

Differential Scanning Calorimetry (DSC) **Practical** Training Course

2020 *Part 2* *Maintenance*



Discovery
DSC2500
DSC250
DSC25

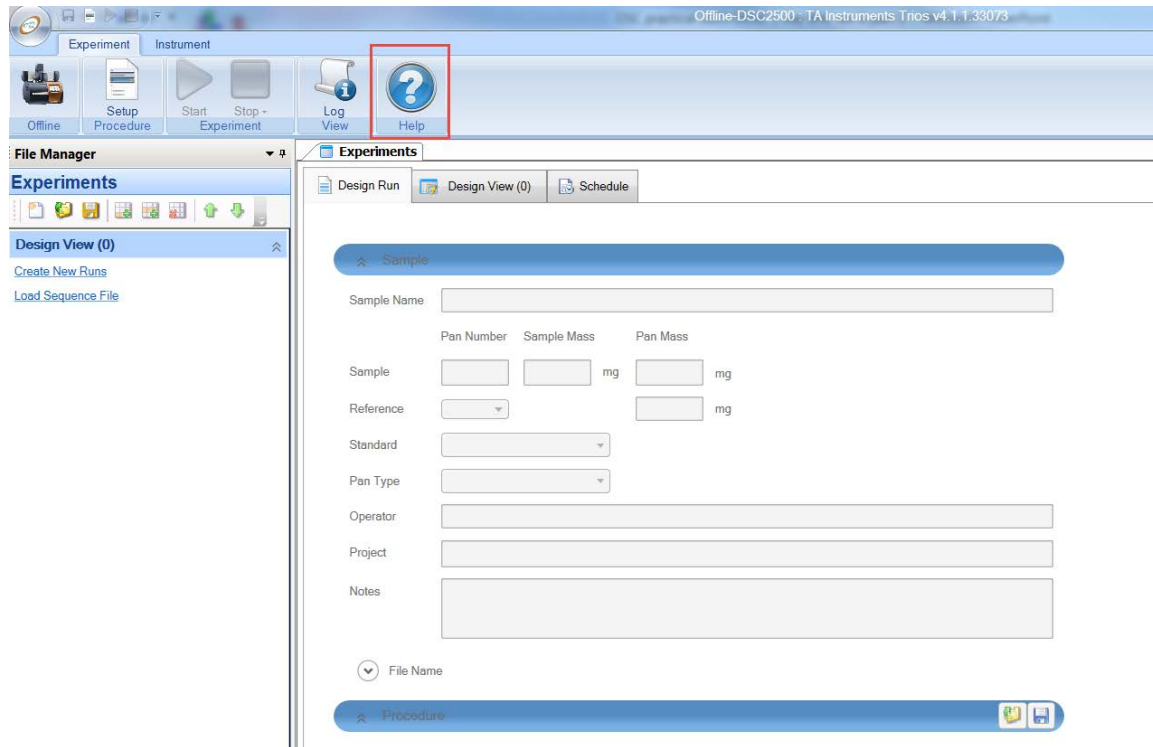


Training Course Agenda

- Online help
- Cleaning a contaminated cell
- Lid cleaning and alignment
- Baseline verification
- Gripper fingers cleaning and checking
- Autosampler calibration
- Prepair Indium sample
- Cooling accessory use and maintenance
- Purge gases & flow rates
- Troubleshooting
- Video's
- Finding part numbers

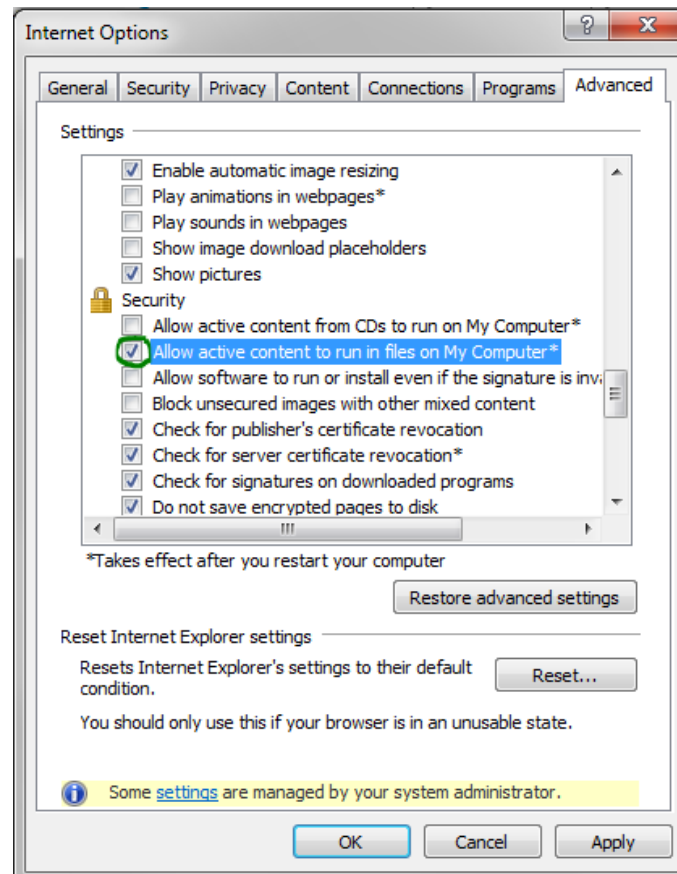
Trios Online Help

Select help function  in the software or press F1.



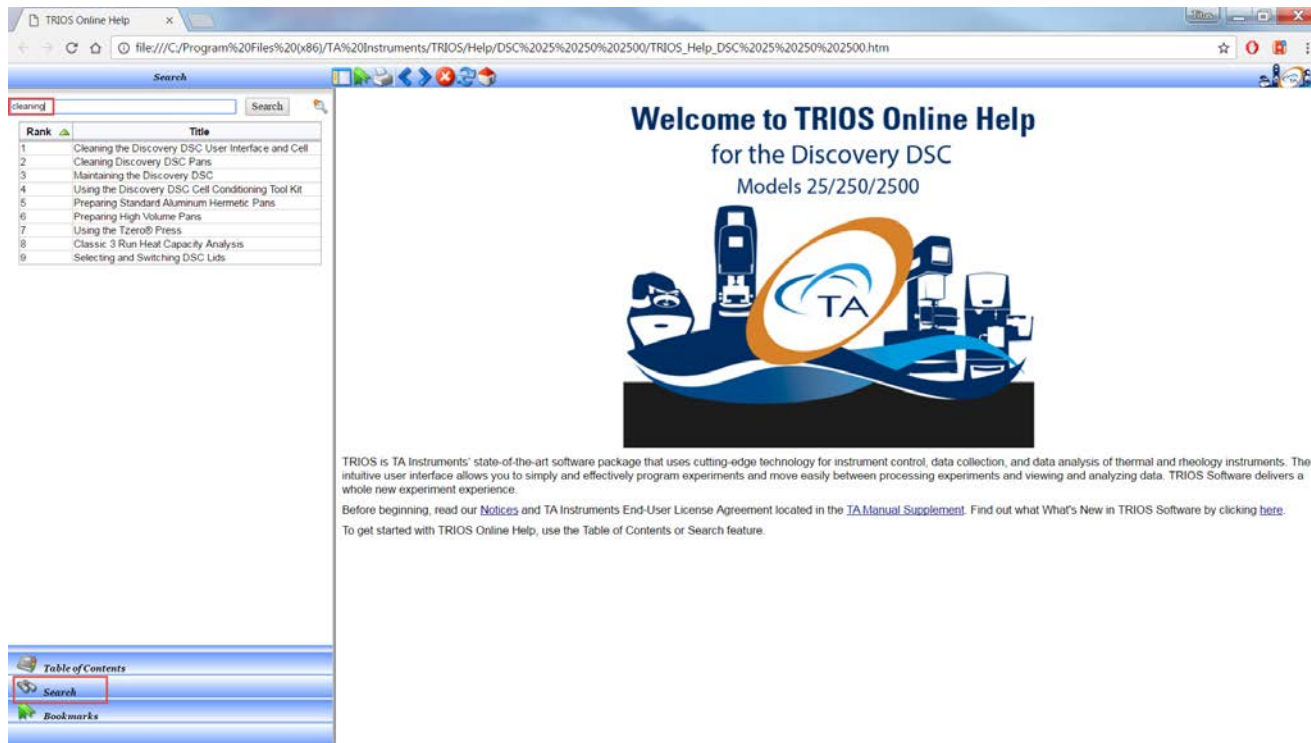
Trios Online Help

If the TRIOS Online help does not work you may need to enable “Allow active content to run in files on My Computer*”.



Cleaning a contaminated cell

- The help function is very useful



Rank	Title
1	Cleaning the Discovery DSC User Interface and Cell
2	Cleaning Discovery DSC Pans
3	Maintaining the Discovery DSC
4	Using the Discovery DSC Cell Conditioning Tool Kit
5	Preparing Standard Aluminum Hermetic Pans
6	Preparing High Volume Pans
7	Using the Tzero® Pans
8	Classic 3 Run Heat Capacity Analysis
9	Selecting and Switching DSC Lids

Welcome to TRIOS Online Help
for the Discovery DSC
Models 25/250/2500

TRIOS is TA Instruments' state-of-the-art software package that uses cutting-edge technology for instrument control, data collection, and data analysis of thermal and rheology instruments. The intuitive user interface allows you to simply and effectively program experiments and move easily between processing experiments and viewing and analyzing data. TRIOS Software delivers a whole new experiment experience.

Before beginning, read our [Notices](#) and TA Instruments End-User License Agreement located in the [TA Manual Supplement](#). Find out what's New in TRIOS Software by clicking [here](#).

To get started with TRIOS Online Help, use the Table of Contents or Search feature.

Table of Contents
Search
Bookmarks

- Also checkout the Desktop manual



Cleaning a contaminated cell

TRIOS Online Help x Titus

file:///C:/Program%20Files%20(x86)/TA%20Instruments/TRIOS/Help/DSC%20%25%20250%202500/TRIOS_Help_DSC%20%25%20250%202500.htm

Search

Rank Title

1	Cleaning the Discovery DSC User Interface and Cell
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Cleaning the Discovery DSC User Interface and Cell

In this topic

- [Cleaning the User Interface](#)
- [Cleaning a Contaminated DSC Cell](#)
- [Replacing Fuses](#)

The primary maintenance procedures described in this section are the customer's responsibility. Any further maintenance should be performed by a representative of TA Instruments or other qualified service personnel. Consult the online documentation installed with the instrument control software for further information.

DANGER: Because of the high voltages in this instrument, untrained personnel must not attempt to test or repair any electrical circuits.

CAUTION: Before using any **cleaning** or decontamination method except those recommended by the TA Instruments, check with TA Instruments that the proposed method will not damage the instrument.

Cleaning the User Interface

Clean the Discovery DSC user interface as often as desired. The user interface screen should be cleaned with a household liquid glass cleaner and soft cloth. Wet the cloth, not the screen with the glass cleaner, and then wipe off the screen and surrounding surfaces.

WARNING: Do not use harsh chemicals, abrasive cleansers, steel wool, or any rough materials to clean the user interface screen, as you may scratch the surface and degrade its properties.

Cleaning a Contaminated DSC Cell

Baseline anomalies are often the sign of a contaminated cell. DSC cells must be cleaned properly to maintain satisfactory operation. Scraping the contamination off of the cell is not recommended.

If your baseline appears to show sample contamination, try the following recommended **cleaning** procedure. The procedure varies slightly depending upon the type of cooler that is installed.

- Begin by removing any pans from the cell. Refer to [Loading and Unloading Pans](#) for more information.
- Choose from one of the following procedures:
 - [Cleaning a Contaminated Discovery DSC Standard Cell](#)
 - [Burning Off Contamination in a DSC Cell with the FACS Installed](#)
 - [Burning Off Contamination in a DSC Cell with an RCS or LNP Installed](#)

[Back to top](#)

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Cleaning a contaminated cell

Gently clean the sensor platform with the fiber brush



Cleaning a contaminated cell

Also clean the sensor base and the silver block

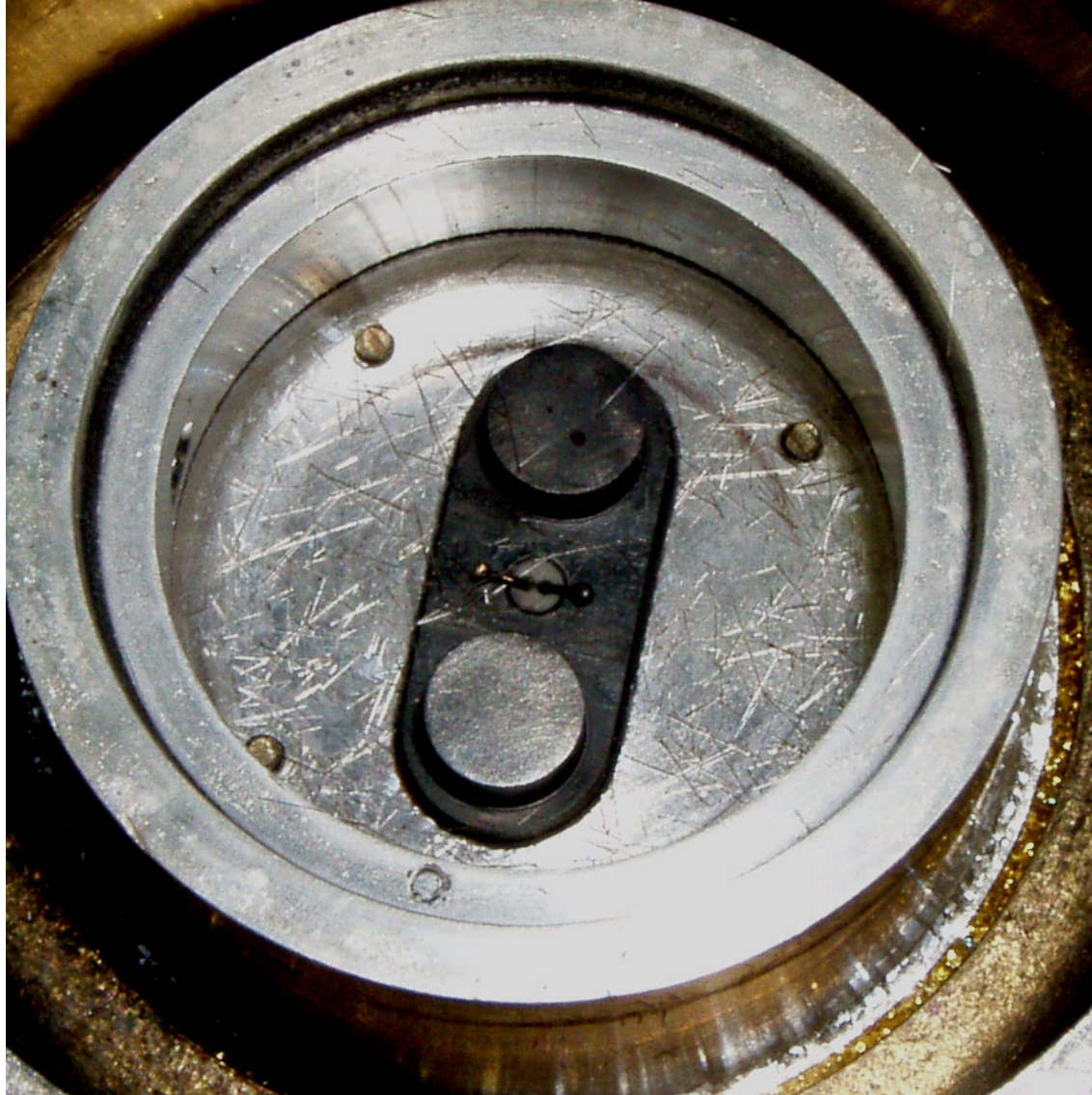


Cleaning a contaminated cell

Clean the Lid area



After cleaning the cell

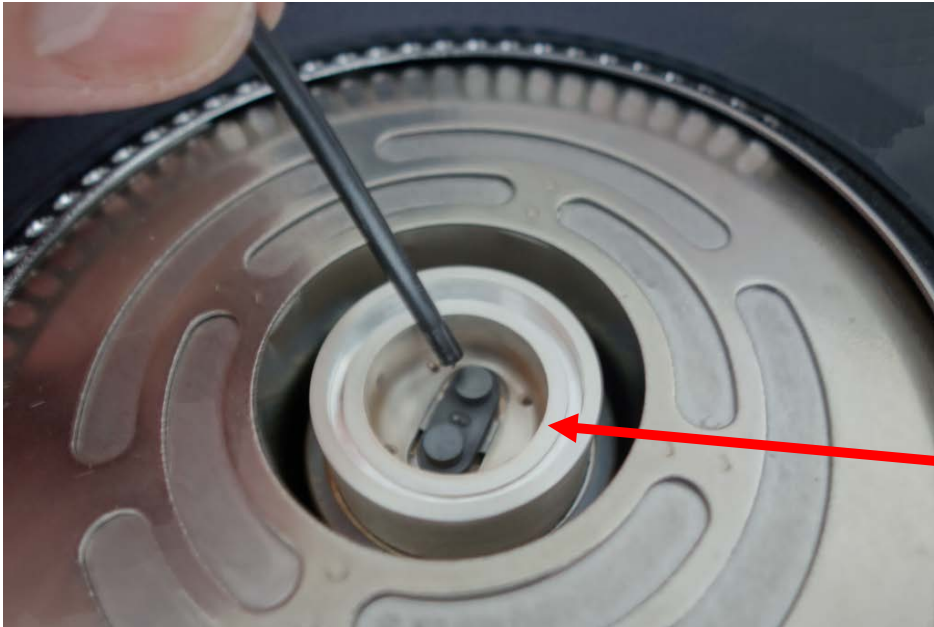


Wear safety glasses and use vacuum cleaner to remove fibers

Avoid damaging the silver cell with the vacuum cleaner

After cleaning the cell

Only if vacuum cleaner is not available!



Disconnect purge line from the back of the instrument and blow out the fibers

Make sure that the lid surfaces are clean

After cleaning the cell

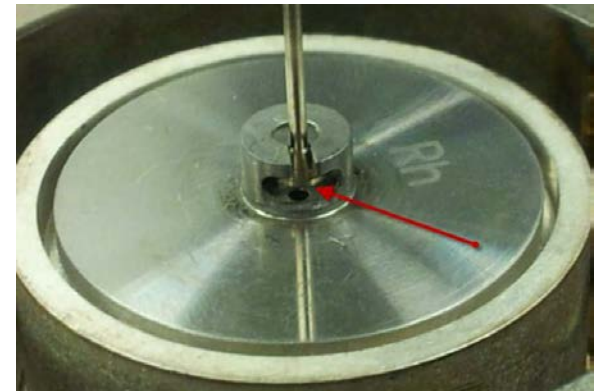
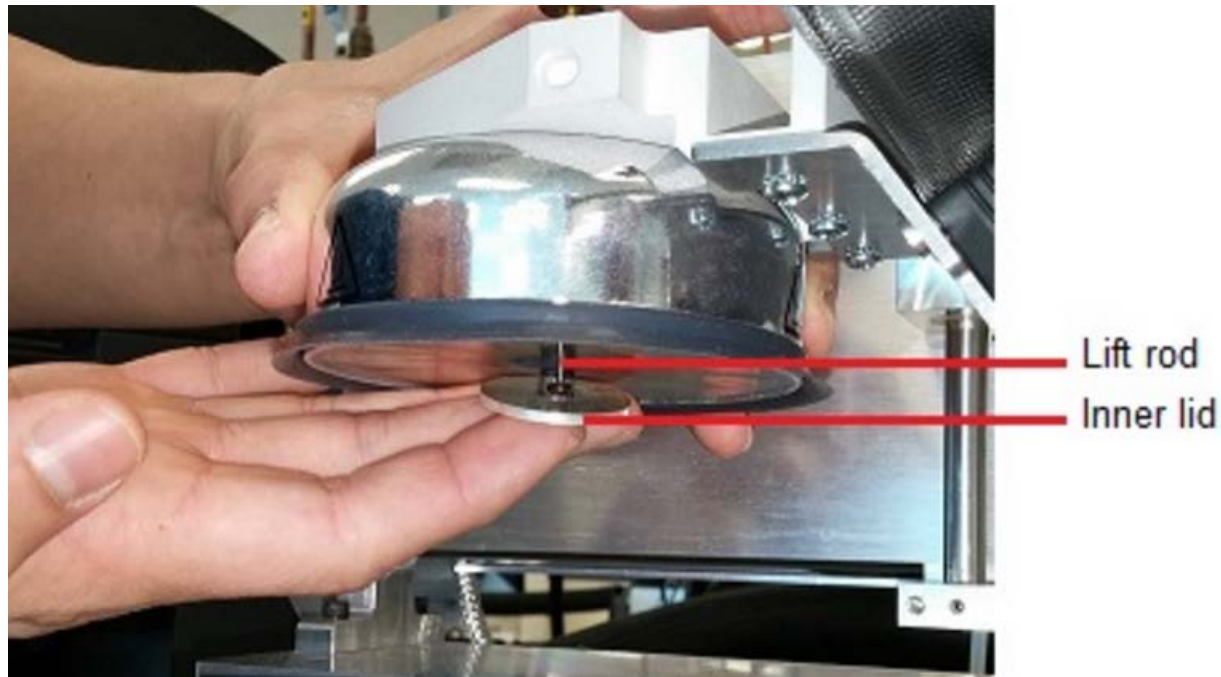
- Use cotton swab and solvent to clean the cell



- Heat the cell to 200°C for 5 minutes to drive off any remaining solvent
- Replace the reference pan with a freshly made pan

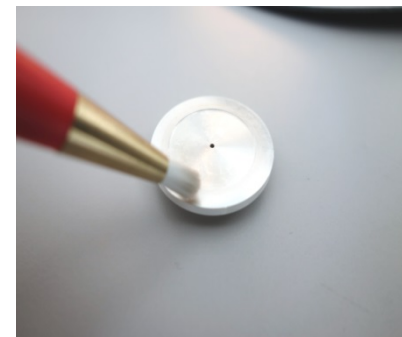
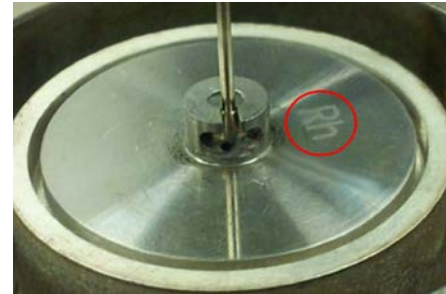
Removing and installing the lid

Remove the inner lid by lifting it up and sliding it off of the lift rod



Cleaning the lid

- Standard lid is coated with Rhodium
- Only use a tissue and solvent to clean this lid
- High temperature lid is not coated
- High temperature lid can also be cleaned with glass fiber brush



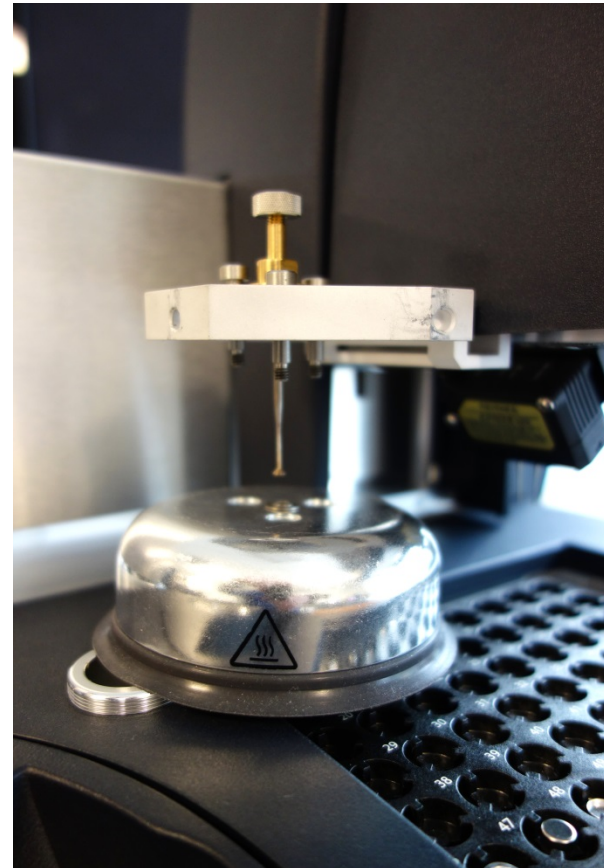
Discovery auto lid calibration

- Open the lid with the cell at ambient temperature
- Remove the Autolid arm cover by pulling out the edges and rotating it to the left



Discovery auto lid calibration

Loosen the three screws and remove the outer lid (heat shield) by sliding it down over the lift rod



Discovery auto lid calibration

- Loosen the nut and remove the lift rod



- Verify that the liftrod is straight by rolling it on the table

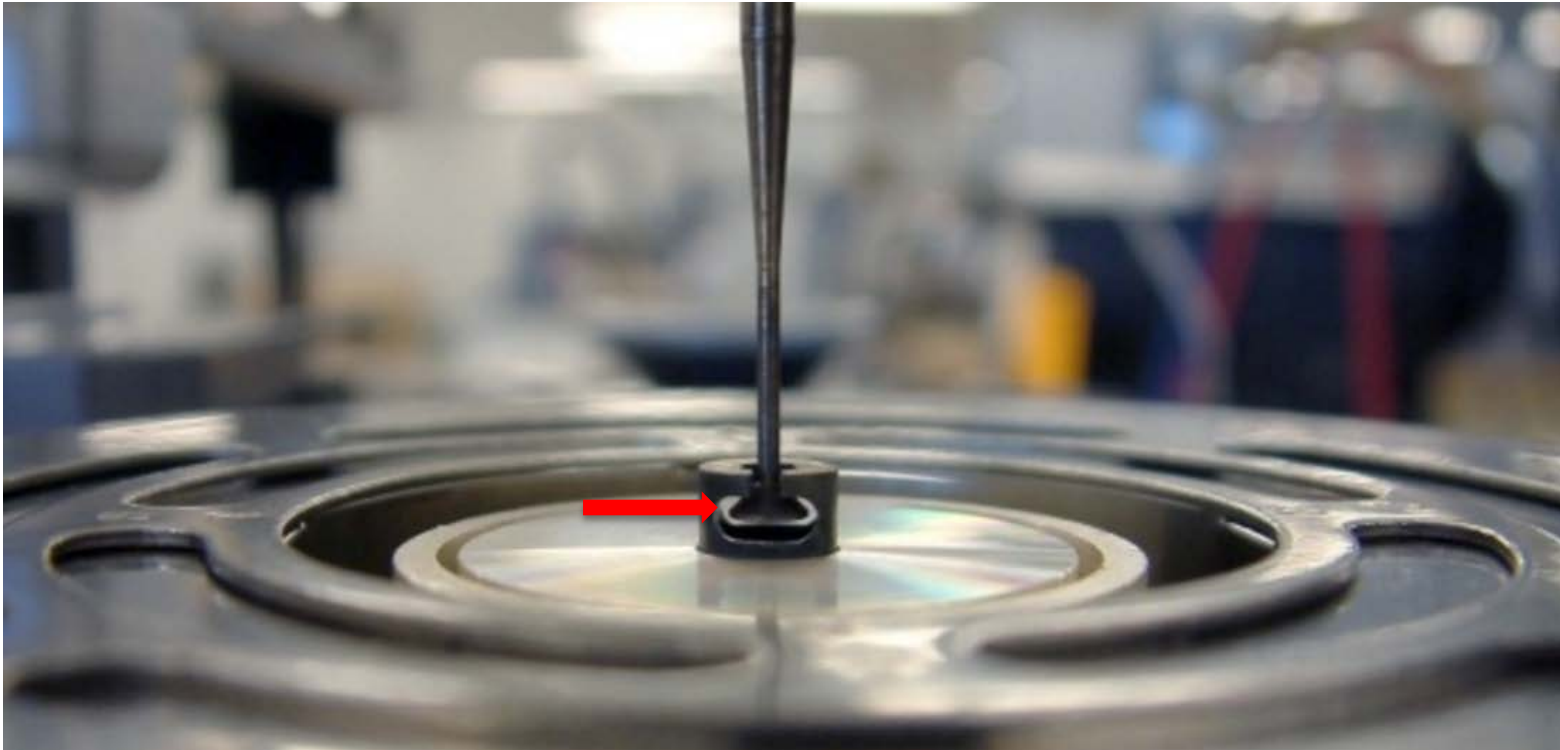


Part number lift rod:
972633.001

- Re-install the lift rod and mount the inner lid

Discovery auto lid height calibration

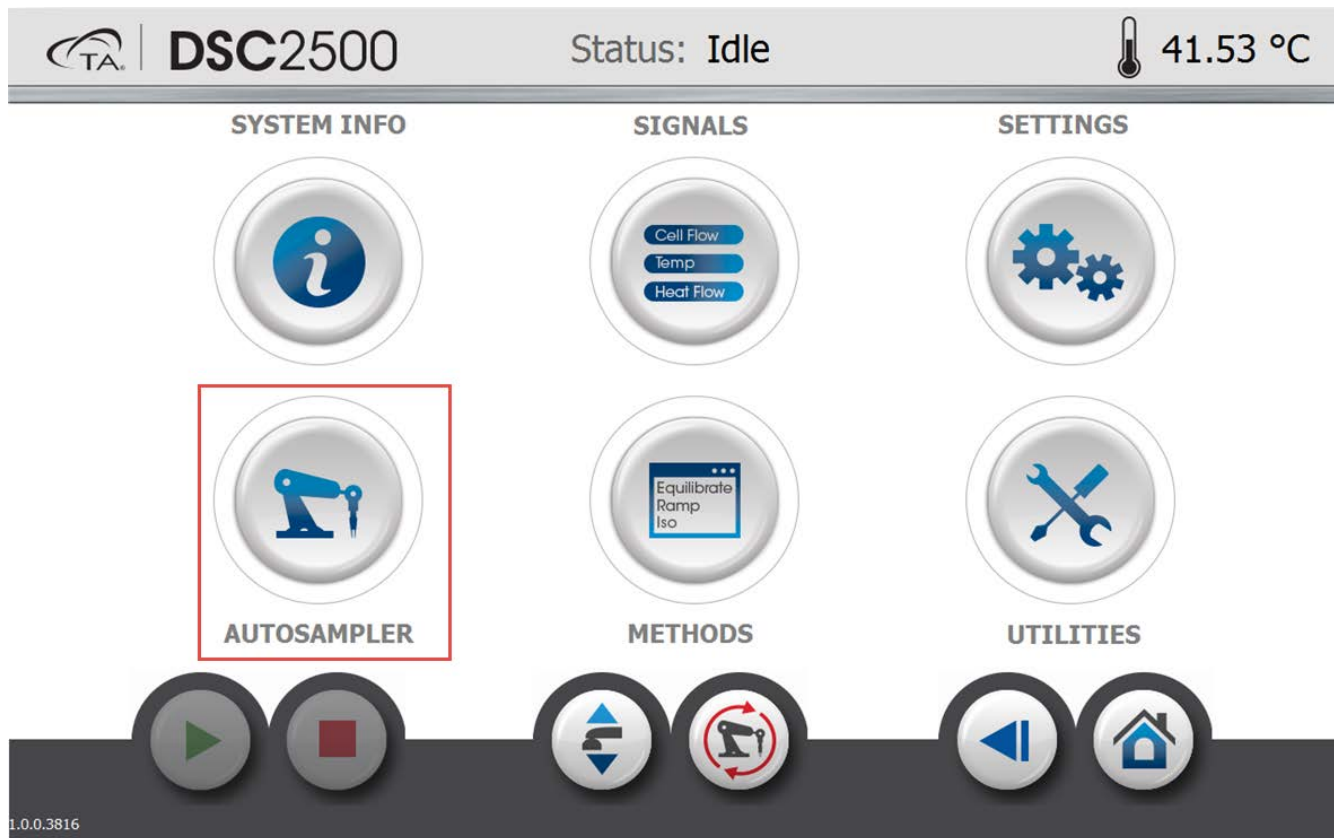
- Close the cell with the lid mounted



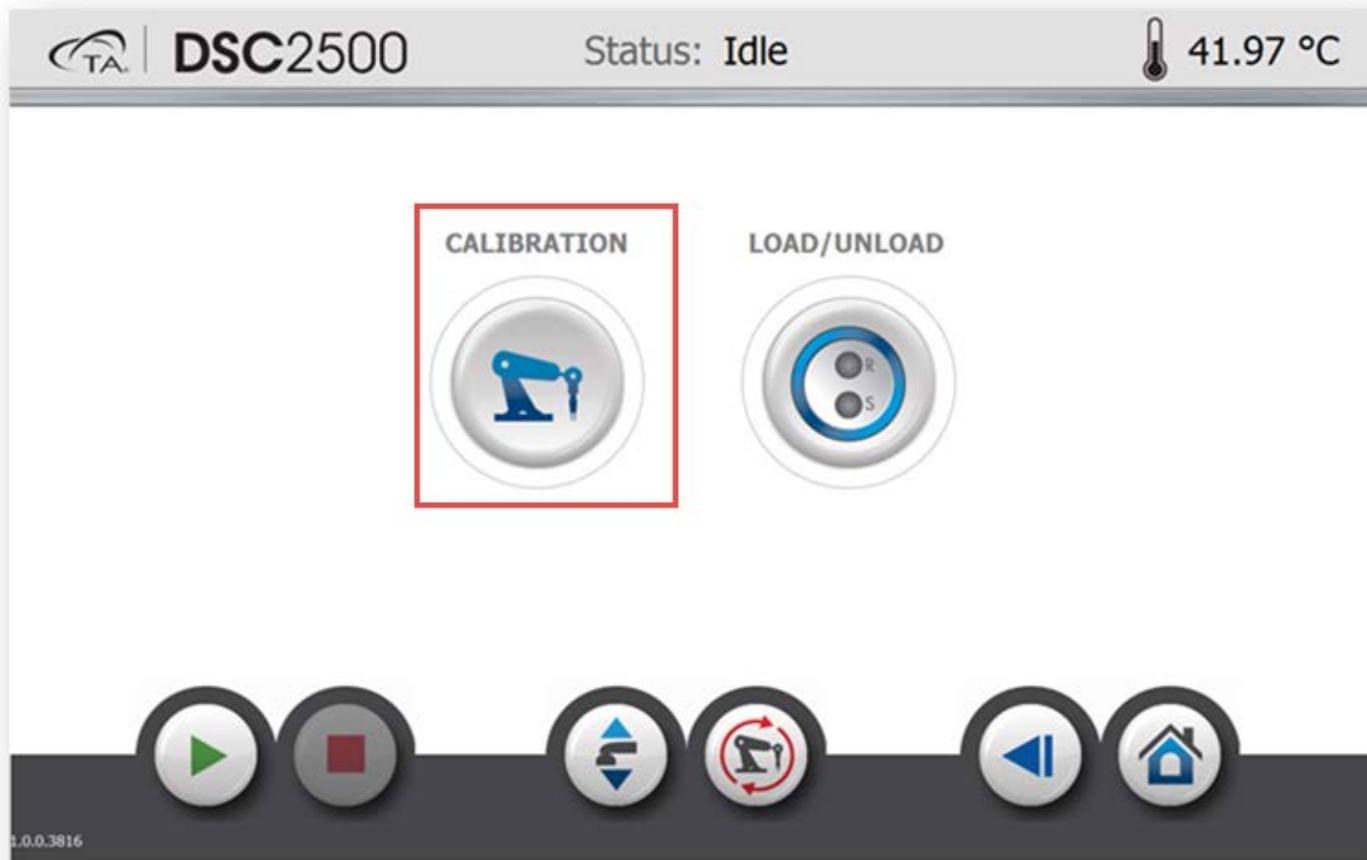
- Adjust the height so the lift rod is not touching the lid

Autolid calibration

- Select Autosampler on the touchscreen



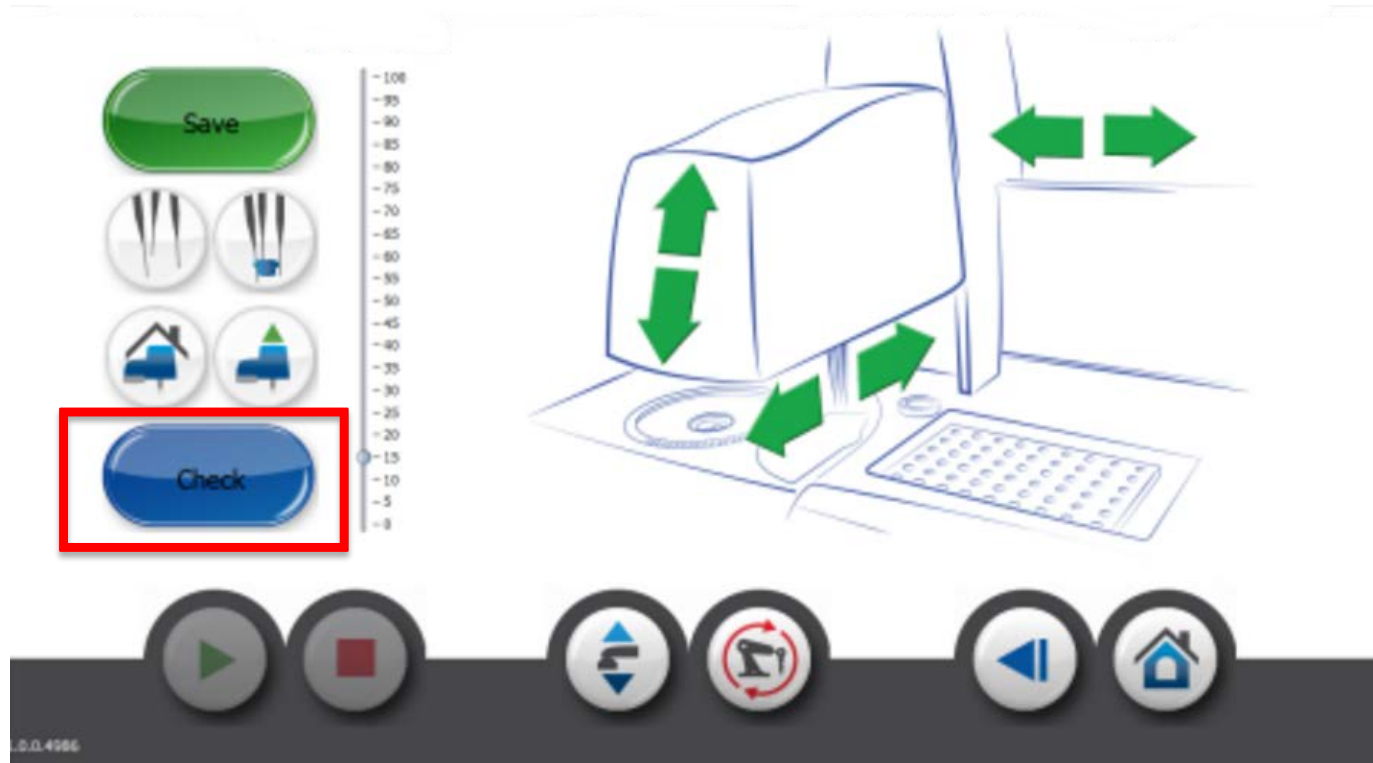
Discovery auto lid calibration



Select Calibration on the touchscreen
choose Lid Closed (park)

Discovery auto lid height calibration

- Use the touchscreen and verify the center position of the lid



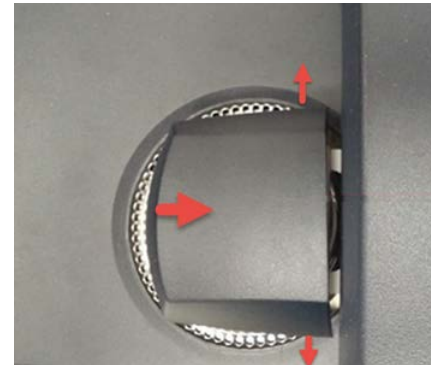
- Adjust if needed and  the new position

Discovery auto lid calibration reassembly

- Remove the inner lid and install the outer lid again

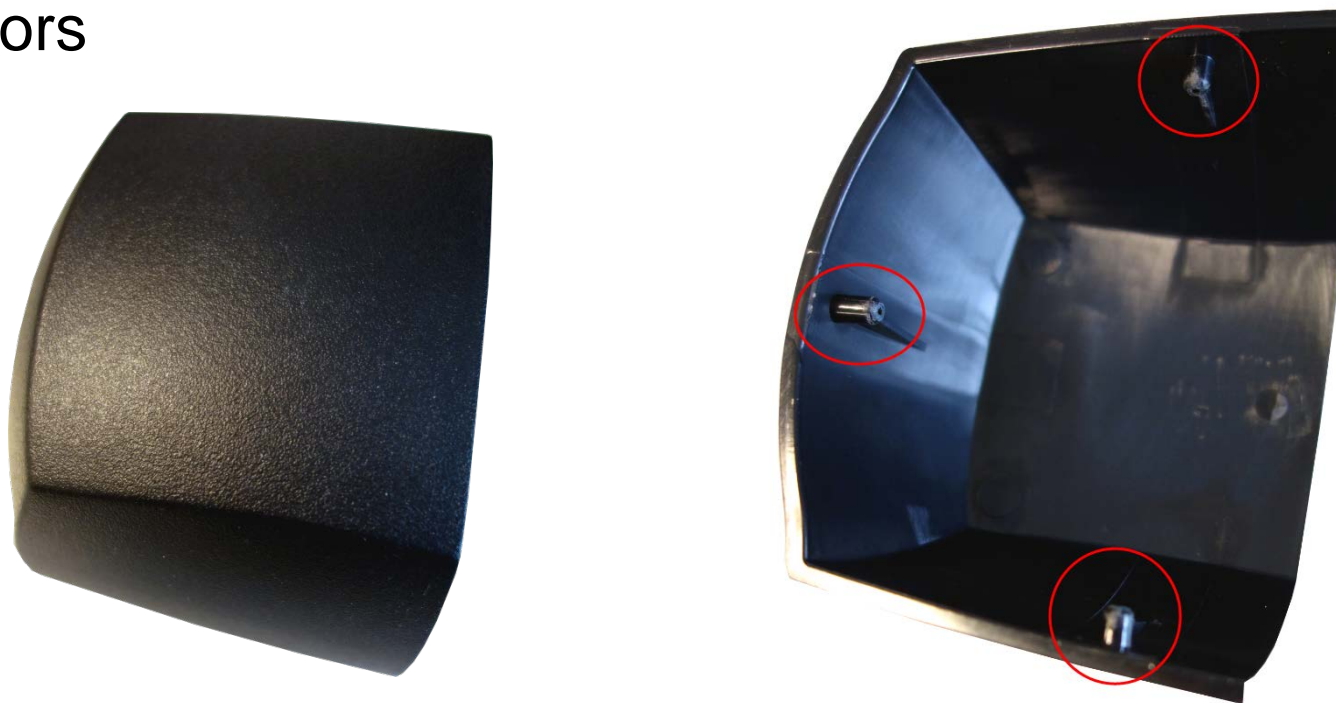


- Install the innerlid and lid arm cover by pulling out the edges



Discovery auto lid calibration

- Verify that the lid cover fits properly
- Do a reset autosampler to home the autosamplers sensors



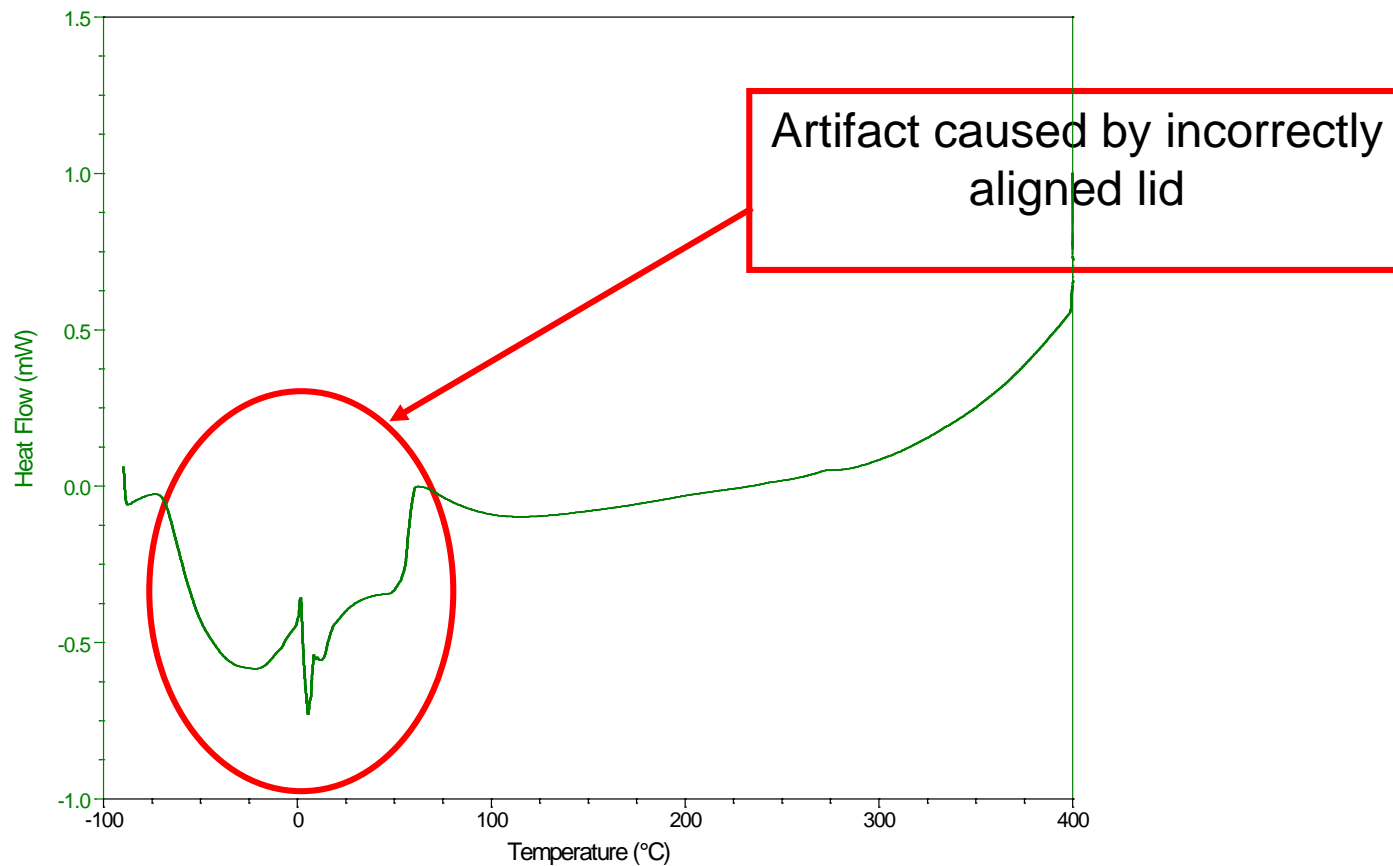
After cleaning

- Verify the performance by running a baseline check
- Verify enthalpy and temperature with Indium
- If results are not good, repeat previous procedures
- Use extended cleaning step if needed

Verify baseline

Do a TRIOS BASELINE
EXAMPLE

If the lid is not correctly positioned, the data will be noisy and have artifacts



Extensive cleaning

Rhodium lid

- Equilibrate the furnace at 400°C
- Switch to air purge or open the furnace at 400°C

Silver lid

- Equilibrate at 500°C or 550°C
- Switch to air purge or open the furnace at 400°C

- Do not stay long at high temperatures (max. 5 min.)
- Clean with brush and cotton swab at room temp.
- Check baseline and Indium

- Do not calibrate a contaminated cell!

Baseline verification template

- Use the template to run a baseline verification

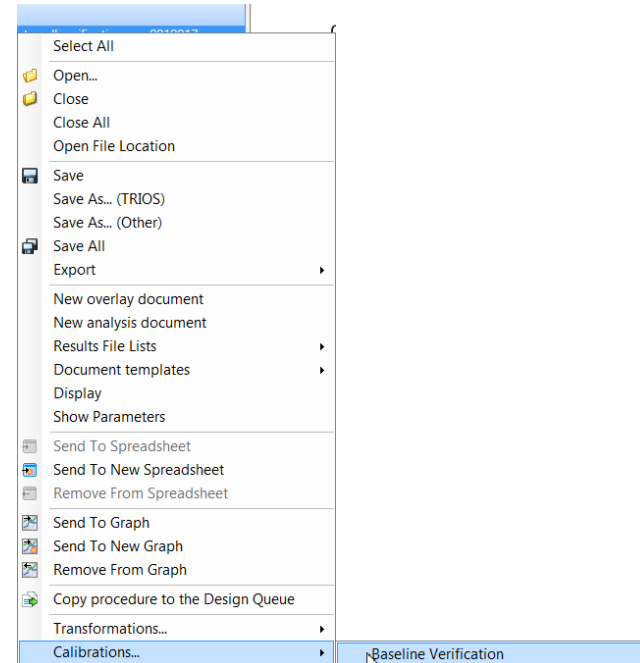
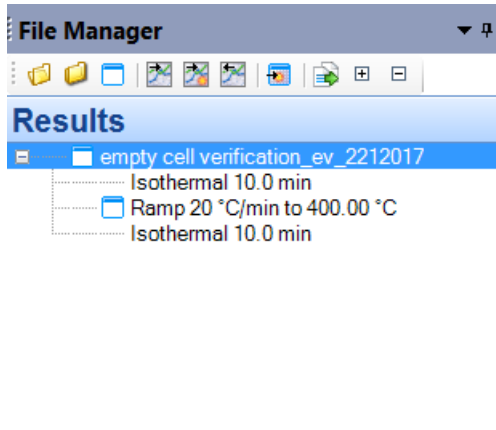
The screenshot shows a software interface for configuring a procedure. At the top, there is a blue header bar with the text "Procedure" and an upward-pointing arrow. Below this, there is a "Test" dropdown menu with "Verify Heat Flow" selected, which is highlighted by a red rectangular box. Underneath the dropdown is a "Name" text input field containing the word "Baseline". Below these fields are two tabs: "Template" (which is active) and "Segments". Under the "Template" tab, there are four rows of parameters, each with a label, a numerical input field, and a unit:

Ramp Rate	20	°C/min
Lower Temperature	-50.00	°C
Upper Temperature	400.00	°C
Isothermal	10.0	min

- Analysis is done automatically when template is used

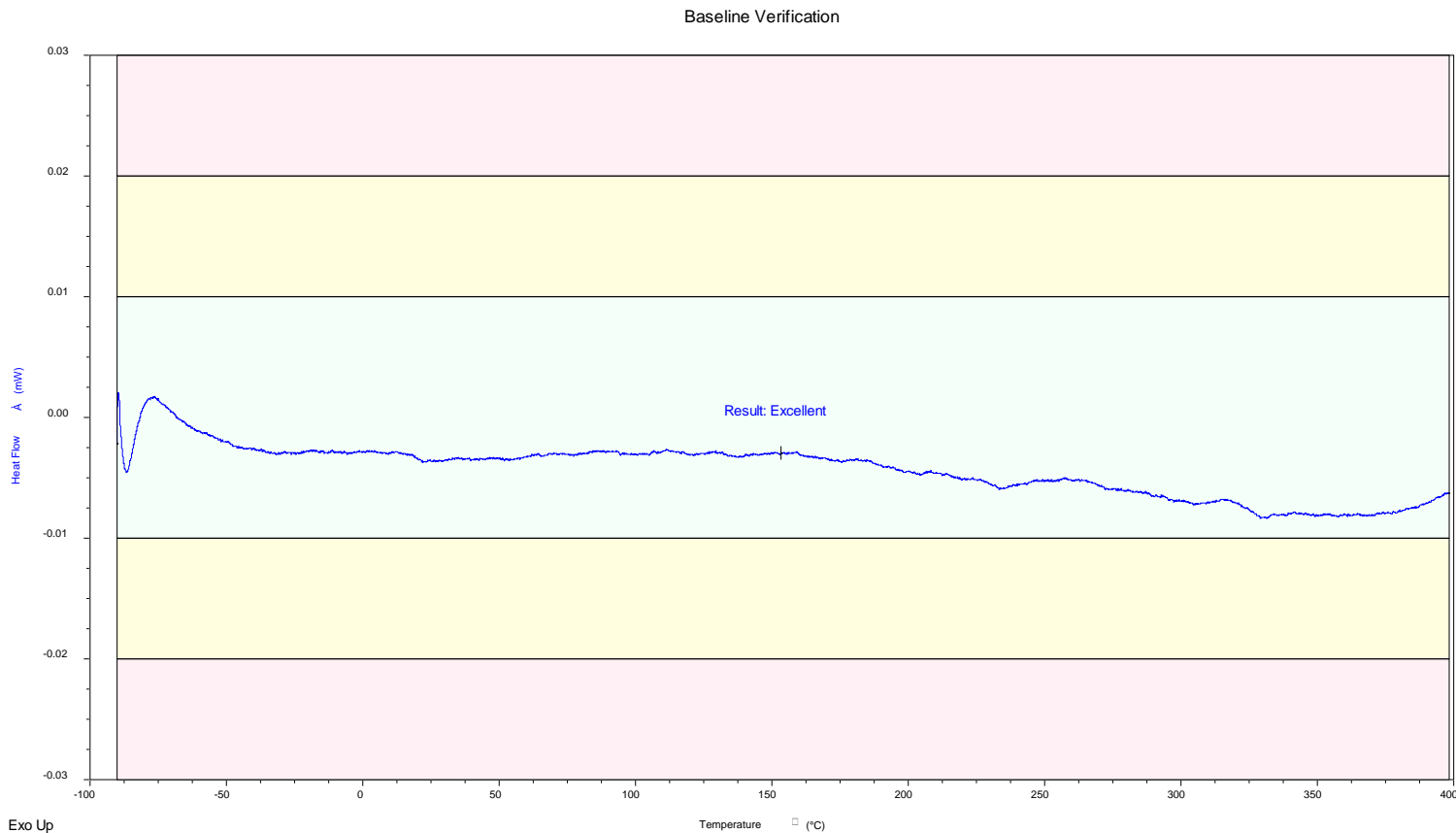
Baseline Verification Analysis

- You can manually select baseline verification analysis
- Open the file and right click on the file
- Select Calibrations, Baseline Verifications



Baseline Verification

- A good baseline is in the green or yellow range (without startup hook)



If you receive “Check Tzero cal” have a look at the Delta T and Delta Tzero signals first

Verify baseline

The full Tzero calibration is usually done during maintenance by TA Instruments and should not be needed in between the annual visits.

Send datafile to TA Instruments for advise if you are in doubt if the result is good!

Diagnostic Signals

- Select Graph Variables

TA Instruments TRIOS

Graph Variables

Axis	Log
X1: T (°C)	<input type="checkbox"/>
Y1: Q (mW)	<input type="checkbox"/>
Y2:	<input type="checkbox"/>
Y3:	<input type="checkbox"/>
Y4:	<input type="checkbox"/>

Y3 | Y1 | Y2 | Y4
X1

Show extended list
 Show user variables

- Temperature : T (°C)
- Heat Capacity (Normalized) (J/g.°C)
- Heat Capacity : C_p (J/°C)
- Heat Flow (Normalized) (W/g)
- Heat Flow : Q (mW)
- Temperature (°C), Time (min)
- Time : t (min)
- Time (min), Temperature (°C)
- 1/temperature : 1/T (1/K)
- Cell Purge (mL/min)
- Delta T (µV)
- Delta Tzero (µV)
- Flange Temperature (°C)
- Heat Capacity Polystyrene (J/g.°C)
- Heat Capacity Sapphire (J/g.°C)
- Heater Temp (°C)
- Power Delivered (W)

- Show extended list

- More signals are available

Value of Diagnostic Signals

Delta T and Delta T zero can be helpful to diagnose baseline issues

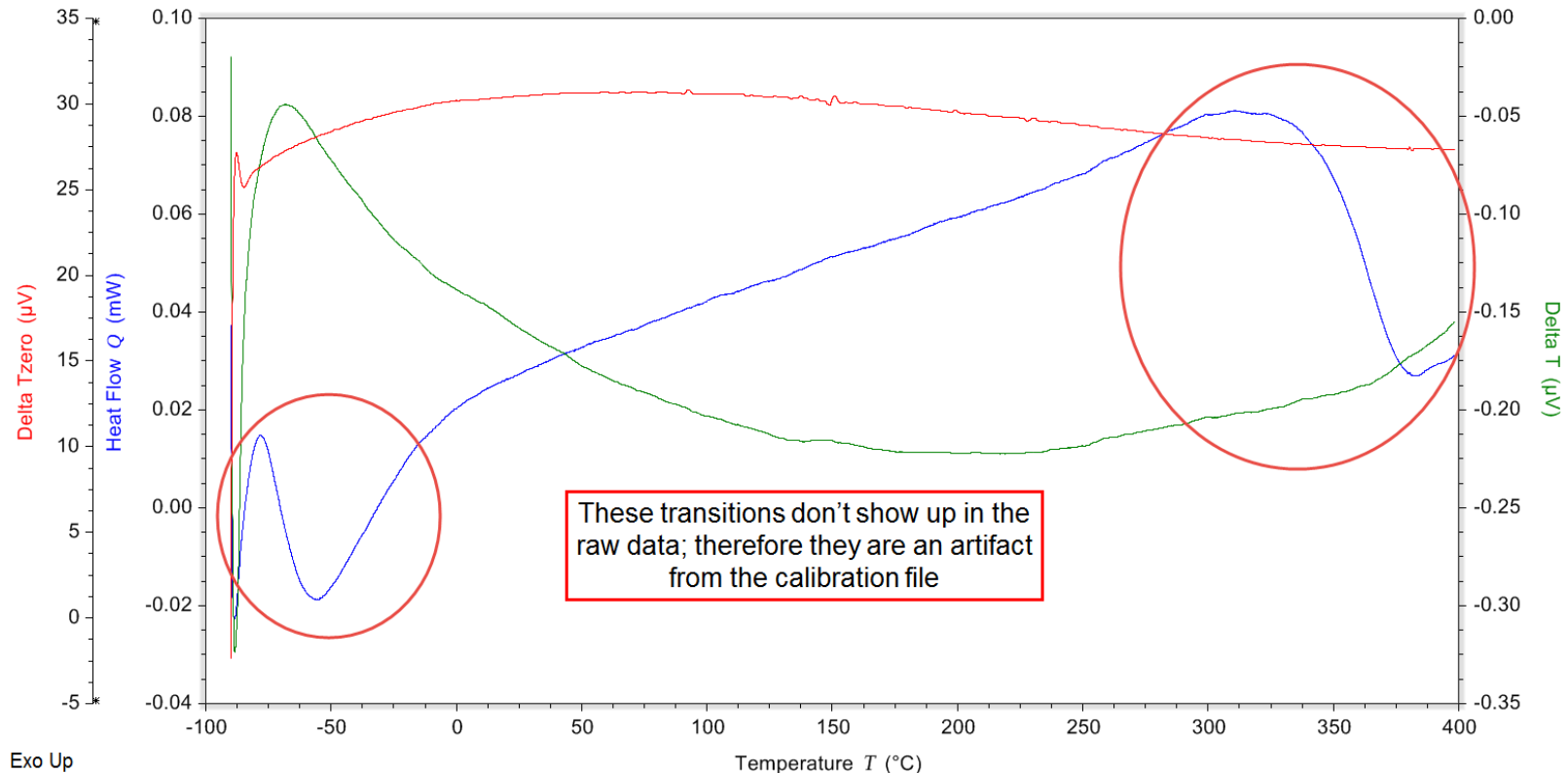
- 1/temperature : $1/T$ (1/K)
- Cell Purge (mL/min)
- Delta T (μV)
- Delta Tzero (μV)
- Flange Temperature ($^{\circ}\text{C}$)
- Heat Capacity Polystyrene (J/g. $^{\circ}\text{C}$)
- Heat Capacity Sapphire (J/g. $^{\circ}\text{C}$)
- Heater Temp ($^{\circ}\text{C}$)
- Power Delivered (W)
- Reference Junction Temperature ($^{\circ}\text{C}$)
- Step time : t_s (min)
- Temperature ($^{\circ}\text{C}$), Time (min)
- Time (min), Temperature ($^{\circ}\text{C}$)
- Tzero Temperature : T_0 ($^{\circ}\text{C}$)

Value of Diagnostic Signals

DSC empty cell with Diagnostic signals

empty c...2016(1)

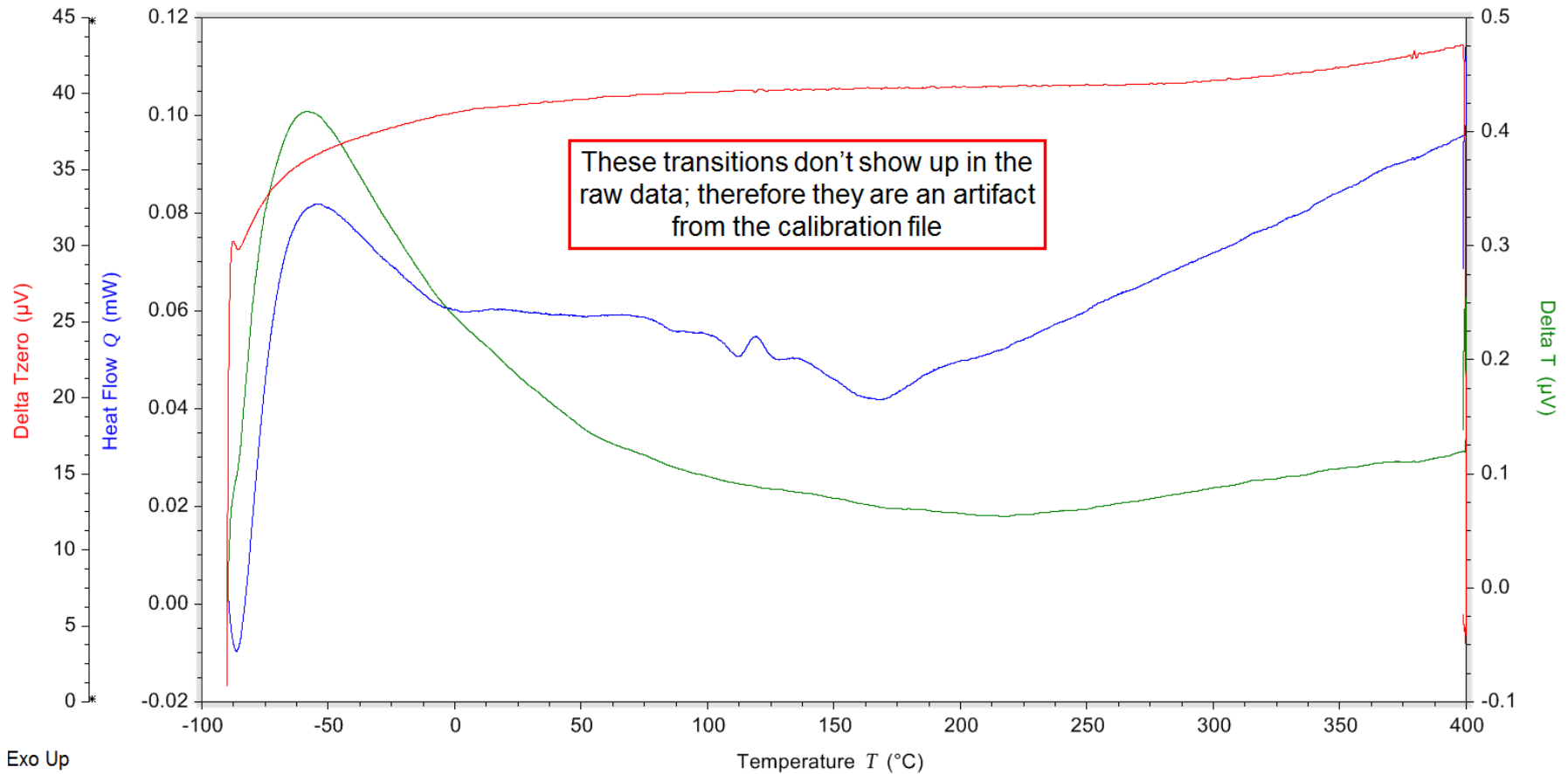
empty cell verification_EV_1172016(1)



Value of Diagnostic Signals

Another example

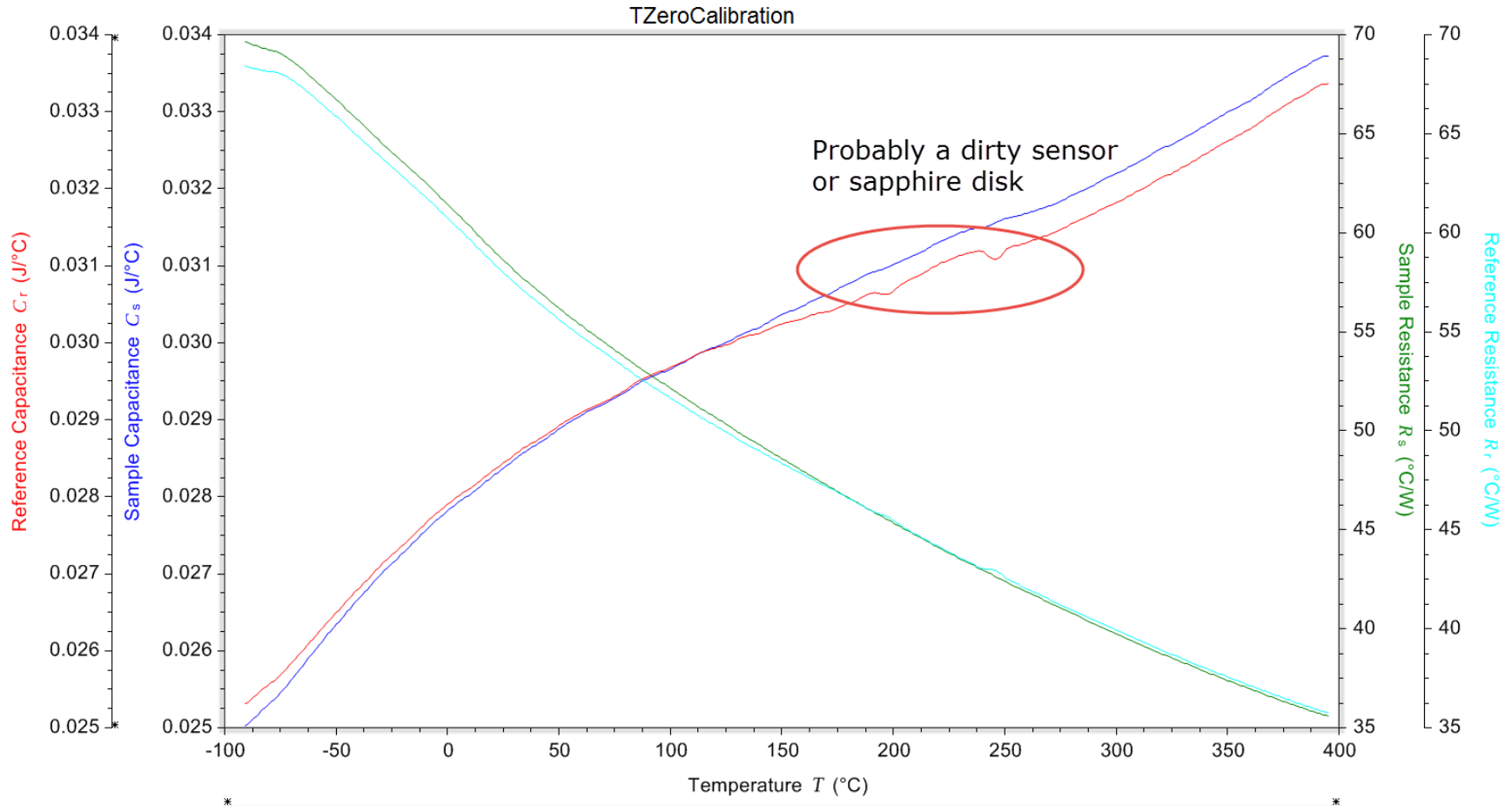
Empty cell



Exo Up

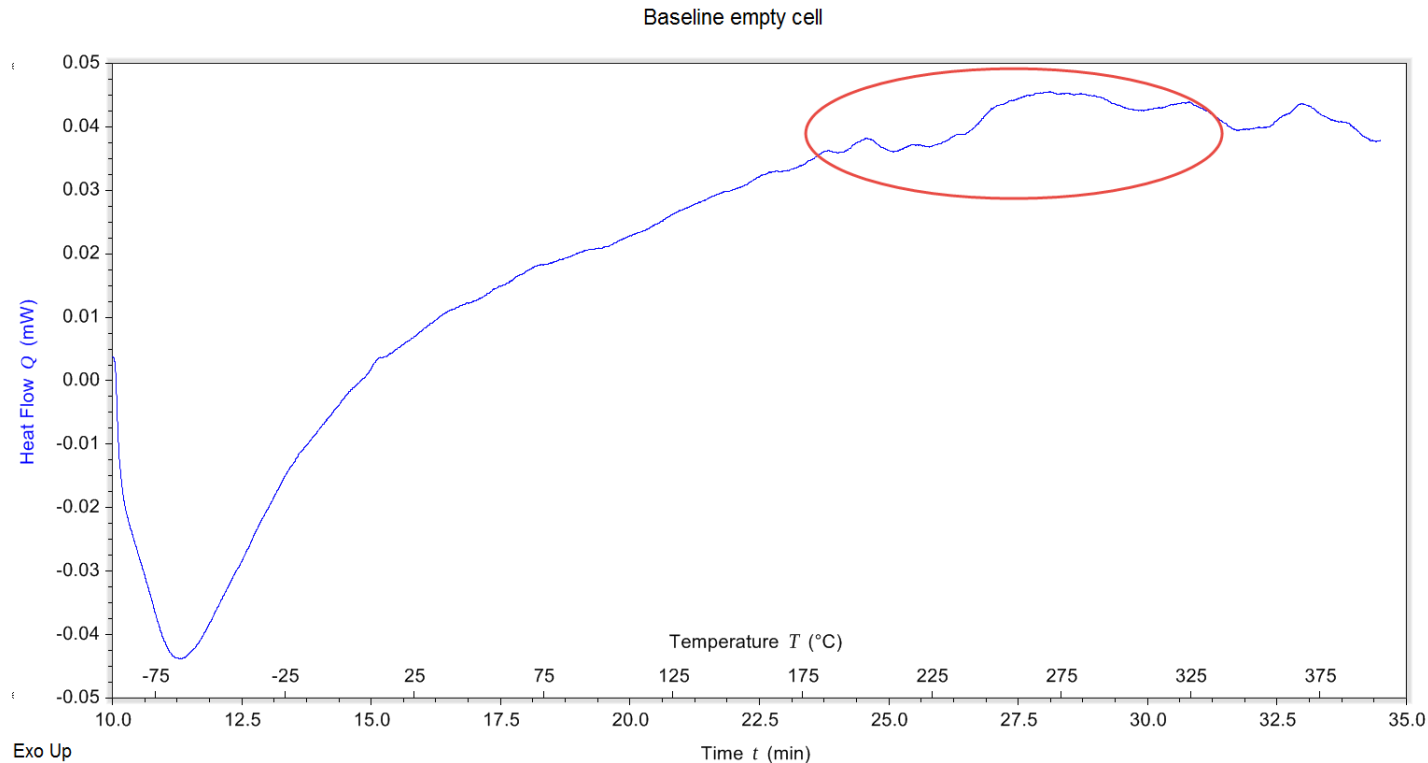
Value of Diagnostic Signals

Bad Tzero calibration



Value of Diagnostic Signals

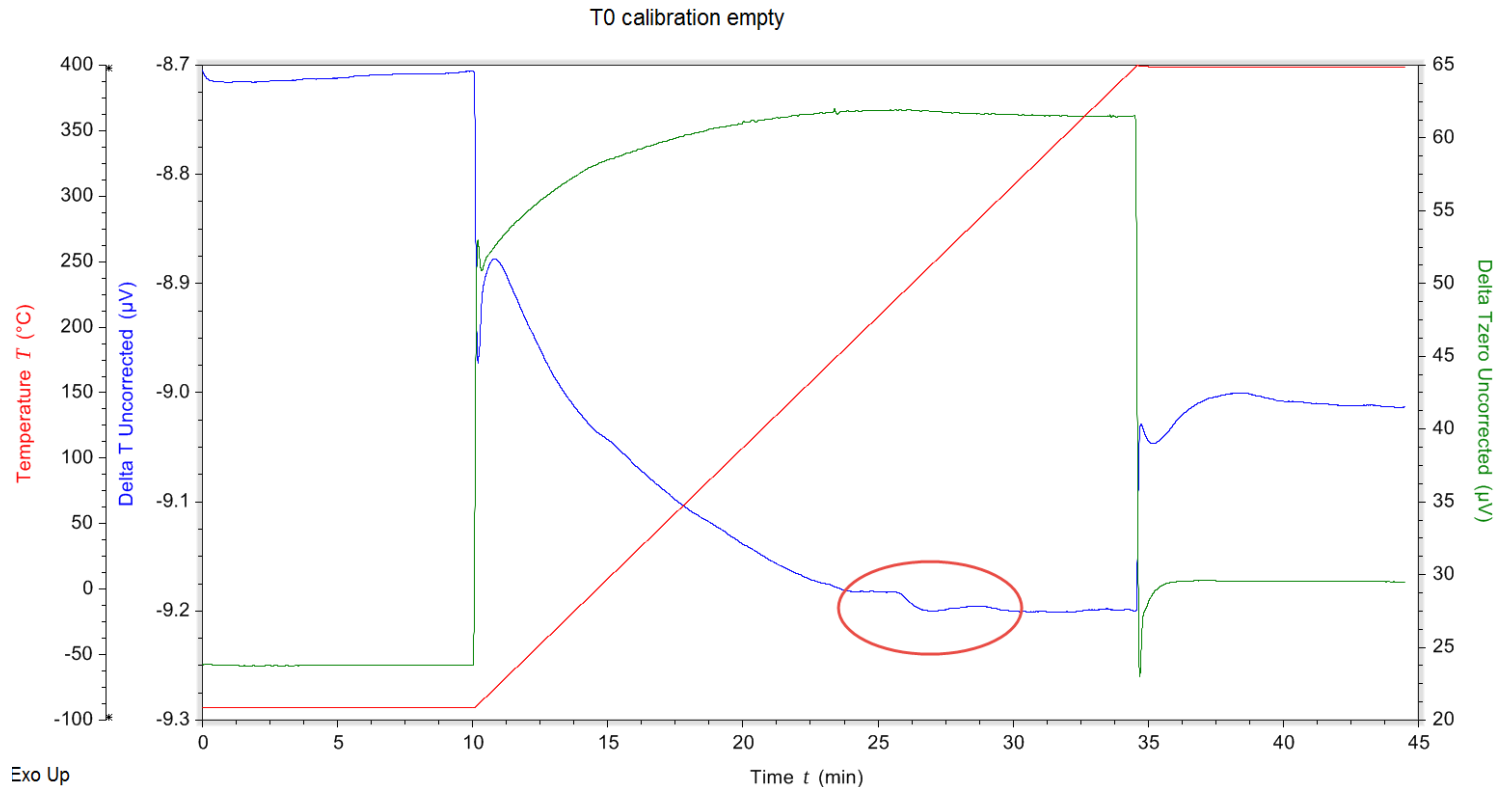
- Baseline after previous bad Tzero calibration
- Why is the Baseline not so good?



- Investigate calibration files with diagnostic signals

Value of Diagnostic Signals

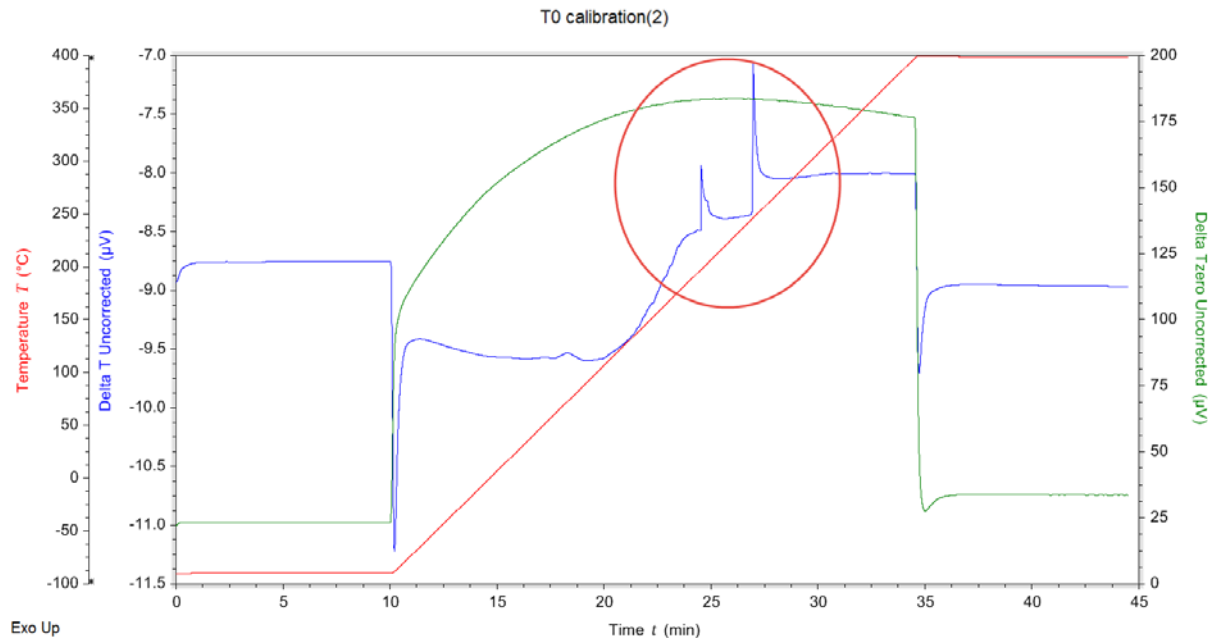
- Empty cell calibration run from previous T0 calibration



- Steps from dirty sensor

Value of Diagnostic Signals

- Sapphire run from previous T0 calibration



- Steps from dirty sensor
- This was also visible in the empty cell calibration run
- Don't calibrate a dirty cell

Cleaning gripper fingers

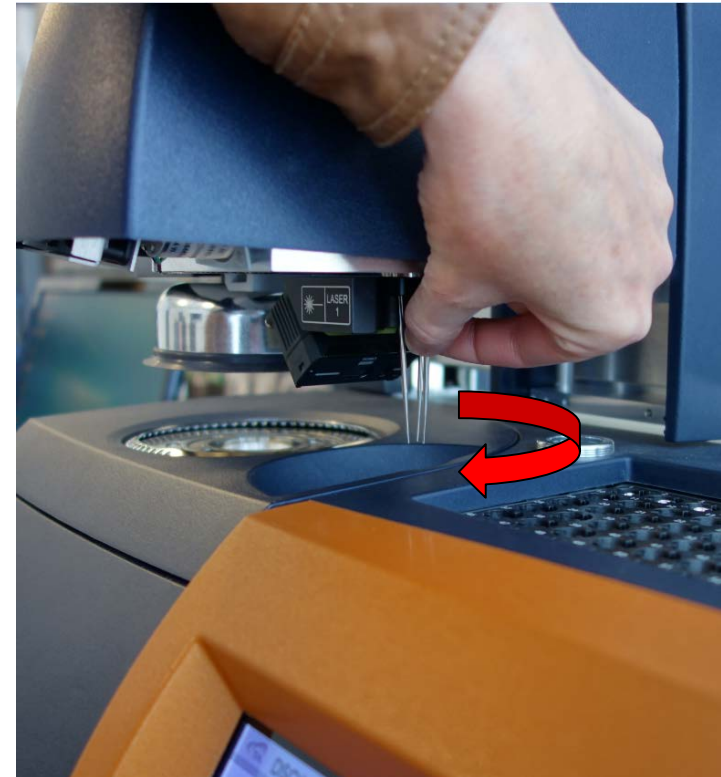
- Gripper fingers can get dirty if a
 - Dirty sample pan was loaded
 - Sample pan that opened during a run was unloaded
- Select to load sample pan 54 and stop the arm above the tray
- Gently clean the gripper fingers with a tissue and some solvent
- If solvent is not enough then a fine sandpaper can be used

Avoid the use of Acetone
Be careful not to bend the gripper fingers

Checking gripper fingers

- Open the lid and stop the autosampler in the open position
- Carefully rotate the gripper fingers and check if the tips are not bent
- Reset the autosampler

Bent gripper fingers can only be replaced by a TA instruments Engineer



Autosampler calibration

- Only calibrate if the gripper fingers are cleaned
- Calibrations to be checked are:
 1. Autosampler tray position 1
 2. Gripper closed
 3. Sample
 4. Reference
- Do not save a position that is not good

Autosampler tray calibration

- Place a sapphire disk on tray position 1
- Reset Autosampler via the touchscreen
- Select Autosampler on the touchscreen



The screenshot displays the DSC2500 touchscreen interface. At the top, the TA logo and 'DSC2500' are on the left, 'Status: Idle' is in the center, and a temperature reading of '41.53 °C' is on the right. Below this is a grid of six main menu categories: SYSTEM INFO, SIGNALS, SETTINGS, AUTOSAMPLER, METHODS, and UTILITIES. The AUTOSAMPLER icon, which shows a robotic arm, is highlighted with a red rectangular border. At the bottom of the screen is a navigation bar with several icons: a play button, a stop button, a double-headed arrow, the autosampler tray calibration icon, a left arrow, and a home button. The version number '1.0.0.3816' is visible in the bottom left corner.

Autosampler tray calibration



DSC2500

Status: Idle



41.97 °C

CALIBRATION



LOAD/UNLOAD



0.0.3816

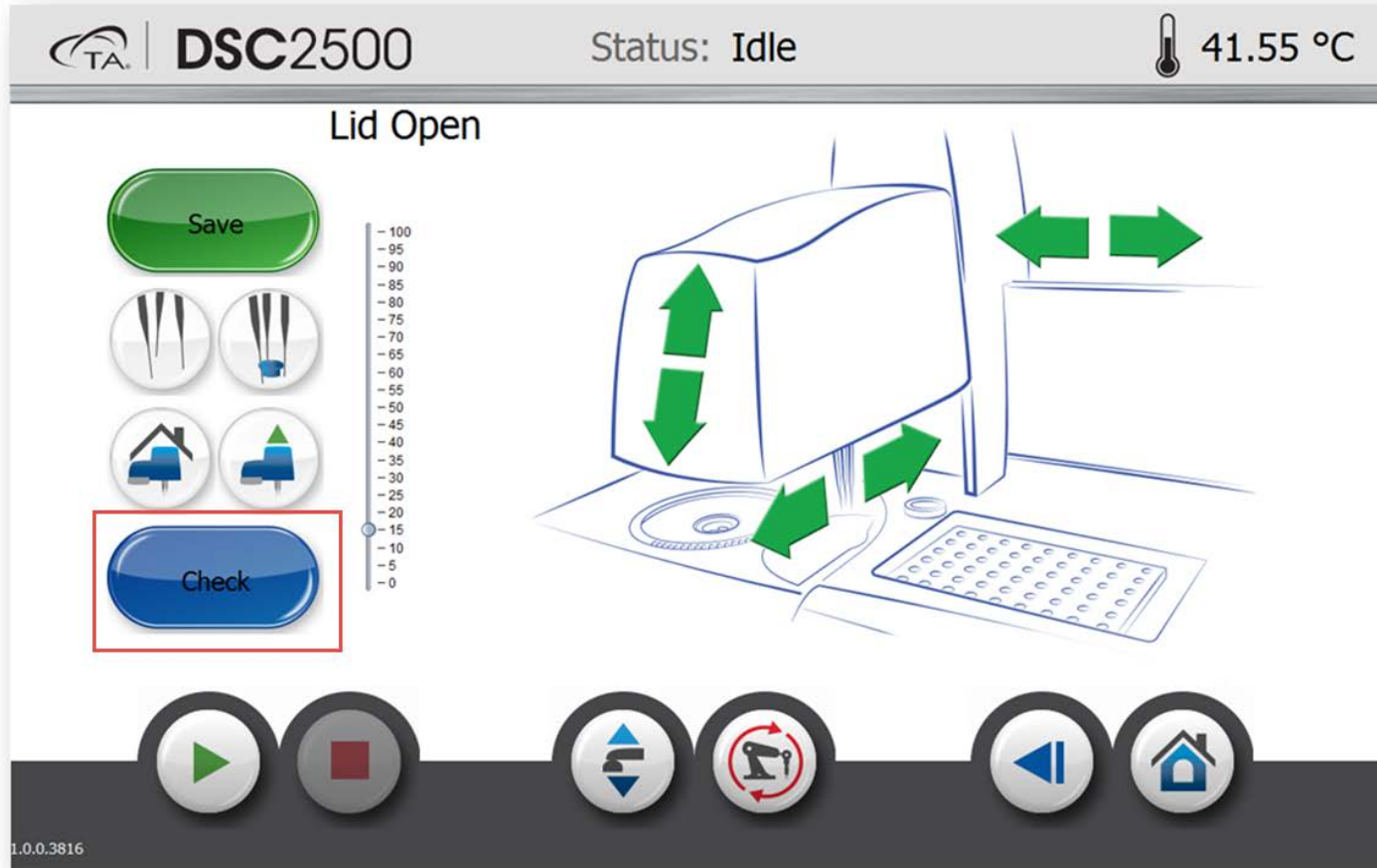
Autosampler tray calibration

- Select Tray 1

The screenshot displays the DSC2500 software interface. At the top, the TA logo and 'DSC2500' are on the left, 'Status: Idle' is in the center, and a temperature reading of '57.70 °C' is on the right. Below this is the title 'Choose Autosampler Calibration'. A list of calibration options is shown on the left: 'All', 'Tray 1' (highlighted with a red box), 'Sample', 'Reference', 'Lid Open', 'Lid Closed (Park)', 'Waste Bin', and 'Cleanup Open Cell'. To the right of the list is a vertical scrollbar. At the bottom, there is a navigation bar with several icons: a play button, a stop button, a refresh button, a circular arrow button, a left arrow button, and a home button. The version number '3.0.0.4199' is visible in the bottom left corner.

Autosampler tray calibration

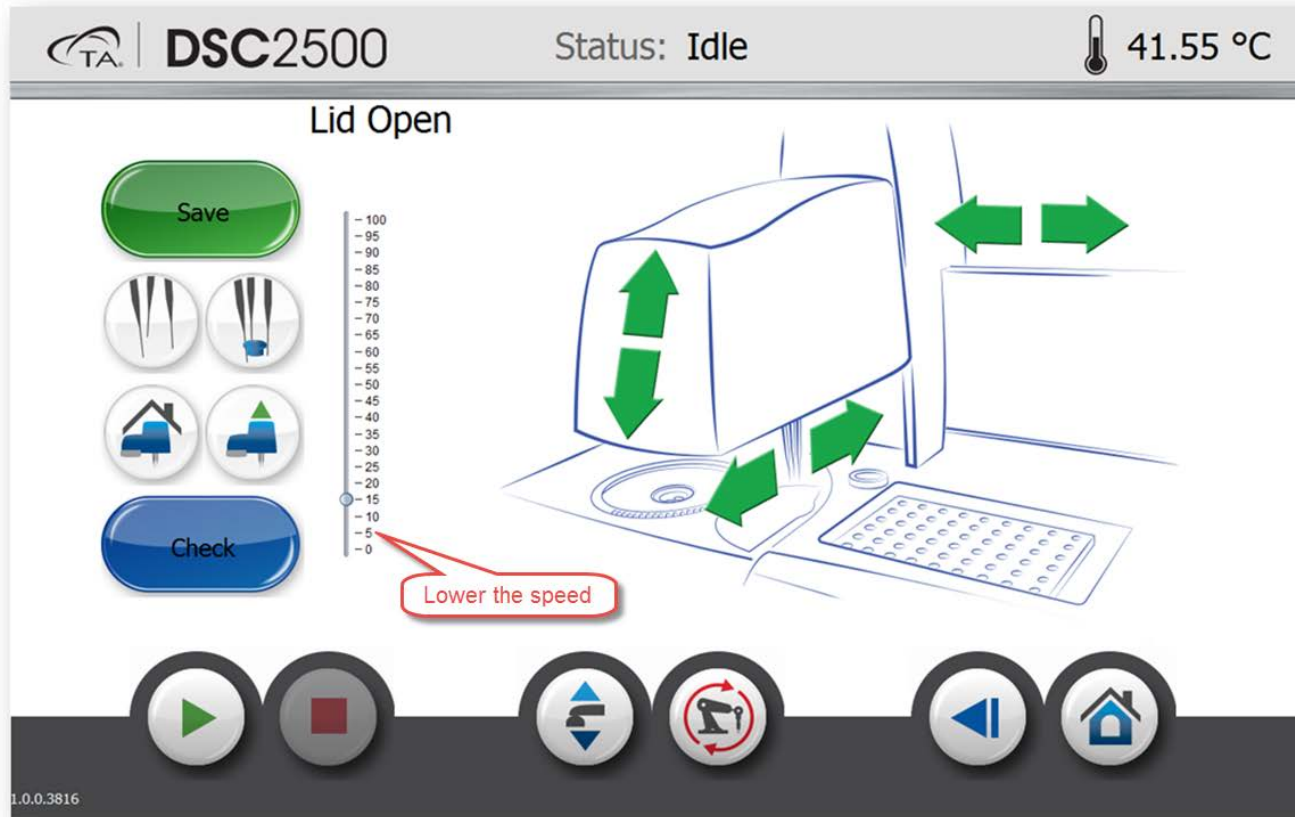
Select  to verify the position



The screenshot displays the TA DSC2500 software interface. At the top, the status bar shows 'DSC2500', 'Status: Idle', and a temperature of 41.55 °C. The main area is titled 'Lid Open' and features a vertical scale from 0 to 100. A diagram of the autosampler tray is shown with green arrows indicating movement. A 'Check' button is highlighted with a red box.

Autosampler tray calibration

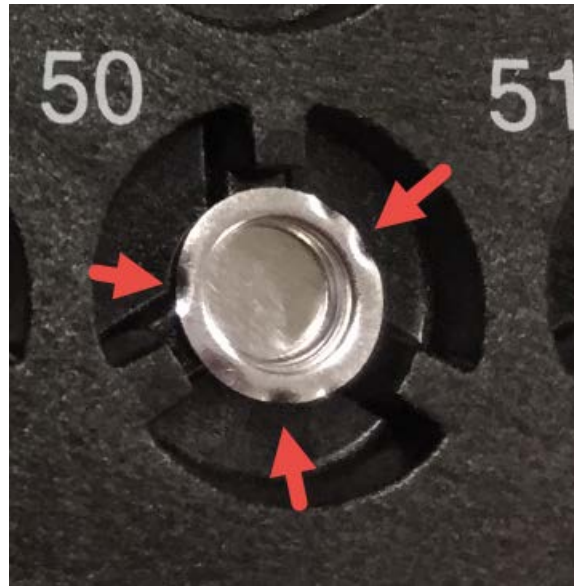
- Set slider bar to a low speed (5) and adjust with the arrows



- Save the new position when satisfied

Autosampler gripper close calibration

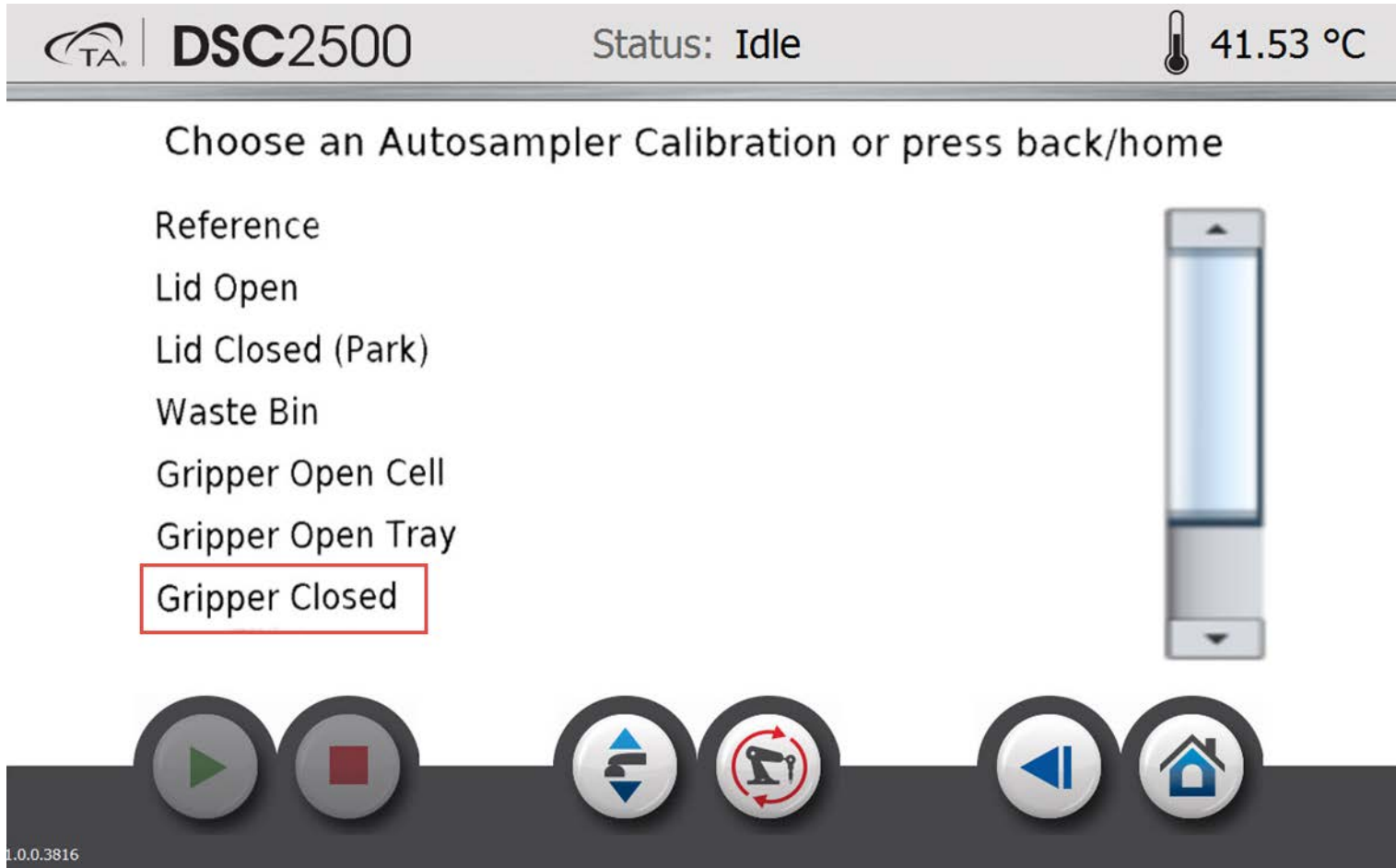
- Frequently used (reference) pans can show dents



- This is an indication that the grippers are set too tight
- Adjust the gripper closed position

Autosampler gripper close calibration

Scroll down and select Gripper closed



The screenshot displays the DSC2500 software interface. At the top, the TA logo and 'DSC2500' are on the left, 'Status: Idle' is in the center, and a temperature reading of '41.53 °C' is on the right. Below this is a menu with the instruction 'Choose an Autosampler Calibration or press back/home'. The menu items are: Reference, Lid Open, Lid Closed (Park), Waste Bin, Gripper Open Cell, Gripper Open Tray, and Gripper Closed. The 'Gripper Closed' option is highlighted with a red rectangular border. To the right of the menu is a vertical touch screen icon. At the bottom, there is a navigation bar with six circular icons: a green play button, a red stop button, a blue double-headed arrow, a red gripper icon, a blue left arrow, and a blue house icon. The version number '1.0.0.3816' is visible in the bottom left corner.

TA | **DSC2500** Status: Idle 41.53 °C

Choose an Autosampler Calibration or press back/home

- Reference
- Lid Open
- Lid Closed (Park)
- Waste Bin
- Gripper Open Cell
- Gripper Open Tray
- Gripper Closed**

1.0.0.3816

Autosampler gripper close calibration

Select Check to grab the sapphire from position 1

TA | **DSC2500** Status: Idle 41.55 °C

Lid Open

Save

Check

100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0

1.0.0.3816

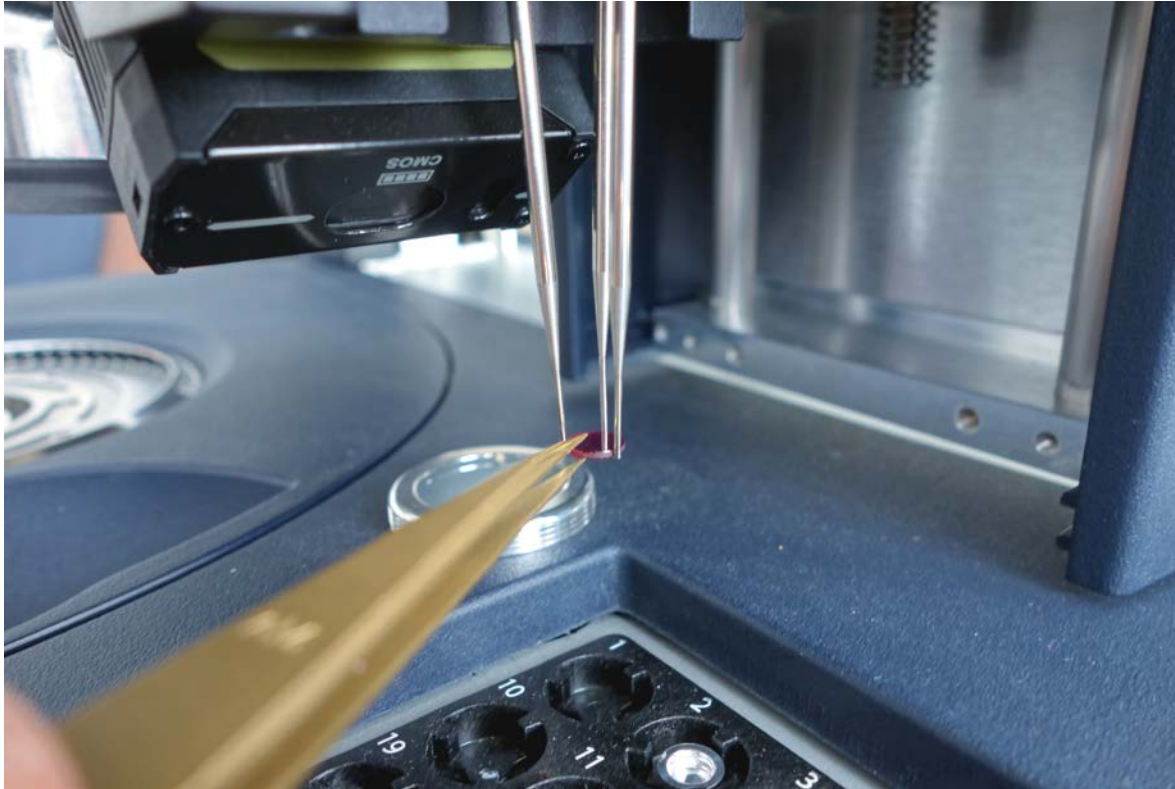
Autosampler gripper close calibration

Raise the gripper arm

The screenshot displays the TA DSC2500 software interface. At the top, the status is "Idle" and the temperature is 41.55 °C. The main area features a central diagram of the autosampler gripper with green arrows indicating its movement: a vertical double-headed arrow on the gripper arm, a horizontal double-headed arrow on the gripper base, and a horizontal arrow pointing right from the gripper base to the sample pan. To the left of the diagram is a vertical temperature scale from -100 to 0. Below the scale are several icons: a "Save" button, two gripper icons, a home icon, and a gripper icon with a red border. Below these is a "Check" button. At the bottom of the interface are six navigation buttons: a play button, a stop button, a gripper icon, a gripper icon with a red circle and arrow, a left arrow, and a home icon. The version number "1.0.0.3816" is visible in the bottom left corner.

Autosampler gripper close calibration

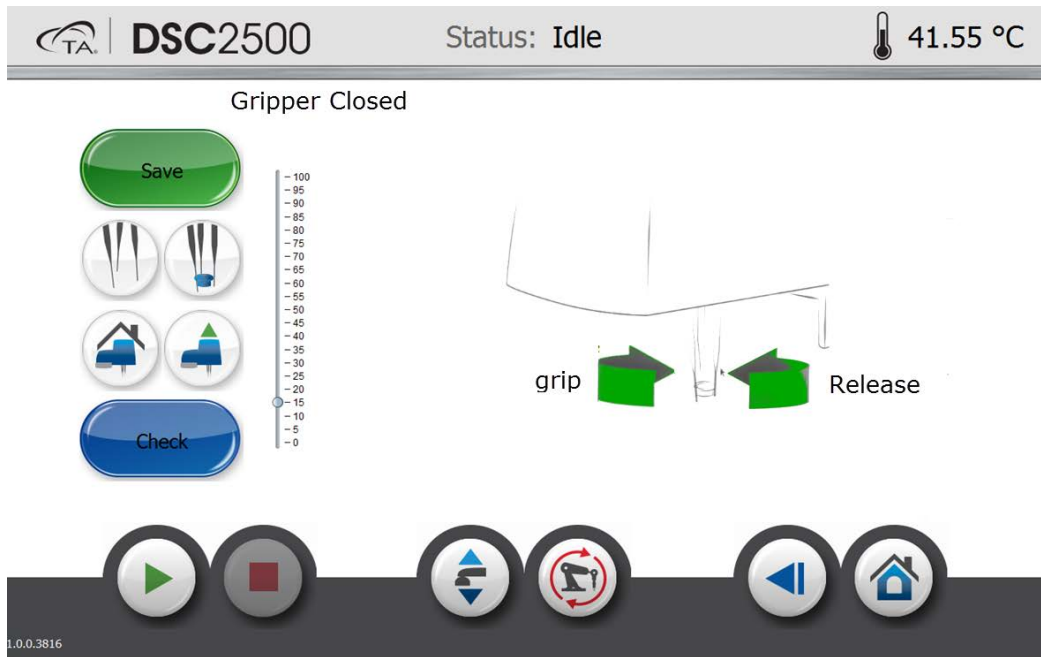
- Check with tweezers how well the sample is held




- Release the grip tension if needed


Autosampler gripper close calibration

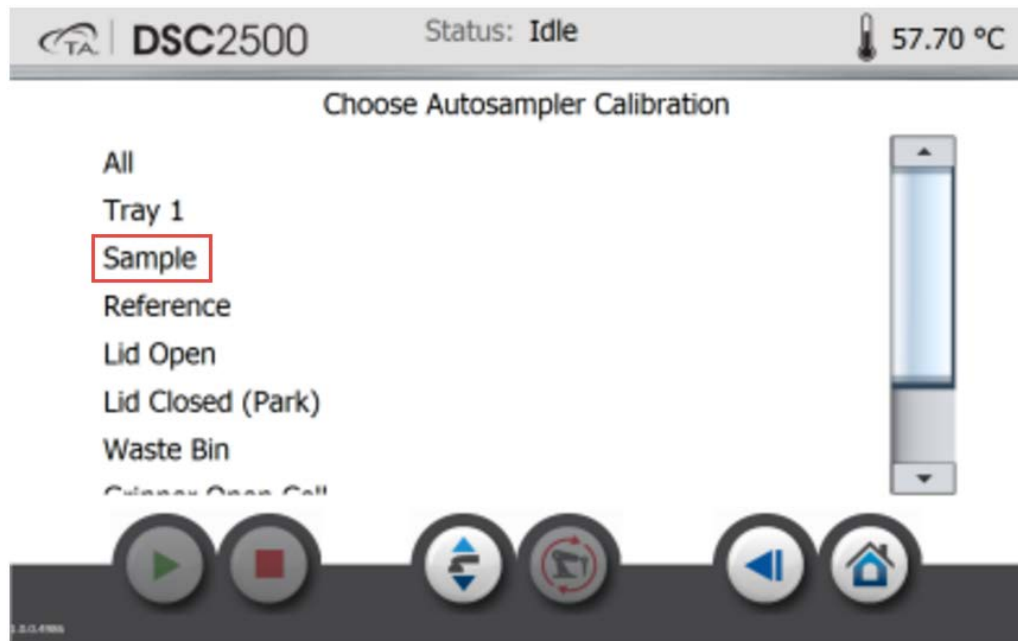
- Adjust with the arrows 



- Sapphire sample should just be held
-  the new setting

Autosampler cell and reference calibration

- Select Sample position and  the position
- Sapphire on tray position 1 will be used for this

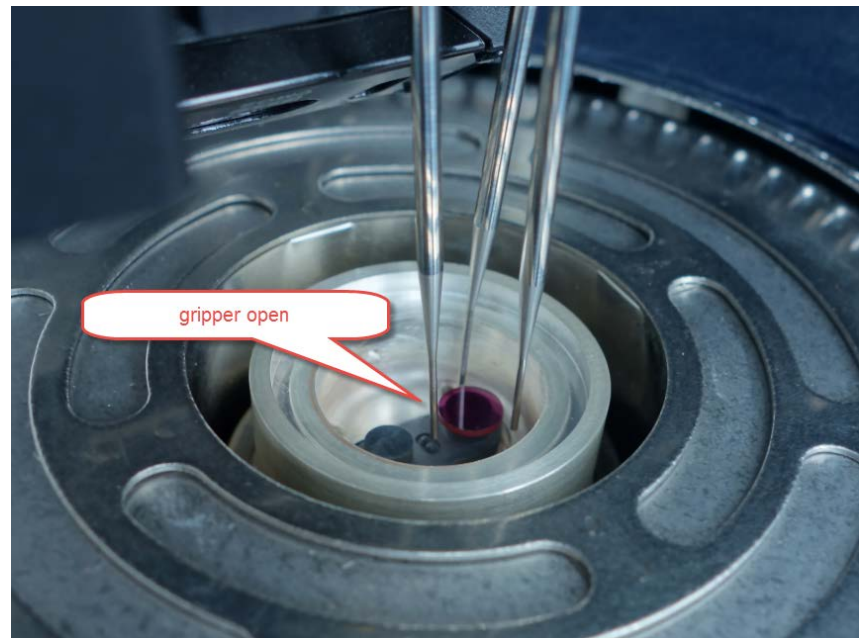


Autosampler cell and reference calibration

- Press 
- Adjust with the arrows 
- Observe the position of sapphire with grippers open
- Use grip/ release buttons after every correction



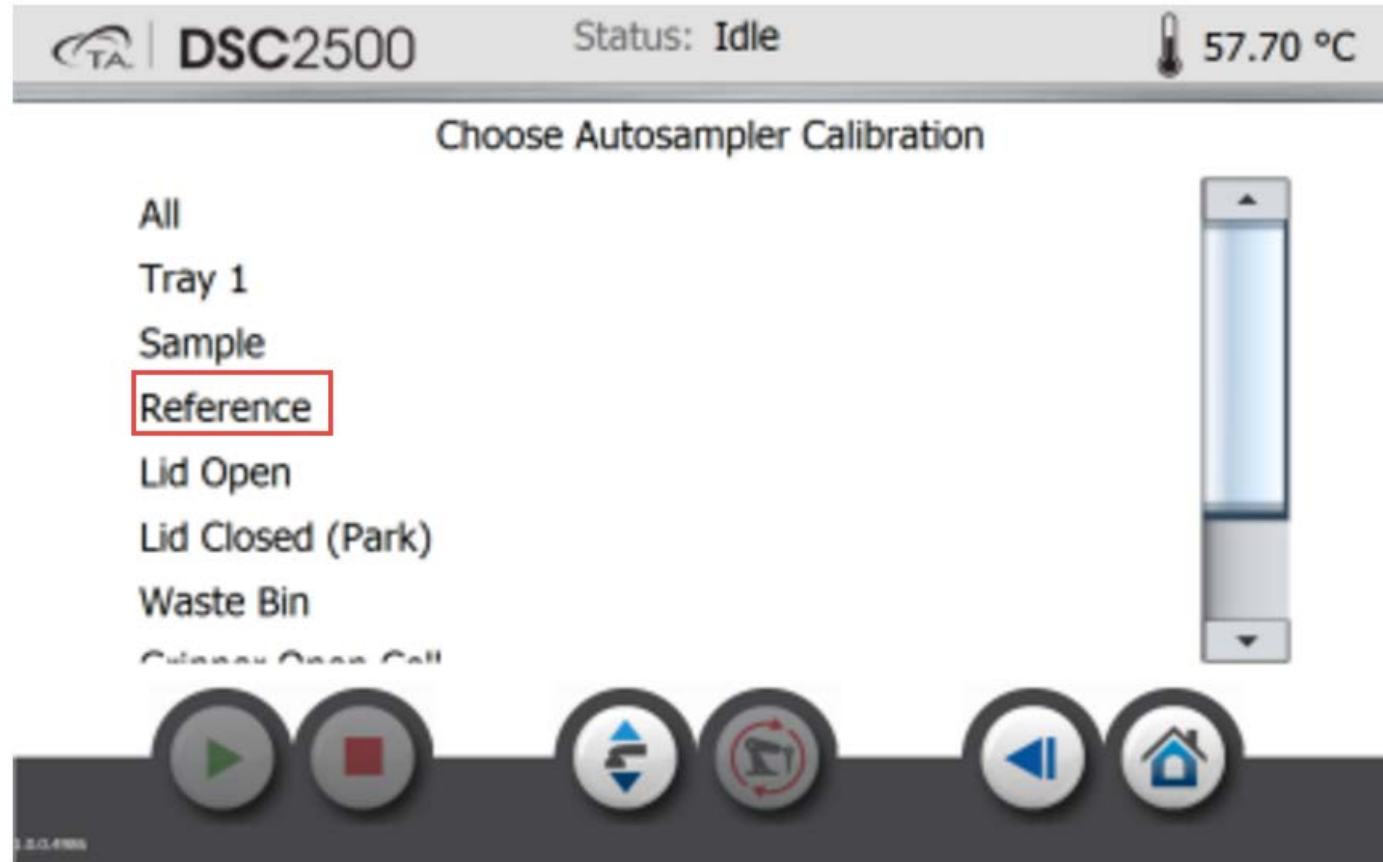
Make adjustments in the down position



the new position when satisfied

Autosampler cell and reference calibration

Repeat the same calibration for the Reference position



Prepare Indium sample

Clean tweezers, scalpel and a flat (glass) surface with ethanol



Prepare Indium sample

Cut a piece of Indium (3-5 mg)



Prepare Indium sample

Press it flat with the cleaned, rear part of the tweezers



Prepare Indium sample

- The Indium sample will often stick to the glass
- Scrape it off and flatten it again with the side of the scalpel



Prepare Indium sample

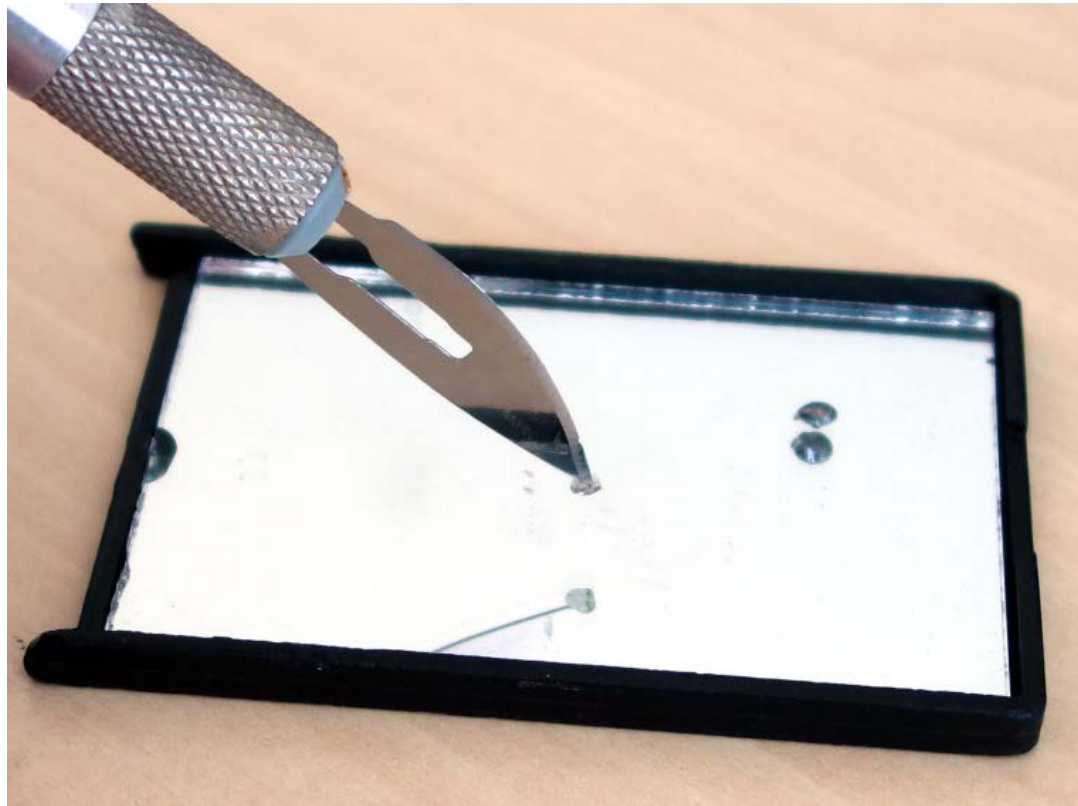
- Weigh the sample pan and lid
- Make a note of the weight (for T4P mode only)



- Tare the balance

Prepare Indium sample

- Pick up the Indium sample with the sharp tip of the scalpel



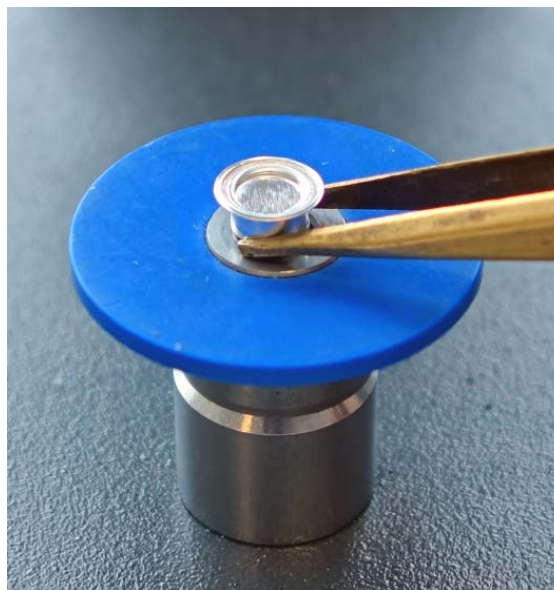
Prepare Indium sample



- Place Indium sample in center of the pan
- Make a note of the weight
- Recommended sample weight is 3-5 mg

Prepare Indium sample

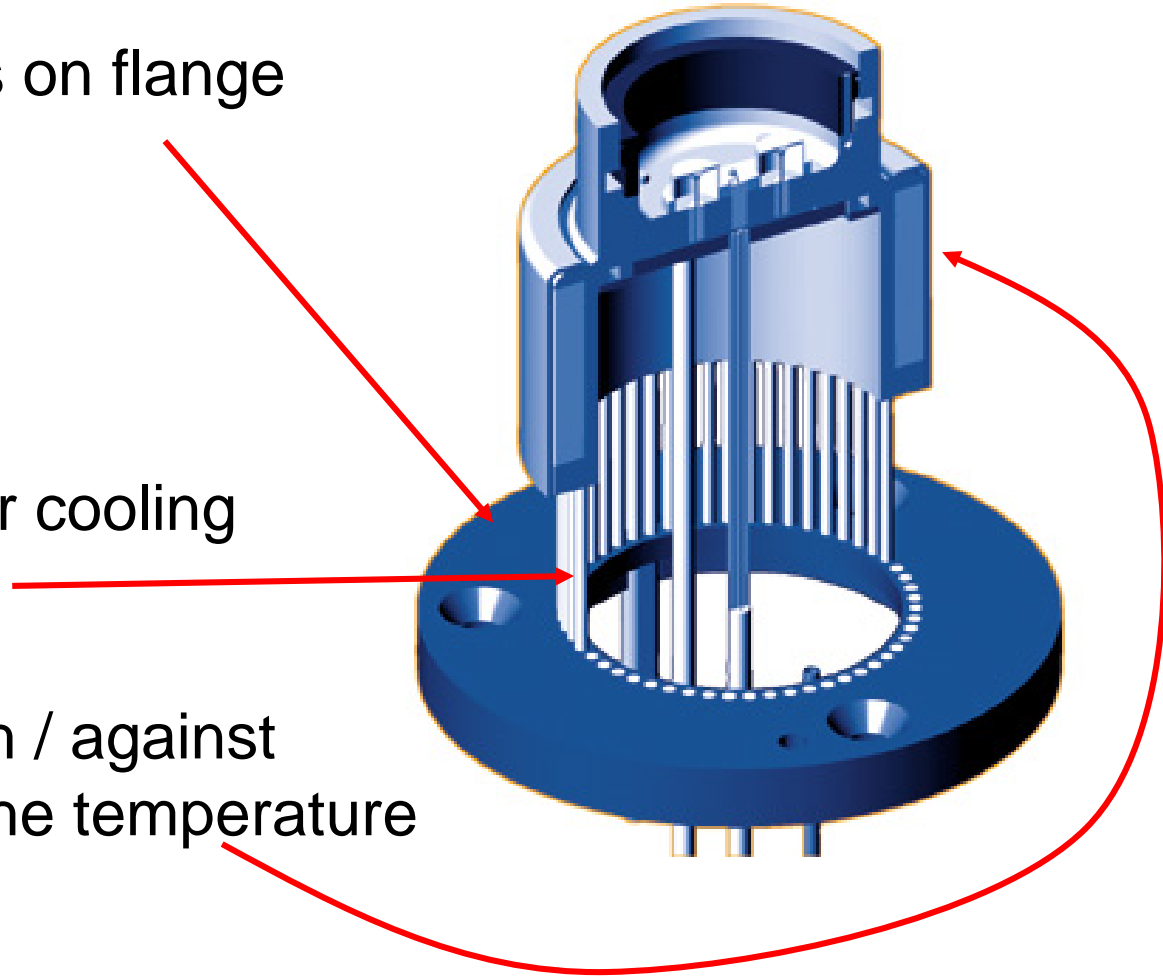
- Close the lid with the matching die set



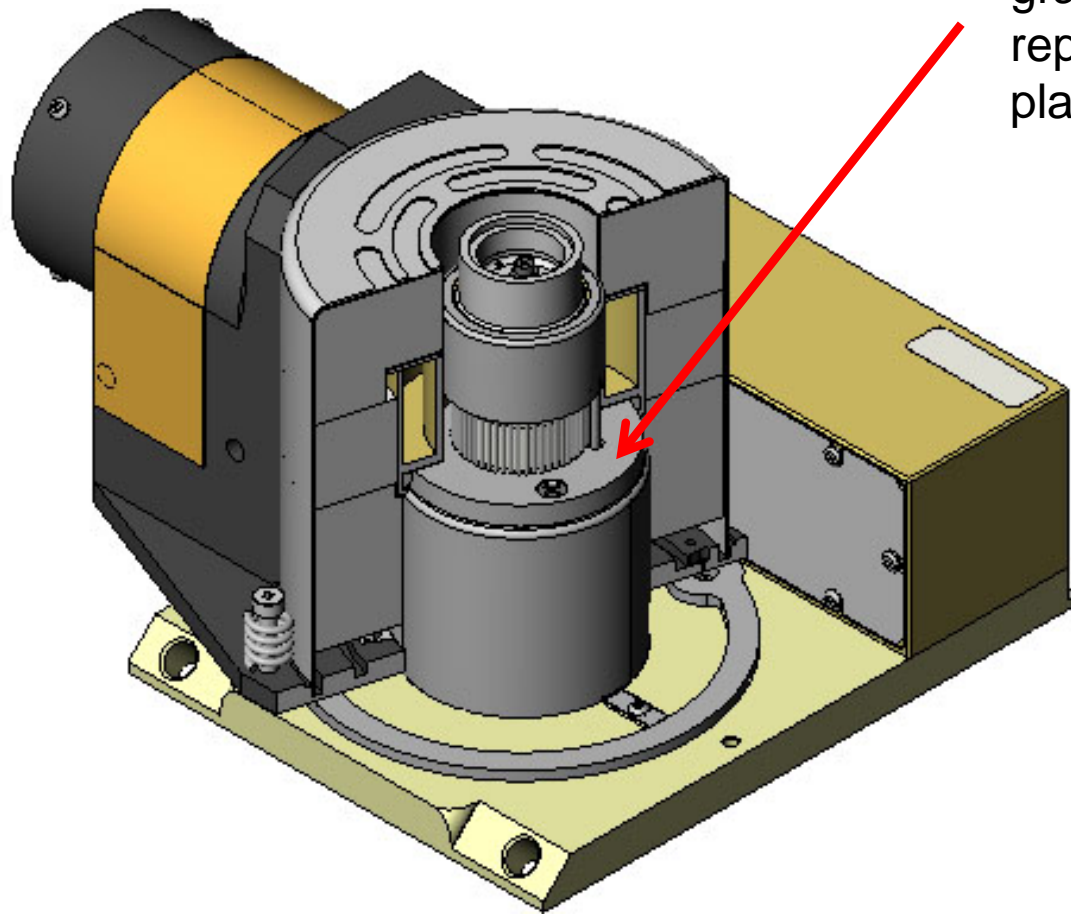
- Place the pan on the auto sampler tray
- Setup calibration or verification run

Coolers

- Cooling device sits on flange
- Nickel rods transfer cooling to furnace / cell
- Furnace works with / against cooling to control the temperature



Cooler and Cell Cut-away



If cooler is removed,
graphite disk needs to be
replaced before cooler is
placed back on the cell

RCS maintenance

- RCS heat exchanger needs to be cleaned on regular basis
- Switch off the RCS
- Remove side panel from RCS (without moving the RCS)



RCS maintenance

- Use soft brush and vacuum cleaner to remove dust



Conditioning RCS/LNCS

- Done each time the RCS/LNCS cooling head is installed on the cell or if the system ran without purge gas
- Two step procedure

Drying system

- ◆ Run with cooler installed and turned off
- ◆ System is held isothermally at 75°C for 30 minutes

Stabilizing system

- ◆ Run with cooler on
- ◆ Baseline is cycled

Conditioning RCS/LNCS

The Discovery DSC has a template for the conditioning

The screenshot displays the 'Procedure' configuration window in the Discovery DSC software. The 'Mode' is set to 'Standard' and the 'Test' is 'Cell Conditioning'. The 'Name' field contains 'Cell Conditioning'. The 'Template' tab is active, showing the 'Segments' section with 'Conditioning Temperature' set to 75.00 °C and 'Hold Time' set to 30 min. A dropdown menu is open for the 'Test' field, listing options: Custom, Cell Conditioning (highlighted), Cyclic, Heat/Cool/Heat, Isothermal, Ramp, Verify Temperature, and Verify Tzero.

Procedure

Mode: Standard

Test: Cell Conditioning

Name: Cell Conditioning

Template: Segments

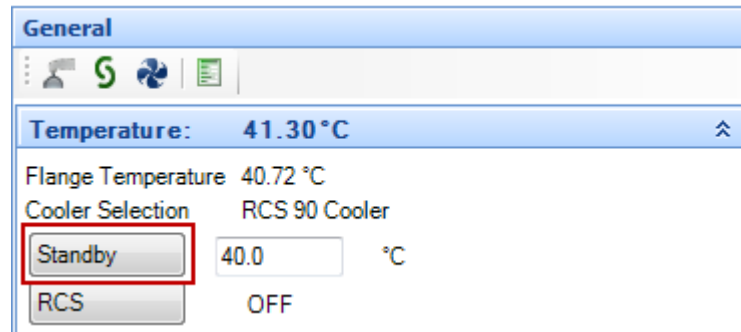
Conditioning Temperature: 75.00 °C

Hold Time: 30 min

- Custom
- Cell Conditioning
- Cyclic
- Heat/Cool/Heat
- Isothermal
- Ramp
- Verify Temperature
- Verify Tzero

Optimizing Performance of Discovery DSC-RCS

- Always make sure that cell is well above ambient between experiments !
- Leave standby temperature at 40° C



Optimizing Performance of Discovery DSC-RCS

Define a load and unload temperature

Procedure

Mode: Standard Test: Custom

Name: Cell Conditioning

Custom Edit

No.	Description
1	Event1 Off
2	Equilibrate 75.00 °C
3	Isothermal 30.00 min

Advanced

Load Window

Use Standby Temperature

Use 30.0 °C to 40.0 °C

End of Test

Discard pan in waste bin at end of test

Use Standby Temperature

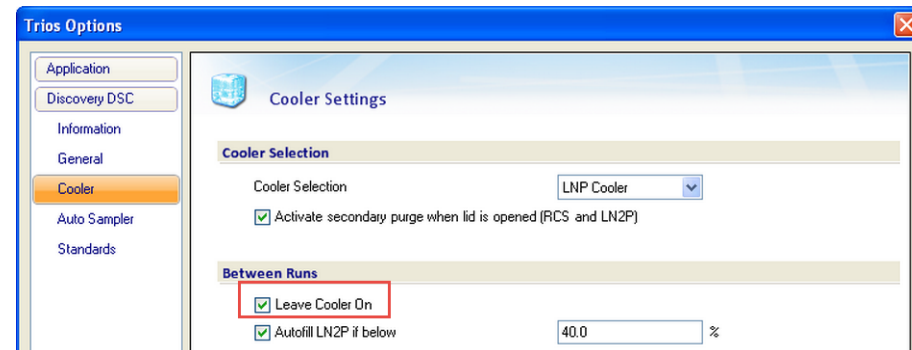
Use 35.0 °C to 45 °C delay 0.0 S

Optimizing Performance of Discovery DSC-RCS

- Run in event mode (switch on front panel RCS)



- Leave RCS on between runs
- Requires constant supply of cell & base purge

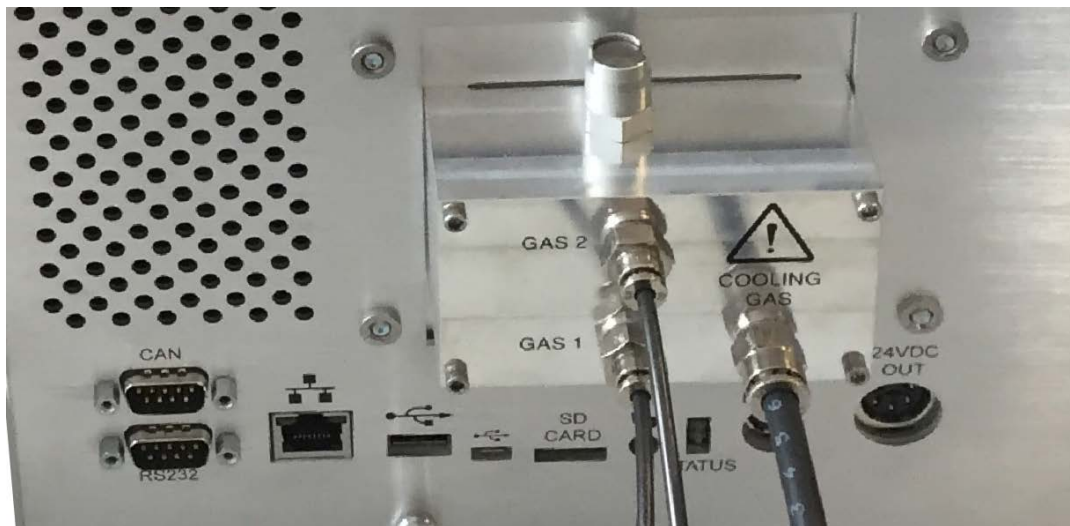


Purge Gas

- Set pressure on regulator to 1.4 Bar (140kPa)
- Cell purge: 50 ml/min N₂
- RCS base purge: 300-350 ml/min (mandatory)
- RCS base purge is controlled by the inlet pressure
- RCS base purge flow is a signal on the touch screen
- RCS secondary purge: 9 l/min (optional and active only when auto lid open for sample loading and / or during cell conditioning)

Purge Gas Selection

- Gas 1 is always Nitrogen
- Gas 1 is used for cell and base purge
- Helium is used as Gas 2 for low temperature operation with LN2P (below -100°C)
- Cooling gas is Nitrogen or air if a FACS is used

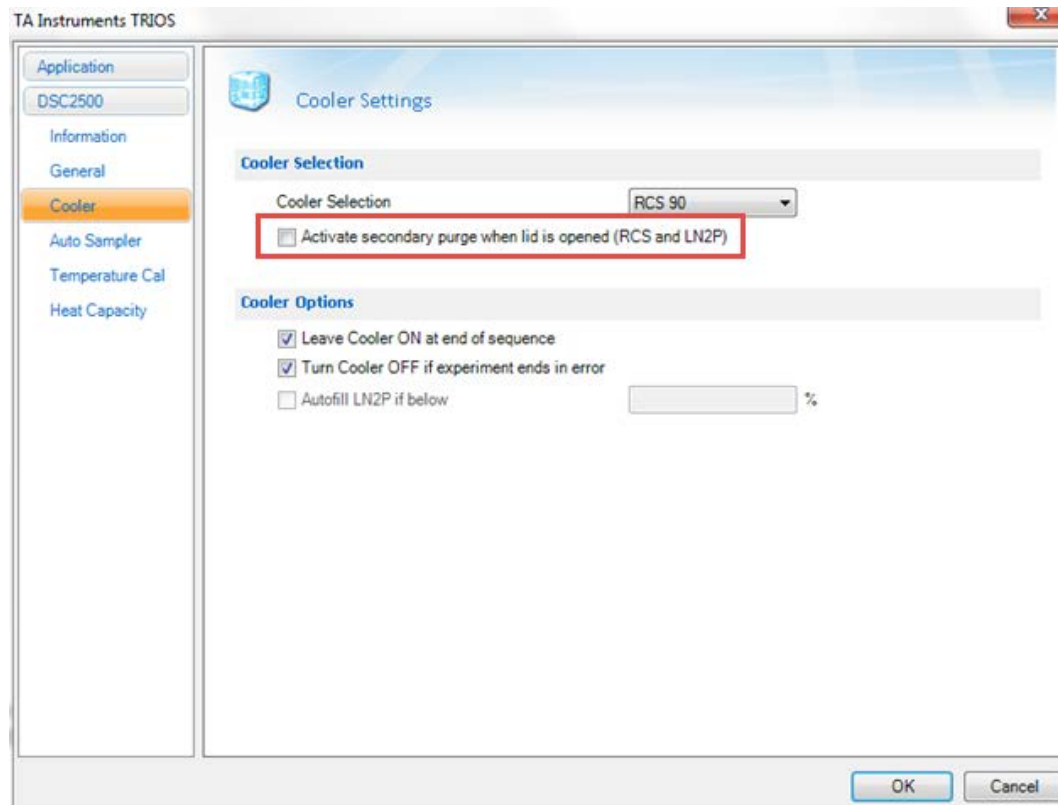


Secondary Purge

- Used in high humidity conditions
- Used if sample is loaded below room temperature
- When activated, purges area around heat exchanger & cell when the lid is open
- Helps to ensure moisture doesn't get in this area

Secondary Purge

- Instrument Options



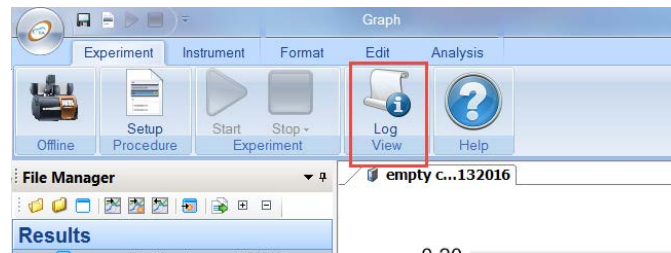
Troubleshooting

Topics:

- Notifications log
- Troubleshooting with online help
- Diagnostic signals
- Value of Diagnostic signals
- System health
- Video's
- Part numbers

Notifications Manager

- The notifications log shows all messages from instrument and controller



- Every step is logged

Log

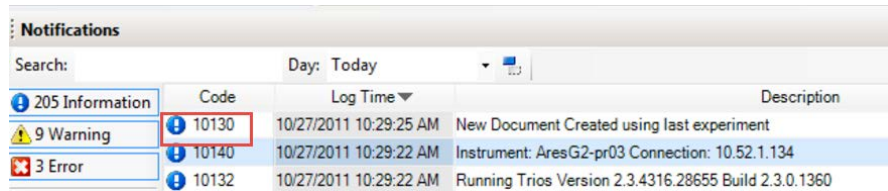
Search: Day: Today Instrument: <ALL>

	Code	Log Time	Description	Machine ID	User ID
321 Information	6051	4/19/2017 1:47:49.931...	Air Cool is off.	DSC2A-00367 (1. DSC250/TA Service	
4 Warning	10010	4/19/2017 2:49:21.861...	File Saved C:\ProgramData\TA Instruments\TRIOS\Data\installation ilco baseline verification.tri	DSC2A-00367 (1. DSC250/TA Service	
3 Error	10010	4/19/2017 2:49:21.620...	File Saved C:\ProgramData\TA Instruments\TRIOS\Data\installation ilco baseline verification.tri	DSC2A-00367 (1. DSC250/TA Service	
	10009	4/19/2017 2:49:21.473...	Experiment "installation ilco baseline verification" Completed	DSC2A-00367 (1. DSC250/TA Service	
Clear List	10009	4/19/2017 2:49:21.424...	Experiment "installation ilco baseline verification" Completed	DSC2A-00367 (1. DSC250/TA Service	
	6162	4/19/2017 2:49:21.379...	Ending Experiment	DSC2A-00367 (1. DSC250/TA Service	
	6148	4/19/2017 2:49:21.345...	Modulate Temperature Segment 0 amplitude, 0 period	DSC2A-00367 (1. DSC250/TA Service	
	6143	4/19/2017 2:33:26.486...	Isothermal Segment 10 min started	DSC2A-00367 (1. DSC250/TA Service	
	6144	4/19/2017 2:08:56.493...	Ramp Segment 20 C/min to 400 Started	DSC2A-00367 (1. DSC250/TA Service	
	6143	4/19/2017 1:58:56.166...	Isothermal Segment 10 min started	DSC2A-00367 (1. DSC250/TA Service	
	6051	4/19/2017 1:47:49.931...	Air Cool is off.	DSC2A-00367 (1. DSC250/TA Service	

- Save and send by email for support

Notifications Manager

- Click on “Code” for more information



The screenshot shows a 'Notifications' window with a search bar and a 'Day: Today' dropdown. Below is a table with columns for 'Code', 'Log Time', and 'Description'. A summary bar on the left shows '205 Information', '9 Warning', and '3 Error'. The 'Code' column is highlighted with a red box.

	Code	Log Time	Description
205 Information	10130	10/27/2011 10:29:25 AM	New Document Created using last experiment
9 Warning	10140	10/27/2011 10:29:22 AM	Instrument: AresG2-pr03 Connection: 10.52.1.134
3 Error	10132	10/27/2011 10:29:22 AM	Running Trios Version 2.3.4316.28655 Build 2.3.0.1360

- Code explanation can also be found in the Online help

Troubleshooting with Online help



TRIOS Online Help

file:///C:/Program%20Files%20(x86)/TA%20Instruments/TRIOS/Help/DSC%2025%20250%202500/TRIOS_Help_

Search

troubleshooting Search

Rank	Title
1	Troubleshooting
2	Discovery DSC Error Messages
3	Touring the TRIOS Workspace

Discovery DSC Troubleshooting

Select from the following topics for information:

- [Understanding Error Messages](#)
- [TRIOS Application Messages](#)

Table of Contents

Search

Bookmarks

Troubleshooting with Online help

- Online help shows detailed information per message

The screenshot shows the online help interface for TRIOS. On the left is a 'Table of Contents' sidebar with a tree view. The 'Error Messages' section is highlighted with a red box, and its sub-item 'Understanding Error Messages' is also highlighted. The main content area displays the title 'Understanding Error Messages in TRIOS' in blue. Below the title is a paragraph explaining the Notifications Panel and a table for mapping message code ranges to categories. The table has two columns: 'Message Code Range' and 'Message Category'. The first row shows code ranges '1000 - 2002' and '10000 - 19999' (both highlighted with a red box) corresponding to 'TRIOS Application messages'. The second row shows the range '5523-12507' corresponding to 'Discovery DSC messages (includes Autosampler, PCA, and GDM errors)'. The sidebar also lists other topics like 'Welcome to TRIOS', 'Using the Discovery DSC', 'Introducing the Discovery DSC User Interface', 'Monitoring the Discovery DSC System', 'Shutting Down the Discovery DSC System', 'Calibrating the Discovery DSC', 'Maintaining the Discovery DSC', 'Discovery DSC Photocalorimeter Accessory', 'Discovery DSC Cooling Options', 'The Refrigerated Cooling Systems (RCS)', 'The Liquid Nitrogen Pump', 'Drying the DSC-RCS or DSC-LN Pump System', 'The Finned Air Cooling System (FACS)', 'The Stand-Alone Quench Cooler', 'Discovery DSC Autosampler', 'Preparing the Discovery DSC', 'Using the Instrument Control Panels', 'Preparing Samples', 'Setting Up Discovery DSC Experiments', 'Running Discovery DSC Experiments', 'Technical Information', 'Discovery Series Manuals', 'Using TRIOS Software', 'Evaluating Data', 'TA Instruments Offices', and 'Trademarks and Patents'.

Message Code Range	Message Category
1000 - 2002 10000 - 19999	TRIOS Application messages
5523-12507	Discovery DSC messages (includes Autosampler, PCA, and GDM errors)

Troubleshooting with Online help

TRIOS Application Error Messages

Refer to the table below for the list of TRIOS messages and possible solutions to error messages.

Message Code	Message Text	Explanation of Message	Solutions to Error
1000	Printing Information threw exception : <error>	Calibration tab printing failure.	Check the printer is connected, switched on, and ready to print.
1001	Sending Proc Content Changes threw exception : <error>	Unexpected software error.	Please contact TA Instruments for assistance.
1002	The instrument's address has not been specified. Please set the address in its Property window and try again.	No IP entered, connection to the instrument could not be effected.	Check that the correct IP has been specified in the connection dialog.
1003	Failed Connecting to the Instrument.	Initial communications with the instrument could not be established.	Check that the IP has been correctly specified, all network cables are connected and that the instrument is switched on.
1004	CloseLiveDataThread liveData null or filename empty	Software operation informational message.	Please inform TA Instruments.
1005	CloseLiveDataThread - live doc already closing	Software operation informational message.	Please inform TA Instruments.
1006	The instrument interface has been changed.	Software operation error message.	Please contact TA Instruments for assistance.
1007	Compiler Error: <error>	Software operation error message.	Please contact TA Instruments for assistance.
1008	LoadDataFile(Binary section): <filename> <error>	Software operation error message.	Please contact TA Instruments for assistance.
1009	OnDragOver threw exception : <error>	Software operation informational message.	Please inform TA Instruments.
1010	OnDragDrop threw exception : <error>	Software operation informational message.	Please inform TA Instruments.

System health

This function checks the circuits boards



System Health (Benefit for Service)

- Reboot if an indicator is red

TA | **DSC2500** Status: Test 41.81 °C

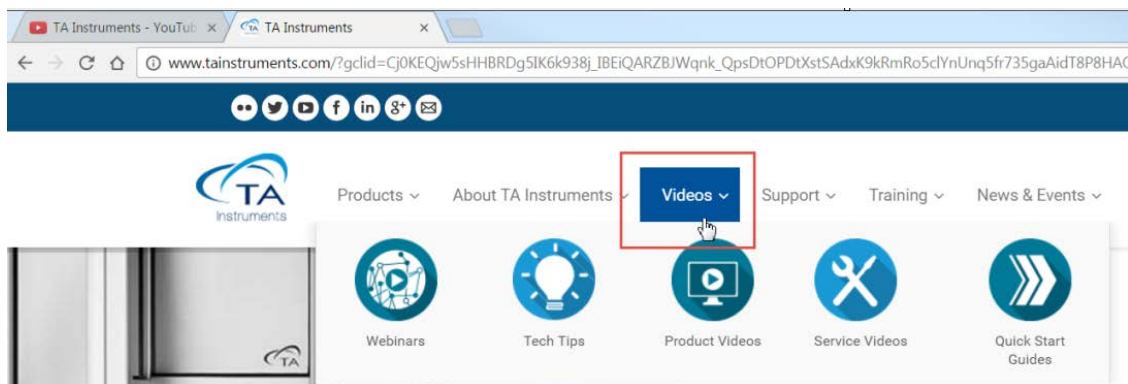
Autosampler	2.0.2.4	●
Cortex	2.2.2.166	●
FEP	1.0.3.6	●
FCM	1.0.1.5	●
GDM	1.0.1.7	●

1.0.0.3816

- Contact TA Service if problem persists

Video's

- Video's are available www.tainstruments.com

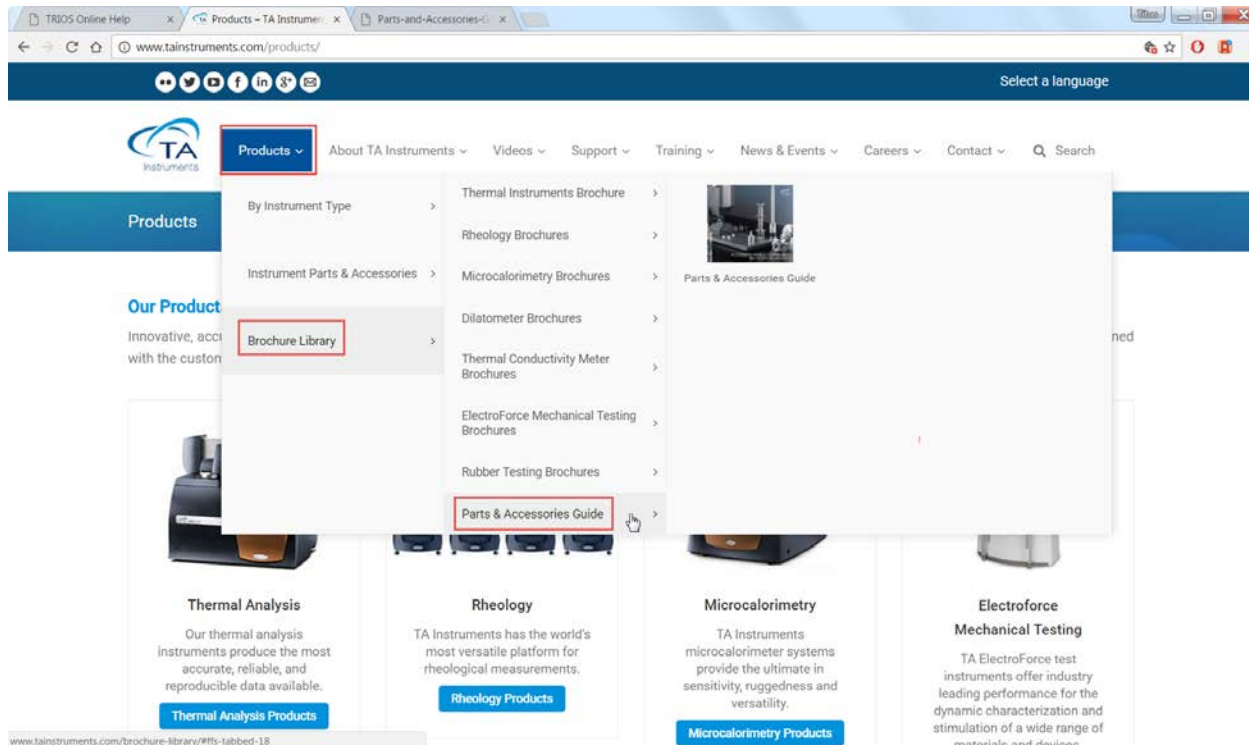


- And on YouTube



Part numbers

- Part numbers in cover of accessory box
- Part numbers labeled on parts
- Part numbers on TA Instruments.com



Part numbers

935012.001	Dual Liquid Light Guide for PCA (-50 °C to 80 °C operation) <i>Note: Requires RCS for subambient use.</i>
972734.901	Discovery PCA Trigger Adapter: an adapter to convert USB communication from the Discovery products to RS232 communication for the PCA. This adapter is required for the Discovery DSC to communicate with the PCA and should be added to PCA orders for the Discovery DSC.
935014.901	PCA/UV External Filter Adapter Accessory Kit (allows use of external filters with the PCA P/N: 935000.901)
935009.005	Blank Filter Holder (for the Omnicure S-2000 with external filter adapter)
935009.001	Filter, External, 320 - 480 nm (for the Omnicure S-2000 with external filter adapter)
935009.002	Filter, External, 320 - 390 nm (for the Omnicure S-2000 with external filter adapter)
935009.004	Filter, External, 400 - 500 nm (for the Omnicure S-2000 with external filter adapter)
935009.003	Filter, External, 365 nm (for the Omnicure S-2000 with external filter adapter)
935013.001	PCA Air Filter Kit (pkg. of 10)
935018.901	PCA Longpass Filter, 390 nm (pkg. of 2)
935019.901	PCA Longpass Filter, 490 nm (pkg. of 2)
935015.901	Filter, Neutral Density, 1 %
935016.901	Filter, Neutral Density, 10 %
935021.001	Lamp, 100 W, Mercury (for the Novacure 2100)
935021.002	Lamp, 200 W, Mercury (for the Omnicure S-2000)
935051.901	Universal Optical Accessory Kit
200700.001	Radiometer (R2000) (for use with either PCA)

Tzero DSC Sample Press and Die Sets/Sample Pans and Lids

901600.901	Tzero Sample Press and Die Sets Kit
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901608.902	DSC Hermetic Die Set (WHITE color) (for use in the Tzero Sample Press)
901608.903	DSC Tzero Die Set (BLACK color) (for use in the Tzero Sample Press)
901608.904	DSC Tzero Hermetic Die Set (BLUE color) (for use in the Tzero Sample Press)
901608.905	DSC High Volume Die Set (YELLOW color) (for use with the Tzero Sample Press and standard series high volume pans and lids)
972800.901	Tzero Powder Sample Preparation Kit
901670.901	Tzero Low-Mass Pans (pkg. of 100)
901671.901	Tzero Lids (pkg. of 100)
901683.901	Tzero Pans (pkg. of 100)
901684.901	Tzero Hermetic Lids (pkg. of 100)
901685.901	Tzero Hermetic Pinhole Lid (75 micron diameter pinhole) (pkg. of 50)
901697.901	Tzero Alodined Pans (pkg. of 100)
901698.901	Tzero Hermetic Alodined Lids (pkg. of 100)

Standard Series DSC Sample Pans and Lids

Note: () Indicates the pans and lids work with the Tzero or Standard DSC Press.*

900760.901	Classic Aluminum Pans* (pkg. of 200) (higher sidewall compared to standard aluminum sample pans)
900786.901	Standard Aluminum Pans* (pkg. of 200)
900779.901	Standard Aluminum Lids* (pkg. of 200)
900793.901	Standard Aluminum Hermetic Pans* (pkg. of 200)
900794.901	Standard Aluminum Hermetic Lids* (pkg. of 200)
900860.901	Hermetic Lids with Pinhole* (pkg. of 50)
900796.901	Standard Coated Aluminum Hermetic Pans* (pkg. of 200)
900790.901	Standard Coated Aluminum Hermetic Lids* (pkg. of 200)

Thank You

The World Leader in Thermal Analysis,
Rheology, and Microcalorimetry

