MotoSim EG-VRC Ver5.20 OPTIONS INSTRUCTIONS

FOR CAM FUNCTION (FOR PAINTING)

Upon receipt of the product and prior to initial operation, read this manual thoroughly, and retain for future reference.

YASKAWA ELECTRIC CORPORATION

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MANDATORY

- **This manual explains teaching, playback, editing operations of jobs and files, operation management of MotoSim EG-VRC. Read this manual carefully and be sure to understand its contents before operation.**
- **General items related to safety are listed in instruction manuals supplied with the manipulator. To ensure correct and safe operation, carefully read the instructions on safety before reading this manual.**

CAUTION

- **Some drawings in this manual are shown with the protective covers or shields removed for clarity. Be sure all covers and shields are replaced before operating this product.**
- **The drawings and photos in this manual are representative examples and differences may exist between them and the delivered product.**
- **YASKAWA may modify this model without notice when necessary due to product improvements, modifications, or changes in specifications. If such modification is made, the manual number will also be revised.**
- **If your copy of the manual is damaged or lost, contact a YASKAWA representative to order a new copy. The representatives are listed on the back cover. Be sure to tell the representative the manual number listed on the front cover.**
- **YASKAWA is not responsible for incidents arising from unauthorized modification of its products. Unauthorized modification voids your product's warranty.**
- **Software described in this manual is supplied against licensee only, with permission to use or copy under the conditions stated in the license. No part of this manual may be copied or reproduced in any form without written consent of YASKAWA.**

NOTE

This instruction manual is applicable to both FS100 (a controller for small-sized manipulators) and FS100L (a controller for large and medium-sized manipulators).
The description of "FS100" refers to both "FS100" and "FS100L" in this manual unless otherwise specified.

Notes for Safe Operation

Before using this product, read this manual and all the other related documents carefully to ensure knowledge about the product and safety, including all the cautions.
In this manual, the Notes for Safe Operation are classified as “WARNING”, “CAUTION”, “MANDATORY”, or ”PROHIBITED”.

 WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to personnel.
 CAUTION	Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury to personnel and damage to equipment. It may also be used to alert against unsafe practices.
 MANDATORY	Always be sure to follow explicitly the items listed under this heading.
 PROHIBITED	Must never be performed.

Even items described as “CAUTION” may result in a serious accident in some situations. At any rate, be sure to follow these important items.

To ensure safe and efficient operation at all times, be sure to follow all instructions, even if not designated as “CAUTION” and “WARNING”.

Notation for Menus and Buttons

Descriptions of the programming pendant, buttons, and displays are shown as follows:

Item	Manual Designation
Menu	The menus displayed on screen are denoted with { }. ex. {TOOL}.
Button	The buttons, check boxes, radio buttons displayed on screen are denoted with [ ]. ex. [Close]; [Sync] check box; [Fast] radio button.

Description of the Operation Procedure

In the explanation of the operation procedure, the expression "Select • • • " means the following operations:

- To move the cursor to the object item and left-click on it with the mouse.
- To pick out the object item by the tab key and press the Enter key.
  (In case of selecting a menu, use arrow keys instead of the tab key to pick out the object item, then press the Enter key.)

Registered Trademark

In this manual, names of companies, corporations, or products are trademarks, registered trademarks, or bland names for each company or corporation. The indications of (R) and TM are omitted.

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1 Introduction

This manual explains the procedure for creating a job for specifying the painting surfaces of a workpiece using CAD data.

NOTE
- This function is available MotoSim EG-VRC ver4.00 or later.
- To use this function (CadPack option), the MotoSim EG-VRC-CadPack is required. (The MotoSim EG-VRC-CadPack is separate product from MotoSim EG-VRC.)

1.1 Cautions for Using the CAM Function

- When using the CAM function, use native 3-D CAD data (CATIA, PRO/E, Inventor, Solid-Works) whenever possible. Please use native 3D CAD format (CATIA V5, PRO / E, Inventor, SolidWorks, etc.) when possible. However, Importing 3D CAD format data (CATIA V5, PRO / E, Inventor SolidWorks, etc.) is needed extra-cost options.
- Compatible system configuration:

R1	One robot
R1+B1	One robot plus one travelling axis
R1+S1	One robot plus a positioner

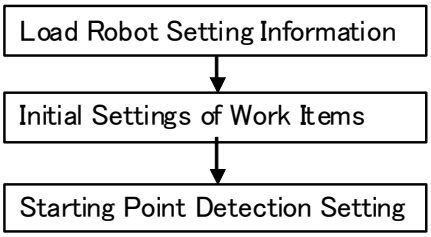
- Compatible positioner:

Supported Positioner Name	Number of axis
S500B-A00	1 (Rotation axis only)
S500B-B00	1 (Rotation axis only)
D250B-A00	2 (Tilt axis + rotation axis)
D250B-B00	2 (Tilt axis + rotation axis)

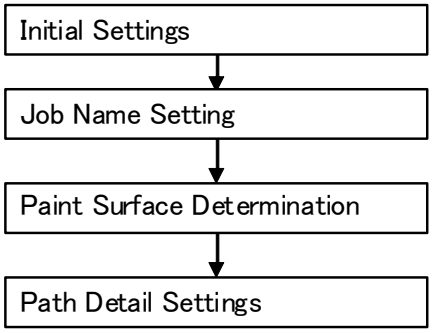
2 Job Creation Flow

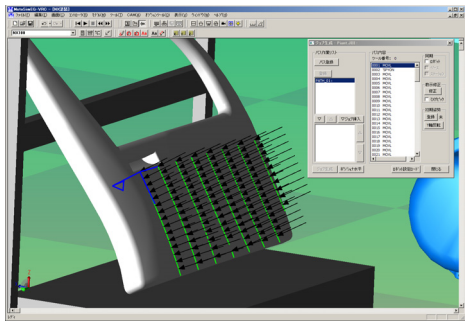
The overall procedure for creating a job is as follows. Refer to each chapter for details.

Preparation (Chapter 4)

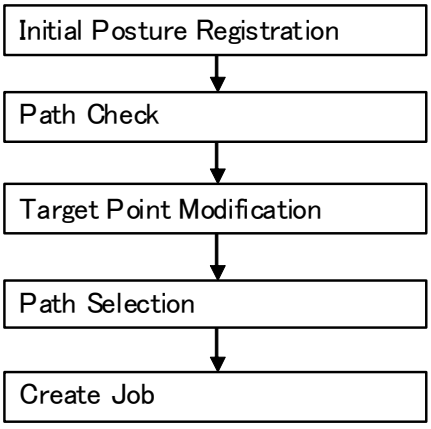


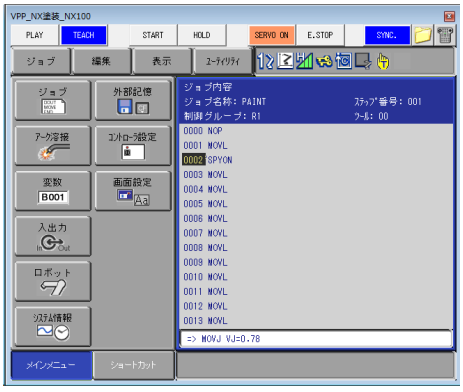
Create Path (Chapter 5)



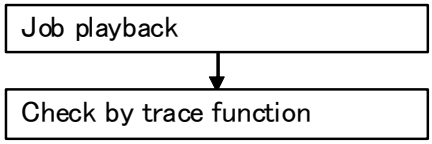


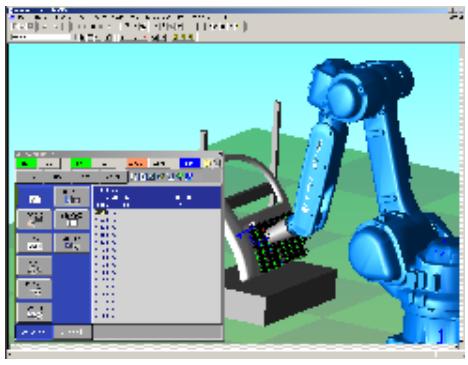
Create Job (Chapter 6)





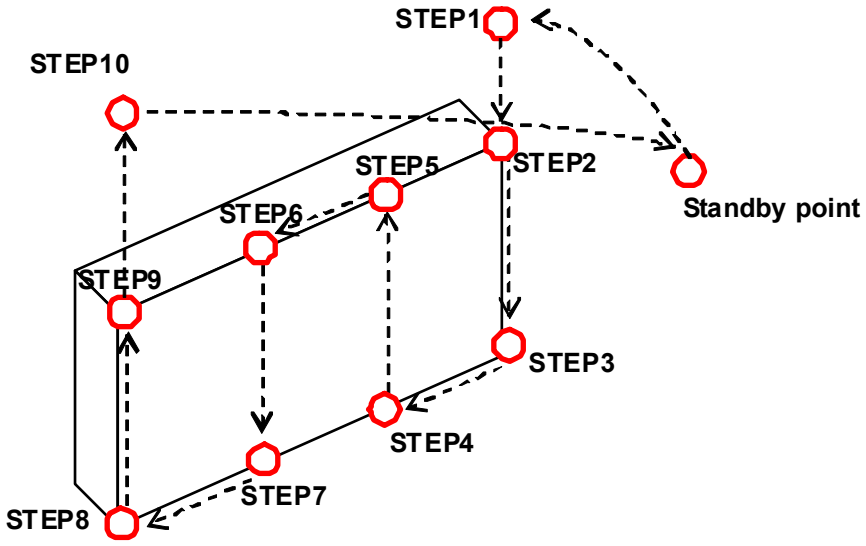
Checking Motion (Chapter 7)





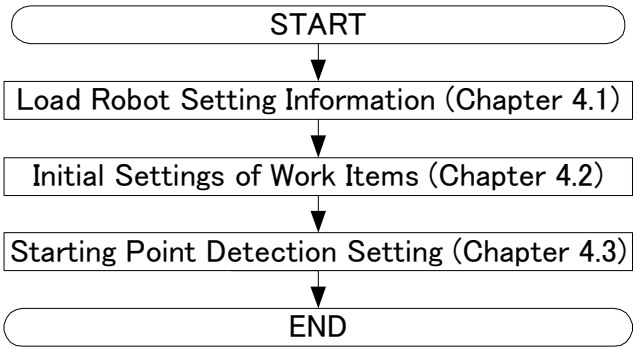
3 Job Created with CAM Function

When the target point is created, the job is created as shown below. Movement to the standby point is performed using the origin point job call (CALL JOB:RETURN_WORK_ORG).



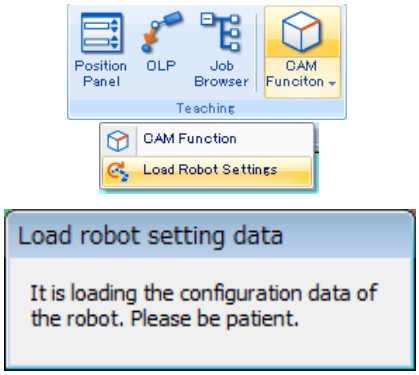
NOP	
CALL JOB:RETURN_WORK_ORG	Standby point (Job call)
MOVL V=250.0	STEP1
MOVL V=800.0	STEP2
SPYON	Paint start
MOVL V=1000	STEP3
MOVL V=1000	STEP4
MOVL V=1000	STEP5
MOVL V=1000	STEP6
MOVL V=1000	STEP7
MOVL V=1000	STEP8
MOVL V=1000	STEP9
SPYOFF	Paint end
MOVL V=250.0	STEP10
CALL JOB:RETURN_WORK_ORG	Standby point (Job call)
END	

4 Preparation



4.1 Load Robot Setting Information

Before using the CAM function for the first time, always on the [Home] tab, in the [Teaching] group, click the [CAM Function]-[Load Robot Settings] button.
When {Load robot setting data} is selected, the following dialog box appears, and the information necessary for job creation is loaded.



When the dialog box closes, the loading is complete.

NOTE

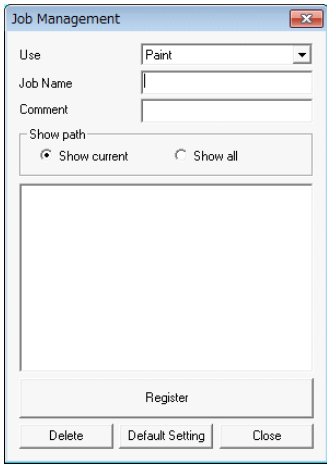
Also execute {Load robot setting data} when the following operations are performed.
- Controller parameter are changed
- Tool data is changed

4.2 Initial Settings of Work Items

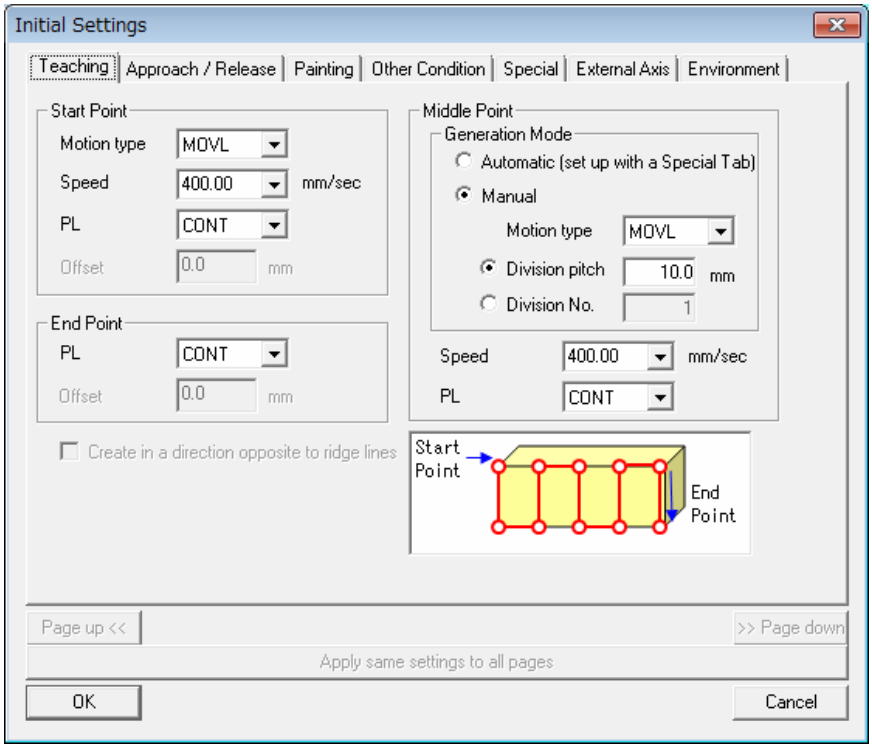
Perform initial setting of the work items. The settings set here will be the default values for items that can be input, as described in " 5.3 Path Settings ". If this is the first time the CAM function is being used, set the initial values for the current cell.

Procedure

1. On the [Home] tab, in the [Teaching] group, click the [CAM Function] button to display the "CAM Job Management" dialog.

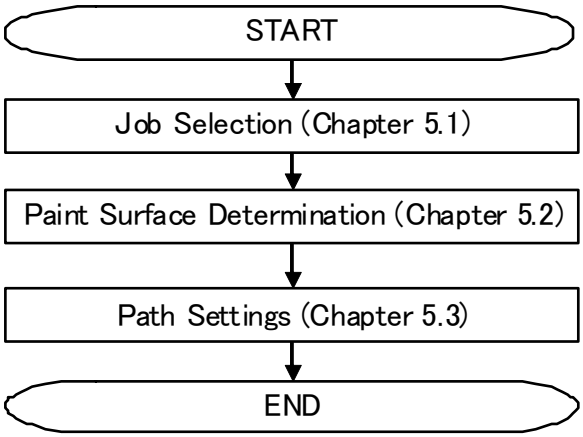


Press the {Default Setting} button. Set each item in the "Initial Settings" dialog box. For setting value details, refer to " 7 Default Settings and Path Settings ". Once settings are complete, be sure to press the {OK} button even if no changes were made. The "Job Management" dialog box is displayed again.



5 Create Path

The overall procedure for creating a path (target point group) is as follows.
Refer to each chapter for detailed procedures.



5.1 Job Selection

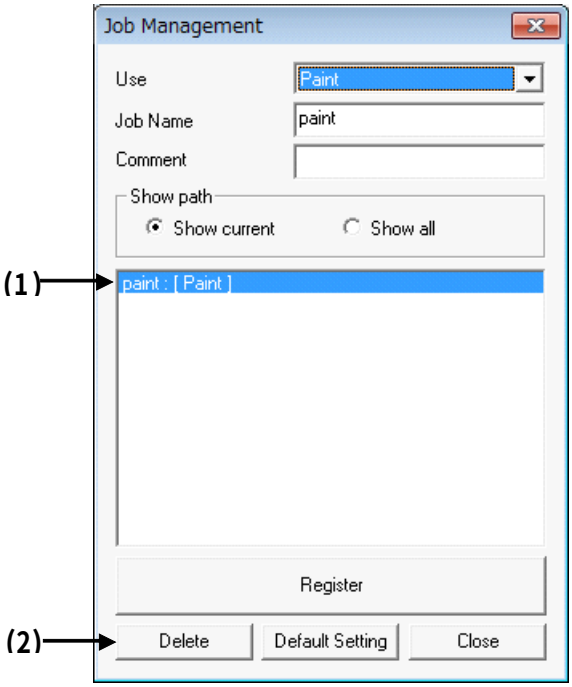
■ When new create the job

1. On the "Job Management" dialog box, input the Job Name and a comment (comment for the job to be created). The Job Name must be input. The comment is optional. The character input limits are as follows.

Controller	Job Name	Comment
DX100	32 half-width characters	32 half-width characters
FS100	32 half-width characters	32 half-width characters
NX100	8 half-width characters	32 half-width characters

2. Press the {Register} button to display the "Create job : paint.JBI :" dialog box.

■ When already registered

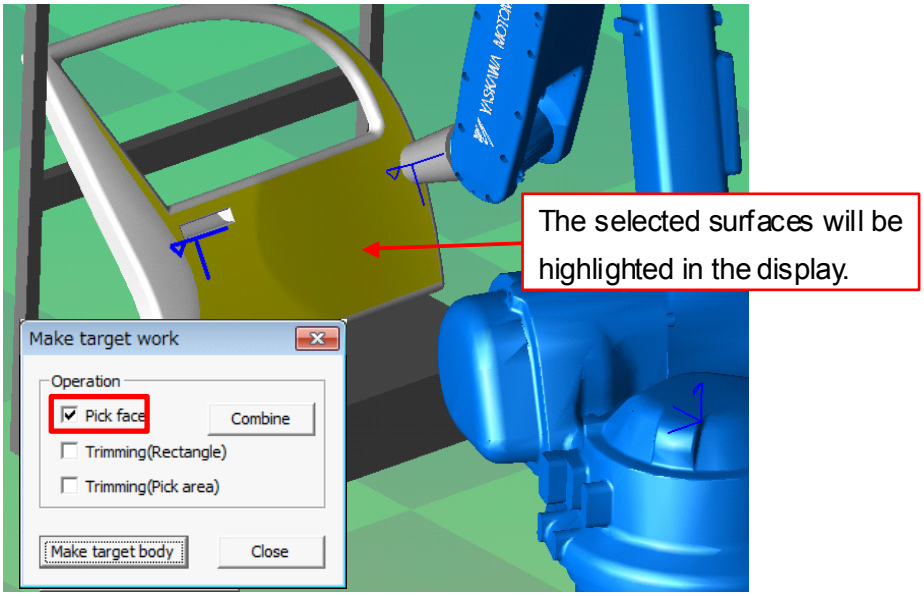


1. To load a job that has already been registered, select it from the list, and then press the {Register} button, or double-click the listed item. The "Create job : paint.JBI :" dialog box appears.
2. To delete a job that has already been registered, select it from the list, and then press the {Delete} button.

5.2 Paint Surface Determination

Procedure

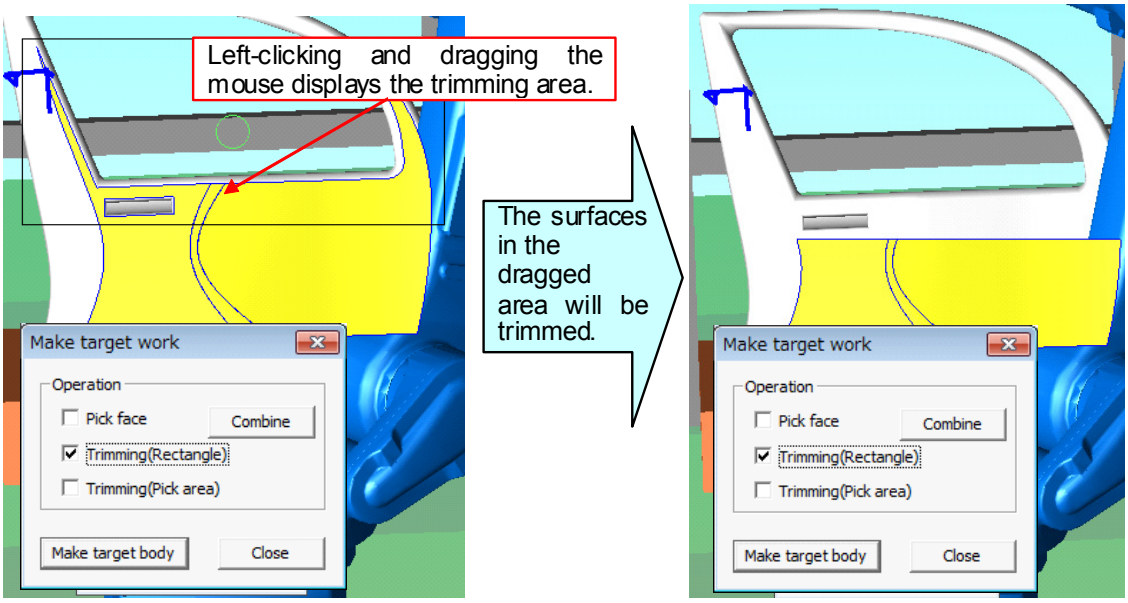
1. Select surfaces of the workpiece to paint by clicking {Add path} in the "Create job : paint.JBI :" dialog box. The surface selection state is activated by left-clicking on the workpiece's CAD data. Also, holding down the CTRL key while clicking allows selection of multiple surfaces. Once the target surfaces have been selected, click the {Combine} button.



2. After combining surfaces, the surface trimming function can be used to exclude unnecessary areas from the selected surfaces. There are two types of trimming: "rectangle" and "pick area". (This function cannot be used without first combining surfaces)

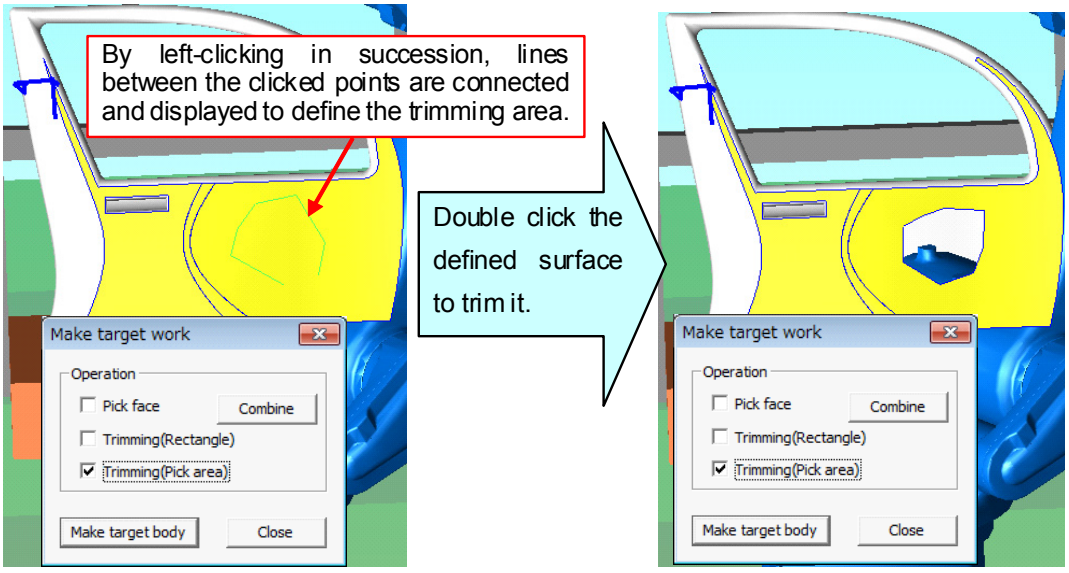
   By checking the "Trimming (Rectangle)" check box, surfaces can be excluded by selecting rectangles.

[Before surface trimming] [After surface trimming]



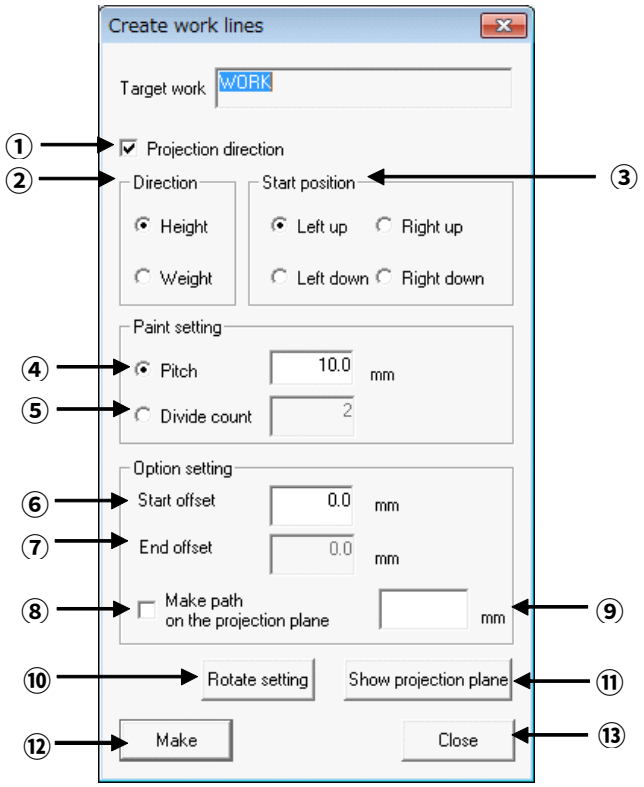
   Also, by checking the "Trimming (Pick area)" check box, surfaces can be selected for trimming with a high degree of freedom.

[Before surface trimming] [After surface trimming]



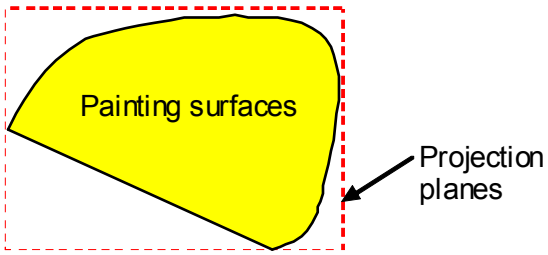
3. Once the painting surface is determined using surface selection and surface trimming, press the {Make target body} button.

4. The "Create work lines" dialog box will be displayed. In this dialog box the painting path work lines are created.

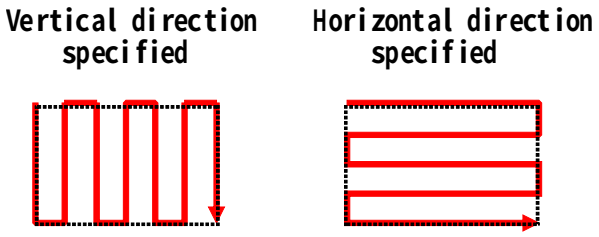
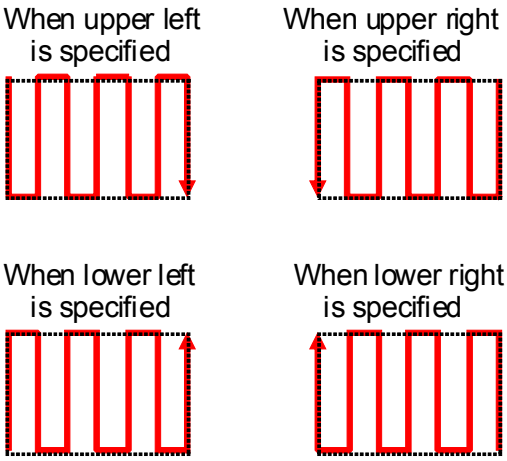
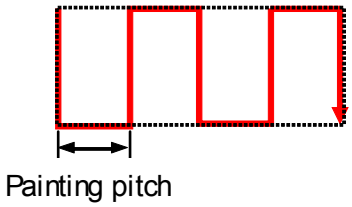
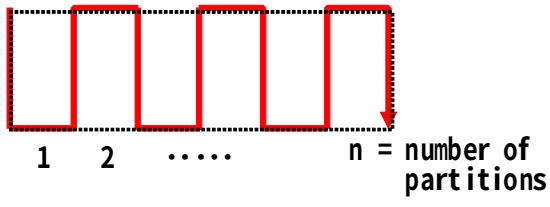
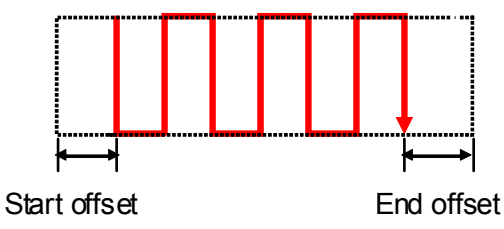


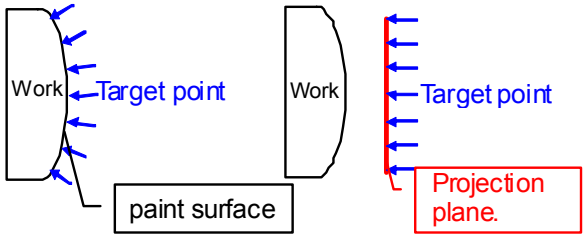
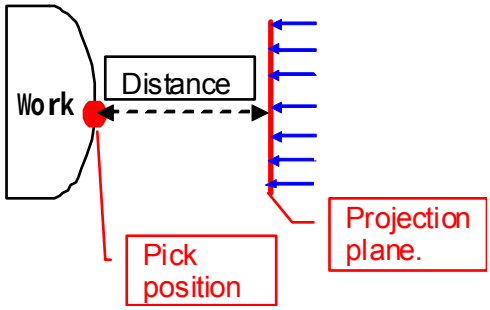
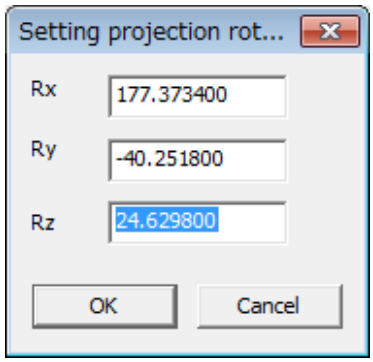
Projection planes

Projection planes are rectangular areas that completely encompass a painting surface as seen from the camera position.



	Explanation	Additional Explanation
(1)	Painting surfaces can be picked. By picking a painting surface, the camera moves from the pick position surface, along the surface.	

	Explanation	Additional Explanation
(2)	Determines the painting direction. Specifies whether the path is created in a vertical direction or horizontal direction relative to the painting surface.	
(3)	Sets the paint start position.	
(4)	Specifies the painting pitch.	
(5)	Specifies the number of segments the paint surface is divided into.	
(6)	Specifies the paint start side offset for starting painting.	
(7)	Specifies the offset for the painting end side. This setting is only available when the divide count setting is specified.	

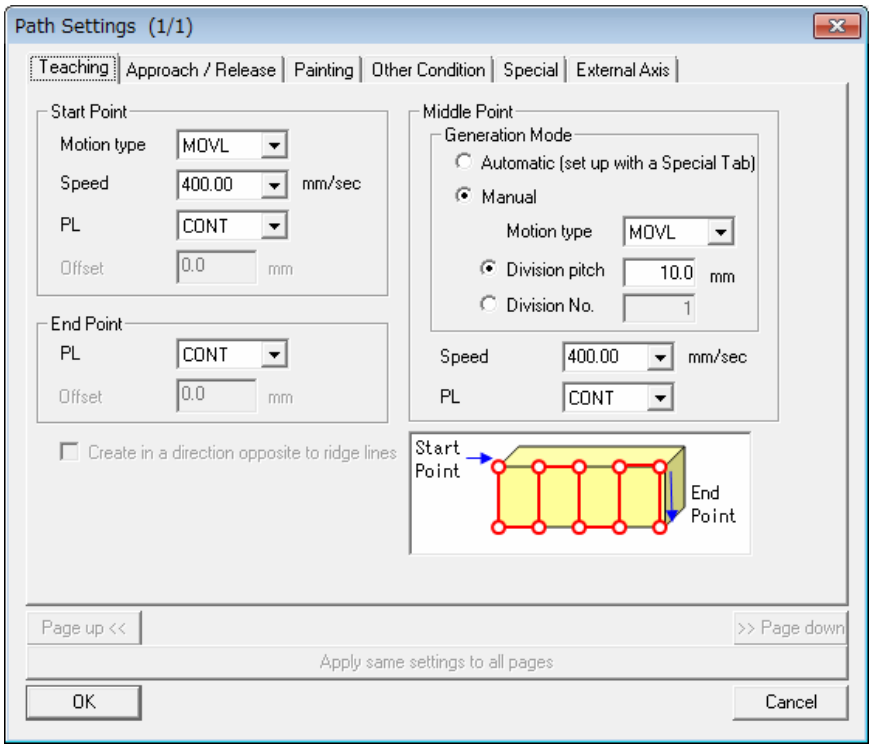
	Explanation	Additional Explanation
(8)	Creates teaching points on the projection plane.	Check OFF (Creates teaching points on the paint surface.) 
(9)		
(10)	Rotation angles are specified in relation to world coordinates. After settings are complete, the camera moves according to the setting values.	The following dialog box appears. This dialog box is used to set camera positions in terms of world coordinates. 
(11)	Re-displays the projection plane using the above setting values.	
(12)	Creates the work lines, and shifts to the path editing screen.	
(13)	Closes the screen.	

5. Press the {Make} button.

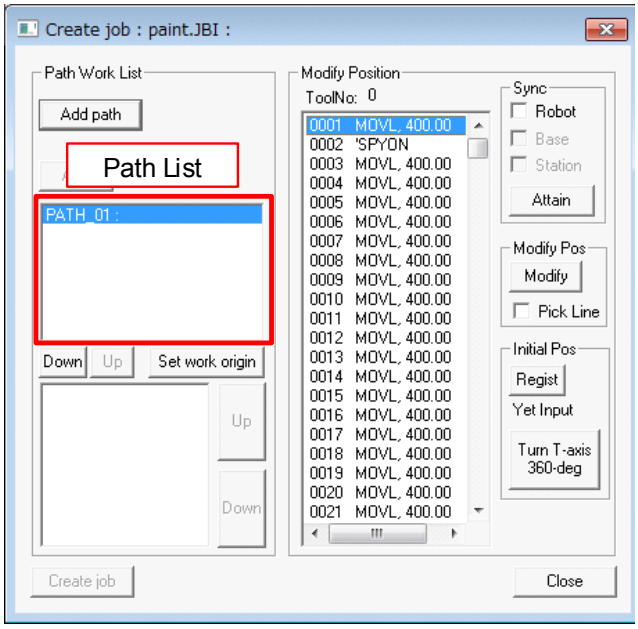
5.3 Path Settings

Procedure

1. The "Path Settings" dialog box appears. The contents registered in "Chapter 5.1" are shown here, but they can be changed. For details about each setting value, refer to " 7 Default Settings and Path Settings ".

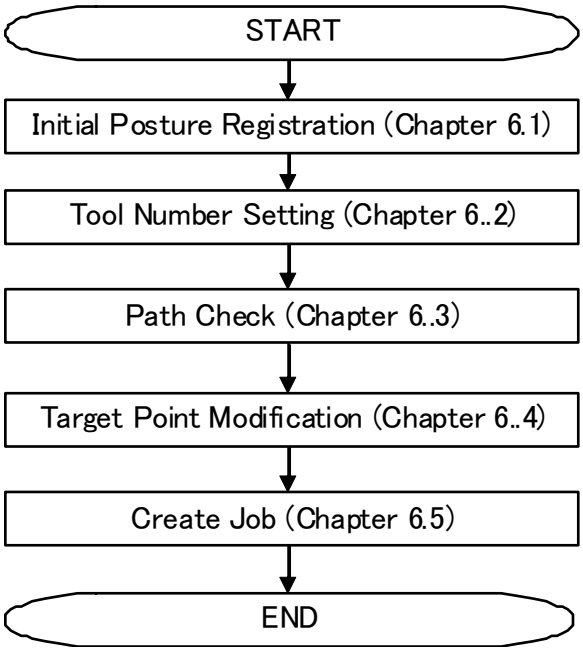


2. After making settings, press the {OK} button of the "Path Settings" dialog box. A target point group is created in the path list. In this example, it is "PATH_01".



6 Create Job

The overall procedure up to the completion of job creation is as follows. Refer to each chapter for detailed procedures.



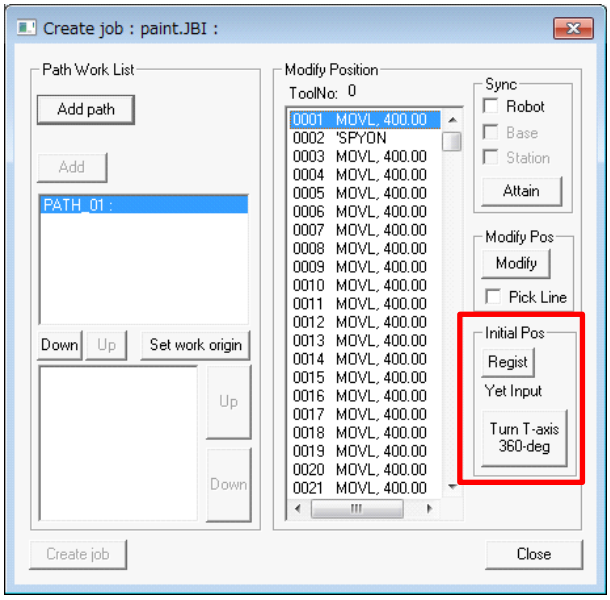
6.1 Initial Position Registration

Register the initial posture. When the initial posture is registered, the first step of the created job will be created close to the initial posture, and subsequent steps are created with the posture close to that of the previous step. When registering robot welding postures, register appropriate postures, making considerations to avoid robot axis pulse limits and cable pinching, etc.

Procedure

1. Specify robot postures for registration using MotoSim EG-VRC.

2. Press the {Regist} button. The robot's current posture is registered.



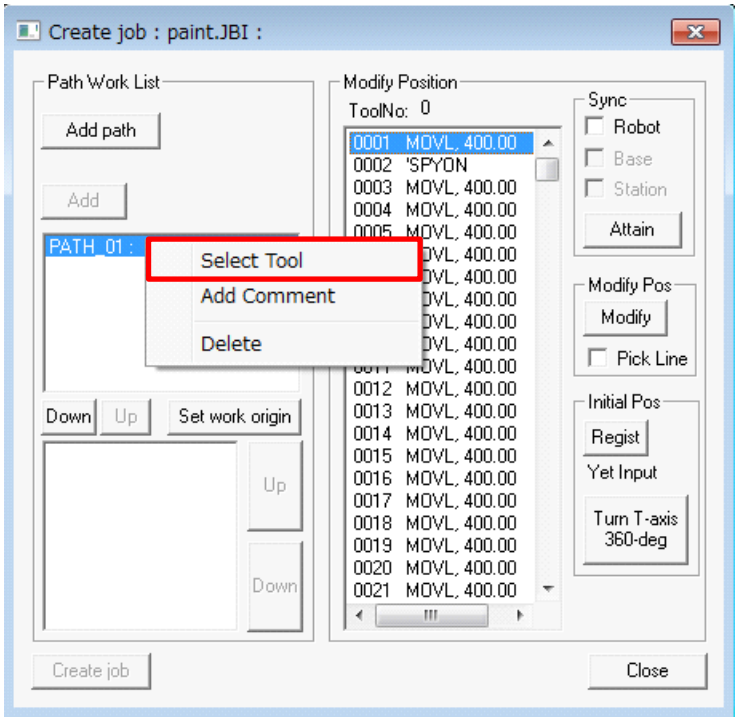
Press the {Turn T-axis} button to reverse the T-axis of the initial posture. When checking the path as described in the procedure for " 6.3 Path check ", in some cases the T-axis reaches its limit and the robot cannot move. In such cases, the robot may become able to move if the T-axis at the initial posture is reversed.

6.2 Tool Number Setting

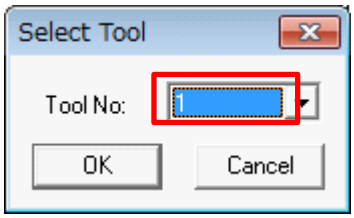
The default tool number used is set to "0", but if another number is to be used, perform the following.

Procedure

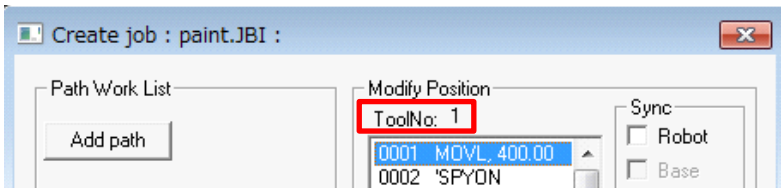
1. Select the item of the path list, and from the right-click menu, select "Select Tool".



2. In the "Select Tool" dialog box, select the tool number to use, and then press {OK}.



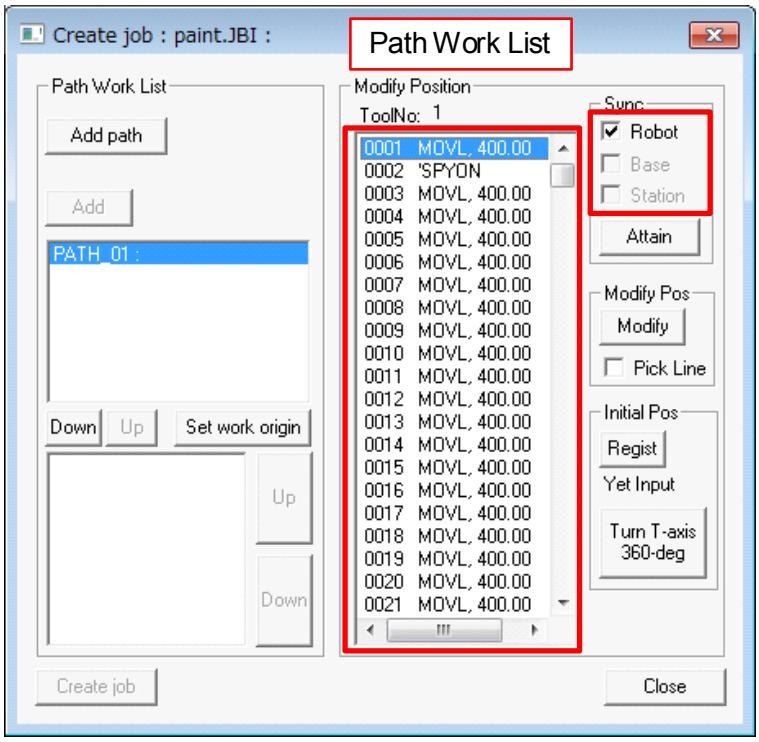
3. Confirm that the tool number has been set to the selected tool number.



6.3 Path check

Procedure

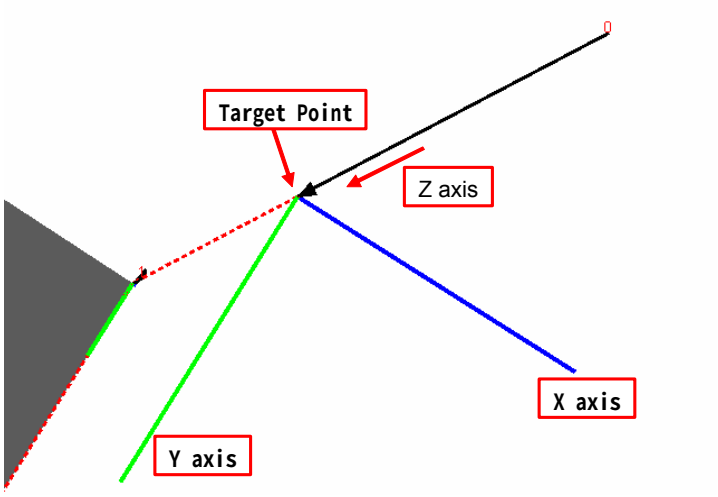
1. Clicking an item in the path list will display that path's contents on the right.
2. The robot's movement can be checked by checking each check box in "Sync" and then moving the cursor in the Path Work List. The robot will move to the selected position in MotoSim EG-VRC.



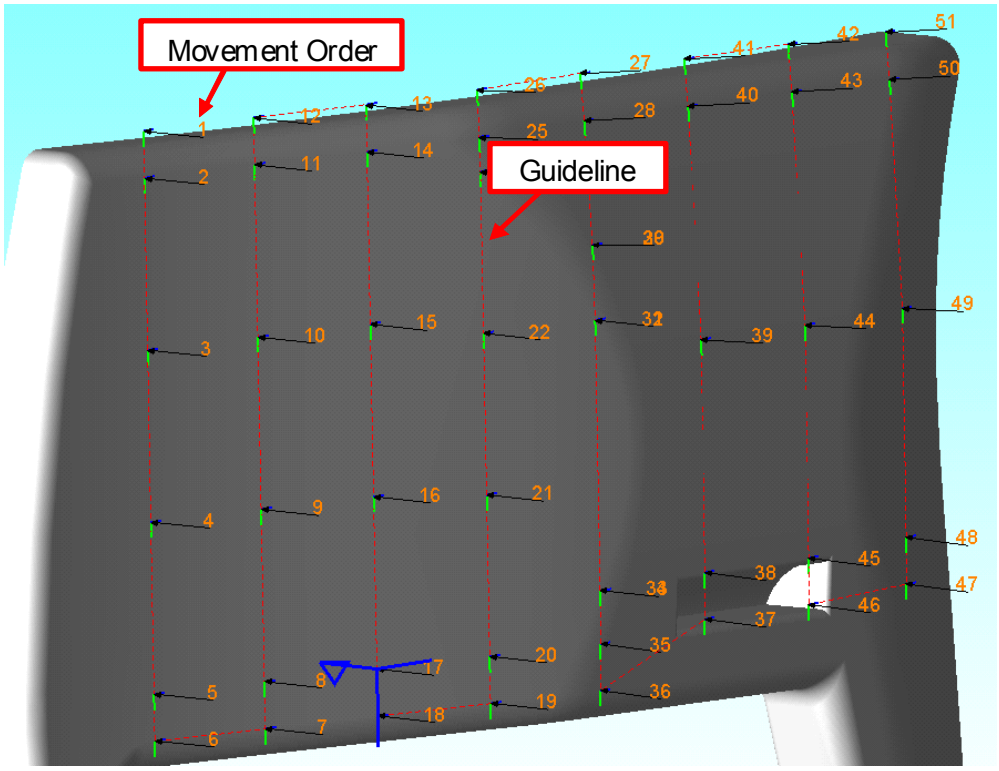
3. If the robot does not move, the robot cannot move to that position. Adjust the work-piece positioner placement and the positioner posture, etc.

■ Display in MotoSimEG-VRC

IIn MotoSim EG-VRC, the orientation of the torch (Z-axis direction) is indicated with a black arrow at each target point, with the pointed end of the black arrow indicating the position of the target point. TCP X-axis direction and Y-axis direction are indicated by blue and green lines, respectively.



Red and yellow dashed lines (a yellow line indicates a path selected in the path list) extend from the target point and are estimates of the TCP trajectory. However, the robot may not move exactly as indicated by these lines.
The red numbers displayed along the black arrow indicate the movement order.

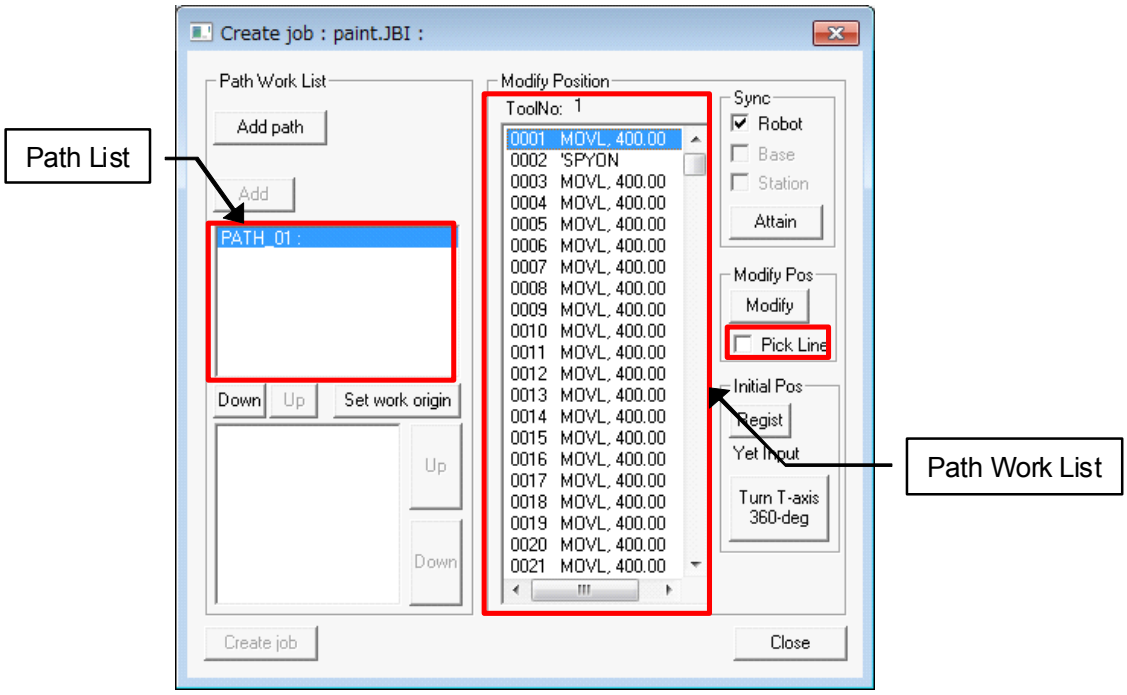


6.4 Target point modification

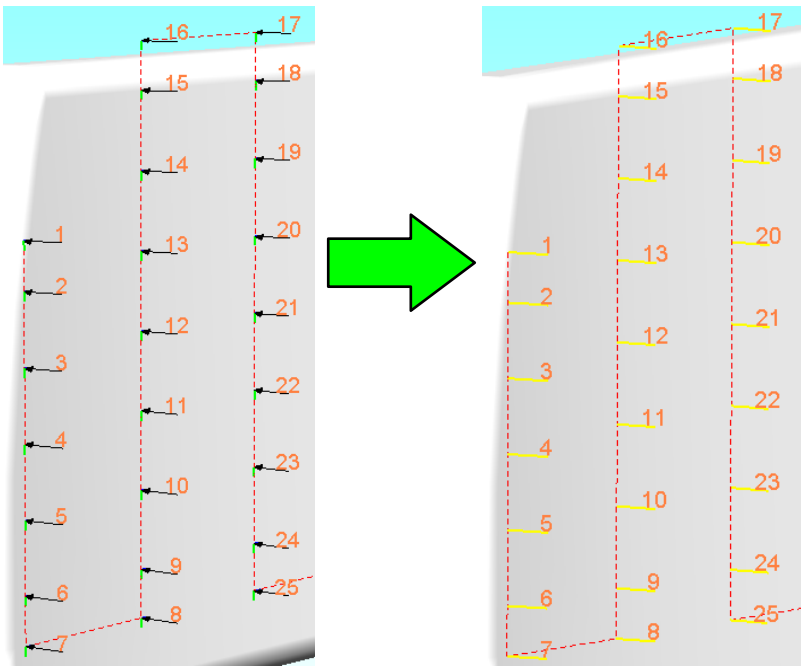
To modify target points, perform the following procedure.

Procedure

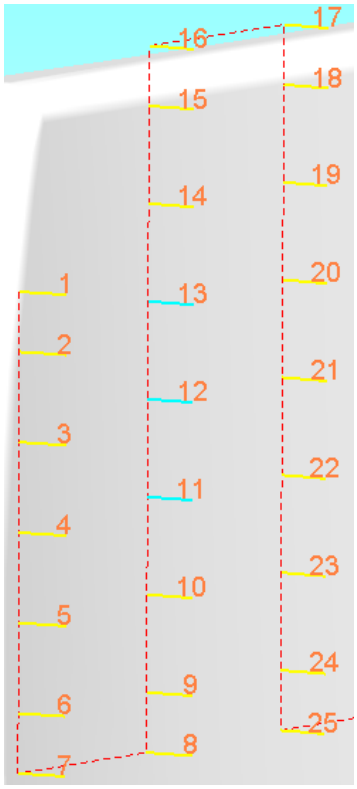
1. Select the path to modify from the path list. The selected path will be displayed in the Path Work List.



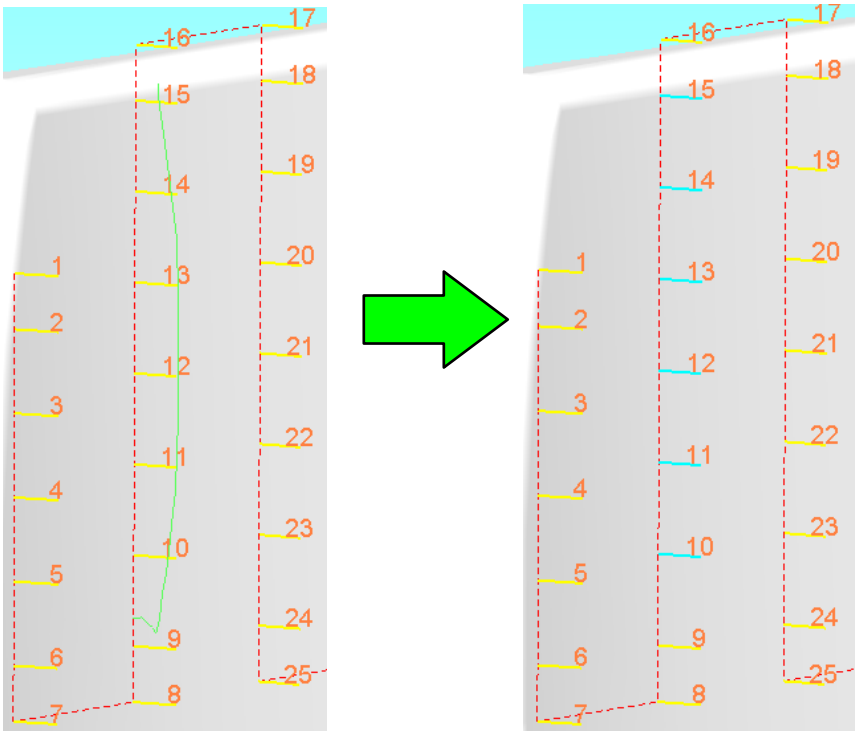
2. Check the box for "Pick Line" in the "Create job : paint.JBI :" dialog box. The following will then be displayed.



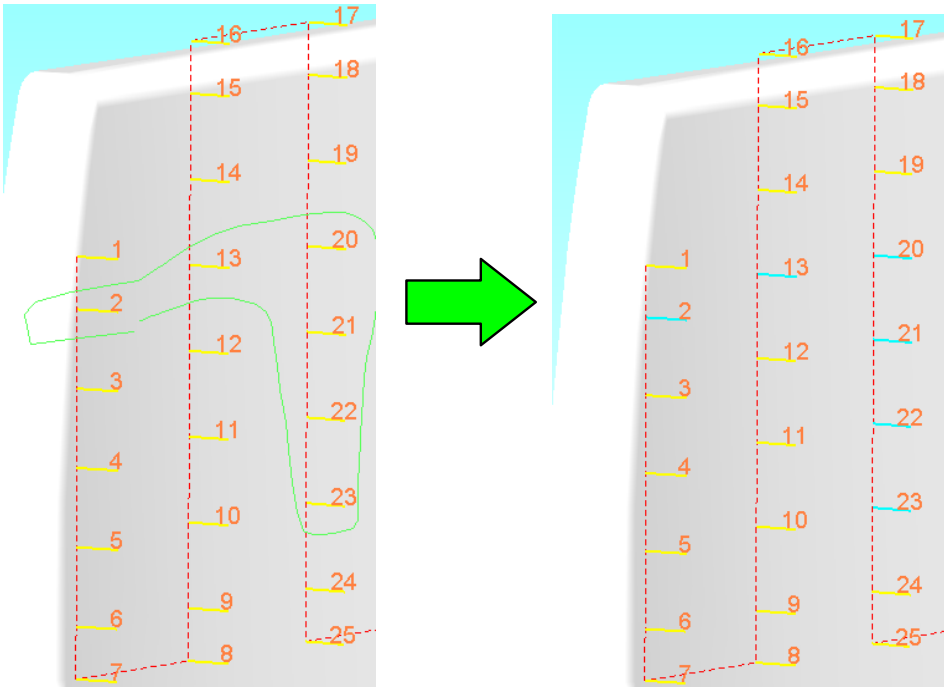
3. While holding down the [Ctrl] key, click the Pick Lines (yellow lines) with the mouse. Clicked Pick Lines change to a light blue color, which indicated they have been selected.



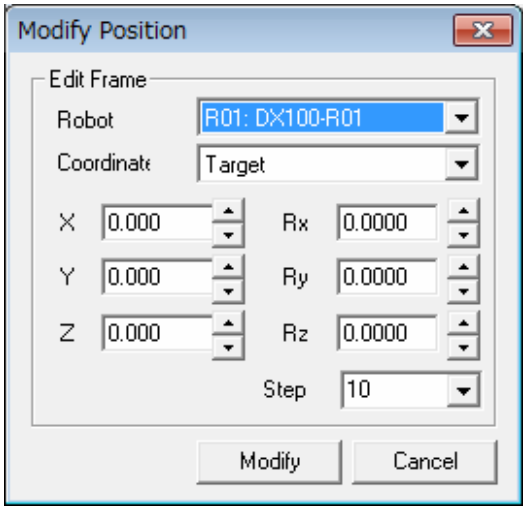
4. Multiple Pick Lines can also be selected at once. While holding down the [Ctrl] key, drag the mouse to draw a green line. By dragging the mouse to draw a line through multiple Pick Lines, they can be selected together at once.



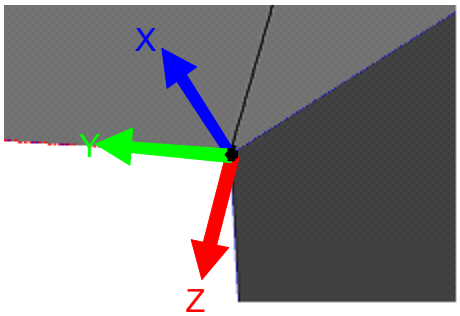
Drag the mouse while selecting around multiple Pick Lines to select all of them at once.



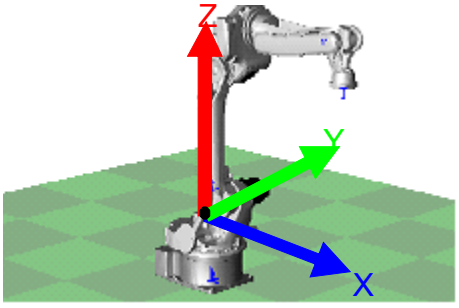
5. Press the {Modify} button in the "Create job : paint.JBI : " dialog box. The following dialog box appears. Input the modification amount.



For the coordinates, select target coordinates or robot coordinates.

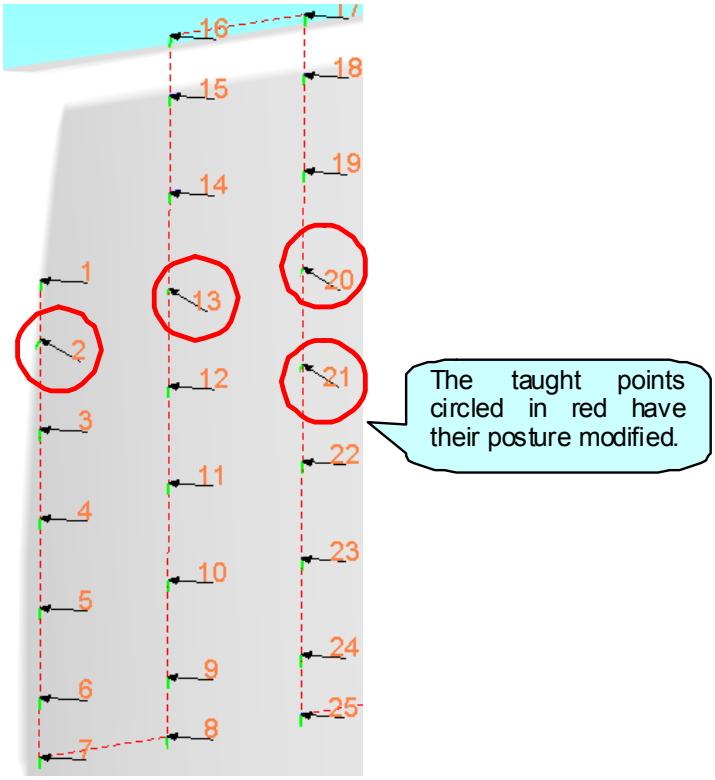


Target coordinates

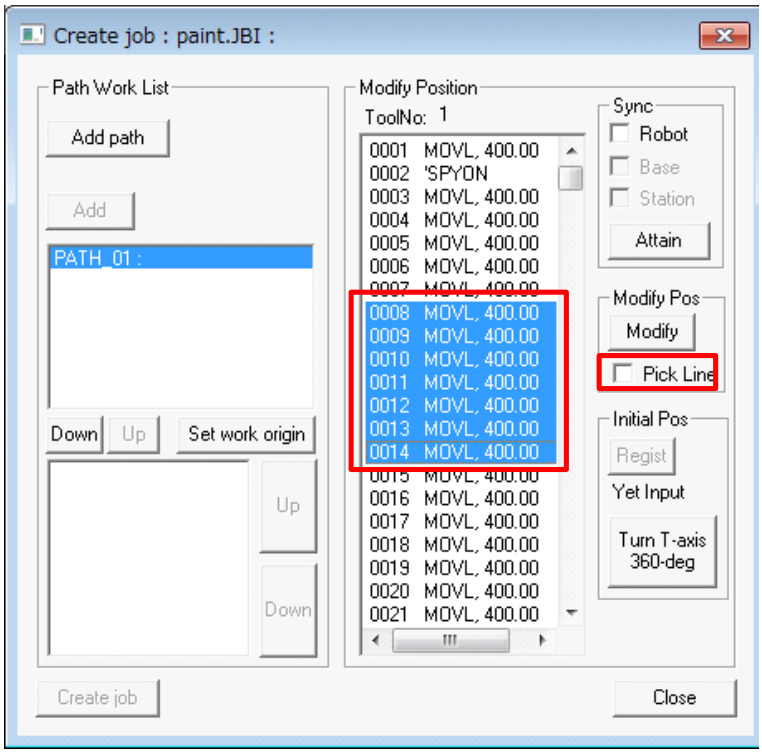


Robot coordinates

6. Press the {Modify} button to modify the Pick Lines' position and posture. Press the {Cancel} button to cancel the modification of the contents.



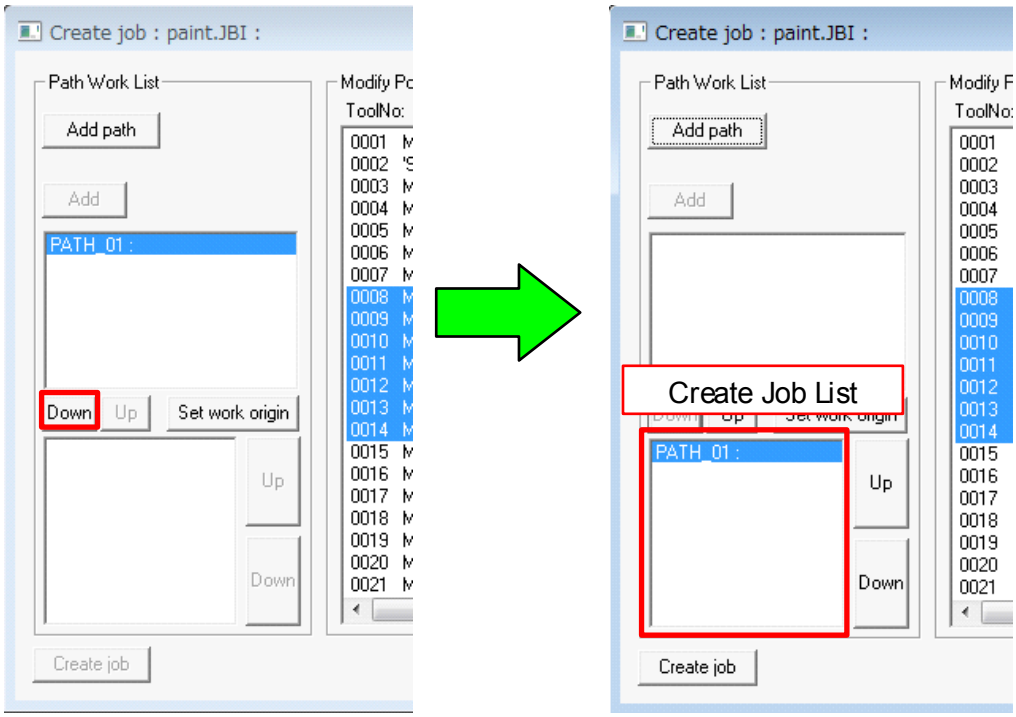
7. Pick Lines can also be selected for modification from the Path Work List. Drag inside the Path Work List to select multiple instructions. In this state, press the {Modify} button in the "Create job : paint.JBI :" dialog box and then input the modification values. The modifications will be applied to the selected instructions.



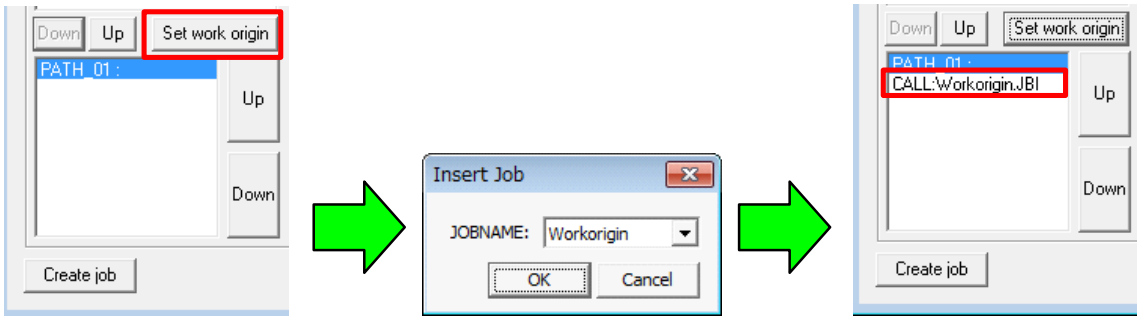
6.5 Create Job

Procedure

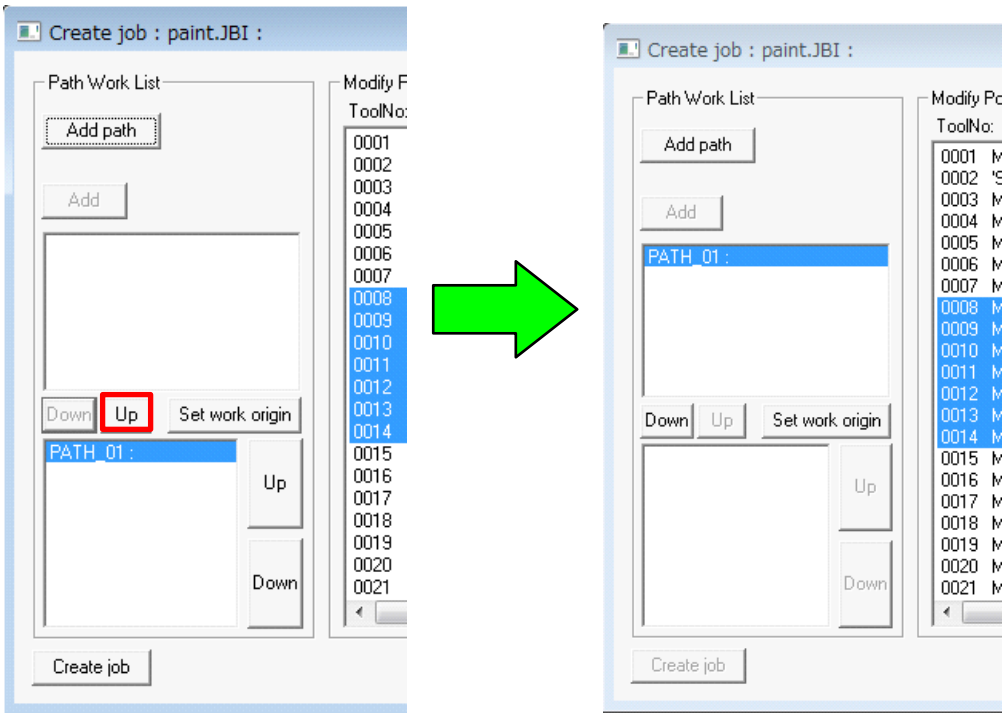
1. Press the "Down" button. The path will be moved to the Create job list. This list is a list of paths to be applied to the job. Because the job will be created using the order in this list, when creating a job using multiple paths, determine the order of the paths using the "Up" and "Down" buttons.



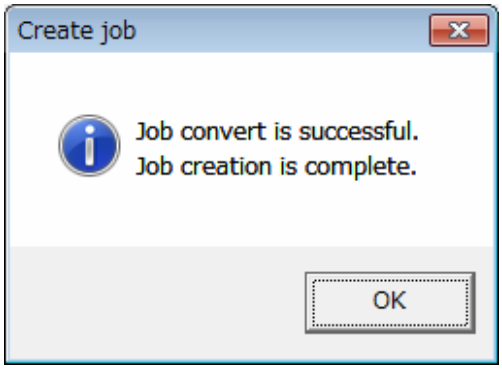
2. If more than 1 job is registered in the {Initial Settings} - {Environment} tab, insert a CALL instruction to load a job that use the {Set work origin} button.



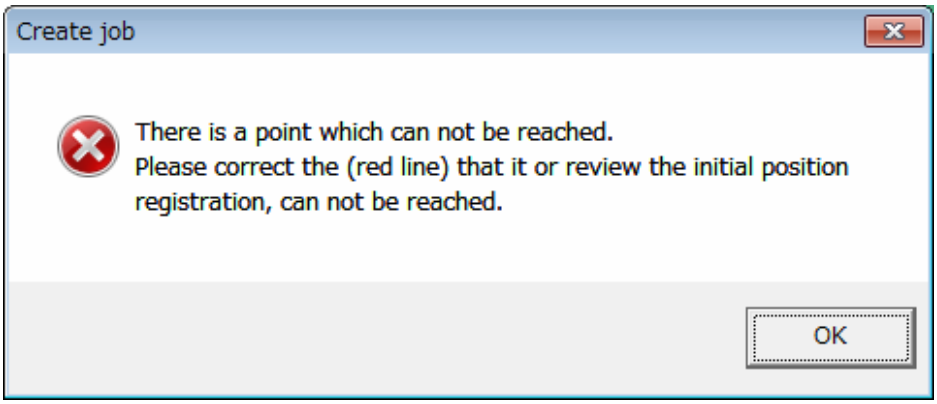
3. To delete items from the Create job list, select the item and then press the {Up} button above the Create job list.



4. Press the {Create job} button. When the following dialog box is displayed, the job has been successfully created and loaded to the virtual pendant.



Also, when the {Create job} button is pressed, if the following dialog box is displayed, job creation has failed.



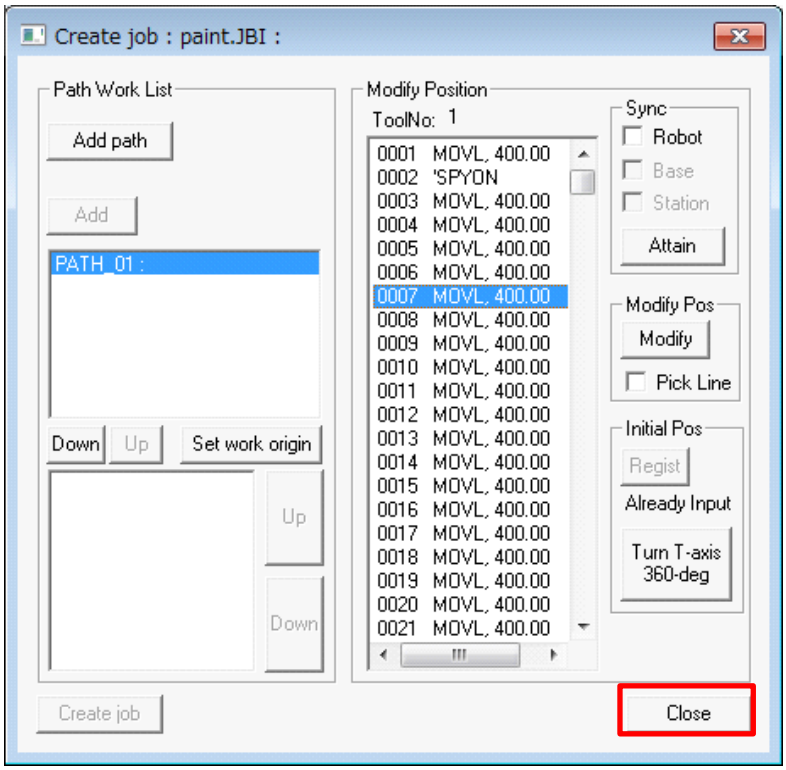
In such cases, confirm the following.

- Use robot sync to check if the robot can reach all path steps.

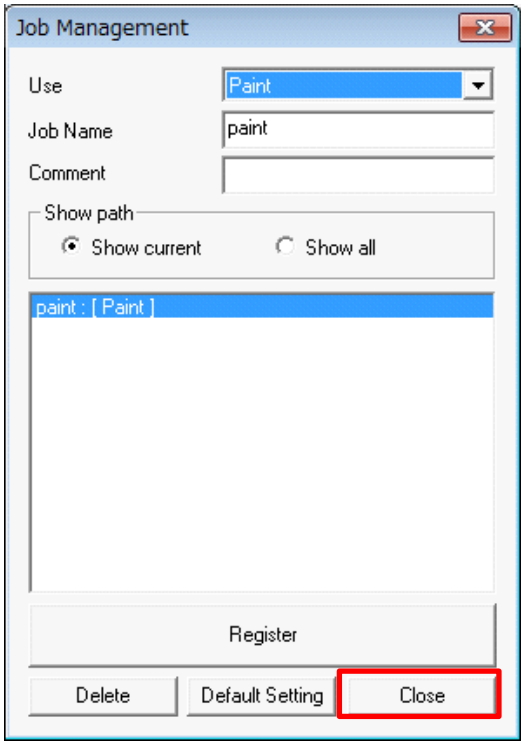
  →If a step cannot be reached:

  - Check if the path setting contents are correct (posture of aim angle and advancing angle, etc., position of approach point and release point, etc.). (Refer to " 5.3 Path Settings ")
  - Are the contents of the initial settings correct? (Refer to " 5.1 Job Selection ")
  - Are the position and posture of target points modified with teaching correct?
  - Is the configuration correct?(Refer to " 6.1 Initial Position Registration ")
  - Is the robot work layout correct?
  - Are the tool setting values correct? (Refer to " 4.1 Load Robot Setting Information ")

5. To finish job creation, press the {Close} button. The "Create job : paint.JBI :" dialog box closes, and the "Job Management" dialog box appears.



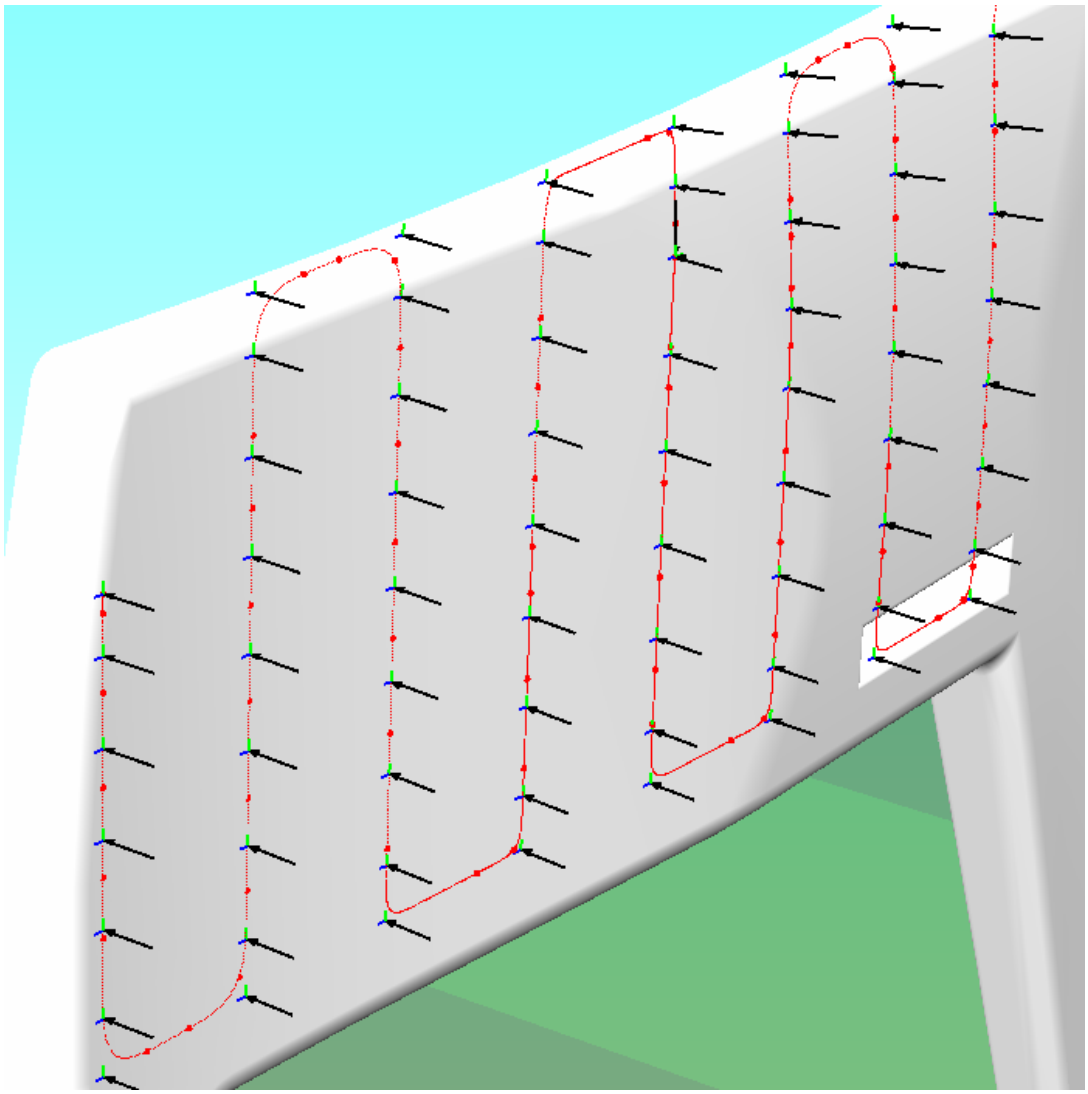
6. If job creation will not be continued, press the {Close} button in the "Job Management" dialog box.



■ Checking Motion

Procedure

1. Select {Job}-{Select Job} from the virtual pendant main menu, and then select the created job from the job list.
2. Perform playback and check the motion.
3. If the trace function is used, the path of the tool can be displayed.

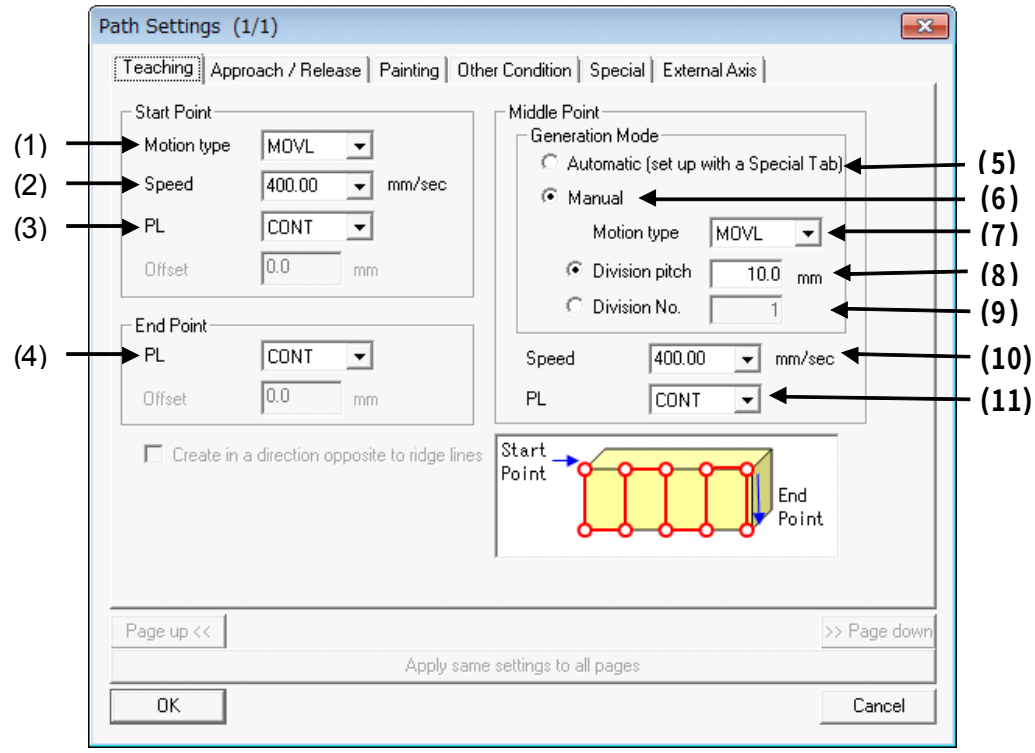


7 Default Settings and Path Settings

Press the {Default Setting} button in the "Job Management" dialog box to display the "Initial Settings" dialog box, and there each setting can be set. The contents set here will be used at the default values for path settings. Also, if work lines have been registered after determining paint surfaces, the "Path Settings" dialog box appears. Here is an explanation of the items of the tabs of this dialog box.

NOTE The contents set in the "Initial Settings" dialog box will not be reflected onto paths that have already been created.
To reflect the setting contents, the paths need to be deleted once, then re-created.

7.1 Teaching



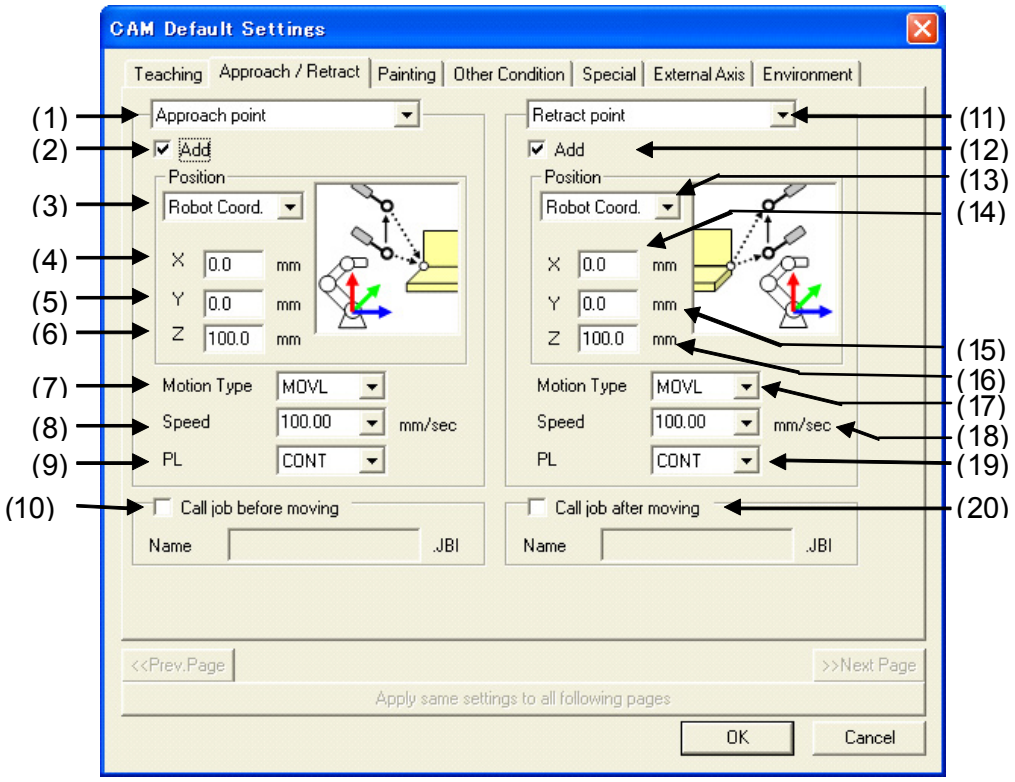
Teaching

Start Point		
	(1)Motion type	Sets the interpolation method of move instructions when moving to a start point.
	(2)Speed	Sets the movement speed when moving to a start point. The units used for the speed can be set in the Environment tab.
	(3)PL	Sets the positioning precision when moving to a start point.
End Point		
	(4)PL	Sets the positioning precision when moving to an end point.
Moddle Point		
	Generation Mode	
	(5)Automatic	Sets the generation mode to automatically determine the intermediate point interpolation method and number of divisions. Detailed settings for the automatic mode are set on a facet of the Special tab . If automatic mode is used, the offset values of (4) and (6) are not used.
	(6)Manual	Sets the generation mode to set intermediate point interpolation manually.

Teaching

(7)Motion type	Specifies the interpolation method when moving to an intermediate point.
(8)Division pitch	Specifies the interval of interpolation points. (Unit: mm) Intermediate points are generated using this division interval.
(9)Division No.	Specifies the number of intermediate points with the number divisions between the start and end points. Divisions are made evenly according to this number of divisions.
(10)Speed	Specifies the movement speed. The units used for the speed can be set in the Environment tab.
(11)PL	Sets the positioning precision when moving to an intermediate point.

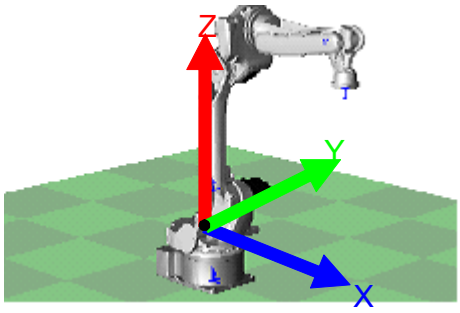
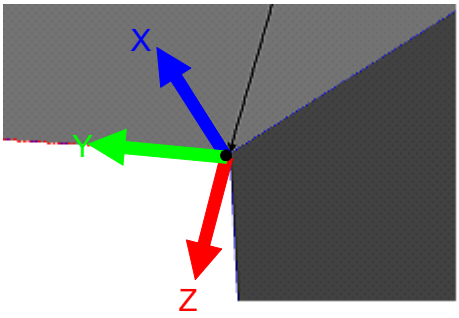
7.2 Approach / Release



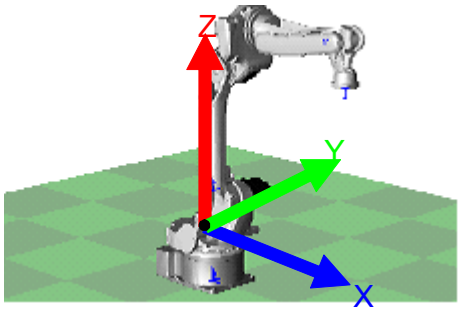
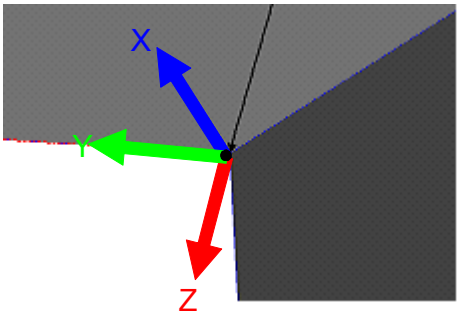
Approach / Release

(1)Approach point	Check this when generating an approach point.
(2)Add	

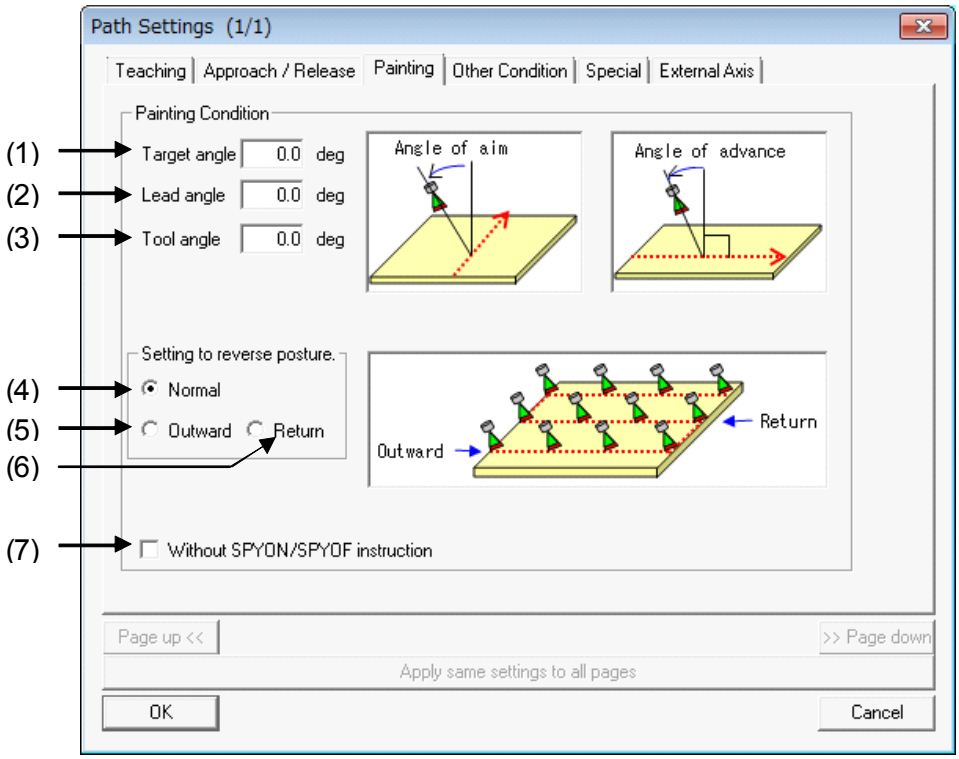
Approach / Release

(3)Position	Sets the coordinate system for specifying the shift amount. For the robot coordinate system, the shift amount is set in the coordinate system as shown below.  Sets the shift amount at the AXIS6 start point in the target coordinate system. 
(4)X	Sets the shift amount of the X-axis direction from the start point using the coordinate reference of (3). (Unit: mm)
(5)Y	Sets the shift amount of the Y-axis direction from the start point using the coordinate reference of (3). (Unit: mm)
(6)Z	Sets the shift amount of the Z-axis direction from the start point using the coordinate reference of (3). (Unit: mm)
(7)Motion Type	Sets the interpolation method of the move instructions.
(8)Speed	Sets the movement speed. The units used for the speed can be set in the Environment tab.
(9)PL	Sets the positioning precision when moving to an approach point.
(10)Call job before moving	Check this box to load a job before moving to the approach point. Input the job name. *The naming of the job name is not checked.
(11)Release	Check this when generating a release point.
(12)Add	

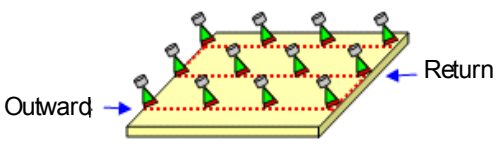
Approach / Release

(13)Position	Sets the coordinate system for specifying the shift amount. For the robot coordinate system, the shift amount is set in the coordinate system as shown below.  Sets the shift amount at the AXIS6 end point in the target coordinate system. 
(14)X	Sets the shift amount of the X-axis direction from the end point using the coordinate reference of (13). (Unit: mm)
(15)Y	Sets the shift amount of the Y-axis direction from the end point using the coordinate reference of (13). (Unit: mm)
(16)Z	Sets the shift amount of the Z-axis direction from the end point using the coordinate reference of (13). (Unit: mm)
(17)Motion Type	Sets the interpolation method of the move instructions.
(18)Speed	Sets the movement speed. The units used for the speed can be set in the Environment tab.
(19)PL	Sets the positioning precision when moving to a release point.
(20)Call job before moving	Check this box to load a job after moving to the release point. Input the job name. *The naming of the job name is not checked.

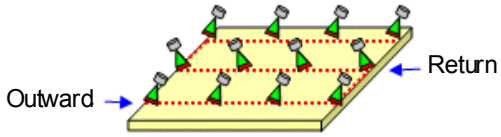
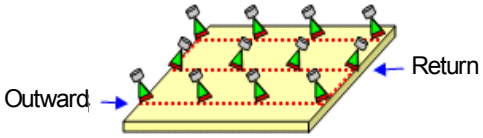
7.3 Painting



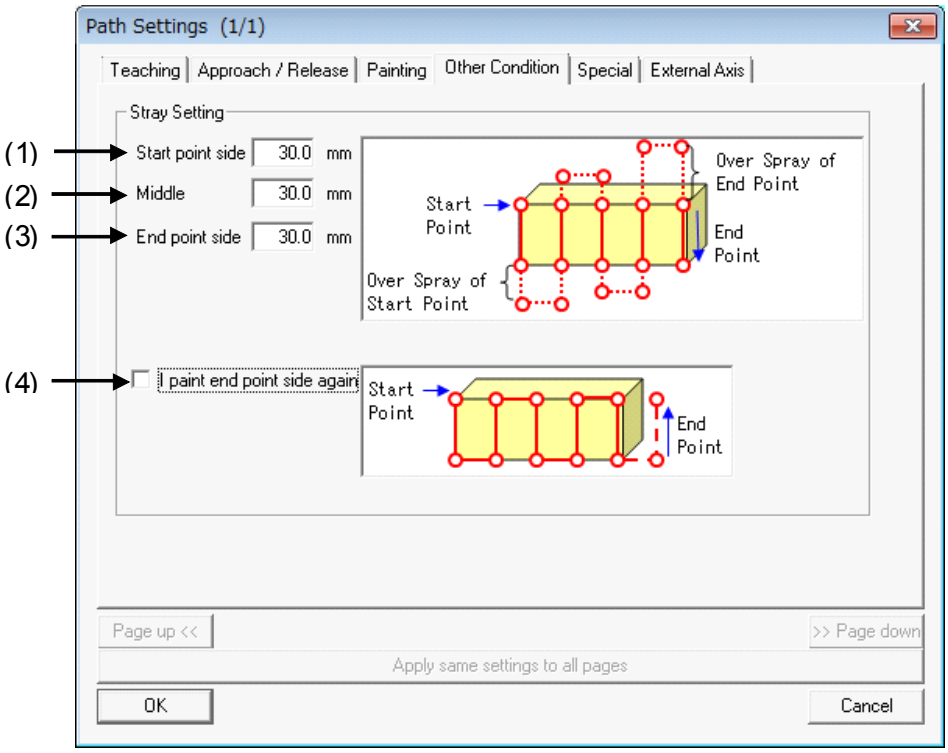
Painting

Painting Condition		
	(1)Target angle	Sets the angle at which the torch is tilted in relation to the paint surface. (Unit: deg) The position perpendicular to the paint surface is 0 deg.
	(2)Lead angle	Sets the inclination angle from a vertical posture in relation to the advancement direction. (Unit: deg) The position perpendicular to the paint surface is 0 deg.
	(3)Tool angle	Sets the angle at which the torch is rotated. (Unit: deg)
	Setting to reverse posture.	
		(4)Normal	The advance angle for outward and return motion is not reversed. 

Painting

(5)Outward	The advance angle for outward motion is reversed. 
(6)Return	The advance angle for return motion is reversed. 
(7)Without SPYON/ SPYOF instruction	Check this when the target is not a painting zone. When checked, SPYON and SPYOFF instructions will be automatically inserted.

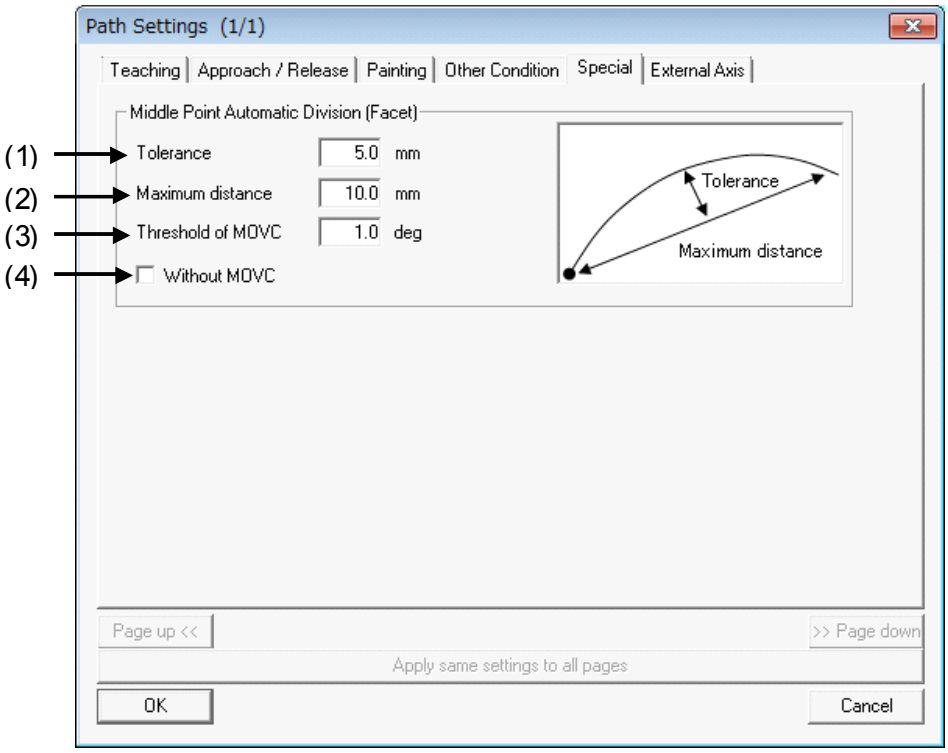
7.4 Other Condition



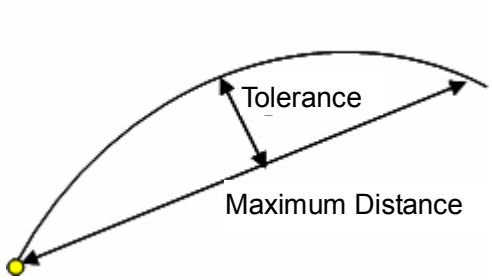
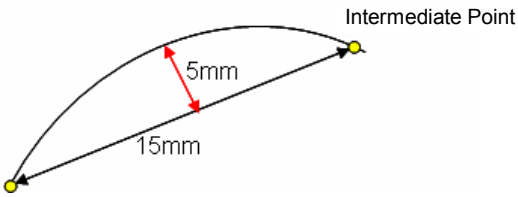
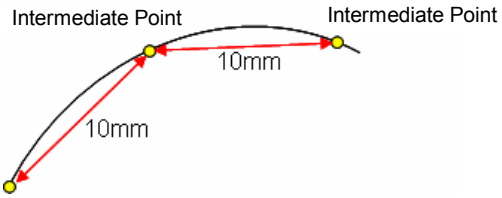
Other Condition

Stray Setting		
	(1)Start point side	Specifies the overspray distance for the start point side. (Unit: mm)
	(2)Middle	Specifies the overspray distance for the middle region. (Unit: mm)
	(3)End point side	Specifies the overspray distance for the end point side.
	(4)I paint end point side again	Specifies whether to return and perform additional overspray at the end point side.

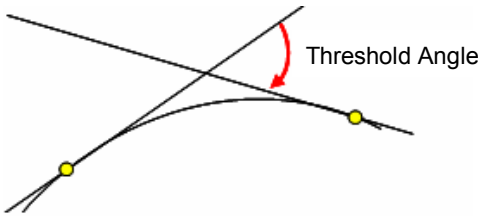
7.5 Special


Path Settings (1/1)
Teaching
Approach / Release
Painting
Other Condition
Special
External Axis
Middle Point Automatic Division (Facet)
(1)
Tolerance
5.0
mm
(2)
Maximum distance
10.0
mm
(3)
Threshold of MOVC
1.0
deg
(4)
Without MOVC
Tolerance
Maximum distance
Page up <<
>> Page down
Apply same settings to all pages
OK
Cancel

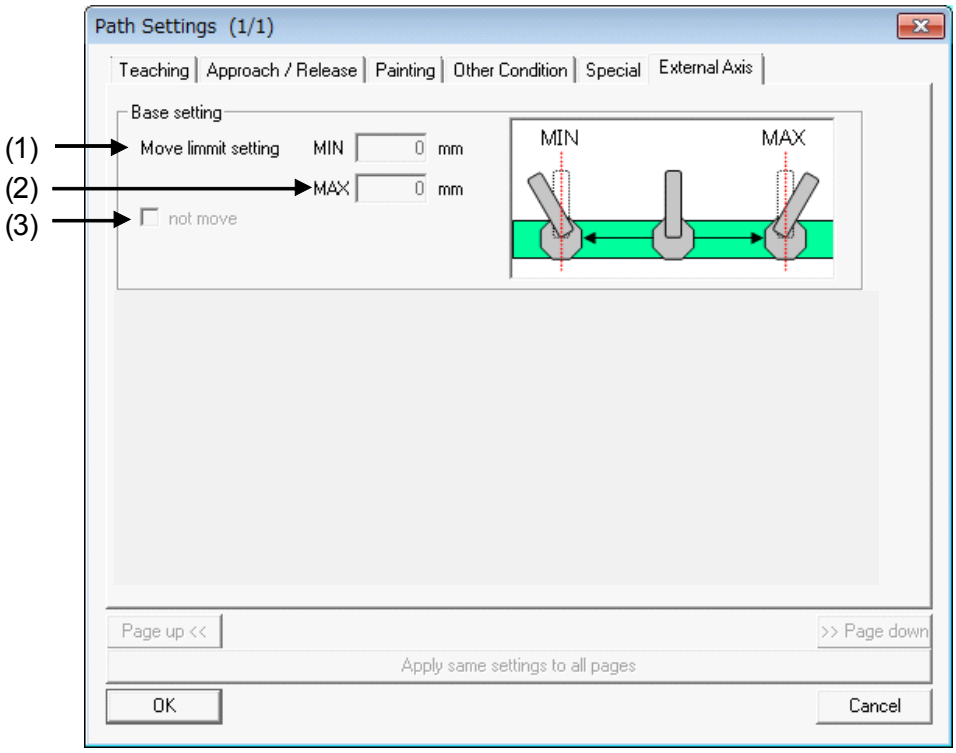
Spacial

Middle Point Automatic Division (Facet)		
(1)Tolerance	Sets the tolerance. (Unit: mm)	The relationship between the tolerance and the maximum distance is shown below. The target point is set where the value set by the tolerance and the maximum distance is reached.  For example, Tolerance = 5 mm and Maximum distance = 20 mm are given. In the following diagram, a location where the tolerance meets the conditions (Tolerance = 5 mm, Maximum distance = 15 mm) has been found, so the target point is set at that position.
(2)Maximum distance	Sets the maximum distance. (Unit: mm)	 Conversely, Tolerance = 5 mm and Maximum distance = 10 mm are given. In the following diagram, a location where the maximum distance meets the conditions (Tolerance = 3 mm, Maximum distance = 10 mm/Tolerance = 4 mm, Maximum distance = 10mm) has been found, so the target point is set at that position. 

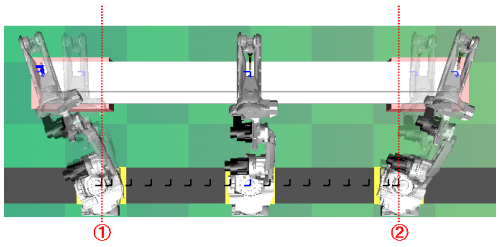
Spacial

(3)Threshold of MOVC	Sets the arc judgment threshold. (Unit: deg)	When the angle created by tangents of 2 points exceeds the threshold, the MOVC instructions are used. When below the threshold, the MOVL instructions are used. 
(4)Without MOVC	Check this box when the MOVC instructions are not to be used.	

7.6 External Axis

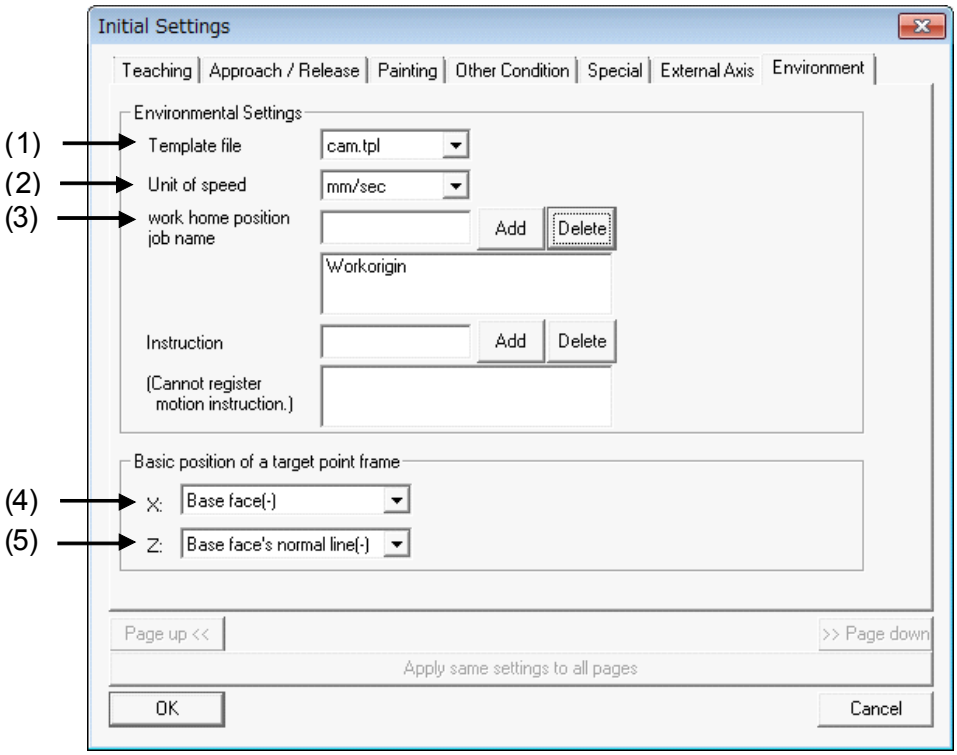


External Axis

Base setting		
(1)MIN	Sets the minimum value of the travel axis range. Input the value of the travel axis limit (minimum value) set using the virtual pendant. Set a value larger than the travel axis limit in order to move within a constant distance beyond the travel axis limit.	 The travel axis position is created to face the target point. For example, the travel axis range is -2000 mm to 2000 mm, and (A) = -1000 mm and (B) = 1000 mm is input. In order for the travel axis position to face the target point between -1000 mm and 1000 mm, the path is generated so that the travel axis position faces the target point. In order for the position to face the target point between -2000 and -1000 mm/1000 mm and 2000 mm, the travel axis position should be set to -1000 mm or 1000 mm, and the robot posture should be modified for generating the target point position.
(2)MAX	Sets the maximum value of the travel axis range. Input the value of the travel axis limit (maximum value) set using the virtual pendant. Set a value smaller than the travel axis limit in order to move within a constant distance beyond the travel axis limit.	

External Axis	
(3)not move	Set this when the travel axis should not be moved.

7.7 Environment (Default Settings Only)



Environment (Default Settings Only)

Environment Settings	
(1)Template file	Sets the template file. Set the template file according to the system as shown below. System / Template File R1 / cam.tpl R1 + B1 / cam_bs.tpl R1 + S1 / cam_station.tpl By default, the opened cell's system configuration is selected.
(2)Unit of speed	Selects the speed data input format. The setting specified here will be reflected for speed units in dialogs.
(3)work home position job name	Jobs to be used when the {Set work origin} button is clicked in the "Create job : paint.JBI :" dialog box are set here.
Basic position of a target point frame	
(4)X	Sets X-axis direction of the target point frame basic posture. (Initial value + direction)

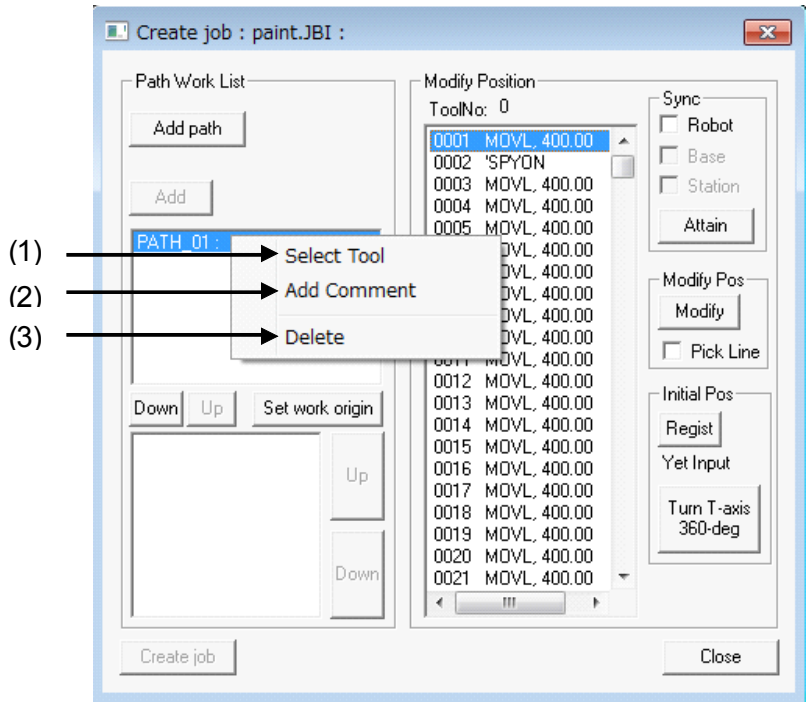
Environment (Default Settings Only)	
(5)Z	Sets Z-axis direction of the target point frame basic posture. (Initial value - direction)

8 Operations Applicable to the "Create job : paint.JBI :" Dialog Box

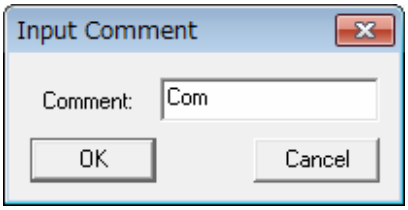
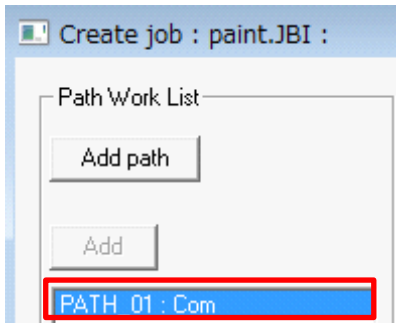
8.1 Right-click Menu

8.1.1 Path List

Select an item from the path list, and right-click the item to display a menu. Select {Delete} to delete the selected item from the path list..

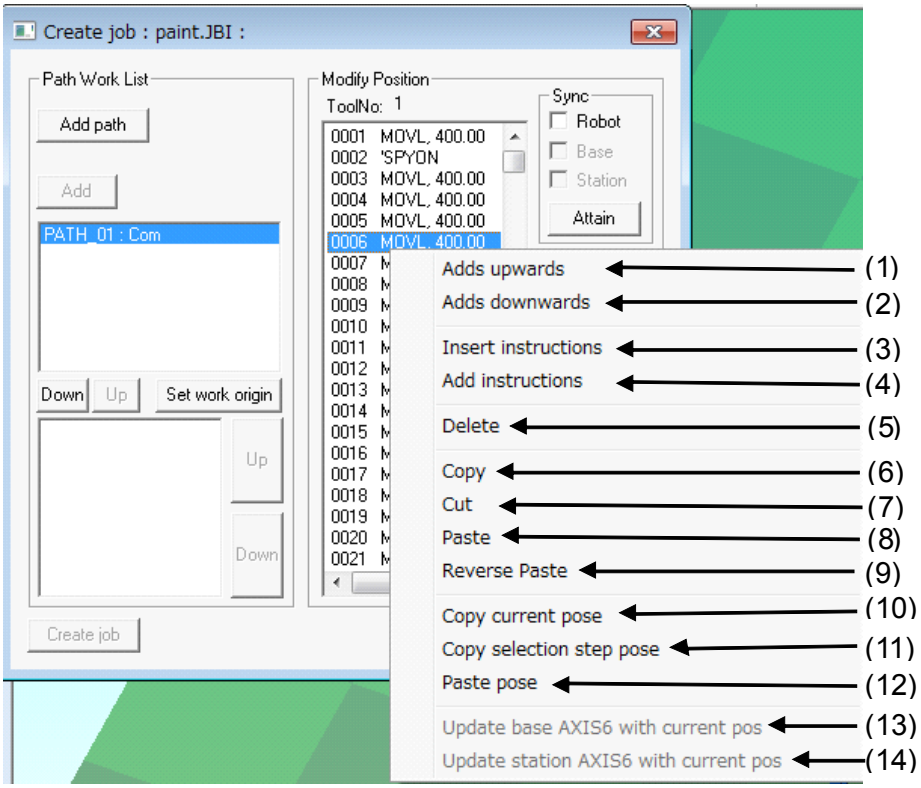


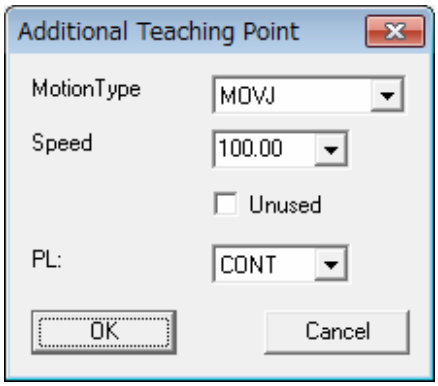
Select Tool	Selects the tool number set to the path,

Add Comment	Sets the comments set for the path. When the menu is selected, the following dialog box appears.  After entering comments, click OK to set the comments for the path. Set comments are displayed after the path name in the path list and Create job list.  The comment can be up to 5 full-width characters in length.
Delete	Deletes the selected path from the path list.

8.1.2 Path Work List

Select an item from the Path Work List, and right-click the item to display a menu.



(1)Adds upwards	Adds instructions for moving to the position of the robot (base/station) displayed in MotoSim EG-VRC. Instructions are added above the item selected in the Path Work List.	Clicking (1) or (2) will display the following dialog box.  If there is a station, the Motion Type item will display SMOV*. The speed unit is the same as that set in the Environment tab. For example, with Motion Type: MOVJ and a speed of 100.0 set, if Unused is not selected, MOVJVJ=100.0. If Unused is selected, MOVJ is set. PL determines the positioning accuracy.
(2)Adds downwards	Adds instructions for moving to the position of the robot (base/station) displayed in MotoSim EG-VRC. Instructions are added below the item selected in the Path Work List.	
(3)Insert instructions	Adds instructions registered by instruction registration in the {Default Setting} - {Environment} tab above the item selected in the Path Work List.	

(4)Add instructions	Adds instructions registered by instruction registration in the {Default Setting} - {Environment} tab below the item selected in the Path Work List.
(5)Delete	Deletes the selected items from the Path Work list.
(6)Copy	Copies the posture of the robot axis of the item selected in the Path Work List. When multiple items are selected, copying cannot be performed.
(7)Cut	Copies the posture at the current value of the robot axis.
(8)paste	Replaces the posture of the robot axis of the item currently selected in the Path Work List with the copied posture.
(9)Reverse Paste	Inserts the reverse of the row copied in the operation of (7) or (8).
(10)Copy current pose	Copies the posture of the robot of the row currently selected in the Path Work List.
(11)Copy selection step pose	Copies the posture of the current robot.
(12)Paste pose	Replaces the currently selected row with the posture copied using (10) or (11). Replaces everything of the row selected in the Path Work List.
(13)Update base AXIS6 with current pos	Overwrites the travel axis position of the item selected in the Path Work List with the travel axis position displayed in MotoSim EG-VRC.
(14)Update station AXIS6 with current pos	Overwrites the station axis position of the item selected in the Path Work List with the station axis position displayed in MotoSim EG-VRC.

MotoSim EG-VRC OPTIONS INSTRUCTIONS

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