





6 Under **Units**, specify units for the function's input and output, if desired.

Click the **Plot** button () to generate a preview plot of the function. Click the **Create Plot** button () to create a plot group and a plot for the function plot. A plot group for a piecewise function contains three connected line graphs: a line graph of the piecewise function and two line graphs using dashed red lines, Left Extrapolation and Right Extrapolation, that show how the selected extrapolation extends the piecewise function on both sides.



Ramp Functions

A **Ramp** function () is a linear increase with a user-defined slope that begins at some specified time. The ramp function is a function of one variable (the time t , for example).

- 1 In the **Model Builder**, right-click **Global Definitions** or **Definitions** and select **Functions>Ramp** () .
- 2 Enter a **Function name**.
- 3 Under **Parameters**:
 - a Enter a **Location** value s_0 for the start of the ramp. The function evaluates to 0 for values less than its start location and increases linearly for values greater than the location.
 - b Enter a **Slope** k of the ramp.
 - c To ensure that the value never exceeds a certain point, select the **Cutoff** check box and enter a value.

For an input variable s , a start location s_0 , and a slope k , the ramp function's value is 0 for $s < s_0$ and $k(s - s_0)$ for $s \geq s_0$.

- 4 Under **Smoothing**:
 - a To turn on the smoothing function at the start or the cutoff, select the **Smooth at start** or **Smooth at cutoff** check boxes.
 - b Enter a value in the **Size of transition zone** field to control the amount of smoothing. Use smoothing to improve the behavior of the model by avoiding discontinuities that are difficult to handle numerically. Smoothed ramp functions have continuous first and second derivatives.

Click the **Plot** button () to generate a preview plot of the function. Click the **Create Plot** button () to create a plot group and a plot for the function plot.