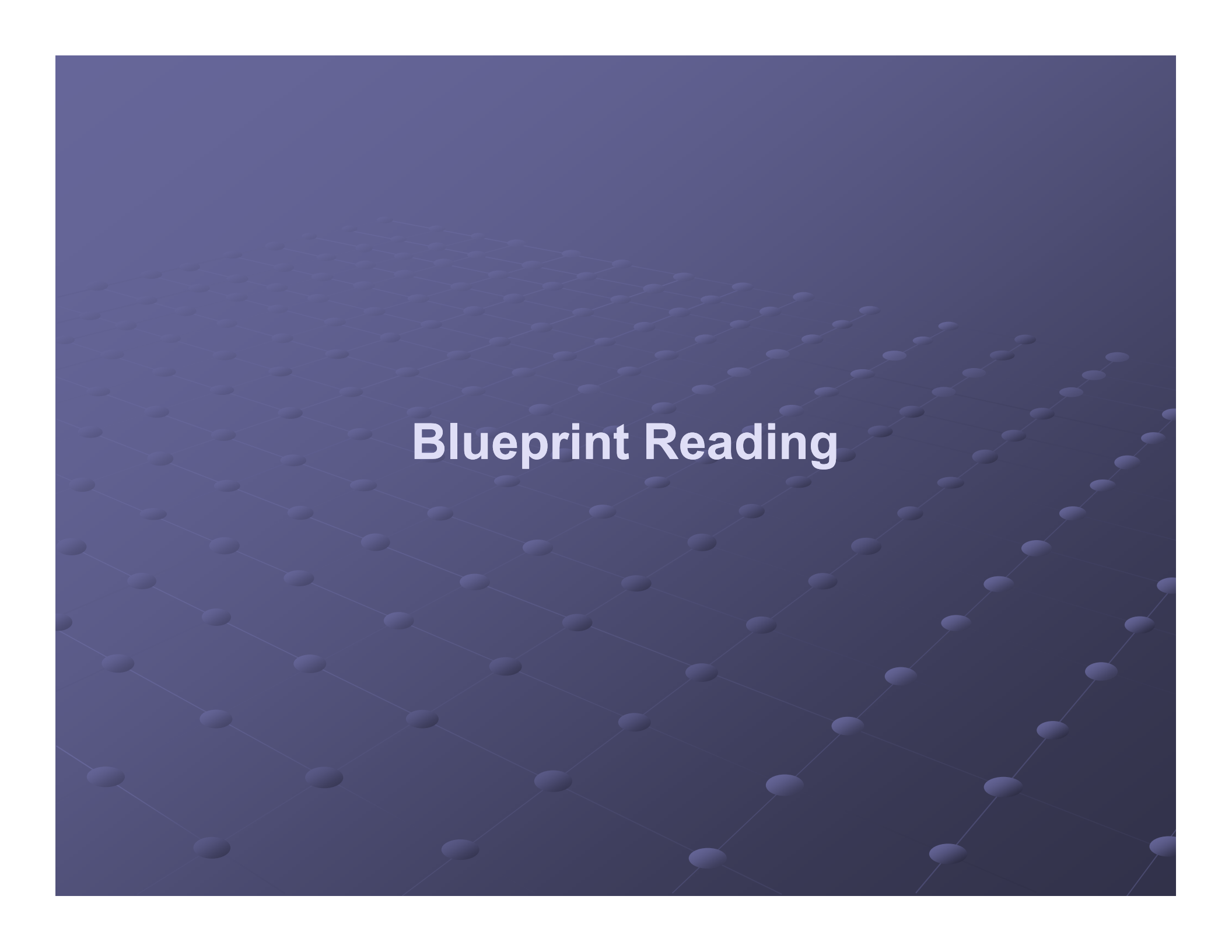




Blueprint Reading

References

“Blueprint Reading Basics”

Warren Hammer

Industrial Press Inc.

Copyright 1989

“Blueprint Reading and Technical Sketching for Industry”

Thomas P. Olivo

Nelson Canada

Copyright 1992

Dimensioning and Tolerancing

ASME Y14.5M – 1994 (R1999)

ASME International

Three Park Avenue

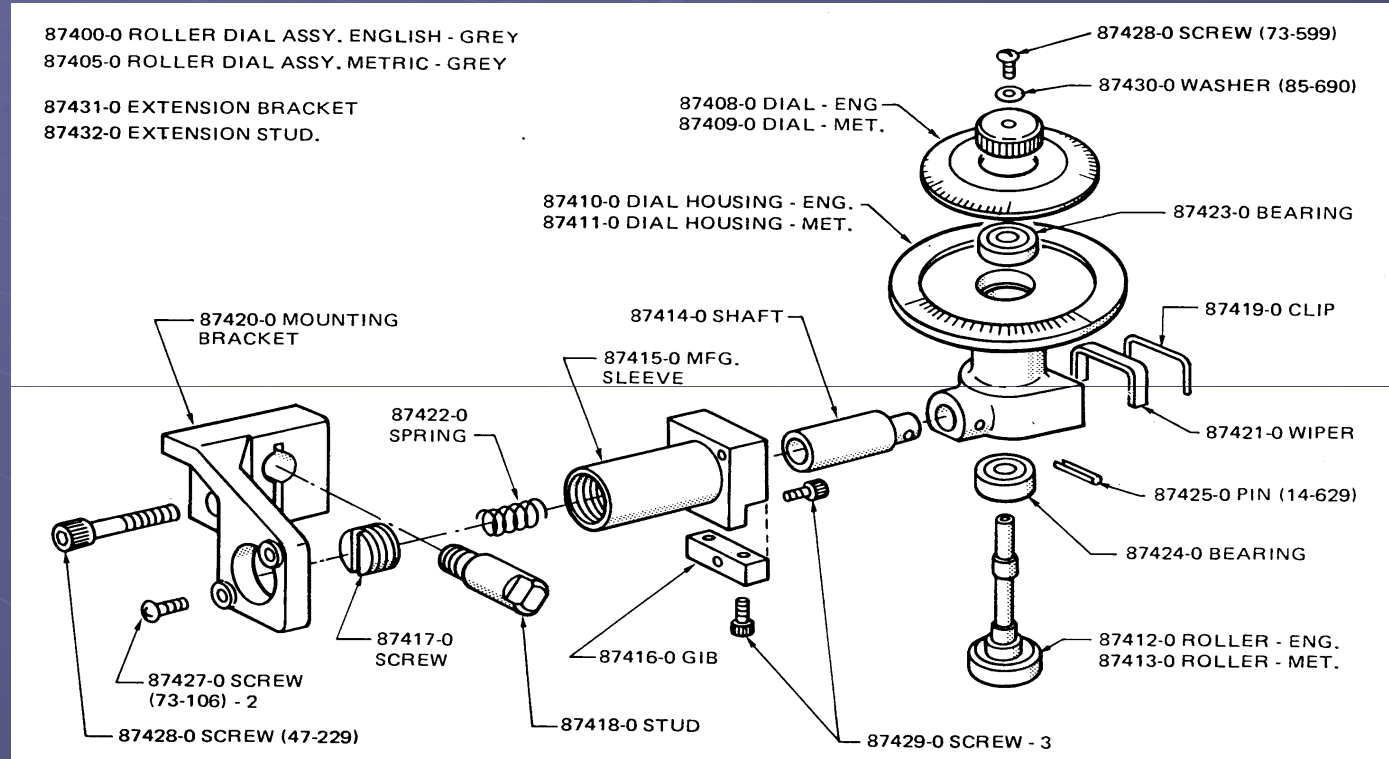
New York, NY 10016-5990

Blueprints Have Three Main Parts:

- Drawing - Graphical representation that shows the exact shape of a component.
- Dimensions - Numbers that provide the measurements of a piece of a drawing.
- Notes - Include information that cannot be easily identified on the drawing or other information needed to fabricate the component. Some information may be important and some may be irrelevant.

Drawings:

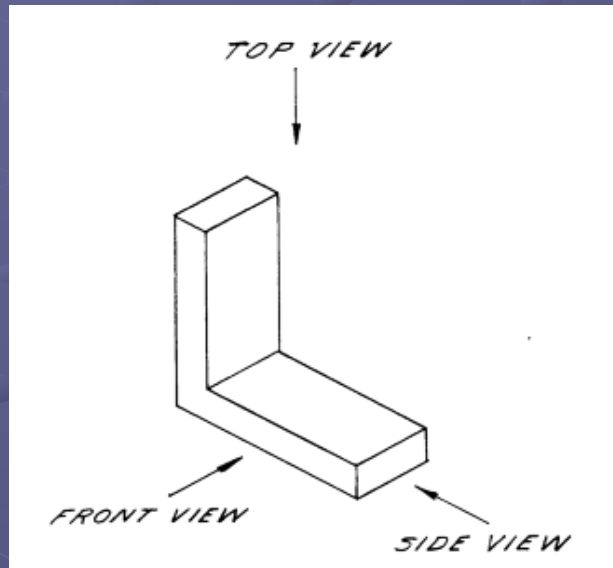
Exploded View:



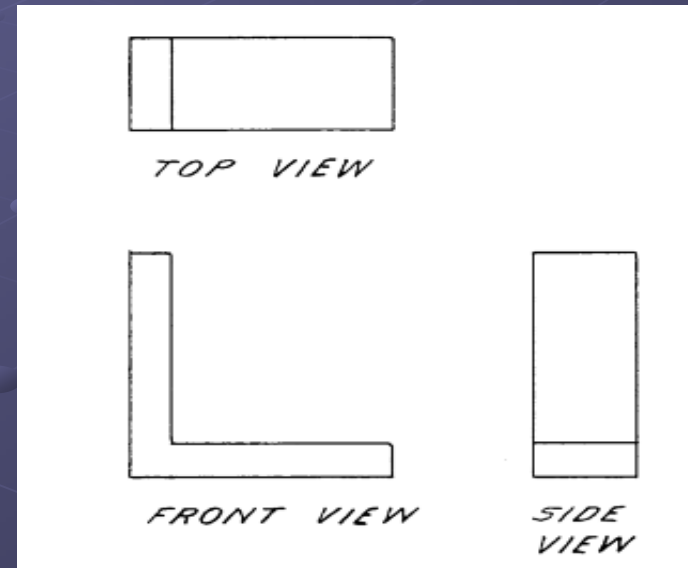
- good for viewing how pieces fit together
- usually no dimensions or piece information

Drawings:

Isometric:

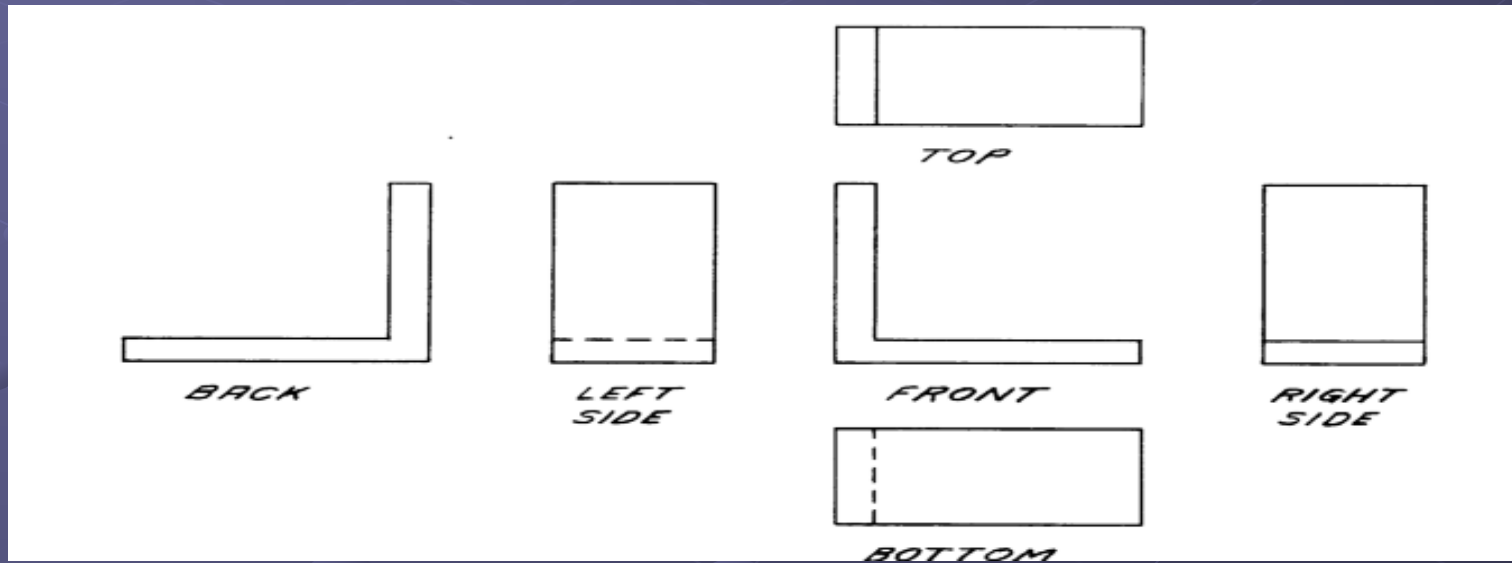


Orthographic:

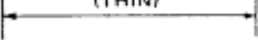
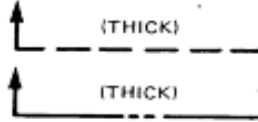
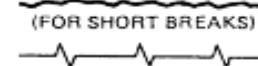


Orthographic:

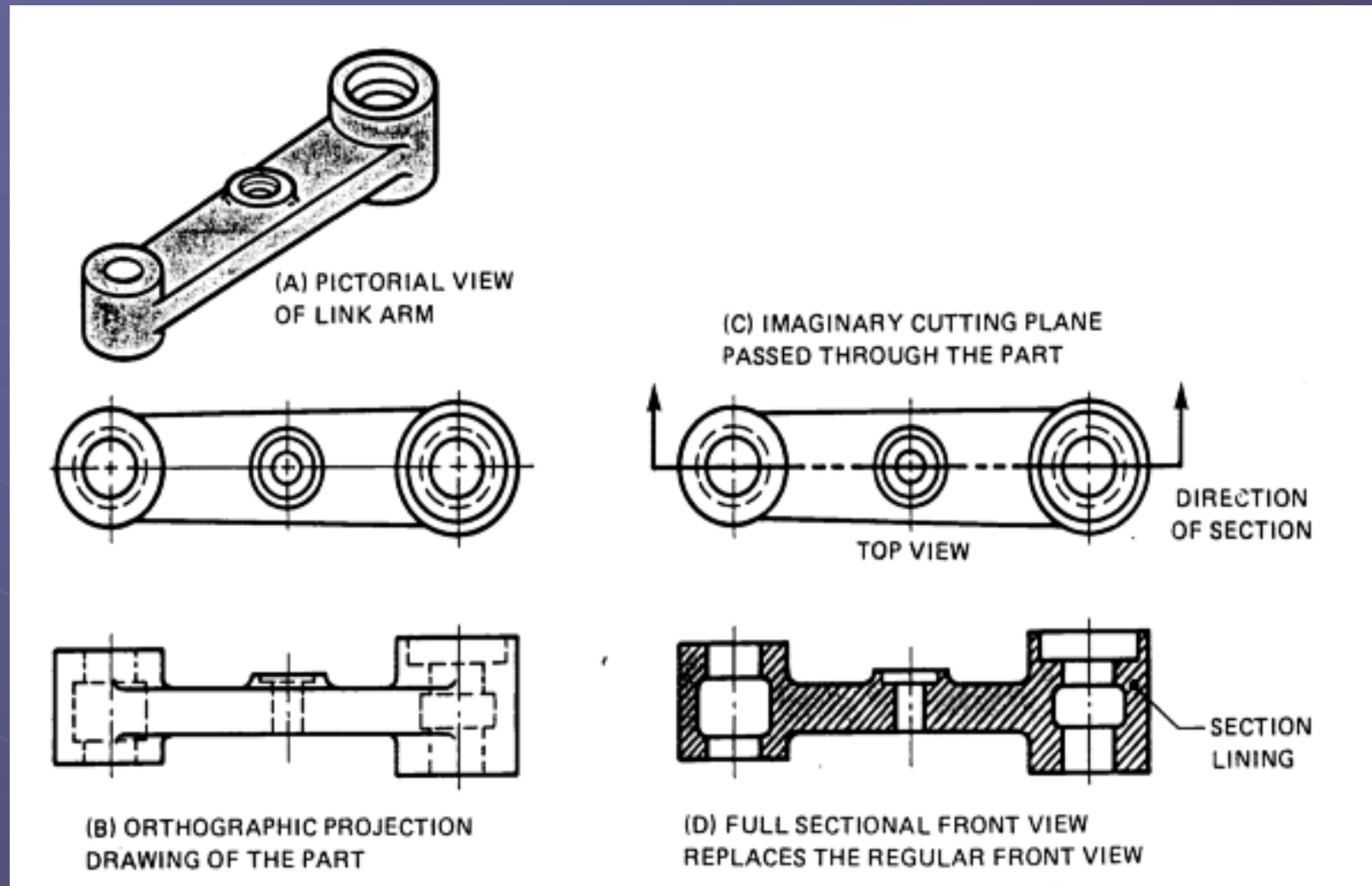
Each component has 6 sides and each can be shown as a view on a drawing. Typically, only 3 views (front, top, and right side) are provided unless other views are needed for clarification.



Lines:

BASIC LINES	LINE SYMBOL AND CHARACTERISTICS
① VISIBLE (OBJECT) LINE	(THICK) 
② HIDDEN LINE	(THIN) 
③ CENTER LINE	(THIN) 
④ EXTENSION AND DIMENSION LINES	(THIN) 
⑤ PROJECTION LINE	(THIN) 
⑥ CUTTING PLANE LINES (SHOWING DIRECTION OF VIEWING PLANE LINE)	(THICK) 
⑦ BREAK LINES	(THICK) (FOR SHORT BREAKS)  (THIN) 
⑧ PHANTOM (OR ALTERNATE, ADJACENT, OR REPEAT POSITION) LINE	(THIN) 
⑨ SECTION LINE	(THIN) 

Sectional Drawings:



Partial Sectional Drawings:

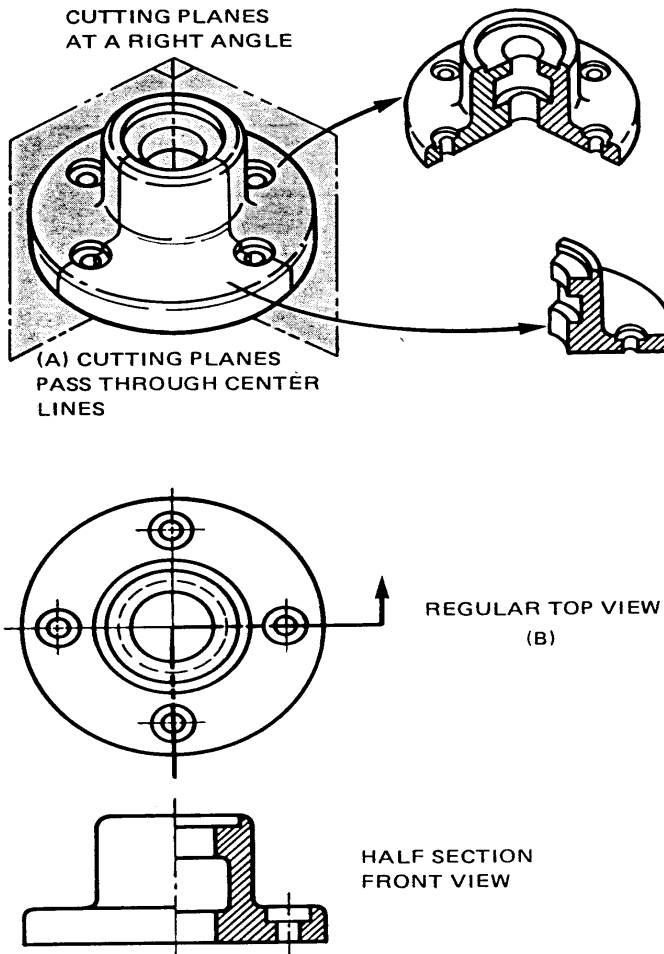


FIGURE 25-1 CUTTING PLANE POSITION AND THE DEVELOPMENT OF A HALF-SECTION VIEW

Partial Sectional Drawings:

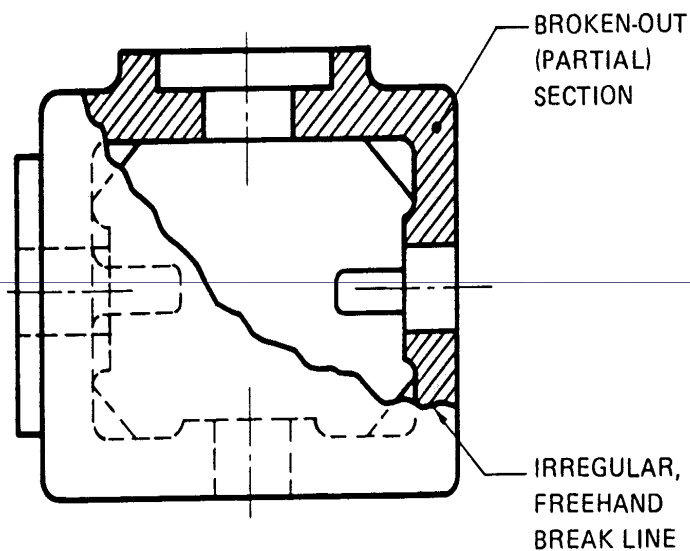


FIGURE 25-2 EXAMPLE OF BROKEN-OUT (PARTIAL) SECTION OF AN OBJECT

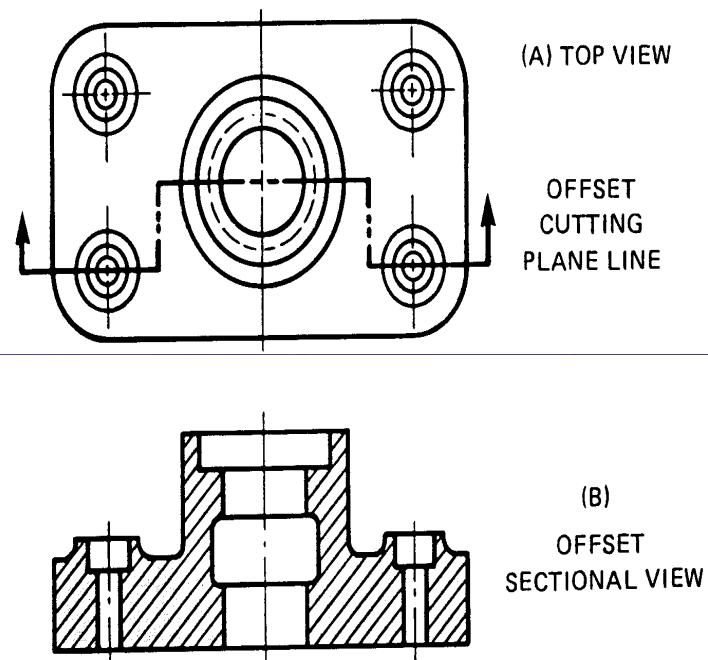
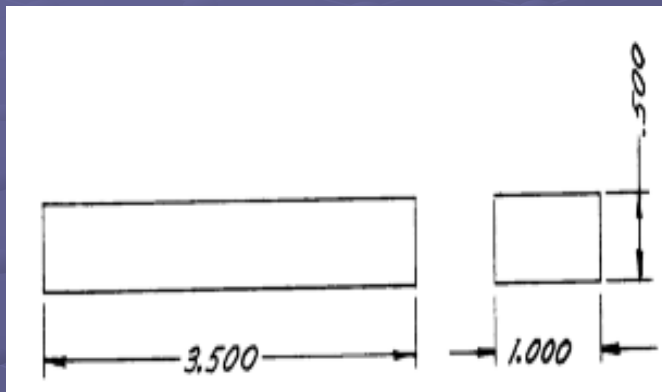


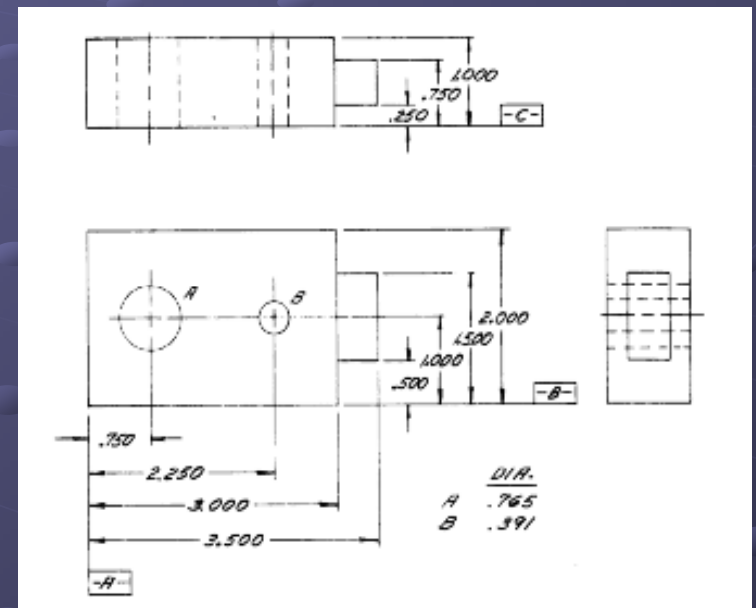
FIGURE 25-3 OFFSET SECTIONAL VIEW OF A MACHINED CASTING

Dimensions:

Point to Point:



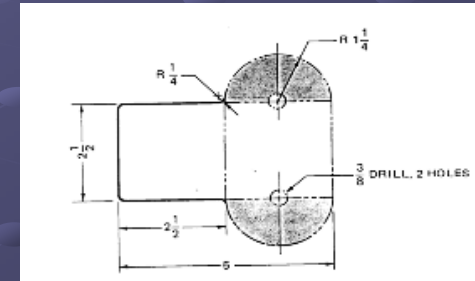
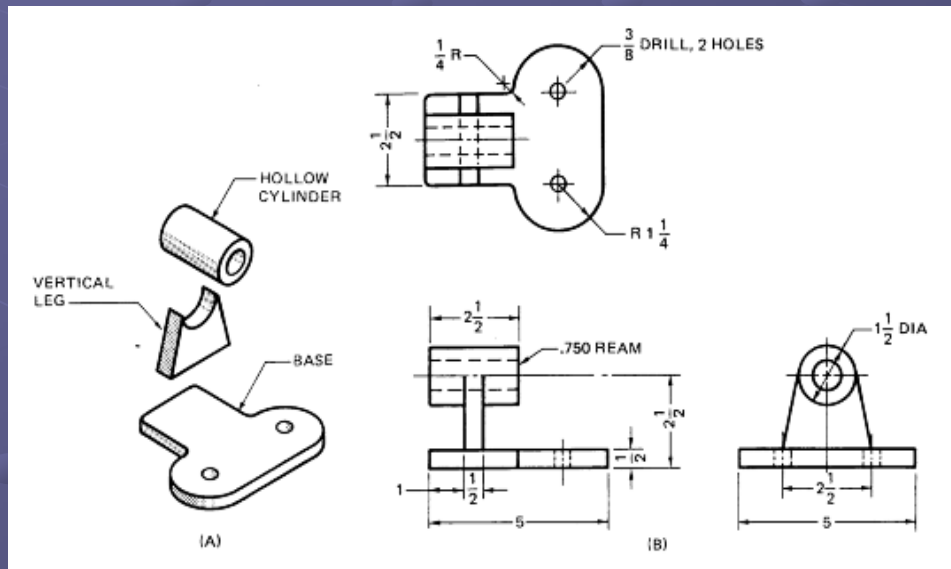
Datum:



- May be fractions or decimal and must include units

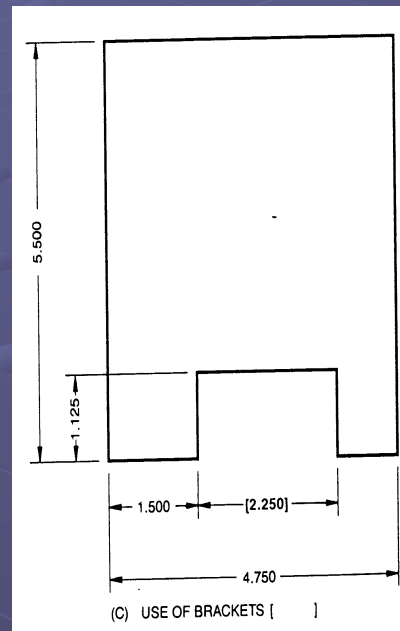
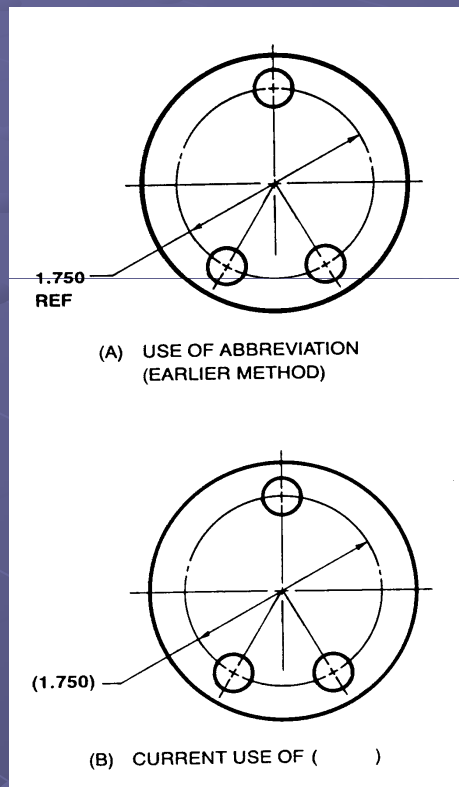
Dimensions (cont.):

Radii and Holes:

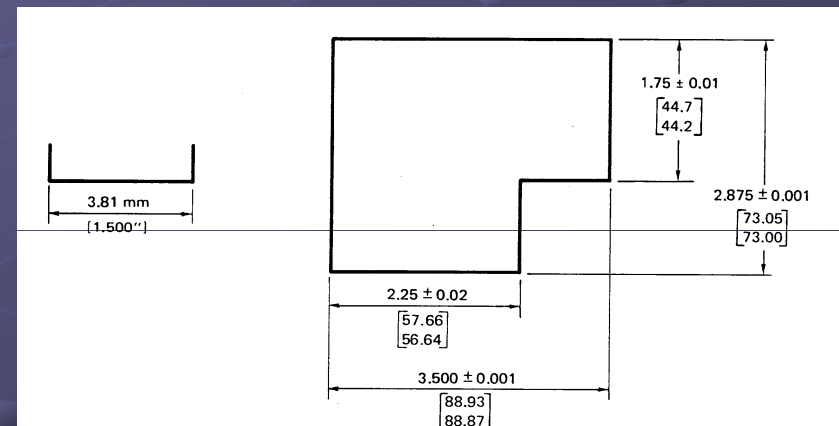


Dimensions (cont.):

Reference Dimensions:



Dual Units:



Tolerances:

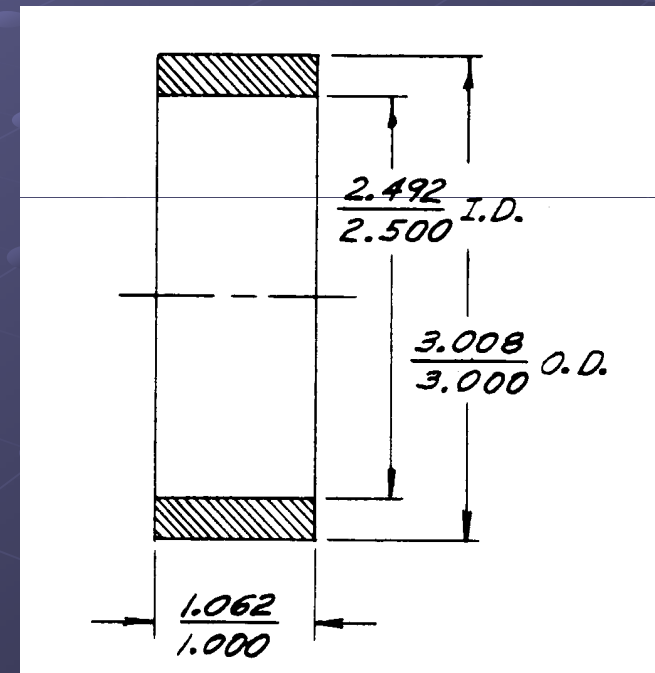
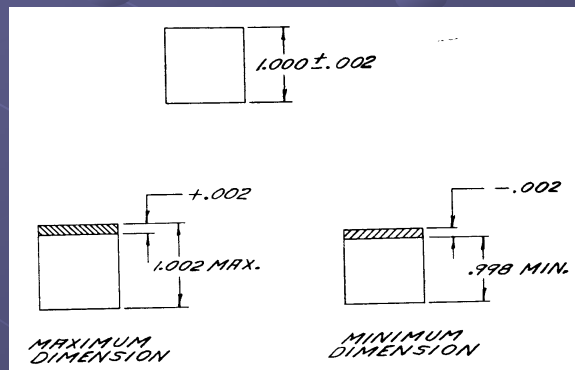
+/- X.XX

drawing, note or title block

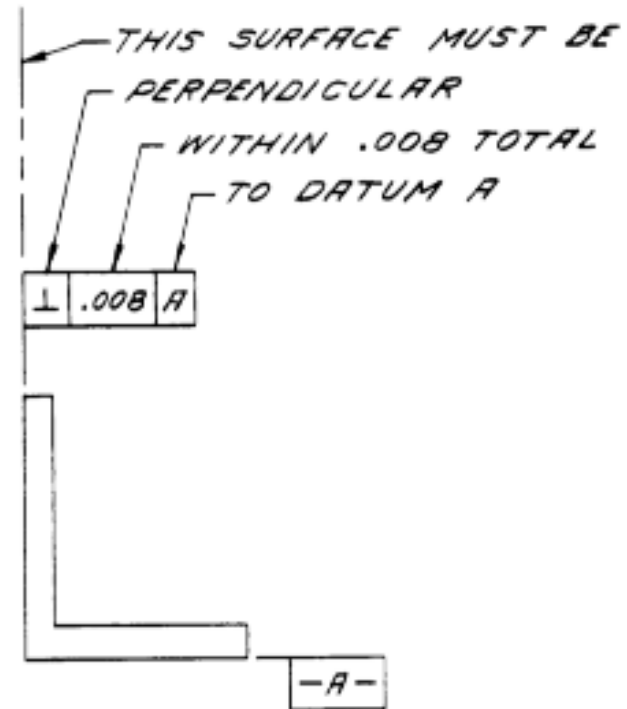
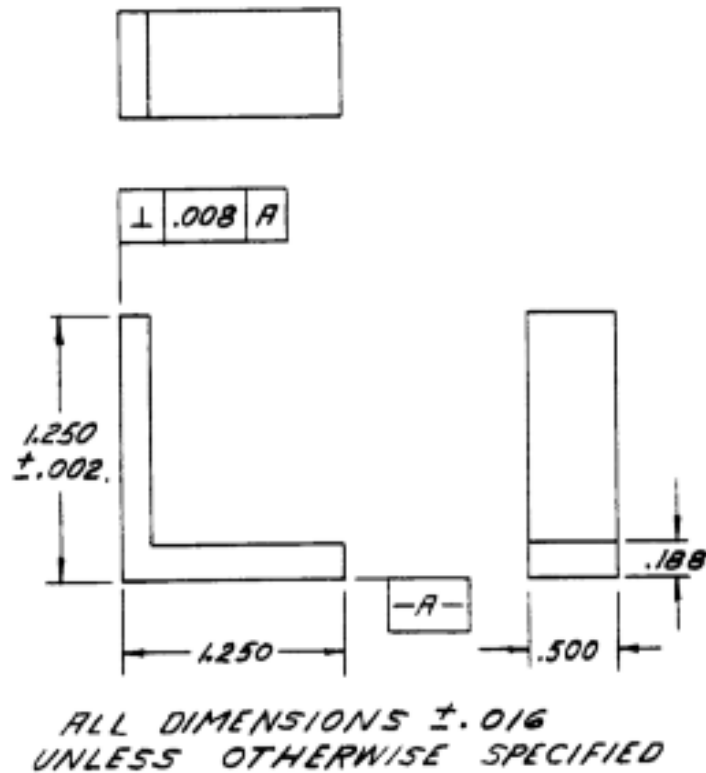
Max./Min.

THE FOLLOWING TOLERANCES TO APPLY UNLESS OTHERWISE SPECIFIED FRACTIONS $\pm 1/64$ 2 PL. DECIMALS $\pm .020$ 3 PL. DECIMALS $\pm .006$ ANGLES $\pm 1^\circ$	MATERIAL	DRAWN	CHECK	SCALE
	NAME	NO.		

NOTE
 ALL DIMENSIONS $\pm .002$
 UNLESS OTHERWISE SPECIFIED

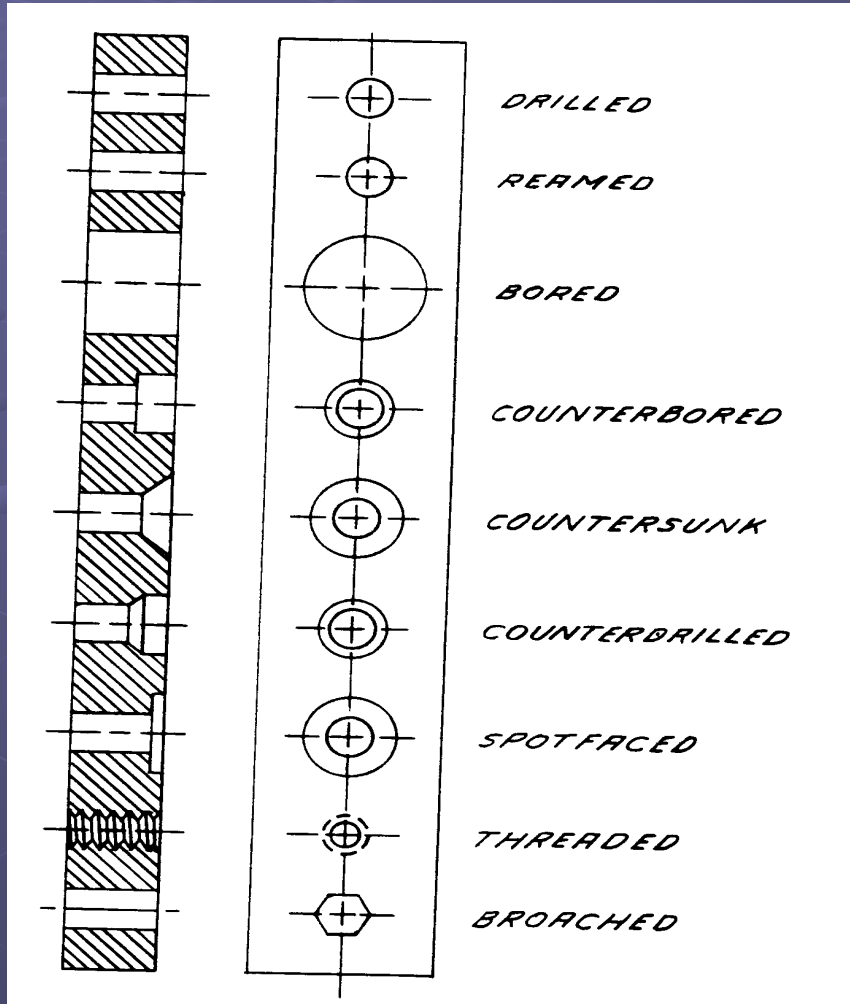


Geometric Tolerancing:



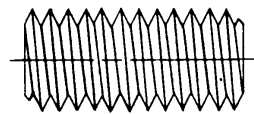
Machining:

Types of Holes:

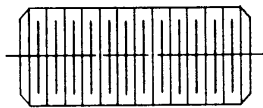


Machining (cont.):

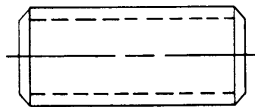
Threaded Sections:



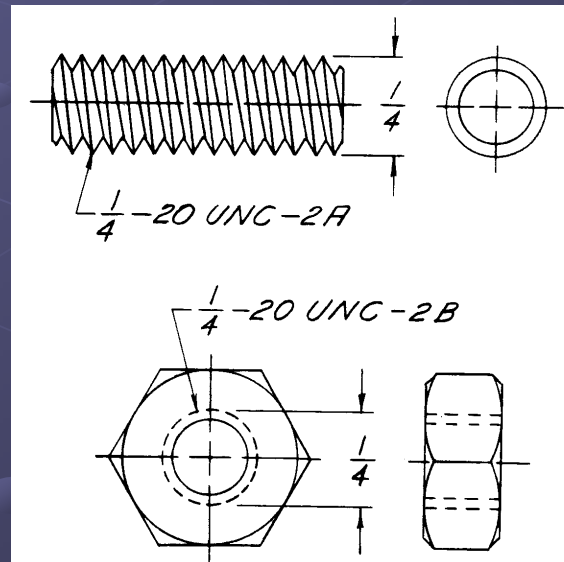
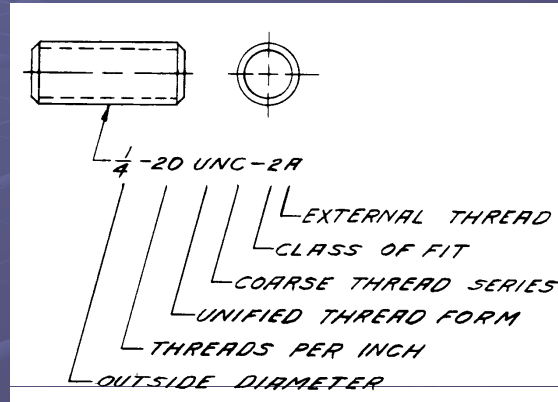
GRAPHIC



SCHEMATIC

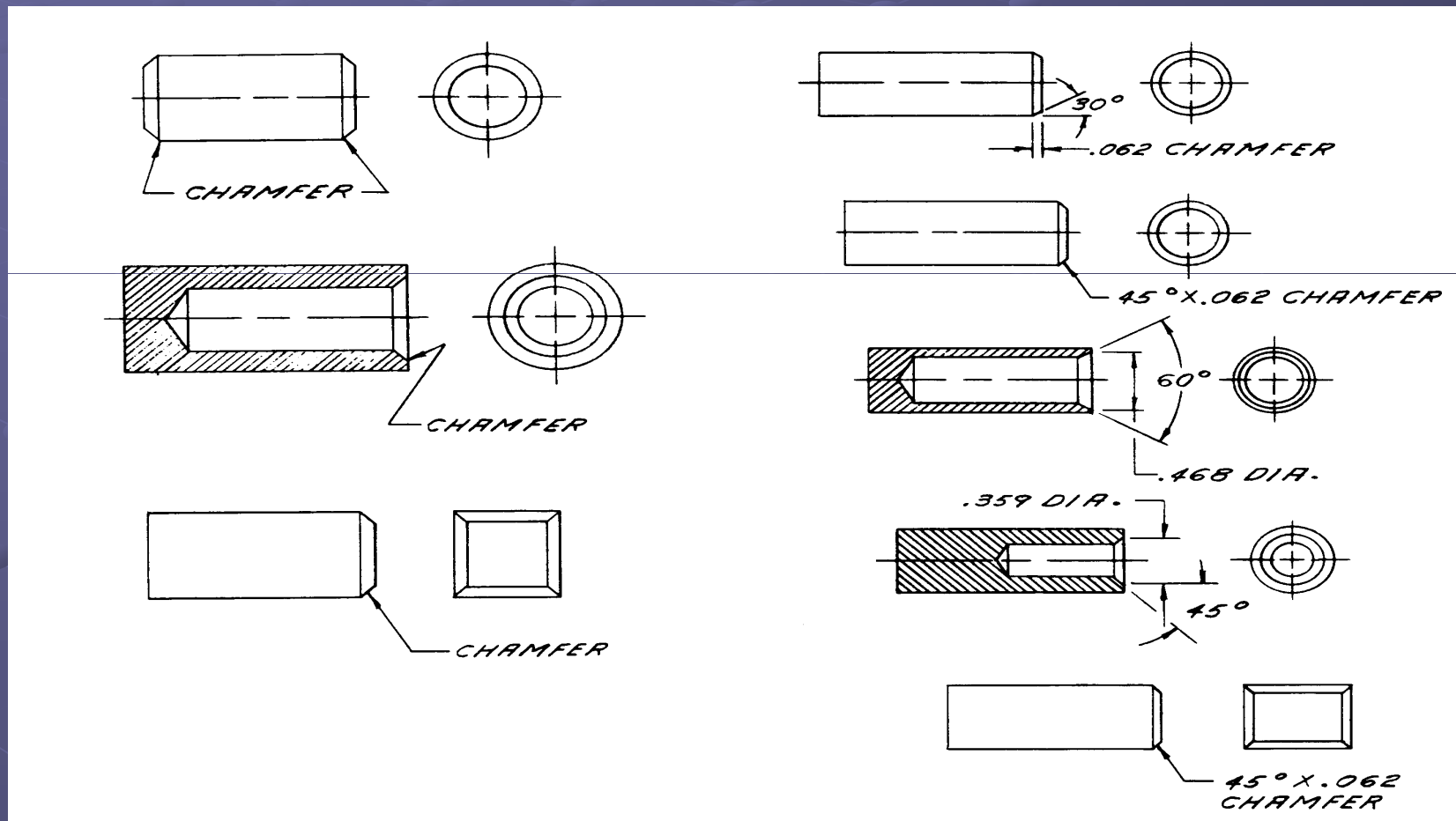


SIMPLIFIED



Machining (cont.):

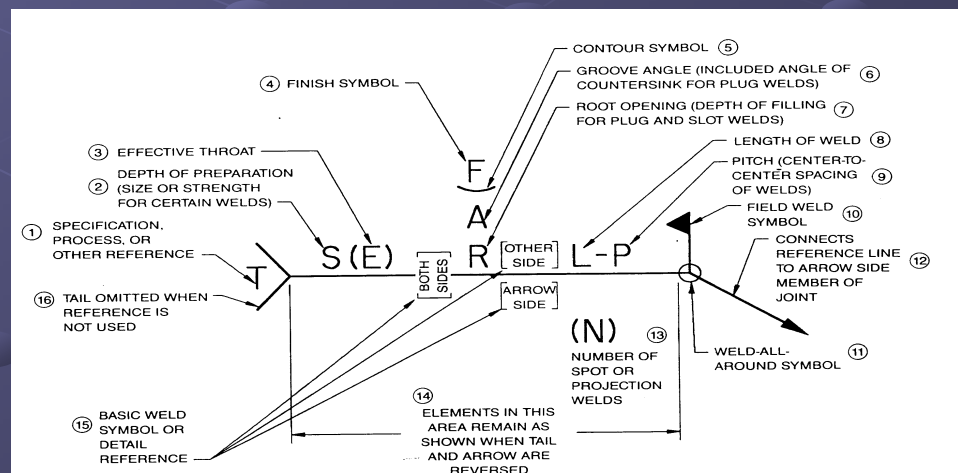
Chamfers:



Machining (cont.):

Welds:

FILLET	PLUG OR SLOT	SPOT OR PROJECTION	SEAM	BACK OR BACKING	SURFACING	SCARF FOR BRAZED JOINT	FLANGE EDGE
GROOVE							FLANGE
SQUARE	V	BEVEL	U	J	FLARE-V	FLARE-BEVEL	CORNER



Notes:

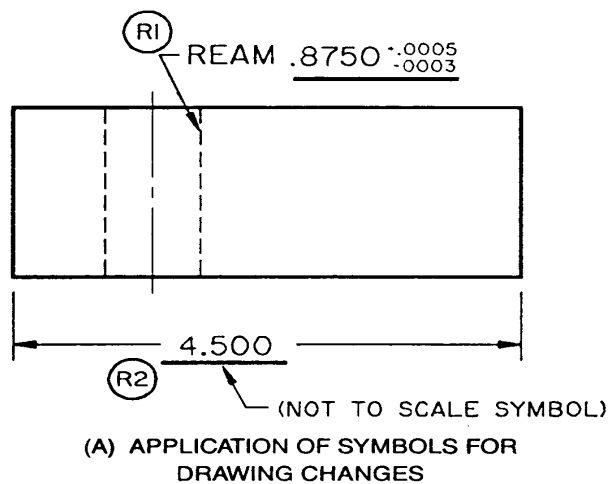
- ❖ Finishes (Machining, Paints, Chemical Treatments)
- ❖ QC Inspections
- ❖ Default units, dimensions, or tolerances
- ❖ Instructions for fabrication processes
- ❖ Other instructions necessary to describe the part

Title Block:

RIGHT -
BORDER LINE OF
DRAWING SHEET →

(E) UNLESS OTHERWISE SPECIFIED, DIMENSIONAL TOLERANCES ARE FRACTIONS DECIMALS ANGLES ± 0.015 $XXX \pm 0.001$ $\pm 0^\circ 10'$			APPROVALS		SHANNON MACHINE WORKS → (A) DRILL FIXTURE BASE → (B)
			DATE		
SURFACE FINISH MATERIAL AISI 1020			DRAWN <i>[Signature]</i> 11-5-91 CHKD <i>[Signature]</i> 11-7-91 APPVD <i>[Signature]</i> 11-8-91	SCALE 1/1 DRAWING 82A96 SHEET 1 OF 2	
HEAT TREATMENT CARBURIZE 0.010" CASE					

(G) (I) (H) (J) (C) (F)



REVISION	DATE	ECN #	DESCRIPTION	APPROVED
(R1)	9-2-91	000372	.8750 $^{+.0005}_{-.0003}$ WAS .750 $\pm .001$	HGO
(R2)	12-5-91	000395	4.5000 WAS 4.375	SJB

(B) ENGINEERING CHANGES RECORDED IN
TITLE/CHANGE BLOCK