

Atellica Solution

Adjustment Atellica Immunoassay (IM) Analyzer

Sample Probe

Document Version

Siemens reserves the right to change its products and services at any time. In addition, manuals are subject to change without notice. The hardcopy documents correspond to the version at the time of system delivery and/or printout. Versions to hardcopy documentation are not automatically distributed.

Please contact your local Siemens office to order a current version or refer to our website http://www.siemens-healthineers.com.

Disclaimer

Siemens provides this documentation "as is" without the assumption of any liability under any theory of law.

The content described herein shall be used by qualified personnel who are employed by Siemens or one of its affiliates or who are otherwise authorized by Siemens or its affiliates to use such documents.

Assemblers and other persons who are not employed by or otherwise directly affiliated with or authorized by Siemens or one of its affiliates are not entitled to use this documentation without prior written authority.

Copyright

"© Siemens, 2017" refers to the copyright of a Siemens entity such as:

Siemens Healthcare GmbH - Germany

Siemens Aktiengesellschaft - Germany

Siemens Shenzhen Magnetic Resonance Ltd. - China

Siemens Shanghai Medical Equipment Ltd. - China

Siemens Healthcare Private Ltd. - India

Siemens Medical Solutions USA Inc. - USA

Siemens Healthcare Diagnostics Inc. - USA and/or

Siemens Healthcare Diagnostics Products GmbH - Germany

1	Preparat	ion	4
	1.1	General Information	4
2	Sample	Probe Mechanical Alignment Check	5
	2.1 2.2	Required Tools and Materials	6 7
3	Sample	Probe Mechanical Coarse Alignment	9
	3.1 3.2	Required Tools and Materials	10 11
4	Sample	Probe Theta Wedge Mechanical Alignment Procedure	14
	4.1	Rotational Alignment Sample Probe to the Theta Wedge Pre-Eject Position	17
5	Sample	Probe Semi-Auto Alignments	19
	5.1 5.2	Sample Probe Semi-Auto Alignment Required Tools and Materials Sample Probe Semi-Auto Alignment Procedure	20 21
6	Sample	Probe Alignments	22
	6.1 6.2	 Sample Probe Alignment Required Tools and Materials Sample Probe Alignment Procedure 6.2.1 Manual Rotational Alignment Sample Probe to Outer Incubation Ring 6.2.2 Vertical Alignment Sample Probe to Outer Incubation Ring 6.2.3 Rotational Alignment of the Sample Probe to the Tip Pickup Offset 6.2.4 Vertical Alignment of the Sample Probe to the Tip Pickup Offset 6.2.5 Verify the Tip Pickup Offset Alignments 6.2.6 Rotational Alignment Sample Probe to Sample Rack 	22 23 23 26 28 33 37 40
_		6.2.7 Vertical Alignment Sample Probe to Sample Rack	42

1.1 General Information

Read this procedure in its entirety before starting the alignment. For general safety information, refer to the Safety section of the Atellica Solution CB-DOC.

Fig. 1: Strong Magnetic Field / No Pacemakers Warning

WARNING

Do not access the Atellica Magline Transport or handle the pucks if wearing a pacemaker. Magnetic fields can interfere with the operation of pacemakers and other medical implants. Pacemaker and medical implant wearers should stay at least 30 cm (12 inches) away from the Atellica Magline Transport.

WARNING

The probe tip is sharp and can cause skin punctures.

» Use care when working with the probe.

This document contains manual alignment procedures and a semi-automated alignment procedure.

For the semi-automated alignment procedure, refer to (\rightarrow Sample Probe Semi-Auto Alignments / Page 19).

2.1 Required Tools and Materials

Tools and Materials	Quantity
Inspection Mirror	1
Flashlight	1
Sample Probe Alignment Tool, SMN 11313416	1

2.2 Sample Probe Mechanical Alignment Check Procedure

- 1. Disable the sample probe rotational and vertical amplifiers:
 - a) Disable the Sample Probe Rotational Amplifier: In Service Utility UI, go to the **Execution** tab. Send the command: **SampleProbeRotationalAmplifierDisable**.
 - b) Disable the Sample Probe Vertical Amplifier: In Service Utility UI, go to the **Execution** tab. Send the command: **SampleProbeVerticalAmplifierDisable**.



Fig. 2: Sample Probe to Outer Incubation Ring Mechanical Check

(1) Sample Probe

- 2. Check the Sample Probe to the Outer Incubation Ring Access Hole:
 - a) By hand, exercise the Sample Probe on its rotational axis such that the Sample Probe plunger is directly above the Sample Probe Outer Incubation Ring Access Hole on the Incubation Ring Cover.
 - b) By hand, exercise the Sample Probe on its vertical axis such that it travels in and out of the Incubation Ring Access Hole.
 - c) Determine if the alignment passes or fails:

Pass	Fail
The Sample Probe plunger enters the Incubation Ring Access Hole with adequate clearance on all sides.	The Sample Probe does not have adequate clearance.

2 Sample Probe Mechanical Alignment Check

d) If the alignment fails, perform the (→ Sample Probe Mechanical Coarse Alignment / Page 9).

Perform this procedure only if an expected result in the (\rightarrow Sample Probe Mechanical Alignment Check Procedure / Page 7) is not met.

3.1 Required Tools and Materials

Tools and Materials	Quantity
T30 wrench	1

3.2 Sample Probe Mechanical Coarse Alignment Procedure

- 1. Perform the (→ Sample Probe Mechanical Alignment Check Procedure / Page 7). Determine in which direction the Sample Probe Mechanism is not aligned, and plan accordingly before performing the following steps.
- 2. Use a T30 wrench to loosen 4 screws that fasten the Sample Probe Mounting Plate to the IM analyzer Upper Deck.
- Fig. 3: Loosening the Sample Probe Mounting Plate



(1) Sample Probe Mounting Plate Screws

3. Slide the Sample Probe Mounting Plate and move the Sample Probe on its rotational axis until it hits the center of the Sample Probe Outer Incubation Ring Access Hole.

- 4. Use a T30 wrench to securely tighten 4 screws that fasten the Sample Probe Mounting Plate the IM analyzer Upper Deck.
- Fig. 4: Move the Sample Probe to the Center of the Outer Incubation Ring



- (1) Sample Probe Assembly
- (2) Sample Probe

1

After adjusting the sample probe mounting plate, ensure that the sample probe is at its full rotational range of motion.



Fig. 5: Sample Probe has Full Range of Motion

(1) Sample Probe Assembly

(2) Sample Probe

1. Using a T20 driver, loosen four wedge bracket screws by a quarter turn or as necessary to be able to move the bracket in the theta direction without motion in the Z.



(1) Bracket Screws

2. Lower the theta wedge height by loosening the two screws so that the wedge is at its lowest vertical position.



Fig. 7: Adusting the Theta Wedge Height

(1) Adjustment Screws (x2)

(2) Lowest Vertical Position

- 3. Move the Sample Probe plunger into the theta wedge, Adjust the theta wedge so that the sample probe plunger can reach the back wall of the theta wedge.
- 4. Confirm that there is no mechanical interference between the sample plunger and the Theta Wedge. Check that there is visible clearance on both sides while the plunger is

engaged in the Wedge slot (centered in the slot); clearance must be consistent from the beginning to the end of the slot.

Fig. 8: No Mechanical Interference Between the Sample Plunger and the Theta Wedge



- (1) Sample Probe
- (2) Theta Wedge
- 5. Perform the vertical software move to align the theta wedge to the plunger:
 - a) Navigate to the **Execution** tab of the Service Utility.
 - b) Home the Sample Probe Vertically using the **SP_VerHome** sequence.
 - c) Navigate to the **Alignments** tab of the Service Utility.
 - d) Under Manual Alignments, select Sample Probe and then select the **SP Vertical Tip Pre Eject Offset** and click **Run**. This will lower the probe by -22 counts.
- 6. Raise the theta wedge and adjust vertically until the sample probe plunger is making minimal contact with the top surface of the wedge throughout the arc of the wedge. Tighten the two screws from step 2.

4.1 Rotational Alignment Sample Probe to the Theta Wedge Pre-Eject Position

Ensure the Theta Wedge mechanical adjustment (→ Sample Probe Theta Wedge Mechanical Alignment Procedure / Page 14) has been performed.

1. Home the Sample Probe:

ĺ

- a) In the Service Utility UI, select the Execution tab.
- b) In the first filter, click **Sequence**.
- c) Type **Home** in the first column.
- d) In the second column, find the sequence **SP_VerHome** and click **Send**.
- e) In the second filter, click **Sequence**.
- f) Type **Home** in the first column.
- g) In the second column, find the sequence **SP_RotationalHome** and click **Send**.
- 2. Send the Sample Probe Rotationally to the Theta Wedge Pre-Eject Position:
 - a) In the Service Utility UI, navigate to the **Alignments** tab and click the **Manual Alignment** tab.
 - b) In the left column, select **Sample Probe** and then select **SP Rotational Tip Pre Eject Nominal** and then click **Run**.
 - c) If the Sample Probe is rotationally inside the Theta Wedge, using the Sample Probe Rotational Tip Pre Eject Nominal alignment, move the Sample Probe Rotationally Counter-Clockwise to move the probe completely out of the Theta Wedge (by at least 4mm).
- 3. Move the Sample Probe Vertically Down to the Alignment Position:
 - a) In Service Utility UI, navigate to the Execution tab:
 - b) Send the following commands, in the order as they appear below:
 - SampleProbeVerticalClearStartMoveBit
 - SampleProbeVerticalSetTargetPosition. Set this parameter to -2000
 - SampleProbeVerticalStartAbsoluteMove

This will move the probe down vertically so that the plunger collar would hit the wedge entrance if rotationally moved.

4. Perform the Rotational Alignment of Sample Probe to Theta Wedge Pre-Eject position with 2mm Gauge Block:

This alignment will also align the Sample Probe rotationally to the Sample Probe Tip Post-Eject Slot in the Theta Wedge via a calculation in the software.

a) Hold 2 mm gauge block so that the surface of the gauge block is flush with the entrance surface of the theta wedge.

- b) In the **Alignments** tab, adjust the **SP Rotational Tip Pre Eject Nominal** rotationally clockwise towards the 2 mm gauge block being held at the entrance of the Theta Wedge.
- c) Record the step count at the point in which the plunger collar touches the 2 mm gauge block such that the gauge is held in place.
- d) Using small steps, and with your hand under the gauge, move the sample probe counter-clockwise until the gauge falls into your hand. Record the value.
- e) Find the average of the two values recorded in steps 5 c and d and record.
- f) Vertically home the Sample Probe once the average rotational count from step e has been recorded.

i) Navigate back to the Execution tab in the 'Service Utility UI'.

ii) In the first filter, click Sequence.

iii) Type **Home** in the first column.

iv) In the second column, find the sequence **SP_VerHome** and then click **Send**.

g) Add **403** to the count recorded in step e and set the **SP Rotational Tip Pre Eject Nominal** to this new number.

For example, if the value recorded in step 5 e is -1016, -1016 + 403 = -613.

h) Press **Save** to save this alignment position.



If this procedure fails, perform the manual alignment procedure in the "Sample Probe Alignments" section, (→ Sample Probe Alignments / Page 22).

20

5.1 Sample Probe Semi-Auto Alignment Required Tools and Materials

Tools and Materials	Quantity
Sample Probe Semi-auto Alignment Tool, SMN 11313494	1
Phillips screwdriver	1

5.2 Sample Probe Semi-Auto Alignment Procedure

- 1. Home the Sample Probe:
 - a) On the left, select the **Miscellaneous** tab.
 - b) Select the **Home_SP** sequence and then click **Send**.
- 2. Select **Sample Probe Rotational Outer Nominal** and then set the Current Offset to **-1650**.
- 3. Select **Semi-Auto Alignment** and then **Sample Probe**.
- 4. Click Start Alignment.
- 5. Click OK.
- 6. Install the Sample Probe Alignment Tool onto the Sample Probe:
 - a) Slide the Sample Probe Alignment Tool as far up as possible on the Sample Probe.
 - b) Using a Phillips screwdriver, securely fasten the tool to the sample probe.

$\mathbf{N} \mathbf{A}$	DNI	NIC
		DV

Tighten the lock screw with a light touch to not damage the Sample Probe.

- Tighten the lock screw with a light touch to not damage the Sample Probe, but enough that the tool will not move when the probe is exercised.
- 7. When the Sample Probe Alignment Tool is attached, click **OK**.
 - » The semi-automated alignment will start.
- 8. When the semi-automated alignment has successfully finished, remove the sample probe alignment tool.
- 9. Click OK.

6.1 Sample Probe Alignment Required Tools and Materials

Tools and Materials	Quantity
T20 driver	1
Incubation Ring Cuvette Alignment Tool	1
Sample Probe Alignment Tool, SMN 11313416	1
Medium-sized flat head screw driver	1
Sample Tip	1
Empty Tip Tray	1

6.2 Sample Probe Alignment Procedure

6.2.1 Manual Rotational Alignment Sample Probe to Outer Incubation Ring



- 1. Remove the Cuvette Channel (if it has not already been done). Refer to (→ Remove the Cuvette Channel / LDAT-030.841.04).
- 2. Place the Incubation Ring Cuvette Alignment Tool in the Incubation Ring Position 1:
 - a) From Service Utility UI, select the Execution tab.
 - b) In the first filter, click **Command**.
 - c) Type **Disable** in the first column.
 - d) In the second column, find the command **IncubationOuterRingAmplifierDisable** and then click **Send**.
 - e) Remove the Incubation Ring Sample Probe Cover (if it has not already been done). Refer to (→ Remove the Incubation Ring Sample Probe Cover / LDAT-030.842.04).
 - f) Move the Outer Incubation Ring by hand until you see Position 90.





- (1) Sample Probe Alignment Tool
- (2) Outer Incubation Ring Position 90
- g) Place the Cuvette Alignment Tool in Position 1, which is one slot counter-clockwise from the Blank Slot.

Т

- 3. Install the Sample Probe Alignment Tool onto the Sample Probe:
 - a) Disable the Sample Probe Rotational Amplifier:
 In Service Utility UI, go to the Execution tab.
 Send the Command: SampleProbeRotationalAmplifierDisable.
 - b) Slide the Sample Probe Alignment Tool as far up as possible on the Sample Probe.
 - c) Tighten the lock screw on the tool with a light touch so as not to damage the sample probe plunger.

WARNING

Tighten the lock screw with a light touch to not damage the Sample Probe.

- Tighten the lock screw with a light touch to not damage the Sample Probe, but enough that the tool will not move when the probe is exercised.
- 4. Home the Sample Probe and Incubation Ring:
 - a) From Service Utility UI, go to the Execution tab.
 - b) In the first filter, click Sequence.
 - c) Type **Home** in the first column.
 - d) In the second column, find the sequence **SP_VerHome** and click **Send**.
 - e) In the second filter, click **Sequence**.
 - f) Type **Home** in the first column.
 - g) In the second column, find the sequence **SP_RotationalHome** and click **Send**.
 - h) In the third filter, click Sequence.
 - i) Type **Home** in the first column.
 - j) In the second column, find the sequence Home_IncOuterRing and click Send.

If you move any probe rotationally or horizontally, you must home it vertically first.

- 5. Send the Sample Probe Rotationally to the Incubation Ring:
 - a) In Service Utility UI, go to the Alignments tab, Manual Alignments.
 - b) In the option column on the left, click Sample Probe.
 - c) Highlight the row **SP Rotational Outer Nominal**.
 - d) In the column to the right click **Run**.
- 6. Send the Incubation Ring Rotationally Position 1 to the Sample Probe:
 - a) From Service Utility UI, go to the Alignments tab.
 - b) In the column to the left, click the Incubation Ring menu.
 - c) Highlight the row **Outer Ring Sample Offset**.
 - d) In the column to the right, click **Run**.

1

- 7. Disable the Sample Probe Vertical Amplifier:
 - a) From Service Utility UI, go to the Execution tab.
 - b) In the first filter, click **Command**.
 - c) Type **Disable** in the first column.
 - d) In the second column, find the command **SampleProbeVerticalAmplifierDisable**.
 - e) Press Send.
- 8. Standard Alignment of Sample Probe to Incubation Ring Position 90:
 - a) Adjust the **SP Rotational Outer Nominal** and the **Outer Ring Sample Offset** until the Sample Probe Alignment Tool aligns with the hole in the Cuvette Alignment Tool.



Fig. 10: Aligning the Sample Probe to the Incubation Ring

- (1) Sample Probe
- (2) Outer Incubation Ring Position 90
- 9. Fine Alignment of Sample Probe to Outer Incubation Ring:
 - a) From **Service Utility UI**, go to the **Alignments** tab.
 - b) Engineer 1: Move the SP Rotational Outer Nominal one small step clockwise.
 - c) Engineer 1: Move the Sample Probe up off of the Cuvette Alignment Tool, and back down until it either makes contact with the Incubation Ring or the Cuvette Alignment Tool using the belt while Engineer 2 observes the alignment.
 - d) Repeat the previous steps until the Sample Probe Tool clips the side of the slot in the Cuvette Alignment Tool.
 - e) Note the Current Offset in the highlighted row.
 - f) Engineer 1: Move SP Rotational Outer Nominal one small step counter-clockwise.
 - g) Engineer 1: Move the Sample Probe up off of the Cuvette Alignment Tool, and back down until it either makes contact with the Incubation Ring or the Cuvette Alignment Tool using the belt while Engineer 2 observes the alignment.

- h) Repeat the previous steps until the Sample Probe Tool "clips" the opposite side of the Cuvette Alignment Tool.
- i) Note the Current Offset in the highlighted row.
- j) Take an average of the two noted Current Offsets, step the Sample Probe to that offset, and click **Save**.
- 10. Fine Alignment of Outer Incubation Ring to the Sample Probe:



These steps for fine alignment are optional, but they will provide a more precise alignment.

- a) From Service Utility UI, go to the Alignments tab.
- b) Engineer 1: Adjust the **Outer Ring Sample Offset** one small step clockwise.
- c) Engineer 1: Move the Sample Probe up off of the Cuvette Alignment Tool, and back down until it either makes contact with the Incubation Ring or the Cuvette Alignment Tool using the belt while Engineer 2 observes the alignment
- d) Repeat the previous steps until the Sample Probe Tool'clips the side of the slot in the Cuvette Alignment Tool.
- e) Note the Current Offset in the highlighted row.
- f) Engineer 1: Adjust the **Outer Ring Sample Offset** one small step counter-clockwise.
- g) Engineer 1: Move the Sample Probe until the Sample Probe alignment tool goes into the Outer Incubation Ring Tool hole.
- h) Repeat the previous steps until the Sample Probe Tool clips the opposite side of the slot in the Cuvette Alignment Tool.
- i) Note the Current Offset in the highlighted row.
- j) Average the two noted Current Offsets, step the Sample Probe to that offset, and click **Save**.
- 11. Continuously repeat steps 10-11 until the Sample Probe Tool falls directly in the center of the slot in the Cuvette Alignment Tool.

6.2.2 Vertical Alignment Sample Probe to Outer Incubation Ring



Perform this procedure if the semi-auto alignment is not successful.

- 1. Remove the Cuvette Channel (if it has not already been done). Refer to (→ Remove the Cuvette Channel / LDAT-030.841.04).
- 2. Remove Incubation Ring Back Cover (if it has not already been done). Refer to (→ Remove the Incubation Ring Back Cover / LDAT-030.842.04).
- 3. Remove Incubation Ring Sample Probe Cover (if it has not already been done). Refer to (→ Remove the Incubation Ring Sample Probe Cover / LDAT-030.842.04).

- 4. Home the Sample Probe:
 - a) From Service Utility UI, go to the Execution tab.
 - b) In the first filter, click **Sequence**.
 - c) Type **Home** in the first column.
 - d) In the second column, find the sequence **SP_VerHome** and then click **Send**.
 - e) In the second filter, click Sequence.
 - f) Type **Home** in the second column.
 - g) In the second column, find the sequence **SP_RotationalHome** and then click **Send**.

i

If you move any probe rotationally or horizontally, you must home it vertically first.

- 5. Send the Sample Probe Rotationally to the Incubation Ring:
 - a) From Service Utility UI, go to the Alignments tab.
 - b) In the option column on the left, click Sample Probe.
 - c) Highlight the row SP Rotational Outer Nominal.
 - d) In the column to the right click **Run**.
- 6. Send the Incubation Ring rotationally to Position 90 to the Sample Probe:
 - a) From Service Utility UI, go to the Alignments tab.
 - b) In the column to the left, click the Incubation Ring menu.
 - c) Highlight the row Outer Ring Sample Offset.
 - d) In the column to the right click **Run**.
- 7. Send the Sample Probe Down to Vertical Incubation Ring Offset:
 - a) Remove all Tools and Cuvettes from the Incubation Ring.

Make certain that Incubation Ring Position 90 is empty. If a tool or cuvette is in this position, the Sample Probe may forcefully crash into it and potentially cause damage.

- b) From Service Utility UI, go to the Alignments tab.
- c) In the option column on the left, click Sample Probe.
- d) Highlight the row SP Vertical Outer Incubation Ring Offset.
- e) Click Run.

6 Sample Probe Alignments

- 8. To vertically align the sample probe to the incubation ring, do the following steps:
- Fig. 11: Vertically Aligning the Sample Probe to Incubation Ring



- (1) Sample Probe
- (2) Cuvette Alignment Tool
- a) Disable the Incubation Ring Rotational Amplifier:
 From Service Utility UI, go to the Execution tab.
 Send the command: IncubationOuterRingAmplifierDisable.
- b) Engineer 1: From the **Alignments** tab, adjust the **SP Vertical Outer Incubation Ring Offset** up a good distance until the Sample Probe Tool is above the Incubation Ring enough that the Cuvette Tool can be placed in the ring.
- c) Engineer 2: Place the Cuvette Alignment Tool in Incubation Ring Position 90.
- d) Engineer 1: Adjust the **SP Vertical Outer Incubation Ring Offset** down approximately 1 step.
- e) Engineer 2: Swivel the Incubation Ring counter-clockwise and clockwise, moving the slot past the Sample Probe Tool each way.
- f) Repeat steps d and e until the probe just scrapes the Cuvette Alignment Tool during one of the swivels.
- g) Engineer 1: Adjust the SP Vertical Outer Incubation Ring Offset up 1 step.
- h) Press Save.
- i) Remove the alignments tools from the Incubation Ring.
- j) Uninstall the Sample Probe Alignment Tool from the Sample Probe.

6.2.3 Rotational Alignment of the Sample Probe to the Tip Pickup Offset

- 1. Open the front cover.
- 2. Install the Interlock Bypass key and depress the latch.

- 3. Remove 3 screws to remove the bottom cover for access to the front of the IM Analyzer.
- Fig. 12: Remove the Bottom Cover



(1) 3 Screws

4. Prepare the tip tray stage for alignment:

- a) Remove the sample tip tray from the tip tray stage. The sample probe should not have any tips when starting this procedure.
- b) Lock an empty tip tray on to the tip tray stage.
- 5. Initialize the tip loader:
 - a) From the Service Software, go to the **Alignments** tab.
 - b) In the Manual Alignment tab, select **Tip Loader** and then select **Initialize Tip Loader** and then click **Run**.
 - » This may take up to a minute to complete.
- 6. Home the sample probe and tip tray stage. Go to the **Execution** tab and select the following:
 - a) Select sequence, type and then select from the drop down the sequence **SP_Ver-Home** and then click **Send**.
 - b) Select sequence, type and then select from the drop down the sequence **SP_Rota-tionalHome** and then click **Send**.
 - c) Select sequence, type and then select from the drop down the sequence **TL_Tip-PickupStageHome** and then click **Send**.
- 7. Send the sample probe rotationally to the tip pickup lower left offset and send the Tip Tray Stage to tip pickup lower left offset:
 - a) Go to the **Alignments** tab.

- b) In the Manual Alignment tab, select **Sample Probe**.
- c) Select the alignment: **SP Rotational Tip Pickup Lower Left Offset** and then click **Run**.

If the sample probe crashes during step 7c, repeat steps 6 and 7. If the issue persists, contact your regional support center for assistance.

Fig. 13: Running the SP Rotational Alignment for Tip Tray Position 1, 1 (lower left)



- 8. Perform the rotational alignment of the sample probe to the tip pickup lower left offset:
 - a) Use your hand to position the probe vertically just above the tip tray hole, to allow you to see more clearly to perform the alignment.

Fig. 14: Probe Lifted and Plunger is Visible in the Hole for Tip Tray Position 1, 1 (lower left)



- b) Using the two alignments below, adjust the sample probe and the tip pickup stage until the sample probe tip is in the center of the tip pickup lower left hole, which corresponds to tip tray position (1, 1) from the front.
 - In the Manual Alignment tab, select **Sample Probe** and then select **SP Rotational Tip Pickup Lower Left Offset** to adjust the probe position.
 - In the Manual Alignment tab, select **Tip Loader** and then select **Tip Pickup Stage Tip Pickup Lower Left Offset** to adjust the tray position.
- c) Press Save.
- 9. Home the sample probe and tip tray stage. Go to the **Execution** tab and find the following:
 - a) Sequence **SP_VerHome** and then click **Send**.
 - b) Sequence **SP_RotationalHome** and then click **Send**.
 - c) Sequence **TL_TipPickupStageHome** and then click **Send**.

- 10. Send the sample probe rotationally to the tip pickup upper right offset and send the Tip Tray Stage to tip pickup upper right offset:
 - a) Go to the **Alignments** tab.
 - b) In the Manual Alignment tab, select **Sample Probe**.
 - c) Select the alignment: **SP Rotational Tip Pickup Upper Right Offset** and then click **Run**.

If the sample probe crashes during step 10c, repeat steps 9 and 10. If the issue persists, contact your regional support center for assistance.

Fig. 15: Running the SP Rotational Alignment for Tip Tray Position 12, 10 (upper right)



- 11. Perform the rotational alignment of the sample probe to the Tip Pickup Upper Right Offset:
 - a) Use your hand to position the probe vertically just above the tip tray hole, to allow you to see more clearly to perform the alignment.

- b) Using the two alignments below, adjust the sample probe and the tip pickup stage until the sample probe tip is in the center of the tip pickup upper right hole, which corresponds to tip tray position (12, 10) from the front.
 - In the Manual Alignment tab, select **Sample Probe** and then select **SP Rotational Tip Pickup Upper Right Offset** to adjust the probe position.
 - In the Manual Alignment tab, select **Tip Loader** and then select **Tip Pickup Stage Tip Pickup Upper Right Offset** to adjust the tray position.
- c) Press Save.

6.2.4 Vertical Alignment of the Sample Probe to the Tip Pickup Offset

- 1. Home the sample probe and tip tray stage:
 - a) Go to the **Execution** tab.
 - b) Find and send the sequence **SP_VerHome**.
 - c) Find and send the sequence **SP_RotationalHome**.
 - d) Find and send the sequence TipPickupStageMoveToHome.
- 2. Send the sample probe rotationally and the tip tray stage horizontally to the tip tray position of Row 1, Column 1:
 - a) From the Service Software Home page, click **Log Viewer** in the lower right corner to open the IC Debug Log in the IC Message Viewer.

This should take no longer than 5 minutes to open.

b) In the toolbar at the top of the viewer, click **Send** (or click on the lightning bolt icon) to open the Send dialog box.

Fig. 16: IC Message Viewer with Send Dialog Box

N 10 10 10 10 10 10	In IS I through the	Provide and Provid	 Descerit 			
	A ST CARACTER			- 0 / 0/ 88		
slo, Taro	Modulo	Discospo				
20/2010 15:40:09.290	Workflow Manager	Siche duéer ser	ding Slibe for cycle 11362			
20/2010 15:40:08.290	Workflow Menager	CSeqTable &	t s_niterdie 0			
20/2010 15:48 69:296	We 🔐 Sections				101211	SieMcGot(911), Lonetorid=Dc00, Dydelsand
20/2018 15:48 12:298	W				Calcouttors	
20/2018 15:48 12:296	With Facility of the		Send Single Line			
33/2013 15:46 12:296	With the state of the	egarda anda 4	Seal Fail Sefferage bood 121		 Sentire 	
30/2018 15:48 12:286	We See 17b					
30/2018 15:48 12:286	Wi Sercive					
30/2018 15:48 12:296	We file.				- Inst	 WesselMovePrintlySpecialInfe(1))
93/2018 15:48 12:280	w					unity:/VescalidevePriorrySpecieMo(1)
80/2018 15:48 12:287	We				- Besi	
0/2018 10:48 12:398	We					
0/2018 10:48 12:308	Wr					s_sCurrentCycleNember = 11897
0/2018 16:48 12:308	Wr					
0/2018 15:48 12:308	We					
33/2018 15:48 12:308	We					
30/2018 15:48:12.413	We					ell-love Priority-Special-Mo(1))
30/2015 15:48:12.413	We					Priority/Vix(12))
30/2015 15:48:12,413	We					PriorityAdo(12))
0/2010 15:46:12,413	We				Des	
0/2010 15:46:12.414	We a				i lim	
0/2013 15:46:17.206	We					
0/2010 15:46:17.296	Wa					
0/2010 15:40:17.200	We Date sett avones	el der	Lines			bisMxGiot(911), Loostorid=0x30, CycleHumb
0/2010 15:40:13:000	We					
0/2010 15:40:13:000	Workflow Manager	Siche duler ad	ied verzei move request HicPee	igentTray(0) from position	42 to position 0 (Priority=V	esselMovePriorityMix(13))
0/2010 15:40 13:900	World'ov Manager	Siche duler Ad-	ing Vessel Move Command: 6, 5	Sitt For: D, Det Pas: 42 Cy	cle: 11300	
0/2010 15:40:13:000	Workflow Manager	Scheduler edi	ied verseilmeve requert HidRee	gentTrey(0) from particip	42 to position 0 (Priority=V	install-lovePriorits/Ma(12))
ected, Warkflew Memoral Di-	connectad: Simulator		Une 275	2 of 2002 Filter is no	t equilied	

- c) In the Send Text field, type SetTipStageRowCol 1 1, then click SendLine.
- d) Do not close the Send dialog box and the Log Viewer. Return to the Service Software.
- e) In the Service Software, **Execution** tab, click on **Add Filter** a few times to add more lines if needed, and then type the following commands in order as listed below:

SampleProbeRotationalClearStartMoveBit SampleProbeRotationalTipPickup SampleProbeRotationalStartAbsoluteMove TipPickupStageClearStartMoveBit TipPickupStageTipPickup TipPickupStageStartAbsoluteMove

Fig. 17: Sample Probe and Tip Loader Alignments

SIEMENS	Thermals	Haib	1125	Advetorit	Server	Seamon	Alaments	Ketwat	Carden	Function.	- * *
Eller.	1101101	10001		No. of Control of Cont	2000	adarse.	Ny ten	TREAMORE	Contract	CARCENOF	
Common	d 🔹 Sequence	SP_VerHome	57,Vertilome		•	D	Scrid				Let like Serve The
😑 Cannar	d 😐 Sequence	SP_rotational	SP_RotationalHo	ne .	•	D	Send				
😑 Cannar	d 💌 Sequence	TL_T#PickupSlope	TL,T@PickupSlop	pettome	•	D	Send				
• Common	d 🧁 Sequence	sampleproberot	SampleProbertor	lationa ClearStartMay	e51 ·	15	Send				
• Caninar	d 🦲 Sequence	sompleprobered	SampleProbeRot	ationa/TipPickup	•	D	Send				
• Comman	d 🕒 Sequence	sempreproterrot	SampleProbeRot	ationa StartAbeciutai	Vove +	31	Send				
• Common	d 🧅 Sequence	Sppickupstage	ToPoweStage	as StartMove81	•	15	Send				
Common	d 🕒 Sequence	Sppic kupetage	Tip#ickupStageT	lpPiskup	•	0	Send				
• Comman	d 🕒 Sequence	Sppit kupsloge	Tip#ickupStageS	tartAbsoluteHove	·	31	Send				
Common	d . Sequence	Home_SP	Hove_SP		•	D	Send				
😑 Cannar	a 💌 Sequence	TL_TipPickup	ΤL_TipPickupShap	peToTlpPickup	•	D	Send				
Comman	d 💌 Sequence	SamplePratePax	SampleProbePtd	kupītip	•	D	Send				
÷ 6	100										247.04
										10 1	

- 3. Click **Send** for the first three commands in order from step 2d for **SampleProbe**. Wait for the sample probe to stop moving.
- 4. Click **Send** for the last three commands in order from step 2d for **TipPickupStage**.
- 5. Send the sample probe vertically down to SP vertical tip pickup nominal:
 - a) Go to the Alignments tab.
 - b) From the Manual Alignment tab, select **Sample Probe**.
 - c) Select the SP Vertical Tip Pick up Offset row to highlight it, then click Run.

6. Using the SP Vertical Tip Pick up Offset alignment, raise the probe a few steps to see a gap between the probe and the tray.



Fig. 18: Lift the Probe to See a Gap

- (1) Gap Between the Plunger and the Tray (showing Lower Right Position 1, 10 in this example)
- 7. With your fingers, grasp the tray in the corner you are aligning and gently move the tray up and down. The tray will move as long as the probe is not contacting the tray.

8. Lower the probe one step at a time until you reach the point where you can no longer move the tray at that corner.





- (1) No Gap Between the Plunger and the Tray (showing Lower Right Position 1, 10 in this example)
- 9. Select Save.
- 10. In the table below, record the SP Vertical Tip Pick up Offset value for the vertical alignment of the sample probe to the front left corner (Row 1 Col 1) of the tip tray:
- 11. Repeat steps 1 through 10 for the remaining three positions Row 1 Col 10 (lower right), Row 12 Col 1 (upper left), and Row 12 Col 10 (upper right) by sending the corresponding commands below in step 2c:

Since the Log Viewer is still open from step 2c, it is not necessary to open a new Log Viewer to send the command for the remaining tray positions.

Tab. 1 Sample Probe Vertical Tip Pick up Offset

Position	Command	Offset Value
Row 1 Col 1	SetTipStageRowCol 1 1	
Row 1 Col 10	SetTipStageRowCol 1 10	

Position	Command	Offset Value
Row 12 Col 1	SetTipStageRowCol 12 1	
Row 12 Col 10	SetTipStageRowCol 12 10	

12. To complete the vertical alignment, set the **SP Vertical Tip Pick up Offset** value to the highest offset value recorded in the table.

For example if the values are -94, -90, -102, -104 the highest positive offset value is -90.

13. Save the alignment.

6.2.5 Verify the Tip Pickup Offset Alignments

- 1. Home the sample probe and tip tray stage:
 - a) Go to the **Execution** tab.
 - b) Find and send the sequence **SP_VerHome**.
 - c) Find and send the sequence **SP_RotationalHome**.
 - d) Find and send the sequence TipPickupStageMoveToHome.
- 2. Place sample tips in all four corners of the empty tip tray.
- 3. In the IC Message Viewer, open the Send dialog box and send the command corresponding to the lowest offset value recorded in the table, (→ Sample Probe Vertical Tip Pick up Offset / LDAT-030.896.04):
 - a) From the Service Software Home page, click **Log Viewer** in the lower right corner to open the IC Debug Log in the IC Message Viewer.

📕 Instrument Controller Mexicoly West and Pass Unificat 10 15 10 12 18 15 18 10 10 10 10 10 10 10 10 - Desireda - 🐻 🐼 🔯 Date, Two 01/03/2010 15:40 03:290 Monute Workflow Menager Scheduler sending Silce for cycle 11362 01/20/2010 15:40 08:296 Workflow Menager CSeqTebic Int. n_niterdie 0 01/20/2010 15:40 08:290 WV R Geneticing WoRio(911), Lonatoria-Dx00, Dydelkani 01/33/2013 15:48 12:298 01/33/2013 15:48 12:298 Sent Sinds Line Derivative United in 1/20/2018 15:46 12:286 Sent Fest Defense Sendine N/S0/2019 15:46 12:286 N/S0/2019 15:46 12:286 N/S0/2019 15:46 12:286 Section 2 7**b**... MavePrinitySpace Inst 1/93/2018 15:48 12:28 arity: VescalidevePriortySpecie Mac(1)) - Sector 190/2018 10:48 12:280 NSN2018 10-18 12 98 NSN2018 10-18 12 98 NSN2018 10-18 12 99 CurrentCycleNember = 11897 nghi2019 10 42 12 398 nghi2019 10 42 12 398 nghi2019 10 42 12 412 nghi202019 10 42 12 414 nghi202019 10 42 12 414 nghi2019 10 44 12 300 nghi2019 10 44 13 300 /90/2018 15:48 12:308 elizione Priority Special Mo(1) Priority Mox(12) Priority Mox(12) (Dec.) **Date** Data sero properties Dave MxGlot(911), Loostorid=0x30, Dydehlumb Scheider edad versei nove requer Höffesger They(0) how partich 42 to and on 0 (Prady AverabilovePrody Mc(12) Scheider edad versei How Connexed 9, Star Face 0, Car Part 42 Optier 11800 Scheider edad versei nove requer Höffesger They(0) how partich 42 to and no 0 (Prady AverabilovePrody Mc(12)) Workflow Manage Workflow Manage Filter is not coplied 💩 🥝 🗃 🚺 🗈 🚺

Fig. 20: IC Message Viewer with Send Dialog Box

- b) In the toolbar at the top of the viewer, click **Send** (or click on the lightning bolt icon) to open the Send dialog box.
- c) In the Send Text field, type the command corresponding to the lowest offset value recorded in the table, then click **SendLine**.
- 4. From the Service Software, **Execution** tab, type in and then select from the drop down the sequence **TL_TipPickupStageToTipPickup** and then click **Send**.
- 5. From the Service Software, **Execution** tab, type in and select from the drop down the sequence **SampleProbePickupTip** and then click **Send**.
- 6. Confirm that the sample tip has no gap between the sample probe and the top of the sample tip.
 - **»** The sample tip must be fully seated on the probe to ensure proper functioning.



Fig. 21: Sample Tip is Fully Seated on the Probe

- (2) Sample Probe Properly Seated
- (3) Sample Tip

39

6 Sample Probe Alignments

7. Remove the tip from the sample probe and repeat steps 1 through 7 for the remaining three corners to confirm that the sample tip is fully seated on the probe at all four corners.



If the tip does not fully seat in all four corners, repeat the Vertical Alignment of the Sample Probe to the Tip Pickup Offset starting on page 10, and then repeat the Final Check. If the issue persists, contact your regional support center for assistance.



In Diagnostics, discard the empty tip tray and load a new tray prior to returning the analyzer to the operator.

- 8. Home the sample probe and tip tray stage:
 - a) Go to the **Execution** tab.
 - b) Find and send the sequence **SP_VerHome**.
 - c) Find and send the sequence **SP_RotationalHome**.
 - d) Find and send the sequence **TipPickupStageMoveToHome**.

6.2.6 Rotational Alignment Sample Probe to Sample Rack

- 1. Install the Sample Probe Alignment Tool onto Sample Probe:
 - a) From the **Service Utility UI**, go to the **Execution** tab.
 - b) In the first filter, click **Command**.
 - c) Type **Disable** in the first column.
 - d) In the second column, find the sequence **SampleProbeRotationalAmplifierDisable**.
 - e) Slide the Sample Probe Alignment Tool as far up as possible on the Sample Probe.
 - f) Use a screwdriver to securely fasten the tool to the probe.



Tighten the lock screw lightly to not damage the Sample Probe, but enough that the tool will not move when the probe is exercised.

- 2. Home the Sample Probe:
 - a) From the Service Utility UI, go to the Execution tab.
 - b) In the first filter, click **Sequence**.
 - c) Type **Home** in the first column.
 - d) In the second column, find the sequence **SP_VerHome** and then click **Save**.
 - e) In the second filter, click **Sequence**.
 - f) Type **Home** in the second column.

- g) In the second column, find the sequence **SP_RotationalHome** and then click **Send**.
- 3. Send Sample Probe Rotationally to Sample Rack Position 2:
 - a) From **Service Utility UI**, go to the **Alignments** tab, Manual Alignments.
 - b) In the option column on the left, click **Sample Probe**.
 - c) Highlight the row **SP Rotational Sample Position 1 Nominal**.
 - d) In the column to the right click **Run**.
- 4. Send Sample Rack Position 2 Horizontally to the Sample Probe:
 - a) Navigate to the TCCS computer screen.
 - b) Open the **Instrument Check** application. If there is not a shortcut on the desktop, go to the **C:/Siemens/Bin** folder.
 - c) Select the **Subsystems** tab.
 - d) Select **Sample Rack Positioner** from the column on the left side.
 - e) Click the Home Subsystem button towards the bottom left corner of the UI.

WARNING

This command will home the mechanism.

- » Stand away from the analyzer.
- f) In the central menu on the interface, select **PositionerSlot0Pos2AtAliquotter**.

WARNING

This command will move the sample rack into position.

- » Stand away from the analyzer.
- g) Place new Sample Tubes in position 2 and position 5 of a Sample Rack.
- h) Place the Sample Rack in the frontmost position of the Sample Rack Positioner on the DL such that Sample Rack Position 2 is to the left and Sample Rack Position 5 is to the right.
- 5. Rotational Alignment of Sample Probe to DL Sample Rack Position 2
 - a) Disable the Sample Probe Vertical Amplifier and by hand bring the Sample Probe down to Sample Rack Position 2:
 - b) Adjust the **SP Rotational Sample Position 1 Nominal** and the **Positioner-SlotOPos2AtAliquotter** until the Sample Probe falls in the center of the Sample Tube in Sample Rack Position 2.
 - c) Press Save.

6 Sample Probe Alignments

- 6. Repeat the previous steps to perform Rotational Alignment of Sample Probe to DL Sample Rack Position 5.
 - a) SP Rotational Sample Position 1 Nominal = SP Rotational Sample Position 2 Nominal
 - b) PositionerSlot0Pos2AtAliquotter = PositionerSlot0Pos5AtAliquotter

6.2.7 Vertical Alignment Sample Probe to Sample Rack

- 1. Home the Sample Probe:
 - a) From Service Utility UI, go to the Execution tab.
 - b) In the first filter, click **Sequence**.
 - c) Type **Home** in the first column.
 - d) In the second column, find the sequence **SP_VerHome** and then click **Send**.
 - e) In the second filter, click **Sequence**.
 - f) Type **Home** in the second column.
 - g) In the second column, find the sequence **SP_RotationalHome** and then click **Send**.
- 2. Send Sample Probe Rotationally to Sample Rack Position 5:
 - a) From Service Utility UI, go to the Alignments tab.
 - b) In the option column on the left, click **Sample Probe**.
 - c) Highlight the row entitled SP Rotational Sample Position 2 Nominal.
 - d) In the column to the right click **Run** and then click **Save**.
- 3. Send Sample Probe Down to Vertical Incubation Ring Offset:

Make certain that the Sample Probe is Rotationally Aligned to the Sample Rack Position before performing this step.

- a) From Service Utility UI, go to the Alignments tab.
- b) In the option column on the left, click Sample Probe.
- c) Highlight the row entitled **SP Vertical Sample Tube Bottom Offset**.
- d) Move the sample probe vertically so that the alignment tool does not crash into the sample rack. Then click **Save**.
- e) Click Run.
- 4. Vertical Alignment of Sample Probe to Sample Rack:
 - a) Engineer 1: Adjust the **SP Vertical Sample Tube Bottom Offset** up or down approximately 1 step.
 - b) Repeat the previous step until the probe just touches the metal portion of the DL Sample Rack.

- c) Engineer 1: Adjust the SP Vertical Sample Tube Bottom Offset up 1 step.
- d) Press Save.
- 5. Disable and then remove the alignment tool.
- 6. Home the Vertical Sample Probe:
 - a) Place the alignment tool on the sample probe.

i

If the sample probe crashes into the rack, remove the alignment tool and use the Sequence Home_SP to home the sample probe and repeat the entire alignment sequence.

b) Repeat the sample probe vertical sample tube bottom offset.

There are no Hazard IDs in this document.

- Restricted - All documents may only be used by authorized personnel for rendering services on Siemens Healthcare Products. Any document in electronic form may be printed once. Copy and distribution of electronic documents and hardcopies is prohibited. Offenders will be liable for damages. All other rights are reserved.

siemens-healthineers.com

Siemens Healthineers Headquarters Siemens Healthcare GmbH Henkestr. 127 91052 Erlangen Germany Telephone: +49 9131 84-0 siemens-healthineers.com

Print No.: LDAT-030.842.01.04.02 | Replaces: LDAT-030.842.01.03.02 Doc. Gen. Date: 10.17 | Language: English © Siemens Healthcare GmbH, 2017

siemens-healthineers.com