4.1 GDT: Exercise 1
Redraw the object including all dimensions and tolerances (all units are in mm).

4.2 GDT: Exercise 2
Redraw the following shaft and add a feature dimension and tolerance of 36±0.1 and a straightness tolerance of 0.07 about the centerline at maximum material condition (all units are in mm).
4.3 GDT: Problem 10.3

Draw the two-view drawing (all the units are in mm). Add the GDT information:

1. Make left-hand face in RS view flat within 0.01. Identify this surface as datum feature A.
2. Make top surface in F view perpendicular within 0.01 relative to datum feature A. Identify this surface as datum feature B.
3. Make right surface in F view perpendicular within 0.01 relative to primary datum feature A and secondary feature B. Identify this surface as datum feature C.
4. Make all dimensions basic except for existing limit dimensions.
5. Position the four holes within 0.007 cylindrical tolerance zone at maximum material condition relative to primary datum feature A, secondary datum feature B and tertiary datum feature C.
6. In F view, identify top left corner as point X. Identify bottom right corner as Y. On bottom surface in F view, add a profile of surface tolerance of 0.02 relative to A, B & C. Indicate that this tolerance applies between X and Y.
4.4 GDT: Problem 10.4

Draw the two-view drawing (all the units are in inches). Add the GDT information;

1. Where the small cylinder intersects large cylinder in the right side view, make the face on the larger cylinder datum feature D. Control this surface with a flatness tolerance of .005.

2. In the right side view, make the axis of small cylinder datum feature E. The axis must be perpendicular within a .002 cylindrical tolerance zone at maximum material condition relative to datum feature D.

3. In the front view, make the .500-.505 slot datum feature F. Position this slot within a .003 tolerance zone at maximum material condition relative to primary datum feature D and a secondary datum feature E at maximum material condition.

4. Make the 2.500 and 4.000 diameters basic dimensions.

5. Position the four small holes within a .005 cylindrical tolerance zone at maximum material condition relative to primary datum feature D, secondary datum feature E at maximum material condition, and a tertiary datum feature F at maximum material condition.

6. Apply a profile of a surface tolerance of .050 to the outside surface in the front view relative to primary datum feature D and secondary datum feature E at maximum material condition.
SELECTED PROBLEMS

4.1 Problem 10.5

Draw the two-view drawing of the base. Using the top right-hand corner on the top surface of the part as the origin for datum reference frame, dimension the drawing using GDT information:

1. Make all dimensions basic except for the size dimension of the four holes.
2. Add the datum feature symbols making the top surface of the part datum feature A, the back surface datum feature B, and right hand side datum feature C.
3. Control datum feature A with a flatness tolerance of .005. Control datum feature B with a perpendicularity tolerance of .005 relative to datum feature A. Control datum feature C with a perpendicularity tolerance of .005 relative to primary datum feature A, secondary datum feature B.
4. For this exercise, change the four holes from threaded to through holes with a limit tolerance of .500-.510. Position the holes within .010 cylindrical tolerance zones at maximum material condition relative to primary datum feature A, secondary datum feature B, and tertiary datum feature C.
5. On the top surface, label the upper left corner point X and bottom-right corner point Y. Apply a profile of a surface tolerance of .005 relative to primary datum feature A, secondary datum feature B, and tertiary datum feature C between points X and Y. In the adjacent view, apply a profile of a surface tolerance of .005 relative to datum feature A to the surface parallel to datum feature A.
4.2 Problem 10.6

Draw the two-view drawing of the base. Dimension the drawing using the following GDT information:

1. Make all dimensions basic except for the size dimension of the four holes. Delete the 1.00 and 2.50 dimensions.
2. Identify the top surface of the part datum feature A. Control this surface with a flatness tolerance of .005.
3. For this exercise, change the four holes from threaded to through holes with a limit tolerance of .500-.510. Position the holes within .010 cylindrical tolerance zones at maximum material condition relative to primary datum feature A. Sometimes it is necessary to use a pattern of holes to establish a datum reference frame. Identify the holes as datum feature B by attaching the datum feature symbol to the bottom of the position feature control frame or to the shoulder of the leader for the size dimension of the holes.
4. Apply a profile of a surface tolerance all around of .005 relative to datum feature A and secondary datum feature B at maximum material condition. In the adjacent view, apply a profile of a surface tolerance of .005 relative to datum feature A to the surface parallel to datum feature A.
When a material condition is applied to a tolerance, the size of the tolerance zone varies with the size of the feature. Complete the table.

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<thead>
<tr>
<th>Actual Size of Hole</th>
<th>Diameter of Tolerance Zone Allowed</th>
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