ANSI/AIAA S-017B-2015(2019)

Standard

Aerodynamic Decelerator and Parachute Drawings

AIAA

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American National Standard

Aerodynamic Decelerator and Parachute Drawings

Sponsored by

American Institute of Aeronautics and Astronautics

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Abstract

This standard establishes terminology critical to communication about the design and function of parachutes. It further sets requirements for the graphic description of materials, stitching, seams, view, and projections, with related dimensions and tolerances, all of which are consistent with current practice. Many figures are included to illustrate the requirements. Additional illustrations of many of the most common types of parachutes are provided in an annex.

American National Standard

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Contents

Figures

Tables

Foreword

The purpose of this standard is to help government and private organizations prepare parachute drawing details in a reasonably uniform format. For parachute drawings, it offers guidelines on exceptions to basic drawing standards; general notes; views and projections, seams and stitching, identification markings; and finished and pattern dimensions.

Every attempt has been made to base this standard on widely accepted usage by government and industry. By following the requirements and recommendations of this standard, developing groups will help create consistent parachute drawings, which will enhance their usefulness in design and manufacturing applications.

This standard was prepared by the AIAA Aerodynamic Decelerator Systems Committee on Standards, functioning as a subcommittee of the Technical Committee of the same name. A need for a national standard for decelerator drawing had been perceived, and this document is the response to that need. Because of some unique properties, aerodynamic decelerator drawings need some special conventions. In addition to improved clarity, it is intended to help prevent misunderstanding and disagreements about interpretation and problems with quality control or inspection due to differing drawing conventions.

A standard used by Sandia Laboratories was the starting point for this standard. Inputs were provided by members of the AIAA Aerodynamic Decelerator Systems Technical Committee representing industry, government, and academia. Additional inputs were provided by the Parachute Industry Association and the U.S. Army Natick Research, Development, and Engineering Center on behalf of the Department of Defense. The official DoD adoption notice is reprinted on page viii.

The second revision was conducted by the members of the AIAA Aerodynamic Decelerator Systems Technical Committee, Standards Working Group comprised of:

John Watkins, Chair	Pioneer Aerospace Corporation
Charles M. Fremaux	NASA Langley Research Center
Elsa Hennings	Naval Air Warfare Center Weapons Division
Frank Kerrigan	U.S. Army Natick Soldier Center
Robert Schober	Pioneer Aerospace Corporation
Oleg Yakimenko	Naval Postgraduate School

Additional assistance was provided by:

Ignatius Kapo	Performance Designs, Inc.
Robert Sinclair	Airborne Systems

The above consensus body approved this document in March 2015.

The AIAA Standards Executive Council (Vice President, Laura McGill, Chairperson) accepted the document for publication in April 2015.

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AIAA S-017B

ADOPTION NOTICE

AIAA S-017B, AERODYNAMIC DECELERATOR AND PARACHUTE DRAWINGS, STANDARD was adopted on 03-JAN-92 for use by the Department of Defense (DoD). Proposed changes by DoD activities must be submitted to the DoD Adopting Activity: Commander, US Army Soldier Systems Center, Attn: AMSRD-NS-CG, 10 Kansas St., Natick, MA 01760-5000. Copies of this document may be purchased from the American Institute of Aeronautics and Astronautics, 1801 Alexander Bell Drive, Suite 500, Reston, VA 20191-4344. http://arc.aiaa.org/

Custodians:
Army – GL
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Reviewer Activities:
Army – AR, GL, TR
Navy – AS
Air Force – 11, 82
DLA – GS

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Introduction

This drawing standard refers to federal and military specifications which, as of the time of this revision, are either equivalent to existing commercial specifications or are in the process of being converted to commercial specifications. The federal or military specification should be considered a reference only.

This standard supplements the requirements of MIL-DTL-31000C, “Product Drawings and Associated Lists,” for drawings with conventions for textile drawings used for parachutes and components. Uniform practices for stating and interpreting these conventions are established herein.

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 "ANSI/AIAA-S-017B-2015(2019)."

This standard was intended to supplement rather than replace MIL-STD-100G and the following American Society of Mechanical Engineers (ASME) documents:

ASME Y14.2, *Line Conventions and Lettering*

ASME Y14.3, *Orthographic and Pictorial Views*

ASME Y14.5, *Dimensioning and Tolerancing*

As of 2001, MIL-STD-100G has been superseded by the following documents:

ASME Y14.100, *Engineering Drawing Practices*

ASME Y14.24, *Types and Applications of Engineering Drawings*

ASME/ANSI Y14.34M, *Parts Lists, Data Lists, and Index Lists: Associated Lists*

ASME/ANSI Y14.35M, *Revision of Engineering Drawings and Associated Documents*

The following standards and specifications are also referenced in this standard: ASTM-D-6193-16, A-A-55126C, and A-A-59291A. In the event of a conflict between the text of this standard and the references cited, the text of this standard shall take precedence.

The figures in this standard are intended only as illustrations to aid the user in understanding the principles and methods of representing textile drawings given in the text. The absence of a figure illustrating the desired application is neither reason to assume inapplicability nor basis for rejection of the drawing. In some instances figures show added detail for emphasis, in other instances figures are incomplete by intent.

Notes herein in capital letters are intended to appear on finished drawings. Notes in lower case are explanatory only and are not intended to appear on drawings. Notes as given are generic in nature and should be adapted to the specific end-item requirements.

1 Scope

This standard establishes terminology for 270 terms critical to communication about the design and function of parachutes. It further sets requirements for the graphic description of materials, stitching, seams, view, and projections, with related dimensions and tolerances, all of which are consistent with current procurement practice. Many figures are included to illustrate the requirements. Additional illustrations of many of the most common types of parachutes are provided in an annex.

2 Tailoring

The terminology, figures, and information included in this standard provide recommended practices that are for guidance only. As such, the information in this standard may be tailored to meet the requirements, practices, and conventions of a specific organization; parachute program; drawings for a parachute system or component; or technical information such as parachute packing, rigging, and maintenance manuals.

3 Applicable Documents

The following documents contain provisions which, through reference in this text, constitute provisions of this standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

The following standards and specifications are also referenced in this standard. In the event of a conflict between the text of this standard and the references cited, the text of this standard shall take precedence.

3.1 Standards and Specifications

A-A-55126C	Fastener Tapes, Hook and Loop, Synthetic (21 Dec 2016)
A-A-59291A	Ink, Marking (for Parachutes and Other Textile Items) (30 Jan 2011)
ASTM-D-6193-16	Standard Practice for Stitches and Seams (01 Jan 2016)
FED-STD-751	Stitches, Seams, and Stitchings (superseded by ASTM-D-6193-16)
AMS-STD-595	Colors Used in Government Procurement (14 Feb 2017)
FED-STD-595C	Colors Used in Government Procurement (superseded by SAE-AMS-STD-595)
MIL-STD-130N	Identification Marking of U.S. Military Property (16 Nov 2012)
MIL-STD-849B	Inspection Requirements, Definitions and Classification of Defects for Parachutes (31 Jul 2009)

3.2 Recommended References

Ewing, E. G., Bixby, H. W., Knacke, T. W. Recovery System Design Guide, Air Force Flight Dynamics Laboratory, AF Wright Aeronautical Laboratories, ASFC, Wright-Patterson Air Force Base, Ohio 45433. December 1978.

Knacke, T. W. Parachute Recovery Systems Design Manual, Naval Weapons Center, NWC TP 6575. Para Publishing, Santa Barbara, CA. March 1991.

Poynter, D. F. The Parachute Manual, A Technical Treatise on Aerodynamic Decelerators, Volume I, 3rd edition. Para Publishing, Santa Barbara, CA. 1991.

Poynter, D. F. The Parachute Manual, A Technical Treatise on Aerodynamic Decelerators, Volume II, 4th edition. Para Publishing, Santa Barbara, CA, 1991.

4 Vocabulary

4.1 Terms and Definitions

Following is a glossary of parachute terms related to parachute drawings. The definitions in this glossary are brief. For additional information, refer to section 3.2 Recommended References.