ASME Y14.31-2014
(Revision of ASME Y14.31-2008)

REAFFIRMED 2019

Undimensioned Drawings

Engineering Drawing and Related Documentation Practices

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

ADOPTION NOTICE

ASME Y14.31, Undimensioned Drawings, was adopted on 16 September 2008 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-EIQ-SE, Picatinny Arsenal, NJ 07806-5000. Copies of this document may be purchased from The American Society of Mechanical Engineers (ASME), Two Park Avenue, New York, NY 10016-5990. http://www.asme.org

Custodians:
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Army — AR

(Project DRPR-2014-005)

Review Activities:
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The American Society of Mechanical Engineers
Two Park Avenue • New York, NY • 10016 USA

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This Standard will be revised when the Society approves the issuance of a new edition.

Periodically certain actions of the ASME Y14 Committee may be published as Cases. Cases are published on the ASME Web site under the Y14 Committee Page at go.asme.org/Y14committee as they are issued.

Errata to codes and standards may be posted on the ASME Web site under the Committee Pages to provide corrections to incorrectly published items, or to correct typographical or grammatical errors in codes and standards. Such errata shall be used on the date posted.

The Y14 Committee Page can be found at go.asme.org/Y14committee. There is an option available to automatically receive an e-mail notification when errata are posted to a particular code or standard. This option can be found on the appropriate Committee Page after selecting "Errata" in the "Publication Information" section.

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

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FOREWORD

Undimensioned Drawings is the type designation applied to engineering drawings prepared on environmentally stable material to a precise scale, from which the defined item and the supporting tooling are produced directly, by photographic or other processes. The drawing presents the engineering definition graphically rather than by use of numerical dimensions, although some dimensions may be included to establish a base when tolerances for specific features are smaller than those for surfaces controlled by the precision contour, for verifying those surfaces controlled by the precision contour, and for verifying stability of the drawing material. The drawing may utilize flat patterns and similar processing information, as necessary, to economically present the definition.

The following is a summary of the significant changes incorporated in this revision:

- Paragraph 1.3 was added.
- References were relocated to section 2.
- Definitions were relocated to section 3 and the definition of *original* was added.
- SI units were converted to U.S. Customary units.
- Paragraph 6 was revised to clarify that the requirement for meeting ASP-5.9 is for originals stored in a nonelectronic format.
- In para. 7.4, crop marks were added as an alternative practice.
- Figure 5-6 was revised to show an example of crop marks.

When this Standard is specified as a requirement, its defined requirements are assumed to be consistent with the needs of the user. Therefore, each user provides appropriate application consistent with the environment in which it is applied. Those who use this Standard as a requirement for contractual purposes should keep the following facts in mind:

(a) This Standard should be tailored to meet any specific needs. All users shall take careful note of the necessity of tailoring this Standard and the contents. The extent of tailoring will in large part be governed by drawing ownership and the logistics intent.

(b) It is not the intent of this Standard to prevent individual organizations from designing specific drawing practices that meet their individual needs, but rather to provide common engineering delineation standards to aid the increasing interchange of drawings between industry, government, and other users.

It is well recognized that individual companies have many detailed requirements for their specific method of operation. Consequently, the minimum requirements set forth in this Standard will provide them flexibility in implementation.

The successful creation and release of this Standard is attributed to the subcommittee members and their respective companies.

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

This Standard was approved as an American National Standard on April 16, 2014.

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.)

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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 requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, Y14 Standards Committee
The American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016-5990
http://go.asme.org/Inquiry

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 and 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 and/or telephone conferences that are open to the public. Persons wishing to attend any meeting and/or telephone conference should contact the Secretary of the Y14 Standards Committee. Future Committee meeting dates and locations can be found on the Committee Page at go.asme.org/Y14committee.

UNDIMENSIONED DRAWINGS

1 GENERAL

1.1 Scope

This Standard establishes the requirements for undimensioned drawings that graphically define items with true geometry view(s) and predominantly without the use of dimensions.

1.2 Drawing Type Selection Considerations

The acceptance zone for an undimensioned drawing is the uniform boundary along the true profile or line on the undimensioned drawing. See Fig. 1-1, illustration (a). The line on the undimensioned drawing located at true profile is not probable, due to contributors such as graphical tolerance, reproduction tolerance, or skill of the user. These contributors can move the acceptance zone, resulting in a relaxed acceptance. See Fig. 1-1, illustration (b). This relaxed acceptance makes the undimensioned drawing equivalent to a tolerance range per ASME Y14.43, accepting most part features that are within tolerance, rejecting most part features not within tolerance, accepting a small percentage of borderline out-of-tolerance features, and rejecting a small percentage of borderline within-tolerance features. The effect of these contributors on item acceptance shall be considered before selecting this drawing type.

1.3 ASME Y14 Series Conventions

The conventions in paras. 1.3.1 through 1.3.10 are used in this and other ASME Y14 standards.

1.3.1 Mandatory, Recommended, Guidance, and Optional Words

(a) The words "shall" and "will" establish a mandatory requirement.

(b) The word "should" establishes a recommended practice.

(c) The word "may" establishes an optional practice.

(d) The words "typical," "example," "for reference," and the Latin abbreviation "e.g." indicate suggestions given for guidance only.

(e) The word "or," used in conjunction with a mandatory requirement or a recommended practice, indicates that there are two or more options for complying with the stated requirement or practice.

1.3.2 Cross-Reference of Standards. Cross-reference of standards in text, with or without a date following the standard designator, shall be interpreted as follows:

(a) Reference to other ASME Y14 standards in the text without a date following the standard designator indicates that the issue of the standard identified in the References section (section 2) shall be used to meet the requirement.

(b) Reference to other ASME Y14 standards in the text with a date following the standard designator indicates that only that issue of the standard shall be used to meet the requirement.

1.3.3 Invocation of Referenced Standards. The following examples define the invocation of a standard when specified in the References section (section 2) and referenced in the text of this Standard:

(a) When a referenced standard is cited in the text with no limitations to a specific subject or paragraph(s) of the standard, the entire standard is invoked. For example, "Dimensioning and tolerancing shall be in accordance with ASME Y14.5" is invoking the complete standard because the subject of the standard is dimensioning and tolerancing and no specific subject or paragraph(s) within the standard is invoked.

(b) When a referenced standard is cited in the text with limitations to a specific subject or paragraph(s) of the standard, only the paragraph(s) on that subject is invoked. For example, "Assign part or identifying numbers in accordance with ASME Y14.100" is invoking only the paragraph(s) on part or identifying numbers, because the subject of the standard is engineering drawing practices and part or identifying numbers is a specific subject within the standard.

(c) When a referenced standard is cited in the text without an invoking statement such as "in accordance with," the standard is for guidance only. For example, "For gaging principles, see ASME Y14.43" is only for guidance and no portion of the standard is invoked.