

Short Protocol

AltoStar[®]

Automated Whole Blood Pretreatment

09/2022 EN

AltoStar[®]

Automated Whole Blood Pretreatment

For research use only!

(RUO)

SHO-WBPB1500-AUTO-EN-S01



09 2022



altona Diagnostics GmbH • Mörkenstr. 12 • D-22767 Hamburg

Table of contents

1.	Introduction	6
2.	Workflow	7
2.1	Data flow.....	7
3.	Graphical user interface	8
3.1	Navigation bar	8
3.2	Reset tip counter	8
3.3	Run View	8
3.3.1	Worklist pane.....	9
3.3.2	Message pane.....	10
3.3.3	Sample pane	10
3.3.4	Report View.....	11
4.	Operating	12
4.1	Quickstart	12
4.2	Starting and stopping the software.....	13
4.3	Importing worklists.....	14
4.3.1	Automated import.....	14
4.3.2	Manual import.....	15
4.4	Preparing the instrument	15
4.4.1	Tip handling	16
4.5	Sample preparation	16
4.6	Starting a run.....	17
4.7	During a run.....	17
4.8	After a run.....	18
4.9	Processing failed samples.....	18
4.10	Creating a report.....	19
4.11	Transferring samples into the AltoStar® Workflow	19

4.12	Processing cycler files.....	20
4.12.1	Automated processing of cycler files.....	21
4.12.2	Manual processing of cycler files.....	21
4.13	Repeating a run.....	21
5.	Troubleshooting guide	22
6.	Technical assistance	23
7.	Trademarks and disclaimers.....	23
8.	Symbols	24

1. Introduction

The AltoStar® Pretreatment software provides a plugin solution to the AltoStar® Workflow that allows to perform the pretreatment of whole blood samples in an automated way. Primary tubes with common form factors are supported for direct aspiration of whole blood. This eliminates the need for manual pipetting, improves traceability for the processed samples and removes operator effects on PCR results.

The liquid handling performed during a pretreatment run follows the procedure for whole blood pretreatment as outlined in the instructions for use for the AltoStar® Whole Blood Pretreatment Buffer 1.5. The required mixing of whole blood and Whole Blood Pretreatment Buffer (WBPB) is performed on the instrument after the sample transfer from the primary tubes to the secondary tubes. The secondary tubes can be directly used for a purification run after the pretreatment run has finished.

The AltoStar® Pretreatment workflow requires no additional hardware for the AltoStar® Automation System AM16 (Hamilton; in the following summarized as AltoStar® AM16). The only needed reagent is the AltoStar® Whole Blood Pretreatment Buffer 1.5.

The software integrates in data workflows with or without LIMS and produces trace files and printable reports for filing or digital storage.

2. Workflow

2.1 Data flow

To allow for a convenient workflow, the AltoStar® Pretreatment software allows the use of secondary tubes with arbitrary barcodes. In consequence, this means that any subsequent AltoStar® Workflow will receive all samples from the automated pretreatment workflow in relabeled secondary tubes. To ensure the safety of the data flow, the corresponding primary and secondary barcodes need to be traced and controlled throughout the whole process.

As can be seen in figure 1, the AltoStar® Pretreatment software wraps the AltoStar® Connect software to control the data flow that arrives at the cycler, to make certain the PCR results can be uploaded back to the LIMS in the correct form. Non-whole blood samples will automatically bypass this process and will be treated the same as without the AltoStar® Pretreatment software.

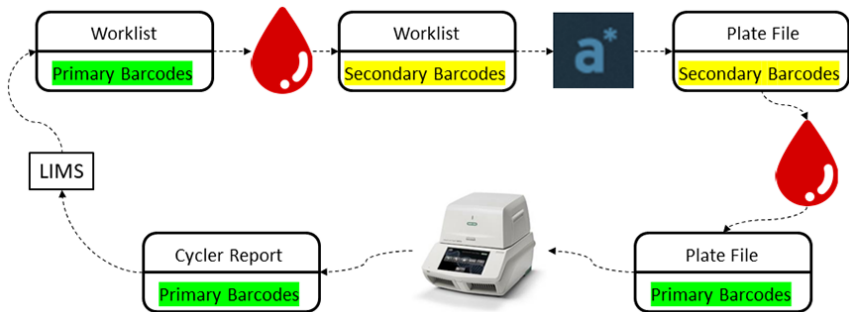


Figure 1: Data flow for LIMS issued whole blood samples with the AltoStar® Pretreatment software

3. Graphical user interface

3.1 Navigation bar

The navigation bar allows to select the active view of the graphical user interface (GUI) and to trigger user actions.

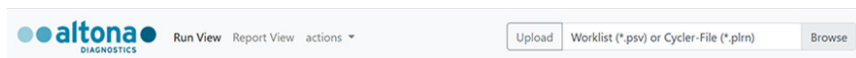


Figure 2: Navigation bar

- **Run View:** main view and user interface of the run for the user
- **Report View:** reporting of past runs with the possibility to create printable reports
- **Actions:**
 - Reset tip counter

On the right side of the navigation bar there is an upload field for selecting (**Browse**) and uploading (**Upload**) worklists (*.psv) for starting runs and cyclor files (*.plrn) for post processing after PCR setup in the AltoStar® Workflow.

3.2 Reset tip counter

The Reset tip counter sets the tip counter for 1,000 µl tips in the AltoStar® Connect software database to zero. Click the **Reset tip counter** button and wait until a message is displayed that the 1,000 µl tips must be completely filled.

3.3 Run View

The Run View is the central view for preparing, starting, and monitoring pretreatment runs. The central view is designed in a 3 column layout (see figure 3):

- Worklist pane (left): Display of worklists that are in the database and worklists that have been successfully processed in past runs.

- Message pane (middle): Display of status and error messages and instructions for the user. Here, contextual dialogs are generated with which the user can interact with the run.
- Sample pane (right): Display the status of the tubes on the deck during active runs. Tubes including barcodes, position on the deck and, if applicable, sample name are displayed here.

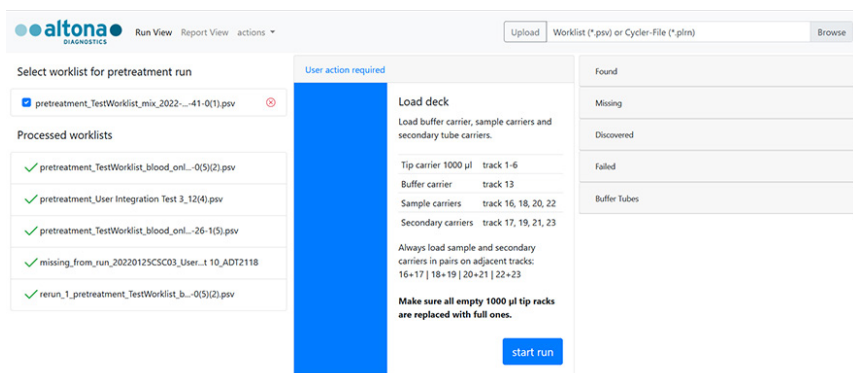


Figure 3: Run View

3.3.1 Worklist pane

Worklists in the database are displayed in the worklist pane under "Select worklist for pretreatment run", if they have not yet been used for a run that completed successfully. The worklists can be selected for the next run using checkboxes. Selection of multiple worklists is possible.

A red cross is displayed behind each selectable worklist, with which the worklist can be **deleted**. However, this does not remove the worklist from the database, but only removes it from the list displayed in the GUI.

Under **Processed worklists** the 5 most recently processed worklists are displayed.

3.3.2 Message pane

All information relevant to the user before and during the run is displayed in the message pane. The messages are color coded depending on their content.

- *Blue*: user instructions
- *Yellow*: warnings (with timeout if necessary)
- *Red*: errors (run aborts after confirmation)
- *Green*: run successfully completed

Before the run, a dialog appears with information about how to load the autoloader tray. This dialog is marked with blue color. Click the **start run** button to start a run with or without selected worklist(s).

The displayed dialogs may query decisions from the user or require confirmation. In particular, the message for the successfully completed run can be used to check information such as the remaining buffer reactions before confirming.

3.3.3 Sample pane

Information about all tubes on the deck is displayed in the sample pane during the run.

The display is divided into:

- **Found**: samples present in the loaded worklist whose barcodes were found on the deck.
- **Missing**: samples that are present in the loaded worklist and whose barcodes were not found on the deck.
- **Discovered**: samples that are not present in the loaded worklist and whose barcodes were found on the deck.
- **Failed**: samples that have been excluded from the run due to a run error and must be processed by hand after the run.
- **Buffer Tubes**: buffer tubes found on the buffer carrier. The level is indicated as remaining reactions. Empty tubes are marked with "depleted" and bordered in red.

The fields are constantly updated during the run and reset at the end of a run.

3.3.4 Report View

In the Report View, past runs can be selected and results and data for the run can be displayed (see figure 4).

On the left is a list of completed runs. If a worklist has been loaded for the run, the name of the worklist file(s) is displayed.

The screenshot displays the 'Report View' interface. On the left, under 'Select Run', there is a list of runs:

- 20220126CSC05_User Test 2_re-run
26.1.2022, 14:14:00 - 14:21:00
rerun_1_pretreatment_TestWorklist_blood_only_2021-01-25_14-32-0(5)(2).psv
- 20220126CSC01_User Test 4_ADT2118
26.1.2022, 11:30:00 - 11:35:00
(no worklist)
- 20220125CSC04_User Test 3_ADT2118
25.1.2022, 13:01:00 - 13:07:00
(no worklist)
- 20220125CSC03_User Test 10_missing samples_ADT2118
25.1.2022, 12:18:00 - 12:26:00
missing_from_run_20220125CSC03_User Test 10_ADT2118
- 20220125CSC03_User Test 10_ADT2118
25.1.2022, 11:26:00 - 12:01:00
pretreatment_TestWorklist_blood_only_2021-01-27_11-01-26-1(5).psv
- 20220125CSC02a_User Test 11a_ADT2118
25.1.2022, 10:02:00 - 10:06:00
(no worklist)

The right panel shows details for the selected run:

- run-info
 - Run Name: 20220207CSC02_User Test 23_ADT2118
 - Run GUID: 114d57fbf36a4d1785d9fda0ac4feb1
 - Start Time: 7.2.2022, 15:12:29
 - End Time: 7.2.2022, 15:21:27
 - Status: finished
- successful
- failed
- missing

Buttons on the right: Open printable report, Re-export psv files, Download psv files, Repeat run.

Figure 4: Report View

The information about the run is summarized in the middle of the Report View:

- **Run-info:** general information and success status
- **Successful:** list of successfully processed samples
- **Failed:** failed samples that need to be processed by hand
- **Missing:** samples that are in the run's worklist but were not found on the deck

On the right side there are 4 buttons that refer to the currently selected run:

- **Open printable report:** opens a view with a detailed report that is formatted for printing. Printing takes place via a **print** button in the report or the print function of the browser.

- **Re-export psv files:** for successfully completed runs, the worklists generated on the run can be re-exported if there was no network connection during the run (if a network drive was configured as a directory) or the files have already been deleted.
- **Download psv files:** for successfully completed runs, the psv files for the purification can be downloaded here. The files are downloaded as a zip archive.
- **Repeat run:** runs that have the status **finished** and were started with a worklist can be marked for a repeat run with this button. Click the **Repeat run** button and to display a message if the run has been successfully scheduled. The run then appears with the name of the worklist in the Run View with the prefix "rerun_x_", where x is the counter of the repetitions.

4. Operating

4.1 Quickstart

- Needed materials:
 - Primary tubes with whole blood samples on the Tube Carrier 24 (primary carrier) or Tube Carrier 32 (primary carrier)
 - An according number of barcode-labeled sample tubes on the Tube Carrier 32 (secondary carrier)
 - At least one unused tube per 12 samples of WBPB from AltoStar® Whole Blood Pretreatment Buffer 1.5 on the Tube Carrier 24 (buffer carrier)
 - The Tip Carrier fully loaded with 5 racks of Tip Carrier 1000 µl filtered tips
- Make sure all samples are mixed to homogeneity by a suitable mixing procedure (see chapter 4.5 Sample preparation).
- Uncap all tubes before placing them on the instrument.
- Open a browser at the address *http://localhost:8000/GUI*
- Select an automatically imported worklist to run in the worklist pane on the left of the screen OR upload a new worklist from hard drive with the file upload in the top right corner of the screen and select the newly imported worklist in the worklist pane on the left of the screen OR do not select any worklist and continue with discovered samples only.

- Click the **start run** button in the message pane in the middle of the screen to start a run. The “no worklist selected” warning can be ignored when performing a run with discovered samples only.
- Follow the instructions on the screen to load the requested labware and continue with the whole blood pretreatment.
- When the green "run finished" message is displayed on the screen, the run is complete. Failed samples that need to be pretreated manually are highlighted on the right in the sample pane.
- Check the **Buffer Tubes** tab in the sample pane to see which buffer tubes are depleted and need to be discarded.
- Unload, recap and store the remaining buffer and primary tubes.
- If applicable, manually pretreat failed samples.
- Open the AltoStar® Connect software to program a purification run. The output worklists from the automated pretreatment run can be found in the AltoStar® Connect software default worklist folder.

4.2 Starting and stopping the software

The user interaction with the AltoStar® Pretreatment software takes place mainly via the Pretreatment GUI (Graphical User Interface). This is accessible via the browser as long as the Pretreatment API (Application Programming Interface) is running, recognizable by the fact that the blood drop icon is visible in the Windows system tray. If the blood drop icon is not visible, the software can be started by double-clicking the shortcut **AltoStar Pretreatment RUO** on the desktop, also marked with a blood drop icon.

The GUI is running in the browser and can be reached by opening the browser and entering the address *http://localhost:8000/GUI*

The Pretreatment API is designed to run in the background indefinitely but can also be terminated by right-clicking on the blood drop icon and selecting **Quit**.

NOTE



Closing the browser or closing the browser tab containing the GUI does not shut down the Pretreatment API.

4.3 Importing worklists

Worklists are files with the suffix “.psv” that are used to transfer sample information into the AltoStar® Workflow. They contain the sample names and barcodes and specify which AltoStar® assays are used with the samples.

If there is no LIMS involved in the data workflow, it is not strictly necessary to use worklists. The AltoStar® Pretreatment software will scan any primary tube in the primary carriers and produce an output worklist, which can be imported into the AltoStar® Connect software, after the pretreatment run has finished.

NOTE



Note that the worklists produced for discovered samples do not contain any sample names or the AltoStar® assay information. This information needs to be entered manually within the AltoStar® Connect software.

4.3.1 Automated import

If the installation site is equipped with a LIMS system generating worklist files compatible with the AltoStar® Workflow, the worklist import can be completely automated. The imported worklists will appear in the worklist pane as soon as they are ready. Refreshing the browser page also refreshes the list of imported worklists.

The on-site LIMS is expected to deliver valid AltoStar® worklist files. In case the expected worklists do not show up in the worklist pane, it is possible that the generated worklist was incompatible with the AltoStar® Workflow and therefore invalid. The worklist will then be saved in the folder "invalid" in the psv files base folder. The worklists will be filed in this folder within subfolders that are named with a short description of the underlying error.

NOTE



It is possible to upload worklists from the “invalid”-folder in the worklist upload in the GUI, to receive a detailed error message.

4.3.2 Manual import

In addition to the automatic import, worklists can also be imported manually via the upload in the navigation bar. The files are checked during upload. If an invalid worklist is uploaded, an error message with details why the import failed is shown.

4.4 Preparing the instrument

Table 1: Labware for a whole blood pretreatment run

Tracks	Role	Carrier	Samples or consumables
1–6	Tip carrier	Tip Carrier	1000 µl filtered tips
13	Buffer carrier	Tube Carrier 24	1–24 WBPB tubes
16, 18, 20, 22	Primary carrier	Tube Carrier 24	1–24 whole blood sample tubes (primary tubes)
		Tube Carrier 32	1–32 whole blood sample tubes (primary tubes)
17, 19, 21, 23	Secondary carrier	Tube Carrier 32	1–32 whole blood pretreatment sample tubes (secondary tubes)

The following rules apply:

- There must be one secondary carrier for secondary tubes next to each primary carrier for primary tubes filled with at least as many empty secondary tubes as there are primary tubes on the adjacent primary carrier.
- There must be at least as many WBPB reactions on the buffer carrier as there are primary tubes.
- The instrument will work with as many channels as there are buffer tubes for aliquoting the buffer, speeding up the runtime.
- There is no need to put more than 8 buffer tubes on the buffer carrier if the tubes are completely filled (12 reactions). If already used buffer tubes are used, all 24 slots of the buffer carrier can be filled with buffer tubes.

The instrument will prioritize depleting the emptiest tubes first. Putting empty buffer tubes on the instrument will not result in an error if enough reactions are left in the remaining tubes on the carrier. If unsure whether a buffer tube contains another reaction, it is possible to simply put it on the carrier and follow the automated choice by the instrument.

4.4.1 Tip handling

The instructions for placing tip racks on the tip carrier are the same as for AltoStar® Workflow. The tip counter is synchronized with the AltoStar® Connect software, so it is not necessary to completely refill the tip carrier for every run.

However, care needs to be taken to replace any completely empty tip rack with a completely filled one before any run. If for any reason the tip counter needs to be reset, this can be done in the **Run View** in the **actions** menu. Make sure that all tip racks on the 1,000 µl tip carrier are completely filled with tips and click the **Reset tip counter** button.

4.5 Sample preparation

Whole blood is a complex cell suspension and prone to phase separation by sedimentation of cells or other particulates formed during sampling and storage. It is therefore necessary to mix whole blood to homogeneity shortly before starting a pretreatment run.

NOTE



Whole Blood samples must be mixed to homogeneity shortly before a pretreatment run.

The method transfers 350 µl of whole blood from the primary tubes to the secondary tubes. To account for the dead volume of the primary tube, additional volume of whole blood has to be provided. The necessary excess volume depends on the tube geometry of the primary tube (see table 2).

Table 2: Minimum total volumes for a successful aspiration of whole blood

Tube geometry	Minimum whole blood volume [μ l]
AltoStar® sample tube	600
16 mm diameter round bottom tube	700

4.6 Starting a run

Once the run is started by clicking the **start run** button in the GUI, the front cover of the instrument will lock and the loading of the carriers begins.

A run can either be started with an empty autoloader tray and the carrier can be transferred on the autoloader tray as it is requested by the instrument, or the carrier can be put on the autoloader tray according to the deck layout described in chapter 4.4 Preparing the instrument. The deck layout is also described in the standby message in the GUI before the **start run** button is clicked.

Regardless of which variant is chosen, the run will pause and indicate the possible position for the next carrier to load until the user has provided the carrier and acknowledged the message in the loading dialog.

For easier identification and grouping of result worklists, the run will query the user for a run name that can be chosen freely but cannot be used for a later run. If the query for the run name is acknowledged without input, the run name will be automatically generated from the time and the date the run started.

4.7 During a run

The run uses a color coded system to notify the user, if input is needed:

- *Blue*: user instructions
- *Yellow*: warnings (with timeout if necessary)
- *Red*: errors (run aborts after acknowledgement)
- *Green*: run successfully completed

The colored indicator will be accompanied by instructions or informational text about the error or warning.

In any case, it is possible to abort a run with the **abort run** button. Any abort has to be confirmed. If the **abort run** button is clicked by accident, it is possible to resume the run by clicking the **continue** button in the next dialog. If the run is aborted, the carriers will be unloaded. If a worklist was used for this run, the run will be marked as "aborted", and the worklist can be used again after the instrument finished unloading.

4.8 After a run

As soon as the run is finished, the GUI will show a run finished message with a green color coding.

NOTE



The instrument will stay locked until the end of the run is confirmed by the user.

While the run finished dialog is shown, information about the run can be accessed in the sample pane. If there are failed samples in the run, the **Failed** tab in the sample pane will be marked with a red border and the barcodes, names and positions of the failed samples can be controlled and split off for manual pretreatment. Additionally, the remaining reactions in the buffer tubes will be listed in the **Buffer Tubes** tab. Positions of depleted buffer tubes will be highlighted and the corresponding buffer tubes can be discarded. As soon as the **Finish** button is clicked, the instrument will unlock, and the GUI will display the start screen.

4.9 Processing failed samples

In automated whole blood pretreatment, the failure rate is expected to be dependent on the quality of the whole blood samples. Failed samples are not treated as errors, but as an expected result in the workflow. Therefore, runs with failed samples are still stored and treated as **successful**.

The fallback for samples that could not be successfully pretreated automatically consists in the manual procedure according to the instructions for use for the AltoStar® Whole Blood Pretreatment Buffer 1.5.

This means that failed samples have to be sorted out by the user and mixed manually with WBPB in a fresh secondary tube labeled with the sample's primary barcode. On the software side, this means that the samples are exported in a failed worklist. In this worklist, the samples are listed only with their primary barcode (see chapter 4.10 Transferring samples into the AltoStar® Workflow).

4.10 Creating a report

After any run, all information is stored in a database. The data can be accessed by the user using the Run View as described in chapter 3.3 Run View.

The Run View is meant to quickly browse the performed runs with only necessary information or to select a run for detailed reporting. All runs are listed on the left with the used worklists and the date and time when the run was started and finished. When a run is selected, a summary is displayed in the middle column, which also includes the Run-GUID, which is a unique identifier that can be used to link the run to its logfiles (*.trc, *.mdb).

To generate a more detailed report in a printable format, the **Create Printable Report** button can be used. Once clicked, another browser tab will open that contains the requested report. The new tab will present a **print** button for convenience. The resulting print dialog is generated by the browser and can be used to send the report to a printer or generate a pdf document for electronic storage.

4.11 Transferring samples into the AltoStar® Workflow

The AltoStar Pretreatment RUO workflow integrates completely into the AltoStar® Workflow and uses worklists to transfer sample data to the AltoStar® Connect software. Any worklist that is compatible with the AltoStar® Connect software, can be imported into the AltoStar® Pretreatment workflow. If the original worklist already contains all information about the scheduled assays for the samples, no manual selections are needed within the AltoStar® Connect software.

The number of worklists that need to be imported into the AltoStar® Connect software, depends on the mix of sample matrices in the original worklist and if there are failed samples in the pretreatment run.

If there are non-whole blood samples in the original worklist, they are split off into a separate worklist that is stored in the default AltoStar® Connect software worklist folder and can be instantly used for a purification run, if needed. The suggested workflow is to perform the pretreatment run first and combine all sample types in a common purification run.

A pretreatment run can result in at most 2 worklists. One for all successful samples and one for all failed samples. This split is to allow the user to choose if failed samples are instantly pretreated to be extracted in the same run or if failed samples are collected over several runs and then manually pretreated in a larger batch.

The result worklists of an pretreatment run will be batched into a subfolder of the default worklist folder of the AltoStar® Connect software. The name of the subfolder will be either the run name, or the date and time of the start of the run.

To import all samples into a purification run, the user has to import a maximum number of 3 worklists per original worklist via the **Import File** button within the AltoStar® Connect software:

- The split off non-blood samples in the root of the worklist folder, prefixed “non_blood_” (e.g. “non_blood_MyWorklist.psv”)
- The successful samples in a subfolder of the worklist folder, prefixed “successful_” (e.g. MyRunName/successful_MyRunName.psv)
- The failed samples in a subfolder of the worklist folder, prefixed “failed_” (e.g. MyRunName/failed_MyRunName.psv)

4.12 Processing cyler files

Cyler files are files with the suffix “.plrn”, which are used to communicate information to the cyler after the AltoStar® AM16 has prepared a PCR plate. Since the pretreatment run transfers the primary samples to fresh secondary tubes with a different barcode, the output plrn files contain the secondary barcodes instead of the primary barcodes.

To link the sample information back to the primary barcode, an editing step for the cycler files is needed. The original cycler files are archived to the hard drive and prefixed with "OriginalFile_", (e.g. OriginalFile_ME2923423.plrn). The filename of the edited cycler file is conserved and equal to the barcode of the microtiter plate. This way, a barcode scanner can be used to select the correct cycler file at the cycler workstation.

4.12.1 Automated processing of cycler files

The background services of the AltoStar® Pretreatment software detect the generation of a new cycler file and automatically schedules it for editing.

4.12.2 Manual processing of cycler files

In addition to the automated editing of cycler files, cycler files can also be edited in the navigation bar via the file upload. If the software detects the upload of a cycler file, a download dialog for the edited cycler file is opened. The file can then be stored at any location or is stored in the downloads folder. Since the original file remains untouched in this variant of the workflow the file is not archived but remains in the location the user puts it.

4.13 Repeating a run

Worklists imported by the AltoStar® Pretreatment software are stored in a database and cannot be imported again. The worklist will appear in the worklist pane in the Run View until it was used for a successful pretreatment run. If the worklist is supposed to be used for an identical re-run, e.g. a qualification run, the worklist needs to be rescheduled within the AltoStar® Pretreatment software.

The user has to choose the run, which was used for the worklist in the Run View. Once the run is selected in the run list, a set of actions can be chosen on the right of the screen. To reschedule the run, click the **Repeat run** button and wait for a confirmation by a short message. After this, the worklist(s) contained in the run can be selected again in the **Run View**.

5. Troubleshooting guide

Possible cause	Suggestions
Uploaded worklists are not displayed in the worklist pane.	Depending on the size and complexity of the worklist the import can take a couple of seconds. Refresh the browser window after some time has passed.
The method aborts due to insufficient Whole Blood Pretreatment Buffer, although there is enough buffer in the buffer carrier.	Check the buffer tubes for visible foaming. Foam can impact the liquid level control of the AltoStar® AM16 and prevent a correct aspiration of the buffer. Prevent foaming by letting the buffer tubes rest before using them for a run. It is not necessary to mix or invert the buffer tubes before usage.
The method fails to transfer whole blood samples and marks samples as "failed".	The main reasons for failed samples are insufficient sample volume and clotting of the whole blood samples. In both cases it is necessary to process the failed samples by hand (see chapter 4.9 Processing failed samples).
After a barcode reading error occurs, barcodes can not be entered in the GUI.	The AltoStar® Pretreatment software checks the entered barcodes for validity. The entered barcodes are rejected if they contain unsupported characters. Check if the entered barcodes comply with the specifications of the AltoStar® Connect software and whether the barcodes are entered correctly using the supported characters in both text fields of the GUI.
The AltoStar® Connect software does not recognize the samples from the AltoStar® Automated Whole Blood Pretreatment.	Make sure to import the automatically produced worklist files (.psv) from the AltoStar® Pretreatment software when creating a run in the AltoStar® Connect software. It is important that samples that have been marked as "failed" in the AltoStar® Pretreatment software are processed by hand and labeled with the same barcode as the corresponding primary tube.
Double-clicking the AltoStar Pretreatment RUO desktop icon results in an error message: "Pretreatment API already running".	The AltoStar® Pretreatment software is designed to run in the background. This error message indicates that the software has already been started. To access the software, open a browser and enter the address: <i>http://localhost:8000/GUI</i>

Possible cause	Suggestions
The AltoStar® Pretreatment software is not available in the browser due to a missing internet connection.	The AltoStar® Pretreatment software does not need an internet connection. This error indicates that the browser can not connect to the software, which usually means that the software has not been started yet (see chapter 4.2 Starting and stopping the software).

6. Technical assistance

For customer support, contact altona Diagnostics technical support:

e-mail: **support@altona-diagnostics.com**
phone: **+49-(0)40-5480676-0**

7. Trademarks and disclaimers





AltoStar® (altona Diagnostics).

Registered names, trademarks, etc. used in this document, even if not specifically marked as such, are not to be considered unprotected by law.

For research use only (RUO)! Not for use in diagnostic procedures.

© 2022 altona Diagnostics GmbH; all rights reserved.

8. Symbols

Symbol	Explanation
 The symbol consists of the letters "RUO" in a bold, black, sans-serif font, enclosed within a thin black rectangular border.	Research use only
 The symbol is a black silhouette of a factory with three smokestacks of varying heights.	Manufacturer
 The symbol is a simple black outline of an open book, showing two pages.	Version
 The symbol is a bold, black, lowercase letter "i" in a sans-serif font.	Note

page intentionally left blank

page intentionally left blank

always a drop ahead.

altona Diagnostics GmbH
Mörkenstr. 12
22767 Hamburg, Germany

phone +49 40 548 0676 0
fax +49 40 548 0676 10
e-mail info@altona-diagnostics.com

www.altona-diagnostics.com

