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DEPARTMENT OF DEFENSE STANDARD PRACTICE

GENERAL STYLE AND FORMAT REQUIREMENTS FOR TECHNICAL MANUALS

AMSC N/A

AREA TMSS

FOREWORD

1. This standard is approved for use by all Departments and Agencies of the Department of Defense.

2. This change incorporated ITPS requirements, changes to Marine specific requirements as requested by the Marine Corps, added print information from the canceled MIL-HDBK-38790, and included various administrative updates.

3. Comments, suggestions, or questions on this document should be addressed to AFLCMC/HIAM Technical Data Section, 4170 Hebble Creek Road, Bldg. 280, Door 15, Area A, Wright-Patterson AFB, OH 45433–5653 or emailed to SGMLsupport@us.af mil. Since contact information can change, the currency of this address information should be verified using the ASSIST Online database at https://assist.dla mil/.

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1 SCOPE.

1.1 Scope. This standard covers the general style and format requirements for the preparation of standard Technical Manuals (TM) and changes thereto. This includes all technical documents assigned a TM identification number and controlled by a TM management information system, or subject to requisition from an inventory control point. This standard provides for Standard Generalized Markup Language (SGML) Document Type Definition (DTD) usage (see appendices B through E) required for electronic data delivery, including PDF. This standard supplements the performance of detail specifications used for specific TM types and related publications, but does not deliver any technical data. Unless specified otherwise herein, the examples at the end of this standard are typical and may be adapted to fit the specific equipment or situation being covered. All appendices are intended for compliance when applicable.

2 APPLICABLE DOCUMENTS.

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this standard. This section does not include documents cited in other sections of this standard or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this standard, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards and handbooks. The following specifications, standards, and handbooks form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-87268	Interactive Electronic Technical Manual (IETM) General Requirements
MIL-DTL-38807	Technical Manuals - Illustrated Parts Breakdown

DEPARTMENT OF DEFENSE STANDARDS

MIL-STD-1309	Definitions of Terms for Testing, Measurement and Diagnostics
MIL-STD-1808	System Subsystem Sub-subsystem (S/S/SN) Numbering

(Copies of federal and military specifications, standards and handbooks are available at https://assist.dla mil/)

2.2.2 Other Government documents, drawings, and publications. The following other Government documents, drawings, and publications form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

DEPARTMENT OF DEFENSE PUBLICATIONS

DoD 5220.22-M	National Industrial Security Program Operating Manual (NISPOM)
DoDI 5230.24	Distribution Statements on Technical Documents
DoDM 5200.01	Information Security Program

(Copies available at http://www.dtic mil/whs/directives/index html)

AIRFORCE TECHNICAL MANUALS

TO 00-5-1	AF Technical Order System
TO 00-5-3	AF Technical Order Life Cycle Management
TO 00-25-234	General Shop Practice Requirements For The Repair, Maintenance and Test of Electrical Equipment

(Copies of these documents required by users with" mil" government web address access are available online at https://www my.af mil/etims/ETIMS/index.jsp. Refer to helpdesk information if obtaining copies

without a TO subscription account. Copies of documents required by contractors in connection with specific procurement functions should be obtained from the acquiring activity or as directed by the contracting officer.)

AIRFORCE INSTRUCTIONS

AFI 63-101	ACQUISITION AND SUSTAINMENT LIFE CYCLE MANAGEMENT

(Application for copies should be addressed to the Superintendent of Documents, US Government Printing Office, Washington, DC 20402. http://www.e-publishing.af.mil/.www.gpo.gov)

GOVERNMENT PRINTING OFFICE

GP 1.23/4:ST 9/2008	US Government Printing Office Style Manual

(Copies may be obtained at https://www.gpo.gov/fdsys/.)

JCS Pub. 1–02	DoD Dictionary of Military and Associated Terms

(Copies may be obtained at http://www.dtic.mil/.)

2.3 Non-government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those cited in the solicitation or contract.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS PUBLICATIONS

ASME-Y14.38	Abbreviations and Acronyms for use on Drawings and Related Documents

(Application for copies should be addressed to http://www.asme.org or the American Society of Mechanical Engineers, 22 Law Drive, PO Box 2900, Fairfield, NJ 07007-2900.)

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS PUBLICATIONS

IEEE ASTM SI 10	Standard for use of the International System of Units (SI): The Modern Metric System
IEEE 945-1984	IEEE Recommended Practice for Preferred Metric Units for use in Electrical and Electronics Science and Technology

(Application for copies should be addressed to http://www.ieee.org/ or the Institute of Electrical and Electronics Engineers, Inc., Publications Office, 10662 Los Vaqueros Circle, PO Box 3014, Los Alamitos, CA 90720-1264)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3 DEFINITIONS.

3.1 Acronyms used in this standard. The acronyms used in this standard are defined as follows:

a. AFOSH Air Force Occupational Safety and Health

b. AFTO - Air Force Technical Order

c. AMSC - Acquisition Management Systems Control

d. ASTM - American Society for Testing Materials

e. ASSIST - Acquisition Streamlining and Standardization Information System

f. CAC - Common Access Card

g. DA - Department of the Army
h. DAEP - Department of the Army Equipment Publication
i. DEP - Draft Equipment Publication
j. DoD - Department of Defense
k. DoDISS - Department of Defense Index of Specifications and Standards
l. DTD - Document Type Definition
m. ECP - Engineering Change Proposal
n. ESDS - Electrostatic Discharge Sensitive
o. EUT&E - Early User Test and Experimentation
p. FCP - Fracture/Fatigue Critical Part
q. FDEP - Final Draft Equipment Publication
r. FOSI - Formatting Output Specification Instance
s. FOT&E - Follow-on Test and Evaluation
t. FRC - Final Reproducible Copy
u. GFI - Government Furnished Information
v. HCP - Hardness Critical Processes
w. HTML- Hyper Text Markup Language
x. IEEE - Institute of Electrical and Electronics Engineers
y. IOT&E - Initial Operational Test and Evaluation
z. IPB - Illustrated Parts Breakdown
aa. ISO - International Organization for Standardization
ab. IETM - Interactive Electronic Technical Manual
ac. IETP - Interactive Electronic Technical Publication
ad. ITPS - Identifying Technical Publication Sheet
ae. LEP - List of Effective Pages
af. LOC - List of Changes
ag. LOI - List of Illustrations
ah. LRP - List of Related Publications
ai. LOT - List of Tables
aj. NET - New Equipment Training
ak. NISPOM - National Industrial Security Program
al. NSP - Nuclear Surety Procedures
am. O&SHA - Operating and Support Hazard Analysis
an. OCI/OCP - Observable Critical Item/Process
ao. OSH - Occupational Safety and Health
ap. PED - Portable Electronic Device
aq. PDEP - Preliminary Draft Equipment Publication
ar. PDF - Portable Document Format
as. PHA - Preliminary Hazard Analysis
at. PKI - Public Key Infrastructure

au. PTM - Preliminary Technical Manual

av. PTO - Preliminary Technical Order

aw. RAC - Rapid Action Change

ax. RDC - Review Draft Copy

ay. RPSTL - Repair Parts and Special Tools List

az. SGML - Standard Generalized Markup Language

ba. S/S/SN - System/Subsystem Sub-subsystem Numbering

bb. TB - Technical Bulletin

bc. TCTO - Time Compliance Technical Order

bd. TDT - Tag Description Table

be. TM - Technical Manual

bf. TMINS - Technical Manual Identification Number System

bg. TMSS - Technical Manual Specifications and Standards

bh. TO - Technical Order

bi. TOC - Table of Contents

bj. TOPS - Technical Order Page Supplement

bk. TTI - Technical Test I

bl. APD - Army Publishing Director

bm. XML - Extensible Markup Language

NOTE

Throughout this publication requirements that are only applicable to specific military services are indicated by the following: (A) for Army, (F) for Air Force, (M) for Marine Corps and (N) for Navy.

3.2 Definitions.

3.2.1 Apron (blank apron). Print presentation: A blank area starting at the binding edge of foldout pages (see 3.2.14) which is slightly wider than a normal page. The blank apron permits the technician to use a foldout while reading the associated text (see figure 52 and 6.1.6e for further information on blank aprons).

3.2.2 Boxhead title. Those titles which are enclosed by rules at the head of a column on tables and charts prepared as tables.

3.2.3 Callout. Anything placed on an illustration to aid in identifying the objects being illustrated, such as index numbers, nomenclatures, leader lines, arrows and, when placed directly on the illustration, legends.

3.2.4 Caution. Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness. Cautions are further explained in appendix A.

3.2.5 Change. Print presentation: A change is comprised of corrected pages to the basic manual. It consists of information that improves or clarifies the basic manual without requiring rewriting or reorganization of the technical content of the basic manual.

(F) Electronic presentation requirement: Changes are accomplished through revisions and will be identified in the list of changes, that will be linked to the corresponding changes.

3.2.6 Change designator. Print presentation: A unique number or letter used to differentiate each change page from the original pages and to differentiate among changes.

(F) Electronic presentation: Change designators are not required in screen display. The List of changes contain the list of all changes made to the manual with links to the corresponding changes.

3.2.7 Chapter. The first major functional division of a publication.

3.2.8 Deleted.

3.2.9 Department of the Army Equipment Publication(s) (DAEP). (A) Those publications that have been authenticated, printed, and distributed for use during the production and operations phase of the life cycle of the equipment.

Technical Bulletin (TB) (A) Technical Bulletins are a U.S. Army publication type that contains information, procedures, and techniques of a technical or professional nature relating to equipment and general subjects. A TB does not contain administrative material or material pertaining to tactical training or tactical operations. TBs may supplement equipment TMs, however, the contents of equipment TMs will not be changed by TBs nor will TBs be published instead of equipment TMs. TBs cannot have Operations, Maintenance or Repair Parts and Special Tools List (RPSTL) data. TBs are published at the same time as the TMs they support or after the TM is completed. TBs should not be used for pocket sized quick reference guides. TBs are generally smaller in size (under 200 pages as a rule).

3.2.10 Draft Equipment Publication(s) (DEP). (A) (M) Those publications prepared during the full scale development phase of the equipment which are used for Technical Test I (TTI) and user tests (Initial Operational Test & Evaluation (IOT&E), usually with prototype models of equipment. The DEP is also used for coordination and review by user agencies US Army Forces Command (FORSCOM) and US Army Training and Doctrine Command (TRADOC) and for verification. The DEP also designates the publication that is sent for user coordination during revision of Department of the Army (DA) equipment publications.

a. The DEP is prepared in the format prescribed by applicable detail specification. It is an updated version of the Preliminary Draft Equipment Publication (PDEP) which includes all changes as a result of the validation and early technical and user testing (TTI) and Early User Test and Experimentation (EUT&E) and physical tear down function of the maintenance evaluation.

b. The DEP definition replaces terms formerly used to refer to publications used for the above purpose and phase of development (draft manuscript, draft equipment manual, draft TM, preliminary manuscripts, review copy, etc.).

c. DEPs prepared prior to Milestone III (full rate production decision) may be prepared in typewritten manuscript form following the Content/Format Summary Sheet of the applicable detail specification, integrating text and illustrations appropriately.

3.2.11 Equipment Publication Manuscript. (A) (M) The documentation used in preparation of the PDEP, DEP, or FDEP. It may be in any form (typewritten or handwritten, reproducible copy, drawings, illustrations, unchanged publication pages, changed publication pages, etc.). When the term “manuscript” is used, it will be prefaced with the type of publication, e.g. PDEP manuscript, DEP manuscript, etc. When PDEP or DEP manuscripts are ready for reproduction to be distributed to test and user agencies for evaluation and coordination, the word manuscript will be dropped and the title PDEP or DEP (as appropriate) will be used.

3.2.12 Final Draft Equipment Publication(s) (FDEP). (A) (M) Those publications prepared during the final development or initial production phase of the equipment and used for printing of the Department of the Army (DA) equipment publication.

a. The FDEP is the final document (FRC) with illustrations, ready for transmittal to the Army Publishing Director (APD) for printing and publication as an authenticated DA equipment publication. The FDEP includes all necessary changes and resolutions of all comments and recommendations made as a result of technical and user testing TTI, TTII, EUT&E, Initial Operational Test and Evaluation (IOT&E) and Follow-On Test and Evaluation (FOT&E), if conducted, service test, validation/verification, user coordination, and maintenance literature conference.

b. The FDEP definition replaces terms formerly used to refer to publications used for the above purpose and phase of development (final manuscript, final draft manuscript, final draft TM, draft TM, manuscript for review, etc.).

3.2.13 Final Reproducible Copy (FRC). The final document ready for reproduction and publication as an authenticated TM including all necessary changes made as a result of validation/verification and acquiring activity conditions of acceptance or approval. Delivery will be by digital media that includes, PDF files, SGML, HTML, XML tagged data, etc. For Army and Marine Corps, FRC equates to FDEP (see 3.2.12).

3.2.14 Foldout page. Print presentation: A foldout page has the same height as, but is wider than, a standard page. Foldout pages are folded either 2, 4 or 6 times (depending on width) to assume the dimensions of a standard page.

3.2.15 Icon. Icons are pictorial images which may be used in lieu of words. For example: the ESDS icon is used to represent "Electrostatic Discharge Sensitive." See appendix A for authorized icons. See figure 18 for example.

3.2.16 Index numbers/letters. Those callouts which consist of a number or letter referenced from text or leading to a legend (see 3.2.20).

3.2.17 Issue indicator. The issue indicator states the level of change or revision of the manual, e.g. Original, Change 1, Change 2, Revision 1, Revision 2, etc.

3.2.18 Leader lines. A line with or without arrowhead extending from index number or letter/nomenclature to item.

3.2.19 Leading. Leading is the vertical spacing between lines of type measured from baseline to baseline (bottom of line to bottom of next line below). Leading is measured in points.

3.2.20 Legend. A tabular listing of the index numbers/letters and their meanings.

3.2.21 Module. (A) (M) Integrated text and illustration covering performance of a task procedure/step.

3.2.22 Multivolume manuals. Print presentation: Multivolume manuals are assigned individual TM identification numbers. If a volume, because of its bulk, warrants being further divided, the acquiring activity will decide how these divisions will be identified. When specified for use by the acquiring activity, volumes will be used when a publication exceeds 1,500 printed pages (750 sheets). Foldouts are counted in page units (sheets).

3.2.23 Nomenclature callout. Nomenclatures or partial nomenclatures placed directly on the illustration; e.g. "power supply", "½-inch lock nut."

3.2.24 Note. Highlights an essential operating or maintenance procedure, condition, or statement. Do not use notes in place of procedural steps.

3.2.25 Part. (F) (N) A part is the next lower division of a publication below volume. Parts should normally be separately bound.

3.2.26 Permanent change package. (N) A controlled permanent change to the basic manual or revision comprised of change instruction sheet, certification sheet, title page, LEP and replacement or additional pages. Each package is identified by a unique TM identification number and each replacement or added page is identified by a change designator.

3.2.27 Preliminary Draft Equipment Publication(s) (PDEP). (A) (M) Those publications prepared during the development phase of the equipment which are used for validation and early technical and user testing (TTI and Early User Test and Experimentation EUT&E). The PDEP need not conform to format requirements of the applicable detail specification. The PDEP may be in the form of printed books or manuscript, or they may be a package of documentation such as a draft maintenance allocation chart, engineer drawings, technical data or other data required for operation and maintenance of the equipment. The PDEP is used as the basis for preparation of the draft equipment publications and may be used as source data for developing New Equipment Training (NET) and other training requirements.

3.2.28 Preliminary Technical Manual(s) (PTM). A PTM is intended for interim use to make the technical information available for test, verification, training purposes and operational use pending receipt of the FRC copy and distribution of printed manuals. PTMs will be complete and validated accurate. PTMs will be superseded by published manuals. For Army,and Marine Corps PTM equates to DEP (see 3.2.10). For Air Force, PTM equates to Verification PTO.

3.2.29 Presentation requirements. Addresses data functionality/formatting that is determined by two primary modes of rendering and outputting of the TM data (print, electronic) that are within the scope of this specification. They are defined as follows:

3.2.29.1 Electronic presentation. Specifies requirements used to develop TM data to be rendered for display on an electronic/digital system, such as various kinds of work station computers, glass cockpit displays, or Portable Electronic Devices (PED)/Commercial Mobile Devices (CMD). These requirements apply to technical data developed as linear-structured compositions to be rendered digitally, i.e., HTML or equivalent web source data, for display in a browser or viewer. Electronic presentation requirements herein do NOT apply to development of PDF files, unless explicitly stated otherwise. Where data functionality requirements are specified through a separate document, such as a functionality matrix or a technical requirements document, that is approved by the acquiring activity, they should reflect or reference the functionality requirements specified herein. NOTE: Requirements for higher level digital non-linear interactive data, herein called Interactive Electronic TMs (IETMs) or Interactive Electronic Technical Publications (IETPs), are contained in a separate specification.

3.2.29.2 Print presentation. Specifies formatting requirements herein used to develop TM data to be rendered only as page-oriented or printed publications. Print presentation requirements herein also apply overall to development of PDF files, with limited exceptions.

3.2.30 Review Draft Copy (RDC). The RDC is used for review and coordination for technical accuracy and adequacy to evaluate the contractor's progress and assess compliance with applicable specifications and terms of the contract. (A) (M) RDC equates to PDEP (see 3.2.27). (N) RDC equates to review manuscript.

3.2.31 Revision. A revision is a second or subsequent edition of a manual which normally supersedes the preceding edition.

3.2.31.1 Update revision. An update revision incorporates the basic manual, all previous changes, and new data that would require the issuance of an additional change. The update is prepared by incorporating applicable portions in the manual without requiring rewrite or reorganization of the technical content of the material. It is prepared in the style and format of the basic manual.

3.2.31.2 Complete revision. A complete revision requires rewrite or reorganization of the technical content of the material and is prepared in accordance with the current detail specification and as outlined by this standard.

3.2.31.3 Nonsuperseding revision. Normally revisions supersede the preceding edition. However, when a new manual is needed to cover a different configuration of a system or equipment for which there is a high degree of commonality, a nonsuperseding revision can be acquired to minimize cost. A nonsuperseding revision will stand on its own and will be identified by a unique Technical Manual (TM) identification number.

3.2.31.4 Pickup revision. A pickup revision incorporates the basic manual, all previous changes and the new data that would require the issuance of an additional change.

Print presentation: Only those changed, revised, or added pages will have the current change number and date. Other existing pages will be reissued without changes to dates, change symbols or other modification.

3.2.32 Scrollable view. Electronic presentation: The view that is electronically displayed that includes the data that can be viewed by scrolling up and down or left and right. The view corresponds to the partitioning of data into sections or chapters.

3.2.33 Section. The first major functional subdivision of a chapter.

3.2.34 Set. A set is a number of individual manuals or volumes which comprises a complete TM package of information for an item.

3.2.35 Standard technical manual. A standard TM is any TM that does not require a new concept or special presentation of data that cannot, or should not, be constrained by the size and format requirements of this standard.

3.2.36 Supplement. A supplement is a complimentary TM which supplements information in a related TM.

3.2.37 Technical manual. TMs are publications that contain instructions for the installation, operation, maintenance, training, and support of weapon systems, weapon system components and support equipment. TM information may be presented in any form or characteristic including, but not limited to, hard copy, audio and visual displays, disks, and other electronic devices. A TM normally contains operational and maintenance instructions, parts lists or parts breakdowns, and related technical information or procedures exclusive of administrative procedures. Technical Orders (TO) that meet the criteria of this definition may also be classified as TMs.

3.2.38 The Marine Corps Technical Publications System. (M) Those publications that have been authenticated, printed, and distributed for use during the production and operations phase of the life cycle of the equipment. Instruction-type Publications (I-Type) (M) Instruction-type publications are a Marine Corps publication type that contains information, procedures, and techniques of a technical nature relating to equipment. The Marine Corps has four I-Types publications. They are Lubrication Instructions (LI) /Lubrication Orders (LO), Modification Instructions (MI), Technical Instructions (TI) and Supply Instructions (SI). TIs are published as required to supplement and support TMs on an as required basis. As TMs are updated TIs may be incorporated into the TMs.

3.2.39 Volume. Print presentation: The first separately bound subdivision of a publication.

3.2.40 Warning. Highlights an essential operating or maintenance procedure, practice, condition, statement, etc., which, if not strictly observed, could result in injury to, or death of, personnel or long term health hazards. Warnings are further explained in appendix A of this standard.

4 GENERAL REQUIREMENTS.

4.1 General.

4.1.1 Print presentation. In this standard, print presentation shall apply to printed technical data and where applicable, to PDF.

4.1.2 (F) Electronic presentation. In this standard, electronic presentation shall apply to tech data that is displayed electronically or digitally. The scrollable view will be by chapter division, unless otherwise specified in the detail specification. These requirements shall be applicable to Type 1 electronic presentation. Type 2 (IETM) electronic requirements are provided in a separate standard.

4.1.3 Advertising. TMs shall contain no advertising except as required by 4.5.1.3.6.

4.1.4 Copyrighted material. Technical manuals shall not contain copyrighted material except as specified in the Federal Acquisition Regulations/Defense Federal Acquisition Regulation Supplement. When copyrighted material is to be included in a technical publication, the preparer shall obtain prior written permission from the copyright owner/authorized agent for its use. The signed, written permission shall be delivered with the FRC copy when it is delivered. The written permission shall contain a statement declaring whether or not a copyright credit line is required (see 4.5.1.16).

4.1.5 Jointly used manuals. When manuals are acquired by one Service for joint use with another Service, see 4.2.1.5 regarding Army, Navy, Marine Corps and Air Force TM identification numbers. See figure 1, Note 2, regarding showing two or more identification numbers on cover/title page. Paragraphs in joint publications which do not apply to all Services concerned, shall be marked to indicate the Services to which they apply. For example: "4.4 (ARMY ONLY) THE LANDING GEAR."

4.1.6 Manual outline. When specified by the acquiring activity (see 6.2.b) or detail specification, a manual outline shall contain the following:

a. A text outline that shall be in accordance with the requirements of the detail specification, showing volume, part, chapter, section and paragraph titles to indicate the intended coverage of

the various aspects of the equipment or system. Each paragraph title or notation shall be followed by a brief statement outlining the information to be presented. The text outline shall clearly show the specific equipment/system and related procedures/data planned for inclusion in the manual. (F) Electronic presentation: References shall be linked to the data which they apply to.

b. An illustration outline and a table outline that shall be keyed to the text outline. Each illustration and table listed in the outlines shall be described. The illustration outline shall contain figure numbers, title, information, intent, approximate size and nature of illustration (exploded view, schematic, line drawing). The table outline shall describe the tables by table number and information content and in addition, a statement indicating the scope, depth or coverage. (F) Electronic presentation: References shall be linked to the data which they apply to. Print presentation: An estimated page count for each chapter.

4.1.7 Preliminary Technical Manual. (See 3.2.28.) When specified by the acquiring activity (see 6.2.c), PTM copies of the manual to be provided as interim editions, preliminary issues for training purposes or for other early uses shall have the same style and format as the FRC.

4.1.8 Source data. The primary source data for TMs shall be engineering drawings. Sound engineering principles and techniques, available engineering analyses, service experience, performance data on the item and on similar items, and all other reliability and maintainability data available shall be used in the preparation of specific instructions.

4.1.9 Manual types. Three types of technical manuals (see 3.2.40) are addressed by this standard (see 6.2.d): RDC (see 3.2.30); PTM (see 3.2.28); and FRC (see 3.2.13).

4.2 Format.

4.2.1 Preparation methods.

a. RDC. (See 3.2.30.) To be delivered in paper or digital format as authorized by the acquiring activity. The RDC shall be technically edited and shall be computer generated. The RDC may be issued initially in single column format, and may contain voids where information is not available. Print presentation: The RDC shall be double spaced, on one side of the sheet only. The page size and image area shall be in accordance with 4.2.1.2. The binding edge shall not be less than 1-inch and the outside edge not less than ¼-inch. The method of duplication, covering and binding shall provide legible, collated copies.
(F) Electronic presentation: When the RDC is presented in computer or other form such that the paragraphing or symbols cannot be readily understood it shall be annotated to make the paragraphing and symbols clear to the reviewer, except for certain presentations authorized by the acquiring activity.

b. PTM. (See 3.2.28.) To be delivered in paper or digital format as authorized by the acquiring activity. The PTM shall be developed in accordance with the applicable detail specifications so that the conversion effort from preliminary to FRC is minimal. The PTM shall contain all front matter, text, illustrations and tables to be included in the manual as specified in the detail specification. The PTM shall be technically edited, validated and shall be computer generated. Print presentation: The PTM page size and image area shall be in accordance with 4.2.1.2. The method of duplication, covering and binding shall provide legible, collated copies.

c. FRC. (See 3.2.13.) To be delivered in digital format. The FRC shall include all text information (including tabular data and emergency page markings when applicable) and artwork. Appendix B provides the DTD for electronic delivery of data. Unless otherwise specified by the acquiring activity (see 6.2.e), the FRC shall have the following minimum acceptable features (print presentation):

1. Single or double column format for 8½ by 11-inch and larger manuals, as specified by the acquiring activity (see 6.2.f) single column format for smaller manuals. (A) Single column format for page-based manuals. (M) Single column format.

2. Single spacing.

3. (A) (M) Unjustified right margins. (F) (N) Justified right margins.

4. Type styles and sizes shall be comparable to those shown in table I.

4.2.1.1 FRC copy leading and vertical spacing. Print presentation: Layout shall conserve space without lessening usability or clarity of material (see figure 2). Blank spaces shall be avoided whenever possible. Leading (see 3.2.19) and vertical spacing as indicated by table I shall be used for best legibility and conservation of space. Double spacing of text within a paragraph, or similar wastefulness, is unacceptable. Layout practices shall not result in:

a. The first line of a paragraph being at the bottom of a page or column.

b. The last line of a paragraph being at the top of a new page.

c. A sidehead falling on the last line of a page or column.

d. Warnings, cautions and notes (see 3.2.40, 3.2.4 and 3.2.24) being divided so that first lines or group of icons (see 3.2.15) appear on one page and remaining lines or group of icons on another (first lines or group of icons may appear in the left column with remaining lines in the right column on the same page).

e. Warnings, cautions and notes being separated from the paragraph they apply to (warnings, cautions and notes may appear in the left column with applicable paragraphs in the right column on the same page).

f. Undesirable location of an illustration or table.

(F) Electronic presentation: Layout shall ensure the usability and clarity of material.

4.2.1.2 Page size and reproduction area for FRC. Print presentation: Text and artwork shall not exceed the following dimensions for the indicated size manual. Unless otherwise specified by the acquiring activity (see 6.2.h), manuals shall be prepared in 8½ by 11-inch size. When specified by the acquiring activity (see 6.2.g), manuals shall be produced in accordance with the dimensions in table II.

(F) Electronic presentation: All manuals shall be produced in single column format. The restrictions for page sizes are not applicable.

4.2.1.3 Margin data. Print presentation: Margin data (generally the running heads and feet) shall be placed outside that portion of the page used for either narrative text, full page tabular data or full page illustrations, but within the printing area dimensions of the page. When applicable, margin data also consists of the change number, security classification, page content/equipment identification, figure number and figure title. See 4.7.2.7 for deleted pages statement.

(A) Margin data will include pub number, change number, security classification and page number.

4.2.1.4 Running heads and feet. Print presentation: Complete running heads and feet shall be included on all pages except title pages or pages otherwise blank. Blank pages which back up classified pages shall be marked with the security classification of the backed up page.

4.2.1.4.1 Running heads.

4.2.1.4.1.1 Security classification.
Print presentation: The security classification, including unclassified pages, of classified manuals shall be at the top center of each page in bold face type in accordance with DoD 5220.22-M. For foldouts, the security classification shall be marked in bold face type, ¾-inch from the right hand edge and repeated continuously to the left with four inches of space between each marking.

(F) Electronic presentation: Security classification shall appear in the footer area of the viewer per the requirements of MIL-DTL-87268, section 3.

4.2.1.4.1.2 TM identification number. Print presentation: The TM identification number, as assigned for each volume and part, shall be in bold face type at the upper outer edge of each page and outer segment (page unit) of each foldout page.

(F) Electronic presentation: TM identification number shall appear in the title bar area of the viewer per the requirements of MIL-DTL-87268, section 3.

4.2.1.4.1.3 Binding edge (equipment or subject identification). Print presentation: When specified by the acquiring activity (see 6.2.i), the binding edge shall indicate the equipment or subject to which the manual applies and relate to the prime title. Appropriate abbreviations may be used. Top-bound manuals shall place this information on the top, left-hand corner.

(F) Electronic presentation: References shall be indicated using a linking method rather than notes in margins.

4.2.1.4.1.4 Outer edge (reference information). Print presentation: When specified by the acquiring activity (see 6.2.j) significant reference information such as chapter, section or subject titles, paragraph number or figure number shall be used or added. Appropriate abbreviations may be used. Top bound manuals shall have this information placed on the top, right-hand corner.

(F) Electronic presentation: References shall be indicated using a linking method rather than notes in margins.

4.2.1.4.2 Running feet.

4.2.1.4.2.1 Page number. Print presentation: Page numbers shall be located at the lower outer edge ending at the outside margin and shall be in bold face type. Even numbers, including zero, shall be assigned to left-hand pages and odd numbers to right-hand pages. The page number for a foldout page shall be so placed (lower outer edge ending at the outside margin) that the number will be visible when the printed page is folded.

(M) Pages shall not be numbered as zero.

4.2.1.4.2.2 System/Subsystem Sub-subsystem Numbering (S/S/SN). Print presentation: When used, the S/S/SN shall appear in the lower outer corner of each page directly above the page number and shall be approximately 18 point type. S/S/SN shall not be placed at the bottom of front matter pages.

(F) Electronic presentation: The S/S/SN shall be marked on the TOC. If the capability exists, the S/S/SN shall be displayed in an area containing persistent data applicable to the content being displayed in the scrollable view (see MIL-DTL-87268, section 3).

4.2.1.4.2.3 Issue indicator. Print presentation: When specified by the acquiring activity (see 6.2.k), the issue indicator (see 3.2.17) of basic manuals, revisions and the change designator (see 3.2.6) for change pages shall be located at the outer edge of all pages on the same line as, and ½-inch to the inside of the page number. When specified by the acquiring activity (see 6.2.l), the word “Original” shall be included on basic pages.

(F) Electronic presentation: If required by the acquiring activity (see 6.2 k), the issue indicator shall be displayed on the bottom of the title screen in the library of TOs.

4.2.1.4.2.4 Security classification. Print presentation: The security classification, including unclassified pages, of classified manuals shall be at the bottom center of each page in bold face type. See DoD 5220.22-M for guidance. For foldouts, the security classification shall be marked in bold face type, ¾-inch from the right-hand edge and repeated continuously to the left with four inches of space between each marking.

(F) Electronic presentation: Security classification shall appear in the footer area of the viewer per the requirements of MIL-DTL-87268, section 3.

4.2.1.4.2.5 Foldout figure number and title. Print presentation: The figure number and title for a foldout page (see 3.2.14) shall be so placed (lower outer corner) that the number will be visible when the printed page is folded.

4.2.1.5 Technical manual identification number. Print presentation: The TM identification number assigned by the acquiring activity shall be located on each page as specified in 4.2.1.4.1.2. However, when all the information for a 4 by 5½, 4 by 8, 4½ by 7 or 5 by 8-inch manual is placed horizontally on all pages and all pages are arranged head to foot, the TM identification number shall be placed in the upper right corner of all pages. If the publication is jointly used, each Service’s number shall be prefixed with the word Army, Navy, (NAVSEA), (NAVAIR), (SPAWARS), Marine Corps or Air Force as applicable. The acquiring activity’s TM identification number shall be placed above the using activity’s TM identification number. The using activity’s numbers shall be in alphabetic sequence (by Service name) following the acquiring activity’s number. See example below:

NAVY (NAVAIR)	AI-F18AA-WRM-070
ARMY	TM 11-1510-204-34
AIR FORCE	TO 21M-LGM30G-12
MARINE CORPS	TM-12345-OR.
NAVY (NAVSEA)	SE211-FA-MMA-010/SPS-10A

(F) Electronic presentation: TM identification number shall appear in the title bar area of the viewer per the requirements of MIL-DTL-87268, section 3.

4.2.2 Numbering of pages, tables, illustrations, footnotes and appendices.

4.2.2.1 Review draft copy. Print presentation: Page numbering techniques shall approximate that to be used in the FRC. These page numbers are used only to establish the continuity of the RDC (see 3.2.30) and have no bearing on page numbers which will appear later in the FRC.

4.2.2.2 PTMs and FRCs. Print presentation: (See 3.2.28 and 3.2.13.) The page number shall be placed as specified in 4.2.1.4.2.1. However, when all the information for a 4 by 5½, 4½ by 7, 5½ by 7, 4 by 8 or 5 by 8-inch manual is placed horizontally on all pages, and all pages are arranged head to foot, the page number shall be placed in the lower right corner of all pages.

4.2.2.2.1 Blank page number. Print presentation: A blank page shall be assigned a number but it shall appear on the preceding or following page. For example: if page 10 of Chapter 1 is blank, page 9 shall bear the number 1-9/(1-10 blank); if page 9 of Chapter 1 is blank, page 10 shall bear the number (1-9 blank)/1-10. When applicable, an added page, such as 1-10.1, shall show that 1-10.2 is blank.

4.2.2.2.2 Pages, tables, and illustrations. Tables and illustrations shall be numbered consecutively within each chapter. Manuals divided into chapters and, in turn, into sections, shall contain consecutively numbered tables and illustrations for the entire chapter. Table and illustration numbers shall consist of two part Arabic numerals separated by a hyphen. The first part shall be the chapter number with the second part being the order within the chapter. For example:

Number	Meaning
* Table 2-17. (Title)	Chapter 2, table 17
* Figure 2-17. (Title)	Chapter 2, figure 17
† Figure 2-17. (Title) (Sheet 1 of 3)	Chapter 2, figure 17 is a multisheet (3 total) illustration. Remaining sheets shall be numbered in consecutive order; (Sheet 2) (Sheet 3) and so forth.

* Note that a manual may contain both a table and a figure 2-17.

† Only the first sheet of a multiple sheet illustration shall contain the total number of sheets, i.e., Sheet 1 of 3.

(M) (A) Consecutive running sheets shall place total sheet count on each page (e.g., figure # Title … Objective is for MC to follow Army method.

Print presentation: Pages shall be numbered consecutively within each chapter. Manuals divided into chapters and, in turn, into sections, shall contain consecutively numbered pages, for the entire chapter. Page, numbers shall consist of two part Arabic numerals separated by a hyphen. The first part shall be the chapter number with the second part being the order within the chapter. When specified by the acquiring activity (see 6.2.m), the volume number shall be included with the page number. See example:

Number	Meaning
# 2-17	Chapter 2, Page 17
# 3-12-10	Volume 3, Chapter 12, Page 10

If a chapter is so short that the chapter can be completed on one page, permitting another chapter to start on the same page, both chapter numbers shall be indicated by the page number. For example: "3-1/4-1." For numbering of blank pages, see 4.2.2.2.1.

(F) Electronic presentation: Requirements for page numbering are not applicable. If hotspots are used in graphics, activation should be represented using reverse video highlighting. Thumbnails, when used, shall be of a size that maintains the aspect ratio of the original graphic and is optimally viewed using 1024 x 768 resolution (or resolution required by acquiring activity).

4.2.2.2.2.1 Title pages. Print presentation: Title pages shall not be numbered. The reverse side of the title page, when used as a continuation of the title page (see 4.5.1), shall be numbered T-2. In a brief manual that uses an abbreviated title, the page number shall be placed below the text at the bottom of the page, and shall be assigned Arabic numeral 1.

4.2.2.2.2.2 Warning pages. (A) (M) Print presentations: Warning pages shall be numbered with lowercase letters, e.g. "a", "b", "c", etc.

4.2.2.2.2.3 List of effective pages (LEP). Print presentation: The LEP shall be numbered using the letter "A" in the lower left-hand corner. When using a T-2 page, or when the LEP otherwise begins as a right-hand page, the letter "A" shall be in the lower right-hand corner. When additional pages are required, they shall be identified as "B", "C", etc.

(M) When there is only one page to the LEP it shall be numbered, e.g., A/(B blank) in the lower right hand corner.

4.2.2.2.2.4 Verification status page. (F) (M) (N) Print presentation: The verification status page shall be numbered VS-1. If more than one page is required, they shall be numbered consecutively, and shall indicate the total number of pages, i.e., VS-1 of 3, VS-2 of 3, VS-3 of 3.

4.2.2.2.2.5 Front matter. Print presentation: Front matter pages, except change record pages, following the LEP and preceding chapter 1 shall be assigned sequential lower case Roman numerals, i.e., i, ii, iii, etc.

4.2.2.2.2.6 Foldout figure numbers. Print presentation: The figure numbers for foldouts (see 3.2.14) which fall at the end of the manual shall be "FO-1", "FO-2", etc., and shall be placed preceding the figure title under the illustration. The figure numbers for foldouts which fall at the end of a chapter or are interspersed with the text shall follow normal figure numbering sequence in accordance with 4.2.2.2.2. When a foldout consists of several sheets, the sheets shall be numbered in consecutive order following the figure title in accordance with 4.2.2.2.2. (A) Foldouts shall be placed at the end of the manual.

4.2.2.2.2.7 Foldout page numbers. Print presentation: The page numbers for foldout pages (see 3.2.14) which fall at the end of the manual shall be FP-1/(FP-2 blank), FP-3/(FP-4 blank) etc. The page numbers for foldout pages which fall at the end of a chapter or are interspersed with the text shall follow normal page numbering sequence in accordance with 4.2.2.2.2.

4.2.2.2.3 Footnotes. Print presentation: Numbering of footnotes to tables shall be independent of that of footnotes to the text. Consecutive superior numbers beginning with "1" shall be used (in tables, superior lowercase letters, asterisks or other designators may be used where numbers would cause confusion). Footnote numbers and text shall be separated by two spaces. The numbering system shall be per chapter or table, as applicable.

(F) Electronic presentation: Footnotes may either be implemented with superscripts at the point of reference and the explanation at the bottom of the scrollable view, or by linking the superscript references to the explanation, or by displaying a tooltip when the mouse is held over the superscript reference.

4.2.2.2.4 Appendix. Appendices shall be identified by capital letters, e.g. APPENDIX A, APPENDIX B and so forth. Paragraphs, illustrations and tables for appendices shall be consecutively numbered in Arabic numerals preceded by the capital letter of the appendix. For example:

Number	Meaning
Figure B-17	Appendix B, figure 17
Table C-17	Appendix C, table 17

(F) Electronic presentation: Requirements for page numbering are not applicable.

Print presentations: Pages for appendices shall be consecutively numbered in Arabic numerals preceded by the capital letter of the appendix. Example:

Number	Meaning
A-17	Appendix A, page 17

4.2.2.2.5 Glossary pages. Print presentation: The page numbers for an independent glossary shall be consecutively numbered in Arabic numerals with the word "Glossary" preceding the page number. For example: "Glossary 1."

4.2.2.2.6 Index pages. Print presentation: Unless otherwise specified by the acquiring activity (see 6.2 n), page numbers for indexes shall be consecutively numbered in Arabic numerals with the word "Index" preceding the page number. For example: "Index 1."

4.2.3 Headings. Print presentation: Numbers and titles for parts, chapters, sections, appendices, glossaries, alphabetical indexes, etc., shall be in all capital letters centered at the top of the first page of text for each. The SECTION I heading shall be centered immediately below the chapter heading; subsequent section headings shall be centered on the page and precede the applicable text.

(F) Electronic presentation: For screen displays, the titles and numbers shall be centered at the top of the scrollable view. If the Data is split into sections when applicable, the chapter number and title shall appear directly above the section number and title for all sections in that chapter, not just the first section.

4.2.4 Foldout page and multisheet illustration limitations.

4.2.4.1 Foldout pages. Print presentation: Foldout-foldup pages are not permitted. Foldout pages shall be prepared only when approved by the acquiring activity (see 6.2.o) (See 3.2.14). Multisheet illustrations should be used where possible, in lieu of foldouts, when usability will not be affected. If approved by the acquiring activity, foldout pages may be prepared for the 4 by 8, 5½ by 7, 5 by 8 and 8½ by 11-inch manuals. Foldout pages shall not be used in the 4 by 5½, 4½ by 7 or 17 by 11-inch manuals. Numbering of foldouts shall be in accordance with 4.2.2.2.2.6 and 4.2.2.2.2.7. Unless otherwise specified by the acquiring activity (see 6.2.p), foldouts shall meet the following requirements:

a. All foldout pages shall be prepared for printing on one side only.

b. Full blank aprons (see 3.2.1) shall be used.

c. Foldout pages shall not be spliced.

d. Foldout pages shall fall at the end of the manual. When specified, foldout pages shall fall at the end of chapters or be interspersed within text pages. When foldout pages fall at the end of the manual, such pages shall follow the last chapter, appendix or index, whichever forms the last portion.

e. Maximum foldout page sizes and maximum printable area for foldout pages shall be as follows:

Manual Size	Foldout Maximum Page Size (including blank apron)	Foldout Maximum Printable Area
4 by 8	24 by 8	# 19½ by 7½
5½ by 7	35 by 7	* 28¾ by 6¼
5 by 8	31 by 8	# 25½ by 7½
8½ by 11	45 by 11	† 36 by 10

Minimum margins: ¼-inch top, bottom and side opposite binding edge.

* Minimum margins: ¼-inch top, ½-inch bottom and side opposite binding edge.

† Minimum margins: ½-inch top and bottom, ¼-inch side opposite binding edge.

(F) Electronic presentation: There shall be no foldout pages in electronic display. Instead, the foldout graphics shall only be listed in the LOI.

4.2.4.2 Multisheet illustrations. Print presentation: When an illustration exceeds one page but will not be prepared as a foldout, the illustration shall be divided and planned for presentation on facing pages and numbered in accordance with 4.2.2.2.2. Sheet 3, Sheet 4, etc., can be planned for succeeding pages when required and if this treatment will not affect the usefulness of the manual.

4.2.5 Emergency page markings. Emergency information shall be marked as follows:

Print presentation: Pages shall contain a broken black border in accordance with the requirements of figure 3. FRC for emergency pages shall be ¼-inch oversize to ensure proper printing of the bleed borders. Emergency page markings are not considered margin data.

(F) Electronic presentation: An emergency border (black and red stripe) shall frame the scrollable text window/pane within the client area.

4.2.6 Indentations. All lines on warnings, cautions and notes (see 3.2.40, 3.2.4 and 3.2.24) shall be indented five spaces or characters from both left and right margins. When the right margin is unjustified, indentations of five spaces shall be from the maximum allowable width of the typed text. Procedural steps in a paragraph structure shall be indented as described in 4.2.9.5.3. Procedural steps in other structures, e.g. on a table, shall have substeps indented two spaces. Each level of substep shall be indented an additional two spaces. When step numbers require double characters, such as aa., (10), (aa), etc., the number shall be indented only one space in order to maintain right justification of the numbers. For example:

z. xxxxxxxxx (9) xxxxxxxxxx

aa. xxxxxxxxx (10) xxxxxxxxxx

4.2.7 Tables. See 4.3.9. and figures 2 and 4 that provide an example of a typical table.

4.2.7.1 Table titles. Tables shall be assigned table titles. The title shall follow two spaces after the table number and shall be centered above the applicable table. The first letter of the first word and of each principal word shall be capitalized. Table titles should begin with an identifying name. For example: "Table 3-1. Guidance System Test Points." The title shall be short and describe the contents or purpose of the table. Tables applicable to one Service, in a manual that will be used by more than one Service, shall be identified. For example: "Table 2-3. (Army Only) Fuel Indicator Correction Factors."

(A) (M) Table cutline for RDC, the point at which a table or (when appropriate) chart is to be placed shall be indicated by a break in the text and the insertion of the table number and title see figure 5. Cutlines shall be placed at the end of the first paragraph or subparagraph to which they pertain. The table number

shall begin at the left margin and there shall be a double space above and below the cutline. For the PTM or FRC, the table is mounted in place and the cutline becomes the table title.

Print presentation: Full page tables, placed sideways on a page, shall be turned 90 degrees counterclockwise. The table number and title for a turned table shall also be turned 90 degrees counterclockwise to stay centered above the table.

(F) Electronic presentation: Landscape tables shall not be used in electronic viewing.

4.2.7.2 Boxhead titles and rules. (See 3.2.2.) Tables shall be vertically ruled as required for clarity. A horizontal rule shall be placed at the beginning (head) and at the end (foot) of a table and following column heads (boxhead titles). The first letter of the first word and of each principal word of boxhead titles shall be capitalized; the remaining letters shall be lowercase. Tables shall be so designed that related entries in different columns are aligned. Carry over lines shall be indented two spaces unless adequately spaced between entries.

Print presentation: The closing rule is omitted at the foot of a continued table; the opening rule is omitted at the head of the continuation of the table. For preprogrammed tables, with columns ruled for continued tables, the opening rule may be included at the head of the continuation of the table.

(F) Electronic presentation: No closing rule shall be omitted. The header and footer rows of a table shall be displayed as fixed if the table is scrollable.

4.2.7.3 Continued table material. Print presentation: When a table is continued on a following page, the number and title shall be repeated at the head of the columns on all following pages of the table, followed by a dash and the word "Continued." Boxhead titles shall also be repeated. The above information shall not be repeated on a following page when the page is a foot page of a head to foot tabular arrangement. When a table entry is continued, the entry or its identifying number or letter from the first column shall be repeated in the first column followed by a dash and the word "Continued." The abbreviation "Cont." may be used when table columns are too narrow for "Continued" to be spelled out.

(F) Electronic presentation: If the table is too large to fit on a 800 X 600 resolution screen, the table shall be rendered with contents of the table being scrollable to allow the table to fit into the scrollable view.

4.2.7.4 Footnotes to tables. Print presentation: Numbering of footnotes to tables shall be in accordance with 4.2.2.2.3. The footnotes, which shall be kept to the minimum consistent with clarity, shall be placed immediately below the table in which they are referenced. If a table is continued onto other pages, all footnotes shall be placed at the bottom of the page on which they are referenced or at the end of the table and the directory note "See footnotes at end of table" shall be placed at the bottom of pages containing footnote references. For footnotes coming before the end of the table, and for a directory note, a one inch horizontal rule shall be placed flush left below the table and the footnote or directory note placed under the rule. Footnotes at the end of the table shall be started on the second line below the closing rule. All table notes and footnotes shall be indented five spaces from the left margin of the table and carry over lines shall return to the left margin of the table.

(F) Electronic presentation: Footnotes may either be implemented with superscripts at the point of reference and the explanation after the table, or by linking the superscript references to the explanations, or by displaying a tooltip when the mouse is held over the superscript reference.

4.2.8 Illustration placement and legends. See 4.3.9 and 3.2.20.

4.2.8.1 Figure titles. Illustrations shall be assigned figure titles. The title shall follow two spaces after the figure number and shall be centered below the applicable illustration. The first letter of the first word and of each principal word shall be capitalized. Figure titles should begin with an identifying name. For example: "Figure 3-1. Guidance System Gyroscope Assembly." The title shall be short and describe the contents or purpose of the illustration. Illustrations applicable to one Service, in a manual that will be used by more than one Service, shall be identified. For example: "Figure 2-3. (Army Only) Fuel Indicator."

Print presentation: Full page illustrations, placed sideways on a page, shall be turned 90 degrees counterclockwise. The figure number and title for a turned illustration shall be placed at the bottom of the page with the manual in its normal position. When the majority of illustrations are turned, the

figure number and title shall also be turned to appear below the illustration. For foldout figures, title spacing and centering requirements, see 4.2.4.1.

(F) Electronic presentation: Graphics shall not be rotated 90 degrees. Icons linked to graphics shall appear in lieu of the graphics themselves. The graphics shall open in the graphic pane per the requirements of MIL-DTL-87268.

4.2.8.2 Illustration legends. See 3.2.20. Legends shall be headed by the word "Legend" followed by the number of the figure to which it is applicable (see figure 5). If the legend is continued, the figure number and title shall be repeated, followed by a dash and the word "Continued." Only that information which is necessary to clearly identify the items shall be included in the legend. Where methods such as the tabular presentation technique (as in an Illustrated Parts Breakdown/Repair Parts and Special Tools List) are used, no legends are required.

Print presentation: The entire legend shall be indented 5 spaces.

(F) Electronic presentation: Legends shall be presented below the graphic in the graphic pane.

4.2.8.3 System/Subsystem Sub-subsystem Numbering (S/S/SN) numbers. S/S/SN numbers are required only for systems/equipment using the MIL-STD-1808 numbering system or when specified in the detail specification. When used, S/S/SN numbers shall be placed in the lower right-hand corner of the illustration. For contractor illustration identification numbers, see 4.6.12.

4.2.9 Divisions. The hierarchical breakdown of a publication shall be divided into volumes, parts, chapters, sections and paragraphs, as appropriate. There shall be at least two of each subdivision used, except paragraphs, i.e., where there is a Volume, Part, Chapter 1 or Section I, there shall be a Volume, Part, Chapter 2 or Section II. All volumes, parts, chapters, sections and primary and first subordinate paragraphs shall be titled except procedural steps or those statements which follow a colon. The second and all following subparagraph lines shall begin at the left margin. Breakout shall be planned so as to subordinate that which should be subordinated. For example:

2.7 NONREVERSIBLE VALVE.

2.7.1 Removal. The following steps describe removal of the nonreversible valve (figure 2-2).

a. Remove safety wire from J1, J2 and J3 and remove connectors.

b. Remove four nuts (16), washers (17) and bolts (18) securing valve (1) to mount (20) and remove from mount.

2.7.2 Disassembly. The following steps describe disassembly of the nonreversible valve (figure 2-3).

a. Remove safety wire from locking ring (27) and unscrew locking ring from body (2).

b. Remove spring (3) and plate (4) from body (2).

2.7.3 Assembly. The following steps describe assembly of the nonreversible valve (figure 2-3).

a. Install spring (3) and plate (4) in body (2).

b. Screw locking ring (27) into body (2) and install safety wire.

2.7.4 Adjustment. The following steps describe adjustment of the nonreversible valve (figure 2-4).

a. Using special tool, part no. 12345, apply 12 pounds of pressure to plate (4).

b. Adjust break point screw (11) until plate (4) seats against body.

4.2.9.1 Volumes. See 3.2.39. Print presentation: Unless otherwise specified by the acquiring activity (see 6.2.q), volumes shall be used and numbered consecutively in Arabic numerals. When authorized, volumes shall be used when a publication exceeds 1500 printed pages (750 sheets). Two or more volumes shall be

identified sequentially by volume numbers and subtitles indicative of volume content and have a unique Technical Manual Identification Number System (TMINS) number assigned as provided by the acquiring activity. Volumes shall be separated by complete chapters, where possible.
(A) (M) Separate volumes shall not be used to distinguish between models, i.e., -10 for basic model, -10-1 for model A, -10-2 for model B, etc.

(F) Electronic presentation: Page limits do not apply to digital manuals; therefore, volumes are not required.

4.2.9.2 Parts. (See 3.2.25.) (N) When a volume exceeds approximately three inches in thickness, it shall be divided by complete chapters (where possible) into separately bound parts. Each part shall be numbered consecutively in Arabic numerals. Each part shall be identified by both its volume and part numbers and have a unique TMINS number assigned as provided by the acquiring activity.

4.2.9.3 Chapters. (See 3.2.7.) Arabic numerals shall be used to number chapters consecutively throughout all volumes of the publication.

Print presentation: Chapters shall begin on a right-hand page. Format shall be as shown on figure 2.

(F) Electronic presentation: Chapters shall start at the beginning of the scrollable view.

4.2.9.4 Sections. (See 3.2.33.) Roman numerals shall be used to number sections consecutively within each chapter. Format shall be as shown on figure 2.

(F) Electronic presentation: If the data is split into sections when applicable, the chapter number and title shall appear directly above the section number and title for all sections in that chapter, not just the first section.

4.2.9.5 Paragraphs. Text shall be divided into primary paragraphs and subordinate paragraphs. Paragraphs may also be divided into procedural steps. Procedural steps may be further divided if necessary. Decimal paragraph numbering as described in 4.2.9.5.2 shall be used.

4.2.9.5.1 Paragraph headings. Paragraph headings (titles) are identified as primary sideheads, first subordinate sideheads, second subordinate sideheads, etc. Periods shall follow paragraph titles. There shall be two spaces between the paragraph number and the title.

4.2.9.5.1.1 Primary sideheads. Primary sideheads divide text within chapters or sections into two or more portions. There shall be at least one primary sidehead in each chapter or section. Primary sideheads stand alone (are not run in with text) and shall appear in capital letters. They shall begin at the left margin and shall be underscored.

4.2.9.5.1.2 Subordinate paragraphs. Subordinate paragraphs shall be numbered. First subordinate paragraphs shall have a sidehead. Second and subsequent subordinate paragraphs should, but are not required to, have a sidehead. The first letter of the first word and of each principal word shall be capitalized, and the title shall be underscored. The text shall begin on the same line as the title/paragraph number and be separated by a period (if using a title) and two spaces. Carry over lines for all subordinate paragraphs shall return to the left margin. Breakdowns beyond the third subordinate shall not be used without the approval of the acquiring activity. Figure 6 shows samples of decimal paragraph numbering and decimal paragraph numbering with added material.

Print presentation: Single column format shall use the same conventions as double column.

4.2.9.5.2 Decimal paragraph numbering. Format for the decimal numbering method shall be as outlined below and on figure 6. Paragraphs shall be numbered consecutively within chapters, appendices, introduction, and safety summary. All paragraph numbers within a chapter or appendix shall be preceded by the chapter number or appendix letter and a period.

a. The paragraph number shall be preceded by the chapter number and a period, e.g., the first primary paragraph of Chapter 3 would be 3.1, the second primary paragraph would be 3.2, etc. The first primary paragraph of Introduction would be "1" And the first primary paragraph of Safety Summary would be "1".

b. Print presentation: All subordinate sideheads shall begin two spaces below the preceding paragraph at the left margin.

c. Print presentation: Procedural steps shall begin two spaces below the preceding text and indented two spaces from the left margin. Substeps shall begin two spaces below the preceding step and indented an additional two spaces.

Use the following breakdown for numbering paragraphs:

1–1. Primary Sidehead.

a. 1st subordinate sidehead title. Text starts two spaces after title.

(1) 2nd subordinate sidehead. May or may not have a title.

(a) 3rd subordinate paragraph.

1 4th level subordinate paragraph.

a 5th level subordinate paragraph.

4.2.9.5.3 Procedural steps. Procedural steps shall be used to provide step-by-step instructions, such as disassembly, assembly and alignment procedures. Steps may be further divided into substeps. Procedural steps and checklist items shall be numbered in accordance with 4.2.9.5.2. See figure 6. The text shall begin on the same line as the step number and be separated by two spaces. Carry over lines shall not return to the left margin but shall start under the first letter of the preceding line (blocked).

4.2.9.6 Appendices. Appendices shall immediately follow the last chapter of the manual. Paragraphs, illustrations and tables for appendices shall be numbered in accordance with 4.2.2.2.4. (F) (N) Each manual or volume in a set (see 3.2.22 and 3.2.32) of manuals shall contain its own appendices. In addition, Volume 1 or the first manual of the set shall contain appendices for all volumes or manuals in the set.

Print presentation: Appendices shall begin on a right-hand page. Pages for appendices shall be numbered in accordance with 4.2.2.2.4.

4.2.9.7 Glossaries. Glossaries shall be used in TMs only when the terms are not adequately defined in the text, in the Army, Navy, Air Force, DoD or standard dictionary, or contained in the manual (M) (N) Foreword/Preface/Introduction or (F) Introduction. If a glossary is required, it shall immediately precede the alphabetical index, if any. Each manual or volume in a set (see 3.2.22 and 3.2.32) of manuals shall contain its own glossary. In addition, Volume 1 or the first manual of the set shall contain a glossary for all volumes or manuals in the set.

Print presentation: Page numbers for a glossary shall be consecutively numbered as specified in 4.2.2.2.5.

4.2.9.8 Index. Unless otherwise specified by the acquiring activity (see 6.2.r), an alphabetical index shall be prepared when the number of titled paragraphs in a publication exceeds 100 see figure 7. When specified, an index shall be prepared regardless of the number of paragraphs. It shall list pertinent subjects under every topic for which users are likely to look. “See” and “see also” references may be included to guide the user to other pertinent entries. All applicable paragraph numbers for each item shall be indicated. The alphabetical index shall be so constructed as to enable the user to easily locate any part, information or operation described in the text. Each manual or volume in a set (see 3.2.22 and 3.2.32) of manuals shall contain its own index. In addition, Volume 1 or the first manual of the set shall contain an index for all volumes or manuals in the set.

Print presentation: Alphabetical indexes shall begin on a right hand page. Page numbers for alphabetical indexes shall be consecutively numbered as specified in 4.2.2.2.6. The alphabetical index shall be located at the end of the publication but will be located before foldout page(s).

(F) Electronic presentation: Indexes shall either be presented per the general requirements listed in paragraph 4.2.9.8 or a screen with the title of the index shall be displayed with instructions on how to use the search functionality.

4.3 Style of writing. Style of writing shall ensure:

a. Technical content shall be presented in language free of vague and ambiguous terms, using the simplest words and phrases which will convey the intended meaning. The U.S. Government Printing Office Style Manual shall be used as a general guide for capitalization, punctuation, compounding of words, numerals in the text and spelling of nontechnical words. All essential information shall be included, either by direct statements or by reference. Sentences shall be short and concise. Punctuation shall be used in a manner which aids in reading and prevents misreading. Sentences shall be rewritten when extensive punctuation is necessary for clarity. Technical words shall be used only when no other wording will convey the intended meaning.

b. For maximum clarity and usefulness, there shall be consistency in terminology and organization within the same publication or series of publications. Nomenclature shall be consistent within a publication and throughout parts lists, parts breakdowns and other directly related publications.

c. Quotation marks and underscoring shall not be used for emphasis.

d. Words which have more than one meaning which will fit the context in which they are used, such as "replace" for "reinstall," shall not be used.

e. Chapter, section and paragraph headings shall be descriptive of the contents of the division they head; "General" and "Miscellaneous" shall not be used unless no other title will suffice.

f. Statements which explain applicability for individual items of equipment shall use specific serial number(s), block designator(s), specific model designator(s) or similar identification. Such terms as "on later equipment" and "on early serial numbers" shall not be used.

g. Technical publications shall make no reference to age, sex, race or national origin. Use sex neutral terms, except avoid use of the word "person" (terms such as "midshipman" and "workman" are considered sex neutral). Terms such as male and female connectors, pins, etc., are acceptable.

4.3.1 References. The text shall refer to:

a. Only models or types covered by the manual. To facilitate coverage of modified or additional models or types at a later date, references should be held to a minimum consistent with clarity.

b. The basic number of Government specifications and standards. When the contractor cannot ascertain the Government specification number, the contractor shall request this information from the acquiring activity, furnishing complete information concerning the material's composition, properties, characteristics, applications, manufacturer's specification number, etc.

c. Temperature readings as calibrated on the equipment. If other than Fahrenheit, the equivalent in Fahrenheit shall follow in parentheses. General temperature references, such as room temperature, shall normally be given in degrees Fahrenheit.

d. Speed, distance and other instrument readings as calibrated on the equipment.

e. Switch positions and panel markings exactly as marked on the equipment. However, symbols on panel markings may be spelled out when they cannot be produced by the composing equipment used to prepare the PTM or FRC, such as the symbol for "ohm", "infinity", etc.

f. Measurements in U.S. standard units (ounces, pounds, gallons, inches, feet, knots, miles, etc.) except instances in which metric measurements are required. When the metric system is used on the equipment, conversion to U.S. standards shall follow in parentheses. If the detail specification so requires, conversion of U.S. measurements to metric measurements shall be indicated.

g. Illustrations by figure number, including section letter/number when applicable, and the sheet number for multisheet illustrations, when applicable. References shall be made only to illustrations within the same manual or another volume of the same manual.
(F) Electronic presentation: References to illustrations shall be linked to the data to which they apply.

h. Figure numbers first, followed by the index number (see 3.2.16). For example: "(figure 2-6, 34)." However, when multiple references in a paragraph refer to the same figure, only the first

reference needs to indicate the figure number. For an example, see the sample following 4.2.9. If two or more figures are involved in the same sequence, the figure with the greater number of items shall be cited as described above. Index callouts (see 3.2.3 and 3.2.16) for items on remaining figures shall have the index number follow the figure number, e.g. "(figure 3-5, 21)." In such cases, the paragraph lead-in shall contain a statement similar to the following: "Item numbers below refer to figure 3-4 unless otherwise indicated."
(F) Electronic presentation: References to figures shall be linked to the data to which they apply. Print presentation: When the sequence is unbroken for procedures requiring two or more pages, the figure number followed by a dash and the word "Continued" shall be repeated after the first reference on each succeeding page.

i. Parts on diagrams by enough of their reference designator to identify the item. For example: Resistor A6R11.

j. Tables by table number. Reference shall be made only to tables within the same manual or another volume of the same manual.
(F) Electronic presentation: References to tables shall be linked to the data to which they apply.

k. Other supporting paragraphs in the same manual or another volume of the same manual, by exact paragraph title (without the paragraph number) in capital letters, followed by the volume/part/chapter/section number in parentheses
(F) Electronic presentation: References to paragraphs shall be linked to the data to which they apply. Ensure paragraph number is displayed as link.

l. Other subordinate paragraphs of the same primary paragraph as "above" or "below."

m. Other TM identification numbers including exact paragraph title, when applicable, but omitting dates, page, figure and paragraph numbers. Reference may be made only to publications in the publication system(s) of the Service(s) that will use the publications and are authorized at user level.

n. Footnotes, when essential for reference, explanation, comments, etc. Numbering of footnotes shall be in accordance with 4.2.2.2.3. Identical footnotes shall not be repeated within the chapter. Footnotes in the text shall not be used for mandatory requirements.
Print presentation: Footnotes to the text shall be placed at the bottom of the page with a one inch horizontal rule placed flush left two spaces below the text and the footnote placed under the rule. For footnotes to tables, see 4.2.7.4.

o. Series of items as follows:

   1. By following the basic number with "-series" when all numbers in the series are included. For example: "TO 00-20-series" includes all TM identification numbers beginning with 00-20.

   2. By following the basic number with "series" (without dash) when the basic number is immediately followed by a letter or is succeeding a higher number. For example: AFTO Form 781 series could include AFTO Forms 781A, 781K, etc.; DD Form 1570 series could include DD Forms 1571, 1575, 1577, etc.

p. When a reference applies only to one sentence, it shall be enclosed in parenthesis and placed at the end of the sentence with the period outside the parenthesis. For example: "...which will be used for this purpose (figures 2-9 and 2-10)." When a reference applies to the entire paragraph it shall be enclosed in parenthesis and placed after the paragraph title. For example: "5.3 Inspection Requirements. (figure 3-2) Inspection shall be ..... system." When a reference applies to the entire paragraph, but the paragraph has no title, it shall be enclosed in parenthesis outside the sentence. For example: "...technical data change request. (TO 00-5-1)."

4.3.1.1 Duplication of material. Duplication of material within a manual shall be avoided by referencing unless required for clarity or emphasis.

Print presentation: To avoid duplication of more than two pages, other manuals shall be referenced in accordance with 4.3.1.m. Except for classified material, cross referencing is prohibited when material of two pages or less is involved.

4.3.2 Grammatical person and mood. The second person imperative mood shall be used for procedures, i.e., "Remove test set from carrying case." Third person indicative mood shall be used for description and discussion, i.e., "When switch A is in the ON position, lamp (34) lights."

4.3.3 Readability. Unless otherwise specified by the acquiring activity (see 6.2.s), the Reading Grade Level (RGL) shall be nine. Technical publications shall be written to the capability of the target audience for which they are intended. See TO 00-5-3 for information on calculation of RGL.

4.3.4 Abbreviations/acronyms. Use of abbreviations/acronyms shall be held to a minimum and each shall be spelled out the first time it appears in each chapter, section, part, job guide, work package or other division where confusion may exist or usability would be enhanced. An excellent rule to follow is: "when in doubt, spell it out." Abbreviations/acronyms which are accepted as words (radar, sonar, laser, etc.) need not be spelled out. When a phrase is being defined by an acronym, the first letter of each word shall be capitalized and elements shall not be separated by periods. For example: Offensive Avionics System (OAS). Abbreviations/acronyms used shall be in accordance with the requirements of ASME-Y14.38M, except that abbreviations may be plural (s) or possessive ('s) after the first use. If a manual is prepared on composing equipment which cannot produce a certain abbreviation or symbol, such as "±" for "plus or minus", a substitute symbol, such as "+/-" or "+ or -," or an abbreviation, such as "POM", may be used. New abbreviations/acronyms shall not be created for words or terms that already have abbreviations/acronyms established in ASME-Y14.38M. All abbreviations/acronyms used in the manual shall be explained in the manual's (A) (M) (N) Foreword/Preface/Introduction or (F) Introduction.

4.3.5 Metric symbols. Metric symbols shall be in accordance with IEEE-ASTM-SI-10 and IEEE 945-1984.

4.3.6 Military terms. Military terms used shall be in accordance with Joint Chiefs of Staff (JCS) Pub. 1 or any dictionary or glossary of military terms of the appropriate Service.

4.3.7 Automatic electronic test and checkout terminology. Terms used for automatic electronic test and checkout shall be in accordance with MIL-STD-1309.

4.3.8 Use of "shall", "will", "should" and "may". Use "shall" whenever a manual expresses a provision that is binding. Use "should" and "may" whenever it is necessary to express nonmandatory provisions. "Will" may be used to express a declaration of purpose. It may be necessary to use "will" in cases where simple futurity is required, e.g., "Power for the meter will be supplied by the ship."

4.3.9 Tables charts and graphs. Reference data (other than illustrations, drawings, diagrams) shall be presented in tabular, chart or graph form. Any other type of data which lends itself to tabular, chart or graph form may also be so presented. Tables, charts, and graphs shall be so designed that they are easily understood. Charts shall be presented as tables or illustrations, whichever is most appropriate. Graphs shall be considered illustrations, and be assigned figure numbers.

4.3.9.1 Tabular material. When a small amount of tabular information is to be inserted, and will not require referencing from adjacent text, it may be included within a paragraph of text without identifying it as a table.

4.3.10 Warnings, cautions and notes. See 3.2.40, 3.2.4, and 3.2.24. Unless otherwise specified by the acquiring activity (see 6.2.t), warnings and cautions for primary sidehead paragraphs shall precede the text but follow the paragraph headings to which they apply. For all subordinate sideheads and procedural steps, the warning or caution shall precede the paragraph or step. Notes may precede or follow applicable text, depending upon the material to be highlighted. Warnings, cautions and notes shall not contain procedural steps nor shall the headings be numbered. When a warning, caution or note consists of two or more paragraphs the heading WARNING, CAUTION, NOTE shall not be repeated above each paragraph. If it is necessary to precede a paragraph by both a warning and a note, or a caution and a note, etc., warnings shall precede cautions, which in turn shall precede notes. Figure 8 illustrates the styles. Warnings, cautions and notes shall be short, concise and used only to emphasize important or critical data. Warnings and cautions may be worded positively or negatively and shall state the hazard and result or reason, unless obvious. Appendix (A) of this standard provides additional guidance for inclusion of warnings and cautions.

(A) (M) Notes shall precede the applicable paragraph.

(M) Warnings shall be in all caps. If more than one paragraph in warnings, cautions or notes, put a space between each paragraph. Bullets may be used when there are three or more paragraphs within the warning, caution or note.

4.3.10.1 Health hazards. (F) Procedures prescribed for the operation of equipment shall be consistent with the safety standards established by the Air Force Occupational Safety and Health (AFOSH) Standards. Each service will reference their own safety program. When exposure to hazardous chemicals or other adverse health factors or use of equipment cannot be eliminated, guidance pertaining to the exposure shall be included in the Safety Summary or a Warning. A list of personnel protective devices shall be included. appendix A provides additional guidance for inclusion of warnings. Unless otherwise specified by the acquiring activity (see 6.2.u), icons (see 3.2.15) shall be used as described in appendix A.

4.3.10.2 Nuclear surety. Nuclear weapon or weapon system technical publication procedures containing operations, maintenance, troubleshooting, (F) Operational Certification (OPCERT), handling, movement, restraint configuration, loading, testing and delivery require certification for nuclear safety. The primary consideration for nuclear weapon systems is to ensure that the system is safe and weapons are not subjected to inadvertent power application, control signals, or used for troubleshooting. If nuclear weapon or weapon system technical publication procedures require nuclear safety certification, applicable cautions shall be incorporated into technical publications to ensure that safety is not degraded during operation and maintenance.

4.3.10.2.1 Nuclear surety procedure symbol. Unless otherwise specified by the acquiring activity (see 6.2.v), all Nuclear Surety Procedures (NSP) shall be marked with the symbol NSP. When approved by the acquiring activity, the symbol **NSP** may be used in lieu of the box NSP symbol. The symbol shall be prepared in the same style and size as the applicable paragraph sidehead. The symbol shall not be included in the paragraph title in the TOC. Use of the symbol is as follows:

a. When the entire manual is nuclear safety certified, the symbol shall be inserted immediately following the title of the manual on the title page (e.g. WEAPON LOADING PROCEDURES "NSP").

b. When the entire chapter, section and all subordinate paragraphs/steps relate to Nuclear surety procedures, the symbol shall be inserted immediately following the chapter or section title or immediately following the paragraph number (e.g. "PYLON LOADING "NSP or "1.2 NSP LOADING OPERATIONS").

c. When all subordinate paragraphs and steps do not contribute to establishing nuclear surety, only those which do contribute will be annotated with the symbol.

4.3.10.2.2 Nuclear surety procedures symbol explanation. When applicable, the (M) (N) Foreword/Preface/Introduction or (F) Introduction shall include the symbol and an explanation of the NSP symbol and other pertinent information as necessary to emphasize the uniqueness of nuclear surety. This shall include an explanation that all manuals, chapters, sections, paragraphs, procedures and steps identified by the symbol must be followed as written to ensure nuclear surety is not degraded. This explanation shall be preceded by a CAUTION heading.

4.3.10.3 Nuclear hardness. If equipment to be operated, maintained or overhauled has nuclear survivability requirements (i.e., Over Pressure and Burst, Thermal Radiation, Electromagnetic Pulse or Transient Radiation Effects on Electronics), applicable cautions shall be incorporated into technical publications to ensure that hardness of equipment is not degraded during operation and maintenance.

4.3.10.3.1 Nuclear hardness symbol. Unless otherwise specified by the acquiring activity (see 6.2.w), all Hardness Critical Processes (HCP) shall be marked with the symbol HCP. When approved by the acquiring activity, the symbol **HCP** may be used in lieu of the boxed HCP symbol. The symbol shall be prepared in the same style and size as the applicable paragraph sidehead. The symbol shall not be included in the paragraph title in the TOC. Use of the symbol is as follows:

a. When the entire procedure and all subordinate paragraphs/steps relate to establishing nuclear hardness, the symbol shall be inserted immediately following the paragraph number (e.g. "1.2 HCP HCP LRU REPAIR.").

b. When all subordinate paragraphs and steps do not contribute to establishing nuclear hardness, only those which do contribute will be annotated with the symbol.

c. Maintenance actions which could degrade hardness, but which are not directly involved in establishing nuclear hardness, will not be annotated with the symbol, but will be preceded by a caution.

4.3.10.3.2 Nuclear hardness symbol explanation. When applicable, the (M) (N) Foreword/Preface/Introduction or (F) Introduction shall include the symbol and an explanation of the HCP symbol and other pertinent information as necessary to emphasize the uniqueness of hardness features. This shall include an explanation that all paragraphs, procedures and steps identified by the symbol must be followed as written to ensure nuclear hardness is not degraded. This explanation shall be preceded by a CAUTION heading.

4.3.10.4 Electrostatic Discharge Sensitive (ESDS) parts. If equipment to be handled/maintained contains ESDS parts, components or circuits, applicable cautions and symbols shall be incorporated into technical publications to ensure ESDS parts are not damaged or degraded during handling/maintenance.

4.3.10.4.1 ESDS symbol. Unless otherwise specified by the acquiring activity (see 6.2.x), all paragraphs which address handling or maintenance which could damage ESDS parts shall be identified by the ESDS symbol. When approved by the acquiring activity, the symbol **ESDS** may be used in lieu of the ESDS symbol. The symbol shall be prepared in the same style and size as the applicable paragraph sidehead. The symbol shall not be included in the paragraph title in the TOC. Use of the symbol is as follows:

a. When the entire procedure and all subordinate paragraphs/steps describe handling/maintenance which could damage ESDS parts, the ESDS symbol shall be inserted immediately following the paragraph number (e.g. "1.2 LRU REPAIR.").

b. When all subordinate paragraph and steps are not related to handling/maintenance which could damage ESDS parts, only those related will be annotated.

c. Maintenance actions which could damage ESDS parts, but which are not directly related to handling/maintenance of ESDS parts, will not be annotated with the ESDS symbol, but will be preceded by a caution.

d. Illustrations, drawings and schematic shall be marked with the ESDS symbol.

4.3.10.4.2 ESDS symbol explanation. When applicable, the (M) (N) Foreword/Preface/Introduction or (F) Introduction shall include the symbol and an explanation of the ESDS symbol. Other pertinent information shall be included as necessary to emphasize the uniqueness of ESDS parts. This will include an explanation that the ESDS symbol requires that all ESDS parts be handled according to ESDS device handling procedures. This explanation shall be preceded by a CAUTION heading. (F) The Introduction shall refer to "ESDS device handling procedures in TO 00-25-234."

4.3.10.5 Fatigue and fracture critical parts. If equipment to be maintained contains Fracture Critical Parts (FCP), applicable cautions and symbols shall be included to ensure these parts are not damaged or degraded during handling and maintenance.

4.3.10.5.1 FCP symbol. Unless otherwise specified by the acquiring activity (see 6.2.y), all fatigue and fracture critical parts shall be marked with the FCP symbol. When approved by the acquiring activity, the symbol **FCP** may be used in lieu of the boxed symbol. The symbol shall be prepared in the same style and size as the applicable paragraph sidehead. The symbol shall not be included in the paragraph title in the TOC.

4.3.10.5.2 FCP symbol explanation. When applicable, the (M) (N) Foreword/Preface/Introduction or (F) Introduction shall include the symbol and an explanation. Insert notes of caution regarding the temporary relocation, storage, removal, installation, inspection, and handling procedures for FCPs.

4.3.10.6 Observable criticality. If equipment to be operated or maintained has absorbability critical requirements, e.g., radar cross-section/signature, applicable cautions shall be incorporated to ensure that equipment is not degraded during operation and maintenance.

4.3.10.6.1 Observable criticality. Unless otherwise specified by the acquiring activity (see 6.2.z), all Observable Critical Items (OCI) and Observable Critical Processes (OCP) shall be marked with the symbol OCI or OCP as applicable. When approved by the acquiring activity, the symbols **OCI** and **OCP** may be used in lieu of the boxed symbol. The symbol shall be prepared in the same style and size as the applicable paragraph sidehead. Only the text version of the symbol shall be used in the applicable TOC paragraph title.

4.3.10.6.2 Observable critical symbol explanation. When applicable, the (M) (N) Foreword/Preface/Introduction or (F) Introduction shall include the symbol, an explanation of the symbol, and other pertinent information to emphasize the uniqueness of observable critical features. This shall include an explanation that all paragraphs, procedures, items, and steps identified by the OCI or OCP symbols must be followed as written, or the components handled in such a manner that ensure surface integrity is not degraded. This explanation shall be preceded by a CAUTION heading.

4.3.11 Energy efficiency requirements. When specified by the acquiring activity (see 6.2.aa), TMs covering products that directly consume energy in normal operations, and that commonly have a method of expressing energy efficiency, shall include their energy efficiency.

4.3.12 Environmental protection. All TMs that require the use, transportation, handling, storage or disposal of fuels, toxic and hazardous substances, chemicals, ordnance/munitions, etc., shall meet the requirements of the Federal Environmental Protection Standards.

4.4 Security classification markings. The overall classification assigned to a TM shall agree with the highest classification assigned to any portion within and security classification markings shall be in accordance with DoD 5220.22-M and DoDM 5200.01.

(F) Electronic presentation: In addition to being placed on the title screen, security classifications shall appear in the footer area of the viewer per the requirements of MIL-DTL-87268, section 3.

Print presentation: Security classification markings shall be placed conspicuously at the top and bottom of the Cover/Title page or abbreviated title and shall be placed in accordance with 4.2.1.4.1.1, and 4.2.1.4.2.4.

4.5 Front matter. Print presentation: Unless otherwise specified (see 6.2.ab), material preceding the first chapter shall consist of the following in the order specified in table III.

(F) Electronic presentations: The table of contents, list of illustrations, list of tables, list of changes, and list of emergency procedures shall be included as part of the left pane per the requirements of MIL-DTL-87268.

4.5.1 Cover/title page. Manuals shall have either a cover or title page/screen or an abbreviated title. There shall be a cover and title page/screen when specified by the acquiring activity (see 6.2.ac). (F) Cover page shall not be used. The cover/title page/screen shall contain the information indicated by figure 1. Figure 1 also lists the requirements for abbreviated titles. Abbreviated titles shall be used only when specified by the acquiring activity (see 6.2.ad). The TM identification number will be furnished by the acquiring activity (see 6.2.ah).

Print presentation: (F) (N) If there is both a cover and title page, the date shall be omitted from the cover page. When specified by the acquiring activity (see 6.2.af), a manual shall require a backbone for binder or cover. For the FRC the backbone or cover of a manual shall be in accordance with figure 9. (A) (M) When specified by the acquiring activity (see 6.2.ae) certain information such as the supersedure notice, supplement notice, disclosure notice and destruction notice, as applicable, may be placed on the reverse side of the title page if additional space is needed to avoid overcrowding of the title page (i.e., small TMs such as Job Guides and Work Cards) see figure 10. The reverse side of the title page, when used as a continuation of the title page, shall be numbered as described in 4.2.2.2.2.1.
(A) (M) (N) The T-2 page shall be used only if absolutely necessary when reduced type size and leading will not allow all information to be presented on the title page. When a T-2 page is used (see 6.2.ag), a statement shall be placed on the title page indicating which information has been moved to the T-2 page.

(M) See figure 46 for cover/title page example.

(F) Electronic presentation: All data for the Title screen shall appear in the scrollable view. The Title screen will be the first view displayed when a TO is opened.

4.5.1.1 Preliminary Technical Manuals. (See 3.2.28.) When applicable, the word “PRELIMINARY” shall be centered above the words "TECHNICAL MANUAL" (or type of publication).

4.5.1.2 Review draft copies. (See 3.2.30.) When specified by the acquiring activity (see 6.2.ai), the words "Draft" or "Final Draft" shall be centered above the words "TECHNICAL MANUAL."

4.5.1.3 Title. The TM title as indicated by the applicable detail specification shall consist of the following, located as shown on figure 1.

a. WARNING (if the manual contains unverified data).

b. Heading "TECHNICAL MANUAL."

c. Type of manual.

d. Maintenance level (if restrictive).

e. Prime title (name/nomenclature).

f. Subtitle (as applicable).

g. Manufacturer.

4.5.1.3.1 Title warning. (F) (N) When specified by the acquiring activity (see 6.2.aj), a manual containing unverified data shall have the following warning centered above the heading TECHNICAL MANUAL:

Print presentation:

WARNING

This manual contains unverified procedures. Refer to the Verification Status Page(s) prior to performing any operation or maintenance procedures.

(F) Electronic presentation: The warning box shall be consistent with those used in warnings. The warning shall contain the following statement: This manual contains unverified procedures. Refer to the Verification Status list(s) prior to performing any operation or maintenance procedures.

4.5.1.3.2 Type of manual. The type of manual (e.g. operation instructions, illustrated parts breakdown/repair parts and special tools list, maintenance instructions, etc.) shall be placed beneath the "TECHNICAL MANUAL" heading.

4.5.1.3.3 Maintenance level(s). The level(s) of maintenance, as appropriate, shall be placed beneath the manual type. (F) (N) When only one maintenance manual is being acquired to support a weapon, equipment or hardware, no level shall be specified unless restrictive, since it will be the only manual available for repair and maintenance at any designated maintenance level (Organizational, Intermediate or Depot).

4.5.1.3.4 Prime title. The nomenclature of the equipment, type/type designator, model, part number or subject (blocks, serial numbers or registration numbers, if appropriate) shall be positioned below the words identifying the manual type or maintenance level, if applicable. When specified by the acquiring activity (see 6.2.ak), the national stock number and identification of other equipment covered in the manual shall be indicated. The classification of the equipment nomenclature shall be indicated (U) (C) and (S), as specified in DoD 5220.22-M if the publication itself is classified. The prime title shall be the same on all volumes and parts of a multi-volume/part TM set (see 3.2.22 and 3.2.32).

4.5.1.3.5 Subtitle. A subtitle shall be used and located immediately below the prime title to indicate the contents of every separately bound volume and part of a TM.

4.5.1.3.6 Manufacturer. (F) (N) Unless otherwise specified by the acquiring activity (see 6.2.al), the identification of the manufacturer of the equipment shall appear below the equipment nomenclature or subtitle, as applicable.

(M) The identification of the manufacturer of the equipment shall only be used on commercial manuals.

4.5.1.4 Contract number. (F) (N) Unless otherwise specified by the acquiring activity (see 6.2.am), the original contract number for the equipment shall be placed on all new issues and carried forward on all subsequent cover/title pages/screens. If the contract number for a change or revision is different from the original number, the number applicable to the change or revision shall be indicated on the cover/title page/screen in addition to the original number. No more than two contract numbers, the original and the latest, need appear.

4.5.1.5 Seal. (N) The Department of the Navy Seal, with command identifier, is placed below the contract number(s).

(M) The Marine Corps Seal shall appear below the title on the cover page. See figure 46.

4.5.1.6 Supersedure notice. Unless otherwise specified the supersedure notice shall be placed on the title page when the manual/change/revision/Rapid Action Change (RAC) under preparation supersedes all or portions of other manuals/changes/revisions. When specified by the acquiring activity (see 6.2.an), the supersedure notice shall include a list of all currently superseded supplements and RACs. Superseded supplements/RACs shall normally be listed individually, but when several alphabetically/numerically sequenced supplements/RACs are superseded, they shall be grouped. When specified, the FRC that supersedes a PTM shall include the supersedure notice. The applicable portions of the following supersedure notice shall be used:

This (manual/change/revision/RAC) supersedes (applicable manual/change/revision number or portions of) dated (date of superseded document), Change (change number) dated (change date), including (superseded supplement/RAC numbers).

4.5.1.7 Supplement notice. (F) (N) (A) supplement notice is used to show dependent and supporting publications when one cannot be used without the other. They apply to supplements, supplemental or partial manuals and basic manuals. Dependency is shown by such statements as "INCOMPLETE WITHOUT TO XX-XX-XX" or "USE WITH TO XX-XX-XX." Supporting publications are depicted by such statements as "THIS PUBLICATION SUPPLEMENTS TO XXXX- XX." Cross-reference notes to supplements or to augmented manuals.

Print presentation: Supplement notice shall be placed on the cover/title page initially, or at time of change or revision.

(F) Electronic presentation: Whenever possible, the supplement number shall link to the appropriate TO.

4.5.1.8 Effective date notice. (F) When a manual or change becomes effective later than the date upon which it is distributed, a notice similar to the following shall be placed on the title page immediately after or in place of the supersedure notice:
The effective date of this (publication, change) is (effective date). Instructions herein shall not be used prior to that date.

4.5.1.9 Volume notice. Print presentation: When specified by the acquiring activity (see 6.2.ao), the cover/title page of each volume (see 3.2.39) shall contain a statement that the applicable volume is incomplete without the other volumes in the set (see 3.2.22 and 3.2.32).

4.5.1.10 Disclosure notice. (F) (N) When specified by the acquiring activity (see 6.2.ap), the following disclosure notice shall be placed on the cover/title page/screen of classified and unclassified manuals, (F) except those with Distribution Statement A, IAW AFI 63-101. Any request for this document should be referred to (TO management activity and address).

> This information is furnished upon the condition that it will not be released to another nation without the specific authority of the Department of the (appropriate Service or agency) of the United States, that it will be used for military purposes only, that individual or corporate rights originating in the information, whether patented or not, will be respected, that the recipient will report promptly to the United States, any known or suspected compromise, and that the information will be provided substantially the same degree of security afforded it by the Department of Defense of the United States. Also, regardless of any other markings on the document, it will not be downgraded or declassified without written approval of the originating United States agency.

4.5.1.11 Distribution statement. All TMs shall have a distribution statement placed on the cover/title page/screen (not T-2). The appropriate distribution statement, selected from DoDI 5230.24, will be provided by the acquiring activity. Selection of the statement shall be in accordance with the provisions of DoDI 5230.24. Unless otherwise specified by the acquiring activity (see 6.2.aq), include both the distribution statement letter ("A," "B," etc.) and wording from DoDI 5230.24. Include the reason, "Controlling DoD office," and date of determination when required. If the reason is "Proprietary Data," (F) (N) then each TM page/screen containing proprietary data must be marked with the company name and the word "Proprietary" (e.g. "Boeing Propriety").

4.5.1.12 Export control notice. When required by the provisions of DoDI 5230.24 (see 6.2.ar), an Export Control Notice shall be placed on the cover/title page/screen (not T-2) of each manual, manual supplement, revision or change.

4.5.1.13 Destruction notice. All classified technical documents shall be marked with a destruction notice from DoDM 5200.01 on the cover/title screen/page. All unclassified technical documents with distribution statements B, C, D, E shall be marked with Handling and Destruction Notice "a" (below) on the cover/title screen/page. "Unclassified TOs authorized for Public Release (Distribution Statement "A") shall not be marked with Handling and Destruction Notice "a" below on the cover/title screen/page."

a. HANDLING AND DESTRUCTION NOTICE. Comply with distribution statement and destroy by any method that will prevent disclosure of contents or reconstruction of the document.

b. (F) (M) (N) DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

Print presentation: If required, the T-2 page can be used to contain the destruction notice.

4.5.1.14 Handling and destruction notice. (F) See TO 00-5-1 for specific destruction procedures information to be included on cover/title page/screen.

4.5.1.15 Deleted.

4.5.1.16 Copyright credit line. If required (see 4.1.4), the copyright credit line shall be included on the cover/title page/screen. If a copyright credit line is required, include a statement of government rights to publish, reproduce, and distribute the TM. The copyright credit line will be provided by the copyright or patent owner. Credit lines should contain the complete name of the author(s), article title (when applicable), book title, editors and/or translators (when applicable), publisher, the copyright symbol ©, and copyright date. City of publication and page numbers may also be included.

Print presentation: (F) If required, the T-2 page can be used to contain the copyright credit line.

4.5.1.17 Authority notice. The authority notice will be provided by the acquiring activity (see 6.2.as). Manuals to be jointly used shall show a joint authority notice.

4.5.1.18 Publication date. The publication date of the manual shall be the cutoff date from which no further changes to the manual are permitted without issuing a formal change. This is normally the "approved date", that is, the date the government accepts the manual subject to the inclusion of specified comments. If the acquiring activity does not advise the contractor the exact date to use, the publication date shall be the date at which the last material to be included was received. The day, month, and year shall be given in that sequence. For example: "7 JULY 2011."

(M) Publication date for the last working day of the month shall be that in which the TM is signed/authorized.

(F) Electronic presentation: The publication date shall also be listed in the TO library.

4.5.1.19 Change number (or letter) and date. See 4.7.2.1 for numbering of changes. The change number and date shall be placed on the cover/title page as follows: "CHANGE 1 10 OCTOBER 1989" or "CHANGE A 10 OCTOBER 1989."

4.5.2 Warning page. (A) (M) When specified by the acquiring activity (see 6.2.at), a warning page/screen shall include each general type of warning (see 3.2.40) and warning symbol used within the TM. This page/screen shall not be a list of specific warnings that pertain to particular procedural steps, but

shall include general subject data (e.g. radiation, chemicals, voltage, gas pressure, laser light, etc.,) as shown in the examples on figure 11.

Print presentation: The warning page shall be placed on the inside front cover or be the initial page(s) of the manual. These pages shall be numbered in accordance with 4.2.2.2.2.2.

(F) Electronic presentation: The warning screen shall appear as a separate section immediately following the Title screen.

4.5.3 List of Effective Pages (LEP). Print presentation: A LEP shall be prepared in accordance with figure 12 page borders shall be optional. The LEP shall back up the title page and be numbered as specified in 4.2.2.2.2.3.
(M) An even page shall not be used with an odd page.
When using a T-2 page, this shall be a right hand page. When the last page is a right hand page, it shall not be backed up and will list the next succeeding page as blank, e.g. "B/(C blank)." The LEP shall be a complete list of all manual pages, including title page, T-2 page (if used), the LEP, verification status pages, TOC pages, safety summary pages, blank pages, deleted pages, added pages and foldout pages. The LEP shall include a statement of the total number of pages in the manual. The LEP shall be updated for each change or revision. The listing shall be held to a minimum by grouping numbers where applicable. The page numbers for a blank page and the printed side of the sheet shall be listed as separate numbers even though a double number will appear on the printed side of the sheet. Appropriate change numbers shall be placed in the "Change No." column. The words "Deleted" or "Blank" shall be placed alongside the page number of pages so affected.

(F) Electronic presentation: In lieu of an LEP a List of Changes (LOC) shall be generated that will be placed inside the left pane. The entries in the List of Changes will indicate the title of the closest parent element to the change number, whether the change was an insertion or deletion, and a link to the effected data.

4.5.3.1 Identifying change numbers and dates. Print presentation: On the LEP, above the listing of pages contained in the manual, shall be a list of applicable change numbers and dates.

(F) Electronic presentation: The top of the list of changes shall display the change numbers and dates associated with those changes.

4.5.3.2 Acquiring Service identification. Print presentation: The abbreviation of the acquiring Service, e.g. USAF, shall be placed in the lower right corner of the LEP (page "A" only). If a Service acquires a manual for exclusive use of another Service, the symbol in the lower right-hand corner of the page shall still show the abbreviation of the acquiring Service.

(F) Electronic presentation: The marking shall appear in the lower right hand corner of the list of changes.

4.5.3.3 List of effective pages for multivolume manuals. (See 3.2.26.) Print presentation: A LEP covering all volumes shall be prepared for the basic manual and shall be included in Volume 1. In a multivolume manual, each of the volumes, except Volume 1, shall include the listing of pages provided in that particular volume.

4.5.4 Verification status page. Print presentation: (F) (M) (N) When specified by the acquiring activity (see 6.2.au) all PTM/TMs exceeding eight pages which contain unverified data shall have a temporary verification status page(s) (see figure 12). Contractor format and/or additional columns may be used, if approved by the acquiring activity (see 6.2.av). Upon completion of all verification, this page(s) shall be removed. This page(s) shall immediately follow the LEP pages as the next right-hand page and shall be numbered as specified in 4.2.2.2.2.4.

a. The following warning shall be placed at the top center of each verification status page.

WARNING

This manual contains unverified procedures. Unverified procedures shall only be performed during verification, in accordance with TOs 00-5-1 and 00-5-3. Performance of unverified procedures can result in injury to personnel or damage to equipment.

b. Verification status pages may be in contractor format but shall be tabular and include the TM identification number and date, change number and date, and TM management agency in the heading. Columns shall include the paragraph/function/procedure number, verification status, date verified and remarks. When specified, additional columns may be included.

(F) Electronic presentation: Verification status screen shall have check marking or similar user interface capability for identifying verified material within the electronic manual. This screen(s) shall immediately follow the title screen as the next scrollable view. Upon completion of all verification, the verification screen shall be removed.

a. The following warning shall be placed at the top center of each verification status screen.

WARNING

This manual contains unverified procedures. Unverified procedures shall only be performed during verification, in accordance with TOs 00-5-1 and 00-5-3. Performance of unverified procedures can result in injury to personnel or damage to equipment.

b. Verification status screens may be in contractor format but shall be tabular and include the TM identification number and date, change number and date, and TM management agency in the heading. Columns shall include the paragraph/function/procedure number, verification status, date verified and remarks. When specified, additional columns may be included.

4.5.5 Change record. Print presentation: (F) (M) (N) Unless otherwise specified by the acquiring activity (see 6.2.aw), a change record, when included, shall be prepared in accordance with figure 14, and shall be included in each separate volume. The change record should not back or be backed up. These pages shall not be numbered.

4.5.6 Table Of Contents (TOC). Print presentation: TOC contents shall be placed at the beginning of each publication. A TOC listing parts, chapters, sections and paragraphs in the same order and with the exact titles used in the text, with page number, shall be placed at the beginning of each publication. In publications containing alphabetical indexes (see 4.2.9.8) only primary and first subordinate paragraphs shall be listed in the TOC. There shall be no TOC preceding individual parts, chapters or sections. Each manual or volume in a set (see 3.2.34 and 3.2.39) of manuals shall contain its own TOC. Volume 1 or the first manual of the set shall contain a complete TOC covering the entire set. Entries shall indicate the volume in which the referenced material appears; e.g. “Operating Instructions, Vol 1”.
(F) (N) Layout shall conform to figure 15 except that a single column format shall be used when the manual is prepared in single column.
(A) Layout shall conform to figure 16.

(M) Only the single column format shall be used. Acronyms shall not be used in the headings/titles in the Table of Contents. See figure 43.

(F) (M) Electronic presentation: TOC entries shall be linked to the data to which they apply. TOCs shall be located in the left pane per MIL-DTL-87268, section 3. The TOC may be formatted like print TOCs or may be represented as a collapsible tree structure.

4.5.6.1 Table Of Contents (TOC) for RDC. Print presentation: The page number column for the TOC may be left blank when working on RDC during the early stages of preparation. The page number column may be filled in, if the composition equipment can produce the TOC automatically.

(F) Electronic presentation: There shall be no page number column.

4.5.7 List Of Illustrations (LOI). Print presentation: Each manual or volume in a set (see 3.2.34 and 3.2.39) of manuals shall contain its own LOI. In addition, Volume 1 or the first manual of the set shall contain a LOI for all volumes or manuals in the set. Publications containing 10 or more illustrations (including charts and graphs assigned figure numbers) shall have a LOI showing the figure number, title, and page number of each figure. This list shall include foldout pages, schematics, etc. The security classification, if any, of illustration titles shall be indicated. Layout shall conform to figure 17 except that a single column format shall be used when the manual is prepared in single column.

(F) (M) Electronic presentation: LOI entries shall be linked to figures to which they apply. The LOI shall be placed under a tab in the left pane per the requirements of MIL-DTL-87268.

4.5.8 List Of Tables (LOT). Manuals containing 10 or more tables (including charts assigned table numbers) shall have a LOT showing the table number, title, and page number of each table. The security classification, if any, of table titles shall be indicated. Layout shall conform to figure 17 except that a single column format shall be used when the manual is prepared in single column.

Print presentation: Each manual or volume in a set (see 3.2.34 and 3.2.39) of manuals shall contain its own LOT. In addition, Volume 1 or the first manual of the set shall contain a LOT for all volumes or manuals in the set. When both are brief, the LOI and LOT may be included on the same page.

(F) Electronic presentation: LOT entries shall be linked to the table to which they apply. The LOT shall be placed under a tab in the left pane per the requirements of MIL-DTL-87268.

4.5.9 Foreword/Preface/Introduction. (M) (N) Foreword/Preface/Introduction or (F) Introduction shall contain the purpose and scope of the manual plus any other information required by the detail specification. The (A) (M) (N) Foreword/Preface/Introduction or (F) Introduction shall define abbreviations and nonstandard symbols, including any icons (see 3.2.15), used in the manual. The first volume of a manual shall contain general information and reporting requirements (e.g. general circuit board data, feedback reports, special TM use requirements, error reporting, unique requisition needs, etc.) regarding all volumes and specific information applicable to Volume 1, as required. When specified by the acquiring activity (see 6.2.ax), submittal and routing instructions for TM improvement reports shall be included in the (A) (M) (N) Foreword/Preface/Introduction or (F) Introduction as provided by the acquiring activity.

4.5.9.1 International standardization agreements. The (M) (N) Foreword/Preface/Introduction or (F) Introduction of a manual implementing an international standardization agreement(s) shall contain the following note:

NOTE

Certain provisions of this technical manual (identify by chapter, section, paragraph or similar manner, if appropriate) are the subject of international standardization agreement (insert the ABCA or ASCC standard number, the NATO, STANAG, NETR or NEPR number, or appropriate documentary reference). When change, revision or cancellation of this technical manual is proposed which will modify the international agreement concerned, the technical manual management activity will take appropriate action through international standardization channels, including departmental standardization offices, to change the agreement or make other appropriate accommodations.

4.5.9.2 List of Related Publications (LRP). Print presentation: When specified by the acquiring activity (see 6.2.ay), a LRP shall be included in the (M) (N) Foreword/Preface/Introduction or (F) Introduction. The list shall include only those publications referenced in the TM. The listing shall be in the following format with the title centered above the list and four spaces between the last character in the publication number column and the first character of the publication title column:

List of Related Publications

Number	Title

(F) Electronic presentation: The LRP entries shall be linked to the TOs to which they apply.

4.5.9.3 List of Time Compliance Technical Orders (TCTO). When specified by the acquiring activity (see 6.2.az), a list of applicable TCTOs shall be included in the (M) (N) Foreword/Preface/Introduction or (F) Introduction. The list shall include all TCTOs pertinent to the equipment covered. Once the modification has been incorporated and the TCTO rescinded, the listed item shall be removed at the next change. The TCTO Date shall be entered in shortened form (e.g. “12 Jan 16”). The listing shall be in the following format:

List of Time Compliance Technical Orders

TCTO Number	TCTO Title	TCTO Date

(F) Electronic presentation: The TCTO entries shall be linked to the TOs to which they apply.

4.5.9.4 Record of applicable technical directives. When specified by the acquiring activity (see 6.2.ba), a record of applicable technical directives shall be included in the (M) (N) Foreword/Preface/Introduction or (F) Introduction. The record shall include all technical directives that direct accomplishment and recording of material change, repositioning, modification or alteration in the characteristics of the equipment to which the technical directive applies. Once the technical directive has been rescinded, the listed item shall be removed at the next change or revision. If no technical directives (or ECPs as noted below) are applicable, the word “None” shall be listed below the title. The listing shall be in the following format:

Record of Applicable Technical Directives

Type/No	Date	Title and ECP No.	Date Inc.	Remarks

a. The “Type/No.” column shall list the type and number of the directive. For example: “AFC 12.”

b. The “Date” column shall list the date of issue of the directive. If the number of the directive has been assigned but the directive has not been issued, the directive number shall be listed in the “Type/No.” column and a dash shall be placed in the “Date” column.

c. The “Title and ECP No.” column shall list the title of the directive and the ECP number, if applicable. If a directive is the direct result of an approved ECP, the ECP number shall be shown in parentheses following the directive title.

d. The “Date Inc.” column shall list the date the information affected by the directive or ECP was incorporated. If the directive number has been assigned and the directive has not been issued (retrofit program), but the ECP that incorporates the change in the production program has been approved, the ECP coverage shall be indicated by the date listed in this column and a notation in the “Remarks” column. For example: “ECP coverage only.” When the directive is approved and incorporated in a later change or revision, the date of issue shall be entered, the date of incorporation shall be listed in this column (in lieu of the ECP coverage incorporation date), and the notation shall be removed from the “Remarks” column.

e. The “Remarks” column shall contain applicable remarks. If no remarks apply, a dash shall be entered.

4.5.10 Safety summary. (F) (M) (N) All TMs containing warnings or cautions (see 3.2.40 and 3.2.4.) shall have a safety summary. It shall include general precautions applicable to the safety and health exposures found in the TM. A sample of a safety summary is provided on figure 18. Appendix A provides further guidance.

Print presentation: The safety summary shall be located as the last page(s) of the front matter.

(A) (M) Army has Warning Summary (includes Safety Summary) after inside front cover.

4.5.10.1 General safety precautions. The safety summary shall contain general safety precautions. These general safety precautions shall not be repeated in the text of the manual. The use of safety glasses while soldering or that a soldering iron is hot, in an electronics manual, is an example of general safety precautions not to be repeated in the text. Soldering may not be an everyday occurrence in a manual covering propellers; therefore, warnings or cautions related to soldering techniques shall be included in the text. When in doubt, place the warning or caution in the text (see 4.3.10 and appendix A).

4.6 Illustrations. Style and techniques shall be of a quality which will produce artwork that will clearly, adequately, and economically portray the information to be illustrated. Illustrative material shall be used to: describe an item or idea if this can be done more efficiently and effectively by graphic methods; clarify text; present phases difficult to describe by text alone; call attention to details; and furnish graphic identification of parts and tools. Multiple sheet, or sequence number illustrations, in addition to step-by-step operational type, may be used for depicting disassembly, assembly, removal, installation, etc. Illustrations, other than foldouts, shall be located as near as possible to the point at which they are first referenced, except where this would require unnecessary duplication of illustrations.

(F) Electronic presentation: A figure shall be indicated in the flow of text as a figure title and an icon both of which will link to the graphic in the graphic pane per the requirements of MIL-DTL-87268.

4.6.1 Scale. Illustrations shall be prepared to as small a scale as possible consistent with effective use of space, with all essential details legible.

Print presentation: Illustrations shall be the same size as the areas they will occupy in the manual page, or be of such oversize as to permit the uniform reduction to this size (see 4.2.4.1) regarding foldout pages.

4.6.1.1 Letter size. Print presentation: The scale shall be such as to provide for a minimum final letter size, when printed, as required by table I.

(F) Electronic presentation: Font sizes shall be determined based on requirements in MIL-DTL-87268.

4.6.2 Photographs. When specified for use by the acquiring activity (see 6.2.bb), photographs shall be detailed and sharp, free of heavy shadows, distorted objects, cluttered foregrounds or backgrounds, and give good contrast from white, middle tones and black.

(F) Electronic presentation: When specified by the acquiring activity (see 6.2.bc), color photographs may be used. Photographs may be edited to provide clarity and for the purpose of component identification, i.e., leader lines, callouts, etc.

4.6.3 Diagrams/wire lists. Diagrams/wire lists shall be arranged functionally. When wiring diagrams are included in a manual, wire lists shall not be included.

4.6.4 Exploded views. Exploded views of the equipment shall be used in parts breakdowns and for reference in disassembly/assembly instructions. Index numbers (see 3.2.16) shall be used to identify parts. If the equipment is of such a nature that it cannot be adequately illustrated by a single exploded view, it shall be exploded by subassemblies as separate views. In such cases, an exploded view showing the complete equipment exploded into its major subassemblies shall be shown first. Parts which attach and connect the major assemblies together shall be shown on this illustration. These views and those in parts breakdowns shall be the same, with the sequence of index numbers in the order of disassembly.

4.6.5 Engineering drawings/wire lists. Engineering drawings/wire lists are acceptable only if they meet the content, arrangement, legibility and format requirements of the contract and detail specification, and the style, format and production requirements contained in this document. They must have all unnecessary data

removed that would reduce the comprehension or clarity of the illustration. When wiring diagrams are included in a manual, wire lists shall not be included.

Print presentation: Engineering drawings/wire lists must be reduced or redrawn to meet foldout restrictions.

4.6.6 Multisection illustrations. Each section of a multisection illustration shall be identified by a capital letter (see figure 19). Sections may or may not be captioned, but if one section is captioned, all shall be captioned. Each caption, with the identifying letter as its first character, shall be centered with respect to the section to which it applies. Where captions are not used, the identifying letters shall be centered. Identifying letters and captions shall be larger and bolder than any other lettering on the illustration. Sections shall be separated by lines. Separation by shading shall not be used.

4.6.7 Cartoons. (M) (N) When specified by the acquiring activity (see 6.2.bd), the use of animated drawings and other visual techniques are permitted. Animated drawings shall not include copyrighted cartoon characters. Such presentations must serve a functional purpose.

4.6.8 Other types of illustrations. Depending on the type of information to be shown, a manual may contain illustrations such as frontispiece (assembled view), functional, cutaway, procedural, operational, exploded, location view, lubrication, waveform, etc. See figures 20, 21, 22 and 23.

4.6.9 Color in illustrations. Print presentation: When specified by the acquiring activity (see 6.2.be), color shall be used and shall be held to the absolute minimum necessary to clarify functional operations. The number of colors shall be kept to a minimum by use of tints, patterns, cross-hatching, dots, etc. When color is required, the primary colors (red, blue, yellow) shall be used first. Yellow shall not be used by itself.

(F) Electronic presentation: Limited use of color is authorized, unless restricted by the detail specification. The color red shall be used to identify hazardous areas, such as in danger zones, the color yellow shall be used to identify areas of potential hazard, the color green shall be used to identify safe areas. Unless otherwise specified by the acquiring activity (see 6.2.bf), color shall be used to distinguish flow patterns on complex hydraulic, fuel, bleed, airflow, and electrical diagrams. Color illustrations portraying multi-function components, i.e., glass cockpit, and other displays, such as color weather radar shall be representative of the actual display. When used, color shall not be used for decorative or non-essential purposes. Use of color shall not detract or distract from the information conveyed in the illustration.

4.6.10 Border rules. Border rules shall not be used for single illustrations, but shall be used to separate multi-section illustrations on the same page see figure 19.

4.6.11 Use of the human figure. Where it is necessary to illustrate an operation, procedure, or installation, illustrations may include a human figure or parts of the body. Jewelry shall not appear in any illustration. The human figure shall not be permitted to obscure details of the equipment necessary for a complete understanding of its operation. The human figure shall be clothed as designated by the acquiring activity. A cross section of races and sexes shall be used.

4.6.12 Credit lines. The artist's name shall not appear on any artwork; neither shall a manufacturer's name, symbol, or trademark appear on artwork for the purpose of identifying the illustration. A contractor's identification number may be used. When used, such numbers shall be in approximately 4- to 6-point type and placed in the lower right-hand corner of the illustration sufficiently removed to avoid being confused as part of the illustration or margin data.

4.6.13 Callouts. Index numbers, reference designator, nomenclature, leader lines, legends, procedures, etc., shall be used, when necessary, to identify significant features (see 3.2.3). Callouts shall be prepared by an electronic method. Lettering shall be in upper case. Nomenclatures shall appear on illustrations only if it can be done without crowding or reducing type size so as to make reading difficult. Callouts shall be placed in the background areas of illustrations when practical.

Print presentation: Unless otherwise specified by the acquiring activity (see 6.2.bg) type size shall be no smaller than 8-point and no larger than 10-point. Diagram callouts shall be no smaller than 8-point. (A) Shall uses letters for callouts (e.g., 22A).

(F) Electronic presentation: Font size shall be as specified in the MIL-DTL-87268.

4.6.13.1 Index numbers. Index numbers for each separate figure shall start with Arabic numeral 1 and continue consecutively (see 3.2.16). Sequence on exploded views used to show assembly/disassembly shall be in disassembly order. Otherwise, sequence shall be from top to bottom or clockwise, when possible. New callouts inserted between items when an illustration is changed shall be the same as the preceding index number with an added decimal number, e.g. 22.1, 22.2, etc.

Print presentation: All multisheet illustrations shall be considered one figure.

4.6.13.2 Nomenclature. Nomenclature of more than one line shall have the left margin justified (see 3.2.23). All lines of copy shall parallel the horizontal edges of the figure, whenever possible. When specified by the acquiring activity (see 6.2.bh), a cross reference shall list the official nomenclature and its corresponding acronym or general usage nomenclature.

4.6.13.3 Leader lines and arrowheads. Leader lines and arrowheads may end close to the callout and object, or may touch the objects to which they apply (see 3.2.18). Lines shall be uniform, short and straight as possible; however, dog leg shaped lines are permitted. Lines and arrowheads shall not cross or come in contact with other callout lines or arrowheads nor shall they obscure essential details. For clarity, where illustration line(s) and leader line(s) intersect, break illustration line(s) to provide white space on either side of leader line. Arrowheads may be added for clarity. Arrowheads shall be uniform in shape and size when multiple arrowheads are used on a page.

4.6.14 Legends. Print presentation: When index numbers are used, a legend consisting of their numerical listing and their identification shall be included on, adjacent to (same page), or facing, the artwork (see 3.2.20).

(F) Electronic presentation: Legends shall be placed in the graphics pane directly following the graphic.

4.6.15 Steps. Essential illustrations depicting mechanical operations shall be included as necessary. Operational or procedural illustrations shall have one or more text steps with each illustrated step. It is not necessary to illustrate each step of a maintenance procedure, such as the removal of screws with an ordinary screw driver, lifting off a cover after the screws have been removed, etc. Procedural illustrations should supplement the text by clarifying procedures which are of a special nature or are not obvious. The text step shall be as close to the illustrated step as possible. Steps shall be identified in the order in which they are to be accomplished (see figure 22). Alternate types of operational and procedural step illustrations are acceptable (see figure 23).

4.6.16 Reference designator. The application of reference designator shall be consistent with the reference designator marked on equipment.

4.6.17 Line drawing details.

4.6.17.1 Darkness and sharpness of lines. The darkness and sharpness of lines shall be sufficient to reproduce clearly at required reproduction size without additional treatment. Secondary lines, such as those used to indicate extensions or measurements (see figures 24 and 25) shall be lighter but strong enough to reproduce clearly at reproduction size. Shading may be used to give substance and form to the item depicted, to sharpen the contrast between the subject and its background or to increase effectiveness. Shadows shall be used only when necessary to provide a clear understanding of form, shape or depth. Shading effects shall not be used for decorative purposes. Accented lines may be used to emphasize detail. Lines, crosshatching, or mechanical patterns used for coding shall remain clearly defined when reduced to reproduction size (see figure 26).

Print presentation: Parallel lines on wiring and schematic diagrams shall in no case be less than 1/16-inch apart when reduced to printed size (see figure 27).

4.6.17.2 Designations. diagrams, and symbols. Designations, diagrams, graphic symbols and letter symbols shall be consistent with industry standards. New designator, diagrams and symbols may be used if they are explained in the manual's (M) (N) Foreword/Preface/Introduction or (F) Introduction (acquiring activity approval is required before any new designator, diagrams or symbols are used).

4.7 Changes. When specified by the acquiring activity (see 6.2.bi), the change package shall conform to the format of the basic manual, and shall incorporate all approved information (e.g. engineering change proposals, ship alterations, ordnance alterations, machine alterations, field changes, etc.) (see 3.2.26). The changes shall also incorporate all advanced change notices and resolution of outstanding deficiencies.

(F) Electronic presentation: See 4.8 for electronic manual requirements.

4.7.1 Changes to cover and title page. The cover and title page/screen of unclassified manuals shall be updated to reflect the current Distribution Statement (see 4.5.1.11).

4.7.2 Changes to PTMs and FRC. Preparation shall conform to the style and format used in the basic manual.

4.7.2.1 Numbering of changes. Each change to a manual shall be numbered or lettered, as specified by the acquiring activity (see 6.2.bk), in sequence and dated. Identification of changes after each revision of a manual shall begin over again with number 1 or letter A as applicable. Unless otherwise specified by the acquiring activity (see 6.2.bj), the change date shall be the date at which the material to be included was received.

4.7.2.2 Numbering of added material. Print presentation: When paragraphs/illustrations/tables/pages are added by a change, existing paragraphs/illustrations/tables/pages shall be renumbered. If this involves renumbering more than 10 paragraphs or will affect more than five pages, the following method shall be used. Except when added at the end of a sequence, in which case the next consecutive number shall be used, paragraphs shall be numbered by adding an alpha character (e.g. 2.4A, 2.4B, 2.4.1A, etc.) to the preceding paragraph number (see figure 6). Added illustrations/tables/pages shall be numbered by adding a decimal (e.g. 3-2.1, page 3-26.1, etc.). When it is necessary to add an illustration/table/page between items which have already been added by the preceding method, an alpha character shall be used (e.g. a page added between 3-26.2 and 3-26.3 would be 3-26.2A). Pages shall not be added between a right-hand (odd numbered) and a left-hand (even numbered) page. When new material is to be added to a right-hand page, any overrun shall be carried to the left-hand page. The overrun from the left-hand page shall be placed on the added page. Where material is to be added to a right-hand page (e.g. 2-5) and adequate blank space is available on the preceding left-hand page (e.g. 2-4), material at the top of 2-5 shall be moved to the bottom of 2-4 and the new material added to 2-5.

(F) Electronic presentation: Unless otherwise specified by the acquiring activity (see 6.2.bl), paragraphs, illustrations and tables shall be renumbered when added to existing technical data.

4.7.2.3 Difference Data Sheets. (F) (N) When specified by the acquiring activity (see 6.2.bm), Difference Data Sheets shall be used to provide information on additional models of equipment which constitute minor changes from the basic design. Separate Difference Data Sheets shall be prepared for each additional model covered. The first page/screen of the Difference Data Sheets shall conform generally to figure 28.

(F) Electronic presentation: Difference Data Sheets shall be contained in their own scrollable view.

4.7.2.3.1 Format. See figure 29. Print presentation:

a. Sheets shall be identified with the title “DIFFERENCE DATA SHEET” centered at the top of each page.

b. The first page of each sheet (for a specific model) shall have a heading in uppercase type consisting of the nomenclature and the model, type/type designator, or part number of the item covered. The heading shall be accentuated by having lines drawn above and below it and extending across the width of the page. The heading shall be followed by a statement to this effect:

> THE INSTRUCTIONS CONTAINED IN THE PRECEDING CHAPTERS OF THIS TECHNICAL MANUAL ARE APPLICABLE TO THIS MODEL EXCEPT FOR THE DIFFERENCES CITED IN THIS DIFFERENCE DATA SHEET.

c. Sheets for each model shall start on a right-hand page. Page numbers, figure numbers and table numbers shall run consecutively throughout the sheets. Sheets shall be added as required. Paragraphs need not be numbered, but if numbering is used, single Arabic numerals, beginning with “1” for each added model may be used.

d. Sheets shall consist of one or two pages and shall not exceed four pages.

4.7.2.3.2 Arrangement. Difference Data Sheets shall briefly specify how operation and maintenance procedures for that configuration differ from the procedures for the representative configuration contained in the preceding sections or chapters. Sheets shall contain the following information:

a. An external view of the model if the view is significantly different from the one previously shown.

b. A table of tabulated data if the information is significantly different from that previously presented.

c. Illustrations which are essential for clarifying differences. Illustrations in preceding sections or chapters shall not be duplicated, but may be referenced if necessary. Reference shall not be made to illustrations on other Difference Data Sheets.

d. Brief coverage of subjects specified for the original model. The title of each of the preceding chapters shall be listed in the same order of arrangement as the manual. Short, concise statements shall be used to convey the similarity or explain the difference in procedures.

(F) Electronic presentation: References to previous figures, graphics, etc., shall be linked to data to which they apply.

4.7.2.4 Transmittal cover sheets. Print presentation: When specified by the acquiring activity (see 6.2.bn), classified or unclassified changed pages, supplements or TCTOs to a classified manual shall be covered with an appropriate transmittal cover sheet (see figure 30). Each transmittal cover sheet shall be prepared and submitted in the same form as the changed pages.

4.7.2.5 Changes to illustrations. When changes are made to illustrations, the original artwork shall be used unless the preparation of new artwork is less expensive.

4.7.2.5.1 Illustration changes. Print presentation: Sheets added to a set of multisheet illustrations which fall between existing sheets shall be assigned the preceding number plus a decimal number. For example: if a sheet is added between sheets 2 and 3, the added sheet becomes 2.1. If possible, the new sheet shall be added after the last sheet and be assigned the next consecutive number. If a callout (see 3.2.3) is deleted from an illustration, the word "(Deleted)" in parentheses shall be placed after the appropriate number in the legend.

4.7.2.5.2 Index number changes. Where a change to an illustration adds index numbers between existing numbers, the added numbers shall be the same as the preceding index number with an added decimal number, e.g., 22.1, 22.2, etc.

4.7.2.6 Deleted paragraphs, steps, illustrations, tables. Where a change deletes a paragraph, step/substep, illustration, or table without substituting another, the space formerly occupied by the paragraph, step/substep, illustration, or table can be used for other instructions, allowing for sufficient space to provide ¼-inch above and below a sentence such as "Paragraph 4-2 deleted." The TOC, LOI, LOT and index shall be changed as necessary.

(F) Electronic presentation: The LOC shall also be changed to indicate this change.

4.7.2.7 Deleted pages. Print presentation: When page number continuity is broken by deletion of a page and a blank page results, a statement indicating the deletion shall be placed in the bottom margin (right or left corner, or centered, as space permits) of the preceding page or top margin of the succeeding page. For example: "All data on page . . . . . including . . . . . deleted." This also applies when two back to back pages are deleted. The statement shall be used only if the same manual change affects a preceding or succeeding page. A preceding or succeeding page shall not be changed merely to add this statement. In such instances, the LEP listings will be adequate.

4.7.2.8 Change designator. Print presentation: Each page containing changed or added material shall bear the words "Change..." placed at the bottom of the page in the same corner and on the same line as the page number (see 3.2.6). The change designator shall begin approximately ½-inch to the right of the page number for an even numbered page, and end approximately ½-inch to the left of the page number for an odd numbered page (see figure 31). This change designator requirement is also applicable to all added pages, including those placed at the end of a manual.

(F) Electronic presentation: No change designator is required in screen display. Instead, the LOC shall list all changes made to that manual with links to the corresponding changes.

4.7.2.9 Change symbols for text and tables. Print presentation: Changes (except as noted below to the text and tables (including new material on added pages) shall be indicated by a vertical line in the margin. The line shall extend the entire area of the material affected (outer margin for double column material, margin

opposite binding edge for single column material) (see figure 31 and figure 32). Exception: pages with emergency markings (black diagonal lines around three edges) shall have the vertical line symbols placed along the inner margins for single column; for double column, the vertical line symbols which apply to the outside column shall be placed in the gutter between columns. Previous change symbols on a page shall be deleted when a page is subsequently changed. Symbols shall show current changes only. The vertical line change symbol shall be 6-point in width. It may be reduced 10 percent in width to allow for automatic composing equipment use providing it remains legible and obvious. If the composing equipment used is incapable of producing a vertical line, change symbols such as a number sign "#," plus sign "+," black circle or black square, or the letter “C”, “R”, or “X” may be used in lieu of the vertical line, if approved by the acquiring activity (see 6.2.bo). The meaning of these symbols shall be explained in the (M) (N) Foreword/Preface/Introduction or (F) Introduction of the manual. Change symbols are not required for:

a. Introductory material.

b. Indexes where the change cannot be identified.

c. Blank space resulting from the deletion of text, an illustration or part of an illustration, or a table (see 4.7.2.6).

d. Correction of minor inaccuracies such as spelling, punctuation, relocation of material, renumbering paragraphs, etc., unless such correction changes the meaning of instructive information and procedures.

e. Replacement or addition of a complete part, chapter, or section.

(F) Electronic presentation: Changed text highlighting may be used in lieu of vertical change bars. Highlighting shall be viewable under all conditions of use of the viewer. Change marking shall be viewable when printed.

4.7.2.9.1 Change symbols for illustrations. Changes to line drawings, charts prepared as illustrations, graphs, diagrams and schematics shall be indicated by shading and screening to highlight the area containing the changed information. Extensively changed presentations shall be indicated by a screen border around the affected area. For minor changes not suitable for shading or screening, a miniature pointing hand shall be used (see figure 32).

4.7.2.10 Changes to loose-leaf publications. Print presentation: The following applies to printed material only.

4.7.2.10.1 New material identification. The new material shall be identified as described in 4.7.2.9. An explanation of the method used shall be included in the change instruction sheets.

4.7.2.10.2 Change instruction sheet. When specified by the acquiring activity (see 6.2.bp), a change to a loose leaf manual shall include a change instruction sheet in the format of figure 33. The change instruction sheet shall:

a. Include the following statements:

(TM identification number and date) is changed as follows:

File this change sheet in front of the publication for reference purposes.

b. Be the first page of each change with additional pages, as required.

c. Provide clear instructions for required changes listed page by page.

d. Specify deleted or added pages, reasons for the changes, instructions for completing the change record, and instructions that the sheet be inserted in the volume.

e. If applicable, indicate that the change is the result of an equipment alteration, e.g. ORDALT, and identify the alteration by number.

f. Include an instruction for holders of the manuals at accomplishing activities not to incorporate the change in their copies of the manual until it is verified that the alteration has been accomplished. Also, an instruction for all other holders of the manual to incorporate the changes in their copies of the manual shall be included.

g. The appropriate distribution statement and export control notice (see 4.5.1.11 and 4.5.1.12), if applicable, shall be placed on the front of the change instructions sheet. These statements shall be taken from the title page of the publication being changed.

4.7.2.11 Changes to permanently bound publications. Print presentation: The following applies to printed material only.

4.7.2.11.1 Deletions. When a paragraph is to be deleted, the number of the page on which it appears shall be stated, followed by a statement that the paragraph is rescinded. For example: "Page 3. Paragraph 2-1 is rescinded."

4.7.2.11.2 Additions. Except when added to the end of a sequence, added paragraphs shall be numbered according to 4.7.2.2. When added to the end of a series, the sequence shall be continued by using the next number or letter. The number of the page where the added material would appear if it were incorporated into the existing manual shall be stated, followed by a statement to the effect that the material is being added. This shall be followed by the number, title, and text of the new paragraph. For example:

Page 3-14. Paragraph 3.5.1A and 3.5.1B are added after 3.5.1.

3.5.1A Refer to TO XX-XX-XXX for coaxial connector repair procedures.

3.5.1B Refer to TO XX-XX-XX for LRU checkout and trouble-shooting procedures.

4.7.2.11.3 Text supersession. When a paragraph is changed extensively or replaced entirely, the paragraphs shall be superseded. The number of the page on which the paragraph appears shall be stated, followed by a statement to the effect that the paragraph is superseded. This shall be followed by the number, title, and text of the superseding paragraph. For example:

Page 1-6. Paragraph 1.2 is superseded as follows:

1.2 RECORD AND REPORT FORMS.

1.2.1 Depreservation Guide. STD Form XXXX, Depreservation Guide for Engineer Equipment.

1.2.2 Other Forms. For other record and report forms applicable to operator/crew and organizational maintenance, refer to TM XX-XXX.

4.7.2.11.4 Minor changes. When a minor change to a lengthy paragraph is necessary, only the affected portion of the paragraph shall be stated. For example:

Page 1-10, paragraph 1.12 b(3) - In line 1, "four copies" is changed to read "three copies".

4.7.2.11.5 Changes to tabular material. When changes are made in lengthy tabular material, deletions, additions, and substitutions shall be listed in page sequence and the page number on which each change occurs shall be shown. For example:

Page B-15, appendix B.

The following are deleted from the list of classes:

Page B-15. 5133 Drills, Counter-bores and Countersinks, 5905 Resistors

Page B-16. 6115 Generators and Generators Sets

The following changes are made in the columns indicated:

Page B-21. The description of class 4010 is changed to read “Chain and Wire Rope”.

Page B-27. Class number “2960”, appearing between class 2930 and 2940, is corrected to read “2935”.

4.8 Revisions. When specified by the acquiring activity (see 6.2.bq), a complete update, non-superseding, or pickup revision shall be prepared (see 3.2.26). Revisions shall incorporate current information from previously issued changes to the existing manual. The acquiring activity will determine the type of revision. The following information shall be presented to the acquiring activity for consideration in approving the type of revision to be prepared. This information shall be presented sufficiently in advance to permit the acquiring activity time to reach a decision, yet not delay submittal of data.

a. Percent of change.

b. Reason for revision; such as, change in equipment configuration, excess number of changes outstanding, major inadequacies, cost considerations, etc.

(F) Electronic presentation: When the only TO distribution format is as an electronic manual, formal updates shall be published, indexed and distributed as revisions. When the distribution format is both electronic and paper, formal updates to the digital manual file are indexed as revisions dated the same as the update, and with the updates merged (posted) to the basic file to mirror the paper version for distribution.

4.8.1 Renumbering and removal. Print presentation: In a complete revision, all pages, paragraphs, illustrations and tables shall be renumbered, as necessary, to eliminate all number suffixes and to establish correct sequence. Complete revisions shall be prepared to current specifications and standards. In an update revision, suffixed paragraph, illustration and table numbers shall be retained when use of the manual will not be substantially improved by renumbering. All change numbers and change dates shall be removed from pages. All partial pages, miniature pointing hands, shading, screening, vertical lines in margin and other change symbols shall be eliminated. For index numbers on illustrations see 4.6.13.1.

4.8.2 Revision change symbols. (F) (M) (N) When specified by the acquiring activity (see 6.2.br), after all previous change symbols have been eliminated, new change symbols shall be inserted to identify technical changes in text, illustrations and tables that differ in the revision from those contained in the latest previous edition of the manual (see 4.7.2.9).

(A) Change markings may be used, but are neither prohibited or required.

4.9 Supplements. (See 3.2.26.) When specified by the acquiring activity (see 6.2.bs), supplements shall be prepared. They shall conform in style and format with the existing manual. See appendix C for the DSS to be used for digital development and delivery of supplemental manuals. See appendix D for the DSS to be used for digital development and delivery of safety, operational and Technical Order Page Supplements (TOPS).

(F) Electronic presentation: If determined by the acquiring activity (see 6.2.bt), revisions shall be used in lieu of supplements (see 4.8).

4.9.1 Classified supplements. The title pages or screens of both the basic manual and the supplement shall contain a cross-reference note (see 4.5.1.7). Supplements shall contain the minimum amount of information required to protect security and maintain continuity of thought. Acquiring activity approval is required for each supplement.

(F) Electronic presentation: The cross references on the title screen shall link to the appropriate TO.

4.9.2 Safety supplements. (F) (M) (N) Safety supplement “SS” borders and the words “SAFETY SUPPLEMENT” at the top and bottom of the supplement shall be in red. Other text lettering, numbering, etc., shall be in black (see figure 34). Detailed requirements for formal safety supplements are as follows:

4.9.2.1 Safety supplement margin. Print presentation: The abbreviated title of a safety supplement shall have multiple “SS” along the top, bottom, and side borders with the word “SAFETY SUPPLEMENT” at the bottom of the page.

(F) Electronic presentation: An “SS” border shall frame the scrollable text window/pane within the client area.

4.9.2.2 Title designator. The words “SAFETY SUPPLEMENT” shall be positioned above the words “TECHNICAL MANUAL”. The nomenclature shall be the same as the basic manual.

4.9.2.3 Supplement notices and replacement notices. A notice shall reference the basic manual supplemented, and, if applicable, reference any publication(s) replaced. For example:

> This publication supplements TO 1C-141A-6, dated 13 September 1979 and supersedes interim safety supplement TO 1C-141A-6SS-144, dated 23 December 1980, with no changes to the text.

(F) Electronic presentation: When applicable, the TO reference shall be linked.

4.9.2.3.1 Reference notice. The following, or similar, sentence shall be provided in the notice:

> A suitable reference to this supplement will be made on the title page of the basic publication.

4.9.2.4 Responsibility notice. The responsibility notice shall be positioned as shown on figure 34.

4.9.2.5 Distribution statement. Unless otherwise specified by the acquiring activity (see 6.2.bu), the distribution statement from the basic manual shall be used.

4.9.2.6 Publication date. The publication date shall be the same as the date of the replaced interim safety supplement unless the formal supplement contains additional changes.

4.9.2.7 Security information. The security markings shall be the same as for other title pages/screens.

4.9.3 Operational supplements. See figure 35. Detailed requirements for formal operational supplements shall be the same as for formal safety supplements except:

a. The margin shall consist of multiple “OS” in lieu of “SS”.

b. The words “OPERATIONAL SUPPLEMENT” in lieu of “SAFETY SUPPLEMENT”.

c. The supplement shall be printed in black.

(F) Electronic presentation: An “OS” border shall frame the scrollable text window/pane within the client area.

4.9.4 Routine supplements. A routine supplement title page or screen will be the same as the operational supplement title page or screen, except that the title shall be the single word “SUPPLEMENT” and margins shall be blank.

4.9.5 Incorporation of supplements into manuals. Whenever practical, supplements, other than those of a higher classification, shall be incorporated into the next change of the manual.

4.9.6 Technical Order Page Supplements (TOPS). Print presentation: When specified by the acquiring activity (see 6.2.bv), TOPS shall be issued to supplement individual pages of a TM. Figure 36 provides an example of a TOPS.

4.9.6.1 General. Print presentation: TOPS shall be printed on green paper. TOPS may be an accumulation of data from several TOPS or be independent. An accumulation type TOPS shall contain only new or changed TOPS data pages. Unchanged TOPS data pages shall not be reissued.

4.9.6.2 Numbering and indexing. Print presentation: TOPS shall have the same title as the basic TM. TOPS pages shall be numbered with the basic TM identification number followed by the suffix “TP” and a dash number assigned in sequence. For example: “TO 00-5-1TP-1.”

4.9.6.3 TOPS title page. Print presentation: TOPS shall use an abbreviated title. The TM identification number shall be printed flush right above the upper line of the abbreviated title. On inspection work cards which require six hole drill, the TM identification number shall be printed in the center of the page above the upper line of the abbreviated title. The words “TECHNICAL ORDER PAGE SUPPLEMENT” shall be centered beneath the upper line of the abbreviated title. The TM identification number and date

of the TM being supplemented by the TOPS shall be as shown on figure 37. Security classification markings for classified TOPS shall be in accordance with DoD 5220.22-M and DoDM 5200.01. In addition to normal supplement and supersedure notices, the abbreviated title shall contain a note stating whether or not the TOPS is modification related. If there is a modification TCTO, it shall be referenced. Other explanatory notes shall be added, such as TOPS issued out of sequence. The sequence of notes shall be supplement, supersedure, then explanatory.

4.9.6.4 TOPS list of effective pages. Print presentation: The LEP shall be on the lower half of the TOPS title page and shall include a list of TOPS affected and their issue date. The LEP shall also include a listing of all TOPS data pages included/deleted/superseded and the TOPS number in which they were issued. When the LEP is too long to be included in its entirety on the lower half of the title page, the list shall be continued on the reverse side of the title page with the heading “List of Effective Pages - Continued”. The page number for TOPS continued LEP shall be TOPS A. When more than one continued LEP is required, the additional pages shall be assigned a decimal number (TOPS A.1, A.2, etc.).

4.9.6.5 TOPS data pages. Print presentation: Each TOPS data page shall include the TOPS number centered at the top of the page and the page number centered at the bottom of the page. They shall be printed on one side only and shall be drilled to permit filing in the TM facing the affected page. TOPS data pages shall be numbered the same as the affected TM page. When, within a single TOPS, more than one page affects the same TM page, the first TOPS page shall be numbered the same as the TM page and the additional TOPS pages shall be assigned the page number plus a decimal number. For example: TM page 4-2, TOPS pages 4-2, 4-2.1, 4-2.2, etc. The TOPS data page shall contain only the information being changed, added or deleted. When possible, the data shall be in the same position on the TOPS page as the affected data on the TM page. Each TOPS page which is the result of a modification shall have the statement "RESULT OF TCTO ....." at the bottom, centered, all capitals, two spaces above the page number. If more than one modification or both modification and nonmodification data are on a page, each applicable data entry shall start with “AFTER (BEFORE) TCTO ....." TOPS pages superseding existing TOPS pages shall have the statement “SUPERSEDES PAGE . . . . . OF TP-..." at the bottom, centered, all capitals, two spaces above the page number. However, if a complete TOPS is superseded, the TOPS supersedure notice will be adequate.

4.9.6.6 Superseding TOPS. Print presentation: When TOPS are superseded by a revision, change, another TOPS, or a safety or operational supplement, the supersedure notice shall list the superseded TOPS.

4.9.7 (F) Commercial Manual Supplements. When specified by the acquiring activity (see 6.2by) a Commercial Manual Supplements package shall be developed for the COTS manuals. This will consist of Commercial Manual Supplement title page, list of effective pages (when required), supplemental information, Identifying Technical Publication Sheet (ITPS) cover sheet, and a Safety Summary (when required). The supplement will be filed per TO 00-5-1. Appendix D provides the DTD for electronic delivery of data.

4.9.7.1 (F) COTS Commercial Manual Supplement title page. The COTS Commercial Manual Supplement title page shall be developed per TO 00-5-1 and follow the content and format as shown in figure 47.

4.9.7.2 (F) List of Effective Pages (LEP). When specified by the acquiring activity (see 6.2bz), a LEP shall be included. This LEP shall be prepared per 4.5.3 except that it shall reflect the information for the supplement as well as the commercial manual (see figure 12).

4.9.7.3 (F) COTS Supplemental information. The COTS supplemental information shall be provided as non-titled paragraphs that are enumerated using single, Arabic numerals. They may either be a single paragraph describing what must be done to the commercial manual (i.e., "delete para x”) or as an instruction of what should be done with the following information (i.e., ”add the following…”) in accordance with TO 00-5-1. The COTS information will follow the content and format as shown in figure 47. Instructions will be provided indicating how the supplement is to be broken up for filing with the COTS manual.

4.9.7.4 (F) ITPS Cover Sheet. Each supplement package will include an ITPS cover sheet at the back of the supplement package along with instructions to replace the existing ITPS. The ITPS cover sheets shall be developed per TO 00-5-1 and follow the content and format as shown in figure 47. For ITPS cover sheets without supplemental information, follow the content and format as shown in figure 48.

4.9.7.5 (F) Safety Summary. When specified by the acquiring activity (see 6.2ca), a Safety Summary shall be provided and will appear at the end of the supplement package. The Safety Summary shall be developed per 4.5.10 and shall follow the content and format as shown in figure 18.

4.10 Brief manuals. Print presentation: Unless otherwise specified by the acquiring activity, manuals of twenty pages or less shall be prepared in accordance with the requirements stated elsewhere in this standard. If specified by the acquiring activity, (see 6.2.bw) brief manuals shall conform to the requirements listed below. See appendix E for the DSS to be used for digital development and delivery of brief manuals conforming to the requirements below.

a. Not be required to have front matter (except abbreviated title).
b. Have the first page consist of an abbreviated title and text below it.
c. Have chapters or sections begin on left- or right-hand pages with no blank pages.
d. Contain more than one chapter or section on a page, where possible.
e. Have pages, paragraphs, illustrations and tables numbered consecutively throughout the manual with single Arabic numerals, disregarding chapter and section number.
f. Always be revised, never have changes issued.
g. Contain the words "THE END" placed on a new line following the last line of text on the last page, shall be centered, and written in the same size and font as the regular text of the manual.

(F) Electronic presentation: Brief Manuals are not applicable to electronic technical manuals.

4.11 Combined manual. If specified by the acquiring activity (see 6.2.bx), an Illustrated Parts Breakdown (IPB) shall be combined with the maintenance manual. When combined, the IPB chapter shall be prepared in accordance with MIL-DTL-38807 and shall be the last chapter or section of the manual. The IPB chapter shall be sectionalized (A) (M) (N) (Section I Foreword, Section II Maintenance Parts List or Repair Parts and Special Tools List . (F) Section I Introduction, Section II Maintenance Parts List or (A) RPSTL, etc.

5 DETAILED REQUIREMENTS

This section is not applicable to this standard.

6 NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. Technical publications prepared in accordance with this standard are intended for use in the installation, operation, maintenance, repair and logistics support of military equipment/systems or for accomplishment of assigned missions and to set a style and format standard for related publications for which no other standards exist.

6.1.1 Information for printed manual production (paper). For information relating to printed manual production, see the following:

a. Page impositioning (figure 49).
b. Page hole drilling (figure 50).
c. Page bleed border impositioning (figure 51).
d. Page folding (figure 52).
e. For further information relating to printed manual production on page folding, bleed border impositioning, and page hole drilling see MIL-HDBK-38790 (see https://assist.dla mil/).

6.2 Acquisition requirements. Acquisition documents should specify the following:

a. Title, number, and date of this standard.
b. If outlines should be provided (4.1.6). (F) Manual outlines are required when using MIL-DTL-83495 and MIL-DTL-87929.

c. If PTM copies of the manual are to be provided as interim editions, preliminary issues or for other early uses (4.1.7).

d. Types of manuals to be provided (RDC, PTM, FRC) (4.1.9).

e. If minimum acceptable features for FRC should be other than as specified in this document (4.2.1.c).

f. Whether 8½ by 11 inch manuals will be single or double column (4.2.1.c1.).

g. Page size, if other than 8½ by 11 (4.2.1.2). (F) Page size should be as specified in the applicable content specification.

h. If FRC should be other than final size (4.2.1.2). (F) FRC should be the final size.

i. (N) If the binding edge should indicate the equipment or subject to which the manual applies (4.2.1.4.1.3).

j. (A) (N) (M) If the outer edge should indicate significant reference information (4.2.1.4.1.4).

k. (N) If the issue indicator should be used (4.2.1.4.2.3). (F) Issue indicators will be used.

l. (N) If "Original" will be used in the issue indicator. (F) The word "Original" will not be used. (4.2.1.4.2.3).

m. If volume number will be included with the page number (4.2.2.2.2).

n. (A) (M) If index page numbers will be other than as specified in this document (4.2.2.2.6).

o. If foldout pages may be prepared (4.2.4.1). (F) Will accept foldout pages unless otherwise specified in content specification.

p. If preparation of foldout pages will be other than as specified in this document. (F) Will accept foldout pages interspersed with the text when required to enhance TO usability. The entry for 8½ by 11 inch manuals should be as follows (4.2.4.1):

Manual Size	Foldout maximum page size (including blank apron)	Foldout Maximum printable area
8 ½ by 11 inches	25 ½ by 11 inches	16 ½ by 10 inches

q. If volumes will be other than as specified in this document (4.2.9.1). (F) Volumes will be used when specified in content specification.

r. If index requirements are other than as specified in this document (4.2.9.8).

s. (A) (N) (M) If reading grade level of narrative material will be other than as specified in this document (4.3.3).

t. (A) (N) (M) If the placement of warnings and cautions will be other than as specified in this document (4.3.10).

u. (A) (M) (N) If the use of health hazard icons will be other than as specified in this document (4.3.10.1).

v. (F) If the use and style of NSP symbol will be other than as specified in this document (4.3.10.2.1).

w. If the use and style of the HCP symbol will be other than as specified herein (4.3.10.3.1).

x. (A) (M) (N) If the use and style of ESDS symbol will be other than as specified in this document (4.3.10.4.1).

y. If the use and style of the FCP symbol will be other than as specified herein (4.3.10.5.1).

z. If the use and style of OCP, OCI symbol will be other than as specified in this document (4.3.10.6.1).

aa. If energy efficiency information is required (4.3.11). (F) Not required.

ab. (A) (M) (N) Front matter peculiar requirements (4.5).

ac. If there will be a cover and title page (4.5.1). (F) Manuals will have a title (not cover) page.

ad. If abbreviated titles will be used (4.5.1). (F) Abbreviated title pages will only be used on manuals of eight pages or less and on TO Page Supplements (TOPS), TO Field Change Notices (TOFCNs), Operational Supplements and Safety Supplements.

ae. (A) If the date will be included on the cover (4.5.1).

af. If a backbone is required (4.5.1). (F) A backbone will not be used.

ag. (F) (M) (N) If T-2 page will be used (4.5.1).

ah. The TM identification number will be furnished by the acquiring activity (4.5.1).

ai. (A) (M) If Draft or Final Draft will be used (4.5.1.2).

aj. If title warning is required (4.5.1.3.1). (F) A title warning is required.

ak. (A) (M) Use of National Stock Number, applicable to the equipment, on cover/title page (4.5.1.3.4).

al. (N) If identification of the manufacturer will be other than as specified in this document (4.5.1.3.6).

am. (F) (N) If use of contract number will be other than as specified in this document (4.5.1.4).

an. If supersedure notice will be other than as specified in this document, and if supplements/ RACs/PTMs will be listed in the notice (4.5.1.6). (F) Supersedure notices will be used and will include supplements superseded. No supersedure notice is required when PTOs are superseded.

ao. If volume notice is required (4.5.1.9).

ap. If disclosure notice is required (4.5.1.10). (F) Disclosure notices will be used for Foreign Military Sales manuals only, also known as Country Standard Technical Order.

aq. Wording for distribution statement (4.5.1.11).

ar. If export control notice is required (4.5.1.12).

as. Authority notice wording (4.5.1.17). (F) The authority notice is "Published Under Authority of the Secretary of the Air Force."

at. (A) (M) If a warning page(s) is required (4.5.2).

au. If verification status page(s) is required (4.5.4). (F) Required.

av. If contractor format and/or additional columns may be used on verification status page(s) (4.5.4).

aw. If change record will be other than as specified in this document (4.5.5). (F) Not applicable.

ax. If submittal and routing instructions for TM improvement reports is required (4.5.9).

ay. If a list of related publications is required (4.5.9.2). (F) A list of related publications is required when such documents are required for completion of procedures directed in the TO.

az. If a list of TCTOs is required (4.5.9.3). (F) A list of TCTOs will be provided.

ba. If a record of applicable technical directives is required (4.5.9.4). (F) When applicable (usually for PTOs), the List of Applicable Technical Directives will be included in, or replace, the list of TCTOs.

bb. Print presentation: If photographs may be used (4.6.2).

bc. (F) Electronic presentation: If color photographs may be used (4.6.2).

bd. (N) If cartoons may be used (4.6.7).

be. Print presentation: If color may be used in illustrations (4.6.9). Color may only be used if applicable content specifications authorize its use.

bf. (F) Electronic presentation: If color will be used other than to distinguish flow patterns on complex hydraulic, fuel, bleed, airflow, and electrical diagrams (4.6.9).

bg. (A) (M) (N) If callout type size will be other than as specified in this document (4.6.13).

bh. If a nomenclature cross reference is required (4.6.13.2).

bi. If change packages are required (4.7).

bj. If changes will be numbered (A) or lettered (M) (N) (F) Changes will be numbered and dated as of the date the material was received (4.7.2.1).

bk. If change date will be other than as specified in this document (4.7.2.1).

bl. If other than complete renumbering of paragraphs, illustrations and tables will be required (4.7.2.2).

bm. If difference data sheets will be furnished (4.7.2.3).

bn. If a transmittal cover sheet is required (4.7.2.4). (F) Cover sheets are required.

bo. (A) (M) (N) If change symbols will be other than as specified in this document (4.7.2.9).

bp. (A) (M) (N) If change instruction sheets will be furnished (4.7.2.10.2).

bq. If revisions will be prepared and type of revision (4.8).

br. (A) (M) If revision change symbols are required (4.8.2). (F) Revision change symbols are required unless the changes are so extensive as to defeat the purpose of symbol use.

bs. (F) (N) If supplements will be prepared (4.9).

bt. If revisions will be used in lieu of supplements in electronic manuals (4.9).

bu. (A) (M) (N) If a supplement distribution statement will be other than as specified in this document (4.9.2.5).

bv. If TOPS will be prepared (4.9.6).

bw. (A) (M) (N) If brief manual(s) will be other than as specified herein (4.10).

bx. If manuals combined with IPB will be prepared (4.11).

by. (F) If commercial manual supplements will be developed for the COTS manual (4.9.7).

bz. (F) If a LEP will be included in the COTS supplement (4.9.7.2).

ca. (F) If a Safety Summary will be included in the COTS supplement (4.9.7.5).

6.3 Subject term (key word) listing.

Copy, Final Reproducible

Copy, Review Draft

Preliminary copy

Scrollable view

6.4 Changes from previous issue. The margins of this standard are marked with vertical lines to indicate where changes from the previous issue were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to the previous issue.

TABLE I. Style, capitalization, leading and vertical spacing.

Use	Type Style	Capitalization	Leading	Vertical Spacing
TM identification no.	Sans serif, bold 10	Upper case		36 points from top of page to top of text
Page no.	Sans serif, bold 10			36 points from bottom of page bottom of text
Change no.	Sans serif, bold 10	Upper and lower case		36 points from bottom of page bottom of text
Page content/equipment identification	Sans serif, bold 10	Upper and lower case		36 points from top of page top of text
Security classification	Sans serif, bold 14	Upper case		36 points from top and bottom of page to top and bottom of text respectively
Deleted page notation	Serif, bold 8	Upper and lower case		36 points from top and bottom of page to top and bottom of text respectively
Chapter no. and title	Sans serif, bold 14	Upper case		48 points below TM identification No.; 18 points above text, table, or illustration
Section no. and title	Sans serif, bold 14	Upper case		28 points below TM identification no. or text of previous section; 24 points below chapter title; 18 points above text, table, or illustration.
Table of contents, list of illustrations, list of tables fore-word/preface/intro-duction, safety summary index, glossary and appendix headings	Sans serif, bold 14	Upper case		48 points below TM identification no.; 18 points above text.
Text	Serif 10	Upper and lower case		18 points below TM identification no. or chapter/section title; 12 points above or below table or illustration; 6 points above page No.; 12 points above or below warning, caution, and note headings.
Emphasis	Italic Bold 10	Upper and Lower Case	1	
Formulas and Equations	Math 10	Upper and Lower Case	1	12 Points Above/Below Text, Table or Illustration

TABLE I. Style, capitalization, leading and vertical spacing. - Continued

Use	Type Style	Capitalization	Leading	Vertical Spacing
Primary Sideheads	Sans Serif 10	Upper Case	2	18 Points Below TM Identification No. or Chapter/Section Title; 12 Points Above/Below Text, Table or Illustration; 12 Points Above/Below Warning, Caution and Note Headings
Subordinate Sideheads	Sans Serif 10	Upper and Lower Case	2	18 Points Below TM Identification No. or Chapter/Section Title; 12 Points Below Table or Illustration; 12 Points Below Warning, Caution and Note Headings
Figure No. and Title	Serif or Italic Bold 10	Upper case for First Letter of each Principal Word	2	18 Points Below Illustration; 6 Points Above Page Number
Legend Text	Sans Serif 8	Upper Case for First Letter of First Word	1	28 Points Above Illustration
Legend on Artwork	Sans Serif 8	Upper Case	1	As Required
Table No. and Title	Serif or Italic Bold 10	Upper case for First Letter of Each Principal Word	2	18 Points Above Table; 18 Points Below TM Identification No.
Boxhead Titles	Serif 10	Upper Case for First Letter of Each Principal Word	1	
Table Text	Serif 10	Upper and Lower Case	2	
Rules	0.75 Point Width			
Footnotes	Serif 8	Upper and Lower Case	1	18 Points Below Text or Table
Warning and Caution Headings	Sans Serif Extra Bold 10 (Boxed)	Upper Case		12 Points Above and Below Text
Note Headings	Sans Serif Extra Bold 10	Upper Case		12 Points Above and Below Text
Maintenance Parts List, Numerical Index and Reference Designation Index Column Heads	Sans Serif 8	Upper Case	1	

TABLE I. Style, capitalization, leading and vertical spacing. - Continued

Use	Type Style	Capitalization	Leading	Vertical Spacing
Maintenance Parts List Text	Sans Serif 8 or 10	Upper and Lower Case	1	
Numerical Index and Reference Designation Index Text	Sans Serif 8	Upper and Lower Case	1	12 Points Space after Every Tenth Entry
All type sizes may be plus-or-minus one point. Slight variations in spacing and leading are permitted. Final reproducible copy shall use above type sizes. IT IS NOT THE INTENT OF THIS STANDARD TO SPECIFY THE METHODS OR COMPOSING EQUIPMENT TO BE USED, BUT. ONLY TO SPECIFY REQUIRED RESULTS.				

TABLE II. Page size and reproduction area.

Paper Size of Printed Manuals	Width - Text/Art		Depth - Text/Art		Depth (Including Marginal Copy)	
(Inches)	(Inches)	(Picas)	(Inches)	(Picas)	(Inches)	(Picas)
# 4 by 5½	3⅛	19	4½	27	5	30
4½ by 7	3⅝	22	6	36	6½	39
4 by 8	3⅛	19	7	42	7½	45
4½ by 8	3½	21	7	42	7½	45
5½ by 7	4½	27	5¾	35	6¼	38
5 by 8	4⅛	25	7	42	7½	45
6½ by 9½	5½	33	8½	51	19	54
9½ by 6½	8½	51	5½	33	6	36
8½ by 11	*7	44	9 2/5	54	10	60
17 by 11	15¾	94	9	54	10	60
#	A 4 by 5½-inch manual, volume, or part shall not exceed 200 pages (100 sheets).					
*	Double column, each column shall be approximately 3½ inches wide with an approximately ¼-inch gutter between. Single column shall be 7¼-inches wide.					

TABLE III. Front matter.

MATERIAL	ARMY	NAVY	AIR FORCE	MARINE CORPS
Cover/Title Page or Abbreviated Title (as applicable)	x	x	x	x
T-2 Page (as applicable)			x	
Warning Page	x			x

TABLE III. Front matter. - Continued

MATERIAL	ARMY	NAVY	AIR FORCE	MARINE CORPS
List of Effective Pages	x	x	x	x
Verification Status Page			x	
Change Record		x		x
Table of Contents	x	x	x	x
List of Illustrations		x	x	x
List of Tables		x	x	x
Introduction			x	
Foreword/Preface/Introduction		x		x
Safety Summary (as applicable)	x	x	x	x

SECURITY CLASSIFICATION [1]

IDENTIFICATION NUMBER [2]

FORMERLY XX-XXX-X-X [3]

VOLUME NO./PART NO. [4] REVISION NO. [5]

TITLE BLOCK [6]

TECHNICAL MANUAL [7]
TYPE OF PUBLICATION [8]
MAINTENANCE LEVEL(S) [9]

NOMENCLATURE OF EQUIPMENT [10]
TYPE, MODEL, PART NUMBER,
NATIONAL STOCK NUMBER
OR SUBJECT

SUBTITLE [11]

MANUFACTURER [12]
CONTRACT NUMBER [13]

NAVY SEAL [14]

SUPERSEDURE NOTICE [15]

SUPPLEMENT NOTICE [16]

EFFECTIVE DATE NOTICE [17]

VOLUME NOTICE [18]

DISCLOSURE NOTICE [19]

DISTRIBUTION STATEMENT [20]

EXPORT CONTROL NOTICE [21]

DESTRUCTION NOTICE [22]

COPYRIGHT CREDIT LINE [23]

AUTHORITY NOTICE [24]

DATE [25] CHANGE NO. - DATE [26]

SECURITY CLASSIFICATION [27]

(SAMPLE NOT TO SCALE)

FIGURE 1. Example cover/title page.

	Notes	Type Size
1.	The security classification assigned by the acquiring activity shall be as specified in DOD Manual 5200.01 or DOD 5220.22-M, Section 11-19, when the manual itself is classified.	24
2.	The acquiring activity shall furnish the TM identification number(s). If the manual will be jointly used by more than one Service, the acquiring Service's number shall appear at the top with the other Service's number immediately below it. Each Service's number shall be prefixed with the word Army, Navy, Marine Corps, or Air Force as appropriate. All numbers shall appear above the ruled line, near the right margin, except for Naval Sea Systems Command numbers, which shall be on the left margin. 5x8 manuals shall use type size 14	24
3.	When a manual is renumbered, the former TM identification number shall appear below the new number, preceded by the word "Formerly". Both numbers shall remain at this location until the first revision, at which time only the new number shall be shown.	14
4.	Required for multivolume/multipart sets only, located below TM identification number.	14
5.	(N) Required when it is advisable to indicate status for publications subject to frequent revisions. Especially significant when the same TM identification numbers are maintained for superseding revisions identified by a change of the publication date.	14
6.	The title is required to provide all information necessary to relate the manual to its subject and content, such that readers can discern the applicability of the manuals and can discriminate between manuals of similar applicability. The title consists of a heading, the type of manual, the level of maintenance, the prime title, and subtitle as applicable.	
7.	The words TECHNICAL MANUAL shall appear in the upper center portion of the page, aircraft flight manuals excepted. When applicable, the word PRELIMINARY shall be centered above the words TECHNICAL MANUAL. For flight manuals, the appropriate term shall be used. Not required for Space and Naval Warfare Systems Command and Naval Sea Systems Command technical manuals.	14
8.	Required to define the specific type of technical manual (e.g. Maintenance Manual, Illustrated Parts Breakdown, Repair Parts and Special Tools List, Inspection Manual etc.)	14
9.	Required to define the specific intended level of maintenance, when the manual is restricted for use at a specified level.	14
10.	The prime title: nomenclature of the equipment, type, model, part number, (blocks, serial numbers, registration numbers, if appropriate), national stock number or	18

(SAMPLE NOT TO SCALE)

FIGURE 1. Example cover/title page. - Continued.

	Notes	Type Size
	subject shall be positioned below the words identifying the manual type. Also, the classification of the equipment nomenclature shall be indicated as specified in DOD Manual 5200.01 Chapter IV or DOD 5220.22-M, Section 11-19, when the manual itself is classified.	
11.	Indicates the content covered. Required on multivolume/multipart publications to differentiate between the coverage among volumes.	14
12.	Identification of the manufacturer of the equipment shall appear below the equipment nomenclature.	8
13.	The original contract number for the equipment shall be placed on all new issues and carried forward on all subsequent title pages. If the contract number for a change or revision is different from the original number, the number applicable to the change or revision shall be indicated on any new title pages, in addition to the original number. No more than two contract numbers, the original and the latest, need appear.	8
14.	(N) The Department of the Navy seal, with Command identifier, is used.	1¼ - 1½ inches
15.	When a manual supersedes a previous issue, or another manual, a supersedure notice shall be placed in the space indicated.	8
16.	When a manual supplements, or is supplemented by, another manual, a supplement notice shall be placed in the space indicated.	8
17.	When a manual or change becomes effective later than the date upon which it is distributed, an effective date notice shall be placed in the space indicated.	8
18.	When a manual is one volume of a multivolume set, a volume notice shall be placed in the space indicated.	8
19.	When required, a disclosure notice shall be placed in the space indicated.	8
20.	The distribution statement shall be placed in the space indicated. (F) Add distribution statement after "DISTRIBUTION STATEMENT - ".	8
21.	When required, the export control notice shall be placed in the space indicated. (F) Add export control notice statement after "WARNING - ".	8
22.	The destruction notice shall be placed in the space indicated.	8
23.	When required, the copyright credit line shall be placed in the space indicated.	8

(SAMPLE NOT TO SCALE)

FIGURE 1. Example cover/title page. - Continued.

	Notes	Type Size
24.	Indicates the authority under which the manual is acquired and issued. It shall be placed on the cover/title page (not T-2). This statement will be furnished by the acquiring activity.	8
25.	The publication date.	18
26.	Change title pages shall show a change number and date.	14
27.	Same as 1.	24

Spacing between the necessary information shall be such as to result in an attractive, well balanced title page. Horizontal lines, one (1) point high, shall be placed across the page, one just below the TM identification number and the second just above the date.

When an abbreviated title followed by text on the same page is used instead of a cover/title page, the abbreviated title shall be confined to a 7 by 5 1/2 inch area. Type size shall be such that all the information can be included within the prescribed area. Abbreviated title pages shall be used only when specified by the acquiring activity.

(SAMPLE NOT TO SCALE)

FIGURE 1. Example cover/title page. - Continued.

TO XX-XXX-XX-X

CHAPTER 1
GENERAL MAINTENANCE PROCEDURES

SECTION I HYDRAULIC SYSTEM

1.1 HYDRAULIC SYSTEM PERTINENT DATA.

Data pertinent to the operation and physical properties of the hydraulic system are provided in Table 1-1.

1.2 HYDRAULIC SYSTEM TUBING AND FITTINGS.

1.2.1 Titanium Tubing. Ti-3Al-2.3V titanium tubing is used for all pressure lines, return lines, all lines in high temperature areas and all flex lines. Titanium tubing is used because it is corrosion resistant, strong, lightweight and can withstand high temperatures.

1.2.2 Dynatube Fittings. Dynatube fittings are made of 6AL-3V titanium. They have a metal to metal seal that uses hydraulic pressure in the lines to increase sealing pressure. Dynatube fittings are used to meet the high temperature, high pressure, no leak requirements of aircraft hydraulic systems.

1.2.3 Permaswage Fittings. Permaswage fittings are made of 6AL-3V titanium. They provide permanent connections between line assemblies not disconnected during normal maintenance. The outside of the fitting is swaged. The swage is transferred to the outside of the tubing, providing a permanent seal.

1.3 HYDRAULIC LINE REMOVAL AND INSTALLATION.

Figure 1-1 shows the location of all aircraft hydraulic lines and connections. It also shows location and position of support clamps. Table 1-2 provides inspection/replacement criteria. Table 1-3 provides torque values for all size lines.

1.3.1 Removal. Typical hydraulic line removal is as follows.

WARNING

Very high pressure is present in hydraulic lines when hydraulic system power is on. Ensure hydraulic system power is OFF prior to loosening or removing lines. Serious injury or death may result.

a. Remove support clamps from hydraulic line(s). Inspect clamps and retain for use during assembly if undamaged.

CAUTION

Hydraulic lines may twist or flex during removal or installation. Use two wrenches to ensure lines are not twisted or flexed during removal. Failure of hydraulic lines may result.

b. Using two wrenches, loosen dynatube fitting coupling nuts and remove hydraulic line(s).

Table 1-1. Hydraulic System Pertinent Data.

Feature	Operating Parameter
Hydraulic Fluid	MIL-H-83282
Nominal Operating Pressure	3000 Pounds per Square Inch (psi)
Fluid Capacity	5.3 Gallons
Reservoir Usable Fluid Capacity	1.7 Gallons
Reservoir 1 Shutoff Level	0.865 Gallons
Reservoir 2 Shutoff Level	0.416 Gallons
Filtration	
Pressure	23 Micron Absolute
Return	21 Micron Absolute

(SAMPLE NOT TO SCALE)

FIGURE 2. Example typical TM page.

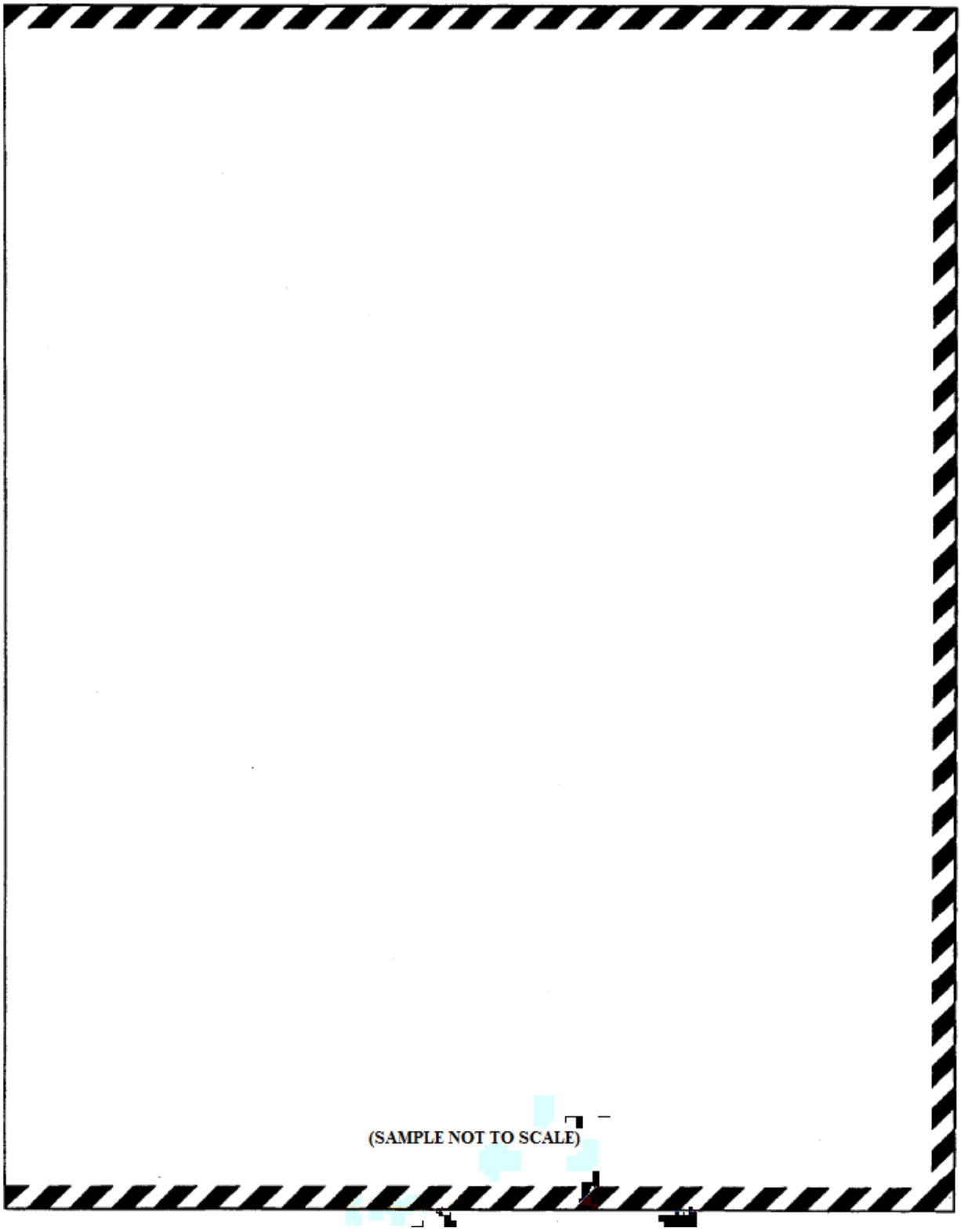

FIGURE 3. Example emergency page markings.

Information on aircraft principal dimensions, aircraft stations using reference lines and access provisions listed in table 6-1. Refer to figure 6-1 for three view illustrations showing front, side and top.

Table 6-1. Aircraft Principal Data.

Item	Dimension
Aircraft	
Span	52'10"
Length 1	73'9"
Height 2	28'8"
Maximum takeoff weight	53,400 pounds
Wing	
Span	52'10"
Chord at Root	311.5"
Chord at Tip	78.3"
Sweep (Leading Edge)	45°
Aspect Ratio	3.51
Stabilator	
Span	38'3"
Chord at Root	157.2"

See footnotes at end of table.

6-1

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Table 6-1. Aircraft Principal Data - Continued.

Item	Dimension
Stabilator - Continued	
Chord at Tip	47.5"
Sweep (Leading Edge) 3	50°
Aspect Ratio	2.55
Vertical Tail	
Chord at Root	125.0"
Chord at Tip	35.6"
Sweepback 3	44°44'
Aspect Ratio	1.89

1 Length measured from tip of radome with no accessory pitot tubes installed. Consult TO XX-XXX-XX-X for information regarding pitot tubes.

2 Maximum take off weight for normal configuration. See TO XX-XXX-XX-X for information regarding takeoff weight for special mission configuration.

3 Measured at root.

6.1.2 Reference lines. Include a system for locating units/components in relation to aircraft reference lines provide access to aircraft structure , systems or components for inspection servicing and maintenance .

(SAMPLE NOT TO SCALE)

FIGURE 4. Example typical continued table.

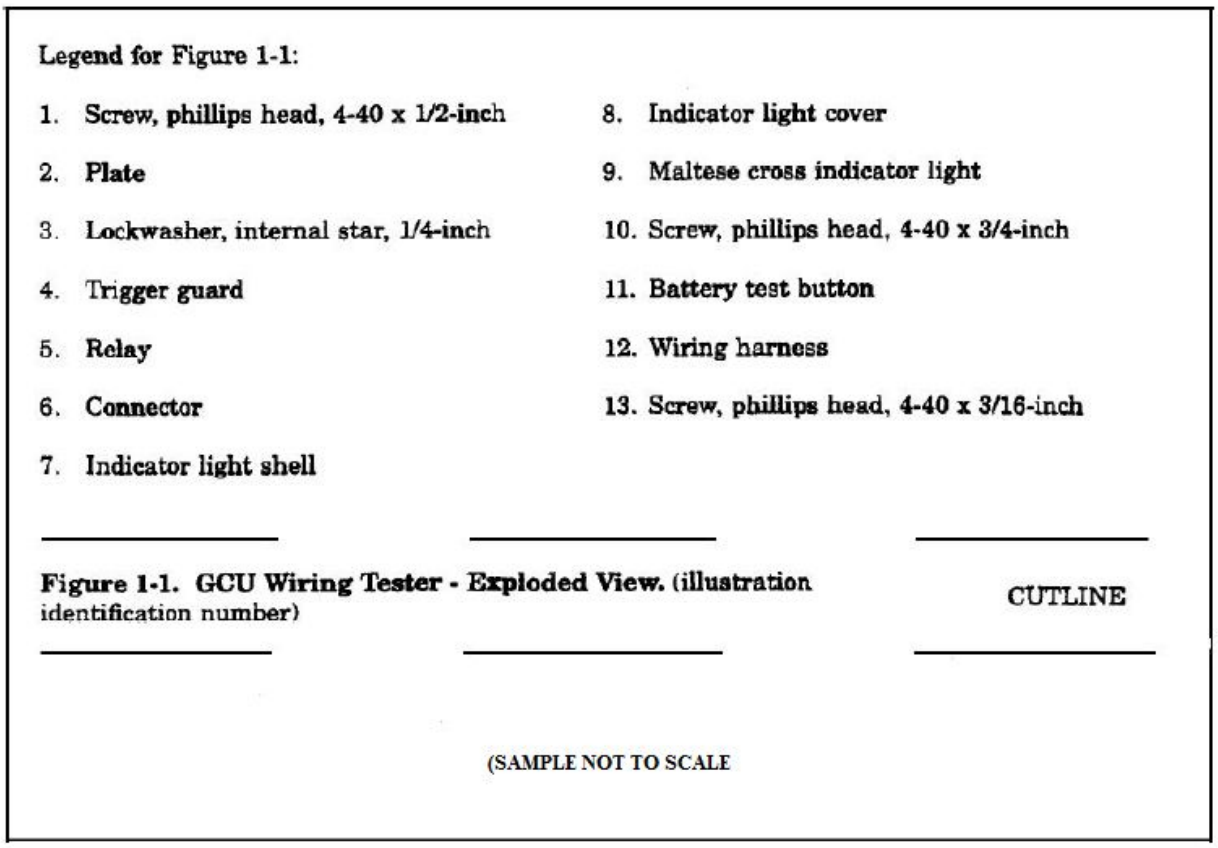

FIGURE 5. Example figure cutline with legend.

1.3 PRIMARY SIDEHEAD.

This is a primary paragraph. Primary sideheads stand alone. Primary sideheads may be followed by one, AND ONLY ONE, unnumbered paragraph of text. A primary sidehead or paragraph may be followed by a first subordinate paragraph or a first level procedural step. In Technical Manuals (TM), a paragraph is considered one block of text, not several blocks of text.

1.3.1 First Subordinate Sidehead. This is a first subordinate paragraph. The text is run in with the title and carry over lines return to the left margin. A first subordinate paragraph may be followed by another first subordinate paragraph, a second subordinate paragraph or a first level procedural step.

1.3.1.1 Second Subordinate Sidehead. This is a second subordinate paragraph. Second subordinate paragraphs should, but are not required to, have a title. The text is run in with the title and carry over lines return to the left margin. A second subordinate paragraph may be followed by another second subordinate paragraph, a third subordinate paragraph or a first level procedural step.

1.3.1.1.1 Third Subordinate Sidehead. This is a third subordinate paragraph. Third subordinate paragraphs should, but are not required to, have a title. The text is run in with the title and carry over lines return to the left margin. A third subordinate paragraph may be followed by another third subordinate paragraph or a first level procedural step.

1.4 PRIMARY PARAGRAPH FOLLOWED BY PROCEDURAL STEPS.

a. This is a first level procedural step. Steps do not have titles. The step letter (alpha character) is indented two spaces from the left margin. The text is indented an additional two spaces and is blocked. A first level procedural step may be followed by a series of first level procedural steps or a series of second level procedural steps.

(1) This is a second level procedural step. Steps do not have titles. The step number is indented four spaces from the left margin. The text is indented an additional two spaces and is blocked. A second level procedural step may be followed by a series of second level procedural steps or a series of third level procedural steps.

(a) This is a third level procedural step. Steps do not have titles. The step letter (alpha character) is indented six spaces from the left margin. The text is indented an additional two spaces and is blocked. A third level procedural step may be followed by a series of third level procedural steps or a series of fourth level procedural steps.

1 This is a fourth level procedural step. Steps do not have titles. The step number is indented eight spaces from the left margin. The text is indented an additional two spaces and is blocked. A fourth level procedural step may be followed by a series of fourth level procedural steps.

1.5 PRIMARY SIDEHEAD.

1.5.1 First Subordinate Sidehead. First subordinate sidehead followed by procedural steps.

a. This is a first level procedural step. Steps are block indented.

(1) This is a second level procedural step. Steps are block indented.

(a) This is a third level procedural step. Steps are block indented.

1 This is a fourth level procedural step. Steps are block indented.

1.6 PRIMARY SIDEHEAD.

1.6.1 First Subordinate Sidehead. First subordinate sidehead followed by second subordinate sidehead.

1.6.1.1 Second Subordinate Sidehead. Second subordinate sidehead followed by procedural steps.

a. This is a first level procedural step. Steps are block indented.

(1) This is a second level procedural step. Steps are block indented.

(a) This is a third level procedural step. Steps are block indented.

1 This is a fourth level procedural step. Steps are block indented.

1.7 PRIMARY SIDEHEAD.

1.7.1 First Subordinate Sidehead. First subordinate sidehead followed by second subordinate sidehead.

1.7.1.1 Second Subordinate Sidehead. Second subordinate sidehead followed by a third subordinate sidehead.

1.7.1.1.1 Third Subordinate Sidehead. Third subordinate sidehead followed by procedural steps.

a. This is a first level procedural step. Steps are block indented.

(1) This is a second level procedural step. Steps are block indented.

1-3

(SAMPLE NOT TO SCALE)

FIGURE 6. Example decimal paragraph numbering.

TO XX-XXX-XX-X

(a) This is a third level procedural step. Steps are block indented.

1 This is a fourth level procedural step. Steps are block indented.

1.8 PRIMARY SIDEHEAD.

Primary paragraph followed by an added primary paragraph.

1.8A ADDED PRIMARY SIDEHEAD.

This paragraph shows numbering for added primary paragraphs.

1.8B ADDED PRIMARY SIDEHEAD.

This paragraph shows numbering for added primary paragraphs.

1.9 PRIMARY SIDEHEAD.

1.9.1 First Subordinate Sidehead. First subordinate paragraph followed by an added first subordinate paragraph.

1.9.1A Added First Subordinate Sidehead. This paragraph shows numbering for added first subordinate paragraphs.

1.9.1B Added First Subordinate Sidehead. This paragraph shows numbering for added first subordinate paragraphs.

1.9.2 First Subordinate Sidehead. First subordinate paragraph following an added first subordinate paragraph.

1.9.2.1 Second Subordinate Sidehead. Second subordinate paragraph followed by an added second subordinate paragraph.

1.9.2.1A Added Second Subordinate Sidehead. This paragraph shows numbering for added second subordinate paragraphs.

1.9.2.1B Added Second Subordinate Sidehead. This paragraph shows numbering for added second subordinate paragraphs.

1.9.2.2 Second Subordinate Sidehead. Second subordinate paragraph following an added second subordinate paragraph.

1.9.2.2.1 Third Subordinate Sidehead. Third subordinate paragraph followed by an added third subordinate paragraph.

1.9.2.2.1A Added Third Subordinate Sidehead. This paragraph shows numbering for added third subordinate paragraphs.

1.9.2.2.1B Added Third Subordinate Sidehead. This paragraph shows numbering for added third subordinate paragraphs.

1.9.2.2.2 Third Subordinate Sidehead. Third subordinate paragraph following an added third subordinate paragraph.

a. First level procedural step followed by an added first level procedural step.

a1. Added first level procedural step. This step shows numbering of added first level procedural steps.

a2. Added first level procedural step. Step shows numbering of added first level procedural steps.

b. First level procedural step following an added first level procedural step.

(1) Second level procedural step followed by an added second level procedural step.

(1A) Added second level procedural step. This step shows numbering of added second level procedural steps.

(1B) Added second level procedural step. This step shows numbering of added second level procedural steps.

(2) Second level procedural step following an added second level procedural step.

(a) Third level procedural step followed by an added third level procedural step.

(a1) Added third level procedural step. This step shows numbering of added third level procedural steps.

(a2) Added third level procedural step. This step shows numbering of added third level procedural steps.

(b) Third level procedural step followed by an added third level procedural step.

1 Fourth level procedural step followed by an added fourth level procedural step.

1A Added fourth level procedural step. This step shows numbering of added fourth level procedural steps.

1B Added fourth level procedural step. This step shows numbering of added fourth level procedural steps.

2 Fourth level procedural step following an added fourth level procedural step.

1-4

(SAMPLE NO TO SCALE)

FIGURE 6. Example decimal paragraph numbering. - Continued.

INDEX

(SAMPLE NOT TO SCALE)

FIGURE 7. Example alphabetical index.

WARNINGs, CAUTIONs and NOTEs, Warning, Caution and Note headings and their definitions are as follows:

WARNING

OR

WARNING

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc, which, if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

CAUTION

OR

CAUTION

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc, which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

Highlights and essential operating or maintenance procedure, condition, or statement.

(SAMPLE NOT TO SCALE)

FIGURE 8. Example warnings, cautions, and notes.

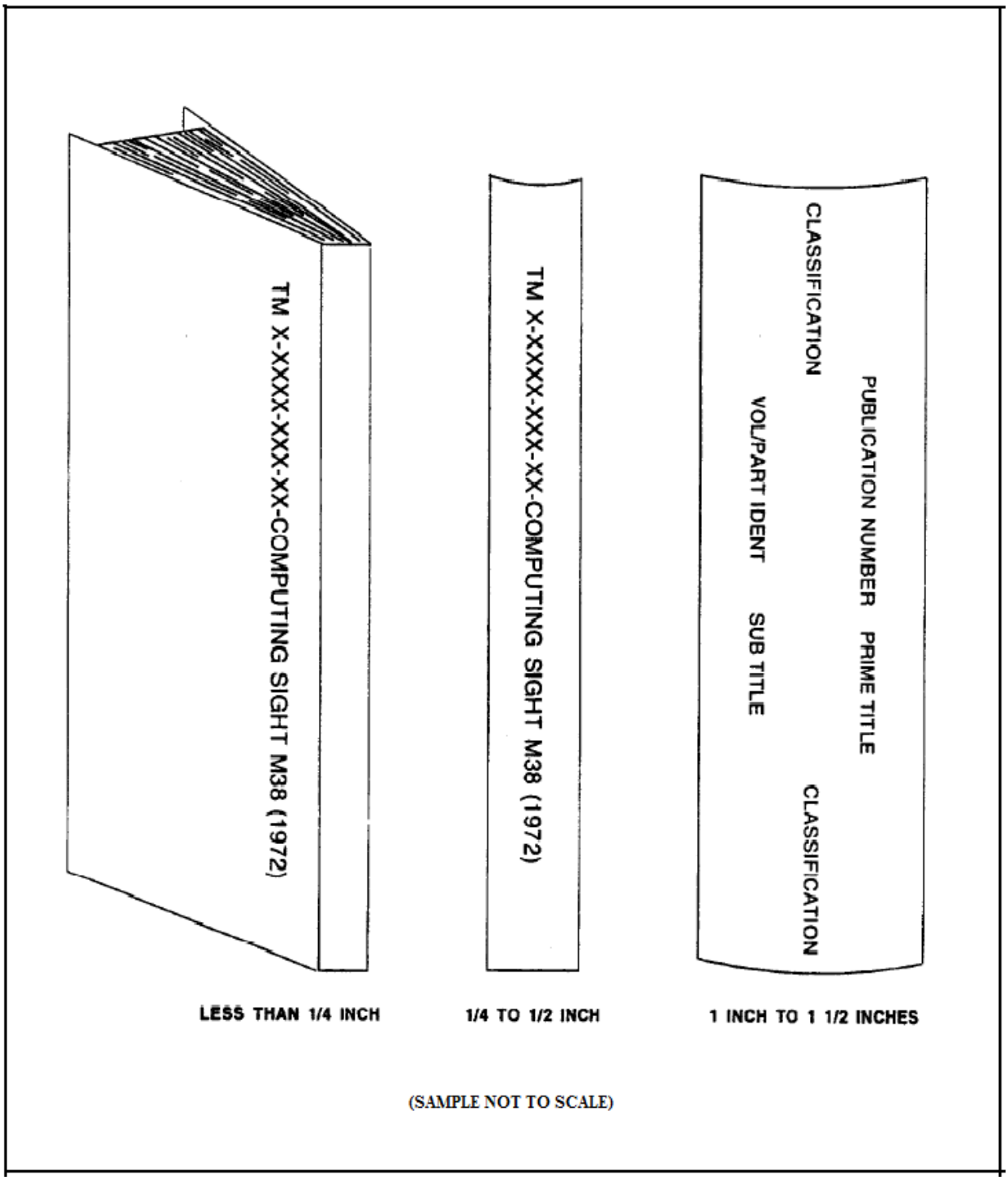

FIGURE 9. Example backbone for binder or cover.

IDENTIFICATION NUMBER

This manual supersedes TO XX-XXX-XX-X dated 16 April 1991, Change4 dated 14 November 1993 including Operational Supplements TO XX-XXX-XX-X dated 6 August 1991 and TO XX-XXX-XX-X-XTP-1 dated 12 December 1993.

This manual supplements TO XX-XXX-XX-X dated 4 September 1992.

This manual is incomplete without Volume thru XX.

HANDLING AND DESTRUCTION NOTICE- Comply with distribution statement and destroy by any method that will prevent disclosure of contents or reconstruction of the document.

(SAMPLE NOT TO SCALE)

FIGURE 10. Example T-2 page.

WARNING
RADIATION HAZARD

Co 60

Tube types OA2 and 6530/PL-35 (TR tubes) used in this equipment contain radioactive material (para 0-0). These tubes are potentially hazardous when broken; see qualified medical personnel and the Safety Director if you are exposed to or cut by broken tubes. For first aid instructions see TB 750-237 and AR 755-15. Use extreme care in replacing these tubes (para 0-0) and follow safe procedures in their handling, storage, and disposal (para 0-0). Refer to paragraph 0-0 and to TB 750-237 and AR 755-15 for instructions on handling, storage, and disposal of radioactive material.

Never place radioactive tubes in your pocket.

Use extreme care not to break radioactive tubes while handling them.

Never remove radioactive tubes from cartons until ready to use them.

SAMPLE A

ELECTROMAGENTIC RADIATION

DO NOT STAND IN THE DIRECT PATH OF THE ANTENNA WHEN THE POWER IS ON! DO NOT WORK ON THE WAVE GUIDES WHILE THE POWER IS ON

High frequency electromagnetic radiation can cause fatal internal burns. It can literally "cook" internal organs and flesh. If you feel the Slightest warming effect while near this equipment MOVE AWAY QUICKLY

SAMPLE B

(SAMPLE NOT TO SCALE)

FIGURE 11. Example warnings for warning page.

WARNING

RADIATION HAZARD

This equipment contains the following radioactive tubes:
(List applicable tubes and equipment locations)
Radiation may be present at unsealed or broken waveguide elements.

Sample C

WARNING

DANGEROUS CHEMICALS

are used in this equipment.
DEATH
or severe burns may result if personnel fail to observe safety precautions.

Sample D

WARNING

HIGH VOLTAGE

is used in the operation of this equipment.
DEATH ON CONTACT
may result if personnel fail to observe safety precautions.
Learn the areas containing high voltage in each piece of equipment.
Be careful not to contact high voltage connections when installing or operating this equipment.
Before working inside the equipment, turn power off and ground points of high voltage potential before touching them.

Sample E

WARNING

GASES OR AIR UNDER PRESSURE

3000 PSI AIR PRESSURE

is used in the operation of this equipment.
DEATH
or severe injury may result if personnel fail to observe safety precautions.

Sample F

(SAMPLE NOT TO SCALE)

FIGURE 11. Example warnings for warning page. - Continued.

TO XX-XXX-XX-X

INSERT LATEST CHANGED PAGES. DESTROY SUPERSEDED PAGES.

LIST OF EFFECTIVE PAGES

NOTE The portion of the text affected by the changes is indicated by a vertical Line in the outer margins of the page. Changes to illustrations are indicated by shaded or screened areas, or by miniature pointing hands.

Dates of issue for original and change pages are:

Original . . . . . 0 . . . . . 1 January 1991		Change . . . . . 4 . . . . . 6 July 1992	
Change . . . . . 1 . . 19 September 1991		Change . . . . . 5 . . 25 September 1992	
Change . . . . . 2 . . . 20 December 1991		Change . . . . . 6 . . . . . 29 March 1993	
Change . . . . . 3 . . . 21 February 1992		Change . . . . . 7 . . . 15 February 1994	

TOTAL NUMBER OF PAGES IN THIS PUBLICATION IS 326. CONSISTING OF THE FOLLOWING:

Page No.	*Change No.	Page No.	*Change No.	Page No.	*Change No.
Title	7	4-1 - 4-7	0	8-57 - 8-59	3
A	7	4-8 - 4-9	3	8-60 - 8-64	0
i - ii	2	4-10 - 4-16	0	Index 1 - Index 4	7
iii	7	4-17 - 4-21	3	Index 5	6
iv - viii	2	4-22 - 4-33	0	Index 6 Blank	0
ix - x	0	4-34 - 4-39	5		
1-1 - 1-2	0	4-40 Blank	0		
1-3	3	5-1	6		
1-4 Blank	0	5-2 - 5-15	0		
2-1 - 2-2	0	5-16 - 5-17	1		
2-3	2	5-18 Blank	1		
2-4 - 2-8	0	5-19 - 5-26	2		
3-1	5	5-26.1 Added	2		
3-2 Blank	5	5-26.2 Blank	2		
3-3 - 3-4	7	5-27 - 5-44	0		
3-5	2	5-45 - 5-47	4		
3-6	4	5-48 - 5-54	0		
3-7	0	6-1 - 6-9	0		
3-8	4	6-10 - 6-11	3		
3-9 - 3-10	0	6-12	0		
3-11	4	6-13 - 6-16	4		
3-12 - 3-18	0	6-17	0		
3-19	1	6-18 Blank	0		
3-20 Blank	1	7-1 - 7-13	0		
3-21	0	7-14	1		
3-22 - 3-23	5	7-15 - 7-21	0		
3-24 Blank	5	7-22	6		
3-25	2	7-23 - 7-36	0		
3-26 Blank	2	7-37 - 7-40	4		
3-27	4	7-41	2		
3-28 Blank	4	7-42 Blank	2		
3-29 - 3-31	0	7-43 - 7-52	0		
3-32	2	7-53	7		
3-32.1 Added	7	7-54 - 7-61	0		
3-32.2 Blank	7	7-62 Blank	0		
3-33 - 3-35	5	8-1 - 8-3	0		
3-36 - 3-39	1	8-4 - 8-5	1		
3-40	5	8-6 - 8-22	0		
3-41	6	8-23 - 8-24	3		
3-42 Blank	6	8-25 - 8-30	0		
3-43 - 3-46	0	8-31	4		
3-47 - 3-54	7	8-32 - 8-56	0		

*Zero in this column indicates an original page

A Change 7 USAF

(SAMPLE NOT TO SCALE)

FIGURE 12. Example list of effective pages.

TO XX-XXX-XX-X

WARNING

This manual contains unverified procedures. Unverified procedures shall only be performed during verification procedures, in accordance with TOs 00-5-1 and 00-5-3. Performance of unverified procedure may result in injury to personnel of damage to equipment.

To Number	Date	To Management Agency
Change Number/Date		

Function/Para/ Figure etc.	Verification Status	Date Verified	Remarks
Title Page			
LEP			
TOC			
Foreword			
Safety Summary			
1.1			
1.2			
1.2.1			
1.2.2			
1.2.3			
1.2.4			
1.2.4.1			
1.2.4.2			
1.2.4.2.1			
1.2.4.2.2			
1.2.4.2.3			
1.2.5			
1.2.5.1			
1.2.5.2			
1.3			
1.3.1			
Figure 1-1.			
1.4			
1.4.1			
1.4.1.1			
1.4.1.2			
1.4.1.3			
1.4.2			
Table 1-1.			
1.4.3			

(SAMPLE NOT TO SCALE)

VS-1 of 3

FIGURE 13. Example verification status page.

TO XX-XXX-XX-X

RECORD OF CHANGES

CHANGE NO.	DATE	TITLE OR BRIEF DESCRIPTION	ENTERED BY

(SAMPLE NOT TO SCALE)

FIGURE 14. Example change record.

TO XX-XXX-XX-X

TABLE OF CONTENTS

i

(SAMPLE NOT TO SCALE)

FIGURE 15. (F) (N) Example table of contents.

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TM 9-1440-1585-20-1

TECHNICAL MANUAL

No. 9-1440-1585-20-1

HEADQUARTERS
DEPARTMENT OF THE ARMY
Washington, D.C., *31 August 1991*

Organizational Maintenance Manual
for
Launching Station M54A1
Maintenance and Check Procedures
IMPROVED CHAPARRAL INTERCEPT-AERIAL GUIDED MISSILE SYSTEM

REPORTING ERRORS AND RECOMMENDING IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual directly to Commander, U.S. Army Missile Command, ATTN: DRSMI-SNPM, Redstone Arsenal, Alabama 35898. A reply will be furnished to you.

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COMMANDER (MICOM) ATTN: DRCPM-CF.

(SAMPLE NOT TO SCALE)

FIGURE 16. (A) (M) Example table of contents.

TO XX-XXX-XX-X

LIST OF ILLUSTRATIONS

LIST OF TABLES

(SAMPLE NOT TO SCALE)

FIGURE 17. Example List of illustrations and list of tables.

SAFETY SUMMARY

1 GENERAL SAFETY INSTRUCTIONS.

This manual describes physical and chemical processes which may cause injury or death to personnel, or damage to equipment if not properly followed. This safety summary includes general safety precautions and instructions that must be understood and applied during operation and maintenance to ensure personnel safety and protection of equipment. Prior to performing any task, the WARNINGs, CAUTIONs and NOTEs included in that task shall be reviewed and understood.

2 WARNINGS, CAUTIONS AND NOTES.

WARNINGs and CAUTIONs are used in this manual to highlight operating or maintenance procedures, practices, conditions or statements which are considered essential to protection of personnel (WARNING) or equipment (CAUTION). WARNINGs and CAUTIONs immediately precede the step or procedure to which they apply. WARNINGs and CAUTIONs consist of four parts: heading (WARNING, CAUTION or Icon [see HAZARDOUS MATERIALS WARNINGS]), a statement of the hazard, minimum precautions, and possible result if disregarded. NOTEs are used in this manual to highlight operating or maintenance procedures, practices, conditions or statements which are not essential to protection of personnel or equipment. NOTEs may precede or follow the step or procedure, depending upon the information to be highlighted. The headings used and their definitions are as follows.

WARNING

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc, which if not strictly observed, could result in injury to, or death of, personnel or long term health hazards.

CAUTION

Highlights an essential operating or maintenance procedure, practice, condition, statement, etc, which, if not strictly observed, could result in damage to, or destruction of, equipment or loss of mission effectiveness.

NOTE

Highlights an essential operating or maintenance procedure, condition, or statement.

3 HAZARDOUS MATERIALS WARNINGS.

Hazardous Materials Warnings in this manual are provided through use of the Hazard Symbols listed below. Consult the HAZARDOUS MATERIALS DESCRIPTION below or Material Safety Data Sheets (MSDS) (Occupational Safety and Health Administration [OSHA] Form 20 or equivalent) for specific information on hazards, effects, and protective equipment requirements. If you do not have an MSDS for the material involved, contact your supervisor, or the base Safety or Bioenvironmental Engineering Offices.

3.1 Hazardous Materials Icons. Icons are used in this manual to identify dangers associated with hazardous materials. The icons used and their definitions are as follows.

The abstract symbol bug shows that a material may contain bacteria or viruses that present a danger to life or health.

The symbol of drops of liquid onto a hand shows that the material will cause burns or irritation of skin and tissue.

The rapidly expanding symbol shows that the material may explode if subjected to high temperatures, sources of ignition or high pressure.

The symbol of a person wearing goggles shows that the material will injure eyes.

The symbol of a flame shows that the material can ignite and burn.

The symbol of a skull and crossbones shows that the material is poisonous or a danger to life.

The symbol of three circular wedges shows that radioactive energy is emitted which can injure tissue and organs.

The symbol of a human figure in a cloud shows that the material gives off vapors that are a danger to life or health.

3.2 Hazardous Materials Description. The following hazardous materials are used in this manual. Each icon represents certain hazards as described above. Beneath the icons is the hazardous material name and a reference number. Below the icons, material name,

ix

(SAMPLE NOT TO SCALE)

FIGURE 18. Example safety summary

TO XX-XXX-XX-X

and reference number is a description of the hazardous material. Only the icons, material name, and reference number are used in the text of the manual. If a full description of the hazardous material is required while performing procedures in this manual, use the reference number to locate the appropriate description below.

THREAD COMPOUND, MIL-C-38736 1

Thread Compound, MIL-C-38736, is flammable and toxic to eyes, skin and respiratory tract. Skin and eye protection required. Avoid repeated or prolonged exposure. Keep Thread Compound, MIL-C-38736, off skin, eyes, and clothes; do not breathe vapors. Keep away from open flames or other sources of ignition.

AMINE ACID HALOGENATED ORGANIC SOLVENT, MIL-S-4784 2

Amine Acid Halogenated Organic Solvent, MIL-S-4784, contains trace amounts of bacteria and is toxic to eyes, skin and respiratory tract. Respirator, skin and eye protection required. Keep Amine Acid Halogenated Organic Solvent, MIL-S-4784, off skin, eyes, and clothes; do not breathe vapors. Keep away from open flames or other sources of ignition.

ELECTRON TUBE, OA2 3

Electron Tube, OA2, contains radioactive material. Avoid repeated or prolonged exposure. TO XX-XXX-XX lists protective equipment required and provides instructions for safe handling and disposal of radioactive tubes.

4. SAFETY PRECAUTIONS.

The following safety precautions shall be observed while performing procedures in this manual.

- Dangerous voltages are present at system connectors. Ensure power is OFF prior to connecting or disconnecting cables.
- Do not wear metal frame glasses, rings, watches, or other metal jewelry while working on electronic equipment.
- Some cleaning materials specified herein are flammable and/or toxic. Keep away from open flame or other ignition sources. Provide adequate ventilation and avoid skin/eye exposure.
- Cleaning with compressed air can create airborne particles that may enter eyes or penetrate skin. Pressure shall not exceed 30 psig. Wear goggles. Do not direct compressed air against skin.

(SAMPLE NOT TO SCALE)

X

FIGURE 18. Example safety summary - Continued.

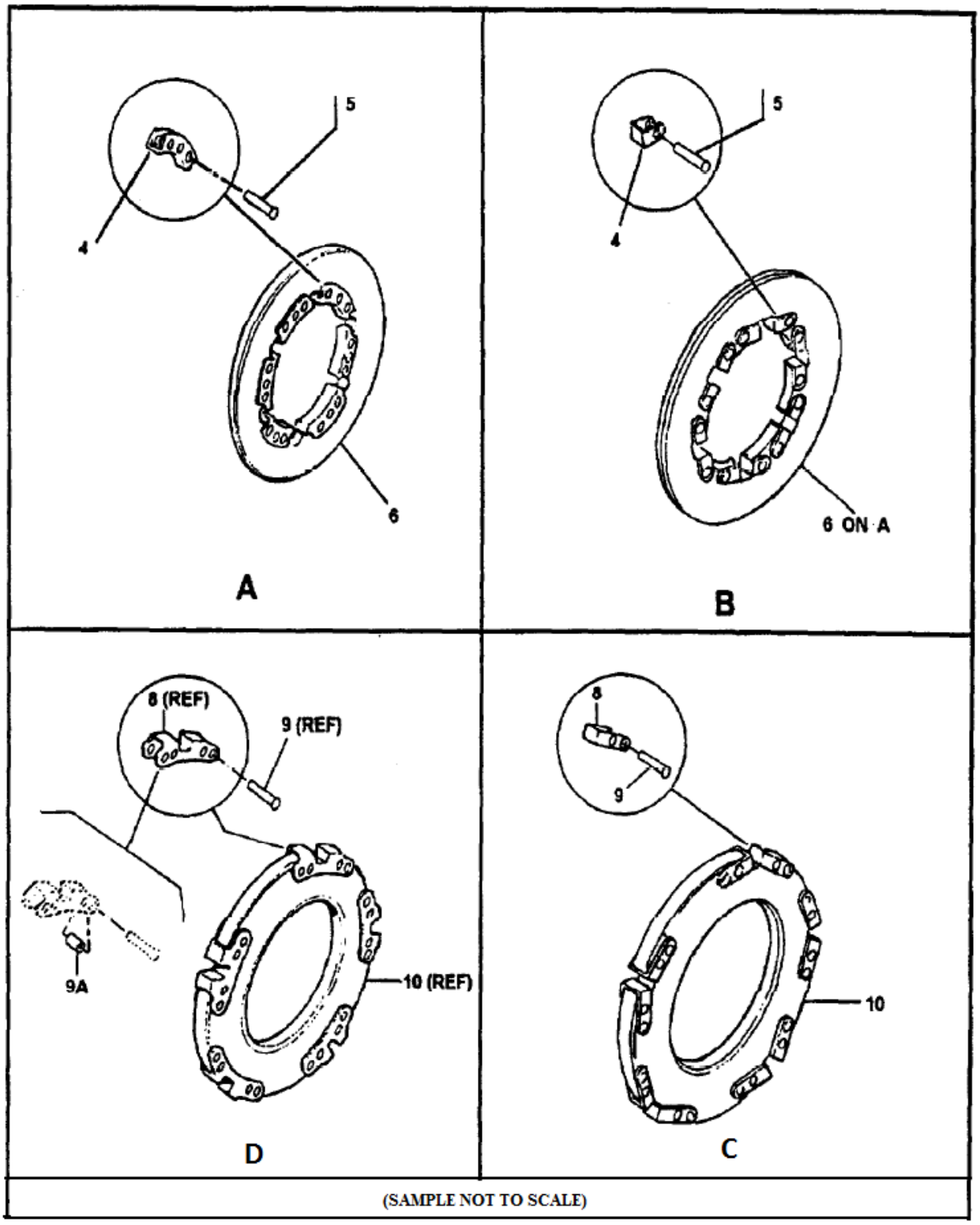


FIGURE 19. Example multisection illustration.

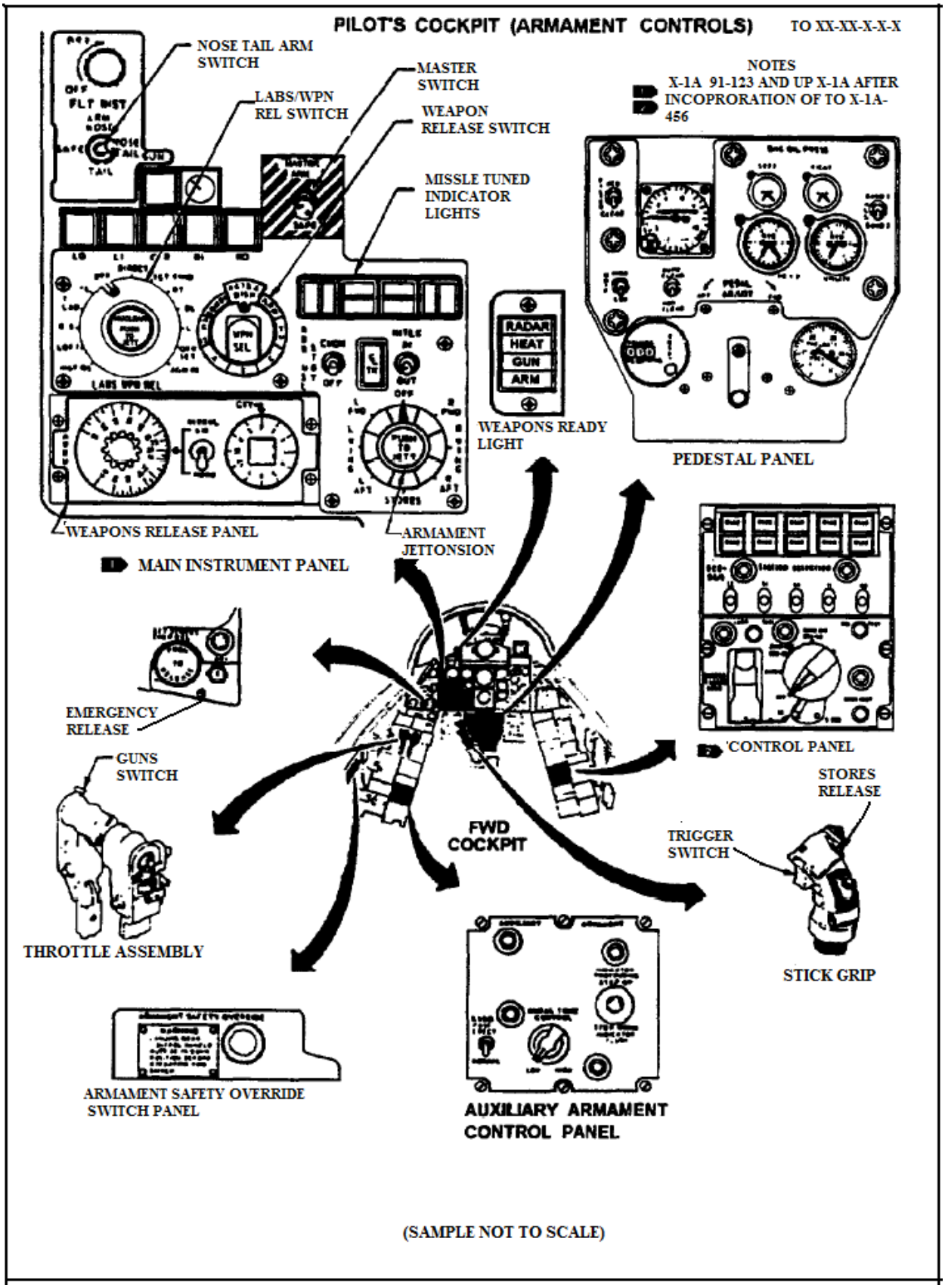


FIGURE 20. Example functional illustration - location view.

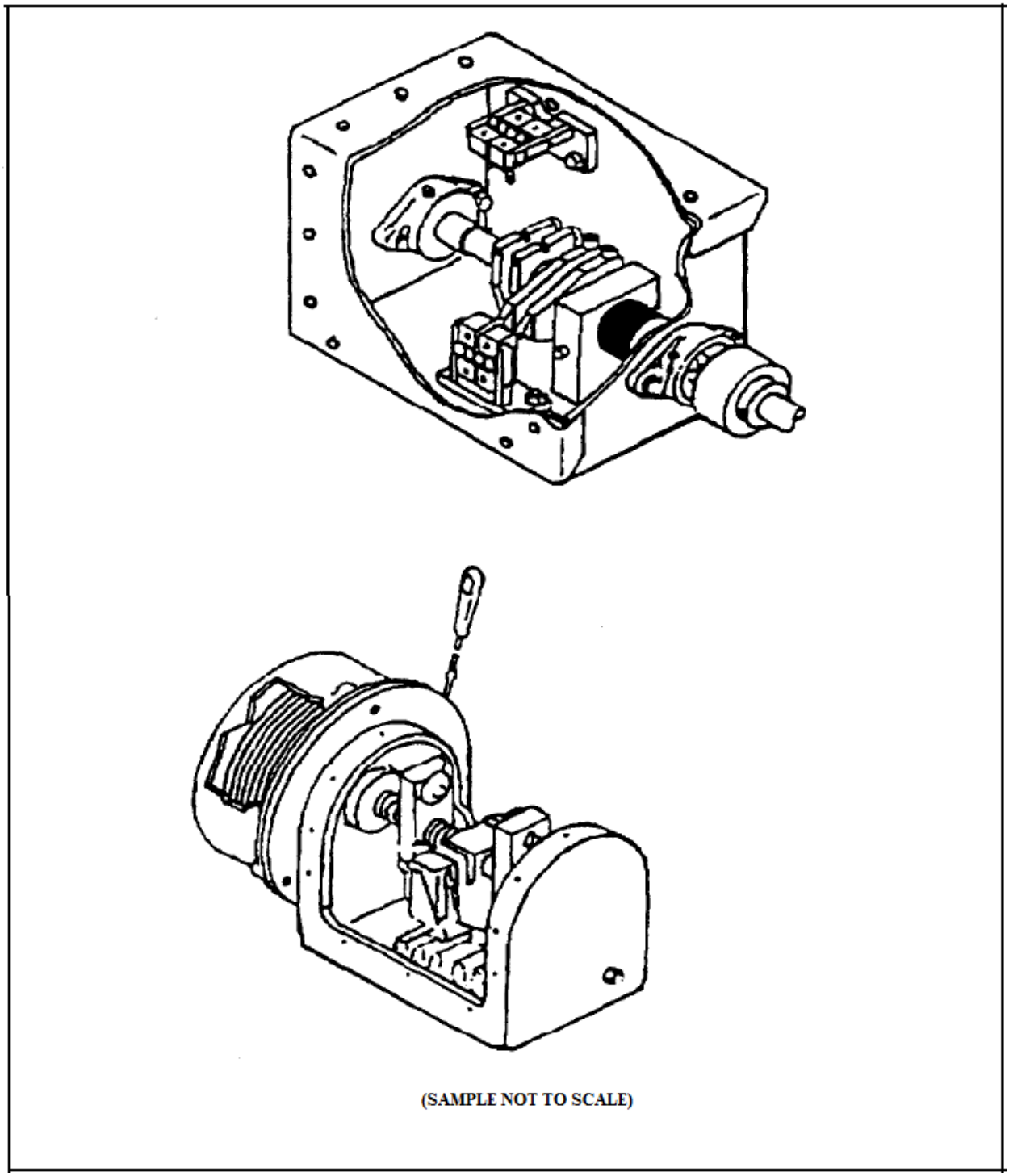


FIGURE 21. Example cutaway illustrations.

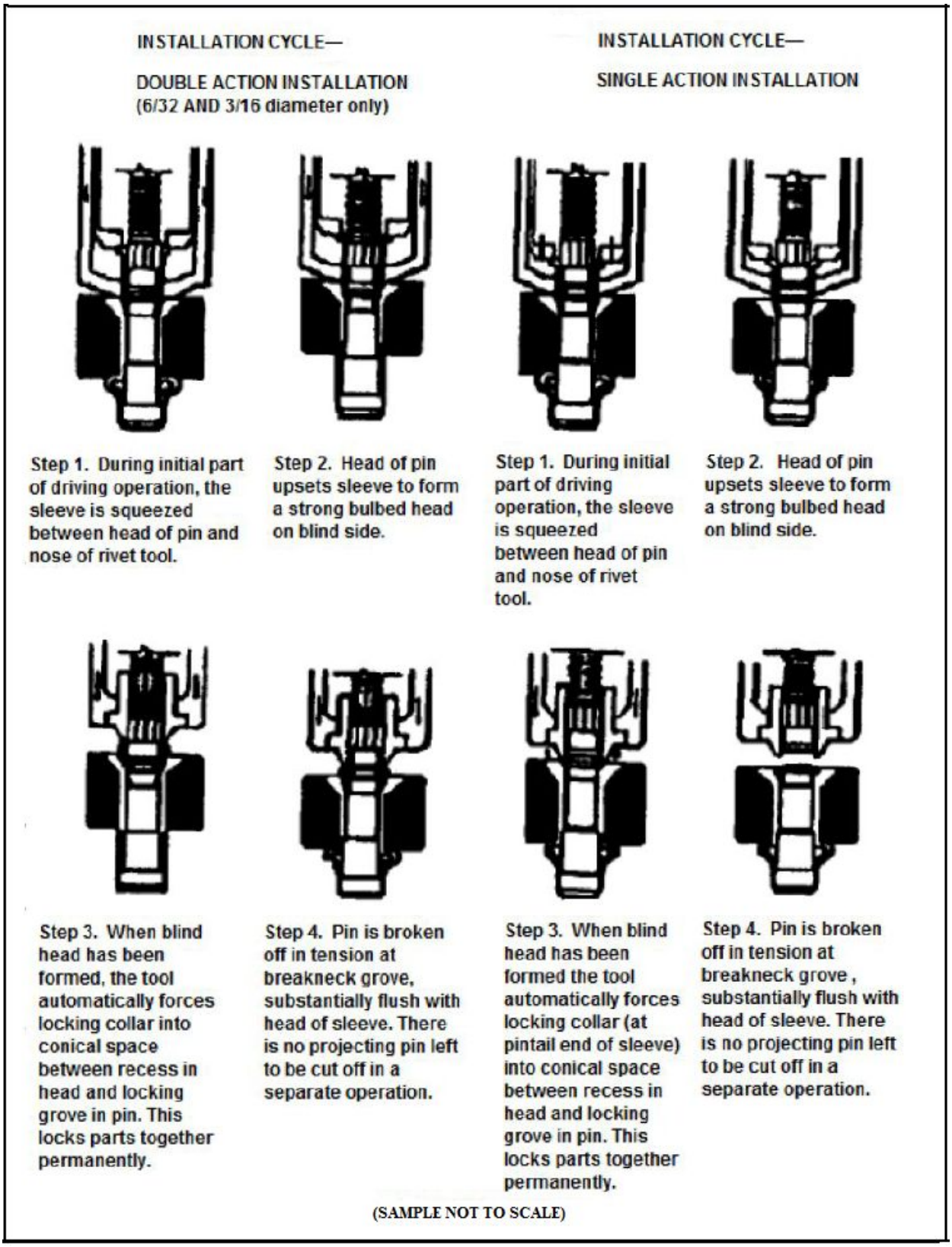
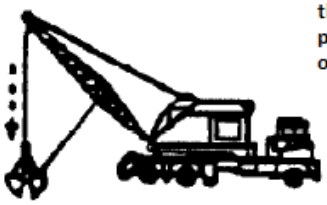
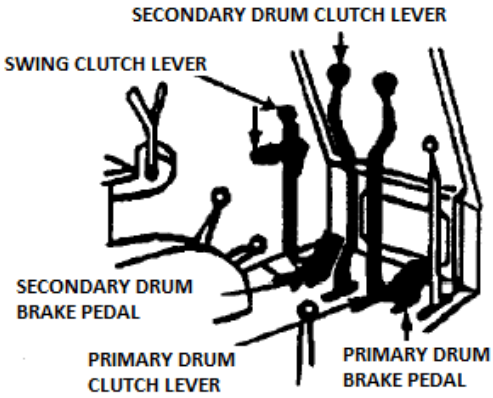


FIGURE 22. Example procedural illustrations.

FILLING THE CLAMSHELL

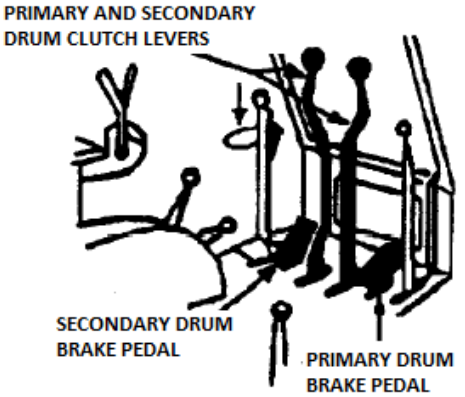
Pull back on the drum clutch levers until the clamshell bucket is high enough to clear being moved. Then push the drum clutch levers to neutral position, applying both brake pedals, swing clamshell over material Release the secondary drum brake to open clamshell then release primary drum brake pedal to lower clamshell bucket over material.





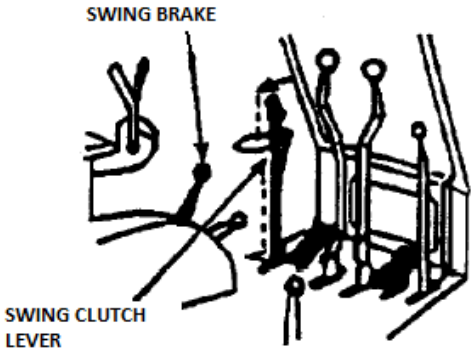
CLOSING AND HOISTING

To close the clamshell bucket pull back on the secondary drum clutch lever. Move the lever until the bucket is filled with material and closed. When the bucket is closed, release the primary drum brake pedal and pull the primary drum clutch lever back. Hold both levers back until the load has reached the desired height. Return both drum clutch levers to neutral and at the same time apply both drum brake pedals.



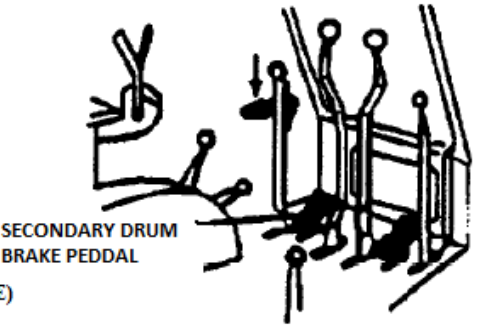
SWINGING

Push the swing clutch lever forward to swing the crane to the left. Pull it to the rear to go to the right. Swing slowly and evenly to avoid bucket whipping. When handling fine materials keep on secondary line but coordinate primary drum to avoid excessive slack in the primary line.



DUMPING

To dump the bucket, release the secondary drum brake pedal.



(SAMPLE NOT TO SCALE)

FIGURE 23. Example operational illustrations.

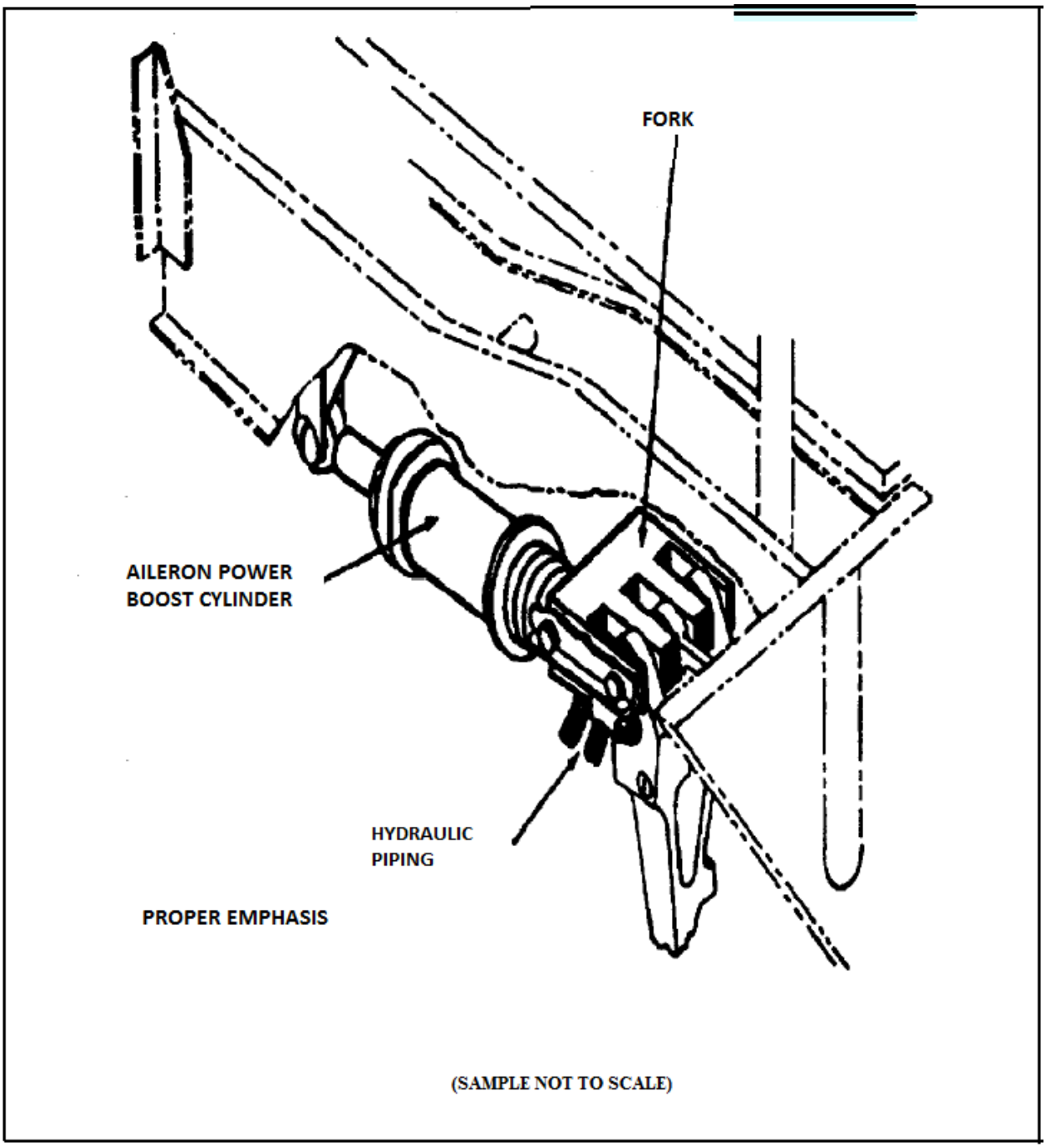


FIGURE 24. Example emphasis and subordination of detail.

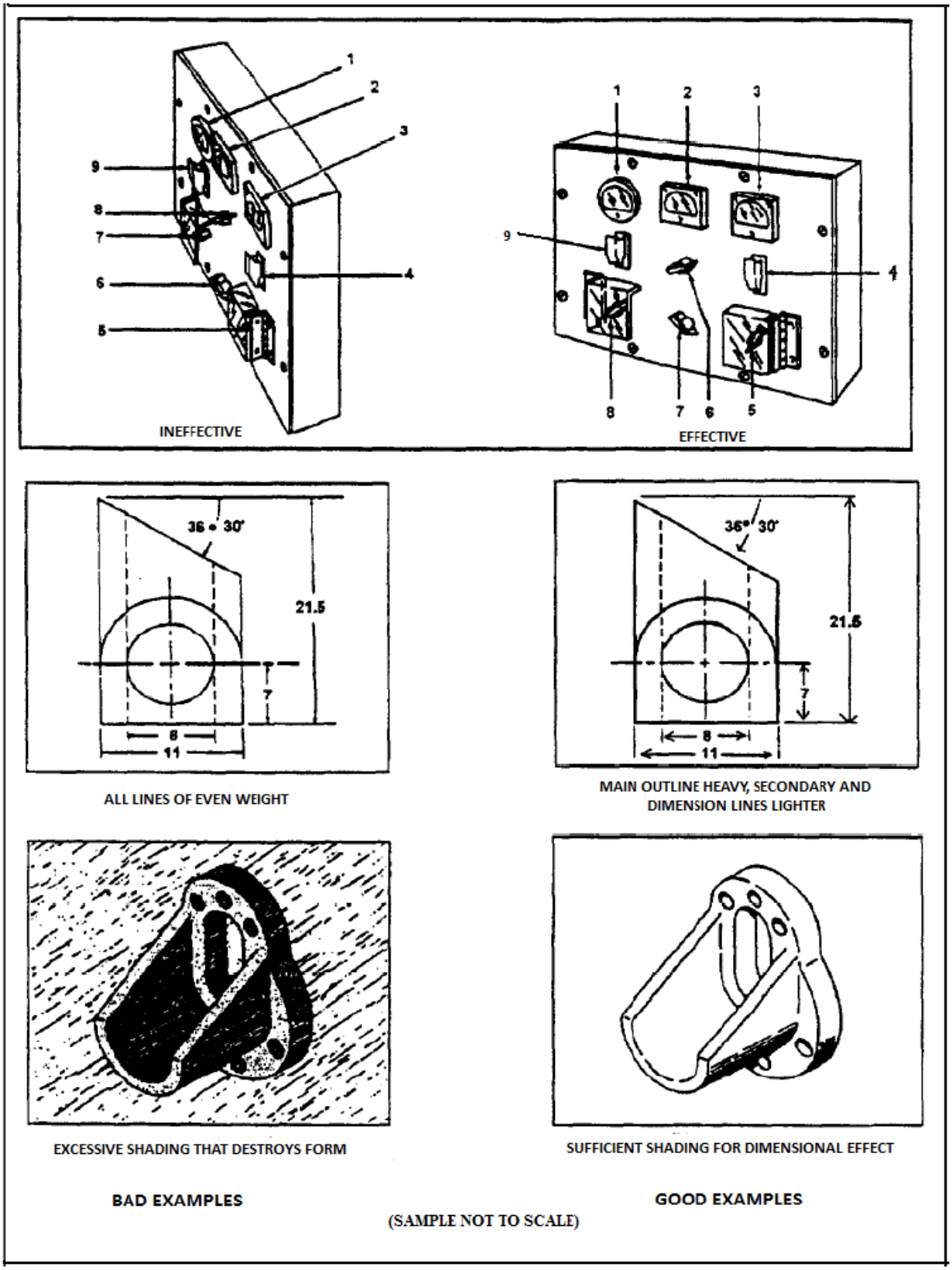


FIGURE 25. Examples of angle view, line weight, and shading.

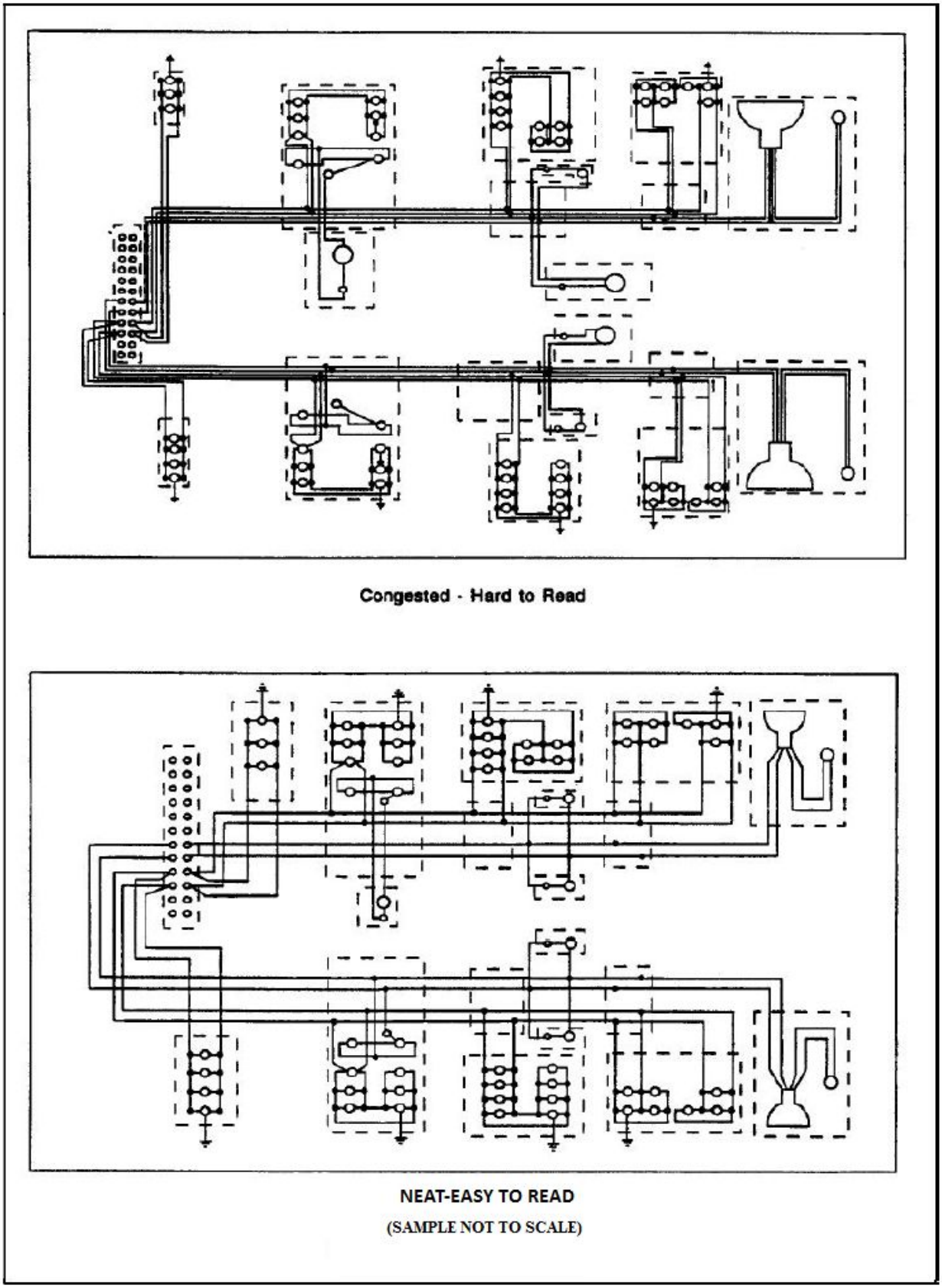


FIGURE 26. Example line separation on diagrams.

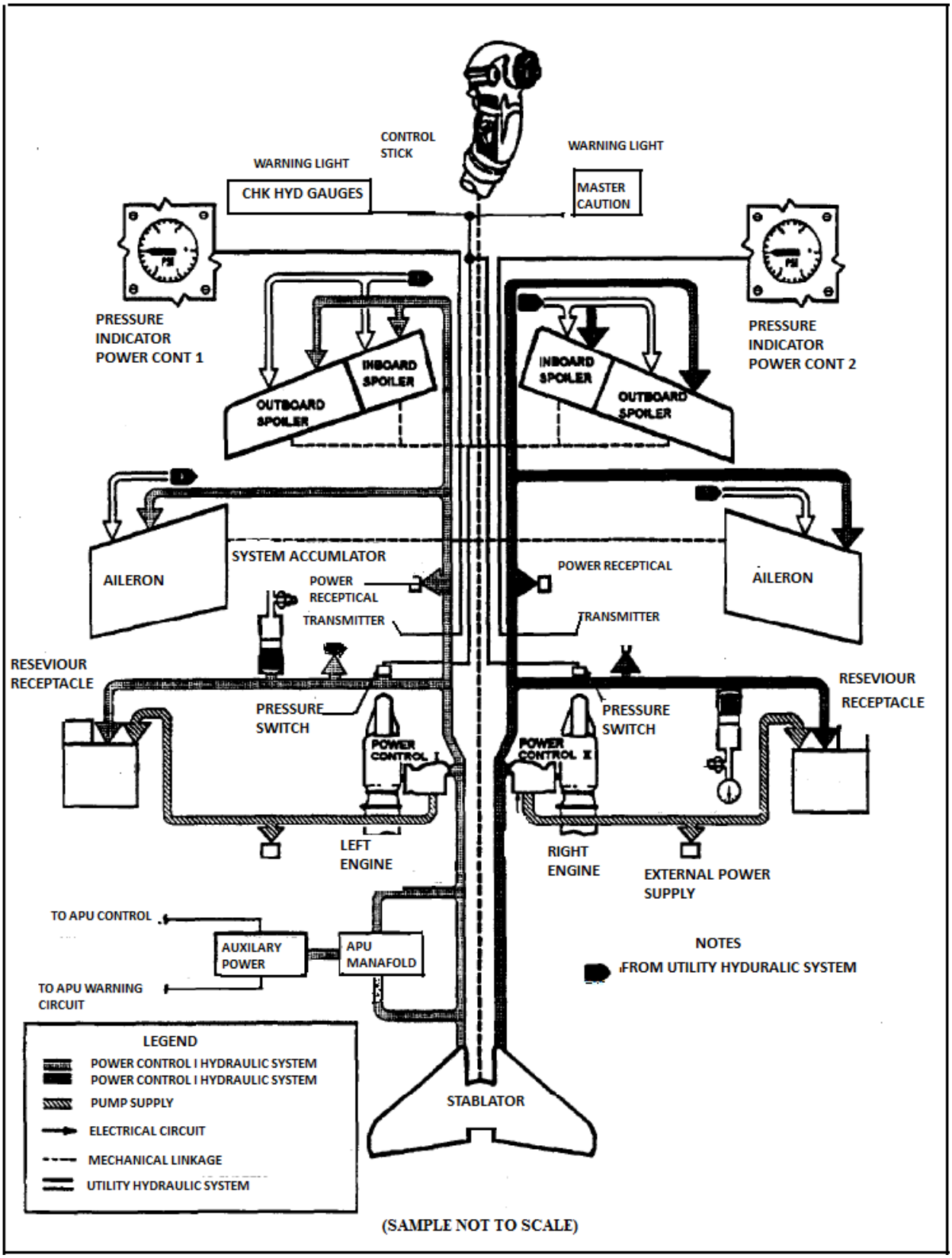


FIGURE 27. Example use of patterns instead of color.

TO XX-XXX-XX-X

CHAPTER 8
DIFFERENCE DATA SHEETS

8.1 INTRODUCTION.

Overhaul and test procedures for models included in this chapter are the same as procedures for Main Landing Gear Assembly, Part No. 12L006-811, except for specific differences noted by the applicable difference data sheet. Chapters 1 and 2 contain complete overhaul instructions for Main Landing Gear Assembly, Part No. 12L006-811.

8.2 INDEX TO PART NUMBERS.

The following index lists applicable part numbers and corresponding page numbers of respective difference data sheets.

(SAMPLE NOT TO SCALE)

FIGURE 28. Example first page of difference data chapter.

TO XX-XXX-XX-X

DIFFERENCE DATA SHEET

MAIN LANDING GEAR ASSEMBLY — PART NO. 12L006-8

THE INSTRUCTIONS CONTAINED IN THE PRECEDING CHAPTERS OF THIS TECHNICAL MANUAL ARE APPLICABLE TO THIS MODEL EXCEPT FOR THE DIFFERENCES CITED IN THIS DIFFERENCE DATA SHEET

LEADING PARTICULARS.

Same as for Part No. 12L006-811 except:

Stroke	10.920 to 11.353
Weight	6.7 pounds

SPECIAL TOOLS.

Same as for Part No. 12L006-811.

DISASSEMBLY.

Same as for Part No. 12L006-811 (see Figure 1-4) except:

a. To remove cap (8), cut lockwire on lock (20), loosen lockring (19), then unscrew cap.

b. Remove piston (18), then remove rings (14 and 16) and packings (15 and 17).

NOTE

Do not remove nameplate (22) from barrel (21).

c. Remove rod assembly (34), rings (24 and 25) and scraper (31).

d. Remove bushing (23).

CLEANING.

Same as for Part No. 12L006-811 (see Figure 1-4) except Degreasing Solvent, MIL-S-14756 shall be used to clean the piston (18) and rod assembly (34).

INSPECTION.

Same as for Part No. 12L006-811 (see Figure 1-4) except:

a. Inspect rod assembly (34) chrome plated surfaces for scoring and scratches. Reject part if plated surface is penetrated.

b. Inspect bushing (23) for maximum inside diameter of 0.753 inch.

c. Inspect piston (18) chrome plated surfaces for scoring and scratches. Reject part if plated surface is penetrated.

d. Inspect spring (4) for minimum length of 1.15 inch with 0.4 pound load applied. Ends of spring must be square to centerline within 5°.

REPAIR AND REPLACEMENT.

Same as for Part No. 12L006-811.

LUBRICATION.

Same as for Part No. 12L006-811.

ASSEMBLY.

Same as for Part No. 12L006-811 (see Figure 1-4) except:

a. Install trunion (32) by bottoming barrel (21) in trunion. Unscrew barrel (21) until indicator groove in barrel threads is exposed.

b. Install lockring (19), then screw on cap (8). Tighten lockring. Safety wire cap to lock (20).

(SAMPLE NOT TO SCALE)

8-3/(8-4 blank)

FIGURE 29. Example difference data sheet.

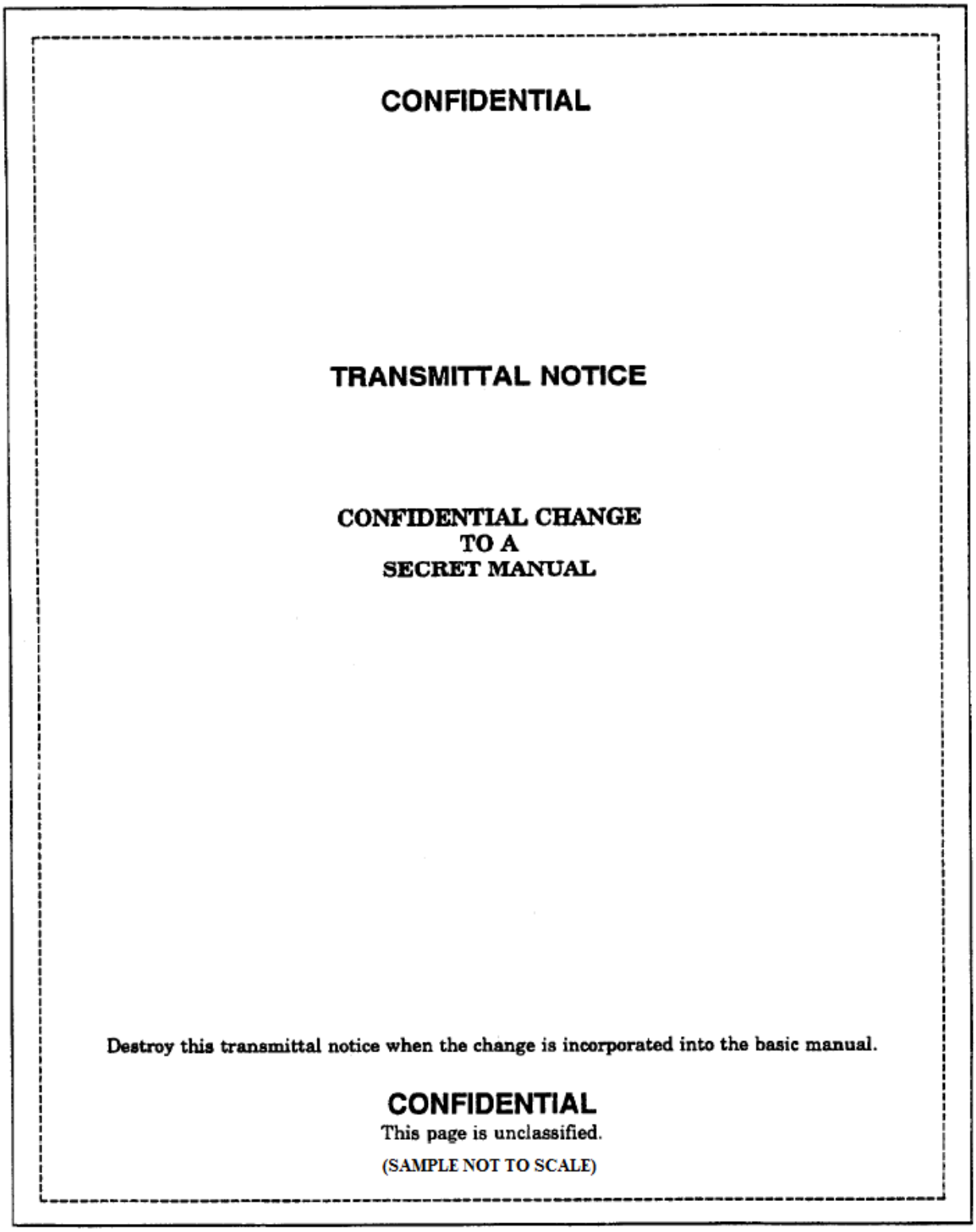


FIGURE 30. Example transmittal cover sheet.

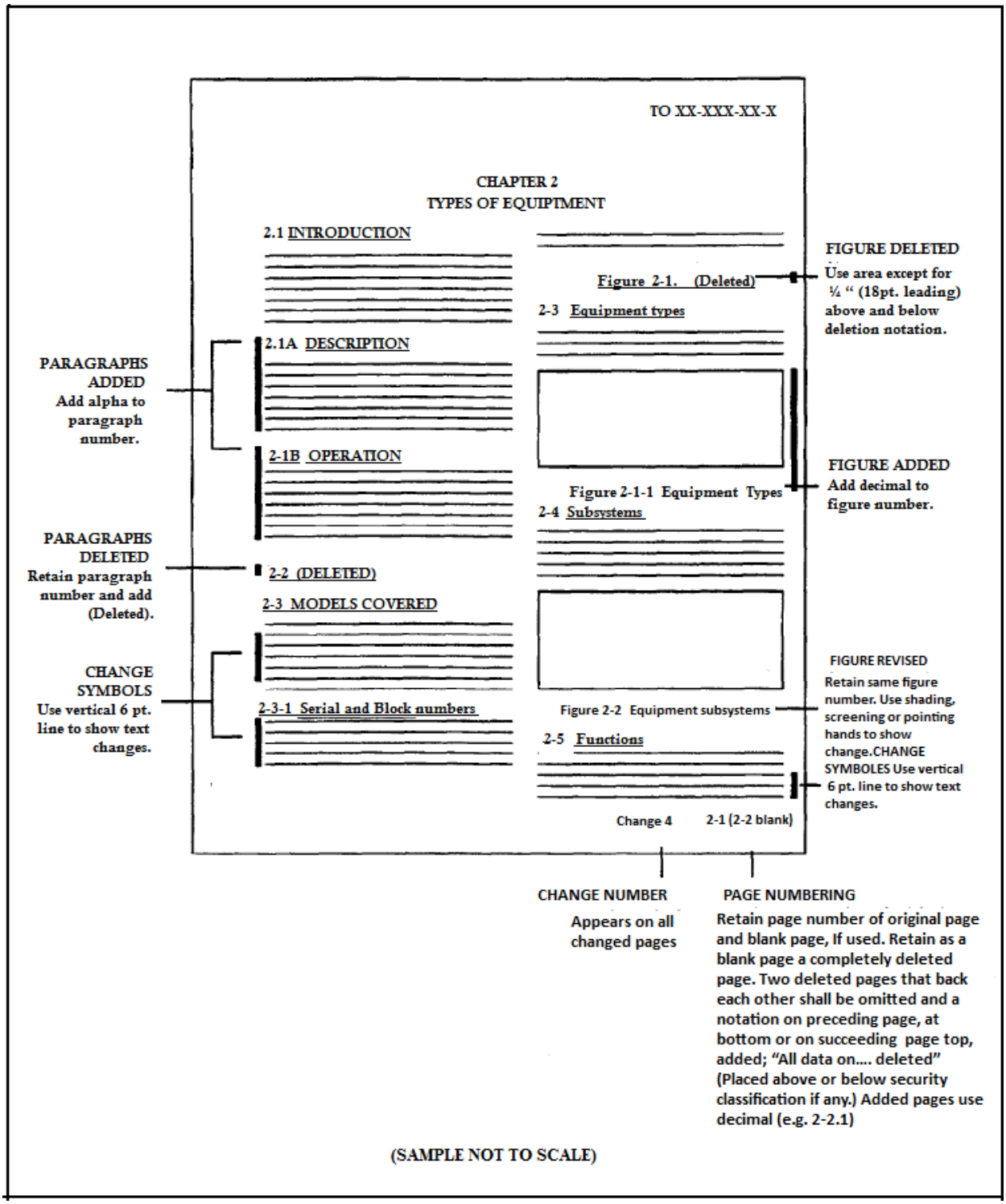


FIGURE 31. Example change page markings.

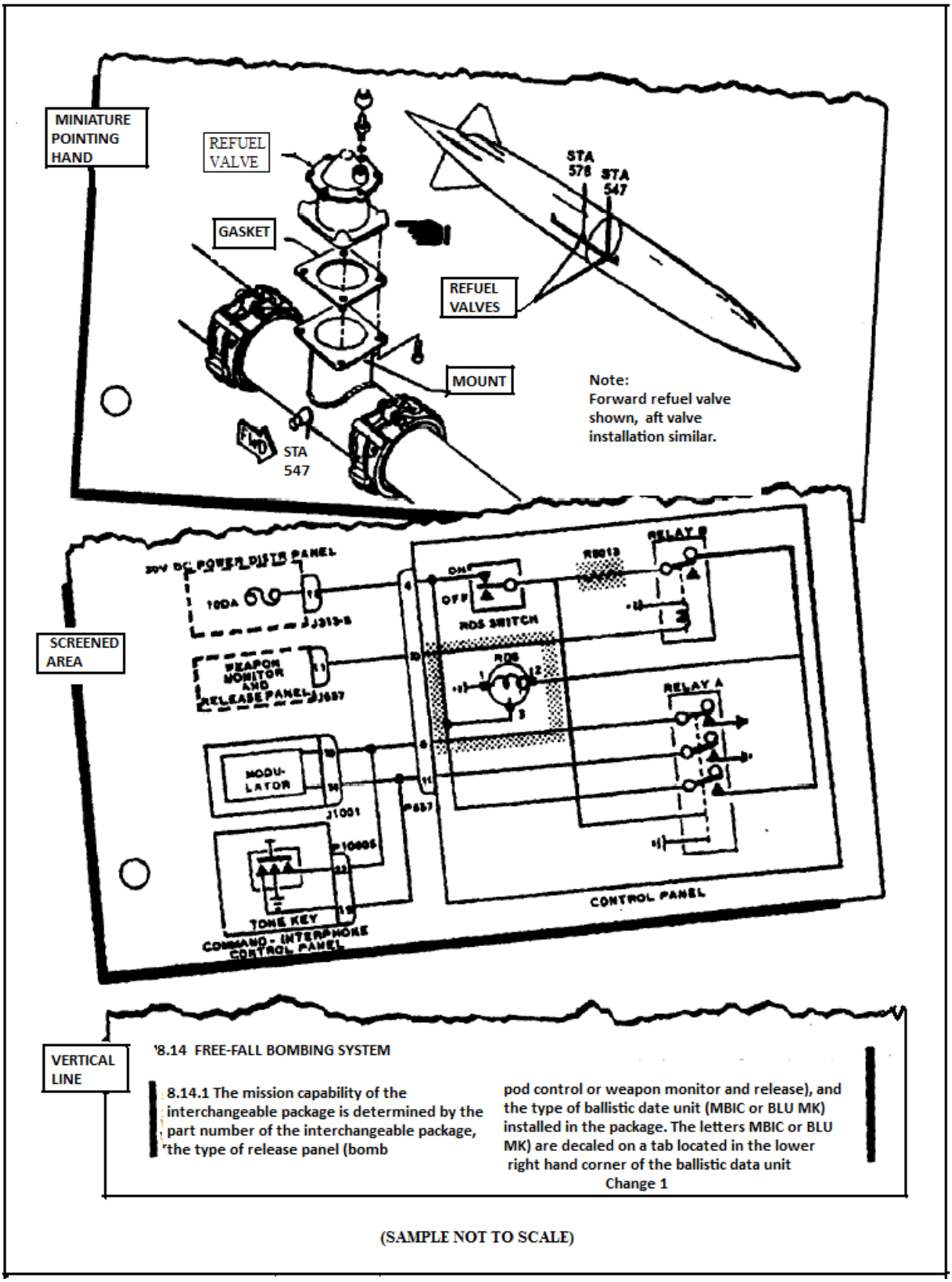


FIGURE 32. Example change symbols.

TM 9-4931-334-14/2
C1

CHANGE

NO. 1

HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, D. C. 6 June 1992

Operator's Organizational, Direct Support

and General Support Maintenance Manual

TEST SET

RADAR AN/TPM-22

(4931-707-1229)

TM 9-4931-334-14/2, 5 June 1990, is changed as follows:
1. Remove old pages and insert new pages as indicated below.
2. New or changed material is indicated by a vertical bar in the margin of the page.
3. Added or revised illustrations are indicated by a vertical bar adjacent to the illustration identification number.

Remove Pages	Insert Pages	Remove Pages	Insert Pages
5-13 through 5-16	5-13 through 5-16	6-113 and 6-114	6-113 and 6-114
6-1 and 6-2	6-1 and 6-2	6-151 and 6-152	6-151 and 6-152
6-23 and 6-24	6-23 and 6-24	6-167 and 6-168	6-167 and 6-168
6-25 and 6-26	6-25, 6-26, 6-26.1 and 6-26.2	6-177 and 6-178	6-177 and 6-178
6-27 through 6-38	6-27 through 6-38	6-183 through 6-192	6-183 through 6-192
6-43 through 6-46	6-43 through 6-44.4 through 6-46	6-195 through 6-198	6-195 through 6-198
6-51 through 6-56	6-51 through 6-56	6-199 and 6-200	6-199 and 6-200
6-75 through 6-80	6-75 through 6-80,680.1 and 6-80.2	6-213 through 6-216	6-213 through 6-216
6-81 through 6-88	6-81 through 6-88	6-219 through 6-224	6-219 through 6-224
6-95 and 6-96	6-95 and 6-96	B3 and B4	B3 and B4

File this change sheet in front of the publication for reference purposes.

(SAMPLE NOT TO SCALE)

FIGURE 33. (A) (M) Example change instruction sheet.

TO XX-XXX-XX-XSS-1

SAFETY SUPPLEMENT

TECHNICAL MANUAL
MAINTENANCE INSTRUCTIONS

INTEGRATED ELECTRONIC CENTRAL
TARGET IDENTIFICATION SYSTEM ELECTRO-OPTICAL (TISEO)

USAF SERIES F-1A AIRCRAFT

This publication supplements TO XX-XXX-XX-X dated September 1992. Change 2 dated 12 April 1983. Reference to this supplement will be made on the title page of the basic manual by personnel responsible for maintaining the manual in current status.

COMMANDERS ARE RESPONSIBLE FOR BRINGING THIS SUPPLEMENT TO THE ARRENRION OF ALL AFFECTED PERSONNEL

Distribution statement C. Distribution authorized to US Government agencies and their contractors; Administrative or operational Use; 4 September 1992. Other requests for this document shall be referred to HQ ESC/AV-2S Wright Patterson AFB, OH 45435-5001

WAR NING- This document contains technical data whose export is restricted by the Arms Export Control Act (Title 22, U.S.C SEC 2751, at seq.) or the Export Administrative Act of 1979, as amended. Title 50, U.S.C. App 2401 at seq Violations of these export laws are subject to severe criminal penalties. Disseminate in accordance with provisions of DoD Directive 5230.25.

HANDLING AND DESTRUCTION NOTICE-Comply with destruction statement and destroy by any method that will prevent disclosure of contents or reconstruction of the document

Published under authority of the Security of the Air Force

1. Page 2-34, paragraph 2.15.4, step g, of basic manual is amended to read as follows;

g. Set meter reading to 0.72 + 0.12 Vac at TP 6064 by adjusting the ELEVATOR CONTROL knob on the TISCO CONTROL panel.

2. Page 2-43, paragraph 2.19.3 step e of basic manual is amended to read as follows:

e. Set meter reading to 1.43 + 0.12 Vac at TP 6051 by adjusting the AZIMUTH CONTROL knob on the TISCO CONTROL panel.

3. Page 8-53, paragraph 8.33.3.1, step b. of basic manual is amended to add Warning preceding step b. to read:

WARNING

To prevent possibility of electrical shock after TCTO 1F-1-642, the mount's cable connector must be wrapped with silicone tape and cable stowed to mount with a retaining strap prior to installing mount in aircraft.

4. Page 9-62, paragraph 9.33.3.1, and step b. of basic manual is amended to add Warning preceding step b. to read:

WARNING

To prevent possibility of electrical shock, after TCTO 1F-1-642, the mount's cable connector must be wrapped with silicon tape and cable stowed to mount with a retaining strap prior to installing mount in aircraft.

SAFETY SUPPLEMENT

(SAMPLE NOT TO SCALE)

FIGURE 34. Example safety supplement.

TO XX-XXX-XX-XS-1

OPERATIONAL SUPPLEMENT

TECHNICAL MANUAL
STORAGE AND MAINTENANCE INSTRUCTIONS

BAROSTAT LOCK INITIATOR
PART NO. 90167-3

USAF SERIES F-1A AIRCRAFT

This publication supplements TO XX-XXX-XX-X dated 4 September 1992 Change 2 dated 12 April 1993. Reference to this supplement will be made on the title page of the basic manual by personnel for maintaining the manual in current status.

COMMANDERS ARE RESPONSIBLE FOR BRINGING THIS SUPPLEMENT TO THE ATTENTION OF ALL AFFECTED PERSONEL

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HANDLING AND DESTRUCTION NOTICE –Comply with distribution statement and destroy by any method that will prevent disclosure of contents or reconstruction of the documents.

4 MARCH 1994

1. **Page 3-59, Figure 3-13 (Sheet 3), NOTES of basic manual is amended to add NOTE 3. to read:**

   3. **CLEARANCE BETWEEN FORWARD AND AFT VARI-RAMP AND INTAKE STRUCTURE, TOP AND BOTTOM, SHALL BE 0.06 INCH MINIMUM.**

2. **Page 6-12, paragraph 4.15, reference to PPP-T-620 (four places) of basic manual is amended to read T-T-620 (four places).**

THE END

(SAMPLE NOT TO SCALE)

1/(2 blank)

OPERATIONAL SUPPLEMENT

FIGURE 35. Example operational supplement.

TO XX-XXX-XX-XTP-1

Paragraph 4.6.4.7, step c. is amended to read to read:
c. Press 1.

Paragraph 4.6.4.6, step k. is amended to read:
k. Purge with nitrogen in accordance with TO XX-XXX-XX-X.

4-16

(SAMPLE NOT TO SCALE)

FIGURE 36. Example TOPS page.

TO XX-XXX-XX-XTP-1

TECHNICAL ORDER PAGE SUPPLEMENT
TECHNICAL MANUAL
STORAGE AND MAINTENANCE INSTRUCTIONS
BAROSTAT LOCK INITIATOR
PART NO. 90167-3
USAF SERIES F-1A AIRCRAFT

This TOPS Supplements TO XX-XXX-XX-X dated 4 September 1992 Chang 2 dated 12April 1993. Reference to this Supplement will be made on the title page of the basic manual by personal responsible for maintaining the manual in current status.

COMMANDERS ARE RESPONSIBLE FOR BRINGING THIS SUPPLEMENT TO THE ATTENTION OF ALL AFFECTED PERSONNEL

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Published under the authority of the Secretary of the Air Force

4 MARCH 1994

LIST OF EFFECTIVE PAGES

NOTE: This TOPS contains supplementary information. Text pages do not supersede pages of basic TO but will be inserted facing the amended page. Total number of effective TOPS pages is 3.

Page No.	Page No.	Page No.	Page No.	Page No.
4-16				
5-14				
5-17				

(SAMPLE NOT TO SCALE)

FIGURE 37. Example TOPS title page.

Figure 38 Deleted

Figure 39 Deleted

Figure 40 Deleted

Figure 41 Deleted

TM XXXXXX-OR

Table 8-18. Table Title Here. - Continued

(1) FIG NO	(2) INDEX NO	(3) SMR CODE	(4) NSN	(5) CAGE	(6) PART NUMBER	(7) DESCRIPTION & USABLE ON CODE (UOC)	(8) REPL ECO	(8) REPL MAN	(9) U/M	(10) QTY
8-18	77	PAOZZ	5310-01-354-4625	54355	6680-0912	WASHER, SHLDR, NYLON		X	ea	6
8-18	78	XBOZZ		01365	835028A0540	BRACKET			ea	3
8-18	79	PAOZZ	5307-01-276-7535	46384	FH-440-8	STUD, SELF-CLINCHING			ea	12
8-18	80	PAOZZ	5310-01-083-7199	54355	6640-3121	WASHER, FL, NYL, 0.322 ID X 0.502 OD		X	ea	6
8-18	81	PAOZZ	5310-00-188-3744	96906	MS932O-09	WASHER, FL, STL, 0.215 ID X 0.438 OD	X		ea	10
8-18	82	PAOZZ	5305-00-984-6212	96906	MS35206-265	SCREW, MACH, STL, 0.190-24 UNC, RH, 0.750 IN FSTNR LG	X		ea	6
8-18	83	XBODD		01365	835028C0152	JUNCTION BOX A ASSEMBLY			ea	1
8-18	84	PAOZZ	5305-00-059-3660	96906	MS51958-64	SCREW, MACH, STL, 0.190-32 UNF THD, 0.625 IN FSTNR LG	X		ea	4
8-18	85	XBOZZ		01365	835028A0928	GUARD, AFT STARBOARD HOUSING			ea	1
8-18	86	PAOZZ	4720-01-343-5830	01365	835028A0819	GUARD, HOSE-TUBING, SSTL, 20 GAGE, 4.880 IN LG			ea	2
8-18	87	XBOZZ		01365	835028A0925	GUARD, AFT PORT HOUSING			ea	1
8-18	88	PAOZZ	5305-01-360-3040	96906	MS90728-61	SCREW, CAP, HEX HD, STL, 0.375-16 UNC THD, 1.125 IN FSTNR LG	X		ea	4
8-18	89	PAOZZ	5305-01-140-9118	96906	MS90728-59	SCREW, CAP, HEX HD, STL, 0.375-16 UNC THD, 0.875 IN FSTNR LG	X		ea	10
8-18	90	PAOZZ	5310-00-934-9758	96906	MS35649-202	NUT, PL, HEX, STL, 0.190-24 UNC, RH	X		ea	4
8-18	91	XBOZZ		01365	835028A0910	GUARD, HOUSING, PORT			ea	1
8-18	92	XBOZZ		01365	835028A0952	GUARD, FORWARD PORT, JUNCTION			ea	1
8-18	93	XBOZZ		01365	835028A0930	GUARD, FORWARD STARBOARD HOUSING			ea	1
8-18	94	XBOZZ		01365	835028A0939	GUARD, HOUSING, STARBOARD			ea	1

(SAMPLE NOT TO SCALE)

FIGURE 42. (M) RPSTL and explanation of columns.

TM XXXXXX-XX

CHAPTER 8

PARTS LIST

Section I. INTRODUCTION

8-1. SCOPE.

This Repair Parts and Special Tools List (RPSTL) lists and authorizes spare and repair parts, special tools, special test, measurement, and diagnostic equipment (TMDE), and other special support equipment required for operation and maintenance of the LMC Mark 154 Mod 0. It authorizes the requisitioning, issue and disposition of spares, repair parts and special tools as indicated by the source, maintenance and recoverability (SMR) codes.

8-2. GENERAL.

This repair parts and special tools list is divided into the following sections:

1. Section II. Repair Parts List. A list of spares and repair parts authorizedthis RPSTL for use in the performance of maintenance. This list also includes parts which must be removed for replacement, with the parts in each group listed in ascending figure and index number sequence. A list of special tools are listed separately in their own group (Table X-28) within Section II. Items listed are shown on the associated illustration.

2. Section III. National Stock Number Cross Reference. Section III consists of a cross reference from NSNs to figure/index numbers, part numbers and Contractor and Government Entity Codes (CAGEC). Section III is arranged in NSN sequence and contains only those items listed in Section II which have an NSN.

3. Section N. Part Number Cross Reference. Section N consists of a cross reference from part numbers to CAGEC, figure/index numbers and NSNs for all items listed in Section II for which part numbers are available. Section N is arranged in alphanumeric sequence by part number.

8-3. EXPLANATION OF COLUMNS (SECTION II)

1. Column 1 (Fig. No.). Indicates the figure number of the illustration in which the item is shown.

2. Column 2 (Index No.). Indicates the number used to identify items called out on the illustration.

3. c. Column 3 (SMR Code).

   a. Source Code. (use the contents of paragraph 8-4.1.)

   b. Maintenance Code. (use the contents of paragraph 8.4.2.)

   c. Recoverability Code. (use the contents or paragraph 8-4.3.)

4. Column 4 (NSN). The national stock number for the item is listed in this column.

5. Column 5 CAGEC. The commercial and government entity code is a 5-digit code which is used to identify the manufacturer, distributor or government agency/activity that supplies the item.

6. Column 6 (Part Number). Indicates the primary number used by the manufacturer (individual, company, fum corporation, or government activity) which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards and inspection requirements to identify an item or range of items.

(SAMPLE NO TO SCALE)

8-1

FIGURE 42. (M) RPSTL and explanation of columns. - Continued.

TM XXXXXX-XX

8-3. EXPLANATION OF COLUMNS (SECTION II) (CONT)

NOTE

When you use an NSN to requisition an item, the item you receive may have a different part number from the number listed.

7. Column 7 (Description and Usable on Code UOC). This cohunn includes the federal item name, and when required, a minimum description to identify the item.

8. Column 8 (REPL ECO/MAN)). This column includes the replacement code of an item. An 'X in the EC0 column indicates that when in doubt of the item's serviceability, it should be replaced rather than spend labor-hours to inspect and determine the item's serviceability. An 'X' in the MAN column indicates that whenever the item is removed or loosened it must be replaced. If there is no 'x in either the EC0 or MAN column, the item has special inspection procedures addressed in the text of the manual or in a separate table.

9. Column 9 (U/M). This column includes the unit of measure of an item. The abbreviation shown in the U/M column indicates the basic quantity of the item as used in performing the actual maintenance function. The measure is expressed by a two-character alpha abbreviation.

10. Column 10 (OTY). The QTY (quantity per Figure) column indicates the quantity of the item used in the breakout shown on the illustration/Figure, which is prepared for a group/assembly. A 'V' appearing in this column instead of a quantity indicates that the quantity is variable and the quantity may vary from application to application.

8-4. SMR CODE.

1. Source Code. Indicates the manner of acquiring support items for maintenance, repair, or overhaul of end items. Source codes are entered in the first and second position of the Uniform SMR Code format as follows:

Code	Dinition
PA	Item procured and stocked for anticipated or known usage.
PB	Item procured and stocked for insurance purpose because essentiality dictates that a minimum quantity be available in the supply systems.
PC	Item procured and stocked and which otherwise would be coded PA except that is deteriorative in nature.
PD	Support item, excluding support equipment, procured for initial issue or outfitting and stocked only for subsequent or additional initial issues outfitting. Not subject to automatic replenishment.
PE	Support equipment procured and stocked for initial issue 01 outfitting to specified maintenance repair activities.
PF	Support equipment which will not be stocked but which will be centrally procured on demand.
PG	Item procured and stocked to provide for sustained support for the life of the equipment.
KD	An item of depot overhaul/repair kit and not purchased separately. Depot kit is defined as a kit that provides items required at the time of overhaul or repair.
KF	An item of a maintenance kit and not purchased separately. Maintenance kit is defined as a kit that provides an item that can be replaced at organizational or intermediate levels of maintenance.
KB	Item included in both a depot overhauYrepair kit and a maintenance kit.
MO	Item to be manufactured 01 fabricated at organizational level.
MF	Item to be manufactured or fabricated at the third echelon maintenance level.

8-2

(SAMPLE NOT TO SCALE)

FIGURE 42. (M) RPSTL and explanation of columns. - Continued.

TM XXXXXX-XX

8-4. SMR CODE. (CONT)

Code	Definition
MH	Item to be manufactured or fabricated at the fourth echelon maintenance level.
MD	Item to be manufactured or fabricated at depot maintenance level.
A0	Item to be assembled at organizational level.
AF	Item to be assembled at the third echelon maintenance level.
AH	Item to be assembled at the fourth echelon maintenance level.
AD	Item to be assembled at depot maintenance level.
XA	Item is not procured or stocked because the requirement for the item will result in replacement of the next higher assembly.
XB	Item is not procured or stocked. If not available through salvage, requisition.
XC	Installation drawing diagram, instruction sheet, field service drawing, that is identified by manufacturer s number.
XD	A support item that is not stocked. When required, item will be procured through normal supply channels.

2. Maintenance Code. Maintenance codes are assigned to indicate the levels of maintenance authorized to USE and REPAIR support items. The maintenance codes are entered in the third and fourth positions of the Uniform SMR Code format as follows:

a. The maintenance code entered in the third position will indicate the lowest maintenance level authorized to remove, replace, and use the support item. The maintenance code entered in the third position will indicate one of the following levels of maintenance:

Code	Application/Explanation
O	Support item is removed, replaced, used at organizational level.
F	Support item is removed, replace, used at third echelon level.
H	Support item is removed, replaced, used at fourth echelon level.
D	Support item that are removed, replaced, used at depot or specialized repair activity only.

b. The maintenance code entered in the fourth position indicates whether the item is to be repaired and identities the lowest maintenance level with the capability to perform complete repair (i.e., all authorized maintenance functions). This position will contain one of the following maintenance codes:

Code	Application/Explanation
O	The lowest maintenance level capable of complete repair of the support item is the organizational level.
F	The lowest maintenance level capable of complete repair of the support item is the third echelon level.
H	The lowest maintenance level capable of complete repair of the support item is the fourth echelon level.
D	The lowest maintenance level capable of complete repair of the support item is the depot level.

Code	Application/Explanation
L	Repair restricted to designated Specialized Repair Activity.

(SAMPLE NOT TO SCALE)

8-3

FIGURE 42. (M) RPSTL and explanation of columns. - Continued.

TM XXXXXX-XX

Code	Application/Explanation
Z	Nonrepairable. No repair is authorized.
B	No repair is authorized. The item may be reconditioned by adjusting, lubricating, etc., at the user level. Not parts or special tools are procured for the maintenance of this item.

3. Recoverability Code. Recoverability codes are assigned to support items to indicate the disposition action on unserviceable items. The recoverability code is entered in the title position of the Uniform SMR Code format as follows:

Code	Application/Explanation
Z	Nonrepairable item. When unserviceable, condemn and dispose at the level indicated in position 3.
O	Repairable item. When uneconomically repairable, condemn and dispose at organizational level.
F	Repairable item. When uneconomically repairable, condemn and dispose at third echelon level.
H	Repairable item. When uneconomically repairable, condemn and dispose at fourth echelon level.
D	Repairable item. When beyond lower level repair capability, return to depot, Condemnation and disposal not authorized beyond depot level.
L	Repairable item. Repair, condemnation, and disposal not authorized below depot/ specialized repair activity level.
	A Item requires special handling or condemnation procedures because of specific reasons (i.e., precious metal content, high dollar value, or hazardous material). Refer to appropriate manuals/directives for specific instructions.

8-5. EXPLANATION OF COLUMNS (SECTION III)

1. Stock No.. This column lists the stock number in NSN sequence. Section III contains only those items listed in Section II which have an NSN.

2. Fig/Index. This column contains figure and index numbers where the item is identified/located. This column corresponds to the figure and index numbers listed in Section II, Columns (1) and (2).

3. Mfg. Code. This column contains the Contractor and Government Entity Code (CAGEC). The CAGEC is a 5-digit numeric code used to identify the manufacturer, distributor, or Government agency, etc., that supplies the item.

4. Part No.. This column contains the part number.

8-6. EXPLANATION OF COLUMNS (SECTION IV)

1. Part No.. This column indicates the primary number used by the manufacturer (individual, firm, corporation or Government activity), which controls the design and characteristics of the item by means of its engineering drawings, specifications, standards and inspection requirements to identify an item or range of items. This column lists part numbers in ascending alpha numeric sequence. Section IV contains all items listed in Section II.

2. Mfg. Code. This column contains the Contractor and Government Entity Code (CAGEC).

8-4

(SAMPLE NOT TO SCALE)

FIGURE 42. (M) RPSTL and explanation of columns. - Continued.

TM XXXXXX-XX

8-6. EXPLANATION OF COLUMNS (SECTION IV) (CONT)

3. Fig/Index. This column contains figure and index numbers where the item is identified/located, This column corresponds to the figure and index numbers listed in Section II, Columns (1) and (2).

4. Stock No.. This column contains the NSN.

(SAMPLE NOT TO SCALE)

8-5

FIGURE 42. (M) RPSTL and explanation of columns. - Continued.

TM XXXXXX-OR

TABLE OF CONTENTS

(SAMPLE NOT TO SCALE)

FIGURE 43. (M) Example of table of contents.

Figure 44 Deleted

Figure 45 Deleted

(1)TM XXXXXX-XX
(2)VOLUME X OF X

(3)U.S. MARINE CORPS TECHNICAL MANUAL

(4)TYPE OF PUBLICATION
AND MAINTENANCE LEVEL

(5)FOR

(6)NOMENCLATURE OF EQUIPMENT

(6)TYPE, MODEL, PART NUMBER

(6)NATIONAL STOCK NUMBER

(7)

(8)THIS PUBLICATION SUPERSEDES TM XXXXXX-XX DATED MONTH XXXX.

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(14)MONTH XXXX
(15)PCN XXX XXXXXX XX

(SAMPLE NOT TO SCALE)

FIGURE 46. Marine Corps cover page

	Notes	Type Size
1.	The acquiring activity shall furnish the TM identification number(s). If the manual will be jointly used by more than one Service, the acquiring Service's number shall appear at the top with the other Service's number immediately below it. Each Service's number shall be prefixed with the word Army, Navy, Marine Corps, or Air Force as appropriate. All numbers shall appear above the ruled line, near the right margin.	24 to 30
2.	Required for multivolume/multipart sets only, located below TM identification number.	22 to 28
3.	The heading U.S. MARINE CORPS TECHNICAL MANUAL shall appear in the upper center portion of the page below the TM identification number and above the ruled line.	18 to 24
4.	The title is required to provide all information necessary to relate the manual to its subject and content. The title consists of the type of manual (e.g. Maintenance Manual, Illustrated Parts Breakdown, Repair Parts and Special Tools List, Inspection Manual etc.), the level of maintenance (Crew/Operator, Field Level, and Sustainment), the prime title, and the subtitle as applicable.	24 to 30
5.	The word FOR shall be placed between the Level of Maintenance and the Nomenclature of the Equipment.	16
6.	The prime title consists of Nomenclature of Equipment, Type, Model, Part Number, and National Stock Number. Also, the classification of the equipment nomenclature shall be indicated as specified in DOD Manual 5200.1-R, Chapter IV or DOD 5220.22-M, Section 11-19, when the manual itself is classified.	18 to 24
7.	The Department of the Navy, United States Marine Corps, seal is used and shall be 2 inches in diameter.	NA
8.	When a manual supercedes a previous manual, a supercedure notice shall be placed in the space indicated.	10 to 12 Bold
9.	The distribution statement shall follow "DISTRIBUTION STATEMENT _:" and be placed in the space indicated	10 to 12
10.	When required, the export control notice shall be placed in the space indicated.	10 to12
11.	The destruction notice shall be placed in the space indicated.	10 to 12
12.	When required, the copyright credit line shall be placed in the space indicated.	10 to 12
13.	The words FOR OFFICIAL USE ONLY shall be centered a the bottom of the cover just below the ruled line as indicated.	18 to 24
14.	The publication date is the last working day of the month in which the PM signs the promulgation page. It shall be right justified at the bottom of the cover.	18 to 24
15.	The PCN shall be placed below the publication date and is right justified.	14

(SAMPLE NOT TO SCALE)

FIGURE 46. Marine Corps cover page - Continued.

TO 5A-2-4-6-3K
15 MAY 2012

COMMERCIAL MANUAL SUPPLEMENT
TECHNICAL MANUAL

THIS REVISION SUPERSEDES TO 5A-2-4-6-33, DATED 15 AUGUST 2011 IN ITS ENTIRETY.

PURPOSE: This technical publication is issued for the purpose of identifying and authorizing the following commercial manual for Air Force use.

MANUFACTURER: Benton Harbor Aviation Tools Group
Kalamazoo, MI (Code: 00001)
CONTRACT NO: F12345-70-C-0123
EQUIPMENT: Torque Adapter 180000-1
TITLE: Overhaul Instructions (with Parts Breakdown), Torque Adapter 180000-1
ADDITIONAL IDENTIFICATION: Publication No. ATA 60-1
DATE: 1 July 2003, Revision 1-17 April 2011

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1 Page i/ii TOC - After Chapter 12 Illustrated Parts List - ADD as follows:

ADD: Appendix A Item Unique Identification (IUID) Required Information.....(PAGE) A-1

2 Page 101 - ADD new sentence to paragraph 2. as follows:

Refer to paragraph 4 A. for Item Unique Identification (IUID) marking instructions and Appendix A, Table A-1. for identification of parts to be marked.

3 Page 201/202, Add warning prior to text as follows:

WARNING

Compressed air used for cleaning purposes shall not exceed 30 psi and then shall be used only when goggles or face shields are used for personnel eye protection.

4 Page 301 - ADD new paragraph 4.A. as follows:

4.A. ITEM UNIQUE IDENTIFICATION (IUID).
Visually inspect the identification plate/label/item for the Unique Item Identifier (UII) marking. If present, visually inspect for damage to the symbol. Ensure readability by using hand-held electronic reader, if symbol is not present or damaged mark/restore. REF: Drawing 200123456, Appendix A, Table A-1. of this T.O. for identification of parts to be marked, T.O. 00-25-260, and MIL-STD-130.

FIGURE 47. COTS supplement package

TO 5A-2-4-6-3K

5 Page 401, Section 5, Paragraph C.; Change as follows:

C INSTRUCTIONS FOR HANDLING DIODES AND TRANSISTORS.

CAUTION

Diodes and transistors can be damaged if correct procedures are not observed when handling them. Proper methods are necessary to prevent damage caused by excessive heat, surge currents, and excessive peak inverse voltage. Mistakes that rarely cause electron tube burnout usually permanently damage a diode or transistor. The following paragraphs outline methods of preventing excessive heat and surge currents.

6 Page 701, Section 8, Paragraph A.; Delete paragraph A.

7 Remove the attached Identifying Publication Cover Page and insert the page ahead of the current commercial title page. Post this supplement in the back of the manual as required by TO 00-5-1.

2

FIGURE 47. COTS supplement package - Continued.

TO 5A-2-4-6-3
15 MAY 2012

IDENTIFYING TECHNICAL PUBLICATION SHEET FOR COMMERCIAL MANUAL

THIS PUBLICATION SUPERSEDES TO 5A-2-4-6-3, DATED 15 AUGUST 2011 IN ITS ENTIRETY.

PURPOSE: This technical publication is issued for the purpose of identifying and authorizing the following commercial manual for Air Force use.

MANUFACTURER: Benton Harbor Aviation Tools Group
Kalamazoo, MI (Code: 00001)
CONTRACT NO: F12345-70-C-0123
EQUIPMENT: Torque Adapter
180000-1
TITLE: Overhaul Instructions (with Parts Breakdown), Torque Adapter 180000-1
ADDITIONAL IDENTIFICATION: Publication No. ATA 60-1
DATE: 1 July 2003, Revision 1-17 April 2011

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SUPPLEMENTAL DATA

LIST OF AFFECTED PAGES IN BASIC MANUAL.

i/ii (TOC)	701	706	718	1106
101	702	707	719	1107
201/202	703	708	901/902	1108
301	704	716	1001	
401	705	717	1104	

SUPPLEMENTARY INFORMATION. The information contained in the above identified commercial manual is supplemented as follows:

a. Table of Contents
b. Section 5
c. Section 8

FIGURE 47. COTS supplement package - Continued.

TO 5E6-2-58-3
2 OCTOBER 2015

IDENTIFYING TECHNICAL PUBLICATION SHEET FOR COMMERCIAL MANUAL

THIS PUBLICATION SUPERSEDES TO 5E6-2-58-3, DATED 15 AUGUST 2011, IN ITS ENTIRETY.

PURPOSE: This technical publication is issued for the purpose of identifying and authorizing the following commercial manual for Air Force use.

MANUFACTURER: ELDON PO Box 100
4500 Whirlwind Rd
McGaheysville, VA, 22840
CONTRACT NO: F12345-00-C-0123
REQUISITION NO: NA
EQUIPMENT: N1 Rotor Percent of RPM Indicator 9-201-01
TITLE: Overhaul Instructions with Illustrated Parts Breakdown - N1 Rotor Percent of RPM Indicator - Part Number 9-201-01
ADDITIONAL IDENTIFICATION: ELDON Document 367510
DATE: 2014-11-15

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HANDLING AND DESTRUCTION NOTICE – Destroy by any method that will prevent disclosure of contents or reconstruction of the document.

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NOTICE: Reproduction for non-military use of the information or illustrations contained in this publication is not permitted. The policy for military reproduction is established for the Army in AR 38-4, for the Navy and Marine Corps in OPNAVINST 5510.1, and for the Air Force in AFPD 34-1.

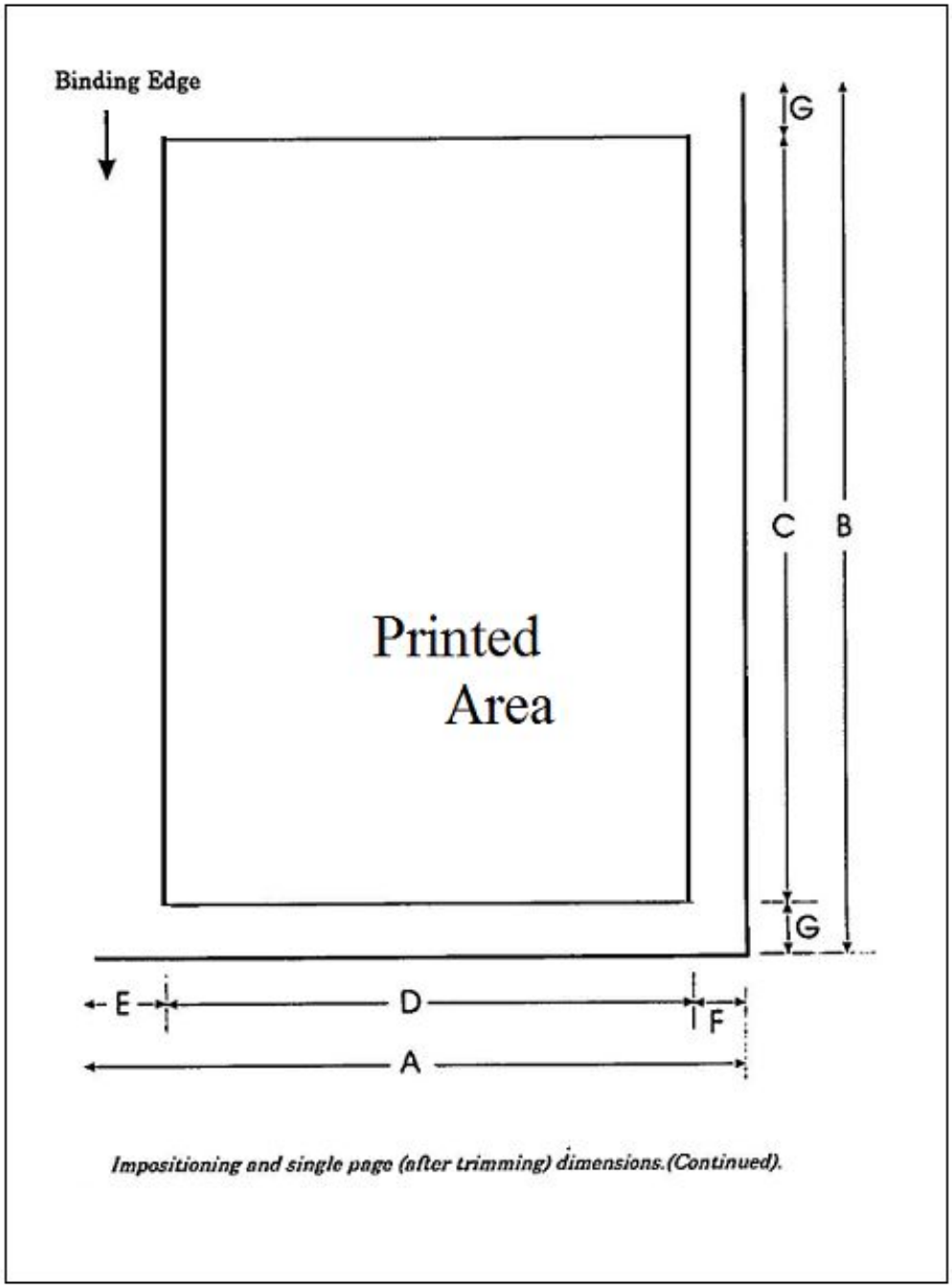
FIGURE 48. ITPS cover sheet for COTS manual (no supplement)

Overall Page Size*		Printed Area*		Binding Edge*	Margins*		
A	B	C	D	E	F	G	⇦ Layout dimension
2.75	‡96	‡91	2.5	0.125	0.125	2.5	Scroll checklist
4	5.5	5	3.125	0.625	0.25	0.25	
4.5	7	6.5	3.625	0.625	0.25	0.25	
4	8	7.5	3.125	0.625	0.25	0.25	
‡24	8	7.5	19.5	4.25	0.25	0.25	4 by 8 foldout
5	8	7.5	4.125	0.625	0.25	0.25	
‡31	8	7.5	25.5	5.25	0.25	0.25	5 by 8 foldout
4.5	8	7.5	3.5	0.75	0.25	0.25	
5.5	7	6.5	4.5	0.5	0.5	0.5	
‡35	7	6.5	29	5.75	0.25	0.25	5.5 by 7 foldout
5	8	7.5	4.5	0.25	0.25	0.25	
8	5	4.5	7.5	0.25	0.25	0.25	Work card
6.5	9.5	9	5.5	0.75	0.25	0.25	
9.5	6.5	6	8.5	0.75	0.25	0.25	
8.5	11	10	7.25	1	0.25	0.5	
‡45	11	7.5	36	8.75	0.25	0.25	8.5 by 11 foldout
11	17	10	15.75	1	0.25	0.5	
17	11	16	9.75	1	0.25	0.5	

Notes:
* All dimensions are in inches.
‡ Maximum

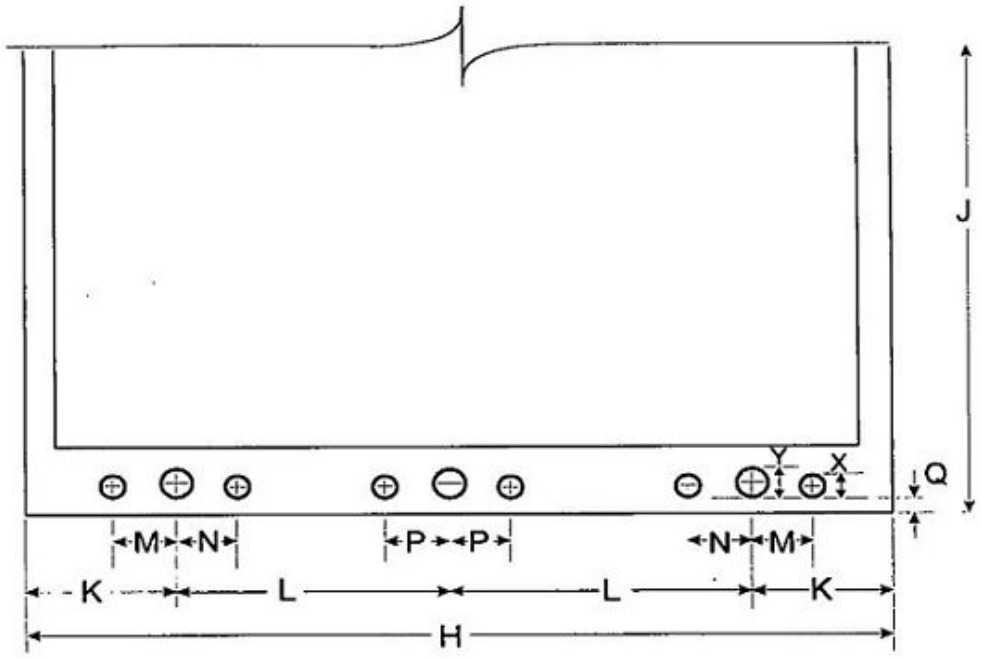
Impositioning and single page (after trimming) dimensions.

FIGURE 49. Page imposition



Impositioning and single page (after trimming) dimensions.(Continued).

FIGURE 49. Page imposition - Continued.



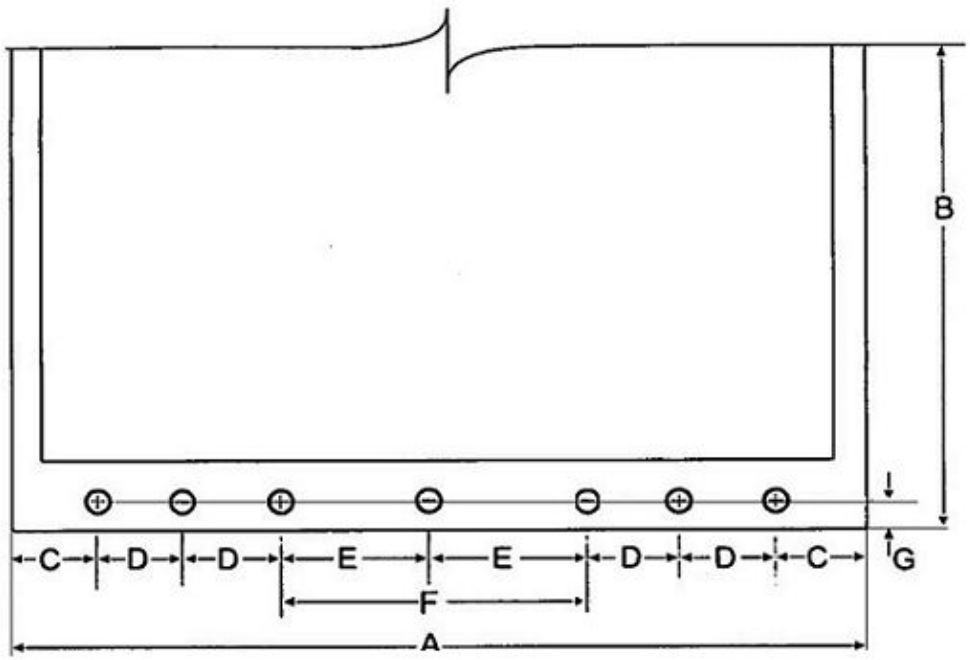
Dimensions
In Inches

Page Size		Hole Placement					
H	J	K	L	M	N	P	Q
6.5	9.5	1.25	3.5	0.75	--	--	0.18"
8.5	11(3 hole)	2	3.5	--	--	--	0.43"
8.5	11(5 hole)	2	3.5	0.75	--	--	0.18"
8.5	11(9 hole)	2	3.5	0.75	0.75	0.75	0.18"
11	17	2	3.5	0.75	--	--	0.37!

X= 0.25
Y= 0.4375

Drilling dimensions for 3,5, and 9 hole manuals.

FIGURE 50. Page drilling



Dimensions
In Inches

Page Size		Hole Placement				
A	B	C	D	E	F	G
7	5.25	0.5	0.75	--	3	0.25
8	4	1	0.75	--	3	0.25
8	4.5	1	1	1	--	0.312
8	5	1	0.75	--	3	0.25
17	11	1.5	2.75	--	2.75	3

NOTE: Holes are 0.25 inch diameter

Drilling dimensions for 6 and 7 hole manuals.

FIGURE 50. Page drilling - Continued.

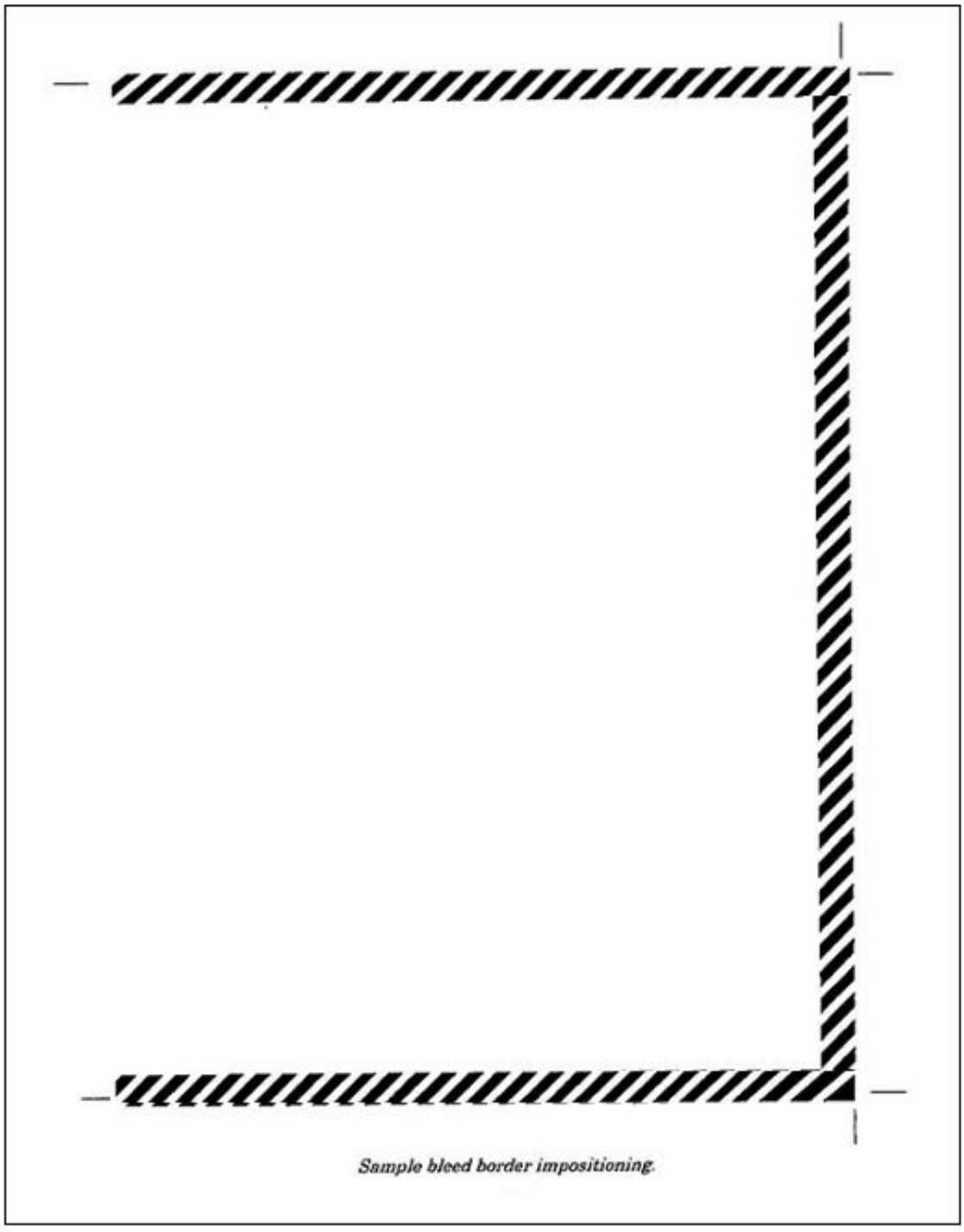


FIGURE 51. Page bleed border

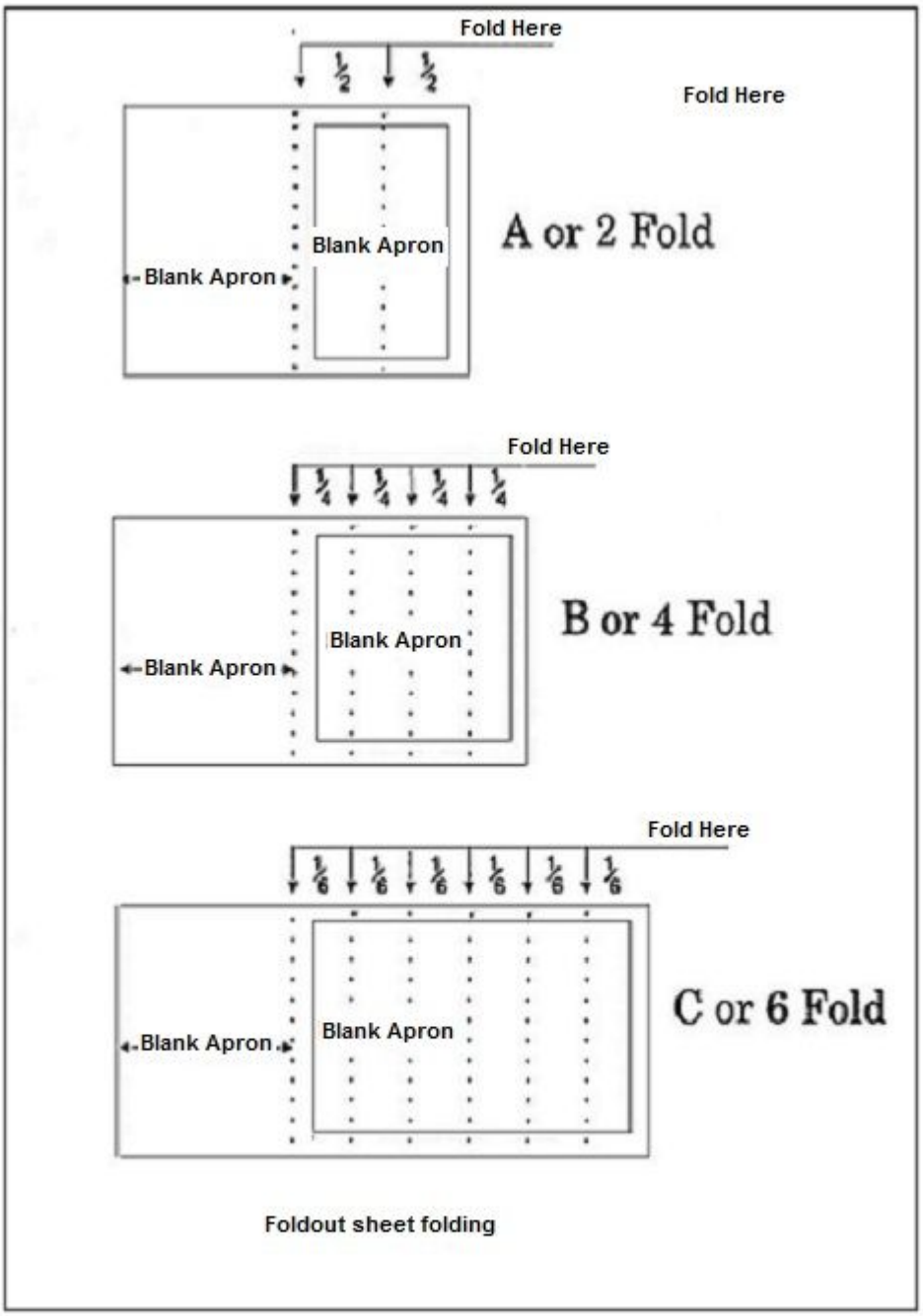


FIGURE 52. Page folding

APPENDIX A

GUIDELINES FOR INCLUSION OF OCCUPATIONAL SAFETY AND HEALTH WARNINGS AND CAUTIONS IN TECHNICAL MANUALS

A.1 SCOPE

A.1.1 Scope. This document includes guidance for the inclusion of Occupational Safety and Health (OSH) guidance in the text of technical manuals. The intent is to provide sufficient information to allow a standardized approach to the task, eliminate some of the confusion, and improve the TM preparation process overall. It does not apply to Flight Manuals. This appendix is a mandatory part of this standard. The information contained herein is intended for compliance.

A.1.2 Philosophy. This standard contains definitions, examples, and general information. This appendix must be used in conjunction with this standard. This appendix contains the following philosophies which are critical to the effective inclusion of OSH guidance in TMs:

a. TMs cannot be made to be stand-alone safety and health documents. They are but one component of a comprehensive safety and health system that includes, among other things, ongoing industrial hygiene programs, ongoing ground and system safety programs, safety education programs, and worker/management involvement. TMs therefore should support, and be supported by, the entire system.

b. The "cry wolf" syndrome definitely applies to WARNINGS in TMs and should be avoided. Simply stated, if you warn about everything, you warn about nothing.

c. Personnel or equipment hazards cannot be controlled strictly through the inclusion of WARNING or CAUTION statements; they are too easily overlooked. Therefore, after exhausting design and engineering considerations, the premium must be on writing effective and safe task procedures. Then WARNINGS and CAUTIONS may be needed to alert and emphasize, but not to provide procedures.

A.2 APPLICABLE DOCUMENTS

Applicable documents N/A.

A.3 GENERAL GUIDANCE

A.3.1 Human Factors. TM procedures are subject to being overlooked or circumvented when they are deemed unworkable or impractical. Careful consideration of environmental factors, equipment design or layout, human nature, and other human factors will help ensure the overall integrity of the task procedures.

A.3.2 When to use WARNING/CAUTION statements.

a. As indicated by the definition in this standard, WARNING statements are reserved for the protection of personnel and CAUTION statements are reserved for equipment or system protection. Do not use CAUTIONS for health hazards.

1. WARNINGS and CAUTIONS should be used for those unique conditions, steps or processes that require additional emphasis because of the inherently dangerous nature of the task or the potential for a “surprise” not otherwise readily obvious from the procedure.

2. A WARNING should be used to advise of injury or occupational illness potential, but only based on the reasonable likelihood that the reader’s health or safety will be impacted in such a manner as to cause immediate concern and a disabling injury or occupational illness will result if the task procedure or stated precaution are not closely followed. Injury is defined as a traumatic bodily harm caused by a single or one day exposure to an external force, toxic substance (usually associated with accidents and spills in work places where the specific agent is not normally in the environment), or physical agent which will result in restricted duty, lost time, or worse. The occupational illness is defined as any abnormal

APPENDIX A

physical condition or disorder, other than one resulting from an injury (as defined above), caused by repeated exposure to chemical, biological, or physical agents associated with the occupational environment which will result in restricted duty, lost time, or worse.

3. Specific direction as to which specific procedures require the use of warnings or cautions should be obtained from logistic analysis and system safety. The responsible safety office also should be requested to review TM procedures for compliance with safety concerns.

b. Risk assessment and the related issue of whether or not additional emphasis is required is somewhat subjective. Decisions concerning these issues should be based on as much information as possible including historical mishap data from related systems, research, and the experience of all those involved in the TM preparation process. Often, the latter is the best indicator of the need for additional comment. Through the acquisition phase of major weapon systems, the decision to include a WARNING or CAUTION statement in the text can often be made by consulting the Operating and Support Hazard Analysis (O&SHA) Preliminary Hazard Analysis (PHA).

c. WARNINGS or CAUTIONS are not to be used for environmental protection concerns or security information.

A.3.3 Wording and structure of WARNING/CAUTION statements.

a. A WARNING or CAUTION statement should consist of four parts: a signal word (WARNING, CAUTION or Icon see 3.2.37, 3.2.4 and 3.2.15) a concise statement of the hazard, minimum precautions, and the possible result if the WARNING or CAUTION is disregarded, unless obvious or as specified by the acquiring activity. In cases where hazardous materials are being used and the conditions in A.3.5.e (2) exist, a hazardous material Icon(s) shall be used. A sample format of these Icons is presented on figure 18.

1. The signal word will always be included using one of the styles, or similar, referenced in this standard. Whichever style is used, it must be used consistently.

2. The remaining parts can be arranged in any way that gets the point across; however, following the hazard statement first, precaution second, and result third format is often the most clear and concise method. Brevity is important. If the possible result is obvious, it need not be included.

3. A precaution is a short statement of hazard mitigation that tells the reader to take care, e.g. “use eye protection”, or “keep arms and hands clear”. Certain precautions may reference other publications or direct people to consult with another agency (e.g. “...consult Bioenvironmental Engineering”). However, guidance of this nature should be considered for inclusion in a safety summary (see A.3.5).

b. WARNING or CAUTION statements shall never contain procedures critical to the effective and safe completion of the task. For example:

WARNING

Cleaning with compressed air can create airborne particles that may enter eyes or penetrate skin. Pressure shall not exceed 30 psig. Wear goggles. Do not direct compressed air against skin.

c. Negatively worded statements (e.g. “Failure to adhere.“, or “DO not use.“) are acceptable and sometimes the best way to convey the message.

d. Multiparagraph or excessively long WARNINGS and CAUTIONS are not specifically disallowed by this standard but lengthy statements are a good indication that the task procedures are not written with the needed safety steps or procedures included.

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e. Pay strict attention to the definitions of “shall”, “will” “should”, and “may” in this standard. The use of these words must be consistent with exposures or conditions which require comparable WARNINGS or CAUTIONS.

A.3.4 Placement of WARNING/CAUTION statements.

a. This standard contains general requirements.

b. WARNINGS or CAUTIONS should be placed in the text immediately prior to the step or procedure to which they apply. The same WARNING or CAUTION need not be repeated within a procedure as long as the emphasis and impact of the WARNING or CAUTION is not lost because of a break in the procedures.

c. There is no stated maximum on the number of unrelated CAUTIONS or WARNINGS that can be placed on a page. Under no conditions should they be so numerous so as to obscure the procedures. Properly written procedures should eliminate the need for consecutive WARNINGS. Sandwiching short (one line or two line) procedures between WARNINGS and CAUTIONS should be avoided.

A.3.5 Safety summary sheets or sections.

a. All TMs containing warnings or cautions shall have a safety summary. In conjunction with properly written procedures, the Safety Summary can eliminate the need for many WARNINGS or CAUTIONS which can contain general safety precautions.

b. Provide a Safety Summary in accordance with this standard in the front of the manual preceding the first text page. The safety summary provided on figure 18 is only an example of the type, depth, and format of general shop safety information necessary. It is not all inclusive. Only the first two paragraphs (see figure 18), or similar wording detailing the significance and use of WARNING and CAUTION statements, should be considered common to all Safety Summaries. Additional paragraphs can be added depending upon the class of hazard found in the TM.

c. Nearly any topic can be considered for inclusion in a Safety Summary: mechanized material handling equipment; overhead lifting devices; wood or metal working machine use and guarding; etc., General precautions related to storage, etc., can also be included.

d. Safety summaries are an excellent place to provide general safety or health instructions, but they must be tailored to the TM.

1. Live circuitry guidance is probably not applicable to a corrosion control TM. This does not preclude the possibility, however, of a WARNING in the text of a corrosion control TM if the text establishes the likelihood of exposure to injurious current.

2. The converse is also true. It would be appropriate to include live circuitry guidance in the Safety Summary of an avionics maintenance manual. However, WARNINGS inserted in the text prior to every point of potential current exposure would not be required, as long as the procedures identify the proper controls, e.g. “discharge capacitor XXXXX,” or “... turn off power and tag out (lock out) switch.” It is reasonable to assume a trained avionics maintenance technician is fully aware of the hazards of live circuitry; emphasis beyond a Safety Summary would be needed only in the event that the equipment, procedures or work environment presented an unusual situation to the technician.

e. Inclusion of general guidance in a Safety Summary does not preclude the need for a WARNING or CAUTION if the text calls out a nonroutine use or application.

1. For example: in a parts cleaning TM, general guidance in the Safety Summary related to air pressures (30 psig), chip guarding, eye protection, etc., would suffice as long as the task procedures include the minimum required controls (pressure regulation, etc.) as procedural steps. A CAUTION may still be required, however, if the text specifies 15 psig for a delicate piece of equipment that would be damaged if the technician proceeded under the general guidance included in the Safety Summary.

APPENDIX A

2. Many industrial hygiene/occupational health concerns can be addressed in the same manner. In TMs that frequently call for routine solvent applications, WARNINGS would not be needed throughout the text as long as the minimum required controls are called for in the task procedures. General guidance regarding solvents could be included in the Safety Summary. Additional emphasis would then be required only if a procedure calls for a nonroutine application, such as heating the solvent, or an unusual, potentially more toxic solvent. In that event, a WARNING could be used depending on the ability of the process to cause immediate safety or health concerns. This approach can be used for many of the occupational health concerns associated with commonly used substances, e.g. hydraulic fluids, oils, fuels, paints, thinners, adhesives, sealants, etc.

f. WARNINGS or CAUTIONS should not simply be extracted from the text and inserted verbatim in a Safety Summary. An acceptable approach would be to provide a general summary of guidance, classed by exposure. WARNINGS or CAUTIONS must still be placed in the text, however, based on the risk associated with the steps or procedure.

g. Excessively long Safety Summaries are discouraged. If a TM requires extensive safety or health guidance, a safety section or chapter should be considered.

h. (F) The above general guidance on Safety Summaries is also applicable to job guide input conditions pages.

   1. General, tailored guidance can be included in the system level job guide as long as the guidance is tailored to the entire system.

   2. General information applicable to an entire procedure should be included on the input conditions pages if it applies to the entire procedure covered.

A.4 POINTS OF CONTACT

A.4.1 Coordination. All those involved in the TM preparation process must remember that the OSH guidance included in the TMs is not the only line of defense against serious mishaps but it is sometimes the last. The effective inclusion of OSH guidance can almost never be accomplished by a single individual with a distinct background. It must be a coordinated effort among system experts, safety professionals, technical writers and the potential user. Questions arising from this process should be referred to the appropriate Safety Office and the acquiring activity. Do not ignore existing contractual or command requirements.

A.5 CONSTRUCTION OF HEALTH HAZARD ICONS

A.5.1 Reason for developing the icon. (See 3.2.15.) Samples of the icons are shown in an example Safety Summary on figure 18. The major reason for suggesting the use of icons for hazardous materials is to save space in the manuals, while still conveying a clear message of the hazard to the technician using the manual. Since the icon presents a visual image of the hazard rather than a more abstract message, recognition should be much faster than with a worded warning. The task of the graphic designer, in this case, is to make the icon as small as possible, while maintaining enough quality in the image to provide almost instant recognition. An optimum image height of ½-inch (three lines) has been selected as the best compromise between image quality and space savings. A bold rectangular outline with rounded corners was also selected for the icon. The width of the icon may vary as necessary for image quality while maintaining the height.

APPENDIX B

DIGITAL TEMPLATE FOR STANDARD TECHNICAL MANUALS DOCUMENT TYPE DEFINITION

B.1 SCOPE.

B.1.1 Scope. This appendix describes the standard Air Force (AF) markup language digital tools created for developing and delivering AF Technical Manuals (TMs). These tools are available in the Digital Support Suites (DSS) provided by the AF Technical Manual Specifications and Standards (TMSS) activity (see B.3). This appendix is a mandatory part of this detail specification. The information herein is intended for compliance.

B.1.2 Template Tool. The Document Type Definition (DTD) is the primary tool used as a template for authoring AF TMs and is based on rules outlined in MIL-PRF-28001 and ISO 8879. See B.3 for information about the DTD specified for this appendix subset.

B.2 DSS.

The DSS is comprised of the following tools for authoring and rendering the TM. See B.3 for information about obtaining DSS component files in digital format through the TMSS activity web site. For information about the current status and availability of DSS tools, see B.3.

B.2.1 DTD. The DTD provides the structure and content template in accordance with the content specific requirements of this specification (see section 4). To be delivered digitally, the TM shall be tagged using the applicable DTD provided through the TMSS activity. Information concerning the markup language type and use of DTDs currently provided, i.e., Standardized General Markup Language (SGML), may be obtained through the contacts listed under B.3.

B.2.2 Formatted Output Specification Instance (FOSI). The FOSI provides formatting for each element of an SGML tagged instance for rendering as a page-oriented document. It contains formatting information that conforms to the content specific requirements of this specification.

B.2.3 Tag Description Table (TDT). The TDT provides detailed descriptions of the elements contained in the DTD. The TDT contains the element tagging structure, parent elements, full element name, source paragraph, attribute descriptions unique to the element, and entities.

B.2.4 OmniMark™. DSS contain OmniMark™ scripts designed to be used as a text processing language that enables authors to auto-generate redundant material that may be difficult to tag manually.

NOTE: FOSIs and OmniMark™ scripts are no longer supported and may not be available for some DSSs.

B.3 OBTAINING DSS TOOLS.

B.3.1 Obtaining files by users with .mil web site access. The following applies to those interested in obtaining DSS component files who are on a mil internet domain, having mil web address access.

B.3.1.1 AF TMSS web site. DTDs, TDTs, and other files in the DSS can be accessed on the TMSS web site at https://techdata.wpafb.af.mil/TMSS/. On the web page, the “Baseline” menu option in the left pane contains three bulleted options called “Specifications”, “Standards”, and “Handbooks”. Hover the cursor over “Specifications” and a listing of the TMSS specifications will appear. Hover over the desired specification number and another drop down list will appear that contains an entry indicating the PDF version of the specification and other entries for the associated appendices. To obtain the preferred subset DTD, select the desired appendix from the list. The following items will appear on the downloading page: The name of the specification, the appendix number and name, the current version of the DSS, buttons to download specific DSS files provided and a “Download” button to download the entire DSS zip file.

B.3.2 Obtaining files by users with a Public Key Infrastructure (PKI) certificate or a Common Access Card (CAC). The following applies to those interested in obtaining DSS component files who have a PKI certificate or a CAC:

B.3.2.1 AF TMSS SharePoint web site. DTDs, TDTs, and other files in the DSS can be accessed at the AF TMSS Sharepoint web site: https://cs3.eis.af mil/sites/OO-LG-MC-38/default.aspx.

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B.3.3 Obtaining files by users without mil access, PKI certificate, or CAC. ATD provides detailed descriptions of the attributes contained in the Standard Technical Manual DTD. See B.3.4 for information on obtaining this file in digital format.

B.3.4 TMSS Helpdesk assistance. Address any requests relating to the DSS by E-mail to SGMLSUPPORT@us.af.mil (organizational address: Wright-Patterson AFLCMC/HIAM_AF TMSS HLPDSK) or by postal mail to Air Force Technical Manual Specifications and Standards, AFMC/AFLCMC/HIAM, 4170 Hebble Creek Road, Building 280, Door 15, Wright-Patterson AFB OH 45433-5653.

B.3.5 (M) Marine Corps DTD. The Marine Corps DTD is USMC-V1 and will be provided at time of contract award.

APPENDIX C

SUPPLEMENTAL TECHNICAL MANUALS DOCUMENT TYPE DEFINITION SUBSET

C.1 SCOPE.

See B.1.

C.2 DSS.

See B.2.

C.2.1 DTD. The DTD provides the structure and content template in accordance with the content specific requirements of this specification (see 4.9).

C.3 OBTAINING FILES.

See B.3.

APPENDIX D

TECHNICAL MANUAL SUPPLEMENTS DOCUMENT TYPE DEFINITION SUBSET

D.1 SCOPE.

See B.1.

D.2 DSS.

See B.2.

D.2.1 DTD. The DTD provides the structure and content template in accordance with the content specific requirements of this specification (see 4.9).

D.3 OBTAINING FILES.

See B.3.

APPENDIX E

BRIEF MANUALS DOCUMENT TYPE DEFINITION SUBSET

E.1 SCOPE.

See B.1.

E.2 DSS.

See B.2.

E.2.1 DTD. The DTD provides the structure and content template in accordance with the content specific requirements of this specification (see 4.10).1

E.3 OBTAINING FILES.

See B.3.

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CONCLUDING MATERIAL

Custodians:
Army - TM
Navy - OS
Air Force - 16

Preparing activity:
Air Force - 16
(Project TMSS 2016-015)

Review activities:
Army - AV, CR
Navy - AS, SH, MC
Air Force - 11, 99

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 https://assist.dla mil.