

**ASME Y14.8-2009**  
[Revision of ASME Y14.8M-1996 (R2008)]

# **Castings, Forgings, and Molded Parts**

---

**Engineering Drawing and Related  
Documentation Practices**

**AN AMERICAN NATIONAL STANDARD**



**The American Society of  
Mechanical Engineers**



## ADOPTION NOTICE

ASME Y14.8, Casting, Forgings, and Molded Parts, was adopted on 2 April 2009 for use by the Department of Defense (DoD). Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Commander, U.S. Army Research, Development and Engineering Center (ARDEC), ATTN: RDAR-AAR-QES-E, Picatinny Arsenal, NJ 07806-5000. Copies of this document may be purchased from The American Society of Mechanical Engineers (ASME), 22 Law Drive, P.O. Box 2900, Fairfield, NJ 07007-2900, <http://www.asme.org>.

Custodians:

Army — AR  
Navy — SA  
Air Force — 16

Adopting Activity:

Army — AR  
(Project DRPR-2009-005)

Review Activities:

Army — CR, MI, PT, TM  
Navy — AS, CG, CH, EC, MC, NP, TD  
Air Force — 13, 99  
DLA — DH  
OSD — SE  
NSA — NS  
Other — CM, MP, DC2

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <http://assist.daps.dla.mil>.

ASMC N/A

AREA DRPR

DISTRIBUTION STATEMENT A. Approved for public release, distribution is unlimited.

**ASME Y14.8-2009**  
[Revision of ASME Y14.8M-1996 (R2008)]

# **Castings, Forgings, and Molded Parts**

---

**Engineering Drawing and Related  
Documentation Practices**

**AN AMERICAN NATIONAL STANDARD**



Date of Issuance: September 30, 2009

This Standard will be revised when the Society approves the issuance of a new edition. There will be no addenda or written interpretations of the requirements of this Standard issued to this edition.

Periodically certain actions of the ASME Y14 Committee may be published as Cases. Cases are published on the ASME Web site under the Committee Pages at <http://cstools.asme.org> as they are published.

ASME is the registered trademark of The American Society of Mechanical Engineers.

This code or standard was developed under procedures accredited as meeting the criteria for American National Standards. The Standards Committee that approved the code or standard was balanced to assure that individuals from competent and concerned interests have had an opportunity to participate. The proposed code or standard was made available for public review and comment that provides an opportunity for additional public input from industry, academia, regulatory agencies, and the public-at-large.

ASME does not “approve,” “rate,” or “endorse” any item, construction, proprietary device, or activity. ASME does not take any position with respect to the validity of any patent rights asserted in connection with any items mentioned in this document, and does not undertake to insure anyone utilizing a standard against liability for infringement of any applicable letters patent, nor assumes any such liability. Users of a code or standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, is entirely their own responsibility.

Participation by federal agency representative(s) or person(s) affiliated with industry is not to be interpreted as government or industry endorsement of this code or standard.

ASME accepts responsibility for only those interpretations of this document issued in accordance with the established ASME procedures and policies, which precludes the issuance of interpretations by individuals.

No part of this document may be reproduced in any form,  
in an electronic retrieval system or otherwise,  
without the prior written permission of the publisher.

The American Society of Mechanical Engineers  
Three Park Avenue, New York, NY 10016-5990

Copyright © 2009 by  
THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS  
All rights reserved  
Printed in U.S.A.

# CONTENTS

Foreword	v
Committee Roster	vi
Correspondence with the Y14 Committee	vii
<b>Section 1 General</b>	<b>1</b>
1.1 Scope	1
1.2 Units	1
1.3 Reference to This Standard	1
1.4 Figures	1
1.5 Notes	1
1.6 Dimensioning and Tolerancing	1
1.7 References	1
1.8 Definitions	2
<b>Section 2 Drawing Presentation</b>	<b>4</b>
2.1 General	4
2.2 Separate View Drawing Method	4
2.3 Combined View Drawing Method	4
2.4 End Item Drawing Method	4
<b>Section 3 Drawing Requirements</b>	<b>7</b>
3.1 General	7
3.2 Dimensions	7
3.3 As-Cast/As-Forged/As-Molded Surfaces	7
3.4 Corner Radii	8
3.5 Die Closure Tolerance	8
3.6 Draft Angle	8
3.7 Fillet Radii	13
3.8 Flash Extension	13
3.9 Orientation of Forging Plane	14
3.10 Form Tolerances	14
3.11 Marking	14
3.12 Match Draft	14
3.13 Mismatch	14
3.14 Parting Lines	14
3.15 Sharp Corners	18
3.16 Grain Direction	18
3.17 Special Requirements	18
3.18 Profile Tolerance	20
3.19 Digital Data File Requirements	20
3.20 Wall Thickness as a Refinement of Profile of a Surface	20
<b>Section 4 Datum Referencing</b>	<b>21</b>
4.1 General	21
4.2 Application	21
4.3 Datum Targets	22
4.4 Datum Reference Frame Established by Machined Datum Features	22
4.5 Machine Tooling Centers	22
4.6 Equalizing Datums	22
4.7 Datum Targets and Profile Tolerancing	24

<b>Section 5</b>	<b>Drawing Notes and Items</b> .....	<b>.34</b>
5.1	General .....	.34
5.2	Drawing Items .....	.34
5.3	Sample General Notes .....	.34
5.4	Sample Local Notes .....	.35
 <b>Nonmandatory Appendices</b>		
A	Glossary.....	.37
B	Sample Drawings.....	.41
C	Form and Proportion of Symbols .....	.44

# FOREWORD

This revision of ASME Y14.8M-1996 expands the scope of the Standard to include molded parts. Changes to both the text and figures have been made to better illustrate drafting practices pertaining to casting/forging and molded part drawings.

Major changes include the addition of symbology for parting line, all around this side of parting line, and all over this side of parting line. Plus draft, minus draft, and draft included are explained. A section on CAD model requirements is added. The effect of applying profile of a surface with datum references to surfaces containing datum targets is explained. Wall thickness is defined. Text and figures are revised to reflect these changes.

Suggestions for improvement of this Standard are welcome. They should be sent to The American Society of Mechanical Engineers; Attn: Secretary, Y14 Standards Committee; Three Park Avenue; New York, NY 10016-5990.

This edition was approved by the American National Standards Institute on March 31, 2009.

# ASME Y14 COMMITTEE

## Engineering Drawing and Related Documentation Practices

(The following is the roster of the Committee at the time of approval of this Standard.)

### STANDARDS COMMITTEE OFFICERS

F. Bakos, Jr., *Chair*  
W. A. Kaba, *Vice Chair*  
C. J. Gomez, *Secretary*

### STANDARDS COMMITTEE PERSONNEL

A. R. Anderson, Dimensional Dynamics, LLC	A. Krulikowski, Effective Training, Inc.
F. Bakos, Consultant	P. J. McCuiston, Ohio University
J. V. Burleigh, Consultant	J. D. Meadows, James D. Meadows & Associates, Inc.
D. E. Day, TEC-EASE, Inc.	M. E. Meloro, Northrop Grumman Corp.
K. Dobert, Siemens PLM Software	H. W. Oakes, Oasis Systems, Inc.
C. W. Ferguson, WM Education Services	J. M. Smith, Caterpillar, Inc.
C. J. Gomez, The American Society of Mechanical Engineers	M. J. Stahl, <i>Alternate</i> , Caterpillar, Inc.
B. A. Harding, Purdue University	N. H. Smith, Spirit AeroSystems, Inc.
D. H. Honsinger, Consultant	R. G. Wilhelm, University of North Carolina
W. A. Kaba, Spirit AeroSystems, Inc.	B. A. Wilson, The Boeing Co.
K. S. King, BAE Systems	

### SUBCOMMITTEE 8 — CASTINGS, FORGINGS, AND MOLDED PARTS

D. E. Day, <i>Chair</i> , TEC-EASE, Inc.	D. E. Jakstis, Spirit AeroSystems, Inc.
D. L. Anderson, Aluminum Co. of America	J. Kaminski, Woodward
N. W. Cutler, Dimensional Management, Inc.	J. D. Keith, Spirit AeroSystems, Inc.
K. Dobert, Siemens PLM Software	B. E. Lance, TEC-EASE & Bub-tech Inc.
E. R. Evans, Jr., Penn State Erie, The Behrend College	P. J. McCuiston, Ohio University
P. Hastie, Consultant	J. I. Miles, Sr., Lockheed Martin Aeronautics
M. Hoganson, Visteon	S. D. Pruss, General Motors Corp.
D. H. Honsinger, Consultant	J. A. Rivers, Rivers Precision LLC
R. J. Hoyt, Le Sueur, Inc.	J. M. Smith, Caterpillar, Inc.
C. J. Husum, The Boeing Co.	D. F. Watts, Hewlett Packard Co.

# CORRESPONDENCE WITH THE Y14 COMMITTEE

**General.** ASME Standards are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Standard may interact with the Committee by proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, Y14 Standards Committee  
The American Society of Mechanical Engineers  
Three Park Avenue  
New York, NY 10016-5990

**Proposing Revisions.** Revisions are made periodically to the Standard to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Standard. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Standard. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal including any pertinent documentation.

**Proposing a Case.** Cases may be issued for the purpose of providing alternative rules when justified, to permit early implementation of an approved revision when the need is urgent, or to provide rules not covered by existing provisions. Cases are effective immediately upon ASME approval and shall be posted on the ASME Committee Web page.

Requests for Cases shall provide a Statement of Need and Background Information. The request should identify the standard, the paragraph, figure or table number(s), and be written as a Question and Reply in the same format as existing Cases. Requests for Cases should also indicate the applicable edition(s) of the standard to which the proposed Case applies.

**Attending Committee Meetings.** The Y14 Standards Committee regularly holds meetings or telephone conferences, which are open to the public. Persons wishing to attend any meeting or telephone conference should contact the Secretary of the Y14 Standards Committee or check our Web site at <http://cstools.asme.org/csconnect/>.

Intentionally left blank

# CASTINGS, FORGINGS, AND MOLDED PARTS

## Section 1 General

### 1.1 SCOPE

This Standard covers definitions of terms and features unique to casting, forging, and molded part technologies with recommendations for their uniform specification on engineering drawings and related documents. Unless otherwise specified, any reference to features, parts, or processes shall be interpreted as applying to castings, forgings, and molded parts. Castings, forgings, and molded parts are delineated as “parts” throughout the Standard.

### 1.2 UNITS

The International System of Units (SI) is used in this Standard because SI units are expected to supersede United States (U.S.) Customary units. Customary units could equally well be used without effect to the principles established.

### 1.3 REFERENCE TO THIS STANDARD

Where drawings are based on this Standard, this fact shall be noted on the drawings or in a document referenced on the drawings. References to this Standard shall state “PREPARED IN ACCORDANCE WITH ASME Y14.8-2009.”

### 1.4 FIGURES

The figures in this Standard are intended as illustrations to aid the user in understanding the principles and methods of drawing described in the text. The absence of a figure illustrating the desired application is neither reason to assume inapplicability nor basis for drawing rejection. In some instances, figures show added detail for emphasis; in other instances, figures are incomplete by intent. Numerical values of dimensions and tolerances are illustrative only.

### 1.4.1 Drawings in Digital Format

The figures in this Standard are illustrated in 2D drawing presentation. The principles shown in these figures may be presented in digital (3D) format per ASME Y14.41.

### 1.5 NOTES

Notes herein in capital letters are intended to appear on drawings. Notes in lower case are explanatory only and are not intended to appear on drawings.

### 1.6 DIMENSIONING AND TOLERANCING

The methods of dimensioning and tolerancing shall be in accordance with ASME Y14.5M and this Standard.

### 1.7 REFERENCES

The following revisions of American National Standards form a part of this Standard to the extent specified herein. A more recent revision may be used provided there is no conflict with the text of this Standard. In the event of a conflict between the text of this Standard and the references cited herein, the text of this Standard shall take precedence.

ASME Y14.5M-1994, Dimensioning and Tolerancing  
 ASME Y14.24-1999, Types and Applications of Engineering Drawings  
 ASME Y14.36M-1996, Surface Texture Symbols  
 ASME Y14.41-2003, Digital Product Definition Data Practices  
 ASME Y14.100-2004, Engineering Drawing Practices  
 Publisher: The American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10016-5990; Order Dept: 22 Law Drive, P.O. Box 2300, Fairfield, NJ 07007-2300 ([www.asme.org](http://www.asme.org))