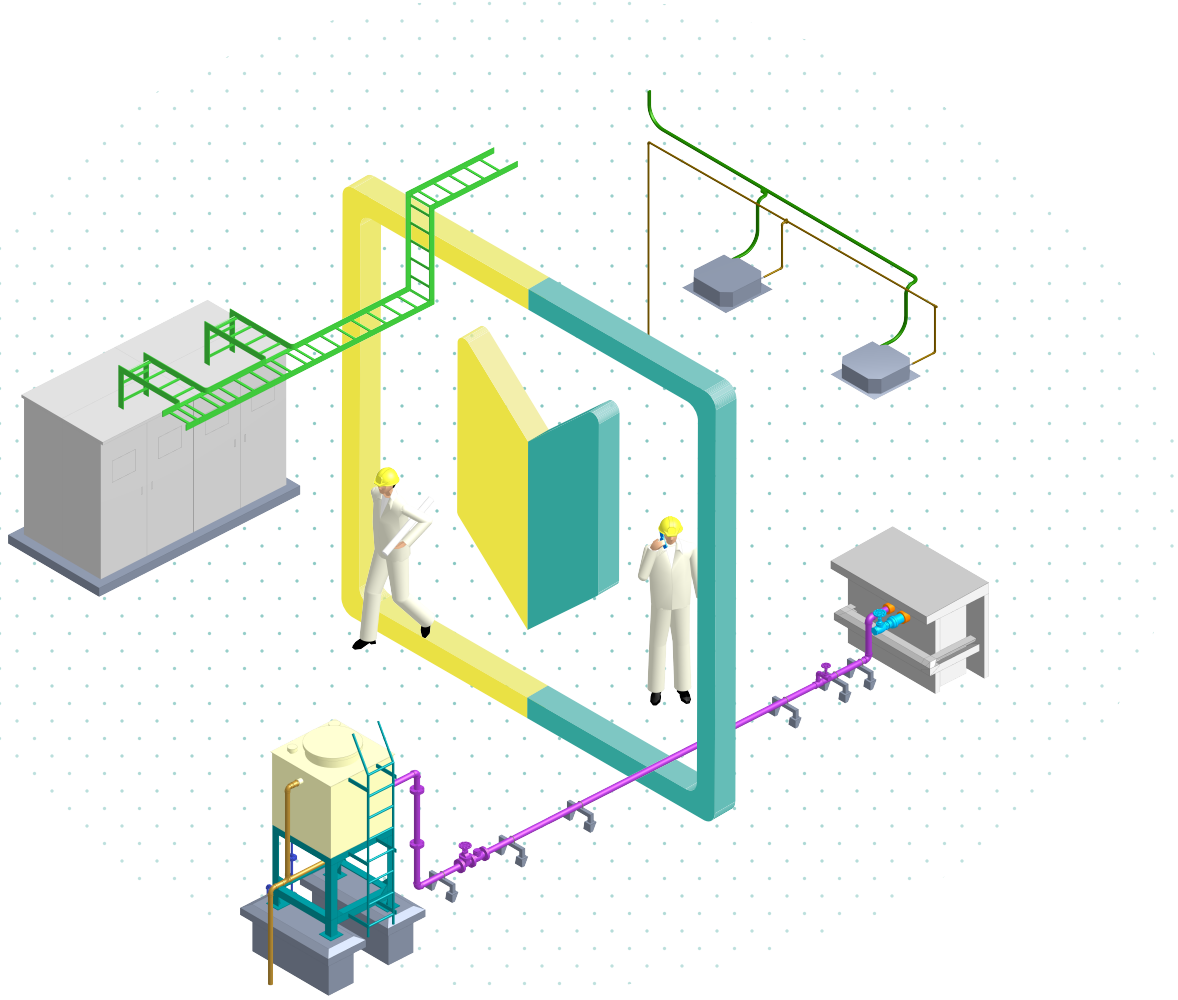
Rebro® 2022

An Introduction to Rebro



NYK SYSTEMS

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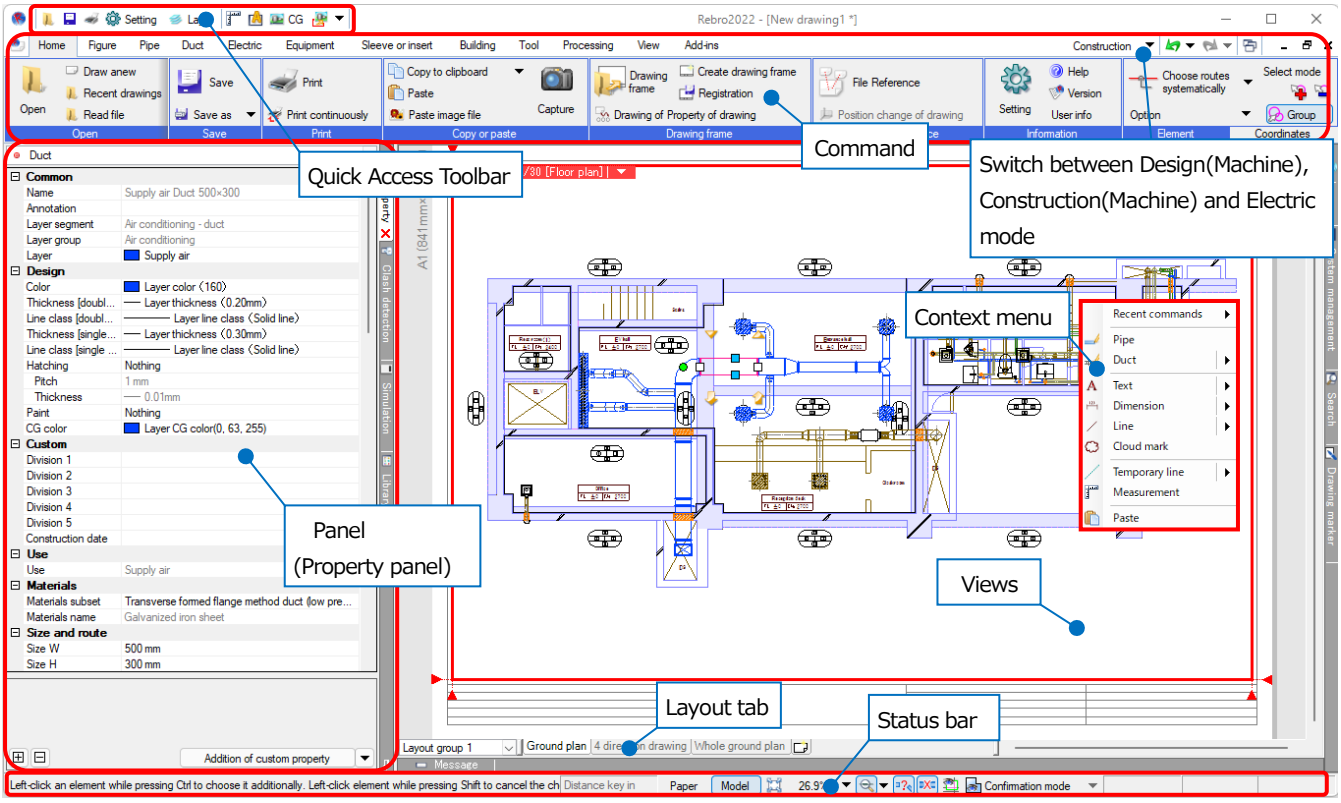
Elementary operation

1.Rebro 2022 Screen layout

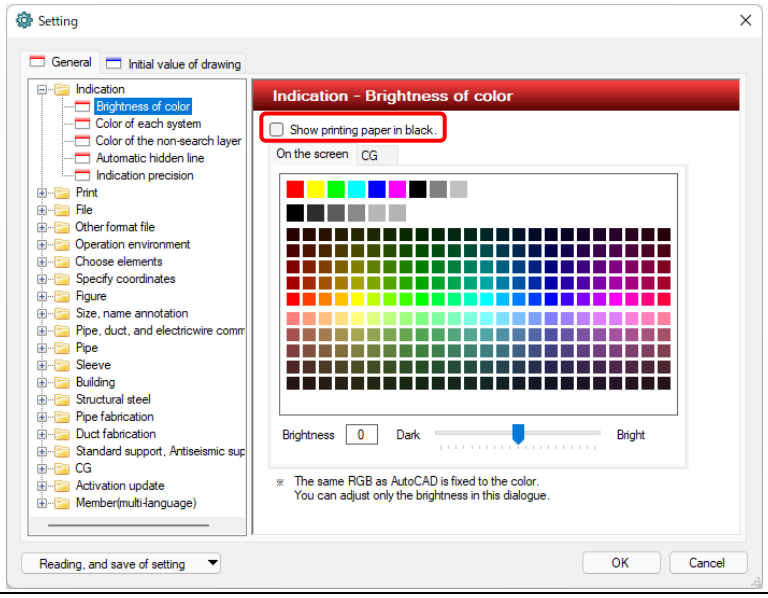


* Recommended display setting for Rebro: 1280 x 1024 (800) or more

*[Pipe] or [Duct] tab is not available in the Electric mode.

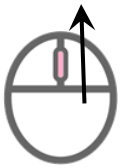
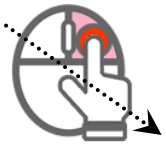
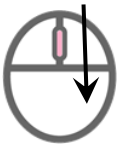
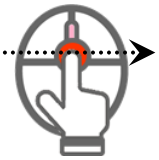
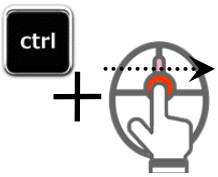
Change the screen color

The initial value is white for the paper color. To change the paper color to black: go through [Setting]-[General]tab-[Indication]-[Brightness of color], and then select “Show printing paper in black”; then click [OK].

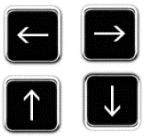
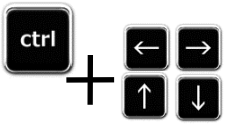


2.How to operate on the screen

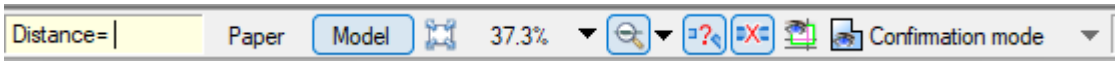
Mouse actions

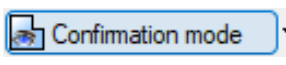
Enlargement	Area enlargement	Reduction	Zoom	Screen panning (Parallel translation)	View panning (Parallel translation)
Rotate the wheel forward	Right-drag to specify the opposite corner	Rotate the wheel backward	Double-click the wheel	Drag the wheel	Drag the wheel while pressing Ctrl
	 Drag		 Double-click	 Drag	 Drag

Keyboard operations

Enlargement	Reduction	End of the enlargement on the screen	Display entirely	Screen panning	View panning
					

Status bar operations

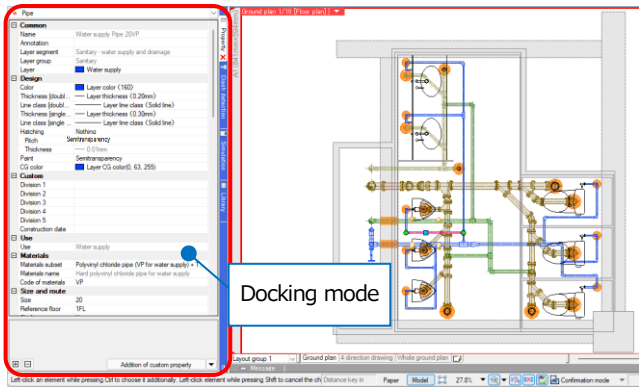


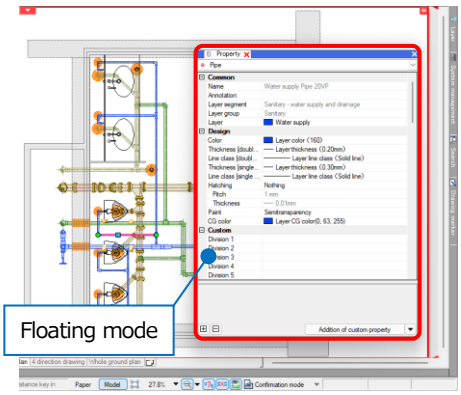
	Display entirely (to fit the whole screen).
	Specify the enlargement ratio.
	Display lines according to the thickness for printing. Left-click [▼] to adjust the showing line thickness.
	Display “?”. “?” indicates the case that has no fittings corresponding to the one of pipe, duct, or electric route.
	Display “X”. “X” appears when fittings overlap at the junction of pipe, duct, or electric route. Also it appears when the duct shorter than the Shortest length is drawn.
	Rebro temporarily shows elements that are hidden by a clip function.
	Rebro color-codes and shows them according to the states of custom properties, zones, etc., that have been set.

Panel operations

The panel shows the window of [Around-view] [Property] [Layer] [Message] [Library] [Search] [System management] [Clash detection] [Simulation] [HVAC Measures] [Zoom] [Drawing marker] [Progress management].

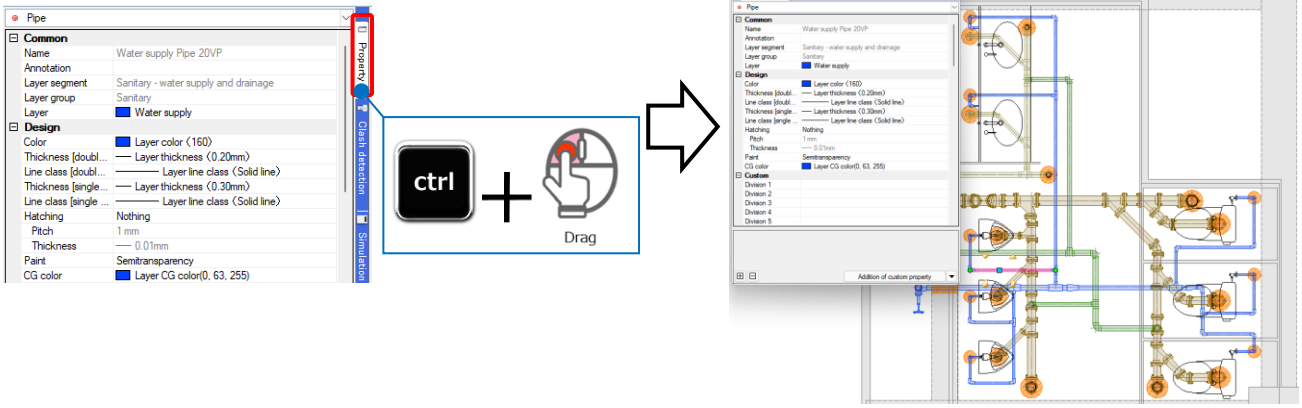
The panel is shown in a docking mode (left-aligned or right-aligned to the edge of the screen) or in a floating mode (placed at any place).





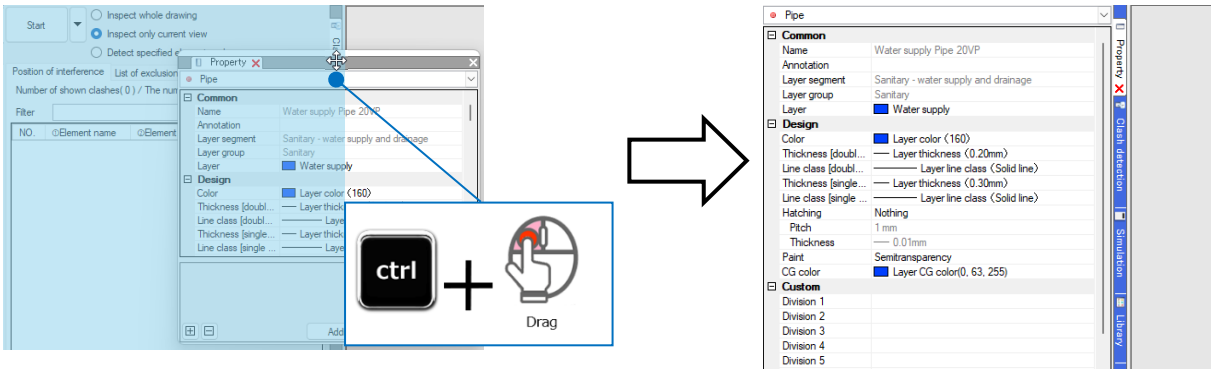
How to float the panel

Drag the tab of the panel name while pressing Ctrl.



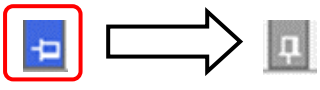
How to dock the panel

Drag the panel to the edge of the screen while pressing Ctrl, and release the mouse button when the blue band appears. Or double-click the panel while pressing Ctrl.



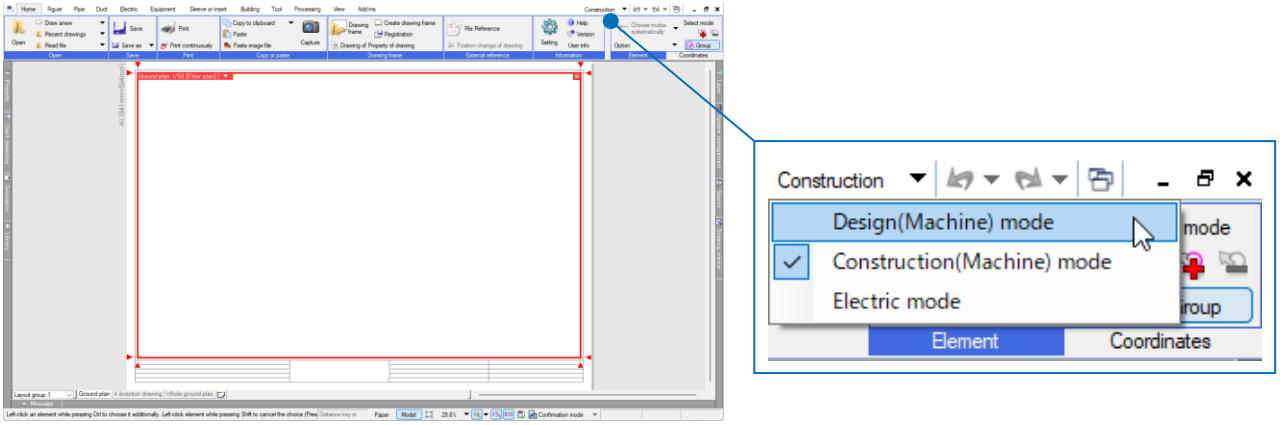
Panel layout in the docking mode

In the docking mode, the lying down pin folds the panel automatically to the edge of the screen. The vertical pin fixes the panel at any position.



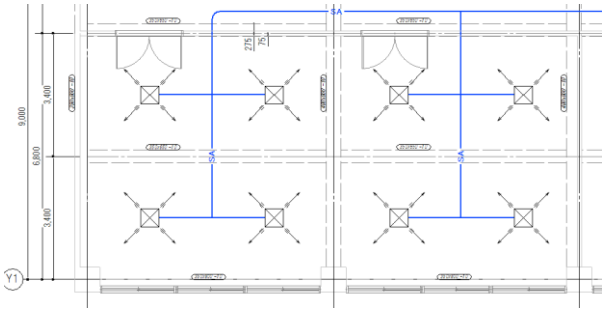
3.Design(Machine) mode, Construction(Machine) mode and Electric mode

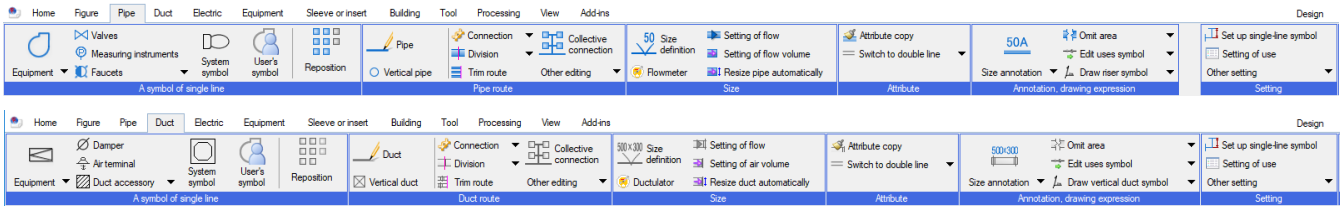
Select between “Design(Machine) mode”, “Construction(Machine) mode”, or “Electric mode” according to your drawing. When you select “Design(Machine) mode” or “Construction(Machine) mode”, the descriptions in [Pipe] or [Duct] tab change. [Pipe] or [Duct] tab is hidden in the electric mode.



Design(Machine) mode

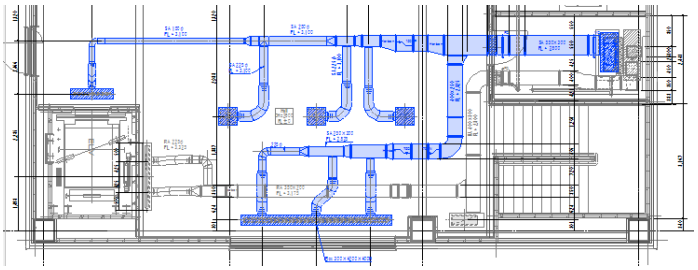
You can use this mode to make design drawings, or plots to place symbols.
You can create drawings as if you draw on papers without considering the height or size.

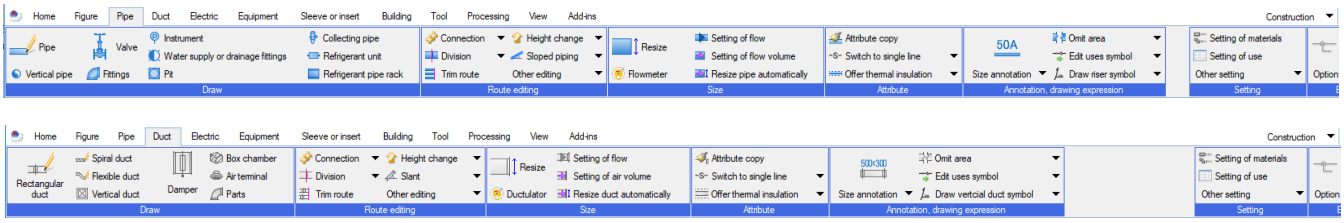




Construction(Machine) mode

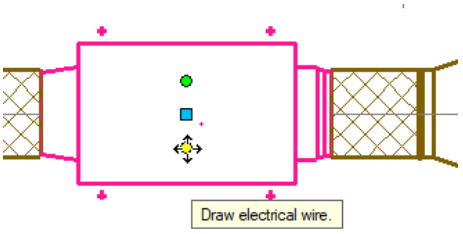
You can use this mode to make working diagrams.
You can complete the working diagrams, by editing the drawings that are created in the design mode.

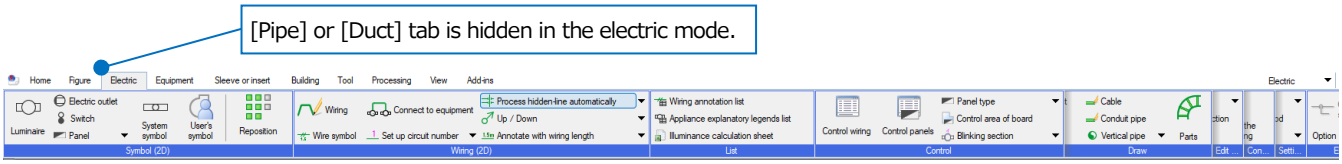




Electric mode

As electric drawings without changes, you can use mechanical plotter drawings created for air-conditioning and plumbing.
In the electric mode, Rebro hides a handle for drawing "Air-conditioning and plumbing"; instead shows a handle for drawing electric wiring at the reference point of pipes or ducts for equipment that has no connection ports of electric wiring.



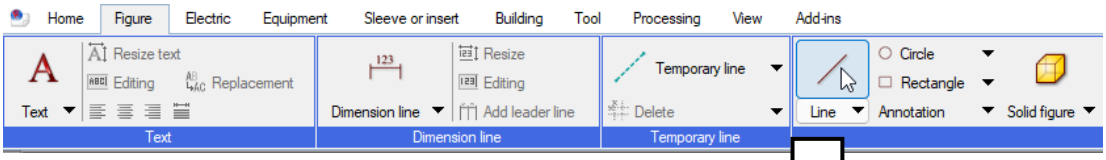


4.Command operations

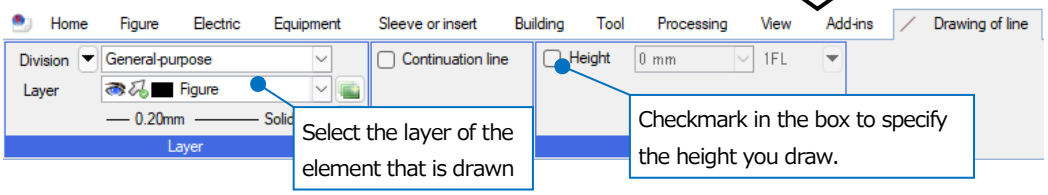
Left-click specifies the start or execution of the commands. Right-click opens the menu to be executed.

Draw a line

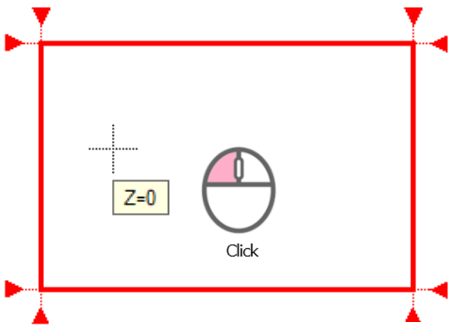
Left-click [Figure] tab- [Drawing of line].

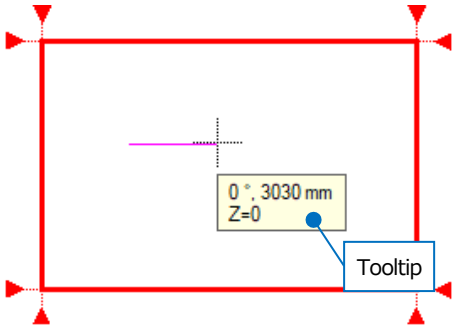


The descriptions on the ribbon change to commands to draw lines.

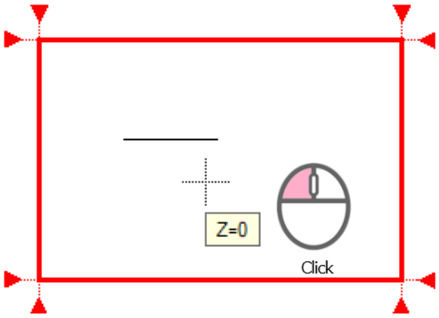


Left-click specifies the starting position of the line.
If you move the mouse pointer, a tooltip shows the angle, distance, and height from the starting position.
Specify the height on the ribbon to show the height as a tooltip.

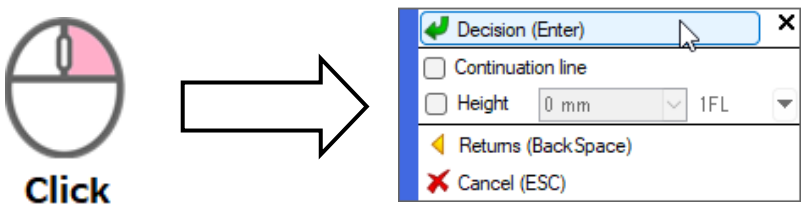




Left-click at the line end position to draw the line.

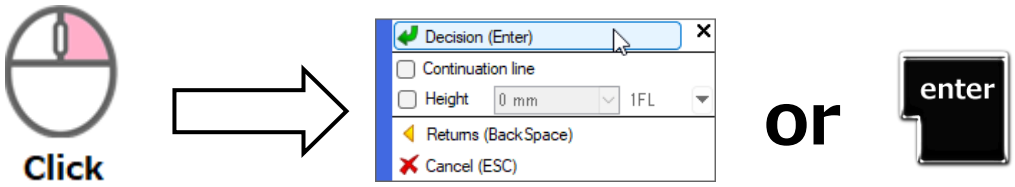


Select [Decision] in the context menu (right-click) to complete commands.



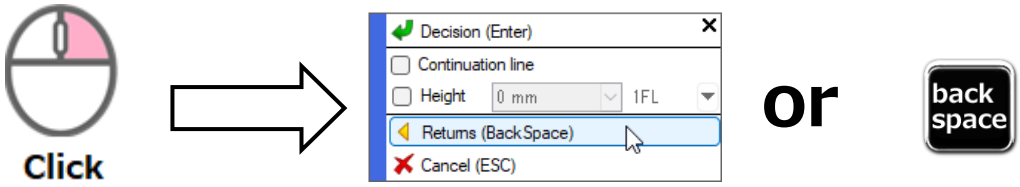
Command execution

Select [Decision] in the context menu (right-click), or press Enter.



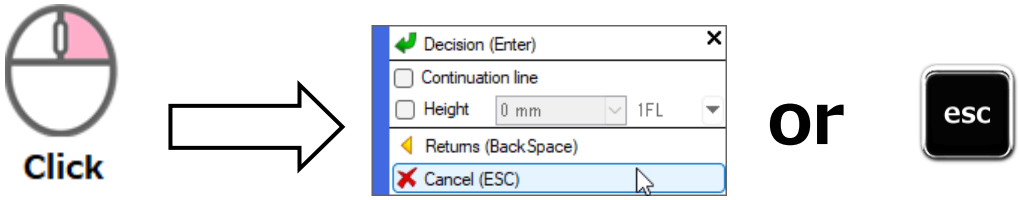
Revert the last one in command operations.

Select [Returns] in the context menu, or press Backspace.



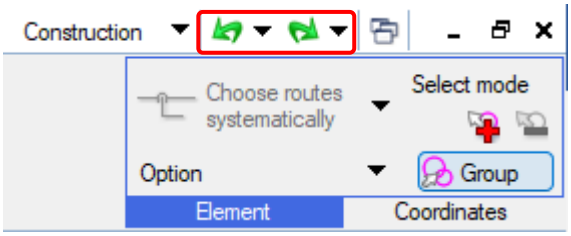
Complete or cancel the command

Select [Cancel] in the context menu, or press Esc.

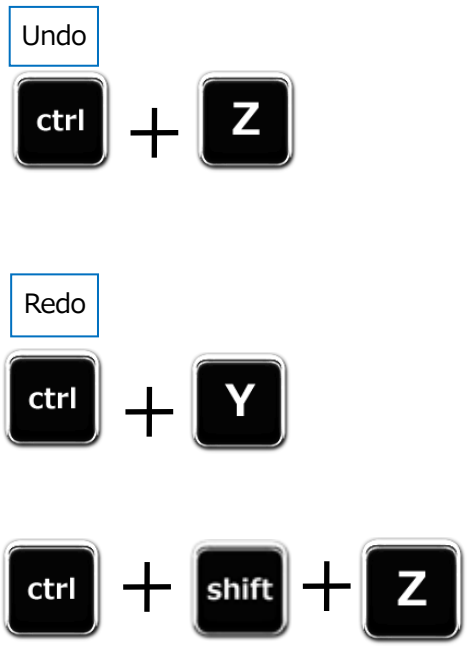


Undo or Redo

Undo the last action by the left-arrow symbol " " in upper-right of the screen. Redo the last action by the right arrow icon " ".



or

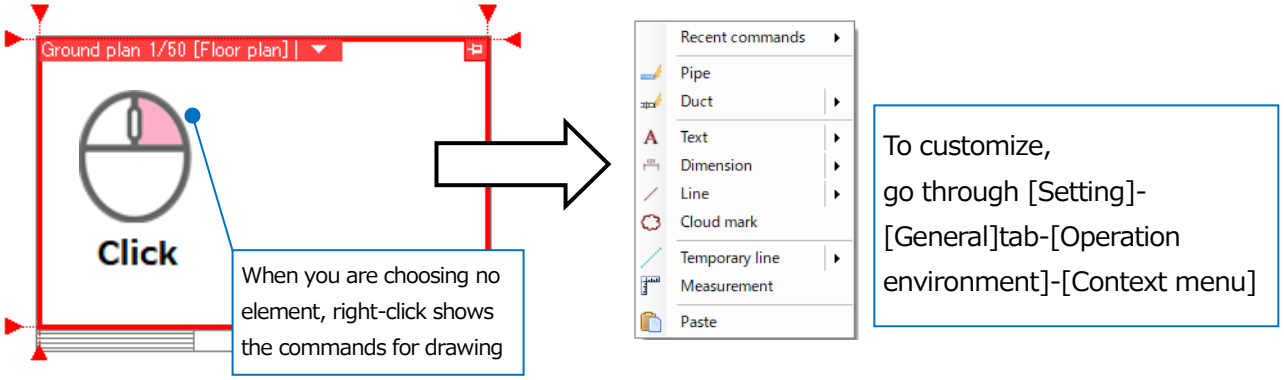


How to start commands

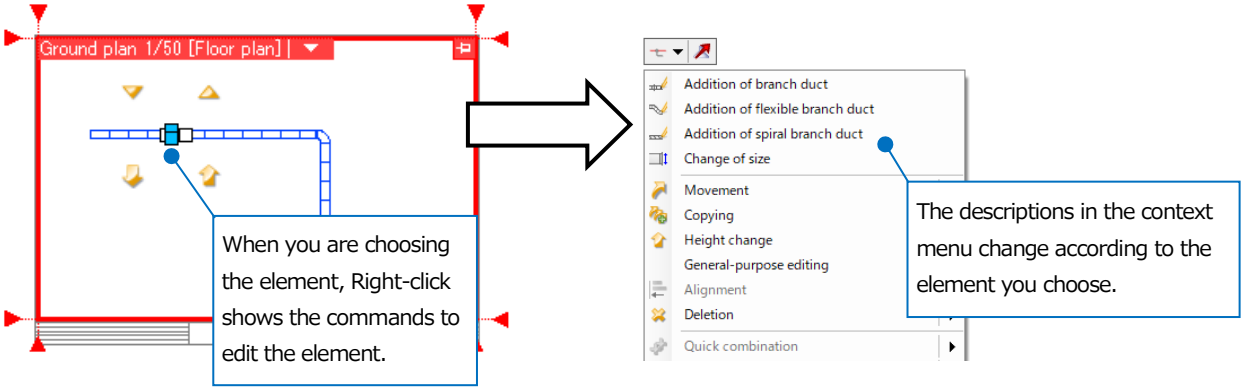
You can start commands from the ribbon, context menu, keyboard shortcuts, or icons on Quick Access Toolbar.

Start from the context menu

When you are choosing no element, Right-click shows the commands for drawing.



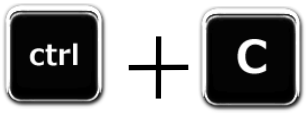
When you are choosing the element, Right-click shows the commands to edit the element.



Start from the keyboard shortcut

* Refer to the reference on page 38 for the keyboard shortcuts set at the time of installation.

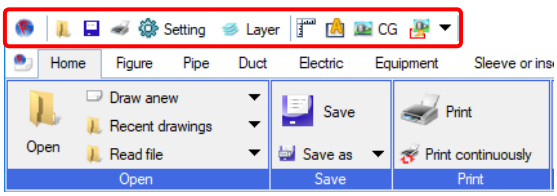
- Delete 

- Copy to the clipboard 

To customize,
go through [Setting]-[General]tab-[Operation environment]-[Shortcut key]

Start from Quick Access Toolbar

You can add commonly used commands to the Quick Access Toolbar.

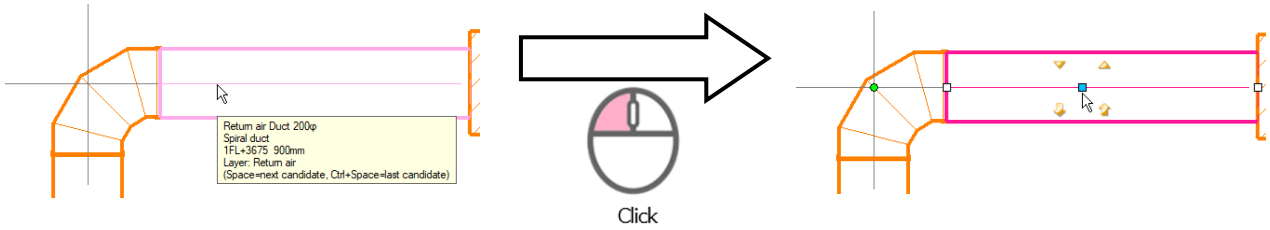


To customize,
go through [Setting]-[General]tab-[Operation environment]-[Quick access toolbar]

5.Choose elements

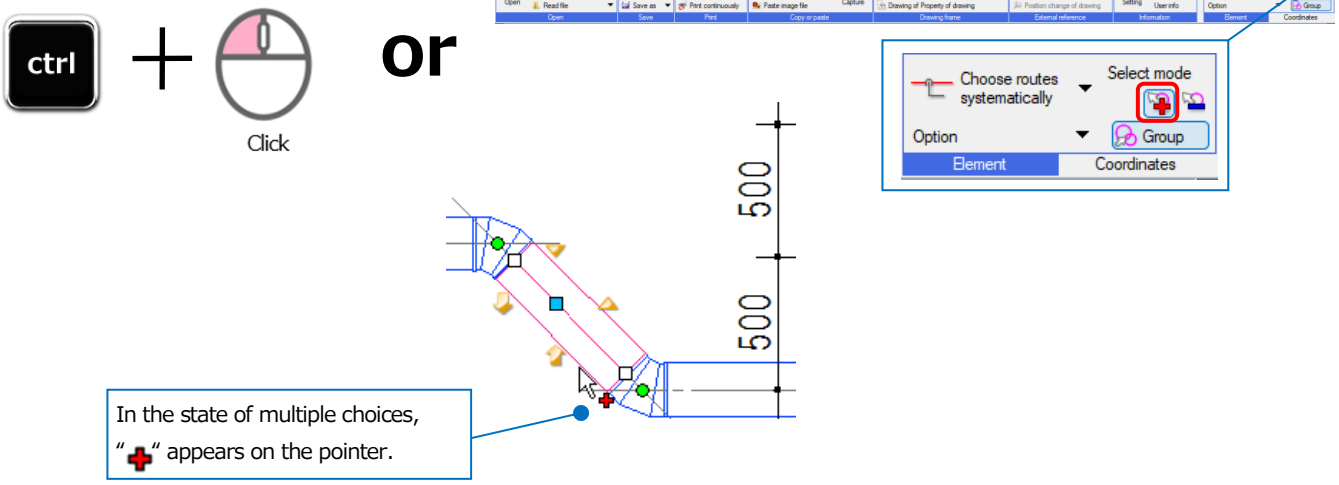
Choose the element

When you bring the pointer close to the element that you want to choose, its color changes to show the temporary state of being chosen. In this state, left-click to choose the element.



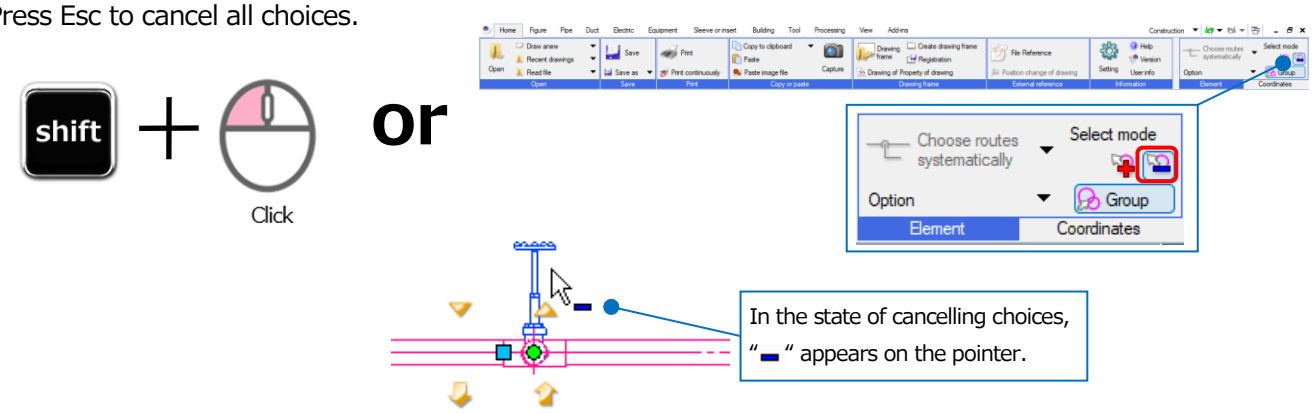
Choose the multiple elements

Left-click the elements while pressing Ctrl, to choose the multiple elements.
Or when you turn on [Elements] panel- [Choose element additionally] icon, you can keep the state of multiple choices.



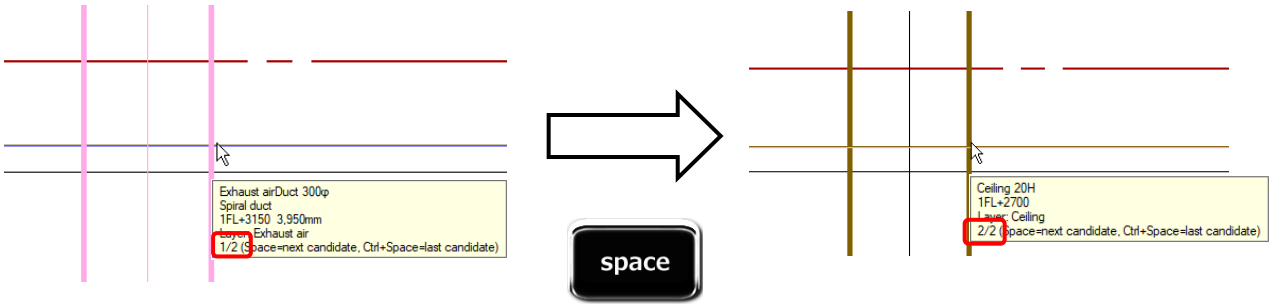
Cancel the choices

Left-click the element while pressing Shift to cancel the choice of the element.
Or when you turn on [Elements] panel- [Cancel to choose element] icon, you can keep the state of cancelling choices.
Press Esc to cancel all choices.



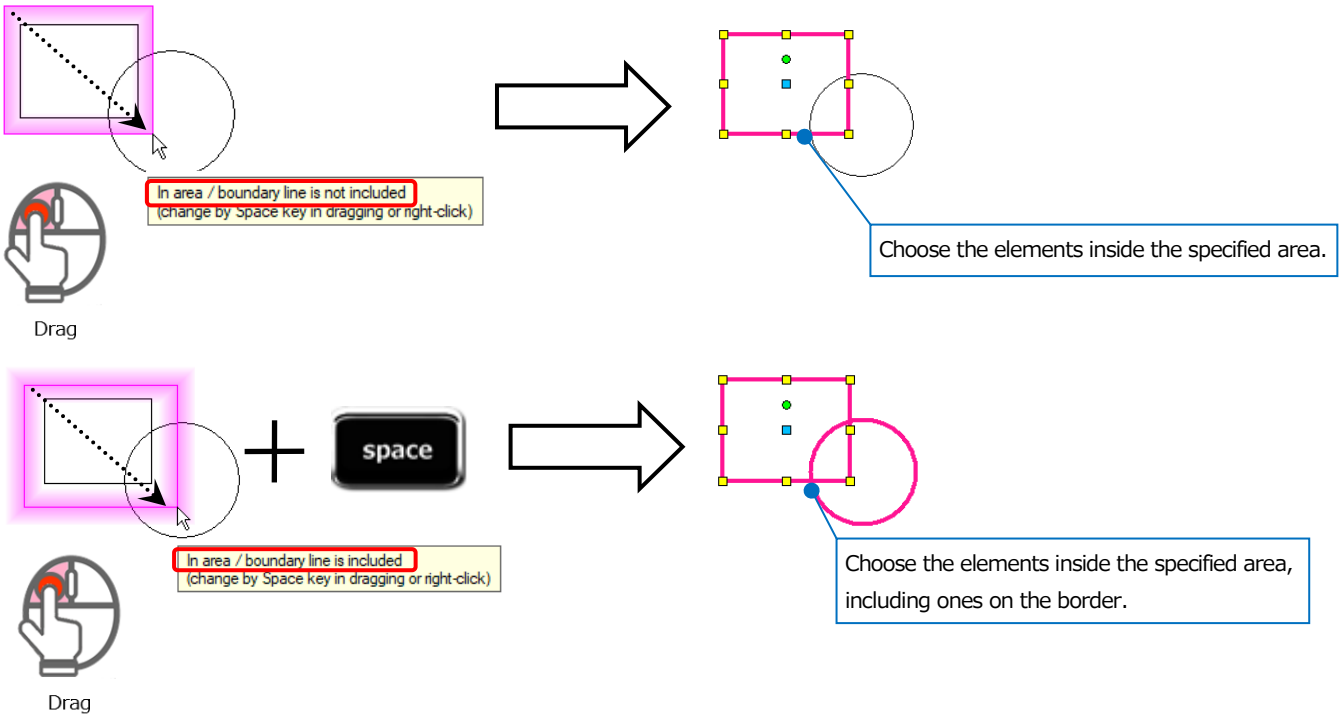
If you cannot choose the element due to the overlapping elements:

Bring the mouse close to the element that you want to choose and press Space to switch between them.
* Press Ctrl+Space to revert to the previous choice.



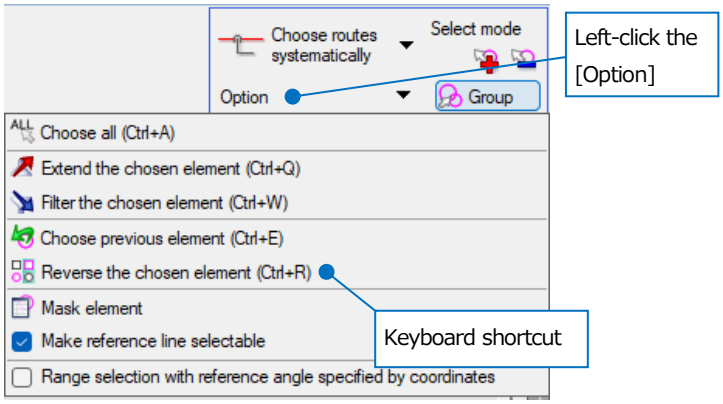
Choose by area specification

Left-drag the corner to enclose the element in the rectangle. While dragging, press Space or right-click to switch the way of choosing.



Choose elements at one time

Left-click the option to select the extended way to choose elements.



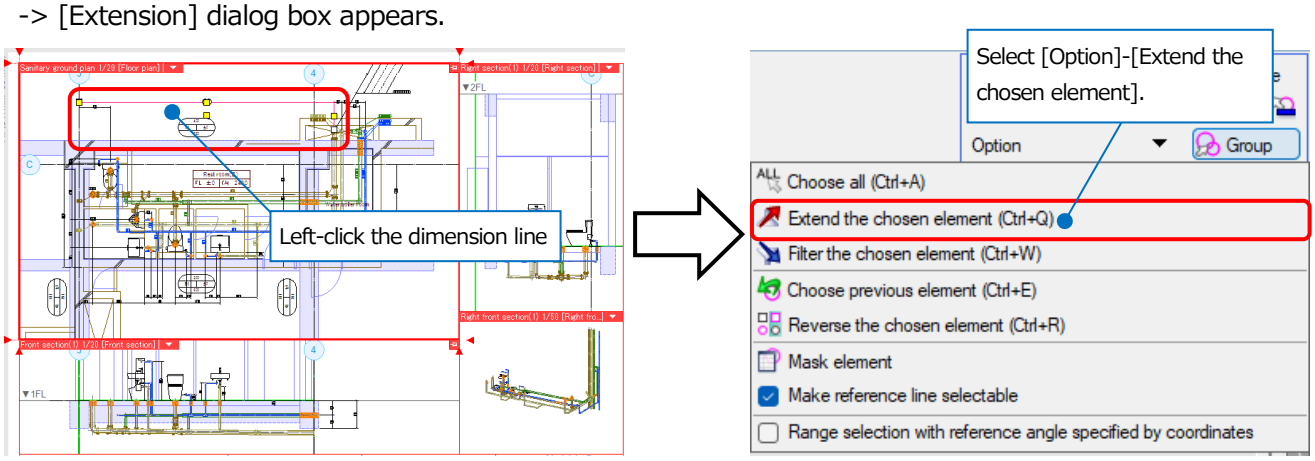
If you want to choose the element that has the same conditions as the specified element:

Extend the chosen element

Choose the elements at one time that has the same conditions as the specified element. The descriptions of the types that are extended change according to the element you choose.

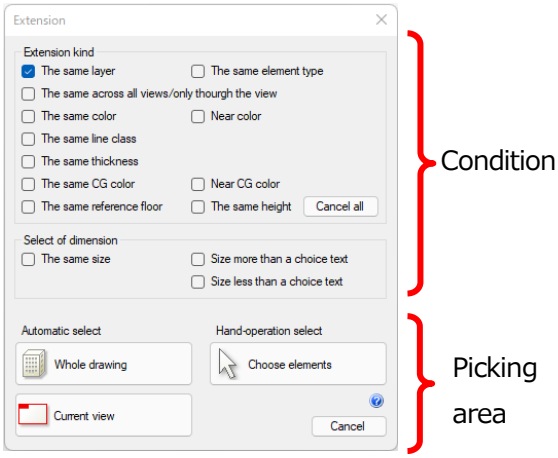
① Choose the element that you want to extract on the same conditions, and then go through [Option]-[Extend the chosen element].

-> [Extension] dialog box appears.

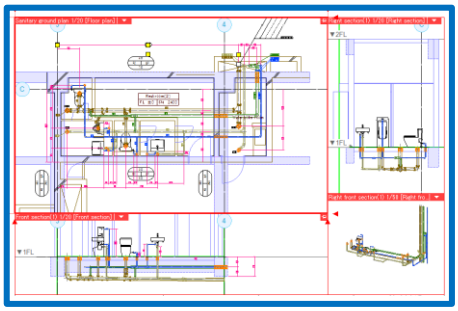


② Select the conditions that you want to extract from the chosen element to specify the area.

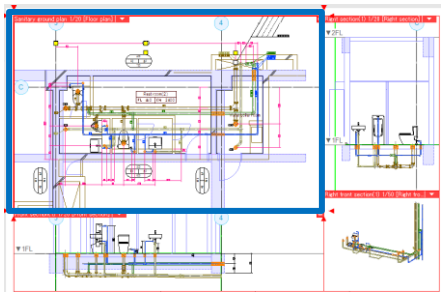
The result of the chosen elements changes according to the specified area.



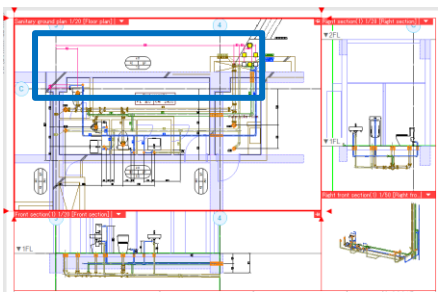
From “Whole drawing”: From the whole drawing, including hidden or non-search elements, Rebro picks the elements that you specified with the conditions.



From “Current view”: From the current view under operation, Rebro picks the elements that you specified by the conditions.

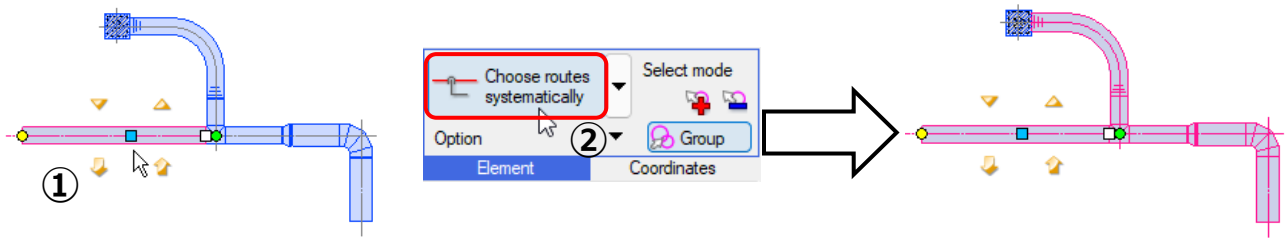


From “Choose elements”: From the specified area, Rebro picks the elements that you specified by the conditions.

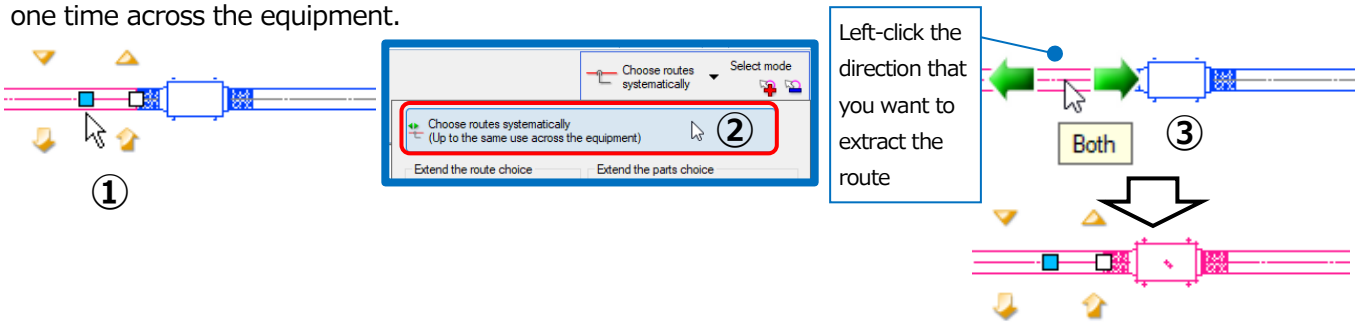


Choose elements systematically at one time through the entire route

Choose systematically at one time the entire route (including fittings) where the chosen route elongates.



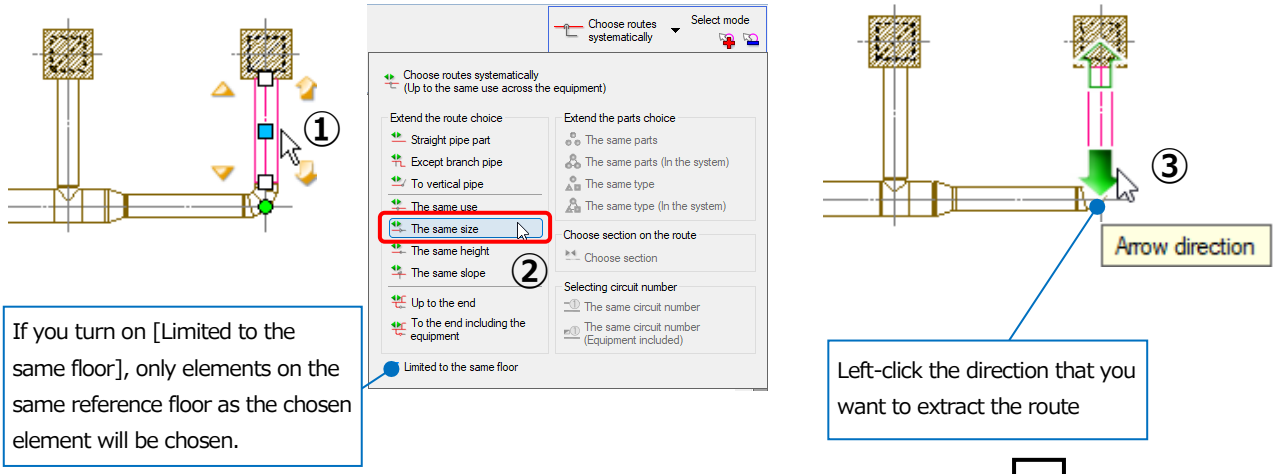
If equipment exists on the way of the system where chosen route elongates, choose the entire route at one time across the equipment.



Choose the route systematically by setting conditions

From the chosen route, extract the other routes that meet the conditions.

Extract the same size route



If you turn on [Limited to the same floor], only elements on the same reference floor as the chosen element will be chosen.

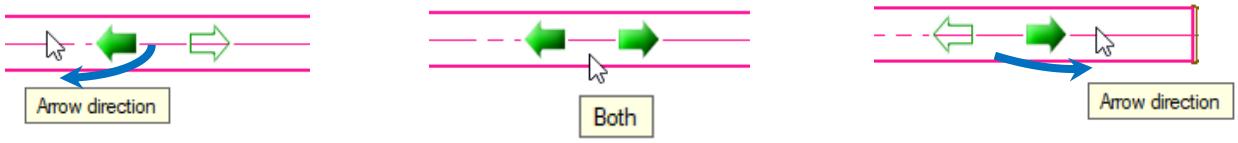
Left-click the direction that you want to extract the route

The route as the same size

Conditions that you can select

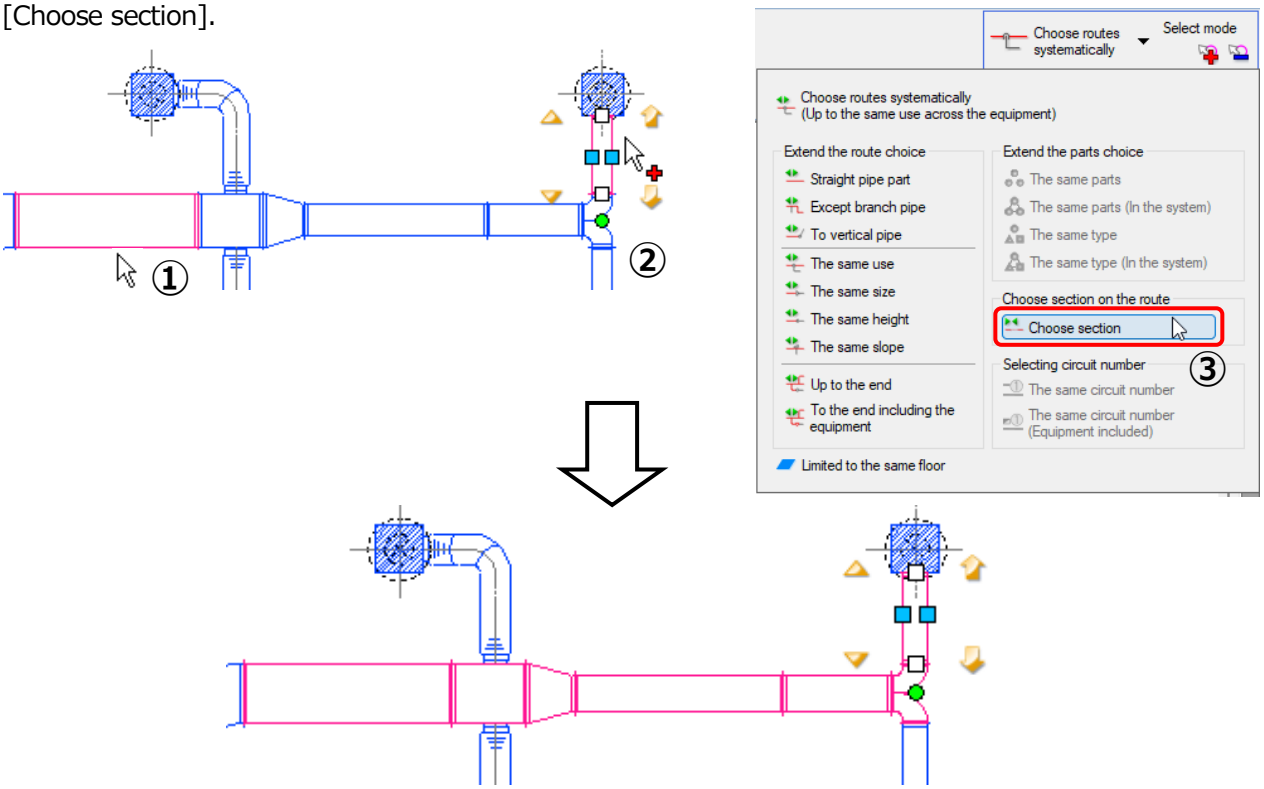
Straight pipe part
Except branch pipe
To vertical pipe
The same use
The same size
The same height
The same slope
Up to the end
To the end including the equipment

Point to the arrow that appears on the chosen route, and then left-click it.
When you left-click the section between arrows, you can choose the both directions of the chosen route.



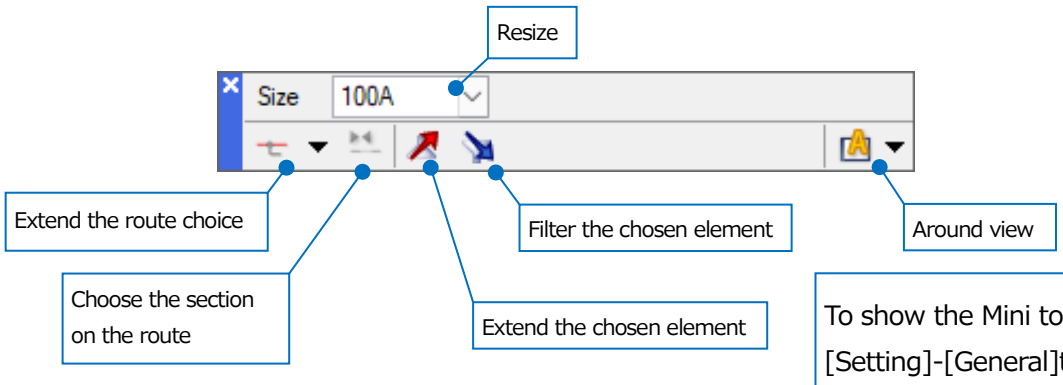
Choose route that connects two elements

Choose the section between the two elements on the route. Choose the two elements, and then left-click [Choose section].



Mini toolbar

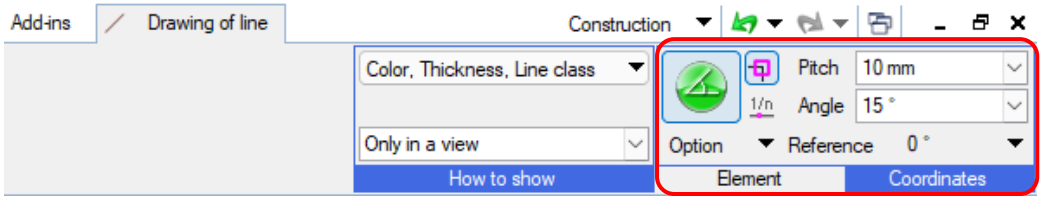
Show the mini toolbar close to the pointer to use handily the packed “Choose elements” functions.
The mini toolbar shows suitable functions according to the chosen element.



To show the Mini toolbar, go through [Setting]-[General]tab-[Choose elements]-[Mini-tool bar・Handle]

6.Specify coordinates

Start the drawing commands to operate the functions of [Coordinates] panel.

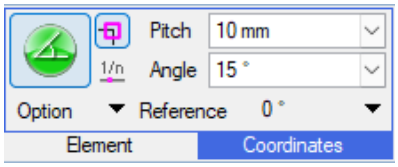


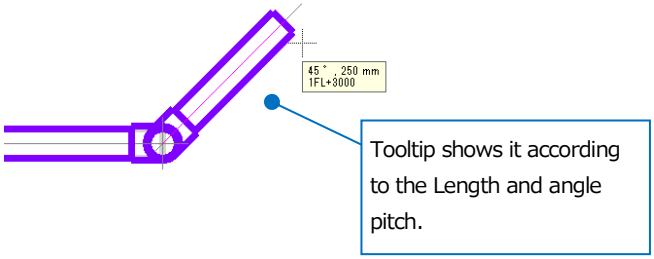
Correct the length or angle

When the coordinate revision " " is in the ON position, the length and angle are corrected according to the pitch value.

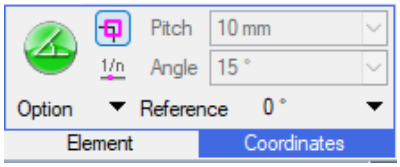
Press and hold Ctrl to disable the revision function temporarily.

ON

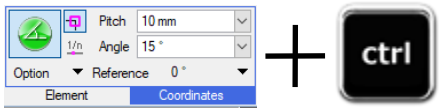


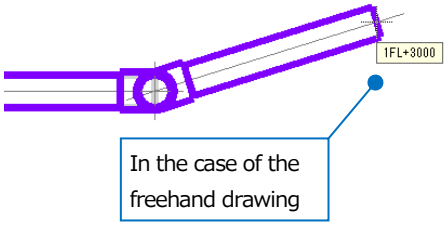


OFF



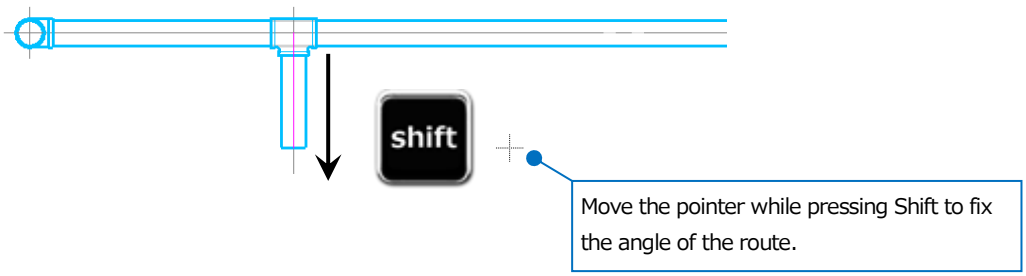
or





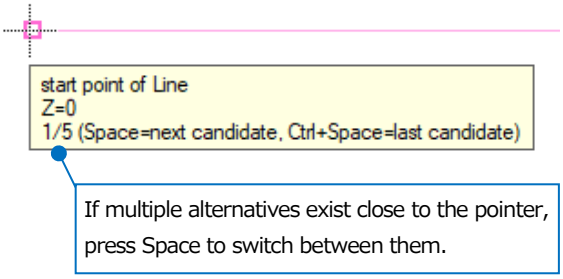
Fix the angle

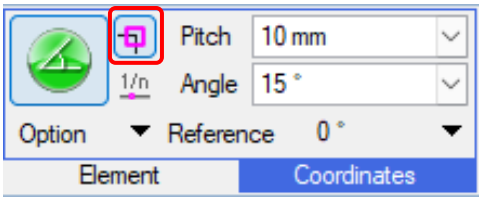
Press and hold Shift while drawing to fix the angle to the direction of the mouse pointer. You can draw based on the detached coordinates.



Auto Snap and meaningful points

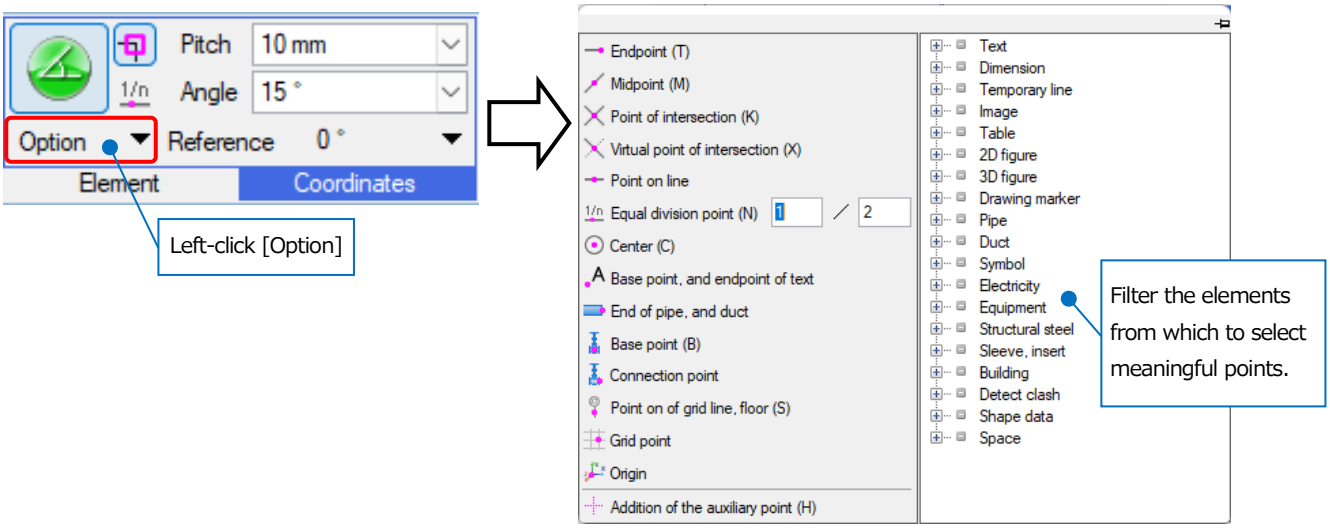
Bring the pointer close to the element to show the coordinate name (Endpoint, Midpoint and so on) in the tooltip. The point that has that information is called a “Meaningful point”. Left-click at the moment when it appears to get the coordinate position.





Types of meaningful points

Left-click [Option] to specify a meaningful point and elements to be AutoSnapped.

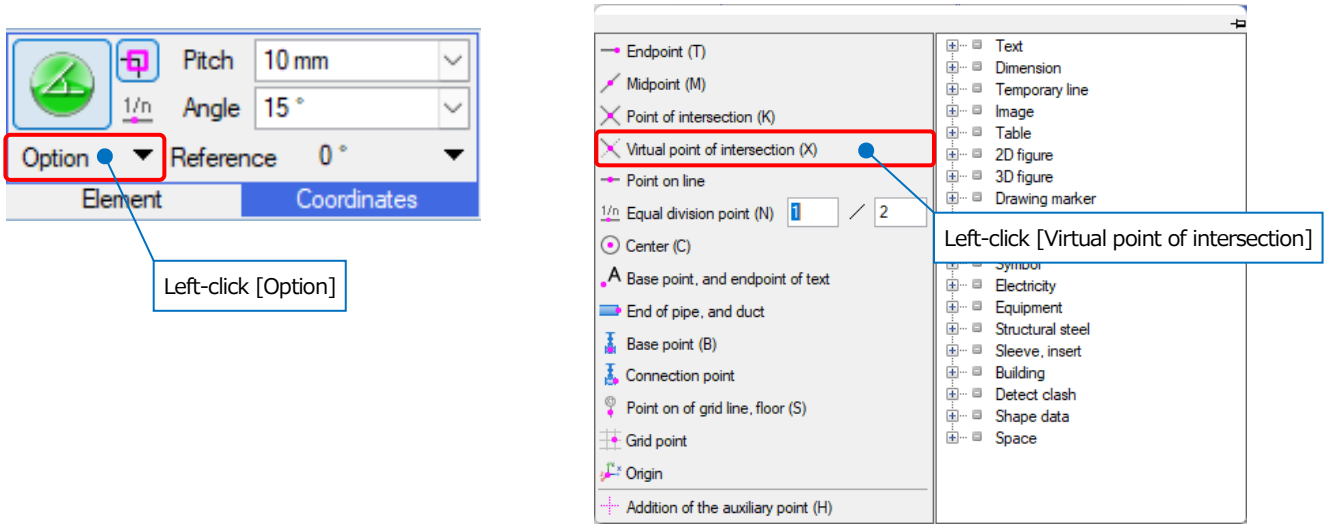


Virtual point of intersection

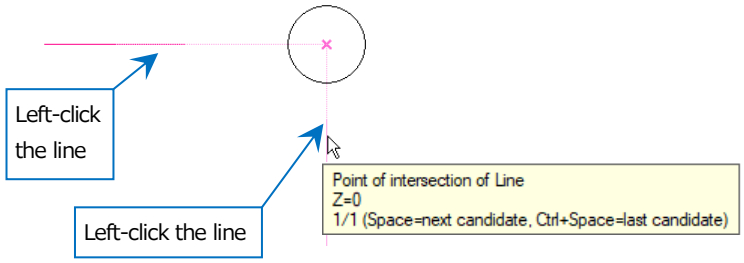
For example: To draw a circle at the point that horizontal and vertical lines intersect.

① Start the drawing command for circle.

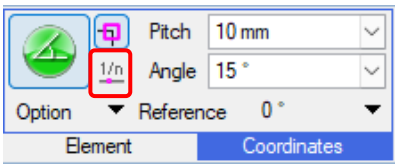
② Left-click [Option] to choose [Virtual point of intersection].



③ Left-click the two lines to get the coordinates at the intersection.



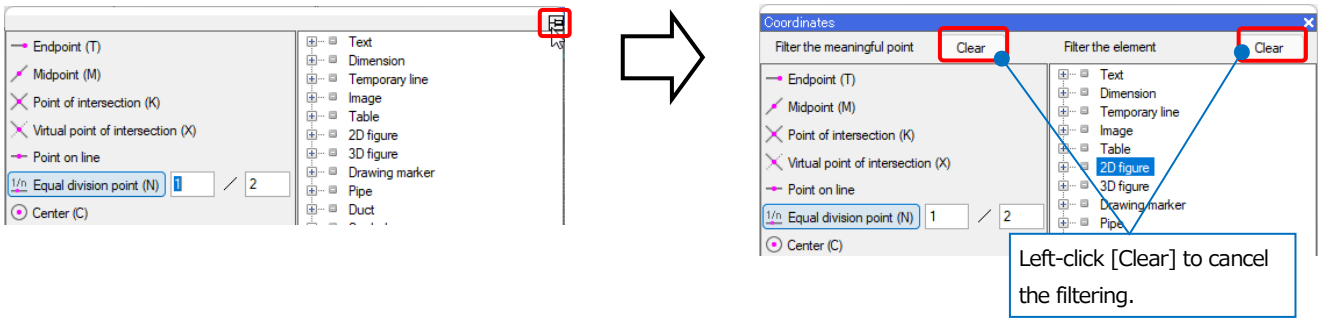
- Supplementary explanation:



The meaningful point previously used in [Option] is shown as a shortcut in [Coordinates] panel.

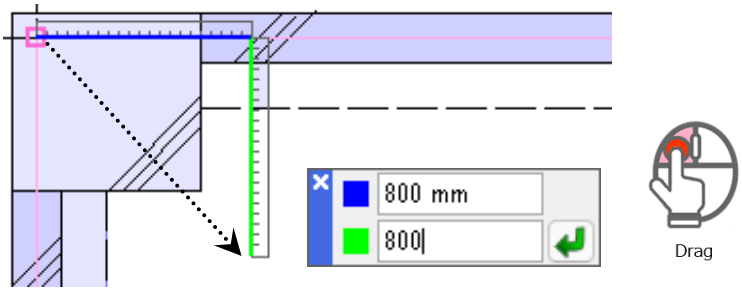
Left-click the pin to show at all times.

When setting to show at all times, you can continuously use the items selected for filtering.



Measures

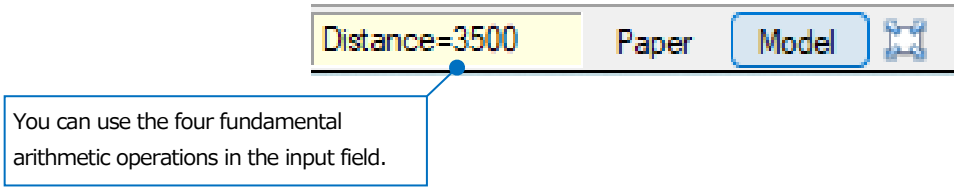
You can specify the moving distance from the reference position numerically. Left-drag the pointer from the reference position to the moving direction, to type the moving distance numerically in the dialog box that appears.



Distance key in

Type a numerical value by the keyboard to specify the moving distance.

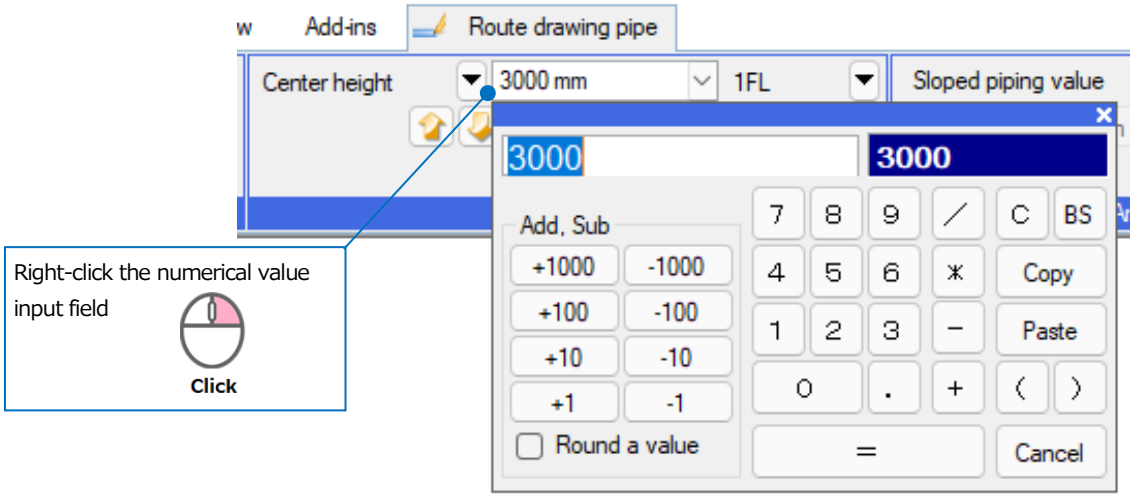
The input numerical value appears in the field [Distance=] on the status bar.



Calculator

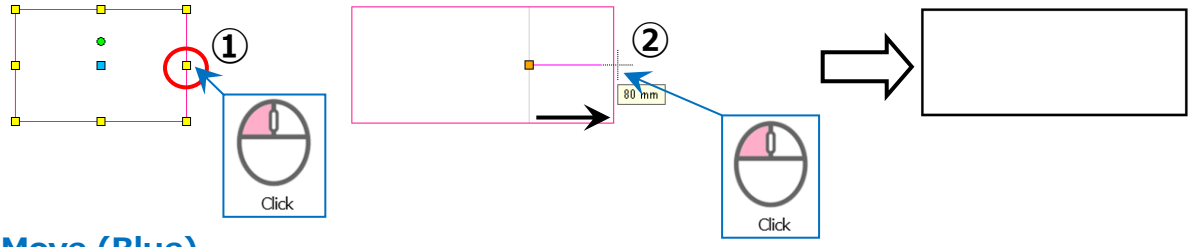
Right-click the numerical inputs field to show [Calculator], and then you can input a numerical value or an equation.

It is convenient when you cannot use a numeric keypad on PC.



7.Handles

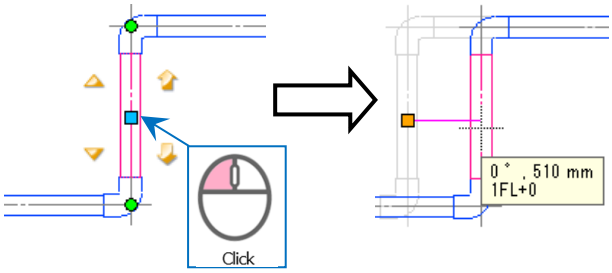
Choose an element to show “Handle”. Left-click the handle to move or operate route drawings.



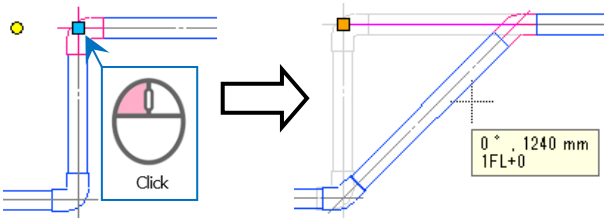
Move (Blue)

The handle on the route can translate parallel. The handle on a curve such as fittings can alter the curve degree.

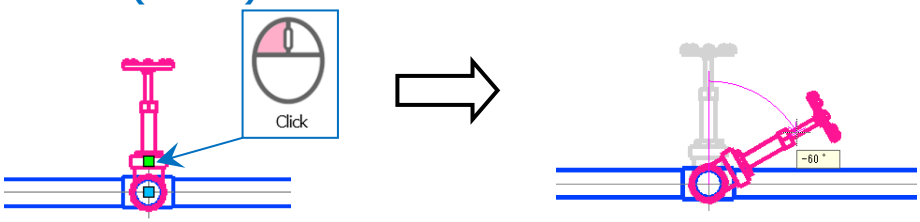
Route



Fitting

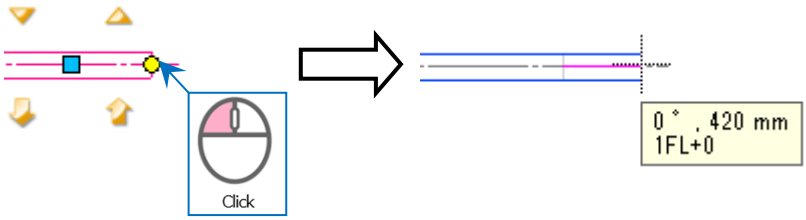


Rotate (Green)



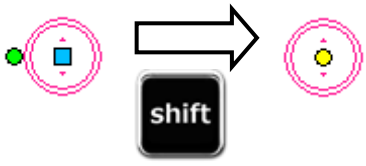
Draw route (Yellow)

Left-click the handle on the end of a route to draw a continuation to the route.



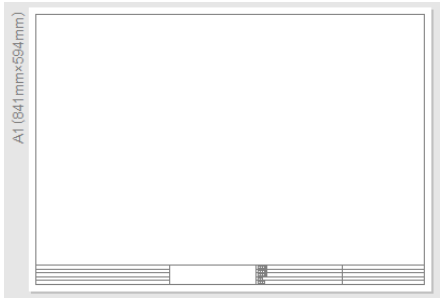
- Supplementary explanation:

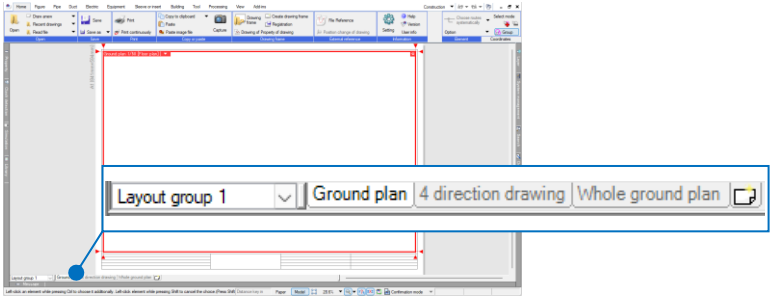
Press Shift while handles appear to switch between handles that are overlapping.



8.Layouts

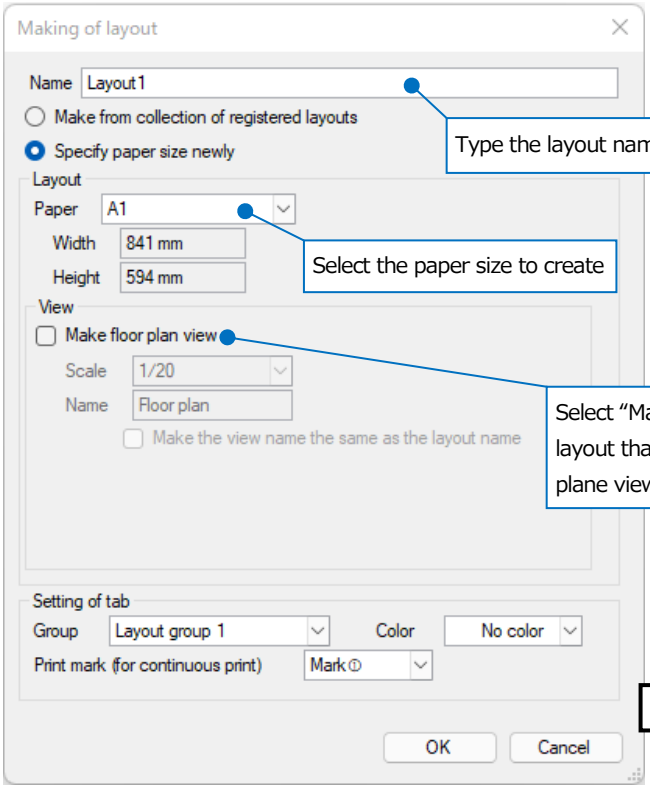
An image for a sheet of paper is called layout. You can create as many layouts in one file as you want.

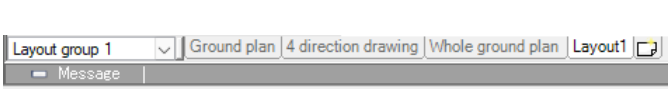




Create a layout

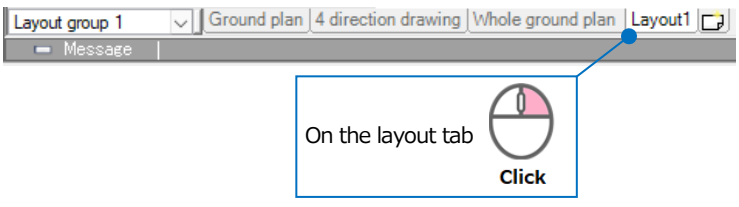
Left-click [Making of layout] icon next to the layout tab to create a layout.

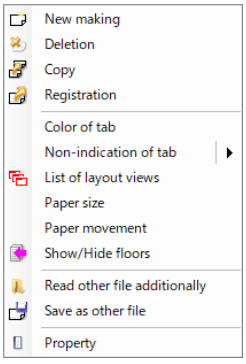




Edit the layout

Right-click the tab to show a menu for layout editing.

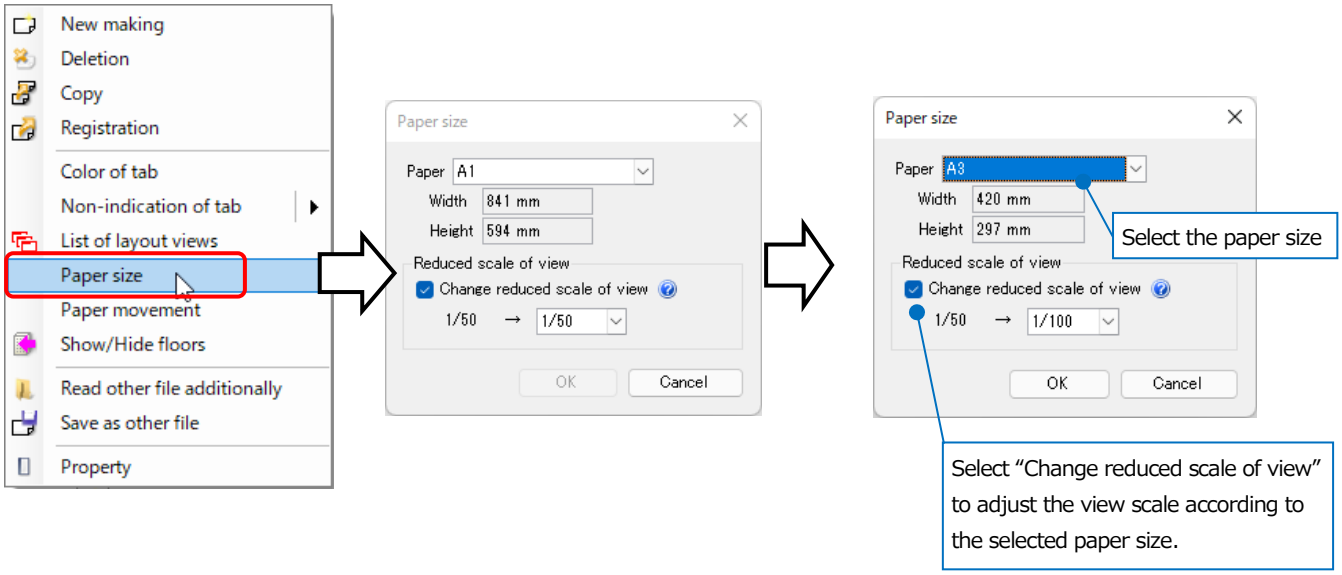




Resize the paper

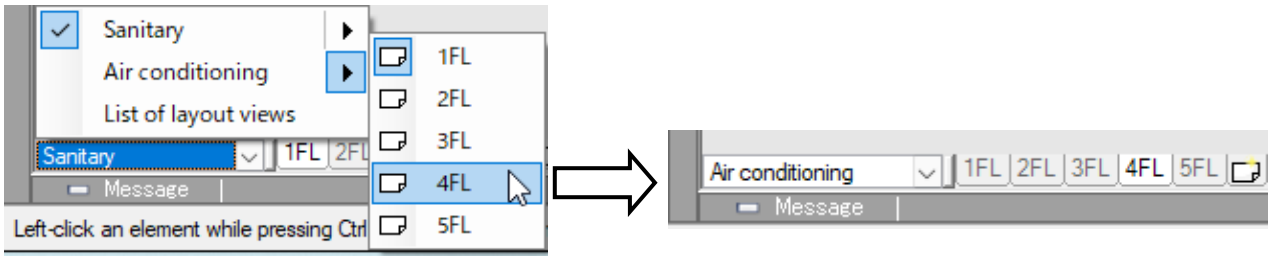
Resize the paper of the layout.

Change to A3 layout from A1

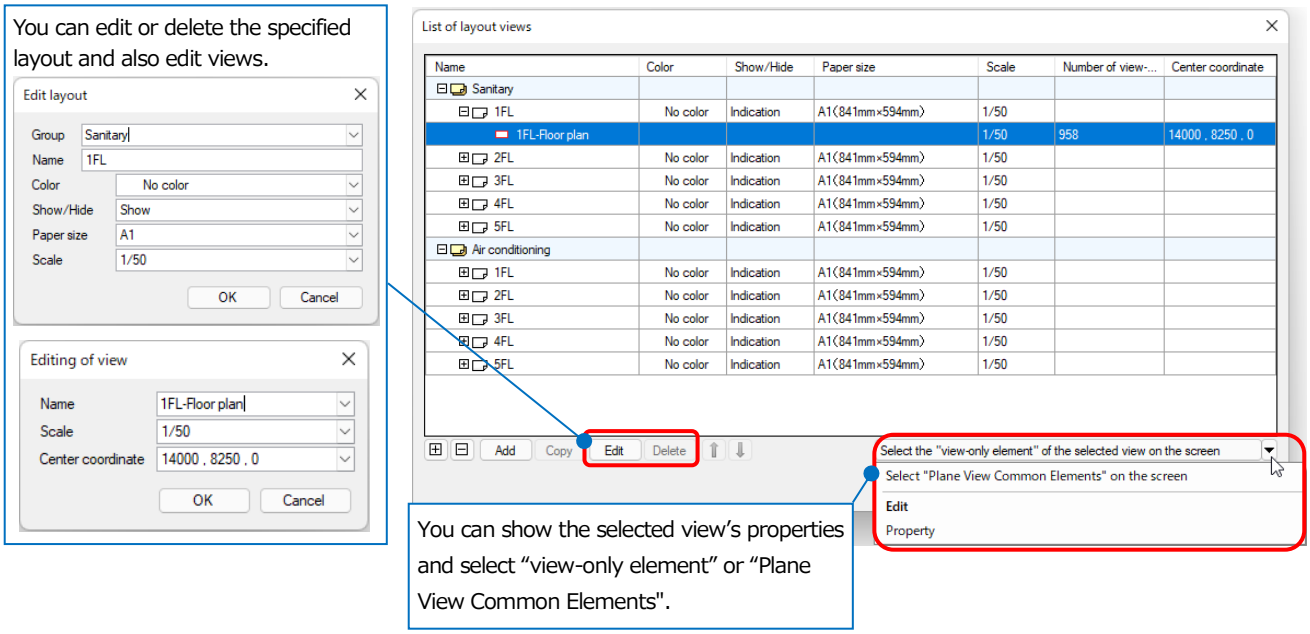


Manage the layout groups

Set groups to show the layout for each group.

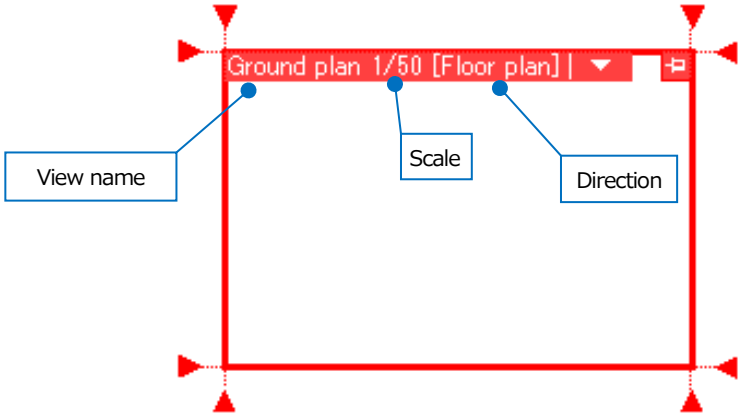


You can edit the groups or listing order of the layout in [List of layout views].



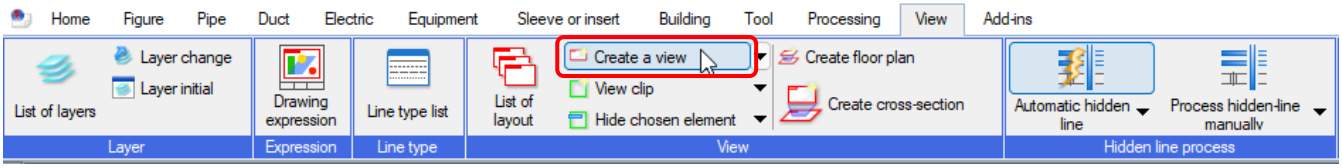
9.Views

View can show model space by setting the scale or direction.

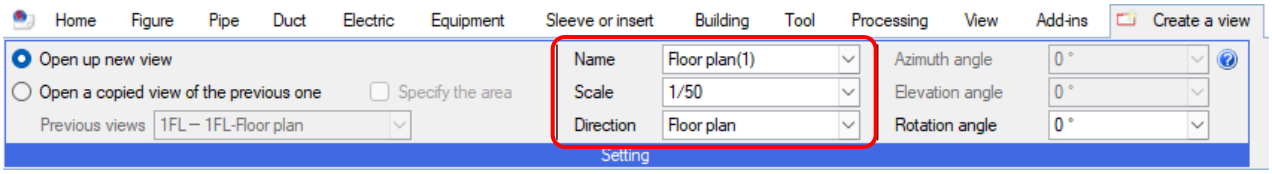


Make a view

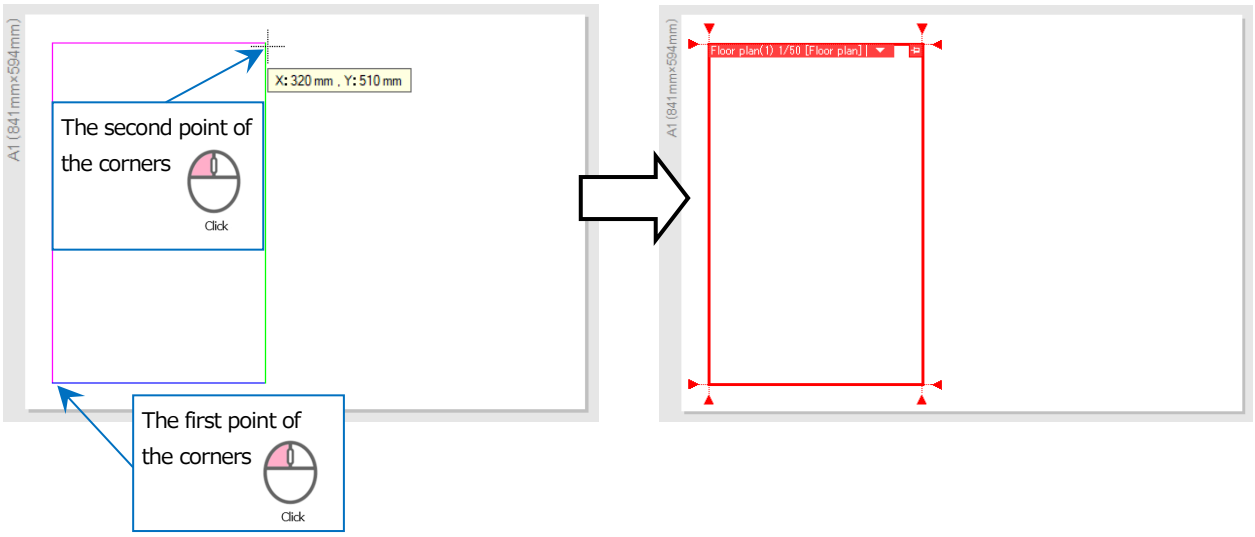
① Select [View] tab- [Create a view].



② Select “Name”, “Scale”, and “Direction”.

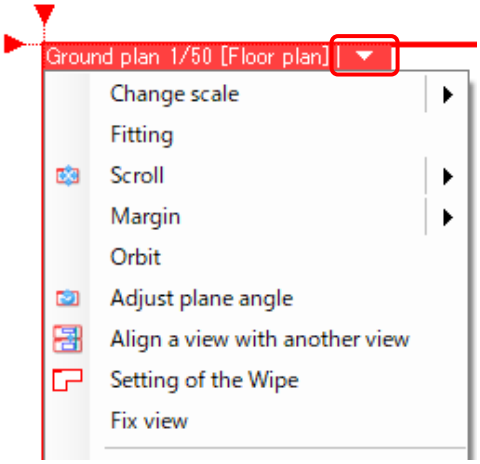


③ Use a temporary rectangular frame made from 2 points of the opposite corners to specify the view area.



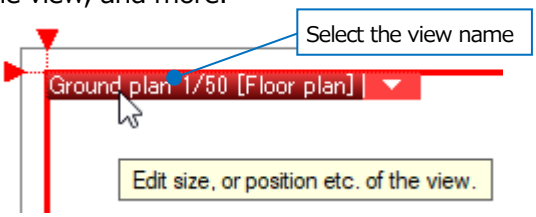
Edit the view

Name, scale, and direction of the view is shown in the upper-left of the view. Select "▼" next to the view name, to edit the view. Then you can change the scales and so on.

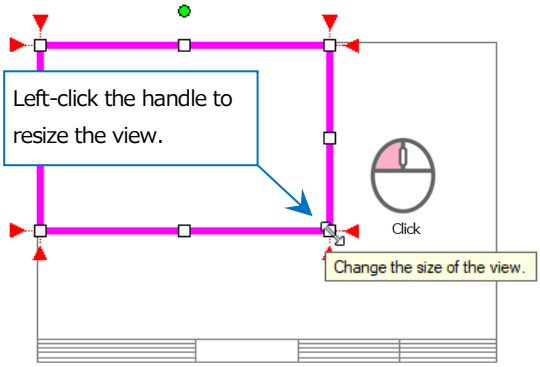


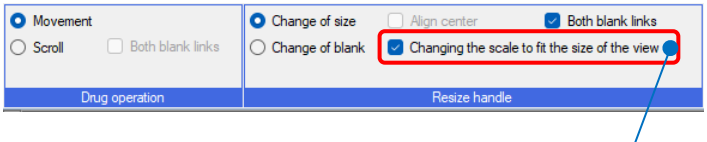
Resize or move the view

Left-click the view name to show the handle (white) on the view frame, with which you can resize or move the view, and more.

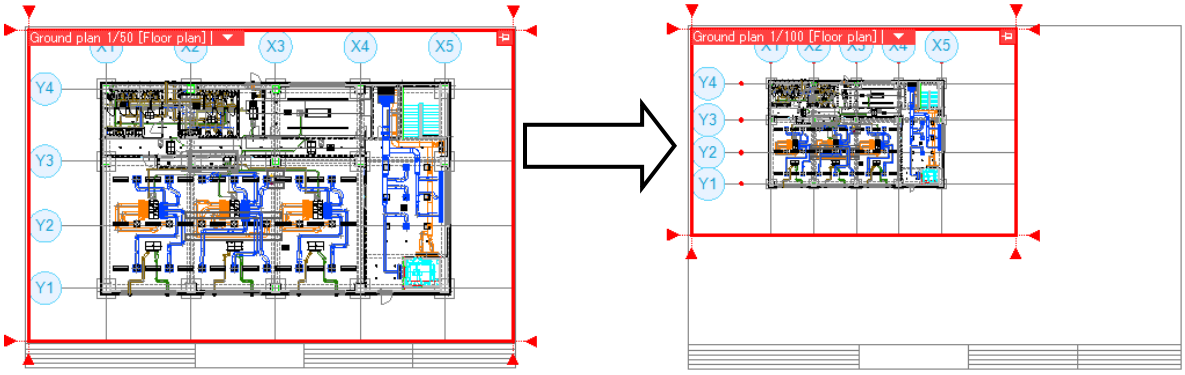


Resize

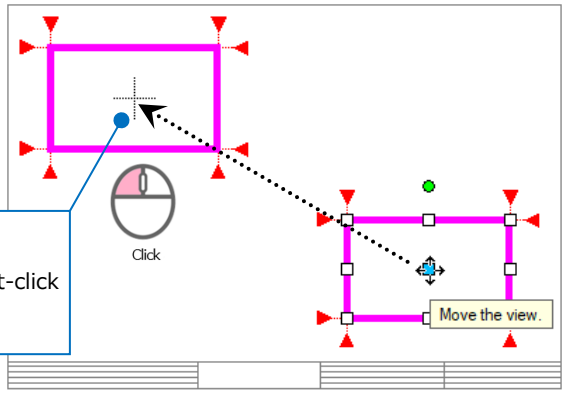




Select "Changing the scale to fit the size of the view" to adjust the scale that all elements can fit in the view area after the view resizing.

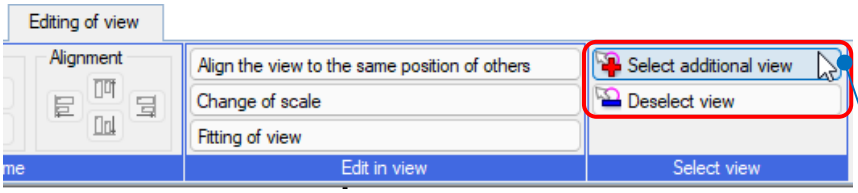


Move



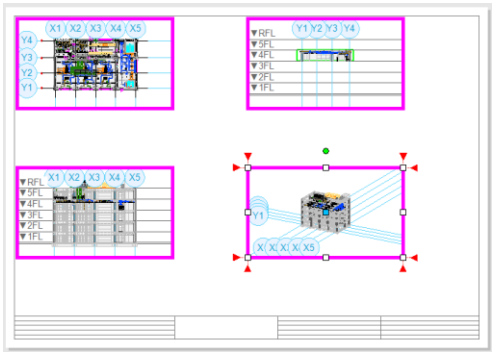
Left-click a handle for moving (blue) and left-click the view to move.

Choose the multiple views

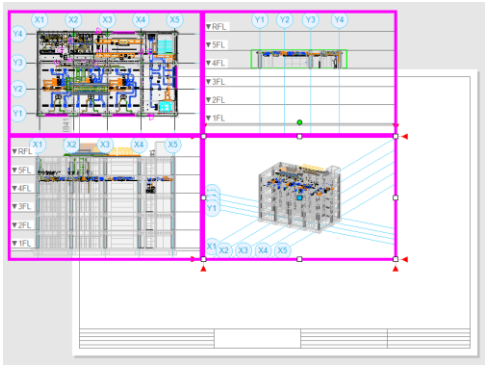


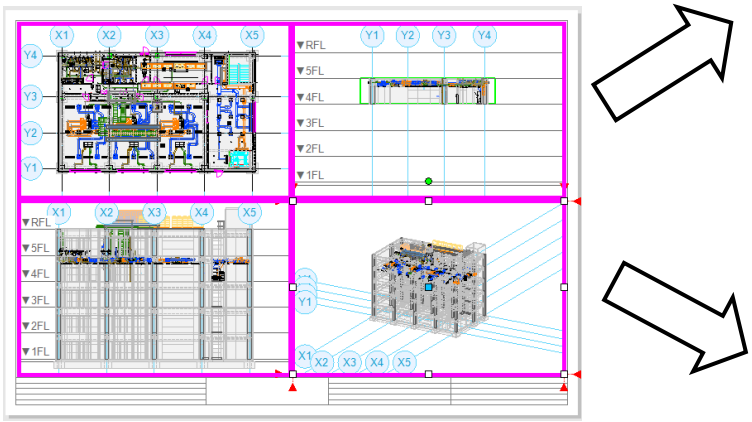
Select “Select additional view” while editing the view to edit the view by choosing the multiple views.

Resize



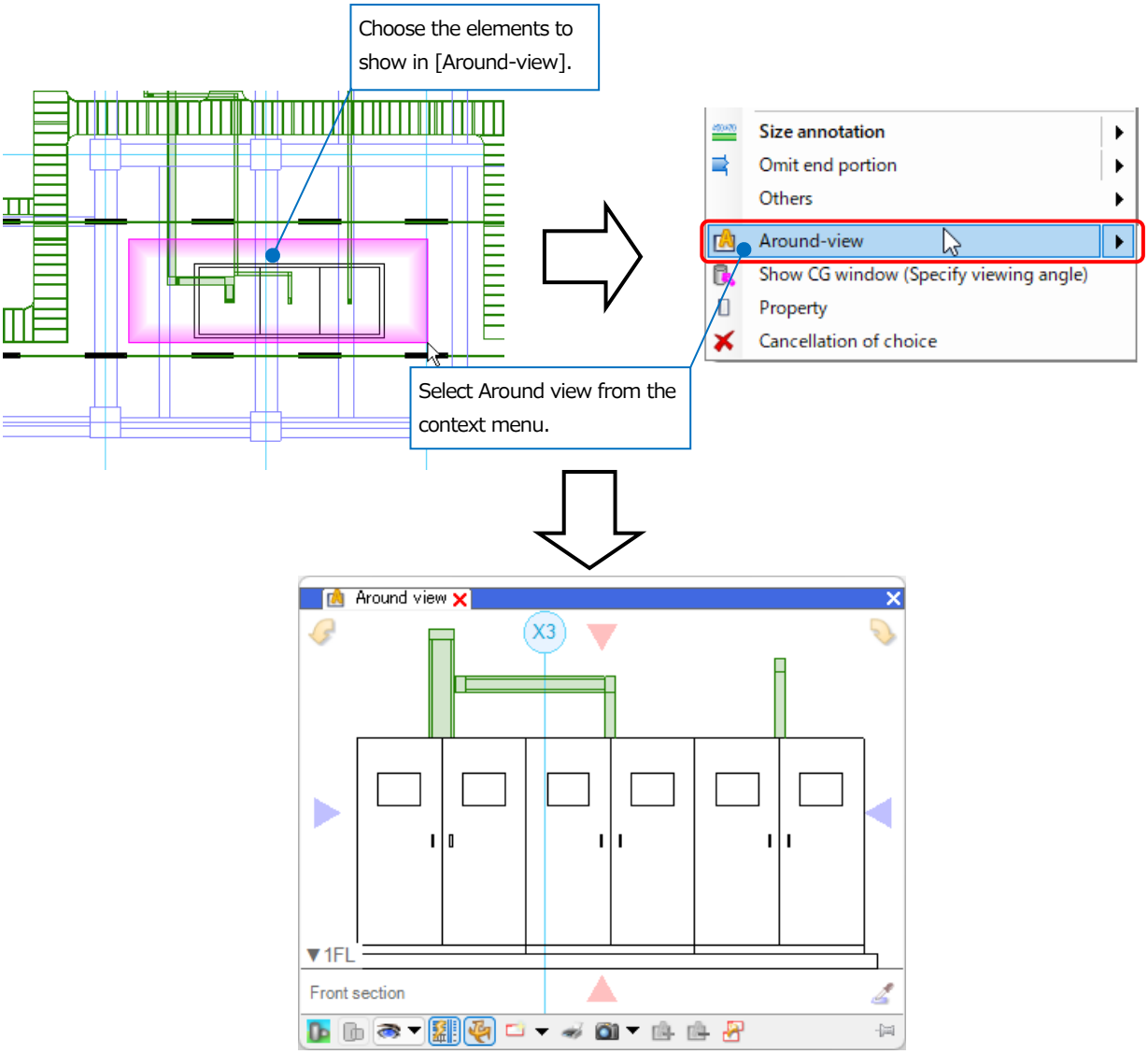
Move





10. Around-views

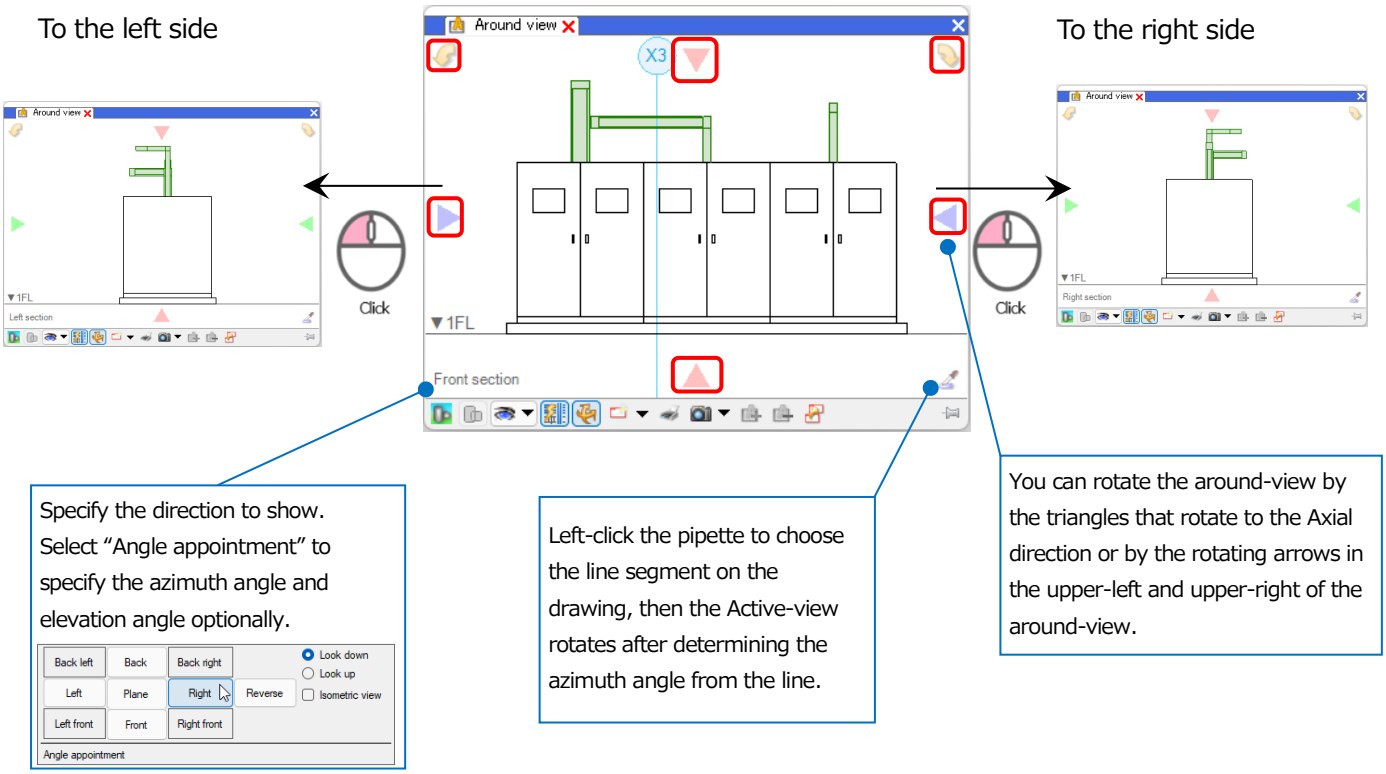
Around-view is a pop-up window to watch a part of the drawing from another perspective. By around-view, you can check a section without placing the view on the drawing. You can also draw or edit the drawing by around-view.



You can activate up to ten around-views at the same time. When you stick up the pushpin in an around-view, the around-view is kept alive and you can open the next around-view that will be activated in another window. When you lay down the pushpin, you can update the elements shown in the same window.

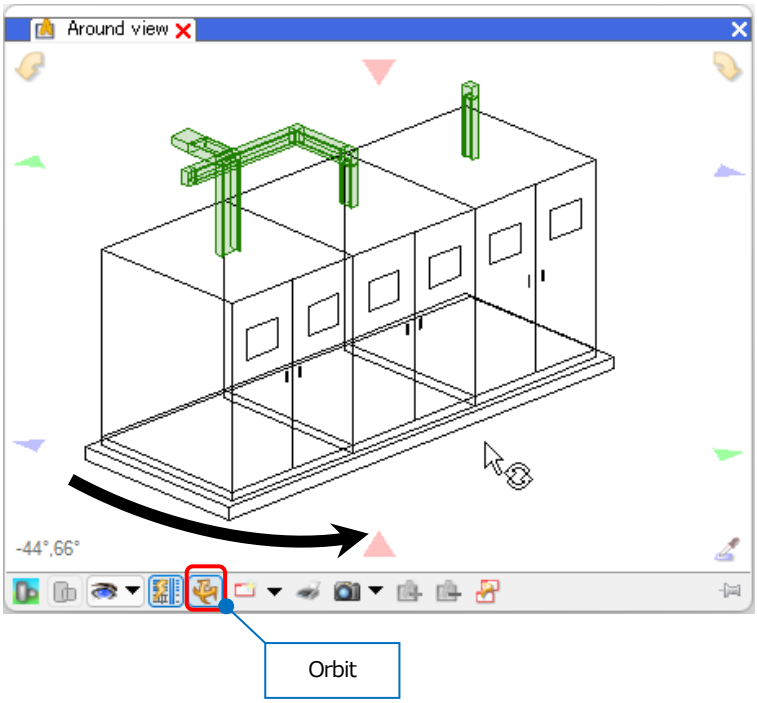
Change the perspective of around-views

Switch the direction.



Orbit

Right-drag the pointer to rotate the perspective, then you can check the drawing from any angle.



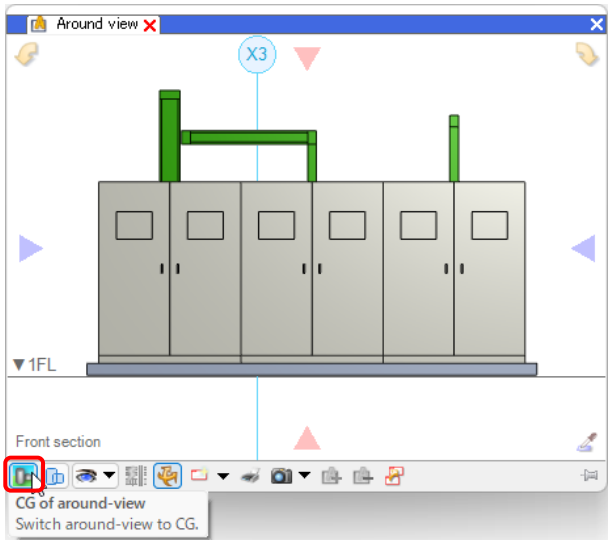
Memo

Operate while choosing the element to rotate your viewpoint around the element.

Drag

Switch the showing in the around-view to CG display

You can switch the showing of elements in the around-view to CG display.

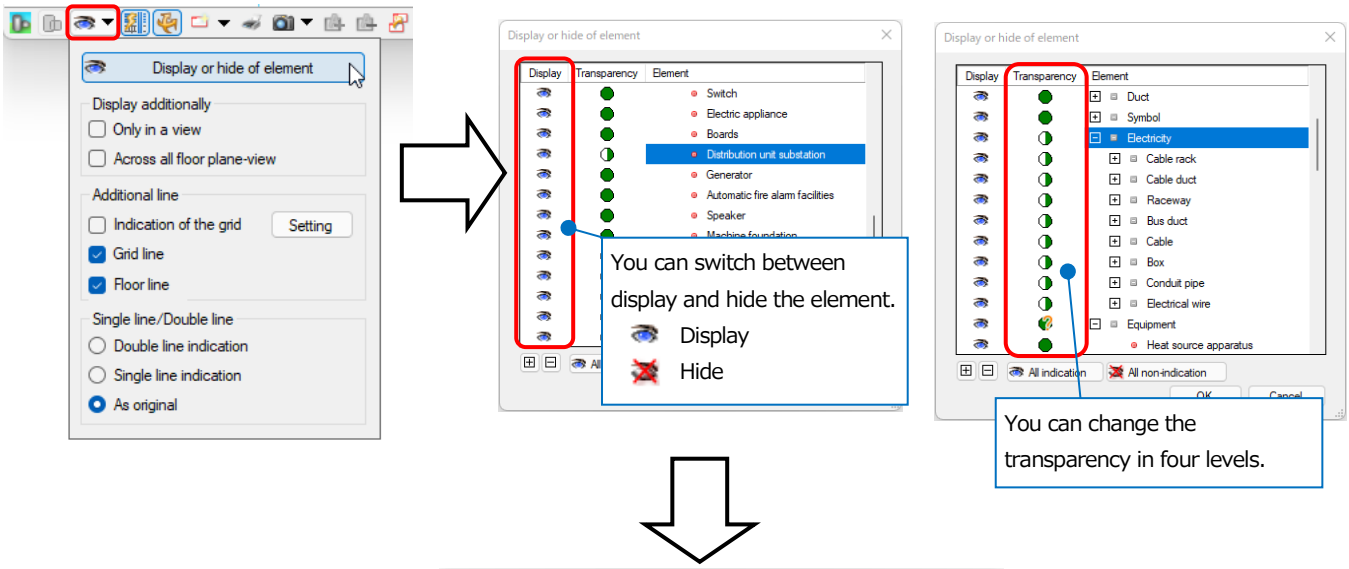


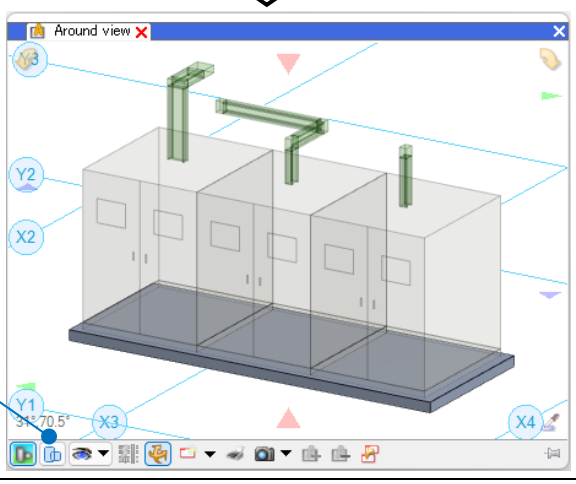
Set up display or hide elements and the transparency

You can switch between show and hide on an element basis.

Set up [Expression of around-view]-[Display or hide of element].

When CG display is in the around-view, you can set up the transparency.

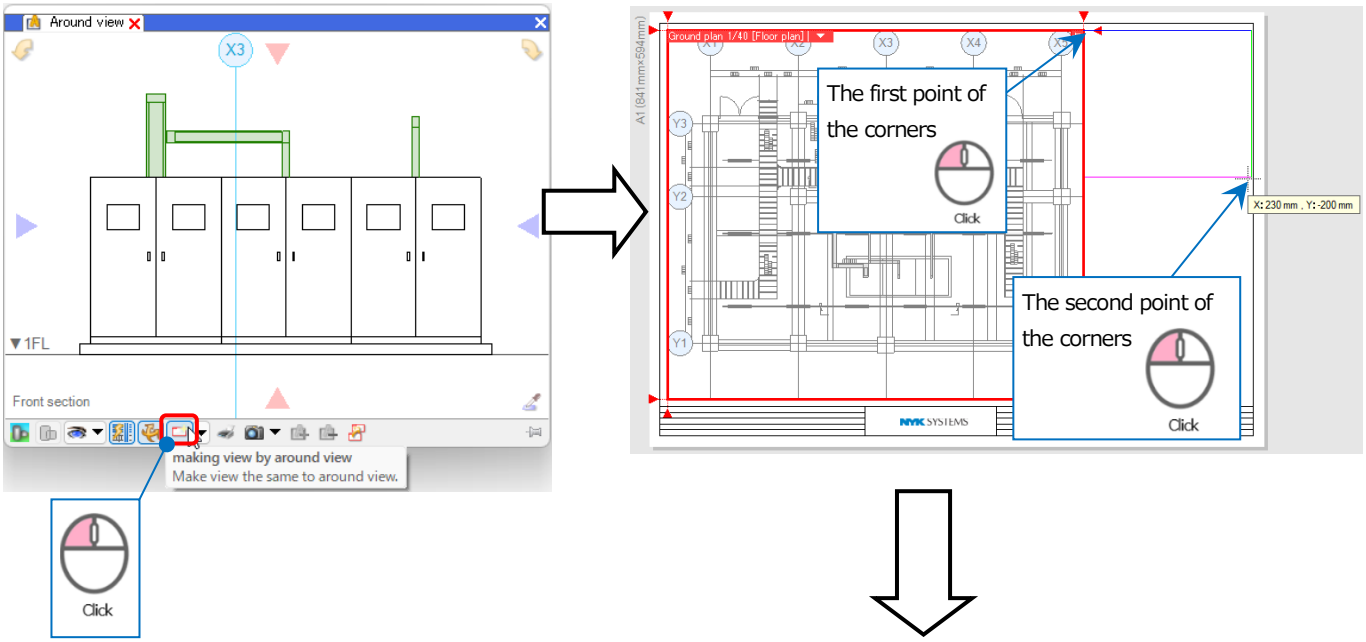


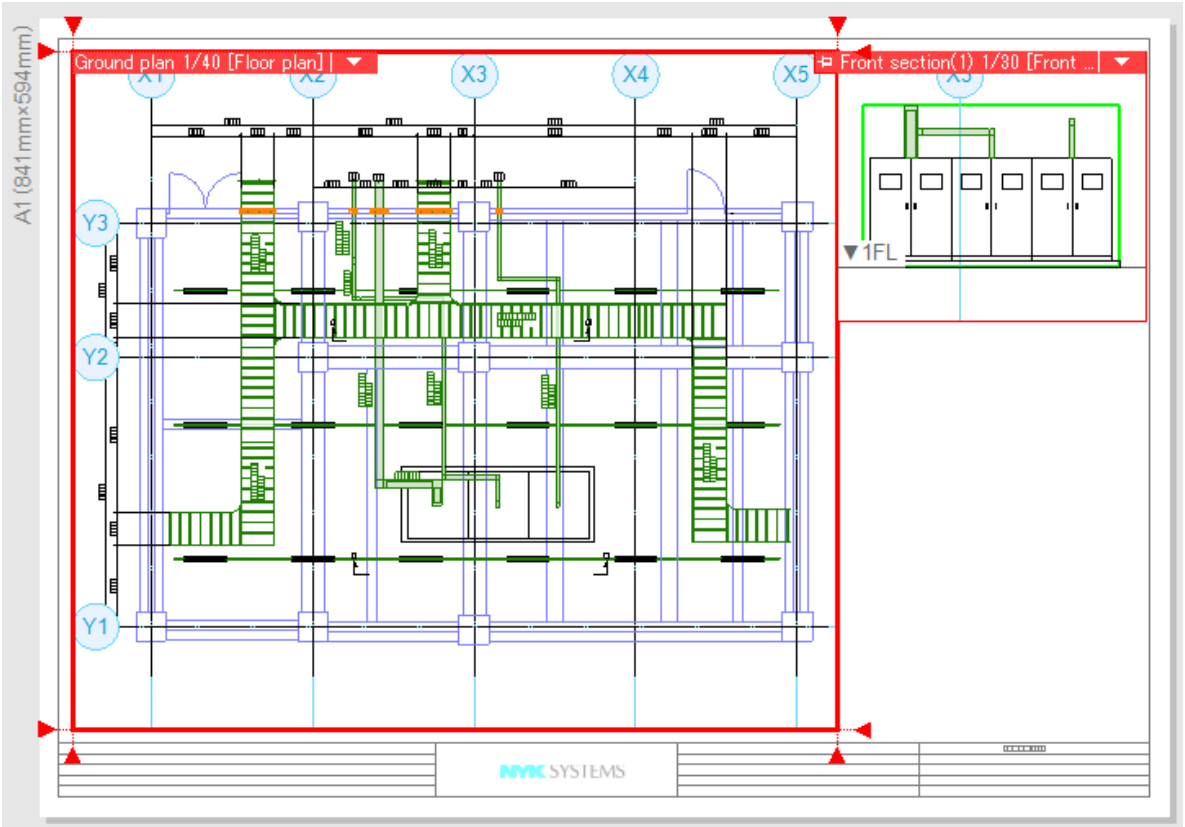


Left-click [Transparency of CG display of [Around-view]] to change between [Nontransparent], [Semitransparent], or [Transparent] for the element set up by [Display or hide of element].

Making view by the around-view

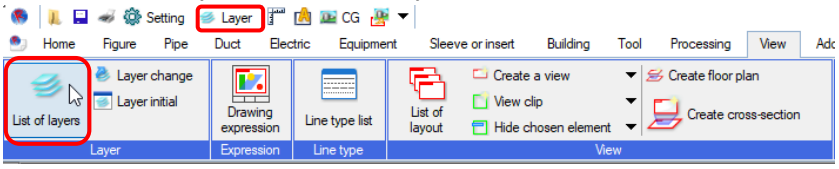
On the drawing, you can place as a view the state shown in the around-view. Use a temporary rectangular frame made from 2 points of the opposite corners to specify the view area.



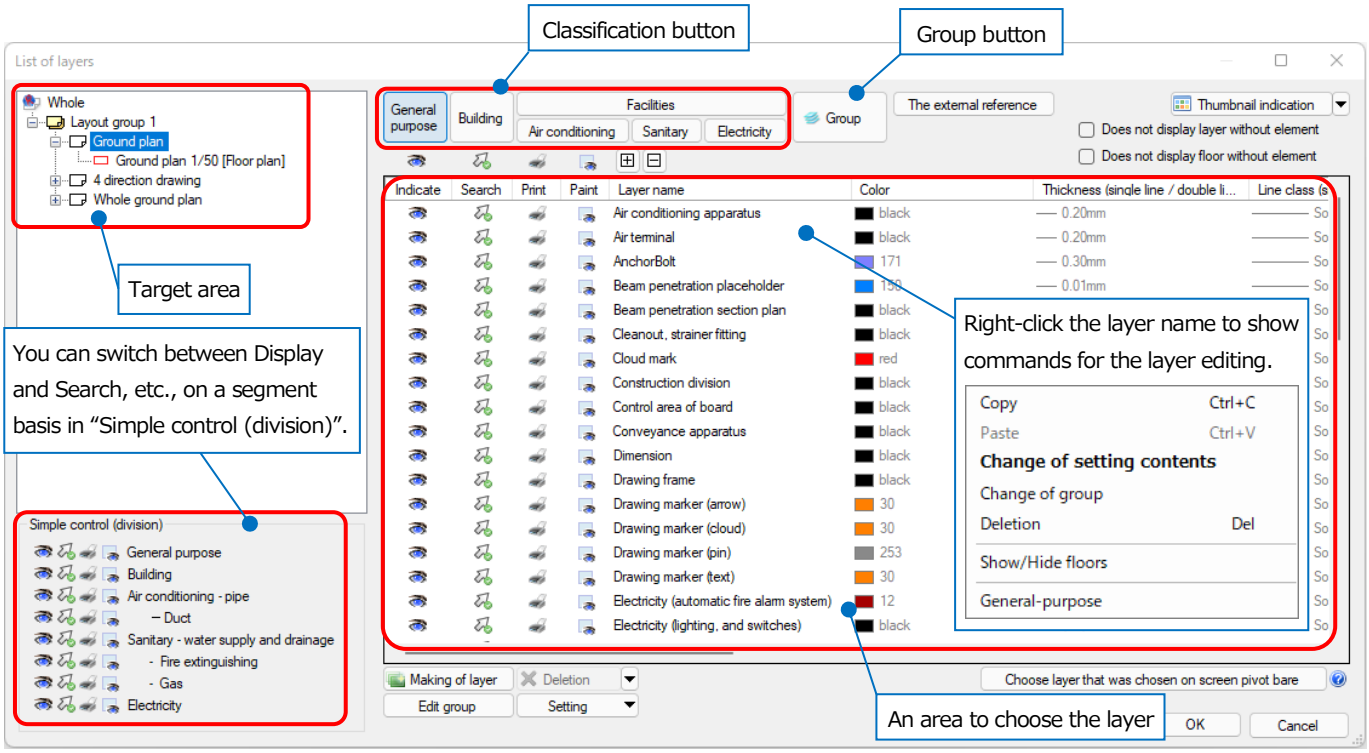


11. Operate layers

Select [List of layers] to control layers in Rebro.

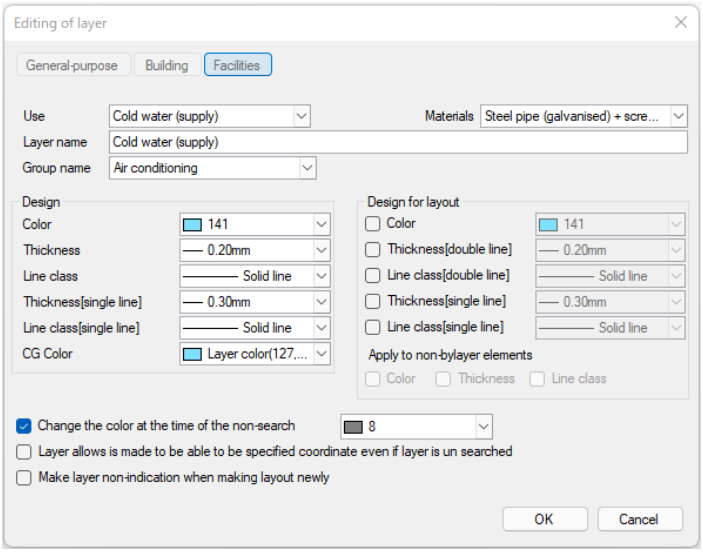


Layers are classified. You can make groups across the classification.
Select “Group” button to show the layers on a group basis.



Editing of layer

Right-click the layer name to change the layer settings for the color, line thickness, and line type by [Change of setting contents].



-Design for the layers

You can set the Color, Thickness, Line class, and CG Color.

-Design for the layout or view

For each specified layout or view, you can set the Color, Thickness, Line class, differently from those of “Design”.

Change the layer state

For each layer, you can change the state of Indicate, Search, Print, and Paint.
Left-click the icon to switch between on and off.

	Indicate	Search	Print	Paint
ON				
OFF				

Even in the off state of Search, on the drawing, left-click the element while pressing Alt to search temporarily.

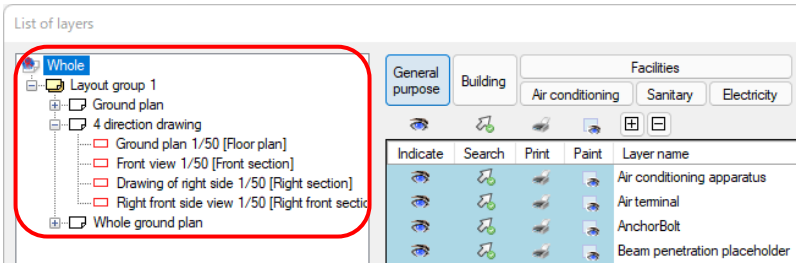
* Cancel temporarily the off setting for Search:

Target of Indicate, Search, Print, and Paint:

Choose the target to set.

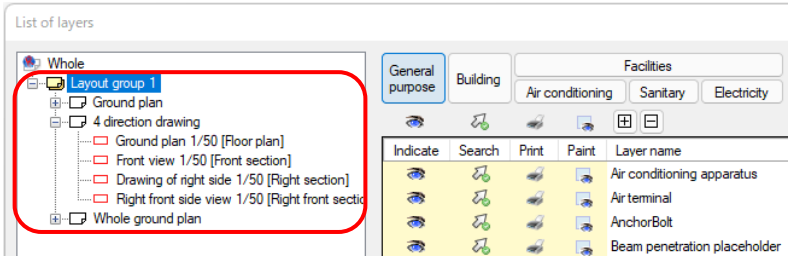
-To the whole drawing

Set to the whole drawing. Affect all layouts and views.



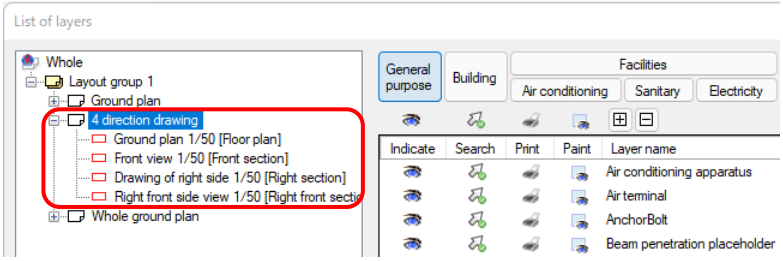
-To the layout group(Layout group name)

Set on a layout group basis. Affect all layouts that are included in the group.



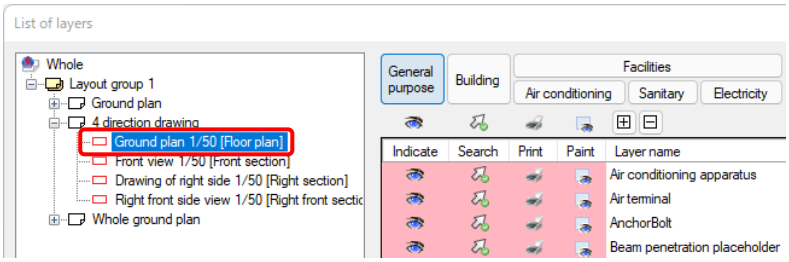
-To the layout (Layout name)

Set on a layout basis. Affect all views that are placed in the layout.



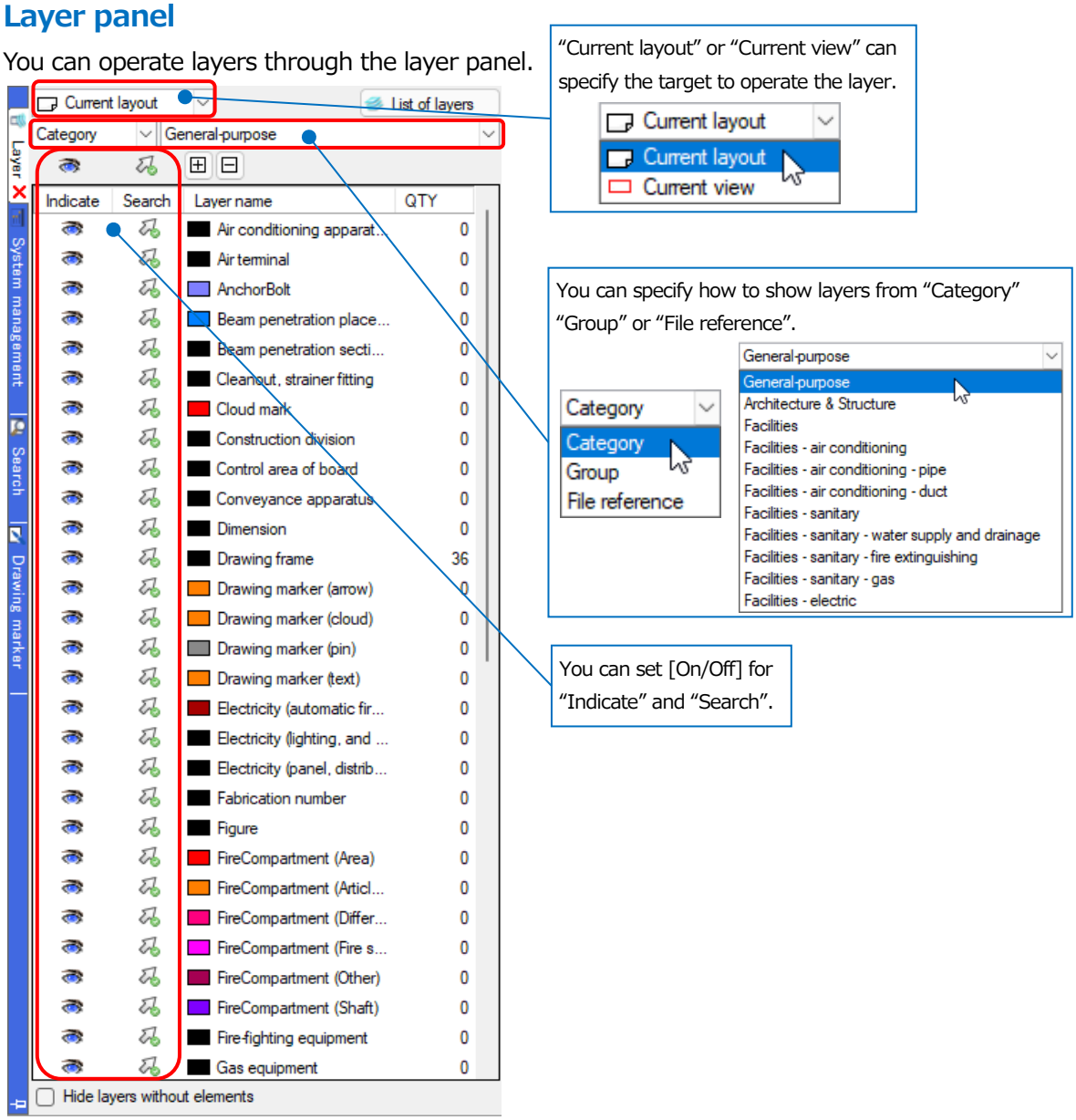
-To the view (View name)

Set individual view that is placed in the layout.



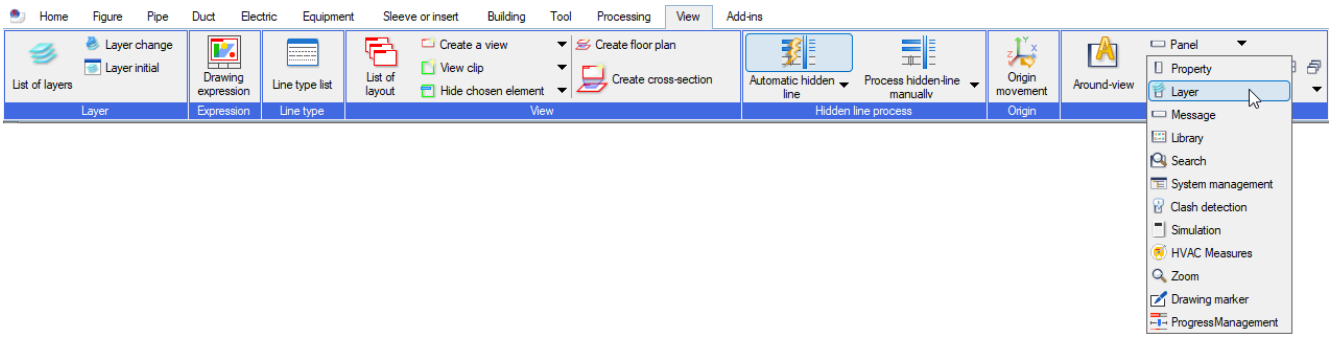
Layer panel

You can operate layers through the layer panel.



- Supplementary explanation:

You can open the layer panel through [View] tab-[Panel].

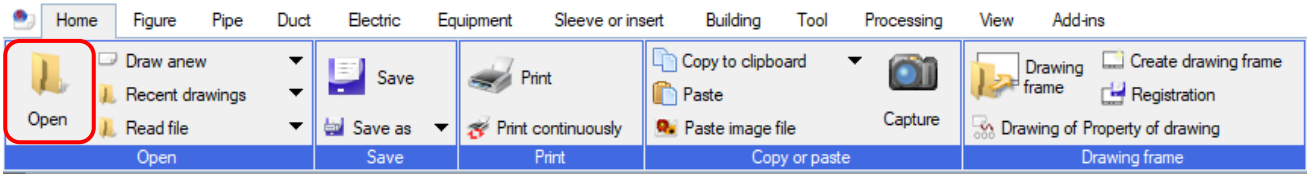


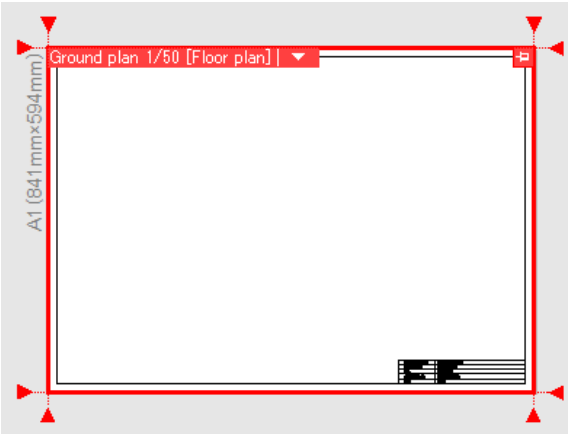
12. Create a drawing frame

Draw a drawing frame by “Paper”. “Paper” is drawn in two-dimensional space at a 1:1 scale and is not affected by the view orientation or scale.
Rebro can read and store the drawing frame from DXF or DWG drawings. You can also refer to the Rebro drawing frame from the multiple files.

Read a drawing frame from DXF/DWG or JWW Data

Left-click [Home] tab-[Open] to select DXF/DWG or JWW data. (See also page 39)

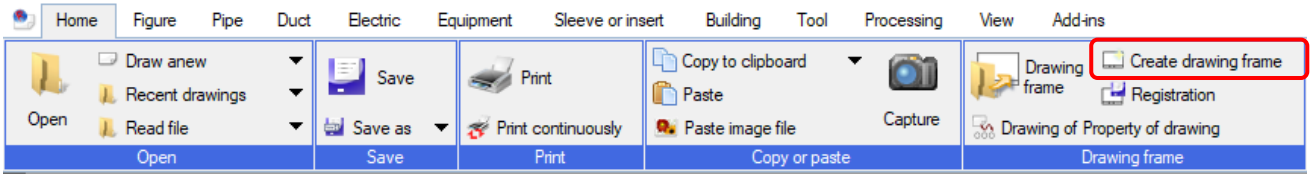




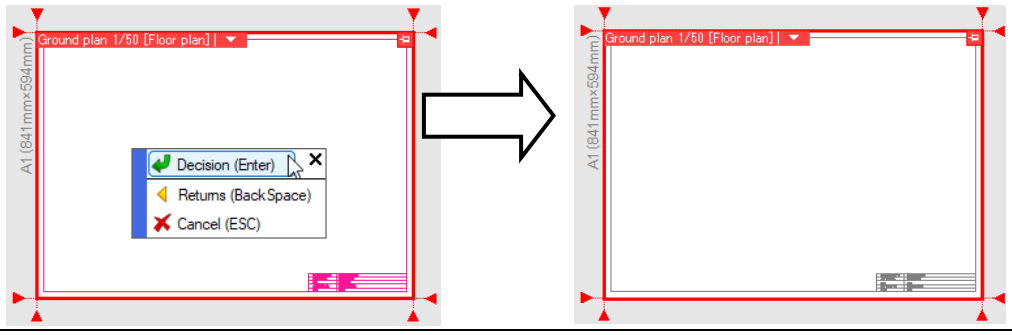
Switch the element "Model" to "Paper"

In order to change a layer to the drawing frame, select [Create drawing frame] to switch the element in chosen “Model” to “Paper”.

Left-click [Home] tab- [Create drawing frame].



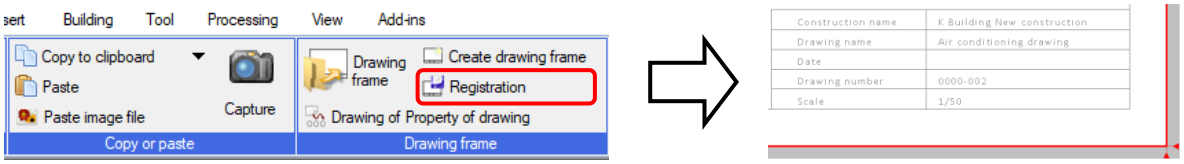
Specify the element in the drawing frame to confirm the state.
-> The specified element changes to “Paper”.



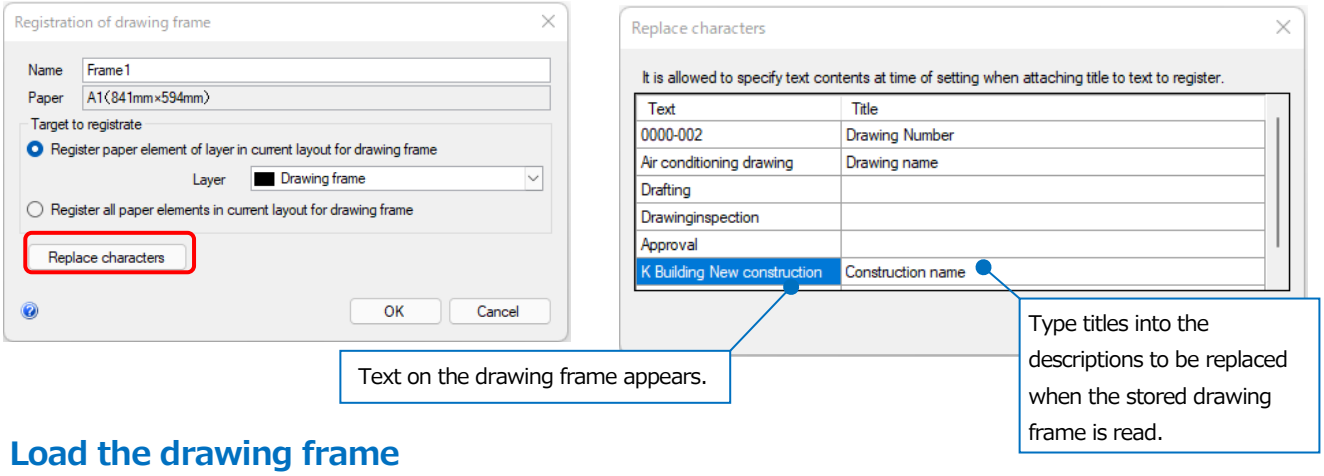
Store in "A collection of drawing frames"

Store in Rebro the element that is changed to “Paper” by [Create drawing frame].

Left-click [Home] tab- [Registration] to specify the element of the drawing frame to be stored.



Type the name for the stored drawing frame into [Name] in [Registration of drawing frame] dialog box. Left-click [Replace characters] to show the dialog box. If text is included in the element that is changed to the drawing frame, the text is shown in [Text] row. Type into [Title] row, to replace descriptions when the stored drawing frame is read.

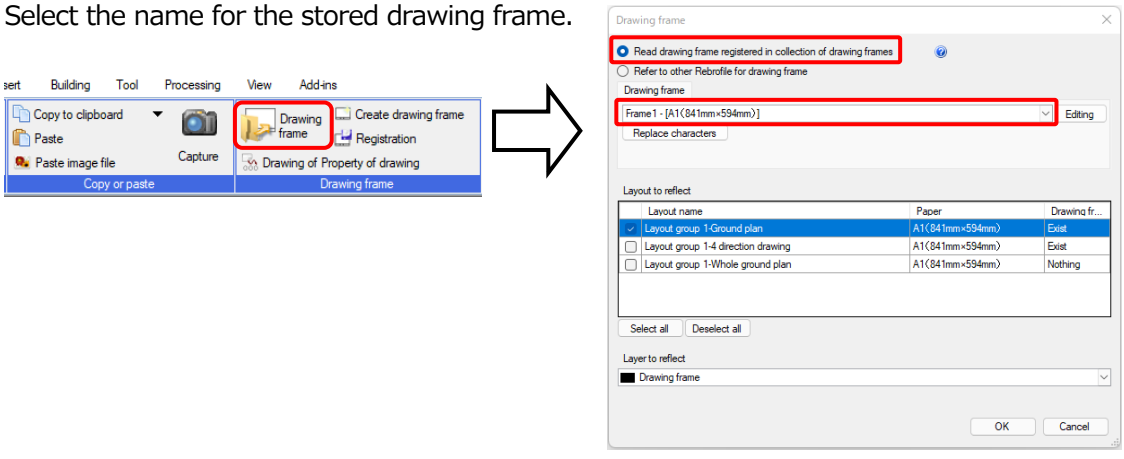


Load the drawing frame

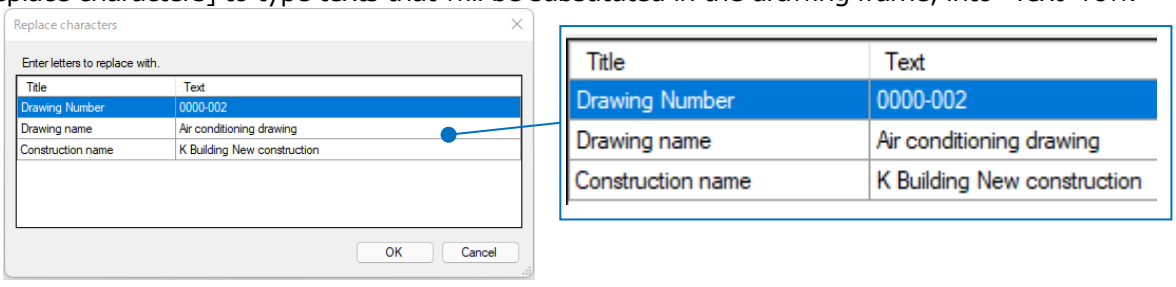
Load the stored drawing frame on the drawing. The elements on the “Paper” in the affecting layer are deleted.

Select [Home] tab- [Drawing frame]-” Read drawing frame registered in collection of drawing frames”.

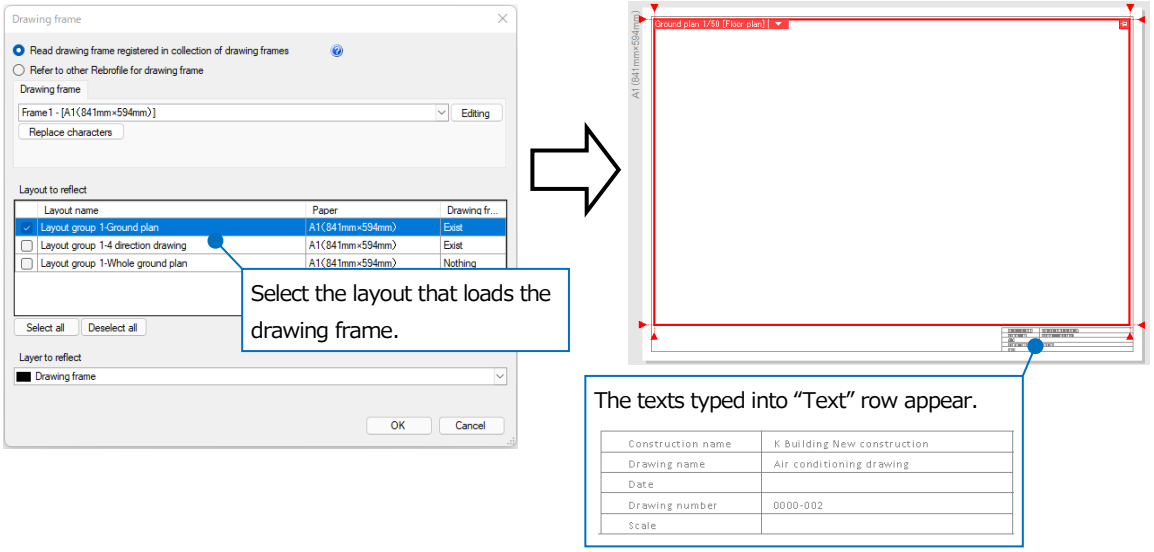
Select the name for the stored drawing frame.



Left-click [Replace characters] to type texts that will be substituted in the drawing frame, into “Text” row.



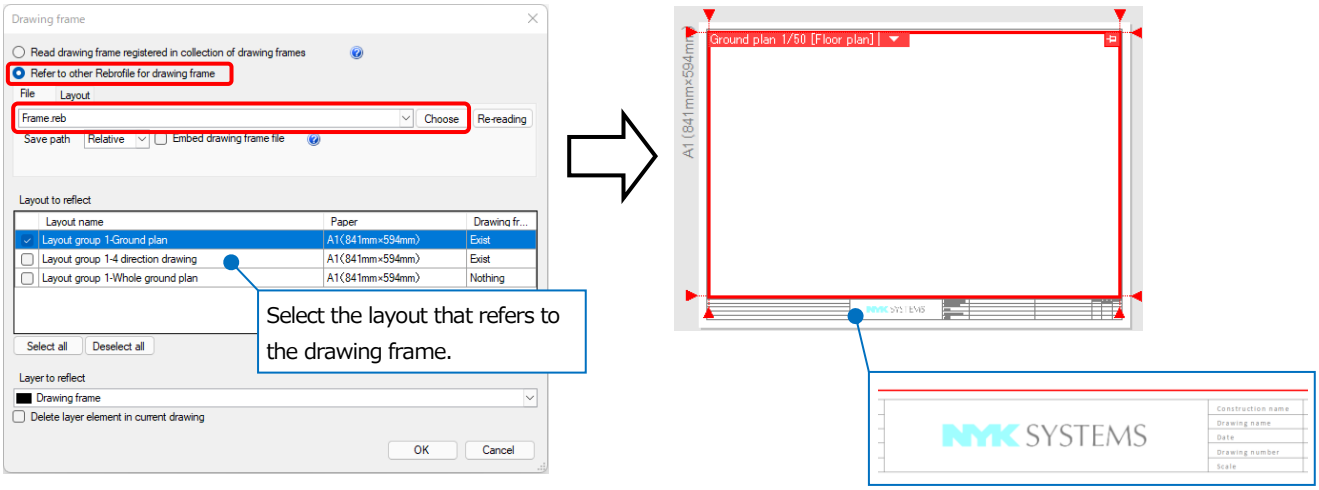
Left-click [OK] to load the drawing frame.



Refer to the drawing frame

Save the common parts of the drawing frame into Rebro file to refer to the drawing frame of the file.

Left-click [Home] tab- [Drawing frame].
Select “Refer to other Rebro file for drawing frame”, and select the Rebro file name that you want to refer to and left-click “Choose”.

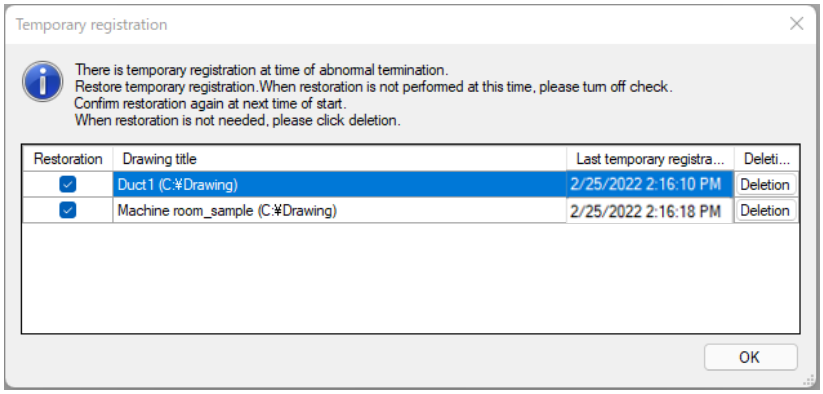


13. Temporary storage and periodic backups

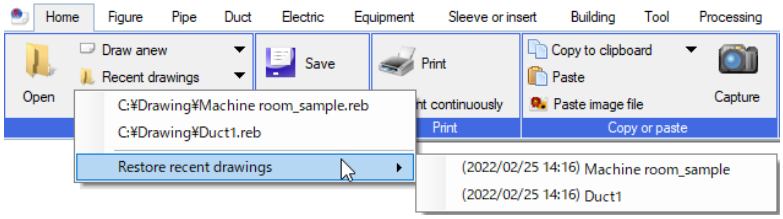
Rebro has two ways for backup function: Temporary storage to recover the drawing of the abnormal termination at the next startup; Automatic storage of the drawing at regular intervals under operation.

If Rebro terminates abnormally

If Rebro terminates abnormally, [Temporary registration] dialog box appears at the next startup, where the drawing that was open at the abnormal termination is shown. Save the drawing after the restoration.

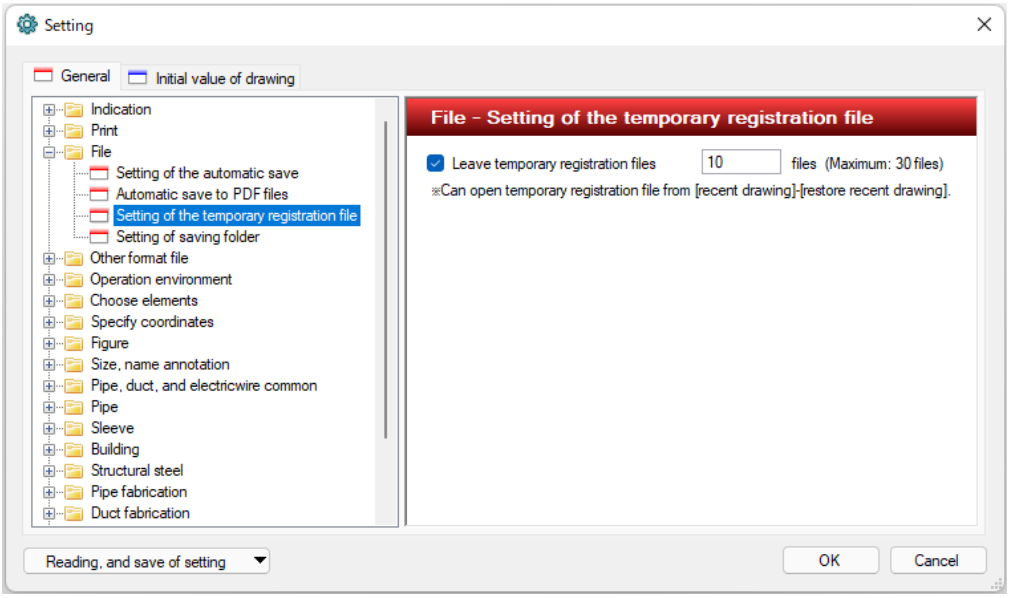


Moreover, if an abnormal termination occurred or you terminated Rebro without saving, you can restore the file through [Home] tab- [Recent drawings]- [Restore recent drawings].



Set files for temporary storage

If you have selected “Leave temporary registration files”, you can execute [Restore recent drawings].



Automatic backup under operation

Rebro automatically stores the drawing at regular intervals under operation.

The drawing file is named as: “~” is added at the beginning, the date and time at the end.

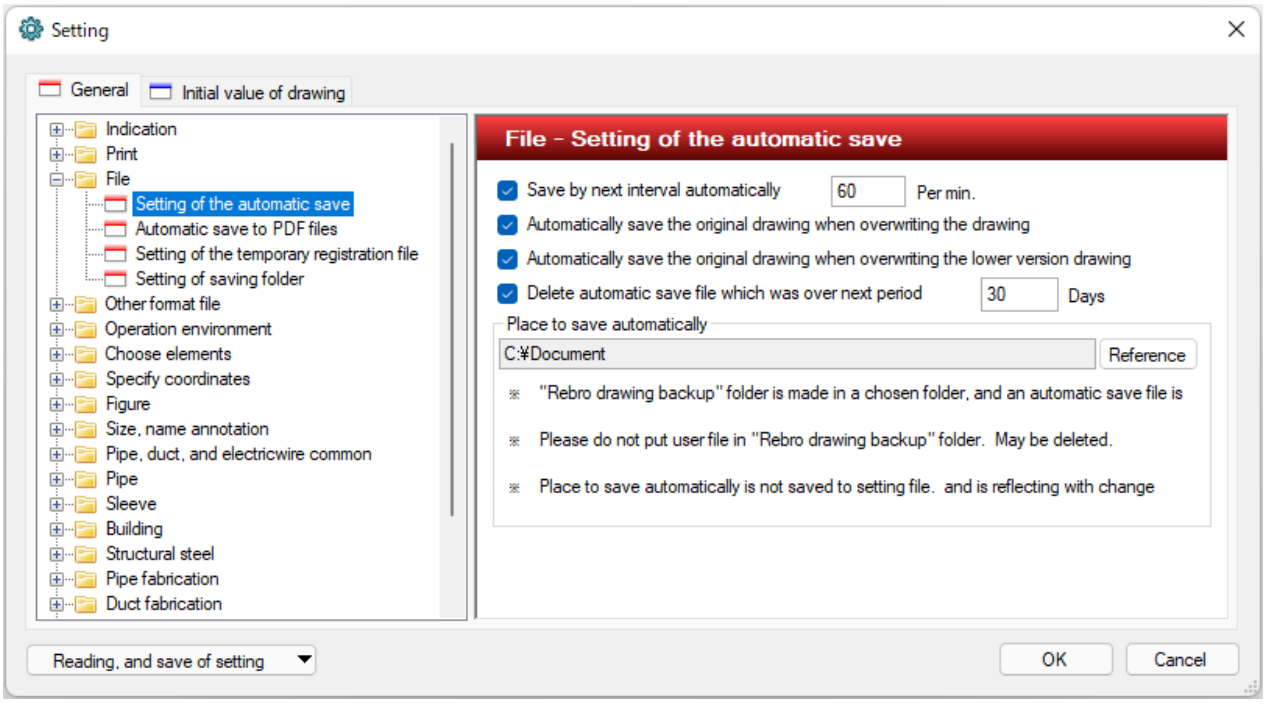
For example: If the original name of a drawing is “buildingdrawing.reb” and was saved at 10:10 a.m. on January 1, 2022.

“~buildingdrawing_20220101_1010.reb”

You can set where the backup file is stored through [Setting]-[General]tab-[File]-[Setting of the automatic save]

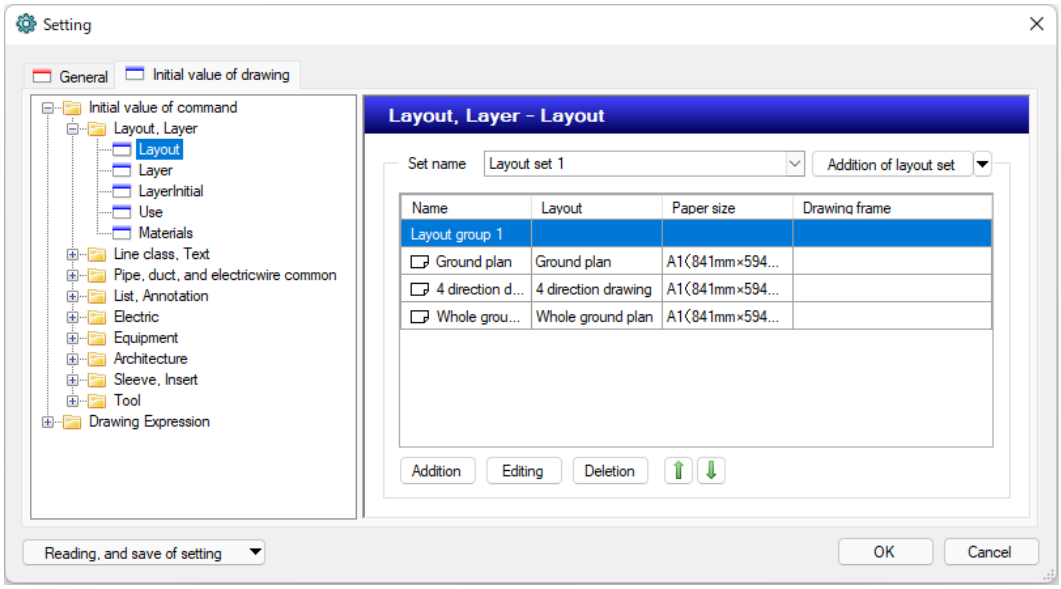
Time interval for automatic storage

- Select [Save by next interval automatically] to store automatically at the time intervals.
- If you store halfway through drawing, Rebro stores automatically at regular intervals from the time.
- If any command is working at the time of automatic storage, Rebro stores after the command’s execution.
- Select “Delete automatic save file which was over next period” to delete automatically the drawings that exceed the set period after the storage.



14. Settings

You can control Rebro's settings by [Setting].



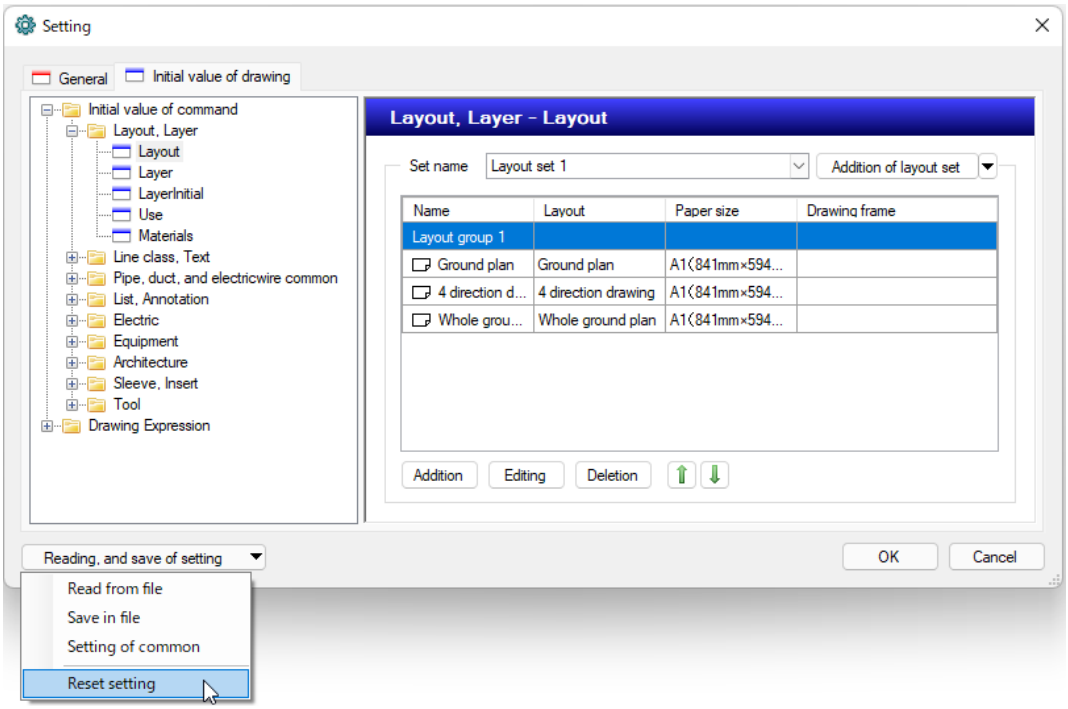
The initial settings for the opening drawing when Rebro starts up

The opening drawing that appears when Rebro starts refers to [Setting]-[Initial value of drawing]tab.

The change of the initial value of the drawing does not affect the drawing under operation.

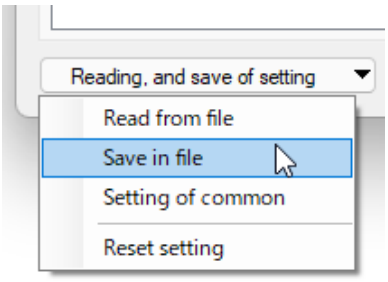
Reset the settings

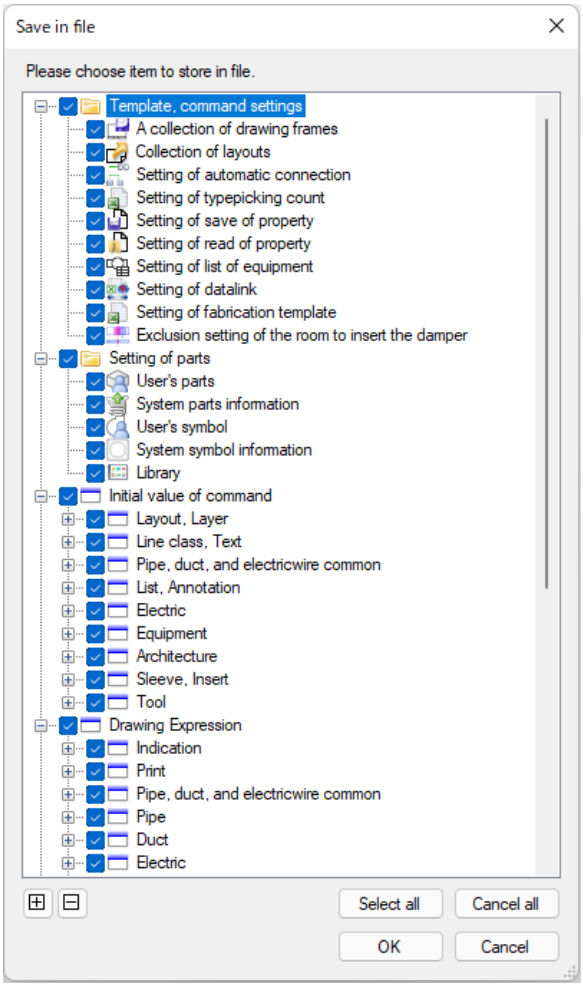
You can reset the settings to the initial state of the time of the installation.



Transfer all settings to another PC

The setting descriptions can be saved for each selected item.
When Rebro reads the settings, only the necessary descriptions can be specified also.





-Create a setting file
[Setting]-[Reading, and save of setting]-[Save in file]

-Read a setting file
[Setting]-[Reading, and save of setting]-[Read from file]

- Supplementary explanation:

Settings can also be saved by [Setting] of each command.

References: Keyboard shortcuts

The keyboard shortcut set at the time of the installation are shown below.
Go through [Setting]-[General]tab-[Operation environment]-[Shortcut key] to modify or add keyboard shortcuts.

Command name	Shortcut key
Indication area is scrolled to top	Up
Scroll indication area below	Down
Indication area is scrolled to left	Left
Indication area is scrolled to right	Right
Expand indication area	Page Up
Fitting of display area	Page Down
View is scrolled to top	Ctrl+Up
Scroll view below	Ctrl+Down
View is scrolled to left	Ctrl+Left
View is scrolled to right	Ctrl+Right
Layout last group	Shift+Up
Next layout group	Shift+Down
Last layout	Shift+Left
Next layout	Shift+Right
Help	F1
List of layers	F2
Setting of use	F3
Zoom panel	F4
Around-view	F5
New window	F6
Show windows horizontally	F7
Show windows vertically	F8
Property panel	F9
Library panel	F10
Setting	F11
CG window	F12
Fitting of indication area	Home
Restore indication area	End
Revert the scroll	Ctrl+End
Deletion of element	Delete
Deletion of element (shape keeping)	Ctrl+Delete
Copy to clipboard	Ctrl+C
Specify reference position to copy	Ctrl+Shift+C
Draw anew	Ctrl+N
Open drawing	Ctrl+O

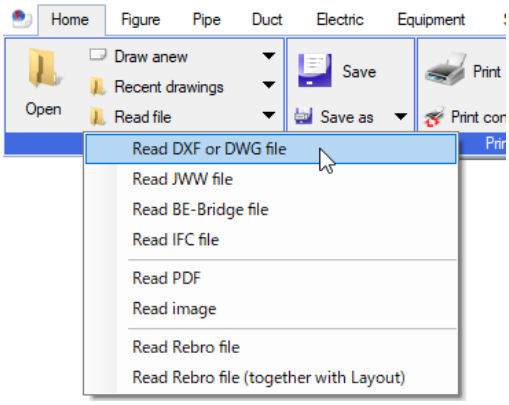
Command name	Shortcut key
Print	Ctrl+P
Save	Ctrl+S
Paste	Ctrl+V
Undo	Ctrl+Z
Redo	Ctrl+Y, Ctrl+Shift+Z
Deletion of history	Ctrl+D
Search panel	Ctrl+F
Replacement of text	Ctrl+H
Choose all	Ctrl+A
Select of group	Ctrl+G
Extend the chosen element	Ctrl+Q
Filter the chosen element	Ctrl+W
Choose previous element	Ctrl+E
Reverse the chosen element	Ctrl+R
Section select	Ctrl+B
Meaningful point	A
Endpoint	T
Midpoint	M
Center	C
Point of intersection	K
Point on of grid line, floor	S
Virtual point of intersection	X
Equal division point	N
Addition of auxiliary point	H

A tutorial manual

Read the building drawing

1.Read the building drawing (DXF/DWG, JWW, BE-Bridge, or IFC)

Select [Home] tab- [Read file] to read the building drawing.

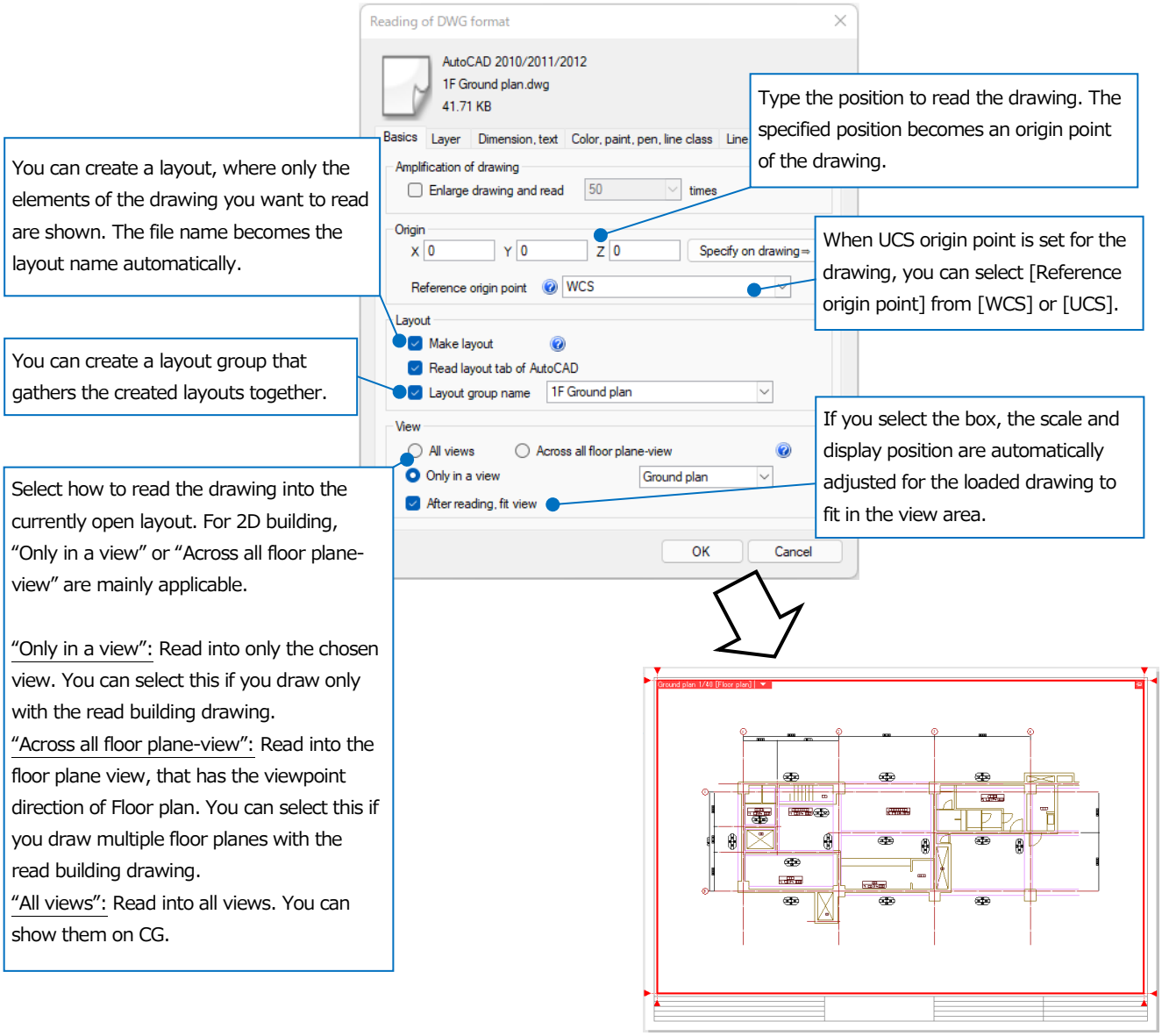


Read DXF or DWG file	*.dwg *.dxf (for both 2D and 3D)
Read JWW file	*.jww (2D)
Read BE-Bridge file	*.ceq (3D)
Read IFC file	*.ifc (3D)

Read the 2D building drawing

Select the drawing to show [Read file] dialog box.

Left-click [OK] to read the building drawing.



You can create a layout, where only the elements of the drawing you want to read are shown. The file name becomes the layout name automatically.

Type the position to read the drawing. The specified position becomes an origin point of the drawing.

When UCS origin point is set for the drawing, you can select [Reference origin point] from [WCS] or [UCS].

You can create a layout group that gathers the created layouts together.

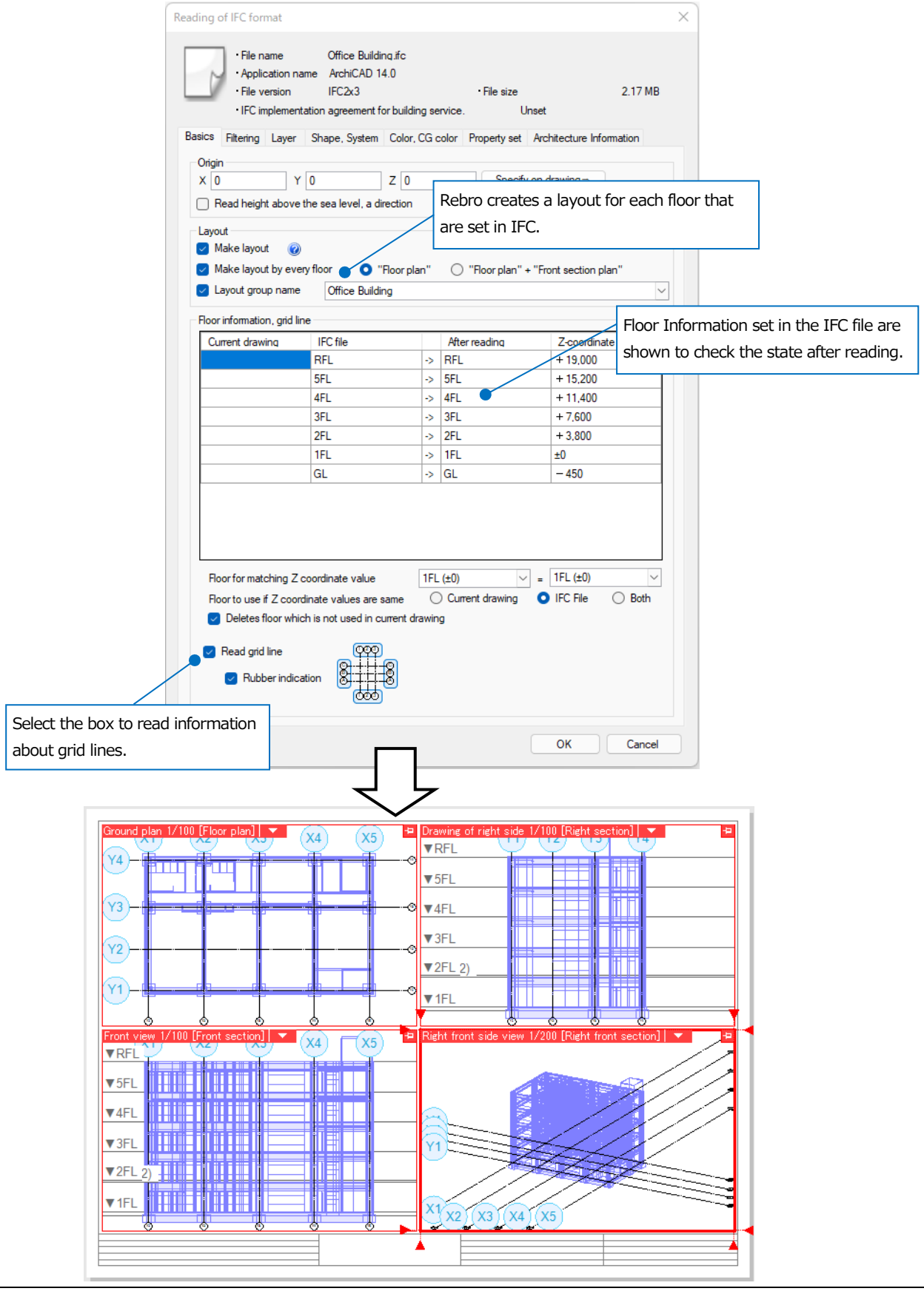
If you select the box, the scale and display position are automatically adjusted for the loaded drawing to fit in the view area.

Select how to read the drawing into the currently open layout. For 2D building, "Only in a view" or "Across all floor plane-view" are mainly applicable.

"Only in a view": Read into only the chosen view. You can select this if you draw only with the read building drawing.
"Across all floor plane-view": Read into the floor plane view, that has the viewpoint direction of Floor plan. You can select this if you draw multiple floor planes with the read building drawing.
"All views": Read into all views. You can show them on CG.

Read the 3D building drawing (model data)

IFC file has pieces of information not only for the shape but also for the attribute. Rebro can read, as its own data, the beams, columns and so on that were drawn with architect CAD systems.



Settings for each drawing type to read

Setting descriptions in [Read] dialog box gets different according to the drawing type to read.

DXF/DWG

[Read layout tab of AutoCAD]: Rebro can read the layout of DXF/DWG.

[Dimension]: Rebro can read, as its own elements for dimension line, the dimension line data of AutoCAD. Select [Divide dimension into line and text] to read the dimension line at the similar size as the original one.

[Text]: Read the text that was output from AutoCAD specifying the size for each font.

JWW

[Color, paint]: you can select whether to read the element color as printing color set in Jw_cad for Windows after the conversion, or to change into layer color without the original drawing color. Also, you can select how to read the color-filling from a flat fill or semi-transparency.

BE-Bridge

[Reference floor]: Specify the reference floor to read.

IFC

[Filtering]: You can specify the element to read according to each IFC element class, layer, and floor.

[Making method of layer]: You can read as IFC layer setting, or set the layer with IFC element class.

[Reading of standard for use of facilities IFC data]:

Select [Read with original shape] to read as a general-purpose figure irrespective of building attribute.

When you checkmark [Read 2D drawing (DWG)], Rebro also reads DWG file (*.dwg) of the same name in the same folder as IFC/IFCZIP file. If there is no DWG file of the same name in the same folder, it gets invalid.

[setting] can make settings for the DWG file to be read.

When you checkmark [Delete 2D figures that overlap with facilities data], Rebro deletes 2D figures data in DWG files that overlap with facilities data and then reads.

Checks will not work in the following cases:

-If you read a DWG file separately from a DWG file that was output simultaneously with an IFC file by [Save as IFC file] etc.

-If you select [Read with original shape]

2.Show the external file as a reference

File reference function can show files (*.dxf, *.dwg, *.jww, *.reb) as a reference. If any modification occurs while you are referring to the building drawing, the modification can be affected on the reference drawing with these two ways: Select [File Reference]-[Update] or reopen the drawing. You can only see the drawing of the reference and cannot edit it.

What you can do by external reference function

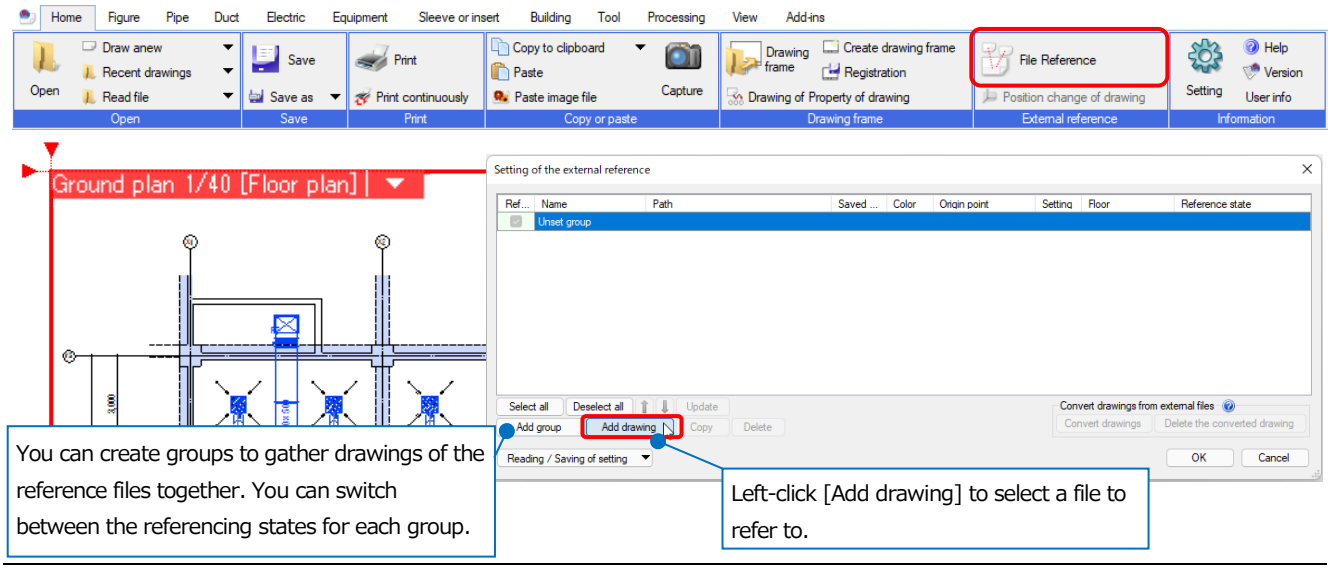
-CG display, -Print, -Property reference, -Save of property, -Layer control
-Around-view, -Size or name annotation, -Search, -System management, -Hidden line process
-Drawing of fire compartment, -Automatic processing of fire compartment penetration
-Confirmation of compartment penetration, -Clip,
-Show or Hide the chosen elements (only when the reference source file is Rebro drawing)
-Clash detection, -Save as IFC file, -Save of list of sleeves, -Insert sleeve automatically
-Add up, -Place penetrative area into beam, -Check penetration into beam,
-Beam penetration section plan, -List of equipment

What you cannot do by external reference function

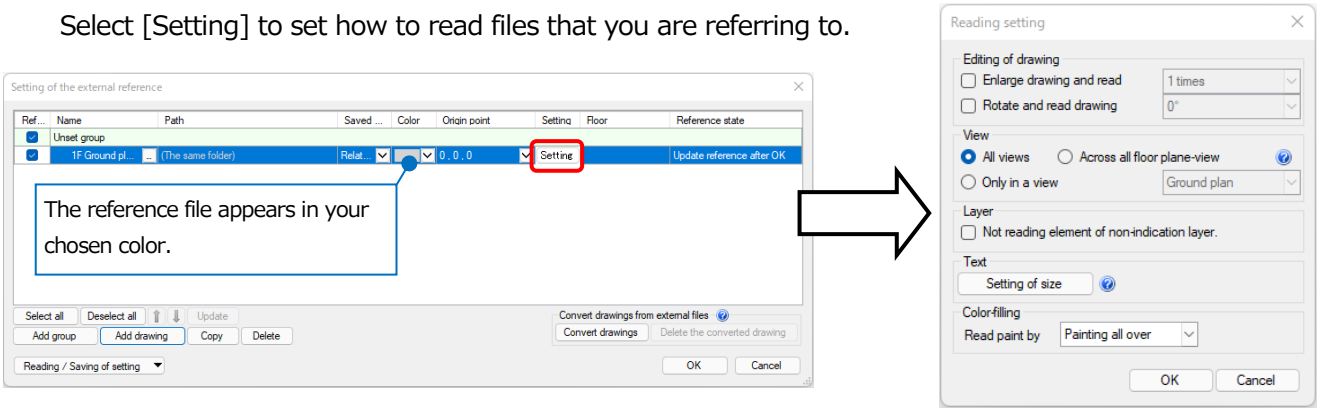
-Output to BE-Bridge file,
-"Choose all", "Extend the chosen element", "Reverse the chosen element",
-"Extend the route choise", "Choose section on the route", "Extend the parts choise"
-Edit the descriptions

How to use external reference

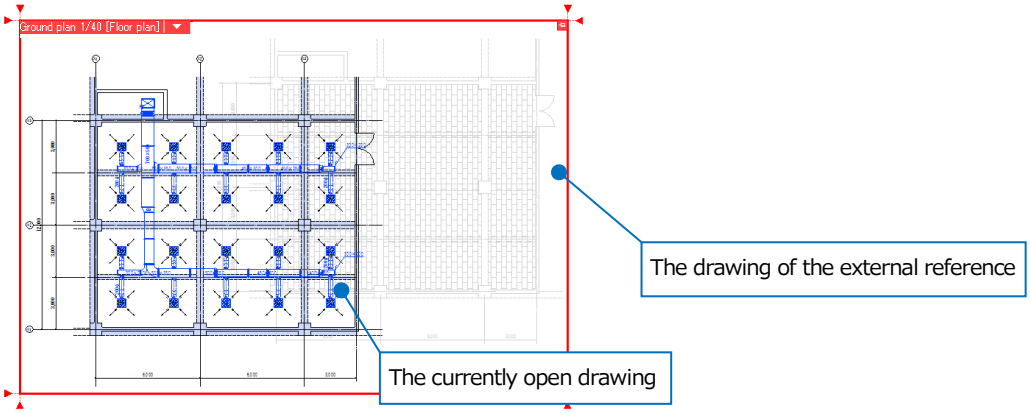
① Select [Home] tab to start [File Reference].
Left-click [Setting of external reference] dialog box-"Add drawing" to select a file that you want to refer to. Rebro can read the files of "*.dxf, *.dwg, *.jww, *.reb".



② The specified file appears in the dialog box.
Select [Setting] to set how to read files that you are referring to.

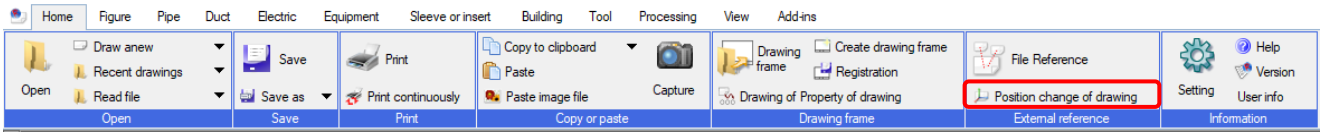


③ The drawing of the reference file appears. The drawing is placed to the position where the origin point of the reference source overlays on that of the reference to.
If a position of the origin point is misaligned and the reference destination drawing does not show in the view, select [Fitting] in view to check.

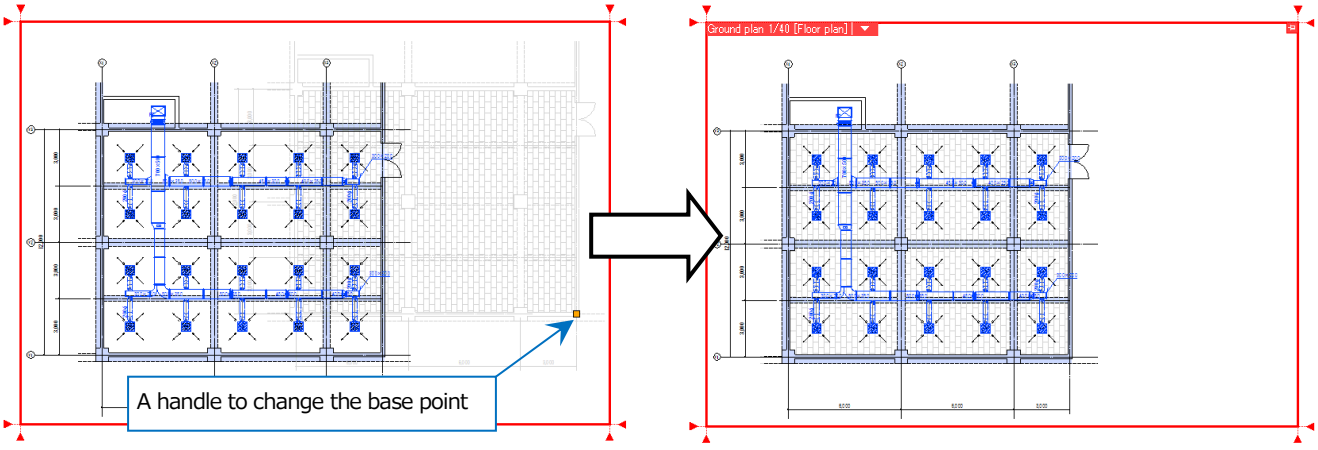


Alignment between drawings in reference files

① Select [Home] tab- [Position change of drawing] to move the drawing of the reference file.



② The handle (orange color) to change a base point appears at the origin point on the drawing of the reference file. To overlay on the drawing in the reference source, left-click the handle and specify the reference position on the drawing of the reference to.



How to operate the drawing of the file reference

-Color

Specify the color in [Setting of the external reference] dialog box to show lines on the drawing in the specified color. If you specify “Color of original drawing”, the lines are shown in the color set on the original drawing.

-Output DXF, DWG, and JWW

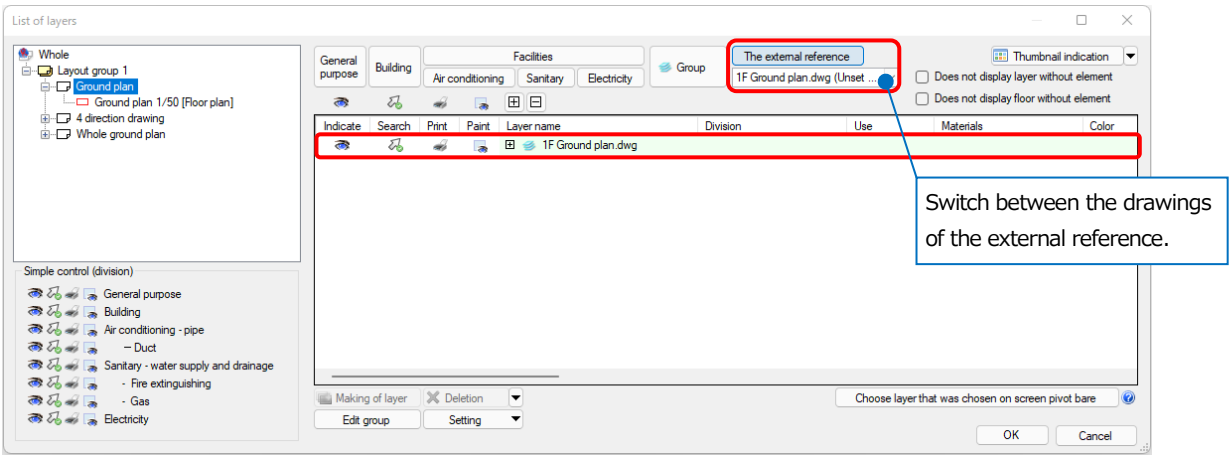
Output during the external reference, to output the both drawings of the reference source and the reference to as a sheet of drawing. If you specify the color, lines are output in “the color”.

-CG display

If 3D figures are on the drawing of the reference file, it is shown in 3D image.

-Layer

You can create layer groups for each drawing of the reference file. You can switch between display or hide, etc. on a layer basis in [List of layers]. Also, you can operate layers on a group basis set in the external reference.



-Convert drawings from external files

You can convert or release the reference destination drawing from [Convert drawings] or [Delete the converted drawing] of [Convert drawings from external files] in the [Setting of the external reference] dialog box. To import an external reference drawing results in a single drawing. This feature allows you to move a drawing to another environment and continue to refer to the external reference drawing. You can not edit the drawing of imported external references.

When you reset the importing, Rebro saves the imported file into the specified folder and separates the external reference drawing from the original drawing.

-Open the referenced drawing

Select an external reference element and left-click [Open the referenced drawing] on the context menu to open.

-Update the referenced drawing

When you have edited the reference destination drawing, you can update the details by left-clicking [Update] in [Setting of the external reference] dialog box. Also, you can update it by choosing the edited element and left-clicking [Update the referenced drawing] on the context menu. Furthermore, you can update the reference destination drawing by saving the reference destination drawing and then reopening the reference source drawing.

3.Set the floor height

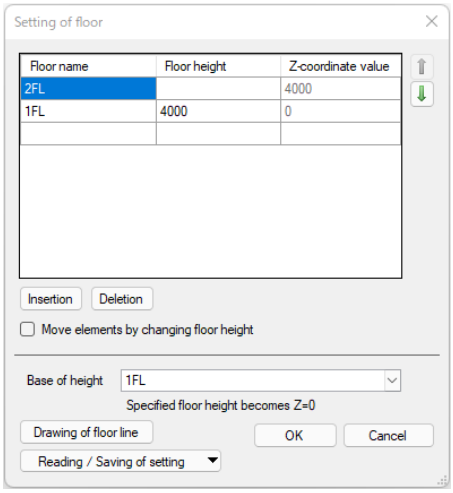
If you have set the floor height of the building in floor setting, you can draw pipes or ducts by specifying the height from the reference floor. In section plan view, floor lines appear based on the specified numerical value of the floor height.

Set the floor height on the building drawing

① Set the floor height on the read building drawing.

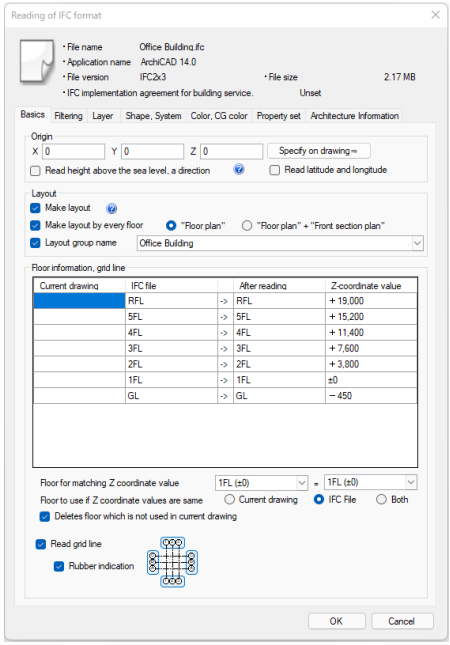
When you read 2D or 3D data

Select [Building] tab- [Setting of floor] to start the command. Type the floor name and the floor height. When the floor height is typed, Z-coordinate value is input automatically.



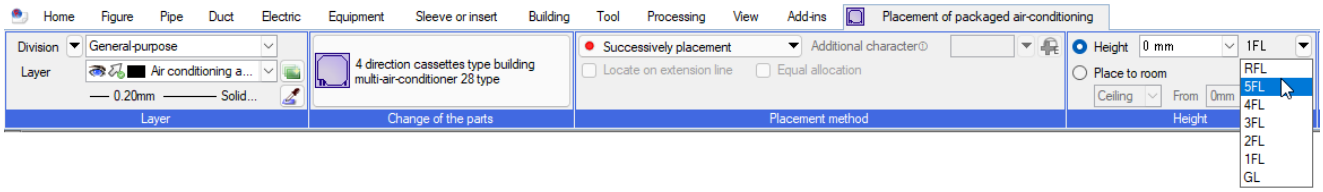
When you read IFC floor information

When the IFC file is read, IFC floor information is also read.

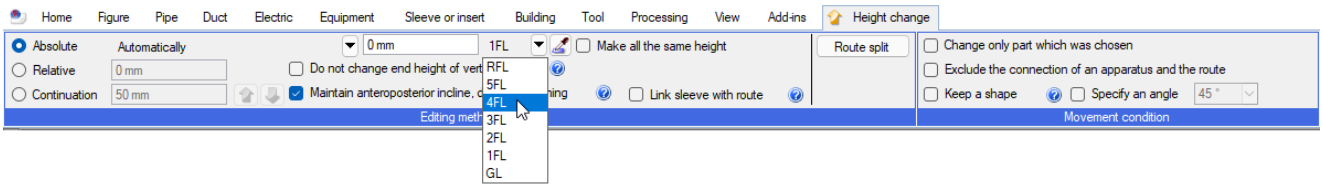


② If you draw route, place equipment, or change the height, you can specify the height based on the floor name you have set.

Commands to place equipment



Commands to change the height

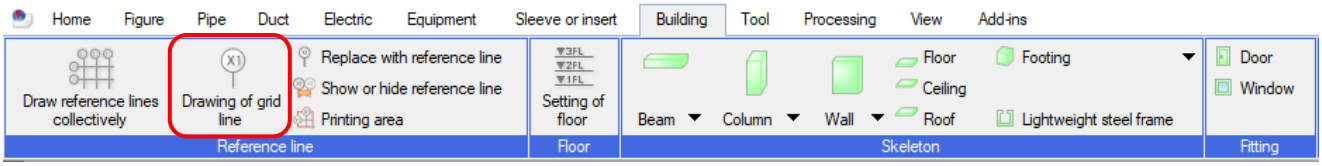


4.Set grid lines

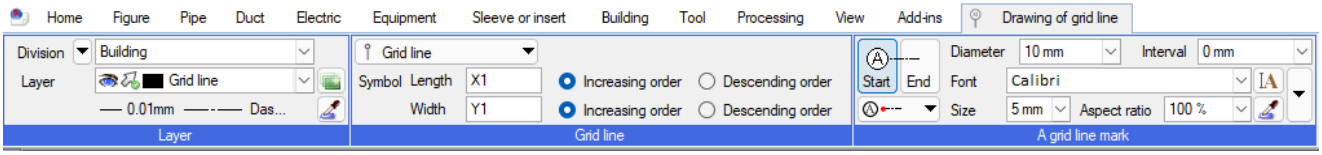
Grid lines are composed of printable figures and “Rubber indication” that appears on the screen as a guide to create drawings. Rubber indication is not output for print, nor for save into DXF/DWG and so on.
You can switch between printable grid lines and rubber indication for grid lines.

Draw the grid line

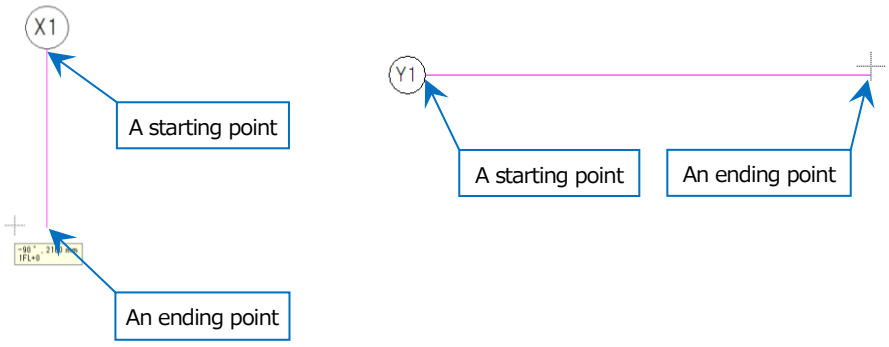
① Select [Building] tab- [Drawing of grid line] to start the command.



② Type the symbol of the grid line for vertical or horizontal direction. According to your selection of the ascending or descending order, the symbol advances or recedes automatically when you specify the second or more symbol into the same direction.



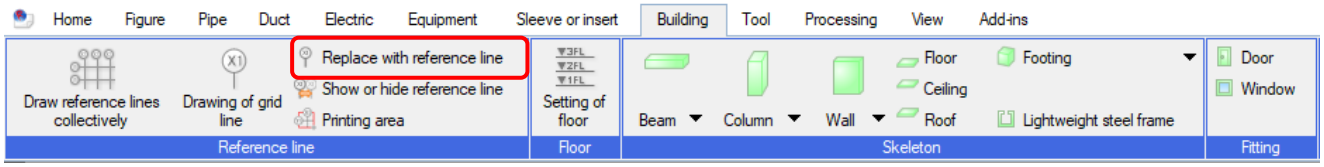
③ You can draw the grid line by specifying coordinates at starting and ending point. The vertical or horizontal direction is the direction you see on the screen and irrespective of view rotation.



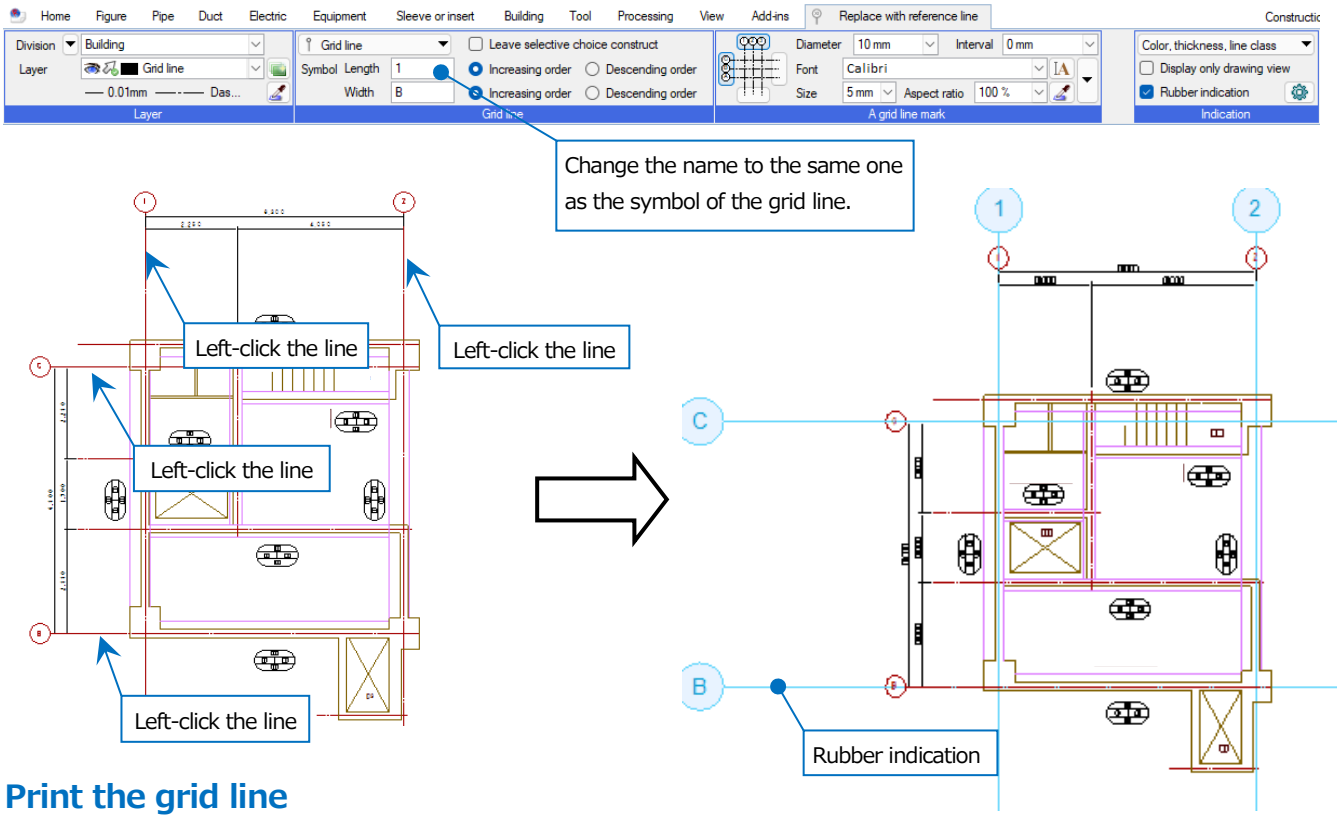
Replace the grid line (With the grid line of the read building drawing)

If the read drawing has grid lines, you can apply those grid lines to replace with.

① Select [Building] tab- [Replace with reference line] to start the command.

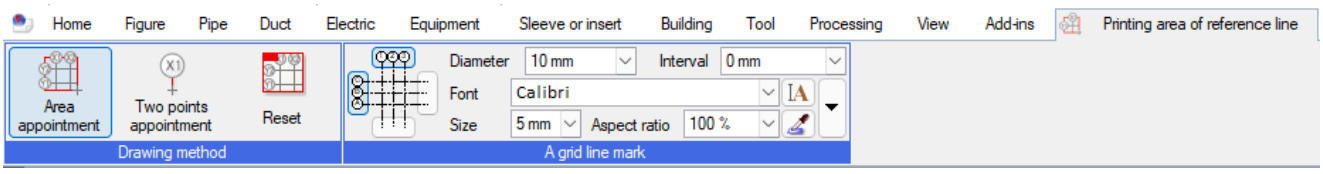


② Left-click the lines to draw the grid lines and symbols according to the set display order.

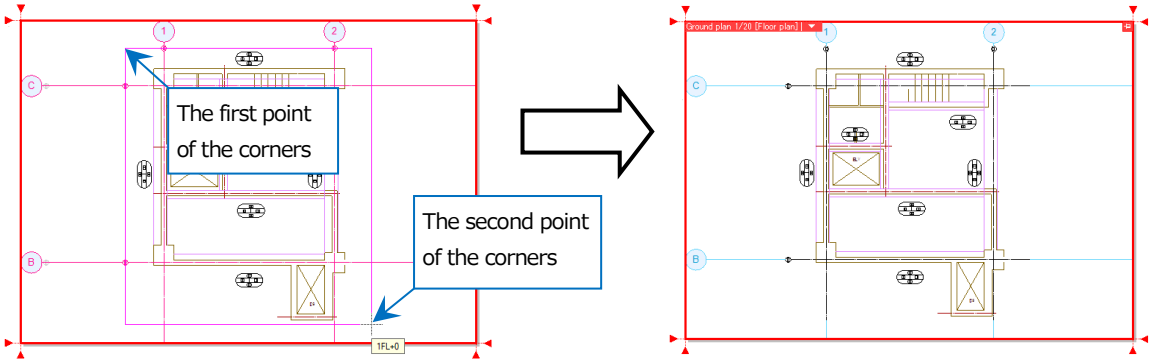


Print the grid line

① Left-click [Building] tab- [Printing area]. Select [Area appointment] and specify a grid line to be printed.



② Use a temporary rectangular frame made from 2 points of the opposite corners to specify the length of print.



5.Convert the structure into 3D

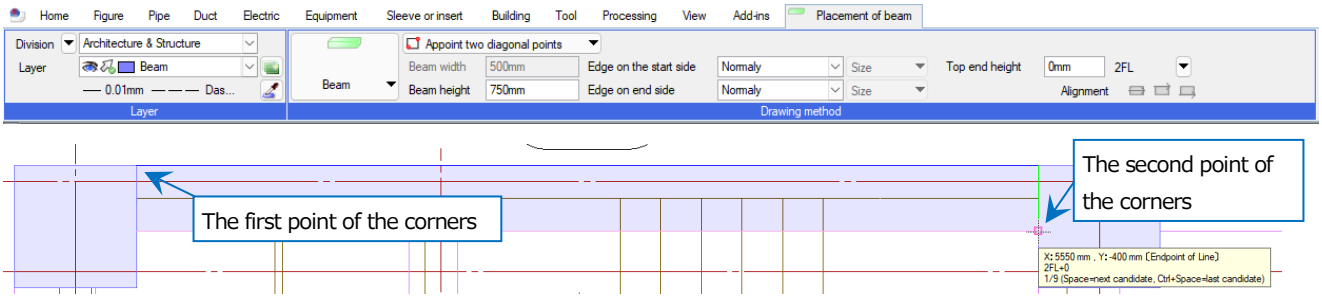
Rebro can convert the floor plan into 3D with building commands by tracing the read 2D drawing. Conversion of the structure into 3D enables you to show the cross section or CG. Moreover, you can detect clashes for drawing adjustments or can insert sleeves automatically.

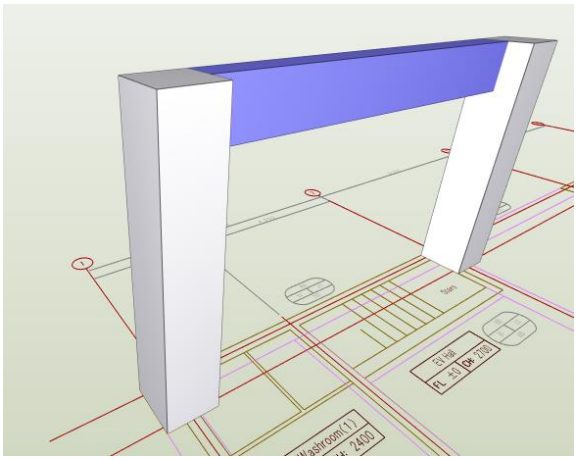
Rebro's structures

-Beam, Arc beam, H steel beam -Rectangle Column, Round column, H steel column, Rectangle steel column
-Wall, Arc wall -Floor -Ceiling -Roof
-Rectangle footing, Truncated pyramid footing, H steel footing
-Lightweight steel frame -Single bar, Double bar, Channel
-Runner, Stud, Rectangle shaped stud, Swing stopper

Draw a structure

If you draw a beam, select [Building] tab- [Beam] to start the command. Select the way of drawing such as "Appoint two diagonal points" and type the height. Based on the beam of the building drawing, draw by specifying coordinates of 2 points of the opposite corners to convert the beam into 3D.

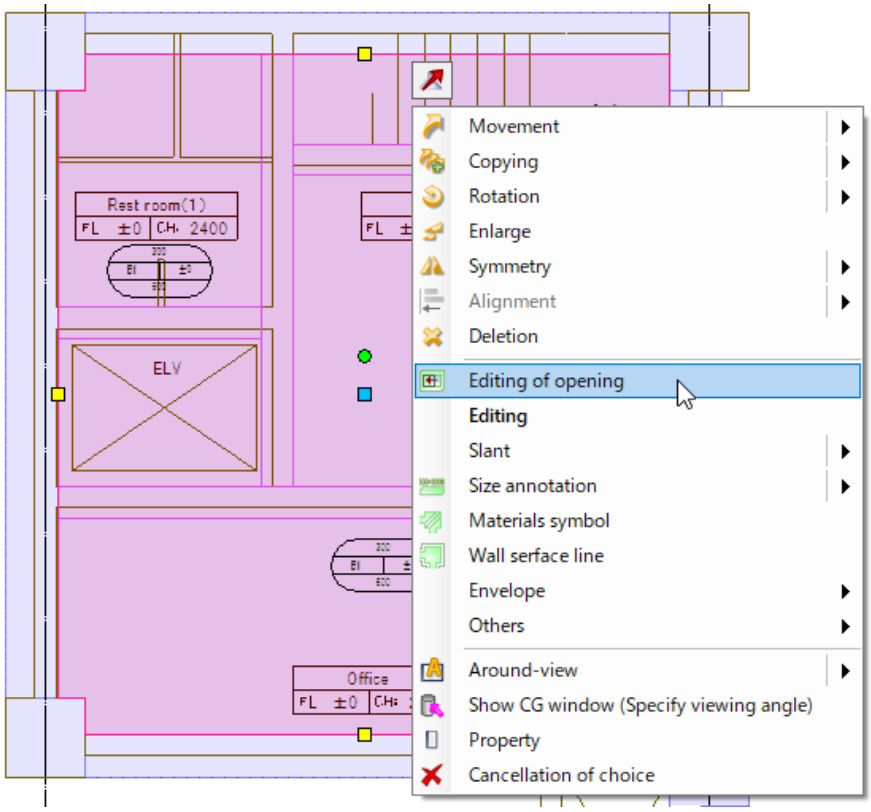




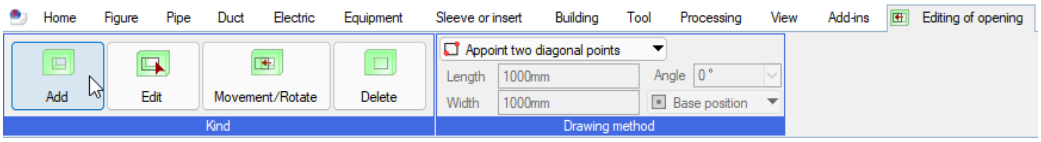
Draw an opening

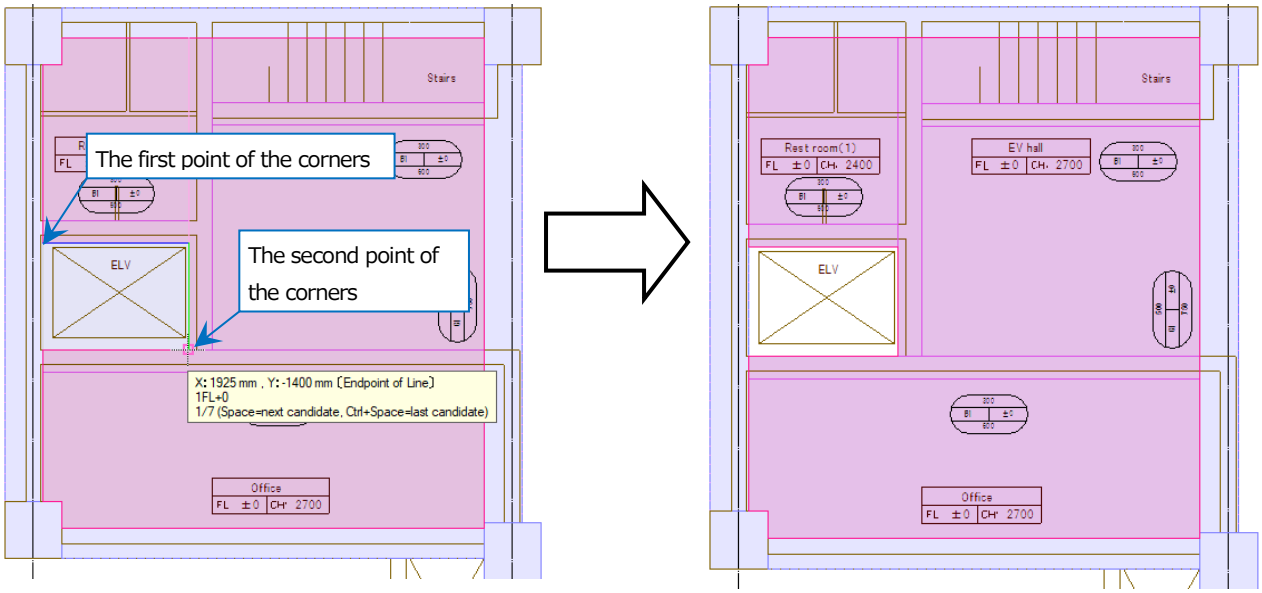
You can draw openings on the wall, floor, ceiling, and roof.

① Choose the drawn floor to select [Editing of opening] from the context menu.



② Select “Add”. Use a temporary rectangular frame made from 2 points of the opposite corners to specify the position of the opening.





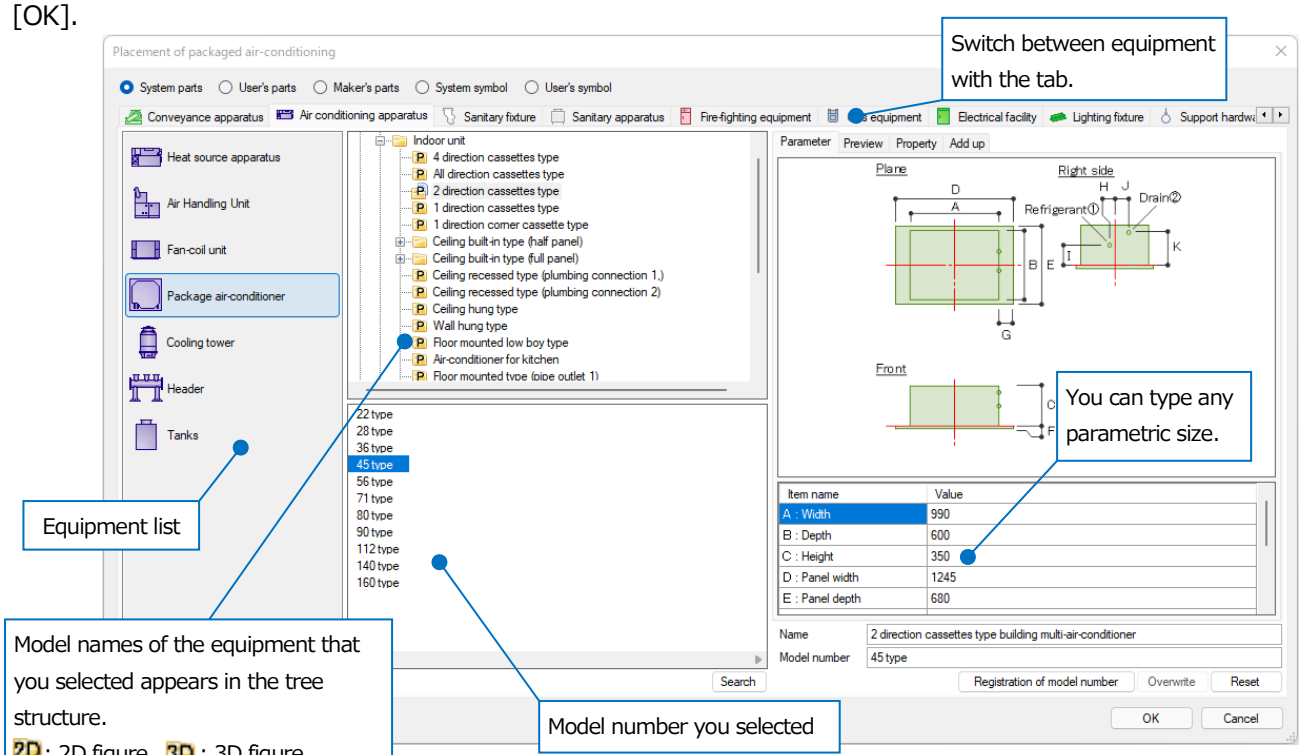
Place equipment

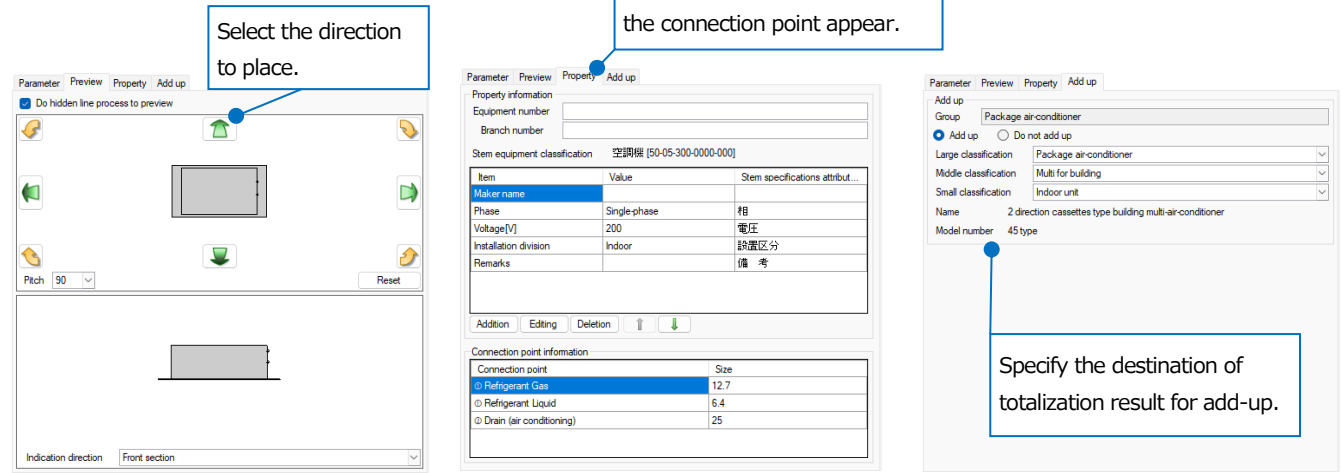
1. Place equipment

Equipment registered in Rebro is 3D model data. (A part of plumbing fixtures support 2D only) Equipment has two types: standard parts and parametric parts. You can type any size into parametric parts. Equipment has a connection point that manages information about sizes or uses. You can draw a route from the connection point.

Select the equipment

Left-click the equipment name in [Equipment] tab to start the dialog box. Left-click the equipment and [OK].



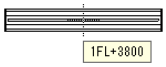


Place equipment

Place equipment that you selected on a drawing.

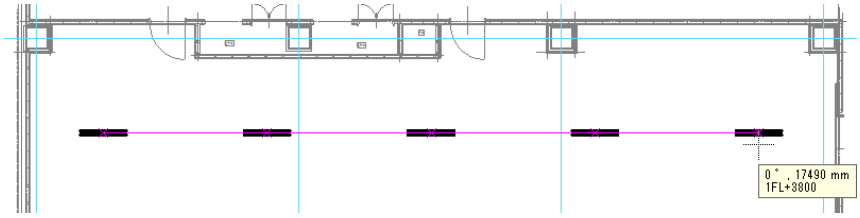
-Successively placement

Place equipment at the position where you specify.



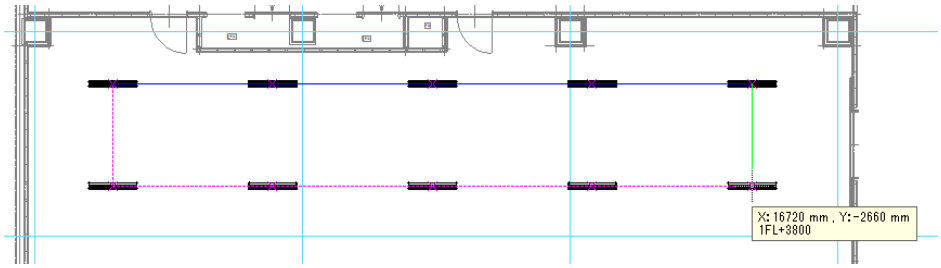
-Locate on straight line

Place equipment between the two points that you specified.



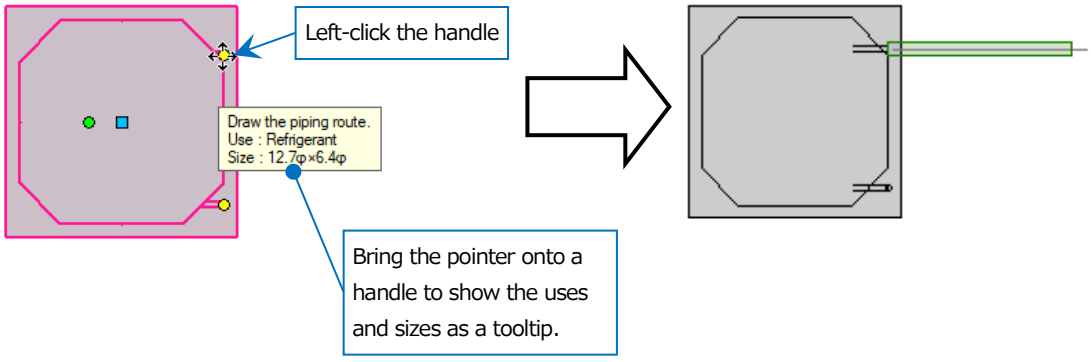
-Locate on range

Place equipment in the specified area horizontally and vertically.



Draw a route from the connection point

Choose equipment that is placed to show a handle on the connection point. Left-click the handle to draw pipes or ducts at any use or size that you set.



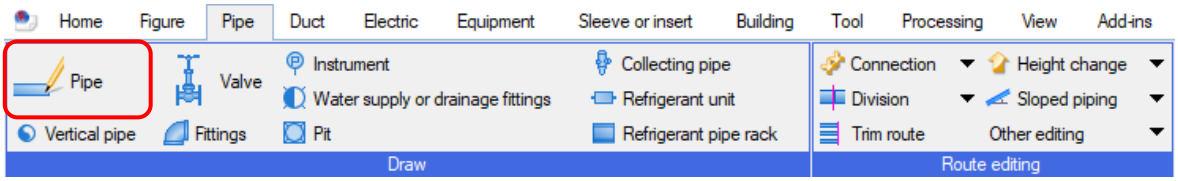
Draw piping, ducting, or electric wiring

1.Draw piping

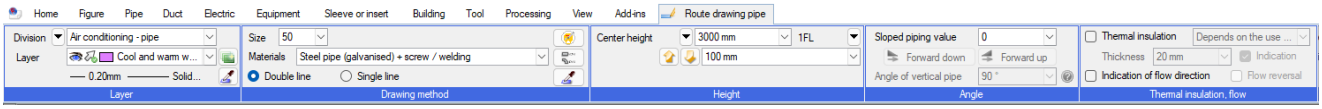
Commands to draw piping are in [Pipe] tab. You can also start the command from the context menu of [Pipe].

Draw piping

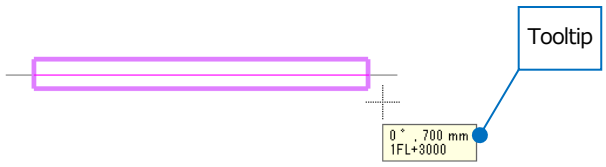
① Select [Pipe] tab- [Pipe] to start the command.



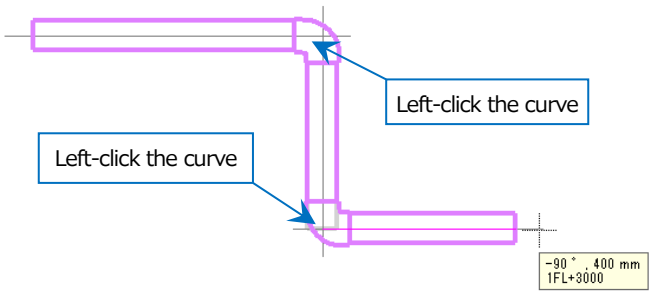
② Select the layer, pipe size, and material to type the height.
Materials are automatically switched according to the chosen layer. This results from the association between layers and materials.



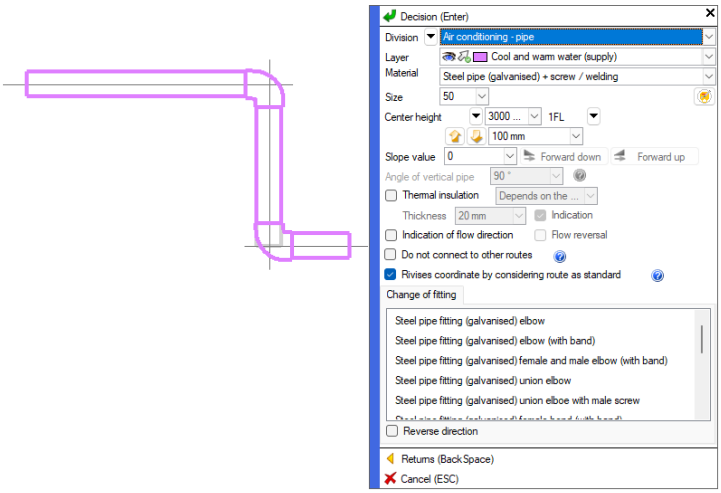
③ Left-click the starting position where you draw. Move the pointer into the direction where you want to draw to show the piping temporarily. Tooltip shows the angle, pipe length, and height.



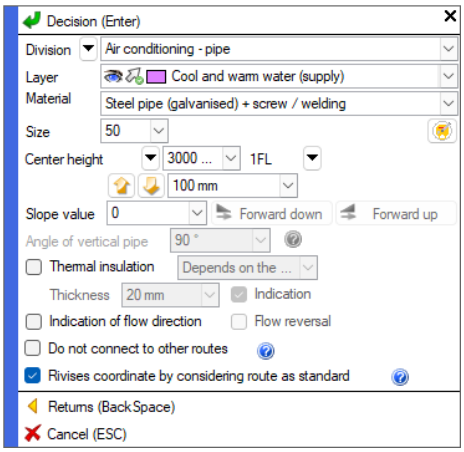
④ Left-click the position where the route curves.



⑤ Start the context menu while drawing to change the fitting of the curving part. Select the fitting in [Change of fitting] tab to change the shape of fittings.

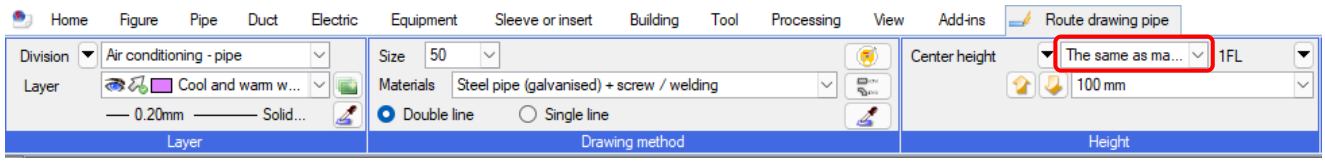


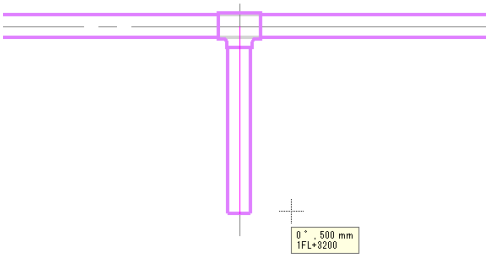
⑥ Left-click at the end position to start the context menu. Left-click [Decision] to draw the route up to the position. To complete the commands, press Esc or select [Decision] or [Cancel] in the context menu.



Draw a branch pipe

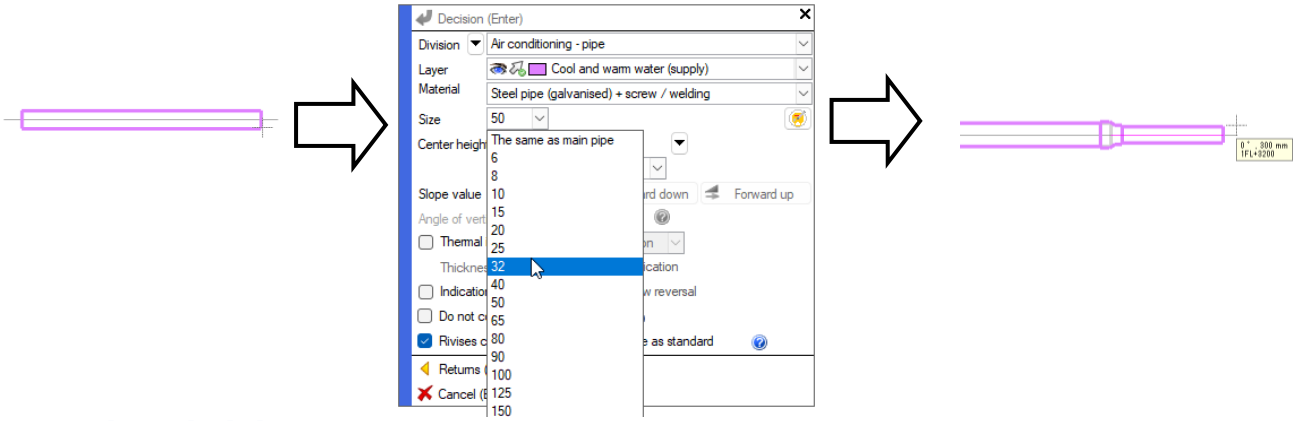
To draw branch pipes, choose the pipe to pull out, left-click [Addition of branch pipe] in the context menu, and then [Route Drawing pipe] ribbon appears. You can start drawing without specifying the height for the chosen pipe because [The same as main pipe] for the height is applied as default. You can create a vertical pipe by typing the height.





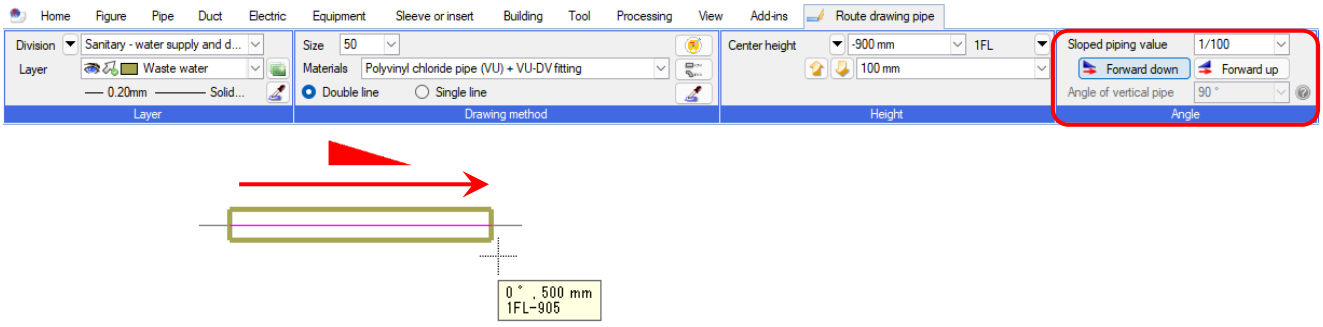
Change the height or size while a drawing route

Left-click the changing position, to type the height or size to change on the ribbon or in the context menu. Fittings are created according to the change.



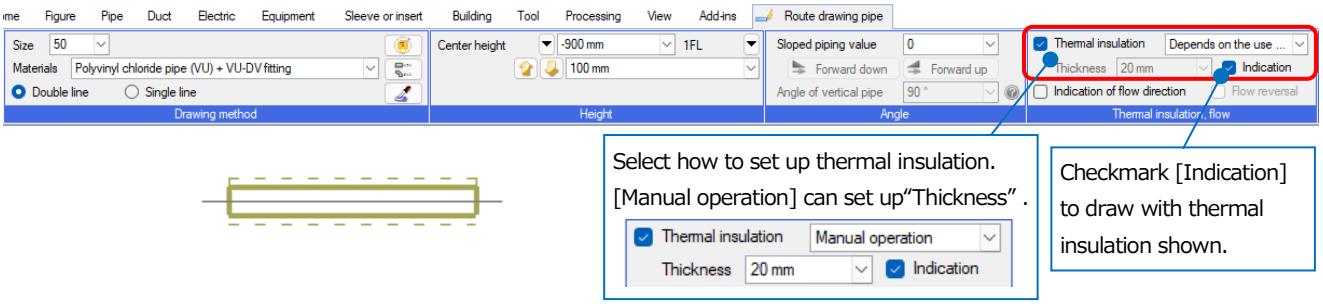
Draw sloped piping

You can draw sloped piping by typing the value in [Sloped piping value]. You can give a slope also to the drawn route.



Thermal insulation

Checkmark [Thermal insulation] to draw with thermal insulation being set.

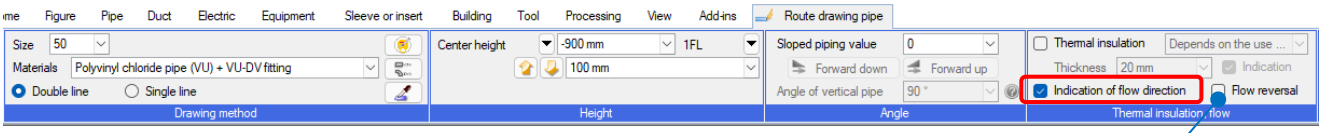


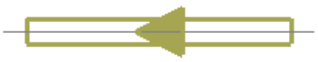
Select how to set up thermal insulation.
[Manual operation] can set up"Thickness".

Checkmark [Indication] to draw with thermal insulation shown.

Indication of flow direction

Checkmark [Indication of flow direction] to draw with the flow direction shown.

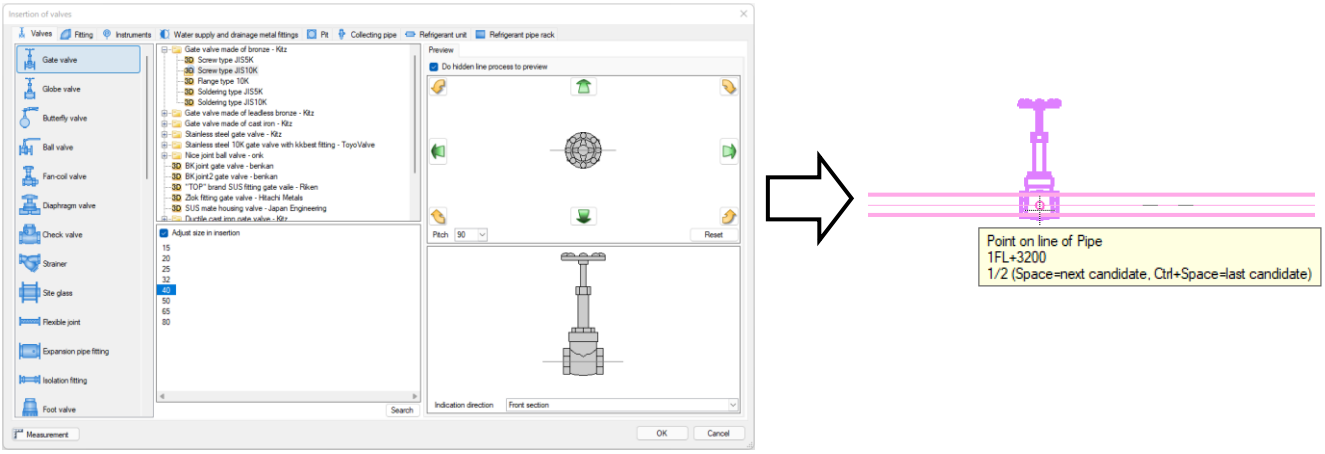




Checkmark [Flow reversal] to reverse the flow of the whole main route that follows the currently drawing route.

Insert bulbs or fittings into piping

You can insert bulbs or fittings into the pipe. Choose a valve in [Pipe] tab- [Valve] command dialog box to bring it close to the pipe. To insert the bulb into the pipe, left-click the bulb when its color becomes the same as the pipe's.

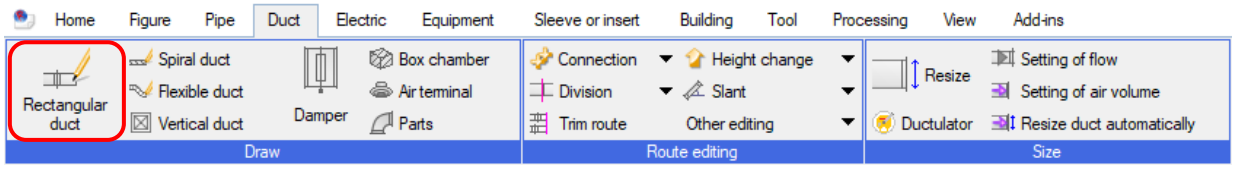


2.Draw ducting

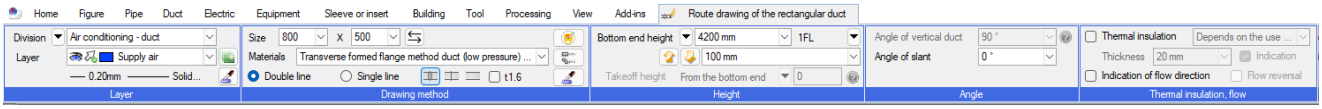
Commands to draw ducting are in [Duct] tab.

Draw ducting: The way while drawing a route

① Select [Duct] tab- [Rectangular duct] to start the command.

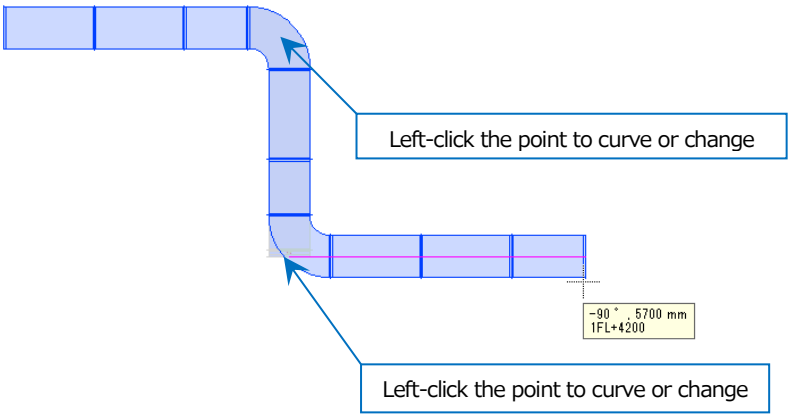


② Select the layer, duct size, and material to type the height.



③ Left-click the starting position where you draw. Move the pointer into the direction where you want to draw to show the duct temporarily. The angle, duct length, and height appear in the tooltip.

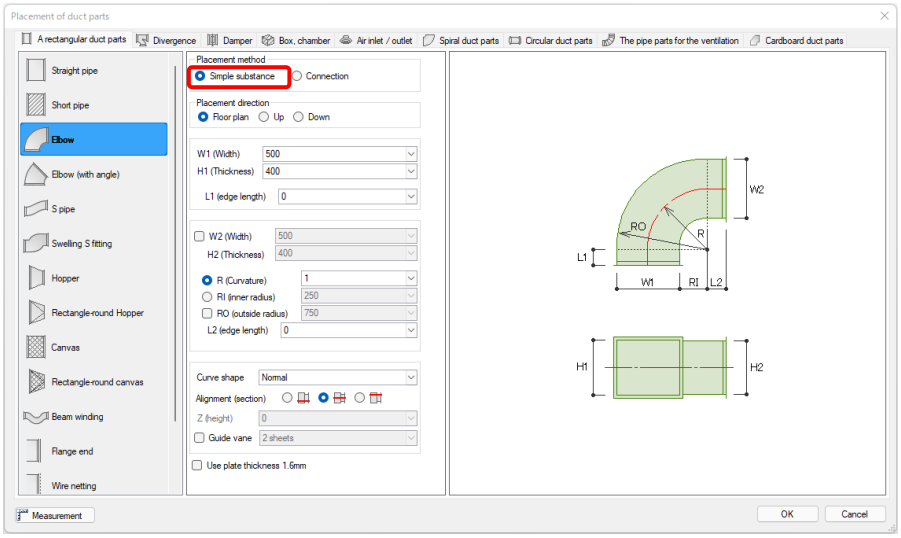
④ On the way, to curve the route or to change the height or size, left-click at the position.
On the ribbon or in the context menu, type the height or size to change. Fittings are created according to the change.



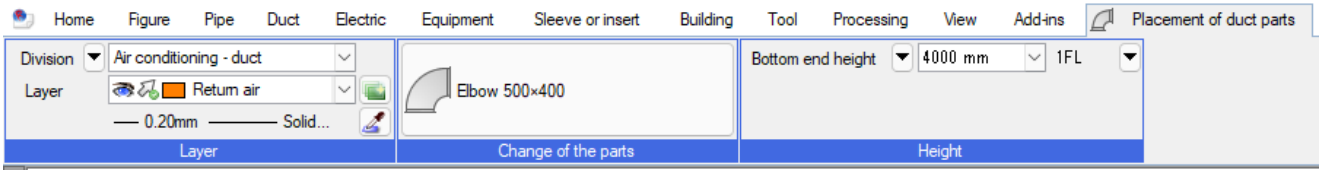
Draw ducting: The way to place ducts first

For the portion where is difficult to fit the elements into, you can draw by placing the parts first, and then combine the route to the placed parts.

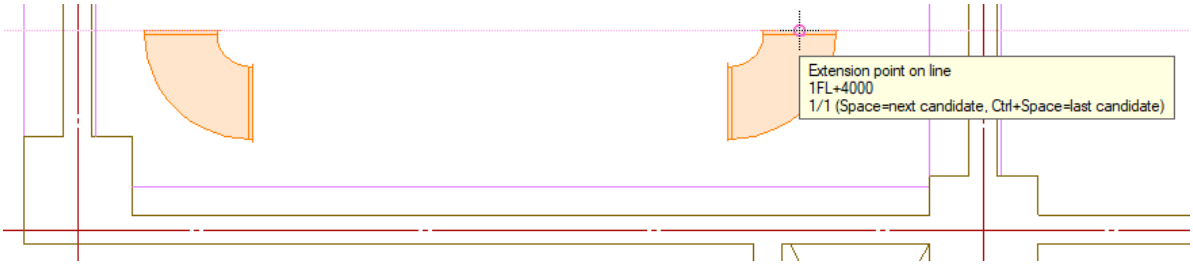
① Select [Duct] tab- [Parts] to start the command. Select the switching parts in the tab. Select "Simple substance" as the placement method and specify the size.



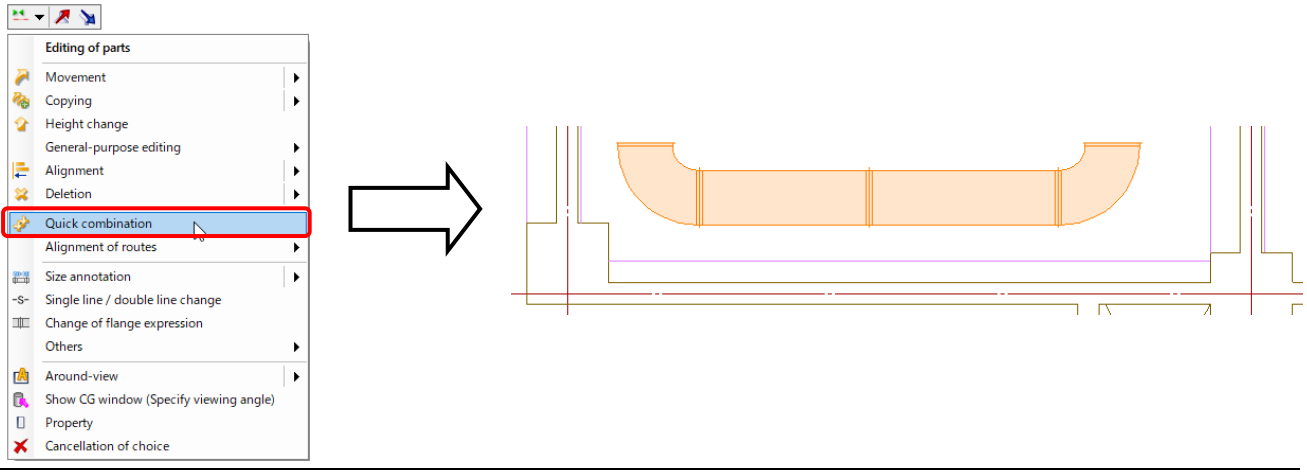
② Select the layer and height.



③ Consider how to fit the elements into, and then place parts.



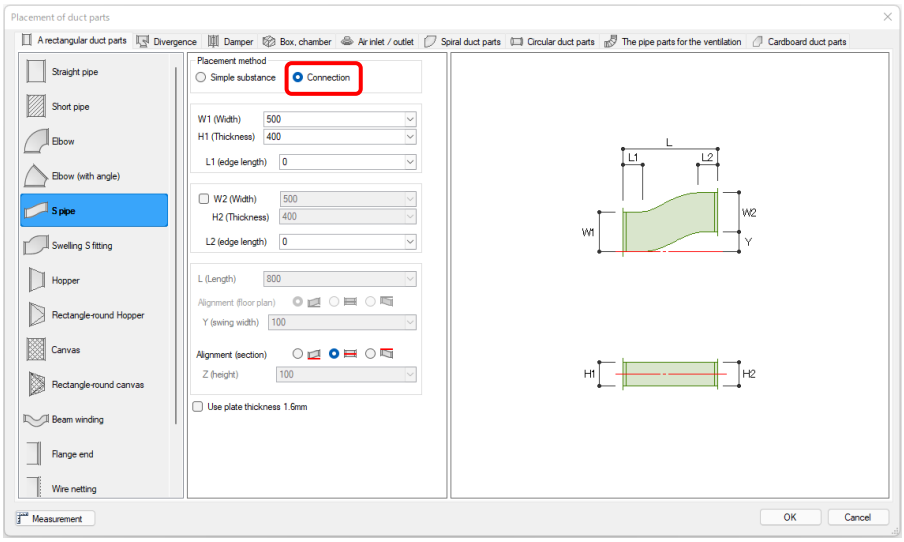
④ Choose the elbows you have placed to connect the parts by [Quick combination] command.



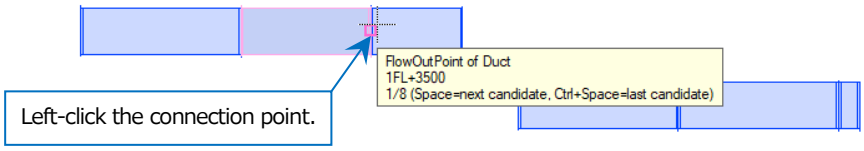
Draw ducting: The way by [Connection] function

You can create a drawing without consideration of the height or size for the hopper.

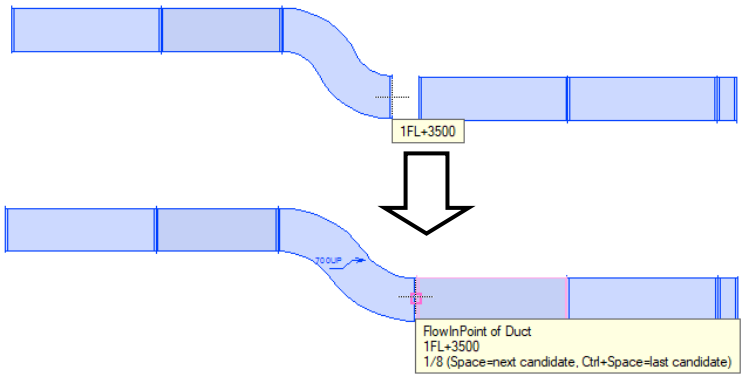
① Select [Duct] tab- [Parts] to start the command. Select the parts. Select [Connection] at “Placement method”.



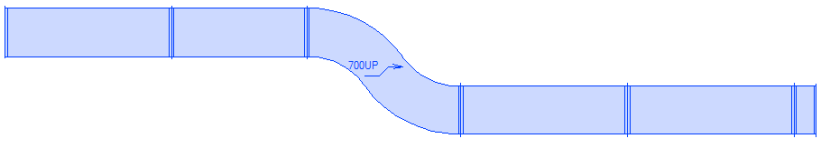
② To connect the parts, left-click the position of the duct where you want to connect the parts, whose information about the size and height of the parts is automatically acquired and applied by Rebro.



③ Bring the pointer close to the other connecting position of the duct to change the shape of the parts according to the acquired information about the size and height.



④ Left-click at the connection position to confirm.



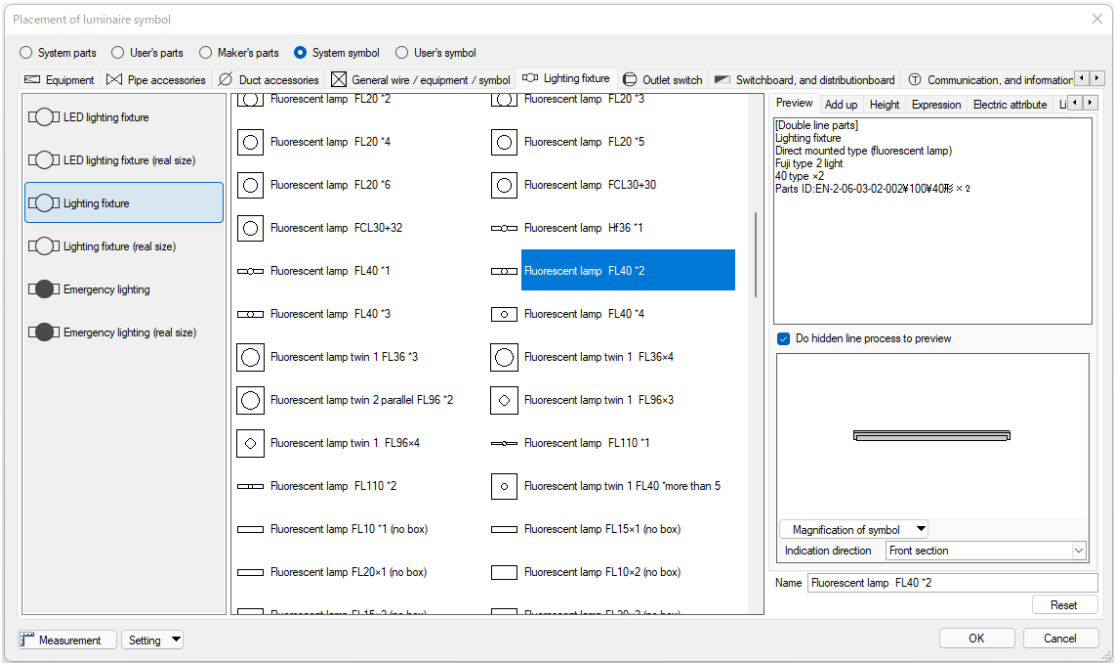
3.Draw electric wiring

Commands to draw electric are in [Electric] tab.

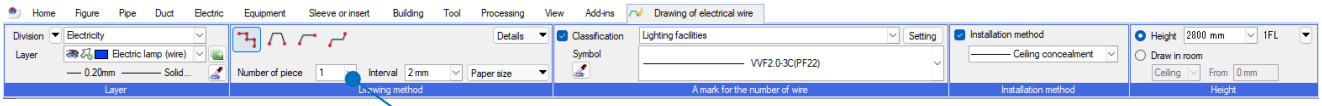
Wiring is drawn in 2D. Cable racks, conduit pipes and so on are drawn in 3D.

Draw wiring

① Select the symbol in [Electric] tab- [Luminaire] to place it.

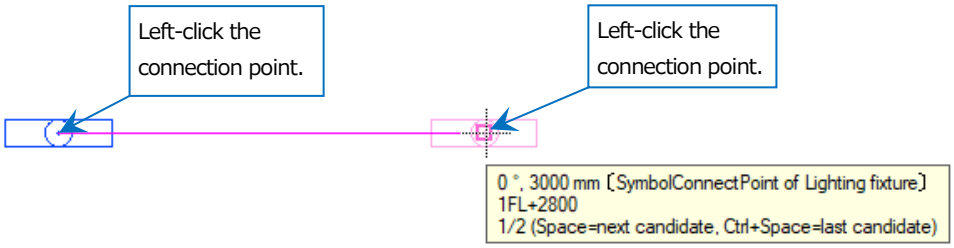


② Start [Wiring] to specify the layer and wire shape, and then enter the height.



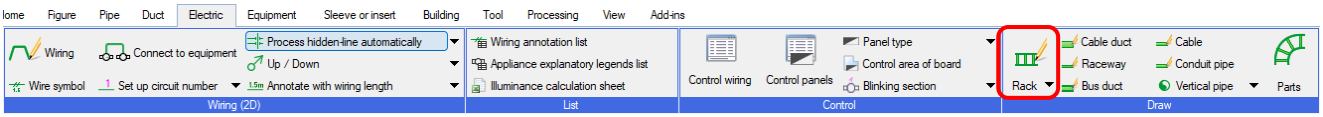
When the drawing method is , select the number to draw. When drawing multiple wires collectively, select the interval between those wires.

③ Left-click the connection point of the symbol to draw wiring.

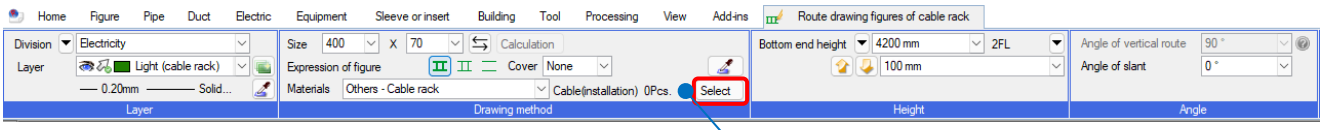


Draw a cable rack

① Select [Electric] tab-[Rack] to start the command.



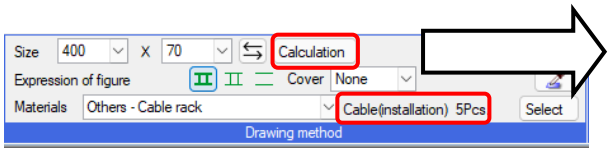
② Select the layer, size, and height of the route.

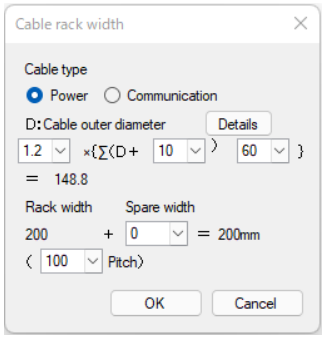


Upon left-clicking “Select”, you can select a cable to lay.

Memo

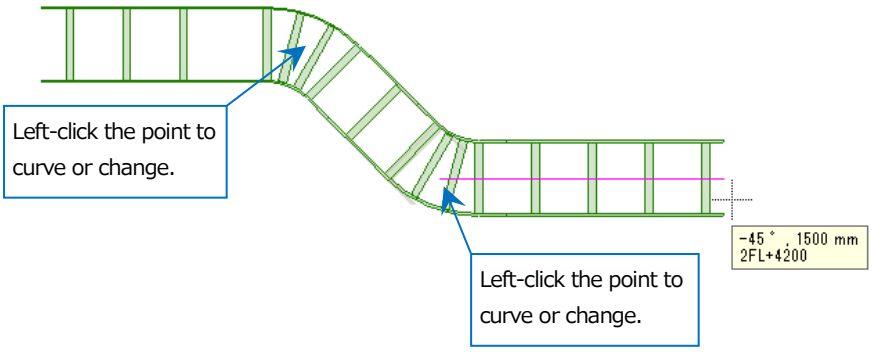
Select a cable to lay and left-click [Calculation], to determine width for a cable rack.





③ Left-click the starting position where you draw. Move the pointer into the direction where you want to draw to show the cable rack temporarily. Tooltip shows the angle, rack length, and height.

④ On the way, to curve the route or to change the height or size, left-click at the position. On the ribbon or in the context menu, type the height or size to change. Fittings are created according to the change.



Edit piping, ducting, or electric wiring

1.Edit piping, ducting, or electric wiring

Change the height of a route

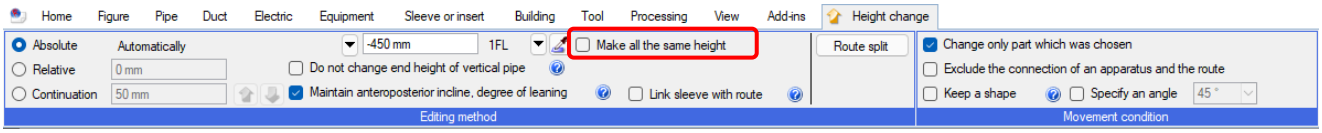
Select the route to change to start [Height change].

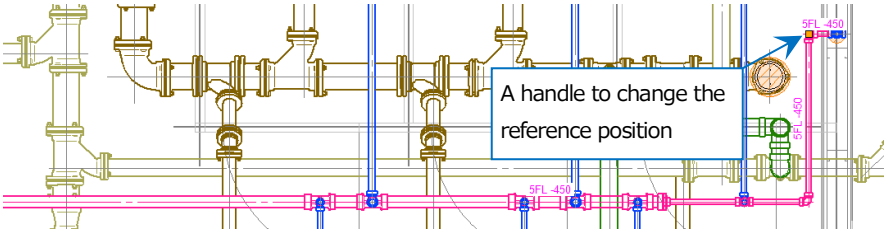
Divide and create a change position to change the height on the way of the route.

Change the height (Absolute)

Change the route to the specified height.

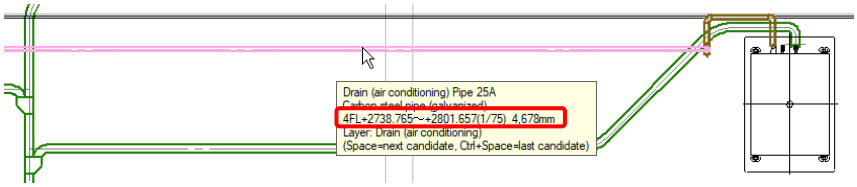
Select “Make all the same height”, to change the chosen route to the same height and also eliminate the slope. If you uncheck “Make all the same height”, Rebro maintains the slope or vertical route, and change the position of the handle (orange color) for reference position to the specified height.





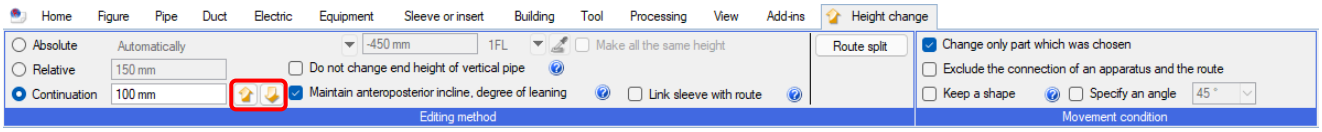
Change the height (Relative)

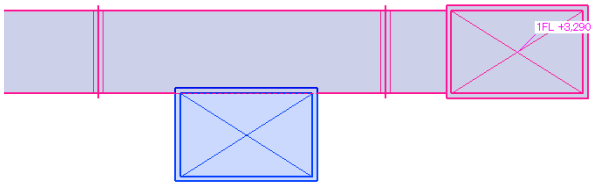
Change the height of the route from the current one.



Change the height (Continuation)

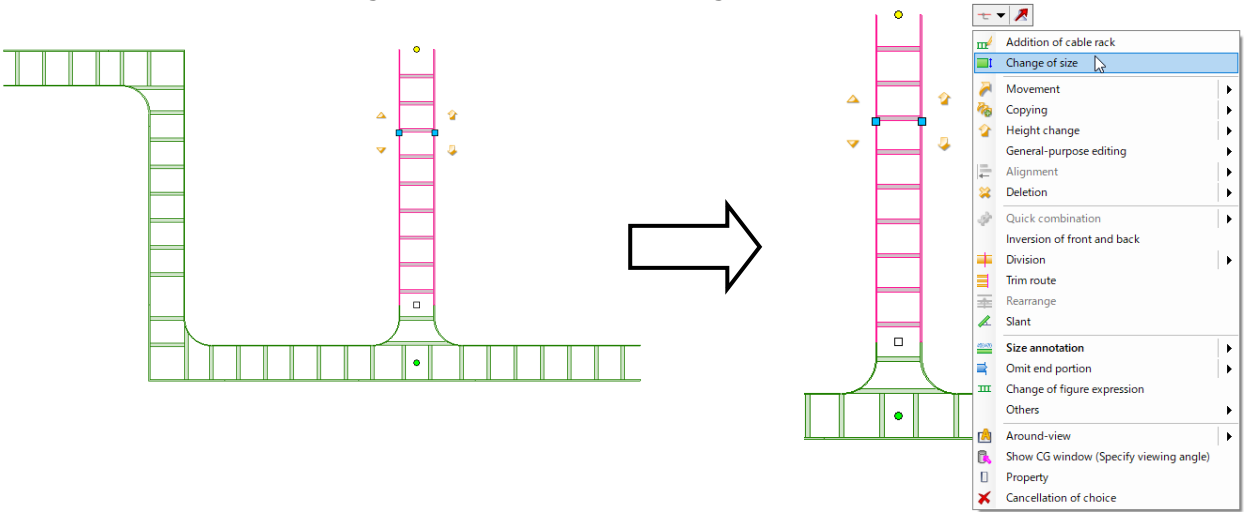
You can adjust the height by “up” and “down” arrow button by the value you specified. You can change the height watching how the elements fit into the place.



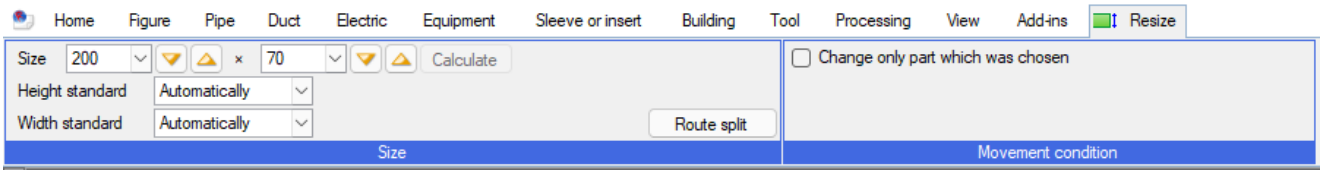


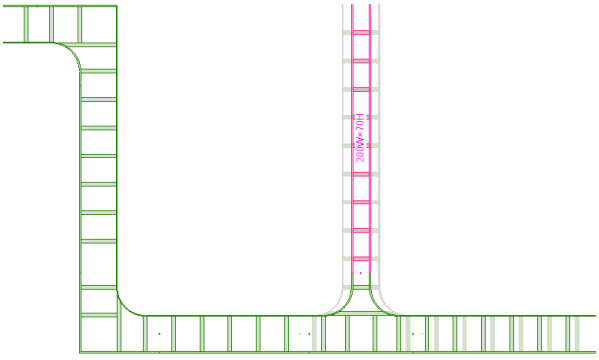
Change the size

① Choose the route to change the size and select [Change of size] from the context menu.



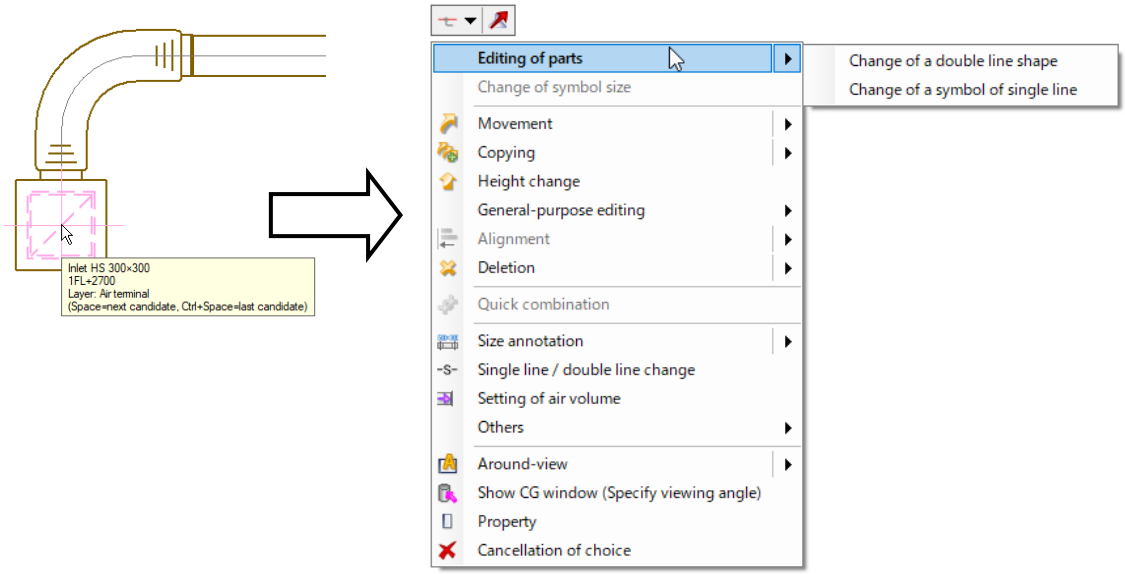
② Type the size to change.



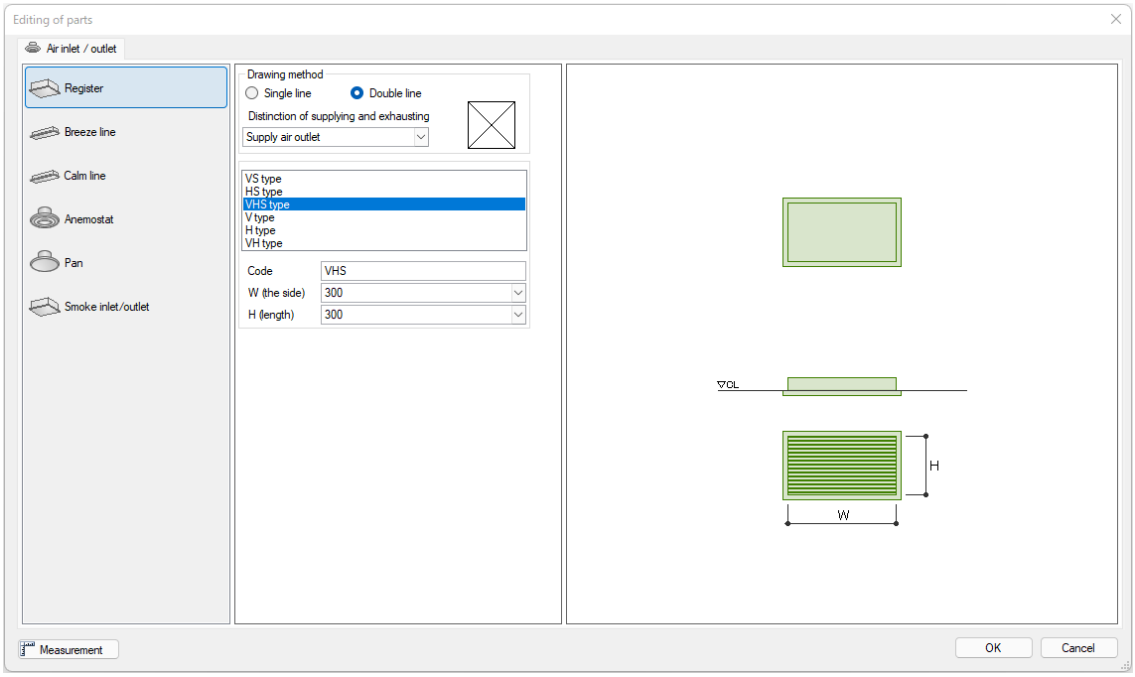


Change parts or fittings

① Choose the parts to change and select [Editing of parts] from the context menu.



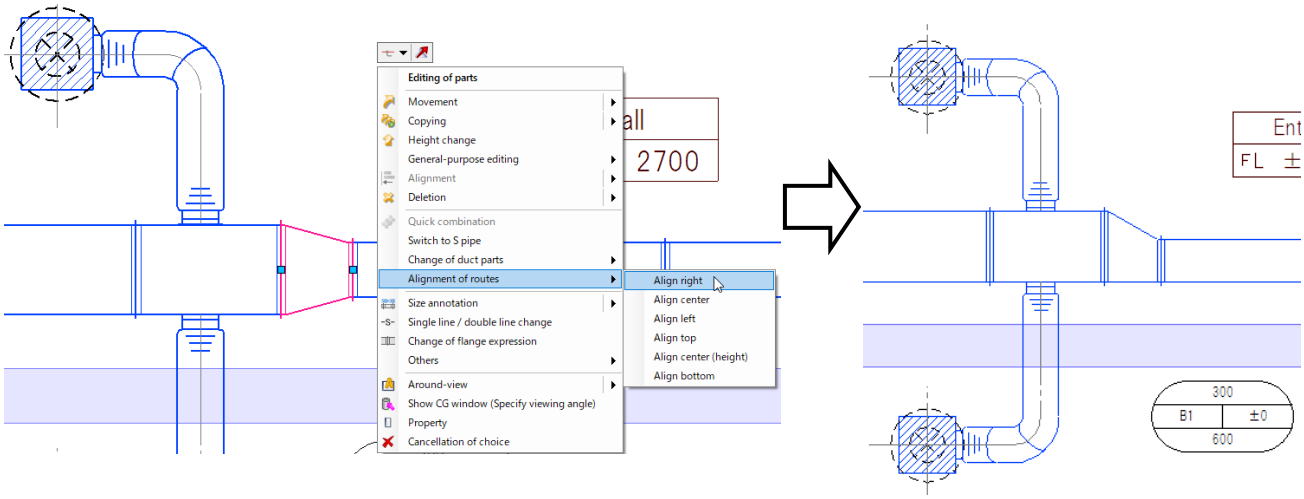
② Select the parts to change in [Editing of parts] command.



Align routes

Select the hopper and select [Alignment of routes] to align the drawn routes.

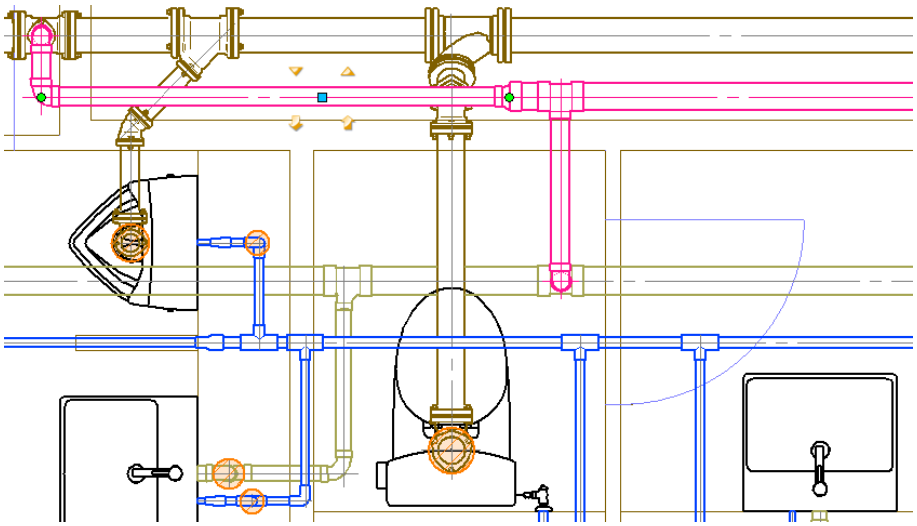
Left-click the hopper to start the context menu. Select [Alignment of routes].
You can use the following functions: “Align left”, “Align center”, or “Align right” aligns routes against the flow of wind from the floor plan. “Align top” aligns the routes to the top of the thickness.
“Align center (height)” aligns the core of the routes to the height center. “Align bottom” aligns routes to the bottom of the thickness.



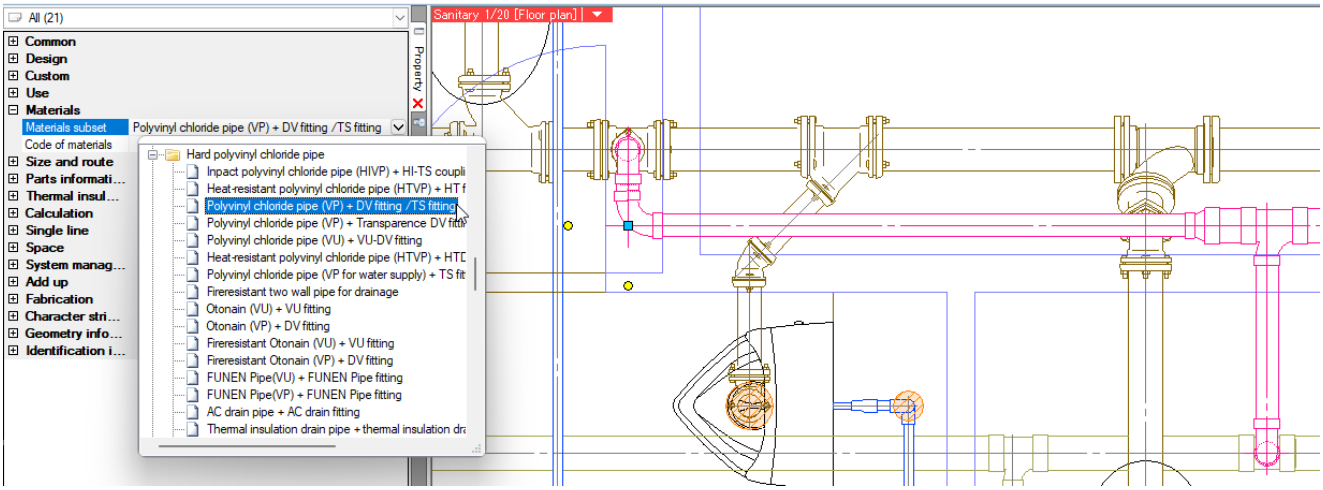
Change a material of the route

You can change a material of the drawn route in the property panel.

① Select the route to change.



② Change the subset name at [Materials]- [Materials subset] on the properties panel.



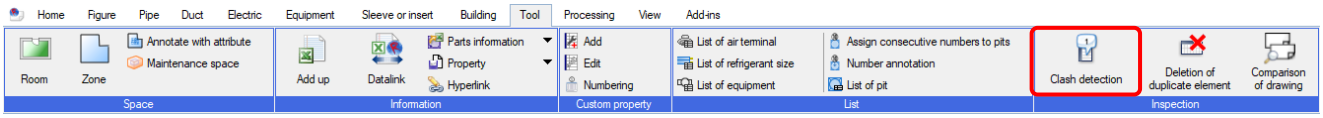
Detect clashes

1. Detect clashes

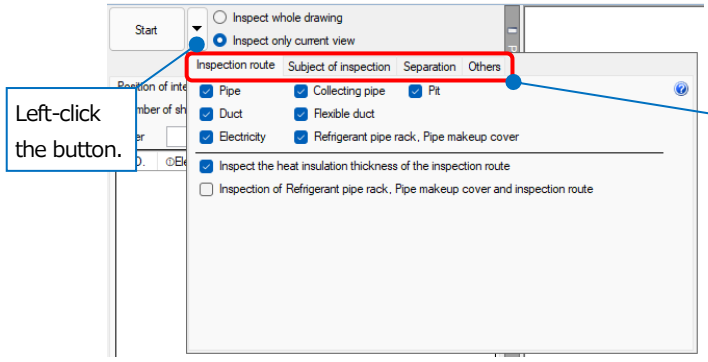
Check if the elements on the drawing clash each other. If the elements clash each other, a balloon appears with a number at the clashing position on the drawing and the number is listed on the clash detection panel. When the elements avoid the clash, the number for the clash disappears automatically.

Check a clashing position

① Select [Tool] tab- [Clash detection] on the ribbon.
→[Clash detection] panel starts.



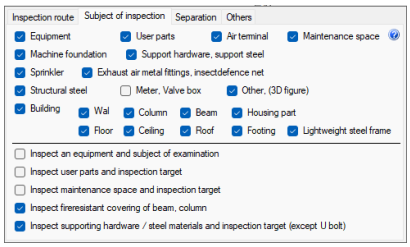
② Filter the target elements to detect clash. Select "▼" and place checkmarks on the target elements.

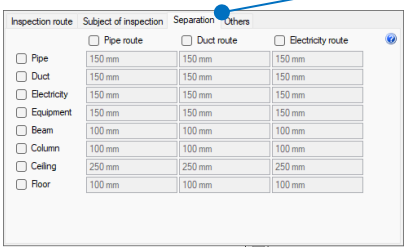


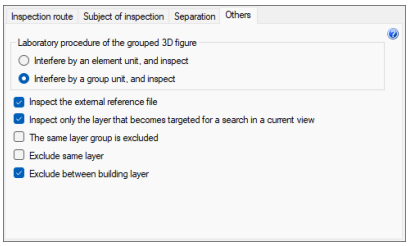
Left-click the button.

Numbers appear at the clashing position between the Inspection routes or the Inspection route and the Subject of inspections. A balloon appears on the drawing to show the number.

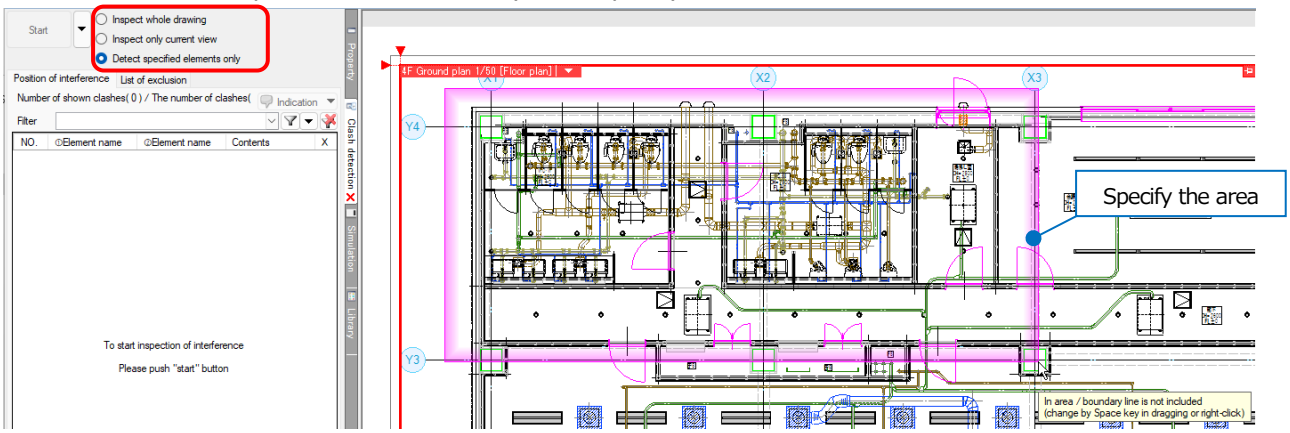
Set up the actual interval between the inspection routes and the inspection targets. Using the minimum cuboid that can contain an element as a reference, detect whether the inspection targets are within the set isolation distance from both top and bottom, left and right of the cuboid.



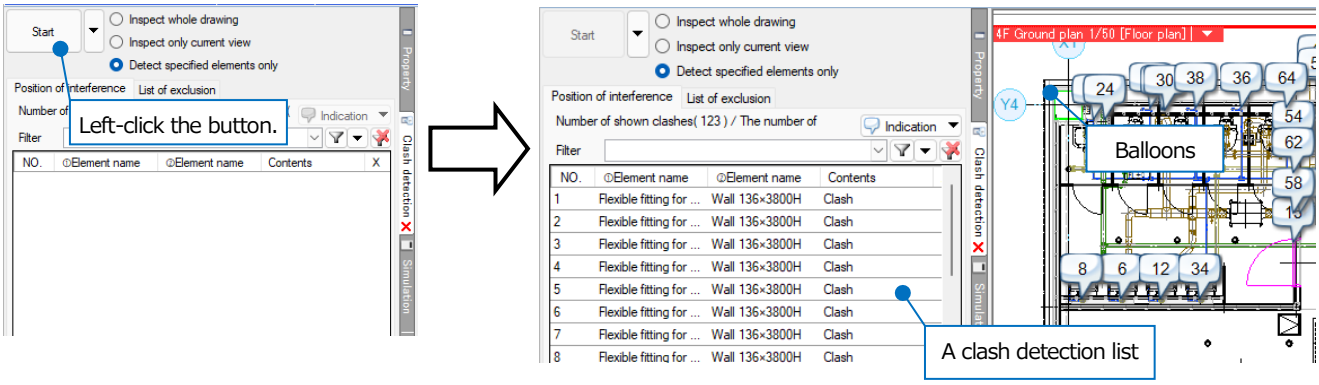




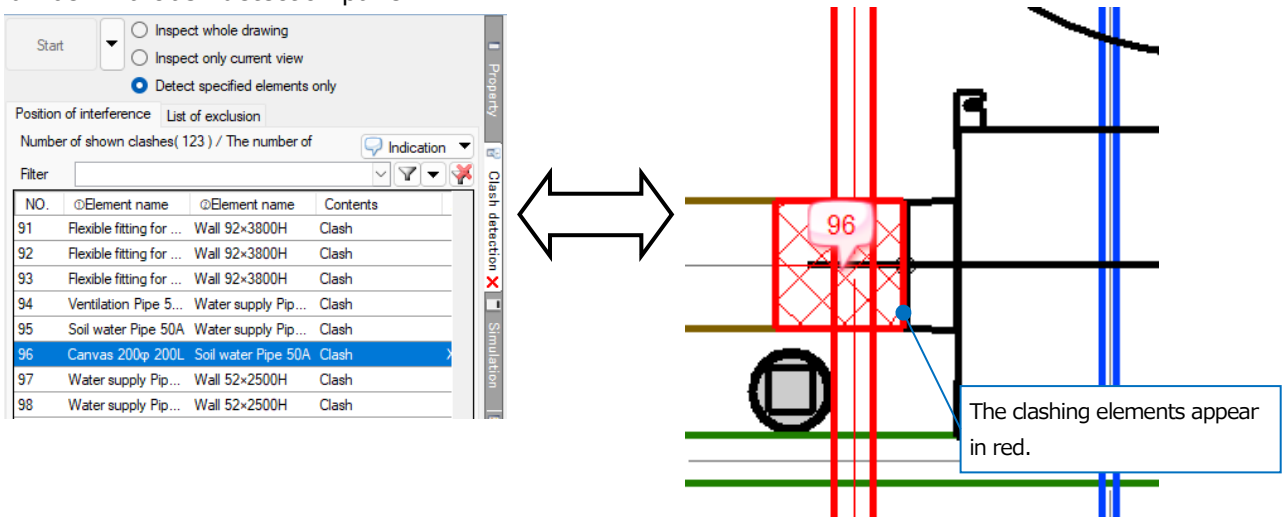
③ Specify the area to detect clashes.
Select [Detect specified elements only] and specify the area to detect clashes.



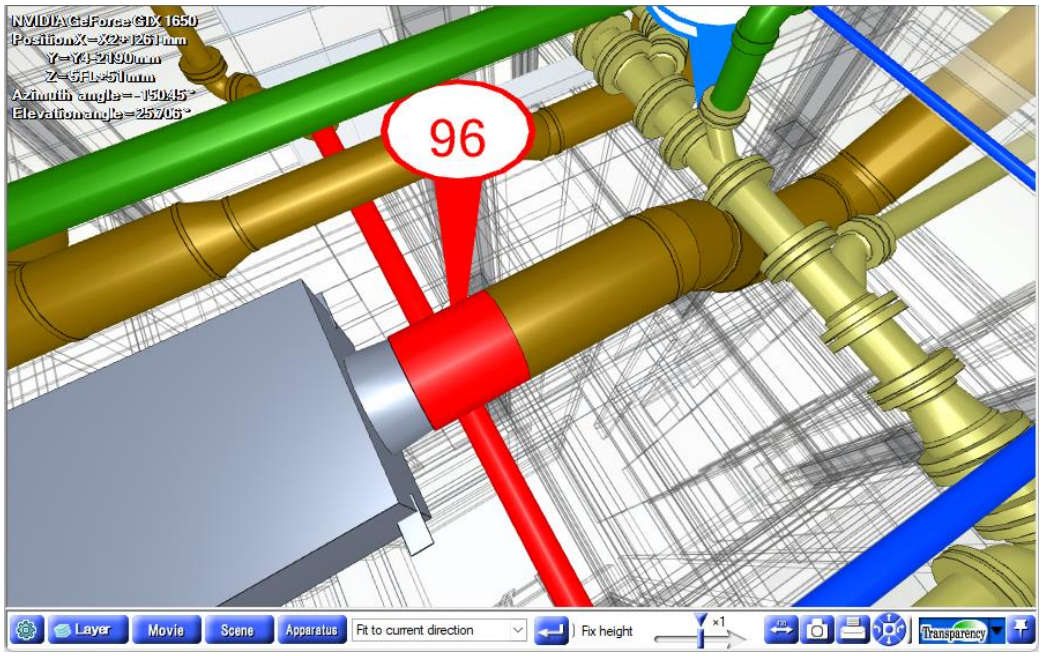
④ Select [Start] to show balloons at the clashing points on the drawing.



The number appears on the clashing position in the drawing works in a ganged manner with the listing number in a clash detection panel.



Double-click the balloon on the drawing or the number in the panel to start CG screen, where you can check the clashing point.



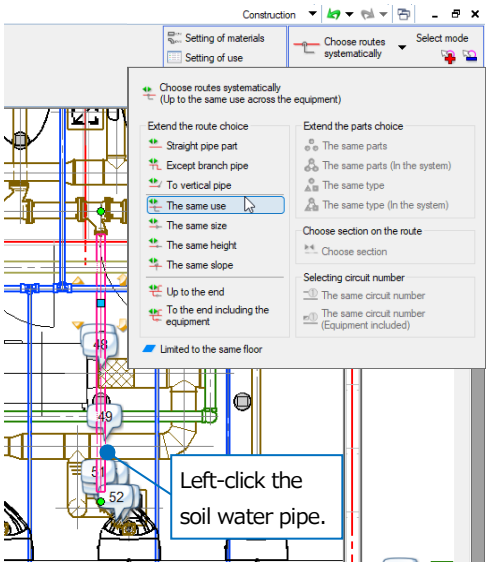
Left-click the number in a clash points list to show the element names that clash, the clash details, the coordinates of a clash position, and the quantity of clashes.

NO.	①Element name	②Element name	Contents	X	Y	Z	The quantity of clashes (upper)	The quantity of clashes (lower)
91	Flexible fitting for ...	Wall 92×3800H	Clash					
92	Flexible fitting for ...	Wall 92×3800H	Clash					
93	Flexible fitting for ...	Wall 92×3800H	Clash					
94	Ventilation Pipe 5...	Water supply Pip...	Clash					
95	Soil water Pipe 50A	Water supply Pip...	Clash					
96	Canvas 200φ 200L	Soil water Pipe 50A	Clash	X2+1199	Y4-2572	4FL+2802	10	253
97	Water supply Pip...	Wall 52×2500H	Clash					
98	Water supply Pip...	Wall 52×2500H	Clash					
99	Water supply Pip...	Wall 52×2500H	Clash					

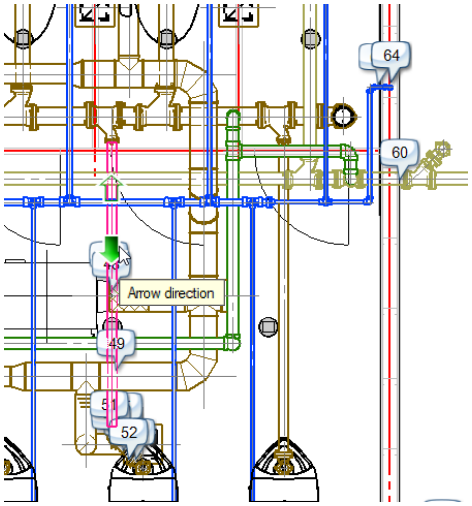
Avoid a clashing point

Check the clash points list to avoid the clashes by moving, resizing, or changing the height.
When the clash is resolved, the listing number and the balloon on the drawing disappears.

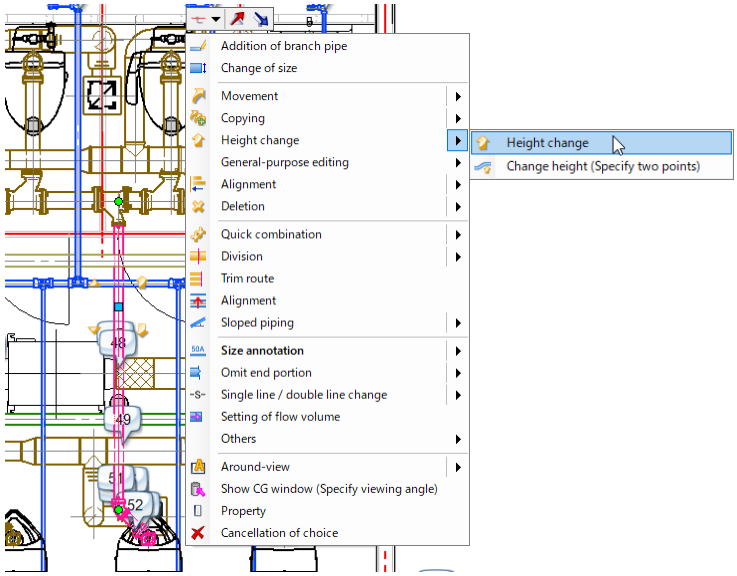
① Choose the soil water pipe.
Left-click "▼" on the right of [Element] panel- [Choose routes systematically] to select [Extend the route choice]- [The same use].



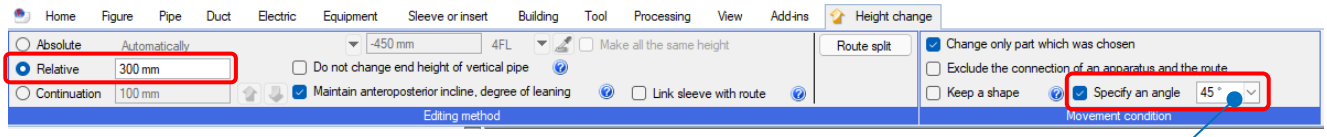
② An arrow appears on the chosen pipe. Left-click the arrow for the direction where you want to change the height.



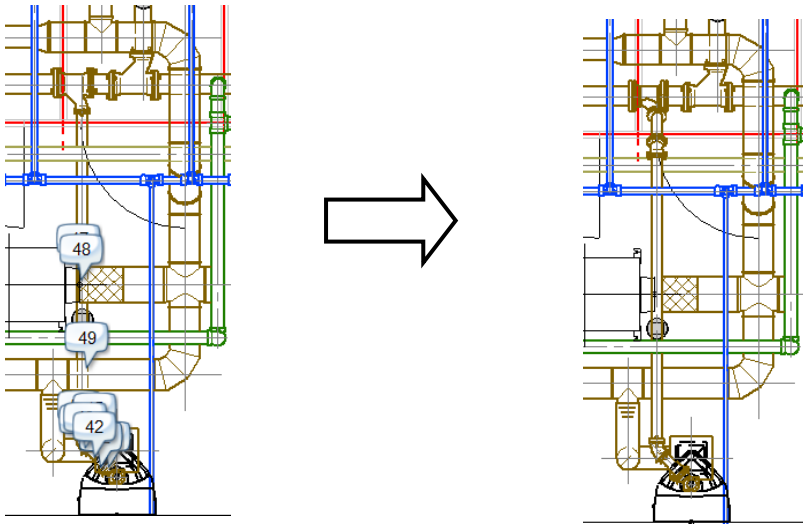
③ Left-click [Height change] in the context menu.

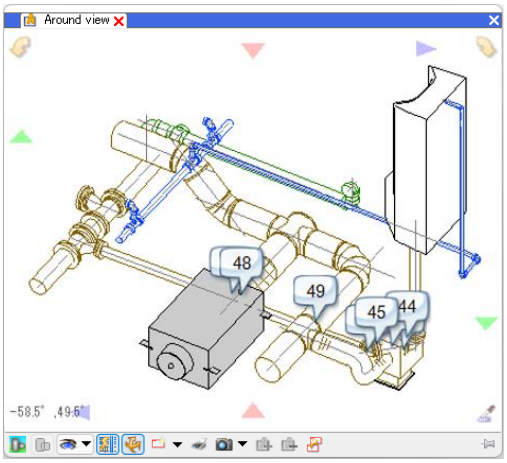


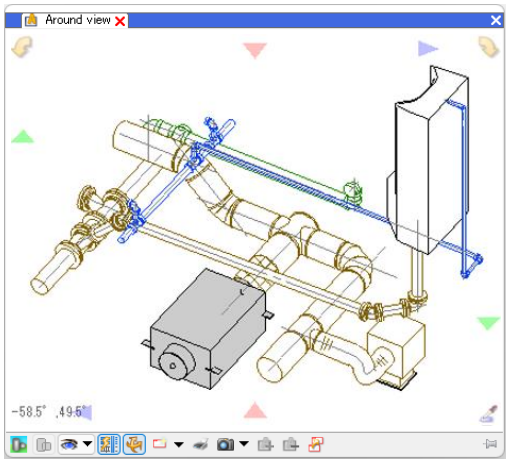
④ Select [Relative] to type the height to change.
→The clashing point is resolved and the balloon disappears.



Select [Specify an angle] and then “45°”.

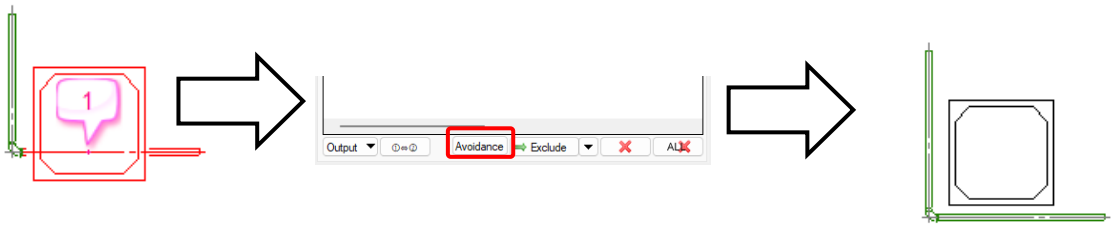




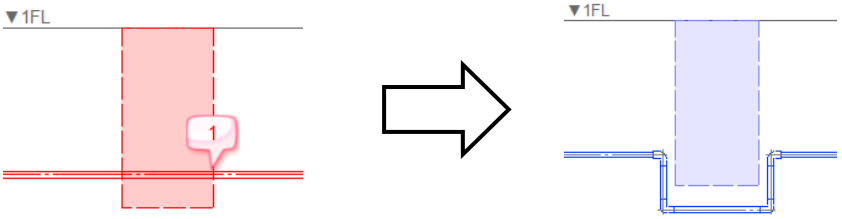


- Supplementary explanation:

If the clash elements are pipes and equipment, Rebro can automatically adjust the pipe route at the clash points and avoid the clashes by [Avoidance] on [Clash detection] panel.
Left-click a list or balloon and then [Avoidance] to adjust the route and avoid the clash.



If the clash elements are beams and pipes, beams and rectangular ducts, or beams and spiral ducts, Rebro adjusts the route height to avoid clashes.

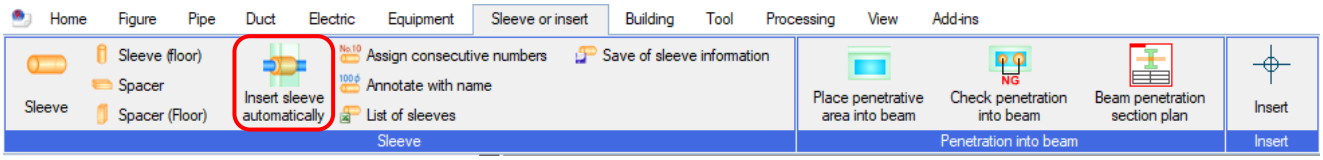


In the case that the clash elements are other combinations except for the above ones, [Avoidance] command is unavailable.

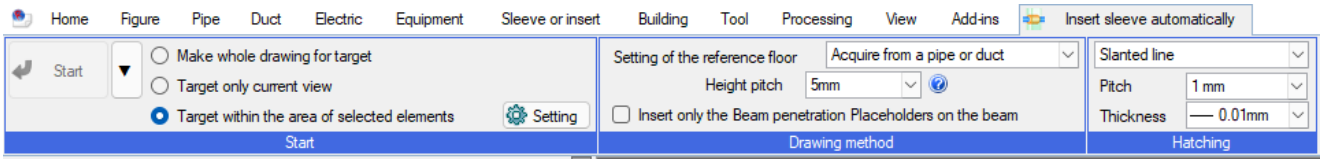
2. Create sleeves

Create sleeves (Automatically)

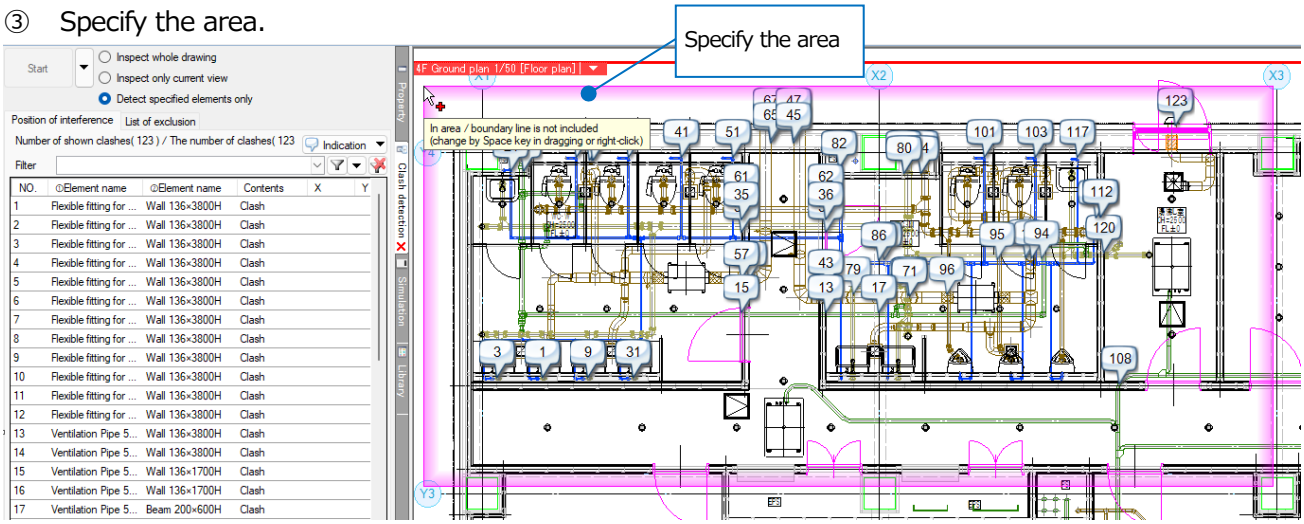
① Start [Sleeve or insert] tab- [Insert sleeve automatically].



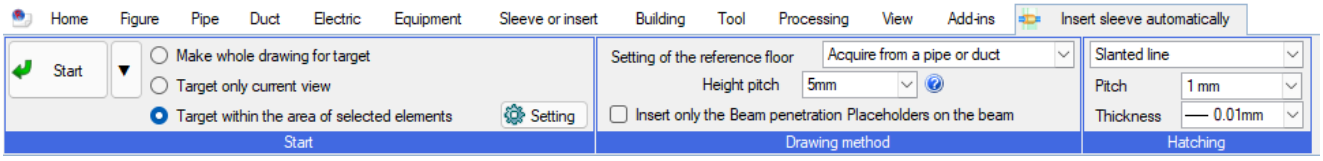
② Select the target area to insert sleeves and [Setting of the reference floor].

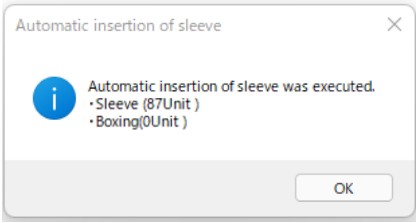


③ Specify the area.



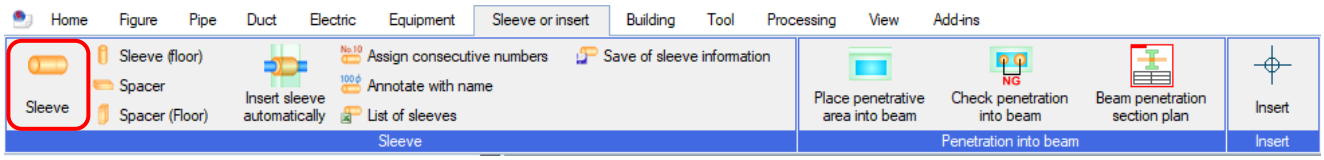
④ Left-click [Start] to show [Automatic insertion of sleeve] dialog box, which shows the type and number of the sleeve. Left-click [OK]. → Sleeve is inserted.





Create a sleeve (Manually)

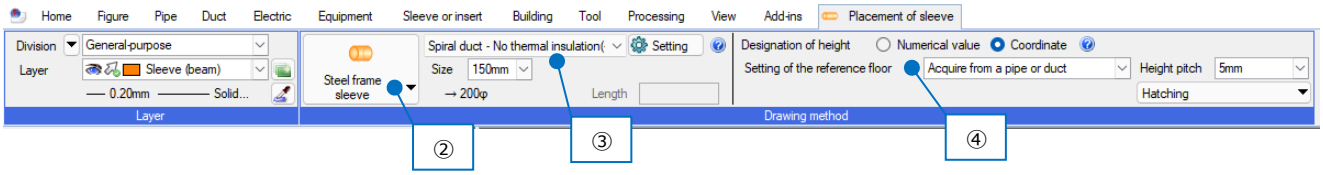
① Start [Sleeve or insert] tab- [Sleeve].



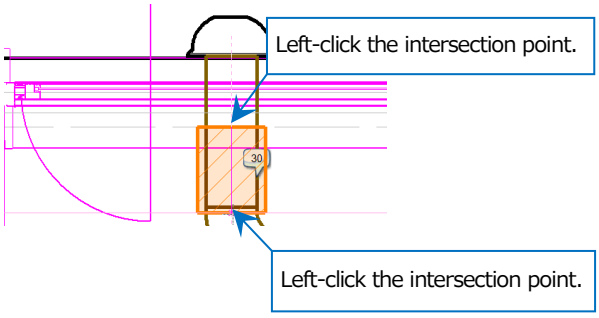
② Select the sleeve type.

③ Select the way to specify the size of the sleeve, and then the duct size.

④ Select [Designation of height] and [Setting of the reference floor].

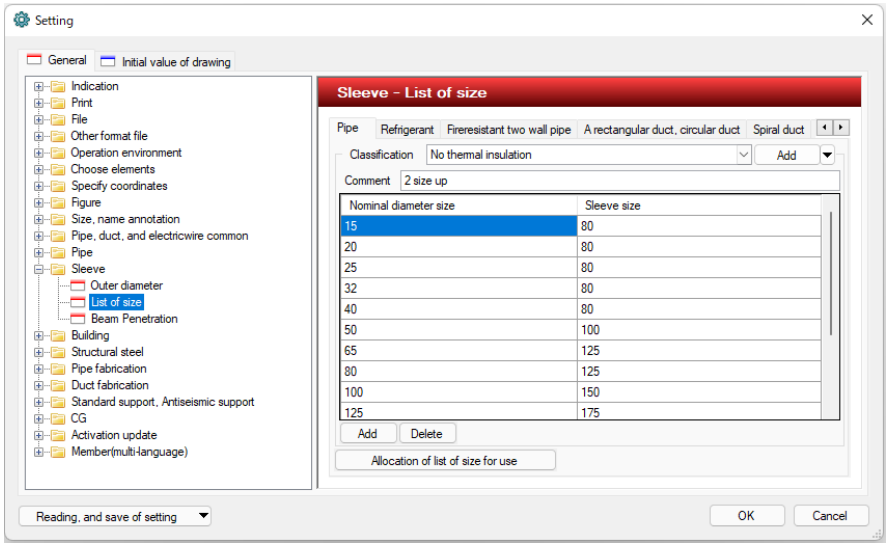


⑤ Left-click two intersection points of the duct and structure.



Set the size of a sleeve

Set the size of a sleeve according to the nominal diameter size of pipes or ducts.



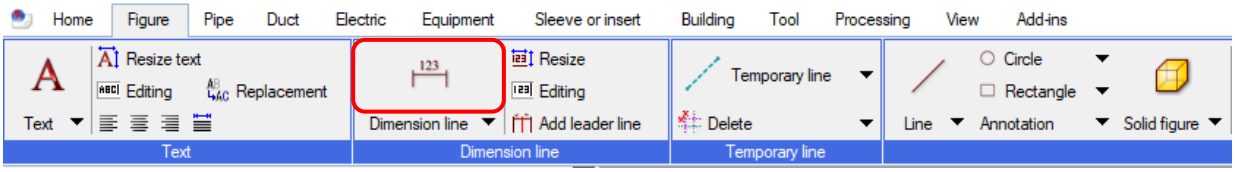
Select [Setting]-[General]tab-[Sleeve]-[List of size] to set the sleeve size.

Finish the drawing

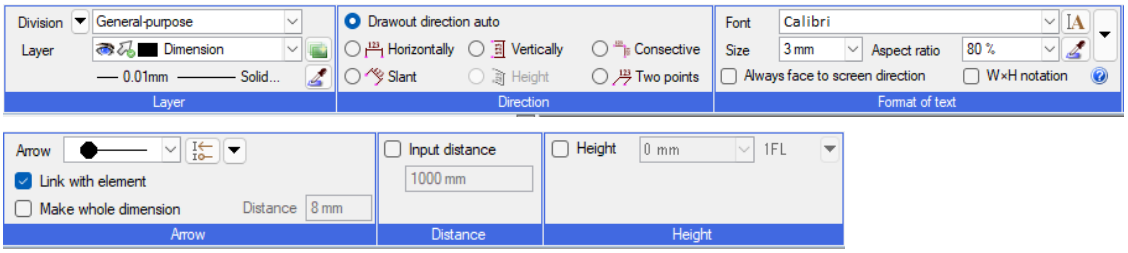
1. Draw a dimension line

Draw a dimension line

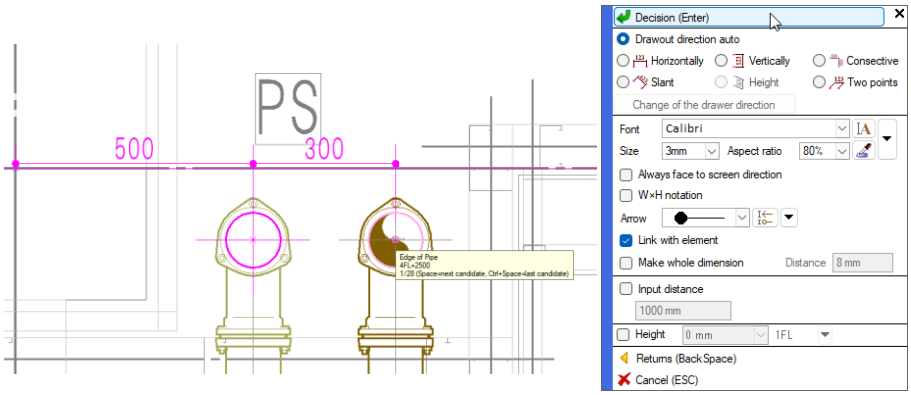
① Select [Figure] tab- [Dimension line] to start the command.



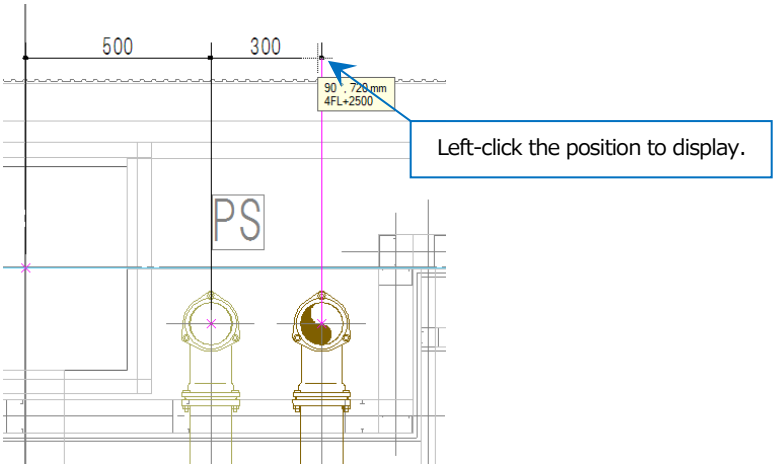
② Select settings for the dimension line.



③ Specify the coordinates of the draw-out position to select “Decision” in the context menu.



④ Left-click the position where you want to display the dimension line.

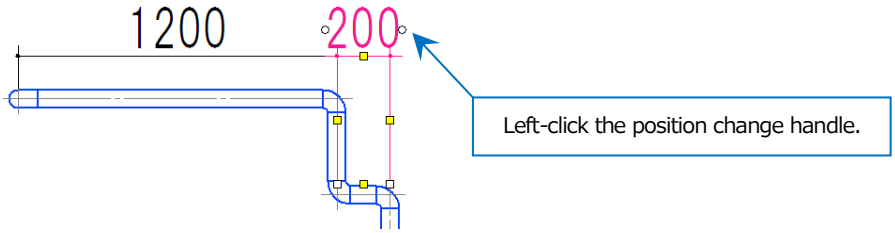


Edit a dimension line

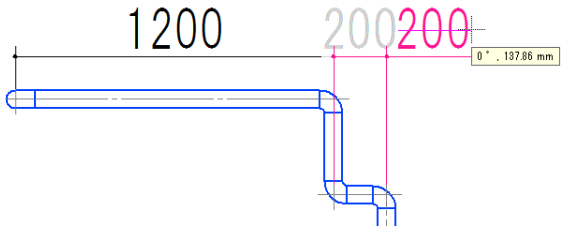
Edit the drawn dimension line.

Change the position of a dimension value

① Choose the dimension line to left-click the position change handle (white) at the both ends of the dimension value.



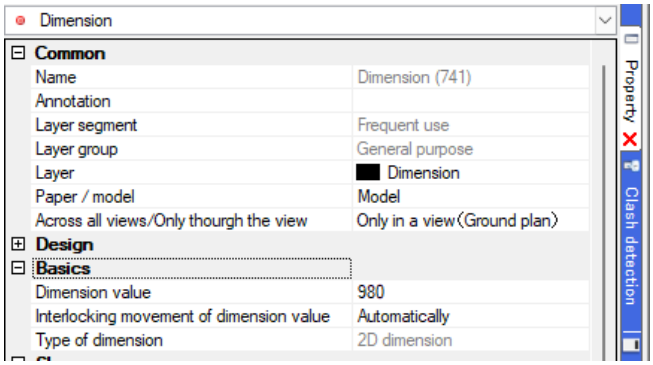
② Specify the position where you want to display.

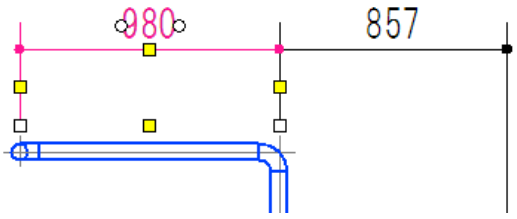


*Turn off the Coordinate revision in [Coordinates] to place the dimension value at any position where you want. (See page 14)

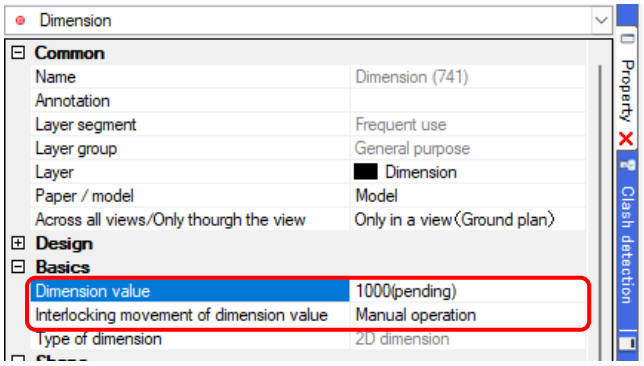
Type any value to a dimension value

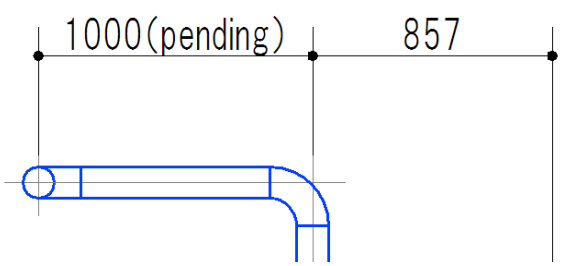
① Choose the dimension line to show the property panel.





② Change “Automatically” to “Manual operation” in [Basics]- [Interlocking movement of dimension value] to type any value in [Dimension value].



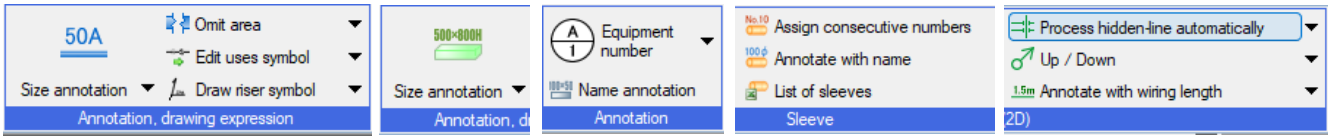


2. Annotate with sizes or names

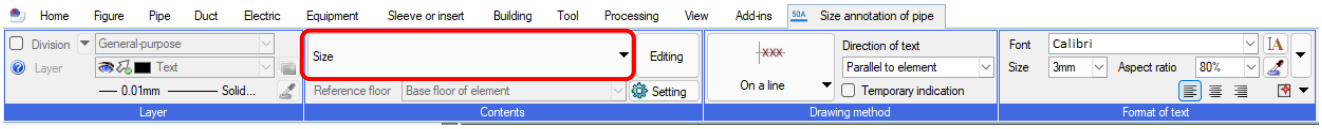
You can annotate the drawing with the information about the piping, ducting, equipment and so on that you drew. The descriptions of the information get different by categories such as pipe, duct, electric, equipment, sleeve, or building. The commands to annotate with sizes or names are linked with each element so that the descriptions get changed when the size of the element and so on get changed.

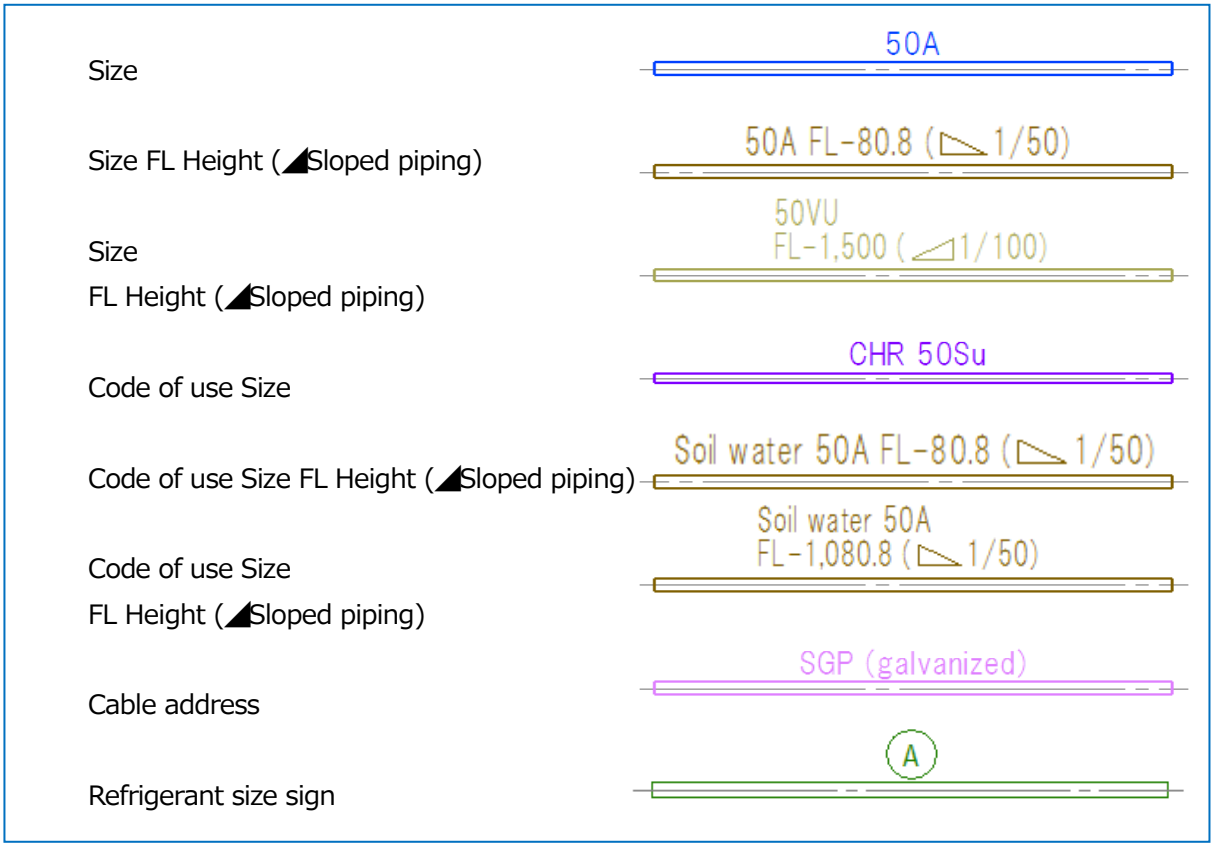
Draw size annotative text

① Start [Size annotation] in the following tabs: [Pipe], [Duct], [Electric]or [Building]. Also, you can start [Name Annotation] in [Equipment], or [Annotate with name] in [Sleeve or insert] tab, or [Annotate with wiring length] in [Electric] tab.



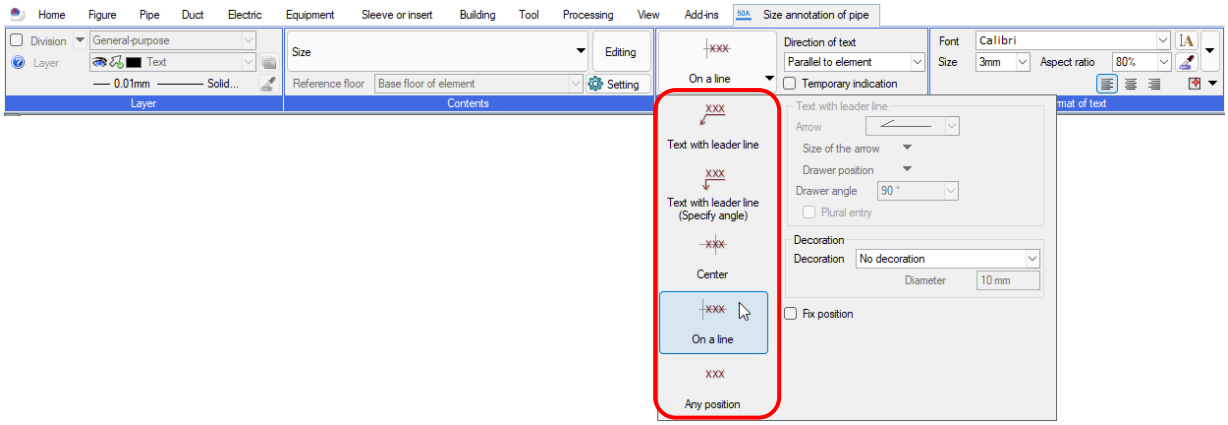
② Select the descriptions to annotate from the following formats.





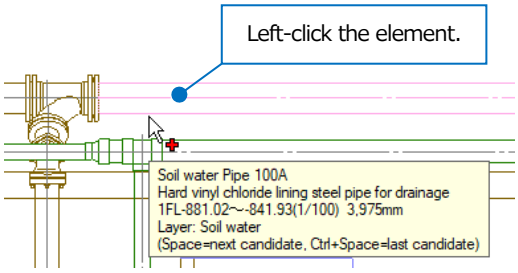
You can create your own format in addition to the above.

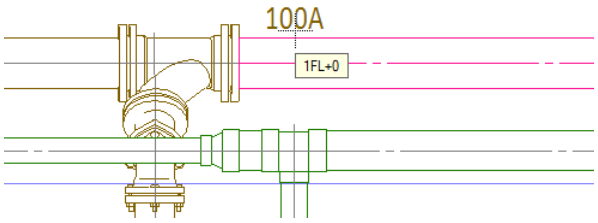
③ Select how to draw the size annotation.



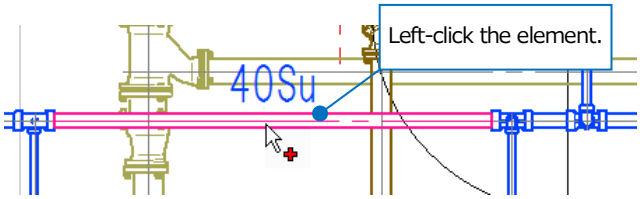
④ Choose the element that you want to annotate with the size.

-Draw [Text with leader line (Specify angle)][On a line][Any position]
Choose the element to specify the position where you want to place the size annotative text.



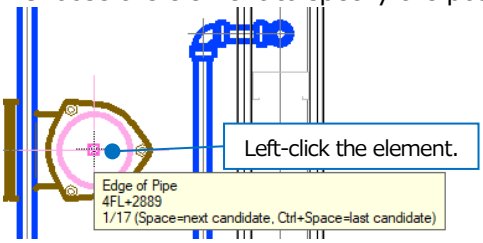


-Draw size annotative text [Center]
Choose the element to place the size annotative text in the middle of the element.

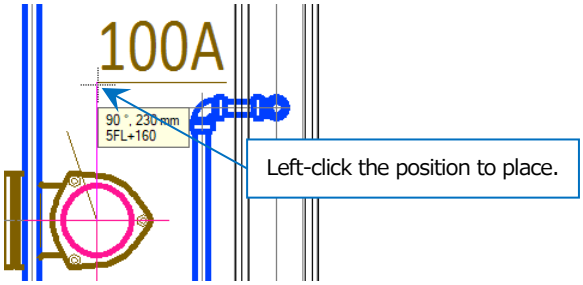


-Draw [Text with leader line]

① Choose the element to specify the position to draw out the leader line.

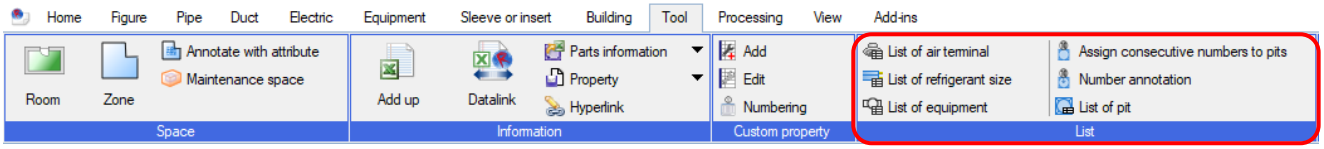


② Specify the position to place the size annotative text.



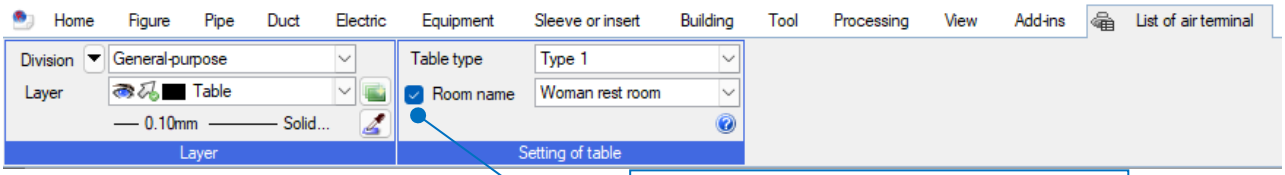
3. Create a list

Rebro can create a list based on the information about the air diffusers or pits that you drew. Change the information of the element to update the information in the placed list that links with the element.



An air terminal list

① Select [Tool] tab- [List of air terminal] to start the command. Select [Table type] and [Room name].



When the checkbox is checkmarked, the room is drawn with the specified name.
When the checkbox is unmarked, the room is drawn with the same name as [Space]-[Room] on a vent terminal property item.

Type 1

Room name	Woman rest room
Equipment name	HS 150×150
Air volume	EA 100 m³/h
Box	250×250×250H
	(No thermal insulation)

×4

Type 2

Woman rest room	
HS 150×150 [EA 100 m³/h]	4
250×250×250H (No thermal insulation)	

Type 1(Without box)

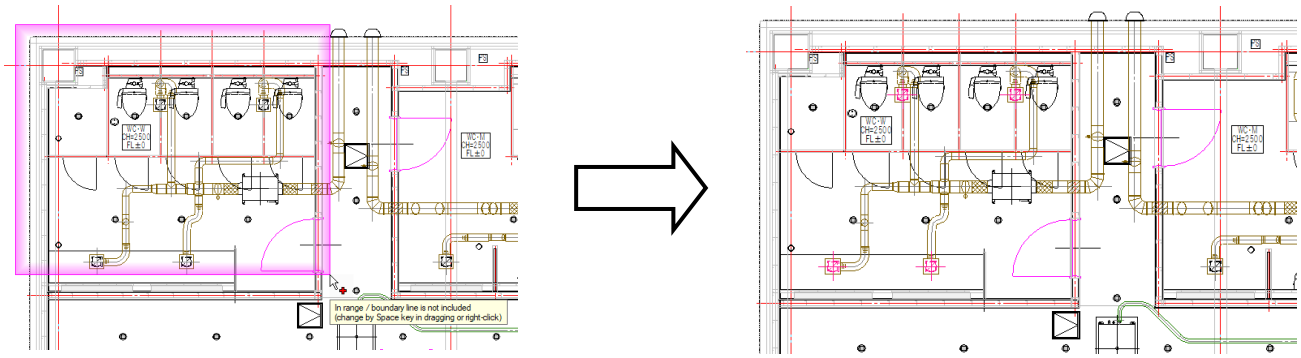
Room name	Woman rest room
Equipment name	HS 150×150
Air volume	EA 100 m³/h

×4

Type 2(Without box)

Woman rest room	
HS 150×150	4
EA 100 m³/h	

② Specify the area you want to create a list, to select all air terminals in the area. Left-click [Decision].



③ Place the list on the drawing where you want.

A refrigerant size list

① Select [Tool] tab- [List of refrigerant size]. Select [Table type].

Type 1

Symbol	Refrigerant size
A	12.7ϕ×6.4ϕ
B	15.9ϕ×9.5ϕ
C	19.1ϕ×9.5ϕ
D	22.2ϕ×9.5ϕ
E	25.4ϕ×12.7ϕ
F	28.6ϕ×12.7ϕ
G	28.6ϕ×15.9ϕ
H	31.8ϕ×19.1ϕ
I	38.1ϕ×19.1ϕ
J	19.1ϕ×15.9ϕ×9.5ϕ
K	22.2ϕ×19.1ϕ×9.5ϕ
L	25.4ϕ×19.1ϕ×12.7ϕ
M	25.4ϕ×22.2ϕ×12.7ϕ
N	28.6ϕ×22.2ϕ×12.7ϕ
O	28.6ϕ×22.2ϕ×15.9ϕ
P	28.6ϕ×25.4ϕ×15.9ϕ
Q	31.8ϕ×25.4ϕ×19.1ϕ
R	31.8ϕ×28.6ϕ×19.1ϕ
S	38.1ϕ×28.6ϕ×19.1ϕ
T	38.1ϕ×31.8ϕ×19.1ϕ

Type 2

Symbol	Gas pipe	Liquid pipe
A	12.7ϕ	6.4ϕ
B	15.9ϕ	9.5ϕ
C	19.1ϕ	9.5ϕ
D	22.2ϕ	9.5ϕ
E	25.4ϕ	12.7ϕ
F	28.6ϕ	12.7ϕ
G	28.6ϕ	15.9ϕ
H	31.8ϕ	19.1ϕ
I	38.1ϕ	19.1ϕ

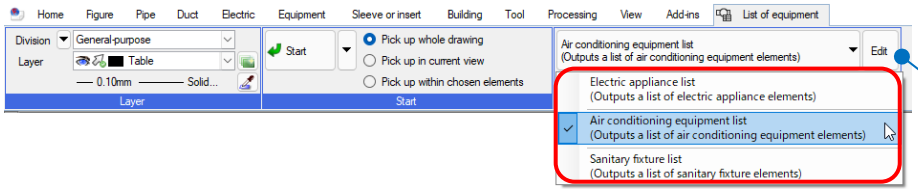
Symbol	Gas pipe	High and low pressure gas pipe	Liquid pipe
J	19.1ϕ	15.9ϕ	9.5ϕ
K	22.2ϕ	19.1ϕ	9.5ϕ
L	25.4ϕ	19.1ϕ	12.7ϕ
M	25.4ϕ	22.2ϕ	12.7ϕ
N	28.6ϕ	22.2ϕ	12.7ϕ
O	28.6ϕ	22.2ϕ	15.9ϕ
P	28.6ϕ	25.4ϕ	15.9ϕ
Q	31.8ϕ	25.4ϕ	19.1ϕ
R	31.8ϕ	28.6ϕ	19.1ϕ
S	38.1ϕ	28.6ϕ	19.1ϕ
T	38.1ϕ	31.8ϕ	19.1ϕ

② Place the list on the drawing where you want.

Select
[Pipe] tab-[Other setting]-[Set refrigerant size] to set the refrigerant size lists.

An equipment list

① Select [Tool] tab- [List of equipment]. Select the chosen area and the equipment list type.



② Choose a target for which you create an equipment list to left-click [Start].

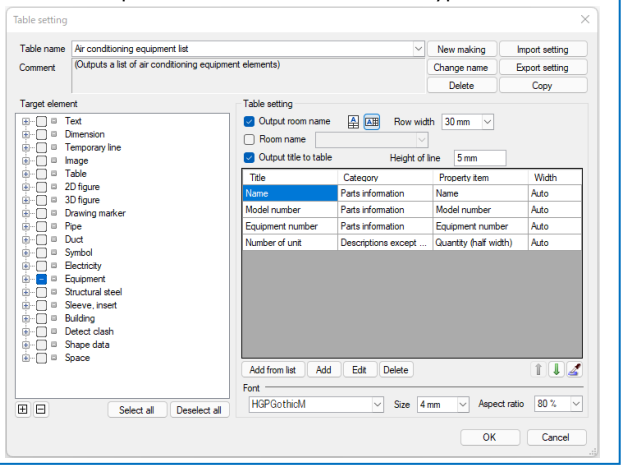
③ Place the list on the drawing where you want.

	Name	Model number	Equipment number	Number of unit
Meeting room	1 direction cassettes type building multi-air-conditioner	28 type	PAC-2	2
	Name	Model number	Equipment number	Number of unit
Office	4 direction cassettes type building multi-air-conditioner	80 type	PAC-1	2

	Name	Model number	Equipment number	Number of unit
Office	LED recessed dome light (no cover)	LED4750lm (Hf32×2 equivalency)	A-1	4
	Name	Model number	Equipment number	Number of unit
Meeting room	LED recessed dome light (no cover)	LED2000lm (FLR40 equivalency)	B-1	4

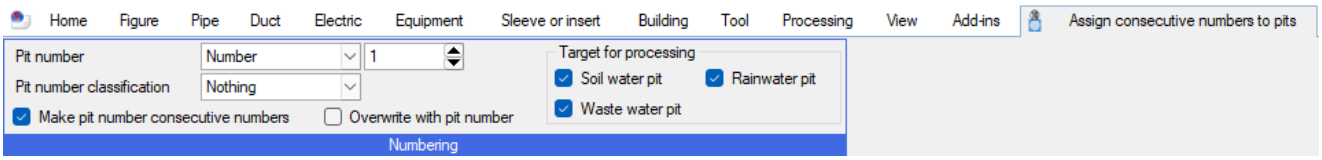
	Name	Model number	Equipment number	Number of unit
Rest room	AH1	CES9783	1-1	3
	Frontage 1200mm	MGJA+L520+TLC31-1(Single unit)	2-1	2

Left-click [Edit] to set up target elements to create a list or the details to output. You can also add more list types.

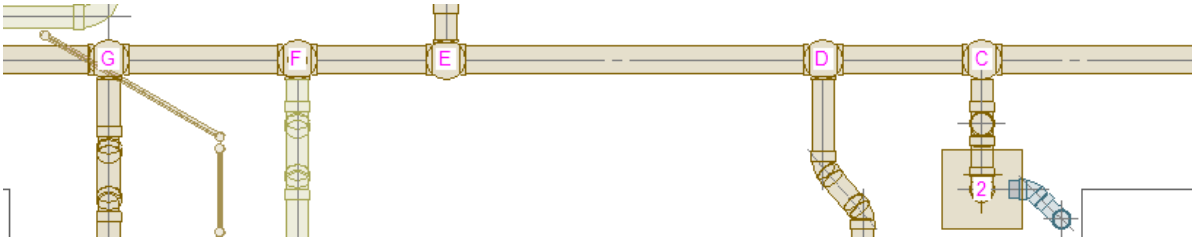


A pit list

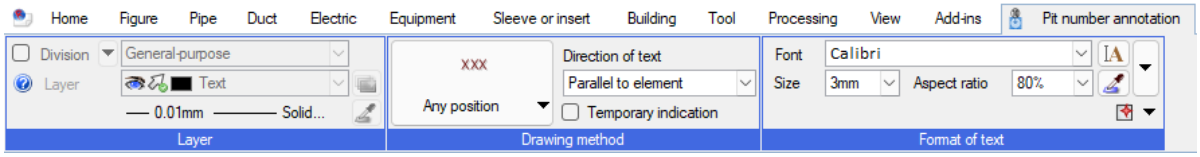
① Select [Tool] tab- [Assign consecutive numbers to pits]. Select the pit number.



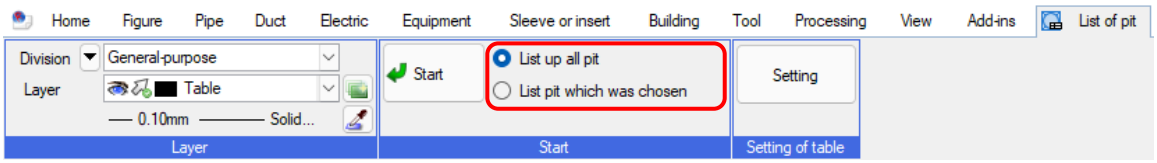
② Left-click the pit on the drawing to assign the number and [Decision] the state.



③ Select [Tool] tab- [Number annotation] to annotate with the assigned number on the drawing.



④ Select [Tool] tab- [List of pit] to select the target to create a list.

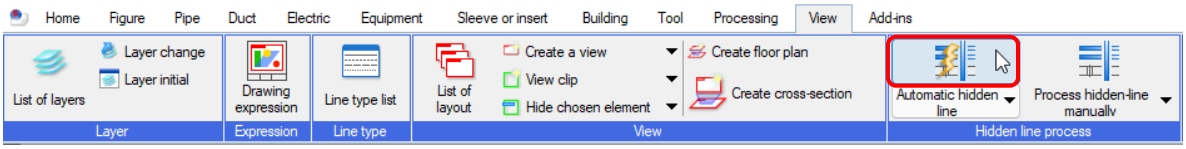


⑤ Left-click the “Start” button to place the pit list on the drawing where you want.

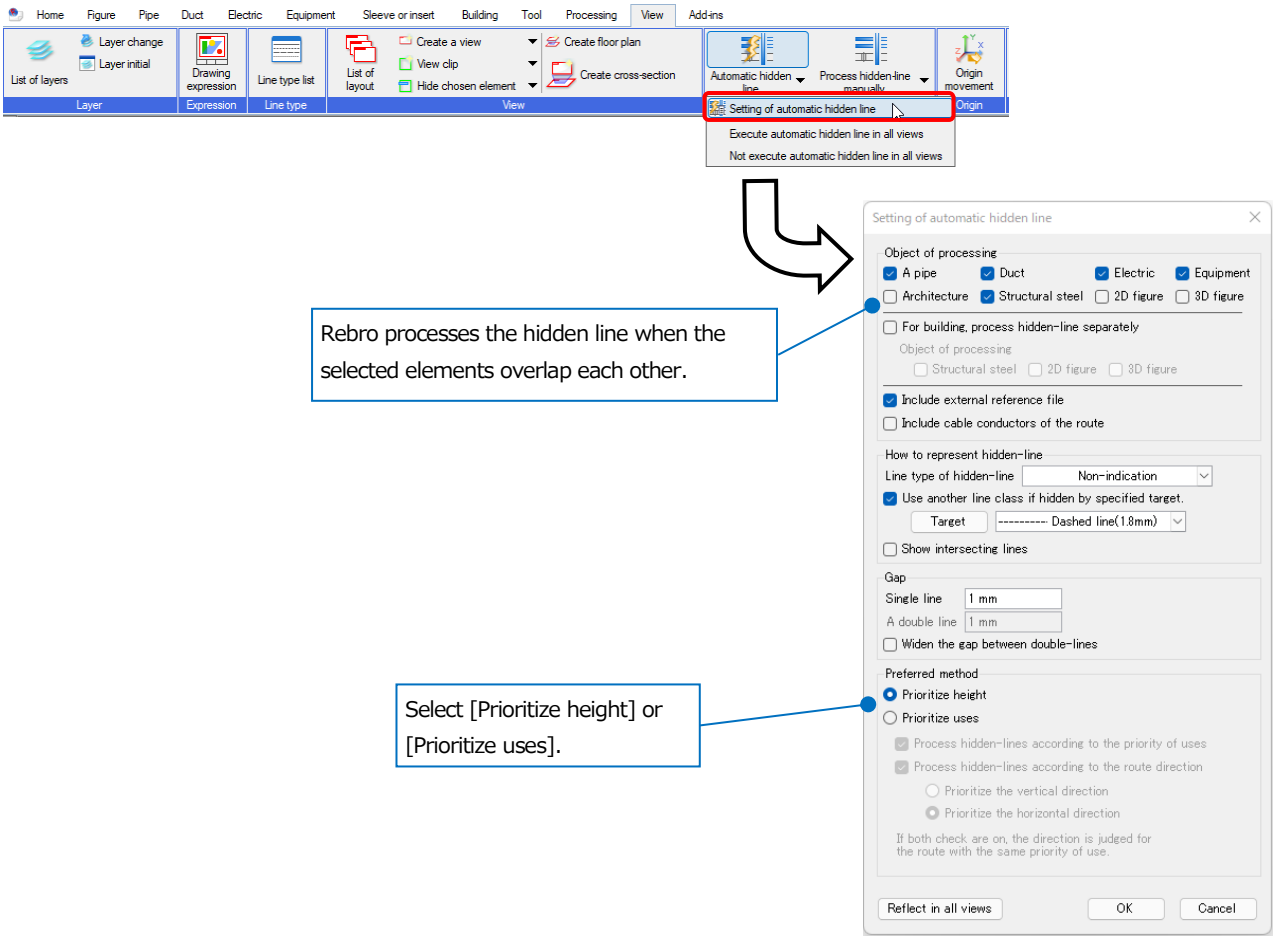
Number	Name	Classification	Size	Ground height (design GL±)	Pipe bottom height (design GL±)	Pit depth	Pit depth (design GL±)	Section distance	Cover specifications	Cover dimensions	Remarks
1	Rainwater pit	Storage pit	300□	-880		579	1,459	0	MHA	300 φ	
2	Rainwater pit	Storage pit	300□	-51		299	350	0	MHA	300 φ	
3	Rainwater pit	Storage pit	300□	-13		787	800	0	MHA	300 φ	
A	Soil water pit		300 φ	-197	-1,004	807	1,004	8.6		300 φ	
B	Soil water pit		300 φ	-88	-882	794	882	10.1		300 φ	
C	Soil water pit		300 φ	-51	-859	808	859	0.4		300 φ	
D	Soil water pit		300 φ	-49	-823	774	823	1.5		300 φ	
E	Soil water pit		300 φ	-42	-778	736	778	0.4		300 φ	
F	Soil water pit		300 φ	-39	-752	713	752	0.6		300 φ	
G	Soil water pit		300 φ	-23	-699	676	699	3.2		300 φ	
H	Soil water pit		300 φ	-41	-462	421	462	0.9		300 φ	

4. Hidden line process

When drawing with [Automatic hidden line] turned on, Rebro automatically hides the overlapping parts or changes the line type according to the direction of viewpoint for a creating drawing or the priority of uses.



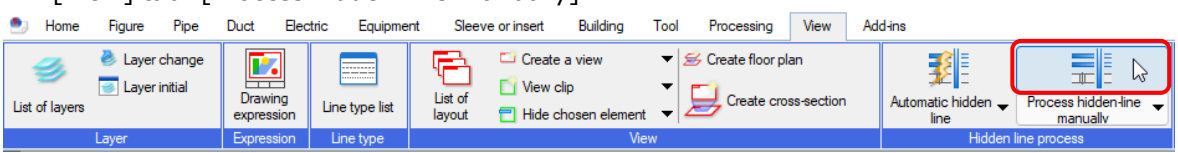
You can set target elements of hidden line process, or hidden line types by [Setting of automatic hidden line].



- Supplementary explanation:

Rebro processes hidden lines when you switch to ON after drawing. If you switch to OFF, hidden line process is reset.

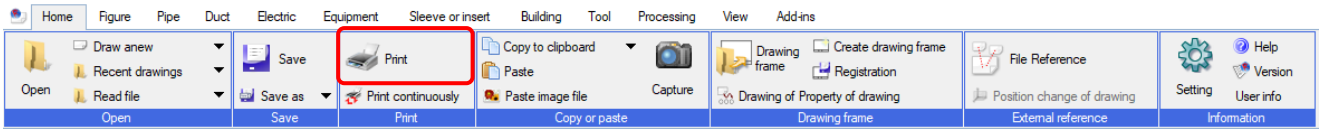
If you want to specify the area of processing for a hidden-line or to change the hidden-line expression partially, turn off the automatic hidden-line processing and execute the hidden-line processing manually in [View] tab- [Process hidden-line manually].



How to print

1. How to print

Select [Home] tab-[Print] to start the command.



How to print on A1-size paper

① Select the printer with that you want to print from the printer names. Select “property” to show the property of the printer driver that you choose.

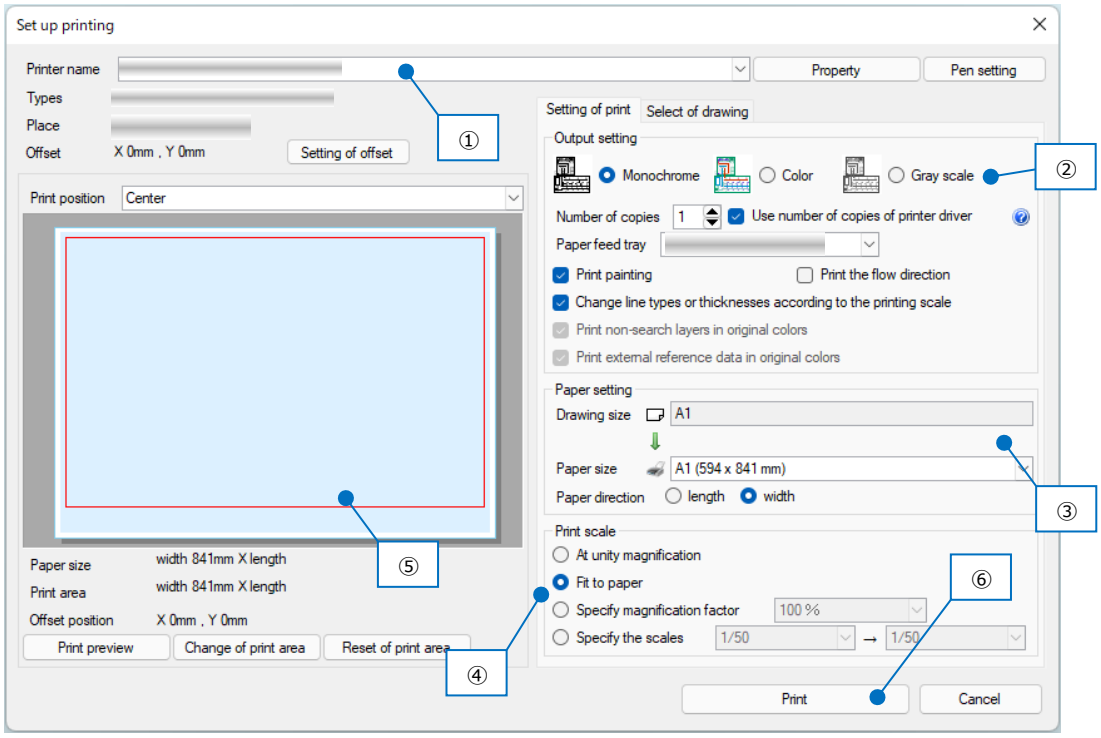
② From the output setting, select Monochrome, Color, or Gray scale, and numbers of copies.
Select “Print painting” to print the painted part of the element.
For monochrome output, it is printed in gray if the paint is “Semitransparency” and is printed in a solid fill if “Painting all over”.

③ In the drawing size, the paper size that you drew appears.
Select a paper size to print.

④ In the print scale, select the ratio of the drawing size against the printing paper size.
Select “At unity magnification” or “Fit to paper” to print out the A1-size drawing against the A1-size paper.

⑤ You can check the print area by the preview function. The print area appears in light blue, paper area in light grey, and the view frame in red.

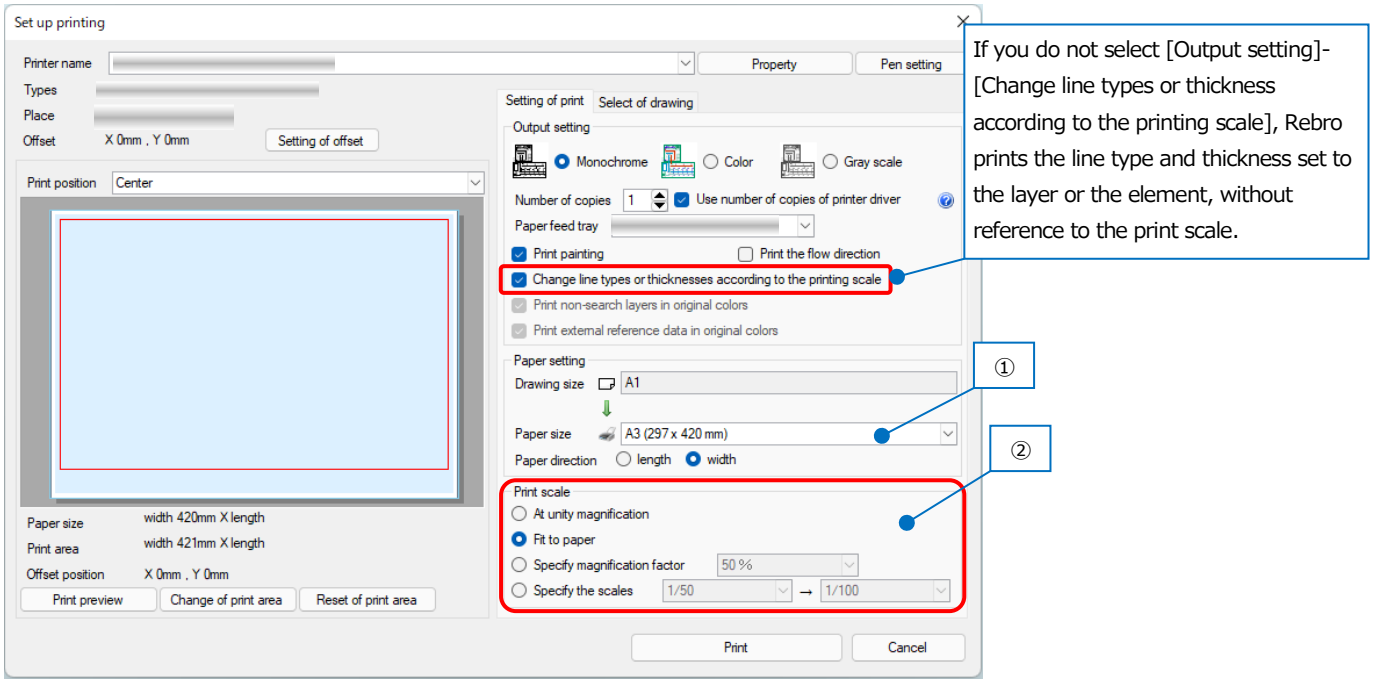
⑥ After the settings, left-click [Print] to print according to those settings.



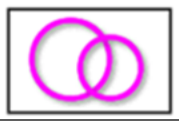
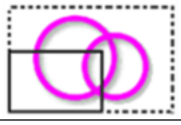
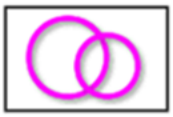
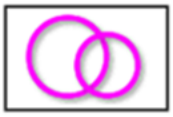
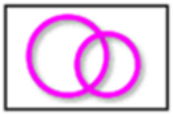
How to reduce and print on A3-size paper

When the chosen paper size is different from the drawing size, you can select the ratio to output in the print scale.

① Select the “A3” size paper.



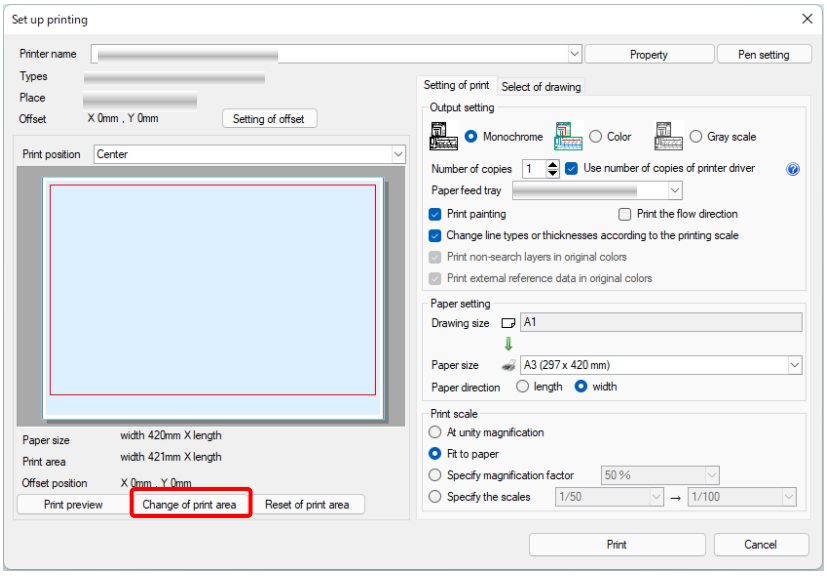
② You can select how to reduce the drawing in the print scale descriptions.

	Drawing size A1 → Paper size A3		
At unity magnification			Output with its original drawing scale.
Fit to paper			Enlarge or reduce automatically according to the paper size. Accordingly, the scale may not be available.
Specify magnification factor			Enlarge or reduce the drawing size by the specified percentage.
Specify the scales			Adjust the ratio of the drawing size by specifying the scale.

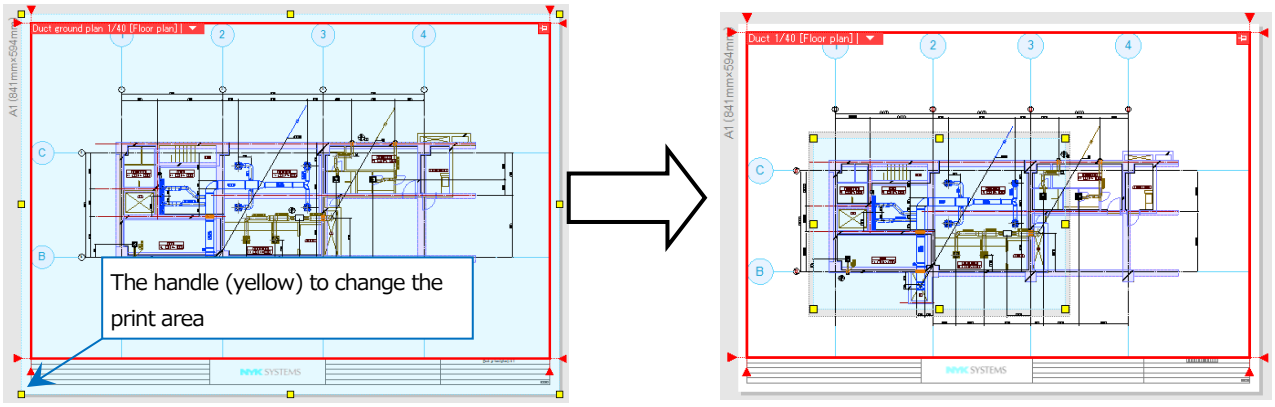
※Both” Specify magnification factor” and “Specify the scales” can specify the ratio of the drawing size. 50% in the “Specify magnification factor” results in the same print as the case that you select 1/50 -> 1/100 in the “Specify the scales”.

Print a part of a drawing

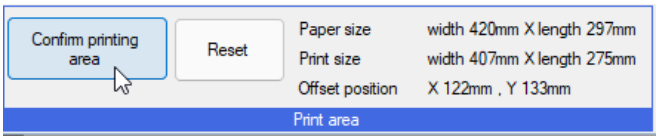
①Left-click [Change of print area].



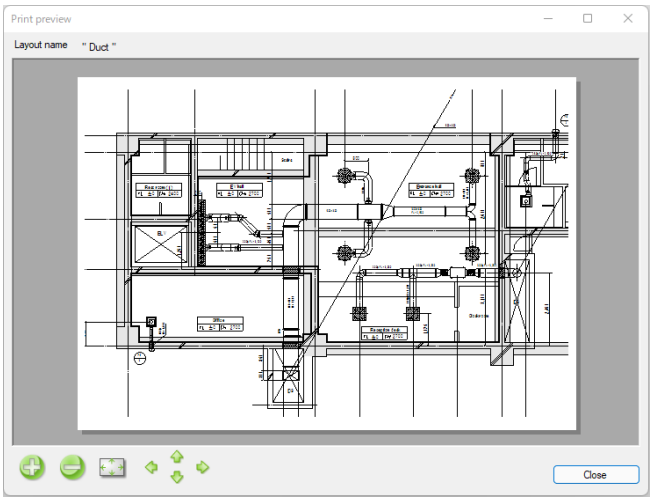
② The print area appears in light blue. Specify the print area by a handle (yellow) to change the print area.



③ Left-click [Confirm printing area].

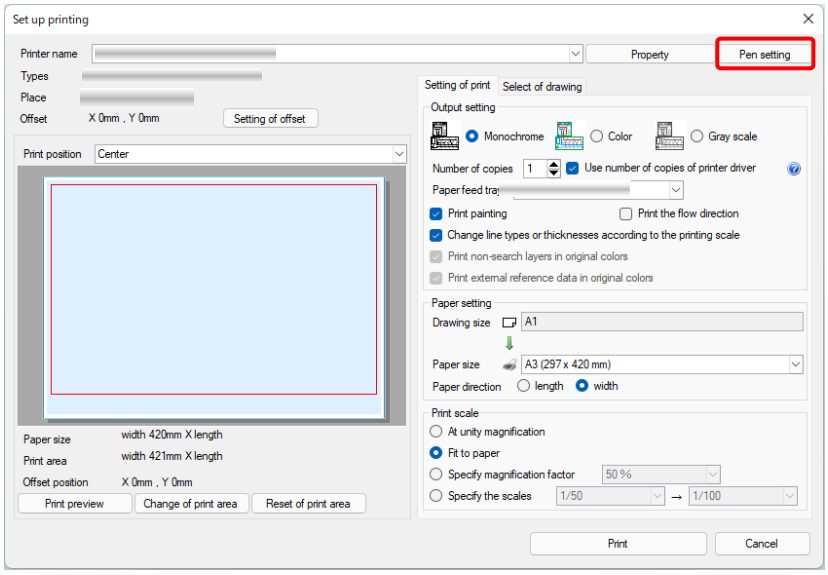


④ Left-click [Print preview] to check the changed condition. You can check the condition that is going to be printed actually.

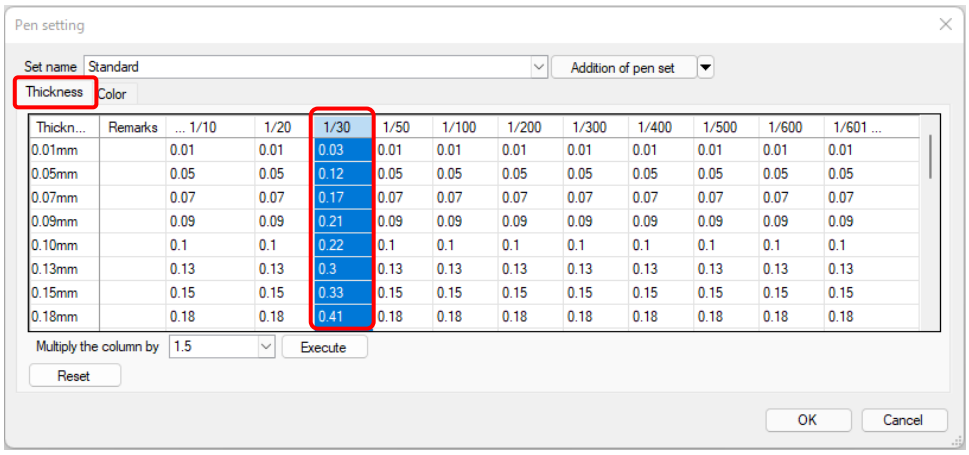


Specify the line thickness for printing

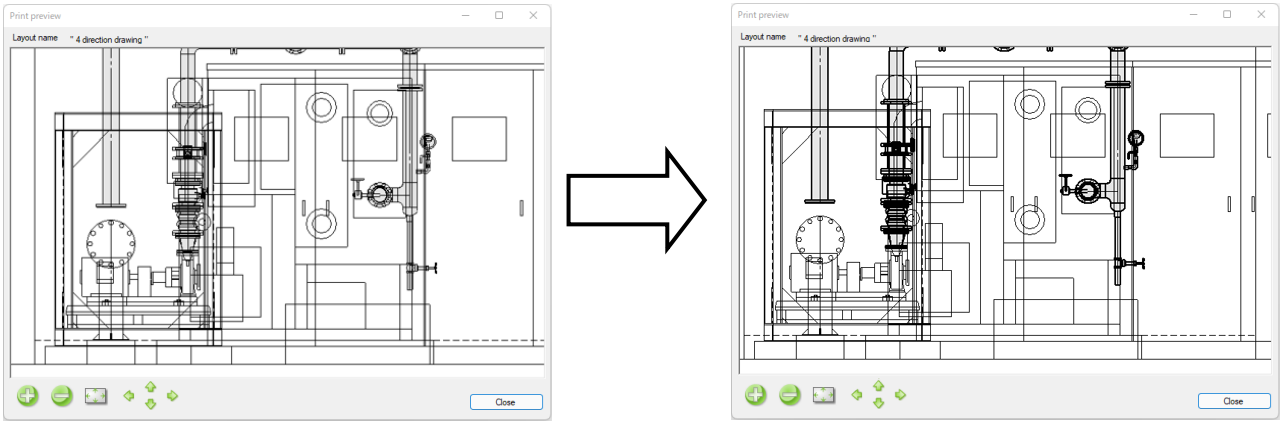
① Left-click “Pen setting”.



② Specify line thickness in [Thickness] tab according to the drawing scale. Type the value to change or select the magnification, to left-click “Execute”.

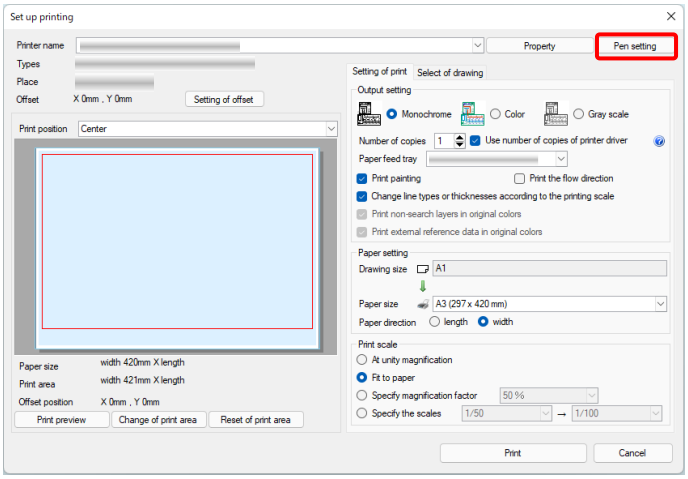


③ Left-click [OK] to check the condition by [Print preview].

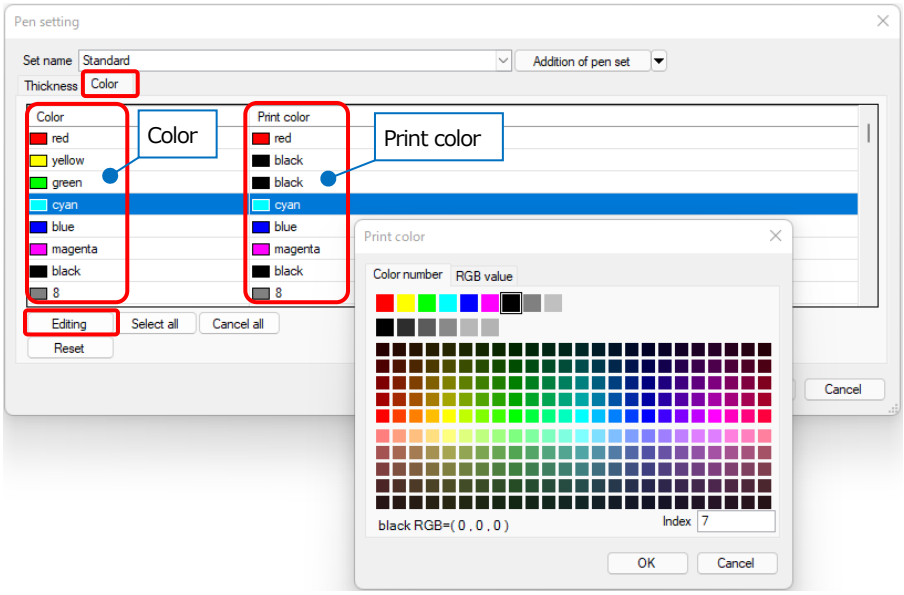


Specify the color for printing

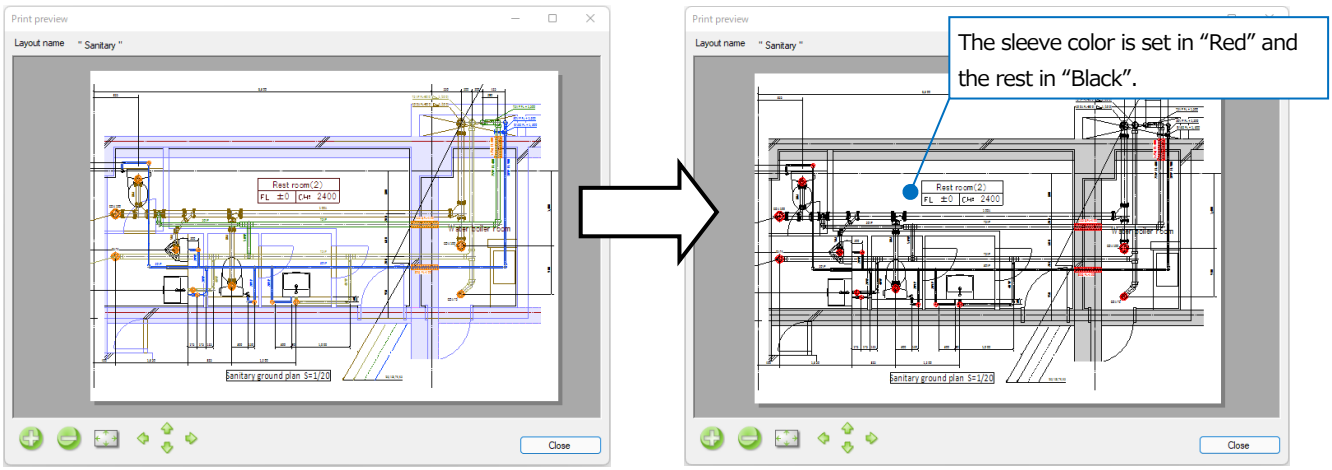
① Left-click “Pen setting”.



② Set up the print color in [Color] tab. Select the color you change to left-click [Editing]. In [Print color] dialog box, select a print color to left-click [OK].



③ Left-click [OK] to check the condition by [Print preview].



Save a drawing

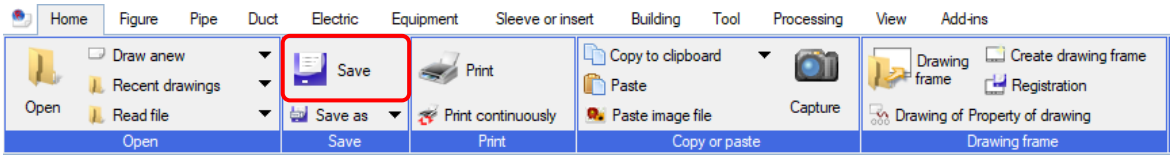
1. Save a Rebro drawing

Rebro has two ways to save a drawing, [Save] and [Save as].

Save

[Save] saves the drawing into the same file on the same location where the drawing is opened.

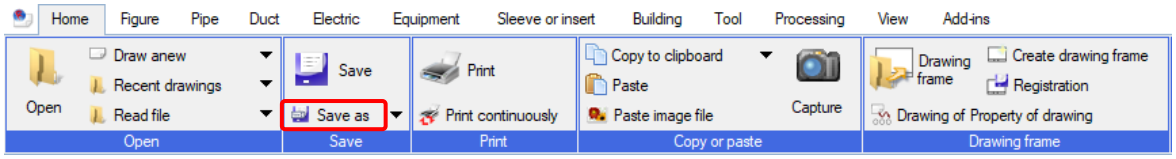
① Left-click [Home] tab-[Save].



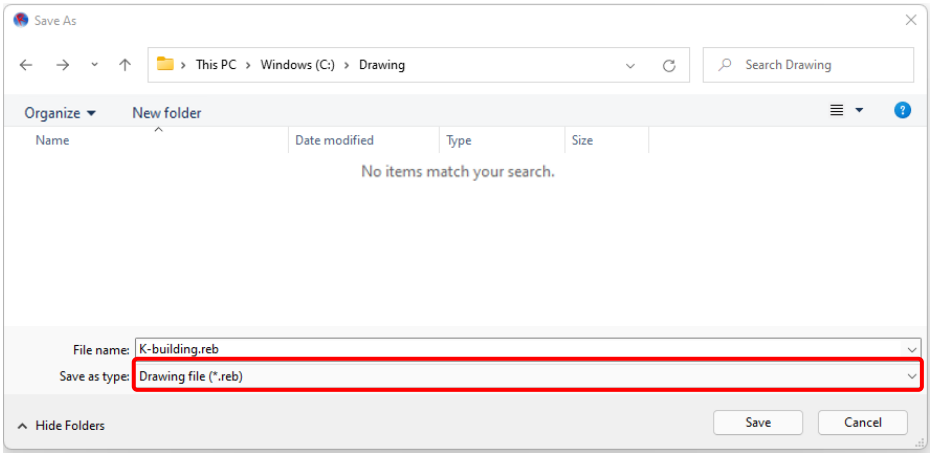
Save as

You can use [Save as] to save the drawing as a new file.

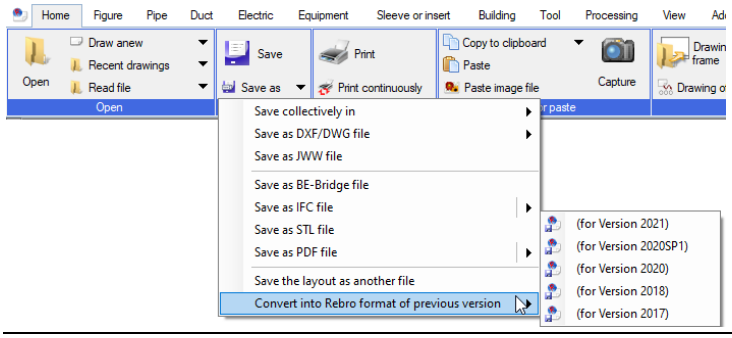
① Left-click [Home] tab- [Save as].



② Select “Drawing file (*.reb)” for the file type. Select the destination file to save the drawing to left-click [Save].



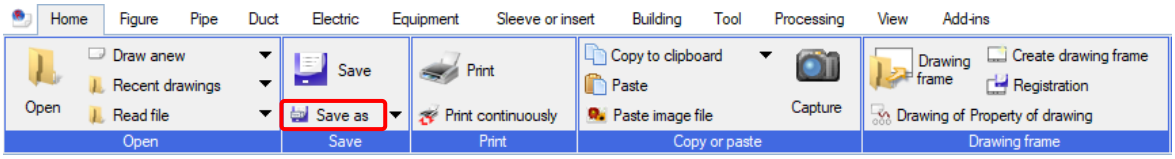
※When you convert into Rebro format of the previous version, left-click [▼] on the right of [Save as] to select a format you want to convert in [Convert into Rebro format of previous version].



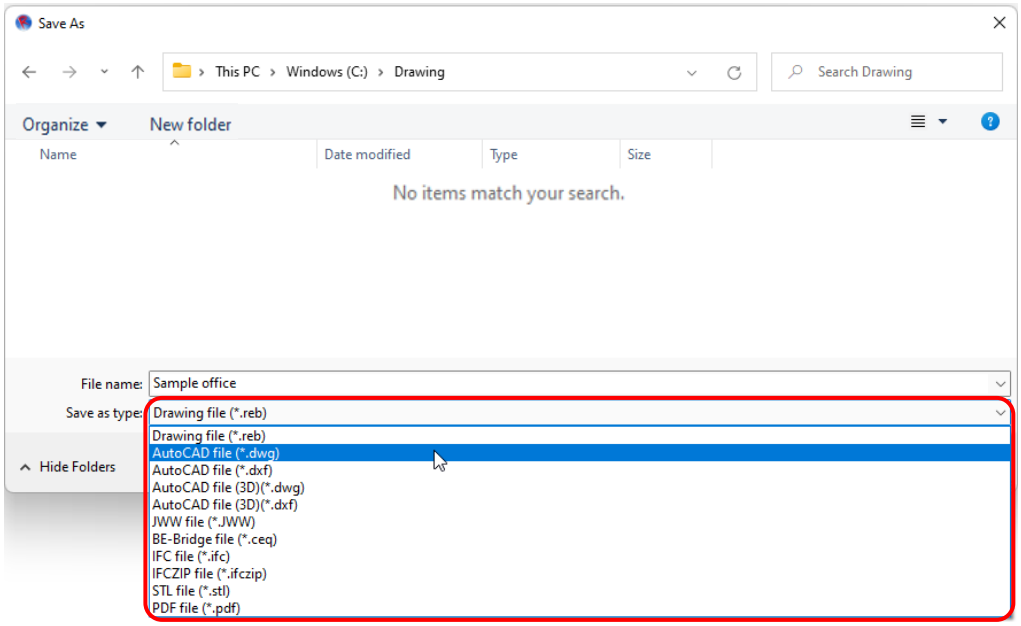
2. Save the drawing into DXF/DWG, JWW, BE-Bridge, IFC, STL, and PDF file format

You can save the drawing in DXF/DWG, JWW, BE-Bridge, IFC, IFCzip, STL, and PDF file format.

① Left-click [Home] tab- [Save as] to show [Save as] dialog box.

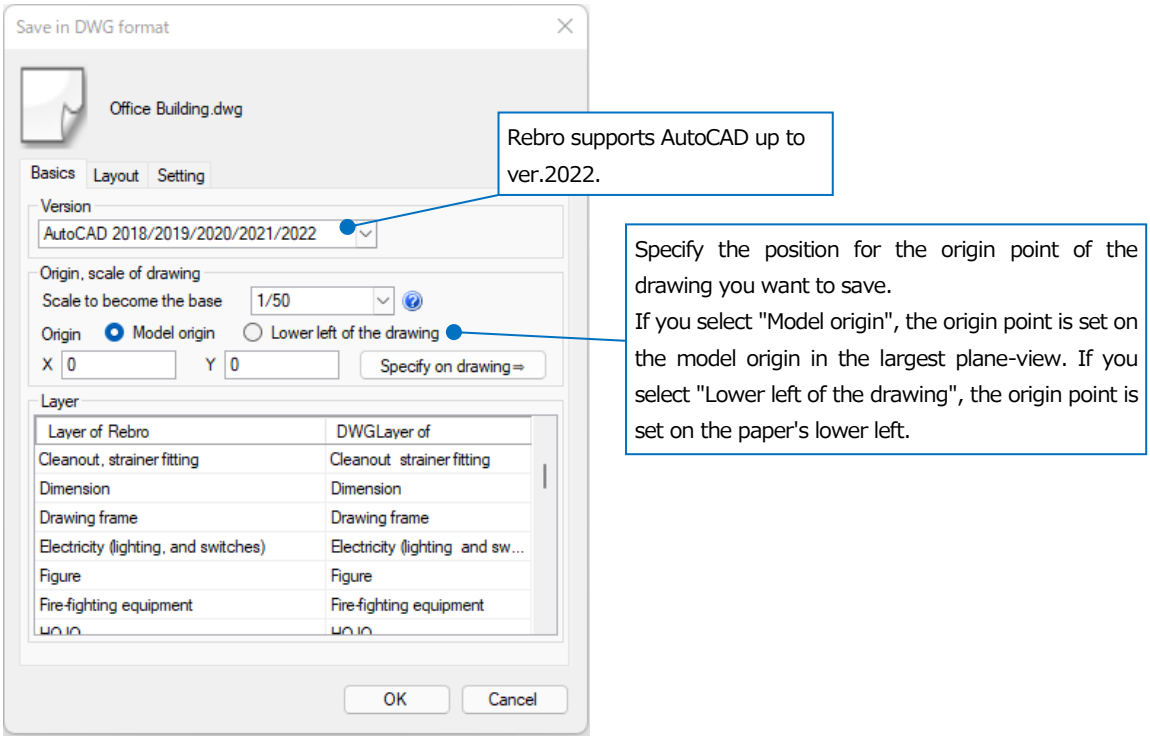


② Select the file format in [Save as type] to left-click [Save].
The drawing is saved in the file with the selected extension.



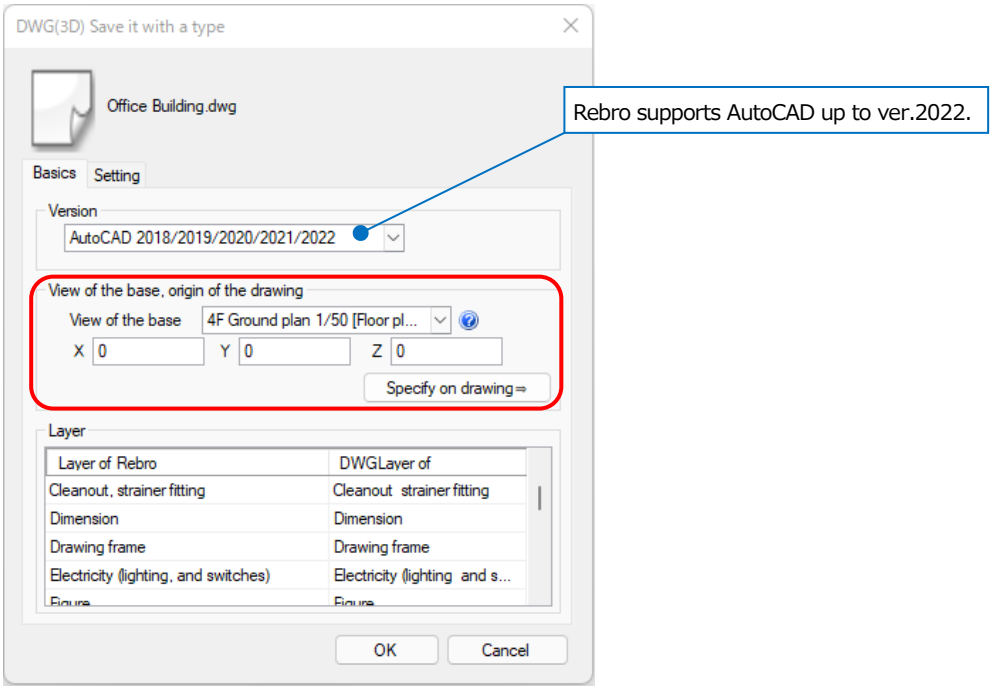
Save a drawing in DXF/DWG file format

When you place multiple views on a layout, Rebro saves all the views as a sheet of floor plan.
An origin point of the drawing can be selected from [Model origin] or [Lower left of the drawing], and you can also specify it on the drawing.



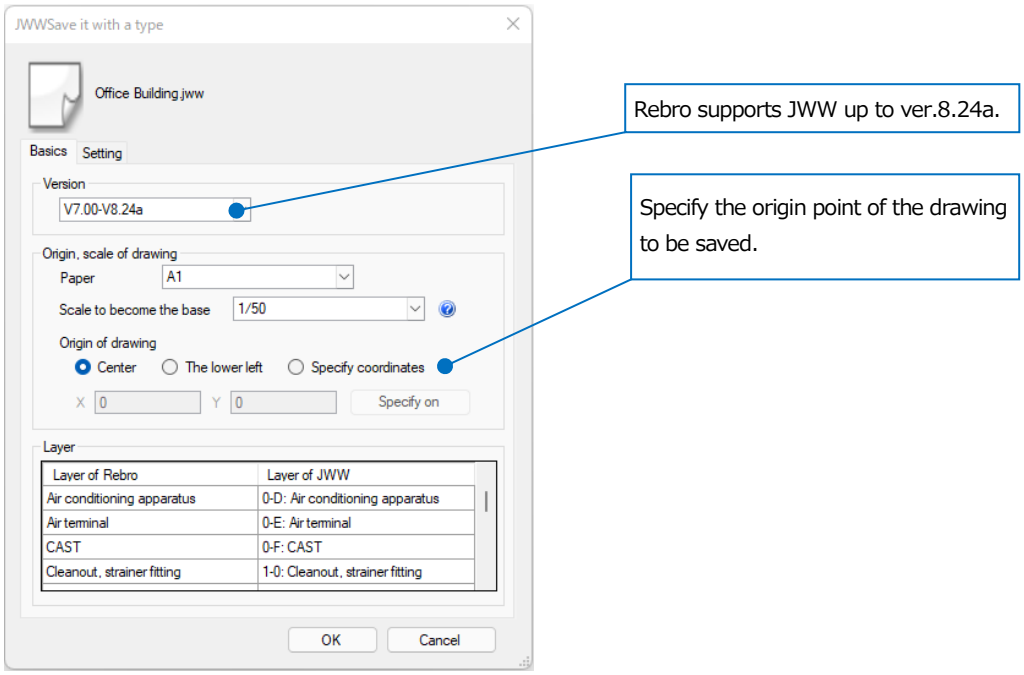
Save a drawing in DXF/DWG(3D) file format

In [View of the base, origin of the drawing], select the view that shows the saving elements.
Rebro saves the elements that are shown in the chosen view. Rebro does not save the elements that are not shown in the chosen view.



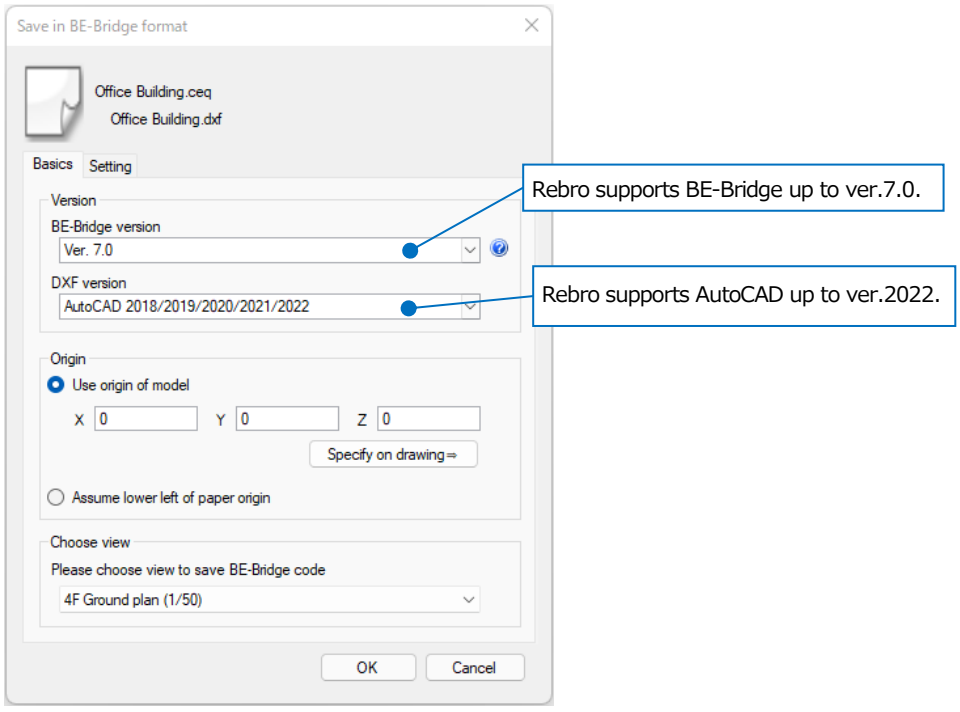
Save a drawing in JWW file format

In the case of JWW files, Rebro also saves all the views as a sheet of floor plan when you place multiple views on a layout, which is the same as AutoCAD(2D).
Rebro saves the floor plan with the origin point at the bottom left in the drawing. You can also specify the position for the origin point.
Select “Center” at the origin of drawing because the origin point of JWW is at the center, if you want to show the drawing on JWW according to the Rebro’s display position.



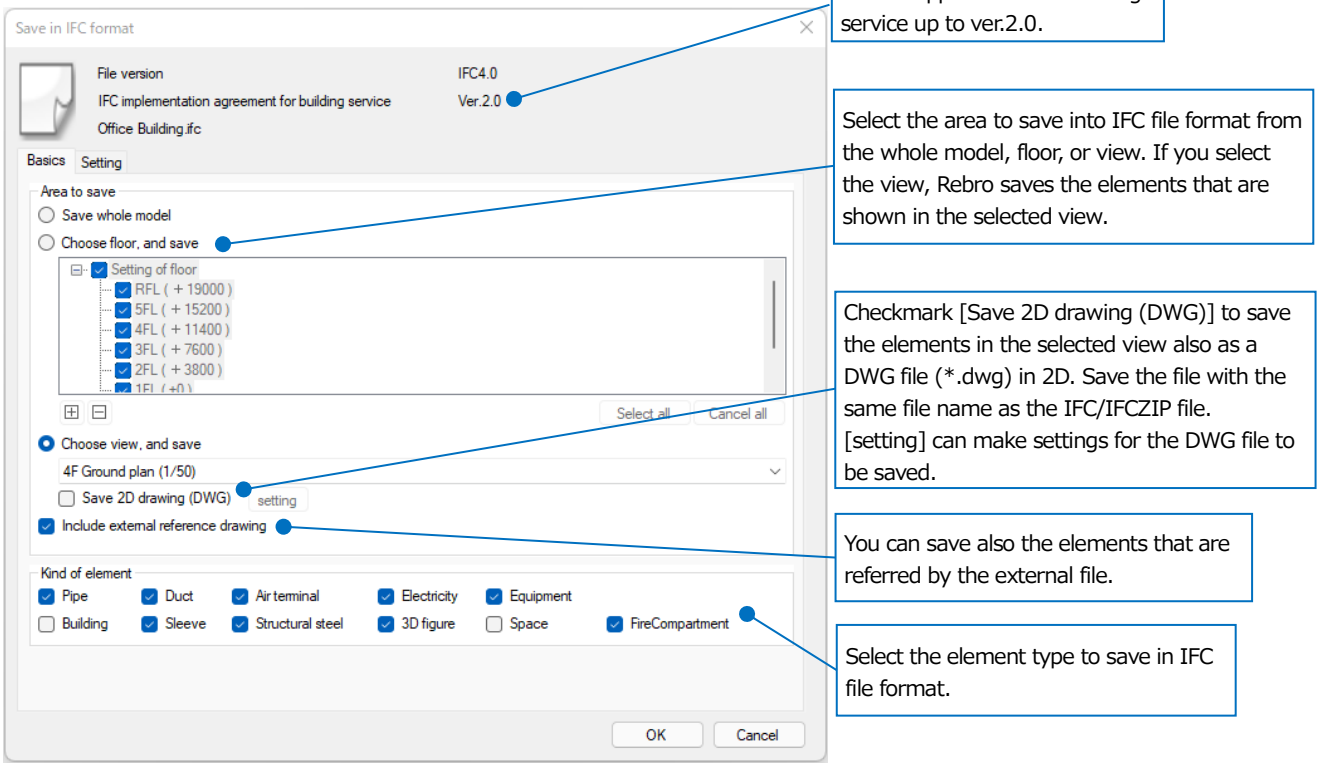
Save a drawing in BE-Bridge file format

BE-Bridge data is saved in DXF file (*.dxf) and BE-Bridge file (*.ceq) by the same file name. DXF file for two dimensions saves the elements of the drawing and BE-Bridge file saves the information about material, height, and size of the pipes or ducts.



Save a drawing in IFC or IFC-ZIP file format

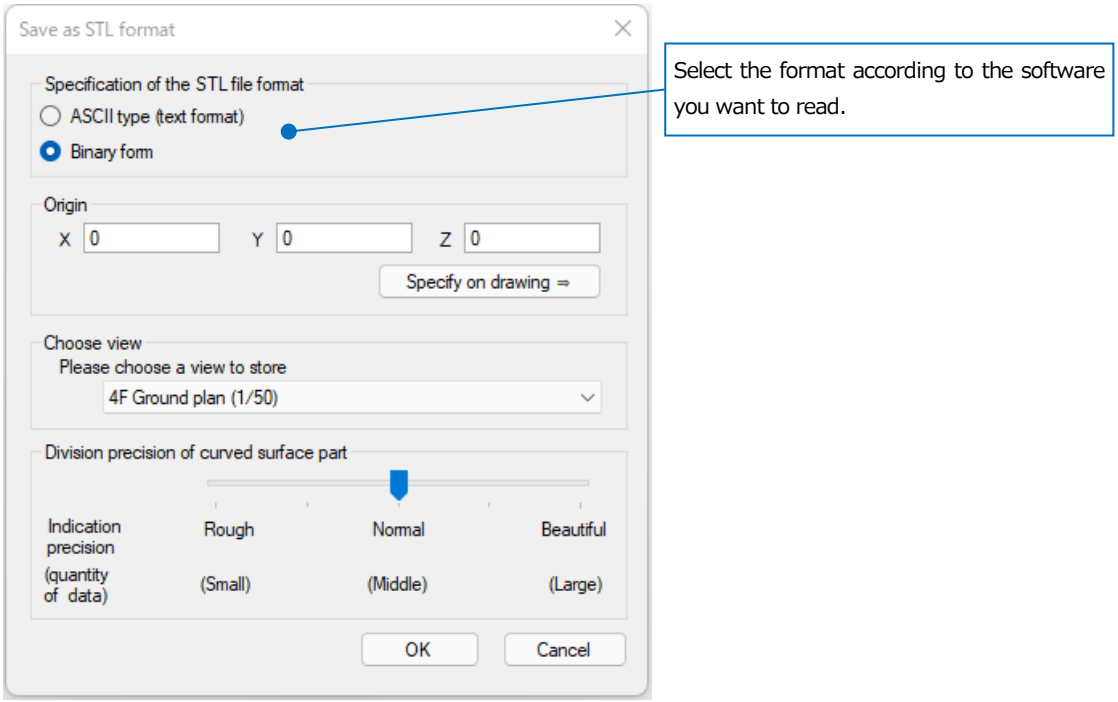
Save the drawing into IFC or IFC-ZIP file format.



Save a drawing in STL file format

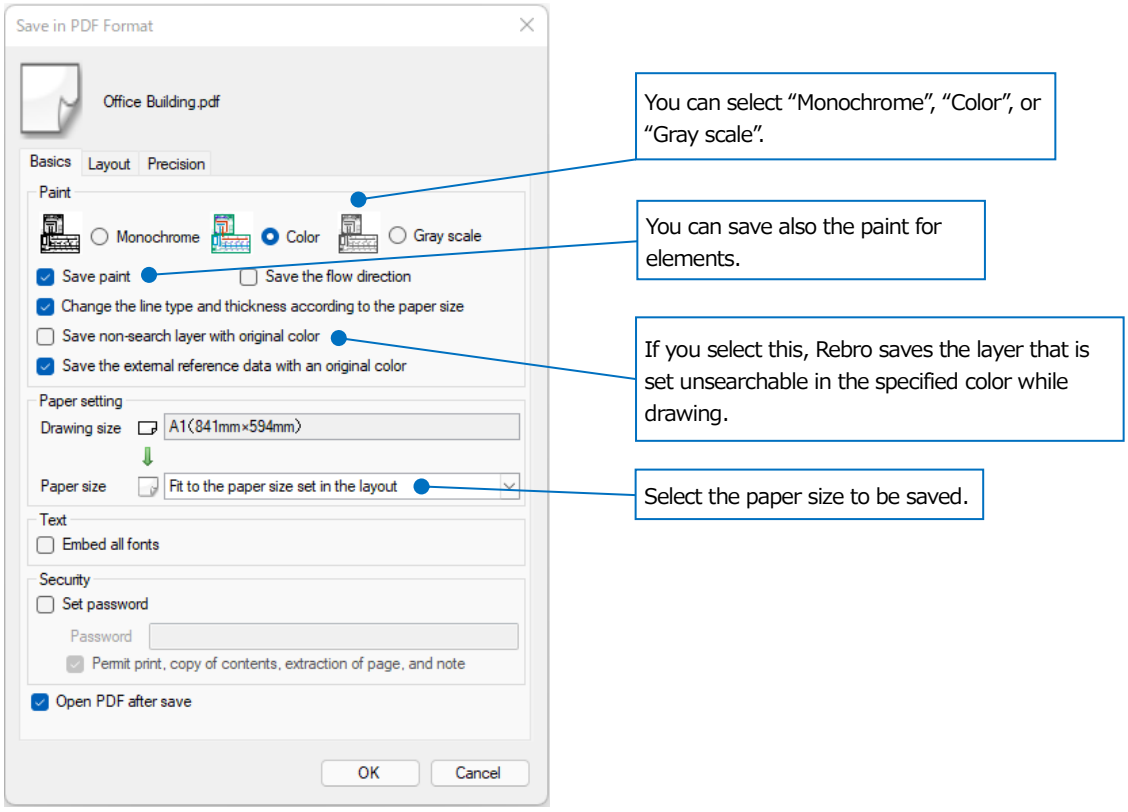
Save the drawing into STL file format.

Rebro saves the elements that are shown in the selected view. Rebro does not save the elements that are not shown in the selected view.



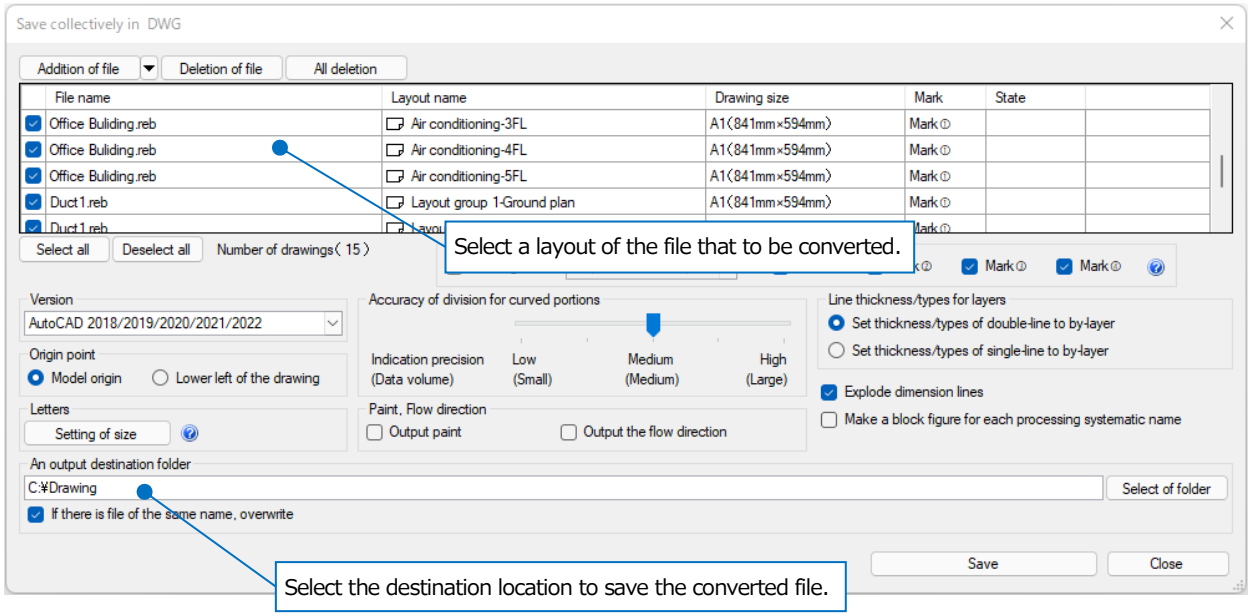
Save a drawing in PDF file format

Save the drawing into PDF file format.



Save files and layouts as a bundle into DXF/DWG, JWW and PDF file format

Multiple files or layouts can be saved together into DXF/DWG, JWW, or PDF file formats without opening the files. When you add a file, all layouts in the file are added to the list and the checkmarked layouts are also saved collectively.



Rebro2022　An Introduction to Rebro　〈June 28, 2022, the first edition〉