28

Modeling Windows and Doors

The AEC Modeler tool offers you simplified creation of 3D door and window modeling. You can model doors and windows in plan view or in elevation view.

In this chapter:

- Modeling windows
- Modeling doors

Modeling Windows

The Windows menu in AEC_MODL serves as the master level for accessing all three-dimensional window component groups. You can access window data, load and save previously designed windows, and select or enter window components and data. All windows open outward, away from you.

Cutting Walls

CutWall is a toggle used to automatically create voids in slabs or polygons for windows. It is available in the Windows menu when InPlan is toggled on. When CutWall is toggled on, a LyrSrch toggle also becomes available.

Window Files

The WndwFile option is a convenient way to expand on initial template designs, tailoring the product to your needs. The files then become additional resources for quick recall. The WndwFile menu options include:

LoadWind	Loads window settings from saved files; select or type a window filename and press (Enter); the window appears with all previously saved settings
SaveWind	Saves window settings to a file; type the filename and press (Enter)
DelWind	Deletes saved window files from the hard disk. To help prevent accidental deletions, the system prompts you for the name of the file you want to delete. Select the file you want to delete and press (Enter). Choose Yes to delete the window file; otherwise choose No.
RenWind	Renames existing files; select a file to rename, type a new filename of up to eight characters long, and press (Enter)
CopyWind	Copies the contents of an existing window file to a new file; select the file to copy from and press (Enter), then type the file to copy to and press (Enter)
Form	Displays a window data form. To save Form settings, press (Esc)

Window Forms

With the WndwForm option, you can view the settings for the current window. The design form offers a comprehensive view of the window parameters on one screen. These window parameters are divided into ten major groups.

Saving Windows as Symbols

Use the Template option to create and save windows as symbols, developing a library of window symbols that you can add quickly to new projects. See the "Symbols, Images, and Objects" chapter for more information on templates and symbols.

This Template option is a shortcut to the Template menu.

Window Height and Wall Thickness

You can set the head height and sill height of a window with the Head Hgt and Sill Hgt options, as well as use the Wall Thk option to change the wall thickness. The Head Hgt and Sill Hgt options only appear when In Plan is toggled on, while Wall Thk is only available when In Elev is toggled on. When you choose Head Hgt, sill Hgt, or Wall Thk, a list of values is displayed. Choose or type a new value and press (Enter). The Head Hgt and Sill Hgt settings are relative to Z-base.

Window Types

The UnitType menu displays available window types. Hinged window types open outward, away from the designer. Sliding windows, when viewed from the interior design position, have a fixed sash on the right and a movable sash on the left.

Choose from the following window types:

Fixed	Windows with fixed panes of glass
Casement	Casement windows
Awning	Awning windows, hinged at the top
Hopper	Hopper windows, hinged at the bottom
DblHung	Double-hung windows
Sliding	Sliding windows
% open	Determines the amount that the window appears open in the model, with 0% being fully closed and 100% being fully open

Window Casings

The Casing option controls the casing or exterior window group. You can set any of the following window casing options:

AtHead	Models casing elements at the window header
Width	Sets the casing width at the window header, the window jamb, and the sill across the window plane; choose the Width option under AtHead, AtJamb, or AtSill, and then choose or type a width and press (Enter)
Thicknss	Sets the casing thickness at the window header, the window jamb, and below the sill; choose or type a thickness and press (Enter)
Extensn	Sets the extension length past the outside edge of the vertical casing components (jamb casing) and past the outside edge of the vertical jamb casing component to the sillChoose or type an extension length and press (Enter). For any extension, the measurement is always 0 when the outside edge of the vertical casing and the extension end are aligned. Positive numbers indicate an extension; negative numbers indicate a setback.
AtJamb	Models the casing element at the jamb (Width and Thicknss appear again below AtJamb)
AtSill	Models the casing elements below the sill. (Width, Thicknss and Extensn appear again below AtSill)

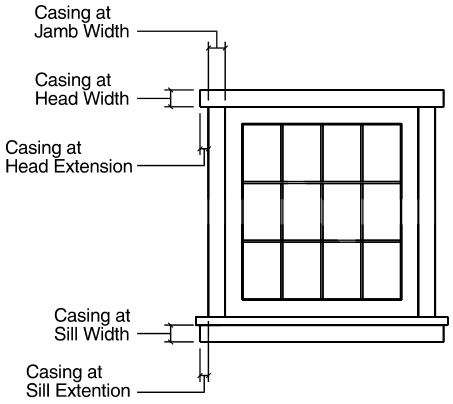

Figure 28.1: Window casing

Window Trim

Use Trim to control the trim or interior window component group. You can vary elements, such as the trim apron, according to aesthetic preference or design requirements:

AtHead	Models trim elements at the window header
Width	Sets the trim width at the window jamb, across the window jamb; choose or type a value and press (Enter)
Thicknss	Sets the trim thickness at the window jamb and the window sill; choose or type a value and press (Enter)
Extensn	Sets the trim extension length past the outside edge of the vertical jamb trim components (jamb casing) or past the outside edge of the vertical jamb casing component of the sill; choose or type a value and press (Enter). For any extension, the measurement is always 0 when the outside edge of the vertical casing and the extension end are aligned. Positive numbers indicate an extension; negative numbers indicate a setback.
AtJamb	Models trim elements at the jamb (Width and Thicknss appear again below AtJamb)
AtSill	Models trim elements at the sill (Width, Thicknss and Extensn appear again below AtSill)

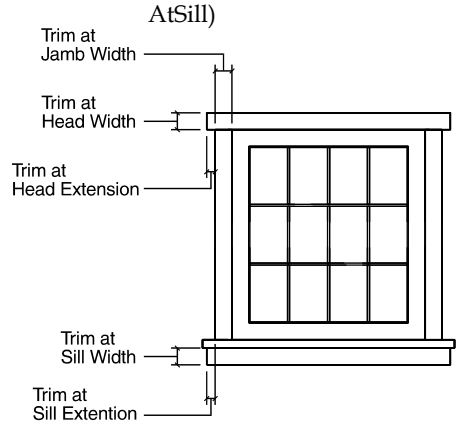

Figure 28.2: Window trim

Window Headers

The Head option lets you define the window header, or top of the frame. This area can become exceedingly detailed in a model rendering, with the inclusion of its structural and aesthetic elements in one master group. You can individually set the following components to provide a clearer view:

Do Head	Models the header component
HeadWdth	Sets the header width. Measure through the wall, from the inner surface of the wall, outward. This option appears when WalWdth is off. When you choose HeadWdth, a list of header width values appears. Choose or type a header width and press (Enter).
Head Thk	Sets the window header thickness. Measure from top, the wall opening, to bottom. When you choose Head Thk, a list of header thickness values appears. Choose or type a header thickness and press (Enter).
WalWdth	Calculates the header width equal to the thickness of the wall. When WalWdth is off, the width of the head is controlled by the header width setting.

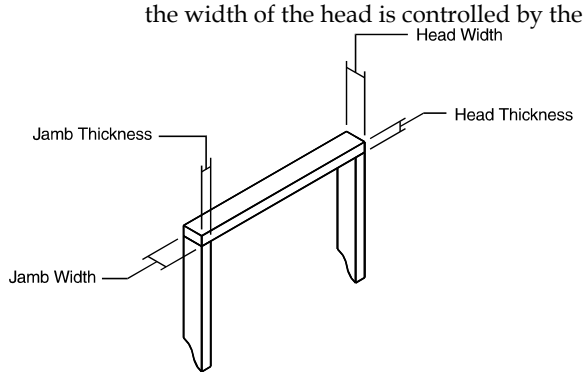

Figure 28.3: Window header

Window Jambs

Use the following Jamb options to define the window jamb:

Do Jamb	Models jamb components
JambWdth	Sets the jamb width. Measure through the wall from the inner surface of the wall, outward. This option appears when WalWdth is off. Choose JambWdth, and then choose or type a jamb width and press (Enter).
Jamb Thk	Sets the jamb thickness. Measure from the void edge, or wall opening, inward toward the window center along the wall plane. Choose Jamb Thk, and then choose or type a jamb thickness and press (Enter).
WalWdth	Sets the wall width. When this toggle is off, the width of the jamb is controlled by JambWdth.

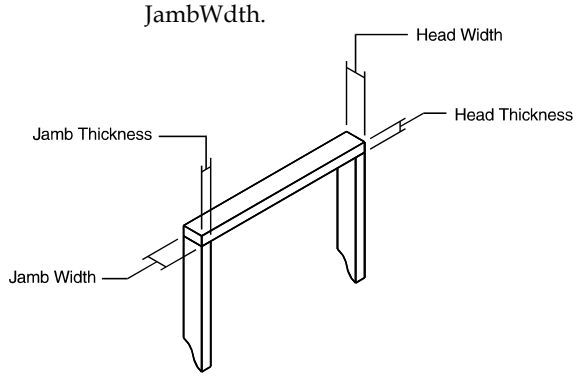

Figure 28.4: Window jamb

Window Sills

Sill lets you define the window sill. The sill is not broken down into stool (interior) and finish (exterior) sill components. Also, the sill horns are proportionate and do not carry different lengths on the interior and exterior extensions.

Do Sill	Models the sill

Thicknss	Sets the sill thickness from the bottom of the window opening, upward; choose Thicknss, and then choose or type a sill thickness and press (Enter)
In Extn	Sets the inside sill extension away from the plane of the wall toward the center of the room; choose In Extn, and then choose or type an inside sill thickness and press (Enter)
Out Extn	Sets the outside sill extension away from the plane of the wall outward; choose Out Extn, and then choose or type an outside sill extension and press (Enter)
SideExtn	Sets the inside and outside (sill horn) extensions from the sides of the window opening, outward, along the plane of the wall; choose SideExtn, and then choose or type a side extension and press (Enter)

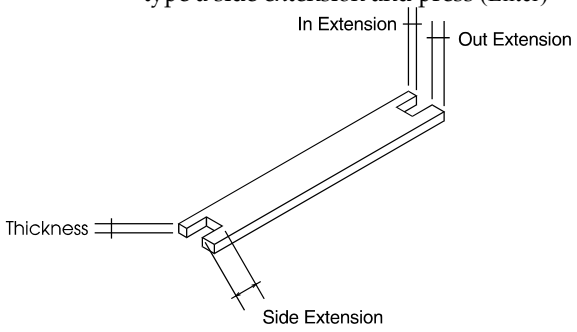

Figure 28.5: Window sill

Window Sashes

Sash defines the window sash assembly. The sash is the frame that holds the muntins and glass; without it, the muntins and glass would be suspended in 3D space. Single pane or double thermopane windows, while not having muntins, must have Centred toggled on to function within the confines of the wall plane.

Do Sash	Models the sash components; when Do Sash is off, muntins and glass are not added to the drawing even if DoMuntn and DoGlass are on
SashWdth	Sets the sash width for all components (top and bottom rails and stiles); choose SashWdth, and then choose or type a sash width and press (Enter)
SashThk	Sets the sash thickness for all sash components; choose SashThk, and then choose or type a sash thickness and press (Enter)
Centred	Centers a sash within the window frame. Centred and Offset are mutually exclusive; only one can be toggled on at any given time
Offset	Determines the sash offset placement from the inside of the window jamb. The distance is from the interior surface of the wall to the interior surface of the sash; choose Offset, and then choose or type a sash offset and press (Enter)

Muntins

Use Muntins to define and place window pane dividers within the sash assemblies. You can also set the number of window panes and their placement.

DoMuntn	Models muntins, or window pane dividers
MuntWdth	Sets the muntin width along the plane of the wall; the width applies equally to vertical and horizontal muntins; choose MuntWdth, and then choose or type a muntin width and press (Enter)
MuntThk	Sets the muntin thickness, which is measured through the window; choose MuntThk, and then choose or type a muntin thickness and press (Enter)
PaneHorz	Sets the number of panes per window horizontally; choose PaneHorz, and then choose or type a value and press (Enter). PaneHorz and PaneVert are also available in the Glass menu. They are the same settings, so when you change either option in the Muntins menu, the new values are also displayed for the PaneHorz and PaneVert options in the Glass menu.
PaneVert	Sets the number of panes per window vertically; choose PaneVert, and then choose or type a value and press (Enter)

Centred	Centers a muntin within the sash; Centred and Offset are mutually exclusive; only one can be toggled on at any given time
Offset	Sets the offset placement of the muntins from the interior surface of the sash to the interior surface of the muntins; choose Offset, and then choose or type a muntin offset and press (Enter); Centred and Offset are mutually exclusive; only one can be toggled on at any given time
FullEdg	Sets a full-edge muntin at the window sash
HalfEdg	Sets a half-edge muntin at the window
No Edg	Sets a no-edge muntin at the window sash
Slabs	Constructs muntins as slabs; when Slabs is toggled off, muntins are constructed as 3D lines

Glass

Use Glass to define the number of glass panes horizontally and vertically. It also sets the glass thickness for the window panes in the model. Since glass is represented as a slab or solid object, it is often left out of a model so that a hidden line removal can be performed as if the glass were transparent.

DoGlass	Models window glass in the window panes
GlassThk	Sets the glass thickness; choose GlassThk, and then choose or type a glass thickness and press (Enter)
PaneHorz	Sets the number of horizontal panes per window; choose PaneHorz, and then choose or type a value and press (Enter). PaneHorz and PaneVert are also available in the Muntins menu. They are the same settings, so when you change either option in the Glass menu, the new values are also displayed for the PaneHorz and PaneVert options in the Muntins menu.
PaneVert	Sets the number of vertical panes per window; choose PaneVert, and then choose or type a value and press (Enter)
Centred	Centers a window pane glass in the muntin, through the window; Centred and Offset are mutually exclusive; only one can be toggled on at any given time
Offset	Sets the offset of the glass panes from the interior surface of the muntin to the interior surface of the glass; choose Offset, and then choose or type a glass pane offset and press (Enter); Centred and Offset are mutually exclusive; only one can be toggled on at any given time

Modeling Doors

The Doors menu in the AEC_Modl macro lets you access door data, load or save previously designed doors, and select or enter door components and data.

Cutting Walls

CutWall is a toggle used to automatically create voids in slabs or polygons for doors. It is available in the menu when InPlan is toggled on. When CutWall is toggled on, a LyrSrch toggle also becomes available.

Door File

Use the DoorFile option to load, save, delete, rename, or copy door files. Choose from the following DoorFile options:

LoadDoor	Loads door parameters from saved files; choose or type a door filename and press (Enter)
SaveDoor	Saves door parameters to a file; type a filename and press (Enter)
Del Door	Deletes saved door files from the hard disk. To help prevent accidental deletions, the system prompts for the filename requested. To delete a door file, select a filename and press (Enter). Choose Yes to delete the file; otherwise choose No.

Ren Door	Renames existing files; select a file to rename, type a filename of up to eight characters long, and press (Enter)
CopyDoor	Copies the contents of an existing door file to a new file; type the name of the file to copy from and press (Enter), then type the filename to copy to and press (Enter)
Form	Displays a door data form

All doors are created to open inward, toward you.

Door Forms

The DoorForm menu lets you view the settings for the door on which you are currently working. The design form offers a comprehensive view of the door parameters on one screen.

Saving 3D Doors as Symbols

Use the Template option to create and save doors as symbols, developing a library of door symbols that you can quickly insert into new projects. For more information, see "Templates and Symbols" in the "Drawing Elements" chapter.

Door Heights and Wall Thickness

You can set the head height and sill height of a door with the Head Hgt and Sill Hgt options, as well as use the Wall Thk option to change the wall thickness. The Head Hgt and Sill Hgt options are available only when In Plan is toggled on, while Wall Thk is only available when In Elev is toggled on. When you choose one of these options, a list of values is displayed in the Menu Window. Choose or type a new value and press (Enter). The Head Hgt and Sill Hgt settings are relative to Z-base.

Door Types

UnitType displays available door types. Doors swing inward (toward you), so you should build designs from the interior of a structure.

Choose a door type from the following options:

Single	Single door, hinged
Double	Double doors, hinged
Bifold	Bi-fold door
2xBifld	Double bi-fold doors
Sliding	Sliding door
Pocket	Pocket doors
% open	Determines the percentage that a door appears open in the model, with 0% being fully closed and 100% being fully open

Door Casings

Use Casing to control the casing or exterior door component group. You can set any of the following door casing options:

At Head	Models casing elements in the door header model
Width	Sets the casing width at the door header, across the door plane, and at the door jamb; choose or type a value and press (Enter)
Thicknss	Sets the casing thickness at the door head and at the door jamb; choose or type a value and press (Enter)

Extensn — Sets the extension length past the outside edge of the vertical casing components (jamb casing). Choose or type a value and press (Enter). For any extension, this measurement is always 0 when the outside edge of the vertical casing and the extension end are aligned. Positive numbers indicate an extension; negative numbers indicate a setback.

At Jamb — Models casing elements in the door jamb model (Width and Thicknss appear again after this option)

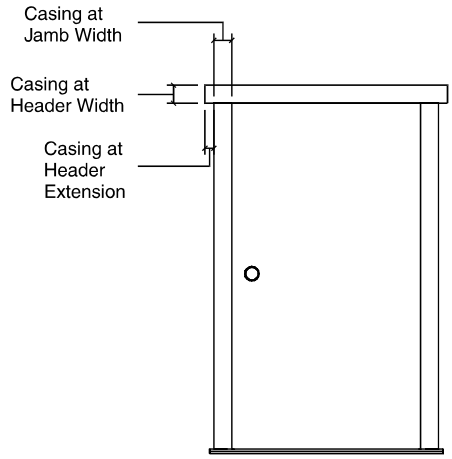

Figure 28.6: Door casing

Door Trim

Use Trim to control the trim, or interior door component group. You can vary such elements as the trim apron, according to aesthetic preference or design requirements.

At Head — Models trim elements at the door header model

Width — Sets the trim width at the door header and across the door jamb

Thicknss — Sets the trim thickness at the door header, through the door, and at the door jamb

Extensn — Sets the trim extension length past the outside edge of the vertical jamb trim components

At Jamb — Models trim elements in the door jamb model (Width and Thicknss appear again after AtJamb)

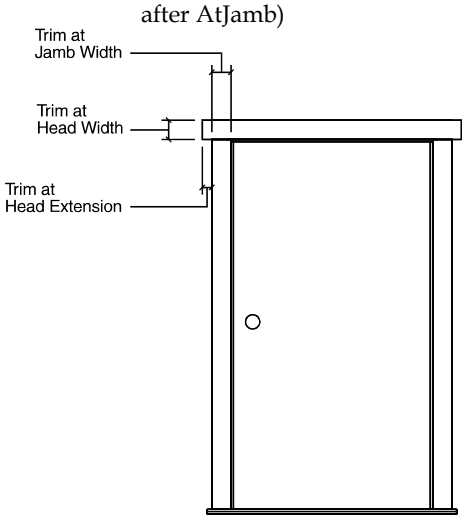

Figure 28.7: Door trim

Door Headers

Use Header to define the door header. This area can become exceedingly detailed in a model rendering, including its structural and aesthetic elements in one master group. With Header you can break down the various components to provide a clearer view.

Do Head	Models the door header
HeadWdth	Sets the door header width. Measure through the door, from the inner surface of the door outward. This option appears when WalWdth is off; choose HeadWdth, and then choose or type a header width and press (Enter)
HeadThk	Sets the door header thickness. Measure from top (wall opening) to bottom. When you choose HeadThk, a list of thickness values appears. Choose or type a header thickness and press (Enter).
WalWdth	Calculates a header width equal to the wall thickness; when WalWdth is off, the width of the header is controlled by the header width (HeadWdth) setting

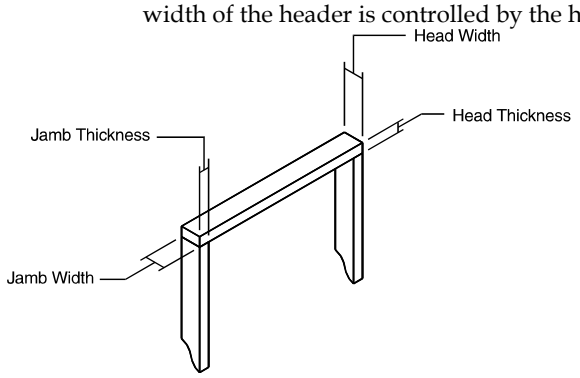

Figure 28.8: Door header

Door Jambs

The Jamb menu defines the door jamb, using the following options:

Do Jamb	Models jamb components
JambWdth	Sets the door jamb width (measure from the inner surface of the door, outward through the door); available only when WalWdth is off; choose JambWdth, and then choose or type a jamb width and press (Enter)
Thicknss	Sets the door jamb thickness (measure from the void edge, or wall opening, inward toward the door center along the wall plane); choose Thicknss, and then choose or type a jamb thickness and press (Enter)
WalWdth	Sets the jamb width equal to the wall width; when WalWdth is off, the width of the jamb is controlled by JambWdth; choose WalWdth, and then choose or type a jamb width and press (Enter)

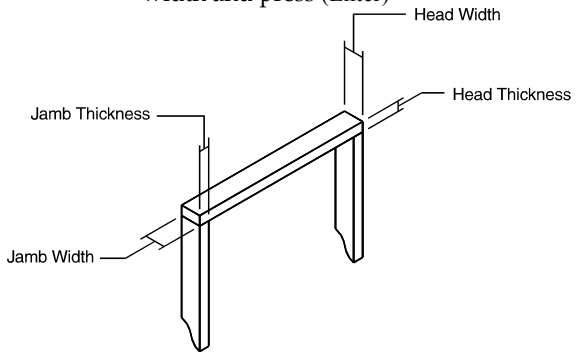

Figure 28.9: Door jamb

Door Sills

The Sill menu defines the door sill, using the following options:

Do Sill	Models the sill
Thicknss	Sets the sill thickness from the bottom of the door opening, upward at the sill middle; choose Thicknss, and then choose or type a sill thickness and press (Enter)
EdgeThk	Sets the thickness of the tapered edge; choose EdgeThk, and then choose or type an edge thickness and press (Enter)
InExtn	Sets the inside sill extension away from the plane of the door toward the center of the room; choose InExtn, and then choose or type an extension and press (Enter)
Out Extn	Sets the exterior sill extension across the door plane from the exterior wall outward; choose Out Extn, and then choose or type an extension and press (Enter)
SideExtn	Sets the exterior sill extension along the wall plane from the outside edge of the trim outward (also known as the "sill horns"); choose SideExtn, and then choose or type an extension and press (Enter)

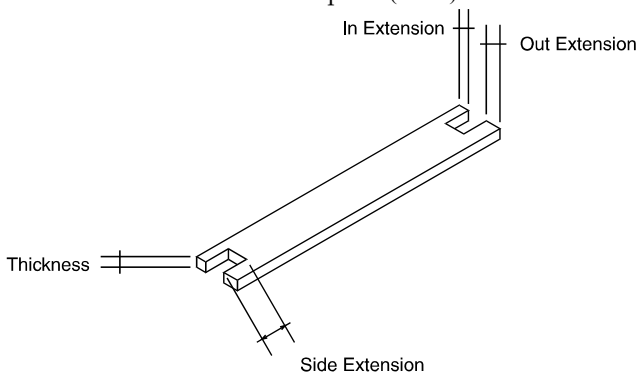

Figure 28.10: Sill thickness

Door Stops

Use Stop to place and size the door stops. The stop is drawn to the exterior of the door, whether the door is flush or offset. Door stops are not created for sliding or pocket doors, regardless of whether Do Stop is toggled on or not.

Do Stop	Models the door stop
StopWdth	Sets the stop width for all components (measure the stop width in the same direction as the jamb width and across the wall plane); choose StopWdth, and then choose or type a stop width and press (Enter)
Stop Thk	Sets the stop thickness dimension (measure the stop thickness in the same direction as the jamb thickness and across the wall plane); choose Stop Thk, and then choose or type a stop thickness and press (Enter)

Door Options

The Door menu sizes, positions, and hinges a door, using the following options:

Do Door	Models the door
Door Thk	Sets the door thickness; choose Door Thk, and then choose or type a door thickness and press (Enter)
HingRht	Hinges doors on the right; determine the right side of the door by standing inside the structure and looking at the door
HingLft	Hinges doors on the left; determine the left side of the door by standing inside the structure and looking at the door
Flush	Sets the door flush with the outside wall
Offset	Sets the offset placement of the door from the interior wall surface across the wall plane; choose Offset, and then choose or type a value and press (Enter)

Door Knobs

Use Knob to place, size, and identify the door knob; only round door knobs are available. When Do Door is off, you can't create a knob regardless of the Do Knob setting.

Do Knob	Models the knob
Diameter	Sets the diameter of the door knob; choose Diameter, and then choose or type a door knob diameter and press (Enter)
Extnsion	Sets the knob extension out from the door; choose Extnsion, and then choose or type a knob extension and press (Enter)
Knob Hgt	Sets the height of the knob from the bottom of the door; choose Knob Hgt, and then choose or type a knob height and press (Enter)
Offset	Sets the knob offset from the door edge; choose Offset, and then choose or type a knob offset and press (Enter)
Inside	Models a knob on the door interior
Outside	Models the knob on the door exterior; Outside and Inside can be toggled individually or together