Drawing Standards

This textbook presents mechanical drafting standards developed by the American Society of Mechanical Engineers (ASME) and accredited by the American National Standards Institute (ANSI). This textbook also references International Standards Organization (ISO) mechanical drafting standards, and discipline-specific standards when appropriate, including the United States National CAD Standard® (NCS) and American Welding Society (AWS) standards.

ASME Drafting Standards

The following is a partial list of drafting standards and related documents developed by the ASME, meeting the ANSI requirements. These standards are ASME/ANSI-adopted unless indicated by another standard-developing organization, such as ANSI/NFPA. Some of the listed standards are, or may in the future be, under review. The list indicates the date the standard was reaffirmed next to the original publication date, when appropriate. Information in this reference material is subject to change. Some standards may be out of print. For more information or to order standards, go to the ASME Web site at www.asme.org.

Abbreviations and Acronyms

Y14.38-2007, Abbreviations and Acronyms for Use on Drawings and Related Documents

Dimensions

B4.1-1967 (R2009), Preferred Limits and Fits for Cylindrical Parts
B4.2-1978 (R2009), Preferred Metric Limits and Fits
B32.100-2005, Preferred Metric Sizes for Flat, Round, Square, Rectangle, and Hexagon Metal Products
B36.10M-2004, Welded and Seamless Wrought Steel Pipe
B36.19M-2004, Stainless Steel Pipe
Drafting
Y14.1-2005, Decimal Inch Drawing Sheet Size and Format
Y14.1M-2005, Metric Drawing Sheet Size and Format
Y14.2-2008, Line Conventions and Lettering
Y14.3-2003 (R2008), Multiview and Sectional View Drawings
Y14.4M-1989 (R2009), Pictorial Drawing
Y14.5-2009, Dimensioning and Tolerancing
Y14.5.1M-1994 (R2004), Mathematical Definition of Dimensioning and Tolerancing Principles
Y14.5.2-2000, Certification of Geometric Dimensioning and Tolerancing Professionals
Y14.6-2001 (R2007), Screw Thread Representation
Y14.8-2009, Castings, Forgings, and Molded Parts
Y14.18M-1986 (R1998), Optical Parts
Y14.24-1999 (R2009), Types and Applications of Engineering Drawings
Y14.31-2008, Undimensioned Drawings
Y14.32.1M-1994 (R2005), Chassis Frames-Passenger Car and Light Truck-Ground Vehicle Practices
Y14.34-2008, Associated Lists
Y14.35M-1997 (R2008), Revision of Engineering Drawings and Associated Documents
Y14.36M-1996 (R2008), Surface Texture Symbols
Y14.42-2002 (R2008), Digital Approval Systems
Y14.43-2003 (R2008), Dimensioning and Tolerancing Principles for Gages and Fixtures
Y14.44-2008, Reference Designations for Electrical and Electronic Parts and Equipment
Y14.100-2004 (R2009), Engineering Drawing Practices

Graphic Symbols
Y32.7-1972 (R2009), Graphic Symbols for Railroad Maps and Profiles
Y32.18-1972 (R2008), Symbols for Mechanical and Acoustical Elements as used in Schematic Diagrams
Metric System


ISO Drafting Standards

The ISO is an international organization that currently includes members from 163 countries. The United States is a member, represented by ANSI. The ISO provides an extensive list of drafting standards and related documents. Several of the ISO drafting standards for various disciplines are available in the ISO’s *Technical drawings* publication.

The ISO 2768—*General Tolerances* standard details specific ISO dimensioning and tolerancing practices. This standard is particularly important in preparing a metric drawing according to ASME/ANSI standards, because metric tolerancing is generally controlled by the ISO. A general note that states the ISO 2768 class for general tolerances, such as ISO 2768-m, should be placed on the drawing. For more information or to order standards, go to the ISO Web site at www.iso.org.

United States National CAD Standard

A group of agencies, including the CADD/GIS Technology Center (CGTC), the American Institute of Architects (AIA), the Construction Specifications Institute (CSI), the U.S. Coast Guard, the Sheet Metal and Air Conditioning Contractors National Association (SMACNA), and the National Institute of Building Sciences (NIBS), developed the United States National CAD Standard (NCS). The NCS primarily applies to architectural and construction-related disciplines and functions with AutoCAD. The NCS includes three documents:

- The American Institute of Architects (AIA) CAD Layer Guidelines
- The Construction Specifications Institute (CSI) Uniform Drawing System, Modules 1–8
- The CSI Plotting Guidelines

For more information or to order the NCS, go to the U.S. National CAD Standard Web site at www.buildingSMARTalliance.org/ncs/.
AWS Drafting Standards