SideCamera Data after BF2-Ver3.4

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1.Overview

Means for creating side camera inspection data is changed since ver 3.4, that can create intuitively

2.Inspection data creation flow

When creating new side camera inspection data, the user needs to scan the target image.
Ver3.4 can automatically allocate FOV, when inspection data includes side camera data.
Therefore, we recommend below flow that side camera data is created.

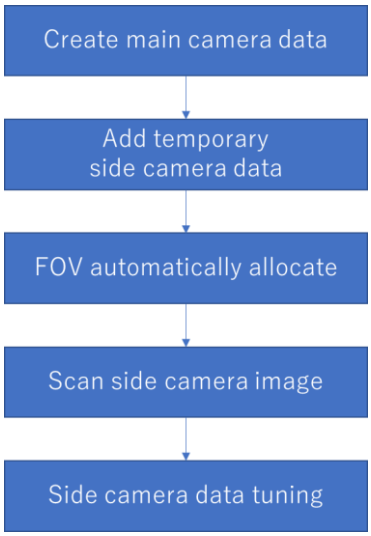

Fig 1 Inspection data creation flow

Also, by using “Sidecamera data addition wizard” described later, side camera data can be created more intuitively.

Fig 2 Flow of creating side camera data with “Sidecamera data addition wizard”

3. Convert Side Camera Program

3.1 How to use it

In ver3.4, the structure is different from the inspection data generated up to ver3.3 (hereinafter

called “Old format”.)
Therefore, when using the side camera data of old format data with the function of Ver3.4, it is necessary to convert the data with the side camera data conversion function.

1, Start to inspection data explorer

2, Select inspection data to be converted

※⚠ is prefixed to the board name for the old format inspection data.

3, **“Convert Side Camera Program”** button will appear in explorer, so select it

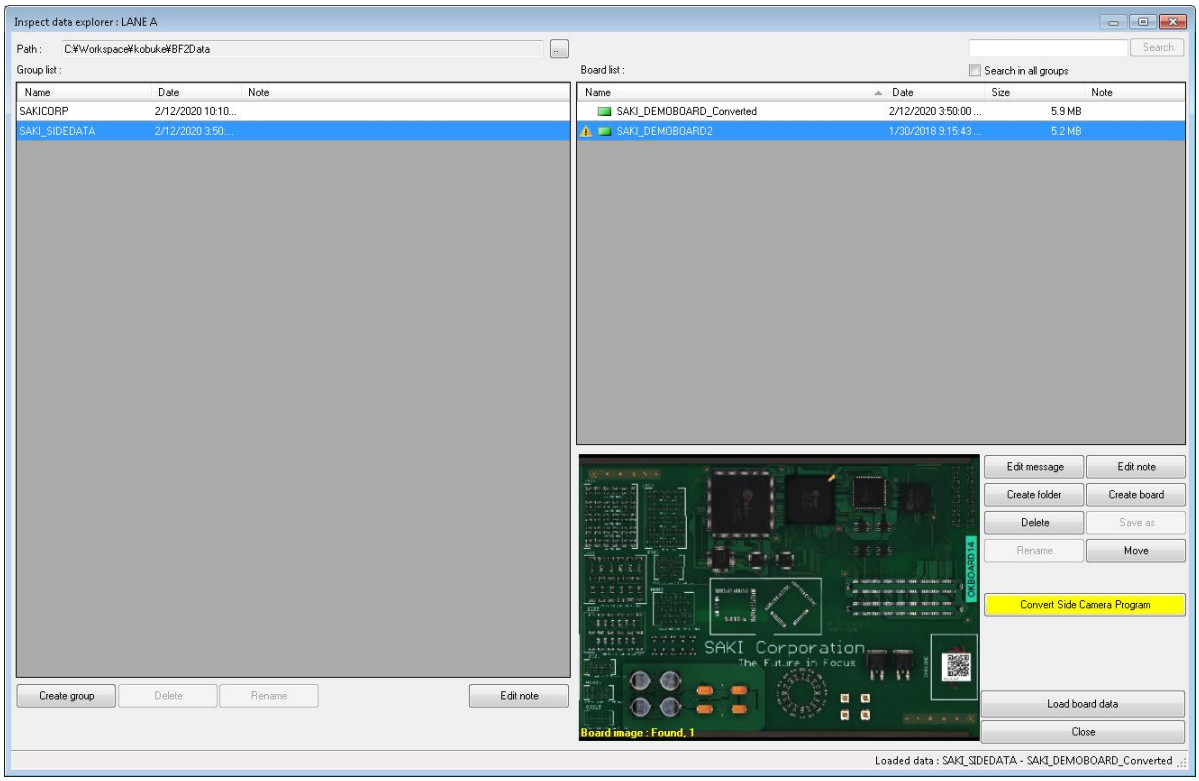

Fig 3 Inspect data explorer

4, Confirm to backup directory and select “OK” button

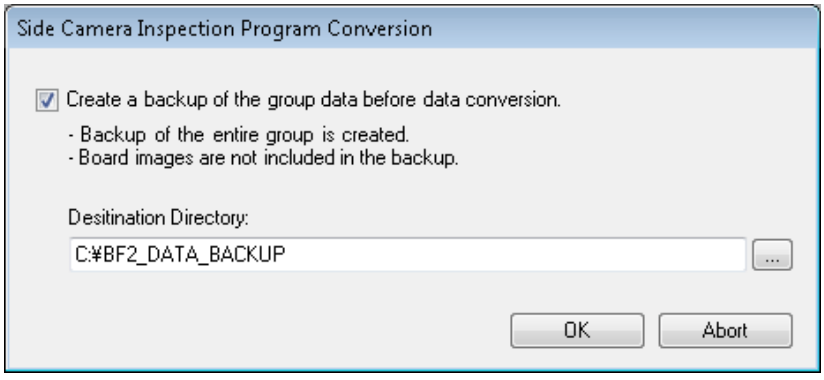

Fig 4 Backup dialog

5, Automatically make a start toward converting and BF2 load converted data

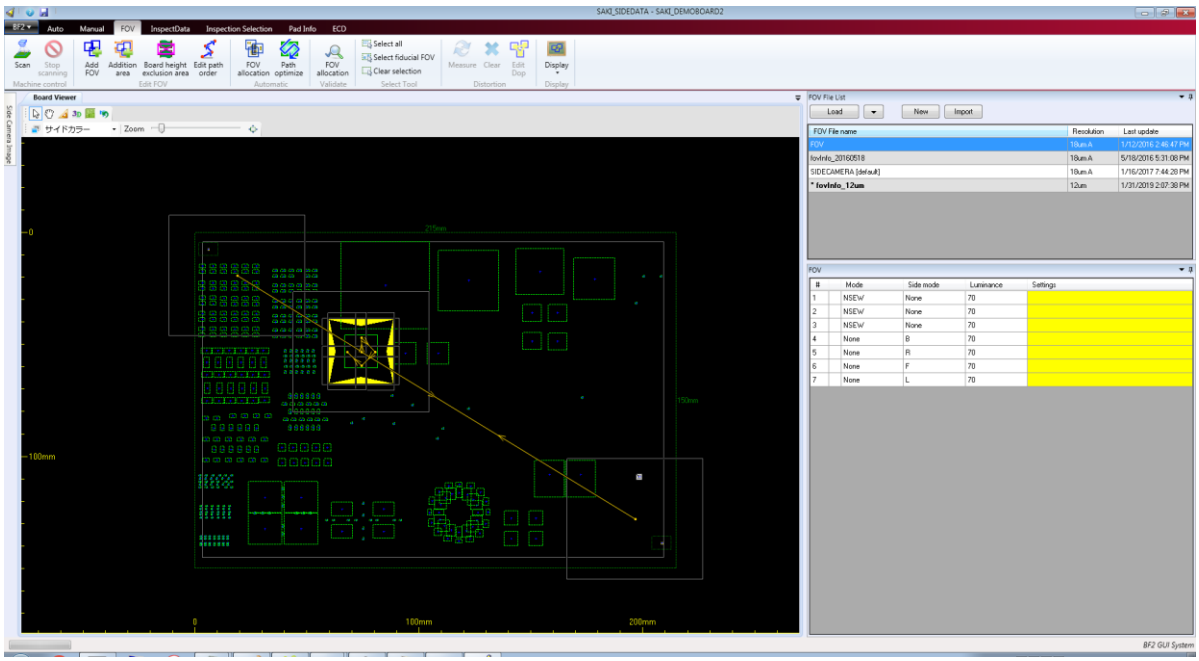

Fig 5 Converted inspection data

Conversion target	Detail
FOV file	For all FOV files registered in the inspection data, delete the FOV for which the side camera is set, and automatically create a FOV for the side camera in the area where the side camera data exists
Inspect window	Deletes the anchor information and converts the side camera inspection data to ver3.4 format (hereinafter a new format) At this time, the following inspection windows are not inherited - Inspection window other than OCV registered in the body - Inspection window belonging to an element that does not exist in the inspection data on the main camera Also, if converted data has the recipe that has new format inspection data, side camera data is not converted and enable to new format data
Inspection data	Inspection data is automatically saved immediately after conversion

Table 1 Conversion detail

If you do not convert the side camera inspection data, the following functions cannot be used.

- ・Some side camera calibrate information (Lens Distortion and ShiftView)
- ・Connecting side camera image between FOVs
- ・Auto allocation of side camera FOV
- ・New recip edit UI
- ・Sidecamera data addition wizard

3.2 Backup

Make a backup with the name “GroupName_Time”. This backup data does not have a board image.

To recover data from a backup, manually copy the backup data and overwrite.

4. SideCamera Recipe edit UI

4.1 Recipe edit UI

From ver3.4, the concept of “Anchor” has been removed and the inspection window can be created based on the shape information. So side camera data can be created as well as main camera data.

According to the following steps, you can access to Recipe edit mode.

1, Select **“InspectData tab”**

2, Select “**Recipe**”

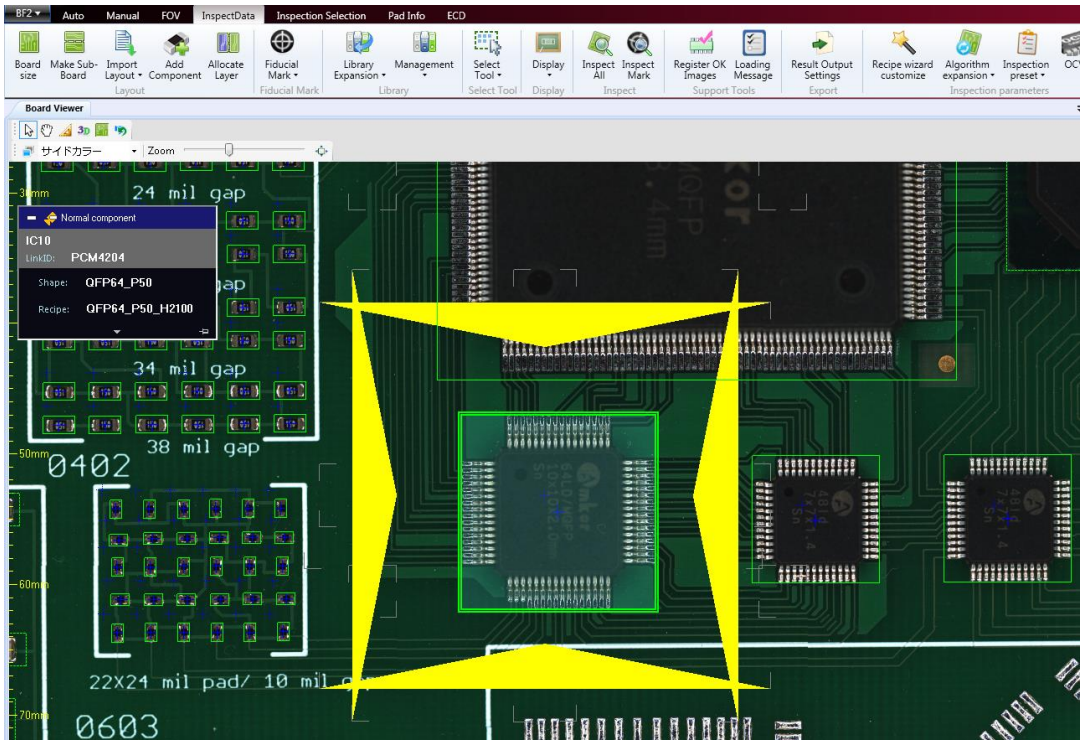

Fig 6 Select inspect data

3, Resipe edit mode is started

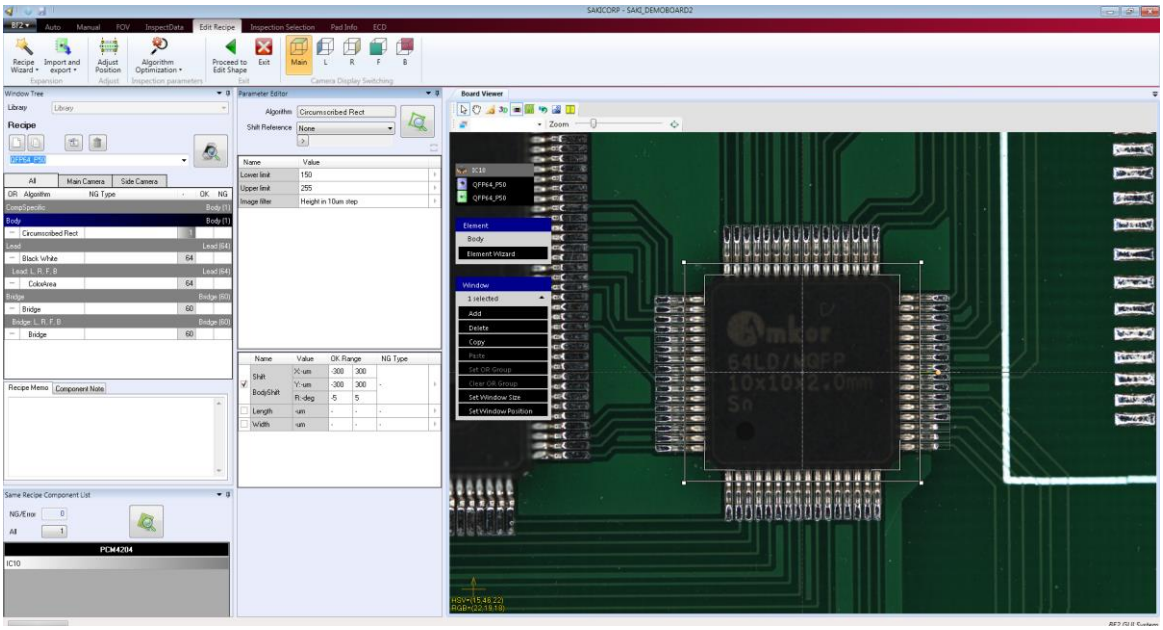

Fig 7 Recipe edit mode

Items	Description
Tab: All	Displays all inspection windows associated with the component
Tab: Main Camera	Displays main camera inspection windows associated with the component
Tab: Side Camera	Displays side camera inspection windows associated with the component
Button: Camera Display Switching	Displays the image in the direction based on the display in editing mode

Table 2 New items of recipe edit mode

4.2 Add side camera data

1, Open recipe edit mode

2, Select **"Side Camera"** tab

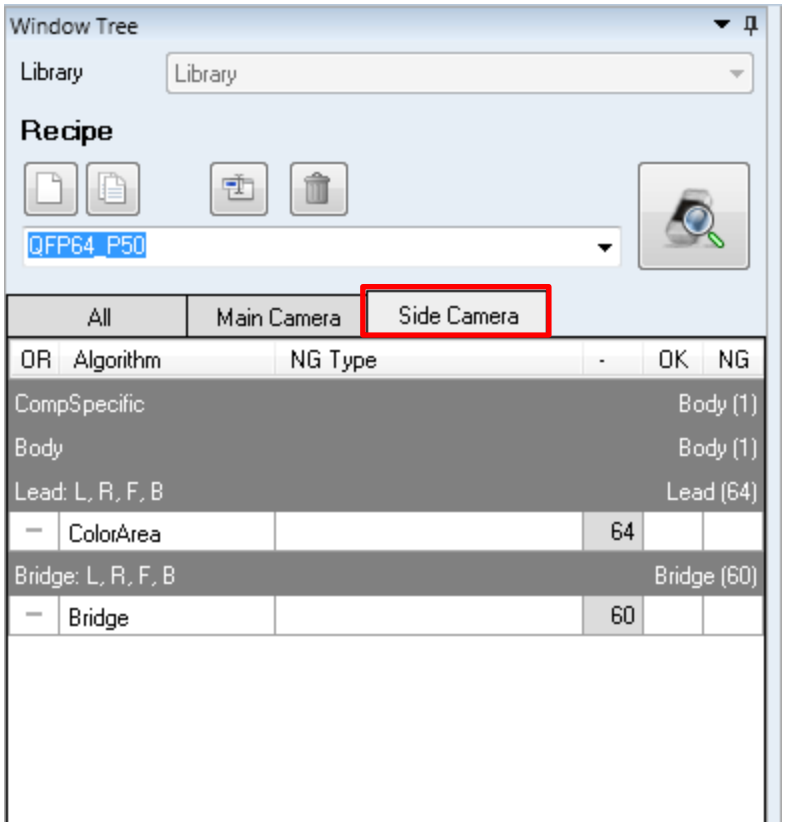

Fig 8 Side Camera tab

3, Select element and select “Add” at panel

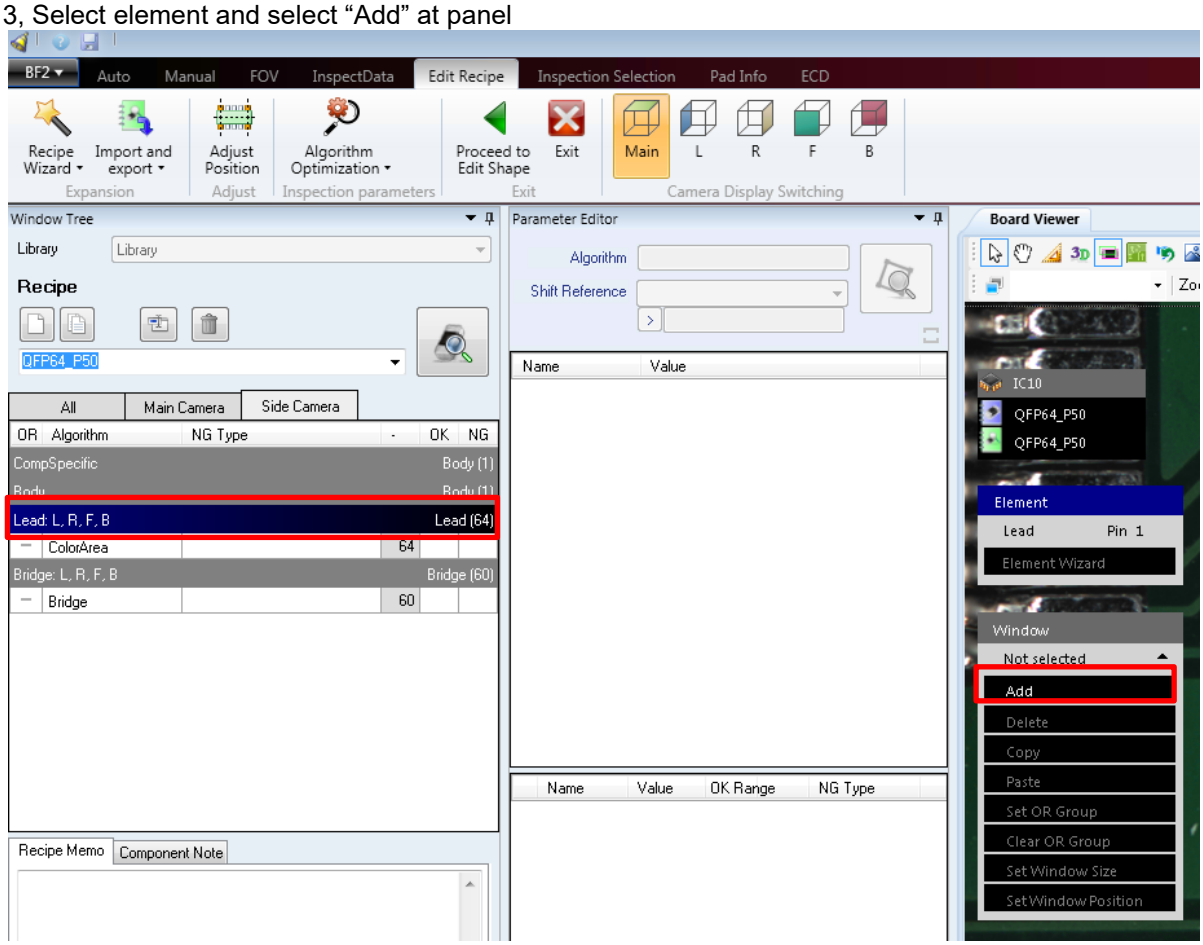

Fig 9 Add side camera data

4, Inspection windows are added in all directions of the element, so select the algorithm and adjust the data as with main camera data

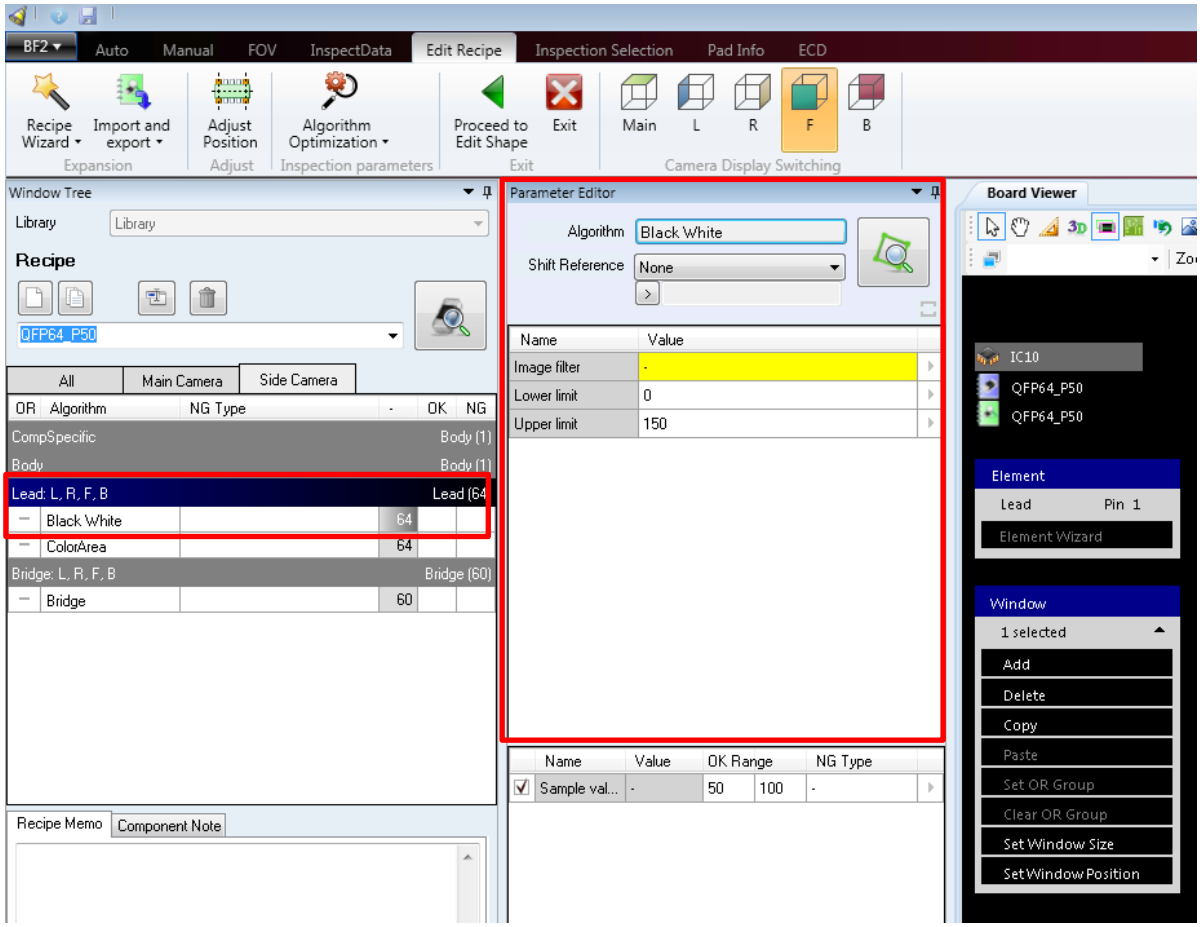

Fig 10 Side camera data tuning

5, Side camera data can be set as “Shift reference” like main camera as needed.

It is possible to use the shift reference information obtained by the main camera.

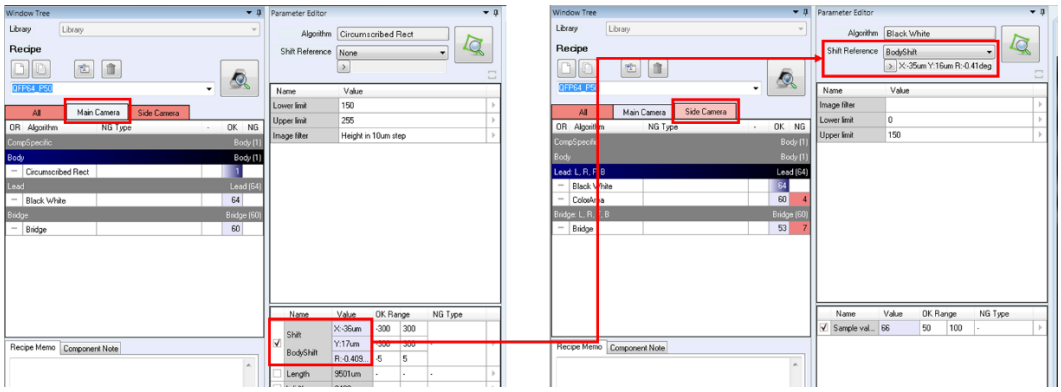

Fig 11 Shift reference setting

4.3 Assign specific direction element

1, Select side camera tab, right click on Element, and select “Add Side Camera element row”

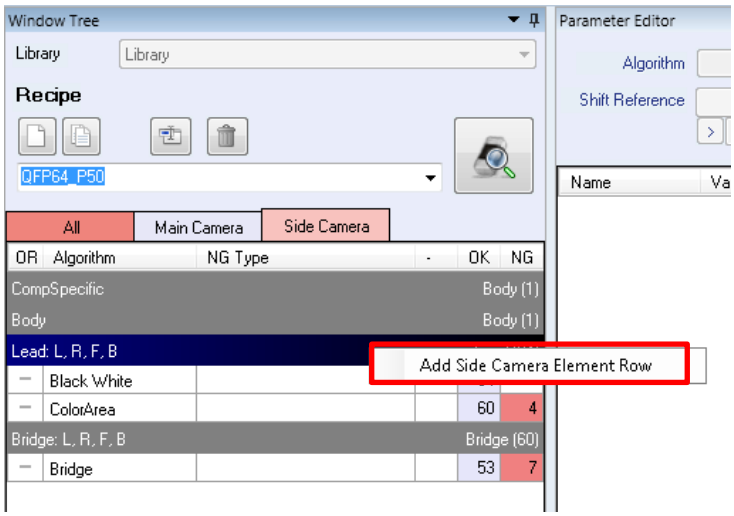

Fig 12 Add Side Camera Element Row

2, Select an element link ID you want to inspect and press **“Next>”**

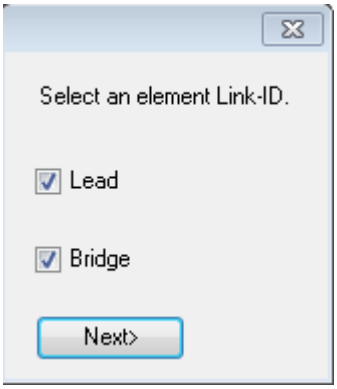

Fig 13 Select element

3, Select the camera direction and press “OK”

※Select the direction based on the recipe edit screen

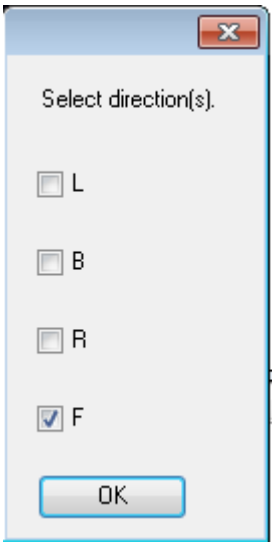

Fig 14 Select directions

4, Elements and inspect windows are generated in the selected side camera direction.

So, create data referring to “4.2 Add Side Camera Data”

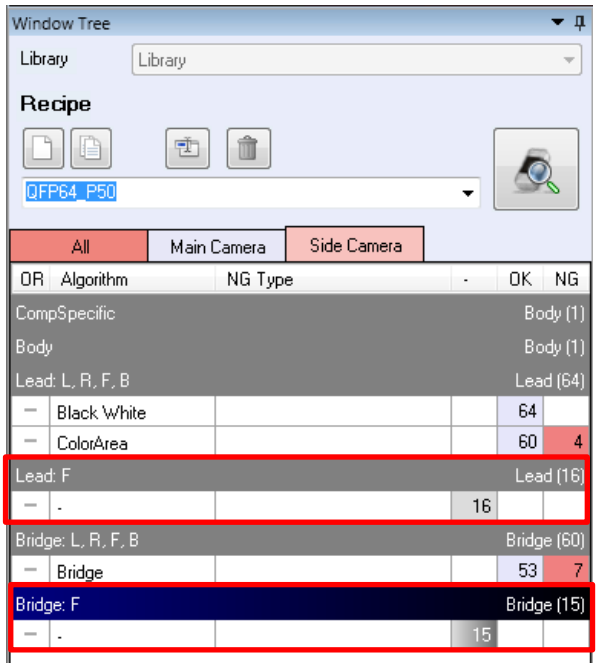

Fig 15 Side camera element that is specific directions

4.4 Data addition for elements which is like a Body

Some elements cannot be automatically assigned camera direction (For Ex. Body, Compspecific), In this case, follow these steps to assign it to the inspect window

1, Select element and click “Add” button

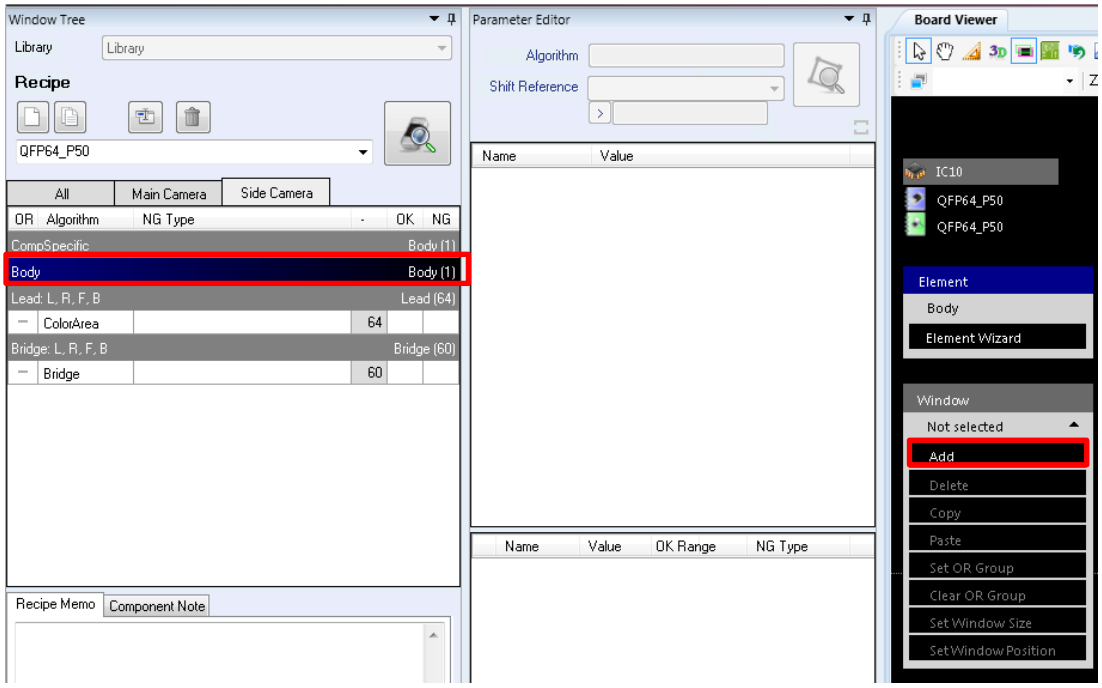

Fig 16 Add inspect window to Body

2, Select to SideCamera direction

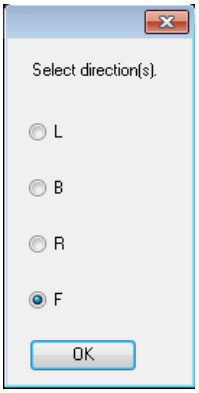

Fig 17 Select camera direction

3, The inspect window of the selected direction is generated.

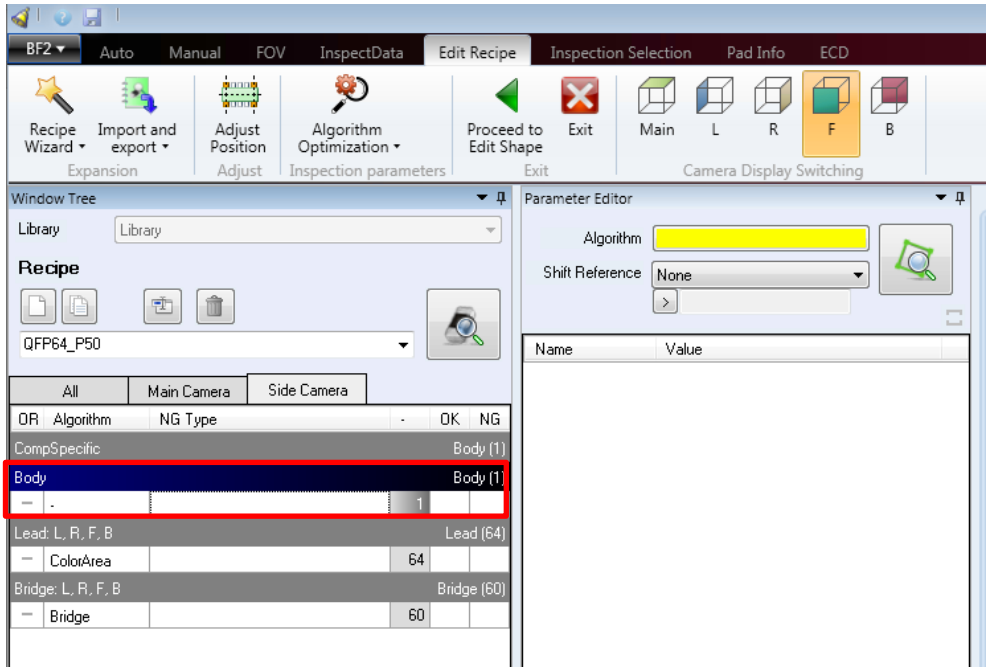

Fig 18 Add inspect window

4.5 Skip side camera inspection

 button is enabled for component to which side camera data is assigned.

When click this button, skip side camera inspection.

Fig 19 Side camera inspect mark on panel

Status	Content

	Side camera data exists, and inspection is enabled
	Side camera data exists, and skip side camera inspection
	Side camera data does not exist

Table 3 Side camera mark status

※When normal “skip” setting is enabled, all inspect windows are skipped regardless of the inspection status of the side camera.

In addition, you can see which parts will be inspected by the side camera from the “Component List”

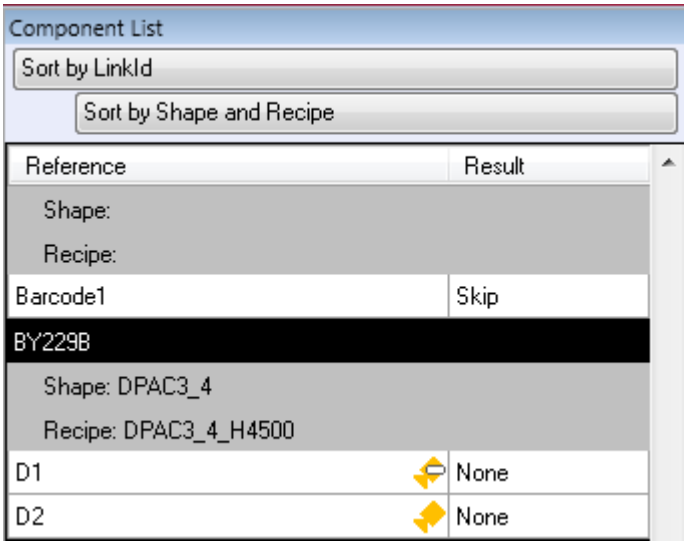

Fig 20 Side camera mark on Component List

Status	Content
	Side camera data exists, and inspection is enabled
	Side camera data exists, and skip side camera inspection
Nothing	Side camera data does not exist

Table 4 Side camera mark on Component List

5. FOV auto allocation

If the side camera inspect window exists, the FOV of the side camera will be automatically allocated by **“FOV allocation”**.

In “FOV allocation”, FOV for the side camera is expanded as follows

FOV	Status
Location	Calculate the bounding rectangle of the inspect window in

	each direction and place the FOV. In addition, FOV is expanded separately for inspect windows belonging to elements such as “body” and “CompSpecific”
Projection (Height setting)	Only 2D images are captured without height imaging

Table 5 FOV allocate

6. Sidecamera data addition wizard

In “Sidecamera data addition wizard”, the following inspect window is added by selecting the part to which the side camera data is to be added, FOV allocation, and board scanning are performed.

Element	Add algorithm
Body, CompSpecific	Not additional
Bridge	Bridge (ImageFilter：Low)
Lead, others (ForEx. PadRoi)	Black White (ImageFilter：Low)

Table 6 Contents added by the side camera addition wizard

1, Click “BF2” in the upper left of the screen to open the menu, and click “Sidecamera data addition wizard”

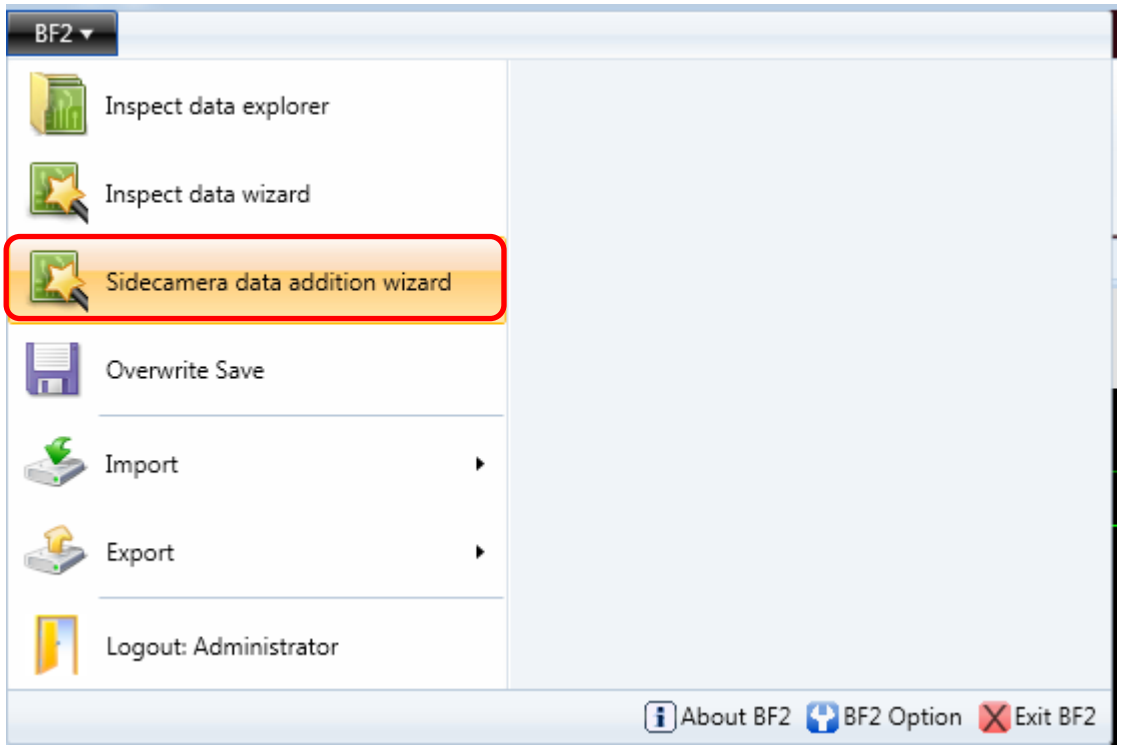

Fig 21 SideCamera data addition wizard

2, The following dialog is displayed

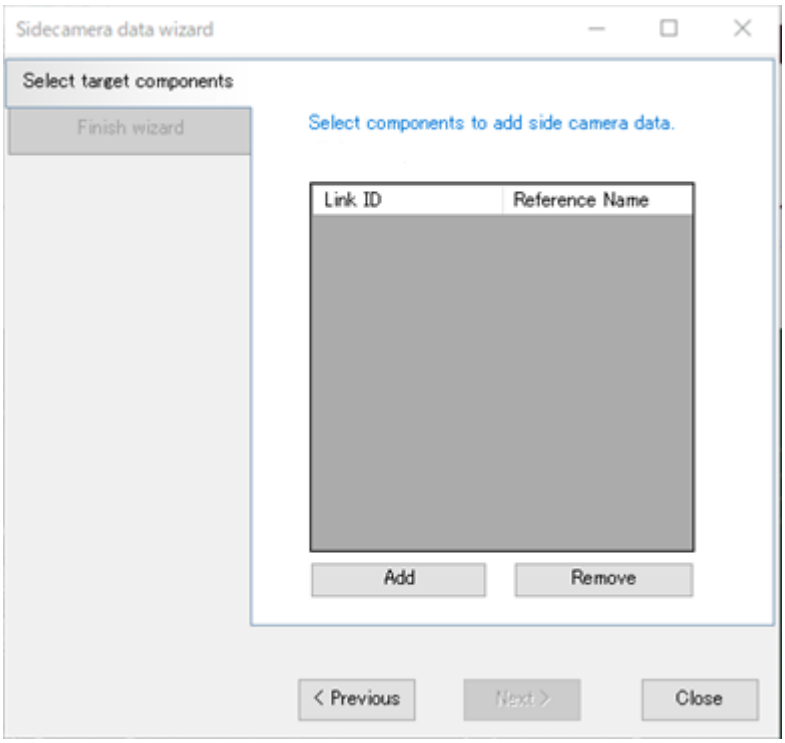

Fig 22 Sidecamera data addition wizard dialog

Item	Description
Target component list	Displays the components to which sidecamera data is added.
Add	The selected components are added to the “Target component list”
Remove	Deletes the line selected on “Target component list”

Table 7 Description each item of dialog

3, Select the component to add the sidecamera data on the “Whole Image Window” and click the “Add” button.

If you want to delete, select the component and click “Remove” button

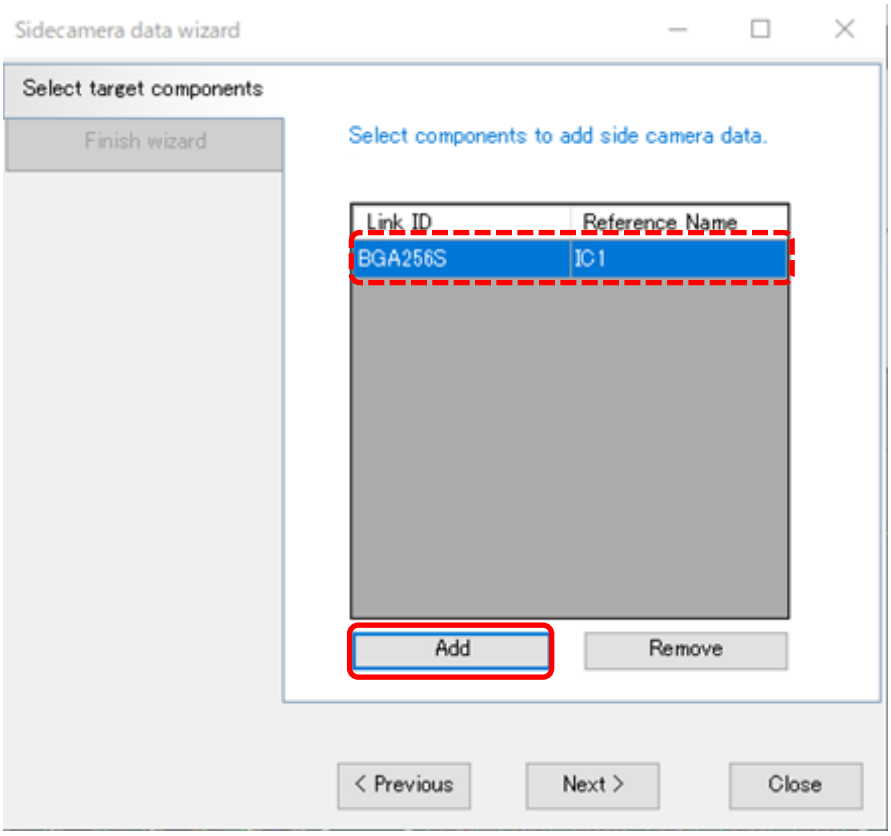

Fig 23 Select target component

4, Click “Next”. The following dialog is displayed

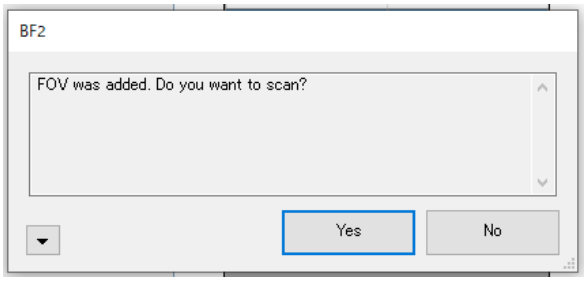

Fig 24 Scan confirmation dialog

5, Select “Yes” to start scanning, otherwise select “No”

6, Select to “Finish”

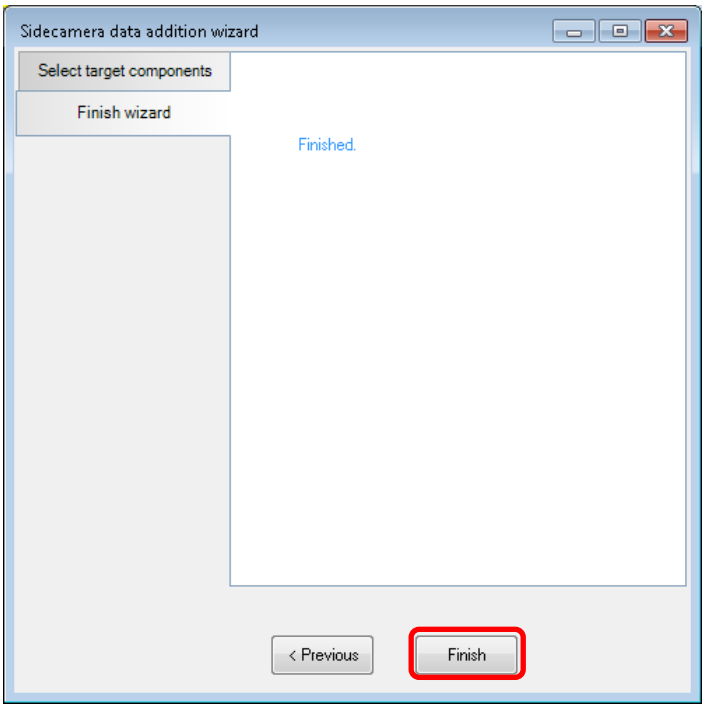

Fig 25 Finish wizard

7, “Recipe edit mode” will automatically appear. Fine-tune the sidecamera inspection window.

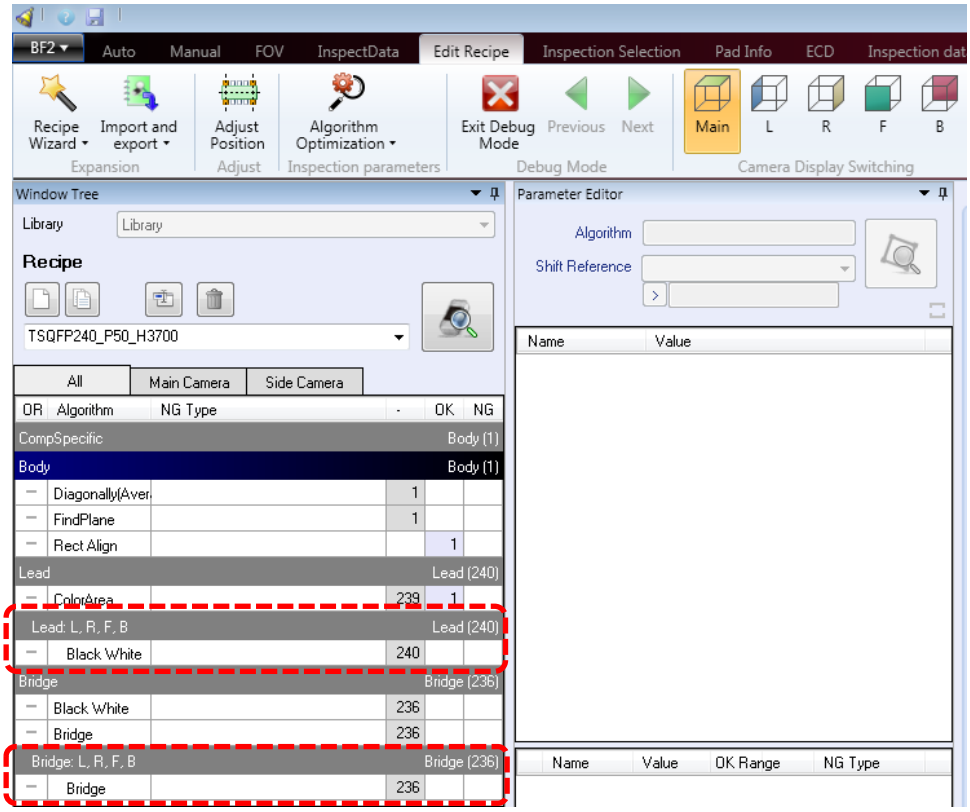

Fig 26 Recipe edit mode from side camera data wizard

7. Display of new format window on old format data

If inspection data before and after the side camera data conversion exists in the same inspection group and the same recipe is used, loading the data before conversion displays a new type of inspection window in grayout as shown below. These inspect windows are skipped inspection.

This is to make it possible to re-register the body shift settings for the new type of inspection window when the inspection window for body shift etc. is regenerated.

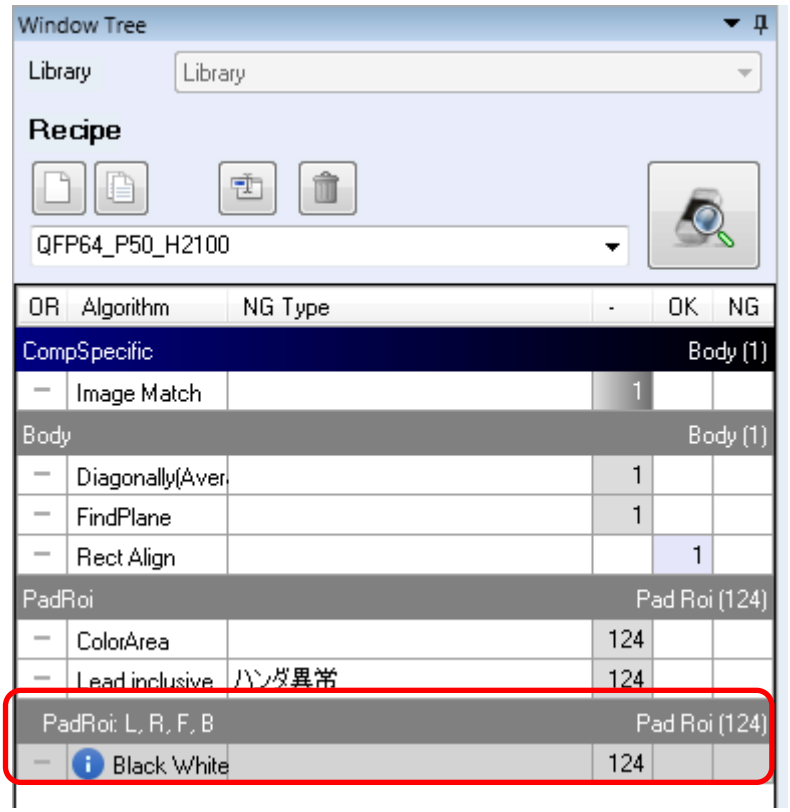

Fig 27 Grayout inspect window

8. Precaution

From ver3.4, it is possible to connect images between side cameras, but in the following cases, there will be a problem that the joint will shift when connecting images.

・When connecting images in the vertical direction when viewed from each direction of side camera

・Connecting seams on the back

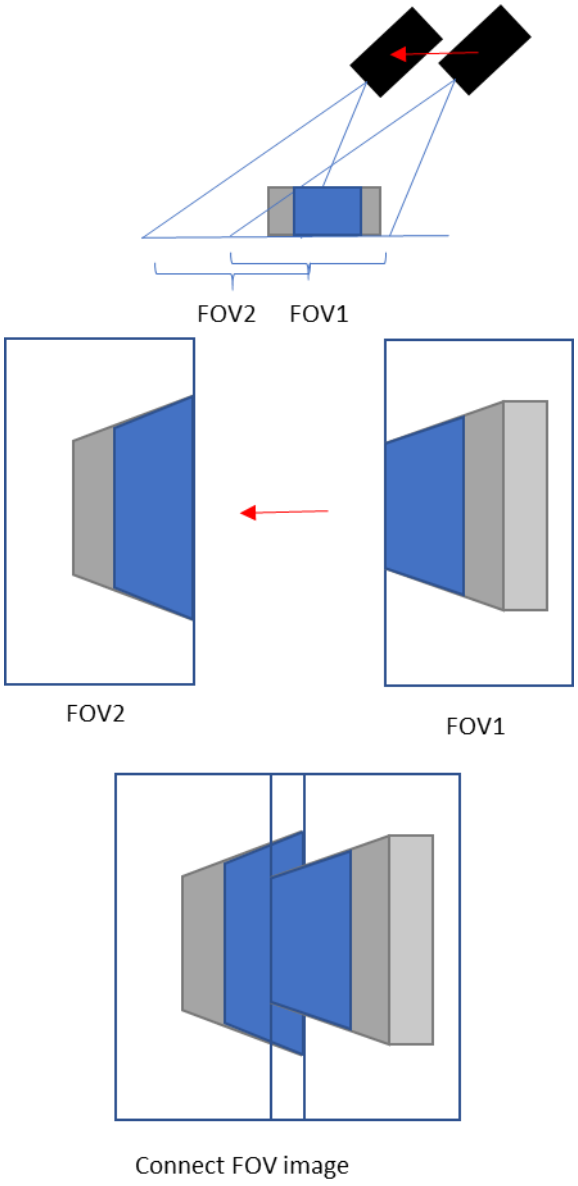

Fig 28 case where the seams of images are misaligned

The image of the side camera looks different on the back side and the front side. By the camera angle correction, the images are correctly connected near the plane of the board surface, but if there is a height, the appearance will differ depending on the imaging position, so the joint will shift.

9. Revision History

リビジョン	日付	説明	担当
01	2020/02/14	First edition	I.Kobuke
02	2020/02/28	Updated about inspection data conversion	I.Kobuke
03	2020/06/23	Add “Precaution”	I.Kobuke