HVAC Tutorial

Insert Components

Version 2014

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SECTION 5

Insert Components

Objective

By the end of this session, you will be able to:

- Insert components such as filters, dampers, and hookup connections in a ductwork.

Before Starting this Procedure

- SP3D Overview
- SP3D Common Sessions
- Route a Duct
- Place Fittings

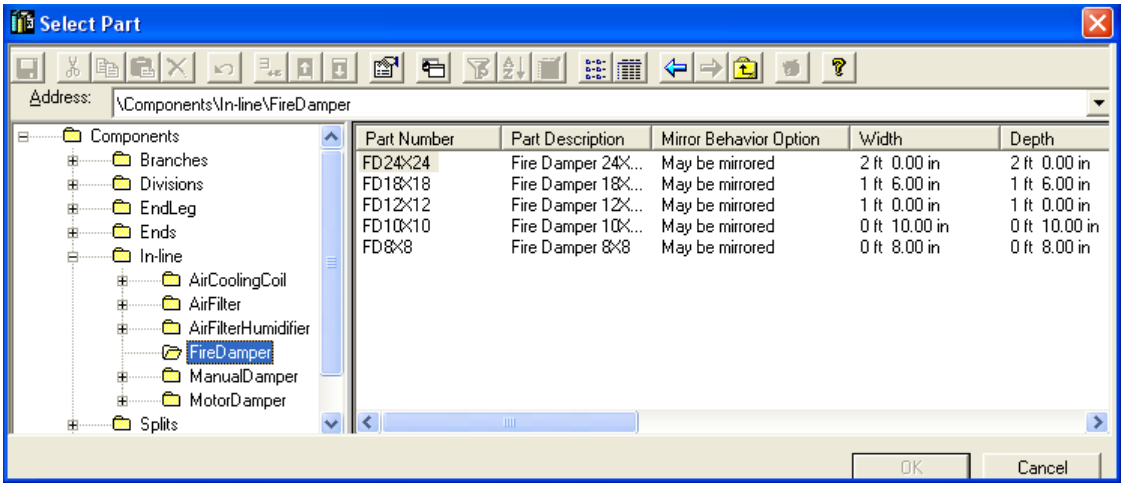
Overview

Components, such as hookup connections (branch ports) and dampers, provide branch or cut off breaks in a duct run. These components can be used as an integral unit to connect the duct sections on a duct system and help the distribution of exhaust gas, forced air, or heated air to and from a building.

You can use **Insert Surface Mount Component** and **Insert In-line Component** on the vertical toolbar to place components in a duct run. You can choose to place components in a duct run either while routing or after routing the duct run.

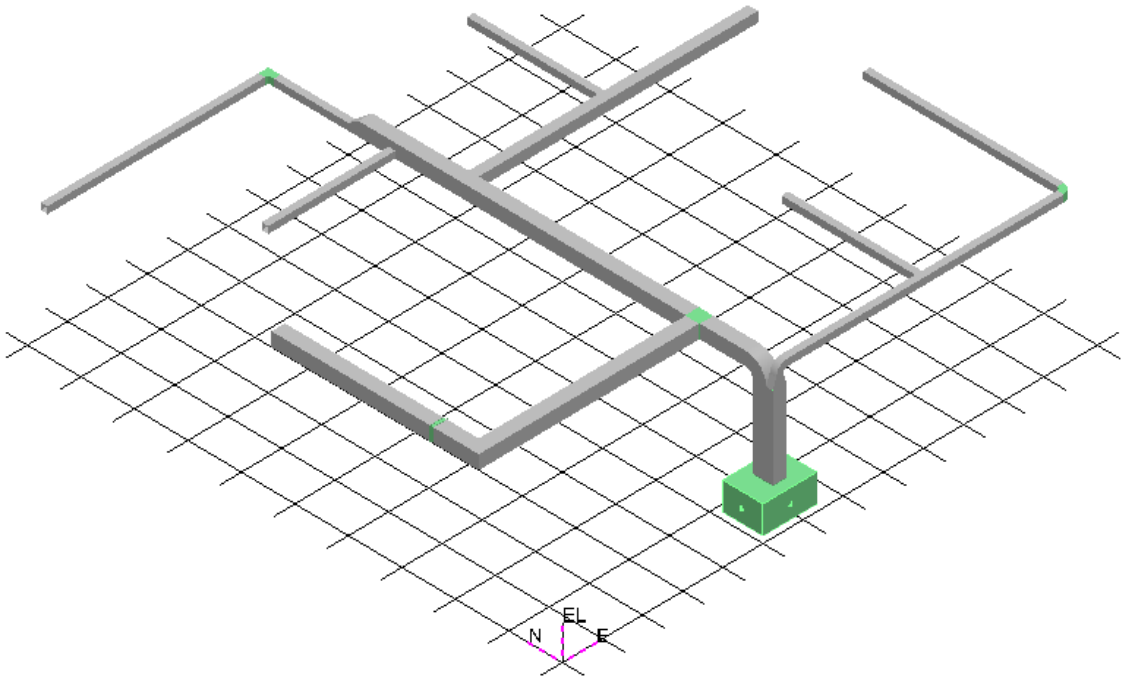
By placing components during the routing process, you can create a more accurate model of the final design. This helps in avoiding needless, extensive editing of the duct system later.

The components that you can choose for a particular model are listed in the **Select Part** dialog box.



Inserting Components in a Duct Run

Insert three branch ports and division duct runs in the ductwork of unit **U06**. Then, place a fire damper in this ductwork.

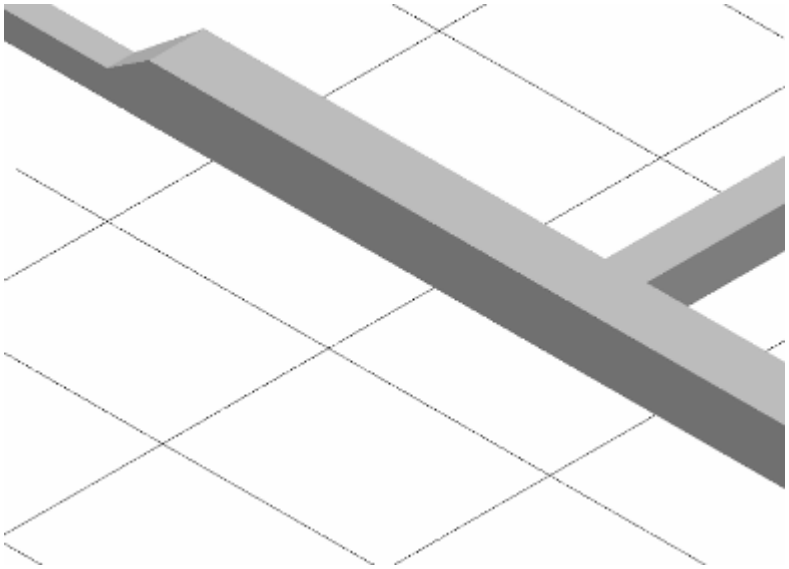


Before starting, make sure the objects are assigned to the appropriate permission group. Set the active permission group to **HVAC**.

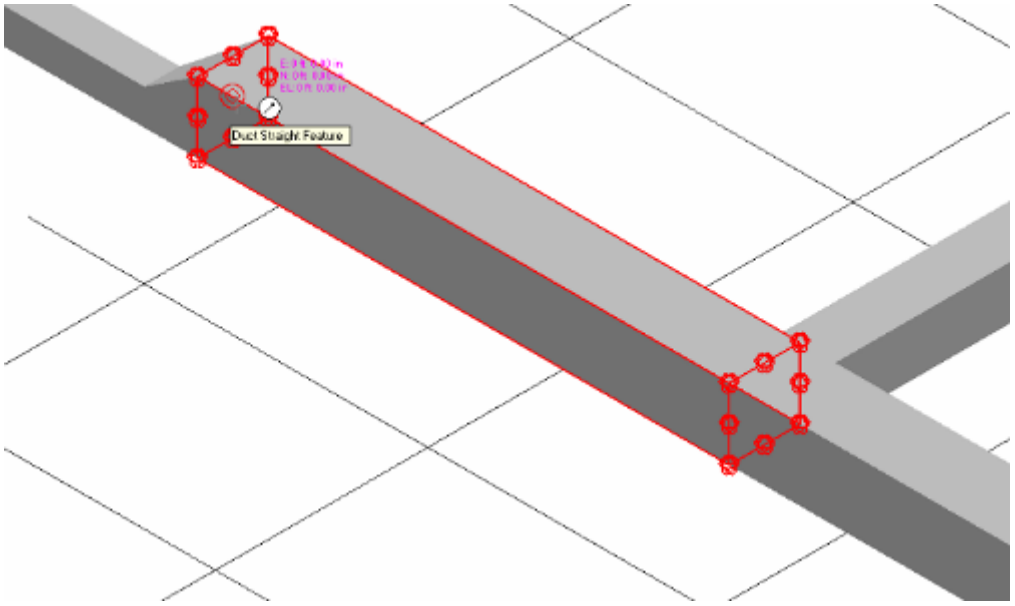
Place Branch Ports and Division Duct Runs

1. Define your workspace to include all objects located in unit **U06**.
2. If you are not in the HVAC environment, click **Tasks > HVAC**.

3. Click **Zoom Area** on the **Common** toolbar and zoom in to the area.

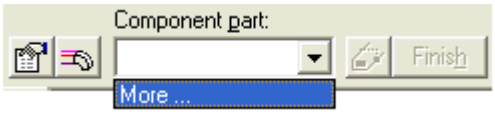


4. Click **PinPoint** on the **Common** toolbar to display the **PinPoint** ribbon.
5. Click **Reposition Target** on the **PinPoint** ribbon.
6. Click to select the starting point of the duct straight feature highlighted in the following figure. This is the reference point to place the first branch port.



7. Click **Insert Surface Mount Component** on the vertical toolbar to start placing the branch port.
8. Select the duct straight feature highlighted in the previous figure.

*The **Component part** list on the **Insert Surface Mount Component** ribbon opens.*

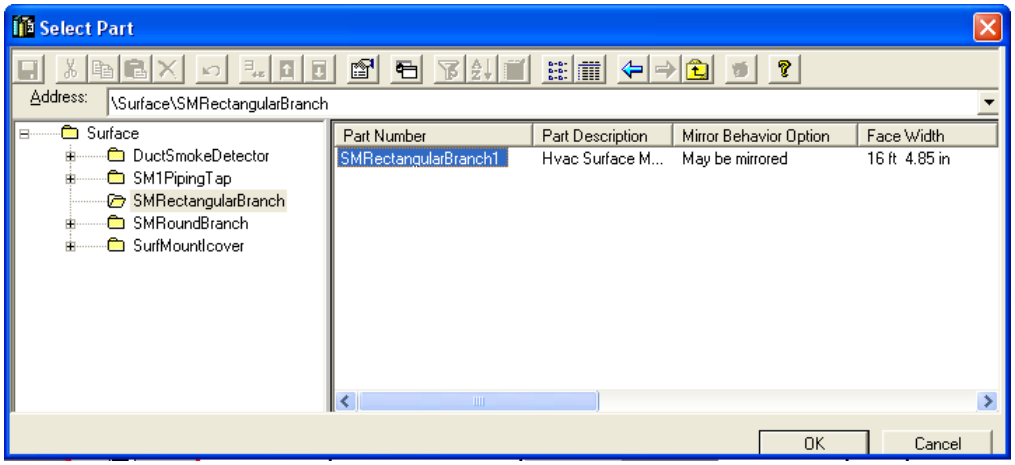


9. Select **More** from the **Component part** list.

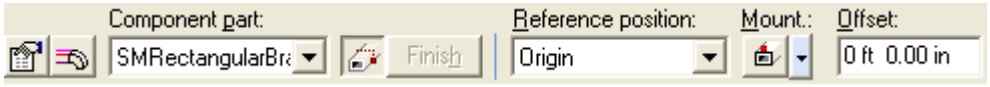
   *The **Select Part** dialog box displays a list of the available components that you can place in a duct run. These components and the component specifications are already defined in the Catalog.*

10. Navigate to **SMRectangularBranch**, and click **SMRectangularBranch1**. Then, click **OK** to close the **Select Part** dialog box.

    TIP You can preview the part you are going to place by clicking **Preview**.

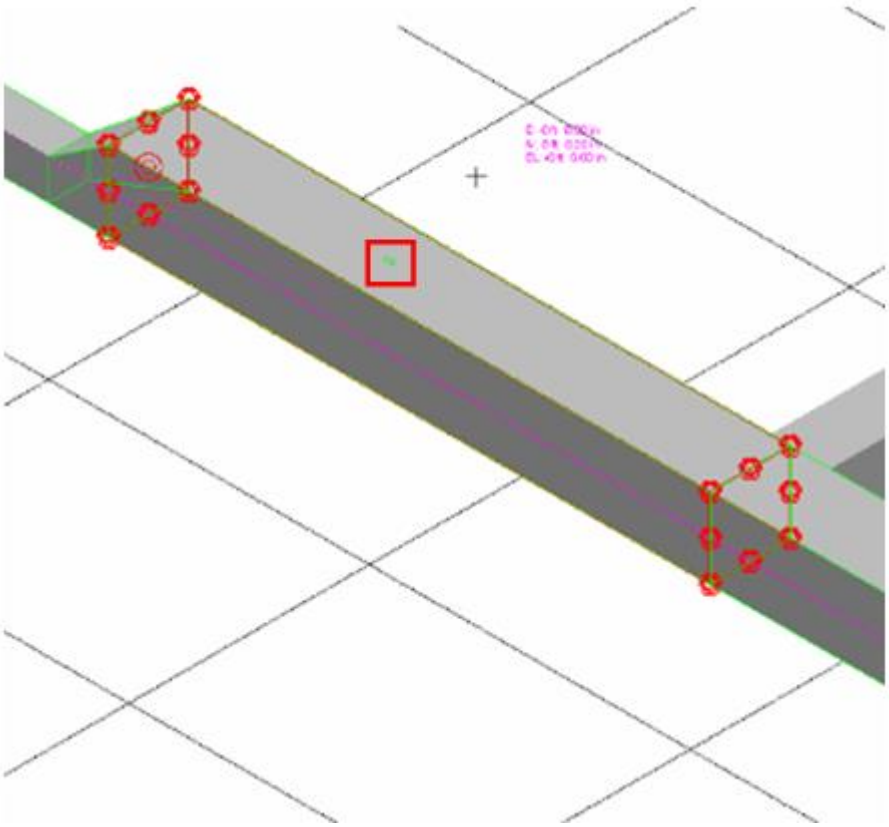


11. Click **Enter Insertion Point** on the **Insert Surface Mount Component** ribbon to define the exact point to place the branch port.



12. Type **-5 ft** in the **N** box on the **PinPoint** ribbon to lock the point where you want to place the branch port.

An outline of the branch port displays in your model.



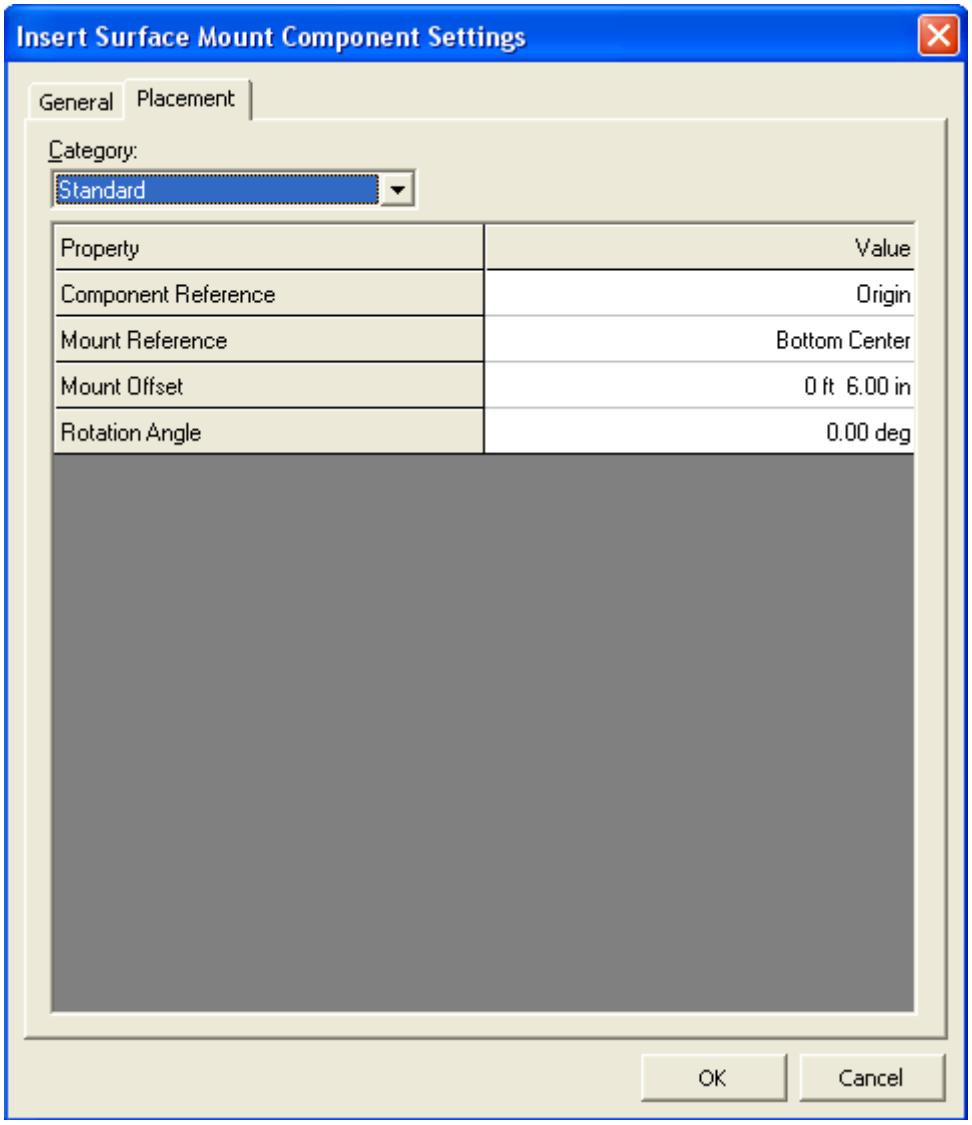
13. Click **Properties** on the **Insert Surface Mount Component** ribbon to define the branch port placement properties.

    *The **Insert Surface Mount Component Settings** dialog box displays.*

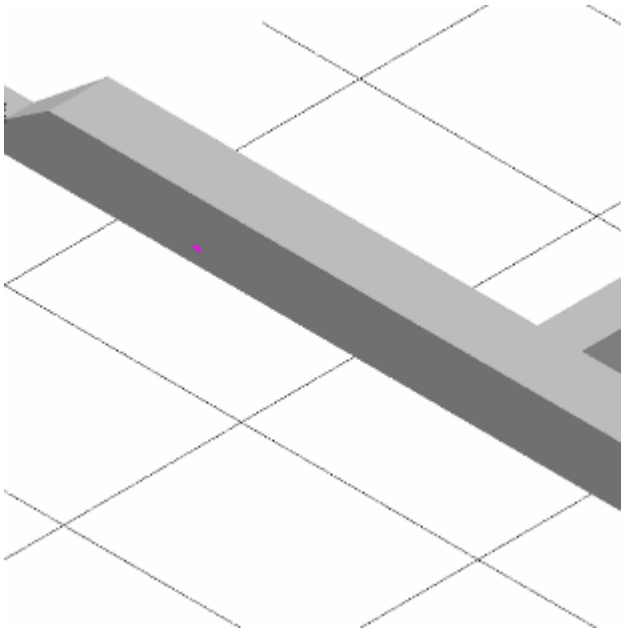
14. Click the **Placement** tab. Set the following parameters, and click **OK** to close the **Insert Surface Mount Component Settings** dialog box:

    - **Component Reference: Origin**
    - **Mount Reference: Bottom Center**
    - **Mount Offset: 0 ft 6 in**

- **Rotation Angle: 0 deg**



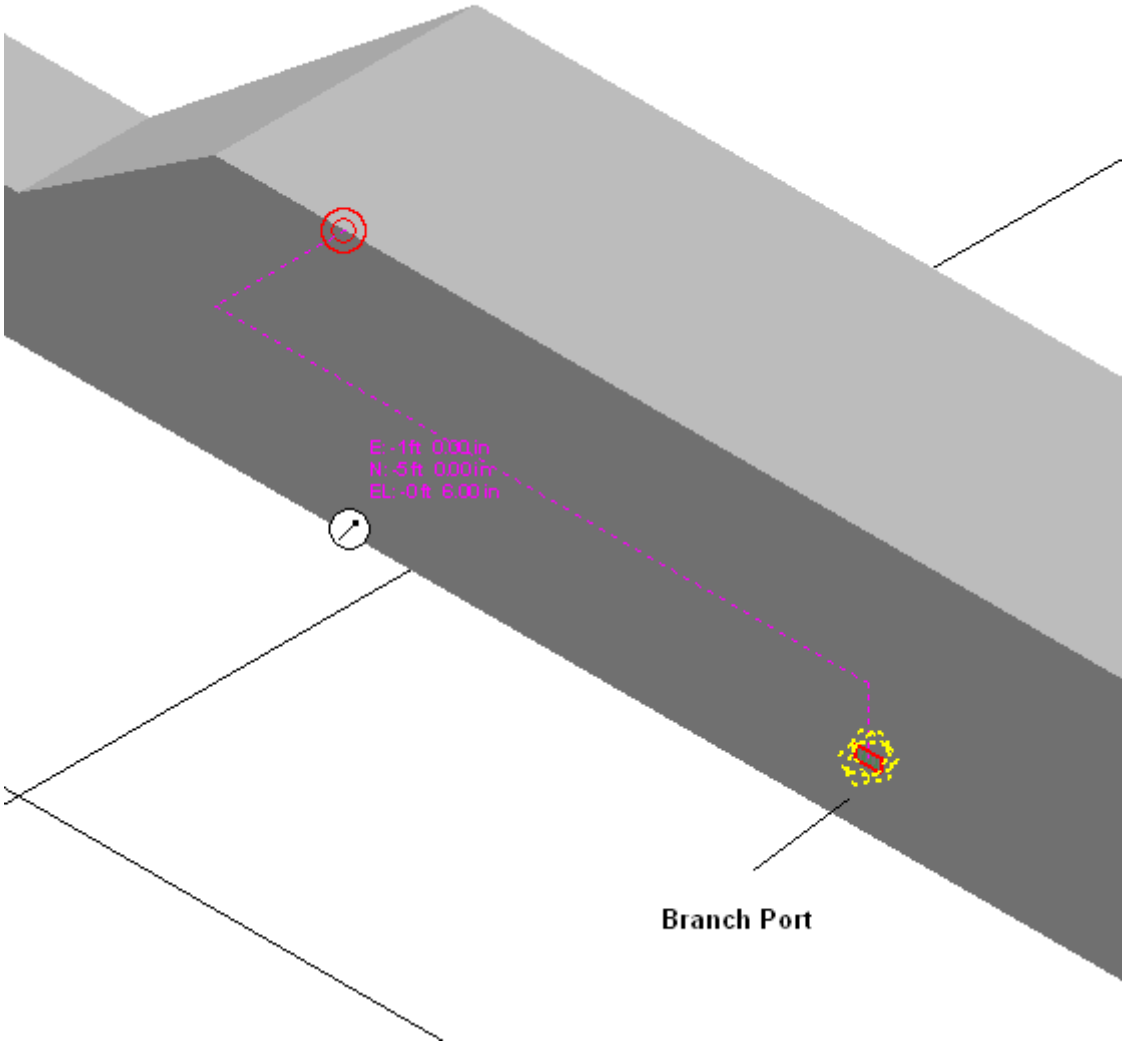
15. Click in the graphic area to accept the position of the branch port, and then click **Finish** on the **Insert Surface Mount Component** ribbon to place the branch port



TIP You can use the same steps to place an access door in your model.

16. Select **Duct Parts** in the **Locate Filter** list. This helps you locate and select the branch port you have just placed.

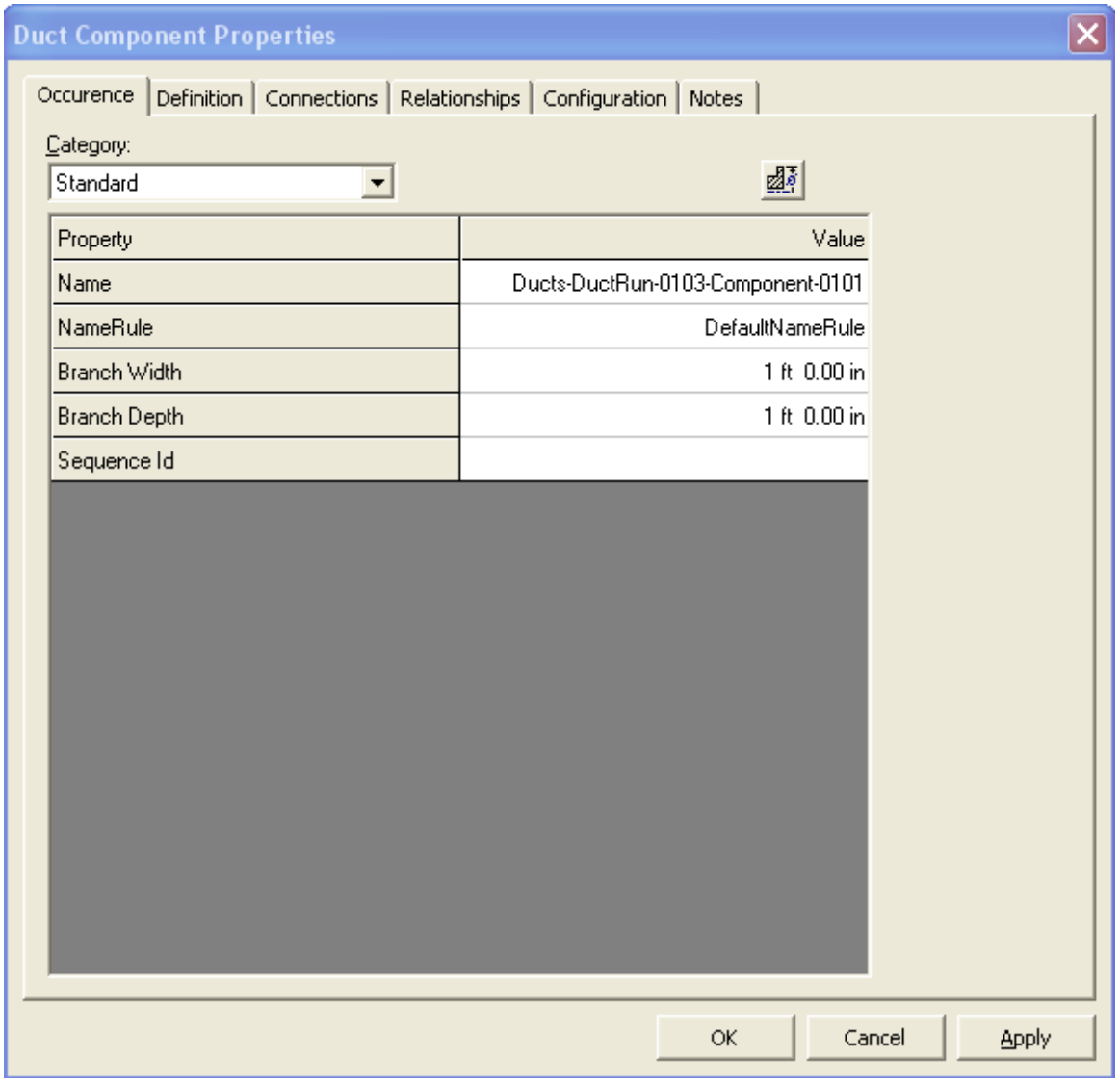
17. Click to select the branch port you just placed, and click **Edit > Properties** to change the properties of the branch port.



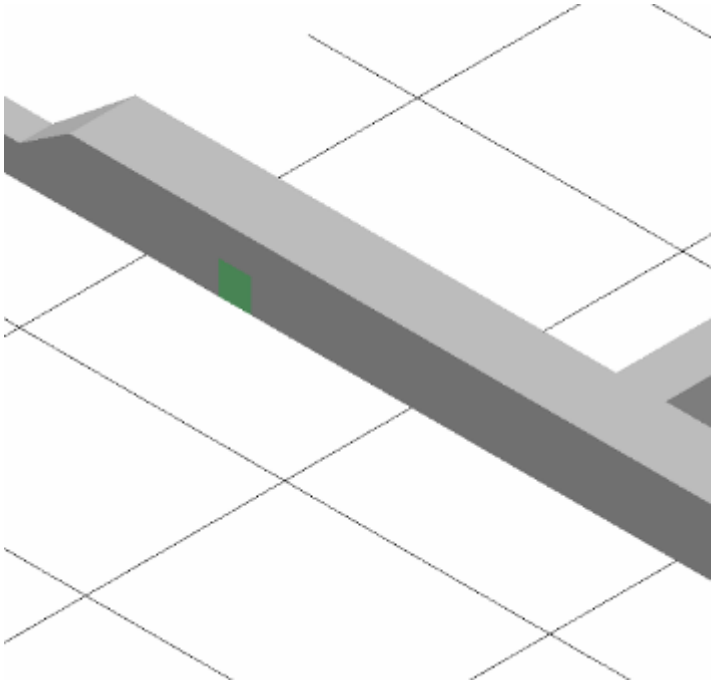
*The **Duct Component Properties** dialog box displays.*

18. Make the following modifications, and click **OK** to close the **Duct Component Properties** dialog box:
    - **Branch Width: 1 ft**

- **Branch Depth: 1 ft**



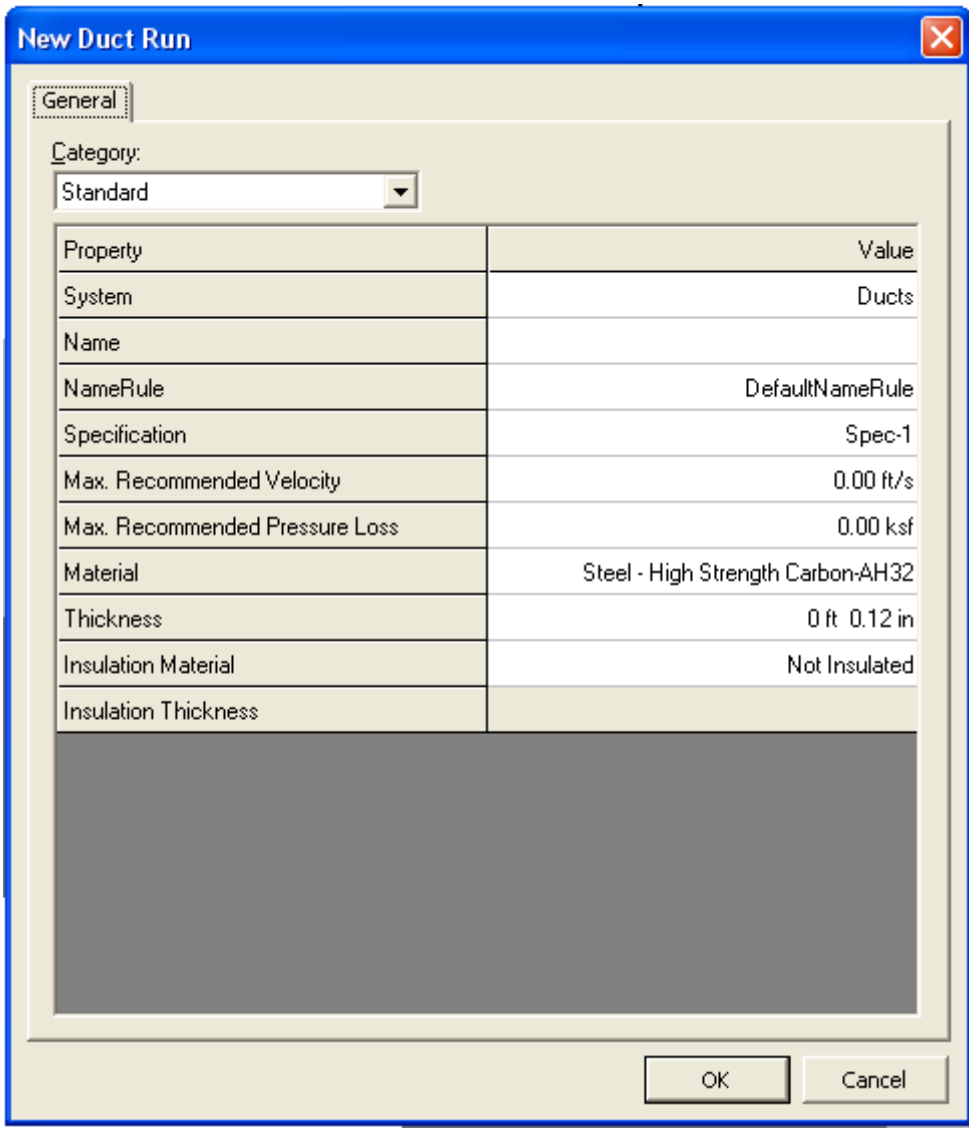
Your model now resembles the following figure:



19. Place a division duct run starting at the branch port you just placed. Click **Route Duct** on the vertical toolbar.
20. Click the branch port you just placed.

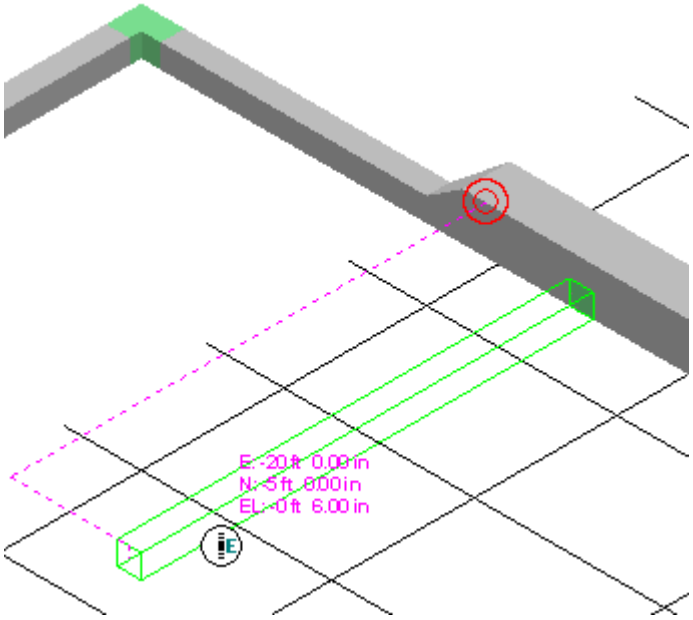
    *The **New Duct Run** dialog box displays.*

21. Click **OK** to accept the default properties and close the **New Duct Run** dialog box.

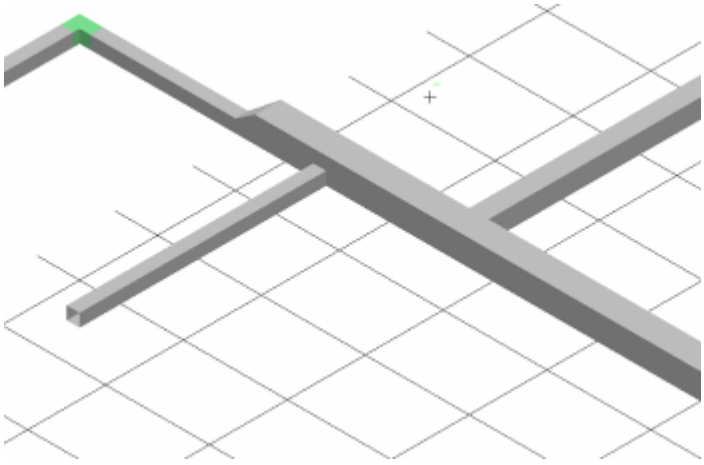


An outline of a duct displays in your model.

22. Type **-20 ft** in the **E** box on the **PinPoint** ribbon to place the duct at a distance of 20 ft from the starting point in the West direction.



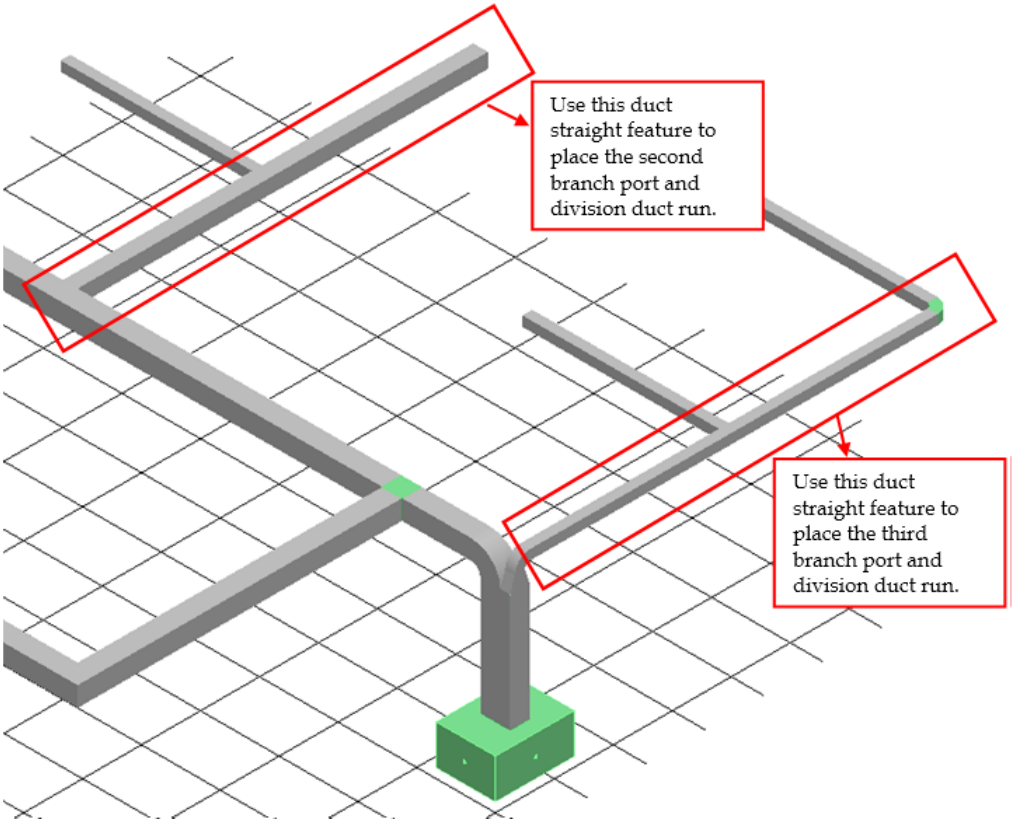
23. Click in the graphic view to place the duct.



24. Use the same steps and the following specifications to place two more branch ports and division duct runs on the main duct line.

Second branch port and division duct	**Specifications**
Branch port	In the **Insert Surface Mount Component Settings** dialog box, set the following placement parameters: ▪ Component Reference: Origin ▪ Mount Reference: Bottom Center

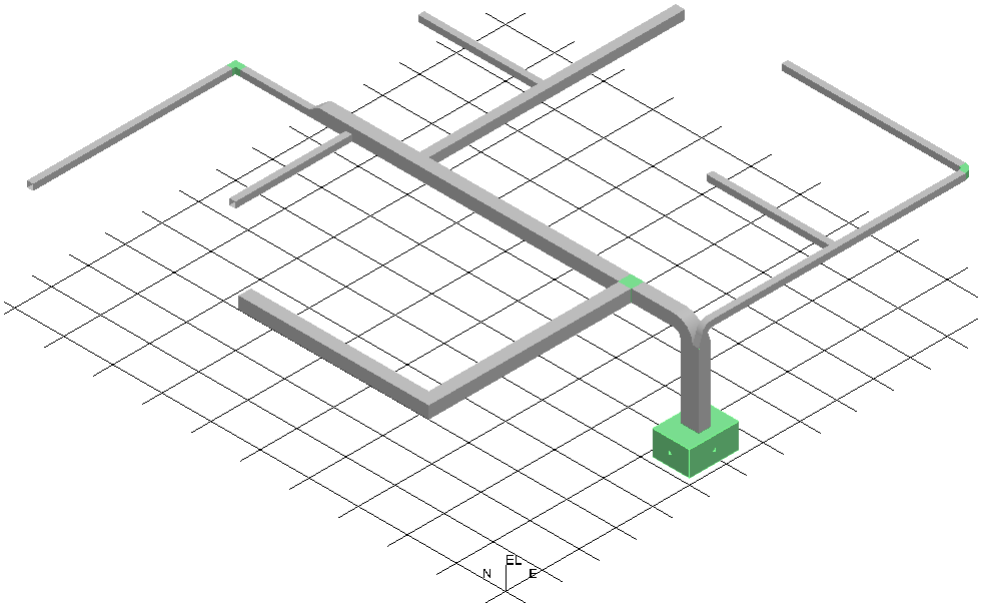
	▪ Mount Offset: 0 ft 3 in ▪ Rotation Angle: 0 deg In the **Duct Component Properties** dialog box, set the following dimension parameters: ▪ Branch Width: 1 ft ▪ Branch Depth: 1 ft 0 in **Placement point**: Midpoint of the duct straight feature
Division duct	**Duct Run**: Last used values **Length**: 20 ft
Third branch port and division duct	**Specifications**
Branch port	In the **Insert Surface Mount Component Settings** dialog box, set the following placement parameters: ▪ Component Reference: Origin ▪ Mount Reference: Top Center ▪ Mount Offset: 0 ft 0 in ▪ Rotation Angle: 0 deg In the **Duct Component Properties** dialog box, set the following dimension parameters: ▪ Branch Width: 10 in ▪ Branch Depth: 10 in **Placement point**: Midpoint of the duct straight feature
Division duct	**Duct Run:** Last used values **Length**: 20 ft



TIPS

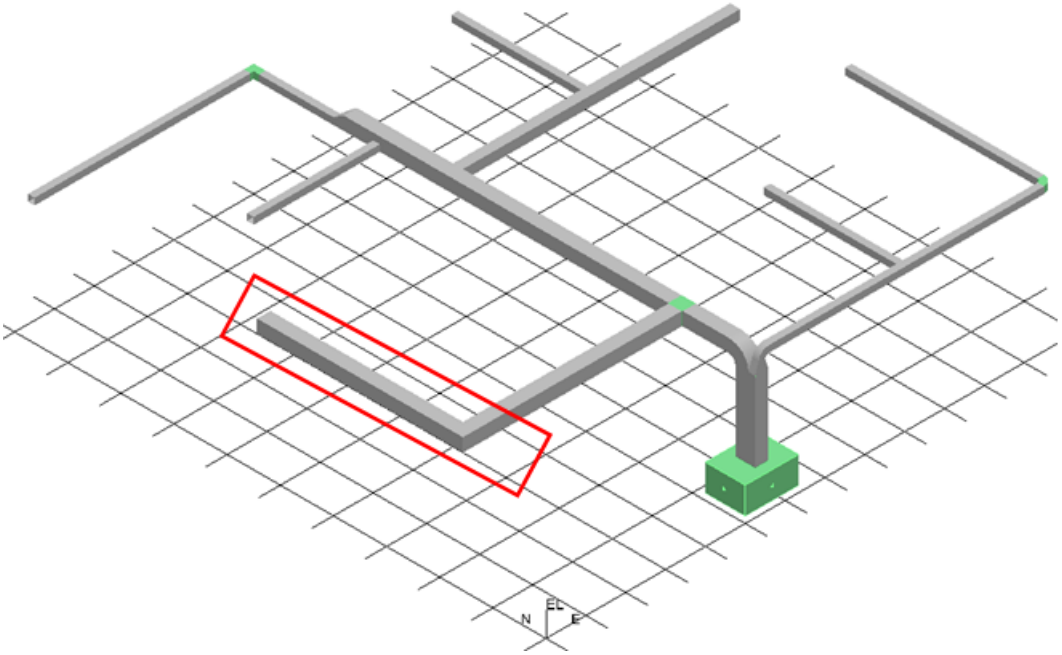
- Use SmartSketch to locate the midpoint of the duct straight feature and place the branch port.
- Use the **Length** list on the **Duct Run** ribbon to define the length of the division duct run. In this case, type **20 ft** in the **Length** box on the **Duct Run** ribbon to lock the length of the duct.

Your model should look like the following figure after you place all three branch ports and division ducts:



Place a Damper

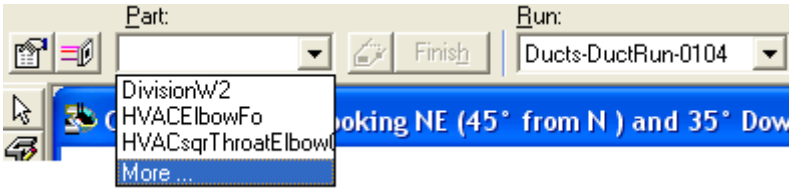
Place a fire damper on the duct straight feature.



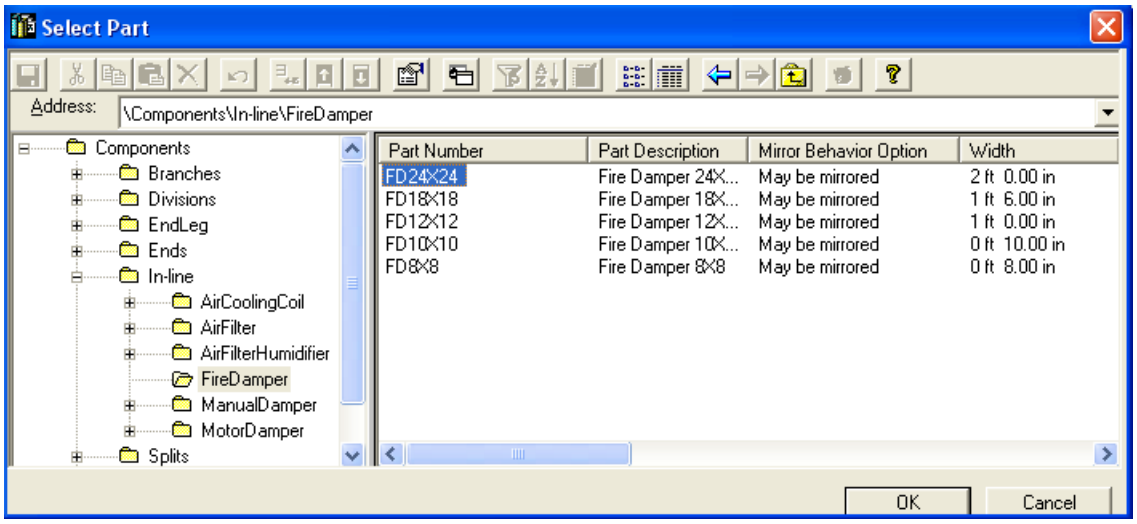
Dampers are placed inside the duct runs. Therefore, you need to use **Insert In-line Component** on the vertical toolbar to place dampers in duct runs.

1. Click **Reposition Target** on the **PinPoint** ribbon. Place the target at the starting point of the duct straight feature highlighted in the previous figure as the reference point to place the damper.
2. Click **Insert In-line Component** on the vertical toolbar to start placing the damper.
3. Click the duct straight feature highlighted in the previous figure.

   *The **Part** list on the **Insert In-line Component** ribbon opens.*
4. Select **More** from the **Part** list to select the component you want to place.



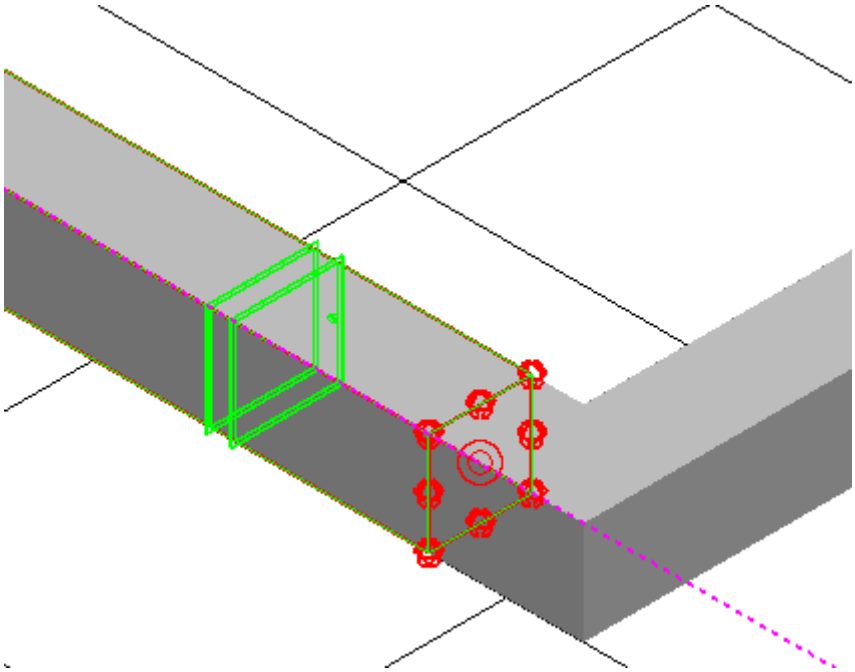
   *The **Select Part** dialog box displays.*
5. Navigate to the **FireDamper** node under **\Components\In-line\FireDamper**, and click **FD24X24**.



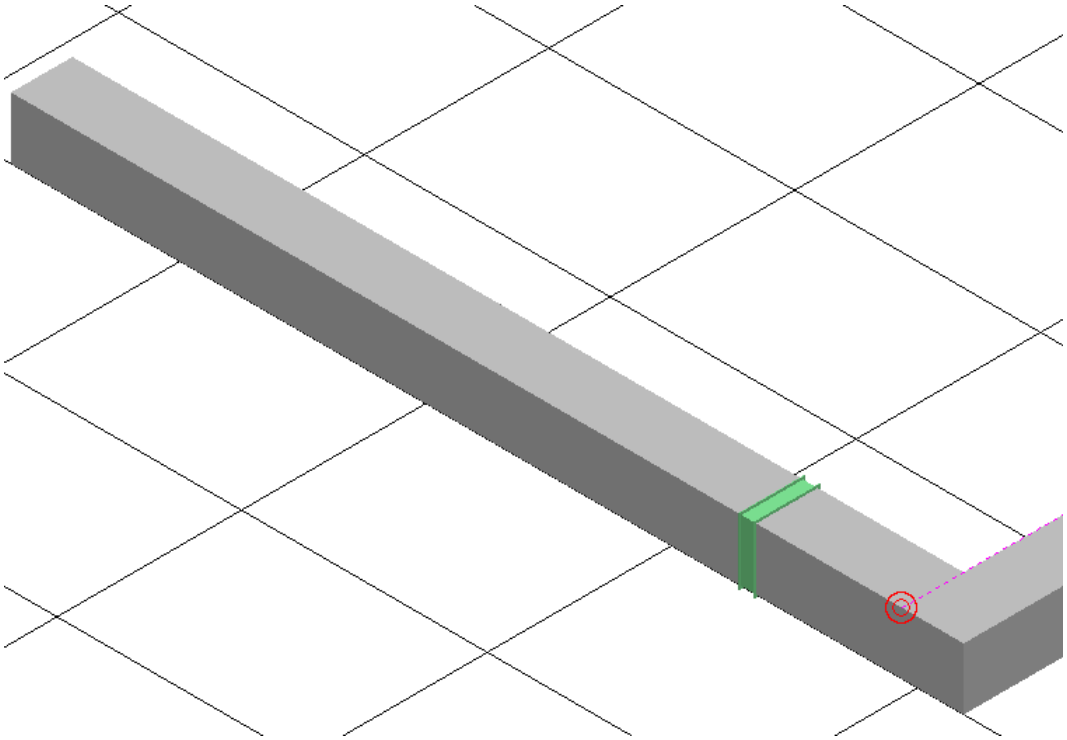
6. Click **OK** to close the **Select Part** dialog box.

   An outline of the damper displays in your model.
7. **Enter Insertion Point** on the **Insert In-line Component** ribbon to define the exact point to place the damper.
8. Type **4 ft** in the **N** box of the **PinPoint** ribbon.

Smart 3D locks the distance of the damper at 4 ft from the starting point of the duct straight feature.



9. Click in the graphic view, and then click **Finish** on the **Insert In-line Component** ribbon to place the damper.



For more information on inserting HVAC components, see *Adding Features to a Duct Run: An Overview* in the **HVACUsersGuide.pdf** file.