values for calculating interpolation between voltage and revolution speed

**Error number 085: Error read interpolation data rotation axis from file.**

- The file 'RotVoltageToRPM.msm' could not be opened.

**Error number 086: Error --- while reading interpolation data rotation axis from file.**

- Error while reading parameters from file 'RotVoltageToRPM.msm'
- Possible error numbers:
  - 1 : internal error initializing memory for data for calculation of interpolation
  - 2 : error reading data from file
  - 3 : number of points for interpolation (parameter [...NbrInterpolationPoints]) not found in file
  - 4 : item for interpolation value (parameter [...IntPoint...]) not found in file
  - 5 : minimum number of points for interpolation (= 1) undershoot
  - 6 : maximum number of points for interpolation (=100) exceeded

### Error messages / warnings User Level

**Error number 090: No User Name selected or Error in Selection.**

- No user name selected in login dialog.

**Error number 091: Wrong Password for User Name.**

- The entered password for the user name is wrong.

**Error number 092: Selected User Name not found in List.**

- The selected user name was not found in the list with valid user names.

**Warning number 093: No License for 'Super Admin' Level, User Level set to 'Admin'.**

- Log-In of user with level 'SuperAdmin' but no valid license key for SuperAdmin Level found. The user level will be set to 'Admin'.

**Warning number 094: Function not allowed for actual User Level. Logon with new User Name?**

- The selected function is not allowed for the actual user level. When selecting 'Yes' the login dialog is opened to log-in with a different user name.

**Warning number 094: Function not allowed for actual User Level.**

- The selected function is not allowed for the actual user level.

**Error number 095: Error read User Data Settings from File.**

- The file 'User\_Settings.msm' containing valid user names could not be opened.

**Error number 096: Error save User Data Settings to File.**

- The file 'User\_Settings.msm' containing valid user names could not be saved.

**Warning number 097: User Name 'Unknown' found in List in Pos. --- User Name not saved**

- When saving user list. The user name in line --- still has the default value. The user name is not saved.

**Warning number 098: User Name --- already found in List with User Names. User Name not saved.**

- When saving user list. The user name in line --- already exists. The user name is not saved.

### Error messages / warnings Log Files

**Error number 120: Error read Production Log Data from File.**

- The log file with the results of the production run could not be opened.

**Error number 121: Error save Production Log Data to File. Retry saving Log Data?** è The log file with the results of the production run could not be saved. When selecting 'Yes' saving of the log file will be tried once again.

**Error number 122: Error calculate Validation ID for Log File.**

- The validation ID for the log file of the production run could not be calculated.

**Error number 123: Error read Sample/Elution ID data from File.**

- Error while reading Sample/Elution ID data from file.

### Error messages / warnings Stripper

**Error number 200: Stripper not in Upper Position.**

- The stripper has been moved to the upper position but does not reach the position within the given timeout.

**Error number 201: Stripper not in Lower Position.**

- The stripper has been moved to the lower position but does not reach the position within the given timeout.

**Warning number 200: Stripper not in Upper Position.**

- The stripper is not in the upper position (Jog-Modus).

**Warning number 201: Stripper not in Lower Position.**

- The stripper is not in the lower position (Jog-Modus).

**Warning number 202: The Stripper Position is Undefined.\nPress Yes to drive up, No to drive down or Cancel to Abort.**

- The stripper is in an undefined position (Jog-Modus), select 'Yes' to move the stripper to the upper position or 'No' to move the stripper to the lower position.

### Error messages / warnings Drop Cover

**Warning number 213: Drop Cover must be open before moving Stripper down.**

- The drop cover must be open before the stripper can be moved to the lower position (Jog-Modus).

**Warning number 214: Drop Cover must be open before moving Z-Axis down.**

- The drop cover must be open before the z-axis can be moved to a lower position (Jog-Modus).

**Error messages / warnings Protocol file during production run**

**Error number 220: The Pattern File contains no Steps. Cannot continue with Program.**

- During production run: the protocol file does not contain any protocol step.

**Error number 221: The Pattern File contains an invalid Transport Slot. Cannot continue with Program.**

- During production run: one of the protocol steps contains an invalid transport slot.

**Error number 222: The Pattern File contains an invalid Step Type. Cannot continue with Program.**

- During production run: the protocol file contains an invalid protocol step type.

**Error number 223: The Rod Head Type of the selected Pattern File does not correspond to the Rod Head Type installed on the Machine. Cannot continue with program.**

- During production run: the read head type in the protocol file does not correspond to the rod head type installed at the machine.

**Error messages / warnings covers**

**Error number 230: The Covers are not closed.**

- One of the covers is not closed.

**Error number 231: The Covers are not closed. Close Covers and press Retry to continue or Abort to Abort Process.**

- One of the covers is not closed.

**Warning number 230: The Covers are not closed.**

- One of the covers is not closed (Jog-Modus).

**Error number 232: Active Run interrupted. Press Retry to continue or Abort to Abort Process.**

- The production run was interrupted (cover opened), select 'Retry' to continue with the production run or 'Abort' to abort the production run.

**Error messages / warnings axes**

**Error number 240: Axis Error occurred for Axis ---.**

- An axis error for axis --- occurred in process.

**Error number 241: Axis ---: Reset axis error failed with error ---.**

- Error reset axis error for axis ---.

**Error number 242: Axis ---: Enable axis failed with error ---.**

- Error enable axis ---.

**Error number 243: Axis ---: Disable axis failed with error ---.**

- Error disable axis ---.

**Error number 244: Axis ---: Change axis parameters failed with error ---.**

- Error while transferring axis parameter for axis --- to motor card.

**Error number 245: Axis ---: Homing axis failed with error ---.**

- Error during homing of axis ---.

**Error number 246: Axis ---: Moving axis to position failed with error ---.**

- Error while moving axis --- to target position.

**Error number 247: Axis ---: Start DC motor with continuous revolution failed with error ---.**

- Error starting DC motor (rotation) with target revolution.

**Error number 248: Axis ---: Axis parameter not changed, error ---.**

- Error while changing axis parameter for axis --- on motor card.

**Error number 249: Axis ---: Axis disabled while homing.**

- Axis --- was disabled while homing (e.g. cover opened during homing).

**Error number 250: Axis ---: Axis disabled while moving to position.**

- Axis --- was disabled while moving to position (e.g. cover opened while moving to position).

**Error number 251: Axis ---: Start axis in continuous mode, error ---.**

- Error starting axis --- with continuous speed

**Error number 252: Motorcard ---: Read status motorcard failed with error ---.**

- Error reading status axis --- from motor card.

**Error number 253: Motorcard ---: Disable motors on motorcard failed with error ---.**

- Error disable all axes on motor card.

**Warning number 255: Moving of transport is not possible because the Z-Axis is not in Upper Position.**

- The movement of the transport axis is not allowed when the z-axis is not in upper position.

**Error number 270: Motorcard ---: Start of program not allowed with firmware versions of motorcards...**

- The firmware version of the motorcards is not valid for starting the software. Firmware update of motorcards is necessary.

**Error number 271: Axis ---: Homing of axis not plausible...**

- Error while moving to testpositions after homing → Homing not correct.

**Error number 272: Motorcard ---: Firmware update motorcard for axis failed with error...**

- Error while updating firmware on motorcard.

**Error number 273: Firmware update file for motorcard not found...**

- Firmware update file for motorcard not found in subdirectory 'Firmware'.

**Error number 274: Firmware update file for motorcard is too large...**

- Firmware update file for motorcard is too large.

**Error number 275: Firmware update file for motorcard is invalid...**

- The firmware update file is not valid firmware file for the motorcard.

**Error messages communication IO-Modules / Axes**

**Error number 300: A Communication Timeout occurred in Communication to IO Module with Address --- (Result = ---). Select another Com-Port and check Supply Voltage and Communication Line to the Modules on the RS485 IO Bus. Check also whether you attached several RS485 IO Modules with the same Communication Address at the Bus.**

- Communication timeout during communication with IO-Module (PR0111). This error is shown only when communicating the first time with the module after startup of the software. Machine switched on and addresses for the modules setup correctly?
  - Address 1 = IO-Module #1
  - Address 2 = IO-Module #2

**Error number 301: A Communication Timeout occurred in Communication to Motorcard with Address --- (Result = ---). Select another Com-Port and check Supply Voltage and Communication Line to the Modules on the RS485 IO Bus. Check also whether you attached several RS485 IO Modules with the same Communication Address at the Bus.**

- Communication timeout during communication with motor card (PR0112 / PR0125). This error is shown only when communicating the first time with the module after startup of the software. Machine switched on and addresses for the modules setup correctly?
  - Address 3 = motor card #1 (Drop Cover / Rotation Needles)
  - Address 4 = motor card #2 (X-Axis / Drawer Prefilling)
  - Address 5 = motor card #3 (Z-Axis)

**Error number 302: A Communication Error occurred in Communication to IO Module with Address --- (Result = ---).**

- Communication timeout during communication with IO-Module (PR0111)
  - Address 1 = IO-Module #1
  - Address 2 = IO-Module #2

**Error number 303: A Communication Error occurred in Communication to Motorcard with Address --- (Result = ---).**

- Communication timeout during communication with motor card (PR0112 / PR0125)
  - Address 3 = motor card #1 (Drop Cover / Rotation Needles)
  - Address 4 = motor card #2 (X-Axis / Drawer Prefilling)
  - Address 5 = motor card #3 (Z-Axis)

### **Error messages internal software errors**

**Internal Error number 400: Unable to establish data for synchronization.**

- Internal software error: should not occur under normal conditions.

**Internal Error number 402: Unable to start Background Threads.**

- Internal software error: should not occur under normal conditions.

**Internal Error number 403: Unable to start Production Thread.**

- Internal software error: should not occur under normal conditions.

**Internal Error number 404: Undefined Step detected in Production Thread.**

- Internal software error: should not occur under normal conditions.

**Internal Error number 405: Invalid Value for selected Rod Head Type received (Value = ---). Program Termination.**

- Internal software error: should not occur under normal conditions.

**Internal Error number 406: Undefined Error Step detected in Production Thread.**

- Internal software error: should not occur under normal conditions.

## Troubleshooting

Problem	Possible Reason	Solution
The <b>chemagic 360-D</b> instrument cannot be switched on	The power chord is not connected to the <b>chemagic 360-D</b> instrument	Make sure the power chord is connected to the <b>chemagic 360-D</b> instrument and plugged into the power socket
The <b>chemagic Software</b> cannot be started	The shortcut on your desktop does not point to the installation path of the <b>chemagic Software</b>	Check whether the <b>chemagic Software</b> including the executable file " <b>chemagicModule_360.exe</b> " is in the installation folder
A communication error occurs during startup of the <b>chemagic Software</b>	The <b>chemagic 360-D</b> instrument is not switched on.	Switch on the <b>chemagic 360-D</b> instrument before starting the software
	The serial cable connection between the <b>chemagic 360-D</b> instrument and the computer is not established	Use the supplied serial cable to connect the <b>chemagic 360-D</b> instrument to the computer
A communication error occurs and the <b>chemagic Software</b> freezes	The <b>chemagic 360-D</b> instrument has been switched off before exiting the <b>chemagic Software</b>	Use the Windows Task Manager to shut down the process " <b>chemagicModule_360.exe</b> "
The status of the X-axis (round table) does not turn green during the reference movement of the axes	The Z-axis cannot be moved into the startup position	Contact your local distributor or Revvity technical support (address below) .
The <b>chemagic Rod Head</b> remains in the lowest position during tip take-up	The tip take-up position was set too low	Contact your local distributor or Revvity technical support (address below) .
Magnetic Bead left overs in plates after the run	Magnetic Bead are used for each application in excess and accordingly the protocols are optimized with regards to the highest trough put. So Magnetic Bead left over are tolerable as long as they do not affect your downstream applications	If you see any problems with the downstream application in related to left over Beads please contact the support team.



## Warranty

The enclosed instrument comes with a limited warranty (the "Warranty") from Wallac Oy ("Wallac"), a Revvity company. This is only a summary of the warranty on the enclosed instrument and shall not be deemed to alter or amend the terms of the Warranty. Consult the terms and conditions, and rental or purchase agreement for a full explanation of the Warranty.

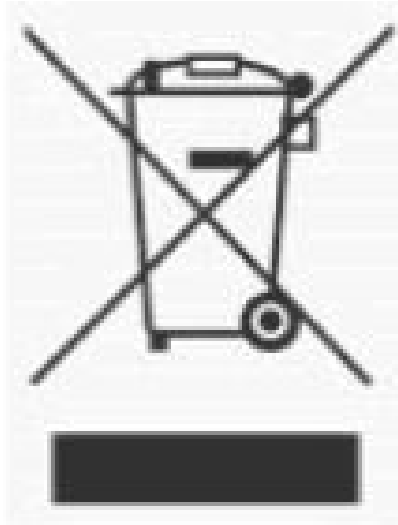
In general, for a period of twelve (12) months from the date of installation, or fifteen (15) months from the date of shipment (the "Instrument Warranty Period"), whichever comes earlier, Wallac warrants that this instrument is free from defects in materials and workmanship.

During the Instrument Warranty Period, Wallac will provide parts and labor to repair defects in materials and workmanship.

**Note:** The warranty on this instrument does not cover required Periodic Maintenance ("PM"), if any, the cost and expense of which must be borne by the purchaser or renter. Failure to perform required PM shall void the Warranty. Revvity and authorized representatives are available to perform PM. Please contact your Revvity representative for additional information on PM.

The full provisions of the limited warranty for this product are available at <https://www.revvity.com/policies>.

## WEEE instructions for Revvity products



A label with a crossed-out wheeled bin symbol and a rectangular bar indicates that the product is covered by the Waste Electrical and Electronic Equipment (WEEE) Directive and is not to be disposed of as unsorted municipal waste. Any products marked with this symbol must be collected separately, according to the regulatory guidelines in your area.

The objectives of this program are to preserve, protect and improve the quality of the environment, protect human health, and utilize natural resources prudently and rationally. Specific treatment of WEEE is indispensable in order to avoid the dispersion of pollutants into the recycled material or waste stream. Such treatment is the most effective means of protecting the customer's environment.

Requirements for waste collection, reuse, recycling, and recovery programs vary by regulatory authority at your location. Contact your local responsible body (e.g. your laboratory manager) or authorized representative for information regarding applicable disposal regulations. Contact Revvity at the website listed below for information specific to Revvity products.

**Website:**

[www.revvity.com/policies](http://www.revvity.com/policies)

**Europe:** follow the link provided above to access instructions on WEEE handling specific to different European countries

**Customer Care USA:** call 1-800-762-4000

**Customer Care Rest of the World:** call (+1) 203-925-4602

Products from other manufacturers may also form a part of your Revvity system. These other producers are directly responsible for the collection and processing of their own waste products under the terms of the WEEE Directive. Please contact these producers directly before discarding any of their products.

Consult the Revvity web site (above) for producer names and web addresses.

# revvity

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revvity

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