Rebro® 2022

Operation Guide
～Duct Section～

NYK SYSTEMS

Chapter 3　Duct Section

1. Set up a drawing screen

Reference drawing: duct1.reb

2. Place equipment

Reference drawing: duct2.reb

3. Place air terminals

Reference drawing: duct3.reb

4. Draw ducts

Reference drawing: duct4.reb

5. Edit ducts

Reference drawing: duct5.reb

6. Finish drawings

Reference drawing: duct6.reb

1.Set up a drawing screen

How to add layouts

You can handle drawings of different paper sizes or scales as one file by adding layouts.
One layout becomes one sheet of drawing.
Now add an A1-size layout to create a drawing of ducts.

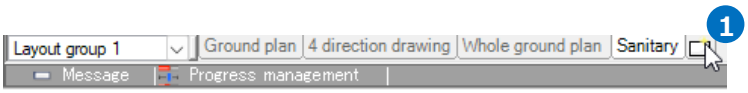
1. Left-click the icon next to Layout tab.

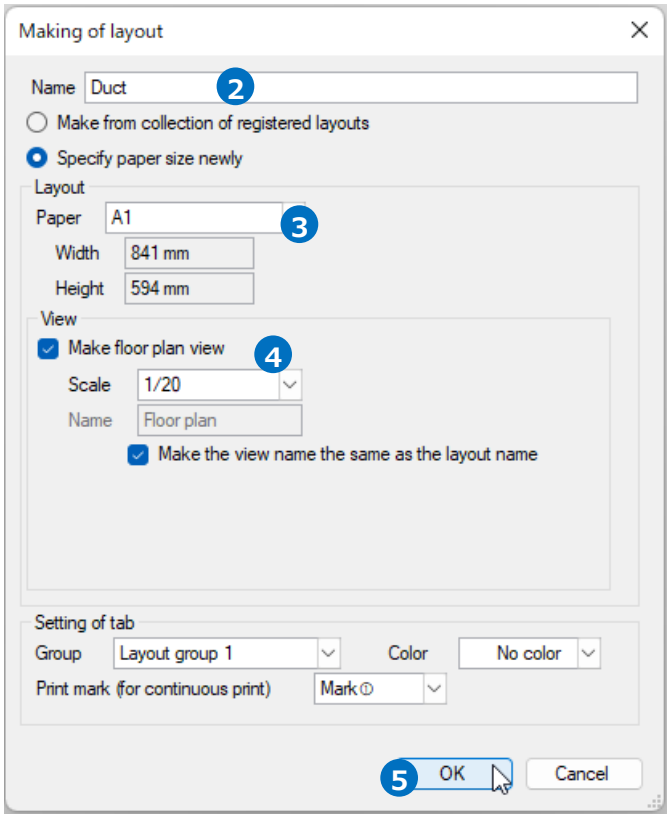
2. Type “Duct” into the name in [Making of layout] dialog box.

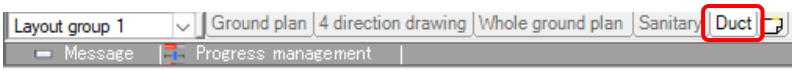
3. Checkmark “Specify paper size newly” to select “A1” for the paper size of a layout.

4. Checkmark “Make floor plan view” to add a layout that has a placed plane view. Checkmark [Make the view name the same as the layout name].

5. Left-click [OK].
   →A layout named “Duct” is added.

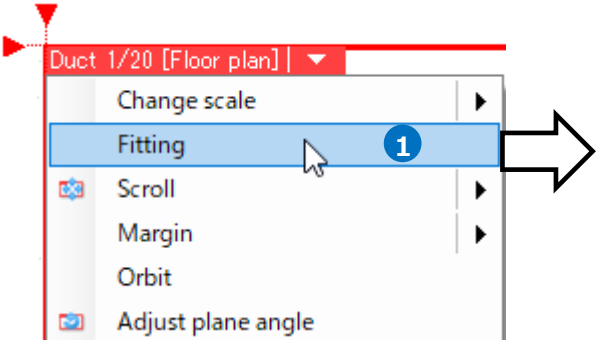


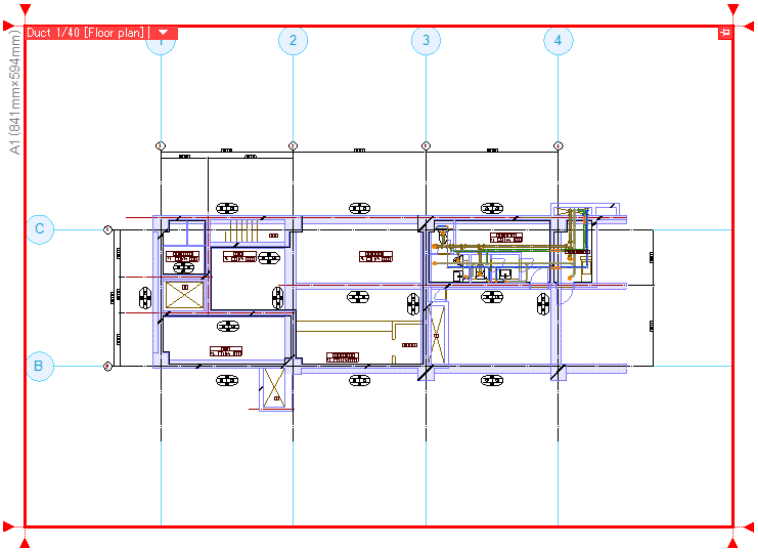




How to adjust a display position of view

1. Left-click [Fitting] in [▼] next to the view name.
   →Rebro adjusts the scale and display position to show all elements in the view.

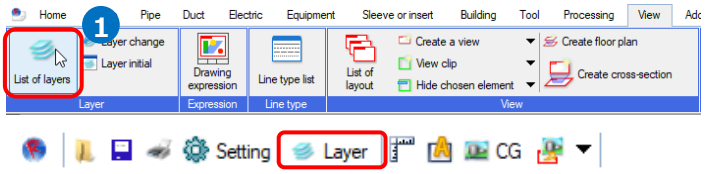




How to control layers

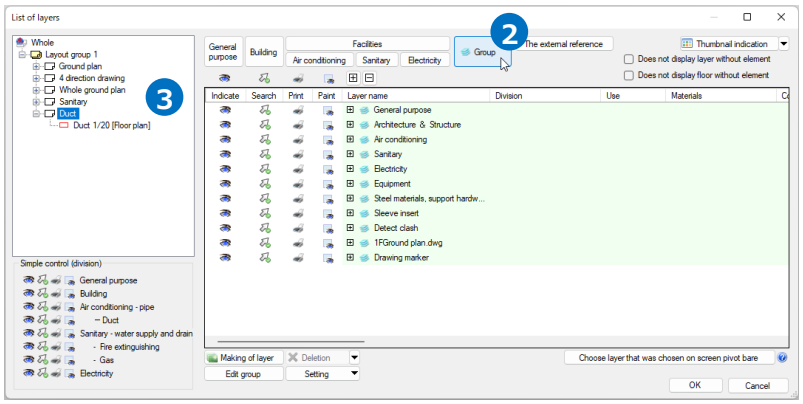
A drawing of pipes drawn in “Chapter 2 Sanitary Section“ appears in a layout that is opened for ducts drawing. With grouping function in [List of layers], set up layers so that only necessary layers, for the duct drawing to be drawn, are shown in the layout of ducts drawing.

1. Left-click [View] tab- [List of layers] or [Layer] on a Quick Access Toolbar.

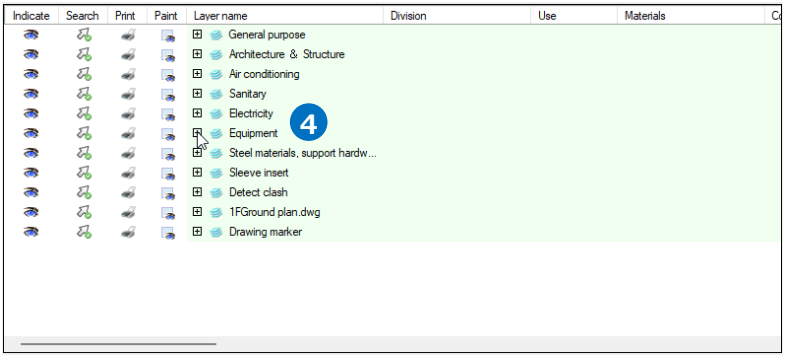


2. Left-click [Group] in [List of layers] dialog box.

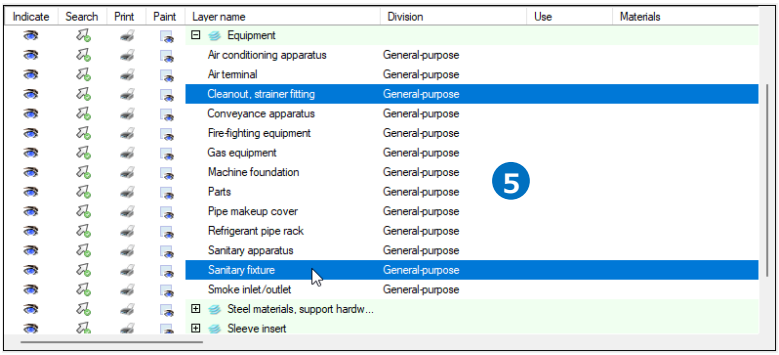
3. Select “Duct” layout to set up the layer display. (Rebro automatically selects the layout that opens when you start the command.)



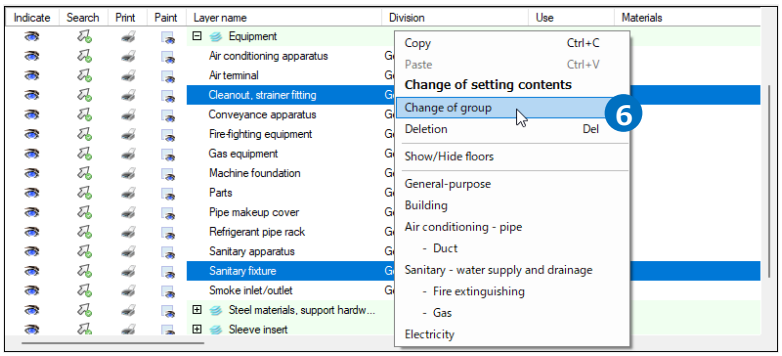
4. Here you change “Sanitary fixture” and ”Cleanout, strainer fitting” from an equipment group to a sanitary group.
Left-click ⊞ icon to open the equipment group.



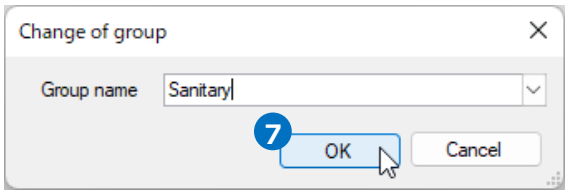
5. Left-click “Sanitary fixture” and ”Cleanout, strainer fitting” layers while pressing Ctrl.



6 Left-click [Change of group] on the context menu.

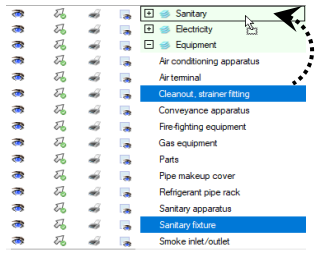


7 Select [Change of group] dialog box-[Sanitary] group name to left-click [OK].
→"Sanitary fixture" and "Cleanout, strainer fitting" move to a sanitary group.

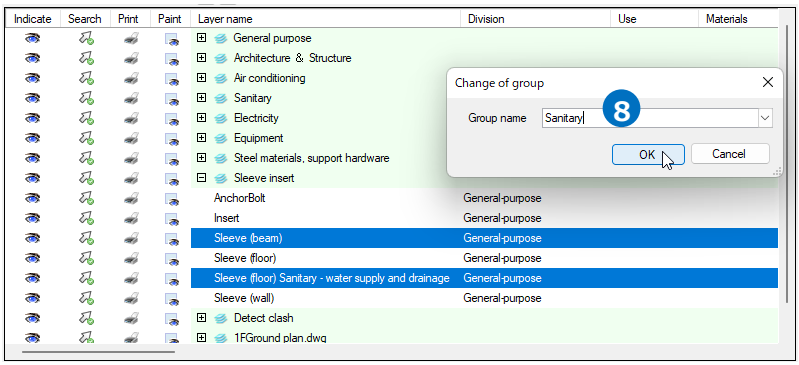


Memo

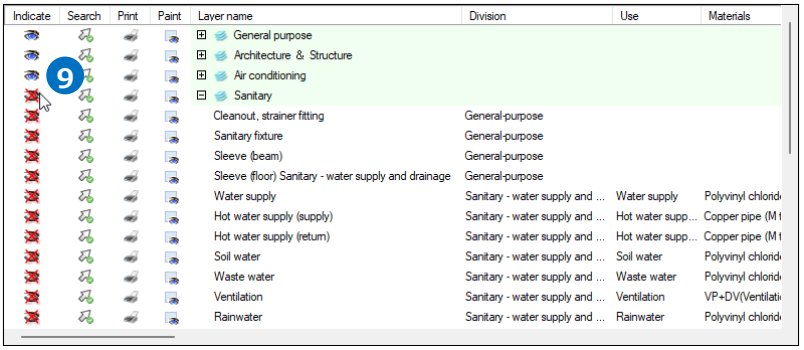
You can change the group by dragging "Sanitary fixture" and "Cleanout, strainer fitting" into a sanitary group.



8 Similarly, change "Sleeve (floor) Sanitary - water supply and drainage", "Sleeve (beam)" in the sleeve insert group to a "Sanitary" group.

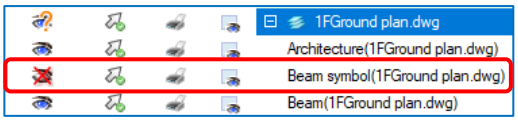


9 Left-click the indicate icon of a sanitary group to hide them away. All the indicate icons of the layer for a sanitary group get changed collectively.



10 Left-click [OK].
→The layer for a sanitary group hides away in a layout for ducts drawing.

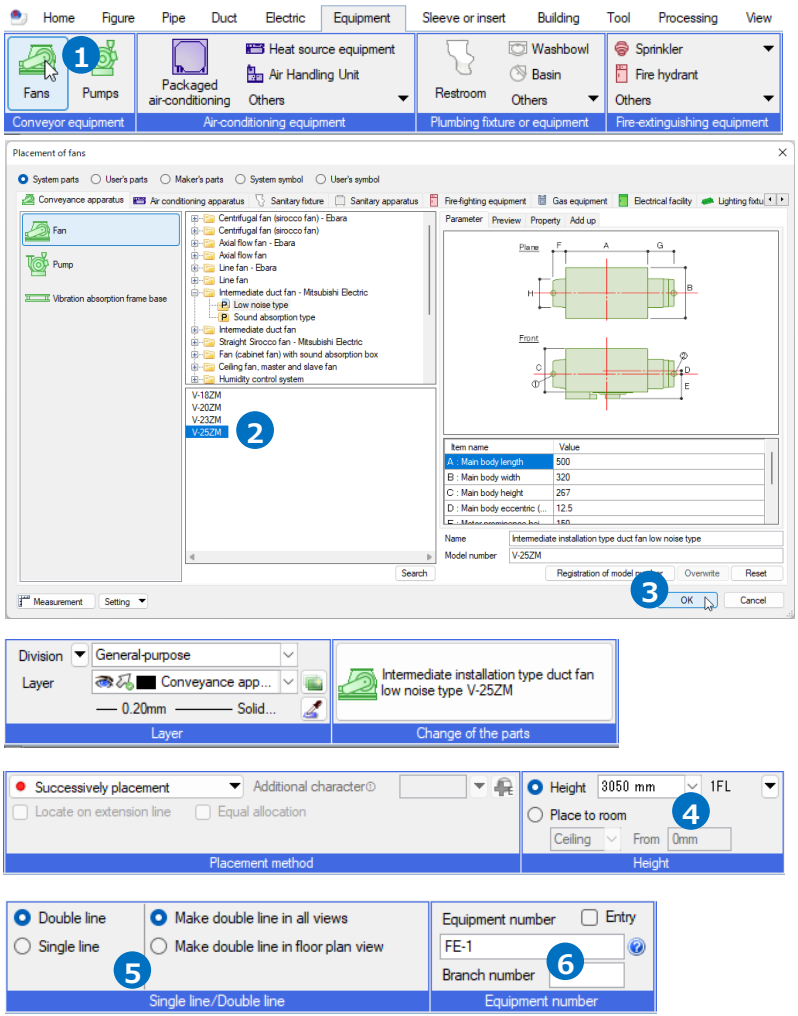
※In this case, "Beam symbol" layer of DWG data is also hidden.



2.Place equipment

How to place intermediate fans

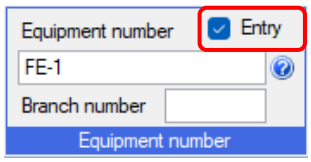
1. Left-click [Equipment] tab- [Fans].
2. Select [Placement of fans] dialog- “Fan”-”Intermediate duct fan- Mitsubishi Electric”-”Low noise type”-”V-25ZM”.
3. Left-click [OK].
4. Type “3050” into the height and select “1FL”.
5. Select “Double line”, “Make double line in all views”.
6. Type “FE-1” into Equipment number.

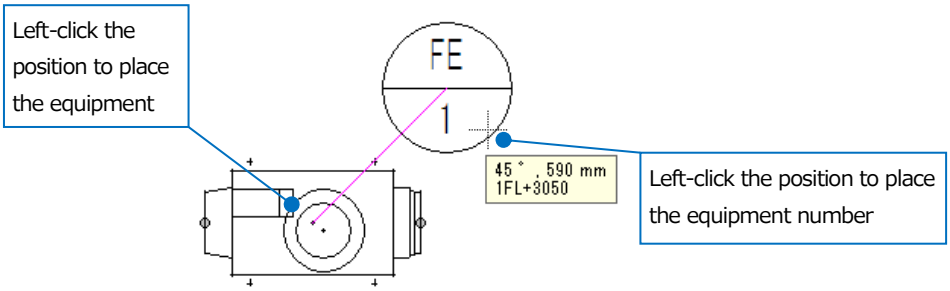


> Memo
> Once the equipment number is set, you can search with the number or input/output the properties information.

- Supplementary explanation:

Checkmark the [Entry] checkbox to entry equipment number upon placing the equipment.



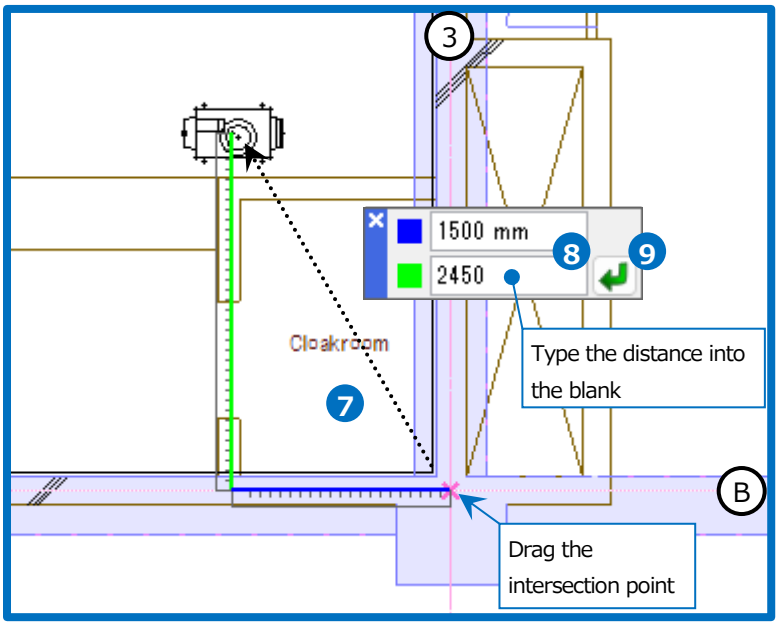


7 A guidance message appears saying: ”Specify position to locate”. Drag the intersection point between 3 and B lines to the upper left direction.

8 Type the distance into the blank by Measure.
- 1500
- 2450

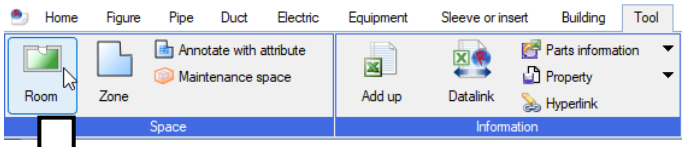
9 Left-click icon or press Enter to confirm.

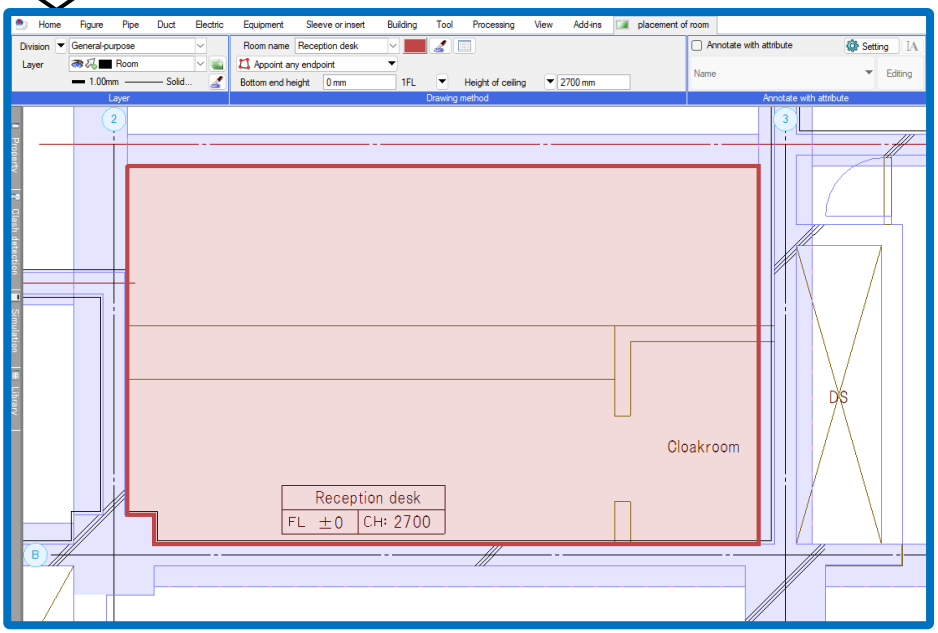
10 Left-click [Decision] on the context menu to complete commands.



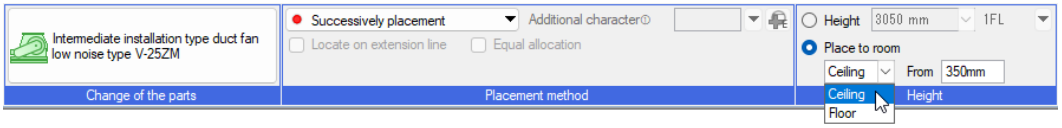
- Supplementary explanation:

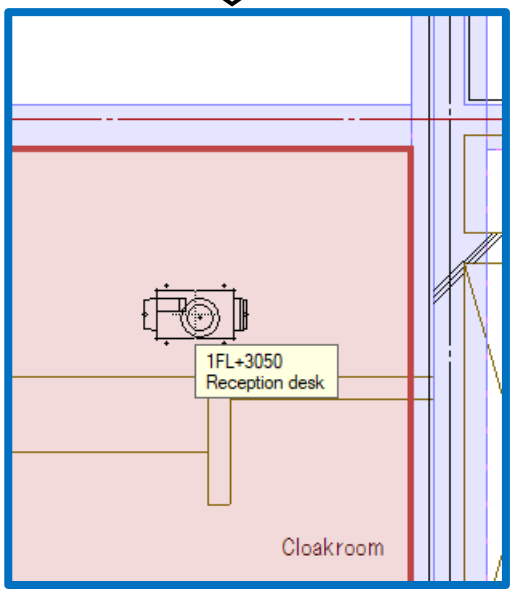
Specify the area by [Tool] tab- [Room] before you place the equipment, to set a room name. Then you can specify the height to place the equipment based on the room information.





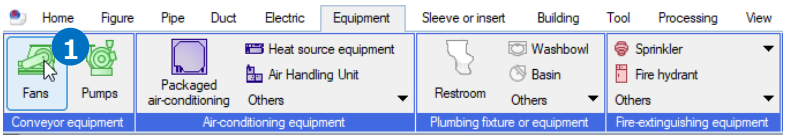
Select “Placement of equipment” command -[Height] ribbon-[Place to room], to type the height from “Floor” or “Ceiling” that becomes a reference position to place.



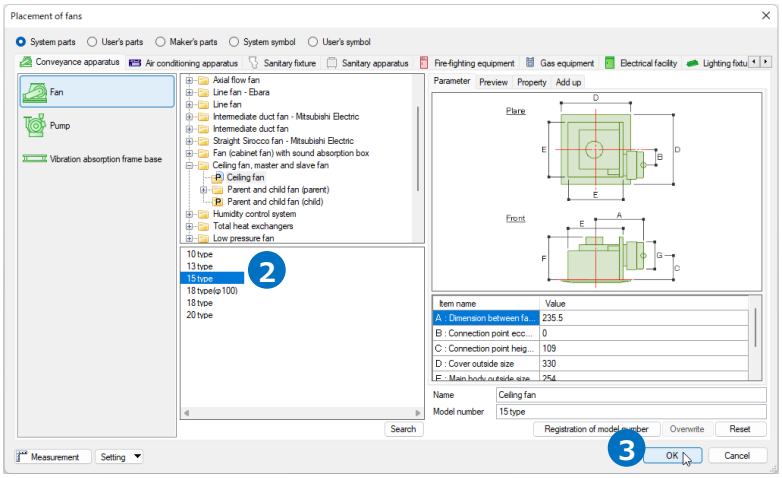


How to place ceiling fans

1. Left-click [Equipment] tab- [Fans].



2. Select [Placement of fans] dialog-"Fan"-"Ceiling fan, master and slave fan"-"Ceiling fan"-"15 type".

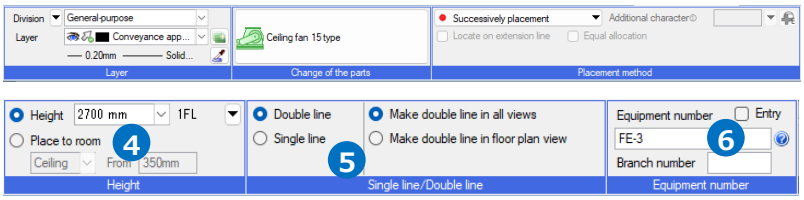


3. Left-click [OK].

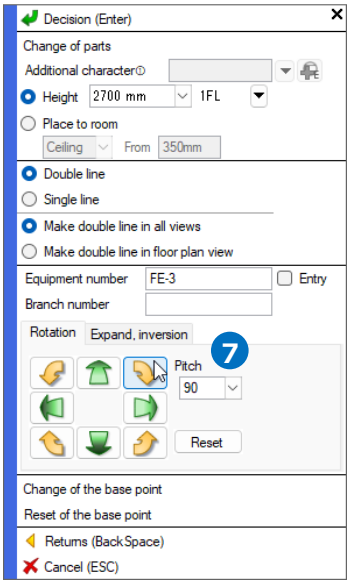
4. Type "2700" into the height and select "1FL".

5. Select "Double line", "Make double line in all views".

6. Type "FE-3" into equipment number.



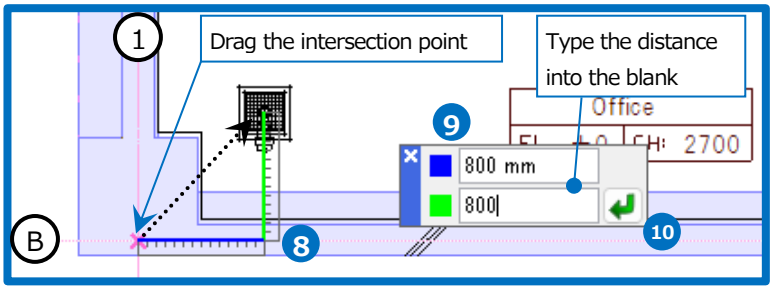
7. Left-click the arrow buttons on the context menu (a right-click menu) to adjust the placing angle, and close the context menu.



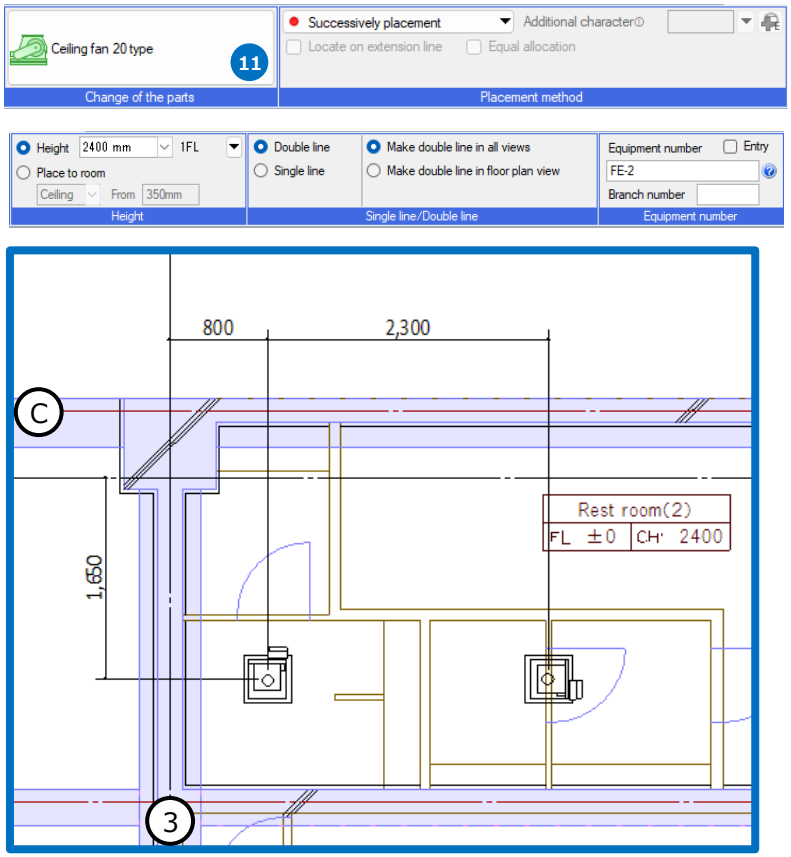
8. A guidance message appears saying "Specify position to locate". Drag the intersection point between 1 and B lines to the upper right direction.

9. Type the distance into the blank by Measure.
   - 800
   - 800

10. Left-click icon or press Enter to confirm.

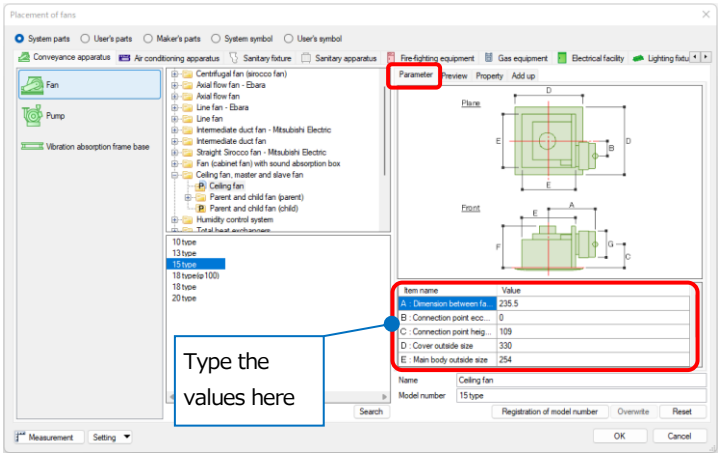


11 Similarly, place a ceiling fan in a Rest room (2).
Model number “20 type”
Height “2400”
Equipment number “FE-2”



- Supplementary explanation:

In [Parameter] tab, you can enter items' values to place equipment of any size.

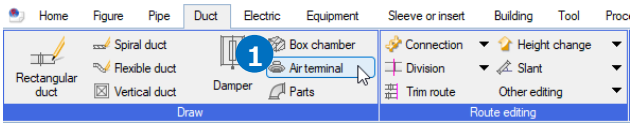


By [Equipment] tab- [Mechanical equipment (Stem)], you can place equipment that are compliant with “Stem” (Standard for The Exchange of Mechanical equipment library data), which are provided with CD-ROM or data-download function.

3. Place air terminals

How to place vent terminal caps

1. Left-click [Duct] tab- [Air terminal].

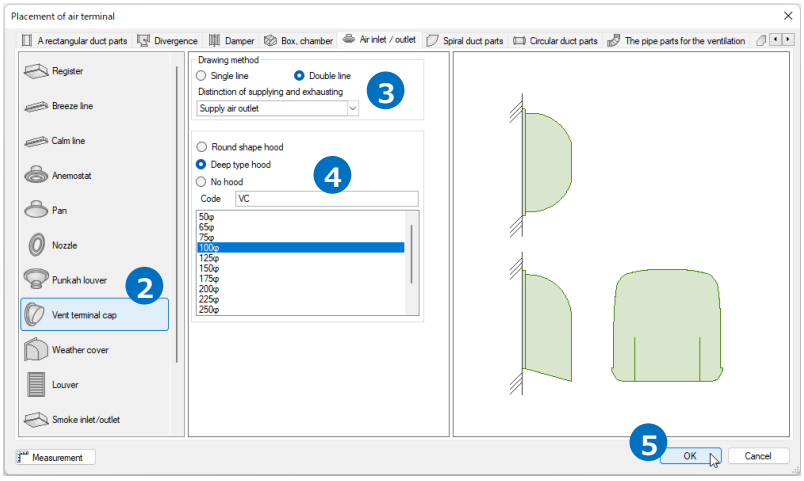


2. Select [Vent terminal cap] in [Placement of air terminal] dialog box.

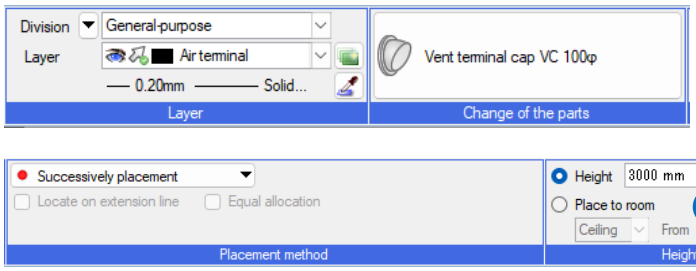
3. Select “Double line” for the drawing method and “Supply air outlet” for the distinction of supplying and exhausting.

4. Select “Deep type hood”, “VC” for the code, and “100φ”.

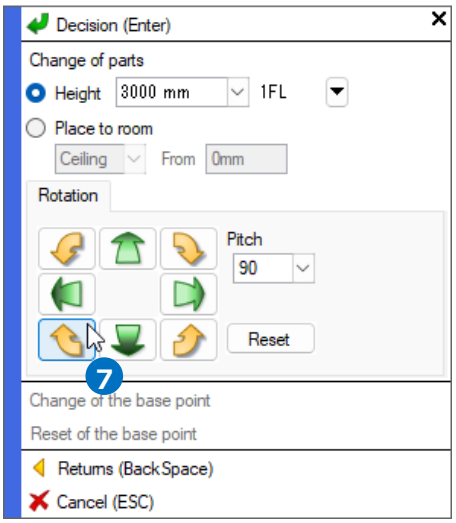
5. Left-click [OK].



6. Type “3000” into the height and select “1FL”.



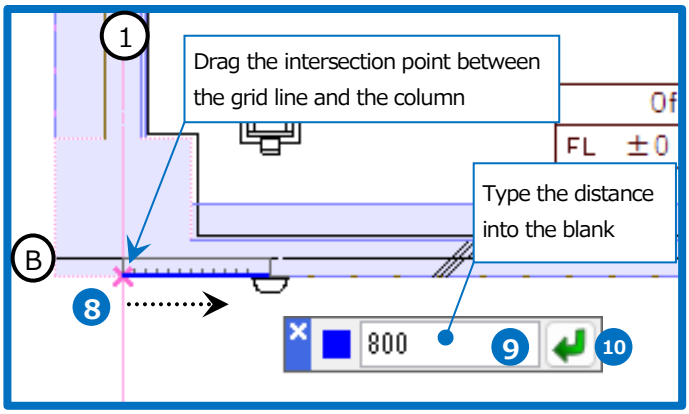
7. Left-click the arrow buttons on the context menu (a right-click menu) to adjust the placing angle, and close the context menu.



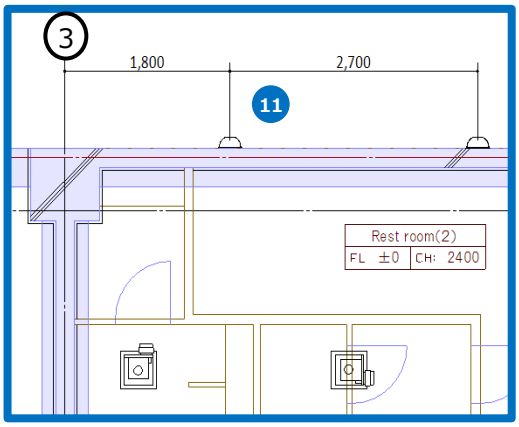
8 A guidance message appears saying: ”Specify position to locate”. Drag the intersection point between 1 grid line and the column to the right.

9 Type the distance into the blank by Measure.
- 800

10 Left-click icon or press Enter to confirm.

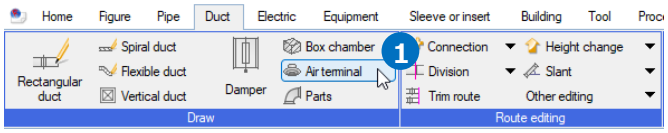


11 Similarly, place a vent terminal cap in a Rest room (2).
Size “150φ”
Height “2900”



How to place breeze lines

1 Left-click [Duct] tab- [Air terminal].

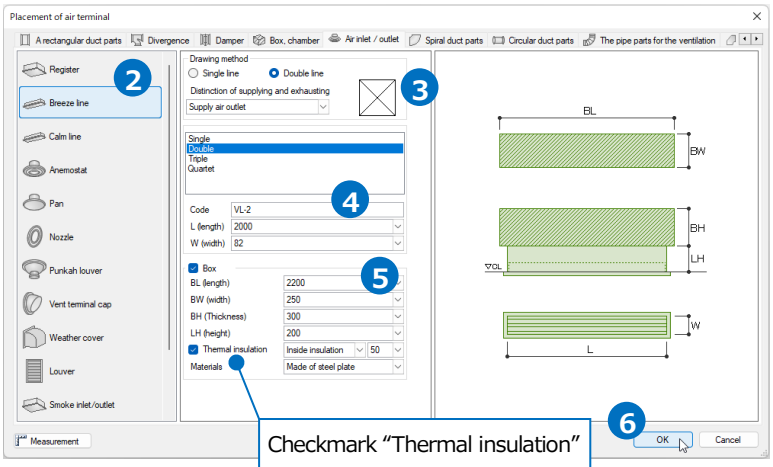


2 Select “Breeze line” in [Placement of air terminal] dialog box.

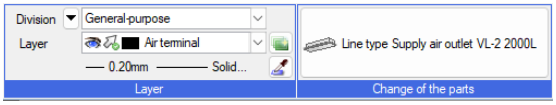
3 Select “Double line” for the drawing method and “Supply air outlet” for the distinction of supplying and exhausting.

4 Select “Double” and type “VL-2” for the code, “2000” the length, and “82” the width.

5 Checkmark “Box” and type the sizes into the blanks.
BL (length) “2200”
BW (width) “250”
BH (thickness) “300”
LH (height) “200”



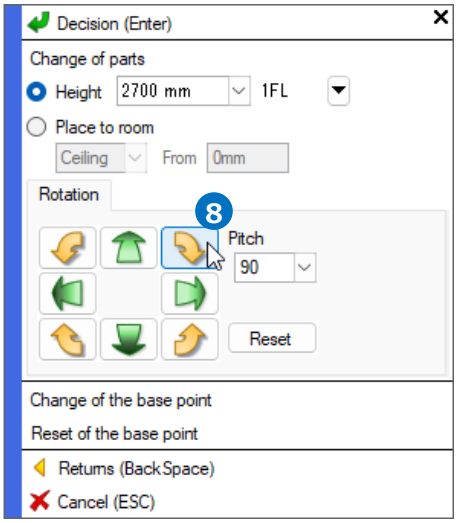
6 Left-click [OK].



7 Type “2700” into the height and select “1FL”.

8 Left-click the arrow buttons on the context menu (a right-click menu) to adjust the placing angle, and close the context menu.

9 A guidance message appears saying: ”Specify position to locate”. Drag the intersection point between the center lines of the walls in the elevator hall to the upper right direction.

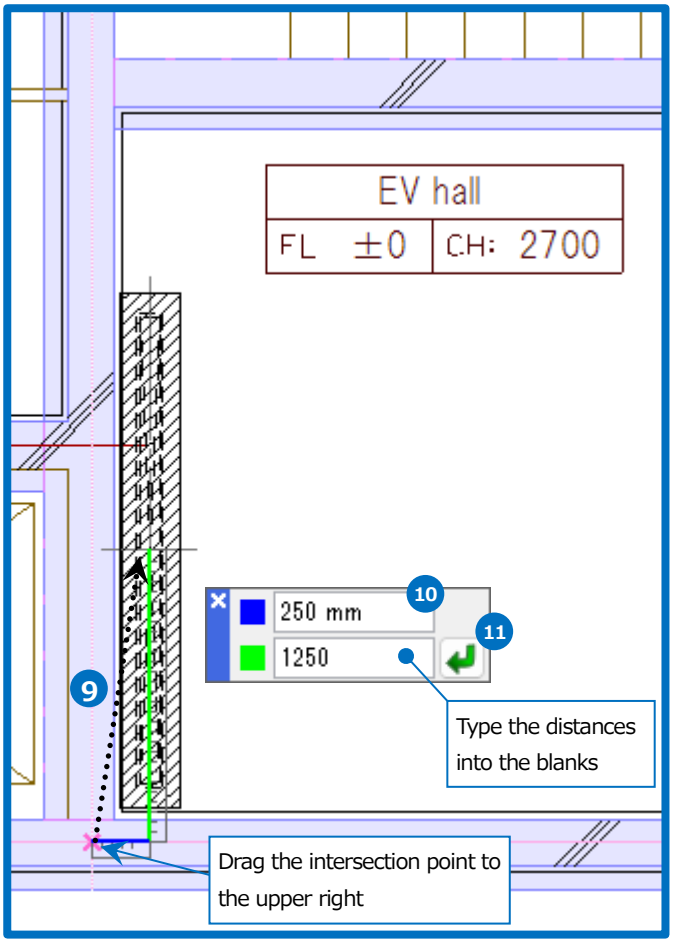


10 Type the distance into the blanks by Measure.

- 250
- 1250

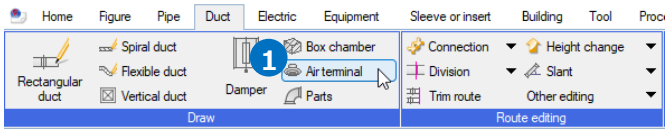
11 Left-click icon or press Enter to confirm.

12 Left-click [Decision] on the context menu to complete commands.



How to place anemostats

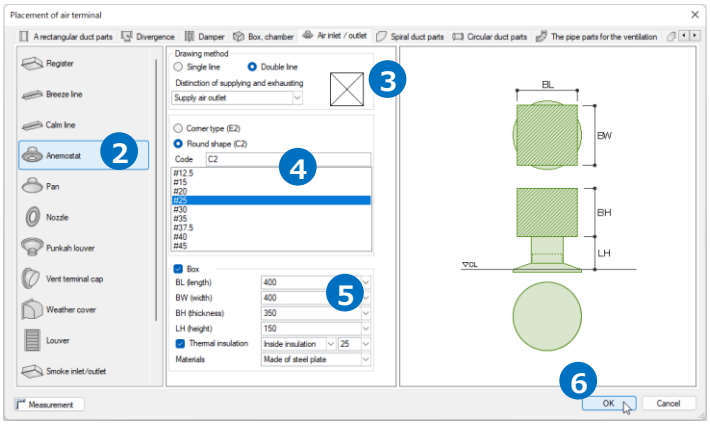
1. Left-click [Duct] tab- [Air terminal].



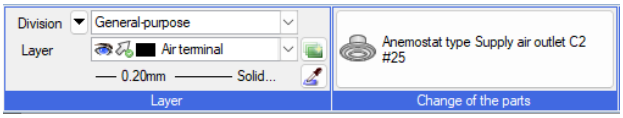
2. Select “Anemostat” in [Placement of air terminal] dialog box.

3. Select “Double line” for the drawing method and “Supply air outlet” for the distinction of supplying and exhausting.

4. Select “Round shape (C2)”, “C2” for the code, and select “#25”.



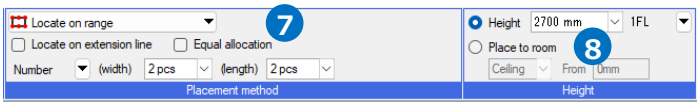
5. Checkmark “Box” and type the sizes into the blanks.
   BL (length) “400”
   BW (width) “400”
   BH (thickness) “350”
   LH (height) “150”



6. Left-click [OK].

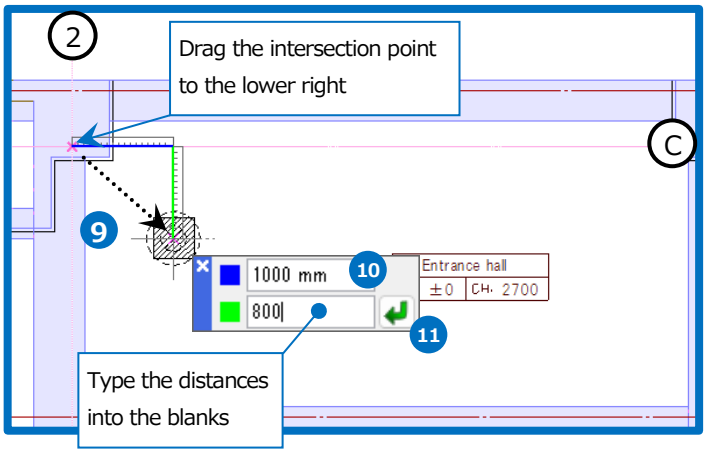
7. Select “Locate on range” for the placement method and “2 pcs” for width and length each.

8. Type “2700” into the height and select “1FL”.



9. A guidance message appears saying: ”Specify position to locate.”. Drag the intersection point between 2 and C lines to the lower right direction.

10. Type the distances into the blanks by Measure.
    - 1000
    - 800

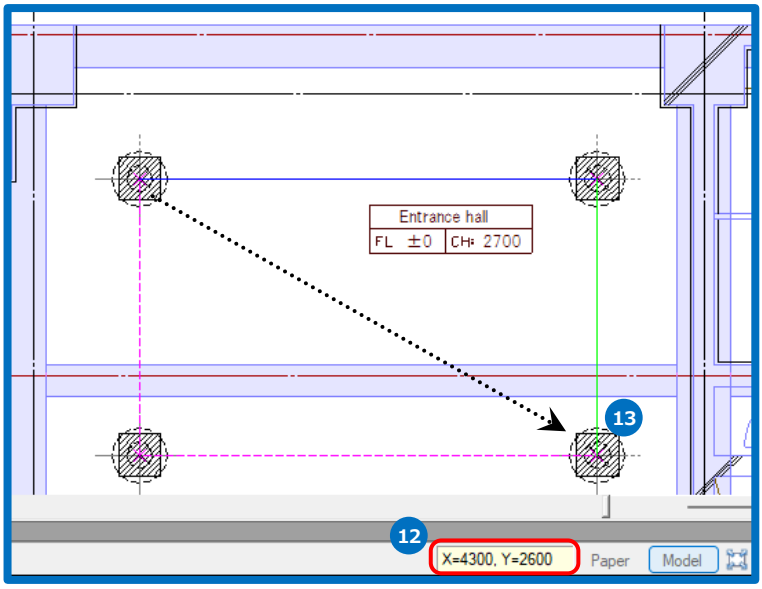


11. Left-click icon or press Enter to confirm.

12 Specify another point on the area. Type with the keyboard “4300” for the distance in the X direction and press Enter to type “2600” for the distance in the Y direction. The entered numerical value appears in the field [Distance=] on the status bar.

13 Bring the pointer into the direction to place the equipment, and left-click there or press Enter.

14 Left-click [Decision] on the context menu to complete commands.



How to place registers

1 Left-click [Duct] tab- [Air terminal].

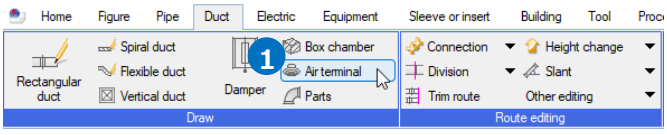
2 Select “Register” in [Placement of air terminal] dialog box.

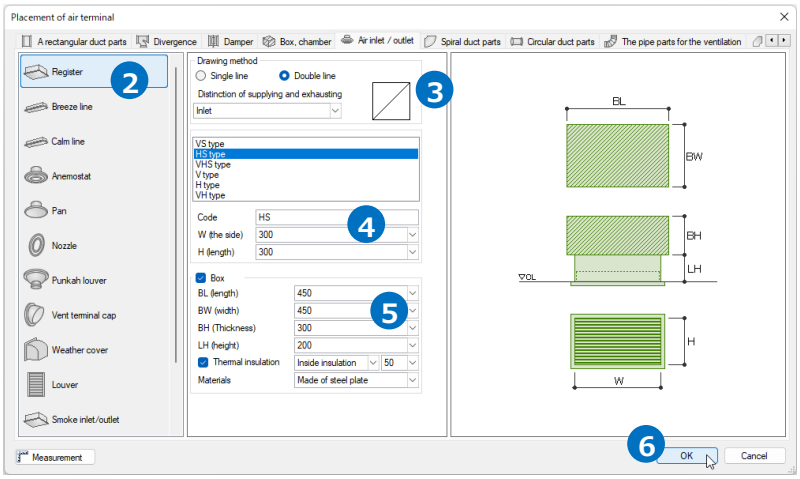
3 Select “Double line” for the drawing method and “Inlet” for the distinction of supplying and exhausting.

4 Select “HS type” to type “HS” for the code, “300” for W (the side), and “300” for H (length).

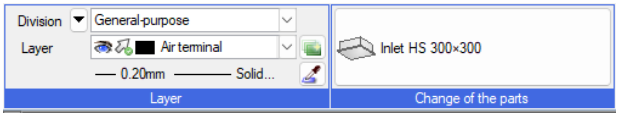
5 Checkmark “Box” and type the sizes into the blanks.
BL (length) “450”
BW (width) “450”
BH (thickness) “300”
LH (height) “200”

6 Left-click [OK].





7 Select “Successively placement” for the Placement method.



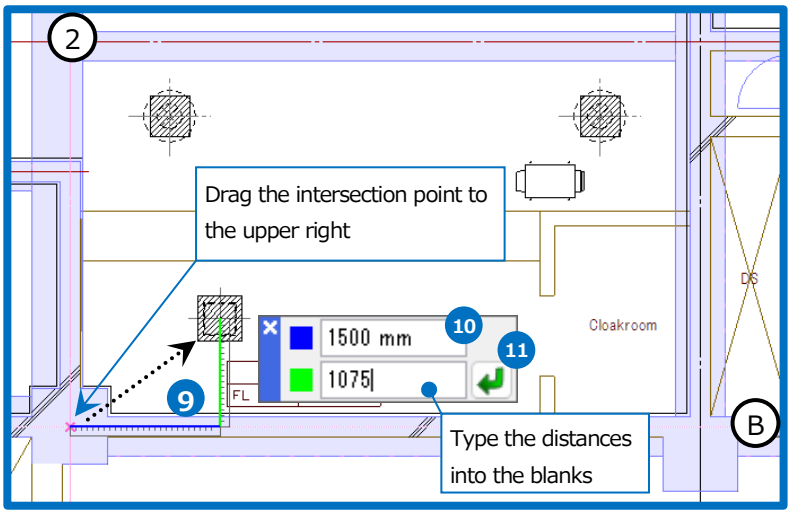
8 Type “2700” into the height and select “1FL”.

9 A guidance message appears saying: ”Specify position to locate”. Drag the intersection point between 2 and B lines to the upper right direction.

10 Type the distances into the blanks by Measure.

- 1500
- 1075

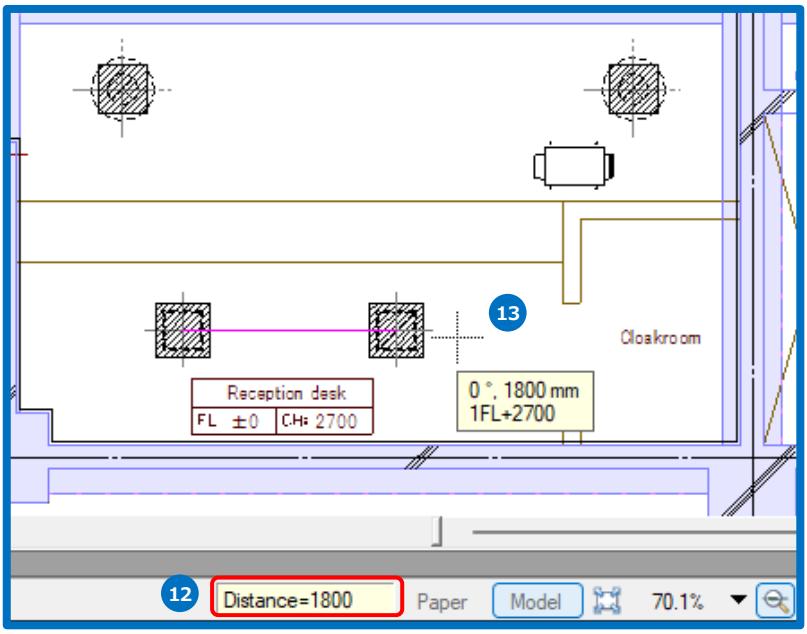
11 Left-click icon or press Enter to confirm.



12 Place another piece of equipment successively.
Type with the keyboard “1800” for the distance in the X direction. The entered numerical value appears in the field [Distance=] on the status bar.

13 Bring the pointer into the direction to place and left-click there or press Enter.

14 Left-click [Decision] on the context menu to complete commands.

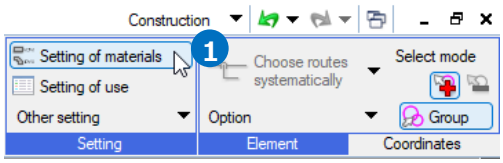


4. Draw ducts

How to set up duct materials

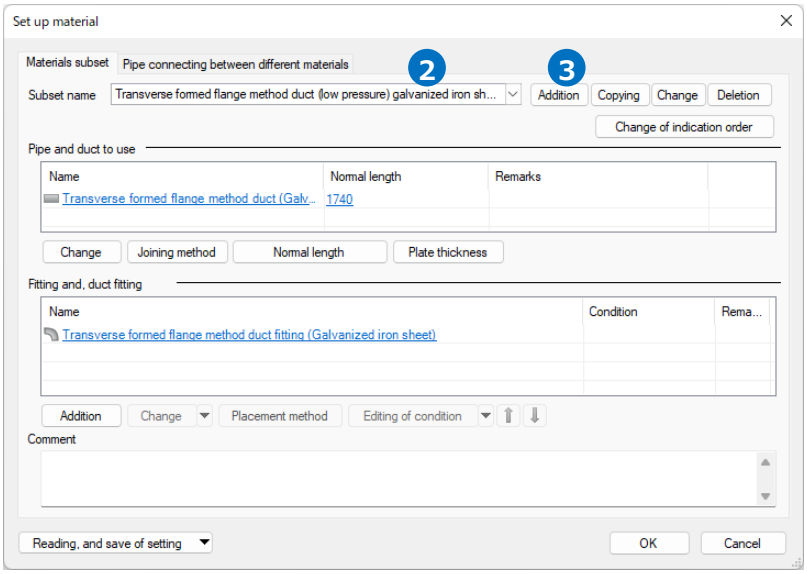
Set up combinations (Material subset) of duct materials and parts that you draw.
You can also use the initial value settings without changes.
You can similarly draw on another PC with the same material subsets that are saved in the drawing. You can also add or overwrite the setting details in another drawing.
Now we explain the way of confirming or changing the settings.

1. Left-click [Duct] tab- [Setting of materials].



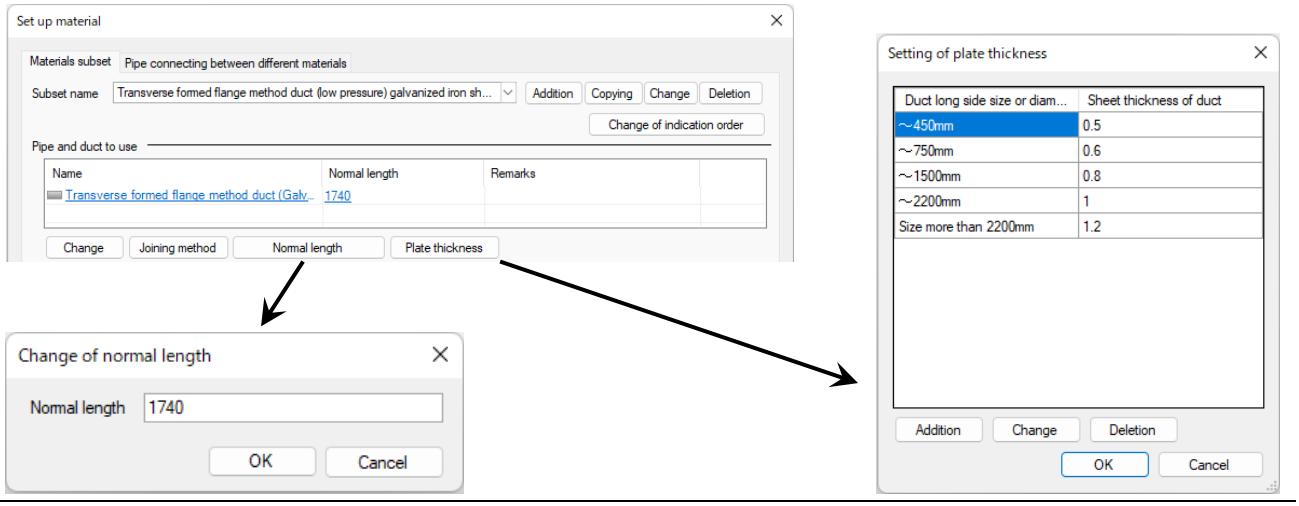
2. Select the subset name to confirm or change the settings in [Set up material] dialog box.
→The materials and parts used for the duct appear.

3. In the case you create a new combination, left-click [Addition], type a subset name, and select materials and parts for the duct.
See page 9 through 11 in “Chapter 2 Sanitary Section” for a detailed way of setting.



- Supplementary explanation:

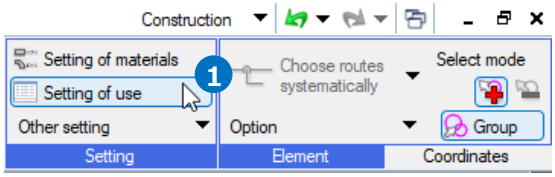
You can set a normal length and the plate thickness for each subset.



How to set up uses

Set up attributes of uses, which are used as initial values to represent a single line or to create layers.
You can similarly draw on another PC with the same setting of uses that are saved in the drawing. You can also add or overwrite the setting details in another drawing.
Now we explain the way to confirm or change the settings.

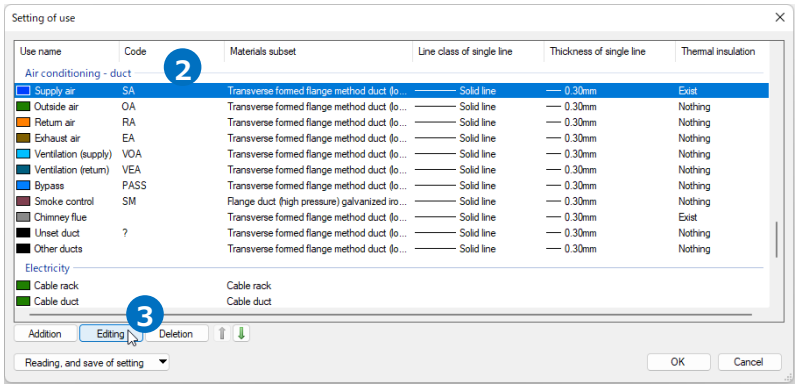
1. Left-click [Duct] tab- [Setting of use].

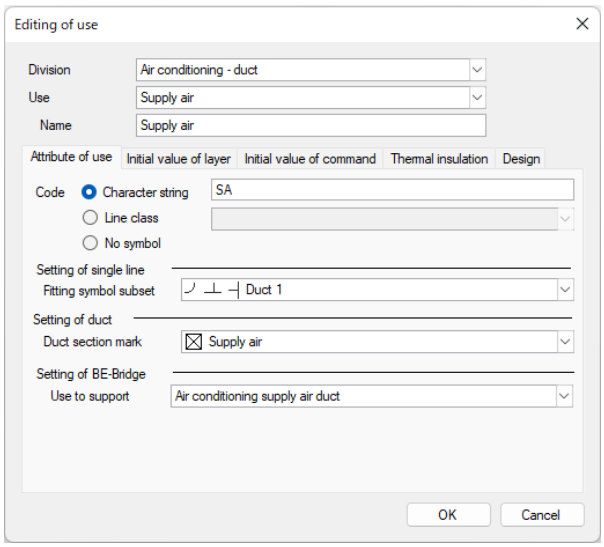


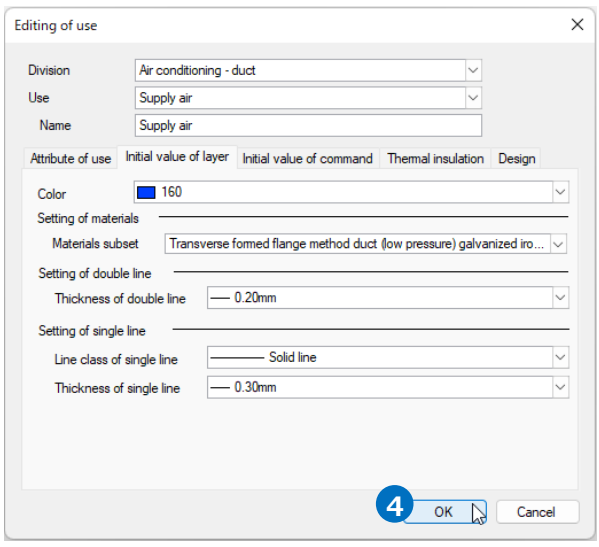
2. Select the name of use in [Setting of use] dialog box to confirm or edit the settings.

3. Left-click [Editing] button.

4. Confirm or edit the settings in [Editing of use] dialog box to left-click [OK].







How to set up layers

Set up layer attributes, necessary to draw ducts, such as uses and materials in addition to designs such as colors and line thickness. Draw duct, with the attributes that are set up on the selected layer when you draw the route.

You can similarly draw on another PC with the same layer that are saved in the drawing. You can also save the setting details, which can be read from another drawing.

You can select by command a material from the one set up on the layer, or among a rectangular duct, a spiral duct or a flexible duct.

Now we explain the way of confirming or changing the settings.

1. Left-click [View] tab- [List of layers] or [Layer] on a Quick Access Toolbar.

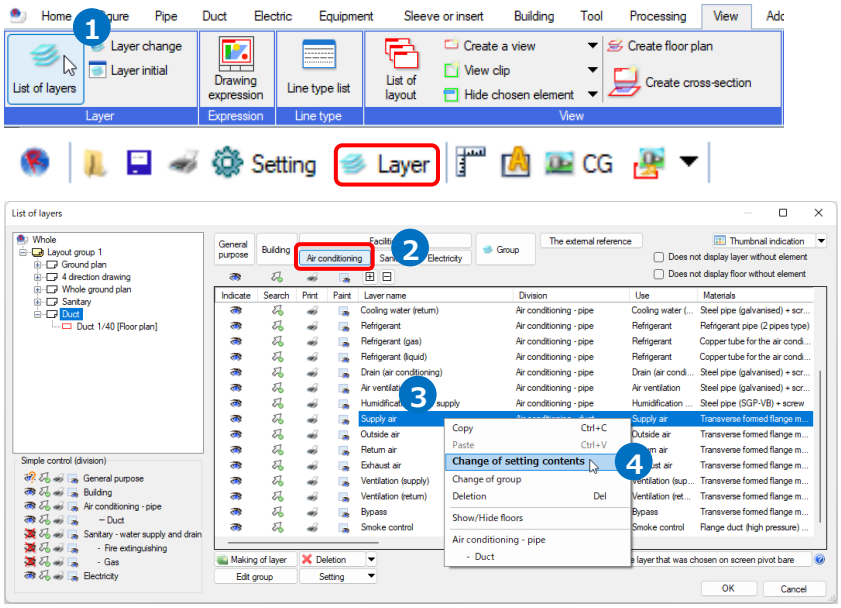
2. Left-click [List of layers] dialog box- [Air conditioning] to show an air conditioning duct layer.

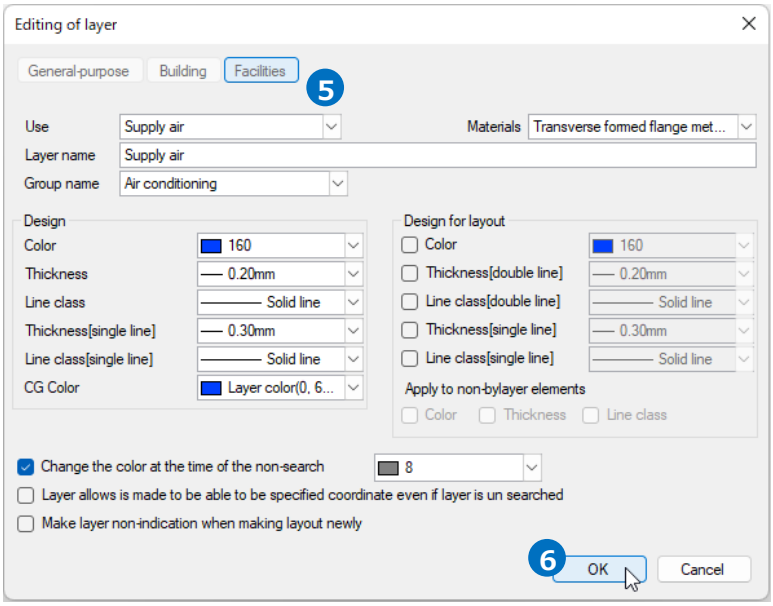
3. Select the Layer name.

4. Left-click [Change of setting contents] on the context menu.

5. Confirm or edit the settings in [Editing of layer] dialog box.

6. Left-click [OK].

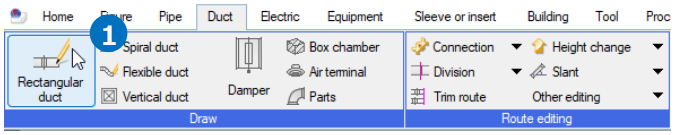




How to draw routes for air supply ducts

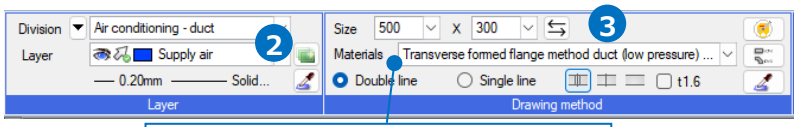
Draw a main route

1. Left-click [Duct] tab- [Rectangular duct].



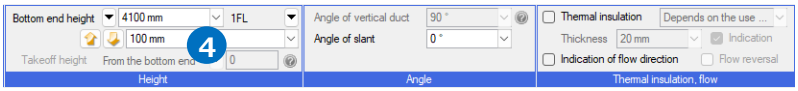
2. Select “Supply air” for the layer.

3. Select or type the size “500” “300”.

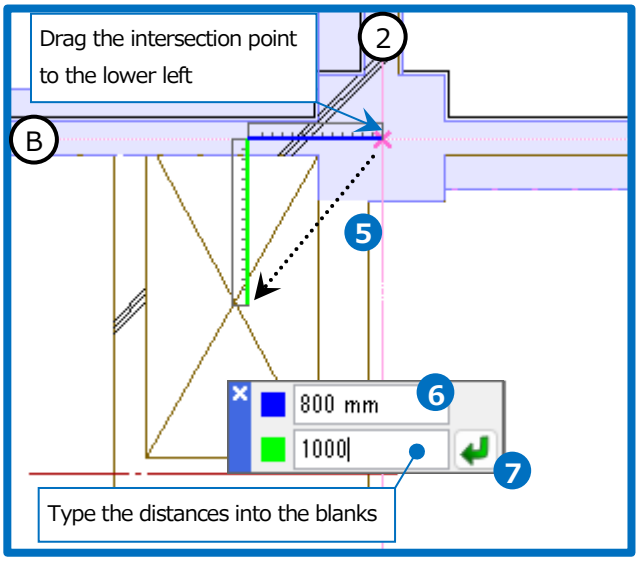


The material subset that was set on the layer appears. You can also select another material.

4. Type “4100” into the bottom end height and select “1FL”.



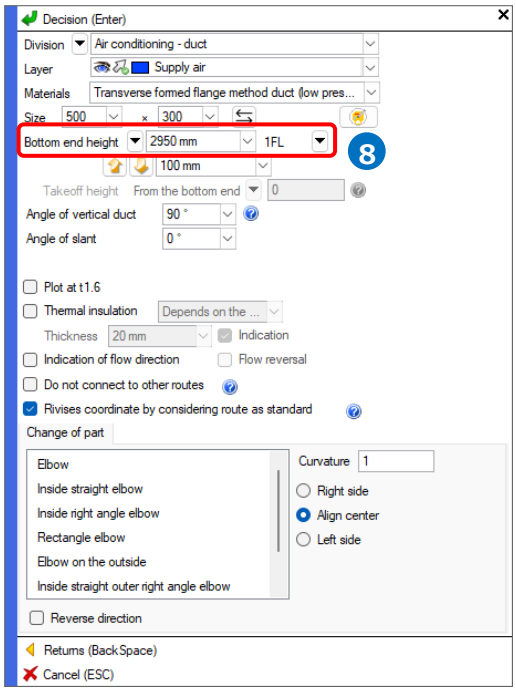
5. A guidance message appears saying: ”Specify position to make duct.” Drag the intersection point between 2 and B lines to the lower left direction.



6. Type the distance into the blank by Measure.
   - 800
   - 1000

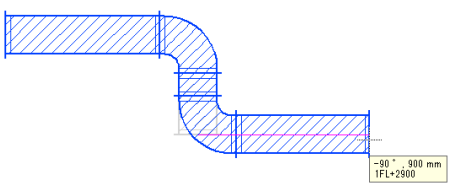
7. Left-click icon or press Enter to confirm.

8. Change the height. Type “2950” into the changing height on the context menu to close the menu.
   →A vertical duct of 2950 to 4100 is drawn.

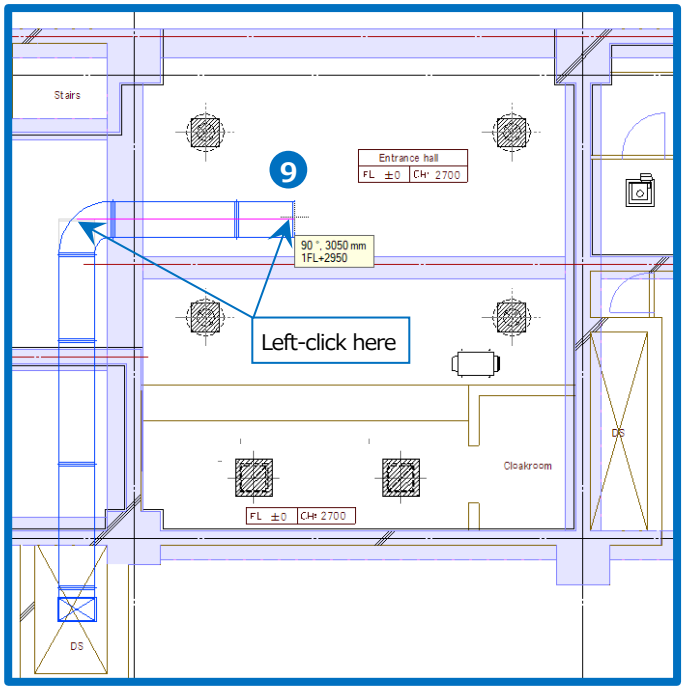


Memo

Checkmark [t1.6] on the ribbon or [Plot at t1.6] on the context menu to draw the duct with t1.6.



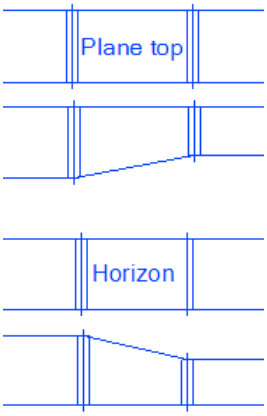
9 Left-click the position to draw a horizontal duct.

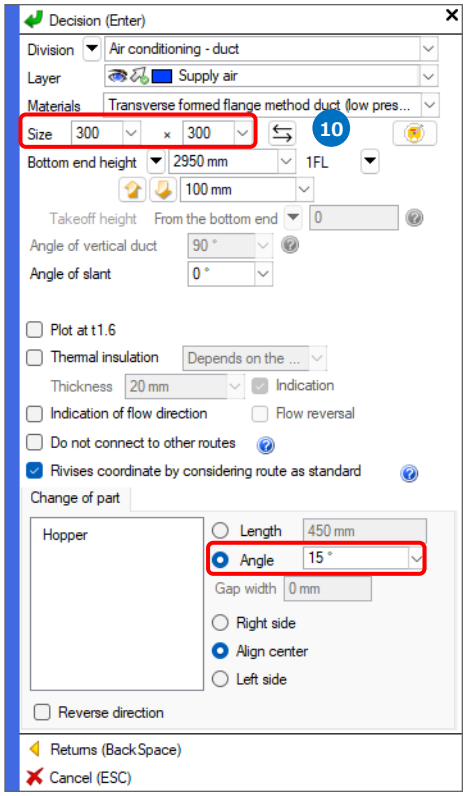


10 Change the size. Type “300” “300” for the changing size and “15-degrees” for the hopper angle on the context menu to close the menu.
→A hopper is entered.

Memo

“Plane top” or “Horizon” appears on the hopper in the case you resize the thickness direction.



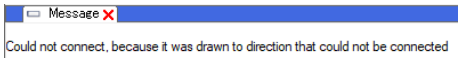


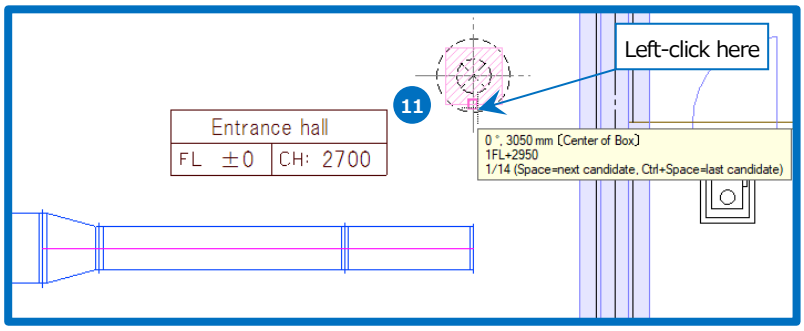
11 Left-click the position for an end portion at the box center.

12 Left-click [Decision] on the context menu to complete the command.

Memo

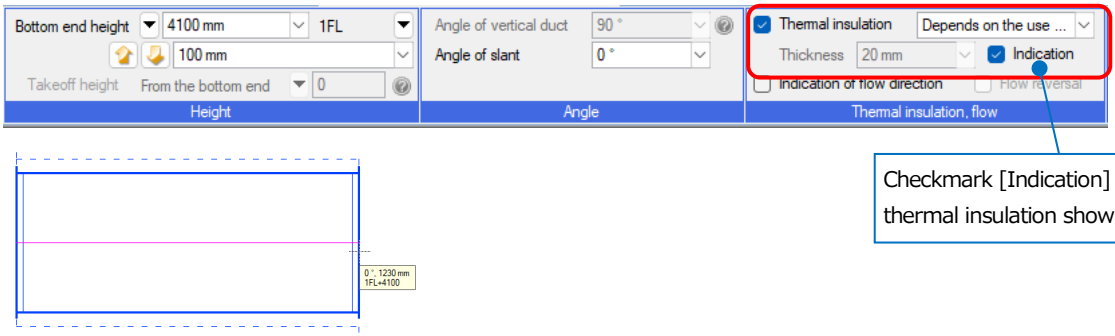
In order to specify the bend position, left-click a significant point of the box. The following message appears but keep on drawing without regard for it.





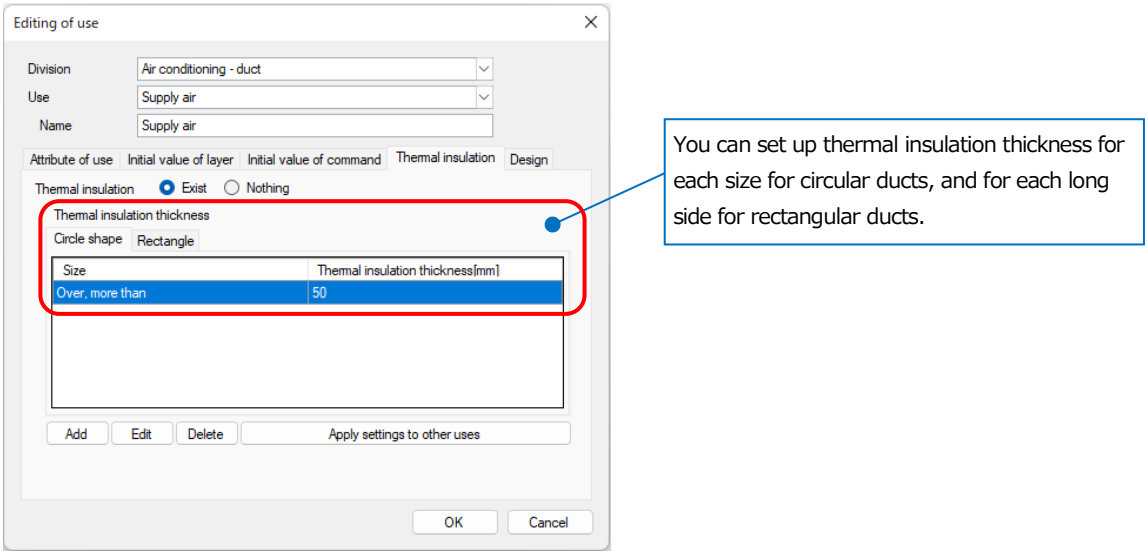
- Supplementary explanation:

Checkmark [Thermal insulation] on the ribbon when drawing duct or vertical duct, to draw ducts with thermal insulation being set.

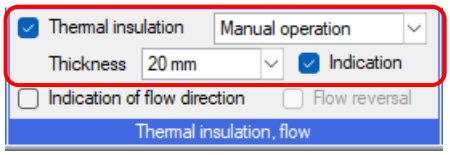


When you select “Depends on the use settings“, Rebro reflects the thermal insulation thickness set for each use.

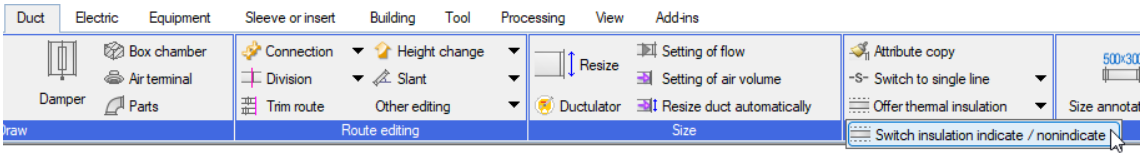
※See also page 17 for [Setting of use].



When selecting “Manual operation”, you can set thermal insulation thickness on the ribbon.

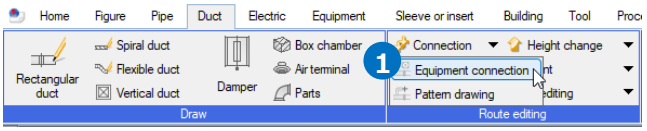


When you set up thermal insulation after drawing, go to [Duct] tab- [Offer thermal insulation].
If you switch between Show/Hide [Thermal insulation], change [Duct] tab- [▼] next to [Offer thermal insulation]- [Switch insulation indicate/nonindicate].

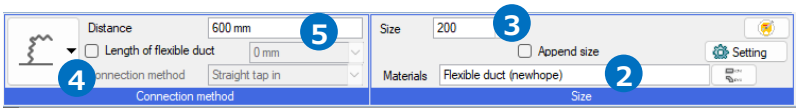


Draw branch ducts that connect to an Anemostat diffuser: Flexible ducts

1. Left-click [Equipment connection] next to [Duct] tab- [Connection].



2. Select “Flexible duct (newhope)” for the material.

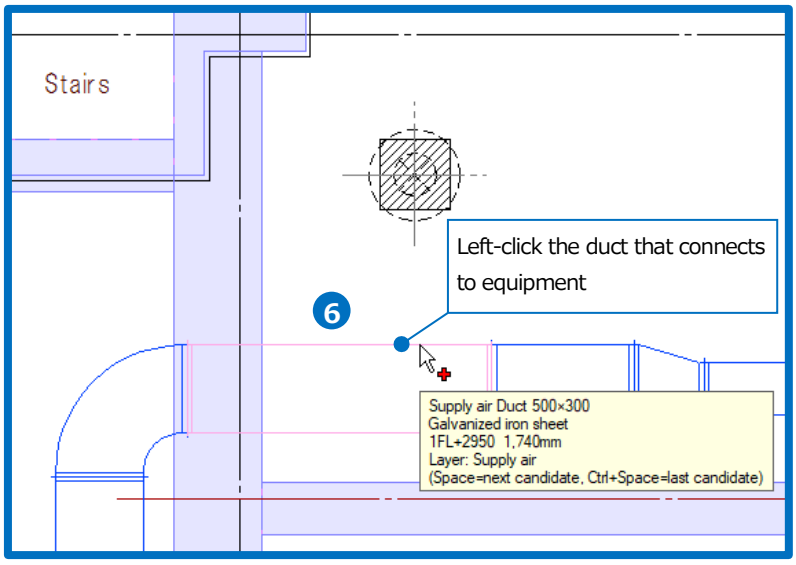


3. Select or type the size ”200”.

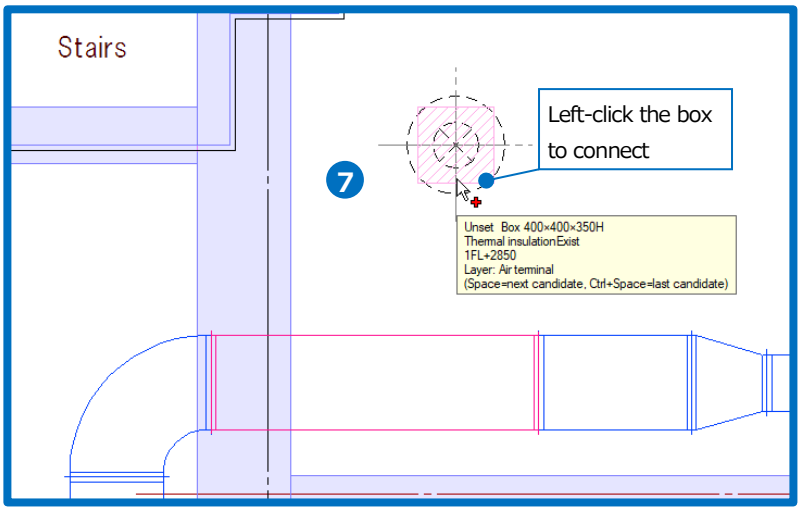
4. Select the shape of a branch duct.

5. Specify the distance between the bend and the connecting position of the box.

6. A guidance message appears saying “Choose the pipe, a duct to connect an equipment to”. Left-click the duct that connects to an Anemostat.



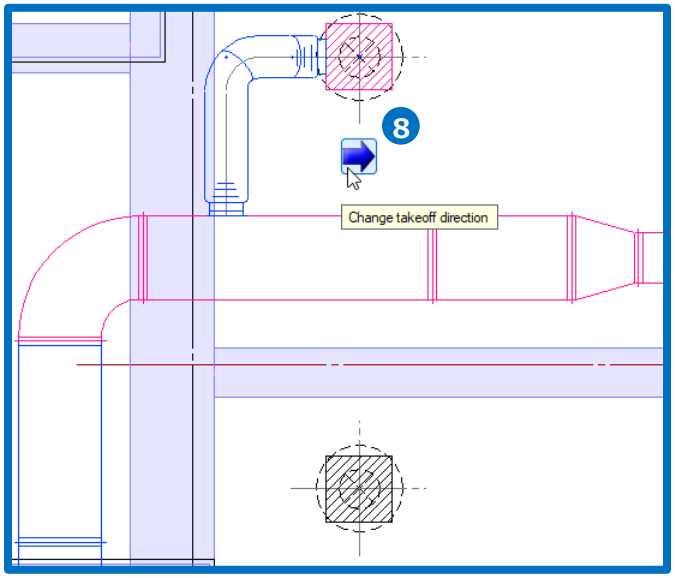
7. A guidance message appears saying: “Choose box chamber to connect”. Select the box to be connected.
→A branch duct appears temporarily.

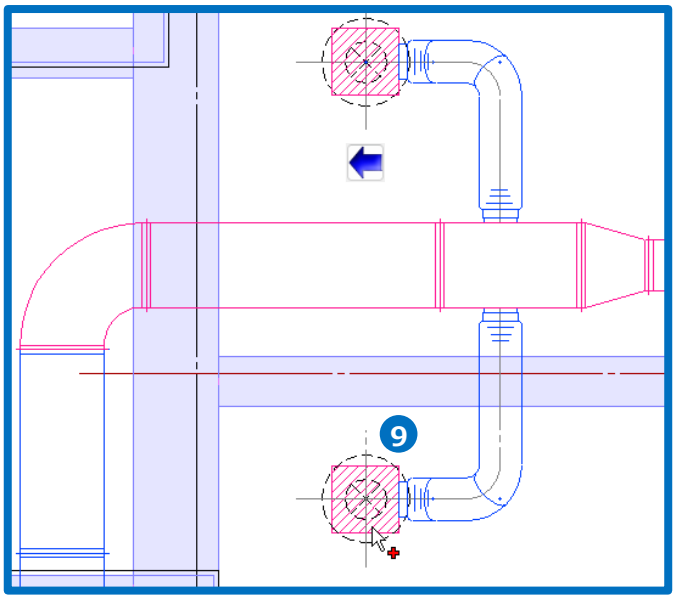


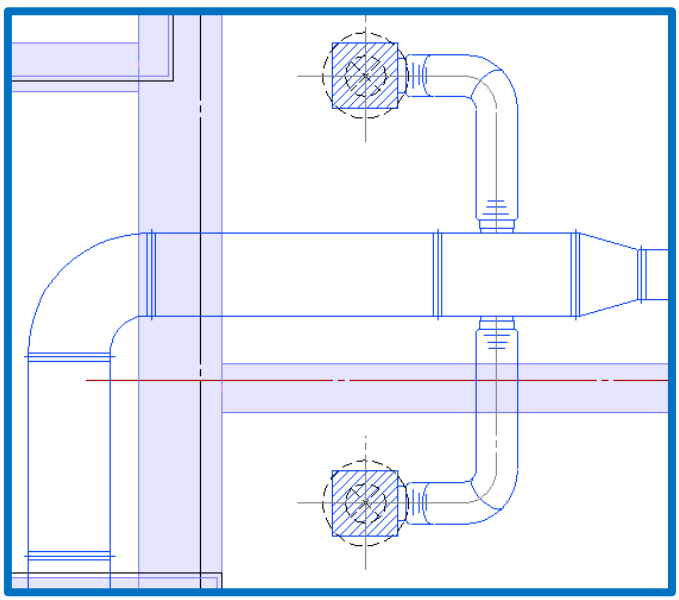
8 Left-click the arrow to change the pick out direction.

9 Left-click another box.

10 Left-click [Decision] on the context menu to complete commands.

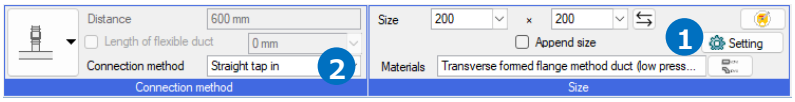






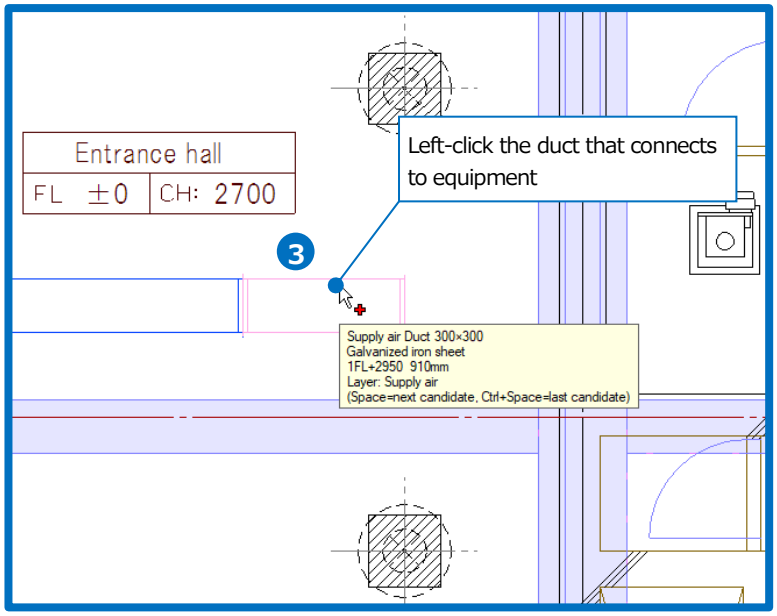
Draw branch ducts that connect to an Anemostat: Transverse formed flange ducts

1. Change the material to “Transverse formed flange method duct (low pressure) galvanized iron sheet” and select ”200” and “200” for the size.

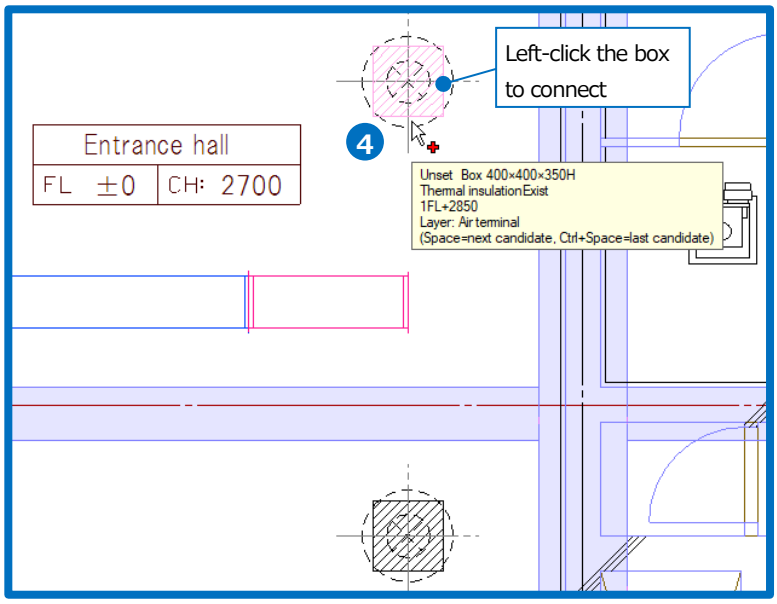


2. Select the shape for a branch duct and “Straight tap in” for the way of connecting.

3. A guidance message appears saying “Choose the pipe, a duct to connect an equipment to”. Left-click the duct that connects to an Anemostat.

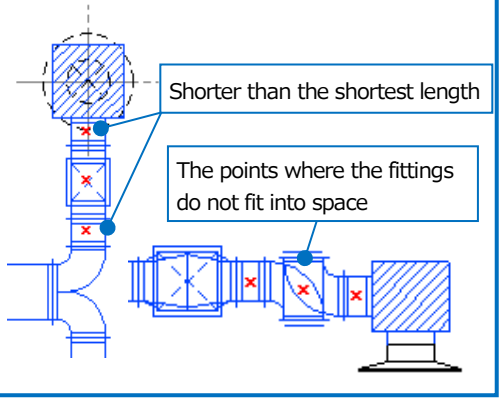


4. A guidance message appears saying: “Choose box chamber to connect”. Left-click the box.
→A branch duct appears temporarily.



Memo

Checkmark [View]tab-[Drawing expression]-[Pipe, duct, and electricwire common]- [Proper placement check]-[Display "X"mark], to show “x” on the point if the fitting does not fit into the space.
Also, “x” appears on a straight pipe that are shorter than “the shortest length” with [Drawing expression]-[Duct]-[Drawing rule]-[Shortest length].



5 Left-click another box.

6 Left-click [Decision] on the context menu.

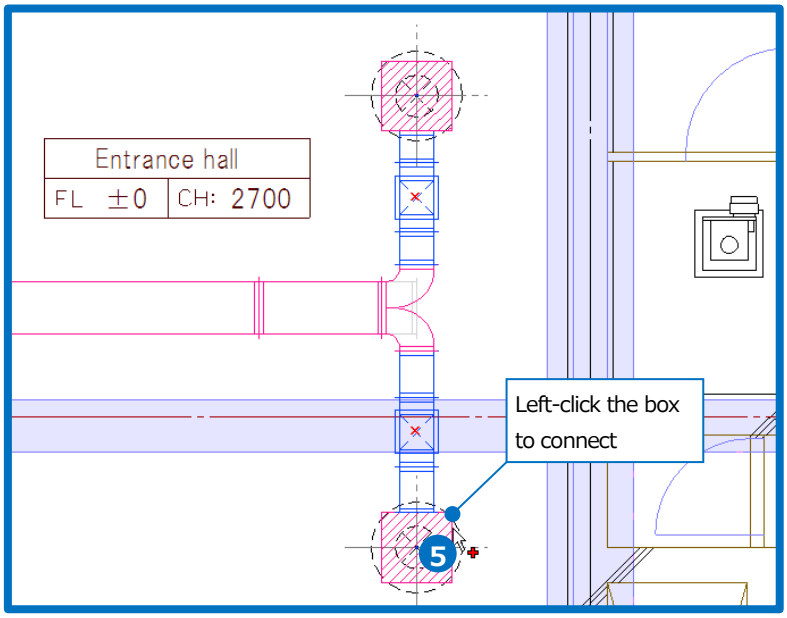
7 Left-click again [Decision] on the context menu to complete commands.

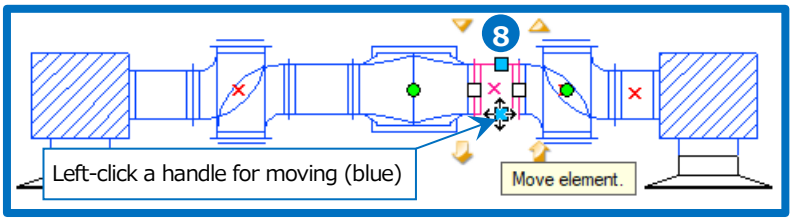
8 Adjust the a branch duct height in around-view (right side). Choose the straight pipe to left-click the handle for moving (blue).

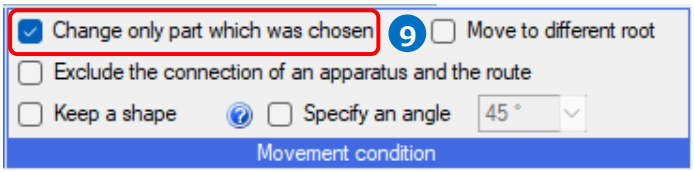
9 Checkmark [Change only part which was chosen] on the ribbon or the context menu.

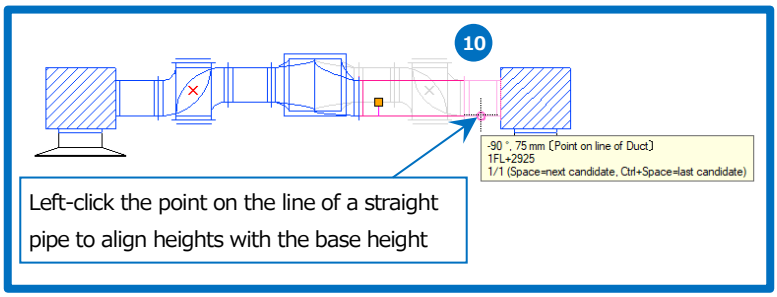
10 Bring the pointer below and press Shift to fix the angle. Left-click the point on the line of a straight pipe on one of two boxes, which becomes a base height to align with.

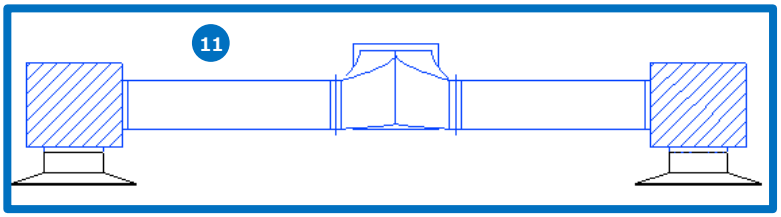
11 Similarly, change another branch duct.

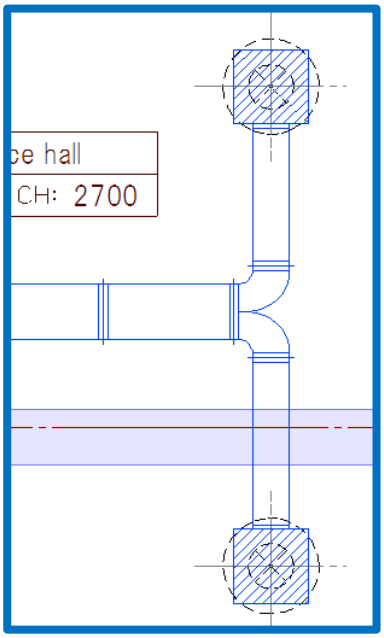






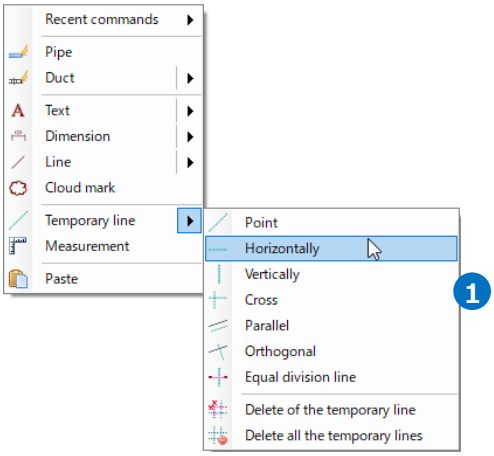




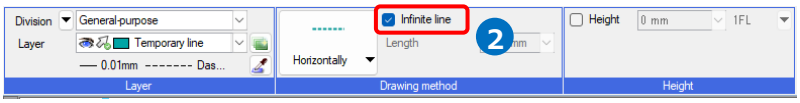


Draw branch ducts that connect to breeze line diffusers

1. Draw temporary lines so as to connect a branch duct to the box at the equally divided position. Left-click [Temporary line]-[Horizontally] on the context menu.



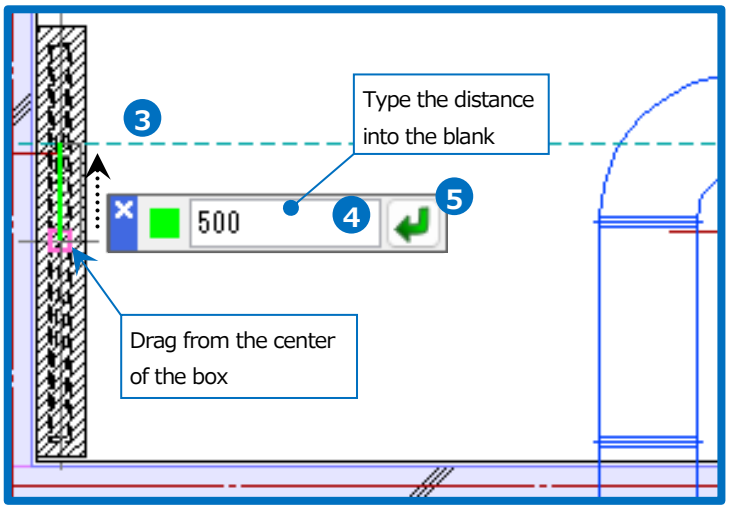
2. Checkmark [Infinite line].



3. A guidance message appears saying:" Specify a position drawing a temporary line". Left-drag in an upward direction the center point of the breeze line ([Base point of Line diffuser], [Base point of Box] and so on).

4. Type the distance into the blank by Measure.
   - 500

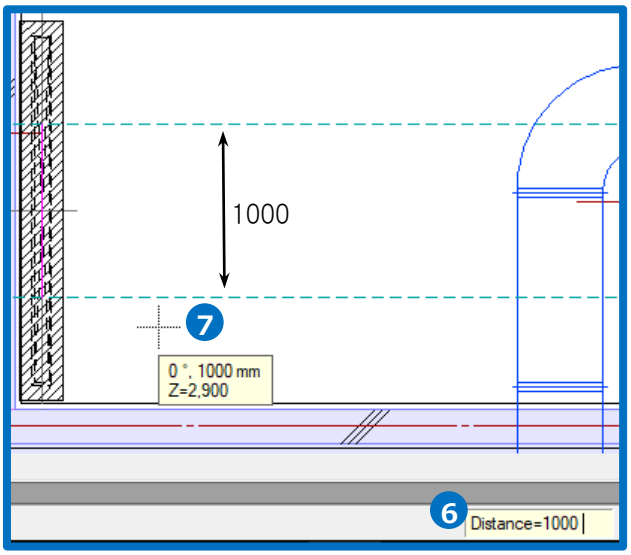
5. Left-click icon or press Enter to confirm.



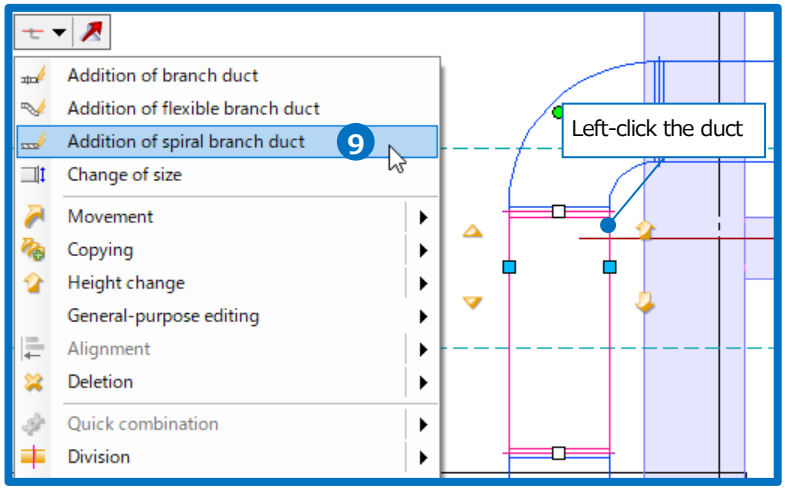
6. Type with the keyboard "1000" for the distance between the first and second temporary line. The entered numerical value appears in the field [Distance=] on the status bar.

7. Bring the pointer in a downward direction of the first temporary line and left-click there.

8. Left-click [Decision] on the context menu to complete the command.

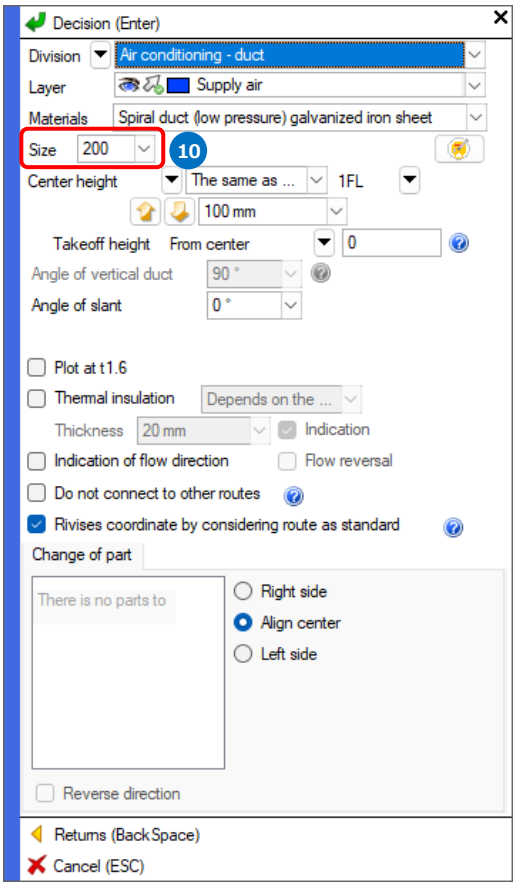


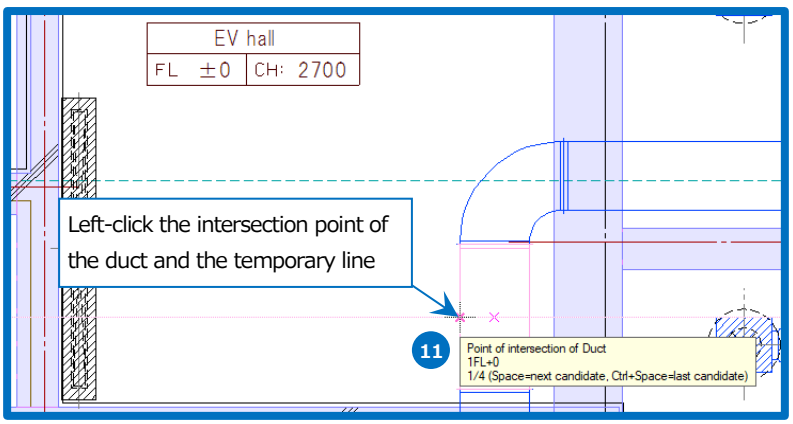
9 Left-click a straight duct and select [Addition of spiral branch duct] on the context menu.



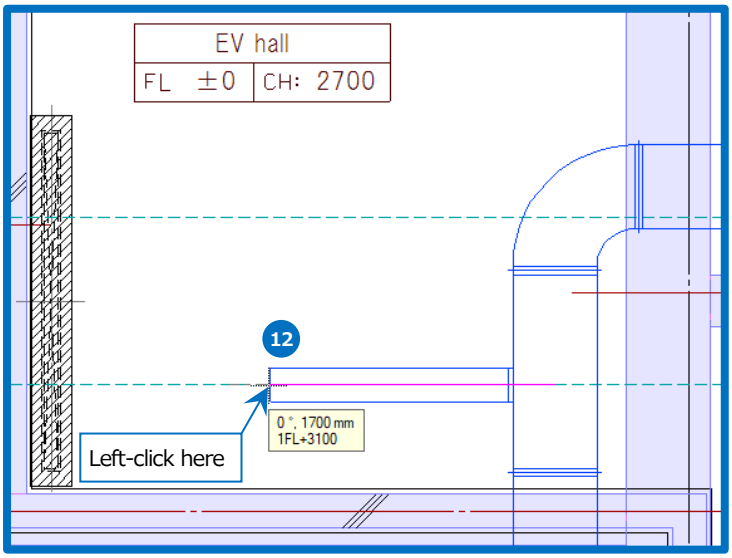
10 Type “200” into the size on the context menu to close the menu.

11 A guidance message appears saying:” Specify position to take off branch duct”. Left-click the intersection points of the duct and temporary line.

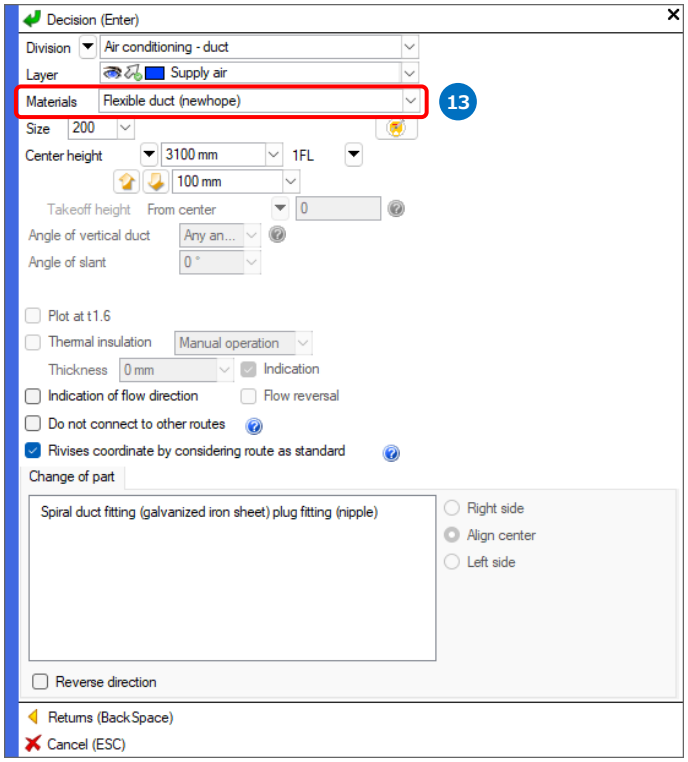




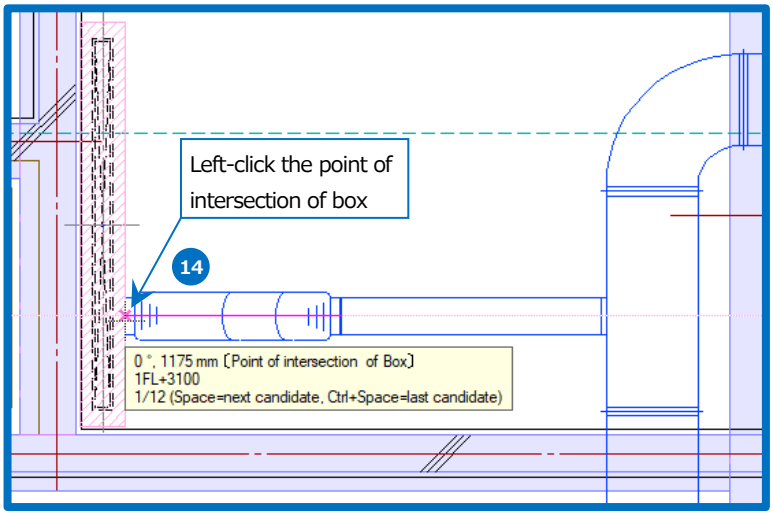
12 A guidance message appears saying:" Specify position to make duct." Left-click the position to create a duct.



13 Change the duct to a flexible one to connect. Select "Flexible duct (newhope)" for the material on the context menu to close the menu.

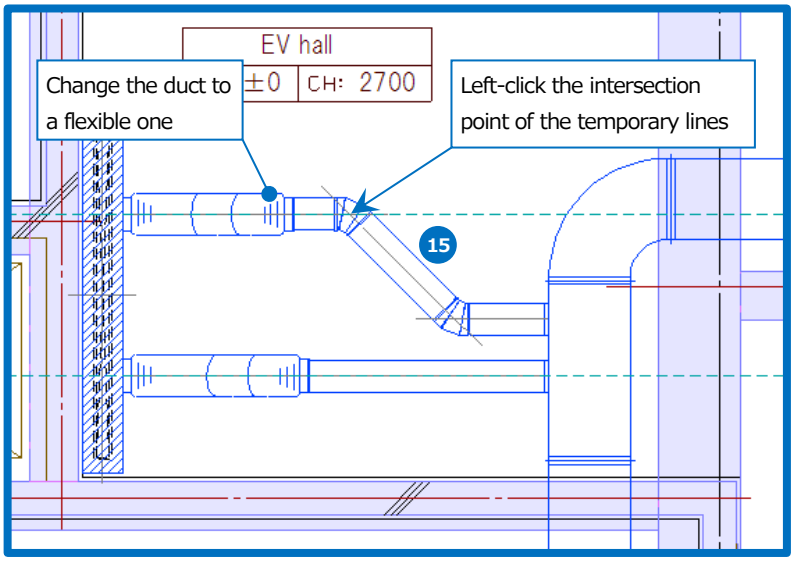


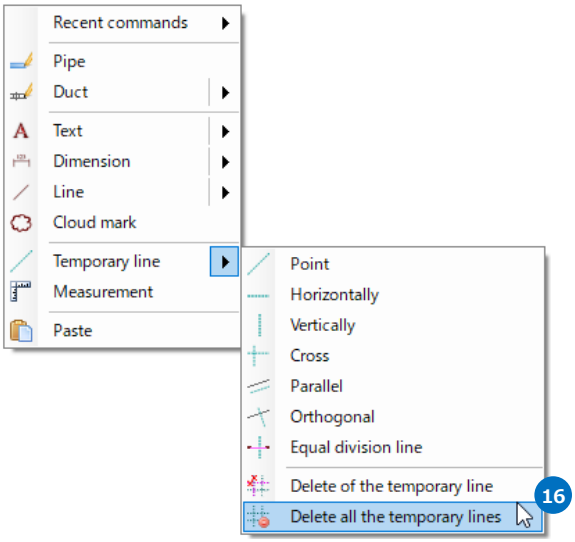
14 Left-click the position where "Point of intersection of Box" appears to connect.
→The layer for boxes changes to for ducts.



15 Similarly, draw another branch duct.

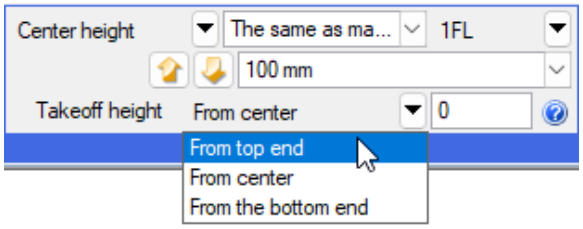
16 Left-click [Temporary line]-[Delete all the temporary lines] on the context menu to delete temporary lines.





- Supplementary explanation:

In the case you draw branch ducts, or routes from boxes or chambers, you can specify the relative height from main pipes. You can select the height reference to pick out “From top end”, “From center”, or “From the bottom end”.

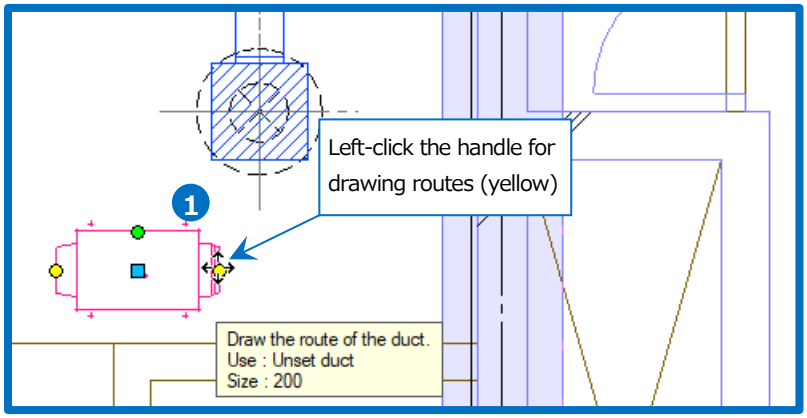


Once you select the pick out height, Rebro adjusts the numeric value of drawing height accordingly.

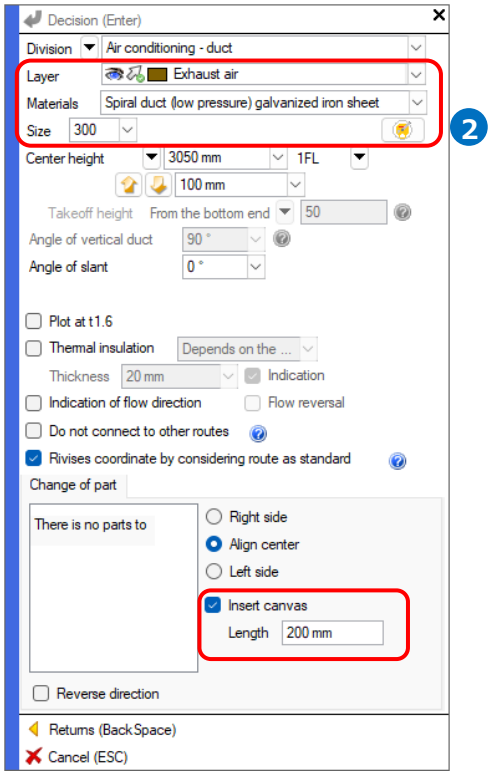
How to draw routes for air exhaust ducts

Draw routes that connect to air inlets

1 Pull out a duct from a fan. Left-click the fan to show a handle for drawing routes (yellow) and left-click it.
→The descriptions on the ribbon change to [Route drawing figure].

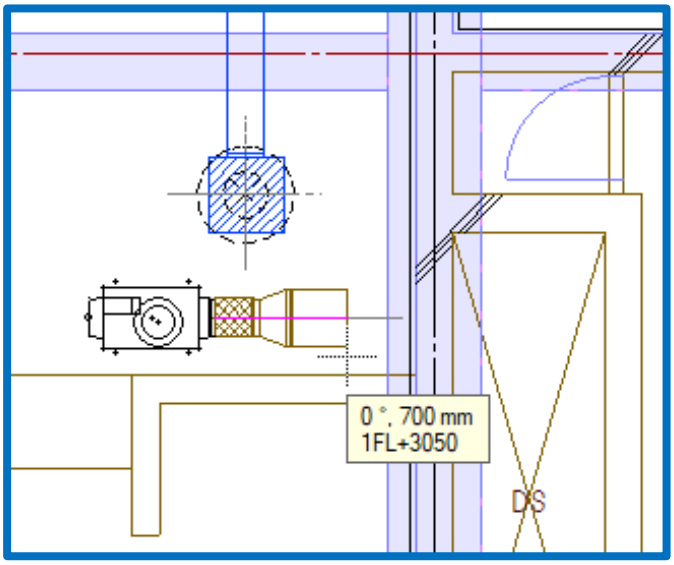


2 Select “Exhaust air” for the layer, “Spiral duct (low pressure) galvanized iron sheet” for the material and “300” for the size on the context menu, and checkmark “Insert canvas” to close the menu.
→A canvas and a hopper are inserted.

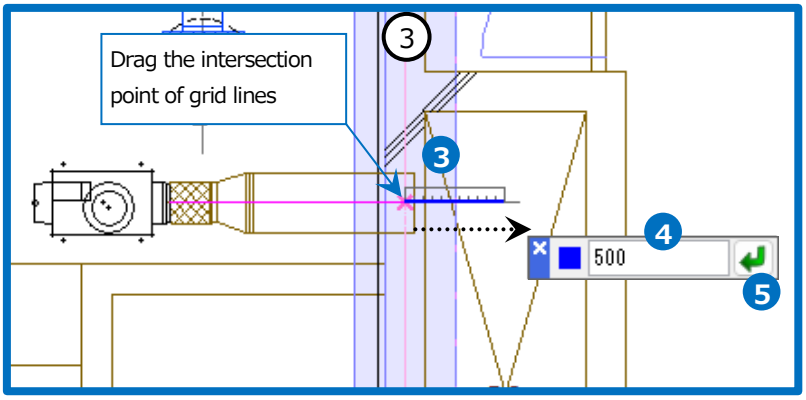


Memo

When you pull out a duct from the handle of equipment whose information on connection points is set to insert a canvas connection, Rebro inserts a canvas. In the case you connect the duct to the fan directly, uncheck “Insert canvas” on the context menu.



3 A guidance message appears saying: ”Specify position to make duct.” Drag the intersection point of grid lines to the right direction.

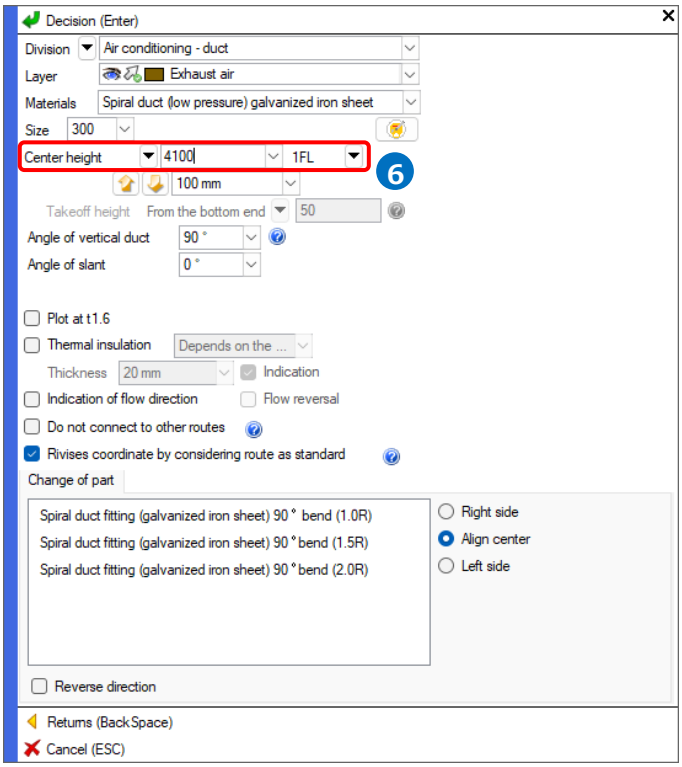


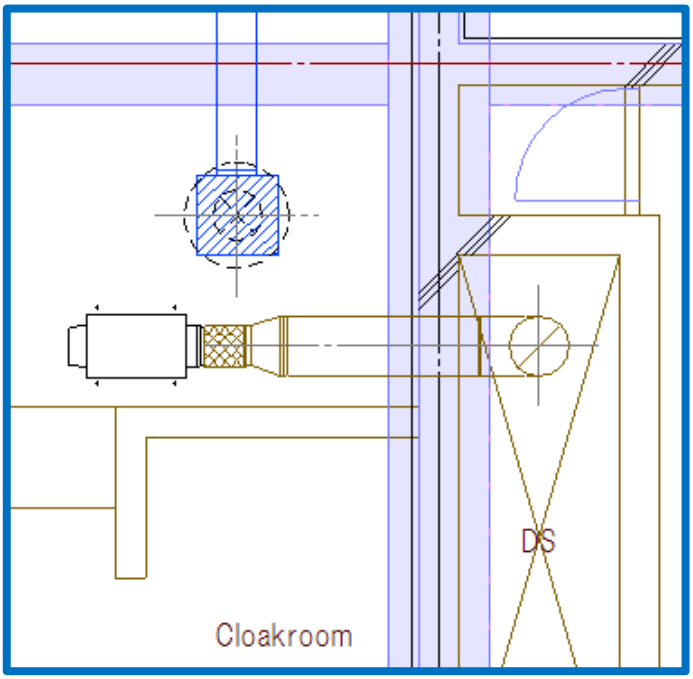
4 Type the distance into the blank by Measure.

■ 500

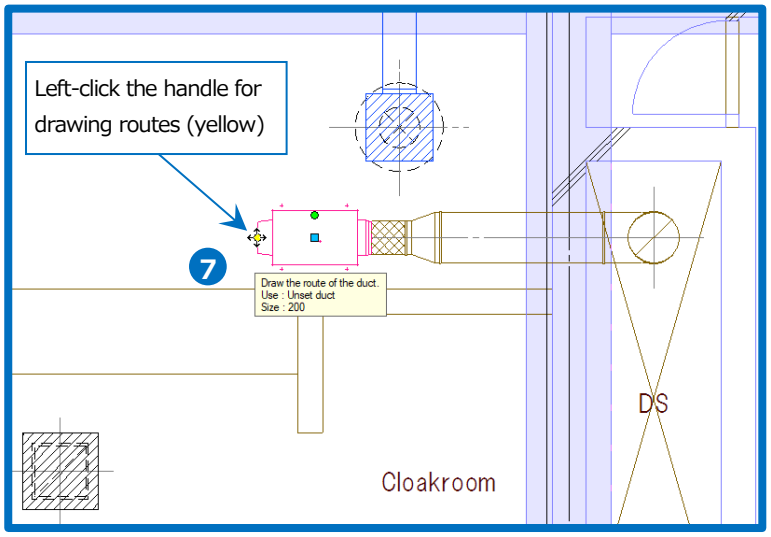
5 Left-click icon or press Enter to confirm.

6 Change the height. Type “4100” for the changing height on the context menu to left-click [Decision] on the menu to complete commands.

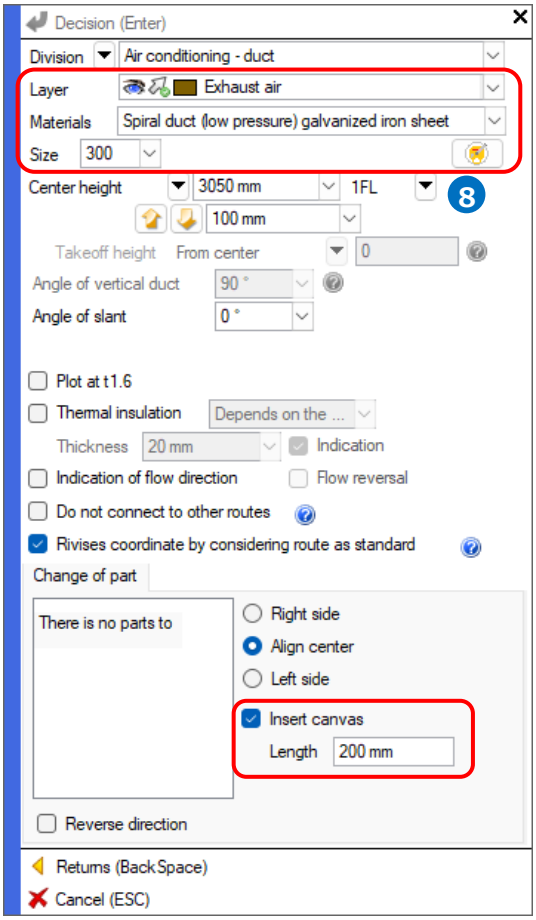




7 Left-click the fan to show a handle for drawing routes (yellow) and left-click it.
→The descriptions on the ribbon change to [Route drawing figure].



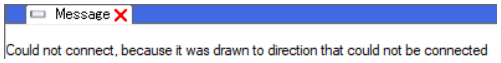
8 Select “Exhaust air” for the layer, “Spiral duct (low pressure) galvanized iron sheet” for the material and “300” for the size on the context menu, and checkmark “Insert canvas” to close the menu.
→A canvas and a hopper are inserted.

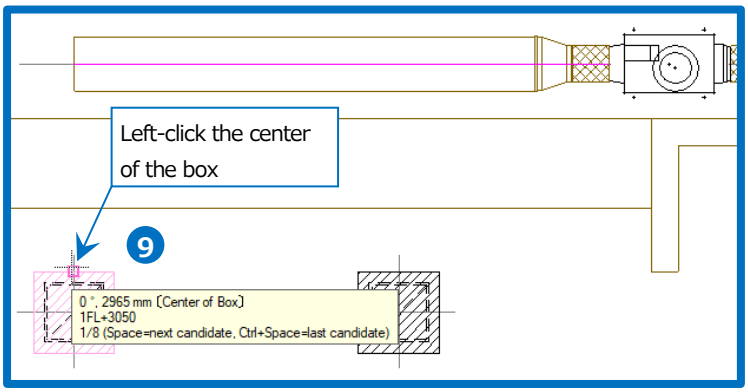


9 A guidance message appears saying:” Specify position to make duct.” Bring the pointer close to the center of a vent terminal to left-click the position where a meaningful point such as [Center of box] appears on the tooltip.
→A straight pipe is drawn up to the air terminal position.

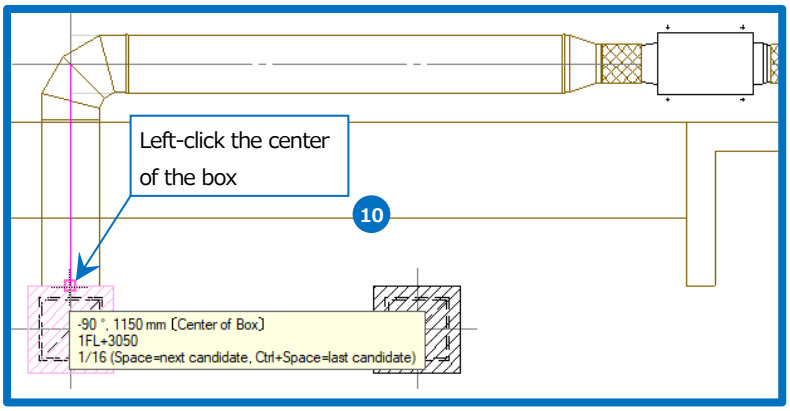
Memo

In order to specify the bend position, left-click a meaningful point of the box. The following message appears but keep on drawing without regard for it.

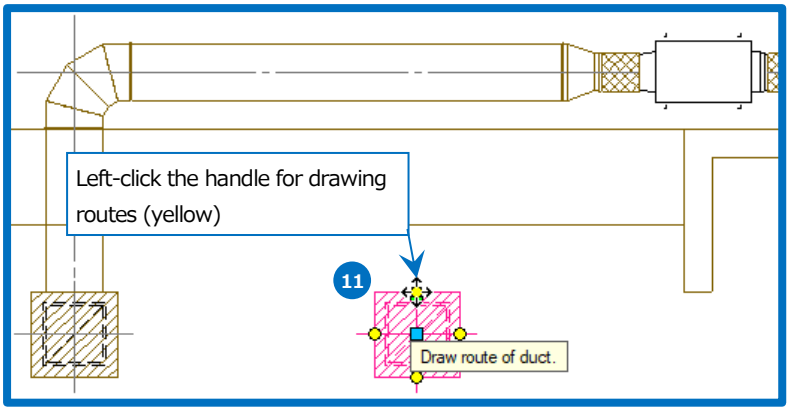




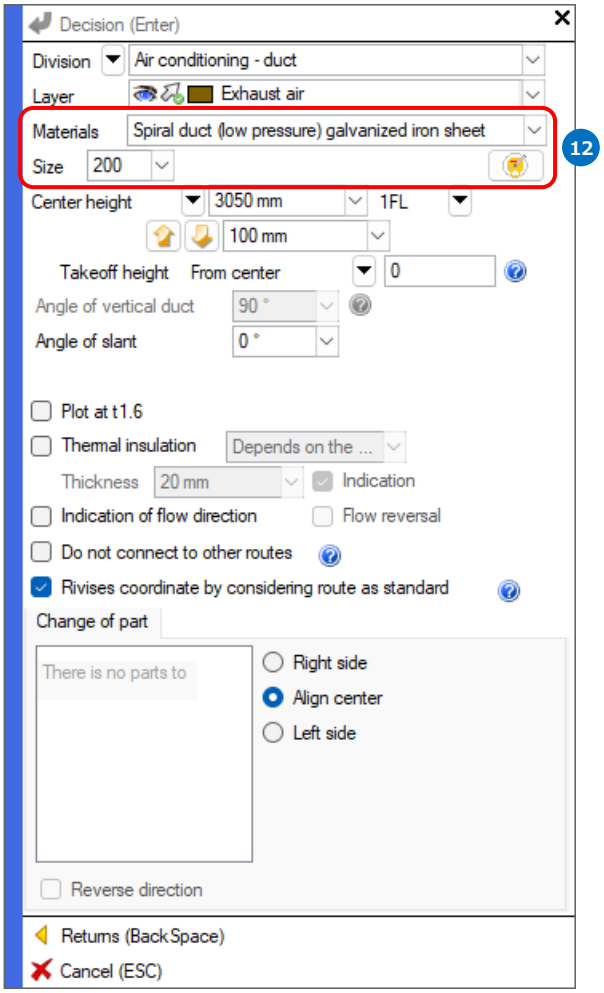
10 Left-click the position where "Center of Box" appears on the tooltip.
→The duct is connected to the box.



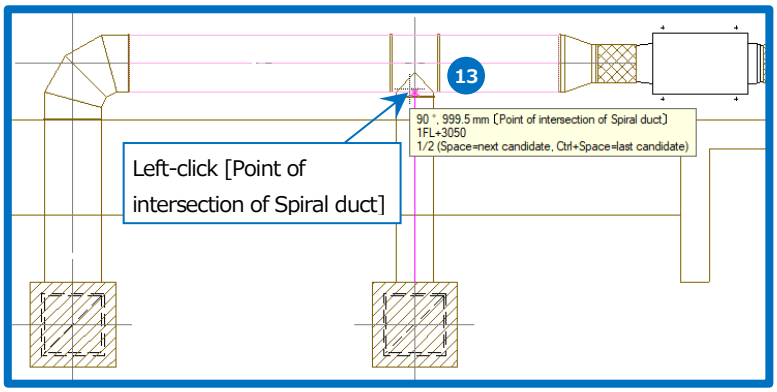
11 Left-click the box and a handle for drawing routes (yellow) that appears.
→The descriptions on the ribbon change to [Route drawing figures of duct].

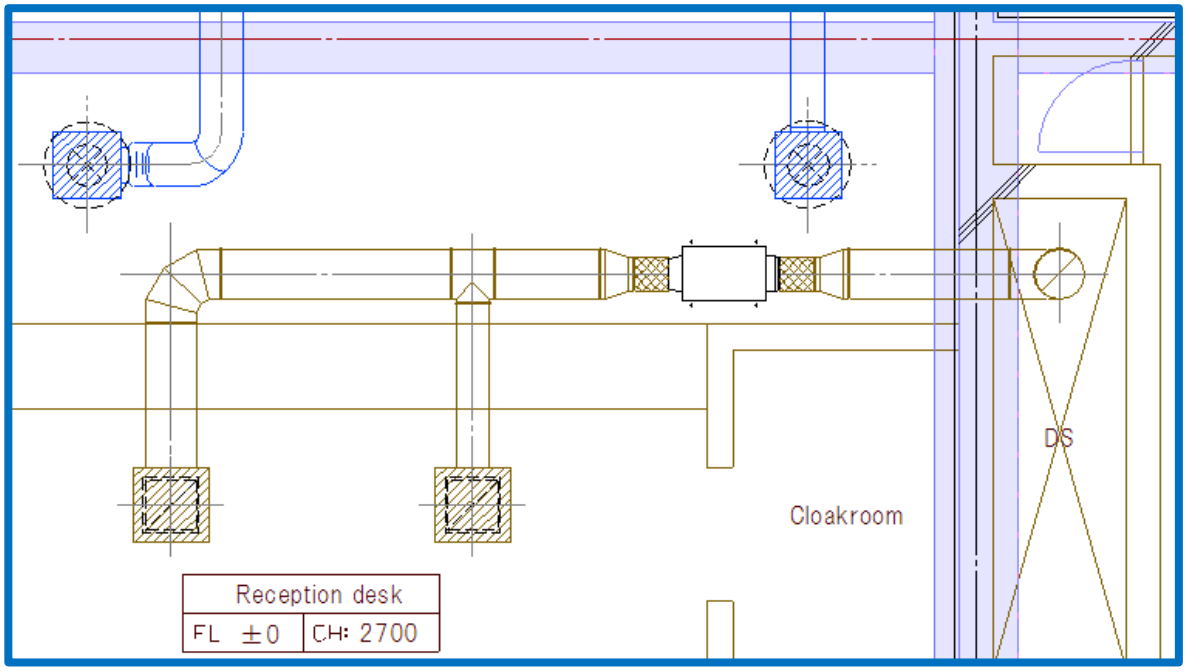


12 Select "Spiral duct (low pressure) galvanized iron sheet" for the material, "200" for the size on the context menu and close the menu.



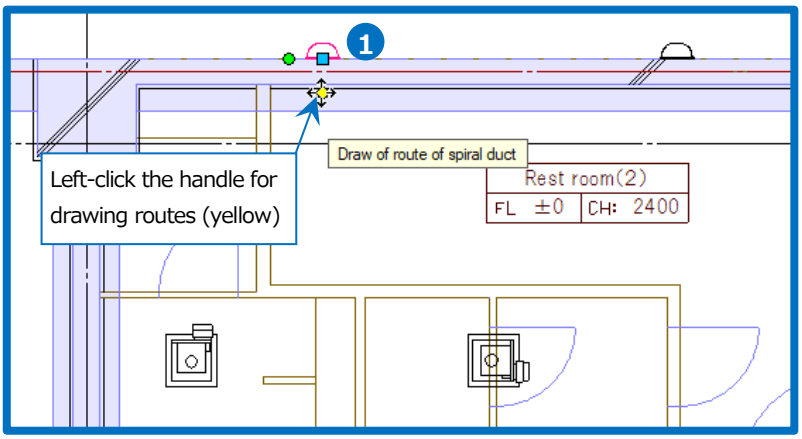
13 A guidance message appears saying: “Specify position to make duct.” Left-click the position where [Point of intersection of Spiral duct] appears on the tooltip.
→The spiral duct is connected to the main duct.



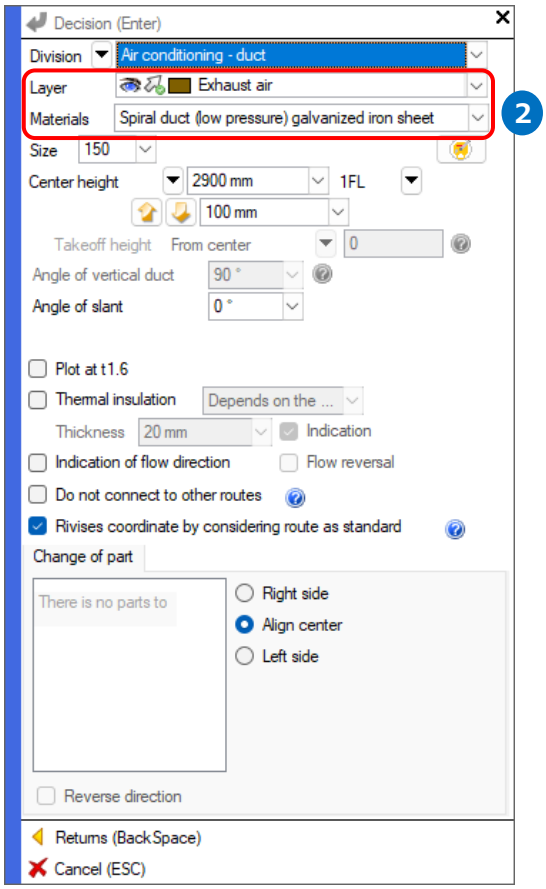


Draw routes that connect to ceiling fans

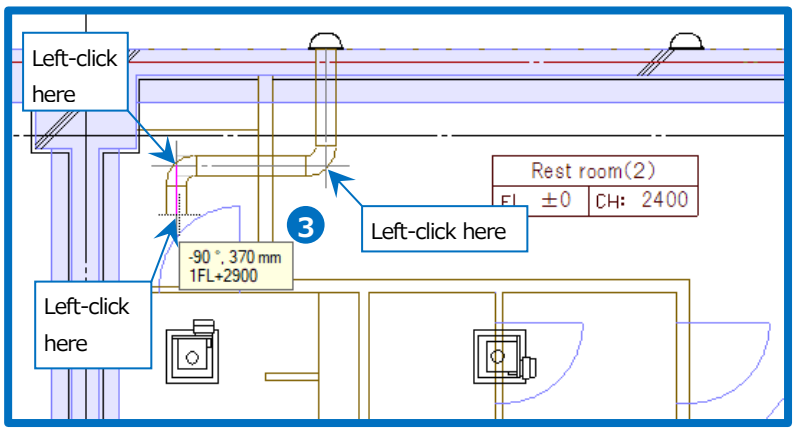
1. Left-click the vent terminal cap to show a handle for drawing routes (yellow) and left-click it.
   →The descriptions on the ribbon change to [Route drawing of spiral duct].



2. Select “Exhaust air” for the layer, “Spiral duct (low pressure) galvanized iron sheet” for the material on the context menu and close the menu.



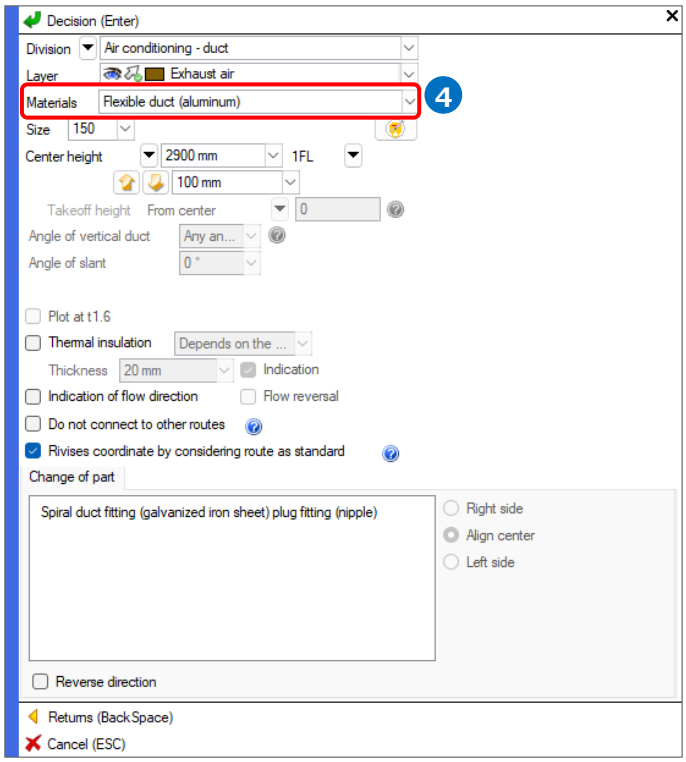
3. A guidance message appears saying: ”Specify position to make duct.” Left-click the position to create a duct.

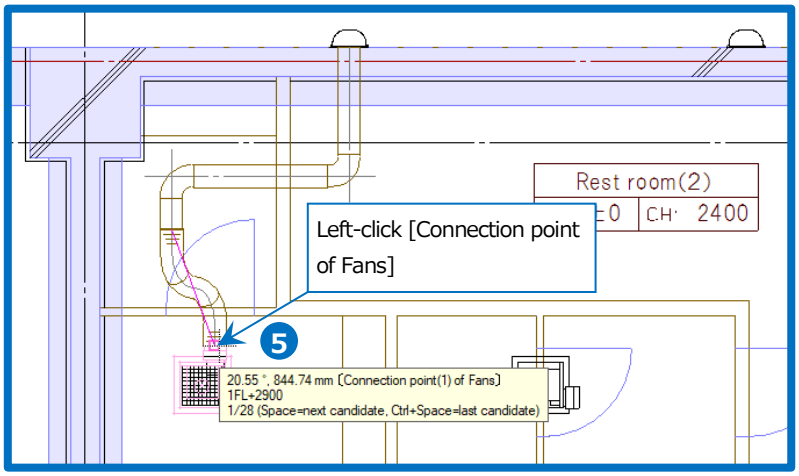


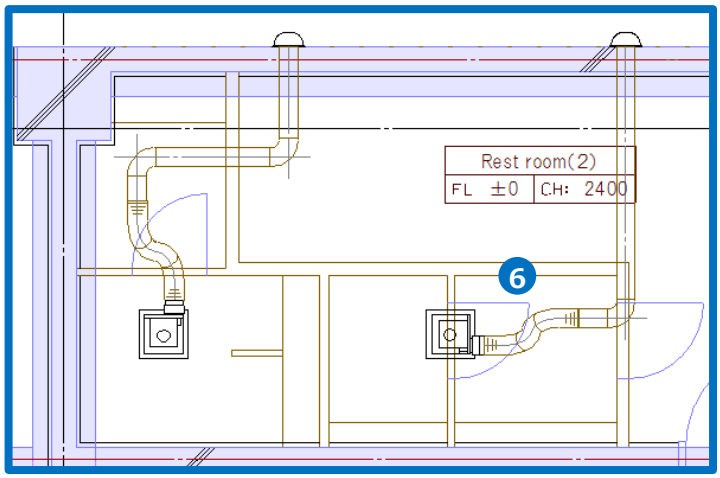
4 Select “Flexible duct (aluminum)” for the material on the context menu to close the menu.

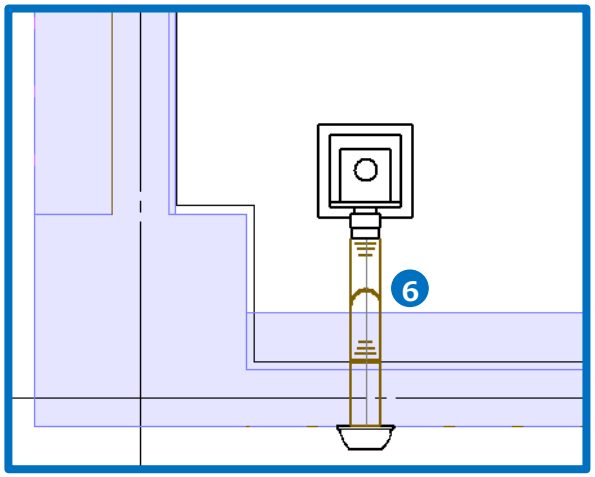
5 Left-click [Connection point of Fans] to connect the duct to a ceiling fan.

6 Similarly, connect the duct to other ceiling fans.









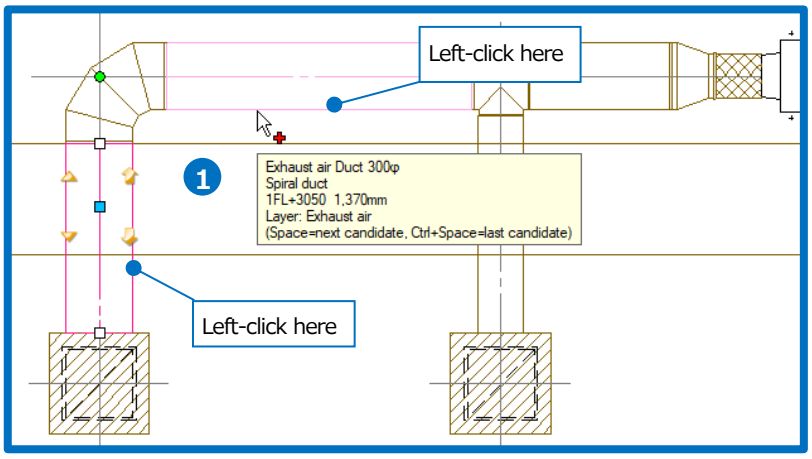
5.Edit ducts

How to resize ducts

Resize air exhaust ducts partly.

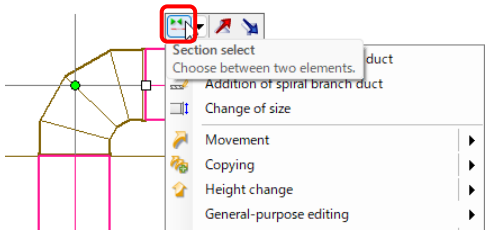
1. Left-click two points on the route for the section where you want to resize.

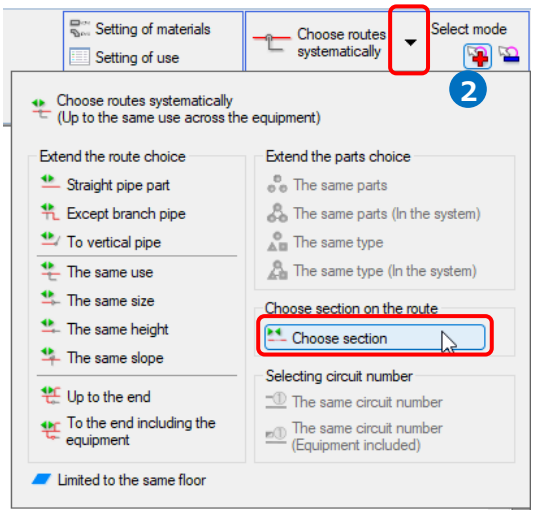
2. Left-click "▼" next to [Choose routes systematically], and [Choose section].
   →The route with the section is chosen.

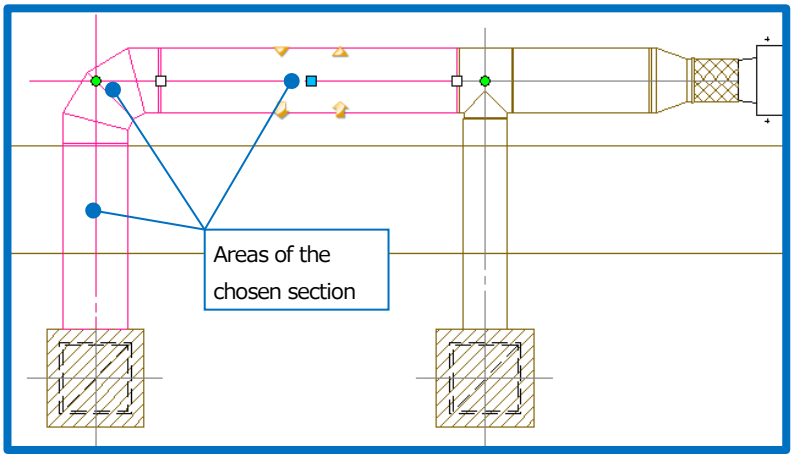


Memo

You can also select [Choose section] on mini toolbar above the context menu.





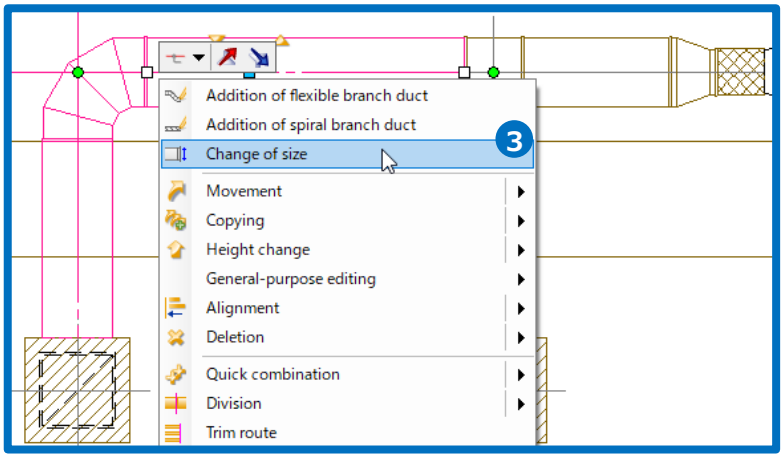


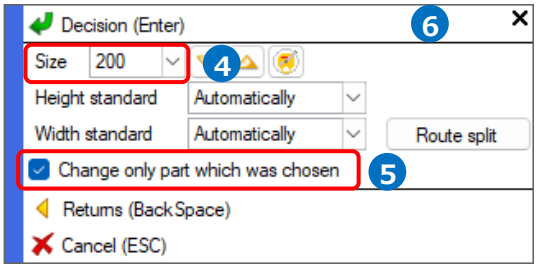
3 Left-click [Change of size] on the context menu.

4 Type “200” into the changing size on the context menu.

5 Checkmark [Change only part which was chosen].

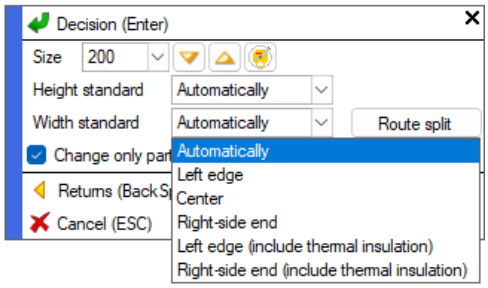
6 Left-click [Decision] to end the command.

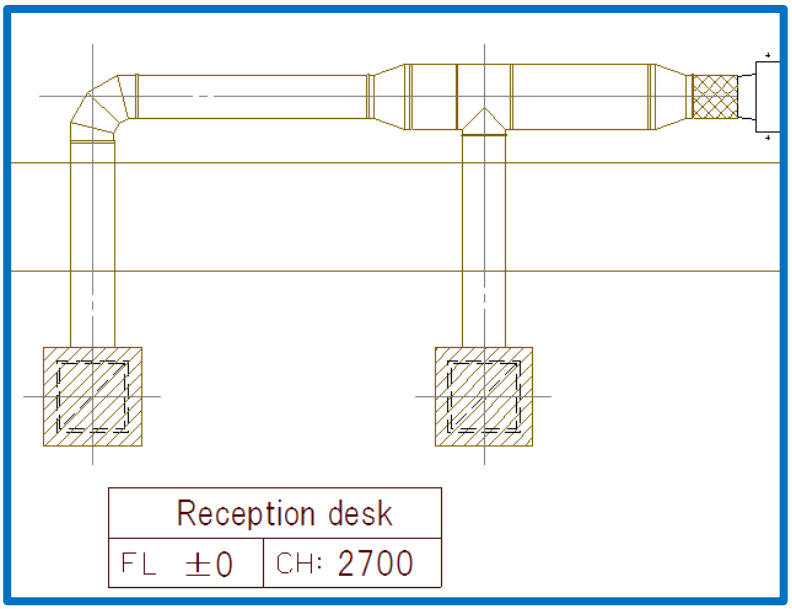




Memo

By “Width standard”, you can specify a reference position for the resized width regarding the main route on a plane.





- Supplementary explanation:

The yellow handles that appear on the chosen route are for resizing or height change.

Change size

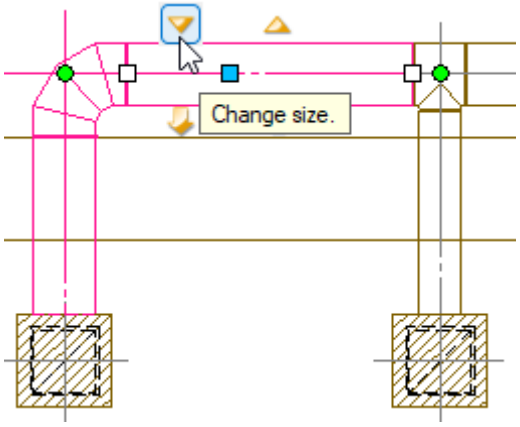
Left-click [▼] or [▲] to start [Resize] command, and each time you left-click the handle, Rebro resizes the target one size each.

[▼] for downsizing

[▲] for upsizing

The size of the rectangular duct is increased / decreased by 50 pitches, and the size of the flexible duct is increased / decreased by 25 pitches.

Bring a pointer onto a handle for resizing and hold down the Shift key to switch between W and H of the size to change.



The spiral duct refers to the size set in [Setting]-[General]tab- [Pipe, duct, and electricwire common]-[Resize].

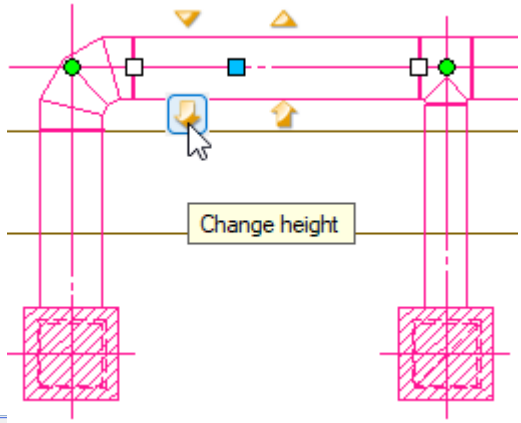
Change height

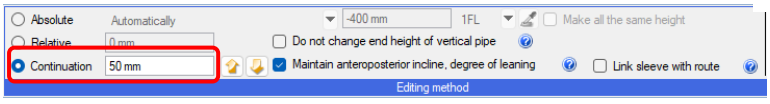
Left-click [⬇] or [⬆] to start [Height change] command, and each time you left-click the handle, Rebro chenges the height.

[⬆] for heightening

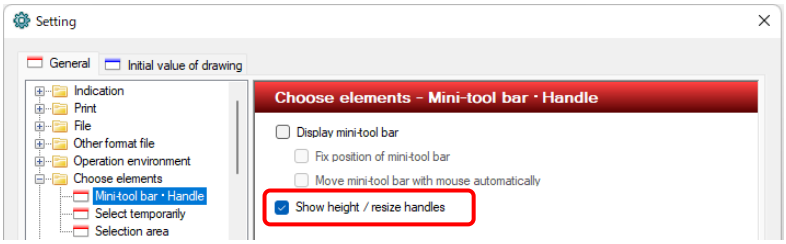
[⬇] for lowering

When changing the height with the handle, the pitch will be the numerical value entered in [Continuation] of the [Height change] command.





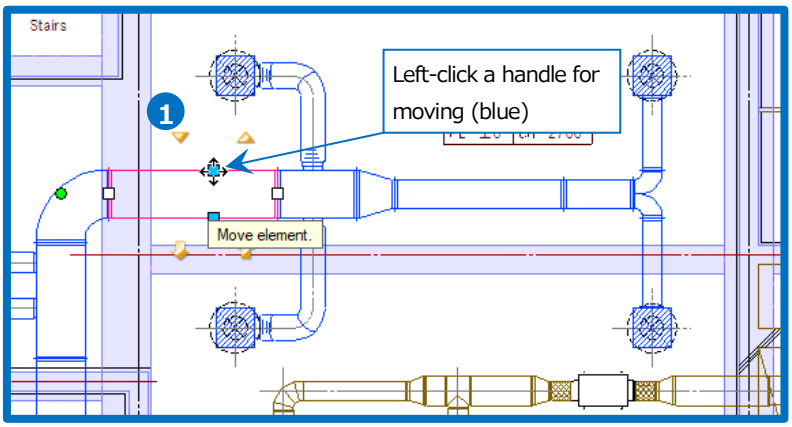
To hide them, go to [Setting]-[General] tab-[Choose elements]-[Mini-toolbar・Handle] and uncheck [Show height / resize handles].



How to move ducts

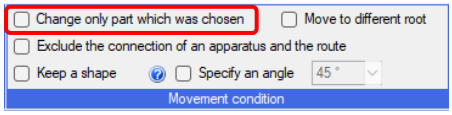
Move a duct and adjust the gap measurement between the base line and the actual center line.

1 Left-click the duct you want to move and a handle for moving (blue), which appears on the face that works as the reference position for the move.



Memo

Uncheck [Change only part which was chosen] to move straight routes collectively.

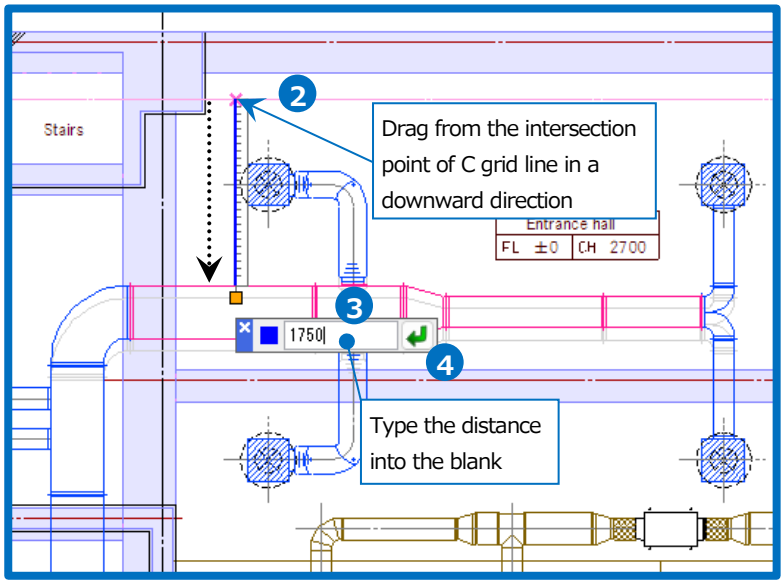


2 A guidance message appears saying:" Specify move point". Drag from the intersection point of C grid line in a downward direction.

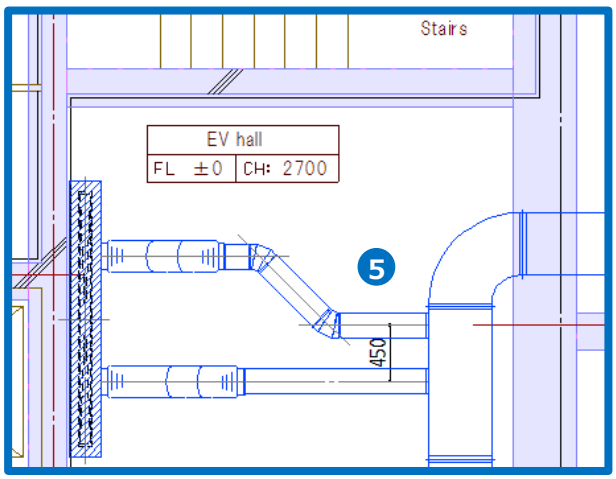
3 Type the distance into the blank by Measure.

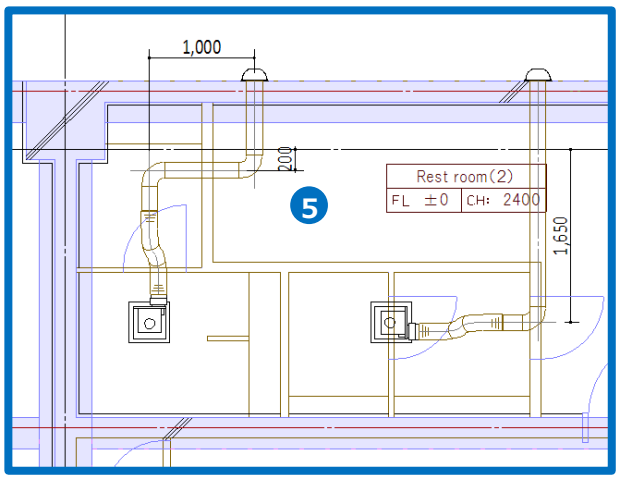
■ 1750

4 Left-click icon or press Enter to confirm.



5 Similarly, align other ducts positions.

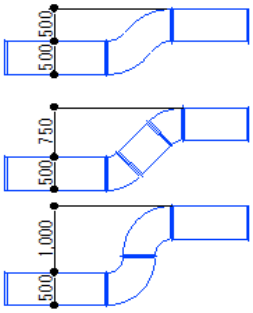




※See a supplementary explanation on the following page

- Supplementary explanation:

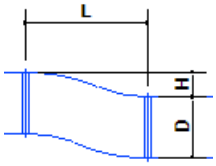
Rebro shows S pipe, 45-degrees elbow, or 90-degrees elbow automatically for the part that has misaligned routes due to [Movement] or [Height change].



S pipe is applied for the gap width in the case of L≧D+H

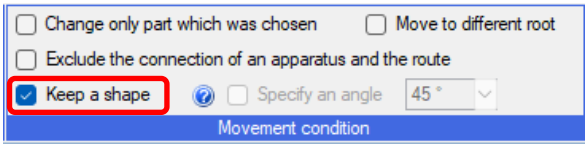
45-degrees elbow is applied for the gap width over L≧D+H

90-degrees elbow is applied for the gap width in the case that two elbows can fit

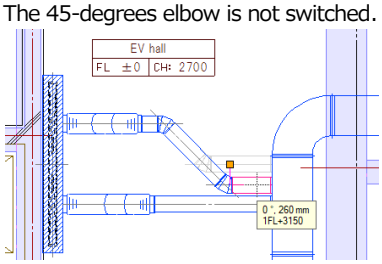


※The initial value of S pipe length is twice as long as the duct size.

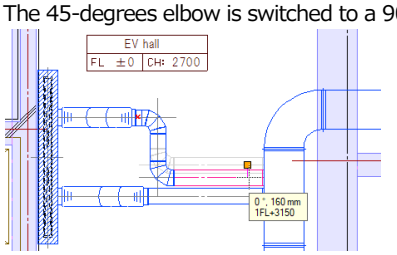
In the case you edit the drawing without changes in the original materials or route shapes, checkmark "Keep a shape".



In the case with a checkmark in “Keep a shape":
The 45-degrees elbow is not switched.



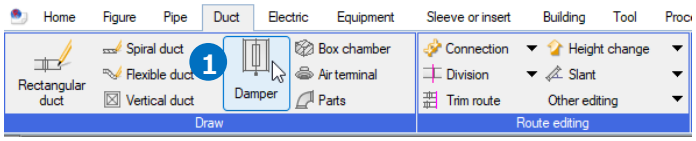
In the case without a checkmark in “Keep a shape”:
The 45-degrees elbow is switched to a 90-degrees elbow.



How to add dampers

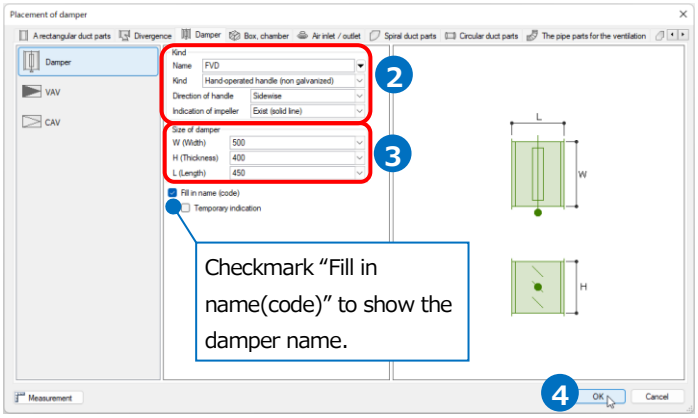
Add dampers to air supply ducts.

1. Left-click [Duct] tab- [Damper].



2. Select the damper type in [Placement of damper] dialog box.
   Name: “FVD”
   Kind: “Hand-operated handle (non galvanized)“
   Direction of handle: “Sidewise”
   Indication of impeller: “Exist (solid line)”

3. Type the size for the damper.
   L (Length): “450”
   In the case you insert on the route, W(Width) and H(Thickness)are adjusted to the duct size.



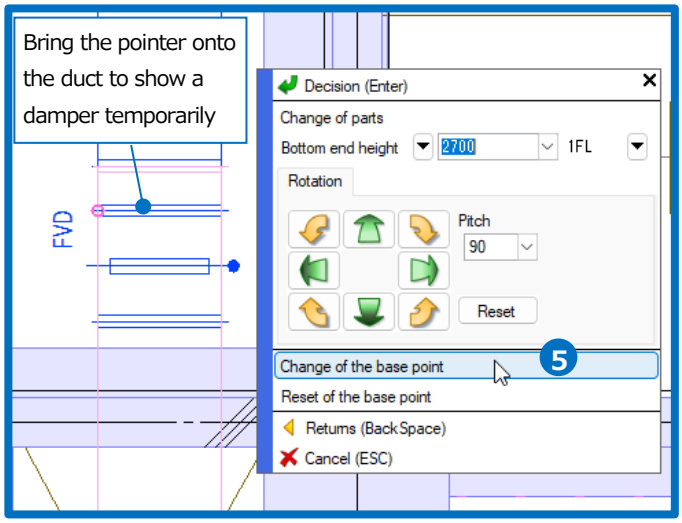
4. Left-click [OK].

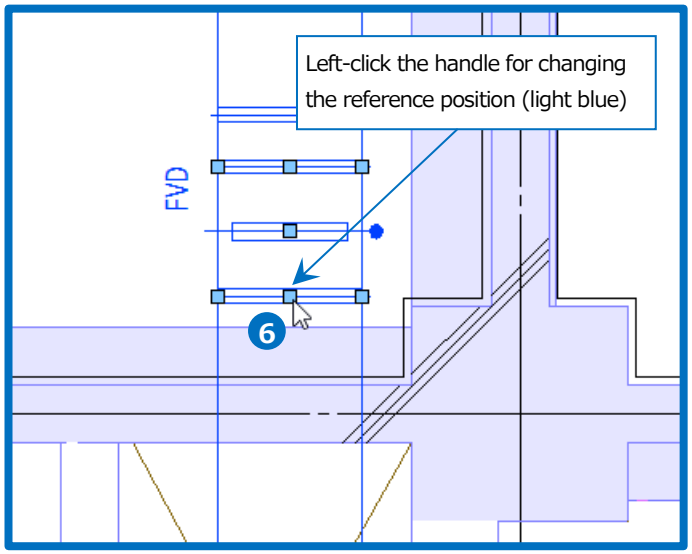
5 Bring the pointer onto the duct and left-click [Change of the base point] on the context menu.
→A handle for changing the reference position (light blue) appears.

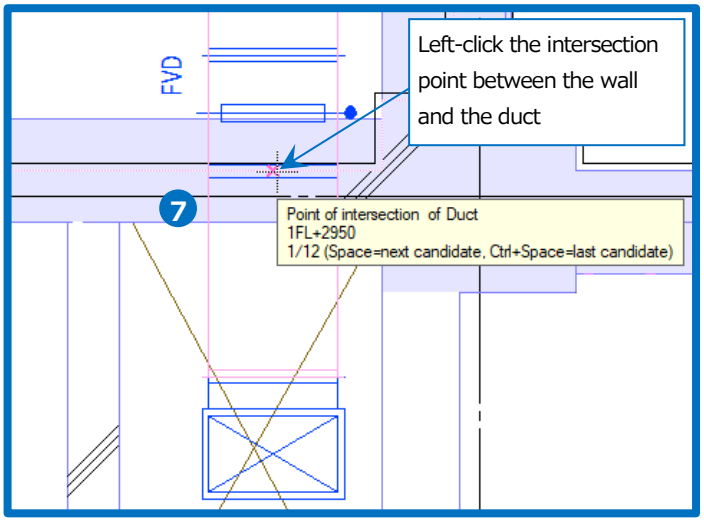
6 Left-click a base point on a flange near the wall.

7 A guidance message appears saying: ” Specify position to locate”. Left-click the intersection point between the wall and the duct.

8 Left-click [Decision] on the context menu to complete the command.





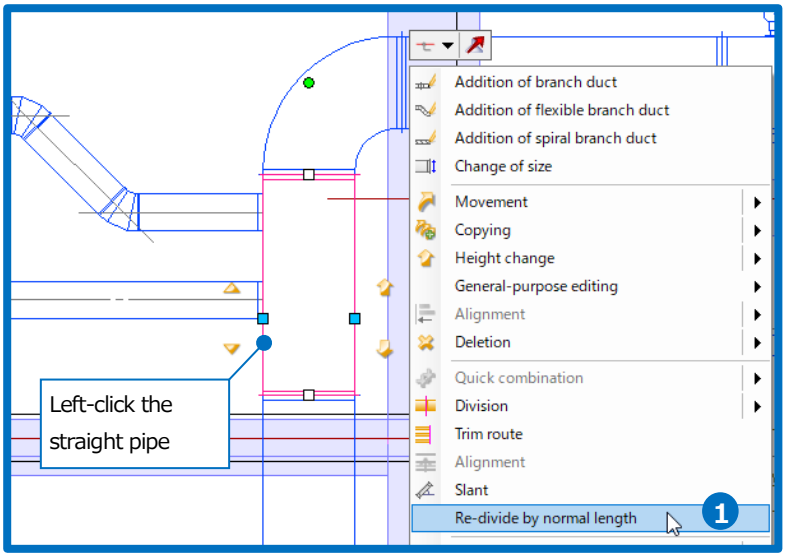


How to allocate flanges

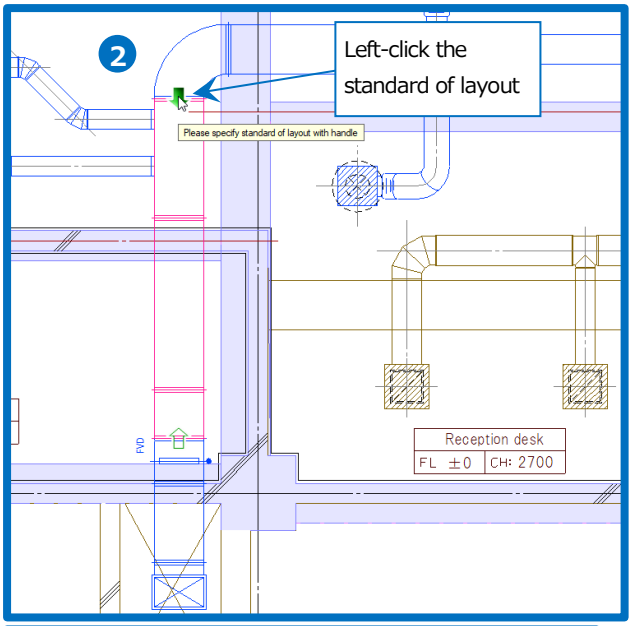
Redivide a straight pipe by normal length.

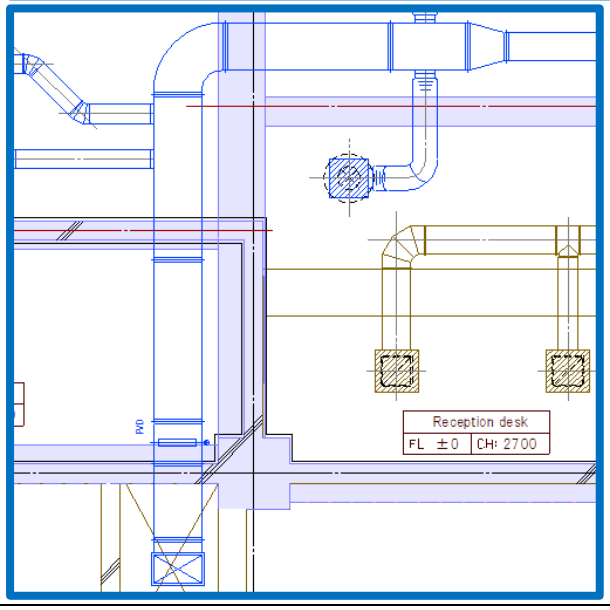
1. Choose the straight pipe you want to redivide by the normal length and left-click [Re-divide by normal length] on the context menu.

> Memo
> In the case you select multiple straight pipes, straight pipes are redivided by the normal length within the area where you choose. In the case you choose one straight pipe, straight pipe on the connected straight line of route are redivided by the normal length.



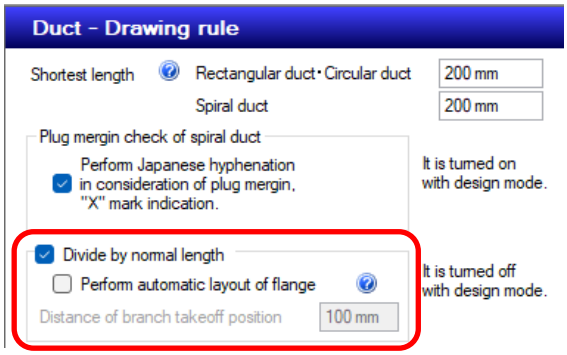
2. A guidance message appears saying: ”Please specify standard of layout with handle”. Left-click the arrow that appears on the screen.
→The straight pipe is redivided by normal length from the direction you specified.





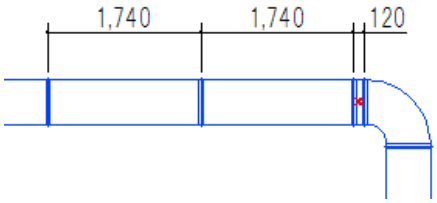
- Supplementary explanation:

Set up flange allocation with [View]tab- [Drawing expression]-[Duct]-[Drawing rule].

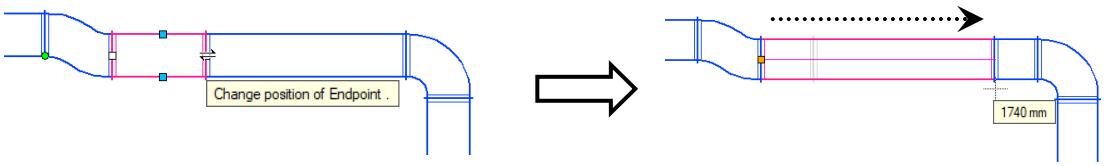


Checkmark “Divide by normal length” to show the flanges at the normal length that are set up in the material subsets.

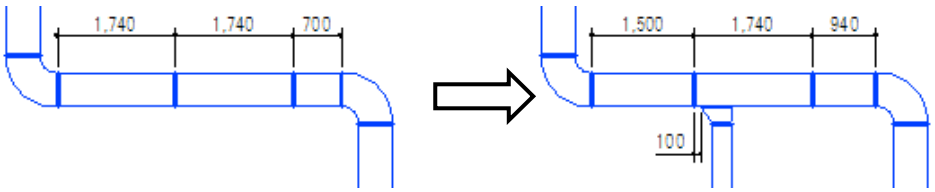
In the case that the length is shorter than “Shortest length”, x mark appears.



In the case you add or edit the route, the positions of flanges that were initially allocated by the normal length are not changed. If you need changes, you can adjust the straight pipe length with [Re-divide by normal length] command or a handle of changing position for the endpoint. The maximum length of the straight pipe is up to normal length.

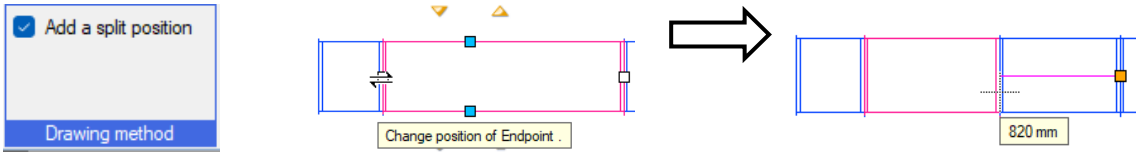


Checkmark “Perform automatic layout of flange” to adjust the flange position automatically so as not to overlap between a branch duct and a flange or not to create a shorter straight pipe than the minimum length.



As initial values, a new drawing reflects the values set up in [Setting]-[Initial value of drawing] tab-[Drawing Expression]-[Duct]-[Drawing rule].

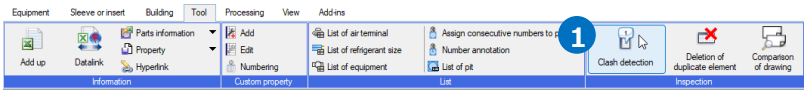
To adjust straight pipe length by a handle for point repositioning, checkmarking [Add a split position] allows you to add a flange regardless of the standard length.



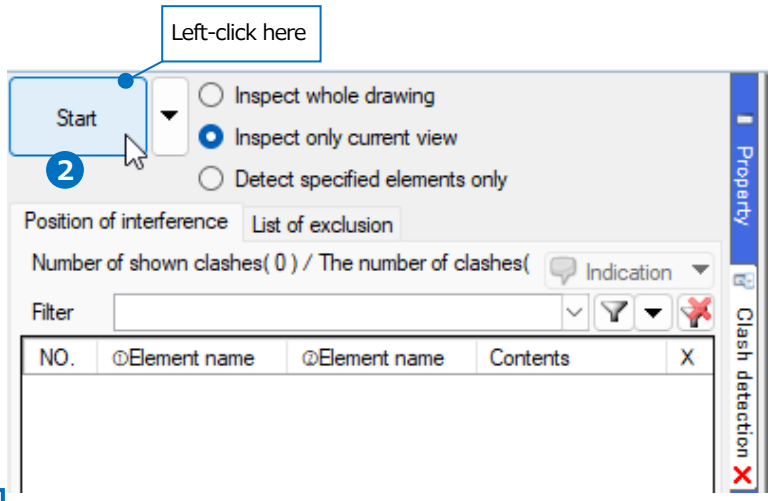
How to detect clashes

Check points where ducts clash with ducts, or with equipment or skeletons.

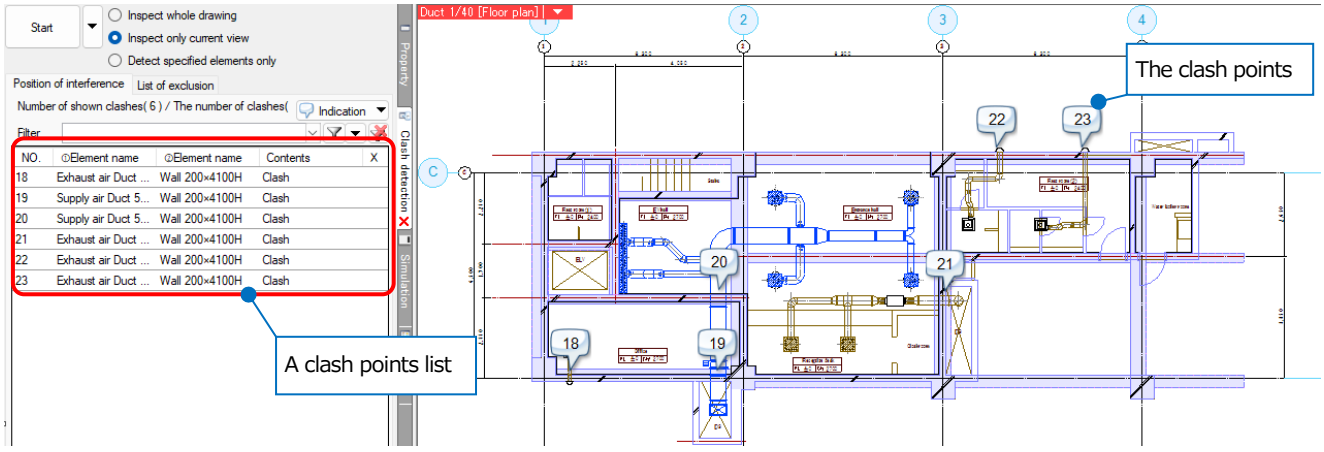
1. Left-click [Tool] tab- [Clash detection].
   →[Clash detection] panel opens.



2. Select [Inspect only current view] and left-click [Start] to execute clash detection.
   →Clash positions between ducts or between a duct and building skeletons are listed on [Clash detection] panel. On the drawing, balloons appear with the numbers on the list.



> Memo
> In the case you detect clashes on every layout basis by setting up multiple layouts such as “Sanitary” or “Duct”, select [Inspect only current view] or [Detect specified elements only] to specify the detection area.

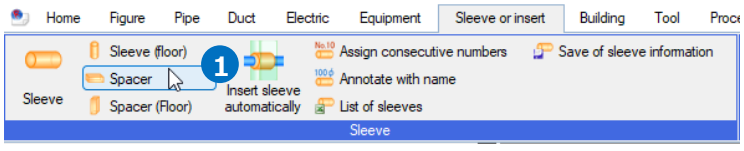


How to draw sleeves

Insert sleeves into the penetrating points through a skeleton. The points where sleeves were inserted are excluded from the clash points list. Sleeves can be inserted automatically or manually. Now insert sleeves manually.

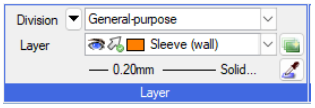
Insert rectangular duct sleeves

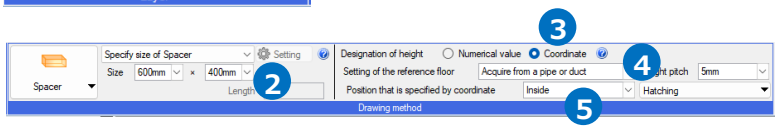
1. Left-click [Sleeve or insert] tab- [Spacer].



2. Specify the size for the boxing. Type “600” “400” into the [Size].

3. Select [Designation of height]- [Coordinate] to draw figures according to the duct height.

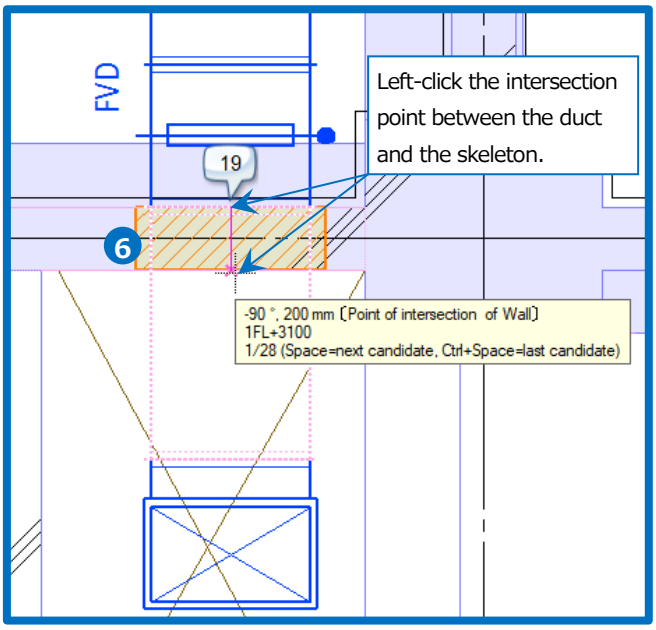




4. Select [Setting of the reference floor]- [Acquire from a pipe or duct] to align the sleeve with the reference floor of the duct.

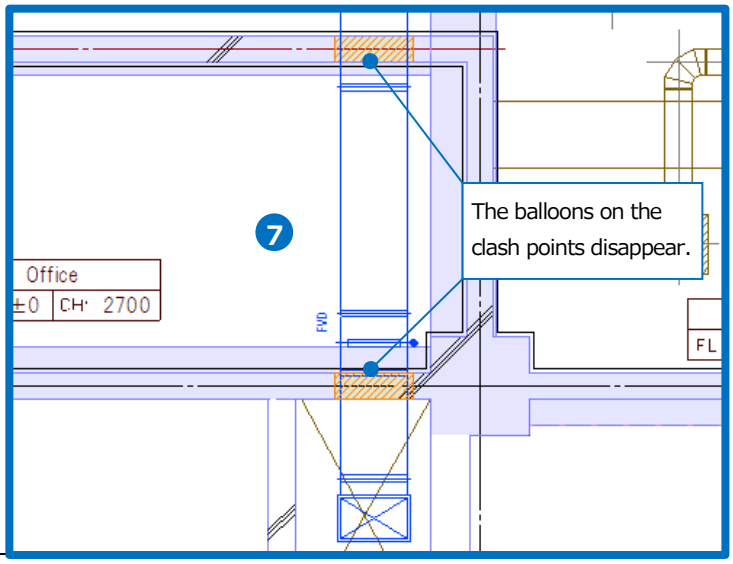
5. Select [Inside] for a position to specify coordinates.

6. A guidance message appears saying: ”Specify two positions becoming both ends of boxing. Specifies first point as position to start drawing boxing”. Left-click two intersection points between the duct and the skeleton.



> Memo
> Specify [Point of intersection of Duct] at a meaningful point to determine the boxing height according to the ducts.

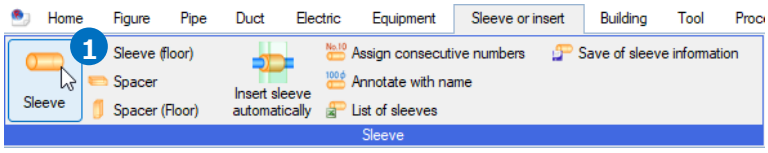
7. Similarly, insert another boxing into the clash points also with other skeletons.
→When the boxing is drawn, the balloon on the clash point disappears.



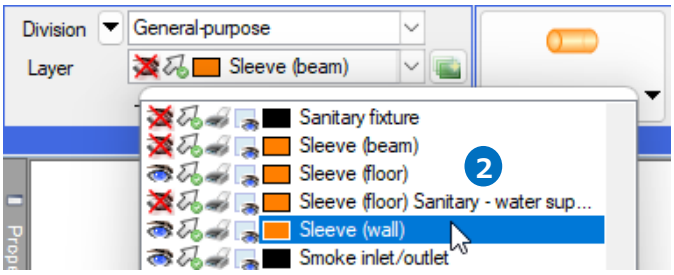
8. Left-click [Decision] on the context menu to complete the command.

Insert spiral duct sleeves

1. Left-click [Sleeve or insert] tab-[Sleeve].

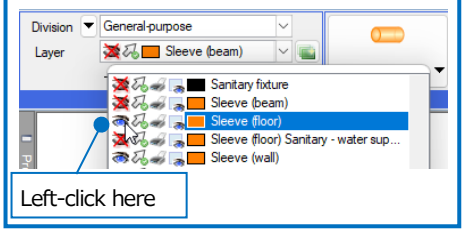


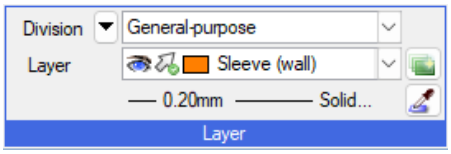
2. The sleeve layer for sanitary pipes, which is hidden, does not appear on this screen. Switch the layer to “Sleeve (wall)”.



Memo

You can change a setting for indicate or search by left-clicking an icon in the drop-down list of a drawing layer.



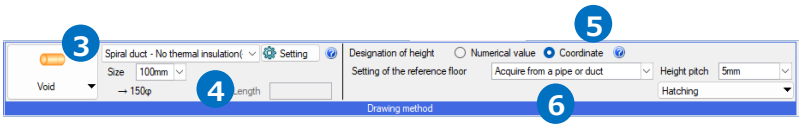


3. Select the sleeve type.

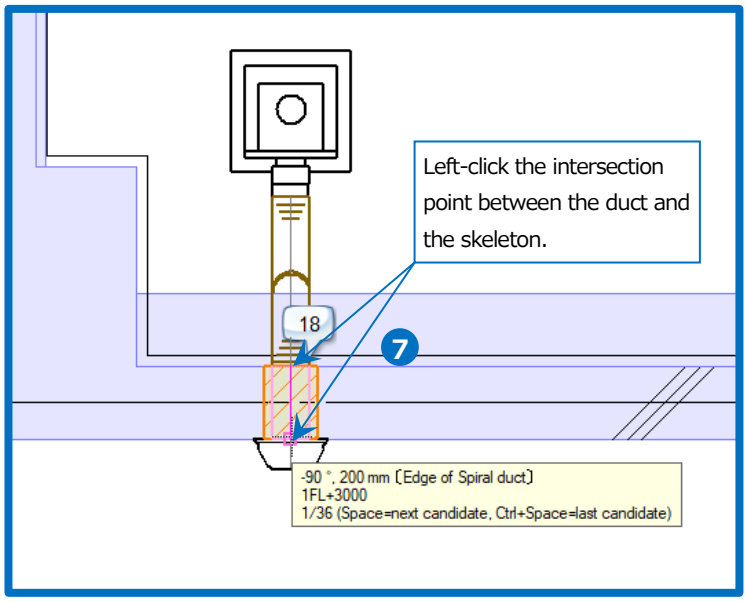
4. Select the way to specify the sleeve size. Now select “Spiral duct-No thermal insulation(+50mm)” and type “100” into the duct size.

5. Select [Designation of height]-[Coordinate] to draw figures according to the duct height.

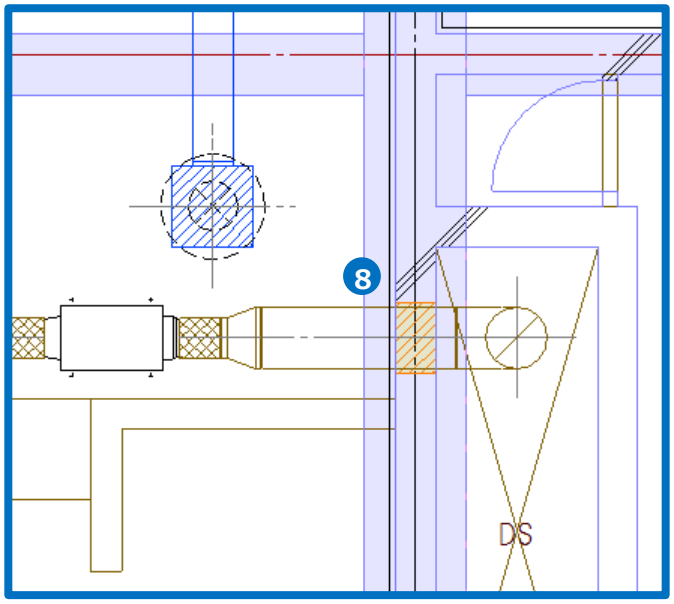
6. Select [Setting of the reference floor]-[Acquire from a pipe or duct].



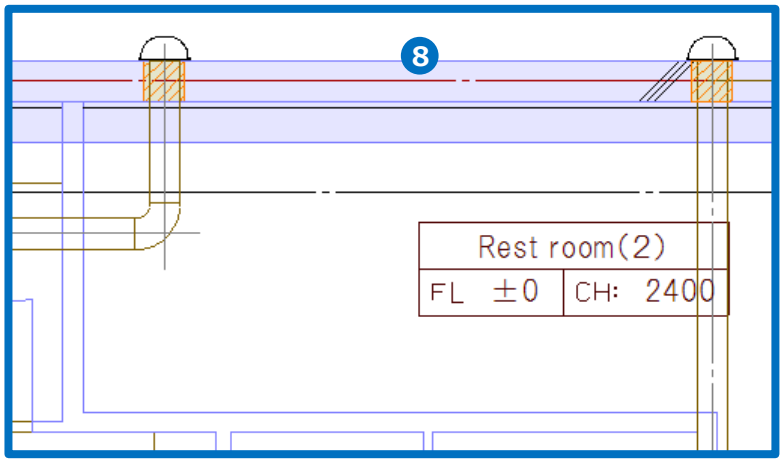
7 A guidance message appears saying:" Specify two positions of both ends of sleeve. Specifies first point for starting position of drawing sleeve". Left-click two intersection points between the duct and the skeleton.



8 Similarly, insert another sleeve into the clash points also with other walls.
→When the sleeve is drawn, the balloon on the clash point disappears.



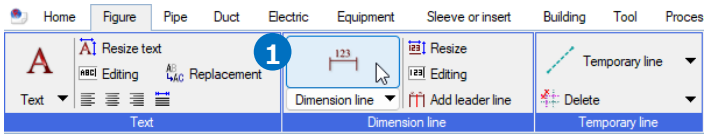
9 Left-click [Decision] on the context menu to complete the command.



6.Finish drawings

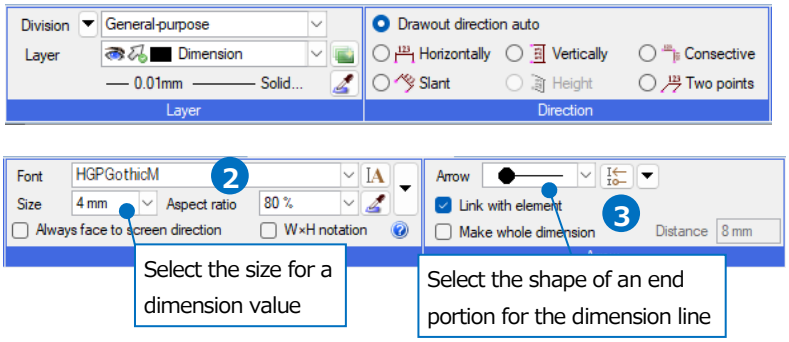
How to draw dimension lines

1. Left-click [Figure] tab- [Dimension line].

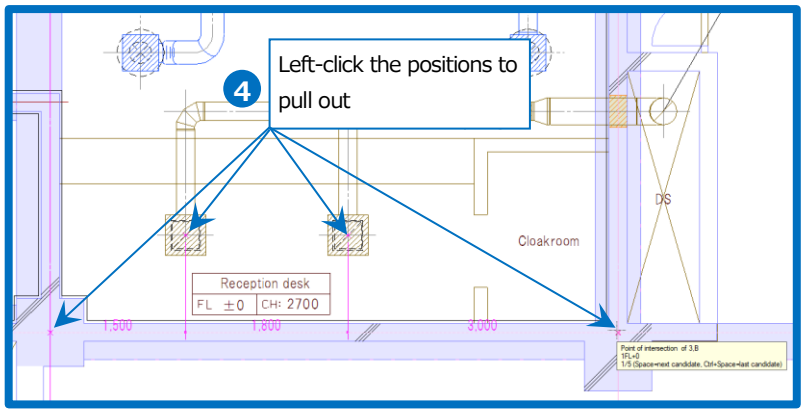


2. Select the size for a dimension value.

3. Select the shape for an end portion of the dimension line.



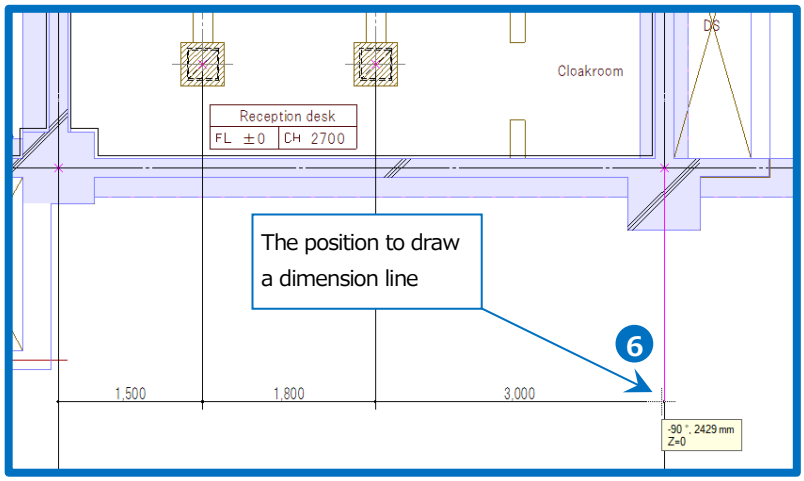
4. A guidance message appears saying:" Specify drawout position more than two points, and choose "decision (Enter)" of clicking right button". Left-click the position to lead out a dimension line.
(In this case, the center positions between the grid lines and the air terminals)



5. Left-click [Decision] on the context menu.

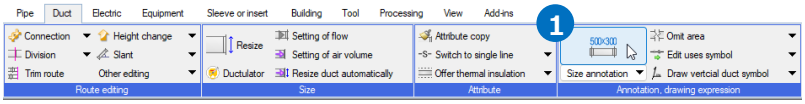
6. A guidance message appears saying:" Specify position of dimension or choose "decision (Enter)" of clicking right button". Left-click the position to draw the dimension line.

7. Left-click [Decision] on the context menu to complete the command.

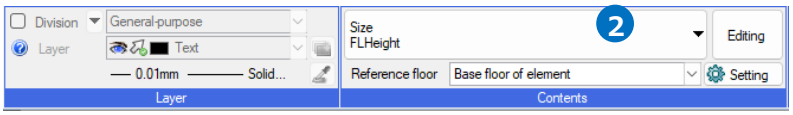


How to annotate the drawings with sizes

1 Left-click [Duct] tab- [Size annotation].

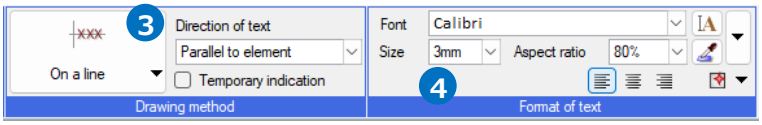


2 Select the descriptions that you want to annotate.

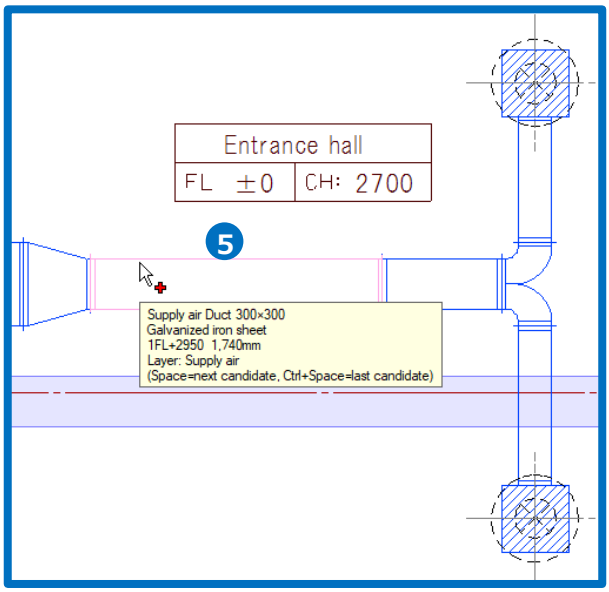


3 Select the way to draw.

4 Select the character size.

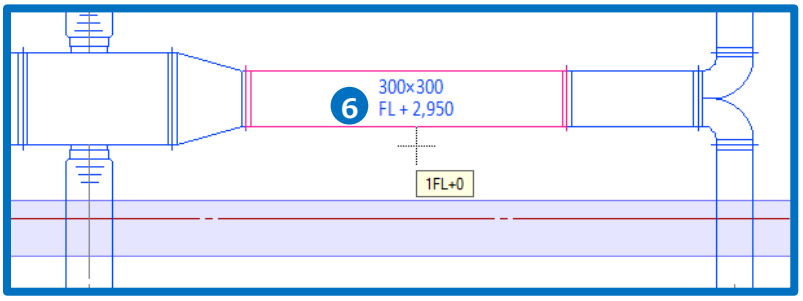


5 A guidance message appears saying “Choose Duct, Damper, Chamber, Box, An air diffuser you want to annotate with Text such as size”. Left-click the duct to annotate with the size.



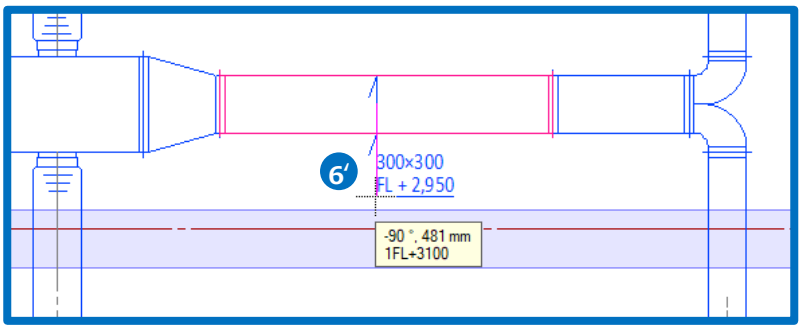
6 In the case of [Text with leader line (Specify angle)], [On a line], or [Any position], left-click the position where you place the size annotation text.

※[Center] places the text in the middle of the duct that you left-clicked.



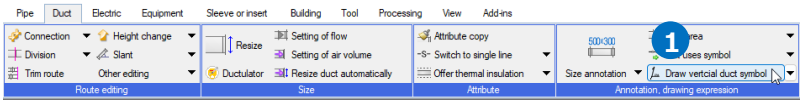
6′ In the case of [Text with leader line], left-click the position of the leader line and the position where you place the size annotation text.

7 Left-click [Decision] on the context menu to complete the command.

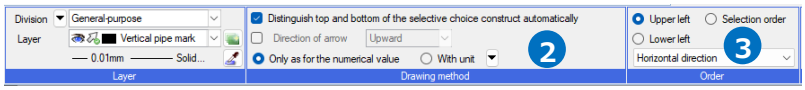


How to draw vertical duct symbols

1. Left-click [Duct] tab- [Draw vertical duct symbol].

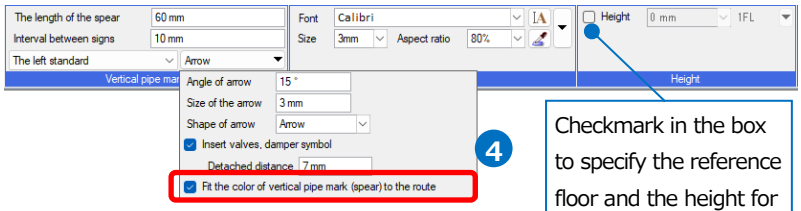


2. Specify the way to draw vertical duct symbols.
Checkmark “Distinguish top and bottom of the selective choice construct automatically” and select “Only as for the numerical value”.



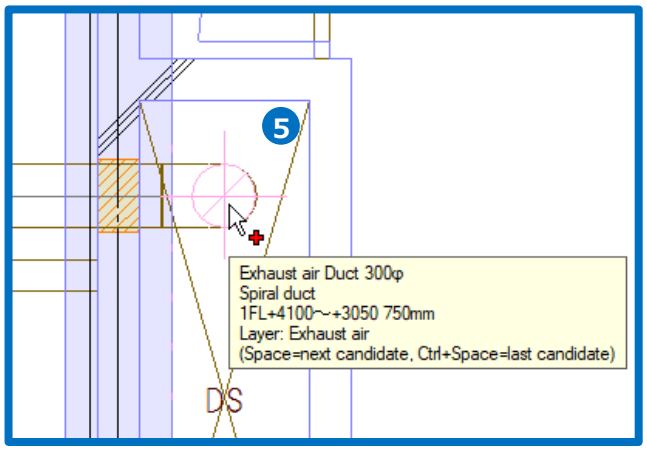
3. Select the order how to place vertical duct symbols. Select “Upper left”.

4. Left-click [Arrow] to checkmark “Fit the color of vertical pipe mark (spear) to the route”.



Checkmark in the box to specify the reference floor and the height for a vertical duct symbol to draw.

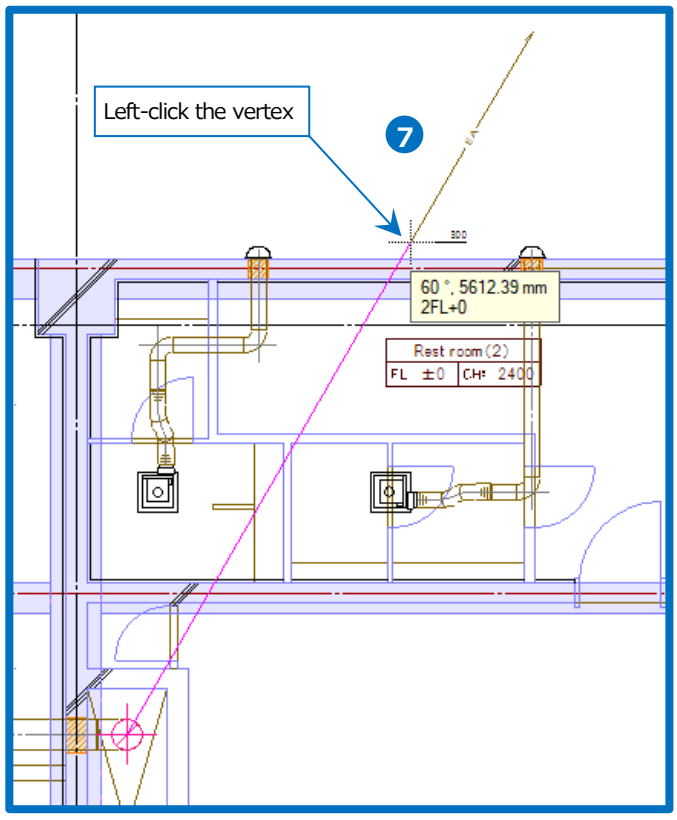
5. A guidance message appears saying:” Choose vertical pipe, vertical duct”. Choose the vertical duct in a duct shaft.



6. Left-click [Decision] on the context menu.

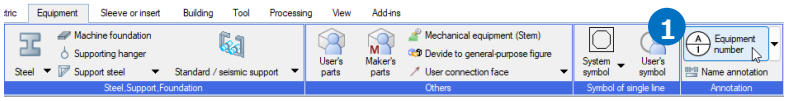
7. A guidance message appears saying:” Specify vertex of a leader line and select “Decision (Enter)” with right click”. Left-click the vertex of the leader line.

8. Left-click [Decision] on the context menu to complete the command.



How to annotate equipment numbers

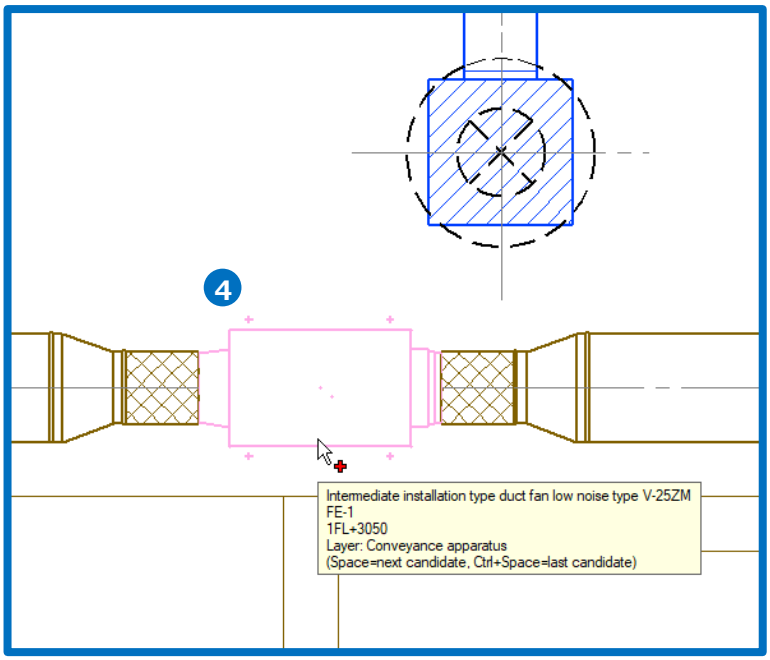
1. Left-click [Equipment] tab-[Equipment number].



2. Select the shape and the size for the equipment number.

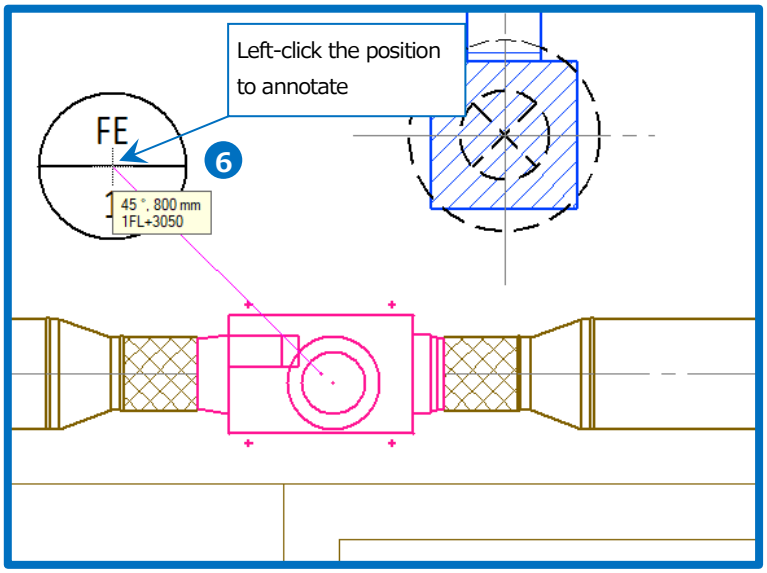
3. Select the number of stages for the equipment number.

4. A guidance message appears saying: ”Choose an apparatus”. Choose the equipment that you want to annotate with the equipment number.



5. Left-click [Decision] on the context menu.

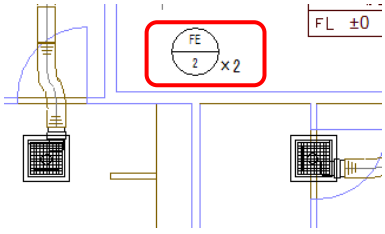
6. A guidance message appears saying: ”Specify position drawing a figure of the equipment number”. Left-click the position to paste the equipment number.



7. Left-click [Decision] on the context menu to complete the command.

Memo

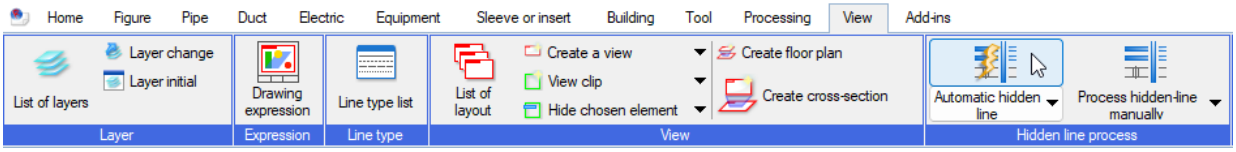
When you choose multiple pieces of equipment with the same equipment number, a numerical subscript appears.



How to process a hidden line

If you use [Automatic hidden line] command, Rebro processes hidden lines when drawing.

If you turn on [View] tab- [Automatic hidden line] after drawing, Rebro processes a hidden line at that moment. If you turn off [Automatic hidden line], the hidden line process is reset.



[Setting of automatic hidden line] can complete settings for the target elements of a hidden line process or line types of a hidden line part.