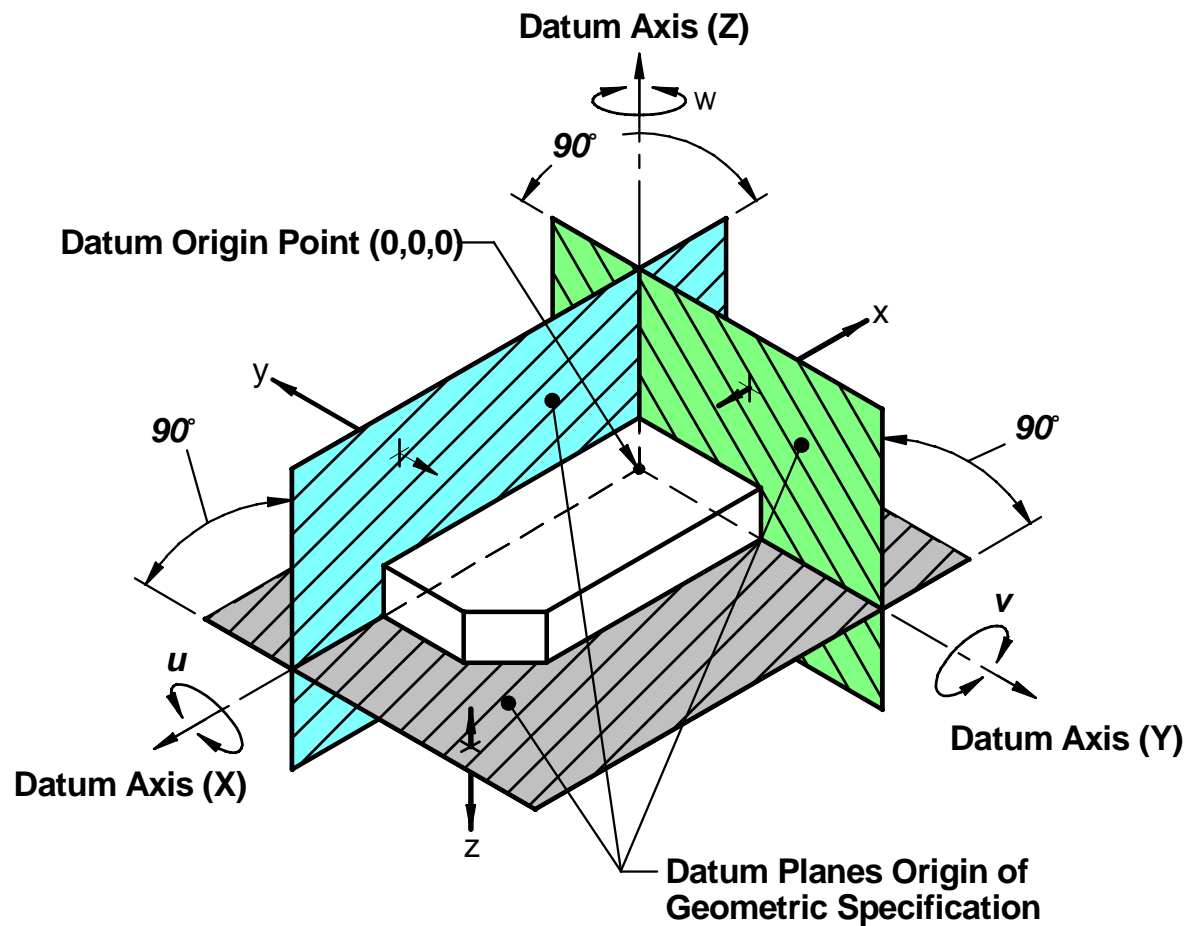


Geometric Metrology

Dimensional Tolerances Inspection & Practices in Manufacturing Fundamentals



Preface

This book is written for those individuals within metrology and manufacturing fields that desire an introduction to measuring dimensions and tolerances to ASME Y14.5-2009 and ISO 1101(E)-2004 geometric dimensioning and tolerancing.

Much of the text material has been organized so that the topics appear and build the necessary knowledge required to proceed to the next subject matter.

Kelly L. Bramble
ASME Certified Senior GDTP

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Written and Illustrated by
Kelly L. Bramble

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IEEE/ASTM SI 10-2002 ERRATA 2005, Standard for Use of the International System of Units (SI) — The Modern Metric System

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Introduction

Geometric Dimensioning and Tolerancing (GD&T) is an engineering drawing language used to communicate the physical requirements of a product object in two or three dimensional space. The GD&T standard defines a collection of symbols and specific rules for defining specific characteristics, relationships, and feature controls.

The latest standard on the subject of GD&T defined and in practice is the American Society of Mechanical Engineers ASME Y14.5 – 2009 Dimensioning and Tolerancing. The GD&T standard used internationally is the International Institute Standard (ISO) 1101:2004, Technical Drawings - Geometrical Tolerancing and associated standards.

The following are ISO standards that define GD&T requirements:

ISO/129-	Technical Drawings General Principles
ISO/406-	Technical Drawing Linear and Angular Dimensions
ISO/1101-	Technical Drawings Geometrical Tolerancing
ISO/1660-	Technical Drawings Profiles
ISO/2692-	Technical Drawings Maximum Material Condition
ISO/2692:1998/DAM 1	Technical Drawings Least Material Condition
ISO/3040-	Technical Drawings Cones
ISO/5458-	Technical Drawings Positional Tolerancing
ISO/5959-	Technical Drawings Datum's and Datum Systems

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ISO standards that define GD&T requirements continued:

ISO/5959-	Technical Drawings Datum's and Datum Systems
ISO/7083-	Technical Drawings Symbols Proportions
ISO/8015-	Technical Drawings Fundamental Tolerance Principle
ISO/10579-	Technical Drawings Non-Rigid Parts
ISO/10587-	Technical Drawings Projected Tolerance Zones

Declarations:

All illustrations and drawings are depicted and interpreted per Figure 1

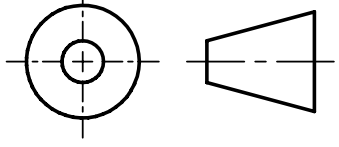
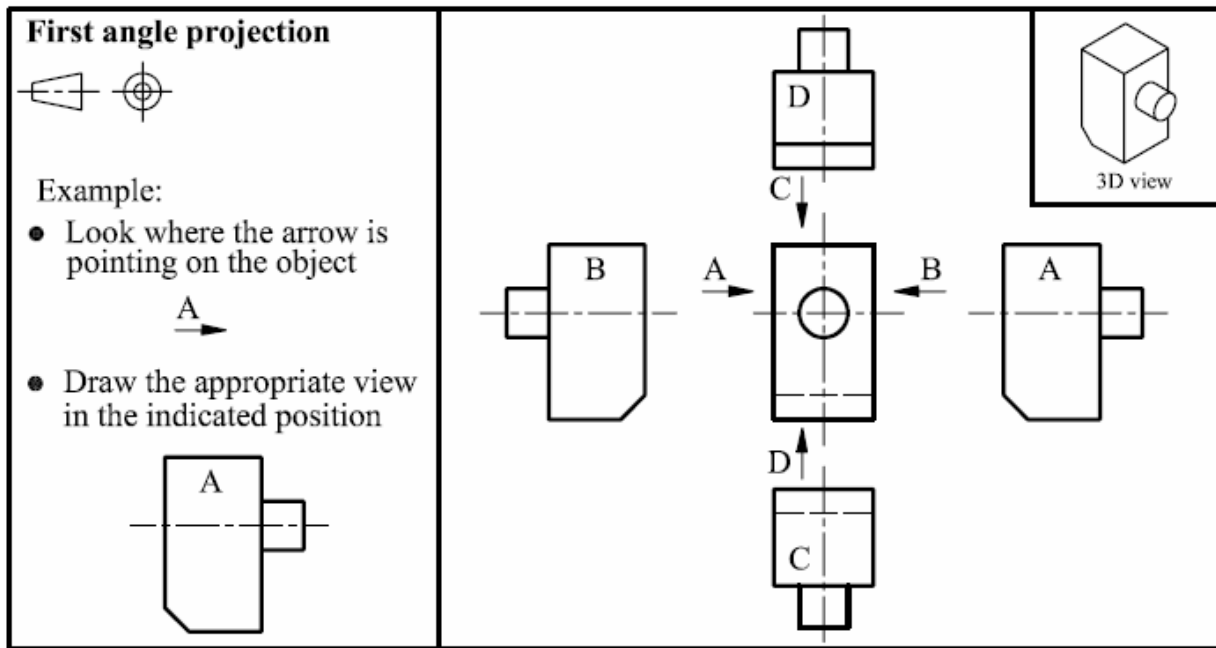
THIRD ANGLE PROJECTION	UNLESS OTHERWISE SPECIFIED
	DIM ARE IN INCHES TOL ON ANGLE $\pm 0^{\circ} 30'$.XX $\pm .03$.XXX $\pm .010$.XXXX $\pm .0001$ INTERPRET DRAWING AND TOL PER ASME Y14.5-2009

Figure 1

Engineering Drawing Standards First and Third Angle Projection



The illustrations shown for reference only – not included, discussed or otherwise defined within the ASME Y14.5-2009 standard.

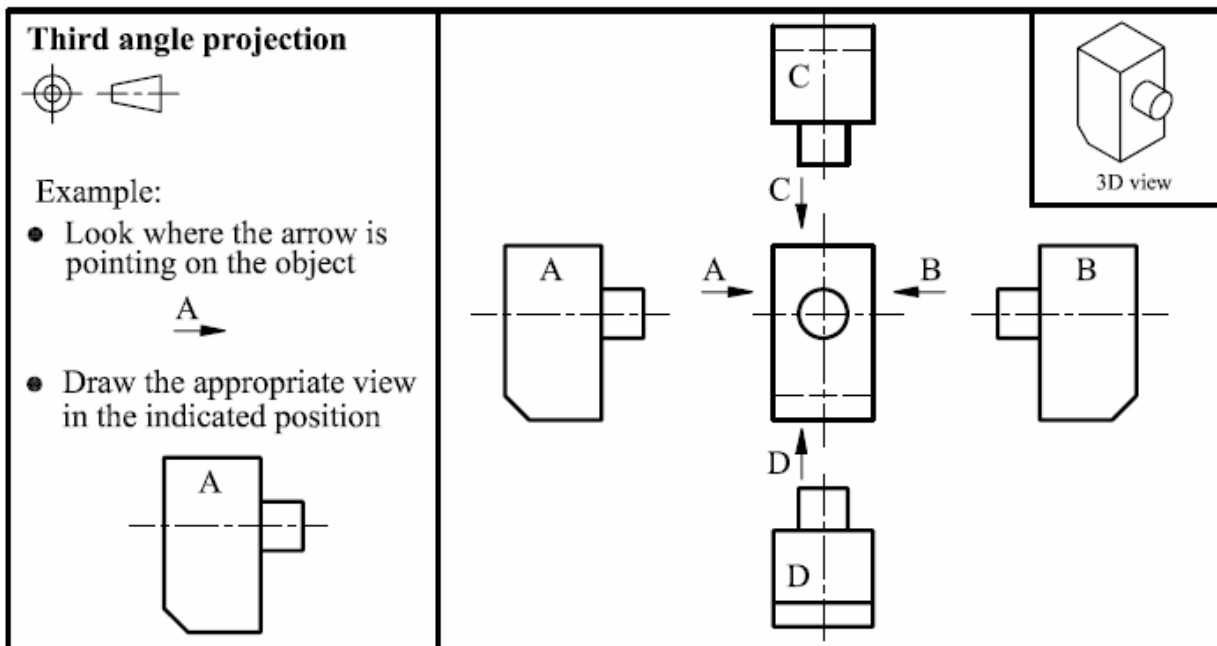


Figure 2