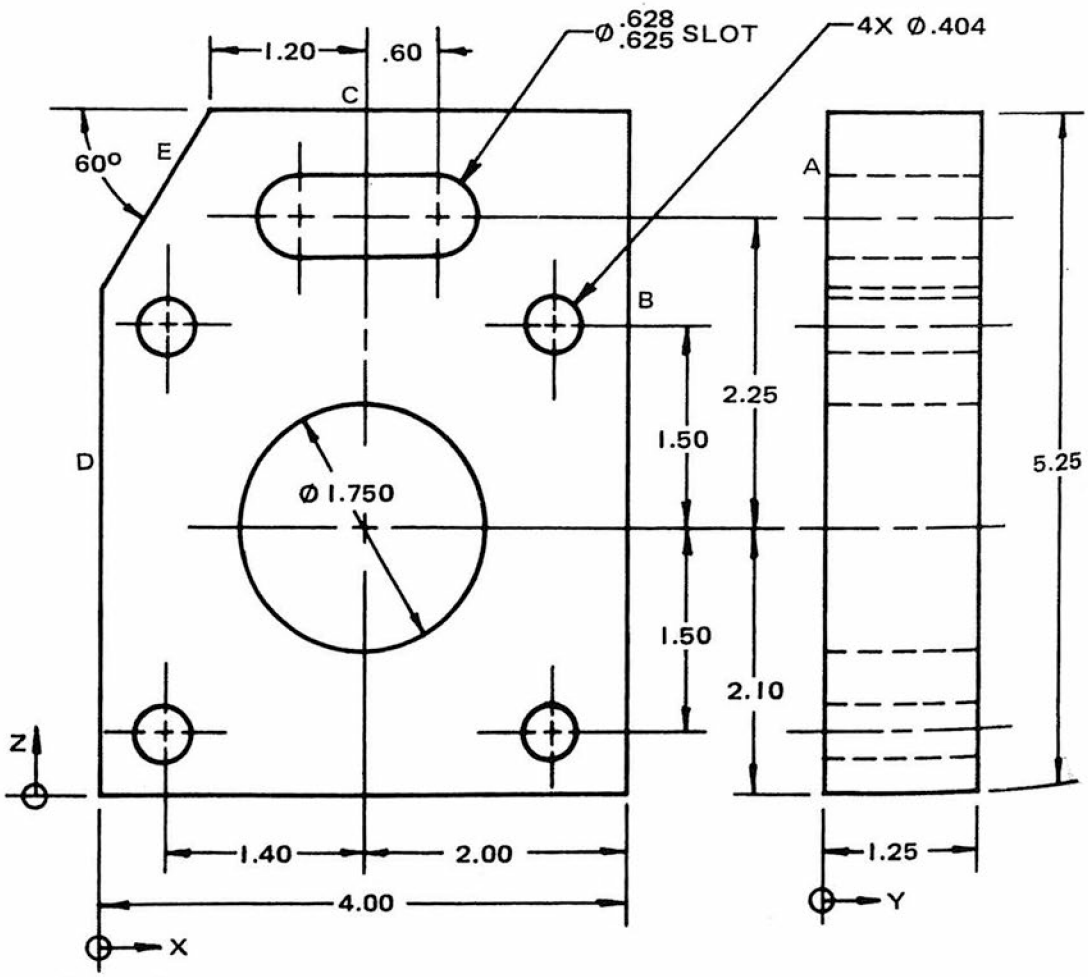


From the information shown in Fig. 16-221 make a two-view drawing of the spacer.

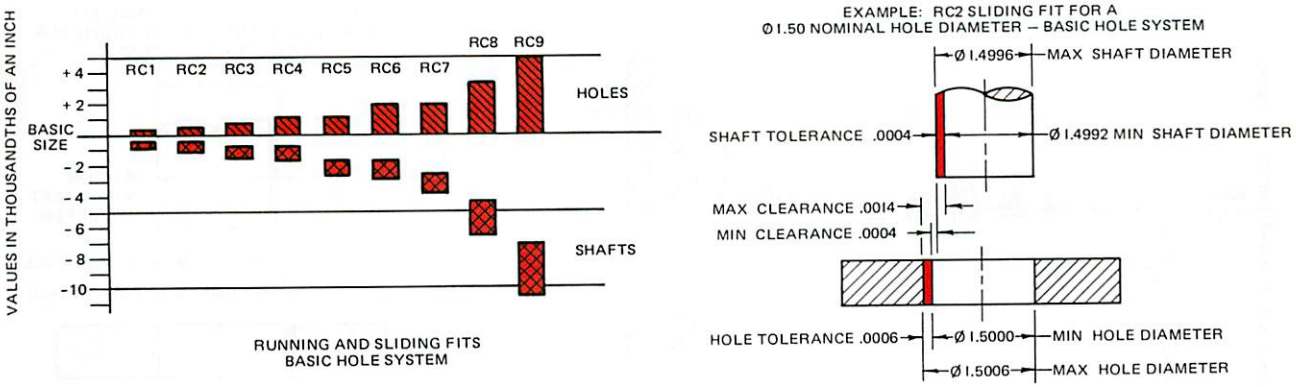
GEOMETRIC TOLERANCING REQUIREMENTS TO BE ADDED TO DRAWING

- ALL DATUMS AND TOLERANCES TO BE ON AN MMC BASIS UNLESS OTHERWISE SPECIFIED
- SURFACES MARKED A, B, AND C ARE DATUMS A, B, AND C RESPECTIVELY
- SURFACE A IS PERPENDICULAR WITHIN .01 TO DATUMS B AND C IN THAT ORDER
- SURFACE D IS PARALLEL WITHIN .004 OF DATUM B
- THE SLOT IS PARALLEL WITHIN .002 TO DATUM C AND PERPENDICULAR WITHIN .001 TO DATUM A
- THE 1.750 HOLE HAS AN RC7 FIT (SHOW THE SIZE OF THE HOLE AS LIMITS) AND IS PERPENDICULAR WITHIN .002 TO DATUM A
- SURFACE E HAS AN ANGULARITY TOLERANCE OF .010 WITH DATUM C
- SURFACE A IS TO BE FLAT WITHIN .002 FOR ANY ONE-INCH SQUARE SURFACE WITH A MAXIMUM FLATNESS TOLERANCE OF .005

See attached table 43

See attached fig 16-29

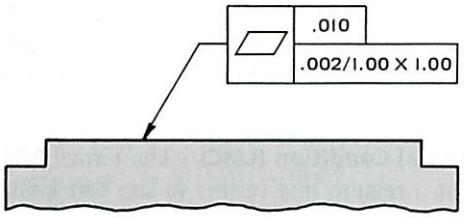
Fig. 16-221 Spacer.



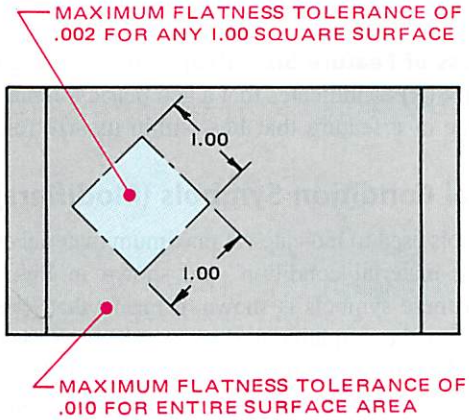
Nominal Size Range Inches		Class RC1 Precision Sliding			Class RC2 Sliding Fit			Class RC3 Precision Running			Class RC4 Close Running		
		Hole Tol. GR5	Minimum Clearance	Shaft Tol. GR4	Hole Tol. GR6	Minimum Clearance	Shaft Tol. GR5	Hole Tol. GR7	Minimum Clearance	Shaft Tol. GR6	Hole Tol. GR8	Minimum Clearance	Shaft Tol. GR7
Over	To	−0		+0	−0		+0	−0		+0	−0		+0
0	.12	+0.15	0.1	−0.12	+0.25	0.1	−0.15	+0.4	0.3	−0.25	+0.6	0.3	−0.4
.12	.24	+0.2	0.15	−0.15	+0.3	0.15	−0.2	+0.5	0.4	−0.3	+0.7	0.4	−0.5
.24	.40	+0.25	0.2	−0.15	+0.4	0.2	−0.25	+0.6	0.5	−0.4	+0.9	0.5	−0.6
.40	.71	+0.3	0.25	−0.2	+0.4	0.25	−0.3	+0.7	0.6	−0.4	+1.0	0.6	−0.7
.71	1.19	+0.4	0.3	−0.25	+0.5	0.3	−0.4	+0.8	0.8	−0.5	+1.2	0.8	−0.8
1.19	1.97	+0.4	0.4	−0.3	+0.6	0.4	−0.4	+1.0	1.0	−0.6	+1.6	1.0	−1.0
1.97	3.15	+0.5	0.4	−0.3	+0.7	0.4	−0.5	+1.2	1.2	−0.7	+1.8	1.2	−1.2
3.15	4.73	+0.6	0.5	−0.4	+0.9	0.5	−0.6	+1.4	1.4	−0.9	+2.2	1.4	−1.4
4.73	7.09	+0.7	0.6	−0.5	+1.0	0.6	−0.7	+1.6	1.6	−1.0	+2.5	1.6	−1.6
7.09	9.85	+0.8	0.6	−0.6	+1.2	0.6	−0.8	+1.8	2.0	−1.2	+2.8	2.0	−1.8
9.85	12.41	+0.9	0.8	−0.6	+1.2	0.8	−0.9	+2.0	2.5	−1.2	+3.0	2.5	−2.0
12.41	15.75	+1.0	1.0	−0.7	+1.4	1.0	−1.0	+2.2	3.0	−1.4	+3.5	3.0	−2.2

Class RC5 Medium Running			Class RC6 Medium Running			Class RC7 Free Running			Class RC8 Loose Running			Class RC9 Loose Running		
Hole Tol. GR8	Minimum Clearance	Shaft Tol. GR7	Hole Tol. GR9	Minimum Clearance	Shaft Tol. GR8	Hole Tol. GR9	Minimum Clearance	Shaft Tol. GR8	Hole Tol. GR10	Minimum Clearance	Shaft Tol. GR9	Hole Tol. GR11	Minimum Clearance	Shaft Tol. GR10
−0		+0	−0		+0	−0		+0	−0		+0	−0		+0
+0.6	0.6	−0.4	+1.0	0.6	−0.6	+1.0	1.0	−0.6	+1.6	2.5	−1.0	+2.5	4.0	−1.6
+0.7	0.8	−0.5	+1.2	0.8	−0.7	+1.2	1.2	−0.7	+1.8	2.8	−1.2	+3.0	4.5	−1.8
+0.9	1.0	−0.6	+1.4	1.0	−0.9	+1.4	1.6	−0.9	+2.2	3.0	−1.4	+3.5	5.0	−2.2
+1.0	1.2	−0.7	+1.6	1.2	−1.0	+1.6	2.0	−1.0	+2.8	3.5	−1.6	+4.0	6.0	−2.8
+1.2	1.6	−0.8	+2.0	1.6	−1.2	+2.0	2.5	−1.2	+3.5	4.5	−2.0	+5.0	7.0	−3.5
+1.6	2.0	−1.0	+2.5	2.0	−1.6	+2.5	3.0	−1.6	+4.0	5.0	−2.5	+6.0	8.0	−4.0
+1.8	2.5	−1.2	+3.0	2.5	−1.8	+3.0	4.0	−1.8	+4.5	6.0	−3.0	+7.0	9.0	−4.5
+2.2	3.0	−1.4	+3.5	3.0	−2.2	+3.5	5.0	−2.2	+5.0	7.0	−3.5	+9.0	10.0	−5.0
+2.5	3.5	−1.6	+4.0	3.5	−2.5	+4.0	6.0	−2.5	+6.0	8.0	−4.0	+10.0	12.0	−6.0
+2.8	4.5	−1.8	+4.5	4.0	−2.8	+4.5	7.0	−2.8	+7.0	10.0	−4.5	+12.0	15.0	−7.0
+3.0	5.0	−2.0	+5.0	5.0	−3.0	+5.0	8.0	−3.0	+8.0	12.0	−5.0	+12.0	18.0	−8.0
+3.5	6.0	−2.2	+6.0	6.0	−3.5	+6.0	10.0	−3.5	+9.0	14.0	−6.0	+14.0	22.0	−9.0

TABLE 43 Running and sliding fits. (Values in thousandths of an inch.)



(A) DRAWING CALLOUT



(B) INTERPRETATION

Fig. 16-29 Overall flatness tolerance combined with a flatness tolerance of a unit area.

16-3 ASSIGNMENTS

See Assignments 4 through 7 for Unit 16-3 on page 602.

INTERNET CONNECTION Visit this site for additional information on geometric dimensioning and tolerancing: http://www.engineersedge.com/gdt.htm

16-4 STRAIGHTNESS OF A FEATURE OF SIZE

Features of Size

So far, only lines, line elements, and single surfaces have been considered. These are features having no diameter or thickness, and geometric tolerances applied to them cannot be affected by feature size.

Features of size are features that do have diameter or thickness. These may be cylinders, such as shafts and holes. They may be slots, tabs, or rectangular or flat parts, where two parallel, flat surfaces are considered to form a single feature. With features of size, the feature control frame is associated with the size dimension (Fig. 16-30).

Definitions

Before examples of features of size are given, it is essential to understand certain terms.

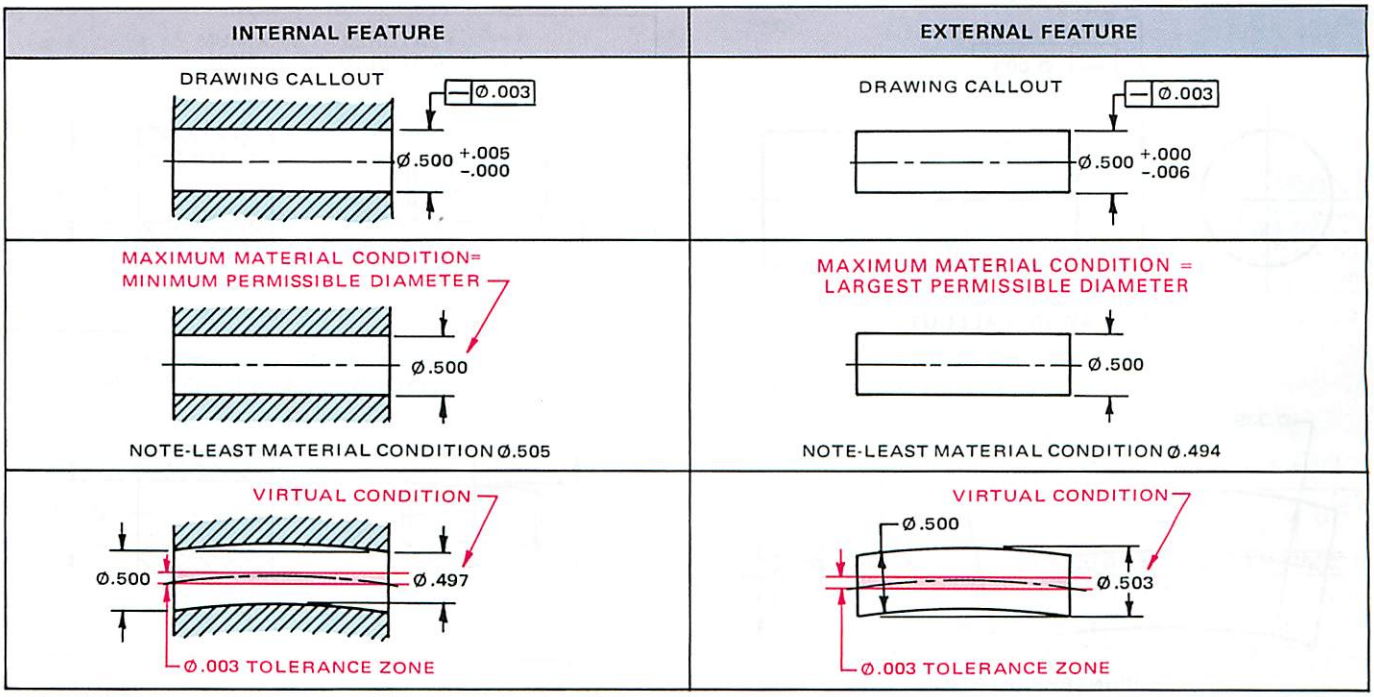


Fig. 16-30 Maximum material and virtual conditions.