

## Fundamentals

### *“Engineering Drawing Practices”*

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ASME Y14.35M; “Revision of Engineering Drawings and Associated Documents”. This Standard defines the practices of **revising drawings and associated documentation** and establishes methods for identification and recording revisions. The revision practices of this Standard apply to any form of original drawing and associated documentation.

## Fundamentals

### *“Engineering Drawing Practices”*

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#### Drawing Practices

**Drawing practices associated with drawing changes shall be consistent with those already used on the drawing to be revised unless the latest of applicable standards can be incorporated without conflict. Any change to a drawing after release, including a change to “Rights in Data”, shall be recorded in the Revision History Block.**

#### 1. Revision Methods

**Changes may be made by adding, deleting, or crossing out the information or by re-drawing the drawing.**

## Drawing Practices

### 2. Re-Drawn Drawings

Depending on the circumstances, drawing may be redrawn either with or without change.

#### 1) With Change (**Revision letter is advanced**)

When a revision warrants re-drawing of the drawing, the revision letter next in sequence shall be entered in the REV column of the Revision History Block of the new drawing.

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Drawing Practices

##### 2. Re-Drawn Drawings

Depending on the circumstances, drawing may be redrawn either with or without change.

##### 2) Without Change (**Advance of revision letter is not required**)

When a drawing, or a sheet of a drawing, is to be replaced because of loss, destruction, or degradation due to age it may be re-drawn without change. The replacement shall duplicate the requirements of the old original which is being replaced.

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Drawing Practices

#### 3. Superseding a Drawing with that of a Different Number

##### a) Superseding (**New**) Drawing.

When a drawing is superseded by a drawing with a different number, the notation “REPLACES WITH CHANGE DRAWING (Enter superseded drawing number) REV (Enter superseded revision letter or if no revision enter a – [dash]) shall be entered in the DESCRIPTION columns of the superseding drawing.

No entry is required in the REV letter, DATE or APPROVED Column.  
New Title Block Approval entries apply.

## Fundamentals “Engineering Drawing Practices”

ASME Y14.35M-1997

REVISION OF ENGINEERING DRAWINGS AND ASSOCIATED DOCUMENTS

**REVISION HISTORY**

ZONE	REV	DESCRIPTION	DATE	APPROVED
		REDRAWN WITH CHANGE <i>(Enter description of change or reference to the revision authorization document)</i>		

(a)

**REVISION HISTORY**

ZONE	REV	DESCRIPTION	DATE	APPROVED
		REDRAWN WITHOUT CHANGE <i>(Enter revision authority, signature of those who prepared the replacement and date or reference to the revision authorization document)</i>		

(b)

**FIG. 1 NOTATIONS FOR A REDRAWN DRAWING**

**REVISION HISTORY**

ZONE	REV	DESCRIPTION	DATE	APPROVED
		REPLACES WITH CHANGE DRAWING 123XXXX7 REVC <i>(Enter description of change or reference to the revision authorization document)</i>		

**FIG. 2 NOTATIONS FOR A SUPERSEDING DRAWING**

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Drawing Practices

#### 3. Superseding a Drawing with that of a Different Number

##### b) Superseding (Old) Drawing.

When the superseded drawing will be retained, the notation REPLACED WITH CHANGE BY DRAWING (Enter the superseding drawing number) REV (Enter the revision letter of the superseding drawing or if no revision, enter a – [dash]) shall be entered in the DESCRIPTION column of the superseded drawing.

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Drawing Practices

#### 4. Revisions of Digital Data

Revisions of digital data files and copies of digital data files shall not be considered re-draws except when the document is converted from a manually maintained to a digitally maintained document.



## Fundamentals

### *“Engineering Drawing Practices”*

#### Drawing Practices

#### 4. Identifying Revisions on Drawings

- **Revision Letters.**

- Upper case letters shall be used in sequence beginning with A and omitting letters “I”, “O”, “Q”, “S”, “X”, and “Z”.
- When the single letters have been exhausted, the revisions following “Y” shall be “AA”, “AB” through “AY”.
- Should “AA” to “AY” be exhausted the next sequence shall be “BA”, “BB” through “BY”.
- Revision letters shall not exceed two characters.
- Initial issue of a drawing does not constitute need for a revision letter and may be indicated by the use of a – [dash].

#### Drawing Practices

#### 4. Identifying Revisions on Drawings

- **Revision Locations.** When incorporating a change or replacing the drawing with change, a revision location shall be identified by one or more of the following methods;
  - Revision symbol in the field of the drawing;
  - Description in the Revision History Block;
  - Zone locations in the ZONE Column of the Revision History Block;
  - Revision authorization document identified in the DESCRIPTION or other dedicated column of the Revision History Block.

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Drawing Practices

#### 4. Identifying Revisions on Drawings

- Multiple Changes.

**All changes authorized by a single revision authorizations document shall be incorporated into the document at the same time.** All changes to a drawing incorporated at one time shall be identified by the same revision letter if the revision letter is assigned at the time the changes are incorporated.

**Sequence Number Use.** When a revision involves two or more individual changes on a drawing, each change may be identified by a sequence number enclosed in parentheses preceding the description of the change.

### Drawing Practices

#### 4. Recording Revisions

Changes to drawings shall be **recorded in the Revision History Block**. The Revision History Block format shall be in accordance with ASME Y14.1.

#### 5. Revision Control

Revisions may be by;

- Drawing Level Method
- Sheet Level Method; or by
- All Sheets Same Revision Level Method.

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Drawing Practices

### 6. Associated Document Revisions

**Associated documents (DL, IDL, AL, PL, WL, IL) are revised in the same manner as for any other revision to a drawing. Associated documents may be revised as a separate document. See ASME Y13.34 for associated list preparation requirements.**

**Associated documents need not be revised for the sole purpose of maintaining a common revision level.**

## Fundamentals

### *“Engineering Drawing Practices”*

---

**ASME Y14.100; “Engineering Drawing Practices”. This Standard establishes the essential requirements and reference documents applicable to the preparation and revision of engineering drawings and associated lists. It is essential that this Standard be used in close conjunction with ASME Y14.24, ASME Y14.34M, and ASME Y14.35M.**

## Fundamentals

### *“Engineering Drawing Practices”*

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#### Types and Application of Engineering Drawings

1. Associated Lists (IAW ASME Y14.34M)
2. Revisions of Engineering Drawings and Associated Lists (IAW ASME Y14.35M)
3. Size and Format of Engineering Drawing (IAW ASME Y14.1)
4. Application Data

When used, application data with “Next Assembly” and “Used On” columns are required for drawings whose detail part or assembly depicted thereon is for an element of a larger item.

## Fundamentals

### *“Engineering Drawing Practices”*

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#### Types and Application of Engineering Drawings

##### 5. Preparation of Duplicate Original

Duplicate originals shall not be prepared for the purpose of maintaining duplicate records. Their application is limited to replacing lost original drawings.

##### 6. Line Conventions and Lettering (IAW ASME Y14.2M)

##### 7. Single, Multiple, and Sectional View Drawings (IAW ASME Y14.3M)

##### 8. Isometric and Pictorial Views (IAW ASME Y14.4M)



## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Types and Application of Engineering Drawings

9. Projection Systems (IAW ASME Y14.3M)
10. Dimensioning and Tolerancing (IAW ASME Y14.5M)
11. Surface Texture (IAW ASME B46.1 and ASME Y14.36M)
12. Screw Thread Representation (IAW ANSI Y14.6 and Y14.6aM)
13. Gears (IAW ANSI Y14.7.1 and Y14.7.2)
14. Mechanical Springs (IAW ANSI Y14.13M)
15. Optical Elements and Optical Systems (ASME/ANSI Y14.18M)

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Types and Application of Engineering Drawings

**16. Casting and Forgings (IAW ASME Y14.8M)**

**17. Circuit Diagrams (IAW ANSI/IEEE 991)**

**18. Digital Data**

Engineering drawings prepared by other than manual means (such as computer generated drawings) shall provide all of the information required by the particular drawing type or level of design disclosure. Variations to accommodate document preparation will be acceptable so long as these variations meet the requirements relative to the information contents.

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Types and Application of Engineering Drawings

### 19. Scale

Scale expresses the ratio of the size of the object as drawn to its full size. Drawings shall be drawn to a scale that depicts all details of the item clearly and accurately.

Drawings Not to Scale: In the case of diagrams, pictorials, cable assemblies, tabulated and other drawings not prepared to any scale, the word “NONE” shall be entered after “SCALE” in the space provided on the drawing format.

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Types and Application of Engineering Drawings

### 20. Drawing Notes

Drawing notes provide information that clarifies the requirements for the item delineated. They apply to either a portion of the drawing or to the entire drawing providing additional treatment, finish, protection, and other considerations.

The Notes area of a drawing shall be identified with the heading “NOTES”

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Types and Application of Engineering Drawings

### 21. Metric Practices

The measurement system in which the part, item, or any of its features is designed shall be used in the documentation for that part, item or feature.

### 22. Drawing Titles

#### General Rules:

- The title shall be as brief as possible, describe the item, and distinguish between similar items.
- The title shall consist of a noun or noun phrase (basic name).
- The noun or noun phrase establishes the basic concept of an item.

## Fundamentals

### *“Engineering Drawing Practices”*

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## Types and Application of Engineering Drawings

### 22. Drawing Titles

#### General Rules (cont'd):

- The noun or noun phrase shall be used in singular form, except for items such as Tongs, Gloves, Fuses.
- An ambiguous noun is not used alone;

#### Preferred

CIRCUIT CARD ASSEMBLY  
PRINTED CIRCUIT BOARD

#### Not Preferred

ASSEMBLY, CIRCUIT CARD  
BOARD, PRINTED CIRCUIT

## Fundamentals

### *“Engineering Drawing Practices”*

#### Types and Application of Engineering Drawings

#### 22. Drawing Titles

##### General Rules (cont'd):

- ❑ When an item is neither container nor material, but its name involves the use of a noun that ordinarily designates a container or material, a noun phrase shall be used, for example;

##### Preferred

JUNCTION BOX

SOLDERING IRON

##### Not Preferred

BOX, JUNCTION

IRON, SOLDERING

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Types and Application of Engineering Drawings

### 22. Drawing Titles

#### General Rules (cont'd):

- Abbreviations should be avoided
- The title shall be consistent with the title of the next assembly
- When titles are used on continuation sheets, the title shall be the same on each sheet.
- Reference to major assemblies or end items shall not be used except when necessary to differentiate similar items.
- Nonpart drawings, such as schematic diagrams, shall include the drawing type as part of the title, for example; “TRANSFORMER ASSY, SCHEMATIC DIAGRAM”



## Fundamentals

### *“Engineering Drawing Practices”*

#### Types and Application of Engineering Drawings

#### 23. Numbering, Coding, and Identification

##### Drawing Numbers

Drawing numbers consist of numeric, alpha, or special characters, or combinations thereof. Spaces are not used between any of the elements of a drawing number.

Although there is no National Consensus limitations on drawing number length, many drawing number systems limit themselves to 15 characters (including the base number, and any required prefixes, suffixes, and separators).

## Fundamentals

### *“Engineering Drawing Practices”*

---

#### Types and Application of Engineering Drawings

#### 23. Numbering, Coding, and Identification

##### Part or Identifying Number

The Part or Identifying Number (PIN) is an identification assigned by the original design activity or by the controlling nationally recognized standard for the purpose of uniquely identifying a specific item.

The PIN does not include the drawing revision identifier, drawing size, or activity identification.

A widely recognized limitation on PIN number length is 32 characters.

## Fundamentals

### *“Engineering Drawing Practices”*

---

## Types and Application of Engineering Drawings

### 24. Markings on Drawings

Markings are used in support of, and in addition to, graphics and text to convey information about the drawing, the list, or items depicted thereon.

- Symbology
- Duplicate Original Notation
- Duplicate Production Master Drawing Notation
- CAD Generated Drawing Note


## Fundamentals “Engineering Drawing Practices”


Acrobat Reader - [A5ME Y14.100.pdf]

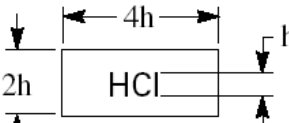
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CSI	CSP	ENI	ESS
INT	I/R	HAZ	HCI
HCP	ODC		
ODS			



 (ESD SYMBOLS)


 (SYMBOL WITH LEADER LINE)


 INDIVIDUAL SYMBOLS

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 EXTENDED SYMBOLS

## Symbology

## Fundamentals

### “Engineering Drawing Practices”

ENGINEERING DRAWING PRACTICES

ASME Y14.100-2000

1				
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
TITLE				
SIZE	CAGE CODE	DWG NO	REV	
SCALE		SHEET		
DUPLICATE ORIGINAL				

FIG. 2 DUPLICATE ORIGINAL NOTATION

Duplicate  
Original

## Fundamentals

### *“Engineering Drawing Practices”*

ASME Y14.100-2000 ENGINEERING DRAWING PRACTICES

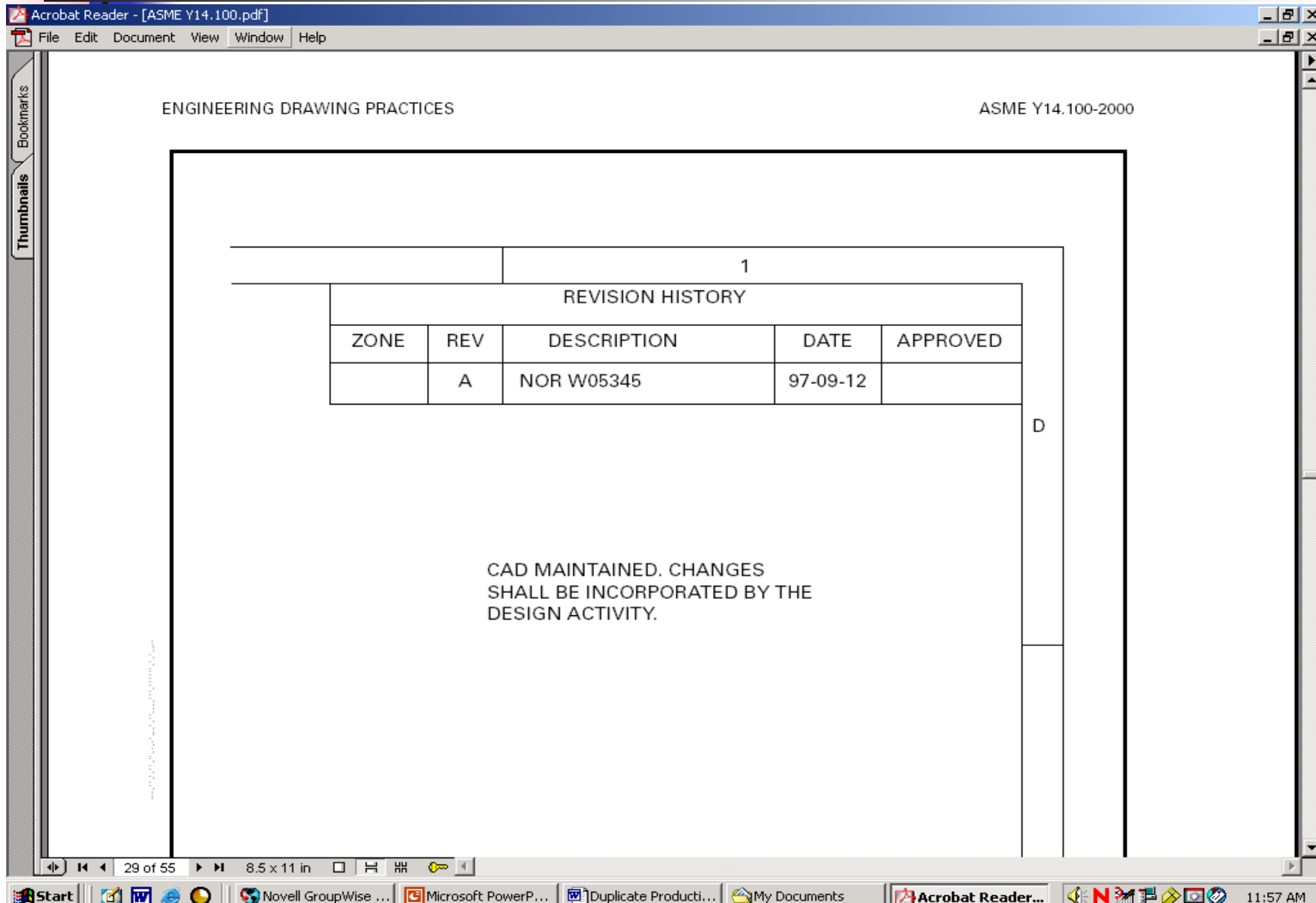
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	—	PRODUCT BASELINE ERR WOS2345	80-06-12	
	A	NOR W2S2569	83-07-22	
	B	NOR W4S2932	84-10-14	

DUPLICATE PRODUCTION  
MASTER. DO NOT REVISE

**Duplicate  
Production  
“Master”**

# Fundamentals

## *“Engineering Drawing Practices”*



Acrobat Reader - [ASME Y14.100.pdf]

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ENGINEERING DRAWING PRACTICES ASME Y14.100-2000

		1		
REVISION HISTORY				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	NOR W05345	97-09-12	

D

CAD MAINTAINED. CHANGES SHALL BE INCORPORATED BY THE DESIGN ACTIVITY.

29 of 55 8.5 x 11 in

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**CAD  
Generated  
Drawing  
Note**

## Fundamentals

### *“Engineering Drawing Practices”*

#### Types and Application of Engineering Drawings

In General Y14.100 refers to the Y14 series for specific guidance.

In addition there are several “Non-Mandatory” Appendix’s within the document;

**Appendix A - Tailoring Checklist**

**Appendix B – Non-Commercial Drawing Practices**

**Appendix C – Drawing Titles**

**Appendix D – Numbering, Coding, and Identification**

**Appendix E – Markings on Engineering Drawings**