

Optics Alignment (PB) Part

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1. How to set Part conditions

In this chapter, how to set the **Optics Alignment (PB)** Part conditions is described.

1.1 Setting conditions

Set the basic conditions in the **Optics Alignment (PB)** dialog box.

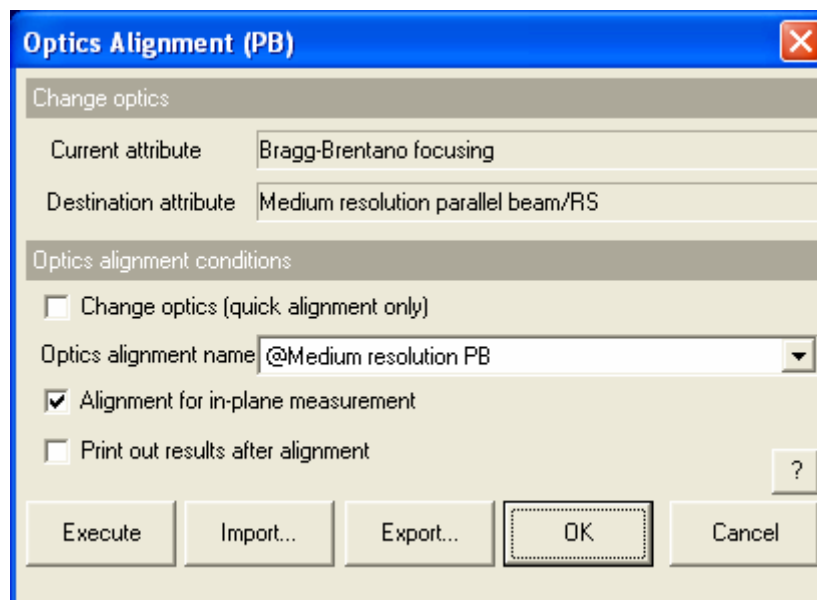


Fig.1.1.1 Optics Alignment (PB) dialog box

Current attribute Shows the current optics attribute.

Destination attribute Shows the destination optics attribute after the optics alignment.

Change optics (quick alignment only)

When the **Change optics (quick alignment only)** box is checked, the optical axes are positioned at the predetermined optimal axis positions as recorded for the selected optics alignment name and the alignment of the 2-theta axis is performed.

When the **Change optics (quick alignment only)** box is unchecked, the optics alignment is performed according to the sequence described in Chapter 2.

If the **Alignment for in-plane measurement** box is checked, the alignment of the 2-theta-chi axis is also performed.



Tip: It takes about 10 minutes for the optics alignment to complete. It is recommended to perform the optics alignment (to uncheck the **Change optics (quick alignment only)** box) unless there is a specific reason not to.


Optics alignment name

Select the optics alignment name. After the alignment, the optimal position of each axis is registered in the selected optics alignment name.

Alignment for in-plane measurement

When the **Alignment for in-plane measurement** box is checked, the alignment of the 2-theta-chi axis is performed.

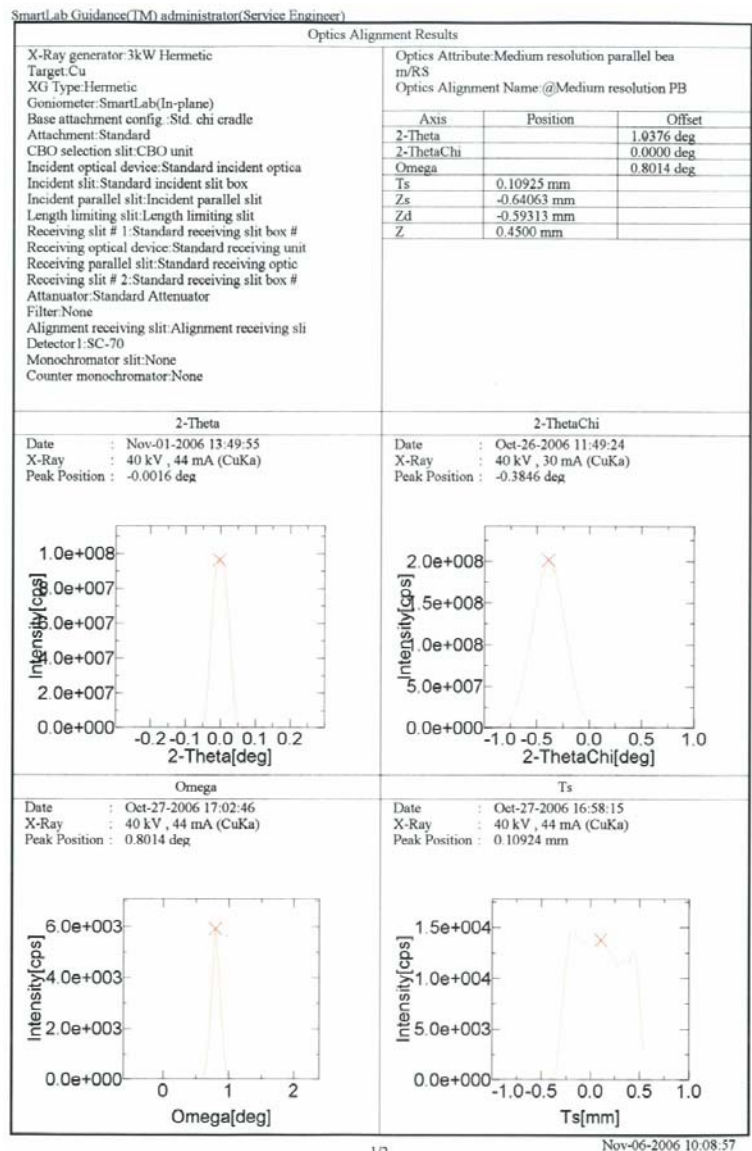
When the **Alignment for in-plane measurement** box is unchecked, the alignment of the 2-theta-chi axis is not performed and the 2-theta-chi zero offset value is set to 0°.



Tip: This checkbox is displayed only when using the SmartLab (in-plane) goniometer.

Print out results after alignment

Check the **Print out results after alignment** box to print out the alignment results with the format shown below after alignment.



Execute


Executes the optics alignment under the conditions specified in the **Optics Alignment (PB)** dialog box.



CAUTION: Clicking the **Cancel** button after executing the optics alignment does not cancel the specified conditions.



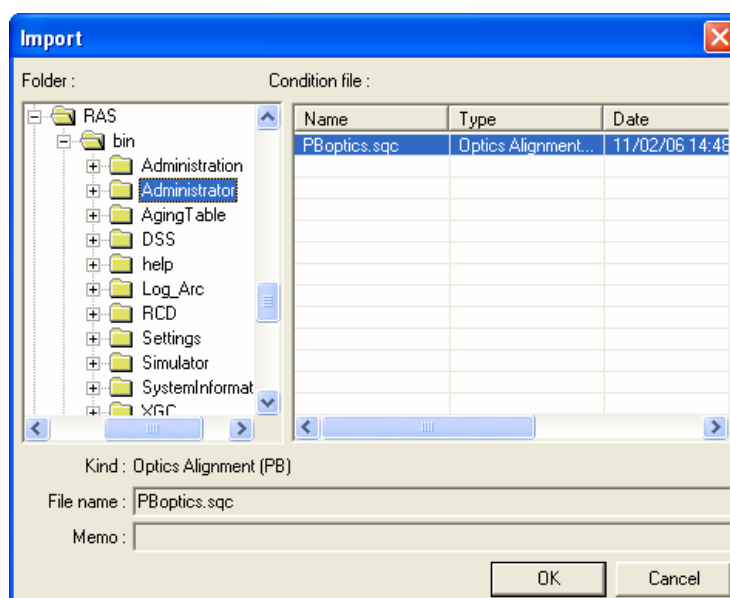
Tip: The optics alignment is executed with the **Optics Alignment (PB)** dialog box open. While the optics alignment is running, the Part conditions cannot be changed. They can be changed again after the alignment has been completed.

The setting of  (Show confirmation messages) on the flow bar becomes invalid.

Import

Loads the saved Part conditions.

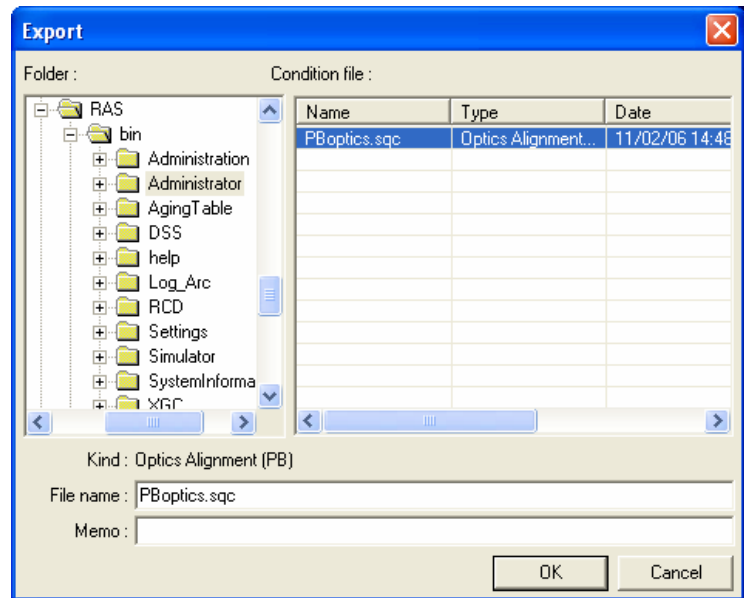
Clicking the **Import** button opens the **Import** dialog box. Select the folder including the file you want to import from the **Folder** tree view. In the **Condition file** list, select the condition file you want to import and click the **OK** button to load the Part conditions.



Export


Saves the specified Part conditions in a file.

Clicking the **Export** button opens the **Export** dialog box. From the **Folder** tree view, select a destination folder to save the conditions file then enter a file name in the **File name** box. Enter comments in the **Memo** box, if needed. After entering them, click the **OK** button.



OK

Sets the conditions and closes the dialog box.

 **CAUTION:** When selecting another Package measurement or switching the task to the **Manual Control** task, etc. the specified conditions will be cancelled. To save the specified conditions in a file, click the **Export** button and save the conditions.

Cancel

Does not set the conditions and closes the dialog box.

?

Opens the online help of this Part.

2. Optics alignment sequence

The optics alignment is performed automatically. However, the center slit, Soller slit, etc. must be installed (or removed) manually as instructed by messages displayed on the screen.

Described below is the general optics alignment sequence.

- (1) Drive each axis of the goniometer to the initial position ($\theta_s = 1.0^\circ$, $\theta_d = 0.0^\circ$).
Adjust each slit width as shown in Fig. 2.1.
- (2) Place the height reference sample plate on the attachment and insert the center slit into the height reference sample plate as instructed by the messages displayed on the screen.

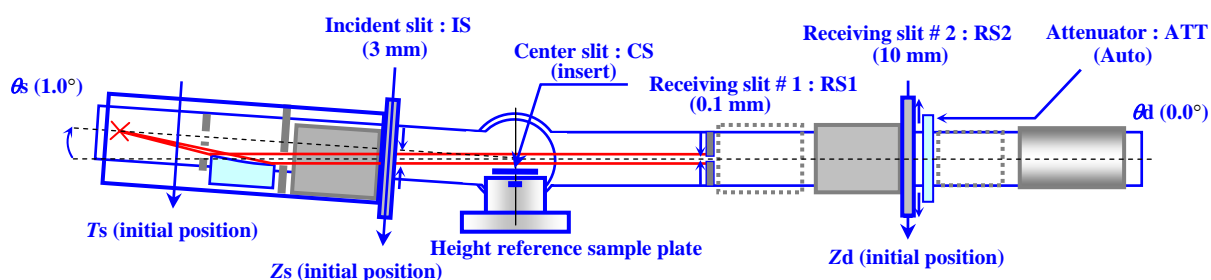


Fig. 2.1 Setting of the initial positions of the goniometer axes

- (3) Scan the θ_d axis and drive the θ_d axis to the peak position.

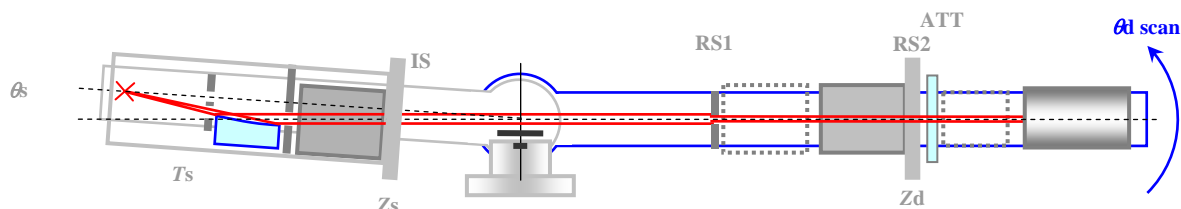


Fig. 2.2 Alignment based on θ_d scan



Tip: When the **Alignment for in-plane measurement** box is checked, the 2-theta-chi scan is performed before scanning the θ_d axis, then the 2-theta-chi axis is driven to the peak position.

2. Optics alignment sequence

- (4) Set the RS1 width to 10 mm. Drive the Z axis to the reference position (factory default). Scan the T_s axis and drive the T_s axis to the peak position.

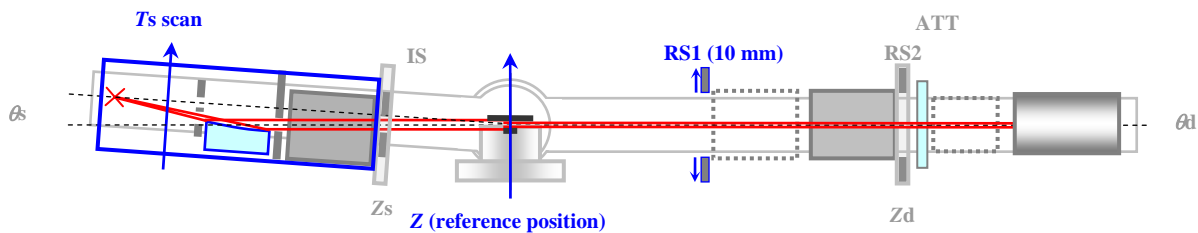


Fig. 2.3 Alignment based on T_s scan

- (5) Scan the θ_s axis and drive the θ_s axis to the peak position.

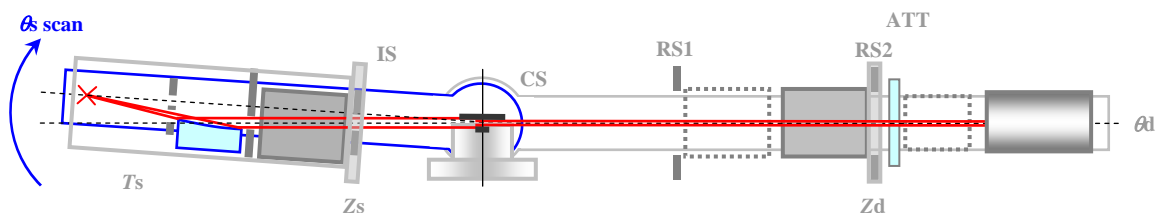


Fig. 2.4 Alignment based on θ_s scan

- (6) Set the IS width to 0.05 mm. Scan the Z_s axis and drive the Z_s axis to the peak position.

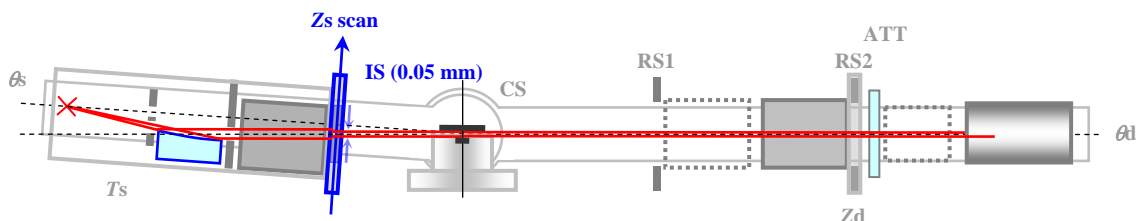


Fig. 2.5 Alignment based on Z_s scan

- (7) Set the RS1 width to 0.05 mm and the Z axis to -4 mm. Scan the 2-theta (θ_d) axis and drive the 2-theta axis to the peak position.

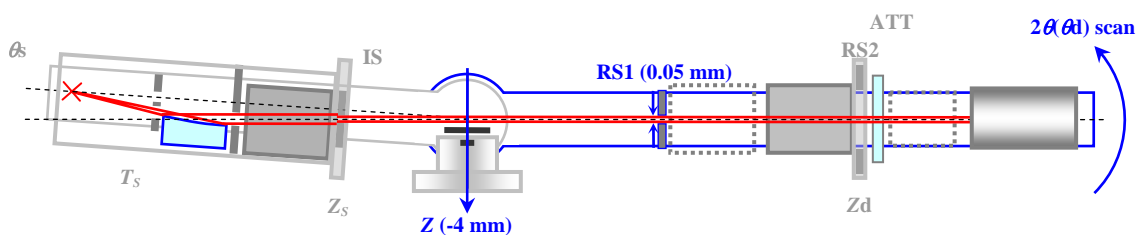


Fig. 2.6 Alignment based on 2-theta scan

- (8) Set the RS2 width to 0.05 mm. Scan the Zd axis and drive the Zd axis to the peak position.

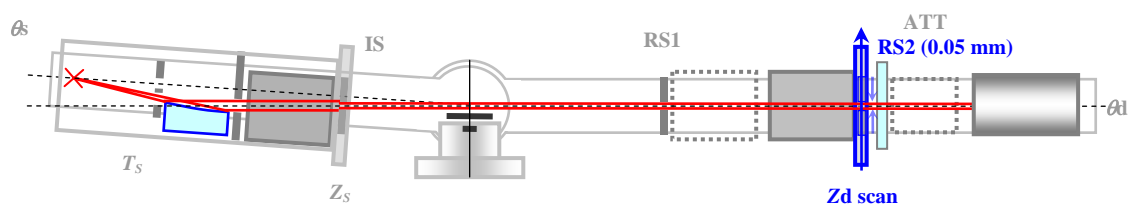


Fig. 2.7 Alignment based on Zd scan

- (9) Scan the 2-theta axis again and drive the 2-theta axis to the peak position. The position determined here is the current zero position of the 2-theta axis. Set the 2-theta zero offset value so that the position is 0° .
- (10) Set the IS width to 0.1 mm, the RS1 width to 0.1 mm, and the RS2 width to 10 mm. Drive the Z axis to the reference position for direct beam half cut alignment.

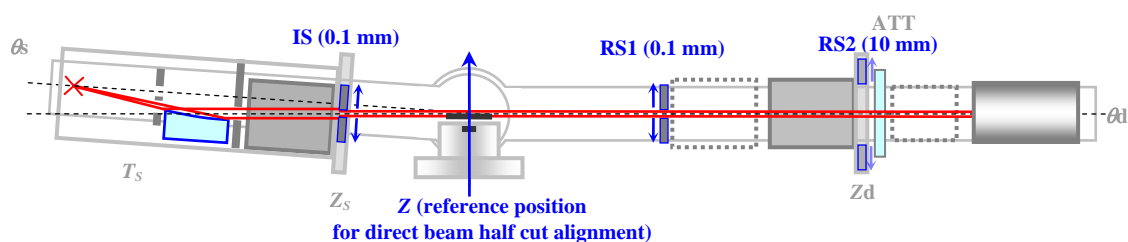


Fig. 2.8 Driving the Z axis to the reference position for direct beam half cut alignment

- (11) Scan the omega axis again and drive the omega axis to the peak position.

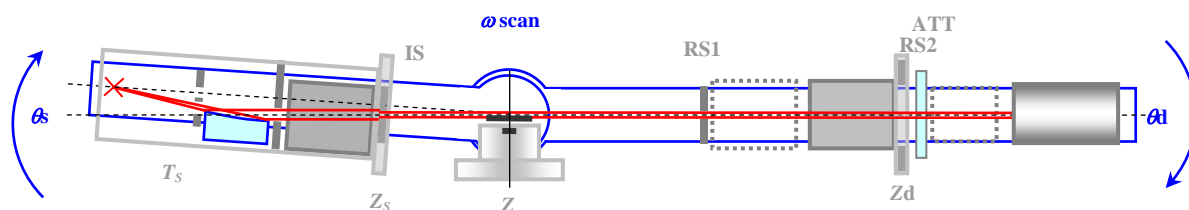


Fig. 2.9 Alignment based on omega scan

- (12) The position determined in step (11) is the current zero position of the omega axis at which the upper surface of the center slit is parallel to the incident x-ray beam. Set the omega zero offset value so that the position is 0° .
- (13) Register the positions of the T_s , Z_s , Z_d , 2-theta, and omega axes determined in steps (4), (6), (8), (9), and (11) in the optics management database.