Autodesk® Moldflow® Insight 2012

AMI User Interface

Autodesk®

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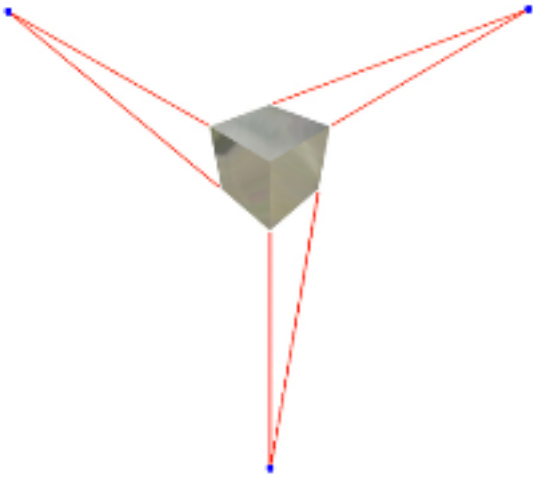
Projection modes 1

There are two different projection modes: perspective and orthographic. Perspective projected views are calculated based on the distance from a theoretical camera and target point. Orthographic projected views display all the points of a model being projected parallel to the screen.

Perspective projection mode

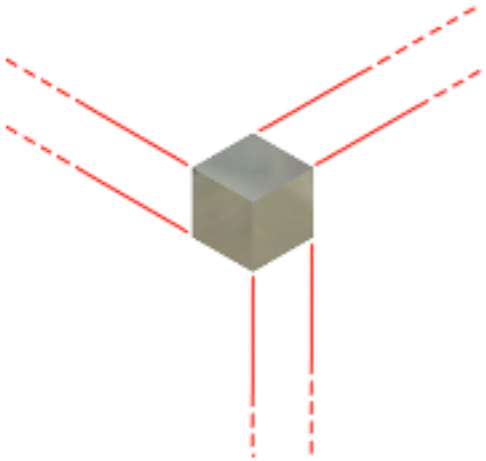
In Perspective Camera mode, part or assembly models are displayed in three-point perspective, a visual effect in which parallel lines converge on a vanishing point. This effect is the way real objects are perceived by the human eye or by a camera.



The shorter the distance between the camera and the target point, the more distorted the perspective effect appears; greater distances produce less distorted effects on the model.

Orthographic projection mode

In orthographic projection mode, a model is displayed so all its points project along parallel lines to their positions on the screen.



All same-length parallel edges display as the same length, even when you orient them so one edge is closer to you than the other. In Orthographic Camera mode, a 3D model appears flat and unlike objects observed in the real world.

When the view for a model changes, the view is updated using the last projection mode unless the current projection mode set for the ViewCube is Perspective with Ortho Faces. The Perspective with Ortho Faces mode forces all views to be displayed in perspective projection unless the model is being viewed from one of the face views: top, bottom, front, back, left, or right.

Navigation tools 2

Various navigation tools are available to help you navigate around your model and change it's orientation and position, in order to obtain the best view possible.

This section describes how to manoeuver your model to get the best view for your task at hand. Whether you want to simply rotate it, resize it so it fits in the window better or centre it in the window, there are tools to help you do this. Once you are comfortable with simple manoeuvring, you can add your own viewpoints or add a cutting plane so that you can see results on the inside of the model.

Autodesk Moldflow software supports 3Dconnexion *3D motion controllers* on page 25, including SpacePilot PRO, SpacePilot, Space Explorer, SpaceNavigator and SpaceNavigator for Notebooks. Devices that were previously supported with the classic UI, are still supported with the classic UI. Before you can use 3D motion controller functionality, you must have a 3D motion controller device connected.

3D motion controllers allow you to control the rotation axes on different parts of the model and the user interface around it. You can position the cursor at any point and use the 3D motion controller functionality to move the model in the X, Y, and Z axes. You can also program (map) your 3D motion controller mouse buttons to any function by using the software that came with your 3D motion controller device.

For additional information, and to ensure that you have the latest drivers for these devices, visit *http://www.3dconnexion.com*.

Mouse functions

You can assign specific functions, such as rotate/zoom/pan, to the middle and right mouse buttons, either when clicked alone, or when clicked in combination with the Shift, Control, or ALT keys.

Functions can also be assigned to a mouse wheel, where available. Then, to change the size of your model, for example, you need only click on the zoom button, and scroll your mouse wheel.

Mouse functions

You can assign specific functions to your mouse buttons and wheel.

Assigning mouse functions

You can assign specific functions, for example, rotate/zoom/pan, to the middle and right mouse buttons, either when clicked alone or in combination with the

Shift, Control, or ALT keys. Functions can also be assigned to a mouse wheel where available.

1 Click  then **Options**.
The **Options** dialog appears.
2 Click the **Mouse** tab.
3 Select the required functions from the relevant drop-down lists to customize the mouse button or mouse wheel assignments according to your preferences.

NOTE: The current default is for a double click to open an item. This can be altered to a single-click in the **Project items** box.

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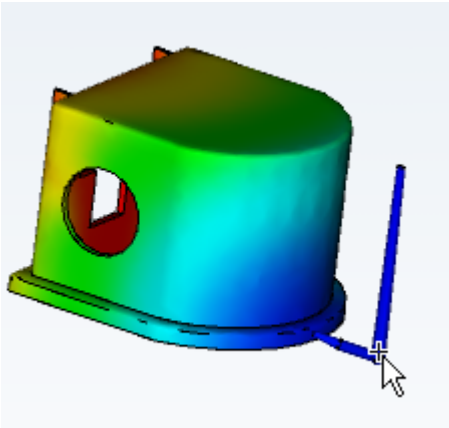
4 Click **OK** to save the changes and close the dialog.

Select tool

The Select tool is used to pick individual or multiple entities, either for modeling purposes or to change their properties.



Valid entities for selection include mesh entities, cooling channels and their associated components, runners, gates, injection locations and cavities.

Once selected, you can perform different operations on the entity.

Select tool

The Select tool is used to select model entities.

Using the Select tool

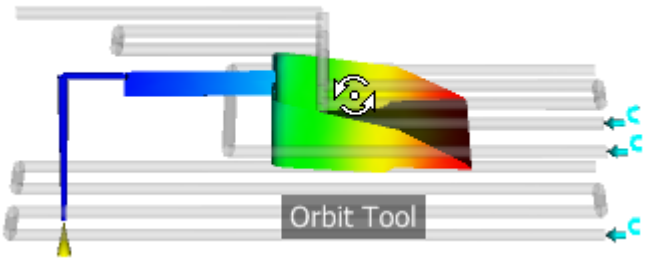
1 Click  **(View tab > Navigate panel > Select)** from the ribbon or the **Navigation bar**.

2 Move the cursor to the model and click on an entity.
All selected entities will turn pink.

3 To select multiple entities, click the left-hand mouse button, then drag the mouse to draw a box around the entities of interest.

Orbit tool

The **Orbit** tool enables you to change the orientation of a model in a 3-dimensional manner. As you drag the cursor, the model rotates around a pivot point, while the view remains fixed.



The pivot point is the base point used when rotating a model with the **Orbit** tool. You can specifiy the pivot point in the following ways:

Default pivot point	When you first open a model, the target point of the current view is used as the pivot point for orbiting the model.
Center tool.	You can specify a point on the model, using the *Center tool*, to use as the pivot point for orbiting.

Orbit tool

The **Orbit** tool is used to change the orientation of a model on the screen.

Using the Orbit tool on the ribbon to rotate the model

1 Click **Orbit** on the **Navigate** panel of the **View** tab.

2 Hold down the left-hand mouse button and move the mouse around the screen to rotate the model.

Using the SteeringWheel to rotate the model

1 Display any of the **View Object** or **Full Navigation wheels**.

2 Left-click and hold down the **Orbit** wedge.

The cursor will change to the **Orbit** cursor

3 Move the mouse around the screen to rotate the model.

NOTE: Use the **Center** tool to re-center the model in the current view.

4 Release the button on your pointing device, to return to the wheel.

Using the Orbit tool on the Navigation bar to rotate the model

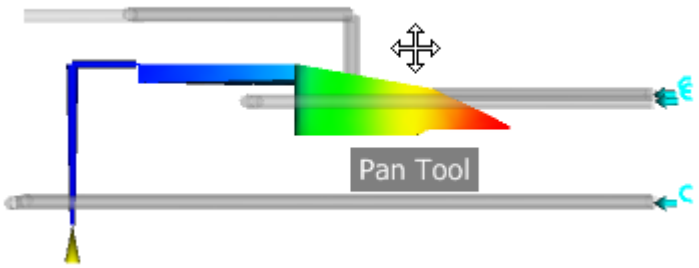
1 Click **Orbit** on the **Navigation bar**.

2 Hold down the left-hand mouse button and move the mouse around the screen to rotate the model.

Pan tool

The **Pan** tool enables you to move the model relative to the center of the model pane.

When the Pan tool is active, the Pan cursor (a four-sided arrow, or a hand with a four-sided arrow inside) is displayed. Click and hold down the left-hand mouse button while dragging the mouse about the model pane. In this way you can position the point of interest on your model in the middle of the display. For example, moving the mouse upwards moves the model up, while moving it downwards moves the model down.



Pan tool

The **Pan** tool is used to move the model within the **Model** pane, without affecting it's rotation.

Using the Pan tool on the ribbon to move the model within the model pane

Click **Pan** then click on the model and move the cursor around the **Model** pane to move the model to the desired location. The cursor will change to the **Pan** cursor.

Using the SteeringWheel to move the model within the model pane

1. Display either of the two**mini wheels** or the **Full Navigation Wheel**.
2. Left-click and hold down the **Pan** wedge. The cursor will change to the **Pan** cursor.
3. Move the cursor around the screen to reposition the model.
4. Release the button on the mouse to return to the wheel.

Zoom tools

The zoom tools enable you to get a close-up view of the model or particular sections of the model.

There are three zoom tools that you can use, depending on your need:

Zoom All — The Zoom All tool rescales the model so that it is fully contained by the active model window.

Zoom — The Zoom tool enables you to zoom in and out of the display. Drag the mouse up to zoom in, or down to zoom out.

Zoom Window — The Zoom Window tool enables you to zoom into a specific area of interest. Draw a rectangle around the point of interest, by clicking on one side of the area and dragging the mouse to around to the other side.

NOTE: To access this tool from a SteeringWheel, hold down Shift before you press Zoom.

The following mouse click and key combinations are available to control how the Zoom tools behave:

- **Click**. If you select the **Zoom** tool, then click on your model, the current view is zoomed in by a factor of 25 percent. If you are using the Full Navigation wheel, incremental zoom must be enabled in the SteeringWheels Options dialog box.
- **SHIFT+click**. If you select the **Zoom** tool, then hold down SHIFT before you click on your model, the current view is zoomed out by a factor of

25 percent. Zooming is performed from the current location of the cursor, and not the current pivot point.

NOTE: When you start the Zoom tool from the Full Navigation wheel, incremental zooming must be enabled in the SteeringWheels Options dialog box in order to use CTRL+click and SHIFT+click.

- **CTRL+click**. If you select the **Zoom** tool, then hold down the CTRL key before you click on your model, the current view is zoomed in by a factor of 25 percent. Zooming is performed from the current pivot point, and not the location of the cursor.
- **Click and drag**. If you select the Zoom tool, then hold down the button on your pointing device, while dragging it up or down, you can adjust the magnification of the model. Dragging down decreases the size of the model, while dragging upwards increases it's size.
- **CTRL+click and drag**. When using the Full Navigation wheels or the mini View Object wheel, you can control the target point used by the Zoom tool. By holding down the CTRL key, the Zoom tool uses the location of the previous pivot point defined by the Zoom, Orbit, or Center tool.
- **SHIFT+click and drag**. When using the Full Navigation wheels or the mini View Object wheel, zoom in to an area of the model by dragging a rectangular window around the area you want to fit in the window. Hold down SHIFT and then click and drag a window around the area in which you want to zoom.

NOTE: This is similar to the **Zoom Window** tool.

NOTE: If you hold down the CTRL key along with SHIFT, you can zoom in to an area of a model using a center-based window, instead of one defined by opposite corners.

- **Mouse wheel**. When you select the **Zoom** tool, scroll the mouse wheel up or down to zoom the view of the model in or out.

Zoom tools

The zoom tools are used to get a close-up view of a particular section of the model.

Zooming in with a single click

You must enable **Zoom Tool - Enable Incremental Zoom-in** to use this feature with the **Full Navigation wheels**. The setting can be changed from the **SteeringWheels Options** dialog box.

1 Do the following to ensure that the **Zoom Tool - Enable Incremental Zoom-in** is selected, if you plan to use a SteeringWheel to Zoom:

   - Display the Full Navigation wheel.

- Right-click on the wheel, and click Options.
- In the SteeringWheels Options dialog box, select **Zoom Tool - Enable Incremental Zoom-in.**
- Click OK.

2. Click **(View tab > Navigate panel > Zoom)** to select the Zoom tool, or select it from a **SteeringWheel** or the **Navigation bar**.
3. Click on the model pane.
   The magnification of the model is increased and you are zoomed in closer to the model. If you hold down SHIFT while clicking the Zoom wedge, the model is zoomed out; you can hold down the CTRL key to zoom in.

Zooming in and out by dragging

1. Click (**View tab > Navigate panel > Zoom**). Alternatively, you can access this tool from the **Navigate bar** or a **SteeringWheel**.
2. Click and hold down the mouse button
3. Drag vertically up to zoom in or down to zoom out.
4. Release the button on your mouse to stop zoom.

Zooming in on an area of the model by specifying a window

1. Click **(View tab > Navigate panel > Zoom Window)**, or select it from the **Navigation Bar.**
2. Click on one side of the area of interest, then drag the pointing device to define the opposite corner of the window that defines the area of interest.

Specifying a window using the SteeringWheel

When using the Full Navigation wheels or the mini View Object wheel, hold down SHIFT then click and drag a window around the area of interest.

NOTE: If you hold down the CTRL key along with SHIFT, you can zoom in to an area of a model using a center-based window, instead of one defined by opposite corners.

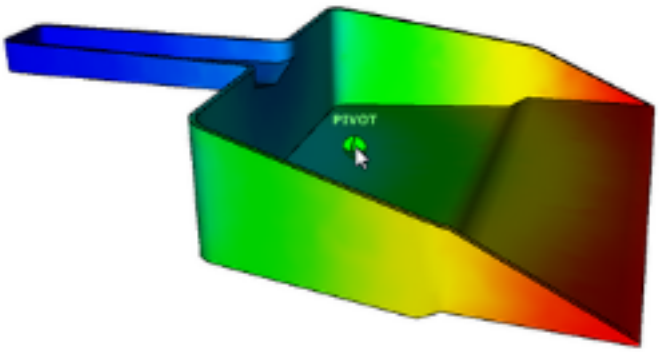
Zooming in and out by scrolling the mouse wheel

1. Click on any of the Zoom tools accessible from the ribbon UI **(View tab > Navigate panel)**, the **Navigation Bar** or a **SteeringWheel**.
2. Click on the model to activate the model pane.
3. Scroll the wheel forwards to zoom in or backwards to zoom out.

Center tool

You can select the pivot point around which to rotate the model, using the **Center** tool

The point of the arrow indicates the point at which the model will be centered.



The point defined by the Center tool provides a focal point for the **Zoom** tool and a pivot point for the **Orbit** tool.

Center

The **Center** tool is used to select the pivot point around which the model rotates.

Using the Center tool on the ribbon

1. Click **(View tab > Navigate panel > Center)**.
2. Click the location on the model where you would like set the center of rotation.
3. Click **(View tab > Navigate panel > Orbit)** to rotate the model with the new center of rotation.
4. Click **(View tab > Navigate panel > Zoom)** to zoom in on the model about the new center.

Using the Center tool on the SteeringWheels

This tool is not available on the Mini View Object Wheel.

1 Display one of the Full Navigation wheels or the big View Object wheel.
2 Click and hold down the **Center** wedge.
3 Drag the cursor over the model, until you reach the location that you would like to assign as the center.
4 Release the button on your mouse.
The model is re-centered in the model pane, about the new point.
5 Use the **Zoom** tool or the **Orbit** tool to reorient the view of the model.
If you are using one of the Full Navigation wheels, hold down **CTRL** before using the **Zoom** tool.

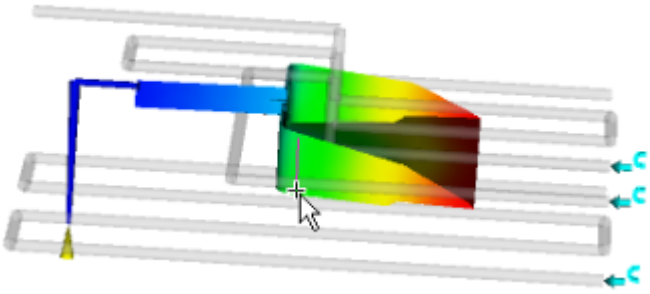
Using the Center tool on the Navigation bar

1 Click **Center** on the **Navigation bar**.
2 Click the location on the model where you would like set the center of rotation.
3 Click **Orbit** on the **Navigation bar**, to rotate the model with the new center of rotation.
4 Click **Zoom**on the **Navigation bar** to zoom in on the model about the new center.

Measure tool

The **Measure** tool toggles measurement mode, enabling you to measure distances on a model.

Click on the model at the point from which you would like to measure. Click again on the model at the point to which you want to end the measurement.



The coordinates of each point, distance measured, and vector are instantly updated.

Measure tool

The **Measure** tool is used to measure the distances between two points. It can also be used to find out the coordinates of a point or a node on a model. The **Measure** tool can be accessed from the ribbon, from the Navigation bar or by right-clicking the mouse and selecting **Measure**.

Measuring distances on the model using the Measure tool

1. Click **(View tab > Navigate panel > Measure)** to access the tool from the ribbon. Alternatively, you can access it from the Navigation bar.

   The **Measurements** dialog appears.
2. Change the **Snap To** selection to **Nearest Node** if you want to measure distances between nodes.
3. Click on the point or node from which you want to measure.

   The coordinates of the point will appear in the **Start** box.
4. Click on the point or node to which you want to measure.

   The coordinates of the second point, the measured distance between the two selected points, and the vector between the two points are displayed.

NOTE: When you are trying to measure small distances, the arrowhead of the measurement display may get in the way. In the **Measurements** toolbox, you can change the size of the arrow head by dragging the arrow slider. You can hide the arrowhead by clearing the **Arrow** check box.

Measure tool

Determine the vector, or absolute distance between two points on the model.

Measurements dialog

To access this dialog select **Measure** from the **Navigation bar** or the **View** tab of the ribbon. Alternatively, right-click on anywhere on the model and select **Measure** from the context menu.

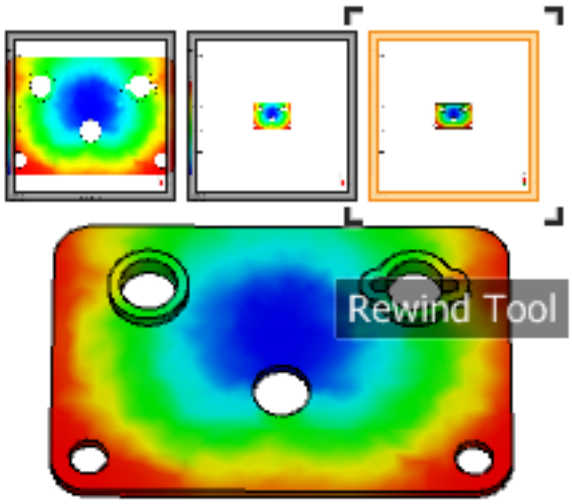
To make a measurement, click anywhere on the model to set the start point. Then click a second point on the model to set the end point.

Rewind tool

As you use the navigation tools to reorient the view of a model, the previous view is saved to the navigation history. The navigation history holds a representation of the previous views of the model along with a thumbnail. A separate navigation history is maintained for each window; it is not

maintained after the window is closed. Rewind navigation history is view-specific.

With the Rewind tool, you can retrieve previous views from the navigation history. From the navigation history, you can restore a previous view or scroll through all of the saved views.



When you hold down the button on the pointing device over the Rewind tool on the wheel, the Rewind History panel is displayed. You can scroll through the navigation history. To restore one of the previous views in the navigation history, drag the bracket to the left in the Rewind History panel.

NOTE: Rewind history is not saved between sessions.

Rewind tool

A quick click on the rewind tool will restore the previous view. You can also look at the Rewind History and select from any of the previous views.

Restoring the previous view

1. Display a wheel.
2. Click and release the **Rewind** wedge.
   The previous view will be restored.
3. Click the **Rewind** wedge again if you would like to restore the next previous view.

Restoring a previous view

1. Display a wheel.
2. Click and hold the **Rewind** wedge.
   The **Rewind History** panel is displayed.
3. While holding down the button on your pointing device, drag to the left or to the right to restore a previous view.
   Dragging to the left restores an older previous view. Dragging to the right restores a view that is newer than the one you are currently viewing. You must have previously used the **Rewind** tool to see views available on the right. The current position in the navigation history is indicated by the orange box dragged along the **Rewind History** panel.

Walk tool

With the **Walk** tool, you can navigate through a model as if you were walking through it. Once you start the **Walk** tool, the **Center Circle** icon is displayed near the center of the view, and the cursor changes to display a series of arrows. To walk through the model, drag in the direction in which you want to move.

When walking through a model, you can constrain the movement angle to the ground plane. This enables you to walk around while maintaining a constant camera viewpoint elevation. If the walk angle is not constrained, you "fly" in the direction you are looking.

As you walk or "fly" through a model, you can control the speed of motion. Speed is controlled by the distance the cursor is moved from the **Center Circle** icon, and the speed setting.

As you use the **Walk** tool, you can adjust the camera elevation by holding down **SHIFT**. This action temporarily activates the **Up/Down** tool. With the **Up/Down** tool active, drag up or down to adjust the elevation of the camera

Walk tool

Moving through the model

1. Display one of the **Full Navigation** wheels.
2. Click and hold down the **Walk** wedge.

   The cursor changes to the  **Walk** cursor and the **Center Circle** icon is displayed.
3. Drag in the direction you want to walk.

NOTE: While walking, press and hold down the + (plus) key to temporarily increase your speed.

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4 Release the button on your pointing device to return to the wheel.

Changing the speed of walking

1 Display a wheel.
2 Right-click the wheel, and click **Options**.
3 In the **SteeringWheels Options** dialog box, under **Walk Tool - Speed Factor**, drag the **Walk Speed slider** to the left to decrease the walking speed or to the right to increase the walking speed.
4 Click **OK**.

Constraining the Walk tool to the ground plane

1 Display a wheel.
2 Right-click the wheel, and select **Options**.
3 In the **SteeringWheels Options** dialog box, check **Walk Tool - Constrain movement to Ground Plane**.
4 Click **OK**.
Movement when walking is done parallel to the ground plane of the model.

Adjusting the height of the current view from the Walk tool

1 Display one of the **Full Navigation** wheels.
2 Click and hold down the **Walk** wedge.

The cursor changes to the  **Walk** cursor and the **Center Circle** icon is displayed.

3 Do one of the following:

- Press and hold down the **SHIFT** key to enable the **Up/ Down** tool; drag up or down.
- Press and hold down the **UP** arrow or **DOWN** arrow key.

4 Release the button on your pointing device to return to the wheel.

Look tool

With the Look tool, you can move the current view vertically and horizontally. When moving the view, your line of sight rotates about the current eye position, like turning your head. The Look tool can be compared to you standing in a fixed location, and looking up or down while turning your head left or right.

Look tool

Looking around with the Look tool

1. Display a **Full Navigation** wheel.
2. Click and hold down the **Look** wedge.

   The cursor changes to the  **Look** cursor.
3. Drag the pointing device to change the direction in which you are looking.
4. Release the button on your pointing device to return to the wheel.

Looking around while walking through a model

1. Display the big **Full Navigation** wheel.
2. Click and hold down the **Look** wedge.

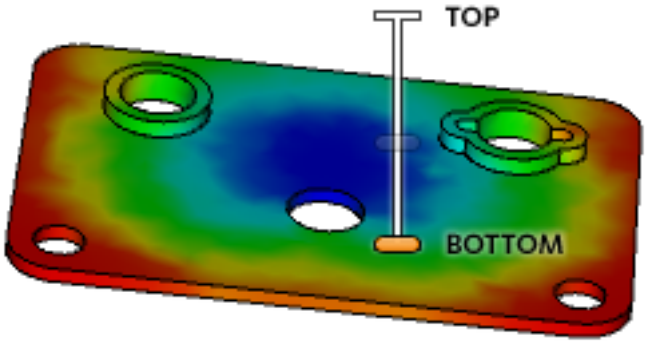
   The cursor changes to the  **Look** cursor.
3. Drag the pointing device to change the direction in which you are looking.
4. While holding down the button on your pointing device, press the arrow keys to walk in the model.
5. Release the button on your pointing device to return to the wheel.
6. Click **Close** to exit the wheel.

Inverting the vertical axis for the Look tool

1. Display a wheel.
2. Right-click the wheel, and select **Options**.
3. In the **SteeringWheels Options** dialog box, select the **Look Tool - Invert Vertical Axis** checkbox.
   Dragging downwards lowers, and dragging upwards raises the target point of the current view.
4. Click **OK**.

Up/Down tool

Unlike the Pan tool, you use the Up/Down tool to adjust the height of the current viewpoint along the model's Z axis. To adjust the vertical elevation of the current view, you drag up or down. As you drag, the current elevation and the allowed range of motion is displayed on a graphical element called the **Vertical Distance** indicator.



The **Vertical Distance** indicator has two marks that show the highest (TOP) and lowest (BOTTOM) elevation possible for the view. While changing the elevation with the **Vertical Distance** indicator, the current elevation is shown by the bright orange indicator, while the previous elevation is shown by the dim orange indicator.

Up/Down tool

The Up/Down tool moves the model in the Up or Down direction.

Changing the elevation of a view

1. Display one of the Full Navigation wheels.
2. Click and hold down the Up/Down wedge.
   The Vertical Distance indicator is displayed.
3. Drag up or down to change the elevation of the view.
4. Release the button on your pointing device to return to the wheel.

View tools

The View tools are used to return the model to a pre-defined orientation.

There are 4 View tools to help you orientate your model exactly as you need it:

Home view.	A special view stored with a model that makes it easy to return to a known or familiar view. You can define any view of the model as the Home view.
View Face.	A special tool that makes it easy for you to orient a plane or part face parallel to the screen, so you can scrutinize it more closely
Previous View.	Returns the graphics display to the previous view orientation and zoom scale.

Next View.	Only becomes active after Previous View has been selected. Reverts to the next view after Previous View is used.

View Tools

Defining the Home view

1. Orient the model as you would like to see it when you click .
2. Right-click the **ViewCube** and select **Set Current View as Home**.
   The current view is now the Home View.

Selecting the Home view

Use one of the following methods:

1. Click located near the **ViewCube**,
   or
2. Right-click the **ViewCube** and select **Go Home**.

Using View Face to orient a particular face towards the screen

1. Click **(View tab > Navigate panel > View Face)** or select it from the **Navigation bar**.
2. Move the cursor over the model, until the face of interest is highlighted in pink.
3. Click on the pink face of interest.
   The model will rotate and the face of interest will appear facing towards you, parallel to the screen.

ViewCube 3

The **ViewCube** tool is a persistent, clickable and draggable interface used to switch between standard and isometric views of a model.

When you display the **ViewCube** tool, it is shown in one of the corners of the window over the model in an inactive state. The **ViewCube** tool provides visual feedback about the current viewpoint of the model as view changes occur. When the cursor is positioned over the **ViewCube** tool, it becomes active. You can drag or click the **ViewCube**, switch to one of the available preset views, roll the current view, or change to the **Home** view of the model.

Control the Appearance of the ViewCube

The **ViewCube** tool is displayed in one of two states: inactive and active. When the **ViewCube** tool is inactive, it appears partially transparent by default so that it does not obscure the view of the model. When active, it is opaque and may obscure the view of the objects in the current view of the model.

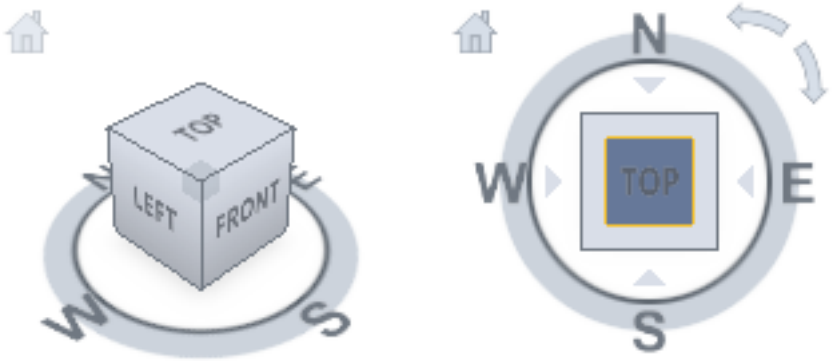
In addition to controlling the inactive opacity level of the **ViewCube** tool, you can also control the following properties for the **ViewCube** tool:

- Size
- Position
- Default Orientation
- Compass display

Using the Compass

The compass is displayed below the **ViewCube** tool and indicates which direction North is defined for the model. You can click a cardinal direction letter on the compass to rotate

the model, or you can click and drag one of the cardinal direction letters or the compass ring to interactively rotate the model around the pivot point.



ViewCube

Change the size of the ViewCube

1 Right-click the **ViewCube**, and click **Options**.

2 In the **ViewCube Options** dialog box, under **Display**, select an option from the **ViewCube Size** drop-down list.

NOTE: Selecting **Automatic** will let the program decide for you.

3 Click OK.

Change the position of the ViewCube

The **ViewCube** can be positioned in any corner of the **Model pane**.

1 Right-click the **ViewCube**, and click **Options**.
The **ViewCube Options** dialog will appear.

2 Under the **Display** group, select one of the available positions from the **On-screen Position** drop-down list.

3 Click OK.

The **ViewCube** and **Navigation** bar should now be displayed in the selected corner of the **Model pane**.

Display the compass below ViewCube

The compass is displayed beneath the **ViewCube** and indicates the direction of North for the model.

To display the compass below **ViewCube**,

1 Right-click the **ViewCube**, and click **Options**.
2 In the **ViewCube Options** dialog box, under **Compass**, select **Show the Compass below the ViewCube**.
3 Click **OK**.

Change the inactive opacity of ViewCube

To change the inactive opacity of **ViewCube**,

1 Right-click the **ViewCube**, and click **Options**.
2 In the **ViewCube Options** dialog box, under **Display**, select an option from the **Inactive Opacity** drop-down list.
3 Click **OK**.

ViewCube

Controls available for adjusting the behaviour of the ViewCube.

ViewCube

By default, the **ViewCube** is displayed in the top right of the **Model pane**. To disable its display, click (**View tab > Windows panel > User Interface**). Click the drop-down arrow and deselect **ViewCube**. When the ViewCube display is disabled, it becomes available in the **Navigation bar**.

Go Home	The default view of the model. You can change the default view using **Set current view as Home**. You can navigate to the **Home** position by selecting this option from the context menu or by clicking the **Home** icon displayed just above the **ViewCube**.
Orthographic	A display mode where all points of a model are projected along parallel lines to the screen.
Perspective	A display mode where a model is displayed in three-point perspective, very similar to the way objects in the real world are perceived by the human eye.
Perspective with Ortho Faces	A display mode where the model is displayed in orthographic projection when one of the faces of the **ViewCube** is active.
Set current view as Home	Defines the current view as the default/Home view.
Set current view as Front	Uses the current view to redefine the **Front** view.

Reset Front	Resets the front view to the default setting.
Options	Opens the **ViewCube Options** dialog box.
Help Topics	Launches the online help system and displays the topic on the **ViewCube**.

ViewCube Options

Sets the preferences for working with the ViewCube.

Application Options		
	Show the ViewCube on window create	When the check box is enabled, the ViewCube displays in the graphics window by default.
Display		
	On Screen Position	The ViewCube can be placed in any corner of the screen by selecting one of the items in the On-screen Position combo box control: Top Right, Bottom Right, Top Left, or Bottom Left.
	ViewCube Size	Sets the ViewCube size to Tiny, Small, Normal, or Large.
	Inactive Opacity	When the cursor is in the vicinity of the ViewCube, the cube and all the additional controls are displayed, fully opaque. However, when the cursor is distant from the ViewCube, the additional controls (except the Home button) are not displayed; the ViewCube and the Home button may be displayed at reduced opacity. Specifies the opacity display when the cursor is distant (inactive) from the ViewCube.
When Dragging on the ViewCube		
	Snap to the closest view	While being dragged, the ViewCube and the scene rotate in an arcball-like fashion. If Snap to closest view is selected, the viewpoint snaps to one of

		the fixed views when it is angularly close to one of the fixed views.
When clicking on the ViewCube		
	Use animated transitions when switching views	An animated transition displays when you click on a section of the ViewCube to help visualize the spatial relationship between the current viewpoint and the selected viewpoint. **NOTE:** When navigating about 3D scenes that contain vast amounts of geometry, the application frame rate can drop significantly and make it difficult for the system to smoothly animate a viewpoint transition.
	Keep model upright	When clicking on edges, corners, or faces of the ViewCube, the orientation algorithm normally attempts to turn the viewpoint so that upside-down orientations of the scene are avoided.
Document Settings		
	Show the Compass below the ViewCube	Sets the preference for the display of the Compass.
	Angle of North	Sets the angle between the ViewCube FRONT face and the Compass direction North.

Navigation Bar 4

The navigation bar is a user interface element from which you can access both unified and product-specific navigation tools. Unified navigation tools (such as Autodesk® ViewCube® and SteeringWheels) are those that can be found across many Autodesk products. Product-specific navigation tools are unique to a product. The navigation bar floats over and along one of the sides of the current model's window.

The unified and product-specific navigation tools are organized into separate areas of the navigation bar. The unified navigation tools are located on the two ends of the navigation bar, while the product-specific navigation tools are located in the center. You start navigation tools by clicking one of the buttons on the navigation bar or selecting one of the tools from a list that is displayed when you click the smaller portion of a split button.

Available Navigation Tools

The following unified navigation tools are available from the navigation bar. :

- *ViewCube* on page 19 Indicates the current orientation of a model and is used to reorient the current view of a model.
- *SteeringWheels* on page 32 Collection of wheels that offer rapid switching between specialized navigation tools.

The following product-specific navigation tools are available from the navigation bar:

- *Select tool* on page 4 Tool to select entities on the model.
- *Orbit tool* on page 5 Set of navigation tools for rotating the current view of a model.
- *Pan tool* on page 6 Moves the view parallel to the screen.
- *Zoom tools* on page 7 Set of navigation tools for increasing or decreasing the magnification of the current view of a model.
- *View tools* on page 17 Points the selected face at the user, parallel with the screen.

The following product-specific navigation tools can easily be added to the navigation bar using the Customize menu.

- *View tools* on page 17 Returns the graphics display to the previous view orientation and zoom scale.
- *View tools* on page 17 Reverts to the next view after Previous View is used.
- *Measure tool* on page 11 Tool for measuring the distance between two user-defined points.

- *Cutting planes* on page 50 Cuts a plane through the model so you can see inside.
- *Cutting planes* on page 50 Moves a cutting plane up or down so you can adjust the view of the inside.

3D motion controllers

3D motion controllers allow you an easy way to rotate the part about different rotation axes.

With the ribbon user interface (ribbon UI) installed, Autodesk Moldflow software supports 3Dconnexion *3D motion controllers* on page 25, including SpacePilot PRO, SpacePilot, Space Explorer, SpaceNavigator and SpaceNavigator for Notebooks. Before you can use 3D motion controller functionality, you must have a 3D motion controller device connected.

NOTE: Devices that were previously supported with the classic UI, are still supported with the classic UI, in 32-bit environments.

When a 3D motion controller is connected, you can position the cursor at any point on the model and use the 3D motion controller functionality to move the model about the X, Y, and Z axes. You can also program (map) the 3D motion controller mouse buttons to any function by using the software that came with it.

For more information about 3Dconnexion 3D motion controllers, and to ensure that you have the latest drivers for these devices, visit *http://www.3dconnexion.com*.

Installing a 3D motion controller

When you install an Autodesk Moldflow product on your computer, the installation will automatically check for the presence of a 3DConnexion device.

If a 3DConnexion device is detected, configuration files will be installed that *Moldflow Button Configurations* on page 26.

If a 3DConnexion device is not detected, the installation will proceed without installing these configuration files.

If you want to install a 3DConnexion device, after having installed the Autodesk Moldflow product, you will need to re-install the Autodesk Moldflow product in order to pick up the button configuration files.

NOTE: A 3DConnexion device will not work if it is installed after the Autodesk Moldflow product. The Autodesk Moldflow product must be re-installed in order to pick up the configuration files.

3Dconnexion Control Panel

The **3Dconnexion Control Panel** is accessed from a button on your 3Dconnexion device, and enables you to configure your device to your personal liking.

There are 4 tabs on the **3Dconnexion Control Panel**:

Device Configuration	This tab is used to specify the zoom direction and the overall speed of motion.
App Configuration	This tab enables you to activate or disable the various navigation tools associated with moving the device, including pan, zoom, tilt, spin and roll. You can also reverse all axes and select a dominant axis.
Button Configuration	This tab enables you to configure the buttons on your device to specific functions. Upon installation of your Autodesk Moldflow software, the buttons on your 3D device are assigned certain functions that are relevant to your Moldflow product, one of which is access to the **3Dconnexion Control Panel**. Although you can change the button configurations, only the Autodesk Moldflow installed configurations are supported with this product.
Advanced Settings	This tab enables you to alter the speed with which you move around the model. You can also reverse the direction of the motion, if you prefer.

Moldflow Button Configurations

Autodesk Moldflow has mapped the buttons on the various 3DConnexion devices to specific functions. User-specified settings are not supported.

SpaceNavigator and SpaceNavigator for Notebooks

SpaceNavigator supports a controller cap that is designed to flex in all directions, so you can rotate, pan, zoom and otherwise control your 3D model. SpaceNavigator is compatible with Windows XP, 32-bit and 64-bit.

Name	Function
Fit	Fit
Panel	3DxWare Panel

Space Explorer

In principle, SpaceExplorer behaves similarly to SpaceNavigator. Furthermore, it supports 15 preconfigured function keys within reach of the controller cap.

Name	Function	Name	Function
1	Home View	Fit	Fit
2	View Face	Panel	3DxWare Panel
T	Top	+	Increase Sensitivity
L	Left	-	Decrease Sensitivity
R	Right	2D	Rotations
F	Front		
Esc	Esc Key		
Alt	Alt Key		
Shift	Shift Key		
Ctrl	Ctrl Key		

SpacePilot

In addition to configurable keys and the 3d controller, SpacePilot includes a lit LCD and a USB connector. SpacePilot can sense the application environment and adapt the LCD and function keys to that environment. The SpacePilot has a USB connector and supports Windows XP, 32-bit and 64-bit, as well as UNIX and Linux Operating Systems.

Name	Function	Name	Function
1	New	Esc	Esc Key
2	Open	Alt	Alt Key
3	Import	Shift	Shift Key
4	Undo (^z)	Ctrl	Ctrl Key
5	Redo (^y)	Fit	Fit
6	View Face	Panel	3DxWare Panel
T	Top		
L	Left		
R	Right		
F	Front		

SpacePilot PRO

In addition to configurable keys and a 2nd generation 3d controller, SpacePilotPro includes a lit LCD and additional function keys. SpacePilot Pro can sense the application environment and adapt the LCD and function keys to that environment. The SpacePilot Pro has a USB connector and supports Windows 7, Vista and XP, 32-bit and 64-bit, as well as UNIX and Linux Operating Systems.

Name	Function	Name	Function	Name	Function
Menu	3DXWare Panel	Iso1	Isometric 1	Ctrl	Ctrl Key
Fit	Fit to View	Iso2	Isometric 2	Rot	Rotations
T	Top	1	New	Pan Zoom	Translations - turns translations on or off for all axes.
L	Left	2	Open	Dom	Dominant Axis - Enables the Dominant Axis filter.
R	Right	3	Import	+	Increase Sensitivity
F	Front	4	Undo	-	Decrease Sensitivity
B	Bottom	5	Redo		
Bk	Back	6	View Face		
Roll +	Roll Clockwise	7	Home View		
Roll -	Roll Counterclockwise	8	Results		
		9	Help Topics		
		10	Print Setup		
		Esc	Esc Key		
		Alt	Alt Key		
		Shift	Shift Key		

Navigation modes

There are three different navigation modes from which to choose that provide you with different views of your model.

With all three modes, you can view both the inside and the outside of the model.

Object Mode

Object Mode, also known as "Free" mode, allows you to move the object around as if you were holding it in your hand. The idea with this mode is that you can rotate the model, pan, zoom, move up and down, and view all the details as if you were actually holding it. In this mode, if the controller is moved up, the actual scene is brought up. This is the default setting for your navigation device.

Walk Mode

Walk Mode interactively changes the navigation motion, so you appear to be walking through the model as you move the controller cap. In this mode you move about the scene as if on a moving walkway. Thus, if the controller is moved left, the scene is moved right.

Fly Mode

Fly Mode interactively changes the navigation motion, so you appear to be flying through the model as you move the controller cap. In this mode you move about the scene as if in an airplane. Thus, if the controller is moved left, the scene is moved right. Fly mode is essentially the same as walk mode without contraints to any of the planes.

	Pan Left/Right	Pan Up/Down	Zoom	Tilt	Spin	Roll
Object Mode	Scene moves in the direction of the mouse	Scene moves in the direction of the mouse	Scene moves in the direction of the mouse	Scene moves in the direction of the mouse	Scene moves in the direction of the mouse	Scene moves in the direction of the mouse
Walk Mode	Scene moves in the opposite direction from the mouse	Scene moves in the opposite direction from the mouse	Scene moves in the opposite direction from the mouse	Scene moves in the opposite direction from the mouse	Scene moves in the opposite direction from the mouse	N/A
Fly Mode	Scene moves in the opposite	Scene moves in the opposite direction	Scene moves in the opposite	Scene moves in the opposite	Scene moves in the opposite	N/A

direction from the mouse	from the mouse	direction from the mouse	direction from the mouse	direction from the mouse	

SteeringWheels

5

SteeringWheels, also known as wheels, are tracking menus that follow your cursor, and from which you can access different 2D and 3D navigation tools.

Steering wheels can save you time by combining many of the common navigation tools into a single interface. The following illustrations show the different wheels available:

Figure 1: Full Navigation Wheel

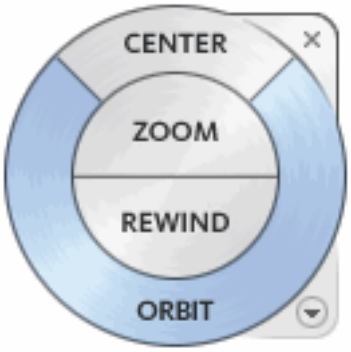


Figure 2: Basic View Object Wheel

Figure 3: Mini Full Navigation Wheel

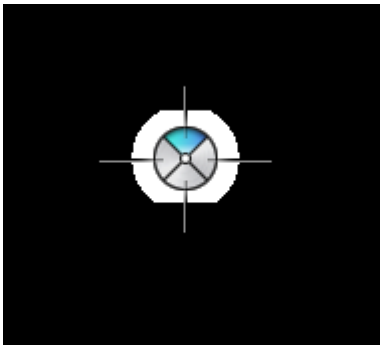


Figure 4: Mini View Object Wheel

Appearance of the Wheels

You can control the appearance of the wheels by switching between the different styles of wheels that are available, or by adjusting the size and opacity. Wheels (except the 2D Navigation wheel) are available in two different styles: big and mini.

The size of a wheel controls how large or small the wedges and labels appear on the wheel; the opacity level controls the visibility of the objects in the model behind the wheel.

Wheel Tooltips, Tool Messages, and Tool Cursor Text

Tooltips are displayed for each button on a wheel as the cursor is moved over them. The tooltips appear below the wheel and identify what action will be performed if the wedge or button is clicked.

Similar to tooltips, tool cursor text is displayed when you use one of the navigation tools from a wheel. Tool messages are displayed when a navigation tool is active; they provide basic instructions about using the tool. Tool cursor text displays the name of the active navigation tool near the cursor. Disabling tool messages and cursor text only affects the messages that are displayed when using the mini wheels or the big Full Navigation wheel.

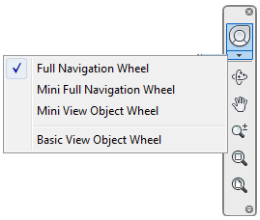
SteeringWheels

The following tasks instruct you on how to personalize the SteeringWheels according to your preferences.

Displaying a SteeringWheel from the Navigation bar

You can access the SteeringWheels from the View tab of the ribbon, or from the Navigation bar.

On the Navigation bar, click the drop-down arrow associated with the SteeringWheel, and choose a wheel.



Closing a SteeringWheel

Use one of the following methods to close a wheel:

1. Right-click the wheel, and click **Close Wheel**.
2. Click the close button on the top right of the SteeringWheel.

Changing the size of a SteeringWheel

1. Display a wheel.
2. Right-click the wheel, and click **Options**.
3. In the**SteeringWheels Options** dialog, next to **Mini Wheel Size** or **Big Wheel Size**, click the drop-down arrow and choose from the selection.
4. Click **OK** to accept the changes and close the dialog.

Changing the opacity of a SteeringWheel

1. Display a wheel.
2. Right-click the wheel, and click **Options**.
3. In the **SteeringWheels Options** dialog, next to **Wheel Opacity**, click the drop-down arrow and choose from the selection.
4. Click **OK** to accept the selection and close the dialog.

Enabling tooltips for a SteeringWheel

1. Display a wheel.
2. Right-click the wheel and select **Options** from the list.
3. In the **SteeringWheels Options** dialog, click **Show Tool tips**.
   Tooltips are displayed for each wedge and button on the wheel, when the cursor moves over the wheel.
4. Click **OK**.

Enabling tool messages for a SteeringWheel

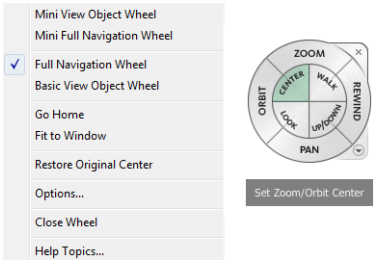
1. Display a wheel.
2. Right-click the wheel, and select **Options** from the list.
3. In the **SteeringWheels Options** dialog, click **Show Tool Messages**.
   Messages are displayed when you use the navigation tools.
4. Click **OK** to accept the selection and close the dialog.

SteeringWheels

There are several different SteeringWheel tools to choose from, which can be customized to suit your preferences. The Steering Wheels are accessed from the **View** tab of the ribbon, or by clicking on a SteeringWheel on the **Navigation bar** and dragging it onto the model pane.

SteeringWheels menu options

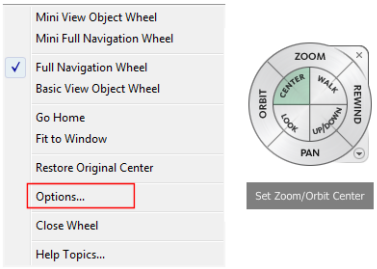
To access this dialog, make sure that you have an active SteeringWheel, then right-click the mouse to see the menu options.



Mini View Object Wheel	Displays the mini View Object wheel.
Mini Full Navigation Wheel	Displays the mini Full Navigation wheel.
Full Navigation Wheel	Displays the big Full Navigation wheel.
Basic View Object Wheel	Displays the big View Object wheel.
Go Home	Goes to the Home view saved with the model. This view is in synchronization with the Home view option in the ViewCube tool.
Fit to Window	Resizes and centers the current view to display all objects.
Restore Original Center	Restores the center point of the view to the extents of the model.
Options	Displays the dialog box where you can adjust the preferences for the wheels.
Close Wheel	Closes the wheel.
Help Topics	Launches the online Help system and displays the topic about the wheels.

SteeringWheels Options dialog

To access this dialog, make sure that you have an active SteeringWheel, then right-click the mouse and scroll down to **Options**.



	Show Tool Messages	Sets the preference for displaying Wheel messages.
	Show ToolTips	Sets the preference for displaying Wheel tooltips.
Display		
	Mini Wheel Size	Sets the Mini Wheel size to the size of your preference.
	Big Wheel Size	Sets the Big Wheel size to the size of your preference.
	Wheel Opacity	Sets the Wheel opacity to your preference.
Navigation Options		
	Look Tool - Invert Vertical Axis	Swaps the up-down mouse motion of the Look tool.
	Zoom Tool - Enable Incremental Zoom-in	When Enable Incremental Zoom-In is checked, single clicking over the Zoom wedge increases the magnification of the model, and when left unchecked nothing happens if you single-click over the Zoom wedge.
	Walk Tool - Constrain movement to Ground Plane	Adjusts the walking movement direction based on your current camera looking direction instead of the default ground plane. It

	is used in combination with the Look Tool to move around in 3D space.
Walk Tool - Speed Factor	Sets the speed for the Walk Tool.

Full Navigation Wheel

The Full Navigation wheel has the same functionality as the mini Full Navigation wheel, but in a larger format that is easier to use. This wheel enables you to view individual objects and walk through and around the model.

When the Full Navigation wheel is displayed, you can press and hold the middle mouse button to orbit the model, scroll the wheel button to zoom in and out, and hold down **SHIFT** while pressing and holding the middle mouse button, to pan.

You can control the appearance of the wheels by switching between the different styles of wheels that are available, or by adjusting the size and opacity. Wheels (except the 2D Navigation wheel) are available in two different styles: big and mini. The size of a wheel controls how large or small the wedges and labels appear on the wheel; the opacity level controls the visibility of the objects in the model behind the wheel.

Tooltips are displayed for each button on a wheel as the cursor is moved over them. The tooltips appear below the wheel and identify what action will be performed if the wedge or button is clicked.

The Full Navigation wheel wedges include the following options:

- *Zoom tools* on page 7. Adjusts the magnification of the current view.
- *Rewind tool* on page 12. Restores the most recent view. Move backward or forward by clicking and dragging left or right.
- *Pan tool* on page 6. Repositions the current view by panning.

- *Orbit tool* on page 5. Rotates the current view around a fixed pivot point.
- *Center tool* on page 10. Specifies a point on a model to adjust the center of the current view or change the target point used for some of the navigation tools.
- *Walk tool* on page 14. Simulates walking through a model.
- *Look tool* on page 15. Swivels the current view.
- *Up/Down tool* on page 16. Slides the current view of a model along the Z axis of the model.

Mini Full Navigation Wheel

The mini Full Navigation wheel has the same functionality as the Full Navigation Wheel, but in a concise format. This navigation wheel enables you to view individual objects and walk through and around the model.

When the mini Full Navigation Wheel is displayed, you can press and hold the middle mouse button to orbit the model, scroll the wheel button to zoom in and out, and hold down **SHIFT** while pressing and holding the middle mouse button, to pan.

You can control the appearance of the wheels by switching between the different styles of wheels that are available, or by adjusting the size and opacity. Wheels (except the 2D Navigation wheel) are available in two different styles: big and mini. The size of a wheel controls how large or small the wedges and labels appear on the wheel; the opacity level controls the visibility of the objects in the model behind the wheel.

Tooltips are displayed for each button on a wheel as the cursor is moved over them. The tooltips appear below the wheel and identify what action will be performed if the wedge or button is clicked.

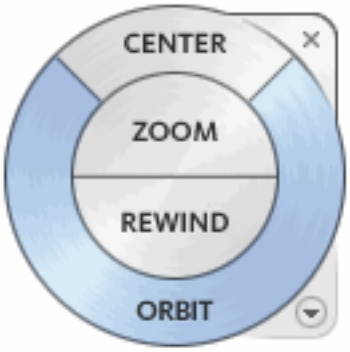
The mini Full Navigation wheel wedges include the following options:

- *Zoom tools* on page 7. Adjusts the magnification of the current view.
- *Walk tool* on page 14. Simulates walking through a model.
- *Rewind tool* on page 12. Restores the most recent view. Move backward or forward by clicking and dragging left or right.

- *Up/Down tool* on page 16. Slides the current view of a model along the Z axis of the model.
- *Pan tool* on page 6. Repositions the current view by panning.
- *Look tool* on page 15. Swivels the current view.
- *Orbit tool* on page 5. Rotates the current view around a fixed pivot point.
- *Center tool* on page 10. Specifies a point on a model to adjust the center of the current view or change the target point used for some of the navigation tools.

Basic View Object Wheel

The View Object wheels are used to view individual objects or features in a model. The Basic View Object wheel is optimized for new 3D users.

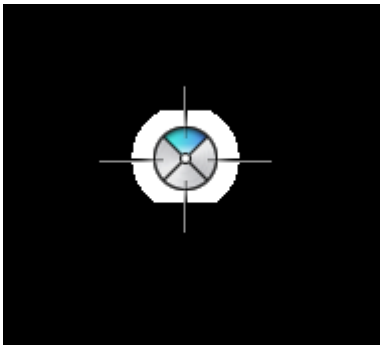


The basic View Object wheel wedges have the following options:

- *Center tool* on page 10. Specifies a point on a model to adjust the center of the current view or change the target point used for some of the navigation tools.
- *Zoom tools* on page 7. Adjusts the magnification of the current view.
- *Rewind tool* on page 12. Restores the most recent view orientation. You can move backward or forward by clicking and dragging left or right.
- *Orbit tool* on page 5. Rotates the current view around a fixed pivot point.

Mini View Object Wheel

The View Object wheels are used to view individual objects or features in a model. The mini View Object wheel is optimized for experienced 3D users.



The basic View Object wheel wedges have the following options:

- *Zoom tools* on page 7. Adjusts the magnification of the current view.
- *Rewind tool* on page 12. Restores the most recent view orientation. You can move backward or forward by clicking and dragging left or right.
- *Pan tool* on page 6. Repositions the current view by panning.
- *Orbit tool* on page 5. Rotates the current view around a fixed pivot point.

NOTE: When the mini wheel is displayed, you can press and hold the middle mouse button to pan, scroll the wheel button to zoom in and out, and hold down **Shift** while pressing and holding the middle mouse button to orbit the model.

Layers

6

Layers enable you to organize and categorize components of your model. You can use layers to visualize, manipulate, and edit your model more efficiently.

Typically you will want to organize layers either by function or by entity type, as shown in the table below. Functional layers are more common and offer more flexibility because you can access entity types within layers.

Example of layers categorized by function	Example of layers categorized by entity type
Top Cover	Node Layer
Bottom Cover	Beam Layer
Hose	Triangle Layer
Runner	

The Layers panel

The **Layers** panel allows you to add, activate, delete, and modify the layers associated with your model. Click  (**Assign Layer**) to assign model entities to individual layers.

TIP: When using a large number of layers, constant scrolling of the layer list may be required. To rearrange the order so that layers being worked on are placed next to each other in the list, use the **Move Up**, **Move Down**, and **Show All Layers** options in the right-mouse button context menu from the required layer.

Diagnostic layers

Whenever you are performing a mesh diagnostic check, you have the option of placing the result in a diagnostic layer. Only two diagnostic layers are ever created because there will normally be an overlap between the elements that make up the different diagnostics. Since no element can ever belong to more than one layer, it is not possible to maintain each layer's consistency across diagnostic checks.

For example, if you display bad aspect ratio elements and then display overlapping elements, some elements may be removed from the layer generated by the aspect ratio diagnostic.

Therefore, the layers are named diagnostic/old diagnostic to indicate that the data is not valid in the long term.

Using layers with results

You can utilize layers to view deflections and other results in certain areas of a model. The results automatically scale to the entities assigned to the visible layers. First you will have to create a new layer, and then assign the entities you want to that layer.

After assigning the entities to a layer, make sure only the layers for which you want to view results are visible. Now when you view results, they are displayed and scaled to visible layers only. For Warp results, you can set up an anchor plane. This is a very useful feature if you are concerned with warpage in one area of a part, or in the case of multi-cavity or family molds, you want to isolate individual cavities.

As an example, suppose you are interested in how far the part is warping out of plane (Z direction) on the bottom surface of a model. To isolate the results, place the bottom surface into a new layer called Bottom. The results will be scaled to the visible layer, and it will be much easier to view the results for that area.

NOTE: X, Y, and Z directions are defined by the anchor plane and not globally, so use caution when interpreting results.

Layers

Typically you will want to organize layers either by function or by entity type. Functional layers are more common and offer more flexibility because you can access entity types within layers.

Creating layers

You can utilize layers to view deflections and other results in certain areas of a model. The results automatically scale to the entities assigned to the visible layers. First you will have to create a new layer and then assign the entities you want to that layer.

1 In the **Layers** pane, click **New**.

A new, highlighted Layer appears.

2 Click on the highlighted name once, and then type a new layer name of your own choice. Alternatively, you can highlight a Layer, right-click and select **Rename**.

3 Click outside of the **Layers** pane to finish.

NOTE: Layer names can be changed at any time by repeating step 2 above, or by right-clicking the layer and selecting **Rename**.

Activating layers

1 In the **Layers** pane, right-click on the required layer name to display the context menu.

2 Select **Make Active**.

NOTE: The active layer is displayed in bold.

Displaying/hiding layers

1 In the **Layers** pane, select the check box next to the layer of your choice.
The layer is displayed.

2 To turn off this layer, clear the check box.
The check box is now empty and the layer is no longer visible.

Editing the properties of a layer

This topic assumes you have already added a layer.

1 In the **Layers** panel, click on a layer name to select it.

2 Click  **Activate Layer**. (Alternatively, right-click on the layer name and select **Make Active** from the menu that appears.)
You can only add entities to a layer that you have made active.

3 Use the most appropriate method and tools to create entities.
Any newly created entity will now reside in the layer you made active. You can also assign existing entities to the active layer.

TIP: You can also edit the display attributes of a layer.

Editing layer display attributes

If there are Entity types with the same attributes in different layers, you may want to change the display attributes on one or more layers to assist in visualizing different aspects of the model. For example, if you had a layer called Top Cover and another called Bottom Cover, and the default color for part surface triangle entities in both layers was the same, you might decide to change the color of the Top Cover triangles.

1 In the **Layers** panel, select an existing layer, or create a new layer, then click  **Activate Layer**. (Alternatively, right-click on the layer name and select **Make Active** from the menu that appears.)

2 In the **Layers** panel, click  **Display...**. (Alternatively, right-click in the Layers panel and select **Display...** from the menu that appears).
The **Layer Display** dialog appears.

3 Click the arrow in the **Entity type** drop-down list to reveal a list of Entity types, and select one.
4 Select **Specify** in the **Color** area, click **Select...**, and select a color.
5 Click the arrow in the **Show as** drop-down list to reveal a list of attributes, and select one.
6 Click **Close**.

Removing unused layers

This function removes unused layers.

In the **Layers** pane, click  (**Clean Layer**).
Unused layers are detected and removed from the **Layers** pane.

NOTE: To recover a layer, click (**Undo**) or (**Action History**).

Deleting layers

Where only one layer is available for a given study, deletion cannot take place until all entities of the layer have been reallocated to another layer. Since this is only possible with more than one layer, it is not possible to delete the final layer.

In the **Layers** pane, click on the required layer to highlight it and click  (**Delete)**, and answer any questions that may follow.
The layer is removed from the **Layers** pane.

NOTE: To recover a layer, click (**Undo**) or (**Action History**).

Assigning model entities to layers

1 Click on the layer of your choice.
2 Click  (**Select**) and select any entity you want to assign to a particular layer.
3 In the **Layers** pane, select the layer you want the entities assigned to.
4 Click **Assign** to assign the selected entities to that layer.

NOTE: After assigning the entities to a layer, ensure only the layers for which you want to view results are visible. Now when you view results, they are scaled to visible layers only. For warpage results, you can set up

an anchor plane. This is useful if you are concerned with warpage in one area of a part, or in the case of multi-cavity or family molds, you want to isolate individual cavities.

Displaying labels for specific entity types within a layer

1 In the **Layers** pane, select the desired layer.
2 Click **Display**.
The **Layer Display** dialog appears.
3 Select the Entity type you want to have labels displayed for.
4 Select the **Labels** check box, and **Close** the dialog.
5 Go back to the **Layers** pane and **right-click** the previously required layer, and select **Labels**.
A checkmark appears next-to the word Labels, and the labels appear on the model.

Layers

You can select layers to access entities that are assigned to the layer.

Layers panel

The Layers panel is used to manage the layers associated with the currently open study.

To display the **Layers panel**, click (**View tab > Windows panel > User Interface**), and select **Layers** from the drop-down menu. Layers are an organizational tool that help you to categorize the various aspects of your model so that you can work more efficiently.

Layer Display dialog

This dialog is used to set layer-specific display properties for a particular entity type, for example, to change the visibility or display color of all elements assigned to a particular layer.

To access this dialog, right click the desired layer in the **Layers Pane** and then click **Display...**.

NOTE: If a layer is set to display triangles as shrunken through this dialog, it will override the default display setting in the **Default Display** tab of the **Options** dialog (**> Options > Default Display**).

Select by Layers dialog

This dialog is used to select groups of model entities according to the layer that they have been assigned to. To access this dialog, click  (**Geometry tab > Selection panel > Layers** or **Mesh tab > Selection panel > Layers**).

Layer controls

Layers are a way of grouping related elements so that they can be made visible or deleted together.

Work with layers using these controls.

 **New**

Allows you to add a layer to your model. Click **New**, and layer named **New Layer** appears in the list. Right-click on this layer (or any other) to rename it.

Activate

Allows you to specify which layer will be active. Select a layer from the list and then click **Activate**. The name of the active layer is highlighted in bold type.

TIP: Make sure the appropriate layer is active before you create new geometry or mesh entities. New entities automatically become part of the active layer.

 **Delete**

Allows you to remove a layer from your model. You are not allowed to delete the **active** layer, or to delete **all** layers. Select a layer and click **Delete**. Next, you will be asked whether you want to save the selected layer's entities (the selected layer will be deleted, but its entities will be moved to the active layer) or permanently delete the selected layer and all of its entities.

NOTE: Although components of an assembly are assigned to different layers, deleting a layer that contains CAD components of an assembly will result in the deletion of the whole assembly.

 **Display**

Allows you to open a dialog to specify advanced layer settings.

 **Assign**

Allows you to assign entities to a layer. On your model, select the entities that you wish to assign to a particular layer. Next, in the **Layers** dialog, select a layer and then click **Assign**.

Expand

Allows you to assign adjoining entities to the selected layer. Select an entity on the model, then click **Expand**. Specify the number of levels by which you wish to expand.

TIP: This is a useful mesh correction aid. For example, if you isolate a mesh entity with a bad aspect ratio, use **Expand** to assign adjoining entities to the layer of the problematic entity. Adjust the aspect ratios of the neighboring entities, to correct the problem.

NOTE: This operation does not apply to CAD entities.

Clean

Deletes any layers that do not have any entities associated with them.

Layer controls

You can control the display settings for the selected layers.

Layer Display dialog

This dialog is used to set layer-specific display properties for a particular entity type, for example, to change the visibility or display color of all elements assigned to a particular layer.

To access this dialog, right click the desired layer in the **Layers Pane** and then click **Display...**.

NOTE: If a layer is set to display triangles as shrunken through this dialog, it will override the default display setting in the **Default Display** tab of the **Options** dialog ( **> Options > Default Display**).

Model entities 7

Model entities are components that go into modeling the various geometry and mesh.

Model entity labels

Labels are names associated with every single model entity. These labels are used to identify specific entities within the model.

Knowing which label is associated with entities of interest enables you to use modeling, meshing, and results functions without the need to visually see and select the entities. Labels are especially useful when using API commands (PC only).

Labels can be displayed for an entire layer by right-clicking the required layer in the **Layers** pane and selecting **Labels**. You can also display labels for specific entity types within the layer.

NOTE: The layer has to be visible to display the labels.

Entity identifiers

Autodesk Moldflow Insight uses short entity identification labels to distinguish between the various geometry and mesh components in the study.

For a meshed Midplane or Dual Domain model, for example, the most common identifiers are “N” for node, and “T” for triangle.

Many modeling, meshing, and mesh repair dialogs contain input boxes for selecting specific entities in the model. As you select entities in the model by using the mouse, you will see the selected entities being listed with their identifiers, for example, N23 meaning node 23. You will also see entity identifiers used in a number of other places, for example on the **Query Entities** dialog in the **Modeling** menu or when defining selection lists.

The following table provides a complete list of identifiers used by Autodesk Moldflow Insight:

Identifier	Entity type
B	Beam element, a 2-noded element, for example, cold runner, cooling channel
C	Curve
N	Node
NBC	Nodal boundary condition, for example, injection location applied to mesh
R	Region
STL	STL body
S	IGES surface
SBC	Surface boundary condition, for example, injection location applied to geometry model
T	Triangle element, a 3-noded element in a Midplane or Dual Domain mesh
TE	Tetrahedral element, a 4-noded element in a 3D mesh
BD#	CAD body
F#	Body face

Cutting planes

8

A cutting plane enables you to visually remove part of the model to reveal the internal structure of the part. This is useful when reviewing results at different locations through the model.

You can specify cutting planes in the XY, YZ, or XZ planes, define customized cutting planes, or display multiple cutting planes simultaneously. The following diagram shows the use of a cutting plane to display a **Fill time** result through the center of a part.

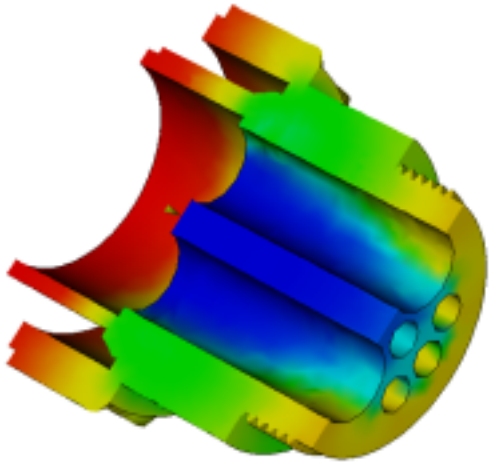


Figure 5: 3D representation.

Context menus

9

Many of the actions that can be performed in the program can be selected quickly by right-clicking the item on which you want to perform the action and selecting an entry in the context menu that appears.

To display a context menu, right-click on or within one of the following:

- The **Model** pane
- A study name in the **Project View** pane
- A task in the **Study Tasks** pane.
- A result name in the **Study Tasks** pane
- A toolbar
- A selected entity on the model

Toolbars (Classic UI only)

10

Toolbars provide you with fast, visual access to commands.

You can select from the toolbars available, or create your own. You can also customize the toolbars, by adding or deleting icons to suit your requirements.

Windows 11

The model is displayed in a window when you open a study. Multiple windows can be opened simultaneously, and managing them is an important aspect of effective modeling.

You can open a single study in several windows to compare different aspects of the model, or you can also open different studies and view them all for comparative purposes. This topic explains how to perform the following tasks to achieve effective viewing:

- Create new windows
- Split windows
- Tile windows
- Cascade windows
- Customize the display
- Position or dock the side panels

Locking

12

The model is displayed in a window when you open a study. Multiple windows can be opened simultaneously, and managing them is an important aspect of effective modeling.

You can open a single study in several windows to compare different aspects of the model, or you can also open different studies and view them all for comparative purposes. When you have multiple windows, you can 'lock' them so that everything that you do in one window happens in another window at exactly the same time. This topic explains how to perform the following tasks to achieve effective viewing:

- lock and unlock the view so that all the models can be manipulated in exactly the same way at the same time, that is, rotated, measured, zoomed, etc.,
- lock and unlock the plot, so that all the results can be studied in exactly the same way and at the same time,
- lock and unlock the animations, so that all the progression of results can be viewed on all models at the same time.

Viewpoint (Classic UI)

13

A Viewpoint is a direction from which to look at your model.

Default viewpoints, such as

-  **Top**
-  **Bottom**
-  **Front**
-  **Back**
-  **Left**
-  **Right**

and others, have already been created as defaults and can be accessed using the ViewCube. You can also set up your own viewpoints.