Dimensional Constraint Properties

All dimensional constraints include specific properties. Most dimensional constraint properties use predefined default settings or reference characteristics specified in the Document Settings dialog box. The Dimension Properties dialog box allows you to control the properties of specific dimensional constraints.

Document Settings

The Units tab of the Document Settings dialog box includes options for specifying dimensional constraint and parameter input display. The Modeling Dimension Display area controls linear and angular dimensional constraint display precision. See Figure 4A-1A. The linear and angular precision is the precision shown when you add dimensional constraints. It does not necessarily correspond to the tolerance precision. Dimensional constraints are displayed according to the selected radio button. Figure 4A-1B describes each setting.

NOTE

You can also set dimensional constraint display by right-clicking and selecting an option from the Dimension Display cascading submenu.
The selected radio button in the **Default Parameter Input Display** area of the **Units** tab determines the input display in the **Edit Dimension** dialog box. The default **Display as value** option displays the value, including calculations. Pick the **Display as expression** radio button to display the entire expression. Figure 4A-2 shows both options.

Use the **Default Tolerance** tab of the **Document Settings** dialog box, shown in Figure 4A-3, to add general tolerances to dimensional constraints. If you do not define default tolerances on the **Default Tolerance** tab, only actual model values display. To define general dimensional...
**Figure 4A-2.** Options for displaying parameter input in the **Edit Dimension** dialog box.

**Figure 4A-3.** Use the **Default Tolerance** tab of the **Document Settings** dialog box to add general tolerances to dimensional constraints.
constraint tolerances, pick the **Use Standard Tolerancing Values** check box or the **Export Standard Tolerance Values** check box. The **Use Standard Tolerancing Values** setting allows you to apply the specified tolerances to the current document. The **Export Standard Tolerance Values** setting allows you to use the general tolerances in a drawing linked to the model.

The next step is the same for both linear and angular dimensional constraint tolerances. Pick the **Click here to add** button, and then select the unit precision to apply to a tolerance from the drop-down list. Next, highlight the default tolerance of 0.0 and enter the required tolerance. Continue adding tolerances as required, and pick the **Apply** button to finish.

### Dimension Properties

To control individual dimensional constraint properties, right-click on a dimensional constraint and select **Dimension Properties**... to display the **Dimension Properties** dialog box. See **Figure 4A-4**. The **Dimension Settings** tab includes options for overriding the existing dimensional constraint settings. Each parameter throughout the design process, including dimensional constraints, receives a name. You can modify the default name to something more descriptive using the **Name:** text box. For example, change the name d1 to **Block_Width**. Select a precision from the **Precision:** drop-down list to override the dimensional constraint value precision. Then view the value in the **Value:** display box.

The **Evaluated Size** area sets the dimensional constraint tolerance level. The **Nominal** option is the default and defines the dimensional constraint as the nominal value. Select the **+ (Upper)**, **– (Lower)**, or **Median** button to set the dimensional constraint at the designated upper, lower, or median tolerance and place a line under the value, which means “not to scale.”

The **Tolerance** area allows you to set specific tolerance values. The options in the **Tolerance** area are available only when you select a specific tolerance method. The **Lower** and/or **Upper**
text boxes are available when you define limit tolerance methods such as **Symmetrical**, **Deviation**, **Limits – Stacked**, and **Limits – Linear**. Enter a value in the **Upper** text box to set an upper value for a tolerance with a value range. For example, an object that is 8” long and has an upper range of .05” has an upper tolerance limit of 8.05” (8+.05 = 8.05). Similarly, you can enter a value in the **Lower** text box to set a lower value for a tolerance with a value range. Using the previous example, an object with a lower range of .05” has a lower tolerance limit of 7.95” (8 – .05 = 7.95). The tolerance for this dimensional constraint reads 8 ± .05 if you choose the **Symmetric** tolerance method.
The **Upper** and **Lower** text boxes are available when you select the **Deviation** tolerance option. Use the normal **Deviation** application to set up a bilateral tolerance such as \(0.625 \pm 0.005\) or \(0.625 + 0.005/–0.002\). To accomplish this, enter a minus (−) symbol in front of the value in the **Lower** text box. A positive symbol automatically applies to a positive number, so you do not need to add a plus (+) sign.

The **Hole** and **Shaft** drop-down lists are available when you use limits and fits tolerance methods for dimensionally constraining holes and shafts. The hole values—A1 or B2, for example—in the **Hole** drop-down list correspond to specific hole tolerances established in ANSI size and fit tables. For example, a hole dimensioned \(20 \ H9\) takes the place of \(20 + 0.05/0\). The shaft values—a1 or b2, for example—in the **Shaft** drop-down list correspond to specific hole tolerances established in ANSI size and fit tables. For example, a shaft dimensioned \(10d9\) takes the place of \(9.950/–0.05\).

**NOTE**

When you select a value from the **Hole** drop-down list, the **Shaft** value is N/A. Similarly, when you select a value from the **Shaft** drop-down list, the **Hole** value is N/A because the ANSI size and fit tolerances apply to either the hole or shaft.
The **Document Settings** tab contains the same options found in the **Document Settings** dialog box. Use this tab to change the document settings for the entire file, not just the selected dimensional constraint.

**NOTE**

You can also modify many individual dimensional constraint settings using the **Parameters** dialog box.