**Problem 4-4:** A coordinate measuring machine has sampled a hole feature surface and has generated the 3D pattern of points shown below. The gage is made up of a cylindrical zone of size 1 mm and the datum Plane A. The derived axis of the hole feature must fit inside the tolerance zone while datum A feature makes full contact with the datum feature simulator of the gage. First, using an expanding pin (shown in dashed lines), identify the axis of the hole (UAME) and draw the axis. You can expand the size of the pin and rotate it to fit inside the hole. Then check the gage against this axis. Based on this data, is this hole feature within the perpendicularity tolerance?



1 mm cylindrical Gage – 3D

Hole surface

Datum A surface 3D