

## Lesson: Create an as-built ball joint

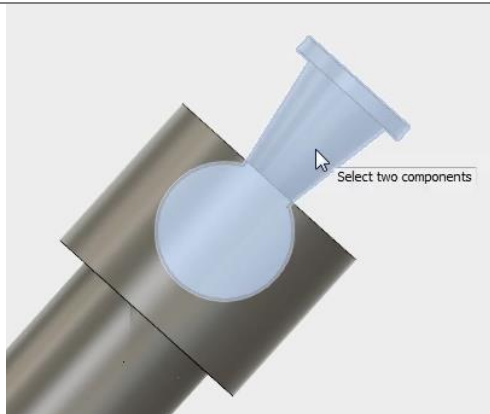
In this lesson, you will restrict the motion of the Ball Joint inside the Ball Joint Socket.

### Learning Objectives:

- Create an as-built ball joint.
- Edit a joint limit.

### Step 1: Create the as-built ball joint.

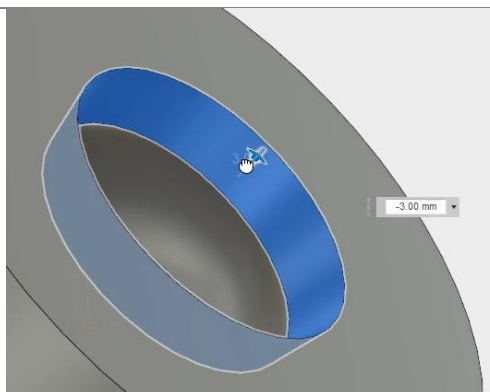
1. Carry on with the file from the previous example. Hide the Lamp Shade by clicking the lightbulb icon in the Browser. Select Assemble> As-Built Joint. In the properties panel, select Ball as the Motion Type. Select the Ball Joint and the Ball Joint Socket bodies for the Components option.



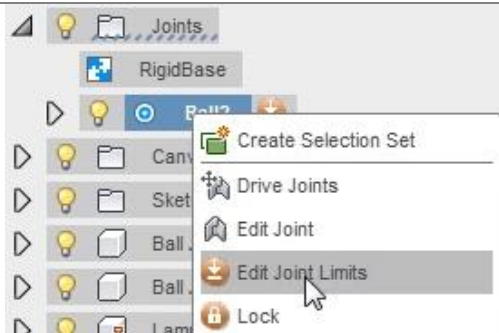
2. For the Position option, temporarily hide the Ball Joint Socket and select the ball surface of the Ball Joint. Press OK.



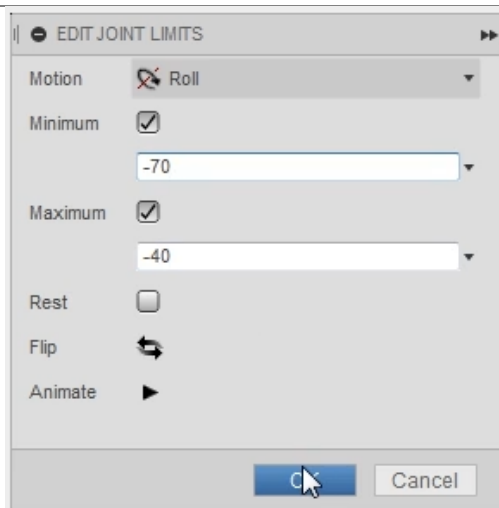
3. Temporarily hide the Ball Joint using the lightbulb in the Browser. Activate the Ball Joint Socket using the radio button in the Browser. Select Modify> Press Pull. Pull the inside face of the Ball Joint Socket outwards by -3mm. Click OK. Activate the top level of the file using the radio button in the Browser. Show the Ball Joint using the lightbulb in the Browser.



4. In the Browser, right click on Ball2 and select Edit Joint Limits.



5. Investigate the Pitch, Roll, and Yaw motions, controlling the extents using the Minimum and Maximum inputs. For Pitch, enter 30 for the Minimum and 60 for the Maximum. For Yaw, enter 0 degrees for the Minimum and 360 degrees for the Maximum. For Roll, enter -70 for the Minimum and -40 for the Maximum. Press OK.



6. Return to the front view and show the Lamp Shade. Maneuver the Ball joint until it matches the slope of the shade and then select Capture Position. Save the file.

