

**ENGINEERING DRAWING PRACTICES  
VOLUME I OF II  
AEROSPACE AND GROUND SUPPORT EQUIPMENT**

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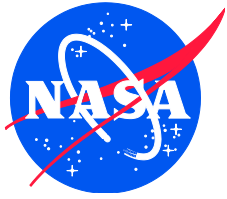
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# **ENGINEERING DRAWING PRACTICES VOLUME I OF II AEROSPACE AND GROUND SUPPORT EQUIPMENT**

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**NOT MEASUREMENT-  
SENSITIVE**

**KSC-GP-435, Volume I  
Revision G, Change 1  
March 26, 2015**

# **ENGINEERING DRAWING PRACTICES VOLUME I OF II AEROSPACE AND GROUND SUPPORT EQUIPMENT**



**APRIL 18, 2014**

**ENGINEERING DIRECTORATE**

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National Aeronautics and  
Space Administration

**John F. Kennedy Space Center**

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**ENGINEERING DRAWING PRACTICES**  
**VOLUME I OF II**  
**AEROSPACE AND GROUND SUPPORT EQUIPMENT**

Approved by:

A handwritten signature in black ink, appearing to read 'Pa. Simpkins', is written over a horizontal line.

Patrick A. Simpkins, D.B.A.  
Director, Engineering Directorate

This Revision Supersedes All Previous Editions of This Document

**APRIL 18, 2014**

**JOHN F. KENNEDY SPACE CENTER, NASA**

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G		General revision to replace all previous revisions and changes.	April 18, 2014
	G-1	Updated signature authority. Updated applicable documents and revision levels throughout. Removed reference to obtaining hard copies from Foreword. Added section 1.2.1.2, Drawings, to accommodate format of reference. Added requirement to provide drawing media as digital data in 2.2.a. Stated applicable appendices of ASME Y14.35-2014 in	March 26, 2015

RECORD OF REVISIONS			
REV LTR	CHANGE NO.	DESCRIPTION	DATE
		2.2.s. Added lettering height requirements in 2.3.d, 2.4.d, and 2.5.d. Specified note/reference to be placed on drawings in 2.3.e. Simplified Figure 5.	



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## FOREWORD

The Kennedy Space Center (KSC) *Engineering Drawing Practices, Volume I of II, Aerospace and Ground Support Equipment*, is the official source for the requirements and interpretations to be used in the development and presentation of engineering drawings and related documentation for the KSC.

The Engineering Directorate has been delegated the responsibility for interpretation, periodic updates, and distribution of the *Engineering Drawing Practices, Volume I of II, Aerospace and Ground Support Equipment*.

KSC Engineering Directorate design organizations and their contractors shall adhere to the requirements of this manual when preparing KSC engineering documentation.

Requests for information or for making corrections or additions to this manual should be directed to the Engineering Directorate, Kennedy Space Center, Florida 32899.

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## **ABBREVIATIONS, ACRONYMS, AND SYMBOLS**

AES	advanced electrical schematic
ASME	American Society of Mechanical Engineers
CADD	computer-aided design and drafting
CAE	computer-aided engineering
CAGE	Commercial and Government Entity
DOD	Department of Defense
EES	elementary electrical schematic
EO	Engineering Order
GIS	ground integrated schematic
GS	Ground Systems
ISO	International Organization for Standardization
KSC	John F. Kennedy Space Center
NASA	National Aeronautics and Space Administration
NPR	NASA Procedural Requirement
PIN	Part Identification Number
STD	standard
TM	technical memorandum

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## ENGINEERING DRAWING PRACTICES

### 1. INTRODUCTION

KSC-GP-435, *Engineering Drawing Practices, Volume I of II, Aerospace and Ground Support Equipment*, establishes the conventions to be adhered to by engineering and drafting personnel in the preparation, revision, and completion of engineering digital product definition data sets. This manual sets forth the minimum requirements acceptable at Kennedy Space Center (KSC) for the preparation of model-only, model and dependent drawing, and drawing-only digital product definition data sets based on the engineering drawing and model requirements in the ASME Y14 series.

The engineering drawings prepared by KSC design personnel or contractors in the KSC drawing format using KSC drawing numbers shall be known as *government design activity drawings*.

Although generally in accordance with industry practices and procedures, this manual does contain specific differences and exceptions. This manual, while not intended as a manual of instruction in the basic principles of drafting, does set forth the minimum requirements acceptable at KSC. One of those requirements is that persons engaged in the preparation of digital product definition data sets shall have a thorough understanding of the fundamentals of modeling, drafting and geometrical dimensioning and tolerancing in order to produce interpretable product definition data sets.

The widely accepted use of computer-aided design and drafting (CADD) and computer-aided engineering (CAE) software and numerous packages thereof has necessitated the abandonment of legacy manual drafting practices so long maintained by this manual at KSC. Typically resulting from the use of these various CADD and CAE software packages is the existence of software-package-provided or internally generated supplemental documents, such as design manuals, computer-generated modeling manuals, and drawing manuals, that comply with industry standards and may further define and standardize the creation of consistent digital product definition data sets within the respective companies and organizations where they are used.

The expectation now rests within the various companies or organizations producing government design activity drawings to provide consistent product definition data sets that comply with the industry standards discussed in this document. Clarifications of the industry standards and additional requirements in this manual are specific to the KSC needs and are assumed CADD-software-independent and not to cause undue burden or customization of CADD software.

Tailoring is permitted where unique contractor practices meet the intent of this standard. Approval of tailoring is the responsibility of the lead discipline engineer for this manual as identified in KSC-PLN-5400\_LDE-LIST.



## **1.1 Scope**

This manual establishes the essential requirements and reference documents for the preparation and revision of digital product definition data sets prepared for or by NASA at KSC. This volume is only applicable to KSC in-house programs/projects. These requirements do not apply to the preparation of illustrations, artwork, or figures in technical publications.

## **1.2 Applicable Documents**

The following documents form a part of this document to the extent specified herein. When this document is used for procurement, including solicitations, or is added to an existing contract, the specific revision levels, amendments, and approval dates of said documents shall be specified in an attachment to the Solicitation/Statement of Work/Contract.

### **1.2.1 Governmental**

#### National Aeronautics and Space Administration (NASA)

NASA-STD-(I)-0007 NASA Computer-Aided Design Interoperability

NPR 1600.1 NASA Security Program Procedural Requirements

NPR 2190.1 NASA Export Control Program

#### **1.2.1.1 Standards**

##### John F. Kennedy Space Center, NASA

KSC-DE-512-SM, Rev. L Facility Systems, Ground Support Systems, and Ground Support Equipment General Design Requirements

KSC-PLN-5400\_LDE-LIST Lead Discipline Engineers for KSC Specifications and Standards

KSC-STD-152-2 Graphic Symbols for Drawings, Part 2: Ground Support Equipment, Standard for

#### **1.2.1.2 Drawings**

##### John F. Kennedy Space Center, NASA

75M50393 Identification Plate, Ground Support Equipment, Kennedy Space Center

### 1.2.1.3 Publications

#### Military

DOD 5220.22-M National Industrial Security Program Operating Manual

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specified procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

### 1.2.2 Non-Governmental

#### American National Standards Institute

ANSI Y14.7.1-1971	Gear Drawing Standards – for Spur, Helical, Double Helical and Rack
ANSI Y14.7.2-1978	Gear and Spline Drawing Standards Part 2 – Bevel and Hypoid Gears

#### American Society of Mechanical Engineers (ASME)

ASME B46.1-2009	Surface Texture (Surface Roughness, Waviness, and Lay)
ASME Y14.1-2012	Decimal Inch Drawing Sheet Size and Format
ASME Y14.1M-2012	Metric Drawing Sheet Size and Format
ASME Y14.2-2014	Line Conventions and Lettering
ASME Y14.3-2012	Orthographic and Pictorial Views
ASME Y14.5-2009	Dimensioning and Tolerancing
ASME Y14.6-2001	Screw Thread Representation
ASME Y14.8-2009	Castings, Forgings, and Molded Parts
ASME Y14.24-2012	Types and Applications of Engineering Drawings
ASME Y14.34-2013	Associated Lists
ASME Y14.35-2014	Revision of Engineering Drawings and Associated Drawings
ASME Y14.38-2007	Abbreviations and Acronyms for Use on Drawings and Related Documents

ASME Y14.41-2012	Digital Product Definition Data Practices
ASME Y14.44-2008	Reference Designations for Electrical and Electronics Parts and Equipment

ASME Y14.100-2013	Engineering Drawing Practices
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American Welding Society

AWS A2.4:2012	Standard Symbols for Welding, Brazing, and Nondestructive Examination
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AWS A3.0M/A3.0:2010	Standard Welding Terms and Definitions; Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying
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Institute of Electrical and Electronics Engineers, Inc. (IEEE)

IEEE/ASTM SI 10-2010	American National Standard for Metric Practice
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International Standards Organization (ISO)

ISO 14617-1 Graphical symbols for diagrams - Part 1: General information and indexes

ISO 14617-2 Graphical symbols for diagrams - Part 2: Symbols having general application

ISO 14617-3 Graphical symbols for diagrams - Part 3: Connections and related devices

ISO 14617-4 Graphical symbols for diagrams - Part 4: Actuators and related devices

ISO 14617-5 Graphical symbols for diagrams - Part 5: Measurement and control devices

ISO 14617-6 Graphical symbols for diagrams - Part 6: Measurement and control functions

ISO 14617-7 Graphical symbols for diagrams - Part 7: Basic mechanical components

ISO 14617-8 Graphical symbols for diagrams - Part 8: Valves and dampers – First edition

ISO 14617-9 Graphical symbols for diagrams - Part 9: Pumps, compressors and fans – First edition

ISO 14617-10 Graphical symbols for diagrams - Part 10: Fluid power converters – First edition

ISO 14617-11 Graphical symbols for diagrams - Part 11: Devices for heat transfer and heat engines – First edition

ISO 14617-12 Graphical symbols for diagrams - Part 12: Devices for separating, purification and mixing – First edition

National Institute of Building Sciences

United States National CAD Standard – V5

### 1.3 Definitions

For the purpose of this document, the following definitions apply.

**design activity:** an organization that has responsibility for the design of an item or system. The activity may be a government entity, contractor, vendor, or other organization such as a university.

**graphic symbol:** a representation of a physical component used in diagrams such as overview diagrams, flow diagrams, and circuit diagrams.

**maintained drawing:** a drawing that contains design data that must be kept up to date in order to meet an operational need.

**“shall”:** an emphatic form of the verb that is used whenever a requirement is intended to express a provision that is binding and mandatory.

**“should”:** an expression of strong recommendation of a nonmandatory provision.

**symbology:** drawing symbols that convey information for the interpretation of markings on drawings.

## 2. GENERAL PRACTICES

### 2.1 General

The preparation and revision of KSC engineering drawings and associated lists shall be in accordance with ASME Y14.100-2013 unless otherwise stated or refined in the following sections. The preparation and revision of digital product definition data shall be in accordance with ASME Y14.41-2012 and NASA-STD-(I)-0007 unless otherwise stated or refined in the following sections. References to electrical and electronic parts shall be in accordance with ASME Y14.44-2008 unless otherwise stated or refined in the following sections.

## 2.2 ASME Y14.100-2013 Tailoring

The drawing requirements defined by ASME Y14.100-2013 have been tailored for this manual as follows. *Contractor's option* implies that the choice of options to follow in ASME Y14.100-2013 is the contractor's decision and does not imply that the contractor has the option to not follow the ASME Y14.100-2013 standard.

- a. Drawing media shall be produced and provided as digital data. (The order of preference for drawing media is as follows: native file; STEP AP214, AP214IS, or AP214DIS; DXF file; and PDF file.)
- b. Drawing format shall be Government (forms supplied by the contractor or by the Government).
- c. Drawing sheet sizes shall be in accordance with ASME Y14.1-2012.
- d. Application data shall be provided per the contractor's option, and general use or multi-use application data is allowed.
- e. Drawing detail shall be produced as monodetail, multidetail, or tabulated. Drawing detail may be produced as a detailed assembly drawing to preserve legacy types, and drawing types should be combined only if this will result in a significant advantage over using separate drawings of a single type.
- f. Dimensioning and tolerancing shall be in accordance with ASME Y14.5-2009.
- g. Drawing notes shall be provided as a separate document by reference (native files are preferred over PDF files) or on the drawing.
- h. Types of drawings (ASME Y14.24-2012) shall be the contractor's option.
- i. Multisheet drawings shall be maintained such that all sheets are at same revision level (the preferred method) or at the drawing revision level.
- j. In a redrawn drawing (a redrawing without a change), the revision level shall be advanced.
- k. The revision history shall be maintained in accordance with one of the following methods: remove one or more revision records as required, remove all previous revision history, remove all details in the revision history but retain the line entry for revision authorization and date of revision, remove all revision history except that for the revision preceding the current one, or maintain the revision history in its entirety.
- l. When sheets are added, the drawing shall be renumbered using consecutive whole numbers or an alphanumeric sequence.

- m. The method for deleting sheets (ASME Y14.35-2014) shall be the contractor's option.
- n. Marking on engineering drawings shall include applicable symbols and notes for special items and processes.
- o. Associated lists shall be provided as digital data. (Native files are preferred over PDF files.)
- p. Types of associated lists shall include a parts list per the contractor's option, an application list, data list, index list, indentured data list, and wire list.
- q. Third-angle projection shall be used in drawings.
- r. The English language shall be used in drawings.
- s. Drawings shall be titled in accordance with Appendix C of ASME Y14.100-2013, with changes requiring a new Part or Identifying Number (PIN) identified as specified in Appendix D, section D-13. Materials, processes, and protective treatment shall be identified as specified in Appendix D, section D-14.

### **2.3 Drawing Elements**

- a. The CAD model driving drawing views and annotations shall be identified by filename, extension, and as appropriate, software application on government design activity drawings.
- b. All components on an assembly or installation drawing shall be identified on the field of the drawing.
- c. Symbology used on government design activity drawings that is not defined in accordance with ASME Y14.100-2013 or in Appendix A, Nonmandatory Symbols, of this document shall be shown in a legend located on the drawing sheet where the drawing symbol is used or in a legend located on the first page of the drawing.
- d. Lettering height may be reduced to 1/16 inch (1.5 mm) for A- and B-size drawings.
- e. Drawings or data sets based on this standard should contain a note or reference as follows: THIS DRAWING SHALL BE INTERPRETED IN ACCORDANCE WITH ASME Y14.100-2013.

### **2.4 Single, Multiple, and Sectional View Drawings**

- a. Cross-reference zoning shall be used on drawings to indicate the location of an indicated section, view, or detail and to refer back to the viewing location for that section, view, or detail.

- b. Views located on different sheets of drawings shall include the sheet number as well as the zone.
- c. An identifying letter shall only be used for one section, view, or detail on the same drawing (e.g., if section A exists, there shall be no view A or detail A).
- d. The height of the lettering used for view, detail, and section identification may be reduced to 3/32 inch (2.5 mm) on A- and B-size drawings.

## **2.5 Graphic Symbols, Designations, Letter Symbols, and Abbreviations**

Graphic symbols shall be in accordance with ASME Y14.100-2013. Additional requirements are as follows.

- a. Mechanical and piping and fluid power graphic symbols shall be done in accordance with ISO 14617-1 through 14617-12, as applicable.
- b. KSC-unique graphic symbols not defined in this manual shall be in accordance with KSC-STD-152-2.
- c. Graphic symbols, designations, letter symbols, and abbreviations not covered by the standards referenced in this manual may be used provided they are explained on each drawing or referenced to an explanatory document.
- d. Graphic symbols and inclusive lettering for A- and B-size drawings may be reduced to half-size, i.e., a minimum letter height of 1/16 inch.

## **2.6 Types and Application of Drawings**

Types and application of drawings shall be done in accordance with ASME Y14.24-2012. Additional applications and requirements are defined in the following sections.

### **2.6.1 Electrical/Electronic Diagrams (ASME Y14.24-2012, Sec. 12)**

#### **2.6.1.1 System Block Diagram or Functional Block Diagram**

- a. The system shall be laid out from left to right where possible.
- b. The electrical flow shall be from top to bottom where possible.

### **2.6.1.2 Advanced Electrical Schematic (AES)**

An advanced electrical schematic illustrates and defines electrical signal and power paths, detailed electrical connections, and functions of component items used within a specific circuit or system of circuits by means of graphic symbols. Complete and formal titles and reference designators of each component are identified. Indication of physical size, shape, or relative location of components is not required.

### **2.6.1.3 Elementary Electrical Schematic (EES)**

An elementary electrical schematic contains much of the same information as an advanced electrical schematic except that wire routings and most of the detailed wire connections of the component items are omitted. These diagrams show all black boxes that are on the advanced schematic with sufficient detail to identify components and black-box functions. The schematic shows components in their functional relationship and is not restricted to drawing location by black-box outlines. Cross-reference information between the elementary electrical schematic and the electromechanical control diagram is shown. Hydraulic/pneumatic control circuits may also be shown.

### **2.6.1.4 Ground Integrated Schematic (GIS)**

A ground integrated schematic combines a system block diagram with its related advanced electrical schematic, cable interconnect diagram, and system mechanical schematic/electromechanical control diagram. Used in conjunction with interfacing schematics, a ground integrated schematic is an analytic tool for program engineering and operational functions.

A ground integrated schematic shall give end-to-end system visibility and definition in various levels of detail and display formats.

### **2.6.1.5 Electrical Power Riser Diagram (United States National CAD Standard – V5, Sheet Type 6)**

Electrical AC power riser diagrams represent multiconductor power circuits as a single line. The various devices in the circuit (such as transformers, motor starters, and switches) and the connected loads are shown in simplified schematic form. This diagram locates power equipment and loads within a structure. Each AC power panel shall have a panel schedule, which is to be a part of the drawing.

### **2.6.1.6 Electrical Panel Schedule (United States National CAD Standard – V5, Sheet Type 6)**

- a. An electrical panel schedule is a tabulated drawing of the internal configuration of an AC power panel.
- b. A panel schedule shall be a part of the single-line power riser diagram.



- c. The panel schedule shall contain the panel location and its identification, the type of panel, associated circuit breakers, panel capacity and feeder source, breaker trip settings with the loads being supplied, spare breakers, and empty spares.

## **2.6.2 Space and Weight Allocation Drawing (ASME Y14.24-2012, Sec. 7)**

A space and weight allocation drawing sets forth dimensional information for an item in terms of area, space, weight, sway and access clearance, and pipe and cable attachment that are required when the item is to be installed and to function with related items, and represents the as-built configuration.

## **2.6.3 Sketch**

A sketch is an informal drawing by an engineer or designer. Sketches are not covered in this manual.

Sketches should not be prepared in place of engineering drawings for procurement of mockups, models, preproduction hardware, or associated equipment.

## **2.7 Tags and Plates**

Assemblies should use identification plates and labels in accordance with 75M50393 where practical.

# **3. DIGITAL PRODUCT DATA FORMAT**

## **3.1 Title Block**

- a. Government design activity data shall use 22264 for the KSC CAGE Code.
- b. Government design activity data shall use *John F. Kennedy Space Center* for the name and *NASA Kennedy Space Center, Florida* for the address.
- c. Government design activity data shall not contain specific contractor identification, such as names or logos.

## **3.2 Security Classification and Notation**

Security classifications and notations shall be shown on all digital product data warranting such classifications in accordance with DOD 5220.22-M, NPR 1600.1, NPR 2190.1, ASME Y14.100-2013, and ASME Y14.41-2012.

### 3.3 Notice

The following notice shall appear in the upper left corner of all sheets or views of government design activity digital definition product data:

*Notice: When government drawings, specifications, or other data are used for any purpose other than in connection with a definitely related government procurement operation, the United States government thereby incurs no responsibility or obligation whatsoever; and the fact that the government may have formulated, furnished, or in any way supplied the said drawings, specifications, or other data is not to be regarded by implication or otherwise as in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell any patented invention that may in any way be related thereto.*

## 4. REVISION AUTHORIZATION DOCUMENT

### 4.1 Change Methods

Any changes to engineering drawings shall be recorded by Engineering Order (EO) or drawing revision. Changes made by EOs should be incorporated into the drawing when the drawing is revised. EO changes will be used as an alternate method of making drawing changes only when a revision to the drawing is not feasible.

#### 4.1.1 Changes by EO

An EO is used to change an engineering drawing only when it is impractical to revise the drawing. When an EO is released, it becomes a permanent part of the drawing to which it is applicable. Any change required to correct errors on a released EO requires the preparation of a new EO. A new EO may cancel a preceding EO in its entirety only if no other subsequent EOs are affected by the cancellation. A portion of an EO cannot be cancelled. All EOs are accounted for in the drawing revision block at the next revision release, up to and including the last release. An EO against one drawing number cannot be incorporated in another drawing number.

- a. All EOs that are incorporated into the drawing should be listed as *INC* or *incorporated* in the revision table.
- b. If EO numbers were reserved and not subsequently used, they should be accounted for as *Not used* in the revision table.
- c. All EOs that have been released but have been cancelled by revision or subsequent EO should be listed as *Cancelled* in the revision table.
- d. An EO can be prepared on KSC Form 21-34 or an approved equivalent.
- e. Changes made by EO should be incorporated into maintained drawings when the number of outstanding EOs exceeds 10.

#### **4.1.2 Revisions of Engineering Drawings and Associated Lists**

- a. A revision block shall be completed, starting at the basic revision, in accordance with ASME Y14.1-2012, and including the zone on drawing sizes C, D, E, and J.
- b. The “crossing-out” method of revision should not be used.
- c. When revising an existing drawing, the graphic symbols, designations, lettering style and size, material and method of application, and drawing practices used in creating the original drawing may be followed for changes/revisions, unless otherwise directed by the responsible design organization.

## APPENDIX A. NONMANDATORY SYMBOLS

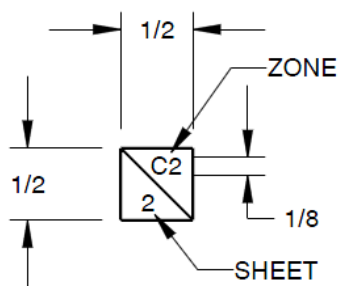


Figure 1. Sheet/Zone Locator Symbol

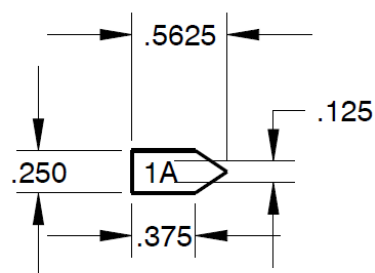


Figure 2. Flag Note Symbol

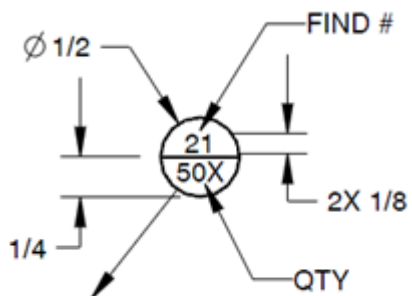


Figure 3. Find Number/Quantity Symbol

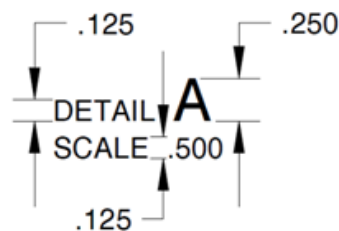
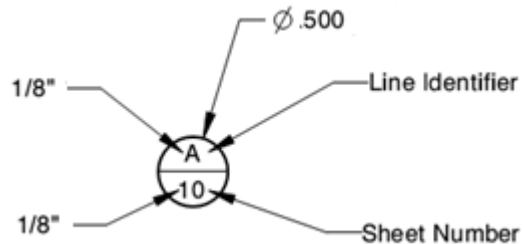
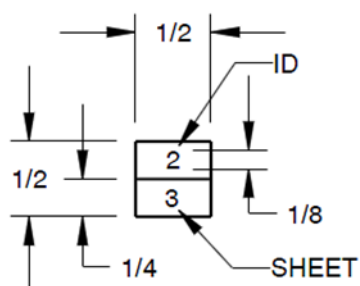


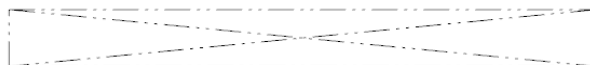
Figure 4. View Title



**Figure 5. Continuation Symbol**



**Figure 6. Alternate Continuation Symbol**



**Figure 7. Part Marking Symbol**



**Figure 8. Mechanical Find Number/Reference Designator Symbol**



**Figure 9. Electrical Reference Designator Symbol**

## APPENDIX B. NONMANDATORY REFERENCE

This appendix provides a mapping of the contents from the previous version of KSC-GP-435 (Rev. F) to the industry standards.

GP-435 Revision F		New Reference
Section	Subsection	
2.1 Scope		KSC-GP-435, Section 2.1 General
2.2 Signatures, Approvals, Dates, and Block Entries	2.2.1 CAD Drawing	ASME Y14.100-2013, Sec. 4.28 Drawing Verification and Approval
	2.2.2 Revision Blocks	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists ASME Y14.35-2014, Sec. 6.1 Revision History Block Entries ASME Y14.1-2012, Sec. 7 Revision History Block
	2.2.3 Title Blocks	ASME Y14.1-2012, Sec. 6 Title Blocks
2.3 Parts Identification/Parts List		ASME Y14.100-2013, Sec. 6.6 Part or Identifying Number
	2.3.1 Parts Identification	ASME Y14.100-2013, Sec. 6.7 Reference to Items ASME Y14.34-2013, Sec. 3.17 Find Number or Item Number KSC-GP-435, Section 2.3 Drawing Elements
	2.3.2 Parts List	ASME Y14.100-2013, Sec. 4.3 Associated Lists ASME Y14.34-2013 Associated Lists
	2.3.3 Parts List Using Simplified Formats	ASME Y14.100-2013, Sec. 4.3 Associated Lists ASME Y14.34-2013 Associated Lists
2.4 Drawing Scale		ASME Y14.100-2013, Sec. 4.24 Scale
	2.4.1 Selection of Scale	ASME Y14.100-2013, Sec. 4.24.1 Selection of Scale
	2.4.2 Indication of Scale	ASME Y14.100-2013, Sec. 4.24.2 Indication of Scale
	2.4.3 Decimal Scale	ASME Y14.100-2013, Sec. 4.24.2 Indication of Scale
	2.4.4 Common Fraction Scale	ASME Y14.100-2013, Sec. 4.24.2 Indication of Scale
	2.4.5 Not To Scale	ASME Y14.100-2013, Sec. 4.24.3 Drawings Not to Scale
2.5 Callouts on Drawings	2.5.1 Item (Find) Numbers	ASME Y14.34-2013, Sec. 3.17 Find Number or Item Number KSC-GP-435 Appendix A Nonmandatory Symbols

GP-435 Revision F		New Reference
Section	Subsection	
	2.5.2 Mechanical Find Numbers and Reference Designators	ASME Y14.100-2013, Sec. 4.20.9 Reference Designations for Electrical and Electronic Parts and Equipment ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
2.6 Weight of Components		ASME Y14.1-2012, Sec. 6 Title Blocks
2.7 Dimensioning and Tolerancing		ASME Y14.100-2013, Sec. 4.12 Dimensioning and Tolerancing
2.8 Dual Dimensioning		ASME Y14.100-2013, Sec. 4.12 Dimensioning and Tolerancing ASME Y14.5-2009, Sec. 1.5.4 Combination SI (Metric) and U.S. Customary Linear Units
2.9 Metric Values		ASME Y14.100-2013, Sec. 4.34 Metric Practices IEEE/ASTM SI 10-2010 American National Standard for Metric Practice
2.10 Screw Threads		ASME Y14.100-2013, Sec. 4.14 Screw Thread Representation ASME Y14.6-2001 Screw Thread Representation
2.11 Mechanical Springs		ASME Y14.100-2013, Sec. 4.16 Mechanical Springs
2.12 Gears		ASME Y14.100-2013, Sec. 4.15 Gears ANSI Y14.7.1-1971 Gear Drawing Standards – for Spur, Helical, Double Helical and Rack ANSI Y14.7.2-1978 Gear and Spline Drawing Standards Part 2 – Bevel and Hypoid Gears
2.13 Forgings		ASME Y14.100-2013, Sec. 4.18 Castings, Forgings, and Molded Parts ASME Y14.8-2009 Castings, Forgings, and Molded Parts
2.14 Optical Elements and Optical Systems		ASME Y14.100-2013, Sec. 4.17 Optical Elements and Optical Systems
2.15 Welding Practices		ASME Y14.100-2013, Sec. 4.20.6 Welding Symbols AWS A2.4:2012 Standard Symbols for Welding, Brazing, and Nondestructive Examination AWS A3.0M/A3.0:2010 Standard Welding Terms and Definitions; Including Terms for Adhesive Bonding, Brazing, Soldering, Thermal Cutting, and Thermal Spraying

GP-435 Revision F		New Reference
Section	Subsection	
2.16 Abbreviations		ASME Y14.100-2013, Sec. 4.20.12 Abbreviations ASME Y14.38-2007 Abbreviations and Acronyms for Use on Drawings and Related Documents KSC-GP-435, Abbreviations
2.17 Graphic Symbols		ASME Y14.100-2013, Sec. 4.20 Graphic Symbols, Designations, Letter Symbols, and Abbreviations KSC-GP-435, Sec. 2.5 Graphic Symbols, Designations, Letter Symbols, and Abbreviations
2.18 Surface Texture		ASME Y14.100-2013, Sec. 4.13 Surface Texture ASME B46.1-2009 Surface Texture (Surface Roughness, Waviness, and Lay)
2.19 Computer-Aided Design (CAD) Drawings		Removed
2.20 CAD Line Variance		ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
2.21 Multiviews and Sectional Views		ASME Y14.100-2013, Sec. 4.9 Single, Multiple, and Sectional View Drawings ASME Y14.3-2012 Orthographic and Pictorial Views KSC-GP-435, Section 2.4 Single, Multiple, and Sectional View Drawings
2.22 Section, Detail, and View Identification		KSC-GP-435 Appendix A Nonmandatory Symbols ASME Y14.100-2013, Sec. 4.9 Single, Multiple, and Sectional View Drawings ASME Y14.3-2012 Orthographic and Pictorial Views
2.23 Continuation Symbol		KSC-GP-435 Appendix A Nonmandatory Symbols
2.24 Identification Marking	2.24.1 Marking Requirements	KSC-DE-512-SM Revision L Facility Systems, Ground Support Systems, and Ground Support Equipment General Design Requirements
	2.24.2 Drawing Requirements	ASME Y14.100-2013, Sec. 4.25 Marking for Item Identification
	2.24.2.1 Location and Size	ASME Y14.100-2013, Sec. 4.25.2 Marking Location and Size
	2.24.2.2 Assembly Marking	ASME Y14.100-2013, Sec. 4.25.3 Tags and Plates KSC-GP-435, Sec. 2.7 Tags and Plates



GP-435 Revision F		New Reference
Section	Subsection	
2.25 Legibility and Reproducibility	2.25.1 Lines	ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
	2.25.1.1 Line Quality	ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
	2.25.1.2 Line Width	ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
	2.25.1.3 Line Spacing	ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
	2.25.2 Lettering	ASME Y14.100-2013, Sec. 4.8 Line Conventions and Lettering ASME Y14.2-2014 Line Conventions and Lettering
	2.25.2.1 Typewritten Lettering	Removed
	2.25.2.2 Preprinted Lettering	Removed
	2.25.3 Signatures and Dates	ASME Y14.100-2013, Sec. 4.28 Drawing Verification and Approval
	2.25.4 Symbols	ASME Y14.100-2013, Sec. 4.20 Graphic Symbols, Designations, Letter Symbols, and Abbreviations
	2.25.5 Cross-Section Areas	ASME Y14.100-2013, Sec. 4.9 Single, Multiple, and Sectional View Drawings ASME Y14.2-2014, Sec. 4.6.2 Direction and Spacing
2.26 Drawing Checking		Section removed
3.1 Size, Format, Title Block, and Material		ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
3.2 Preferred Formats		ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format

GP-435 Revision F		New Reference
Section	Subsection	
	3.2.1 Zoning of Drawings	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
	3.2.2 Microfilming Alignment Arrowheads	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
3.3 Roll-Size Format		ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
	3.3.1 Zoning	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
	3.3.2 Margins	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
	3.3.3 Match Lines	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
	3.3.4 Supplemental Drawing Number Blocks	ASME Y14.100-2013, Sec. 4.5 Size and Format of Engineering Drawings ASME Y14.1M-2012 Metric Drawing Sheet Size and Format <i>or</i> ASME Y14.1-2012 Decimal Inch Drawing Sheet Size and Format
3.4 Security Classification and Notation		KSC-GP-435, Sec. 3.2 Security Classification and Notation
3.5 Parts List		ASME Y14.100-2013, Sec. 4.3 Associated Lists ASME Y14.34-2013 Associated Lists
3.6 Notice		KSC-GP-435, Sec. 3.3 Notice ASME Y14.100-2013, Sec 7.8 Rights in Data Legends on Drawings
3.7 KSC Contractor Drawing Format		KSC-GP-435, Sec. 1 Introduction
3.8 Preprinted Drawing Format Materials		Removed

GP-435 Revision F		New Reference
Section	Subsection	
3.9 Computer-Generated Drawing Formats and Materials		KSC-GP-435, Sec. 2.3 Drawing Elements
3.10 Metric-Size Paper		ASME Y14.100-2013, Sec. 4.5.1 Metric ASME Y14.1M-2012 Decimal Inch Drawing Sheet Size and Format
4.1 General		ASME Y14.100-2013, Sec. 4.2 Types and Application of Engineering Drawings ASME Y14.24-2012 Types and Applications of Engineering Drawings
	4.2 Advanced Electrical Schematic	KSC-GP-435, Sec. 2.6.1.2 Advanced Electrical Schematic (AES)
	4.3 Elementary Electrical Schematic	KSC-GP-435, Sec. 2.6.1.3 Elementary Electrical Schematic (EES)
	4.4 Electrical Single-Line Diagram	ASME Y14.24-2012, Sec. 14.2 Single-Line Diagram
	4.5 Electrical Two-Line DC Power Diagram	No longer required
	4.6 Cable Interconnect Diagram	ASME Y14.24-2012, Sec. 14.5 Interconnection Diagram
	4.7 Mechanical Schematic	ASME Y14.24-2012, Sec. 13 Mechanical Schematic Diagram
	4.8 Electromechanical Control Diagram	ASME Y14.24-2012, Sec. 13 Mechanical Schematic Diagram
	4.9 System Mechanical Schematic	ASME Y14.24-2012, Sec. 13 Mechanical Schematic Diagram
	4.10 System Block Diagram	ASME Y14.24-2012, Sec. 14.1 Functional Block Diagram
	4.11 Ground Integrated Schematic	KSC-GP-435, Sec. 2.6.1.4 Ground Integrated Schematic (GIS)
	4.12 Logic Diagram	ASME Y14.24-2012, Sec. 14.7 Logic Circuit Diagram
	4.13 Functional Flow Diagram	ASME Y14.24-2012, Sec. 14.1 Functional Block Diagram
	4.14.1 Equipment Procurement/Performance Specification Drawing	ASME Y14.24-2012, Sec. 10 Control Drawings
	4.14.2 Component Procurement/Performance Specification Drawing	ASME Y14.24-2012, Sec. 10 Control Drawings
	4.14.3 Process Specification Drawing	Not applicable for this manual
	4.14.4 Material Specification Drawing	Not applicable for this manual

GP-435 Revision F		New Reference
Section	Subsection	
	4.15 Component Maintenance Drawing	Not applicable for this manual
	4.16 Cable Harness Drawing	ASME Y14.24-2012, Sec. 15.1 Wiring Harness Drawing
	4.17 Cable Assembly Drawing	ASME Y14.24-2012, Sec. 15.2 Cable Assembly Drawing
	4.18 Cable Installation Drawing	ASME Y14.24-2012, Sec. 7 Installation Drawing
	4.19 Cable Subassembly Drawing	ASME Y14.24-2012, Sec. 15.2 Cable Assembly Drawing
	4.20 Printed-Wiring Drawing	ASME Y14.24-2012, Sec. 15.3 Printed Board and Discrete Wiring Board Drawing Sets
	4.21 Assembly Drawing	ASME Y14.24-2012, Sec. 6 Assembly Drawing
	4.22 Detail Assembly Drawing	ASME Y14.24-2012, Sec. 5.2 Multidetail Drawing
	4.23 Detail Drawing	ASME Y14.24-2012, Sec. 5.1 Monodetail Drawing
	4.24 Arrangement Drawing	ASME Y14.24-2012, Sec. 9 Arrangement Drawing
	4.25 Envelope Drawing	ASME Y14.24-2012, Sec. 10.4 Envelope Drawing
	4.26 Installation Drawing	ASME Y14.24-2012, Sec. 7 Installation Drawing
	4.27 Space Allocation Drawing	KSC-GP-435, Sec. 2.6.2 Space and Weight Allocation Drawing (ASME Y14.24-2012, Sec. 7)
	4.28 Matched-Parts Drawing	ASME Y14.24-2012, Sec. 15.8 Matched Set Drawing
	4.29 Altered-Parts Drawing	ASME Y14.24-2012, Sec. 8.1 Altered Item Drawing
	4.30 Modification Drawing	ASME Y14.24-2012, Sec. 8.3 Modification Drawing
	4.31 Layout and Proposal Drawings	ASME Y14.24-2012, Sec. 4 Layout Drawing
	4.32 Undimensioned Drawing	ASME Y14.24-2012, Sec. 15.5 Undimensioned Drawing
	4.33 Block Diagram	ASME Y14.24-2012, Sec. 14.1 Functional Block Diagram
	4.34 Sketch Drawing	KSC-GP-435, Sec. 2.6.3 Sketch
	4.35 Interface Control Drawing	ASME Y14.24-2012, Sec. 11 Interface Drawing
	4.36 System/Equipment Parts List	ASME Y14.34-2013 Associated Lists

GP-435 Revision F		New Reference
Section	Subsection	
	4.37 Electrical Wire Running List	ASME Y14.34-2013, Sec. 3.26 Wire List
	4.38 Patch List	No longer required
	4.39 System/Equipment Documentation List	Not applicable for this manual
	4.40 Index List	ASME Y14.34-2013, Sec. 3.20 Index List
	4.41 Electrical Power Riser Diagram	KSC-GP-435, Sec. 2.6.1.5 Electrical Power Riser Diagram (United States National CAD Standard – V5, Sheet Type 6)
	4.42 Electrical Panel Schedule	KSC-GP-435, Sec. 2.6.1.6 Electrical Panel Schedule (United States National CAD Standard – V5, Sheet Type 6)
	4.43 System Mechanical Schematic/Electromechanical Control Diagram (SMS/EMCD)	ASME Y14.24-2012, Sec. 13 Mechanical Schematic Diagram
	4.44 Standard Interface Document	ASME Y14.24-2012, Sec. 11 Interface Drawing
	4.45 Hardware Interface Module (HIM) Configuration Document (HCD)	No longer required
	4.46 Operation and Maintenance Requirements and Specifications Document (OMRSD)	Not applicable for this manual
5.1 General		ASME Y14.100-2013, Sec. 5 Drawing Titles
5.2 Requirements	5.2.1 First Part	ASME Y14.100-2013, Sec. 5.2 General Rules
	5.2.1.1 Basic Name	ASME Y14.100-2013, Sec. 5.2 General Rules
	5.2.1.2 Modifier	ASME Y14.100-2013, Sec. 5.2 General Rules
	5.2.2 Second Part	ASME Y14.100-2013, Sec. 5.2 General Rules
5.3 Rules		ASME Y14.100-2013, Sec. 5.2 General Rules
6.1 Scope		
6.2 Identification Requirements		ASME Y14.100-2013, Sec. 6 Numbering, Coding, and Identification
	6.2.1 Commercial and Government Entity (CAGE) Code	KSC-GP-435, Sec. 3.1 Title Block
	6.2.2 Referenced Documents	ASME Y14.100-2013, Sec. 4.27.6 Drawing Notes – Contents
	6.2.3 Drawing Number	ASME Y14.100-2013, Sec. 6.2 Drawing Numbers
	6.2.4 Records	Not applicable for this manual
	6.2.5 Transferring Design Responsibility to Another Organization	ASME Y14.100-2013, Sec. 6.5.2.1 Transferring Design Responsibility to Another Activity

GP-435 Revision F		New Reference
Section	Subsection	
6.3 Part Number		ASME Y14.100-2013, Sec. 6.6 Part or Identifying Number
	6.3.1 Item Identification and Part Number	ASME Y14.100-2013, Sec. 6.7 Reference to Items
	6.3.2 Reidentification	Not applicable for this manual
	6.3.3 Identification on Drawings	ASME Y14.100-2013, Sec. 6.7 Reference to Items ASME Y14.34-2013, Sec. 3.17 Find Number or Item Number
	6.3.4 CAGE Code and Part Numbers	ASME Y14.100-2013, Sec. 6.6 Part or Identifying Number
	6.3.5 Numbering of Related Parts	
	6.3.5.1 Matched Parts Designation	ASME Y14.24-2012, Sec. 15.8 Matched Set Drawing
	6.3.5.2 Symmetrically Opposite parts	ASME Y14.24-2012, Sec. 5.1 Monodetail Drawing
	6.3.5.3 Inseparable Assembly	ASME Y14.24-2012, Sec. 6.2 Inseparable Assembly Drawing
	6.3.6 Changes Requiring New Identification	ASME Y14.100-2013, Sec. 6.8.1 Change Requiring New Identification
	6.3.7 Changes not Requiring New Identification	ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-13.2 Changes Not Requiring New Identification
6.4 Identification of Materials, Processes, and Protective Treatment		ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-14 Identification of Materials, Processes, and Protective Treatment
	6.4.1 Group Identification	ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-14.1 Group Identification
	6.4.2 Other Identification	ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-14.2 Other Identification
	6.4.3 Formulation Identification	ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-14.3 Formulation Identification
	6.4.4 Bulk Materials Identification	ASME Y14.100-2013 Nonmandatory Appendix D, Sec. D-14.4 Bulk Items Identification
6.5 Interface Control Identification		ASME Y14.100-2013, Sec. 4.2 Types and Application of Engineering Drawings ASME Y14.24-2012, Sec. 11 Interface Drawing
6.6 Reference Designations		ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.1 Mechanical Find Number	Not applicable for this manual
	6.6.1.1 Records	Not applicable for this manual
	6.6.1.2 Find Number and Use	Not applicable for this manual

GP-435 Revision F		New Reference
Section	Subsection	
	6.6.2 Electrical Reference Designator	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.2.1 Records	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.2.2 Electrical Reference Designator Number	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.2.3 Electrical Reference Designator Use	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.2.4 Cable Assemblies	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
	6.6.2.5 Buses	ASME Y14.44-2008 Reference Designations for Electrical and Electronics Parts and Equipment
7.1 General		
7.2 Drawing Note Types		ASME Y14.100-2013, Sec. 4.27 Drawing Notes
	7.2.1 General Notes	ASME Y14.100-2013, Sec. 4.27.6 Drawing Notes – Contents
	7.2.2 Specific Notes	ASME Y14.100-2013, Sec. 4.27.6 Drawing Notes – Contents
	7.2.3 Flag Notes	ASME Y14.100-2013, Sec. 4.27.6 Drawing Notes – Contents
7.3 Language Style		ASME Y14.100-2013, Sec. 4.27.1 Language
7.4 Commonly Used Words and Phrases		ASME Y14.100-2013, Sec. 4.27.2 Commonly Used Words and Phrases
7.5 Use of “Shall,” “Will,” “Should,” and “May”		ASME Y14.100-2013, Sec. 4.27.3 Use of Shall, Will, Should, and May
7.6 Indefinite Terms		ASME Y14.100-2013, Sec. 4.27.4 Indefinite Term
7.7 Note Contents		ASME Y14.100-2013, Sec. 4.27.6 Drawing Notes – Contents
7.8 Material Notes		Expected responsibility of design activity
7.9 Castings		Expected responsibility of design activity
7.10 Electrical and Electronic		Expected responsibility of design activity
7.11 Finishes, Applied		Expected responsibility of design activity
7.12 Finishes, Machined		Expected responsibility of design activity

GP-435 Revision F		New Reference
Section	Subsection	
7.13 Forgings		Expected responsibility of design activity
7.14 Heat Treatment		Expected responsibility of design activity
7.15 Inspection		Expected responsibility of design activity
7.16 Riveting		Expected responsibility of design activity
7.17 Threads and Threaded Fasteners		Expected responsibility of design activity
7.18 Welding, Brazing, and Soldering		Expected responsibility of design activity
7.19 Miscellaneous		Expected responsibility of design activity
8.1 Scope		
8.2 Documentation Release Authorization Form		Controlled by process
8.3 Drawing Release Application		Controlled by process
8.4 Preliminary Release		Controlled by process
8.5 Preliminary Release Marking		Controlled by process
8.6 Final Release		Controlled by process
8.7 Drawing Revision/Change Revision		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
8.8 Release Records		Controlled by process
8.9 Drawing Control		Controlled by process
8.10 Duplicate Originals		ASME Y14.100-2013, Sec. 7.9 Duplicate Original
8.11 Drawing Record		Controlled by process
9.1 Scope		
9.2 Change Methods		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists KSC-GP-435, Section 4.1 Change Methods
	9.2.1 Changes by EO	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists KSC-GP-435, Section 4.1.1 Changes by EO
	9.2.1.1 Accounting for EO's in Revision Blocks	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.2.1.2 EO Format	KSC-GP-435, Section 4.1.1 Changes by EO
	9.2.1.3 Preparation of the Engineering Order (KSC Form 21-34)	Not applicable for this manual



GP-435 Revision F		New Reference
Section	Subsection	
	9.2.1.4 Preparation of the Engineering Order Continuation Sheet (KSC Form 21-34A)	Not applicable for this manual
9.3 Revision Methods		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists KSC-GP-435, Section 4.1.2 Revision of Engineering Drawings and Associated Lists
	9.3.1 Revision Drawing Practices	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.3.2 Change in Dimensions	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.4 Recording Revisions on Drawings		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.1 Zone	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.2 Revision Letter	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.3 Description	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.3.1 Sheet 1 of Drawing	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.3.2 Succeeding Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.4 Revision Date	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.5 Approval	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.4.6 Separating Revisions	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.5 Revision Identification		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.5.1 Revision Letters	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.5.2 Revision Symbols	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.6 Revision of Multiple-Sheet Drawings		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.1 Adding Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.1.1 Inserting New Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.1.2 Adding Sheets to the End	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists

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Section	Subsection	
	9.6.1.3 Inserting New Sheets and Renumbering	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.2 Deleting Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.2.1 Deleting Sheets Without Renumbering	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.2.2 Deleting Sheets and Renumbering	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.2.3 Reinstating Cancelled/Deleted Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
	9.6.3 Rearranging Sheets	ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.7 Cancelled Drawings		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.8 Obsolete Drawings		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.9 Redrawn or Replotted Drawings		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.10 Reinstating a Cancelled/Obsolete Drawing		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists
9.11 Documentation Files		ASME Y14.100-2013, Sec. 4.4 Revisions of Engineering Drawings and Associated Lists

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# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

## INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
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### **I RECOMMEND A CHANGE:**

#### 1. DOCUMENT NUMBER

KSC-GP-435, Volume I,  
Revision G, Change 1

#### 2. DOCUMENT DATE

March 26, 2015

#### 3. DOCUMENT TITLE

Engineering Drawing Practices, Volume I of II, Aerospace and Ground Support Equipment

#### 4. NATURE OF CHANGE *(Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)*

#### 5. REASON FOR RECOMMENDATION

### **6. SUBMITTER**

a. NAME *(Last, First, Middle Initial)*

b. ORGANIZATION

c. ADDRESS *(Include Zip Code)*

d. TELEPHONE *(Include Area Code)*

7. DATE SUBMITTED

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